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NEW MEXICO
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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 1, 2019

Doug Hintze, Manager
Environmental Management
Los Alamos Field Office
P.O. Box 1663 MS-M984
Los Alamos, NM 87545

RE: EVALUATION OF CHROMIUM PLUME CONTROL INTERIM MEASURE OPERATIONAL ALTERNATIVES FOR INJECTION WELL CrIN-6
LOS ALAMOS NATIONAL LABORATORY (LANL)
EPA ID #NM0890010515
HWB-18-024

Dear Mr. Hintze:

The New Mexico Environment Department (NMED) has received the United States Department of Energy's (DOE) *Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6* (Report), dated and received on April 26, 2018, and referenced by ADEM-18-0045/EP2018-0060.

The subject well, CrIN-6, was installed as part of the interim measure (IM) for chromium plume control (LANL, 2015; see EP2015-0089). The injection well was drilled and installed between May and July, 2017. The objective of the well was to help control the migration of chromium (VI) contaminated groundwater in the regional aquifer along the northeast-downgradient portion of the plume. CrIN-6 was installed approximately 300 feet downgradient of the depicted 50 parts-per-billion (ppb) concentration margin as depicted in the CrIN-6 drilling work plan (LANL, 2016; see EP2016-0157). NMED notes that an older 2012 groundwater flow and transport model as presented in the 2015 IM work plan suggested that higher chromium concentrations in the range of 250 – 300 ppb may occur in the vicinity of CrIN-6. Aquifer testing at CrIN-6 in July 2017 produced chromium concentrations of approximately 270 ppb, in exceedance of the 50-ppb New Mexico groundwater standard.

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Subsequently, NMED's Groundwater Quality Bureau (GWQB) issued correspondence to DOE and Los Alamos National Laboratory, dated September 1, 2017, emphasizing a concern "that injection of treated groundwater into CrIN-6 has the potential to exacerbate the degradation of groundwaters in violation of DP-1835" and required that prior to full-scale injection into CrIN-1 and CrIN-6 "the Permittees provide additional hydraulic and chemical data on the associated portion of the regional aquifer, and information demonstrating that injection into these wells will not have an adverse impact on the vertical and downgradient horizontal extents of chromium contamination." The Permittees responded to NMED on October 19, 2017 with a proposal to conduct a series of functional and hydraulic tests that would provide additional data that could be used for evaluation purposes with reference to NMED's concern and requirement as stated in the September 1, 2017 letter. On November 21, 2017, NMED approved the Permittees' proposal to conduct the testing and required that an updated model be submitted along with, as quoted,

1) all numerical modeling input parameters, including uncertainties and technical defensibility, along with modeling results (i.e., predictions), that reflect new data inputs, including data inputs from CrIN-1 and CrIN-6, through July 2017;
2) model-based particle tracking analyses and results specific to short-duration hydraulic flooding at CrIN-6; and
3) capture-zone delineations for CrIN-6 by March 30, 2018.

This information had previously been requested by Bruce Yurdin, Director, NMED Water Protection Division, via electronic mail on October 13, 2017. At the first CrIN-6 Evaluation Report pre-submittal meeting, held on January 30, 2018, DOE was again notified in writing by NMED that the above referenced information must be provided in the Report. At the second pre-submittal meeting, held on April 12, 2018, NMED made a verbal request for the information. On March 22, 2018, the Permittees submitted correspondence (LANL, 2018; see ADEM-18-0029) notifying NMED that the Report, originally due on March 30, 2018, would be submitted on April 30, 2018. The Report was received on April 26, 2018.

The Report contains two substantive sections:

- The results from numerical modeling with reference to predictions for five different CrIN-6 operational scenarios as a weighted (Pros – Cons) function of four predetermined metrices.

- A path-forward decision for the CrIN-6 operational use and performance monitoring in the vicinity of CrIN-6 based solely on the numerical modeling results presented in the Report.

DOE concluded that continuous extraction, rather than injection, at CrIN-6 would provide the highest probability that the IM objectives for the eastern part of the plume would be met and recommended conversion of CrIN-6 to an extraction well. On June 6, 2018, NMED issued a preliminary response to the Report approving the conversion of CrIN-6 to an extraction well based on meeting the IM objective of controlling plume migration and reducing the potential to

increase chromium mass migration towards downgradient Los Alamos County production well PM-3. The actions to convert CrIN-6 to an extraction well, identified as CrEX-5, were initiated by DOE in mid-2018 and are ongoing. CrEX-5 is estimated to be operational in June, 2019.

NMED has determined that the Report is deficient because DOE failed to provide the modeling information as requested in the October 13, 2017 email, the November 21, 2017 response, and the January 30, 2018 and April 12, 2018 pre-submittal meetings. Consequently, NMED has not conducted a comprehensive review of the modeling results or the Report as a whole. NMED will not conduct reviews of reports that include recommendations based on modeling results that do not provide supporting documentation on input parameters.

If you have any questions regarding this correspondence, please contact me at 505-476-6035.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

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File: Reading and LANL 2019, TA-05 Response to CrIN-6 Evaluation Report