

# **REBUTTAL**

**To**

**Representative George Miller's Letters**

**To**

**The Nuclear Regulatory Commission (NRC)  
and Vice President Gore**

**Concerning Atlas Corporation's Uranium Mill & Tailings Site  
Moab, Utah**

Prepared by

Shaw, Pittman, Potts & Trowbridge  
Washington, D.C.

For

Atlas Corporation  
Denver, Colorado

June, 1997

SHAW, PITTMAN, POTTS & TROWBRIDGE

MEMORANDUM

TO: Richard Blubaugh

FROM: Anthony J. Thompson  
Paul Gormley  
David H. Kim

DATE: June 18, 1997

RE: Rebuttal to Rep. George Miller's Letters  
to NRC and Vice President Gore

---

We have reviewed the letters from Rep. George Miller (D-CA) to his colleagues in the House of Representatives, to Vice President Albert Gore, and to the Nuclear Regulatory Commission (NRC) Chair, Shirley Jackson (attached to this Memorandum as Attachment A). This Memorandum outlines the claims Miller makes in these letters, and provides initial reactions to some of these claims.

The information we have provided can be found in the following documents: (1) Atlas Corporation's (Atlas) April 29, 1996 comments (COMMENTS) to the Draft Environmental Impact Statement and the Draft Technical Evaluation Report (DEIS); (2) NRC Staff Final Technical Evaluation Report (FTER) (March 1997); (3) Letter from Myron Fliegel, Senior Project Manager, Uranium Recovery Branch, NRC, to Judy Mikels, President, Southern California Association of Governments (June 3, 1997) (Fliegel) (attached to this Memorandum as Attachment B); (4) Letter from Jack McGraw, Acting Regional Administrator, U.S. Environmental Protection Agency, Region VIII, to Senator John McCain (June 2, 1997) (McGraw) (attached to this Memorandum as Attachment C); and (5) Letter from Shirley Ann Jackson, Chair, NRC to Senator John McCain (June 1, 1997) (Jackson) (attached to this Memorandum as Attachment D).

In this Memorandum, Rep. Miller's claims are in bold type, and for each claim we have noted the letter (or letters) in which it is made. For these allegations that appear in the "Dear Colleague" letter, the notation is "DC." Similarly, the letter to the Vice President is "VP," and the letter to Ms. Jackson is "NRC."

Before responding to Rep. Miller's specific claims, we note that the Congressman seems to have received much of the information in his letters from the Association for the Tree of Life, an environmental group in Utah. This group, which is opposed to leaving the tailings in place at Moab, has made many of the same false or inaccurate claims as Rep. Miller. Rep. Miller apparently has accepted the group's allegations without conducting any independent investigation into

the conditions at the site. See Information from Atlas Mill Reclamation Task Force, in Decommissioning of Moab, Utah, Uranium Mill Tailings *available on the Internet at* <http://antenna.nl/wise/wupudmoa.html> (attached to this Memorandum as Attachment E).

- **The unlined tailings pond sits on a porous geological site where leachate seeps directly into the groundwater. The wastes seep down through the aquifer into the Colorado River. (DC; VP; NRC).**

A. There is no tailings "pond." Rather, there is a large pile of solid materials in a facility regulated by NRC under the provisions of 10 C.F.R. Part 40, Appendix A and pursuant to EPA generally applicable standards in 40 C.F.R. Part 192.

B. Any constituent leaching is minimal. Those constituents that do leach have very little impact on the water quality of the Colorado River.

- i. NRC assessment of the impact of the tailings pile on the river: In the DEIS, NRC concluded that the tailings pile would not have any significant impact on the water quality of the Colorado River.

[A]vailable data do not indicate that the existing tailings pile has more than a minimal impact on the water quality of the Colorado River beyond a small mixing zone near the bank. Leaving the pile in place would, therefore, have little adverse impact.

(p.4-30 of DEIS; p.74 of COMMENTS).

- ii. UDEQ assessment of level of radionuclides in the river: Mr. William J. Sinclair, Director of the Division of Radiation Control of the Utah Department of Environmental Quality (UDEQ), has reviewed the data on radionuclides (gross-alpha and beta and radium-226 and 228) in the Colorado River for the years from 1975-1990's and has confirmed that current state sampling of the river "especially around the Atlas tailings," has not developed data to "indicate any alarm or concern with radionuclides in the Colorado River." These views were expressed at a meeting of the Utah Radiation Control Board in October 1995. (p.78 of COMMENTS).

- iii. Assessment by Professor McDonald E. Wrenn: In his letter to the editor of a local newspaper published in Moab, Professor Wrenn, concluded that the Atlas site poses little or no health risks to the surrounding population. A resident of Moab, Professor Wrenn teaches pharmacology at the University of Utah and has a doctorate

in nuclear engineering and environmental medicine and years of experience in analyzing the health effects of radiation. He writes:

The natural radioactivity in the suspended sediments flowing down the Colorado River in a thousand years, containing the same radioactive elements found in the Atlas tailings pile, exceeds that which is in the Atlas tailings pile. The mass of suspended sediments flowing by the pile in a year exceeds the total mass of the pile.

I have measured the radioactivity over several tailings piles, including Atlas', and there is nothing unusually high about the Atlas tailings.

(McDonald E. Wrenn, Letter to the Editor, The Times-Independent, Nov. 7, 1996) (attached to this Memorandum as Attachment F).

- iv. The contribution from the tailings pile is a very small fraction of the concentrations in the river. Any contamination the tailings pile does contribute is "the same as that which naturally flushes into the river from the surrounding terrain." (Fliegel at 1). Similarly, "the contribution of the tailings contaminants are trivial in relation to natural levels of river constituents." (Fliegel at 2).
- v. Because it takes 20 years for groundwater to travel from the pile to the river, the contamination currently reaching the river is a result of actual mill operations from 20 years ago. Since the mill ceased operations, seepage has been decreasing. (Fliegel at 1 & 2).
- vi. "Surface water monitoring for the last 20 years indicates there is no measurable increase of the contaminants in the waters of the Colorado River, due in large part to dilution." (FTER at 5-26).
- vii. Unreclaimed uranium mines upstream of the Atlas site: In addition to natural leaching, there are other factors that may contribute to the high background concentration of uranium and other contaminants in the Colorado River. The foremost among these is the presence of multiple (as many as 40) reclaimed and unreclaimed uranium mines in the watershed of the Arches National Park which, after heavy rainfall, likely contribute both radioactive and nonradioactive contaminants which enter the Colorado River just above the Atlas site through Courthouse Wash. (p.94; Attachment H of COMMENTS).



- viii. In addition, there are six mill sites upstream of the Atlas site and within the Colorado River drainage system. These sites are located at Grand Junction, Rifle, Gunnison, Uravan, Naturita, and Slick Rock. Whether or not the Atlas tailings pile is moved, each of these sites will continue to have an impact on the Colorado River drainage system.

C. Even in worst cases, there is no reason for concern:

- i. NRC assessment of a hypothetical flood (HF) scenario: Even in the worst case scenario where twenty percent of the tailings could be released into the Colorado River during a major storm event -- an extremely unlikely scenario that assumes massive pile failure and concurrent flooding -- NRC reached the following conclusion:

[T]he hypothetical failure of the tailings pile design during an HF would have some temporary impact on water quality in the river near the pile. However, the river's water quality, which is already degraded regardless of the tailings pile, would be further degraded only by a slight amount. *Contaminants from the tailings would be quickly diluted to currently existing levels, which are generally below water quality standards and criteria for the protection of aquatic biota. Thus, the long-term impacts to water quality should be negligible.*

(p.4-30, 31 of DEIS, p.131 of COMMENTS).

- ii. Compliance with MCL for uranium: According to a recent study, even under a worst case scenario, assuming a seepage of 9,000 pCi/L of uranium (the contaminant of prime concern) with a maximum seepage flow of 33 gpm and a dilution of 90,000:1 in the Colorado River, the level of uranium contributed by tailings seepage is less than 0.1 pCi/L which is a factor of 300 lower than EPA's proposed MCL for uranium of 30 pCi/L.<sup>4</sup> (p.79 of COMMENTS).

- D. Tailings from the White Canyon uranium mill: The doomsday predictions about the adverse impacts on public health and the environment if tailings from the Atlas pile were to somehow get into the river must be considered in light of the case involving tailings from the White Canyon uranium mill in Hite, Utah. This facility operated from 1949 until 1953 and generated

<sup>4</sup> SENES, "Summary Document: Screening Level Risk Assessment for Reclamation of Uranium Mill Tailings at Moab, Utah." (1995) p.4.3. (Appendix 11).

26,000 tons of tailings that were impounded on-site when it closed down. In November 1963, AEC asked the Department of Health, Education and Welfare (HEW) to determine the radiation effect of the tailings pile if it were to remain at the site, which would ultimately be covered by the waters of Lake Powell. HEW later concluded that the tailings could remain at the site. Subsequent analysis of water and sediment samples indicated "no significant variation in levels of radioactivity between samples collected over the tailings pile (by then covered with sediment) and samples taken upstream and downstream from the site." These tailings currently reside beneath the waters of Lake Powell with no discernible adverse impact. (p.131; Attachment M of COMMENTS).

- E. Natural leaching of uranium: Moreover, in a letter to frequent users of the rivers in the Canyonlands National Park, the National Park Service (NPS) pointed out that natural leaching of uranium occurring in various geologic formations tend to cause high uranium levels. The agency had taken quarterly water samples for almost three years and had them analyzed by the Utah State Health Department. NPS concluded:

Our water sampling to date indicates gross alpha levels exceed the state standards about . . . 67 percent of the time in the Colorado River. Gross beta levels are exceeded . . . 20 percent of the time in the Colorado River. Our data show that these levels are more frequently above state standards during *high water*.

Experts in the National Park Service's water quality lab at Ft. Collins, Colorado, and the State of Utah Radiation Control Department think the readings are due to natural causes and are not man made. This area of Utah has large deposits of uranium occurring naturally in various geologic formations. The levels we are receiving in the rivers are probably due to natural leaching. . . .

[R]adioisotopes adhere strongly to suspended solids and are often associated with clay. During high water or after heavy rains the rivers are the muddiest and of course radioisotopes would be found clinging to the mud. . . .

None of the radiation experts feel there is a danger. . . .

(p.77 of COMMENTS).

- The wastes contain high concentrations of ammonia, arsenic, lead, vanadium, selenium, mercury, molybdenum, nickel, and other toxic metals. (DC; VP; NRC).
  - A. Only ammonia, uranium, molybdenum and selenium have substantially elevated concentrations within the tailings pile. Arsenic, lead and nickel are only slightly above background within the tailings pile. These constituents do not pose significant threats to the Colorado River. There is no data on mercury available.
  - B. NRC has noted that, with the exception of ammonia, the tailings pile "contributes relatively small amounts of known contaminants compared to the relatively high reported ambient concentrations of contaminants in the river." Supplement to the Biological Assessment of Potential Impacts to Endangered and Threatened Species from the Proposed Reclamation of the Atlas Mill Tailings Site, Moab, Utah 56 (January 1997).
  - C. Even under a conservative assessment of contamination with minimal dilution at record low flow conditions, "only gross alpha and ammonia would be likely to approach or exceed the state water quality standards as a result of contaminant input from the pile." (*Id.* at 56-57).
  - D. Furthermore, once the stabilization plan is complete, the transportation of contaminants to the river will be reduced to one-sixth of current levels. (*Id.* at 57). On the other hand, relocating the tailings pile will result in continued discharge into the river for an unknown period. (*Id.*)
- The pile is leaking alpha radioactive materials in the Colorado River at levels 1,300 times above EPA MCLs. (DC; VP; NRC).
  - A. This is a recklessly inaccurate statement. Atlas has no idea where this number originated, but we suspect that it reflects radioactive concentrations within the tailings pile. Because the purpose of the tailings pile is to contain radioactive constituents, it is ridiculous to criticize Atlas for doing just that, and meaningless to compare the radioactivity in the pile with an MCL which is, after all, a "tap water" drinking water standard.
  - B. In addition, in its discussion of radionuclides, the NRC Staff noted that "[s]ee page influences from the Atlas tailings pile are generally overshadowed by natural variations of constituent concentrations in the river from other sources upstream and downstream of the Atlas site." (FTR at A-43).
  - C. A comparison of data collected from the Colorado River over the years shows that concentrations of uranium and thorium are greater upriver from

the tailings pile than they are downriver. (FTER at 5-17). Radium concentrations are essentially the same above and below the mill site. (Id.)

D. Furthermore, groundwater data indicates that although the alluvial groundwater continues to receive seepage from the tailings pile, measured concentrations of uranium, thorium and radium in the alluvial materials have decreased significantly. (FTER at 5-17).

- **The proposed plan will allow toxics to seep into the river at the rate of 8 gallons per minute. (VP; NRC). Furthermore, Atlas says that capping the pile will not affect leaching for at least 66 years. (DC; NRC).**

A. When one considers the size of this tailings pile, the seepage rate is exceptionally low. Indeed, it is probably lower than the rate at any other Title II site in the nation.

B. Atlas' groundwater reclamation and groundwater remediation plan, once completed, will substantially reduce contribution of contaminants from the tailings pile to the river. (Fliegel). Completion of the final radon cover will lessen further the seepage rate. This cover will have the immediate effect of reducing the infiltration of precipitation into the pile thus limiting additional seepage.

C. Activities when the mill was operational contribute to the current seepage rate. Because the mill is no longer active, this rate will continue to decline over time.

D. Atlas has never publicly claimed that capping the tailings pile will not affect leaching for at least 66 years. We have not been able to determine the source of such allegations. However, one possibility is that Lance Christie of the Association for Tree of Life who has vigorously opposed the Atlas' proposal may have provided Rep. Miller with such figures. In an article published in The Zephyr, Christie cites the State of Utah's estimate that it will take at least 40 years for leaching from the Atlas pile to decline to Utah Ground Water Quality Standards.<sup>2</sup>

<sup>2</sup> Peter Haney, "Moab in a Nutshell," The Zephyr, (June-July, 1997) (attached to this Memorandum as Attachment G).



- The pile sits on two active fault lines. (DC). The pile is on seismically unstable land. (VP). According to Lawrence Livermore Laboratories, the Atlas facility is the only commercial uranium tailings site located on seismically unstable land. (NRC).
- A. The NRC Staff has concluded that "the Moab fault is not a capable fault and thus not a seismogenic hazard to the tailings." (FTER at A-5).
- B. The NRC Staff found that Atlas has acceptably addressed the seismic issue in the design for the tailings pile. (FTER at 2-25). Because of the extremely low probability of a seismic event that would exceed the design capability of the pile, NRC determined that Atlas has properly addressed seismic stability. (FTER at 2-28).
- C. NRC agreed with Atlas' assessment that within a 10,000 year period the site may encounter a seismic event with an acceleration of 0.18g. However, Atlas has designed the pile to withstand an event with an acceleration of 0.38g. (FTER at 2-30).
- D. LLNL study: In his letter to NRC, Rep. Miller cites a recent study by the Lawrence Livermore National Laboratory (LLNL) for the proposition that the Atlas site is the "only commercial uranium tailings site located on seismically unstable land." This grossly mischaracterizes the results of that study. In the LLNL study, "simplified" site-specific probabilistic seismic hazard analyses were performed for 19 Title II sites located in the West and concluded that *at most sites*, estimates of probabilistic peak ground acceleration at return periods of 2,000 years and more were higher than the values in design.<sup>2</sup> The LLNL study did not single out the Atlas site in any way as susceptible to higher seismicity than other Title II sites. The 2,000 year period is not obviously relevant to the regulatory time frame of 200-1000 years contained in NRC regulations for such facilities.
- E. Seismic inactivity: The Atlas site is located in a region, the Colorado Plateau, that is among the least active, seismically, in the country. A recent study by the leading experts on seismicity in the Colorado Plateau (Wong, et al.) reached the following conclusion: "In terms of earthquakes and their associated hazards, the Colorado Plateau, particularly its interior, has generally been considered to be seismically inactive and devoid of large earthquakes." (p.2 of Attachment F of COMMENTS).
- F. Inactivity of the Moab fault: The Moab fault that runs beneath a tip of the northeast corner of the tailings pile has been inactive for millennia. The

<sup>2</sup> Ivan G. Wong et al., Earthquake Hazards in the Intermountain US: Issues Relevant to Uranium Mill Tailings Disposal, *Tailings and Mine Waste '97*, Proceedings of the Fourth International Conference on Tailings and Mine Waste '97 204-205 (1997).

evidence strongly suggests that movement on the Moab fault has not occurred for at least the past 35,000 years, and repeated movement has not occurred within the past 500,000 years. In fact, geologic experts have concluded that the Moab fault does not appear to be a capable fault and does not pose a significant earthquake threat to the Atlas site. NRC has also concurred with this assessment. (pp. 82-83 of COMMENTS).

G. Concurrence of Utah Geological Survey: The Utah Geological Survey shares our view that the Moab fault does not pose a significant earthquake threat to the Atlas site. Mr. Helment Doelling of the Survey acknowledged in an interview that the tailings pile "would be secured for that amount of time [10,000 years]." (p.83 of COMMENTS).

H. Precariously balanced rocks belie claims of seismicity: The seismicity study by Ivan Wong notes that the presence of precarious rocks in the Canyonlands area near the Atlas site implies that strong ground shaking has not occurred in this region since the rocks reached their balanced state thousands of years ago. He concludes: "The location of Moab in the Canyonlands region where probably hundreds of precariously balanced rocks occur, some very delicately, suggests that the site region has not been subjected to strong earthquake ground shaking for at least several thousands of years. These observations are consistent with the computed probabilistic peak accelerations." (pp. 15-16 of Attachment F of COMMENTS).

- **Between floods and earthquakes, leaving the pile in place could contaminate drinking water for millions of people. (DC). In the event of a flood, the Colorado River could easily be contaminated. (VP).**

A. In its discussion of surface water hydrology and erosion protection, the NRC Staff notes that during large floods the velocity of the Colorado River at the Atlas site slows to one tenth of its normal flow rate. (FTER at 4-12). This flow rate greatly reduces the river's potential for causing any erosion to the tailings pile.

B. The tailings pile design includes a "collapsible" rock apron that will protect the pile from erosion. When it reviewed the design of this rock apron, NRC determined that the apron, which conforms to the U.S. Army Corps of Engineers guidance, will protect the pile. (See FTER at 4-1 through 4-25 for a comprehensive discussion of the design of the pile. See also FTER at 4-25 for NRC approval of the design).

C. NPS has concurred with Atlas' assessment that the Colorado River is highly unlikely to migrate into the Atlas tailings pile and that there is little, if any, threat of erosion of the tailings pile. After reviewing a report prepared on behalf of Atlas on this issue, Gary Smillie, a hydrologist with



NPS, wrote: "[W]e [NPS] agree with the principal conclusion of the report that the river is unlikely to migrate into the tailings."<sup>4</sup> (Attachment I of COMMENTS).

- D. NRC has noted that during the severe 1984 flood, when the water reached the toe of the tailings pile, there were no adverse erosion consequences. (Letter from Shirley Ann Jackson, Chair, NRC, to Sen. John McCain (June 1, 1997)).

- **The plan has been criticized by NPS, EPA, FWS and state and local authorities. (DC; VP; NRC). Utah claims that Atlas needs a groundwater discharge permit. (NRC).**

- A. All parties, including federal, state and local authorities, have had ample opportunity to comment on Atlas' plan. For example, as early as 1979, NRC reviewed the on-site reclamation option for the Atlas site as part of an EIS prepared in connection with the renewal of Atlas' operating license and concluded that the tailings pile could be stabilized in place. That conclusion was not then disputed by any of the authorities currently reviewing the Atlas proposal. Moreover, none of the comments filed since that time have provided technical critiques sufficient to convince the NRC that Atlas' proposal fails to adequately address NRC's requirements. Furthermore, although EPA has noted some concerns about both on-site stabilization and the removal scenario, the decision to allow the pile to remain in place is consistent with EPA's decision to leave the Sharon Steel tailings in place on the banks of the Jordan River. (See, Discussion of Midvale, Utah, site, *infra*.)
- B. In a recent letter to Sen. John McCain (R-AZ), the Acting EPA Regional Administrator for Region VIII notes that the concerns originally raised by the Agency have been addressed. Although EPA recognizes that there are environmental concerns at the site, it no longer objects to leaving the tailings in place. (Letter from Jack McGraw, Acting Regional Administrator, U.S. EPA Region VIII to Sen. John McCain at 2 (June 2, 1997) ).
- C. NPS and NRC have met and talked repeatedly to discuss technical concerns about the proposal. However, NPS has failed to provide any technical support for the proposition that the pile cannot safely be stabilized on site. Rather, NPS merely repeats its preference that Atlas move the pile. If NPS is so concerned about contaminants entering the Colorado River, why has the agency not acted on the contamination from unreclaimed mines in the Arches drainage?

<sup>4</sup> Memorandum to Superintendent of Arches National Park from G. Smillie, regarding responses to NRC Request for Information on Atlas Corporation's Reclamation Plan Uranium Mill and Tailings Disposal Area (August 16, 1994).

D. FWS has not yet completed its draft biological opinion. Once the agency does so, Atlas will work with FWS and NRC to address any concerns the agency may have. An FWS official has noted, however, that "[a] jeopardy decision will not stop the project or require that [the tailings pile] be moved . . . ." (*Feds Say Tailings May Be Contaminating Fish*, Salt Lake Tribune (March 12, 1997) (attached to this Memorandum as Attachment H)).

E. Atlas continues to meet regularly with regulators from the State of Utah. Atlas anticipates resolving any issues under discussion to the satisfaction of the state.

• **The tailings pond may be designated critical habitat for four endangered species. (VP). FWS will probably determine that leaving the tailings pile in place will jeopardize four endangered fish and critical habitat. (NRC).**

A. This is an outlandish misrepresentation of facts. To begin with, the Atlas site does not contain a tailings pond but rather a tailings impoundment that could not support any population of endangered species of fish that are currently of concern to FWS. Although there is a wetlands wildlife preserve owned and operated by the Nature Conservancy across the river from the Atlas site, no traces of contamination from the Atlas pile have been discovered at the preserve. EPA, USGS and the State of Utah are all satisfied with this data. (See, e.g., McGraw letters).

B. If FWS makes a jeopardy determination, Atlas will evaluate its options and will respond appropriately to that determination. It is premature to speculate as to what the agency's determination will be.

C. In the DEIS, NRC concluded that even the hypothetical failure of the Atlas tailings pile would have insignificant impact on fishes and other aquatic organisms that inhabit the Colorado River:

After reclamation under the Atlas proposal, tailings leachates would continue to add slightly to existing contaminants in the river, potentially having a minor impact on aquatic biota. . . . The hypothetical tailings failure should have negligible impact on water quality and aquatic biota.

(p. xx of DEIS).

In addition, Appendix G to DEIS indicates that the on-site reclamation option is unlikely to adversely affect any of the endangered fish -- Colorado squawfish and razorback suckers -- at the population level. (p.93 of COMMENTS).

- The risks of leaving the tailings pile in place have been grossly underestimated. (VP). Moving the tailings pile may not immediately halt the contamination, but it will remove the source of the contamination. (VP; NRC).
  - A. "Relocating the tailings to another site for disposal does not remove the need for groundwater cleanup at the current Atlas property. Additionally, relocating the tailings would likely involve higher groundwater cleanup costs for the relocation alternative over the on-site closure alternative, since the relocation alternative would mandate a cleanup approach to return contaminants over the entire site to levels suitable for releasing the site for unrestricted use." (FTER at 5-25. See also, FTER at A-35.)
  - B. "Regardless of the surface reclamation implemented, contaminated groundwater exists at the Atlas site. Relocating the tailings to another site does not remove the need for groundwater cleanup at the current Atlas property." (FTER at A-35).
  - C. "Doubling" effect of off-site reclamation: Moving the pile would result in increased potential health risks to the public and workers, due to 1) increased radon releases from *two* uncovered sources; 2) increased gamma exposure of workers at *two* sites; and 3) occupational accidents associated with moving large amounts of material (10.5 million tons of tailings + contaminated soil) with heavy equipment. (p.7 of COMMENTS).
    - i. Recontamination of already reclaimed areas: Moving the tailings pile will also result in recontamination of portions of the site that have already been reclaimed, most notably the mill site portion, since it is impossible to move the tailings without fugitive dust and contamination emanating from the pile area. (p.88 of COMMENTS).
- In every similar case under DOE jurisdiction, tailings have been moved away from riverbeds. (DC; VP).
  - A. The decision to move Title I sites from floodplains was made by DOE, and a number of factors were involved, "some of which were not related to flooding and erosion." (FTER at A-26). NRC staff believes several of these piles could have been stabilized in place. (FTER at A-26).
- Miller expresses surprise that despite the points that he raises to the NRC, he found Atlas' plan to comply with all federal regulations. (NRC).
  - A. Essentially, all of the claims Rep. Miller makes have been addressed by Atlas to NRC's satisfaction. NRC has insisted that Atlas demonstrate that its proposal satisfies Appendix A site closure criteria through appropriate



and detailed technical submittals. The opponents of on-site disposal have been unable to provide NRC with any "technical evidence" that effectively disputes the case for on-site stabilization. Indeed, the agency has required more of Atlas than is normal for this type of review.

- B. NRC not only has scrutinized this facility closely but has gone out of its way to provide opportunities for public involvement, seeking specifically technical submissions that suggest the Atlas proposal does not satisfy NRC criteria. For example, for the Atlas review, "NRC took the extraordinary step of publishing the draft TER and formally requesting public comment." (FTER at A-4).

- **"NRC has misread this situation before." In 1993, NRC was prepared to issue a FONSI, but changed course because of public demands. (NRC).**

- A. In 1993, Atlas reevaluated and upgraded its surface stabilization plan at NRC's direction. Atlas made these changes so that the tailings pile would conform to new guidance issued by the agency. Because these changes upgraded the facility's design and made it more conservative (i.e., more protective), NRC issued a FONSI. NRC reversed itself based not on the environmental impacts of the revised plan, but because the public comments raised some new issues, or new questions about existing issues, and created some controversy about on-site reclamation that NRC deemed sufficient to merit a further review.

- **Atlas' cost estimates for moving the pile vs. leaving it in place are "under suspicion" and should be reviewed. In addition, Miller states that Atlas can afford to move the pile because the company is primarily owned by MIM Holding Co. and Independence Mining Company. (NRC).**

- A. Total costs: The off-site option will likely cost \$145 million in 1996 dollars, exceeding those of the on-site option by \$80-100 million. (pp. 117, 129 of COMMENTS).
- B. Comparison of Atlas' cost estimates to those for other Title II sites: Rep. Miller claims that Atlas' cost estimates are under "suspicion" and should be reviewed by NRC. However, Atlas has conducted a detailed examination of the costs associated with the on-site and off-site reclamation options and has also compared the cost estimates for on-site reclamation to those for other *similar* Title II sites. This analysis has revealed that the range of estimated reclamation costs per ton for the Atlas proposal (\$1.21 - \$1.52) are well within the range of estimated reclamation costs per ton for comparable Title II sites (\$0.62 - \$4.45). (pp. 111-112 of COMMENTS).

- C. Monte Carlo analysis: Moreover, Atlas has completed a probabilistic Monte Carlo analysis to better quantify uncertainties in costing assumptions. Input parameters such as unit costs for haulage and labor rates were assigned a range of values rather than a single value. These ranges were input into the costing model in the form of probabilistic distributions and a distribution of possible reclamation costs was estimated. This sophisticated analysis yielded a cost range of \$1.62 - \$2.43 per ton with a mean of \$1.91 per ton. (p.113 of COMMENTS).
- D. Cost estimates for Title I sites: Some opponents of the Atlas proposal have used DOE's costs for cleanup of Title I sites to argue that Atlas has underestimated costs for its proposal. However, a simplistic comparison of Title I and Title II reclamation costs does not take into account several factors that make Title I reclamation more expensive. Title I reclamation costs frequently include on-site consolidation of multiple ponds and piles into one pile and remedial action for off-site/vicinity properties. Title I sites are generally smaller than the Atlas site and thus have higher unit costs without the economy of scale. Thus, Title I costs must be used carefully when evaluating the Atlas proposal. (p.112 of COMMENTS).
- E. Off-site reclamation entails delays and disruption: Even under the most conservative estimates, it will take at least 6.7 years (assuming a 7 day/week yearly operation) to as much as 8.7 years (assuming 5 day/week yearly operation) just to excavate and load 10.5 million tons of tailings currently in place. New load out facilities will have to be constructed at the Atlas site. Additional activities include the construction of some 3.5 miles of rail siding, improvements on the existing 14 mile main line, the construction of new access roads to the new site, and addition of necessary infrastructures. (pp. 114-116 of COMMENTS). Furthermore, substantial soil excavation at the new site will be required to place 2/3 of the relocated materials below grade. It will take a minimum of 5 - 7 years longer to complete the required reclamation under the off-site option. (p.7 of COMMENTS). In addition, these activities will cause a severe disruption to the tourist traffic since the tailings will be transported past the entrance to Arches National Park, alongside or over established biking and hiking trails and either over or within close proximity to the main thoroughfare that brings tourists into Moab. (p.91 of COMMENTS).
- F. Delay in releasing the Moab site for unrestricted use: Under the off-site option, it will likely take at least 25 to 30 years before any part of the Moab site will be released for unrestricted use. Once the tailings are removed, the opportunity for obtaining an ACL for groundwater cleanup at the site disappears, and groundwater remediation will have to satisfy MCLs or background levels, if they are achievable. In addition, an extended treatment will generate significant amount of metal precipitate

sludges (including radioactive components) the disposal of which will have to be addressed. (p.88 of COMMENTS).

- i. The case of the Vitro site: For example, although relocation of the tailings from the Vitro site in Salt Lake City was completed in 1989, the site has not yet been released for unrestricted use and groundwater cleanup studies are not scheduled to begin until 2002! (p.89 of COMMENTS).

- G. The "slimes" problem: The advocates of the off-site reclamation option have failed to adequately consider the costs associated with handling and moving the fine tailings (slimes) found at the Atlas site. These materials retain their "toothpaste-like" consistency even after years of draining, and it will be necessary to utilize specialized equipment and care to implement their excavation, removal, transportation, placement, and covering. (pp. 119-120 of COMMENTS).

- i. The case of the Midvale, Utah site: EPA has recognized the difficulties posed by the "slimes problem" in overseeing reclamation of another Title I site located at Midvale, Utah that holds tailings generated by Sharon Steel. After considering the likely costs of moving the tailings and comparing them to the actual costs incurred in moving the Vitro tailings pile in Salt Lake City, EPA concluded: "Tailings from the Sharon Steel/Midvale tailings site are smaller in particle size than the Vitro tailings and difficult to handle since they are often present as 'slimes.' *Loading and unloading would, therefore, be more difficult, costly and time consuming than experienced at the Vitro site.*" (p.120 of COMMENTS).

- H. The NRC regulations require the agency to take economic costs into consideration when making licensing decisions. (FTR at 7-1).

- I. MIM Holding Company and Independence Mining Company are not the "primary owners" of Atlas. Atlas is a publicly-traded corporation with many shareholders, including MIM Holding Company and Independence Mining. It is unlikely that these companies, or any individuals or other organizations who own Atlas' publicly-traded stocks, will volunteer to assist Atlas by paying to move the tailings pile as they have no legal liability for any such costs.

- **Miller criticizes the NRC's review of the facility and claims that the agency "is hiding behind its authorizing legislation and regulations." (NRC)**

- A. Atlas is extremely concerned about the implications of this charge. For an elected official to suggest that an agency do something other than follow



its statutory mandate and its lawfully promulgated regulations is disgraceful. Rep. Miller, a senior member of the House of Representatives and an attorney, should understand that the NRC must comply with the statute and with its regulations. To suggest that the agency do otherwise is, at best, highly improper.

- In addition, although not responding to any specific claims of Rep. Miller, we note these additional arguments:

A. ORIGINS OF THE MOAB SITE:

- i. Federal selection of the Moab site: The Atomic Energy Commission (AEC), forerunner to NRC, established a uranium ore buying station on what is now the Atlas site in Moab in 1940. Until 1956, over 600 uranium producers shipped uranium ore to the station from the Colorado Plateau. (p.12 of COMMENTS)
- ii. Establishment of the tailings pond: In 1956, when its milling capacity at the Moab site was exceeded, AEC first encouraged and later licensed the Uranium Reduction Corporation (URC) to build and operate a uranium processing mill at the buying station. In fact, the terms of the uranium procurement contract between AEC and URC *required URC to place the tailings on government land next to the mill and maintain the tailings pond.*<sup>1/</sup>

- B. Subsequent involvement of Atlas: Atlas purchased the mill from URC in 1962 and operated it until its closure in 1988. Based on these facts, it can be strongly argued that, even in the worst scenario, Atlas should not be required to move the tailings pile to an alternative site at its own expense when it had absolutely no involvement in the selection of Moab as the site of the current tailings pile. That decision is solely attributable to the AEC.

455734

<sup>1/</sup> Uranium Procurement Contract AT(05-1-266) between AEC and URC, Article XI, October, 1956, amended in 1959, 1962 (replacing URC with Atlas), 1954, 1967, and 1969.

**U.S. House of Representatives**  
**Committee on Resources**  
**Washington, DC 20515**

June 5, 1997

Ms. Shirley Ann Jackson, Chairman  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Madame Chair:

I am writing to express my dissatisfaction with the manner in which the Nuclear Regulatory Commission is handling the decommissioning of the Atlas Corporation Moab Mill in Utah. The continued leaching of highly contaminated wastes, including radioactive spoils, into the Colorado River which serves millions of recreational, urban and agricultural users in California as well as other states, demands a higher degree of urgency and scrutiny than the NRC has devoted to this ongoing crisis.

The original mill at this site was built in 1956. It operated as a uranium mill and then later as a vanadium mill until 1984. The Atlas tailings pond is an Atomic Energy Commission era pile that is unlined and sits on a porous geological site from which contaminated leachate seeps directly into groundwater. Ten and a half million tons of toxic wastes generated by the now-defunct Atlas Mine are stored in the tailings pond which is located right next to the Colorado River. The Atlas pile stands 110 feet above grade over 130 acres on the Colorado floodplain and Moab Wash.

Water from the Colorado river makes up part of the drinking water supply for Los Angeles, San Diego, Las Vegas, Phoenix and Tucson. Additionally, the tailings pond is situated between Canyonlands and Arches National Parks, amid the recreation hub of Moab.

The tailings are radioactive and contain high concentrations of ammonia, arsenic, lead, vanadium, selenium, mercury, molybdenum, nickel, and other toxic metals left by the leaching process used to separate uranium from ore. The tailings pond is not lined, so these wastes are seeping down through the aquifer to the Colorado River.

The pile is leaking alpha radioactive material in the river at levels 1,300 times above the EPA Maximum Concentration Limit. According to the Atlas Corporation, even with the proposed cap, toxics will seep into the river at a rate of 8 gallons per minute. Recent data compiled by the Grand Canyon Trust, however, suggest that this hypothetical estimate by Atlas is much lower than what will actually occur. Capping the pile will not affect the leaching for at least 66 years, according to the Atlas Corporation.

Ms. Shirley Ann Jackson, Chairman  
June 5, 1997 - page two

As if this were not enough to raise concerns, according to the Lawrence Livermore Laboratory, the Atlas tailings pond, bisected by the geologically active Moab Fault, is the only commercial uranium tailings site located on seismically unstable land.

The National Park Service, the Environmental Protection Agency, the Fish and Wildlife Service, and many state and local government agencies have all expressed concerns about the quality of scientific data and information upon which NRC decisions have and will be based. Criticisms include: grossly inadequate sampling, inadequate data on the chemical composition of the tailings, inadequate analysis on the impacts of the seepage on the Colorado River, including biota, sediment and river quality, disagreement on the cost estimates for in situ reclamation versus relocation, inadequate analysis of groundwater impacts. The Grand Canyon Trust has raised alarms about threats to the Lake Powell ecosystem from the toxic wastes seeping from the Atlas tailings. Grand County, Utah, has sufficient concerns to mount a legal battle against the NRC's acquiescence to Atlas' plan to leave the tailings in place.

The FWS has yet to complete the Section 7 consultation required under the Endangered Species Act. An FWS official has said that the agency will probably determine that leaving the 10.5 million tons of radioactive tailings in place will jeopardize 4 endangered fish in the Colorado River as well as critical habitat. The State of Utah Department of Environmental Quality has said that Atlas needs a groundwater-discharge permit.

Yet, in March of this year, the NRC issued a technical report that found Atlas' plan to cap the tailings in place has complied with all federal regulations.

Cost estimates for the two proposals vary greatly ranging from \$11-17 million for *in situ* reclamation and \$100-150 million to move the tailings. However, according to various reports, the cost estimates prepared by Atlas are under suspicion and should be carefully reviewed and recalculated. It is unclear whether these estimates reflect the 56% reimbursement to be provided by the federal government (as required by the 1992 Energy Act) to Atlas for the cost of reclamation.

The Atlas Mine Corporation's assertions that the relocation cost excessive to the risk, and that the cost of relocation would force the company to "go bankrupt," appear persuasive to the NRC. Yet, of all concerns, the question of economics when human lives are at risk should not take precedence. Moreover, as you must certainly know, Atlas is primarily owned by the M.I.M. Holding Company, Ltd., Australia, and Independence Mining Company, two exceptionally profitable companies.

Ms. Shirley Ann Jackson, Chairman  
June 5, 1997 - page three

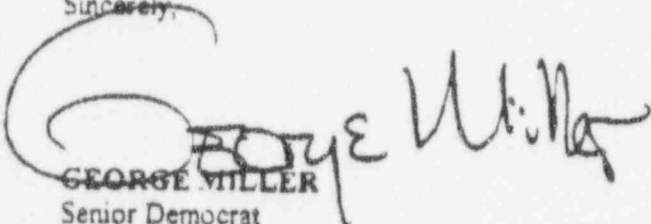
Moving the tailings may not immediately halt the contamination, but, it would remove the source of the contamination. By placing the tailings in a more modern and technologically safe situation, the threats from earthquakes, high water, flooding would be eliminated. In every similar case under the jurisdiction of the Department of Energy, tailings are moved away from riverbeds to lined and protected areas.

I am not convinced that the data generated thus far is of a caliber and sufficiency to warrant a decision allowing the tailings to stay in place. I would remind you that the NRC has misread this situation before. In 1993, the NRC was prepared to re-approve *in situ* reclamation and issue a "Finding Of No Significant Impact". But, in response to public demands, the NRC changed course and undertook a full Environmental Impact Statement. Yet, now, despite serious issues raised by other Federal agencies, the NRC seems determined to acquiesce to Arlas.

It appears that the NRC is hiding behind its authorizing legislation and regulations rather than attempt to do what is best for the public and the environment. I want to know exactly what the NRC proposes be done to resolve these critical issues.

Please respond no later than June 2, 1997. Should you have questions regarding my concerns, please call me or Deborah Lanzone at 202-225-4945.

Sincerely,



GEORGE MILLER  
Senior Democrat  
Resources Committee

CC: Honorable Bruce Babbitt, Secretary of Interior  
Honorable Fredrico Pena, Secretary of Energy  
Honorable Carol Browner, Administrator of the Environmental Protection Agency  
Honorable Katie McGinty, Chairman of the President's Council on Environmental Quality



## U.S. House of Representatives

### Committee on Resources

Washington, DC 20515

June 4, 1997

Honorable Albert Gore, Jr.  
The Vice President  
The White House  
1600 Pennsylvania Avenue NW  
Washington, D.C. 20500

Dear Mr. Vice President:

We are writing to express our deep concern with the manner in which the Nuclear Regulatory Commission is handling the decommissioning of the Atlas Corporation Moab Mill in Utah. Several Executive Branch agencies are involved in development of the remediation proposals currently under consideration, and there is an obvious need for significantly improved coordination in order to address a serious danger to residents and to the environment of Utah, Arizona, Nevada and California.

Ten and a half million tons of toxic wastes generated by the now-defunct Atlas Mine are stored in the tailings pond which is located adjacent to the Colorado River. The tailings are radioactive and contain high concentrations of ammonia, arsenic, lead, vanadium, selenium, mercury, molybdenum, nickel, and other toxic metals left by the leaching process used to separate uranium from ore. *The tailings are leaking alpha radioactive material in the Colorado river at levels 1,300 times above the EPA Maximum Concentration Limits.*

The tailings pond, built in the 1950's, is not lined, and as a result, *these radioactive and toxic wastes are seeping down through the aquifer into the Colorado River.* In addition, the tailings pond is located on seismically unstable land. Water from the Colorado River makes up a significant part of the drinking water supply for Los Angeles, San Diego, Las Vegas, Phoenix and Tucson, and is used additionally to irrigate hundreds of thousands of acres of agricultural lands. Moreover, the tailings pond, which may be designated as critical habitat for four endangered species, is situated between Canyonlands and Arches National Parks.

We understand that the NRC is ready to approve leaving the tailings pond in place rather than requiring removal to a safer location. We are deeply concerned that the risks to drinking water supplies, human health and the environment have been grossly underestimated in the decision-making process. Leaving a tailings pile of the size and state of the Atlas site in place adjacent to the Colorado River does not make sense. In the event of flood, the Colorado River could easily be contaminated.

The National Park Service, the Environmental Protection Agency, the Fish and Wildlife Service, and many state and local government agencies have all expressed concerns about the quality of scientific data and information upon which NRC decisions have been and will be based.

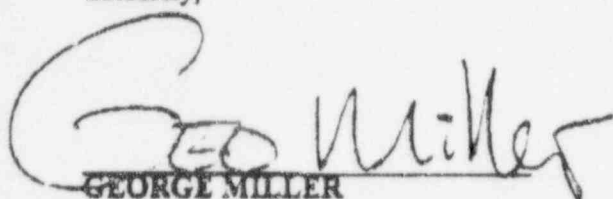
Moving the tailings may not immediately halt the contamination, but, would remove the source of the contamination. By placing the tailings in a more modern and technologically safe situation, the threats from earthquakes, high water, flooding would be eliminated. In every similar case under the jurisdiction of the Department of Energy, tailings have been moved away from riverbeds

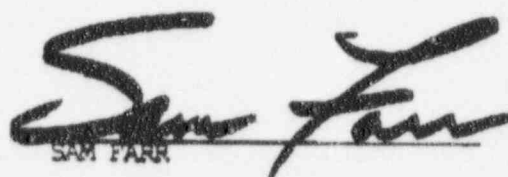
Honorable Albert Gore, Jr.  
June 4, 1997 - page two

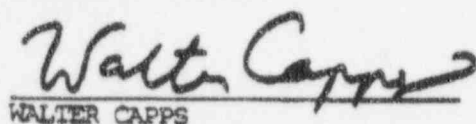
to lined and protected areas. Yet, the NRC seems determined to perpetuate rather than resolve this dangerous situation in the case of the Atlas site.

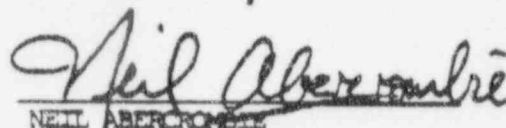
We ask that you personally intervene through the Council on Environmental Quality to bring a more reasonable solution to the table that will provide greater safeguards for those who rely on the Colorado River, and to resolve disagreements within the Executive Branch on how to resolve this serious contamination crisis.

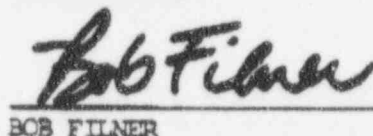
Sincerely,

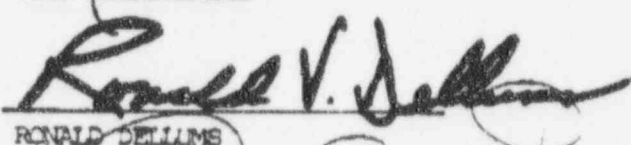
  
GEORGE MILLER

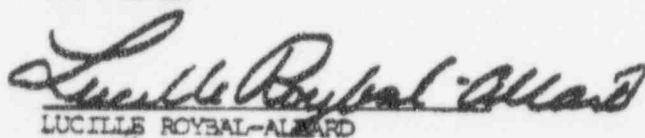
  
SAM FARR

  
WALTER CAPPS

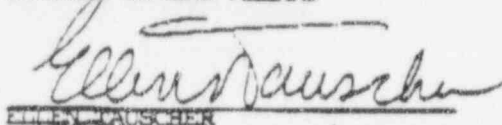
  
NEIL ABERNETHY

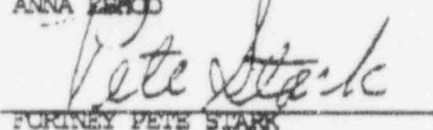
  
BOB FILNER

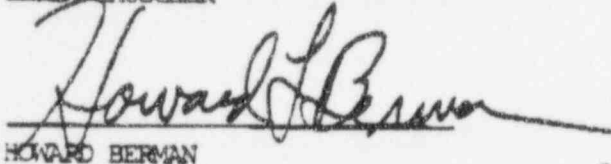
  
RONALD DELLUMS

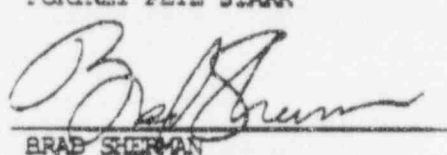
  
LUCILLE ROYBAL-ALFORD

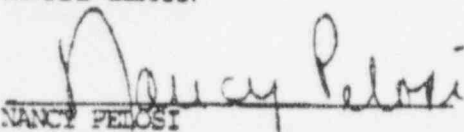
  
ANNA ESCOBEDO

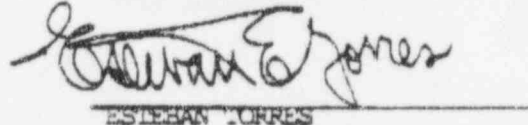
  
ELLEN TRAUSCHER

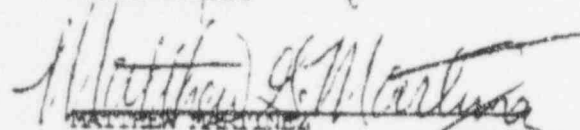
  
FORTNEY PETE STARK

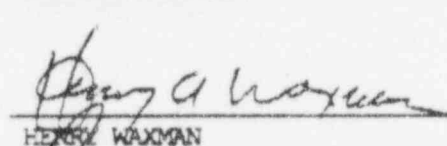
  
HOWARD BERMAN

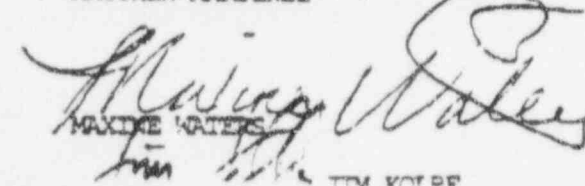
  
BRAD SHERMAN

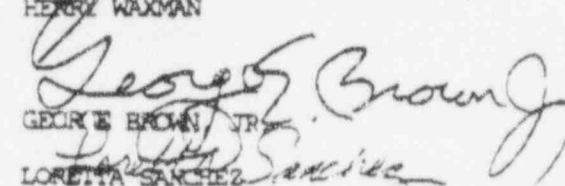

  
NANCY PELOSI

  
ESTEBAN TORRES

  
MATTHEW MARTINEZ

  
HENRY WAXMAN

  
MAXINE WATERS

  
GEORGE BROWN, JR.  
  
LORETTA SANCHEZ



**U.S. House of Representatives**  
**Committee on Resources**  
**Washington, DC 20515**

May 23, 1997

Dear Colleague:

I am writing to ask that you join me in sending the attached letter to Vice President Gore to ask for his personal intervention in the Nuclear Regulatory Commission's handling of the decommissioning of the Atlas uranium mill in Moab, Utah.

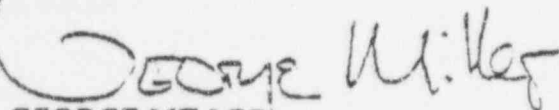
The defunct Atlas mill includes a tailings pond that is unlined and sits on a porous geological site where leachate seeps directly into groundwater. Ten and a half million tons of toxic wastes -- which are radioactive and contain high concentrations of ammonia, arsenic, lead, vanadium, selenium, mercury, molybdenum, nickel, and other toxic metals -- are stored in the tailings pond that is located right next to the Colorado River. The tailings pond is not lined, so these wastes are seeping down through the aquifer to the Colorado River which serves as the source of drinking and irrigation water for our constituents. The pile is leaking alpha radioactive material in the Colorado river at levels 1,300 times above the EPA Maximum Concentration Limit.

Yet, even though it will allow toxics to seep into the river at a rate of 8 gallons per minute, the NRC is seriously considering approval of a plan to cap the pile, and leave the tailings in place! Capping the pile will not affect the leaching for at least 66 years, according to the Atlas Corporation.

The NRC maintains that this plan is "safe" -- even though the tailings pond is located on the intersection of two active fault lines. Every other uranium millsite on the Colorado River has been moved away to higher, safer ground, where modern lined pits are used to store the toxics. Between floods and earthquakes, leaving the pile in place could contaminate the drinking water of millions of people in Los Angeles, San Diego, Las Vegas, Phoenix and Tucson. This plan is drawing justifiable criticism from the National Park Service, the Environmental Protection Agency and the Fish and Wildlife Service, but the NRC continues to advocate a flawed plan that will not end the contamination of the Colorado River.

The risk involved in leaving the tailings in place is simply not acceptable. If you agree, please contact Deborah Lanzone at 225-4945 to add your signature to mine on the attached letter. We intend to mail this letter to the Vice President no later than May 30, 1997.

Sincerely,

  
GEORGE MILLER



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20545-0001

June 23, 1997

Judy Mikels, President  
Southern California Association  
of Governments  
618 West Seventh Street  
12th Floor  
Los Angeles, California 90017

Dear Ms. Mikels:

I am in receipt of your letter of May 19, 1997, in which you express concern about the effects of Atlas Corporation's uranium mill tailings pile near Moab, Utah on the water quality of the Colorado River. The Atlas mill tailings site is regulated by the U.S. Nuclear Regulatory Commission under Source Material License SUA-917. NRC is currently evaluating Atlas' proposed plan to reclaim the mill site, including 10.5 million tons of tailings. You are concerned because the Colorado River serves as a major source of water for southern California and request that every effort be made to prevent further contamination of the Colorado River.

Let me assure you that Atlas' mill tailings do not present a threat to the water supply of southern California for the following reasons: 1) the contribution by the tailings pile, to the concentration of various constituents in Colorado River water, represents a small fraction of the actual concentrations in the river; 2) the seepage of contaminants from the tailings pile to the river is the result of operations at the mill many years ago and has been occurring for decades; and 3) the reclamation plan proposed by Atlas will significantly reduce that seepage in the future.

Further explanations of each of the above follow:

- 1) Currently, near-surface groundwater between the tailings pile and the river has some contamination which is slowly seeping into the Colorado River. However, because the seepage rate is so small in comparison to the river's flow, impacts on Colorado River water quality are negligible outside of a local mixing zone. Seepage from the contaminated groundwater to the Colorado River is estimated to average 1.25 cubic feet per second (cfs), while the average Colorado River flow at Moab is 7770 cfs, providing a dilution of over 6000. Further dilution is provided downstream of Moab as tributaries, runoff, and groundwater further contribute to Colorado River flow. Because the tailings are ground up ore, originally mined in the Colorado River basin, the heavy metals and other contaminants it contributes to the river are the same as that which naturally flushes into the river from the surrounding terrain.
- 2) Current groundwater contaminant levels near the tailings pile reflect past, more severe pile conditions that resulted in higher seepage rates than at present. During mill operation, the tailings pile was completely saturated and a pool of water, with high concentrations of

contaminants, existed on the top. During the past several years, the pool has evaporated and Atlas has begun to dewater the tailings. This is reducing the seepage of tailings water into the near-surface groundwater. However, because of the long groundwater travel time (we estimate that it takes about 20 years for groundwater to travel from the tailings pile to the river), current groundwater seepage into the river represents the effects of when the mill was operating. The water you currently draw from the Colorado River includes this contribution from the tailings, as it has for years. However, as discussed above, the contribution of the tailings contaminants are trivial in relation to natural levels of river constituents.

- 3) Atlas' proposed reclamation plan for the tailings pile includes a relatively impermeable clay cover for the tailings. This cover would restrict infiltration of water into the pile and thus significantly reduce the seepage of contaminated water from the pile to the groundwater and ultimately to the Colorado River. We estimate that seepage would be reduced by at least a factor of 6. Furthermore, under NRC regulations, Atlas will be required to remediate groundwater contamination to a level that does not pose a substantial present or potential hazard to human health or the environment. Thus, the contribution of contaminants from the Atlas tailings to the river will be substantially reduced after completion of Atlas' proposed reclamation and groundwater remediation.

I trust this responds to your concerns. If you have any further questions, you can reach me at (301) 415-6629.

Sincerely,

Original Signed By

Myron Fliegel  
Senior Project Manager  
Uranium Recovery Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 40-3453  
Source Material License No. SUA-917



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

898 16th STREET - SUITE 600  
DENVER, COLORADO 80202-2468

JUN 2 1997

LR-EP

Honorable John McCain  
United States Senate  
Washington, D.C. 20510-0303

Dear Senator McCain:

Thank you for your April 25, 1997 letter expressing interest in the Atlas Corporation uranium mill tailings near Moab, Utah. Your specific concerns included the Environmental Protection Agency's (EPA) opportunity to assess any proposed remediation of the tailings pile and protection of the Colorado River under the Clean Water Act.

Under the National Environmental Policy Act (NEPA) and the Uranium Mill Tailings Radiation Control Act (UMTRCA), EPA provides consultation to the Nuclear Regulatory Commission (NRC). In that role, EPA submitted technical comments to NRC regarding the project's Draft Technical Evaluation Report and Draft Environmental Impact Statement (DEIS).

The NRC has published a Final Technical Evaluation Report (FTER). That report, among other things, determined that acceptable remediation includes stabilization of the waste tailings pile on site. The stabilization design does take into consideration stream bank stability and erosion control. Such designs cannot guarantee that structural failure from a flood event will not result in contamination and damage to natural resources. However, the UMTRCA regulations (40 CFR 192) do intend that reclamation efforts be effective for up to 1000 years.

We realize concerns remain with regard to the proposed remedy. Removal of the tailings pile was considered as an option under the DEIS. EPA's position at the time was that the removal option had several desirable features, which EPA pointed out in its comments (enclosed). The removal option also had potentially detrimental impacts to the environment which included concern over impacts from heavy equipment needed for removal and a significant concern as to how to address contaminated soils beneath the tailings pile, once removed. In NRC's final review, the removal option was not selected after considering the requirements found in regulations at 40 CFR 192, the risk posed to human health and the environment by the on-site stabilization option and the costs of all options considered.

The NRC's engineering cost evaluation of the various options did not take into consideration potential long-term costs for restoring natural resources that could be impacted, should the proposed on-site containment system fail. Nor was there an engineering cost



Printed on Recycled Paper

evaluation of potential natural-resource impacts resulting from failure should the tailings be moved to a different location, under the removal option. While EPA encourages cost analyses that consider potential long-term natural-resource impacts, the NRC is not required to evaluate such costs.

EPA's and the National Park Service's (NPS) concerns regarding the project specifically included the potential effects of the project on the Scott Matheson Wetland Preserve on the south side of the Colorado River. EPA accepted Atlas Corporation's technical consultant's findings that there were no ground-water connections between the tailings pile contamination plume and the preserve (NRC's October 17, 1996 response to NPS and EPA, enclosed). As a result, EPA revised its rating of the DEIS from that of having Environmental Objections and Insufficient Information (EO-2) to that of having Environmental Concerns and Insufficient Information (EC-2) (also enclosed). Later, in January of 1997, the U.S. Geological Survey confirmed that there was no potential for the tailings pile to affect ground water discharged to the Matheson Preserve (letter enclosed).

The Utah Department of Environmental Quality (UDEQ) is concerned about the lack of a long-term ground-water corrective-action plan and has required one be submitted by Atlas Corporation. Since there is ground-water and surface-water interaction at this site, UDEQ is also concerned by the potential for water-quality standards not being met as a result of the localized ground-water contamination from the tailings plume. In its May 6, 1996 comments to NRC, EPA commented that a ground-water management plan should be included with the final EIS; and, at this time, this matter has not been satisfactorily addressed. Under its regulations, the NRC is not required to address ground-water remediation at the same time it considers stabilization and has requested the ground-water issue be deferred until after the stabilization decision is final.

The responsibility of assuring water-quality standards are met under the Clean Water Act is delegated to the State of Utah, with EPA assistance and oversight. Under Utah State water-quality regulations, NRC and Atlas Corporation must address water-quality requirements. As a result, UDEQ has issued an order requiring Atlas to develop and submit a ground-water corrective-action schedule. The schedule must be submitted 30 days after publication of the final EIS and must be reviewed and approved by UDEQ before construction of the cap for the tailings. For more information regarding the UDEQ order and schedule, please contact Loren Morton of UDEQ at (801) 536-4262.

As of the writing of this letter, the U.S. Fish and Wildlife Service (USFWS) is in formal Section 7 consultation pursuant to the Endangered Species Act. During this process, they will evaluate whether or not discharge from the existing tailings pile and the proposed on-site remedy would impact any endangered species or biological resources, such as habitat. USFWS will produce a determination and recommend final actions based on this determination. If there is significant impact, the proposed project may require re-evaluation. The USFWS project contact is Janet Mizzi at (801) 524-5009 x128.

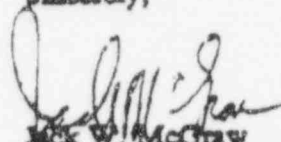


PAGE 501

Unless new information is brought to our attention, EPA has no further regulatory role in the approval or disapproval of the EIS or the final recommended remedial option. However, we remain concerned about and await resolution of the long-term ground-water corrective-action and monitoring issue. The FTER and the final EIS are the responsibility of the NRC's Uranium Recovery Branch. NRC's contact is Joseph J. Holomich at (301) 415-6629.

If you or your staff have additional questions regarding EPA's role in this matter, please contact Carol Campbell at (303) 312- 6340, the member of my staff most knowledgeable about this project.

Sincerely,



Jack W. McGraw  
Acting Regional Administrator

#### Enclosures

cc: w/ copy of inquiry letter  
Diane Nielsen, UDEQ  
Joseph J. Holomich, NRC  
Reed E. Harris, USFWS  
Richard Blubaugh, Atlas Corporation



Printed on Recycled Paper

TOTAL P.23





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

June 4, 1997

The Honorable John McCain  
United States Senate  
Washington, D.C. 20510-0303

Dear Senator McCain:

I am responding to your letter of April 25, 1997, in which you expressed concern about a uranium mill tailings pile near the Colorado River in Moab, Utah. The mill is owned by Atlas Corporation, which holds Nuclear Regulatory Commission (NRC) license SUA-917. Your letter raises several concerns related to the vulnerability of the tailings pile to damage from Colorado River floods and the subsequent consequences to the river.

The Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, as amended, established the framework for NRC regulatory authority over uranium mill tailings. In accordance with UMTRCA, the Environmental Protection Agency (EPA) promulgated standards for the reclamation of tailings piles, and NRC conformed its regulations to those EPA standards. The NRC requirements appear in Appendix A to 10 CFR Part 40 (Part 40). Part 40 requires that the tailings reclamation be designed to be effective in the control of radiological hazards for 1000 years. NRC standards also require that this 1000-year control be achieved without reliance on active maintenance. In the review of licensees' proposed reclamation plans and the ability of the plans to meet the 1000-year standard, NRC considers natural phenomena that may pose a threat to the tailings piles, including the potential for erosion by floods and runoff from precipitation.

In March 1997, following review of the Atlas reclamation design, the NRC staff concluded that it met the applicable standards in Part 40. The staff's conclusions on flooding and erosion are documented in its Technical Evaluation Report (Enclosure). The NRC review considered not only floods on the Colorado River, but also floods on Moab Wash, a nearby ephemeral stream, as well as the capability of the pile's drainage system to convey runoff from intense local precipitation without disturbing the tailings. The staff concluded that Colorado River floods do not present an erosion threat to the tailings because 1) there is a narrow gorge two miles downstream that restricts flow, resulting in a backup of flood waters upstream; 2) due to the backup, water will spread over a large area, particularly on the Moab side of the river, and this large flow area results in low velocities; and 3) dense vegetation near the tailings pile will keep velocities low. Floods in Moab Wash present a greater erosion threat to the tailings pile than floods from the Colorado River, and the erosion protection design addresses that threat.

Your letter also raised concerns about the effects of this year's spring flood, which is expected to be greater than normal. Presently, it is not clear if the spring flood will exceed the 1984 flood, because spring runoff depends on highly variable factors such as snowpack, temperature, and coincident rainfall amounts. However, even if the 1984 flood were exceeded, no erosion or damage to the pile is anticipated because there is a temporary

cover that will avoid tailings contact with the river, and, as stated above, floods on this reach of the Colorado River are non-erosive. It should be noted that the 1984 flood reached the toe of the tailings pile with no adverse erosion consequences.

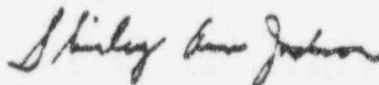
It is possible that during a flood a small amount of the contaminated leachate in the tailings may seep into the river. The leachate contains heavy metals, uranium, and ammonia, but the amounts that could seep into the river during a flood would be insignificant given the large amount of dilution that would occur.

The NRC has worked closely with the EPA Denver office in the preparation of the Final Environmental Impact Statement. This working relationship has helped NRC understand and address all concerns raised by EPA as a result of EPA's review of the Draft Environmental Impact Statement. In addition, the NRC is waiting for the Fish and Wildlife Service (FWS) to prepare a final Biological Opinion under Section 7 of the Endangered Species Act. This is the last piece of information NRC needs to issue the Final Environmental Impact Statement. At present, FWS is scheduled to provide NRC with a draft Biological Opinion no later than mid-June 1997. Once this is received, NRC will work with FWS and Atlas, if appropriate, to develop a final Biological Opinion.

As part of its evaluation of groundwater cleanup at the site, NRC will ensure that groundwater contaminants are cleaned up to the applicable standards. Currently, near-surface groundwater between the tailings pile and the river is contaminated and some of this contamination is seeping into the Colorado River. As a result there is a small mixing zone in the Colorado River with elevated levels of some constituents, with ammonia being of greatest concern. This contamination is a remnant of mill operations from decades ago; it exists independently of whether the tailings are moved, and will slowly flush into the Colorado River. This situation is a short-term impact that should be substantially improved once reclamation, including an impermeable cover to reduce infiltration into the tailings, is complete, and the groundwater is cleaned up to appropriate standards. The State of Utah, as an EPA permitting State, is responsible for the regulation of ammonia in both the groundwater at the site and the Colorado River. NRC plans to follow closely the State of Utah review of the ammonia situation.

In summary, the NRC agrees that the Colorado River is a vital natural resource that must be protected. Toward that end, the NRC staff will ensure that the reclamation plan proposed by the Atlas Corporation provides reasonable assurance that public health and safety and the environment are protected. If I can be of further assistance, please contact me.

Sincerely,



Shirley Ann Jackson

Enclosure  
Technical Evaluation Report

# Decommissioning of Moab, Utah, Uranium Mill Tailings

(last updated 7 Apr 1997)

View of Atlas tailings pile: [image \(79k\)](#)

- > [Search \*Deseret News\* archive for Atlas tailings](#)
- > [Search PR Newswire for Atlas Corp. news releases](#)
- > Search EDGAR Database for Atlas Corp. Records: [via NYU](#) / [via SEC](#)

Contents:

- [Information from Atlas Mill Reclamation Task Force](#)
- [Information from U.S. Nuclear Regulatory Commission](#)

## Information from Atlas Mill Reclamation Task Force

(reprinted here with permission)

We've been on the Nuclear Regulatory Commission's (NRC) case about the Atlas tailings since 1990. I'm the Chairman of the Atlas Mill Reclamation Task Force, also President of a small local 501(c)(3) tax-exempt non-profit which has been pursuing Atlas cleanup as a project.

Basically, what we have here is something George Orwell would understand. The NRC's August, 1990, regulations state that the ideal reclamation of uranium tailings is below grade, away from population, in a seismically stable area, where the tailings are isolated from water and air for at least 200 and preferably 1,000+ years. The Atlas tailings stand 110 feet above grade over 130 acres on the flood plain of the Colorado River and Moab Wash, bisected nicely by the geologically-active Moab Fault, next door to the City of Moab and the Visitor's Center for Arches National Park. The pile is leaking alpha radioactive material into the Colorado at levels 1,300 times above the EPA Maximum Concentration Limit, which are also exceeded by several heavy metals in the leachate. Capping the pile in place will have no effect on this leaching for at least 66 years according to Atlas's own engineering contractor.

Naturally, the NRC sees no problem with capping the thing in place with some expensive rock armor hauled in over a dangerous road which isn't up to it. As I see it, they're basically in a bunker mentality because they approved the capping-in-place plan for this Title II site in 1982 before anybody knew the fault was active, and well before they adopted their tailings reclamation regulations in 1990. They don't want to admit they goofed and that the taxpayers are going to end up having to take on some \$50 million more in reclamation expenses than was bargained for. (We're all agreed the Atlas Minerals Corporation should be held harmless for more than the cost of the original reclamation plan, which was done in good faith with the best information at the time. The Corporation would go bankrupt if asked for more money for reclamation, as they are teetering along the edge of Chapter 11 as is.)

Some locals including myself came up with an alternative reclamation plan involving an ideal geophysical site 23 kilometers north of the current tailings. The tailings could be moved there by rail at low speed, buried completely below grade in a Mancos Shale medium which is competent to contain the tailings without maintenance for 1,000,000+ years - which exceeds the radioactive life of the contents.

**A bit of history:** the original uranium reduction mill was built on the flood plain of the Colorado River, right across the former route of the Moab Wash, in 1956 by the UTEX Corporation, created by Charlie Steen, in order to process pitchblende ore from his Mi Vida Mine to supply the U.S. Atomic Energy Commission's nuclear weapons program. The mill was later purchased by the Atlas Minerals Corporation, and continued to supply the AEC until the government quit buying uranium for atomic weapons, whereupon Atlas rebuilt the mill to process vanadium-bearing uranium ores typical of the Uruvan Uranium Belt into fuel for atomic power plants. The commercial market for uranium collapsed in 1982 in the United States, but the Atlas Mill had contracts which kept it running until March, 1984. Most of the 1950s uranium mills which used unlined tailings piles went out of business when the AEC quit buying uranium for weapons. The Atlas tailings is to my knowledge the only AEC-era pile that ended up getting added to during the uranium fuel-producing commercial era, is unlined, and is sitting on a porous geological site where leachate goes directly into groundwater. According to the Lawrence Livermore National Laboratories, it is the only Title II uranium tailings site in the U.S. which is located on a site which appears to be seismically unstable.

---

**Cost of the reclamation project:** The current Atlas proposal involves the quarrying, transportation, and placement of some unusually large basalt rock armor to resist erosion from floods of the Colorado River and the Moab Wash (which three years ago washed away U.S. Highway 191 opposite the Arches National Park Visitor's Center in a flood). This armor is much more expensive to obtain and place than that typically installed in less vulnerable sites, yet the Atlas cost estimates are much lower. In the meeting with the Nuclear Regulatory Commission (NRC) on February 28, 1996, County Councilman Bill Hedden and Utah State Radiation Control Director Bill Sinclair both presented substantial information that indicates that the Atlas capping proposal will likely cost \$36 million or more, rather than the range of \$11-17 million which has been presented in recent documents.

These quotations are all for the total cost of the reclamation project. My figures from the Department of Energy (DOE) indicate the portion of the tailings which was accrued supplying the Atomic Energy Commission (AEC) nuclear weapons program is 55.75%. Thus, under provisions in the Energy Act of 1992, the DOE will reimburse Atlas for 55.75% of the cost of reclamation on the site. Atlas is making a fuss because they have a surety of \$6.5 million posted against the reclamation costs. \$6.5 million is 44.25% of \$14,689,260. If the final reclamation approved by the NRC costs \$36 million, for example, then Atlas would be required to increase its surety by \$9,430,000. The company, which has quit the uranium business and entered the gold mining business in the Carlin Trend in Nevada, currently has its only mine on standby. The Atlas management has been clear that, if they were asked for more than about an additional \$1 million in surety, they would declare bankruptcy. [...]

**Contact:**

Association for the Tree of Life- ATL  
 Richard Lance Christie  
 P.O.Box 166, Moab, UT 84532, USA  
 Tel. +1-801-259-5095, E-mail: [AtLandL@aol.com](mailto:AtLandL@aol.com)

---

## Information from U.S. Nuclear Regulatory Commission

U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards: **Final Technical Evaluation Report** - For the proposed revised reclamation plan for the Atlas Corporation Moab Mill, NUREG-1532, March 1997

**ABSTRACT:** This final Technical Evaluation Report (TER) summarizes the U.S. Nuclear Regulatory Commission staff's review of Atlas Corporation's proposed reclamation plan for its uranium mill tailings pile near Moab, Utah. The proposed reclamation would allow Atlas





# Opinions and comments from our readers . . .

## An expert speaks up . . .

Dear Sam:

I am an internationally known expert in radiological health and radiation protection and, since I live in Moab, I felt compelled to respond to Peter Haney's advertisement in last week's paper.

Mr. Haney apparently believes the Atlas tailings are high level radioactive waste and are extremely dangerous. This is not true.

The tailings are less radioactive than the naturally occurring ore from which they were derived and they should not be treated as a source of imminent hazard, which they are not.

Substantial human populations live without any ill effects in areas of the world where the natural levels of radiation are as high as those directly over the Atlas pile.

Mr. Haney implies the NRC did not analyze the consequences of the tailings pile being eroded into the Colorado River. His implication is untrue as the consequences of the pile being released to the river is analyzed on page 4-27ff of the Draft Environmental Impact Statement (NUREG 1531).

The natural radioactivity in the suspended sediments flowing down the Colorado River in a thousand years, containing the same radioactive elements found in the Atlas tailings pile, exceeds that which is in the Atlas tailings pile. The mass of suspended sediments flowing by the pile in a year exceeds the total mass of the pile.

I have measured the radioactivity over several tailings piles, including Atlas', and there is nothing unusually high about the Atlas tailings.

I have no financial connection with Atlas Corporation, although I have been frequently called upon to do consulting work for a variety of clients including the U. S. Department of Justice, the Canadian Atomic Energy Control Board and the International Atomic Energy Agency.

However, I do have a financial stake in Moab as the owner of the Sunset Motel and I support Bob Pattison's position that the unnecessary expense of \$100 million for moving the pile would

not have health or environmental benefits commensurate with the cost.

I have read the relevant NRC documents in our public library and conclude that the current pile location will produce no significant exposure to any single person in Moab relative to internationally accepted radiation protection standards or the natural background radiation levels here, either now or in the future.

Mr. Haney's last paragraph is devoid of any quantitative judgment or reasoning. He only wants the pile removed, without reasonable justification. As the owner of a local business I, and some of my employees, are more afraid of Mr. Haney's influence than that of the Atlas tailings pile!

Concerning his educational background, what special training does Mr. Haney have to disapprove of the ability of the NRC scientists and engineers to make valid and complex technical judgments?

When he says: "...what will happen in 500 years..." he hypothesizes a farm over the former Lake Powell. I point out the fact that a farming town in Brazil is built over a naturally occurring uranium deposit where the local population shows no ill effects from eating the food grown upon it; food that is fit for human consumption.

A similar situation exists over an even larger area in India, where 100,000 people are exposed to 2 roentgen per year of external radiation from naturally occurring thorium and its daughter products in the underlying soil, without any apparent ill effects.

When Peter Haney says that the pile will end up in the river, I ask "what will be the consequences?" as it will be buried under tons of sediment where it can not expose anyone significantly. The river can only dilute the tailings, not concentrate them, whether they flush by slow erosion or by flash floods.

Respectfully submitted,

McDonald E. Wrenn, Ph. D.  
Professor of Pharmacology,  
University of Utah and Adjunct  
Professor of Physics and  
Biology, Mesa State College,  
Grand Junction, Colorado

## Volunteers were appreciated . . .

Dear Sam:

the busy congestion between traf-

## It's my turn on arena talk . .

Dear Sam,

Eighteen months ago I moved to Moab, not for the scenery or recreational opportunities, (I was leaving a similar area), but for a challenge few people were interested in taking on professionally

That challenge was to make the county fairgrounds complex, (Spanish Trail Arena), active enough to be a profitable county facility.

Even before starting the job I saw the biggest challenge would be to soften the hostility some residents had toward the facility, because if locals didn't appreciate the facility, they certainly would not send visitors to the arena to see an event, and neither would the locals.

Certainly my job has been hampered to attract producers of events due to the negative reactions these people receive when they do advance work prior to their event. Many have changed their minds after coming across the wrong people.

I have worked hard to diversify the types of people using the facility so when I hear people say it is only a horse facility and that is all it will be, it is a statement without fact.

Activities such as the BMX Race Series, Indoor Soccer League, along with events like the Tour of Canyonlands, Jeep Safari, demolition derbys, Fat Tire Festival, movie productions

## Letters to the editor policy

The Times-Independent welcomes opinions from just pertinent to Southeastern Utah. Letters should include the writer's name, address and telephone number. Letters are used to replace advertisements. Cards of Thanks go to a particular event. Letters to the editor candidate that has filed for political office or for a filed candidate. Anything unsigned, of a libelous or defamatory statements will not be considered. Letters must be typed or legibly written, and be 800 words or less. Mail to "Letter to the Editor," P.O. Box 1000, Moab, UT 84501. Line is Tuesday before 12 noon.

**ORCH**  
ON FIFTH WEST Moab, UT  
801-259-7175 • 800-634-0777  
**TOWN HOMES With**

THE FREE PRESS

## MOAB

IN A NUTSHELL

BY PETER HANEY

## In Moab Who's the Freest of the Free?

Why the NRC (Nuclear Regulatory Agency) of course! It was interesting to read Senator McCain's (R-Ariz.) concerns in the *Salt Lake Tribune*. He is rightfully upset with the recent NRC decision to cap the Atlas Tailings Pile in place. However, he is also partially responsible for that decision. In the NRC's mind it is still 1954, Eisenhower is President, and the reds are at our shores threatening to take over. The NRC was given exclusive powers in the 1954 Atomic Energy Act of Broad Discretion to get the job done. Even now some of them still accidentally say Atomic Energy Commission when they answer the phone.

Along with their powers of Broad Discretion, the Atomic Energy Act included Section 84. Section 84(a) is where the NRC is required to place a dollar value on everything they do, and that they must chose the cheaper alternative, (and thus the tailings stay put). 84(c) is the "to the extent practicable" clause which allows the NRC to exempt everything they want to from any post Atomic Energy Act Congressional legislation.

Thus when Congress determines that for all practical purposes, uranium tailings piles amount to a "perpetual hazard" and that we, Congress, do not want to revisit them again; the NRC determines that what Congress really meant was, don't bankrupt any companies. Don't worry that these NRC decisions only ensure that there will be trouble again at the Moab Tailings as well as other sites. The NRC's interpretation of the law requires the NRC to protect companies over citizens and the environment. Senator McCain, if you want to fix the problem of the tailings pile, change the law. Finally revisit the outdated Atomic Energy Act and repeal Section 84. Make the NRC play by the same rules that we all have to, Congress's.

# THE ATLAS MILL TAILINGS RECLAMATION

A CASE STUDY IN BUREAUCRATIC IDIOTCY OR:  
DID CONGRESS REALLY INTEND TO PUT GEORGE ORWELL AND FRANZ KAFKA IN CHARGE OF THE  
NUCLEAR REGULATORY COMMISSION?  
BY LANCE CHRISTIE



THE VIEW FROM ABOVE: An aerial view of the Atlas Pile and surrounding area.



Well, students of Orwellian bureaucratic reasoning ("slavery is freedom, war is peace") now have a fine example in the final Technical Evaluation Report (TER) published March 7, 1997, by the Nuclear Regulatory Commission (NRC). Basically, the TER provides the predicted answer to the question, "Can we rationalize that capping the Atlas tailings in place would meet NRC reclamation regulations?" The answer in the TER is "yes." We are not surprised.

A strenuous exercise in bureaucratic logic was required to produce this answer. The Atlas tailings site is a textbook example of the *reverse* of the major 1990 NRC tailings reclamation criteria. It took a lot of bureaucratic obfuscation to make the case that capping the pile will meet those criteria. The structure used to achieve this was to fragment the tailings reclamation project into a swarm of often arcane technical issues or questions. In the Draft TER, these issues were declared "open" (unresolved) or "closed," which means the NRC thinks it's got enough information to make a

determination. The NRC ground away on the "open" issues until they could be declared "closed" in a final TER. The NRC analysis process documented in the TER seems to lie somewhere between an alternative reality and a delusional system, which local people reading the TER find maddening in its violation of common sense.

To understand the different way Bill Hedden, Peter Haney, Merv Lawton, the Utah Division of Radiation Control, and almost everybody else except the NRC sees the issue, we need to review the history: In 1947, the Atomic Energy Commission established a uranium ore buying station at the site. In 1957, "uranium king" Charlie Seese's UTEX Corporation built a uranium reduction mill over the Moab Wash on the flood plain of the Colorado River to process pitchblende ore from the Mt Vida Mine, in response to US subsidy of uranium production for atomic weapons at the beginning of the "cold war" with communism. In 1960 the Atlas Corporation purchased the mill and its unlined tailings pile. In 1970 the mill was rebuilt to process vanadium ores and produce commercial uranium for atomic power. 28 AEC-supplying mills shut down, while 13 others made this transition to commercial uranium production.

In 1978 Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA). All abandoned tailings (Type I) were to be reclaimed by the Department of Energy (DOE) at taxpayer expense, under the supervision of the new Nuclear Regulatory Commission (NRC). All operating uranium mills (Type II) were required to do an Environmental Impact Statement (EIS) to evaluate alternative reclamation plans, get a reclamation plan approved by the NRC, and post a bond sufficient to carry out the reclamation when the mill closes. Atlas evaluated capping the pile in place versus moving it to nine alternative sites. The capping plan involved covering the pile with Mancos Shale and then a layer of gravel. At the time, nobody had attempted to reclaim a tailings pile, and no criteria for reclamation had been adopted by the NRC. Atlas concluded it would cost \$3.6 million to cap the pile in place, and \$18.3 million to move it by truck to the nearest alternative site (7 Mile Canyon). In 1977 dollars. In 1982, the NRC approved the capping-in-place reclamation plan, and Atlas posted a bond for the estimated cost. This was done in good faith given the

(lack of) information at the time.

In August, 1990 the NRC finally adopted uranium mill tailings reclamation standards incorporating the experience the DOE had reclaiming 28 Type I tailings sites. The ideal tailings reclamation is (1) below grade (2) away from population (3) in a seismically stable site (4) isolated from groundwater and air for at least 200 and preferably 1000 years without any site maintenance. The regulations specify maximum concentration limits for leachate into groundwater, and erosion control measures (like slope and rock armor) to prevent escape of radioactive materials into the air. The NRC asked Atlas to evaluate and revise their capping reclamation plan to meet the new regulations. Since the Atlas tailings site is a textbook example of the *reverse* of the major reclamation criteria, this put Atlas and the NRC into a bureaucratic bind. The political problem driving all activity since appears to be that, if the NRC ends up approving a different, more expensive reclamation plan than they originally

approved in 1982, they have no legal choice than to demand Atlas increase their bond to cover 45% of all costs. This is unfair to Atlas, and probably illegal, since it represents applying regulatory liabilities backwards in time against a fully compliant private company. Atlas has made clear that the company will declare bankruptcy if confronted with such a demand, whereupon the NRC will be stuck with an unreclaimed tailings pile which has no "licensee" (owner), and obliged to try to recover funds from the defunct licensee (Atlas) to reclaim it. This fruitless effort would occupy years in court, enriching lawyers at taxpayer and Atlas shareholder expense while the pile sits there leaking into the Colorado River.

And significant leaking is going on, contrary to the claims in the DTER and DEIS issued in the fall of 1995. The State of Utah has since taken proper water samples evaluated by a certified laboratory, finding 10 non-radiologic contaminants in excess of Ground Water Quality Standards (GWQS): D-molybdenum was 30 times over health criteria in surface water from seeps on the riverbank; nitrate + nitrite 13, chloride 2.9, manganese 67.5, D-nitrous oxides 2.9 and T-NO<sub>2</sub>+NO<sub>3</sub> 12.9, D-vanadium 3.5, sulfate 18.1, T-Molybdenum 34.8, and T-Vanadium 1.4 times over GWQS. The Colorado River water samples found elevated downstream concentrations for ammonia (as N), manganese (342% higher), molybdenum (488% higher), and nitrate + nitrite (as N, 139% higher), with ammonia concentrations exceeding surface water quality standards. Ammonia was used as a reagent in the uranium milling process, and in tailings effluent reaches 2,400 mg/l concentrations. The NRC has sole authority over radionuclides, so the state could not test for these. Monitoring wells show alpha radiation levels up to 5,600 pCi/l in groundwater, versus 33 pCi/l background. The state estimates it will take at least 40 years for leaching from the pile to decline to GWQS limits if the pile is capped in place.

And how does the TER deal with the state water contamination information? On page 5-14, "Staff further concludes that the concern of contamination extent on adjacent properties has minimal relevance to the review of the proposed plan for onsite surface reclamation of the tailings. The contamination extent does have a large



bearing on groundwater compliance for license termination and revision to the Corrective Action Plan (CAP) for groundwater cleanup, regardless of the decision with respect to surface reclamation." I offer the following translation into standard English: "Since capping the tailings in place won't have any effect on leaching into water, and since the pile can't be found to be remediated and Atlas dismissed from responsibility until the groundwater is cleaned up, we'll just ignore the whole issue."

Putting up with this water contamination might be justified if it would truly cost five times as much to move the pile as to cap it. We don't think so. Local citizens collaborated with volunteer staff from the largest mining reclamation contractors in the world to develop a plan to use 300-ton Caterpillar mining haul trucks straddling the railroad spur as a haul road to move the tailings to a below-grade reclamation in the geophysically-ideal Mancos Shale of the Klondike Flats. These professionals estimated that the tailings could be reclaimed for a total of \$20,355,396 in 314 days. This cost overlaps the range of estimates by Smith Engineering for the cost of capping the pile. The Department of the Interior has noted that Smith's cost estimates (mostly from 1994) may not include the cost of engineering features added to the capping plan during the 1996 DEIS/Draft Technical Evaluation Report critique, such as ground acceleration from earthquake, insufficient clay thickness in the cap, and protection against Colorado River migration against the toe of the pile. Moving the pile by this creative, safe, least expensive method could cost the same or even less than capping the pile in place with all the additional engineering features. Moving the pile is environmentally preferable, so an equivalent cost to capping makes moving the pile the cost-beneficial reclamation.

Every Title I pile which was unlined, sitting on a porous basement structure, and leaking into groundwater like Atlas was reclaimed by moving to another, non-permeable site by the DOE. Five were moved out of metropolitan areas, and none suffered radiation escape incidents. Several attempts to cap leaky piles in place failed, and the piles were re-reclaimed by moving at vast additional expense. What worries me is that we can expect the same if the Atlas tailings are capped - eventually, the pile plus the cap material will be moved to Klondike Flats, at 100% taxpayer expense, because of environmental problems with the capped pile.

It is a bureaucratic accident that Atlas got classified with well-sited, lined Title II tailings piles which are appropriately capped in place, instead of with unlined Title I piles leaking into watercourses which were moved to stop water contamination. We should thank Atlas for their forbearance, take their reclamation bond, release them from further responsibility; then deal with these tailings as we did with many similar sites created under the AEC national defense program. Otherwise, we're going to jack around for years wasting taxpayer and private mining industry money while at least the soluble components of the Atlas tailings patiently deposit themselves in the Colorado River.

*The non-profit Association for the Tree of Life (ATL) is bearing the expense of mailing information to media, long-distance calls, etc., regarding the Atlas tailings reclamation. Tax-deductible contributions can be sent to P.O. Box 1366, Moab, UT 84532; or call 259-5095.*

The Salt Lake Tribune **UTAH** Wednesday, March 12, 1997

## Feds Say Atlas Tailings May Be Contaminating Fish

BY JIM WOOLF

THE SALT LAKE TRIBUNE

Federal biologists are worried that contaminated water seeping from the Atlas uranium mill tailings near Moab may be creating problems for endangered fish in the adjacent Colorado River.

So Bob Williams, assistant field supervisor for the U.S. Fish and Wildlife Service, said Tuesday that the agency probably will issue a decision stating that capping the 10.5 million tons of sand-like, radioactive dirt in place on the riverbank could "jeopardize" the fish.

A jeopardy decision will not stop the project or require that it be moved to an alternate disposal site 14 miles north of

Moab, stressed Williams.

But it will require Atlas to conduct additional monitoring studies to resolve any doubts about whether the endangered Colorado squawfish and razor-backed sucker are being harmed. If problems are identified, Williams said, Atlas would be required to take action to resolve them.

The U.S. Nuclear Regulatory Commission (NRC) last week issued a technical report that found Atlas' plan to cap the tailings in place complied with all federal regulations. The final step in the federal decision-making process comes this summer when an environmental impact statement is expected to be released by NRC. All indications are that it, too, will approve Atlas' plan.

That would leave one last approval from the Utah Department of Environmental Quality before Atlas could begin capping the pile. The state regulates groundwater beneath the site and has asked the company to prove that contaminated water escaping from the tailings will not harm human health or the environment. A decision on the groundwater question is expected soon after NRC's environmental study is completed.

State officials in the past have expressed doubts about leaving the Atlas tailings on the banks of the Colorado River, so there are no guarantees they will go along with NRC on this issue. The endangered-fish question could increase the state's concern about groundwater pollution at the site.