

Newsletter of the Bluewater Valley Downstream Alliance

<http://www.bvdownstreamalliance.org/>

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Bluewater Valley Downstream Alliance: An Introduction

The Bluewater Valley Downstream Alliance (BVDA) is a group of citizens from neighboring communities north of Milan and Grants, New Mexico where groundwater and soil have been contaminated by uranium mining and milling activities that began in the 1950s. Our membership includes 6th-generation New Mexicans; families with a historically rural culture; former underground uranium miners; ranchers; farmers; environmentalists; business owners and wage earners. Please visit our webpage or contact us at contact1@bvdownstreamalliance.org to find out who we are, what we are doing and why.

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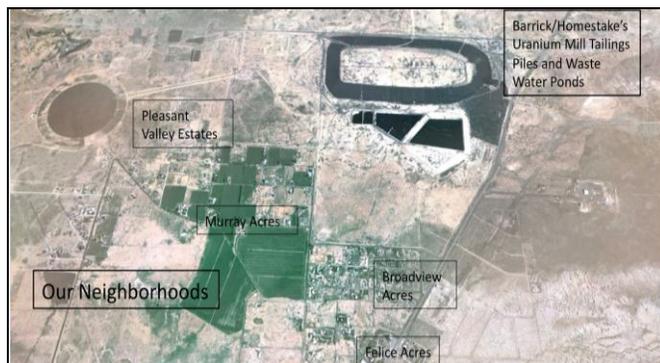
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Purpose and Content of the BVDA Newsletter

The BVDA Newsletter is part of a Technical Assistance Grant (TAG) Program to provide summaries of recent documents related to the continuing effort to remediate contamination associated with the Homestake Mining Company Superfund site. This document has been funded partly or wholly through the use of U.S. Environmental Protection Agency (EPA) TAG funds. Its contents do not necessarily reflect the policies, actions, or positions of the U.S. EPA. The Homestake Mining Co. TAG, and BVDA, do not speak for the U.S. EPA.

This second edition of the newsletter includes:

- Summary of the U.S. EPA "Third Five-Year Review of the Homestake Mining Superfund Site" that identified remediation performance issues related to groundwater remediation, tailings stabilization and radon releases.
- Summary of regulatory agency responses to a 2011 U.S. Nuclear Regulatory Commission (NRC) Office of Inspector General (OIG) report on NRC's oversight of uranium mill and tailings decommissioning that determined that the "NRC program increases the risk that [uranium recovery site decommissioning] activities will not occur in an effective and timely manner."
- Summary of 2011 U.S. Department of Energy (DOE) inspection report for the former Anaconda Bluewater uranium mill tailings disposal site that identified uranium concentrations exceeding applicable ground-water protection standards in alluvial monitoring wells, extending more than a mile from the site property boundary.

NRC documents referenced in this Newsletter can be found in the NRC ADAMS system, <http://www.nrc.gov/reading-rm/adams.html>. Click on "Begin Web-based ADAMS Search" and type the document number (ML....) in the search window.

Summary of EPA's "Third Five-Year Review of the Homestake Mining Superfund Site," December 2011

EPA Region 6 distributed the "Third Five-Year Review of the Homestake Mining Superfund Site" (TFYR or "Third Five-Year Review") in December 2011 as part of its responsibilities under the Superfund law, formally called the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). This document is available for downloading from:

http://www.epa.gov/region6/6sf/newmexico/homestake_mining/nm-homestake-mining-3rd-5yr_review.pdf.

The Review identified critical issues at the site for three remediation programs, which, in Superfund language, are called "operable units" (OUs). OU1 is the restoration of groundwater that is contaminated by tailings seepage. OU2 is the long-term stabilization of the tailings, surface reclamation and decommissioning, and closure of the mill (which was torn down in 1992-1994). OU3 is indoor and outdoor radon concentrations in residential areas adjacent to the mill site. The paragraphs below, shown in *italics*, are taken verbatim (with minor editing) from the Executive Summary of the Third Five-Year Review.

ISSUES AT HOMESTAKE SITE OPERABLE UNITS

Operable Unit 1 – Groundwater

A. Extraction of large quantities of water from the San Andres Formation and subsequent injection, primarily into the alluvial aquifer, has created localized areas with an artificial head difference of approximately 100 feet that, combined with the presence of faults and associated fracturing in the bedrock, increases the risk of downward migration of contaminants. In addition, significant geochemical differences between the injected San Andres water and receiving alluvial water may cause reduction of permeability over time as minerals precipitate in the mixing zone.

B. The tailings flushing program is expected to continue until 2014 before reaching the uranium clean-up target concentration of 2 milligrams per liter (mg/l) in the leachate. However, the potential for rebound of contaminant concentrations conditions are unknown in the tailings flushing program. The flushing program likely is also decreasing the stability of the large tailings pile due to the increased saturation of the pore spaces. The earthquake stability analysis assumed unsaturated tailings and did not account for the increased percentage of fluid-filled pore space resulting from the tailings flushing program.

Operable Unit 2 — Tailings stabilization and reclamation

A. A persistent plume of elevated uranium contamination just south of the former mill site, likely a remnant of the large tailings pile, may continue to impact groundwater. In addition, an historic irrigation ditch, established in the 1920s, that ran through the future Homestake Mill property...and presumably backfilled to original grade during construction of the mill, may be serving as a preferential pathway for leached contaminants to groundwater.

B. The east side slope of the small tailings pile [on top of which Evaporation Pond 1 is built] had moderate to large furrows and the west side of the westernmost collection pond had moderate furrows, both of which appeared to be the result of rainfall/erosion.

Operable Unit 3 — Radon

A. Annual air monitoring reports in 2006 – 2010 indicate releases of radon outside the area covered by the NRC license, in concentrations exceeding EPA standards. The 2006 - 2010 annual air monitoring report indicates that releases of radon exceeded the annual average concentrations allowed under 40 CFR 192.02(b)(2).

B. Radon air monitors along the Homestake fence line have continuously recorded outdoor ambient air radon concentrations associated with cancer risk levels that are greater than EPA's acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} [i.e., lifetime cancer risks of 1 in 10,000 to 1 in 1 million], as published in the National Contingency Plan.

RECOMMENDATIONS AND FOLLOWUP ACTIONS

The Site Manager should work with EPA to ensure that the issues identified above are addressed in the following manner:

Operable Unit 1

A. Minimize use of clean water and develop alternate source such as treatment of extracted groundwater for use in injection into the alluvial and Chinle Formation aquifers remedy.

B. Conduct a pilot study in a portion of the large tailings pile to quantify possible contaminant concentration rebound effects and demonstrate that rebound will not occur once the flushing program has ended. The earthquake stability analysis should be reevaluated to account for the increased fluid-filled pore space resulting from the relatively recent tailings flushing program. The protectiveness is dependent on a revised earthquake-risk analysis.

Operable Unit 2

A. Determine whether a remnant of tailings pile contaminant plume is continuing to impact groundwater. Investigate the backfilled irrigation ditch that ran through the HMC property to determine whether it serves as a preferential pathway for the migration of leached contaminants to groundwater.

B. Provide some type of native vegetative cover or erosion-protection cover to the east side slope of the small tailings pile/Evaporation Pond 1 and the westside of the westernmost collection pond to prevent erosion.

Operable Unit 3

A. EPA is currently in the process of completing a radon survey and a determination of the radon source (if possible), and specific recommendations will be made upon completion of the survey. This information will be incorporated into human health risk assessment in the spring of 2012.

The Third Five-Year Review identified the remedies currently in place for groundwater remediation (OU1) and tailings reclamation (OU2) as protective of human health and the environment. This protectiveness determination was based on the “institutional controls” in place at the site, most notably the New Mexico Environment Department’s health advisory notifications to residents and landowners near the site regarding the occurrence of contaminated groundwater around the area and the active pumping systems used to manage groundwater flow at the site.

The TFYR deferred a determination whether existing radon controls (OU3) are protective of public health and the environment until the completion of the “Human Health Risk Assessment” study evaluating radon concentrations in the area. The EPA risk assessment is expected to be completed this summer.

Summary of NRC Office of Inspector General audit of NRC oversight of uranium mill tailings decommissioning, December 2011

Weaknesses in the NRC’s oversight of the decommissioning of uranium recovery sites were identified in a December 13, 2011, NRC Office of Inspector General (OIG) report. The OIG report, titled “Audit of NRC’s Oversight of Decommissioning of Uranium Recovery Sites and Sites Undergoing Decommissioning” (OIG-12-A-06), is available on the NRC ADAMS document retrieval system as ID number ML113470006. It specifically addresses the two “Title II” uranium mills and tailings sites that are also Superfund sites — the Homestake Mill and tailings near Milan, N.M., and the United Nuclear Church Rock mill and tailings near Gallup, N.M. Findings of the Audit Report, reproduced verbatim in *italics*, follow:

1. *NRC does not fully comply with the conditions of the MOUs [i.e., Memoranda of Understanding] with EPA for uranium recovery sites subject to CERCLA [i.e., Superfund].*
2. *NRC program increases the risk that [uranium recovery site decommissioning] activities will not occur in an effective and timely manner.*
3. *NRC does not fully comply with the conditions of the jointly developed and agreed upon MOUs with EPA for uranium recovery CERCLA sites.*
4. *NRC has not provided required progress reports to EPA or conducted required annual reviews of the MOUs.*
5. *NRC has not met its responsibility to conduct an annual review of the MOUs.*

6. *NRC does not fully comply with the MOUs for uranium recovery CERCLA sites because*

NRC does not have internal controls or performance measures in place to provide reasonable assurance that NRC is fulfilling its obligations.

Based on these findings, the NRC Inspector General concluded (again, quoting directly):

“NRC Risks Hindering Effective Oversight. *Because NRC is not in full compliance with the conditions of the MOUs with EPA for uranium recovery CERCLA sites, effective and efficient oversight may be hindered. NRC not providing progress reports on site remediation and the lack of annual MOU reviews have contributed to an approach to oversight of remediation activities in a way not outlined in the MOUs. For example, NRC and EPA senior managers recently exchanged letters agreeing that the objective of the Homestake MOU is to ensure site remediation activities occur in an effective and timely manner, but staff from both agencies disagreed with the other agency’s approach to overseeing the activities at the site.”*

The NRC-OIG’s recommendations in the Audit did not address the full scope of the defects identified. The single recommendation made to address uranium recovery Superfund sites was one sentence:

“Establish performance measures to ensure compliance with the NRC-EPA CERCLA site MOUs.” Prior to issuance of the OIG report, NRC and EPA exchanged correspondence and held meetings to discuss “apparent conflicts” between NRC’s and EPA’s separate regulatory roles at the HMC site. (NRC’s role is based on the Atomic Energy Act (AEA) of 1954, as amended, and its implementing regulations, while EPA’s role is based on requirements of CERCLA and its regulations.) Two areas of discussion addressed (1) the viability of the current MOU between NRC and EPA for remediation at HMC, and (2) whether NRC’s role as lead regulator responsible at the site should be reconsidered in light of EPA Region 6’s CERCLA responsibilities, according to an October 3, 2011, letter from Larry Camper, director of the Division of Waste Management and Environmental Protection of NRC’s Office of Federal and State Materials and Environmental Management Programs, to Samuel Coleman, director of EPA-Region 6’s Superfund office in Dallas. See, NRC ADAMS ML111990073.

These issues were discussed at an October 19, 2011 meeting attended by NRC, EPA and NMED officials. BVDA had asked to attend this meeting, but was turned down by the agencies. According to the minutes of the meeting (see, NRC ADAMS ML113201756), the agencies agreed that “NRC would remain the lead regulatory agency with EPA in the monitoring role.” It was further agreed that “the revised HMC CAP [Corrective Action Plan] was the critical item needed to complete the site remediation and ensure compliance with all regulatory requirements. NRC noted that the CAP would be incorporated into the HMC License by reference in a license amendment and would be the compliance document by the NRC inspections and enforcement process.”

The agencies agreed they would take the following actions (quoted directly from the minutes of the October 19 meeting):

“1. EPA will provide to NRC any outstanding CERCLA requirements that EPA believes need to be addressed to close the facility. NMED will address any [state] permit issues. NRC made it clear that only regulatory requirements can be required of the licensee to address. Recommendations in the RSE [EPA’s December 2010 Remediation System Evaluation], such as performing pilot studies, were beyond the statutory authority of NRC. EPA and NRC also agreed to hold a separate meeting if necessary to discuss inconsistencies with CERCLA and 10 CFR Part 40, Appendix A. To address any EPA and NMED outstanding requirements, the NRC will draft a letter for

all three agencies to be signatories for submittal to HMC. Mr. Camper stated that he will need to consult with the Office of General Counsel for legal advice on the multi-agency letter.

“2. Mr. Coleman requested a meeting with NRC to be held in Washington, DC to discuss radon standards and radiological measurements differences of the two agencies to demonstrate cleanup criteria. Mr. Camper agreed that a meeting should be scheduled in December.

“3. In the first quarter of CY 2012, Mr. Camper will schedule a facilitated public meeting near the HMC site to discuss each of the agencies roles with respect to the HMC site. It was noted that this would also be an opportunity to invite public comments on the revised HMC CAP and the NRC process for making comments.

“4. Mr. Coleman will issue a consent decree to resolve past costs with HMC.

“5. HMC has agreed to prepare a technical evaluation for the feasibility of moving the tailings pile to another location. NRC will solicit comments from both EPA and NMED on the HMC evaluation.

“6. The State of New Mexico Radon Program Coordinator will work with local residents and EPA on radon mitigation in selected homes in the Village of Milan. While all parties agree that there is not sufficient radon data that indicates [sic] that the source of elevated radon levels in the selected homes is from the HMC tailings pile and the remediation operations, EPA and NMED will continue discussions with HMC to obtain funding to remediate the selected homes separate from the site specific issues, including the revised CAP review.

“7. Mr. Coleman will provide NRC and NMED with the EPA fly-over radiological report for the Grants area.”

In late January, NRC sent HMC a request for submittal of the revised Corrective Action Plan that had been agreed to three months earlier (see, NRC letter dated January 26, 2012, ADAMS ML113390071). This would be the latest of a series of revised CAPs, the most recent having been submitted by HMC in 2006. If, as NRC asserts, the CAP will be an amendment to HMC’s existing NRC license, than the latest revised CAP – once finalized -- would be subject to notice and opportunity for public comment and hearing pursuant to provisions of the AEA, and may trigger the need for preparation of an environmental impact statement pursuant to the National Environmental Policy Act, or

NEPA. NRC has not specified a path forward for its own review or for public review of the revised CAP, and it is not clear that the “facilitated public meeting” agreed to by NRC at the October 19 meeting is part of a formal regulatory process or simply an *ad hoc* response to community concerns.

BVDA reiterated its long-held concerns about the lack of success of the HMC groundwater remediation program over the last 35 years in a December 23, 2011, letter to the New Mexico congressional delegation and officials of NRC, EPA and NMED (see, NRC ADAMS ML120190343). In the letter, BVDA demanded (1) moving the HMC tailings to a safe, permanent disposal site; (2) mitigating high levels of radon in homes in the community; (3) returning groundwater to pre-mining and milling water quality conditions; and (4) meeting with regulators and legislators to “identify roadblocks to full cleanup”.

In its February 1, 2012 response (NRC ADAMS ML120230377) to the December 23 BVDA letter, NRC stated that HMC is required to submit a revised groundwater CAP “as soon as possible.” NRC further stated:

“The updated CAP will guide HMC’s remedial activities at the site through site closure. After receipt of the updated CAP and allowing time for its review by all involved regulatory agencies, the NRC intends to hold a noticed meeting open to the public at the New Mexico Environment Department (NMED) offices in Albuquerque, NM to identify any outstanding regulatory concerns. Subsequently, NRC plans to hold a public meeting in Grants, NM to discuss the planned remedial activities and the issues raised in your letters. We anticipate that these two meetings will take place this summer.”

Again, NRC provided no clear indication whether the public meetings outlined in its response to BVDA would be part of a formal public involvement process required by AEA and by NRC’s own uranium-licensing regulations for license amendments, nor was the agency specific about how soon “as soon as possible” is for HMC’s submission of a revised CAP. And none of the agencies has addressed whether HMC will be required to address findings of the Third Five-Year Review or of the December 2010 RSE in the next iteration of the CAP.

Summary of 2011 DOE inspection report for the DOE Bluewater uranium mill tailings disposal site

Uranium concentrations are increasing and exceeding some regulatory limits in alluvial groundwater monitoring wells located near the property boundary of the former Anaconda Bluewater uranium mill, according to a December 2011 facility inspection report by the U.S. Department of Energy, which owns the tailings disposal cell. The reported uranium levels indicate that a plume of contamination now stretches about 1.5 miles from the edge of the covered tailings at the second largest uranium mill tailings impoundment in the U.S.

The findings are the first indication that groundwater protection standards — even “alternate” limits that are less stringent than state and federal drinking water standards — have been exceeded at a “Title II” uranium mill waste disposal facility since the DOE acquired ownership of the site. And the findings reinforce concerns raised in a 2010 NMED report that historic seepage from the unlined tailings disposal cell may still be causing groundwater quality degradation down-gradient from the former Anaconda mill.

The DOE inspection report, titled “Annual Site Inspection and Monitoring Report for Uranium Mill

Tailings Radiation Control Act Title II Disposal Sites,” December 2011, LMS/S08077, is available at http://www.lm.doe.gov/pro_doc/guidance_reports.htm. The NMED report cited above, titled “Geochemical Analysis of Ground Water Data Collected as part of the Anaconda Company Bluewater Uranium Mill Site Investigation and San Mateo Creek Site Legacy Uranium Sites Investigation, McKinley and Cibola County, New Mexico,” May 2010, is available at: <http://www.nmenv.state.nm.us/gwb/documents/FinalPublicDraftofGeochemofBluewaterandSMCGroundWaterSamples.pdf>.

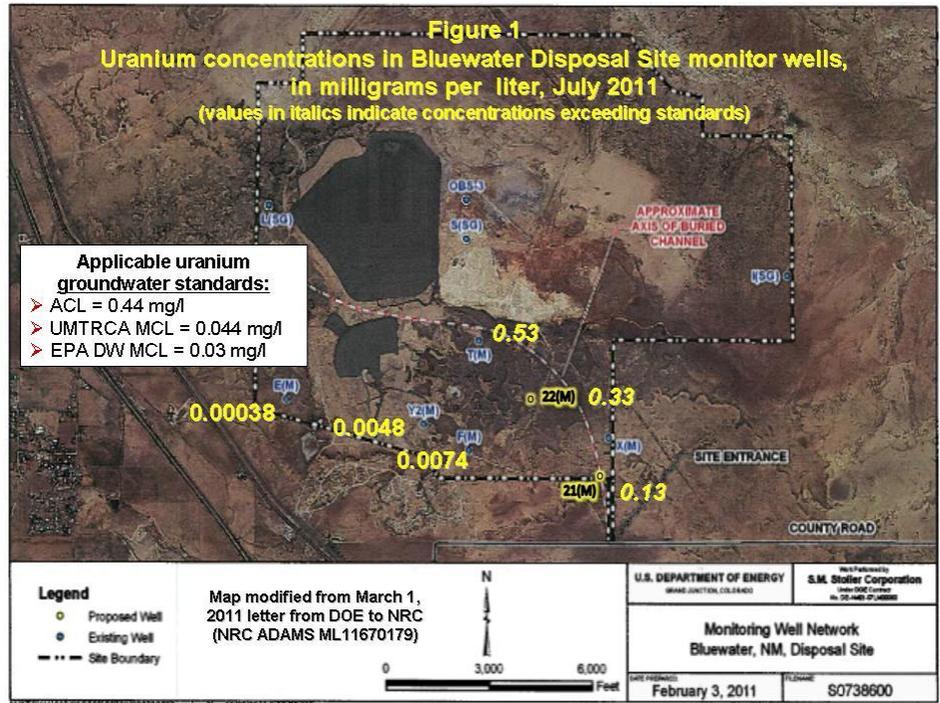
The DOE report summarized results of alluvial groundwater sampling conducted in 2010 and 2011:

“The alternate concentration limit (ACL) for uranium [of 0.44 milligrams/liter (mg/l)] at an alluvium point-of-compliance (POC) monitoring well [well T(M)] was exceeded during the November 2010 sampling event. Confirmatory sampling in April 2011 verified the exceedance. Consequently, two new alluvium monitoring wells [wells 21(M) and 22(M)] were installed downgradient of the POC well in July 2011. The new wells were sampled as part of the semiannual sampling event in July 2011. Uranium concentrations

in the POC well continue to be above the ACL. Although uranium concentrations are below the ACL in the new alluvium wells, they are above the UMTRCA maximum concentration limit (MCL). Results from the November 2011 semiannual sampling event are pending.”

The monitor wells cited in the report’s summary, along with their uranium concentrations in July 2011, are depicted in **Figure 1**, which was modified from a map included in DOE’s notification to NRC of the ACL exceedances. See, “Letter DOE to NRC regarding Notification of Alternative Concentration Limits Exceedances at Bluewater, New Mexico UMTRCA Title II Disposal Site,” NRC ADAMS ML110670179. Uranium concentrations in monitoring Well T(M) were 0.525 mg/l in an April 2011 sample and 0.53 mg/l in the July 2011 sampling, or about 20% above the site ACL of 0.44 mg/l. (The DOE inspection report does not indicate what the basis for selection of alluvial groundwater uranium ACL was or when it was adopted.)

As illustrated in **Figure 2**, Well T(M) has shown a rising trend in uranium concentrations since it was first sampled in 1999. Uranium levels in Well T(M) have risen steadily from approximately 0.1 mg/l in 2000 to approximately 0.3 mg/l in 2009 and to 0.557 mg/l in November 2010. Additional samples from Well T(M) in 2011 had U levels greater than 0.5 mg/l, indicating an ongoing exceedance of the ACL.



As shown in **Figure 1**, uranium concentrations in the two new alluvial monitoring wells, 22(M) and 21(M), which are located southeast of Well T(M) along the path of a buried channel, were 0.33 mg/l and 0.13 mg/l, respectively. When seen together, the uranium levels in the three monitoring wells depict a *contaminant plume* that stretches for about 1.5 miles from the edge of the tailings disposal area to the property boundary near Well 21(M).

While the July 2011 uranium levels in Wells 22(M) and 21(M) are below the ACL for the site, they still exceed groundwater protection standards that apply at other uranium mill sites, as shown in **Figure 2**. For instance, they exceed EPA’s uranium standard of 0.044 mg/l at UMTRA “Title I” tailings sites (40 CFR 192 Subpart B) (which DOE refers to as the “UMTRCA MCL”), and the New Mexico Water Quality Control Commission groundwater-protection standard of 0.03 mg/l. This latter limit is identical to the EPA’s drinking water standard, or maximum contaminant level (MCL), for uranium in public water supplies of 30 micrograms per liter, or 0.03 mg/l (40 CFR Part 141) (**Figure 2**). The uranium levels in the monitoring wells also range from 10 to 38 times greater than the lowest level of uranium associated with kidney damage in people who drank contaminated well water over long periods (Mao et al., 1995).

