

October 22, 1998

To: Board of Directors (Engineering and Operations Committee--Information)
(Committee on Communications and Legislation--
Information)

From: General Manager _____

Submitted by: Mark D. Beuhler _____
Director of Water Quality

Subject: Uranium Mill Tailings Pile Near the Colorado River in Moab, Utah

RECOMMENDATION(S)

For information only.

EXECUTIVE SUMMARY

A ten-and-a-half-million-ton pile of uranium mill tailings in Moab, Utah, is located adjacent to the Colorado River and could potentially contaminate the river in the future. Although the best water quality protection solution is to move the pile away from the river and clean up the groundwater immediately, it appears that the Nuclear Regulatory Commission (NRC) plans to allow capping (covering) of the pile to satisfy its regulations and to address groundwater issues after the capping decision has been made. In a recent letter to NRC, Metropolitan recommended that the pile be moved away from the Colorado River or that an alternative equivalent to moving the pile be implemented. A copy of the letter to NRC is attached. The owner of the mill, Atlas Corporation, has recently petitioned for bankruptcy, raising the possibility of needing federal assistance to ensure the quality of Colorado River water.

DETAILED REPORT

A ten-and-a-half-million-ton pile of uranium mill tailings in Moab, Utah, is located 500 to 700 feet from the Colorado River, 150 miles upstream of Lake Powell. The pile covers 130 acres and is 110 feet high. Leachate from the pile is contaminating the groundwater under the pile and the groundwater is seeping into the Colorado River at an estimated rate of 50 gallons per minute.

The owner of the mill, the Atlas Corporation (Atlas), has proposed capping (covering) the pile at an estimated cost of \$16 - 19 million. The cost of moving the pile has been estimated at approximately \$100 - 150 million. NRC has indicated that the plan to cap the pile satisfies federal regulations; the decision on approving the amendment to the license is expected by the end of

March 1999. Even with the cap, the latest estimates by Oak Ridge National Laboratory indicate that groundwater would continue to seep into the river at a rate of 3.7 gallons per minute.

In March 1996, Metropolitan commented to NRC on the draft environmental impact statement and draft technical evaluation report. The comments stated that Metropolitan strongly believes that protection of water supplies is critical to ensure safe drinking water to millions of downstream consumers. Therefore, any actions that degrade source water quality are not condoned and every effort should be made to remove or prevent any contamination of the Colorado River. In September 1998, Metropolitan commented on the final technical evaluation report. Metropolitan recommended that the pile be moved (or an equivalent alternative be implemented), the contaminated groundwater be intercepted and treated, and the level of water quality monitoring in the Colorado River be increased. Metropolitan also stated that a feasibility study may need to be conducted to examine the possible relocation.

Consumers of Colorado River water in Southern California and Mexico have expressed concern related to the tailings pile. In addition, the US Environmental Protection Agency (EPA) is in the process of reviewing current radionuclide maximum contaminant levels, and these levels may become more stringent in the future. Uranium is a known kidney toxicant and considered by EPA to be a Class A (proven) human carcinogen.

Atlas has recently filed a petition for bankruptcy (Chapter 11 of Title 11 of the United States Code). The company intends to complete a third party remediation agreement for the closure and final reclamation of the Moab mill site, including the tailings pile. Additional federal assistance may be needed to cap the pile; and definitely would be needed if the pile were relocated. Consequently, Metropolitan may need to support matched federal and state funding for the removal and remediation of the impacts of the pile to a better-suited location. Staff are now developing plans to pursue such funding. Metropolitan will also continue to recommend that the uranium pile be moved away from the Colorado River and will comment accordingly in the proceedings on this issue.

SEB/cs

Attachment 9-10A

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September 23, 1998

Mr. Joseph J. Holonich
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Mail Stop TWFN 7J-9
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Reply to: 700 Moreno Avenue
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Dear Mr. Holonich:

Comments on Final Technical Evaluation Report on Atlas Corporation's Uranium Mill Tailings Pile near Moab, Utah

Thank you for sending the Metropolitan Water District of Southern California (Metropolitan) the Final Technical Evaluation Report for the Proposed Revised Reclamation Plan for the Atlas Corporation Moab Mill (Final TER), subsequent correspondence, and other documents relevant to the activities concerning the proposed capping of the Atlas Corporation uranium mill tailings pile near Moab, Utah. In this letter, Metropolitan addresses concerns from a water utility perspective that have not been answered by the Nuclear Regulatory Commission (NRC).

Background

Metropolitan delivers supplemental treated and raw water to 27 member public agencies within its 5,200-square-mile service area in southern California. These agencies in turn provide wholesale or retail water to approximately 16 million people residing within about 240 cities and unincorporated areas. Metropolitan currently provides approximately 60 percent of the drinking water used in its service area, which covers portions of Ventura, Los Angeles, Orange, Riverside, San Diego, and San Bernardino counties. Metropolitan receives imported water from two sources: the State Water Project (SWP) through the California Aqueduct, and the Colorado River through the Colorado River Aqueduct.

Water delivered to Metropolitan's member agencies is used for potable supplies or utilized for groundwater recharge. Protecting our source water quality is a primary concern so that the delivery of adequate supplies of high quality water can be assured.

Concerns

Metropolitan is concerned that over 20 million people who drink treated Colorado River water downstream of the Atlas Corporation facility, now and in the future, are being and will be exposed to unnecessary levels of radioactivity from uranium and other known and unknown contaminants that are presently in the pile, leachate, groundwater, and groundwater seepage into the river. There is no information on the long-term history of covers such as that proposed, and the sampling continues to be inadequate (i.e., limited or nonexistent depth, cross sectional and plug flow samples) in the vicinity of the pile. Furthermore, the cumulative human health effects of continuing contamination of the river is unknown.

Cover Information—The Final TER is not clear as to whether the existing pile is to be sufficiently reconfigured and compacted. The Final TER lacks information regarding compaction (or even if it is being contemplated) and placement of the cover. There may not be sufficient precedence in terms of successful applications of this type of a cover or a long enough historical record to permit anyone to assess whether or not such a cover would last for 200 to 1,000 years without significant maintenance.

Representative Water Quality Sampling—The data for contaminants in the river provided by NRC may not provide an accurate picture of the actual concentrations in the river if there are flaws in the sampling procedure or there exist spatial and temporal variations in constituents. There is no indication in the Final TER if a study was done to determine if constituents such as uranium or thorium 230 were conservative (i.e., do not react with constituents in the water or with the bottom and sides of the river). Although recent data were collected since the Final TER was published, the extent of the measurable influence of the uranium in the river was not determined in locations downstream of the pile.

The Colorado River at the Atlas Corporation Moab Mill site is wide with a large cross-section of flow. From the Final TER (p. 4-12), at a flow of 4,000 cfs the calculated cross-sectional area is 1,594 square feet (ft²). If the cross-sectional shape were a rectangle, the depth would be about 15 feet for a bottom width of 100 feet. There is no data or information provided to indicate if the sampling points were representative of the cross-sections or depths of the river (spatially representative). It appears that grab samples may have been taken at the surface of the Colorado River with little or no sampling done at lower depths in the river, except for the most recent sampling (which was a one-time only sampling).

It is not known if samples were taken to follow a plug of water down the Colorado River, taking into account the flow velocities in the river at the times the samples were taken. There is no information offered to indicate the temporal (time) variation of concentrations of constituents in the Colorado River for a specific sampling location. For example, it is possible that radium 226 varies hourly or minute-to-minute at a given sampling site, but the sampling may have been done hours apart or at random times during the same day. If the temporal variation is very high, these variations would likely swamp the impact of the contribution of the contaminated groundwater on the Colorado River.

Groundwater Contamination—There is no provision in the Final TER to deal with groundwater contaminated by the existing pile or other sources in the Atlas Corporation facilities (e.g., a former ore storage pad). It is not certain that groundwater cleanup would take place for many years. Because of the lack of representative samples and the unknown nature of the contaminants' cumulative human health effects, the groundwater should be intercepted to stop the contaminated water from entering the river. A collect-and-treat operation should be initiated immediately.

Water Quality Standards—Table 5-9 of the Final TER contains groundwater water quality standards for the Atlas Corporation monitoring program for monitoring wells that are being used to monitor the quality of the contaminated groundwater impacted by the tailings pile. It should be noted that the gross alpha compliance limit of 33 pCi/L shown in Table 5-9 is higher than the California Department of Health Services (CDHS) Title 22 maximum contaminant level (MCL) of 15 pCi/L. It is unclear if this value includes counting error. In California, counting error is part of the 15 pCi/L MCL. In Utah, it appears not to be included in the standard or reported values

unless specially requested. The compliance limit for chromium in Table 5-9 at 0.08 mg/L is higher than the Title 22 MCL of 0.05 mg/L. Finally, the compliance limit in Table 5-9 for uranium is shown as 4.0 mg/L compared to the Title 22 MCL of 20 pCi/L. All radionuclide concentrations in Table 5-9 should be expressed in pCi/L.

California Department of Health Services' Assessment—Metropolitan received a letter from CDHS in response to Metropolitan's request for CDHS' assessment of the situation. The letter in part states that “. . .the treatment of hazardous wastes by isolation and capping is an accepted means of handling hazardous material, even though it is not without controversy. However, other projects with which we are familiar seek to protect drinking water sources from environmental contamination. They do not use drinking water sources as means to remove environmental contaminants from the site, or to dilute them in case of an accidental release. We believe that the goals of source water protection for drinking water supplies would be better served by relocating the Atlas uranium tailings pile. . .”

Recommendation

Without delaying the mitigation of the groundwater contamination to the Colorado River, Metropolitan recommends that the pile be moved away from the Colorado River (or implement an alternative equivalent to moving the pile). A comprehensive monitoring program in the Colorado River above and below the pile, taking spatial and temporal variations into consideration, should be implemented immediately. The financial surety should be increased to ensure sufficient funds to maintain a long-term surveillance monitoring program. A feasibility study may need to be conducted on moving the uranium tailings pile to a better suited location. The feasibility study should focus on how the pile will be moved, possible contamination of the Colorado River as a result of the move, and the environmental impacts on the new site. Costs of relocating the uranium tailings pile should be secondary to protecting the water quality in the Colorado River and mitigating the impacts subsequent to moving the material.

Conclusions

As long as the pile is next to the river, there will be a negative public perception of the quality of the water used for drinking by over 20 million people in Arizona, Nevada, and California. We do not know what other chemicals in the pile may cause a problem in the future, and we do not know what future changes may negatively impact water quality. For example, contaminated groundwater may start moving faster as a result of some geological change, the cap (if allowed to be implemented) may crack or fail through subsidence or differential settlement of the tailings pile underneath, or the river may move closer to the pile. For these reasons, it is prudent to move the pile (or develop an alternative equivalent to moving the pile), intercept the groundwater before it reaches the river and increase the level of water quality monitoring of the river.

If you have any questions or comments, please call Mr. Mark Beuhler, Director of Water Quality, at (213) 217-6647.

Very truly yours,

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