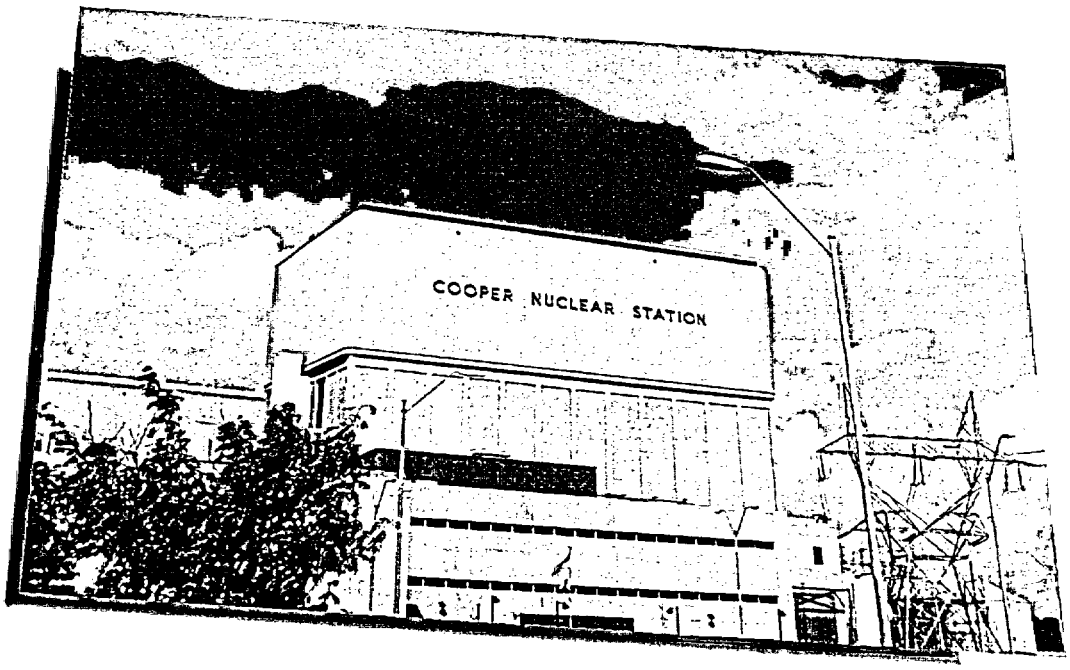
Cooper Nuclear Station

Annual Radiological Environmental Operating Report

Radiological Environmental Monitoring Program
January 1, 2002 - December 31, 2002



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Nebraska Public Power District
Nebraska's Energy Leader

Prepared by

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

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NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

Radiological Environmental Monitoring Program

2002 Annual Report

January 1, 2002 to December 31, 2002

Approved by Keith Jeter

Keith Jeter
Laboratory Director

Prepared by
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TABLE OF CONTENTS

SECTION	TITLE	PAGE
	Preface	6
I.	Introduction	7
II.	Summary	10
III.	Sampling and Analyses Program	12
IV.	Summary and Discussion of 2002 Analytical Results	16
	A. Airborne Particulates	17
	B. Airborne Iodine	19
	C. Fish	19
	D. Milk – Nearest Producers	19
	E. Milk – Other producer	19
	F. Ground Water	22
	G. River Water	22
	H. Thermoluminscent Dosimeters	22
	I. Food – Broadleaf Vegetation	26
	J. Shoreline Sediment	26
V.	Conclusions	29
VI.	Radiological Environmental Monitoring Program Summary Table – 2002	31
VII.	Complete Data Tables	36
VIII.	References	90

TABLE OF CONTENTS (Cont)

APPENDICES

APPENDIX A – 2002 Land Use Census A-1

APPENDIX B – Summary of Interlaboratory Comparisons B-1

APPENDIX C – Synopsis of Analytical procedures C-1

APPENDIX D- Detection Limits and Reporting Levels D-1

APPENDIX E – REMP Sampling and Analytical Exceptions E-1

APPENDIX F – Summary of Doses to a Member of the Public Offsite F-1

APPENDIX G – REMP Sample Station Descriptions G-1

LIST OF FIGURES

1. Map of Sampling Stations 15

TABLE OF CONTENTS (Cont)

LIST OF TRENDING GRAPHS

1. Gross Beta in Air Particulates – CNS 18
2. Cesium-137 in Fish 20
3. Iodine-131 and Cesium-137 in Milk – Nearest Producer 21
4. Iodine-131 and Cesium-137 in Milk – Other Producers 23
5. Tritium in Ground Water 24
6. Tritium in River Water 25
7. Thermoluminescent Dosimetry 27
8. Iodine-131, Cesium-134, and Cesium-137 in Shoreline Sediment 28

TABLE OF CONTENTS (Cont)

LIST OF TABLES

1 Sampling Schedule and Analysis 14

VII-1 Gross Beta In Air Particulates 37
Iodine in Charcoal Filters

VII-2 Gamma Emitters in Quarterly 57
Air Particulate Samples

VII-3 Gamma Emitters in Fish 67

VII-4 Iodine-131, Gamma Emitters in Milk – Nearest Producers 69

VII-5 Iodine-131, Gamma Emitters in Milk – Other Producers 74

VII-6 Iodine-131, Gamma Emitters in Ground Water 76

VII-7 Gamma Emitters in River Water 78

VII-8 Direct Radiation Measurements 84
TLD Results

VII-9 Gamma Emitters in Broadleaf Vegetation 86

VII-10 Gamma Emitters in Sediment 89

PREFACE

This report covers the period of January 1 through December 31, 2002. Personnel of the Nebraska Public Power District made all sample collections. Analyses were performed and reports of analyses were prepared by Teledyne Brown Engineering – Environmental Services and forwarded to Nebraska Public Power District.

I. INTRODUCTION

I. INTRODUCTION

This report contains a complete tabulation of data collected during the period January through December 2002, for the operational Radiological Environmental Monitoring Program performed for the Cooper Nuclear Station (CNS) of the Nebraska Public Power District (NPPD) by Teledyne Brown Engineering - Environmental Services.

Cooper Nuclear Station is located in Nemaha County in the southeast corner of Nebraska on the Missouri River. A portion of the site extends into Missouri. The reactor is a 778-megawatt (net electrical) boiling water reactor. Initial criticality was attained on February 21, 1974. The reactor reached 50 percent power on June 25, 1974 and 100 percent power on November 20, 1974.

Radiological environmental monitoring began in 1971 before the plant became operational and has continued to the present. The program monitors radiation levels in air, terrestrial and aquatic environments. All samples are collected by NPPD personnel. All are shipped for analysis to a contractor's laboratory where there exists special facilities required for measurements of extremely low levels of radioactivity. From 1971 through 1976 the contractor was Teledyne Isotopes, Westwood, New Jersey. NALCO Environmental Sciences assumed responsibility for the analyses effective January 1, 1977.

On November 1, 1978 Hazelton Environmental Sciences Corporation (HESC) assumed responsibility for the program. Prior to November 1, 1978 Hazelton Environmental Sciences operated as NALCO Environmental Sciences. Teledyne Isotopes (now trading as Teledyne Brown Engineering - Environmental Services) again assumed responsibility for the analyses effective January 1, 1979 through December 31, 2002.

The United States Nuclear Regulatory Commission (USNRC) regulations (10CFR50.34a) require that nuclear power plants be designed, constructed, and operated to keep levels of radioactive material in effluents to unrestricted areas as low as is reasonably achievable (ALARA). To ensure these criteria are met, the operating license for Nebraska Public Power District's Cooper Nuclear Station includes Technical Specifications which address the release of radioactive effluents. Inplant monitoring is used to ensure that these release limits are not exceeded. As a precaution against unexpected or undefined environmental processes which might allow undue accumulation of radioactivity in the environment, a program for monitoring the plant environs is also included in NPPD's CNS Offsite Dose Assessment Manual (ODAM).

A. Atmospheric Nuclear Tests

Three atmospheric nuclear detonations in the People's Republic of China influenced program results significantly in late 1976 and in 1977. Two of these detonations occurred in late 1976 (September 26 and November 17) and one in late 1977 (September 17). As a consequence of these tests elevated activities of gross beta in air particulate filters and I-131 in milk were observed throughout most of the United States.

No atmospheric nuclear tests have been conducted since 1977, thus no short-lived fission products were detected in air particulate samples. Also no I-131 was detected from radiogases from any sources.

On April 26, 1986 the fire and explosion of Chernobyl Reactor No. 4 in the Soviet Union resulted in the release of fission products to the atmosphere and worldwide fallout. Following the explosion, elevated levels of gross beta activities in air particulates and Iodine-131 in charcoal filters and milk samples were measured. Additionally, in 1986, Cesium-137 and the short-lived isotopes Iodine-131, Ruthenium-106, and Cesium-134 were detected in broadleaf vegetation. Similar results occurred in other areas of the United States and the entire Northern Hemisphere.

B. Program Objectives and Data Interpretation

The objective of the monitoring program is to detect and assess the impact of possible releases to the environs of radionuclides from the operations of the Cooper Nuclear Station. This objective requires measurements of low levels of radioactivity equal to or lower than pre-determined limits of detection. In addition the source of the environmental radiation must be established. Sources of environmental radiation include:

(1) Natural background radiation from cosmic rays (Berillium-7).

(2) Terrestrial, primordial radionuclides from the environment (potassium-40, Radium-226, Thorium-228).

(3) Fallout from atmospheric nuclear tests such as the September 1977 detonation by the Peoples' Republic of China and the atmospheric weapons test of October 16, 1980 (fission products and fusion products).

(4) Releases from nuclear power plants such as CNS (fission products and neutron activation products).

(5) Fallout from the Chernobyl Nuclear Reactor Accident.

Radiation levels measured in the vicinity of an operating power station are compared with preoperational measurements at the same locations to distinguish power plant effects from other sources. Also, results of the monitoring program are related to events known to cause elevated levels of radiation in the environment, e.g., atmospheric nuclear detonations or abnormal plant releases.

II. SUMMARY

II. SUMMARY

Presented in this report are summaries and discussions of the data generated for the Radiological Environmental Monitoring Program (REMP) for the Cooper Nuclear Station (CNS) of the Nebraska Public Power District (NPPD) for 2002.

The sampling and analysis program is described in Section III. It contains the sampling schedule and required analyses in Table 1 and the site map.

A discussion of each type of sample analyzed and its impact, if any, on the environment is presented in Section IV. Included also are graphs of the isotopes of interest for the past several years and the statistical results for each quarter of the year.

Section V presents the yearly conclusions of the program.

Section VI is the Radiological Environmental Monitoring Program Summary. It contains the yearly summary of the program with the total number of samples of each type analyzed. It lists the yearly average and range for the control locations versus the indicator locations and the number of detections per total number of samples. It identifies the station with the highest yearly average, the distance and location of that station and provides the range of detection.

Section VII contains the complete data tables for the period.

References are presented in Section VIII.

III. SAMPLING AND ANALYSIS PROGRAM

III. SAMPLING AND ANALYSIS PROGRAM

The 2002 sampling and analysis program is described in Table 1. Teledyne Brown Engineering - Environmental Services has a comprehensive quality assurance/quality control program designed to assure the reliability of data obtained. The results for the 2002 Intercomparison Program conducted by the Analytic's, Inc. and Environmental Resource Associates are contained in Appendix B.

Sampling locations are indicated in the map labeled Figure 1. The sample types collected at each location and the approximate distance and direction from the reactor elevated release point are specified.

The annual land use census for 2002 is described in Appendix A. There were no milk animals found within three miles of CNS in 2002 and no evidence of potable water use from the river. The nearest garden to CNS is in sector L, 1.3 miles from CNS. Gardens were found in eight sectors during 1999, in nine sectors during 2000, in eight sectors during 2001, and in seven sectors during 2002. The nearest resident to CNS is in sector Q, 0.9 miles from CNS.

All of the required 2002 environmental monitoring, including sampling and analysis, was conducted as specified in Table D4.1-1 of the CNS Offsite Dose Assessment Manual (ODAM), except as noted in Appendix E, Exception Table.

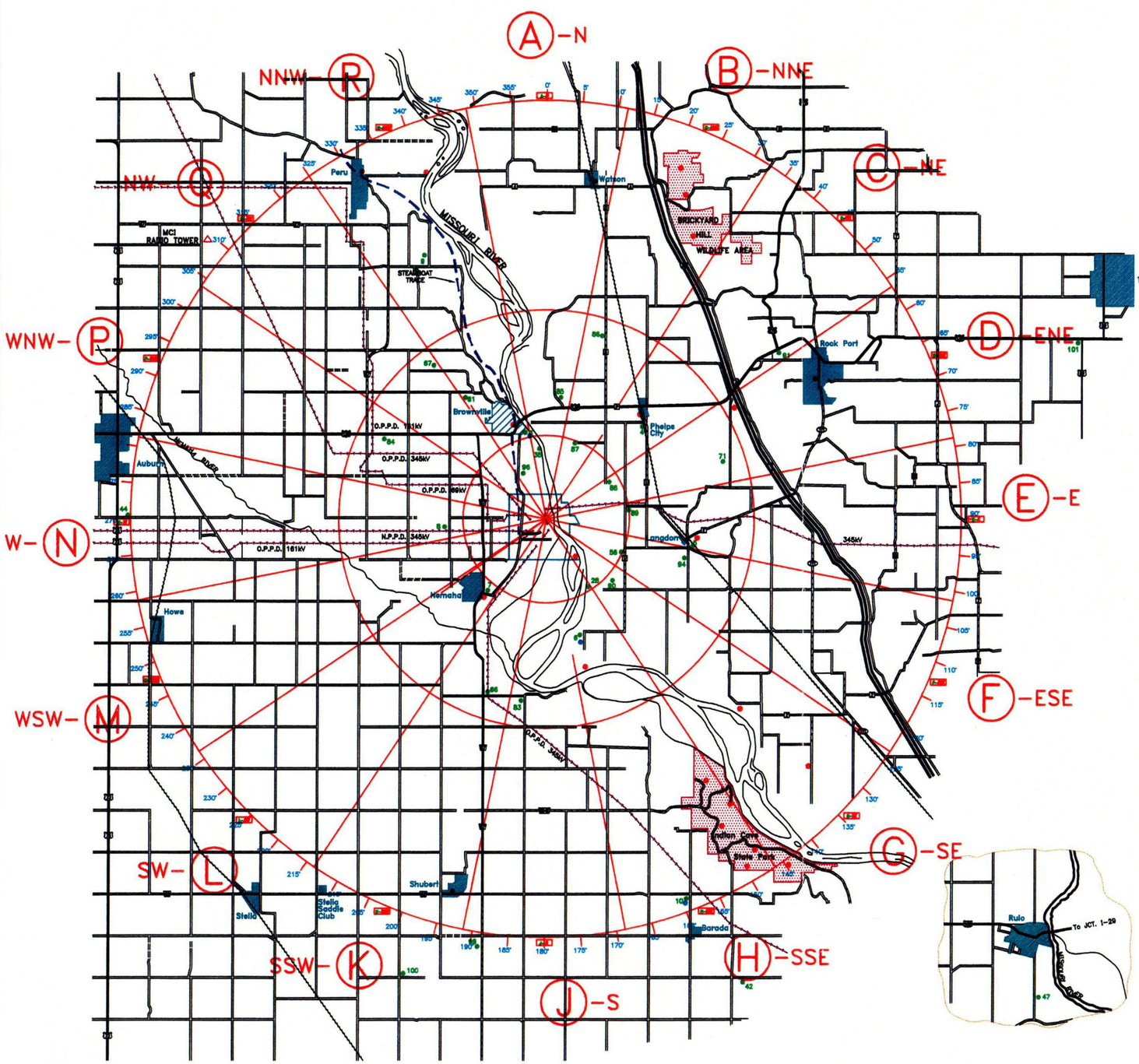
TABLE 1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION
Environmental Radiation Surveillance Program
Sampling Schedule and Analysis

Sample Type	*Station*	*Frequency*	*Analyses*
Airborne/ Particulate	1-10	Once per 7 days	Gross beta. Gamma Isotopic on quarterly composite of each station, and on each sample in which gross beta activity is >10 times the yearly mean of control samples
Airborne/Iodine	1-10	Once per 7 days	I-131
Milk / Nearest Producer peak pasture only	61	Once per 15 days	I-131 (low level), Gamma Isotopic analysis of each sample
River Water	12, 28	Once per 31 days	Gamma Isotopic, each sample Tritium on quarterly composite
Milk/ Nearest Producer Non-peak pasture	61, 99	Once per 31 days	I-131 (low level), Gamma Isotopic analysis of each sample
Food Products / Broadleaf Vegetation	28, 35, 96, 101	Monthly when available	I-131 (low level), Gamma Isotopic analysis of each sample
Background Radiation Thermoluminescent Dosimeters	1-10, 20, 44, 56, 58, 59, 66, 67, 71, 79-91, 94	Once per 92 days	TLD Readout (gamma dose)
Groundwater	11, 47	Once per 92 days	I-131 (low level), Gamma Isotopic, Tritium
Milk Other Producers	42, 99, 100	Once per 92 days	I-131 (low level), Gamma Isotopic
Fish (Summer and Fall)	28, 35	Two times per year	Gamma Isotopic on edible portions
Shoreline Sediment	28	Two times per year	Gamma Isotopic

Figure 1



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LEGEND

- Federal HWY
- Nebraska State HWY
- Interstate
- Missouri State HWY
- Missouri County Road
- Transmission Line
- CNS Environmental Sample Stations

SAMPLING LOCATION KEY (AREA)

Station Number	Distance* (miles)	Direction* (degrees)	Classification	Sample Type(s)
3	2.5	338	IND	AP, C, TL
4	3	43	IND	AP, C, TL
5	3.5	102	IND	AP, C, TL
6	3	165	IND	AP, C, TL
7	2.5	220	IND	AP, C, TL
8	2.5	260	IND	AP, C, TL
9	7.3	335	IND	AP, C, TL
10	10	160	IND	AP, C, TL
28	1.8	150	IND	WR,FI,SH,VT
35	2	350	IND & CON	VT, FI, WR
42	12.9	156	IND	M (Other)
44	10.3	270	CON	TL
47	25.8	154	IND	WG
56	1.9	118	IND	TL
61	3.5	326	IND	M (Nearest)
66	4.5	200	IND	TL
67	4.8	325	IND	TL
71	4.3	71	IND	TL
83	4.4	189	IND	TL
84	4.4	297	IND	TL
85	3.1	3	IND	TL
86	4.6	16	IND	TL
87	1.75	20	IND	TL
88	1.75	63	IND	TL
89	2	86	IND	TL
90	2.25	134	IND	TL
91	6.9	54	IND	TL
94	3.6	108	IND	TL
96	1.25	334	IND	VT
99	10.5	189	IND	M (Nearest, Other)
100	11.5	197	IND	M (Other)
101	13.3	73	CON	VT

* Approximate distance and direction with respect to reactor Elevated Release Point (ERP)

NOTE:
Environmental sample type codes: AP = air particulate filters; C = charcoal cartridges FI = fish; M = milk; SH = shoreline sediment; TL = environmental thermoluminescent dosimeters; VT = broadleaf vegetation; WG = groundwater; WR = river water. IND = Indicator; CON = Control

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SAMPLING STATIONS AREA

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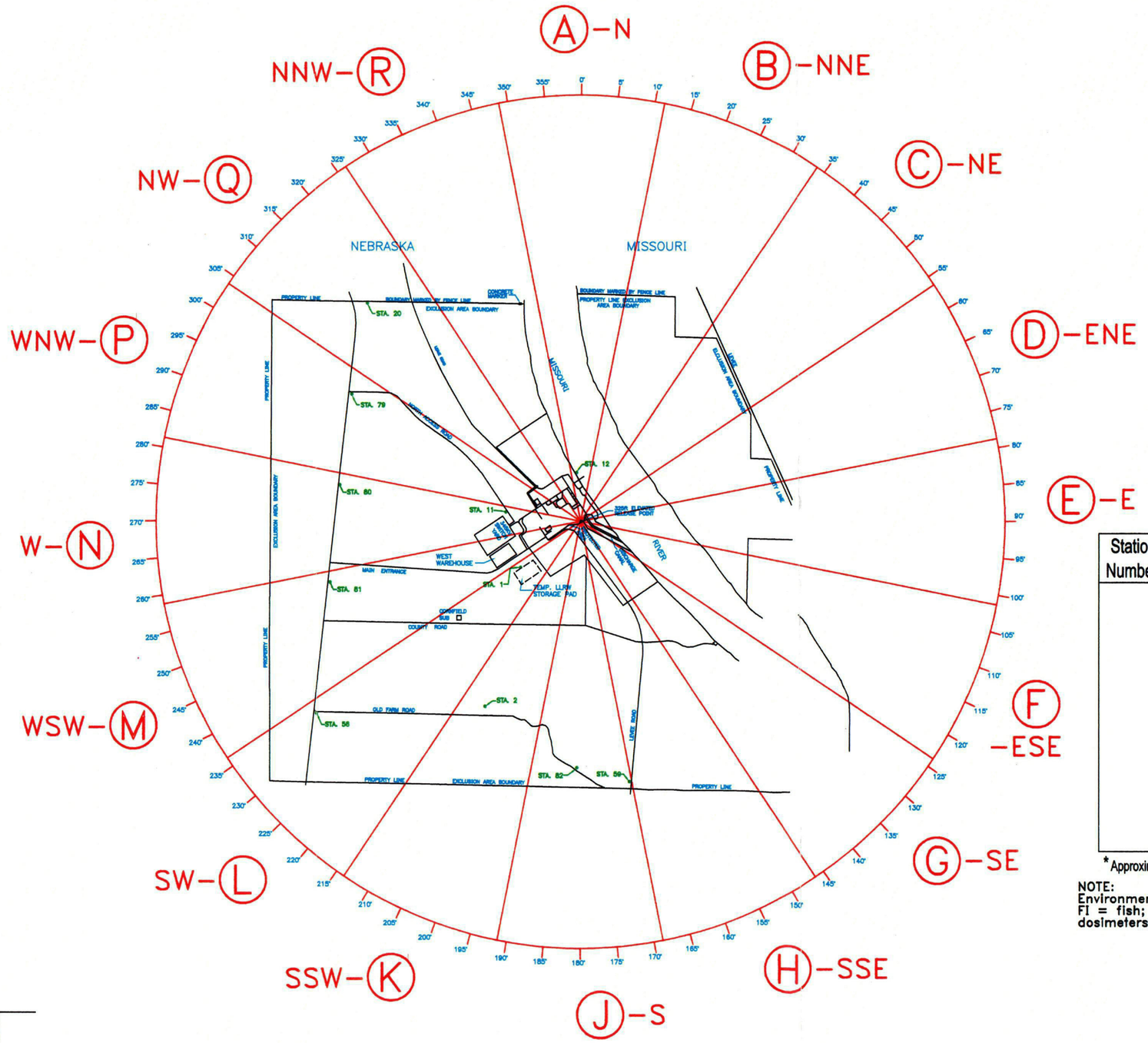

LEGEND

- Federal HWY
- Nebraska State HWY
- Interstate
- Missouri State HWY
- Missouri County Road
- Transmission Line
- CNS Environmental Sample Stations

SAMPLING LOCATION KEY (SITE)

Station Number	Distance* (miles)	Direction* (degrees)	Classification	Sample Type(s)
1	0.1	230	IND	AP, C, TL
2	0.75	210	IND	AP, C, TL
11	0.15	275	IND	WG
12	0.1	355	CON	WR
20	0.96	315	IND	TL
58	1.1	234	IND	TL
59	1	170	IND	TL
79	0.85	299	IND	TL
80	0.75	280	IND	TL
81	0.8	255	IND	TL
82	0.8	185	IND	TL

* Approximate distance and direction with respect to reactor Elevated Release Point (ERP)

NOTE:
Environmental sample type codes: AP = air particulate filters; C = charcoal cartridges FI = fish; M = milk; SH = shoreline sediment; TL = environmental thermoluminescent dosimeters; VT = broadleaf vegetation; WG = groundwater; WR = river water.

CADD DRAWING
DO NOT REVISE MANUALLY

SIGNIFICANT NUMBER							
GROUP	1	2	3	4	5	6	

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APPROVED DATE
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MAP OF SAMPLING STATIONS SITE

Nebraska Public Power District

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IV. SUMMARY AND DISCUSSION OF 2002 ANALYTICAL RESULTS

IV. SUMMARY AND DISCUSSION OF 2002 ANALYTICAL RESULTS

Data from the radiological analyses of environmental media collected during 2002 are tabulated and discussed below. The procedures and specifications followed in the laboratory for these analyses are as required in the Teledyne Brown Engineering Quality Assurance manual and are explained in the Teledyne Brown Engineering Analytical Procedures. A synopsis of analytical procedures used for the environmental samples is provided in Appendix C. In addition to internal quality control measures performed by Teledyne, the laboratory also participates in an Interlaboratory Comparison Program. Participation in this program ensures that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed. The results of the Interlaboratory Comparison are provided in Appendix B.

Radiological analyses of environmental media characteristically approach and frequently fall below the detection limits of state-of-the-art measurement methods. The "less than" values in the data tables were calculated from each specific analysis and are dependent on sample size, detector efficiency, length of counting time, chemical yield, when appropriate, and the radioactive decay factor from time of counting to time of collection. Teledyne Brown Engineering's analytical methods meet or are below the Lower Limit of Detection (LLD) requirements given in Table 2 of the USNRC Branch Technical Position, Radiological Monitoring Acceptable Program (November 1979, Revision 1). Section C contains a discussion of the LLD formulas.

The following is a discussion and summary of the results of the environmental measurements taken during the 2002 reporting period

A. Airborne Particulates

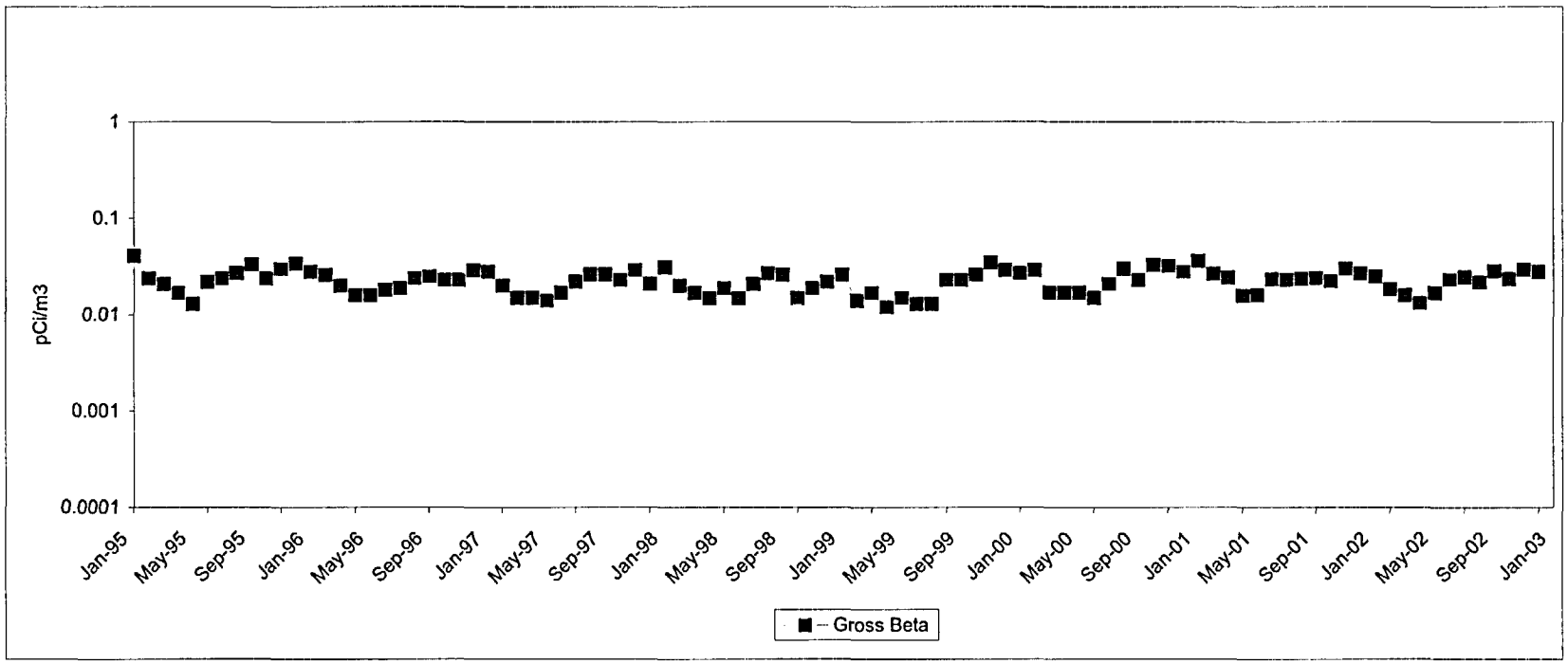
Gross beta activity was observed in 528 of the 530 indicator samples collected during 2002. The average concentration was 0.022 pCi/m^3 and a range of 0.004 to 0.052 pCi/m^3. The results of the gross beta activities are presented in Section VII-1 and Trending Graph 1. The gross beta activities for 2002 were comparable to levels measured in the previous several years. Prior to that period the gross beta activities were higher due to atmospheric nuclear weapons testing performed in other countries. The preoperational period of 1971 through 1974 averaged 0.098 pCi/m^3 gross beta.

Air particulate filters were collected weekly and composited by locations on a quarterly basis. They were analyzed by gamma ray spectroscopy. The results are presented in Section VII-2. Beryllium-7, which is produced continuously in the upper atmosphere by cosmic radiation, was measured in 40 of 40 composite samples. The indicator locations had an average concentration of 0.195 pCi/m^3 and a range of 0.051 to 1.41 pCi/m^3. During the preoperational period, beryllium-7 was measured at comparable levels, as would be expected. Naturally occurring potassium-40 was measured in one of 40 composite samples. Station 08 had a concentration of 0.27 pCi/ m^3. All other gamma emitters were below the detection limits. The Environmental Measurements Laboratory of the US Department of Energy no longer reports measurements of cerium-144 because the

TRENDING GRAPH 1

GROSS BETA IN AIR PARTICULATES

MONTHLY AVERAGE - ALL LOCATIONS



artificial nuclides such as cerium-144 have reached the limits of detection by the analytical techniques now used.

B. Airborne Iodine

Charcoal cartridges used to collect airborne iodine were collected weekly and analyzed by gamma spectrometry for iodine-131. Stations 01 through 10 were monitored. The results are presented in Section VII-1. All results were below the required lower limit of detection. The preoperational period of 1971 through 1974 averaged less than 0.02 pCi/m^3 iodine-131.

C. Fish

Aquatic biota can be sensitive indicators of radionuclide accumulation in the environment because of their ability to concentrate certain chemical elements, which have radioactive isotopes. The results are presented in Table VII-3 and Trending Graph 2. Nine samples of fish were collected during the summer and fall of 2002. A middle-top feeding fish (carp) and a bottom feeding fish (catfish) were collected in July and September. These samples were analyzed by gamma ray spectroscopy. As expected naturally occurring potassium-40 was detected in all samples. The average concentration at the control location was 3213 pCi/kg (wet weight) and a range of 2950 to 3650 pCi/kg (wet weight). The average concentration for the five indicator samples was 3724 pCi/kg (wet weight) with a range of 3340 to 4290 pCi/kg (wet weight). The preoperational period of 1971 through 1974 averaged 2400 pCi/kg potassium-40.

The fission product cesium-137 was not measured above detection levels in any samples for 2002. All other gamma emitters were below their detection levels.

D. Milk – Nearest Producer

Milk samples are collected once every 15 days in peak pasture season and once every 31 days the rest of the year. The results are presented in Table VII-4 and Trending Graph 3. Eighteen samples were analyzed by gamma ray spectroscopy. As expected, naturally occurring potassium-40 was measured in all samples with an average of 1274 pCi/liter and a range of 1060 to 1630 pCi/liter.

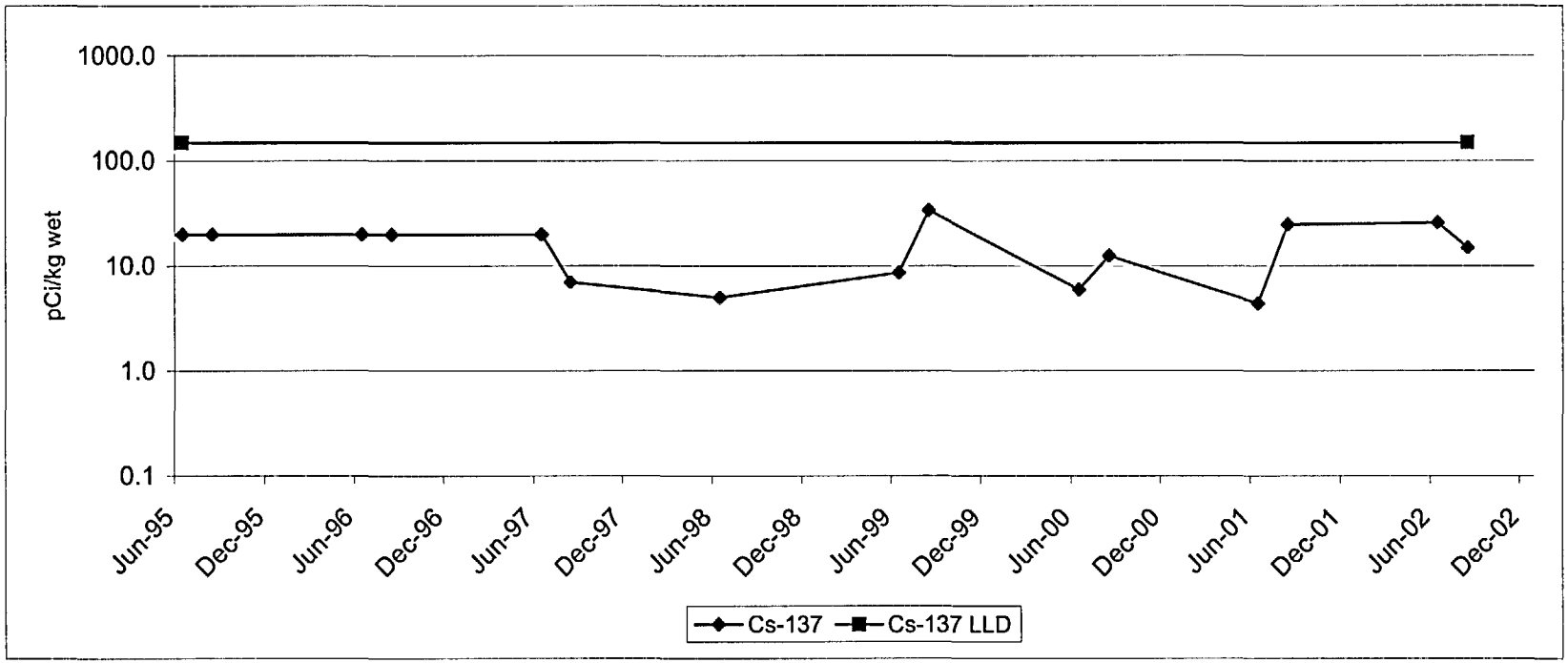
The fission product cesium-137 was not detected during 2002. The preoperational period of 1971 through 1974 averaged 7.33 pCi/liter cesium-137. All other gamma emitters were below their detection levels. The levels of radioactivity of the nuclides iodine-131 and cesium-137 are plotted on Trending Graph 3. The preoperational period averaged less than 0.2 pCi/liter iodine-131.

E. Milk – Other Producers

Eight milk samples were collected from two locations of other producers during 2002 and results are presented in Table VII-5 and Trending Graph 4. Station 99 and station 100 were sampled quarterly in 2002. Naturally occurring potassium-

TRENDING GRAPH 2

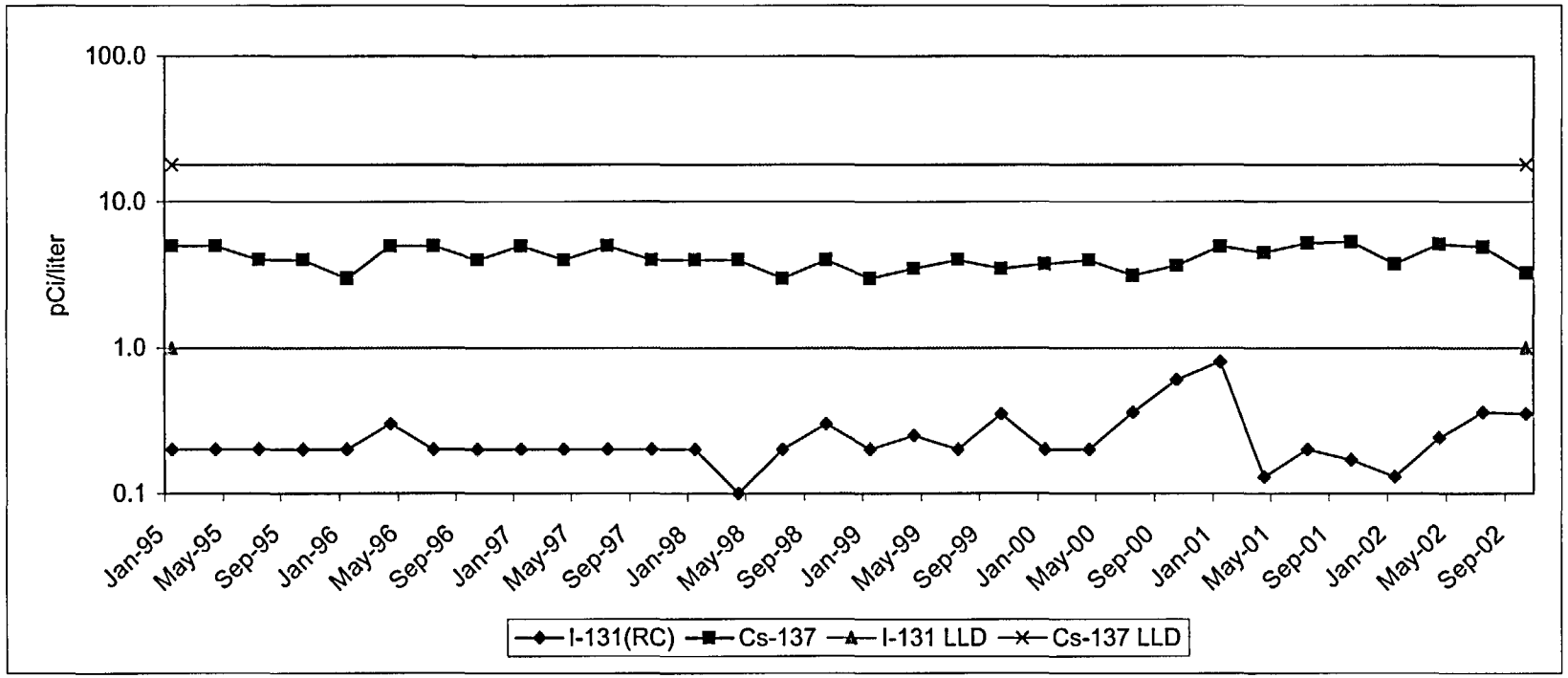
CESIUM-137 IN FISH
ALL LOCATIONS



TRENDING GRAPH 3

IODINE-131 AND CESIUM-137 IN MILK - NEAREST PRODUCER

STATION 61



40 was detected in all eight samples analyzed with an average concentration of 1441 pCi/liter and a range of 1210 to 1620 pCi/liter. All other gamma emitters were below their detection levels.

The levels of radioactivity of the nuclides iodine-131 and cesium-137 are plotted on Trending Graph 4. A comparison of graph 3 and graph 4 indicate there was no appreciable difference between the levels of activity of the nearest producer and the commercial producers. This indicates there is no effect on milk samples from the operation of the Cooper Nuclear Station.

F. Ground Water

Groundwater was collected from two stations quarterly and analyzed for tritium and for gamma emitting radionuclides. Station 11 is located 0.15 miles from the plant and station 47 is 25.8 miles from the plant. The results are presented in Table VII-6 and Trending Graph 5.

There were no gamma emitters measured above their detection levels. Tritium levels have been plotted in Trending Graph 5. The graph indicates this activity has remained essentially unchanged. The preoperational period averaged 379 pCi/liter tritium.

G. River Water

River water was collected monthly and monitored for gamma emitting isotopes. A quarterly composite was measured for tritium. The results are presented in table VII-7 and Trending Graph 6.

Potassium-40 was measured in one of eleven samples with a concentration of 53 pCi/liter. Thorium-228 was measured in one of eleven samples with a concentration of 11 pCi/liter. No other gamma emitters were detected. Tritium was not detected. The preoperational period averaged 338 pCi/liter tritium. No fission or reactor activation products were detected. Trending Graph 6 illustrates the level of activity for tritium.

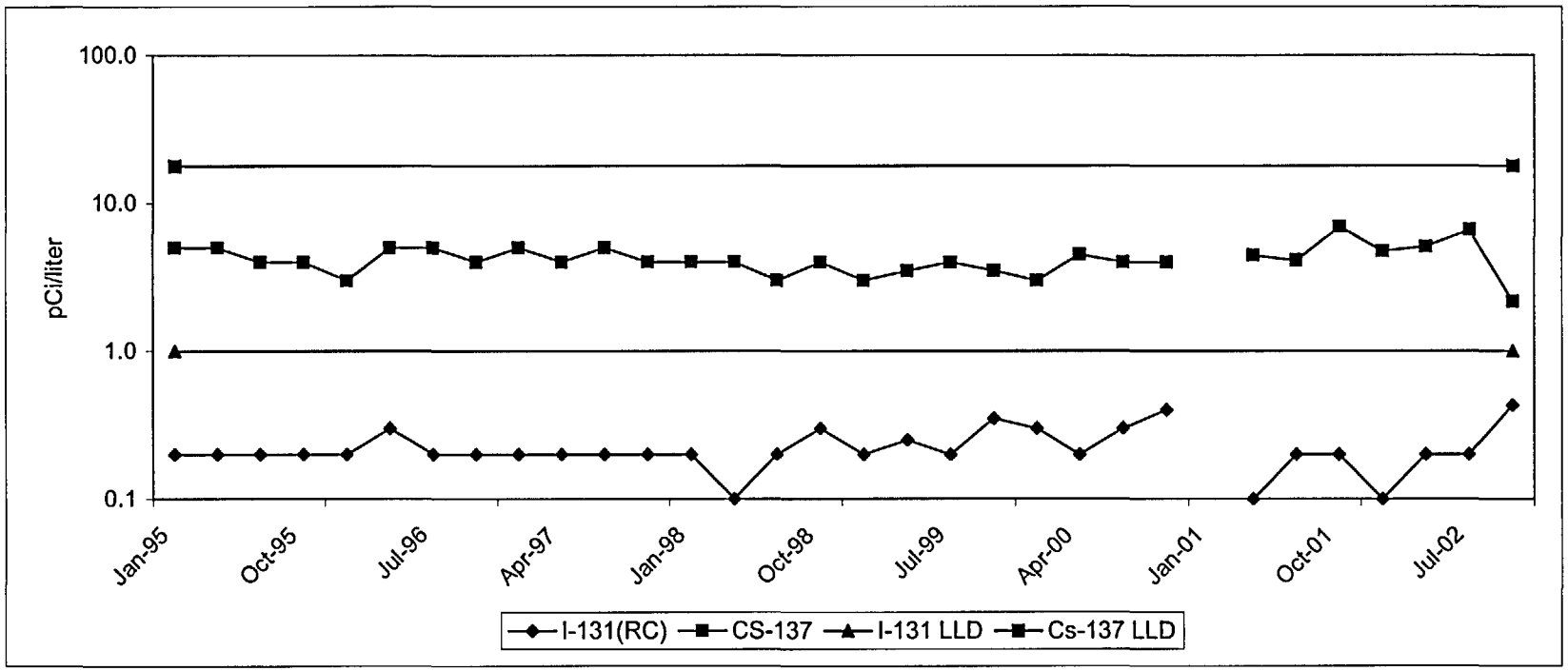
H. Thermoluminescent Dosimeters

Thermoluminescent dosimeters (TLDs) determine environmental radiation doses and the results are presented in Table VII-8 and Trending Graph 7. Ambient radiation was monitored at 32 locations within a 10 mile radius of the Cooper Nuclear Station and collected quarterly. The quarterly averages for the indicator locations was 10.0 milliRoentgen/quarter and a range from 1.3 to 20.6 milliRoentgen/quarter. The control station 44, which is located 10.5 miles, 270 degrees had an average of 10.8 milliRoentgen/quarter and a range from 5.4 to 14.1 milliRoentgen/quarter. The highest station was Station 84 with an average of 13.9 milliRoentgen/quarter and a range from 10.4 to 16.1 milliRoentgen/quarter. The preoperational period of 1971 through 1974 averaged 7.0 milliRoentgen/quarter.

TRENDING GRAPH 4

IODINE-131 AND CESIUM-137 IN MILK - OTHER PRODUCERS

QUARTERLY AVERAGE - ALL LOCATIONS

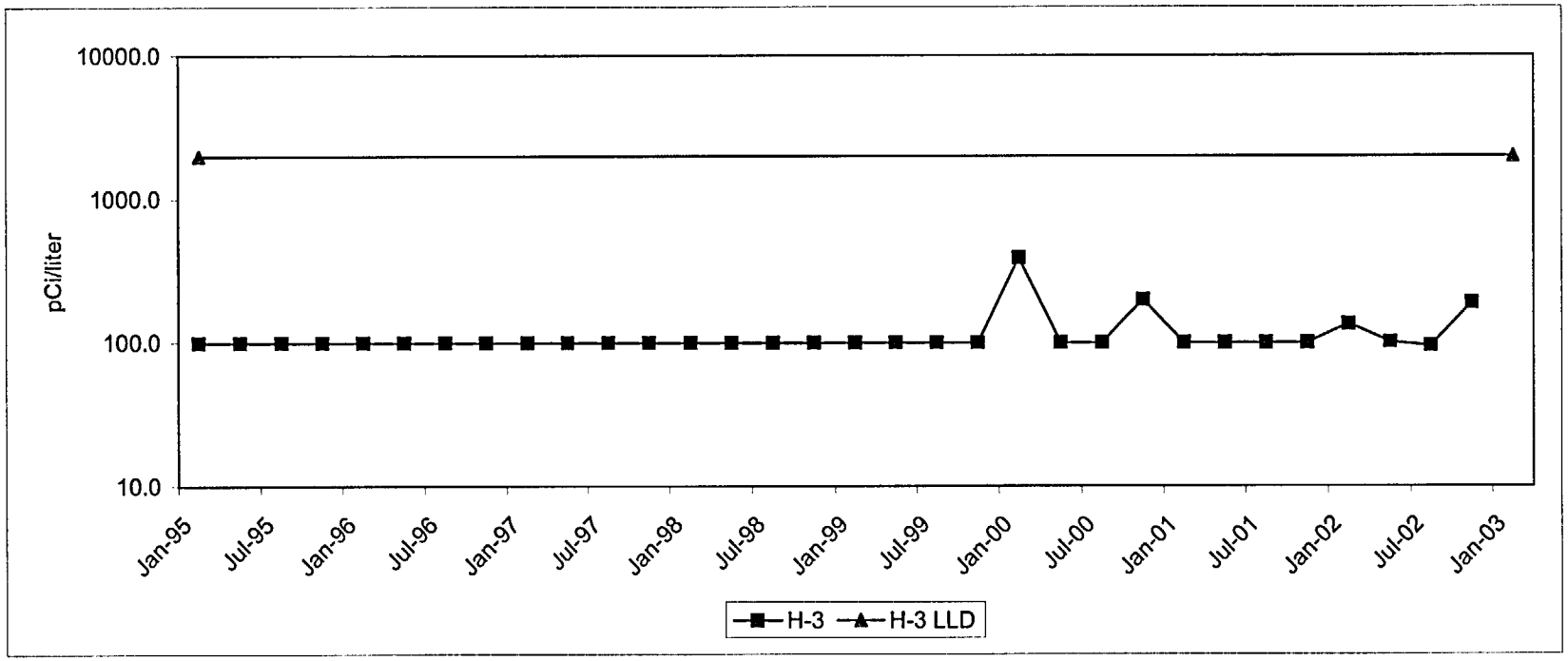


Due to delay in analysis, sample results for I-131 for the first quarter of 2001 were excluded and are not plotted.

TRENDING GRAPH 5

TRITIUM IN GROUND WATER

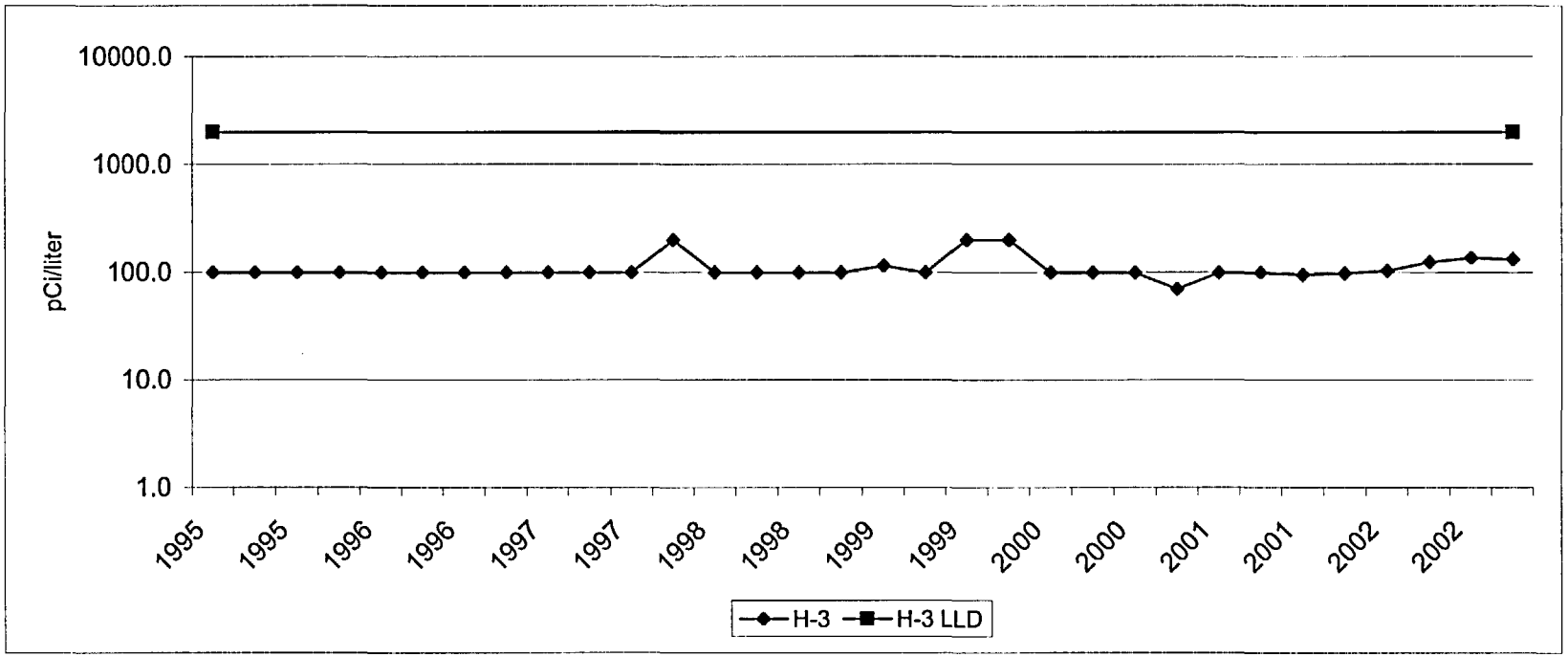
QUARTERLY AVERAGE - ALL LOCATIONS



TRENDING GRAPH 6

TRITIUM IN RIVER WATER

QUARTERLY AVERAGE - ALL LOCATIONS



The gamma exposures monitored by thermoluminescent dosimeters from 1995 through 2002 are plotted in Trending Graph 7. The data from year to year is in good agreement and indicates no adverse changes in radiation exposure to the population near the Cooper Nuclear Station.

I. Food – Broadleaf Vegetation

As stated in the CNS ODAM vegetation samples are not required as long as milk samples are available.

J. Shoreline Sediment

Sediment samples were collected during May and October from Station 28 and were analyzed by gamma spectrometry. The results are presented in Table VII-10 and Trending Graph 8. One man-made and a number of naturally occurring radioisotopes were detected in these samples. Cesium-137 was detected in two of two samples with an average activity of 80.5 pCi/kg (dry weight) and a range from 66.2 to 94.7 pCi/kg (dry weight). As expected, naturally occurring potassium-40 was observed in the two samples with an average activity of 21050 pCi/kg (dry weight) and a range from 19300 to 22800 pCi/kg (dry weight). Radium-226 was measured in one of the two samples with a concentration of 1150 pCi/kg (dry weight). Naturally occurring, thorium-228 was observed in the two samples with an average concentration of 969 pCi/kg (dry weight) and a range from 667 to 1270 pCi/kg (dry weight). All other gamma emitters were below their detection limits.

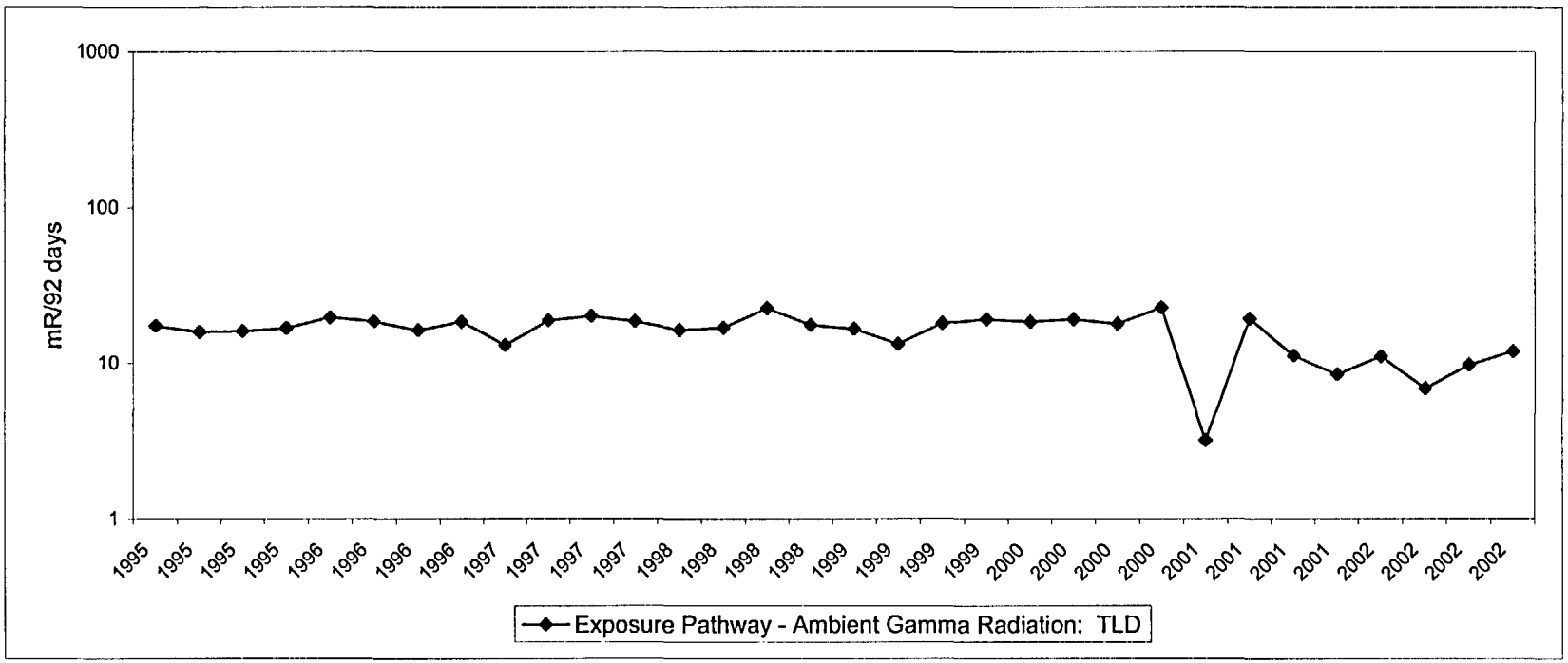
The results of the analyses have been presented. Based on the evidence of the Radiological Environmental Monitoring Program, the Nebraska Public Power District, Cooper Nuclear Station is operating within regulatory limits.

TRENDING GRAPH 7

AMBIENT RADIATION

THERMOLUMINESCENT DOSIMETRY

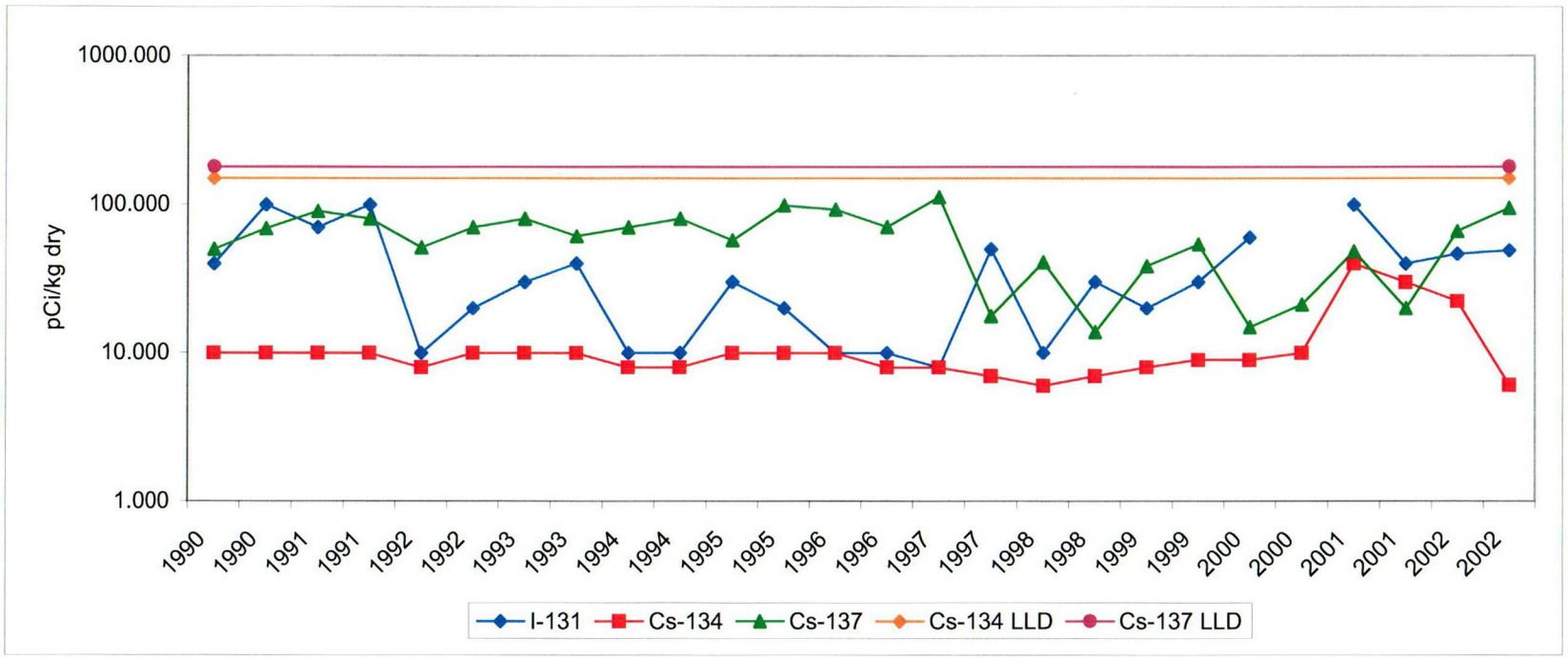
QUARTERLY AVERAGE - ALL LOCATIONS



TRENDING GRAPH 8

IODINE-131, CESIUM-134, AND CESIUM-137 IN SHORELINE SEDIMENT

STATION 28



Due to delay in analysis, sample results for I-131 for the second quarter of 2000 were excluded and are not plotted.

C03

V. CONCLUSIONS

V. CONCLUSIONS

The results of the 2002 Radiological Environmental Monitoring Program (REMP) for the Cooper Nuclear Station (CNS) of the Nebraska Public Power District (NPPD) have been presented. The report contains data tables, summaries, and discussions of the data and trending graphs.

Naturally occurring radioactivity was observed in sample media in the expected activity ranges. Occasional samples of a few media showed the presence of man-made isotopes. They have been discussed individually in the text. Observed activities were at very low concentrations and had no significant dose consequence.

SECTION VI.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY - 2002

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility: Cooper Nuclear Station
Location of Facility: Nemaha, Nebraska (County, State)
Docket No. 50-298
Reporting Period January 1, 2002 to December 31, 2002

Medium of Pathway Sampled (Unit of Measurement)	Type & Total No. of Analyses Performed		Lower Limit of Detection (1) (LLD)	All Indicator Locations Mean (2) Range (2)	Location with Highest Annual Mean: Name		Mean ( ) (2) Range (2)	Control Location Mean ( ) (2) Range (2)	No. of Reportable Occurrences
Air Iodine (pCi/m^3)	I-131	530	0.07	- (0/530) -				- (0/0) -	0
Air Particulate (pCi/m^3)	Gross Beta (Weekly)	530	0.01	0.022(528/530) (0.004-0.052)	Sta. 8	2.5 mi.	0.024(52/52) (0.009-0.052)	- (0/0) -	0
	Gamma	40							
	Be-7	40	-	0.195(40/40) (0.051-1.41)	Sta. 9	7.3 mi.	0.044(4/4) (0.087-1.41)	- (0/0) -	0
	Co-60	40	-	- (0/40) -				- (0/0) -	0
	Th-228	40	-	- (0/40) -				- (0/0) -	0
Fish (pCi/kg wet)	Gamma	9							
	K-40	9	-	3724(5/5) (3340-4290)	Sta. 28	1.8 mi.	3724(5/5) (3340-4290)	3213(4/4) (2950-3650)	0
	Co-60	9	0.13	-(0/5) -				-(0/4) -	0
	Cs-137	9	0.15	-(0/5) -				-(0/4) -	0

(1) Nominal Lower Limit of Detection (LLD).

(2) Mean and Range based upon detectable measurements only. Fraction of detectable measurements at specified location indicated in brackets().

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility: Cooper Nuclear Station
Location of Facility: Nemaha, Nebraska (County, State)
Docket No. 50-298
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Medium of Pathway Sampled (Unit of Measurement)	Type & Total No. of Analyses Performed		Lower Limit of Detection (1) (LLD)	All Indicator Locations Mean (2) Range (2)	Location with Highest Annual Mean: Name		Mean ( ) (2) Range (2)	Control Location Mean ( ) (2) Range (2)	No. of Reportable Occurrences
Fish (pCi/kg wet)	Th-228	9		-(0/5) -				-(0/4) -	0
Milk Nearest Producers (pCi/liter)	I-131	18		-(0/18) -				-(0/0) -	0
	Gamma	18							
	K-40	18	-	1274(18/18) (1060-1630)	Sta. 61	3.5 mi.	1274(18/18) (1060-1630)	-(0/0) -	0
	Ra-226	18	-	-(0/18) -			-(0/18) -	-(0/0) -	0
Milk Other Producers (pCi/liter)	I-131	8		-(0/8) -				-(0/0) -	0
	Gamma	8							
	K-40	8	-	1441(8/8) (1210-1620)	Sta. 99	10.5 mi.	1443(4/4) (1310-1600)	-(0/0) -	0
	Th-228	8	-	-(0/8) -			-(0/4) -	-(0/0)	0

(1) Nominal Lower Limit of Detection (LLD).

(2) Mean and Range based upon detectable measurements only. Fraction of detectable measurements at specified location indicated in brackets().

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility: Cooper Nuclear Station
Location of Facility: Nemaha, Nebraska (County, State)
Docket No. 50-298
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Medium of Pathway Sampled (Unit of Measurement)	Type & Total No. of Analyses Performed		Lower Limit of Detection (1) (LLD)	All Indicator Locations Mean (2) Range (2)	Location with Highest Annual Mean: Name		Mean ( ) (2) Range (2)	Control Location Mean ( ) (2) Range (2)	No. of Reportable Occurrences
Groundwater (pCi/liter)	H-3	8	2000	180(1/8) -	Sta. 47	25.8 mi.	180(1/4)	-(0/0) -	0
	Gamma	8							
	K-40	8	-	-(0/8) -				-(0/0) -	0
River Water (pCi/liter)	H-3	9	2000	-(0/4) -				-(0/5) -	0
	Gamma	22							
	K-40	22		53(1/11) -	Sta. 28	1.8 mi.	53(1/11) -	-(0/11) -	0
	Th-228	22		11(1/11) -	Sta. 28	1.8 mi.	11(1/11) -	-(0/11) -	0
Direct Radiation (mR/Standard Month)	Gamma Dose Quarterly	127	-	10.0(123/123) (1.3-20.6)	Sta. 84	4.4 mi.	13.9(4/4) (10.4-16.1)	10.8(4/4) (5.4-14.1)	0

(1) Nominal Lower Limit of Detection (LLD).

(2) Mean and Range based upon detectable measurements only. Fraction of detectable measurements at specified location indicated in brackets().

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name of Facility: Cooper Nuclear Station
Location of Facility: Nemaha, Nebraska
(County, State)

Docket No. 50-298
Reporting Period January 1, 2002 to December 31, 2002

Medium of Pathway Sampled (Unit of Measurement)	Type & Total No. of Analyses Performed		Lower Limit of Detection (1) (LLD)	All Indicator Locations Mean (2) Range (2)	Location with Highest Annual Mean: Name		Mean ( ) (2) Range (2)	Control Location Mean ( ) (2) Range (2)	No. of Reportable Occurrences
Shoreline Sediment (pCi/kg dry)	Gamma	2							
	Be-7	2	-	1230(1/2) -	Sta. 28	1.8 mi.	1230(1/2) -	-(0/0) -	0
	K-40	2	-	21050(2/2) (19300-22800)	Sta. 28	1.8 mi.	21050(2/2) (19300-22800)	-(0/0) -	0
	Cs-137	2	0.18	80.5(2/2) (66.2-94.7)	Sta. 28	1.8 mi.	80.5(2/2) (66.2-94.7)	-(0/0) -	0
	Ra-226	2	-	1150(1/2) -	Sta. 28	1.8 mi.	1150(1/2) -	-(0/0) -	0
	Th-228	2	-	969(2/2) (667-1270)	Sta. 28	1.8 mi.	969(2/2) (667-1270)	-(0/0) -	0

(1) Nominal Lower Limit of Detection (LLD).

(2) Mean and Range based upon detectable measurements only. Fraction of detectable measurements at specified location indicated in brackets().

SECTION VII. COMPLETE DATA TABLES

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 01

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	2.30E-02 ± 3.00E-03	01/15	L.T. 4.E-02
01/02	01/08	8.66E+03	CU. FT.	2.90E-02 ± 4.00E-03	01/17	L.T. 5.E-02
01/08	01/15	1.01E+04	CU. FT.	1.20E-02 ± 2.00E-03	01/24	L.T. 1.E-02
01/15	01/22	1.01E+04	CU. FT.	1.50E-02 ± 3.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.04E+04	CU. FT.	2.00E-02 ± 3.00E-03	02/11	L.T. 5.E-02
01/29	02/05	9.77E+03	CU. FT.	3.30E-02 ± 3.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.04E+04	CU. FT.	1.70E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/12	02/18	8.30E+03	CU. FT.	6.40E-03 ± 2.40E-03	02/25	L.T. 1.E-02
02/18	02/26	1.14E+04	CU. FT.	1.40E-02 ± 2.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.01E+04	CU. FT.	7.80E-03 ± 2.10E-03	03/15	L.T. 2.E-02
03/05	03/12	9.76E+03	CU. FT.	2.30E-02 ± 3.00E-03	03/20	L.T. 3.E-02
03/12	03/18	8.59E+03	CU. FT.	1.70E-02 ± 3.00E-03	03/25	L.T. 3.E-02
03/18	03/26	1.16E+04	CU. FT.	9.40E-03 ± 2.00E-03	04/02	L.T. 9.E-03
03/26	04/03	1.16E+04	CU. FT.	1.00E-02 ± 2.00E-03	04/11	L.T. 2.E-02
04/03	04/09	8.56E+03	CU. FT.	9.10E-03 ± 2.50E-03	04/17	L.T. 2.E-02
04/09	04/16	9.80E+03	CU. FT.	1.70E-02 ± 3.00E-03	04/24	L.T. 2.E-02
04/16	04/24	1.13E+04	CU. FT.	1.50E-02 ± 2.00E-03	05/01	L.T. 1.E-02
04/24	04/30	8.14E+03	CU. FT.	1.05E-02 ± 2.80E-03	05/09	L.T. 3.E-02
04/30	05/07	1.01E+04	CU. FT.	2.23E-02 ± 2.90E-03	05/20	L.T. 9.E-03
05/07	05/14	1.00E+04	CU. FT.	1.12E-02 ± 2.40E-03	06/15	L.T. 3.E-02
05/14	05/21	1.01E+04	CU. FT.	1.91E-02 ± 2.80E-03	06/05	L.T. 8.E-03
05/21	05/28	1.02E+04	CU. FT.	1.77E-02 ± 2.70E-03	06/05	L.T. 4.E-02
05/28	06/04	9.25E+03	CU. FT.	2.68E-02 ± 3.30E-03	06/19	L.T. 4.E-02
06/04	06/11	1.01E+04	CU. FT.	1.61E-02 ± 2.56E-03	06/22	L.T. 3.E-02
06/11	06/18	1.01E+04	CU. FT.	1.27E-02 ± 2.48E-03	06/26	L.T. 3.E-02
06/18	06/25	1.01E+04	CU. FT.	3.19E-02 ± 3.43E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 01

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.01E+04	CU. FT.	2.66E-02 ± 3.23E-03	07/24	L.T. 3.E-02
07/02	07/09	9.72E+03	CU. FT.	3.06E-02 ± 3.46E-03	07/25	L.T. 3.E-02
07/09	07/15	8.44E+03	CU. FT.	1.72E-02 ± 3.01E-03	08/08	L.T. 3.E-02
07/15	07/23	1.11E+04	CU. FT.	2.46E-02 ± 2.97E-03	08/10	L.T. 2.E-02
07/23	07/30	1.01E+04	CU. FT.	2.23E-02 ± 2.92E-03	08/19	L.T. 2.E-02
07/30	08/06	9.78E+03	CU. FT.	2.69E-02 ± 3.27E-03	08/21	L.T. 4.E-02
08/06	08/13	9.93E+03	CU. FT.	2.97E-02 ± 3.42E-03	08/27	L.T. 3.E-02
08/13	08/19	8.64E+03	CU. FT.	1.47E-02 ± 2.89E-03	08/27	L.T. 2.E-02
08/19	08/27	1.01E+04	CU. FT.	2.50E-02 ± 3.18E-03	09/05	L.T. 3.E-02
08/27	09/03	9.48E+03	CU. FT.	4.11E-02 ± 4.00E-03	09/19	L.T. 2.E-02
09/03	09/10	1.01E+04	CU. FT.	3.22E-02 ± 3.52E-03	09/25	L.T. 3.E-02
09/10	09/17	1.01E+04	CU. FT.	2.52E-02 ± 3.00E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	2.26E-02 ± 2.90E-03	10/08	L.T. 3.E-02
09/24	10/01	1.00E+04	CU. FT.	3.30E-02 ± 3.43E-03	10/10	L.T. 2.E-02
10/01	10/08	9.97E+03	CU. FT.	2.11E-02 ± 4.03E-03	10/25	L.T. 3.E-02
10/08	10/15	1.02E+04	CU. FT.	2.05E-02 ± 4.06E-03	11/11	L.T. 2.E-02
10/15	10/22	1.00E+04	CU. FT.	2.55E-02 ± 4.41E-03	11/13	L.T. 2.E-02
10/22	10/29	1.02E+04	CU. FT.	1.20E-02 ± 3.59E-03	11/16	L.T. 1.E-02
10/29	11/04	8.66E+03	CU. FT.	3.37E-02 ± 5.24E-03	12/05	L.T. 3.E-02
11/04	11/12	1.15E+04	CU. FT.	4.36E-02 ± 5.05E-03	12/11	L.T. 5.E-02
11/12	11/19	9.98E+03	CU. FT.	3.45E-02 ± 4.90E-03	12/13	L.T. 2.E-02
11/19	11/26	1.00E+04	CU. FT.	1.76E-02 ± 4.00E-03	12/19	L.T. 9.E-03
11/26	12/03	9.72E+03	CU. FT.	2.28E-02 ± 4.24E-03	12/22	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.36E-02 ± 4.96E-03	12/24	L.T. 8.E-03
12/10	12/17	1.00E+04	CU. FT.	4.45E-02 ± 5.65E-03	12/26	L.T. 1.E-02
12/17	12/23	8.70E+03	CU. FT.	2.09E-02 ± 4.24E-03	01/15	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	1.79E-02 ± 5.17E-03	01/06	L.T. 5.E-03

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 02

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	2.50E-02 ± 3.00E-03	01/15	L.T. 3.E-02
01/02	01/08	8.67E+03	CU. FT.	1.40E-02 ± 3.00E-03	01/17	L.T. 5.E-02
01/08	01/15	1.01E+04	CU. FT.	1.10E-02 ± 2.00E-03	01/24	L.T. 6.E-03
01/15	01/22	1.01E+04	CU. FT.	1.40E-02 ± 2.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.03E+04	CU. FT.	1.90E-02 ± 3.00E-03	02/11	L.T. 5.E-02
01/29	02/05	9.86E+03	CU. FT.	1.80E-02 ± 3.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.03E+04	CU. FT.	1.70E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/12	02/18	8.30E+03	CU. FT.	8.00E-03 ± 2.60E-03	02/25	L.T. 1.E-02
02/18	02/26	1.14E+04	CU. FT.	1.70E-02 ± 2.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.01E+04	CU. FT.	1.20E-02 ± 2.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	1.40E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.53E+03	CU. FT.	7.20E-03 ± 2.30E-03	03/25	L.T. 3.E-02
03/18	03/26	1.16E+04	CU. FT.	7.60E-03 ± 1.90E-03	04/02	L.T. 1.E-02
03/26	04/03	1.16E+04	CU. FT.	1.10E-02 ± 2.00E-03	04/11	L.T. 2.E-02
04/03	04/09	8.44E+03	CU. FT.	1.60E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	1.01E+04	CU. FT.	7.60E-03 ± 2.20E-03	04/24	L.T. 3.E-02
04/16	04/24	1.14E+04	CU. FT.	1.30E-02 ± 2.00E-03	05/01	L.T. 1.E-02
04/24	04/30	8.30E+03	CU. FT.	1.30E-02 ± 2.90E-03	05/09	L.T. 3.E-02
04/30	05/07	9.87E+03	CU. FT.	2.17E-02 ± 2.90E-03	05/20	L.T. 1.E-02
05/07	05/14	1.00E+04	CU. FT.	1.02E-02 ± 2.30E-03	06/15	L.T. 3.E-02
05/14	05/21	9.81E+03	CU. FT.	2.42E-02 ± 3.10E-03	06/05	L.T. 1.E-02
05/21	05/28	1.02E+04	CU. FT.	2.03E-02 ± 2.80E-03	06/05	L.T. 5.E-02
05/28	06/04	9.87E+03	CU. FT.	2.63E-02 ± 3.20E-03	06/19	L.T. 4.E-02
06/04	06/11	1.01E+04	CU. FT.	2.44E-02 ± 3.00E-03	06/22	L.T. 3.E-02
06/11	06/18	9.82E+03	CU. FT.	1.97E-02 ± 2.92E-03	06/26	L.T. 3.E-02
06/18	06/25	9.97E+03	CU. FT.	3.45E-02 ± 3.57E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 02

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.01E+04	CU. FT.	2.85E-02 ± 3.31E-03	07/24	L.T. 3.E-02
07/02	07/09	9.79E+03	CU. FT.	3.49E-02 ± 3.63E-03	07/25	L.T. 3.E-02
07/09	07/15	7.91E+03	CU. FT.	2.66E-02 ± 3.66E-03	08/08	L.T. 3.E-02
07/15	07/23	1.12E+04	CU. FT.	3.00E-02 ± 3.18E-03	08/10	L.T. 2.E-02
07/23	07/30	1.01E+04	CU. FT.	2.15E-02 ± 2.89E-03	08/19	L.T. 3.E-02
07/30	08/06	9.78E+03	CU. FT.	3.03E-02 ± 3.42E-03	08/21	L.T. 2.E-02
08/06	08/13	1.01E+04	CU. FT.	2.84E-02 ± 3.33E-03	08/27	L.T. 3.E-02
08/13	08/19	8.64E+03	CU. FT.	1.65E-02 ± 2.99E-03	08/27	L.T. 2.E-02
08/19	08/27	1.12E+04	CU. FT.	2.58E-02 ± 3.01E-03	09/05	L.T. 3.E-02
08/27	09/03	9.36E+03	CU. FT.	4.48E-02 ± 4.17E-03	09/19	L.T. 3.E-02
09/03	09/10	9.90E+03	CU. FT.	3.75E-02 ± 3.78E-03	09/25	L.T. 3.E-02
09/10	09/17	1.01E+04	CU. FT.	3.25E-02 ± 3.33E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	2.38E-02 ± 2.96E-03	10/09	L.T. 3.E-02
09/24	10/01	1.00E+04	CU. FT.	4.68E-02 ± 3.98E-03	10/10	L.T. 2.E-02
10/01	10/08	9.97E+03	CU. FT.	2.32E-02 ± 4.18E-03	10/25	L.T. 3.E-02
10/08	10/15	1.02E+04	CU. FT.	2.53E-02 ± 4.39E-03	11/11	L.T. 2.E-02
10/15	10/22	9.99E+03	CU. FT.	1.24E-02 ± 3.43E-03	11/14	L.T. 2.E-02
10/22	10/29	1.02E+04	CU. FT.	1.86E-02 ± 4.09E-03	11/16	L.T. 1.E-02
10/29	11/04	8.60E+03	CU. FT.	3.46E-02 ± 5.32E-03	12/05	L.T. 3.E-02
11/04	11/12	1.15E+04	CU. FT.	5.02E-02 ± 5.37E-03	12/11	L.T. 5.E-02
11/12	11/19	9.99E+03	CU. FT.	3.38E-02 ± 4.85E-03	12/13	L.T. 1.E-02
11/19	11/26	1.00E+04	CU. FT.	2.01E-02 ± 4.19E-03	12/19	L.T. 2.E-02
11/26	12/03	1.01E+04	CU. FT.	2.42E-02 ± 4.24E-03	12/22	L.T. 2.E-02
12/03	12/10	1.01E+04	CU. FT.	3.49E-02 ± 5.04E-03	12/24	L.T. 8.E-03
12/10	12/17	1.00E+04	CU. FT.	4.54E-02 ± 5.70E-03	12/26	L.T. 1.E-02
12/17	12/23	8.70E+03	CU. FT.	2.25E-02 ± 4.36E-03	01/15	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	2.01E-02 ± 5.28E-03	01/06	L.T. 5.E-03

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 03

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.02E+04	CU. FT.	3.20E-02 ± 3.00E-03	01/15	L.T. 4.E-02
01/02	01/08	8.67E+03	CU. FT.	1.80E-02 ± 3.00E-03	01/17	L.T. 5.E-02
01/08	01/15	9.89E+03	CU. FT.	1.20E-02 ± 2.00E-03	01/24	L.T. 1.E-02
01/15	01/22	9.92E+03	CU. FT.	2.50E-02 ± 3.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.04E+04	CU. FT.	2.10E-02 ± 3.00E-03	02/11	L.T. 5.E-02
01/29	02/05	9.93E+03	CU. FT.	3.50E-02 ± 4.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.02E+04	CU. FT.	1.50E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/12	02/18	8.29E+03	CU. FT.	8.00E-03 ± 2.60E-03	02/25	L.T. 2.E-02
02/18	02/26	1.16E+04	CU. FT.	1.50E-02 ± 2.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.01E+04	CU. FT.	1.40E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	1.80E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.71E+03	CU. FT.	2.10E-02 ± 3.00E-03	03/25	L.T. 3.E-02
03/18	03/26	1.16E+04	CU. FT.	1.40E-02 ± 2.00E-03	04/02	L.T. 1.E-02
03/26	04/03	1.17E+04	CU. FT.	7.30E-03 ± 1.90E-03	04/11	L.T. 2.E-02
04/03	04/09	8.51E+03	CU. FT.	1.60E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	9.86E+03	CU. FT.	1.30E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.15E+04	CU. FT.	1.50E-02 ± 2.00E-03	05/01	L.T. 1.E-02
04/24	04/30	8.33E+03	CU. FT.	1.51E-02 ± 3.00E-03	05/09	L.T. 3.E-02
04/30	05/07	1.00E+04	CU. FT.	2.02E-02 ± 2.80E-03	05/20	L.T. 1.E-02
05/07	05/14	1.00E+04	CU. FT.	1.28E-02 ± 2.50E-03	06/15	L.T. 3.E-02
05/14	05/21	1.01E+04	CU. FT.	2.62E-02 ± 3.20E-03	06/05	L.T. 1.E-02
05/21	05/28	1.02E+04	CU. FT.	1.86E-02 ± 2.70E-03	06/05	L.T. 5.E-02
05/28	06/04	1.00E+04	CU. FT.	1.69E-02 ± 2.70E-03	06/19	L.T. 3.E-02
06/04	06/11	1.01E+04	CU. FT.	2.57E-02 ± 3.06E-03	06/22	L.T. 3.E-02
06/11	06/18	9.92E+03	CU. FT.	1.84E-02 ± 2.83E-03	06/26	L.T. 3.E-02
06/18	06/25	9.88E+03	CU. FT.	3.89E-02 ± 3.76E-03	07/02	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 03

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	9.65E+03	CU. FT.	2.82E-02 ± 3.39E-03	07/24	L.T. 3.E-02
07/02	07/09	9.54E+03	CU. FT.	3.31E-02 ± 3.61E-03	07/25	L.T. 3.E-02
07/09	07/15	8.79E+03	CU. FT.	2.54E-02 ± 3.37E-03	08/08	L.T. 2.E-02
07/15	07/23	9.67E+03	CU. FT.	2.90E-02 ± 3.44E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	2.61E-02 ± 3.07E-03	08/19	L.T. 3.E-02
07/30	08/06	9.83E+03	CU. FT.	2.08E-02 ± 2.96E-03	08/21	L.T. 4.E-02
08/06	08/13	1.00E+04	CU. FT.	3.08E-02 ± 3.45E-03	08/27	L.T. 3.E-02
08/13	08/19	8.64E+03	CU. FT.	1.80E-02 ± 3.07E-03	08/27	L.T. 1.E-02
08/19	08/27	1.12E+04	CU. FT.	1.49E-02 ± 2.48E-03	09/05	L.T. 3.E-02
08/27	09/03	9.71E+03	CU. FT.	3.77E-02 ± 3.81E-03	09/19	L.T. 2.E-02
09/03	09/10	9.99E+03	CU. FT.	3.45E-02 ± 3.63E-03	09/25	L.T. 3.E-02
09/10	09/17	9.83E+03	CU. FT.	2.80E-02 ± 3.18E-03	10/12	L.T. 3.E-02
09/17	09/24	1.01E+04	CU. FT.	1.85E-02 ± 2.68E-03	10/09	L.T. 3.E-02
09/24	10/01	1.02E+04	CU. FT.	4.25E-02 ± 3.78E-03	10/10	L.T. 2.E-02
10/01	10/08	1.01E+04	CU. FT.	1.99E-02 ± 3.91E-03	10/25	L.T. 3.E-02
10/08	10/15	9.99E+03	CU. FT.	2.83E-02 ± 4.64E-03	11/11	L.T. 2.E-02
10/15	10/22	9.85E+03	CU. FT.	2.01E-02 ± 4.08E-03	11/14	L.T. 2.E-02
10/22	10/29	1.02E+04	CU. FT.	1.74E-02 ± 4.00E-03	11/16	L.T. 1.E-02
10/29	11/04	8.61E+03	CU. FT.	2.63E-02 ± 4.75E-03	12/06	L.T. 3.E-02
11/04	11/12	1.15E+04	CU. FT.	3.38E-02 ± 4.52E-03	12/11	L.T. 5.E-02
11/12	11/19	9.92E+03	CU. FT.	2.58E-02 ± 4.35E-03	12/13	L.T. 6.E-02
11/19	11/26	9.98E+03	CU. FT.	1.36E-02 ± 3.70E-03	12/19	L.T. 3.E-02
11/26	12/03	1.02E+04	CU. FT.	2.32E-02 ± 4.14E-03	12/22	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.53E-02 ± 5.07E-03	12/24	L.T. 8.E-03
12/10	12/17	1.00E+04	CU. FT.	4.23E-02 ± 5.53E-03	12/26	L.T. 1.E-02
12/17	12/23	8.71E+03	CU. FT.	2.51E-02 ± 4.56E-03	01/15	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	1.57E-02 ± 5.05E-03	01/06	L.T. 5.E-03

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 04

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.02E+04	CU. FT.	2.00E-02 ± 3.00E-03	01/09	L.T. 4.E-02
01/02	01/08	8.71E+03	CU. FT.	2.80E-02 ± 4.00E-03	01/14	L.T. 3.E-02
01/08	01/15	1.01E+04	CU. FT.	9.40E-03 ± 2.30E-03	01/18	L.T. 1.E-02
01/15	01/22	1.01E+04	CU. FT.	2.10E-02 ± 3.00E-03	01/24	L.T. 1.E-02
01/22	01/29	1.02E+04	CU. FT.	1.90E-02 ± 3.00E-03	02/04	L.T. 5.E-02
01/29	02/05	8.83E+03	CU. FT.	3.30E-02 ± 4.00E-03	02/12	L.T. 2.E-02
02/05	02/12	1.03E+04	CU. FT.	1.80E-02 ± 3.00E-03	02/19	L.T. 1.E-02
02/12	02/18	8.30E+03	CU. FT.	1.20E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/18	02/26	1.14E+04	CU. FT.	2.10E-02 ± 3.00E-03	02/28	L.T. 1.E-02
02/26	03/05	1.01E+04	CU. FT.	1.60E-02 ± 3.00E-03	03/11	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	2.60E-02 ± 3.00E-03	03/14	L.T. 2.E-02
03/12	03/18	8.69E+03	CU. FT.	1.50E-02 ± 3.00E-03	03/21	L.T. 3.E-02
03/18	03/26	1.14E+04	CU. FT.	1.10E-02 ± 2.00E-03	03/28	L.T. 1.E-02
03/26	04/03	1.17E+04	CU. FT.	8.90E-03 ± 2.00E-03	04/11	L.T. 1.E-02
04/03	04/09	8.41E+03	CU. FT.	2.20E-02 ± 3.00E-03	04/17	L.T. 1.E-02
04/09	04/16	1.01E+04	CU. FT.	1.60E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.12E+04	CU. FT.	1.40E-02 ± 2.00E-03	05/01	L.T. 1.E-02
04/24	04/30	8.45E+03	CU. FT.	1.07E-02 ± 2.70E-03	05/09	L.T. 3.E-02
04/30	05/07	1.01E+04	CU. FT.	1.84E-02 ± 2.70E-03	05/20	L.T. 1.E-02
05/07	05/14	1.01E+04	CU. FT.	1.42E-02 ± 2.50E-03	06/15	L.T. 2.E-02
05/14	05/21	1.00E+04	CU. FT.	2.14E-02 ± 3.00E-03	06/05	L.T. 1.E-02
05/21	05/28	1.02E+04	CU. FT.	2.05E-02 ± 2.80E-03	06/15	L.T. 5.E-02
05/28	06/04	9.69E+03	CU. FT.	2.90E-02 ± 3.40E-03	06/19	L.T. 4.E-02
06/04	06/11	1.01E+04	CU. FT.	2.48E-02 ± 3.02E-03	06/22	L.T. 2.E-02
06/11	06/18	1.01E+04	CU. FT.	1.62E-02 ± 2.68E-03	06/26	L.T. 3.E-02
06/18	06/25	9.26E+03	CU. FT.	3.19E-02 ± 3.61E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 04

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.02E+04	CU. FT.	2.29E-02 ± 3.03E-03	07/24	L.T. 3.E-02
07/02	07/09	9.60E+03	CU. FT.	3.03E-02 ± 3.48E-03	07/25	L.T. 2.E-02
07/09	07/15	8.18E+03	CU. FT.	2.16E-02 ± 3.32E-03	08/08	L.T. 3.E-02
07/15	07/23	1.00E+04	CU. FT.	2.27E-02 ± 3.08E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	2.15E-02 ± 2.85E-03	08/19	L.T. 3.E-02
07/30	08/06	9.80E+03	CU. FT.	2.73E-02 ± 3.28E-03	08/21	L.T. 4.E-02
08/06	08/13	1.01E+04	CU. FT.	2.73E-02 ± 3.28E-03	08/27	L.T. 3.E-02
08/13	08/19	8.64E+03	CU. FT.	1.66E-02 ± 3.00E-03	08/27	L.T. 2.E-02
08/19	08/27	4.44E+03	CU. FT.	1.35E-02 ± 4.80E-03	09/05	L.T. 5.E-02
08/27	09/03	9.57E+03	CU. FT.	3.86E-02 ± 3.87E-03	09/19	L.T. 2.E-02
09/03	09/10	9.98E+03	CU. FT.	3.45E-02 ± 3.64E-03	09/25	L.T. 2.E-02
09/10	09/17	9.98E+03	CU. FT.	2.97E-02 ± 3.23E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	2.18E-02 ± 2.86E-03	10/09	L.T. 3.E-02
09/24	10/01	1.01E+04	CU. FT.	3.77E-02 ± 3.61E-03	10/10	L.T. 2.E-02
10/01	10/08	1.01E+04	CU. FT.	1.92E-02 ± 3.85E-03	10/25	L.T. 3.E-02
10/08	10/15	1.01E+04	CU. FT.	2.74E-02 ± 4.55E-03	11/11	L.T. 2.E-02
10/15	10/22	9.75E+03	CU. FT.	2.40E-02 ± 4.38E-03	11/14	L.T. 2.E-02
10/22	10/29	1.01E+04	CU. FT.	2.25E-02 ± 4.39E-03	11/16	L.T. 1.E-02
10/29	11/04	8.60E+03	CU. FT.	3.32E-02 ± 5.23E-03	12/06	L.T. 3.E-02
11/04	11/12	1.15E+04	CU. FT.	5.12E-02 ± 5.42E-03	12/11	L.T. 5.E-02
11/12	11/19	9.98E+03	CU. FT.	2.71E-02 ± 4.43E-03	12/13	L.T. 6.E-02
11/19	11/26	9.97E+03	CU. FT.	1.28E-02 ± 3.64E-03	12/19	L.T. 3.E-02
11/26	12/03	1.01E+04	CU. FT.	1.93E-02 ± 3.89E-03	12/22	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.71E-02 ± 5.17E-03	12/24	L.T. 8.E-03
12/10	12/17	1.00E+04	CU. FT.	4.73E-02 ± 5.80E-03	12/27	L.T. 1.E-02
12/17	12/23	8.72E+03	CU. FT.	2.53E-02 ± 4.57E-03	01/15	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	1.30E-02 ± 4.91E-03	01/06	L.T. 5.E-03

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 05

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.02E+04	CU. FT.	2.70E-02 ± 3.00E-03	01/15	L.T. 4.E-02
01/02	01/08	8.71E+03	CU. FT.	2.70E-02 ± 3.00E-03	01/17	L.T. 5.E-02
01/08	01/15	1.01E+04	CU. FT.	1.10E-02 ± 2.00E-03	01/24	L.T. 1.E-02
01/15	01/22	9.87E+03	CU. FT.	2.20E-02 ± 3.00E-03	02/01	L.T. 2.E-02
01/22	01/29	1.02E+04	CU. FT.	2.30E-02 ± 3.00E-03	02/11	L.T. 2.E-02
01/29	02/05	9.92E+03	CU. FT.	3.10E-02 ± 3.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.03E+04	CU. FT.	2.10E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/12	02/18	8.30E+03	CU. FT.	9.80E-03 ± 2.70E-03	02/25	L.T. 2.E-02
02/18	02/26	1.16E+04	CU. FT.	1.90E-02 ± 3.00E-03	03/08	L.T. 9.E-03
02/26	03/05	1.01E+04	CU. FT.	2.00E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	2.40E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.71E+03	CU. FT.	1.40E-02 ± 3.00E-03	03/25	L.T. 3.E-02
03/18	03/26	1.14E+04	CU. FT.	1.30E-02 ± 2.00E-03	04/02	L.T. 1.E-02
03/26	04/03	1.17E+04	CU. FT.	1.50E-02 ± 2.00E-03	04/11	L.T. 2.E-02
04/03	04/09	8.53E+03	CU. FT.	1.90E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	1.01E+04	CU. FT.	1.30E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.13E+04	CU. FT.	1.50E-02 ± 2.00E-03	05/01	L.T. 7.E-03
04/24	04/30	8.45E+03	CU. FT.	1.35E-02 ± 2.90E-03	05/09	L.T. 2.E-02
04/30	05/07	1.01E+04	CU. FT.	1.88E-02 ± 2.70E-03	05/20	L.T. 1.E-02
05/07	05/14	1.01E+04	CU. FT.	1.38E-02 ± 2.50E-03	06/15	L.T. 3.E-02
05/14	05/21	1.01E+04	CU. FT.	2.31E-02 ± 3.00E-03	06/05	L.T. 1.E-02
05/21	05/28	1.02E+04	CU. FT.	1.78E-02 ± 2.70E-03	06/15	L.T. 5.E-02
05/28	06/04	1.00E+04	CU. FT.	1.88E-02 ± 2.80E-03	06/19	L.T. 2.E-02
06/04	06/11	1.01E+04	CU. FT.	2.11E-02 ± 2.83E-03	06/22	L.T. 3.E-02
06/11	06/18	1.01E+04	CU. FT.	1.74E-02 ± 2.75E-03	06/26	L.T. 4.E-02
06/18	06/25	1.00E+04	CU. FT.	2.79E-02 ± 3.27E-03	07/02	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 05

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	SAMPLE UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.02E+04	CU. FT.	2.39E-02 ± 3.08E-03	07/24	L.T. 2.E-02
07/02	07/09	1.01E+04	CU. FT.	2.65E-02 ± 3.20E-03	07/25	L.T. 3.E-02
07/09	07/15	8.83E+03	CU. FT.	2.45E-02 ± 3.31E-03	08/09	L.T. 2.E-02
07/15	07/23	1.10E+04	CU. FT.	2.42E-02 ± 2.96E-03	08/10	L.T. 1.E-02
07/23	07/30	1.03E+04	CU. FT.	2.42E-02 ± 2.98E-03	08/20	L.T. 3.E-02
07/30	08/06	9.80E+03	CU. FT.	2.87E-02 ± 3.34E-03	08/21	L.T. 4.E-02
08/06	08/13	9.93E+03	CU. FT.	2.31E-02 ± 3.12E-03	08/27	L.T. 2.E-02
08/13	08/19	8.64E+03	CU. FT.	1.62E-02 ± 2.97E-03	08/27	L.T. 2.E-02
08/19	08/27	1.16E+04	CU. FT.	2.27E-02 ± 2.81E-03	09/05	L.T. 3.E-02
08/27	09/03	1.01E+04	CU. FT.	3.48E-02 ± 3.60E-03	09/19	L.T. 2.E-02
09/03	09/10	1.01E+04	CU. FT.	3.66E-02 ± 3.70E-03	09/25	L.T. 2.E-02
09/10	09/17	9.98E+03	CU. FT.	3.34E-02 ± 3.39E-03	10/12	L.T. 3.E-02
09/17	09/24	1.01E+04	CU. FT.	1.96E-02 ± 2.74E-03	10/09	L.T. 2.E-02
09/24	10/01	1.02E+04	CU. FT.	3.65E-02 ± 3.54E-03	10/10	L.T. 1.E-02
10/01	10/08	1.01E+04	CU. FT.	1.92E-02 ± 3.85E-03	10/25	L.T. 2.E-02
10/08	10/15	1.01E+04	CU. FT.	2.45E-02 ± 4.37E-03	11/11	L.T. 9.E-03
10/15	10/22	9.83E+02	CU. FT.	2.14E-02 ± 4.17E-03	11/14	L.T. 1.E-02
10/22	10/29	1.01E+04	CU. FT.	L.T. 4.E-03	11/16	L.T. 8.E-03
10/29	11/04	8.60E+03	CU. FT.	2.22E-02 ± 4.45E-03	12/06	L.T. 2.E-02
11/04	11/12	1.16E+04	CU. FT.	3.23E-02 ± 4.41E-03	12/11	L.T. 3.E-02
11/12	11/19	9.97E+03	CU. FT.	2.37E-02 ± 4.20E-03	12/13	L.T. 6.E-02
11/19	11/26	9.97E+03	CU. FT.	1.59E-02 ± 3.88E-03	12/19	L.T. 3.E-02
11/26	12/03	9.91E+03	CU. FT.	1.73E-02 ± 3.78E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.09E-02 ± 4.81E-03	12/24	L.T. 8.E-03
12/10	12/17	1.00E+04	CU. FT.	3.23E-02 ± 4.96E-03	12/27	L.T. 1.E-02
12/17	12/23	8.72E+03	CU. FT.	2.04E-02 ± 4.18E-03	01/15	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	1.58E-02 ± 5.06E-03	01/06	L.T. 5.E-03

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 06

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.02E+04	CU. FT.	2.40E-02 ± 3.00E-03	01/15	L.T. 3.E-02
01/02	01/08	8.71E+03	CU. FT.	2.70E-02 ± 3.00E-03	01/17	L.T. 4.E-02
01/08	01/15	1.01E+04	CU. FT.	1.30E-02 ± 3.00E-03	01/24	L.T. 1.E-02
01/15	01/22	8.90E+03	CU. FT.	2.90E-02 ± 3.00E-03	02/01	L.T. 2.E-02
01/22	01/29	1.02E+04	CU. FT.	2.40E-02 ± 3.00E-03	02/11	L.T. 4.E-02
01/29	02/05	9.92E+03	CU. FT.	2.10E-02 ± 3.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.03E+04	CU. FT.	1.20E-02 ± 2.00E-03	02/21	L.T. 3.E-02
02/12	02/18	8.30E+03	CU. FT.	1.10E-02 ± 3.00E-03	02/25	L.T. 2.E-02
02/18	02/26	1.16E+04	CU. FT.	1.50E-02 ± 2.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.00E+04	CU. FT.	1.90E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	1.40E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.24E+03	CU. FT.	1.60E-02 ± 3.00E-03	03/25	L.T. 4.E-02
03/18	03/26	1.14E+04	CU. FT.	1.60E-02 ± 2.00E-03	04/02	L.T. 9.E-03
03/26	04/03	1.17E+04	CU. FT.	1.20E-02 ± 2.00E-03	04/11	L.T. 2.E-02
04/03	04/09	8.43E+03	CU. FT.	1.10E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	1.01E+04	CU. FT.	1.70E-02 ± 3.00E-03	04/24	L.T. 2.E-02
04/16	04/24	1.12E+04	CU. FT.	1.40E-02 ± 2.00E-03	05/01	L.T. 2.E-02
04/24	04/30	8.45E+03	CU. FT.	1.08E-02 ± 2.70E-03	05/09	L.T. 2.E-02
04/30	05/07	1.01E+04	CU. FT.	1.63E-02 ± 2.50E-03	05/20	L.T. 2.E-02
05/07	05/14	1.01E+04	CU. FT.	1.18E-02 ± 2.40E-03	06/15	L.T. 2.E-02
05/14	05/21	1.01E+04	CU. FT.	1.92E-02 ± 2.80E-03	06/05	L.T. 3.E-02
05/21	05/28	1.02E+04	CU. FT.	1.58E-02 ± 2.60E-03	06/15	L.T. 5.E-02
05/28	06/04	9.50E+03	CU. FT.	2.52E-02 ± 3.20E-03	06/19	L.T. 3.E-02
06/04	06/11	1.01E+04	CU. FT.	2.36E-02 ± 2.96E-03	06/22	L.T. 4.E-02
06/11	06/18	1.01E+04	CU. FT.	1.70E-02 ± 2.73E-03	06/26	L.T. 4.E-02
06/18	06/25	9.51E+03	CU. FT.	3.61E-02 ± 3.74E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 06

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.02E+04	CU. FT.	2.71E-02 ± 3.23E-03	07/24	L.T. 3.E-02
07/02	07/09	9.53E+03	CU. FT.	2.96E-02 ± 3.46E-03	07/25	L.T. 2.E-02
07/09	07/15	8.50E+03	CU. FT.	2.28E-02 ± 3.30E-03	08/09	L.T. 3.E-02
07/15	07/23	9.86E+03	CU. FT.	2.64E-02 ± 3.28E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	2.17E-02 ± 2.86E-03	08/20	L.T. 2.E-02
07/30	08/06	9.80E+03	CU. FT.	1.95E-02 ± 2.90E-03	08/21	L.T. 3.E-02
08/06	08/13	9.40E+03	CU. FT.	2.85E-02 ± 3.48E-03	08/27	L.T. 2.E-02
08/13	08/19	8.64E+03	CU. FT.	1.03E-02 ± 2.61E-03	08/27	L.T. 2.E-02
08/19	08/27	1.16E+04	CU. FT.	2.41E-02 ± 2.88E-03	09/05	L.T. 2.E-02
08/27	09/03	9.94E+03	CU. FT.	2.98E-02 ± 3.42E-03	09/20	L.T. 2.E-02
09/03	09/10	1.01E+04	CU. FT.	3.36E-02 ± 3.58E-03	09/25	L.T. 2.E-02
09/10	09/17	9.98E+03	CU. FT.	2.78E-02 ± 3.14E-03	10/12	L.T. 3.E-02
09/17	09/24	1.01E+04	CU. FT.	1.25E-02 ± 2.33E-03	10/09	L.T. 3.E-02
09/24	10/01	1.02E+04	CU. FT.	3.53E-02 ± 3.49E-03	10/10	L.T. 4.E-02
10/01	10/08	1.01E+04	CU. FT.	1.68E-02 ± 3.67E-03	10/25	L.T. 2.E-02
10/08	10/15	1.01E+04	CU. FT.	2.14E-02 ± 4.15E-03	11/11	L.T. 3.E-02
10/15	10/22	9.84E+03	CU. FT.	2.27E-02 ± 4.26E-03	11/14	L.T. 5.E-02
10/22	10/29	1.01E+04	CU. FT.	1.80E-02 ± 4.08E-03	11/16	L.T. 3.E-02
10/29	11/04	8.60E+03	CU. FT.	2.91E-02 ± 4.95E-03	12/06	L.T. 2.E-02
11/04	11/12	1.16E+04	CU. FT.	4.80E-02 ± 5.24E-03	12/11	L.T. 2.E-02
11/12	11/19	9.97E+03	CU. FT.	3.28E-02 ± 4.80E-03	12/13	L.T. 6.E-02
11/19	11/26	9.97E+03	CU. FT.	1.50E-02 ± 3.81E-03	12/19	L.T. 3.E-02
11/26	12/03	1.01E+04	CU. FT.	2.61E-02 ± 4.37E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.52E-02 ± 5.06E-03	12/24	L.T. 2.E-02
12/10	12/17	1.00E+04	CU. FT.	4.24E-02 ± 5.54E-03	12/27	L.T. 2.E-02
12/17	12/23	8.71E+03	CU. FT.	3.04E-02 ± 4.94E-03	01/15	L.T. 2.E-02
12/23	12/31	1.14E+04	CU. FT.	1.65E-02 ± 5.09E-03	01/06	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 07

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	2.80E-02 ± 3.00E-03	01/15	L.T. 3.E-02
01/02	01/08	8.67E+03	CU. FT.	2.00E-02 ± 3.00E-03	01/17	L.T. 4.E-02
01/08	01/15	1.01E+04	CU. FT.	1.40E-02 ± 3.00E-03	01/24	L.T. 1.E-02
01/15	01/22	1.01E+04	CU. FT.	1.60E-02 ± 3.00E-03	02/01	L.T. 2.E-02
01/22	01/29	1.02E+04	CU. FT.	2.90E-02 ± 3.00E-03	02/11	L.T. 4.E-02
01/29	02/05	9.86E+03	CU. FT.	3.30E-02 ± 3.00E-03	02/15	L.T. 1.E-02
02/05	02/12	1.03E+04	CU. FT.	1.60E-02 ± 3.00E-03	02/21	L.T. 3.E-02
02/12	02/18	8.20E+03	CU. FT.	1.30E-02 ± 3.00E-03	02/25	L.T. 2.E-02
02/18	02/26	1.14E+04	CU. FT.	1.50E-02 ± 2.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.01E+04	CU. FT.	1.30E-02 ± 2.00E-03	03/15	L.T. 2.E-02
03/05	03/12	9.82E+03	CU. FT.	2.90E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.32E+03	CU. FT.	1.70E-02 ± 3.00E-03	03/25	L.T. 4.E-02
03/18	03/26	1.16E+04	CU. FT.	7.00E-03 ± 1.80E-03	04/02	L.T. 1.E-02
03/26	04/03	1.16E+04	CU. FT.	6.80E-03 ± 1.80E-03	04/11	L.T. 2.E-02
04/03	04/09	8.56E+03	CU. FT.	1.60E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	1.00E+04	CU. FT.	1.70E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.16E+04	CU. FT.	1.50E-02 ± 2.00E-03	05/01	L.T. 1.E-02
04/24	04/30	8.23E+03	CU. FT.	4.36E-03 ± 2.31E-03	05/09	L.T. 2.E-02
04/30	05/07	9.98E+03	CU. FT.	1.11E-02 ± 2.20E-03	05/20	L.T. 2.E-02
05/07	05/14	1.00E+04	CU. FT.	6.20E-03 ± 2.04E-03	06/15	L.T. 2.E-02
05/14	05/21	9.96E+03	CU. FT.	1.30E-02 ± 2.50E-03	06/05	L.T. 3.E-02
05/21	05/28	9.98E+03	CU. FT.	6.89E-03 ± 2.06E-03	06/15	L.T. 5.E-02
05/28	06/04	9.74E+03	CU. FT.	1.53E-02 ± 2.60E-03	06/19	L.T. 2.E-02
06/04	06/11	9.86E+03	CU. FT.	1.06E-02 ± 2.26E-03	06/22	L.T. 3.E-02
06/11	06/18	1.00E+04	CU. FT.	1.09E-02 ± 2.39E-03	06/26	L.T. 4.E-02
06/18	06/25	9.85E+03	CU. FT.	1.73E-02 ± 2.77E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 07

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	9.93E+03	CU. FT.	6.32E-03 ± 2.13E-03	07/24	L.T. 3.E-02
07/02	07/09	9.66E+03	CU. FT.	1.99E-02 ± 2.96E-03	07/25	L.T. 3.E-02
07/09	07/15	8.66E+03	CU. FT.	1.52E-02 ± 2.84E-03	08/09	L.T. 2.E-02
07/15	07/23	1.11E+04	CU. FT.	1.15E-02 ± 2.30E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	7.40E-03 ± 2.02E-03	08/20	L.T. 2.E-02
07/30	08/06	9.78E+03	CU. FT.	1.31E-02 ± 2.55E-03	08/21	L.T. 2.E-02
08/06	08/13	1.01E+04	CU. FT.	1.15E-02 ± 2.46E-03	08/27	L.T. 4.E-02
08/13	08/19	8.64E+03	CU. FT.	4.37E-03 ± 2.19E-03	08/27	L.T. 2.E-02
08/19	08/27	1.16E+04	CU. FT.	3.73E-03 ± 1.74E-03	09/05	L.T. 2.E-02
08/27	09/03	1.01E+04	CU. FT.	1.14E-02 ± 2.46E-03	09/20	L.T. 2.E-02
09/03	09/10	9.76E+03	CU. FT.	2.13E-02 ± 3.09E-03	09/25	L.T. 3.E-02
09/10	09/17	1.01E+04	CU. FT.	9.67E-03 ± 2.10E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	1.10E-02 ± 2.23E-03	10/09	L.T. 3.E-02
09/24	10/01	1.01E+04	CU. FT.	8.35E-03 ± 2.10E-03	10/10	L.T. 4.E-02
10/01	10/08	9.97E+03	CU. FT.	6.09E-03 ± 2.70E-03	10/25	L.T. 2.E-02
10/08	10/15	1.02E+04	CU. FT.	3.95E-03 ± 2.60E-03	11/11	L.T. 4.E-02
10/15	10/22	9.99E+03	CU. FT.	6.37E-03 ± 2.86E-03	11/14	L.T. 5.E-02
10/22	10/29	1.02E+04	CU. FT.	L.T. 4.E-03	11/16	L.T. 3.E-02
10/29	11/04	8.60E+03	CU. FT.	2.43E-02 ± 4.60E-03	12/06	L.T. 2.E-02
11/04	11/12	1.15E+04	CU. FT.	3.69E-02 ± 4.70E-03	12/11	L.T. 2.E-02
11/12	11/19	9.99E+03	CU. FT.	8.74E-03 ± 2.95E-03	12/13	L.T. 4.E-02
11/19	11/26	1.00E+04	CU. FT.	1.64E-02 ± 3.92E-03	12/19	L.T. 1.E-02
11/26	12/03	1.01E+04	CU. FT.	1.89E-02 ± 3.85E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	1.90E-02 ± 4.02E-03	12/25	L.T. 2.E-02
12/10	12/17	1.00E+04	CU. FT.	2.26E-02 ± 4.34E-03	12/27	L.T. 2.E-02
12/17	12/23	8.49E+03	CU. FT.	1.97E-02 ± 4.20E-03	01/16	L.T. 1.E-02
12/23	12/31	1.14E+04	CU. FT.	1.19E-02 ± 3.22E-03	01/06	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 08

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	2.60E-02 ± 3.00E-03	01/15	L.T. 2.E-02
01/02	01/08	8.76E+03	CU. FT.	2.70E-02 ± 3.00E-03	01/17	L.T. 3.E-02
01/08	01/15	9.98E+03	CU. FT.	1.10E-02 ± 2.00E-03	01/24	L.T. 1.E-02
01/15	01/22	1.01E+04	CU. FT.	2.00E-02 ± 3.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.03E+04	CU. FT.	2.10E-02 ± 3.00E-03	02/11	L.T. 4.E-02
01/29	02/05	9.70E+03	CU. FT.	2.60E-02 ± 3.00E-03	02/15	L.T. 2.E-02
02/05	02/12	1.01E+04	CU. FT.	2.20E-02 ± 3.00E-03	02/21	L.T. 3.E-02
02/12	02/18	8.30E+03	CU. FT.	9.20E-03 ± 2.60E-03	02/25	L.T. 2.E-02
02/18	02/26	1.12E+04	CU. FT.	2.40E-02 ± 3.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.00E+04	CU. FT.	1.60E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	9.94E+03	CU. FT.	2.30E-02 ± 3.00E-03	03/20	L.T. 1.E-02
03/12	03/18	8.44E+03	CU. FT.	1.50E-02 ± 3.00E-03	03/25	L.T. 4.E-02
03/18	03/26	1.12E+04	CU. FT.	1.80E-02 ± 3.00E-03	04/02	L.T. 1.E-02
03/26	04/03	1.16E+04	CU. FT.	1.20E-02 ± 2.00E-03	04/11	L.T. 9.E-03
04/03	04/09	8.46E+03	CU. FT.	2.20E-02 ± 3.00E-03	04/17	L.T. 1.E-02
04/09	04/16	9.42E+03	CU. FT.	1.50E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.18E+04	CU. FT.	1.70E-02 ± 2.00E-03	05/01	L.T. 2.E-02
04/24	04/30	8.27E+03	CU. FT.	1.25E-02 ± 2.90E-03	05/09	L.T. 2.E-02
04/30	05/07	1.01E+04	CU. FT.	2.07E-02 ± 2.80E-03	05/20	L.T. 2.E-02
05/07	05/14	1.00E+04	CU. FT.	1.64E-02 ± 2.70E-03	06/15	L.T. 2.E-02
05/14	05/21	1.01E+03	CU. FT.	2.08E-02 ± 2.90E-03	06/05	L.T. 2.E-02
05/21	05/28	1.03E+04	CU. FT.	2.02E-02 ± 2.80E-03	06/15	L.T. 3.E-02
05/28	06/04	9.42E+03	CU. FT.	2.99E-02 ± 3.50E-03	06/19	L.T. 3.E-02
06/04	06/11	1.01E+04	CU. FT.	2.32E-02 ± 2.94E-03	06/22	L.T. 4.E-02
06/11	06/18	1.00E+04	CU. FT.	2.25E-02 ± 3.03E-03	06/26	L.T. 4.E-02
06/18	06/25	9.06E+03	CU. FT.	2.42E-02 ± 3.29E-03	07/02	L.T. 2.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 08

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.02E+04	CU. FT.	2.45E-02 ± 3.11E-03	07/24	L.T. 3.E-02
07/02	07/09	1.01E+04	CU. FT.	3.06E-02 ± 3.39E-03	07/25	L.T. 3.E-02
07/09	07/15	8.23E+03	CU. FT.	2.65E-02 ± 3.56E-03	08/09	L.T. 3.E-02
07/15	07/23	1.13E+04	CU. FT.	2.71E-02 ± 3.04E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	2.59E-02 ± 3.06E-03	08/20	L.T. 1.E-02
07/30	08/06	9.80E+03	CU. FT.	2.79E-02 ± 3.30E-03	08/21	L.T. 3.E-02
08/06	08/13	1.01E+04	CU. FT.	3.14E-02 ± 3.46E-03	08/27	L.T. 4.E-02
08/13	08/19	8.63E+03	CU. FT.	1.53E-02 ± 2.93E-03	08/27	L.T. 2.E-02
08/19	08/27	1.16E+04	CU. FT.	2.11E-02 ± 2.74E-03	09/05	L.T. 2.E-02
08/27	09/03	9.87E+03	CU. FT.	4.31E-02 ± 3.98E-03	09/20	L.T. 3.E-02
09/03	09/10	9.99E+03	CU. FT.	3.56E-02 ± 3.68E-03	09/25	L.T. 2.E-02
09/10	09/17	1.01E+04	CU. FT.	2.99E-02 ± 3.22E-03	10/12	L.T. 3.E-02
09/17	09/24	1.01E+04	CU. FT.	2.27E-02 ± 2.90E-03	10/09	L.T. 3.E-02
09/24	10/01	1.02E+04	CU. FT.	3.73E-02 ± 3.57E-03	10/10	L.T. 4.E-02
10/01	10/08	1.00E+04	CU. FT.	2.55E-02 ± 4.33E-03	10/25	L.T. 2.E-02
10/08	10/15	1.00E+04	CU. FT.	3.00E-02 ± 4.75E-03	11/11	L.T. 5.E-02
10/15	10/22	1.00E+04	CU. FT.	2.23E-02 ± 4.20E-03	11/14	L.T. 5.E-02
10/22	10/29	1.02E+04	CU. FT.	2.68E-02 ± 4.64E-03	11/16	L.T. 3.E-02
10/29	11/04	8.60E+03	CU. FT.	2.96E-02 ± 4.99E-03	12/06	L.T. 2.E-02
11/04	11/12	1.15E+04	CU. FT.	5.16E-02 ± 5.44E-03	12/11	L.T. 2.E-02
11/12	11/19	9.99E+03	CU. FT.	2.71E-02 ± 4.42E-03	12/13	L.T. 5.E-02
11/19	11/26	1.00E+04	CU. FT.	1.51E-02 ± 3.81E-03	12/19	L.T. 1.E-02
11/26	12/03	1.01E+04	CU. FT.	2.70E-02 ± 4.42E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.46E-02 ± 5.02E-03	12/25	L.T. 2.E-02
12/10	12/17	1.00E+04	CU. FT.	4.81E-02 ± 5.84E-03	12/27	L.T. 2.E-02
12/17	12/23	8.71E+03	CU. FT.	2.65E-02 ± 4.66E-03	01/15	L.T. 2.E-02
12/23	12/31	1.14E+04	CU. FT.	1.87E-02 ± 5.21E-03	01/06	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 09

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	2.60E-02 ± 3.00E-03	01/15	L.T. 3.E-02
01/02	01/08	8.76E+03	CU. FT.	3.00E-02 ± 4.00E-03	01/17	L.T. 4.E-02
01/08	01/15	9.98E+03	CU. FT.	1.50E-02 ± 3.00E-03	01/24	L.T. 7.E-03
01/15	01/22	1.01E+04	CU. FT.	2.60E-02 ± 3.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.03E+04	CU. FT.	2.70E-02 ± 3.00E-03	02/11	L.T. 4.E-02
01/29	02/05	9.56E+03	CU. FT.	3.00E-02 ± 3.00E-03	02/15	L.T. 1.E-02
02/05	02/12	1.03E+04	CU. FT.	2.40E-02 ± 3.00E-03	02/21	L.T. 2.E-02
02/12	02/18	8.30E+03	CU. FT.	9.60E-03 ± 2.70E-03	02/25	L.T. 2.E-02
02/18	02/26	1.16E+04	CU. FT.	1.90E-02 ± 3.00E-03	03/08	L.T. 9.E-03
02/26	03/05	1.00E+04	CU. FT.	1.90E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	1.90E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.67E+03	CU. FT.	1.60E-02 ± 3.00E-03	03/25	L.T. 5.E-02
03/18	03/26	1.14E+04	CU. FT.	2.10E-02 ± 3.00E-03	04/02	L.T. 1.E-02
03/26	04/03	1.17E+04	CU. FT.	1.30E-02 ± 2.00E-03	04/11	L.T. 2.E-02
04/03	04/09	8.47E+03	CU. FT.	2.00E-02 ± 3.00E-03	04/17	L.T. 2.E-02
04/09	04/16	1.00E+04	CU. FT.	1.70E-02 ± 3.00E-03	04/24	L.T. 3.E-02
04/16	04/24	1.18E+04	CU. FT.	1.50E-02 ± 2.00E-03	05/01	L.T. 2.E-02
04/24	04/30	8.27E+03	CU. FT.	1.49E-02 ± 3.00E-03	05/09	L.T. 1.E-02
04/30	05/07	9.99E+03	CU. FT.	2.41E-02 ± 3.00E-03	05/20	L.T. 1.E-02
05/07	05/14	1.01E+04	CU. FT.	1.43E-02 ± 2.50E-03	06/15	L.T. 2.E-02
05/14	05/21	1.00E+04	CU. FT.	1.52E-02 ± 2.60E-03	06/05	L.T. 3.E-02
05/21	05/28	1.03E+04	CU. FT.	1.61E-02 ± 2.60E-03	06/15	L.T. 4.E-02
05/28	06/04	1.00E+04	CU. FT.	2.43E-02 ± 3.10E-03	06/19	L.T. 3.E-02
06/04	06/11	1.01E+04	CU. FT.	2.23E-02 ± 2.90E-03	06/23	L.T. 4.E-02
06/11	06/18	1.00E+04	CU. FT.	1.60E-02 ± 2.69E-03	06/26	L.T. 4.E-02
06/18	06/25	1.01E+04	CU. FT.	3.05E-02 ± 3.37E-03	07/02	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 09

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	SAMPLE UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	1.00E+04	CU. FT.	2.16E-02 ± 3.01E-03	07/24	L.T. 3.E-02
07/02	07/09	9.71E+03	CU. FT.	3.34E-02 ± 3.59E-03	07/25	L.T. 3.E-02
07/09	07/15	8.23E+03	CU. FT.	2.39E-02 ± 3.43E-03	08/09	L.T. 3.E-02
07/15	07/23	1.08E+04	CU. FT.	2.28E-02 ± 2.93E-03	08/10	L.T. 2.E-02
07/23	07/30	1.03E+04	CU. FT.	2.66E-02 ± 3.09E-03	08/20	L.T. 2.E-02
07/30	08/06	9.80E+03	CU. FT.	2.97E-02 ± 3.39E-03	08/21	L.T. 3.E-02
08/06	08/13	1.01E+04	CU. FT.	2.37E-02 ± 3.11E-03	08/28	L.T. 4.E-02
08/13	08/19	8.62E+03	CU. FT.	1.57E-02 ± 2.95E-03	08/27	L.T. 2.E-02
08/19	08/27	1.11E+04	CU. FT.	2.13E-02 ± 2.82E-03	09/05	L.T. 2.E-02
08/27	09/03	9.69E+03	CU. FT.	3.55E-02 ± 3.72E-03	09/20	L.T. 3.E-02
09/03	09/10	9.68E+03	CU. FT.	2.94E-02 ± 3.49E-03	09/25	L.T. 2.E-02
09/10	09/17	1.01E+04	CU. FT.	2.31E-02 ± 2.89E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	1.88E-02 ± 2.69E-03	10/09	L.T. 3.E-02
09/24	10/01	9.77E+03	CU. FT.	3.35E-02 ± 3.50E-03	10/10	L.T. 4.E-02
10/01	10/08	1.00E+04	CU. FT.	1.91E-02 ± 3.87E-03	10/25	L.T. 2.E-02
10/08	10/15	1.00E+04	CU. FT.	2.36E-02 ± 4.33E-03	11/11	L.T. 5.E-02
10/15	10/22	1.00E+04	CU. FT.	2.18E-02 ± 4.15E-03	11/14	L.T. 5.E-02
10/22	10/29	1.02E+04	CU. FT.	1.55E-02 ± 3.86E-03	11/16	L.T. 3.E-02
10/29	11/04	8.60E+03	CU. FT.	3.27E-02 ± 5.20E-03	12/06	L.T. 2.E-02
11/04	11/12	1.15E+04	CU. FT.	4.62E-02 ± 5.18E-03	12/11	L.T. 2.E-02
11/12	11/19	1.00E+04	CU. FT.	3.02E-02 ± 4.62E-03	12/13	L.T. 5.E-02
11/19	11/26	9.98E+03	CU. FT.	1.62E-02 ± 3.90E-03	12/20	L.T. 1.E-02
11/26	12/03	1.01E+04	CU. FT.	3.25E-02 ± 4.78E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.60E-02 ± 5.11E-03	12/25	L.T. 2.E-02
12/10	12/17	1.00E+04	CU. FT.	4.99E-02 ± 5.93E-03	12/27	L.T. 2.E-02
12/17	12/23	8.71E+03	CU. FT.	2.92E-02 ± 4.85E-03	01/15	L.T. 2.E-02
12/23	12/31	1.14E+04	CU. FT.	1.54E-02 ± 5.04E-03	01/06	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 10

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
12/26	01/02	1.01E+04	CU. FT.	1.70E-02 ± 3.00E-03	01/15	L.T. 3.E-02
01/02	01/08	8.74E+03	CU. FT.	1.40E-02 ± 3.00E-03	01/17	L.T. 4.E-02
01/08	01/15	1.00E+04	CU. FT.	9.20E-03 ± 2.30E-03	01/24	L.T. 1.E-02
01/15	01/22	1.01E+04	CU. FT.	1.40E-02 ± 2.00E-03	02/01	L.T. 1.E-02
01/22	01/29	1.03E+04	CU. FT.	2.10E-02 ± 3.00E-03	02/11	L.T. 2.E-02
01/29	02/05	9.87E+03	CU. FT.	2.30E-02 ± 3.00E-03	02/15	L.T. 1.E-02
02/05	02/12	1.02E+04	CU. FT.	1.30E-02 ± 2.00E-03	02/21	L.T. 3.E-02
02/12	02/18	8.31E+03	CU. FT.	9.40E-03 ± 2.70E-03	02/25	L.T. 1.E-02
02/18	02/26	1.15E+04	CU. FT.	1.80E-02 ± 3.00E-03	03/08	L.T. 1.E-02
02/26	03/05	1.00E+04	CU. FT.	1.60E-02 ± 3.00E-03	03/15	L.T. 2.E-02
03/05	03/12	1.01E+04	CU. FT.	1.80E-02 ± 3.00E-03	03/20	L.T. 2.E-02
03/12	03/18	8.56E+03	CU. FT.	8.10E-03 ± 2.30E-03	03/25	L.T. 5.E-02
03/18	03/26	1.16E+04	CU. FT.	1.40E-02 ± 2.00E-03	04/02	L.T. 1.E-02
03/26	04/03	1.14E+04	CU. FT.	7.90E-03 ± 1.90E-03	04/11	L.T. 2.E-02
04/03	04/09	8.56E+03	CU. FT.	9.90E-03 ± 2.50E-03	04/17	L.T. 2.E-02
04/09	04/16	1.02E+04	CU. FT.	6.80E-03 ± 2.10E-03	04/24	L.T. 3.E-02
04/16	04/24	1.15E+04	CU. FT.	1.30E-02 ± 2.00E-03	05/01	L.T. 2.E-02
04/24	04/30	8.27E+03	CU. FT.	1.11E-02 ± 2.80E-03	05/09	L.T. 2.E-02
04/30	05/07	1.01E+04	CU. FT.	1.51E-02 ± 2.50E-03	05/20	L.T. 2.E-02
05/07	05/14	1.00E+04	CU. FT.	1.20E-02 ± 2.40E-03	06/15	L.T. 1.E-02
05/14	05/21	1.01E+04	CU. FT.	1.49E-02 ± 2.60E-03	06/05	L.T. 3.E-02
05/21	05/28	1.03E+04	CU. FT.	1.50E-02 ± 2.50E-03	06/15	L.T. 5.E-02
05/28	06/04	9.92E+03	CU. FT.	2.34E-02 ± 3.00E-03	06/19	L.T. 3.E-02
06/04	06/11	1.01E+04	CU. FT.	1.92E-02 ± 2.73E-03	06/23	L.T. 4.E-02
06/11	06/18	1.01E+04	CU. FT.	1.77E-02 ± 2.76E-03	06/26	L.T. 4.E-02
06/18	06/25	1.01E+04	CU. FT.	3.79E-02 ± 3.68E-03	07/02	L.T. 1.E-02

VII-1

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

AIR PARTICULATE & CHARCOAL FILTERS

STATION NUMBER 10

COLL. START DATE	TIME STOP DATE	SAMPLE VOLUME	UNITS	AP FILTER GROSS BETA (PCI/CU.M.)	MID-COUNT DATE	CHARCOAL FILTER I-131 (PCI/CU.M.)
06/25	07/02	9.83E+03	CU. FT.	2.62E-02 ± 3.26E-03	07/24	L.T. 3.E-02
07/02	07/09	9.90E+03	CU. FT.	3.63E-02 ± 3.67E-03	07/25	L.T. 3.E-02
07/09	07/15	8.83E+03	CU. FT.	1.89E-02 ± 3.01E-03	08/09	L.T. 3.E-02
07/15	07/23	1.12E+04	CU. FT.	2.28E-02 ± 2.87E-03	08/10	L.T. 1.E-02
07/23	07/30	1.03E+04	CU. FT.	2.18E-02 ± 2.87E-03	08/20	L.T. 2.E-02
07/30	08/06	9.80E+03	CU. FT.	3.13E-02 ± 3.46E-03	08/21	L.T. 3.E-02
08/06	08/13	1.01E+04	CU. FT.	3.02E-02 ± 3.40E-03	08/28	L.T. 4.E-02
08/13	08/19	8.63E+03	CU. FT.	2.10E-02 ± 3.24E-03	08/27	L.T. 1.E-02
08/19	08/27	1.16E+04	CU. FT.	2.54E-02 ± 2.93E-03	09/05	L.T. 2.E-02
08/27	09/03	9.81E+03	CU. FT.	4.29E-02 ± 3.99E-03	09/20	L.T. 2.E-02
09/03	09/10	9.92E+03	CU. FT.	3.88E-02 ± 3.82E-03	09/25	L.T. 3.E-02
09/10	09/17	1.01E+04	CU. FT.	2.32E-02 ± 2.90E-03	10/12	L.T. 2.E-02
09/17	09/24	1.01E+04	CU. FT.	2.68E-02 ± 3.10E-03	10/09	L.T. 2.E-02
09/24	10/01	9.94E+03	CU. FT.	4.61E-02 ± 3.97E-03	10/10	L.T. 3.E-02
10/01	10/08	1.00E+04	CU. FT.	2.34E-02 ± 4.19E-03	10/25	L.T. 2.E-02
10/08	10/15	1.02E+04	CU. FT.	2.31E-02 ± 4.24E-03	11/11	L.T. 4.E-02
10/15	10/22	9.92E+03	CU. FT.	2.95E-02 ± 4.70E-03	11/14	L.T. 4.E-02
10/22	10/29	1.02E+04	CU. FT.	1.63E-02 ± 3.92E-03	11/16	L.T. 2.E-02
10/29	11/04	8.60E+03	CU. FT.	3.18E-02 ± 5.14E-03	12/06	L.T. 2.E-02
11/04	11/12	1.15E+04	CU. FT.	4.26E-02 ± 5.00E-03	12/11	L.T. 1.E-02
11/12	11/19	9.98E+03	CU. FT.	3.83E-02 ± 5.12E-03	12/13	L.T. 5.E-02
11/19	11/26	1.00E+04	CU. FT.	1.72E-02 ± 3.97E-03	12/20	L.T. 1.E-02
11/26	12/03	1.01E+04	CU. FT.	2.83E-02 ± 4.51E-03	12/23	L.T. 1.E-02
12/03	12/10	1.01E+04	CU. FT.	3.63E-02 ± 5.13E-03	12/25	L.T. 1.E-02
12/10	12/17	1.00E+04	CU. FT.	4.57E-02 ± 5.72E-03	12/27	L.T. 2.E-02
12/17	12/23	8.71E+03	CU. FT.	2.40E-02 ± 4.47E-03	01/16	L.T. 2.E-02
12/23	12/31	1.14E+04	CU. FT.	1.90E-02 ± 5.22E-03	01/06	L.T. 1.E-02

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 01

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	6.70E-02 ± 9.67E-03	1.43E-01 ± 1.28E-02	1.36E-01 ± 8.91E-03	1.30E-01 ± 7.26E-03
K-40	L.T. 1.E-02	L.T. 9.E-03	L.T. 1.E-03	L.T. 4.E-03
MN-54	L.T. 8.E-04	L.T. 6.E-04	L.T. 2.E-04	L.T. 3.E-04
CO-58	L.T. 1.E-03	L.T. 1.E-03	L.T. 3.E-04	L.T. 5.E-04
FE-59	L.T. 4.E-03	L.T. 4.E-03	L.T. 1.E-03	L.T. 1.E-03
CO-60	L.T. 8.E-04	L.T. 6.E-04	L.T. 2.E-04	L.T. 3.E-04
ZN-65	L.T. 2.E-03	L.T. 1.E-03	L.T. 4.E-04	L.T. 7.E-04
ZR-95	L.T. 1.E-03	L.T. 1.E-03	L.T. 6.E-04	L.T. 9.E-04
RU-103	L.T. 2.E-03	L.T. 2.E-03	L.T. 5.E-04	L.T. 9.E-04
RU-106	L.T. 7.E-03	L.T. 4.E-03	L.T. 1.E-03	L.T. 3.E-03
I-131	L.T. 4.E-01	L.T. 2.E+00	L.T. 4.E-01	L.T. 1.E-01
CS-134	L.T. 7.E-04	L.T. 4.E-04	L.T. 1.E-04	L.T. 3.E-04
CS-137	L.T. 7.E-04	L.T. 5.E-04	L.T. 2.E-04	L.T. 3.E-04
BA-140	L.T. 5.E-02	L.T. 9.E-02	L.T. 7.E-02	L.T. 4.E-02
CE-141	L.T. 3.E-03	L.T. 3.E-03	L.T. 8.E-04	L.T. 2.E-03
CE-144	L.T. 3.E-03	L.T. 2.E-03	L.T. 6.E-04	L.T. 2.E-03
RA-226	L.T. 2.E-02	L.T. 1.E-02	L.T. 3.E-03	L.T. 5.E-03
TH-228	L.T. 6.E-03	L.T. 4.E-03	L.T. 5.E-04	L.T. 5.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 02

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	5.07E-02 ± 6.70E-03	1.70E-01 ± 1.52E-02	1.56E-01 ± 1.04E-02	1.01E-01 ± 7.59E-03
K-40	L.T. 9.E-03	L.T. 9.E-03	L.T. 1.E-03	L.T. 4.E-03
MN-54	L.T. 5.E-04	L.T. 7.E-04	L.T. 2.E-04	L.T. 3.E-04
CO-58	L.T. 8.E-04	L.T. 1.E-03	L.T. 4.E-04	L.T. 5.E-04
FE-59	L.T. 3.E-03	L.T. 4.E-03	L.T. 1.E-03	L.T. 1.E-03
CO-60	L.T. 5.E-04	L.T. 5.E-04	L.T. 2.E-04	L.T. 3.E-04
ZN-65	L.T. 1.E-03	L.T. 1.E-03	L.T. 4.E-04	L.T. 6.E-04
ZR-95	L.T. 1.E-03	L.T. 1.E-03	L.T. 8.E-04	L.T. 9.E-04
RU-103	L.T. 1.E-03	L.T. 2.E-03	L.T. 7.E-04	L.T. 8.E-04
RU-106	L.T. 4.E-03	L.T. 5.E-03	L.T. 2.E-03	L.T. 2.E-03
I-131	L.T. 2.E-01	L.T. 2.E+00	L.T. 5.E-01	L.T. 1.E-01
CS-134	L.T. 4.E-04	L.T. 5.E-04	L.T. 2.E-04	L.T. 2.E-04
CS-137	L.T. 4.E-04	L.T. 5.E-04	L.T. 2.E-04	L.T. 3.E-04
BA-140	L.T. 3.E-02	L.T. 1.E-01	L.T. 9.E-02	L.T. 4.E-02
CE-141	L.T. 2.E-03	L.T. 4.E-03	L.T. 1.E-03	L.T. 2.E-03
CE-144	L.T. 2.E-03	L.T. 3.E-03	L.T. 9.E-04	L.T. 2.E-03
RA-226	L.T. 1.E-02	L.T. 1.E-02	L.T. 3.E-03	L.T. 5.E-03
TH-228	L.T. 4.E-03	L.T. 4.E-03	L.T. 5.E-04	L.T. 5.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 03

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	7.24E-02 ± 1.09E-02	1.56E-01 ± 1.42E-02	1.33E+00 ± 9.33E-02	9.97E-02 ± 5.56E-03
K-40	L.T. 2.E-02	L.T. 1.E-02	L.T. 3.E-02	L.T. 3.E-03
MN-54	L.T. 1.E-03	L.T. 6.E-04	L.T. 4.E-03	L.T. 2.E-04
CO-58	L.T. 2.E-03	L.T. 1.E-03	L.T. 7.E-03	L.T. 3.E-04
FE-59	L.T. 6.E-03	L.T. 4.E-03	L.T. 2.E-02	L.T. 1.E-03
CO-60	L.T. 1.E-03	L.T. 6.E-04	L.T. 3.E-03	L.T. 2.E-04
ZN-65	L.T. 3.E-03	L.T. 1.E-03	L.T. 8.E-03	L.T. 4.E-04
ZR-95	L.T. 2.E-03	L.T. 1.E-03	L.T. 1.E-02	L.T. 7.E-04
RU-103	L.T. 3.E-03	L.T. 2.E-03	L.T. 1.E-02	L.T. 6.E-04
RU-106	L.T. 9.E-03	L.T. 5.E-03	L.T. 3.E-02	L.T. 2.E-03
I-131	L.T. 6.E-01	L.T. 2.E+00	L.T. 1.E+01	L.T. 1.E-01
CS-134	L.T. 1.E-03	L.T. 5.E-04	L.T. 3.E-03	L.T. 2.E-04
CS-137	L.T. 1.E-03	L.T. 5.E-04	L.T. 3.E-03	L.T. 2.E-04
BA-140	L.T. 8.E-02	L.T. 1.E-01	L.T. 2.E+00	L.T. 3.E-02
CE-141	L.T. 5.E-03	L.T. 4.E-03	L.T. 3.E-02	L.T. 1.E-03
CE-144	L.T. 5.E-03	L.T. 3.E-03	L.T. 2.E-02	L.T. 1.E-03
RA-226	L.T. 2.E-02	L.T. 1.E-02	L.T. 6.E-02	L.T. 4.E-03
TH-228	L.T. 7.E-03	L.T. 4.E-03	L.T. 1.E-02	L.T. 4.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 04

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	7.28E-02 ± 9.02E-03	1.41E-01 ± 1.21E-02	1.44E-01 ± 9.55E-03	9.81E-01 ± 5.63E-02
K-40	L.T. 1.E-02	L.T. 1.E-02	L.T. 3.E-03	L.T. 2.E-02
MN-54	L.T. 7.E-04	L.T. 8.E-04	L.T. 3.E-04	L.T. 2.E-03
CO-58	L.T. 1.E-03	L.T. 2.E-03	L.T. 7.E-04	L.T. 4.E-03
FE-59	L.T. 3.E-03	L.T. 5.E-03	L.T. 2.E-03	L.T. 1.E-02
CO-60	L.T. 5.E-04	L.T. 7.E-04	L.T. 3.E-04	L.T. 2.E-03
ZN-65	L.T. 1.E-03	L.T. 2.E-03	L.T. 8.E-04	L.T. 4.E-03
ZR-95	L.T. 1.E-03	L.T. 2.E-03	L.T. 1.E-03	L.T. 7.E-03
RU-103	L.T. 2.E-03	L.T. 3.E-03	L.T. 1.E-03	L.T. 6.E-03
RU-106	L.T. 5.E-03	L.T. 6.E-03	L.T. 3.E-03	L.T. 2.E-02
I-131	L.T. 3.E-01	L.T. 2.E+00	L.T. 9.E-01	L.T. 1.E+00
CS-134	L.T. 5.E-04	L.T. 7.E-04	L.T. 3.E-04	L.T. 2.E-03
CS-137	L.T. 6.E-04	L.T. 5.E-04	L.T. 3.E-04	L.T. 2.E-03
BA-140	L.T. 4.E-02	L.T. 1.E-01	L.T. 2.E-01	L.T. 3.E-01
CE-141	L.T. 3.E-03	L.T. 5.E-03	L.T. 2.E-03	L.T. 1.E-02
CE-144	L.T. 3.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 1.E-02
RA-226	L.T. 1.E-02	L.T. 2.E-02	L.T. 6.E-03	L.T. 4.E-02
TH-228	L.T. 4.E-03	L.T. 5.E-03	L.T. 1.E-03	L.T. 4.E-02

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 05

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	7.20E-02 ± 8.87E-03	1.28E-01 ± 1.43E-02	1.30E-01 ± 2.42E-02	8.06E-02 ± 5.65E-03
K-40	L.T. 1.E-02	L.T. 1.E-02	L.T. 7.E-03	L.T. 3.E-03
MN-54	L.T. 9.E-04	L.T. 1.E-03	L.T. 1.E-03	L.T. 3.E-04
CO-58	L.T. 1.E-03	L.T. 2.E-03	L.T. 2.E-03	L.T. 6.E-04
FE-59	L.T. 5.E-03	L.T. 7.E-03	L.T. 6.E-03	L.T. 2.E-03
CO-60	L.T. 8.E-04	L.T. 9.E-04	L.T. 9.E-04	L.T. 3.E-04
ZN-65	L.T. 2.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 8.E-04
ZR-95	L.T. 1.E-03	L.T. 2.E-03	L.T. 4.E-03	L.T. 1.E-03
RU-103	L.T. 2.E-03	L.T. 4.E-03	L.T. 3.E-03	L.T. 9.E-04
RU-106	L.T. 7.E-03	L.T. 9.E-03	L.T. 8.E-03	L.T. 3.E-03
I-131	L.T. 4.E-01	L.T. 3.E+00	L.T. 2.E+00	L.T. 1.E-01
CS-134	L.T. 8.E-04	L.T. 1.E-03	L.T. 8.E-04	L.T. 3.E-04
CS-137	L.T. 7.E-04	L.T. 9.E-04	L.T. 9.E-04	L.T. 3.E-04
BA-140	L.T. 5.E-02	L.T. 2.E-01	L.T. 4.E-01	L.T. 5.E-02
CE-141	L.T. 3.E-03	L.T. 6.E-03	L.T. 5.E-03	L.T. 1.E-03
CE-144	L.T. 4.E-03	L.T. 5.E-03	L.T. 4.E-03	L.T. 1.E-03
RA-226	L.T. 2.E-02	L.T. 2.E-02	L.T. 2.E-02	L.T. 5.E-03
TH-228	L.T. 6.E-03	L.T. 7.E-03	L.T. 3.E-03	L.T. 5.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 06

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	6.17E-02 ± 8.65E-03	1.50E-01 ± 1.33E-02	1.60E-01 ± 2.45E-02	1.04E-01 ± 5.44E-03
K-40	L.T. 2.E-02	L.T. 1.E-02	L.T. 3.E-03	L.T. 2.E-03
MN-54	L.T. 7.E-04	L.T. 1.E-03	L.T. 5.E-04	L.T. 3.E-04
CO-58	L.T. 1.E-03	L.T. 2.E-03	L.T. 1.E-03	L.T. 4.E-04
FE-59	L.T. 4.E-03	L.T. 6.E-03	L.T. 4.E-03	L.T. 1.E-03
CO-60	L.T. 7.E-04	L.T. 9.E-04	L.T. 5.E-04	L.T. 3.E-04
ZN-65	L.T. 2.E-03	L.T. 3.E-03	L.T. 1.E-03	L.T. 6.E-04
ZR-95	L.T. 1.E-03	L.T. 2.E-03	L.T. 2.E-03	L.T. 8.E-04
RU-103	L.T. 2.E-03	L.T. 4.E-03	L.T. 2.E-03	L.T. 7.E-04
RU-106	L.T. 6.E-03	L.T. 8.E-03	L.T. 5.E-03	L.T. 2.E-03
I-131	L.T. 4.E-01	L.T. 3.E+00	L.T. 1.E+00	L.T. 1.E-01
CS-134	L.T. 6.E-04	L.T. 1.E-03	L.T. 5.E-04	L.T. 2.E-04
CS-137	L.T. 7.E-04	L.T. 8.E-04	L.T. 5.E-04	L.T. 2.E-04
BA-140	L.T. 5.E-02	L.T. 2.E-01	L.T. 2.E-01	L.T. 4.E-02
CE-141	L.T. 3.E-03	L.T. 6.E-03	L.T. 3.E-03	L.T. 1.E-03
CE-144	L.T. 3.E-03	L.T. 4.E-03	L.T. 2.E-03	L.T. 1.E-03
RA-226	L.T. 1.E-02	L.T. 2.E-02	L.T. 6.E-03	L.T. 3.E-03
TH-228	L.T. 5.E-03	L.T. 6.E-03	L.T. 2.E-03	L.T. 3.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 07

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	5.56E-02 ± 8.93E-03	7.00E-02 ± 1.15E-02	5.25E-02 ± 1.02E-02	5.17E-02 ± 6.51E-03
K-40	L.T. 2.E-02	L.T. 1.E-02	L.T. 4.E-03	L.T. 5.E-03
MN-54	L.T. 1.E-03	L.T. 8.E-04	L.T. 5.E-04	L.T. 3.E-04
CO-58	L.T. 2.E-03	L.T. 2.E-03	L.T. 1.E-03	L.T. 5.E-04
FE-59	L.T. 6.E-03	L.T. 6.E-03	L.T. 4.E-03	L.T. 2.E-03
CO-60	L.T. 1.E-03	L.T. 7.E-04	L.T. 5.E-04	L.T. 3.E-04
ZN-65	L.T. 3.E-03	L.T. 2.E-03	L.T. 1.E-03	L.T. 6.E-04
ZR-95	L.T. 2.E-03	L.T. 2.E-03	L.T. 2.E-03	L.T. 9.E-04
RU-103	L.T. 3.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 9.E-04
RU-106	L.T. 9.E-03	L.T. 7.E-03	L.T. 4.E-03	L.T. 3.E-03
I-131	L.T. 5.E-01	L.T. 3.E+00	L.T. 1.E+00	L.T. 2.E-01
CS-134	L.T. 1.E-03	L.T. 6.E-04	L.T. 4.E-04	L.T. 2.E-04
CS-137	L.T. 1.E-03	L.T. 7.E-04	L.T. 4.E-04	L.T. 3.E-04
BA-140	L.T. 7.E-02	L.T. 1.E-01	L.T. 2.E-01	L.T. 5.E-02
CE-141	L.T. 4.E-03	L.T. 5.E-03	L.T. 3.E-03	L.T. 2.E-03
CE-144	L.T. 5.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 2.E-03
RA-226	L.T. 2.E-02	L.T. 1.E-02	L.T. 7.E-03	L.T. 5.E-03
TH-228	L.T. 7.E-03	L.T. 6.E-03	L.T. 1.E-03	L.T. 5.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 08

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	9.18E-02 ± 1.08E-02	1.39E-01 ± 1.39E-02	1.63E-01 ± 2.39E-02	1.00E-01 ± 1.33E-02
K-40	2.73E-02 ± 5.57E-03	L.T. 1.E-02	L.T. 3.E-03	L.T. 1.E-02
MN-54	L.T. 7.E-04	L.T. 7.E-04	L.T. 4.E-04	L.T. 6.E-04
CO-58	L.T. 1.E-03	L.T. 1.E-03	L.T. 8.E-04	L.T. 9.E-04
FE-59	L.T. 4.E-03	L.T. 5.E-03	L.T. 2.E-03	L.T. 3.E-03
CO-60	L.T. 7.E-04	L.T. 5.E-04	L.T. 5.E-04	L.T. 6.E-04
ZN-65	L.T. 2.E-03	L.T. 2.E-03	L.T. 7.E-04	L.T. 1.E-03
ZR-95	L.T. 1.E-03	L.T. 2.E-03	L.T. 2.E-03	L.T. 2.E-03
RU-103	L.T. 2.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 1.E-03
RU-106	L.T. 7.E-03	L.T. 6.E-03	L.T. 3.E-03	L.T. 4.E-03
I-131	L.T. 4.E-01	L.T. 2.E+00	L.T. 1.E+00	L.T. 3.E-01
CS-134	L.T. 6.E-04	L.T. 6.E-04	L.T. 3.E-04	L.T. 5.E-04
CS-137	L.T. 7.E-04	L.T. 6.E-04	L.T. 4.E-04	L.T. 5.E-04
BA-140	L.T. 5.E-02	L.T. 1.E-01	L.T. 2.E-01	L.T. 8.E-02
CE-141	L.T. 3.E-03	L.T. 4.E-03	L.T. 3.E-03	L.T. 2.E-03
CE-144	L.T. 3.E-03	L.T. 3.E-03	L.T. 2.E-03	L.T. 2.E-03
RA-226	L.T. 1.E-02	L.T. 1.E-02	L.T. 7.E-03	L.T. 8.E-03
TH-228	L.T. 5.E-03	L.T. 5.E-03	L.T. 1.E-03	L.T. 7.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 09

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	8.73E-02 ± 9.71E-03	1.51E-01 ± 1.39E-02	1.41E+00 ± 2.14E-01	1.13E-01 ± 7.17E-03
K-40	L.T. 9.E-03	L.T. 8.E-03	L.T. 6.E-02	L.T. 3.E-03
MN-54	L.T. 6.E-04	L.T. 6.E-04	L.T. 8.E-03	L.T. 3.E-04
CO-58	L.T. 1.E-03	L.T. 1.E-03	L.T. 1.E-02	L.T. 4.E-04
FE-59	L.T. 3.E-03	L.T. 4.E-03	L.T. 5.E-02	L.T. 1.E-03
CO-60	L.T. 8.E-04	L.T. 8.E-04	L.T. 6.E-03	L.T. 3.E-04
ZN-65	L.T. 1.E-03	L.T. 1.E-03	L.T. 1.E-02	L.T. 7.E-04
ZR-95	L.T. 1.E-03	L.T. 1.E-03	L.T. 3.E-02	L.T. 9.E-04
RU-103	L.T. 2.E-03	L.T. 2.E-03	L.T. 3.E-02	L.T. 8.E-04
RU-106	L.T. 5.E-03	L.T. 5.E-03	L.T. 6.E-02	L.T. 2.E-03
I-131	L.T. 3.E-01	L.T. 2.E+00	L.T. 2.E+01	L.T. 2.E-01
CS-134	L.T. 5.E-04	L.T. 5.E-04	L.T. 6.E-03	L.T. 2.E-04
CS-137	L.T. 6.E-04	L.T. 5.E-04	L.T. 7.E-03	L.T. 2.E-04
BA-140	L.T. 4.E-02	L.T. 1.E-01	L.T. 3.E+00	L.T. 5.E-02
CE-141	L.T. 2.E-03	L.T. 4.E-03	L.T. 5.E-02	L.T. 1.E-03
CE-144	L.T. 3.E-03	L.T. 3.E-03	L.T. 4.E-02	L.T. 1.E-03
RA-226	L.T. 1.E-02	L.T. 1.E-02	L.T. 1.E-01	L.T. 5.E-03
TH-228	L.T. 4.E-03	L.T. 4.E-03	L.T. 2.E-02	L.T. 4.E-03

VII-2

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

COMPOSITE AIR PARTICULATE FILTERS

(PCI/CU. M.)

STATION NUMBER 10

DATE COLLECTED	12/26 - 03/26	03/26 - 06/25	06/25 - 09/24	09/24 - 12/31
GAMMA SPECTRUM ANALYSIS:				
BE-7	6.10E-02 ± 8.30E-03	1.32E-01 ± 1.37E-02	1.85E-01 ± 3.02E-02	1.06E-01 ± 1.54E-02
K-40	L.T. 1.E-02	L.T. 1.E-02	L.T. 1.E-02	L.T. 2.E-02
MN-54	L.T. 7.E-04	L.T. 9.E-04	L.T. 1.E-03	L.T. 7.E-04
CO-58	L.T. 1.E-03	L.T. 2.E-03	L.T. 2.E-03	L.T. 1.E-03
FE-59	L.T. 3.E-03	L.T. 6.E-03	L.T. 7.E-03	L.T. 4.E-03
CO-60	L.T. 6.E-04	L.T. 8.E-04	L.T. 1.E-03	L.T. 7.E-04
ZN-65	L.T. 1.E-03	L.T. 3.E-03	L.T. 3.E-03	L.T. 2.E-03
ZR-95	L.T. 1.E-03	L.T. 2.E-03	L.T. 4.E-03	L.T. 2.E-03
RU-103	L.T. 2.E-03	L.T. 4.E-03	L.T. 4.E-03	L.T. 2.E-03
RU-106	L.T. 6.E-03	L.T. 8.E-03	L.T. 9.E-03	L.T. 6.E-03
I-131	L.T. 3.E-01	L.T. 3.E+00	L.T. 3.E+00	L.T. 3.E-01
CS-134	L.T. 6.E-04	L.T. 9.E-04	L.T. 9.E-04	L.T. 6.E-04
CS-137	L.T. 6.E-04	L.T. 7.E-04	L.T. 1.E-03	L.T. 6.E-04
BA-140	L.T. 4.E-02	L.T. 2.E-01	L.T. 4.E-01	L.T. 1.E-01
CE-141	L.T. 3.E-03	L.T. 6.E-03	L.T. 7.E-03	L.T. 3.E-03
CE-144	L.T. 3.E-03	L.T. 4.E-03	L.T. 5.E-03	L.T. 3.E-03
RA-226	L.T. 1.E-02	L.T. 8.E-03	L.T. 1.E-02	L.T. 1.E-02
TH-228	L.T. 5.E-03	L.T. 6.E-03	L.T. 3.E-03	L.T. 9.E-03

VII-3

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

FISH

(PCI/KG WET)

STATION NUMBER 28

DATE COLLECTED:	07/17/2002 CARP	07/17/2002 CATFISH	07/17/2002 QA	09/12/2002 CARP	09/12/2002 CATFISH
GAMMA SPECTRUM ANALYSIS:					
BE-7	L.T. 2.E+02	L.T. 3.E+02	L.T. 3.E+02	L.T. 1.E+02	L.T. 9.E+01
K-40	3.34E+03 ± 2.57E+02	3.79E+03 ± 3.02E+02	3.37E+03 ± 4.44E+02	3.83E+03 ± 3.17E+02	4.29E+03 ± 3.47E+02
MN-54	L.T. 2.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 1.E+01	L.T. 9.E+00
CO-58	L.T. 3.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 1.E+01
FE-59	L.T. 5.E+01	L.T. 7.E+01	L.T. 8.E+01	L.T. 4.E+01	L.T. 3.E+01
CO-60	L.T. 2.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 8.E+00
ZN-65	L.T. 5.E+01	L.T. 7.E+01	L.T. 6.E+01	L.T. 3.E+01	L.T. 2.E+01
ZR-95	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 3.E+01	L.T. 2.E+01
RU-103	L.T. 3.E+01	L.T. 4.E+01	L.T. 4.E+01	L.T. 2.E+01	L.T. 1.E+01
RU-106	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 1.E+02	L.T. 8.E+01
I-131	L.T. 1.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 1.E+02	L.T. 8.E+01
CS-134	L.T. 2.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 1.E+01	L.T. 8.E+00
CS-137	L.T. 2.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 9.E+00
BA-140	L.T. 7.E+01	L.T. 9.E+01	L.T. 1.E+02	L.T. 2.E+02	L.T. 1.E+02
CE-141	L.T. 4.E+01	L.T. 5.E+01	L.T. 5.E+01	L.T. 3.E+01	L.T. 2.E+01
CE-144	L.T. 1.E+02	L.T. 2.E+02	L.T. 1.E+02	L.T. 7.E+01	L.T. 5.E+01
RA-226	L.T. 3.E+02	L.T. 6.E+02	L.T. 6.E+02	L.T. 3.E+02	L.T. 2.E+02
TH-228	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 4.E+01	L.T. 3.E+01

VII-3

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

FISH

(PCI/KG WET)

STATION NUMBER 35

DATE COLLECTED:	07/17/2002 CARP	07/17/2002 CATFISH	09/12/2002 CARP	09/12/2002 CATFISH
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 3.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02
K-40	3.65E+03 ± 3.76E+02	3.28E+03 ± 2.69E+02	2.97E+03 ± 2.72E+02	2.95E+03 ± 2.78E+02
MN-54	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01	L.T. 2.E+01
CO-58	L.T. 4.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01
FE-59	L.T. 8.E+01	L.T. 6.E+01	L.T. 5.E+01	L.T. 5.E+01
CO-60	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01	L.T. 2.E+01
ZN-65	L.T. 8.E+01	L.T. 6.E+01	L.T. 4.E+01	L.T. 4.E+01
ZR-95	L.T. 4.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01
RU-103	L.T. 4.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 3.E+01
RU-106	L.T. 3.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02
I-131	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02	L.T. 2.E+02
CS-134	L.T. 4.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01
CS-137	L.T. 3.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 2.E+01
BA-140	L.T. 1.E+02	L.T. 8.E+01	L.T. 8.E+01	L.T. 8.E+01
CE-141	L.T. 6.E+01	L.T. 4.E+01	L.T. 5.E+01	L.T. 4.E+01
CE-144	L.T. 2.E+02	L.T. 1.E+02	L.T. 1.E+02	L.T. 1.E+02
RA-226	L.T. 6.E+02	L.T. 4.E+02	L.T. 5.E+02	L.T. 6.E+02
TH-228	L.T. 2.E+02	L.T. 2.E+02	L.T. 1.E+02	L.T. 1.E+02

VII-4

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK NEAREST PRODUCER

(PCI/LITER)

STATION NUMBER 61

DATE COLLECTED:	01/08/2002	02/05/2002	03/05/2002	04/02/2002
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 1.E-01	L.T. 1.E-01	L.T. 2.E-01	L.T. 1.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 5.E+01
K-40	1.09E+03 ± 6.80E+01	1.08E+03 ± 7.10E+01	1.32E+03 ± 1.00E+02	1.63E+03 ± 8.50E+01
MN-54	L.T. 4.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00
CO-58	L.T. 4.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00
FE-59	L.T. 8.E+00	L.T. 8.E+00	L.T. 1.E+01	L.T. 1.E+01
CO-60	L.T. 3.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00
ZN-65	L.T. 7.E+00	L.T. 8.E+00	L.T. 1.E+01	L.T. 1.E+01
ZR-95	L.T. 3.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00
RU-103	L.T. 4.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00
RU-106	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 5.E+01
I-131	L.T. 6.E+00	L.T. 6.E+00	L.T. 8.E+00	L.T. 1.E+01
CS-134	L.T. 3.E+00	L.T. 3.E+00	L.T. 4.E+00	L.T. 6.E+00
CS-137	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 6.E+00
BA-140	L.T. 5.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 1.E+01
CE-141	L.T. 5.E+00	L.T. 6.E+00	L.T. 8.E+00	L.T. 1.E+01
CE-144	L.T. 2.E+01	L.T. 2.E+01	L.T. 3.E+01	L.T. 4.E+01
RA-226	L.T. 1.E+02	L.T. 1.E+02	L.T. 2.E+02	L.T. 1.E+02
TH-228	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 5.E+01

VII-4

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK NEAREST PRODUCER

(PCI/LITER)

STATION NUMBER 61

DATE COLLECTED:	05/07/2002	05/28/2002	06/11/2002	06/11/2002 QA
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 1.E-01	L.T. 3.E-01	L.T. 3.E-01	L.T. 2.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 2.E+01	L.T. 4.E+01	L.T. 4.E+01	L.T. 3.E+01
K-40	1.33E+03 ± 6.50E+01	1.30E+03 ± 7.00E+01	1.41E+03 ± 9.60E+01	1.39E+03 ± 7.60E+01
MN-54	L.T. 3.E+00	L.T. 5.E+00	L.T. 5.E+00	L.T. 4.E+00
CO-58	L.T. 3.E+00	L.T. 5.E+00	L.T. 5.E+00	L.T. 4.E+00
FE-59	L.T. 6.E+00	L.T. 1.E+01	L.T. 1.E+01	L.T. 8.E+00
CO-60	L.T. 3.E+00	L.T. 5.E+00	L.T. 5.E+00	L.T. 4.E+00
ZN-65	L.T. 6.E+00	L.T. 1.E+01	L.T. 1.E+01	L.T. 8.E+00
ZR-95	L.T. 3.E+00	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00
RU-103	L.T. 3.E+00	L.T. 5.E+00	L.T. 5.E+00	L.T. 4.E+00
RU-106	L.T. 2.E+01	L.T. 4.E+01	L.T. 4.E+01	L.T. 3.E+01
I-131	L.T. 4.E+00	L.T. 8.E+00	L.T. 9.E+00	L.T. 7.E+00
CS-134	L.T. 3.E+00	L.T. 5.E+00	L.T. 5.E+00	L.T. 3.E+00
CS-137	L.T. 4.E+00	L.T. 7.E+00	L.T. 5.E+00	L.T. 4.E+00
BA-140	L.T. 4.E+00	L.T. 7.E+00	L.T. 8.E+00	L.T. 5.E+00
CE-141	L.T. 4.E+00	L.T. 8.E+00	L.T. 8.E+00	L.T. 6.E+00
CE-144	L.T. 2.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 2.E+01
RA-226	L.T. 9.E+01	L.T. 1.E+02	L.T. 2.E+02	L.T. 1.E+02
TH-228	L.T. 2.E+01	L.T. 4.E+01	L.T. 4.E+01	L.T. 3.E+01

VII-4

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK NEAREST PRODUCER

(PCI/LITER)

STATION NUMBER 61

DATE COLLECTED:	06/25/2002	07/09/2002	07/23/2002	08/06/2002
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 3.E-01	L.T. 2.E-01	L.T. 3.E-01	L.T. 4.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 3.E+01	L.T. 4.E+01	L.T. 3.E+01	L.T. 4.E+01
K-40	1.32E+03 ± 7.80E+01	1.46E+03 ± 7.90E+01	1.37E+03 ± 7.70E+01	1.33E+03 ± 7.00E+01
MN-54	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00	L.T. 5.E+00
CO-58	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00	L.T. 5.E+00
FE-59	L.T. 8.E+00	L.T. 1.E+01	L.T. 9.E+00	L.T. 1.E+01
CO-60	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00	L.T. 4.E+00
ZN-65	L.T. 8.E+00	L.T. 1.E+01	L.T. 8.E+00	L.T. 1.E+01
ZR-95	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00	L.T. 5.E+00
RU-103	L.T. 4.E+00	L.T. 5.E+00	L.T. 4.E+00	L.T. 5.E+00
RU-106	L.T. 3.E+01	L.T. 5.E+01	L.T. 3.E+01	L.T. 4.E+01
I-131	L.T. 4.E+00	L.T. 9.E+00	L.T. 6.E+00	L.T. 8.E+00
CS-134	L.T. 3.E+00	L.T. 6.E+00	L.T. 4.E+00	L.T. 5.E+00
CS-137	L.T. 5.E+00	L.T. 7.E+00	L.T. 4.E+00	L.T. 6.E+00
BA-140	L.T. 5.E+00	L.T. 8.E+00	L.T. 6.E+00	L.T. 7.E+00
CE-141	L.T. 3.E+00	L.T. 9.E+00	L.T. 6.E+00	L.T. 8.E+00
CE-144	L.T. 1.E+01	L.T. 3.E+01	L.T. 2.E+01	L.T. 3.E+01
RA-226	L.T. 1.E+02	L.T. 8.E+01	L.T. 1.E+02	L.T. 7.E+01
TH-228	L.T. 4.E+01	L.T. 4.E+01	L.T. 3.E+01	L.T. 4.E+01

VII-4

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK NEAREST PRODUCER

(PCI/LITER)

STATION NUMBER 61

DATE COLLECTED:	08/19/2002	09/03/2002	09/17/2002	10/08/2002
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 2.E-01	L.T. 6.E-01	L.T. 5.E-01	L.T. 3.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 5.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01
K-40	1.06E+03 ± 7.40E+01	1.18E+03 ± 7.20E+01	1.23E+03 ± 6.90E+01	1.12E+03 ± 7.50E+01
MN-54	L.T. 6.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00
CO-58	L.T. 6.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00
FE-59	L.T. 1.E+01	L.T. 8.E+00	L.T. 8.E+00	L.T. 9.E+00
CO-60	L.T. 6.E+00	L.T. 4.E+00	L.T. 3.E+00	L.T. 4.E+00
ZN-65	L.T. 1.E+01	L.T. 8.E+00	L.T. 7.E+00	L.T. 9.E+00
ZR-95	L.T. 5.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00
RU-103	L.T. 6.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00
RU-106	L.T. 5.E+01	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01
I-131	L.T. 7.E+00	L.T. 6.E+00	L.T. 6.E+00	L.T. 8.E+00
CS-134	L.T. 6.E+00	L.T. 4.E+00	L.T. 3.E+00	L.T. 4.E+00
CS-137	L.T. 6.E+00	L.T. 4.E+00	L.T. 4.E+00	L.T. 4.E+00
BA-140	L.T. 7.E+00	L.T. 6.E+00	L.T. 5.E+00	L.T. 6.E+00
CE-141	L.T. 8.E+00	L.T. 6.E+00	L.T. 6.E+00	L.T. 6.E+00
CE-144	L.T. 4.E+01	L.T. 2.E+01	L.T. 2.E+01	L.T. 2.E+01
RA-226	L.T. 1.E+02	L.T. 1.E+02	L.T. 1.E+02	L.T. 1.E+02
TH-228	L.T. 4.E+01	L.T. 4.E+01	L.T. 3.E+01	L.T. 3.E+01

VII-4

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK NEAREST PRODUCER

(PCI/LITER)

STATION NUMBER 61

DATE COLLECTED:	11/04/2002	12/02/2002
RADIOCHEMICAL ANALYSIS:		
I-131	L.T. 3.E-01	L.T. 5.E-01
GAMMA SPECTRUM ANALYSIS:		
BE-7	L.T. 3.E+01	L.T. 2.E+01
K-40	1.15E+03 ± 6.50E+01	1.17E+03 ± 8.85E+01
MN-54	L.T. 3.E+00	L.T. 2.E+00
CO-58	L.T. 3.E+00	L.T. 2.E+00
FE-59	L.T. 7.E+00	L.T. 4.E+00
CO-60	L.T. 3.E+00	L.T. 2.E+00
ZN-65	L.T. 7.E+00	L.T. 4.E+00
ZR-95	L.T. 3.E+00	L.T. 3.E+00
RU-103	L.T. 3.E+00	L.T. 2.E+00
RU-106	L.T. 3.E+01	L.T. 2.E+01
I-131	L.T. 7.E+00	L.T. 3.E+00
CS-134	L.T. 3.E+00	L.T. 2.E+00
CS-137	L.T. 3.E+00	L.T. 2.E+00
BA-140	L.T. 5.E+00	L.T. 8.E+00
CE-141	L.T. 5.E+00	L.T. 3.E+00
CE-144	L.T. 2.E+01	L.T. 1.E+01
RA-226	L.T. 1.E+02	L.T. 5.E+01
TH-228	L.T. 3.E+01	L.T. 4.E+01

VII-5

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK OTHER PRODUCER

(PCI/LITER)

STATION NUMBER 99

DATE COLLECTED:	01/22/2002 (a)	04/09/2002	07/09/2002	10/08/2002
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 1.E-01	L.T. 2.E-01	L.T. 2.E-01	L.T. 4.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 5.E+01	L.T. 4.E+01	L.T. 6.E+01	L.T. 2.E+01
K-40	1.37E+03 ± 7.90E+01	1.49E+03 ± 7.80E+01	1.60E+03 ± 9.80E+01	1.31E+03 ± 5.80E+01
MN-54	L.T. 6.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
CO-58	L.T. 6.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
FE-59	L.T. 1.E+01	L.T. 1.E+01	L.T. 1.E+01	L.T. 6.E+00
CO-60	L.T. 5.E+00	L.T. 5.E+00	L.T. 6.E+00	L.T. 4.E+00
ZN-65	L.T. 1.E+01	L.T. 1.E+01	L.T. 2.E+01	L.T. 5.E+00
ZR-95	L.T. 6.E+00	L.T. 4.E+00	L.T. 7.E+00	L.T. 4.E+00
RU-103	L.T. 6.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
RU-106	L.T. 5.E+01	L.T. 4.E+01	L.T. 6.E+01	L.T. 2.E+01
I-131	L.T. 9.E+00	L.T. 7.E+00	L.T. 1.E+01	L.T. 8.E+00
CS-134	L.T. 6.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
CS-137	L.T. 6.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
BA-140	L.T. 8.E+00	L.T. 6.E+00	L.T. 9.E+00	L.T. 1.E+01
CE-141	L.T. 8.E+00	L.T. 7.E+00	L.T. 1.E+01	L.T. 4.E+00
CE-144	L.T. 3.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 2.E+01
RA-226	L.T. 9.E+01	L.T. 9.E+01	L.T. 1.E+02	L.T. 6.E+01
TH-228	L.T. 4.E+01	L.T. 4.E+01	L.T. 5.E+01	L.T. 7.E+00

(a) Sample collected two weeks late due to provider's inability to meet the schedule.

VII-5

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

MILK OTHER PRODUCER

(PCI/LITER)

STATION NUMBER 100

DATE COLLECTED:	01/08/02	04/09/02	07/09/2002	10/08/2002
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 1.E-01	L.T. 2.E-01	L.T. 2.E-01	L.T. 5.E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 3.E+01	L.T. 4.E+01	L.T. 5.E+01	L.T. 2.E+01
K-40	1.21E+03 ± 7.10E+01	1.44E+03 ± 7.80E+01	1.49E+03 ± 8.90E+01	1.62E+03 ± 6.70E+01
MN-54	L.T. 4.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
CO-58	L.T. 4.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 3.E+00
FE-59	L.T. 8.E+00	L.T. 1.E+01	L.T. 1.E+01	L.T. 6.E+00
CO-60	L.T. 4.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
ZN-65	L.T. 8.E+00	L.T. 1.E+01	L.T. 2.E+01	L.T. 5.E+00
ZR-95	L.T. 4.E+00	L.T. 5.E+00	L.T. 6.E+00	L.T. 2.E+00
RU-103	L.T. 4.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 3.E+00
RU-106	L.T. 3.E+01	L.T. 4.E+01	L.T. 6.E+01	L.T. 2.E+01
I-131	L.T. 6.E+00	L.T. 7.E+00	L.T. 1.E+01	L.T. 8.E+00
CS-134	L.T. 3.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
CS-137	L.T. 4.E+00	L.T. 5.E+00	L.T. 7.E+00	L.T. 2.E+00
BA-140	L.T. 5.E+00	L.T. 7.E+00	L.T. 1.E+01	L.T. 5.E+00
CE-141	L.T. 6.E+00	L.T. 7.E+00	L.T. 8.E+00	L.T. 4.E+00
CE-144	L.T. 2.E+01	L.T. 3.E+01	L.T. 4.E+01	L.T. 1.E+01
RA-226	L.T. 1.E+02	L.T. 8.E+01	L.T. 1.E+02	L.T. 7.E+01
TH-228	L.T. 3.E+01	L.T. 4.E+01	L.T. 5.E+01	L.T. 2.E+01

VII-6

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - GROUND

(PCI/LITER)

STATION NUMBER 11

DATE COLLECTED:	01/15/02	04/14/02	07/15/02	10/15/02
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 3. E-01	L.T. 4. E-01	L.T. 4. E-01	L.T. 3. E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 3. E+01	L.T. 6. E+01	L.T. 4. E+01	L.T. 3. E+01
K-40	L.T. 7. E+01	L.T. 9. E+01	L.T. 7. E+01	L.T. 6. E+01
MN-54	L.T. 4. E+00	L.T. 6. E+00	L.T. 4. E+00	L.T. 3. E+00
CO-58	L.T. 4. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
FE-59	L.T. 7. E+00	L.T. 1. E+01	L.T. 8. E+00	L.T. 7. E+00
CO-60	L.T. 4. E+00	L.T. 6. E+00	L.T. 4. E+00	L.T. 3. E+00
ZN-65	L.T. 7. E+00	L.T. 1. E+01	L.T. 8. E+00	L.T. 7. E+00
ZR-95	L.T. 4. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 4. E+00
RU-103	L.T. 4. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 4. E+00
RU-106	L.T. 3. E+01	L.T. 6. E+01	L.T. 4. E+01	L.T. 3. E+01
I-131	L.T. 6. E+00	L.T. 2. E+01	L.T. 9. E+00	L.T. 1. E+01
CS-134	L.T. 4. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
CS-137	L.T. 4. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
BA-140	L.T. 6. E+00	L.T. 1. E+01	L.T. 7. E+00	L.T. 9. E+00
CE-141	L.T. 6. E+00	L.T. 1. E+01	L.T. 7. E+00	L.T. 6. E+00
CE-144	L.T. 3. E+01	L.T. 4. E+01	L.T. 2. E+01	L.T. 2. E+01
RA-226	L.T. 1. E+02	L.T. 1. E+02	L.T. 1. E+02	L.T. 1. E+02
TH-228	L.T. 3. E+01	L.T. 5. E+01	L.T. 3. E+01	L.T. 2. E+01
TRITIUM ANALYSIS:				
H-3	L.T. 9. E+01	L.T. 1. E+02	L.T. 1. E+02	L.T. 2. E+02

VII-6

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - GROUND

(PCI/LITER)

STATION NUMBER 47

DATE COLLECTED:	01/15/02	04/14/02	07/15/02	10/15/02
RADIOCHEMICAL ANALYSIS:				
I-131	L.T. 2. E-01	L.T. 5. E-01	L.T. 5. E-01	L.T. 4. E-01
GAMMA SPECTRUM ANALYSIS:				
BE-7	L.T. 4. E+01	L.T. 6. E+01	L.T. 4. E+01	L.T. 3. E+01
K-40	L.T. 1. E+02	L.T. 9. E+01	L.T. 8. E+01	L.T. 5. E+01
MN-54	L.T. 5. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
CO-58	L.T. 5. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
FE-59	L.T. 1. E+01	L.T. 1. E+01	L.T. 9. E+00	L.T. 7. E+00
CO-60	L.T. 5. E+00	L.T. 6. E+00	L.T. 4. E+00	L.T. 3. E+00
ZN-65	L.T. 1. E+01	L.T. 2. E+01	L.T. 9. E+00	L.T. 6. E+00
ZR-95	L.T. 5. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
RU-103	L.T. 5. E+00	L.T. 7. E+00	L.T. 5. E+00	L.T. 4. E+00
RU-106	L.T. 5. E+01	L.T. 6. E+01	L.T. 4. E+01	L.T. 3. E+01
I-131	L.T. 8. E+00	L.T. 1. E+01	L.T. 9. E+00	L.T. 1. E+01
CS-134	L.T. 5. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
CS-137	L.T. 5. E+00	L.T. 7. E+00	L.T. 4. E+00	L.T. 3. E+00
BA-140	L.T. 8. E+00	L.T. 1. E+01	L.T. 8. E+00	L.T. 8. E+00
CE-141	L.T. 8. E+00	L.T. 1. E+01	L.T. 7. E+00	L.T. 7. E+00
CE-144	L.T. 3. E+01	L.T. 4. E+01	L.T. 3. E+01	L.T. 2. E+01
RA-226	L.T. 1. E+02	L.T. 1. E+02	L.T. 1. E+02	L.T. 9. E+01
TH-228	L.T. 4. E+01	L.T. 5. E+01	L.T. 3. E+01	L.T. 2. E+01
TRITIUM ANALYSIS:				
H-3	1.80E+02 ± 5.00E+01	L.T. 1. E+02	L.T. 9. E+01	L.T. 2. E+02

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 12

DATE COLLECTED:	01/02/02	02/05/02	03/05/02	04/03/02	05/07/02
GAMMA SPECTRUM ANALYSIS:					
BE-7	(a)	L.T. 3.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 3.E+1
K-40	(a)	L.T. 9.E+1	L.T. 6.E+1	L.T. 1.E+2	L.T. 3.E+1
MN-54	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 3.E+0
CO-58	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 3.E+0
FE-59	(a)	L.T. 9.E+0	L.T. 6.E+0	L.T. 8.E+0	L.T. 6.E+0
CO-60	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 3.E+0
ZN-65	(a)	L.T. 8.E+0	L.T. 6.E+0	L.T. 9.E+0	L.T. 7.E+0
ZR-95	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 5.E+0
RU-103	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 3.E+0
RU-106	(a)	L.T. 4.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 3.E+1
I-131	(a)	L.T. 7.E+0	L.T. 5.E+0	L.T. 8.E+0	L.T. 5.E+0
CS-134	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 4.E+0	L.T. 3.E+0
CS-137	(a)	L.T. 4.E+0	L.T. 3.E+0	L.T. 5.E+0	L.T. 3.E+0
BA-140	(a)	L.T. 6.E+0	L.T. 4.E+0	L.T. 8.E+0	L.T. 1.E+1
CE-141	(a)	L.T. 6.E+0	L.T. 5.E+0	L.T. 7.E+0	L.T. 5.E+0
CE-144	(a)	L.T. 2.E+1	L.T. 2.E+1	L.T. 3.E+1	L.T. 2.E+1
RA-226	(a)	L.T. 1.E+2	L.T. 1.E+2	L.T. 2.E+2	L.T. 8.E+1
TH-228	(a)	L.T. 3.E+1	L.T. 2.E+1	L.T. 4.E+1	L.T. 9.E+0

TRITIUM ANALYSIS:	02/05-03/05
H-3	L.T. 1.E+2

(a) Sample not taken due to ice conditions.

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 12

DATE COLLECTED:	06/04/02	07/02/02
GAMMA SPECTRUM ANALYSIS:		
BE-7	L.T. 3.E+1	L.T. 4.E+1
K-40	L.T. 8.E+1	L.T. 7.E+1
MN-54	L.T. 4.E+0	L.T. 5.E+0
CO-58	L.T. 4.E+0	L.T. 5.E+0
FE-59	L.T. 8.E+0	L.T. 1.E+1
CO-60	L.T. 4.E+0	L.T. 5.E+0
ZN-65	L.T. 7.E+0	L.T. 1.E+1
ZR-95	L.T. 4.E+0	L.T. 5.E+0
RU-103	L.T. 4.E+0	L.T. 5.E+0
RU-106	L.T. 3.E+1	L.T. 4.E+1
I-131	L.T. 6.E+0	L.T. 1.E+1
CS-134	L.T. 4.E+0	L.T. 5.E+0
CS-137	L.T. 4.E+0	L.T. 6.E+0
BA-140	L.T. 5.E+0	L.T. 8.E+0
CE-141	L.T. 6.E+0	L.T. 8.E+0
CE-144	L.T. 2.E+1	L.T. 3.E+1
RA-226	L.T. 1.E+2	L.T. 8.E+1
TH-228	L.T. 3.E+1	L.T. 4.E+1
TRITIUM ANALYSIS:	04/03-06/04	07/02/02
H-3	L.T. 1.E+2	L.T. 1.E+2

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 28

DATE COLLECTED:	01/02/02	02/05/02	03/05/02	04/03/02	05/07/02
GAMMA SPECTRUM ANALYSIS:					
BE-7	(a)	L.T. 3.E+1	L.T. 3.E+1	L.T. 5.E+1	L.T. 1.E+1
K-40	(a)	L.T. 6.E+1	L.T. 8.E+1	L.T. 1.E+2	5.3E+01 ± 2.9E+01
MN-54	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 2.E+0
CO-58	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 2.E+0
FE-59	(a)	L.T. 6.E+0	L.T. 8.E+0	L.T. 1.E+1	L.T. 3.E+0
CO-60	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 2.E+0
ZN-65	(a)	L.T. 6.E+0	L.T. 8.E+0	L.T. 1.E+1	L.T. 4.E+0
ZR-95	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 3.E+0
RU-103	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 2.E+0
RU-106	(a)	L.T. 3.E+1	L.T. 3.E+1	L.T. 5.E+1	L.T. 2.E+1
I-131	(a)	L.T. 5.E+0	L.T. 6.E+0	L.T. 1.E+1	L.T. 2.E+0
CS-134	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 7.E+0	L.T. 2.E+0
CS-137	(a)	L.T. 3.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 2.E+0
BA-140	(a)	L.T. 5.E+0	L.T. 6.E+0	L.T. 1.E+1	L.T. 7.E+0
CE-141	(a)	L.T. 5.E+0	L.T. 6.E+0	L.T. 9.E+0	L.T. 2.E+0
CE-144	(a)	L.T. 2.E+1	L.T. 2.E+1	L.T. 4.E+1	L.T. 9.E+0
RA-226	(a)	L.T. 1.E+2	L.T. 1.E+2	L.T. 1.E+2	L.T. 5.E+1
TH-228	(a)	L.T. 2.E+1	L.T. 3.E+1	L.T. 5.E+1	1.1E+01 ± 6.8E+00

TRITIUM ANALYSIS:	02/05-03/05
H-3	L.T. 1.E+2

(a) Sample not taken due to ice conditions.

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 28

DATE COLLECTED:	06/04/02	07/02/02	08/06/02	09/03/02	10/01/02
GAMMA SPECTRUM ANALYSIS:					
BE-7	L.T. 4.E+1	L.T. 5.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 4.E+1
K-40	L.T. 8.E+1	L.T. 8.E+1	L.T. 7.E+1	L.T. 9.E+1	L.T. 8.E+1
MN-54	L.T. 5.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 5.E+0
CO-58	L.T. 5.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 5.E+0	L.T. 6.E+0
FE-59	L.T. 9.E+0	L.T. 1.E+1	L.T. 8.E+0	L.T. 1.E+1	L.T. 1.E+1
CO-60	L.T. 5.E+0	L.T. 6.E+0	L.T. 5.E+0	L.T. 4.E+0	L.T. 4.E+0
ZN-65	L.T. 1.E+1	L.T. 1.E+1	L.T. 8.E+0	L.T. 9.E+0	L.T. 9.E+0
ZR-95	L.T. 5.E+0	L.T. 7.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 6.E+0
RU-103	L.T. 5.E+0	L.T. 7.E+0	L.T. 4.E+0	L.T. 5.E+0	L.T. 6.E+0
RU-106	L.T. 4.E+1	L.T. 5.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 4.E+1
I-131	L.T. 8.E+0	L.T. 1.E+1	L.T. 8.E+0	L.T. 9.E+0	L.T. 2.E+1
CS-134	L.T. 5.E+0	L.T. 7.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 4.E+0
CS-137	L.T. 6.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 5.E+0	L.T. 5.E+0
BA-140	L.T. 7.E+0	L.T. 1.E+1	L.T. 8.E+0	L.T. 8.E+0	L.T. 1.E+1
CE-141	L.T. 6.E+0	L.T. 1.E+1	L.T. 6.E+0	L.T. 7.E+0	L.T. 1.E+1
CE-144	L.T. 3.E+1	L.T. 4.E+1	L.T. 2.E+1	L.T. 3.E+1	L.T. 4.E+1
RA-226	L.T. 8.E+1	L.T. 9.E+1	L.T. 1.E+2	L.T. 1.E+2	L.T. 1.E+2
TH-228	L.T. 4.E+1	L.T. 4.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 3.E+1
TRITIUM ANALYSIS:	04/03-06/04			07/02-09/03	
H-3	L.T. 1.E+2			L.T. 1.E+2	

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 28

DATE COLLECTED:	11/04/02	12/03/02
GAMMA SPECTRUM ANALYSIS:		
BE-7	L.T. 3.E+1	L.T. 3.E+1
K-40	L.T. 8.E+1	L.T. 3.E+1
MN-54	L.T. 4.E+0	L.T. 3.E+0
CO-58	L.T. 4.E+0	L.T. 3.E+0
FE-59	L.T. 8.E+0	L.T. 6.E+0
CO-60	L.T. 4.E+0	L.T. 4.E+0
ZN-65	L.T. 8.E+0	L.T. 7.E+0
ZR-95	L.T. 4.E+0	L.T. 6.E+0
RU-103	L.T. 4.E+0	L.T. 4.E+0
RU-106	L.T. 3.E+1	L.T. 3.E+1
I-131	L.T. 9.E+0	L.T. 6.E+0
CS-134	L.T. 4.E+0	L.T. 4.E+0
CS-137	L.T. 4.E+0	L.T. 3.E+0
BA-140	L.T. 7.E+0	L.T. 2.E+1
CE-141	L.T. 7.E+0	L.T. 6.E+0
CE-144	L.T. 3.E+1	L.T. 3.E+1
RA-226	L.T. 1.E+2	L.T. 8.E+1
TH-228	L.T. 3.E+1	L.T. 7.E+1

TRITIUM ANALYSIS:		10/01-12/03
H-3		L.T. 1.E+2

VII-7

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

WATER - RIVER

(PCI/LITER)

STATION NUMBER 35

DATE COLLECTED:	08/06/02	09/03/02	10/01/02	11/04/02	12/03/02
GAMMA SPECTRUM ANALYSIS:					
BE-7	L.T. 5.E+1	L.T. 3.E+1	L.T. 5.E+1	L.T. 3.E+1	L.T. 4.E+1
K-40	L.T. 9.E+1	L.T. 7.E+1	L.T. 8.E+1	L.T. 7.E+1	L.T. 2.E+2
MN-54	L.T. 6.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 5.E+0
CO-58	L.T. 6.E+0	L.T. 4.E+0	L.T. 5.E+0	L.T. 4.E+0	L.T. 5.E+0
FE-59	L.T. 1.E+1	L.T. 8.E+0	L.T. 1.E+1	L.T. 8.E+0	L.T. 1.E+1
CO-60	L.T. 6.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 5.E+0
ZN-65	L.T. 1.E+1	L.T. 7.E+0	L.T. 1.E+1	L.T. 8.E+0	L.T. 1.E+1
ZR-95	L.T. 6.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 9.E+0
RU-103	L.T. 6.E+0	L.T. 4.E+0	L.T. 6.E+0	L.T. 4.E+0	L.T. 5.E+0
RU-106	L.T. 5.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 3.E+1	L.T. 4.E+1
I-131	L.T. 1.E+1	L.T. 7.E+0	L.T. 2.E+1	L.T. 9.E+0	L.T. 8.E+0
CS-134	L.T. 7.E+0	L.T. 3.E+0	L.T. 4.E+0	L.T. 4.E+0	L.T. 4.E+0
CS-137	L.T. 6.E+0	L.T. 4.E+0	L.T. 5.E+0	L.T. 4.E+0	L.T. 5.E+0
BA-140	L.T. 1.E+1	L.T. 6.E+0	L.T. 1.E+1	L.T. 7.E+0	L.T. 2.E+1
CE-141	L.T. 8.E+0	L.T. 6.E+0	L.T. 1.E+1	L.T. 6.E+0	L.T. 7.E+0
CE-144	L.T. 4.E+1	L.T. 2.E+1	L.T. 4.E+1	L.T. 2.E+1	L.T. 3.E+1
RA-226	L.T. 1.E+2	L.T. 1.E+2	L.T. 2.E+2	L.T. 1.E+2	L.T. 1.E+2
TH-228	L.T. 4.E+1	L.T. 3.E+1	L.T. 4.E+1	L.T. 3.E+1	L.T. 9.E+1
TRITIUM ANALYSIS:		07/02-09/03			10/01-12/03
H-3		L.T. 1.E+2			L.T. 1.E+2

VII-8

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AMBIENT GAMMA RADIATION: TLD

milliRoentgen/Quarter

Sample Nuclide	Station Number	First Quarter 01/03-04/04	Second Quarter 04/04-07/10	Third Quarter 07/10-10/02	Fourth Quarter 10/02-01/02	Quarter Average ± 1 std dev.
TLD	01	15.3 ± 2.8	10.1 ± 4.4	8.7 ± 1.1	9.3 ± 0.3	10.9 ± 3.0
	02	11.8 ± 4.6	8.8 ± 2.0	9.2 ± 1.0	13.7 ± 1.8	10.9 ± 2.3
	03	9.0 ± 1.7	10.4 ± 0.6	8.4 ± 0.1	13.1 ± 2.5	10.2 ± 2.1
	04	6.5 ± 1.6	10.7 ± 3.4	8.0 ± 0.3	9.8 ± 2.3	8.8 ± 1.9
	05	9.4 ± 0.6	6.3 ± 1.9	7.2 ± 0.9	8.4 ± 0.2	7.8 ± 1.4
	06	9.7 ± 2.1	11.7 ± 1.5	10.2 ± 1.1	9.5 ± 2.1	10.3 ± 1.0
	07	11.6 ± 3.8	9.6 ± 1.8	7.7 ± 1.2	9.4 ± 1.5	9.6 ± 1.6
	08	10.0 ± 0.1	6.5 ± 2.0	8.6 ± 0.6	8.9 ± 0.4	8.5 ± 1.5
	09	7.2 ± 0.8	4.7 ± 0.6	12.3 ± 5.6	9.3 ± 0.0	8.4 ± 3.2
	10	11.8 ± 2.8	4.1 ± 1.1	7.1 ± 0.6	10.3 ± 1.4	8.3 ± 3.4
	20	10.5 ± 1.6	6.9 ± 1.0	11.8 ± 0.5	12.7 ± 1.4	10.5 ± 2.5
	44	14.1 ± 2.3	5.4 ± 1.9	10.7 ± 0.6	13.1 ± 0.9	10.8 ± 3.9
	56	11.3 ± 2.4	1.3 ± 0.9	9.1 ± 1.0	9.0 ± 0.7	7.7 ± 4.4
	58	13.0 ± 2.0	4.6 ± 0.5	8.9 ± 0.6	11.4 ± 0.8	9.5 ± 3.7
	59	7.2 ± 1.0	6.2 ± 0.4	9.3 ± 0.9	8.2 ± 0.6	7.7 ± 1.3
	66	14.5 ± 0.6	7.5 ± 3.2	10.2 ± 0.5	9.6 ± 0.6	10.5 ± 2.9
	67	11.4 ± 1.3	11.2 ± 2.2	11.4 ± 1.2	8.7 ± 0.8	10.7 ± 1.3
	71	13.5 ± 2.2	6.6 ± 1.6	10.2 ± 0.9	8.5 ± 1.2	9.7 ± 2.9
	79	10.8 ± 2.6	6.6 ± 0.9	12.4 ± 0.6	8.4 ± 1.6	9.6 ± 2.6
	80	11.0 ± 1.6	6.2 ± 2.6	9.8 ± 0.3	13.8 ± 3.2	10.2 ± 3.1
	81	11.5 ± 1.6	6.1 ± 2.3	12.0 ± 0.3	17.7 ± 4.7	11.8 ± 4.7
	82	11.6 ± 1.7	4.2 ± 0.2	13.4 ± 0.7	15.9 ± 0.6	11.3 ± 5.0
	83	10.4 ± 0.4	8.4 ± 0.1	14.2 ± 1.7	14.9 ± 0.3	12.0 ± 3.1
	84	16.1 ± 1.6	10.4 ± 0.7	14.0 ± 0.7	15.1 ± 2.1	13.9 ± 2.5
	85	10.6 ± 2.2	6.6 ± 3.4	8.2 ± 0.3	12.7 ± 1.8	9.5 ± 2.7

VII-8

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AMBIENT GAMMA RADIATION: TLD

milliRoentgen/Quarter

Sample Nuclide	Station Number	First Quarter 01/03-04/04	Second Quarter 04/04-07/10	Third Quarter 07/10-10/02	Fourth Quarter 10/02-01/02	Quarter Average ± 1 std dev.
TLD	86	10.7 ± 0.5	7.8 ± 1.0	8.9 ± 0.2	16.4 ± 0.1	11.0 ± 3.8
	87	10.7 ± 1.6	6.2 ± 0.6	8.9 ± 0.5	20.6 ± 12.0	11.6 ± 6.3
	88	9.8 ± 1.7	4.5 ± 0.9	8.7 ± 0.9	15.2 ± 1.1	9.6 ± 4.4
	89	11.6 ± 1.0	(a)	13.0 ± 1.1	13.8 ± 1.3	12.8 ± 1.1
	90	12.2 ± 0.2	3.2 ± 0.5	6.5 ± 0.9	12.9 ± 0.8	8.7 ± 4.7
	91	11.3 ± 1.2	3.6 ± 1.7	7.3 ± 0.5	11.9 ± 1.8	8.5 ± 3.9
	94	13.6 ± 1.8	6.2 ± 0.3	9.6 ± 0.1	8.6 ± 0.2	9.5 ± 3.1
Average/Quarter		11.2 ± 2.2 mR/91 days	6.9 ± 2.6 mR/97 days	9.9 ± 2.1 mR/84 days	11.9 ± 3.2 mR/92 days	
Average/Day		0.124 ± 0.02 mR/day	0.071 ± 0.03 mR/day	0.118 ± 0.02 mR/day	0.129 ± 0.03 mR/day	
Range		(6.5-16.1) mR/91 days	(1.3-11.7) mR/97 days	(6.5-14.2) mR/84 days	(8.2-20.6) mR/92 days	
Detection/Total		32/32	31/32	32/32	32/32	

(a) Sample could not be located at site.

VII-9

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

VEGETATION-TERRESTRIAL, BROADLEAF

(PCI/KG WET)

STATION NUMBER 35

DATE COLLECTED (a)

RADIOCHEMICAL ANALYSIS:

I-131

GAMMA SPECTRUM ANALYSIS:

BE-7
K-40
MN-54
CO-58
FE-59
CO-60
ZN-65
ZR-95
RU-103
RU-106
I-131
CS-134
CS-137
BA-140
CE-141
CE-144
RA-226
TH-228

(a) No vegetation sampled due to milk sample being available. Vegetation will be sampled if milk samples are not available.

VII-9

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

VEGETATION-TERRESTRIAL, BROADLEAF

(PCI/KG WET)

STATION NUMBER 96

DATE COLLECTED (a)

RADIOCHEMICAL ANALYSIS:

I-131

GAMMA SPECTRUM ANALYSIS:

BE-7
K-40
MN-54
CO-58
FE-59
CO-60
ZN-65
ZR-95
RU-103
RU-106
I-131
CS-134
CS-137
BA-140
CE-141
CE-144
RA-226
TH-228

(a) No vegetation sampled due to milk sample being available. Vegetation will be sampled if milk samples are not available.

VII-9

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - INGESTION

VEGETATION-TERRESTRIAL, BROADLEAF

(PCI/KG WET)

STATION NUMBER 101

DATE COLLECTED (a)

RADIOCHEMICAL ANALYSIS:

I-131

GAMMA SPECTRUM ANALYSIS:

BE-7
K-40
MN-54
CO-58
FE-59
CO-60
ZN-65
ZR-95
RU-103
RU-106
I-131
CS-134
CS-137
BA-140
CE-141
CE-144
RA-226
TH-228

(a) No vegetation sampled due to milk sample being available. Vegetation will be sampled if milk samples are not available.

VII-10

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

EXPOSURE PATHWAY - AIRBORNE

SHORELINE SEDIMENT

(PCI/KG DRY)

STATION NUMBER 28

DATE COLLECTED:	05/07/02	10/08/02
GAMMA SPECTRUM ANALYSIS:		
BE-7	L.T. 2.E+2	1.23E+03 ± 1.27E+02
K-40	1.93E+04 ± 7.60E+02	2.28E+04 ± 3.40E+02
MN-54	L.T. 3.E+1	L.T. 7.E+0
CO-58	L.T. 3.E+1	L.T. 8.E+0
FE-59	L.T. 5.E+1	L.T. 2.E+1
CO-60	L.T. 2.E+1	L.T. 7.E+0
ZN-65	L.T. 6.E+1	L.T. 2.E+1
ZR-95	L.T. 3.E+1	L.T. 1.E+1
RU-103	L.T. 3.E+1	L.T. 9.E+0
RU-106	L.T. 2.E+2	L.T. 6.E+1
I-131	L.T. 5.E+1	L.T. 5.E+1
CS-134	L.T. 2.E+1	L.T. 6.E+0
CS-137	6.62E+01 ± 1.32E+01	9.47E+01 ± 1.20E+01
BA-140	L.T. 4.E+1	L.T. 8.E+1
CE-141	L.T. 4.E+1	L.T. 2.E+1
CE-144	L.T. 2.E+2	L.T. 4.E+1
RA-226	L.T. 8.E+2	1.15E+03 ± 2.67E+01
TH-228	6.67E+02 ± 9.65E+01	1.27E+03 ± 5.13E+01

VIII. REFERENCES

VIII. REFERENCES

1. Nebraska Public Power District, Cooper Nuclear Station Environmental Radiation Monitoring Program, Annual Report, January 1, 1982-December 31, 1982 (prepared by Teledyne Isotopes).

2. Nebraska Public Power District, Cooper Nuclear Station Environmental Radiation Monitoring Program, Annual Report, January 1, 1983-December 31, 1983 (prepared by Teledyne Isotopes).

3. Nebraska Public Power District Cooper Nuclear Station, Environmental Monitoring Program, Annual Report, January 1, 1984 to December 31, 1984. (Prepared by Teledyne Isotopes).

4. U.S. Department of Energy; EML 440 March 1985; EML-444 April 1989; Environmental Measurements Laboratory, US Department of Energy, New York, New York 10014.

5. U.S. Environmental Protection Agency; Environmental Radiation Data, Report 35, July -- September 1983, Report 39, July -- September 1985; Report 40, October -- December 1984; Report 41, January -- March 1985. Report 42, April -- June 1985; Report 43, July-September 1985, Report 44-45, October-March 1986; Report 46, April-June 1986; Report 47, July-September 1986; Report 48, October-December 1986; Report 49, January-March 1987. Environmental Radiation Facility, Montgomery, Alabama.

6. U.S. Department of Energy; EML 460, October 1, 1986; Environmental Measurements Laboratory, US Department of Energy, New York, New York 10014.

7. U.S. Nuclear Regulatory Commission, 1975, Regulatory Guide 4.8, Environmental Technical Specifications for Nuclear Power Plants.

8. U.S. Regulatory Commission, Branch Technical Position, Radiological Monitoring Acceptable Program (November, 1979, Revision 1).

APPENDIX A
LAND USE CENSUS

ANNUAL CNS LAND USE CENSUS

Conducted July 17 - 18, 2002
0-3 miles

Cooper Nuclear Station (CNS) Offsite Dose Assessment Manual (ODAM) requires an annual land use census. This census identifies the location of the nearest garden that is greater than 500 square feet in area and yields leafy green vegetables, the nearest milk animal, and the location of the nearest resident in each of the 16 meteorological sectors within 3 miles of CNS.

In accordance with the CNS ODAM, a land use census was performed on July 17 and 18, 2002. The nearest residence was found in sector Q, 0.9 miles from CNS, and the nearest garden was found in sector L, 1.3 miles from CNS.

No milk animals were found within 3 miles of CNS and there was no evidence of potable water use from the Missouri River within three miles downstream of CNS.

ANNUAL CNS LAND USE CENSUS

July 17 - 18, 2002
0-3 Miles

SECTOR	NEAREST RESIDENT Distance	Direction in Degrees	NEAREST GARDEN Distance	Direction in Degrees	NEAREST MILK ANIMAL
A/N	3.0 Miles	1.0°	3.0 Miles	1.0°	NONE
B/NNE	NONE	--	NONE	--	NONE
C/NE	NONE	--	NONE	--	NONE
D/ENE	1.7 Miles	62.0°	NONE	--	NONE
E/E	1.8 Miles	92.0°	NONE	--	NONE
F/ESE	2.3 Miles	112.0°	2.3 Miles	112.0°	NONE
G/SE	NONE	--	NONE	--	NONE
H/SSE	NONE	--	NONE	--	NONE
J/S	NONE	--	NONE	--	NONE
K/SSW	NONE	--	NONE	--	NONE
L/SW	1.3 Miles	219.0°	1.3 Miles	219.0°	NONE
M/WSW	2.5 Miles	243.0°	1.9 Miles	241.0°	NONE
N/W	1.0 Miles	265.0°	NONE	--	NONE
P/WNW	1.7 Miles	294.0°	2.4 Miles	293.0°	NONE
Q/NW	0.9 Miles	307.0°	2.9 Miles	314.0°	NONE
R/NNW	1.9 Miles	336.0°	1.9 Miles	336.0°	NONE