



**Department of Energy**  
 Carlsbad Field Office  
 P. O. Box 3090  
 Carlsbad, New Mexico 88221

 ENTERED

MAR 10 2005

Mr. Steve Zappe, WIPP Project Leader  
 Hazardous Waste Permits Program  
 Hazardous and Radioactive Materials Bureau  
 New Mexico Environment Department  
 2905 E. Rodeo Park Drive, Bldg. 1  
 Santa Fe, NM 87505



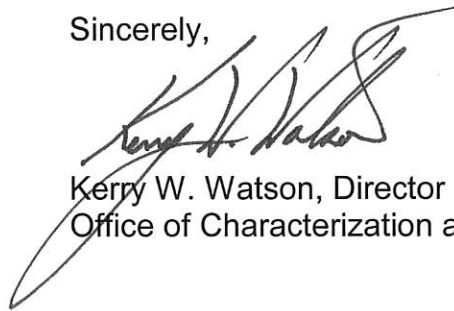
Subject: Transmittal of Approved AMWTP BNINW218 – Lot 2, BNFL-5232-RPT-TRUW-31, Revision 0C

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Advanced Mixed Waste Treatment Project (AMWTP), BNINW218-Lot 2, BNFL-5232-RPT-TRUW-31, Revision 0C. Enclosed is a copy of the approved report as required by Section B-4(b)(1) of the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit No. NM4890139088- TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,



Kerry W. Watson, Director  
 Office of Characterization and Transportation

Enclosure

cc: w/o enclosure  
 J. Bearzi, NMED \*ED  
 J. Kieling, NMED ED  
 C. Walker, TechLaw ED  
 M. Strum, WTS ED  
 R. Chavez, WRES ED  
 R. Reeves, WRES ED  
 L. Price, L&M ED  
 W. Ledford, CTAC ED  
 WIPP Operating Record  
 CBFO M&RC

\*ED denotes Electronic Distribution

CBFO:OCT:KWW:VW:05-0783:UFC:5822

050320





BNFL-5232-RPT-TRUW-31  
Revision 0C

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**IDAHO NATIONAL LABORATORY**

**ADVANCED MIXED WASTE TREATMENT FACILITY**

**Sampling Report for BNINW218 - Lot 2**

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**BNFL INC.**

**March 2005**

Approved by:

  
TRU Programs Site Project Manager

3,10,05  
Date



### *Purpose*

The purpose of this sampling report is to provide the solid sampling characterization data from the core sampling of randomly selected containers from Lot 2 of waste stream BNINW218 in accordance with Section B-1a of the WAP.

### *Introduction*

Containers that make up BNINW218 Lot 2 are listed in Attachment 2 of this report. Containers can be 55-gallon drums or 85-gallon drum overpacks.

Containers on the list include:

- Containers of BNINW218 waste that the AMWTP received at turnover and that are not eligible to be shipped as part of Lot 1. (Date 7/24/01)

### *Selection Process*

For Lot 2, six drums were randomly selected. Attachment 1 presents the Lot 2 evaluation for the required number of samples. The largest calculated sample size selection and associated analyte pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA hazardous waste number (HWN) is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold). Since there is no intent to establish that a constituent is below regulatory threshold, five samples were sufficient but six were selected. The six drums were selected using a simple random selection method in accordance with MP-TRUW-8.25, RCRA Statistical Sampling. This sampling was conducted by AMWTP using procedure INST-OI-16, Drum Coring Operations, Rev. 16. BNFL, Inc. memorandum EPS-065-2004, Sampling Plan for BNINW218 – Lot 2, presents the evaluation for the required number of samples, the random generation verification, the list of cored containers and the comprehensive list of containers (Lot 2).

Ten random numbers were generated to ensure that there were a sufficient number of random numbers generated to select five containers. The first six random numbers on the list were selected for coring. Table 1 identifies the selection order attributed to the random number, the specific random number and associated AMWTP container ID and the historical container identification number. The first six containers were processed in accordance with procedure INST-OI-16, Drum Coring Operation. Selected coring drums 2, 3, and 4 were removed from their overpack containers and cored under a new container number. The overpack container number is listed in parenthesis.

**Table 1. Lot 2 Containers Randomly Selected for Coring.**

Selection Order	Random Number	AMWTP Container ID	Historical ID
1	195	10012150	IDRF074704114
2	165	(10011711) 10026313	IDRFOP4701485
3	240	(10012641) 10026315	IDRFOP4701231
4	118	(10010766) 10026314	IDRFOP4701222
5	175	10011771	IDRF074702778
6	181	10011828	IDRF074701826
7	288	10013215	IDRF74704358A
8	112	10010702	IDRFOP4701201
9	2	10001853	IDRFOP4705007
10	216	10012197	IDRF074702320

The random numbers documented on the Random Number Generator form correlate to the Lot 2 population of 316 containers (See Attachment 2). The containers presented on Attachment 2 are also listed in succession of assigned AMWTP numbers.

**Data Results**

The analytical data collected for BNINW218, Lot 2 are presented in Tables 2 through 4B. Table 5 lists the correlation of container number to solids analysis data packages. The data are used as the required ("n") samples to determine the mean concentrations and the upper confidence levels (UCL<sub>90</sub>) for toxicity characteristic compounds and to assign and/or confirm hazardous waste codes for the BNINW218 waste stream.

Chromium and mercury UCL<sub>90</sub> results were above the Regulatory Threshold Limits (RTLs) for metals associated with toxicity characteristic HWNs (Table 2). There were no UCL<sub>90</sub> solid sampling results above the PRQLs for volatile organic compounds (VOCs) (Table 3A) or semi-volatile organic compounds (SVOCs) (Table 4A).

Lot 2 analyses included evaluation of SVOC target compound bis(2-ethylhexyl)phthalate and fluoranthene (Table 4A). Bis(2-ethylhexyl)phthalate was added as the result of the tentatively identified compound evaluation of BNINW218, Lot 1 data. Fluoranthene is not a target analyte for this waste stream. Fluoranthene was added to the laboratory target analyte list as the result of the tentatively identified compound evaluation of Lot 1 data for BNINW216. Therefore, fluoranthene is reported as a target analyte rather than a tentatively identified compound (TIC). SVOC data from these compounds did not result in the assignment of additional hazardous waste numbers to the Building 374 Sludge.



ADVANCED MIXED WASTE TREATMENT FACILITY  
Sampling Report For BNINW218 Lot 2

Table 4B presents the solid sampling total SVOC TIC data. Phenol was detected in 55% of the solid samples analyzed to date. Phenol is listed on 40 CFR 261, Appendix VIII. The source of the TIC could not be attributed to packaging materials or established as present due to radiolysis. The TIC (phenol) was added to the SVOC target analyte list for this waste stream.

In conclusion, the originally assigned HWNs from BNINW218 Waste Stream Profile Form are retained. The HWN assignment for this waste stream includes D006, D007, D008, D009, D010, D011, and D032, and listed codes F001, F002, F005, F006, F007, and F009, which were determined from Acceptable Knowledge or confirmed, as applicable, by results of Lot 1 and Lot 2 analysis of the solid sampling. The results of the Lot 2 sampling and data analysis did not assign additional HWNs.



ADVANCED MIXED WASTE TREATMENT FACILITY  
Sampling Report For BNINW218 Lot 2

Table 2. Metals Summary Data. BNINW218 Lot 2

ANALYTE	# Samples	# Samples above MDL <sup>a</sup>	Transformation Used <sup>f</sup>	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL <sub>90</sub> (mg/kg)	Transformed RTL	RTL <sup>d</sup> (mg/kg)	EPA Code <sup>h</sup>
Arsenic <sup>b</sup>	6	6	Natural log	2.17	1.29	0.615	1.66	4.61	100	N/A
Barium <sup>b</sup>	6	6	Natural log	3.66	3.31	0.225	3.45	7.60	2000	N/A
Cadmium <sup>b</sup>	6	6	Natural log	2.25	1.48	0.594	1.84	3.00	20	D006 <sup>c</sup>
Chromium	6	6	None	360	253	82.6	303	-	100	D007 <sup>c</sup>
Lead <sup>b</sup>	6	6	Natural log	4.33	4.05	0.202	4.17	4.61	100	D008 <sup>c</sup>
Mercury <sup>b</sup>	6	6	Natural log	2.89	1.88	0.660	2.28	1.39	4	D009 <sup>c</sup>
Selenium <sup>b</sup>	6	3	Natural log	1.36	-0.171	1.08	0.481	3.00	20	D010 <sup>c</sup>
Silver <sup>b</sup>	6	6	Natural log	5.14	4.26	0.538	4.58	4.61	100	D011 <sup>c</sup>
Antimony <sup>b</sup>	6	6	Natural log	2.40	1.08	0.661	1.48	4.61	100	N/A <sup>g</sup>
Beryllium	6	6	None	64.0	35.2	17.5	45.7	-	100	N/A <sup>g</sup>
Nickel <sup>b</sup>	6	6	Natural log	8.59	5.85	1.45	6.72	4.61	100	N/A <sup>g</sup>
Thallium	6	6	None	3.50	2.82	0.578	3.16	-	100	N/A <sup>g</sup>
Vanadium <sup>b</sup>	6	6	Natural log	3.76	2.76	0.510	3.06	4.61	100	N/A <sup>g</sup>
Zinc <sup>b</sup>	6	6	Natural log	7.70	6.81	0.625	7.19	4.61	100	N/A <sup>g</sup>

- a. When a measurement is reported as below detection, one-half the analysis method detection limit (MDL) is used. Note that the MDL for a given analyte may vary from sample to sample.
- b. The maximum, mean, SD, UCL<sub>90</sub>, and RTL are presented as transformed values.
- c. These HWNs were assigned to the waste stream in BNINW218 Lot 1 based upon acceptable knowledge and have been retained for this waste stream even if the data did not confirm the presence above the RTL.
- d. To determine whether a HWN should be added, the UCL<sub>90</sub> is compared against the appropriate limit. For toxicity characteristic constituents that do not have a PRQL in the permit, the TC limit (mg/L) multiplied by 20 is used to calculate the RTL. RTLs correspond to the analyte PRQL for analytes that are not characteristic hazardous waste constituents.
- e. The HWNs assigned to these analytes were established by AK in BNINW 218 Lot 1 and confirmed by characterization for the waste stream profile and are retained for this lot.
- f. The Shapiro-Wilk test for normality was applied to data prior to determination of the maximum, mean, SD, UCL<sub>90</sub>, and RTL.
- g. There are no associated toxicity characteristic HWNs with these analytes.
- h. Spent stripping, cleaning, and plating operations in which cyanides and chromium were used are included in this waste stream; therefore, EPA HWNs F006, F007 and F009 are applied based on AK.

Did the data verify the Acceptable Knowledge? Yes X No       

If no, describe the basis for assigning the EPA Hazardous Waste Code: N/A

Statistics Performed by: Jamara Selus Date: 3/10/05  
Signature



**ADVANCED MIXED WASTE TREATMENT FACILITY**  
 Sampling Report For BNINW218 Lot 2

**Table 3A. Total VOC Summary Data. BNINW218 Lot 2**

ANALYTE	# Samples	# Samples above MDL <sup>a, h</sup>	Transformation Used <sup>e</sup>	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL <sub>90</sub> (mg/kg)	Transformed PRQL	PRQL (mg/kg) <sup>c</sup>	EPA Code
1,1-Dichloroethylene <sup>d</sup>	6	2	Natural log	-0.968	-2.02	0.603	-1.65	2.30	10	N/A
(trans)-1,2-Dichloroethylene	6	0	None	0.100	0.093	0.005	b	-	10	N/A
1,1,1-Trichloroethane <sup>d</sup>	6	4	Natural log	3.61	0.581	2.81	2.28	2.30	10	F001 <sup>c</sup>
1,1,2,2-Tetrachloroethane	6	0	None	0.100	0.093	0.005	b	-	10	N/A
1,1,2-Trichloro-1,2,2-Trifluoroethane <sup>d</sup>	6	5	Natural log	3.78	0.709	1.91	1.86	2.30	10	F001 <sup>c</sup>
1,1,2-Trichloroethane	6	0	None	0.100	0.093	0.005	b	-	10	N/A
1,2-Dichloroethane	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Acetone <sup>f</sup>	6	0	None	0.600	0.560	0.042	b	-	100	N/A
Benzene	6	0	None	0.100	0.093	0.005	b	-	10	F005 <sup>c</sup>
Bromoform	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Butanol	6	5	None	13.0	8.16	4.52	10.9	-	100	N/A
Carbon disulfide	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Carbon Tetrachloride	6	0	None	0.195	0.185	0.008	b	-	10	F001 <sup>c</sup>
Chlorobenzene	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Chloroform	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Ethyl benzene	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Ethyl ether <sup>f</sup>	6	0	None	1.15	1.09	0.065	b	-	100	N/A
Isobutanol <sup>f</sup>	6	0	None	0.600	0.560	0.042	b	-	100	N/A
Methanol <sup>f</sup>	6	3	None	16.0	6.61	6.28	10.9	-	100	N/A
Methyl ethyl ketone <sup>f</sup>	6	0	None	1.15	1.09	0.065	b	-	100	N/A
Methylene chloride <sup>d</sup>	6	2	Natural log	-0.288	-1.86	0.877	-1.33	2.30	10	F002 <sup>b</sup>
Pyridine <sup>e</sup>	6	0	None	1.15	1.09	0.065	b	-	100	N/A
o-Xylene	6	0	None	0.100	0.093	0.005	b	-	10	N/A
m&p-Xylene	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Tetrachloroethylene <sup>d</sup>	6	2	Natural log	-1.56	-2.13	0.384	-1.89	2.30	10	F001 <sup>c</sup>
Toluene <sup>d</sup>	6	6	Natural log	0.182	-0.626	0.618	-0.254	2.30	10	F005 <sup>c</sup>
Trichloroethylene <sup>d</sup>	6	3	Natural log	0.470	-1.28	1.39	-0.445	2.30	10	F001 <sup>c</sup>
Trichlorofluoromethane	6	0	None	0.100	0.093	0.005	b	-	10	N/A
Vinyl chloride	6	0	None	0.100	0.093	0.005	b	-	4	N/A

- a. When a measurement is reported as below detection, one-half the analysis MDL is used. Note that the MDL for a given analyte may vary from sample to sample.
- b. The mean and standard deviation presented are the mean and standard deviation of the method detection limits (after dividing by 2) since all measurements are below detection. Therefore, since measurements are below detection, the upper 90% confidence limit will not be calculated.
- c. To determine whether a HWN should be added, the UCL<sub>90</sub> is compared against the appropriate limit. For toxicity characteristic wastes, the TC limit expressed as the RTL is used, if compounds do not have a PRQL in the permit. For listed wastes, the PRQL is used.
- d. The maximum, mean, SD, UCL<sub>90</sub> and PRQL are presented as transformed values.
- e. The HWNs were assigned to the waste stream in BNINW218 Lot 1 based upon acceptable knowledge and have been retained for this waste stream even if the data did not confirm the presence above the PRQL.
- f. Some of the samples were diluted due to radionuclide content and were below the MDL. Diluted samples below the MDL are not used to calculate the maximum, mean, standard deviation and upper 90% confidence limit. See Attachment 1 for number of diluted, non-detect samples.
- g. The Shapiro-Wilk test for normality was applied to data prior to determination of the maximum, mean, SD, UCL<sub>90</sub>, and PRQL.
- h. Distribution testing is not performed on 2 or fewer applicable samples; therefore, a normal distribution is assumed.







ADVANCED MIXED WASTE TREATMENT FACILITY  
Sampling Report For BNINW218 Lot 2

Table 3B. Total VOC summary data – tentatively identified compounds. BNINW218 Lot 2

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	# Containers in Lot	% Detected	# Containers in Waste Stream to Date	% Detected
None	N/A	N/A	N/A	N/A	N/A	N/A

Did the Data verify the Acceptable Knowledge? Yes X No     

If no, describe the basis for assigning the EPA Hazardous Waste Codes: N/A

Verification of % Detected Calculation     N/A     Date:                       
Signature



ADVANCED MIXED WASTE TREATMENT FACILITY  
 Sampling Report For BNINW218 Lot 2

Table 4A. Total SVOC summary data.

BNINW218 Lot 2

Analyte	# Samples	# Samples Above MDL <sup>a, c</sup>	Transformation Used <sup>e</sup>	Maximum (mg/kg)	Mean (mg/kg)	SD (mg/kg)	UCL <sub>90</sub> (mg/kg)	Transformed PRQL	PRQL (mg/kg) <sup>c</sup>	EPA code
1,2-Dichlorobenzene <sup>h</sup> (ortho-Dichlorobenzene)	6	0	None	0.100	0.100	0.000	b	-	40	N/A
1,4-Dichlorobenzene <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
2,4-Dinitrophenol <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
2,4-Dinitrotoluene <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	2.6	N/A
Bis(2-Ethylhexyl) phthalate <sup>f</sup>	6	5	None	17.0	7.93	6.20	11.7	-	40	N/A
Fluoranthene <sup>g, h</sup>	6	2	None	4.00	2.43	2.23	7.27	-	40	N/A
Hexachlorobenzene <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	2.6	D032 <sup>d</sup>
Hexachloroethane <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
2-Methylphenol (o-Cresol) <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
3&4-Methylphenol (m&p-Cresol) <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
Nitrobenzene <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A
Pentachlorophenol <sup>h</sup>	6	0	None	0.100	0.100	0.000	b	-	40	N/A

- a. When a measurement is reported as below detection, one-half the analysis MDL is used. Note that the MDL for a given analyte may vary from sample to sample.
- b. The mean and standard deviation presented are the mean and standard deviation of the method detection limits (after dividing by 2) since all measurements are below detection. Therefore, since measurements are below detection, the upper 90% confidence limit will not be calculated.
- c. Distribution testing is not performed on 2 or fewer applicable samples; therefore, a normal distribution is assumed.
- d. This HWN was assigned to waste stream BNINW218 Lot 1 based upon AK, even if the data do not confirm UCL<sub>90</sub> above the PRQL, and have been retained for this waste stream Lot 2.
- e. The Shapiro-Wilk test for normality was applied to data prior to determination of the maximum, mean, SD, UCL<sub>90</sub>, and PRQL.
- f. Bis(2-Ethylhexyl) phthalate was detected as a TIC in BNINW218 Lot 1 in over 25% of the samples analyzed and was added to the target analyte list as required by the WAP. The CAS # for bis(2-Ethylhexyl) phthalate is 117-81-7.
- g. Fluoranthene was detected as a TIC in BNINW216 Lot 1 in over 25% of the samples analyzed and was added to the laboratory target analyte list. This analyte would normally be reported as a TIC for this waste stream but was analyzed by the laboratory as a target analyte; therefore, it is reported as a target analyte. The CAS # for fluoranthene is 206-44-0;
- h. Some of the samples were diluted and were below the MDL (see Attachment 1). Diluted samples below the MDL are not used to calculate the maximum, mean, standard deviation and upper 90% confidence limit.

Did the data verify the Acceptable Knowledge?

Yes  X  No

If no, describe the basis for assigning the EPA Hazardous Waste Code: N/A

Statistics Performed by: Samara E. Jones Date: 3/10/05  
 Signature



ADVANCED MIXED WASTE TREATMENT FACILITY  
Sampling Report For BNINW218 Lot 2

Table 4B. Total SVOC Summary data -- TICs. BNINW218 Lot 2

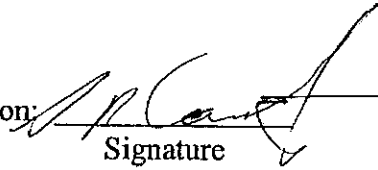
Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	# Containers in Lot	% Detected	# Containers in Waste Stream to Date	% Detected
Phenol	4.0	6	6	100	11	55

NOTE: Phenol is listed on 40 CFR 261, Appendix VIII and is detected in greater than 25% of the SVOC solid samples to date. Phenol will be added to the SVOC solids target analyte list. The CAS# for phenol is 108-95-2.

Did the data verify the Acceptable Knowledge? Yes  No

If no, describe the basis for assigning the EPA Hazardous Waste Code: N/A

Verification of % Detected Calculation:



Signature

Date: 3.10.05



ADVANCED MIXED WASTE TREATMENT FACILITY  
Sampling Report For BNINW218 Lot 2

Table 5. Correlation of Container Identification Numbers to Data Package BNINW218 Lot2

Container Number	Headspace Gas Data Package	RTR Data Package	RA Data Package	Visual Examination Data Package	Solid Sampling Data Package	Solid Analysis Data Packages
10011771	N/A	N/A	N/A	N/A	SSC04-00011	ALD04026M, ALD04023N, ALD04020S, ALD04022V
10011828	N/A	N/A	N/A	N/A	SSC04-00011	ALD04026M, ALD04023N, ALD04020S, ALD04022V
10012150	N/A	N/A	N/A	N/A	SSC04-00010	ALD04026M, ALD04023N, ALD04020S, ALD04022V
10026313	N/A	N/A	N/A	N/A	SSC04-00011	ALD04026M, ALD04023N, ALD04020S, ALD04022V
10026314	N/A	N/A	N/A	N/A	SSC04-00010	ALD04026M, ALD04023N, ALD04020S, ALD04022V
10026315	N/A	N/A	N/A	N/A	SSC04-00011	ALD04026M, ALD04023N, ALD04020S, ALD04022V

NOTE: These containers are being used for solid sampling data only in this Sampling Report. RTR or VE, HSG and RA will be performed on these containers and validated prior to certification for shipment to WIPP.



ADVANCED MIXED WASTE TREATMENT FACILITY  
 Sampling Report For BNINW218 Lot 2

Attachment 1

Evaluation of required number of samples BNINW218 Lot 2

ANALYTE	Number of Samples <sup>i</sup>	Number of Samples above MDL <sup>e,j</sup>	Transformation Used <sup>f</sup>	Maximum (mg/kg)	Mean (mg/kg)	Standard Deviation (mg/kg)	Upper 90% confidence limit (mg/kg)	Transformed PRQL	PRQL (mg/kg)	Required number of samples <sup>g</sup>	Comments <sup>h</sup>
1,1,1-Trichloroethane	6	4	Natural log	3.61	0.581	2.81	2.28	2.30	10	6	Code F001 applied <sup>b,c</sup>
1,1,2,2-Tetrachloroethane	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
1,1,2-Trichloro-1,2,2-trifluoroethane	6	5	Natural log	3.78	0.709	1.91	1.86	2.30	10	5	Code F001 applied <sup>b</sup>
1,1,2-Trichloroethane	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
1,1-Dichloroethene (1,1-Dichloroethylene)	6	2	Natural log	-0.968	-2.02	0.603	-1.65	2.30	10	5	Code not required to be applied <sup>k</sup>
1,2-Dichlorobenzene (o-Dichlorobenzene)	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
1,2-Dichloroethane	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
1,4-Dichlorobenzene (p-Dichlorobenzene)	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
2,4-Dinitrophenol	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
2,4-Dinitrotoluene	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	2.6		No samples above MDL
2-Methylphenol (o-Cresol)	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
3&4-Methylphenol (m&p-Cresol)	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
Acetone	6 (1)	0	None	0.600	0.560	0.042	-- <sup>a</sup>	--	100		No samples above MDL
Antimony	6	6	Natural log	2.40	1.08	0.661	1.48	4.61	100	5	No associated hazardous waste code <sup>d</sup>
Arsenic	6	6	Natural log	2.17	1.29	0.615	1.66	4.61	100	5	Code not required to be applied <sup>k</sup>
Barium	6	6	Natural log	3.66	3.31	0.225	3.45	7.60	2000	5	Code not required to be applied <sup>k</sup>
Benzene	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		Code F005 applied <sup>b</sup>
Beryllium	6	6	None	64.0	35.2	17.5	45.7	--	100	5	No associated hazardous waste code <sup>d</sup>
bis(2-Ethylhexyl)phthalate	6	5	None	17.0	7.93	6.20	11.7	--	40	5	Code not required to be applied <sup>k</sup>
Bromoform	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Butanol	6	5	None	13.0	8.16	4.52	10.9	--	100	5	Code not required to be applied <sup>k</sup>



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ANALYTE	Number of Samples <sup>1</sup>	Number of Samples above MDL <sup>e,j</sup>	Transformation Used <sup>f</sup>	Maximum (mg/kg)	Mean (mg/kg)	Standard Deviation (mg/kg)	Upper 90% confidence limit (mg/kg)	Transformed PRQL	PRQL (mg/kg)	Required number of samples <sup>g</sup>	Comments <sup>b</sup>
Cadmium	6	6	Natural log	2.25	1.48	0.594	1.84	3.00	20	5	Code D006 applied <sup>b</sup>
Carbon Disulfide	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Carbon Tetrachloride	6	0	None	0.195	0.185	0.008	-- <sup>a</sup>	--	10		Code F001 applied <sup>b</sup>
Chlorobenzene	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Chloroform	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Chromium	6	6	None	360	253	82.6	303	--	100	5	Code D007 applied <sup>b</sup>
Ethyl ether	6 (1)	0	None	1.15	1.09	0.065	-- <sup>a</sup>	--	100		No samples above MDL
Ethylbenzene	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Fluoranthene	6 (4)	2	None	4.00	2.43	2.23	7.27	--	40	5	Code not required to be applied <sup>k</sup>
Hexachlorobenzene	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	2.6		Code D032 applied <sup>b</sup>
Hexachloroethane	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
Isobutanol	6 (1)	0	None	0.600	0.560	0.042	-- <sup>a</sup>	--	100		No samples above MDL
Lead	6	6	Natural log	4.33	4.05	0.202	4.17	4.61	100	5	Code D008 applied <sup>b</sup>
m&p-Xylene	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Mercury	6	6	Natural log	2.89	1.88	0.660	2.28	1.39	4.0	5	Code D009 applied <sup>b</sup>
Methanol	6 (1)	3	None	16.0	6.61	6.28	10.9	--	100	5	Code not required to be applied <sup>k</sup>
Methyl ethyl ketone	6 (1)	0	None	1.15	1.09	0.065	-- <sup>a</sup>	--	100		No samples above MDL
Methylene Chloride	6	2	Natural log	-0.288	-1.86	0.877	-1.33	2.30	10	5	Code F002 applied <sup>b</sup>
Nickel	6	6	Natural log	8.59	5.85	1.45	6.72	4.61	100	5	No associated hazardous waste code <sup>d</sup>
Nitrobenzene	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
o-Xylene	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Pentachlorophenol	6 (4)	0	None	0.100	0.100	0.000	-- <sup>a</sup>	--	40		No samples above MDL
Pyridine	6 (1)	0	None	1.15	1.09	0.065	-- <sup>a</sup>	--	100		No samples above MDL
Selenium	6	3	Natural log	1.36	-0.171	1.08	0.481	3.00	20	5	Code D010 applied <sup>b</sup>
Silver	6	6	Natural log	5.14	4.26	0.538	4.58	4.61	100	6	Code D011 applied <sup>b,c</sup>



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ANALYTE	Number of Samples <sup>l</sup>	Number of Samples above MDL <sup>e, f</sup>	Transformation Used <sup>f</sup>	Maximum (mg/kg)	Mean (mg/kg)	Standard Deviation (mg/kg)	Upper 90% confidence limit (mg/kg)	Transformed PRQL	PRQL (mg/kg)	Required number of samples <sup>g</sup>	Comments <sup>h</sup>
Tetrachloroethene (Tetrachloroethylene)	6	2	Natural log	-1.56	-2.13	0.384	-1.89	2.30	10	5	Code F001 applied <sup>b</sup>
Thallium	6	6	None	3.50	2.82	0.578	3.16	--	100	5	No associated hazardous waste code <sup>d</sup>
Toluene	6	6	Natural log	0.182	-0.626	0.618	-0.254	2.30	10	5	Code F005 applied <sup>b</sup>
trans-1,2-Dichloroethene (trans-1,2-Dichloroethylene)	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Trichloroethene (Trichloroethylene)	6	3	Natural log	0.470	-1.28	1.39	-0.445	2.30	10	5	Code F001 applied <sup>b</sup>
Trichlorofluoromethane	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	10		No samples above MDL
Vanadium	6	6	Natural log	3.76	2.76	0.510	3.06	4.61	100	5	No associated hazardous waste code <sup>d</sup>
Vinyl Chloride	6	0	None	0.100	0.093	0.005	-- <sup>a</sup>	--	4		No samples above MDL
Zinc	6	6	Natural log	7.70	6.81	0.625	7.19	4.61	100	5	No associated hazardous waste code <sup>d</sup>

**NOTE:**

- The mean and standard deviation presented are the mean and standard deviation of the method detection limits (after dividing by 2) for all measurements that are below detection. Therefore, since measurements are below detection, the upper 90% confidence limit will not be calculated.
- The HWN was assigned to the waste steam BNINW218 Lot 1 based on AK, even if the data do not confirm UCL<sub>90</sub> above the PRQL, and are retained for this waste stream Lot 2.
- The required number "n" of samples pertains only to toxicity characteristic or listed waste analytes and only to those analytes where the associated EPA HWN is not assigned (i.e., it only applies to those cases where a site intends to establish that the constituent is below the regulatory threshold and the associated EPA HWN does not apply). Since the silver HWN D011 and the 1,1,1-trichloroethane associated HWN F001/F002 are accepted and applied, silver and 1,1,1-trichloroethane are not used in determining "n" for the waste stream.
- If there is no hazardous waste code associated with an analyte, then that analyte will not be used to define the number of required samples.
- If there are no samples above the MDL for a given analyte, then that analyte will not be used to define the number of required samples.
- If a transformation is applied to the distribution to improve normality, prior to calculating the mean and variance, then this same transformation is applied to the PRQL / RTL for that analyte.
- If the calculated sample size is less than 5, then the initial estimated number of required samples is set to the program defined minimum of 5.
- Spent stripping, cleaning, and plating solutions from electroplating operations in which cyanides and chromium were used are included in this waste stream, therefore EPA HWNs F006, F007 and F009 are applied based on AK.
- Diluted samples below the MDL are not used to calculate the maximum, mean, standard deviation and upper 90% confidence limit. The number of diluted samples below the MDL are noted as (#) in the Number of samples column.
- Distribution testing is not performed on 2 or fewer applicable samples; therefore, a normal distribution is assumed.
- The HWN for characteristic or listed hazardous waste is not assigned based on AK and the upper 90% confidence limits are below the RTL or PRQL.



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ATTACHMENT 2

Container List BNINW218 Lot 2

Sequential Number	AMWTP ID	Historical Container ID
1	10001844	IDRFOP4702026
2	10001853	IDRFOP4705007
3	10002131	IDRFOP4701990
4	10006437	IDRF074705496
5	10006438	IDRF074703133
6	10006439	IDRF074705518
7	10006440	IDRF074704045
8	10006441	IDRF074704013
9	10006442	IDRF074703754
10	10006443	IDRF074704024
11	10006451	IDRF074700905
12	10006747	IDRF074705656
13	10006748	IDRF074705552
14	10006749	IDRF074705436
15	10006750	IDRF074705505
16	10006764	IDRF074703437
17	10006775	IDRF074702461
18	10006878	IDRF074702296
19	10006880	IDRF074703855
20	10007000	IDRF074701035
21	10007001	IDRF074700509
22	10007003	IDRF074701012
23	10007015	IDRF074701137
24	10007016	IDRF074701138
25	10007054	IDRF074700163
26	10007055	IDRF074701694
27	10007056	IDRF074704353
28	10007066	IDRF074703597
29	10007068	IDRF074704472
30	10007070	IDRF074706799
31	10007071	IDRF074706996
32	10007072	IDRF074705846
33	10007073	IDRF074706310
34	10007074	IDRF074704211
35	10007075	IDRF074705466
36	10007081	IDRF074702375
37	10007083	IDRF074703263
38	10007090	IDRFRD4706919
39	10007101	IDRFRD4704996
40	10007104	IDRF074706370

Sequential Number	AMWTP ID	Historical Container ID
41	10007131	IDRF074704724
42	10007146	IDRF074705163
43	10007147	IDRF074705082
44	10007148	IDRF074704143
45	10007152	IDRF074703370
46	10007155	IDRF074704722
47	10007157	IDRF074706766
48	10007171	IDRF074705221
49	10007172	IDRF074703751
50	10007173	IDRF074705361
51	10007227	IDRF074705099
52	10007228	IDRF074705549
53	10007229	IDRF074705542
54	10007230	IDRF074704780
55	10007464	IDRF074706786
56	10007533	IDRF074002657
57	10007536	IDRF074707086
58	10007542	IDRF074703991
59	10007546	IDRF074705322
60	10007555	IDRF074704025
61	10007559	IDRFRD9504639
62	10007560	IDRF074701062
63	10007563	IDRF074705144
64	10008099	IDRFOP4703849
65	10008106	IDRFOP4704070
66	10008234	IDRFOP2500429
67	10008335	IDRFOP4704559
68	10008404	IDRFOP4701284
69	10008438	IDRFOP4704893
70	10008452	IDRFOP4704990
71	10008455	IDRFOP4705167
72	10008459	IDRFOP4703841
73	10008461	IDRFOP4702110
74	10009448	IDRF074701520
75	10009468	IDRF074702499
76	10009476	IDRF074704159
77	10009508	IDRFOP4705930
78	10009523	IDRFOP4706856
79	10009526	IDRFOP4704557
80	10009533	IDRFOP4705920





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Sequential Number	AMWTP ID	Historical Container ID
81	10009556	IDRFOP4703007
82	10009602	IDRF074702325
83	10009929	IDRFOP4701873
84	10009942	IDRFOP4703853
85	10009943	IDRFOP4702020
86	10009958	IDRFOP4700726
87	10009962	IDRFOP4702422
88	10009963	IDRFOP4700663
89	10009966	IDRFOP4702855
90	10009969	IDRFOP4700727
91	10010068	IDRFOP4700991
92	10010073	IDRFOP4700912
93	10010082	IDRFOP4705849
94	10010083	IDRFOP4700695
95	10010084	IDRFOP4704701
96	10010128	IDRF074700284
97	10010137	IDRF074701794
98	10010153	IDRF074702380
99	10010159	IDRF074700923
100	10010380	IDRFOP4700794
101	10010411	IDRF074703456
102	10010413	IDRF074702354
103	10010414	IDRF074704221
104	10010425	IDRF074700200
105	10010513	IDRF074702543
106	10010525	IDRF074702674
107	10010596	IDRFOP4702732
108	10010597	IDRFOP4703288
109	10010600	IDRFOP4707074
110	10010684	IDRFOP4702064
111	10010691	IDRFOP4702719
112	10010702	IDRFOP4701201
113	10010711	IDRFOP4702983
114	10010748	IDRFOP4700324
115	10010749	IDRFOP4701309
116	10010751	IDRFOP4701808
117	10010758	IDRFOP1904232
118	10010766	IDRFOP4701222
119	10010767	IDRFOP4702619
120	10010769	IDRFOP4702586
121	10010887	IDRF074706078
122	10010906	IDRF074703490

Sequential Number	AMWTP ID	Historical Container ID
123	10010909	IDRF074705187
124	10010912	IDRF074701460
125	10010913	IDRF074702761
126	10010915	IDRF074700422
127	10010916	IDRF074705079
128	10010918	IDRF074702560
129	10010925	IDRF074703744
130	10010927	IDRF074702665
131	10010928	IDRF074703126
132	10010929	IDRF074704629
133	10010930	IDRF074703333
134	10010933	IDRF074704719
135	10010935	IDRF074703977
136	10010936	IDRF074703009
137	10010937	IDRF074703003
138	10010939	IDRF074704160
139	10010940	IDRF074704388
140	10010941	IDRF074701426
141	10010943	IDRF074703034
142	10010944	IDRF074702558
143	10010948	IDRF074702816
144	10010951	IDRF074704241
145	10010953	IDRF074702800
146	10010954	IDRF074702803
147	10010958	IDRF074700911
148	10010966	IDRF074706914
149	10010969	IDRF074701264
150	10010972	IDRF074701502
151	10010976	IDRF074702179
152	10010977	IDRF074703475
153	10010979	IDRF074703014
154	10010981	IDRF074702944
155	10010982	IDRF074705725
156	10010985	IDRF074704301
157	10011001	IDRFOP4705010
158	10011002	IDRFOP4703089
159	10011022	IDRFOP4703885
160	10011030	IDRFOP4705528
161	10011043	IDRFOP4700275
162	10011052	IDRFOP4704805
163	10011182	IDRFOP4700811
164	10011242	IDRF074702379



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Sequential Number	AMWTP ID	Historical Container ID
165	10011711	IDRFOP4701485
166	10011712	IDRFOP4701440
167	10011738	IDRFOP4703874
168	10011757	IDRF074704166
169	10011759	IDRF074702939
170	10011766	IDRF074701365
171	10011767	IDRF074703016
172	10011768	IDRF074703472
173	10011769	IDRF074704263
174	10011770	IDRF074704294
175	10011771	IDRF074702778
176	10011772	IDRF074703211
177	10011773	IDRF074701468
178	10011774	IDRF074701404
179	10011776	IDRF074702799
180	10011778	IDRF074702399
181	10011828	IDRF074701826
182	10011829	IDRF074705776
183	10011926	IDRFOP4705854
184	10011969	IDRFOP4701896
185	10011971	IDRFOP4704128
186	10011994	IDRFOP4701075
187	10012053	IDRF074703040
188	10012052	IDRF074704272
189	10012057	IDRF074701234
190	10012114	IDRF074702508
191	10012125	IDRF074701779
192	10012133	IDRF074703038
193	10012146	IDRF074703011
194	10012148	IDRF074704246
195	10012150	IDRF074704114
196	10012151	IDRF074702792
197	10012152	IDRF074702033
198	10012154	IDRF074704110
199	10012155	IDRF074704112
200	10012156	IDRF074704438
201	10012157	IDRF074703908
202	10012159	IDRF074702840
203	10012160	IDRF074701242
204	10012161	IDRF074702197
205	10012164	IDRF074701083
206	10012167	IDRF074703776
207	10012169	IDRF074704345

Sequential Number	AMWTP ID	Historical Container ID
208	10012170	IDRF074703008
209	10012171	IDRF074704261
210	10012177	IDRF074701799
211	10012180	IDRF074702913
212	10012185	IDRF074701614
213	10012187	IDRF074702152
214	10012189	IDRF074700774
215	10012191	IDRF074701645
216	10012197	IDRF074702320
217	10012198	IDRF074702886
218	10012200	IDRF074702290
219	10012201	IDRF074702680
220	10012203	IDRF074701211
221	10012204	IDRF074702890
222	10012205	IDRF074700767
223	10012208	IDRF074702205
224	10012211	IDRF074704564
225	10012224	IDRF074703534
226	10012452	IDRFOP4701798
227	10012506	IDRFOP4701255
228	10012518	IDRFOP4700600
229	10012554	IDRFOP4700179
230	10012607	IDRFOP4700276
231	10012608	IDRFOP4700344
232	10012613	IDRFOP4701816
233	10012618	IDRFOP4701325
234	10012619	IDRFOP4701094
235	10012622	IDRFOP4701809
236	10012624	IDRFOP4701405
237	10012625	IDRFOP4701371
238	10012627	IDRFOP4701803
239	10012640	IDRFOP4701807
240	10012641	IDRFOP4701231
241	10012648	IDRFOP4700685
242	10012649	IDRFOP4701024
243	10012653	IDRFOP4701749
244	10012705	IDRF074700856
245	10012718	IDRFOP4704628
246	10012725	IDRFOP4702018
247	10012758	IDRFOP4702410
248	10012774	IDRFOP4701010
249	10012777	IDRFOP4700230
250	10012781	IDRFOP4704652

