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ENTERED

February 2, 2004

Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building One
Santa Fe, New Mexico 87505-6303



Reference: Work Assignment No. 06110.210.0002; State of New Mexico Environment Department, Santa Fe, New Mexico; Litigation Support; Reference Lists for Cleanup Levels (Section VIII), Task 2 Deliverable.

Dear Mr. Cobrain:

Enclosed please find the deliverable for the above-referenced work assignment. The deliverable consists of references for the cleanup and screening levels Section VIII of the Corrective Action Order (Order). The text from the Order was broken out by sentence or paragraph, and two or more references, where possible, for the requirements were provided. In addition, a copy of each reference has also been provided.

Section VIII.A.1 Groundwater Cleanup Levels contains a citation for 20.6.2.1101 NMAC. However, the NMAC as accessible on the internet lists 20.6.2.1101 as reserved. As such, this citation should be verified.

There are several documents that have been included as a reference, but no page numbers or hard copies of the documents are provided with this deliverable.

- TechLaw does not have a final copy of the newly revised NMED Soil Screening Guidance. As such, copies of the version we sent as a deliverable to NMED were provided. It is suggested that an entire copy of this document be included as a reference.
- TechLaw also does not have either the "Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites." (NMED, March 2000) or the "Guidance for Assessing Ecological Risks Posed by Radionuclides: Screening-Level Ecological Risk Assessment." (NMED, April 2000). It is suggested that an entire copy of these documents be included as a reference; however, certain pages numbers should be brought out where indicated in the following deliverable.
- TechLaw does not have the latest version of Los Alamos's screening documents. As noted in an email from you dated January 9, 2004, a copy of this new document will

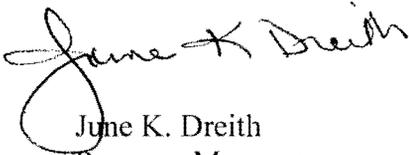


be sent to TechLaw. It is suggested that in the mean time, this document be added as a reference to Section VIIC.

- 20.6.1 NMAC. This regulation was not available on the NMAC internet site.

The document is formatted in Word. The deliverable was emailed to you on February 2, 2004 at David_Cobrain@nmenv.state.nm.us. A formalized hard (paper) copy of this deliverable will be sent via mail. If you have any questions, please call me at (303) 763-7188 or Ms. Paige Walton at (801) 451-2978.

Sincerely,



June K. Dreith
Program Manager

Enclosure

cc: ✓ Mr. John Kieling, NMED
Ms. Paige Walton, TechLaw

TASK 2 DELIVERABLE

**REFERENCE LISTS FOR CLEANUP AND SCREENING LEVELS
(SECTION VIII),
CORRECTIVE ACTION ORDER
LOS ALAMOS NATIONAL LABORATORY**

Litigation Support

Submitted by:

**TechLaw, Inc.
560 Golden Ridge Road
Suite 130
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Submitted to:

**Mr. David Cobrain
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building One
Santa Fe, New Mexico 87505**

In response to:

Work Assignment No. 06110.210

February 2, 2004

VIII. CLEANUP AND SCREENING LEVELS

The Department has established cleanup levels, methods of calculating cleanup goals, and reporting requirements at sites where corrective action is required in response to the release of contaminants to the environment. The cleanup levels are based on excess lifetime cancer risk levels that are consistent with the EPA's National Oil and Hazardous Substance Pollution Contingency Plan, 40 C.F.R. §300.430(e)(2)(i)(A)(2). The EPA recommends a range of 10^{-4} to 10^{-6} lifetime excess cancer risk as acceptable. In general, the Department has selected a target risk level of 10^{-5} for establishing cleanup levels for regulated substances. The Department has generally selected a target hazard index (HI) of one for individual noncarcinogenic chemicals of concern and for contamination involving two or more noncarcinogenic regulated substances. Unless otherwise specifically provided in this Order, the Respondents shall follow the cleanup and screening levels described in this Section (VIII) in implementing the corrective action requirements of this Order. The Respondents shall comply with the adopted and established cleanup and reporting requirements described in this section (VIII).

References:

- 40 CFR §300.430(e)(2)(i)(A)(2), pages 1 and 2; and
- NMED 2003, page 2.

VIII.A GROUNDWATER

VIII.A.1 Groundwater Cleanup Levels

The New Mexico WQCC has established groundwater cleanup standards for selected contaminants (20.6.2.1101, 20.6.2.3103, and 20.6.2.4103 NMAC). The Department has established groundwater cleanup levels that incorporate the WQCC standards and the EPA MCLs for drinking water contaminants. If both a WQCC standard and an MCL have been established for an individual substance, then the lower of the two levels will be considered the cleanup level for that substance. The Department uses the most recent version of the EPA Region VI Human Health Medium-Specific Screening Level (HHMSSL) for tap water as the target cleanup level if either a WQCC standard or an MCL has not been established for a specific substance.

References:

- 20.6.2.1101 NMAC – NOT AVAILABLE:LISTED AS RESERVED
- 20.6.2.3103 NMAC, pages 11 through 13;
- 20.6.2.4103 NMAC, pages 24 and 25; and
- USEPA 2004a, pages 1 through 9 (table lookup).

VIII.A.1.a Groundwater Perchlorate Screening Levels

EPA has established a draft reference dose for perchlorate in drinking water. Currently, the drinking water equivalent level for perchlorate, based on this dose, is one $\mu\text{g}/\text{L}$. The Department has adopted the EPA provisional drinking water reference dose as an interim groundwater screening level. The Department will adopt the EPA drinking water

standard for perchlorate as a groundwater cleanup level when the EPA publishes the new drinking water standard. The Department's drinking water screening level for perchlorate will be updated if EPA revises the reference dose for perchlorate in the future. If the Department determines that corrective action is required, site-specific cleanup levels will be established.

References:

- USEPA 2004c, pages 1 through 3; and
- USEPA 1999, 1 through 4.

VIII.A.2 Groundwater Radionuclide Reporting

The Respondents shall determine the nature and extent of radionuclide contamination and implement groundwater monitoring at sites where radiological contamination is suspected or has been detected. The EPA has published preliminary remediation goals for radionuclides and drinking water maximum contaminant levels for some radionuclides. The Respondents shall report to the Department all radionuclide concentrations in groundwater exceeding background, and, of those, all radionuclide concentrations exceeding the most current version of the EPA preliminary remediation goals or the maximum contaminant level. The Respondents also shall submit to the Department the results of all investigations and testing for the presence of radionuclides.

References:

- USEPA 2004b, page 8; and
- USEPA 2000a, Attachment D, pages D-4 through D-7.

VIII.B SOIL

VIII.B.1 Soil Cleanup Levels

The Department has established soil cleanup levels for 133 elements and compounds. In general, the cleanup levels are based on a target total risk of 10^{-5} for carcinogenic substances and a target HI of one for all noncarcinogenic chemicals. The target soil cleanup levels for selected substances are listed in the Department's Technical Background Document for Development of Soil Screening Levels. The Department uses the most recent version of the EPA Region VI HHMSSL for residential soil as the target cleanup level for compounds designated as "n" (noncarcinogen effects), "max" (maximum concentration), and "sat" (soil saturation concentration), or ten times the EPA Region VI HHMSSL for compounds designated "c" (carcinogen effects) if a Department soil cleanup level has not been established for a regulated substance.

References:

- NMED 2003, Appendix A, Table A-1; and
- USEPA 2004a, pages 1 through 9 (table lookup).

VIII.B.1.a Soil Polychlorinated Biphenyls Cleanup Levels

The Department has established soil cleanup levels for PCBs. Soil cleanup levels for PCBs are discussed in the Department's Position Paper "Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites" (March 2000). The default soil cleanup level for PCBs is one mg/kg.

References:

NMED 2000a, page ?? DO NOT HAVE REFERENCE

VIII.B.1.b Soil Perchlorate Cleanup Levels

Currently, a soil cleanup level for perchlorate has not been established by NMED. NMED will determine a soil cleanup level for perchlorate based on the reference dose, which is anticipated to be established by the EPA. The soil cleanup level for perchlorate will be updated if EPA revises the reference dose for perchlorate in the future.

References:

No references required.

VIII.B.2 Soil Radionuclide Reporting

The Respondents shall determine the nature and extent of radioactive contamination in soil or other solid-phase media and implement monitoring programs at sites where radiological contamination is suspected or has been detected. The Department has not established soil cleanup levels for radionuclides in environmental media; however, the Department requires testing to determine if soil has been affected by radiological contamination. All radionuclides are classified as Class A carcinogens by the EPA, as described in the *April 2001 User's Guide: Radionuclide Carcinogenicity for the HEAST Radionuclide Table* from the EPA Office of Radiation and Indoor Air Radiation Protection Division. Radionuclides have been assigned HEAST slope factors for carcinogenicity and are evaluated by the same methods used for chemical carcinogens. The EPA has developed preliminary remediation goals for radionuclides in soil that correspond to a 10^{-6} excess risk for various scenarios. The Respondents shall report all radionuclide concentrations in soil exceeding background and the most current EPA preliminary remediation goals for the residential and agricultural scenarios to the Department.

References:

- USEPA 2002, updated User's Guide for April 2001 HEAST tables, page 3; and
- USEPA 2000b, Appendix A, pages A-1 through A-12.

Comparison of individual radionuclide concentrations to the EPA preliminary remediation goals assures that the total excess risk from radionuclides will not exceed the

Department total excess risk goal of 10^{-5} . The total risk goal is delineated in Section 1.2.3 *Target Risk and Hazard* of the Department's guidance document NMED-00-008 *Technical Background Document for Development of Soil Screening Levels*. The Respondents shall also submit the results of all investigations and testing for the presence of radionuclides to the Department.

References:

- NMED 2003, page 4; and
- USEPA 2000b, Appendix A, pages A-1 through A-12.

VIII.C SURFACE WATER

VIII.C.1 Surface Water Cleanup Levels

The Respondents shall comply with the surface water quality standards outlined in the Clean Water Act (33 U.S.C.§26), the New Mexico WQCC Regulations (20.6.1 NMAC) and the State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC).

References:

- 33 U.S.C.§26 (see reference list for internet site);
- 20.6.1 NMAC – COULD NOT ACCESS;
- 20.6.4 NMAC, pages 1 through 71.

VIII.C.1.a Surface Water Perchlorate Cleanup Levels

EPA has established a draft reference dose for perchlorate in drinking water of 0.00003 mg/kg-day. Currently, the drinking water equivalent level for perchlorate, based on this dose, is one µg/L. The Department has adopted the EPA provisional drinking water equivalent level as an interim groundwater cleanup level. EPA anticipates publishing a drinking water standard for perchlorate. The Department will adopt the EPA drinking water standard for perchlorate as a surface water cleanup level when EPA publishes the drinking water standard. The Department's drinking water cleanup level for perchlorate will be updated if EPA revises the reference dose for perchlorate in the future.

References:

- USEPA 2004 c, pages 1 through 3; and
- USEPA 1999, pages 1 through 4.

VIII.C.2 Surface Water Radionuclide Reporting

The Respondents shall determine the nature and extent of radionuclide contamination and implement surface water monitoring at sites where radiological contamination is suspected or has been detected. EPA has published preliminary remediation goals for radionuclides in groundwater and drinking water maximum contaminant levels for some radionuclides. The Respondents shall report to the Department all radionuclide concentrations in surface water exceeding background and either the EPA preliminary

remediation goals or maximum contaminant levels. The Respondents also shall submit the results of all investigations and testing for the presence of radionuclides to the Department.

References:

- USEPA 2000b, Attachment D, pages D-4 through D-7; and
- USEPA 2004b, page 8.

VIII.D ECOLOGICAL RISK EVALUATION

Ecological risk at each site shall be evaluated in a manner consistent with the Department's Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment (March 2000) and the Department's Guidance for Assessing Ecological Risks Posed by Radionuclides: Screening-Level Ecological Risk Assessment (April 2000). The Facility ER Project Screening Level Ecological Risk Assessment Methods and database may be substituted for the above guidance provided that written approval for use of this method and database is obtained from the Department prior to implementation.

References:

- NMED 2000a, page?? (DO NOT HAVE REFERENCE);
- NMED 2000b, page?? (DO NOT HAVE REFERENCE); and
- LANL 2002, Searchable database.

VIII.E RISK-BASED VARIANCE FROM CLEANUP STANDARDS OR LEVELS

If attainment of the established cleanup level is demonstrated to be technically infeasible, the Respondents may perform a risk-based evaluation to establish alternative cleanup levels for specific media at individual corrective action units. The risk-based evaluation should be conducted in accordance with the Department's human health risk Position Paper Assessing Human Health Risks Posed by Chemicals: Screening Level Risk Assessment (March 2000) using the equations in the Department's Technical Background Document for Development of Soil Screening Levels. The risk-based evaluation should be developed in accordance with the Department's ecological risk guidance document Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-level Ecological Risk Assessment (March 2000). For groundwater, if the Respondents propose to demonstrate the technical infeasibility of achievement of a groundwater cleanup level that is a WQCC standard, the applicable requirements of the WQCC Regulations, 6.2.4103.E and 4103.F NMAC, shall be followed.

References:

- NMED 2000a, page?? (DO NOT HAVE REFERENCE);
- NMED 2000b, page?? (DO NOT HAVE REFERENCE);
- NMED 2003, pages 4 through 35;
- 6.2.4103E NMAC, pages 24 and 25; and

- 6.2.4103F NMAC, page 25.

References for Section VIII:

Los Alamos National Laboratory (LANL) 2002. ECORisk Database, Release 1.5, ER Package No. 186, Environmental Restoration Project, Los Alamos, New Mexico, September.

New Mexico Environment Department (NMED) 2003. "Technical Background Document for Development of Soil Screening Levels." NMED Hazardous Waste Bureau and Groundwater Quality Bureau Voluntary Remediation Program. October.

NMED 2000a. "Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites." March.

NMED 2000b. "Guidance for Assessing Ecological Risks Posed by Radionuclides: Screening-Level Ecological Risk Assessment." April.

United States Environmental Protection Agency (USEPA), 2004a. EPA Region 6, Human Health Medium-Specific Screening Levels." January.

USEPA, 2004b. Drinking Water Contaminants and MCLs, www.epa.gov/safewater/mcl.html

USEPA, 2004c. Groundwater and Drinking Water: Perchlorate. www.epa.gov/safewater/ccl/perchlorate/perchlorate.html

USEPA 2002. "User's Guide: Radionuclide Carcinogenicity and Radionuclide Table." December. www.epa.gov/radiation/heast/userguide.htm

USEPA 2000a. "Soil Screening Guidance for Radionuclides: Technical Background Document." Office of Radiation and Indoor Air, Office of Solid Waste and Emergency Response. EPA/540-R-00-006, October.

USEPA 2000b. "Soil Screening Guidance for Radionuclides: User's Guide." Office of Radiation and Indoor Air, Office of Solid Waste and Emergency Response. EPA/540-R-00-007, October.

USEPA, 1999. "Interim Assessment Guidance for Perchlorate." Office of Research and Development. June 18.

40 CFR §430. 2004. U.S. Environmental Protection Agency. "Remedial Investigation/Feasibility Study and Selection of Remedy."

20.6.2 NMAC. 2002. State of New Mexico. "New Mexico Water Quality Control Commission Regulations." September 15.

20.6.4 NMAC. 2002. State of New Mexico. "Standards for Interstate and Intrastate Surface Waters." October 11.

30 USC §26. 2004. United State Code. "Water Pollution Prevention and Control."
http://www.access.gpo.gov/uscode/title33/chapter26_.html

REFERENCES FOR SECTION VIII – CLEANUP LEVELS