Ancient Monuments Laboratory

Interim Report on geophysical survey of the Great Hill Ditch, Old Windsor.

Survey Nos. : G 16/75
G 10/82

Dates of fieldwork : 1956 (NCW Test Branch)
1975 (17-18, 24-26th. June)
1982 (9-11th. June)

Plans enclosed:

1 - location of geophysical surveys, 1 : 2500
2 - copy of plan supplied by Dr. Hope-Taylor based on 1912 25" map showing information available in 1981 with location of 1982 survey added.
3 - plots of magnetic and resistivity readings from Manor Farm, 1982, 1 : 480
4 - plots of 1982 resistivity survey of test area B (field west of church), 1975 survey inset. 1 : 480.
5 - plot of 1956 NCW resistivity survey.

This report summarises geophysical results available to the AM Laboratory up to the fieldwork done in June 1982. The work is brought together at this stage in the hope of clarifying problems which remain. The recent work was concerned with tracing the course of the Great Hill Ditch, but other parts of the Saxon site have been looked at previously.

The 1982 survey was restricted to two areas as shown on plans 1 and 2 : the field north of Manor Farm and the field east of the churchyard and adjoining Priory Cottage.

Field north of Manor Farm (test area A)

i) Magnetometer survey:

Traverses were recorded on a 30 m. grid at 1.0 m. intervals using a fluxgate gradiometer to give the plot shown on plan 3 (ii).

There is a series of minor magnetic anomalies which clearly align throughout the length of the plot. It at first seemed possible that they might mark an edge of the Great Hill Ditch, but in fact they corresponded to the position of the old field boundary as shown on the Tithe Award map, and traced on to plan 1. (A copy of the map was supplied by Dr. Hope-Taylor).

Little else was detected apart from a belt of iron in the filling of the pond at the north of the field, and a lesser amount near the farm buildings at the south. The sewer trench reported across the north part of the field was not detected, but this is not unusual for relatively shallow-filled features.

The lack of response from the Great Ditch itself is not necessarily surprising at a place where the magnetic contrasts between topsoil and subsoil or fill and natural can often be impossible. Magnetic susceptibility measurements on a set of samples from the fill and of subsoil would be useful in assessing the problem. The ditch forming the old field boundary might have

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responded because it was filled with imported material, and the iron fragments detected in the fill would tend to support this.

ii) Resistivity survey

A series of 60 m. traverses was recorded at 10 m. intervals across the depression assumed to mark the line of the Ditch. Plan 3 (i) shows that a band of low readings runs through the traverses on the correct alignment. (The graphs were plotted with a logarithmic vertical scale to emphasize variation in the low readings).

The width of the ditch is not clearly defined. The strip of low readings as indicated is some 25 m. wide, or about twice the supposed width of the ditch. The 0.5 m. probe spacing probably gives a sufficiently shallow response to include a wide weathering ramp as well as the ditch itself (but conditions seem to be different in the field near the church - see below). Further work at alternative probe spacings might test these possibilities and give some indication of the profile of the ditch.

Some other features were observed : there were high readings from the fill of the pond, and also possible anomalies on the line of the old boundary ditch (cf the magnetic survey). There is also a high resistance feature of uncertain significance in the area of magnetic noise at the southern end of the field.

Field west of the church (test area B)

No magnetic surveying was attempted in this field because it has been considerably disturbed and contains remains of garden buildings and greenhouses which would interfere.

Instead the site was covered by a resistivity survey with readings taken on a 2 m. grid. This should be satisfactory for features on the scale of the Mill Ditch, but would not resolve fine detail or structures, for which more intensive survey would be required. The probe spacing used was again 0.5 m., which with the Twin Electrode configuration should respond to features to about 1.0 m. depth, and so give a good general assessment of the site even if deeper features are obscure.

Various alternative treatments of the data are shown on plan 4. The smoothing (II) reinforces features on the scale of those sought. A wide, high-pass filter was applied to remove any background changes from the data and when the negative anomalies are then displayed as dot-density and contour plots several significant features are visible.

The most conspicuous of these enters mid-way across the southern side of the field. It is a well-defined anomaly some 8 - 10 m. across and in both size and orientation forms a continuation of the line of the Ditch as known in the field to the south, where it has been traced both in the resistivity survey of Professor Atkinson and by excavation.

Half way up the field the line becomes ambiguous. There are anomalies which could represent a continuation either to the north (A), or towards the north-west (B). The survey response might well be confused by the driveway to the Priory shown on the Tithe map, which could lie close to the line B, or by former subdivisions of the field shown on a 1932 25" map very near to line A (see plan 1). Both these, however, would be expected to give positive anomalies rather than the negative ones being considered here.

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There is a further area of low readings in the south-western corner of the field, but they do not appear to form part of a linear feature.

Line B, if extended, could accommodate the exposed ditch section noticed by Dr. Clark to the north-west of the field in 1975, and with a sharp turn to the west would allow the ditch to include the pond visible north of the road in 1912 (plans 1 and 2). The negative anomaly on line A is however rather more pronounced, and of similar magnitude to that at the southern side of he the field. There could of course be more than one channel, and further work in fields north of the road is probably needed to test this possibility. A cropmark including an apparent linear feature was noted to the north-east on a plan drawn in 1975 (plan 1).

The 1975 results (inset) have been replotted to the same scale and confirm that both surveys detected the minor negative feature to the east of the site. The earlier survey was done at 1.0 m. reading separation and so responded more clearly to the relatively narrow feature. A traverse taken westwards from the 1975 survey also produced low readings from the position now confirmed to be the line of the Great Ditch.

Other results

In addition to the resistivity mentioned above, a magnetic scan was carried out south of the Priory in 1975 in an area where it was proposed to build stables. The scan produced two areas of magnetic disturbance in the positions shown on plan 1, but I do not know whether they were later investigated. The stables were built on a concrete raft to protect any archaeological features. The area of the 1956 resistivity survey was also scanned without result. The scan would have included some of Test Area C as marked on plan 2, but there was no response from the assumed line of the ditch which is unlikely to be any more magnetically detectable here than at Manor Farm.

Resistivity work remains to be done in this area. Once it has been carried out it will be useful to correlate the results with those from Professor Atkinson's survey which lies between Area C and the field surveyed last year. The plan published in Pyddoke (ed., The Scientist and Archaeologist, 1963, p. 28) shows apparently an occupation area within the site and not the line of the ditch itself.

The location of the 1956 MOW Test Branch survey is marked on plan 1, and a plot made from it in 1975 is also included (plan 5). The dot-density plot shows only darkening around the edges, which appears to be an effect caused by the filters when used on a triangular grid, and some linear features which lie parallel to the traverses and might also be artefacts of the survey. Further processing of this data so that it can be presented uniformly with the recent results might show whether this area is genuinely lacking in features, and if so will give an indication of the degree of natural background variation to be expected on this site.

Reported by A. Bartlett, 11th. January 1983.

Surveyed; 1975, by A. J. Clark, D. Haddon-Reece, A. David, P. Crawshaw.
1982, by A. Bartlett, A. David.

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OLD WINDSOR
Geophysics

30m magnetometer squares

resistivity traverses

resistivity survey

A.M. Lab 1982 1:2500

boundary (Tithe map)

AML 1982

drive to Priory (Tithe map)

AP (1975)

exposure (1975)

AML 1982

AML 1975

boundaries (1932)

ATKINSON ?

excavation

line of Great Ditch

MOW 1956

magnetic anomalies (1975)

after BHT June 1981

ARCHAEOLOGICAL FEATURES SUPERIMPOSED ON 1912 EDITION OF 25" O.S. TO SHOW AREA BEFORE MORE RECENT CHANGES

N

1" = 200 feet approx.

RIVER THAMES

POND 1912

WEIR

THE NEW CUT

APPROX. LINE OF MAIN SEWER TRENCH

TEST AREA A

POND

Manor Farm

OLD WATER COURSE

'GREAT MILL-DITCH' SURVIVING AS VISIBLE MONUMENT

HAM LANE

CHURCH ROAD

POND 1912

Lodge

Cell Farm

Lodge

TEST AREA B

MAIN AREA OF EXCAVATIONS 1953-8

Manor Cottage

St. Peter's Church

The Hermitage

THE PRIORY

TEST AREA C

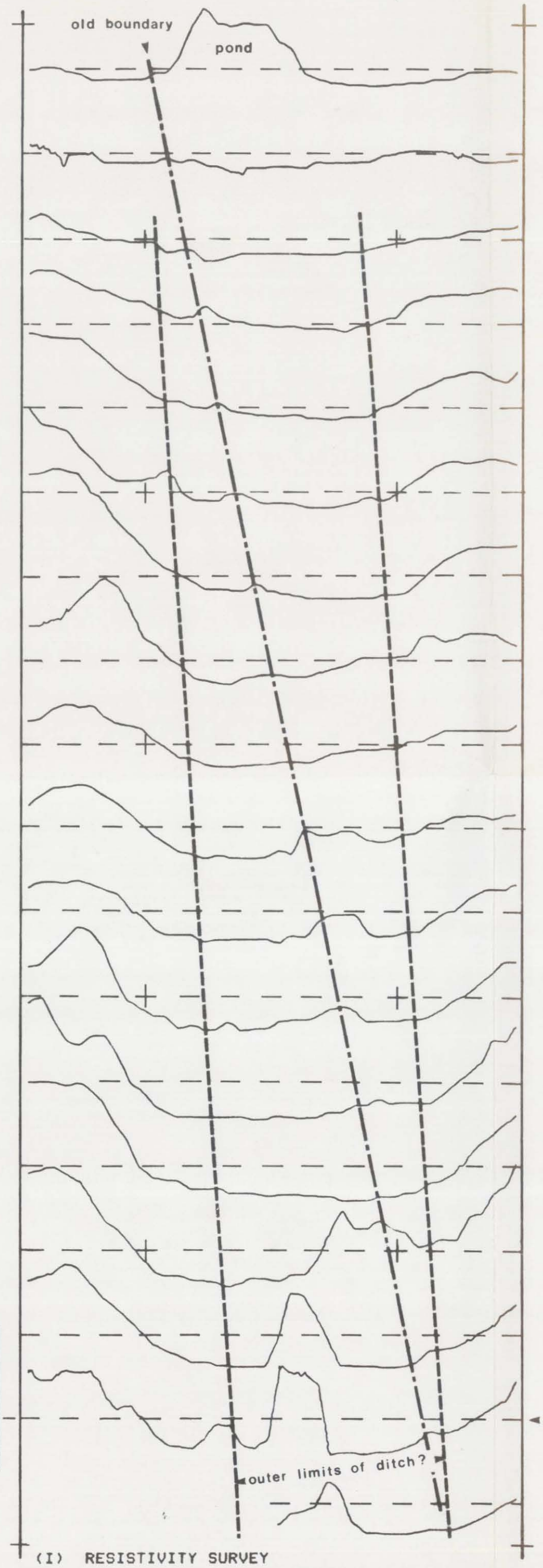
R. THAMES

Ferry

OLD WINDSOR: THE GREAT MILL-DITCH

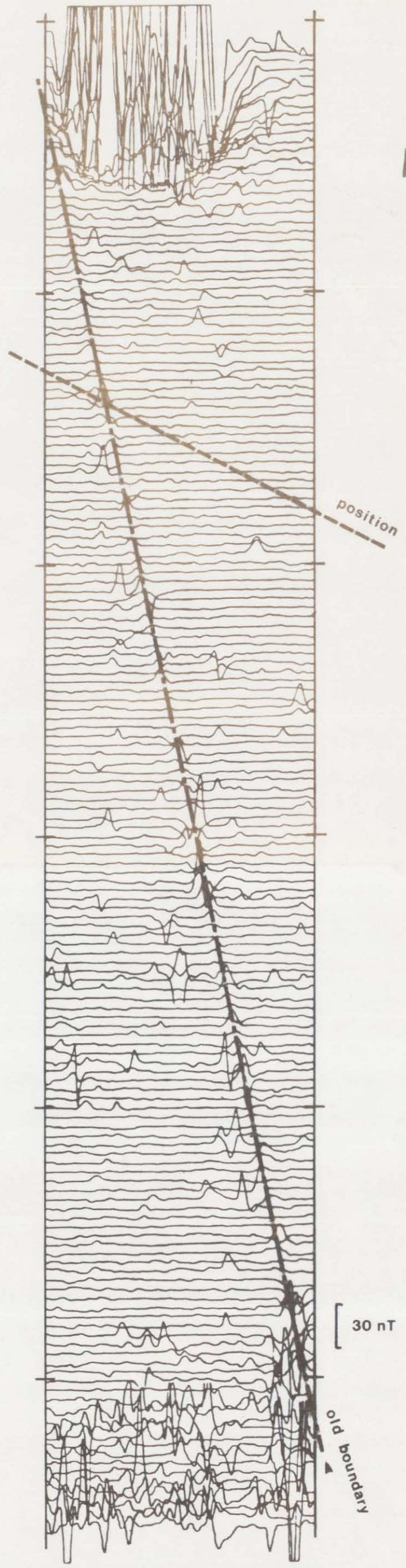
= KNOWN = INFERRED = CROPMARK

OLD WINDSOR Test Area A



(I) RESISTIVITY SURVEY

(T.E. CONFIGURATION; PROBE SPACING 0.5M;
SEPARATION OF READINGS 1.5M)

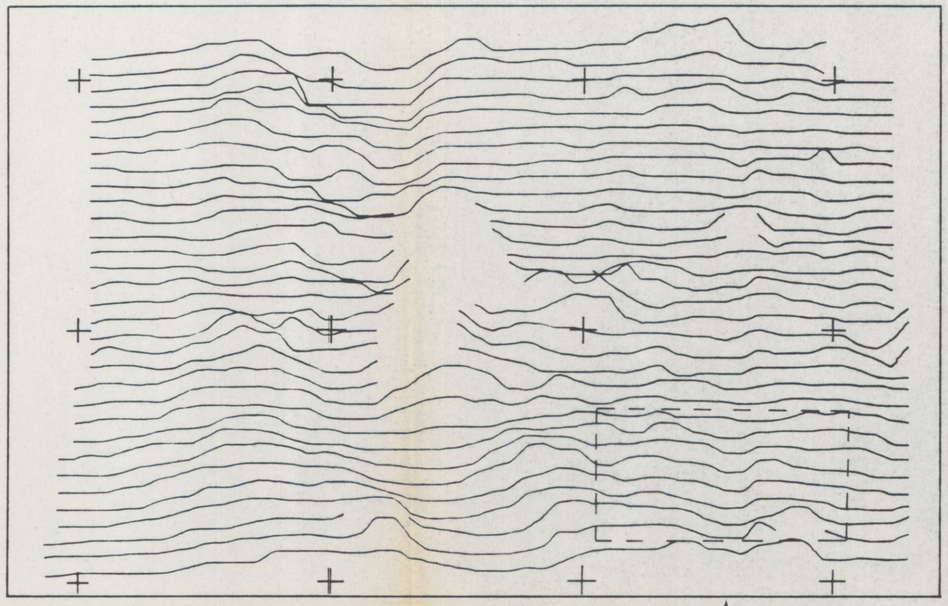


(II) MAGNETOMETER SURVEY

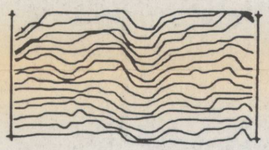
1:480

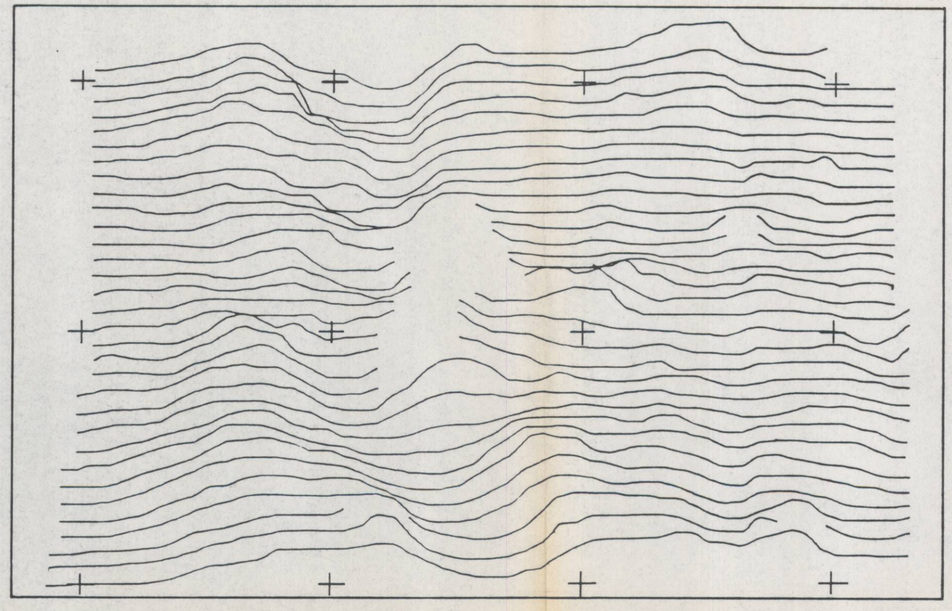
A.M. Lab 1982

OLD WINDSOR Resistivity Survey 1982 Test Area B



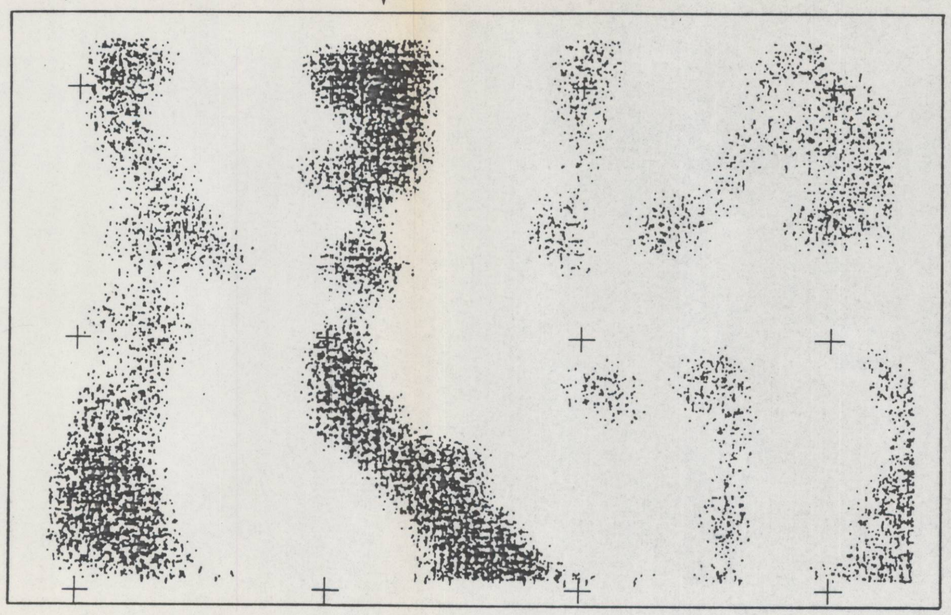
(I) INITIAL DATA (WITH EDGE CORRECTIONS)
T.E. CONFIGURATION; PROBE SPACING 0.5M
SEPARATION OF READINGS 2M



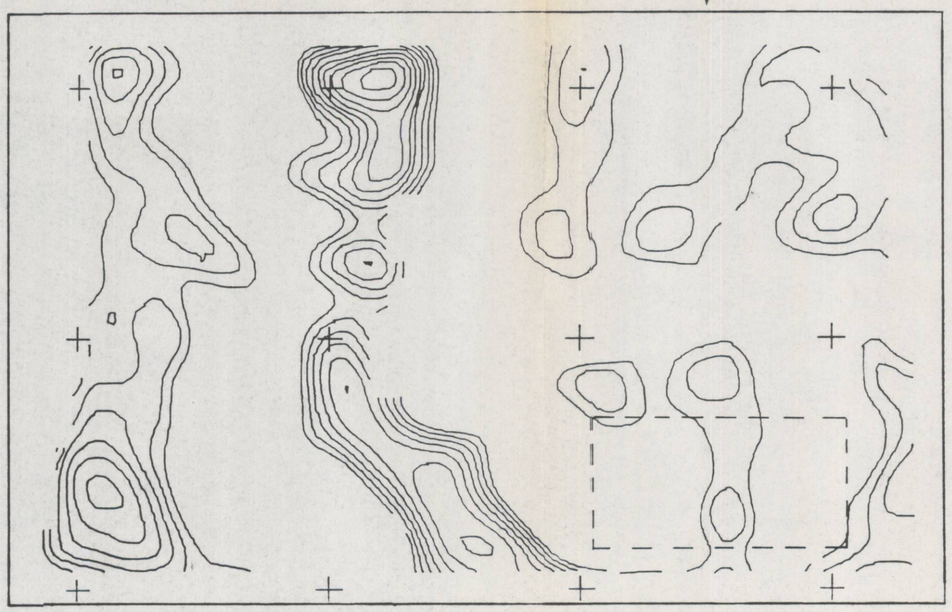


(II) SMOOTHED DATA (LOW-PASS FILTER RADIUS 2)

1975 SURVEY
(TREATMENT AS BELOW)



(III) DOT DENSITY PLOT OF NEGATIVE ANOMALIES. RANGE MINIMUM TO MEAN.
(DATA AS FROM (II) X HIGH-PASS FILTER RADIUS 7)



(IV) CONTOUR PLOT. RANGE MINIMUM TO MEAN; CONTOUR INTERVAL = 0.5 ST. DEV.
(DATA AS FOR (III))

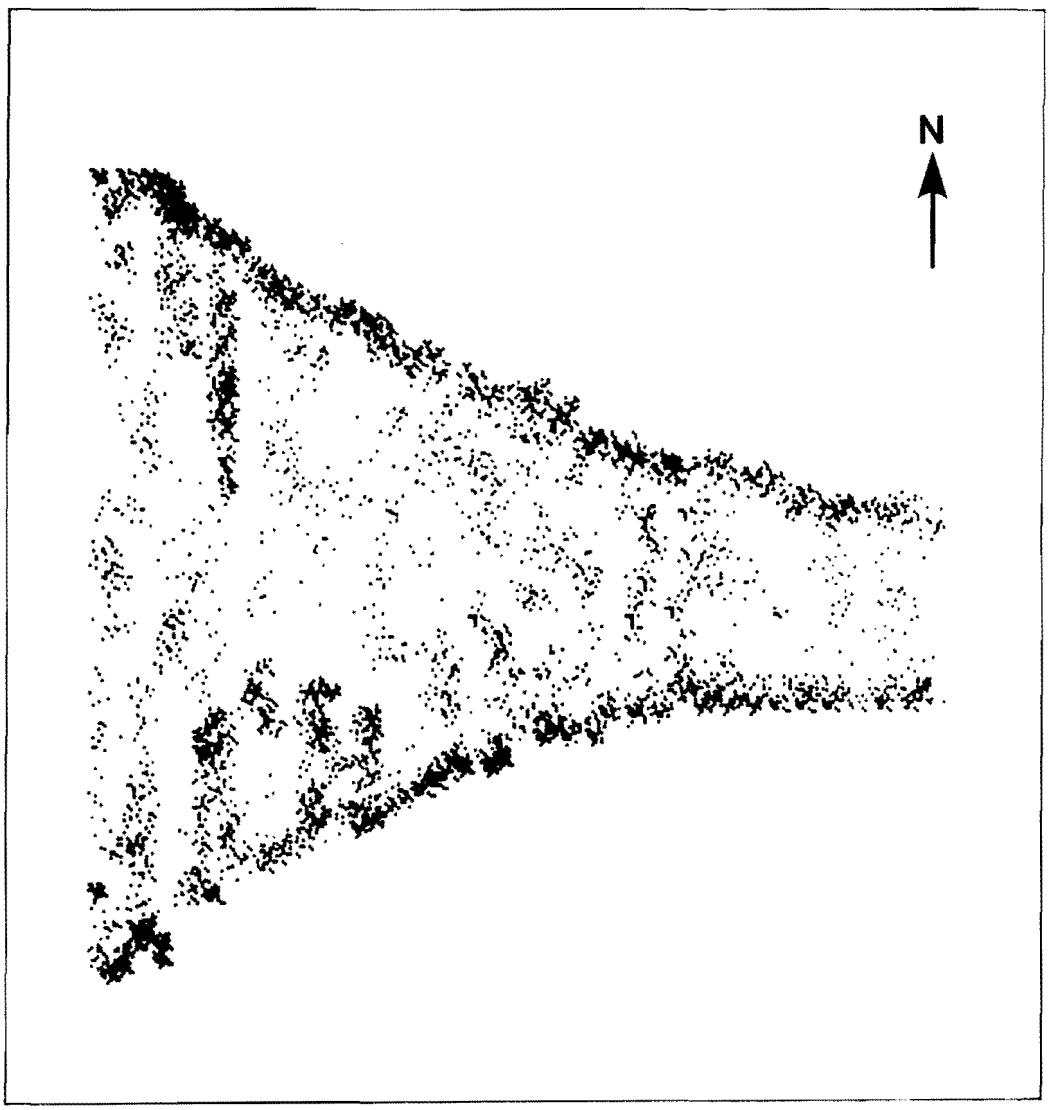
A.M. Lab

1:480

OLD WINDSOR, Resistivity survey, 1956 (by MOW Test Branch)

Dot density plot by CI Data Ltd., 1975

(Filter radius 2, Range 14 - 20 ohms)



dimensions of survey 260 x 216 feet

Equilateral grid: configuration not recorded

reading interval and probe spacing : 4 feet

A. M. LAB., 1982