INSTALLATION RESTORATION PROGRAM

(1)

STEWART AIR NATIONAL GUARD BASE
NEWBURGH, NEW YORK

SITE INSPECTION REPORT

VOLUME II - APPENDICES

HAZWRAP SUPPORT CONTRACTOR OFFICE
Oak Ridge, Tennessee 37831
Operated by MARTIN MARIETTA ENERGY SYSTEMS, INC.
For the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-840R21400

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Site Inspection of sites determined to contain possible hazardous wastes at the Stewart Air National Guard Base. Sites were analyzed for possible health hazardous and contamination of groundwater. The study was conducted under the Air National Guard's Installation Restoration Program.

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Site Inspection
Stewart Air National Guard Base

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VOLUME II

STEWART AIR NATIONAL GUARD BASE
NEWBURGH, NEW YORK

Prepared for:

HAZWRAP SUPPORT CONTRACTOR OFFICE
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Prepared by:

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PORTLAND, MAINE

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SITE INSPECTION
STEWART AIR NATIONAL GUARD BASE

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INTRODUCTION

The magnetic method is a versatile, relatively inexpensive, geophysical exploration technique. Magnetic data can be acquired on land or water, or in the air. Aeromagnetic surveys and deep water marine studies are commonly used as a reconnaissance tool for evaluating hydrocarbon prospects. Land-based or coastal water marine magnetic surveys are usually done for evaluating shallow geologic structures (e.g., shallow mineral deposits) in detail. Such surveys have also been used successfully in locating manmade features; for example, in archeological prospecting.

More recently, the focus of national attention on the hazardous waste problem has prompted routine use of magnetometers for locating repositories of buried (drummed) wastes. Locating and quantifying these materials is essential to any remediation effort, and magnetometer surveys can provide an extra measure of safety to those personnel involved in the clean-up activities.

EARTH MAGNETISM

Although the origin of the earth's magnetic field is not well understood, it is known that the earth behaves magnetically, as if a large bar magnet were located near its center. The axis of this "magnet" is oriented at a small angle, which produces the differences between "true" north and "magnetic" north. The angle is called the declination. The lines of magnetic force are nearly horizontal at the equator and nearly vertical at the poles. The angle between these lines of force and horizontal at any point on the earth's surface is known as the inclination.

The strength of the magnetic field also varies over the surface of the earth, and is stronger at the poles than at the equator. The strength of the field is approximately 60,000 gammas at the poles and 30,000 gammas at the equator (where 1 gamma = 0.00001 Gauss).

The earth's magnetic field (sometimes referred to as its "ambient" field) is modified locally by both naturally occurring and manmade magnetic materials. Two types of magnetization contribute to this: induced and remanent. Induced magnetization refers to the ability of a material to act as a magnet itself, thereby enhancing the ambient field. The more the ambient field is enhanced by a material, the greater is the "magnetic susceptability" for that material.

Remanent or permanent magnetization often predominates over induced magnetization in igneous rocks and metals. (Remanent refers to rocks, whereas permanent refers to metals). Remanent or permanent magnetization is produced in materials that have been heated above the Curie point, allowing magnetic minerals to align with the earth's ambient field before cooling. The remanent field direction is not, in general, parallel to the earth's present field. It may, in fact, act in the opposite direction. The remanent field combines vectorially with the ambient and induced field components, and any quantitative

interpretation of magnetic data should consider this if such information is available.

INSTRUMENTATION

Although many types of magnetometers are available, by far the most widely used is the "proton precession" type. This device utilizes the precession of spinning protons of hydrogen atoms in a sample of hydrogen-rich fluid (i.e., kerosene, alcohol, or water) to measure the total magnetic field intensity.

Protons spinning in an atomic nucleus behave like tiny magnetic dipoles which can be aligned (polarized) by an external magnetic field. The protons are initially aligned parallel to the earth's field. A second, much stronger magnetic field is produced approximately perpendicular to the earth's field by introducing electric current through a coil of wire. The protons become temporarily aligned with this stronger field. When this stronger field is removed, the protons tend to realign themselves with the earth's field, causing them to precess about this direction at a frequency of about 2,000 Hz. The precessing protons will generate a small electric signal in the same coil used to polarize them, with a frequency proportional to the total magnetic field intensity and independent of the coil orientation. By measuring the signal frequency, one can obtain the absolute value of the total earth's field intensity to an accuracy of 1 gamma or better. The total magnetic field value measured by the proton precession magnetometer is the net vector sum of the ambient earth's field and any local induced and/or remanent (permanent) perturbations.

FIELD TECHNIQUES

In the field, the operator should avoid any source of high magnetic gradients (e.g., powerlines, buildings, or large iron or steel objects). The operator should also avoid carrying any unnecessary metal articles. Magnetic stations are established at intervals that reflect the nature of the survey and the magnetic gradients encountered.

At hazardous waste sites, a typical "rough" reconnaissance grid might start out at a 25-foot interval, and would be closed down to 3 or 5 feet in areas where fine detail is desired. Base station readings should be taken frequently (every 30 to 60 minutes) to provide a check on diurnal variations and magnetic storms that may occur during a survey. Typically, diurnal variations will not exceed a few tens of gammas, but magnetic storms may produce changes in the earth's field of thousands of gammas in a short period of time (the order of hours). If survey requirements dictate, it may be prudent to establish a continuously recording magnetic base station to account for diurnal variations. If a magnetic storm occurs, survey operations should cease until the storm is over.

INTERPRETATION

For typical manmade iron or steel objects, one may quantify estimates for the approximate depth of burial and the amount of metal which produces an observed

magnetic perturbation (or anomaly). The size of the anomaly (T) can be expressed as:

$$T = (M)/(r)^n$$

where "M" is the magnetic moment of the source, "r" is the depth to the source, and "n" is a measure of the rate of decay with distance (n = 3 for a dipole source and 2 for a monopole source).

Assuming a dipole source, the weight of a metal object (in pounds) can be expressed by the following relation:

$$\text{Weight} = ((T)*(r)^3)/(M)$$

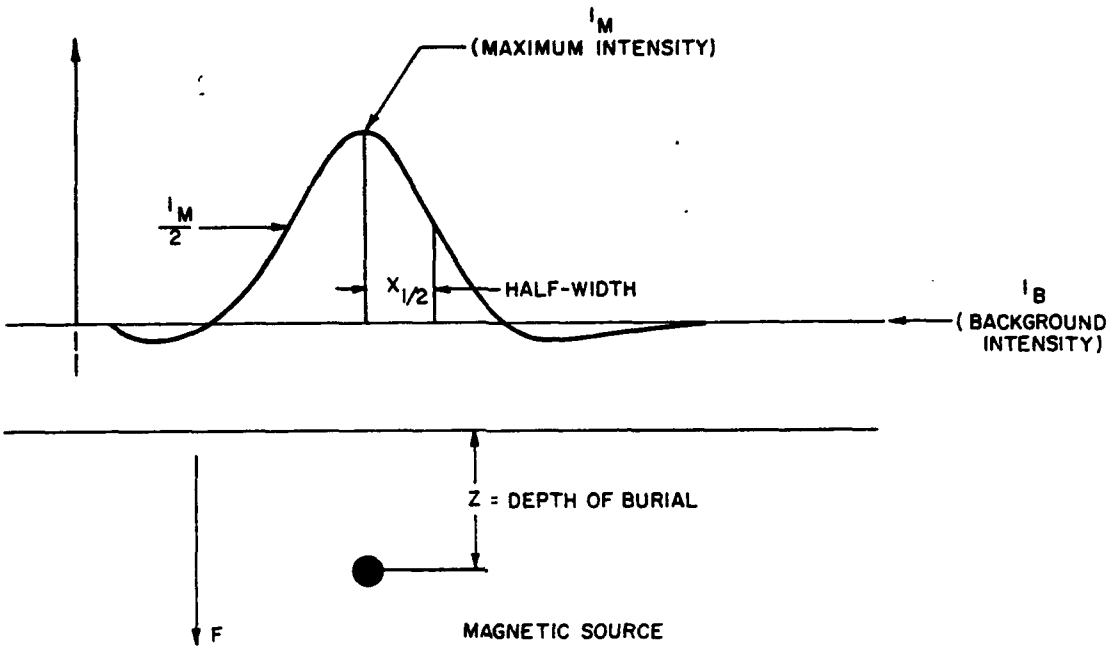
where "M" is the magnetic moment per pound of iron and varies from approximately 175 to 1750, "r" is the depth in feet (below the sensor), and "T" is the anomaly amplitude in gammas.

The depth, "r", of a magnetic source can be estimated by a number of techniques, but perhaps the simplest is by the "half-width" rule. This states that for simple anomaly sources, the depth to the center of the anomaly is equal to the "half-width" of the anomaly. The half-width is the horizontal distance between the maximum value of the anomaly and the point at which the value is one-half the maximum value (Figure A-1).

A further refinement in magnetic studies is permitted with the addition of vertical gradient measurements. This involves the simultaneous acquisition by two sensors of two values of the total field. The sensors are mounted on a staff that is held vertically during a measurement. A known distance (commonly one-half or one meter) separates the sensors on the staff. Vertical gradient measurements tend to be more sensitive to the presence of near surface metal objects than total field values alone. There are commercially available magnetometers that record field data in an internal memory which can be "dumped" onto a personal computer at the completion of field activities. These instruments can record the total field value, the vertical gradient, the time and date of the measurement, and the station location (input by the user), as well as a number of parameters which permit an evaluation of data quality.

The vertical gradient data obtained during the present study are presented as Figures A-2 through A-19. The reader is referred to the main text (Section 5.0) for a discussion of the interpretation and results of these data.

DEPTH CALCULATION/METAL QUANTITY
FOR TOTAL FIELD MEASUREMENTS:



T = MAGNETIC ANOMALY INTENSITY

= MAXIMUM ANOMALY INTENSITY MINUS BACKGROUND INTENSITY

$= I_M - I_B$

$$= \frac{M_{fps}}{r^3} = \frac{1.75 \times 10^2 \text{ to } 1.75 \times 10^3}{(1 \text{ to } 2)\, r^3}$$

where "M_{fps}" is the magnetic moment per pound of iron and "r" is the distance between the magnetometer sensor and the object (the depth of burial) "z" is equal to "r" minus the height of the sensor above the ground.

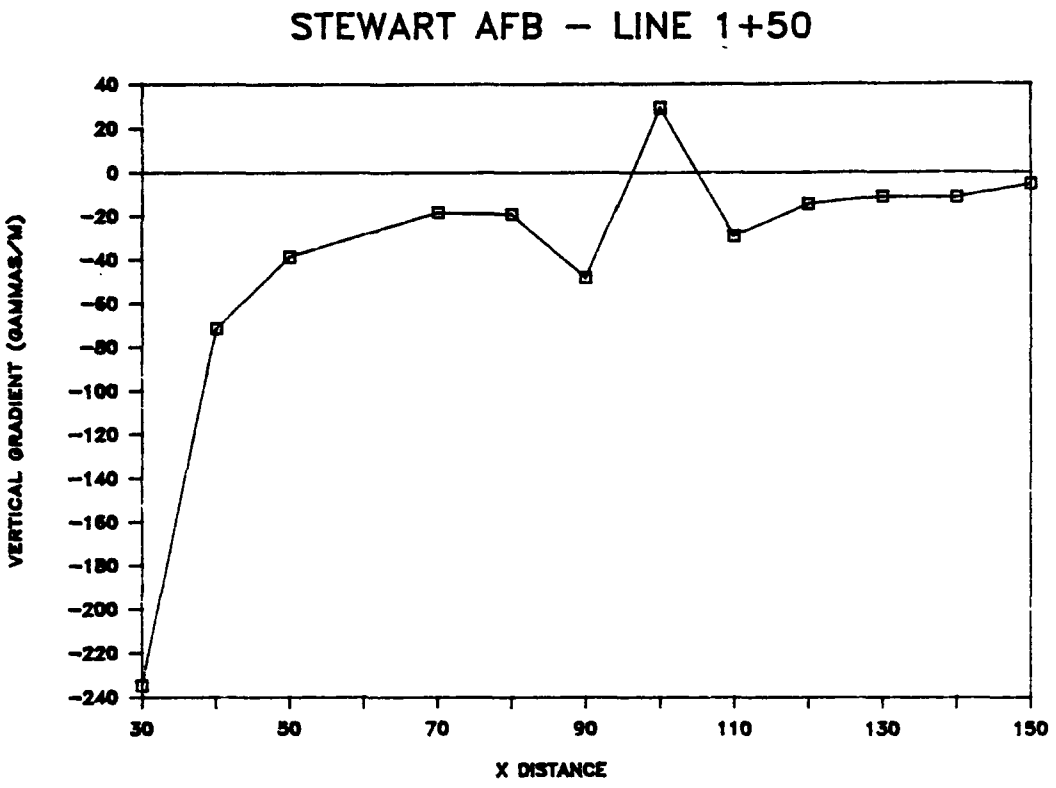
DEPTH CALCULATION FOR GRADIOMETER MEASUREMENTS

$$r = \frac{-nT}{\frac{dT}{dz}}$$

where "n" is the "falloff" factor and generally varies from 1 to 2, depending on the magnetic source, "r" is the separation between the midpoint between the two sensors and the object.

MAGNETOMETER DATA INTERPRETATION

FIGURE A-1


STEWART AFB – LINE 1+50
VERTICAL GRADIENT (GAMMAS/M)
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
30
50
70
90
110
130
150
X DISTANCE

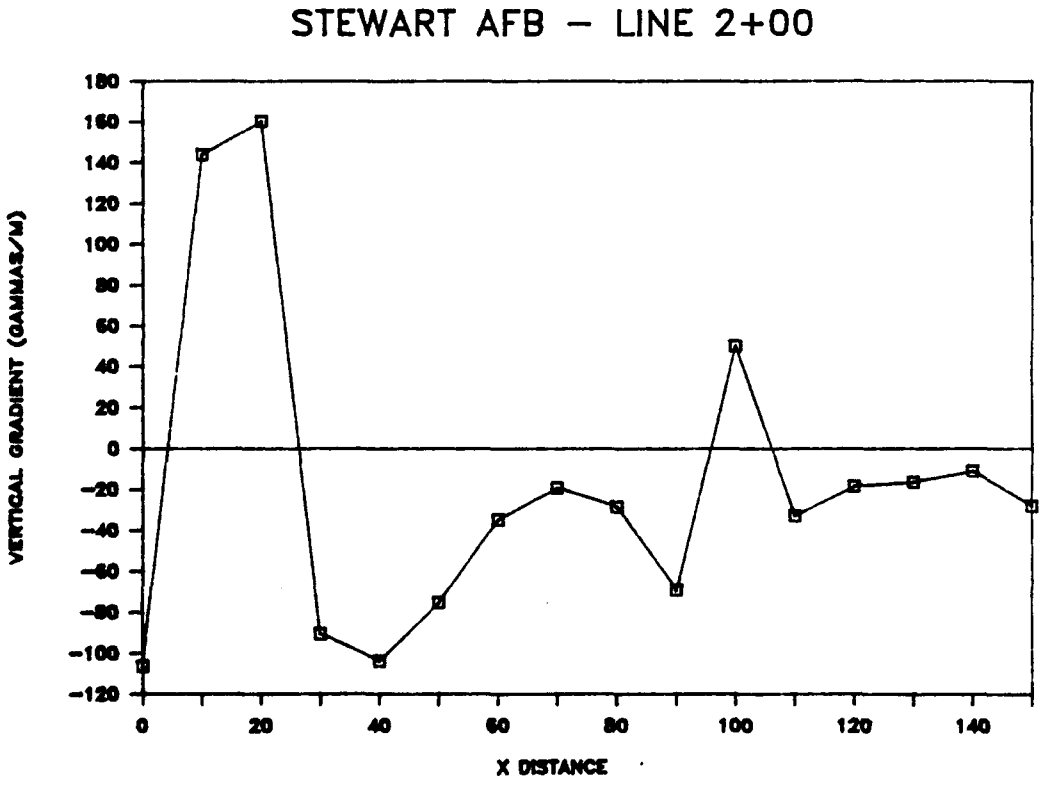
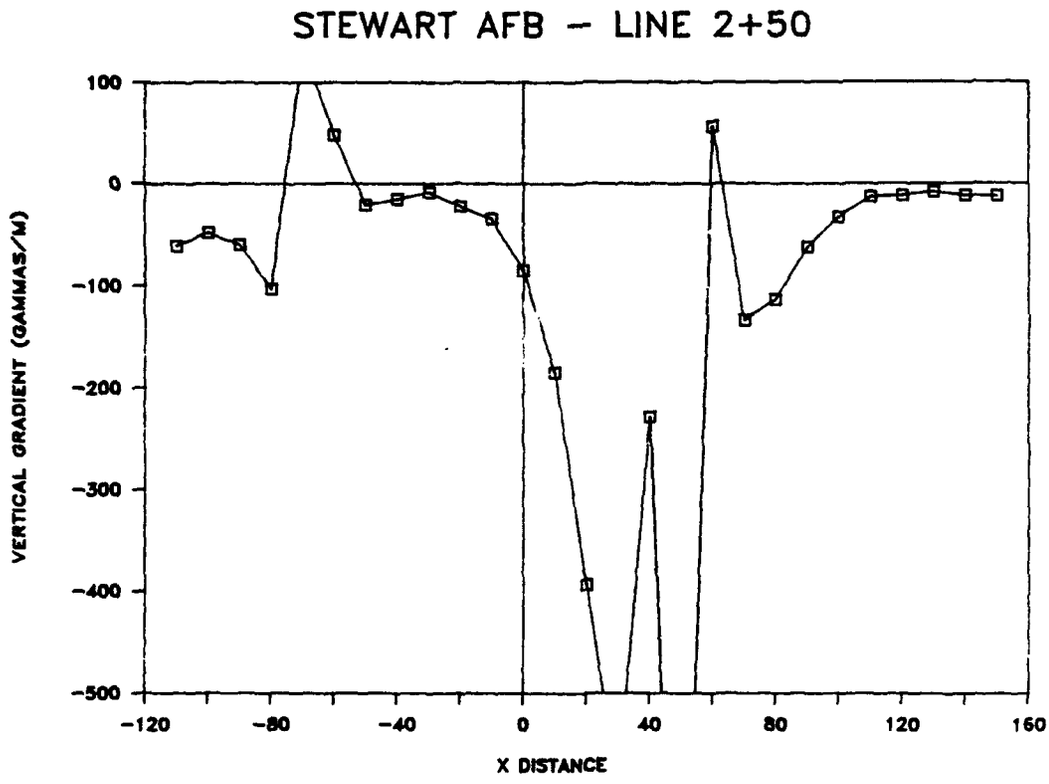

STEWART AFB – LINE 2+00
VERTICAL GRADIENT (GAMMAS/M)
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
0
20
40
60
80
100
120
140
X DISTANCE

FIGURE A-2


STEWART AFB – LINE 2+50
VERTICAL GRADIENT (GAMMAS/M)
100
0
-100
-200
-300
-400
-500
-120
-80
-40
0
40
80
120
160
X DISTANCE

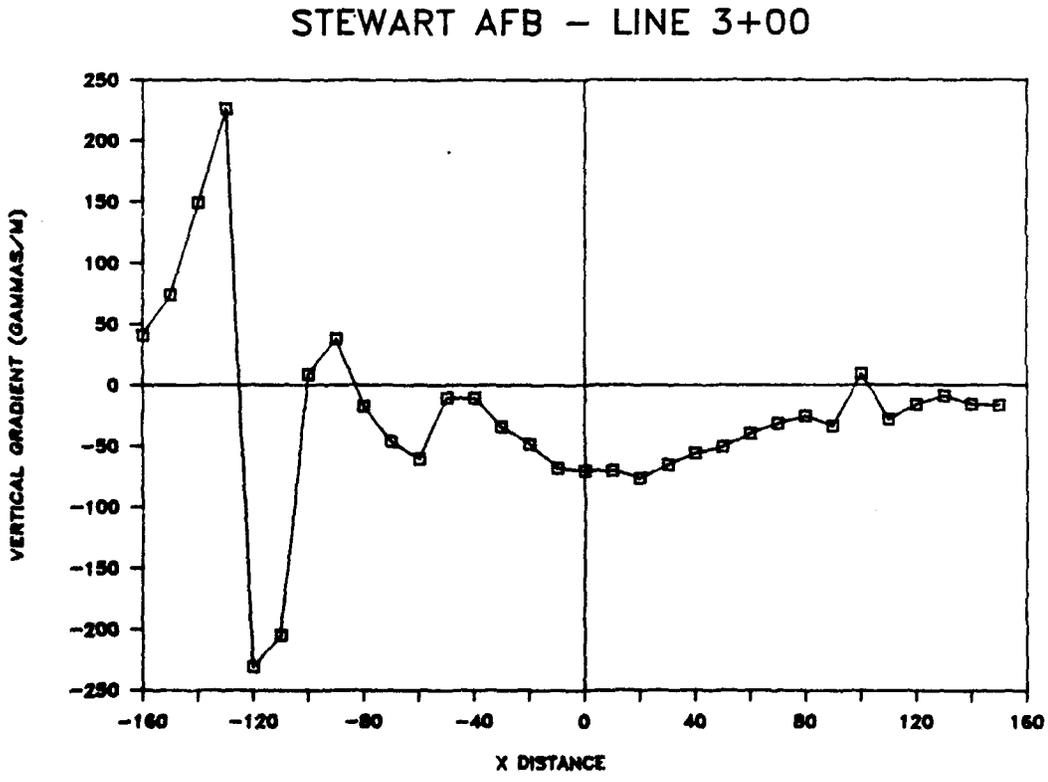
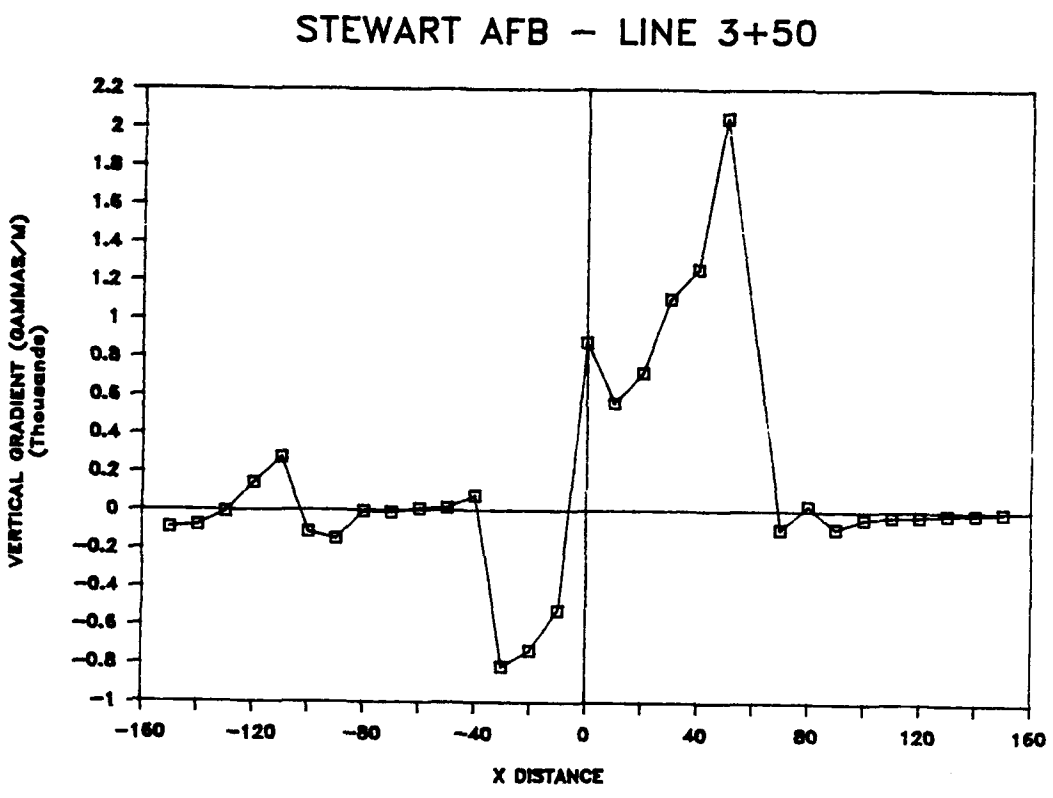

STEWART AFB – LINE 3+00
VERTICAL GRADIENT (GAMMAS/M)
250
200
150
100
50
0
-50
-100
-150
-200
-250
-160
-120
-80
-40
0
40
80
120
160
X DISTANCE

FIGURE A-3


STEWART AFB – LINE 3+50
VERTICAL GRADIENT (GAMMAS/M)
(Thousands)
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-160
-120
-80
-40
0
40
80
120
160
X DISTANCE

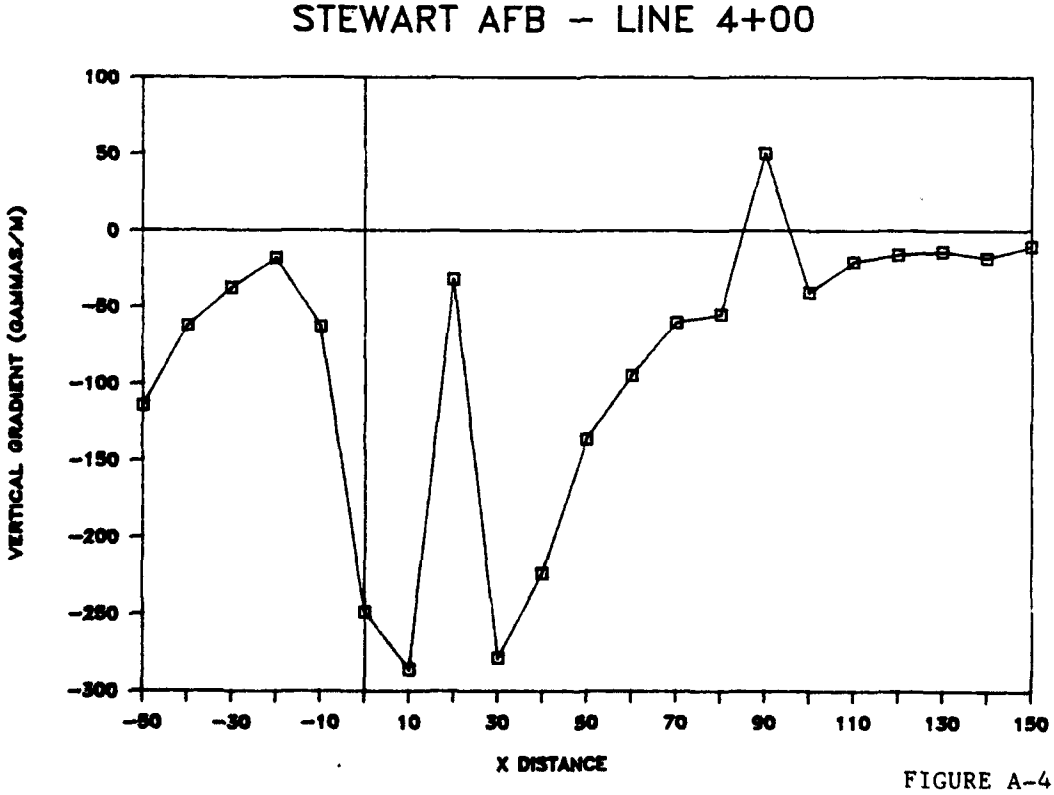
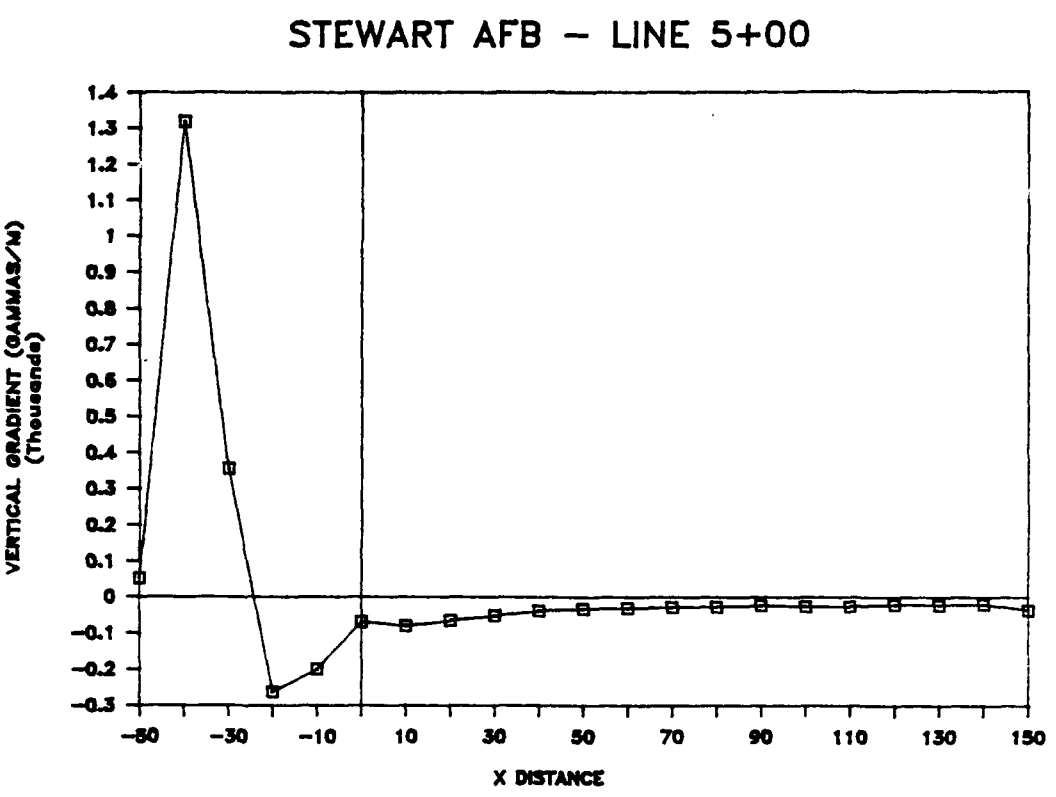

STEWART AFB – LINE 4+00
VERTICAL GRADIENT (GAMMAS/M)
100
50
0
-50
-100
-150
-200
-250
-300
-50
-30
-10
10
30
50
70
90
110
130
150
X DISTANCE

FIGURE A-4


STEWART AFB – LINE 5+00
VERTICAL GRADIENT (GAMMAS/M)
(Thousands)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-50
-30
-10
10
30
50
70
90
110
130
150
X DISTANCE

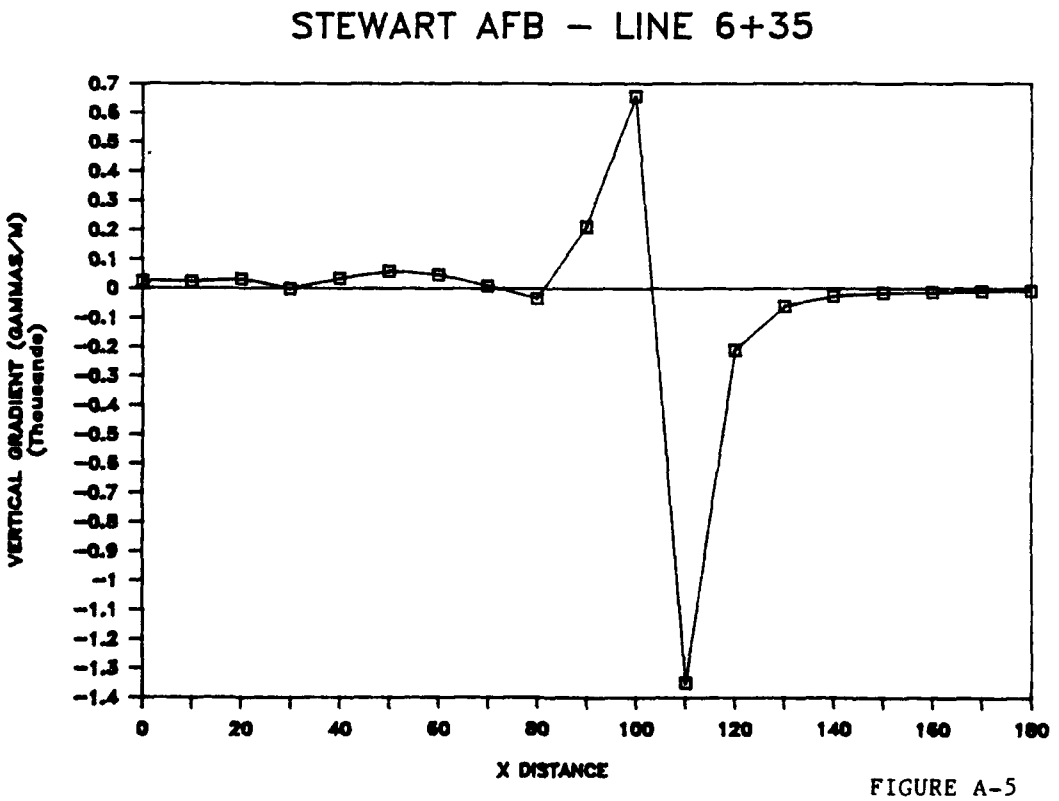

STEWART AFB – LINE 6+35
VERTICAL GRADIENT (GAMMAS/M)
(Thousands)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
0
20
40
60
80
100
120
140
160
180
X DISTANCE

FIGURE A-5

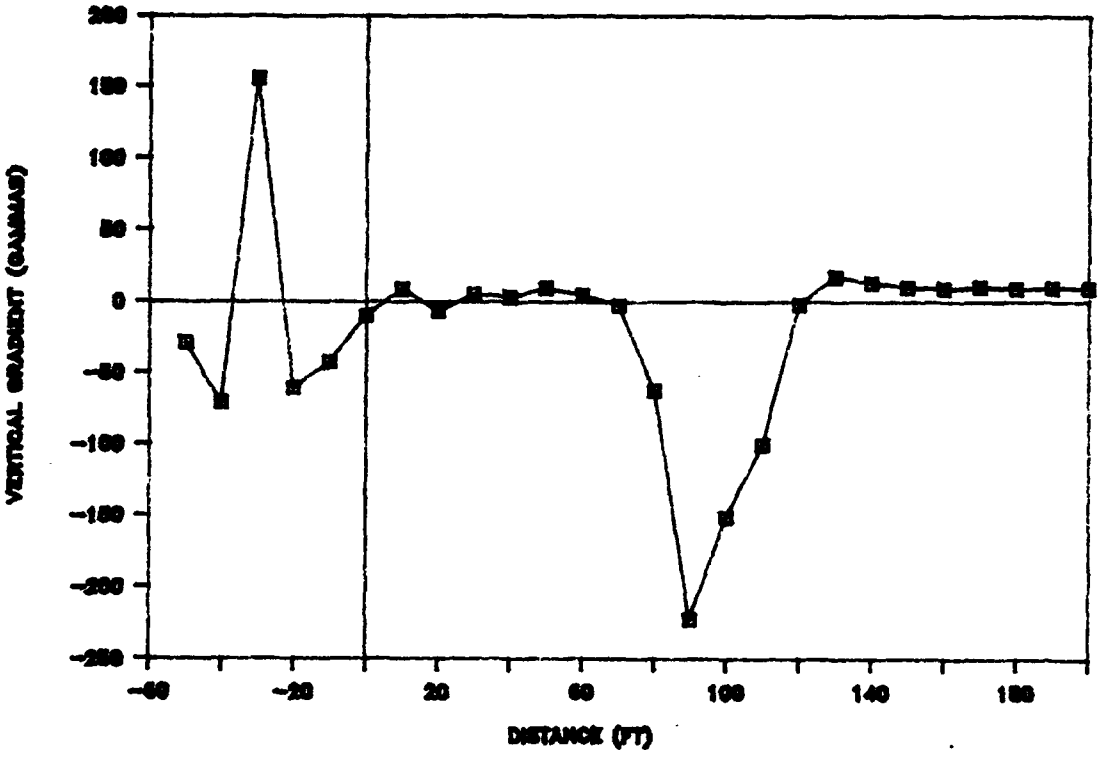
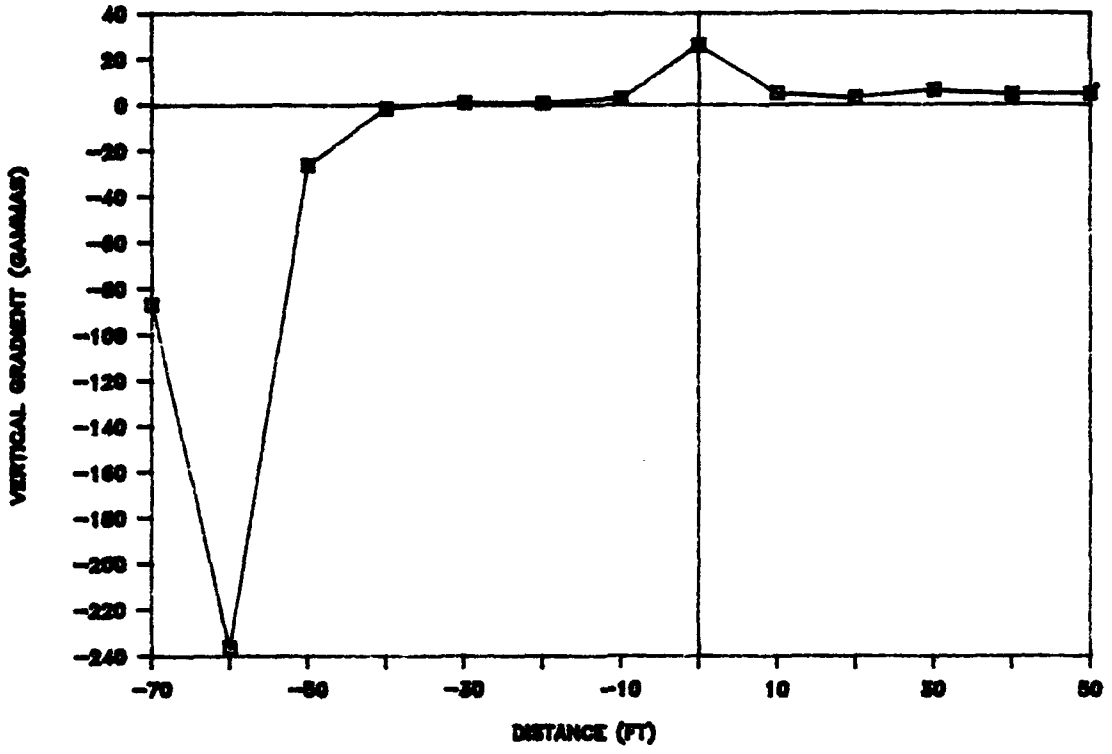

STEWART AFB – LINE 6+65
VERTICAL GRADIENT (GAMMAS)
DISTANCE (FT)
-60
-20
20
60
100
140
180

FIGURE A-6


STEWART AFB – LINE 9+00
VERTICAL GRADIENT (GAMMAS)
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-70
-50
-30
-10
10
30
50
DISTANCE (FT)

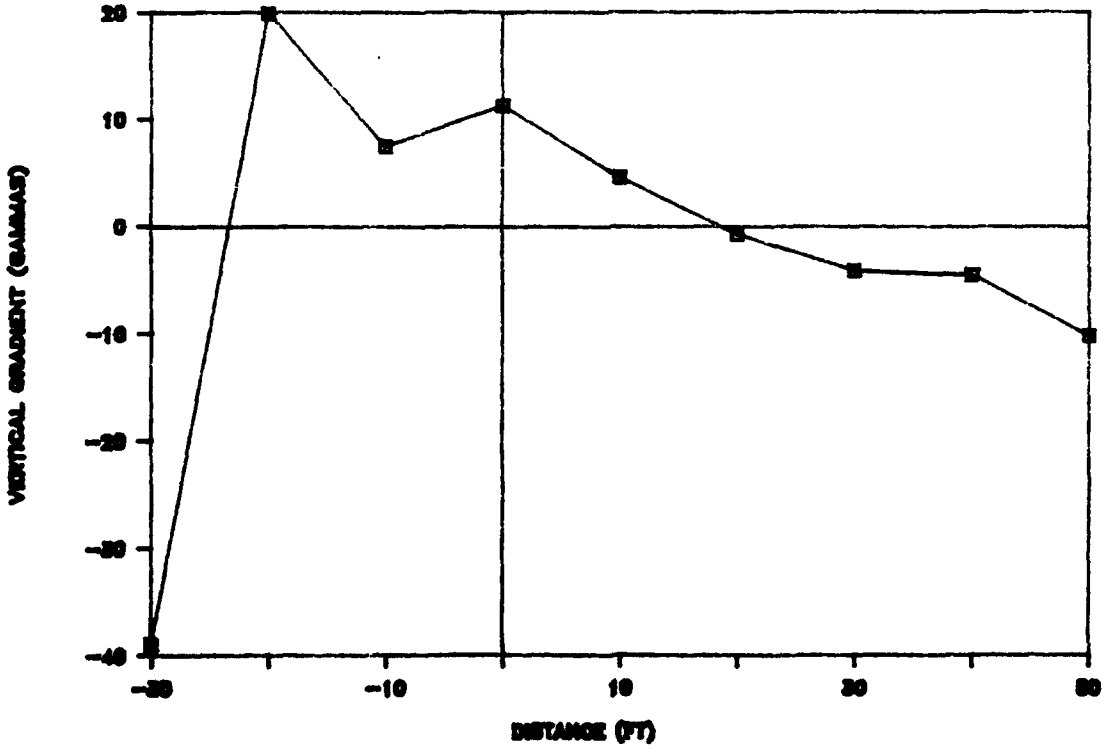
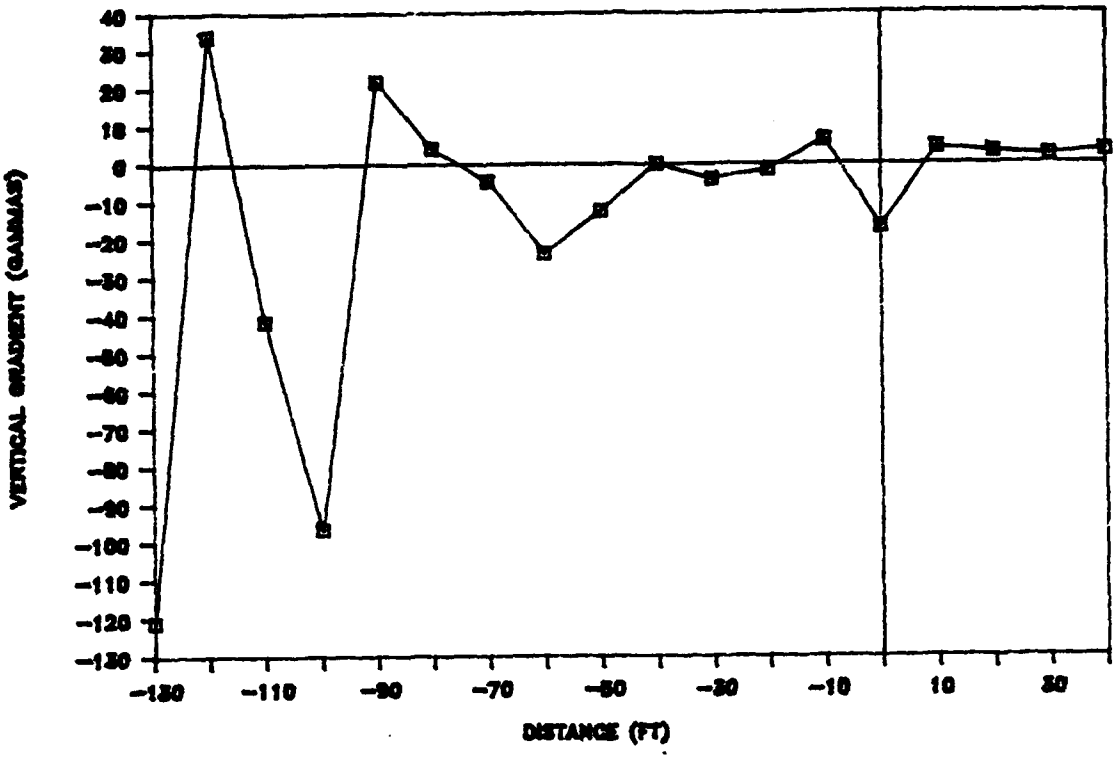

STEWART AFB – LINE 9+50
VERTICAL GRADIENT (GAMMAS)
20
10
0
-10
-20
-30
-40
-30
-10
10
30
50
DISTANCE (FT)

FIGURE A-7

STEWART AFB – LINE 10+50



STEWART AFB – LINE 19+50

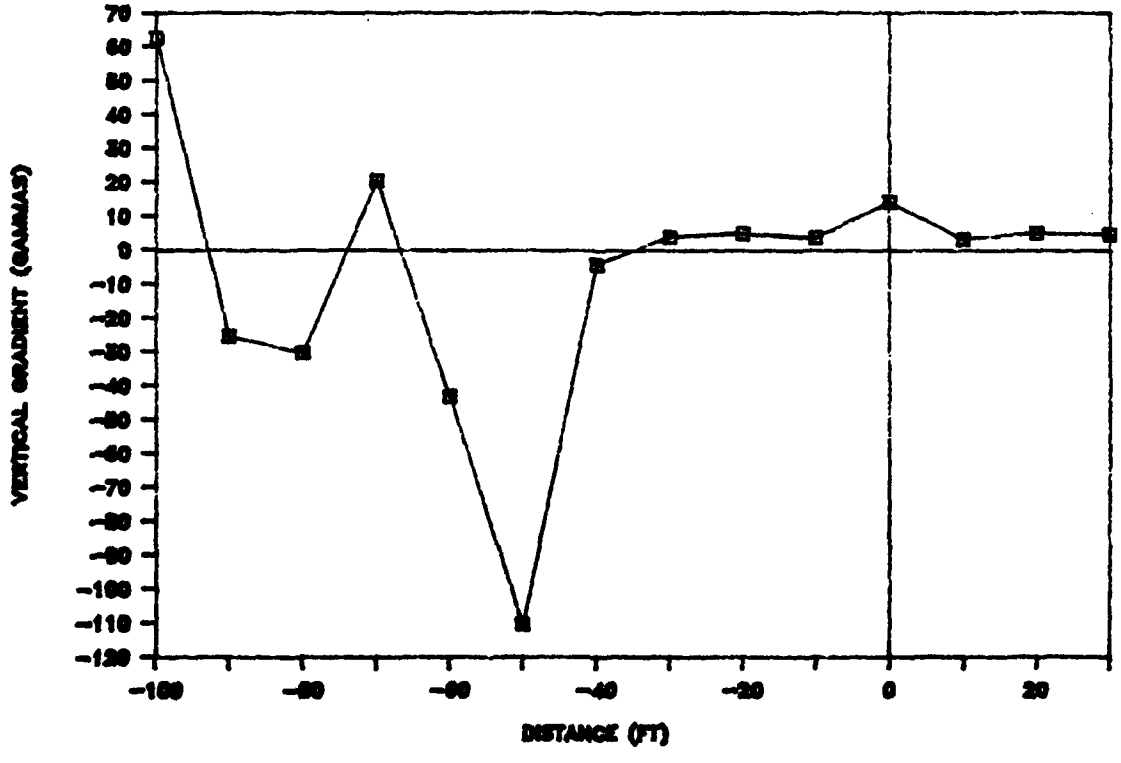
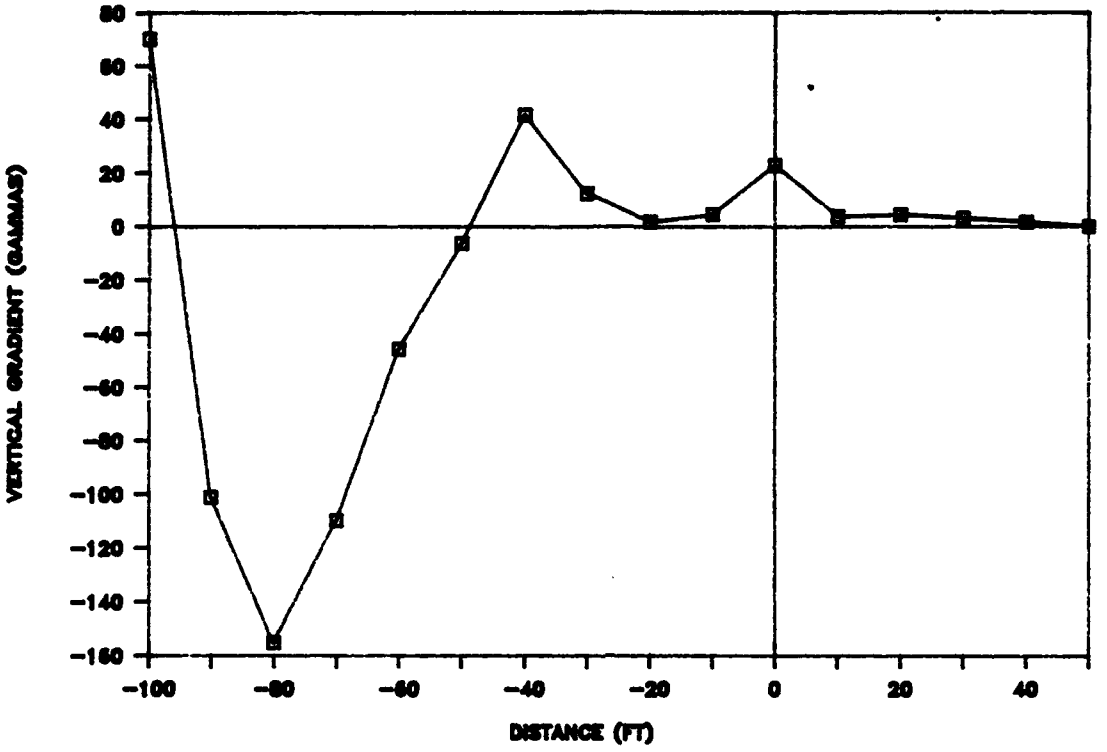


FIGURE A-8

STEWART AFB – LINE 20+00



STEWART AFB – LINE 20+50

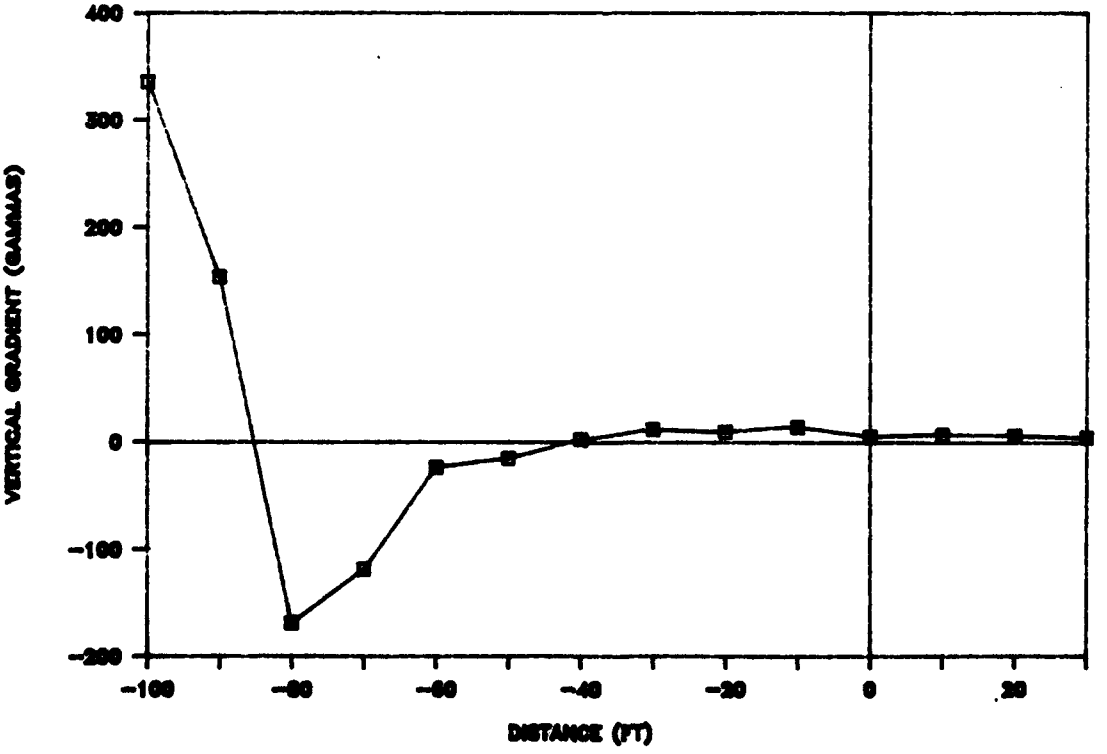


FIGURE A-9

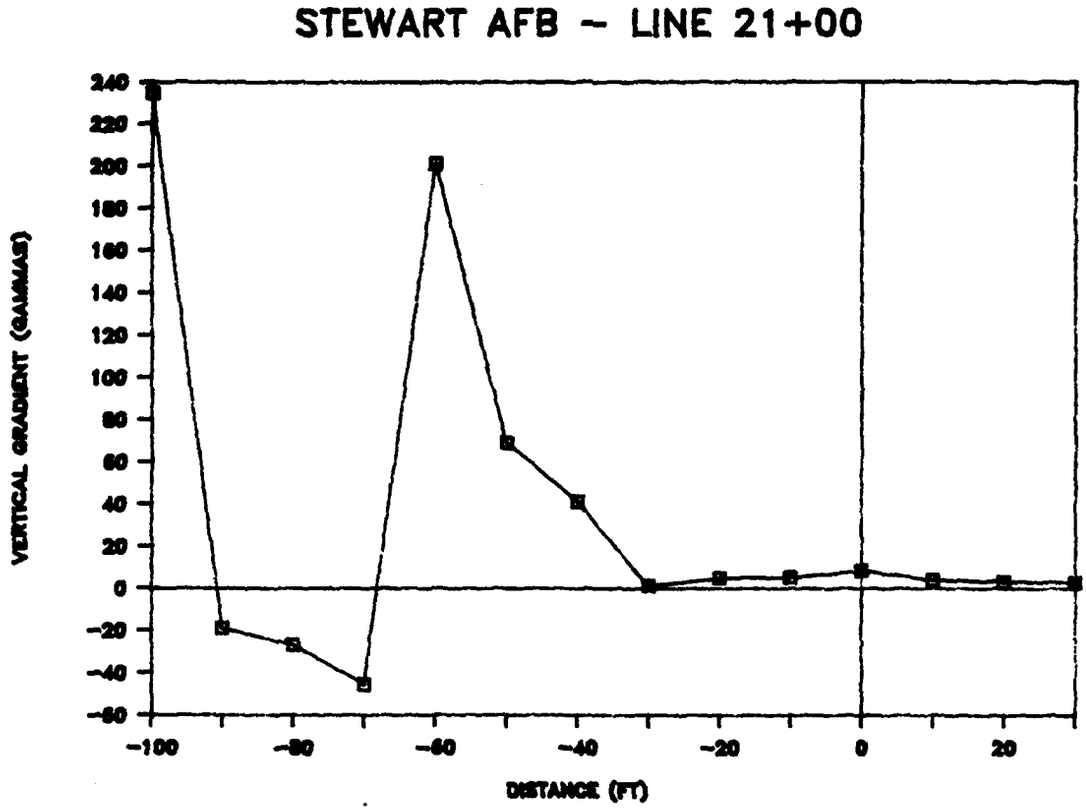
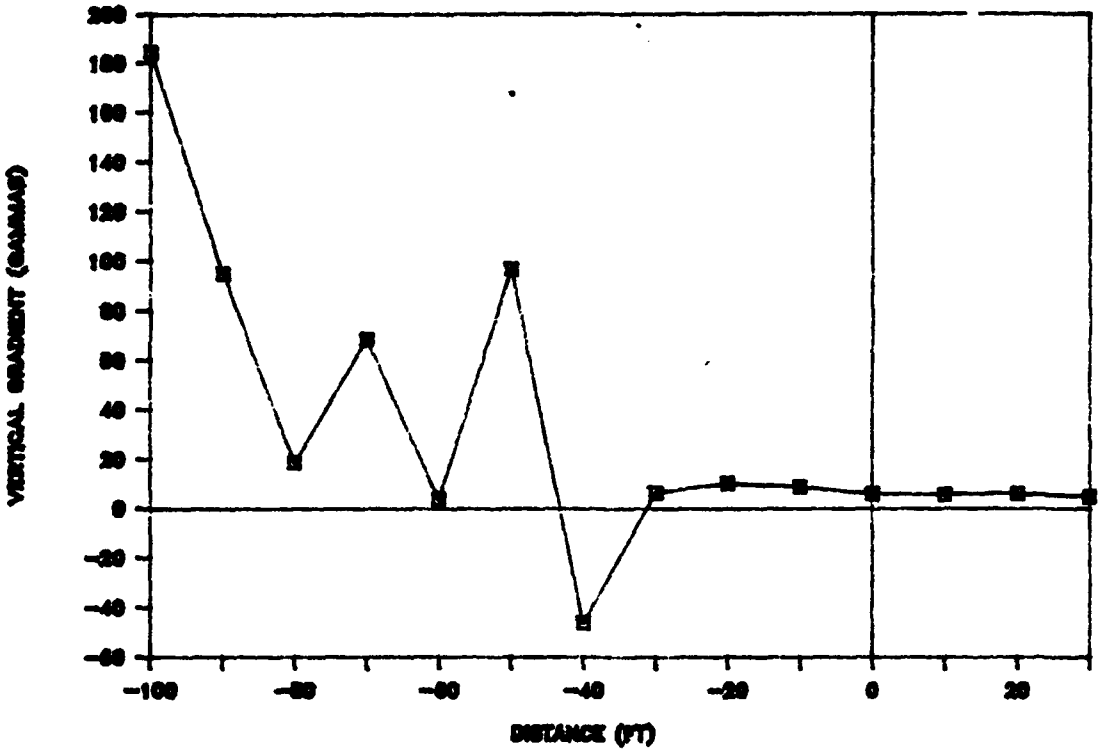

STEWART AFB – LINE 21+00
VERTICAL GRADIENT (GAMMAS)
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-100
-80
-60
-40
-20
0
20
DISTANCE (FT)

FIGURE A-10

STEWART AFB – LINE 21+50



STEWART AFB – LINE 22+00

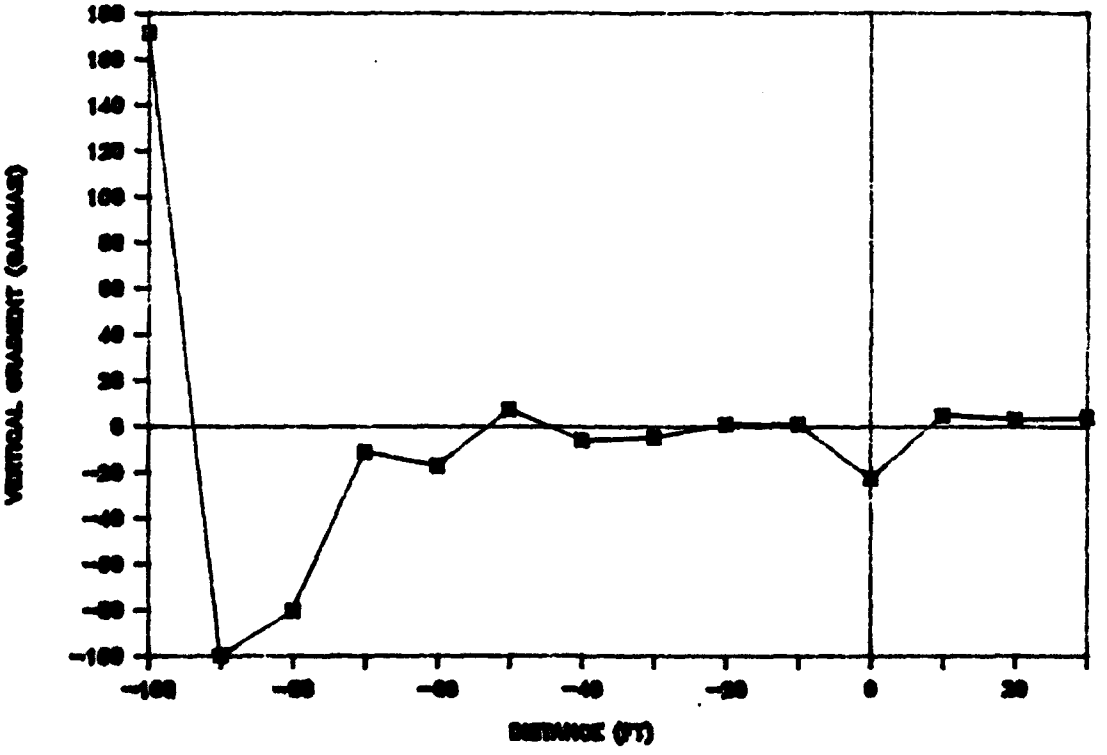
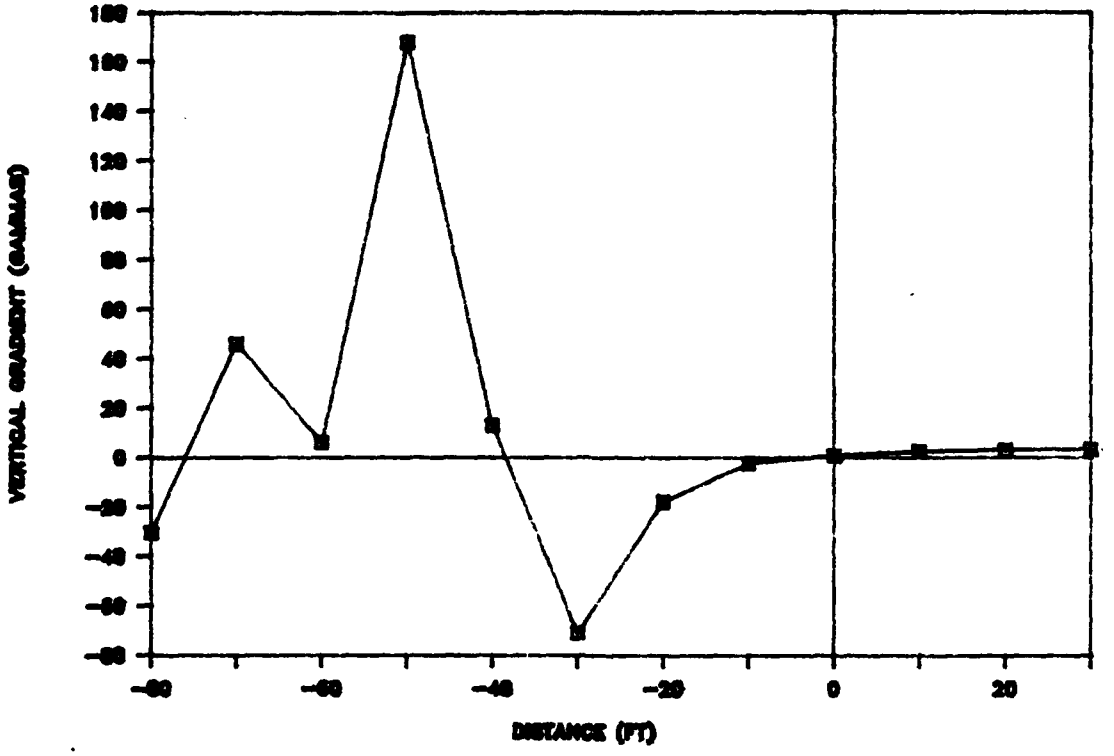


FIGURE A-11

STEWART AFB – LINE 22+50



STEWART AFB – LINE 23+00

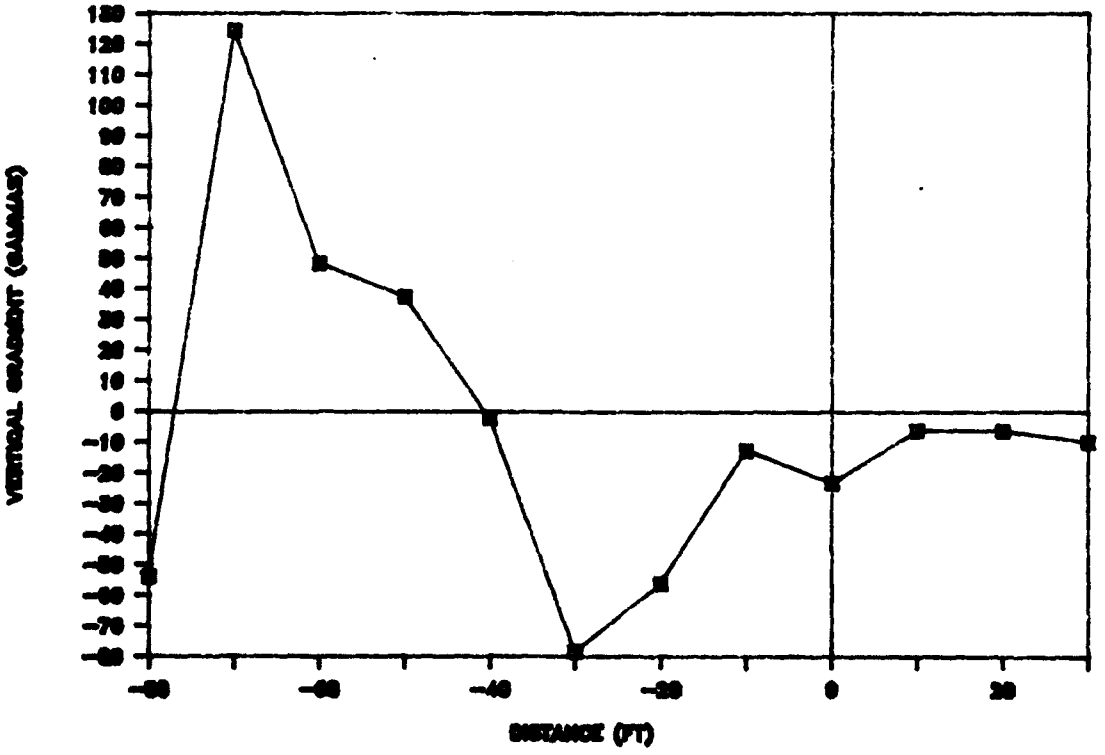
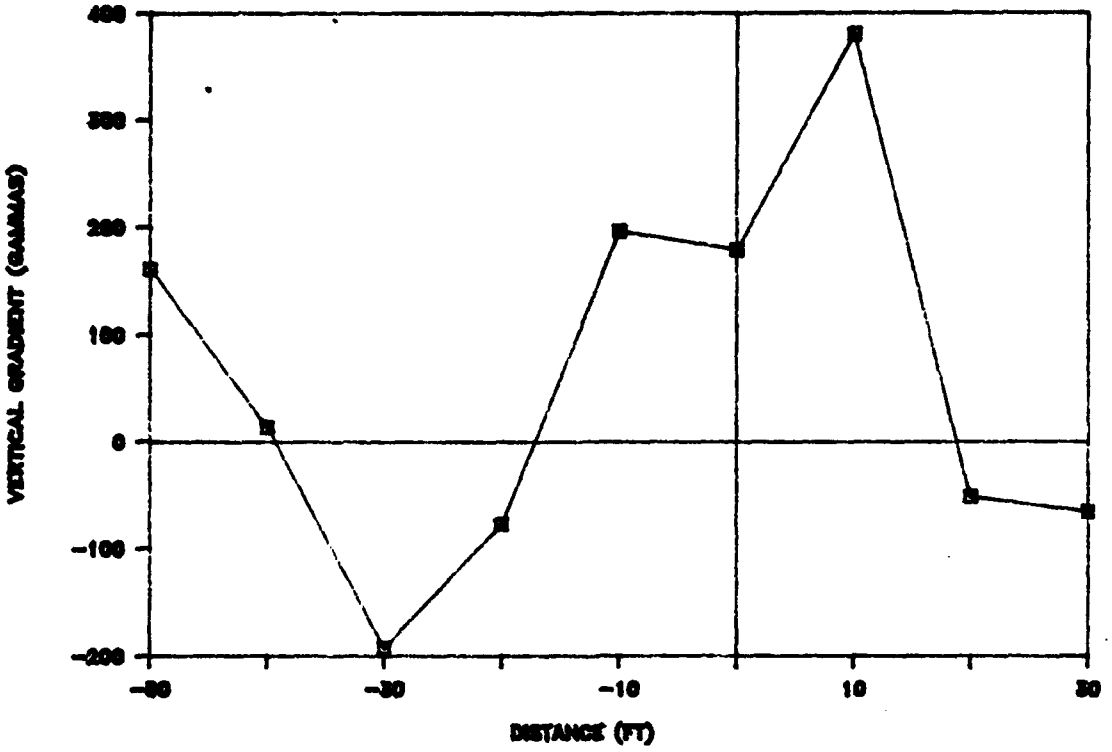


FIGURE A-12

STEWART AFB – LINE 23+50



STEWART AFB – LINE 24+00

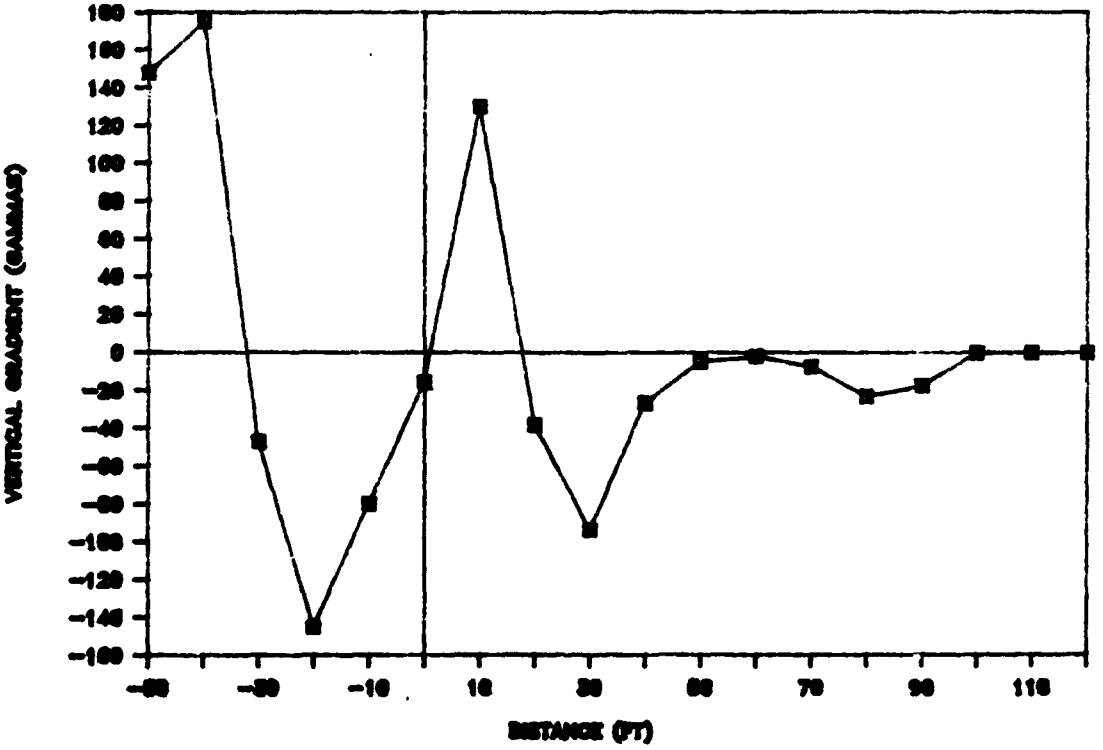
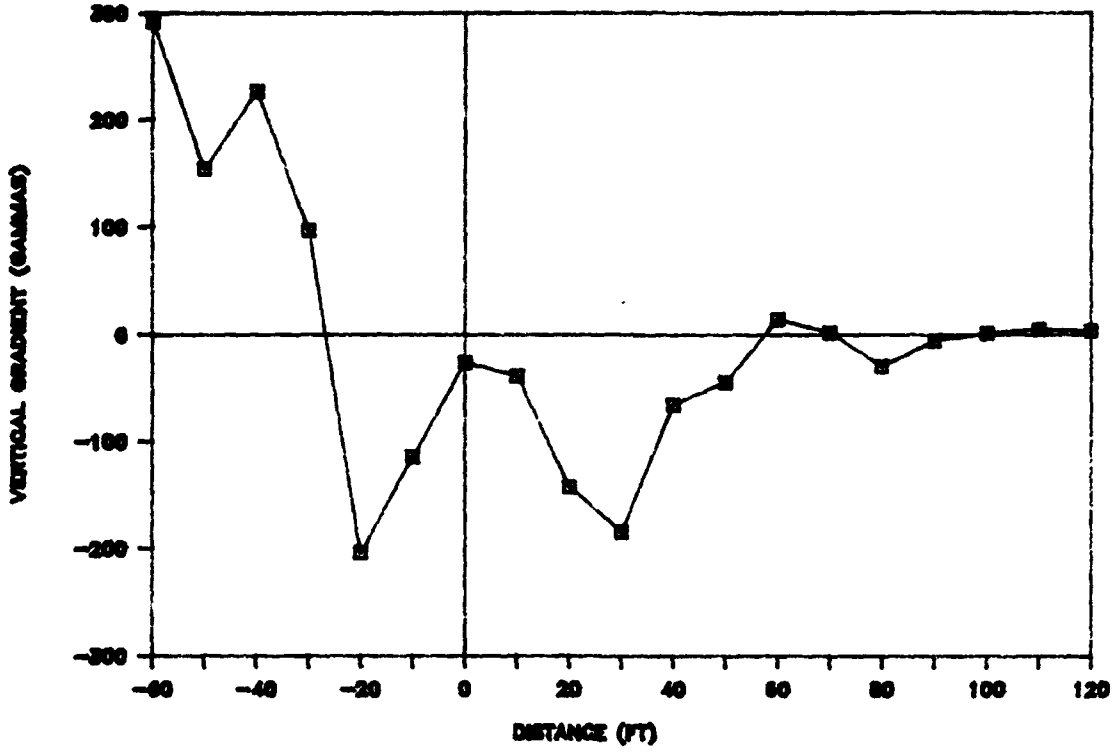


FIGURE A-13

STEWART AFB – LINE 24+50



STEWART AFB – LINE 25+00

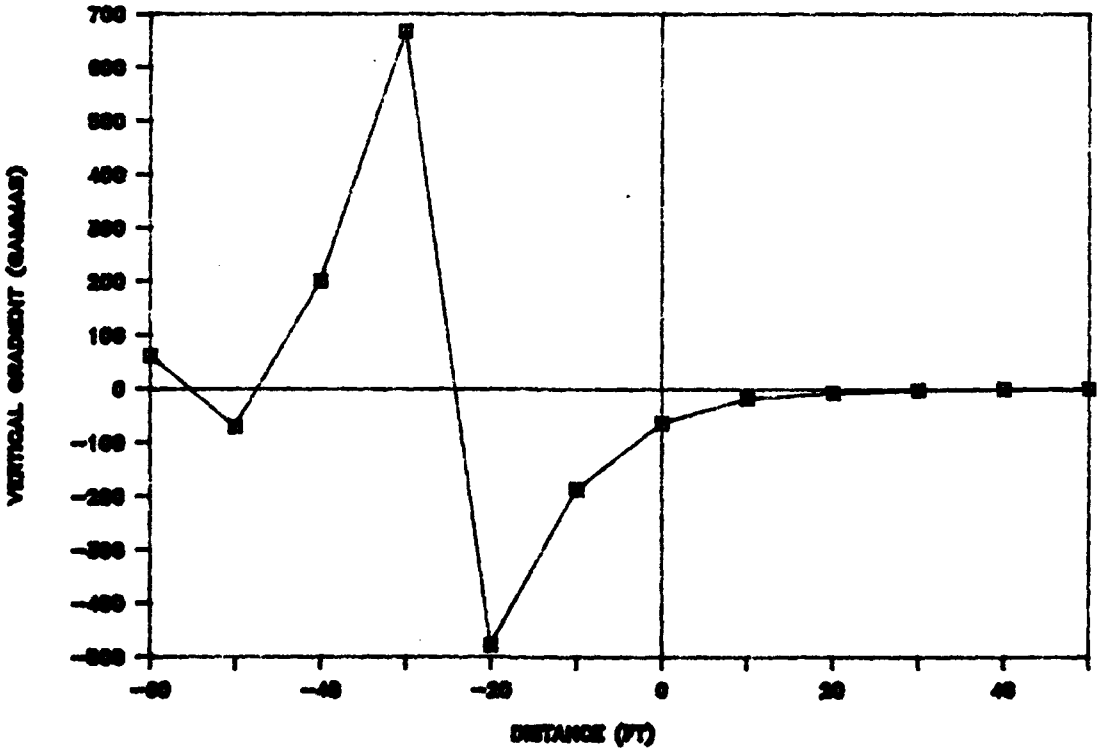
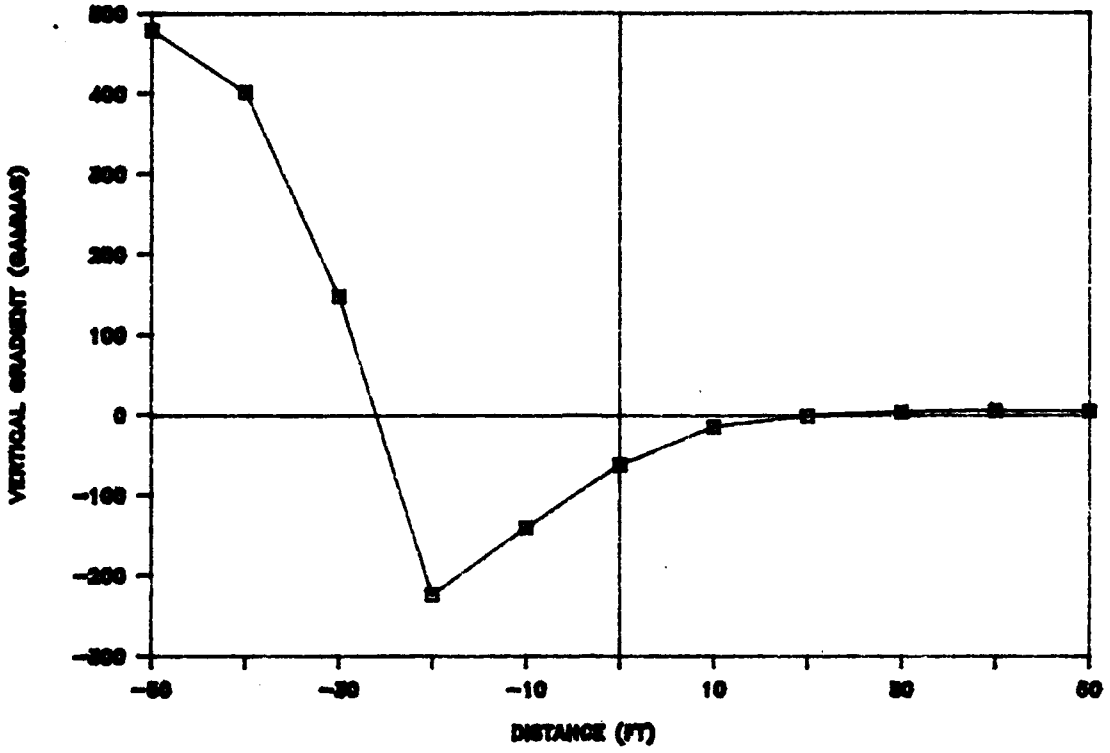


FIGURE A-14

STEWART AFB – LINE 25+50



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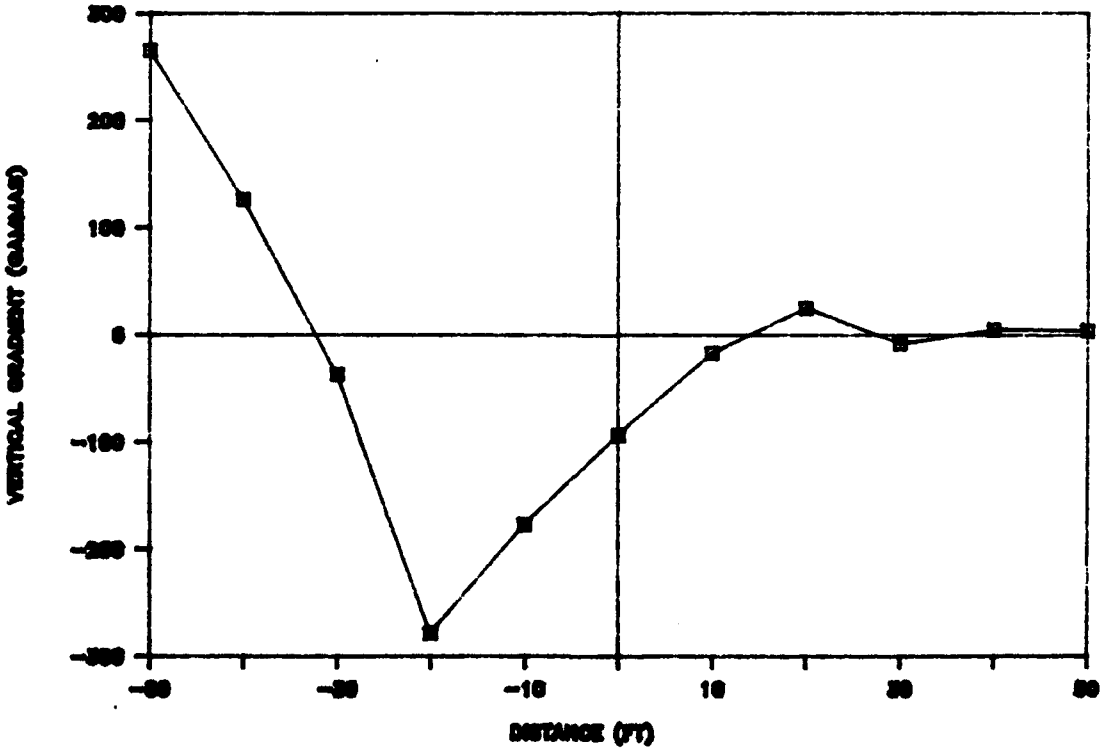
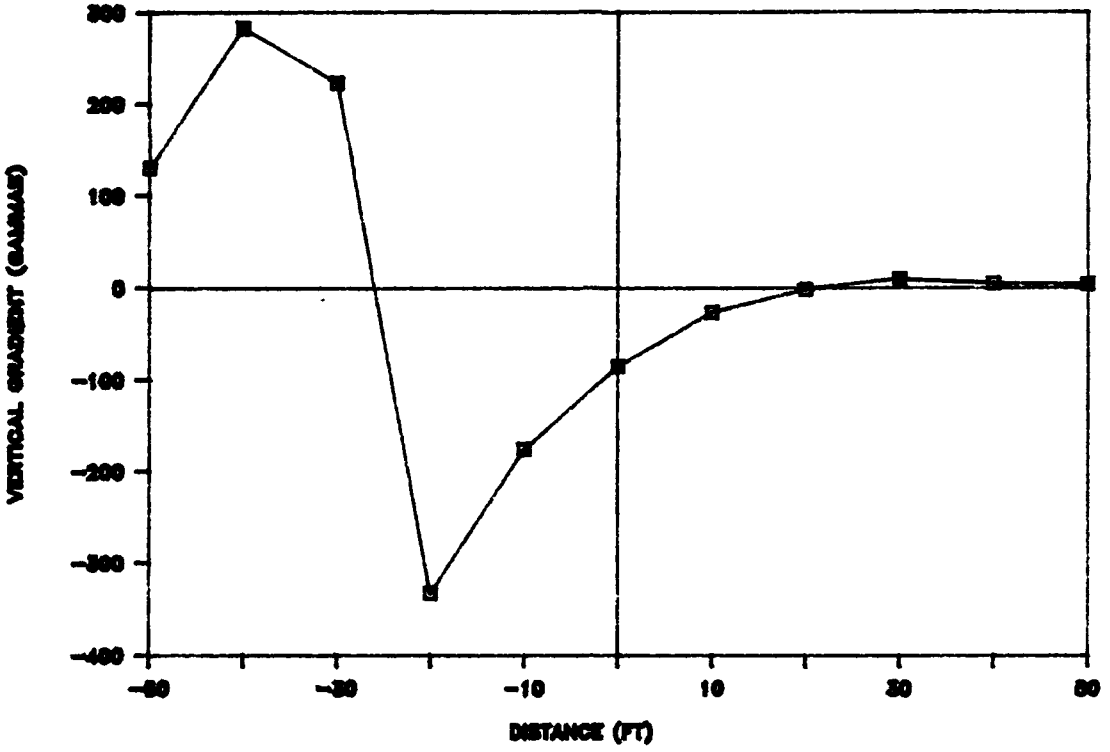


FIGURE A-15

STEWART AFB – LINE 26+50



STEWART AFB – LINE 27+00

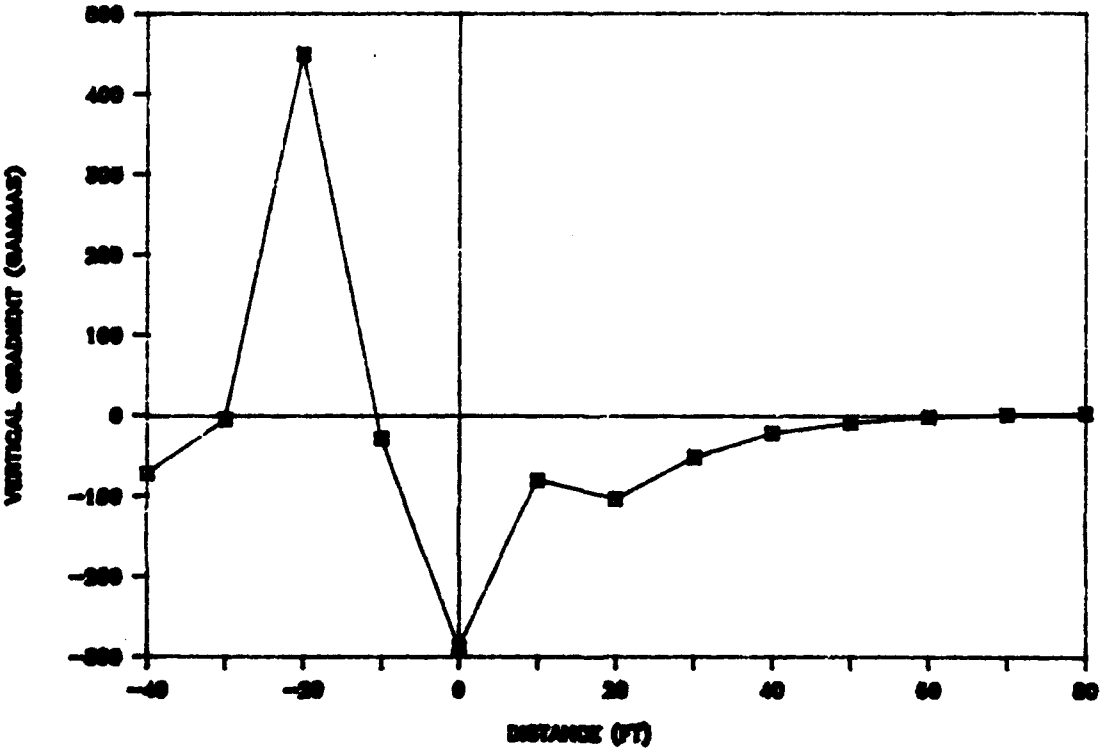
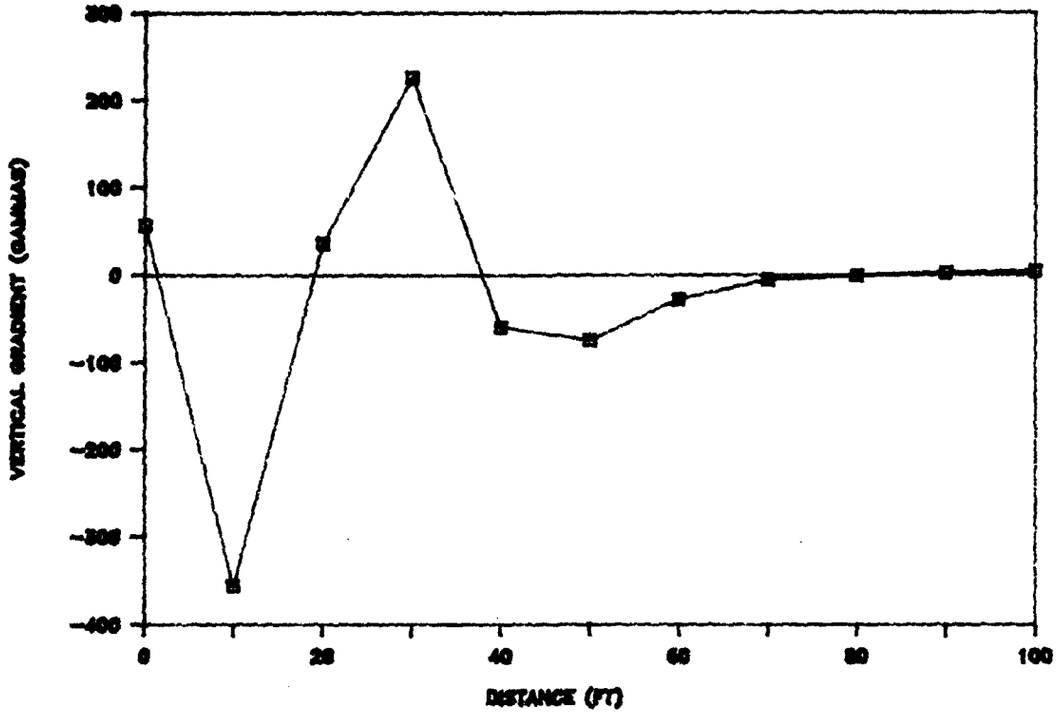


FIGURE A-16

STEWART AFB – LINE 27+50



STEWART AFB – LINE 28+00

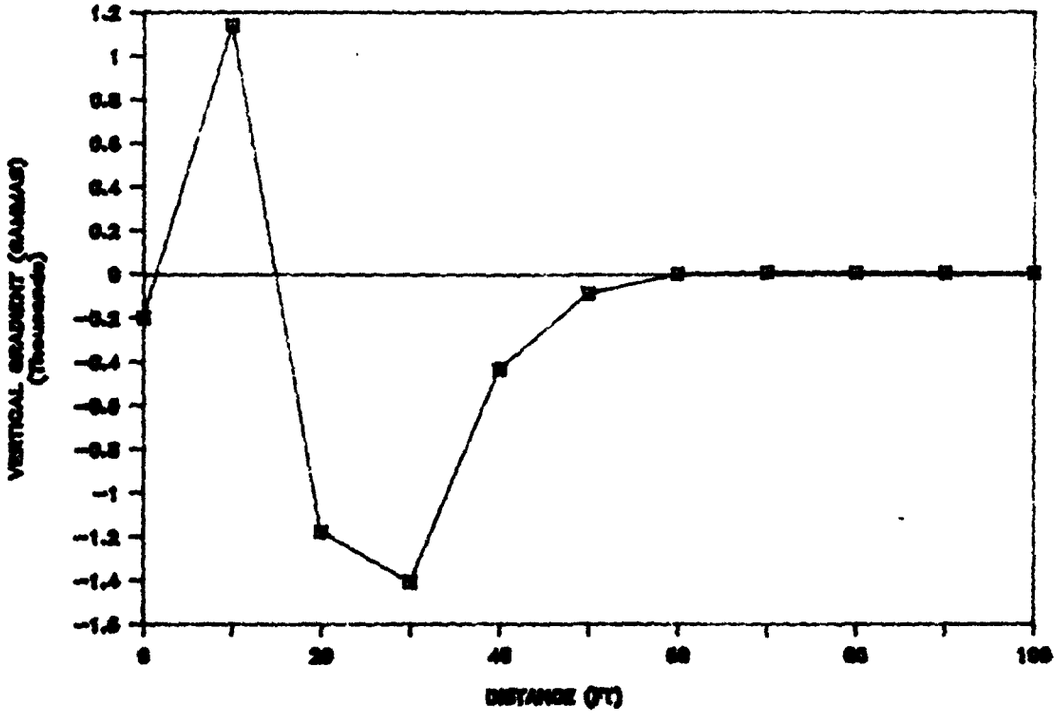
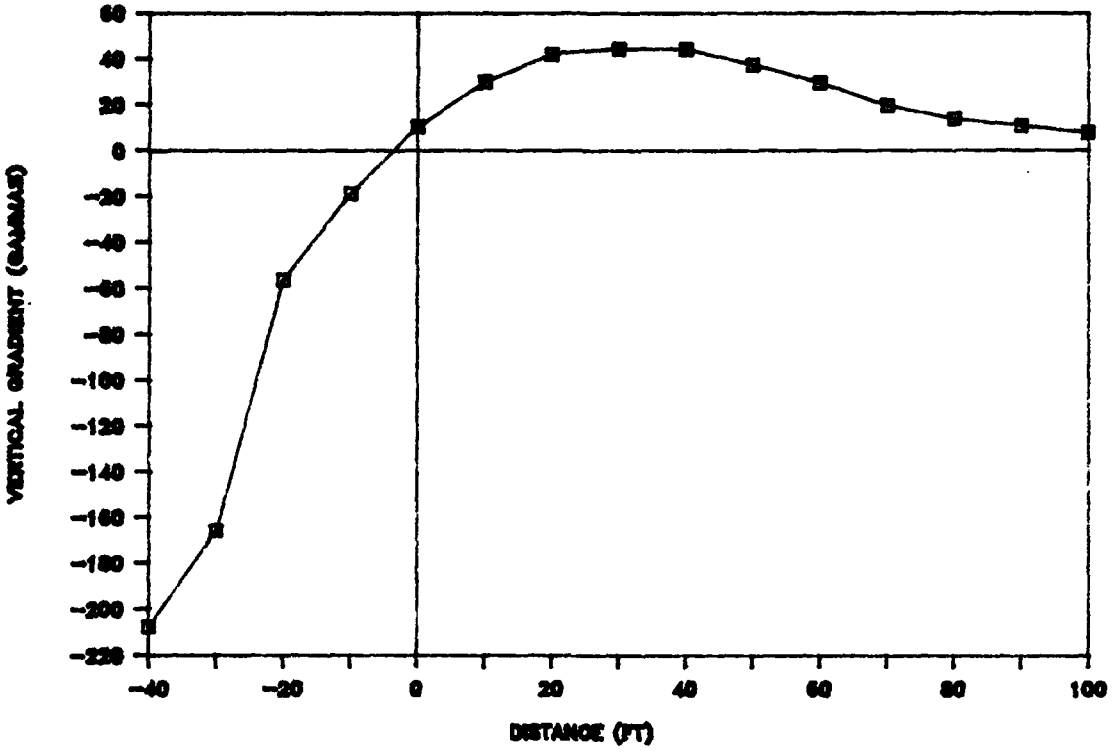


FIGURE A-17

STEWART AFB – LINE 28+35



STEWART AFB – LINE 30+50

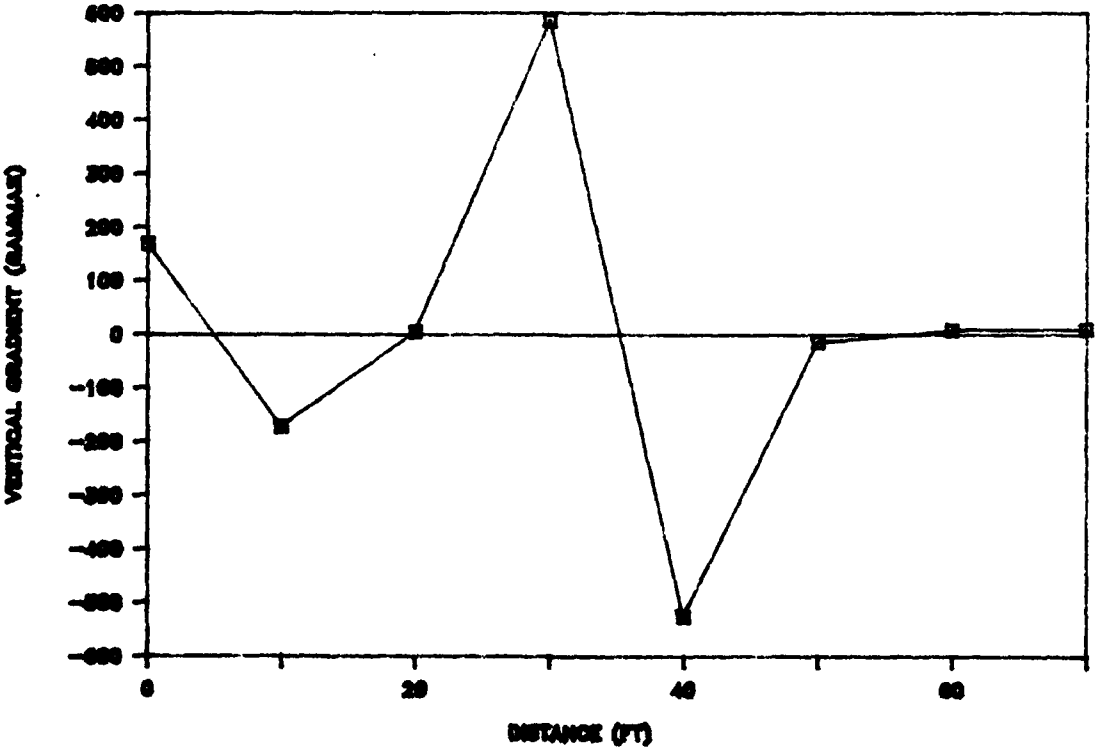


FIGURE A-18

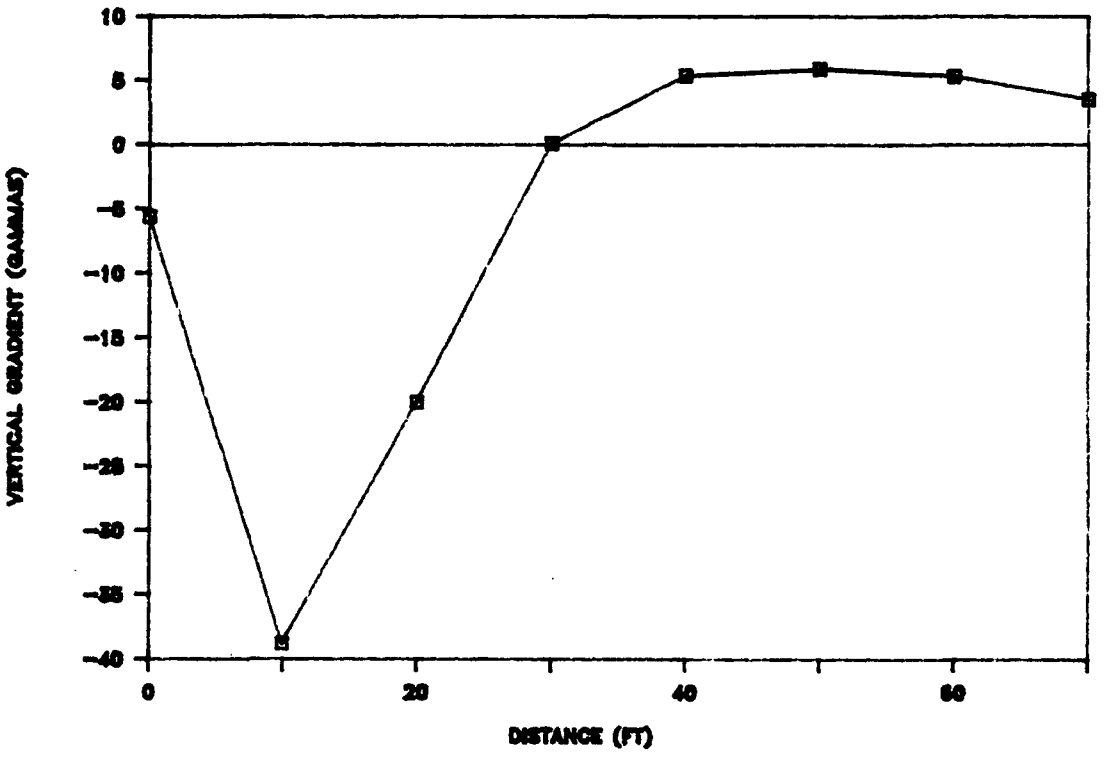

STEWART AFB – LINE 30+80
VERTICAL GRADIENT (GAMMAS)
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
0
20
40
60
DISTANCE (FT)

FIGURE A-19

APPENDIX A-2
TERRAIN CONDUCTIVITY MEASUREMENTS

INTRODUCTION

Terrain conductivity surveys, also referred to as EMI (electro-magnetic induction) surveys, have traditionally been used in mineral exploration for tracing conductive ore bodies (i.e., massive sulfides). More recently, conductivity surveys have been widely used for tracing conductive contaminant plumes in groundwater. Leachate from municipal landfills tends to be much more conductive than naturally occurring groundwater. Accordingly, the shape, extent, and relative impact of a plume can be studied with terrain conductivity surveys. Such surveys have also been successfully used in studying some organic contamination in soil and groundwater, since the conductivity of most organic chemicals is much lower then naturally occurring soils and groundwater.

Because the instrument never comes in contact with the ground, data acquisition is more rapid than conventional, galvanic, earth-resistivity surveys. However, quantification of conductivity data to yield a layered-earth solution is more difficult than with conventional earth resistivity.

INSTRUMENTATION

Two popular instruments used in terrain conductivity surveys are the EM-31 and EM-34-3, both manufactured by Geonics, Ltd., in Mississauga, Ontario. These instruments, which have proven to be rapid-reconnnaissance exploration tools, are used to assess the conductivity values for soil and rock materials.

Simply stated, the instrumentation, which consists of a transmitter and receiver, operates in the following manner. The transmitter is energized by an alternating current that produces a magnetic field, designated as the primary field, Hp. This artificial magnetic field induces small electric currents to flow in the earth which, in turn, produce a secondary magnetic field, Hs. This secondary magnetic field is complexly related to the transmitter/receiver separation and to the operating frequency of the transmitter, both of which are selected by the operator. The ratio of the secondary field to the primary field (Hs/Hp), under conditions that are commonly fulfilled in the field, is linearly proportional to the terrain conductivity. It is the ratio that is sensed by the receiver and converted into conductivity values in units of millimhos per meter. Although it is difficult to define the thicknesses and "true" conductivity of individual subsurface layers, the instrument measures very precisely the "apparent" conductivity of a volume of underlying earth materials. The apparent conductivity value is comprised of the sum of the contributions from each layer that is "sampled" by the transmitter-receiver array. The volume (and therefore the depth) of earth materials sampled increases with increasing separation between the transmitter and receiver. The separation is fixed with the EM-31 (3 meters), but is operator-selectable with the EM 34-3 at 10, 20, or 40 meters.

Each instrument can be used in either the horizontal dipole or vertical dipole mode. Selection of the operational dipole mode depends on the depth of

sampling desired, and the desired sensitivity of the instrument to materials at various depths, relative to the transmitter-receiver coil separation. Table A-1 shows the relationship of effective depth of exploration.

INTERPRETATION

The relative response of the instrument to materials at various depths can be estimated by examining Figure A-20, which shows a comparison of the relative responses for vertical and horizontal dipoles. The vertical axis describes the relative contribution to the secondary magnetic field, arising from a thin layer at a given depth, z. The horizontal axis shows how this response varies as a function of the ratio (z/s), where "z" is the depth of the thin layer described previously and "s" is the transmitter/receiver separation.

Figure A-20 demonstrates that in the vertical dipole mode, the contribution to the secondary magnetic field from near-surface materials is very small, but reaches a maximum at a depth "z" of approximately 0.4*s. The contribution is significant, although diminished, at a depth of 1.5*s. This depth represents the effective depth of exploration in the vertical dipole mode (Table A-1).

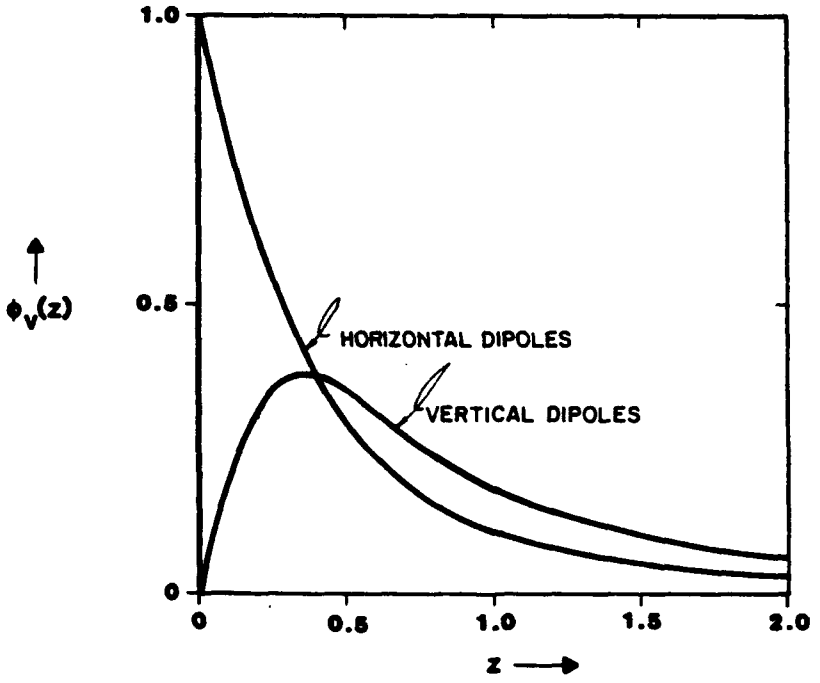
In the horizontal dipole mode, the contribution to the secondary magnetic field, arising from near-surface materials, is a maximum and decreases with increased depth. The contribution is also significant at a depth of about 0.75*s. This depth represents the effective depth of exploration in the horizontal dipole mode (Table A-1).

The terrain conductivity data acquired during the present study are presented in Figure A-21. The reader is referred to the main text for a brief discussion of these data.

TABLE A-1

TERRAIN CONDUCTIVITY MEASUREMENTS
EFFECTIVE DEPTH OF EXPLORATION

Instrument	Coil Separation	Vertical Dipole	Horizontal Dipole
EM 31	3m	4.5m	2.25m
EM 34-3	10m	15m	7.5m
	20m	30m	15m
	40m	60m	30m



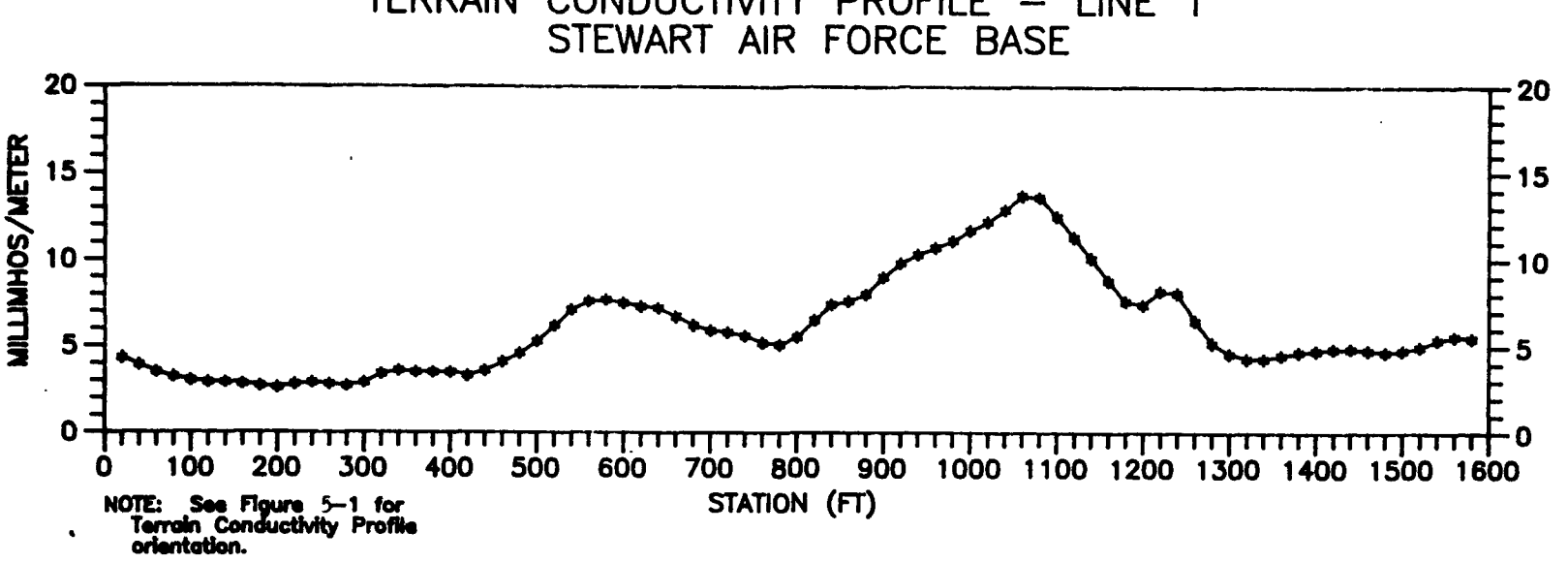
Note: "$\phi_V(z)$" is the relative contribution to the secondary magnetic field intensity from material in a thin layer (dz) located at (normalized) depth "z".

"z" is the depth of the thin layer (dz) divided by the intercoil spacing between transmitter and receiver.

TERRAIN CONDUCTIVITY SURVEY

COMPARISON OF RELATIVE RESPONSES FOR VERTICAL AND HORIZONTAL DIPOLES

FIGURE A-20


TERRAIN CONDUCTIVITY PROFILE – LINE 1
STEWART AIR FORCE BASE
MILLIMHOS/METER
0
5
10
15
20
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600
STATION (FT)
NOTE: See Figure 5–1 for Terrain Conductivity Profile orientation.

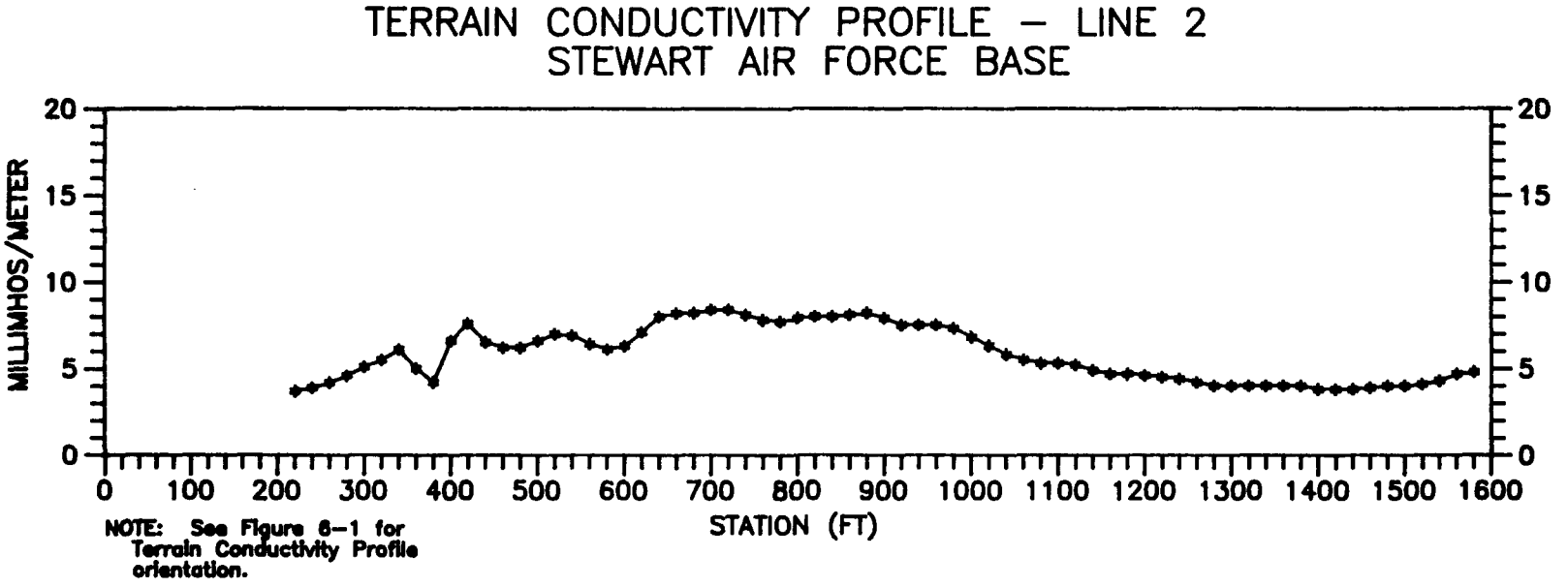

TERRAIN CONDUCTIVITY PROFILE – LINE 2
STEWART AIR FORCE BASE
MILLIMHOS/METER
0
5
10
15
20
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600
STATION (FT)
NOTE: See Figure 6–1 for Terrain Conductivity Profile orientation.

FIGURE A-21

APPENDIX B

BORING LOGS AND INSTALLATION DETAILS

B-1 SOIL BORING LOGS (INCLUDING PEIZOMETER AND MONITORING WELL INSTALLATION DIAGRAMS)
B-2 ROCK CORE LOGS
B-3 MONITORING WELL INSTALLATION SHEETS

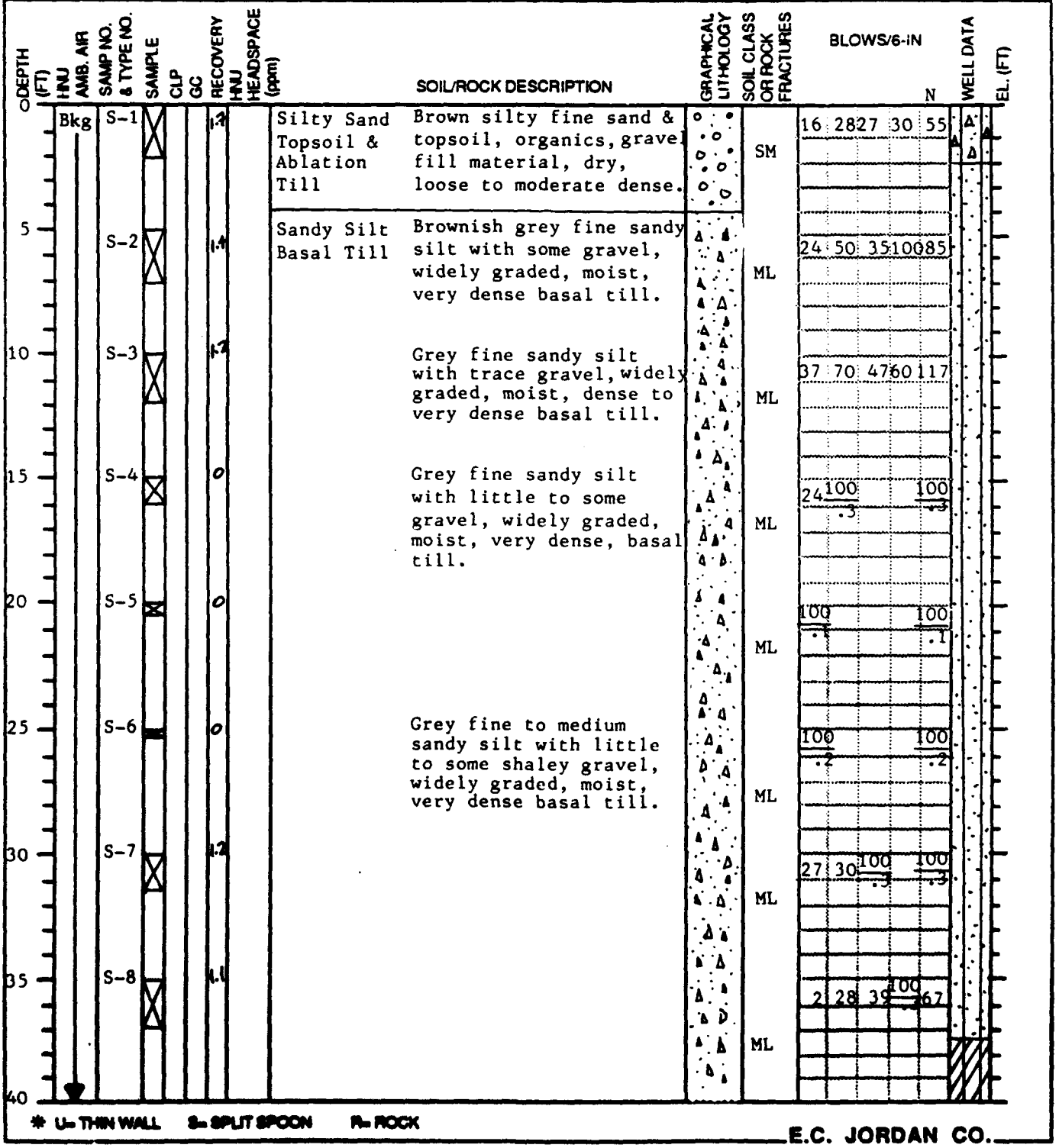
APPENDIX B-1

SOIL BORING LOGS (INCLUDING PIEZOMETER AND MONITORING WELL INSTALLATION DIAGRAMS)

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-100

CLIENT STEWART AIR NATIONAL GUARD BASE			**PROJECT NO.** 5139-01
CONTRACTOR EMPIRE SOILS INVESTIGATIONS		**DATE STARTED** 8/13/87	**COMPLTD.** 8/14/87
METHOD Spun casing	**CASING SIZE** 4" I.D.	**HNU TIP** 10.6	**PROTECTION LEVEL** B C D
GROUND EL 433.93	**SOIL DRILLED** 45.6'	**ROCK DRILLED** 10'	**FT BELOW GROUND** 55.6'
LOGGED BY J. Urquhart	**CHECKED BY** FFB	**DATE** 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-100

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/13/87	COMPLTD. 8/14/87
METHOD Spun casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 433.93	SOIL DRILLED 45.6'	ROCK DRILLED 10'	FT BELOW GROUND 55.6
LOGGED BY J. Urquhart	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN N	WELL DATA	EL. (FT)
40	Bkg	S-9						Sandy Silt — Grey fine sandy silt with little clay, trace gravel. Clay structure has thin laminations. Widely graded, moist, cohesive medium dense to dense.		ML	24 47 47 60 94		
45		S-10				.2		45.6' Shale — Black, dark grey extremely weathered shale, Fe staining on fractured surfaces, thinly bedded.			84 100/.1		
50								Roller bit 45.6' to 55.6'					
55								B.O.B. 55.6'					
60													

* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-101

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8-4-87	COMPLTD. 8-7-87
METHOD HSA/Spin casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 437.64	SOIL DRILLED 37.7	ROCK DRILLED 8.8	FT BELOW GROUND 46.5'
LOGGED BY S. Pinette	CHECKED BY FFB	DATE 11-10-87	Page 1 of 2

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CIP	GC	RECOVERY HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN or RQD %	WELL DATA
0	Bkg	S-1				25	Fine Sand Fill & Ablation Till: Light yellowish brown with grass roots, loose dry uniform; over very fine & with little coarse sand, trace gravel		SW	8 60	
5		S-2				66	6' Fine Sand Basal Till: Olive brown, silty, trace clay & coarse sand & gravel, very dense, dry, gap graded		SM	8 31 6570	
10		S-3				63	Olive gray with fine to medium gravel, fine to coarse sand, some clay, moderately plastic, very firm, moist			- 50 44 63	
15		S-4				44				48 82 90100/0.2	
20		S-5				63	As above with more fine sand			38 63 80 -	
25		S-6				87				63 100/0.4	
30		S-7				84	As above with little clay, low plasticity, moist, very hard		SM	100/0.2	
35		S-8				0	As above but mixed with weathered shale fragments			100/0.2	
							37.7' Top of Rock				
40		R-1				77%	Shale: Medium gray, well cleaved, cleavage surfaces stained with oxidation, cleavage at 45°			0%	

* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM			BORING NO. JTB-101
CLIENT STEWART AIR NATIONAL GUARD BASE			PROJECT NO. 5139-01
CONTRACTOR EMPIRE SOILS INVESTIGATIONS		DATE STARTED 8/4/87	COMPLTD. 8/7/87
METHOD HSA/Spun casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 437.64	SOIL DRILLED 37.7'	ROCK DRILLED 8.8'	FT BELOW GROUND 46.5
LOGGED BY S. Pinette	CHECKED BY FFB	DATE 11-10-87	Page 2 of 2

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN or RQD % (20 40 60 80)	WELL DATA	EL. (FT)
40		R-1					Shale Medium gray, well cleaned @ 45°, staining on cleavage surfaces, very broken;					
45		R-2					Sandstone interbedded with shale at 42.6 to 43.3					
							B.O.B. @ 46.5'					
50												

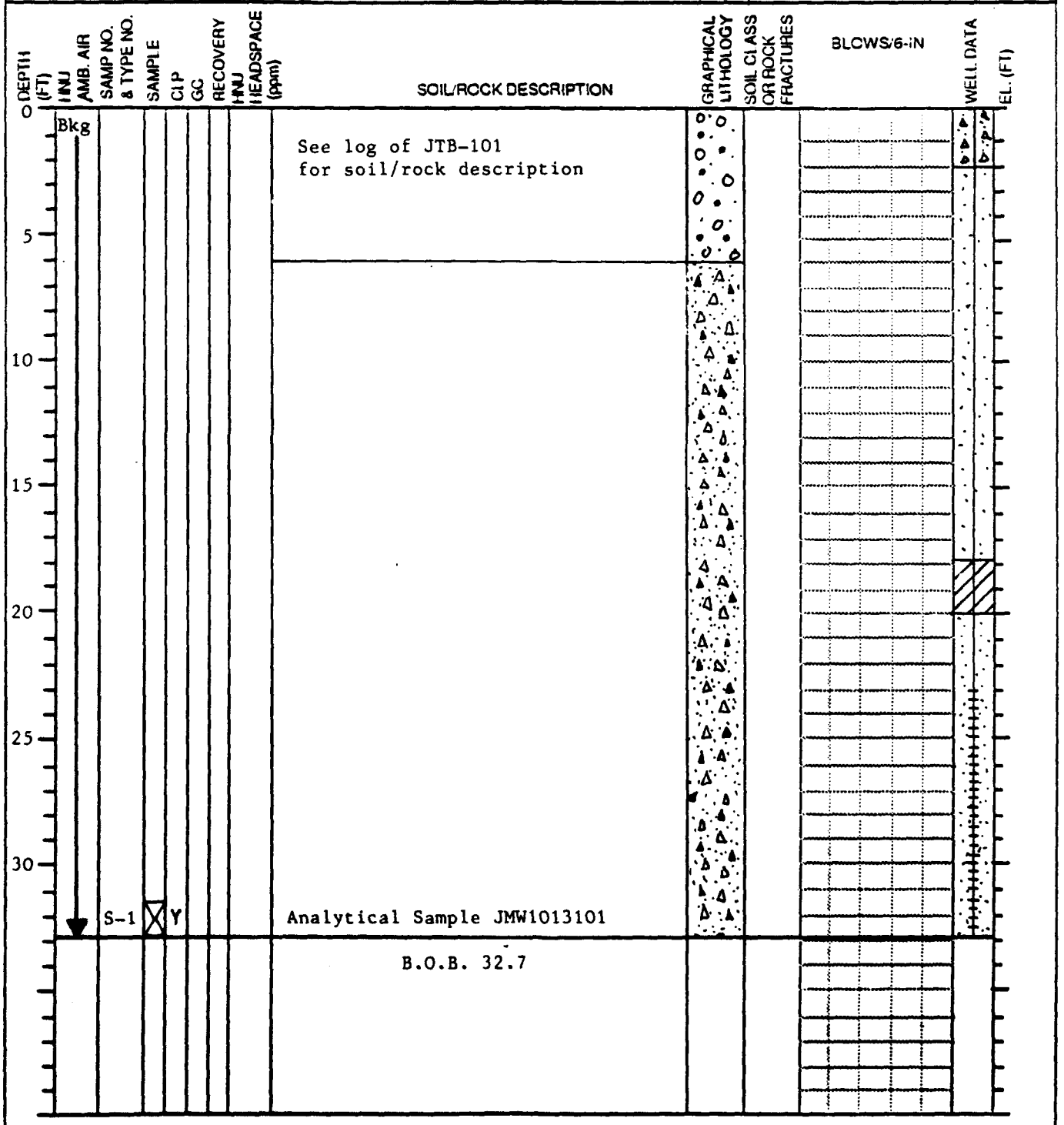
* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JMW-101

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8-7-87	COMPLTD. 8-10-87
METHOD HSA	CASING SIZE 4.25" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 437.83	SOIL DRILLED 32.5	ROCK DRILLED 0.2	FT BELOW GROUND 32.7
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

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INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-102

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/11/87	COMPLTD. 8/13/87
METHOD Spun Casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 427.62	SOIL DRILLED 51.6'	ROCK DRILLED 10'	FT BELOW GROUND 61.6'
LOGGED BY J. Urquhart	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN N	WELL DATA
0	Bkg	S-1				1.5		Sandy Silt Topsoil & Ablation Till — Brown with organics, loose, over brownish grey fine sandy silt, trace gravel, trace coarse sand, widely graded, dry loose		SM	7 12 17 19 29	
10		S-2	Y			1.6		Silt Basal Till — Brownish grey silt with trace fine sand, some gravel, widely graded, slightly moist, very dense basal till		ML	30 59 53 70 112	
								Analytical Sample JTB1021201				
20		S-3				0.8		Silt Basal Till — Dark grey silt with trace fine sand some gravel, widely graded, moist, very dense, basal till		ML	36 56 65 51 121	
25		S-4				1.2		Gravelly Silt Basal Till — Dark grey silt with trace fine sand much gravel, moist, very dense, basal till		ML	22 55 64 100 119	
30		S-5				1.1		Dark grey silt with trace fine sand much gravel. Isolated light grey clay lenses, moist, cohesive, plastic, very dense, basal till		ML	59 70 81 100 151	
35		S-6				0.9		Silt — Brownish grey silt with trace fine sand, little clay, some gravel. Moist very dense, basal till		ML	43 55 68 100 123	
40												

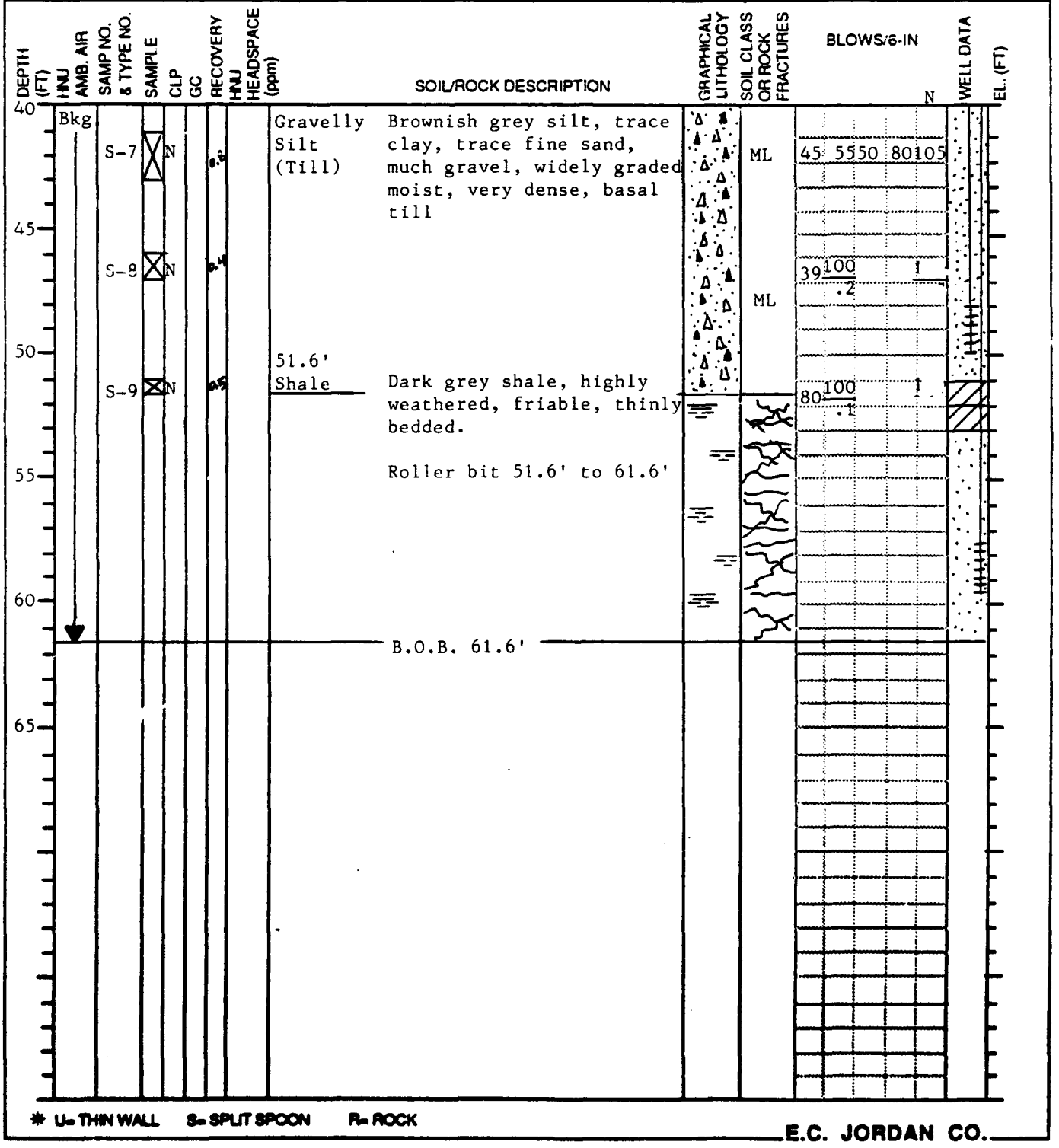
* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-102

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED	COMPLTD. 8/13/87
METHOD Spun casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 427.62	SOIL DRILLED 51.6	ROCK DRILLED 10'	FT BELOW GROUND 61.6'
LOGGED BY J. Urquhart	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-103

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/12/87	COMPLTD. 8/14/87
METHOD Spin casing/coring	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 432.54	SOIL DRILLED 41'	ROCK DRILLED 10'	FT BELOW GROUND 51.4'
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP GC	RECOVERY HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN or RQD % N	WELL DATA
0	Bkg	S-1			10 Bkg	Sandy Silt Over Silty Sand Fill & Ablation Till — Tan fine sandy silt, trace coarse sand, trace gravel, dry, loose, over tan gravelly, silty sand		ML/ SM	8 33 50/0.0	
5		S-2	Y		17 Bkg	Silt & Sand Basal Till — Brown, trace gravel, trace clay, well graded, damp, non-plastic, very dense, massive structure. Analytical Sample JTB1030501		SM	36 30 31 37 61	
10		S-3			0.0 Bkg	While tri-coning, water return turned grey at 13'.			26 22 35 75 57	
15		S-4			0.0 Bkg	Sandy Silt — Gray, trace fine gravel, non to slightly plastic, evenly graded, dense, damp		ML	11 21 42 67 63	
20		S-5			0.6 Bkg	As above but appears like weathered bedrock, very dense, damp, cemented till, trace gravel is all gray shale			12 27 6	
25		S-6			0.7 Bkg	As above but with little sand			32 89 100/0.4	
30		S-7			1.0 Bkg	Gray, trace coarse sand, trace gravel, trace clay very well sorted, very dense, non-plastic, damp			13 39 83 100/.3	
35		S-8			0.0 Bkg	As above, but around a ½" lense of very well sorted fine sand			33 57 100/.3	
40		S-9			0.0 Bkg	Silty Sand — Yellowish-brown with little coarse shale fragments, damp		SM	29 47 100/.1	

* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-103

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/12/87	COMPLTD. 8/14/87
METHOD Spin casing-coring	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 432.54	SOIL DRILLED 40'	ROCK DRILLED 11.4'	FT BELOW GROUND 51.4'
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN	WELL DATA	EL. (FT)
40								Extremely weathered bedrock, water return is brown		SM			
45		S-10				.05	Bkg	Sand & Silt (Weathered Rock) Brown, trace gravel, very dense, wet; few distinct brown mottles; weathered rock			100/.1		
		S-11				.1	Bkg						
		S-12				.0	Bkg	Black & brown w/little clay, moist, lensoid, very hard			100/.3		
50								B.O.B. @ 51.4' Solid Rock					
55													

* U= THIN WALL S= SPLIT SPOON R= ROCK

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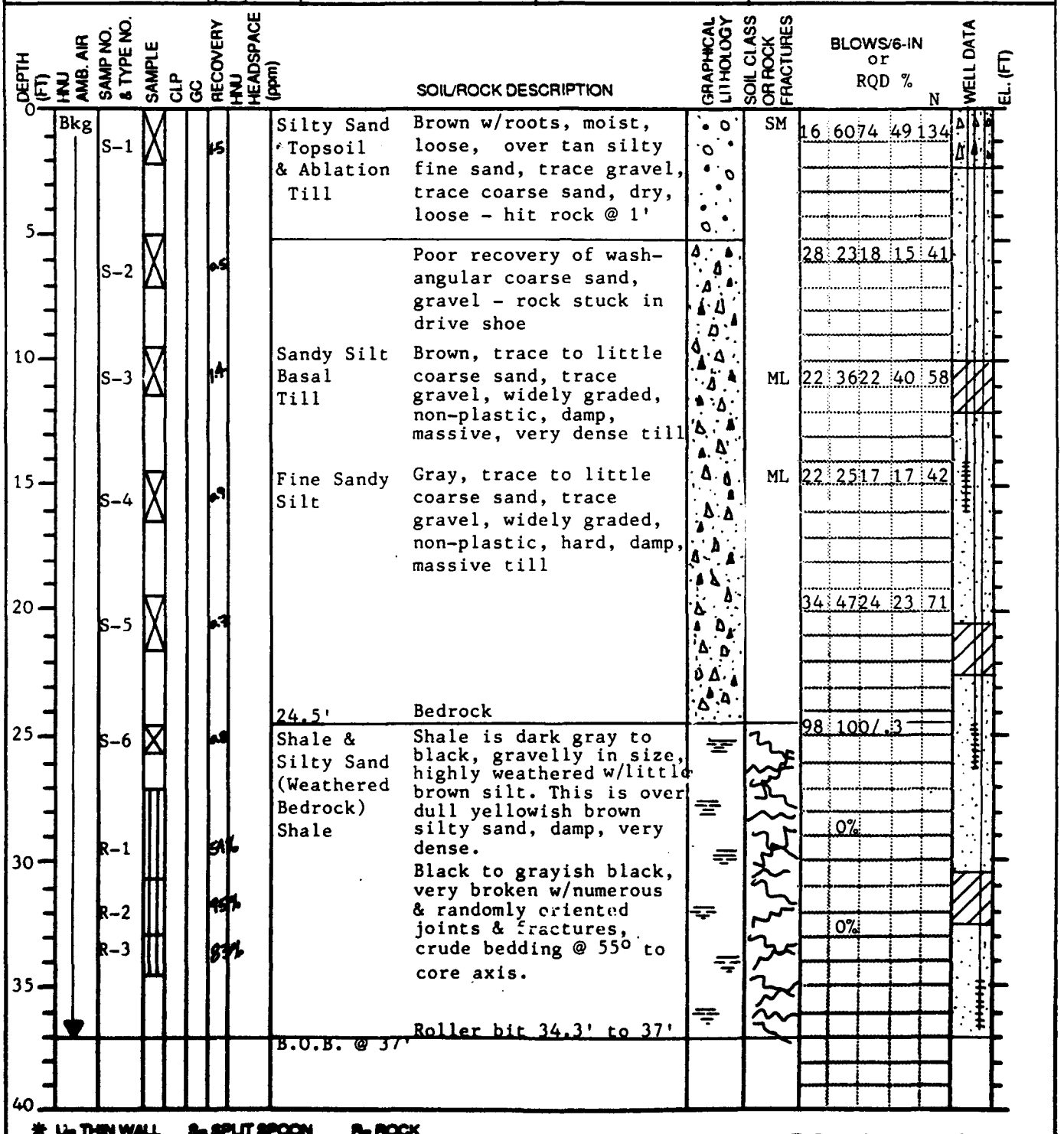
INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-104

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/11/87	COMPLTD. 8/12/87
METHOD Spin casing-coring	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 435.54	SOIL DRILLED 27'	ROCK DRILLED 10'	FT BELOW GROUND 37.0
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

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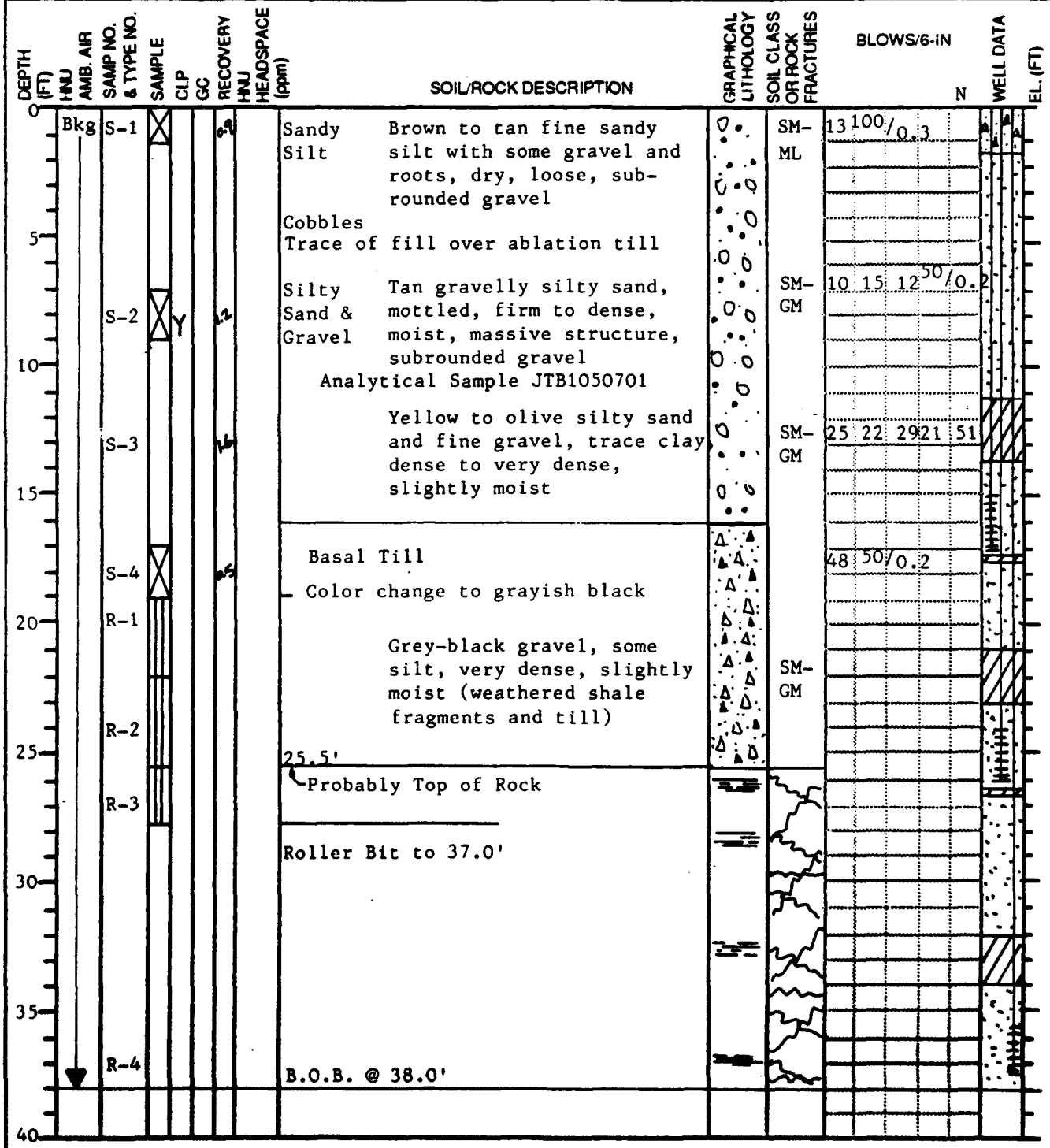
INSTALLATION RESTORATION PROGRAM			BORING NO. JTB-105
CLIENT STEWART AIR NATIONAL GUARD BASE			PROJECT NO. 5139-01
CONTRACTOR EMPIRE SOILS INVESTIGATIONS		DATE STARTED 8/7/87	COMPLTD. 8/10/87
METHOD Spin casing-coring	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 392.69	SOIL DRILLED	ROCK DRILLED	FT BELOW GROUND 38.0
LOGGED BY T. Longley & J. Urquhart	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

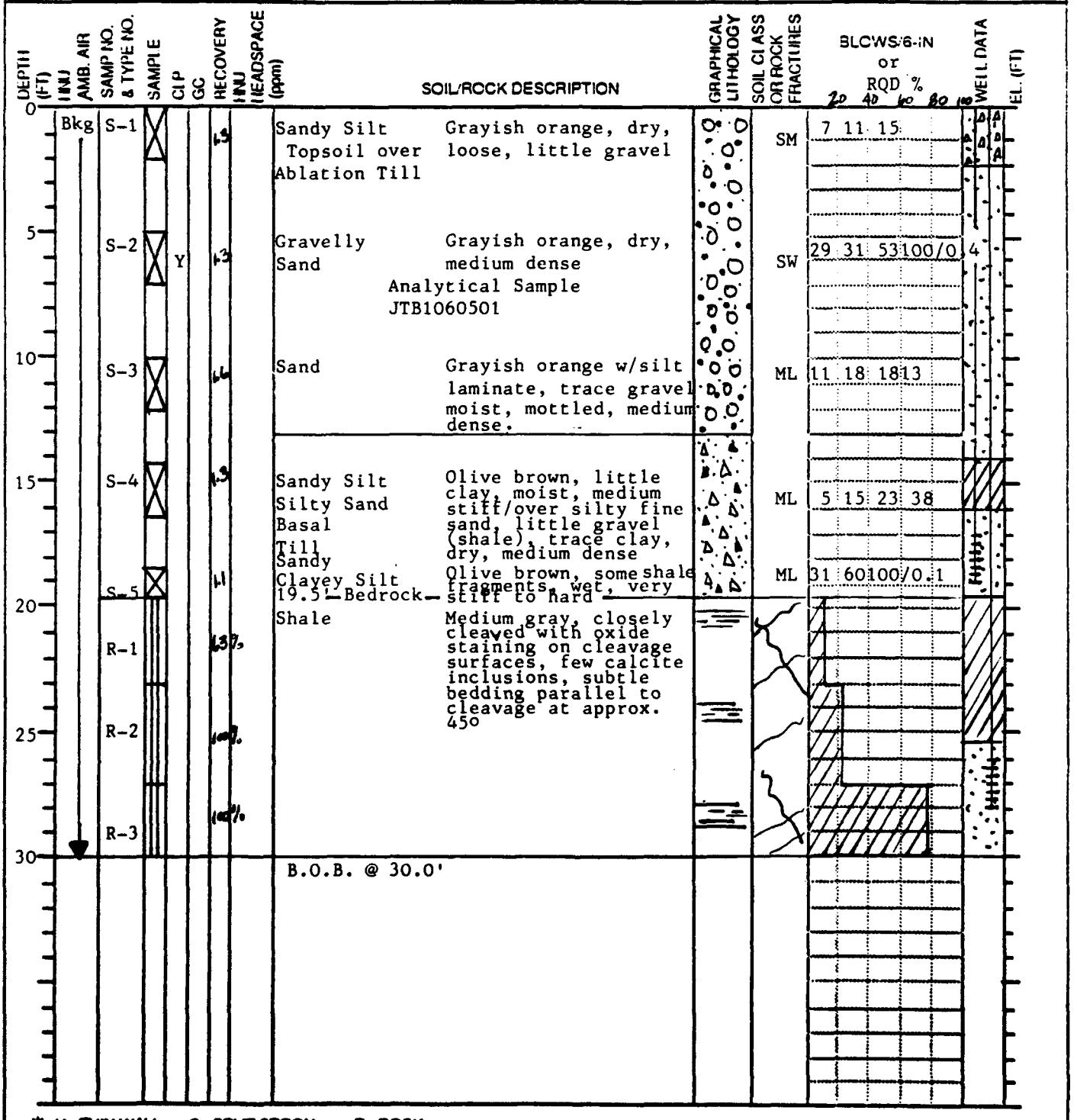
E.C. JORDAN CO.

*Cored cobbles; not boxed

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-106

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 7/30/87	COMPLTD. 8/4/87
METHOD HSA/Rock core	CASING SIZE 4.25"	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 386.97	SOIL DRILLED 19.5'	ROCK DRILLED 10.5'	FT BELOW GROUND 30.0
LOGGED BY S. Pinette	CHECKED BY FFB	DATE 11-10-87	Page 1 of 1



* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-107

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 7/30/87	COMPLTD. 8/3/87
METHOD Spin casing-coring	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 364.79	SOIL DRILLED 10.0'	ROCK DRILLED 9.4'	FT BELOW GROUND 19.4
LOGGED BY L. Healey	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP GC	RECOVERY HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN N	WELL DATA
0	Bkg	S-1			8.4	Silty Sand (Colluvium) — Tan silty sand, trace medium gravel & roots, loose, brown moist		SM	2 7 9 15 16	
5		S-2			1.4	Fine Sand Ablation Till — Brown fine sand, little silt, trace medium - coarse gravel, moist, medium dense, mottled, slightly stratified		SM		
		S-3			0'	9.4'				
10						Silty Sand & Shale — Gray silty sand, weathered medium-coarse shale gravel, moist cohesive (Top of rock 9.4')		SM-GM	6 9 24 32 33	
		R-1			25%				0% RQD	
15		R-2			66%	Black to grayish black shale, highly weathered FeO staining, clay seams and voids			0% RQD	
		R-3			33%				0% RQD	
20						B.O.B. @ 19.4'				
25										
30										
35										
40										

* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JMW-107

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 7/30/87	COMPLTD. 8/3/87
METHOD 4.25" HSA	CASING SIZE N/A	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 364.14	SOIL DRILLED * 21.0	ROCK DRILLED N	FT BELOW GROUND 9.5
LOGGED BY L. Healey	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CIP	GC	RECOVERY HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN N	WELL DATA
0	Bkg						See log of JTB-107 for soil/rock descriptions. Analytical sample JMW-107 0401 taken from 4.5-7.5'				
5			Y			25				13 21 18 22 40 15 21	
10							B.O.B. @ 9.5'				

*Note: Moved borehole location 5 times before boulder-free location was found. 21' of soil drilled.

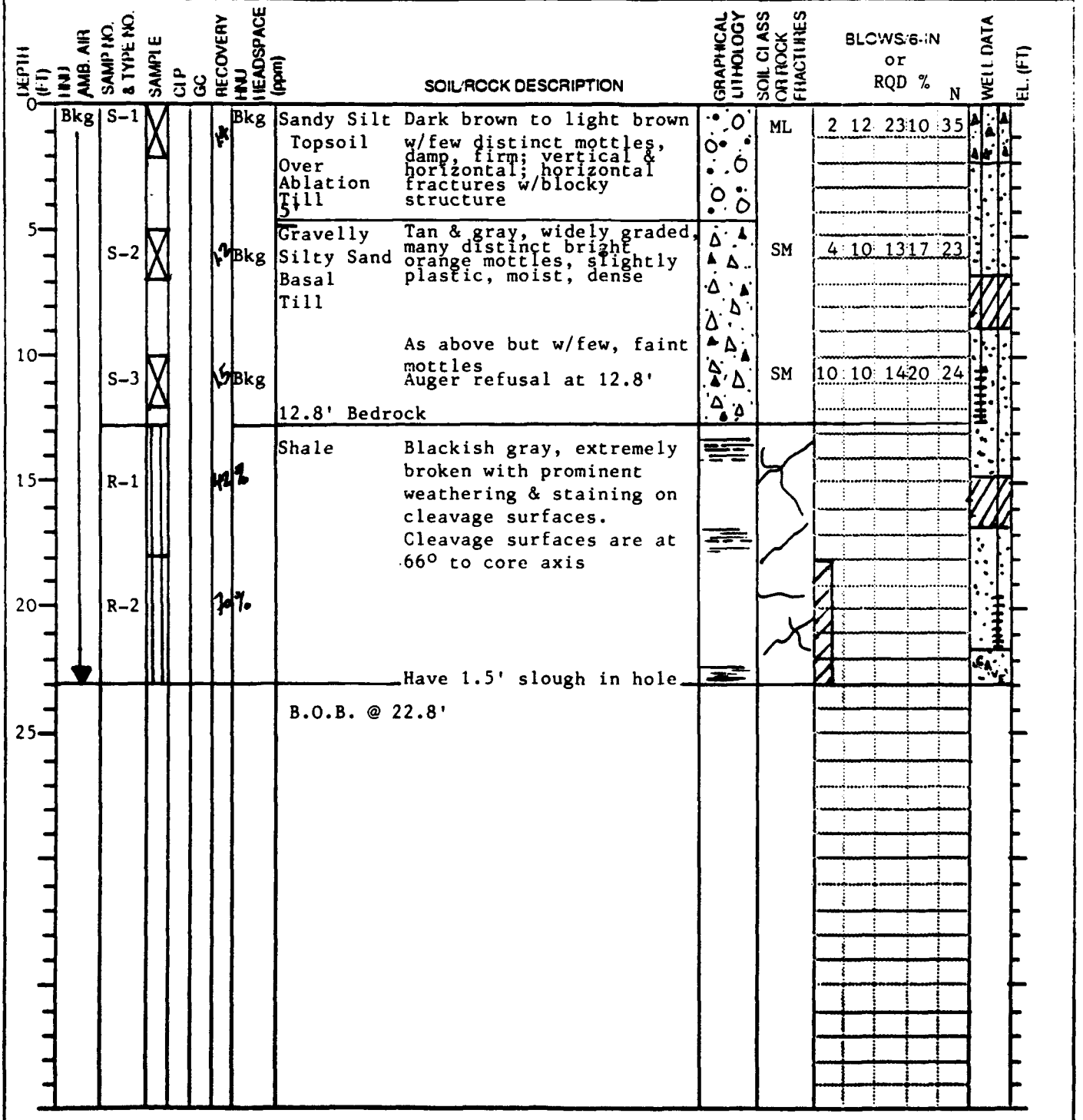
* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-108

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/3/87	COMPLTD. 8/4/87
METHOD HSA/Coring	CASING SIZE 4.25" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 367.34	SOIL DRILLED 12.8'	ROCK DRILLED 10'	FT BELOW GROUND 22.8'
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM			BORING NO. MW-108
CLIENT STEWART AIR NATIONAL GUARD BASE			PROJECT NO. 5139-01
CONTRACTOR EMPIRE SOILS INVESTIGATIONS		DATE STARTED	COMPLTD.
METHOD HSA	CASING SIZE 4.25" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 368.34	SOIL DRILLED 12'	ROCK DRILLED N.A.	FT BELOW GROUND 12
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CIP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN or RQD % N	WELL DATA
0	Bkg	S-1				12	Bkg	Silty Sand Topsoil & Till — Brown, dry, loose, trace gravel, roots at top		ML	3 6 5 10 11	
5								Analytical Sample JMW1080701				
		S-2	Y			88		Silty Sand Till — Brown, trace to little gravel, moist to wet firm, well graded w/few distinct yellow mottles; S-2 filled VOA jar, S-3 filled remaining jars		SM	7 9 9 9 18	
10		S-3	Y			41					9 12 100/.3	
								B.O.B. @ 12'				
15												

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E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-109

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 8/4/87	COMPLTD.
METHOD H.S.A./Spin casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 371.72	SOIL DRILLED 10.4	ROCK DRILLED 9'	FT BELOW GROUND 19.4
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	

Bkg = Background

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN N	WELL DATA	EL. (FT)
0	Bkg	S-1				1.9	Bkg	Silty Sand over Sandy Silt Topsoil over Ablation Till — Dark brown to tan, trace gravel, dry loose; top-soil over blocky structure w/oxidation staining on ped faces		SM/ ML	3 6 11 12 17		
5		S-2				.8	Bkg	Silty Sand Till — Yellowish brown, trace to some gravel, very dense, dry to damp, widely graded, massive structure, distinct mottles, auger refusal at 6 - spin casing			24 32 100/.3		
10		R-1				16%		10.4' Bedrock — Shale — Gray, thinly laminated, medium hard, very broken much oxidation on fracture faces			0%	CAP	
15		R-2				24%		Roller Bit 18.5 - 19.4			0%		
20								B.O.B. @ 19.4'					

* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. MW-109

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED	COMPLTD.
METHOD Spin casing	CASING SIZE 4" I.D.	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 372.02	SOIL DRILLED 11'	ROCK DRILLED NA	FT BELOW GROUND 11.0
LOGGED BY T. Longley	CHECKED BY FFB	DATE 11-10-87	

Bkg - Background

DEPTH (FT)	HNU AMB. AIR	SAMP NO. & TYPE NO.	SAMPLE	CLP	GC	RECOVERY	HNU HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	GRAPHICAL LITHOLOGY	SOIL CLASS OR ROCK FRACTURES	BLOWS/6-IN or RQD %	N	WELL DATA
0	Bkg	S-1				.9/1.0	Bkg	Silty Fine Sand Topsoil & Till — Dark brown topsoil w/ roots, moist, firm over grayish brown silty fine sand w/trace to little gravel, dry, dense w/many distinct orange mottles		SM	7 9 21 32 30		
5		S-2	Y			1.4/2.0	Bkg	Silty Sand Till — Olive brown (sand is fine to coarse) well graded, dense moist; gravel zone at 6'; many distinct reddish brown mottles		SM	12 31 24 11 55		
								Analytical Sample JMW:090501					
10		S-3						Silty Sand & Weathered Rock — Yellowish brown gravelly well graded, trace clay moist, dense, over black & brown weathered shale, prom. ox., dense moist, trace clay		SM	12 14 19 20 33		
								Bedrock					
								B.O.B. @ 11'					
15													

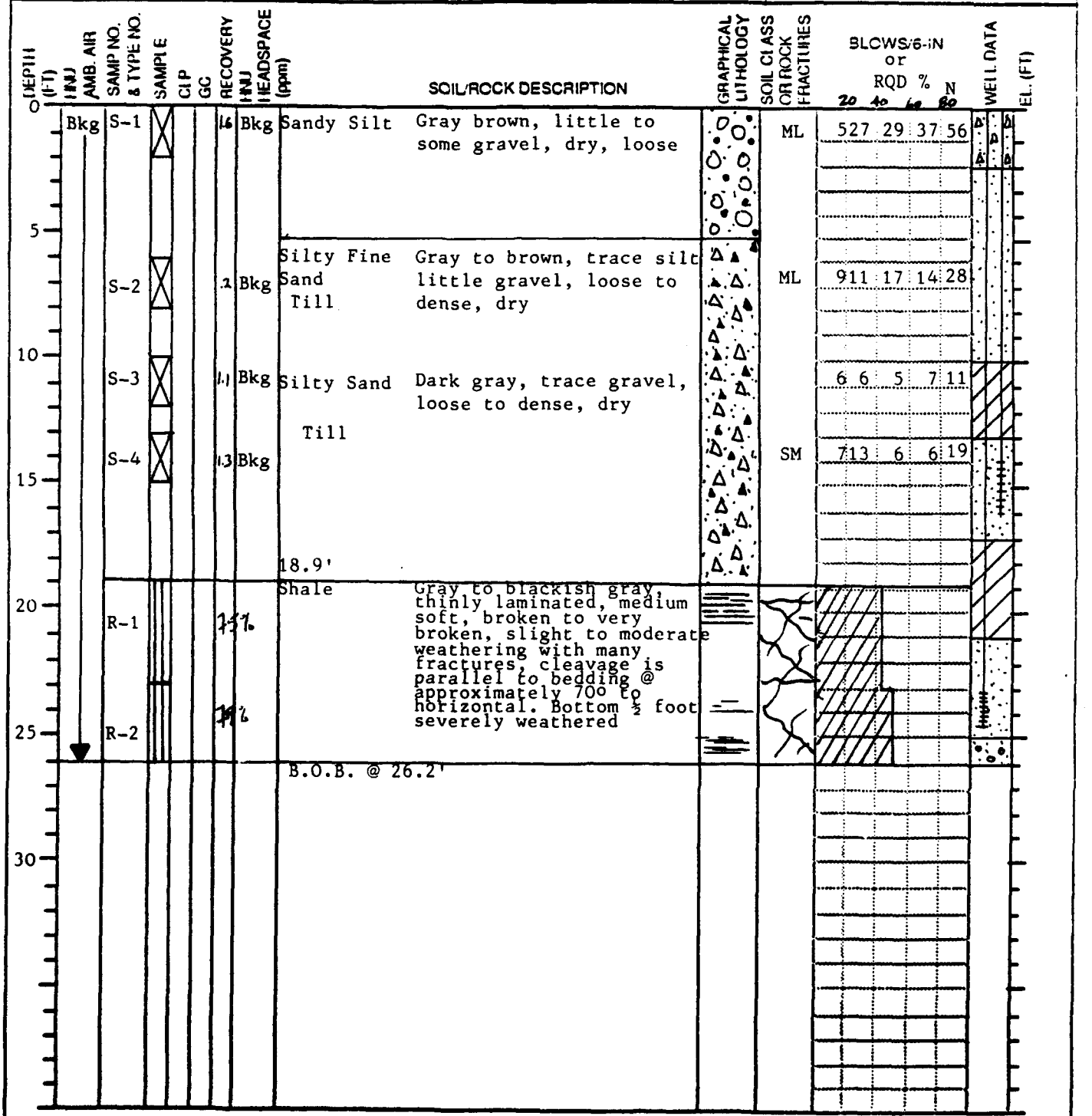
* U= THIN WALL S= SPLIT SPOON R= ROCK

E.C. JORDAN CO.

INSTALLATION RESTORATION PROGRAM

BORING NO. JTB-110

CLIENT **STEWART AIR NATIONAL GUARD BASE**			PROJECT NO. **5139-01**
CONTRACTOR **EMPIRE SOILS INVESTIGATIONS**		DATE STARTED 7/29/87	COMPLTD. 7/29/87
METHOD HSA	CASING SIZE 4¼"	HNU TIP 10.6	PROTECTION LEVEL B C D
GROUND EL 361.34	SOIL DRILLED 18.9'	ROCK DRILLED 7.3'	FT BELOW GROUND 26.2
LOGGED BY J. Urquhart	CHECKED BY FFB	DATE 11-10-87	



* U= THIN WALL S= SPLIT SPOON R= ROCK

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APPENDIX B-2

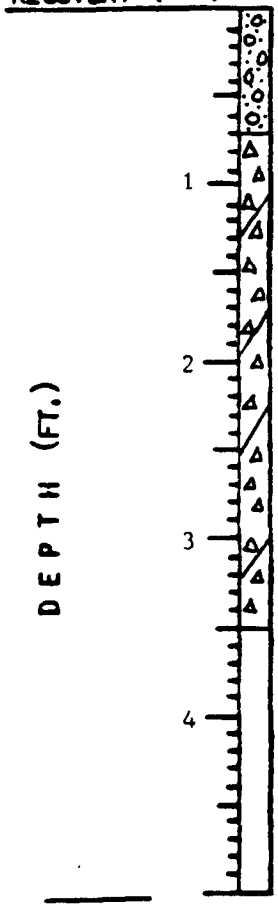
ROCK CORE LOGS

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-101
Logged By S. Pinette	Date 8-6-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-1	Depth 37.0 ft to 41.5 ft.	(4.5)
Core Recovery 3.5 ft.	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)



TOTAL 3.5 (4.5)

77 %

.3 FT. CORE RECOVERY

Soil - Till

Highly broken and Fractured

End of Core

TOTAL 0 (4.5)

0 %

ROCK DESCRIPTION AND IDENTIFICATION

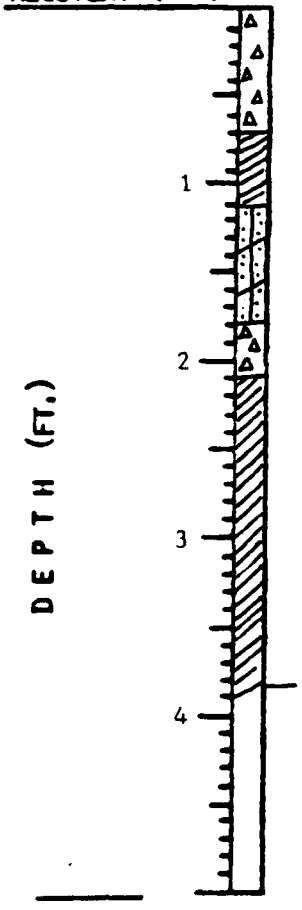
Upper 0.7' (37.0'-37.7') is olive grey till mixed with medium grey shale fragments.

remainder of core is medium grey shale; well cleaved; cleavage planes stained rusty brown and medium greenish brown; cleavage oriented at 45° to core axis. Only 4 pieces of core are at least 1" in diameter.

VISUAL IDENTIFICATION OF ROCK CORES

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-101
Logged By S. Pinette	Date 8-7-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-2	Depth 41.5 ft to 46.5 ft. (5)	
Core Recovery 3.9 ft.	RQD 36 %	Core Quality Poor to fair	

CORE RECOVERY (FT.)



TOTAL 3.9 (5.0)

78 %

.3 FT. CORE RECOVERY

Feldspathic Sandstone

End of Core

TOTAL 1.8 (5.0)

36 %

ROCK DESCRIPTION AND IDENTIFICATION

Shale - predominantly medium grey, closely cleaved; cleavage plane oriented at 45° to core axis; cleavage surface stained medium greenish brown and, in frequently, rusty brown (geothite); vertical joint (parallel to core axis) discontinous (0.1') in shale

Feldspathic Sandstone -- 0.7' bed interbedded with shale (42.6' to 43.3') fine grain, light grey/tan color; laminated parallel to cleavage in shale; relatively massive

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 1

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-102
Logged By J. Urquhart	Date 8-12-87		Protection Level D
Core Diameter Roller Bit 3.5"	Core Run No.	Depth 51.6 ft to 61.6 ft.	
Core Recovery 0* ft.	RQD 0 %	Core Quality	

*No rock core made - hole advanced into rock with tri-cone roller bit.

CORE RECOVERY (FT,)

.3 FT. CORE RECOVERY

ROCK DESCRIPTION AND IDENTIFICATION

DEPTH (FT.)

TOTAL ____( )

____%

TOTAL ____( )

____%

EC JORDAN CO.

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 1

Project No. 5139-01	Project Name Stewart ANGB	Boring No. JTB-103
Logged By T. Longley	Date 8-14-87	Protection Level D
Core Diameter Roller Bit 3.5"	Core Run No. --	Depth 43 ft to 51.4 ft.
Core Recovery 0* ft.	RQD 0 %	Core Quality

*No rock core made - hole advanced into rock with tri-cone roller bit.

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY

ROCK DESCRIPTION AND IDENTIFICATION

DEPTH (FT.)

TOTAL ____( )

____%

TOTAL ____( )

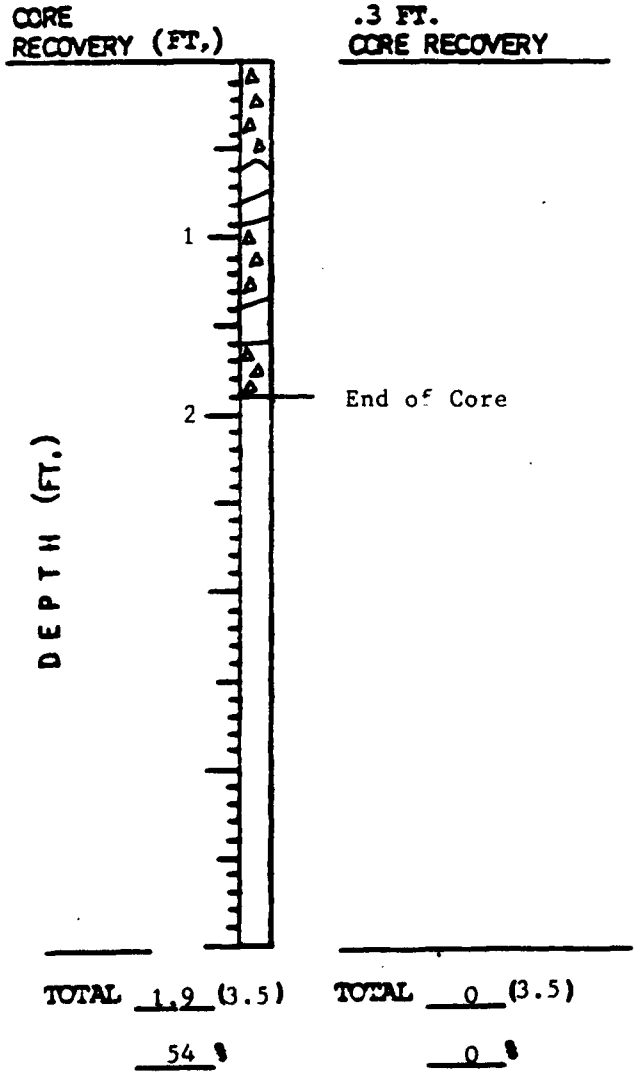
____%

ECJORDANCO

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-104
Logged By T. Longley	Date 8-11-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-1	Depth 27 ft to 30.5 ft. (3.5)	
Core Recovery 1.9 ft.	RQD 0 %	Core Quality Very poor	



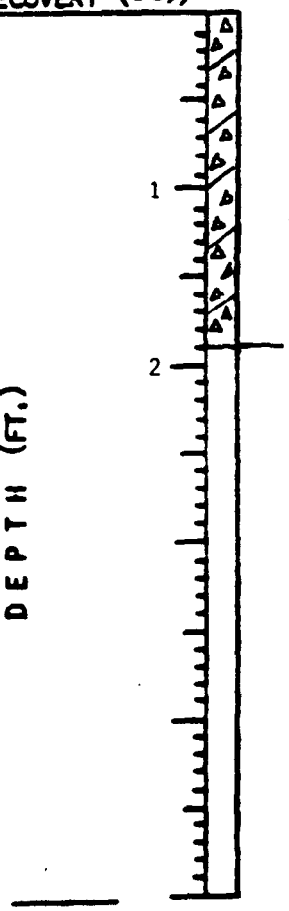
ROCK DESCRIPTION AND IDENTIFICATION

Black to grayish black shale, highly fractured and broken with numerous interconnecting, randomly oriented joints and open fractures. No one piece is as large as 4"; most are less than 2". Weathering of fractures is moderately fresh, especially near 30', which has moderate staining and distinct FeO and Mn O_2 staining on fracture faces. No distinct layering or foliation

VISUAL IDENTIFICATION OF ROCK CORES

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-104
Logged By T. Longley	Date 8-12-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-2	Depth 30.5 ft to 32.5 ft. (2')	
Core Recovery 1.9 ft.	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)



TOTAL 1.9 (2)

95 %

.3 FT. CORE RECOVERY

TOTAL 0' (2)

0 %

ROCK DESCRIPTION AND IDENTIFICATION

Same rock type as in R-1 - highly fractured and broken shale, common joints and fractures, few open ½" in size; top of run is extremely broken and pebbly, bottom ½' of recovered core is severely weathered rock (prevented penetration and caused core block), very (soil-like) weak and crumbly; one rock piece shows bedding at 55° to long core axis; FeO & MnO_2 is faint to distinct throughout core

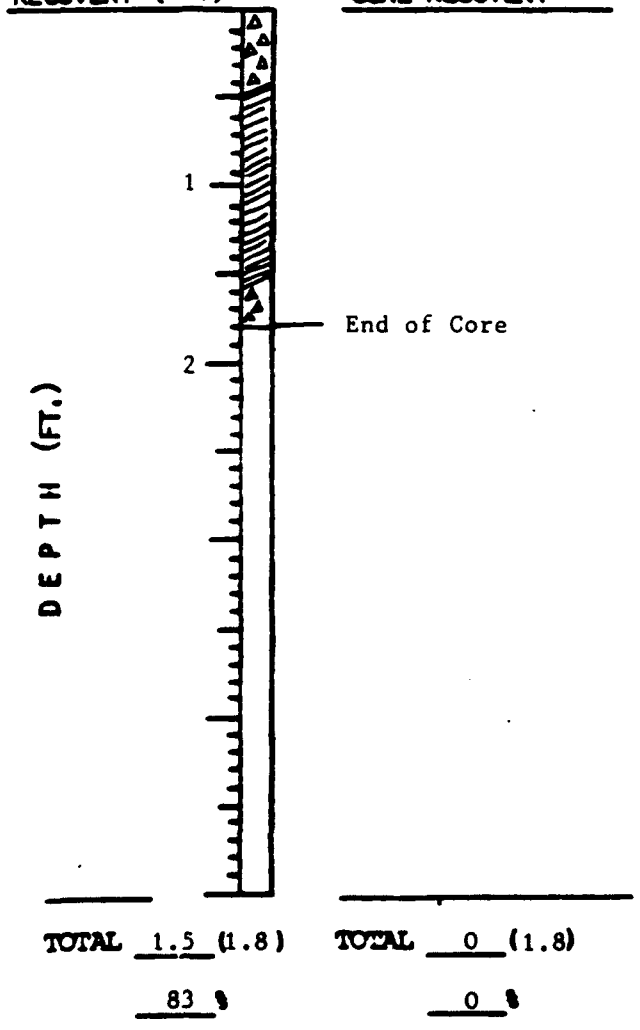
Some fragments exhibit highly sheared and rehealed rock.

Thin interbedded layers of feldspathic sandstone

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 3 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-104
Logged By T. Longley	Date 8-12-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-3	Depth 32.5 ft to 34.3 ft. (1.8')	
Core Recovery 1.8 ft.	RQD 0 %	Core Quality Very poor	



ROCK DESCRIPTION AND IDENTIFICATION

Shale

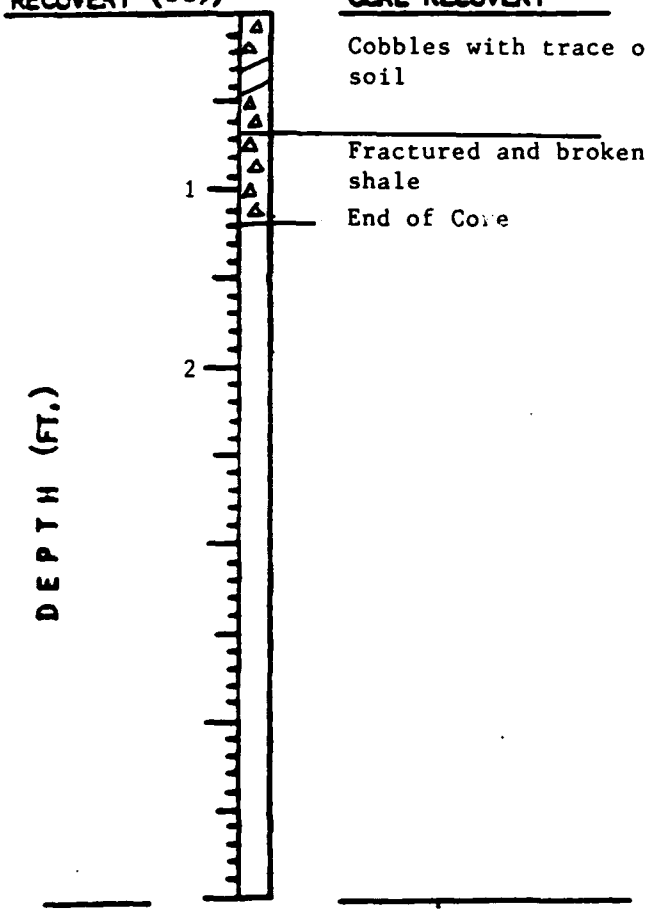
Same as above; extremely fractured and broken, crumbly, very weak, moderate to severe weathering; no piece of core longer than 1".
Top of recovery is slough from soil zone - pebbles and gravel

Core recovery is very subjective due to the poor rock quality

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 1

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-105
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-3*	Depth 25.6 ft to 27.9 ft. (2.3)	
Core Recovery 1.2 ft.	RQD 0 %	Core Quality Very poor	



*R-1 and R-2 in soil only

ROCK DESCRIPTION AND IDENTIFICATION

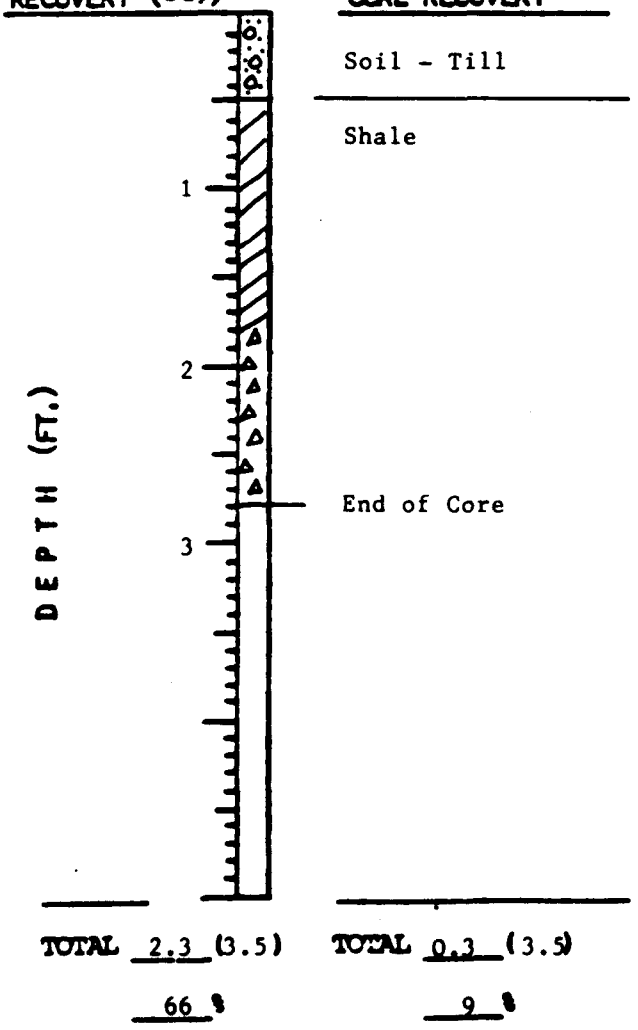
Shale - medium grey colored; closely spaced cleaved planes are well developed and stained medium brown (FeO/MnO); cleavage and stratification are parallel and oriented at 26° with respect to core axis; trace calcite peds and veinlets occur throughout, oriented both parallel and transverse to bedding/cleavage

Note: Majority of core breaks occur along cleavage planes; no joints evident in this run

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-106
Logged By S. Pinette	Date 8-3-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-1	Depth 19.5 ft to 23.0 ft. (3.5)	
Core Recovery 2.3 ft.	RQD 9 %	Core Quality Poor	



ROCK DESCRIPTION AND IDENTIFICATION

Shale - Medium grey colored; closely spaced cleaved planes are well developed and stained medium brown (FeO/MnO); cleavage and stratification are parallel and oriented at 40-50° with respect to core axis; trace calcite peds and veinlets occur throughout, oriented both parallel and transverse to bedding/cleavage

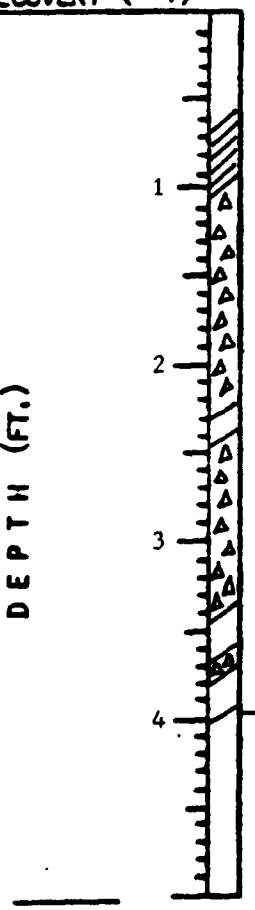
Note: Majority of core breaks occur along cleavage planes; no joints evident in this run

VISUAL IDENTIFICATION OF ROCK CORES

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-106
Logged By S. Pinette	Date 8-4-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-2	Depth 23.0 ft to 27.0 ft. (4.0)	
Core Recovery 4.0 ft.	RQD 18 %	Core Quality Fair to poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY



DEPTH (FT.)

TOTAL 4.0 (4.0)

100 %

TOTAL 0.7 (4)

18 %

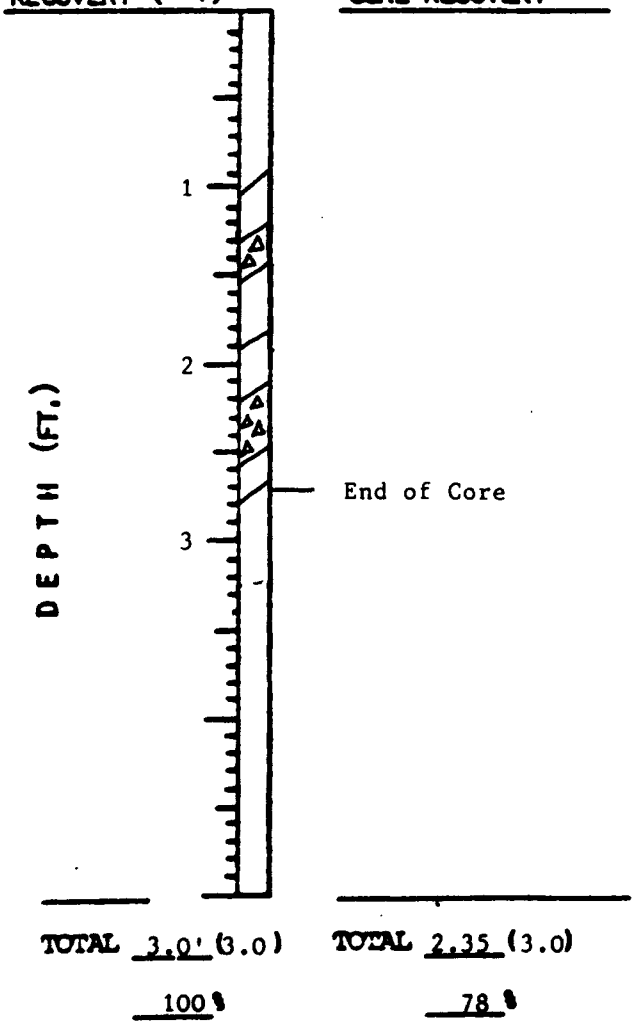
ROCK DESCRIPTION AND IDENTIFICATION

Shale - essentially same as described for R-1; discontinuous, poorly developed joints present; oriented 90° to cleavage plane; joint surface stained iron-oxide (geothite) rusty yellowish brown color which is distinct from stain on cleavage surfaces; joints are relatively sparse

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 3 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-106
Logged By S. Pinette	Date 8-4-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-3	Depth 27.0 ft to 30.0 ft.	(3.0)
Core Recovery 2.8 ft.	RQD 78 %	Core Quality Good	



ROCK DESCRIPTION AND IDENTIFICATION

Shale as described in R-2 above; joints are more abundant and slightly better developed then in R-2; joints spaces as closely as 1 inch in some core sections

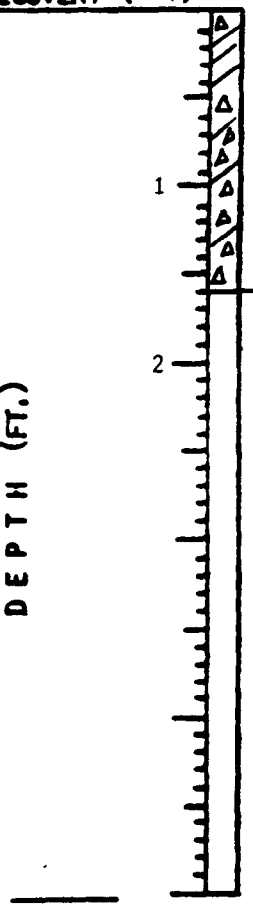
VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-107
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-1	Depth 10 ft to 14 ft. (4)	
Core Recovery 1.6 ft.	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY



TOTAL 1.6 (4)

40 %

TOTAL 0 (4)

0 %

ROCK DESCRIPTION AND IDENTIFICATION

Shale

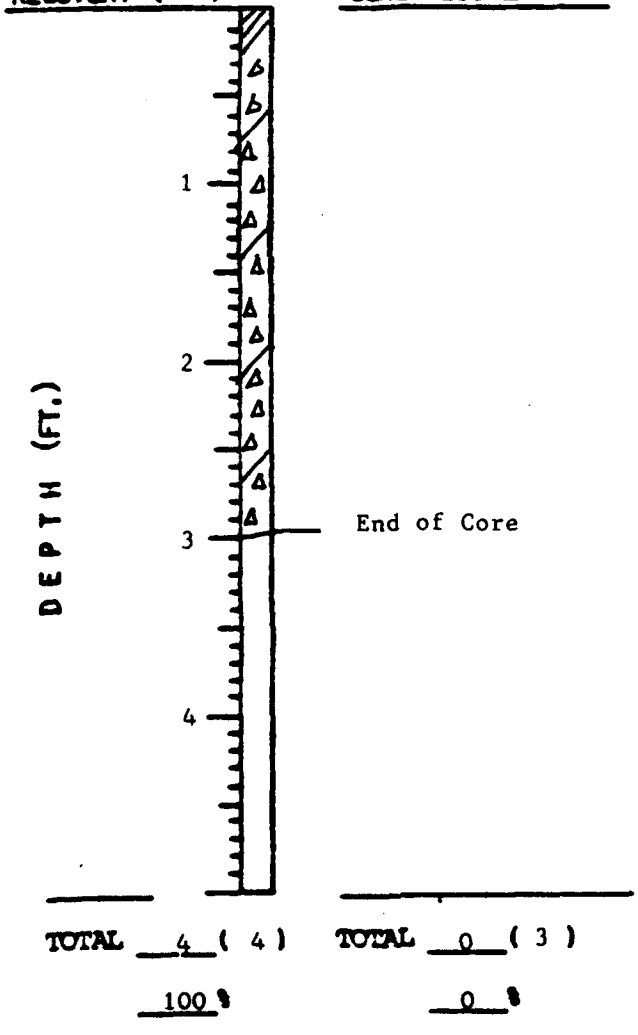
gray shale

highly fractured and broken
slicken sides throughout
reddish brown to yellowish stain
on most all surfaces

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 2 OF 3

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-107
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-2	Depth 14 ft to 17 ft. (3')	
Core Recovery 4' ft.	RQD 0 %	Core Quality Very poor	



ROCK DESCRIPTION AND IDENTIFICATION

Shale - Gray, thinly laminated medium-hard, highly fractured and broken, slight to moderate weathering staining on all fracture surfaces

Cleavage is 36° to core axis and is // to bedding lineation

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 3 OF 3

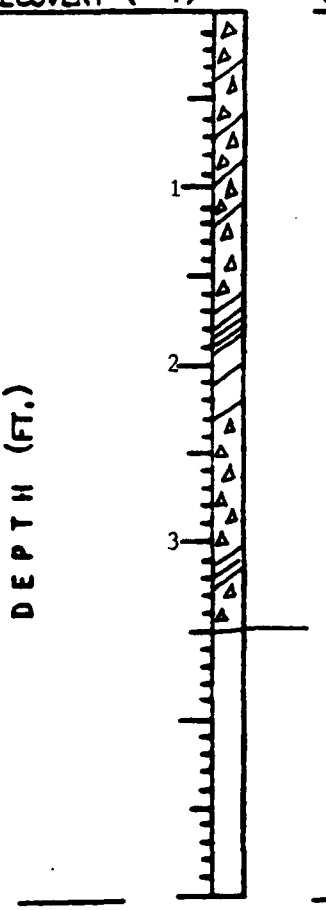
Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-107
Logged By T. Longley	Date 8-20-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-3	Depth 17 ft to 19.3 ft. (2.3)	
Core Recovery 3.5 ft.*	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY

ROCK DESCRIPTION AND IDENTIFICATION

Shale - Same as R-1 and R-2



TOTAL 3.5 (2.3) TOTAL 0 (2.3)

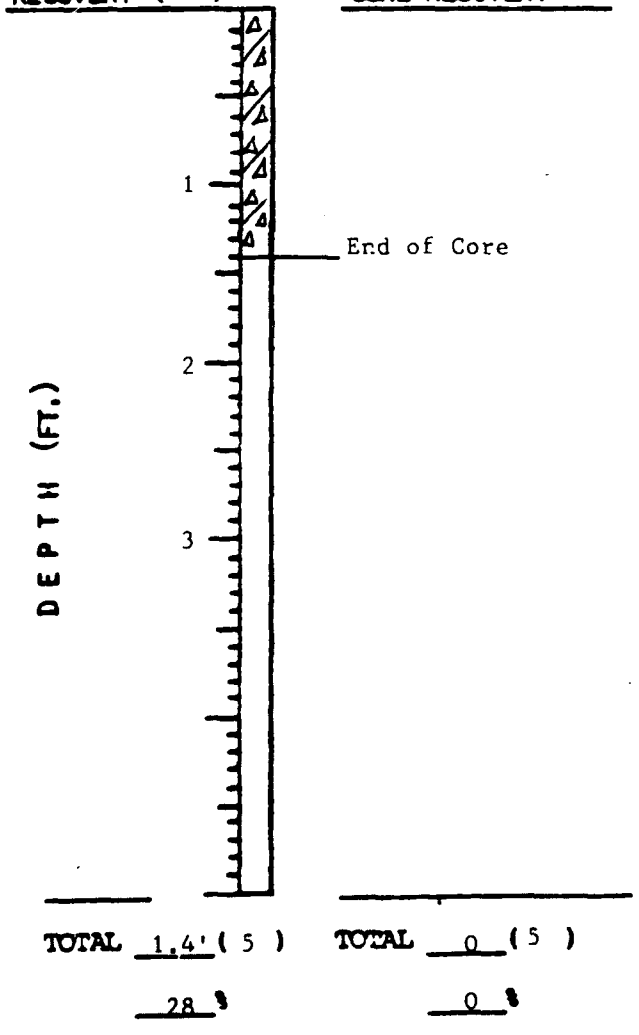
100 %* 0 %

*R-3 recovered some of the broken fragments from R-2

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-108
Logged By T. Longley	Date 8-20-87		Protection Level D
Core Diameter NX (≈2")	Core Run No. R-1	Depth 12.8 ft to 17.8 ft. (5)	
Core Recovery 1.4 ft.	RQD 0 %	Core Quality Very poor	



ROCK DESCRIPTION AND IDENTIFICATION

Shale - gray to blackish gray thinly laminated medium soft to medium hard with depth, highly fractured and broken, medium weathering at top to slight with depth

Cleavage 50° to long axis

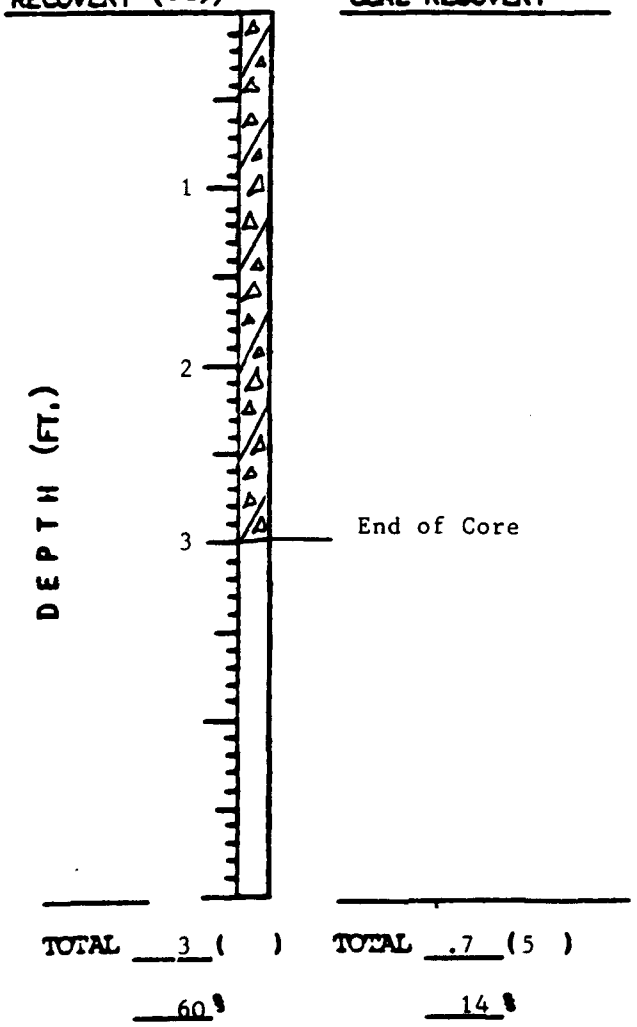
VISUAL IDENTIFICATION OF ROCK CORES

SHEET 2 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-108
Logged By T. Longley	Date 8-20-87		Protection Level D
Core Diameter NX (2")	Core Run No. R-2	Depth 17.8 ft to 22.8 ft. (5)	
Core Recovery 3.0 ft.	RQD 14 %	Core Quality Very poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY



TOTAL 3 ( ) TOTAL .7 (5)

60 % 14 %

ROCK DESCRIPTION AND IDENTIFICATION

Shale - blackish gray to black thinly laminated, medium hard to hard, fresh to slight weathering highly fractured and broken

Cleavage is // to laminations and at 45° to long axis

Trace of disseminated pyrite

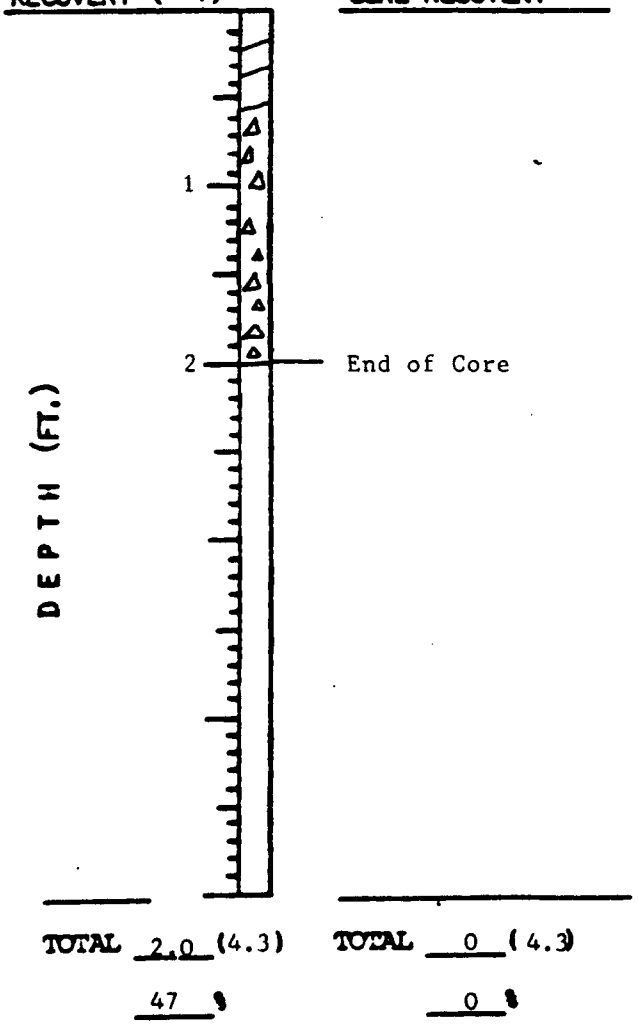
VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-109
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (2")	Core Run No. R-1	Depth 10 ft to 14.3 ft. (4.3')	
Core Recovery 2.0 ft.	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY



TOTAL 2.0 (4.3)

47 %

TOTAL 0 (4.3)

0 %

ROCK DESCRIPTION AND IDENTIFICATION

Shale - gray, thinly laminated, medium hard, highly fractured and broken, fresh to slight weathering

Can't measure 4's at all due to broken nature of rock

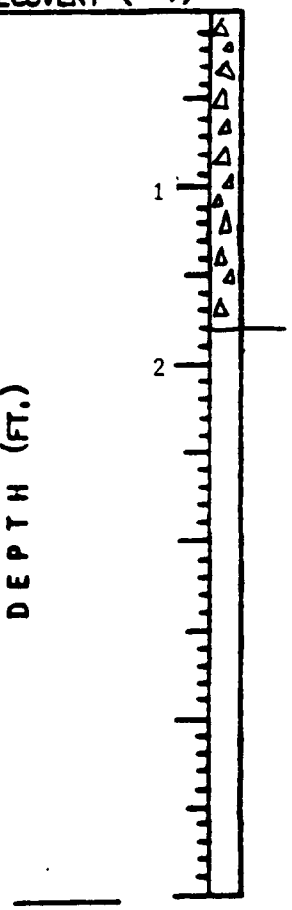
VISUAL IDENTIFICATION OF ROCK CORES

SHEET 2 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-109
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (2")	Core Run No. R-2	Depth 14.3 ft to 18.5 ft. (4.2)	
Core Recovery 1.8 ft.	RQD 0 %	Core Quality Very poor	

CORE RECOVERY (FT.)

.3 FT. CORE RECOVERY



TOTAL 1.8 (4.2)

43 %

TOTAL 0 (4.2)

0 %

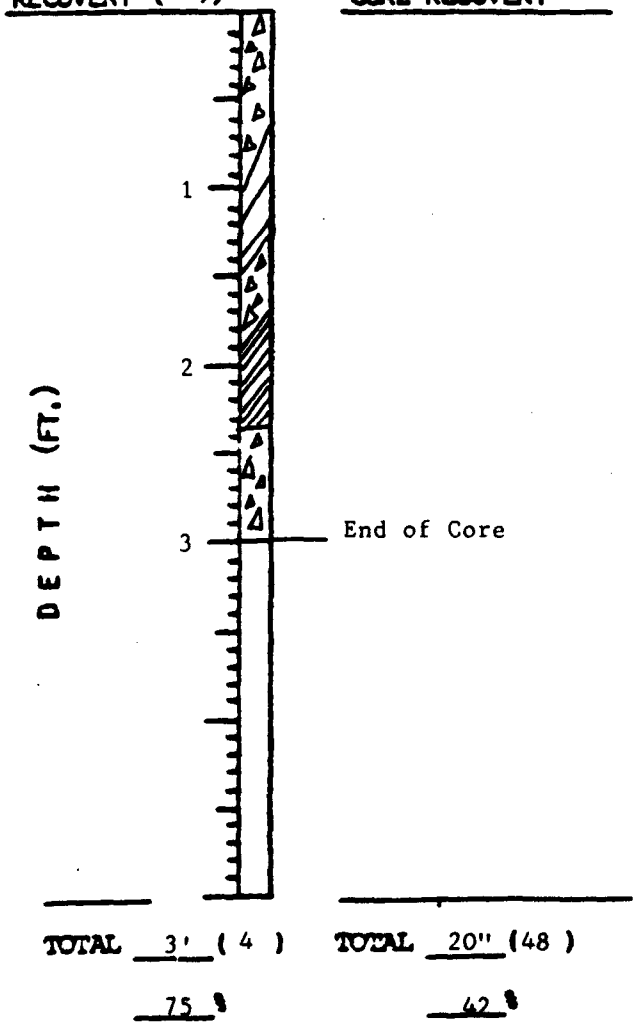
ROCK DESCRIPTION AND IDENTIFICATION

Shale same as above - recovered very short pieces but these show more weathering on all fracture faces

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 1 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-110
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (2")	Core Run No. R-1	Depth 18.9 ft to 22.9 ft.	(4')
Core Recovery 3 ft.	RQD 42 %	Core Quality Fair	



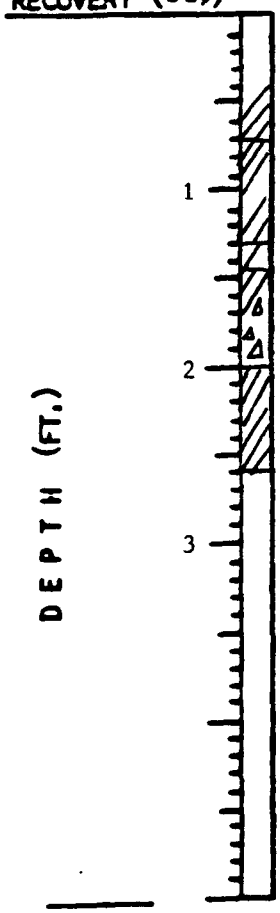
ROCK DESCRIPTION AND IDENTIFICATION

Shale - gray to blackish gray, thinly laminated, medium soft, moderately fractured and broken, 42% RQD, slight to moderate weathering with many fractures showing bright oxidation staining.
Cleavage is // to bedding and at 20° to core axis.
Few fractures up to 60° to axis
Few open vugs
Very crumbly at bottom of run

VISUAL IDENTIFICATION OF ROCK CORES

SHEET 2 OF 2

Project No. 5139-01	Project Name Stewart ANGB		Boring No. JTB-110
Logged By T. Longley	Date 8-19-87		Protection Level D
Core Diameter NX (2")	Core Run No. R-2	Depth 22.9 ft to 26.2 ft. (3.3')	
Core Recovery 2.6 ft.	RQD 52 %	Core Quality Fair	



TOTAL 2.6 (3.3)

79%

.3 FT. CORE RECOVERY

TOTAL 1.7 (3.3)

52 %

ROCK DESCRIPTION AND IDENTIFICATION

Shale - As above but less fractured

Last 9" of core is severely weathered along fracture faces

End of Core

EC JORDAN CO

APPENDIX B-3

MONITORING WELL INSTALLATION SHEETS

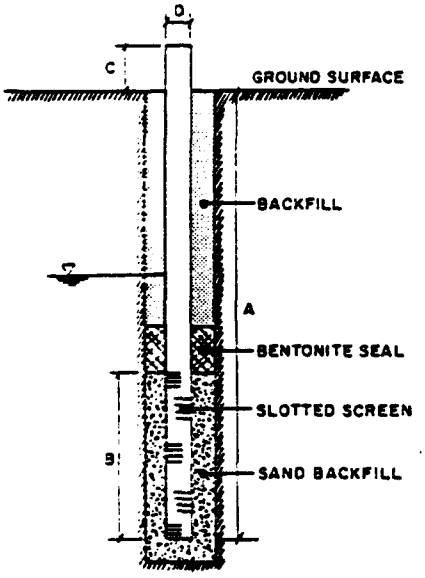
SITE Stewart ANGB JOB NO. 5139-01

MONITORING WELL DESIGNATION JMW-101 INSTALLATION DATE 8/3/87

DIAMETER OF WELL 0.166' MATERIAL SCH 40 PVC

LOCKING PROTECTIVE COVER YES ✓ NO ___ ~~DRILLER~~ ECJ DEVELOPED YES ✓ NO ___

WELL CONSTRUCTION



A = 32.75'

B = 12.0'

C = 2.41 CASING

D = 0.166'

NOTES
10' SCREEN LENGTH

WATER LEVEL RANGE 31.44

ELEVATION OF WELL AT GRADE ___

GROUNDWATER INFORMATION

APPROXIMATE RECHARGE/YIELD ___

WELL SCREEN POSITIONED IN TILL
(i.e. till, clay, rock)

GROUNDWATER MONITORING/SAMPLING DATA

RECOMMENDED TYPE OF EQUIPMENT TO FLUSH WELL ___

RECOMMENDED AMOUNT OF FLUSHING ___

SAMPLING PROCEDURES

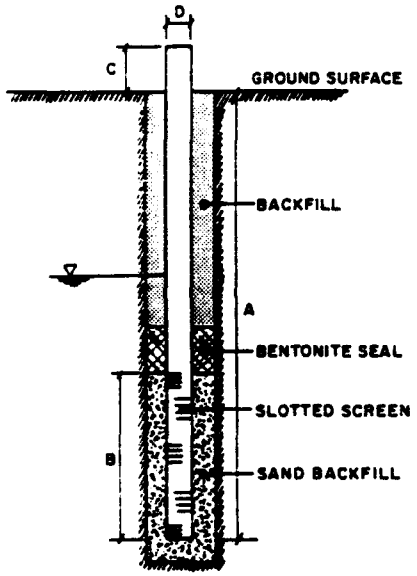
SITE **Stewart ANGB** JOB NO. **5139-01**

MONITORING WELL DESIGNATION JMW-107 INSTALLATION DATE 8/3/87

DIAMETER OF WELL 0.166 FT MATERIAL SCH. 40 PVC; 0.010" SLOTTED SCREEN

LOCKING PROTECTIVE COVER YES ✓ NO ___ ~~DRILLER~~ ECJ DEVELOPED YES ✓ NO ___

WELL CONSTRUCTION



A = 9.38'

B = 7.0'

C = 3.25' CASING

D = 0.166'

NOTES
5' SCREEN LENGTH

WATER LEVEL RANGE 10.25 - 10.55

ELEVATION OF WELL AT GRADE ___

GROUNDWATER INFORMATION

APPROXIMATE RECHARGE/YIELD ___

WELL SCREEN POSITIONED IN TILL
(i.e. till, clay, rock)

GROUNDWATER MONITORING/SAMPLING DATA

RECOMMENDED TYPE OF EQUIPMENT TO FLUSH WELL ___

RECOMMENDED AMOUNT OF FLUSHING ___

SAMPLING PROCEDURES

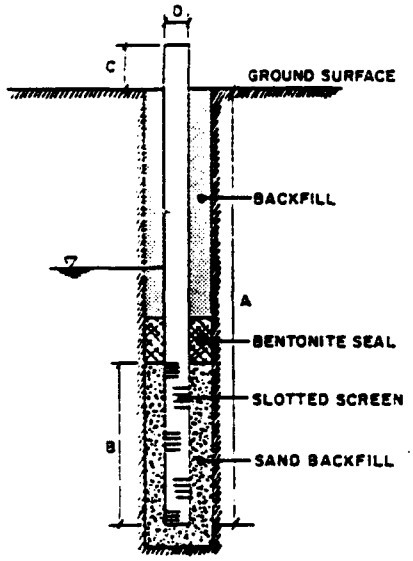
SITE Stewart ANGB JOB NO. 5139-01

MONITORING WELL DESIGNATION JMW-108 INSTALLATION DATE 8/4/87

DIAMETER OF WELL 0.166 FT MATERIAL SCH. 40 PVC; 0.010" SLOT SIZE SCREEN

LOCKING PROTECTIVE COVER YES ✓ NO ___ ECI ~~DRILLER~~ DEVELOPED YES ✓ NO ___

WELL CONSTRUCTION



A = 10.97'

B = 7.0'

C = 2.59' CASING

D = 0.166'

NOTES
5' SCREEN LENGTH

WATER LEVEL RANGE 8.5 - 8.7

ELEVATION OF WELL AT GRADE ___

GROUNDWATER INFORMATION

APPROXIMATE RECHARGE/YIELD ___

WELL SCREEN POSITIONED IN TILL
(i.e. till, clay, rock)

GROUNDWATER MONITORING/SAMPLING DATA

RECOMMENDED TYPE OF EQUIPMENT TO FLUSH WELL ___

RECOMMENDED AMOUNT OF FLUSHING ___

SAMPLING PROCEDURES

E.C. JORDAN CO.

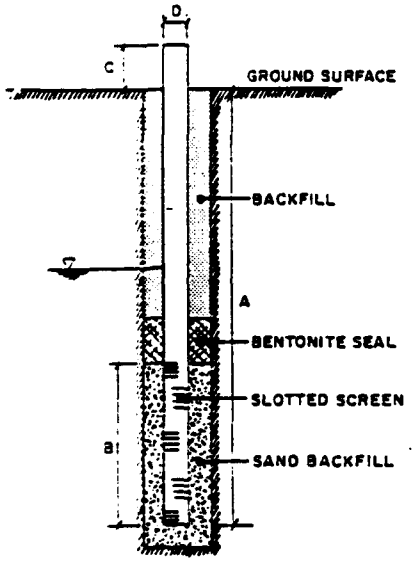
SITE Stewart ANGB JOB NO. 5139-01

MONITORING WELL DESIGNATION JMW -109 INSTALLATION DATE 8/6/87

DIAMETER OF WELL 0.166' MATERIAL SCH. 40 PVC ; 0.010 SLOT SIZE SCREEN

LOCKING PROTECTIVE COVER YES ✓ NO ___ ECJ ~~DRILLER~~ DEVELOPED YES ✓ NO ___

WELL CONSTRUCTION



A = 10.25'

B = 7.0'

C = 2.45' CASING

D = 0.166'

NOTES

5' SCREEN LENGTH

WATER LEVEL RANGE 10.05 - 10.12

ELEVATION OF WELL AT GRADE ___

GROUNDWATER INFORMATION

APPROXIMATE RECHARGE/YIELD ___

WELL SCREEN POSITIONED IN TILL
(i.e. till, clay, rock)

GROUNDWATER MONITORING/SAMPLING DATA

RECOMMENDED TYPE OF EQUIPMENT TO FLUSH WELL ___

RECOMMENDED AMOUNT OF FLUSHING ___

SAMPLING PROCEDURES

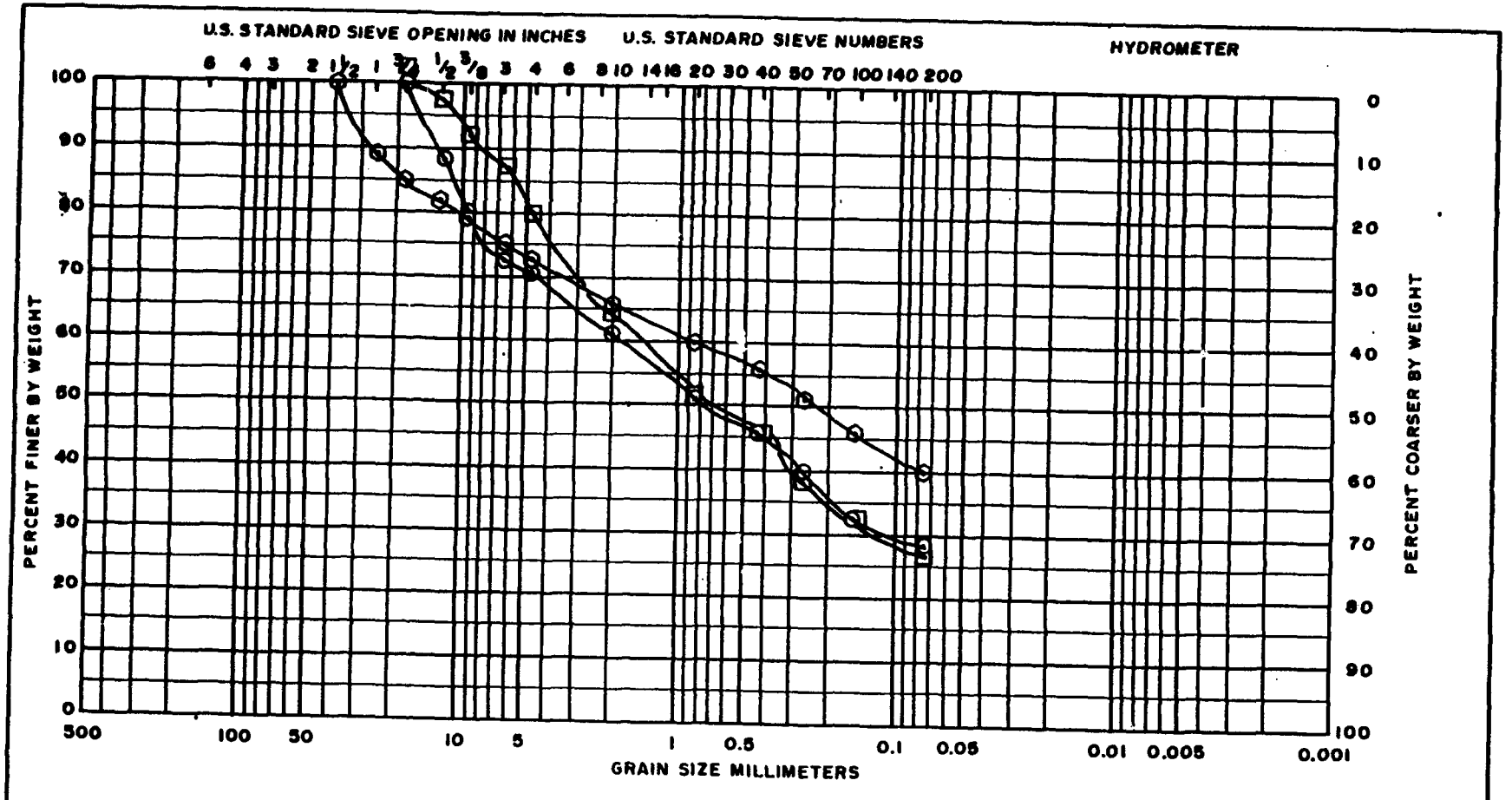
APPENDIX C

LABORATORY DATA

C-1 GRAIN-SIZE DISTRIBUTION CURVES
C-2 SIEVE ANALYSIS DATA

APPENDIX C-1

GRAIN-SIZE DISTRIBUTION CURVES



COBBLES	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
MW 101	5·1 ⊙	Silty Sand, some gravel, little Clay; fill	8.2%			
MW 109	5·1 ⊙	Silty Sand, some gravel, little Clay, till	12.9%			
MW 100	5·1 ⊡	Silty Sand, some gravel, little gravel, till	11.0%			

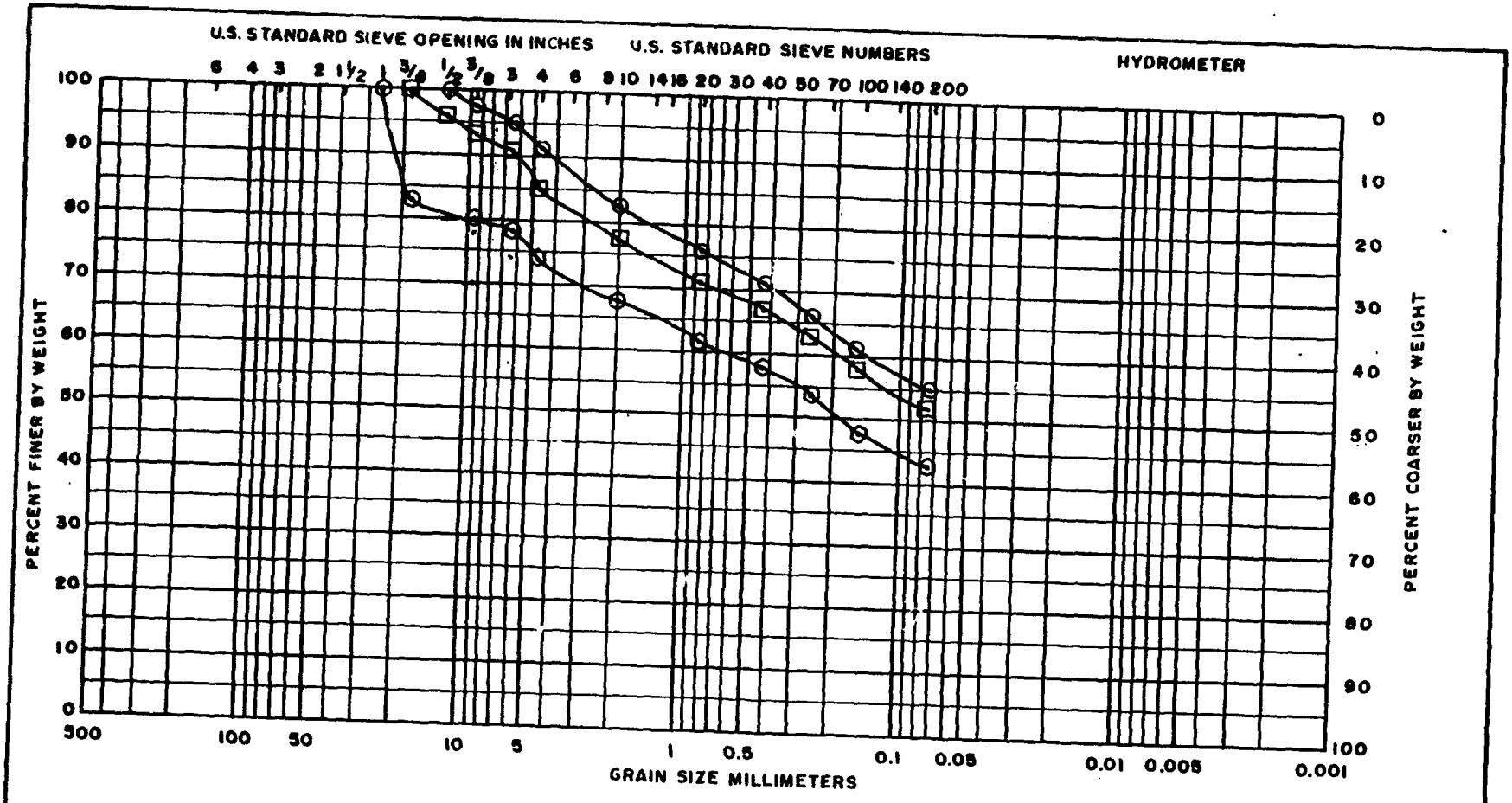
GRAIN SIZE DISTRIBUTION CURVES

STEWART A.N.G.

TESTED BY	CHECKED BY	PROJ NO
TS	RLR	5139.01
	DATE 9.10.87	

JGA 003
1 APR 82

JORDAN GORRILL ASSOCIATES
GEOTECHNICAL CONSULTANTS



COBBLES	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
B100	S-3 ⊙	Silty Sand, some clay, some gravel, till	8.0%			
B101	S4 ⊙	Silty Sand, some clay, some gravel, till	8.8%			
B102	S6 ⊡	Silty Sand, some clay, some gravel, till	10.6%			

GRAIN SIZE DISTRIBUTION CURVES

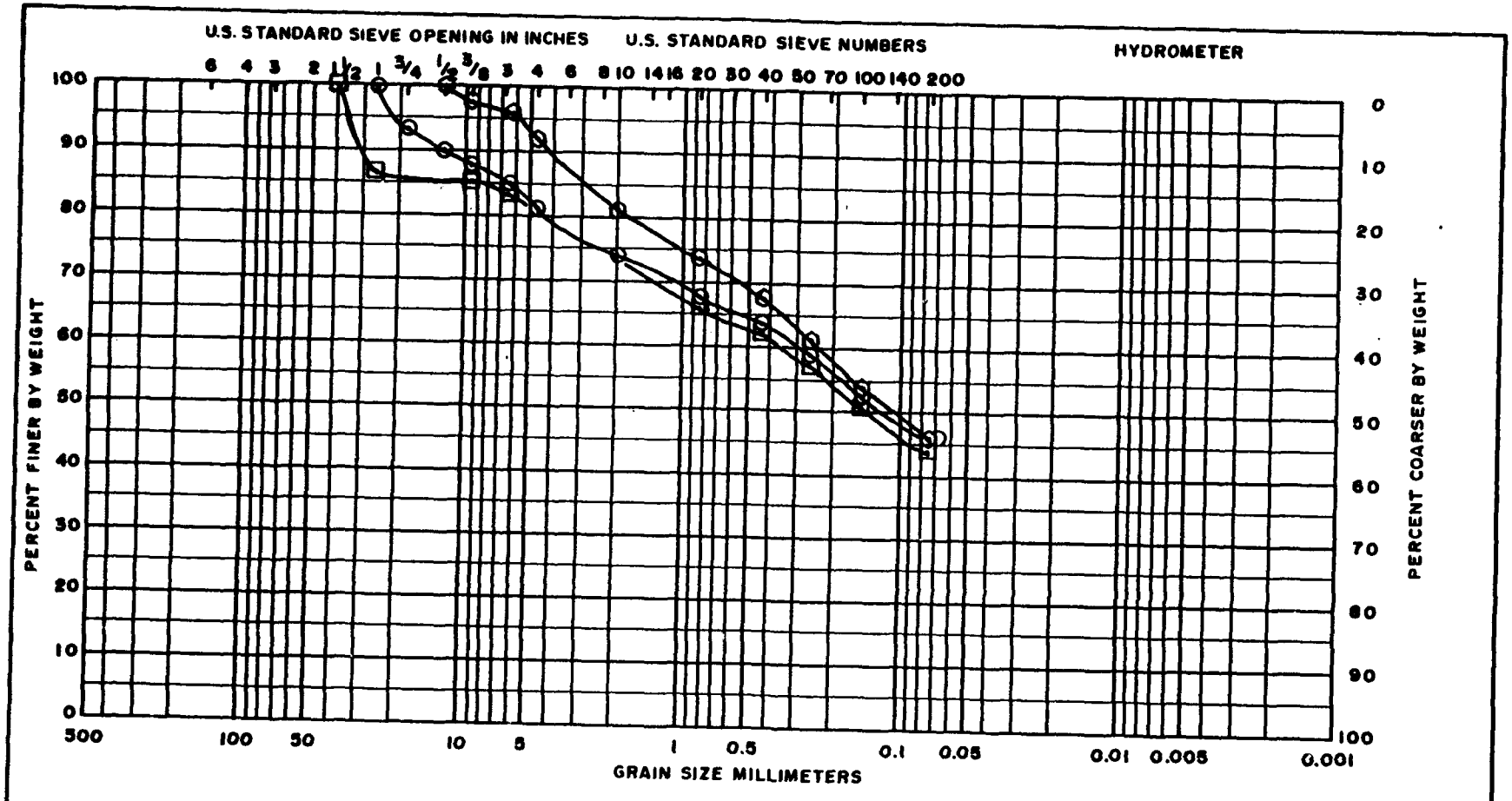
STEWART A.N.G.

TESTED BY TS | CHECKED BY RLR | PROJ NO 5139.01

DATE 9.10.87

JGA 003
1 APR 82

JORDAN GORRILL ASSOCIATES
GEOTECHNICAL CONSULTANTS



COBBLES	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
B103	S2 ⊙	Silty Sand, little clay, trace fine gravels	10.0%			
B103	S7 ⊙	Silty Sand, little clay, little fine gravels	8.1%			
B104	S4 ⊡	Silty Sand, little clay, little gravel	8.5%			

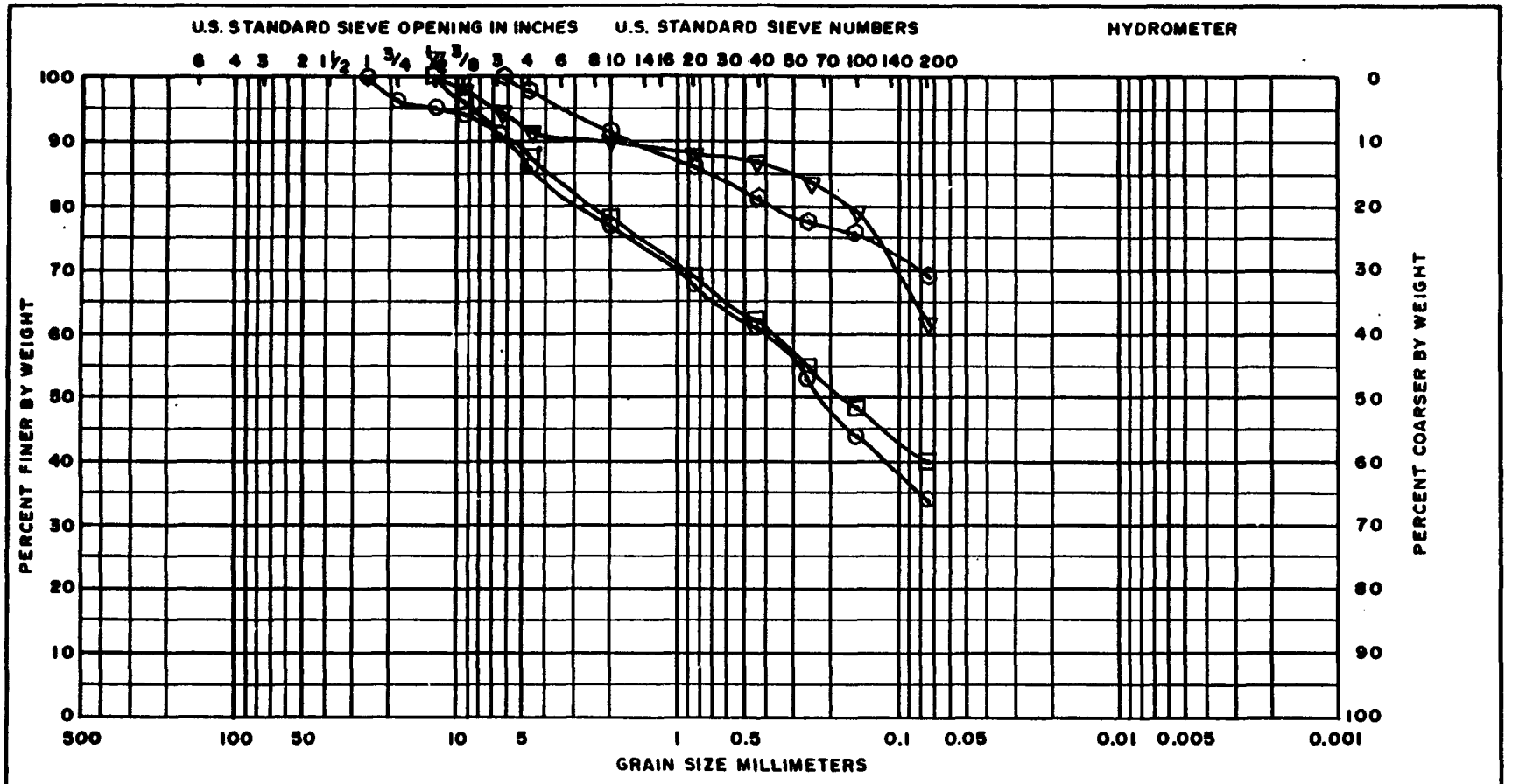
GRAIN SIZE DISTRIBUTION CURVES

STEWART A.N.G.

TESTED BY	CHECKED BY	PROJ NO
TS	RJR	5139.01
	DATE 9.10.87	

JGA 003
1 APR 82

JORDAN GORRILL ASSOCIATES
GEOTECHNICAL CONSULTANTS



COBBLES	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

SAMPLE NO.	ELEV. OR DEPTH		CLASSIFICATION	NAT W%	LL	PL	PI
B105	S5	⊙	Silt and Sand, stratified	13.6%			
B106	S3	⊙	Sand, some silt, little gravel, trace clay	12.2%			
B106	S5	⊡	Silty Sand, some clay, little gravel	13.2%			
B107	S2	▽		17.2%			

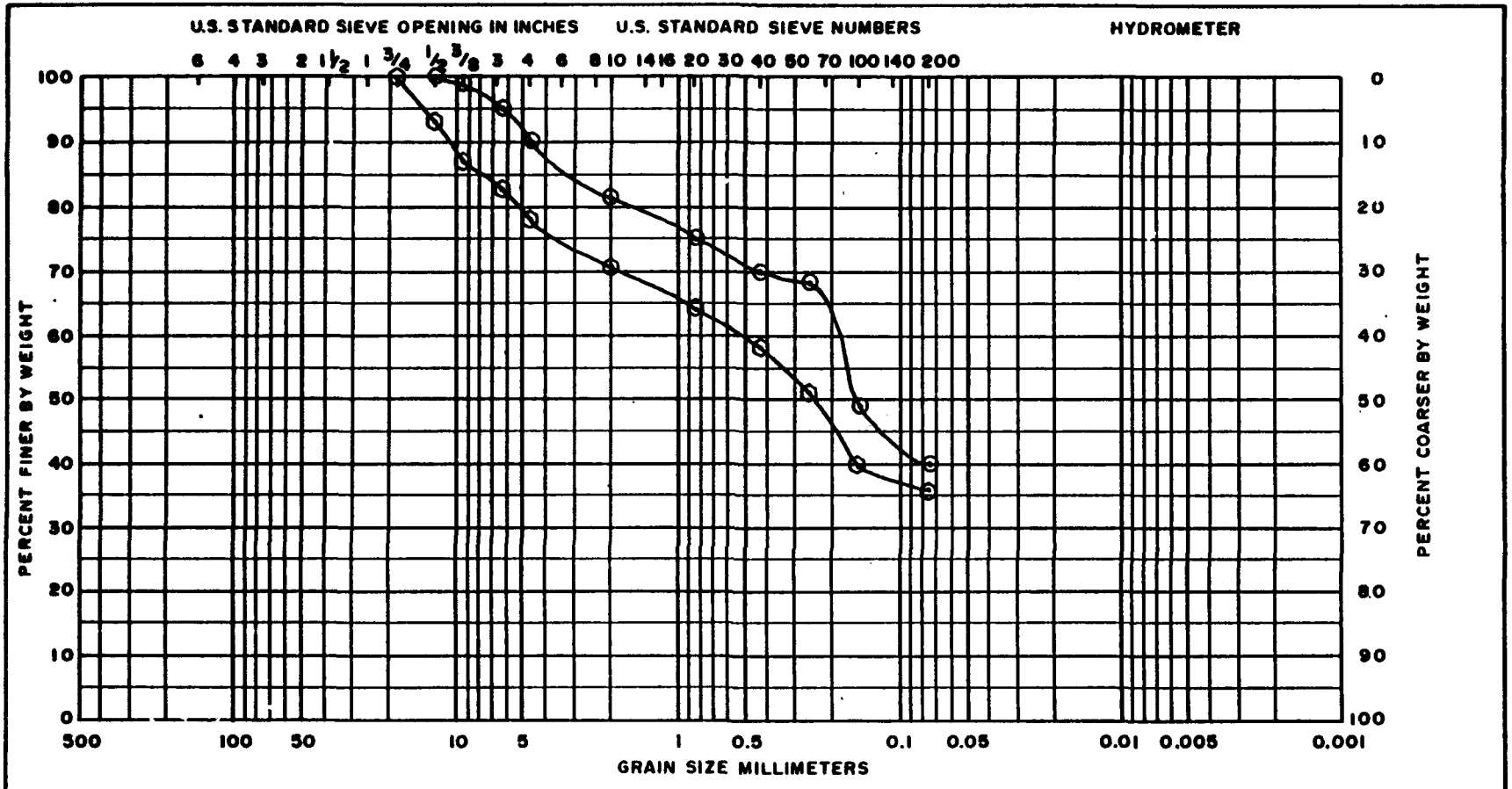
GRAIN SIZE DISTRIBUTION CURVES

STEWART ANG

TESTED BY	CHECKED BY	PROJ NO
TS	RLR	5139.01
	DATE 9-10-87	

JGA 003
1 APR 82

JORDAN GORRILL ASSOCIATES
GEOTECHNICAL CONSULTANTS



COBBLES	GRAVEL		SAND			SILT	CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE		

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	NAT W%	LL	PL	PI
B108	S3 ⊙	Sand, some silt, little clay, little fine gravel	12.0%			
B110	S4 ⊙	Sand, some silt, little clay, little fine gravel	13.5%			

GRAIN SIZE DISTRIBUTION CURVES

STEWART A.N.G.

TESTED BY	CHECKED BY	PROJ NO
TS		5139.01
	DATE 9.10.87	

JGA 003
1 APR 82

JORDAN GORRILL ASSOCIATES
GEOTECHNICAL CONSULTANTS

APPENDIX C-2

SIEVE ANALYSIS DATA

"LEVEL D"

WATER CONTENT - GENERAL

DATE 9.3.87

PROJECT STEWART AVE JOB NO. 5132.01

	BORING AND SAMPLE NO.		MW101 S1	MW109 S1	MW109 S3	B100 S3	B101-S4	B102 S2
	TARE NO.		34	106	75	55	56	5
WEIGHT IN GRAMS	TARE PLUS WET SOIL		207.4	226.7	242.5	251.6	229.6	235.7
	TARE PLUS DRY SOIL		289.7	207.4	224.5	237.3	215.3	249.0
	WATER	W_w	17.7	19.3	18.0	14.3	14.3	20.7
	TARE		72.7	58.2	61.1	58.8	53.0	52.8
	DRY SOIL	W_s	217.0	149.2	163.4	178.5	162.3	196.2
	WATER CONTENT, %	w	8.2	12.9	11.0	8.0	8.8	10.6
	SAMPLE DESCRIPTION							

	BORING AND SAMPLE NO.		B103 S2	B103 S7	B104 S4	B105 S5	B106 S3	B106 S5
	TARE NO.		60	8	4	53	70	3
WEIGHT IN GRAMS	TARE PLUS WET SOIL		279.8	234.8	261.8	183.3	222.1	263.5
	TARE PLUS DRY SOIL		259.1	221.1	245.4	167.8	204.1	235.6
	WATER	W_w	20.7	13.7	16.4	15.5	18.0	27.9
	TARE		52.5	52.1	53.4	53.7	78.6	51.9
	DRY SOIL	W_s	206.6	169.0	192.0	114.1	205.5	183.7
	WATER CONTENT, %	w	10.0	8.1	8.5	13.6	12.2	13.2
	SAMPLE DESCRIPTION							

	BORING AND SAMPLE NO.		B107 S2	B103 S3	B110 S4			
	TARE NO.		25	19	51			
WEIGHT IN GRAMS	TARE PLUS WET SOIL		234.9	232.7	237.2			
	TARE PLUS DRY SOIL		210.5	213.8	215.3			
	WATER	W_w	24.4	18.9	21.9			
	TARE		68.7	55.7	52.5			
	DRY SOIL	W_s	141.8	158.1	162.5			
	WATER CONTENT, %	w	17.2	12.0	13.5			
	SAMPLE DESCRIPTION							

REMARKS high 17.2 (B107 S-2) Low 8.0 (B100 S3) AVE: 11.2%

TECHNICIAN TS COMPUTED BY TS CHECKED BY

PROJECT STEWART ANG	COMP. BY TS	JOB Nº 513[illegible]
	CHK. BY RLR	DATE [illegible]

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING MW101 NUMBER S1 DEPTH ____

MOISTURE CONTENT

- TARE Nº 34 Wt. 72.7
- SAMPLE + TARE, i 307.4
- SAMPLE + TARE, f 289.7
- SAMPLE, f 217.0
- MOISTURE 17.7
- % W_c [illegible]

% OF FINES

- TARE Nº 34 Wt. 72.7
- SAMPLE + TARE, i 289.7
- SAMPLE + TARE, f 203.5
- Wt. SOIL LOST 86.2
- Wt. SOIL, i 217.0
- % of FINES 39.7

HYDROMETER ANALYSIS

- SAMPLE SIZE i ____
- MENISCUS CORR (M) ____
- DISP. AGENT ____
- AMOUNT ____ CORR (C_d) ____

	SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
COARSE ANALYSIS	3					
	1½				100	[illegible]
	1		23.4	10.8	[illegible]	[illegible]
	3/4		32.5	15.0	[illegible]	[illegible]
	1/2		40.2	18.5	[illegible]	[illegible]
	3/8		[illegible]	[illegible]	[illegible]	[illegible]
	1/4		55.3	[illegible]	[illegible]	[illegible]
	4		58.8	27.1	72.9	[illegible]
	PAN					

Wt. i ____ Wt. f ____ % Loss ____

	SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
FINE ANALYSIS	4					
	10		73.1	33.7	[illegible]	[illegible]
	20		86.4	39.8	60.2	[illegible]
	40		95.5	44.0	56.0	[illegible]
	60		105.4	48.6	51.4	51
	100		117.0	53.9	46.1	[illegible]
	200		130.5	[illegible]	[illegible]	[illegible]
	PAN		130.9	—	—	—

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	$R-C_d+M$ CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	1/2								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s-1}\right) \times \frac{100}{W_i} \left((R-C_d+M)-1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

EQUORDANCE

PROJECT SEWARD ANC | COMP. BY TS | JOB Nº 513[illegible] | CHK. BY RLR | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING MW109 NUMBER S-1 DEPTH

MOISTURE CONTENT

TARE Nº 106 Wt. 58.2
SAMPLE+TARE, i 226.7
SAMPLE+TARE, f 207.4
SAMPLE, f 149.2
MOISTURE 19.3
% Wc 12.9

% OF FINES

TARE Nº 106 Wt. 58.2
SAMPLE+TARE, i 207.4
SAMPLE+TARE, f 165.2
Wt. SOIL LOST 42.2
Wt. SOIL, i 149.2
% of FINES 28.3

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (Cd)

	SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
COARSE ANALYSIS	3					
	1½					
	1				[illegible]	[illegible]
	¾		18.0	12.1	[illegible]	[illegible] ✓
	½		19.6	13.1	[illegible]	[illegible]
	⅜		30.3	[illegible]	[illegible]	[illegible]
	¼		40.1	26.9	[illegible]	[illegible]
	4		43.[illegible]	[illegible]	[illegible]	[illegible] ✓
	PAN					
	Wt. i		Wt. f		% Loss	
FINE ANALYSIS	4		-	-		
	10		58.5	39.2	60.8	61
	20		72.9	48.9	51.1	51 ✓
	40		81.2	54.4	45.6	46
	60		89.7	60.1	39.9	40
	100		99.3	66.6	33.4	33 ✓
	200		106.5	71.4	28.6	29
	PAN		106.6	—	—	—
	Wt. i		Wt. f		% Loss	C.F.

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-Cd+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000 \qquad G_s \_\_\_\_ \text{ REAL / ASSUMED}$$

EDICFDAICC

PROJECT [illegible] ENVAP - ANC

COMP. BY TS | JOB Nº 513.01

CHK. BY RLR | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING MW109 NUMBER S-3 DEPTH

MOISTURE CONTENT

TARE Nº [illegible] Wt. [illegible]

SAMPLE + TARE, i 242.5

SAMPLE + TARE, f 224.5

SAMPLE, f [illegible]

MOISTURE 18.0

% W_c [illegible]

% OF FINES

TARE Nº 75 Wt. 61.1

SAMPLE + TARE, i 224.5

SAMPLE + TARE, f 181.5

Wt. SOIL LOST 43.0

Wt. SOIL, i 163.4

% of FINES 26.3

HYDROMETER ANALYSIS

SAMPLE SIZE i

MENISCUS CORR (M)

DISP. AGENT

AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾				100	100
½		3.6	2.2	97.8	98
⅜		12.5	7.6	92.4	92
¼		21.3	13.0	87.0	87
4		33.5	20.5	79.5	80
PAN			-		

Wt. i _____ Wt. f _____ % Loss _____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4			-	-	
10		59.1	36.2	63.8	64
20		78.4	48.0	52.0	52
40		90.3	55.3	44.7	45
60		100.6	61.6	38.4	38
100		110.1	67.4	32.6	33
200		120.0	73.4	26.6	27
PAN		120.2	73.6	-	-

Wt. i _____ Wt. f _____ % Loss _____ C.F. _____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d = K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSUMED

EDIPEH100

PROJECT STEWART ANG | COMP. BY TS | CHK. BY RR | JOB Nº 5120 | DATE 3-31-97

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B100 NUMBER S-3 DEPTH _____

MOISTURE CONTENT

TARE Nº 38 Wt. 58.8
SAMPLE+TARE, i 251.6
SAMPLE+TARE, f 237.3
SAMPLE, f 178.5
MOISTURE 14.3
% Wc 8.0%

% OF FINES

TARE Nº 88 Wt. 58.8
SAMPLE+TARE, i 237.3
SAMPLE+TARE, f 160.6
Wt. SOIL LOST 76.7
Wt. SOIL, i 178.5
% of FINES 43.0

HYDROMETER ANALYSIS

SAMPLE SIZE i _____
MENISCUS CORR (M) _____
DISP. AGENT _____
AMOUNT ___ CORR (C_d) ___

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1		—		100	100
¾		5.1	1.9	98	98 ✓
½		—		—	—
⅜		22.5	10.6	[illegible]	[illegible] ✓
¼		38.5	21.6	75.4	75
4		55.5	25.7	74.3	74 ✓
PAN		—			

Wt. i _____ Wt. f _____ % Loss _____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4		—		—	
10		56.5	31.8	68.2	68
20		67.3	37.7	62.3	62 ✓
40		74.8	41.9	58.1	58
60		82.8	46.4	53.6	54
100		93.0	52.1	47.9	48 ✓
200		102.0	57.1	42.9	43
PAN		—			✓

Wt. i _____ Wt. f _____ % Loss _____ C.F. _____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000 \qquad G_s \_\_\_\_\_ \text{ REAL / ASSUMED}$$

EDIGRAN.CDR

PROJECT STEWART ANG | COMP. BY TS | CHK. BY RLR | JOB Nº 512-01 | DATE 2-5-82

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B 101 NUMBER S4 DEPTH

MOISTURE CONTENT

TARE Nº 56 Wt. 53.0
SAMPLE+TARE, i 229.6
SAMPLE+TARE, f 215.3
SAMPLE, f 162.3
MOISTURE 14.3
% Wc 8.8

% OF FINES

TARE Nº 56 Wt. 53.0
SAMPLE+TARE, i 215.3
SAMPLE+TARE, f 126.5
Wt. SOIL LOST 88.8
Wt. SOIL, i 162.3
% of FINES 54.7

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR(Cd)

	SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
COARSE ANALYSIS	3					
	1½					
	1					
	¾					
	½			0	100	100
	⅜		3.2	2.0	98	98
	¼		5.9	3.5	94.5	95
	4		14.8	9.1	90.9	91
	PAN				—	
	Wt. i		Wt. f		% Loss	
FINE ANALYSIS	4				—	—
	10		28.1	17.3	82.7	83
	20		39.5	24.3	75.7	76
	40		47.2	29.1	70.9	71
	60		55.1	33.9	66.1	66
	100		63.9	39.4	60.6	61
	200		73.3	45.2	54.8	55
	PAN		73.5	45.3	—	—
	Wt. i		Wt. f		% Loss	C.F.

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-Cd+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSUMED

EDJOB-1.02

PROJECT STEWART ANG | COMP. BY TS | JOB Nº 5139.01 | CHK. BY RC | DATE 8.3.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B102 NUMBER S-6 DEPTH

MOISTURE CONTENT

TARE Nº 5 Wt. 52.8
SAMPLE+TARE, i 269.7
SAMPLE+TARE, f 249.0
SAMPLE, f 196.2
MOISTURE 20.7
% Wc 10.6 ✓

% OF FINES

TARE Nº 5 Wt. 52.8
SAMPLE+TARE, i 249.0
SAMPLE+TARE, f 146.2
Wt. SOIL LOST 102.8
Wt. SOIL, i 196.2
% of FINES 52.4 ✓

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾				100	100
½		8.7	4.4	95.6	96 ✓
⅜		13.2	6.7	88.9	89
¼		18.4	9.5	79.4	79
4		28.7	14.6	64.8	65
PAN					

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4					
10		44.7	22.8	77.2	77 ✓
20		57.2	29.2	70.8	71
40		64.4	32.8	67.2	67 ✓
60		73.3	37.4	62.6	63
100		83.3	42.5	57.5	58 ✓
200		93.3	47.6	52.4	52
PAN		93.4	—	—	—

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s-1}\right) \times \frac{100}{Wi} \left((R-C_d+M)-1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

EJ JORDAN CO

PROJECT	COMP. BY	JOB Nº
STEWART AVE	TS	5139.01
	CHK. BY RR	DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING 5102 NUMBER 5-2 DEPTH

MOISTURE CONTENT

TARE Nº 60 Wt. [illegible]
SAMPLE+TARE, i 279.5
SAMPLE+TARE, f 250.1
SAMPLE, f 206.6
MOISTURE [illegible]
% Wc 10.0

% OF FINES

TARE Nº 60 Wt. 52.5
SAMPLE+TARE, i 259.1
SAMPLE+TARE, f 164.0
Wt. SOIL LOST 95.1
Wt. SOIL, i 206.6
% of FINES 46.0

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR(C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1 1/2					
1					
3/4					
1/2				100	100
3/8		4.0	1.9	98.1	98
1/4		9.2	4.5	95.5	96
4		17.0	8.2	91.8	92
PAN					

Wt. i _____ Wt. f _____ % Loss _____

FINE ANALYSIS

4		—	—	—	—
10		38.2	18.4	81.6	82
20		54.3	26.3	73.7	74
40		67.1	32.5	67.5	68
60		80.2	38.8	61.2	61
100		96.2	46.6	53.4	54
200		111.4	53.9	46.1	46
PAN		111.6	—	—	—

Wt. i _____ Wt. f _____ % Loss _____ C.F. _____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	1/2								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSUMED

PROJECT STEWART ANC

COMP. BY TS

CHK. BY

JOB Nº 5120.1

DATE 8.5.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING 5103 NUMBER S-7 DEPTH

MOISTURE CONTENT

TARE Nº 8 Wt. 52.1

SAMPLE+TARE, i 234.8

SAMPLE+TARE, f 221.1

SAMPLE, f 169.0

MOISTURE 13.7

% W_c 8.1

% OF FINES

TARE Nº 8 Wt. 52.1

SAMPLE+TARE, i 221.1

SAMPLE+TARE, f 143.3

Wt. SOIL LOST 77.8

Wt. SOIL, i 169.0

% of FINES 46.0

HYDROMETER ANALYSIS

SAMPLE SIZE i

MENISCUS CORR (M)

DISP. AGENT

AMOUNT CORR (C_d)

	SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
COARSE ANALYSIS	3					
	1½					
	1				100	100
	¾		12.1	7.2	92.8	93
	½		17.7	10.5	89.5	90
	⅜		21.2	12.6	87.4	86
	¼		24.6	14.6	85.4	85
	4		31.5	18.6	81.4	81
	PAN					
	Wt. i		Wt. f		% Loss	
FINE ANALYSIS	4					—
	10		43.6	25.8	74.2	74
	20		53.5	31.7	68.3	68
	40		60.9	36.0	64.0	64
	60		68.9	40.8	59.2	59
	100		79.0	46.7	53.3	53
	200		91.2	54.0	46.0	46
	PAN		91.4	—	—	
	Wt. i		Wt. f	% Loss	C.F.	

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSUMED

PROJECT STEWART ANG | COMP. BY TS | CHK. BY [illegible] | JOB Nº 5139.01 | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B104 NUMBER S-4 DEPTH _____

MOISTURE CONTENT

TARE Nº 4 Wt. 53.4
SAMPLE+TARE, i 261.8
SAMPLE+TARE, f 245.4
SAMPLE, f 192.0
MOISTURE 16.4
% Wc 9.5 /

% OF FINES

TARE Nº 4 Wt. 53.4
SAMPLE+TARE, i 245.4
SAMPLE+TARE, f 160.3
Wt. SOIL LOST 85.1
Wt. SOIL, i 192.0
% of FINES 44.3 /

HYDROMETER ANALYSIS

SAMPLE SIZE i _____
MENISCUS CORR (M) _____
DISP. AGENT _____
AMOUNT ____ CORR(Cd) ____

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½				100	100
1		23.7	13.4	86.6	87 /
¾		—	—	—	
½		—	—	—	
⅜		27.8	15	85	85
¼		31.2	17.3	82.7	84
4		37.0	19.3	80.7	81 /
PAN					

Wt. i _____ Wt. f _____ % Loss _____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4					
10		50.6	26.4	73.6	74 /
20		62.8	32.7	67.3	67
40		71.8	37.4	62.6	63 /
60		82.1	42.8	57.2	57
100		93.9	48.9	51.1	51 /
200		106.8	55.6	44.4	44
PAN		107.0	—		

Wt. i _____ Wt. f _____ % Loss _____ C.F. _____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-Cd+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECT
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSU

EDCFDA

B

PROJECT STEWART ANG | COMP. BY TS | JOB Nº 5134.01 | CHK. BY JR | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING 105 NUMBER S5 DEPTH

MOISTURE CONTENT

TARE Nº 53 Wt. 53.7
SAMPLE+TARE, i 183.3
SAMPLE+TARE, f 167.8
SAMPLE, f 114.1
MOISTURE 15.5
% Wc 13.6

% OF FINES

TARE Nº 53 Wt. 53.7
SAMPLE+TARE, i 167.8
SAMPLE+TARE, f 88.9
Wt. SOIL LOST 78.9
Wt. SOIL, i 114.1
% of FINES 69.1

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾					
½					
⅜					
¼		–		100	100
4		3.2	1.9	98.1	98
PAN					

Wt. i _____ Wt. f _____ % Loss _____

FINE ANALYSIS

4		–		–	
10		9.7	8.5	91.5	92
20		16.5	14.5	85.5	86
40		21.0	18.4	81.6	82
60		25.3	22.2	77.8	78
100		30.2	26.5	74.5	76
200		35.2	30.9	69.1	69
PAN		35.2	–	–	–

Wt. i _____ Wt. f _____ % Loss _____ C.F. _____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wt} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s _____ REAL / ASSUMED

B

PROJECT STEWART ANG | COMP. BY TS | JOB Nº 5139.01
CHK. BY RLR | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B106 NUMBER S3 DEPTH

MOISTURE CONTENT

TARE Nº 70 Wt. 58.6
SAMPLE+TARE, i 289.1
SAMPLE+TARE, f 264.1
SAMPLE, f 205.5
MOISTURE 25.0
% Wc 12.2 ✓

% OF FINES

TARE Nº 70 Wt. 58.6
SAMPLE+TARE, i 264.1
SAMPLE+TARE, f 195.0
Wt. SOIL LOST 69.1
Wt. SOIL, i 205.5
% of FINES 33.6 ✓

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1				100	100
¾		7.1	3.5	96.5	97 ✓
½		9.7	4.7	95.3	95
⅜		11.6	5.6	94.4	94 ✓
¼		18.7	9.1	90.9	91
4		28.1	13.7	86.3	86 ✓
PAN					

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4				—	
10		46.8	22.8	77.2	77
20		65.4	31.8	68.2	68 ✓
40		80.2	39.0	61.0	61 ✓
60		97.3	47.4	52.6	53 ✓
100		116.3	56.6	44.4	44
200		135.8	66.1	33.9	34 ✓
PAN		136.5	—	—	—

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

ECJORDANCO

PROJECT STEWART AVE | COMP. BY TS | JOB Nº 5139.01
CHK. BY RLR | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING S 106 NUMBER S5 DEPTH

MOISTURE CONTENT

TARE Nº 3 Wt. 51.9
SAMPLE+TARE, i 263.3
SAMPLE+TARE, f 238.6
SAMPLE, f 186.7
MOISTURE 24.7
% Wc 13.2

% OF FINES

TARE Nº 3 Wt. 51.9
SAMPLE+TARE, i 238.6
SAMPLE+TARE, f 164.5
Wt. SOIL LOST 74.1
Wt. SOIL, i 186.7
% of FINES 39.9

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾					
½				100	100
⅜		8.0	4.3	95.7	96
¼		16.8	9.0	91.0	91
4		24.3	13.0	87.0	87
PAN					

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

4		–			
10		41.7	22.3	77.7	78
20		58.2	31.2	68.8	69
40		71.0	38.0	62.0	62
60		83.7	44.8	55.2	55
100		97.0	52.0	48.0	48
200		112.0	60.0	40.0	40
PAN		112.8	–	–	–

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

(B)

PROJECT STEWART ANC | COMP. BY TB | CHK. BY RLR | JOB Nº 5139.01 | DATE 8-31-87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B 107 NUMBER S-2 DEPTH

MOISTURE CONTENT

TARE Nº 25 Wt. 68.7
SAMPLE+TARE, i 234.9
SAMPLE+TARE, f 210.5
SAMPLE, f 141.8
MOISTURE 24.4
% Wc 17.2 /

% OF FINES

TARE Nº 25 Wt. 68.7
SAMPLE+TARE, i 210.5
SAMPLE+TARE, f 123.6
Wt. SOIL LOST 86.9
Wt. SOIL, i 141.8
% of FINES 61.3% /

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾					
½				100	100
⅜		5.0	5.5	96.5	97 /
¼		8.4	5.9	94.1	94
4		11.3	3.0	92.0	92 /
PAN				—	

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

4				—	
10		13.6	9.6	90.4	90
20		16.5	11.6	88.4	88 /
40		18.8	13.3	86.7	87
60		22.6	15.9	84.1	84 /
100		30.3	21.4	78.6	79
200		53.4	37.7	62.3	62 /
PAN		54.9	—	—	

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{t}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

B

PROJECT STEWART ANG | COMP. BY TS | CHK. BY BLR | JOB Nº 5139.01 | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B108 NUMBER 53 DEPTH

MOISTURE CONTENT

TARE Nº 19 Wt. 55.7
SAMPLE+TARE, i 232.7
SAMPLE+TARE, f 213.8
SAMPLE, f 158.1
MOISTURE 18.9
% Wc 12.0%

% OF FINES

TARE Nº 19 Wt. 55.7
SAMPLE+TARE, i 213.8
SAMPLE+TARE, f 158.8
Wt. SOIL LOST 55.0
Wt. SOIL, i 158.1
% of FINES 34.8 35.1

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾				100	100
½		11.5	7.3	92.7	93 ✓
⅜		20.0	12.7	87.3	87
¼		26.3	16.7	83.3	83 ✓
4		34.2	21.6	78.4	78 ✓
PAN					

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
4		—			
10		45.9	29.0	71.0	71
20		97.6	36.4	63.6	64 ✓
40		66.4	42.0	58.0	58
60		77.6	49.1	50.9	51 ✓
100		95.1	60.2	39.8	40
200		103.2	64.9	35.5	36 35
PAN		103.3			

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{T}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wt} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

ECJORDAN CO

B

PROJECT STEWART ANG | COMP. BY TS | CHK. BY RLR | JOB Nº 5136.01 | DATE 8.31.87

GRAIN SIZE ANALYSIS

SAMPLE I.D: BORING B 110 NUMBER S4 DEPTH

MOISTURE CONTENT

TARE Nº E 51 Wt. 52.8
SAMPLE+TARE, i 237.2
SAMPLE+TARE, f 215.3
SAMPLE, f 162.5
MOISTURE 21.9
% Wc 13.5 /

% OF FINES

TARE Nº 51 Wt. 52.8
SAMPLE+TARE, i 215.3
SAMPLE+TARE, f 150.4
Wt. SOIL LOST 64.9
Wt. SOIL, i 162.5
% of FINES 40.0 /

HYDROMETER ANALYSIS

SAMPLE SIZE i
MENISCUS CORR (M)
DISP. AGENT
AMOUNT CORR (C_d)

COARSE ANALYSIS

SIEVE	Wt. RETAINED WITH TARE	Wt. RETAINED WITHOUT TARE	% RET	% PASS	CORRECT'D
3					
1½					
1					
¾					
½		0		100	100
⅜		1.8	1.1	98.9	99 /
¼		8.2	5.1	94.9	95
4		16.1	9.9	90.1	90 /
PAN					

Wt. i ____ Wt. f ____ % Loss ____

FINE ANALYSIS

4					
10		29.7	18.3	81.7	82
20		40.3	24.8	75.2	75 /
40		48.5	30.0	70.0	70
60		60.2	31.7	68.3	68 /
100		82.3	50.7	49.3	49
200		98.1	60.4	39.6	40 /
PAN		98.3	60.5	—	—

Wt. i ____ Wt. f ____ % Loss ____ C.F. ____

TIME	Δt MIN	TEMP/K	ACTUAL HYDRO	R CORR'D	L Eff.Dpth.	R-C_d+M CALC	$d=K\sqrt{\frac{L}{t}}$ SIZE	% Finer	CORRECTED
	0								
	½								
	1								
	2								
	4								
	8								
	15								
	30								
	60								
	120								
	240								
	480								
	1440								

$$\% \text{ FINER} = \left[\left(\frac{G_s}{G_s - 1}\right) \times \frac{100}{Wi} \left((R - C_d + M) - 1\right)\right] \times 1000$$

G_s ____ REAL / ASSUMED

APPENDIX D

FIELD PERMEABILITY TEST DATA

TABLE D-1

RISING HEAD PERMEABILITY TEST DATA

JMW108 PERMTEST

Diameter of riser = 0.166
Length of zone = 7
Diameter of zone = 0.66
Static water level = 8.38
Number of readings = 20

Time (min.)	Excess Head (ft.)
0	5.1
1	4.88
2	4.67
3	4.41
4	4.09
5	3.88
6	3.66
7	3.42
8	3.2
9	2.97
10	2.78
11	2.58
12	2.41
13	2.26
14	2.11
15	1.95
20	1.38
25	0.88
30	0.61
35	0.48

$K = 5.13 \times 10^{-5}$ cm/sec

JMW109 PERMTEST

Diameter of riser = 0.166
Length of zone = 7
Diameter of zone = 0.666
Static water level = 9.91
Number of readings = 14

Time (min.)	Excess Head (ft.)
0	2.04
.5	1.93
1	1.87
2	1.73
3	1.59
4	1.48
5	1.39
6	1.3
7	1.22
8	1.15
9	1.08
10	1.01
15	0.74
20	0.61

$K = 5.19 \times 10^{-5}$ cm/sec

JMW107 PERMTEST

Diameter of riser = 0.166
Length of zone = 7
Diameter of zone = 0.66
Static water level = 10.13
Number of readings = 18

Time (min.)	Excess Head (ft.)
.5	1.98
1	1.9
1.5	1.86
2	1.84
3	1.78
4	1.75
5	1.69
6	1.65
7	1.61
8	1.57
9	1.53
10	1.49
15	1.14
21	0.89
29	0.49
30	0.47
40	0.17
50	0.13

$K = 4.20 \times 10^{-5}$ cm/sec

JMW101 PERMTEST

Diameter of riser = 0.166
Length of zone = 12
Diameter of zone = 0.333
Static water level = 31.23
Number of readings = 16

Time (min.)	Excess Head (ft.)
0	1.41
.5	1.34
1	1.34
2	1.24
3	1.20
4	1.17
5	1.13
6	1.13
7	1.11
8	1.09
9	1.08
10	1.07
15	1.02
20	0.94
25	0.88
30	0.84

$K = 2.24 \times 10^{-5}$ cm/sec

11.87.126T
0007.0.0

APPENDIX E

ANALYTICAL RESULTS

ORGANIC AND INORGANIC QUALIFIERS

U	Indicates the parameter was analyzed for but was not detected at the value preceding the flag. This value represents the CRDL corrected for dilution where appropriate.
J	Indicates an estimated value.
B	Indicates the parameter was present in the associated method blank.
R	Indicates the value was rejected.
JB	A combination of the J and B flags. Indicates an estimated value due to possible method blank contamination.
UJB	A combination of the U, J, and B flags. Indicated that, due to contamination found in the method blank, the detection limit was revised.
CRDL	Contract Required Detection Limit
IDL	Instrument Detection Limit
RDL	Revised Detection Limit due to blank contamination
NA	Not Analyzed
NR	Not Required
-	Analyzed but not detected
ND	Not Detected
II	Indistinguishable Isomers

INORGANIC QUALIFIERS

Concentration (C) Qualifiers:

[ ] = The reported value is less than the CRDL but greater than the IDL.

U = The analyte was analyzed for but not detected.

(Q) Qualifiers:

E = The reported value is estimated because of the presence of interference. If the problem applies to all samples, an explanatory note must be included under "Comments" on the cover sheet. If it is an isolated problem, a note should be included on the specific Form I=IN.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the method of standard additions (MSA).

W = Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* = Duplicate Analysis not within control limits.

_ = Correlation coefficient for the MSA is less than 0.995.

Method (M) Qualifiers:

P = ICP

A = Flame AA

F = Furnace AA

CV = Manual Cold Vapor AA

AV = Automated Cold Vapor AA

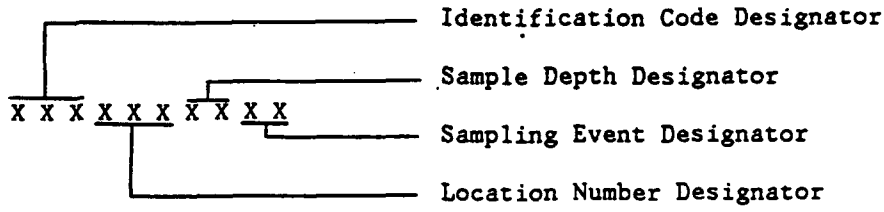
AS = Semiautomated Spectrophotometric

C = Manual Spectrophotometric

T = Titrimetric

NR = The analyte is not required to be analyzed

SAMPLE IDENTIFICATION NUMBER EXPLANATION



Identification Code Designator - J = E.C. Jordan
MW = Monitoring Well
TB = Test Boring
SD = Surface Soil/Sediment
SW = Surface Water

Location Number Designator - Three-digit number that represents a location

Sample Depth Designator - Two-digit number that represents sample depth interval (i.e., 01 = 0 to 1 foot, 31 = 30 to 31 feet, xx = water sample)

Sampling Event Designator - Two-digit number that represents the sampling event at the same location (i.e., 01 = first sampling event, 04 = fourth sampling event)

Miscellaneous

JDUP - Jordan Duplicate Sample
MSD - Matrix Spike Duplicate
MS01 - Matrix Spike First Event
JSAMP - Jordan Soil Sampler Blank
JSBL - Jordan Water Sampler Blank
JFBL - Jordan Field Filter Blank
JTBL - Jordan Trip Blank (Water Samplers)
JMW 108 R1 = Replicate 1
JMW 108 R2 = Replicate 2
JMW 108 R3 = Replicate 3

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JDUP01XX01		JSD1000101		JSD100MSD		JSD100MS01	
COMPUCHEM ID		144007		144003		144009		144017	
DATE SAMPLED		07/30/87		07/30/87		07/30/87		07/30/87	
DEPTH (ft)		0		1		0		0	
MATRIX		SOIL		SOIL		SOIL		SOIL	
INORGANIC COMPOUNDS (mg/kg)	DETECTION LIMIT								
ARSENIC	2	3.4	N	3.9	N	4.4	S N	4.3	N
BERYLLIUM	1	1	[]	1.1	[]	1.1	[]	1	[]
CADMIUM	1	3.6		-		3.7		-	
CHROMIUM	2	16		21		15		18	
COPPER	10	9.1		44		9.5	[]	40	
LEAD	1	22	N	27	N	28	N	24	N
MERCURY	0.02	-		-		-		-	
NICKEL	8	17		20		16		21	
THALLIUM	2	-		-		-		-	
ZINC	4	81		104		78		98	
BARIUM	40	75		86		72		82	
IRON	20	24800		32600		23700		30500	
MANGANESE	3	1020		1190		987		1070	
VANADIUM	10	17		22		17		21	
ALUMINUM	40	12800		15600		12000		15000	
COBALT	10	9.3	[]	11	[]	9.4	[]	9.9	[]
MAGNESIUM	1000	5310	E	6520	E	5080	E	6130	E
CALCIUM	1000	7250		9060		7620		7820	
POTASSIUM	1000	1420	[]	1510	[]	1390	[]	1580	[]
CYANIDE	0.5	-		-		-		-	
PERCENT SOLIDS		64		56		61		59	

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JDUP01XX01	JSD100O101	JSD100MSD	JSD100MS01
COMPUCHEM ID		144007	144003	144009	144017
DATE SAMPLED		07/30/87	07/30/87	07/30/87	07/30/87
DEPTH (ft)		0	1	0	0
MATRIX		SOIL	SOIL	SOIL	SOIL
VOLATILE ORGANIC COMPOUNDS (ug/kg)	DETECTION LIMIT				
BENZENE	5	-	-	2.1 J B	-
CHLOROFORM	5	-	-	-	2.3 J
METHYLENE CHLORIDE	5	32 B	28 B	50 B	20 B
ACETONE	10	29 B	15 J B	14 J B	20 B
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg)					
ACENAPHTHENE	330	-	-	-	-
ANTHRACENE	330	-	-	-	-
BENZO(A)ANTHRACENE	330	-	-	-	-
BENZO(A)PYRENE	330	-	-	-	-
BENZO(B)FLUORANTHENE	330	-	-	-	-
BENZO(K)FLUORANTHENE	330	-	-	-	-
BIS(2-ETHYLHEXYL)PHTHALATE	330	-	-	-	66 J
CHRYSENE	330	-	-	-	-
FLUORANTHENE	330	-	-	-	-
PHENANTHRENE	330	-	-	-	-
PYRENE	330	-	-	-	-
PESTICIDES (ug/kg)					
4,4'-DDT	16	2300 C	2300 C	3100 C	2800 C
4,4'-DDE	16	190	180	230	230
4,4'-DDD	16	170	-	130	120
pH, SULFATE, CHLORIDE, FLUORIDE (ug/kg)					
PH		7.7	7.8	7.7	7.9
FLUORIDE		1.4	1.4	1.7	1.7
CHLORIDE		7.3	20	21	13
PERCENT SOLIDS		64	56	61	59

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JSD1010101	JSD1020101
COMPUCHEM ID		144005	144006
DATE SAMPLED		07/30/87	07/30/87
DEPTH (ft)		1	1
MATRIX		SOIL	SOIL
INORGANIC COMPOUNDS (mg/kg)	DETECTION LIMIT		
ARSENIC	2	3 N	2.4 [] N
BERYLLIUM	1	0.61 []	0.47 []
CADMIUM	1	1.1 []	2.9
CHROMIUM	2	11	8.7
COPPER	10	7.4	7.8 []
LEAD	1	24 N	29 N
MERCURY	0.02	-	0.26 N
NICKEL	8	15	-
THALLIUM	2	-	-
ZINC	4	59	43
BARIUM	40	58	44 []
IRON	20	15900	9650
MANGANESE	3	2310	282
VANADIUM	10	15	12 []
ALUMINUM	40	7370	6400
COBALT	10	6.8 []	2.3 []
MAGNESIUM	1000	2880 E	1990 E
CALCIUM	1000	3430	3980
POTASSIUM	1000	-	-
CYANIDE	0.5	-	-
PERCENT SOLIDS		78	74

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

	DETECTION LIMIT		
ECJ SAMPLE ID		JSD1010101	JSD1020101
COMPUCHEM ID		144005	144006
DATE SAMPLED		07/30/87	07/30/87
DEPTH (ft)		1	1
MATRIX		SOIL	SOIL
VOLATILE ORGANIC COMPOUNDS (ug/kg)			
BENZENE	5	-	-
CHLOROFORM	5	1.3 J	-
METHYLENE CHLORIDE	5	32 B	22 B
ACETONE	10	33 B	20 B
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg)			
ACENAPHTHENE	330	52 J	-
ANTHRACENE	330	87 J	-
BENZO(A)ANTHRACENE	330	300 J	-
BENZO(A)PYRENE	330	260	-
BENZO(B)FLUORANTHENE	330	450 II	-
BENZO(K)FLUORANTHENE	330	450 II	-
BIS(2-ETHYLHEXYL)PHTHALATE	330	120 J	55 J
CHRYSENE	330	370 J	-
FLUORANTHENE	330	620	-
PHENANTHRENE	330	500	-
PYRENE	330	540	73 J
PESTICIDES (ug/kg)			
4,4'-DDT	16	-	-
4,4'-DDE	16	-	-
4,4'-DDD	16	-	-
pH, SULFATE, CHLORIDE, FLUORIDE (ug/kg)			
PH		7.5	7.4
FLUORIDE		0.6	0.67
CHLORIDE		-	-
PERCENT SOLIDS		78	74

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

	DETECTION LIMIT (ug/l)	
POINT		JSAMP1
ECJ SAMPLE ID		JSAMP10101
COMPUCHEM ID		143986
DATE SAMPLE		07/30/87
DEPTH (ft)		1
MATRIX		WATER
INORGANIC COMPOUNDS (ug/l)		
ARSENIC	10	2.5 []
BERYLLIUM	5	-
CADMIUM	5	-
CHROMIUM	10	-
COPPER	25	7.1 []
LEAD	5	1.9 []
MERCURY	0.2	-
NICKEL	40	-
THALLIUM	10	1.8 []
ZINC	20	35 E
BARIUM	200	-
IRON	100	86 [] E
MANGANESE	15	5.2 []
VANADIUM	50	-
ALUMINUM	200	-
COBALT	50	7.1 []
MAGNESIUM	5000	-
CALCIUM	5000	136 []
POTASSIUM	5000	-
CYANIDE	10	86 N *

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

POINT		
ECJ SAMPLE ID		JSAMP1
COMPUCHEM ID		JSAMP10101
DATE SAMPLE		143986
DEPTH (ft)		07/30/87
MATRIX		1
		WATER
VOLATILE ORGANIC COMPOUNDS (ug/l)	DETECTION LIMIT (ug/l)	
BENZENE	5	-
CHLOROFORM	5	-
METHYLENE CHLORIDE	5	3.7 J B
ACETONE	10	16
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/l)		
ACENAPHTHENE	10	-
ANTHRACENE	10	-
BENZO(A)ANTHRACENE	10	-
BENZO(A)PYRENE	10	-
BENZO(B)FLUORANTHENE	10	-
BENZO(K)FLUORANTHENE	10	-
BIS(2-ETHYLHEXYL)PHTHALATE	10	7 J
CHRYSENE	10	-
FLUORANTHENE	10	-
PHENANTHRENE	10	-
PYRENE	10	-
PESTICIDES (ug/l)		
4,4'-DDT	0.1	-
4,4'-DDE	0.1	-
4,4'-DDD	0.1	-
pH, SULFATE, CHLORIDE, FLUORIDE (ug/l)		
PH		6.6
FLUORIDE		-
CHLORIDE		-

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JMW1013101	JMW1070401	JMW1080701	JMW1090501
COMPUCHEM ID		145827	144191	144768	145249
DATE SAMPLED		08/10/87	08/01/87	08/04/87	08/06/87
DEPTH (ft)		31	4	7	5
MATRIX		SOIL	SOIL	SOIL	SOIL
INORGANIC COMPOUNDS (mg/kg)	DETECTION LIMIT				
ARSENIC	2	3.4 N	1.7 [] N	2.3 N	1.3 [] N
BERYLLIUM	1	0.52 []	0.42 []	0.44 []	0.52 []
CADMIUM	1	-	-	-	-
CHROMIUM	2	11	11	11	12
COPPER	5	25 E	6.7	20	24 E
LEAD	1	9.5 N	9.6 N	8 N	20
MERCURY	0.02	-	-	0.13 N	0.11 N
NICKEL	8	13	11	12	17
ZINC	4	117	54	62	65
BARIUM	40	52	28 []	23 []	44 []
IRON	20	18800	17700	17800	21400
MANGANESE	3	790	594	504	999
VANADIUM	10	12	10 []	10 []	14
ALUMINUM	40	8140	7810	7510	9220
COBALT	10	5.1 []	4.8 []	4.9 []	5.7 []
MAGNESIUM	100	5830 E	3370 E	3250	3820 E
CALCIUM	1000	30900	1800	2120	2490
POTASSIUM	1000	-	883 []	-	-
	1000				
VOLATILE ORGANIC COMPOUNDS (ug/kg)					
BENZENE	5	-	1.7 J B	-	-
CHLOROFORM	5	2.2 J	5.3 J	-	3.6 J
METHYLENE CHLORIDE	5	70 B	24 B	17 B	27 B
TOLUENE	5	-	-	-	-
ACETONE	10	-	14 B	14 B	58 B
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg)					
BIS(2-ETHYLHEXYL)PHTHALATE	330	53 J B	-	85 J B	-
DIETHYLPHTHALATE	330	1100 B	-	-	270 J B
DI-N-BUTYLPHTHALATE	330	71 J	-	-	-
PCBs(ug/kg)					
AROCLOR-1254	160	210	-	-	-
pH, SULFATE, CHLORIDE, FLUORIDE (mg/kg)					
PH		9.3	7.5	8	7.2
SULFATE		1100	-	-	-
FLUORIDE		-	0.44	3.5	1.8
CHLORIDE		39	-	35	-
PERCENT SOLIDS		87	87	84	88

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JTB1021201	JTB1030501	JTB1050701	JTB1060501
COMPUCHEM ID		145960	146673	145545	144195
DATE SAMPLED		08/11/87	08/13/87	08/07/87	08/01/87
DEPTH (ft)		12	5	7	5
MATRIX		SOIL	SOIL	SOIL	SOIL
INORGANIC COMPOUNDS (mg/kg)	DETECTION LIMIT				
ARSENIC	2	3.1 N	1.8 []N	-	2.5 N
BERYLLIUM	1	0.47 []	0.45 []	-	0.52 []
CADMIUM	1	-	-	-	1.4
CHROMIUM	2	11	11	-	24
COPPER	5	27 E	28 E	-	6.7
LEAD	1	7 N	9.2 N	-	14 N
MERCURY	0.02	0.12 N	-	-	-
NICKEL	8	16	16	-	12
ZINC	4	61	64	-	48
BARIUM	40	40 []	36 []	-	41 []
IRON	20	19400	18500	-	18100
MANGANESE	3	471	575	-	595
VANADIUM	10	12	12	-	12
ALUMINUM	40	8190	7940	-	7950
COBALT	10	5.8 []	5.6 []	-	4.4 []
MAGNESIUM	100	6150 E	4070 E	-	3470 E
CALCIUM	100	25500	28300	-	4690
POTASSIUM	100	-	-	-	837 []
VOLATILE ORGANIC COMPOUNDS (ug/kg)					
BENZENE	5	-	-	-	-
CHLOROFORM	5	3.4 J	-	-	-
METHYLENE CHLORIDE	5	92 B	23 B	31 B	25 B
TOLUENE	5	-	3 J	-	-
ACETONE	10	27 B	32 B	25 B	47 B
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/kg)					
BIS(2-ETHYLHEXYL)PHTHALATE	330	230 J B	53 J	-	85 J
DIETHYLPHTHALATE	330	1000 B	350 B	470 B	-
DI-N-BUTYLPHTHALATE	330	-	49 J	-	-
PCBs (ug/kg)					
AROCLOR-1254	160	210	-	-	-
pH, SULFATE, CHLORIDE, FLUORIDE (mg/kg)					
PH		9.2	8.9	7.7	6.9
SULFATE		590	-	66	-
FLUORIDE		-	-	-	0.29
CHLORIDE		40	14	21	-
PERCENT SOLIDS		90	89	93	84

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

POINT		JSAMP1	TRIP B
ECJ SAMPLE ID		JSAMP10201	TRIP BLANK
COMPUCHEM ID		146680	145579
DATE SAMPLED		08/13/87	08/07/87
DEPTH (ft)		2	0
MATRIX		WA	SO
INORGANIC COMPOUNDS (ug/l)	DETECTION LIMIT	-	-
ARSENIC	10	-	-
BERYLLIUM	5	-	-
CADMIUM	5	-	-
CHROMIUM	10	-	-
COPPER	25	-	-
LEAD	5	-	-
MERCURY	0.2	-	-
NICKEL	40	-	-
ZINC	20	-	-
BARIUM	200	-	-
IRON	100	1.9 []	-
MANGANESE	15	-	-
VANADIUM	50	-	-
ALUMINUM	200	-	-
COBALT	50	-	-
MAGNESIUM	5000	-	-
CALCIUM	5000	-	-
POTASSIUM	5000	-	-
VOLATILE ORGANIC COMPOUNDS (ug/l)			
BENZENE	5		
CHLOROFORM	5	15	
METHYLENE CHLORIDE	5	52 B	8.9 B
TOLUENE	5	4.2 J	
ACETONE	10	22 B	25
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/l)			
BIS(2-ETHYLHEXYL)PHTHALATE	10	-	-
DIETHYLPHTHALATE	10	220 J B	-
DI-N-BUTYLPHTHALATE	10	-	-
PCBs (ug/l)			
AROCLOR-1254	1	-	-
pH, SULFATE, CHLORIDE,FLUORIDE (ug/l)			
PH		6.1	-
SULFATE		-	-
FLUORIDE		-	-
CHLORIDE		2	-

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

	DETECTION LIMIT			JSW001XX01 150738 WA		JTBL-1XX01 150791 WA
ECJ SAMPLE ID						
COMPUCHEM ID						
DATE SAMPLED						
MATRIX						
INORGANIC COMPOUNDS (ug/l)						
ALUMINUM	200			739		-
ARSENIC	10			3.8	[]	-
BARIUM	200			.43	[] E	-
CALCIUM	5000			135000		-
COPPER	25			9.7	[]	-
IRON	100			1460		-
MAGNESIUM	5000			34800		-
MANGANESE	15			87		-
MERCURY	0.2			-		-
SODIUM	5000			18900		-
ZINC	20			20	[]	-
VOLATILE ORGANIC COMPOUNDS (ug/l)						
METHYLENE CHLORIDE	5			2.2	JB	4.4 JB
ACETONE	10			-		-
1,1,1-TRICHLOROETHANE	5			-		-
1,1-DICHLOROETHANE	5			-		-
TRANS-1,2-DICHLOROETHENE	5			-		-
CHLOROFORM	5			-		-
CHLOROMETHANE	10			-		-
BROMOMETHANE	10			-		-
VINYL CHLORIDE	10			-		-
CHLOROETHANE	10			-		-
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/l)						
BIS-(2-ETHYLHEXYL)PHTHALATE	10			-		-
PESTICIDES/PCBs (ug/l)						
4-4'-DDT	0.1			0.57		-
ORGANIC HERBICIDES (ug/l)						
2,4-D	4			-		-
2,4,5-TP (SILVEX)	1			-		-
2,4,5-T	1			-		-
ORGANIC PESTICIDES (ug/l)						
DISULFOTON	0.5			-		-
METHYL PARATHION	0.5			-		-
PARATHION	0.5			-		-
PHORATE	0.5			-		-
SULFOTEPP	0.5			-		-
pH, SULFATE, FLUORIDE,CHLORIDE (ug/l)						
pH				6.8		-
SULFATE				320		-
FLUORIDE				0.2		-
CHLORIDE				42		-

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JMW101XX01	JDUP-1XX01	JMW107XX01	JMW108XX01	JMW108R101
COMPUCHEM ID		150770	150759	150746	150751	150752
DATE SAMPLED						
MATRIX		WA	WA	WA	WA	WA
INORGANIC COMPOUNDS (ug/l)	DETECTION LIMIT					
ALUMINUM	200	-	-	-	-	-
ARSENIC	10	4.2 []	4.3 []	4.1 []	4 []	3.9 []
BARIUM	200	96 [] E	29 [] E	35 [] E	59 [] E	58 [] E
CALCIUM	5000	306000	128000	204000	212000	210000
COPPER	25	-	-	-	-	-
IRON	100	466	112	41 []	154	206
MAGNESIUM	5000	89900	17600	19400	27700	27300
MANGANESE	15	2750	9430	160	5940	5240
MERCURY	0.2	-	-	-	-	-
SODIUM	5000	117000	46400	35700	101000	98600
ZINC	20	13 []	13 []	22	16 []	23
VOLATILE ORGANIC COMPOUNDS (ug/l)						
METHYLENE CHLORIDE	5	4.9 JB	4.3 JB	8.2 B	5.2 B	4.6 JB
ACETONE	10	-	3.8 J	-	-	-
1,1,1-TRICHLOROETHANE	5	-	-	8.6	-	-
1,1-DICHLOROETHANE	5	-	4.9 J	**2.3 J**	2 J	-
TRANS-1,2-DICHLOROETHENE	5	-	4.8 J	-	-	-
CHLOROFORM	5	4.3 J	1.7 J	-	-	-
CHLOROMETHANE	10	-	-	-	-	-
BROMOMETHANE	10	-	-	-	-	-
VINYL CHLORIDE	10	-	-	-	-	-
CHLOROETHANE	10	-	3.0 J	-	-	-
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/l)						
BIS-(2-ETHYLHEXYL)PHTHALATE	10	7.2 J	-	-	2.4 J	9.6 J
PESTICIDES/PCBs (ug/l)						
4-4'-DDT	0.1	-	-	-	-	-
ORGANIC HERBICIDES (ug/l)						
2,4-D	4	-	-	-	-	-
2,4,5-TP (SILVEX)	1	-	-	-	-	-
2,4,5-T	1	-	-	-	-	-
ORGANIC PESTICIDES (ug/l)						
DISULFOTON	0.5	-	-	-	-	-
METHYL PARATHION	0.5	-	-	-	-	-
PARATHION	0.5	-	-	-	-	-
PHORATE	0.5	-	-	-	-	-
SULFOTEPP	0.5	-	-	-	-	-
pH, SULFATE, FLUORIDE,CHLORIDE (ug/l)						
pH		6.8	6.4	6.7	6.6	-
SULFATE		1300	40	45	60	-
FLUORIDE		0.16	0.16	0.1	0.12	-
CHLORIDE		11	67	54	250	-

APPENDIX E
ANALYTICAL RESULTS
STEWART AIR NATIONAL GUARD BASE

ECJ SAMPLE ID		JMW108R201	JMW108R301	JMW109XX01	JSBL-1XX01	JFBL-1XX01
COMPUCHEM ID		150765	150756	150762	150755	150771
DATE SAMPLED						
MATRIX		WA	WA	WA	WA	WA
INORGANIC COMPOUNDS (ug/l)	DETECTION LIMIT					
ALUMINUM	200	-	-	-	-	-
ARSENIC	10	3.7 []	3.6 []	3.6 []	-	3 []
BARIUM	200	59 [] E	58 [] E	30 [] E		
CALCIUM	5000	213000	211000	128000	118 []	129 []
COPPER	25	-	-	-	-	-
IRON	100	131	89 []	50 []	67 []	11 []
MAGNESIUM	5000	28100	27000	17700	-	-
MANGANESE	15	5800	5660	9150	-	-
MERCURY	0.2	-	7.5	-	-	-
SODIUM	5000	100000	101000	45900	-	-
ZINC	20	20	14 []	11 []	11 []	9.8 []
VOLATILE ORGANIC COMPOUNDS (ug/l)						
METHYLENE CHLORIDE	5	3.7 J	3.9 JB	3.7 J	4 J	-
ACETONE	10	-	-	-	-	-
1,1,1-TRICHLOROETHANE	5	-	-	-	-	-
1,1-DICHLOROETHANE	5	1.8 J	1.7 J	4.4 J	-	-
TRANS-1,2-DICHLOROETHENE	5	-	-	4.4 J	-	-
CHLOROFORM	5	-	-	2.5 J	-	-
CHLOROMETHANE	10	-	-	1.7 J	-	-
BROMOMETHANE	10	-	-	1.6 J	-	-
VINYL CHLORIDE	10	-	-	4.8 J	-	-
CHLOROETHANE	10	-	1.2 J	5.5 J	-	-
SEMI-VOLATILE ORGANIC COMPOUNDS (ug/l)						
BIS-(2-ETHYLHEXYL)PHTHALATE	10	13 J	26	8 J	-	-
PESTICIDES/PCBs (ug/l)						
4-4'-DDT	0.1	-	-	-	-	-
ORGANIC HERBICIDES (ug/l)						
2,4-D	4	-	-	-	-	-
2,4,5-TP (SILVEX)	1	-	-	-	-	-
2,4,5-T	1	-	-	-	-	-
ORGANIC PESTICIDES (ug/l)						
DISULFOTON	0.5	-	-	-	-	-
METHYL PARATHION	0.5	-	-	-	-	-
PARATHION	0.5	-	-	-	-	-
PHORATE	0.5	-	-	-	-	-
SULFOTEPP	0.5	-	-	-	-	-
pH, SULFATE, FLUORIDE,CHLORIDE (ug/l)						
pH		-	-	6.5	6.2	4.6
SULFATE		-	-	40	<1	<1
FLUORIDE		-	-	0.22	0.04	NR
CHLORIDE		-	-	68	<6	<6

APPENDIX F

SURFACE AND GROUNDWATER FIELD SAMPLE DATA RECORDS

E.C. JORDAN CO.

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SURFACE WATER / SEDIMENT FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG - TASK NO. 1 JOB NO 5139-00

STATION NO / LOCATION SW-1 DATE 9.2.87

SKETCH ON BACK ☑ YES ☐ NO PHOTOGRAPHS ☑ YES ☐ NO ROLL NO / EXPOSURE NO 1 6-7

FIELD DATA

TIME: START 10:00 AIR TEMP. 80°F

END 11:00 WEATHER Sunny

WATER DEPTH @ SAMPLE LOCATION 1' WIDTH OF ~~STREAM~~ Pond 60 sq'

TYPE OF ~~STREAM~~ SAMPLE Pond SAMPLE METHOD Grab

STREAM VELOCITY MEASUREMENTS ☐ YES ☑ NO

FIELD DATA COLLECTED ☐ IN SITU TEMP 16.1 °C

☑ IN BOTTLE SP. COND 1023 @ 25°C pH 7.1

DISSOLVED OXYGEN N/A PPM ☐ METER VOA LEVEL (PPM) AMBIENT NA

☐ WINKLER SAMPLE LOCATION NA

HEADSPACE NA

TYPE / DESCRIPTION OF SEDIMENT SEE SAMPLE DATA RECORD SD-

DEPTH OF SEDIMENT SAMPLE — EQUIPMENT USED —

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
204, 205		40ml	H_2O	No	4°C	VOA NCLP - COP
206, 207		1-liter	H_2O	No	4°C	Ext. Org. NCLP - COP
208, 209		1-liter	H_2O	No	4°C	Pest/PCB NCLP - COP
210		1-liter	H_2O	No	HNO_3	METALS NCLP - COP
211, 212		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST - 8140/3950-8140
213, 214		1-liter	H_2O	No	4°C	CHLORINATE HERBICIDE 8150
215		250ml	H_2O	No	4°C	CHLORIDE/SULFATE
216		125ml	H_2O	No	4°C	FLUORIDE

REMARKS / OBSERVATIONS ~~Duplicate~~ Sample slightly turbid - sample collected 9.2 (Short Heavy Rainfall on 8.31) Sample collected on Southwest corner of pond.

SAMPLER B. Schannard / J. McMillen

NO D.B. Battery Dead

CHES Compu Chem Code JSW001XX01

ECJORDANCO

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GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK NO. 1 JOB NO 5139-00

STATION NO/LOCATION MW-101 DATE 9/1/87 + 9/2/87

SKETCH ON BACK YES ☑ NO ☐ PHOTOGRAPHS YES ☑ NO ☐ ROLL NO/EXPOSURE NO 1/1-2

FIELD DATA

TIME: START 9.30 PM 9/1 AIR TEMP 75°F

END 8:00 AM 9/2 WEATHER Sunny

WATER DEPTH 11.00' ☐ TOP WELL ☐ TOP CASING WELL DEPTH 34' ± WELL DIAM. 2" WELL MATERIAL PVC

34
-11
23
.16
.7
3
3.69

WELL STICK-UP 2.39 WELL/CASING 0.23'

SAMPLING EQUIPMENT USED Peristaltic / S.S. Bailer ~~IN-LINE FILTER~~ Vacuum Filter VOLUME PURGED 4 gals

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE VOA LEVEL(PPM) AMBIENT 0.4 ppm SAMPLE LOCATION 0.4 ppm HEADSPACE —

SAMPLE PURGE DATA

@ 4 GAL	@ 8 GAL	@ 12 GAL	@ — GAL
TEMP 17.1 °C	TEMP — °C	TEMP — °C	TEMP — °C
SP. COND 2123 @25°C	SP. COND — @25°C	SP. COND — @25°C	SP. COND — @25°C
pH 7.3	pH —	pH —	pH —
Eh —	Eh —	Eh —	Eh —

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
100, 101		40ml	H_2O	No	4°C	VOA - NCLP - COP
102, 103		1-liter	H_2O	No	4°C	Ext. ORG. - NCLP-COP
104, 105		1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
106		1-liter	H_2O	YES	HNO_3	METALS NCLP-COP
107, 108		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/3350-8140
109, 110		1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE -8150
111		250ml	H_2O	YES	4°C	CHLORIDE/SULPHATE
112		125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volume = 3.7 gal.

Purged Well Dry At 1 Volume. Sample Appearance: Clear - No Odor

Sampled well next day - 9/2/87 SAMPLER B. Schannard / J. McMullen

DG # 1

HES COMAN CHEM CODE: JMW101KN01

ECJORDANCO

PAGE ____ OF ____

GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION MW-107 DATE 9-1-87 9/2/87

SKETCH ON BACK YES ☑ NO ☐ PHOTOGRAPHS YES ☑ NO ☐ ROLL NO/EXPOSURE NO 8+9

FIELD DATA

TIME: START 12:30 9-1 AIR TEMP 75°F

END 13:15 9-2 WEATHER Partly Cloudy

WATER DEPTH 10.51 ☑ TOP WELL ☐ TOP CASING WELL DEPTH 11.5± WELL MATERIAL PVC

WELL DIAM. 2"

WELL STICK-UP 3.25' WELL/CASING 0.34'

SAMPLING EQUIPMENT USED Peristaltic / S.S. Bailer VOLUME PURGED .2 gal

~~IN-LINE FILTER~~ Vacome Filter

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE VOA LEVEL(PPM) AMBIENT 0.4ppm

SAMPLE LOCATION 0.4ppm

HEADSPACE —

SAMPLE PURGE DATA

@ .2 GAL	@ — GAL	@ — GAL	@ — GAL
TEMP 15.6 °C	TEMP — °C	TEMP — °C	TEMP — °C
SP. COND 1217 @25°C	SP. COND — @25°C	SP. COND — @25°C	SP. COND — @25°C
pH 6.5	pH —	pH —	pH —
Eh —	Eh —	Eh —	Eh —

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
113, 114		40ml	H_2O	No	4°C	VOA - NCLP - COP
115, 116		1-liter	H_2O	No	4°C	Ext. ORG. - NCLP - COP
117, 118		1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
119		1-liter	H_2O	YES	HNO_3	METALS NCLP. COP
120, 121		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/3330-8140
122, 123		1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE -8150
124		250ml	H_2O	YES	4°C	CHLORIDE/SULFATE
125		125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volume = .2 gal

Purged Dry at 1 Volume. Sample Appearances: Turbid Brown color

Sampled next day 9-2-87

SAMPLER B. Schonard / J. McMullen

DB # 4

YES COMAN CHEM CODE: JMW107XX01

ECJORDANCO

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GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION MW-108 (AEP #1, 2, 3) DATE 4-1-87

SKETCH ON BACK YES ☑ NO ☐ PHOTOGRAPHS YES ☑ NO ☐ ROLL NO/EXPOSURE NO 1-3

FIELD DATA

TIME: START 13:15 AIR TEMP 75°F

END ~~14:00~~ 15:00 WEATHER Partly Cloudy

13 − 8 = 5 ft

WATER DEPTH 8.46' ☑ TOP WELL ☐ TOP CASING WELL DEPTH 13'± WELL MATERIAL PVC

WELL DIAM. 2"

WELL STICK-UP 2.50 WELL/CASING 0.13

SAMPLING EQUIPMENT USED Peristaltic / S.S. Bailer ~~IN-LINE FILTER~~ Vacume Filter VOLUME PURGED .8 gal

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE VOA LEVEL(PPM) AMBIENT .4 SAMPLE LOCATION .4 HEADSPACE —

SAMPLE PURGE DATA

@ 1.8 GAL	@ — GAL	@ — GAL	@ — GAL
TEMP 15.6 °C	TEMP — °C	TEMP — °C	TEMP — °C
SP. COND 1130 @25°C	SP. COND — @25°C	SP. COND — @25°C	SP. COND — @25°C
pH 6.1	pH —	pH —	pH —
Eh —	Eh —	Eh —	Eh —

Rep #3	BOTTLE ID	LAB ID Rep #1	LAB ID Rep #2	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
514, 515	126, 127	501, 502	507, 508	40ml	H_2O	No	4°C	VOA - NCLP - COP
516, 517	128, 129	503, 504	509, 510	1-liter	H_2O	No	4°C	Ext. ORG. - NCLP - COP
518, 519	130, 131	504, 505	511, 512	1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
520	132	506	513	1-liter	H_2O	YES	HNO_3	METALS NCLP-COP
	133, 134			1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/3550-8140
	135, 136			1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE - 8150
	137			250ml	H_2O	YES	4°C	CHLORIDE/SULFATE
	138			125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volume = .8 gal

Purged Dry at 1 Volume. Sample Appearance: Clear with silts in bottom of well, when agitated sample became turbid (Brown).

SAMPLER B. Schoenard / J. McMullen

DB #3

CHES COMAN CHEM CODE: JMW108XX01

EC JORDAN CO

PAGE ____ OF ____

GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION MW-109 / Dup-1 DATE 9-1-87

SKETCH ON BACK ☑ YES ☐ NO PHOTOGRAPHS ☑ YES ☐ NO ROLL NO/EXPOSURE NO 1/4-5

FIELD DATA

TIME: START 11:30 AIR TEMP 80°F

END 18:00 WEATHER Sunny

WATER DEPTH 8.23' ☑ TOP WELL ☐ TOP CASING WELL DEPTH 12' ± WELL MATERIAL PVC

WELL DIAM. ~~3~~ 2"

WELL STICK-UP 2.45 WELL/CASING .13'

12 8 To 4 / 64

SAMPLING EQUIPMENT USED Peristaltic / S.S. Bailer IN-LINE FILTER VOLUME PURGED 1 gal

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE

VOA LEVEL (PPM) AMBIENT 1.0

SAMPLE LOCATION 1.0

HEADSPACE —

SAMPLE PURGE DATA

@ .5 GAL	@ 1 GAL	@ 1.5 GAL	@ — GAL
TEMP 15.6 °C	TEMP 15.3 °C	TEMP — °C	TEMP — °C
SP. COND 697 @25°C	SP. COND 937 @25°C	SP. COND — @25°C	SP. COND — @25°C
pH 6.8	pH 6.6	pH —	pH —
Eh —	Eh —	Eh —	Eh —

BOTTLE ID	~~LAB ID~~ Dup 1	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
139, 140	152, 153	40ml	H_2O	No	4°C	VOA - NCLP - COP
141, 142	154, 155	1-liter	H_2O	No	4°C	Ext. ORG. - NCLP - COP
143, 144	156, 157	1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
145	158	1-liter	H_2O	YES	HNO_3	METALS NCLP-COP
146, 147	159, 160	1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/3350-8140
148, 149	161, 162	1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE -8150
150	163	250ml	H_2O	YES	4°C	CHLORIDE/SULFATE
151	164	125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volume = .6 gal

Purged Dry at 2 volumes. Sample Appearance: Turbid - Light Gray Silts & Fines

SAMPLER A Schannard / J. McMullen

DB #2

Dup 1 matches Compu chem codes JDUP-1X101

MATCHES COMPU CHEM CODE: JMW109X101

E.C. JORDAN CO.

PAGE _____ OF _____

GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION SB - 1 DATE 9.2.87

SKETCH ON BACK YES ☐ NO ☑ PHOTOGRAPHS YES ☐ NO ☑ ROLL NO/EXPOSURE NO NA

FIELD DATA TIME: START 11:30 AIR TEMP 75°F

END 12:00 WEATHER Sunny

WATER DEPTH NA ☐ TOP WELL ☐ TOP CASING WELL DEPTH NA WELL DIAM. NA WELL MATERIAL NA

WELL STICK-UP NA WELL/CASING NA

SAMPLING EQUIPMENT USED ~~IN-LINE FILTER~~ / S.S. Bailor VOLUME PURGED NA

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE NA VOA LEVEL (PPM) AMBIENT NA SAMPLE LOCATION NA HEADSPACE NA

SAMPLE PURGE DATA

@ ___ GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL
TEMP ___ °C	TEMP ___ °C	TEMP ___ °C	TEMP ___ °C
SP. COND ___ @25°C	SP. COND ___ @25°C	SP. COND ___ @25°C	SP. COND ___ @25°C
pH ___	pH ___	pH ___	pH ___
Eh ___	Eh ___	Eh ___	Eh ___

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
165, 166		40ml	H_2O	No	4°C	VOA - NCLP - COP
167, 169		1-liter	H_2O	No	4°C	Ext. ORG. - NCLP - COP
169, 170		1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
171		1-liter	H_2O	YES	HNO_3	METALS NCLP-COP
172, 173		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/3330-8140
174, 175		1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE - 8150
176		250ml	H_2O	YES	4°C	CHLORIDE/SULFATE
177		125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS / Volume = NA

Fitter Sample Blank done in field with tank water from E.C. Jordan Staging area. SAMPLER B. Schoonard / J. McMullen (S.S. Bailor)

CHES COMAN CHEM CODE: JSBL-1XX01

EC JORDAN CO

PAGE ____ OF ____

GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION FB-1 DATE 9.2.87

SKETCH ON BACK YES ☐ NO ☑ PHOTOGRAPHS YES ☐ NO ☑ ROLL NO/EXPOSURE NO NA

FIELD DATA TIME: START 11:00 AIR TEMP 75°F
END 11:15 WEATHER Sunny

WATER DEPTH NA ☐ TOP WELL ☐ TOP CASING WELL DEPTH NA WELL DIAM. NA WELL MATERIAL NA

WELL STICK-UP NA WELL/CASING NA

SAMPLING EQUIPMENT USED Vacuume Filt. / ~~S.S. Bailer~~ ~~SY-LINE FILTER~~ VOLUME PURGED NA

FIELD DATA COLLECTION ☐ IN SITU ☑ IN BOTTLE VOA LEVEL(PPM) AMBIENT NA SAMPLE LOCATION NA HEADSPACE NA

SAMPLE PURGE DATA

@ ___ GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL
TEMP ___ °C	TEMP ___ °C	TEMP ___ °C	TEMP ___ °C
SP. COND ___ @25°C	SP. COND ___ @25°C	SP. COND ___ @25°C	SP. COND ___ @25°C
pH ___	pH ___	pH ___	pH ___
Eh ___	Eh ___	Eh ___	Eh ___

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
		40ml	H_2O	No	4°C	VOA - NCLP - COP
		1-liter	H_2O	No	4°C	Ext. Org. - NCLP - COP
		1-liter	H_2O	No	4°C	PEST/PCB NCLP-COP
184		1-liter	H_2O	YES	HNO_3	METALS NCLP-COP
		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/8SED 8140
		1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE - 8150
189		250ml	H_2O	YES	4°C	CHLORIDE/SULFATE
		125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volume = NA

Filter Blank Made up in field with blank water from staging area (Vacuume filter)

SAMPLER B. Gschwend / J. McMullen

*HES COMPANY CHEM CODE: JFBL-1XX01

ECJORDANCO

PAGE ____ OF ____

GROUNDWATER FIELD SAMPLE DATA RECORD

PROJECT STEWART ANG TASK No. 1 JOB NO 5139-00

STATION NO/LOCATION TB-1 DATE 9.2.87

SKETCH ON BACK YES ☐ NO ☒ PHOTOGRAPHS YES ☐ NO ☒ ROLL NO/EXPOSURE NO NA

FIELD DATA TIME: START 12:00 AIR TEMP 75°F

END 12:15 WEATHER Sunny

WATER DEPTH NA ☐ TOP WELL ☐ TOP CASING WELL DEPTH NA WELL DIAM. NA WELL MATERIAL NA

WELL STICK-UP NA WELL/CASING NA

SAMPLING EQUIPMENT USED NA / ~~S.S. Bailer~~ ~~IN-LINE FILTER~~ VOLUME PURGED NA

FIELD DATA COLLECTION ☐ IN SITU ☒ IN BOTTLE NA VOA LEVEL(PPM) AMBIENT NA SAMPLE LOCATION — HEADSPACE —

SAMPLE PURGE DATA

@ — GAL	@ — GAL	@ — GAL	@ — GAL
TEMP — °C	TEMP — °C	TEMP — °C	TEMP — °C
SP. COND — @25°C	SP. COND — @25°C	SP. COND — @25°C	SP. COND — @25°C
pH —	pH —	pH —	pH —
Eh —	Eh —	Eh —	Eh —

BOTTLE ID	LAB ID	VOL	MATERIAL	FILTERED	PRES./VOL.	ANALYSIS REQUESTED
191, 192		40ml	H_2O	No	4°C	VOA - NCLP - COP
—		1-liter	H_2O	No	4°C	~~Ext. Org. - NCLP-COP~~
—		1-liter	H_2O	No	4°C	~~PEST/PCB NCLP-COP~~
—		1-liter	H_2O	YES	HNO3	~~METALS NCLP-COP~~
—		1-liter	H_2O	No	4°C	ORGANOPHOSPHORUS PEST. 8140/8320-8140
—		1-liter	H_2O	No	4°C	CHLORINATED HERBICIDE -8150
—		250ml	H_2O	YES	4°C	CHLORIDE/SULFATES
—		125ml	H_2O	No	4°C	FLUORIDE

REMARKS/OBSERVATIONS 1 Volumes = NA

Trip Blanks done in field with E.C. Jordan
Blank Water from Staging Area.

SAMPLER B. Schmand / J McMullen

USE CHAIN OF CUSTODY CODE: JTBL-1XX01

APPENDIX G

DAMES AND MOORE - BORING AND MONITORING WELL DATA

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

SOIL CLASSIFICATION CHART

UNIFIED SOIL CLASSIFICATION SYSTEM

BARRES & MOORE

FIGURE A-1

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-1
SURFACE ELEV: 436.0'

DRILLING METHOD: Hollow stem auger

SAMPLING METHOD: Split spoon

DATE STARTED: 9/12/85
DATE FINISHED: 9/16/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
1	40	SS	0		Brown moist silt and fine to medium sand, little medium gravel
			1	SM	grading to brownish-gray, silt, dry,
			2	ML	some fine gravel and coarse sand, little coarse to medium gravel
			3		Hnu=0ppm
			4		Gray dry silt, litle fine to medium gravel, little sand
2	103	SS	5		Hnu=0ppm
			6		
			7		
			8		boulder drilled at 8.0'
			9		
3	88	SS	10		grades to some sand, little fine to coarse gravel
			11		Hnu=0ppm
			12	ML	
			13		
			14		
4	128	SS	15		cobble at 15.0'
			16		
			17		
			18		
			19		
5	77	SS	20		

FIGURE A-2A

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-1

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			20		
			21		
			22		
			23		boulder at 23.0'
			24		
6	100	SS	25		grades to little sand Hnu=0ppm
			26		
			27		
			28	ML	
			29		
7	146	SS	30		Hnu=<1ppm
			31		
			32		
			33		
			34		
8	80/2"	SS	35		Hnu=<1ppm
			36		
			37		
			38		Brown with iron staining, fissile, weathered shale, dry to moist, wet zone from 40'1" to 40'2", some silt
			39		
9	100/3"	SS	40		

FIGURE A-28

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-1

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			40	WEATHERED ROCK	
			41		
			42		
			43		
			44		
10	100/5"	SS	45		grades to gray, dry with iron staining
			46		
			47		
			48		Bedrock, spoon refusal, no sample Hnu=0ppm
			49		
	100/0"		50		Boring terminated at a depth of 50.0 feet on 9/16/85

NOTE: Hnu readings are field detections of organic vapors given off by soil samples; measured with an Hnu photoionization meter set to a 9.8 span.

FIGURE A-2C

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-2
SURFACE ELEV: 433.5'

DRILLING METHOD: Hollow stem auger

SAMPLING METHOD: Split spoon

DATE STARTED: 9/18/85
DATE FINISHED: 9/19/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
1	32	SS	0		Brown, mottled, dry to moist, fine sand and silt, little fine gravel
			1		Hnu=0ppm
			2	SP	
			3		
			4		
2	100	SS	5	SM	Brown, dry fine sand, little fine to medium gravel
			6		Hnu=0ppm
			7		Brown, moist, fine sand, little medium to coarse sand and fine gravel, trace silt
			8		Hnu=0ppm
			9	SP	
3	92	SS	10		grades to dry, less gravel
			11		
			12		
			13		Gray, moist, silt, little fine to medium gravel, little fine sand
			14		Hnu=0ppm
4	75	SS	15		
			16		
			17	ML	
			18		
			19		
			20		

FIGURE A-3A

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-2

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			20		no soil sample; cuttings are gray silt drilled boulder at 21 feet
	100/5"		21		
			22		
			23		
			24		
5	80	SS	25		grades to dry to slightly moist, little fine to medium sand, little fine to coarse gravel Hnu=10ppm
			26		
			27	ML	
			28		
			29		
6	20/1"	SS	30		no soil sample; cuttings are gray silt
			31		
			32		
			33		
			34		
7	100/1"	SS	35		Brown-gray with iron stains, weathered, slightly, metamorphosed shale Hnu=200ppm
			36		
			37	ROCK	
			38		
			39		
8	100/1/2"	SS	40		Hnu=8ppm

FIGURE A-3B

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-2

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			40		
			41		
			42		
			43		
			44		
	100/0"	SS	45	BEDROCK	Spoon bounces; bedrock
			46		
			47		
			48		
			49		
	50/0"		50		Boring terminated at a depth of 50.0 feet on 9/19/85

NOTE: Hnu readings are field detections of organic vapors given off by soil samples; measured with an Hnu photoionozation meter set to a 9.8 span.

FIGURE A-3C

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-3
SURFACE ELEV: 432.6'

DRILLING METHOD: Hollow stem auger

SAMPLING METHOD: Split sploon

DATE STARTED: 9/24/85
DATE FINISHED: 9/26/85

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
1	46	SS	0		Gray-brown, dry to slightly moist, mottled fine sand, some fine to medium gravel, little silt
			1		Hnu=0ppm
			2		
			3		boulder at 3.0'
			4		
2	31	SS	5		grades to mottled, tan-light brown, moist
			6		Hnu=0ppm
			7		
			8	SM	boulder at 8.0'
			9		
3	74	SS	10		Hnu=0ppm
			11		
			12		boulder at 12.0'
			13		
			14		
4	52	SS	15		Tan to light brown, moist, fine sand, some fine to coarse gravel, trace silt
			16		Hnu=0ppm
			17		
			18	SP	
			19		
5	86	SS	20	SM	Yellow-tan, dry to slightly moist, fine

FIGURE A-4A

DAMES & MOORE
BORING LOG

CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-3

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			20	SM	sand and silt, little fine to medium gravel
			21		grades to brown, dry, no gravel
			22		grades to gray slightly moist
			23		Gray, slightly moist silt, some fine to medium gravel, some fine sand
			24		Hnu=0ppm
6	50/6"	SS	25		
			26		
			27		
			28		
			29		
7	50/3"	SS	30		cobble at 30.0'
			31	ML	grades to dry, little fine to coarse gravel
			32		Hnu=0ppm
			33		
			34		
8	70/1/2"	SS	35		grades to no gravel
			36		Hnu=0ppm
			37		
			38		
			39		
	50/1/2"		40		grades to light gray silt and gravel

FIGURE A-4B

DAMES & MOORE
BORING LOG

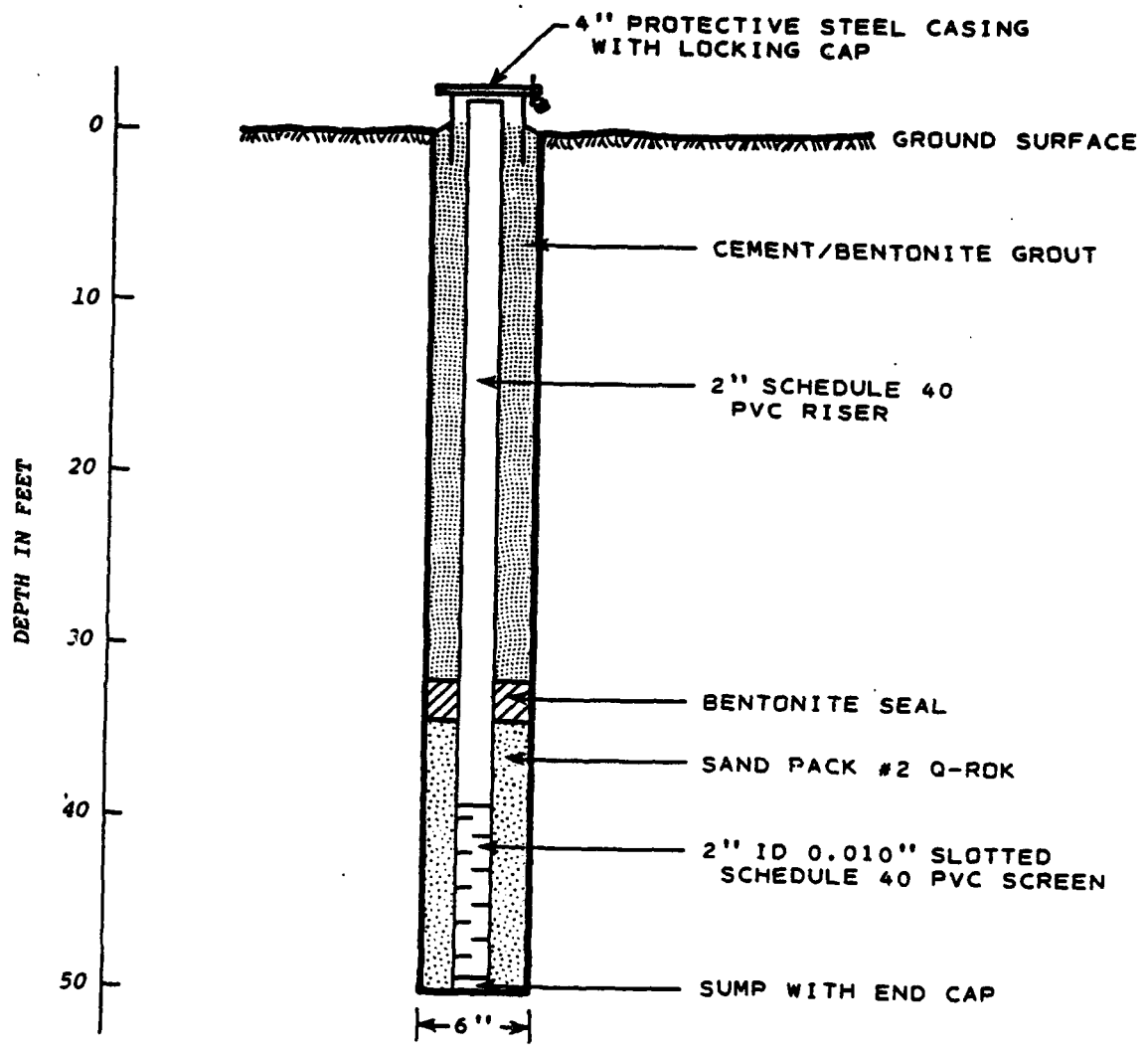
CLIENT: STEWART AIR NATIONAL GUARD BASE
LOCATION: NEWBURGH, NY

BORING NO.: SW-3

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT.	SOIL GRAPH	MATERIAL DESCRIPTION
			40		Hnu=0ppm
			41	ML	
			42		
			43		Weathered rock Hnu=0ppm
			44		
9	70/1"	SS	45		drilled easy from 44 1/2 to 45 feet Shale bedrock Hnu=0ppm
			46		
			47		
			48		
			49		Boring terminated at a depth of 49.5 feet on 9/26/85
			50		

NOTE: Hnu readings are field detections of organic vapors given off by soil samples; meadured with an Hnu photoionozation meter set to a 9.8 span.

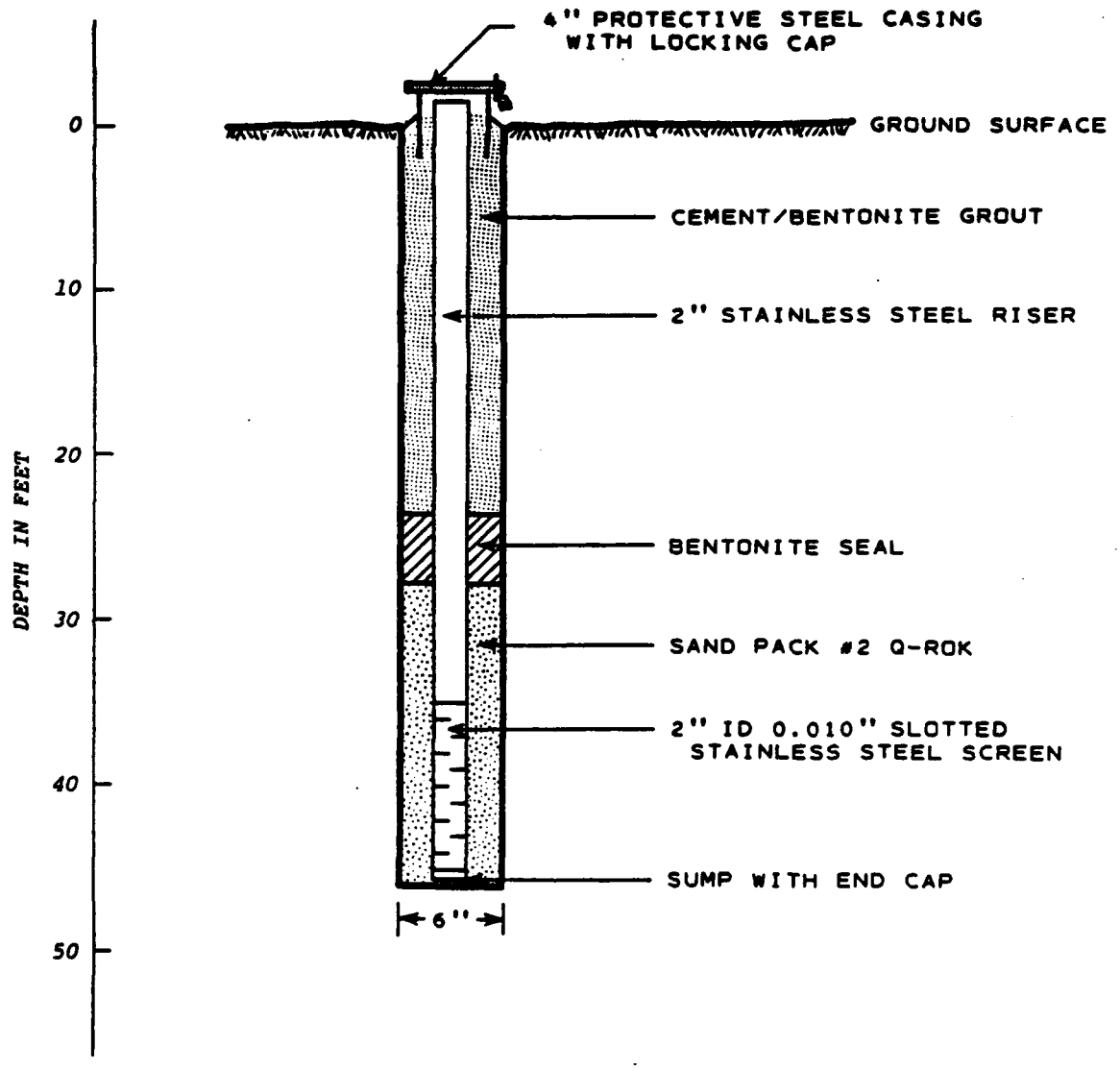
FIGURE A-4C



WELL SCHEMATIC
SW-1

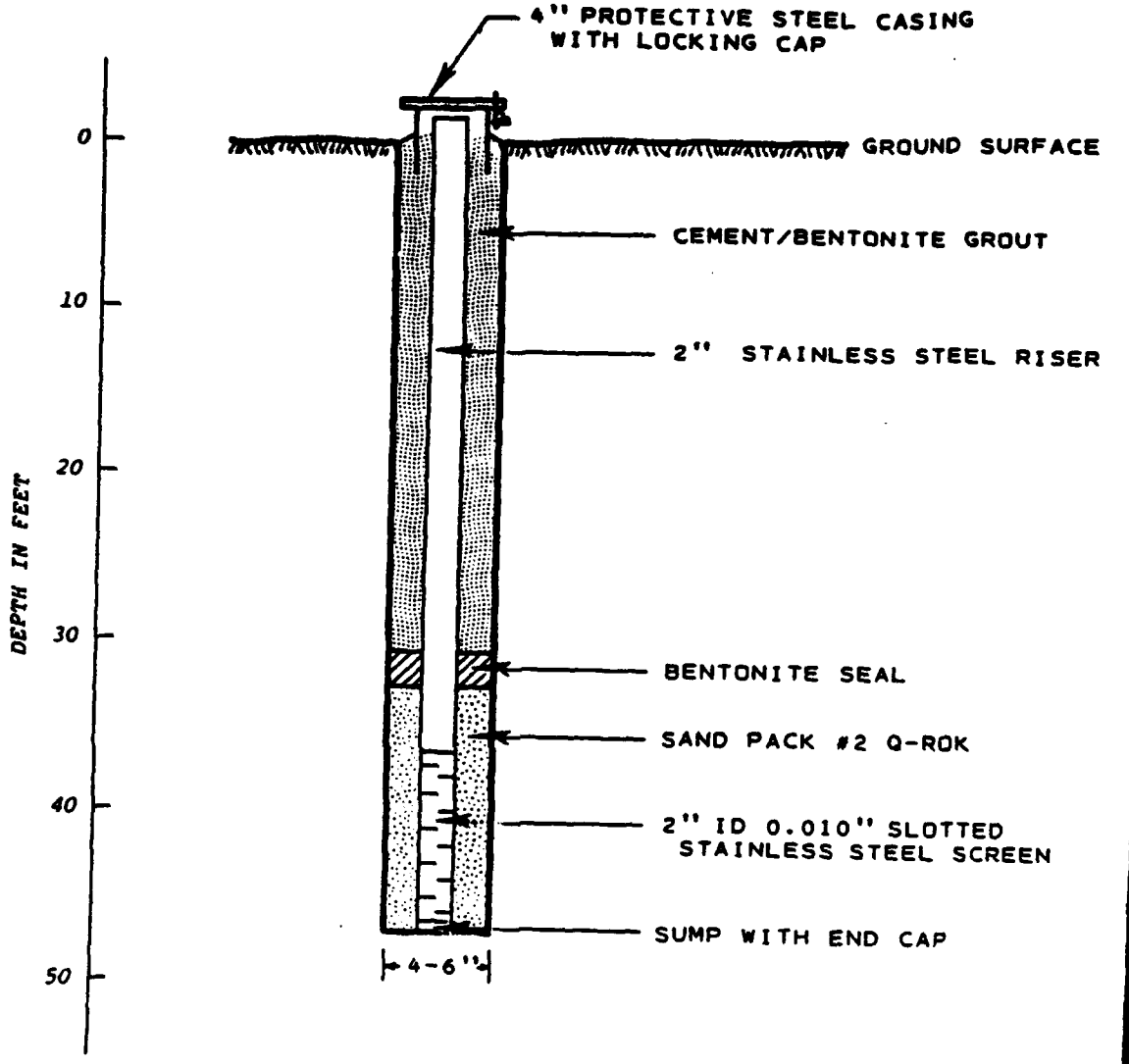
BAKER & MOORE

FIGURE A-5



WELL SCHEMATIC
SW-2

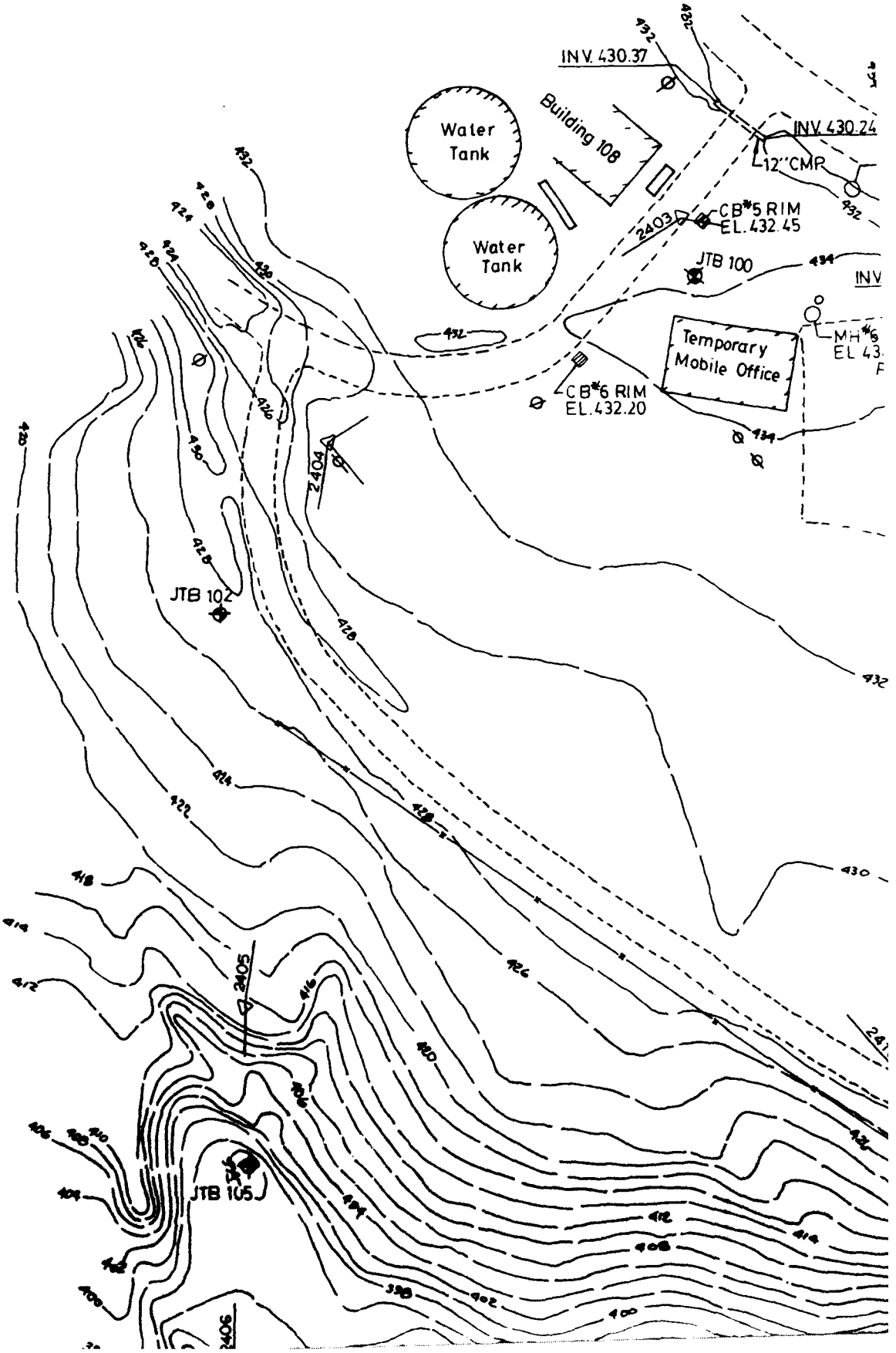
FIGURE A-6



WELL SCHEMATIC
SW-3

DAMES & MOORE

FIGURE A-7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Water Tank
Building 108
INV. 430.24
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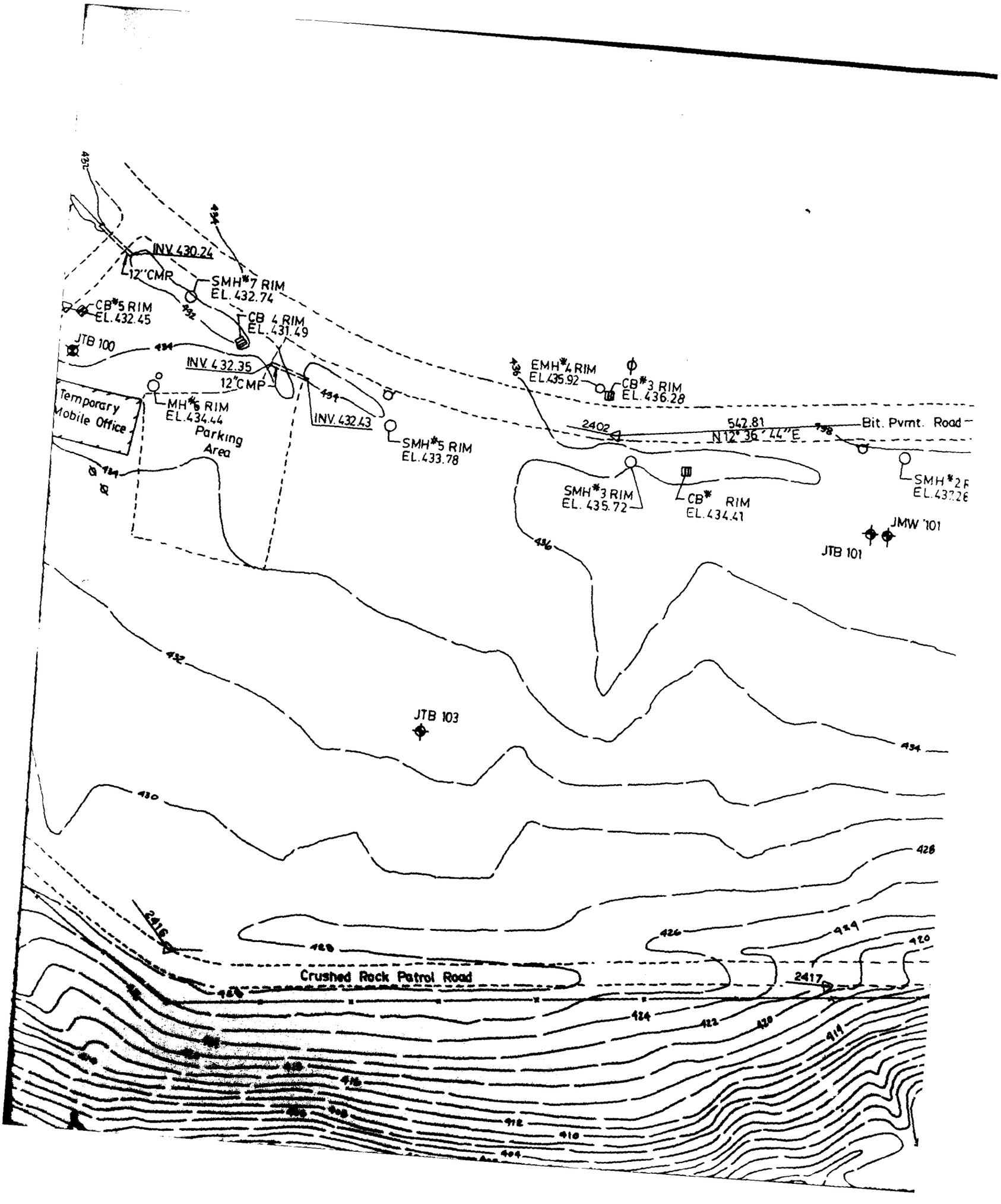
CB #5 RIM EL. 432.45
2403
Water Tank
JTB 100
Temporary Mobile Office
CB #6 RIM EL. 432.20
2404
JTB 102
2405
JTB 105
2406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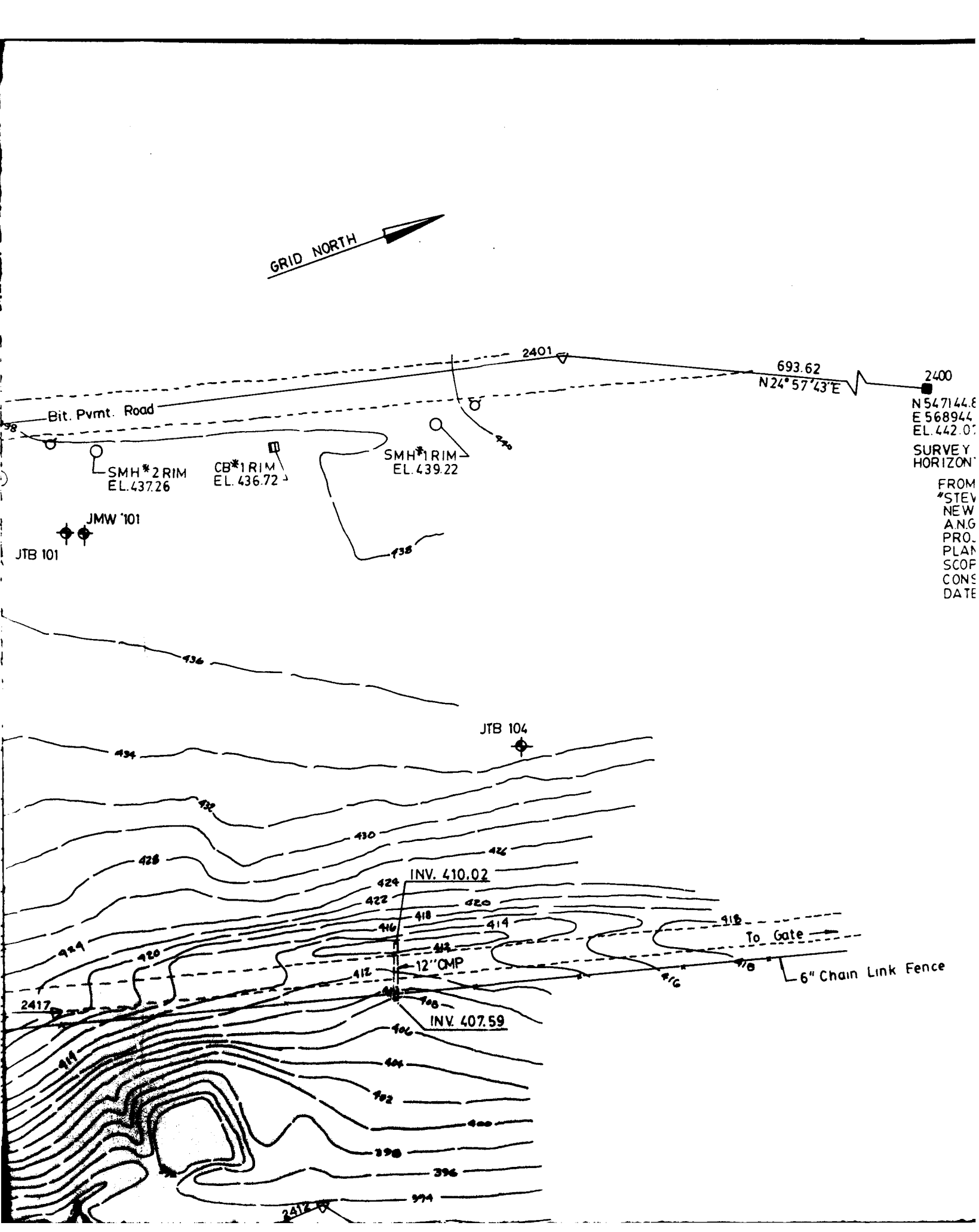
12" CMP
SMH* 7 RIM
EL. 432.74
CB* 5 RIM
EL. 432.45
CB 4 RIM
EL. 431.49
JTB 100
INV 432.35
12" CMP
Temporary
Mobile Office
MH* 6 RIM
EL. 434.44
Parking
Area
INV. 432.43
SMH* 5 RIM
EL. 433.78
EMH* 4 RIM
EL. 435.92
CB* 3 RIM
EL. 436.28
2402
542.81
N 12° 36' 44" E
Bit. Pvmt. Road
SMH* 3 RIM
EL. 435.72
CB* RIM
EL. 434.41
SMH* 2 R
EL. 437.26
JMW '101
JTB 101
JTB 103
2416
Crushed Rock Patrol Road
2417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2400
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SURVEY
HORIZON
FROM
"STEV
NEW
A.N.G
PRO
PLAN
SCOP
CONS
DATE
Bit. Pvmt. Road
SMH*2 RIM
EL. 437.26
CB*1 RIM
EL. 436.72
SMH*1 RIM
EL. 439.22
JMW '101
JTB 101
JTB 104
INV. 410.02
12" CMP
INV. 407.59
To Gate
6" Chain Link Fence
2417
436
434
432
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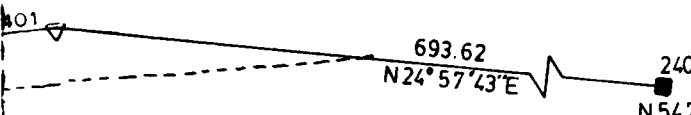

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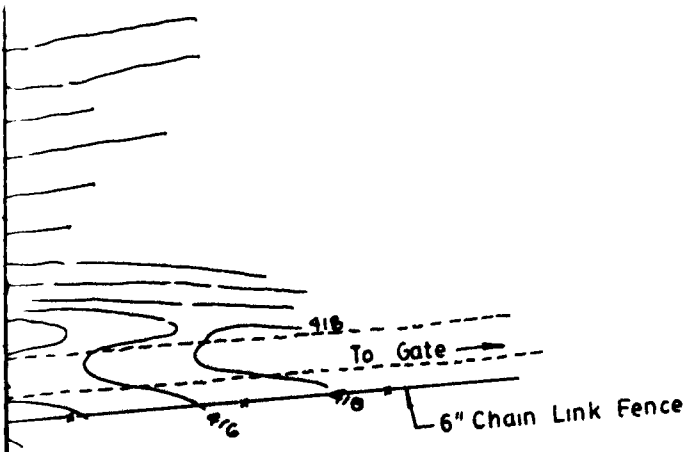
E 568944.85
EL. 442.07

SURVEY MONUMENT USED FOR HORIZONTAL & VERTICAL CONTROL

FROM PLAN,
"STEWART INT. AIRPORT
NEWBURGH, NEW YORK
A.N.G. & USMCR INSTALLATION
PROJECT NO. 43164 (B) SITE
PLAN PREPARATION PROJECT
SCOPE. TRANSPLAN ENGINEERING
CONSULTING ENGINEERS SHT.2
DATED 2/24/86"



STEWART A.

WELL INDENT.	GROUND ELEV.	JTB AND JMW F TOP RIS
JTB 104	435.54	A=437.62 B=4
JMW 101	437.83	440.00
JTB 101	437.64	A=439.50 B=4
JTB 103	432.54	A=434.56 B=4
JTB 100	433.93	A=436.06 B=4
JTB 102	427.62	A=430.27 B=4
JTB 105	392.69	A=394.23 B=
JMW 107	364.14	367.21
JTB 107	364.79	A=367.15 B=
JMW 108	373.28	370.73
JTB 108	372.28	A=370.10 B=
JMW 109	377.02	374.32
JTB 109	371.72	A=374.01 B=
JTB 106	386.97	A=389.78 B=THREADED
JTB 110	361.34	A=THREADED B=363.98

5

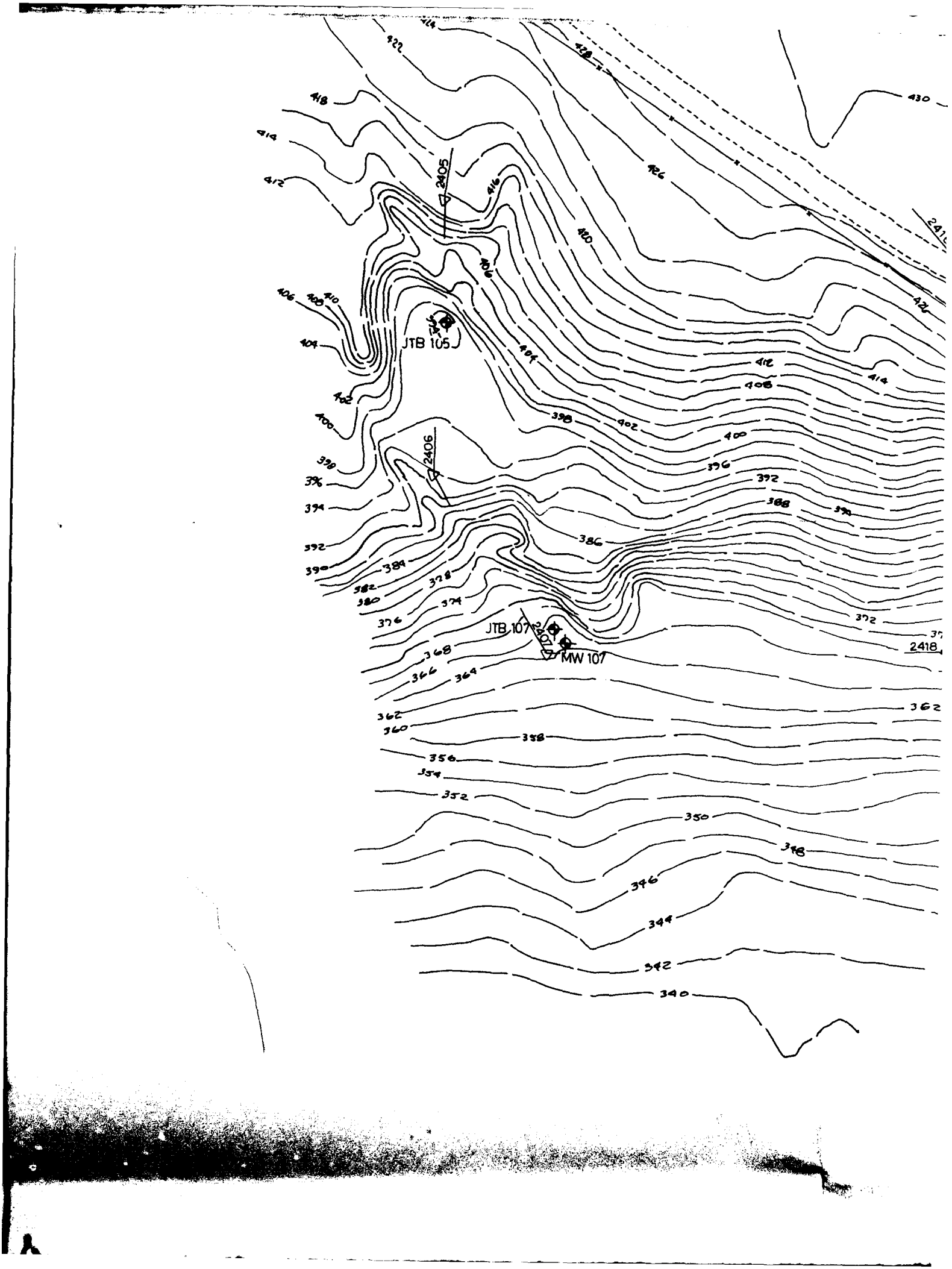
MONUMENT USED FOR
AL & VERTICAL CONTROL

PLAN,
ART INT. AIRPORT
URGH, NEW YORK
& USMCR INSTALLATION
CT NO. 43164(B) SITE
PREPARATION PROJECT
TRANSPLAN ENGINEERING
LTING ENGINEERS SHT.2
2/24/86"

STEWART A.F.B.

JTB AND JMW EKV DATA

WELL INDENT.	GROUND ELEV.	TOP RISER ELEV.	TOP CASING ELEV.
JTB 104	435.54	A=437.62 B=437.69 C=437.69	437.95
JMW 101	437.83	440.00	440.21
JTB 101	437.64	A=439.50 B=439.65	440.15
JTB 103	432.54	A=434.56 B=434.71	435.48
JTB 100	433.93	A=436.06 B=436.29	436.60
JTB 102	427.62	A=430.27 B=430.37 C=430.27	430.36
JTB 105	392.69	A=394.23 B=394.43 C=394.57	394.57
JMW 107	364.14	367.21	367.43
JTB 107	364.79	A=367.15 B=367.22	367.99
JMW 108	373.28	370.73	370.85
JTB 108	372.28	A=370.10 B=370.21	370.25
JMW 109	377.02	374.32	374.45
JTB 109	371.72	A=374.01 B=374.02	374.01
JTB 106	386.97	A=389.78 B=THREADED PIPE 389.88	389.95
JTB 110	361.34	A=THREADED PVC 353.88 B=363.98	364.22


JTB 105
JTB 107
MW 107
2405
2406
2407
2418
414
422
418
430
414
412
416
426
410
406
408
404
402
400
398
396
394
392
390
388
386
384
382
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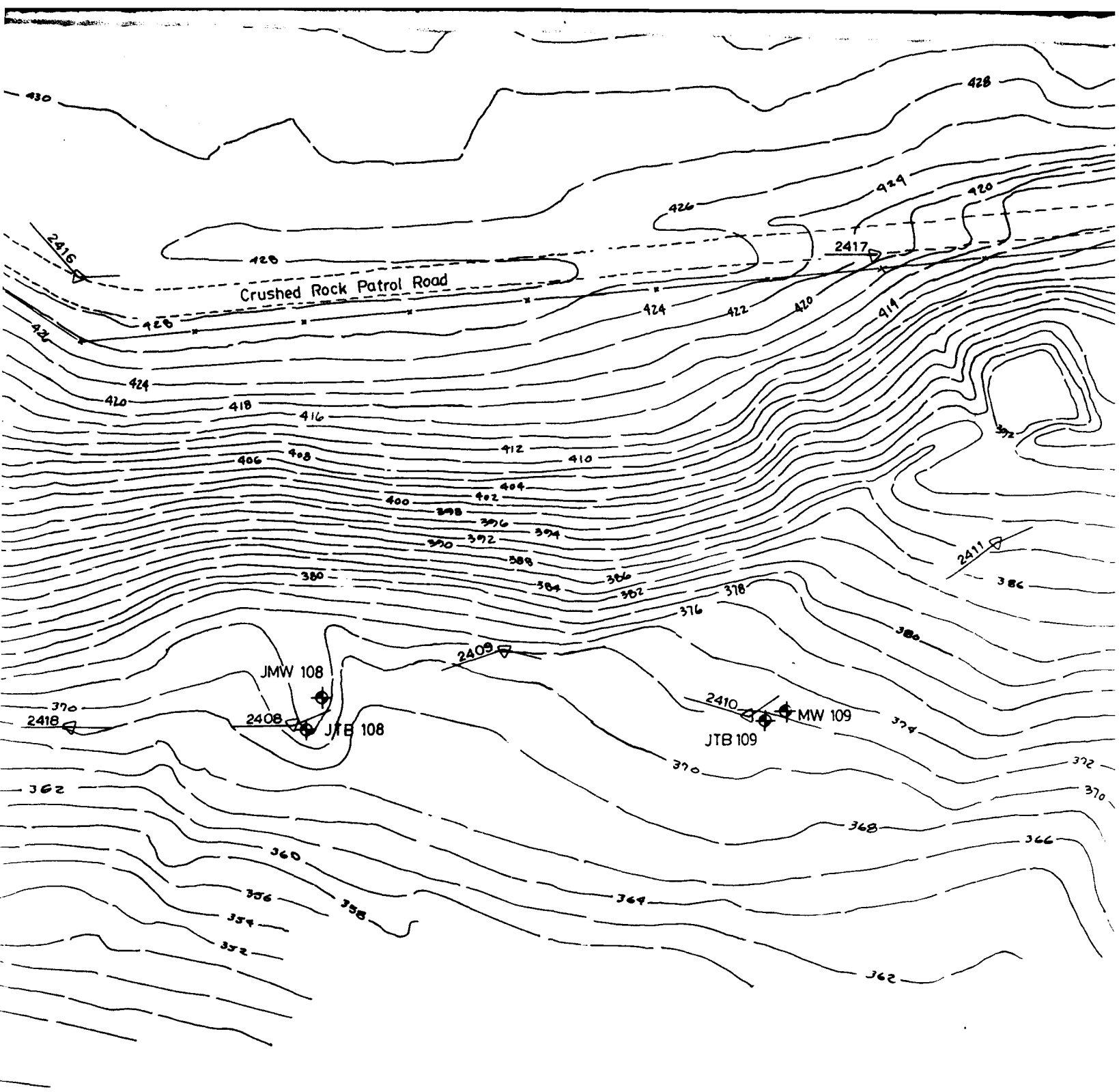
340


Crushed Rock Patrol Road
2416
2417
2418
2409
2408
2410
2411
JMW 108
JTB 108
JTB 109
MW 109
430
428
426
424
422
420
418
416
414
412
410
408
406
404
402
400
398
396
394
392
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384
382
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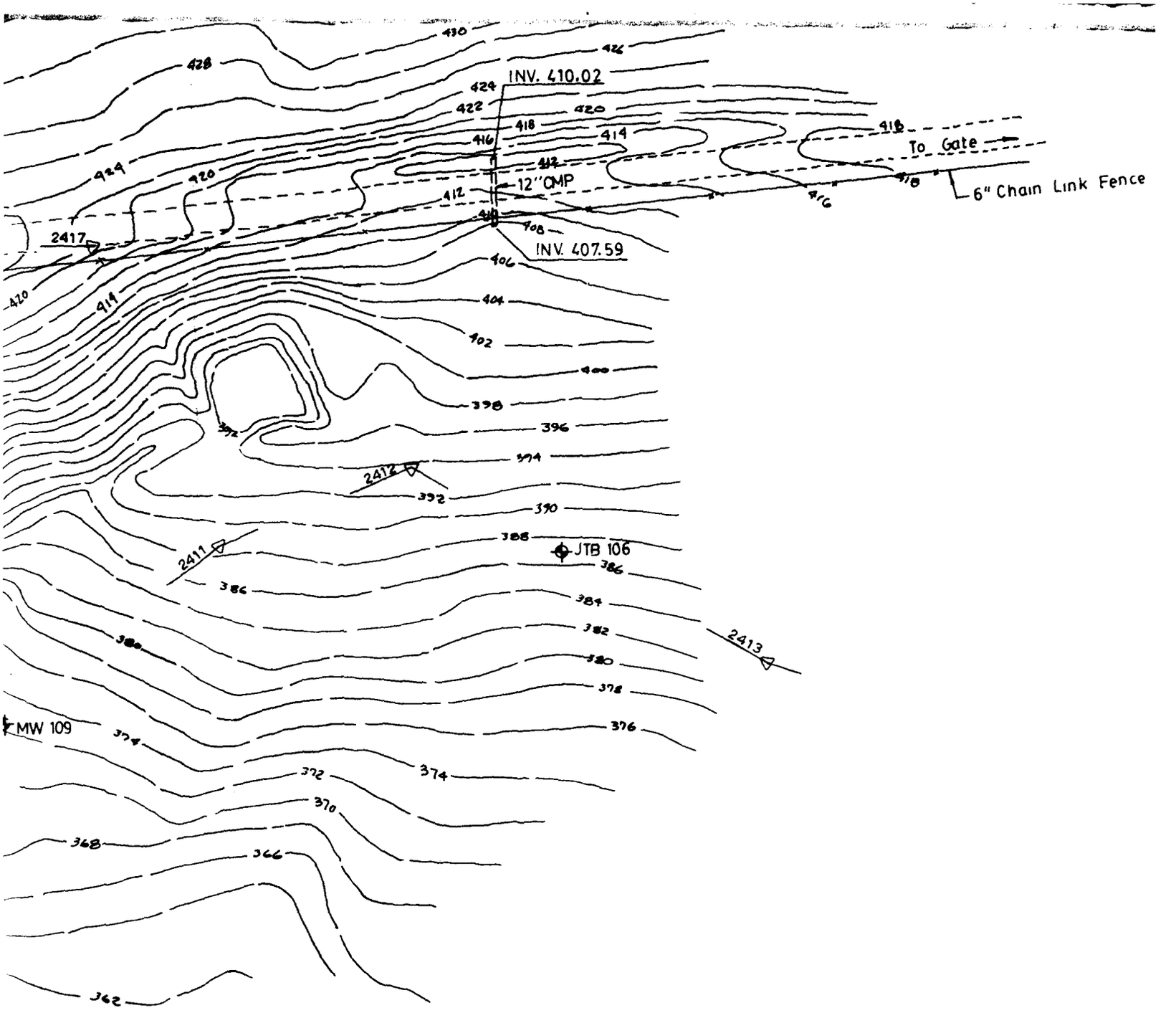
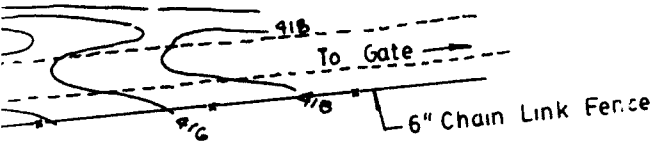
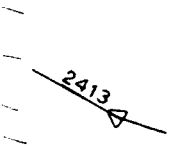
352


INV. 410.02
12" CMP
INV. 407.59
To Gate
6" Chain Link Fence
2417
2412
2411
2413
JTB 106
MW 109
430
428
426
424
422
420
418
416
414
412
410
408
406
404
402
400
398
396
394
392
390
388
386
384
382
380
378
376
374
372
370
368
366
362



JTB 100	433.93	A=436.06 B=436.
JTB 102	427.62	A=430.27 B=430
JTB 105	392.69	A=394.23 B=394
JMW 107	364.14	367.21
JTB 107	364.79	A=367.15 B=367
JMW 108	373.28	370.73
JTB 108	372.28	A=370.10 B=370
JMW 109	377.02	374.32
JTB 109	371.72	A=374.01 B=374
JTB 106	386.97	A=389.78 B=THREADED PIP
JTB 110	361.34	A=THREADED PVC B=363.98



JTB 110

LEGEND:

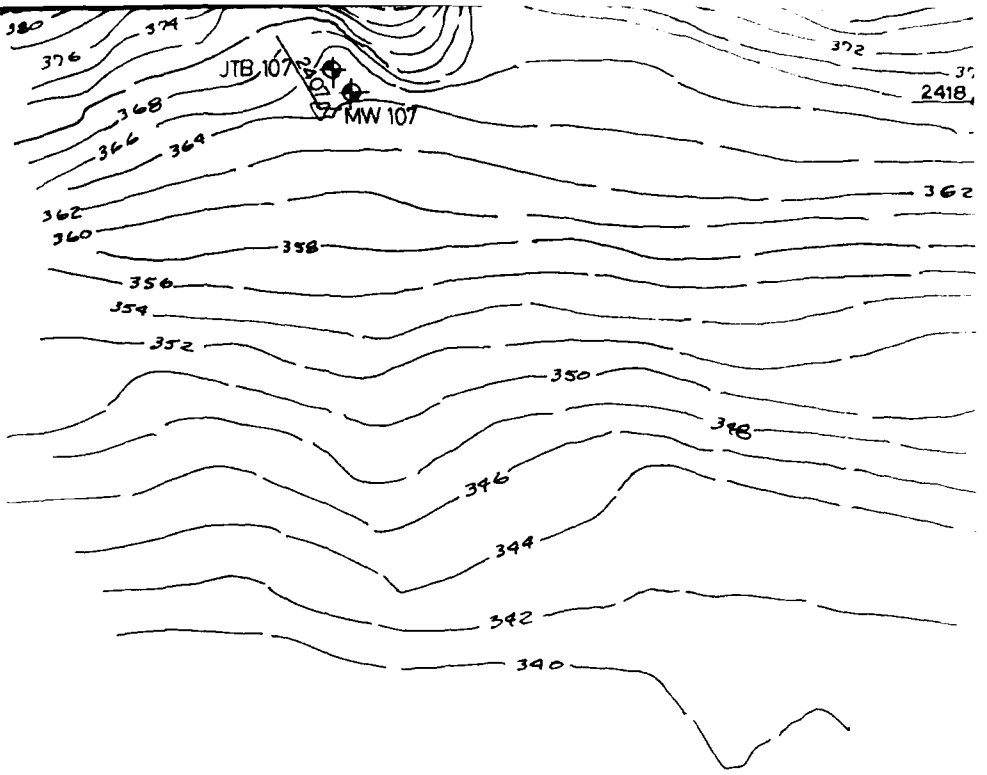
⊕	JTB 107	TEST BORING
⊕	MW 107	MONITORING
	HYDRANT	
	POLE	
	CATCH BASIN	
—x—	FENCE	
	MANHOLE	
2410	HORIZONTAL SURVEY POINT	

JTB 100	433.93	A=436.06 B=436.29	436.60
JTB 102	427.62	A=430.27 B=430.37 C=430.27	430.36
JTB 105	392.69	A=394.23 B=394.43 C=394.57	394.57
JMW 107	364.14	367.21	367.43
JTB 107	364.79	A=367.15 B=367.22	367.99
JMW 108	373.28	370.73	370.85
JTB 108	372.28	A=370.10 B=370.21	370.25
JMW 109	377.02	374.32	374.45
JTB 109	371.72	A=374.01 B=374.02	374.01
JTB 106	386.97	A=389.78 B=THREADED PIPE 389.88	389.95
JTB 110	361.34	A=THREADED PVC 353.88 B=363.98	364.22

LEGEND:

JTB 110

⊕	JTB 107	TEST BORING
⊕	MW 107	MONITORING WELL
	HYDRANT	
	POLE	
■	CATCH BASIN	
—x—	FENCE	
○	MANHOLE	
~~⊙ 2410~~	HORIZONTAL SURVEY POINT	


380
376
374
372
JTB-107
MW 107
2418
368
366
364
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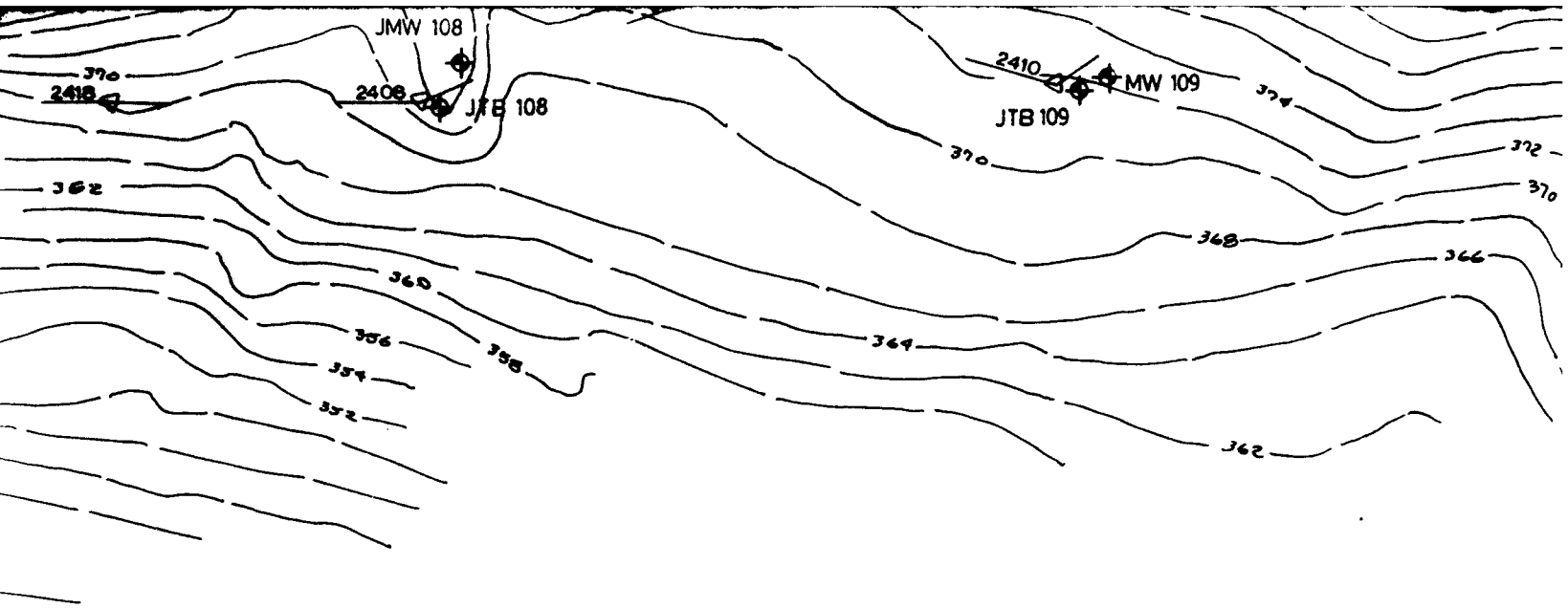
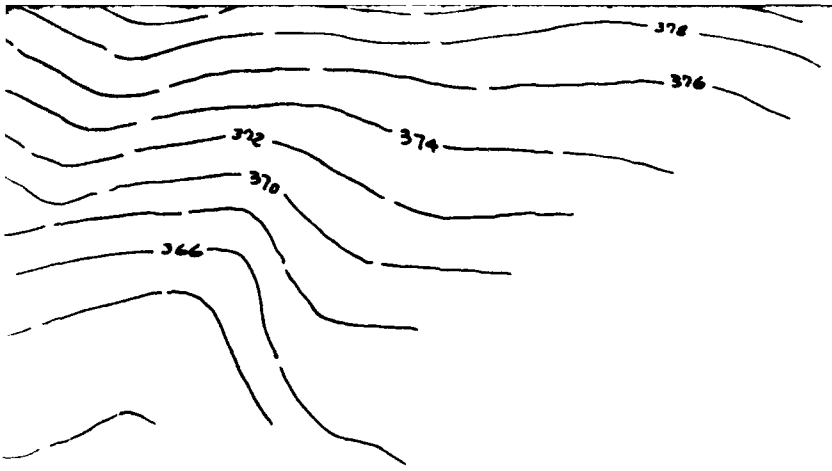
346
344
342
340


JMW 108
2408
JTB 108
2410
MW 109
JTB 109
370
2418
362
360
358
356
354
352
364
368
372
374
366



JTB 110

LEGEND:

JTB 110

⊕	JTB 107	TEST BORING
⊕	MW 107	MONITORING WELL
	HYDRANT	
	POLE	
■	CATCH BASIN	
—×—	FENCE	
○	MANHOLE	
△ 2410	HORIZONTAL SURVEY POINT	

NCQ

DESIGN		
DRAWN		11-16-87
CHKD.		
[illegible]		
[illegible]		
[illegible]		

TITLE STEWART INTERNATIONAL AIRPORT
NEWBURGH, NEW YORK

SITE CONDITIONS PLAN