



**Department of Energy
Office of Legacy Management**

June 5, 2006

Mr. Mark Thiesse
West District Supervisor
Groundwater Pollution Control Program
Wyoming Department of Environmental Quality
510 Meadowview Drive
Lander, WY 82520

Subject: Ground water evaluative monitoring plan at the Shirley Basin South, WY, Disposal Site

Dear Mr. Thiesse:

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) concurs with your letter dated March 27, 2006, in that DOE, too, is concerned with how to address the issue of sample results exceeding alternate concentration limits (ACLs) at the Shirley Basin South disposal site, and how to verify that contaminated ground water is not migrating toward the property boundary.

In our letter to the U.S. Nuclear Regulatory Commission (NRC) dated October 20, 2005, DOE identified that ACLs were exceeded in two point-of-compliance (POC) wells for cadmium (Well 5-SC) and radium-228 (Well 5-DC) during its initial sampling event in July 2005 (DOE acquired the site in June 2005). Because of these exceedances, confirmatory samples were collected in December 2005. Reporting ACL exceedance and resampling is required by the site Long-Term Surveillance Plan (LTSP), which is the NRC-approved document that dictates how the site will be managed.

Results of the confirmatory sampling were provided to NRC in a letter dated March 10, 2006. The trends for the analytical data from these wells are not conclusive. Although cadmium has increased in each of the last four sampling events over the past 2 years, the results are within the historical range of measurements—the ACL had been exceeded in 1997, 1999, and 2001 (NRC approved the site ACLs in October 1998). Although still above the ACL, the radium-228 result in December 2005 was less than the result in July 2005.

The radium-228 result for Well 54-SC was not reported to the NRC because it is not a designated POC well in the LTSP and, therefore, ALCs do not apply to this well. However, the well was resampled by DOE in December 2005 and the radium-228 result was the same as the July result. As shown on the enclosed chart, radium-228 in this non-POC well has consistently exceeded the ACL designated for the POC wells.

Well 54-SC is a downgradient well with respect to the disposal cell, but it cannot be compared to Well 5-DC to track the potential migration of radium-228. Well 54-SC is completed in the Upper Sand aquifer of the Wind River Formation, whereas Well 5-DC is completed in the underlying Main Sand aquifer of the same formation. Well 54-SC is downgradient of Well 5-SC, so the potential migration of cadmium will be monitored.

Uranium and sulfate are the primary plume indicator contaminants for the aquifers. As shown on the enclosed charts, uranium and sulfate in the POC wells are indicating downward trends in the Upper Sand aquifer, and lower and steady concentrations in the Main Sand aquifer. At this time, therefore, DOE does not anticipate a threat to human health or the environment from the contaminant plume at the site. Moreover, DOE will not allow use of ground water from the Upper Sand and Main Sand aquifers at the site for any purposes.

Because we are being protective of human health and the environment, and because our sampling results are consistent with historical results, DOE considers the continuation of annual sampling for 5 years followed by an evaluation to be a reasonable course of action. In accordance with the LTSP, that evaluation will be used to determine if corrective action is necessary.

Since the ACL for cadmium was exceeded prior to site transfer to DOE, DOE is pursuing discussions with the NRC regarding the compliance implications of those exceedances. DOE will keep WDEQ apprised of the results of these discussions and any future actions that may be required.

I trust this response addresses your concerns, and I look forward to working with WDEQ and the NRC in further resolution of this ACL issue. If you have any questions, please call me at (303) 966-3551.

Sincerely,



Scott R. Surovchak
Site Manager

Enclosure:

cc w/enclosure

(S. Cohen, NRC)

K. Frederick, WQD Cheyenne

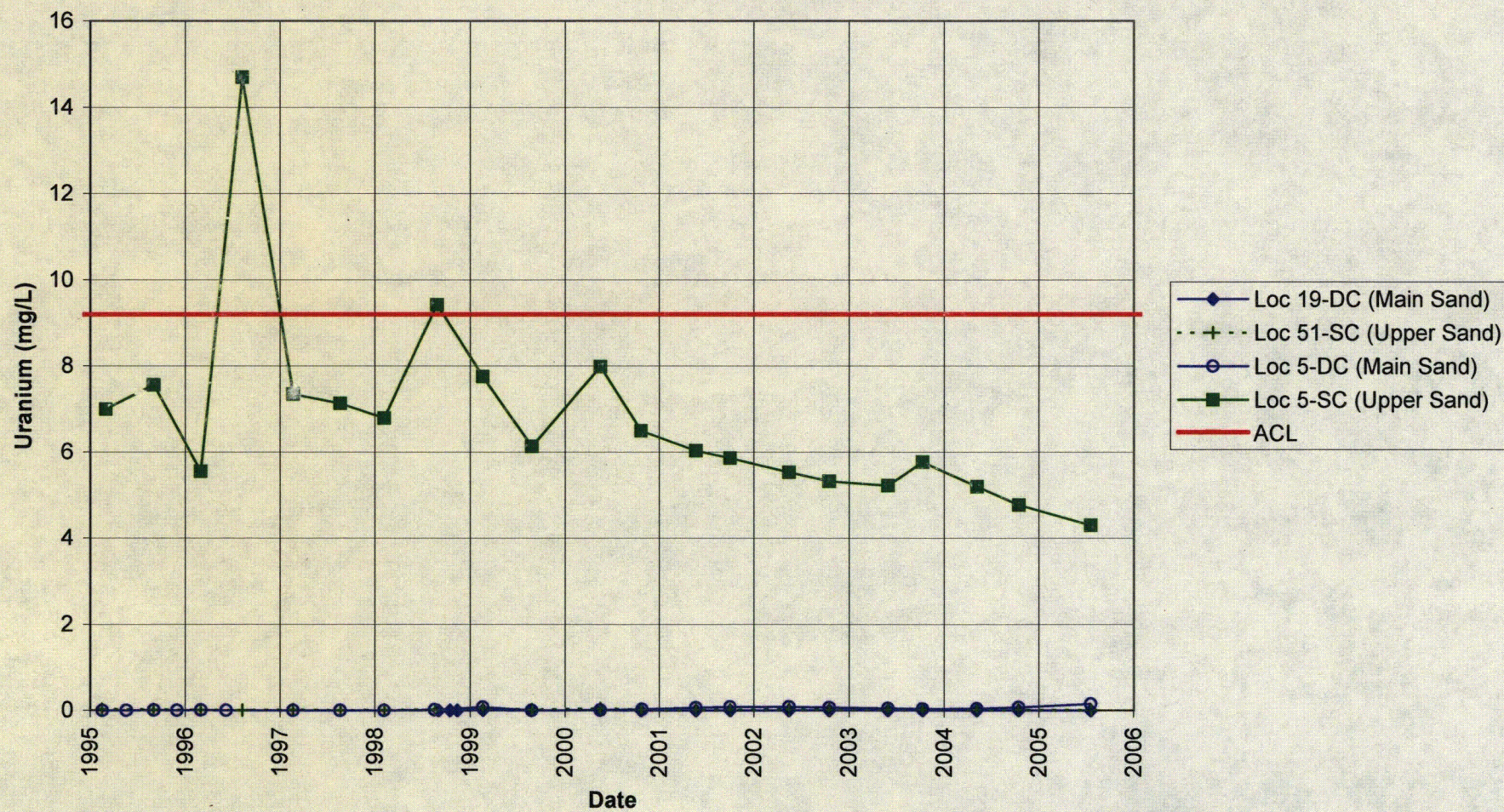
R. Hoy, LQD Cheyenne

T. Pauling (LM-50)

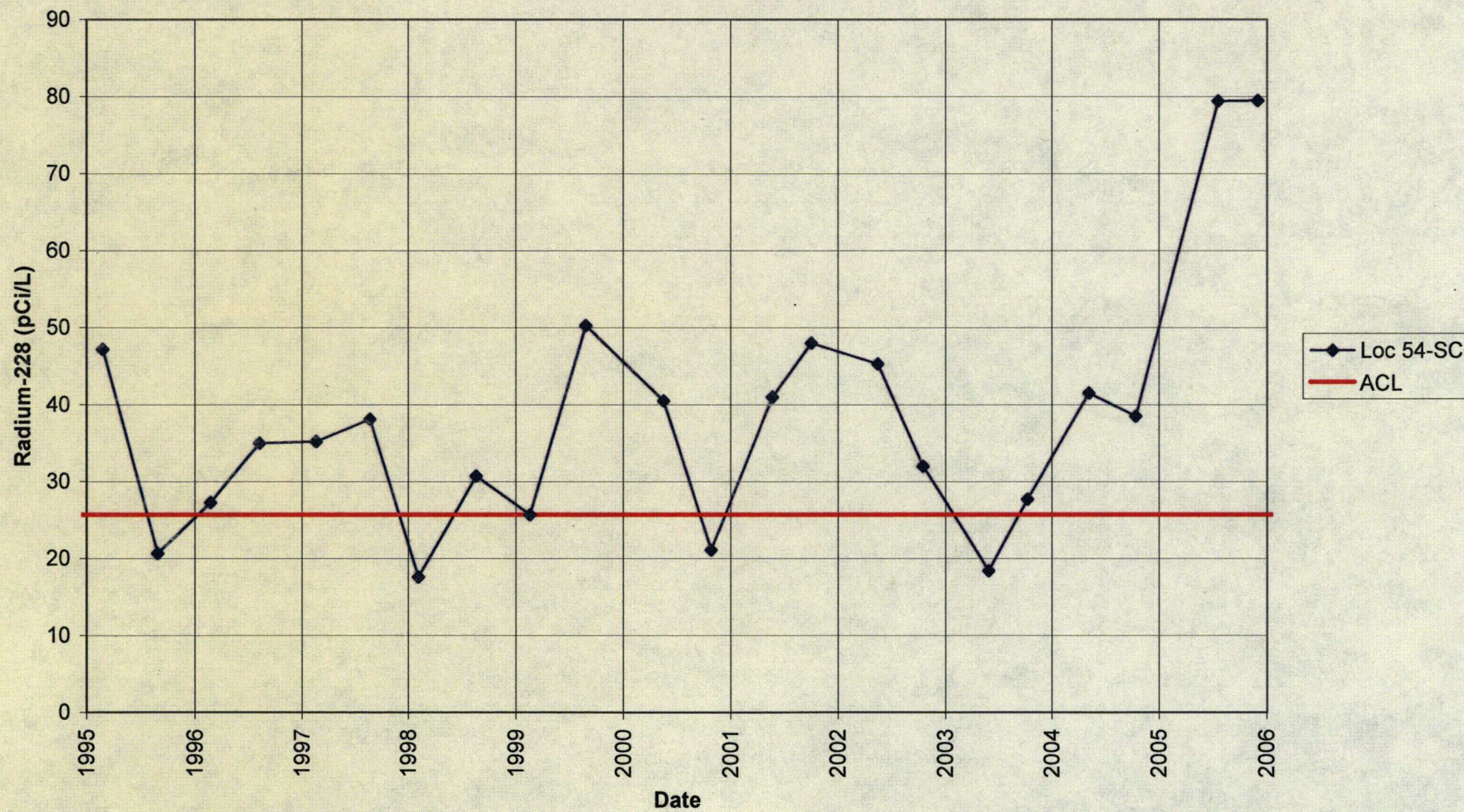
D. Johnson (Stoller)

Records File SBS 410.10 (thru D. Roberts)

Shirley Basin South Disposal Site
POC Wells
Uranium Concentration
ACL = 9.2 mg/L



Shirley Basin South Disposal Site
Non-POC Well 54-SC
Radium-228 Concentration
(ACL not applicable)



Shirley Basin South Disposal Site
POC Wells
Sulfate Concentration
(Ground Water Protection Standard = 3000 mg/L)

