

NATURAL ENVIRONMENTAL RADIOACTIVITY SURVEY

FOR THE PERIOD OF

SEPTEMBER 1983 THROUGH AUGUST 1984

Prepared by:

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INTRODUCTION

The health physics environmental sampling program includes a continuous evaluation of the levels of naturally occurring radioactivity in the immediate environs, and out to a radius of five miles from the Northrop Reactor site.

Fluctuations in the radioactivity content of the environmental samples occur from time to time due to seasonal and climatic conditions which may effect the deposition of the atmospheric fallout or other airborne radioactive materials. These minor variations must be noted since they do add to the natural environmental background; therefore, it is quite important to compile the sample data and periodically compare it with the data from the previous sampling periods in order to establish the trend in the natural background.

This, twenty-third annual report, is a compilation of the data derived from the environmental samples collected and processed during the period of September 1983 through August 1984.

In order to maintain continuity in the overall sampling program, the sampling sites have not been changed from those shown in Table 1. All sample processing and handling techniques have remained the same as those stated in the previous reports.

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AIR ANALYSIS

A total of 74 continuous air samples were collected during the period from sites S-11 and S-12. The sampling time averaged 251 hours per sample. A 72 hour decay period was permitted on each sample prior to counting to eliminate natural Radon-Thoron activities.

Figure 1, graphically displays the monthly averages from the two sampling stations. A slight overall increase in activity is shown in comparison with the previous periods for the months of November and January through May.

RAINWATER ANALYSIS

A total of 28 samples were collected from sites S-11 and S-12. The radioactivity content of the rainwater, as shown in Figure 2, shows a slight increase for September 1983 and March 1984 over the previous report, and a significant decrease for the month of August 1984 over the previous report period.

SOIL ANALYSIS

A total of 108 soil samples were collected from the sampling sites indicated in Table 1. The radioactivity content of the soil samples, as shown in Figure 3, indicates an overall stable trend with reductions for the months of January and April 1983 periods over the previous report periods.

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VEGETATION ANALYSIS

A total of 108 vegetation samples were collected and processed from the same areas as the soil samples. The sample averages, as shown in Figure 4, were quite typical with both slight increases and decreases in radioactivity.

WATER ANALYSIS

A total of 120 water samples were collected from the sites indicated in Table 1. The combined monthly averages for drinking water and pond water are shown in Figure 5. The water samples indicated a slight rise in radioactivity for the first 3 months of the report and a corresponding decrease for the last six months of the report period.

DISCUSSION

Analysis of the data for the overall environmental samples indicates a reasonably stable trend in their radioactivity content, with several slight decreases in water sample activity during the last six months of report period over previous periods and a significant decrease in rain sample activity for the month of August over previous periods.

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At times the radioactivity content of the environmental samples changed due to climatic conditions, the prevailing winds (with the change in seasons), and the temperature inversions in the Los Angeles basin. The smog content in the air during periods of temperature inversions tends to increase the natural background radioactivity of the air.

Since the overall radioactivity content of the environmental samples was reasonably stable, it is apparent that the Northrop Reactor and associated facilities have not contributed significantly to the natural radioactivity background.

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TABLE 1

SAMPLING SITES

<u>SITE</u>	<u>LOCATION</u>	<u>SAMPLES TAKEN</u>
S-1	Reactor	Soil, vegetation, and drinking water
S-2	Imperial Highway and Inglewood Blvd.	Soil, vegetation, and drinking water
S-3	Imperial Highway and Sepulveda Blvd.	Soil, vegetation, and drinking water
S-4	Prairie Avenue and Redondo Beach Blvd.	Soil, vegetation, and pond water (Alondra Park)
S-5	Hawthorne Blvd. and Redondo Beach Blvd.	Soil, vegetation, and drinking water
S-6	Hawthorne Blvd. and 190th Street	Soil, vegetation, and drinking water
S-7	Normandie and El Segundo Blvd.	Soil, vegetation, and drinking water
S-8	Rosecrans and Central Avenue	Soil, vegetation, and drinking water
S-9	Hawthorne Blvd. and Century Avenue	Drinking water
S-10	La Brea Avenue and Slauson Avenue	Soil, vegetation, and drinking water
S-11	Atop Engineering Center 900 yds. west of Reactor	Air (particulates), and rainwater
S-12	Atop Plant 3, 200 yds. east of Reactor	Air (particulates), and rainwater

PARTICULATE ACTIVITY ( $10^{-14}$   $\mu\text{Ci}/\text{ml}$ )

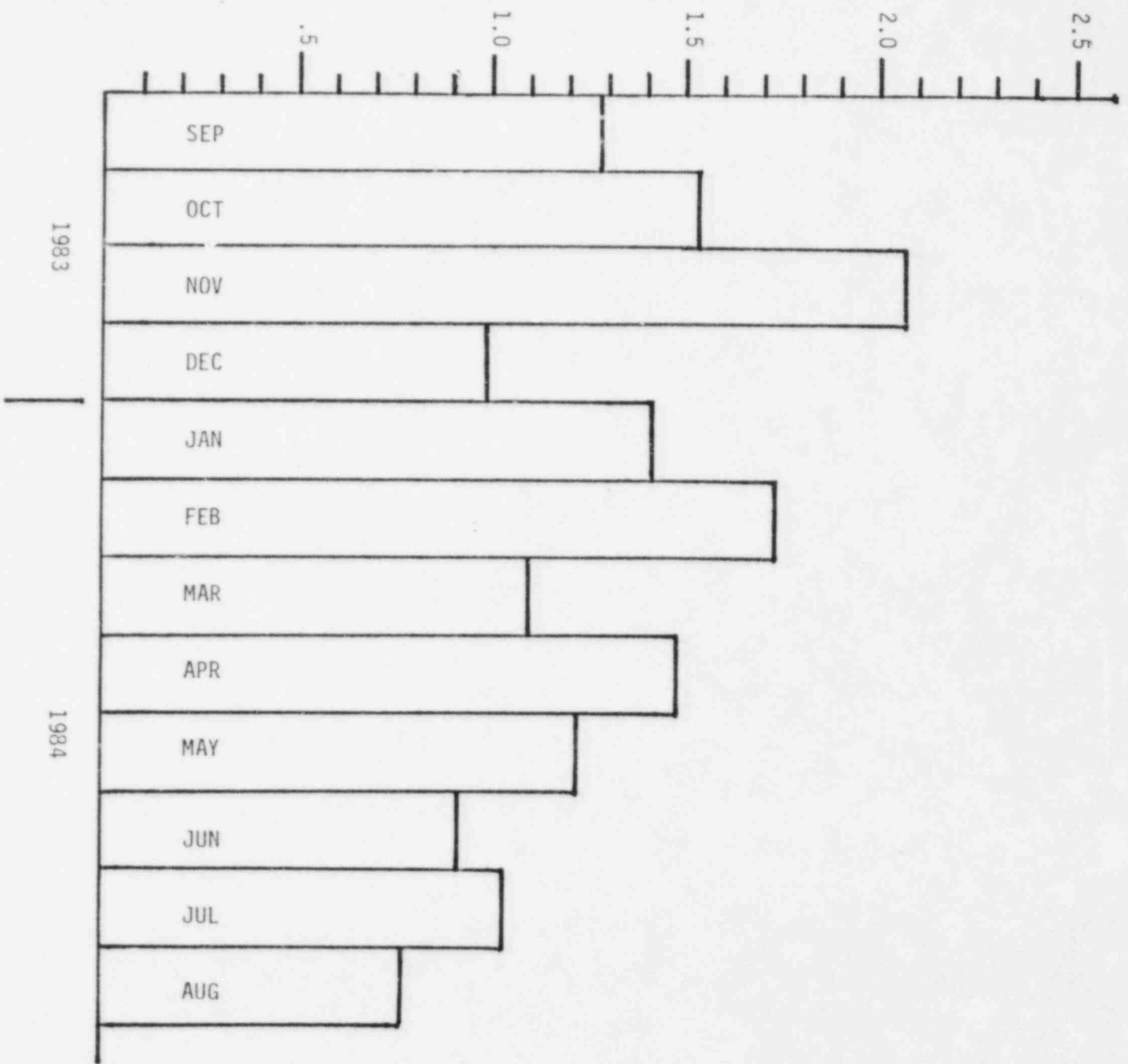


FIGURE 1 Monthly Averages of Continuous Air Samples from Sites S-11 and S-12

RAINWATER ACTIVITY ( $10^{-9}$   $\mu$ Ci/ml)

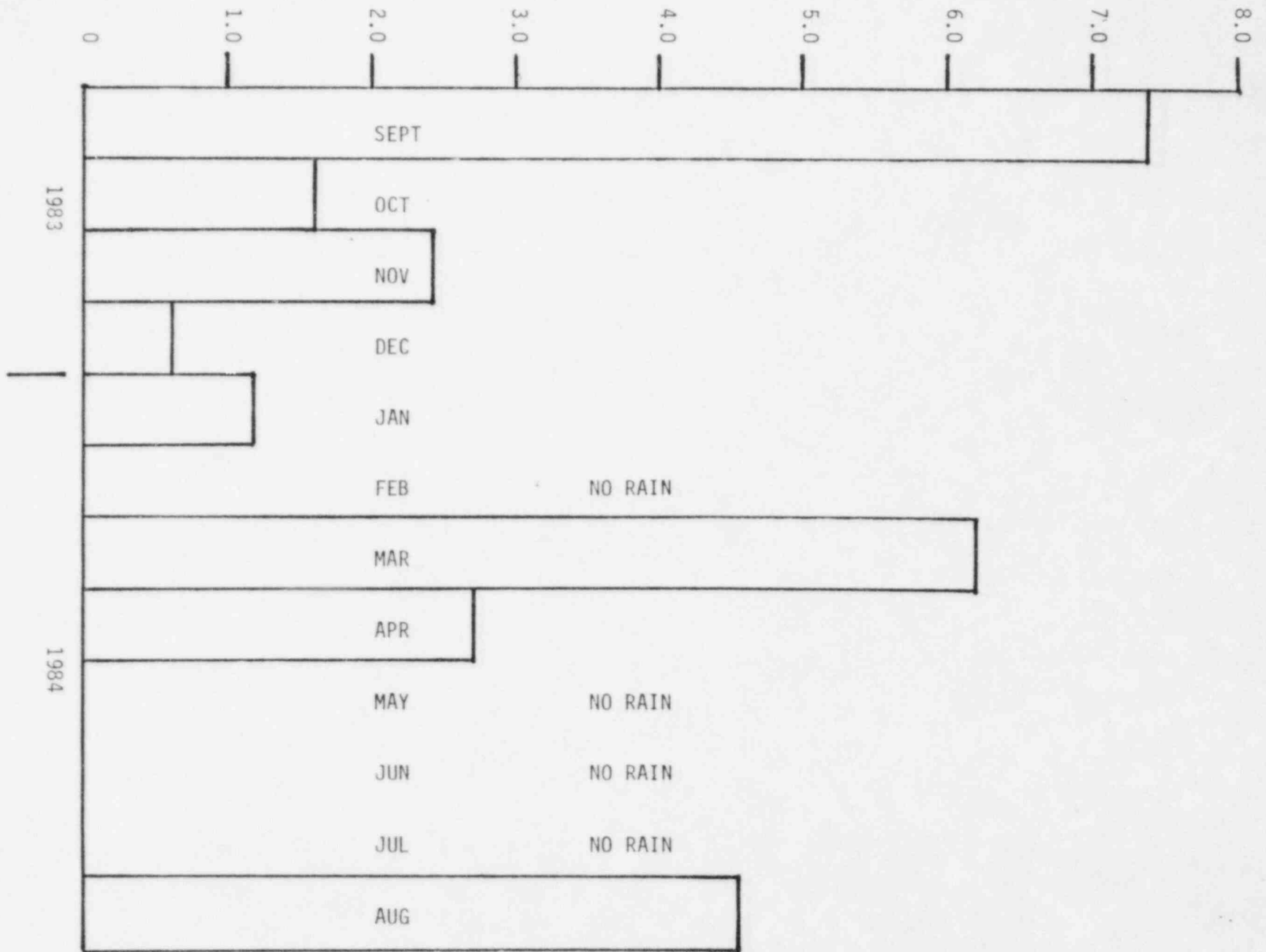


FIGURE 2 Monthly Averages of Rain Water Samples from Sites S-11 and S-12



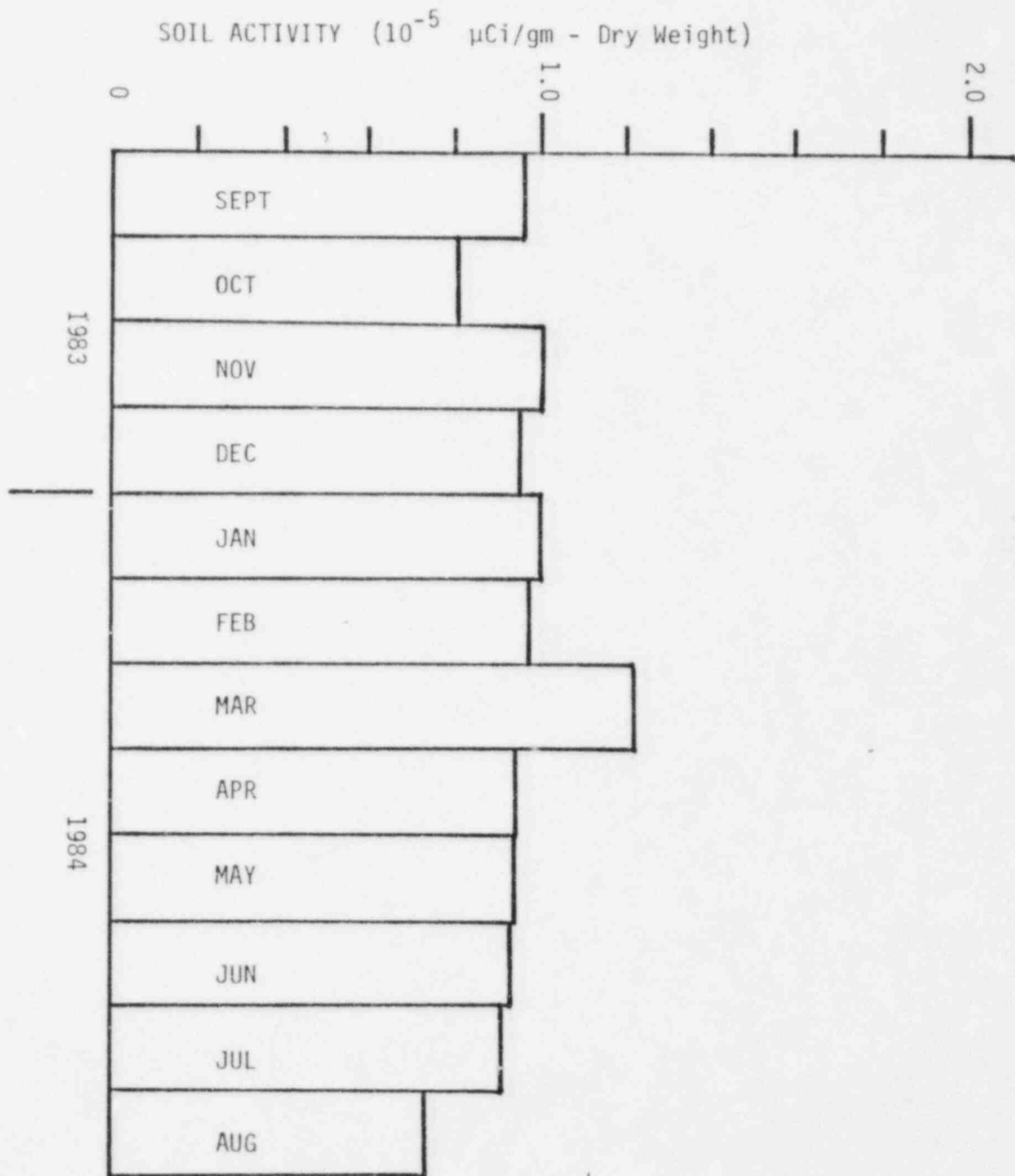


FIGURE 3 Monthly Averages of Soil Samples from Sites S-1 thru S-8, and S-10

VEGETATION ACTIVITY ( $10^{-4}$   $\mu\text{Ci/gm}$  - Dry Ash)

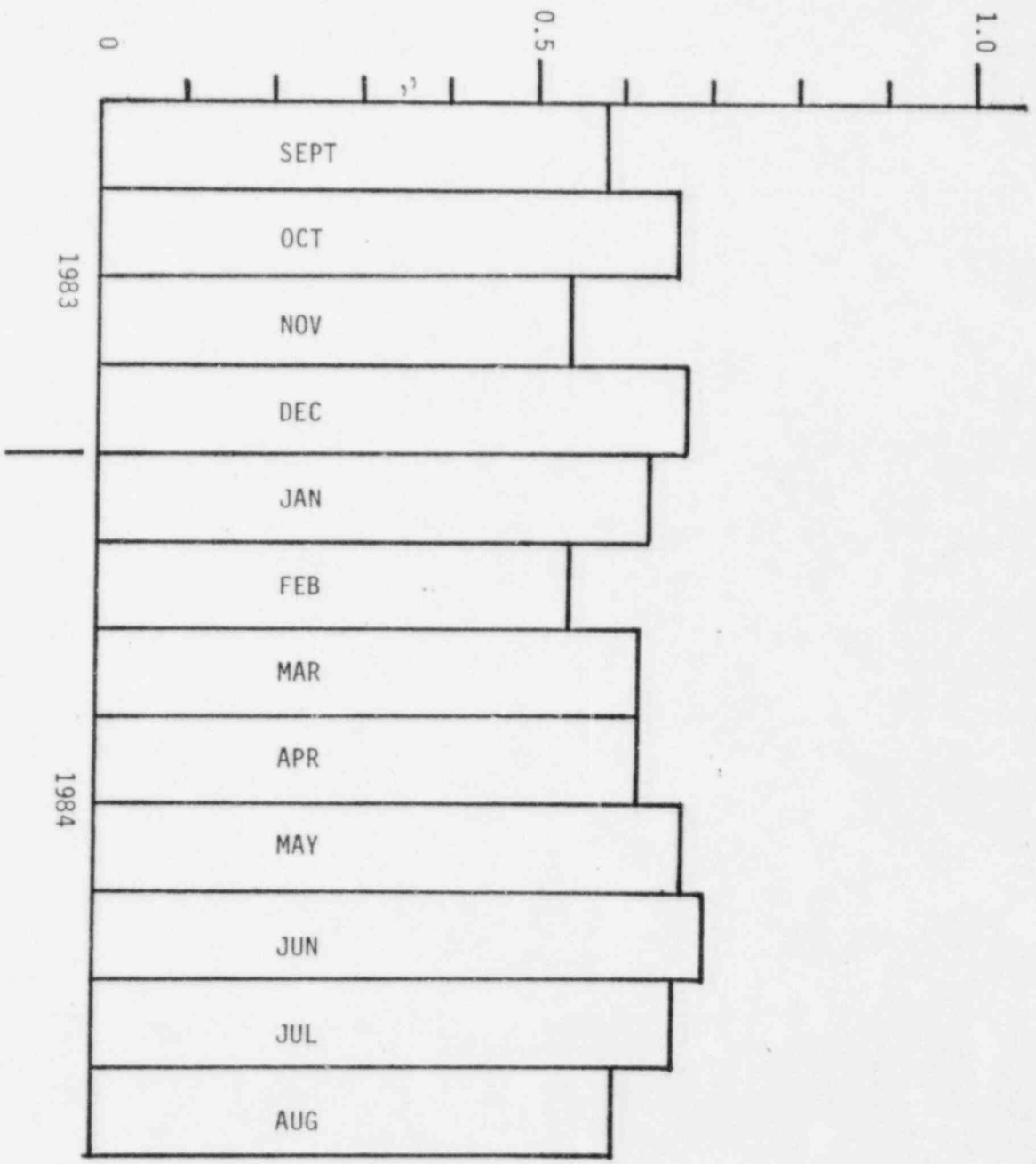


FIGURE 4 Monthly Averages of Vegetation Samples from Sites S-1 thru S-8, and S-10

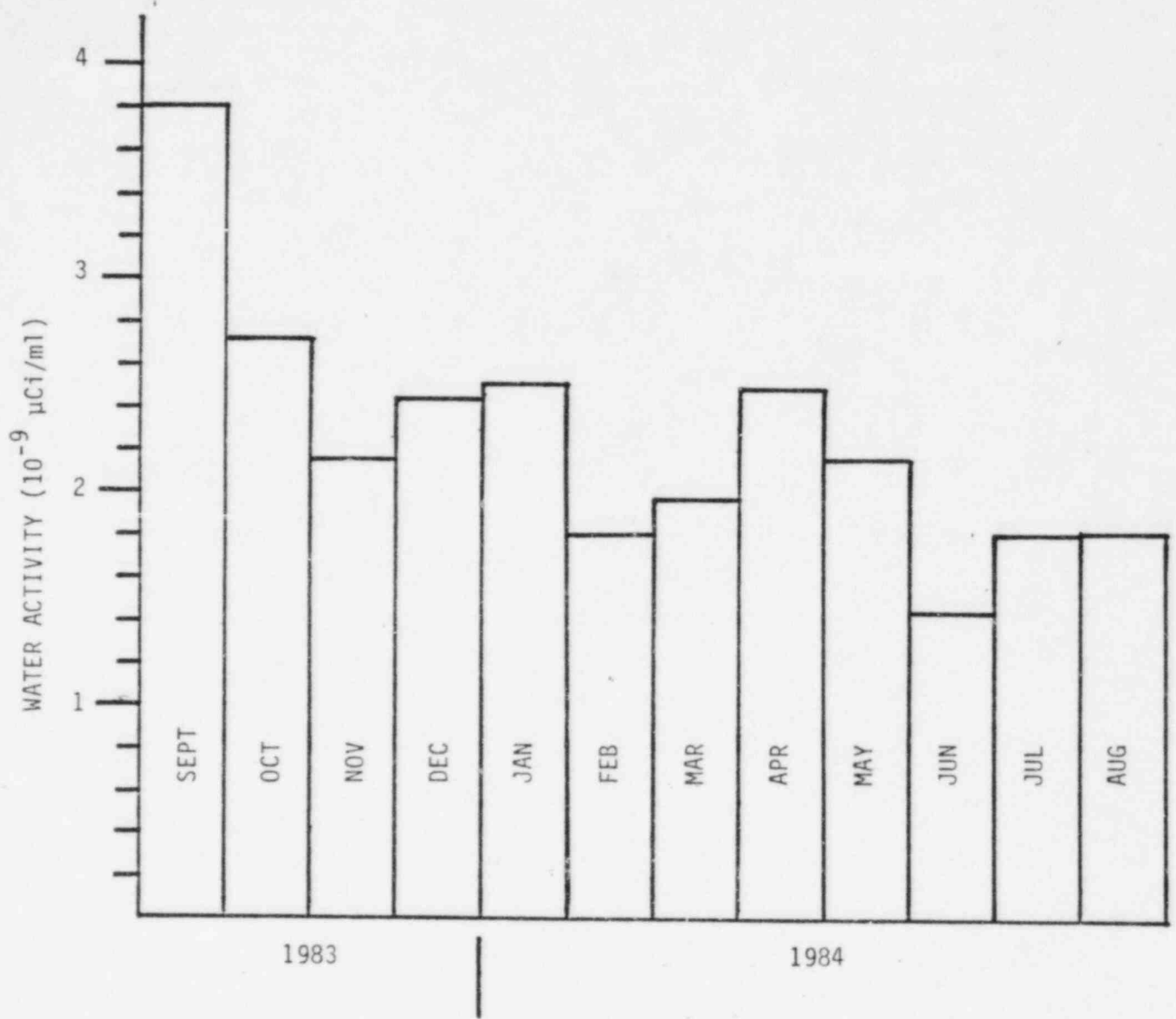


FIGURE 5 Monthly Averages of Water Samples from Sites S-1 thru S-10

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November 8, 1984

Office of Inspection & Enforcement  
c/o Distribution Services Branch  
DDC-ACM  
Washington, D. C. 20055

Attention: Director

Enclosure: Natural Environmental Radioactivity  
Survey for the period of September  
1983 through August 1984

Gentlemen:

Enclosed are seventeen copies of enclosure (1), the Natural  
Environmental Radioactivity Survey for the period of September  
1983 through August 1984, as required by our Reactor License  
R-90.

All correspondence related to the above enclosure should be  
directed to the undersigned at the following address:

Northrop Corporation ZQF  
Northrop Research and Technology Center  
One Research Park  
Palos Verdes Peninsula, California 90274

Sincerely,



J. Benveniste, Chairman  
Corporate Radiation Committee

JB:rb

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