Master Schedule for CY-1980 Hanford Environmental Surveillance Routine Program

**P. J. Blumer
J. R. Houston
P. A. Eddy**

December 1979

**Prepared for the U.S. Department of Energy
under Contract EY-76-C-06-1830**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute**

NOTICE

This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the Department of Energy, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

The views, opinions and conclusions contained in this report are those of the contractor and do not necessarily represent those of the United States Government or the United States Department of Energy.

PACIFIC NORTHWEST LABORATORY
operated by
BATTELLE
for the
UNITED STATES DEPARTMENT OF ENERGY
Under Contract EY-76-C-06-1830

Printed in the United States of America
Available from
National Technical Information Service
United States Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22151

Price: Printed Copy \$____*; Microfiche \$3.00

*Pages	NTIS Selling Price
001-025	\$4.00
026-050	\$4.50
051-075	\$5.25
076-100	\$6.00
101-125	\$6.50
126-150	\$7.25
151-175	\$8.00
176-200	\$9.00
201-225	\$9.25
226-250	\$9.50
251-275	\$10.75
276-300	\$11.00

3 3679 00054 4314

MASTER SCHEDULE FOR CY-1980
HANFORD ENVIRONMENTAL SURVEILLANCE
ROUTINE PROGRAM

P. J. Blumer
J. R. Houston
P. A. Eddy

December 1979

Prepared for
the U.S. Department of Energy
under Contract EY-76-C-06-1830

Pacific Northwest Laboratory
Richland, Washington 99352

CONTENTS

INTRODUCTION	1
SCHEDULE	3
I. AIR	3
II. COLUMBIA RIVER	9
III. SANITARY WATER	10
IV. SURFACE WATER	11
V. GROUND WATER	12
VI. FOODSTUFFS	24
VII. WILDLIFE	26
VIII. SOIL AND VEGETATION	28
IX. EXTERNAL RADIATION MEASUREMENT	30
X. PORTABLE INSTRUMENT SURVEYS	33
XI. SURVEILLANCE OF WASTE DISPOSAL SITES	35

MASTER SCHEDULE FOR CY-1980
HANFORD ENVIRONMENTAL SURVEILLANCE ROUTINE PROGRAM

INTRODUCTION

This report provides the current schedule of data collection for the routine environmental surveillance program at the Hanford Site, as conducted by the Environmental Evaluations Section of the Pacific Northwest Laboratory^(a) for the Department of Energy. Questions about specific entries should be referred to the authors since modifications to the schedule are made during the year and special areas of study, usually of short duration, are not scheduled.

The environmental surveillance program objectives are to evaluate the levels of radioactive and nonradioactive pollutants in the Hanford environs, as required in Manual Chapter 0513, and to monitor Hanford operations for compliance with applicable environmental criteria given in Manual Chapter 0524 and Washington State Water Quality Standards. Air quality data are obtained in a separate program administered by the Hanford Environmental Health Foundation. The collection schedule for potable water is shown but it is not part of the routine environmental surveillance program. Water quality data for Hanford Site potable water systems are published each year by the Hanford Environmental Health Foundation.

The data collected are available in routine reports issued by the Environmental Evaluations staff. Groundwater data and evaluations are reported in the series, "Radiological Status of the Groundwater Beneath the Hanford Project for...", the latest issue being PNL-2899 for CY-1978. Data from locations within the plant boundaries are presented in the annual "Environmental Status of the Hanford Site for..." report series, the most recent report being PNL-2933 for 1978. Data from offsite locations are presented in the annual "Environmental Surveillance at Hanford for..." series of reports, the latest being PNL-2932 for 1978.

(a) Operated by Battelle Memorial Institute.

Frequency Symbols Used

D - Daily	M Comp. - Monthly Composite
W - Weekly	Q - Quarterly
BW - Biweekly (every 2 wk)	A - Annually
M - Monthly	SA - Semiannually
BM - Bimonthly (every 2 mo)	NRA - Not Routinely Analyzed

SCHEDULE

I. AIR

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Filter</u>	<u>Composite^(a) Group</u>
<u>Onsite</u>				
100-K	0058	BW	Beta	100 Areas
100-N (WPPSS)	1529	BW	Beta	100 Areas
100-D	1074	BW	Beta	100 Areas
100-A Fire Station	6154	BW	Beta	100 Areas
200 WEC	0046	BW	Beta, Alpha	200 West
200 WNE	1370	BW	Beta	200 West
200 WWC	0045	BW	Beta	200 West
Redox	0028	BW	Beta, Alpha	200 West
200 ESE	0043	BW	Beta, Alpha	200 East
200 ENC	1401	BW	Beta, Alpha	200 East
200 EEC	0042	BW	Beta, Alpha	200 East
200 EWC	0041	BW	Beta	200 East
Hanford	0057	BW	Beta	IE
Wye Barricade	0924	BW	Beta, Alpha	IE
400 E	6308	BW	Beta, Alpha	400 Area
400 W	6455	BW	Beta, Alpha	400 Area
400 S	6456	BW	Beta, Alpha	400 Area
400 N	6457	BW	Beta, Alpha	400 Area
3705 Building	1531	BW	Beta	300 Area
ACRMS	1793	BW	Beta	300 Area
300 SW Gate	6148	BW	Beta	300 Area
300 South Gate	6150	BW	Beta, Alpha	300 Area
300 Pond	1543	BW	Beta	300 Area
RRC CP#64	6182	BW	Beta, Alpha	ISE
1100 Area	6396	BW	Beta	ISE
Prosser Barricade	0055	BW	Beta, Alpha	ISW
ERC	0929	BW	Beta	ISW
Rattlesnake Springs	0972	BW	Beta	ISW
Yakima Barricade	1650	BW	Beta	INW
Vernita Bridge	1651	BW	Beta	INW

(a) Composite group for filter analyses shown on page 7.

I. AIR (contd)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Filter</u>	<u>Composite(a)</u>
			<u>Analyses</u>	<u>Group</u>
600 E	6461	BW	Beta, Alpha	600 Area
600 W	6462	BW	Beta, Alpha	600 Area
600 S	6463	BW	Beta, Alpha	600 Area
600 N	6464	BW	Beta, Alpha	600 Area
<u>Offsite</u>				
Wahluke Slope #2	1551	BW	Beta	INW
Berg Ranch	1405	BW	Beta, Alpha	INE
Othello	1652	BW	Beta	INE
Connell	1653	BW	Beta	INE
Cooke Brothers	1118	BW	Beta	INE
Wahluke Wm.	1119	BW	Beta	INE
Fir Road	6391	BW	Beta	ISE
Pettett	6351	BW	Beta	ISE
Byers Landing	0247	BW	Beta, Alpha	ISE
Pasco	1654	BW	Beta	ISE
Richland	0054	BW	Beta, Alpha	ISE
Benton City	0029	BW	Beta, Alpha	ISW
Moses Lake	0960	BW	Beta	ONE
Washtucna	0959	BW	Beta	ONE
Walla Walla	0262	BW	Beta	OSE
McNary Dam	0958	BW	Beta	OSE
Sunnyside	0964	BW	Beta	OW

(a) Composite group for filter analyses shown on page 7.

I. AIR (contd)

<u>Location</u>	<u>Charcoal Cartridge</u>			<u>Tritium Cartridge</u>		
	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>Onsite</u>						
100-K	1581	M	NRA			
100-N (WPPSS)	1661	M	NRA			
100-D	1582	BW	¹³¹ I	6335	BW	HTO
100-A Fire Station	6155	M	NRA			
200 WEC	1662	M	NRA			
200 WNE	6272	M	NRA			
200 WWC	6152	M	NRA			
Redox	1663	M	NRA			
200 ESE	1664	BW	¹³¹ I	6201	BW	HTO
200 ENC	1665	M	NRA			
200 EEC	1361	M	NRA			
200 EWC	6273	M	NRA			
Hanford	1666	M	NRA			
Wye Barricade	1584	M	NRA			
400 E	6309	BW	¹³¹ I	6428	BW	HTO
400 W	6458	BW	¹³¹ I			
400 S	6459	BW	¹³¹ I			
400 N	6460	BW	¹³¹ I			
3705 Building	1669	M	NRA			
ACRMS	1795	M	NRA			
300 SW Gate	6149	BW	¹³¹ I			
300 South Gate	6151	M	NRA			
300 Pond	6239	M	NRA			
RRC CP#64	6183	M	NRA			
1100 Area	6397	M	NRA			
Prosser Barricade	6248	M	NRA			
ERC	1585	M	NRA			
Rattlesnake Springs	1586	M	NRA			
Yakima Barricade	1667	M	NRA			
Vernita Bridge	1668	M	NRA			
<u>Offsite</u>						
Wahluke Slope #2	1671	M	NRA			
Berg Ranch	1672	M	NRA			
Othello	1673	M	NRA			

I. AIR (contd)

<u>Location</u>	<u>Charcoal Cartridge</u>			<u>Tritium Cartridge</u>		
	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Connell	1674	M	NRA			
Cooke Brothers	1675	M	NRA			
Wahluke Wm.	1676	M	NRA			
Fir Road	6392	BW	131 I	6393	BW	HTO
Pettett	6352	BW	131 I			
Byers Landing	0246	BW	131 I			
Pasco	1678	M	NRA			
Richland	0231	BW	131 I	6207	BW	HTO
Benton City	1670	BW	131 I	6411	BW	HTO
Moses Lake	1682	M	NRA			
Washtucna	1683	M	NRA			
Walla Walla	0261	M	NRA			
McNary Dam	1684	M	NRA			
Sunnyside	1680	BW	131 I			

I. AIR (contd)

<u>Composite Group</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
200 East	1749	M	Gamma scan
200 ENC		Q	⁹⁰ Sr, Pu-total
200 EWC			
200 ESE			
200 EEC			
200 West	1751	M	Gamma scan
200 WEC		Q	⁹⁰ Sr, Pu-total
200 WWC			
Redox			
200 WNE			
300 Area	1752	M	Gamma scan
300 Area, 3705 Building		Q	⁹⁰ Sr, Pu-total
ACRMS			
300 South Gate			
300 Southwest Gate			
300 Pond			
400 Area		M	Gamma scan
400 E	6465	Q	⁹⁰ Sr, Pu-total
400 W			
400 S			
400 N			
100 Areas	1753	M	Gamma scan
100 Area Fire Station		Q	⁹⁰ Sr, Pu-total
100-K			
100-N			
100-D			
600 Area	6466	M	Gamma scan
600 E		Q	⁹⁰ Sr, Pu-total
600 W			
600 S			
600 N			
Inner Eastern Quadrant	1754	M	Gamma scan
Hanford		Q	⁹⁰ Sr, Pu-total
Wye Barricade			

I. AIR (contd)

<u>Composite Group</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Inner Southeast Quadrant	1745	M	Gamma scan
RRC CP#64		Q	⁹⁰ Sr, Pu-total
1100 Area			
Richland			
Pasco			
Byers Landing			
Fir Road			
Pettett			
Inner Southwest Quadrant	1746	M	Gamma scan
Rattlesnake Springs		Q	⁹⁰ Sr, Pu-total
ERC			
Benton City			
Prosser Barricade			
Inner Northwest Quadrant	1747	M	Gamma scan
Yakima Barricade		Q	⁹⁰ Sr, Pu-total
Vernita			
Wahluke #2			
Inner Northeast Quadrant	1743	M	Gamma scan
Othello		Q	⁹⁰ Sr, Pu-total
Connell			
Berg Ranch			
Wahluke Watermaster			
Cooke Brothers			
Outer Northeast Quadrant	1742	M	Gamma scan
Moses Lake		Q	⁹⁰ Sr, Pu-total
Washtucna			
Outer Southeast Quadrant	1744	M	Gamma scan
Walla Walla		Q	⁹⁰ Sr, Pu-total
McNary			
Outer Western Quadrant	1748	M	Gamma scan
Sunnyside		Q	⁹⁰ Sr, Pu-total

II. COLUMBIA RIVER

<u>Sample Type</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>"Filter-Resin"</u>	Priest Rapids Dam			
	Resin Column	6394	BW	Gamma scan (^{131}I)
			Q	Pu, ^{129}I
	Filters	6395	BW	Gamma scan (^{131}I)
			Q	Pu, ^{129}I
	300 Area Forebay			
	Resin Column	6384	BW	Gamma scan (^{131}I)
			Q	Pu, ^{129}I
<u>Cumulative</u>				
	100-B	6156	M comp	Alpha, Beta, ^3H ,
				Gamma scan, U
			Q	^{89}Sr , ^{90}Sr , ^{226}Ra ,
				^{228}Ra
	Richland	1000	M comp	Alpha, Beta, ^3H ,
				Gamma scan, U
			Q	^{89}Sr , ^{90}Sr , ^{226}Ra ,
				^{228}Ra
<u>Grab</u>	Vernita	1204	W	pH, Diss O_2 , Turbidity
		1616	W	NO_3^-
		1373	M*	Coliforms, Fecal coli-
				forms, BOD
	Richland Forebay	1617	W	NO_3^-
		1365	M*	Coliforms, BOD, Fecal
				coliforms
		6429	W	pH, Diss O_2 , turbidity

* Performed by HEHF.

III. SANITARY WATER

<u>Sample Type</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>Cumulative</u>	Richland	1002	W	Alpha, Beta
			M comp	Gamma scan
	300 Area	1366	W*	NO ₃
		1686	M comp	Alpha, Beta, Gamma scan
			Q	⁸⁹ Sr, ⁹⁰ Sr, ³ H, ¹³¹ I, ²²⁶ Ra, ²²⁸ Ra
		1724	W*	NO ₃
<u>Grab</u>	FFTF	6382	M comp	Beta, Alpha, ³ H, Gamma scan (²² Na)
			Q	⁸⁹ Sr, ⁹⁰ Sr, ²²⁶ Ra, ²²⁸ Ra, ¹³¹ I, ¹⁰⁶ Ru, ⁹⁹ Tc
	Observatory	6381	Q	Alpha, Beta
	100-D	1219	Q	Alpha, Beta
	200 East	6374	Q	Alpha, Beta
	200 West	6375	Q	Alpha, Beta
	100 Area Fire Station	6376	Q	Alpha, Beta
	200 Area Fire Station	6377	Q	Alpha, Beta
	251 Building	6378	Q	Alpha, Beta
	Met Tower	6380	Q	Alpha, Beta

* Performed by HEHF.

IV. SURFACE WATER

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Gable Mountain Pond	1054	Q	Alpha, Beta, Gamma scan, ⁹⁰ Sr
West Lake	6133	Q	Alpha, Beta, Gamma scan, ⁹⁰ Sr
B Pond	0015	Q	Alpha, Beta, Gamma scan, ⁹⁰ Sr
FFTF Pond	6467	Q	Alpha, Beta, Gamma scan, ²² Na

V. GROUND WATER

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
<u>600 Area Wells</u>			
(699-)S0-7	*4817	Q	³ H, NO ₃ , S, Y
S0-8	*4818	Q	³ H, NO ₃ , B, Y
S1-7B	*4819	Q	³ H, NO ₃ , B, Y
S3-25	4787	Q	³ H, NO ₃
		A	WQ
S3-E12	4553	Q	³ H, NO ₃
		A	WQ
S6-E4 B	4502	Q	³ H, NO ₃ , U
S6-E4 D	4504	Q	³ H, NO ₃ , U
S6-E14	4580	Q	³ H, NO ₃
S7-34	4427	Q	³ H, NO ₃
S8-19	4421	Q	³ H, NO ₃
S11-E12A O	4552	Q	³ H, NO ₃
S11-E12A P	4747	Q	³ H, NO ₃
S12-3	4424	Q	³ H, NO ₃
S12-29	4592	Q	NO ₃
S14-20 A	4535	Q	NO ₃
S18-51	4852	Q	NO ₃ , F
S19-11	4780	SA	NO ₃
S19-E13	4802	Q	NO ₃ , F, U
		A	WQ
S24-19	4510	SA	NO ₃
S27-E14	4413	M	NO ₃ , U, F, Cr ⁺⁶
S29-E12	4803	Q	NO ₃ , F, U
S30-E15 A	4804	Q	NO ₃ , F, U, Cr ⁺⁶
S31-1 P	4745	Q	³ H, NO ₃
		A	WQ
1-18	4513	Q	³ H, NO ₃
2-3	*4423	M	³ H, NO ₃
		Q	B, Y
		A	WQ

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

* FFTF Preoperational Survey.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)2-7	4758	A	WQ
2-33	4526	Q	³ H, NO ₃
3-45	4593	Q	NO ₃
		SA	³ H
4-E6	4620	Q	³ H, NO ₃
8-17	4426	Q	β, ³ H, NO ₃ , γ
8-25	4788	Q	β, ³ H, NO ₃ , γ
8-32	4420	Q	³ H, NO ₃
9-E2	4519	Q	³ H, NO ₃
10-E12	4581	Q	³ H, NO ₃
10-54	4428	A	WQ
13-1 A	4830	Q	³ H, NO ₃
		SA	γ
13-1 B	4831	Q	³ H, NO ₃
		SA	γ
13-1 C	4854	Q	³ H, NO ₃
		SA	γ
13-64	4429	Q	³ H, NO ₃
14-E6 P	4700	Q	³ H, NO ₃
14-E6 O	4701	Q	³ H, NO ₃
14-E6 R	4702	Q	³ H, NO ₃
14-E6 S	4703	Q	³ H, NO ₃
14-E6 T	4766	Q	³ H, NO ₃
14-38	4527	Q	³ H, NO ₃
14-47	4608	Q	³ H, NO ₃
		A	WQ
15-15 B	4810	Q	β, ³ H, NO ₃ , γ
15-26	4464	Q	β, ³ H, NO ₃ , γ
		A	WQ
17-5	4422	Q	β, ³ H, NO ₃ , γ
17-70	4531	Q	³ H, NO ₃
19-43	4417	Q	³ H, NO ₃
		A	WQ

(a) Water quality analyses (designated WQ) include the following: pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl, SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)19-47 A	4609	Q	³ H, NO ₃
19-58	4528	Q	NO ₃
19-88	4522	Q	NO ₃
		A	F
20-E5 A	4838	Q	³ H, NO ₃ , γ
		A	WQ
20-E5 P	4705	Q	³ H, NO ₃
20-E5 Q	4706	Q	³ H, NO ₃
20-E5 R	4707	Q	³ H, NO ₃
20-E12 O	4567	Q	³ H, NO ₃
20-E12 P	4611	Q	³ H, NO ₃
20-20	4418	Q	β, ³ H, NO ₃ , γ
20-39	4559	Q	³ H, NO ₃
		A	γ
22-70	4595	Q	³ H, NO ₃
		A	γ
20-82	4529	Q	³ H, NO ₃
23-7	4855	M	³ H, NO ₃
24-1 P	4710	Q	³ H, NO ₃
24-1 Q	4711	Q	³ H, NO ₃
24-1 R	4712	Q	³ H, NO ₃
24-1 S	4713	Q	³ H, NO ₃
24-1 T	4764	Q	³ H, NO ₃
24-33	4416	Q	β, ³ H, NO ₃ , γ
24-46	4525	Q	³ H, NO ₃
25-55	4415	Q	³ H, NO ₃
25-70	4452	SA	³ H, NO ₃
		A	WQ
26-15	4518	Q	β, ³ H, NO ₃ , γ
		A	WQ
26-89	4598	SA	NO ₃
		A	WQ
27-4	4857	M	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following: pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl, SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)27-8	4557	Q	B, ³ H, NO ₃ , Y
29-78	4594	Q	³ H, NO ₃
28-40 O	4481	Q	³ H, NO ₃ , Y
28-40 P	4754	Q	³ H, NO ₃ , Y
28-52	4521	Q	³ H, NO ₃ , Y
31-31 O	4471	Q	³ H, NO ₃ , Y
31-31 P	4738	Q	³ H, NO ₃ , Y
31-53 B	4520	SA	³ H, NO ₃ , Y
		A	WQ
31-65 O	4495	Q	³ H, NO ₃
32-22	4794	Q	B, ³ H, NO ₃ , Y
32-42	4777	Q	³ H, NO ₃
32-43	4778	Q	³ H, NO ₃ , Y
32-62	4550	Q	³ H, NO ₃ , α
32-70	4492	Q	B, ³ H, NO ₃ , Y
32-72	4491	Q	³ H, NO ₃ , Y
32-77	4446	Q	B, ³ H, NO ₃ , Y
33-42	4779	Q	B, ³ H, NO ₃ , Y
33-56	4523	Q	B, α, ³ H, NO ₃ , Y
34-39 A	4448	Q	B, ³ H, NO ₃ , Y
34-41	4789	Q	³ H, NO ₃ , Y
34-42	4790	Q	B, ³ H, NO ₃ , Y
		A	WQ
34-51	4414	Q	B, ³ H, NO ₃ , Y
34-88	4439	Q	³ H, NO ₃
35-9	4419	Q	B, ³ H, NO ₃ , Y
35-66	4494	Q	B, ³ H, NO ₃ , Y
35-70	4441	Q	B, ³ H, NO ₃ , Y
		A	WQ
35-78	4445	Q	B, ³ H, NO ₃ , Y
36-46 P	4751	Q	³ H, NO ₃
		SA	Y
36-46 Q	4752	Q	³ H, NO ₃
		SA	Y
36-61 A	4447	Q	NO ₃

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)36-61 B	4549	Q	³ H, NO ₃
36-93	4579	SA	³ H, NO ₃
		A	WQ
37-43	4480	Q	B, ³ H, NO ₃ , Y
37-82 A	4554	Q	³ H, NO ₃
38-65	4546	Q	³ H, NO ₃
		SA	Y
38-70	4493	Q	B, ³ H, NO ₃ , Y
39-39	4791	SA	B, ³ H, NO ₃ , Y
39-79	4444	Q	B, ³ H, NO ₃ , Y
40-1	4566	Q	³ H, NO ₃
		A	Y, WQ
40-33	4431	Q	³ H, NO ₃
		A	Y, WQ
40-62	4458	Q	³ H, NO ₃
41-1	4858	M	³ H, NO ₃
41-23	4430	Q	B, ³ H, NO ₃ , Y
42-2	4859	M	³ H, NO ₃
42-12	4517	Q	B, ³ H, NO ₃ , Y
43-3	4861	M	³ H, NO ₃
43-88	4836	Q	³ H, NO ₃
44-64	4548	Q	³ H, NO ₃ , Y
45-4	4862	M	³ H, NO ₃
45-42	4450	Q	B, ³ H, NO ₃ , Y
		A	WQ
45-69	4449	Q	³ H, NO ₃
		SA	B, Y
		A	WQ
46-5	4863	M	³ H, NO ₃
46-21	4479	Q	³ H, NO ₃
47-6	4864	M	³ H, NO ₃
47-35	4478	Q	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)47-46	4564	Q	³ H, NO ₃
		SA	B, Y
47-60	4434	Q	B, ³ H, NO ₃ , Y
48-7	4756	Q	³ H, NO ₃
48-18	4830	Q	³ H, NO ₃
48-71	4487	Q	³ H, NO ₃
49-13	4771	Q	³ H, NO ₃
		A	WQ
49-28	4816	Q	³ H, NO ₃
49-55	4562	Q	B, ³ H, NO ₃ , Y
49-57	4485	Q	B, ³ H, NO ₃ , Y
49-79	4443	Q	³ H, NO ₃
		A	WQ
50-19	4776	SA	NO ₃
50-28 B	4844	Q	³ H, NO ₃
		A	WQ
50-30	4451	Q	³ H, NO ₃
50-42	4460	Q	³ H, NO ₃
50-53	4473	Q	B, ³ H, NO ₃ , Y
		A	WQ
50-85	4497	Q	³ H, NO ₃
51-63	4488	Q	³ H, NO ₃
51-75	4496	Q	³ H, NO ₃
53-35	4637	Q	³ H, NO ₃
		A	Y
53-47	4774	Q	³ H, NO ₃
53-55 A	4563	Q	³ H, NO ₃
53-103	4772	Q	³ H, NO ₃
54-34	4638	Q	³ H, NO ₃
54-37 A	4853	Q	³ H, NO ₃
54-42	4432	Q	NO ₃
		SA	³ H
54-45	4811	Q	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-) 54-57	4469	Q	³ H, NO ₃
55-40	4639	Q	³ H, NO ₃
55-44	4640	Q	³ H, NO ₃
55-50 AO	4433	Q	³ H, NO ₃
55-50 C	4483	Q	³ H, NO ₃
		SA	Y
		A	WQ
55-50 D	4484	Q	³ H, NO ₃
55-70	4442	Q	³ H, NO ₃
55-76	4533	Q	NO ₃
55-89	4453	Q	NO ₃
56-43	4650	Q	³ H, NO ₃
57-25 A	4856	Q	³ H, NO ₃
57-29 A	4462	Q	³ H, NO ₃
57-83	4558	Q	NO ₃
58-24	4652	Q	³ H, NO ₃
59-32	4815	Q	³ H, NO ₃
59-58	4827	Q	³ H, NO ₃
		A	WQ
59-80 B	4437	Q	NO ₃
60-32	4814	Q	³ H, NO ₃
60-57	4826	Q	³ H, NO ₃
60-60	4435	Q	³ H, NO ₃
61-37	4694	Q	NO ₃
61-41	4653	Q	³ H, NO ₃
61-62	4825	Q	³ H, NO ₃
61-66	4474	Q	³ H, NO ₃
62-31	4813	Q	NO ₃
62-43 F	4537	Q	³ H, NO ₃
63-25	4499	Q	³ H, NO ₃
63-51	4845	SA	³ H, NO ₃
63-55	4823	Q	³ H, NO ₃
63-58	4822	Q	³ H, NO ₃
63-90	4436	Q	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)64-27	4599	Q	NO ₃
		SA	³ H
		A	WQ
64-62	4824	Q	³ H, NO ₃
65-23	4851	SA	³ H, NO ₃
65-38	4716	Q	³ H, NO ₃
65-50	4477	Q	³ H, NO ₃
65-59	4532	Q	³ H, NO ₃
65-72	4468	Q	³ H, NO ₃
65-83	4775	Q	³ H, NO ₃
66-23	4547	Q	NO ₃
66-38	4586	Q	NO ₃
66-39	4812	Q	NO ₃
66-58	4821	Q	³ H, NO ₃
66-64	4820	Q	³ H, NO ₃
		A	WQ
66-103	4587	SA	³ H, NO ₃
		A	Y
67-51	4561	Q	³ H, NO ₃
67-86	4585	Q	³ H, NO ₃
67-98	4556	Q	³ H, NO ₃
68-105	4588	SA	³ H, NO ₃
		A	Y
69-38	4461	Q	³ H, NO ₃
70-68	4455	SA	³ H, NO ₃
71-30	4490	SA	³ H, NO ₃
71-52	4454	Q	³ H, NO ₃
71-77	4584	SA	³ H, NO ₃
		A	WQ
72-73	4569	SA	³ H, NO ₃
72-88	4465	Q	³ H, NO ₃
		A	WQ
72-92 0	4565	SA	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following: pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl, SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(699-)72-98	4463	SA	³ H, NO ₃
73-61	4583	Q	³ H, NO ₃
74-44	4516	Q	³ H, NO ₃
		A	WQ
74-60	4583	SA	NO ₃
77-36	4500	Q	³ H, NO ₃
77-54	4512	Q	NO ₃
78-62	4511	SA	NO ₃
		A	WQ
80-43 P	4760	SA	NO ₃
80-43 Q	4761	SA	NO ₃
80-43 R	4762	SA	NO ₃
80-43 S	4763	SA	NO ₃
81-58	4597	Q	³ H, NO ₃
		A	WQ
83-47	4515	SA	³ H
84-35 A O	4596	SA	³ H, NO ₃
87-55	4792	Q	³ H, NO ₃
		A	WQ
89-35	4571	Q	NO ₃
		A	WQ
90-45	4770	Q	³ H
		SA	NO ₃
96-49	4591	Q	³ H, NO ₃
97-43	4590	Q	³ H, NO ₃
97-51 A	4728	Q	³ H, NO ₃
101-48 B	4846	SA	³ H, NO ₃
<u>100 Area Wells</u>			
(199-)B3-1	1851	SA	³ H
B3-2 P	1856	SA	³ H, NO ₃
B3-2 Q	1857	SA	³ H, NO ₃
B4-1	1853	Q	³ H, NO ₃
B4-2	1854	Q	³ H, NO ₃

(a) Water quality analyses (designated WQ) include the following: pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl, SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(199-)B4-3	1855	Q	³ H, NO ₃
B4-4	1891	SA	B, ³ H, NO ₃ , Y
B5-1	1895	Q	³ H, NO ₃
B9-1	1893	SA	³ H, NO ₃
D2-5	1894	Q	³ H, NO ₃
D5-12	1892	Q	B, ³ H, NO ₃ , Y
D8-3	1862	Q	³ H, NO ₃
F5-1	1865	Q	³ H, NO ₃
F5-3	1867	Q	³ H, NO ₃
F5-4	1868	Q	³ H, NO ₃
F5-6	1870	Q	³ H, NO ₃
F7-1	1871	Q	³ H, NO ₃
F8-1	1888	Q	³ H, NO ₃
F8-2	1889	Q	³ H, NO ₃
H3-1	1890	Q	³ H, NO ₃
H4-3	1877	M	B, U, ³ H, NO ₃ , Cr ⁺⁶ F, Cu
		Q	Y
		A	WQ
K-11	1882	Q	³ H, NO ₃
		SA	Y
K-19	1884	Q	³ H, NO ₃
K-20	1885	Q	³ H, NO ₃
K-22	1887	Q	³ H, NO ₃
N-1	1908	Q	³ H, NO ₃ , Y
		SA	Sr
N-2	1904	Q	³ H, NO ₃ , Y
		SA	Sr
N-3 0	1896	Q	B, ³ H, Y
		SA	Sr
N-4	1899	Q	B, ³ H, NO ₃ , Y
		SA	Sr
N-5	1909	Q	³ H, NO ₃ , Y
		SA	Sr

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(199-)N-6	1901	Q	B, ³ H, Y
		SA	Sr
N-7	1910	Q	³ H, NO ₃ , Y
		SA	Sr
N-10 P	1900	Q	B, ³ H, NO ₃ , Y
		SA	Sr
N-14	1902	Q	B, ³ H, NO ₃ , Y
		SA	Sr
N-15	1903	Q	B, ³ H, NO ₃ , Y
		SA	Sr
<u>300 Area Wells</u>			
(399-)1-1	4403	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
1-2	4404	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
1-3	4406	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
1-4	4407	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
1-5	4806	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y (To HEDL)
1-6	4837	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
2-1	4402	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
2-2	4633	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
2-3	4634	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
3-1	4401	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
3-2	3303	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
3-3	3034	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
3-9	4626	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y, Sr
3-10	4627	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y, Sr
3-11	4628	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y, Sr
4-1	4410	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
4-7	4568	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y
4-9	4629	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y, Sr
4-10	4630	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y, Sr
5-1	4411	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
6-1	4409	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y

(a) Water quality analyses (designated WQ) include the following: pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl, SO₄-S, and dissolved solids.

V. GROUND WATER (contd)

<u>Well Number</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u> ^(a)
(399-)8-1	4405	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
8-2	4408	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
8-3	4412	Q	B, NO ₃ , U, Cr ⁺⁶ , F, Y
8-4	4865	M	B, NO ₃ , U, Cr ⁺⁶ , F, Y

200 Area Wells

(299-)E19-1	2359	Q	B, ³ H, NO ₃ , Y
E23-1	2553	Q	B, ³ H, NO ₃ , Y
E24-7	2542	Q	B, ³ H, NO ₃ , Y
E25-2	2554	Q	B, ³ H, NO ₃ , Y
E26-1	2545	Q	B, ³ H, NO ₃ , Y
E26-3	2365	Q	B, ³ H, NO ₃ , Y
E27-1	2287	Q	B, ³ H, NO ₃ , Y
E28-1	2555	Q	B, ³ H, NO ₃ , Y
E28-5	2285	Q	B, ³ H, NO ₃ , Y
E33-14	2297	Q	B, ³ H, NO ₃ , Y
E34-1	2549	Q	B, ³ H, NO ₃ , Y
W6-1	2990	Q	B, ³ H, NO ₃ , Y
W10-5	2890	Q	B, ³ H, NO ₃ , Y
W11-9	2881	Q	B, ³ H, NO ₃ , Y
W12-1	2883	Q	B, ³ H, NO ₃ , Y
W15-2	2891	Q	B, ³ H, NO ₃ , Y
W18-3	3011	Q	B, ³ H, NO ₃ , Y
W19-4	2938	Q	B, ³ H, NO ₃ , Y
W21-1	2930	Q	B, ³ H, NO ₃ , Y
W22-7	3014	Q	B, ³ H, NO ₃ , Y
W22-9	3013	Q	B, ³ H, NO ₃ , Y

(a) Water quality analyses (designated WQ) include the following:
pH, Conductance, Ca, Mg, Na, CO₃, HCO₃, K, B, NO₃-N, Cl,
SO₄-S, and dissolved solids.

VI. FOODSTUFFS

<u>Location</u>	<u>Description</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>Whole Milk</u> ^(a)				
Harris	Riverview	0975	BW	¹³¹ I, Gamma scan
			Q	⁸⁹ Sr, ⁹⁰ Sr
Pettett	Byers Landing	6340	BW	¹³¹ I, Gamma scan
			M	⁸⁹ Sr, ⁹⁰ Sr
Truhlicka	Benton City	6296	BW	¹³¹ I, Gamma scan
			Q	⁹⁰ Sr
Meeker	Sunnyside	6355	BW	¹³¹ I, Gamma scan
			M	⁸⁹ Sr, ⁹⁰ Sr
Lazy Dee	Wahluke Slope	6165	BW	¹³¹ I, Gamma scan
			Q	⁹⁰ Sr
Young	Columbia Basin	1648	BW	¹³¹ I, Gamma scan
Cooke Brothers	Composite #3		Q	⁹⁰ Sr
Price				
Bleazard				
<u>Meat</u>				
Harris	Riverview	1292	SA	Gamma scan, ⁹⁰ Sr
Pasco Meat Packers	Commercial	1375	Q	Gamma scan, ⁹⁰ Sr
Local Farm	FFTF F Sector	6418	A	Gamma scan
<u>Produce (Leafy Vegetables)</u> ^(b)				
Kinne	Ringold	6373	A	Gamma scan, ⁹⁰ Sr
Harris	Riverview	1609	M	Gamma scan, ⁹⁰ Sr
Local Farm	Sunnyside	6372	A	Gamma scan, ⁹⁰ Sr
Local Farm	Benton City	1612	BM	Gamma scan, ⁹⁰ Sr
Local Farm	Sage Moor Vicinity	6419	A	Gamma scan
Local Farm ^(c)	Walla Walla	6409	M	Gamma scan
Local Farm ^(c)	Moses Lake	6407	M	Gamma scan
Local Farm ^(c)	McNary	6410	M	Gamma scan
Local Farm ^(c)	Othello	6408	M	Gamma scan

(a) Sample of forage also collected but not analyzed unless a positive result for ¹³¹I is observed.

(b) Sample collected only during growing season, May to October.

(c) Sample only from one source each month.

VI. FOODSTUFFS (contd)

<u>Location</u>	<u>Description</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
	<u>Farm Fruit</u>			
Sagemoor Vicinity	Peaches	0567	A	Gamma scan
Sagemoor Vicinity	Plums	0577	A	Gamma scan
Sagemoor Vicinity	Grapes	6417	A	Gamma scan
Sagemoor Vicinity	Apples	0565	A	Gamma scan
Sagemoor Vicinity	Pears	6424	A	Gamma scan
Sagemoor Vicinity	Cherries	0543	A	Gamma scan
Sunnyside	Cherries	6453	A	Gamma scan
Sunnyside	Peaches	6443	A	Gamma scan
Sunnyside	Plums	6442	A	Gamma scan
Sunnyside	Pears	6441	A	Gamma scan
Sunnyside	Apples	6440	A	Gamma scan
Sunnyside	Grapes	6454	A	Gamma scan

VII. WILDLIFE

<u>Location</u>	<u>EMA#</u>	<u>Species</u>	<u>Frequency</u>	<u>Analyses</u>
<u>Fish(a)</u>				
Above Priest Rapids Dam		Mtn. Whitefish Smallmouth Bass	SA (April & Oct.) A (April)	Gamma Scan Gamma Scan
Vernita to Priest Rapids		Mtn. Whitefish	SA (April & Oct.)	Gamma Scan
100-D		Mtn. Whitefish	Q	Gamma Scan
Hanford Slough		Mtn. Whitefish Smallmouth Bass	SA (April & Oct.) A (April)	Gamma Scan Gamma Scan
Ringold		Mtn. Whitefish	SA (April & Oct.)	Gamma Scan
<u>Ducks(b)</u>				
Vicinity 100-N	6451 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
B Pond	1298 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
Gable Pond	0432 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
U Pond	0439 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
West Lake	6186 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
300 Area	1589 ATS*	Mallard Other	2/mo.(c) 2/mo.(c)	Gamma Scan Gamma Scan
<u>Geese(d)</u>				
Vicinity 100-N	ATS*		1/mo.(e)	Gamma Scan
<u>Game Birds(f)</u>				
Vicinity Burial Grounds:				
100-BC	ATS*	Chukar, Pheas- ant or Quail	A (3 Bird Comp. in October)	Gamma Scan
100-K	ATS*	Chukar, Pheas- ant or Quail	A (3 Bird Comp. in October)	Gamma Scan

(a) Collect up to five fish at each sampling. Two samples are to be taken from each:
1) skinless muscle fillet from one side of fish and 2) remainder of fish.

(b) Other species such as coot, teal, widgeon, etc., may be used for this sample.

(c) 2/mo. in January, August, and December.

(d) Collect the same species October through December.

(e) 1/mo. in October, November, and December.

(f) Composite the samples only if they are of the same species; otherwise
submit as separate samples.

* ATS - according to species.

VII. WILDLIFE (contd)

<u>Location</u>	<u>EMA#</u>	<u>Species</u>	<u>Frequency</u>	<u>Analyses</u>
<u>Game Birds</u> (contd)(a)				
100-N	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
100-D	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
100-H	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
100-F	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
200 E	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
200 W	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
300 Area	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
<u>OFFSITE</u>				
Wahluke Slope	ATS*	Chukar, Pheasant or Quail	A (3 Bird Comp. in October)	Gamma Scan
<u>Deer</u>				
100 Area	According to location	Mule	2/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr Liver - Pu
200 Areas	According to location	Mule	2/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr Liver - Pu
300 Area	According to location	Mule	2/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr Liver - Pu
<u>Rabbits</u>				
100-N Area	According to location	Cottontail	4/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr
200 Areas	According to location	Cottontail	4/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr
300 Area	According to location	Cottontail	4/yr	Muscle - Gamma Scan Bone - ⁹⁰ Sr

(a) Composite the samples only if they are of the same species; otherwise submit as separate samples.

* ATS - According to species.

VIII. SOIL AND VEGETATION

<u>Location</u>	<u>Soil</u>	<u>Vegetation</u>	<u>Frequency</u>	<u>Analyses</u>
Benton City	6000	6046	A	Gamma scan, 90Sr, U, Pu(a)
Yakima Barricade	6004	6050	A	Gamma scan, 90Sr, U, Pu(a)
Wahluke #2 Air Sampling Station	6007	6053	A	Gamma scan, 90Sr, U, Pu(a)
Berg Ranch Air Sampling Station	6008	6054	A	Gamma scan, 90Sr, U, Pu(a)
Ringold	6009	6055	A	Gamma scan, 90Sr, U, Pu(a)
Byers Landing Air Sampling Station	6011	6057	A	Gamma scan, 90Sr, U, Pu(a)
Wye Barricade	6016	6062	A	Gamma scan, 90Sr, U, Pu(a)
Hanford Townsite (CP#57)	6017	6063	A	Gamma scan, 90Sr, U, Pu(a)
200 E Hill Air Sampling Station	6022	6068	A	Gamma scan, 90Sr, U, Pu(a)
Taylor Flats #2	6421	6423	A	Gamma scan, 90Sr, U, Pu(a)
Prosser Barricade	6225	6227	A	Gamma scan, 90Sr, U, Pu(a)
East of 200 W Gate (CP#2)	6276	6283	A	Gamma scan, 90Sr, U, Pu(a)
Southeast Side FFTF Site	6277	6286	A	Gamma scan, 90Sr, U, Pu(a)
East of ALE Field Lab	6278	6287	A	Gamma scan, 90Sr, U, Pu(a)
1/2 Mile Northeast FFTF Site	6282	6285	A	Gamma scan, 90Sr, U, Pu(a)
Sunnyside	6357	6363	A	Gamma scan, 90Sr, U, Pu(a)
Sagemoor Farms	6358	6364	A	Gamma scan, 90Sr, U, Pu(a)
Taylor Flats #1	6420	6422	A	Gamma scan, 90Sr, U, Pu(a)

(a) Isotopic Pu.

VIII. SOIL AND VEGETATION (contd)

<u>Location</u>	<u>Soil</u>	<u>Vegetation</u>	<u>Frequency</u>	<u>Analyses</u>
West End Fir Road	6360	6366	A	Gamma scan, 90Sr, U, Pu(a)
Harris Farm	6361	6367	A	Gamma scan, 90Sr, U, Pu(a)
200 ENC	6362	6368	A	Gamma scan, 90Sr, U, Pu(a)

(a) Isotopic Pu.

IX. EXTERNAL RADIATION MEASUREMENT

Thermoluminescent Dosimeters

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Coyote Rapids	6135	M	Immersion Dose
Richland Pumpouse	1715	M	Immersion Dose
200 ENC ^(a)	1467	M	Ambient Dose
200 ESE ^(a)	1468	M	Ambient Dose
200 EWC ^(a)	1470	M	Ambient Dose
200 EEC ^(a)	1469	M	Ambient Dose
200 WEC ^(a)	1473	M	Ambient Dose
Redox ^(a)	1474	M	Ambient Dose
200 WWC ^(a)	1471	M	Ambient Dose
200 WNE ^(a)	1472	M	Ambient Dose
3705 Building	1486	M	Ambient Dose
ACRMS	1698	M	Ambient Dose
300 Pond ^(a)	1699	M	Ambient Dose
300 Southwest Gate ^(a)	6163	M	Ambient Dose
300 South Gate ^(a)	6162	M	Ambient Dose
CP #64 ^(a)	6171	M	Ambient Dose
1100 Area ^(a)	6398	M	Ambient Dose
100-K ^(a)	1475	M	Ambient Dose
100-N (WPPSS) ^(a)	1476	M	Ambient Dose
100-D ^(a)	1477	M	Ambient Dose
100 Area Fire Station ^(a)	6164	M	Ambient Dose
400 E ^(a)	1729	M	Ambient Dose
400 W ^(a)	6468	M	Ambient Dose
400 S ^(a)	6469	M	Ambient Dose
400 N ^(a)	6470	M	Ambient Dose
FFTF North	6177	M	Ambient Dose
FFTF Southeast	6178	M	Ambient Dose
Prosser Barricade ^(a)	6176	M	Ambient Dose
Hanford ^(a)	1480	M	Ambient Dose
Wye Barricade ^(a)	1483	M	Ambient Dose
Rattlesnake Springs ^(a)	1485	M	Ambient Dose
ERC ^(a)	1484	M	Ambient Dose
Yakima Barricade ^(a)	1482	M	Ambient Dose
Wahluke #2 ^(a)	1490	M	Ambient Dose

(a) Located at Air Sampling Station.

IX. EXTERNAL RADIATION MEASUREMENT (contd)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Pasco ^(a)	1488	M	Ambient Dose
Richland ^(a)	1487	M	Ambient Dose
Vernita ^(a)	1481	M	Ambient Dose
Benton City ^(a)	1499	M	Ambient Dose
Othello ^(a)	1493	M	Ambient Dose
Connell ^(a)	1494	M	Ambient Dose
Berg Ranch ^(a)	1491	M	Ambient Dose
Wahlake Wm. ^(a)	1495	M	Ambient Dose
Cooke Brothers ^(a)	1492	M	Ambient Dose
Byers Landing ^(a)	1498	M	Ambient Dose
Pettett ^(a)	6353	M	Ambient Dose
Sage Moor Farms	6354	M	Ambient Dose
Fir Road ^(a)	6356	M	Ambient Dose
Walla Walla ^(a)	1695	M	Ambient Dose
Sunnyside ^(a)	1500	M	Ambient Dose
McNary ^(a)	1696	M	Ambient Dose
Moses Lake ^(a)	1693	M	Ambient Dose
Washtucna	1694	M	Ambient Dose
Up River 100-B Area	6471	M	Ambient Dose
Below 100-B Retention Basin	6472	M	Ambient Dose
Above 100-K Boat Ramp	6260	M	Ambient Dose
Below 100-K Retention Basins	6473	M	Ambient Dose
100-N Trench Springs	6390	M	Ambient Dose
Down River 100-N Trench Springs	6474	M	Ambient Dose
Down River 100-D	6475	M	Ambient Dose
Down River Opposite 100-D	6261	M	Ambient Dose
Lower End Locke Island	6262	M	Ambient Dose
White Bluffs Ferry Landing	6263	M	Ambient Dose
White Bluffs Slough	6476	M	Ambient Dose
100-F Area Floodplain	6477	M	Ambient Dose
Below 100-F	6264	M	Ambient Dose
Hanford Peninsula	6478	M	Ambient Dose
Hanford Powerline Crossing	6389	M	Ambient Dose
Hanford Ferry Landing	6265	M	Ambient Dose

(a) Located at Air Sampling Station.

IX. EXTERNAL RADIATION MEASUREMENT (contd)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Hanford RR Track	6266	M	Ambient Dose
Savage Island Slough	6479	M	Ambient Dose
Ringold Island	6267	M	Ambient Dose
Powerline Crossing	6268	M	Ambient Dose
North End Wooded Island	6480	M	Ambient Dose
South End Wooded Island	6269	M	Ambient Dose
Island River Mile 344	6481	M	Ambient Dose
Island River Mile 333	6482	M	Ambient Dose

(a) Located at Air Sampling Station.

X. PORTABLE INSTRUMENT SURVEYS

Columbia River Shoreline

<u>Location</u>	<u>River Mile</u>	<u>EMA #</u>	<u>Instrument</u>
Above 100-K Boat Ramp	382.5 P	6132	LLM, GM
100-N Trench Springs	379.4 P	6129	LLM, GM
Down River Opposite 100-D	376.8 F	6241	LLM, GM
Lower End Locke Island	371.0 IP	6123	LLM, GM
White Bluffs Ferry Landing	369.7 P	6121	LLM, GM
Below 100-F	368.3 P	6120	LLM, GM
Hanford Powerline Crossing	362.6 P	6118	LLM, GM
Hanford Ferry Landing	362.0 F	6117	LLM, GM
Hanford Railroad Track	361.4 P	6242	LLM, GM
Ringold Island	354.7 IP	6114	LLM, GM
Powerline Crossing	350.4 P	6113	LLM, GM

Roadway Survey

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
300 Area to Wye Barricade Rt. 4-S to Wye Barricade Return to Rt. 4-S to 300 Area.	1	M	Bioplastic Crystal
Wye Barricade to 200 E Rt. 2-S from Wye Barricade to the NE Gate of 200 E via 11A and return to Wye Barricade.	2	M	Bioplastic Crystal
100-N to 200 W Rt. 4-N from 100-N to 100-K via Rt. 1. 100-K to NW Gate of 200 W via Rt. 1, Rt. 4-N, and 11A.	3	M	Bioplastic Crystal
200 W to 100-N NW Gate of 200 W to 100-N via 11A and Rt. 4-N.	4	M	Bioplastic Crystal
Redox Cutoff Rd. and Rt. 3 Redox cutoff road from inter- section of Rt. 3 to SE corner 200 W. Rt. 3 to 11A and return to Rt. 4S.	5	M	Bioplastic Crystal

X. PORTABLE INSTRUMENT SURVEYS (contd)

Roadway Survey (contd)

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
Hanford to 100-N Rt. 2-N from Rt. 11A to 100-N inter- section via Rt. 4-N. 100-N intersection to Rt. 11A via Rt. 4-N and Rt. 2-N.	6	Q	Bioplastic Crystal
11A to 100-K 11A and Rt. 6 intersection to 100-K via Rt. 6 and Rt. 1. Return via Rt. 1 and Rt. 6 to 11A.	7	Q	Bioplastic Crystal
Yakima Barricade to NECO Entrance Via 11A and Rt. 4-S.	8	Q	Bioplastic Crystal
Horn Rapids to 11A Rt. 10 from Horn Rapids to Wye Barricade. Rt. 4-S from Wye Barricade to 11A.	9	M	Bioplastic Crystal

Railway Survey

300 Area to May Junction including FFTF Spur	1	Q	Bioplastic Crystal
May to Ethel	2	Q	Bioplastic Crystal
100-N to Nancy to Helen Helen via Audrey to 100-K, Helen to Susie, Susie to 200 West, Susie to 200 East	3	Q	Bioplastic Crystal
100-K to Audrey Audrey to 100-B, Audrey to Vernita Highway	4	A	Bioplastic Crystal
May to Nancy via Ruth and Bettie	5	A	Bioplastic Crystal

Aerial Survey

Project Perimeter	3	A	NaI Crystal
-------------------	---	---	-------------

XI. SURVEILLANCE OF WASTE DISPOSAL SITES

Active, inactive, and retired waste disposal sites require periodic monitoring to assure appropriate maintenance. The following sites are routinely checked for vegetation growth, evidence of burrowing animals, erosion, status of enclosure, etc.

<u>Description</u>	<u>Frequency</u>
100-K Trench	A
100-BC SE B.G. (105-C Solid Waste)	SA
100-BC SW B.G. (105-B Solid Waste, N. Solid Waste)	SA
100-BC Construction B.G.	SA
100-BC B.G. East of 108-B	SA
100-BC Irradiated Metal Storage Basin Waste	SA
108-B Ball 3x Burial Ground	SA
108-B Crib	SA
105-C Trench	SA
105-B Trench	SA
107 Basin Sludge Burial	SA
105-C Metal Examination Waste Tank	SA
100-BC Overflow Pluto Crib	SA
107-C Retention Basin	SA
107-B Retention Basin	SA
100-BC Effluent Diversion Box	SA
100-BC Minor B.G.'s East of 105-B	SA
100-BC Outfall Structures	SA
100-DR Outfall Structures	SA
100-DDR Trench	SA
107-D Retention Basin	SA
107-DR Retention Basin	SA
100-DDR Effluent Lines	SA
100-D Dummy Decontamination Waste	SA
100-DDR Solid Waste B.G. (VSR Thimbles)	SA
100-DDR Construction B.G.	SA
100-DDR #3 B.G. NE of DR	SA
100-DDR Pluto Crib	SA
100-DDR 105 Basin Sludge B.G.	SA
100-DDR #1 B.G.	SA
100-DDR #2 B.G.	SA
100-H Trench	SA
107-H Basin	SA
100-H Effluent Lines (Junction Boxes)	SA

XI. SURVEILLANCE OF WASTE DISPOSAL SITES (contd)

<u>Description</u>	<u>Frequency</u>
100-H Liquid Waste Burial	SA
100-H #1 B.G.	SA
100-H #2 B.G.	SA
P-11 Area	A
100-F Lewis Canal	SA
100-F Swampy Area	SA
100-F Trench	SA
100-F Retention Basin	SA
100-F Trench Drain and Adjacent Wood Covered Pit	SA
100-F Ball Washer Crib	SA
100-F #3 B.G.	SA
100-F #2 B.G.	SA
100-F #1 B.G.	SA
100-F Sawdust Burial	SA
100-F Leaching Trench	SA
100-F 60" Overground Pipe	SA
100-F Happy Valley Farm Plots	SA
200 W New Redox Pond (216-S-16)	SA
200 W Old Redox Pond (216-S-17)	A
200 W U Pond Overflow (216-U-11)	SA
200 E B Pond (216-B-3)	Q
200 E B Pond Ditch #3	SA
200 E Purex Crib #1 (216-A-6)	SA
200 E Purex Crib #2 (216-A-30-1)	SA
200 E North of Purex Crib #3 (216-A-37-1)	SA
200 E NE Perimeter Fence	SA
200 E 216-BC Crib Area	SA
200 E California Nuclear B.G. Perimeter	Q
300 Area 300 N B.G.	SA
300 Area 300 Wye B.G.	SA
300 Area #2 B.G.	SA
300 Area #3 B.G.	SA
300 Area #4 B.G.	SA
300 Area #5 B.G.	SA
300 Area #7 B.G.	SA
300 West B.G.	SA
300 Area N. Process Trench at Perimeter Fence	Q
200-N, P, and R Areas	SA

DISTRIBUTION

<u>No. of Copies</u>		<u>No. of Copies</u>	
	<u>OFFSITE</u>		<u>Hanford Environmental Health Foundation</u>
	A. A. Churm DOE Patent Group Department of Energy 9800 South Cass Ave. Argonne, IL 60439		B. D. Reinert
27	<u>DOE Technical Information Center</u>	3	<u>UNC Nuclear Industries, Inc.</u>
	R. R. Mooney Washington State Department of Social and Health Services 1514 Smith Tower Seattle, WA 98104		T. E. Dabrowski E. A. Weekly UNI Files
		2	<u>Westinghouse Hanford Company</u>
			P. R. Prevo R. B. Hall
	<u>ONSITE</u>	46	<u>Pacific Northwest Laboratory</u>
9	<u>DOE Richland Operations Office</u>		G. L. Andersen L. L. Belt P. J. Blumer (20) P. E. Bramson J. P. Corley R. L. Dirkes P. A. Eddy L. W. Hankel W. M. Harty J. R. Houston W. W. King H. V. Larson V. L. McGhan K. R. Price M. R. Quarders (3) B. D. Robertson M. J. Sula C. M. Unruh Technical Information (5) Publishing Coordination GO (2)
	O. J. Elgert D. R. Elle (5) H. E. Ransom M. W. Tiernam T. E. Austin		
7	<u>Rockwell Hanford Company</u>		
	W. F. Heine P. G. Lorenzini G. C. Owens J. V. Panesko W. H. Price R. E. Wheeler Rockwell Files		