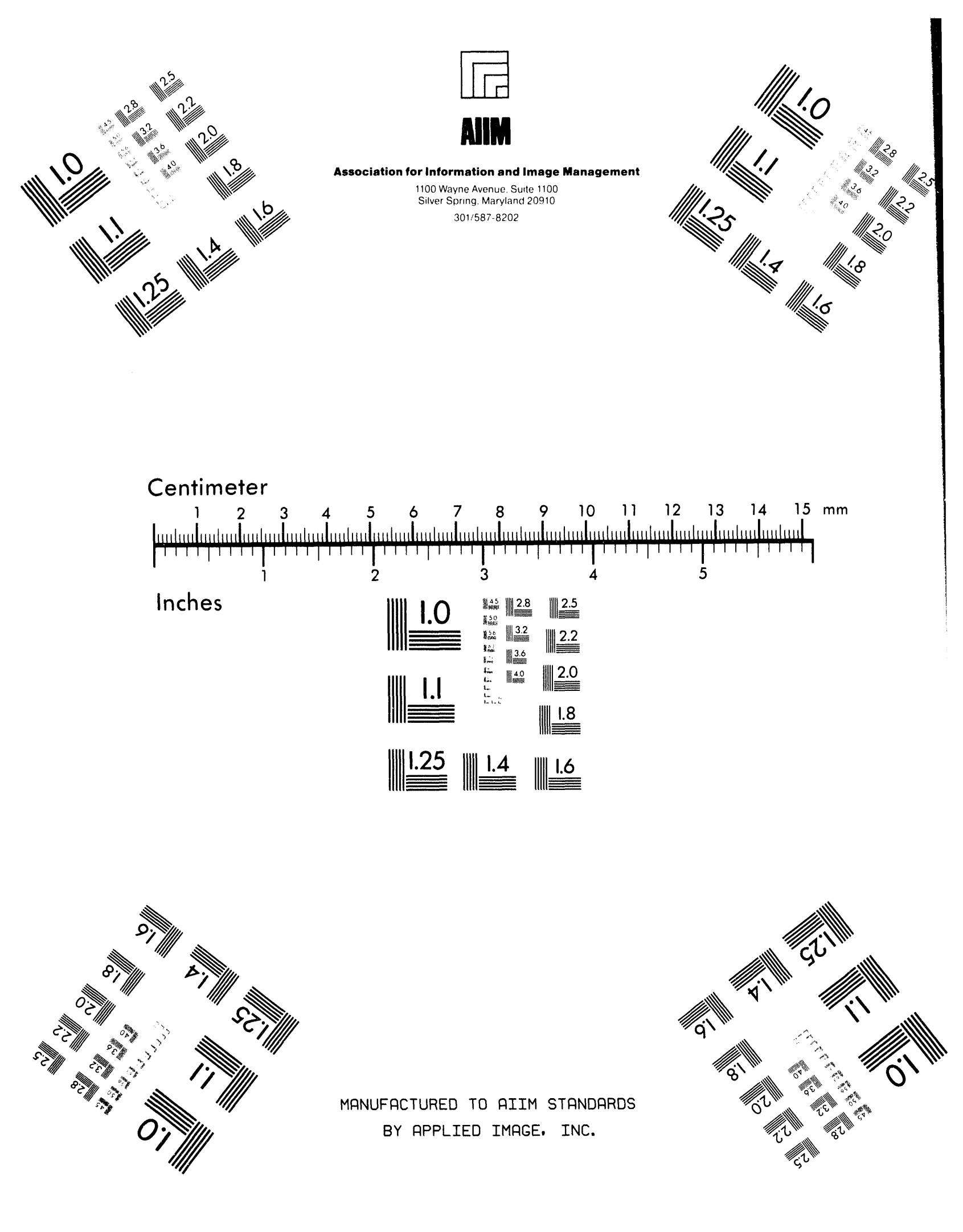
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SUPPORTING DOCUMENT

SUPPORTING DOCUMENT	1. Total Pages 6

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7. Abstract

WHC, 1994, Mitchell, T. H. and G. J. Szwartz, *Geophysical Survey for Proposed Borehole 199-K-106A, 100-K Area, WHC-SD-EN-TI-230*, Rev. 0, *Hanford Site, Westinghouse Hanford Company, Richland, Washington."*

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10. RELEASE STAMP

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1.0 OBJECTIVE

The objective of the survey was to locate subsurface obstructions that may affect the drilling of proposed borehole, 199-K-106A, about 50 ft east of the 1714 KW Building, 100-K Area, (Figure 1). Based upon the results of the survey, possible drill sites within the zone, with the least likelihood of encountering identified obstructions, were identified.

2.0 GROUND-PENETRATING RADAR METHODOLOGY

The ground-penetrating radar (GPR) system used for this work utilized a 300-megahertz antenna to transmit the electromagnetic (EM) energy into the ground. The transmitted energy is reflected back to a receiving antenna where variations in the return signal are recorded. Common reflectors include natural geologic conditions such as bedding, cementation, moisture, and clay, or man-made objects such as pipes, barrels, foundations, and buried wires.

The method is limited in depth by transmit power, receiver sensitivity, frequency, and attenuation of the transmitted energy which can be strongly affected by geology. Depth of investigation is also influenced by highly conductive material, such as metal drums, which reflect all the energy back to the receiver. Therefore, the method cannot "see" below such objects. Maximum depth of penetration for this survey seemed to be about 10 to 12 ft.

Display and interpretation of the data are similar to seismic reflection data. In some areas, interpretations can be straight forward, but often unknown parameters within a highly variable subsurface yield complex data.

Data for these surveys were collected with a Geophysical Survey Systems Inc. (GSSI) Subsurface Interface Radar (SIR) [a trademark of Geophysical Survey Systems Inc. (GSSI)] System 8, model 4800 and digitally stored on a GSSI DT6000A tape drive. A recording window of 100 nanoseconds, two-way travel time, was used.

3.0 GRID LOCATION

The survey boundary is a square, measuring 50 ft by 50 ft (Figure 2). Painted stakes mark the corners of the grid. The survey grid strikes approximately N28W. All distances were measured and posted in feet. The southwestern corner of the grid is designated E100/N100 and serves as the "origin" for the survey locations. The letters "N" or "E" refer to a direction that trends generally north or east, respectively. The number refers to a distance in feet. For example, grid point E135/N120 lies 35 ft "east" and 20 ft "north" of grid point E100/N100.

Data were collected along two sets of profiles perpendicular to each other. Spacing between profiles was 5 ft.

4.0 QUALITY CONTROL

These data were collected using procedures in WHC-CM-7-7, EII 11.2, Rev. 3, *Environmental Investigations and Site Characterization Manual*, Westinghouse Hanford Company. The data and records are stored in the Geophysics files. Figure 3 summarizes survey parameters.

5.0 RESULTS

The entire site appears to be disturbed. The southern and western portions of the site, as defined by the hatched pattern (Figure 2), contain significant scattered debris. The debris is predominantly between 3 to 7 ft below the surface. In the northern and northeastern portions of the survey area, cables are mapped protruding from the surface. The cables apparently are old anchors for trailers. No linear anomalies transecting the survey area are evident in the data.

The borehole was initially located at N117/E120. Another location, several feet north at N119/E126, is recommended in order to reduce the likelihood of drilling into significant debris.

Figure 1. Location Map.

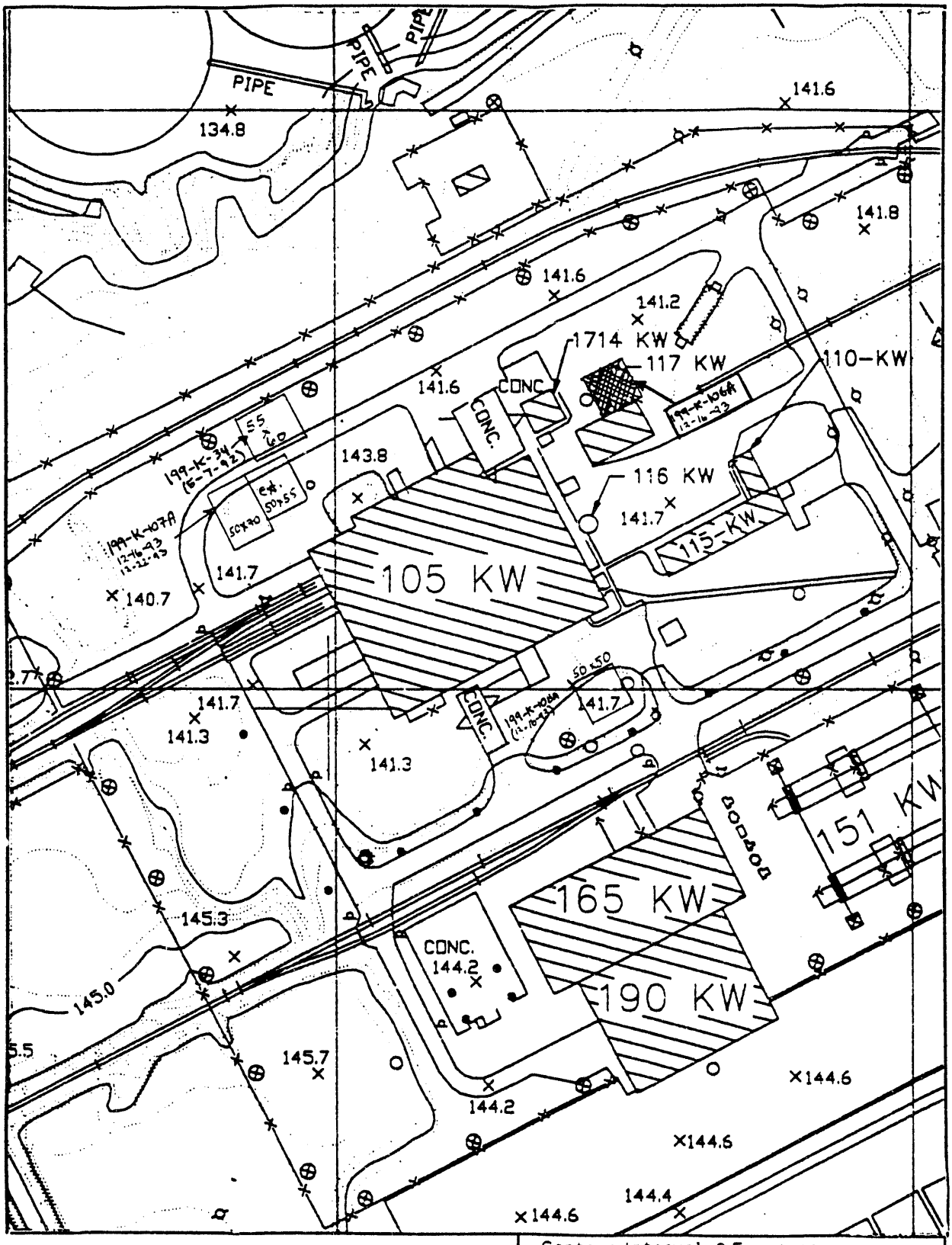
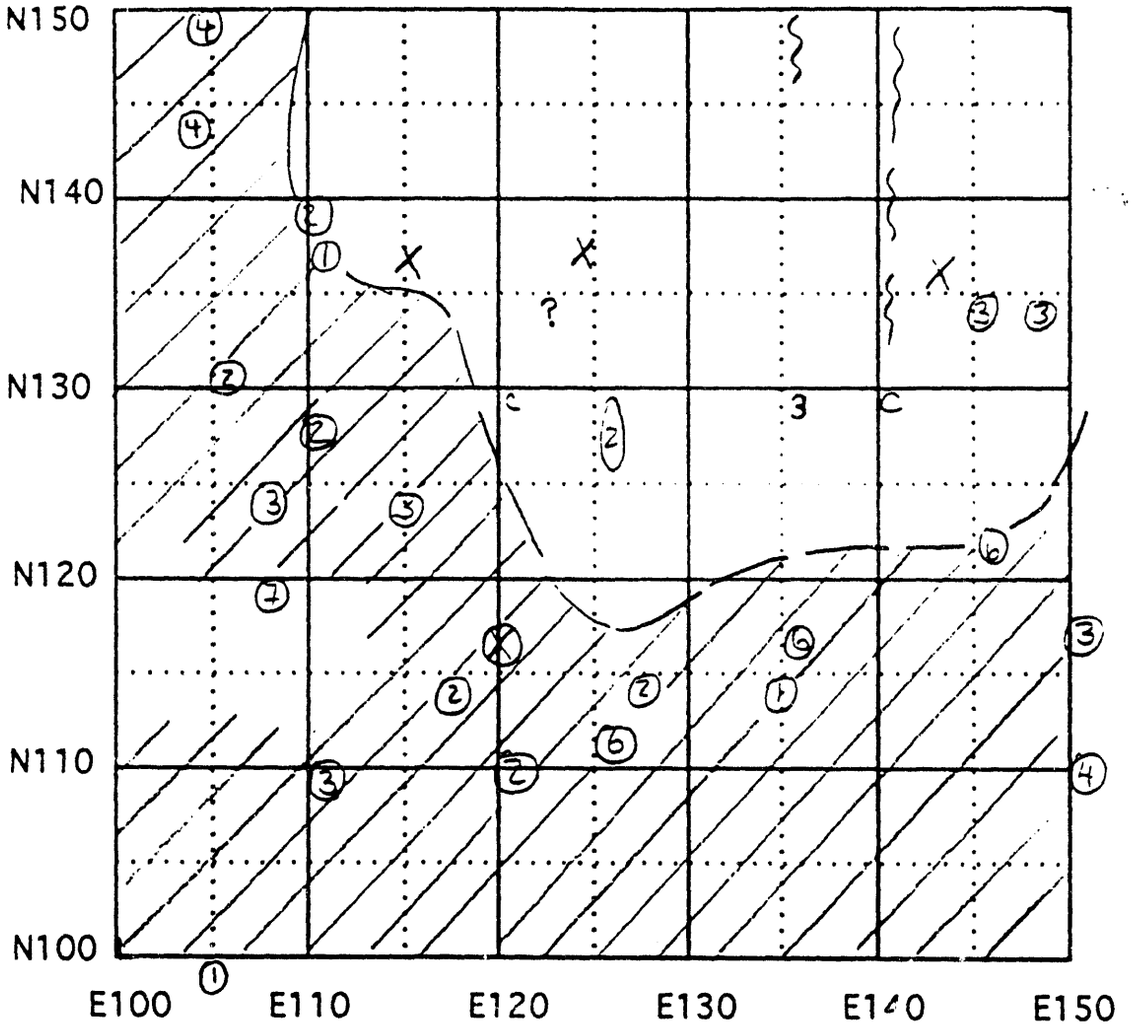


Figure 2. Interpretation Summary.



③	Buried anomaly; depth in feet.
C	Buried anomaly; depth < 1.5 feet
═③═	Linear; depth in feet.
∿∿[3]∿∿	Disturbed zone; depth in feet
- - - -	Continuity of anomaly/zone/horizon etc. uncertain.
⊗	Proposed borehole site
⬭	Scattered debris/disturbed area primarily 3-7 feet below the surface
X	Guy wire

Questions: Contact surface geophysics @ 6-1747
T.H. Mitchell, K.A. Bergstrom 6-4024

BOREHOLE K-106A

Figure 3. GPR Parameters for the 199-K-106A Well Site Survey.

GROUND PENETRATING RADAR (GPR) SURVEY

Geophysics Group, Westinghouse Hanford Operations

TITLE: Borehole 199-K-106A	DATE: 12/16/93
LOCATION: 100 K Area	
CLIENT:	DATA COLLECTED BY G.J. Szwartz & T.H. Mitchell
EQUIPMENT USED: GSSI System 8, model 4800 Calibrator Model P731 Digital Tape Recoder DT6000A	ANTENNA(S) USED: 100 ____ 300 XX 100 BISTATIC ____
	LOG BOOK: EFL-1109
	TIME WINDOW (NS): 100
PROCEDURES FOLLOWED: WHC-CM-7-7 EII 11.2, REV. 3	
GRID : 50 X 50 NO. OF PROFILES: 20 TOTAL FOOTAGE COLLECTED: 1000	
PARAMETERS: Two sets of perpendicular profiles; five feet between profiles.	
DATA TAPE NO.: 94-5 RECORDS LOCATION: Geophysical field files	
TAPE ADDRESS : 32957-44999 CALIBRATION ADDRESS: 44467-44999	
INTERPRETED BY : T.H. Mitchell REVIEWED BY : G.J. Szwartz	
INTERPRETATION DELIVERED TO _____ DATE : 12/22/93	
OBJECTIVE(S): To locate subsurface obstructions that may adversely affect the borehole.	
NOTES: Antenna pulled by hand at 1-2 mph on the south and east side of the survey marks.	

DATE
FILMED
8/24/94
END