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MARTIN MARIETTA

**Environmental
Surveillance of the
U.S. Department of Energy
Oak Ridge Reservation
and Surrounding
Environs During 1987**

Volume 2: DATA PRESENTATION

OPERATED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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**ENVIRONMENTAL SURVEILLANCE OF THE
U.S. DEPARTMENT OF ENERGY OAK RIDGE
RESERVATION AND SURROUNDING ENVIRONS
DURING 1987**

Volume 2: DATA PRESENTATION

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U.S. DEPARTMENT OF ENERGY
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CONVERSION TABLE

Multiply	By	To obtain	Multiply	By	To obtain
in.	2.54	cm	cm	0.394	in.
ft	0.305	m	m	3.28	ft
mile	1.61	km	km	0.621	mile
lb	0.4536	kg	kg	2.205	lb
liq qt-U.S.	0.946	L	L	1.057	liq qt-U.S.
ft ²	0.093	m ²	m ²	10.764	ft ²
mile ²	2.59	km ²	km ²	0.386	mile ²
ft ³	0.028	m ³	m ³	35.31	ft ³
Bq	27	pCi	pCi	0.037	Bq
nCi	1 × 10 ³	pCi	pCi	1 × 10 ⁻³	nCi
dpm/L	0.45 × 10 ⁻⁹	μCi/cm ³	μCi/cm ³	2.22 × 10 ⁹	dpm/L
pCi/L (water)	10 ⁻⁹	μCi/mL (water)	μCi/mL (water)	10 ⁹	pCi/L (water)
pCi/m ³ (air)	10 ⁻¹²	μCi/cm ³ (air)	μCi/cm ³	10 ¹²	pCi/m ³ (air)
mCi/km ²	1	nCi/m ²	nCi/m ²	1	mCi/km ²
sievert (Sv)	100	rem	rem	0.01	sievert (Sv)



1. INTRODUCTION AND GENERAL INFORMATION

The first two volumes of this report are devoted to a presentation of environmental data and supporting narratives for the U.S. Department of Energy's (DOE's) Oak Ridge Reservation (ORR) and surrounding environs during 1987. Volume 1 includes all narrative descriptions, summaries, and conclusions and is intended to be a "stand-alone" report for the ORR for the reader who does not want to review

in detail all of the 1987 data. Volume 2 includes the detailed data summarized in a format to ensure that all environmental data are represented in the tables. Narratives are not included in Vol. 2. The tables in Vol. 2 are addressed in Vol. 1. For this reason, Vol. 2 cannot be considered a stand-alone report but is intended to be used in conjunction with Vol. 1.

Table 1.1.1. Administrative^a units on the ORR in 1987

Description	Forested area (ha) ^b	Total area (ha)
Resource management ^c	12,221 (30,185) ^d	14,050 (34,705)
Y-12 Plant primary plant complex ^e		352 (870)
ORNL primary plant complex ^e	4 (10)	147 (364)
ORGP primary plant complex ^e		405 (1,000)
Scarboro Facility (ORAU-DOE)	81 (200)	432 (1,067)
Total	12,306 (30,395)	15,386 (38,006)

^aAdministrative units are those units that are managed by a major installation or by central Energy Systems.

^bHectare (ha) = 2.47 acres.

^cResource Management is the unit managed by central Energy Systems.

^dNumbers in parentheses denote acres.

^ePrimary plant complexes within fenced areas and facilities outside but adjoining the fenced areas.

**Table 1.2.1. Populations
of central East
Tennessee towns^a**

Town/city	Population
<i>Anderson County</i>	
Clinton	5,245
Lake City	2,335
Norris	1,374
Oak Ridge	27,662
Oliver Springs	3,600
<i>Blount County</i>	
Friendsville	694
Alcoa	6,870
Maryville	17,478
<i>Knox County</i>	
Knoxville	183,139
<i>Loudon County</i>	
Greenback	546
Lenoir City	5,446
Loudon	3,940
<i>Morgan County</i>	
Wartburg	761
<i>Roane County</i>	
Harriman	8,303
Kingston	4,441
Rockwood	5,767
<i>Sevier County</i>	
Sevierville	4,566
<i>Union County</i>	
Luttrell	962
Maynardville	924
<i>Campbell County</i>	
Caryville	2,039
Jellico	2,769
Jacksboro	1,620
LaFollette	8,176

^aSource: *Environmental Surveillance of the Oak Ridge Reservation and Surrounding Environs During 1986, ES/ESH-1, Oak Ridge, Tenn., 1986.*

Table 1.4.1. Use classifications for the Clinch River and its tributaries on the ORR^a

Stream	Description	DOM ^b	IND ^c	FISH ^d	REC ^e	IRR ^f	LW&W ^g	NAV ^h
Clinch River	km 7.0-19.2 (Poplar Creek)	✓	✓	✓	✓	✓	✓	✓
Poplar Creek	km 0.0-0.8		✓	✓	✓	✓	✓	
Poplar Creek	km 0.8-2.1			✓	✓	✓	✓	
Poplar Creek	km 2.1-8.8			✓	✓	✓	✓	
East Fork Poplar Creek	km 0.0-7.7			✓	✓	✓	✓	
Bear Creek	km 0.0-origin			✓	✓	✓	✓	
East Fork Poplar Creek	km 7.7-13.3			✓	✓	✓	✓	
East Fork Poplar Creek	km 13.3-dam at Y-12 Plant			✓	✓	✓	✓	
Poplar Creek	km 8.8-19.8			✓	✓	✓	✓	
Poplar Creek	km 19.8-23.0			✓	✓	✓	✓	
Indian Creek	At Poplar Creek (km 22.9); km 0.0-origin			✓	✓	✓	✓	
Poplar Creek	km 23.0-origin			✓	✓	✓	✓	
Clinch River	km 19.2-32.0	✓	✓	✓	✓	✓	✓	
White Oak Creek	km 0.0-origin			✓	✓	✓	✓	
Melton Branch	km 0.0-origin			✓	✓	✓	✓	
Clinch River	km 32.0-63.4	✓	✓	✓	✓	✓	✓	✓
Clinch River	km 63.4-65.8	✓	✓	✓	✓	✓	✓	✓
Scarboro Creek	km 0.0-1.6			✓	✓	✓	✓	
Scarboro Creek	km 1.6-2.1			✓	✓	✓	✓	
Scarboro Creek	km 2.1-origin			✓	✓	✓	✓	
Clinch River	km 65.8-74.7	✓	✓	✓	✓	✓	✓	✓
All other tributaries in the Clinch River basin, named and unnamed, that have not been specifically treated shall be classified								

^aSource: Tennessee Department of Public Health, 1978. *Water Management Plan—Clinch River Basin.*^bDOM = Domestic water supply.^cIND = Industrial water supply.^dFISH = Fish and aquatic life.^eREC = Recreation.^fIRR = Irrigation.^gLW&W = Livestock watering and wildlife.^hNAV = Navigation.

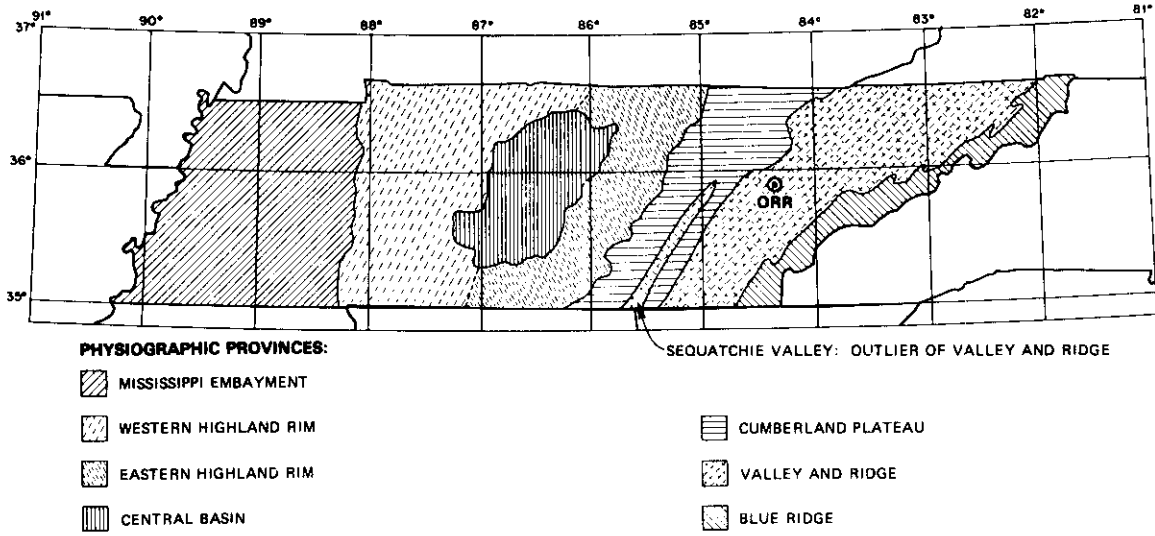


Fig. 1.3.1. Physiographic map of Tennessee.

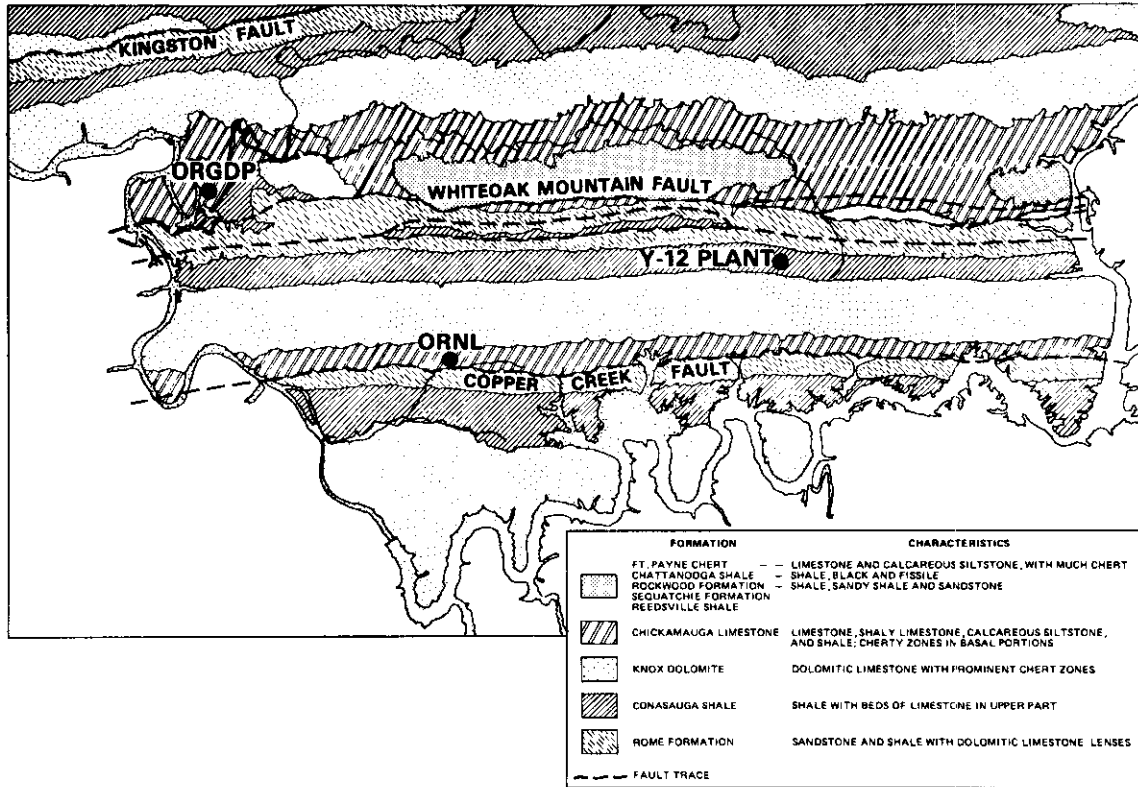


Fig. 1.3.2. Geologic map of the Department of Energy's Oak Ridge Reservation.

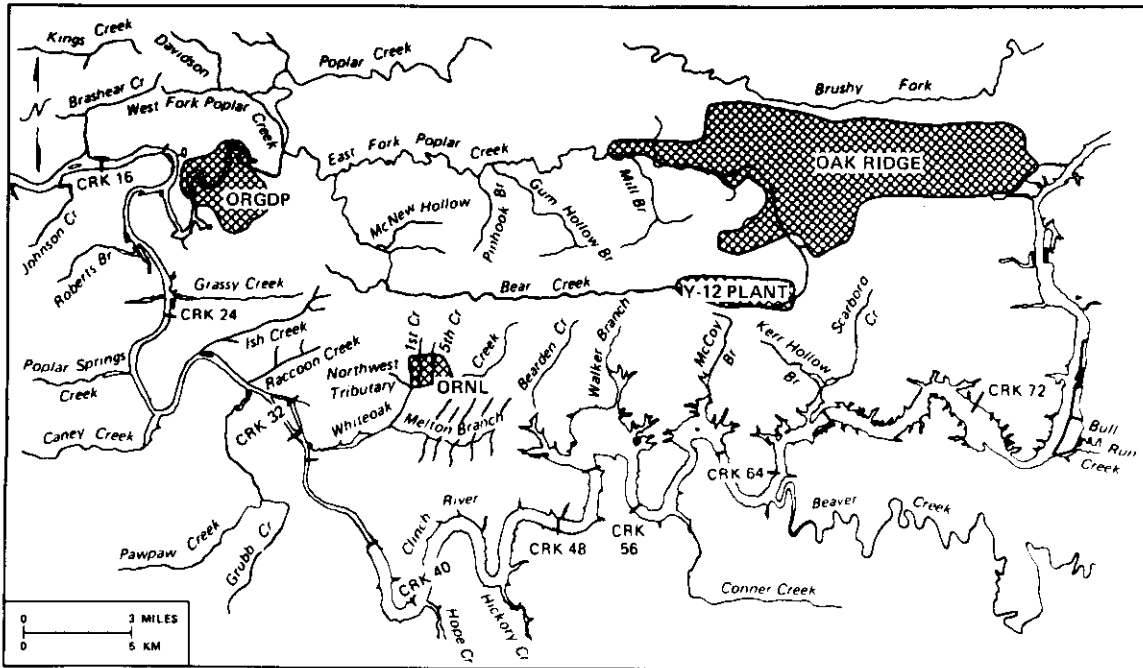


Fig. 1.4.1. Location map of Oak Ridge Reservation tributaries.

2.1 AIR



Table 2.1.1. 1987 fluoride monthly averages at the Y-12 Plant^a

Station ID	Average concentrations ($\mu\text{g}/\text{m}^3$)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
01	<0.0193	0.011	0.025	0.031	<0.0123	<0.0089	<0.007	<0.007	<0.007	<0.0147	0.0224	<0.018
02	0.0337	0.0259	0.0232	0.0374	<0.0237	<0.0156	<0.007	<0.007	<0.007	<0.0084	0.0439	0.0292
03	0.04	0.025	0.0289	0.0396	0.0401	0.0293	<0.007	<0.007	<0.0075	<0.0116	0.0518	0.031
04	0.0909	0.0439	0.0526	0.0414	0.0821	<0.0351	<0.007	<0.007	<0.0079	<0.0116	0.0939	0.062
05	0.0218	0.0254	0.0328	0.0425	0.0436	0.0183	<0.007	<0.0074	<0.007	<0.0154	0.0544	0.0249
06	0.027	0.0316	0.0206	0.0366	0.0276	<0.0098	<0.0078	<0.007	<0.007	<0.0151	0.0596	0.0225
07	0.0396	0.0237	0.0386	0.0351	0.0303	<0.0105	<0.007	<0.007	<0.007	<0.0091	0.0654	0.0354
08	0.027	0.0272	0.0219	0.0789	0.0197	<0.0092	<0.0072	<0.007	<0.007	<0.0379	0.0351	0.0217
09	0.0312	0.0329	0.0294	0.0498	0.0463	<0.0088	<0.007	<0.007	<0.007	<0.0565	0.0417	0.0366
10	0.0165	<0.0105	<0.0164	<0.0404	0.0228	<0.007	<0.007	<0.007	<0.007	0.0165	0.0329	0.0122
11	0.0204	<0.0145	<0.0112	<0.0143	<0.017	<0.0081	<0.007	<0.007	<0.007	<0.0214	0.0202	<0.0125

^aTennessee standard for 30-d av = 1.2 $\mu\text{g}/\text{m}^3$.

Table 2.1.2. 1987 ^{234}U , ^{235}U , ^{236}U , and ^{238}U in air at the Y-12 Plant^a

Station number	Concentration ($10^{-15} \mu\text{Ci}/\text{cm}^3$)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
^{234}U				
1	1.39 ± 0.17	1.02 ± 0.15	0.175 ± 0.047	1.37 ± 0.16
2	2.66 ± 0.30	1.06 ± 0.14	0.240 ± 0.076	1.36 ± 0.17
3	4.53 ± 0.46	5.87 ± 0.65	0.456 ± 0.092	3.14 ± 0.35
4	5.81 ± 0.55	5.51 ± 0.53	0.68 ± 0.099	4.57 ± 0.41
5	5.01 ± 0.50	8.27 ± 0.82	1.20 ± 0.15	4.52 ± 0.43
6	4.92 ± 0.49	3.14 ± 0.35	0.505 ± 0.090	3.17 ± 0.34
7	4.32 ± 0.48	2.98 ± 0.29	0.582 ± 0.090	4.02 ± 0.41
8	19.6 ± 1.77	1.61 ± 0.19	0.45 ± 0.21	3.35 ± 0.32
9	23.6 ± 2.25	1.17 ± 0.16	0.42 ± 0.098	2.65 ± 0.27
10	1.47 ± 0.16	1.12 ± 0.15	0.25 ± 0.067	1.66 ± 0.23
11	1.24 ± 0.15	1.25 ± 0.17	0.176 ± 0.049	0.90 ± 0.14
12	<i>b</i>	0.548 ± 0.11	0.13 ± 0.049	0.869 ± 0.12
^{235}U				
1	0.075 ± 0.029	0.088 ± 0.034	0.016 ± 0.016	0.022 ± 0.015
2	0.053 ± 0.024	0.056 ± 0.023	<i>c</i>	0.043 ± 0.025
3	0.132 ± 0.039	0.23 ± 0.059	0.036 ± 0.025	0.12 ± 0.048
4	0.18 ± 0.042	0.24 ± 0.049	0.024 ± 0.017	0.26 ± 0.060
5	0.24 ± 0.053	0.39 ± 0.075	0.079 ± 0.036	0.12 ± 0.043
6	0.063 ± 0.025	0.082 ± 0.030	<i>c</i>	0.18 ± 0.056
7	0.13 ± 0.042	0.099 ± 0.030	0.013 ± 0.013	0.094 ± 0.039
8	0.60 ± 0.090	0.12 ± 0.037	0.16 ± 0.093	0.26 ± 0.063
9	0.72 ± 0.11	0.064 ± 0.027	0.025 ± 0.025	0.072 ± 0.030
10	0.037 ± 0.017	0.032 ± 0.019	0.049 ± 0.029	0.028 ± 0.020
11	0.096 ± 0.032	0.045 ± 0.023	0.014 ± 0.014	0.015 ± 0.015
12	<i>b</i>	0.082 ± 0.038	0.036 ± 0.02	0.064 ± 0.029

Table 2.1.2. (Continued)

Station number	Concentration (10^{-15} $\mu\text{Ci}/\text{cm}^3$)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
^{236}U				
1	<i>c</i>	0.042 ± 0.033	<i>c</i>	0.12 ± 0.038
2	0.14 ± 0.042	0.082 ± 0.029	0.017 ± 0.017	0.090 ± 0.035
3	0.094 ± 0.030	0.39 ± 0.083	0.015 ± 0.015	0.15 ± 0.051
4	0.17 ± 0.039	0.29 ± 0.054	0.0098 ± 0.0099	0.38 ± 0.071
5	0.11 ± 0.033	0.37 ± 0.072	<i>c</i>	0.28 ± 0.063
6	0.14 ± 0.038	0.27 ± 0.060	<i>c</i>	0.26 ± 0.064
7	0.13 ± 0.039	0.16 ± 0.040	0.011 ± 0.011	0.25 ± 0.064
8	0.35 ± 0.060	0.044 ± 0.024	0.088 ± 0.063	0.18 ± 0.048
9	0.37 ± 0.068	0.11 ± 0.042	<i>c</i>	0.23 ± 0.055
10	0.088 ± 0.027	0.047 ± 0.025	0.013 ± 0.013	0.31 ± 0.081
11	0.073 ± 0.025	0.081 ± 0.036	<i>c</i>	0.079 ± 0.036
12	<i>b</i>	0.041 ± 0.036	0.020 ± 0.014	0.15 ± 0.045
^{238}U				
1	0.116 ± 0.039	0.028 ± 0.025	0.0454 ± 0.023	0.128 ± 0.038
2	0.162 ± 0.049	0.111 ± 0.034	0.0641 ± 0.040	0.191 ± 0.055
3	0.127 ± 0.039	0.361 ± 0.077	0.0526 ± 0.027	0.686 ± 0.12
4	0.304 ± 0.053	0.545 ± 0.080	0.0351 ± 0.018	0.480 ± 0.078
5	0.234 ± 0.050	0.338 ± 0.065	<i>c</i>	0.264 ± 0.059
6	0.220 ± 0.050	0.255 ± 0.057	0.0573 ± 0.031	0.387 ± 0.082
7	0.212 ± 0.057	0.343 ± 0.059	0.139 ± 0.039	0.684 ± 0.11
8	0.692 ± 0.091	0.360 ± 0.065	0.194 ± 0.090	0.229 ± 0.051
9	0.218 ± 0.047	0.334 ± 0.068	0.0551 ± 0.032	0.301 ± 0.062
10	0.208 ± 0.044	0.218 ± 0.051	0.0591 ± 0.032	0.338 ± 0.091
11	0.237 ± 0.052	0.168 ± 0.049	0.0508 ± 0.023	0.294 ± 0.070
12	<i>b</i>	0.0193 ± 0.027	0.0348 ± 0.018	0.118 ± 0.037

^aSee Fig. 2.1.14 for station locations.

^bInstalled in April 1987.

^cNo data available.

Table 2.1.3. 1987 sulfur dioxide in air at the Y-12 Plant^{a,b}

Month/ station ID	Monthly av SO ₂ (ppm)	Max 24-h av SO ₂ (ppm)	Max 3-h av SO ₂ (ppm)
January			
—East	0.014	0.031	0.050
—West	0.013	0.051	0.152
February			
—East	0.012	0.032	0.087
—West	0.011	0.021	0.030
March			
—East	0.015	0.032	0.058
—West	0.006	0.013	0.024
April			
—East	0.014	0.032	0.083
—West	0.005	0.014	0.027
May			
—East	0.010	0.022	0.076
—West	0.007	0.020	0.043
June			
—East	0.011	0.024	0.081
—West	0.008	0.016	0.043
July			
—East	0.010	0.021	0.050
—West	0.006	0.010	0.021
August			
—East	0.007	0.019	0.064
—West	0.006	0.013	0.021
September			
—East	0.008	0.020	0.092
—West	0.008	0.016	0.031
October			
—East	0.014	0.024	0.089
—West	0.011	0.022	0.052
November			
—East	0.016	0.029	0.105
—West	0.011	0.024	0.071
December			
—East	0.013	0.038	0.109
—West	0.010	0.038	0.077

^aSee Fig. 2.1.14 for station locations.

^bThe Tennessee 24-h average standard is 0.14 ppm, and the Tennessee 3-h average standard is 0.5 ppm.

Table 2.1.4. 1987 total suspended particulates in air at the Y-12 Plant^a

Date sample completed	Concentration ^{b,c} ($\mu\text{g}/\text{m}^3$)		Date sample completed	Concentration ($\mu\text{g}/\text{m}^3$)	
	East	West		East	West
1/4	0.1	2	7/2	51	46
1/9	61	558	7/8	61	67
1/15	21	25	7/14	32	44
1/21	0.1	26	7/20	86	86
2/2	1.0	4.0	7/26	65	59
2/8	0.1	55	8/1	83	79
2/14	21	70	8/7	51	44
2/20	44	73	8/13	47	36
2/26	58	29	8/19	16	8
3/4	26	75	8/25	46	69
3/10	45	81	8/31	24	40
3/16	49	83	9/6	5	6
3/22	42	64	9/12	16	16
3/28	26	66	9/18	14	29
4/3	63	81	9/24	34	43
4/9	114	307	9/30	4	5
4/15	88	118	10/6	72	108
4/21	133	280	10/12	18	19
4/27	83	233	10/18	56	40
5/3	98	92	10/24	56	40
5/9	0.1	128	10/30	41	35
5/15	97	98	11/5	12	19
5/21	106	102	11/11		0
5/27	129	119	11/17	0	1
6/2	115	120	11/23	44	39
6/8	33		11/29	32	34
6/14	106	53	12/5	45	46
6/20	56	52	12/11	38	58
6/26	43	44	12/17	12	9
			12/23	20	32
			12/29	0	0

^aSee Fig. 2.1.14 for station locations.

^bTennessee primary air quality standard = $260 \mu\text{g}/(\text{m}^3 \cdot 24 \text{ h})$.

^cTennessee secondary air quality standard = $150 \mu\text{g}/(\text{m}^3 \cdot 24 \text{ h})$.

Table 2.1.5. 1987 gross alpha and beta in air at the Y-12 Plant^a

Station number	Concentration (10^{-15} $\mu\text{Ci}/\text{cm}^3$)			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<i>Gross alpha</i>				
1	2.80 \pm 0.59	1.93 \pm 0.57	0.92 \pm 0.46	5.15 \pm 0.77
2	3.80 \pm 0.65	2.80 \pm 0.62	0.99 \pm 0.46	5.67 \pm 0.79
3	8.07 \pm 0.86	5.87 \pm 0.79	0.92 \pm 0.46	7.13 \pm 0.86
4	9.21 \pm 0.92	8.18 \pm 0.92	1.78 \pm 0.52	9.83 \pm 0.98
5	9.94 \pm 0.95	12.1 \pm 1.1	1.78 \pm 0.52	6.99 \pm 0.85
6	7.34 \pm 0.83	5.40 \pm 0.76	1.06 \pm 0.47	6.14 \pm 0.82
7	7.27 \pm 0.83	3.80 \pm 0.68	1.98 \pm 0.53	8.58 \pm 0.93
8	20.8 \pm 1.39	4.00 \pm 0.69	0.92 \pm 0.46	7.46 \pm 0.88
9	23.0 \pm 1.47	2.67 \pm 0.62	0.99 \pm 0.46	6.80 \pm 0.85
10	3.20 \pm 0.61	2.20 \pm 0.59	0.86 \pm 0.45	4.35 \pm 0.73
11	3.40 \pm 0.62	2.33 \pm 0.60	0.79 \pm 0.45	3.50 \pm 0.68
12	<i>b</i>	0.47 \pm 0.47	1.45 \pm 0.49	3.43 \pm 0.68
<i>Gross beta</i>				
1	18.4 \pm 1.45	17.3 \pm 1.37	9.43 \pm 0.96	23.1 \pm 1.71
2	18.5 \pm 1.45	15.1 \pm 1.25	9.94 \pm 0.99	22.6 \pm 1.69
3	22.7 \pm 1.69	21.6 \pm 1.62	10.1 \pm 1.00	24.1 \pm 1.77
4	25.7 \pm 1.86	21.3 \pm 1.60	8.68 \pm 0.93	23.1 \pm 1.71
5	23.7 \pm 1.75	20.9 \pm 1.58	10.3 \pm 1.01	24.9 \pm 1.82
6	23.5 \pm 1.74	20.3 \pm 1.54	9.68 \pm 0.98	22.0 \pm 1.65
7	23.6 \pm 1.74	20.5 \pm 1.55	11.8 \pm 1.09	25.2 \pm 1.83
8	25.8 \pm 1.87	16.9 \pm 1.35	9.48 \pm 0.97	23.9 \pm 1.76
9	22.9 \pm 1.70	19.1 \pm 1.47	9.08 \pm 0.95	21.8 \pm 1.64
10	18.3 \pm 1.44	16.5 \pm 1.35	8.97 \pm 0.94	20.8 \pm 1.58
11	21.3 \pm 1.61	16.9 \pm 1.35	6.87 \pm 0.84	17.6 \pm 1.40
12	<i>b</i>	9.30 \pm 0.94	7.67 \pm 0.88	19.4 \pm 1.50

^aSee Fig. 2.1.14 for station locations.^bInstalled in April 1987.

Table 2.1.6. 1987 long-lived gross alpha in air

Location	Number of samples	Concentration (1×10^{-15} Ci/m ³)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
3	51	3.8	-3.5	-1.1	0.53
7	43	2.8	-3.5	-0.98	0.51
9	51	7.6	-3.3	-0.56	0.58
22	39	1.4	-2.8	-1.0	0.50
Network summary	184	7.6	-3.5	-0.90	0.27
<i>Reservation perimeter stations^b</i>					
8	50	4.9	-3.5	-0.95	0.55
23	52	25	-4.9	-0.23	1.1
31	52	3.1	-4.0	-0.99	0.51
33	51	3.3	-4.9	-0.63	0.59
34	52	3.5	-4.9	-0.55	0.55
36	52	5.3	-4.1	-0.88	0.69
40	50	3.3	-4.9	-0.84	0.55
41	52	11	-4.9	-0.33	0.67
42	51	2.8	-3.3	-0.87	0.50
43	52	4.3	-6.1	-1.1	0.68
44	50	5.6	-4.9	-0.65	0.62
45	51	13	-4.4	0.077	0.83
46	50	3.5	-4.9	-0.37	0.62
Network summary	665	25	-6.1	-0.64	0.19
<i>Remote stations^c</i>					
51	46	5.3	-3.3	0.85	0.50
52	45	6.1	-3.3	0.85	0.52
53	46	7.5	-2.8	0.76	0.60
55	45	9.8	-2.5	1.3	0.73
56	47	4.4	-5.0	1.0	0.50
57	51	11	-1.6	1.7	0.64
Network summary	280	11	-5.0	1.1	0.24
Overall summary	1129	25	-6.1	-0.26	0.14

^a95% confidence coefficient about the average of all samples, if more than two.

^bSee Fig. 2.1.15.

^cSee Fig. 2.1.16.

Table 2.1.7. 1987 long-lived gross beta in air

Location	Number of samples	Concentration (1×10^{-15} Ci/m ³)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
3	51	25	0	13	1.5
7	43	35	1.4	14	2.5
9	51	42	4.7	20	2.1
22	39	31	2.5	16	2.7
Network summary	184	42	0	16	1.2
<i>Reservation perimeter stations^b</i>					
8	50	35	3.3	19	2.0
23	52	39	7.4	21	2.1
31	52	48	1.2	19	2.6
33	51	46	1.4	26	3.2
34	52	46	6.1	23	2.6
36	52	53	3.5	25	3.0
40	50	41	4.2	18	2.5
41	52	47	9.3	23	2.2
42	51	42	4.2	21	2.5
43	52	37	3.5	18	2.1
44	50	43	3.3	23	2.1
45	51	43	4.4	23	2.8
46	50	42	3.3	21	2.4
Network summary	665	53	1.2	22	0.71
<i>Remote stations^c</i>					
51	46	63	-2.5	18	5.0
52	45	68	-6.5	13	4.9
53	46	67	-7.9	18	5.8
55	45	39	-1.8	8.8	3.3
56	47	70	-1.4	19	6.2
57	51	47	0	15	3.9
Network summary	280	70	-7.9	15	2.1
Overall summary	1129	70	-7.9	19	0.71

^a95% confidence coefficient about the average of all samples, if more than two.

^bSee Fig. 2.1.15.

^cSee Fig. 2.1.16.

Table 2.1.8. 1987 ¹³¹I concentrations in air

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
<i>ORNL perimeter stations</i>						
3	51	3.8	-2.6	0.54	0.41	<0.01
7	43	5.1	-3.8	0.53	0.47	<0.01
9	51	9.6	-2.2	0.86	0.58	<0.01
22	39	3.9	-2.2	0.74	0.44	<0.01
Network summary	184	9.6	-3.8	0.67	0.24	<0.01
<i>Reservation perimeter stations</i>						
8	50	6.6	-3.8	1.1	0.52	<0.01
23	52	3.8	-1.5	0.67	0.30	<0.01
31	52	4.8	-2.3	0.86	0.44	<0.01
33	51	5.3	-3.8	0.33	0.43	<0.01
34	52	4.2	-2.6	0.53	0.33	<0.01
36	52	4.6	-3.8	0.92	0.46	<0.01
40	50	3.8	-2.2	0.50	0.32	<0.01
41	52	5.6	-2.5	0.60	0.45	<0.01
42	51	3.3	-3.8	-0.14	0.38	<0.01
43	52	2.8	-2.6	-0.082	0.36	<0.01
44	50	5.1	-1.7	0.55	0.37	<0.01
45	51	5.4	-3.8	0.65	0.45	<0.01
46	50	3.3	-4.9	0.54	0.41	<0.01
Network summary	665	6.6	-4.9	0.54	0.11	<0.01
Overall summary	849	9.6	-4.9	0.57	0.10	<0.01

^aSee Fig. 2.1.15.

^b95% confidence coefficient about the average of more than two samples.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG for ¹³¹I is $270,000 \times 10^{-15}$ Ci/m³.

Table 2.1.9. 1987 tritium activity in air

Location ^a	Number of samples	Concentration (pCi/m ³)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
3	12	100	3.8	27	16	0.1
7	1	43	43	43		0.043
8	12	18	0.58	8.8	3.5	0.018
Overall summary	25	100	0.58	19	8.7	0.053

^aSee Fig. 2.1.15.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG for tritium is 1.0×10^5 pCi/m³. This assumes that 50% of the tritium is absorbed through the skin.

Table 2.1.10. 1987 continuous air monitoring data for ⁶⁰Co (composite samples)

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL perimeter	4	0.18	<0.063	<0.10	0.054	<0.01
34	4	<0.26	<0.16	<0.22	0.049	<0.01
36	4	<0.35	<0.21	<0.25	0.062	<0.01
40	4	<0.29	<0.23	<0.26	0.027	<0.01
41	4	<0.29	<0.16	<0.23	0.060	<0.01
45	4	<0.29	<0.22	<0.25	0.035	<0.01
46	4	<0.29	<0.13	<0.22	0.068	<0.01
Reservation perimeter	4	<0.064	<0.044	<0.049	0.0096	<0.01
Remote	4	<0.050	<0.031	<0.043	0.0082	<0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = $80,000 \times 10^{-15}$ Ci/m³.

Table 2.1.11. 1987 continuous air monitoring data for ^{137}Cs (composite samples)

Location ^a	Number of samples	Concentration ($1 \times 10^{-15} \text{ Ci/m}^3$)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL perimeter	4	0.14	<0.053	<0.085	0.039	<0.01
34	4	<0.26	<0.14	<0.18	0.056	<0.01
36	4	<0.35	<0.14	<0.21	0.093	<0.01
40	4	<0.29	<0.15	<0.19	0.066	<0.01
41	4	<0.29	<0.14	<0.20	0.071	<0.01
45	4	<0.29	<0.15	<0.21	0.066	<0.01
46	4	<0.29	<0.11	<0.20	0.078	<0.01
Reservation perimeter	4	0.086	<0.023	<0.047	0.027	<0.01
Remote	4	<0.093	<0.031	<0.058	0.026	<0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = $400,000 \times 10^{-15} \text{ Ci/m}^3$.

Table 2.1.12. 1987 continuous air monitoring data for analysis ^{238}Pu (composite samples)

Location ^a	Number of samples	Concentration ($1 \times 10^{-15} \text{ Ci/m}^3$)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL perimeter	4	0.0011	-0.00076	0.00020	0.00086	<0.01
34	4	0.0026	-0.012	-0.0030	0.0063	<0.01
36	4	-0.00012	-0.0086	-0.0045	0.0035	<0.01
40	4	0.0076	-0.0032	0.0010	0.0046	0.019
41	4	0.0031	-0.0029	0.00069	0.0027	<0.01
45	4	0.0011	-0.032	-0.0089	0.016	<0.01
46	4	0.0037	-0.0032	-0.00055	0.0032	<0.01
Reservation perimeter	4	0.0049	-0.00009	0.0013	0.0024	0.012
Remote	4	-0.00020	-0.0010	-0.00053	0.00036	<0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = $40 \times 10^{-15} \text{ Ci/m}^3$.

**Table 2.1.13. 1987 continuous air monitoring data
for ^{239}Pu (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				Percent DCG ^c
		Max	Min	Av	95% cc ^b	
ORNL						
perimeter	4	0.00041	-0.0023	-0.00060	0.0013	<0.01
34	4	0.0026	-0.012	-0.0050	0.0070	<0.01
36	4	0.00056	-0.015	-0.0047	0.0070	<0.01
40	4	0.0032	-0.013	-0.0033	0.0072	<0.01
41	4	-0.0063	-0.013	-0.010	0.0028	<0.01
45	4	-0.0051	-0.028	-0.014	0.010	<0.01
46	4	-0.0011	-0.018	-0.0084	0.0079	<0.01
Reservation						
perimeter	4	-0.00045	-0.0044	-0.0016	0.0019	<0.01
Remote	4	-0.00014	-0.0065	-0.0025	0.0030	<0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of more than two samples.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = 40×10^{-15} Ci/m³.

**Table 2.1.14. 1987 continuous air monitoring data
for ^{232}Th (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				Percent DCG ^c
		Max	Min	Av	95% cc ^b	
ORNL						
perimeter	4	0.070	0.00076	0.023	0.032	0.26
34	4	0.22	-0.0029	0.11	0.12	0.82
36	4	0.17	0.0040	0.054	0.081	0.65
40	4	0.16	-0.0032	0.047	0.075	0.58
41	4	0.16	0.0031	0.046	0.078	0.60
45	4	0.15	-0.0069	0.046	0.072	0.56
46	4	0.16	0.010	0.049	0.072	0.58
Reservation						
perimeter	4	0.059	0.00098	0.022	0.025	0.22
Remote	4	0.037	0.00066	0.018	0.018	0.14

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = 27×10^{-15} Ci/m³.

**Table 2.1.15. 1987 continuous air monitoring data
for analysis ^{230}Th (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL						
perimeter	4	0.020	0.0015	0.0099	0.0075	0.073
34	4	0.084	-0.0029	0.044	0.040	0.31
36	4	0.020	0.0080	0.013	0.0050	0.073
40	4	0.021	-0.0064	0.011	0.012	0.078
41	4	0.016	0.0031	0.0096	0.0056	0.058
45	4	0.017	-0.0035	0.0092	0.0088	0.063
46	4	0.028	0.0074	0.016	0.0090	0.10
Reservation						
perimeter	4	0.028	0.00049	0.013	0.011	0.10
Remote	4	0.025	0.00033	0.011	0.012	0.093

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG).
The DCG = 27×10^{-15} Ci/m³.

**Table 2.1.16. 1987 continuous air monitoring data
for ^{232}Th (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL						
perimeter	4	0.021	0.00076	0.010	0.0087	0.26
34	4	0.045	0.0029	0.021	0.018	0.55
36	4	0.023	-0.0040	0.012	0.011	0.28
40	4	0.024	0.0032	0.012	0.0087	0.30
41	4	0.027	0.0031	0.013	0.010	0.33
45	4	0.016	0.0035	0.0097	0.0053	0.19
46	4	0.016	-0.0037	0.0087	0.0093	0.20
Reservation						
perimeter	4	0.030	0.00049	0.014	0.012	0.37
Remote	4	0.029	0.00033	0.012	0.013	0.36

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG).
The DCG = 8.1×10^{-15} Ci/m³.

**Table 2.1.17. 1987 continuous air monitoring data
for total Sr (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				Percent DCG ^e
		Max	Min	Av	95% cc ^b	
ORNL						
perimeter	4	0.042	-0.12	-0.028	0.079	<0.01
34	4	0.42	-0.047	0.18	0.19	<0.01
36	4	0.12	-0.12	-0.0058	0.10	<0.01
40	4	0.13	-0.25	0.00070	0.18	<0.01
41	4	0.18	-0.21	-0.014	0.16	<0.01
45	4	0.16	0.087	0.12	0.029	<0.01
46	4	0.087	-0.22	-0.056	0.15	<0.01
Reservation						
perimeter	4	0.027	-0.036	0.0093	0.030	<0.01
Remote	4	0.070	0.0066	0.031	0.029	<0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = 8100×10^{-15} Ci/m³ for ⁹⁰Sr. The total Sr is assumed to be all ⁹⁰Sr, which is a worst case analysis.

**Table 2.1.18. 1987 continuous air monitoring data
for ²³⁴U (composite samples)**

Location ^a	Number of samples	Concentration (1×10^{-15} Ci/m ³)				Percent DCG ^e
		Max	Min	Av	95% cc ^b	
ORNL						
perimeter	4	0.50	0.031	0.20	0.21	0.62
34	4	0.29	0.13	0.20	0.077	0.36
36	4	0.26	0.035	0.13	0.099	0.32
40	4	1.7	0.14	0.86	0.71	2.1
41	4	0.51	0.055	0.24	0.19	0.63
45	4	2.9	0.15	1.4	1.1	3.5
46	4	2.0	0.20	0.97	0.79	2.4
Reservation						
perimeter	4	0.93	0.057	0.39	0.38	1.1
Remote	4	0.090	0.033	0.053	0.025	0.11

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = 81×10^{-15} Ci/m³.

**Table 2.1.19. 1987 continuous air monitoring data
for ^{235}U (composite samples)**

Location ^a	Number of samples	Concentration ($1 \times 10^{-15} \text{ Ci/m}^3$)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL						
perimeter	4	0.050	0.0031	0.030	0.024	0.047
34	4	0.014	0.0026	0.0079	0.0060	0.013
36	4	0.042	-0.0022	0.017	0.019	0.039
40	4	0.10	0.0070	0.056	0.048	0.093
41	4	0.049	0.0087	0.028	0.019	0.046
45	4	0.44	0.0099	0.16	0.19	0.41
46	4	0.34	0.021	0.14	0.15	0.32
Reservation						
perimeter	4	0.12	0.0028	0.063	0.058	0.11
Remote	4	0.0034	0.0014	0.0022	0.00089	< 0.01

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = $108 \times 10^{-15} \text{ Ci/m}^3$.

**Table 2.1.20. 1987 continuous air monitoring data
for ^{238}U (composite samples)**

Location ^a	Number of samples	Concentration ($1 \times 10^{-15} \text{ Ci/m}^3$)				
		Max	Min	Av	95% cc ^b	Percent DCG ^c
ORNL						
perimeter	4	0.084	0.017	0.052	0.030	0.078
34	4	0.13	0.032	0.070	0.045	0.12
36	4	0.072	0.020	0.052	0.023	0.067
40	4	0.12	0.020	0.069	0.050	0.12
41	4	0.082	0.021	0.051	0.033	0.076
45	4	0.45	0.050	0.31	0.18	0.41
46	4	0.29	0.047	0.16	0.10	0.27
Reservation						
perimeter	4	0.12	0.024	0.079	0.042	0.11
Remote	4	0.036	0.022	0.031	0.0064	0.034

^aSee Figs. 2.1.15 and 2.1.16.

^b95% confidence coefficient about the average of all samples if more than two.

^cPercent DCG = maximum \times 100/derived concentration guide (DCG). The DCG = $108 \times 10^{-15} \text{ Ci/m}^3$.

ORNL-DWG 88-7369

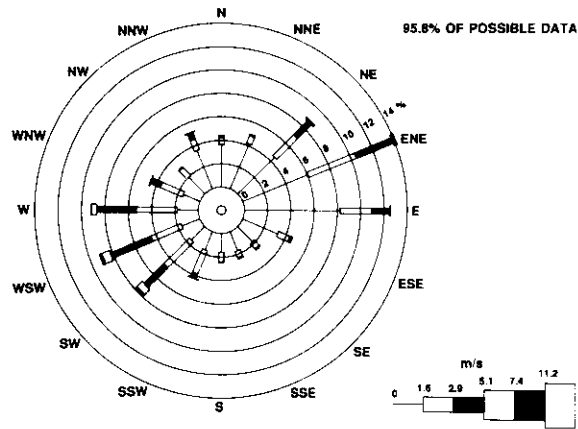


Fig. 2.1.1. Wind rose for Y-12 tower MT5 (east) (30-m level).

ORNL-DWG 88-7365

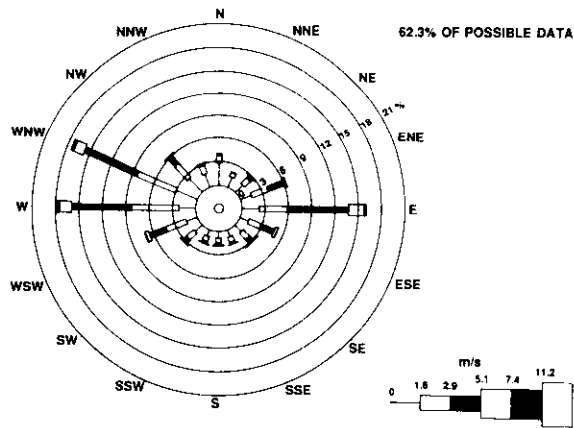


Fig. 2.1.2. Wind rose for Y-12 tower MT6 (west) (60-m level).

ORNL-DWG 88-7366

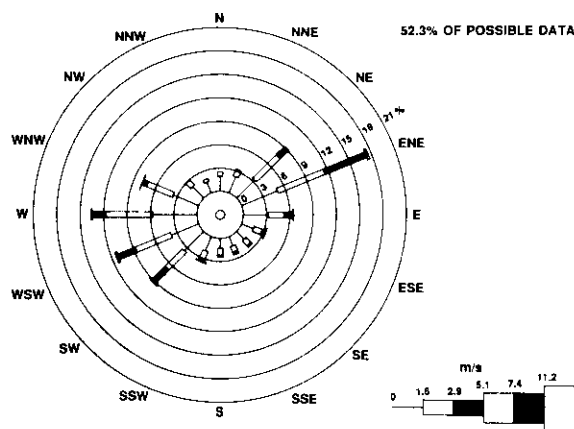


Fig. 2.1.3. Wind rose for Y-12 tower MT6 (west) (10-m level).

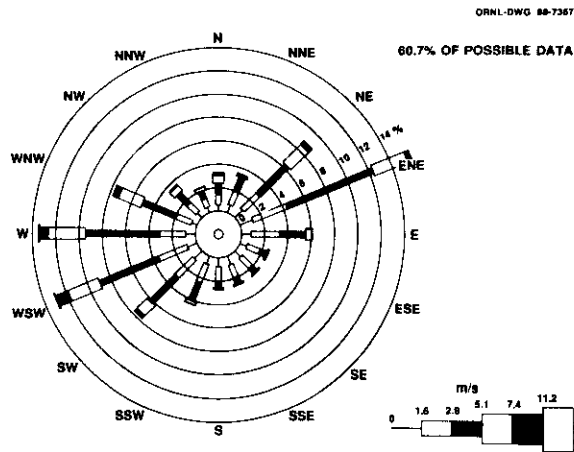


Fig. 2.1.4. Wind rose for Y-12 tower MT5 (east) (100-m level).

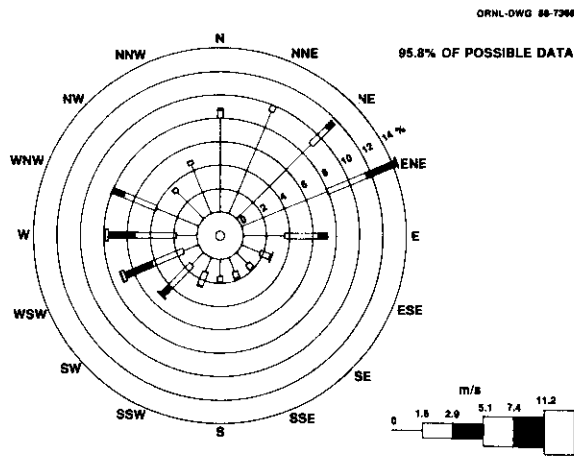


Fig. 2.1.5. Wind rose for Y-12 tower MT5 (east) (10-m level).

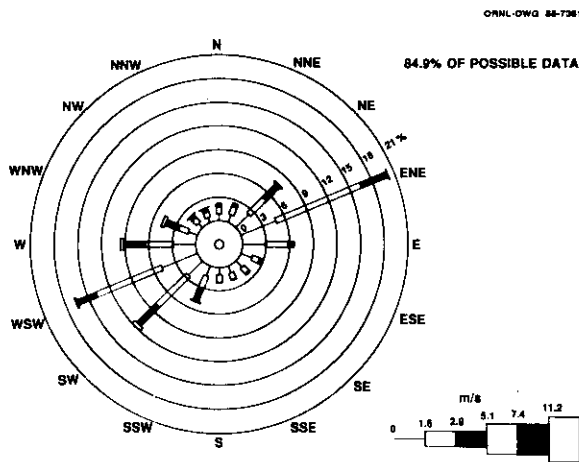


Fig. 2.1.6. Wind rose for ORNL tower MT4 (30-m level).

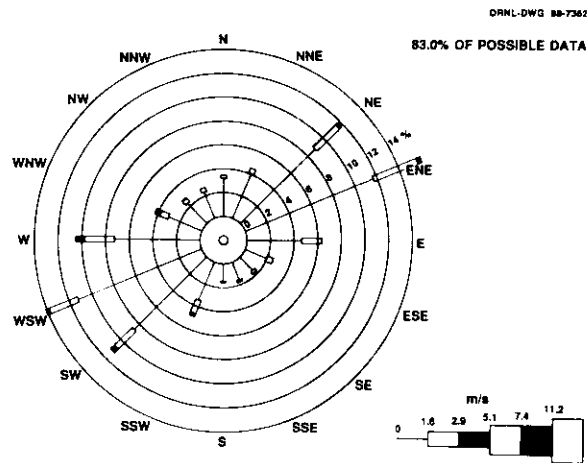


Fig. 2.1.7. Wind rose for ORNL tower MT4 (10-m level).

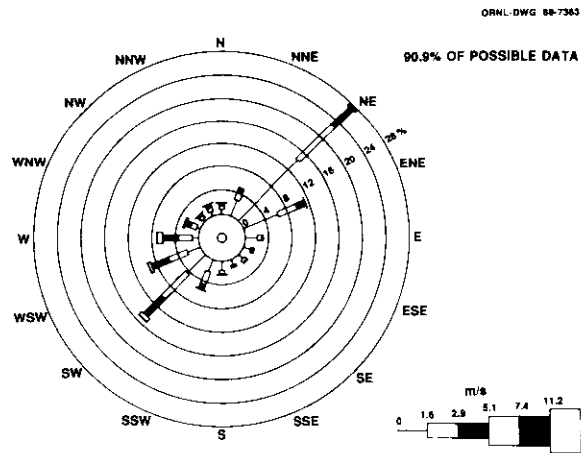


Fig. 2.1.8. Wind rose for ORNL tower MT3 (30-m level).

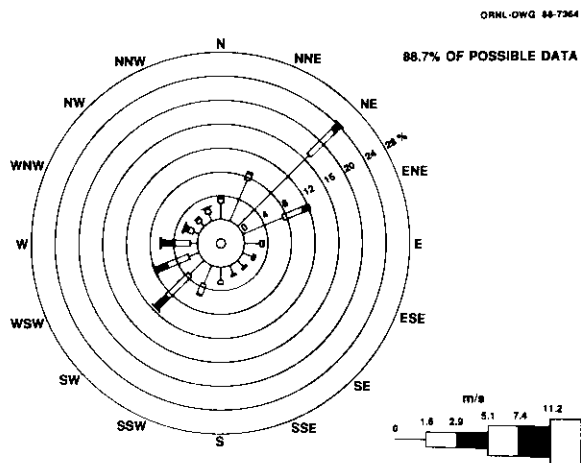


Fig. 2.1.9. Wind rose for ORNL tower MT3 (10-m level).

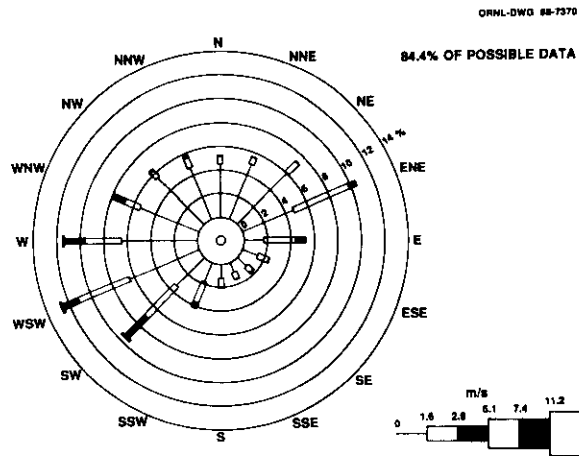


Fig. 2.1.10. Wind rose for ORNL tower MT2 (10-m level).

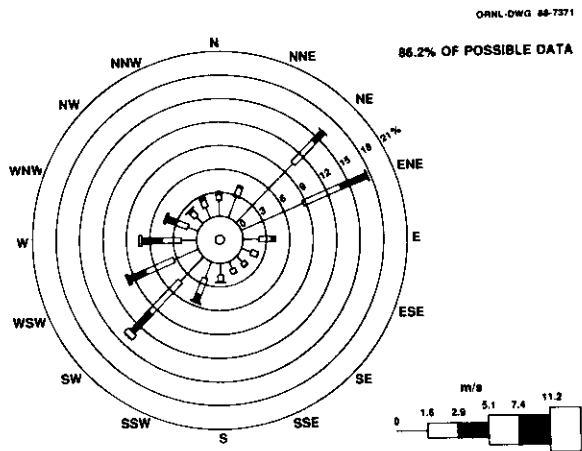


Fig. 2.1.11. Wind rose for ORNL tower MT2 (30-m level).

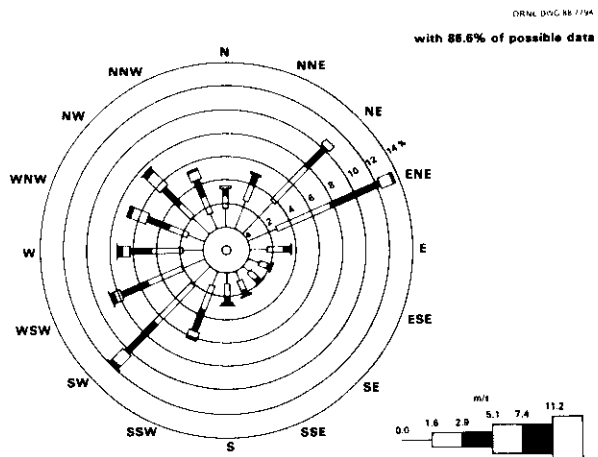


Fig. 2.1.12. Wind rose for ORGDP tower MT1 (60-m level).



2.2 SURFACE WATER



Table 2.2.1. Radionuclide concentrations in water around ORNL in 1987

Radionuclide	No. of samples	Concentration (pCi/L)				Percent of DCG ^b
		Max	Min	Av	95% cc ^a	
<i>White Oak Creek</i>						
⁶⁰ Co	12	11	<5.4	<6.9	1.0	0.20
¹³⁷ Cs	12	190	4.6	68	29	7.1
Total Sr	12	150	59	96	19	14
Tritium	12	350,000	2,400	47,000	56,000	16
<i>White Oak Creek headwaters</i>						
²⁴¹ Am	11	0.30	0.050	0.080	0.045	0.28
²⁴⁴ Cm	11	0.12	<0.050	<0.057	0.013	0.0077
⁶⁰ Co	12	8.1	<2.7	<4.5	1.0	0.15
¹³⁷ Cs	12	15	<2.7	<5.2	2.0	0.55
Gross alpha	11	65	2.2	24	11	N/A
²³⁸ Pu	11	0.076	<0.050	<0.053	0.0046	0.0028
²³⁹ Pu	11	2.7	<0.050	<0.29	0.48	0.10
²²⁸ Th	1	<0.050	<0.050	<0.050	N/A	0.019
²³⁰ Th	1	<0.050	<0.050	<0.050	N/A	0.019
²³² Th	1	<0.050	<0.050	<0.050	N/A	0.093
Total Sr	12	130	2.0	21	20	12
Tritium	12	3,200	1,500	1,700	310	0.15
²³⁴ U	1	0.19	0.19	0.19	N/A	0.035
²³⁵ U	1	<0.050	<0.050	<0.050	N/A	0.0093
²³⁸ U	1	0.14	0.14	0.14	N/A	0.025
<i>White Oak Dam</i>						
²⁴¹ Am	52	0.49	<0.050	<0.14	0.029	0.45
²⁴⁴ Cm	52	1.6	<0.050	<0.30	0.085	0.097
⁶⁰ Co	52	38	<2.7	<12	2.2	0.70
¹³⁷ Cs	52	300	13	49	15	11
Gross beta	52	890	86	360	39	N/A
²³⁸ Pu	52	0.32	<0.050	<0.075	0.018	0.012
²³⁹ Pu	52	1.7	<0.050	<0.11	0.067	0.064
Total Sr	52	410	7.6	130	17	38
Tritium	52	1,900,000	46,000	270,000	82,000	89
<i>Melton Branch 2</i>						
⁶⁰ Co	12	1000	13	110	170	19
¹³⁷ Cs	12	<8.1	<2.7	<5.2	1.2	0.30
¹⁵² Eu	1	180	180	180	N/A	0.74
¹⁵⁴ Eu	1	300	300	300	N/A	1.8
¹⁵⁵ Eu	1	170	170	170	N/A	0.0062
Total Sr	12	100	2.0	22	18	9.5
Tritium	12	760,000	6,800	120,000	120,000	35

Table 2.2.1 (continued)

Radionuclide	No. of samples	Concentration (pCi/L)				Percent of DCG ^b
		Max	Min	Av	95% cc ^a	
<i>Melton Hill Dam</i>						
²⁴¹ Am	11	0.19	0.050	0.079	0.026	0.18
²⁴⁴ Cm	11	0.32	<0.050	<0.091	0.051	0.020
⁶⁰ Co	12	8.1	<2.7	<5.0	0.91	0.15
¹³⁷ Cs	12	27	<2.7	<5.9	3.9	1.0
Gross alpha	11	41	1.0	15	7.8	N/A
²³⁸ Pu	11	0.059	<0.050	<0.051	0.0018	0.0022
²³⁹ Pu	11	0.16	<0.050	<0.069	0.022	0.0060
²²⁸ Th	1	<0.050	<0.050	<0.050	N/A	0.019
²³⁰ Th	1	<0.050	<0.050	<0.050	N/A	0.019
²³² Th	1	<0.050	<0.050	<0.050	N/A	0.093
Total Sr	12	35	2.0	12	6.9	3.3
Tritium	12	1500	<1500	<1500	0.0	0.069
²³⁴ U	1	0.38	0.38	0.38	N/A	0.070
²³⁵ U	1	0.11	0.11	0.11	N/A	0.020
²³⁸ U	1	0.22	0.22	0.22	N/A	0.040
<i>Raccoon Creek</i>						
⁶⁰ Co	12	<8.1	<2.7	<5.2	1.0	0.15
¹³⁷ Cs	12	<5.4	<2.7	<4.7	0.71	0.20
Total Sr	12	200	32	110	36	19
<i>Sewage treatment plant</i>						
⁶⁰ Co	12	<14	<2.7	<5.7	1.7	0.25
¹³⁷ Cs	12	16	<3.2	<7.7	2.0	0.60
Gross beta	11	840	81	410	140	N/A
Total Sr	12	380	62	180	57	35
<i>TRU ponds</i>						
Gross beta	4	120	32	62	39	N/A
<i>First Creek</i>						
⁶⁰ Co	12	<8.1	<2.7	<5.2	1.0	0.15
¹³⁷ Cs	12	<5.4	<2.6	<4.3	0.81	0.20
Total Sr	12	810	300	610	120	75

Table 2.2.1 (continued)

Radionuclide	No. of samples	Concentration (pCi/L)				Percent of DCG ^b
		Max	Min	Av	95% cc ^a	
<i>Fifth Creek</i>						
⁶⁰ Co	12	<8.1	<2.5	<5.2	1.1	0.15
¹³⁷ Cs	12	8.1	<2.7	<5.1	1.2	0.30
Total Sr	12	46	20	28	4.3	4.3
<i>7500 bridge</i>						
⁶⁰ Co	12	12	<5.4	<7.7	1.4	0.23
¹³⁷ Cs	12	86	14	50	12	3.2
Total Sr	12	120	49	74	11	11
Tritium	12	590,000	1,500	55,000	98,000	28
<i>HFIR</i>						
⁶⁰ Co	2	16,000	5,400	11,000	11,000	300
¹³⁷ Cs	1	35	35	35	N/A	1.3
Gross alpha	2	810	590	700	220	N/A
Gross beta	2	14,000	12,000	13,000	1,900	N/A
⁶⁵ Zn	1	110	110	110	N/A	1.0
<i>Melton Branch 1</i>						
⁶⁰ Co	12	84	22	43	13	1.6
¹³⁷ Cs	12	11	<2.7	<5.6	1.2	0.40
Total Sr	12	590	130	280	86	55
Tritium	12	3,500,000	1,000,000	1,900,000	450,000	160
<i>Northwest tributary</i>						
⁶⁰ Co	12	<8.1	<2.7	<5.0	1.1	0.15
¹³⁷ Cs	12	<8.1	<2.7	<5.0	1.1	0.30
Total Sr	12	78	2.7	32	16	7.3
<i>1500 area</i>						
Gross alpha	11	32	1.0	13	7.0	N/A
Gross beta	11	130	8.1	51	23	N/A
<i>190 ponds</i>						
⁶⁰ Co	10	97	<2.7	<14	18	1.8
¹³⁷ Cs	10	1,700	5.4	190	340	64
Gross alpha	11	46	2.7	23	8.4	N/A
Gross beta	11	140	4.3	80	24	N/A

Table 2.2.1 (continued)

Radionuclide	No. of samples	Concentration (pCi/L)				Percent of DCG ^b
		Max	Min	Av	95% cc ^a	
<i>2000 area</i>						
⁶⁰ Co	11	<5.9	<2.7	<4.5	0.85	0.11
¹³⁷ Cs	11	<5.4	<2.5	<4.1	0.84	0.20
Gross beta	11	73	4.0	26	14	N/A
Total Sr	11	32	2.0	7.0	5.7	3.0
<i>3518</i>						
Gross alpha	11	38	1.0	13	8.1	N/A
Gross beta	11	57	4.0	29	12	N/A
<i>3544</i>						
⁶⁰ Co	11	270	<5.4	<170	47	5.0
¹³⁴ Cs	3	18	10	13	5.0	0.94
¹³⁷ Cs	11	2600	26	1600	520	97
¹⁵² Eu	2	59	46	53	14	0.24
¹⁵⁴ Eu	1	30	30	30	N/A	0.18
Gross alpha	11	250	59	140	38	N/A
Gross beta	11	3000	270	1800	450	N/A
¹⁰⁶ Ru	1	140	140	140	N/A	2.6
Total Sr	11	140	3.8	50	24	13
<i>Resin regeneration facility</i>						
⁶⁰ Co	1	<2.7	<2.7	<2.7	N/A	0.050
¹³⁷ Cs	1	9.5	9.5	9.5	N/A	0.35
Gross alpha	1	1.0	1.0	1.0	N/A	N/A
Gross beta	1	8.1	8.1	8.1	N/A	N/A

^aNinety-five percent confidence coefficient about the average.

^bMaximum concentration as a percentage of the derived concentration guide (DCG) from Draft DOE Order 5480.xx.

Table 2.2.2. 1987 radionuclide concentrations in water

Radionuclide	No. of samples	Concentration (pCi/L)			Percent of DCG ^a
		Max	Min	Av	
West Fork Poplar Creek					
Np	11	<1	<1	<1	NA ^b
Pu	11	<2	<1	<1	NA
Tc	11	<224	<105	<164	NA
Cs	11	<100	<100	<100	NA
U ^c	11	2.0	<0.7	<0.7	0.14
U (mg/L)	11	0.003	<0.001	<0.001	
K-1710					
Np	11	<2	<1	<1	NA
Pu	11	<3	<1	<1	NA
Tc	11	<222	<109	<164	NA
Cs	11	<100	<100	<100	NA
U	11	10	<0.7	<5.4	1.08
U (mg/L)	11	0.015	<0.001	<0.008	
K-716					
Np	11	<2	<1	<1	NA
Pu	11	<3	<1	<1	NA
Tc	11	<222	<109	<165	NA
Cs	11	<100	<100	<100	NA
U	11	8.7	<0.7	<2.7	0.54
U (mg/L)	11	0.013	<0.001	<0.004	
K-1513					
Np	11	<2	<1	<1	NA
Pu	11	<3	<1	<1	NA
Tc	11	<222	<109	<165	NA
Cs	11	<100	<100	<100	NA
U	11	4.0	<0.7	<2.0	0.4
U (mg/L)	11	0.006	<0.001	<0.003	
K-901 @ 892					
Np	11	<2	<1	<1	NA
Pu	11	<3	<1	<1	NA
Tc	11	<222	<109	<164	NA
Cs	11	<100	<100	<100	NA
U	11	2.7	<0.7	<1.3	<0.26
U (mg/L)	11	0.004	<0.001	<0.002	
Clinch River					
Np	10	<1	<1	<1	NA
Pu	10	<2	<1	<1	NA
Tc	10	<224	<105	<164	NA
Cs	10	<100	<100	<100	NA
U	10	1.3	<0.7	<0.7	0.14
U (mg/L)	10	0.002	<0.001	<0.001	

Table 2.2.2 (continued)

Radionuclide	No. of samples	Concentration (pCi/L)			Percent of DCG ^a
		Max	Min	Av	
Mitchell Branch					
<i>Source</i>					
Alpha	12	11.7	<2	<3.6	
Beta	12	97.5	<2	<15.1	
Gamma	3	<100	<100	<100	
<i>Upstream</i>					
Alpha	12	29.2	<2	<14.3	
Beta	12	38.6	<2	<17.8	
Gamma	3	<100	<100	<100	
<i>Downstream</i>					
Alpha	12	21.8	<2	<8.6	
Beta	12	57.8	21	35.5	
Gamma	3	<100	<100	<100	

^aMaximum concentration as a percentage of the derived concentration guide (DCG) from Draft Order 5480.xx.

^bNot applicable.

^cThe specific activity for natural uranium of 1.49 (10⁶) g/Ci was used to determine pCi/L.

Table 2.2.3. 1987 ORGDP radiological effluent at K-1203

Radionuclide	Emission source (Ci)	DCG ^a (pCi/L)	Average concentration (pCi/L)	Percent DCG
⁹⁹ Tc	<224	100,000	NA ^b	NA
²³⁴ U	34.7×10^{-3}	500	6.2	1.2
²³⁵ U	12.8×10^{-4}	600	0.23	0.04
²³⁶ U	33.0×10^{-5}	500	0.059	0.01
²³⁸ U	13.6×10^{-3}	600	2.4	0.4

^aDerived concentration guide.^bNot applicable.**Table 2.2.4. 1987 ORGDP radiological effluent at K-1700**

Radionuclide	Emission source (Ci)	DCG ^a (pCi/L)	Average concentration (pCi/L)	Percent DCG
²³⁷ Np	<2	30	NA ^b	NA
²³⁹ Pu	<3	30	NA	NA
⁹⁹ Tc	<224	100,000	NA	NA
¹³⁷ Cs	<100	3,000	NA	NA
²³⁴ U	15.8×10^{-2}	500	52.8	11
²³⁵ U	26.6×10^{-5}	600	0.089	0.01
²³⁶ U	10.1×10^{-4}	500	0.337	0.07
²³⁸ U	37.2×10^{-3}	600	12.4	2.1

^aDerived concentration guide.^bNot applicable.**Table 2.2.5. 1987 ORGDP radiological effluent at K-1007B**

Radionuclide	Emission source (Ci)	DCG ^a (pCi/L)	Average concentration (pCi/L)	Percent DCG
²³⁷ Np	<2	30	NA ^b	NA
²³⁹ Pu	<3	30	NA	NA
⁹⁹ Tc	<224	100,000	NA	NA
¹³⁷ Cs	<100	3,000	NA	NA
²³⁴ U	46.7×10^{-2}	500	29.6	5.9
²³⁵ U	26.1×10^{-4}	600	0.166	0.03
²³⁶ U	6.37×10^{-5}	500	0.040	0.01
²³⁸ U	21.9×10^{-3}	600	1.39	0.20

^aDerived concentration guide.^bNot applicable.

Table 2.2.6. 1987 ORGDP radiological effluent at K-901A

Radionuclide	Emission source (Ci)	DCG ^a (pCi/L)	Average concentration (pCi/L)	Percent DCG
²³⁷ Np	<2	30	NA ^b	NA
²³⁹ Pu	<3	30	NA	NA
⁹⁹ Tc	<224	100,000	NA	NA
¹³⁷ Cs	<100	3,000	NA	NA
²³⁴ U	12.7×10^{-3}	500	10.6	2.1
²³⁵ U	5.76×10^{-5}	600	0.48	0.1
²³⁶ U	14.9×10^{-4}	500	0.125	0.02
²³⁸ U	6.15×10^{-4}	600	5.14	0.9

^aDerived concentration guide.^bNot applicable.**Table 2.2.7. 1987 concentrations at K-1710**

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	<0.005	<0.005	<0.005
Mercury	0.0004	<0.0002	0.0002
COD	11	<5	<7
Suspended solids	17	4	11
Dissolved solids	310	132	215
pH (units)	8.0	7.7	
Cyanide	0.017	<0.002	<0.006
Ammonia nitrogen	0.2	<0.2	<0.2
Fluoride	0.70	<0.10	<0.44
Nitrate nitrogen	10	0.68	2.0
Sulfate	49	32	40
Chromium	0.041	<0.010	<0.013
Copper	0.050	<0.0040	<0.008
Manganese	0.250	0.022	0.114
Nickel	<0.050	<0.050	<0.050
Sodium	15.0	4.0	10.0
Zinc	0.13	<0.02	<0.03
Cadmium	<0.002	<0.002	<0.002
Lead	0.007	<0.004	<0.004

Table 2.2.8. 1987 concentrations at K-716

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	<0.005	<0.005	<0.005
Mercury	0.0005	<0.0002	0.0002
COD	14.5	<5	<7.1
Suspended solids	22	5	14
Dissolved solids	214	136	177
pH (units)	8.5	7.6	
Cyanide	0.14	<0.002	<0.005
Ammonia nitrogen	0.2	<0.2	<0.2
Fluoride	0.6	<0.1	<0.2
Nitrate nitrogen	33.6	0.24	3.38
Sulfate	40	23	30
Chromium	<0.01	<0.01	<0.01
Copper	0.054	<0.004	0.009
Manganese	1.5	<0.01	<0.08
Nickel	<0.050	<0.050	<0.050
Sodium	8.6	4.0	6.7
Zinc	0.054	<0.020	<0.023
Cadmium	<0.002	<0.002	<0.002
Lead	0.005	<0.004	<0.004

Table 2.2.9. 1987 concentrations at K-1513

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	0.005	<0.005	<0.005
Mercury	0.0004	<0.0002	<0.0002
COD	7.5	<5	<5.2
Suspended solids	19	<4	<6
Dissolved solids	230	122	171
pH (units)	8.2	7.8	
Cyanide	0.006	<0.002	<0.003
Ammonia nitrogen	<0.2	<0.2	<0.2
Fluoride	0.19	<0.10	<0.11
Nitrate nitrogen	8.37	0.19	1.10
Sulfate	27	19	22
Chromium	<0.010	<0.010	<0.010
Copper	0.085	<0.004	<0.013
Manganese	0.084	<0.010	0.025
Nickel	<0.050	<0.050	<0.050
Sodium	5.9	3.6	4.7
Zinc	0.064	<0.02	<0.03
Cadmium	<0.002	<0.002	<0.002
Lead	0.005	<0.004	<0.004

Table 2.2.10. 1987 concentrations at K-901 at 892

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	<0.005	<0.005	<0.005
Mercury	0.0006	<0.0002	<0.0002
COD	18	<5	<6
Suspended solids	7	2	4
Dissolved solids	208	156	161
pH (units)	8.3	7.6	
Cyanide	0.005	<0.002	<0.003
Ammonia nitrogen	<0.2	<0.2	<0.2
Fluoride	0.19	<0.10	<0.10
Nitrate nitrogen	16.7	0.42	1.80
Sulfate	28	20	20
Chromium	<0.010	<0.010	<0.010
Copper	0.0300	<0.0040	<0.0063
Manganese	0.056	<0.010	<0.032
Nickel	<0.050	<0.050	<0.050
Sodium	6.6	3.9	4.8
Zinc	0.059	<0.020	<0.033
Cadmium	0.003	<0.002	<0.002
Lead	0.004	<0.004	<0.004

Table 2.2.11. 1987 concentrations at Clinch River

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	<0.005	<0.005	<0.005
Mercury	<0.0002	<0.0002	<0.0002
COD	28	<5	<9
Suspended solids	13	<4	<8
Dissolved solids	216	138	165
pH (units)	8.4	7.6	
Cyanide	0.003	<0.002	<0.002
Ammonia nitrogen	<0.2	<0.2	<0.2
Fluoride	0.5	<0.1	<0.1
Nitrate nitrogen	0.61	0.17	0.40
Sulfate	25	14	21
Chromium	<0.01	<0.01	<0.01
Copper	<0.004	<0.004	<0.004
Manganese	0.074	<0.01	0.02
Nickel	<0.050	<0.050	<0.050
Sodium	5.6	2.6	4.7
Zinc	0.24	<0.02	<0.02
Cadmium	0.003	<0.002	<0.002
Lead	0.025	<0.004	<0.007

Table 2.2.12. 1987 COD concentrations at Mitchell Branch

Location	Concentration (mg/L)		
	Max	Min	Av
Source	44	<5	<16.2
Upstream	17	<5	<7.4
Downstream	25	<5	<7.1

Table 2.2.13. 1987 concentrations at West Fork Poplar Creek

Parameter	Concentration (mg/L)		
	Max	Min	Av
Arsenic	<0.005	<0.005	<0.005
Mercury	<0.0002	<0.0002	<0.0002
COD	11	<5	<7
Suspended solids	29	1	12
Dissolved solids	252	116	186
pH (units)	8.0	7.3	
Cyanide	0.01	<0.002	<0.003
Ammonia nitrogen	<0.2	<0.2	<0.2
Fluoride	0.3	<0.1	<0.2
Nitrate nitrogen	1.3	<0.11	<0.35
Sulfate	80	27	44
Chromium	<0.01	<0.01	<0.01
Copper	<0.004	<0.004	<0.004
Manganese	0.38	<0.010	<0.102
Nickel	<0.050	<0.050	<0.050
Sodium	7.3	2.4	5.2
Zinc	0.054	<0.020	<0.023
Cadmium	<0.002	<0.002	<0.002
Lead	0.014	<0.004	<0.005

Table 2.2.14. 1987 NPDES Permit Number TN 0002968
Discharge Point: 301^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Total suspended solids (mg/L)												
	No. of samples 8			Mercury (mg/L)			Lithium (mg/L)			Zirconium (mg/L)		
	No. of samples 8			No. of samples 8			No. of samples 8			No. of samples 8		
January	<5.0	<5.0	<5.0	<0.0002	<0.0002	<0.0002	0.149	0.149	0.149	<0.002	<0.002	<0.002
February	<5.0	<5.0	<5.0	<0.0002	<0.0002	<0.0002	0.203	0.146	0.175	<0.002	<0.002	<0.002
June	<5.0	<5.0	<5.0	<0.0002	<0.0002	<0.0002	0.043	0.043	0.043	<0.002	<0.002	<0.002
July	13	13	13	<0.0002	<0.0002	<0.0002	0.041	0.041	0.041	<0.002	<0.002	<0.002
November	<5.0	<5.0	<5.0	<0.0002	<0.0002	<0.0002	0.110	0.110	0.110	<0.002	<0.002	<0.002
December	<5.0	<5.0	<5.0	<0.0002	<0.0002	<0.0002	0.240	0.094	0.167	<0.002	<0.002	<0.002
Annual summary	13	<5.0	<6.3	<0.0002	<0.0002	<0.0002	0.240	0.041	0.114	<0.002	<0.002	<0.002
Potassium (mg/L)												
	No. of samples 8			Sodium (mg/L)			pH (units)			Arsenic (mg/L)		
	No. of samples 8			No. of samples 8			No. of samples 8			No. of samples 8		
January	1.2	1.2	1.2	0.72	0.72	0.72	7.8	7.8	NA ^b	<0.04	<0.04	<0.04
February	1.1	0.8	1.0	0.6	0.5	0.6	7.4	7.3	NA	<0.04	<0.04	<0.04
June	0.9	0.9	0.9	0.530	0.530	0.530	8.5	8.5	NA	<0.04	<0.04	<0.04
July	0.9	0.9	0.9	0.6	0.6	0.6	8.4	8.4	NA	<0.04	<0.04	<0.04
November	0.9	0.9	0.9	0.6	0.6	0.6	7.4	7.4	NA	<0.04	<0.04	<0.04
December	0.9	0.9	0.9	0.7	0.5	0.6	8.1	7.8	NA	<0.04	<0.04	<0.04
Annual summary	1.2	0.8	1.0	0.7	0.5	0.6	8.5	7.3	NA	<0.04	<0.04	<0.04
Cadmium (mg/L)												
	No. of samples 8			Chromium (mg/L)			Copper (mg/L)			Iron (mg/L)		
	No. of samples 8			No. of samples 8			No. of samples 8			No. of samples 8		
January	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	0.003	0.003	0.003	0.16	0.16	0.16
February	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	<0.002	<0.002	<0.002	0.07	0.06	0.07
June	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	<0.002	<0.002	<0.002	0.13	0.13	0.13
July	0.003	0.003	0.003	0.006	0.006	0.006	<0.002	<0.002	<0.002	0.09	0.09	0.09
November	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	<0.002	<0.002	<0.002	0.27	0.27	0.27
December	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	0.003	<0.002	<0.003	0.07	0.07	0.07
Annual summary	<0.003	<0.003	<0.003	<0.006	<0.006	<0.006	0.003	<0.002	<0.002	0.27	0.06	0.13

Table 2.2.14 (continued)

Month	Nickel (mg/L)			Selenium (mg/L)			Zinc (mg/L)			Lead (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 8											
January	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.005	0.005	0.005	<0.02	<0.02	<0.02
February	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.005	0.003	0.004	<0.02	<0.02	<0.02
June	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.002	0.002	0.002	<0.02	<0.02	<0.02
July	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.001	0.001	0.001	<0.02	<0.02	<0.02
November	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.004	0.004	0.004	<0.02	<0.02	<0.02
December	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.028	0.007	0.018	<0.02	<0.02	<0.02
Annual summary	<0.007	<0.007	<0.007	<0.002	<0.002	<0.002	0.028	0.001	0.006	<0.02	<0.02	<0.02
	Temperature (°C)											
	No. of samples 8											
January	9.1	9.1	9.1									
February	10.9	8.8	9.9									
June	25.6	25.6	25.6									
July	27.4	27.4	27.4									
November	12.3	12.3	12.3									
December	10.6	8.5	9.6									
Annual summary	27.4	8.5	15.6									

^aY-12 Plant, Kerr Hollow Quarry.^bNA—not applicable.

**Table 2.2.15. 1987 NPDES Permit Number TN 0002968
Discharge Point: 302^a (Part 1)**

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Total suspended solids (mg/L)</i> No. of samples 52			<i>Chemical oxygen demand (mg/L)</i> No. of samples 52			<i>Sulfate as SO₄ (mg/L)</i> No. of samples 52			<i>Oil and grease (mg/L)</i> No. of samples 52		
January	14.0	<5.0	<7.75	10.0	<5.0	<6.25	90.0	86.0	88.0	<2.0	<2.0	<2.0
February	20.0	<5.0	<9.0	<5.0	<5.0	<5.0	98.0	86.0	90.0	5.0	<2.0	<3.0
March	8.0	<5.0	<6.0	16.0	<5.0	<7.0	75.0	66.0	70.0	<2.0	<2.0	<2.0
April	<5.0	<5.0	<5.0	9.0	<5.0	<6.0	74.0	63.0	69.0	6.0	<2.0	<3.0
May	<5.0	<5.0	<5.0	5.0	<5.0	<5.0	62.0	60.0	61.0	2.0	<2.0	<2.0
June	10	<5.0	<5.0	11.0	<5.0	<8.0	79.0	60.0	73.0	3.0	<2.0	<2.0
July	5.0	<5.0	<5.0	5.0	<5.0	<5.0	80.0	74.0	79.0	3.0	<2.0	<2.0
August	8.0	<5.0	<6.0	8.0	<5.0	<6.0	80.0	74.0	77.0	<2.0	<2.0	<2.0
September	16.0	<5.0	<7.0	14.0	5.0	8.0	98.0	71.0	78.0	2.0	<2.0	<2.0
October	6.0	<5.0	<5.0	10.0	5.0	7.0	78.0	75.0	76.0	<2.0	<2.0	<2.0
November	19.0	<5.0	<9.0	12.0	<5.0	<9.0	79.0	70.0	75.0	<2.0	<2.0	<2.0
December	<5.0	<5.0	<5.0	10.0	<5.0	<7.0	80.0	76.0	78.0	<2.0	<2.0	<2.0
Annual summary	20.0	<5.0	<6.2	16	<5.0	<6.6	98.0	60.0	76.2	6.0	<2.0	<2.2
	<i>Settleable solids (mL/L)</i> No. of samples 52			<i>Selenium (mg/L)</i> No. of samples 52			<i>Mercury (mg/L)</i> No. of samples 52			<i>Arsenic (mg/L)</i> No. of samples 52		
January	<0.1	<0.1	<0.1	0.03	0.024	0.027	<0.0002	<0.0002	<0.0002	0.36	0.31	0.33
February	<0.1	<0.1	<0.1	0.025	0.022	0.023	<0.0002	<0.0002	<0.0002	0.36	0.33	0.35
March	<0.1	<0.1	<0.1	0.032	0.022	0.026	0.0004	<0.0002	<0.0003	0.34	0.29	0.31
April	<0.1	<0.1	<0.1	0.030	0.022	0.025	<0.0002	<0.0002	<0.0002	0.35	0.25	0.29
May	<0.1	<0.1	<0.1	0.022	0.021	0.022	0.0024	<0.0002	<0.0007	0.22	0.20	0.21
June	<0.1	<0.1	<0.1	0.032	0.022	0.027	<0.0002	<0.0002	<0.0002	0.25	0.16	0.23
July	<0.1	<0.1	<0.1	0.029	<0.002	<0.021	<0.0002	<0.0002	<0.0002	0.23	0.22	0.22
August	<0.1	<0.1	<0.1	0.029	<0.002	<0.021	<0.0002	<0.0002	<0.0002	0.22	0.20	0.21
September	<0.5	<0.1	<0.3	0.031	0.018	0.025	0.0002	<0.0002	<0.0002	0.28	0.22	0.24
October	<0.1	<0.1	<0.1	0.028	0.019	0.025	<0.0002	<0.0002	<0.0002	0.28	0.22	0.24
November	<0.5	<0.1	<0.4	0.028	0.018	0.024	<0.0002	<0.0002	<0.0002	0.27	0.24	0.26
December	<0.1	<0.1	<0.1	0.030	0.028	0.029	0.0052	<0.0002	<0.0012	0.28	0.24	0.26
Annual summary	<0.5	<0.1	<0.14	0.032	<0.002	<0.025	0.0052	<0.0002	<0.0003	0.36	0.16	0.26

^aY-12 Plant, Rogers Quarry.

**Table 2.2.17. 1987 NPDES Permit Number TN 0002968
Discharge Point: 302^a (Part 3)**

Month	Max	Min	Av	Max	Min	Av
	<i>Turbidity (NTU)</i>			<i>Temperature (°C)</i>		
	No. of samples 52			No. of samples 52		
January	8.2	1.8	4.85	9.5	8.0	8.95
February	4.3	0.2	1.6	8.1	8.0	8.1
March	5.3	0.9	1.9	13.2	8.5	10.5
April	4.3	2.3	3.0	14.0	9.7	12.8
May	2.5	1.5	1.8	25.4	19.8	23.2
June	3.0	1.2	1.9	25.4	21.3	22.6
July	4.2	1.5	2.9	27.4	25.8	26.4
August	4.0	1.3	3.0	28.0	27.3	27.8
September	5.6	1.8	3.7	25.7	23.0	24.6
October	3.7	1.9	3.1	21.1	17.3	18.9
November	2.7	1.3	2.0	16.3	13.0	14.9
December	5.3	1.8	3.2	13.0	9.3	11.1
Annual summary	8.2	0.2	2.7	28.0	8.0	17.5

^aY-12 Plant, Rogers Quarry.

Table 2.2.18. 1987 NPDES Permit Number TN 0002968
Discharge Point: 303^a (Part 1)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Ammonia (as N) (mg/L)</i> No. of samples 199			<i>Chromium (mg/L)</i> No. of samples 201			<i>Fluoride (mg/L)</i> No. of samples 198			<i>Lithium (mg/L)</i> No. of samples 201		
January	2.4	<0.2	<0.8	<0.013	<0.006	<0.0069	1.0	0.6	0.89	0.056	0.014	0.024
February	1.3	<0.2	0.6	<0.006	<0.006	<0.006	1.0	0.8	1.0	0.050	0.01	0.02
March	0.9	<0.2	<0.40	<0.006	<0.006	<0.006	1.0	0.8	1.0	0.047	0.014	0.018
April	1.2	<0.2	0.4	0.010	<0.006	<0.006	1.1	0.5	0.90	0.056	0.011	0.021
May	0.5	<0.2	<0.3	<0.006	<0.006	<0.006	1.20	0.9	1.1	0.318	0.013	0.053
June	0.5	<0.2	<0.3	<0.006	<0.006	<0.006	1.1	0.9	1.0	0.138	0.011	0.028
July	2.2	<0.2	<0.4	<0.006	<0.006	<0.006	2.5	0.7	1.0	0.064	0.012	0.018
August	<0.2	<0.2	<0.2	0.009	<0.006	<0.006	1.0	0.8	1.0	0.017	0.01	0.013
September	0.6	<0.2	<0.3	0.007	<0.006	<0.006	1.0	0.8	1.0	0.083	0.009	0.018
October	0.5	<0.2	<0.3	0.011	<0.006	<0.006	1.0	0.8	1.0	0.037	0.01	0.014
November	<0.2	<0.2	<0.2	<0.006	<0.006	<0.006	1.0	1.0	1.0	0.073	0.01	0.027
December	1.1	<0.2	<0.4	<0.007	<0.006	<0.006	1.2	0.8	1.0	0.037	0.011	0.021
Annual summary	2.4	<0.2	<0.38	0.011	<0.006	<0.006	2.5	0.5	0.99	0.318	0.009	0.023
	<i>Surfactants (as MBAS) (mg/L)</i> No. of samples 54			<i>Dissolved solids (mg/L)</i> No. of samples 198			<i>Nickel (mg/L)</i> No. of samples 201			<i>Beryllium (mg/L)</i> No. of samples 201		
January	<0.05	<0.05	<0.05	830	160	277	0.023	<0.007	<0.0083	0.0001	<0.0001	<0.0001
February	<0.05	<0.05	<0.05	390	200	262	0.204	<0.007	<0.034	0.0001	0.0001	0.0001
March	<0.05	<0.05	<0.05	280	200	235	0.009	<0.007	<0.007	0.0001	<0.0001	<0.0001
April	<0.05	<0.05	<0.05	500	200	254	0.011	<0.007	<0.007	0.0003	<0.0001	<0.0001
May	0.05	<0.05	<0.05	480	230	332	0.011	<0.007	<0.008	0.0002	<0.0001	<0.0001
June	0.06	<0.05	<0.05	3300	190	403	<0.007	<0.007	<0.007	<0.0001	<0.0001	<0.0001
July	<0.05	<0.05	<0.05	270	70	215	<0.007	<0.007	<0.007	<0.0001	<0.0001	<0.0001
August	<0.05	<0.05	<0.05	270	180	222	<0.007	<0.007	<0.007	0.0002	<0.0001	<0.0001
September	<0.05	<0.05	<0.05	270	190	228	0.012	<0.007	<0.007	<0.0001	<0.0001	<0.0001
October	<0.05	<0.05	<0.05	640	210	258	0.009	<0.007	<0.007	<0.0001	<0.0001	<0.0001
November	<0.05	<0.05	<0.05	350	210	247	0.007	<0.007	<0.007	<0.0001	<0.0001	<0.0001
December	<0.05	<0.05	<0.05	300	220	253	<0.007	<0.007	<0.007	<0.0001	<0.0001	<0.0001
Annual summary	0.06	<0.05	<0.05	3300	70	265	0.204	<0.007	<0.009	0.0003	<0.0001	<0.0001

^aNew Hope Pond.

Table 2.2.19. 1987 NPDES Permit Number TN 0002968
Discharge Point: 303^a (Part 2)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Residual chlorine (mg/L)</i> No. of samples 59											
January	1.1	0.3	0.61	<0.010	<0.010	<0.010	<0.1	<0.1	<0.1	10.8	8.1	9.4
February	0.70	0.1	0.40	<0.010	<0.010	<0.010	<0.1	<0.1	<0.1	11.1	8.4	9.5
March	1.0	0.10	0.30	<0.010	<0.010	<0.010	<0.1	<0.1	<0.1	10.1	8.0	9.1
April	0.50	0.20	0.30	0.010	<0.010	<0.010	<0.1	<0.1	<0.1	10.1	7.9	9.0
May	0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.1	0.1	0.1	10.5	1.4	7.9
June	0.2	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	10.2	6.0	8.1
July	0.28	0.2	0.22	<0.01	<0.01	<0.01	0.1	0.1	0.1	9.9	6.0	8.0
August	0.3	0.2	0.2	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	9.5	6.0	7.3
September	0.4	<0.1	<0.2	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	9.4	6.3	7.9
October	0.3	0.2	0.2	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	11.9	6.9	8.6
November	0.15	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	10.1	7.0	8.5
December	0.2	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	9.6	6.0	7.8
Annual summary	1.1	<0.1	<0.24	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	11.9	1.4	8.4
	<i>Oil and grease (mg/L)</i> No. of samples 65											
January	2	<2	<2	19.0	<5.0	<6.9	0.105	0.061	0.077	12.0	3.5	6.3
February	3	<2	<2	19.0	<5.0	<6	0.105	0.064	0.085	5.1	3.7	4.1
March	2.0	<2	<2.0	9.0	<5.0	<5.0	0.095	0.047	0.072	4.8	3.5	4.4
April	3	<2	<2	170.0	<5	<16	0.151	0.037	0.076	6.5	3.7	4.6
May	4	<2	<3	<5.0	<5	<6	0.113	0.026	0.052	4.4	3.4	4.0
June	<2	<2	<2	13	<5	<5	0.05	0.02	0.03	4.8	3.1	4.1
July	3	<2	<2	12	<5	<6	0.048	0.019	0.033	6.1	2.9	3.9
August	3	<2	<2	160	<5	<17	0.097	0.02	0.037	3.6	2.2	3.1
September	3	<2	<2	6	<5	<5	0.046	0.024	0.033	3.8	3.0	3.2
October	2	<2	<2	10	<5	<5	0.048	0.026	0.033	5.0	2.7	3.7
November	<2	<2	<2	10	<5	<6	0.073	0.025	0.049	3.3	2.2	2.8
December	3	<2	<2	6	<5	<5	0.074	0.041	0.056	5.1	2.6	3.7
Annual summary	4	<2	<2	170	<5	<7.4	0.151	0.019	0.053	12.0	2.2	3.9
	<i>Total suspended solids (mg/L)</i> No. of samples 198											
	<i>Settleable solids (mL/L)</i> No. of samples 13											
	<i>Zinc (mg/L)</i> No. of samples 201											
	<i>Dissolved oxygen (mg/L)</i> No. of samples 253											
	<i>Nitrogen (total) (mg/L)</i> No. of samples 53											

^aY-12 Plant, New Hope Pond.

Table 2.2.20. 1987 NPDES Permit Number TN 0002968
Discharge Point: 303^e (Part 3)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Cadmium (mg/L)</i> No. of samples 201			<i>Lead (mg/L)</i> No. of samples 201			<i>Copper (mg/L)</i> No. of samples 201			<i>Mercury (mg/L)</i> No. of samples 199		
January	<0.003	<0.003	<0.003	<0.02	<0.02	<0.020	0.013	0.008	0.0099	0.0042	0.0016	0.0028
February	<0.003	<0.003	<0.003	<0.02	<0.02	<0.020	0.015	0.007	0.009	0.0140	0.0018	0.0043
March	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.017	0.007	0.009	0.0024	0.0012	0.0018
April	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.025	0.003	0.009	0.02	0.0014	0.0033
May	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.015	0.006	0.009	0.0072	<0.0002	<0.0023
June	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.011	0.005	0.007	0.0022	0.0007	0.0013
July	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.008	0.004	0.006	0.019	0.0018	0.0065
August	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.020	0.005	0.008	0.037	0.0017	0.0049
September	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.008	0.004	0.006	0.004	0.0012	0.002
October	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.008	0.005	0.006	0.0028	0.0009	0.0014
November	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.010	0.004	0.007	0.0020	0.0008	0.0013
December	<0.003	<0.003	<0.003	0.02	<0.02	<0.02	0.015	0.006	0.008	0.0048	0.0014	0.0020
Annual summary	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.025	0.003	0.0078	0.037	<0.0002	<0.0028
	<i>Temperature (°C)</i> No. of samples 69			<i>Biochemical oxygen demand (mg/L)</i> No. of samples 199			<i>Chemical oxygen demand (mg/L)</i> No. of samples 198			<i>pH (units)</i> No. of samples 255		
January	13.0	10.1	11.3	<5	<5	<5	20.0	5.4	11.3	8.2	7.6	NA ^b
February	12.5	9.1	11.0	6.0	<5.0	<5.0	18	5.0	10.0	7.9	6.8	NA
March	16.7	12.3	13.7	9.0	<5.0	<5.0	32	5.0	12.0	8.3	6.9	NA
April	16.9	13.0	15.4	<5	<5	<5	44	5.0	14	8.0	7.3	NA
May	22.3	17.3	20.8	6	<5	<5	320	6	25	8.5	7.2	NA
June	23.2	21.3	22.5	7	<5	<5	41	<5	<14	8.5	7.2	NA
July	24.8	22.7	23.7	<5	<5	<5	12	7	10	9.3	7.5	NA
August	28.5	22.0	24.7	<5	<5	<5	32	4	14	9.9	7.5	NA
September	27.6	20	22.5	<5	<5	<5	17	7	10	8.1	7.4	NA
October	21.0	17.0	18.7	<5	<5	<5	19	<5	<12	9.0	7.0	NA
November	19.3	13.1	16.4	<5	<5	<5	19	9	12	7.8	7.2	NA
December	15.5	13.3	14.4	<5	<5	<5	20	7	12	8.1	7.4	NA
Annual summary	28.5	9.1	17.9	9.0	<5	<5	320	<5	<13.0	9.9	6.8	NA

^eY-12 Plant, New Hope Pond.

^bNA—not applicable.

Table 2.2.21. 1987 NPDES Permit Number TN 0002968
Discharge Point: 304^a (Part 1)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Oil and grease (mg/L) No. of samples 52			Biochemical oxygen demand (mg/L) No. of samples 52			Chemical oxygen demand (mg/L) No. of samples 52			Dissolved solids (mg/L) No. of samples 52		
January	<2	<2	<2	<5	<5	<5	<10	<5.0	<6.5	290	150	198
February	<2	<2	<2	<5	<5	<5	20	5	10	210	130	185
March	3	<2	<2	<5	<5	<5	22	<5	<10	240	140	180
April	3	<2	<2	<5	<5	<5	17	2	8	210	160	180
May	<2	<2	<2	<5	<5	<5	5	<5.0	<5	380	180	285
June	<2	<2	<2	8	<5	<6	20	<5	<9	270	190	223
July	3	<2	<2	<5	<5	<5	9	<5	<6	310	170	214
August	2	<2	<2	<5	<5	<5	6	<5	<5	170	86	142
September	6	<2	<3	<5	<5	<5	9	<5.0	<7	230	160	208
October	2	<2	<2	<5	<5	<5	18	<5	<11	410	250	284
November	<2	<2	<2	<5	<5	<5	17	7	13	470	260	378
December	<2	<2	<2	<5	<5	<5	14	<5	<9	440	390	418
Annual summary	6	<2	<2.1	8	<5	<5.1	22	<2	<8.3	470	86	241
	Total suspended solids (mg/L) No. of samples 52			Nitrates (as N) (mg/L) No. of samples 52			Conductivity (μ mho/cm) No. of samples 52			Dissolved oxygen (mg/L) No. of samples 52		
January	<5	<5.0	<5.0	20	4.4	8.5	470	130	320	11.9	10.1	11.0
February	52	<5.0	19.0	13	5.4	9.1	360	230	313	12.0	9.3	11.0
March	21	<5.0	<10	10.0	4.0	7.8	700	290	400	11.3	8.8	10.3
April	<5	<5.0	<5.0	9.2	2.6	5.7	360	270	308	11.0	9.9	10.5
May	<5	<5.0	<5	4.8	2.0	3.6	400	320	368	9.8	7.3	9.1
June	60	<5	<19	5.8	2.0	3.5	440	400	420	10.5	7.3	9.1
July	10	<5.0	<7	11.0	0.6	3.5	640	370	463	10.5	8.2	9.1
August	20	<5.0	<9	3.4	0.2	0.3	380	380	380	10.7	6.8	9.1
September	20	<5	<10	13	<0.1	<1.3	430	340	390	8.7	7.0	8.1
October	48	<5.0	<15	20.0	4.0	8.6	480	430	453	8.7	8.0	8.3
November	10	<5.0	<6	44.0	5.0	26.0	530	410	463	10.4	8.2	9.4
December	<5	<5.0	<5	40.0	15.0	27.4	900	390	608	9.6	8.8	9.2
Annual summary	60	<5	<9.6	44	<0.1	<8.7	900	130	407	12.0	6.8	9.5

^aY-12 Plant.

**Table 2.2.22. 1987 NPDES Permit Number TN 0002968
Discharge Point: 304^a (Part 2)**

Month	Max	Min	Av	Max	Min	Av ^b
	<i>Turbidity (NTU)</i>			<i>pH (units)</i>		
	No. of samples 52			No. of samples 52		
January	43.0	1.2	14.3	7.6	6.6	NA
February	18.0	0.36	5.01	7.5	6.7	NA
March	8.3	2.0	3.9	7.8	7.4	NA
April	5.0	3.4	3.9	7.9	7.4	NA
May	125.0	4.6	40.0	7.9	7.5	NA
June	24.0	8.0	12.6	7.8	7.2	NA
July	110.0	7.4	34.2	7.8	7.2	NA
August	8.0	6.0	6.6	7.7	7.2	NA
September	15.0	6.9	9.6	7.6	7.2	NA
October	9.2	3.8	6.3	7.5	7.2	NA
November	16	2.1	7.9	7.5	7.1	NA
December	10.2	1.5	4.9	8.1	7.4	NA
Annual summary	125.0	0.36	12.4	8.1	6.6	

^aY-12 Plant, Bear Creek.

^bNA—not applicable.

Table 2.2.23. 1987 NPDES Permit Number TN 0002968
Discharge Point: 305^a

Month	Oil and grease (mg/L)			Total suspended solids (mg/L)			Mercury (mg/L)			pH (units)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	2	2	2	5	5	5	<0.0002	<0.0002	<0.0002	6.6	6.6	NA ^c
February	4	4	4	8	8	8	0.0002	0.0002	0.0002	6.3	6.3	NA
March	2	2	2	6	6	6	0.0003	0.0003	0.0003	7.0	7.0	NA
April	2	2	2	8	8	8	<0.0002	<0.0002	<0.0002	7.5	7.5	NA
May	2	2	2	6	6	6	0.0002	0.0002	0.0002	7.9	7.9	NA
June	2	2	2	10	10	10	<0.0002	<0.0002	<0.0002	7.3	7.3	NA
July	2	2	2	34	34	34	<0.0002	<0.0002	0.0002	7.0	7.0	NA
August ^b												
September	3	3	3	8	8	8	<0.0002	<0.0002	<0.0002	7.9	7.9	NA
October	2	2	2	5	5	5	0.0002	0.0002	0.0002	7.2	7.2	NA
November	2	2	2	5	5	5	<0.0002	<0.0002	<0.0002	7.6	7.6	NA
December	3	3	3	5	5	5	<0.0002	<0.0002	<0.0002	8.2	8.2	NA
Annual summary	4	2	2.4	34	5	9.1	0.0003	<0.0002	<0.0002	8.2	6.3	NA
	Beryllium (mg/L)			Cadmium (mg/L)			Lead (mg/L)			Silver (mg/L)		
	No. of samples 11			No. of samples 11			No. of samples 11			No. of samples 11		
January	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	0.02	<0.02	0.004	0.004	0.004
February	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
March	<0.0001	<0.0001	<0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
April	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
May	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
June	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
July	0.0002	0.0002	0.0002	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
August ^b												
September	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
October	0.0001	0.0001	0.0001	0.003	0.003	0.003	0.02	0.02	0.02	0.004	0.004	0.004
November	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
December	0.0001	0.0001	0.0001	<0.003	<0.003	<0.003	<0.02	<0.02	<0.02	0.004	0.004	0.004
Annual summary	0.0002	<0.0001	<0.0001	0.003	<0.003	<0.003	0.02	<0.02	<0.02	0.004	0.004	0.004

^aY-12 Plant, leaking burial grounds and wet weather springs (Bear Creek Valley Oil Pond No. 1).

^bNo discharge.

^cNA - not applicable.

Table 2.2.24. 1987 NPDES Permit Number TN 0002968
Discharge Point: 306^c

Month	Oil and grease (mg/L)			Total suspended solids (mg/L)			Mercury (mg/L)			pH (units)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<2	<2	<2	8.0	8.0	8.0	<0.0002	<0.0002	<0.0002	7.3	7.3	NA ^b
February	3	3	3	<5	<5	<5	0.0002	0.0002	0.0002	7.5	7.5	NA
March	<2	<2	<2	<5	<5	<5	<0.0002	<0.0002	<0.0002	7.4	7.4	NA
April	3	3	3	<5	<5	<5	<0.0002	<0.0002	<0.0002	7.9	7.9	NA
May	<2	<2	<2	10	10	10	<0.0002	<0.0002	<0.0002	7.4	7.4	NA
June	3	3	3	34	34	34	0.0002	0.0002	0.0002	7.0	7.0	NA
July	<2	<2	<2	14	14	14	0.0002	0.0002	0.0002	7.1	7.1	NA
December	<2	<2	<2	<5	<5	<5	<0.0002	<0.0002	<0.0002	8.3	8.3	NA
Annual summary	3	<2	2.38	34	<5	<10.75	0.0002	<0.0002	<0.0002	8.3	7.0	NA
	Cadmium (mg/L)			Nickel (mg/L)			Lead (mg/L)			Silver (mg/L)		
	No. of samples 8			No. of samples 8			No. of samples 8			No. of samples 8		
January	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
February	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
March	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
April	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
May	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
June	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
July	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
December	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004
Annual summary	<0.003	<0.003	<0.003	<0.007	<0.007	<0.007	<0.02	<0.02	<0.02	<0.004	<0.004	<0.004

^cY-12 Plant, seepage from burial pit and surface water runoff (Bear Creek Valley Oil Pond No. 2); sample ID W48.

^bNA—not applicable.

Table 2.2.25. 1987 NPDES Permit Number TN 0002968
Discharge Point: 504^c

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Oil and grease (mg/L)</i> No. of samples 13			<i>Cyanide (mg/L)</i> No. of samples 13			<i>Chromium (mg/L)</i> No. of samples 13			<i>Copper (mg/L)</i> No. of samples 13		
March	<2	<2	<2	0.003	<0.002	<0.002	<0.006	<0.006	<0.006	0.005	<0.002	<0.003
April	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.004	0.004	0.004
May	3	<2	<3	0.03	<0.002	<0.016	<0.006	<0.006	<0.006	0.004	0.003	0.004
June	<2	<2	<2	0.028	0.015	0.028	<0.006	<0.006	<0.006	0.004	0.003	0.004
November	<2	<2	<2	0.002	0.002	0.002	<0.006	<0.006	<0.006	0.005	0.005	0.005
December	<2	<2	<2	0.003	0.002	0.003	<0.006	<0.006	<0.006	0.003	<0.002	<0.003
Annual summary	<2	<2	<2	0.03	<0.002	<0.009	<0.006	<0.006	<0.006	0.005	<0.002	<0.004
	<i>Lead (mg/L)</i> No. of samples 8			<i>Nickel (mg/L)</i> No. of samples 8			<i>Cadmium (mg/L)</i> No. of samples 8			<i>Zinc (mg/L)</i> No. of samples 8		
March	<0.02	<0.02	<0.02	0.303	0.06	0.153	<0.003	<0.003	<0.003	0.211	0.113	0.148
April	<0.02	<0.02	<0.02	0.095	0.084	0.090	<0.003	<0.003	<0.003	0.094	0.069	0.082
May	<0.02	<0.02	<0.02	0.076	0.066	0.071	<0.003	<0.003	<0.003	0.084	0.055	0.07
June	<0.02	<0.02	<0.02	0.022	0.02	0.021	<0.003	<0.003	<0.003	0.055	0.021	0.038
November	<0.02	<0.02	<0.02	0.583	0.583	0.583	<0.003	<0.003	<0.003	0.121	0.121	0.121
December	<0.02	<0.02	<0.02	0.316	0.027	0.124	<0.003	<0.003	<0.003	0.101	0.043	0.065
Annual summary	<0.02	<0.02	<0.02	0.583	0.02	0.174	<0.003	<0.003	<0.003	0.211	0.021	0.087
	<i>Silver (mg/L)</i> No. of samples 13			<i>Total suspended solids (mg/L)</i> No. of samples 13			<i>Temperature (°C)</i> No. of samples 13			<i>pH (units)</i> No. of samples 13		
March	<0.004	<0.004	<0.004	7	7	7	15.8	10.2	13.9	7.3	6.7	NA ^b
April	<0.004	<0.004	<0.004	<5	<5	<5	23.5	14.9	19.2	7.2	6.5	NA
May	<0.004	<0.004	<0.004	<5	<5	<5	24.0	23.3	23.7	7.4	7.0	NA
June	<0.004	<0.004	<0.004	<5	<5	<5	26.1	25.2	25.7	7.7	7.4	NA
November	<0.004	<0.004	<0.004	<5	<5	<5	17.2	17.2	17.2	6.8	6.8	NA
December	<0.004	<0.004	<0.004	6	<5	<5	19.7	14.7	16.9	6.9	6.5	NA
Annual summary	<0.004	<0.004	<0.004	7	<5	<5	26.1	10.2	19.4	7.7	6.5	NA

Table 2.2.25 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Potassium (mg/L)</i> No. of samples 13			<i>Sodium (mg/L)</i> No. of samples 13			<i>Nitrates (as N)</i> No. of samples 13			<i>Fluoride (mg/L)</i> No. of samples 13		
March	24.6	11.6	14.1	45.6	39.3	41.7	0.3	<0.1	<0.2	2.0	1.0	1.5
April	22.1	2.6	12.4	49.0	18.0	34.0	1.5	0.9	1.2	1.0	0.8	0.9
May	60.4	4.1	32.3	109.0	28.0	69.0	4.6	2.6	3.6	1.3	1.0	1.2
June	6.9	2.8	4.9	68.0	20.0	44.0	2.1	0.9	1.5	1.0	0.8	0.9
November	28.1	28.1	28.1	70.8	70.8	70.8	1.1	1.1	1.1	0.9	0.9	0.9
December	26.7	4.2	17.7	58	33	49	2.0	0.4	1.1	0.9	0.5	0.6
Annual summary	60.4	2.6	18.2	109.0	18.0	51.4	4.6	<0.1	1.4	2.0	0.5	1.0
	<i>Aluminum (mg/L)</i> No. of samples 13			<i>Iron (mg/L)</i> No. of samples 13			<i>Mercury (mg/L)</i> No. of samples 13			<i>Beryllium (mg/L)</i> No. of samples 13		
March	0.07	<0.01	<0.03	2.7	0.5	1.3	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001
April	0.31	0.03	0.17	1.3	0.31	0.81	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002
May	0.7	0.57	0.64	1.18	0.29	0.74	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001
June	0.93	0.87	0.9	0.67	0.63	0.65	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001
November	0.44	0.44	0.44	2.13	2.13	2.13	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001
December	0.29	0.02	0.29	1.24	0.10	0.49	0.0021	0.0004	0.0021	<0.0001	<0.0001	<0.0001
Annual summary	0.93	<0.01	0.41	2.7	0.10	1.02	0.0021	<0.0002	<0.0005	<0.0002	<0.0001	<0.0001
	<i>Phosphorus (mg/L)</i> No. of samples 13			<i>Chlorine (mg/L)</i> No. of samples 13			<i>Sulfate (mg/L)</i> No. of samples 13			<i>Total toxic organics (mg/L)</i> No. of samples 13		
March	1.1	0.15	0.6	4400	73	2858	270	160	197	0.018	<0.01	<0.013
April	0.61	0.47	0.54	2900	99	1500	180	29	105	<0.01	<0.01	<0.01
May	1.1	0.94	1.1	71	20	46	590	37	314	0.019	0.01	0.015
June	1.4	1.02	1.21	110	3	57	68	38	53	0.042	0.01	0.026
November	0.69	0.69	0.69	700	700	700	210	210	210	<0.01	<0.01	<0.01
December	2.99	1.19	2.04	3400	1200	2100	260	30	173	<0.01	<0.01	<0.01
Annual summary	2.99	0.47	0.96	4400	3	1210	590	29	175	0.042	<0.01	<0.012

^aY-12 Plant, Plating Rinsewater Treatment Facility.

^bNA—not applicable.

Table 2.2.26. 1987 NPDES Permit Number TN 0002968
Discharge Points: 501/504^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Oil and grease (mg/L)</i> No. of samples 15			<i>Cyanide (mg/L)</i> No. of samples 15			<i>Chromium (mg/L)</i> No. of samples 15			<i>Copper (mg/L)</i> No. of samples 15		
April	<2	<2	<2	0.004	<0.002	<0.002	<0.006	<0.006	<0.006	0.008	<0.002	<0.005
May	<2	<2	<2	0.015	<0.002	<0.009	<0.006	<0.006	<0.006	0.006	0.003	0.005
June	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.006	0.006	0.006
July	<2	<2	<2	0.008	<0.002	<0.005	0.011	<0.006	<0.009	0.006	0.004	0.005
November	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.003	<0.002	0.003
December	2	2	2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.006	0.006	0.006
Annual summary	2	<2	<2	0.015	<0.002	<0.004	0.011	<0.006	<0.006	0.008	<0.002	<0.005
	<i>Lead (mg/L)</i> No. of samples 15			<i>Nickel (mg/L)</i> No. of samples 15			<i>Temperature (°C)</i> No. of samples 15			<i>Cadmium (mg/L)</i> No. of samples 15		
April	<0.02	<0.02	<0.02	0.194	0.011	0.125	21.0	14.1	18.4	<0.003	<0.003	<0.003
May	<0.02	<0.02	<0.02	0.089	0.045	0.075	26.1	21.8	24.4	<0.003	<0.003	<0.003
June	<0.02	<0.02	<0.02	0.038	0.038	0.038	23.6	23.6	23.6	<0.003	<0.003	<0.003
July	<0.02	<0.02	<0.02	0.09	0.07	0.08	26.6	24.4	25.5	<0.003	<0.003	<0.003
November	<0.02	<0.02	<0.02	0.639	0.399	0.519	17.1	12.3	14.7	0.018	<0.003	<0.011
December	<0.02	<0.02	<0.02	0.353	0.353	0.353	18.9	18.9	18.9	<0.003	<0.003	<0.003
Annual summary	<0.02	<0.02	<0.02	0.639	0.038	0.198	26.6	14.1	20.9	0.018	<0.003	<0.004
	<i>Zinc (mg/L)</i> No. of samples 15			<i>Total toxic organics (mg/L)</i> No. of samples 14			<i>Total suspended solids (mg/L)</i> No. of samples 15			<i>Silver (mg/L)</i> No. of samples 15		
April	0.227	0.034	0.107	0.101	<0.01	<0.044	12	<5	<7	0.019	<0.004	<0.007
May	0.093	0.055	0.079	0.012	<0.01	<0.011	7	<5	<6	0.029	<0.004	<0.01
June	0.131	0.131	0.131	<0.01	<0.01	<0.01	<5	<5	<5	<0.004	<0.004	<0.004
July	0.093	0.09	0.092	<0.01	<0.01	<0.01	6	<5	<6	0.011	<0.004	<0.008
November	0.117	0.066	0.092	<0.01	<0.01	<0.01	22	<5	<14	<0.004	<0.004	<0.004
December	0.147	0.147	0.147	<0.01	<0.01	<0.01	<5	<5	<5	<0.004	<0.004	<0.004
Annual summary	0.227	0.034	0.087	0.101	<0.01	<0.012	22	<5	<7	0.029	<0.004	<0.006

Table 2.2.26 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>pH (units)</i> No. of samples 15			<i>Potassium (mg/L)</i> No. of samples 15			<i>Sodium (mg/L)</i> No. of samples 15			<i>Nitrate (as N) (mg/L)</i> No. of samples 14		
April	7.5	7.0	NA ^b	137.0	11.2	82.2	180	24	104	2.2	<0.1	<0.5
May	7.2	6.7	NA	192.0	65.9	103.0	367	76	212	1.9	0.3	1.1
June	8.2	8.2	NA	198.0	198.0	198.0	164	164	164	0.3	0.3	0.3
July	7.0	6.7	NA	79.2	34.2	56.7	88	52	70	0.18	0.04	0.11
November	6.9	6.7	NA	91.6	78.4	85.0	144	92	118	0.2	0.2	0.2
December	7.2	7.2	NA	54.1	54.1	54.1	96	96	96	<0.1	<0.1	<0.1
Annual summary	8.2	6.7	NA	198.0	11.2	100.2	367	52	127	2.2	<0.1	<0.4
	<i>Fluoride (mg/L)</i> No. of samples 14			<i>Aluminum (mg/L)</i> No. of samples 15			<i>Iron (mg/L)</i> No. of samples 15			<i>Mercury (mg/L)</i> No. of samples 15		
April	1.7	1.0	1.3	0.34	<0.01	<0.16	2.0	0.09	1.23	<0.0002	<0.0002	<0.0002
May	2.0	1.2	1.5	0.66	0.03	0.23	0.94	0.14	0.61	<0.0002	<0.0002	<0.0002
June	0.8	0.8	0.8	<0.01	<0.01	<0.01	0.21	0.21	0.21	0.0004	0.0004	0.0004
July	1.7	1.1	1.4	0.27	0.17	0.22	0.95	0.32	0.64	<0.0002	<0.0002	<0.0002
November	0.7	0.7	0.7	0.10	<0.01	<0.06	3.50	1.41	2.46	0.0002	<0.0002	<0.0002
December	0.6	0.6	0.6	0.29	0.29	0.29	1.18	1.18	1.18	<0.0002	<0.0002	<0.0002
Annual summary	2.0	0.6	1.0	0.66	<0.01	<0.16	3.50	0.09	1.11	0.0004	<0.0002	<0.0002
	<i>Beryllium (mg/L)</i> No. of samples 15			<i>Phosphorus (mg/L)</i> No. of samples 15			<i>Chloride (mg/L)</i> No. of samples 15			<i>Sulfate (mg/L)</i> No. of samples 15		
April	0.0002	<0.0001	<0.0001	1.28	0.31	0.79	670	400	508	1400	80	780
May	<0.0001	<0.0001	<0.0001	0.89	0.68	0.77	720	91	285	2300	530	1113
June	<0.0001	<0.0001	<0.0001	0.37	0.37	0.37	1400	1400	1400	1200	1200	1200
July	<0.0001	<0.0001	<0.0001	1.57	0.63	1.10	88	53	71	990	700	845
November	<0.0001	<0.0001	<0.0001	2.16	1.41	1.79	3500	2	1751	1200	1100	1150
December	<0.0001	<0.0001	<0.0001	1.82	1.82	1.82	1500	1500	1500	740	740	740
Annual summary	0.0002	<0.0001	<0.0001	2.16	0.31	1.11	3500	2	919	2300	80	971

^aY-12 Plant, combined discharge of Central Pollution Control Facility and Plating Rinsewater Treatment Facility.

^bNA—not applicable.

Table 2.2.27. 1987 NPDES Permit Number TN 0002968
Discharge Point: 501^c (Part 1)

Month	Oil and grease (mg/L)			Cyanide (mg/L)			Chromium (mg/L)			Copper (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<2	<2	<2	0.003	<0.001	<0.002	<0.006	<0.006	<0.006	0.008	0.003	0.004
February	<2	<2	<2	0.018	<0.002	<0.005	<0.006	<0.006	<0.006	0.008	0.004	0.006
March	7	<2	<3	0.018	<0.002	<0.007	<0.006	<0.006	<0.006	0.017	0.004	0.008
April	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.023	0.023	0.023
May	6	4	5	0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.008	0.003	0.006
June	<2	<2	<2	<0.003	<0.002	<0.002	<0.006	<0.006	<0.006	0.011	0.011	0.011
July	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.008	0.008	0.008
August ^b												
September	3	<2	<2	0.007	0.007	0.007	<0.006	<0.006	<0.006	<0.008	<0.003	<0.003
October	<2	<2	<2	0.002	0.002	0.002	<0.006	<0.006	<0.006	0.006	0.002	0.004
November	3	<2	<3	0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.004	0.002	0.003
December	<2	<2	<2	<0.002	<0.002	<0.002	<0.006	<0.006	<0.006	0.006	0.005	0.006
Annual summary	7	<2	<2	0.018	<0.001	<0.003	<0.006	<0.006	<0.006	0.023	0.002	0.007
January	<0.02	<0.02	<0.02	0.279	0.034	0.097	15.5	8.8	11.6	<0.003	<0.003	<0.003
February	<0.02	<0.02	<0.02	0.159	0.075	0.115	13.9	11.1	12.5	<0.003	<0.003	<0.003
March	<0.02	<0.02	<0.02	0.165	0.053	0.125	17.3	13.3	14.6	<0.003	<0.003	<0.003
April	<0.02	<0.02	<0.02	0.134	0.134	0.134	15.5	15.5	15.5	<0.003	<0.003	<0.003
May	<0.02	<0.02	<0.02	0.107	0.107	0.107	24.7	20.6	22.7	<0.003	<0.003	<0.003
June	<0.02	<0.02	<0.02	0.093	0.093	0.093	25.5	25.5	25.5	<0.003	<0.003	<0.003
July	<0.02	<0.02	<0.02	0.116	0.116	0.116	27.3	27.3	27.3	<0.003	<0.003	<0.003
August ^b												
September	<0.02	<0.02	<0.02	0.014	0.014	0.028	25.2	24.9	25.1	<0.003	<0.003	<0.003
October	<0.02	<0.02	<0.02	0.128	0.067	0.098	19.7	19.7	19.7	<0.008	<0.003	<0.006
November	<0.02	<0.02	<0.02	0.469	0.373	0.435	19.6	16.3	18.0	<0.003	<0.003	<0.003
December	<0.02	<0.02	<0.02	0.409	0.196	0.303	13.4	10.7	12.1	<0.004	<0.003	<0.004
Annual summary	<0.02	<0.02	<0.02	0.469	0.014	0.137	27.3	8.8	17	<0.008	<0.003	<0.003

^aY-12 Plant, Central Pollution Control Facility.

^bNo discharge.

Table 2.2.28. 1987 NPDES Permit Number TN 0002968
Discharge Point: 501^a (Part 2)

Month	Zinc (mg/L)			Total toxic organics (mg/L)			Total suspended solids (mg/L)			Silver (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 31			No. of samples 31			No. of samples 31			No. of samples 31		
January	0.092	0.027	0.062	0.087	<0.01	<0.02	13	<5	<6.6	<0.004	<0.004	<0.004
February	0.363	0.084	0.171	0.072	0.018	0.047	16	<5	<11	<0.004	<0.004	<0.004
March	0.113	0.027	0.067	0.04	<0.01	<0.019	19	<5	<11	<0.004	<0.004	<0.004
April	0.09	0.09	0.09	<0.01	<0.01	<0.01	10	10	10	<0.004	<0.004	<0.004
May	0.09	0.067	0.079	<0.025	<0.01	<0.018	19	6	13	0.005	<0.004	<0.005
June	0.169	0.169	0.169	<0.01	<0.01	<0.01	10	10	10	<0.004	<0.004	<0.004
July	0.192	0.192	0.192	<0.01	<0.01	<0.01	<5	<5	<5	0.006	0.006	0.006
August ^b												
September	0.104	0.058	0.081	<0.01	<0.01	<0.01	<5	<5	<5	0.004	<0.004	<0.005
October	0.123	0.116	0.12	<0.01	<0.01	<0.01	<5	<5	<5	<0.004	<0.004	<0.004
November	0.208	0.069	0.139	<0.01	<0.01	<0.01	5	<5	<5	<0.004	<0.004	<0.004
December	0.24	0.207	0.244	<0.01	<0.01	<0.01	<5	<5	<5	<0.004	<0.004	<0.004
Annual summary	0.363	0.027	0.118	0.087	<0.01	<0.02	19	<5	<7.2	0.006	<0.004	<0.004
	pH (units)			Color (units)			Sodium (mg/L)			Nitrates (as N) (mg/L)		
	No. of samples 31			No. of samples 31			No. of samples 31			No. of samples 31		
January	8.1	6.9	NA ^c	10	<1.0	<2.8	258	158	209	0.7	<0.1	<0.2
February	7.2	6.3	NA	20	5.0	11.0	264	139	173	4.4	<0.1	<1.1
March	7.4	7.0	NA	20	10	13	290	155	216	23.0	<0.1	<5.3
April	8.0	8.0	NA	25	25	25	170	170	170	<0.1	<0.1	<0.1
May	6.9	6.7	NA	10	10	10	491	247	369	<0.1	<0.1	<0.1
June	7.4	7.4	NA	25	25	25	265	265	265	0.2	0.2	0.2
July	6.6	6.6	NA	20	20	20	122	122	122	<0.1	<0.1	<0.1
August ^b												
September	7.4	7.3	NA	15	10.0	12.5	125	82	103	1.0	0.3	0.7
October	7.1	7.1	NA	10	10	10	145	145	145	0.5	0.5	0.5
November	7.1	6.5	NA	15	15	15	228	127	178	0.3	<0.1	<0.2
December	6.6	6.4	NA	20	15	17.5	207	196	202	0.3	<0.1	<0.2
Annual summary	8.1	6.3	NA	25	<1.0	13.5	491	82	179	23.0	<0.1	<0.73

^aY-12 Plant, Central Pollution Control Facility I. ID W53.

^bNo discharge.

^cNA—not applicable.

Table 2.2.29. 1987 NPDES Permit Number TN 0002968
Discharge Point: 501^a (Part 3)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Surfactants (as MBAS)</i> No. of samples 31			<i>Beryllium (mg/L)</i> No. of samples 31			<i>Phosphorus (mg/L)</i> No. of samples 31			<i>Chlorides (mg/L)</i> No. of samples 31		
January	<0.05	<0.05	<0.05	<0.0001	<0.0001	<0.0001	0.34	0.16	0.23	510	230	331
February	0.14	<0.05	<0.08	0.0008	<0.0001	<0.0003	0.24	0.14	0.19	6000	120	1974
March	<0.05	<0.05	<0.05	0.0003	<0.0001	<0.0001	1.63	0.17	0.81	1900	310	994
April	0.05	0.05	0.05	0.0002	0.0002	0.0002	1.12	1.12	1.12	2800	2800	2800
May	<0.05	<0.05	<0.05	0.0003	<0.0001	<0.0002	1.3	0.74	1.02	1300	48	674
June	0.03	0.03	0.03	<0.0001	<0.0001	<0.0001	1.17	1.17	1.17	590	590	590
July	<0.05	<0.05	<0.05	<0.0001	<0.0001	<0.0001	0.5	0.5	0.5	200	200	200
August ^b												
September	<0.05	<0.05	<0.05	<0.0001	<0.0001	<0.0001	0.60	0.34	0.47	370	130	250
October	<0.05	<0.05	0.05	<0.0002	<0.0002	<0.0002	0.47	0.46	0.47	1800	1800	1800
November	<0.05	<0.05	<0.05	<0.0001	<0.0001	<0.0001	1.43	0.88	1.16	2600	860	1730
December	0.10	<0.05	<0.08	0.0001	<0.0001	<0.0001	2.04	0.36	1.2	1700	1600	1650
Annual summary	0.14	0.03	<0.05	0.0008	<0.0001	<0.0001	2.04	0.14	0.70	6000	48	1083
	<i>Phenols (mg/L)</i> No. of samples 31			<i>Sulfates (mg/L)</i> No. of samples 31			<i>Fluorides (mg/L)</i> No. of samples 31			<i>Aluminum (mg/L)</i> No. of samples 31		
January	0.005	<0.001	<0.003	2100	1700	1888	5.0	2.6	3.5	0.18	<0.01	<0.07
February	0.61	0.007	0.135	1900	1300	1600	7.0	2.3	4.5	0.16	<0.01	<0.04
March	0.04	0.008	0.019	1800	700	1400	9.6	1.0	3.7	0.37	<0.01	<0.08
April	0.014	0.014	0.014	1500	1500	1500	2.2	2.2	2.2	<0.01	<0.01	<0.01
May	0.005	<0.001	<0.003	3600	1600	2600	0.9	0.7	0.8	0.21	0.12	0.17
June	0.008	0.008	0.008	1400	1400	1400	1.4	1.4	1.4	0.17	0.17	0.17
July	0.012	0.012	0.012	1800	1800	1800	1.9	1.9	1.9	<0.01	<0.01	<0.01
August ^b												
September	0.005	0.001	0.003	1800	1400	1600	1.0	0.7	0.9	0.31	0.29	0.3
October	0.003	0.003	0.003	1900	1900	1900	1.0	1.0	1.0	<0.01	<0.01	<0.01
November	0.320	0.028	0.174	1600	1200	1400	0.7	0.7	0.7	0.02	<0.01	<0.02
December	0.05	0.024	0.037	1800	1700	1750	0.8	0.3	0.5	0.03	0.01	0.02
Annual summary	0.61	<0.001	<0.034	3600	700	1570	9.6	0.3	1.8	0.31	<0.01	<0.08

^aY-12 Plant, Central Pollution Control Facility I.

^bNo discharge.

**Table 2.2.30. 1987 NPDES Permit Number TN 0002968
Discharge Point: 501^a (Part 4)**

Month	Max	Min	Av	Max	Min	Av
	<i>Iron (mg/L)</i>			<i>Mercury (mg/L)</i>		
	No. of samples 31			No. of samples 31		
January	3.71	0.15	1.34	<0.0002	<0.0002	<0.0002
February	2.77	0.49	1.09	<0.0002	<0.0002	<0.0002
March	2.72	0.49	1.52	<0.0002	<0.0002	<0.0002
April	1.08	1.08	1.08	<0.0002	<0.0002	<0.0002
May	1.82	0.37	1.1	<0.0002	<0.0002	<0.0002
June	0.54	0.54	0.54	<0.0002	<0.0002	<0.0002
July	0.9	0.9	0.9	0.0002	0.0002	0.0002
August ^b						
September	0.14	0.13	0.14	<0.0002	<0.0002	<0.0002
October	0.12	0.09	0.11	<0.0002	<0.0002	<0.0002
November	2.76	0.97	1.17	0.0002	<0.0002	<0.0002
December	1.14	0.48	0.81	0.0004	<0.0002	<0.0003
Annual summary	3.71	0.09	0.88	0.0004	<0.0002	<0.0002

^aY-12 Plant, Central Pollution Control Facility I.

^bNo discharge.

Table 2.2.31. 1987 NPDES Permit Number TN 0002968
Discharge Point: 502^a

Month ^b	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Silver (mg/L)</i> No. of samples 22			<i>Cadmium (mg/L)</i> No. of samples 22			<i>Cyanide (mg/L)</i> No. of samples 22			<i>Chromium (mg/L)</i> No. of samples 22		
May	0.008	<0.004	<0.004	0.005	<0.003	<0.003	0.23	0.004	0.17	0.015	<0.006	<0.007
Annual summary	0.008	<0.004	<0.004	0.005	<0.003	<0.003	0.23	0.004	0.17	0.015	<0.006	<0.007
	<i>Copper (mg/L)</i> No. of samples 22			<i>Nickel (mg/L)</i> No. of samples 22			<i>Lead (mg/L)</i> No. of samples 22			<i>Zinc (mg/L)</i> No. of samples 22		
May	0.33	0.058	0.125	1.42	0.836	1.42	0.03	<0.02	<0.02	0.452	0.038	0.111
Annual summary	0.33	0.058	0.125	1.42	0.836	1.42	0.03	<0.02	<0.02	0.452	0.038	0.111
	<i>Total toxic organics (mg/L)</i> No. of samples 5			<i>Total suspended solids (mg/L)</i> No. of samples 22			<i>Oil and grease (mg/L)</i> No. of samples 22			<i>Temperature (°C)</i> No. of samples 18		
May	0.22	0.03	0.11	27	5	12	31	<2	<11	26.3	19.8	23.3
Annual summary	0.22	0.03	0.11	27	5	12	31	<2	<11	26.3	19.8	23.3
	<i>pH (units)</i> No. of samples 18			<i>Arsenic (mg/L)</i> No. of samples 22			<i>Beryllium (mg/L)</i> No. of samples 22			<i>Sulfates (mg/L)</i> No. of samples 22		
May	8.4	6.9	NA ^c	<0.04	<0.04	<0.04	<0.0001	<0.0001	<0.0001	14000	10000	11588
Annual summary	8.4	6.9	NA	<0.04	<0.04	<0.04	<0.0001	<0.0001	<0.0001	14000	10000	11588
	<i>Aluminum (mg/L)</i> No. of samples 22			<i>Mercury (mg/L)</i> No. of samples 22			<i>Fluorides (mg/L)</i> No. of samples 22			<i>Calcium (mg/L)</i> No. of samples 22		
May	0.12	0.9	0.67	0.0036	<0.0002	<0.0004	17.0	8.8	13.9	365	150	276
Annual summary	0.12	0.9	0.67	0.0036	<0.0002	<0.0004	17.0	8.8	13.9	365	150	276
	<i>Barium (mg/L)</i> No. of samples 22			<i>Nitrates (as N) (mg/L)</i> No. of samples 22			<i>Total residual chlorine (mg/L)</i> No. of samples 22					
May	0.124	0.0056	0.0274	0.2	<0.1	<0.1	<0.2	<0.1	<0.1			
Annual summary	0.124	0.0056	0.0274	0.2	<0.1	<0.1	<0.2	<0.1	<0.1			

^aY-12 Plant, Central Pollution Control Facility II.

^bNo flow occurred in January, February, March, April, June, July, August, September, October, November, or December.

^cNA—not applicable.

Table 2.2.32. 1987 NPDES Permit Number TN 0002968
Discharge Point: 502^a

Month ^b	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Phosphorus (mg/L)</i> No. of samples 22			<i>Cobalt (mg/L)</i> No. of samples 22			<i>Magnesium (mg/L)</i> No. of samples 22			<i>Manganese (mg/L)</i> No. of samples 22		
May	13.8	7.09	10.5	0.006	0.003	0.005	4.1	1.1	2.5	0.017	0.004	0.007
Annual summary	13.8	7.09	10.5	0.006	0.003	0.005	4.1	1.1	2.5	0.017	0.004	0.007
	<i>Molybdenum (mg/L)</i> No. of samples 22			<i>Iron (mg/L)</i> No. of samples 22			<i>Sodium (mg/L)</i> No. of samples 22			<i>Chloride (mg/L)</i> No. of samples 22		
May	2.39	1.76	2.09	0.99	0.29	0.47	5720	325	4595	2050	1300	1638
Annual summary	2.39	1.76	2.09	0.99	0.29	0.47	5720	325	4595	2050	1300	1638
	<i>Potassium (mg/L)</i> No. of samples 22											
May	183	104	140									
Annual summary	183	104	140									

^aY-12 Plant, Central Pollution Control Facility (CPCF-II) and West End Treatment Facility (WETF).

^bNo flow occurred in January, February, March, April, June, July, August, September, October, November, or December.

Table 2.2.33. 1987 NPDES Permit Number TN 0002968
Discharge Points^a

Quarter	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Discharge Point 602												
	Chromium (mg/L) No. of samples 4			Zinc (mg/L) No. of samples 4			Copper (mg/L) No. of samples 4			Temperature (°C) No. of samples 4		
First	0.007	0.007	0.007	0.147	0.147	0.147	0.052	0.052	0.052	16.5	16.5	16.5
Second	<0.006	<0.006	<0.006	0.27	0.27	0.27	0.064	0.064	0.064	20.5	20.5	20.5
Third	0.023	0.023	0.023	0.084	0.084	0.084	0.026	0.026	0.026	17.5	17.5	17.5
Fourth	0.023	0.023	0.023	0.05	0.05	0.05	0.016	0.016	0.016	23.9	23.9	23.9
Annual summary	0.023	<0.006	<0.015	0.27	0.05	0.138	0.064	0.016	0.040	23.9	16.5	19.6
Discharge Point 604												
	Free available chlorine (mg/L) No. of samples 4			pH (units) No. of samples 4			Chromium (mg/L) No. of samples 4			Zinc (mg/L) No. of samples 4		
First	<0.1	<0.1	<0.1	8.6	8.6	NA ^b	0.009	0.009	0.009	0.336	0.336	0.336
Second	<0.1	<0.1	<0.1	8.9	8.9	NA	0.019	0.019	0.019	0.853	0.853	0.853
Third	<0.1	<0.1	<0.1	8.1	8.1	NA	0.009	0.009	0.009	0.575	0.575	0.575
Fourth	0.15	0.15	0.15	8.9	8.9	NA	0.018	0.018	0.018	0.444	0.444	0.444
Annual summary	0.15	<0.1	<0.11	8.9	8.1	NA	0.019	0.009	0.014	0.853	0.336	0.552
Discharge Point 604												
	Copper (mg/L) No. of samples 4			Temperature (°C) No. of samples 4			Free available chlorine (mg/L) No. of samples 4			pH (units) No. of samples 4		
First	0.025	0.025	0.025	10.0	10.0	10.0	<0.1	<0.1	<0.1	8.7	8.7	NA
Second	0.024	0.024	0.024	18.1	18.1	18.1	<0.1	<0.1	<0.1	8.7	8.7	NA
Third	0.013	0.013	0.013	16.2	16.2	16.2	<0.1	<0.1	<0.1	7.7	7.7	NA
Fourth	0.019	0.019	0.019	20.4	20.4	20.4	<0.1	<0.1	<0.1	8.8	8.8	NA
Annual summary	0.025	0.013	0.020	20.4	10.0	16.2	<0.1	<0.1	<0.1	8.8	7.7	NA
Discharge Point 606												
	Chromium (mg/L) No. of samples 3			Zinc (mg/L) No. of samples 3			Copper (mg/L) No. of samples 3			Temperature (°C) No. of samples 3		
First	0.019	0.019	0.019	0.213	0.213	0.213	0.073	0.073	0.073	15.7	15.7	15.7
Second	<0.006	<0.006	<0.006	0.281	0.281	0.281	0.103	0.103	0.103	20.1	20.1	20.1
Third	0.013	0.013	0.013	0.125	0.125	0.125	0.077	0.077	0.077	24.9	24.9	24.9
Fourth	NF ^c	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF
Annual summary	0.019	<0.006	<0.013	0.281	0.125	0.206	0.103	0.073	0.084	24.9	15.7	20.2

Table 2.2.33 (continued)

Quarter	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Discharge Point 606												
	<i>Free available chlorine (mg/L)</i>			<i>pH (units)</i>			<i>Chromium (mg/L)</i>			<i>Zinc (mg/L)</i>		
	No. of samples 3			No. of samples 3			No. of samples 4			No. of samples 4		
First	0.25	1.2	0.73	8.2	8.2	NA	0.01	0.01	0.01	0.233	0.233	0.233
Second	<0.1	<0.1	<0.1	8.6	8.6	NA	0.01	0.01	0.01	0.265	0.265	0.265
Third	<0.1	<0.1	<0.1	7.8	7.8	NA	0.009	0.009	0.009	0.149	0.149	0.149
Fourth	NF	NF	NF	NF	NF	NA	0.01	0.01	0.01	0.137	0.137	0.137
Annual summary	0.25	<0.1	<0.31	8.6	7.8	NA	0.01	0.009	0.01	0.265	0.137	0.196
Discharge Point 610												
	<i>Copper (mg/L)</i>			<i>Temperature (°C)</i>			<i>Free available chlorine (mg/L)</i>			<i>pH (units)</i>		
	No. of samples 4			No. of samples 4			No. of samples 4			No. of samples 4		
First	0.033	0.033	0.033	20.1	20.1	20.1	0.14	0.14	0.14	9.0	9.0	NA
Second	0.029	0.029	0.029	22.2	22.2	22.2	<0.1	<0.1	<0.1	8.6	8.6	NA
Third	0.017	0.017	0.017	23.8	23.8	23.8	0.2	0.2	0.2	7.7	7.7	NA
Fourth	0.016	0.016	0.016	24.7	24.7	24.7	<0.1	<0.1	<0.1	7.7	7.7	NA
Annual summary	0.033	0.016	0.024	24.7	20.1	22.7	0.2	<0.1	0.14	9.0	7.7	NA
Discharge Point 612												
	<i>Chromium (mg/L)</i>			<i>Zinc (mg/L)</i>			<i>Copper (mg/L)</i>			<i>Temperature (°C)</i>		
	No. of samples 4			No. of samples 4			No. of samples 4			No. of samples 4		
First	<0.006	<0.006	<0.006	0.205	0.205	0.205	0.025	0.025	0.025	20.5	20.5	20.5
Second	<0.006	<0.006	<0.006	0.183	0.183	0.183	0.014	0.014	0.014	22.5	22.5	22.5
Third	<0.006	<0.006	<0.006	0.128	0.128	0.128	0.013	0.013	0.013	24.8	24.8	24.8
Fourth	0.007	0.007	0.007	0.126	0.126	0.126	0.033	0.033	0.033	21.0	21.0	21.0
Annual summary	0.007	<0.006	<0.006	0.205	0.126	0.161	0.033	0.014	0.021	24.8	20.5	22.2
Discharge Point 613												
	<i>Free available chlorine (mg/L)</i>			<i>pH (units)</i>			<i>Chromium (mg/L)</i>			<i>Zinc (mg/L)</i>		
	No. of samples 4			No. of samples 4			No. of samples 4			No. of samples 4		
First	0.54	0.54	0.54	8.8	8.8	NA	0.007	0.007	0.007	0.151	0.151	0.151
Second	0.1	0.1	0.1	8.6	8.6	NA	0.01	0.01	0.01	0.171	0.171	0.171
Third	<0.1	<0.1	<0.1	7.7	7.7	NA	0.009	0.009	0.009	0.156	0.156	0.156
Fourth	<0.1	<0.1	<0.1	7.2	7.2	NA	0.007	0.007	0.007	0.109	0.109	0.109
Annual summary	0.54	<0.1	<0.21	8.8	7.2	NA	0.01	0.007	0.008	0.171	0.109	0.147

Table 2.2.33 (continued)

Quarter	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Discharge Point 618												
	Chromium (mg/L) No. of samples 4			Zinc (mg/L) No. of samples 4			Copper (mg/L) No. of samples 4			Temperature (°C) No. of samples 4		
First	<0.006	<0.006	<0.006	1.000	<0.005	<0.500	0.019	0.019	0.019	13.6	13.6	13.6
Second	<0.006	<0.006	<0.006	0.215	0.215	0.215	0.025	0.025	0.025	23.7	23.7	23.7
Third	0.012	0.012	0.012	0.172	0.172	0.172	0.061	0.061	0.061	23.3	23.3	23.3
Fourth	0.006	0.006	0.006	0.064	0.064	0.064	0.039	0.039	0.039	17.9	17.9	17.9
Annual summary	0.012	<0.006	<0.0075	1.0	<0.005	<0.500	0.061	0.019	0.036	23.7	13.6	19.6
Discharge Point 619												
	Free available chlorine (mg/L) No. of samples 5			pH (units) No. of samples 4			Chromium (mg/L) No. of samples 2			Zinc (mg/L) No. of samples 2		
First	0.54	0.43	0.49	8.2	8.2	NA	NF	NF	NF	NF	NF	NF
Second	0.2	0.2	0.2	8.7	8.7	NA	0.013	0.013	0.013	0.109	0.109	0.109
Third	<0.1	<0.1	<0.1	8.7	8.7	NA	NF	NF	NF	NF	NF	NF
Fourth	<0.1	<0.1	<0.1	8.1	8.1	NA	0.017	0.017	0.017	0.111	0.111	0.111
Annual summary	0.54	<0.1	<0.22	8.7	8.1	NA	0.017	0.013	0.015	0.111	0.109	0.110
Discharge Point 619												
	Copper (mg/L) No. of samples 2			Temperature (°C) No. of samples 2			Free available chlorine (mg/L) No. of samples 2			pH (units) No. of samples 2		
First	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Second	0.029	0.029	0.029	19.8	19.8	19.8	0.2	0.2	0.2	8.4	8.4	NA
Third	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Fourth	0.018	0.018	0.018	14.3	14.3	14.3	0.15	0.15	0.15	8.1	8.1	NA
Annual summary	0.029	0.018	0.023	19.8	14.3	17.1	0.2	0.15	0.18	8.4	8.1	NA
Discharge Point 622												
	Chromium (mg/L) No. of samples 4			Zinc (mg/L) No. of samples 4			Copper (mg/L) No. of samples 4			Temperature (°C) No. of samples 4		
First	<0.006	<0.006	<0.006	0.110	0.110	0.110	0.049	0.049	0.049	23.2	23.2	23.2
Second	<0.006	<0.006	<0.006	0.271	0.271	0.271	0.05	0.05	0.05	21.9	21.9	21.9
Third	0.009	0.009	0.009	0.186	0.186	0.186	0.065	0.065	0.065	28.6	28.6	28.6
Fourth	<0.006	<0.006	<0.006	0.186	0.186	0.186	0.06	0.06	0.06	26.3	26.3	26.3
Annual summary	0.009	<0.006	<0.007	0.271	0.110	0.188	0.065	0.049	0.06	28.6	21.9	25.0

Table 2.2.33 (continued)

Quarter	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Discharge Point 622												
	Free available chlorine (mg/L)			pH (units)			Chromium (mg/L)			Zinc (mg/L)		
	No. of samples 5			No. of samples 4			No. of samples 4			No. of samples 4		
First	0.81	0.62	0.72	8.3	8.3	NA	0.011	0.011	0.011	0.218	0.218	0.218
Second	0.2	0.2	0.2	8.6	8.6	NA	<0.006	<0.006	<0.006	0.249	0.249	0.249
Third	<0.1	<0.1	<0.1	8.4	8.4	NA	0.012	0.012	0.012	0.074	0.074	0.074
Fourth	<0.1	<0.1	<0.1	8.7	8.7	NA	<0.006	<0.006	<0.006	0.097	0.097	0.097
Annual summary	0.81	<0.1	<0.28	8.7	8.3	NA	0.012	<0.006	<0.009	0.249	0.074	0.160
Discharge Point 624												
	Copper (mg/L)			Temperature (°C)			Free available chlorine (mg/L)			pH (units)		
	No. of samples 4			No. of samples 4			No. of samples 5			No. of samples 4		
First	0.089	0.089	0.089	8.8	8.8	8.8	<0.1	<0.1	<0.1	8.3	8.3	NA
Second	0.058	0.058	0.058	17.2	17.2	17.2	<0.1	<0.1	<0.1	8.5	8.5	NA
Third	0.077	0.077	0.077	20.7	20.7	20.7	1.65	<0.1	<0.88	8.3	8.3	NA
Fourth	0.044	0.044	0.044	17.7	17.7	17.7	<0.1	<0.1	<0.1	8.9	8.9	NA
Annual summary	0.089	0.044	0.067	20.7	8.8	16.1	1.65	<0.1	<0.3	8.9	8.3	NA
Discharge Point 626												
	Chromium (mg/L)			Zinc (mg/L)			Copper (mg/L)			Temperature (°C)		
	No. of samples 4			No. of samples 4			No. of samples 4			No. of samples 4		
First	0.069	0.069	0.069	0.144	0.144	0.144	0.063	0.063	0.063	15.0	15.0	15.0
Second	0.06	0.06	0.06	0.105	0.105	0.105	0.034	0.034	0.034	22.8	22.8	22.8
Third	0.022	0.022	0.022	0.143	0.143	0.143	0.03	0.03	0.03	18.8	18.8	18.8
Fourth	0.064	0.064	0.064	0.247	0.247	0.247	0.161	0.161	0.161	22.8	22.8	22.8
Annual summary	0.069	0.022	0.054	0.247	0.105	0.160	0.161	0.03	0.072	22.8	15.0	19.9
Discharge Point 628												
	Free available chlorine (mg/L)			pH (units)			Chromium (mg/L)			Zinc (mg/L)		
	No. of samples 4			No. of samples 4			No. of samples 1			No. of samples 1		
First	<0.1	<0.1	<0.1	8.3	8.3	NA	NF	NF	NF	NF	NF	NF
Second	<0.1	<0.1	<0.1	8.7	8.7	NA	NF	NF	NF	NF	NF	NF
Third	<0.1	<0.1	<0.1	7.6	7.6	NA	NF	NF	NF	NF	NF	NF
Fourth	<0.1	<0.1	<0.1	8.6	8.6	NA	0.013	0.013	0.013	0.058	0.058	0.058
Annual summary	<0.1	<0.1	<0.1	8.7	8.3	NA	0.013	0.013	0.013	0.058	0.058	0.058

Table 2.2.33 (continued)

Quarter	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Discharge Point 628			Discharge Point 628			Discharge Point 628			Discharge Point 628		
	Copper (mg/L)			Temperature (°C)			Free available chlorine (mg/L)			pH (units)		
	No. of samples 1			No. of samples 1			No. of samples 1			No. of samples 1		
First	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Second	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Third	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Fourth	0.025	0.025	0.025	18.8	18.8	18.8	0.1	0.1	0.1	7.9	7.9	NA
Annual summary	0.025	0.025	0.025	18.8	18.8	18.8	0.1	0.1	0.1	7.9	7.9	NA
	Discharge Point 630			Discharge Point 630			Discharge Point 630			Discharge Point 630		
	Chromium (mg/L)			Zinc (mg/L)			Copper (mg/L)			Temperature (°C)		
	No. of samples 3			No. of samples 3			No. of samples 3			No. of samples 3		
First	0.021	0.021	0.021	0.124	0.124	0.124	0.017	0.017	0.017	19.1	19.1	19.1
Second	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF
Third	0.006	0.006	0.006	0.133	0.133	0.133	0.005	0.005	0.005	19.5	19.5	19.5
Fourth	0.041	0.041	0.041	0.11	0.11	0.11	0.026	0.026	0.026	20.5	20.5	20.5
Annual summary	0.041	0.006	0.023	0.133	0.11	0.122	0.026	0.005	0.016	20.5	19.1	19.7
	Discharge Point 630			Discharge Point 630			Discharge Point 632			Discharge Point 632		
	Free available chlorine (mg/L)			pH (units)			Chromium (mg/L)			Zinc (mg/L)		
	No. of samples 3			No. of samples 3			No. of samples 2			No. of samples 2		
First	0.3	0.3	0.3	8.6	8.6	8.6	NF	NF	NF	NF	NF	NF
Second	NF	NF	NF	NF	NF	NA	0.008	0.008	0.008	0.131	0.131	0.131
Third	0.3	0.25	0.28	7.7	7.7	NA	0.007	0.007	0.007	0.156	0.156	0.156
Fourth	<0.1	<0.1	<0.1	8.5	8.5	NA	NF	NF	NF	NF	NF	NF
Annual summary	0.3	<0.1	<0.23	8.6	7.7	NA	0.008	0.007	0.008	0.156	0.131	0.144
	Discharge Point 632			Discharge Point 632			Discharge Point 632			Discharge Point 632		
	Copper (mg/L)			Temperature (°C)			Free available chlorine (mg/L)			pH (units)		
	No. of samples 2			No. of samples 2			No. of samples 2			No. of samples 2		
First	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NA
Second	0.055	0.055	0.055	19.3	19.3	19.3	<0.1	<0.1	<0.1	8.9	8.9	NA
Third	0.036	0.036	0.036	17.6	17.6	17.6	<0.1	<0.1	<0.1	8.5	8.5	NA
Fourth	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Annual summary	0.055	0.036	0.046	19.3	17.6	18.5	<0.1	<0.1	<0.1	8.9	8.5	NA

Table 2.2.33 (continued)

Quarter	Max	Min	Av	Discharge Point 634			Discharge Point 634			Max	Min	Av
				Chromium (mg/L) No. of samples 3	Zinc (mg/L) No. of samples 3	Copper (mg/L) No. of samples 3	Temperature (°C) No. of samples 3					
First	0.01	0.01	0.01	0.03	0.03	0.03	0.093	0.093	26.9	26.9	26.9	
Second	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	
Third	0.02	0.02	0.02	0.081	0.081	0.081	0.011	0.011	21.2	21.2	21.2	
Fourth	0.025	0.025	0.025	0.063	0.063	0.063	0.04	0.04	16.8	16.8	16.8	
Annual summary	0.025	0.01	0.018	0.081	0.03	0.058	0.093	0.011	0.048	26.9	16.8	21.6

Quarter	Max	Min	Av	Discharge Point 634		
				Free available chlorine (mg/L) No. of samples 3	pH (units) No. of samples 3	
First	0.1	0.1	0.1	8.9	8.9	NA
Second	NF	NF	NF	NF	NF	NA
Third	<0.1	<0.1	<0.1	7.5	7.5	NA
Fourth	<0.1	<0.1	<0.1	8.3	8.3	NA
Annual summary	<0.1	<0.1	<0.1	8.9	7.5	NA

^aY-12 Plant; cooling towers.^bNA = not applicable.^cNF = no flow.^dND = no data.

**Table 2.2.34. 1987 NPDES Permit Number TN 0002968
Discharge Point: 623^a**

Month	Max	Min	Av
<i>pH (units)</i>			
No. of samples 52			
January	8.0	7.7	NA ^b
February	7.2	7.0	NA
March	7.9	7.3	NA
April	7.8	6.6	NA
May	8.0	7.5	NA
June	7.9	6.5	NA
July	7.8	7.5	NA
August	8.0	7.4	NA
September	7.9	6.8	NA
October	7.7	7.2	NA
November	7.5	7.3	NA
December	8.4	7.4	NA
Annual summary	8.4	6.5	NA

^aY-12 steam plant fly ash sluice water; sample ID W49.

^bNA—not applicable.

**Table 2.2.35. 1987 Y-12 Plant
category I outfalls**

Outfall No.	pH	
	Max	Min
1	7.7	7.1
3	7.5	6.8
9	7.4	7.4
15	7.1	7.1
17	8.3	6.6
18	7.5	7.3
19	7.9	7.4
44	7.7	7.7
45	8.2	8.0
57	7.6	7.6
134	7.3	7.3
138	7.8	7.8
161	7.9	7.9
193	8.1	8.1
197	7.1	7.1
198	7.6	7.6
202	7.6	7.6
205	7.3	7.3
206	6.5	6.5
224	8.0	8.0
234	7.7	7.7

Table 2.2.36. 1987 Y-12 Plant category II outfalls

Outfall No.	pH		Temperature (°C)		
	Max	Min	Max	Min	Av
16	7.8	6.8	15.9	10.1	12.9
20	8.0	7.3	29.6	9.4	17.7
23	8.4	7.7	34.7	20.6	26.1
24	7.8	7.3	24.8	18.2	22.1
25	8.4	7.9	90	36.2	60.1
26	8.3	7.5	90	25.3	55.6
29	8.2	7.7	38.5	13.3	24.8
35	8.0	7.2	24.3	18.2	20.4
43	7.7	7.0	28.1	13.2	18.1
46	8.3	7.6	41.9	14.4	30.8
54	8.0	7.7	26.1	12.4	18.8
58	8.3	7.4	22.8	6.8	13.0
60	7.8	7.4	25.4	14.3	17.5
66	7.9	7.7	30.6	25.2	27.9
68	8.3	7.6	43.8	19.0	27.8
73	7.9	6.9	26.6	17.4	22.0
74	8.1	7.4	17.1	16.1	16.6
87	7.9	7.2	28.2	10.6	17.1
96	8.0	7.4	26.3	11.4	17.1
111	8.3	7.2	28.7	16.4	21.3
117	7.9	7.6	48.5	23.1	36.7
131	8.1	7.8	15.9	8.9	12.9
133	8.0	7.2	18.0	10.8	14.9
144	7.5	7.1	23.0	14.6	18.8
185	7.6	7.4	44.6	35.8	40.2
201	7.4	7.4	16.5	16.5	16.5
203	7.6	7.6	15.0	15.0	15.0
204	7.7	7.6	20.9	17.3	19.1
213	7.6	6.8	25.5	13.1	17.8
238	8.0	7.1	22.4	14.4	16.9
239	8.0	7.1	22.4	14.4	16.9
240	7.9	7.1	22.4	14.4	16.9
241	7.9	7.1	22.4	14.4	16.9

Table 2.2.37. Y-12 Plant category III outfalls

Outfall No.	pH		Temp (°C)		
	Max	Min	Max	Min	Av
2	7.8	7.5	21.8	13.8	17.8
71	7.9	6.9	24.4	17.5	21.0
135	8.2	7.1	34.0	28.9	31.5
147	8.4	7.4	26.2	15.9	21.1
150	8.3	7.1	26.8	21.8	24.3
157	8.0	7.3	13.6	13.6	13.6
160	8.1	5.5	29.4	18.3	23.9
162	8.7	7.4	23.6	16.1	19.9
163	8.2	7.0	26.0	20.6	23.3
169	7.8	7.4	27.2	19.5	23.4
181	7.6	7.2	24.7	18.6	21.7
192	7.6	6.8	24.5	12.1	18.3

Table 2.2.38 (continued)

Outfall No.	July		Aug		Sept		Oct		Nov		Dec		Annual	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
401	NF		NF		NF		NF		NF		NF		NF	
402	NF		NF		NF		6.5	6.5	NF		NF		8.5	6.5
403	7.8	7.7	8.0	7.1	7.8	6.9	7.6	7.3	7.5	7.2	8.2	6.6	8.2	6.6
404	7.7	7.5	NF		NF		7.5	7.3	7.6	7.2	7.8	7.4	8.0	6.9
405	8.1	7.5	7.5	7.0	7.7	7.6	7.5	7.1	7.5	7.1	8.0	7.1	8.1	6.7
406	NF		NF		NF		7.6	7.6	8.5	7.7	NF		7.1	8.5
407	NF		NF		NF		NF		NF		NF		NF	
408	8.0	7.1	7.8	6.5	7.8	7.2	7.6	6.8	7.6	7.2	8.0	7.4	8.0	6.5
409	NF		NF		NF		5.9	6.6	6.7	5.9	6.6	6.0	8.5	5.9
410	NF		NF		NF		8.3	8.0	8.2	7.9	8.4	7.0	8.5	7.0
411	NF		NF		NF		7.3	7.5	7.3	7.2	8.0	7.7	8.0	6.7
412	7.8	7.5	7.5	7.5	7.5	7.3	7.5	7.0	7.4	7.2	7.9	7.2	7.9	6.7
413	NF		7.5	7.4	7.5	7.4	7.6	7.1	7.4	7.2	7.8	7.3	7.8	6.8
414	7.8	7.5	7.5	6.9	7.6	7.5	7.5	7.1	7.5	7.3	7.8	7.3	7.8	6.8
415	NF		NF		NF		7.5	7.2	7.3	7.1	7.7	7.6	7.9	6.7
416	NF		NF		NF		NF		NF		NF		NF	
417	NF		NF		NF		NF		NF		NF		NF	
418	7.6	7.2	7.5	7.5	NF		7.4	7.0	7.7	7.2	7.5	7.4	7.7	6.9
419	NF		NF		NF		NF		7.4	7.4	6.7	6.7	7.4	6.7
420	NF		NF		NF		NF		NF		NF		NF	

^aNo flow.

**Table 2.2.39. 1987 NPDES Permit Number TN 0002941
Discharge Point: 3086^a**

Month	Max	Min	Av	Copper (mg/L)			Flow (Mgd)			Temperature (°C)		
				No. of samples	Max	Min	Av	No. of samples	Max	Min	Av	No. of samples
February	0.031	0.031	0.031	<0.012	<0.012	<0.012	0.0028	0.0028	0.0028	23	23	23
Annual summary	0.031	0.031	0.031	<0.012	<0.012	<0.012	0.0028	0.0028	0.0028	23	23	23
	Zinc (mg/L)			No. of samples								
February	0.15	0.15	0.15									
Annual summary	0.15	0.15	0.15									

^aORNL.

**Table 2.2.40. 1987 NPDES Permit Number TN 0002941
Discharge Point: 3103^a**

Month	Max	Min	Av	Copper (mg/L)			Flow (Mgd)			Temperature (°C)		
				No. of samples	Max	Min	Av	No. of samples	Max	Min	Av	No. of samples
May	0.068	0.068	0.068	0.018	0.018	0.018	0.25	0.25	0.25	20	20	20
Annual summary	0.068	0.068	0.068	0.018	0.018	0.018	0.25	0.25	0.25	20	20	20
	Zinc (mg/L)			No. of samples								
May	7.7	7.7	7.7									
Annual summary	7.7	7.7	7.7									

^aORNL.

Table 2.2.41. 1987 NPDES Permit Number TN 0002941
Discharge Point: 4509^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Chromium (mg/L) No. of samples 4			Copper (mg/L) No. of samples 4			Flow (G (Mgd)) No. of samples 3			Temperature (°C) No. of samples 4		
February	<0.024	<0.024	<0.024	0.067	0.067	0.067	0.12	0.12	0.12	26	26	26
May	<0.024	<0.024	<0.024	0.034	0.034	0.034	0.12	0.12	0.12	26	26	26
August	<0.024	<0.024	<0.024	0.042	0.042	0.042	0.12	0.12	0.12	28	28	28
December	<0.024	<0.024	<0.024	0.070	0.070	0.070	0.12	0.12	0.12	16	16	16
Annual summary	<0.024	<0.024	<0.024	0.070	0.034	0.053	0.12	0.12	0.12	28	16	24
	Zinc (mg/L) No. of samples 4											
February	0.25	0.25	0.25									
May	0.11	0.11	0.11									
August	0.077	0.077	0.077									
December	0.14	0.14	0.14									
Annual summary	0.25	0.077	0.14									

^aORNL.

Table 2.2.42. 1987 NPDES Permit Number TN 0002941
Discharge Point: 7902^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Chromium (mg/L) No. of samples 2			Copper (mg/L) No. of samples 2			Flow (Mgd) No. of samples 1			Temperature (°C) No. of samples 2		
May	<0.024	<0.024	<0.024	0.17	0.17	0.17	0.18	0.18	0.18	18	18	18
August	<0.024	<0.024	<0.024	0.085	0.085	0.085	0.18	0.18	0.18	22	22	22
Annual summary	<0.024	<0.024	<0.024	0.17	0.085	0.12	0.18	0.18	0.18	22	18	20
	Zinc (mg/L) No. of samples 2											
May	0.56	0.56	0.56									
August	0.46	0.46	0.46									
Annual summary	0.56	0.46	0.51									

^aORNL.

Table 2.2.43. 1987 NPDES Permit Number TN 0002941
Discharge Point: category I outfalls^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Flow (Mgd) No. of samples 12			Oil and grease (mg/L) No. of samples 12			pH (standard units) No. of samples 12			Temperature (°C) No. of samples 12		
December	0.043	0.00028	0.0079	6.0	2.0	3.5	9.5	7.5	NA ^b	56	9.5	16
Annual summary	0.043	0.00028	0.0079	6.0	2.0	3.5	9.5	7.5	NA ^b	56	9.5	16
	Total suspended solids (mg/L) No. of samples 12											
December	119	<5.0	<22									
Annual summary	119	<5.0	<22									

^aORNL.

^bNot applicable.

Table 2.2.44. 1987 NPDES Permit Number TN 0002941
Discharge Point: category II outfalls^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Flow (Mgd) No. of samples 81			Oil and grease (mg/L) No. of samples 48			pH (standard units) No. of samples 80			Temperature (°C) No. of samples 82		
February	0.34	0.00001	0.046	8.0	<2.0	<2.4	8.4	6.9	NA ^b	27	7.3	11
December	0.25	0.00004	0.036	8.0	<2.0	<2.4	8.5	7.0	NA ^b	39	8.8	15
Annual summary	0.34	0.00001	0.042	8.0	<2.0	<2.4	8.5	6.9	NA ^b	39	7.3	13
	Total suspended solids (mg/L) No. of samples 48											
February	436	<4.0	<69									
Annual summary	436	<4.0	<69									

^aORNL.

^bNot applicable.

Table 2.2.45. 1987 NPDES Permit Number TN 0002941
Discharge Point: category III outfalls^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Flow (Mgd) No. of samples 85			Mercury (mg/L) No. of samples 31			Oil and grease (mg/L) No. of samples 1			pH (standard units) No. of samples 85		
January	0.32	0.00008	0.038	0.010	<0.0010	<0.0014				8.6	7.2	NA ^b
April	0.25	0.00007	0.028	0.0020	<0.0010	<0.0010				8.1	7.0	NA ^b
May												
October	0.12	0.00007	0.025	0.010	<0.0010	<0.0013	<2.0	<2.0	<2.0	8.1	7.1	NA ^b
December	1.8	0.00005	0.18				<2.0	<2.0	<2.0	8.2	6.3	NA ^b
Annual summary	1.8	0.00005	0.067	0.010	<0.0010	<0.0013	<2.0	<2.0	<2.0	8.6	6.3	NA ^b
	Total organic carbon (mg/L) No. of samples 8											
April	2.0	0.80	1.5									
May	2.3	0.80	1.5									
Annual summary	2.3	0.80	1.5									

^aORNL.

^bNot applicable.

Table 2.2.46. 1987 NPDES Permit Number TN 0002941
Discharge Point: EF7002^a

Month	Max	Min	Av	Max	Min	Av
	Oil and grease (mg/L) No. of samples 4			pH (standard units) No. of samples 4		
March	<2.0	<2.0	<2.0	8.2	8.2	NA ^b
May	<2.0	<2.0	<2.0	7.3	7.3	NA ^b
August	<2.0	<2.0	<2.0	7.0	7.0	NA ^b
October	<2.0	<2.0	<2.0	7.5	7.5	NA ^b
Annual summary	<2.0	<2.0	<2.0	8.2	7.0	NA ^b

^aORNL.

^bNot applicable.

Table 2.2.47. 1987 NPDES Permit Number TN 0002941
Discharge Point: PF7007^c

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Downstream pH (standard units) No. of samples 8			Oil and grease (mg/L) No. of samples 8			pH (standard units) No. of samples 8			Phenols (mg/L) No. of samples 11		
January	7.7	7.7	7.7	3.0	3.0	3.0	7.7	7.7	NA ^b	0.0030	0.0030	0.0030
February	7.3	7.3	7.3	<2.0	<2.0	<2.0	7.3	7.3	NA	0.0050	0.0050	0.0050
March	7.7	7.7	7.7	2.0	2.0	2.0	7.6	7.6	NA	0.050	<0.0070	<0.028
April	7.9	7.9	7.9	5.0	5.0	5.0	8.3	8.3	NA	0.017	0.017	0.017
May	8.1	8.1	8.1	3.0	3.0	3.0	7.6	7.6	NA	0.041	0.019	0.030
June	6.1	6.1	6.1	2.0	2.0	2.0	6.2	6.2	NA	0.0025	0.0025	0.0025
July				<2.0	<2.0	<2.0				0.012	0.012	0.012
August	8.4	8.4	8.4	6.0	6.0	6.0	8.5	8.5	NA	0.0030	<0.0010	<0.0020
September	8.2	8.2	8.2	8.8	8.8	8.8						
Annual summary	8.4	6.1	7.6	6.0	<2.0	<3.1	8.5	6.2	NA	0.050	<0.0010	<0.014
	Total suspended solids (mg/L) No. of samples 8											
January	<5.0	<5.0	<5.0									
February	<5.0	<5.0	<5.0									
March	<5.0	<5.0	<5.0									
April	65	65	65									
May	275	275	275									
June	48	48	48									
July	69	69	69									
August	46	46	46									
Annual summary	275	<5.0	<64									

^aORNL.

^bNot applicable.

**Table 2.2.48. 1987 NPDES Permit Number TN 0002941
Discharge Point: SP2519^a**

Month	Max	Min	Av	Max	Min	Av
	<i>pH (standard units)</i>			<i>Temperature (°C)</i>		
	No. of samples 4			No. of samples 4		
March	11	11	NA ^b	24	24	24
May	10	10	NA ^b	32	32	32
August	10	10	NA ^b	23	23	23
October	10	10	NA ^b	22	22	22
Annual summary	11	10	NA ^b	32	22	25

^aORNL.

^bNot applicable.

Table 2.2.49. 1987 NPDES Permit Number TN 0002941
Discharge Point: VC7002^a

Month	Biological oxygen demand (mg/L)			Downstream pH (standard units)			Fecal coliform (colonies/100 mL)			Oil and grease (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 9											
January	<5.0	<5.0	<5.0	7.7	7.7	7.7	0	0	0	<2.0	<2.0	<2.0
February	6.0	6.0	6.0	7.3	7.3	7.3	0	0	0	<2.0	<2.0	<2.0
March	<5.0	<5.0	<5.0	7.7	7.7	7.7	0	0	0	<2.0	<2.0	<2.0
April	<5.0	<5.0	<5.0	7.9	7.9	7.9	0	0	0	<2.0	<2.0	<2.0
May	35	35	35	8.1	8.1	8.1	460	460	460	3.0	3.0	3.0
June	<5.0	<5.0	<5.0	6.1	6.1	6.1	2.0	2.0	2.0	<2.0	<2.0	<2.0
July	<5.0	<5.0	<5.0	7.9	7.9	7.9	<2.0	<2.0	<2.0	3.0	3.0	3.0
August	<5.0	<5.0	<5.0	8.4	8.4	8.4	10	10	10	2.0	2.0	2.0
September	8.2	8.2	8.2									
October	7.6	7.6	7.6									
December	<5.0	<5.0	<5.0	7.2	7.2	7.2	200	200	200	4.0	4.0	4.0
Annual summary	35	<5.0	<8.4	8.4	6.1	7.6	460	0	74	4.0	<2.0	<2.4
	No. of samples 11											
	pH (standard units)											
January	7.7	7.7	NA ^b	0.0040	0.0040	0.0040	<5.0	<5.0	<5.0	18	18	18
February	7.3	7.3	NA ^b	0.0040	0.0040	0.0040	8.0	8.0	8.0	<5.0	<5.0	<5.0
March	7.6	7.6	NA ^b	0.0030	0.0030	0.0030	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
April	8.2	8.2	NA ^b	0.0030	0.0030	0.0030	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
May	8.1	8.1	NA ^b	0.010	0.010	0.010	18	18	18	<5.0	<5.0	<5.0
June	6.0	6.0	NA ^b	<0.0010	<0.0010	<0.0010	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
July	7.7	7.7	NA ^b	0.0030	0.0030	0.0030	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
August	8.7	8.7	NA ^b	<0.0010	<0.0010	<0.0010	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
September	8.1	8.1	NA ^b									
October	7.6	7.6	NA ^b									
December	7.2	7.2	NA ^b	0.026	0.026	0.026	6.0	6.0	6.0	6.0	6.0	6.0
Annual summary	8.7	6.0	NA ^b	0.026	<0.0010	<0.0061	18	<5.0	<6.8			

^aORNL.

^bNot applicable.

Table 2.2.50. 1987 NPDES Permit Number TN 0002941
Discharge Point: X01^a

Month	Silver (mg/L) No. of samples 12			Biological oxygen demand (mg/L) No. of samples 156			Bromodichloromethane (mg/L) No. of samples 12			Chlorine (mg/L) No. of samples 156			Cyanide (mg/L) No. of samples 12			Copper (mg/L) No. of samples 12		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
February	<0.030	<0.030	<0.030	14	<5.0	<5.7	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
March	<0.030	<0.030	<0.030	13	<5.0	<6.3	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
April	<0.030	<0.030	<0.030	17	<5.0	<5.9	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
May	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
June	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
July	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
August	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
September	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
October	<0.030	<0.030	<0.030	<5.0	<5.0	<5.1	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
November	<0.030	<0.030	<0.030	7.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
December	<0.030	<0.030	<0.030	<5.0	<5.0	<5.0	<0.0050	<0.0050	<0.0050	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Annual summary	<0.030	<0.030	<0.030	17	<5.0	<5.2	<0.0050	<0.0050	<0.0050	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
January	<0.0050	<0.0050	<0.0050	0.34	<0.010	<0.15	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
February	<0.0050	<0.0050	<0.0050	0.42	0.010	0.17	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
March	0.0070	0.0070	0.0070	0.48	<0.010	<0.27	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
April	<0.0050	<0.0050	<0.0050	0.46	0.16	0.38	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
May	0.0070	0.0070	0.0070	0.44	0.18	0.36	0.011	0.011	0.011	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
June	<0.0050	<0.0050	<0.0050	0.83	0.24	0.40	0.011	0.011	0.011	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
July	0.0050	0.0050	0.0050	0.38	0.12	0.22	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
August	<0.0050	<0.0050	<0.0050	0.45	0.18	0.28	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
September	0.0080	0.0080	0.0080	0.44	0.12	0.34	<0.0020	<0.0020	<0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
October	0.0090	0.0090	0.0090	0.41	0.030	0.28	0.014	0.014	0.014	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
November	0.011	0.011	0.011	0.47	0.27	0.36	0.0020	0.0020	0.0020	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
December	0.013	0.013	0.013	0.49	0.14	0.37	0.0030	0.0030	0.0030	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Annual summary	0.013	<0.0050	<0.0070	0.83	<0.010	<0.30	<0.0020	<0.0020	<0.0020	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014

Table 2.2.50 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Dissolved oxygen (mg/L)</i> No. of samples 250			<i>Downstream pH (standard units)</i> No. of samples 52			<i>Fecal coliform (colonies/100 mL)</i> No. of samples 157			<i>Flow (Mgd)</i> No. of samples 249		
January	9.9	4.2	7.4	7.9	7.5	NA ^b	150	0	26	0.35	0.058	0.16
February	9.8	2.7	7.3	7.9	7.1	NA	1200	0	147	0.66	0.16	0.50
March	9.8	6.4	8.7	7.8	6.1	NA	17000	0	1409	0.67	0.42	0.54
April	9.8	6.2	8.2	7.7	7.5	NA	4.0	0	0.92	0.60	0.096	0.24
May	8.4	7.0	7.5	7.5	7.4	NA	21	0	2.0	0.28	0.11	0.17
June	8.3	7.1	7.3	8.2	7.0	NA	45	0	7.5	0.21	0.081	0.15
July	8.4	6.8	7.3	7.6	7.3	NA	600	<1.0	<81	0.25	0.081	0.15
August	8.2	5.6	6.9	8.5	7.1	NA	130	<1.0	<11	0.28	0.11	0.21
September	7.6	3.2	6.3	7.8	7.3	NA	600	<1.0	<47	0.42	0.073	0.27
October	9.4	6.2	7.8	7.6	7.5	NA	240	<1.0	<29	0.47	0.17	0.30
November	8.4	6.3	7.7	7.8	7.0	NA	2.0	<1.0	<1.0	0.69	0.17	0.42
December	27	6.1	8.0	7.8	7.4	NA	7.0	<1.0	<1.7	0.81	0.52	0.63
Annual summary	27	2.7	7.5	8.5	6.1	NA	17000	0	<145	0.81	0.058	0.31
	<i>Mercury (mg/L)</i> No. of samples 12			<i>NH₄-N (mg/L)</i> No. of samples 157			<i>Oil and grease (mg/L)</i> No. of samples 157			<i>pH (standard units)</i> No. of samples 52		
January	<0.00020	<0.00020	<0.00020	1.5	0.050	0.30	8.0	<2.0	<2.7	7.3	7.0	NA
February	<0.00020	<0.00020	<0.00020	1.8	0.050	0.55	4.0	<2.0	<2.4	7.9	7.0	NA
March	<0.00020	<0.00020	<0.00020	1.7	0.050	0.33	19	<2.0	<4.0	7.7	6.5	NA
April	<0.00020	<0.00020	<0.00020	0.53	0.060	0.15	5.0	<2.0	<2.4	7.6	7.1	NA
May	<0.00020	<0.00020	<0.00020	1.0	0.080	0.23	<2.0	<2.0	<2.0	7.3	7.1	NA
June	<0.00020	<0.00020	<0.00020	0.73	0.060	0.15	4.0	<2.0	<2.3	8.3	7.2	NA
July	<0.00020	<0.00020	<0.00020	0.21	0.050	0.11	10	<2.0	<3.0	7.3	7.0	NA
August	<0.00020	<0.00020	<0.00020	0.47	0.056	0.14	4.0	<2.0	<2.6	8.0	7.0	NA
September	<0.00020	<0.00020	<0.00020	0.12	0.030	0.065	4.0	<2.0	<2.1	7.7	7.1	NA
October	<0.00020	<0.00020	<0.00020	0.23	0.031	0.066	<2.0	<2.0	<2.0	7.5	7.0	NA
November	<0.00020	<0.00020	<0.00020	0.91	0.070	0.26	3.0	<2.0	<2.0	7.9	6.7	NA
December	<0.00020	<0.00020	<0.00020	1.1	0.034	0.15	3.0	<2.0	<2.0	7.4	7.1	NA
Annual summary	<0.00020	<0.00020	<0.00020	1.8	0.030	0.21	19	<2.0	<2.4	8.3	6.5	NA

Table 2.2.50 (continued)

Month	Phenols (mg/L) No. of samples 12			Trichloroethylene (mg/L) No. of samples 12			Total suspended solids (mg/L) No. of samples 157			Zinc (mg/L) No. of samples 12		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	166	<5.0	<16	0.087	0.087	0.087
February	0.0020	0.0020	0.0020	<0.0050	<0.0050	<0.0050	6.0	<5.0	<5.0	0.065	0.065	0.065
March	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	145	<5.0	<18	0.060	0.060	0.060
April	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	36	<5.0	<7.7	0.066	0.066	0.066
May	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	6.0	<5.0	<5.0	0.064	0.064	0.064
June	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0.061	0.061	0.061
July	0.0030	0.0030	0.0030	<0.0050	<0.0050	<0.0050	711	<5.0	<59	0.060	0.060	0.060
August	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	7.0	<5.0	<5.1	0.067	0.067	0.067
September	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	5.0	<2.0	<4.6	0.053	0.053	0.053
October	0.0020	0.0020	0.0020	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0.055	0.055	0.055
November	0.0010	0.0010	0.0010	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0.070	0.070	0.070
December	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0.075	0.075	0.075
Annual summary	0.0030	<0.0010	<0.0013	<0.0050	<0.0050	<0.0050	711	<2.0	<11	0.087	0.053	0.065

^aORNL.^bNot applicable.

Table 2.2.51. 1987 NPDES Permit Number TN 0002941
Discharge Point: X02^a

Month	Silver (mg/L) No. of samples 48			Arsenic (mg/L) No. of samples 48			Cadmium (mg/L) No. of samples 48			Chromium (mg/L) No. of samples 48		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.030	<0.025	<0.028	0.060	<0.050	<0.057	0.0030	<0.0025	<0.0028	0.024	<0.020	<0.023
February	0.030	<0.030	<0.030	0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
March	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
April	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
May	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
June	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
July	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
August	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
September	<0.030	<0.030	<0.030	0.068	<0.060	<0.062	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
October	<0.030	<0.030	<0.030	0.064	<0.060	<0.061	<0.0030	<0.0030	<0.0030	0.039	<0.024	<0.027
November	<0.030	<0.030	<0.030	0.066	<0.060	<0.061	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
December	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
Annual summary	0.030	<0.025	<0.029	0.068	<0.050	<0.060	0.0030	<0.0025	<0.0029	0.039	<0.020	<0.024

Month	Copper (mg/L) No. of samples 48			Downstream pH (standard units) No. of samples 248			Iron (mg/L) No. of samples 48			Manganese (mg/L) No. of samples 48		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.021	<0.012	<0.014	8.1	7.0	NA ^b	0.53	0.15	0.31	0.049	0.021	0.030
February	<0.012	<0.012	<0.012	8.8	7.0	NA	0.30	0.12	0.21	0.048	0.021	0.029
March	<0.012	<0.012	<0.012	8.3	6.1	NA	0.34	0.11	0.22	0.053	0.013	0.034
April	<0.012	<0.012	<0.012	8.0	7.1	NA	0.20	0.057	0.11	0.055	0.033	0.041
May	<0.012	<0.012	<0.012	8.1	6.8	NA	0.27	0.058	0.13	0.047	0.029	0.038
June	<0.012	<0.012	<0.012	8.4	6.2	NA	0.10	<0.018	<0.066	0.061	<0.0030	<0.022
July	<0.012	<0.012	<0.012	8.7	7.3	NA	0.16	<0.018	<0.061	0.022	0.0035	0.010
August	<0.012	<0.012	<0.012	8.9	7.1	NA	0.44	0.055	0.24	0.0089	0.0046	0.0067
September	<0.012	<0.012	<0.012	8.2	7.0	NA	0.13	0.039	0.10	0.070	0.031	0.050
October	<0.012	<0.012	<0.012	8.2	7.1	NA	0.13	0.034	0.066	0.041	0.016	0.024
November	<0.012	<0.012	<0.012	8.0	6.8	NA	0.13	0.021	0.064	0.031	0.018	0.024
December	<0.012	<0.012	<0.012	7.9	6.7	NA	0.069	<0.018	<0.039	0.023	0.0043	0.014
Annual summary	0.021	<0.012	<0.012	8.9	6.1	NA	0.53	<0.018	<0.13	0.070	<0.0030	<0.027

Table 2.2.51 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Nickel (mg/L)</i> No. of samples 48			<i>Oil and grease (mg/L)</i> No. of samples 48			<i>Lead (mg/L)</i> No. of samples 48			<i>pH (standard units)</i> No. of samples 248		
January	0.036	<0.030	<0.034	8.0	<2.0	<3.5	0.12	<0.10	<0.11	8.2	6.7	NA
February	<0.036	<0.036	<0.036	3.0	<2.0	<2.2	<0.12	<0.12	<0.12	8.4	6.7	NA
March	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	8.2	5.8	NA
April	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	8.1	6.5	NA
May	<0.036	<0.036	<0.036	3.0	<2.0	<2.2	<0.12	<0.12	<0.12	7.7	5.3	NA
June	<0.036	<0.036	<0.036	3.0	<2.0	<2.2	<0.12	<0.12	<0.12	8.4	5.7	NA
July	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	8.4	6.3	NA
August	<0.036	<0.036	<0.036	6.0	3.0	4.5	<0.12	<0.12	<0.12	9.0	6.4	NA
September	<0.036	<0.036	<0.036	3.0	<2.0	<2.3	0.12	<0.12	<0.12	8.1	6.5	NA
October	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.7	6.8	NA
November	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.9	6.8	NA
December	<0.036	<0.036	<0.036	3.0	<2.0	<2.2	<0.12	<0.12	<0.12	7.7	6.6	NA
Annual summary	0.036	<0.030	<0.035	8.0	<2.0	<2.3	0.12	<0.10	<0.11	9.0	5.3	NA
	<i>Selenium (mg/L)</i> No. of samples 48			<i>Sulfate (mg/L)</i> No. of samples 11			<i>Temperature (°C)</i> No. of samples 49			<i>Total suspended solids (mg/L)</i> No. of samples 48		
January	0.12	<0.10	<0.11	900	900	900	10	6.3	7.8	6.0	<5.0	<5.2
February	<0.12	<0.12	<0.12	800	800	800	10	7.8	9.7	5.0	<2.0	<4.2
March	<0.12	<0.12	<0.12	1300	1300	1300	15	12	14	9.0	<5.0	<6.8
April	<0.12	<0.12	<0.12	1000	1000	1000	19	9.4	13	39	5.0	15
May	<0.12	<0.12	<0.12	1400	1400	1400	23	20	21	9.0	<5.0	<6.2
June	<0.12	<0.12	<0.12	2600	2600	2600	27	23	25	<5.0	<5.0	<5.0
July	0.16	<0.12	<0.13	2200	2200	2200	24	23	23	13	<5.0	<7.0
August	0.17	<0.12	<0.14	1800	1800	1800	24	21	22	10	<5.0	<7.5
September	0.12	<0.12	<0.12	c	c	c	24	15	20	7.0	<5.0	<5.6
October	<0.12	<0.12	<0.12	2100	2100	2100	24	12	17	<5.0	<5.0	<5.0
November	<0.12	<0.12	<0.12	1400	1400	1400	20	12	16	<5.0	<5.0	<5.0
December	<0.12	<0.12	<0.12	1300	1300	1300	20	9.3	15	9.0	<5.0	<5.8
Annual summary	0.17	<0.10	<0.12	2600	800	1527	27	6.3	17	39	<2.0	<6.4

Table 2.2.51 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Zinc (mg/L)</i>											
	No. of samples 48											
January	0.12	0.025	0.065									
February	0.084	<0.012	<0.045									
March	0.061	0.017	0.032									
April	0.032	0.020	0.026									
May	0.021	<0.012	<0.016									
June	0.014	<0.012	<0.012									
July	0.021	<0.012	<0.014									
August	0.031	<0.012	<0.021									
September	<0.012	<0.012	<0.012									
October	0.028	<0.012	<0.019									
November	0.035	<0.012	<0.020									
December	<0.012	<0.012	<0.012									
Annual summary	0.12	<0.012	<0.024									

^aORNL.^bNot applicable.^cNo samples were collected because of scheduling problems.

Table 2.2.52. 1987 NPDES Permit Number TN 0002941
Discharge Point: X03^a

Month	Arsenic (mg/L)			Cadmium (mg/L)			Chromium (mg/L)			Copper (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.34	0.022	0.18
February	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.022	<0.012	<0.017
March	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.029	0.022	0.025
April	0.060	<0.010	<0.035	0.0030	<0.00050	<0.0017	0.024	<0.0040	<0.014	<0.012	0.0030	<0.0075
May	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
June	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.024	0.017	0.020
July	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.013	<0.012	<0.012
August	<0.060	<0.060	<0.060	0.0044	<0.0030	<0.0037	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
September	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.018	<0.012	<0.015
October	<0.060	<0.060	<0.060	0.0061	<0.0030	<0.0045	<0.024	<0.024	<0.024	0.018	<0.012	<0.015
November	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
December	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
Annual summary	0.060	<0.010	<0.057	0.0061	<0.00050	<0.0030	0.024	<0.0040	<0.023	0.34	0.0030	<0.028
Downstream pH (standard units)												
	No. of samples 52			Iron (mg/L)			Flow (Mgd)			Nickel (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	8.1	7.3	NA ^b	0.77	0.15	0.46	0.076	0.076	0.076	<0.036	<0.036	<0.036
February	7.9	7.5	NA	0.16	0.085	0.12	0.016	0.016	0.016	<0.036	<0.036	<0.036
March	8.6	6.4	NA	0.24	0.18	0.21	0.010	0.0075	0.0090	<0.036	<0.036	<0.036
April	8.1	7.8	NA	0.097	0.014	0.055	0.0094	0.0094	0.0094	0.036	<0.0060	<0.021
May	8.0	7.9	NA	0.15	0.11	0.13	0.012	0.012	0.012	<0.036	<0.036	<0.036
June	8.6	7.1	NA	0.075	<0.018	<0.046	0.0043	0.0043	0.0043	<0.036	<0.036	<0.036
July	7.9	7.7	NA	0.080	0.039	0.059	0.039	0.039	0.039	<0.036	<0.036	<0.036
August	7.7	6.9	NA	0.058	0.046	0.052	0.016	0.016	0.016	<0.036	<0.036	<0.036
September	7.7	7.1	NA	0.14	0.057	0.098	0.019	0.019	0.019	<0.036	<0.036	<0.036
October	8.1	7.5	NA	0.085	0.060	0.072	0.014	0.014	0.014	<0.036	<0.036	<0.036
November	7.7	7.1	NA	0.033	<0.018	<0.025	0.014	0.014	0.014	<0.036	<0.036	<0.036
December	8.0	7.5	NA	0.26	0.081	0.17	0.015	0.015	0.015	<0.036	<0.036	<0.036
Annual summary	8.6	6.4	NA	0.77	<0.014	<0.12	0.076	0.0043	0.019	0.036	<0.0060	<0.034

Table 2.2.52 (continued)

Month	Oil and grease (mg/L) No. of samples 24			Phosphorus (mg/L) No. of samples 24			Lead (mg/L) No. of samples 24			pH (standard units) No. of samples 52		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	8.0	3.0	5.5	0.88	0.50	0.69	<0.12	<0.12	<0.12	7.8	7.2	NA
February	<2.0	<2.0	<2.0	0.40	0.30	0.35	<0.12	<0.12	<0.12	8.0	7.5	NA
March	<2.0	<2.0	<2.0	0.60	0.49	0.54	<0.12	<0.12	<0.12	8.0	6.0	NA
April	35	<2.0	<18	0.60	0.50	0.55	0.12	<0.020	<0.070	7.8	7.5	NA
May	<2.0	<2.0	<2.0	1.1	0.60	0.85	<0.12	<0.12	<0.12	7.7	7.6	NA
June	4.0	3.0	3.5	0.70	0.40	0.55	<0.12	<0.12	<0.12	8.7	7.3	NA
July	3.0	2.0	2.5	0.90	0.41	0.65	<0.12	<0.12	<0.12	7.6	7.4	NA
August	4.0	2.0	3.0	0.30	0.30	0.30	<0.12	<0.12	<0.12	7.7	7.0	NA
September	<2.0	<2.0	<2.0	0.40	0.30	0.35	<0.12	<0.12	<0.12	7.3	7.0	NA
October	<2.0	<2.0	<2.0	0.60	0.30	0.45	<0.12	<0.12	<0.12	7.9	4.0	NA
November	<2.0	<2.0	<2.0	0.30	0.30	0.30	<0.12	<0.12	<0.12	7.6	6.9	NA
December	<2.0	<2.0	<2.0	0.70	0.40	0.55	<0.12	<0.12	<0.12	7.9	7.2	NA
Annual summary	35	<2.0	<3.9	1.1	0.30	0.51	0.12	<0.020	<0.11	8.7	4.0	NA
	Temperature (°C) No. of samples 24			Total organic carbon (mg/L) No. of samples 24			Total suspended solids (mg/L) No. of samples 24			Zinc (mg/L) No. of samples 24		
January	14	8.5	11	11	4.9	7.9	43	<5.0	<24	0.22	0.096	0.15
February	14	11	13	6.2	3.9	5.0	<5.0	<5.0	<5.0	0.13	0.086	0.10
March	16	16	16	7.1	5.8	6.4	<5.0	<5.0	<5.0	0.12	0.11	0.11
April	23	21	22	6.2	3.5	4.8	<5.0	<5.0	<5.0	0.13	0.025	0.077
May	23	19	21	4.9	4.7	4.8	<5.0	<5.0	<5.0	0.096	0.093	0.094
June	25	22	23	10	5.2	7.6	<5.0	<5.0	<5.0	0.12	0.11	0.11
July	23	23	23	4.4	2.0	3.2	<5.0	<5.0	<5.0	0.089	0.056	0.072
August	25	12	18	5.6	1.7	3.6	<5.0	<5.0	<5.0	0.098	0.079	0.088
September	23	12	18	3.9	2.2	3.0	<5.0	<5.0	<5.0	0.11	0.10	0.10
October	11	9.0	10	3.5	2.8	3.1	<5.0	<5.0	<5.0	0.099	0.099	0.099
November	17	11	14	3.8	1.9	2.8	<5.0	<5.0	<5.0	1.5	0.085	0.79
December	20	18	19	5.1	2.1	3.6	<5.0	<5.0	<5.0	0.092	0.082	0.087
Annual summary	25	8.5	17	11	1.7	4.6	43	<5.0	<6.5	1.5	0.025	0.15

^aORNL.^bNot applicable.

Table 2.2.53. 1987 NPDES Permit Number TN 0002941
Discharge Point: X04^e

Month	Silver (mg/L) No. of samples 24				Arsenic (mg/L) No. of samples 24				Cadmium (mg/L) No. of samples 24				Chromium (mg/L) No. of samples 24			
	Max	Min	Av		Max	Min	Av		Max	Min	Av		Max	Min	Av	
January	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
February	0.036	<0.030	<0.033		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
March	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
April	<0.030	0.013	<0.021		0.060	<0.010	<0.035		0.0030	<0.00050	<0.0017		0.024	<0.0040	<0.014	
May	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
June	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
July	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
August	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
September	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
October	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
November	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		<0.024	<0.024	<0.024	
December	<0.030	<0.030	<0.030		<0.060	<0.060	<0.060		<0.0030	<0.0030	<0.0030		0.026	<0.024	<0.025	
Annual summary	0.036	0.013	<0.029		0.060	<0.010	<0.057		0.0030	<0.00050	<0.0028		0.026	<0.0040	<0.023	
	Copper (mg/L) No. of samples 24				Downstream pH (standard units) No. of samples 52				Flow (Mgd) No. of samples 13				Nickel (mg/L) No. of samples 24			
January	<0.012	<0.012	<0.012		8.1	7.5	NA ^b		0.070	0.070	0.070		<0.036	<0.036	<0.036	
February	<0.012	<0.012	<0.012		8.1	7.7	NA		0.065	0.065	0.065		<0.036	<0.036	<0.036	
March	<0.012	<0.012	<0.012		8.2	6.1	NA		0.055	0.053	0.054		<0.036	<0.036	<0.036	
April	0.012	<0.0020	<0.0070		8.1	7.7	NA		0.046	0.046	0.046		0.036	<0.0060	<0.021	
May	<0.012	<0.012	<0.012		7.9	7.7	NA		0.042	0.042	0.042		<0.036	<0.036	<0.036	
June	<0.012	<0.012	<0.012		8.6	7.1	NA		0.016	0.016	0.016		<0.036	<0.036	<0.036	
July	0.069	<0.012	<0.040		7.8	7.6	NA		0.011	0.011	0.011		<0.036	<0.036	<0.036	
August	0.013	<0.012	<0.012		7.8	7.0	NA		0.012	0.012	0.012		0.13	<0.036	<0.083	
September	<0.012	<0.012	<0.012		7.6	7.1	NA		0.023	0.023	0.023		<0.036	<0.036	<0.036	
October	<0.012	<0.012	<0.012		8.2	7.4	NA		0.013	0.013	0.013		<0.036	<0.036	<0.036	
November	<0.012	<0.012	<0.012		8.0	7.1	NA		0.0041	0.0041	0.0041		<0.036	<0.036	<0.036	
December	<0.012	<0.012	<0.012		7.8	7.5	NA		0.0015	0.0015	0.0015		<0.036	<0.036	<0.036	
Annual summary	0.069	<0.0020	<0.014		8.6	6.1	NA		0.070	0.0015	0.030		0.13	<0.0060	<0.038	

Table 2.2.54. 1987 NPDES Permit Number TN 0002941
Discharge Point: X06^a

Month	Arsenic (mg/L)				Cadmium (mg/L)				Chromium (mg/L)				Copper (mg/L)			
	Max	Min	Av	No. of samples 24	Max	Min	Av	No. of samples 24	Max	Min	Av	No. of samples 24	Max	Min	Av	No. of samples 24
January	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.064	0.026	0.045	<2.0	<2.0
February	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.030	0.016	0.023	<2.0	<2.0
March	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.033	0.027	0.030	<2.0	<3.0
April	0.060	<0.010	<0.035	0.0030	<0.00050	<0.0017	<0.0017	<0.024	<0.0040	<0.014	<0.014	0.030	0.011	0.020	<2.0	<13
May	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.18	0.12	0.15	<2.0	<2.0
June	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.13	0.10	0.11	<2.0	<2.0
July	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.12	0.096	0.10	<2.0	<2.0
August	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.18	0.12	0.15	<2.0	<2.0
September	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	0.12	<0.024	<0.072	<0.072	0.11	0.049	0.079	<2.0	<2.0
October	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.066	0.047	0.056	<2.0	<2.0
November	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.10	0.019	0.059	<2.0	<2.0
December	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.024	0.034	0.026	0.030	<2.0	<2.0
Annual summary	0.060	<0.010	<0.057	0.0030	<0.00050	<0.0028	<0.0028	0.12	<0.0040	<0.027	<0.027	0.18	0.011	0.072	<2.0	<6.2
Downstream pH (standard units)																
	No. of samples 52				Flow (Mgd)				Nickel (mg/L)				Oil and grease (mg/L)			
January	7.6	6.8	NA ^b	0.10	0.10	0.10	0.10	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
February	7.4	7.0	NA	0.13	0.13	0.13	0.13	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
March	8.3	6.9	NA	0.13	0.13	0.13	0.13	<0.036	<0.036	<0.036	<0.036	4.0	<2.0	<3.0	<2.0	<3.0
April	7.6	7.2	NA	0.14	0.14	0.14	0.14	<0.036	<0.0060	<0.021	<0.021	24	<2.0	<13	<2.0	<13
May	7.5	7.4	NA	0.13	0.13	0.13	0.13	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
June	8.6	7.1	NA	0.15	0.15	0.15	0.15	<0.036	<0.036	<0.036	<0.036	21	7.0	14	<2.0	14
July	7.5	7.3	NA	0.012	0.012	0.012	0.012	<0.036	<0.036	<0.036	<0.036	21	2.0	11	<2.0	11
August	7.4	7.2	NA	0.14	0.14	0.14	0.14	<0.036	<0.036	<0.036	<0.036	16	<2.0	<9.0	<2.0	<9.0
September	7.4	7.0	NA	0.14	0.14	0.14	0.14	<0.036	<0.036	<0.036	<0.036	24	<2.0	<13	<2.0	<13
October	7.7	7.2	NA	0.13	0.13	0.13	0.13	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
November	8.1	6.8	NA	0.13	0.13	0.13	0.13	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
December	7.9	7.2	NA	0.14	0.14	0.14	0.14	<0.036	<0.036	<0.036	<0.036	<2.0	<2.0	<2.0	<2.0	<2.0
Annual summary	8.6	6.8	NA	0.15	0.012	0.12	0.12	0.036	<0.0060	<0.034	<0.034	24	<2.0	<6.2	<2.0	<6.2

Table 2.2.54 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Lead (mg/L) No. of samples 24			pH (standard units) No. of samples 52			Selenium (mg/L) No. of samples 24			Sulfate (mg/L) No. of samples 24		
January	<0.12	<0.12	<0.12	7.0	6.9	NA	<0.12	<0.12	<0.12	29	24	26
February	<0.12	<0.12	<0.12	7.3	6.8	NA	<0.12	<0.12	<0.12	25	21	23
March	<0.12	<0.12	<0.12	8.3	7.0	NA	<0.12	<0.12	<0.12	26	24	25
April	<0.12	<0.020	<0.070	7.4	6.9	NA	<0.12	<0.020	<0.070	25	23	24
May	<0.12	<0.12	<0.12	7.3	7.0	NA	<0.12	<0.12	<0.12	25	24	24
June	<0.12	<0.12	<0.12	8.7	7.2	NA	<0.12	<0.12	<0.12	23	22	22
July	<0.12	<0.12	<0.12	7.3	7.0	NA	<0.12	<0.12	<0.12	22	21	21
August	<0.12	<0.12	<0.12	7.5	7.1	NA	<0.12	<0.12	<0.12	28	21	24
September	<0.12	<0.12	<0.12	7.6	7.0	NA	<0.12	<0.12	<0.12	24	21	22
October	<0.12	<0.12	<0.12	7.7	6.9	NA	<0.12	<0.12	<0.12	29	21	25
November	<0.12	<0.12	<0.12	7.7	7.0	NA	<0.12	<0.12	<0.12	39	22	30
December	<0.12	<0.12	<0.12	7.9	6.9	NA	<0.12	<0.12	<0.12	29	23	26
Annual summary	0.12	<0.020	<0.11	8.7	6.8	NA	0.12	<0.020	<0.11	39	21	24
	Temperature (°C) No. of samples 24			Total organic carbon (mg/L) No. of samples 24			Total suspended solids (mg/L) No. of samples 24			Zinc (mg/L) No. of samples 24		
January	14	4.8	9.5	6.1	5.3	5.7	10	<5.0	<7.5	0.11	0.10	0.10
February	12	11	12	3.3	2.8	3.0	<5.0	<5.0	<5.0	0.080	0.073	0.076
March	12	9.2	10	3.5	3.1	3.3	6.0	<5.0	<5.5	0.11	0.11	0.11
April	12	12	12	7.9	3.1	5.5	<5.0	<5.0	<5.0	0.096	0.019	0.057
May	18	15	17	6.0	4.6	5.3	9.0	<5.0	<7.0	0.11	0.093	0.10
June	23	15	19	8.8	3.4	6.1	15	6.0	10	0.073	0.060	0.066
July	23	12	17	3.6	3.0	3.3	9.0	<5.0	<7.0	0.082	0.071	0.076
August	25	10	17	8.7	2.5	5.6	10	7.0	8.5	0.14	0.051	0.095
September	23	10	16	6.1	3.6	4.8	<5.0	<5.0	<5.0	0.097	0.076	0.086
October	10	5.4	7.8	5.9	5.5	5.7	<5.0	<5.0	<5.0	0.089	0.062	0.075
November	17	10	13	10	2.4	6.2	<5.0	<5.0	<5.0	0.082	0.055	0.068
December	13	13	13	3.9	3.1	3.5	<5.0	<5.0	<5.0	0.085	0.083	0.084
Annual summary	25	4.8	14	10	2.4	4.8	<5.0	<6.3	0.14	0.14	0.019	0.083

^aORNL.^bNot applicable.

Table 2.2.55. 1987 NPDES Permit Number TN 0002941
Discharge Point: X07^d

Month	Silver (mg/L)			Arsenic (mg/L)			Cadmium (mg/L)			Chromium (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
February	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
March	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.046	<0.024	<0.035
April	<0.030	<0.0050	<0.017	<0.060	<0.010	<0.035	<0.0030	<0.00050	<0.0017	<0.024	<0.0040	<0.014
May	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
June	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
July	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
August	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
September	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
October	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
November	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024
December	<0.030	<0.030	<0.030	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.43	<0.024	<0.022
Annual summary	<0.030	<0.0050	<0.028	<0.060	<0.010	<0.057	<0.0030	<0.00050	<0.0028	0.43	<0.0040	<0.041
Downstream pH (standard units)												
	Copper (mg/L)			pH			Nickel (mg/L)			Nitrate (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.012	<0.012	<0.012	7.8	6.6	NA ^b	<0.036	<0.036	<0.036	7.0	<5.0	<6.0
February	<0.012	<0.012	<0.012	7.8	7.5	NA	<0.036	<0.036	<0.036	45	15	30
March	0.015	<0.012	<0.013	8.3	7.5	NA	<0.036	<0.036	<0.036	10	<5.0	<7.5
April	<0.012	0.0040	<0.0080	7.5	7.3	NA	<0.036	<0.0060	<0.021	23	5.0	14
May	0.056	0.025	0.040	7.5	7.4	NA	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
June	0.078	0.048	0.063	8.4	7.0	NA	<0.036	<0.036	<0.036	30	8.2	19
July	0.025	0.025	0.025	7.5	7.5	NA	<0.036	<0.036	<0.036	5.3	<5.0	<5.1
August	0.056	0.038	0.047	7.6	7.4	NA	<0.036	<0.036	<0.036	17	<5.0	<11
September	0.035	0.021	0.028	7.5	7.0	NA	<0.036	<0.036	<0.036	16	<5.0	<10
October	0.090	<0.012	<0.051	7.7	7.0	NA	<0.036	<0.036	<0.036	20	<5.0	<12
November	0.033	0.032	0.032	8.0	6.9	NA	<0.036	<0.036	<0.036	8.1	<1.0	<4.5
December	0.022	<0.012	<0.017	7.6	7.3	NA	<0.036	<0.036	<0.22	<5.0	<5.0	<5.0
Annual summary	0.090	0.0040	<0.029	8.4	6.6	NA	0.42	<0.0060	<0.050	45	<1.0	<10

Table 2.2.55 (continued)

Month	Oil and grease (mg/L) No. of samples 24			Lead (mg/L) No. of samples 24			pH (standard units) No. of samples 52			Sulfate (mg/L) No. of samples 24		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.9	7.5	NA	270	173	221
February	5.0	<2.0	<3.5	<0.12	<0.12	<0.12	8.0	7.7	NA	223	79	151
March	16	2.0	9.0	<0.12	<0.12	<0.12	8.3	7.4	NA	180	48	114
April	5.0	<2.0	<3.5	<0.12	<0.020	<0.070	7.6	7.2	NA	300	210	255
May	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.6	7.1	NA	380	240	310
June	5.0	<2.0	<3.5	<0.12	<0.12	<0.12	8.6	7.2	NA	300	230	265
July	3.0	<2.0	<2.5	<0.12	<0.12	<0.12	7.4	7.3	NA	300	110	205
August	8.0	4.0	6.0	<0.12	<0.12	<0.12	7.7	7.2	NA	250	230	240
September	8.0	<2.0	<5.0	<0.12	<0.12	<0.12	7.3	6.9	NA	190	118	154
October	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.6	7.1	NA	200	180	190
November	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.6	6.9	NA	230	160	195
December	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	8.2	7.2	NA	400	48	216
Annual summary	16	<2.0	<3.5	<0.12	<0.020	<0.11	8.6	6.9	NA	400	48	216
	Temperature (°C) No. of samples 24			Total organic carbon (mg/L) No. of samples 25			Total suspended solids (mg/L) No. of samples 24			Total toxic organics (mg/L) No. of samples 24		
January	8.7	7.1	7.9	1.8	1.6	1.7	15	<5.0	<10	11	0	5.5
February	10	7.9	9.2	1.8	1.7	1.7	<5.0	<5.0	<5.0	123	0	61
March	11	9.9	10	4.5	2.3	3.4	8.0	<5.0	<6.5	44	0	22
April	13	13	13	2.4	1.4	1.9	<5.0	<5.0	<5.0	0	0	0
May	21	13	17	2.3	2.0	2.1	<5.0	<5.0	<5.0	0	0	0
June	25	22	23	4.3	3.8	4.0	<5.0	<5.0	<5.0	0	0	0
July	24	20	22	2.4	2.0	2.2	<5.0	<5.0	<5.0	0	0	0
August	25	15	20	2.8	1.8	2.3	10	6.0	8.0	0	0	0
September	23	19	21	2.2	1.5	1.8	<5.0	<5.0	<5.0	0	0	0
October	19	9.8	14	4.0	2.2	2.8	<5.0	<5.0	<5.0	0	0	0
November	16	9.8	13	2.1	2.0	2.0	<5.0	<5.0	<5.0	17	0	8.5
December	17	17	17	2.4	1.6	2.0	<5.0	<5.0	<5.0	0	0	0
Annual summary	25	7.1	16	4.5	1.4	2.4	15	<5.0	<5.7	123	0	8.1

Table 2.2.55 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
				<i>Zinc (mg/L)</i>								
				No. of samples 24								
January	0.019	<0.012	<0.015									
February	<0.012	<0.012	<0.012									
March	<0.012	<0.012	<0.012									
April	<0.012	<0.0020	<0.0070									
May	<0.012	<0.012	<0.012									
June	<0.012	<0.012	<0.012									
July	<0.012	<0.012	<0.012									
August	<0.012	<0.012	<0.012									
September	<0.012	<0.012	<0.012									
October	<0.012	<0.012	<0.012									
November	<0.012	<0.012	<0.012									
December	<0.012	<0.012	<0.012									
Annual summary	0.019	<0.0020	<0.011									

^aORNL.^bNot applicable.

Table 2.2.56. 1987 NPDES Permit Number TN 0002941
Discharge Point: X08^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Arsenic (mg/L)</i> No. of samples 10			<i>Cadmium (mg/L)</i> No. of samples 10			<i>Chromium (mg/L)</i> No. of samples 10			<i>Copper (mg/L)</i> No. of samples 10		
January	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
February	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.013	<0.012	<0.012
March	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.027	<0.024	<0.024	0.016	<0.012	<0.013
May	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.025	<0.024	<0.024	0.019	<0.012	<0.015
July	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.016	0.016	0.016
Annual summary	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.027	<0.024	<0.024	0.019	<0.012	<0.013
	<i>Downstream pH (standard units)</i> No. of samples 10			<i>Flow (Mgd)</i> No. of samples 9			<i>Nickel (mg/L)</i> No. of samples 10			<i>Nitrate (mg/L)</i> No. of samples 10		
January	8.2	8.2	NA ^b	0.0019	0.0019	0.0019	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
February	7.5	7.5	NA	0.0010	0.0010	0.0010	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
March	8.0	7.7	NA	0.00096	0.00096	0.00096	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
May	7.9	7.7	NA	0.00096	0.00096	0.00096	0.10	<0.036	<0.068	6.0	<5.0	<5.5
July	7.8	7.8	NA	0.00096	0.00096	0.00096	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
Annual summary	8.2	7.5	NA	0.0019	0.00096	0.0010	0.10	<0.036	<0.042	6.0	<5.0	<5.1
	<i>Oil and grease (mg/L)</i> No. of samples 10			<i>Lead (mg/L)</i> No. of samples 10			<i>pH (standard units)</i> No. of samples 10			<i>Sulfate (mg/L)</i> No. of samples 10		
January	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.9	7.9	7.9	28	28	28
February	<2.0	<2.0	<2.0	<0.12	<0.12	<0.12	7.6	6.9	7.2	42	29	35
March	10	<2.0	<4.7	<0.12	<0.12	<0.12	8.6	7.2	8.1	41	24	29
May	9.0	7.0	8.0	<0.12	<0.12	<0.12	7.4	7.2	7.3	24	24	24
July	4.0	4.0	4.0	<0.12	<0.12	<0.12	7.5	7.5	7.5	56	56	56
Annual summary	10	<2.0	<4.5	<0.12	<0.12	<0.12	8.6	6.9	7.6	56	24	32
	<i>Temperature (°C)</i> No. of samples 10			<i>Total organic carbon (mg/L)</i> No. of samples 10			<i>Total suspended solids (mg/L)</i> No. of samples 10			<i>Zinc (mg/L)</i> No. of samples 10		
January	3.0	3.0	3.0	3.0	3.0	3.0	7.0	7.0	7.0	0.080	0.080	0.080
February	9.7	3.4	6.5	3.0	2.6	2.8	<5.0	<5.0	<5.0	0.11	0.073	0.091
March	25	13	16	3.1	2.0	2.4	<5.0	<5.0	<5.0	0.11	0.015	0.050
May	19	19	19	6.1	4.1	5.1	6.0	<5.0	<5.5	0.11	0.013	0.061
July	23	23	23	5.1	5.1	5.1	7.0	7.0	7.0	0.039	0.039	0.039
Annual summary	25	3.0	14	6.1	2.0	3.3	7.0	<5.0	<5.5	0.11	0.013	0.062

^aORNL.

^bNot applicable.

Table 2.2.57. 1987 NPDES Permit Number TN 0002941
Discharge Point: X09^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Arsenic (mg/L)</i> No. of samples 4			<i>Cadmium (mg/L)</i> No. of samples 4			<i>Chromium (mg/L)</i> No. of samples 4			<i>Copper (mg/L)</i> No. of samples 4		
January	<0.060	<0.060	<0.060	0.0084	0.0084	0.0084	<0.024	<0.024	<0.024	0.11	0.11	0.11
February	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.044	0.044	0.044
July	<0.060	<0.060	<0.060	0.0033	0.0033	0.0033	<0.024	<0.024	<0.024	0.083	0.083	0.083
August	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.046	0.046	0.046	0.11	0.11	0.11
Annual summary	<0.060	<0.060	<0.060	0.0084	<0.0030	<0.0044	0.046	<0.024	<0.029	0.11	0.044	0.086
	<i>Downstream pH (standard units)</i> No. of samples 4			<i>Flow (Mgd)</i> No. of samples 4			<i>Nickel (mg/L)</i> No. of samples 4			<i>Nitrate (mg/L)</i> No. of samples 4		
January	8.2	8.2	NA ^b	0.0051	0.0051	0.0051	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
February	7.5	7.5	NA	0.0046	0.0046	0.0046	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
July	6.9	6.9	NA	0.00009	0.00009	0.00009	<0.036	<0.036	<0.036	23	23	23
August	7.8	7.8	NA	0.0041	0.0041	0.0041	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
Annual summary	8.2	6.9	NA	0.0051	0.00009	0.0035	<0.036	<0.036	<0.036	23	<5.0	<9.5
	<i>Oil and grease (mg/L)</i> No. of samples 4			<i>Lead (mg/L)</i> No. of samples 4			<i>pH (standard units)</i> No. of samples 4			<i>Sulfate (mg/L)</i> No. of samples 4		
January	2.0	2.0	2.0	<0.12	<0.12	<0.12	7.9	7.9	NA ^b	118	118	118
February	2.0	2.0	2.0	<0.12	<0.12	<0.12	7.0	7.0	NA	80	80	80
July	3.0	3.0	3.0	<0.12	<0.12	<0.12	7.1	7.1	NA	420	420	420
August	3.0	3.0	3.0	<0.12	<0.12	<0.12	7.8	7.8	NA	110	110	110
Annual summary	3.0	2.0	2.5	<0.12	<0.12	<0.12	7.9	7.0	NA	80	80	182
	<i>Temperature (°C)</i> No. of samples 4			<i>Total organic carbon (mg/L)</i> No. of samples 4			<i>Total suspended solids (mg/L)</i> No. of samples 4			<i>Zinc (mg/L)</i> No. of samples 4		
January	5.7	5.7	5.7	1.9	1.9	1.9	<5.0	<5.0	<5.0	0.15	0.15	0.15
February	10	10	10	2.2	2.2	2.2	<5.0	<5.0	<5.0	0.054	0.054	0.054
July	4.9	4.9	4.9	6.6	6.6	6.6	9.0	9.0	9.0	0.26	0.26	0.26
August	25	25	25	4.5	4.5	4.5	22	22	22	0.14	0.14	0.14
Annual summary	25	4.9	11	6.6	1.9	3.8	22	<5.0	<10	0.26	0.054	0.15

^aORNL.

^bNot applicable.

Table 2.2.58. 1987 NPDES Permit Number TN 0002941
Discharge Point: X10^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Arsenic (mg/L)</i> No. of samples 2			<i>Cadmium (mg/L)</i> No. of samples 2			<i>Chromium (mg/L)</i> No. of samples 2			<i>Copper (mg/L)</i> No. of samples 2		
January	<0.060	<0.060	<0.060	0.011	0.011	0.011	0.094	0.094	0.094	0.16	0.16	0.16
April	<0.060	<0.060	<0.060	0.0040	0.0040	0.0040	0.090	0.090	0.090	0.17	0.17	0.17
Annual summary	<0.060	<0.060	<0.060	0.011	0.0040	0.0075	0.094	0.090	0.092	0.17	0.16	0.16
	<i>Downstream pH (standard units)</i> No. of samples 2			<i>Iron (mg/L)</i> No. of samples 2			<i>Flow (Mgd)</i> No. of samples 2			<i>Nickel (mg/L)</i> No. of samples 2		
January	7.9	7.9	NA ^b	22	22	22	0.00025	0.00025	0.00025	0.088	0.088	0.088
April	7.4	7.4	NA	1.9	1.9	1.9	0.00027	0.00027	0.00027	0.062	0.062	0.062
Annual summary	7.9	7.4	NA	22	1.9	12	0.00027	0.00025	0.00026	0.088	0.062	0.075
	<i>Nitrate (mg/L)</i> No. of samples 2			<i>Oil and grease (mg/L)</i> No. of samples 2			<i>Lead (mg/L)</i> No. of samples 2			<i>pH (standard units)</i> No. of samples 2		
January	1500	1500	1500	3.0	3.0	3.0	0.55	0.55	0.55	7.8	7.8	NA
April	940	940	940	<2.0	<2.0	<2.0	0.14	0.14	0.14	7.2	7.2	NA
Annual summary	1500	940	1220	3.0	<2.0	2.5	0.55	0.14	0.34	7.8	7.2	NA
	<i>Sulfate (mg/L)</i> No. of samples 2			<i>Temperature (°C)</i> No. of samples 2			<i>Total organic carbon (mg/L)</i> No. of samples 2			<i>Total suspended solids (mg/L)</i> No. of samples 2		
January	25	25	25	12	12	12	7.1	7.1	7.1	253	253	253
April	24	24	24	10	10	10	10	10	10	6.0	6.0	6.0
Annual summary	25	24	24	12	10	11	10	7.1	8.5	253	6.0	129
	<i>Zinc (mg/L)</i> No. of samples 2											
January	0.97	0.97	0.97									
April	0.26	0.26	0.26									
Annual summary	0.97	0.26	0.61									

^aORNL.

^bNot applicable.

Table 2.2-59. 1987 NPDES Permit Number TN 0002941
Discharge Point: X11^a

Month	Arsenic (mg/L) No. of samples 24			Cadmium (mg/L) No. of samples 24			Chromium (mg/L) No. of samples 24			Copper (mg/L) No. of samples 24		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012
February	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.018	<0.012	<0.015
March	<0.060	<0.060	<0.060	0.015	0.0044	0.0097	<0.024	<0.024	<0.024	0.068	<0.012	<0.040
April	0.060	<0.010	<0.035	1.0	<0.00050	<0.50	0.024	<0.0040	<0.014	0.045	0.0054	0.025
May	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.026	<0.024	<0.025	0.018	<0.012	<0.015
June	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.030	<0.024	<0.027	0.34	0.072	0.20
July	0.070	<0.060	<0.065	<0.0030	<0.0030	<0.0030	0.048	<0.024	<0.036	0.039	0.037	0.038
August	0.063	<0.060	<0.061	<0.0030	<0.0030	<0.0030	0.042	0.029	0.035	0.43	0.13	0.28
September	<0.060	<0.060	<0.060	<0.0030	<0.0030	<0.0030	0.031	<0.024	<0.027	0.17	<0.012	<0.091
October	<0.060	<0.060	<0.060	0.024	<0.0030	<0.013	0.036	<0.024	<0.030	0.86	0.27	0.56
November	0.076	<0.060	<0.068	<0.0030	<0.0030	<0.0030	<0.024	<0.024	<0.024	0.18	0.096	0.13
December	<0.060	<0.060	<0.060	0.021	<0.0030	<0.012	<0.024	<0.024	<0.087	0.019	0.019	0.019
Annual summary	0.076	<0.010	<0.059	1.0	<0.00050	<0.046	0.15	<0.0040	<0.031	0.86	<0.0054	<0.12
Downstream pH (standard units)												
	No. of samples 52			Flow (Mgd) No. of samples 12			Nickel (mg/L) No. of samples 24			Nitrate (mg/L) No. of samples 52		
January	7.8	7.5	NA ^b	0.036	0.036	0.036	<0.036	<0.036	<0.036	7.0	<5.0	<5.5
February	7.7	7.4	NA	0.036	0.036	0.036	<0.036	<0.036	<0.036	6.0	<5.0	<5.2
March	8.4	7.4	NA	0.033	0.033	0.033	<0.036	<0.036	<0.036	18	<5.0	<7.6
April	7.5	7.3	NA	0.021	0.021	0.021	0.036	<0.0060	<0.021	<5.0	<5.0	<5.0
May	7.5	7.4	NA	0.017	0.017	0.017	<0.036	<0.036	<0.036	6.0	<5.0	<5.2
June	8.3	7.1	NA	0.013	0.013	0.013	<0.036	<0.036	<0.036	5.3	<5.0	<5.0
July	7.5	7.4	NA	0.13	0.13	0.13	0.054	<0.036	<0.045	<5.0	<5.0	<5.0
August	7.5	7.0	NA	0.010	0.010	0.010	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
September	7.4	7.1	NA	0.013	0.013	0.013	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
October	7.7	6.5	NA	0.026	0.026	0.026	<0.036	<0.036	<0.036	23	<5.0	<9.5
November	8.1	6.1	NA	0.018	0.018	0.018	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0
December	7.9	7.3	NA	0.024	0.024	0.024	0.055	<0.036	<0.045	<5.0	<5.0	<5.0
Annual summary	8.4	6.1	NA	0.13	0.010	0.031	0.055	<0.0060	<0.036	23	<5.0	<5.6

Table 2.2.59 (continued)

Month	Oil and grease (mg/L) No. of samples 24			Phosphorus (mg/L) No. of samples 24			Lead (mg/L) No. of samples 24			pH (standard units) No. of samples 52		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	3.0	<2.0	<2.5	3.3	2.6	3.0	<0.12	<0.12	<0.12	7.2	6.4	NA
February	<2.0	<2.0	<2.0	17	2.7	9.8	<0.12	<0.12	<0.12	7.6	7.0	NA
March	<2.0	<2.0	<2.0	4.1	2.3	3.2	<0.12	<0.12	<0.12	8.1	7.2	NA
April	4.0	<2.0	<3.0	2.9	1.2	2.0	0.12	<0.020	<0.070	7.3	6.5	NA
May	7.0	3.0	5.0	5.5	3.6	4.5	<0.12	<0.12	<0.12	7.3	7.2	NA
June	3.0	<2.0	<2.5	4.1	0.80	2.4	<0.12	<0.12	<0.12	8.2	7.2	NA
July	5.0	<2.0	<3.5	0.88	0.80	0.84	<0.12	<0.12	<0.12	7.2	7.1	NA
August	3.0	2.0	2.5	2.1	0.80	1.4	<0.12	<0.12	<0.12	7.6	7.2	NA
September	<2.0	<2.0	<2.0	0.70	0.60	0.65	<0.12	<0.12	<0.12	7.3	7.0	NA
October	<2.0	<2.0	<2.0	3.6	2.3	2.9	<0.12	<0.12	<0.12	7.6	2.2	NA
November	<2.0	<2.0	<2.0	3.8	2.6	3.2	<0.12	<0.12	<0.12	7.7	2.7	NA
December	<2.0	<2.0	<2.0	5.4	4.3	4.8	<0.12	<0.12	<0.12	7.1	6.8	NA
Annual summary	7.0	<2.0	<2.5	17	0.6	3.2	0.12	<0.020	<0.11	8.2	2.2	NA
	Sulfate (mg/L) No. of samples 52			Temperature (°C) No. of samples 24			Total organic carbon (mg/L) No. of samples 52			Total suspended solids (mg/L) No. of samples 24		
January	2000	1200	1582	9.7	6.8	8.2	6.7	2.5	4.2	25	25	25
February	2000	580	1220	12	10	11	3.3	3.1	3.1	9.0	5.0	7.0
March	2250	1100	1600	12	8.3	10	4.3	3.1	3.7	22	14	18
April	2600	1500	1900	10	9.8	10	3.6	2.2	2.8	19	16	17
May	3300	1400	2025	20	19	20	7.6	3.3	6.2	49	11	30
June	3800	1800	2420	21	16	18	6.6	2.1	4.0	23	16	19
July	4000	1300	2700	23	12	18	6.7	3.0	4.1	19	6.0	12
August	2600	1900	2325	24	13	19	5.4	2.8	3.7	156	<5.0	<80
September	2300	1600	1980	23	11	17	3.0	1.7	2.3	13	<5.0	<9.0
October	3111	2100	2477	12	4.5	8.4	8.9	3.0	5.1	46	21	33
November	2400	2200	2300	16	10	13	7.5	4.5	5.6	51	38	44
December	2600	2300	2460	17	14	15	6.5	1.2	5.1	41	<5.0	<23
Annual summary	4000	580	2085	24	4.5	14	8.9	1.2	4.2	156	<5.0	<26

Table 2.2.60. 1987 NPDES Permit Number TN 0002941
Discharge Point: X13^a

Month	Silver (mg/L)			Aluminum (mg/L)			Arsenic (mg/L)			Biological oxygen demand (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
February	<0.0050	<0.0050	<0.0050	0.30	0.30	0.30	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
March	<0.0050	<0.0050	<0.0050	0.24	0.24	0.24	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
April	<0.0050	<0.0050	<0.0050	0.22	0.22	0.22	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
May	<0.0050	<0.0050	<0.0050	0.12	0.12	0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
June	<0.0050	<0.0050	<0.0050	0.21	0.21	0.21	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
July	<0.0050	<0.0050	<0.0050	0.50	0.50	0.50	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
August	<0.0050	<0.0050	<0.0050	0.33	0.33	0.33	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
September	<0.0050	<0.0050	<0.0050	0.57	0.57	0.57	<0.060	<0.060	<0.060	7.0	7.0	7.0
October	<0.0050	<0.0050	<0.0050	0.57	0.57	0.57	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
November	<0.0050	<0.0050	<0.0050	0.30	0.30	0.30	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
December	<0.0050	<0.0050	<0.0050	0.15	0.15	0.15	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
Annual summary	<0.0050	<0.0050	<0.0050	0.57	<0.12	<0.30	<0.060	<0.060	<0.060	7.0	<5.0	<5.1
	Bromodichloromethane (mg/L)			Cadmium (mg/L)			Chloroform			Chlorine (mg/L)		
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 52		
January	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
February	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
March	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
April	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
May	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
June	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
July	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
August	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
September	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
October	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
November	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
December	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
Annual summary	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	0.030	<0.010	<0.014
	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	0.030	<0.010	<0.010

Table 2.2.60 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Conductivity ($\mu\text{mho/cm}$)</i>			<i>Chromium (mg/L)</i>			<i>Copper (mg/L)</i>			<i>Dissolved oxygen (mg/L)</i>		
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 52		
January	300	300	300	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	13	6.0	10
February	200	200	200	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	12	6.0	10
March	250	250	250	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	12	9.0	10
April	290	290	290	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	11	9.1	10
May	300	300	300	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	10	8.0	9.2
June	310	310	310	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	9.3	6.1	7.5
July	390	390	390	<0.024	<0.024	<0.024	0.017	0.017	0.017	7.5	4.0	6.3
August	330	330	330	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	7.8	5.5	6.7
September	350	350	350	<0.024	<0.024	<0.024	0.015	0.015	0.015	8.1	5.1	6.8
October	380	380	380	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	10	7.1	8.5
November	350	350	350	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	10	7.0	8.0
December	300	300	300	<0.024	<0.024	<0.024	<0.012	<0.012	<0.012	14	5.9	8.8
Annual summary	390	200	312	<0.024	<0.024	<0.024	0.017	<0.012	<0.012	14	4.0	8.6
	<i>Fluoride (mg/L)</i>			<i>Iron (mg/L)</i>			<i>Mercury (mg/L)</i>			<i>Manganese (mg/L)</i>		
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 12		
January	<1.0	<1.0	<1.0	0.088	0.088	0.088	<0.00005	<0.00005	<0.00005	0.058	0.058	0.058
February	<1.0	<1.0	<1.0	0.21	0.21	0.21	0.00010	0.00010	0.00010	0.10	0.10	0.10
March	<1.0	<1.0	<1.0	0.18	0.18	0.18	<0.00005	<0.00005	<0.00005	0.044	0.044	0.044
April	<1.0	<1.0	<1.0	0.15	0.15	0.15	<0.00005	<0.00005	<0.00005	0.053	0.053	0.053
May	<1.0	<1.0	<1.0	0.16	0.16	0.16	<0.00005	<0.00005	<0.00005	0.043	0.043	0.043
June	1.0	1.0	1.0	0.19	0.19	0.19	<0.00005	<0.00005	<0.00005	0.13	0.13	0.13
July	1.0	1.0	1.0	0.50	0.50	0.50	<0.00005	<0.00005	<0.00005	0.20	0.20	0.20
August	1.1	1.1	1.1	0.36	0.36	0.36	<0.00005	<0.00005	<0.00005	0.15	0.15	0.15
September	1.0	1.0	1.0	0.64	0.64	0.64	<0.00005	<0.00005	<0.00005	0.15	0.15	0.15
October	1.0	1.0	1.0	0.45	0.45	0.45	<0.00005	<0.00005	<0.00005	0.097	0.097	0.097
November	1.0	1.0	1.0	0.20	0.20	0.20	<0.00005	<0.00005	<0.00005	0.066	0.066	0.066
December	1.0	1.0	1.0	0.19	0.19	0.19	<0.00005	<0.00005	<0.00005	0.054	0.054	0.054
Annual summary	1.1	<1.0	<1.0	0.64	0.088	0.27	0.00010	<0.00005	<0.00005	0.20	0.043	0.095

Table 2.2.60 (continued)

Month	Phenols (mg/L)			Sulfate (mg/L)			Total dissolved solids (mg/L)			Temperature (°C)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.0010	<0.0010	<0.0010	34	34	34	233	233	233	9.4	9.4	9.4
February	0.0010	0.0010	0.0010	28	28	28	148	148	148	10	10	10
March	<0.0010	<0.0010	<0.0010	23	23	23	207	207	207	10	10	10
April	<0.0010	<0.0010	<0.0010	20	20	20	164	164	164	10	10	10
May	<0.0010	<0.0010	<0.0010	24	24	24	234	234	234	22	22	22
June	<0.0010	<0.0010	<0.0010	36	36	36	280	280	280	23	23	23
July	<0.0010	<0.0010	<0.0010	28	28	28	2074	2074	2074	22	22	22
August	<0.0010	<0.0010	<0.0010	28	28	28	226	226	226	24	24	24
September	0.0010	0.0010	<0.0010	26	26	26	250	250	250	21	21	21
October	0.0010	0.0010	0.0010	40	40	40	241	241	241	13	13	13
November	0.0030	0.0030	0.0030	32	32	32	213	213	213	4.4	4.4	4.4
December	<0.0010	<0.0010	<0.0010	29	29	29	180	180	180	4.4	4.4	4.4
Annual summary	0.0030	<0.0010	<0.0011	40	20	29	2074	148	370	24	4.4	14
	Total organic carbon (mg/L)			Trichloroethylene (mg/L)			Total suspended solids (mg/L)			Turbidity (Jackson turbidity units)		
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 12		
January	1.8	1.8	1.8	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	25	25	25
February	1.6	1.6	1.6	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	30	30	30
March	1.5	1.5	1.5	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0	0	0
April	1.5	1.5	1.5	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	10	10	10
May	2.2	2.2	2.2	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0	0	0
June	2.4	2.4	2.4	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0	0	0
July	2.5	2.5	2.5	<0.0050	<0.0050	<0.0050	7.0	7.0	7.0	20	20	20
August	2.4	2.4	2.4	<0.0050	<0.0050	<0.0050	9.0	9.0	9.0	20	20	20
September	3.0	3.0	3.0	<0.0050	<0.0050	<0.0050	13	13	13	30	30	30
October	5.2	5.2	5.2	<0.0050	<0.0050	<0.0050	11	11	11	35	35	35
November	2.4	2.4	2.4	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	10	10	10
December	2.1	2.1	2.1	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	10	10	10
Annual summary	5.2	1.5	2.3	<0.0050	<0.0050	<0.0050	13	<5.0	<6.6	35	0	15

Table 2.2.60 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Zinc (mg/L)</i>											
	No. of samples 12											
January	0.015	0.015	0.015									
February	<0.012	<0.012	<0.012									
March	<0.012	<0.012	<0.012									
April	<0.012	<0.012	<0.012									
May	0.052	0.052	0.052									
June	<0.012	<0.012	<0.012									
July	0.099	0.099	0.099									
August	0.034	0.034	0.034									
September	0.053	0.053	0.053									
October	0.038	0.038	0.038									
November	0.016	0.016	0.016									
December	<0.012	<0.012	<0.012									
Annual summary	0.099	<0.012	<0.030									

*ORNL.

Table 2.2.61. 1987 NPDES Permit Number TN 0002941
Discharge Point: X14^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Silver (mg/L)</i> No. of samples 12			<i>Aluminum (mg/L)</i> No. of samples 12			<i>Arsenic (mg/L)</i> No. of samples 12			<i>Biological oxygen demand (mg/L)</i> No. of samples 12		
January	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
February	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
March	<0.0050	<0.0050	<0.0050	0.13	0.13	0.13	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
April	<0.0050	<0.0050	<0.0050	0.13	0.13	0.13	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
May	<0.0050	<0.0050	<0.0050	0.13	0.13	0.13	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
June	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
July	<0.0050	<0.0050	<0.0050	0.92	0.92	0.92	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
August	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
September	<0.0050	<0.0050	<0.0050	0.15	0.15	0.15	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
October	<0.0050	<0.0050	<0.0050	0.15	0.15	0.15	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
November	<0.0050	<0.0050	<0.0050	0.13	0.13	0.13	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
December	<0.0050	<0.0050	<0.0050	<0.12	<0.12	<0.12	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
Annual summary	<0.0050	<0.0050	<0.0050	0.92	<0.12	<0.19	<0.060	<0.060	<0.060	<5.0	<5.0	<5.0
	<i>Bromodichloromethane (mg/L)</i> No. of samples 12			<i>Cadmium (mg/L)</i> No. of samples 12			<i>Chloroform</i> No. of samples 12			<i>Chlorine (mg/L)</i> No. of samples 52		
January	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
February	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
March	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	0.020	<0.010	<0.012
April	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
May	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
June	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
July	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
August	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
September	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
October	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010
November	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	0.062	0.062	0.062	<0.010	<0.010	<0.010
December	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	0.0060	0.0060	0.0060	0.030	<0.010	<0.014
Annual summary	<0.0050	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	0.062	<0.0050	<0.0098	0.030	<0.010	<0.010

Table 2.2.61 (continued)

Month	<i>NH₄-N</i> No. of samples 12			<i>Nickel (mg/L)</i> No. of samples 12			<i>Nitrate (mg/L)</i> No. of samples 12			<i>Oil and grease (mg/L)</i> No. of samples 51		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.060	0.060	0.060	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	6.0	<2.0	<3.0
February	0.050	0.050	0.050	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
March	0.050	0.050	0.050	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
April	0.060	0.060	0.060	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	8.0	<2.0	<3.5
May	0.050	0.050	0.050	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	5.0	<2.0	<2.7
June	0.080	0.080	0.080	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
July	0.090	0.090	0.090	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
August	0.10	0.10	0.10	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	4.0	<2.0	<2.5
September	0.070	0.070	0.070	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	5.0	<2.0	<2.6
October	0.066	0.066	0.066	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
November	2.9	2.9	2.9	0.17	0.17	0.17	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
December	0.14	0.14	0.14	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
Annual summary	2.9	0.050	0.31	0.17	<0.036	<0.047	<5.0	<5.0	<5.0	8.0	<2.0	<2.3
				<i>Lead (mg/L)</i> No. of samples 12			<i>PCB (mg/L)</i> No. of samples 12			<i>pH (standard units)</i> No. of samples 12		
				Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.35	0.35	0.35	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.9	7.9	NA ^b
February	0.20	0.20	0.20	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.6	7.6	NA
March	0.10	0.10	0.10	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.9	7.9	NA
April	0.10	0.10	0.10	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	8.0	8.0	NA
May	0.30	0.30	0.30	0.0050	0.0050	0.0050	<0.00050	<0.00050	<0.00050	8.0	8.0	NA
June	0.30	0.30	0.30	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	6.5	6.5	NA
July	0.20	0.20	0.20	0.012	0.012	0.012	<0.00050	<0.00050	<0.00050	7.8	7.8	NA
August	0.40	0.40	0.40	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.8	7.8	NA
September	0.42	0.42	0.42	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.5	7.5	NA
October	0.30	0.30	0.30	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	8.0	8.0	NA
November	0.30	0.30	0.30	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	8.0	8.0	NA
December	0.40	0.40	0.40	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	8.5	8.5	NA
Annual summary	0.42	0.10	0.28	0.012	<0.0040	<0.0047	<0.00050	<0.00050	<0.00050	8.5	6.5	NA

Table 2.2.61 (continued)

Month	Phenols (mg/L)			Sulfate (mg/L)			Total dissolved solids (mg/L)			Temperature (°C)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	<0.0010	<0.0010	<0.0010	63	63	63	272	272	272	12	12	12
February	<0.0010	<0.0010	<0.0010	42	42	42	95	95	95	12	12	12
March	<0.0010	<0.0010	<0.0010	39	39	39	162	162	162	12	12	12
April	<0.0010	<0.0010	<0.0010	21	21	21	186	186	186	10	10	10
May	<0.0010	<0.0010	<0.0010	63	63	63	277	277	277	25	25	25
June	<0.0010	<0.0010	<0.0010	42	42	42	231	231	231	22	22	22
July	0.0030	0.0030	0.0030	47	47	47	545	545	545	29	29	29
August	0.0010	0.0010	0.0010	48	48	48	305	305	305	21	21	21
September	<0.0010	<0.0010	<0.0010	36	36	36	314	314	314	23	23	23
October	0.0020	0.0020	0.0020	59	59	59	239	239	239	18	18	18
November	0.0010	0.0010	0.0010	52	52	52	252	252	252	12	12	12
December	0.0020	0.0020	0.0020	49	49	49	190	190	190	13	13	13
Annual summary	0.0030	<0.0010	<0.0013	63	21	46	545	95	255	29	10	17
<p><i>Total organic carbon (mg/L)</i></p> <p>No. of samples 12</p>												
January	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	10	10	10
February	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	10	10	10
March	1.7	1.7	1.7	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	400	400	400
April	1.4	1.4	1.4	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	120	120	120
May	2.6	2.6	2.6	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	160	160	160
June	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	150	150	150
July	1.8	1.8	1.8	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	92	92	92
August	2.0	2.0	2.0	<0.0050	<0.0050	<0.0050	7.0	7.0	7.0	50	50	50
September	1.7	1.7	1.7	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	120	120	120
October	2.2	2.2	2.2	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	88	88	88
November	2.0	2.0	2.0	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	165	165	165
December	2.1	2.1	2.1	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0	0	0
Annual summary	2.6	1.4	1.9	<0.0050	<0.0050	<0.0050	7.0	<5.0	<5.1	400	0	113
<p><i>Trichloroethylene (mg/L)</i></p> <p>No. of samples 12</p>												
January	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	10	10	10
February	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	10	10	10
March	1.7	1.7	1.7	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	400	400	400
April	1.4	1.4	1.4	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	120	120	120
May	2.6	2.6	2.6	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	160	160	160
June	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	150	150	150
July	1.8	1.8	1.8	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	92	92	92
August	2.0	2.0	2.0	<0.0050	<0.0050	<0.0050	7.0	7.0	7.0	50	50	50
September	1.7	1.7	1.7	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	120	120	120
October	2.2	2.2	2.2	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	88	88	88
November	2.0	2.0	2.0	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	165	165	165
December	2.1	2.1	2.1	<0.0050	<0.0050	<0.0050	<5.0	<5.0	<5.0	0	0	0
Annual summary	2.6	1.4	1.9	<0.0050	<0.0050	<0.0050	7.0	<5.0	<5.1	400	0	113

Table 2.2.62 (continued)

Month	NH_4-N			Nickel (mg/L)			Nitrate (mg/L)			Oil and grease (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 52		
January	0.080	0.080	0.080	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	7.0	<2.0	<3.7
February	0.040	0.040	0.040	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
March	0.070	0.070	0.070	<0.036	<0.036	<0.036	<1.0	<1.0	<1.0	3.0	<2.0	<2.2
April	0.12	0.12	0.12	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	21	<2.0	<6.7
May	0.22	0.22	0.22	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	5.0	<2.0	<2.7
June	0.10	0.10	0.10	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	26	<2.0	<1.4
July	0.11	0.11	0.11	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	15	<2.0	<7.5
August	0.29	0.29	0.29	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	6.0	2.0	3.7
September	0.090	0.090	0.090	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	5.0	<2.0	<2.6
October	0.14	0.14	0.14	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0
November	0.13	0.13	0.13	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	3.0	<2.0	<2.2
December	0.23	0.23	0.23	<0.036	<0.036	<0.036	<5.0	<5.0	<5.0	6.0	<2.0	<2.8
Annual summary	0.29	0.040	0.13	<0.036	<0.036	<0.036	5.0	<1.0	<4.6	26	<2.0	<4.4
	Phosphorus (mg/L)			Lead (mg/L)			PCB (mg/L)			pH (standard units)		
	No. of samples 12			No. of samples 12			No. of samples 12			No. of samples 12		
January	0.24	0.24	0.24	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.9	7.9	NA ^b
February	<0.10	<0.10	<0.10	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.9	7.9	NA
March	0.10	0.10	0.10	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.9	7.9	NA
April	0.66	0.66	0.66	0.016	0.016	0.016	<0.00050	<0.00050	<0.00050	8.5	8.5	NA
May	0.20	0.20	0.20	0.0080	0.0080	0.0080	<0.00050	<0.00050	<0.00050	7.3	7.3	NA
June	0.10	0.10	0.10	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	6.4	6.4	NA
July	0.20	0.20	0.20	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	7.1	7.1	NA
August	0.30	0.30	0.30	0.0040	0.0040	0.0040	<0.00050	<0.00050	<0.00050	8.5	8.5	NA
September	0.43	0.43	0.43	0.019	0.019	0.019	<0.00050	<0.00050	<0.00050	7.4	7.4	NA
October	0.20	0.20	0.20	0.0040	0.0040	0.0040	<0.00050	<0.00050	<0.00050	8.0	8.0	NA
November	0.20	0.20	0.20	<0.0040	<0.0040	<0.0040	0.00050	0.00050	0.00050	8.0	8.0	NA
December	0.20	0.20	0.20	<0.0040	<0.0040	<0.0040	<0.00050	<0.00050	<0.00050	8.1	8.1	NA
Annual summary	0.66	<0.10	<0.24	0.019	<0.0040	<0.0065	0.00050	0.00050	0.00050	8.5	6.4	NA

Table 2.2.62 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Phenols (mg/L)</i> No. of samples 1			<i>Sulfate (mg/L)</i> No. of samples 12			<i>Total dissolved solids (mg/L)</i> No. of samples 12			<i>Temperature (°C)</i> No. of samples 12		
January				57	57	57	226	226	226	7.8	7.8	7.8
February				37	37	37	240	240	240	7.9	7.9	7.9
March				30	30	30	172	172	172	12	12	12
April				31	31	31	193	193	193	15	15	15
May				28	28	28	201	201	201	6.4	6.4	6.4
June				48	48	48	232	232	232	16	16	16
July				36	36	36	373	373	373	28	28	28
August				42	42	42	346	346	346	27	27	27
September	<0.0010	<0.0010	<0.0010	45	45	45	265	265	265	23	23	23
October				36	36	36	192	192	192	22	22	22
November				46	46	46	270	270	270	7.2	7.2	7.2
December				40	40	40	237	237	237	4.4	4.4	4.4
Annual summary	<0.0010	<0.0010	<0.0010	57	28	39	373	172	245	28	4.4	14
	<i>Total organic carbon (mg/L)</i> No. of samples 12			<i>Trichloroethylene (mg/L)</i> No. of samples 12			<i>Total suspended solids (mg/L)</i> No. of samples 12			<i>Turbidity (Jackson turbidity units)</i> No. of samples 12		
January	1.9	1.9	1.9	<0.0050	<0.0050	<0.0050	5.0	5.0	5.0	25	25	25
February	2.2	2.2	2.2	<0.0050	<0.0050	<0.0050	11	11	11	20	20	20
March	2.0	2.0	2.0	<0.0050	<0.0050	<0.0050	13	13	13	20	20	20
April	3.3	3.3	3.3	<0.0050	<0.0050	<0.0050	172	172	172	240	240	240
May	6.3	6.3	6.3	<0.0050	<0.0050	<0.0050	63	63	63	9.0	9.0	9.0
June	2.7	2.7	2.7	<0.0050	<0.0050	<0.0050	15	15	15	200	200	200
July	3.3	3.3	3.3	<0.0050	<0.0050	<0.0050	16	16	16	68	68	68
August	3.2	3.2	3.2	<0.0050	<0.0050	<0.0050	50	50	50	85	85	85
September	3.2	3.2	3.2	<0.0050	<0.0050	<0.0050	94	94	94	155	155	155
October	3.4	3.4	3.4	<0.0050	<0.0050	<0.0050	53	53	53	35	35	35
November	3.1	3.1	3.1	<0.0050	<0.0050	<0.0050	37	37	37	0	0	0
December	2.3	2.3	2.3	<0.0050	<0.0050	<0.0050	9.0	9.0	9.0	10	10	10
Annual summary	6.3	1.9	3.0	<0.0050	<0.0050	<0.0050	172	5.0	44	240	0	72

Table 2.2.62 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Zinc (mg/L)</i>											
	No. of samples 12											
January	0.012	0.012	0.012									
February	<0.012	<0.012	<0.012									
March	0.021	0.021	0.021									
April	0.18	0.18	0.18									
May	0.048	0.048	0.048									
June	0.013	0.013	0.013									
July	0.015	0.015	0.015									
August	0.032	0.032	0.032									
September	0.10	0.10	0.10									
October	0.049	0.049	0.049									
November	0.019	0.019	0.019									
December	0.014	0.014	0.014									
Annual summary	0.18	<0.012	<0.042									

^aORNL.^bNot applicable.

Table 2.2.63 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Bromide (mg/L)</i> No. of samples 52			<i>Cadmium (mg/L)</i> No. of samples 104			<i>Calcium (mg/L)</i> No. of samples 26			<i>Chemical oxygen demand</i> No. of samples 208		
January	6	3	4.4	0.003	<0.002	<0.0027				27	<5	<10.5
February	2	2	2.0	<0.002	<0.002	<0.002				44	<5	<11.2
March	3	2	2.5	<0.002	<0.002	<0.002				31	<5	<15
April	3	2	2.2	<0.002	<0.002	<0.002				30	<5	<16
May	2	<2	<2	0.05	<0.002	<0.0145				91	<5	<23
June	2	<2	<2	<0.002	<0.002	<0.002				32	8	20
July	<2	<2	<2	<0.002	<0.002	<0.002				26.5	<5	<14
August	2	<2	<2	0.002	<0.002	<0.002				50	6.5	26
September	<2	<2	<2	<0.002	<0.002	<0.002				30	<5	<17
October	<2	<2	<2	0.008	<0.003	<0.003	150	150	150	24.5	<5	<11
November	<2	<2	<2	0.003	<0.002	<0.0025	210	150	180	21	<5	<9.4
December	<2	<2	<2	0.0041	<0.002	<0.0026	160	100	126	23	<5	<9.3
Annual summary	6	<2	2.3	0.05	<0.002	<0.006	210	100	37.9	91	<5	<15
	<i>Chloride (mg/L)</i> No. of samples 52			<i>Chloroform (µg/L)</i> No. of samples 260			<i>Chromium (mg/L)</i> No. of samples 104			<i>Cobalt (mg/L)</i> No. of samples 104		
January	567	214	412	51	<5	<8.2	0.011	<0.01	<0.0101	<0.1	<0.1	<0.1
February	419	253	332	14	<5	<6.05	0.038	<0.01	<0.0135	<0.1	<0.1	<0.1
March	520	193	388	<5	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
April	655	348	449	<5	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
May	448	<270	<354	7	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
June	349	186	277	8	<5	<5	0.034	<0.01	<0.0127	<0.1	<0.1	<0.1
July	656	201	367	<5	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
August	1095	182	436	8	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
September	586	212	402	<5	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
October	287	201	234	<5	<5	<5	0.012	<0.01	<0.0102	<0.1	<0.1	<0.1
November	308	184	248	20	<5	<5.3	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
December	289	<120	<203	<5	<5	<5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
Annual summary	1095	<120	<342	51	<5	<5.4	0.038	<0.01	<0.010	<0.1	<0.1	<0.1

Table 2.2.63 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	Copper (mg/L) No. of samples 104			Cyanide (mg/L) No. of samples 52			Dissolved solids (mg/L) No. of samples 208			Fluoride (mg/L) No. of samples 204		
January	0.0093	<0.004	<0.0058	0.006	<0.002	<0.0046	2020	284	1470	2.6	<0.1	<0.39
February	<0.004	<0.004	<0.004	0.009	0.003	0.0060	1680	1310	1440	5.6	1.3	2.92
March	0.016	<0.004	<0.0055	0.005	<0.002	<0.0043	2480	1210	1720	6	1.7	3.10
April	0.054	<0.004	<0.0122	0.009	<0.003	<0.006	2070	1430	1740	2.1	0.6	1.02
May	0.026	<0.004	<0.0087	<0.1	<0.1	<0.1	2570	1112	1790	0.9	0.2	0.57
June	0.0086	<0.004	<0.0055	0.016	<0.002	<0.0041	1280	852	1040	1.1	0.3	0.6
July	0.011	<0.004	<0.0055	<0.002	<0.002	<0.002	1450	196	1040	21	0.4	5.99
August	0.021	0.0049	0.0121	0.008	<0.002	<0.0035	3200	844	1300	2.5	0.7	1.31
September	0.0077	<0.004	<0.0045	0.01	<0.002	<0.0038	1720	920	1370	1	0.6	0.80
October	0.014	<0.004	<0.0053	0.016	<0.002	<0.007	1190	812	1050	1.8	0.4	0.87
November	<0.004	<0.004	<0.004	<0.002	<0.002	<0.002	1440	966	1200	1.2	<0.3	<0.68
December	0.0098	<0.004	<0.0051	0.006	<0.002	<0.0034	1310	684	960	2.1	<0.4	<0.87
Annual summary	0.054	<0.004	<0.0065	0.016	<0.002	<0.012	3200	284	1340	2.1	<0.1	<1.59
	Freon 113 (µg/L) No. of samples 52			Iron (mg/L) No. of samples 104			Kjeldhal nitrogen (mg/L) No. of samples 52			Lead (mg/L) No. of samples 104		
January	150	1	11.4	1.9	0.086	1.06	0.9	0.4	0.64	0.05	<0.004	<0.0347
February	14	1	5.0	1.6	0.16	0.82	0.95	0.3	0.63	<0.004	<0.004	<0.004
March	7	2	3.2	5	0.23	1.38	1.12	0.39	0.65	0.006	<0.004	<0.0044
April	12	1	3.3	1.9	0.11	0.75	0.98	<0.1	<0.65	<0.004	<0.004	<0.004
May	12	1	2.6	1.8	0.28	0.74	1.62	0.45	0.84	<0.004	<0.004	<0.004
June	16	1	4.8	0.86	<0.05	<0.41	0.9	0.56	0.72	0.004	<0.004	<0.004
July	14	1	4.4	0.43	0.11	0.24	1.2	0.67	0.92	0.007	<0.004	<0.0044
August	18	2	10.0	0.63	0.22	0.44	0.7	<0.2	<0.46	<0.004	<0.004	<0.004
September	4	1	2.7	1.7	0.15	0.60	0.8	<0.2	<0.48	<0.004	<0.004	<0.004
October	3	1	2.2	1.3	0.057	0.37	0.6	0.2	0.48	0.052	<0.004	<0.013
November	5	1	2.3	0.86	<0.05	<0.37	0.4	<0.2	<0.32	0.06	<0.004	<0.0268
December	6	3	4.3	2.3	0.094	0.67	^a			0.068	<0.004	<0.279
Annual summary	150	1	4.7	5	<0.05	<0.67	1.62	<0.1	<0.61	0.068	0.068	<0.011

Table 2.2.63 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
<i>Lithium (mg/L)</i> No. of samples 26												
January				30	16	23.8	0.22	0.0049	0.12	<0.0002	<0.0002	<0.0002
February				25	18	21.9	0.24	0.056	0.12	<0.0002	<0.0002	<0.0002
March				25	9.7	19.8	0.4	0.15	0.30	<0.0002	<0.0002	<0.0002
April				35	24	28.5	0.53	0.029	0.21	<0.001	<0.0002	<0.0003
May				23	16	20.4	0.33	0.047	0.14	<0.0002	<0.0002	<0.0002
June				17	13	14.7	0.061	<0.01	<0.034	<0.0002	<0.0002	<0.0002
July				17	14	15.6	0.076	0.011	0.026	<0.0002	<0.0002	<0.0002
August				17	12	15.0	0.28	0.039	0.094	0.0003	<0.0002	<0.0002
September				15	13	13.7	0.33	0.013	0.075	<0.0002	<0.0002	<0.0002
October	0.0071	0.0065	0.0068	14	11	12.9	0.14	<0.01	<0.045	<0.0002	<0.0002	<0.0002
November	0.015	0.0078	0.0111	18	11	15.2	0.086	<0.01	<0.048	<0.0002	<0.0002	<0.0002
December	0.02	0.0058	0.0132	17	13	15.4	0.15	<0.01	<0.066	<0.0002	<0.0002	<0.0002
Annual summary	0.02	0.0058	0.0103	35	9.7	18.1	0.53	<0.01	<0.11	0.001	<0.0002	<0.00021
<i>Methylene chloride (µg/L)</i> No. of samples 260												
January	11	<5	<5.62	0.023	<0.01	<0.0116	0.16	<0.05	<0.09	0.77	0.32	0.56
February	<5	<5	<5	0.012	<0.01	<0.0102	0.83	<0.05	<0.24	90.0	0.23	3.39
March	59	<5	<7.38	0.016	<0.01	<0.0111	0.18	<0.05	<0.09	0.81	<0.22	0.39
April	<5	<5	<5	0.019	<0.01	<0.0119	1.3	<0.05	<0.51	26.2	0.45	6.67
May	<5	<5	<5	0.023	<0.01	<0.0146	0.24	<0.05	<0.10	6.4	<0.22	2.55
June	<5	<5	<5	0.025	<0.01	<0.0123	<0.05	<0.05	<0.05	4.2	<0.1	1.17
July	<5	<5	<5	0.019	<0.01	<0.0123	0.2	<0.05	<0.07	2.43	<0.11	0.58
August	<5	<5	<5	<0.01	<0.01	<0.01	0.23	<0.05	<0.09	9.37	<0.11	1.92
September	<5	<5	<5	<0.01	<0.01	<0.01	0.27	<0.05	<0.08	1.13	<0.11	0.44
October	240	<5	<13.86	<0.01	<0.01	<0.01	1.3	<0.05	<0.26	12.6	0.21	3.27
November	16	<5	<5.39	<0.01	<0.01	<0.01	0.11	<0.05	<0.06	1.95	0.34	0.86
December	<5	<5	<5	0.011	<0.01	<0.0101	0.37	<0.05	<0.10	2.1	0.19	0.90
Annual summary	240	<5	<6.02	0.025	<0.01	<0.011	1.3	<0.05	<0.14	26.2	<0.1	1.89
<i>Nitrate-nitrogen (mg/L)</i> No. of samples 104												

Table 2.2.63 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Sulfate (mg/L)</i> No. of samples 52			<i>Sulfide (mg/L)</i> No. of samples 52			<i>Sulfite (mg/L)</i> No. of samples 52			<i>Surfactants (mg/L)</i> No. of samples 52		
January	755	431	589	<1	<1	<1	3	<2	<2.4	<0.2	<0.2	<0.2
February	562	441	487	<1	<1	<1	3	<2	<2.2	<0.2	<0.2	<0.2
March	748	554	648	<1	<1	<1	<2	<2	<2	<0.2	<0.2	<0.2
April	729	550	628	<1	<1	<1	<2	<2	<2	<0.2	<0.2	<0.2
May	752	385	634	<1	<1	<1	2	<2	<2	<0.2	<0.2	<0.2
June	352	299	327	<1	<1	<1	<2	<2	<2	<0.2	<0.2	<0.2
July	351	270	294	<1	<1	<1	5	<2	<2.6	0.3	<0.2	0.22
August	338	319	326	<1	<1	<1	7	3	4.8	<0.2	<0.2	<0.2
September	487	267	370	<1	<1	<1	6	2	3.6	0.2	<0.2	<0.2
October	438	295	362	<1	<1	<1	3	3	3.0	<0.2	<0.2	<0.2
November	510	347	421	<1	<1	<1	4	<2	<2.8	<0.2	<0.2	<0.2
December	300	60	234	<1	<1	<1	<2	<2	<2	<0.2	<0.2	<0.2
Annual summary	755	60	443	<1	<1	<1	7	<2	<2.6	0.3	<0.2	<0.2
	<i>Suspended solids (mg/L)</i> No. of samples 208			<i>Temperature (°C)</i> No. of samples 260			<i>Tetrachloroethene (µg/L)</i> No. of samples 260			<i>Thallium (mg/L)</i> No. of samples 52		
January	48	1	10.1	13.9	5.6	7.8	36	6	12.6	<0.01	<0.01	<0.01
February	9	1	5.5	12.2	6.7	9.4	9	<5	<6.5	<0.01	<0.01	<0.01
March	31	1	10.4	19.4	8.3	13.9	10	<5	<5.62	<0.01	<0.01	<0.01
April	33	1	12.2	24.4	11.1	17.8	10	<5	<5	<0.01	<0.01	<0.01
May	17	4	11.5	30.6	23.3	26.7	8	<5	<5	<0.01	<0.01	<0.01
June	16	<4	<9.3	30.6	27.8	28.9	23	<5	<5	<0.01	<0.01	<0.01
July	12	<4	<7.2	34.4	27.8	31.1	<5	<5	<5	<0.01	<0.01	<0.01
August	28	5	12.3	31.7	26.8	30.0	<5	<5	<5	<0.01	<0.01	<0.01
September	21	4	11.3	28.3	22.8	26.1	<5	<5	<5	<0.01	<0.01	<0.01
October	66	4	12.1	22.8	12.8	17.2	14	<5	<5	<0.01	<0.01	<0.01
November	13	<4	<6.4	16.7	8.3	11.7	<5	<5	<5	<0.01	<0.01	<0.01
December	17	<4	<8	15.6	6.1	10.6	5	<5	<5	<0.01	<0.01	<0.01
Annual summary	66	1	9.7	34.4	5.6	19.4	36	<5	<5.8	<0.01	<0.01	<0.01

Table 2.2.63 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Tin (mg/2L)</i> No. of samples 52			<i>Titanium (mg/L)</i> No. of samples 104			<i>Total organic carbon (mg/L)</i> No. of samples 104			<i>Total organic nitrogen (mg/L)^b</i> No. of samples 4		
January	0.03	<0.01	<0.014	<0.003	<0.003	<0.003	34	13	22.0			
February	<0.01	<0.01	<0.01	0.0041	<0.003	<0.0033	22	17	19.1			
March	<0.01	<0.01	<0.01	0.014	<0.003	<0.0045	22	5	15.6			
April	<0.01	<0.01	<0.01	0.017	0.0072	0.0133	20	5	9.9			
May	<0.01	<0.01	<0.01	0.023	<0.003	<0.0116	63	2	14.5			
June	<0.01	<0.01	<0.01	0.021	0.0035	0.0087	9	3.1	5.2			
July	0.01	<0.01	<0.01	0.0076	<0.003	<0.0042	4.8	2.7	3.5			
August	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	16.4	3.4	6.9			
September	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	7.6	3	5.2			
October	0.015	<0.01	<0.011	<0.003	<0.003	<0.003	4.6	2.4	3.3			
November	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	4.3	2.1	2.7			
December	<0.01	<0.01	<0.01	<0.003	<0.003	<0.003	4.2	1.9	2.8			
Annual summary	0.03	<0.01	0.01	0.023	<0.003	<0.005	63	1.9	9.2	0.7	0.62	0.67
	<i>Total residual chlorine (mg/L)</i> No. of samples 52			<i>Total toxic organics (µg/L)</i> No. of samples 52			<i>Trans-1, 2-dichloroethene (µg/L)</i> No. of samples 260			<i>Trichloroethene (µg/L)</i> No. of samples 260		
January	<0.1	<0.1	<0.1	191	59	106	24	<10	<10	100	13	31.6
February	<0.1	<0.1	<0.1	600	73	213	13	<5	<8.3	50	13	27.4
March	<0.1	<0.1	<0.1	453	1	134	15	<5	<6.2	36	<5	<15.1
April	<0.1	<0.1	<0.1	36	15	24	17	<5	<8.0	30	10	16.7
May	0.5	<0.1	<0.2	62	36	52	12	5	8.0	33	6	16.0
June	<0.1	<0.1	<0.1	77	41	52	53	<5	<11.7	32	9	14.4
July	<0.1	<0.1	<0.1	245	29	86	20	<5	<9.4	25	5	12.5
August	<0.1	<0.1	<0.1	87	20	40	120	<5	<14.6	42	<5	<13.4
September	0.1	<0.1	<0.1	41	11	24	34	<5	<9.6	33	<5	<13.8
October	<0.1	<0.1	<0.1	41	11	24	32	<5	<10.7	20	<5	<12.1
November	<0.1	<0.1	<0.1	78	5	37	43	<5	<10	35	<5	<14.3
December	<0.1	<0.1	<0.1	50	21	32	15	<5	<6.5	50	10	24.8
Annual summary	0.5	<0.01	<0.11	600	1	68.7	120	<5	<9.4	100	<5	<17.7

Table 2.2.63 (continued)

Month	Uranium (mg/L) No. of samples 52			Zinc (mg/L) No. of samples 104			pH No. of samples 260		
	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.199	0.038	0.1198	0.031	<0.02	<0.0225	8.8	6.9	NA ^c
February	0.116	0.056	0.0910	0.035	<0.02	<0.0219	8.8	6.0	NA
March	0.13	0.03	0.0832	0.97	<0.02	<0.2105	8.9	6.0	NA
April	0.182	0.046	0.1202	0.24	<0.02	<0.0638	9.0	6.7	NA
May	0.111	0.022	0.778	0.097	<0.02	<0.0341	8.9	6.3	NA
June	0.106	0.018	0.0638	0.029	<0.02	<0.021	9.0	6.2	NA
July	0.125	0.056	0.0914	0.1	<0.02	<0.0307	9.0	6.6	NA
August	0.118	0.009	0.0570	0.095	<0.02	<0.0494	9.0	6.1	NA
September	0.045	0.005	0.0270	0.069	<0.02	<0.0264	8.9	6.2	NA
October	0.059	0.018	0.0380	<0.02	<0.02	<0.02	9.0	6.3	NA
November	0.053	<0.001	<0.0275	<0.02	<0.02	<0.02	9.0	6.2	NA
December	0.06	0.003	0.0366	<0.02	<0.02	<0.02	9.0	6.0	NA
Annual summary	0.199	<0.001	<0.128	0.97	<0.02	<0.045	9.0	6.0	NA

^aORGDP.^bTotal organic nitrogen is reported instead of Kjeldahl nitrogen starting December 1987.^cNot applicable.

Table 2.2.64. 1987 NPDES Permit Number TN 0002950
Discharge Point: K1700^e

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>1,1,1-trichloroethane</i> (µg/L) No. of samples 104			<i>Aluminum</i> (mg/L) No. of samples 104			<i>Beryllium</i> (mg/L) No. of samples 104			<i>Cadmium</i> (mg/L) No. of samples 104		
January	9	<5	<5	2.6	<0.1	<0.56	<0.001	<0.001	<0.001	0.003	<0.002	<0.0026
February	11	<5	<5	1.1	<0.1	<0.27	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
March	6	<5	<5	0.63	<0.1	<0.24	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
April	<5	<5	<5	0.17	<0.1	<0.12	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
May	<5	<5	<5	0.55	0.11	0.27	<0.001	<0.001	<0.001	0.012	<0.002	<0.0034
June	7	<5	<5	4.3	<0.1	<0.67	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
July	<5	<5	<5	0.61	<0.1	<0.18	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
August	<5	<5	<5	10	<0.1	<1.43	<0.001	<0.001	<0.001	0.002	<0.002	<0.002
September	<5	<5	<5	0.22	<0.1	<0.15	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
October	<5	<5	<5	0.32	<0.1	<0.13	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
November	<5	<5	<5	12	<0.1	<2.35	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002
December	<5	<5	<5	1.7	<0.1	<0.34	<0.001	<0.001	<0.001	0.003	<0.002	<0.0021
Annual summary	11	<5	<5	12	<0.1	<0.55	<0.001	<0.001	<0.001	0.012	<0.002	<0.0022
	<i>Chemical oxygen demand</i> (mg/L) No. of samples 208			<i>Chromium</i> (mg/L) No. of samples 104			<i>Dissolved solids</i> (mg/L) No. of samples 104			<i>Fluoride</i> (mg/L) No. of samples 104		
January	50	<5	<9.17	0.019	<0.01	<0.0134	1200	246	530	0.1	<0.1	<0.1
February	20	<5	<7.2	<0.01	<0.01	<0.01	696	332	439	1	0.1	0.39
March	14	<5	<6.06	0.013	<0.01	<0.0104	432	226	334	3.3	0.1	0.7
April	17	<5	<9.07	<0.01	<0.01	<0.01	824	354	570	0.6	0.3	0.41
May	23	<5	<11.38	<0.01	<0.01	<0.01	794	440	602	0.5	0.1	0.3
June	28	<5	<11.94	<0.01	<0.01	<0.01	540	284	423	0.5	0.2	0.32
July	21	<5	<8.56	0.012	<0.01	<0.0102	692	308	513	6	0.3	1.7
August	38	<5	<16.03	0.023	<0.01	<0.0122	1264	346	560	1	0.3	0.50
September	32	<5	<11.14	0.016	<0.01	<0.0107	706	438	567	1	0.3	0.50
October	28	<5	<10.41	<0.01	<0.01	<0.01	670	432	558	1.7	0.2	0.58
November	16	<5	<9.19	0.022	<0.01	<0.0119	826	208	536	0.5	0.3	0.4
December	12.5	<5	<7.95	0.013	<0.01	<0.0103	840	400	573	2.4	0.1	0.66
Annual summary	50	<5	<9.8	0.023	<0.01	<0.0108	1264	208	517	6	<0.1	<0.55

Table 2.2.64 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Lead (mg/L)</i> No. of samples 104			<i>Mercury (mg/L)</i> No. of samples 104			<i>Methylene chloride (µg/L)</i> No. of samples 104			<i>Nitrate-nitrogen (mg/L)</i> No. of samples 104		
January	<0.05	<0.05	<0.05	<0.0002	<0.0002	<0.0002	<5	<5	<5	1.0	0.3	0.5
February	<0.004	<0.004	<0.004	<0.0002	<0.0002	<0.0002	<5	<5	<5	1.7	0.38	0.73
March	0.008	<0.004	<0.005	0.0003	<0.0002	<0.0002	<5	<5	<5	0.63	0.2	0.35
April	0.007	<0.004	<0.0044	<0.001	<0.001	<0.001	<5	<5	<5	7.68	0.29	1.83
May	0.005	<0.004	<0.0041	<0.0003	<0.0002	<0.0002	<5	<5	<5	1.8	0.27	0.83
June	0.036	<0.004	<0.0077	0.0006	<0.0002	<0.0002	<5	<5	<5	0.99	0.34	0.52
July	0.004	<0.004	<0.004	<0.0002	<0.0002	<0.0002	<5	<5	<5	1.15	0.28	0.53
August	0.009	<0.004	<0.0046	0.0004	<0.0002	<0.0002	<5	<5	<5	4.56	<0.11	<1.17
September	0.009	<0.004	<0.0047	<0.0002	<0.0002	<0.0002	<5	<5	<5	0.7	0.3	0.45
October	0.006	<0.004	<0.0045	0.0008	<0.0002	<0.0003	<5	<5	<5	2.43	0.29	0.81
November	0.018	<0.004	<0.0061	0.0007	<0.0002	<0.0004	5	<5	<5	0.87	0.3	0.48
December	0.005	<0.004	<0.0043	0.0005	<0.0002	<0.0003	<5	<5	<5	1.1	0.24	0.52
Annual summary	0.036	<0.004	<0.009	0.0008	<0.0002	<0.0003	5	<5	<5	7.68	<0.11	0.73
	<i>Oil and grease (mg/L)</i> No. of samples 104			<i>Selenium (mg/L)</i> No. of samples 104			<i>Silver (mg/L)</i> No. of samples 104			<i>Suspended solids (mg/L)</i> No. of samples 208		
January	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	17	1	6
February	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	42	<1	8.38
March	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	29	1	9
April	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	20	<1	8.35
May	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	40	2	14.94
June	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	43	3	12.36
July	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	18	<4	6.78
August	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	46	<4	11.5
September	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	33	<4	9.53
October	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	19	<4	6.88
November	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	45	<4	9.75
December	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	14	<4	7.35
Annual summary	<2	<2	<2	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	46	<1	9.24

Table 2.2.64 (continued)

Month	Temperature (°C)			Tetrachloroethene (µg/L)			Total halomethanes (µg/L)			Trichloroethene (µg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 260			No. of samples 104			No. of samples 4			No. of samples 104		
January	11.1	3.3	7.2	6	<5	<5	6	<5	<5	91	6	53.8
February	9.4	3.9	7.2	<5	<5	<5	<5	6	6	88	30	59.1
March	13.9	6.7	8.3	29	<5	<6	29	<5	<6	57	<5	<23.6
April	15.6	7.8	12.2	<5	<5	<5	<5	6	6	70	10	48.9
May	22.8	15.0	17.8	5	<5	<5	5	6	6	74	31	53.1
June	24.4	18.9	20.6	<5	<5	<5	<5	<5	<5	67	19	45.3
July	30.0	20.0	23.3	<5	<5	<5	<5	<10	<10	77	28	49.6
August	22.8	18.9	21.1	<5	<5	<5	<5	<10	<10	64	35	48.0
September	21.1	15.6	17.8	<5	<5	<5	<5	6	6	510	34	116
October	16.1	8.9	12.8	<5	<5	<5	<5	6	6	75	25	55.9
November	12.8	5.0	10.0	6	<5	<5	6	6	6	99	<5	<60.9
December	11.1	4.4	7.8	<5	<5	<5	<5	<10	<7	150	27	76.3
Annual summary	30.0	3.3	13.8	29	<5	<5	29	<10	<7	510	<5	<57.6
	Turbidity (NTU)			Zinc (mg/L)			pH					
	No. of samples 208			No. of samples 104			No. of samples 260					
January	17	2.8	6.9	0.037	<0.02	<0.0224	8.0	7.2	NA ^b			
February	73	<1	<9.2	0.037	<0.02	<0.0235	7.9	6.8	NA			
March	10	1	4.7	0.066	<0.02	<0.0304	8.4	7.0	NA			
April	180	3	20.3	0.19	<0.02	<0.043	8.7	7.7	NA			
May	9.4	2.7	5.2	0.04	<0.02	<0.0231	8.2	6.8	NA			
June	76	1.4	10.5	0.14	<0.02	<0.038	8.6	6.9	NA			
July	13	<2	<3.8	0.13	<0.02	<0.0378	8.2	6.9	NA			
August	9.7	2.6	5.5	0.12	<0.02	<0.0695	8.7	6.8	NA			
September	41	2	7.0	0.32	<0.02	<0.0697	8.3	6.9	NA			
October	5.2	2	3.4	<0.02	<0.02	<0.02	8.9	6.8	NA			
November	123	1.8	18.0	0.06	<0.02	<0.0296	7.8	7.0	NA			
December	180	1.3	15.4	0.06	<0.02	<0.0257	8.6	7.1	NA			
Annual summary	180	<1	<9.2	0.32	<0.02	<0.036	8.9	6.8	NA			

^aORGDP.^bNot applicable.

Table 2.2.65. 1987 NPDES Permit Number TN 0002950
Discharge Point: K901A^c

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Chemical oxygen demand (mg/L) No. of samples 104												
January	10	<5	<6.6	0.026	<0.01	<0.018	13.3	10.8	12.3	<0.1	<0.1	<0.1
February	7	5	6	<0.01	<0.01	<0.01	13.5	10.2	12.0	0.14	<0.1	0.11
March	14	<5	<9.5	0.06	0.013	0.026	13.0	6.8	8.1	<0.1	<0.1	<0.1
April	14	<5	<8.7	0.029	<0.01	<0.021	11.2	6.9	9.2	<0.1	<0.1	<0.1
May	18	<5	<11.2	0.024	<0.01	<0.0148	14.0	4.5	8.2	0.2	<0.1	0.15
June	28	6.5	17.5	0.034	0.034	0.034	8.6	5.2	6.5	0.15	0.15	0.15
July	28	9.5	20.9	0.042	0.038	0.04	7.7	5.1	6.4	0.15	0.14	0.145
August	27	8	18.7	0.049	<0.01	<0.0295	7.9	5.0	6.4	0.11	<0.1	0.105
September	NS ^b	NS	NS	NS	NS	NS	7.8	5.7	6.6	NS	NS	NS
October	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
November	18	15	16.5	0.02	0.013	0.0165	10.9	6.2	8.4	0.16	<0.1	0.13
December	8	5	5.6	0.025	0.025	0.025	9.4	5.0	7.4	0.24	0.24	0.240
Annual summary	28	<5	<12.1	0.049	<0.01	<0.023	14.0	4.5	8.3	0.24	<0.1	0.13
Oil and grease (mg/L) No. of samples 52												
January	2	<2	<2	16	<1	<6.3	19	4.1	9.7	9.0	7.7	NA ^c
February	<2	<2	<2	8	1	4	18	4.6	8.8	9.0	7.7	NA
March	<2	<2	<2	39	4	14.0	15	6	10.50	8.5	7.8	NA
April	3	<2	<2.3	30	12	20.3	37	4	18.14	8.8	8.1	NA
May	<2	<2	<2	30	4	14	19	2.1	9.7	8.7	7.8	NA
June	3	<2	<2.5	35	12	23.5	32	6.6	20.2	9.0	6.4	NA
July	<2	<2	<2	16	16	16	62	39	48.2	9.0	6.4	NA
August	<2	<2	<2	NS	NS	NS	77	56	65.3	9.1	6.8	NA
September	<2	<2	<2	NS	NS	NS	NS	NS	NS	8.6	7.2	NA
October	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NA
November	3	<2	2.5	23	14	18.5	22	12	17	9.9	6.0	NA
December	<2	<2	<2	15	15	15	10.3	10.3	10.3	8.0	6.5	NA
Annual summary	3	<2	2.1	39	<1	<14.6	77	2.1	21.8	9.9	6.0	NA
Dissolved oxygen (mg/L) No. of samples 260												
Turbidity (NTU) No. of samples 104												
pH No. of samples 260												

^aORGDP.

^bNo samples were collected during the sample collection period due to zero flow.

^cNot applicable.

Table 2.2.66. 1987 NPDES Permit Number TN 0002950
Discharge Point: K1203^a

Month	1,1,1-Trichloroethane (µg/L)			Ammonia nitrogen (mg/L)			Beryllium (mg/L)			Biological oxygen demand (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	No. of samples 52			No. of samples 156			No. of samples 52			No. of samples 156		
January	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
February	<5	<5	<5	0.27	<0.2	<0.21	<0.001	<0.001	<0.001	56	<5	<9.0
March	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	85	<5	<11.2
April	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
May	<5	<5	<5	2.3	<0.2	<0.38	<0.001	<0.001	<0.001	<5	<5	<5
June	<5	<5	<5	0.5	<0.2	<0.22	<0.001	<0.001	<0.001	<5	<5	<5
July	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
August	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
September	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
October	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
November	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
December	<5	<5	<5	<0.2	<0.2	<0.2	<0.001	<0.001	<0.001	<5	<5	<5
Annual summary	<5	<5	<5	2.3	<0.2	<0.22	<0.001	<0.001	<0.001	85	<5	<5.9
	Cadmium (mg/L)			Chemical oxygen demand (mg/L)			Chlorine residual (mg/L)			Copper (mg/L)		
	No. of samples 52			No. of samples 208			No. of samples 260			No. of samples 52		
January	0.003	<0.002	<0.0028	47	7	18.7	0.14	0.03	0.04	0.011	0.007	0.013
February	<0.002	<0.002	<0.002	44	7	20.00	0.04	0.03	0.03	<0.004	<0.004	<0.004
March	<0.002	<0.002	<0.002	27	5	14.8	0.06	0.04	0.04	0.0061	<0.004	<0.0045
April	<0.002	<0.002	<0.002	31	5	13.7	0.07	0.04	0.05	0.0091	<0.004	<0.0062
May	<0.002	<0.002	<0.002	21	<5	<10.7	0.08	0.05	0.06	0.0088	<0.004	<0.0058
June	<0.002	<0.002	<0.002	21	6.5	14.6	0.11	0.06	0.07	0.0081	<0.004	<0.0064
July	0.002	<0.002	<0.002	21	<5	<11.3	0.13	0.08	0.1	0.0063	<0.004	<0.0046
August	<0.002	<0.002	<0.002	28	<5	<13.8	0.13	0.06	0.09	0.019	<0.004	<0.0093
September	<0.005	<0.005	<0.005	26.5	<5	<14.8	0.15	0.05	0.10	0.011	0.0062	0.0085
October	<0.002	<0.002	<0.002	21	8	14.5	0.14	0.06	0.09	0.0093	<0.004	<0.0058
November	<0.002	<0.002	<0.002	45	7	16.8	0.19	0.07	0.09	0.022	0.0058	0.0111
December	<0.002	<0.002	<0.002	27	<5	<17.7	0.13	0.08	0.09	0.012	<0.004	<0.0078
Annual summary	0.003	<0.002	<0.002	47	<5	<15.1	0.19	0.03	0.07	0.022	<0.004	<0.007

Table 2.2.66 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Dissolved oxygen (mg/L)</i> No. of samples 260			<i>Dissolved solids (mg/L)</i> No. of samples 52			<i>Fecal coliform bacteria (cm³/100 mL)</i> No. of samples 156			<i>Lead (mg/L)</i> No. of samples 52		
January	11.5	10.2	11.0	270	134	202	2	1	1.1	0.05	<0.004	0.0385
February	11.4	10.7	11.0	256	220	233.0	4	1	1.8	0.01	<0.004	0.0065
March	10.9	8.6	9.8	276	76	200	4	1	2.0	0.01	<0.004	0.0067
April	9.7	6.2	8.2	236	216	222.5	4	1	1.8	<0.004	<0.004	<0.004
May	9.2	6.9	8.6	226	214	220	3	0	0.9	<0.004	<0.004	<0.004
June	8.9	8.2	8.8	258	184	224	2	0	0.4	0.004	<0.004	<0.004
July	8.4	7.1	8.0	244	194	215.0	1	<1	<1	0.008	<0.004	0.005
August	8.5	8.0	8.3	248	210	232.5	3	<1	<1.5	0.004	<0.004	<0.004
September	8.2	8.9	8.5	246	188	220	<1	<1	<1	0.011	<0.004	0.0054
October	10.7	8.5	9.3	226	192	212	3	<1	<1.3	0.013	0.004	0.0088
November	10.1	8.3	9.4	256	203	226	2	<1	<1.1	0.01	0.005	0.0070
December	10.4	4.9	7.7	228	208	218	2	<1	<1.0	0.014	<0.004	<0.0066
Annual summary	11.5	4.9	9.0	276	76	219	4	<1	<1.2	0.05	<0.004	<0.008
	<i>Mercury (mg/L)</i> No. of samples 52			<i>Methylene chloride (µg/L)</i> No. of samples 52			<i>Nickel (mg/L)</i> No. of samples 52			<i>Nitrate-nitrogen (mg/L)</i> No. of samples 104		
January	0.0008	<0.0002	<0.0004	<5	<5	<5	<0.05	<0.05	<0.05	4.41	1.85	3.16
February	0.0009	0.0002	0.0004	<5	<5	<5	<0.05	<0.05	<0.05	4	1.27	3.17
March	0.0004	<0.0002	<0.0003	<5	<5	<5	<0.05	<0.05	<0.05	4.38	1.89	3.49
April	0.001	<0.0002	<0.0004	5	<5	<5	<0.05	<0.05	<0.05	6.55	2.95	4.34
May	0.0002	<0.0002	<0.0002	<5	<5	<5	<0.05	<0.05	<0.05	5.8	4.33	4.87
June	0.0003	<0.0002	<0.0002	<5	<5	<5	<0.05	<0.05	<0.05	5.43	3.39	4.27
July	<0.0002	<0.0002	<0.0002	<5	<5	<5	<0.05	<0.05	<0.05	4.52	2.9	3.76
August	0.0002	<0.0002	<0.0002	<5	<5	<5	<0.05	<0.05	<0.05	4.87	3.19	4.09
September	0.0007	<0.0002	<0.0003	<5	<5	<5	<0.05	<0.05	<0.05	4.95	2.14	4.05
October	0.0008	<0.0002	<0.0004	<5	<5	<5	<0.05	<0.05	<0.05	4.57	3.04	3.85
November	0.0005	<0.0002	<0.0004	6	<5	<5	<0.05	<0.05	<0.05	4.48	2.7	3.67
December	0.0006	<0.0002	<0.0004	<5	<5	<5	<0.05	<0.05	<0.05	4.58	2.31	3.61
Annual summary	0.001	<0.0002	<0.0003	6	<5	<5	<0.05	<0.05	<0.05	6.55	1.27	3.86

Table 2.2.66 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>pH</i>			<i>Phenols (mg/L)</i>			<i>Selenium (mg/L)</i>			<i>Settleable solids (mg/L)</i>		
	No. of samples 260			No. of samples 260			No. of samples 52			No. of samples 204		
January	8.3	7.8	NA ^b	0.01	<0.001	<0.0025	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1
February	7.8	7.3	NA	0.006	<0.001	<0.0015	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
March	7.6	7.4	NA	0.009	<0.001	<0.0017	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
April	8.2	7.8	NA	0.009	<0.001	<0.0027	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
May	7.9	7.4	NA	0.014	<0.001	<0.0024	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
June	8.3	7.4	NA	0.007	<0.001	<0.0021	<0.005	<0.005	<0.005	0.4	<0.1	<0.13
July	8.2	6.7	NA	0.005	<0.001	<0.0018	<0.005	<0.005	<0.005	0.2	<0.1	<0.11
August	8.2	7.9	NA	0.002	<0.001	<0.0011	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
September	8.2	7.9	NA	0.006	<0.001	<0.0019	<0.005	<0.005	<0.005	0.2	<0.1	<0.13
October	8.3	7.4	NA	0.006	<0.001	<0.0015	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
November	8.0	7.5	NA	0.005	<0.001	<0.0015	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
December	8.0	7.5	NA	0.003	<0.001	<0.0013	<0.005	<0.005	<0.005	<0.1	<0.1	<0.1
Annual summary	8.3	6.7	NA	0.014	<0.001	<0.0018	<0.05	<0.005	<0.009	0.4	<0.1	<0.10
	<i>Silver (mg/L)</i>			<i>Suspended solids (mg/L)</i>			<i>Tetrachloroethene (µg/L)</i>			<i>Total halomethanes (µg/L)</i>		
	No. of samples 52			No. of samples 156			No. of samples 52			No. of samples 4		
January	0.026	<0.01	<0.0153	54	9	18.9	<5	<5	<5	7	7	7
February	0.015	<0.01	<0.0113	27	11	16.4	<5	<5	<5			
March	0.011	<0.01	<0.0103	22	9	14.8	<5	<5	<5			
April	<0.01	<0.01	<0.01	20	5	12.2	<5	<5	<5	10	10	10
May	<0.01	<0.01	<0.01	17	4	11.5	<5	<5	<5			
June	<0.01	<0.01	<0.01	21	8	12.3	<5	<5	<5	<10	<10	<10
July	<0.01	<0.01	<0.01	14	5	9.6	<5	<5	<5			
August	<0.01	<0.01	<0.01	21	6	12.3	<5	<5	<5			
September	<0.01	<0.01	<0.01	26	7	15.5	<5	<5	<5			
October	<0.01	<0.01	<0.01	24	6	15.2	<5	<5	<5			
November	<0.01	<0.01	<0.01	40	8	19.2	<5	<5	<5			
December	0.011	<0.01	<0.0102	28	6	17.2	<5	<5	<5			
Annual summary	0.026	<0.01	<0.011	54	4	14.6	<5	<5	<5	10	7	9

Table 2.2.66 (continued)

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
	<i>Total organic carbon (mg/L)</i> No. of samples 52			<i>Trichloroethene (µg/L)</i> No. of samples 52			<i>Zinc (mg/L)</i> No. of samples 52					
January	40	34	37	<5	<5	<5	1	<0.02	<0.23			
February	40	32	35	<5	<5	<5	0.15	0.038	0.079			
March	36	33	34	<5	<5	<5	0.06	0.032	0.049			
April	32	4	14	<5	<5	<5	0.038	0.031	0.034			
May	6	4	5.2	<5	<5	<5	0.056	0.023	0.039			
June	4	2.3	3	<5	<5	<5	0.049	0.028	0.037			
July	4.4	1.9	2.8	<5	<5	<5	0.087	<0.02	<0.041			
August	3.4	1.8	2.4	<5	<5	<5	0.079	<0.02	<0.062			
September	5.3	2.1	3.4	<5	<5	<5	0.069	<0.02	<0.044			
October	3.9	1.7	2.8	<5	<5	<5	0.14	0.043	0.077			
November	4.9	2.1	3.2	<5	<5	<5	0.11	0.042	0.065			
December	4.6	1.7	2.7	<5	<5	<5	0.067	0.039	0.056			
Annual summary	40	1.7	12.1	<5	<5	<5	1	<0.02	<0.068			

^aORGDP^bNot applicable.

Table 2.2.67. 1987 NPDES Permit Number TN 0002950
Discharge Point: K1007B^a

Month	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
Chemical oxygen demand (mg/L) No. of samples 104												
January	14	5	9.5	0.013	<0.01	<0.012	15.0	11.0	12.9	<0.1	<0.1	<0.1
February	17	<5	<9	<0.01	<0.01	<0.01	15.2	10.1	12.3	<0.1	<0.1	<0.1
March	31	<5	<10.2	<0.01	<0.01	<0.01	13.5	7.9	11.3	<0.1	<0.1	<0.1
April	20	<5	<12.5	<0.01	<0.01	<0.01	11.3	6.1	9.1	<0.1	<0.1	<0.1
May	28	<5	<13.1	<0.01	<0.01	<0.01	11.1	7.2	9.0	0.1	<0.1	<0.1
June	23	9.5	17.2	<0.01	<0.01	<0.01	10.4	7.2	8.8	0.15	<0.1	<0.11
July	24.5	5	14.7	<0.01	<0.01	<0.01	10.9	6.0	8.8	0.14	<0.1	<0.12
August	21	15	18.9	<0.01	<0.01	<0.01	15.0	6.6	9.0	0.1	<0.1	<0.1
September	11	<5	<9.6	NS ^b	NS	NS	12.0	7.3	9.0	NS	NS	NS
October	19.5	<5	<11.2	<0.01	<0.01	<0.01	10.8	8.2	9.3	<0.1	<0.1	<0.13
November	16	<5	<9.6	<0.01	<0.01	<0.01	11.0	8.2	9.7	0.19	<0.1	<0.13
December	18	<5	<10.2	0.016	<0.01	<0.0112	11.1	5.0	8.0	0.23	0.14	0.18
Annual summary	31	<5	<12.1	0.016	<0.01	<0.010	15.2	5.0	9.8	0.23	<0.1	<0.11
Oil and grease (mg/L) No. of samples 52												
January	3	<2	<2.2	19	4	10	9.4	6.6	NA ^c			
February	<2	<2	<2	10	<1	<5.6	8.9	6.4	NA			
March	<2	<2	<2	15	5	10	8.9	6.5	NA			
April	<2	<2	<2	24	5	13.1	8.4	8.1	NA			
May	<2	<2	<2	11	6	7.9	8.2	7.5	NA			
June	<2	<2	<2	19	6	11.9	8.6	8.1	NA			
July	<2	<2	<2	17	6	10.2	9.8	7.2	NA			
August	<2	<2	<2	16	9	12.6	9.2	7.9	NA			
September	NS	NS	NS	11	5	7.8	9.0	7.5	NA			
October	<2	<2	<2	14	8	11.4	8.8	7.8	NA			
November	<2	<2	<2	13	4	8.4	9.1	6.9	NA			
December	<2	<2	<2	10	<4	<7.6	9.1	7.9	NA			
Annual summary	3	<2	<2.0	24	<1	<9.7	9.8	6.4	NA			
pH No. of samples 260												
January							9.4	6.6	NA ^c			
February							8.9	6.4	NA			
March							8.9	6.5	NA			
April							8.4	8.1	NA			
May							8.2	7.5	NA			
June							8.6	8.1	NA			
July							9.8	7.2	NA			
August							9.2	7.9	NA			
September							9.0	7.5	NA			
October							8.8	7.8	NA			
November							9.1	6.9	NA			
December							9.1	7.9	NA			
Annual summary							9.8	6.4	NA			

^aORGDP.

^bNo samples were collected during the sample collection period due to zero flow.

^cNot applicable.

Table 2.2.68. 1987 NPDES Permit Number TN 0002950
Discharge Point: K1515C

Month	Aluminum (mg/L)			Chemical oxygen demand (mg/L)			pH			Sulfate (mg/L)		
	Max	Min	Av	Max	Min	Av	Max	Min	Av	Max	Min	Av
January	0.35	0.2	0.28	<5	<5	<5	7.7	7.4	NA ^b	26	14	19
February	0.3	0.19	0.24	10	<5	<7	7.5	6.9	NA	23	16	20
March	0.44	0.31	0.36	<5	<5	<5	7.7	7.1	NA	21	14	18
April	0.31	<0.1	<0.20	13	<5	<9	7.8	7.7	NA	20	15	18
May	0.49	0.32	0.42	11	7.5	10.13	8.1	7.3	NA	26	20	22
June	0.5	0.17	0.34	14.5	7.5	10.4	8.1	7.8	NA	27	22	24
July	0.62	<0.1	<0.34	14.5	<5	<8.63	8.2	7.2	NA	26	22	24
August	0.41	0.24	0.34	16	8	11.75	8	7.4	NA	25	23	24
September	0.71	0.28	0.47	11	<5	<9.6	8.1	7.7	NA	25	23	24
October	2.5	0.28	1.07	8	5	7.13	8.1	7.5	NA	24	23	24
November	0.53	0.32	0.40	8	<5	<6.25	8.6	6.9	NA	25	22	23
December	0.52	0.19	0.31	8	<5	<5.6	8	7.4	NA	27	24	26
Annual summary	2.5	<0.1	<0.40	16	<5	<7.96	8.6	6.9	NA	27	14	22
Suspended solids (mg/L)												
	No. of samples 52			No. of samples 52			No. of samples 52			No. of samples 52		
January	4	<1	<2.8	4	<1	<2.8	4	<1	<2.8	4	<1	<2.8
February	6	<1	<2.0	6	<1	<2.0	6	<1	<2.0	6	<1	<2.0
March	10	<1	<4.3	10	<1	<4.3	10	<1	<4.3	10	<1	<4.3
April	7	<1	<4	7	<1	<4	7	<1	<4	7	<1	<4
May	10	4	6.2	10	4	6.2	10	4	6.2	10	4	6.2
June	7	3	4.8	7	3	4.8	7	3	4.8	7	3	4.8
July	14	<3	<6.8	14	<3	<6.8	14	<3	<6.8	14	<3	<6.8
August	10	4	6.8	10	4	6.8	10	4	6.8	10	4	6.8
September	11	5	7.8	11	5	7.8	11	5	7.8	11	5	7.8
October	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
November	7	<4	<5	7	<4	<5	7	<4	<5	7	<4	<5
December	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Annual summary	14	<1	<4.9	14	<1	<4.9	14	<1	<4.9	14	<1	<4.9

^aORGDP.

^bNot applicable.



2.3 GROUNDWATER



The following references are referred to in Tables 2.3.1–2.3.11.

REFERENCES

1. RCRA 40 CFR 265 Appendix 3.
2. Safe Drinking Water Act—National Primary Drinking Water Regulations, 40 CFR 141, as amended.
3. Safe Drinking Water Act—National Secondary Drinking Water Regulations, 40 CFR 143, as amended.
4. State of Tennessee Hazardous Waste Regulations TN 1200-1-11-05, Appendix 05/B.
5. DOE Order 5480.xx. Derived Concentration Guides (DCGs) for Air and Water.
6. National Primary Drinking Water Regulations; Synthetic Organic Chemicals, US EPA, Federal Register, July 8, 1987, pp. 25690-25717.

Table 2.3.1. Primary drinking water parameters monitored in groundwater during 1987

Parameter	Reference	Applicable ^a standards (mg/L)
As	1, 2, 4	0.05
Ba	1, 2, 4	1.0
Cd	1, 2, 4	0.010
Cr	1, 2, 4	0.05
F	2, 3	4.0, 2.0 ^b
Pb	1, 2, 4	0.05
Nitrate	1, 2, 4	10
Hg	1, 2, 4	0.002
Se	1, 2, 4	0.01
Ag	1, 2, 4	0.05
Endrin	1, 2, 4	0.0002
Lindane	1, 2, 4	0.004
Methoxychlor	1, 2, 4	0.1
Toxaphene	1, 2, 4	0.005
2,4-D	1, 2, 4	0.1
2,4,5-TP Silvex	1, 2, 4	0.01
²²⁶ Ra and ²²⁸ Ra (pCi/L)	1, 2, 4	5
Gross alpha (pCi/L)	1, 2, 4	15
Gross beta (mrem/year)	1, 2, 4	4

^aMaximum contaminant level.

^bSecondary maximum contaminant level.

Table 2.3.2. Parameters establishing groundwater quality monitored during 1987

Parameter	Reference	Applicable ^a standards (mg/L)
Chloride	3	250
Fe	3	0.3
Mn	3	0.05
Phenols		None
Na		None
Sulfate	3	250

^aSecondary maximum contaminant level.

Table 2.3.3. Indicator parameters monitored in groundwater semiannually in 1987

Parameter	Reference	Applicable standards
Total organic carbon (mg/L)		None
Total organic halogen (mg/L)		None
Specific conductance ($\mu\text{mho/cm}$)		None
pH	3	6.5–8.5 ^a
Coliform bacteria (colonies/100 mL)	1, 2, 4	1 ^b

^aSecondary maximum contaminant level.

^bMaximum contaminant level.

Table 2.3.4. Typical inductively coupled argon plasma metals scan of groundwater (results used for metals analysis and site characterization studies)

Parameter	Reference	Applicable standards (mg/L)
Al		None
Sb		None
Ba	1, 2, 4	1.0 ^a
Be		None
B		None
Cd	1, 2, 4	0.01 ^a
Ca		None
Cr	1, 2, 4	0.05 ^a
Co		None
Cu	3	1.0 ^b
Pb	3	0.3 ^b
Li		None
Mg		None
Mn	3	0.05 ^b
Mo		None
Ni		None
Nb		None
P		None
K		None
Si		None
Ag	1, 2, 4	0.05 ^a
Na		None
Sr		None
Th		None
Ti		None
V		None
Zn	3	5.0 ^b
Zr		None

^aMaximum contaminant level.

^bSecondary maximum contaminant level.

Table 2.3.5. Typical metals sought in groundwater by atomic absorption spectroscopy (results used to fulfill required monitoring and in characterization studies)

Parameter	Reference	Applicable ^a standards (mg/L)
Sb		None
As	1, 2, 4,	0.05
Ba	1, 2, 4	1.00
Be		None
Cd	1, 2, 4	0.010
Cr	1, 2, 4	0.05
Cu	3	1
Pb	1, 2, 4	0.05
Hg	1, 2, 4	0.002
Ni		None
Se	1, 2, 4	0.01
Ag	1, 2, 4	0.05
Tl		None
Zn	3	5.0 ^b

^aMaximum contaminant level.

^bSecondary maximum contaminant level.

Table 2.3.6. Typical anions sought in groundwater (results used for required monitoring and in characterization studies)

Parameter	Reference	Applicable standards (mg/L)
Chloride	3	250 ^a
Fluoride	2, 3	4.0 ^a , 2.0 ^b
Nitrate	1, 2, 4	10 ^b
Nitrite		1 ^c
Phosphate		None
Sulfate	3	250 ^a

^aSecondary maximum contaminant level.

^bMaximum contaminant level.

^cProposed by Y-12 Environmental Management Department for required monitoring and compliance limit.

Table 2.3.7. Volatile organics (hazardous substance list) sought in groundwater

Parameter	Reference	Chemical Abstracts Service No.	Applicable ^a standards (mg/L)
Chloromethane		74-87-3	None
Bromomethane		74-83-9	None
Vinyl chloride	6	75-01-4	0.002
Chloroethane		75-00-3	None
Methylene chloride		75-09-2	None
Acetone		67-64-1	None
Carbon disulfide		75-15-0	None
1,1-dichloroethene	6	75-35-4	0.007
1,1-dichloroethane		75-35-3	None
1,2-dichloroethene (total)		540-59-0	None
Chloroform		67-66-3	None
1,2-dichloroethane	6	107-06-2	0.005
2-butanone		78-93-3	None
1,1,1-trichloroethane	6	71-55-6	0.20
Carbon tetrachloride	6	56-23-5	0.005
Vinyl acetate		108-05-4	None
Bromodichloromethane		75-27-4	None
1,1,2,2-tetrachloroethane		79-34-5	None
1,2-dichloropropane		78-87-5	None
Cis-1,3,-dichloropropene		10061-01-5	None
Trichloroethene	6	79-01-6	0.005
Dibromochloromethane		124-48-1	None
1,1,2-trichloroethane		79-00-5	None
Benzene	6	71-43-2	0.005
trans-1,3-dichloropropene		10061-02-6	None
Bromoform		75-25-2	None
2-hexanone		591-78-6	None
4-methyl-2-pentanone		108-10-1	None
Tetrachloroethene		127-18-4	None
Toluene		108-88-3	None
Chlorobenzene		108-90-7	None
Ethyl benzene		100-41-4	None
Styrene		100-42-5	None
Xylenes (total)		133-02-7	None

^aMaximum contaminant level effective 1/9/87.

**Table 2.3.8. Pesticides and polychlorinated biphenyls
(hazardous substance list) sought in groundwater**

Parameter	References	Chemical Abstracts Service No.	Applicable standards ($\mu\text{g/L}$)
Alpha-BHC		319-84-6	None
Beta-BHC		319-85-7	None
Delta-BHC		319-86-8	None
Gamma-BHC (Lindane)		58-89-9	None
Heptachlor		76-44-8	None
Aldrin		309-00-2	None
Heptachlor epoxide		1024-57-3	None
Endosulfan I		959-98-8	None
Dieldrin		60-57-1	None
4,4'-DDE		72-55-9	None
Endrin		72-20-8	None
Endosulfan II		33213-65-9	None
4,4'-DDD		72-54-8	None
Endosulfan sulfate		1031-07-8	None
4,4'-DDT		50-29-3	None
Endrin ketone		53494-70-5	None
Methoxychlor		72-43-5	None
Alpha-chlordane		5103-71-9	None
Gamma-chlordane		5103-74-2	None
Toxaphene		8001-35-2	None
Aroclor-1016		12674-11-2	None
Aroclor-1221		11104-28-2	None
Aroclor-1232		11141-16-5	None
Aroclor-1242		53469-21-9	None
Aroclor-1248		12672-29-6	None
Aroclor-1254		11097-69-1	None
Aroclor-1260		11096-82-5	None

**Table 2.3.9. Base/neutral/acid extractable organics
(hazardous substance list) sought in groundwater**

Parameter	Reference	Chemical Abstracts Service No.	Applicable ^a standards (mg/L)
Phenol		108-95-2	None
bis(2-chloroethyl) ether		111-44-4	None
2-chlorophenol		95-57-8	None
1,3-dichlorobenzene		541-73-1	None
1,4-dichlorobenzene	6	106-46-7	0.075
Benzyl alcohol		100-51-6	None
1,2-dichlorobenzene		95-50-1	None
2-methylphenol		95-48-7	None
bis(2-chloroisopropyl)ether		39638-32-9	None
4-methylphenol		106-44-5	None
N-Nitroso-dipropylamine		621-64-7	None
Hexachloroethane		67-72-1	None
Nitrobenzene		98-95-3	None
Isophorone		78-59-1	None
2-nitrophenol		88-75-5	None
2,4-dimethylphenol		105-67-9	None
Benzoic acid		65-85-0	None
bis(2-chloroethoxy) methane		111-91-1	None
2,4-dichlorophenol		120-83-2	None
1,2,4-trichlorobenzene		120-82-1	None
Naphthalene		91-20-3	None
4-chloroaniline		106-47-8	None
Hexachlorobutadiene		87-68-3	None
4-chloro-3-methylphenol (para-chloro-meta-cresol)		59-50-7	None
2-methylnaphthalene		91-57-6	None
Hexachlorocyclopentadiene		77-47-4	None
2,4,6-trichlorophenol		88-06-2	None
2,4,5-trichlorophenol		95-95-4	None
2-chloronaphthalene		91-58-7	None
2-nitroaniline		88-74-4	None
Dimethyl phthalate		131-11-3	None
Acenaphthylene		208-96-8	None
2,6-dinitrotoluene		606-20-2	None
3-nitroaniline		99-09-2	None
Acenaphthene		83-32-9	None
2,4-dinitrophenol		51-28-5	None
4-nitrophenol		100-02-7	None
Dibenzofuran		132-64-9	None
2,4-dinitrotoluene		121-14-2	None
Diethylphthalate		84-66-2	None
4-chlorophenyl phenyl ether		7005-72-3	None
Fluorene		86-73-7	None
4-nitroaniline		100-01-6	None
4,6-dinitro-2-methylphenol		534-52-1	None
N-nitrosodiphenylamine		86-30-6	None
4-bromophenyl phenyl ether		101-55-3	None
Hexachlorobenzene		118-74-1	None
Pentachlorophenol		87-86-5	None
Phenanthrene		85-01-8	None
Anthracene		120-12-7	None
Di-n-butylphthalate		84-74-2	None
Fluoranthene		206-44-0	None
Pyrene		129-00-0	None

Table 2.3.9 (continued)

Parameter	Reference	Chemical Abstracts Service No.	Applicable ^a standards (mg/L)
Butyl benzyl phthalate		85-68-7	None
3,3'-dichlorobenzidine		91-94-1	None
Benzo[<i>a</i>]anthracene		56-55-3	None
Chrysene		218-01-9	None
bis(2-ethylhexyl)phthalate		117-81-7	None
Di-n-octyl phthalate		117-84-0	None
Benzo[<i>b</i>]fluoranthene		205-99-2	None
Benzo[<i>k</i>]fluoranthene		207-08-9	None
Benzo[<i>a</i>]pyrene		50-32-8	None
Indeno(1,2,3- <i>cd</i>)pyrene		193-39-5	None
Dibenz[<i>a,h</i>]anthracene		53-70-3	None
Benzo[<i>g,h,i</i>]perylene		191-24-2	None

^aMaximum contaminant level effective 1/9/89.

Table 2.3.10. Radionuclides and radioactive metals sought in groundwater

Parameter	Reference	Applicable standards ^a (pCi/L)
Gross alpha radiation	1, 2, 4	15
Gross beta radiation (mrem/yr)	1, 2, 4	4 ^b
Gross gamma radiation		None
²²⁶ Ra and ²²⁸ Ra	1, 2, 4	5
¹³⁷ Cs	5	3,000
⁹⁰ Sr	5, 2	1,000; 8.0
⁶⁰ Co	5	10,000
Tritium	5, 2	2,000,000; 20,000
⁹⁹ Tc	5	100,000
²³⁹ Pu	5	30
²³⁵ U	5	600
Total uranium (mg/L)		None

^aMaximum contaminant level.

^bMaximum contaminant level in the absence of ⁹⁰Sr and alpha emitters = 1,000 pCi/L.

Table 2.3.11. Other typical parameters that may be included in groundwater studies

Parameter	Reference	Applicable standards (mg/L)
Alkalinity (CO ₃)		None
Alkalinity (HCO ₃)		None
Total phosphorus		None
Solids:		
Total		None
Suspended		None
Dissolved	3	500
Turbidity (JTU)	2	5
Total Kjeldahl nitrogen		None
Ammonia (N)		None
Chemical oxygen demand		None
MBAS		None

Table 2.3.12. Constituents in groundwater at the Y-12 Plant

Variable ^a	No. of samples	Max or min reporting limit	Max	Av of values above the detection limit
<i>Beta-4 Security Pit</i>				
Barium	5	0.22	1.8	0.87
Chromium	5	<0.01	0.16	0.095
Dissolved solids	5	140	580	290
Iron	6	1	150	56
Manganese	6	0.5	12	3.3
pH (units)	48	6.4	8.3	7.4
<i>Bear Creek Burial Grounds</i>				
Acetone ($\mu\text{g/L}$)	92	0.9	850	33
Barium	93	<0.1	2.2	0.58
Benzene	92	1	180	27
Bromoform ($\mu\text{g/L}$)	92	1	8	4.0
Cadmium	93	<0.002	0.05	0.007
Carbon disulfide	92	1	12	3.2
Carbon tetrachloride ($\mu\text{g/L}$)	92	190	190	190
Chloride	58	<1	3250	139
Chloroethane ($\mu\text{g/L}$)	92	2	740	175
Chloroform ($\mu\text{g/L}$)	92	1	1700	36
Chromium	93	<0.01	0.67	0.083
Coliform (colonies/100 mL)	58	0	34	1.2
Dissolved solids	24	78	5100	766
Ethyl benzene ($\mu\text{g/L}$)	92	1	21	3.5
Fluoride	58	<0.1	6.4	0.93
Gross alpha (pCi/L)	93	<4	74	13
Gross beta (pCi/L)	93	<5	130	25
Iron	58	<0.05	290	16
Lead	93	<0.004	0.53	0.041
Manganese	58	<0.01	19	1.3
Methylene chloride ($\mu\text{g/L}$)	92	0.9	490	18
pH (units)	365	5.3	11	8.1
Styrene ($\mu\text{g/L}$)	92	12	12	12.000
Sulfate	58	<1	290	18
Tetrachloroethene ($\mu\text{g/L}$)	92	0.8	63000	3030
Toluene ($\mu\text{g/L}$)	92	0.6	190	13
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	92	0.7	50000	4610
Trichloroethene ($\mu\text{g/L}$)	92	1	17000	1640
Vinyl chloride ($\mu\text{g/L}$)	92	2	3400	800
Xylenes ($\mu\text{g/L}$)	92	0.8	120	7.8
1,1-dichloroethane ($\mu\text{g/L}$)	92	6	7800	1020
1,1-dichloroethene ($\mu\text{g/L}$)	92	1	13000	960
1,1,1-trichloroethane ($\mu\text{g/L}$)	92	0.9	13000	970
1,1,2-trichloroethane ($\mu\text{g/L}$)	92	2	300	130
1,1,2,2-tetrachloroethane ($\mu\text{g/L}$)	92	2	24	12
1,2-dichloroethane ($\mu\text{g/L}$)	92	1	100	28
2-butanone ($\mu\text{g/L}$)	92	3	3600	86
2-hexanone ($\mu\text{g/L}$)	92	1	220	19
4-methyl-2-pentanone ($\mu\text{g/L}$)	92	1	320	48
<i>C. R. Security Pit</i>				
Acetone ($\mu\text{g/L}$)	24	4	380	42
Barium	23	0.0049	2.5	0.24
Chromium	23	<0.01	0.11	0.031
Iron	23	<0.004	36	4.1

Table 2.3.12 (continued)

Variable ^a	No. of samples	Max or min reporting limit	Max	Av of values above the detection limit
Lead	24	<0.004	0.093	0.028
Manganese	23	<0.001	0.42	0.080
pH (units)	90	6.9	8.6	7.7
Tetrachloroethene ($\mu\text{g/L}$)	24	1	59	14
Trichloroethene ($\mu\text{g/L}$)	24	1	15	3.3
1,1-dichloroethane ($\mu\text{g/L}$)	24	1	230	82
1,1-dichloroethene ($\mu\text{g/L}$)	24	1	75	17
1,1,1-trichloroethane ($\mu\text{g/L}$)	24	1	820	180
2-butanone ($\mu\text{g/L}$)	24	4	11	8.5
<i>C. R. Sediment Disposal Basin</i>				
Acetone ($\mu\text{g/L}$)	32	2	340	49
Arsenic	32	<0.005	0.071	0.019
Barium	32	<0.1	1.4	0.18
Gross alpha (pCi/L)	32	<4	530	27
Gross beta (pCi/L)	32	<5	1040	120
Iron	32	0.049	37	6.2
Lead	32	<0.004	0.19	0.035
Manganese	32	0.0034	0.95	0.23
pH (units)	128	4.8	9.1	7.6
Tetrachloroethene ($\mu\text{g/L}$)	32	0.9	6	2.4
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	32	2	8	5.0
Xylenes ($\mu\text{g/L}$)	32	0.1	10	1.8
<i>Kerr Hollow Quarry</i>				
Bis(2-ethylhexyl)phthalate ($\mu\text{g/L}$)	3	47	54	51
Gross alpha (pCi/L)	4	2	16	8.7
Iron	6	<0.004	22	6.1
Manganese	6	0.0028	0.53	0.12
pH (units)	54	7.5	9.3	8.1
<i>New Hope Pond</i>				
Acetone ($\mu\text{g/L}$)	44	3	22	9.3
Carbon tetrachloride ($\mu\text{g/L}$)	44	2	120	26
Chloroform ($\mu\text{g/L}$)	44	1	10	4.4
Gross alpha (pCi/L)	44	<3	220	18
Gross beta (pCi/L)	44	<5	130	24
Iron	44	<0.004	17	1.7
Lead	44	<0.004	0.17	0.028
Manganese	44	<0.001	2.6	0.35
Methylene chloride ($\mu\text{g/L}$)	44	1	6	2.6
pH (units)	176	6.7	9.3	7.6
Tetrachloroethene ($\mu\text{g/L}$)	44	1	120	22
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	44	1	72	24

Table 2.3.12 (continued)

Variable ^a	No. of samples	Max or min reporting limit	Max	Av of values above the detection limit
Trichloroethene ($\mu\text{g/L}$)	44	1	23	6.5
Vinyl chloride ($\mu\text{g/L}$)	44	2	6	4.0
1,2-dichloroethane ($\mu\text{g/L}$)	44	26	26	26
2-butanone ($\mu\text{g/L}$)	44	8	19	11
<i>Oil Landfarm Area</i>				
Acetone ($\mu\text{g/L}$)	64	1	45	8.3
Barium	65	<0.1	1.4	0.36
Benzene ($\mu\text{g/L}$)	64	1	53	11
Cadmium	65	<0.002	0.03	0.010
Carbon tetrachloride ($\mu\text{g/L}$)	64	1	13	5.2
Chloroethane ($\mu\text{g/L}$)	64	0.9	19	5.5
Chloroform ($\mu\text{g/L}$)	64	0.9	84	8.5
Chloromethane ($\mu\text{g/L}$)	64	12	12	12
Chromium	65	<0.01	0.73	0.075
Coliform (colonies/100 mL)	44	0	100	4.4
Dissolved solids	17	120	850	470
Gross alpha (pCi/L)	65	<3	160	21
Gross beta (pCi/L)	65	<5	230	34
Iron	44	<0.004	83	7.6
Lead	65	<0.004	0.23	0.026
Manganese	44	0.0025	8.5	1.3
Methylene chloride ($\mu\text{g/L}$)	64	1	3400	79
Nitrate-n	44	<0.11	77	27
pH (units)	260	4.8	8.7	7.2
Tetrachloroethene ($\mu\text{g/L}$)	64	1	1600	150
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	64	1	270	43
Trichloroethene ($\mu\text{g/L}$)	64	1	800	110
Vinyl chloride ($\mu\text{g/L}$)	64	1	31	10
1,1-dichloroethane ($\mu\text{g/L}$)	64	1	17	6.9
1,1-dichloroethene ($\mu\text{g/L}$)	64	1	17	4.8
1,1,2-trichloroethane ($\mu\text{g/L}$)	64	7	10	9.0
1,1,2,2-tetrachloroethane ($\mu\text{g/L}$)	64	10	41	41
1,2-dichloroethane ($\mu\text{g/L}$)	64	1	27	13
2-butanone ($\mu\text{g/L}$)	64	2	91	12
<i>Ravine Disposal site</i>				
Iron	5	0.22	20	6.3
Manganese	5	0.11	4.3	1.1
pH (units)	40	6.2	7.7	6.9
<i>S-2 Pond site</i>				
Acetone ($\mu\text{g/L}$)	30	1	31	8.9
Barium	30	<0.1	1.0	0.30
Benzene ($\mu\text{g/L}$)	30	1	20	10
Benzoic acid ($\mu\text{g/L}$)	30	1	48	14
Bis(2-ethylhexyl)phthalate ($\mu\text{g/L}$)	30	1	190	30
Cadmium	30	<0.003	7.9	0.66
Carbon disulfide ($\mu\text{g/L}$)	30	1	70	12
Carbon tetrachloride ($\mu\text{g/L}$)	30	2	820	127
Chloroform ($\mu\text{g/L}$)	30	2	72	16
Chromium	30	<0.01	0.1	0.023
Coliform (colonies/100 mL)	30	0	2	0.10

Table 2.3.12 (continued)

Variable ^a	No. of samples	Max or min reporting limit	Max	Av of values above the detection limit
Copper	30	<0.004	160	15
Dissolved solids	3	346	5000	1900
Fluoride	30	<0.1	8.6	1.5
Gross alpha (pCi/L)	30	<4	130	21
Gross beta (pCi/L)	30	<5	170	24
Iron	30	0.015	4.4	1.4
Lead	30	<0.004	0.12	0.016
Manganese	30	0.0092	61	8.6
Mercury	30	<0.0002	0.032	0.010
Methylene chloride ($\mu\text{g/L}$)	30	0.3	1100	63
Nitrate-n	30	0.61	990	180
pH (units)	120	5.1	8.3	7.0
Tetrachloroethene ($\mu\text{g/L}$)	30	0.9	24000	1160
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	30	1	3000	250
Trichloroethene ($\mu\text{g/L}$)	30	1	2100	300
Zinc	30	0.0045	11	1.2
1,1,2,2-tetrachloroethane ($\mu\text{g/L}$)	30	8	21	14
2-butanone ($\mu\text{g/L}$)	30	5	5000	250
<i>S-3 Ponds site</i>				
Acetone ($\mu\text{g/L}$)	104	1	600	64
Barium	102	<0.1	374	29
Benzene ($\mu\text{g/L}$)	104	0.6	73	19
Benzoic acid ($\mu\text{g/L}$)	41	1	58	11
Bis(2-ethylhexyl)phthalate ($\mu\text{g/L}$)	41	1	70	11
Bromoform ($\mu\text{g/L}$)	104	2	11	6.2
Cadmium	102	<0.3	1.7	0.22
Carbon tetrachloride ($\mu\text{g/L}$)	104	62	820	270
Chloride	77	<100	480	64
Chloroform ($\mu\text{g/L}$)	104	0.3	26	8.3
Chromium	102	<1	0.61	0.11
Coliform (colonies/100 mL)	76	0	34	0.79
Copper	57	<0.4	1.7	0.10
Di-n-octyl phthalate ($\mu\text{g/L}$)	41	0.2	6	1.5
Dissolved solids	22	260	87000	19000
Fluoride	77	<0.1	10	1.1
Gross alpha (pCi/L)	104	<210	35000	1600
Gross beta (pCi/L)	104	<300	79000	5900
Iron	77	<0.4	44	3.3
Lead	104	<0.004	0.62	0.033
Manganese	77	0.0021	330	28
Mercury	104	<0.0002	0.16	0.021
Methylene chloride ($\mu\text{g/L}$)	104	1	66	12
Naphthalene ($\mu\text{g/L}$)	41	1	8	4.0
Nitrate-n	77	<0.11	46000	3400
Nitrite-n	41	<33	6.7	3.0
pH (units)	413	3.5	10	6.6
Selenium	104	<0.005	0.045	0.02
Sulfate	77	<100	770	89
Tetrachloroethene ($\mu\text{g/L}$)	104	1	7200	370
Toluene ($\mu\text{g/L}$)	104	0.4	11	1.8
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	104	1	18	6.4
Trichloroethene ($\mu\text{g/L}$)	104	0.8	97	9.1
2-butanone ($\mu\text{g/L}$)	104	5	58	17

Table 2.3.12 (continued)

Variable ^a	No. of samples	Max or min reporting limit	Max	Av of values above the detection limit
2-hexanone ($\mu\text{g/L}$)	104	1	26	5.9
2-nitrophenol ($\mu\text{g/L}$)	41	43	71	54
2,4-dinitrophenol ($\mu\text{g/L}$)	41	77	77	77
4-methyl-2-pentanone ($\mu\text{g/L}$)	104	2	28	13
4-nitrophenol ($\mu\text{g/L}$)	41	22	120	72
<i>Salvage Yard Area</i>				
Acetone ($\mu\text{g/L}$)	56	3	150	32
Barium	53	<0.1	130	17
Benzene ($\mu\text{g/L}$)	56	1	73	55
Bis(2-ethylhexyl)phthalate ($\mu\text{g/L}$)	56	2	210	24
Cadmium	53	<0.3	0.019	0.009
Chloroform ($\mu\text{g/L}$)	56	2	19	4.8
Chromium	53	<1	0.075	0.027
Coliform (colonies/100 mL)	55	0	10	0.24
Di-n-octyl phthalate ($\mu\text{g/L}$)	56	0.04	6	0.96
Dissolved solids	11	90	73000	12000
Gross alpha (pCi/L)	56	<4	460	47
Gross beta (pCi/L)	56	<5	10000	560
Iron	55	<0.4	36	5.080
Lead	56	<0.004	0.11	0.017
Manganese	55	0.0021	56	3.5
Methylene chloride ($\mu\text{g/L}$)	56	1	38	7.7
Naphthalene ($\mu\text{g/L}$)	56	4	8	6.3
Nitrate-n	56	<0.5	15000	2300
Nitrite-n	56	<33	6.5	3.2
pH (units)	222	2.5	11	6.8
Selenium	56	<0.005	0.045	0.042
Tetrachloroethene ($\mu\text{g/L}$)	56	0.6	770	96
Trans-1,2-dichloroethene ($\mu\text{g/L}$)	56	1	410	92
Trichloroethene ($\mu\text{g/L}$)	56	1	1100	82
Vinyl chloride ($\mu\text{g/L}$)	56	2	14	8.0
1,1-dichloroethane ($\mu\text{g/L}$)	56	11	16	14
1,1-dichloroethene ($\mu\text{g/L}$)	56	1	770	91
1,1,1-trichloroethane ($\mu\text{g/L}$)	56	1	2100	150
1,1,2,2-tetrachloroethane ($\mu\text{g/L}$)	56	8	27	15
1,2-dichloroethane ($\mu\text{g/L}$)	56	8	8	8.0
2-butanone ($\mu\text{g/L}$)	56	5	19	13
<i>United Nuclear site</i>				
pH (units)	34	7.4	8.8	8.1

^aUnits in mg/L unless noted otherwise.

Table 2.3.13. Constituents in groundwater at the ORNL site—greater than regulatory standards in 1987

Location ^a	Parameter	Result ^b	Standard
31-001	Gross beta (pCi/L)	100	4.0
31-001	Mn (mg/L)	0.090	0.050
31-002	Gross beta (pCi/L)	570	4.0
31-002	Mn (mg/L)	1.4	0.050
31-003	Fe (mg/L)	0.73	0.30
31-003	Gross alpha (pCi/L)	29	15
31-003	Gross beta (pCi/L)	2080	4.0
31-003	Mn (mg/L)	3.1	0.050
31-004	Gross beta (pCi/L)	35	4.0
31-004	Mn (mg/L)	0.76	0.050
31-013	Gross beta (pCi/L)	51	4.0
31-015	Gross beta (pCi/L)	15	4.0
31-015	Mn (mg/L)	0.22	0.050
31-005	Fe (mg/L)	2.6	0.30
31-005	Gross beta (pCi/L)	51	4.0
31-005	Mn (mg/L)	9.3	0.050
31-006	Fe (mg/L)	1.4	0.30
31-006	Gross beta (pCi/L)	10	4.0
31-006	Mn (mg/L)	5.6	0.050
31-007	Fe (mg/L)	1.1	0.30
31-007	Gross beta (pCi/L)	6.7	4.0
31-007	Mn (mg/L)	0.80	0.050
31-008	Fe (mg/L)	6.6	0.30
31-008	Gross beta (pCi/L)	7.8	4.0
31-008	Mn (mg/L)	8.7	0.050
31-009	Fe (mg/L)	10	0.30
31-009	Mn (mg/L)	3.2	0.050
31-010	Fe (mg/L)	1.4	0.30
31-010	Gross beta (pCi/L)	29	4.0
31-010	Mn (mg/L)	0.27	0.050
31-012	Fe (mg/L)	3.9	0.30
31-012	Gross beta (pCi/L)	9.4	4.0
31-012	Mn (mg/L)	6.8	0.050
32-001	Gross beta (pCi/L)	11	4.0
32-002	Gross beta (pCi/L)	6.7	4.0
32-003	Gross beta (pCi/L)	5.4	4.0
32-004	Fe (mg/L)	0.48	0.30
32-004	Gross beta (pCi/L)	11	4.0
32-004	Mn (mg/L)	0.13	0.050
32-005	Mn (mg/L)	0.21	0.050
32-005	Total Ra (pCi/L)	6.4	5.0
33-001	Cr (mg/L)	0.070	0.050
33-001	Fe (mg/L)	0.62	0.30
33-001	Gross beta (pCi/L)	7.8	4.0
33-001	Mn (mg/L)	0.070	0.050
33-002	Gross alpha (pCi/L)	27	15
33-002	Gross beta (pCi/L)	1080	4.0
33-002	Mn (mg/L)	0.32	0.050
33-002	NO ₃ (mg/L)	23	10
33-003	Gross beta (pCi/L)	590	4.0
33-003	NO ₃ (mg/L)	40	10

^aSee Figs. 2.3.16 and 2.3.17.

^bOnly one sample per well taken during 1987.

Table 2.3.14. Summary of pH in groundwater wells at the ORNL site greater or less than the regulatory standards at least once in 1987

Location ^a	Number of samples	Max	Min	Av	Lower standard	Upper standard
31-009	12	7.0	6.3	6.8	6.5	8.5
31-011	3	12.5	12.2	12.4	6.5	8.5

^aSee Fig. 2.3.16.

Table 2.3.15. Constituents in groundwater at the ORNL site—above background in 1987

Location ^a	Parameter	Result (mg/L)
31-001	Na	23
31-001	Se	0.0050
31-001	Total recoverable phenolics	0.0010
31-002	Na	15
31-002	Se	0.0050
31-002	Total recoverable phenolics	0.0010
31-003	Na	17
31-003	Se	0.0050
31-003	Total recoverable phenolics	0.0010
31-004	Na	38
31-004	Se	0.0050
31-004	Total recoverable phenolics	0.0010
31-005	Na	6.5
31-005	Se	0.0050
31-005	Total recoverable phenolics	0.0010
31-006	Na	4.5
31-006	Se	0.0050
31-006	Total recoverable phenolics	0.0010
31-007	Na	31
31-007	Se	0.0050
31-007	Total recoverable phenolics	0.0010
31-008	Na	6.5
31-008	Se	0.0050
31-008	Total recoverable phenolics	0.0010
31-009	Na	15
31-009	Se	0.0050
31-009	Total recoverable phenolics	0.0010
31-010	Na	8.2
31-010	Se	0.0050
31-010	Total recoverable phenolics	0.0010
31-012	Na	5.6
31-012	Se	0.0050
31-012	Total recoverable phenolics	0.0010
31-013	Na	23
31-013	Se	0.0050
31-013	Total recoverable phenolics	0.0010
31-015	Na	24
31-015	Se	0.0050
31-015	Total recoverable phenolics	0.0010
32-001	Na	5.8
32-001	Se	0.0050
32-001	Total recoverable phenolics	0.0010
32-002	Na	5.8
32-002	Se	0.0050
32-002	Total recoverable phenolics	0.0010
32-003	Na	3.6
32-003	Se	0.0050
32-003	Total recoverable phenolics	0.0010
32-004	Na	8.1
32-004	Se	0.0050
32-004	Total recoverable phenolics	0.0010
32-005	Na	6.3
32-005	Se	0.0050
32-005	Total recoverable phenolics	0.0010
33-001	Na	6.5

Table 2.3.15 (continued)

Location ^a	Parameter	Result (mg/L)
33-001	Se	0.0050
33-001	Total recoverable phenolics	0.0010
33-002	Na	23
33-002	Se	0.0050
33-002	Total recoverable phenolics	0.0010
33-003	Na	51
33-003	Se	0.0050
33-003	Total recoverable phenolics	0.0010

^aSee Figs. 2.3.16 and 2.3.17.

Table 2.3.16. 1987 ORGDP groundwater monitoring data that either exceed a standard or are above background

Parameter	Concentrations (mg/L)		
	Max	Min	Av
K-770 site			
Acetone	0.01	<0.01	<0.012
Aliphatic hydrocarbon	0.01	0.01	0.010
Alpha activity (pCi/L)	19.0	<1	<19.0
Barium	1.60	1.60	1.60
Beta activity (pCi/L)	1580.00	<4	<328
Bis(2-ethylhexyl)phthalate	0.03	<0.005	<0.014
Chromium	0.19	<0.01	<0.190
Conductivity (μ mho/cm)	802	300	509
Dissolved oxygen	8.2	1.2	3.8
Iron	230	<0.004	<32.5
Lead	0.091	<0.004	<0.091
Manganese	7.2	0.14	1.7
Methylene chloride	0.003	<0.005	<0.003
Phenols	0.019	<0.001	<0.008
Tetrachloroethene	0.001	<0.005	<0.001
Toluene	0.001	<0.005	<0.001
Total coliform (colonies/100 mL)	8	8	8.0
Total organic halide	0.068	<0.010	<0.019
Turbidity (NTU)	>180	1.0	>92
2-butanone	0.01	<0.01	<0.01
Iron ^a	4.6	<0.004	<2.6
Manganese ^a	2.3	0.10	0.91
K-1064-G site			
Arsenic	0.20	<0.005	<0.13
Beta activity (pCi/L)	59.6	9.1	33.8
Conductivity (μ mho/cm)	3200	590	1060
Dissolved oxygen	3.7	0.6	2.5
Fluoride	7.0	4.9	6.0
Freon 113	0.037	0.002	0.014
Iron	6.3	1.4	3.1
Manganese	0.37	<0.001	<0.21
Nitrate-nitrogen	3.8	<2.3	<1.5
pH (units)	8.8	6.8	7.3
Phenols	0.009	<0.001	<0.003
Substituted hydrocarbon	0.008	0.008	0.008
Sulfate	770	760	765
Tetrachloroethene	0.002	<0.005	<0.001
Total coliform (colonies/100 mL)	54	1	14.6

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Total organic carbon	9.2	<1.0	<9.2
Total organic halide	0.17	<0.010	<0.084
Trans-1,2-dichloroethene	0.018	<0.005	<0.009
Trichloroethene	0.021	<0.005	<0.015
Turbidity (NTU)	>180	1.5	>31
1,1-dichloroethane	0.048	<0.005	<0.022
1,1-dichloroethene	0.020	<0.005	<0.014
1,1,2-trichloroethane	0.022	<0.005	<0.014
Arsenic ^a	0.20	<0.005	<0.13
Manganese ^a	0.35	<0.001	<0.21
K-1070-A site			
Acetone	0.006	<0.010	<0.005
Alpha activity (pCi/L)	44	<2	<44
Beta activity (pCi/L)	986	4.0	407
Bis(2-ethylhexyl)phthalate	0.033	<0.005	<0.013
Butylbenzylphthalate	0.003	<0.005	<0.003
Carbon tetrachloride	0.18	<0.005	<0.070
Chloroform	0.010	0.003	0.007
Chromium	0.092	<0.010	<0.073
Conductivity (μ mho/cm)	345	120	236
Delta-bhc	0.001	<0.00005	<0.001
Di- <i>n</i> -butylphthalate	0.002	<0.005	<0.002
Di- <i>n</i> -octylphthalate	0.002	<0.005	<0.001
Diacetone alcohol	0.20	0.001	0.10
Dissolved oxygen	11.6	5.4	7.6
Iron	120	<0.004	<25.8
Lead	0.56	<0.004	<0.28
Manganese	3.1	0.057	0.96
Methylene chloride	0.002	<0.005	<0.002
Nitrate-nitrogen	1.0	<0.11	<0.70
pH (units)	8.9	6.5	7.4
Phenols	0.013	<0.001	<0.005
Pyrene	0.001	<0.005	<0.0009
Tetrachloroethene	0.024	<0.005	<0.0095
Total coliform (colonies/100 mL)	12	4.0	8.0
Total xylenes	0.002	<0.005	<0.002
Total organic halide	8.1	<0.010	<1.2
Trans-1,2-dichloroethene	0.023	<0.005	<0.005
Trichloroethene	1.2	<0.005	<0.73
Turbidity (NTU)	>180	28	>133
1,1-dichloroethane	0.054	<0.005	<0.022
1,1-dichloroethene	1.24	<0.005	<0.4

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
1,1,1-trichloroethane	2.0	<0.005	<0.92
1,1,2-trichloroethane	0.010	<0.005	<0.005
Manganese ^a	0.31	0.19	0.25
K-1070-B site			
Alpha activity (pCi/L)	51.7	51	51.7
Beta activity (pCi/L)	25.4	25.4	25.4
Chromium	0.08	0.082	0.08
Conductivity	1170	1040	1138
Dissolved oxygen	6.0	6.0	6.00
Freon 123	0.012	0.012	0.012
Iron	29	29	29
Manganese	5.9	5.9	5.9
Phenols	0.007	0.007	0.007
Total coliform (colonies/100 mL)	6.0	6.0	6.0
Total organic carbon	5.3	5.0	5.17
Total organic halide	0.49	0.38	0.43
Trans-1,2-dichloroethene	0.78	0.78	0.78
Trichloroethene	0.009	0.009	0.009
Turbidity (NTU)	180	180	180
Vinyl chloride	0.34	0.34	0.34
1,1-dichloroethane	0.047	0.047	0.047
Manganese ^a	3.5	3.5	3.5
K-1070-C/D site			
Alpha activity (pCi/L)	15.8	<2	<15.8
Beta activity (pCi/L)	608	<4	<46.5
Bis(2-ethylhexyl)phthalate	3.6	<0.005	<0.26
Chloride	529	<1.0	<504
Chromium	0.12	<0.01	<0.092
Conductivity (μ mho/cm)	1920	193	600
Cyclopentanone	0.03	0.027	0.027
Di-n-octylphthalate	0.02	<0.005	<0.006
Diacetone alcohol	0.20	0.2	0.2
Dissolved oxygen	12.9	0.6	4.1
Freon 113	0.020	0.001	0.006
Heptanoic acid	0.001	0.001	0.001
Hexanoic acid	0.007	0.007	0.007
Iron	79	0.41	17.7
Lead	0.12	<0.004	<0.08
Manganese	11.0	<0.001	<2.8

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Methylene chloride	0.029	<0.005	<0.0078
Nitrate-nitrogen	0.12	<0.11	<0.12
pH (units)	10.7	6.6	8.1
Phenols	0.013	<0.001	<0.006
Tetrachloroethene	0.29	<0.005	<0.07
Toluene	0.035	<0.005	<0.016
Total coliform (colonies/100 mL)	49	1.0	24.3
Total organic carbon (TOC)	14.1	<1.0	<7.39
Total xylenes	0.028	<0.005	<0.016
Total organic halide	1.18	<0.01	<0.15
Trans-1,2-dichloroethene	0.23	<0.005	<0.04
Trichloroethene	0.29	<0.005	<0.068
Turbidity (NTU)	>180	1.6	>111
Vinyl chloride	0.005	<0.01	<0.005
1,1-dichloroethane	0.44	<0.005	<0.17
1,1-dichloroethene	0.12	<0.005	<0.063
1,1,1-trichloroethane	0.22	<0.005	<0.22
1,1,1,2-tetrachloroethane	0.006	<0.005	<0.006
2-butanone	0.008	<0.01	<0.007
4-tert-butyl phenol	0.007	0.007	0.007
Iron ^a	0.42	<0.004	<0.42
Manganese ^a	8.8	<0.001	<2.6
K-1070-F site			
Acetone	0.043	<0.01	<0.025
Beta activity (pCi/L)	34	<2	<14.0
Bis(2-ethylhexyl)phthalate	0.051	<0.005	<0.018
Bromodichloromethane	0.006	<0.005	<0.003
Conductivity (μ mho/cm)	879	159	583
Di- <i>n</i> -butylphthalate	0.001	<0.005	<0.001
Di- <i>n</i> -octylphthalate	0.001	<0.005	<0.001
Dissolved oxygen	9.1	3.3	5.22
Fluoride	21	<0.1	<21.0
Freon 113	0.0010	0.001	0.001
Iron	45	0.33	7.5
Lead	0.11	<0.004	<0.106
Manganese	1.3	0.063	0.3
Nitrate-nitrogen	0.44	<0.11	<0.35
pH (units)	9.9	6.9	8.7
Phenols	0.018	0.003	0.0099
Tetrachloroethene	0.001	<0.005	<0.001
Total coliform	15	12	13.5
Total xylenes	0.002	<0.005	<0.002
Total organic halide	0.1	<0.01	<0.039

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Turbidity (NTU)	>180	8.6	>113
Iron ^a	7.0	<0.004	<7.0
Lead ^a	0.099	<0.004	<0.099
Manganese ^a	0.46	0.086	0.21
K-1085 site			
Alpha activity (pCi/L)	70	<2	<54.5
Arsenic	0.059	<0.005	<0.059
Barium	1.3	1.1	1.2
Beta activity (pCi/L)	90	<4	<24.6
Bis(2-ethylhexyl)phthalate	0.001	<0.005	<0.001
Chromium	0.25	<0.01	<0.16
Conductivity (μ mho/cm)	640	215	416
Diethylphthalate	0.001	<0.005	<0.0008
Dissolved oxygen	9.9	1.9	5.19
Freon 113	0.001	0.001	0.001
Iron	150	1.9	34.1
Lead	0.45	0.055	0.24
Manganese	24	0.13	4.7
Methylene chloride	0.16	<0.005	<0.16
Nitrate-nitrogen	5.1	0.36	2.06
Phenols	0.007	<0.001	<0.004
Tetrachloroethene	0.001	<0.005	<0.001
Toluene	0.001	<0.005	<0.001
Total coliform (colonies/100 mL)	6.0	6.0	6.0
Total xylenes	0.001	<0.005	<0.001
Total organic halide	0.113	<0.01	<0.052
Trichloroethene	0.008	<0.005	<0.008
Turbidity (NTU)	>180	13.0	>148
2-butanone	0.012	<0.01	<0.012
2-chlorophenol	0.0	<0.005	<0.0
Iron ^a	0.78	0.78	0.78
Manganese ^a	1.6	0.095	0.49
K-1099 site			
Alpha activity (pCi/L)	15.0	15.0	15.0
Beta activity (pCi/L)	36	12.0	24.0
Bis(2-ethylhexyl)phthalate	0.001	<0.005	<0.001
Conductivity (μ mho/cm)	693	520	638
Dissolved oxygen	7.3	3.5	5.4

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Iron	0.77	0.77	0.77
Nitrate-nitrogen	0.65	<0.11	<0.65
Phenols	0.004	<0.001	<0.004
Total coliform (colonies/100 mL)	7.0	7.0	7.0
Total organic halide	0.015	<0.01	<0.012
Turbidity (NTU)	>180	28.0	>104
K-1232 site			
Acetone	0.014	0.014	0.014
Beta activity (pCi/L)	29.8	4.0	11.7
Bis(2-ethylhexyl)phthalate	0.005	<0.005	<0.003
Chloroform	0.003	<0.005	<0.002
Chromium	0.066	<0.01	<0.066
Conductivity (μ mho/cm)	780	330	445
Di- <i>n</i> -octylphthalate	0.001	<0.005	<0.001
Diethylphthalate	0.0	<0.005	<0.000
Dissolved oxygen	4.3	1.8	3.14
Fluoride	11.5	10.0	10.8
Freon 113	0.001	0.001	0.001
Iron	150	<0.004	<93.5
Lead	0.47	<0.004	<0.31
Manganese	9.9	<0.001	<6.35
pH (units)	11.7	7.0	9.42
Phenols	0.007	<0.001	<0.005
Sulfur	0.003	0.003	0.003
Tetrachloroethene	0.001	<0.005	<0.001
Total xylenes	0.004	<0.005	<0.004
Total organic halide	0.025	<0.01	<0.019
Trans-1,2-dichloroethene	0.002	<0.005	<0.002
Trichloroethene	0.014	<0.005	<0.0105
Turbidity (NTU)	>180	1.4	>72.9
Vinyl chloride	0.003	<0.01	<0.0025
2-butanone	0.019	0.019	0.019
4-tert-butylphenol	0.11	0.079	0.094
Manganese ^a	0.15	<0.001	<0.15
K-1407-A site			
Acetone	0.016	0.016	0.016
Beta activity (pCi/L)	16.0	6.9	11.5

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Chloroethane	0.001	<0.01	<0.001
Chloromethane	0.003	<0.01	<0.003
Conductivity ($\mu\text{mho/cm}$)	444	380	433
Dissolved oxygen	2.6	1.6	2.1
Freon 113	0.015	0.015	0.015
Iron	3.2	3.2	3.2
Manganese	3.3	3.2	3.25
Total organic halide	1.7	0.099	0.79
Trans-1,2-dichloroethene	1.9	1.81	1.87
Trichloroethene	0.62	0.42	0.55
Turbidity (NTU)	30.0	27.0	28.5
1,1-dichloroethane	0.014	0.012	0.013
1,1-dichloroethene	0.029	0.007	0.022
1,1,2-trichloroethane	0.001	<0.005	<0.001
Iron ^a	3.7	<0.004	<3.7
Manganese ^a	3.4	3.1	3.25
K-1407-B site			
Alpha activity (pCi/L)	117	<3	<56.1
Barium	1.7	1.7	1.7
Beta activity (pCi/L)	60.5	11.7	25.9
Bis(2-ethylhexyl)phthalate	0.08	<0.005	<0.03
Cadmium	0.02	<0.003	<0.02
Carbon disulfide	0.00	<0.005	<0.0
Chloride	418	254	353
Chloroethane	0.01	<0.01	<0.01
Chromium	0.17	<0.01	<0.12
Conductivity ($\mu\text{mho/cm}$)	2560	490	1529
Dissolved oxygen	10.6	0.50	4.5
Iron	140	0.73	21.4
Lead	0.21	<0.004	<0.1
Manganese	12.0	0.088	4.12
pH (units)	8.6	6.5	7.3
Phenols	0.003	<0.001	<0.002
Sulfate	646	290	499
Tetrachloroethene	6.22	<0.005	<0.9
Toluene	0.011	<0.005	<0.005
Total coliform (colonies/100 mL)	1.0	1.0	1.0
Total organic carbon	5.1	<1.0	<5.1
Total organic halide	29.3	0.01	3.7
Trans-1,2-dichloroethene	1.8	<0.005	<0.69

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
Trichloroethene	10.3	<0.005	<2.18
Turbidity (NTU)	180	66	143
Vinyl acetate	0.006	<0.01	<0.006
Vinyl chloride	1.16	<0.01	<0.29
1,1-dichloroethane	2.4	<0.005	<0.6
1,1-dichloroethene	1.25	<0.005	<0.46
1,1,1-trichloroethane	0.53	<0.005	<0.34
1,1,2-trichloroethane	0.015	<0.005	<0.015
1,2-dichloroethane	0.029	<0.005	<0.016
2-butanone	0.008	<0.01	<0.008
2-hexanone	0.004	<0.01	<0.004
4-methyl-2-pentanone	0.002	<0.01	<0.002
Iron ^a	5.4	<0.004	<5.4
Lead ^a	0.069	<0.004	<0.064
Manganese ^a	9.8	0.12	3.6
K-1407-C site			
Acetone	0.067	0.067	0.067
Beta activity (pCi/L)	67.0	20.2	44.3
Chloride	260	260	260
Chromium	0.12	<0.01	<0.09
Conductivity (μ mho/cm)	2020	260	1223
Dissolved oxygen	8.6	0.5	3.1
Iron	120	0.68	20.2
Lead	0.13	<0.004	<.09
Manganese	26.0	0.14	11.6
pH (units)	10.0	6.5	7.3
Sulfate	269	253	260
Tetrachloroethene	0.001	<0.005	<0.001
Toluene	0.001	<0.005	<0.001
Total coliform (colonies/100 mL)	25	25.0	25.0
Total organic carbon	5.0	<1.0	<5.0
Total organic halide	0.11	<0.01	<0.036
Trans-1,2-dichloroethene	0.004	<0.005	<0.003
Trichloroethene	0.007	<0.005	<0.006
Turbidity (NTU)	80.000	4.1	68
Iron ^a	15.0	<0.004	<5.7
Lead ^a	0.12	<0.004	<0.09
Manganese ^a	25	0.09	11.3

Table 2.3.16 (continued)

Parameter	Concentrations (mg/L)		
	Max	Min	Av
K-1413 site			
Alpha activity (pCi/L)	21.0	18.0	19.5
Beta activity (pCi/L)	42.1	12.0	27.6
Bis(2-ethylhexyl)phthalate	0.006	<0.005	<0.006
Chloroform	0.011	0.011	0.011
Chromium	0.095	<0.01	<0.095
Conductivity (μ mho/cm)	688	160	406
Iron	42.0	0.32	12.6
Lead	0.17	<0.004	<0.17
Manganese	2.1	0.052	0.99
Nitrate-nitrogen	0.79	0.13	0.4
Phenols	0.003	<0.001	<0.0023
Total coliform (colonies/100 mL)	5.0	2.0	3.5
Total organic halide	1.78	0.011	0.29
Trans-1,2-dichloroethene	0.002	<0.005	<0.0015
Trichloroethene	0.019	<0.005	<0.01
Turbidity (NTU)	80	8.5	96
4-methyl-2-pentanone	0.001	<0.01	<0.001
Manganese ^a	0.51	0.47	0.49

^aFiltered sample.



2.4 BIOLOGICAL



Table 2.4.1. 1987 ¹³¹I concentrations in milk^a

Location ^b	No. of samples	Concentration (pCi/L)				Percent of guideline ^d
		Max	Min	Av	95% cc ^c	
<i>Immediate environs</i>						
2	26	<5.4	<2.2	<2.3	0.25	23
3	16	<2.2	<2.2	<2.2	0	22
4	26	<5.4	<2.2	<2.3	0.25	23
6	8	<2.2	<2.2	<2.2	0	22
7	5	<2.2	<2.2	<2.2	0	22
8	8	<2.7	<2.2	<2.3	0.14	23
<i>Remote environs</i>						
51	3	<2.2	<2.2	<2.2	0	22
53	3	<14	<2.2	<5.9	7.6	59
56	3	<5.4	<2.2	<3.2	2.2	32

^aRaw milk samples.^bSee Fig. 2.4.1.^cNinety-five percent confidence coefficient about the average.^dAverage concentration as a percentage of applicable FRC standard assuming 1 L/d intake: Range I for ¹³¹I, 0-10 pCi/L, adequate surveillance required to confirm calculated intakes.Table 2.4.2. 1987 total radioactive Sr concentrations in milk^a

Location ^b	No. of samples	Concentration (pCi/L)				Percent of guideline ^d
		Max	Min	Av	95% cc ^c	
<i>Immediate environs</i>						
2	27	10	1.9	4.5	0.83	23
3	17	10	2.0	5.1	1.2	26
4	27	15	1.6	6.7	1.3	33
6	8	25	5.1	12	4.5	60
7	6	5.1	1.9	4.0	1.1	20
8	8	15	3.0	7.4	3.2	37
<i>Remote environs</i>						
51	3	16	4.1	12	8.1	61
53	3	5.9	2.5	4.8	2.3	24
56	3	2.2	2.1	2.2	0.04	11

^aRaw milk samples.^bSee Fig. 2.4.1.^cNinety-five percent confidence coefficient about the average.^dAverage concentration as a percent of applicable FRC standard assuming 1 L/d intake: Range I for total strontium, 0-20 pCi/L, adequate surveillance required to confirm calculated intakes.

Table 2.4.3. 1987 Hg concentrations in Clinch River bluegill

Location ^a	No. of samples	Concentration ($\mu\text{g/g}$ wet wt)				Percent of guideline ^c
		Max	Min	Av	95% cc ^b	
CRK 8.0	12	0.34	0.05	0.14	0.06	14
CRK 33.0	12	0.22	0.03	0.08	0.04	8.0
CRK 40.0	12	0.32	0.03	0.07	0.05	6.6

^aSee Fig. 2.4.2.^bNinety-five percent confidence coefficient about the average.^cPercent of Food and Drug Administration action level of mercury in fish ($1.0 \mu\text{g/g}$ wet wt) for the average concentration.**Table 2.4.4. 1987 PCB concentrations in Clinch River bluegill**

Location ^a	Determination	No. of samples	Concentration ($\mu\text{g/g}$ wet wt)				Percent of guideline ^c
			Max	Min	Av	95% cc ^b	
CRK 8.0	1254	12	0.17	0.10	0.05	0.03	2.5
	1260	12	0.10	<0.10	<0.03	0.02	1.5
CRK 33.0	1254	12	0.16	0.01	0.04	0.03	2.0
	1260	12	0.14	<0.01	<0.04	0.02	2.0
CRK 40.0	1254	12	0.08	0.01	0.04	0.01	2.0
	1260	12	0.05	<0.01	<0.01	0.007	0.50

^aSee Fig. 2.4.2.^bNinety-five percent confidence coefficient about the average.^cPercent of Food and Drug Administration tolerance for PCBs in fish ($2.0 \mu\text{g/g}$ wet wt) for the average concentration.**Table 2.4.5. 1987 radionuclide concentrations in Clinch River bluegill**

Location ^a	Determination	No. of samples	Concentration (pCi/kg wet wt)			
			Max	Min	Av	95% cc ^b
CRK 8.0	⁶⁰ Co	6	<4.0	<2.8	<3.2	0.35
	¹³⁷ Cs	6	69	41	55	7.4
	Total Sr ^c	6	120	<1.7	<26	38
CRK 33.0	⁶⁰ Co	6	<4.7	<0.96	<3.7	1.1
	¹³⁷ Cs	6	290	94	151	59
	Total Sr ^c	6	41	4.6	19	12
CRK 44.0	⁶⁰ Co	6	<4.7	<3.0	<3.7	0.52
	¹³⁷ Cs	6	8.2	<1.7	<4.7	2.3
	Total Sr ^c	6	64	0.61	12	21

^aSee Fig. 2.4.2.^bNinety-five percent confidence coefficient about the average.^cTotal radioactive strontium (⁸⁹Sr and ⁹⁰Sr).

Table 2.4.6. 1987 ⁶⁰Co concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	<55	<36	<43	8.4
07	4	<63	<37	<48	12
09	4	<29	<24	<25	2.6
22	4	<50	<34	<38	7.7
Network summary	16	<63	<24	<39	5.7
<i>Oak Ridge Reservation stations^b</i>					
08	4	<50	<23	<33	11
23	4	<54	<24	<35	14
31	4	<51	<45	<47	2.9
33	4	<45	<34	<39	4.2
34	4	<41	<29	<33	5.4
36	4	<38	<26	<32	5.3
40	4	<31	<23	<28	3.8
41	4	<42	<30	<36	5.2
42	4	<44	<23	<36	9.3
43	4	<35	<24	<30	5.5
44	4	<33	<22	<27	5.0
45	4	<38	<27	<33	5.4
46	4	<41	<23	<33	7.9
Network summary	52	<54	<22	<34	2.2
<i>Remote stations^c</i>					
51	4	<50	<46	<47	1.9
52	4	<50	<30	<43	9.3
53	4	<33	<24	<28	4.6
55	4	<40	<30	<33	4.9
56	4	<36	<23	<27	6.3
57	4	<34	<31	<32	1.5
Network summary	24	<50	<23	<35	3.6

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.7. 1987 ²³⁸Pu concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	0.27	-0.27	0	0.31
07	4	0.97	-0.46	0.26	0.58
09	4	0.41	-2.7	-0.80	1.5
22	4	0	-2.7	-1.0	1.2
Network summary	16	0.97	-2.7	-0.39	0.53
<i>Oak Ridge Reservation stations^b</i>					
08	4	1.4	-4.9	-1.1	2.7
23	4	2.7	-3.0	-0.49	2.4
31	4	2.7	-3.2	-0.95	2.8
33	4	0.73	-1.9	-0.31	1.1
34	4	0.59	-0.27	0.19	0.36
36	4	0.027	-2.7	-0.68	1.3
40	4	3.8	-9.2	-1.5	5.5
41	4	-0.081	-0.84	-0.45	0.31
42	4	1.6	-0.81	0.20	1.2
43	4	0.81	-2.4	-0.29	1.5
44	4	2.7	-2.7	1.4	2.7
45	4	2.4	-1.5	0.73	1.6
46	4	3.0	-1.1	1.9	2.0
Network summary	52	3.8	-9.2	-0.11	0.63
<i>Remote stations^c</i>					
51	4	0.32	-1.9	-0.45	1.0
52	4	0.62	-0.68	0.16	0.57
53	4	2.2	-3.0	-0.25	2.2
55	4	2.7	-97	-25	48
56	4	0.97	-0.81	-0.095	0.76
57	4	0.81	0.38	0.57	0.20
Network summary	24	2.7	-97	-4.1	8.1

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.8. 1987 ²³⁹Pu concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	2.0	-2.4	-0.31	1.8
07	4	0.97	-2.5	-0.47	1.5
09	4	3.5	-2.5	-0.44	2.7
22	4	-0.46	-2.7	-1.3	0.96
Network summary	16	3.5	-2.7	-0.64	0.85
<i>Oak Ridge Reservation stations^b</i>					
08	4	-1.1	-18	-6.1	8.0
23	4	0.62	-3.2	-1.5	1.8
31	4	-3.2	-18	-8.6	6.9
33	4	-0.27	-4.6	-1.8	2.0
34	4	0.38	-3.5	-1.1	1.7
36	4	1.9	-3.5	-0.52	2.3
40	4	3.5	-8.1	-1.6	5.2
41	4	1.5	-3.5	-0.78	2.1
42	4	0.11	-5.9	-1.8	2.8
43	4	-0.32	-2.3	-1.5	0.83
44	4	-0.27	-2.7	-1.8	1.1
45	4	-0.32	-2.7	-1.9	1.1
46	4	-0.14	-3.5	-1.3	1.5
Network summary	52	3.5	-18	-2.3	1.1
<i>Remote stations^c</i>					
51	4	0.54	-3.5	-1.7	1.7
52	4	0.81	-2.5	-0.43	1.5
53	4	-0.68	-7.6	-3.7	3.1
55	4	1.1	-13	-3.3	6.5
56	4	-0.51	-1.8	-1.2	0.64
57	4	0.57	-5.1	-0.92	2.8
Network summary	24	1.1	-13	-1.9	1.3

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.9. 1987 Total radioactive Sr concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	240	57	190	88
07	4	150	54	110	41
09	4	230	140	170	41
22	4	430	27	220	170
Network summary	16	430	27	170	49
<i>Oak Ridge Reservation stations^b</i>					
08	4	200	32	110	67
23	4	730	270	470	200
31	4	320	46	150	120
33	4	86	54	68	16
34	4	97	14	64	36
36	4	180	140	150	19
40	4	150	16	72	54
41	4	300	230	260	30
42	4	140	84	110	27
43	4	210	51	150	71
44	4	150	-380	-17	250
45	4	220	110	160	59
46	4	300	84	210	90
Network summary	52	730	-380	150	41
<i>Remote stations^c</i>					
51	4	2500	-270	650	1300
52	4	410	200	330	90
53	4	320	78	220	100
55	4	2700	190	870	1200
56	4	270	140	190	56
57	4	110	27	53	41
Network summary	24	2700	-270	390	290

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.10. 1987 ¹³⁷Cs concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	210	<40	<87	85
07	4	51	<37	<45	6.9
09	4	29	<21	<25	3.5
22	4	50	<26	<32	12
Network summary	16	210	<21	<47	23
<i>Oak Ridge Reservation stations^b</i>					
08	4	40	<16	<29	10
23	4	90	<24	<44	31
31	4	51	<30	<37	9.7
33	4	36	<29	<32	3.5
34	4	41	<29	<33	5.4
36	4	38	<22	<27	7.8
40	4	27	<16	<22	4.7
41	4	29	<21	<24	3.5
42	4	41	<23	<33	7.5
43	4	35	<24	<27	4.9
44	4	33	<22	<25	5.0
45	4	38	<27	<31	5.1
46	4	32	<23	<28	4.7
Network summary	52	90	<16	<30	3.0
<i>Remote stations^c</i>					
51	4	50	<34	<38	7.6
52	4	47	<30	<36	8.2
53	4	39	<25	<31	6.3
55	4	40	<30	<33	4.9
56	4	52	<29	<37	10
57	4	31	<23	<27	3.4
Network summary	24	52	<23	<34	3.1

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.11. 1987 ²³⁴U concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	84	17	37	32
07	4	38	18	28	8.7
09	4	30	10	16	9.1
22	4	19	12	14	3.0
Network summary	16	84	10	24	9.0
<i>Oak Ridge Reservation stations^b</i>					
08	4	65	27	40	17
23	4	110	57	81	21
31	4	54	14	35	18
33	4	22	14	17	3.6
34	4	35	25	29	4.5
36	4	57	0.22	25	24
40	4	150	57	97	42
41	4	38	22	29	8.3
42	4	57	13	30	19
43	4	17	6.5	11	5.3
44	4	25	6.5	15	7.8
45	4	260	150	190	50
46	4	210	54	100	76
Network summary	52	260	0.22	54	16
<i>Remote stations^c</i>					
51	4	210	26	120	92
52	4	57	10	26	21
53	4	240	150	190	43
55	4	270	73	160	82
56	4	62	38	54	11
57	4	30	19	22	5.0
Network summary	24	270	10	96	34

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.12. 1987 ²³⁵U concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	7.3	0.27	3.4	2.9
07	4	4.3	-0.32	1.9	2.0
09	4	2.7	0.57	1.5	0.89
22	4	3.0	-0.081	0.94	1.4
Network summary	16	7.3	-0.32	1.9	0.99
<i>Oak Ridge Reservation stations^b</i>					
08	4	7.3	2.4	4.5	2.4
23	4	4.9	1.3	3.0	1.7
31	4	20	0.81	11	8.2
33	4	1.2	0.76	0.97	0.20
34	4	3.0	-1.3	1.0	1.8
36	4	6.8	0.024	2.3	3.0
40	4	3.5	-0.16	0.97	1.7
41	4	1.8	0.92	1.3	0.36
42	4	1.2	-0.30	0.32	0.61
43	4	3.8	-0.054	1.5	1.6
44	4	5.9	-1.2	2.0	3.1
45	4	12	2.7	6.4	4.1
46	4	6.8	1.9	4.2	2.3
Network summary	52	20	-1.3	3.1	1.1
<i>Remote stations^c</i>					
51	4	11	-2.7	4.2	6.4
52	4	4.3	1.9	3.0	1.0
53	4	24	3.8	12	8.6
55	4	3.5	0.35	2.1	1.3
56	4	7.6	2.2	5.5	2.3
57	4	2.2	0.65	1.2	0.71
Network summary	24	24	-2.7	4.7	2.2

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.4.13. 1987 ²³⁸U concentrations in grass

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	84	5.9	27	38
07	4	9.5	2.5	7.2	3.2
09	4	7.3	4.1	5.6	1.5
22	4	6.2	3.5	4.9	1.2
Network summary	16	84	2.5	11	9.8
<i>Oak Ridge Reservation stations^b</i>					
08	4	19	6.8	12	5.1
23	4	38	26	30	5.2
31	4	30	4.9	16	11
33	4	7.8	3.2	6.2	2.1
34	4	13	9.7	11	1.5
36	4	27	0.092	13	11
40	4	17	4.6	12	5.1
41	4	24	12	15	5.7
42	4	30	3.2	14	12
43	4	8.6	3.8	6.1	2.0
44	4	15	4.6	8.6	4.7
45	4	140	89	100	22
46	4	27	18	23	4.5
Network summary	52	140	0.092	21	7.1
<i>Remote stations^c</i>					
51	4	10	4.3	6.6	2.4
52	4	11	7.3	8.7	1.8
53	4	30	12	21	8.0
55	4	26	5.1	17	11
56	4	32	16	23	7.0
57	4	10	4.1	6.6	2.9
Network summary	24	32	4.1	14	3.7

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

2.5 SOIL AND SEDIMENT



Table 2.5.1. 1987 ⁶⁰Co concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	73	<2.7	<32	30
07	4	46	<24	<31	10
09	4	24	<0	<12	14
22	4	54	<27	<41	16
Network summary	16	73	<0	<29	10
<i>Oak Ridge Reservation stations^b</i>					
08	4	54	<27	<34	14
23	4	27	<22	<24	3.1
31	4	54	<27	<47	14
33	4	54	<27	<41	16
34	4	27	<27	<27	0
36	4	27	<27	<27	0
40	4	54	<27	<47	14
41	4	54	<27	<34	14
42	4	27	<27	<27	0
43	4	27	<27	<27	0
44	4	35	<27	<29	4.1
45	4	54	<22	<39	18
46	4	27	<27	<27	0
Network summary	52	54	<22	<33	3.3
<i>Remote stations^c</i>					
51	4	27	<24	<26	1.4
52	4	27	<22	<26	2.7
53	4	410	<16	<120	190
55	4	27	<27	<27	0
56	4	54	<27	<34	14
57	4	27	<24	<26	1.4
Network summary	24	410	<16	<42	32

^a95% confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.5.2. 1987 ¹³⁷Cs concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	2100	110	730	900
07	4	2300	300	820	970
09	4	1400	430	950	440
22	4	1300	410	660	410
Network summary	16	2300	110	790	330
<i>Oak Ridge Reservation stations^b</i>					
08	4	2400	1400	1800	380
23	4	1200	200	580	450
31	4	1200	510	780	290
33	4	1600	570	910	480
34	4	970	32	440	470
36	4	860	220	620	280
40	4	1300	120	470	560
41	4	350	57	240	130
42	4	320	110	200	93
43	4	1100	320	680	390
44	4	860	320	630	230
45	4	1500	240	770	560
46	4	540	140	370	170
Network summary	52	2400	32	650	140
<i>Remote stations^c</i>					
51	4	590	120	450	230
52	4	920	650	780	120
53	4	840	490	710	160
55	4	1200	920	1100	170
56	4	460	250	350	91
57	4	1500	760	1200	370
Network summary	24	1500	120	760	150

^a95% confidence coefficient about the average.^bSee Fig. 2.4.4.^cSee Fig. 2.4.5.

Table 2.5.3. 1987 ²³⁸U concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	1.7	-1.1	0.42	1.3
07	4	3.0	0.78	1.5	1.0
09	4	4.1	-25	-4.7	13
22	4	2.7	-0.62	1.2	1.5
Network summary	16	4.1	-25	-0.41	3.3
<i>Oak Ridge Reservation stations^b</i>					
08	4	9.2	-1.1	5.1	4.4
23	4	1.9	-2.4	0.14	1.9
31	4	14	-0.54	4.5	6.4
33	4	2.2	0.59	1.4	0.71
34	4	1.8	-780	-200	390
36	4	2.7	-0.14	1.4	1.2
40	4	2.7	-14	-2.7	7.3
41	4	2.2	0.81	1.8	0.64
42	4	0.65	-0.43	0.22	0.46
43	4	1.4	1.0	1.2	0.17
44	4	3.0	-35	-7.8	18
45	4	12	0.35	3.5	5.5
46	4	1.9	-22	-5.8	11
Network summary	52	14	-780	-15	30
<i>Remote stations^c</i>					
51	4	2.7	-0.35	0.72	1.4
52	4	3.0	0.16	1.1	1.3
53	4	1.5	-1.2	-0.41	1.3
55	4	4.6	-24	-5.0	13
56	4	-0.54	-24	-12	13
57	4	2.2	-1.1	0.84	1.4
Network summary	24	4.6	-24	-2.5	3.4

^a95% confidence coefficient about the average.^bSee Fig. 2.4.4.^cSee Fig. 2.4.5.

Table 2.5.4. 1987 ²³⁹Pu concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	35	0.92	18	17
07	4	4.3	3.0	3.7	0.60
09	4	15	7.0	9.8	3.8
22	4	32	2.2	13	14
Network summary	16	35	0.92	11	5.7
<i>Oak Ridge Reservation stations^b</i>					
08	4	38	30	33	3.4
23	4	15	2.4	8.4	6.1
31	4	16	-9.2	6.4	11
33	4	15	5.7	10	4.1
34	4	13	-86	-19	46
36	4	15	3.2	9.9	5.8
40	4	6.8	-27	-5.7	16
41	4	13	0.27	5.5	5.2
42	4	3.2	0.51	2.1	1.2
43	4	7.0	3.5	5.2	1.4
44	4	30	4.1	12	12
45	4	23	-1.1	11	10
46	4	14	5.7	8.6	3.6
Network summary	52	38	-86	6.8	4.7
<i>Remote stations^c</i>					
51	4	13	1.4	8.5	4.9
52	4	17	13	15	1.9
53	4	20	9.7	13	4.9
55	4	22	16	20	2.8
56	4	9.2	6.2	7.2	1.4
57	4	38	19	27	9.2
Network summary	24	38	1.4	15	3.4

^a95% confidence coefficient about the average.^bSee Fig. 2.4.4.^cSee Fig. 2.4.5.

Table 2.5.5. Total Sr concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	410	95	210	140
07	4	130	73	100	27
09	4	210	100	170	52
22	4	760	46	260	330
Network summary	16	760	46	190	87
<i>Oak Ridge Reservation stations^b</i>					
08	4	230	59	130	75
23	4	410	57	180	150
31	4	240	30	150	95
33	4	170	65	120	49
34	4	190	57	94	66
36	4	460	-14	190	200
40	4	140	2.7	45	64
41	4	2400	130	710	1100
42	4	180	110	160	31
43	4	150	22	78	53
44	4	540	26	310	210
45	4	230	-81	76	130
46	4	570	-110	200	280
Network summary	52	2400	-110	190	95
<i>Remote stations^c</i>					
51	4	270	76	170	84
52	4	95	46	70	21
53	4	210	170	200	18
55	4	350	110	240	100
56	4	140	-27	37	74
57	4	190	2.7	61	88
Network summary	24	350	-27	130	41

^a95% confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.5.6. 1987 ²³⁴U concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	510	350	430	87
07	4	430	240	330	83
09	4	430	300	360	56
22	4	1,100	490	770	280
Network summary	16	1,100	240	470	110
<i>Oak Ridge Reservation stations^b</i>					
08	4	810	460	610	150
23	4	350	300	330	26
31	4	730	350	590	170
33	4	410	260	310	69
34	4	300	260	280	15
36	4	1,000	380	550	320
40	4	19,000	1,900	7,100	8,100
41	4	680	430	540	100
42	4	490	380	420	47
43	4	460	230	350	100
44	4	570	250	360	150
45	4	4,100	1,000	2,400	1,300
46	4	1,200	490	810	300
Network summary	52	19,000	230	1,100	750
<i>Remote stations^c</i>					
51	4	270	220	250	26
52	4	620	510	570	46
53	4	760	590	670	68
55	4	540	460	510	34
56	4	300	240	260	28
57	4	700	410	510	140
Network summary	24	760	220	460	70

^a95% confidence coefficient about the average.^bSee Fig. 2.4.4.^cSee Fig. 2.4.5.

Table 2.5.7. 1987 ²³⁵U concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	210	15	65	96
07	4	150	-3.8	79	65
09	4	49	17	33	13
22	4	68	19	35	22
Network summary	16	210	-3.8	53	28
<i>Oak Ridge Reservation stations^b</i>					
08	4	250	23	89	110
23	4	120	11	62	48
31	4	130	20	72	53
33	4	41	17	26	10
34	4	35	5.9	21	15
36	4	320	26	140	130
40	4	1800	350	1100	600
41	4	160	32	93	59
42	4	32	11	24	11
43	4	22	4.9	16	7.8
44	4	300	4.6	98	140
45	4	320	86	200	98
46	4	59	19	40	16
Network summary	52	1800	4.6	150	88
<i>Remote stations^c</i>					
51	4	41	11	24	15
52	4	140	49	92	47
53	4	320	59	200	110
55	4	130	16	67	55
56	4	43	-7.8	18	22
57	4	160	10	61	69
Network summary	24	320	-7.8	76	33

^a95% confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.5.8. 1987 ^{238}U concentrations in soil

Location	No. of samples	Concentration (pCi/kg dry wt)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
03	4	380	220	300	80
07	4	320	220	250	49
09	4	350	220	270	57
22	4	1500	490	990	410
Network summary	16	1500	220	450	190
<i>Oak Ridge Reservation stations^b</i>					
08	4	590	350	470	100
23	4	300	210	240	38
31	4	410	220	340	81
33	4	230	160	210	32
34	4	210	140	170	29
36	4	410	300	340	56
40	4	6800	1500	3200	2500
41	4	510	380	420	64
42	4	350	220	280	58
43	4	300	170	230	63
44	4	620	150	300	220
45	4	2700	860	2200	900
46	4	680	320	490	150
Network summary	52	6800	140	680	310
<i>Remote stations^c</i>					
51	4	250	160	220	42
52	4	510	460	490	31
53	4	650	490	580	72
55	4	490	430	460	22
56	4	260	200	230	30
57	4	780	320	480	210
Network summary	24	780	160	410	66

^a95% confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.4.5.

Table 2.5.9. 1987 fluoride and uranium in soil from ORGDP perimeter^a

New station ID	Number of samples	Concentration ($\mu\text{g/g}$ dry wt)						U (pCi/g dry wt)		
		F			U (total)			Feb.	Oct.	Av
		Feb.	Oct.	Av	Feb.	Oct.	Av	Feb.	Oct.	Av
S18	2	500	X ^b	—	3	3	3.0	2.3	2.3	2.3
S19	2	300	X		2	5	3.5	1.5	3.8	2.7
S20	2	150	X		4	4	4.0	3.0	3.0	3.0
S21	2	300	X		2	5	3.5	1.5	3.8	2.7
S22	2	1050	X		3	4	3.5	2.3	3.0	2.7
S23	2	200	X		2	3	2.5	1.5	2.3	1.9
S24	2	300	X		2	3	2.5	1.5	2.3	1.9
S25	2	200	X		3	4	3.5	2.3	3.0	2.7
S26	2	250	X		2	4	3.0	1.5	3.0	2.3
S27	2	350	X		4	2	3.0	3.0	1.5	2.3
S28	2	120	X		43	41	42.0	32.7	31.2	31.9
S29	2	500	X		6	7	6.5	4.6	5.3	4.9
S30	2	250	X		4	2	3.0	3.0	1.5	2.3

^aSee Fig. 2.5.1.^bX indicates not enough samples were available to complete the analysis.

Table 2.5.10. 1987 concentrations of various elements in stream sediment samples near ORGDP^a

Element		Concentration ($\mu\text{g/g}$ dry wt)							
		SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8
Aluminum	Oct	7,000	5,700	9,000	140,000	130,000	8,600	6,500	5,200
	Nov	15,000	14,000	11,000	14,000	15,000	13,000	5,000	2,600
	Avg.	11,000	9,850	10,000	77,000	72,500	10,800	5,750	3,900
Cadmium	Oct	<0.30	<0.30	<0.30	<0.30	0.30	<0.30	<0.30	<0.30
	Nov	<0.30	1.5	<0.30	<0.30	2.5	<0.30	<0.30	<0.30
	Avg.	<0.30	<0.9	<0.30	<0.30	1.4	<0.30	<0.30	<0.30
Chromium	Oct	33	22	15	39	39	32	9.9	9.4
	Nov	26	41	22	31	260	70	11	6.2
	Avg.	29.5	31.5	18.5	35	149.5	51	10.5	7.8
Copper	Oct	24	12	16	130	49	22	8.1	4.4
	Nov	17	69	30	43	83	68	9.2	2.9
	Avg.	20.5	40.5	23	86.5	66	45	8.7	3.7
Lead	Oct	18.1	12.6	16.6	45	46	19.5	9.1	9.1
	Nov	16	41	22.8	32	94	20	13.9	5.0
	Avg.	17.1	26.8	19.7	38.5	70	19.8	11.5	7.1
Manganese	Oct	270	170	490	720	920	650	2,000	560
	Nov	560	660	610	690	510	600	860	390
	Avg.	415	415	550	705	715	625	1,430	475
Mercury	Oct	6.4	5.3	3.7	5.9	25	7.2	<1.0	<1.0
	Nov	1.2	32	6.0	5.1	33	25	<1.0	<1.0
	Avg.	3.8	18.7	4.9	5.5	29	16.1	<1.0	<1.0
Nickel	Oct	35	33	25	240	27	37	9.8	9.1
	Nov	24	120	43	69	36	69	10	5.2
	Avg.	29.5	76.5	34	154.5	31.5	53	9.9	7.2
Thorium	Oct	<20	<20	<20	<20	<20	<20	<20	<20
	Nov	<20	<20	<20	<20	<20	<20	<20	<20
	Avg.	<20	<20	<20	<20	<20	<20	<20	<20
Uranium	Oct	5	5	6	8	14	7	3	2
	Nov	0.5	1.0	0.9	1.4	4.01	1.2	0.03	<0.2
	Avg.	2.8	3	3.5	4.7	9	4.1	1.5	<1.1
Zinc	Oct	80	51	65	140	150	75	45	27
	Nov	65	140	110	140	160	91	36	14
	Avg.	72.5	95.5	87.5	140	155	83	40.5	20.5

^aSee Fig. 2.5.2.

2.6 EXTERNAL GAMMA



Table 2.6.1. 1987 external gamma radiation measurements

Location	No. of samples	Concentration ($\mu\text{R}/\text{h}$)			
		Max	Min	Av	95% cc ^a
<i>ORNL perimeter stations^b</i>					
3	10	11	3.0	6.3	1.9
7	10	11	1.3	5.5	2.2
9	10	12	2.0	7.0	2.3
21	10	10	2.3	5.8	1.9
22	10	12	4.3	7.4	1.7
Network summary	50	12	1.3	6.4	0.88
<i>Oak Ridge Reservation stations^b</i>					
8	10	8.3	0.67	4.9	1.8
23	10	9.3	1.3	5.2	1.8
Network summary	20	9.3	0.67	5.1	1.2
<i>Clinch River stations^c</i>					
41	4	12	5.3	8.3	3.0
42	4	22	3.3	11	7.6
60	4	7.7	3.7	5.9	1.9
61	4	12	8.0	10	1.9
64	4	21	16	18	2.2
65	4	25	19	21	2.5
66	4	32	21	24	5.4
67	4	14	11	12	1.1
68	3	18	4.7	10	7.8
69	3	7.3	4.0	5.2	2.1
Network summary	39	32	3.3	13	2.2
<i>Remote stations^d</i>					
51	2	1.7	0.0	0.83	1.7
52	2	2.3	2.3	2.3	0
53	2	3.0	2.3	2.7	0.67
55	2	4.0	2.3	3.2	1.7
56	2	2.0	1.0	1.5	1.0
57	2	5.0	3.0	4.0	2.0
Network summary	12	6.0	0.0	2.7	0.88

^aNinety-five percent confidence coefficient about the average.

^bSee Fig. 2.4.4.

^cSee Fig. 2.6.1.

^dSee Fig. 2.4.5.



3. RADIATION AND CHEMICAL DOSE



All data for this section are presented in Vol. 1.



4. REMEDIAL ACTION



All data for this section are presented in Vol. 1.



5. SOLID WASTE MANAGEMENT



Table 5.1.1. 1987 ORGDP recycled waste

Waste description	Quantity (kg)
Water treatment chemicals sent to PGDP	8440
Lime, janitorial supplies used by maintenance personnel	2600
Drums reused for oils, solvents	200 (drums)
Trapping media used by process support and chemical operations	18

**Table 5.2.1. Y-12 Plant remedial action
waste data for 1987**

Waste	Quantity (kg)
Nonhazardous	4,000
Hazardous	348,000
Mixed	0

Table 5.3.1. ORNL waste treatment data for 1987

Type	Quantity (kg)	Treatment	Residue type	Quantity (kg/year)
Hazardous	41	Neutralization	None	
Hazardous	258	Detonation	None	
Hazardous	236	Evaporation	Nonhazardous glass	21.6

Table 5.3.2. Y-12 Plant on-site waste disposal during 1987

Waste	Method	Quantity (kg)
Sanitary/industrial	Landfill	45,874,300 ^a
Solid/low level	Landfill	1,407,600
Classified	Landfill	175,300

^aThis category consists of wastes disposed at the Y-12 centralized sanitary landfill II and also includes construction/demolition spoils (dirt, concrete, wood, etc.).

Table 5.3.3. ORNL on-site waste disposal during 1987

Waste	Quantity	Disposal method
Hazardous (kg)	130	Release to air
Sanitary		
Nonradiological (m ³)	29.97	Landfilled at ORNL contractors' landfill
Radiological (m ³)	9.48	Buried at ORNL SWSA 6
Asbestos		
Radiological (kg)	575	Buried at ORNL SWSA 6
Industrial (kg)	4,637	Landfilled at ORNL landfill
Scrap metal—	71,327	Buried at ORNL SWSA 6
Radiological (kg)		

Table 5.3.4. ORGDP waste disposal at DOE Oak Ridge Facilities during 1987

Waste	Quantity	Disposal method
Industrial nonradiological (kg)	47	Trapped/vented to atmosphere
Asbestos nonradiological (kg)	33,518	Sent to landfill at Y-12 Plant
Miscellaneous nonradiological (m ³)	770	Buried at ORGDP
nonhazardous (m ³)	77,654	Sent to landfill at Y-12 Plant

Table 5.3.5. Y-12 Plant 1987 off-site waste disposal

Waste	Disposal method	Quantity (kg)
Oil and solvents	Fuels program; incineration; recycle/recovery	0
PCB liquid	Incineration	222,200
PCB solids	Landfill	97,400
Scrap metal (clean)	Public sale	620,600

Table 5.3.6. ORNL off-site waste disposal activities during 1987

Waste	Quantity (kg)	Disposal method	Location
Hazardous	7,825	Incineration	Ensco, El Dorado, Ark.
Hazardous	37,223	Landfilling	Chem Waste, Emelle, Ala.
Hazardous ^a	133,975	Landfilling	Rollins, Baton Rouge, La.
Hazardous ^b	58,555	Metal reclamation	Demco, Coalfield, Tenn.
Hazardous	1,621	Incineration	Rollins, Deer Park, Tex.
PCB nonradiological	8,346	Incineration	Rollins, Deer Park, Tex.
PCB nonradiological	1,755	Incineration	Ensco, El Dorado, Ark.
PCB nonradiological ^c	1,547	Detoxification	Ensco, White Bluff, Tenn.

^aLead-contaminated soil from remedial action cleanup.

^bPhotographic waste recycled for silver content.

^cPCB transformers.

Table 5.3.7. ORGDP off-site disposal activities during 1987

Waste description	Quantity (kg)	Ultimate disposal
Scrap metal—nonradiological	1,640,000	Sold to public
Batteries (hazardous; solid)	5,200	Sold to public (for recycle)
Film (hazardous; solid)	27	Sold to public (for recovery)
Chemicals	3,600	Sold to public
Office furniture, tires, etc.	22,200	Sold to public
Laboratory chemicals, janitorial supplies, etc.	1,130	Commercial disposal facility—United States Pollution Control Inc. Okla. City, Okla.
Mercaptan	260	Lake City, Tenn. Public Utility

Table 5.3.8. Waste placed in storage on site at the Y-12 Plant in 1987

Waste	Quantity (kg)
Low level	7,100
Mixed	59,200
PCB	24,100
PCB/uranium	21,800
Scrap metal (contaminated)	126,500
Roofing materials	3,109,000
Other	118,100

Table 5.3.9. Y-12 Plant total waste in storage at the end of 1987^a

Waste	Quantity (kg)
Low level	13,500
Mixed	16,560,800
Hazardous	110,700
PCB	13,000
PCB/uranium	182,100
Noncontaminated oils/solvents	131,800
Scrap metal	
Uncontaminated	48,000
Uranium-contaminated	660,500
Mercury-contaminated soil	393,000

^aTotals do not include United Nuclear Corporation wastes.

Table 5.3.10. Waste placed in storage at ORNL during 1987

Waste	Quantity	
	Long-term (kg)	Short-term (kg)
Hazardous		197,000
Mixed	12,900	
PCB		
Nonradiological		15,200
Radiological	1,250	
Transuranic		
Chemical hazardous	136	
Radioactive hazardous	500	
Low-level ^a (m ³)	15.9	
Asbestos—nonradiological		33,500
Asbestos—radiological		575
Scrap metal—nonradiological		670,000
Scrap metal—radiological		71,300
Miscellaneous radiological		2,130

^aLow-level concentrate sludge.

Table 5.3.11. Waste remaining in storage at ORNL at year's end for 1987

Waste	Quantity (kg)
Hazardous	8,580
Mixed	74,200
PCB	
Nonradiological	2,740
Radiological	1,260
Transuranic	
Chemical hazardous	96,000
Radioactive hazardous	466,000
Low-level ^a (m ³)	15.9

^aIn storage at ORGDP.**Table 5.3.12. 1987 ORGDP waste placed in on-site storage**

Waste description	Quantity	Type storage ^a		Ultimate disposal
		Short-term	Long-term	
Scrap metal (kg)	91,000		X	Under review
PCB liquids (L)	190	X		TSCA incinerator
PCB solids (kg)	12,260	X		TSCA incinerator
Plating solutions (kg)	450		X	Under review
Solvents (L)	56,800	X		TSCA incinerator
Oils (L)	34,400	X		TSCA incinerator
Sludge from K-1232 treatment of Y-12 Plant wastewaters (kg)	15,000		X	Under review
Laboratory waste (L)	15,100	X		Analyses and treatment plan under review
Sludge from close-out of K-1407-B/C ponds (L × 10 ⁶)	8.4		X	Delisting effort under way
Low-level contaminated shoes, clothes, etc. (kg)	16,300		X	Under review
Spill cleanup debris (kg)	4,600	X		TSCA incinerator
Photographic solutions (L)	7,200	X		ORNL for silver recovery
Aerosol contents (L)	1,500	X		TSCA incinerator
TSCA ash (kg)	3,400		X	Under review
Gas cylinders (kg)	68		X	Under review

^aShort-term storage = <5 years; long-term storage = >5 years.

**Table 5.3.13. Waste placed in storage at ORGDP
from other DOE facilities during 1987**

Waste description	Quantity (L)	Type storage ^a		Ultimate disposal
		Short-term	Long-term	
Acetonitrile	26,200	X		TSCA incinerator
Waste oils, solvents	157,000	X		TSCA incinerator

^aShort-term storage = <5 years; long-term storage = >5 years.

Table 5.3.14. Total waste in storage at ORGDP—end of 1987

Waste description	Quantity (L)	Ultimate disposal
Waste oils (low-level waste)	9,800	Incineration
K-1407-B/C pond sludge (mixed)	24,000 (drums)	Under review
K-1420 nickel electroplating solution (mixed)	1,900	Under review
K-1420 hydrochloric acid (mixed)	760	Under review
K-1420 nitric acid (mixed)	12,500	Under review
K-1420 electroless nickel solution (mixed)	18,900	Under review
K-1407-B/C pond sludge (mixed in surface impoundment)	11,300,000	To be fixed in concrete
K-1035 circuit board solutions (hazardous)	378	Commercial disposal
Spent solvents, oils, & PCB liquids (mixed)	462,000	Incineration
Paint waste (mixed)	7,570	Incineration
K-1232 spent carbon filter agent (mixed)	41,600	Under review
Sludges from treatment of wastewaters	4,900 (drums)	Under review
PCB solids and liquids (PCB radiological)	847 (drums)	Incineration
Decontamination solutions (mixed)	229 (drums)	Under review
Waste oils from WMCO (mixed)	790 (drums)	Incineration

6. SPECIAL STUDIES



All data for this section are presented in Vol. 1.



7. QUALITY ASSURANCE



**Table 7.1.1. Example of inorganic QC results for sampling
GW-245—Y-12 Plant, 1987**

Parameter	GW-245	Field replicate	Equipment rinse
Concentration (mg/L)			
As	<0.005	<0.005	—
Ba	25.1	24.2	0.0057
Cd	0.26	0.26	<0.0030
Cr	<0.01	<0.01	<0.10
Pb	0.007	0.005	<0.050
Se	<0.005	<0.005	—
Ag	<0.01	<0.01	0.01
Hg	0.0003	0.0003	
TOC ^a	2.5	1.7	<1.0
	2.1	2.2	
	2.2	2.1	
	2.0	1.3	
pH (units)	5.7	5.7	
	5.7	5.7	
	5.7	5.7	
	5.7	5.7	
Activity (pCi/L)			
Alpha	75	75	
Beta	3,690	4,272	
Suspended solids (mg/L)			
	54	32	
U (mg/L)			
	0.106	0.115	
Conductivity (μ mho/cm)			
	18,500	18,600	
	18,600	18,600	
	18,600	18,600	
	18,600	18,700	
Alkalinity (mg/L)			
CO ₃	<1	<1	
HCO ₃	271	268	

^aTotal organic carbon.

Table 7.1.2 Example of organic QC data at
GW-245—Y-12 Plant, 1987

Parameter	GW-245	Field replicate	Field blank	Laboratory blank
<i>Volatile organic compounds (µg/L)</i>				
Chloromethane	ND ^a	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
Methylene chloride	7 ^b	7 ^b	3 ^{b,c}	2 ^c
Acetone	2 ^c	6 ^c	4 ^c	ND
Carbon disulfide	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	ND	ND
1,1-dichloroethane	ND	ND	ND	ND
<i>Trans</i> -1,2-dichloroethene	ND	ND	ND	ND
Chloroform	6 ^b	6 ^b	3 ^{b,c}	12
1,2-dichloroethane	ND	ND	ND	ND
2-butanone	8 ^{b,c}	7 ^{b,c}	8 ^{b,c}	11
1,1,1-trichloroethane	ND	1 ^c	ND	ND
Carbon tetrachloride	ND	ND	ND	ND
Vinyl acetate	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND
1,1,2,2-tetrachloroethane	ND	ND	ND	ND
1,2-dichloropropane	ND	ND	ND	2 ^c
<i>Trans</i> -1,3-dichloropropene	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND
Chlorodibromomethane	ND	ND	ND	ND
1,1,2-trichloroethane	ND	ND	ND	ND
Benzene	ND	ND	ND	ND
<i>Cis</i> -1,3-dichloropropene	ND	ND	ND	ND
2-chloroethylvinyl ether	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND
2-hexanone	1 ^{b,c}	1 ^{b,c}	1 ^{b,c}	4 ^c
4-methyl-2-pentanone	ND	ND	ND	2 ^c
Tetrachloroethene	9	8	ND	ND
Toluene	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Styrene	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND
<i>Surrogate Recovery (%)</i>				
Toluene-D8	104.0	106.0	108.0	108.0
Bromofluorobenzene	104.0	106.0	104.0	108.0
1,2-dichloroethane D-4	96.0	96.0	94.0	92.0

^aND = not detected.

^bCompound found in lab blank.

^cEstimated value.

Table 7.2.1. Energy Systems environmental analysis procedures for water

Parameter	Energy Systems procedure	EPA method	Lowest concentration reported ^a
Alkalinity, CaCO ₃ (mg/L)	EC-1005	310.1	5
Gross alpha activity (pCi/L)	EC-1010		1.0
Gross beta activity (pCi/L)	EC-1010		4.0
²⁴¹ Am and ²⁴⁴ Cm (pCi/L)			
²⁴¹ Am	EC-1020		3.0
²⁴⁴ Cm	EC-1020		(ORNL) 0.05
			3.0
			(ORNL) 0.05
As and Se, gaseous hydride-AA (mg/L)			
As	EC-1040	206.3	0.002
Se	EC-1040	270.3	0.002
Asbestos (fibers/L)	EC-1050		0.3 × 10 ⁶
Biochemical oxygen demand, 5-d (mg/L)	EC-1060	405.1	5
Bromide, spectrophotometric (mg/L)	EC-1070	ASTM D 1216-77	0.1
Chemical oxygen demand (low level) titration method (mg/L)	EC-1090	410.2	5
Chloride, titration, HgNO ₃ (mg/L)	EC-1120	325.3	2
Anions, ion chromatograph ^b (mg/L)			
Chloride	EC-1130	300.0	2
Nitrate (N)	EC-1130	300.0	1
Sulfate	EC-1130	300.0	5
Phosphate (P)	EC-1130	300.0	2
TRCl ₂ , amperometric (mg/L)	EC-1150	330.1	0.05
			(PGDP) 0.01
Cr (VI), spectrophotometric (mg/L)	EC-1180	USGS ^c	0.01
Coliform bacteria, fecal (colonies/100 mL)	EC-1190	909C Std Mth ^d	1
Coliform bacteria, total (colonies/100 mL)	EC-1200	909A Std Mth	1
Color (color unit)	EC-1220	110.2	1
Conductance, specific (μmho/cm)	EC-1240	120.1	0.5
Cyanide, total (5-cm cell)	EC-1270	335.2	0.004
Dissolved oxygen, membrane electrode method (mg/L)	EC-1300	360.1	0.1
Fluoride (mg/L)	EC-1330	340.2	0.1
Gamma-ray emitters (pCi/L)	EC-1340		2.5
Herbicides (chlorinated phenoxy acid), GC method (μg/L)			
2,4-D	EC-1370	509B Std Mth	0.1
Silvex	EC-1370	509B Std Mth	0.02
¹³¹ I (pCi/L)	EC-1380		4.0
Hg, total (mg/L)	EC-1390	245.1	0.0002
Methylene-blue-active substances (mg/L)	EC-1450	425.1	0.05
²³⁷ Np (pCi/L)	EC-1460		1.0
			(ORNL) 4 × 10 ⁻²
N (mg/L)			
Ammonia, spectrophotometric	EC-1470	350.2	0.2
Ammonia, SIE	EC-1480	350.3	0.2
Kjeldahl (total), spectrophotometric	EC-1500	351.3	0.2
Kjeldahl (total), volumetric	EC-1510	351.3	0.2
Kjeldahl (total), SIE	EC-1520	351.4	0.2
Nitrate, brucine method	EC-1530	352.1	0.1
Nitrate-nitrite, Cd-Redn.	EC-1540	353.3	0.1
N-nitrosomorpholine, spectrophotometric (mg/L)	EC-1550		1.0
O&G, gravimetric (mg/L)	EC-1560	413.1	5
O&G, infrared (mg/L)	EC-1570	413.2	2.0
Pentachlorophenol, HPLC (μg/L)	EC-1583		50

Table 7.2.1 (continued)

Parameter	Energy Systems procedure	EPA method	Lowest concentration reported ^a
Pesticides (organochlorine), GC method ($\mu\text{g/L}$)			
Lindane	EC-1586	608 ^e	0.01
Endrin	EC-1586	608	0.05
Toxaphene	EC-1586	608	1.0
Methoxychlor	EC-1586	509A Std Mth	0.2
Phenols ($\mu\text{g/L}$)			
Without conc.	EC-1590	420.1	50
With conc.	EC-1590	420.1	5
pH, electrometric (units)	EC-1600	150.1	Nearest 0.1
P (all forms), spectrophotometric (mg/L)	EC-1610	365.2	0.1
Pu isotopes (pCi/L)	EC-1615		1.0 (ORNL) 5×10^{-2}
PCBs, each ($\mu\text{g/L}$)	EC-1620	608	0.5
Priority pollutants, organic (base/neutral/acid), each ($\mu\text{g/L}$)	EC-1701	625	Mostly 10-50 ^f
Priority pollutants, organic (volatile, purgeable), each ($\mu\text{g/L}$)	EC-1704	624	Mostly 10-30 ^g
Solids			
Dissolved (mg/L)	EC-1760	160.1	10
Settleable [mL/(L·h)]	EC-1770	160.5	1.0
Total (mg/L)	EC-1790	160.3	10
Undissolved (mg/L)	EC-1800	160.2	4
Volatile (mg/L)	EC-1820	160.4	5
⁹⁰ Sr (pCi/L)	EC-1840		4.0 (ORNL) 2.0
Sulfate, turbidimetric method (mg/L)	EC-1850	375.4	5
⁹⁹ Tc (pCi/L)	EC-1860		300
Th isotopes (pCi/L)	EC-1870		0.4 (ORNL) 5×10^{-2}
Th, spectrophotometric (mg/L)	EC-1871		2×10^{-3}
Total organic carbon, combustion or oxidation (mg/L)	EC-1873	415.1	1
Tritium (pCi/L)	EC-1879		5000 (ORNL) 1500
Turbidity (NTU)	EC-1880	180.1	0.05
U (total), fluorometric (mg/L)	EC-1910		1×10^{-3}
U isotopes (pCi/L)	EC-1920		1 (ORNL) 5×10^{-2}
U isotopic abundances (wt %)	EC-1960		0.001

^aThe lowest concentration reported (LCR) may vary among specific samples, depending on interferences in the sample matrix. However, these LCRs have been assigned to accommodate most minor interferences. Some of the Energy Systems LCRs are higher than the method detection limits (MDLs) listed by EPA. This is consistent with guidance from EPA. However, any data reported below the MDLs must be supported by sound documentation. The LCRs applied by the Energy Systems laboratories meet the needs of the programs they support.

^bApproved for drinking water only (reagent water).

^c*Methods for Analysis of Inorganic Substances in Water and Fluvial Sediment*, U.S. Department of the Interior, U.S. Geological Survey, Open-File Report 78-679; or "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," N. W. Skougstad et al., *Techniques of Water-Resources Investigation*, Book 5, Chapter A1, U.S. Geological Survey, 1979.

^dAll references to *Standard Methods* for the 15th Edition, 1980.

^e*Federal Register* 49 (209), 43, 261, October 26, 1984.

^fFor 81 compounds.

^gFor 31 compounds.

Table 7.2.2. Energy Systems atomic absorption and ICP environmental analysis procedures for waters

Element	Lowest concentration reported ^a (mg/L)		
	MMES EC-1400 EPA 200 series flame AA	MMES EC-1400 EPA 200 series graphite furnace AA	MMES EC-1410 EPA 200.7 ICP
Ag	0.05	0.01	0.03
Al	0.3	0.01	0.01
As	<i>b</i>	0.005	0.1
Ba	0.2	0.01	0.005
Ca	0.05	<i>b</i>	0.01
Cd	0.02	0.002	0.01
Cr	0.2	0.01	0.05
Cu	0.05	0.004	0.01
Fe	0.05	<i>b</i>	0.01
K	0.2	<i>b</i>	2.0
Li	0.01	<i>b</i>	0.02
			(ORNL) 0.2
Mg	0.02	<i>b</i>	0.002
Mn	0.03	0.01	0.005
Mo	0.2	0.01	0.05
Na	0.05	<i>b</i>	0.04
			(ORNL) 0.5
Ni	0.1	0.01	0.05
Pb	0.2	0.004	0.2
Se	<i>b</i>	0.005	0.2
Zn	0.02	<i>b</i>	0.005

^aThe lowest concentration reported (LCR) may vary among specific samples, depending on interferences in the sample matrix. However, these LCRs have been assigned to accommodate most minor interferences. Some of the Energy Systems LCRs are higher than the method detection limits (MDLs) listed by EPA. This is consistent with guidance from EPA. However, any data reported below the MDLs must be supported by sound documentation. The LCRs applied by Energy Systems laboratories meet the needs of the programs they support.

^bElement not normally determined using this technique.

Table 7.2.3. Energy Systems environmental analysis procedures for air

Parameter	Energy Systems procedure	NIOSH ^a or EPA method	Lowest concentration reported ^b
Gross alpha, beta, air filters, radiochemistry (pCi/m ³)	EC-2100	APHA 601, 602 ^c	
Alpha			0.005
Beta			0.025
Dustfall, gravimetric	EC-2270		<i>d</i>
Fluoride, air, SIE (μg/sample)	EC-2360		5
Fluoride, stacks, SIE (μg/m ³)	EC-2370		30
Gamma-ray spec., air filters	EC-2400		<i>d</i>
¹³¹ I, gamma-ray spec., air filter (pCi/filter)	EC-2420		2.5
Metals in air particulates, emission spec. (μg/sample)	EC-2440		For 48 metals, mostly 1-10
Air filters, radiochemistry (pCi/filter)			
Pu	EC-2500	EPA-680/4-75-001	0.04
⁹⁰ Sr	EC-2580		2
⁹⁹ Tc	EC-2600		300
Th alpha isotopes, radiochemistry (pCi/filter)	EC-2640		0.04
U, air filters, fluorometric (μg/sample)	EC-2850		0.05
U isotopes, air filters, radiochemistry (pCi/filter)	EC-2870	EPA-680/4-75-001	0.04
U, stack gases, spec./fluoro. (μg/m ³)	EC-2890		1.7
Dichlorotetrafluoroethane, GC method (mg/m ³)	IHA-230	NIOSH S108	3500
Diocetyl phthalate, air, GC method (mg/m ³)	IHA-235	NIOSH S40	2
Formaldehyde, air (mg/m ³)	IHA-237	NIOSH 125	0.1
Isopropanol, air (mg/m ³)	IHA-240	NIOSH S64	180
Oil mist, air, infrared (mg/m ³)	IHA-247		0.5
Organic solvents, air, GC method (mg/sample)	IHA-250	NIOSH 127	18 cpds; 0.01 to 1.0
Pentachlorophenol, air, HPLC (mg/m ³)	IHA-260	NIOSH S297	0.27
PCBs, air, GC (μg/m ³)	IHA-270	NIOSH 244	10
Quinoline, air	IHA-273		<i>d</i>
Toluene diisocyanate, air (μg/m ³)	IHA-239	NIOSH 141	7
Tributyl phos. air, GC method (mg/m ³)	IHA-285	NIOSH S208	2.7
Vinyl chloride, air, GC method (μg/m ³)	IHA-294	NIOSH 178	8

^aNIOSH *Manual of Analytical Methods*, 2nd ed., U.S. Dept. of Health, Education, and Welfare, 1977.

^bThe lowest concentration reported (LCR) may vary among specific samples, depending on interferences in the sample matrix. However, these LCRs have been assigned to accommodate most minor interferences. Some of the Energy Systems LCRs are higher than the method detection limit (MDLs) listed by EPA. This is consistent with guidance from EPA. However, any data reported below the MDLs must be supported by sound documentation. The LCRs applied by Energy Systems laboratories meet the needs of the programs they support.

^cAPHA *Methods*, American Public Health Assoc., 1977.

^dProcedure in preparation.

Table 7.2.4. Energy Systems environmental analysis procedures for soil and sediment

Parameter	Energy Systems procedure	EPA method	Lowest concentration reported ^a
Fluoride	EC-3050		<i>b</i>
Gamma-ray spectrum analysis	EC-3070		<i>b</i>
Hg (total), flameless atomic absorption (mg/kg)	EC-3100	245.5	0.2
Metals, atomic absorption	EC-3200	200 Series	<i>c</i>
Metals, inductively coupled plasmaoptical emission spectrometric (ICP-OES)	EC-3250	200.7	<i>c</i>
Np, direct gamma spectrum	EC-3300		<i>b</i>
²³⁷ Np, radiochemical (pCi/kg)	EC-3305		20
Pu, radiochemical (pCi/kg)	EC-3360		20
PCBs, gas chromatographic (mg/kg)	EC-3400		0.1
⁹⁰ Sr, radiochemical (pCi/kg)	EC-3500	704 Std Mth ^d	200
⁹⁹ Tc, radiochemical (pCi/kg)	EC-3550		2 × 10 ⁴
Th, spectrophotometric (mg/kg)	EC-3600		3
Th (alpha-emitting) isotopes, radiochemical (pCi/kg)	EC-3650		4
U (total), fluorometric (mg/kg)	EC-3700		0.5
U (total and isotopic), isotope dilution mass spectrometric (ng)	EC-3740		10
U isotopes, radiochemical (pCi/kg)	EC-3780		4

^aThe lowest concentration reported (LCR) may vary among specific samples, depending on interferences in the sample matrix. However, these LCRs have been assigned to accommodate most minor interferences. Some of the Energy Systems LCRs are higher than the method detection limits (MDLs) listed by EPA. This is consistent with guidance from EPA. However, any data reported below the MDLs must be supported by sound documentation. The LCRs applied by Energy Systems laboratories meet the needs of the programs they support.

^bProcedure in preparation.

^cSee Table 7.2.2.

^dReferences to Standard Methods are from the 14th Edition, 1975.

Table 7.2.5. Energy Systems environmental analysis procedures for biota

Parameter	Energy Systems procedure	EPA method	Lowest concentration reported ^a
Fluoride in vegetation (mg/kg)	EC-4100		3
Gamma-ray spectrometry of deer muscle	EC-4130		<i>b</i>
Gamma-ray spectrometry of fish	EC-4150		<i>b</i>
Gamma-ray spectrometry of vegetation	EC-4170		<i>b</i>
¹³¹ I and ⁹⁰ Sr in raw milk (pCi/L)	EC-4180		
¹³¹ I			1
⁹⁰ Sr			1
Metals in fish, atomic absorption, furnace AA (mg/kg)	EC-4250	600/4-81-055 ^c	
Cd			0.01
Cr			0.05
Cu			0.10
Ni			0.50
Pb			0.05
Metals in vegetation, atomic absorption, flame AA (mg/kg)	EC-4300		
Cd			0.5
Cr			3.0
Cu			2.0
Ni			3.5
Zn			0.5
Pu isotopes in fish (pCi/kg)	EC-4360		20 (ORNL) 4
Pu isotopes in vegetation (pCi/kg)	EC-4380		40 (ORNL) 4
PCBs in fish and animal tissue	EC-4400	600/4-81-055 ^c	0.1
⁹⁰ Sr in fish (pCi/kg)	EC-4600		1000 (ORNL) 200
⁹⁰ Sr in vegetation (pCi/kg)	EC-4620		1000 (ORNL) 200
⁹⁹ Tc in fish	EC-4630		<i>b</i>
⁹⁹ Tc in vegetation	EC-4635		<i>b</i>
Th isotopes in vegetation (pCi/kg)	EC-4640		40 (ORNL) 4
U (total) in vegetation (mg/kg)	EC-4700		0.5
U (total and isotopic) in vegetation (ng/sample)	EC-4720		10
U isotopes in animal tissue	EC-4800		<i>b</i>
U isotopes in vegetation (pCi/kg)	EC-4840		40 (ORNL) 4

^aThe lowest concentration reported (LCR) may vary among specific samples, depending on interferences in the sample matrix. However, these LCRs have been assigned to accommodate most minor interferences. Some of the Energy Systems LCRs are higher than the method detection limit (MDLs) listed by EPA. This is consistent with guidance from EPA. However, any data reported below the MDLs must be supported by sound documentation. The LCRs applied by Energy Systems laboratories meet the needs of the programs they support.

^bProcedure in preparation.

^c*Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissue*, EPA, October 1980.

Table 7.2.6. EPA EMSL-LV Intercomparison Radionuclide Control Program—ORNL, 1987

Analysis and sample date	Values (pCi/unit ^a)		Ratio (ORNL/EPA)	Performance evaluation
	EPA	ORNL		
<i>Water</i>				
³ H				
6/87	2895 ± 357	2300	0.79	Unacceptable
10/87	4492 ± 449	4233	0.94	Acceptable
⁵¹ Cr				
6/87	41 ± 5	34	0.83	Acceptable
10/87	70 ± 5	72	1.03	Acceptable
⁶⁰ Co				
2/87	50 ± 5	48	0.96	Acceptable
6/87	64 ± 5	64	1.00	Acceptable
10/87	15 ± 5	16	1.07	Acceptable
⁶⁵ Zn				
2/87	91 ± 5	95	1.04	Acceptable
6/87	10 ± 5	11	1.10	Acceptable
10/87	46 ± 5	48	1.04	Acceptable
⁹⁰ Sr				
5/87	20 ± 1.5	17	0.85	Acceptable
¹⁰⁶ Ru				
2/87	100 ± 5	88	0.88	Acceptable
6/87	75 ± 5	62	0.83	Acceptable
10/87	61 ± 5	59	0.97	Acceptable
¹³⁴ Cs				
2/87	59 ± 5	49	0.83	Acceptable
6/87	40 ± 5	35	0.88	Acceptable
10/87	25 ± 5	24	0.96	Acceptable
¹³⁷ Cs				
2/87	87 ± 5	84	0.97	Acceptable
6/87	80 ± 5	80	1.00	Acceptable
²²⁶ Ra				
3/87	7.3 ± 1.1	7.6	0.97	Acceptable
9/87	9.7 ± 1.5	9.3	0.96	Acceptable
10/87	61 ± 5	59	0.97	Acceptable
²³⁹ Pu				
3/87	16.7 ± 1.7	15.8	0.95	Acceptable
9/87	5.3 ± 0.53	5.0	0.94	Acceptable
U				
3/87	8.6 ± 6	8.0	0.93	Acceptable
10/87	13.0 ± 6	14	1.08	Acceptable
Gross alpha				
1/87	11 ± 5	13.5	1.23	Acceptable
3/87	3 ± 5	3	1.00	Acceptable
6/87	11 ± 5	5.7	0.52	Acceptable
7/87	5 ± 5	7	1.00	Acceptable
9/87	4 ± 5	2.33	0.58	Acceptable

Table 7.2.6 (continued)

Analysis and sample date	Values (pCi/unit ^a)		Ratio (ORNL/EPA)	Performance evaluation
	EPA	ORNL		
Gross beta				
1/87	10 ± 5	22	2.2	Unacceptable
3/87	13 ± 5	8	0.62	Acceptable
6/87	7 ± 5	10	1.43	Acceptable
7/87	5 ± 5	5	1.00	Acceptable
9/87	12 ± 5	11.3	0.92	Acceptable
<i>Air filters</i>				
⁹⁰ Sr				
2/87	17.0 ± 1.5	14	0.82	Acceptable
¹³⁷ Cs				
2/87	8 ± 1.5	9	1.12	Acceptable
8/87	10 ± 5	10	1.00	Acceptable

^aUnit for water is "liter." Unit for air is "filter."

Table 7.2.7. EPA EMSL-LV Intercomparison Radionuclide Control Program—ORGDP, 1987

Analysis and sample date	Values (pCi/unit ^a)		Ratio (ORGDP/EPA)	Performance Evaluation
	EPA	ORGDP		
<i>Water</i>				
⁶⁰ Co				
4/87	8.00 ± 5.00	7.67 ± 1.15	0.96	Acceptable
¹³⁴ Cs				
4/87	20 ± 5	22.3 ± 3.78	1.12	Acceptable
¹³⁷ Cs				
4/87	15 ± 5	15 ± 1	1.00	Acceptable
²³⁹ Pu				
1/87	16.7 ± 1.67	15.5 ± 0.61	0.93	Acceptable
8/87	5.30 ± 0.53	5.33 ± 1.52	1.01	Acceptable
U				
2/87	8.0 ± 6.0	9.0 ± 0.0	1.12	Acceptable
4/87	5.0 ± 6.0	5.0 ± 0.0	1.00	Acceptable
8/87	13.0 ± 6.0	13.7 ± 0.58	1.05	Acceptable
Gross alpha				
1/87	11.0 ± 5.0	9.67 ± 0.58	0.88	Acceptable
3/87	3.0 ± 5.0	3.3 ± 0.58	1.10	Acceptable
4/87	14.0 ± 5.0	16.7 ± 3.05	1.19	Acceptable
5/87	11.0 ± 5.0	15.3 ± 1.52	1.39	Acceptable
7/87	5.0 ± 5.0	5.33 ± 1.52	1.07	Acceptable
Gross beta				
1/87	10.0 ± 5.0	12.0 ± 0.0	1.20	Acceptable
4/87	43.0 ± 5.0	46.3 ± 2.31	1.08	Acceptable
5/87	7.0 ± 5.0	14.0 ± 1.73	0.50	Acceptable
7/87	5.0 ± 5.0	5.33 ± 0.58	1.07	Acceptable
<i>Air filters</i>				
⁹⁰ Sr				
4/87	17.0 ± 1.50	16.0 ± 2.85	0.94	Acceptable
8/87	10.0 ± 1.50	5.67 ± 0.58	0.57	Unacceptable
¹³⁷ Cs				
4/87	8.00 ± 5.0	8.33 ± 3.2	1.04	Acceptable
8/87	10.0 ± 5.0	11.3 ± 2.08	1.33	Acceptable
Gross alpha				
4/87	14.0 ± 5.0	16.7 ± 3.05	1.19	Acceptable
8/87	10.0 ± 5.0	8.33 ± 1.15	0.83	Acceptable
Gross beta				
4/87	43.0 ± 5.0	46.3 ± 2.31	1.08	Acceptable
8/87	30.0 ± 5.0	33.0 ± 1.15	1.10	Acceptable

^aUnit for water is "liter." Unit for air is "filter."

Table 7.2.8. EPA EMSL-LV Intercomparison Radionuclide Control Program—Y-12 Plant, 1987

Analysis and sample date	Values		Ratio (Y-12/EPA)	Performance Evaluation ^a
	EPA	Y-12		
<i>Water (pCi/L)</i>				
³ H				
6/87	2895 ± 359	3167	1.09	Acceptable
10/87	4492 ± 449	5003	1.11	Acceptable
⁵¹ Cr				
10/87	70 ± 5	69	0.99	Acceptable
⁶⁰ Co				
2/87	50 ± 5	50	1.00	Acceptable
4/87	8.0 ± 10	10.3	1.29	Acceptable
10/87	16.0 ± 10	16.3	1.02	Acceptable
⁶⁵ Zn				
2/87	91 ± 5	101	1.11	Acceptable
10/87	46 ± 5	52	1.13	Acceptable
¹⁰⁶ Ru				
10/87	61 ± 5	57	0.93	Acceptable
¹³⁴ Cs				
2/87	59 ± 5	49	0.83	Acceptable
4/87	20 ± 10	17.3	0.86	Acceptable
10/87	16.0 ± 10	14.7	0.92	Acceptable
¹³⁷ Cs				
2/87	87 ± 5	87	1.00	Acceptable
4/87	15.0 ± 10	15.3	1.02	Acceptable
10/87	51 ± 5	49	0.96	Acceptable
10/87	24 ± 10	22.7	0.95	Acceptable
²²⁶ Ra				
3/87	7.3 ± 1.1	8.0	1.10	Acceptable
4/87	3.9 ± 1.2	9.4	2.41	Unacceptable
9/87	9.7 ± 1.5	10.9	1.12	Acceptable
10/87	4.8 ± 1.44	6.2	1.29	Unacceptable
²²⁸ Ra				
3/87	7.5 ± 1.13	8.7	1.02	Acceptable
4/87	4.0 ± 1.2	9.4	2.35	Unacceptable
9/87	6.3 ±	7.2	1.14	Acceptable
10/87	3.6 ± 1.08	7.5	2.08	Unacceptable
²³⁹ Pu				
1/87	16.7 ± 1.7	13	0.78	Acceptable
Gross alpha				
1/87	11 ± 5	12.7	1.15	Acceptable
4/87	30 ± 16	29	0.97	Acceptable
5/87	11 ± 5	11.7	1.06	Acceptable
9/87	4.0 ± 5	5.0	1.25	Acceptable
10/87	28 ± 14	37	1.32	Acceptable
11/87	7.0 ± 5	9.3	1.33	Acceptable
U				
4/87	5.0 ± 12	2.0	0.40	Acceptable
8/87	13 ± 6	15	1.15	Acceptable
10/87	3.0 ± 12	1.0	0.33	Acceptable

Table 7.2.8 (continued)

Analysis and sample date	Values		Ratio (Y-12/EPA)	Performance Evaluation ^a
	EPA	Y-12		
Gross beta				
1/87	10 ± 5	17	1.70	Acceptable
4/98	66 ± 10	70	1.06	Acceptable
5/87	7.0 ± 5	11.7	1.67	Acceptable
9/87	12 ± 5	14.7	1.22	Acceptable
10/87	72 ± 10	62	0.86	Acceptable
11/87	19 ± 5	27	1.42	Acceptable
<i>Air filters (pCi/filter)</i>				
Gross alpha				
4/87	14 ± 5	20	1.43	Acceptable
Gross beta				
4/87	43 ± 5	49	1.14	Acceptable

^aAll evaluations are acceptable unless noted otherwise.

**Table 7.2.9. 1987 EML intercomparison study results
for ORNL in May 1987**

Parameter	EML value	ORNL value	Error, ORNL (%) ^a	Ratio (ORNL/EML)	Performance evaluation
<i>Water (pCi/mL)</i>					
³ H	33.7	20.0	10	0.59	Acceptable
⁵⁴ Mn	4.72	4.90	2	1.04	Acceptable
⁶⁰ Co	4.59	4.40	2	0.96	Acceptable
⁹⁰ Sr	1.33	1.30	7	0.98	Acceptable
¹³⁷ Cs	2.34	2.30	4	0.98	Acceptable
²³⁹ Pu	0.137	0.061	6	0.45	Unacceptable
²⁴¹ Am	0.131	0.110	9	0.84	Acceptable
U	0.142	0.140	7	0.99	Acceptable
<i>Air (pCi/filter)</i>					
⁷ Be	4640	3200	3	0.69 ^b	Acceptable
⁵⁴ Mn	455	340	2	0.75 ^b	Acceptable
⁶⁰ Co	444	320	3	0.72 ^b	Acceptable
⁹⁰ Sr	9.55	9.60	16	1.01	Acceptable
¹³⁷ Cs	470	320	3	0.68 ^b	Acceptable
²³⁹ Pu	5.68	6.40	9	1.13	Acceptable
²⁴¹ Am	4.41	4.30	6	0.98	Acceptable
U	4.77	4.90	14	1.03	Acceptable
<i>Soil (pCi/g)</i>					
⁴⁰ K	1.05	0.930	40	0.89	Acceptable
⁹⁰ Sr	0.184	0.160	56	0.87	Acceptable
¹³⁷ Cs	0.480	0.440	6	0.92	Acceptable
²²⁶ Ra	0.790	0.560	12	0.71	Acceptable
²³⁹ Pu	1.88	1.00	10	0.53	Acceptable
<i>Tissue (pCi/g)</i>					
⁴⁰ K	0.608	0.850	56	1.40	Acceptable
⁹⁰ Sr	2.87	2.80	10	0.98	Acceptable
¹³⁷ Cs	0.042	0.034	85	0.81	Acceptable
²²⁶ Ra	0.400	0.250	40	0.63	Acceptable
U	0.020	0.039	51	1.95	Unacceptable
<i>Vegetation (pCi/g)</i>					
⁴⁰ K	31.7	33.0	6	1.04	Acceptable
⁶⁰ Co	2.14	2.30	8	1.07	Acceptable
⁹⁰ Sr	20.6	18.0	5	0.87	Acceptable
¹³⁷ Cs	14.5	17.0	5	1.17	Acceptable
²³⁹ Pu	0.117	3.80 ^c	7	32.48 ^c	Unacceptable
²⁴¹ Am	0.040	0.054	31	1.35	Acceptable

^aPercent error for the laboratory based on three replicate analyses.

^bThe wrong efficiency factors were used for these analyses. The efficiency factor for a filter smaller in size than the one analyzed was used. Had the correct efficiency factors been used, the ORNL values would have been 20 to 30% higher.

^cThe data were reported in the wrong units. This result was reported in Bq/kg instead of the required units of pCi/g. Converting the 3.80 Bq/kg to pCi/g would yield a value of 0.103 pCi/g—the actual value obtained by ORNL. The performance on this result would therefore have been acceptable if the proper units had been used.

Table 7.2.10. 1987 EML intercomparison study results
for ORNL in September 1987

Parameter	EML value	ORNL value	Error, ORNL (%) ^a	Ratio (ORNL/EML)	Performance evaluation
<i>Water (pCi/mL)</i>					
³ H	19.1	18.0	11	0.94	Acceptable
⁵⁴ Mn	2.28	2.30	4	1.01	Acceptable
⁵⁷ Co	0.142	0.130	7	0.92	Acceptable
⁶⁰ Co	2.27	2.20	4	0.97	Acceptable
⁹⁰ Sr	0.252	0.220	13	0.87	Acceptable
¹³⁷ Cs	2.28	2.20	4	0.96	Acceptable
²³⁹ Pu	0.266	0.130	7	0.49	Unacceptable
²⁴¹ Am	0.140	0.100	9	0.71	Acceptable
U	0.108	0.110	9	1.02	Acceptable
<i>Air (pCi/filter)</i>					
⁷ Be	896	870	5	0.97	Acceptable
⁹⁰ Sr	36.9	40.0	25	1.08	Acceptable
⁹⁵ Zr	188	185	5	0.98	Acceptable
¹⁰⁶ Ru	251	170	11	0.68	Acceptable
¹²⁵ Sb	963	980	5	1.02	Acceptable
¹³⁷ Cs	290	280	10	0.97	Acceptable
¹⁴⁴ Ce	406	350	8	0.86	Acceptable
²³⁹ Pu	5.23	4.80	10	0.92	Acceptable
²⁴¹ Am	5.18	4.20	7	0.81	Acceptable
U	4.94	4.00	12	0.81	Acceptable
<i>Soil (pCi/g)</i>					
⁴⁰ K	20.0	20.0	10	1.00	Acceptable
⁹⁰ Sr	12.7	13.0	7	1.02	Acceptable
¹³⁷ Cs	0.211	0.180	27	0.85	Acceptable
²³⁹ Pu	0.029	0.029	24	1.00	Acceptable
U	2.44	1.70	5	0.70	Acceptable
<i>Tissue (pCi/g)</i>					
⁴⁰ K	2.68	2.00	25	0.75	Acceptable
⁹⁰ Sr	12.9	9.80	10	0.76	Acceptable
¹³⁷ Cs	0.190	0.160	18	0.84	Acceptable
<i>Vegetation (pCi/g)</i>					
⁴⁰ K	163	170	5	1.04	Acceptable
⁹⁰ Sr	15.0	9.40	6	0.63	Acceptable
¹³⁷ Cs	1.82	1.80	11	0.99	Acceptable
U	0.170	0.180	38	1.06	Acceptable

^aPercent error for the laboratory based on three replicate analyses.

Table 7.2.11. 1987 EML intercomparison study results
for ORGDP in May 1987

Parameter	EML value	ORGDP value	Error, ORGDP (%) ^a	Ratio (ORNL/EML)	Performance evaluation
<i>Water (pCi/mL)</i>					
³ H	33.7	21.7	5	0.64	Acceptable
⁵⁴ Mn	4.72	5.67	0	1.20	Acceptable
⁶⁰ Co	4.59	5.12	0	1.12	Acceptable
⁹⁰ Sr	1.33	1.32	2	0.99	Acceptable
¹³⁷ Cs	2.34	2.45	0	1.05	Acceptable
²³⁹ Pu	0.137	0.080	4	0.58	Acceptable
²⁴¹ Am	0.131	0.110	4	0.84	Acceptable
U	0.142	0.140	5	0.99	Acceptable
<i>Air (pCi/filter)</i>					
⁵⁴ Mn	455	455	1	1.00	Acceptable
⁶⁰ Co	444	444	1	1.00	Acceptable
⁹⁰ Sr	9.55	7.32	37	0.77	Acceptable
¹³⁷ Cs	470	423	1	0.90	Acceptable
²³⁹ Pu	5.68	4.47	9	0.79	Acceptable
²⁴¹ Am	4.41	3.35	5	0.76	Acceptable
<i>Soil (pCi/g)</i>					
⁴⁰ K	1.05	3.67	31	3.50	Unacceptable
⁹⁰ Sr	0.184	0.460	52	2.50	Unacceptable
¹³⁷ Cs	0.480	0.370	24	0.77	Acceptable
²³⁹ Pu	1.88	1.44	3	0.77	Acceptable
<i>Tissue (pCi/g)</i>					
⁴⁰ K	0.608	3.97	31	6.53	Unacceptable
⁹⁰ Sr	2.87	1.88	11	0.66	Acceptable
U	0.020	0.120	8	6.00	Unacceptable
<i>Vegetation (pCi/g)</i>					
⁴⁰ K	31.7	28.8	5	0.91	Acceptable
⁶⁰ Co	2.14	1.78	8	0.83	Acceptable
⁹⁰ Sr	20.6	16.6	7	0.81	Acceptable
¹³⁷ Cs	14.5	9.88	2	0.68	Acceptable
²³⁹ Pu	0.117	0.060	16	0.51	Acceptable
²⁴¹ Am	0.040	0.010	7	0.25	Unacceptable

^aPercent error for the laboratory based on three replicate analyses.

Table 7.2.12. 1987 EML intercomparison study results
for ORGDP in September 1987

Parameter	EML value	ORGDP value	Error, ORGDP (%) ^a	Ratio (ORGDP/EML)	Performance evaluation
<i>Water (pCi/mL)</i>					
³ H	19.1	17.0	5	0.89	Acceptable
⁵⁴ Mn	2.28	2.53	0	1.11	Acceptable
⁵⁷ Co	0.142	0.148	5	1.04	Acceptable
⁶⁰ Co	2.27	2.48	0	1.09	Acceptable
⁹⁰ Sr	0.252	0.216	4	0.86	Acceptable
¹³⁷ Cs	2.28	2.32	0	1.02	Acceptable
²³⁹ Pu	0.266	0.187	2	0.70	Acceptable
²⁴¹ Am	0.140	0.128	3	0.91	Acceptable
U	0.108	0.0965	3	0.89	Acceptable
<i>Air (pCi/filter)</i>					
¹⁰⁶ Ru	251	348	3	1.39	Acceptable
¹²⁵ Sb	963	585	1	0.61	Acceptable
¹³⁷ Cs	290	288	1	0.99	Acceptable
¹⁴⁴ Ce	406	439	4	1.08	Acceptable
²³⁹ Pu	5.23	5.02	4	0.96	Acceptable
²⁴¹ Am	5.18	4.90	4	0.95	Acceptable
U	4.94	3.44	5	0.70	Acceptable
<i>Soil (pCi/g)</i>					
⁴⁰ K	20.0	4.14	41	0.21	Unacceptable
⁹⁰ Sr	12.7	11.0	2	0.87	Acceptable
¹³⁷ Cs	0.211	0.322	28	1.53	Unacceptable
²³⁹ Pu	0.0290	0.0339	11	1.17	Acceptable
U	2.44	1.40	2	0.57	Acceptable

^aPercent error for ORGDP based on three replicate analyses.

**Table 7.2.13. 1987 EML intercomparison study results
for the Y-12 Plant in May 1987**

Parameter	EML value	Y-12 value	Error, Y-12 (%) ^a	Ratio (Y-12/EML)	Performance evaluation
<i>Water pCi/L</i>					
³ H	33.7	25	12	0.74 ± 0.10	Acceptable
⁵⁴ Mn	4.72	5.2	1	1.10 ± 0.06	Acceptable
⁶⁰ Co	4.59	4.4	2	0.96 ± 0.05	Acceptable
¹³⁷ Cs	2.34	2.3	4	0.98 ± 0.07	Acceptable
⁹⁰ Sr	1.33	1.4	5	1.05 ± 0.05	Acceptable
²³⁹ Pu	0.137	0.08	12	0.58 ± 0.08	Acceptable
²⁴¹ Am	0.131	0.11	9	0.84 ± 0.09	Acceptable
U, µg/mL	0.206	0.230	8	1.12 ± 0.11	Acceptable
<i>Air pCi/filter</i>					
⁷ Be	4640	5000	3	1.08 ± 0.06	Acceptable
⁵⁴ Mn	455	420	3	0.92 ± 0.05	Acceptable
⁶⁰ Co	444	270	5	0.61 ± 0.07	Acceptable
¹³⁷ Cs	470	210	5	0.45 ± 0.03	Unacceptable
⁹⁰ Sr	9.55	6.5	30	0.68 ± 0.21	Acceptable
²³⁹ Pu	5.68	3.1	12	0.55 ± 0.07	Acceptable
²⁴¹ Am	4.41	3.1	12	0.70 ± 0.09	Acceptable
U, µg/filter	6.92	6.1	9	0.88 ± 0.09	Acceptable
<i>Soil pCi/g</i>					
⁹⁰ Sr	0.184	0.24	20	1.30 ± 0.27	Acceptable
²²⁶ Ra	0.790	0.57	22	0.72 ± 0.17	Acceptable
²³⁹ Pu	1.88	1.4	7	0.74 ± 0.07	Acceptable
¹³⁷ Cs	0.480	0.43	6	0.90 ± 0.07	Acceptable
<i>Tissue pCi/L</i>					
⁹⁰ Sr	2.87	2.4	8	0.84 ± 0.08	Acceptable
²²⁶ Ra	0.400	1.5	20	3.75 ± 0.77	Unacceptable
U, µg/g	0.030	0.035	11	1.17 ± 0.15	Acceptable
<i>Vegetation pCi/g</i>					
⁹⁰ Sr	20.6	19	5	0.92 ± 0.06	Acceptable
²³⁹ Pu	0.117	0.09	11	0.77 ± 0.09	Acceptable
²⁴¹ Am	0.040	0.06	16	1.50 ± 0.29	Acceptable

^aPercent error for the Y-12 Plant based on three replicate analyses.

Table 7.2.14. 1987 EML intercomparison study results
for the Y-12 Plant in September 1987

Parameter	EML value	Y-12 Value	Error, Y-12 (%) ^a	Ratio (Y-12/EML)	Performance evaluation
<i>Air pCi/filter</i>					
⁹⁰ Sr	0.369×10^2	0.480×10^2	8	1.30 ± 0.12	Acceptable
²³⁹ Pu	5.23	5.30	11	1.01 ± 0.12	Acceptable
²⁴¹ Am	5.18	4.70	21	0.91 ± 0.20	Acceptable
U, $\mu\text{g}/\text{filter}$	4.59	4.80	0	1.05 ± 0.08	Acceptable
<i>Soil pCi/g</i>					
⁹⁰ Sr	0.127×10^2	0.123×10^2	6	0.97 ± 0.09	Acceptable
²²⁶ Ra	0.636	<0.640			
²³⁹ Pu	0.290×10^{-1}	0.230×10^{-1}	13	0.79 ± 0.12	Acceptable
U, $\mu\text{g}/\text{g}$	3.54	1.91	0	0.54 ± 0.01	Acceptable
<i>Tissue pCi/g</i>					
⁹⁰ Sr	0.129×10^2	0.150×10^2	9	1.16 ± 0.11	Acceptable
<i>Vegetation pCi/g</i>					
⁹⁰ Sr	0.150×10^2	0.150×10^2	8	1.00 ± 0.12	Acceptable
U, $\mu\text{g}/\text{g}$	0.250	0.118	0	0.47 ± 0.06	Unacceptable
<i>Water pCi/mL</i>					
³ H	0.191×10^2	0.180×10^2		0.94 ± 0.13	Acceptable
⁶⁰ Co	2.27	2.50	13	1.10 ± 0.05	Acceptable
⁹⁰ Sr	0.252	0.280	10	1.11 ± 0.13	Acceptable
¹³⁷ Cs	2.28	2.10	4	0.92 ± 0.06	Acceptable
²³⁹ Pu	0.266	0.200	1	0.75 ± 0.02	Acceptable
²⁴¹ Am	0.140	0.130	2	0.93 ± 0.04	Acceptable
U, $\mu\text{g}/\text{mL}$	0.157	0.139	0	0.89 ± 0.03	Acceptable

^aPercent error for Y-12 Plant based on three replicate analyses.

Table 7.2.15. Proficiency Environmental Testing Control Program at ORNL in 1987—Level 1 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance		
			Acceptable ^c	Marginal ^c	Unacceptable ^c
Biochemical O demand	111	0.98	9	0	1 ^d
Chemical O demand	78	2.64	2	2	3 ^e
TOC	95	0.66	9	0	0
Ammonia N	106	0.34	11	0	0
Nitrate N	100	0.32	6	0	0
Orthophosphate as P	99	0.51	6	1	0
Kjeldahl N	92	0.51	3	0	0
Total P	94	0.30	2	0	0
Suspended solids	85	0.60	10	0	0
Dissolved solids	110	0.90	9	1	0
O&G	203	2.67	9	0	1 ^f
Alkalinity	96	0.37	9	0	0
Ca	100	0.27	9	0	0
Chloride	100	0.44	8	0	0
Conductivity	92	0.28	9	0	0
Mg	99	0.19	9	0	0
K	101	0.32	7	0	0
Na	98	0.41	8	0	0
Sulfate	100	0.35	8	0	0
Total hardness (as CaCO ₃)	99	0.17	9	0	0
pH	100	0.63	10	0	0
As	133	1.17	3	2 ^g	0
Ba	97	0.46	10	0	0
Cd	101	0.49	11	0	0
Cr	103	0.83	8	0	0
Cu	103	0.43	10	0	0
Fe	118	0.87	9	1	0
Pb	104	0.48	5	0	0
Mn	109	0.90	9	0	1
Hg	99	0.35	9	0	0
Ni	106	0.48	8	0	0
Se	142	1.22	4	0	0
Ag	103	0.64	8	0	0
Zn	97	0.54	11	0	0
Phenol	101	0.52	9	0	0
Cyanide	101	0.53	10	0	0
Total residual Cl	99	0.74	9	0	0
Al	116	1.09	3	2	0
Be	107	1.70	8	0	1

Table 7.2.15 (continued)

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance		
			Acceptable ^c	Marginal ^c	Unacceptable ^d
Total organic halides	110	1.23	1	0	0
Cr +6	100	0.03	3	0	0

^aAverage of 10 months results at ORNL. All parameters were not analyzed each month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor EPA, the warning level is 1.96 standard deviations, and the acceptance level is 2.58 standard deviations from the mean.

^dUnacceptable value generated because of procedural error. The blank background was not subtracted from the measured value before reporting.

^eOne of the unacceptable values was generated as a result of a transpositional error.

^fThe unacceptable value was generated because of a data-entry error. The average percent recovery would have been 99%, and the average number of standard deviations would have been 0.50 if this unacceptable value were disregarded.

^gThe values reported were at or below the reporting limits for the methods. Normally, a more sensitive method would have been used and these results would not have been included in the statistical analysis.

Table 7.2.16. Proficiency Environmental Testing Control Program at ORNL in 1987—Level 2 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance		
			Acceptable ^c	Marginal ^c	Unacceptable ^c
Biochemical O demand	103	0.47	10	0	0
Chemical O demand	197	6.24	6	0	1 ^d
TOC	95	0.54	9	0	0
Ammonia N	105	0.27	11	0	0
Nitrate N	99	0.37	5	0	0
Orthophosphate as P	99	0.37	7	0	0
Kjeldahl N	105	0.39	3	0	0
Total P	79	1.53	1	1	0
Suspended solids	94	0.58	10	0	0
Dissolved solids	101	0.67	10	0	0
O&G	181	4.00	9	0	1 ^e
Alkalinity	96	0.56	8	1	0
Ca	99	0.20	9	0	0
Chloride	102	1.02	7	1	0
Conductivity	92	0.31	9	0	0
Mg	98	0.27	9	0	0
K	101	0.17	6	0	0
Na	99	0.28	8	0	0
Sulfate	100	0.28	8	0	0
Total hardness (as CaCO ₃)	101	0.33	9	0	0
pH	103	0.97	9	0	0
As	107	0.64	10	0	1
Ba	103	0.63	10	0	0
Cd	103	0.59	11	0	0
Cr	103	0.39	10	0	0
Cu	103	0.55	10	0	0
Fe	104	0.61	10	0	0
Pb	102	0.56	12	0	0
Mn	102	0.44	10	0	0
Hg	100	0.50	9	0	0
Ni	101	0.49	10	0	0
Se	117	0.87	5	0	0
Ag	107	0.69	9	1	0
Zn	104	0.51	11	0	0
Phenol	96	0.40	8	0	0
Cyanide	103	0.29	10	0	0
Total residual Cl	111	1.28	7	1 ^f	1 ^f
Al	97	0.91	10	0	0
Be	204	18.68	7	1	1 ^g

Table 7.2.16 (continued)

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance		
			Acceptable ^c	Marginal ^c	Unacceptable ^c
Total organic halides	102	0.83	1	0	0
Cr +6	99	0.07	3	0	0

^aAverage of 10 months results at ORNL. All parameters were not analyzed each month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor EPA, the warning level is 1.96 standard deviations, and the acceptance level is 2.58 standard deviations from the mean.

^dUnacceptable value was generated as a result of a transpositional error. The average percent recovery would be 80%, and the average number of standard deviations would be 0.69 if this unacceptable value were disregarded.

^eThe unacceptable value was generated because of a data entry error. The average percent recovery would be 94%, and the average number of standard deviations would be 0.46 if the unacceptable value were disregarded.

^fThe reason for the marginal and unacceptable values is still under investigation. EPA controls are scheduled for analysis alongside the next monthly PET controls.

^gThe unacceptable value was generated because of a decimal placement error. The average percent recovery would be 102% and the average number of standard deviations would be 0.93 if the unacceptable value were disregarded.

Table 7.2.17. Proficiency Environmental Testing Control Program at ORGDP in 1987—Level 1 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance ^c		
			Acceptable	Marginal	Unacceptable
Alkalinity	103.4	0.43	11	0	0
Al	112.9	0.08	7	1	0
Ammonia N	110.2	0.53	9	2	0
As	92.5	-0.43	11	0	0
Ba	97.0	-0.02	11	0	0
Be	96.8	-0.04	8	0	0
Biochemical O demand	92.9	-0.06	11	0	0
Cd	100.2	-0.18	11	0	0
Ca	99.4	0.03	10	0	0
Chemical O demand	101.9	0.79	11	0	0
Chloride	100.4	0.18	11	0	0
Cr	95.4	-0.33	11	0	0
Conductivity	90.5	-0.22	11	0	0
Cu	96.5	-0.19	11	0	0
Cyanide	101.3	-0.00	11	0	0
Cr +6	100.4	0.14	5	0	0
Fe	86.3	-0.86	9	1	0
Pb	97.7	-0.21	11	0	0
Mg	99.8	0.22	10	0	0
Mn	100.3	0.18	11	0	0
Hg	90.9	-0.14	11	0	0
Ni	98.3	-0.34	11	0	0
Nitrate N	105.7	0.20	11	0	0
O&G	100.1	0.36	10	1	0
Orthophosphate as P	98.8	-0.15	11	0	0
pH	98.1	-0.09	11	0	0
Phenol	91.9	-0.78	10	0	1
K	104.6	0.45	10	0	0
Se	104.2	-0.07	11	0	0
Ag	100.8	0.19	11	0	0
Na	101.3	0.18	10	0	0
Sulfate	96.0	-0.26	11	0	0
Tl	100.7	-0.05	8	0	0
Total dissolved solids	117.3	1.16	10	1	0
Total hardness (as CaCO ₃)	97.4	-0.23	11	0	0
Total Kjeldahl N	103.9	-0.40	11	0	0
Total organic C	95.5	-0.52	10	1	0
Total organic halides	116.5	0.19	5	0	0
Total P as P	122.1	0.33	11	0	0
Total residual Cl	104.8	0.10	8	1	0
Total suspended solids	89.5	-0.09	11	0	0
Turbidity	100.2	0.23	2	0	0
U	94.7	-0.27	4	0	0
Zn	104.4	-0.12	11	0	0

^aAverage of all results for ORGDP. All parameters were not measured every month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor the EPA, the warning (marginal) level is 1.96 standard deviations and the acceptance level is 2.58 standard deviations from the mean.

Table 7.2.18. Proficiency Environmental Testing Control Program at ORGDP in 1987—Level 2 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance ^c		
			Acceptable	Marginal	Unacceptable
Alkalinity	102.9	0.47	10	1	0
Al	102.2	0.18	8	0	0
Ammonia N	106.4	0.57	10	1	0
As	91.2	-0.39	11	0	0
Ba	97.6	-0.17	11	0	0
Be	97.6	-0.41	8	0	0
Biochemical O demand	94.0	-0.12	11	0	0
Cd	98.8	-0.13	11	0	0
Ca	99.7	0.13	10	0	0
Chemical O demand	99.0	0.18	11	0	0
Chloride	99.9	0.15	11	0	0
Cr	96.3	-0.43	11	0	0
Conductivity	90.1	-0.29	11	0	0
Cu	99.5	-0.10	11	0	0
Cyanide	103.8	-0.57	10	0	1
Cr +6	89.4	-0.61	5	0	0
Fe	96.8	-0.51	9	1	0
Pb	99.8	0.05	11	0	0
Mg	99.4	0.18	10	0	0
Mn	99.9	0.15	11	0	0
Hg	91.6	-0.26	11	0	0
Ni	100.4	-0.03	11	0	0
Nitrate N	95.2	-0.43	11	0	0
O&G	89.4	0.06	11	0	0
Orthophosphate as P	97.8	-0.18	11	0	0
pH	97.2	-0.36	9	2	0
Phenol	74.7	-1.21	10	0	0
K	103.0	0.11	10	0	0
Se	105.4	0.26	11	0	0
Ag	100.7	0.04	11	0	0
Na	100.4	0.03	10	0	0
Sulfate	95.3	-0.26	11	0	0
Tl	104.7	0.31	8	0	0
Total dissolved solids	107.9	1.42	8	2	1
Total hardness (as CaCO ₃)	98.7	0.05	11	0	0
Total Kjeldahl N	98.4	-0.17	10	0	0
Total organic C	109.8	0.56	11	0	0
Total organic halides	82.8	-0.40	5	0	0
Total P as P	102.3	0.32	10	0	0
Total residual Cl	100.2	0.56	8	2	0
Total suspended solids	93.3	0.12	11	0	0
Turbidity	104.2	0.59	2	0	0
U	89.1	-0.13	4	0	0
Zn	100.4	-0.23	11	0	0

^aAverage of all results for ORGDP. All parameters were not measured every month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor the EPA, the warning (marginal) level is 1.96 standard deviations and the acceptance level is 2.58 standard deviations from the mean.

Table 7.2.19. Proficiency Environmental Testing Control Program at the Y-12 Plant in 1987—Level 1 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance ^c		
			Acceptable	Marginal	Unacceptable
Biochemical O demand	91	0.54	12	0	0
Chemical O demand	97	0.76	10	2	0
TOC	92	1.28	10	2	0
Ammonia N	93	0.45	12	0	0
Nitrate N	102	0.34	12	0	0
Phosphate-P	99	2.33	9	1	2 ^d
Kjeldahl N	115	0.34	12	0	0
Total P	122	0.62	12	0	0
Total suspended solids	80	0.75	12	0	0
Total dissolved solids	93	0.72	11	1	0
O&G	101	0.69	11	1	0
Alkalinity	98	0.39	12	0	0
Ca	100	0.47	12	0	0
Chloride	102	0.42	12	0	0
Conductivity	92	0.69	12	0	0
Mg	99	0.39	12	0	0
K	98	0.46	12	0	0
Na	97	0.60	12	0	0
Sulfate	101	0.68	12	0	0
Total hardness (as CaCO ₃)	100	0.40	12	0	0
pH	101	0.68	12	0	0
Al	96	0.46	9	0	0
As	90	0.58	10	0	0
Ba	101	0.61	12	0	0
Be	97	0.27	9	0	0
Cd	103	0.42	12	0	0
Cr	101	0.74	12	0	0
Cu	105	0.49	12	0	0
Fe	98	0.44	12	0	0
Pb	110	0.92	11	1	0
Mn	102	0.63	12	0	0
Hg	97	0.39	12	0	0
Ni	95	0.67	12	0	0
Se	110	0.54	12	0	0
Ag	100	0.32	12	0	0
Tl	97	0.70	9	0	0
Zn	103	0.30	12	0	0
Phenol	108	0.73	12	0	0
Cyanide	96	0.87	12	0	0
Total residual Cl	117	0.68	12	0	0
Fluoride	109	0.54	2	0	0
Organic halide	105	0.61	6	0	0
Cr +6	110	0.43	6	0	0
U	97	1.33	5	1	0

^aAverage of all results for ORGDP. All parameters were not measured every month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor the EPA, the warning (marginal) level is 1.96 standard deviations and the acceptance level is 2.58 standard deviations from the mean.

^dThe two unacceptable results were statistical outliers. Were these two outliers omitted, the average standard deviation would be 1.42. This procedure is still being evaluated.

Table 7.2.20. Proficiency Environmental Testing Control Program at the Y-12 Plant in 1987—Level 2 concentrations

Parameter ^a	Average recovery (%) ^a	Average number of standard deviations ^b	Performance ^c		
			Acceptable	Marginal	Unacceptable
Biochemical O demand	107	1.19	9	1	1
Chemical O demand	94	0.31	12	0	0
TOC	87	1.04	12	0	0
Ammonia N	106	0.84	11	0	1 ^d
Nitrate N	100	0.48	12	0	0
Phosphate-P	89	1.03	11	1	0
Kjeldahl N	100	0.35	12	0	0
Total P	94	0.66	11	0	1
Total suspended solids	89	0.69	12	0	0
Total dissolved solids	103	1.01	11	0	1 ^e
O&G	99	0.79	12	0	0
Alkalinity	99	0.36	12	0	0
Ca	98	0.29	12	0	0
Chloride	102	0.46	12	0	0
Conductivity	90	0.41	12	0	0
Mg	98	0.45	12	0	0
K	100	0.63	12	0	0
Na	98	0.60	12	0	0
Sulfate	108	3.79	11	0	1 ^f
Total hardness (as CaCO ₃)	98	0.39	12	0	0
pH	102	0.69	12	0	0
Al	99	0.47	9	0	0
As	100	0.36	12	0	0
Ba	101	0.63	12	0	0
Be	97	0.35	9	0	0
Cd	101	0.53	12	0	0
Cr	99	0.55	12	0	0
Cu	103	0.46	12	0	0
Fe	98	0.43	12	0	0
Pb	101	0.41	12	0	0
Mn	103	0.68	12	0	0
Hg	96	0.41	12	0	0
Ni	97	0.70	12	0	0
Se	107	0.54	12	0	0
Ag	101	0.32	12	0	0
Tl	98	0.50	9	0	0
Zn	103	0.33	12	0	0
Phenol	110	0.75	12	0	0
Cyanide	104	0.83	12	0	0
Total residual Cl	97	0.79	11	0	1 ^g
Fluoride	111	1.35	2	0	0
Organic halide	93	0.31	6	0	0
Cr +6	108	0.82	6	0	0
U	94	1.33	6	0	0

^aAverage of all results for ORGDP. All parameters were not measured every month.

^bThe average number of standard deviations from the mean of all participants. The number of participant laboratories varied depending on the parameters and the month.

^cFor the EPA, the warning (marginal) level is 1.96 standard deviations and the acceptance level is 2.58 standard deviations from the mean.

^dThe unacceptable result was a statistical outlier. Were this result omitted, the average standard deviation would be 0.36.

^eA statistical outlier. Without this result, the average standard deviation would be 0.50.

^fA statistical outlier. Were this result omitted, the average standard deviation would be 0.54.

^gA statistical outlier. Were this result omitted, the average standard deviation would be 0.40.

Table 7.2.21. EPA performance evaluation DMR-QA study number 007—ORNL, 1987

Analytes	Values		Limits		Performance evaluation
	Reported	True ^a	Acceptance	Warning	
<i>Trace metals (µg/L)</i>					
Al	240	220	142–296	162–277	Acceptable
As	142	150	111–186	121–177	Acceptable
Be	740	725	621–832	647–797	Acceptable
Cd	49	55.0	46.6–63.2	48.6–61.2	Acceptable
Cr	520	514	400–606	425–581	Acceptable
Co	140	142	118–165	124–159	Acceptable
Cu	980	953	859–1020	880–1000	Acceptable
Fe	1100	1096	947–1210	980–1180	Acceptable
Pb	677	685	584–778	608–753	Acceptable
Mn	380	381	337–419	348–408	Acceptable
Hg	0.89	0.917	0.472–1.40	0.589–1.29	Acceptable
Ni	790	762	670–853	693–831	Acceptable
Se	19	20.0	12.5–26.1	14.2–24.4	Acceptable
V	1100	1129	954–1310	1000–1260	Acceptable
Zn	1100	1059	926–1160	955–1130	Acceptable
<i>Miscellaneous Parameters (mg/L)^b</i>					
pH (units)	5.19	5.20	5.06–5.30	5.09–5.27	Acceptable
Total suspended solids	78.2	80.9	62.1–87.0	65.2–84.0	Acceptable
O&G	8.6	8.00	1.34–12.8	2.77–11.4	Acceptable
Total cyanide	0.064	0.070	0.0278–0.0976	0.036–0.088	Acceptable
Total phenolics	0.358	0.368	0.128–0.607	0.189–0.546	Acceptable
Total residual Cl	1.02	0.975	0.637–1.25	0.718–1.17	Acceptable
N					
Ammonia	11.9	12.5	9.93–14.8	10.5–14.2	Acceptable
Nitrate	4.17	4.00	3.26–4.69	3.43–4.52	Acceptable
Kjeldahl	14.4	12.8	9.58–15.7	10.3–15.0	Acceptable
Total P	5.47	5.90	4.84–7.03	5.10–6.77	Acceptable
Orthophosphate	0.80	0.858	0.739–0.976	0.768–0.947	Acceptable
<i>Demands (mg/L)</i>					
COD	53	54.4	37.4–64.4	40.8–61.1	Acceptable
TOC	20	21.5	16.6–25.9	17.9–24.7	Acceptable
5-day BOD	41	35.0	21.2–48.7	24.6–45.3	Acceptable

^aBased on theoretical calculations or a reference value when necessary.

^bUnits are mg/L except for pH, which is reported in pH units.

Table 7.2.22. EPA performance evaluation DMR-QA study number 007—ORGDP, 1987

Analytes	Values		Limits		Performance evaluation
	Reported ^a	True ^b	Acceptance	Warning	
<i>Trace metals (µg/L)</i>					
Al	225	220	142–296	162–277	Acceptable
As	142	150	111–186	121–177	Acceptable
Be	750	725	621–822	647–797	Acceptable
Cd	56	55	46.6–63.2	48.6–61.2	Acceptable
Cr	528	514	400–606	425–581	Acceptable
Co	137	142	118–165	124–159	Acceptable
Cu	1020	953	859–1020	880–1000	Acceptable
Fe	1100	1096	947–1210	980–1180	Acceptable
Pb	722	685	584–778	608–753	Acceptable
Mn	398	381	337–419	348–408	Acceptable
Hg	0.5	0.917	0.472–1.40	0.589–1.29	Acceptable
Ni	769	762	670–853	693–831	Acceptable
Se	22	20	12.5–26.1	14.2–24.4	Acceptable
V	1160	1129	954–1310	1000–1260	Acceptable
Zn	1100	1059	926–1160	955–1130	Acceptable
<i>Miscellaneous parameters (mg/L)^c</i>					
pH (units)	5.17	5.20	5.06–5.30	5.09–5.27	Acceptable
Total suspended solids	79	80.5	62.1–87.0	65.2–84.0	Acceptable
O&G	8	8.00	1.34–12.8	2.77–11.4	Acceptable
N					
Ammonia	12.6	12.5	9.93–14.8	10.5–14.2	Acceptable
Nitrate	4.0	4.00	3.26–4.69	3.43–4.52	Acceptable
Kjeldahl	12.0	12.8	9.58–15.7	10.3–15.0	Acceptable
Total P	5.2	5.90	4.84–7.03	5.10–6.77	Acceptable
Orthophosphate	0.88	0.858	0.739–0.976	0.768–0.947	Acceptable
Total cyanide	0.092	0.070	0.278–0.976	0.036–0.088	Acceptable
Total phenols	0.524	0.368	0.128–0.607	0.189–0.546	Acceptable
Total residual Cl	2.5	0.975	0.637–1.25	0.718–1.17	Unacceptable ^d
<i>Demands (mg/L)</i>					
COD	51.0	54.4	37.4–64.4	40.8–61.1	Acceptable
TOC	23.0	21.5	16.6–25.9	17.9–24.7	Acceptable
5-day BOD	33.0	35.0	21.2–48.7	24.6–45.3	Acceptable

^aThere was an error in data transfer that resulted in samples from the laboratory being in mg/L. The EPA values were in µg/L, as reflected in the evaluated EPA report. This was explained in a letter dated June 26, 1987, which was sent to EPA and the state of Tennessee.

^bBased on theoretical calculations or a reference value when necessary.

^cUnits are mg/L except for pH, which is reported in pH units.

^dSeveral samples are processed as a batch with known controls, and the known controls were within acceptable limits. No apparent reason for this nonconformance.

Table 7.2.23. EPA performance evaluation DMR-QA study number 007—Y-12 Plant, 1987

Analytes	Values		Limits		Performance evaluation
	Reported	True ^a	Acceptance	Warning	
<i>Trace metals (µg/L)</i>					
Al	230	220	142–296	162–277	Acceptable
As	128	150	111–186	121–177	Acceptable
Be	695	725	621–822	647–797	Acceptable
Cd	57.8	55.0	46.6–63.2	48.6–61.2	Acceptable
Cr	483	514	400–606	425–581	Acceptable
Co	145	142	118–165	124–159	Acceptable
Cu	960	953	859–1020	880–1000	Acceptable
Fe	1030	1096	947–1210	980–1180	Acceptable
Pb	720	685	584–778	608–753	Acceptable
Mn	399	381	337–419	348–409	Acceptable
Hg	0.95	0.917	0.472–1.40	0.589–1.29	Acceptable
Ni	714	762	670–853	693–831	Acceptable
Se	14.2	20.0	12.5–26.1	14.2–24.4	Acceptable
V	1040	1129	954–1310	1000–1260	Acceptable
Zn	1080	1059	926–1160	955–1130	Acceptable
<i>Miscellaneous parameters (mg/L)^b</i>					
pH (units)	5.16	5.20	5.06–5.30	5.09–5.27	Acceptable
Total suspended solids	83.8	80.9	62.1–87.0	65.2–84.0	Acceptable
O&G	9.03	8.00	1.34–12.8	2.77–11.4	Acceptable
Total cyanide	0.065	0.070	0.0278–0.0976	0.0366–0.0888	Acceptable
Total phenols	0.350	0.368	0.128–0.607	0.189–0.546	Acceptable
Total residual Cl	0.95	0.975	0.637–1.25	0.718–1.17	Acceptable
N					
Ammonia	12.2	12.5	9.93–14.8	10.5–14.2	Acceptable
Nitrate	3.72	4.00	3.26–4.69	3.43–4.52	Acceptable
Kjeldahl	12.8	12.8	9.58–15.7	10.3–15.0	Acceptable
Total P	5.28	5.90	4.84–7.03	5.10–6.77	Acceptable
Orthophosphate	0.623	0.858	0.739–0.976	0.768–0.947	Unacceptable
<i>Demands (mg/L)</i>					
COD	70.2	54.4	37.4–64.4	40.8–61.1	Unacceptable
TOC	20.0	21.5	16.6–25.9	17.9–24.7	Acceptable
5-day BOD	37.5	35.0	21.2–48.7	24.6–45.3	Acceptable

^aBased on theoretical calculations or a reference value when necessary.

^bUnits are mg/L except for pH, which is reported in pH units.

Table 7.2.24. Water supply performance evaluation study number WS-020—ORGDP, 1987

Parameter	Sample number	Values		Acceptance limits	Performance evaluation
		Reported	True		
<i>Metals (µg/L)</i>					
As	1	96.7	106	86.8–121	Acceptable
	2	29.3	32.0	25.8–37.4	Acceptable
Ba	1	88.0	75.0	54.7–88.6	Acceptable
	2	720	776	664–860	Acceptable
Cd	1	14.6	17.0	14.3–19.6	Acceptable
	2	3.3	4.16	3.54–4.79	Unacceptable
Cr	1	11.3	12.7	10.1–15.6	Acceptable
	2	63.8	71.1	61.1–80.9	Acceptable
Pb	1	24.0	25.7	20.6–30.5	Acceptable
	2	92.8	99.0	81.7–113	Acceptable
Hg	1	5.30	5.25	3.84–6.54	Acceptable
	2	2.00	1.92	1.32–2.47	Acceptable
Se	1	10.7	9.71	6.94–12.2	Acceptable
	2	51.7	53.9	42.4–65.7	Acceptable
Ag	1	21.2	27.5	23.1–31.9	Acceptable
	2	12.7	13.8	11.2–16.6	Acceptable
<i>Insecticides (µg/L)</i>					
Endrin	1	0.28	0.344	0.211–0.448	Acceptable
	2	4.30	6.19	3.86–7.84	Acceptable
Lindane	1	0.40	0.512	0.279–0.615	Acceptable
	2	3.00	3.84	2.22–4.79	Acceptable
Methoxychlor	1	2.70	2.22	1.34–3.05	Acceptable
	2	92.0	80.8	52.4–104	Acceptable
Toxaphene	1	0.75	1.42	0.432–2.23	Acceptable
<i>Herbicides (µg/L)</i>					
2,4-D	1	58.6	62.7	26.0–24.2	Acceptable
	2	4.6	3.22	0.413–5.66	Acceptable
2,4,5-TP (Silvex)	1	58.6	62.7	26.0–83.8	Acceptable
	2	2.3	3.71	1.23–5.00	Acceptable
<i>Trihalomethanes (µg/L)</i>					
Chloroform	1	18.8	17.7	14.2–21.2	Acceptable
	2	50.1	49.5	39.6–59.4	Acceptable
Bromoform	1	35.1	42.2	33.8–50.6	Acceptable
	2	16.6	16.9	13.5–20.3	Acceptable
Bromodi- chloromethane	1	18.4	20.4	16.3–24.5	Acceptable
	2	58.5	63.2	50.6–75.8	Acceptable
Dibromo- chloromethane	1	54.1	56.9	45.5–68.3	Acceptable
	2	25.5	24.9	19.9–29.9	Acceptable
Total Tri- halomethanes	1	126.4	137.2	110–165	Acceptable
	2	150.7	154.5	124–185	Acceptable

Table 7.2.24 (continued)

Parameter	Sample number	Values		Acceptance limits	Performance evaluation
		Reported	True		
<i>Miscellaneous parameters</i>					
Nitrate-N (mg/L)	1	0.93	0.900	0.762–1.04	Acceptable
	2	6.73	7.00	6.18–7.82	Acceptable
Fluoride (mg/L)	1	0.30	0.180	0.148–0.215	Unacceptable ^a
	2	1.8	1.6	1.48–1.69	Unacceptable ^a
Residual free Cl (mg/L)	1	0.5	0.620	0.231–1.02	Acceptable
	2	1.1	1.39	0.972–1.87	Acceptable
Turbidity (NTU's)	1	4.7	4.50	3.84–5.08	Acceptable
	2	0.55	0.50	0.341–0.779	Acceptable
<i>Volatile organic compounds (µg/L)</i>					
Vinyl chloride	1	8.52	5.98	3.59–8.37	Unacceptable
1,1-Dichloroethylene	1	2.52	2.53	1.52–3.54	Acceptable
	2	12.3	12.7	10.2–15.2	Acceptable
1,2-Dichloroethane	1	6.46	6.23	3.74–8.72	Acceptable
	2	9.54	8.90	5.34–12.5	Acceptable
1,1,1-Trichloroethane	1	10.6	10.5	8.40–12.6	Acceptable
	2	188	182.5	146–219	Acceptable
Carbon tetrachloride	1	1.28	1.36	0.816–1.90	Acceptable
Trichloroethylene	1	7.20	8.22	4.93–11.5	Acceptable
	2	9.97	10.3	8.24–12.4	Acceptable
Benzene	1	3.93	4.32	2.59–6.05	Acceptable
Tetrachloroethylene	2	8.37	8.16	4.90–11.4	Acceptable
1,4-Dichlorobenzene	1	4.27	6.93	4.16–9.70	Acceptable
Chlorobenzene	4	14.0	14.6	11.7–17.5	Acceptable
Methylene chloride	2	6.25	12.0	9.60–14.4	Unacceptable
1,1-Dichloroethane	2	9.86	10.3	8.24–12.4	Acceptable
1,1,2-Trichloroethane	2	13.0	12.8	10.2–15.4	Acceptable
1,1,1,2-Tetrachloroethane	2	14.6	17.3	13.8–20.8	Acceptable
2-Chlorotoluene	2	3.78	8.28	4.97–11.6	Unacceptable

^aThese were the result of non-linearity of the calibration curve at the lower concentration levels. The values of environmental concern are taken from the linear portion of the calibration.

Table 7.2.25. Water supply performance evaluation study number WS-020—Y-12 Plant, 1987

Analytes	Sample number	Values ^a		Acceptance limits	Performance evaluation
		Reported	True		
As	1	100	106	86.8–121	Acceptable
	2	31.8	32.0	25.8–37.4	Acceptable
Ba	1	76	75.0	54.7–88.6	Acceptable
	2	795	776	664–860	Acceptable
Cd	1	15.7	17.0	14.3–19.6	Acceptable
	2	3.95	4.16	3.54–4.79	Acceptable
Cr	1	13.2	12.7	10.1–15.6	Acceptable
	2	78.8	71.1	61.1–80.9	Acceptable
Hg	1	4.88	5.25	3.84–6.54	Acceptable
	2	1.94	1.92	1.32–2.47	Acceptable
Pb	1	24.5	25.7	20.6–30.5	Acceptable
	2	89.5	99.0	81.7–113	Acceptable
Se	1	11.8	9.71	6.94–12.2	Acceptable
	2	71.2	53.9	42.4–65.7	Unacceptable
Ag	1	23.8	27.5	23.1–31.9	Acceptable
	2	11.7	13.8	11.2–16.6	Acceptable
Nitrate as N (mg/L)	1	0.96	0.900	0.762–1.04	Acceptable
	2	6.70	7.00	6.18–7.82	Acceptable
Fluoride (mg/L)	1	0.16	0.180	0.148–0.215	Acceptable
	2	1.58	1.60	1.48–1.69	Acceptable
Endrin	1	0.297	0.344	0.211–0.448	Acceptable
	2	5.82	6.19	3.86–7.84	Acceptable
Lindane	1	0.329	0.512	0.279–0.651	Acceptable
	2	3.341	3.84	2.22–4.79	Acceptable
Methoxychlor	1	2.30	2.22	1.34–3.05	Acceptable
	2	95.7	80.8	52.4–104	Acceptable
Toxaphene	3	1.08	1.42	0.432–2.23	Acceptable
	4	5.33	7.09	3.85–9.80	Acceptable
2,4-D	1	54.1	62.7	26.0–83.8	Acceptable
	2	3.00	3.22	0.413–5.66	Acceptable
2,4,5-TP (Silvex)	1	19.4	30.0	9.42–41.1	Acceptable
	2	2.36	3.71	1.23–5.00	Acceptable
Chloroform	1	18.4	17.7	14.2–21.2	Acceptable
	2	47.4	49.5	39.6–59.4	Acceptable
Bromoform	1	38.2	42.2	33.8–50.6	Acceptable
	2	12.5	16.9	13.5–20.3	Unacceptable
Bromodi- chloromethane	1	23.0	20.4	16.3–24.5	Acceptable
	2	68.0	63.2	50.6–75.8	Acceptable
Dibromo- chloromethane	1	62.2	56.9	45.5–68.3	Acceptable
	2	24.3	24.9	19.9–29.9	Acceptable
Total trihalomethanes	1	141.8	137.2	110–165	Acceptable
	2	152.3	154.5	124–185	Acceptable

Table 7.2.25 (continued)

Analytes	Sample number	Values		Acceptance limits	Performance evaluation
		Reported	True		
Vinyl chloride	1	6.83	5.98	3.59–8.37	Acceptable
1,1-Dichloroethylene	1	2.15	2.53	1.52–3.54	Acceptable
1,2-Dichloroethane	1	4.77	6.23	3.74–8.72	Acceptable
	2	11.1	8.90	5.34–12.5	Acceptable
1,1,1-Trichloroethane	1	8.18	10.5	8.40–12.6	Unacceptable
	2	152	182.5	146–219	Acceptable
Carbon tetrachloride	1	1.61	1.36	0.816–1.90	Acceptable
Trichloroethylene	1	8.80	8.22	4.93–11.5	Acceptable
	2	10.4	10.3	8.24–12.4	Acceptable
Benzene	1	3.97	4.32	2.59–6.05	Acceptable
Tetrachloroethylene	2	7.06	8.16	4.90–11.4	Acceptable
1,4-Dichlorobenzene	1	2.48	6.93	4.16–9.70	Unacceptable
Chlorobenzene	4	12.3	14.6	11.7–17.5	Acceptable
Methylene chloride	2	10.4	12.0	9.60–14.4	Acceptable
1,1-Dichloroethane	2	8.81	10.3	8.24–12.4	Acceptable
1,1-Dichloropropene	2		31.6	25.3–37.9	Unacceptable
1,1,2-Trichloroethane	2	11.7	12.8	10.2–15.4	Acceptable
1,1,1,2-Tetrachloroethane	2		17.3	13.8–20.8	Unacceptable
1,2,3-Trichloropropane	2	483		D.L–D.L	Unacceptable
2-Chlorotoluene	2	6.54	8.28	4.97–11.6	Acceptable
Residual free Cl (mg/L)	1	0.55	0.620	0.231–1.02	Acceptable
	2	1.32	1.39	0.972–1.87	Acceptable
Turbidity (NTU)	1	4.40	4.50	3.84–5.08	Acceptable
	2	0.62	0.500	0.341–0.779	Acceptable
Total filterable residue (mg/L)	1	308	223	161–364	Acceptable
Calcium (mg CaCO ₃ /L)	1	111.7	116	104–125	Acceptable
pH (units)	1	9.18	9.12	8.79–9.34	Acceptable
Alkalinity (mg CaCO ₃ /L)	1	32	31.5	28.8–37.1	Acceptable
Corrosivity (Langelier Ind at 20°C)	1	0.77	0.736	0.279–1.06	Acceptable
Na (mg/L)	1	13.6	14.5	13.4–15.9	Acceptable

^aAll values are expressed as µg/L unless otherwise indicated.

**Table 7.2.26. CLP performance evaluation results—inorganics
(ORNL, 1987)**

Scoring classification	Points deducted			
	1st quarter	2d quarter	3rd quarter	4th quarter
Duplicate precision ^a	0	1.0	0	0
Matrix spikes ^b	0.5	1.0	0.5	0.5
<i>Water sample</i>				
Identification	0	5	0	0
Quantitation	0	6.4	0	13
False positives and unmet CRDLs ^c	0	0	0	0
<i>Soil sample</i>				
Identification	0	0	0	0
Quantitation	3.9	0	3.5	0
False positives and unmet CRDLs ^c	0	0	0	0
Total points deducted	4.4	13.4	4.0	13.5
Laboratory score ^d	95.6	86.6	96.0	86.5
Mean CLP score ^e	84	79	78	82

^aMaximum of 10 points deducted based on number of duplicate results that are outside of the control limits.

^bMaximum of 10 points deducted based on number of matrix spike results that are outside of the control limits.

^cPoints deducted for false positive values and for not meeting the contract-required detection limits (CRDLs).

^dThe maximum number of possible points is 100.

^eThe mean score of all laboratories participating in the Contract Laboratory Program (CLP). The number of participating CLP laboratories varied from 19 to 23. Results are extrapolated from a graph and rounded to the nearest whole number.

**Table 7.2.27. CLP performance evaluation results—inorganics
(ORGDP, FY 1987)**

Scoring classification	Points deducted			
	1st quarter	2d quarter	3rd quarter	4th quarter
Duplicate precision ^a	1.0	0	0	0
Matrix spikes ^b	0.5	1.0	0.5	0.5
<i>Water sample</i>				
Identification	0	5	0	0
Quantitation	0	6.7	3.2	4.3
False positives and unmet CRDLs ^c	0	0	0	0
<i>Soil sample</i>				
Identification	0	0	0	0
Quantitation	17.5	9.3	3.7	13.6
False positives and unmet CRDLs ^c	0	0	0	0
Total points deducted	19	16.0	7.4	18.4
Laboratory score ^d	81.0	84.0	92.6	81.6
Mean CLP score ^e	93	87	82	91

^aMaximum of 10 points deducted based on number of duplicate results that are outside of the control limits.

^bMaximum of 10 points deducted based on number of matrix spike results that are outside of the control limits.

^cPoints deducted for false positive values and for not meeting the contract-required detection limits (CRDLs).

^dThe maximum number of possible points is 100.

^eThe mean score of all laboratories participating in the Contract Laboratory Program (CLP). The number of participating CLP laboratories varied from 19 to 23. Results are rounded to the nearest whole number.

**Table 7.2.28. CLP performance evaluation results—organics
(ORGDP, FY 1987)^a**

Scoring classification	Points deducted			
	1st quarter	2d quarter	3rd quarter	4th quarter
<i>TCL results^a</i>				
Identification	0	0	0	13.8
Quantitation	0	0	8.0	12.0
False positives and unmet CRDLs ^b	0	0	3.0	3
<i>Non-TCL results</i>				
Identification	0	0	0	0
Quantitation	0	0	0	0
False positives and unmet CRDLs ^b	1.0	0	0	0
Total points deducted	1.0	0	11	28.8
Laboratory score ^c	99.0	100	89	71.2
Mean CLP score ^d	92	87	87	88

^aTarget compound list results.

^bPoints deducted from false positive values and for not meeting the contract-required detection limits (CRDLs).

^cThe maximum number of possible points is 100.

^dThe mean score of all laboratories participating in the Contract Laboratory Program (CLP). The number of participating CLP laboratories varied from 19 to 23. Results are rounded to the nearest whole number.

Table 7.3.1. Environmental audits and reviews at ORNL during 1987

Date	Audit/review	Reviewer/ auditor	Subject	Findings/outcome
<i>External regulatory</i>				
3/4-5/87	RCRA inspection	EPA	Review of RCRA facilities and records	All facilities and record-management practices in order.
6/9-10/87	RCRA inspection	TDHE	Review of RCRA facilities and records	All facilities and record-management practices in order.
6/24-25/87	NPDES performance audit inspection	EPA/TDHE	ORNL's NPDES self-monitoring program	A number of minor problems involving equipment and methods, documentation and reporting procedures, and sample analysis were identified.
10/15/87	Air permit review facility inspection	TDHE	Permit list reconciliation and facility inspection	ORNL and TDHE permit lists were found to be identical. Permits were granted after source inspection.
<i>DOE</i>				
2/17-19/87	QA program appraisal	DOE-ORO	Environmental monitoring, ERFU Program, and wastewater treatment	A number of items and recommendations designed to strengthen ORNL's environmental program were made.
4/6-16/87	Environmental protection appraisal	DOE-ORO	Policies, training, communication, incident reporting, and performance	A number of known or potential environmental problems were identified. The survey's findings generally supported ORNL's knowledge concerning the status of environmental conditions at ORNL.
8/17-9/4/87	DOE Headquarters environmental survey	DOE/NUS ^a	Identification of ORNL environmental problems and areas of environmental risk	

^aEnvironmental specialist from NUS Corporation, under contract to DOE Headquarters in Washington, D.C., performed the site survey.

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