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Date: JUN 2 5 2018
Symbol: EPC-DO: 18-233
LA-UR: 18-25189
Locates Action No.: *N/A*

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

Subject: **Transmittal of Nitrate Salt Waste Analytical Results Summary, Los Alamos National Laboratory Hazardous Waste Facility Permit**

Dear Mr. Kieling:

The purpose of this letter is to provide summaries of analytical results from nitrate salt-bearing waste pre-treatment and post-treatment samples. Samples were collected as required by Permit Section 7.6(2) and Section C.3.2.4 of Permit Attachment C (*Waste Analysis Plan*) of the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit. The Permit was issued by the New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB) to the Department of Energy (DOE); Los Alamos National Security, LLC (LANS); and Newport News Nuclear BWXT-Los Alamos, LLC (N3B), collectively the Permittees.

Treatment of remediated nitrate salt-bearing waste at the TA-50, Building 69, Waste Characterization, Reduction, and Repackaging Facility (WCRRF) began on May 18, 2017 and was completed on November 3, 2017. Treatment of unremediated nitrate salt waste began on December 14, 2017 and concluded on March 13, 2018. Samples from six remediate nitrate salt-bearing waste containers and the liquids from two unremediated nitrate salt waste containers were collected prior to treatment at WCRRF, and four samples were collected after waste treatment. All analyses were conducted at an on-site analytical laboratory at the request of the waste generating organization.

Enclosure 1 provides a compilation summary table of all pre-treatment analytical results previously transmitted to NMED-HWB. The summary include copper and nickel concentrations that were previously not included in the original analytical reports from the on-site laboratory. Enclosure 2 includes a summary of post-treatment sample analytical results and compares the values to expected ranges for untreated nitrate salt-bearing waste.

Overall, the data provide a summary of the variability of the nitrate salt-bearing waste streams. As noted in previous result summaries, a complete classified record review of all original bags placed into the nitrate salt waste containers was not conducted for the waste stream. The level of effort that would have been expended would not have changed the overall characterization or the stabilization method of the waste stream because the waste streams are similar. Furthermore, none of the concentrations of specific constituents reported outside of the expected ranges affect the hazardous waste characterization of the waste stream, or have any bearing on the effectiveness of the stabilization treatment process. No additional sampling and analysis should be necessary for this waste stream prior to treatment in the future.

If you have comments or questions regarding this submittal, please contact Arturo Duran (Environmental Management) at (505) 665-7772 or Patrick L. Padilla (LANS) at (505) 667-3932.

Sincerely,

Enrique Torres
Division Leader

Sincerely,

Arturo Q. Duran
Permitting and Compliance Manager

ET/AQD/PLP/LVH:kr

Enclosures:
1) Analytical Results Summary for Pre-Treatment Nitrate Salt-Bearing Waste Samples
2) Analytical Results Summary for Post-Treatment Nitrate Salt-Bearing Waste Samples

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NMED
Hazardous Waste
Bureau

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

Subject: **Transmittal of Nitrate Salt Waste Analytical Results Summary, Los Alamos National Laboratory Hazardous Waste Facility Permit**

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Enclosure 1 provides a compilation summary table of all pre-treatment analytical results previously transmitted to NMED-HWB. The summary include copper and nickel concentrations that were previously not included in the original analytical reports from the on-site laboratory. Enclosure 2 includes a summary of post-treatment sample analytical results and compares the values to expected ranges for untreated nitrate salt-bearing waste.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6/19/18

Enrique Torres
Division Leader
Environmental Protection and Compliance Programs
Los Alamos National Laboratory

Date Signed

6/20/18

Arturo Q. Duran
Permitting Manager
Environmental Management
Los Alamos Field Office
U.S. Department of Energy

Date Signed

ENCLOSURE 1

Analytical Results Summary for Pre-Treatment Nitrate Salt-Bearing Waste Samples

EPC-DO: 18-233

LA-UR-18-25189

Date: JUN 2 5 2018

Analytical Results Summary for Pre-Treatment Nitrate Salt-Bearing Waste Samples

Analyte	Analysis Results								*Expected Range within Waste Stream Pre-treatment*	*Unit*
	68685	**69490**	**69208**	**69553**	**69559**	**94068**	**S844602 (repackaged to 69907 then 70195)**	**S822599 (repackaged to 72672)**		
Nitrate	23.5 wt%	11.4 wt%	33.9 wt%	11.8 wt%	29 wt%	22.9 wt%	30 wt%	36.6 wt%	*20-70*	*%*
Lead	210 µg/g (soluble) + 12.1% (insoluble)	0.73 wt%	1.79 wt%	1.72 wt%	0.235 wt%	1.6 wt%	0.77 wt%	2 wt%	*0-40*	*%*
Water	9.9 wt%	13.9 wt%	14.1 wt%	13.7 wt%	30.4 wt%	14.9 wt%	54.3 wt%	43.4 wt%	*10-30*	*%*
Sodium	11.2 wt%	3.67 wt%	12.22 wt%	3.78 wt%	0.64 wt%	7.1 wt%	10 wt%	4 wt%	*0-25*	*%*
Aluminum	55 ppm	1,900 ppm	910 ppm	1,500 ppm	4,600 ppm	1,200 ppm	3,300 ppm	7,300 ppm	*0-10,000*	*ppm*
Calcium	12 ppm	6,000 ppm	1,250 ppm	1,550 ppm	14,500 ppm	3,300 ppm	790 ppm	6,400 ppm	*0-10,000*	*ppm*
Iron	6 ppm	89 ppm	490 ppm	800 ppm	130 ppm	240 ppm	1,500 ppm	680 ppm	*0-10,000*	*ppm*
Magnesium	125 ppm	7,100 ppm	1,340 ppm	3,450 ppm	22,300 ppm	8,000 ppm	370 ppm	30,000 ppm	*0-50,000*	*ppm*
Potassium	2,345 ppm	3,000 ppm	2,400 ppm	3,200 ppm	17,000 ppm	1,300 ppm	3,400 ppm	36,000 ppm	*0-10,000*	*ppm*
Arsenic	1 ppm	<0.6 ppm	<0.3 ppm	0.28 ppm	0.14 ppm	0.04 ppm	2 ppm	4.4 ppm	*0-1*	*ppm*
Barium	0.5 ppm	<4 ppm	3 ppm	2.7 ppm	16 ppm	1.5 ppm	0.47 ppm	26 ppm	*0-10*	*ppm*
Beryllium	<0.3 ppm	0.3 ppm	<0.6 ppm	1.5 ppm	<0.6 ppm	< 0.6 ppm	1.2 ppm	7.3 ppm	*0-1*	*ppm*
Cadmium	0.02 ppm	1 ppm	2.9 ppm	1.4 ppm	5.6 ppm	2.3 ppm	12 ppm	29 ppm	*0-100*	*ppm*
Chromium	69 ppm	86 ppm	65 ppm	87 ppm	165 ppm	40 ppm	160 ppm	190 ppm	*0-1,000*	*ppm*
Copper	<0.6 ppm	12 ppm	75 ppm	25 ppm	60 ppm	37 ppm	45 ppm	33 ppm	*0-1,000*	*ppm*
Gallium	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured	*0-1,000*	*ppm*
Mercury	0.04 ppm	<0.1 ppm	<0.1 ppm	<0.1 ppm	0.23 ppm	< 0.1 ppm	0.13 ppm	0.17 ppm	*0-1*	*ppm*
Nickel	<0.7 ppm	170 ppm	89 ppm	60 ppm	310 ppm	54 ppm	43 ppm	110 ppm	*0-1,000*	*ppm*
Selenium	<0.4 ppm	0.1 ppm	<0.8 ppm	0.1 ppm	<0.04 ppm	< 0.1 ppm	3.3 ppm	6.4 ppm	*0-1*	*ppm*
Silicon	9 ppm	13 ppm	12 ppm	43 ppm	210 ppm	27 ppm	13 ppm	6.1 ppm	*0-1,000*	*ppm*
Silver	<1 ppm	0.05 ppm	<2 ppm	0.09 ppm	0.02 ppm	0.24 ppm	0.53 ppm	0.6 ppm	*0-1*	*ppm*
Chloride	420 ppm	650 ppm	490 ppm	660 ppm	700 ppm	820 ppm	1,300 ppm	1,400 ppm	*0-1,000*	*ppm*
Fluoride	<800 ppm	68 ppm	150 ppm	510 ppm	4,300 ppm	650 ppm	670 ppm	1,200 ppm	*0-1,000*	*ppm*
Nitrite	24 ppm	41 ppm	1,500 ppm	65 ppm	96 ppm	Not detected	Not detected	Not detected	*0-10,000*	*ppm*
Oxalate	5 wt%	0.03 wt%	0.41 wt%	2.51 wt%	0.35 wt%	1.1 wt%	3.7 wt%	2.2 wt%	*0-1*	*%*
Sulfate	270 ppm	1,800 ppm	580 ppm	1,250 ppm	230 ppm	370 ppm	800 ppm	630 ppm	*0-2,500*	*ppm*
pH of moistened solid	4.5	4.2	5.2	3.6	3.9	2.7	0.02	1.6	*0-7*	*pH*
Organic Matter	31.1 wt%	63.9 wt%	17.7 wt%	53.5 wt%	32.3 wt%	33.3 wt%	Not applicable	Not applicable	*5-90*	*%*

ENCLOSURE 2

Analytical Results Summary for Post-Treatment Nitrate Salt-Bearing Waste Samples

EPC-DO: 18-233

LA-UR-18-25189

Date: JUN 2 5 2018

Analytical Results Summary for Post-Treatment Nitrate Salt-Bearing Waste Samples

Analyte	Analysis Results				*Expected Range within Waste Stream Pre-treatment*	*Unit*
	68553	**68685**	**69559**	**71921**		
Nitrate	2.87%	4.94%	5.44%	9.69%	*20-70*	*%*
Lead	0.05%	0.71%	0.035%	15.50%	*0-40*	*%*
Water	2.40%	21.10%	19.80%	11.30%	*10-30*	*%*
Sodium	1.71%	2.78%	1.34%	4.05%	*0-25*	*%*
Aluminum	9,100 ppm	6,400 ppm	7,000 ppm	6,300 ppm	*0-10,000*	*ppm*
Calcium	7,400 ppm	5,800 ppm	7,900 ppm	6,000 ppm	*0-10,000*	*ppm*
Iron	120 ppm	250 ppm	220 ppm	390 ppm	*0-10,000*	*ppm*
Magnesium	1800 ppm	790 ppm	4900 ppm	300 ppm	*0-50,000*	*ppm*
Potassium	3,100 ppm	2,900 ppm	4,700 ppm	4,600 ppm	*0-10,000*	*ppm*
Arsenic	<0.6 ppm	<0.6 ppm	<0.6 ppm	0.4 ppm	*0-1*	*ppm*
Barium	120 ppm	145 ppm	120 ppm	250 ppm	*0-10*	*ppm*
Beryllium	1.3 ppm	0.2 ppm	<0.6 ppm	6 ppm	*0-1*	*ppm*
Cadmium	1.4 ppm	0.7 ppm	0.9 ppm	0.9 ppm	*0-100*	*ppm*
Chromium	70 ppm	14 ppm	31 ppm	56 ppm	*0-1,000*	*ppm*
Copper	35 ppm	6 ppm	8 ppm	120 ppm	*0-1,000*	*ppm*
Gallium	Not measured	Not measured	Not measured	Not measured	*0-1,000*	*ppm*
Mercury	0.1 ppm	0.09 ppm	<0.1 ppm	0.4 ppm	*0-1*	*ppm*
Nickel	160 ppm	< 1 ppm	56 ppm	17 ppm	*0-1,000*	*ppm*
Selenium	< 0.04 ppm	<0.04 ppm	<0.04 ppm	<0.04 ppm	*0-1*	*ppm*
Silicon	320 ppm	380 ppm	400 ppm	870 ppm	*0-1,000*	*ppm*
Silver	0.03 ppm	0.09 ppm	0.01 ppm	0.4 ppm	*0-1*	*ppm*
Chloride	200 ppm	59 ppm	110 ppm	80 ppm	*0-1,000*	*ppm*
Fluoride	160 ppm	55 ppm	130 ppm	10 ppm	*0-1,000*	*ppm*
Nitrite	470 ppm	40 ppm	Not detected	58 ppm	*0-10,000*	*ppm*
Oxalate	60 ppm	110 ppm	60 ppm	Not detected	*0-1*	*%*
Sulfate	75 ppm	26 ppm	Not detected	Not detected	*0-2,500*	*ppm*
pH of moistened solid	7.4	6.3	6.6	2.7	*0-7*	*pH*
Organic Matter	11.40%	10.60%	8.20%	6.20%	*5-90*	*%*