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Los Alamos
NATIONAL LABORATORY
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APR 2012

Environmental Safety & Health
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National Nuclear Security Administration
Los Alamos Site Office, A316
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Los Alamos, New Mexico 87545
(505) 667-5794/FAX (505) 667-5948

Date: MAR 2 9 2012
Refer To: ENV-DO-12-0012
LAUR: 12-20036

Mr. Jerry Schoeppner, Acting Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2261
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: FINAL PROJECT REPORT, LAND APPLICATION OF TREATED GROUNDWATER FROM MONITORING WELL R-28, DISCHARGE PERMIT DP-1793

On January 13, 2012, the New Mexico Environment Department (NMED) Ground Water Quality Bureau granted Los Alamos National Security, LLC (LANS) temporary permission to discharge treated groundwater from monitoring well R-28 (Enclosure 1). One condition of your agency's approval was the submittal of a final project report:

> *12. A final project report shall be submitted to NMED within 30 days of the final cessation of discharge. The report shall provide the total volume of treated water discharged and the analytical results of the chromium analyses for the project, and identify the locations that received treated water.*

Between February 16, 2012, and February 28, 2012, the Laboratory treated and discharged approximately 408,500 gallons of groundwater from monitoring well R-28. Produced groundwater was treated with ion exchange (IX) to remove chromium to below 50 µg/L. Samples of treated groundwater were collected two times per day and submitted to the Laboratory's Geochemistry & Geomaterials Research Laboratory (GGRL) for total chromium analysis. Following treatment, groundwater was discharged to the land surface at designated land application sites using a 5000-gal. water truck outfitted with a high-pressure sprayer capable of dispersing water up to 100 ft.

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Data collected from treatment and land application activities are summarized in the following enclosures:

- **Enclosure 2**, Table 1, presents a record of the date, volume, and location of each truck load of groundwater land applied under this project.

- **Enclosure 3**, Table 2, presents a record of all pre- and post-treatment analytical results from the sampling of groundwater from monitoring well R-28 for chromium. The concentrations of chromium in the treated groundwater discharged to land application sites were less than the New Mexico Water Quality Control Commission groundwater standard for chromium of 50 µg/L (§20.6.2.3103 NMAC).

- **Enclosure 4** is a map showing the locations receiving treated groundwater.

Please contact Bob Beers at (505) 667-7969 of the Water Quality and RCRA Group (ENV-RCRA) if you have questions.

Sincerely,

Alison M. Dorries
Division Leader
Environmental Protection Division
Los Alamos National Laboratory

Sincerely,

Gene E. Turner
Environmental Permitting Manager
Environmental Projects Office
Los Alamos Site Office
Department of Energy

AMD:GET:BB/kt

Enclosures: a/s

Cy: James Bearzi, NMED/SWQB, Santa Fe, NM, w/enc.
John Kieling, NMED/HWB, Santa Fe, NM, w/enc.
Hai Shen, LASO-EPO, w/enc., A316
Gene E. Turner, LASO-EPO, w/enc., A316
Steve Yanicak, LASO-GOV, w/enc., M894
Carl A. Beard, PADOPS, w/o enc., A102
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Michael Graham, ADEP, w/o enc., M991
Victoria George, REG-DO, w/o enc., M991
Kate Lynnes, REG-DO, w/enc., M991
Ted Ball, MNGRFCT-DO, w/enc., M996
Mike Saladen, ENV-RCRA, w/o enc., K490, (E-File)
Bob Beers, ENV-RCRA, w/enc., K490, (E-File)
Taylor Valdez, w/o enc., K404, (E-File)
Linda Salazar, w/o enc., K491, (E-File)
ENV-RCRA File, (12-0067) w/enc., M704
IRM-RMMSO, (U1200114), w/enc., A150

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Deputy Secretary
JAMES H. DAVIS, Ph.D.
Division Director

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

January 13, 2012

Michael Graham
Associate Director, Environmental Programs
Los Alamos National Laboratory
PO Box 1663, MS-K490
Los Alamos, NM 87544

Chris Cantwell
Associate Director ESH & Q,
Los Alamos National Laboratory
PO Box 1663, MS-K490
Los Alamos, NM 87544

RE: Temporary Permission to Discharge, Treated Well Development and Pump Test Ground Water Discharge at Regional Monitoring Well R-28, DP-1793

Dear Messrs. Graham and Cantwell:

The New Mexico Environment Department has reviewed your application dated December 22, 2011, and request for temporary permission to discharge no more than 400,000 gallons of treated industrial wastewater generated from a proposed regional monitoring well R-28 pump test. Ground water in the area of R-28 has been determined to contain chromium at levels in exceedance the Water Quality Control Commissions (WQCC) standards. The pump test and development water is to be treated for chromium using an ion exchange treatment system. Treated water is proposed to be land applied on approximately 83 acres via water trucks along approximately three miles of dirt road in the vicinity of regional monitoring well R-28. The proposed discharge is located in Mortandad Canyon, approximately three miles southeast of Los Alamos in Section 24, Township 19N, Range 06E, within the boundaries of Los Alamos National Laboratory, Los Alamos County.

Temporary permission to discharge is hereby granted until May 5, 2012, pursuant to Subsection B of 20.6.2.3106 NMAC of the New Mexico Water Quality Control Commission Regulations. This approval is contingent on your discharging and reporting as described in your December 22, 2011 request and upon the following conditions:

1. Water generated from the pump testing of monitoring well R-28 shall be contained and treated to a chromium concentration of less than 0.05 mg/L prior to discharge.
2. The total volume of treated water discharged shall be recorded.
3. Land application of the treated water shall not occur in a watercourse or result in run-off to a watercourse.
4. Land application of the treated water shall not result in ponding.
5. Land application shall be conducted in a manner that minimizes potential impacts to ground water quality and maximizes evaporation.
6. Land application is restricted to daylight hours and a maximum of 10 hours per day.
7. Land application must be supervised at all times.
8. Land application of the treated water is prohibited while precipitation is occurring or during times when the ground is saturated or frozen to the extent that land applied water cannot be absorbed.
9. LANL shall collect representative samples of the treated water twice daily and analyze the samples for chromium using a method with a minimum detection limit below the required discharge limit of 0.05 mg/L. All sample collection, preservation and analysis shall conform to the methods identified in Subsection B of 20.6.2.3107 NMAC of the WQCC Regulations.
10. Should a chromium sample analysis reveal the presence of chromium at a concentration of 0.05 mg/L or greater, discharge of treated water shall immediately cease and NMED shall be notified. Following the implementation of corrective actions to ensure that chromium concentrations of the treated water meet less than 0.05 mg/L and NMED's approval, discharge may resume.
11. All ion exchange treatment vessels used in the treatment system shall be properly disposed of in accordance with all local, state and federal laws and regulations.
12. A final project report shall be submitted to NMED within 30 days of the final cessation of discharge. The report shall provide the total volume of treated water discharged and the analytical results of the chromium analyses for the project, and identify the locations that received the treated water.

Although NMED is granting temporary permission for the proposed discharge, the application which was submitted on December 22, 2011, contains insufficient information to proceed with the issuance of a Discharge Permit. NMED has requested several times in writing (letters dated December 16, 2010 and November 9, 2011) and during several recent teleconference calls (November 16 and December 7, 2011) that LANL submit a single application for a ground water Discharge Permit to cover <u>all</u> potential such temporary on-site treatment and discharge activities associated with contaminated ground water which is intended to be land applied. NMED is seeking supplemental information regarding such discharges in accordance with the required elements under Subsection C of 20.6.2.3106 NMAC. NMED is aware that the timelines and volumes of each event may be variable and therefore recommends using a conservative approach in estimating volumes and locations in the supplemental information. The supplemental information is required to be submitted by NMED **within 60 days of the date of this letter (by February 10, 2012).**

This temporary permission does not relieve you of the responsibility to comply with any other applicable federal, state, and/or local laws and regulations, such as zoning requirements and nuisance ordinances. Also, this approval does not relieve you of liability should your operation result in actual pollution of surface or ground waters.

If you have any questions, please contact Jennifer Fullam of the Ground Water Pollution Prevention Section at 505-827-2909.

Sincerely,

James H. Davis, Ph.D.
Director, Resource Protection Division

JD:JF

cc: Robert Italiano, District Manager, NMED District II
NMED Santa Fe Field Office
County File
James Bearzi, NMED SWQB
Richard Powell, NMED SWQB
John Kieling, NMED HWB
Steven Yanicak, NMED-DOE-Oversight Bureau
Gene Turner, LASO-EO, Los Alamos National Laboratory, A316, Los Alamos, NM 87545
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Bob Beers, ENV-RCRA, Los Alamos National Laboratory, K490, Los Alamos NM, 87545

ENCLOSURE 2

Land Application of Treated Groundwater from Monitoring Well R-28 Pumping Test

Table 1. Dates, Volumes, and Locations of Treated Groundwater Discharges

Date	Number of loads and location of land application (Note: 1 load=4300 gal)				Daily Total Gallons	Cumulative Total Gallons
	R-42	R-45	R-15	Upper Road		
2/16/2012	4	4	0	0	34,400	34,400
2/17/2012	5	5	0	0	43,000	77,400
2/18/2012	5	4	0	0	38,700	116,100
2/19/2012	4	4	0	0	34,400	150,500
2/20/2012	4	4	0	0	34,400	184,900
2/21/2012	7	0	0	4	47,300	232,200
2/22/2012	5	2	0	4	47,300	279,500
2/23/2012	7	2	0	2	47,300	326,800
2/24/2012	4	2	0	2	34,400	361,200
2/27/2012	4	2	0	2	34,400	395,600
2/28/2012	3	0	0	0	12,900	408,500
Totals	**52**	**29**	**0**	**14**	**408,500**	**408,500**

ENCLOSURE 3

Land Application of Treated Groundwater from Monitoring Well R-28 Pumping Test

Table 2. Total Chromium (Cr) Results

Sample #	Date/Time	Total Cr Concentration Well Sample	Total Cr Concentration Ion Exchange 1	Total Cr Concentration Ion Exchange 2	Gallons Treated
1	Feb-15/13:00 hrs	400 ppb	8 ppb	7 ppb	300
2	Feb-16/01:40 hrs	393 ppb	12 ppb	6 ppb	19,300
3	Feb-16/13:15 hrs	398 ppb	8 ppb	5 ppb	37,000
4	Feb-17/00:04 hrs	366 ppb	10 ppb	4 ppb	55,700
5	Feb-17/09:30 hrs	362 ppb	3 ppb	4 ppb	73,600
6	Feb-17/23:35 hrs	375 ppb	2 ppb	4 ppb	98,900
7	Feb-18/08:00 hrs	369 ppb	3 ppb	4 ppb	114,800
8	Feb-18/21:40 hrs	353 ppb	2 ppb	3 ppb	141,000
9	Feb-19/07:20 hrs	350 ppb	2 ppb	3 ppb	157,900
10	Feb-19/20:04 hrs	354 ppb	2 ppb	3 ppb	177,000
11	Feb-20/07:50 hrs	350 ppb	2 ppb	2 ppb	190,400
12	Feb-20/18:30 hrs	370 ppb	2 ppb	2 ppb	210,400
13	Feb-21/07:15 hrs	370 ppb	2 ppb	2 ppb	227,500
14	Feb-21/21:30 hrs	367 ppb	2 ppb	2 ppb	254,900
15	Feb-22/06:30 hrs	366 ppb	2 ppb	2 ppb	273,500
16	Feb-22/22:35 hrs	350 ppb	2 ppb	2 ppb	303,200
17	Feb-23/09:08 hrs	351 ppb	3 ppb	2 ppb	321,000
18	Feb-23/23:24 hrs	336 ppb	3 ppb	2 ppb	347,400
19	Feb-24/08:15 hrs	339 ppb	3 ppb	2 ppb	364,400
20	Feb-24/17:20 hrs	331 ppb	7 ppb	3 ppb	381,700
21	Feb-25/ 03:32 hrs	373 ppb	6 ppb	2 ppb	398,800
22	Feb-25/ 09:13 hrs	312 ppb	6 ppb	2 ppb	408,500

Notes:

1. Pump test began on Feb. 15 at 09:00 hrs.
2. Treatment system began operation on Feb. 15, 2012, at 12:40 hrs.
3. Pump test stopped on Feb. 25, 2012, at 09:00 hrs.
4. Treatment system stopped operation on Feb. 25 at 09:20 hrs.
5. Regulatory Limit for Chromium: 50 ppb (20.6.2.3103 NMAC)

ENCLOSURE 4
LAND APPLICATION SITE MAP