

Recent Detections in Groundwater at LANL

- 142 ppb perchlorate, 13.2 mg/L nitrate, 12,797 pCi/L tritium in perched groundwater at 524 ft in Well MCOBT-4.4 (04/02 data) (Characterization Well MCOBT-4.4 and Borehole MCOBT-8.5 Completion Report, LA-13993-MS, Tables 11.2-2a and 11.2-2b, p. 66-67, Dec. 2002).
- 179 ppb perchlorate, 12.5 mg/L nitrate, 14,900 pCi/L tritium in perched groundwater at 524 ft in Well MCOBT-4.4 (06/02 data) (Minutes from the January 22, 2003 Quarterly Meeting of the LANL Hydrogeologic Characterization Program, p. 7).
- 178 ppb perchlorate in well MCOBT-4.4 (ER Quarterly Technical Report, July-Sept. 2003, LA-UR-03-8200, p. A-35).
- 15.8 mg/L nitrate in well MCOBT-4.4 (ER Quarterly Technical Report, July-Sept. 2003, LA-UR-03-8200, p. A-35).
- 14,900 pCi/L tritium in well MCOBT-4.4 (ER Quarterly Technical Report, July-Sept. 2003, LA-UR-03-8200, p. A-38).
- 4.28 ppb Perchlorate at 383 feet in Well R-5 (April –June 2002 ER Quarterly Technical Report, LA-UR-02-4997, p. D-6).
- 347 pCi/L tritium in Well R-9 in the uppermost perched zone. Nitrogen isotopes in regional well R-12 indicate a sewage influence; tritium at 46.9 pCi/L tritium in perched groundwater in well R-12 at 424 ft (LANL General Part B Permit Application, Revision 2.0, p. A-19, August 2003).
- 2.3 ppb perchlorate and 4.86 mg/L nitrate at 868 feet in regional groundwater in well R-11 (Minutes from LANL Groundwater Protection Program Quarterly Meeting, 10/27/03, p.5; also in handout from the same meeting titled, “Status Report for Geochemistry”, p.3).
- 4.9 pCi/L Tc-99 detected in regional groundwater in well R-22 at 1273.5 ft (Characterization Well R-22 Geochemistry Report, Sept. 2002, LA-13986-MS, p. 12).
- 4.3 pCi/L Tc-99 detected in regional groundwater in well R-22 at 1378 ft (Characterization Well R-22 Geochemistry Report, Sept. 2002, LA-13986-MS, p. 14).
- Perchlorate detections in groundwater include: MCO-7.5 at 148 ppb (7/07/03); MCO-7 at 143 ppb (8/26/02); MCO-5 at 99.8 ppb (5/30/02); MCO-3 at 78.4 ppb (3/28/02); Spring 4A at 12 ppb (1/28/02); Otowi-1 at 4.34 ppb (2/28/03) and 3.29 ppb (4/9/03); Test Well 1 at 2.24 ppb (7/30/03); and PM-3 at 0.884 ppb (1/16/02) (LANL’s online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).
- 7.06 pCi/L Cs-137 in Test Well DT-9 on 8/6/03 (LANL’s online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).
- Sr-90 detections in alluvial groundwater above its MCL (8 pCi/L) include: MCO-5 at 81.6 pCi/L (6/30/03); MCO-4B at 79.1 pCi/L (6/30/03); and LAO-3A at 32 pCi/L (9/17/03) (LANL’s online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).
- 2.19 pCi/L Pu-238 in well MCO-3 (7/08/03); detection is above DOE’s DCG (derived concentration guide) level for drinking water systems for Pu-238 of 1.6 pCi/L (LANL’s online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).



- 1.78 pCi/L Pu-239,240 in well MCO-3 (7/08/03); detection is above DOE's DCG (derived concentration guide) level for drinking water systems for Pu-239,240 of 1.2 pCi/L (LANL's online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).
- 3.98 pCi/L Am-241 in well MCO-3 (5/1/02) and 1.65 pCi/L Am-241 in well MCO-3 (7/08/03); detections are above DOE's DCG (derived concentration guide) level for drinking water systems for Am-241 of 1.2 pCi/L (LANL's online Water Quality Database (hardcopy in the AR in LANL General Groundwater files)).
- 58.6 ug/L HMX in well at 755 ft (ER Quarterly Technical Report for July-September 2002, LA-UR-02-6976, p. D-141).
- 0.18 ug/L amino-2,6-DNT (4-) at 1200 ft in well CdV-R-37-2 (ER Quarterly Technical Report, July-Sept. 2003, LA-UR-03-8200, p. A-30).
- Tritium in screen #5 (1448 ft) at regional well R-22 ranges from 3.54 to 18.45 pCi/L. "Possible sources of detectable tritium at well R-22 include... vapor-phase movement entering the regional water table upgradient of the well. This hypothesis of upgradient recharge is consistent with measurements of higher tritium activities observed in screen #5, while it generally was not detected in screens #2, #3, and #4. The absence of tritium in screens #2, #3, and #4 suggests that the regional aquifer (from 947 to 1385 ft) has not received recharge in the past 50 yr, which predates the beginning of atmospheric nuclear testing. Perched zones were not encountered during the drilling of R-22, suggesting that vertical recharge through the vadose zone at the well site is unlikely." (Groundwater Annual Status Report for FY2002, LA-UR-03-0244, p. 6-20). [Possible evidence of vapor-phase contaminants from TA-54 reaching the regional aquifer]
- Tritium detected in intermediate groundwater in well R-23 at 26 pCi/L; tritium detected in regional groundwater in well R-8 at 16 pCi/L and in well R-11 at 16 pCi/L (in handout from the LANL Groundwater Protection Program Quarterly Meeting, 10/27/03, titled, "Status Report for Geochemistry", p.3). [Evidence of recent groundwater mixing]
- 800 ppb perchlorate detected in pore water in Well MCOBT-8.5 at 100 ft (Characterization Well MCOBT-4.4 and Borehole MCOBT-8.5 Completion Report, LA-13993-MS, Figure 11.1-6, p. 55).

Other groundwater detections at LANL

- Alluvial wells LAUZ-1 and LAUZ-2: 100 to 108 pCi/L 90-Sr. (Groundwater Annual Status Summary Report-FY97, p.19).
- Perched groundwater zones in regional well R-9: 347 pCi/L tritium in upper zone, 106 pCi/L in lower zone (Groundwater Annual Status Summary Report-FY97, p.38 taken from ESH, 1997).
- Activities of tritium in the overlying alluvial groundwater at LAO-I (A) in upper Los Alamos Canyon as high as 35,000 pCi/L in the early 1990s (Groundwater Annual Status Summary Report-FY97, p.40).
- LADP-3: tritium 6,000 pCi/L in 1993 (Groundwater Annual Status Summary Report-FY97, p.40).
- TW-4: 6.2 pCi/L 90-Sr in the regional aquifer (Hydrogeologic Workplan (HWP), p.4-3).
- TW-2A: 2,228 pCi/L tritium (HWP, p.4-4).
- Alluvial well MCO-4: elevated levels of tritium, 90-Sr, 137-Cs, 238-Pu, 239,240-Pu, and 10.9 pCi/L 241-Am (HWP, p.4-7).

- Test well 8, Mortandad Canyon: 89 pCi/L tritium, 2.1 pCi/L 90-Sr, 0.188 pCi/L 239,240-Pu, and 0.034 pCi/L 241-Am in the regional aquifer (HWP, p.4-7).
- Alluvial groundwater within middle Pajarito Canyon (TA-18 and TA-36) contains elevated concentrations of uranium and 1,2 DCA (HWP, p.4-10 taken from EPD 1996 and ICF Kaiser 1996)
- Test well DT-9: HE: 130 mg/l 2,4-dinitrophenol and 110 mg/l pentachlorophenol in the regional aquifer (HWP, p.4-11).
- TA-49 DT wells: above background concentrations of lead, 90-Sr, arsenic, 238-Pu, and antimony have been detected at times; in 1993, DT-9: 2,4 dinitrophenol, pentachlorophenol, and acetone were detected (HWP, p.4-68).
- R-15: perched groundwater at 646'-740'; 12 ppb perchlorate and 3770 pCi/L tritium in groundwater at 646'; 1662 µg/L perchlorate in pore water at 740' (R-15 Well Completion Report, p.54; 2000).
- R-19: perched groundwater at 883': 0.11 µg/L HMX; 0.36 µg/L nitrobenzene; 0.62 µg/L 2-amino-4,6-dinitrotoluene; 0.34 µg/L 2,6-dinitrotoluene (R-19 Well Completion Report, p.40; 2000).