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Analyses: Environmental Monitoring Well ER-20-5 #1 Pu data

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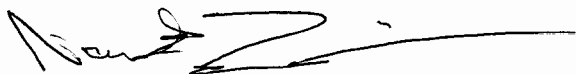
To: Bill Wilborn

From: Environmental Radiochemistry Group, Lawrence Livermore National Laboratory

RE: Analyses: Environmental Monitoring Well ER-20-5 #1 Pu data

This report updates the results of Pu measurements of groundwater samples from well ER-20-5#1 collected on April 26, 2011. These analyses were not completed when the original well report was issued. Pu analytical results for this sample are compiled in Table 1. Laboratory analytical protocols are fully described in the LLNL Standard Operating Procedures written in support of the UGTA Project (LLNL, 2004).

Plutonium was analyzed and isotope ratios (not reported here) were consistent with the identification of Benham as the source, as described in Kersting et al., 1999. The activities in 2011 have decreased slightly since 2004. Importantly, activities are more than one order of magnitude below the MCL for Pu.



Mavrik Zavarin, Project Manager
Underground Test Area

References

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LLNL (2004) Analytical Measurements: Standard Operating Procedures, Underground Test Area Project. Chemical Biology and Nuclear Science Division, Lawrence Livermore National Laboratory, 30 June 2004.

Bowen, S.M., D.L. Finnegan, J.L. Thompson, C.M. Miller, P.L. Baca, L.F. Olivas, C.G. Geoffrion, D.K. Smith, W. Goishi, B.K. Esser, J.W. Meadows, N. Namboodiri, and J.F. Wild. 2001. Nevada Test Site Radionuclide Inventory, 1951 – 1992. Los Alamos National Laboratory, Los Alamos, NM, LA-13859-MS.

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Table 1: Analytical results for groundwater from well ER-20-5 #1.

Sample Date	30 Nov 2004 ^b	26 Apr 2011 ^b
^{239,240} Pu, <20nm (pg/kg)		1.137
^{239,240} Pu, <100nm (pg/kg)		2.281
^{239,240} Pu, 20-100nm (pg/kg)		1.194
^{239,240} Pu, >100nm (pg/kg)		2.473
^{239,240} Pu total (pg/kg)	6.4	4.001
^{239,240} Pu, <20nm (pCi/kg), calculated		0.0828
^{239,240} Pu, <100nm (pCi/kg), calculated		0.1660
^{239,240} Pu, 20-100nm (pCi/kg), calculated		0.0869
^{239,240} Pu, >100nm (pCi/kg), calculated		0.1800
^{239,240} Pu total (pCi/kg), calculated	0.47	0.2912

^b ^{239,240}Pu activity is calculated based on an assumed 240/239 ratio of 0.07. This ratio is the unclassified cumulative atom ratio of 240/239 for all underground nuclear tests reported in Bowen et al. (2001).

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