

February 15, 1979



SUMMARY REPORT

AERIAL RADIOLOGICAL SURVEY

LAKE ONTARIO ORDNANCE WORKS

LEWISTON, NEW YORK

DATE OF SURVEY: OCTOBER 1978

APPROVED FOR DISTRIBUTION:

A handwritten signature in black ink, appearing to read 'Richard H. Beers', written over a horizontal line.

Richard H. Beers, EG&G, Inc.

A handwritten signature in black ink, appearing to read 'Herbert F. Hahn', written over a horizontal line.

Herbert F. Hahn, Department of Energy

PERFORMED BY EG&G, INC UNDER

CONTRACT NO. EY-76-C-08-1183

WITH THE UNITED STATES DEPARTMENT OF ENERGY

The Aerial Measurements System, operated by EG&G, Inc. for the United States Department of Energy, was used to conduct an aerial radiological survey over the Lake Ontario Ordnance Works (LOOW) near Lewiston, New York. This survey was conducted during October 1978 to determine if materials from the radioactive waste storage locations on the site have been redistributed in the surrounding area. A helicopter equipped with sensitive radiation detectors was used for the aerial survey. Flight lines were flown over the area shown in Figure 1, which includes the main surface water drainage paths from the site. The locations where radiation levels exceed those typical of natural background are outlined in Figure 1.

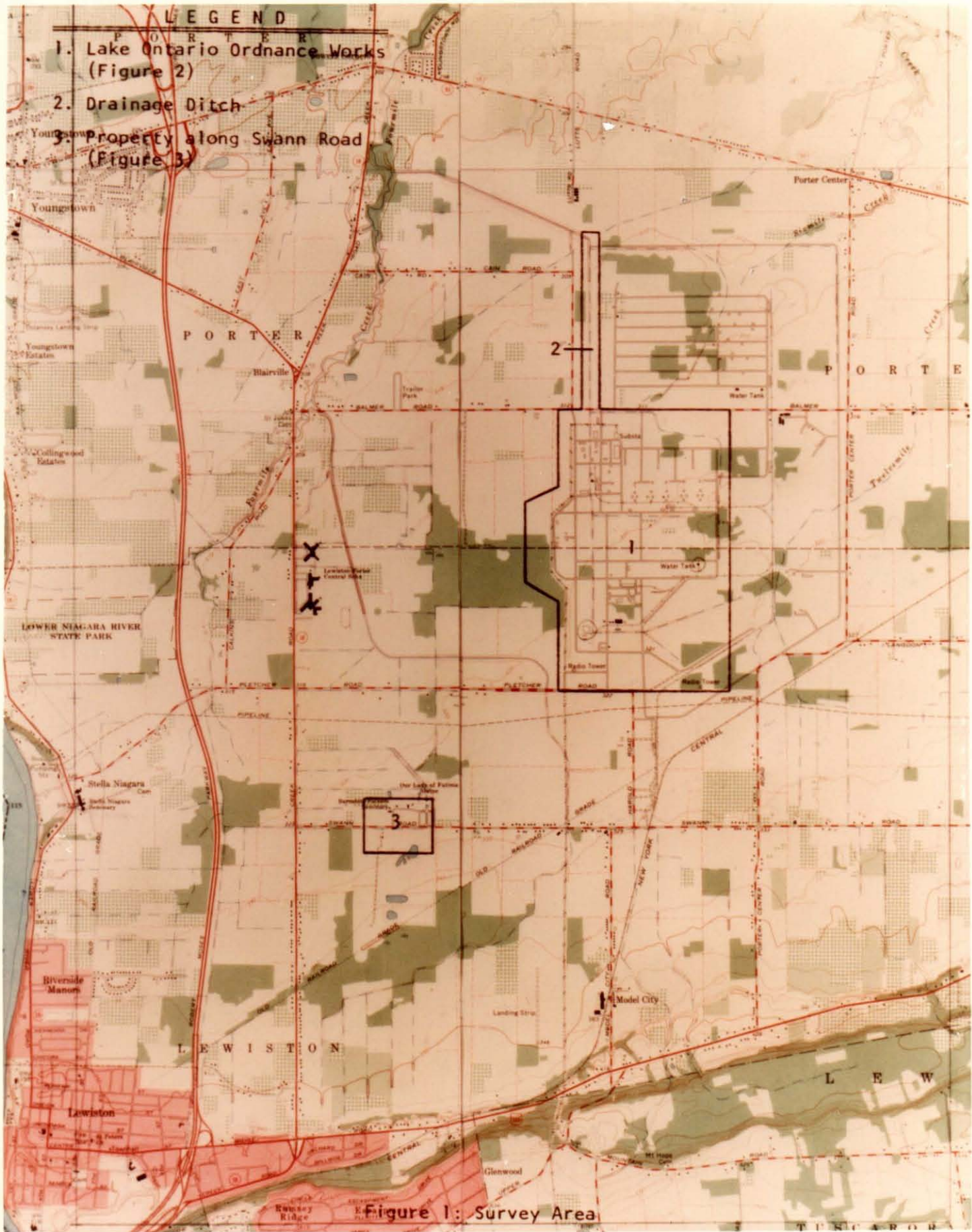
The radiation distribution within the LOOW property is shown in Figure 2. The contour lines show regions of excess radiation ranging from 1.2 to greater than 18 times the intensity of the natural background radiation. In all but one of the areas, radium was identified as the radioisotope producing the excess radiation levels. In one area, Cesium-137 ( $^{137}\text{Cs}$ ) was identified from the spectral data.

Radiation levels due to radium were also found in the drainage ditch leading north from the LOOW. Elevated levels ranging from 1.2 to 1.4 times the intensity of natural background were found along the ditch for approximately one mile. Additionally, elevated radiation

levels due to radium were found in an area along Swann Road, approximately 1.5 miles southwest of the L00W. The radiation distribution in this area is shown in Figure 3. The contour lines show regions of elevated radiation ranging from 1.2 to 4.4 times the intensity of natural background.

The airborne detection system measures the average radiation level over an area of several acres. Localized sources, therefore, will yield individual ground based readings which exceed this average. This averaging effect also produces the concentric contour lines which surround strong sources such as those in Figure 2. Additional source material present in this "shine" causes distortion in the contour lines. For example, the region containing  $^{137}\text{Cs}$  shows this effect.

In summary, the results indicate that radiation levels are typical of the natural background within the survey area except on the L00W and in two locations off-site. On the L00W the highest levels were found over the two waste storage areas. Off-site, elevated radiation levels due to radium were found in the drainage ditch leading north from the site and in an area 1.5 miles southwest of the L00W. Ground measurements are required in these areas to precisely locate the radiological features identified by this aerial survey.





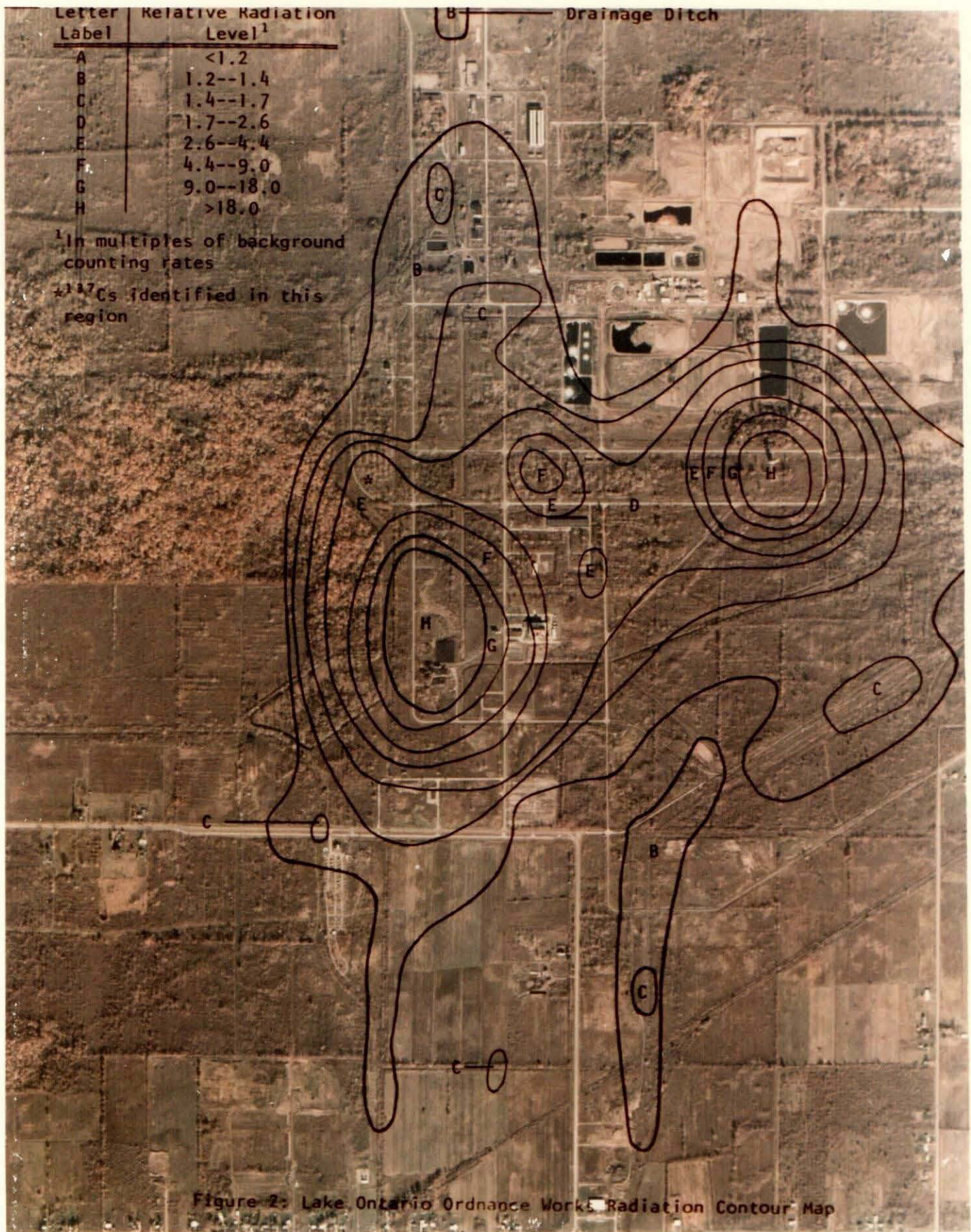


Figure 2: Lake Ontario Ordnance Works Radiation Contour Map



Letter Label	Relative Radiation Level <sup>1</sup>
A	<1.2
B	1.2--1.4
C	1.4--1.7
D	1.7--2.6
E	2.6--4.4

<sup>1</sup>In multiples of background counting rates

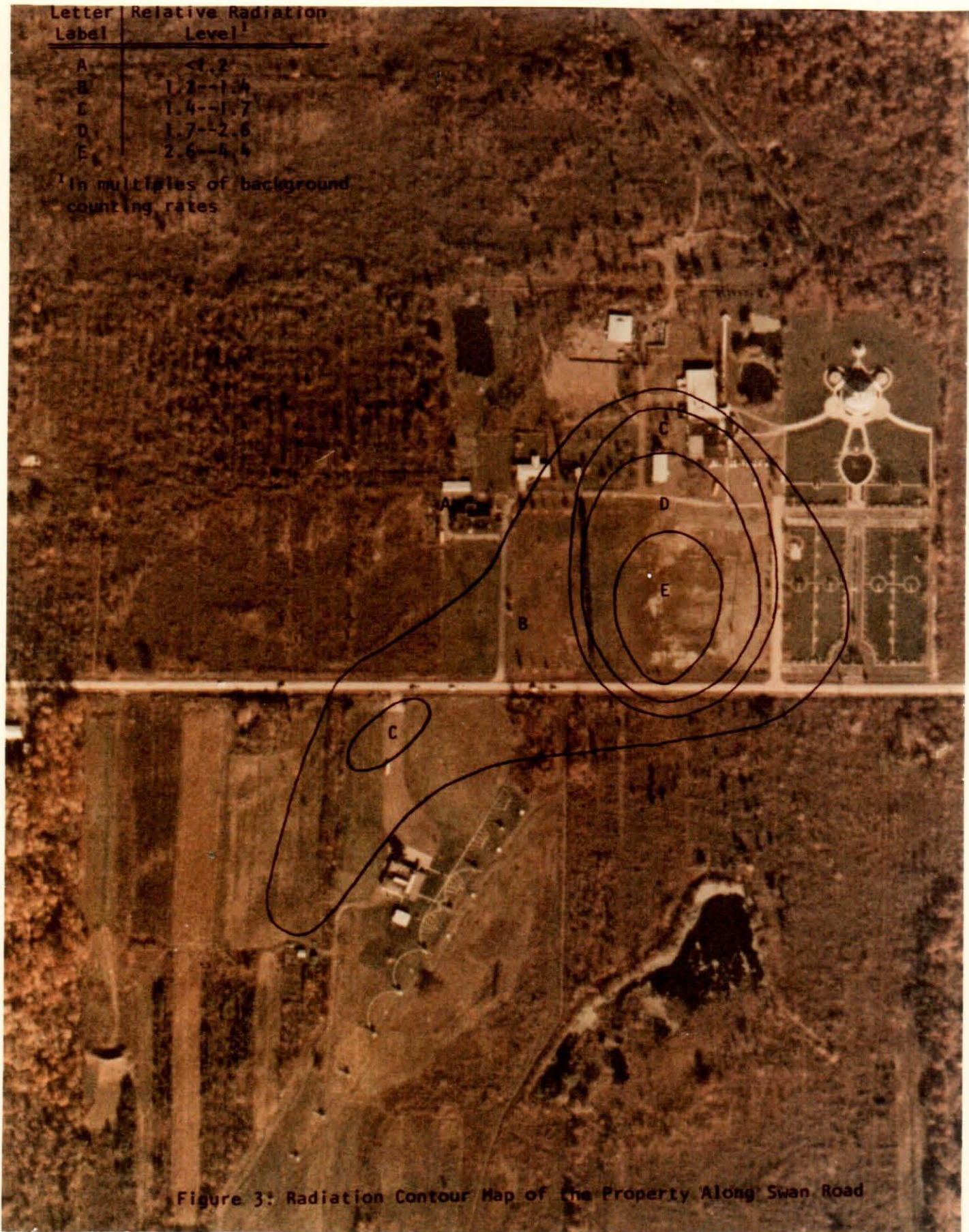


Figure 3: Radiation Contour Map of the Property Along Swan Road