



State of New Jersey
 Department of Environmental Protection and Energy
 Division of Environmental Safety, Health and Analytical Programs
 CN 415
 Trenton, NJ 08625-0415

JOHN,
 As requested
 Regoals
 1/14/93
 4/20/93

Scott A. Welner
 Commissioner

Gerald P. Nicholls, Ph.D.
 Director

March 5, 1993

John H. Austin, Chief
 Decommissioning and Regulatory Issues Branch
 Division of Low-Level Waste Management and
 Decommissioning
 Office of Nuclear Material Safety
 and Safeguards
 U.S. Nuclear Regulatory Commission
 Washington, D.C. 20555

Dear Mr. Austin:

Thank you for sending me the recent information on the Nuclear Regulatory Commission (NRC) Site Decommissioning Management Plan (SDMP) program. Per our recent discussion, I am forwarding you some background information regarding our question as to proper jurisdiction, i.e. federal vs state, in a situation involving contamination from source material.

The situation is described in the enclosed documents. As I mentioned, we are not suggesting that NRC take jurisdiction in a situation where naturally occurring radioactive materials are technologically enhanced, but never reach the .05% concentration threshold for source material. Rather, this involves a case where the radioactive contamination of a relatively large, but otherwise clean pile from a radiation standpoint, was derived from commingling with source materials, thereby diluting the resulting aggregate concentrations to less than the .05% level. Specifically, at the Heritage Minerals facility in Newfield, NJ, prior operations produced a monazite waste stream containing uranium and/or thorium above source material concentrations which should have been, and eventually was, regulated by the NRC. Prior to such licensing, this monazite stream was combined with a much larger radioactively clean volume of wet-mill tailings, thereby contaminating those tailings. This mixture then became the "combined tailings pile." Because the source of the contamination of the combined tailings pile was NRC regulated material, it is our view that all of these contaminated areas should be under NRC jurisdiction, in addition to the operational plant and monazite pile.

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This circumstance appears to raise a fundamental legal and policy question that is relevant to the scope of the SDMP effort. I would very much appreciate a response on this question. If your view is that NRC should not take jurisdiction, the rationale for that position would be of great interest to us.

On a related matter, I noted the NRC's recent efforts to revise 10 CFR Part 40 to improve control of source material through more specific regulation and to update the applicable requirements to conform with the revised standards for protection against radiation. In that process I recommend that you consider deleting or substantially revising the current exemption for unimportant quantities of source materials contained in 10 CFR 40.13(a).

This provision currently exempts, without regard to overall quantity, source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound solution or alloy. We recognize that this is an established regulatory threshold for the definition of source material. However in light of NRC's Branch Technical position on the disposal or onsite storage of thorium or uranium from past operations, and the NRC's current work on the development of decontamination and decommissioning criteria, it is clear that larger volumes of uranium and/or thorium contaminated materials below the .05% threshold, but above disposal criteria, can be a health and safety concern, and therefore should not be exempt from regulatory and related licensing requirements. Rather, it should be clarified that materials deriving their radioactivity from source material, even though their concentration may be below the .05% threshold, should remain under NRC regulatory and licensing jurisdiction until disposal criteria are met, and, as appropriate, the disposal medium is released for unrestricted use.

I appreciate your consideration of these requests and recommendations. If you require additional information, please contact me on (609) 987-2101.

Sincerely,

Bob Stern

Robert Stern, Ph.D., Chief
Bureau of Environmental Radiation

Enclosures

c: Assistant Director Lipoti

include
in
Decree
for
ANIR

?



State of New Jersey
Department of Environmental Protection and Energy
Office of Policy and Planning
CN 402
Trenton, NJ 08625-0402
Tel. # 609-292-1254
Fax. # 609-984-3962

Scott A. Weiner
Commissioner

Richard V. Sinding
Director

May 13, 1992

Thomas T. Martin, Regional Administrator
U.S. Nuclear Regulatory Commission
Region I
King of Prussia, Pennsylvania 19406

Dear Mr. Martin:

I want to bring to your attention two issues of concern to the State of New Jersey regarding the jurisdiction over, and cleanup standards for, the Heritage Minerals site in Lakehurst, New Jersey.

The first issue involves affixing the proper governmental responsibility for the clean-up of the Heritage Minerals facility and, potentially, of other sites with similar histories. At Heritage, prior operations at the facility produced a monazite waste stream containing uranium and/or thorium above source material concentrations which should have been, and eventually were, regulated by the Nuclear Regulatory Commission (NRC). Prior to licensing, these monazite wastes were combined with other tailings and placed on the combined tailings pile, thereby contaminating that pile. It is our position that all of these contaminated areas should be under NRC jurisdiction, in addition to the operational plant and monazite pile. Therefore, any expenditure of public funds that might be required in the clean-up of this site should be borne by the federal government, not the state.

Our rationale for this position was provided to the NRC Region I office on September 20, 1991, in a request for reconsideration of the initial licensing decision (Enclosure 1). The response forwarded to us on this issue (Enclosure 2) was brief, did not address the specific points raised in our letter, and did not provide any substantive reasoning to warrant changing our view.

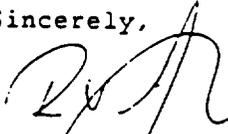
Our second area of concern is the final clean-up criteria employed by the NRC for this and other clean-ups involving technologically enhanced uranium and thorium levels. The NRC's current Branch Technical Position on clean-up criteria for disposal of residual thorium or uranium allows unrestricted use of a property at residual contamination levels less than 10 picocuries per gram (pCi/gm). Our experience with Superfund clean-up efforts in Montclair, New Jersey, involving similarly contaminated soils, leads us to believe that

Page 2
Mr. Martin

average concentrations in the soil below 5 pCi/gm are necessary to protect against elevated radon levels in residences that might eventually be built on the property. Any NRC-approved disposal plan for the monazite pile at Heritage Minerals involving mixing with clean soils to reduce the average concentration to only 10 pCi/gm could result in the need for further remediation in the future. Clearly, this is not an optimum approach to the use of either private or public funds. Therefore, I recommend that the NRC review and appropriately revise its Branch Technical Position in light of the experiences at Montclair and other relevant clean-ups.

I would appreciate your review of our concerns and look forward to hearing from you. Cooperation between our offices on these matters can only be mutually beneficial to both our agencies. If you would like to discuss this further, please call Dr. Jill Lipoti, Assistant Director for Radiation Protection, at (609) - 987-6389.

Sincerely,



Richard V. Sinding
Assistant Commissioner
Policy and Planning

Enclosures

c: The Honorable H. James Saxton, HR
The Honorable William Bradley, Senator
The Honorable Frank R. Lautenberg, Senator
Richard Sullivan, Chairman, Pinelands Commission
Jane C. Cameron, Mayor, Manchester Twp.



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY

CN 415
Trenton, N.J. 08625-0415
(609) 987-6402
Fax (609) 987-6390

Jill Lipoti, Ph.D., Assistant Director
Radiation Protection Programs

September 20, 1991

John D. Kinneman
Section Chief - Nuclear Materials
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Kinneman,

Thank you for your letter dated June 6, 1991. We have reviewed the NRC's rationale for not licensing various areas and materials on the Heritage Minerals, Inc. (HMI) property and other historical information including material provided by Jack Lord, Vice President of HMI, on materials processing at the site.

Based on this review we conclude that the remaining estimated 600,000 tons of combined tailings from Mineral Recovery, Inc. (MRI) and HMI Phase I operations were contaminated radioactively by the mixing of source material with what was otherwise clean material from a radiation standpoint. You state in your June 6 letter that the NRC staff has concluded that it should regulate "the monazite rich waste stream since it contains 0.05% source material by weight and the areas around the plant which are contaminated by this material" (underlining added). Consequently it appears that your Agency has erred in its rationale for not accepting regulatory jurisdiction over the combined tailings. We are, therefore, requesting that you review your prior decision, and accept that responsibility.

Zircon Separation / Monazite Generation

As you stated in the June 6 letter, it is true that a primary activity of HMI is the separation of minerals such as rutile and ilmenite from sand. Your letter, however, does not address HMI's other major activity; the separation of zircon from sand.

As you know, MRI, HMI Phase I and HMI Phase II operations employed the same physical mineral separation processes, differing only in the source of new feed and in the location and disposition of the monazite waste. Generally, new feed entered the

wet mill where zircon, leucoxene, rutile, and monazite were concentrated (see Attachment 1). In the dry mill, the conductors (leucoxene and rutile) were separated from the non-conductors (zircon and monazite). The rationale which you provided to us only addresses the process stream for conductors, which does not contain monazite. We address below the process stream for non-conductors in which monazite is separated from zircon.

During MRI and HMI Phase I operations (November 1986 - March 1990) at the point where zircon was magnetically separated from monazite in the dry mill, the monazite waste stream, at licensable source material concentration, was sent to a hopper where it was combined with tailings from the wet mill. These combined tailings were then pumped to the combined tailings pile. Perkins and Cole, attorneys retained by HMI, in their September 27, 1990 letter to you stated that "... monazite waste at source material concentrations was re-combined with other materials and placed in the area marked in blue on the site map [the combined tailings pile]..." HMI did not possess an NRC license for any portion of Phase I operations. As documented in NRC Inspection Report Number 99990001/89-001, HMI "possessed and used ... monazite waste in which the concentrations of source material were greater than 0.05% by weight without being authorized to do so by an NRC license..."

During HMI Phase II operations (April 1990 - July 1990) at the point where zircon was magnetically separated from monazite in the dry mill, the monazite waste stream was stockpiled on the current monazite pile instead of being recombined with other tailings. HMI did not possess an NRC license for any portion of Phase II operations, and yet accumulated approximately 695 cubic yards of monazite in a pile. HMI's current NRC Materials License SMB-1541 (issued January 2, 1991), allows the company to possess, package, store and transfer this "monazite-rich product."

It is clear that, during MRI and HMI Phase I operations, radioactively clean wet mill tailings were contaminated by a monazite waste stream exceeding the threshold for classification as source material before being stockpiled on the combined tailings pile. Furthermore, during Phase II operations, HMI stockpiled a "monazite-rich product" in an unregulated pile. During both phases of operation HMI concentrated monazite, containing licensable amounts of uranium and thorium, without an NRC license.

Tailings Piles

The June 6 letter discusses areas on the HMI property known as the "original new feed area", the "salvage storage area", and the "recycle tailings area". The "original new feed area" contains mill tailings from the ASARCO process; the recovery of ilmenite from sand. The "salvage storage area" is where old machinery and equipment is currently stored on site. The "recycle tailings area", or combined tailings pile, contains the monazite-contaminated tailings from MRI and HMI Phase I operations. As documented in NRC Inspection Report Number 99990001/89-001, approximately 62 tons each of uranium and thorium in the form of monazite was combined with wet mill tailings, and placed on the combined tailings pile.

The letter also states that "many of these areas were generated at a time when Heritage was using a process which did not produce a monazite-rich waste stream." Based on our review of the process description provided by Mr. Lord, on information in NRC Inspection Report Number 99990001/89-001, and on historical descriptions contained in HMI's July 25, 1990 letter to you, it seems that a monazite-rich waste stream was always produced during MRI, HMI Phase I, and HMI Phase II operations and, as discussed above, was the source of the radioactive contamination of the combined tailings piles.

Conclusions

The June 6 letter concludes that the NRC "can regulate only the monazite-rich waste stream since it contains 0.05% source material by weight and the areas in and around the plant which are contaminated by this material." We agree, and contend that HMI operations produced a monazite waste stream at source material concentrations which should have been regulated by the NRC, and that these monazite wastes were combined with other tailings and placed on the combined tailings pile, thereby contaminating that pile. The conditions of HMI's current Materials License SMB-1541 state that only the interior of all plant buildings where source material is produced, and the outside monazite storage pile shall be decontaminated to meet the unrestricted use criteria described in the Branch Technical Position "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations." We believe that, for the reasons discussed above, the scope of NRC authority should be expanded to include the recycled tailings pile and any other piles or areas on the HMI site which were contaminated with the monazite waste stream.

Please provide a response by October 11, 1991 as to whether the NRC intends to review its previous decision on this matter.

Sincerely,



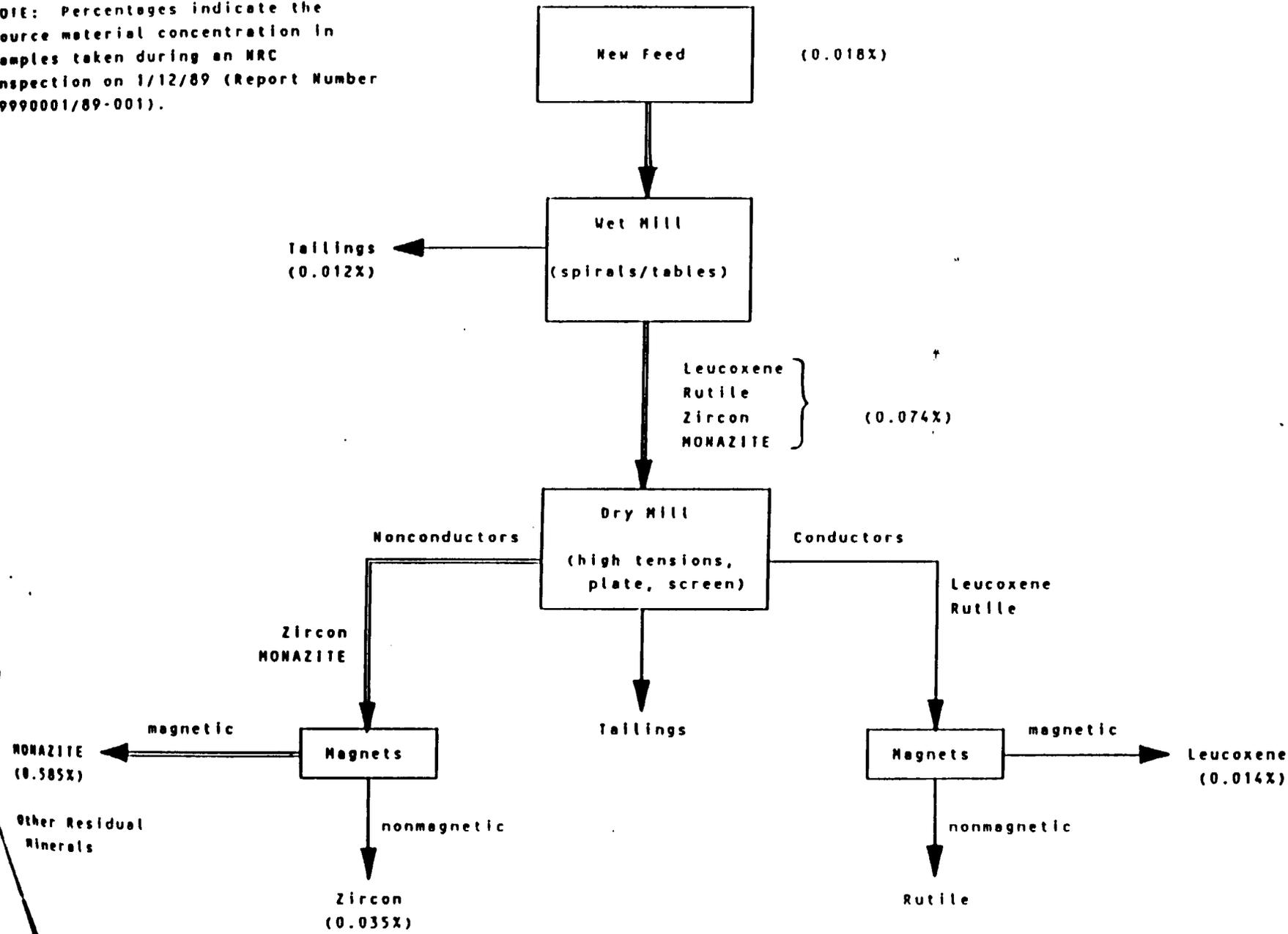
Robert Stern, Ph.D., Chief
Bureau of Environmental Radiation

Attachment

c: Malcolm R. Knapp, NRC
Ronald R. Bellamy, NRC
Marie Miller, NRC
Jill Lipoti, DEQ
Linda Grayson, DHWM
Patricia Gardner, Supervisor, REAS
Maryanne Quinn, REAS

ATTACHMENT 1

NOTE: Percentages indicate the source material concentration in samples taken during an MRC inspection on 1/12/89 (Report Number 99990001/89-001).



ENCLOSURE 2



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

DEC 13 1991

License No. SMB-1541

Docket No. 040-08980

State of New Jersey
ATTN: Robert Stern, Ph.D., Chief
Bureau of Environmental Radiation
CN 415
Trenton, New Jersey 08625-6390

Dear Dr. Stern:

SUBJECT: Heritage Minerals, Inc.

This refers to your letter dated September 20, 1991, regarding the Heritage Minerals, Inc. facility in Lakehurst, New Jersey. As you requested, we have reviewed our decisions concerning NRC jurisdiction over the various areas at the Heritage Minerals, Inc. site known as the "original new feed area", the "recycled tailings area", and the "salvage storage area".

Based on this review, we have concluded that our decisions in this area were based on both policy and legal considerations and that our previous decision is still the proper course. The NRC is not extending license authority at Heritage Minerals to any site areas beyond the operational plant and the monazite pile.

We appreciate your interest in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "John D. Kinneman".

John D. Kinneman, Chief
Research, Development &
Decommissioning Section
Division of Radiation Safety
and Safeguards



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406

JUN 06 1991

Docket No. 040-08980

License No. SMB-1541

State of New Jersey
ATTN: Robert Stern, Ph.D., Chief
Bureau of Environmental Radiation
Department of Environmental Protection
Division of Environmental Quality
CN 415
Trenton, New Jersey 08625-0415

Dear Dr. Stern:

Subject: Heritage Minerals, Lakehurst, New Jersey

This refers to your letters dated February 9, 1991, March 20, 1991 and May 28, 1991 regarding Heritage Minerals, Inc. I provided some of the information requested in my letter dated March 13, 1991. Thank you for informing us of the results of your inspection at the site. We inspected the site on April 10, 1991 and a copy of the results of the inspection are enclosed for your information.

The following information is provided in response to the specific concerns expressed in your letters.

With regard to your concern about the controls on the monazite pile, the fence was standing and posted correctly during the April 10, 1991 inspection. The Radiation Safety Officer and the Manager are the only employees currently at the Heritage Minerals site and the gate to the site is locked when neither employee is present. This represents adequate control of access to the monazite pile at this time. If long-term on-site storage of the monazite is necessary, we may require the licensee to further contain the monazite to prevent erosion by wind or rain. We are currently considering the licensee's proposal to dispose of the monazite pile by dilution with clean sand as described in their letter dated February 28, 1991. We will keep you informed of our progress on this request.

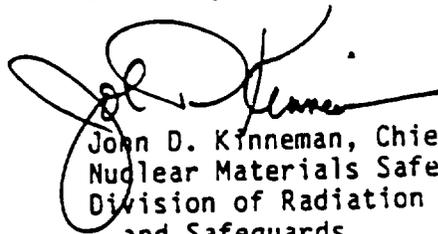
With regard to your concern about the area between the dry mill and the wet mill, our inspector performed surveys during the inspection using a Ludlum Model 19 micro R meter. The highest radiation levels measured were 400 microroentgen per hour near the kiln outside the dry mill. The licensee is aware that soil outside the wet and dry mills is contaminated from spillage of feed sand and monazite, and plans to clean these areas following disposition of the monazite. Cleaning of equipment inside the mills is complete, but final surveys are not planned until remedial activities outside the mills and disposal of the monazite is complete.

You asked for NRC's legal rationale for not licensing various areas and materials on the Heritage property. As part of the licensing process, the NRC staff concluded, based on the advice of the Office of General Counsel (OGC), that the NRC does not have jurisdiction over the areas on the Heritage Mineral property known as the "original new feed area", "recycled tailings area" (the blue area on the Perkins/Cole analysis) and the "salvage storage area". The sand in these areas contains less than 0.05% source material by weight, a concentration which does not meet the definition of source material in 10 CFR 40.4 and is defined in 10 CFR 40.13 as exempt from NRC regulations and the requirement for an NRC license. These areas were generated as a result of the primary activity of Heritage Minerals, Inc. which is the separation of minerals such as rutile and ilmenite from the sand, an activity which is not regulated by the NRC. The waste streams resulting from an unregulated activity are not within the jurisdiction of the NRC unless they meet the definition of source material. Since these areas are not source material and were not generated by an NRC licensed or licensable operation, they cannot be regulated by NRC. In fact, many of these areas were generated at a time when Heritage was using a process which did not produce a monazite-rich waste stream. Furthermore, because the primary activity does not require an NRC license, the staff concluded that the NRC cannot use the authority in the National Environmental Policy Act (NEPA) to regulate these areas of the site. Therefore, the staff concluded it can regulate only the monazite-rich waste stream since it contains 0.05% source material by weight and the areas in and around the plant which are contaminated by this material.

We understand that there are plans to review the Branch Technical Position, no revision is yet available. The other documents you requested are enclosed.

Thank you for your cooperation in this matter. Please contact me if you have any other questions.

Sincerely,



John D. Kinneman, Chief
Nuclear Materials Safety Section B
Division of Radiation Safety
and Safeguards

Enclosures:

1. Letter dated February 21, 1989, including Inspection Report No. 99990001/89-001 and Notice of Violation.
2. Letter dated July 25, 1990 from Heritage Minerals, Inc. to NRC, including Map A.
3. Letter from NRC to Heritage dated January 2, 1991
4. License No. SMB-1541
5. Letter from NRC to Heritage dated March 22, 1991.
6. Letter from NRC to Heritage dated May 22, 1991.