

Los Alamos

NATIONAL LABORATORY

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Date: August 11, 1998
In Reply Refer To: ESH-18/WQ&H:98-0273
Mail Stop: K497
Telephone: (505) 665-1859

Ms. Phyllis Bustamante
Ground Water Protection Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

Ms. Barbara Hoditschek
Surface Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

**SUBJECT: ADDENDUM TO NOTICE OF INTENT TO DISCHARGE (NOI) PURGE
WATER FROM MONITORING WELLS DURING SAMPLING BY EPA
AND NMED**

Dear Ms. Bustamante and Ms. Hoditschek:

Enclosed is an updated list of the surveillance wells that the U.S. Environmental Protection Agency (EPA) and the New Mexico Environment Department (NMED) have indicated that they wish to collect samples from beginning August 17, 1998. These are wells that have not been sampled in several years but are drilled into the same water bearing zone as those listed in the June 6, 1996 NOI submitted to the NMED. No additional potential contaminants of concern are expected to be present. Because these wells have not been sampled on a regular basis, additional purging may be required in order to collect representative samples. Purge water will be discharged onto the surface of the ground in a manner and location where it will not enter a watercourse or Solid Waste Management Unit. The amount of purge water to be discharged to the ground's surface per well is estimated to be less than 50 gallons. All original NOI requirements for surveillance well purging and sampling will be met during this sampling effort.

Please call Harvey Decker (665-2014) or Steve Veenis (665-9735) of the Laboratory's Water Quality and Hydrology Group (ESH-18) if you need any additional information.

Sincerely,



Steven Rae
Group Leader
Water Quality and Hydrology Group



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HSWA LANZ 6/m/s '98

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SR:HD/rj

Enclosures: a/s

Cy: D. Erickson, ESH Division Director, w/o enc., MS K491
G. Saums, NMED/SWQB, w/o enc., Santa Fe, New Mexico
M. Leavett, NMED/GWPB, w/o enc., Santa Fe, New Mexico
J. Kieling, NMED/HRMB, w/enc., Santa Fe, New Mexico
C. Jacquez, ESH-18, w/o enc., MS K497
M. Saladen, ESH-18, w/enc., MS K497
H. Decker, ESH-18, w/enc., MS K497
A. Crowder, ERM Golder, w/enc., MS M327
S. Yanicak, NMED DOE OB, w/enc., MS J993
P. Longmire, EES-5, w/enc., MS J534
A. Pratt, ER/ FPL, w/enc., MS J521
T. George, EM-ER, w/enc., MS M992
S. Veenis, ESH-18, w/enc., MS K497
WQ&H File, w/enc., MS K497
CIC-10, w/enc., MS A150



ADDITIONAL CANYON BOTTOM SURVEILLANCE WELLS

	<u>NORTHING COORD.</u>	<u>EASTING COORD.</u>
<i>LOS ALAMOS CANYON</i>		
LAO-1.8	N 1,172,600	E 495,200
<i>MORTANDAD CANYON</i>		
MCO-2	N 1,770,000	E 485,700
MCO-6.5	N 1,768,600	E 493,800
MCO-6.5B	N 1,768,700	E 493,900
MCWB-6.5D	N 1,768,536.19	E 1,633,878.05
MCWB-6.5E	N 1,768,583.81	E 1,633,833.36
MCWB-7A	N 1,768,551.02	E 1,634,356.62
MT-1	N 1,768,433.7	E 495,019.0
MT-2	N 1,768,484.9	E 495,777.5
MT-3	N 1,768,597.4	E 495,737.9

Los Alamos

NATIONAL LABORATORY

*Los Alamos National Laboratory
Los Alamos, New Mexico 87545*

Date: June 6, 1996

In Reply Refer To: ESH-18/WQ&H:96-0305

Mail Stop: K497

Telephone: (505) 665-1859

Ms. Marcy Leavitt
Ground Water Protection and Remediation Bureau
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87502

Mr. Jim Piatt, Chief
Surface Water Quality Bureau
New Mexico Environment Department
1190 St. Francis Drive
Santa Fe, New Mexico 87502

**SUBJECT: LOS ALAMOS NATIONAL LABORATORY, NOTICE OF INTENT TO
DISCHARGE, PURGING AND SAMPLING OF ENVIRONMENTAL
SURVEILLANCE WELLS**

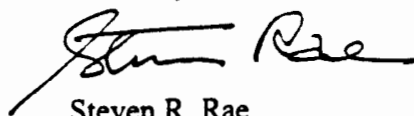
Dear Ms. Leavitt and Mr. Piatt:

Enclosed is a Notice of Intent to Discharge (NOI) for purging and sampling of environmental surveillance wells. This NOI is being submitted to both the Surface Water Quality Bureau and Ground Water Protection and Remediation Bureau of the New Mexico Environment Department (NMED) pursuant to Section 1-201 of the New Mexico Water Quality Control Commission (WQCCC) Regulations. The NOI covers intermittent discharges of 8500 gallons of water, from forty nine (49) ground water monitoring wells located at Los Alamos National Laboratory. This water will result from well purging and sampling during monitoring activities and will be applied onto the surface of the ground in a manner and location whereby it will not enter a watercourse. We would also like to apply this NOI to the purging and sampling of all future observation and test wells drilled at the Laboratory. The enclosed well listing would be updated for that purpose whenever it becomes necessary. Please see the enclosed NOI, and attachments for more details.

Please call Alex Puglisi at 667-4882, or Bruce Gallaher at 667-3040, if you need any additional information regarding the enclosed NOI and the Laboratory's sampling of environmental surveillance wells.

Thank you for your attention in this matter.

Sincerely,



Steven R. Rae
Group Leader
Water Quality and Hydrology Group

SR:AP/vc

Attach: a/s

Cy: A. Puglisi, ESH-18, w/enc., MS K497
A. Pratt, EES-13, w/enc., MS J521
B. Gallaher, ESH-18, w/o enc., MS K497
M. Maes, ESH-18, w/enc., MS K497
M. Saladen, ESH-18, w/o enc., MS K497
H. Decker, NMED/DOE OB, w/enc., MS J993

Cy: (Cont'd.):

K. Zamora. DOE/LAAO, w/o enc.. MS A316
K. Mullen. ESH-18. w/enc.. MS K497
R. Ford-Schmid. NMED/DOE OB. Santa Fe, New Mexico. w/enc.
D. Rogers. ESH-18. w/enc.. MS K497
WQ&H File. w/enc.. MS K497
CRM-4, w/enc.. MS A150

NOTICE OF INTENT TO DISCHARGE

1. **Name and address of the facility making the discharge.**

Los Alamos National Laboratory
Water Quality and Hydrology Group, ESH-18

2. **Location of the discharge (in Township, Range and Section, if available).**

See attachment entitled, "Environmental Surveillance Observation Wells".

3. **The means of discharge (To Lagoon, Flowing Stream, Water Course, Arroyo, Septic Tank, Other).**

Purge water will be discharged onto the surface of the ground in a manner and location where it will not enter a watercourse.

4. **The estimated concentrations of contaminants in the discharge.**

See attachment entitled, "Estimated Concentrations of Contaminants". The wells covered by this NOI are not expected to be contaminated. Any added water used for well will be deionized and free of contaminants. As an added precaution, field screening during the purging activities will be performed prior to discharge to ensure that water discharged is free of contamination. If field screening or professional judgment (for instance, observation of evidence of soil stains, odors, etc.) indicate that gross quantities of contaminants may be in the water, the liquid will not be discharged to the ground, but containerized and treated as suspect hazardous, radioactive, or mixed waste.

5. **The type of operation from which the discharge is derived.**

Purging of observation and test wells prior to sampling. See description on attached document entitled "Well Purging for Routine Annual Environmental Surveillance".

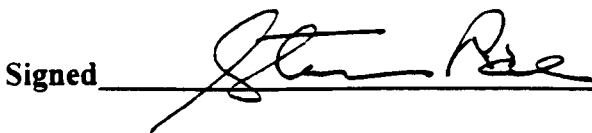
6. **The estimated flow to be discharged per day.**

See attachment (Sheet 1) entitled "Typical Observation and Test Well Purge Calculation".

7. **The estimated depth to ground water (if available).**

Depths to ground water are listed on attachment entitled, "Typical Observation and Test Well Purge Calculation".

Signed



Date

June 6, 1996

ENVIRONMENTAL SURVEILLANCE OBSERVATION WELL LOCATIONS

	LOCATION	
	Northing Coordinate	Easting Coordinate
<i>LOS ALAMOS CANYON</i>		
LAO-C	1775187.8	481913.6
LAO-1	1773894.3	489150.7
LAO-R1	Approx. 100 ft W of LAO-1	Approx. 100 ft W of LAO-1
LAO-R2	Approx. 100 ft W of LAO-1	Approx. 100 ft W of LAO-1
LAO-2	1773033.8	497363.4
LAO-3	1773036.3	497766.3
LAO-3A	Adjacent to LAO-3	Adjacent to LAO-3
LAO-4	1772667.4	500507.7
LAO-4.5	1772025.6	503414.8
LAO-4.5A	1771989.6	503256.0
LAO-4.5B	1771992.5	503268.0
LAO-4.5C	1772014.4	503303.0
LAO-6	1771267.4	505977.9
LAO-6A	1771281.9	505977.3
<i>ACID-PUEBLO CANYON</i>		
APCO-1	1772957.9	508965.3
<i>MORTANDAD CANYON</i>		
MCO-3	1770174.7	487118.3
MCO-4	1769725.8	49097.1
MCO-4B	1769638.1	491784.6
MCO-5	1769475.9	492221.9
MCO-6	1768950.7	493391.1
MCO-6B	1768921.5	493386.3
MCO-7	1768447.8	494273.6
MCO-7A	1768447.2	494259.2
MCO-7.5	1768378.4	495210.6
MCO-8	1768467.2	495776.5
MT-4	1768572.3	496314.5
<i>SANDIA CANYON</i>		
SCO-1	1769440.1	502053.4
SCO-2	1767801.9	507014.9

	LOCATION	
	Northing Coordinate	Easting Coordinate
<i>CANADA DEL BUEY</i>		
CDBO-6	1764698	495965
CDBO-7	1763239	497156
<i>PAJARITO CANYON</i>		
PCO-1	1759928.6	497675.1
PCO-2	1757380.0	501456.2
PCO-3	1755427.3	505844.4
<i>FENCE CANYON</i>		
FCO-1	1751120.0	502168.2
<i>POTRILLO CANYON</i>		
PTCO-1	1753105.4	503902.6
<i>WATER CANYON</i>		
WCO-1	1755007.2	492514.5
WCO-2	1753166.4	496626.2
WCO-3	1750558.3	498968.4
<i>TEST WELLS</i>		
TEST WELL 1	1772014.8	509797.3
TEST WELL 1A	1772003.7	509812.7
TEST WELL 2	1777205.8	493968.9
TEST WELL 2A	1777226.0	493940.6
TEST WELL 3	1773075.9	497483.2
TEST WELL 4	1777618.0	483783.9
TEST WELL 8	1769444.6	492329.6
TEST WELL DT-5A	1754727	485066
TEST WELL DT-9	1751431	488750
TEST WELL DT-10	1754387	488744

ESTIMATED CONCENTRATIONS OF CONTAMINANTS¹

Arsenic (As)	≤0.1 mg/l
Barium (Ba)	≤1.0 mg/l
Cadmium (Cd)	≤0.01 mg/l
Chromium (Cr)	≤0.05 mg/l
Cyanide (CN)	≤0.2 mg/l
Fluoride (F)	≤1.6 mg/l
Lead (Pb)	≤0.05mg/l
Total Mercury (Hg)	≤0.002 mg/l
Nitrate (NO ₃ as N)	≤10.0 mg/l
Selenium (Se)	≤0.05 mg/l
Silver (Ag)	≤0.05 mg/l
Uranium (U)	≤5.0 mg/l
Radioactivity: Combined	
Radium-226 & Radium-228	≤30.0 pCi/l
Benzene	≤0.01 mg/l
Polychlorinated biphenyls (PCBs)	≤0.001 mg/l
Toluene	≤0.75 mg/l
Carbon Tetrachloride	≤0.01 mg/l
1, 2-dichloroethane (EDC)	≤0.01 mg/l
1, 1-dichloroethylene (1, 1-DCE)	≤0.005 mg/l
1, 1, 2, 2-tetrachloroethylene (PCE)	≤0.02 mg/l
1, 1, 2-trichloroethylene (TCE)	≤0.1 mg/l
ethylbenzene	≤0.75 mg/l
total xylenes	≤0.62 mg/l
methylene chloride	≤0.1 mg/l
chloroform	≤0.1 mg/l
1, 1-dichloroethane	≤0.025 mg/l
ethylene dibromide (EDB)	≤0.0001 mg/l
1, 1, 1-trichloroethane	≤0.06 mg/l
1, 1, 2-trichloroethane	≤0.01 mg/l
1, 1, 2, 2-tetrachloroethane	≤0.01 mg/l
vinyl chloride	≤0.001 mg/l
PAHs: total naphthalene plus	
monomethylnaphthalenes	≤0.03 mg/l
benzo-a-pyrene	≤0.0007 mg/l
Aluminum (AL)	≤5.0 mg/l
Boron (B)	≤0.75 mg/l
Cobalt (Co)	≤0.05 mg/l
Molybdenum (Mo)	≤1.0 mg/l
Nickel (Ni)	≤0.2 mg/l
Chloride (Cl)	≤250.0 mg/l
Copper (Cu)	≤1.0 mg/l
Iron (Fe)	≤1.0 mg/l
Manganese (Mn)	≤0.2 mg/l
Phenols	≤0.005 mg/l
Sulfate (SO ₄)	≤600.0 mg/l
Total Dissolved Solids (TDS)	≤1000.0 mg/l
Zinc (Zn)	≤10.0 mg/l
pH	Between 6 and 9

¹ These estimated concentrations apply to the dissolved portion of the contaminants specified with a definition of dissolved being that given in the publication "Methods for Chemical Analysis of Water and Waste of the U.S. Environmental Protection Agency," with the exception that standards for mercury, organic compounds and non-aqueous phase liquids shall apply to the total unfiltered concentrations of the contaminants.

WELL PURGING FOR ROUTINE ANNUAL ENVIRONMENTAL SURVEILLANCE

General Procedure:

Prior to collection of groundwater samples from observation and test wells, all wells should be purged to remove stagnant water in the casing and immediate vicinity to assure a representative sample of the formation water. Normal practice will be to pump approximately three well bore volumes prior to collecting the sample.

The appropriate volume to be purged should be calculated in accord with the Environmental Restoration Program Standard Operating Procedure No. LANL-ER-SOP-06.01, "Purging of Wells for Representative Sampling of Groundwater."

Canyon Alluvium Observation Wells:

These shallow wells are located in or near the stream channels in Los Alamos, Mortandad, and Pajarito Canyons. Total depths range from about 10 to about 70 feet; depths to static water are typically 2 to 50 feet. Typical purge volumes for the alluvial wells range from 10 to 60 gallons. The observation wells used for the routine annual monitoring are equipped with dedicated bladder pumps operated by compressed air. The appropriate purge volume should be determined using a current static water level and tabulated total depths. For wells with transducers, the current level should be available from the electronic data logging system. For wells without transducers, the static level must be measured with a steel tape. The appropriate pumping time should be determined at the time of purging after checking the actual pumping rate. The pumping rate should be monitored periodically during the purging period, and the time recalculated as necessary if there are significant changes. The purge water is discharged to the ground but will be directed away from the working area in a manner and location whereby it will not enter a watercourse.

Main Aquifer and Intermediate Perched Zone Test Wells

These wells were installed by the U.S. Geological Survey at various locations around the Laboratory. The 8 wells penetrating to the main aquifer range in depth from about 650 to 1500 feet; the two in the intermediate perched zone are about 130 to 230 feet deep. Typical purge volumes for the main aquifer wells range from 130 to about 7000 gallons; and for the intermediate perched zone wells are about 120 to 150 gallons. These wells are all equipped with dedicated submersible or reciprocating piston pumps. The appropriate purge volume should be determined using a current static water level and tabulated total depths. These wells are equipped with transducers, and the current levels should be available from the electronic data logging system. The appropriate pumping time should be determined at the time of purging after checking the actual pumping rate. The pumping rate should be monitored periodically during the purging period, and the time recalculated as necessary if there are significant changes. The pumping times range from a few hours to as much as 3 days. The purge water is directed away from the vicinity of the pump by pipes that discharge to the ground in a manner and location whereby it will not enter a watercourse.

Coordination with New Mexico Environment Department

Routine surveillance sampling will often be observed by or include participation by the New Mexico Environment Department. Working contacts in the DOE Oversight Program should be advised of anticipated purging-sampling events for coordination.

TYPICAL OBSERVATION AND TEST WELL PURGE CALCULATION						
	TOTAL	STATIC	WATER	WELBORE	PURGE	
LOS ALAMOS CANYON	DEPTH	W.L.	COLUMN	VOLUME	VOL.(3X)	
LAO-C	12.7	3.9	8.8	5.8	17.4	
LA0-0.7	25.4	10.45	14.95	2.54	7.6	
LA0R-1-	20	17.2	2.8	0.47	1.4	
LA0R-2	19	16.5	2.5	0.42	1.27	
LA0-1	13.6	2.9	10.7	7.08	21.18	
LA0-2	31.26	5.8	25.46	16.8	50.41	
LA0-3	30.86	22.6	8.26	5.45	16.35	
LA0-3A	15.15	8.5	6.65	1.13	3.39	
LA0-4	29.2	12.7	16.5	10.89	32.67	
LA-4.5	24.8	6.8	18	11.88	35.64	
LA0-4.5A	18.5	DRY 95				
LA0-4.5B	34.9	DRY 95				
LA0-4.5C	23.3	DRY 95				
LA0-6	24.2	10.2	14.2	4.4	7.2	
LA0-6A	14.2	10.8	3.4	0.57	1.7	
ACID-PUEBLO CANYON:						
APCO-1	20.1	7.3	12.8	2.17	6.52	
MORTANDAD CANYON:						
MC0-3	11.2	3.9	7.3	4.81	14.45	
MC0-4	10.21	8.2	2.01	1.3	3.9	
MC0-4B	35	27.25	7.75	1.31	3.9	
MC0-5	44.3	22.2	22.1	14.58	43.75	
MC0-6	45.2	35.6	9.6	6.3	19	
MC0-6B	47.7	47.4	0.3	0.05	0.15	
MC0-7	67.3	39.6	27.7	18	54	
MC0-7A	45.9	39.5	6.4	1.08	3.24	
MC0-7.5	60.1	45.3	14.8	9.76	29.3	
MC0-8	OBSTRUCTION IN WELL					
MT-4	74	72.1	1.9	0.3	0.9	
SANDIA CANYON:						
SC0-1	19.3	DRY 95				
SC0-2	18.4	DRY 95				
PAJARITO CANYON:						
PCO-1	16.2	3.9	12.3	2.09	6.27	
PCO-2	9.15	5.15	4	0.68	2.04	
PCO-3	18.9	3.7	15.2	2.58	7.77	

FENCE CANYON:					
FCO-1	29 DRY 95				
POTRILLO CANYON:					
PTCO-1	74 DRY 95				
WATER CANYON:					
WCO-1	35 DRY 95				
WCO-2	38 DRY 95				
WCO-3	14 DRY 95				
TEST WELLS:					
TEST WELL 8	1065	993.11	71.89	179.72	539.1
TEST WELL 3	815	778.24	38.78	149.9	449.9
TEST WELL 2	834	798.35	35.75	89.37268	182
TEST WELL 2A	133	106.03	28.97	67.4	202.2
TEST WELL 1	642	545.98	98.02	240	720
TEST WELL 1A	223	189.96	33.04	49.58	148.68
TEST WELL 4	1205	1174.45	30.55	45.8	137.4
DT-5A	1821	1183.48	637.52	1593	4781
DT-9	1501	1015.94	485.08	2818	8454
DT-10	1408	1096.95	311.05	777.6	2332
CDBO-6	48.34	42.13	6.21	1.05	3.16
CDBO-7	43.12	38.64	4.48	0.76	2.28



GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
Ground Water Protection and Remediation Bureau

Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2918 phone
(505) 827-2966 fax



MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 23, 1996

Steven Rae, Group Leader
Los Alamos National Laboratory
ESH-18, MS K497
Los Alamos, New Mexico 87545

**RE: Response to Notice of Intent to Discharge for Purge Water from
Surveillance Wells at Los Alamos National Laboratory**

Dear Mr. Rae:

The New Mexico Environment Department (NMED) has received your Notice of Intent, dated June 6, 1996, for the discharges of up to 8,500 gallons per day from Los Alamos National Laboratory (LANL) in accordance with Section 1201 of the NM Water Quality Control Commission (WQCC) Regulations. The application satisfies the requirements of Section 1201 of the WQCC Regulations.

Based on the presently available information in your June 6, 1996 letter and additional information provided by Alex Puglisi by telephone October 9, 1996, a discharge plan is not being required for these discharges as long as the discharges are as described.

A discharge plan is not being required because it appears that the discharges conform to numerical ground water standards in WQCC Regulation 3103 and do not contain any toxic pollutants as defined in WQCC Regulation 1101.TT, and therefore are exempt from the discharge plan requirement under WQCC Reg.3105.A.

The exempt discharges are briefly described as follows:

Up to 8,500 gallons of purge water from environmental surveillance wells will be discharged on to the ground surface in locations and by a method that will not allow the purged water to enter a watercourse. Should the results from any analysis of water samples taken from any of the surveillance wells exceed WQCC standards, purge water from that well must be contained and disposed of by a method approved by NMED.

Mr. Rae
October 23, 1996
Page 2

Although a discharge plan is not being required for these discharges, you are not relieved of liability should your operation result in actual pollution of surface or ground waters. Further, this decision by the NMED does not relieve you of your responsibility to comply with any other applicable federal, state, and/or local laws and regulations, such as zoning requirements, plumbing codes and nuisance ordinances.

If at some time in the future you intend to change the amount, the character, or location of your discharge so that it will not be as described, or if observation or monitoring shows that the discharge is not as described, you must file a new request for exemption with the Ground Water Pollution Prevention Section.

If you have any questions, please contact either Phyllis Bustamante of the Ground Water Pollution Prevention Section staff at 827-0166 or Dale Doremus, Program Manager of the Ground Water Pollution Prevention Section at 827-2900.

Sincerely,



Marcy Leavitt, Chief
Ground Water Quality Bureau

ML:PAB/pab

xc: James Bearzi, District Manager, NMED Dist. II
Jim Piatt, SWQB
Steve Yanicak, DOE-OB, White Rock
HRMB
NOI File