



DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

Mr. John E. Kieling
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303



JUN 13 2019

Dear Mr. Kieling:

Subject: Request for Extension of Phase 2 Pilot Amendment Testing Work Plan Milestone

- References:
1. LANL (Los Alamos National Laboratory) 2017. "Pilot-Scale Amendments Testing Work Plan for Chromium in Groundwater beneath Mortandad Canyon," Los Alamos National Laboratory document LA-UR-17-25406, Los Alamos, New Mexico (July 2017).
 2. NMED (New Mexico Environment Department) 2017. "Approval, Pilot-Scale Amendments Testing Work Plan for Chromium in Groundwater beneath Mortandad Canyon," New Mexico Environment Department letter to D. Hintze (DOE-EM) and B. Robinson (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico (July 31, 2017).
 3. N3B (Newport News Nuclear BWXT-Los Alamos, LLC) 2018. "Work Plan for Tracer Testing in Support of the Phase 2 Amendments Test for Chromium Plume Center Characterization," N3B document EM2018-0060, Los Alamos, New Mexico (October 2018).
 4. N3B (Newport News Nuclear BWXT-Los Alamos, LLC) 2019a. "Sixth Quarterly Report on Pilot-Scale Amendments Testing for Chromium in Groundwater Beneath Mortandad Canyon," N3B document EM2019-0133, Los Alamos New Mexico, (April 2019).
 5. N3B (Newport News Nuclear BWXT-Los Alamos, LLC) 2019b. Semiannual Progress Report on Chromium Plume Control Interim Measure Performance," N3B document EM2019-0059, Los Alamos, New Mexico (March 2019).

The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) is requesting an extension for submittal of the Phase 2 Pilot Amendment Testing Work Plan for the chromium interim measure (IM) and characterization campaign. As indicated in the fiscal year (FY) 2019 version of the Appendix B Milestones and Targets table in the 2016 Compliance Order on Consent, Milestone #10, Phase 2 Pilot Amendment Testing Work Plan, stipulates submittal of the work plan by June 28, 2019. EM-LA is using the process outlined in the Compliance Order on Consent, Section XXVIII, *Extensions*, C(7), to submit a request for an extension for the above-mentioned milestone for good cause, specifically, new technical information mutually agreed by the parties as constituting good cause. Note that submittal of a subsequent Appendix B target, "Report (Completion or Progress) of the Phase 2 Pilot

Amendment Test Results,” would also be affected by this extension request. For the reasons outlined below, and in consultation with the New Mexico Environment Department (NMED), EM-LA proposes to submit a work plan by September 26, 2019, that describes additional work that could facilitate completion of the ongoing Phase 1 study as described below. This work plan would be a supplement to the NMED-approved “Pilot-Scale Amendments Testing Work Plan for Chromium in Groundwater beneath Mortandad Canyon” submitted in July 2017 (LANL 2017).

A key reason for extension of the Phase 2 work plan is to provide time to better understand the potential impacts from amendments testing on the operation of the ongoing IM. Observations from IM operations and preliminary geochemical data from extraction well CrEX-3 suggest that Phase 1 testing may have caused a localized geochemical condition in groundwater being pumped at CrEX-3 that causes rapid plugging of the influent filter at the IM treatment system, as described in the March 30, 2019, “Semiannual Progress Report on Chromium Plume Control Interim Measure Performance” (N3B 2019b). These impacts and the possible cause are being evaluated as part of the Phase 1 amendments test and will be reported in the December 2019 Phase 1 quarterly report. The tracer testing work plan stated that “the Phase 2 amendments test will likely propose CrPZ-1 for amendment deployment and CrEX-2 as the cross-hole pumping location” (N3B 2018). Because of the importance of extraction at CrEX-2 and the associated injection of treated CrEX-2 water, EM-LA has concerns that a cross-hole amendments test, as was conceptualized in the tracer test work plan, could compromise CrEX-2 in a manner similar to CrEX-3. Further analysis of Phase 1 data will help to avert a similar situation.

In addition, a key predecessor for development of the Phase 2 Work Plan is collection of sufficient data from the current pilot-scale amendment testing for chromium in groundwater beneath Mortandad Canyon (Phase 1) to design a Phase 2 amendments study (LANL 2017, NMED 2017). The “Work Plan for Tracer Testing in Support of the Phase 2 Amendments Test for Chromium Plume Center Characterization” (N3B 2018) also stated that “a Phase 2 amendments testing work plan will be submitted to the NMED Hazardous Waste Bureau (HWB) when the tracer test data collected under this work plan and sufficient data from the Phase 1 amendments test are available to design the Phase 2 amendments study.” The sixth quarterly report for the Phase 1 amendments testing submitted to the NMED-HWB on April 30, 2019, indicated that the Phase 1 study may continue until later in calendar year 2019 (N3B 2019a). The goal is to include sufficient data and interpretation to guide whether a Phase 2 test is necessary and, if so, to inform development of a Phase 2 work plan for amendments testing. As presented in the sixth quarterly report (N3B 2019a), the dithionite amendment test at R-42 still requires more time to determine hexavalent chromium reduction capacity imparted to the aquifer. Hexavalent chromium has not yet begun to break through into R-42. Other reduction/oxidation indicators such as iron, manganese, and arsenic either continue to decrease towards pre-amendment levels or have held at steady, but elevated, levels since the October 2018 purge tests. The molasses amendment test at R-28 will similarly require more time to determine reduction capacity and to confirm and analyze recent and ongoing changes in the aquifer biogeochemistry.

In summary, EM-LA requests an extension to the 2019 Appendix B milestone for a Phase 2 Pilot Amendments Testing Work Plan due by June 28, 2019, for good cause as described above. EM-LA will submit a supplemental work plan for the Phase 1 amendments study by September 26, 2019, and follow with an assessment report for the Phase 1 study at a future date.

If you have any questions, please contact Erich Evered at (505) 309-1360 (erich.evered@em-la.doe.gov) or Cheryl Rodriguez at (505) 665-5330 (cheryl.rodriguez@em.doe.gov).

Sincerely,



Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
Los Alamos Field Office

cc (date-stamped letter emailed):
L. King, EPA Region 6, Dallas, TX
R. Martinez, San Ildefonso Pueblo, NM
D. Chavarria, Santa Clara Pueblo, NM
S. Yanicak, NMED
E. Day, N3B
E. Evered, N3B
F. Johns, N3B
D. Katzman, N3B
D. Lindsay, N3B
F. Lockhart, N3B
G. Morgan, N3B
B. Robinson, N3B
S. White, N3B
A. Duran, EM-LA
D. Nickless, EM-LA
D. Rhodes, EM-LA
C. Rodriguez, EM-LA
H. Shen, EM-LA
emla.docs@em.doe.gov
N3B Records
Public Reading Room (EPRR)
PRS Website

EM-LA-40AD-00458