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April 30, 1993

U.S. Nuclear Regulatory Commission
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Washington, DC 20555

Subject: Annual Radiological Environmental Operating Report
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Sirs:

The enclosed information is being submitted in accordance with the requirement of Technical Specification Section 6.9.1.3.

This information is a summary of all analyses performed as part of the Radiological Environment Monitoring requirements of Section 3.16 of the R.E. Ginna Technical Specifications. Trend plots of gross beta data for air and selected water samples are included for the years of 1991 and 1992 and the years of 1968 to 1990 and gamma measurements from TLD's surrounding the R.E. Ginna site for 1991 and 1992.

From the data collected, there does not appear to be any measurable effect to the environment from the operation of the R.E. Ginna plant.

Very truly yours,

Robert C. Mecredy

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1992 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

R.E. Ginna Nuclear Plant

Rochester Gas & Electric Corporation

Docket No. 50-244

9305130204

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RADIOLOGICAL ENVIRONMENTAL SURVEY

January - December 1992

1.0 SUMMARY

During 1992, there were no measurable influences from radioactive effluent releases. Routine measurements are taken in the areas surrounding the R.E. Ginna Nuclear Power Plant to determine if man-made radioactivity is being released at a level that would cause an influence to the environs surrounding the plant. Samples are collected on an established schedule for regular testing to determine if measurable levels of activity exist that may be attributed to the operation of the plant. The information obtained from measurements of these environmental samples is compared to the calculated levels of potential activity at the sampling locations from normal plant releases as determined by monitors within the plant effluent streams.

Samples of water, air, fallout, fish, vegetation, milk and direct radiation are collected from locations near the plant that were determined to be at the point of highest concentration from releases through the plant and containment vents and from additional locations at distances ranging out to eighteen miles. Reference samples for background measurements are collected concurrently from locations calculated to have radioactivity concentrations less than 1% of those from the closer sampling locations. These background samples provide continuous background data which makes it possible to distinguish between significant radioactivity introduced into the environment from the operation of the plant and that introduced from other sources.

During 1992, 1425 samples were collected for 1857 analyses for beta and gamma emitters through gross activity counting techniques and gamma spectroscopy. These total 892 air samples, 298 water samples, 16 fish samples, 8 vegetation samples, 58 milk samples, 2 special lake samples and 154 thermoluminescent dosimeter measurements. As part of a required quality control program, 12 EPA Interlaboratory Comparison Studies samples (comparable to normal samples taken by the environmental program) were analyzed and reported.

A summary of the data collected indicating the results of all data for indicator and control locations is given in Table 1-1.

Table 1-1
ROCHESTER GAS AND ELECTRIC CORPORATION
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
R.E. GINNA NUCLEAR POWER PLANT DOCKET NO. 50-244
WAYNE, NEW YORK REPORTING PERIOD 1992

PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE AND TOTAL NUMBER OF ANALYSES	LLD	INDICATOR LOCATIONS MEAN (1) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (1) RANGE	CONTROL LOCATIONS MEAN (1) RANGE
AIR: PARTICULATE (pCi/Cu.M.)	GROSS BETA 601	0.003	0.015(344/344) 0.006-0.027	ONSITE LOCATION #13 690 M 194	0.015(52/52) 0.007-0.027	0.014(260/260) 0.005-0.027
	GAMMA SCAN 47	(2)	<LLD	--------	----------	<LLD
IODINE	GAMMA SCAN 289	0.02-0.06	0.07 (1/32)	ONSITE LOCATION #4 250 M 140	----------	<LLD
DIRECT RADIATION: (3) TLD (mR/QUARTER)	GAMMA 154	5.0	12.7(71/71) 9.7-19.4	ONSITE LOCATION #13 230 M 292	16.0(4/4) 13.4-19.4	11.6(83/83) 7.7-17.9
WATER: DRINKING (pCi/LITER)	GROSS BETA 74	1.2	3.14(76/76) 1.66-5.68	WELL "B" 640 M 150	4.50(12/12) 3.79-5.68	--------- ---------
	GAMMA SCAN 50	(2)	Ra-226 29(12/50) 16-57	WELL "B" 640 M 150	Ra-226 29(12/12) 16-57	<LLD
	IODINE 36	0.45	<LLD	---------	----------	<LLD)
SURFACE (pCi/LITER)	GROSS BETA 164	1.2	2.56(115/115) 1.14-4.40	DEER CREEK 200 M 135	3.71(12/12) 2.86-4.40	2.38(51/51) 1.14-3.10
	GAMMA SCAN 50	(2)	Ra-266 17(6/50) 12-22	DEER CREEK 200 M 135	Ra-226 17(6/12) 12-22	<LLD
	IODINE 48	0.45	<LLD	---------	----------	<LLD
RAINFALL (pCi/sq.M/day)	GROSS BETA 59	1.2	6.88(23/23) 2.26-17.71	STATION #3 420 M 110	7.29(12/12) 2.17-13.53	5.40(36/36) 1.26-18.77
MILK: (pCi/LITER)	IODINE 58	0.45	<LLD	--------	----------	<LLD
	GAMMA SCAN 58	(2)	<LLD	--------	----------	<LLD
FISH: (pCi/Kg)	GAMMA SCAN 16	(2)	Cs-137 21 (8/8) 11-29	DISCHARGE PLUME	----------	Cs-137 27(8/8) 17-33
VEGETATION: (pCi/Kg)	GAMMA SCAN 8	(2)	<LLD	---------	---------- ----------	---------- ----------

(1) Mean and range based on detectable measurements only. Fraction of detectable measurements at specified locations in parentheses.
(2) Table of LLD values attached for gamma scan measurements.
(3) One direct radiation location has been deleted from this summary since it was affected by the contaminated equipment storage location 50 meters away. The average reading at this location is 21 mR/Quarter during 1992.

2.0 SURVEILLANCE PROGRAM

2.1 Regulatory Limits

The Technical Specification requirements for the radiological environmental monitoring program are:

Monitoring Program

The radiological environmental monitoring program shall be conducted as specified in Table 3.16-1 at the locations given in the ODCM.

If the radiological environmental monitoring program is not conducted as specified in Table 3.16-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence. (Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal availability, or to malfunction of automatic sampling equipment. If the latter, efforts shall be made to complete corrective action prior to the end of the next sampling period.)

If milk or fresh leafy vegetable samples are unavailable for more than one sample period from one or more of the sampling locations indicated by the ODCM, a discussion shall be included in the Semiannual Radioactive Effluent Report which identifies the cause of the unavailability of samples and identifies locations for obtaining replacement samples. If a milk or leafy vegetable sample location becomes unavailable, the locations from which samples were unavailable may then be deleted from the ODCM, provided that comparable locations are added to the environmental monitoring program.

Land Use Census

A land use census shall be conducted and shall identify the location of the nearest milk animal and the nearest residence in each of the 16 meteorological sectors within a distance of five miles.

An onsite garden located in the meteorological sector having the highest historical D/Q may be used for broad leaf vegetation sampling in lieu of a garden census; otherwise the land use census shall also identify the location of the nearest garden of greater than 500 square feet in each of the 16 meteorological sectors within a distance of five miles. D/Q shall be determined in accordance with methods described in the ODCM.

Interlaboratory Comparison Program

Analyses shall be performed on applicable radioactive environmental samples supplied as part of an interlaboratory comparison program which has been approved by NRC, if such a program exists.

2.2 Regulatory Fulfillment

The fulfillment of the Technical Specification requirements shall be demonstrated when:

Specification

The radiological environmental monitoring samples shall be collected pursuant to Table 3.16-1. Acceptable locations are shown in the ODCM. Samples shall be analyzed pursuant to the requirements of Tables 3.16-1 and 4.10-1.

A land use census shall be conducted annually (between June 1 and October 1).

A summary of the results obtained as part of the required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report.

2.3 Deviations from the Sampling Schedule

Deviations from the sampling schedule are allowed when samples are unavailable due to hazardous conditions, seasonal variations or malfunction of automatic sampling equipment. There was one deviation from the sampling schedule during 1992. The minimum number of samples required in Tech Spec Table 3.16-1 were collected for all pathways.

This deviation was:

a. The loss of underground power feed to an air sample station that lasted 20 weeks. It was necessary to run a new underground feed to the sample station. This sample is one of the onsite iodine cartridge samplers; however, prior to the event, another onsite location had been added to ensure the minimum number of samples would be taken at all times.

TECHNICAL SPECIFICATION TABLE 3-16.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples & Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
1. AIRBORNE			
a. Radioiodine	2 indicator 2 control	Continuous operation of sampler with sample collection at least once per 10 days.	Radioiodine canister. Analyze within 7 days of collection of I-131.
b. Particulate	7 indicator 5 control	Same as above	Particulate sampler. Analyze for gross beta radioactivity ≥ 24 hours following filter change. Perform gamma isotopic analysis on each sample for which gross beta activity is > 10 times the mean of offsite samples. Perform gamma isotopic analysis on composite (by location) sample at least once per 92 days.
2. DIRECT RADIATION	18 indicator 10 control 11 placed greater than 5 miles from plant site	TLDs at least quarterly.	Gamma dose quarterly.

TECHNICAL SPECIFICATION TABLE 3-16.1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples & Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
3. WATERBORNE			
a. Surface	1 control (Russell Station) 1 indicator (Condenser Water Discharge)	Composite* sample collected over a period of ≤ 31 days.	Gross beta and gamma isotopic analysis of each composite sample. Tritium analysis of one composite sample at least once per 92 days.
b. Drinking	1 indicator (Ontario Water District Intake)	Same as above	Same as above

*Composite sample to be collected by collecting an aliquot at intervals not exceeding 2 hours.

TECHNICAL SPECIFICATION TABLE 3-16.1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples & Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
4. INGESTION			
a. Milk	1 control 3 indicator June thru October each of 3 farms	At least once per 15 days.	Gamma isotopic and I-131 analysis of each sample.
	1 control 1 indicator November thru May one of the farms	At least once per 31 days.	Gamma isotopic and I-131 analysis of each sample.
b. Fish	4 control 4 indicator (Off shore at Ginna)	Twice during fishing season including at least four species.	Gamma isotopic analysis on edible portions of each sample.
c. Food Products	1 control 2 indicator (On site)	Annual at time of harvest. Sample from two of the following: 1. apples 2. cherries 3. grapes	Gamma isotopic analysis on edible portion of sample.
	1 control 2 indicator (On site garden or nearest offsite garden within 5 miles in the highest D/Q meteorological sector)	At time of harvest. One sample of: 1. broad leaf vegetation 2. other vegetable	Gamma isotopic analysis on edible portions of each sample.

The maximum LLD values as defined by Tech Specs Table 4.10-1 are:

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Particulate (pCi/kg, wet)
gross beta	4[a]	1×10^{-2}			
^{3}H	2000 (1000[a])				
^{54}Mn	15		130		
^{59}Fe	30		260		
$^{58,60}Co$	15		130		
^{65}Zn	30		260		
^{95}Zr-Nb	15[b]				
^{131}I	1	7×10^{-2}		1	60
$^{134,137}Cs$	15 (10[a]), 18	1×10^{-2}	130	15	60
^{140}Ba-La	15[b]			15[b]	

a. LLD for drinking water

b. Total for parent and daughter

LLD TABLE NOTATION

The LLD is the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ Sb}{E\ V\ 2.22\ Y \exp\left[(-\lambda\Delta t)\right]}$$

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume)

Sb is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute)

E is the counting efficiency (as counts per disintegration)

V is the sample size (in units of mass or volume)

2.22 is the number of disintegrations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between sample collection and analysis

The value of Sb used in the calculation of the LLD for a particular measurement system shall be based on the actual observed variance of the background counting rate or the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma-ray spectrometry, the background shall include the typical contribution of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples).

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally, background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable.

ROCHESTER GAS AND ELECTRIC

Table 2-1
LOWER LIMIT OF DETECTION (LLD)

Sample Size	Air Filters(a) pCi/M3 3500 M3/Qtr.	Water pCi/liter 3.5 liters		Milk pCi/liter 3.5 liters	Fish pCi/kg 2 kg	Vegetation(a) pCi/kg 2 kg
Ave. Decay(c)	55 days	0.5 d	8 days	0.5 d	6 days	0.5 days
Be-7	0.025	28	31			
K-40	0.031					
Cr-51	0.035	30	35		220	95
Mn-54	0.002	3	3		10	10
Fe-59	0.005	6	6		30	20
Co-58	0.002	3	3		10	10
Co-60	0.002	4	4	4	10	13
Zn-65	0.003	6	6		25	22
Zr-95	0.004	6	6		24	17
Nb-95	0.003	3	3		18	10
Ru-103	0.003	3	3		18	12
Ru-106	0.012	28	28		95	100
I-131	0.03 (b)	4 Gamma 0.5 Gamma (d) 0.2 Beta		10 Gamma 0.5 Gamma (d) 0.2 Beta	15	12
Cs-134	0.002	3	3		10	10
Cs-137	0.002	4	5	4	11	12
BaLa-140		12	17	4	12	10
Ce-141	0.05	7	8		40	25
Ce-144	0.09	30	30		100	100
Ra-226		7	7		20	20
Beta	0.004	1.2 (1 Liter)				

(a) LLD value will vary due to different sample sizes. Data based on 1991 background sample spectra.
(b) Charcoal Cartridge
(c) Ave. decay-normal period from midpoint of sampling period to counting time.
(d) Separation by anion exchange on resin.

Table 2-2

DIRECTION AND DISTANCE TO SAMPLE POINTS
All directions given in degrees and all distances given in meters

Air Sample Stations	Direction	Distance
# 2	87	320
# 3	110	420
# 4	140	250
# 5	185	160
# 6	232	225
# 7	257	220
# 8	258	19200
# 9	235	11400
#10	185	13100
#11	123	11500
#12	93	25100
#13	194	690

Water Sample Locations

	Direct	Dist.
Russell Station	270	25600
Ontario Water District Intake	70	2200
Circ Water Intake	0	420
Circ Water Discharge	15	130
Deer Creek	105	260
Well B	150	640
Tap	Onsite Sink	
Rainfall # 3	110	420
Rainfall # 5	185	160
Rainfall # 8	258	19200
Rainfall #10	185	13100
Rainfall #12	93	25100

Milk Sample Locations

	Direct	Dist.
Farm A	113	9500
Farm B	242	5450
Farm C	156	4950
Farm D	132	21000

Fish Samples

Indicator Samples Lake Ontario Discharge Plume
Background Samples Russell Station

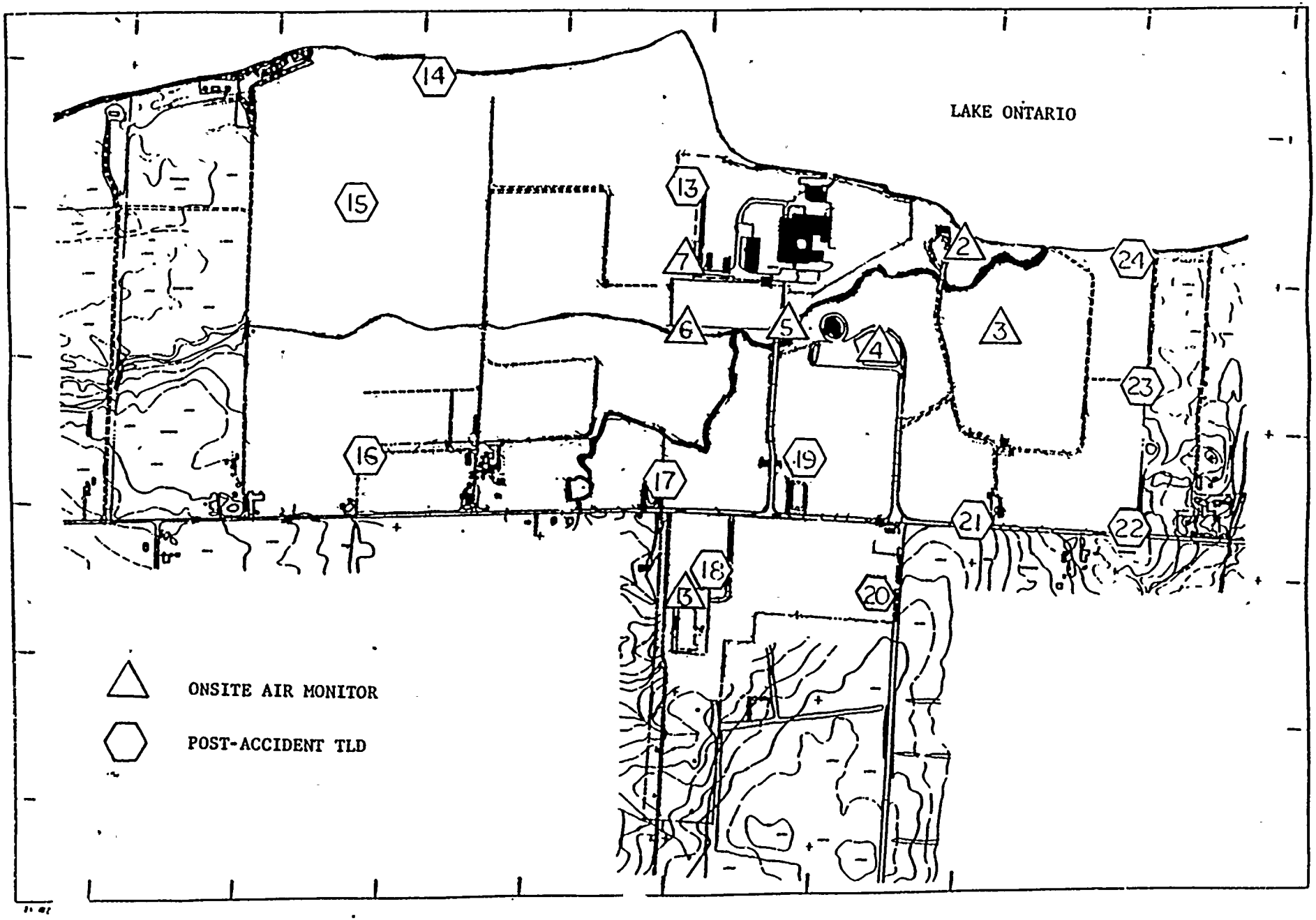
Produce Samples

Indicator Samples Grown on property surrounding Plant
Background Samples Purchased from farms > 10 miles

TLD Locations	Direction	Distance
# 2	87	320
# 3	110	420
# 4	140	250
# 5	185	160
# 6	232	225
# 7	257	220
# 8	258	19200
# 9	235	11400
#10	185	13100
#11	123	11500
#12	93	25100
#13	292	230
#14	292	770
#15	272	850
#16	242	900
#17	208	500
#18	193	650
#19	177	400
#20	165	680
#21	145	600
#22	128	810
#23	107	680
#24	90	630
#25	247	14350
#26	223	14800
#27	202	14700
#28	145	17700
#29	104	13800
#30	103	20500
#31	263	7280
#32	246	6850
#33	220	7950
#34	205	6850
#35	193	7600
#36	174	5650
#37	158	6000
#38	137	7070
#39	115	6630
#40	87	6630

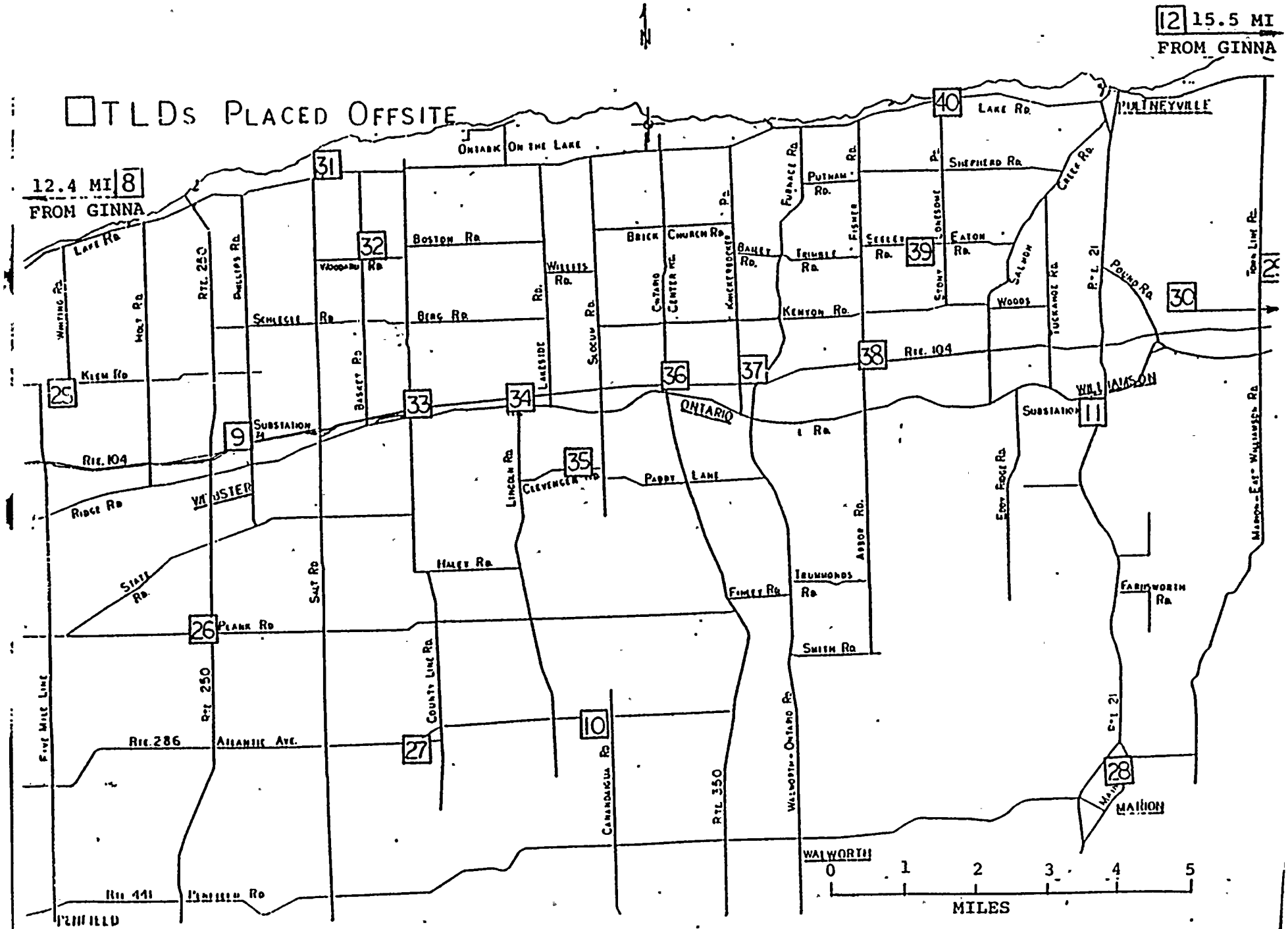
Map 2-1

Onsite Sample Locations



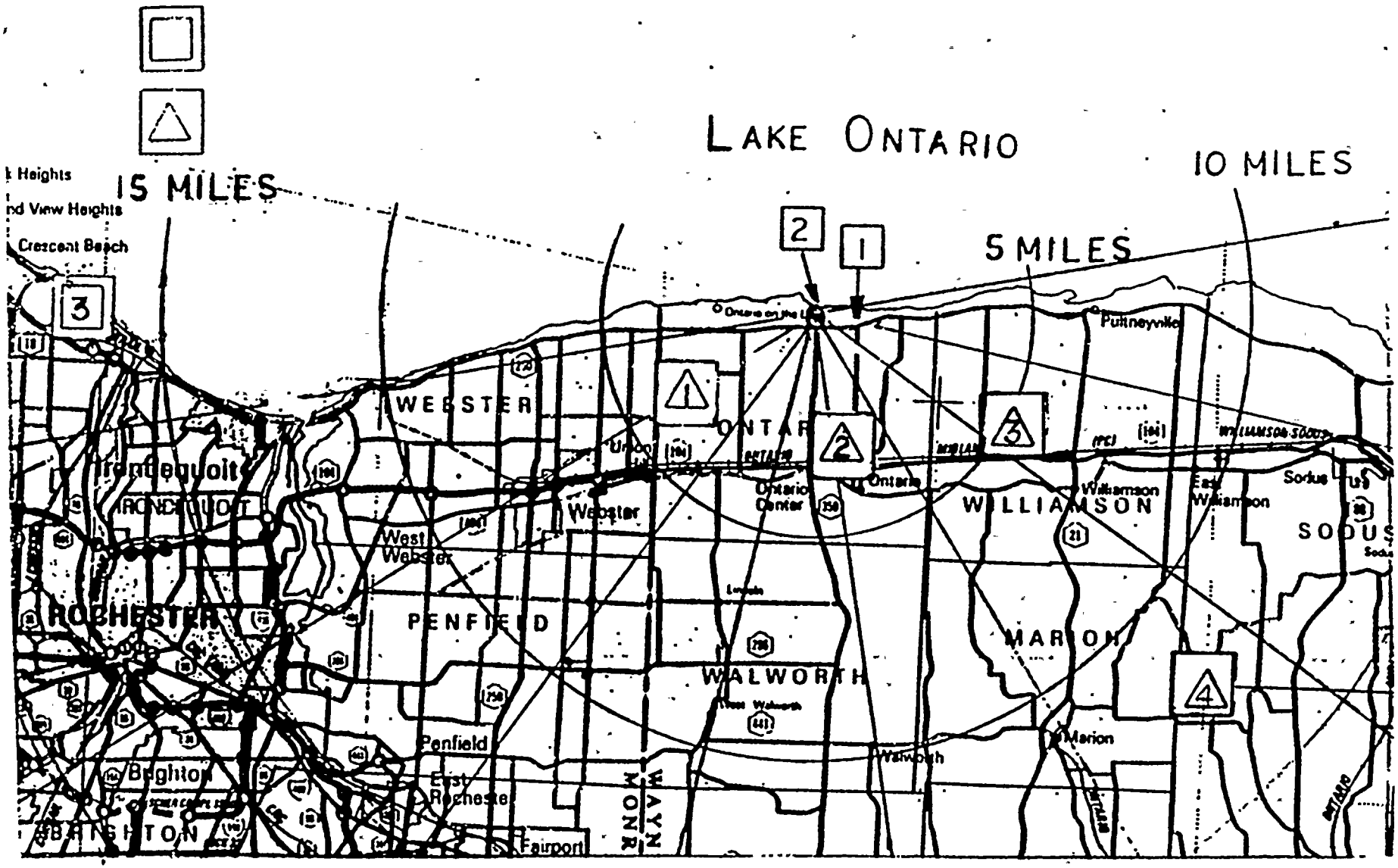
Map 2-2

Offsite Sample Locations



Map 2-3

Water Sample and Milk Farm Locations



3.0 DATA SUMMARY

3.1 Analytical Results

The values listed on the following tables include the uncertainties stated as 2 standard deviations (95% confidence level).

Key Definitions

Curie (Ci): The quantity of any radionuclide in which the number of disintegrations per second is 37 billion.

Picocurie (pCi): One millionth of a millionth of a curie or 0.037 disintegrations per second.

Cubic Meter (M^3): Approximately 35.3 cubic feet.

Liter (L): Approximately 1.06 quarts.

Lower Limit of Detection

The Nuclear Regulatory Commission has requested that reported values be compared to the Lower Limit of Detection (LLD) for each piece of equipment. The LLD for the equipment is established by the measurement of a blank sample. Table 2-1 is a listing of the LLD values for gamma isotopes using our Ge(Li) multichannel pulse height detector system. These values are before the correction for decay. Decay correction is applied from the end of the sampling period to the counting time, not from the midpoint of the sampling period. An explanation of the calculation of the LLD is included before Table 2-1. Gross detection limits are as follows:

Beta:

Air 0.003 pCi/M^3 gross beta for 400 m^3 sample.

Water 0.7 pCi/L gross beta for 1 liter sample.

Milk 0.45 pCi/L iodine 131 for 4 liter sample.

Fallout 1.1 pCi/m^2/day for 0.092 M^2 collection area.

Gamma:

Air 0.03 pCi/m^3 iodine 131 on charcoal cartridge for 400 M^3 sample.

Radiation: 5 millirem/quarter for one quarter exposure (TLD).

3.2 Air Samples

Radioactive particles in air are collected by drawing approximately one cfm through a two inch diameter particulate filter. The volume of air sampled is measured by a dry gas meter and corrected for the pressure drop across the filter. The filters are changed weekly and allowed to decay for three days prior to counting to eliminate most of the natural radioactivity such as the short half-life daughter products of radon and thoron. The decay period is used to give a more sensitive measurement of long-lived man-made radioactivity.

A ring of 6 sampling stations is located on the plant site from 150 to 300 meters from the reactor near the point of the maximum annual average ground level concentration. In addition, there is a ring of 5 sampling stations located approximately 7 to 17 miles from the site that serve as background stations.

Based on weekly comparisons, there was no statistical difference between the on-site and the background radioactive particulate concentrations. The average concentrations for the on-site and background samples were 0.015 and 0.014 pCi/m^3 respectively for the period of January to December, 1992. Maximum weekly concentrations for each station were less than 0.028 pCi/m^3.

The major airborne activities released from the plant are noble gases, tritium, radioiodines and carbon-14. Most of this activity is released in a gaseous form, however, some radioiodine is released as airborne particulate. For airborne particulates, the average calculated concentration of particulate at the site boundary due to measurable plant releases would be 5.5E-7 pCi/m^3 or 0.019% of the average release concentration of 3.34E-3 pCi/m^3. The survey cannot detect such a concentration which is <0.02% of the LLD of 0.003 pCi/m^3.

Tables 3-1A, 3-1B are a list of values for the on-site samplers. Tables 3-2A, 3-2B are a list of values for the off-site samplers.

The particulate filters from each sampling location were saved and a 13 week composite was made. A gamma isotopic analysis was done for each sampling location and corrected for decay. The results of these analyses are listed in Tables 3-3 A to D.

Iodine cartridges are placed at six locations. Two new locations were added for iodine analysis on January 10, 1992. These cartridges are changed and counted each week. The one positive analysis was found after a plant trip and release of activity through the air ejector steam jet hoggers. Air sample station #4 is a sample station on the calculated line of maximum ground level concentration. A list of values for these cartridges is given in Table 3-4.

Trend plots of the 1992 air filter data with a comparison to the 1991 air filter data are included for both onsite and offsite air monitors. Additionally, a trend plot of the annual averages measured since 1968 is included to show the variation of data during the years that the R.E. Ginna Nuclear Power Plant has been operational. The peak activities measured correspond to the years when atmospheric tests of nuclear weapons were being conducted.

Table 3-1 A
On-Site Samplers
Results in pCi/m3

Week Ending	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta #13A	Average
10-Jan	0.016 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.016 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.021 ± 0.001	0.018
17-Jan	0.019 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	0.017 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.020 ± 0.001	0.017
24-Jan	0.019 ± 0.001	0.019 ± 0.001	0.018 ± 0.001	0.019 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.022 ± 0.001	0.019
31-Jan	0.022 ± 0.001	0.022 ± 0.001	0.019 ± 0.001	0.021 ± 0.002	0.023 ± 0.002	0.020 ± 0.002	0.024 ± 0.001	0.022
7-Feb	0.020 ± 0.001	0.022 ± 0.001	0.025 ± 0.001	0.018 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.018 ± 0.001	0.019
14-Feb	0.020 ± 0.001	0.019 ± 0.001	0.018 ± 0.001	0.019 ± 0.002	0.020 ± 0.002	0.019 ± 0.002	0.023 ± 0.001	0.020
21-Feb	0.020 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.018 ± 0.002	0.020 ± 0.002	0.018 ± 0.002	0.021 ± 0.001	0.019
28-Feb	0.015 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.015 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.016 ± 0.001	0.015
6-Mar	0.019 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.017 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.018 ± 0.001	0.018
13-Mar	0.014 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.014 ± 0.002	0.015 ± 0.002	0.012 ± 0.001	0.016 ± 0.001	0.014
20-Mar	0.020 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.018 ± 0.002	0.019 ± 0.002	0.018 ± 0.002	0.020 ± 0.001	0.019
27-Mar	0.019 ± 0.001	0.019 ± 0.001	0.017 ± 0.001	0.017 ± 0.002	0.017 ± 0.002	0.016 ± 0.002	0.019 ± 0.001	0.018
3-Apr	0.011 ± 0.001	0.011 ± 0.011	0.010 ± 0.001	0.011 ± 0.002	0.012 ± 0.001	0.012 ± 0.002	0.014 ± 0.001	0.012
10-Apr	0.015 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.016 ± 0.002	0.017 ± 0.002	0.016 ± 0.002	0.018 ± 0.002	0.015
17-Apr	0.017 ± 0.001	0.016 ± 0.001	0.013 ± 0.001	0.017 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.016 ± 0.001	0.016
24-Apr	0.008 ± 0.001	0.008 ± 0.001	(a)	0.008 ± 0.002	0.007 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	0.007
1-May	0.007 ± 0.001	0.007 ± 0.001	(a)	0.008 ± 0.002	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007
8-May	0.010 ± 0.001	0.009 ± 0.001	(a)	0.012 ± 0.002	0.011 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.010
15-May	0.011 ± 0.001	0.011 ± 0.001	(a)	0.013 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.012 ± 0.001	0.013
22-May	0.012 ± 0.001	0.011 ± 0.001	(a)	0.013 ± 0.002	0.014 ± 0.003	0.014 ± 0.002	0.013 ± 0.001	0.013
29-May	0.016 ± 0.001	0.015 ± 0.001	(a)	0.016 ± 0.002	0.016 ± 0.005	0.014 ± 0.002	0.016 ± 0.001	0.016
5-Jun	0.013 ± 0.001	0.012 ± 0.001	(a)	0.015 ± 0.002	0.015 ± 0.001	0.013 ± 0.002	0.013 ± 0.001	0.014
12-Jun	0.012 ± 0.001	0.011 ± 0.001	(a)	0.014 ± 0.002	0.013 ± 0.001	0.012 ± 0.002	0.012 ± 0.001	0.012
19-Jun	0.016 ± 0.001	0.015 ± 0.001	(a)	0.018 ± 0.002	0.017 ± 0.002	0.015 ± 0.002	0.015 ± 0.001	0.016
26-Jun	0.008 ± 0.001	0.008 ± 0.001	(a)	0.009 ± 0.002	0.010 ± 0.001	0.008 ± 0.001	0.009 ± 0.001	0.009
3-Jul	0.012 ± 0.001	0.012 ± 0.001	(a)	0.011 ± 0.002	0.013 ± 0.001	0.011 ± 0.002	0.012 ± 0.001	0.012
Maximum	0.022 ± 0.001	0.022 ± 0.001	0.025 ± 0.001	0.021 ± 0.002	0.023 ± 0.002	0.020 ± 0.002	0.024 ± 0.001	
Average	0.015	0.015	0.016	0.015	0.015	0.014	0.016	
Minimum	0.007 ± 0.001	0.007 ± 0.001	0.010 ± 0.001	0.008 ± 0.002	0.007 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	

(a) Underground fault, power lost to sampler.

Table 3-1 B
On-Site Samplers
Results in pCi/m3

Week Ending	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta. #13A	Average
10-Jul	0.008 ± 0.001	0.008 ± 0.001	(a)	0.011 ± 0.002	0.009 ± 0.001	0.008 ± 0.001	0.009 ± 0.001	0.009
17-Jul	0.011 ± 0.001	0.010 ± 0.001	(a)	0.011 ± 0.002	0.012 ± 0.001	0.009 ± 0.001	0.011 ± 0.001	0.011
24-Jul	0.011 ± 0.001	0.010 ± 0.001	(a)	0.012 ± 0.002	0.011 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.011
31-Jul	0.007 ± 0.001	0.007 ± 0.001	(a)	0.011 ± 0.001	0.007 ± 0.001	0.008 ± 0.001	0.009 ± 0.001	0.008
7-Aug	0.012 ± 0.001	0.011 ± 0.001	(a)	0.015 ± 0.003	0.015 ± 0.001	0.014 ± 0.002	0.013 ± 0.001	0.013
14-Aug	0.011 ± 0.001	0.011 ± 0.001	(a)	0.012 ± 0.002	0.010 ± 0.001	0.012 ± 0.002	0.011 ± 0.001	0.011
21-Aug	0.010 ± 0.001	0.010 ± 0.001	(a)	0.012 ± 0.002	0.010 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.011
28-Aug	0.017 ± 0.001	0.018 ± 0.001	(a)	0.018 ± 0.002	0.019 ± 0.001	0.018 ± 0.002	0.019 ± 0.001	0.018
4-Sep	0.013 ± 0.001	0.012 ± 0.001	(a)	0.014 ± 0.002	0.017 ± 0.003	0.013 ± 0.002	0.014 ± 0.001	0.014
11-Sep	0.011 ± 0.001	0.012 ± 0.001	0.013 ± 0.001	0.014 ± 0.002	0.012 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.012
18-Sep	0.019 ± 0.001	0.020 ± 0.001	0.021 ± 0.001	0.025 ± 0.002	0.023 ± 0.001	0.025 ± 0.002	0.024 ± 0.001	0.022
25-Sep	0.014 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.010 ± 0.002	0.010 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	0.011
2-Oct	0.009 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.012 ± 0.002	0.012 ± 0.001	0.011 ± 0.002	0.012 ± 0.001	0.011
9-Oct	0.017 ± 0.001	0.018 ± 0.001	0.016 ± 0.001	0.017 ± 0.002	0.016 ± 0.001	0.018 ± 0.002	0.017 ± 0.001	0.017
16-Oct	0.015 ± 0.001	0.017 ± 0.001	0.016 ± 0.001	0.018 ± 0.002	0.017 ± 0.001	0.017 ± 0.001	0.018 ± 0.001	0.017
23-Oct	0.013 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.015 ± 0.002	0.014 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.014
30-Oct	0.013 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.015 ± 0.002	0.014 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.014
6-Nov	0.010 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.009 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.009
13-Nov	0.012 ± 0.001	0.011 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.013
20-Nov	0.010 ± 0.001	0.008 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.011
27-Nov	0.009 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.009 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.010
4-Dec	0.016 ± 0.001	0.018 ± 0.002	0.016 ± 0.001	0.016 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.016 ± 0.001	0.016
11-Dec	0.012 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.012 ± 0.001	0.014 ± 0.001	0.014
18-Dec	0.014 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014
25-Dec	0.024 ± 0.001	0.026 ± 0.002	0.026 ± 0.001	0.027 ± 0.001	0.026 ± 0.001	0.026 ± 0.001	0.027 ± 0.001	0.026
1-Jan	0.017 ± 0.001	0.018 ± 0.001	0.018 ± 0.001	0.017 ± 0.001	0.026 ± 0.002	0.018 ± 0.001	0.018 ± 0.001	0.019
Maximum	0.024 ± 0.001	0.026 ± 0.002	0.026 ± 0.001	0.027 ± 0.001	0.026 ± 0.002	0.026 ± 0.001	0.027 ± 0.001	
Average	0.013	0.013	0.015	0.014	0.014	0.014	0.014	
Minimum	0.007 ± 0.001	0.007 ± 0.001	0.010 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.008 ± 0.001	0.007 ± 0.001	

(a) Underground fault, power lost to sampler.

Table 3-2 A
Off-Site Samplers
Results in pCi/m3

Week Ending	Sta. #8	Sta.#9	Sta. #10	Sta. #11	Sta.#12	Average
10-Jan	0.018 ± 0.001	0.018 ± 0.002	0.017 ± 0.001	0.016 ± 0.001	0.017 ± 0.001	0.017
17-Jan	0.014 ± 0.001	0.016 ± 0.002	0.019 ± 0.001	0.018 ± 0.001	0.012 ± 0.001	0.016
24-Jan	0.020 ± 0.001	0.017 ± 0.002	0.020 ± 0.001	0.016 ± 0.001	0.017 ± 0.001	0.018
31-Jan	0.022 ± 0.001	0.020 ± 0.002	0.020 ± 0.001	0.022 ± 0.002	0.017 ± 0.001	0.020
7-Feb	0.017 ± 0.001	0.015 ± 0.002	0.014 ± 0.001	0.012 ± 0.001	0.015 ± 0.001	0.015
14-Feb	0.021 ± 0.001	0.019 ± 0.002	0.019 ± 0.001	0.020 ± 0.002	0.016 ± 0.001	0.019
21-Feb	0.020 ± 0.001	0.019 ± 0.002	0.018 ± 0.001	0.017 ± 0.001	0.017 ± 0.001	0.018
28-Feb	0.018 ± 0.001	0.015 ± 0.002	0.014 ± 0.001	0.016 ± 0.001	0.012 ± 0.001	0.015
6-Mar	0.018 ± 0.001	0.014 ± 0.002	0.016 ± 0.001	0.015 ± 0.001	0.017 ± 0.001	0.016
13-Mar	0.016 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.014
20-Mar	0.020 ± 0.001	0.019 ± 0.002	0.018 ± 0.001	0.017 ± 0.001	0.019 ± 0.001	0.019
27-Mar	0.018 ± 0.001	0.016 ± 0.002	0.016 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	0.016
3-Apr	0.012 ± 0.001	0.013 ± 0.002	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.012
10-Apr	0.016 ± 0.002	0.015 ± 0.002	0.015 ± 0.001	0.015 ± 0.001	0.012 ± 0.001	0.015
17-Apr	0.019 ± 0.001	0.018 ± 0.002	0.017 ± 0.001	0.016 ± 0.001	0.016 ± 0.001	0.017
24-Apr	0.008 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.005 ± 0.001	0.007
1-May	0.008 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.008 ± 0.001	0.006 ± 0.001	0.007
8-May	0.011 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.009 ± 0.001	0.011
15-May	0.013 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.013
22-May	0.015 ± 0.001	0.016 ± 0.002	0.014 ± 0.001	0.014 ± 0.001	0.011 ± 0.001	0.014
29-May	0.019 ± 0.001	0.017 ± 0.002	0.015 ± 0.001	0.017 ± 0.001	0.014 ± 0.001	0.016
5-Jun	0.016 ± 0.001	0.013 ± 0.001	0.013 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.013
12-Jun	0.014 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.012 ± 0.001	0.012
19-Jun	0.016 ± 0.001	0.015 ± 0.001	0.015 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.015
26-Jun	0.009 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	0.008
3-Jul	0.013 ± 0.001	0.014 ± 0.001	0.009 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012
Maximum	0.022 ± 0.001	0.020 ± 0.002	0.020 ± 0.001	0.022 ± 0.002	0.019 ± 0.001	
Average	0.016	0.015	0.014	0.014	0.013	
Minimum	0.008 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.006 ± 0.001	0.005 ± 0.001	

Table 3-2 B
Off-Site Samplers
Results in pCi/m3

Week Ending	Sta. #8	Sta. #9	Sta. #10	Sta. #11	Sta. #12	Average
10-Jul	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.008 ± 0.001	0.007 ± 0.001	0.009
17-Jul	0.012 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.011
24-Jul	0.012 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.009 ± 0.001	0.010
31-Jul	0.009 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.008
7-Aug	0.015 ± 0.001	0.014 ± 0.001	0.014 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.013
14-Aug	0.013 ± 0.001	0.011 ± 0.001	0.012 ± 0.001	0.012 ± 0.001	0.011 ± 0.001	0.012
21-Aug	(a)	0.012 ± 0.001	0.010 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011
28-Aug	0.020 ± 0.001	0.020 ± 0.002	0.019 ± 0.001	0.020 ± 0.002	0.018 ± 0.001	0.019
4-Sep	0.016 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.014
11-Sep	0.015 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.014
18-Sep	0.027 ± 0.002	0.025 ± 0.002	0.024 ± 0.001	0.022 ± 0.002	0.022 ± 0.001	0.024
25-Sep	0.011 ± 0.001	0.010 ± 0.001	0.010 ± 0.001	0.014 ± 0.001	0.010 ± 0.001	0.011
2-Oct	0.012 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011 ± 0.001	0.011
9-Oct	0.018 ± 0.001	0.020 ± 0.002	0.017 ± 0.001	0.017 ± 0.001	0.015 ± 0.001	0.017
16-Oct	0.017 ± 0.001	0.019 ± 0.002	0.018 ± 0.001	0.018 ± 0.001	0.014 ± 0.001	0.017
23-Oct	0.012 ± 0.001	0.015 ± 0.001	0.013 ± 0.002	0.015 ± 0.001	0.014 ± 0.001	0.014
30-Oct	0.012 ± 0.001	0.015 ± 0.001	0.013 ± 0.002	0.013 ± 0.001	0.013 ± 0.001	0.013
6-Nov	0.007 ± 0.001	0.010 ± 0.001	0.008 ± 0.002	0.011 ± 0.001	0.008 ± 0.001	0.009
13-Nov	0.011 ± 0.001	0.014 ± 0.001	0.015 ± 0.002	0.013 ± 0.001	0.012 ± 0.001	0.013
20-Nov	0.009 ± 0.001	0.011 ± 0.001	0.012 ± 0.002	0.013 ± 0.001	0.011 ± 0.001	0.011
27-Nov	(a)	0.011 ± 0.002	0.009 ± 0.002	0.011 ± 0.001	0.010 ± 0.001	0.010
4-Dec	0.013 ± 0.001	0.015 ± 0.002	0.012 ± 0.002	(b)	0.014 ± 0.001	0.014
11-Dec	0.011 ± 0.001	0.014 ± 0.002	0.010 ± 0.002	0.009 ± 0.002	0.014 ± 0.001	0.012
18-Dec	0.011 ± 0.001	0.012 ± 0.002	0.014 ± 0.002	0.012 ± 0.001	0.013 ± 0.001	0.012
25-Dec	0.023 ± 0.001	0.026 ± 0.002	0.024 ± 0.002	0.025 ± 0.001	0.024 ± 0.001	0.024
1-Jan	0.015 ± 0.001	0.019 ± 0.002	0.019 ± 0.002	0.015 ± 0.001	0.017 ± 0.001	0.017
Maximum	0.027 ± 0.002	0.026 ± 0.002	0.024 ± 0.002	0.025 ± 0.001	0.024 ± 0.001	
Average	0.014	0.014	0.013	0.014	0.013	
Minimum	0.007 ± 0.001	0.009 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	0.007 ± 0.001	

(a) Torn filter
(b) Pump out of service.

Rochester Gas and Electric

Table 3-3 A
13 Week Composite
Gamma Isotopic Analysis
Result in pCi/m3
First Quarter

	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta. #8	Sta. #9	Sta. #10	Sta. #11	Sta. #12	Sta. #13A
Be-7	.105 ± .015	.102 ± .013	.093 ± .012	.094 ± .024	.101 ± .020	.094 ± .019	.122 ± .016	.098 ± .023	.103 ± .013	.088 ± .016	.077 ± .015	.119 ± .016
K-40	<.014	<.007	<.012	<.027	<.020	<.020	<.016	<.021	<.013	<.016	<.013	<.013
Mn-54	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fe-59	<.003	<.001	<.002	<.004	<.003	<.003	<.002	<.003	<.002	<.003	<.003	<.002
Co-58	<.001	<.001	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Co-60	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Zn-65	<.002	<.001	<.001	<.003	<.002	<.002	<.001	<.002	<.001	<.002	<.001	<.001
Zr-95	<.002	<.002	<.001	<.003	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002
Nb-95	<.002	<.001	<.001	<.003	<.002	<.002	<.002	<.002	<.001	<.002	<.002	<.002
Ru-103	<.001	<.001	<.001	<.003	<.002	<.002	<.002	<.002	<.001	<.002	<.002	<.001
Ru-106	<.006	<.005	<.005	<.011	<.007	<.008	<.006	<.007	<.005	<.007	<.006	<.005
Cs-134	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cs-137	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Ba-140	<.032	<.028	<.026	<.057	<.046	<.046	<.044	<.056	<.039	<.058	<.050	<.054
Ce-141	<.002	<.002	<.002	<.004	<.003	<.003	<.003	<.003	<.002	<.003	<.003	<.002
Ce-144	<.004	<.003	<.003	<.006	<.004	<.005	<.004	<.005	<.003	<.004	<.003	<.003

All values given as < are less than LLD corrected for decay..

Rochester Gas and Electric
Table 3-3 B
13 Week Composite
Gamma Isotopic Analysis
Result in pCi/m3
Second Quarter

	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta. #8	Sta. #9	Sta. #10	Sta. #11	Sta. #12	Sta. #13A
Be-7	.114 ± .017	.101 ± .017	(a)	.117 ± .033	.119 ± .025	.100 ± .020	.148 ± .022	.137 ± .031	.095 ± .022	.107 ± .036	.130 ± .031	.110 ± .030
K-40	<0.018	<.016		<.027	<.024	<.024	<.018	<.021	<.014	<.018	<.014	<.012
Mn-54	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fe-59	<.003	<.003		<.007	<.005	<.005	<.004	<.007	<.004	<.008	<.007	<.006
Co-58	<.001	<.001		<.002	<.002	<.002	<.001	<.002	<.001	<.002	<.002	<.002
Co-60	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Zn-65	<.001	<.001		<.003	<.002	<.002	<.002	<.002	<.001	<.002	<.002	<.001
Zr-95	<.002	<.002		<.004	<.003	<.003	<.003	<.004	<.002	<.004	<.004	<.003
Nb-95	<.001	<.002		<.004	<.004	<.003	<.003	<.006	<.003	<.006	<.006	<.006
Ru-103	<.001	<.002		<.003	<.003	<.003	<.002	<.004	<.002	<.005	<.004	<.004
Ru-106	<.006	<.006		<.011	<.009	<.009	<.007	<.009	<.006	<.008	<.007	<.005
Cs-134	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cs-137	<.010	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Ba-140	<.027	<.063		<.153	<.133	<.139	<.123	<.503	<.332	<.350	<.350	<.350
Ce-141	<.002	<.003		<.005	<.005	<.005	<.004	<.008	<.005	<.010	<.009	<.008
Ce-144	<.004	<.004		<.006	<.006	<.005	<.004	<.005	<.003	<.005	<.004	<.003

All values given as < are less than LLD corrected for decay.
(a) Sampler out of service 4/24/92 - 9/4/92, see text under section 2.3- Deviations from Sampling Schedule.

Table 3-3 C
13 Week Composite
Gamma Isotopic Analysis
Result in pCi/m3
Third Quarter

	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta. #8	Sta. #9	Sta. #10	Sta. #11	Sta. #12	Sta. #13A
Be-7	.095 ± .013	.098 ± .015	.101 ± .029	.089 ± .032	.090 ± .090	.095 ± .027	.119 ± .023	.100 ± .023	.100 ± .019	.100 ± .024	.095 ± .020	.119 ± .022
K-40	<.013	<.013	<.005	<.046	<.018	<.024	<.017	<.018	<.012	<.018	<.014	<.015
Mn-54	<.001	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fe-59	<.002	<.003	<.006	<.007	<.004	<.005	<.004	<.005	<.004	<.006	<.004	<.005
Co-58	<.001	<.001	<.002	<.002	<.001	<.002	<.001	<.002	<.001	<.002	<.001	<.001
Co-60	<.001	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Zn-65	<.001	<.001	<.004	<.003	<.002	<.002	<.002	<.002	<.001	<.002	<.001	<.002
Zr-95	<.002	<.002	<.005	<.004	<.003	<.004	<.003	<.003	<.002	<.003	<.002	<.003
Nb-95	<.001	<.002	<.004	<.005	<.003	<.004	<.003	<.004	<.003	<.004	<.003	<.004
Ru-103	<.001	<.002	<.003	<.004	<.002	<.003	<.002	<.003	<.002	<.004	<.003	<.003
Ru-106	<.005	<.006	<.018	<.011	<.006	<.009	<.007	<.007	<.005	<.007	<.006	<.006
Cs-134	<.001	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cs-137	<.001	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Ba-140	<.035	<.350	<.061	<.230	<.148	<.211	<.192	<.274	<.230	<.376	<.298	<.343
Ce-141	<.002	<.003	<.005	<.007	<.004	<.006	<.005	<.006	<.004	<.006	<.005	<.005
Ce-144	<.003	<.003	<.010	<.006	<.004	<.006	<.004	<.005	<.003	<.004	<.003	<.004

All values given as < are less than LLD corrected for decay.

Rochester Gas and Electric

Table 3-3 D
13 Week Composite
Gamma Isotopic Analysis
Result in pCi/m3
Fourth Quarter

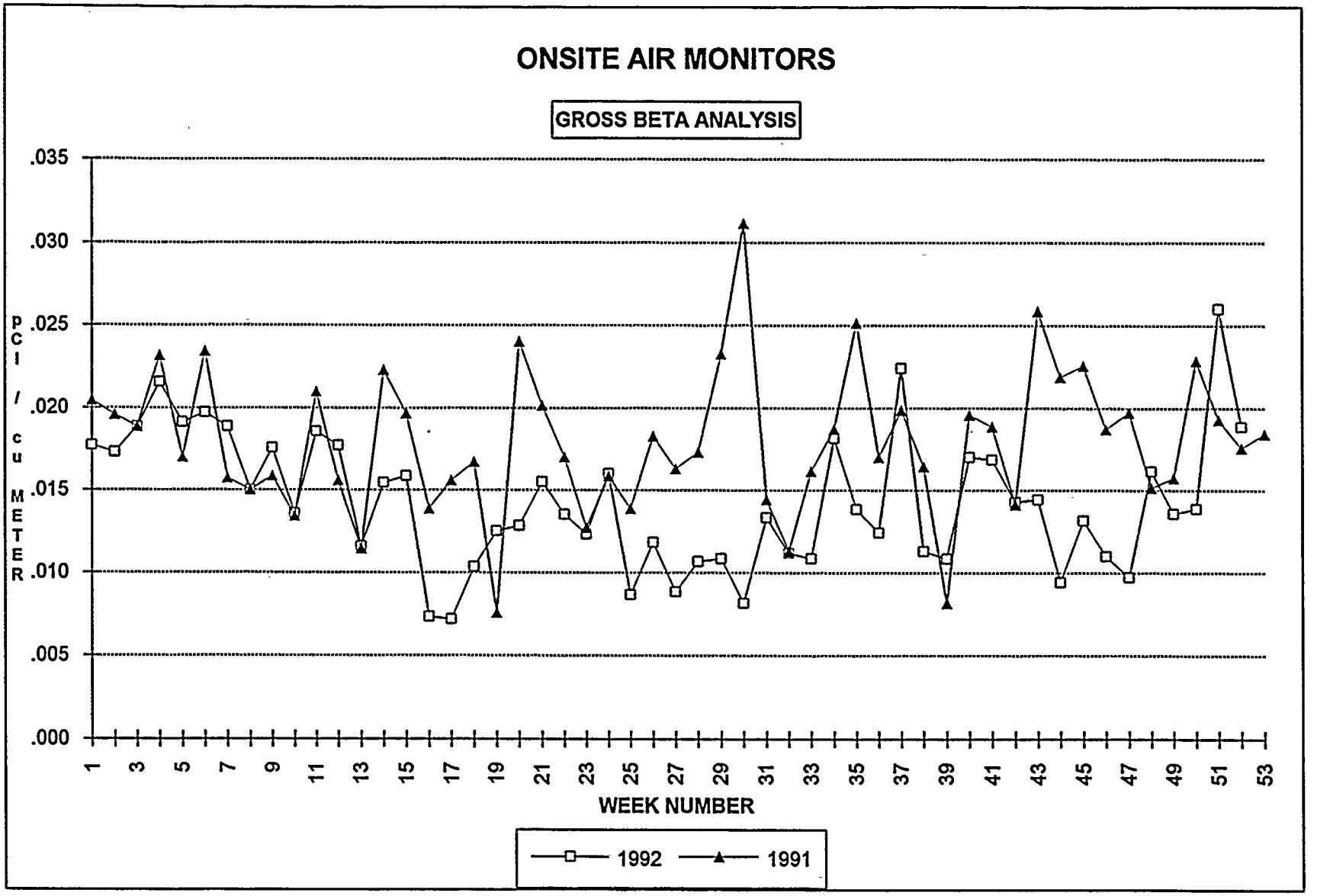
	Sta. #2	Sta. #3	Sta. #4	Sta. #5	Sta. #6	Sta. #7	Sta. #8	Sta. #9	Sta. #10	Sta. #11	Sta. #12	Sta. #13A
Be-7	.076 ± .012	.081 ± .017	.087 ± .013	.088 ± .016	.071 ± .010	.076 ± .015	.068 ± .014	.088 ± .018	.071 ± .018	.078 ± .017	.080 ± .015	.079 ± .015
K-40	<.012	<.018	<.013	<.015	<.010	<.014	<.014	<.018	<.021 ± .002	<.016	<.016	.014
Mn-54	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fe-59	<.002	<.003	<.002	<.002	<.002	<.003	<.003	<.005	<.004	<.004	<.003	<.003
Co-58	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.002	<.002	<.001	<.001	<.001
Co-60	<.001	<.001	<.001	<.001	<.004	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Zn-65	<.001	<.002	<.001	<.001	<.001	<.001	<.001	<.002	<.002	<.001	<.001	<.001
Zr-95	<.001	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.002	<.002	<.002
Nb-95	<.001	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003	<.002	<.002	<.002
Ru-103	<.001	<.002	<.001	<.002	<.001	<.001	<.001	<.002	<.003	<.002	<.002	<.002
Ru-106	<.004	<.007	<.005	<.006	<.004	<.005	<.005	<.007	<.008	<.006	<.005	<.006
Cs-134	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cs-137	<.005	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Ba-140	<.028	<.045	<.036	<.042	<.027	<.045	<.051	<.101	<.118	<.100	<.074	<.100
Ce-141	<.002	<.003	<.021	<.002	<.002	<.003	<.002	<.004	<.004	<.003	<.003	<.003
Ce-144	<.003	<.004	<.003	<.004	<.002	<.003	<.003	<.005	<.005	<.004	<.003	<.003

All values given as < are less than LLD corrected for decay.

Table 3-4
Charcoal Cartridges Gamma Analysis for Iodine
Results in pCi/m3

Week Ending	Sta. #2	Sta. #4	Sta. #7	Sta. #9	Sta. #11	Sta. #12
10-Jan	(b)	<.019	<.041	<.039	<.037	(b)
17-Jan	<.035	<.024	<.044	<.043	<.038	<.034
24-Jan	<.035	<.028	<.040	<.041	<.037	<.037
31-Jan	<.031	<.027	<.041	<.044	<.036	<.035
7-Feb	<.041	.070 ± .045	<.045	<.042	<.032	<.033
14-Feb	<.035	<.028	<.045	<.042	<.038	<.039
21-Feb	<.036	<.024	<.042	<.044	<.034	<.029
28-Feb	<.033	<.027	<.039	<.043	<.038	<.039
6-Mar	<.039	<.028	<.043	<.040	<.033	<.030
13-Mar	<.035	<.030	<.043	<.045	<.039	<.033
20-Mar	<.030	<.027	<.044	<.046	<.039	<.036
27-Mar	<.037	<.025	<.047	<.049	<.031	<.028
3-Apr	<.040	<.025	<.031	<.046	<.036	<.035
10-Apr	<.040	<.027	<.049	<.044	<.035	<.032
17-Apr	<.035	<.031	<.043	<.043	<.033	<.035
24-Apr	<.050	(a)	<.046	<.047	<.039	<.029
1-May	<.034		<.046	<.037	<.037	<.031
8-May	<.039		<.048	<.044	<.039	<.028
15-May	<.038		<.055	<.048	<.037	<.029
22-May	<.033		<.043	<.042	<.035	<.029
29-May	<.031		<.046	<.040	<.036	<.034
5-Jun	<.037		<.049	<.044	<.033	<.032
12-Jun	<.037		<.054	<.049	<.040	<.034
19-Jun	<.040		<.055	<.039	<.033	<.033
26-Jun	<.031		<.041	<.026	<.039	<.021
3-Jul	<.041		<.056	<.039	<.043	<.036
10-Jul	<.040		<.051	<.048	<.033	<.036
17-Jul	<.034		<.050	<.048	<.044	<.034
24-Jul	<.037		<.051	<.049	<.045	<.030
31-Jul	<.035		<.050	<.043	<.042	<.034
7-Aug	<.024		<.048	<.051	<.039	<.033
14-Aug	<.023		<.058	<.047	<.041	<.033
21-Aug	<.029		<.041	<.039	<.035	<.030
28-Aug	<.031		<.046	<.045	<.037	<.032
4-Sep	<.026		<.056	<.050	<.040	<.031
11-Sep	<.029	<.028	<.044	<.040	<.035	<.037
18-Sep	<.035	<.036	<.046	<.047	<.044	<.033
25-Sep	<.031	<.033	<.059	<.047	<.038	<.029
2-Oct	<.051	<.039	<.056	<.044	<.047	<.052
9-Oct	<.025	<.033	<.045	<.042	<.031	<.032
16-Oct	<.047	<.033	<.051	<.044	<.046	<.032
23-Oct	<.023	<.033	<.034	<.044	<.046	<.032
30-Oct	<.027	<.023	<.036	<.051	<.041	<.035
6-Nov	<.030	<.034	<.031	<.049	<.042	<.032
13-Nov	<.029	<.049	<.040	<.052	<.032	<.026
20-Nov	<.041	<.037	<.044	<.052	<.042	<.034
27-Nov	<.052	<.053	<.038	<.061	<.047	<.052
4-Dec	<.031	<.038	<.023	<.031	(a)	<.022
11-Dec	<.041	<.035	<.061	<.052	<.093	<.033
18-Dec	<.049	<.032	<.038	<.063	<.044	<.039
25-Dec	<.033	<.030	<.033	<.052	<.029	<.031
1-Jan	<.044	<.032	<.057	<.067	<.021	<.053

All values given as < are less than LLD.
(a) Sampler out of service,- For station # 4, see text under sections 2.3- Deviations from Sampling Schedule.
(b) Sampler not set up for Iodine this week.


ONSITE AIR MONITORS
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PCi/cu METER
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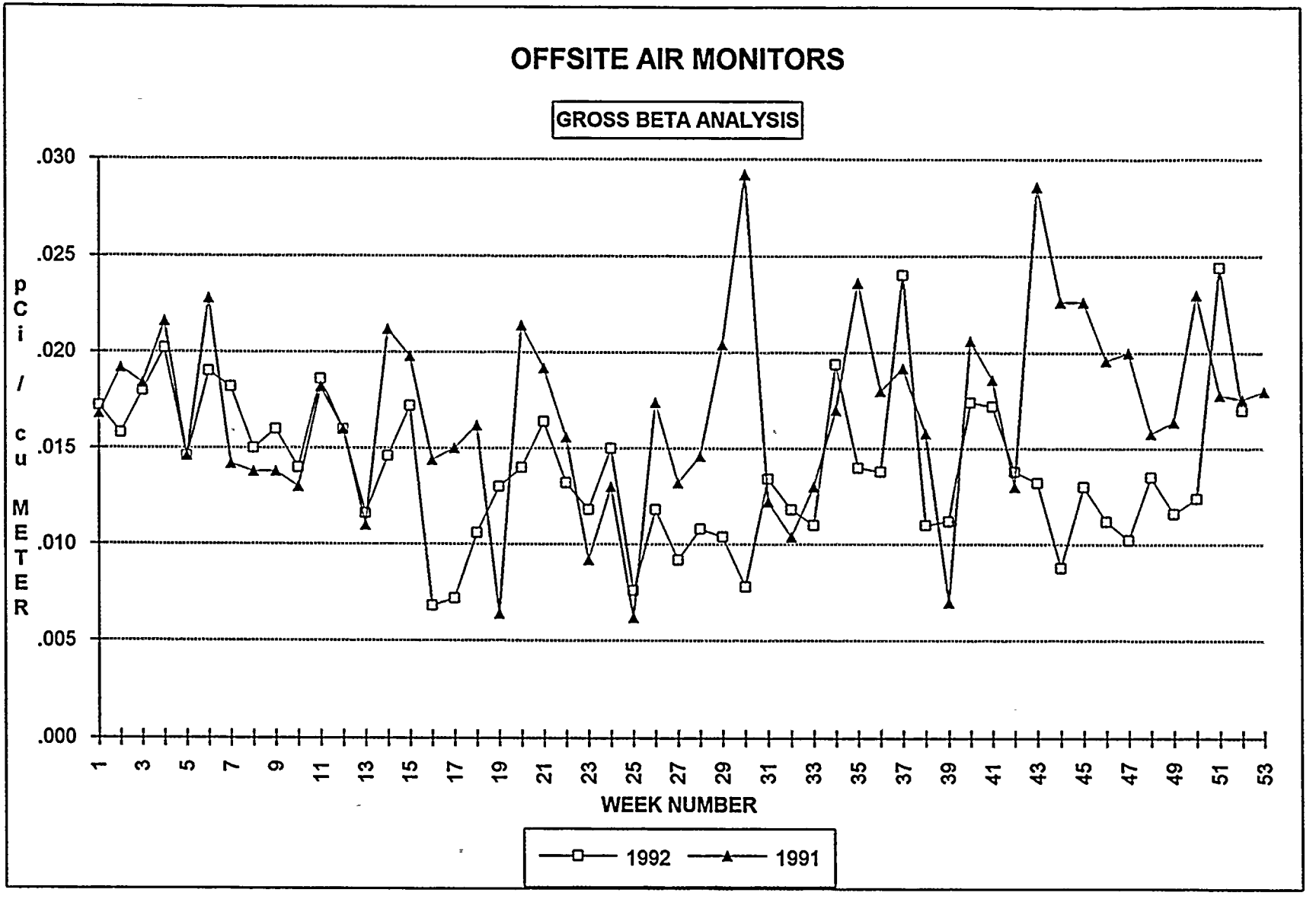
WEEK NUMBER
1992
1991


OFFSITE AIR MONITORS
GROSS BETA ANALYSIS
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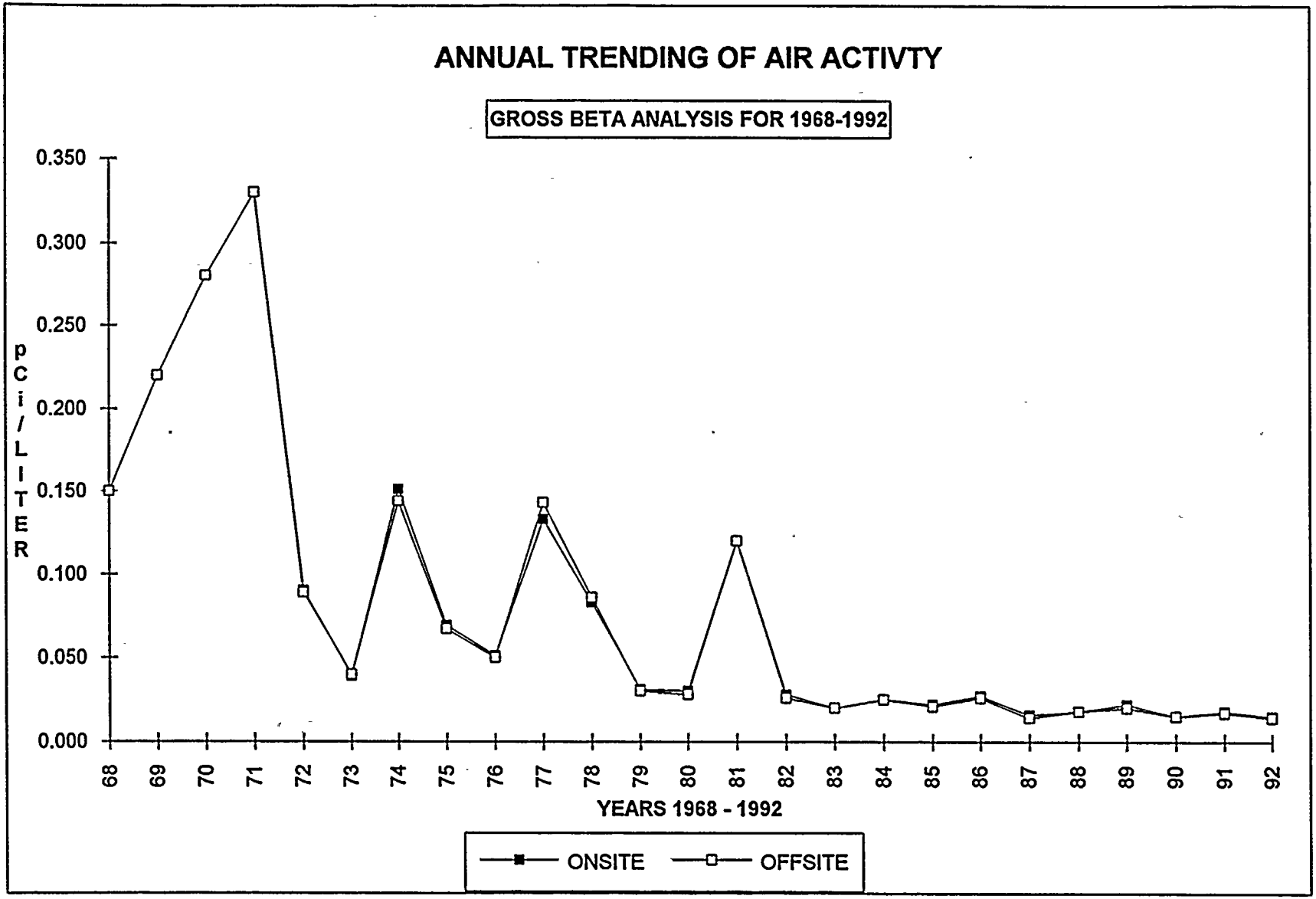
WEEK NUMBER
1992
1991



PEAKS ARE INDICITIVE OF NUCLEAR
DETONATIONS IN THE ATMOSPHERE

3.3 Water Samples

Water samples are collected on a regular schedule from locations surrounding the plant to demonstrate that there is no measurable influence or contamination of drinking or irrigation water from liquid effluent releases or deposition from gaseous effluent releases.

Composite samples are collected weekly from Lake Ontario, upstream (Russell Station) and downstream (Ontario Water District Plant - OWD), and analyzed for gross beta activity. There was no significant difference between the upstream and downstream sample concentrations. The 1992 averages were 2.37 and 2.67 pCi/liter for the upstream and downstream samples respectively. During December, Lake Ontario was stirred up by storms and the samples from the OWD contained large quantities of suspended silt which gave higher than normal beta values.

Weekly composite samples are taken from the plant circulating water intake (Circ In) and discharge canal (Circ Out). The yearly averages were 2.42 and 2.40 pCi/liter for the intake and discharge canal respectively. These are essentially the same as the upstream and downstream values as they fall within the $\pm$ 2 sigma error band and range of the measurement. A gamma isotopic analysis of biweekly composites of the OWD and the discharge canal is performed.

For all batch releases, the average concentration in the discharge canal from the identified activity during 1992 was 0.57 pCi/liter. The normal 2 sigma variation for the activity calculation of composite samples is 0.72 pCi/liter or 1.5 times the average concentration added by releases from the plant.

Samples of tap water, the nearest well, and the creek which crosses the site are collected and analyzed monthly. The results show no indication of plant influence. Results for all beta analyses are listed in Tables 3-5A, 3-5B.

Gamma isotopic analysis is done on each monthly sample and each biweekly or monthly composite of weekly samples. These are listed in Tables 3-6 to 3-11 and separated by source of sample.

Trend plots are included to show the weekly upstream and downstream beta activities. A trend plot showing the annual average activity measured during the years 1968 to 1992 is included to show the data during the years the R.E. Ginna Nuclear Power Plant has been in operation. The peaks correspond to the years when atmospheric testing of nuclear weapons occurred.

Fallout

Fallout is a term used to denote radioactive material settling from the atmosphere to the ground. At the sampling stations, the fallout settles as dust or is collected with rainfall by a funnel and bottle. There are two on-site sampling stations and three off-site. Fallout generally increases in the spring months due to transfer of fission products from the upper to the lower atmosphere in conjunction with increased rainfall. The onsite average and the offsite average were 6.88 and 5.40 pCi/m^2/day respectively. Based on the two sigma error of the measurement, there was no significant difference between on-site and off-site samples for the period of January through December, 1992. Table 3-5C lists the values for fallout samples.

Tritium Analysis

Tritium analysis is done on all water samples on a monthly basis. Composites are made from the weekly composites and a portion distilled for analysis to remove interfering elements or activity. Tritium data is given in Tables 3-12 A & B.

Iodine Analysis

All monthly composite water samples except the fallout samples are analyzed for Iodine-131. A change was made in the method of analysis during 1992 from a chemical separation using an added carrier solution and gross beta counting to anion exchange on resin and direct gamma counting of the resin. The analysis allows the determination of Iodine-131 activity of < 1 pCi/liter. Iodine data is given in Table 3-13. All positive counts and the 2 sigma error are reported. All negative counts after background correction are reported as <LLD for that analysis.

Table 3-5 A
Environmental Water Samples Gross Beta Analysis
Results in pCi / l

Week Ending	Russell	O.W.D.	Circ In	Circ Out	Deer Creek	Tap	Well 'B'
10-Jan	2.20 ± 0.69	2.88 ± 0.71	2.90 ± 0.70	1.67 ± 0.66			
17-Jan	2.57 ± 0.68	3.06 ± 0.71	4.01 ± 0.75	2.41 ± 0.68			
24-Jan	2.33 ± 0.68	3.62 ± 0.74	2.54 ± 0.68	2.48 ± 0.68		1.98 ± 0.67	5.68 ± 0.82
31-Jan	2.59 ± 0.70	2.60 ± 0.70	2.49 ± 0.70	2.53 ± 0.69	3.97 ± 0.76		
7-Feb	2.96 ± 0.72	2.91 ± 0.70	2.78 ± 0.71	3.30 ± 0.74			
14-Feb	2.67 ± 0.69	1.91 ± 0.65	1.99 ± 0.66	3.61 ± 0.73			4.98 ± 0.80
21-Feb	2.92 ± 0.70	2.95 ± 0.70	2.47 ± 0.68	2.85 ± 0.70		1.96 ± 0.65	
28-Feb	2.45 ± 0.71	2.02 ± 0.70	2.56 ± 0.68	2.71 ± 0.69	3.37 ± 0.76		
6-Mar	2.31 ± 0.70	2.61 ± 0.72	2.47 ± 0.72	1.73 ± 0.67			
13-Mar	2.26 ± 0.70	2.18 ± 0.70	1.94 ± 0.69	2.70 ± 0.72	3.46 ± 0.77	2.10 ± 0.70	
20-Mar	2.56 ± 0.71	2.23 ± 0.71	2.24 ± 0.71	2.20 ± 0.70			
27-Mar	2.07 ± 0.69	2.27 ± 0.71	2.14 ± 0.70	2.42 ± 0.71			3.82 ± 0.78
3-Apr	2.19 ± 0.71	1.89 ± 0.70	1.75 ± 0.70	2.78 ± 0.73			
10-Apr	2.36 ± 0.70	2.25 ± 0.70	2.37 ± 0.70	1.71 ± 0.68			
17-Apr	2.08 ± 0.69	1.89 ± 0.68	1.94 ± 0.68	2.32 ± 0.70			
24-Apr	2.52 ± 0.68	2.22 ± 0.67	2.43 ± 0.68	3.07 ± 0.71	3.75 ± 0.77	2.00 ± 0.69	5.00 ± 0.80
1-May	2.27 ± 0.68	2.89 ± 0.70	2.47 ± 0.69	2.49 ± 0.69			
8-May	2.42 ± 0.68	3.03 ± 0.71	2.89 ± 0.70	2.04 ± 0.67			
15-May	2.68 ± 0.69	3.01 ± 0.71	2.70 ± 0.70	(a)	3.85 ± 0.76		
22-May	2.91 ± 0.70	2.76 ± 0.70	2.41 ± 0.68	2.65 ± 0.69		2.97 ± 0.71	5.00 ± 0.80
29-May	2.32 ± 0.68	2.05 ± 0.67	3.48 ± 0.73	2.54 ± 0.69			
5-Jun	2.57 ± 0.69	2.57 ± 0.71	2.34 ± 0.70	2.59 ± 0.71			
12-Jun	2.19 ± 0.72	2.90 ± 0.72	1.66 ± 0.69	2.37 ± 0.69		1.94 ± 0.69	
19-Jun	2.32 ± 0.69	2.09 ± 0.71	2.04 ± 0.70	1.91 ± 0.70	3.24 ± 0.74		
26-Jun	1.14 ± 0.66	2.43 ± 0.69	2.51 ± 0.69	2.27 ± 0.69			4.33 ± 0.78
3-Jul	2.68 ± 0.70	2.75 ± 0.71	2.57 ± 0.70	2.30 ± 0.69			
Maximum	2.96 ± 0.72	3.62 ± 0.74	4.01 ± 0.75	3.61 ± 0.76	3.97 ± 0.76	2.97 ± 0.71	5.68 ± 0.82
Average	2.41	2.54	2.47	2.47	3.61	2.16	4.80
Minimum	1.14 ± 0.66	1.89 ± 0.68	1.66 ± 0.69	1.67 ± 0.74	3.24 ± 0.74	1.94 ± 0.69	3.82 ± 0.78

All values given as < are less than the LLD corrected for decay.
(a) Compositor out of service.

Table 3-5 B
Environmental Water Samples Gross Beta Analysis
Results in pCi / l

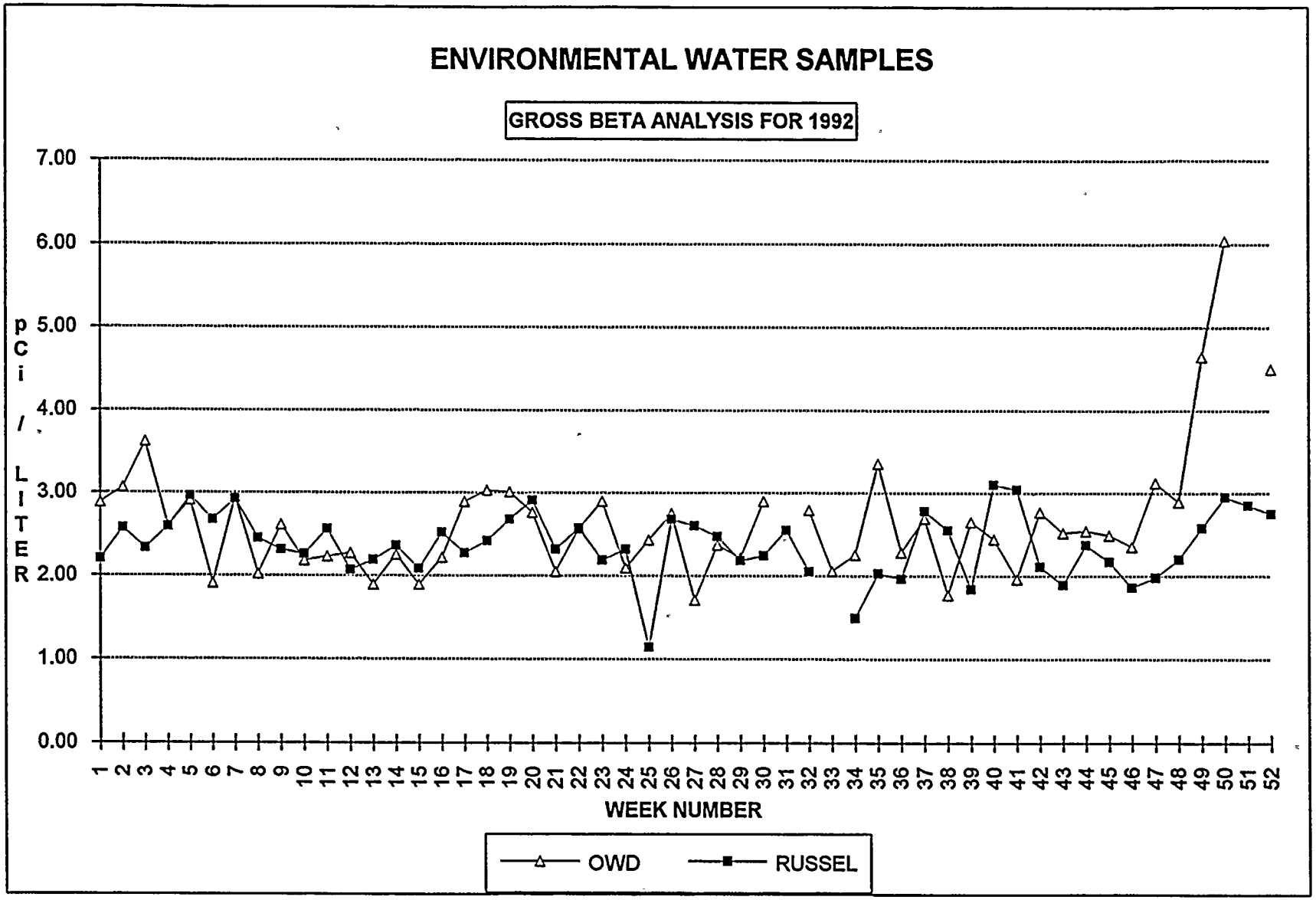
Week Ending	Russell	O.W.D.	Circ In	Circ Out	Deer Creek	Tap	Well 'B'
10-Jul	2.60 ± 0.69	1.71 ± 0.65	1.54 ± 0.64	2.27 ± 0.67		2.37 ± 0.68	
17-Jul	2.47 ± 0.68	2.37 ± 0.68	2.60 ± 0.69	2.49 ± 0.69			3.79 ± 0.75
24-Jul	2.18 ± 0.68	2.22 ± 0.66	2.22 ± 0.68	2.43 ± 0.68	3.56 ± 0.75		
31-Jul	2.24 ± 0.68	2.90 ± 0.71	2.05 ± 0.67	2.71 ± 0.71			
7-Aug	2.55 ± 0.68	(a)	2.36 ± 0.67	(a)			
14-Aug	2.05 ± 0.65	2.79 ± 0.69	2.13 ± 0.94	2.51 ± 0.67	3.89 ± 0.77		
21-Aug	(a)	2.06 ± 0.64	2.06 ± 0.65	(a)		2.26 ± 0.70	
28-Aug	1.49 ± 0.68	2.25 ± 0.71	2.17 ± 0.69	2.20 ± 0.69			3.92 ± 0.77
4-Sep	2.03 ± 0.68	3.35 ± 0.74	2.12 ± 0.69	2.69 ± 0.73			
11-Sep	1.96 ± 0.65	2.28 ± 0.68	2.64 ± 0.69	2.61 ± 0.71		1.66 ± 0.68	
18-Sep	2.78 ± 0.68	2.69 ± 0.69	2.69 ± 0.68	2.46 ± 0.66	2.86 ± 0.72		4.00 ± 0.76
25-Sep	2.55 ± 0.67	1.77 ± 0.68	2.59 ± 0.70	1.67 ± 0.63			
2-Oct	1.84 ± 0.68	2.65 ± 0.68	2.73 ± 0.68	2.08 ± 0.68			
9-Oct	3.10 ± 0.70	2.44 ± 0.67	2.13 ± 0.66	1.88 ± 0.65			
16-Oct	3.04 ± 0.69	1.96 ± 0.65	2.23 ± 0.66	2.95 ± 0.69	4.40 ± 0.76	2.21 ± 0.66	
23-Oct	2.11 ± 0.71	2.77 ± 0.75	1.75 ± 0.70	1.82 ± 0.70			4.27 ± 0.81
30-Oct	1.89 ± 0.70	2.52 ± 0.68	2.46 ± 0.67	1.63 ± 0.69			
6-Nov	2.37 ± 0.67	2.54 ± 0.68	2.79 ± 0.69	2.49 ± 0.68			
13-Nov	2.17 ± 0.66	2.49 ± 0.73	2.84 ± 0.70	2.03 ± 0.71			4.72 ± 0.78
20-Nov	1.86 ± 0.70	2.35 ± 0.73	2.22 ± 0.68	1.87 ± 0.71			
27-Nov	1.98 ± 0.67	3.12 ± 0.73	2.22 ± 0.68	1.95 ± 0.66	4.05 ± 0.80	3.21 ± 0.73	
4-Dec	2.20 ± 0.68	2.89 ± 0.69	2.64 ± 0.70	2.63 ± 0.69			
11-Dec	2.58 ± 0.67	4.65 ± 0.77	2.70 ± 0.68	2.78 ± 0.68	4.10 ± 0.75	2.39 ± 0.67	4.49 ± 0.76
18-Dec	2.95 ± 0.66	6.04 ± 0.80	2.40 ± 0.68	2.50 ± 0.68			
25-Dec	2.85 ± 0.69	(b)	2.43 ± 0.69	3.07 ± 0.71			
1-Jan	2.75 ± 0.67	4.50 ± 0.77	2.67 ± 0.69	2.27 ± 0.68			
Maximum	3.10 ± 0.70	6.04 ± 0.8	2.84 ± 0.70	3.07 ± 0.71	4.40 ± 0.76	3.21 ± 0.73	4.72 ± 0.78
Average	2.34	2.80	2.36	2.33	3.81	2.35	4.20
Minimum	1.49 ± 0.68	1.71 ± 0.68	1.54 ± 0.64	1.63 ± 0.69	2.86 ± 0.72	1.66 ± 0.68	3.79 ± 0.75

All values given as < are less than the LLD corrected for decay.
(a) Samples lost during analysis.
(b) Compositor out of service.

Table 3-5 C
Fallout Gross Beta Analysis
Results in pCi/ m² / Day

Month of	Station 3	Station 5	Station 8	Station 10	Station 12
January	9.23 ± 1.12	2.98 ± 0.79	7.49 ± 0.89	1.01 ± 0.63	3.21 ± 0.98
February	11.22 ± 0.79	3.89 ± 0.54	8.36 ± 0.74	6.65 ± 0.69	3.69 ± 0.55
March	6.54 ± 1.64	2.49 ± 1.31	4.71 ± 1.62	1.26 ± 1.30	1.84 ± 1.46
April	11.33 ± 0.62	4.26 ± 0.53	6.69 ± 0.56	4.44 ± 0.54	3.36 ± 0.52
May	4.90 ± 0.57	5.25 ± 0.59	3.85 ± 0.58	3.03 ± 0.55	6.87 ± 0.65
June	2.89 ± 0.53	4.43 ± 0.57	8.18 ± 0.61	2.59 ± 0.51	6.18 ± 0.63
July	13.53 ± 0.57	17.71 ± 0.58	4.93 ± 0.51	5.21 ± 0.51	18.77 ± 0.58
August	8.76 ± 0.60	11.82 ± 0.61	6.64 ± 0.57	8.66 ± 0.56	8.31 ± 0.59
September	6.41 ± 0.54	2.26 ± 0.51	1.98 ± 0.51	4.57 ± 0.57	9.39 ± 0.65
October	7.45 ± 0.60	3.65 ± 0.55	2.90 ± 0.55	2.59 ± 0.53	8.61 ± 0.63
November	4.95 ± 0.52	8.86 ± 0.59	4.36 ± 0.51	2.75 ± 0.49	10.05 ± 0.59
December	2.17 ± 0.50	(a)	1.46 ± 0.48	2.36 ± 0.49	2.92 ± 0.52
Maximum	13.53 ± 0.57	17.71 ± 0.58	8.36 ± 0.74	8.66 ± 0.56	18.77 ± 0.58
Average	7.29	6.46	4.91	4.01	7.27
Minimum	2.17 ± 0.50	2.26 ± 0.51	1.46 ± 0.48	1.26 ± 1.30	1.84 ± 1.46

All values given as < are less than the LLD corrected for decay.
(a) Sample lost at collection.


ENVIRONMENTAL WATER SAMPLES
GROSS BETA ANALYSIS FOR 1992
pCi/LITER
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
WEEK NUMBER
OWD
RUSSEL

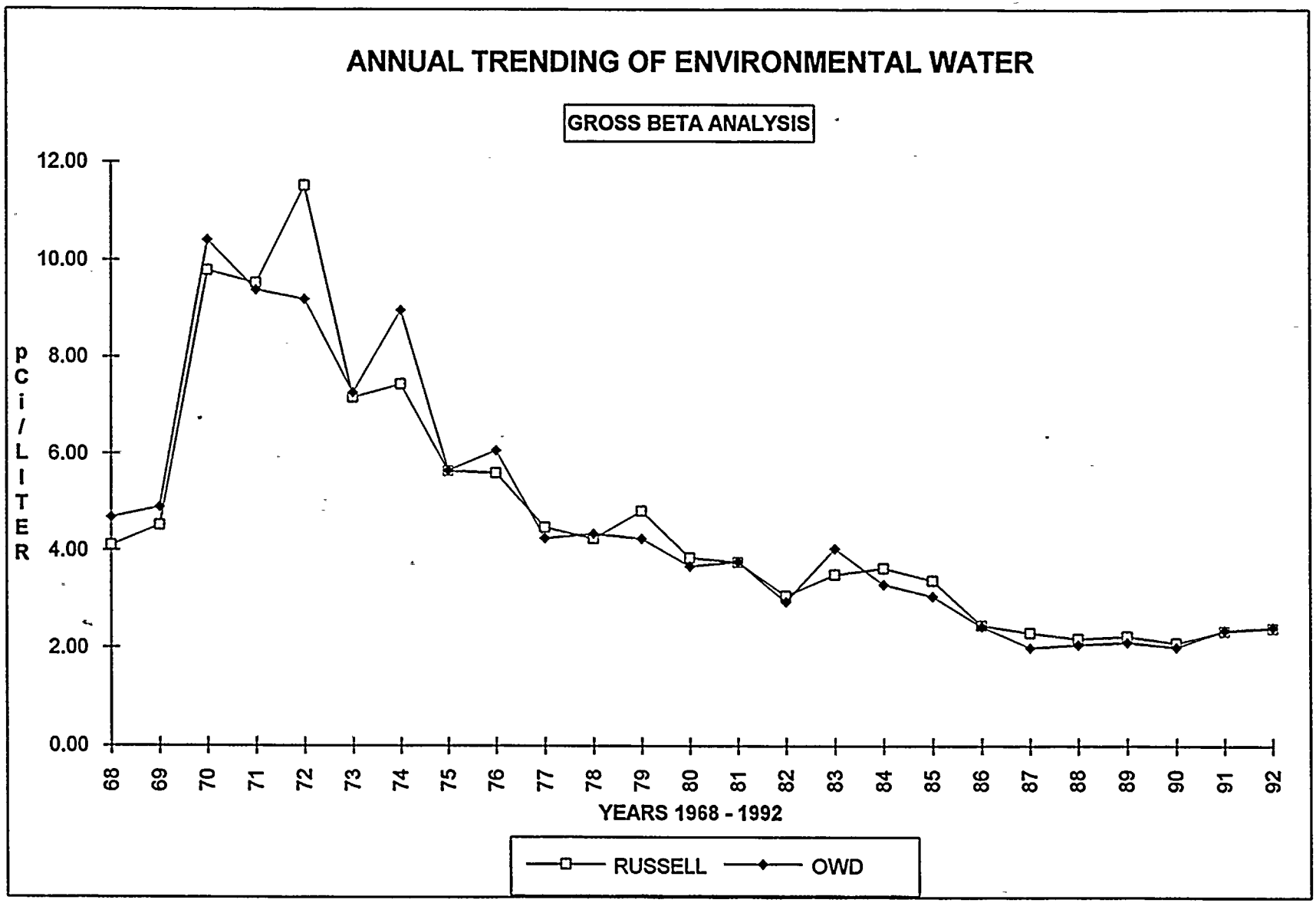

ANNUAL TRENDING OF ENVIRONMENTAL WATER
GROSS BETA ANALYSIS
12.00
10.00
8.00
6.00
4.00
2.00
0.00
pCi/LITER
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
YEARS 1968 - 1992
RUSSELL
OWD

Table 3-6
Ontario Water District Water Gamma Isotopic Analyses
Results in pCi/Liter

Between Dates Of		7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
3-Jan	17-Jan	<30	<35	<3	<6	<3	<4	<7	<5	<4	<3	<33	<4	<4	<16	<8	<34	<6
17-Jan	31-Jan	<31	<36	<3	<6	<3	<3	<7	<6	<4	<4	<32	<4	<4	<19	<8	<33	<7
31-Jan	14-Feb	<31	<39	<3	<7	<3	<4	<7	<6	<4	<4	<31	<4	<4	<20	<8	<32	<7
14-Feb	28-Feb	<32	<37	<3	<7	<4	<4	<6	<6	<3	<4	<27	<4	<4	<20	<8	<32	<7
28-Feb	13-Mar	<30	<34	<3	<8	<3	<3	<6	<6	<4	<4	<30	<4	<3	<16	<8	<31	<8
13-Mar	27-Mar	<30	<37	<3	<7	<3	<3	<6	<6	<4	<4	<30	<4	<4	<17	<8	<32	<7
27-Mar	10-Apr	<30	<35	<3	<6	<3	<4	<6	<6	<3	<4	<29	<4	<4	<15	<8	<32	<7
10-Apr	24-Apr	<30	<36	<4	<6	<3	<5	<6	<6	<4	<4	<32	<4	<4	<19	<8	<33	<7
24-Apr	8-May	<34	<38	<3	<7	<3	<3	<6	<6	<4	<4	<32	<4	<4	<20	<9	<32	<8
8-May	22-May	<34	<37	<3	<6	<4	<3	<6	<6	<4	<4	<33	<4	<4	<20	<8	<33	<7
22-May	5-Jun	<30	<36	<3	<7	<4	<3	<7	<6	<4	<3	<30	<4	<4	<18	<8	<32	<7
5-Jun	19-Jun	<26	<35	<3	<6	<3	<4	<7	<6	<4	<4	<30	<4	<4	<15	<8	<32	<7
19-Jun	3-Jul	<31	<40	<3	<7	<4	<4	<6	<6	<4	<4	<30	<4	<4	<23	<9	<33	<7
3-Jul	17-Jul	<29	<36	<3	<7	<4	<3	<7	<6	<4	<4	<29	<4	<4	<20	<8	<31	<6
17-Jul	31-Jul	<22	<26	<2	<5	<2	<3	<5	<5	<3	<3	<23	<3	<3	<13	<6	<24	<5
31-Jul	14-Aug	<30	<34	<3	<6	<3	<3	<6	<6	<3	<4	<31	<4	<4	<15	<8	<33	<6
14-Aug	28-Aug	<23	<28	<2	<5	<3	<3	<5	<4	<3	<3	<23	<3	<3	<14	<6	<24	<5
28-Aug	11-Sep	<24	<29	<3	<5	<3	<3	<6	<5	<3	<3	<24	<3	<3	<13	<6	<26	<5
11-Sep	25-Sep	<31	<34	<3	<6	<3	<3	<7	<6	<4	<4	<29	<4	<4	<15	<8	<31	<6
25-Sep	9-Oct	<27	<34	<3	<6	<3	<3	<7	<6	<3	<3	<32	<4	<3	<16	<7	<32	<7
9-Oct	23-Oct	<32	<33	<4	<6	<3	<3	<7	<6	<3	<4	<32	<4	<4	<17	<8	<31	<7
23-Oct	6-Nov	<28	<35	<3	<7	<3	<3	<7	<6	<4	<3	<29	<4	<4	<15	<7	<31	<7
6-Nov	20-Nov	<21	<25	<2	<5	<2	<2	<4	<4	<2	<2	<21	<3	<3	<11	<5	<21	<4
20-Nov	4-Dec	<32	<36	<3	<7	<3	<3	<6	<6	<4	<4	<34	<4	<3	<19	<8	<31	<6
4-Dec	16-Dec	<30	<35	<3	<7	<3	<4	<7	<6	<3	<4	<31	<3	<4	<16	<7	<32	<7
23-Dec	30-Dec (a)	<29	<34	<3	<7	<3	<3	<6	<6	<4	<3	<31	<4	<3	<17	<8	<31	<7

All values given as < are less than LLD corrected for decay.
(a) Compositor out of service from Dec 16 to Dec 23 due to valve misalignment.

Table 3-7
Circ. Outlet Water Gamma Isotopic Analyses
Results in pCi/Liter

Between Dates Of		7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
1-Jan	15-Jan	<30	<36	<3	<6	<3	<3	<6	<6	<3	<4	<32	<4	<4	<16	<8	<32	<7
15-Jan	29-Jan	<30	<33	<3	<6	<3	<4	<6	<5	<4	<4	<28	<3	<4	<16	<8	<32	<7
29-Jan	12-Feb	<32	<33	<3	<6	<3	<3	<6	<6	<3	<4	<29	<4	<4	<17	<8	<32	<7
12-Feb	26-Feb	<32	<36	<3	<7	<4	<4	<7	<6	<3	<4	<32	<3	<4	<18	<8	<33	<7
26-Feb	11-Mar	<30	<35	<3	<6	<3	<4	<6	<6	<4	<4	<31	<4	<4	<17	<8	<32	<7
11-Mar	25-Mar	<29	<34	<3	<7	<3	<4	<6	<6	<4	<4	<31	<4	<4	<17	<8	<31	<7
25-Mar	8-Apr	<29	<35	<3	<6	<3	<3	<6	<6	<4	<4	<32	<4	<4	<16	<8	<32	<7
8-Apr	22-Apr	<34	<38	<3	<6	<3	<4	<7	<6	<4	<4	<33	<4	<4	<19	<8	<33	<7
22-Apr	6-May	<30	<32	<3	<7	<3	<4	<7	<6	<4	<4	<32	<4	<4	<16	<8	<32	<6
13-May	20-May (a)	<30	<31	<3	<6	<3	<3	<6	<6	<3	<3	<30	<4	<4	<14	<7	<31	<7
20-May	3-Jun	<31	<32	<3	<6	<3	<3	<7	<6	<3	<4	<33	<4	<4	<15	<8	<32	<7
3-Jun	17-Jun	<32	<35	<3	<6	<3	<3	<6	<6	<4	<3	<28	<4	<4	<17	<8	<30	<6
17-Jun	1-Jul	<31	<36	<3	<7	<3	<3	<7	<6	<4	<4	<30	<3	<4	<17	<8	<32	<7
1-Jul	15-Jul	<23	<26	<2	<5	<3	<2	<5	<4	<3	<3	<22	<3	<3	<13	<6	<24	<5
15-Jul	29-Jul	<22	<25	<2	<5	<3	<3	<5	<4	<2	<2	<22	<3	<3	<12	<6	<24	<5
29-Jul	12-Aug	<31	<33	<3	<7	<3	<3	<6	<6	<4	<4	<31	<4	<4	<17	<8	<31	<7
12-Aug	26-Aug	<31	<34	<3	<6	<3	<3	<7	<6	<3	<4	<32	<3	<4	<17	<8	<32	<7
26-Aug	9-Sep	<30	<37	<3	<6	<3	<3	<6	<6	<4	<3	<33	<4	<4	<17	<8	<32	<7
9-Sep	23-Sep	<23	<27	<2	<5	<3	<2	<5	<5	<3	<3	<22	<3	<3	<12	<6	<23	<5
23-Sep	7-Oct	<23	<26	<2	<5	<3	<2	<5	<4	<3	<3	<23	<3	<3	<13	<6	<23	<5
7-Oct	21-Oct	<24	<26	<2	<5	<3	<2	<5	<4	<3	<3	<23	<3	<3	<13	<6	<24	<5
21-Oct	4-Nov	<28	<33	<3	<7	<3	<3	<6	<6	<4	<3	<29	<4	<4	<16	<8	<31	<7
4-Nov	18-Nov	<22	<26	<2	<5	<3	<3	<4	<4	<2	<2	<24	<3	<3	<12	<6	<23	<5
18-Nov	2-Dec	<30	<6	<3	<6	<3	<3	<7	<4	<4	<4	<31	<3	<3	<16	<8	<30	<3
2-Dec	16-Dec	<22	<27	<2	<5	<3	<3	<5	<4	<3	<3	<23	<3	<3	<12	<6	<23	<5
16-Dec	30-Dec	<24	<28	<3	<5	<3	<2	<5	<4	<3	<3	<23	<3	<3	<13	<6	<24	<5

All values given as < are less than LLD corrected for decay.
(a) Compositor out of service 5/6/92 through 5/13/92.

Table 3-8
Russel Station Water Gamma Isotopic Analyses
Results in pCi/Liter

Month of	7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Jan-92	<28	<30	<3	<5	<3	<3	<7	<6	<3	<3	<30	<4	<4	<13	<7	<32	<7
Feb-92	<30	<39	<3	<7	<3	<4	<6	<6	<4	<4	<30	<4	<4	<21	<8	<33	<7
Mar-92	<28	<31	<3	<5	<3	<4	<6	<6	<3	<3	<32	<3	<4	<13	<7	<31	<7
Apr-92	<29	<31	<3	<6	<3	<4	<6	<6	<3	<3	<29	<4	<4	<13	<7	<32	<7
May-92	<31	<34	<3	<6	<3	<3	<6	<6	<4	<3	<31	<4	<4	<17	<8	<32	<7
Jun-92	<28	<30	<3	<5	<3	<3	<6	<6	<3	<3	<30	<3	<4	<13	<7	<32	<7
Jul-92	<28	<28	<3	<5	<3	<3	<6	<6	<3	<3	<29	<3	<4	<13	<7	<31	<6
Aug-92	<30	<31	<3	<6	<3	<3	<7	<5	<3	<3	<30	<4	<4	<15	<7	<31	<7
Sep-92	<27	<33	<3	<6	<3	<3	<6	<6	<3	<4	<32	<3	<4	<14	<7	<30	<7
Oct-92	<22	<23	<2	<5	<2	<3	<5	<4	<3	<2	<23	<3	<3	<10	<5	<24	<5
Nov-92	<28	<29	<3	<6	<3	<4	<6	<6	<3	<3	<29	<3	<4	<11	<7	<30	<6
Dec-92	<26	<30	<3	<7	<3	<3	<6	<5	<3	<3	<30	<3	<4	<13	<7	<30	<7

All values given as < are less than LLD corrected for decay.

Table 3-9
Tap Water Gamma Isotopic Analyses
Results in pCi/Liter

Month of	7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Jan-92	<29	<29	<3	<5	<3	<3	<7	<5	<3	<3	<30	<3	<4	<11	<7	<32	<7
Feb-92	<27	<30	<3	<6	<3	<4	<6	<6	<3	<3	<30	<3	<4	<11	<7	<31	<7
Mar-92	<28	<29	<3	<6	<3	<4	<6	<6	<3	<3	<32	<4	<4	<12	<7	<33	<7
Apr-92	<25	<31	<3	<7	<3	<4	<7	<5	<3	<3	<31	<4	<4	<11	<4	<31	<8
May-92	<27	<28	<3	<5	<3	<4	<7	<5	<3	<3	<30	<3	<4	<11	<7	<30	<7
Jun-92	<27	<29	<3	<6	<3	<4	<6	<5	<3	<3	<31	<4	<4	<11	<7	<32	<7
Jul-92 (a)	<16	<18	<2	<4	<2	<2	<4	<3	<2	<2	<18	<2	<2	<7	<4	<19	<4
Aug-92	<25	<29	<3	<6	<3	<3	<7	<5	<3	<3	<27	<4	<4	<11	<7	<31	<7
Sep-92	<27	<26	<3	<6	<3	<3	<6	<5	<3	<3	<33	<4	<4	<12	<7	<31	<6
Oct-92	<29	<30	<3	<6	<3	<3	<6	<5	<3	<3	<32	<3	<4	<12	<7	<30	<7
Nov-92	<27	<29	<3	<6	<3	<3	<6	<5	<3	<3	<31	<4	<4	<12	<6	<30	<7
Dec-92	<27	<29	<3	<6	<3	<4	<6	<6	<3	<3	<32	<4	<4	<10	<6	<30	<7

All values given as < are less than LLD corrected for decay.
(a) Sample counted for 24 hours instead of the normal 8:20:00.

Table 3-10
Well "B" Water Gamma Isotopic Analyses
Results in pCi/Liter

Month of	7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Jan-92	<27	<31	<3	<6	<3	<4	<6	<6	<3	<3	<36	<4	<4	<12	<7	<34	32±10
Feb-92	<30	<30	<3	<7	<3	<3	<7	<5	<3	<3	<29	<4	<4	<12	<7	<33	31±10
Mar-92	<28	<31	<3	<6	<3	<3	<6	<5	<3	<3	<31	<4	<4	<11	<7	<34	57±11
Apr-92	<30	<32	<3	<7	<3	<4	<7	<5	<4	<3	<33	<4	<4	<12	<7	<33	41±11
May-92	<30	<29	<3	<6	<3	<3	<8	<5	<3	<3	<30	<4	<4	<10	<7	<32	38±9
Jun-92	<30	<30	<3	<6	<3	<3	<7	<6	<3	<3	<30	<4	<4	<12	<7	<34	24±9
Jul-92	<29	<31	<4	<6	<3	<4	<7	<6	<4	<3	<30	<4	<4	<13	<7	<34	32±9
Aug-92	<27	<31	<3	<5	<3	<3	<7	<6	<3	<3	<28	<4	<4	<12	<7	<32	24±8
Sep-92	<26	<30	<3	<6	<3	<3	<6	<5	<3	<3	<28	<4	<4	<12	<7	<30	13±11
Oct-92	<25	<31	<3	<6	<3	<3	<6	<6	<3	<3	<31	<4	<3	<11	<7	<31	16±7
Nov-92	<27	<29	<3	<6	<3	<3	<6	<6	<3	<3	<30	<4	<4	<11	<7	<31	19±7
Dec-92	<29	<31	<3	<5	<3	<4	<6	<6	<3	<3	<28	<3	<4	<12	<7	<32	22±10

All values given as < are less than LLD corrected for decay.

Table 3-11
Deer Creek Water Gamma Isotopic Analyses
Results in pCi/Liter

Month of	7Be	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Jan-92	<27	<29	<3	<6	<4	<3	<7	<6	<3	<3	<30	<4	<4	<12	<7	<32	18±8
Feb-92	<26	<30	<3	<5	<3	<4	<7	<6	<3	<3	<31	<4	<4	<12	<7	<32	15±8
Mar-92	<31	<33	<4	<7	<3	<4	<7	<6	<4	<4	<33	<4	<4	<12	<8	<34	22±10
Apr-92	<27	<29	<3	<6	<3	<4	<7	<6	<3	<3	<31	<4	<4	<12	<7	<32	<8
May-92	<28	<30	<3	<6	<3	<3	<6	<6	<3	<3	<33	<4	<4	<12	<4	<32	<9
Jun-92	<28	<30	<3	<6	<3	<4	<7	<6	<3	<3	<28	<3	<4	<11	<7	<32	17±9
Jul-92	<29	<32	<3	<5	<3	<3	<6	<6	<3	<3	<30	<4	<4	<12	<7	<31	<7
Aug-92	<28	<27	<3	<6	<3	<3	<5	<5	<3	<3	<31	<3	<4	<11	<7	<32	<8
Sep-92	<26	<31	<3	<6	<3	<4	<6	<6	<3	<3	<29	<4	<4	<13	<7	<30	<8
Oct-92	<26	<31	<3	<6	<3	<4	<6	<6	<3	<3	<29	<3	<4	<11	<7	<31	<8
Nov-92	<24	<29	<3	<6	<3	<3	<6	<6	<3	<3	<30	<4	<4	<11	<6	<30	17±8
Dec-92 (a)	<18	<19	<2	<4	<2	<2	<4	<4	<2	<2	<19	<2	<2	<8	<4	<20	12±6

All values given as < are less than LLD corrected for decay.
(a) Sample counted for 20:00:00 hours instead of the normal 8:20:00.

Table 3-12 A
Environmental Water Samples Tritium Analysis
Results in pCi/L

Month of	Russell	O.W.D.	Circ In	Circ Out	Deer Creek	Tap	Well 'B'
January	<720	<800	<690	<680	<680	<690	<690
February	<700	<700	<700	<700	<700	<700	<700
March	<790	<780	<780	<790	<790	<790	<790
April	<800	<790	<790	<790	<760	<730	<760
May	<730	<740	<730	<730	<740	<730	<740
June	<790	<790	<770	<750	<850	<820	<850
July	<700	<680	<690	<700	<700	<780	<680
August	<720	<720	<720	<720	<720	<720	<710
September	<800	<800	<810	<800	<800	<790	<790
October	<820	<820	<820	<820	<820	<820	<820
November	<800	<800	<790	<800	<810	<790	<800
December	<620	<630	<630	<630	<620	<620	<630

All values given as < are less than the LLD corrected for decay.

Table 3-12 B
Fallout Tritium Analysis
Results in pCi/L

Month of	Station 3	Station 5	Station 8	Station 10	Station 12
January	<720	<700	<680	<700	<690
February	<700	<700	<710	<710	<700
March	<800	<780	<800	<790	<800
April	<900	<930	<870	<740	<740
May	<740	<760	<750	<720	<720
June	<770	<740	<770	<750	<770
July	<700	<700	<700	<700	<700
August	<720	<710	<720	<720	<720
September	<810	<790	<790	<790	<790
October	<810	<830	<810	<810	<820
November	<820	<820	<810	<800	<800
December	<620	(a)	<620	<630	<620

All values given as < are less than the LLD corrected for decay.
(a) Sample lost at collection.

Table 3-13
Iodine in Water
Results in pCi/L

Month of	Russell	O.W.D.	Circ. In	Circ. Out	Deer Creek	Tap	Well"B"
January	<.27	<.31	<.38	<.19	<.20	<.26	<.25
February	<.38	<.39	<.35	<.27	<.22	<.23	<.28
March	<.30	<.32	<.32	<.25	<.22	<.22	<.29
April	<.29	<.32	<.35	<.26	<.21	<.21	<.20
May	<.83	<.52	<.73	<.52	<.25	<.21	<.21
June	<.61	<.22	<.22	<.71	<.48	<.49	<.51
July	<.59	<.95	<.72	<.77	<.95	<.24	<.53
August	<.62	<.51	<.52	<.56	<.50	<.51	<.51
September	<.26	<.68	<.74	<.54	<.84	<.54	<.50
October	<.63	<.47	<.51	<.48	<.55	<.57	<.54
November	<.62	<.46	<.49	<.55	<.51	<.52	<.49
December	<.62	<.71	<.58	<.52	<.52	<.48	<.52

All values given as < are less than the LLD corrected for decay

3.4 Milk Samples

There are three dairy herds located three to five miles from the plant. Milk samples are collected monthly during November through May from one of the three and biweekly during June through October from each. A control farm sample is taken for each monthly sample and once during each biweekly period. The milk is analyzed for Iodine-131 and also gamma scanned for major fission products. A change was made in the method of analysis during 1992 from a chemical separative using an added carrier solution and gross beta counting to anion exchange or resin and direct gamma counting of the resin.

All positive counts and the 2 sigma error are reported. All negative counts after background correction are reported as <LLD for that analysis. During 1992, no samples indicated positive I-131 activity that exceeded the LLD for the analysis. Table 3-14 is a listing of all samples collected during 1992.

The annual dose to the thyroid of an infant which could result from the measured plant release rate, was calculated by the method described in the Offsite Dose Calculation Manual using equation 13. The calculation is done for releases during the growing season when cows may be grazing. For R.E. Ginna, this includes only releases during the months of May through October. The maximum resultant annual thyroid dose for 1992 would be 0.45 mrem using the cow-milk-infant pathway for a hypothetical farm at the site boundary. Using the real farm with the highest D/Q which is 5 miles from the plant, the maximum calculated dose to the infant is 0.0062 mrem from plant releases during the growing season. The annual average plant release rate during the grazing season would give a concentration of < 0.0018 pCi/liter of Iodine-131 in milk at this real farm. This concentration is equal to <0.5% of the LLD for this analysis.

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Table 3-14
Milk
Results in pCi/Liter

Farm	Date	I-131	Cs-137	Ba-140	K-40
C	14-Jan	<.27	<4	<13	1355 ± 114
D	16-Jan	<.29	<4	<13	1408 ± 112
B	11-Feb	<.24	<5	<13	1429 ± 114
D	13-Feb	<.25	<4	<13	1345 ± 111
A	10-Mar	<.24	<4	<13	1491 ± 117
D	26-Mar	<.24	<4	<12	1430 ± 113
C	14-Apr	<.22	<4	<12	1306 ± 117
D	16-Apr	<.24	<4	<13	1397 ± 117
B	12-May	<.28	<4	<12	1557 ± 118
D	14-May	<.30	<4	<13	1465 ± 114
A	2-Jun	<.57	<4	<12	1419 ± 112
C	4-Jun	<.53	<4	<13	1369 ± 112
B	9-Jun	<.46	<4	<13	1517 ± 118
D	11-Jun	<.51	<4	<13	1309 ± 108
A	16-Jun	<.52	<4	<13	1157 ± 108
C	18-Jun	<.56	<4	<12	1382 ± 113
B	23-Jun	<.57	<5	<13	1337 ± 113
D	25-Jun	<.67	<4	<14	1342 ± 114
A	30-Jun	<.54	<4	<12	1424 ± 121
C	2-Jul	<.53	<4	<13	1406 ± 114
B	7-Jul	<.74	<4	<13	1384 ± 113
D	9-Jul	<.55	<4	<14	1340 ± 114
A	14-Jul	<.70	<4	<13	1442 ± 120
C	16-Jul	<.52	<4	<12	1271 ± 118
B	21-Jul	<.55	<4	<13	1430 ± 116
D	23-Jul	<.52	<4	<13	1281 ± 114
A	28-Jul	<.55	<4	<13	1425 ± 119
C	30-Jul	<.60	<4	<13	1358 ± 117
B	4-Aug	<.53	<4	<12	1428 ± 124
D	6-Aug	<.52	<4	<14	1346 ± 121
A	11-Aug	<.53	<4	<12	1331 ± 116
C	13-Aug	<.56	<4	<13	1382 ± 117
B	18-Aug	<.60	<4	<14	1426 ± 118
D	20-Aug	<.69	<4	<13	1399 ± 117
A	25-Aug	<.54	<4	<14	1511 ± 117
C	27-Aug	<.54	<4	<13	1410 ± 116
B	1-Sep	<.54	<4	<13	1466 ± 116
D	3-Sep	<.74	<3	<8	1408 ± 82
A	8-Sep	<.56	<4	<12	1411 ± 113
C	10-Sep	<.53	<4	<13	1300 ± 109
B	15-Sep	<.58	<4	<12	1398 ± 117
D	17-Sep	<.55	<4	<13	1345 ± 115
A	22-Sep	<.71	<4	<12	1449 ± 113
C	24-Sep	<.56	<4	<14	1382 ± 111
B	29-Sep	<.56	<4	<12	1504 ± 113
D	1-Oct	<.56	<4	<12	1373 ± 110
A	6-Oct	<.56	<4	<13	1415 ± 115
C	8-Oct	<.56	<4	<12	1421 ± 114
B	13-Oct	<.55	<4	<14	1278 ± 118
D	15-Oct	<.56	<4	<13	1335 ± 115
A	20-Oct	<.54	<4	<12	1398 ± 117
C	22-Oct	<.55	<4	<13	1275 ± 115
B	27-Oct	<.55	<4	<13	1284 ± 116
D	29-Oct	<.56	<4	<13	1370 ± 113
A	17-Nov	<.57	<4	<13	1471 ± 115
D	19-Nov	<.53	<4	<12	1437 ± 116
C	15-Dec	<.57	<4	<12	1394 ± 117
D	17-Dec	<.53	<4	<12	1298 ± 121

All values given as < are less than the LLD corrected for decay.

3.5 Fish Samples

Indicator fish are caught in the plume from the Discharge Canal and tested for radioactivity ingested from liquid effluent releases from the plant. The fish are filleted to represent that portion which would normally be eaten. Additional fish are caught more than 15 miles away to be used as background indicators and are prepared in the same manner.

Four different species of fish are analyzed during each half year from the indicator and background locations if they are available.

There was no real difference in the activity of the fish caught between the indicator and background locations.

Isotopic gamma concentrations (pCi/wet kilogram) are listed in Tables 3-15A, 3-15B.

Samples of algae (cladophora) and sand were obtained from the lake bottom in the discharge plume area. Results of the gamma scan are included in Table 3-16.

Most fish are held for extended periods before being counted by gamma scan. The LLD value for the shorter half life isotopes will become large. This is the case for most of the chromium, iodine and barium data in the table. This data is also affected by small fish samples in some species.

Table 3-15
Fish Samples
Results in pCi/kgm Wet

Description	40K	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb
Indicator Fish									
First Half 1992									
Rainbow Trout	2870 ± 170	<46	<5	<12	<5	<6	<13	<9	<5
Brown Trout	3381 ± 161	<122	<6	<81	<16	<5	<16	<32	<64
Carp	2612 ± 164	<103	<5	<19	<7	<6	<13	<12	<10
Lake Trout	2739 ± 129	<216	<4	<27	<8	<4	<11	<15	<18
Second Half 1992									
Chinook Salmon	3861 ± 216	<342	<7	<41	<12	<7	<19	<24	<25
Gizzard Shad	3386 ± 211	<140	<9	<91	<24	<7	<23	<44	<77
Lake Trout	3088 ± 233	<290	<9	<39	<14	<8	<19	<25	<23
Brown Trout	3915 ± 256	<83	<8	<19	<9	<9	<20	<15	<6
Background Fish									
First Half 1992									
White Perch	2581 ± 233	<372	<9	<46	<14	<9	<23	<27	<30
Rainbow Trout	3816 ± 206	<74	<7	<18	<7	<8	<16	<12	<8
Lake Trout	3190 ± 219	<72	<7	<17	<7	<7	<18	<13	<8
Coho Salmon	4982 ± 259	<1845	<10	<131	<26	<8	<27	<55	<106
Second Half 1992									
Walleye	2816 ± 214	<795	<8	<67	<14	<7	<20	<39	<49
Chinook Salmon	4080 ± 194	<472	<6	<51	<14	<6	<17	<16	<36
Lake Trout	3365 ± 250	<103	<10	<82	<21	<9	<24	<39	<71
Rainbow Trout	3914 ± 181	<554	<6	<55	<14	<6	<16	<25	<36

All values given as < are less than the LLD corrected for decay

Table 3-15
Fish Samples
Results in pCi/kgm Wet

Description	103Ru	106Ru	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Indicator Fish								
First Half 1992								
Rainbow Trout	<5	<43	<6	24 ± 7	<23	<11	<44	<10
Brown Trout	<46	<52	<6	17 ± 6	<900	<149	<52	<9
Carp	<9	<45	<6	18 ± 7	<121	<20	<47	<11
Lake Trout	<14	<38	<4	18 ± 4	<915	<37	<38	<8
Second Half 1991								
Chinook Salmon	<20	<62	<8	24 ± 8	<109	<54	<61	<12
Gizzard Shad	<59	<71	<10	11 ± 7	<750	<179	<74	<14
Lake Trout	<21	<81	<9	29 ± 11	<748	<52	<73	<16
Brown Trout	<8	<64	<8	26 ± 12	<41	<16	<65	<15
Background Fish								
First Half 1991								
White Perch	<25	<8	<9	17 ± 11	<119	<64	<79	<15
Rainbow Trout	<8	<61	<8	29 ± 11	<52	<16	<54	<13
Lake Trout	<8	<64	<8	26 ± 9	<41	<16	<60	<15
Coho Salmon	<72	<88	<10	33 ± 9	<800	<241	<83	<15
Second Half 1991								
Walleye	<41	<73	<8	27 ± 11	<730	<116	<72	<15
Chinook Salmon	<27	<55	<6	31 ± 8	<3195	<74	<55	<11
Lake Trout	<50	<79	<11	25 ± 10	<800	<143	<86	<16
Rainbow Trout	<28	<56	<7	27 ± 8	<800	<80	<53	<10

All values given as < are less than the LLD corrected for decay

Table 3-16
Lake Samples
Results in pCi/kgm

Description	40k	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb
Cladophora	2027 ± 447	<198	<18	<34	<19	<18	<41	<35	<21
Lake Bottom		<59	<6	<14	<6	<8	<14	<11	<7

Description	103Ru	106Ru	131I	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Cladophora	<22	<176	<33	<24	<26	<86	<38	<142	<49
Lake Bottom	<6	<53	<11	41 ± 8	80 ± 11	<28	<14	<57	866 ± 190

All values given as < are less than the LLD corrected for decay

3.6 Vegetation Samples

Crops are grown on the plant property and samples of the fruits and grains are collected at harvest time for testing. Background samples are purchased from farms greater than 10 miles from the plant. There was no indication in the samples of any measurable activity other than naturally occuring K-40. Gamma isotopic data is given in Table 3-17.

Table 3-17
Vegetation Samples
Results in pCi/kgm Wet

Description	40K	51Cr	54Mn	59Fe	58Co	60Co	65Zn	95Zr	95Nb
Lettuce	3033 ± 272	<71	<8	<16	<9	<8	<21	<14	<9
Apples	703 ± 103	<34	<4	<7	<4	<4	<8	<7	<4
Cherries	1686 ± 130	<33	<4	<7	<4	<4	<9	<6	<4
Grapes	1869 ± 119	<31	<4	<8	<4	<3	<9	<6	<4
Squash	2150 ± 219	<48	<5	<10	<5	<5	<11	<9	<5
Control Vegetation Samples									
Lettuce	1839 ± 219	<71	<8	<16	<8	<8	<18	<12	<8
Apples	620 ± 129	<41	<4	<9	<4	<5	<10	<8	<4
Squash	1926 ± 163	<45	<5	<10	<5	<5	<11	<9	<5

Description	103Ru	106Ru	131I	134Cs	137Cs	140Ba	141Ce	144Ce	226Ra
Lettuce	<8	<77	<9	<10	<10	<28	<16	<70	<17
Apples	<4	<35	<4	<4	<4	<13	<7	<32	<8
Cherries	<4	<36	<4	<4	<4	<14	<7	<34	<8
Grapes	<6	<32	<4	<4	<4	<11	<7	<31	<8
Squash	<5	<49	<6	<6	<6	<19	<10	<16	<11
Control Vegetation Samples									
Lettuce	<8	<70	<9	<9	<10	<25	<15	<69	<15
Apples	<4	<41	<5	<5	<5	<17	<9	<40	<9
Squash	<5	<46	<7	<6	<6	<18	<10	<44	<10

All values given as < are less than LLD corrected for decay

3.7 External Penetrating Radiation

A thermoluminescent dosimeter (TLD) with a sensitivity of 5 millirem/quarter is issued as part of the environmental monitoring program. Thirty-nine TLD badges are currently placed in four rings around the plant. These rings range from less than 1000 feet to 15 miles and have been dispersed to give indications in each of the nine land based sectors around the plant should an excessive release occur from the plant. Badges are changed and read after approximately 3 months exposure.

TLD location #7 is influenced by its close proximity to the Contaminated Equipment Storage Area established in 1983 and will normally read 20-40 mRem/quarter. For the year of 1992, omitting location 7, on-site exposure ranged between 9.7 -19.4 mrem/quarter, with an average exposure of 12.7 mrem/quarter and off-site 7.7 - 17.9 mrem/quarter with an average exposure of 11.6 mrem/quarter. Table 3-18 gives TLD readings for each quarter. The high value at location 13 during the second quarter may be due to radiography in the plant during shutdown.

A trend chart with a comparison of data for each location for the years of 1991 and 1992 is included. The data plotted is the average quarterly dose measured. During 1992, Ginna replaced all environmental TLDs with new Panasonic 814s. This may be reason for the small change in measured quarterly doses.

The NRC also obtains TLD measurements around the plant. The following is a comparison of the data for each quarter of 1992 using NRC data from NUREG-0837 Vol. 11, No. 1, 2, 3, and 4. Results in mrem/quarter:

	Ginna				NRC			
	First	Second	Third	Fourth	First	Second	Third	Fourth
<2 miles	11.6	13.0	13.5	13.6	13.3	14.4	15.1	13.9
2-5 miles	10.7	10.5	11.0	12.6	13.3	13.9	14.6	13.0
>5 miles	10.7	11.5	12.3	11.6	13.2	14.6	14.7	13.7

There are five stations that are colocated. The differences in the comparison of colocated TLDs may be because the NRC uses 801 TLDs and Ginna 814s. These comparisons are:

A	9.3	11.8	12.7	12.9	14.8	16.0	*	15.0
B	11.0	10.4	*	11.4	12.9	14.9	15.2	13.2
C	10.2	11.0	11.0	11.6	13.4	16.2	15.7	14.4
D	11.5	11.9	12.3	12.6	*	13.9	14.5	12.7
E	9.8	10.3	11.3	11.4	14.2	12.0	15.6	11.7

* Dosimeter Missing

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Table 3-18

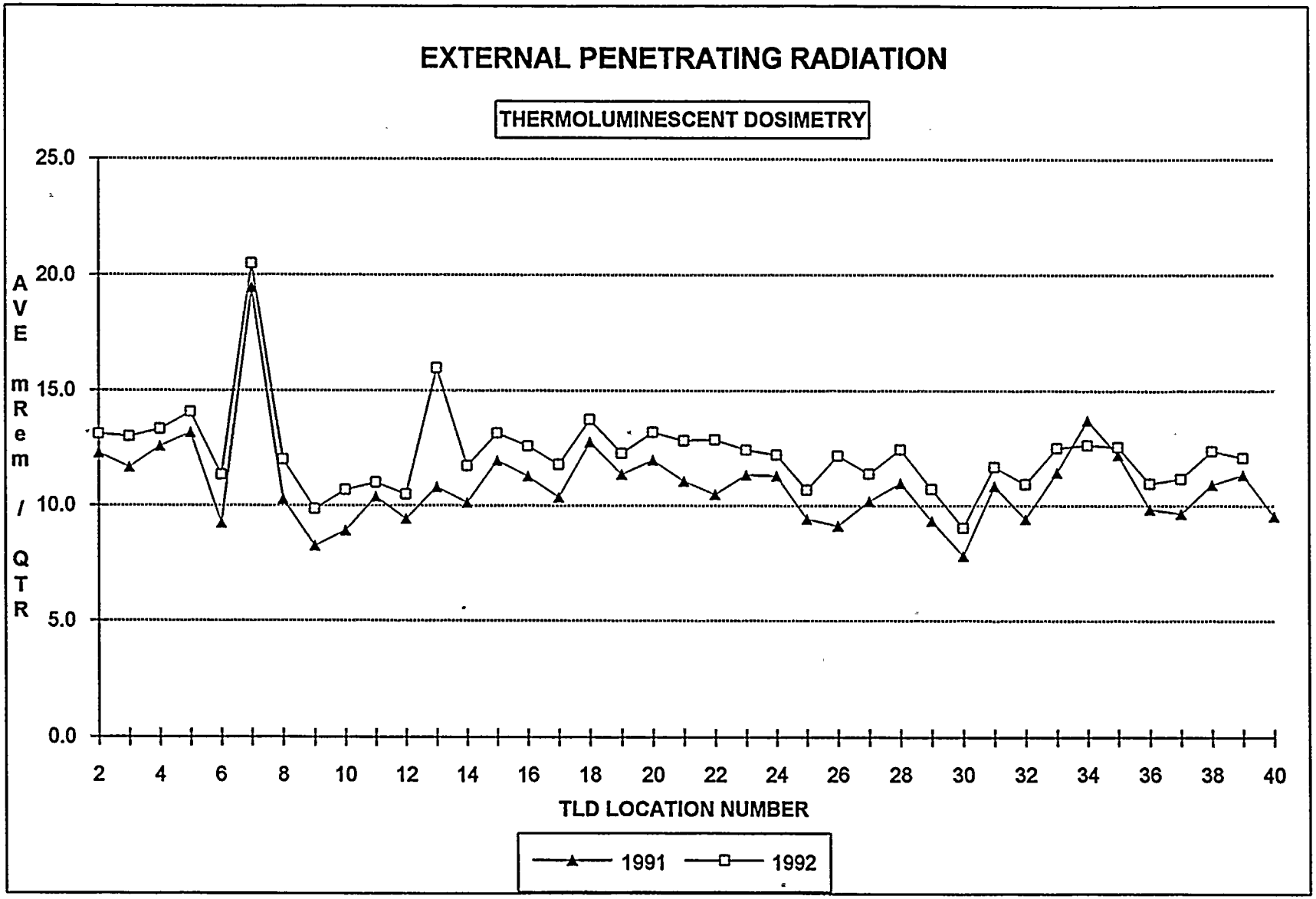
External Penetrating Radiation

Thermoluminescent Dosimetry 1992

Units = Mr/91 Day Quarter

	Location	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
#2 - #7 plus #13 are	2	12.0 ± 3.0	13.9 ± 3.5	13.2 ± 3.3	13.3 ± 3.4
on-site near the line	3	11.6 ± 2.9	12.8 ± 3.2	13.8 ± 3.5	13.8 ± 3.5
of the highest annual	4	12.0 ± 3.0	13.2 ± 3.3	14.1 ± 3.6	14.0 ± 3.5
average ground level	5	12.7 ± 3.2	14.2 ± 3.6	14.5 ± 3.7	14.9 ± 3.8
concentration.	6	9.7 ± 2.4	11.8 ± 3.0	12.0 ± 3.0	11.8 ± 3.0
	7	20.4 ± 5.1	19.9 ± 5.0	20.9 ± 5.3	20.8 ± 5.2
#8 - #12 are offsite at	8	11.1 ± 2.8	11.9 ± 3.0	12.6 ± 3.2	12.4 ± 3.1
a distance of 8 to 15 miles.	9	9.4 ± 2.4	9.1 ± 2.3	10.3 ± 2.6	10.6 ± 2.7
	10	9.9 ± 2.5	10.5 ± 2.6	10.9 ± 2.7	11.4 ± 2.9
	11	10.4 ± 2.6	10.4 ± 2.6	11.3 ± 2.9	11.9 ± 3.0
	12	9.6 ± 2.4	10.3 ± 2.6	10.8 ± 2.7	11.2 ± 2.8
	13	13.4 ± 3.4	19.4 ± 4.9	15.1 ± 3.8	16.0 ± 4.0
#14 - #16 are located	14	10.6 ± 2.7	11.7 ± 2.9	12.1 ± 3.0	12.5 ± 3.1
along a line 3000 ft. west	15	12.0 ± 3.0	13.1 ± 3.3	13.4 ± 3.4	14.1 ± 3.6
of the plant.	16	11.6 ± 2.9	12.5 ± 3.1	13.1 ± 3.3	13.2 ± 3.3
#17 - #21 are located	17	11.2 ± 2.8	11.4 ± 2.9	12.3 ± 3.1	12.2 ± 3.1
along Lake Road.	18	12.9 ± 3.3	13.5 ± 3.4	14.2 ± 3.6	14.4 ± 3.6
	19	11.6 ± 2.9	11.6 ± 2.9	12.6 ± 3.2	13.3 ± 3.4
	20	11.6 ± 2.9	13.1 ± 3.3	14.0 ± 3.5	14.1 ± 3.6
	21	11.2 ± 2.8	12.9 ± 3.3	13.5 ± 3.4	13.7 ± 3.5
#22 - #24 are located	22	11.1 ± 2.8	12.3 ± 3.1	15.2 ± 3.8	(a)
along the east site	23	11.7 ± 2.9	11.5 ± 2.9	12.9 ± 3.2	13.6 ± 3.4
boundary line.	24	10.5 ± 2.6	12.3 ± 3.1	12.7 ± 3.2	13.3 ± 3.4
#25 - #30 are offsite	25	9.9 ± 2.5	10.5 ± 2.6	11.1 ± 2.8	11.2 ± 2.8
at a distance of 8	26	17.9 ± 4.5	9.2 ± 2.3	10.6 ± 2.7	11.0 ± 2.8
to 15 miles.	27	10.4 ± 2.6	11.2 ± 2.8	11.8 ± 3.0	12.1 ± 3.0
	28	10.4 ± 2.6	13.1 ± 3.3	12.8 ± 3.2	13.5 ± 3.4
	29	9.7 ± 2.5	10.3 ± 2.6	11.3 ± 2.8	11.6 ± 2.9
	30	8.9 ± 2.2	9.3 ± 2.4	7.7 ± 1.9	10.2 ± 2.6
#31 - #40 are located	31	9.3 ± 2.4	11.8 ± 3.0	12.7 ± 3.2	12.9 ± 3.3
in an arc at a distance	32	11.0 ± 2.8	10.4 ± 2.6	(a)	11.4 ± 2.9
of 4 - 5 miles.	33	11.3 ± 2.8	12.2 ± 3.1	12.9 ± 3.3	13.6 ± 3.4
	34	11.1 ± 2.8	12.3 ± 3.1	13.6 ± 3.4	13.5 ± 3.4
	35	11.7 ± 2.9	12.3 ± 3.1	13.1 ± 3.3	13.1 ± 3.3
	36	10.2 ± 2.6	11.0 ± 2.8	11.0 ± 2.8	11.6 ± 2.9
	37	10.3 ± 2.6	11.1 ± 2.8	11.3 ± 2.9	12.0 ± 3.0
	38	10.9 ± 2.8	11.8 ± 3.0	13.0 ± 3.3	13.8 ± 3.5
	39	11.5 ± 2.9	11.9 ± 3.0	12.3 ± 3.1	12.6 ± 3.2
	40	9.8 ± 2.5	10.3 ± 2.6	11.3 ± 2.9	11.4 ± 2.9

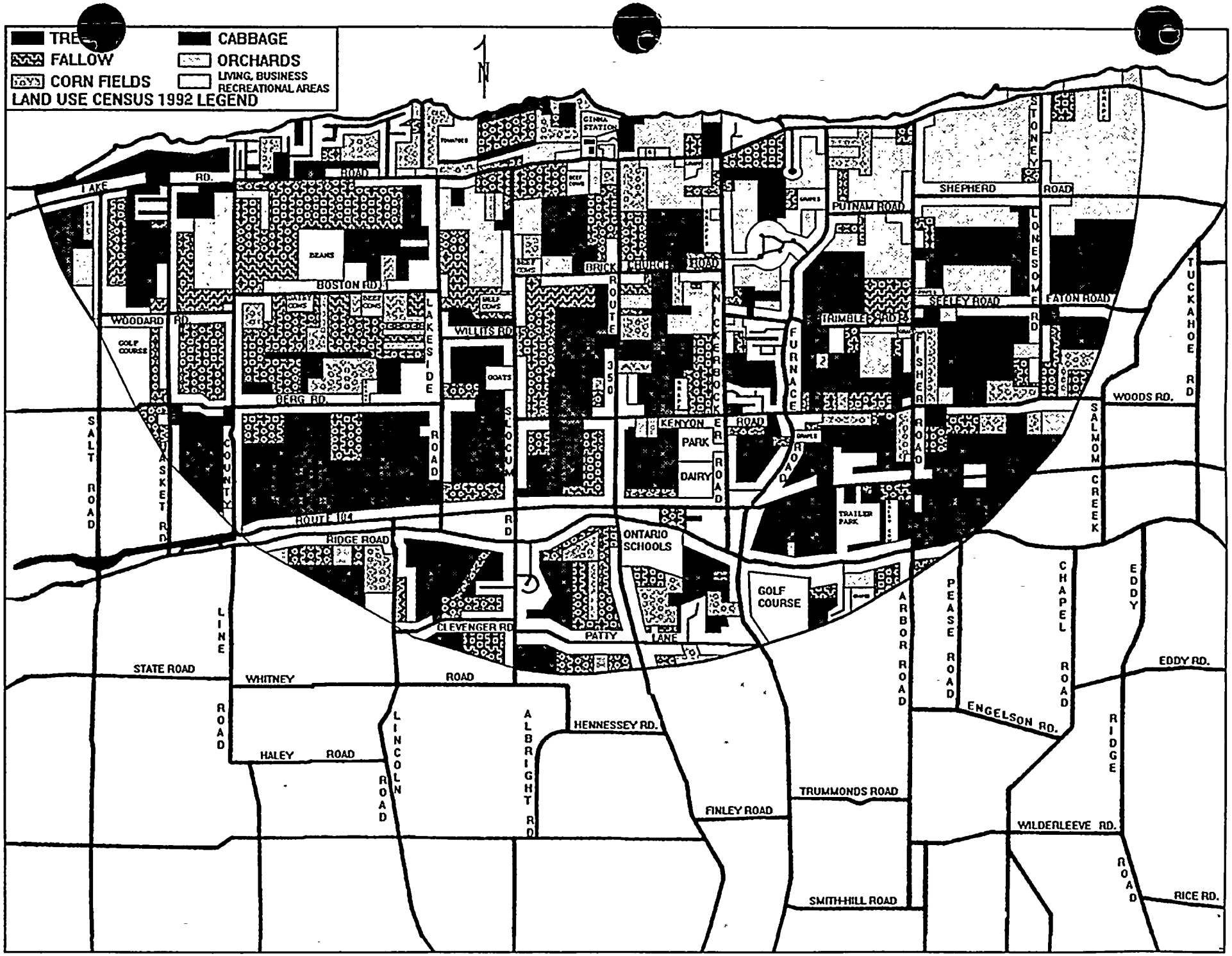
(a) TLD missing at time of collection.


EXTERNAL PENETRATING RADIATION
THERMOLUMINESCENT DOSIMETRY
AVE mRem / QTR
25.0
20.0
15.0
10.0
5.0
0.0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
TLD LOCATION NUMBER
1991
1992

4.0 LAND USE CENSUS

A land use census is done each year to determine any major changes in the use of the land within 5 miles of the plant. There were no major changes. The land use remains mainly agricultural in nature. There were several private homes constructed, but no new housing developments or large business construction projects. The three dairy operations nearest the plant continued in operation with an average of 40 to 70 milking cows. There are no goats used for milk on a regular basis within the 5 mile radius. Beef cattle are still raised on 3 farms within 2 miles of the plant as in the past.

A copy of the Land Use Census is attached.


TREES
CABBAGE
FALLOW
ORCHARDS
CORN FIELDS
LIVING, BUSINESS RECREATIONAL AREAS
LAND USE CENSUS 1992 LEGEND
N
LAKE RD.
BOSTON RD.
WOODARD RD.
GOLF COURSE
BERG RD.
WILLIS RD
BRICK CHURCH ROAD
ROUTE 350
KNICKERBOCKER ROAD
PUTNAM ROAD
SHEPHERD ROAD
STONEY LONESOME RD
SEELEY ROAD
EATON ROAD
TRIMBLE RD
FURNACE ROAD
FISHER ROAD
TUCKAHOE RD
WOODS RD.
SALMON CREEK
KENYON ROAD
PARK
DAIRY
TRAILER PARK
ONTARIO SCHOOLS
GOLF COURSE
PATTY LANE
CLEVENGER RD
RIDGE ROAD
ROUTE 104
SALT ROAD
BASKET RD
COUNTY RD
LAKESIDE ROAD
SLOCUM
LINE ROAD
STATE ROAD
WHITNEY ROAD
HALEY ROAD
LINCOLN ROAD
ALBRIGHT RD
HENNESSEY RD.
FINLEY ROAD
TRUMMONDS ROAD
SMITHHILL ROAD
ARBOR ROAD
PEASE ROAD
CHAPEL ROAD
ENGELSON RD.
WILDERLEEVE RD.
RIDGE ROAD
EDDY
EDDY RD.
RICE RD.

5.0 EXTERNAL INFLUENCES

During 1992, there were no external influences such as atmospheric weapons testing or accidents at other nuclear facilities which caused an influence on the data reported. The annual trending graphs for air and water indicate a level effect in the measured activity.

6.0 EPA INTERLABORATORY COMPARISON STUDY

An indication of the laboratory's ability to analyze samples and achieve results consistent with other laboratories is the aim of the EPA Interlaboratory Comparison. Selected unknowns are received and analyzed by our procedures and the results are sent to the EPA Environmental Monitoring Systems Laboratory. A report is returned from them indicating the concentrations with which the samples were spiked and how we compared to other laboratories analyzing the same samples. Table 6-1 is a tabulation of the samples analyzed during 1992.

During the years of 1991 and 1992, a positive bias for all gamma results has been shown for all interlaboratory comparison samples. The calibration of the gamma counters has been investigated but no definite errors have been established. A continuing study is being done to determine if a specific cause can be found.

Graphs showing a statistical analysis of the results of RG&E's analysis and all reporting laboratories is included after the table. The sigma value is smaller than that calculated by EPA for a single laboratory.

ROCHESTER GAS AND ELECTRIC

TABLE 6-1

EPA INTERLABORATORY COMPARISON PROGRAM - 1992

Description	Date	Sample Analysis		Experimental Data			EPA Value ±1 Sigma
Alpha/Beta in Water (Results in pCi/l)	1/31/92	Alpha		21	21	24	30 ± 8
		Beta		31	33	32	30 ± 5
	5/15/92	Alpha		10	13	14	15 ± 5
		Beta		42	45	42	44 ± 5
	9/18/92	Alpha		31	34	37	45 ± 11
		Beta		43	43	42	50 ± 5
Gamma in Water (Results in pCi/l)	2/14/92	Co-60		50	47	50	40 ± 5
		Zn-65		179	175	162	148 ± 15
		Ru-106		228	194	215	203 ± 20
		Cs-134		32	32	31	31 ± 5
		Cs-137	*	58	60	62	49 ± 5
		Ba-133		84	83	88	76 ± 8
	6/5/92	Co-60		25	24	23	20 ± 5
		Zn-65		124	118	116	99 ± 10
		Ru-106		172	167	165	141 ± 14
		Cs-134		11	13	14	15 ± 5
		Cs-137		18	22	18	15 ± 5
		Ba-133		117	108	109	98 ± 10
	10/9/92	Co-60		9	10	10	10 ± 5
		Zn-65		160	177	175	148 ± 15
		Ru-106		187	191	157	175 ± 18
		Cs-134		10	10	9	8 ± 5
		Cs-137		11	11	11	8 ± 5
		Ba-133	*	90	89	89	74 ± 7
Iodine-131 in Water (Results in pCi/l)	2/7/92	I-131		64	66	60	59 ± 6
	8/11/92	I-131		48	50	47	45 ± 6

* Average of results reported exceeding ± 2 sigma for EPA lab, see note at end of table.

TABLE 6-1 (Cont'd)

EPA INTERLABORATORY COMPARISON PROGRAM - 1992

Description	Date	Sample Analysis	Experimental Data			EPA Value ±1 Sigma
Air Filters (Results in pCi/filter)	3/27/92	Alpha	10	9	10	7 ± 5
		Beta	44	41	41	41 ± 5
		Cs-137	15	17	16	10 ± 5
	8/28/92	Alpha	40	40	40	30 ± 8
		Beta	74	72	74	69 ± 10
		Cs-137	23	25	24	18 ± 5
Milk (Results in pCi/l)	4/24/92	I-131	87	82	84	78 ± 8
		Cs-137	44	45	48	39 ± 5
		K-40	1890	1860	1810	1710 ± 86
	9/25/92	I-131	121	116	110	100 ± 10
		Cs-137	20	20	19	15 ± 5
		K-40	1890	1780	1770	1750 ± 88

* Average of results reported exceeding ± 2 sigma for EPA lab.

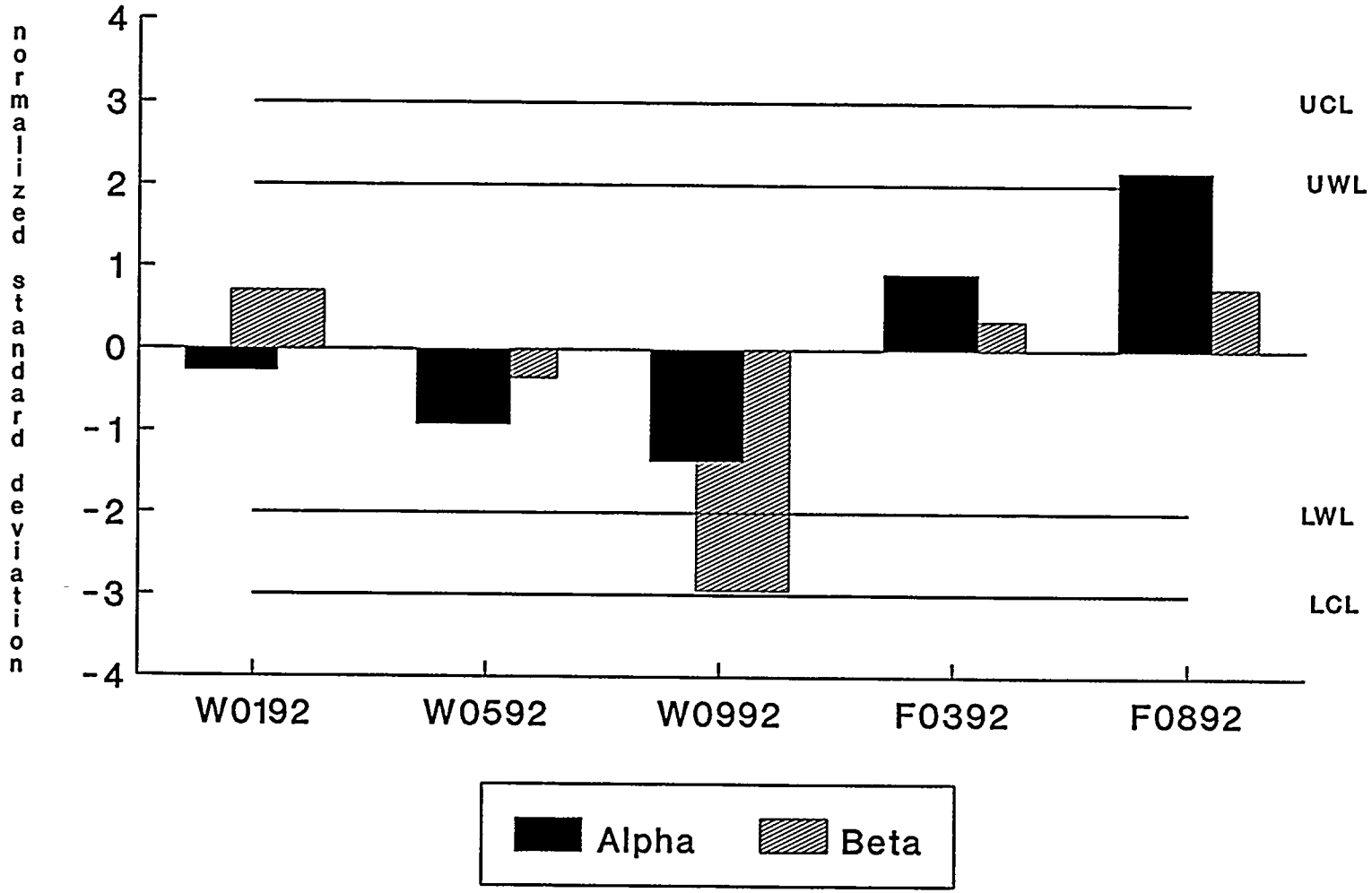
Notes:

Gamma in Water:

2/14/92 Cs-137 result due to to observed high bias on gamma results.

10/9/92 Ba-133 result due to observed high bias on gamma results.

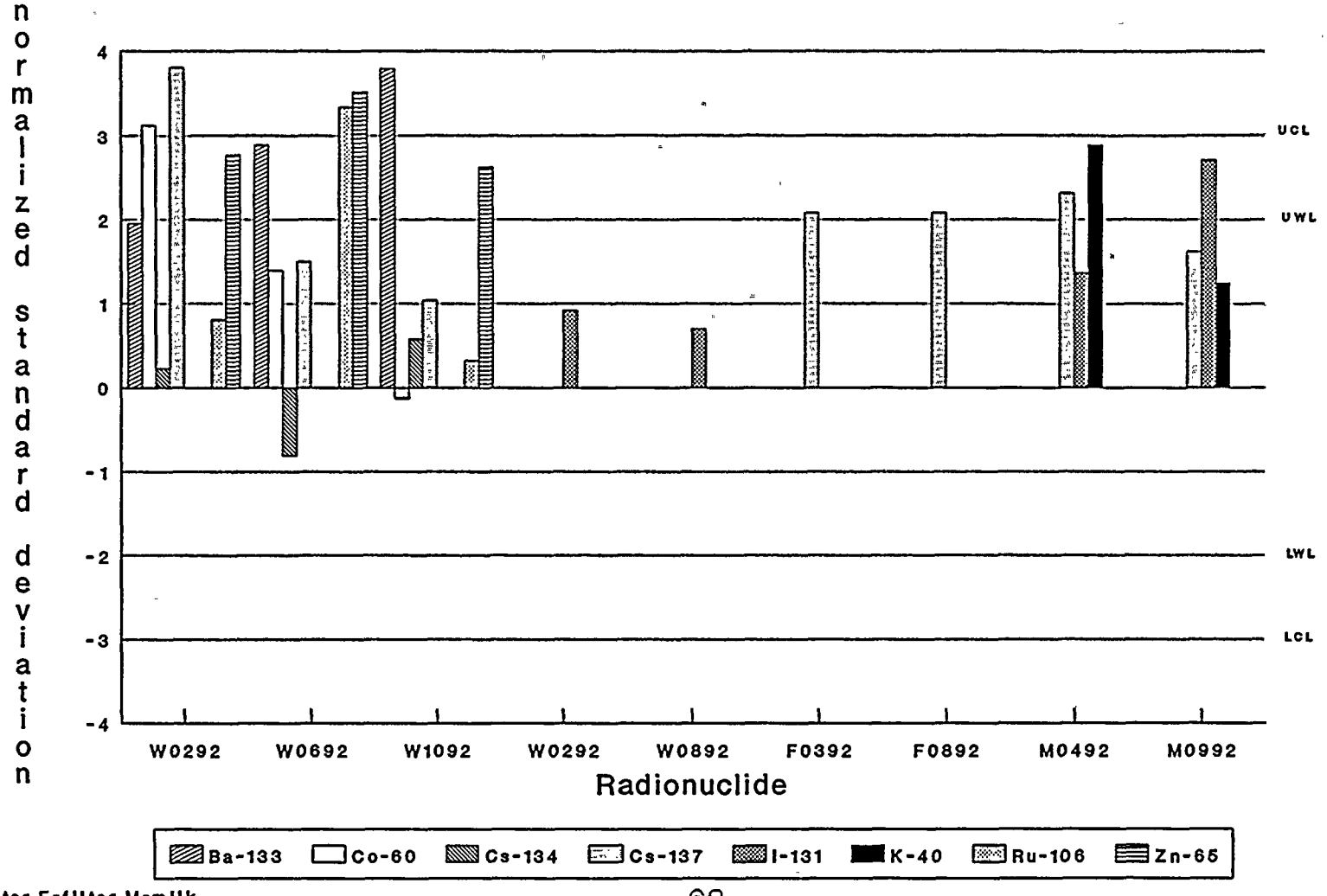
EPA Interlaboratory Comparison Program
1992 RG&E Normalized Standard Deviation



W=water, F=filter

EPA Interlaboratory Comparison Program

1992 RG&E Normalized Standard Deviation



W=water, F=filter, M=milk