N3B-Los Alamos
1200 Trinity Drive, Suite 150
Los Alamos, New Mexico 87544
(505) 257-7690

Environmental Management
Los Alamos Field Office
P.O. Box 1663, MS M984
Los Alamos, New Mexico 87545
(505) 257-7950/FAX (505) 606-2132

Date: December 17, 2020
Refer To: N3B-2020-0452

Rick Carpenter, Water Division Director
Sangre de Cristo Water Division
City of Santa Fe
801 West San Mateo Road
Santa Fe, New Mexico 87505

Subject: Los Alamos National Laboratory Site-Wide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2021 Sampling and Analysis Plan

Dear Mr. Carpenter:

The City of Santa Fe Buckman water supply wells have been sampled since 2001 for both general characterization and specific constituents of interest under Los Alamos National Laboratory's Site-Wide Monitoring Program. These wells include Buckman 1, Buckman 6, Buckman 8, SF-3A, and SF-4A.

The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) continue to coordinate with the City of Santa Fe to conduct an annual review of the sampling and analysis plan (SAP) to ensure it is dynamic, strategic, and mutually beneficial.

The enclosed 2021 SAP represents the sampling and analysis commitment for the period from January 1, 2021, to December 31, 2021. The sampling analyses and methods in this SAP are the same as those used for sampling of groundwater monitoring wells under the New Mexico Environment Department-approved Interim Facility-Wide Groundwater Monitoring Plan.

N3B will continue to implement the following practices associated with groundwater data collected from Buckman water supply wells.

1. N3B will provide an automated report of the data upon receipt from the analytical laboratory. Sixty days after the automated report is provided to the City of Santa Fe, the data will be posted to the publicly accessible website Intellus (http://www.intellusnm.com).

2. If a potential contaminant is detected in a Buckman production well, N3B will work with the City of Santa Fe Sangre de Cristo Water Division to evaluate the data and review the need to modify the SAP and/or to collect additional samples to address questions raised by the potential contaminant, as deemed necessary.

The enclosed 2021 SAP is consistent with the previous SAP regarding requirements to sample for new toxic pollutants under 20.6.2 New Mexico Administrative Code. The previous SAP included initial sampling for three per- and polyfluoroalkyl substances (PFAS) constituents at all locations. The enclosed SAP includes one additional round of sampling for these three PFAS constituents at each location in order to create a baseline sample data set. No additional PFAS sampling will be performed after 2021 unless a New Mexico Water Quality Control Commission (NMWQCC) regulatory standard has been exceeded. If NMWQCC regulatory standards for PFAS constituents change in the future, EM-LA/N3B will evaluate the change to the PFAS regulatory standard and determine if additional sampling for PFAS constituents may be required.

If you have any questions, please contact Steve Veenis at (505) 309-1362 (steve.veenis@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Joseph Murdock
Program Manager
Environment, Safety and Health
N3B-Los Alamos

Sincerely,

M Lee Bishop Digitally signed by M Lee Bishop
Date: 2020.12.16 11:20:29 -07'00'

M. Lee Bishop, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

Enclosure(s):
1. Los Alamos National Laboratory Site-Wide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2021 Sampling and Analysis Plan (EM2020-0664)

cc (letter and enclosure[s] emailed):
Laurie King, EPA Region 6, Dallas, TX
Alex Puglisi, City of Santa Fe, NM
Aaron Rand, City of Santa Fe, NM
Bill Schneider, City of Santa Fe, NM
Chris Catechis, NMED-DOE-OB
Steve Yanicak, NMED-DOE-OB
Kevin Pierard, NMED-HWB
Joe Martinez, NMED-DWB
Stephanie Stringer, NMED-RPD
Peter Maggiore, NA-LA
M. Lee Bishop, EM-LA
Arturo Duran, EM-LA
Stephen Hoffman, EM-LA
Kirk D. Lachman, EM-LA

Thomas McCrory, EM-LA
David Nickless, EM-LA
K. Lee Ocker, EM-LA
Aubrey Pierce, EM-LA
Cheryl Rodriguez, EM-LA
Hai Shen, EM-LA
William Alexander, N3B
Emily Day, N3B
Zoe Duran, N3B
Mary Erwin, N3B
Thomas Harrison, N3B
Danny Katzman, N3B
Ashley Kowalewski, N3B
Kim Lebak, N3B
Joseph Legare, N3B
Dana Lindsay, N3B
Pamela Maestas, N3B
Glenn Morgan, N3B
Joseph Murdock, N3B
Steve Veenis, N3B
emla.docs@em.doe.gov
n3brecords@em-la.doe.gov
Public Reading Room (EPRR)
PRS Website

Pamela T. Maestas

From:	Pamela T. Maestas
Sent:	Thursday, December 17, 2020 4:20 PM
To:	'rrcarpenter@santafenm.gov'
Cc:	'PUGLISI, ALEX A.'; 'arrand@santafenm.gov'; 'whschneider@santafenm.gov'; cheryl.rodriguez@em.doe.gov; Regulatory Documentation; Emily M. Day; Ashley Kowalewski; Zoe A. Duran
Subject:	RE: Submittal of LANL Sitewide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2021 SAP
Attachments:	N3B-2020-0452_2021_SF_SAP_121720.pdf
Importance:	High

Please use this version of the submittal. The pdf I sent earlier has the incorrect year in the date of the letter.
My apologies.
Thank you.

From: Pamela T. Maestas <pamela.maestas@em-la.doe.gov>
Sent: Thursday, December 17, 2020 2:52 PM
To: 'rrcarpenter@santafenm.gov' <rrcarpenter@santafenm.gov>
Cc: 'PUGLISI, ALEX A.' <aapuglisi@santafenm.gov>; 'arrand@santafenm.gov' <arrand@santafenm.gov>; 'whschneider@santafenm.gov' <whschneider@santafenm.gov>; cheryl.rodriguez@em.doe.gov; Regulatory Documentation <RegDocs@EM-LA.DOE.GOV>; Emily M. Day <Emily.Day@em-la.doe.gov>; Ashley Kowalewski <Ashley.Kowalewski@em-la.doe.gov>; Zoe A. Duran <zoe.duran@em-la.doe.gov>
Subject: Submittal of LANL Sitewide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2021 SAP

Mr. Carpenter,
Attached for submittal is a pdf of the following:

- Los Alamos National Laboratory Site-Wide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2021 Sampling and Analysis Plan (N3B-2020-0452, letter and enclosure)

Please acknowledge receipt of this submittal by responding to this email.
Let me know if you have any questions.
Thank you.

Pamela T. Maestas
Regulatory Documentation Manager
Newport News Nuclear BWXT-Los Alamos, LLC
c. 505-927-7882
regdocs@em-la.doe.gov

1200 Trinity Drive, Suite 150
Los Alamos, NM 87544

LOS ALAMOS NATIONAL LABORATORY SITE-WIDE MONITORING PROGRAM, CITY OF SANTA FE BUCKMAN WATER SUPPLY WELLS, 2021 SAMPLING AND ANALYSIS PLAN

Table 1
Sampling and Analysis Plan for the City of Santa Fe
Buckman Water Supply Wells for the Period of January 1, 2021, to December 31, 2021

Location	Analytical Suites[a]											
	Metals		Organics				Radionuclides		Inorganics			PFAS
	Metals	Hexavalent chromium	VOCs[b]	SVOCs[c]	PCBs[d]	HEXP[e]	Radionuclides	Low-Level Tritium	General Inorganics	Nitrate+nitrite	Perchlorate	PFAS[f]
Buckman No. 1	Q2, Q4	Q2	Q4	Q4	Q4	Q4	Q2, Q4	Q2, Q4	Q2, Q4	—[g]	—	Q2
Buckman No. 6	Q2, Q4	Q2	Q4	Q4	Q4	Q4	Q2, Q4	Q2, Q4	Q2, Q4	—	—	Q2
Buckman No. 8	Q2, Q4	Q2	Q4	Q4	Q4	Q4	Q2, Q4	Q2, Q4	Q2, Q4	—	—	Q2
SF-3A	—	Q2	—	—	—	—	—	Q2	—	Q2	Q2	Q2
SF-4A	—	Q2	—	—	—	—	—	Q2	—	Q2	Q2	Q2

Notes: Sampling schedule: Quarter 1 (Q1) = Jan–Mar 2021. Q2 = Apr–Jun 2021; Q3 = Jul–Sep 2021; Q4 = Oct–Dec 2021.

Quality control samples will be collected in accordance with Appendix D of the Interim Facility-Wide Groundwater Monitoring Plan for the associated monitoring year.

[a] Table 2 of this sampling and analysis plan presents the analytical suites, sample field preparation, analytical methods, and analytes for the analytical suites specified in Table 1.

[b] VOC = Volatile organic compounds.

[c] SVOC = Semivolatile organic compounds.

[d] PCBs = Polychlorinated biphenyls.

[e] HEXP = High explosives.

[f] PFAS = Per- and polyfluoroalkyl substances: perfluorohexane sulfonic acid (PFHxS), perfluorooctanoic acid (PFOA), and perfluorooctane sulfate (PFOS). No additional PFAS sampling will be performed after 2021 unless a NMWQCC regulatory standard has been exceeded.

[g] — =This analytical suite is not scheduled to be collected for this location.

Table 2
Analytes, Field Preparation, and Analytical Methods Used by
U.S. Environmental Protection Agency Contract Laboratory Program Laboratories for Samples
Collected under the Sampling and Analysis Plan for the City of Santa Fe Water Supply Wells

Analytical Suite	Field Preparation	Analytical Method	Analytes
Metals	Unfiltered	SW-846:7470 series	Mercury
		SW-846:6020 series	Aluminum, selenium
	Filtered	SM:A2340	Hardness
		SW-846:6010 series	Barium, beryllium, boron, calcium, iron, magnesium, manganese, potassium, silicon dioxide, sodium, strontium, tin, vanadium, zinc
		SW-846:6020 series	Aluminum, antimony, arsenic, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium
		SW-846:7470 series	Mercury
Hexavalent Chromium	Unfiltered	IC-ICPMS:Metals_Cr(VI)	Hexavalent chromium
VOCs[a]	Unfiltered	SW-846:8260 series	See Table 3
SVOCs[b]	Unfiltered	SW-846:8270 series	See Table 3: includes prometon (pesticide) and sulfolane (solvent)
PCBs[c]	Unfiltered	SW-846:8082 series	See Table 3
HEXP[d]	Unfiltered	SW-846:8330 series	See Table 3
PFAS	Unfiltered	EPA 537.1 Modified	Perfluorohexane sulfonic acid (PFHxS), perfluorooctane sulfate (PFOS), perfluorooctanoic acid (PFOA)
Radionuclides	Unfiltered	EPA:900	Gross alpha, gross beta
		EPA:901.1	Cesium-137, cobalt-60, neptunium-237, potassium-40, sodium-22
		EPA:905.0	Strontium-90
		HASL-300:AM-241	Americium-241
		HASL-300:ISOPU	Plutonium-238, plutonium-239/240
		HASL-300:ISOU	Uranium-234, uranium-235/236, uranium-238
		EPA:903.1	Radium-226
		EPA:904	Radium-228
		Generic: radium by calculation	Radium-226+228
Low-level tritium	Unfiltered	Generic: low-level tritium	Tritium

Table 2 (continued)

Analytical Suite	Field Preparation	Analytical Method	Analytes
General inorganics	Filtered	EPA:120.1	Specific conductance
		EPA:150.1	Acidity or alkalinity of a solution
		EPA:160.1	Total dissolved solids
		SW-846:9056 series	Bromide, chloride, fluoride, sulfate
		EPA:310.1	Alkalinity-CO_3, alkalinity-CO_3+HCO_3
		SW-846:6850 series	Perchlorate
		EPA:350.1	Ammonia as nitrogen
		EPA:353.2	Nitrate-nitrite as nitrogen
		EPA:365.4	Total phosphate as phosphorus
	Unfiltered	EPA:351.2	Total Kjeldahl nitrogen
		SW-846:9060	Total organic carbon
		SW-846:9012 series	Cyanide (Total)

[a] VOCs = Volatile organic compounds.

[b] SVOCs = Semivolatile organic compounds.

[c] PCBs = Polychlorinated biphenyls.

[d] HEXP = High explosives.

Table 3
Analytical Methods Used
by Contract Laboratories for Samples Collected
under the Sampling and Analysis Plan for the City of Santa Fe Water Supply Wells

Symbol or CAS[a] No.	Analyte
Analytical Suite: VOCs[b] **Analytical Method: SW-846:8260**	
67-64-1	Acetone
75-05-8	Acetonitrile
107-02-8	Acrolein
107-13-1	Acrylonitrile
71-43-2	Benzene
108-86-1	Bromobenzene
74-97-5	Bromochloromethane
75-27-4	Bromodichloromethane
75-25-2	Bromoform
74-83-9	Bromomethane
71-36-3	Butanol[1-]
78-93-3	Butanone[2-]
104-51-8	Butylbenzene[n-]
135-98-8	Butylbenzene[sec-]
98-06-6	Butylbenzene[tert-]
75-15-0	Carbon Disulfide
56-23-5	Carbon Tetrachloride
126-99-8	Chloro-1,3-butadiene[2-]
107-05-1	Chloro-1-propene[3-]
108-90-7	Chlorobenzene
124-48-1	Chlorodibromomethane
75-00-3	Chloroethane
67-66-3	Chloroform
74-87-3	Chloromethane
95-49-8	Chlorotoluene[2-]
106-43-4	Chlorotoluene[4-]
96-12-8	Dibromo-3-chloropropane[1,2-]
106-93-4	Dibromoethane[1,2-]
74-95-3	Dibromomethane
95-50-1	Dichlorobenzene[1,2-]
541-73-1	Dichlorobenzene[1,3-]
106-46-7	Dichlorobenzene[1,4-]
75-71-8	Dichlorodifluoromethane
75-34-3	Dichloroethane[1,1-]

Table 3 (continued)

Symbol or CAS[a] No.	Analyte
107-06-2	Dichloroethane[1,2-]
75-35-4	Dichloroethene[1,1-]
540-59-0	Dichloroethene[cis/trans-1,2-]
156-59-2	Dichloroethene[cis-1,2-]
156-60-5	Dichloroethene[trans-1,2-]
78-87-5	Dichloropropane[1,2-]
142-28-9	Dichloropropane[1,3-]
594-20-7	Dichloropropane[2,2-]
563-58-6	Dichloropropene[1,1-]
10061-01-5	Dichloropropene[cis-1,3-]
10061-02-6	Dichloropropene[trans-1,3-]
60-29-7	Diethyl ether
123-91-1	Dioxane[1,4-]
97-63-2	Ethyl methacrylate
100-41-4	Ethylbenzene
87-68-3	Hexachlorobutadiene
591-78-6	Hexanone[2-]
74-88-4	Iodomethane
78-83-1	Isobutyl alcohol
98-82-8	Isopropylbenzene
99-87-6	Isopropyltoluene[4-]
126-98-7	Methacrylonitrile
80-62-6	Methyl Methacrylate
1634-04-4	Methyl tert-butyl ether
108-10-1	Methyl-2-pentanone[4-]
75-09-2	Methylene chloride
91-20-3	Naphthalene
107-12-0	Propionitrile
103-65-1	Propylbenzene[1-]
100-42-5	Styrene
630-20-6	Tetrachloroethane[1,1,1,2-]
79-34-5	Tetrachloroethane[1,1,2,2-]
127-18-4	Tetrachloroethene
108-88-3	Toluene
76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]
87-61-6	Trichlorobenzene[1,2,3-]
120-82-1	Trichlorobenzene[1,2,4-]
71-55-6	Trichloroethane[1,1,1-]
79-00-5	Trichloroethane[1,1,2-]
79-01-6	Trichloroethene

Table 3 (continued)

Symbol or CAS[a] No.	Analyte
75-69-4	Trichlorofluoromethane
96-18-4	Trichloropropane[1,2,3-]
95-63-6	Trimethylbenzene[1,2,4-]
108-67-8	Trimethylbenzene[1,3,5-]
108-05-4	Vinyl acetate
75-01-4	Vinyl chloride
95-47-6	Xylene[1,2-]
Xylene[m+p]	Xylene[1,3-]+xylene[1,4-]
Analytical Suite: SVOCs[c] **Analytical Method: SW-846:8270**	
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
62-53-3	Aniline
120-12-7	Anthracene
1912-24-9	Atrazine
92-87-5	Benzidine
56-55-3	Benzo(a)anthracene
50-32-8	Benzo(a)pyrene
205-99-2	Benzo(b)fluoranthene
191-24-2	Benzo(g,h,i)perylene
207-08-9	Benzo(k)fluoranthene
65-85-0	Benzoic Acid
100-51-6	Benzyl Alcohol
111-91-1	Bis(2-chloroethoxy)methane
111-44-4	Bis(2-chloroethyl)ether
117-81-7	Bis(2-ethylhexyl)phthalate
101-55-3	Bromophenyl-phenylether[4-]
85-68-7	Butylbenzylphthalate
59-50-7	Chloro-3-methylphenol[4-]
106-47-8	Chloroaniline[4-]
91-58-7	Chloronaphthalene[2-]
95-57-8	Chlorophenol[2-]
7005-72-3	Chlorophenyl-phenyl[4-] Ether
218-01-9	Chrysene
53-70-3	Dibenz(a,h)anthracene
132-64-9	Dibenzofuran
95-50-1	Dichlorobenzene[1,2-]
541-73-1	Dichlorobenzene[1,3-]
106-46-7	Dichlorobenzene[1,4-]
91-94-1	Dichlorobenzidine[3,3'-]

Table 3 (continued)

Symbol or CAS[a] No.	Analyte
120-83-2	Dichlorophenol[2,4-]
84-66-2	Diethylphthalate
131-11-3	Dimethyl phthalate
105-67-9	Dimethylphenol[2,4-]
84-74-2	Di-n-butylphthalate
534-52-1	Dinitro-2-methylphenol[4,6-]
51-28-5	Dinitrophenol[2,4-]
121-14-2	Dinitrotoluene[2,4-]
606-20-2	Dinitrotoluene[2,6-]
117-84-0	Di-n-octylphthalate
88-85-7	Dinoseb
123-91-1	Dioxane[1,4-]
122-66-7	Diphenylhydrazine[1,2]
122-39-4	Diphenylamine
206-44-0	Fluoranthene
86-73-7	Fluorene
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
193-39-5	Indeno(1,2,3-cd)pyrene
78-59-1	Isophorone
90-12-0	Methylnaphthalene[1-]
91-57-6	Methylnaphthalene[2-]
95-48-7	Methylphenol[2-]
65794-96-9	Methylphenol[3-,4-]
91-20-3	Naphthalene
88-74-4	Nitroaniline[2-]
99-09-2	Nitroaniline[3-]
100-01-6	Nitroaniline[4-]
98-95-3	Nitrobenzene
88-75-5	Nitrophenol[2-]
100-02-7	Nitrophenol[4-]
55-18-5	Nitrosodiethylamine[N-]
62-75-9	Nitrosodimethylamine[N-]
924-16-3	Nitroso-di-n-butylamine[N-]
621-64-7	Nitroso-di-n-propylamine[N-]
930-55-2	Nitrosopyrrolidine[N-]
108-60-1	Oxybis(1-chloropropane)[2,2'-]
608-93-5	Pentachlorobenzene

Table 3 (continued)

Symbol or CAS[a] No.	Analyte
87-86-5	Pentachlorophenol
85-01-8	Phenanthrene
108-95-2	Phenol
1610-18-0	Prometon
129-00-0	Pyrene
110-86-1	Pyridine
126-33-0	Sulfolane
95-94-3	Tetrachlorobenzene[1,2,4,5]
58-90-2	Tetrachlorophenol[2,3,4,6-]
120-82-1	Trichlorobenzene[1,2,4-]
95-95-4	Trichlorophenol[2,4,5-]
88-06-2	Trichlorophenol[2,4,6-]
Analytical Suite: PCBs[d] **Analytical Method: SW-846:8082**	
12674-11-2	Aroclor-1016
11104-28-2	Aroclor-1221
11141-16-5	Aroclor-1232
53469-21-9	Aroclor-1242
12672-29-6	Aroclor-1248
11097-69-1	Aroclor-1254
11096-82-5	Aroclor-1260
37324-23-5	Aroclor-1262
Analytical Suite: HEXP[e] **Analytical Method: SW-846:8330B**	
6629-29-4	2,4-Diamino-6-nitrotoluene
59229-75-3	2,6-Diamino-4-nitrotoluene
618-87-1	3,5-Dinitroaniline
19406-51-0	Amino-2,6-dinitrotoluene[4-]
35572-78-2	Amino-4,6-dinitrotoluene[2-]
99-65-0	Dinitrobenzene[1,3-]
121-14-2	Dinitrotoluene[2,4-]
606-20-2	Dinitrotoluene[2,6-]
2691-41-0	HMX[f]
98-95-3	Nitrobenzene
88-72-2	Nitrotoluene[2-]
99-08-1	Nitrotoluene[3-]
99-99-0	Nitrotoluene[4-]
78-11-5	PETN[g]
121-82-4	RDX[h]
3058-38-6	TATB[i]

Table 3 (continued)

Symbol or CAS[a] No.	Analyte
479-45-8	Tetryl
99-35-4	Trinitrobenzene[1,3,5-]
118-96-7	Trinitrotoluene[2,4,6-]
78-30-8	Tris (o-cresyl) phosphate

Note: Table 3 is referenced in Table 2 and serves to complete the analyte lists in Table 2.

[a] CAS = Chemical Abstracts Service.

[b] VOCs = Volatile organic compounds.

[c] SVOCs = Semivolatile organic compounds.

[d] PCBs = Polychlorinated biphenyls.

[e] HEXP = High explosives.

[f] HMX = Her Majesty's Explosive.

[g] PETN = Pentaerythritol tetranitrate.

[h] RDX = Royal Demolition Explosive.

[i] TATB = Triaminotrinitrobenzene.