



**INTERSTATE NUCLEAR SERVICES**  
A SUBSIDIARY OF UNIFIRST CORPORATION

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September 28, 1999

Mr. John D. Kinneman  
Chief, Nuclear Material Safety Branch 2  
Division of Nuclear Material Safety  
U.S. Nuclear Regulatory Commission, Region I  
475 Allendale Road  
King of Prussia, PA 19406-1415

Re: License No. 37-23341-01 Quarterly Report 2nd Quarter 1999

Dear Mr. Kinneman:

In accordance with condition 16 of the referenced license, enclosed is the quarterly report for the second quarter 1999. Please do not hesitate to call if you have any questions or concerns regarding the information presented. Please contact myself or Mike Fuller, Manager, Health Physics and Engineering, at (413) 543-6911,

Sincerely,

Thomas H. Myers  
Quality Assurance/MIS Engineer  
Interstate Nuclear Services Corp.

Cc: Mike Fuller, Manager, Health Physics and Engineering  
Dan Neely, Plant Manager / RSO, INS Royersford  
File

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SEP 29 1999

**1999 - ROYERSFORD WASTEWATER DISCHARGE SUMMARY**

MONTH	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC
GALLONS	350000	445000	1050000	1295000	1270000	465000	470000					
H-3	2.13E-05	2.13E-05	2.13E-05	5.16E-06	5.16E-06	5.16E-06	ND					
mCi H-3	28.217175	35.8761225	84.651525	25.292127	24.803862	9.081729		0	0	0	0	0
C-14	3.23E-06	3.23E-06	3.23E-06	1.42E-06	1.42E-06	1.42E-06	ND					
mCi C-14	4.2789425	5.44036975	12.8368275	6.9602365	6.825869	2.4992355		0	0	0	0	0
K-40	NF	NF	NF	NF	NF	NF	NF					
Cr-51	NF	NF	1.37E-05	NF	2.69E-07	NF	NF					
Mn-54	2.08E-07	4.82E-07	1.39E-06	2.15E-07	4.95E-07	1.27E-07	8.63E-07					
Fe-55	1.59E-05	1.59E-05	1.59E-05	6.42E-06	6.42E-06	6.42E-06						
Fe-59	NF	NF	NF	NF	1.19E-07	NF	NF					
Co-57	NF	NF	NF	NF	NF	NF	NF					
Co-58	NF	5.63E-08	7.79E-07	3.55E-07	5.34E-07	2.68E-07	5.46E-07					
Co-60	7.64E-07	1.59E-06	2.17E-06	8.65E-07	9.02E-07	4.31E-07	1.65E-06					
Ni-63	9.72E-07	9.72E-07	9.72E-07	9.56E-07	9.56E-07	9.56E-07						
Zn-65	1.50E-07	NF	2.82E-07	2.20E-07	3.13E-07	9.15E-08	3.77E-07					
Sr-89	6.60E-09	6.60E-09	6.60E-09	3.29E-09	3.29E-09	3.29E-09						
Sr-90	*	*	*	*	*	*						
Zr-95	NF	NF	NF	NF	3.88E-08	NF	NF					
Nb-95	NF	NF	NF	NF	2.66E-08	NF	3.02E-08					
Tc-99	1.68E-07	1.68E-07	1.68E-07	5.64E-08	5.64E-08	5.64E-08						
Ag-110m	NF	NF	NF	NF	NF	NF	NF					
Sb-125	NF	NF	NF	NF	NF	NF	NF					
I-129	<MDA	<MDA	<MDA	1.55E-08	1.55E-08	1.55E-08						
Cs-134	9.36E-08	NF	1.24E-07	NF	2.66E-08	5.63E-08	1.07E-07					
Cs-137	1.11E-06	1.24E-06	8.38E-07	2.18E-07	2.44E-07	3.76E-07	6.42E-07					
Eu-152	NF	NF	NF	NF	NF	NF	NF					
Eu-154	NF	NF	NF	NF	NF	NF	NF					
Th-228												
Th-234	3.88E-06											
U-234												
U-235												
U-238												
Pu-238												
Pu-239												
Np-237												
Am-241												
Cu-244												
CONC.	2.33E-05	2.04E-05	3.64E-05	9.32E-06	1.04E-05	8.80E-06	4.22E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ACTIVITY	30.8041600475	34.386235978	144.551023575	45.70027565425	50.084861857	15.488642406	7.4986834085	0	0	0	0	0

**ANNUAL TOTALS**  
5345000 GALLONS

207.92 mCi H-3

38.84 mCi C-14

328.51 mCi AORN

Notes: CONC. is total concentration for all nuclides except H-3 and C-14.

All concentrations are in uCi/ml. All activities are in mCi.

NF - Not found in gamma spectra search

<MDA - Less than minimum detection limit for analytical method.

\*Sr-89/90 analyzed and reported as total Sr unless >50 pCi/L. Conservatively assigned to Sr-90

AORN - All other radionuclides (except for H-3 and C-14)

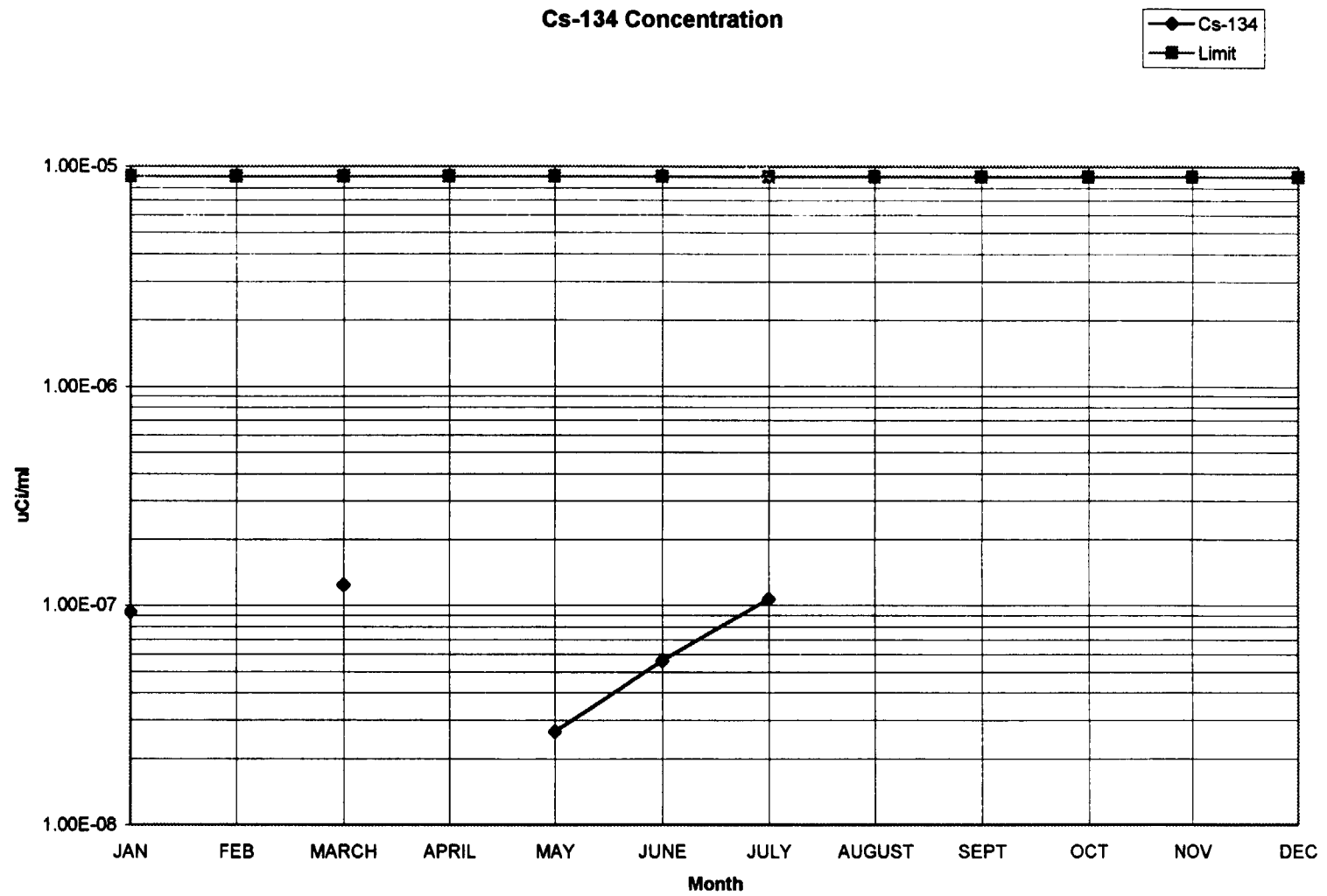
ND - No Data

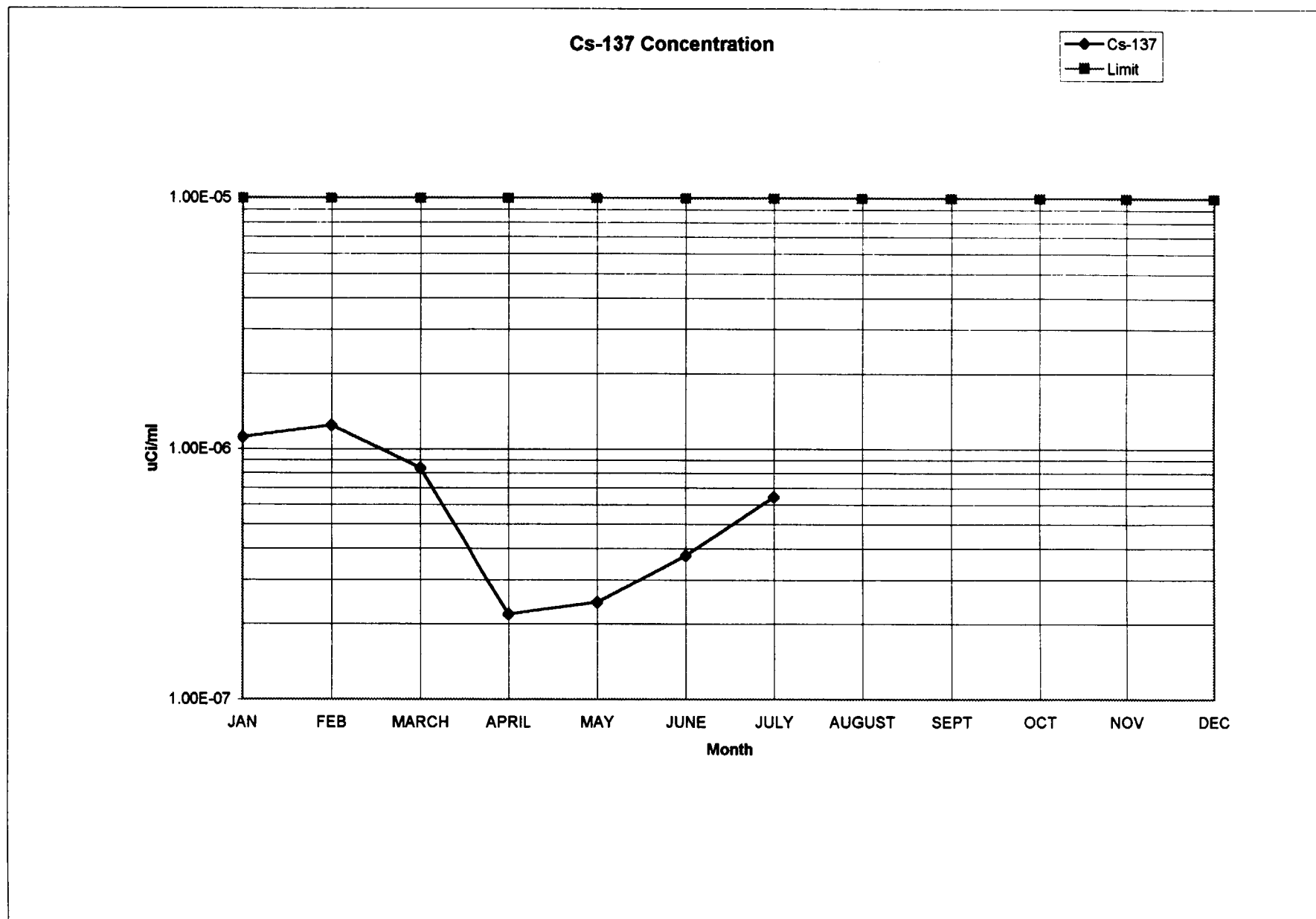
Blank cells will be completed based on quarterly  
radiochemistry and annual alpha spec results.

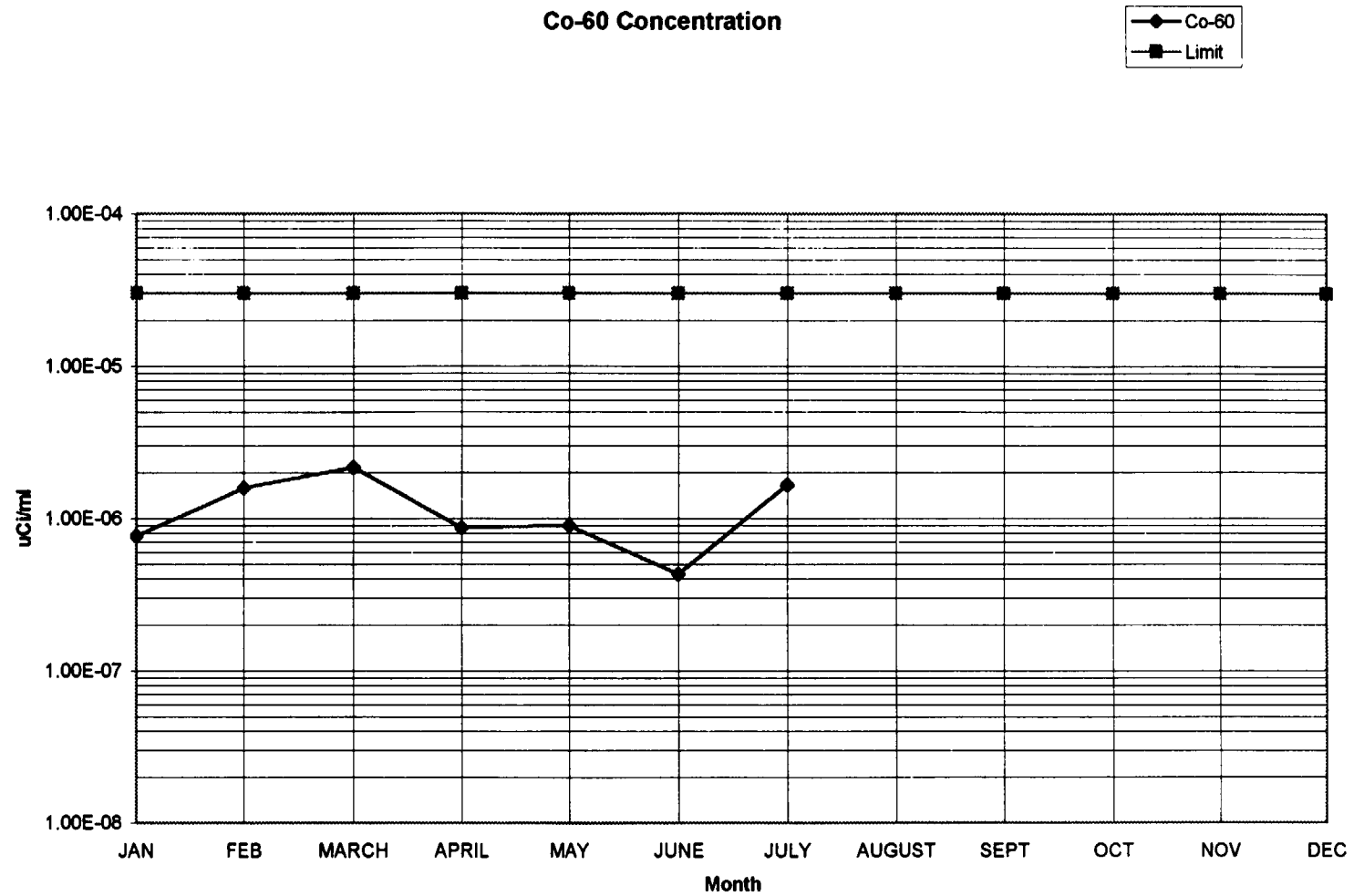
## 079 - Royersford

079 - ROYERSFORD RATIOS OF DISCHARGES TO LIMITS													
	LIMIT	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC
H-3	1.0E-02	0.00213	0.00213	0.00213	0.00052	0.00052	0.00052						
C-14	3.0E-04	0.01077	0.01077	0.01077	0.00473	0.00473	0.00473						
K-40	4.0E-05												
Cr-51	5.0E-03			0.00275		0.00005							
Mn-54	3.0E-04	0.00069	0.00161	0.00464	0.00072	0.00165	0.00042	0.00288					
Fe-55	1.0E-03	0.01590	0.01590	0.01590	0.00642	0.00642	0.00642						
Fe-59	1.0E-04					0.00119							
Co-57	6.0E-04												
Co-58	2.0E-04		0.00028	0.00390	0.00177	0.00267	0.00134	0.00273					
Co-60	3.0E-05	0.02546	0.05297	0.07233	0.02882	0.03007	0.01437	0.05500					
Ni-63	1.0E-03	0.00097	0.00097	0.00097	0.00096	0.00096	0.00096						
Zn-65	5.0E-05	0.00301		0.00565	0.00440	0.00627	0.00183	0.00754					
Sr-89	8.0E-05	0.00008	0.00008	0.00008	0.00004	0.00004	0.00004						
Sr-90	5.0E-06												
Zr-95	2.0E-04					0.00019							
Nb-95	3.0E-04					0.00009		0.00010					
Tc-99	6.0E-04	0.00028	0.00028	0.00028	0.00009	0.00009	0.00009						
Ag-110m	6.0E-05												
Sb-125	3.0E-04												
I-129	2.0E-06				0.00775	0.00775	0.00775						
Cs-134	9.0E-06	0.01040		0.01373		0.00296	0.00626	0.01189					
Cs-137	1.0E-05	0.11140	0.12420	0.08379	0.02180	0.02437	0.03755	0.06420					
Eu-152	1.0E-04												
Eu-154	7.0E-05												
Th-228	2.0E-06												
Th-234	5.0E-05	0.07754											
U-234	3.0E-06												
U-235	3.0E-06												
U-238	3.0E-06												
Pu-238	2.0E-07												
Pu-239	2.0E-07												
Np-237	2.0E-07												
Am-241	2.0E-07												
Cu-244	3.0E-07												
TOTAL	1.00	0.25863	0.20918	0.21692	0.07802	0.09002	0.08228	0.14434	0.00000	0.00000	0.00000	0.00000	0.00000

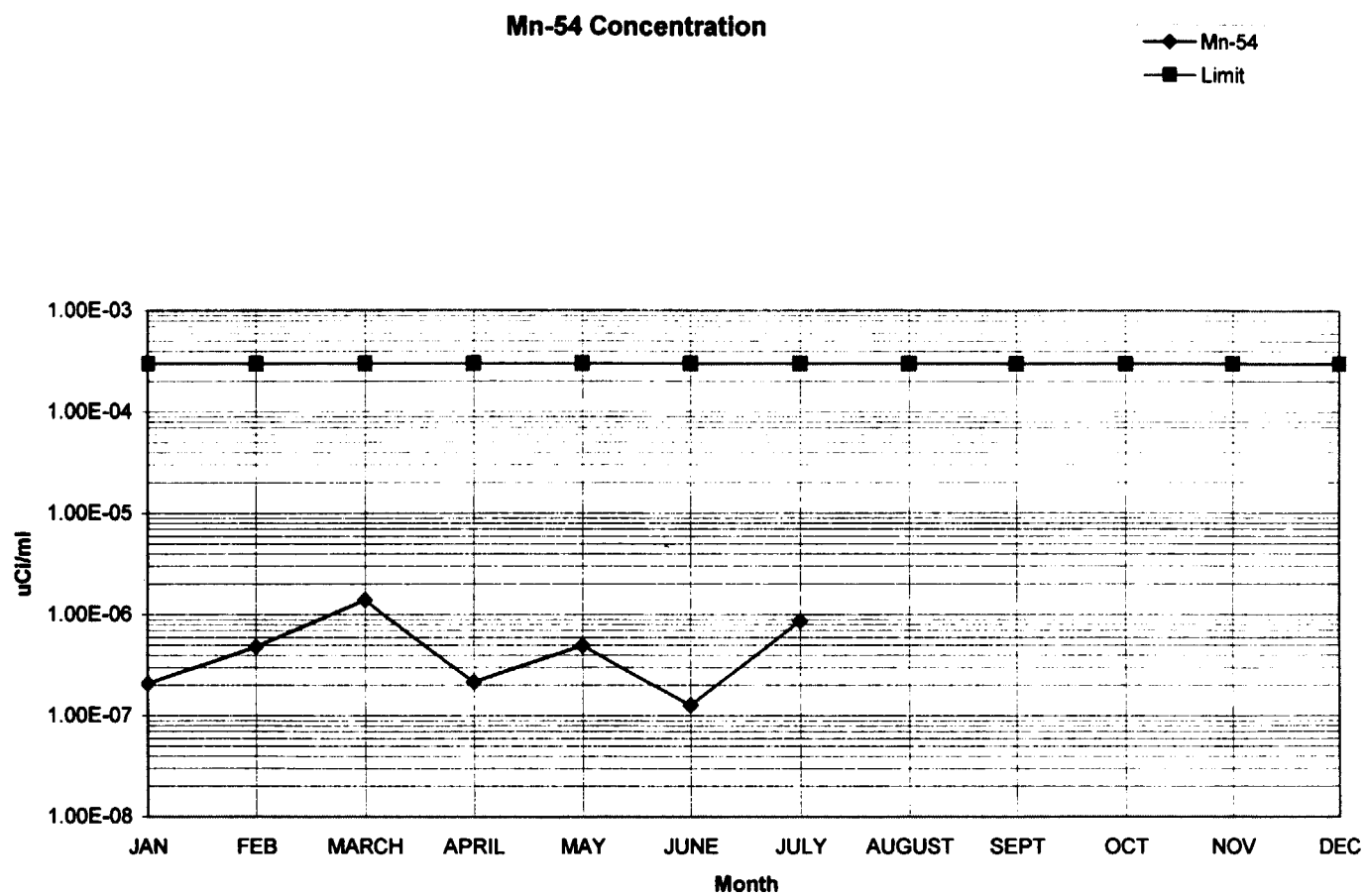
079 - ROYERSFORD RATIOS OF DISCHARGES TO LIMITS													
	LIMIT	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC
H-3	1.0E-02	0.00213	0.00213	0.00213	0.00052	0.00052	0.00052						
C-14	3.0E-04	0.01077	0.01077	0.01077	0.00473	0.00473	0.00473						
K-40	4.0E-05												
Cr-51	5.0E-03			0.00275		0.00005							
Mn-54	3.0E-04	0.00069	0.00161	0.00464	0.00072	0.00165	0.00042	0.00288					
Fe-55	1.0E-03	0.01590	0.01590	0.01590	0.00642	0.00642	0.00642						
Fe-59	1.0E-04					0.00119							
Co-57	6.0E-04												
Co-58	2.0E-04		0.00028	0.00390	0.00177	0.00267	0.00134	0.00273					
Co-60	3.0E-05	0.02546	0.05297	0.07233	0.02882	0.03007	0.01437	0.05500					
Ni-63	1.0E-03	0.00097	0.00097	0.00097	0.00096	0.00096	0.00096						
Zn-65	5.0E-05	0.00301		0.00565	0.00440	0.00627	0.00183	0.00754					
Sr-89	8.0E-05	0.00008	0.00008	0.00008	0.00004	0.00004	0.00004						
Sr-90	5.0E-06												
Zr-95	2.0E-04					0.00019							
Nb-95	3.0E-04					0.00009		0.00010					
Tc-99	6.0E-04	0.00028	0.00028	0.00028	0.00009	0.00009	0.00009						
Ag-110m	6.0E-05												
Sb-125	3.0E-04												
I-129	2.0E-06				0.00775	0.00775	0.00775						
Cs-134	9.0E-06	0.01040		0.01373		0.00296	0.00626	0.01189					
Cs-137	1.0E-05	0.11140	0.12420	0.08379	0.02180	0.02437	0.03755	0.06420					
Eu-152	1.0E-04												
Eu-154	7.0E-05												
Th-228	2.0E-06												
Th-234	5.0E-05	0.07754											
U-234	3.0E-06												
U-235	3.0E-06												
U-238	3.0E-06												
Pu-238	2.0E-07												
Pu-239	2.0E-07												
Np-237	2.0E-07												
Am-241	2.0E-07												
Cu-244	3.0E-07												
TOTAL	1.00	0.25863	0.20918	0.21692	0.07802	0.09002	0.08228	0.14434	0.00000	0.00000	0.00000	0.00000	0.00000







079 - Royersford Chart 12





079 - Royersford Chart 13

