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MCAS EL TORO
SSIC # 5090.3

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October 2, 2000

IT Corporation
3347 Michelson Drive, Suite 200
Irvine, California 92612-1692

Project No. 00-306

Attn: Mr. William Sedlak

Re: Geophysical Investigation Report, Southern Extension-EOD Range, Marine Corps Air Station, El Toro, California

This report is to present the results of our geophysical surveys carried out over portions (Southern Extension) of the Explosive Ordnance Disposal Range (EOD), located at the Marine Corps Air Station, El Toro California (Figure 1) on September 6, 7, 8, 11, 12, 13, 14, and 18, 2000. Extensive use of the range in the past has resulted in buried concentrations of explosive fragments and other metallic debris. The purpose of the geophysical surveys was to scan selected portions of the range using time-domain, pulse electromagnetic (EM) instrumentation in an effort to delineate the affected areas. The area selected for our surveys measured approximately 18 acres.

Survey Design – The northern portion of the EOD range was partially surveyed by Sanford Cohen and Associates (SC&A) between October 13 and 15, 1999, with the remainder completed by Subsurface Surveys between October 27 and November 19, 1999, utilizing Geonics EM-61 instrumentation. For the current survey of the Southern Extension, the formal rectilinear grid (500 X 1600 feet) established for our earlier survey was extended to the south measuring approximately 700 X 1800 feet to guide data acquisition over this portion of the range. For our survey, EM-61 Data were collected at stations every 0.6 feet along southwest-northeast oriented survey lines spaced three feet apart.

Brief Description of the Geophysical Methods Applied - The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets.

Findings and Conclusions –Site conditions over the EOD range are illustrated on Figure 2 (upper photo). Subsurface Surveys established a formal rectilinear grid with survey lines extending along the long axis of the site (y-axis). The grid was tied to an existing concrete block building shown on Figure 2 (lower photo). Production over the site varied mostly due to terrain and ground surface condition (low grass, hard soil, and disked soil) (Figure 3).

The EM-61 data collected over the site were transferred to a computer in the field at the end of each day and monitored for positioning and data quality. In this way, the geophysical crew was also able to review the resulting data in contour format as the survey progressed. Upon completion of our survey, the EM-61 data was transformed from the X-Y coordinate system established in the field to the northing-easting coordinate system (NAD 83) utilized in the earlier investigations of the site using survey coordinates of selected points on our grid.

Based on inspection of the EM-61 data collected during our earlier investigation (North Portion), concentrations of metal fragments and debris were clearly evident (Figure 3). A contour interval of 50 mVolts was utilized in the preparation of the data display illustrated in Figure 4. This view clearly shows both large and small accumulations of buried metal. It should be noted, however, that even smaller metal fragments are seen when the data is contoured at a finer interval.

In contrast, the data shown in contour map format for the Southern Extension presents a much different interpretation (Figure 5). With the exception of the effect of a concrete pad located along the access road, an existing debris pile, power pole support cable, and monitoring wells, the data suggests only a few small anomalies indicative of metal debris either on the surface or buried in the shallow subsurface. The contrasts with the results of our earlier survey are highlighted by the fact that the data displayed in Figure 5 is contoured at a 10 mVolt contour interval. The anomaly pattern expressed could easily represent the distribution of metal debris fragments resulting from soil diking activities as well as debris originating from vehicles traveling along the dirt access road.

All data acquired in these surveys are in confidential file in this office, and are available for review by your staff, or by us at your request, at any time. We appreciate the opportunity to participate in this project. Please call, if there are questions.


Lawrence J. Favilla, GP 969
Senior Geophysicist



**OHM Remediation
Services Corp.**
A Subsidiary of OHM Corporation

OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459

DOCUMENT CONTROL NO: SW9213

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Bozier H. Demaree, Code 02R1.BD
1220 Pacific Highway
San Diego, California 92132-5190

Date: 05-Oct-00

D.O.: 65

Location: MCAS EL TORO

FROM:  FOR
Stewart Bornhoft, Program Manager

Edwin G. Bond, Contracts Manager

DESCRIPTION OF ENCLOSURE: *Geophysical Investigation Results for southern EOD Range Area, dated October 4, 2000*

TYPE: Contract Deliverable () D. O. Deliverable (X) Request for Change () Other ()
(\$) (Tech)

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05 OCT 00 12 40

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A Member of The IT Group

October 4, 2000

Ms. Bozier H. Demaree
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5187

Attention: Ms. Lynn Hornecker

**Subject: Geophysical Investigation Results for Southern EOD Range Area at MCAS El Toro
Contract N68711-93-D-1459, Delivery Order 065,
Removal and Remedial Actions at IRP Sites, MCAS El Toro, California**

Dear Ms. Hornecker:

The geophysical survey of the southern area in the EOD Range was completed in mid-September, 2000. The attached report by Subsurface Surveys documents their findings for the area surveyed.

In summary, the geophysical survey identified only a few small metallic items in the survey area other than the observed surface features (i.e. power pole support, concrete pad, etc.). The few metallic items located were described as likely "metal debris fragments resulting from soil discing activities" or from "vehicles traveling along the dirt access road".

If you have any questions or need additional copies of the report please let me know.

Sincerely,

A handwritten signature in black ink that reads 'W Sedlak'.

William Sedlak
Sr. Project Manager

Attachment: Subsurface Surveys Report, dated October 2, 2000

cc: Lucreatria Holloway, SWDIV, COTR (1C/1E)
Content Arnold, SWDIV (1C/1E)
Dean Gould, BEC (1C/1E)
Admin Record (1C/2E)
OHM PMO File (1C/1E)
Crispin Wanyoike, Earth Tech (1C/2E)
Project File, Correspondence B.01



SITE LOCATION MAP

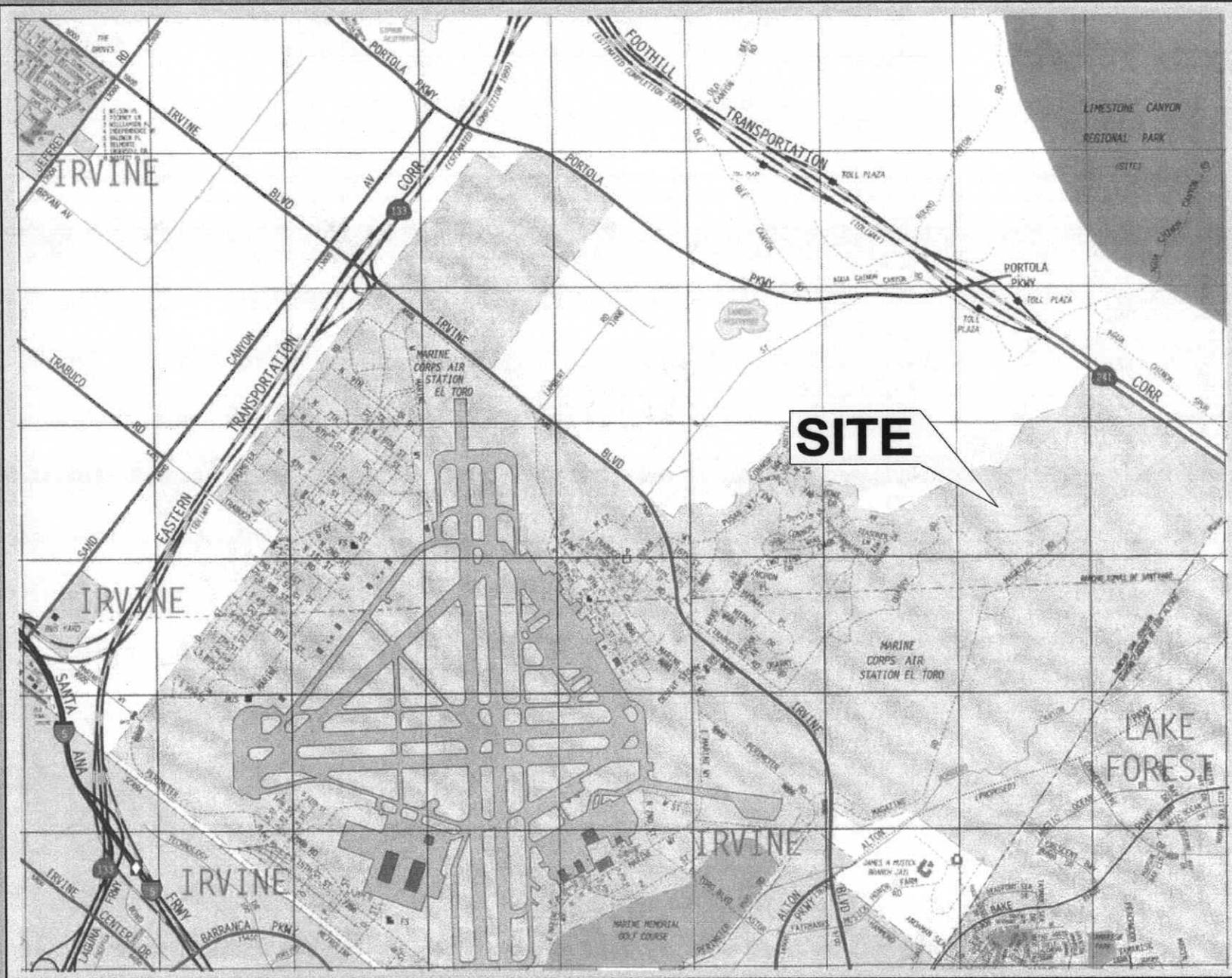


FIGURE 1

SITE PHOTOGRAPHS

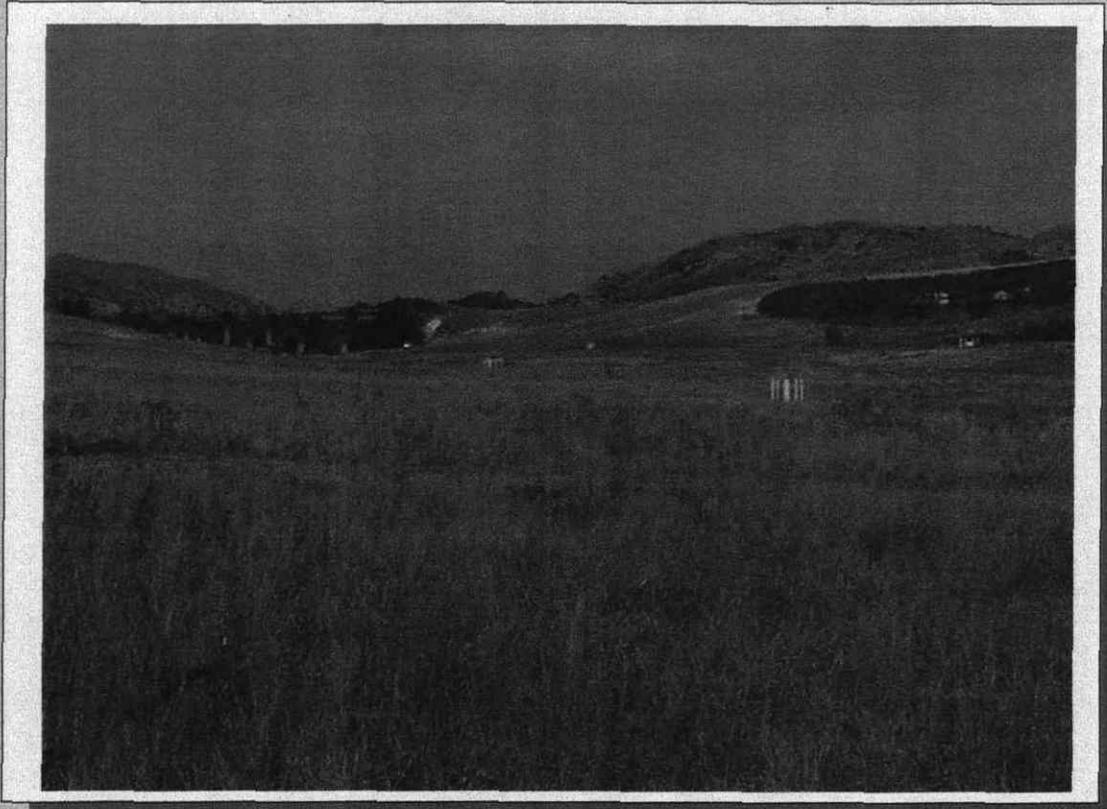


FIGURE 2

SITE PHOTOGRAPHS



FIGURE 3



SITE INTERPRETATION MAP



MARINE CORPS AIR STATION, EL TORO, CA NORTH PORTION

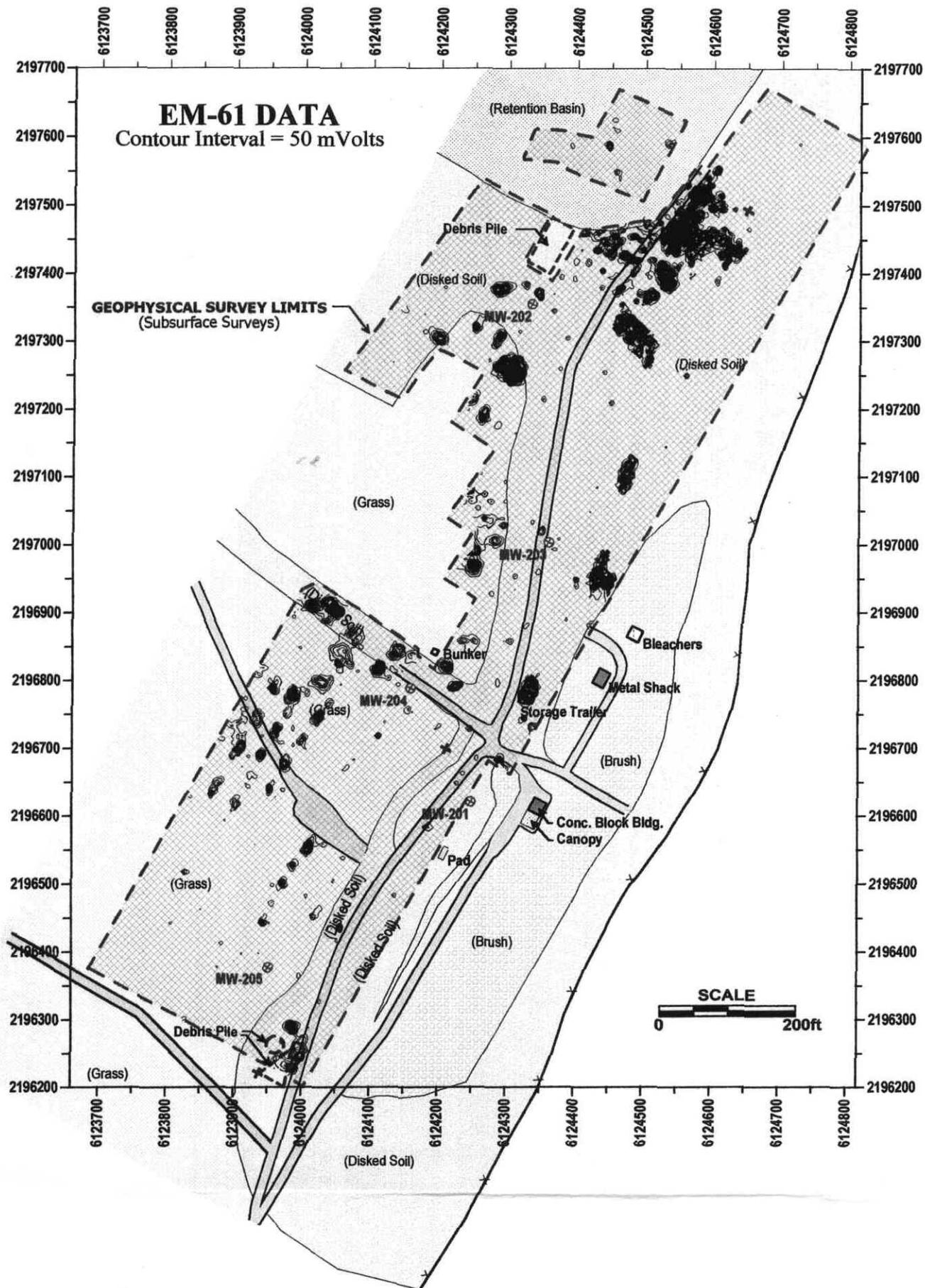


FIGURE 4



SITE INTERPRETATION MAP



MARINE CORPS AIR STATION, EL TORO, CA SOUTHERN EXTENSION

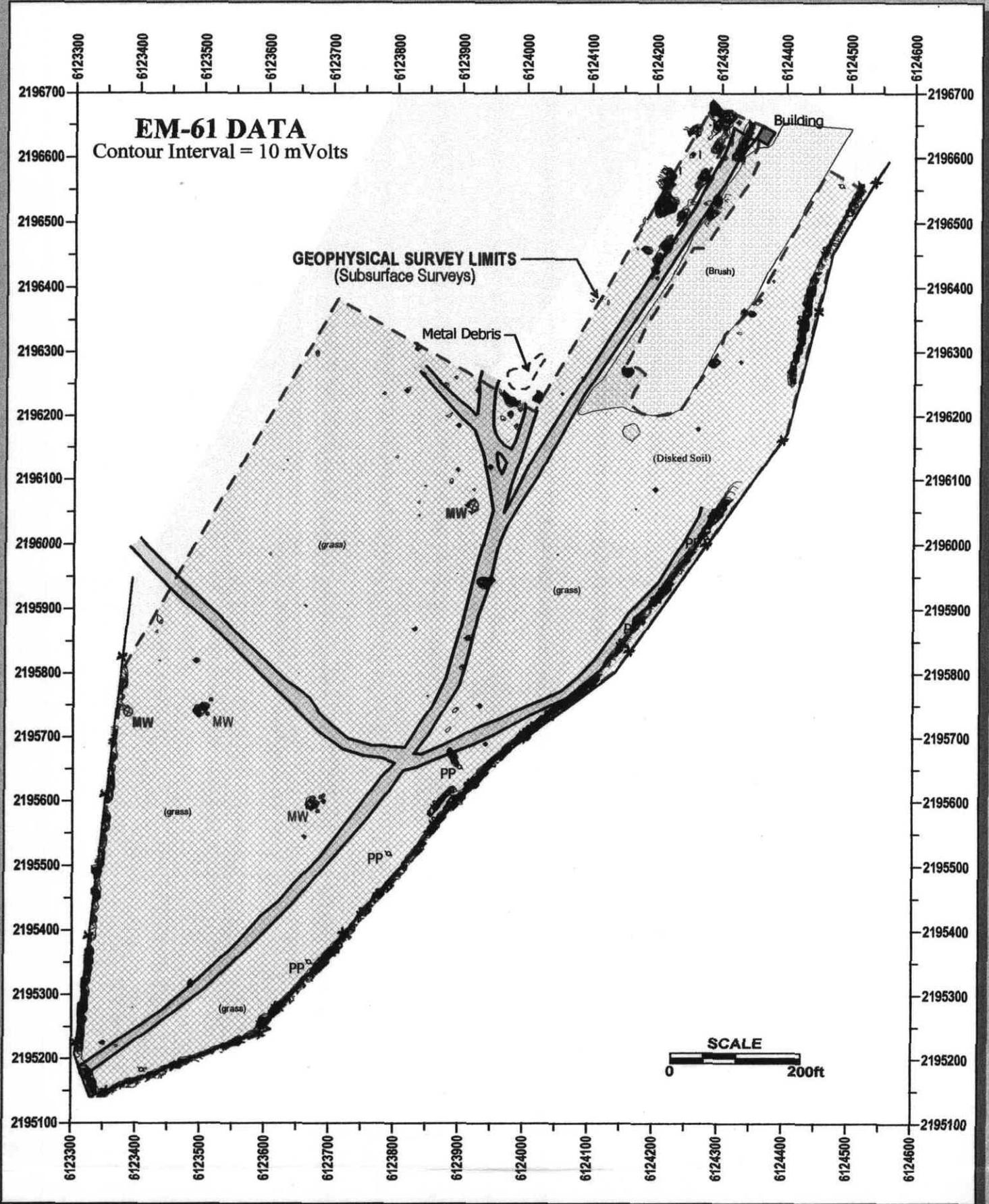


FIGURE 5