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MASTER SCHEDULE - FY 1971
ROUTINE ENVIRONMENTAL SURVEILLANCE
PROGRAM

EFFECTIVE SEPTEMBER 1, 1971

SEPTEMBER 1971

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MASTER SCHEDULE, FY 1971
ROUTINE ENVIRONMENTAL SURVEILLANCE PROGRAM :V

Effective September 1, 1971

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Environmental Evaluations Section
Occupational and Environmental Safety Department
Operations & Services Division

September 1971

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MASTER SCHEDULE - FY 1972
ROUTINE ENVIRONMENTAL SURVEILLANCE PROGRAM

Effective September 1, 1971

I. INTRODUCTION

This report provides the current schedule of data collection for the routine environmental surveillance program at the Hanford plant conducted by Environmental Evaluations for the Atomic Energy Commission. Because minor modifications in this schedule are made from time to time, any questions about specific entries should be referred to the author.

Much of the data collected is available in routine reports issued by the Environmental Evaluations staff. Data from sampling locations within the plant boundaries are presented in the annual "Environmental Status of the Hanford Reservation for ..." report series. Data from off-plant locations are presented in the annual "Evaluation of Radiological Conditions in the Vicinity of Hanford for ..." series of reports.

Shutdown of the K reactors, leaving N as the only operating production reactor, has permitted a major de-emphasis of the river-associated portions of the routine surveillance program. Although some effort continues in all media categories, specific measurement for short-lived nuclides is no longer required, and the time-scale of any remaining sources of activity release to the river is such as to permit reduced measurement frequency.

A number of changes have been made in the groundwater surveillance program, to provide increased monitoring of groundwater for ^3H and NO_3 ion near the reactor areas. Changes in the air sample program have been primarily in the composite groupings for specific radionuclide analyses.

Soil, vegetation, and small mammal sampling have now been placed in a routine schedule, in part to respond to requests for data on plutonium in the local environment and in part to initiate better baseline measurements within the reservation prior to construction and operation of new facilities.

Frequency Symbols Used

D - Daily
 W - Weekly
 BW - Biweekly
 SW - Semi-weekly
 M - Monthly
 BM - Bimonthly
 SM - Semi-monthly
 M Comp. - Monthly Composite
 Q - Quarterly
 A - Annualy
 SA - Semi-annually
 † - BNW

II. WATER SAMPLESA. Columbia River Raw Integrated

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Richland	1000	W	Beta, gamma scan
		BW Comp.	I-131
		M Comp.	H-3, P-32, Sr-90, Alpha
		Q	Pu, Zn-65, Cs-137
Bonneville Dam	0955	M Comp.	Zn-65, Sc-46

B. Columbia River Raw Grab

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Vernita	+1204	W	pH, Diss. O ₂ , Turbidity
	+1373	M	Coliform, Enterococci, BOD
	+1616	W	NO ₃
	1615	M Comp.	H-3, Sr-90, Alpha
100-F	+1392	Q	Pu, Cs-137
		M	Coliform, Enterococci, BOD
300 Area Riverbank Spring	+1394	M	Coliform, Enterococci, BOD

B. Columbia River Raw Grab (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
300 Area	+ None	D	pH, DO, Turbidity
North Richland	+ 1365	M	Coliform, Enterococci, BOD
Richland	+ 1617	W	NO ₃ ⁻

C. Sanitary Water Integrated

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
183-N	1367	W	Beta
300 Area	1686	W	Alpha, Beta, Gamma scan
Richland	1002	W	Alpha, Beta, Gamma scan
		M Comp.	Sr-90

D. Waste Water

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Gable Swamp North (216-A-25)	1054	M Q	Alpha, Beta Gamma scan
Chemical Sewer Emergency Ditch (216-B-63)	1725	M Q	Alpha, Beta Gamma scan
B Swamp North (216-B-3)	0015	M Q	Alpha, Beta Gamma scan
222-S Swamp (216-S-19)	0020	M Q	Alpha, Beta Gamma scan
T Swamp North (216-T-4)	1290	M Q	Alpha, Beta Gamma scan
Redox Swamp (216-S-16)	1040	M Q	Alpha, Beta Gamma scan
U Swamp (216-U-10)	0024	M Q	Alpha, Beta Gamma scan
100-F Leach Trench	1718	M	Alpha, Total strontium
331 Pond	1766	M Q	Alpha, Beta Gamma scan
300 Pond Integrated	1354	W M	Alpha, Beta** Gamma scan

** Chemical analysis by WADCO

D. Waste Water (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
300 Area Leach Trench	1393	M	Coliform, Enterococci, BOD

E. †Groundwater

<u>Measurements</u>				
<u>Well #</u> (299-)	<u>EMA #</u>	<u>BM</u>	<u>Q</u>	<u>SA</u>
E16-2	2528		NO ₃ ⁻	
E17-5	2529		NO ₃ ⁻	
E17-8	2530	NO ₃ ⁻		
E24-2	2531		NO ₃ ⁻	
E24-3	2532	NO ₃ ⁻	H-3	
E24-9	2533		NO ₃ ⁻	
E24-10	2534	NO ₃ ⁻	H-3	
E25-6	2535		NO ₃ ⁻	
E26-7	2536		NO ₃ ⁻ , H-3	
E28-13	2537		NO ₃ ⁻	
E28-16	2538		NO ₃ ⁻	
E33-25	2539		H-3	
W11-17	2981		NO ₃ ⁻	
W15-7	2982		NO ₃ ⁻	
W18-5	2983		NO ₃ ⁻ , H-3	
W22-22	2984		NO ₃ ⁻ , H-3	
W22-26	2985		NO ₃ ⁻	
W23-4	2986		NO ₃ ⁻	
<u>Well #</u> (699-)	<u>EMA #</u>	<u>BM</u>	<u>Q</u>	<u>SA</u>
S12-3	4424	NO ₃ ⁻	H-3	
S11-E12-0	4552	NO ₃ ⁻	H-3	
S8-19	4421	NO ₃ ⁻	H-3	
S6-E14-0	4580	NO ₃ ⁻	H-3	
S6-E4C-0	4720	NO ₃ ⁻	H-3	

E. Groundwater (Continued)

<u>Well #</u> (699-)	<u>EMA #</u>	<u>Measurements</u>		
		<u>BM</u>	<u>Q</u>	<u>SA</u>
S6-E4C-P(a)	4721	NO ₃ ⁻		H-3
S3-E12	4553	NO ₃ ⁻	H-3	
S3-25	4787	NO ₃ ⁻	H-3	
S1-7A	4801	NO ₃ ⁻	H-3	
1-18(a)	4513	NO ₃ ⁻		H-3
2-3	4423	NO ₃ ⁻	H-3	
2-33-0	4526	NO ₃ ⁻		
8-17	4426		NO ₃ ⁻ , Beta	H-3
8-25	4788	NO ₃ ⁻	H-3, Beta	
8-32	4420	NO ₃ ⁻	H-3	
9-E2(a)	4519	NO ₃ ⁻	H-3	
10-E12-0	4581	NO ₃ ⁻		
10-E12-P(a)	4678	NO ₃ ⁻		H-3
14-E6-T	4766	NO ₃ ⁻		
14-E6-Q(a)	4701		NO ₃ ⁻	H-3
14-38-0	4527	NO ₃ ⁻	H-3	
15-15-0	4551		H-3, Beta, NO ₃ ⁻	
15-26	4464		NO ₃ ⁻ , Beta	
17-5	4422	NO ₃ ⁻	H-3	
19-43	4417	NO ₃ ⁻		
20-E5-T	4765	NO ₃ ⁻		
20-E12-0	4567		NO ₃ ⁻	
20-E12-P(a)	4611		NO ₃ ⁻	H-3
20-20	4418		Beta, Ru, NO ₃ ⁻	H-3
20-39-0	4559		NO ₃ ⁻ , H-3	
24-1-P(a)	4710		NO ₃ ⁻	H-3
24-1-T	4764	NO ₃ ⁻		H-3
24-33	4416		Beta, NO ₃ ⁻	H-3
24-46(a)	4525	NO ₃ ⁻	H-3	

E. Groundwater (Continued)

		<u>Measurements</u>		
<u>Well #</u> (699-)	<u>EMA #</u>	<u>BM</u>	<u>Q</u>	<u>SA</u>
25-70	4452	NO ₃ ⁻		
26-15	4518		NO ₃ ⁻ , Beta	H-3, Ru
26-89	4598	NO ₃ ⁻		
27-8	4557		Beta, NO ₃ ⁻	H-3
28-40-0	4481		Beta, NO ₃ ⁻	H-3
29-78	4594	NO ₃ ⁻	H-3	
31-31-0	4471		Beta, Ru, NO ₃ ⁻	H-3
31-53B-0	4520		NO ₃ ⁻ , H-3, Beta	
31-65-0	4495	NO ₃ ⁻	H-3	
32-22	4794		Beta, NO ₃ ⁻	H-3
32-43	4778		Beta, NO ₃ ⁻	H-3
32-62-0	4550	NO ₃ ⁻	Beta	H-3
32-70	4492	NO ₃ ⁻	H-3, Beta	
32-72-0	4491	NO ₃ ⁻	Beta	H-3
32-77	4446		NO ₃ ⁻ , H-3	
33-56	4523	NO ₃ ⁻	H-3, Beta	
34-39A	4448		NO ₃ ⁻ , Beta	H-3
34-41	4789	Beta	NO ₃ ⁻ , H-3	
34-42	4790	Beta	NO ₃ ⁻ , H-3	
34-51	4414		NO ₃ ⁻ , H-3	
34-88-0	4439	NO ₃ ⁻	H-3	
35-9	4419		H-3, Beta, NO ₃ ⁻	
35-66	4494	NO ₃ ⁻	H-3, Beta	
35-70	4441		H-3, Beta, NO ₃ ⁻	
35-78	4445	NO ₃ ⁻	H-3, Beta	
36-46-R	4753	Beta, NO ₃ ⁻		H-3
36-61B-0	4549	NO ₃ ⁻	Beta, H-3	
36-61B-P	4784		NO ₃ ⁻	H-3
36-93-0	4579	NO ₃ ⁻		H-3
37-43-0	4480	NO ₃ ⁻	H-3, Beta	
37-82A-0	4554	NO ₃ ⁻	H-3	

E. <u>Groundwater</u> (Continued)		<u>Measurements</u>		
<u>Well #</u>	<u>EMA #</u>	<u>BM</u>	<u>Q</u>	<u>SA</u>
(699-)				
38-65-0	4546		NO ₃ ⁻ , H-3, Beta	
38-65-P ^(a)	4785		NO ₃ ⁻	H-3
38-70-0	4493	Beta	NO ₃ ⁻ , H-3	
39-39	4791	NO ₃ ⁻	H-3	
39-79-0	4444	NO ₃ ⁻	H-3, Beta	
40-1 ^(a)	4566	NO ₃ ⁻	H-3	
40-62	4458		NO ₃ ⁻ , H-3	
41-23	4430		Beta, NO ₃ ⁻	H-3
42-12	4517		NO ₃ ⁻ , Beta	H-3
43-42	4773		NO ₃ ⁻	H-3
44-64	4548		NO ₃ ⁻ , H-3	
43-89	4438		NO ₃ ⁻ , H-3	
45-42 ^(a)	4450		NO ₃ ⁻	H-3
45-69	4449		NO ₃ ⁻ , H-3	
46-21	4479	NO ₃ ⁻	H-3	
47-35	4478	NO ₃ ⁻	H-3	
47-46	4564		NO ₃ ⁻ , H-3	
47-60	4434		NO ₃ ⁻ , H-3	
48-71	4487	NO ₃ ⁻	H-3	
49-55	4562	NO ₃ ⁻	H-3, Beta	
49-57	4485	NO ₃ ⁻	H-3	
49-79	4443	NO ₃ ⁻		H-3
50-28	4160	NO ₃ ⁻	Beta	
50-42-0	4460	NO ₃ ⁻	H-3	
50-53	4473	Beta	H-3, Ru, NO ₃ ⁻	
50-85-0	4497		NO ₃ ⁻	
51-63	4488	NO ₃ ⁻	H-3	
51-75-0	4496		NO ₃ ⁻ , H-3	
53-47	4774	NO ₃ ⁻	H-3	
53-55-0	4563	NO ₃ ⁻	H-3	

E. Groundwater (Continued)

<u>Well #</u>	<u>EMA #</u>	<u>Measurements</u>	
		<u>BM</u>	<u>Q</u>
54-42	4432	NO ₃ ⁻	H-3
54-57	4469	NO ₃ ⁻	H-3
55-21	4731	NO ₃ ⁻	
55-50A-0	4433	NO ₃ ⁻	H-3
55-70	4442	NO ₃ ⁻	
55-76	4533	NO ₃ ⁻	
55-89	4453	NO ₃ ⁻	
55-95	4534	NO ₃ ⁻	
57-83	4558	NO ₃ ⁻	
59-33	4769	NO ₃ ⁻	
60-60	4435	NO ₃ ⁻	H-3
61-66 ^(a)	4474	NO ₃ ⁻	H-3
65-50	4477	NO ₃ ⁻	H-3
65-72	4468	NO ₃ ⁻	H-3
Hanford-6	4756	NO ₃ ⁻	
Hanford-9	4776	NO ₃ ⁻	
Hanford-19	4771	NO ₃ ⁻	H-3
80-43-S	4763	NO ₃ ⁻	H-3
83-47-0	4515	NO ₃ ⁻	H-3
87-42A	4793	NO ₃ ⁻	H-3
59-80B	4437	NO ₃ ⁻	
62-32	4470		NO ₃ ⁻
62-43F	4537	NO ₃ ⁻	
63-26	4499	NO ₃ ⁻	
63-90	4436	NO ₃ ⁻	H-3
65-83	4775	NO ₃ ⁻	H-3
66-23-0	4547	NO ₃ ⁻	
66-38-0	4586	NO ₃ ⁻	
66-103	4587		NO ₃ ⁻ , H-3
67-51	4561	NO ₃ ⁻	H-3
67-86	4585	NO ₃ ⁻	H-3

E. Groundwater (Continued)

<u>Well #</u>	<u>EMA #</u>	<u>Measurements</u>	
		<u>BM</u>	<u>Q</u>
67-98	4556		NO ₃ ⁻ , H-3
68-105	4588		NO ₃ ⁻ , H-3
69-38	4461	NO ₃ ⁻	
69-45	4560	NO ₃ ⁻	H-3
70-68	4455		NO ₃ ⁻ , H-3
71-30	4490		NO ₃ ⁻ , H-3
71-52	4454		NO ₃ ⁻ , H-3
71-77	4584	NO ₃ ⁻	H-3
72-73	4569		NO ₃ ⁻ , H-3
72-88	4465	NO ₃ ⁻	H-3
72-92-0	4565	NO ₃ ⁻	H-3
72-98	4463		NO ₃ ⁻ , H-3
74-48	4589		NO ₃ ⁻ , H-3
74-60	4583		NO ₃ ⁻ , H-3
77-36	4500		NO ₃ ⁻ , H-3
77-44	4516	NO ₃ ⁻	
77-54	4512		NO ₃ ⁻ , H-3
78-62	4511	NO ₃ ⁻	H-3
81-58-0	4597	NO ₃ ⁻	H-3
87-55	4792		NO ₃ ⁻ , H-3
90-45	4770	NO ₃ ⁻	H-3
96-49-0	4591	NO ₃ ⁻	H-3
97-43-0	4590	NO ₃ ⁻	H-3

(a) Wells which penetrate the Upper Beverly Member (UBM), the most probable confined aquifer to contain plant effluents.

E. Groundwater (Continued)Water Quality

<u>Well #</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurements</u>
299-E17-5	2511	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-8-17	4426	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-15-26	4464	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-24-1-T	4764	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-26-15	4518	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-31-31-0	4471	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}
699-32-43	4778	SA	pH, $\text{SO}_4^{=}$, Na^+ , Ca^{++}

100 Area and Associated 600 Area Wells

<u>Well #</u>	<u>EMA #</u>	<u>Measurements</u>	
		<u>BM</u>	<u>Q</u>
(199-)			
B3-1	1852	Beta	
B4-4	1891	Beta	
D5-12	1892	Beta	H-3, NO_3^-
F5-1	1865		NO_3^- , H-3
F8-1	1888		NO_3^- , H-3
H3-1	1890		NO_3^- , H-3
K-11	1882	NO_3^-	H-3
K-20	1885	Beta	Cr^{+6} , H-3
N-3	1896	Beta	H-3
N-4-0	1899	Beta	H-3, NO_3^-
N-10	1900	Beta	H-3
699-86-60	4570	Beta	H-3, NO_3^-

300 Area and Associated 600 Area Wells

<u>Well #</u>	<u>EMA #</u>	<u>Measurements</u>		
		<u>M</u>	<u>BM</u>	<u>Q</u>
(399-)				
1-1	4403	Alpha, Beta	NO_3^- , Cr^{+6} , F^-	
1-2	4404		NO_3^- , Cr^{+6} , F^-	Alpha, Beta

E. Groundwater (Continued)300 Area and Associated 600 Area Wells

<u>Well #</u>	<u>EMA #</u>	<u>Measurements</u>		
		<u>M</u>	<u>BM</u>	<u>Q</u>
(399-)				
1-3	4406		NO ₃ ⁻ , Cr ⁺⁶ , F ⁻	Alpha, Beta
1-4	4407		NO ₃ ⁻ , Cr ⁺⁶	Alpha, Beta, F ⁻
3-1	4401		NO ₃ ⁻ , Cr ⁺⁶	Alpha, Beta, F ⁻
3-8	4786	Alpha, Beta	NO ₃ ⁻ , Cr ⁺⁶ , F ⁻	
4-1	4410		NO ₃ ⁻ , Cr ⁺⁶	Alpha, Beta, F ⁻
4-7	4568		NO ₃ ⁻ , Cr ⁺⁶	Alpha, Beta, F ⁻
5-1	4411		NO ₃ ⁻ , Cr ⁺⁶	Alpha, F ⁻
6-1	4409		NO ₃ ⁻ , Cr ⁺⁶	Alpha, F ⁻
8-2	4408			Alpha, NO ₃ ⁻ , Cr ⁺⁶ , F ⁻
8-3	4412		NO ₃ ⁻ , Cr ⁺⁶	Alpha, F ⁻
699-S27-E14	4413			Alpha, NO ₃ ⁻ , Cr ⁺⁶ , F ⁻

Off-Plant Wells

<u>Designation</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Webber Ranch	3500	SA	NO ₃ ⁻ , H-3
W-15	3501	SA	NO ₃ ⁻ , H-3
White Bluffs	3502	SA	NO ₃ ⁻ , H-3
Vail Ranch	3503	SA	NO ₃ ⁻ , H-3
Hildebrandt	3505	SA	NO ₃ ⁻ , H-3

III. AIRA. Air Filters

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
100-K	0058	W	Beta
100-N(WPPSS)	1529	W	Beta, Low alpha
100-D	1074	W	Beta
100-F	1075	W	Beta
200 WEC	0046	W	Beta, Low alpha
Redox	0028	W	Beta, Low alpha
200 ESE	0043	W	Beta, Low alpha
200 ENC	1401	W	Beta, Low alpha
Hanford	0057	BW	Beta, Low alpha
Yakima Barricade	1650	BW	Beta, Low alpha
Vernita Bridge	1651	BW	Beta
Wye Barricade	0924	BW	Beta, Low alpha
ERC	0929	BW	Beta
Rattlesnake Springs	0972	BW	Beta
300 Area (3705 Bldg.)	1531	W	Beta, Low alpha
ACRMS	1793	W	Beta
331 Bldg.	1792	W	Beta
Benton City	0029	BW	Beta, Low alpha
Wahluke Slope #2	1551	BW	Beta
Berg Ranch	1405	BW	Beta, Low alpha
Othello	1652	BW	Beta, Low alpha
Connell	1653	BW	Beta
New Moon	1118	BW	Beta
Wahluke Water Master	1119	BW	Beta
Eltopia	1120	BW	Beta
Ringold	1323	BW	Beta, Low alpha
Byers Landing	0247	BW	Beta, Low alpha
Pasco	1654	BW	Beta, Low alpha
Kennewick	1655	BW	Beta
Richland	0054	BW	Beta, Low alpha
Sunnyside	0964	BW	Beta
Ellensburg	0963	BW	Beta
Moses Lake	0960	BW	Beta
Washtucna	0959	BW	Beta
Walla Walla	0262	BW	Beta, Low alpha
McNary Dam	0958	BW	Beta, Low alpha

B. Charcoal Cartridges

100-K	1581	M	NRA*
100-N	1661	BW	I-131
100-D	1582	M	NRA

* Not routinely analyzed

B. Charcoal Cartridges (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
100-F	1583	M	NRA
200 WEC	1662	BW	I-131
Redox	1663	BW	I-131
200 ESE	1664	W	I-131
200 ENC	1665	BW	I-131
Hanford	1666	M	NRA
Yakima Barricade	1667	BW	I-131
Vernita Bridge	1668	M	NRA
Wye Barricade	1584	BW	I-131
ERC	1585	M	NRA
Rattlesnake Springs	1586	M	NRA
300 Area (3705 Bldg.)	1669	W	I-131
ACRMS	1795	W	I-131
331 Bldg.	1794	W	I-131
Benton City	1670	BW	I-131
Wahluke #2	1671	M	NRA
Berg Ranch	1672	BW	I-131
Othello	1673	BW	I-131
Connell	1674	BW	I-131
New Moon	1675	BW	I-131
Wahluke Water Master	1676	BW	I-131
Eltopia	1677	M	NRA
Ringold	1324	BW	I-131
Byers Landing	0246	BW	I-131
Pasco	1678	BW	I-131
Kennewick	1679	M	NRA
Richland	0231	BW	I-131
Sunnyside	1680	M	NRA
Ellensburg	1681	M	NRA
Moses Lake	1682	M	NRA
Washtucna	1683	M	NRA
Walla Walla	0261	M	NRA
McNary Dam	1684	M	NRA

<u>C. Air Scrubbers</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement**</u>
300 Area (3705 Bldg.)	1532	W	I-131
Ringold	1325	BW	I-131
200 ESE	0072	W	I-131

* Not routinely analyzed

** I-131 analyses are not to be conducted on scrubbers unless the I-131 content of the charcoal cartridge exceeds 0.1 pCi/m^3 for the sample period.

D. Composite Analyses1. Definition of CompositesOuter Northeast Quadrant

Moses Lake
Washtucna

Inner Northeast Quadrant

Othello
Connell
Berg Ranch
Wahluke Water Master
New Moon

Outer Southeast Quadrant

Walla Walla
McNary

Outer Western Quadrant

Ellensburg
Sunnyside

Active Area #1

200 ENC

Active Area #2

200 ESE

Active Area #3

200 WEC
Redox

Active Area #4

300 Area
Byers Landing

Active Area #5

100-K
100-N
100-D

Inner Eastern Quadrant

100-F
Hanford
Ringold
Wye Barricade

Inner Southeast Quadrant

Richland
Pasco
Kennewick
Eltopia

Inner Southwest Quadrant

Rattlesnake Springs
ERC
Benton City

Inner Northwest Quadrant

Yakima Barricade
Vernita
Wahluke #2

2. Analyses Required

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Outer Northeast Quadrant	1742	M Q	Gamma scan Pu-239, Sr-90
Inner Northeast Quadrant	1743	M Q	Gamma scan Pu-239, Sr-90
Outer Southeast Quadrant	1744	M Q	Gamma scan Pu-239, Sr-90
Inner Southeast Quadrant	1745	M Q	Gamma scan Pu-239, Sr-90

2. Analyses Required (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Inner Southwest Quadrant	1746	M Q	Gamma scan Pu-239, Sr-90
Inner Northwest Quadrant	1747	M Q	Gamma scan Pu-230, Sr-90
Outer Western Quadrant	1748	M Q	Gamma scan Pu-239, Sr-90
Active Area #1	1749	M Q	Gamma scan Pu-239, Sr-90
Active Area #2	1750	Q	Pu-239, Sr-90
Active Area #3	1751	M Q	Gamma scan Pu-239, Sr-90
Active Area #4	1752	M Q	Gamma scan Pu-239, Sr-90
Active Area #5	1753	M	Gamma scan
Inner Eastern Quadrant	1754	M Q	Gamma scan Pu-230, Sr-90

E. Other

200 WNE	none	W	Total beta, Charcoal paper
200 EEC	none	W	"
200 EWC	none	W	"
200 WWC	none	W	"
320 Building	none	W D	Total beta, Charcoal cartridge Contamination-GM & Poppy
300 Pond	none	W D	Total beta, Charcoal cartridge Contamination-GM & Poppy

IV. MILKA. Commercial Sources

<u>Milk</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Lucerne	Tri-City	0309	M Q	I-131, Gamma scan Sr-90
Darigold-Arden	Tri-City	1647	SM Q	I-131 Sr-90

IV. MILK (Continued)B. Farm Sources

<u>Milk</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Rhoades (Raw)	Benton City	1719	BW Q	I-131, Gamma scan Sr-90
Col. Basin Comp. #2 (Raw)	Esser, Robison, Bleazard	1600	BW Q	I-131, Gamma scan Sr-90
Col. Basin Comp. #3 (Raw)	Taylor, New Moon, Monson	1648	BW	I-131, Gamma scan
West Richland- Benton City Comp. (Raw)	Dinneen, Atterberry	1649	BW	I-131, Gamma scan
River-Irrigated (Ditch)	Harris (Riverview)	0975	BW Q	I-131, Gamma scan Sr-89, Sr-90

NOTE: Current cattle forage, hay, or pasture grass is routinely collected from all farms where milk is sampled, but analyses are made only by special request.

V. FISHA. Whitefish (Muscle)

	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Whitefish (5 fish/sample)	Ringold to Richland	1563	SM Comp.	Gamma scan, P-32

VI. WILD FOWL

A. <u>River Ducks</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
80 birds/yr	100-K to Savage Island	Accor- ding to species & loca- tion	October- January	Sr-90, Gamma scan (muscle)
B. <u>River Geese</u>				
20 birds/yr	100 K to Savage Island	Accor- ding to species & loca- tion	October- January	Gamma scan (muscle)

C. <u>Pheasant</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
20 birds/yr	100-K to 100-D and 300 Area Vicinity	Accor- ding to species & loca- tion	October- January	Sr-90, Gamma scan, (muscle)

D. Swamp Ducks & Coot

	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
4 birds/yr	U Swamp (216-U-10)	According to species & location	Q	Sr-90, Gamma scan (muscle); Pu-239 (liver)
4 birds/yr	Gable Swamp (216-A-25)	According to species & location	Q	Sr-90, Gamma scan (muscle)
4 birds/yr	B Swamp (216-B-3)	According to species & location	Q	Sr-90, Gamma scan (muscle)
4 birds/yr	Redox Swamp (216-S-16)	According to species & location	Q	Sr-90, Gamma scan (muscle)
4 birds/yr	Redox Labs Swamp (216-S-19)	According to species & location	Q	Sr-90, Gamma scan (muscle); Pu-239, Am-241 (liver)
4 birds/yr	T Swamp (216-T-4)	According to species & location	Q	Sr-90, Gamma scan (muscle)
4 birds/yr	300 Area Pond	According to species & location	Q	Sr-90, Gamma scan (muscle); Pu-239, U, (liver)
4 birds/yr	100-F Leach Trench	According to species & location	Q	Sr-90, Gamma scan (muscle); Pu-239 (liver)
4 birds/yr	N Trench Vicinity	According to species & location	Q	Sr-90, Gamma scan (muscle)

NOTE: When several birds of the same species and location are collected on the same day, muscle from up to five birds may be composited for a gamma scan. The gamma scan of the composite will obviate the gamma scans of those individual birds.

VII. MAMMALS

<u>A. Deer</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
3 deer/yr	As Available (Road kills may be used if fresh)	According to loca- tion	Oct.-Dec. (Hunting Season only)	Sr-90, Gamma scan (muscle), Pu-239 (liver)
<u>B. Small Mammals</u>				
Rabbits, muskrat	100 Area & 200 Area Waste Dis- posal Sites preferably	According to loca- tion	4/yr	Sr-90, Gamma scan (muscle), Pu-239 (liver), U (depending on location)
Mice	100 Area & 200 Area Waste Dis- posal Sites	According to loca- tion	3/Q (up to 3 mice may be com- posited from one location at one time)	Sr-90, Gamma scan, Pu-239, U (depending on location)

VIII. FOODSTUFFSA. Meat, Chicken, Eggs

Farm Meat, Lean Beef	Riverview (river-irr.)	1292	M Q	Gamma scan Sr-90
Commercial Meat, Lean Beef	Pasco Meat Packers	1375	M	Sr-90, Gamma scan
**Farm Eggs	Harris (Riverview)	1191	M Q	Gamma scan Sr-90
**Farm Eggs	Olsen (Riverview)	1756	M Q	Gamma scan Sr-90
**Farm Eggs	Kinne (Ringold)	1192	M Q	Gamma scan Sr-90
**Farm Chicken	Harris (Riverview)	1193	Q	Sr-90, Gamma scan
**Farm Chicken	Kinne (Ringold)	1194	Q	Sr-90, Gamma scan

** Sample from only one source in any one time period

B. <u>Produce</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency*</u>	<u>Measurement</u>
Commercial Leafy Vegetable Comp.	Tri-City	1601	M Q	Gamma scan, Sr-89, Sr-90
Farm Leafy Vegetable Comp.	Riverview	1609	M Q	Gamma scan Sr-90
Farm Leafy Vegetable Comp.	Benton City	1612	2 samples/ year	Gamma scan Sr-90
C. <u>Oysters</u>	<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
	Willipa Bay	0323	M	Gamma scan

IX. SOILA. Desert Soil

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Benton City			
0-1"	6000	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6023	A	U, Sr-90, Gamma scan, Pu-239
ERC			
0-1"	6001	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6024	A	U, Sr-90, Gamma scan, Pu-239
Rt. 240--Control Plot #54			
0-1"	6002	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6025	A	U, Sr-90, Gamma scan, Pu-239
Rattlesnake Springs			
0-1"	6003	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6026	A	U, Sr-90, Gamma scan, Pu-239
Yakima Barricade			
0-1"	6004	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6027	A	U, Sr-90, Gamma scan, Pu-239
Vernita Bridge--North End			
0-1"	6005	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6028	A	U, Sr-90, Gamma scan, Pu-239

* During the growing season, May=October only

A. Desert Soil (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Wahluke Slope--opposite 100 N			
0-1"	6006	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6029	A	U, Sr-90, Gamma scan, Pu-239
Wahluke Slope #2			
0-1"	6007	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6030	A	U, Sr-90, Gamma scan, Pu-239
Berg Ranch			
0-1"	6008	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6031	A	U, Sr-90, Gamma scan, Pu-239
Ringold			
0-1"	6009	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6032	A	U, Sr-90, Gamma scan, Pu-239
Byers Pumphouse			
0-1"	6010	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6033	A	U, Sr-90, Gamma scan, Pu-239
Byers Landing			
0-1"	6011	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6034	A	U, Sr-90, Gamma scan, Pu-239
Riverview--CP #55			
0-1"	6012	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6035	A	U, Sr-90, Gamma scan, Pu-239
North Richland--CP #56			
0-1"	6013	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6036	A	U, Sr-90, Gamma scan, Pu-239

A. Desert Soil (Continued)

Location	EMA #	Frequency	Measurement
331 Bldg.--CP #50			
0-1"	6014	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6037	A	U, Sr-90, Gamma scan, Pu-239
FFTF--CP #62			
0-1"	6015	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6038	A	U, Sr-90, Gamma scan, Pu-239
Wye Barricade			
0-1"	6016	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6039	A	U, Sr-90, Gamma scan, Pu-239
Hanford--CP# 57			
0-1"	6017	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6040	A	U, Sr-90, Gamma scan, Pu-239
100 F Area--CP #58			
0-1"	6018	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6041	A	U, Sr-90, Gamma scan, Pu-239
200 Area--CP #59			
0-1"	6019	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6042	A	U, Sr-90, Gamma scan, Pu-239
200 Area--CP #60			
0-1"	6020	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6043	A	U, Sr-90, Gamma scan, Pu-239
200 Area Fire Station			
0-1"	6021	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6044	A	U, Sr-90, Gamma scan, Pu-239
200 E Hill--CP #61			
0-1"	6022	A	U, Sr-90, Gamma scan, Pu-239
1-2"	6045	A	U, Sr-90, Gamma scan, Pu-239

B. River Mud

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Two locations (ten 1" layers)	*	A	Gamma scan

X. VEGETATION

Benton City	6046	A	U, Sr-90, Gamma scan, Pu-239
ERC	6047	A	U, Sr-90, Gamma scan, Pu-239
Rt. 240--CP #54	6048	A	U, Sr-90, Gamma scan, Pu-239
Rattlesnake Springs	6049	A	U, Sr-90, Gamma scan, Pu-239
Yakima Barricade	6050	A	U, Sr-90, Gamma scan, Pu-239
Vernita Bridge--North End	6051	A	U, Sr-90, Gamma scan, Pu-239
Wahluke Slope--opposite 100 N	6052	A	U, Sr-90, Gamma scan, Pu-239
Wahluke Slope #2	6053	A	U, Sr-90, Gamma scan, Pu-239
Berg Ranch	6054	A	U, Sr-90, Gamma scan, Pu-239
Ringold	6055	A	U, Sr-90, Gamma scan, Pu-239
Byers Pumphouse	6056	A	U, Sr-90, Gamma scan, Pu-239
Byers Landing	6057	A	U, Sr-90, Gamma scan, Pu-239
Riverview--CP #55	6058	A	U, Sr-90, Gamma scan, Pu-239
North Richland--CP #56	6059	A	U, Sr-90, Gamma scan, Pu-239
331 Bldg.--CP #50	6060	A	U, Sr-90, Gamma scan, Pu-239
FFTF--CP #62	6061	A	U, Sr-90, Gamma scan, Pu-239
Wye Barricade	6062	A	U, Sr-90, Gamma scan, Pu-239
Hanford--CP #57	6063	A	U, Sr-90, Gamma scan, Pu-239
100 F Area--CP #58	6064	A	U, Sr-90, Gamma scan, Pu-239
200 Area--CP #59	6065	A	U, Sr-90, Gamma scan, Pu-239

* Not currently in schedule. Data obtained from another source.

X. VEGETATION (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
200 Area--CP #60	6066	A	U, Sr-90, Gamma scan, Pu-239
200 Area Fire Station	6067	A	U, Sr-90, Gamma scan, Pu-239
200 E Hill--CP #61	6068	A	U, Sr-90, Gamma scan, Pu-239

XI. SURFACE CONTAMINATION

<u>A. Control Plots</u>	<u>Ident. #</u>	<u>Frequency</u>	<u>Measurement</u>
200-W	#1 - #8	SM	Contamination-GM
200-E	#9 - #16	SM	Contamination-GM
Wahluke Slope	#17 - #24	M	Contamination-GM
300 Area	#25 - #27	M	Contamination-GM
300 Burial Ground	#36, #37	M	Contamination-GM
200 B-C Crib Area	#39, #42, #47	M	Contamination-GM
Gable Swamp	#43, -#45	M	Contamination-GM
Hanford Ferry F.S.	#46	M	Contamination-GM
B Swamp	#48	M	Contamination-GM
300 Area Parking Lot	#49	M	Contamination-GM
South of 331 Bldg.	#50	M	Contamination-GM
FFTF Met. Station	#51	M	Contamination-GM
Hanford Project Well Plots (22 Total)	(699-)	same as well sampling	Contamination-GM
	S12-3		Contamination-GM
	S11-E12		Contamination-GM
	S8-19		Contamination-GM
	2-33		Contamination-GM
	10-E12		Contamination-GM
	20-E12		Contamination-GM
	25-55		Contamination-GM
	25-70		Contamination-GM
	35-9		Contamination-GM
	37-82A		Contamination-GM
	40-1		Contamination-GM
	50-28		Contamination-GM
	50-85		Contamination-GM
	54-42		Contamination-GM
	57-83		Contamination-GM
	60-60		Contamination-GM
	65-50		Contamination-GM
	86-60		Contamination-GM
	Hanford-9		Contamination-GM
	199-B3-2		Contamination-GM
	199-K-20		Contamination-GM
	199-D5-12		Contamination-GM

<u>B. Outside Surfaces</u>	<u>Ident. #</u>	<u>Frequency</u>	<u>Measurement</u>
3705 Dock Smear		D	Contamination
3705 Dock Dose-Rate		D	Contamination
<u>C. Road Survey</u>			
300 Area to 200-W Rt. 4-S & Rt. 3	1	M	Radiation Contamination Bioplastic Crystal
200-W to 300 Area Rt 3 & Rt. 4-S	2	M	Radiation Contamination Bioplastic Crystal
Hanford Highway, Horn Rapids to Yakima Barricade & Rt. 6	3	Q	Radiation Contamination Bioplastic Crystal
Wye Barricade on Rt. 2S to Rt. 11-A, Rt. 11-A to Yakima Barricade	4	M	Radiation Contamination Bioplastic Crystal
Jct. Rt. 11-A & Rt. 2N on Rt. 2N to Rt. 4N access road to N, Rt. 1 to K, past C, Rt. 6 to jct. Rt. 6 and Rt. 11-A	5	M	Radiation Contamination Bioplastic Crystal
Jct. Rt. 2 & Rt. 1, White Bluffs cutoff, Rt. 4N to 200-E from Rt. 4N to C	6	M	Radiation Contamination Bioplastic Crystal
200-E Perimeter	7	M	Radiation Contamination Bioplastic Crystal
200-W Perimeter	8	M	Radiation Contamination Bioplastic Crystal
Between & south of 200-E & 200-W	9	M	Radiation Contamination Bioplastic Crystal
300 Area on Rt. 10 to Prosser Barricade & Wye Barricade	10	Q	Radiation Contamination Bioplastic Crystal
North Richland	11	Q	Radiation Contamination Bioplastic Crystal
Army Loop Road	14	M	Radiation Contamination Bioplastic Crystal
300 Area	15	M	Radiation Contamination Bioplastic Crystal
<u>D. Railroad Survey</u>			
All plant tracks outside area fences		A	Radiation Contamination Bioplastic Crystal

XII. AERIAL SURVEY

<u>Location</u>	<u>Ident. #</u>	<u>Frequency</u>	<u>Measurement</u>
200 Area Local	1	SA	Radiation NaI Crystal
300 Area Local	2	SA	Radiation NaI Crystal
Project Perimeter	3	SA	Radiation NaI Crystal
Richland-Ellensburg- Ritzville "triangle"	4	SA	Radiation NaI Crystal
Columbia River- Vernita to McNary	5	SA	Radiation NaI Crystal

XIII. GAMMA DOSE RATE

<u>A. Columbia River</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Vernita] one only	1712	M	Immersion Dose - TLD]
100-K]	1688	M	Immersion Dose - TLD]
100-D Island	1689	M	Immersion Dose - TLD
100-F Barge	1713	M	Immersion Dose - TLD
S. of Wooded Island	1722	M	Immersion Dose - TLD
Richland Pumphouse	1715	M	Immersion Dose - TLD
<u>B. Columbia River Shoreline</u>			
Vernita	1440	M	Dose Rate - 40 liter Contamination-GM
Richland P.S. Above Water Plant	1443	W	Dose Rate - 40 liter Contamination-GM
Sacajawea	1444	BW	Dose Rate - 40 liter Contamination-GM

For the following locations, Monthly frequency and Dose Rate (40 liter)
plus Contamination (GM):

<u>CRM</u>	<u>EMA #</u>	<u>Description</u>
382.5 P	1450	Boat Launch above 181-KW
381.5 P	1451	Below KE basins
381.0 F	1452	Opposite K Trench

<u>CRM</u>	<u>EMA #</u>	<u>Description</u>
379.4 P	1690	N Trench
379.0 P	1454	Below N
378.4 F	1455	Above D
377.4 IF	1456	D Island
375.8 IF	1458	E Island
373.4 IP	1691	Upper end of Locke Island
371.1 IP	1462	Lower end of Locke Island
369.8 F	1463	White Bluffs Ferry Landing
369.7 P	1464	White Bluffs Ferry Landing
368.3 P	1448	Upper end 100-F Slough
367.0 IF	1620	100-F Slough
362.0 P	1622	Hanford Ferry Landing
362.0 F	1623	Hanford Ferry Landing (Muddy Cove)
359.1 F	1624	Savage Island
355.7 I	1625	Island at Ringold
354.7 F	1626	Ringold
350.4 P	1645	Powerline Crossing
350.4 F	1442	Powerline Crossing
345.2 F	1627	Byers Landing
340.5 P	1443	Richland Pump Plant

C. Other1. TLD

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
All air sample locations except those listed below	by air sample location	M	Integrated Gamma Dose
200 ENC		BW	Integrated Gamma Dose
200 EEC		BW	Integrated Gamma Dose
200 ESE		BW	Integrated Gamma Dose
200 EWC		BW	Integrated Gamma Dose
200 WWC		BW	Integrated Gamma Dose
200 WEC		BW	Integrated Gamma Dose
200 WNE		BW	Integrated Gamma Dose

C. Other (Continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Redox		BW	Integrated Gamma Dose
100-K		BW	Integrated Gamma Dose
100-F		BW	Integrated Gamma Dose
3705 Building		BW	Integrated Gamma Dose
320 Building		BW	Integrated Gamma Dose
ACRMS		BW	Integrated Gamma Dose
300 Pond		BW	Integrated Gamma Dose
Wahlake Control Plots		M	Integrated Gamma Dose
BNW Alfalfa Field		M	Integrated Gamma Dose

2. Chambers and TLD

<u>Location</u>	<u>Ident. #</u>	<u>Frequency</u>	<u>Measurement</u>
700 Area	0224 Chamber	SW	Integrated Gamma Dose
	1487 TLD	BW	Integrated Gamma Dose
Rt. 10. Mile 1.6	0223 Chamber	SW	Integrated Gamma Dose
	1710 TLD	BW	Integrated Gamma Dose
100-N Area	1446 Chamber	SW	Integrated Gamma Dose
	1476 TLD	BW	Integrated Gamma Dose

3. GM Reading

300 Area Water Plant	None	W Feb.-May only	GM
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XIV. INSTRUMENTSA. Radiation Monitors

300 Area	ACRMS	Continuous	Gamma Dose Rate - Water Surface
300 Area	Iodine Monitor	Continuous	I-131 Concentration in River
3705 Building	Radiation Detector	Continuous	Gross gamma

B. Temperature Monitors

Priest Rapids Gauge	by location	Continuous	River Temperature (by others)
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B. Temperature Monitors (Continued)

<u>Location</u>	<u>Ident. #</u>	<u>Frequency</u>	<u>Measurement</u>
ACRMS	By location	Continuous	River Temperature
Richland	By location	Continuous	River Temperature

C. Chemical Monitors

ACRMS	Technicon	Continuous	Cr ⁺⁶
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4	<u>ARHCO, Incorporated</u> G. E. Backman G. R. Kiel B. J. McMurray Files	
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3	<u>Douglas United Nuclear</u> L. V. Barker C. D. Corbit Files	
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