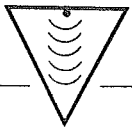


II-8



**GEO-RECOVERY SYSTEMS, INC.**

400 Corporate Circle, Suite B • Golden, Colorado 80401 • (303) 279-0939 • Fax (303) 279-0938

May 22, 1996

Mr. Brandy Gilmore  
Colorado Department of Transportation  
Materials Lab  
4340 East Louisiana Avenue  
Denver, Colorado 80222

Re: Project Report: Ground Penetrating Radar Survey:  
Mine Drift Location, Interstate 70, East of Hidden  
Valley Exit

Geo-Recovery Systems performed a ground penetrating radar (GPR) survey at the referenced project site on May 14, 1995. The purpose of the survey was to identify mine drifts in the alluvial material underlying Interstate 70 east of the Hidden Valley exit. The investigation was performed approximately one week after a sinkhole developed in a portion of the I-70 in the east bound passing lane.

**EQUIPMENT**

A GSSI Subsurface Interface Radar System-8 with 300 MHz and a 80 MHz antennas were fielded to acquire the radar data. Subsequent field tests concluded the 80 MHz antenna yielded the desired resolution and depth of penetration to accomplish the task objectives.

**DISCUSSION**

Surveyed Area

The GPR survey starts approximately one half of a mile east of mile marker 243, extending for 2000 feet east of that point and includes the recent sinkhole area. The limits of the survey and station locations (in 50 foot increments) are depicted on the

Mr. Brandy Gilmore  
Colorado Department of Transportation  
Page 2

roadway in yellow paint. GPR data was collected in the travel and passing lanes in both the east and west bound directions.

To expedite data collection, GPR profiles were collected continuously in each lane over the entire 2000 foot survey length. Each lane was driven with the GPR system and operator residing in the van with the antenna and an operator following approximately 30 feet behind the van. To maintain a lateral location within the lanes, the outside wheel of the antenna followed the inside and outside shoulder line of each lane.

#### Findings

Numerous void-like anomalies were identified during the survey. At the time the survey was performed, the locations of two of the most apparent anomalies observed were painted on the pavement with green paint. These anomalies are located in the east bound travel and passing lanes at 297 and 895 feet, respectively (Figures 6 and 4).

Figure 1 through Figure 9 represent sections of the GPR profiles containing anomalies of potential interest as indicated in Table 1. We believe that the anomalies identified in this report warrant verification by drilling.

Thank you for the opportunity to provide these services for CDOT. Please call if you have any questions, or require additional information.

Sincerely,

GEO-RECOVERY SYSTEMS, INC.

Kevin Taylor, P.G.

Vice President

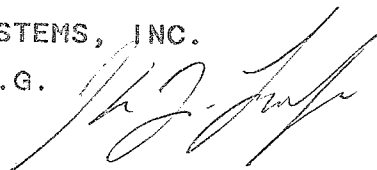


TABLE-1  
 LIST OF GPR ANOMALIES  
 AS IDENTIFIED WITH THE 80 MHZ. ANTENNA

<u>DIRECTION</u>	<u>LANE</u>	<u>LOCATION (In Ft.)</u>	<u>COMMENTS</u>
East Bound	Travel	132 Ft.	
		297	Painted on highway
		402	12 Ft. East of culvert
East Bound	Passing	407	17 Ft. East of culvert
		265 to 300 Ft.	Area looks disturbed
		403	8 Ft. east of culvert
		668	Small deep anomaly
East Bound	Passing	895	Painted on highway
		685 Ft.	
West Bound	Passing	685 Ft.	

250

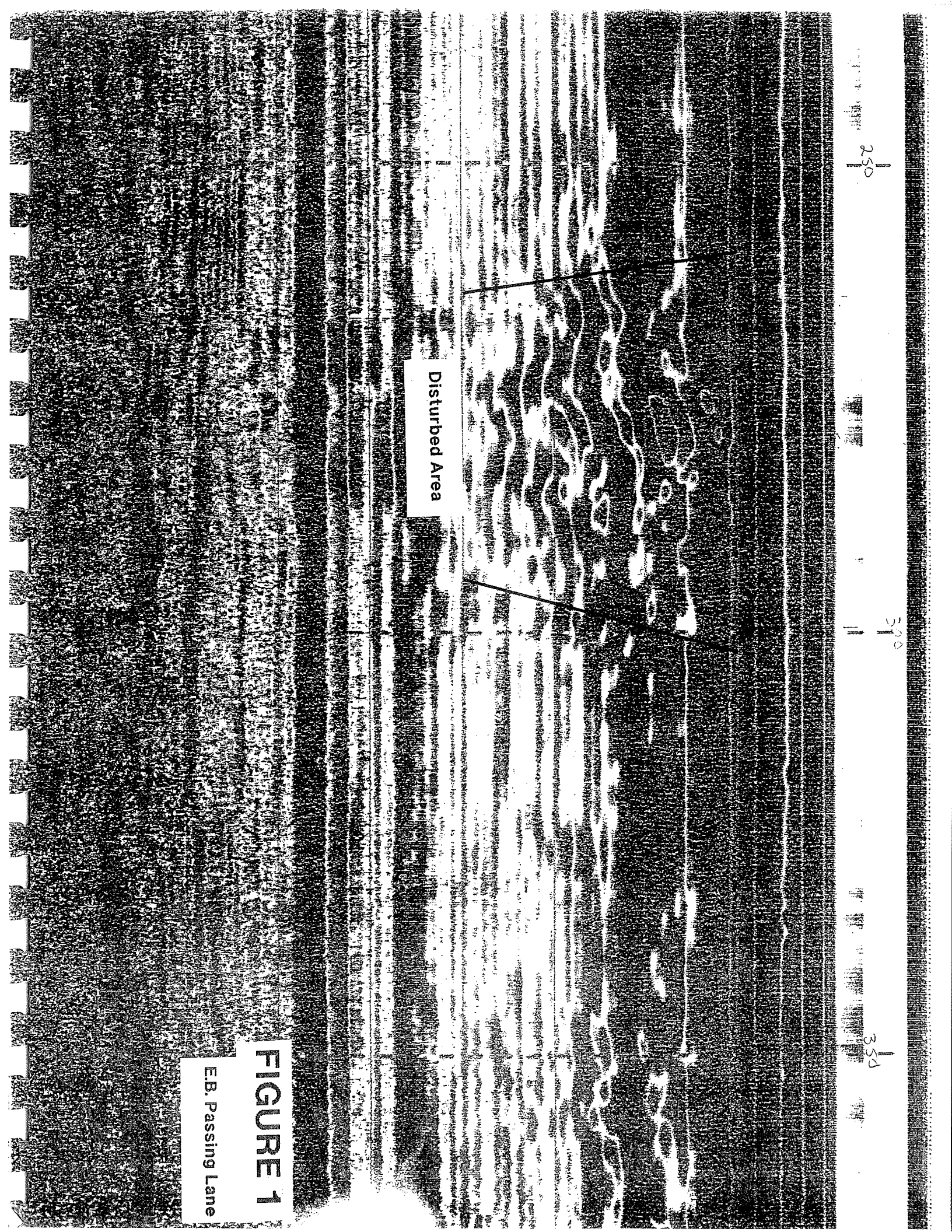
590

350

Disturbed Area

FIGURE 1

EB, Passing Lane



350

400

Culvert



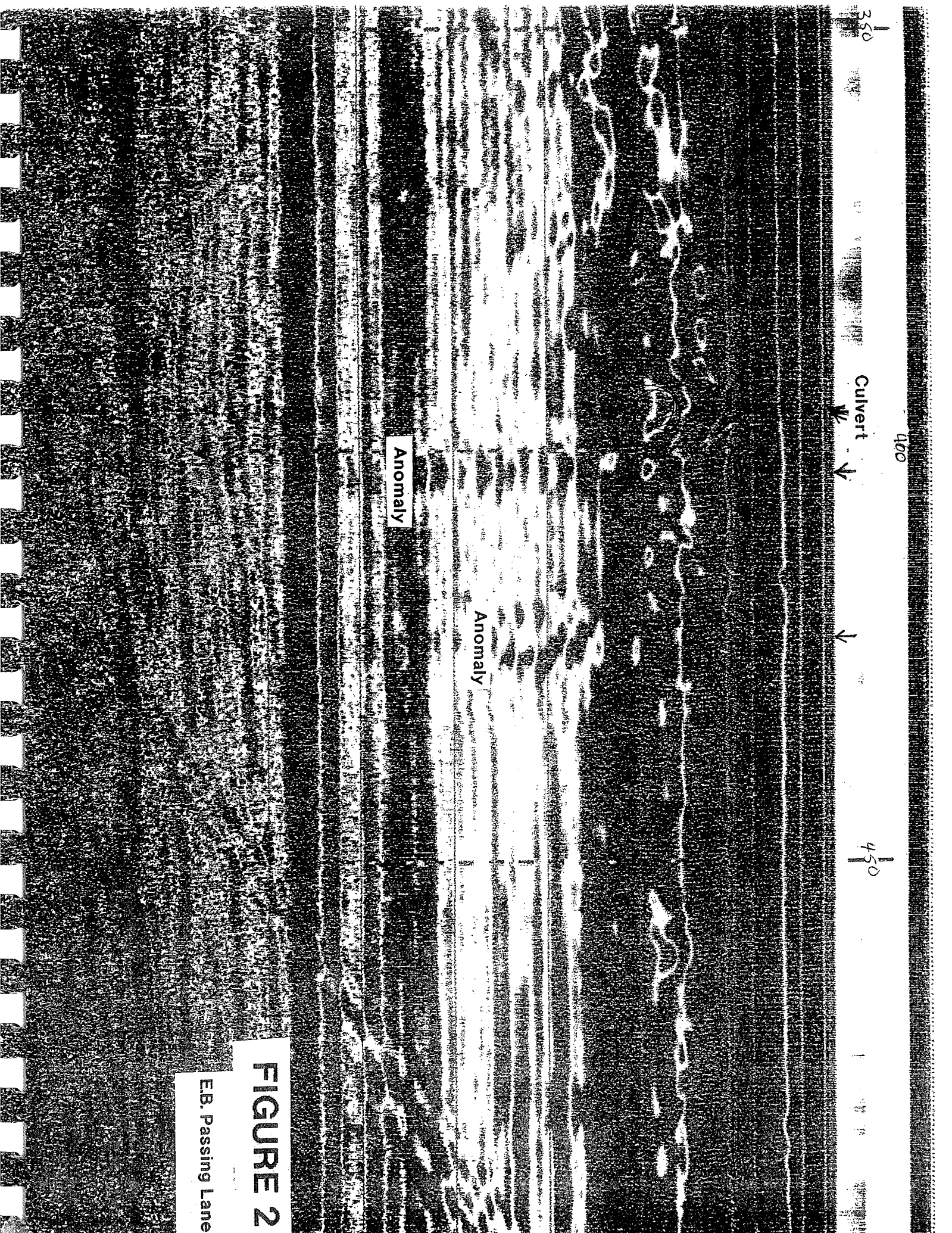
450

Anomaly

Anomaly

FIGURE 2

EB. Passing Lane



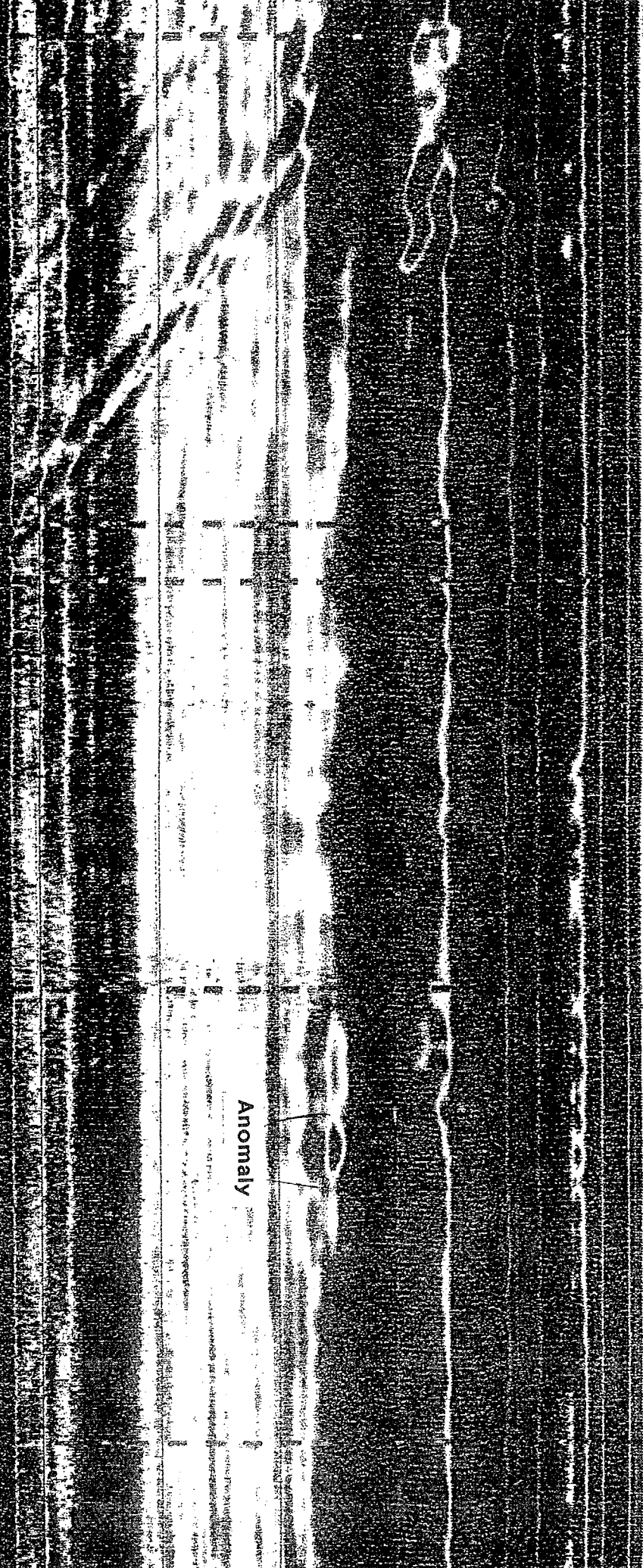
550

600

650



700



Anomaly

**FIGURE 3**

EB Passing Lane

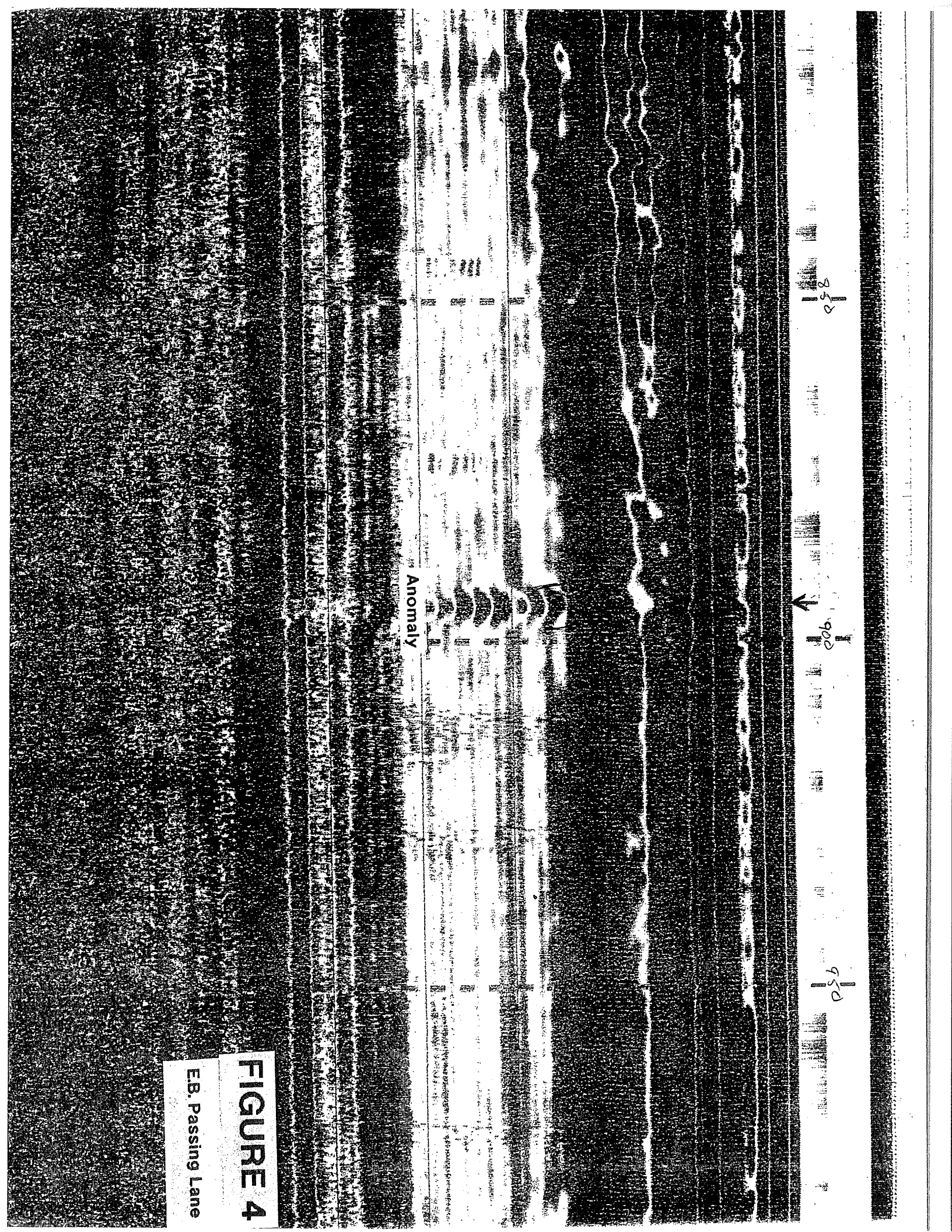
850

↑ 900

950

Anomaly

**FIGURE 4**  
EB, Passing Lane



100



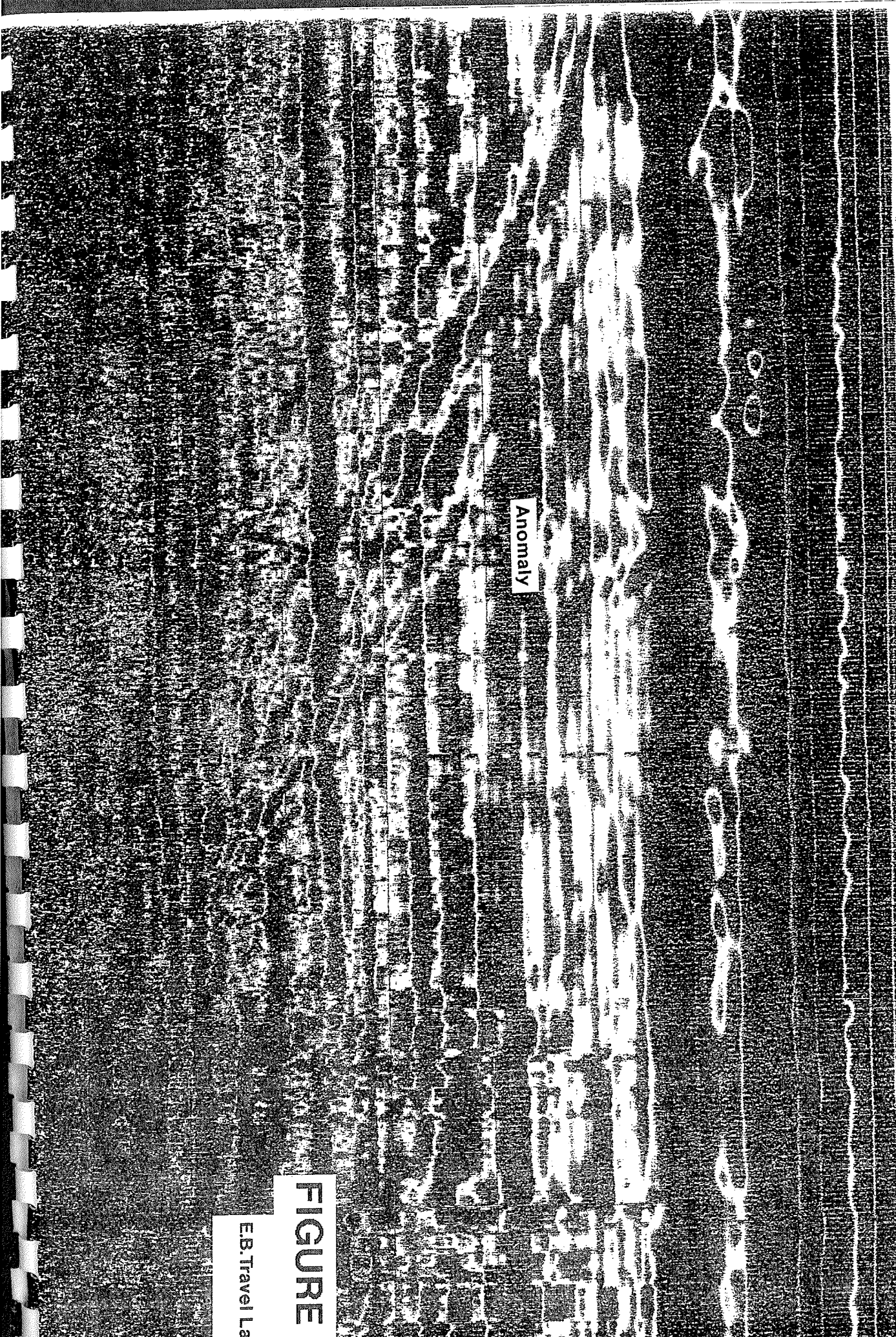
150

200

Anomaly

FIGURE 4

E.B. Travel Log





250

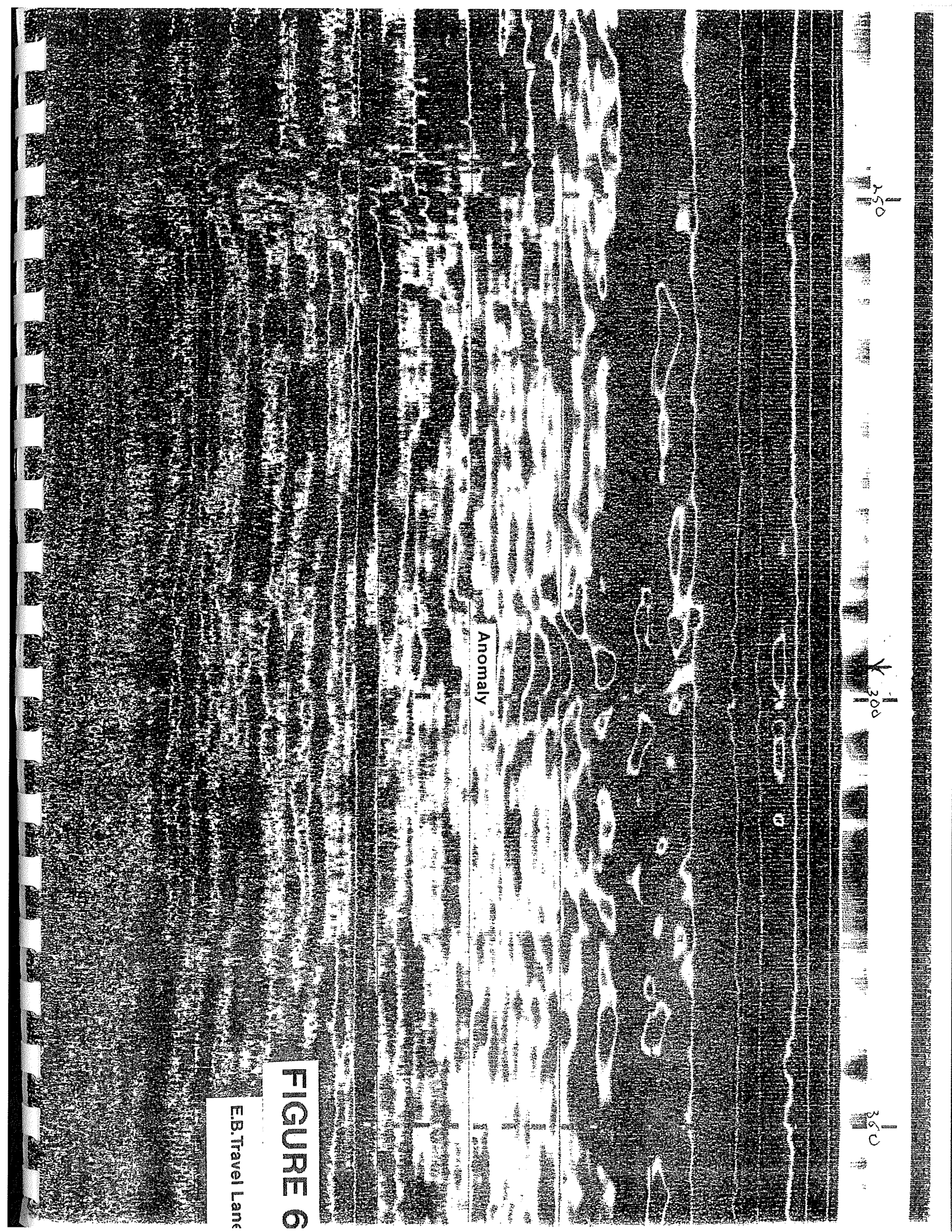
300

350

Anomaly

FIGURE 6

E.B. Travel Lane



390

400

450

500

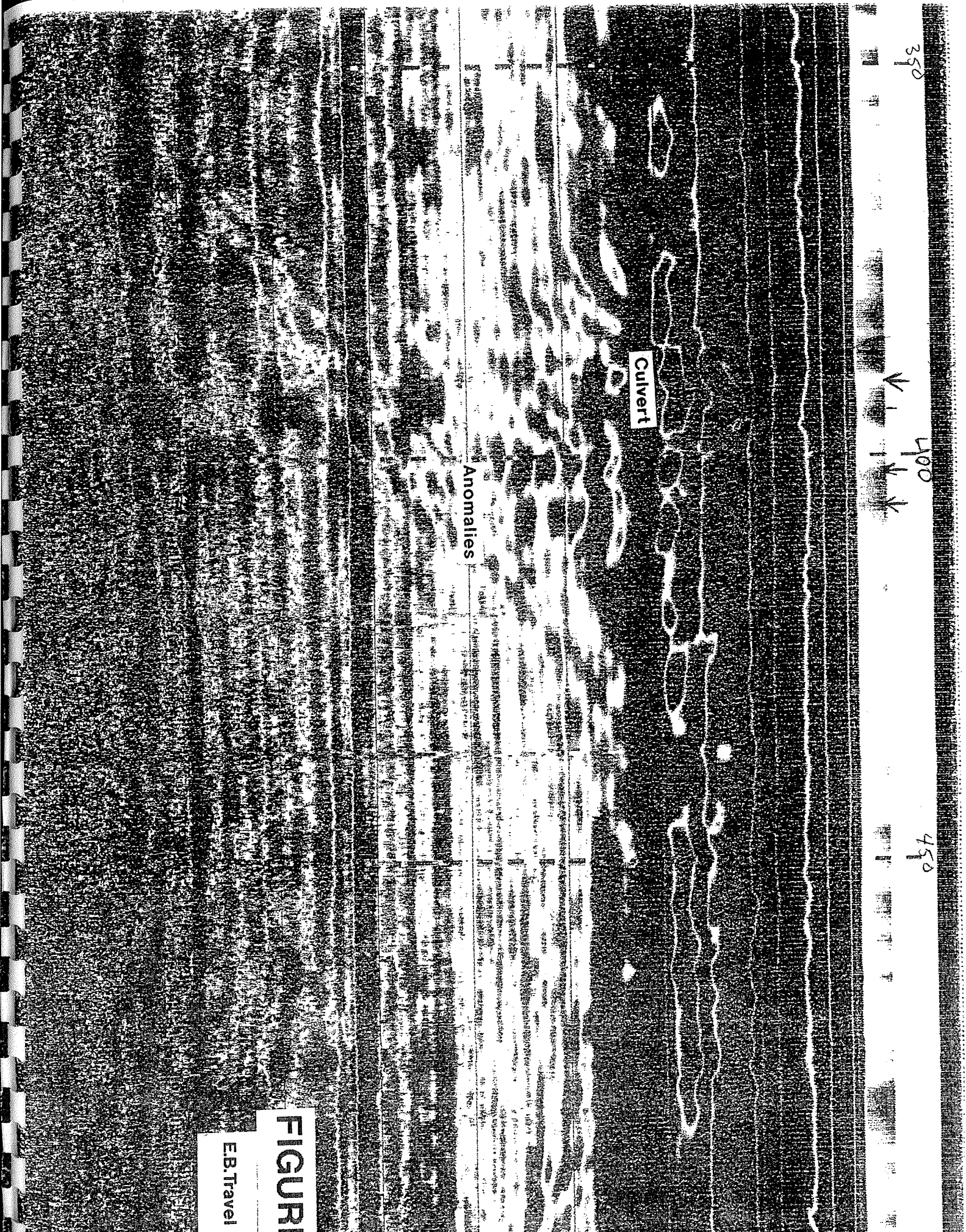


Culvert

Anomalies

FIGURE

EB Travel La



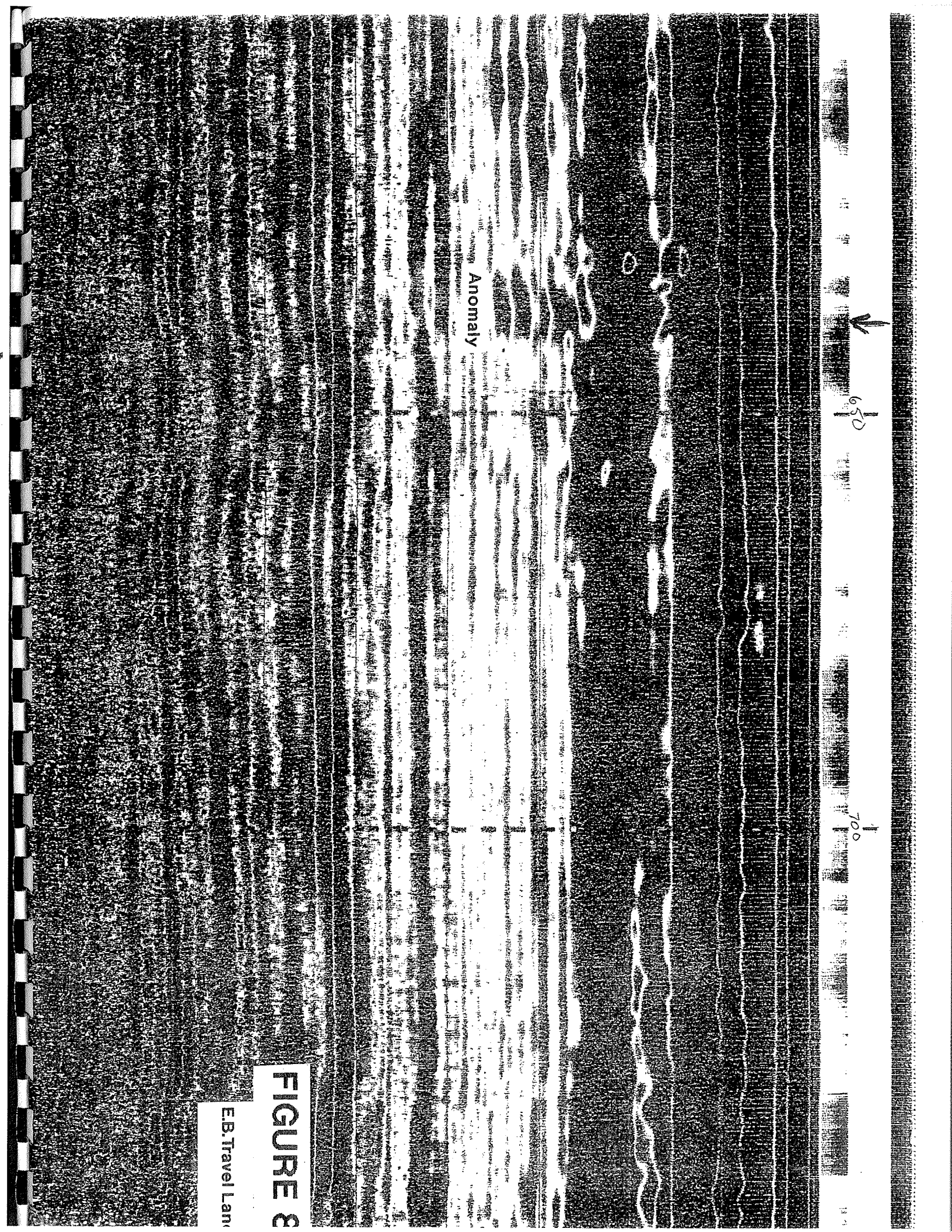
↓  
650

↓  
700

Anomaly

FIGURE 8

E.B. Travel Land



650



700

750

Anomaly

W.B. Passing Lane

FIGURE 9

