CALCULATION OF CAPACITIES OF FACILITIES

White River

a) Daily maximum water supply

White river gravity distribution area	881 m^3/day
Rove distribution area	2,591 m^3/day
Total	3,472 m^3/day
Design	3,500 m^3/day

b) Water source

Deep wells; Four wells of 870 m^3/day/well = 3,480 m^3/day = approx. 3,500 m^3/day

c) Conduction pipeline

Quantity: 20 l/sec, Diameter: 150 mm, Friction loss: 0.9695 %

Length: Upstream section = 800 m, and downstream section = 300 m

Friction head loss: 800m x 0.9695 % = 7.8m

d) Receiving tank

Retention time: 30 minutes or more

3,500 m^3/day x 0.5/24 = 73 m^3 (or more)

e) Booster pumps

3,500 m^3/day = 2.43 m^3/min

Capacity: 2.43 m^3/min. / two pumps = 1.22 m^3/min/pump

Head: Actual head = 60.2 - 9.4 = 50.8 m, Friction loss = 5.4 m, Total = 60 m

Diameter: 125 mm

Output: 22 kw

f) Transmission pipeline

3,500 m^3/day = 2.43 m^3/min = 41 l/sec

Quantity: 41 l/sec, Diameter: 200 mm, Friction loss: 0.901 %, length: 600 m

Friction head loss: 600m x 0.901 % = 5.4m

g) Reservoir tank

Retention time: 8 hours

3,500 m^3/day x 8 / 24 = 1,166 m^3/day

Effective volume = 600 m^3 x 2 = 1,200 m^3

h) Distribution pipeline

Average daily flow rate: 2,591 m^3/day = 30 l/sec

Maximum daily flow rate: two times of the average daily = 60 l/sec

Pipe size: 250 mm, Friction loss: 0.6149 %, Length = 3,300 m

Mataniko

a) Water supply amount

Daily maximum for the new system	2,600 m^3/day
Water supply for the existing system (Low West Kola'a tank)	1,700 m^3/day
Total	4,300 m^3/day

b) Water source

Proposed wells:620 m^3/day/well x 5 wells = 3,100 m^3/day

Existing wells: 620 m^3/day/well x 2 wells = 1,200 m^3/day

c) Conduction pipeline

One(1) conduction pipeline (No.1) for one well

Quantity: 7 l/sec x 1 = 7 l/sec, Diameter: 100 mm

Friction loss: 1.0015 %, Length: 100 m

Two(2) conduction pipelines for two wells, Diameter: 150 mm

Quantity: 7 l/sec x 2 = 14 l/sec

Friction loss: 0.5012 %, Length: No.2= 250 m, No.3= 300m

Friction head loss(Max): 300m x 0.5012 % = 1.5m

d) Receiving tank

Retention time: 30 minutes or more

3,100 m^3/day/ x 0.5/24 = 65m^3 (or more)

e) Booster pumps

2,600 m^3/day = 1.80 m^3/min

Capacity: 1.80 m^3/min. / two pumps = 0.90 m^3/min/pump

Head: Actual head = 112.9 - 14.4 = 98.5 m, Friction loss = 8.3 m

Total head = 110 m

Pipe size: 100 mm diameter

Output: 37 kw

f) Transmission pipeline

2,600 m^3/day = 1.80 m^3/min = 30 l/sec

Quantity: 30 l/sec, Diameter: 200 mm, Friction loss: 0.5057 %

Length: 1,650 m

Friction head loss: 1,650m x 0.5057 % = 8.3m

g) Reservoir tank

Retention time: 8 hours

2,600 m^3/day x 8 / 24 = 870m^3/day

New tank = 480 m^3

The existing tank = 450 m^3

Total capacity = 930m3

Kombito

a) Water supply amount

Daily maximum for the new system	1,600 m^3/day
Water supply for the existing system	4,300 m^3/day
Total	5,900 m^3/day

b) Water source

Proposed wells: 900 m^3/day/well x 2 wells = 1,800 m^3/day

Existing wells: 900 m^3/day/well x 3 wells = 2,700 m^3/day (Panatina)

Existing spring: 1,700 m^3/day (= 20/l)

c) Conduction pipeline

Quantity: 21 l/sec, Diameter: 150 mm, Friction loss: 1.0611 %

Length: 1,100 m

Friction head loss: 1,100m x 1.0611 % = 11.7m

d) Receiving tank

Retention time: 30 minutes or more

1,800 m^3/day x 0.5/24 =38 m^3 (or more)

e) Transmission pipeline

The existing pipeline.

f) Reservoir tank

Retention time: 8 hours

1600 m^3/day x 8 / 24 = 600 m^3

New tank = 600 m^3

Optimum Groundwater Development Plan

Formation to be Developed for Groundwater Resources

Three formations, Mbonche limestones, Honiara Beds and Honiara reef limestones, form aquifers in the study area. Of these three, the formation to be developed for groundwater resources is the Honiara Beds in terms of permeability, storage capacity, homogeneity, size, continuity, depth of location and actual development results.

Honiara Beds comprise alternating calcareous sandstones, siltstones and conglomerates. This formation is characterized by well stratified layers and well developed bedding planes. On the other hand, almost half of the Honiara Beds comprise calcareous sandstones, which show a variation in grain size with location and depth. The permeability of aquifers changes largely with variation of grain size, therefore, distribution of sandstones and conglomerates forming aquifers are limited in the study area.

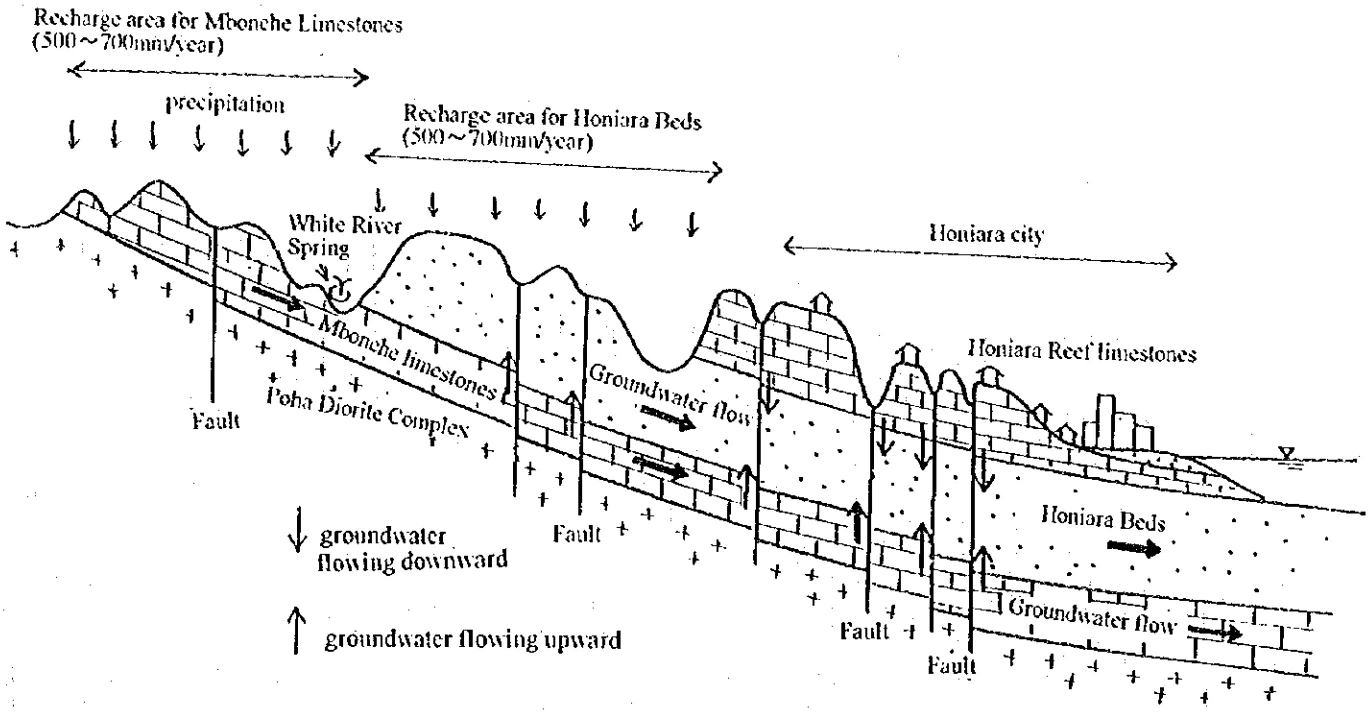
Best Site for Groundwater Development

Effective groundwater development will be carried out by drilling boreholes in fracture zones with densely developed fractures. Therefore, promising drilling sites near the existing water resource sites were selected where fracture zones are developed, based on the results of topographical, geological survey and geophysical prospecting.

Items to be Noticed in Selection of Groundwater Development site

Groundwater contamination:
Groundwater contamination is spreading widely in the study area as residential districts develop. Therefore, it is necessary to prevent groundwater from being abstracted from aquifers with contaminated groundwater near the ground surface. To put it concretely, abstracting groundwater from aquifers about 20m below the ground surface, unless there is an overlying impermeable strata, should be avoided.

Saline water encroachment in aquifer:
Aquifers near the seashore are subject to saline water encroachment. The possibility of saline water encroachment into boreholes depends on the distance between front of saline water encroachment and boreholes. Yield from boreholes in the area subject to saline water encroachment should be limited.



Summary of aquifers

Honiara Reef Limestones	Aquifers size and recharge area are small. Groundwater contamination is likely to occur in the aquifers.
Honiara Beds	Sandstones and limestone bear groundwater in relatively homogeneous aquifers.
Mbonehe Limestones	Limestones are massive, recrystallized and hard, so caverns distribution and zones bearing groundwater are limited.
Poha Diorite Complex	Diorites form impermeable bed rocks of aquifers.

FIGURE 1 Hydrogeological Structure in the Study Area

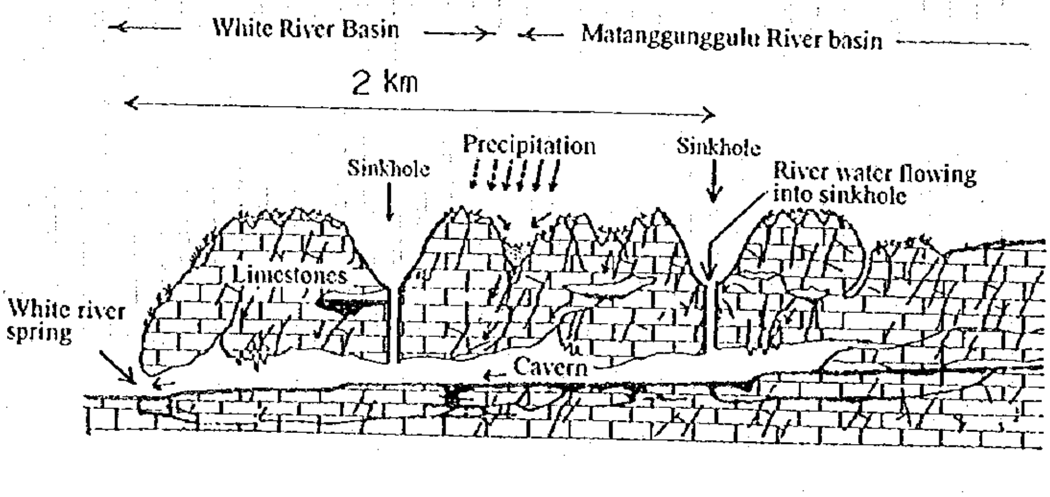


FIGURE 2 Mechanism of White River Spring

Geophysical Prospecting

(1) Outline of Geophysical Prospecting

Electrical resistivity sounding with Schlumberger configuration and VLF electromagnetic sounding were carried out for geophysical prospecting. The outline of the geophysical prospecting is shown in Table 1.

Table 1 Outline of geophysical prospecting

Method	Purpose	Site	Profile line	Number of lines	Note
Schlumberger configuration	Investigation of Aquifers' structure and saline water encroachment	White River	Centered at planned drilling point	3	Aquifer will be identified by electrical resistivity of layers. Zones with low electrical resistivity caused by saline water encroachment will be detected.
		Rove		3	
		Kombito		5	
		Panatina		7	
		Ndondo Creek		4	
VLF sounding	Detection of fracture zone	White River	Configuration crossing predicted fracture zone	10	Fracture zone will be detected by vertical anomaly of magnetic field
		Rove		7	
		Mataniko		5	

Line arrangement for the geological prospecting, observed data and results of analysis are attached to App.

(2) Points for Geophysical Prospecting

Geophysical prospecting was carried out down-stream of the existing groundwater development sites. The method of geophysical prospecting was selected depending on the survey purpose and the condition of existing hydrogeological information available at the sites.

Areas with Hydrogeological Information

In the areas where the existence of aquifers are known from existing reports, the aquifer structure and location of fracture zones were investigated by electrical resistivity sounding and VLF sounding respectively.

Areas without hydrogeological information

In the areas without hydrogeological information, the location of fracture zones were detected in the first instance by VLF sounding. As a next step, the structure of aquifers was detected by electrical resistivity sounding. Lines for VLF sounding were laid to cross lineaments assumed from analysis of aerial photograph and faults indicated in the existing geological maps. Based on the results of the VLF sounding, sites accessible by drilling rigs were selected from zones where fracture were detected, then the electrical resistivity sounding was carried out at the sites.

Areas with high Possibility of Saline Water Encroachment

Saline water encroachment in aquifers was investigated by electrical resistivity sounding.

(3) Results of Geophysical Survey

Locations of Fracture Zones

Locations of fracture zones were detected where vertical anomalies in magnetic field were measured by VLF sounding. All the results of VLF sounding are attached in the Appendix.

Formations' Structure and Distribution

Electrical resistivity cross section was completed from the results of the electrical resistivity sounding. In the analysis of each section, the relation between the values of electrical resistivities and geological formations was obtained from the results of the electrical resistivity sounding carried out at a site where geological conditions are known, and using this relationship, the electrical resistivity cross section at the

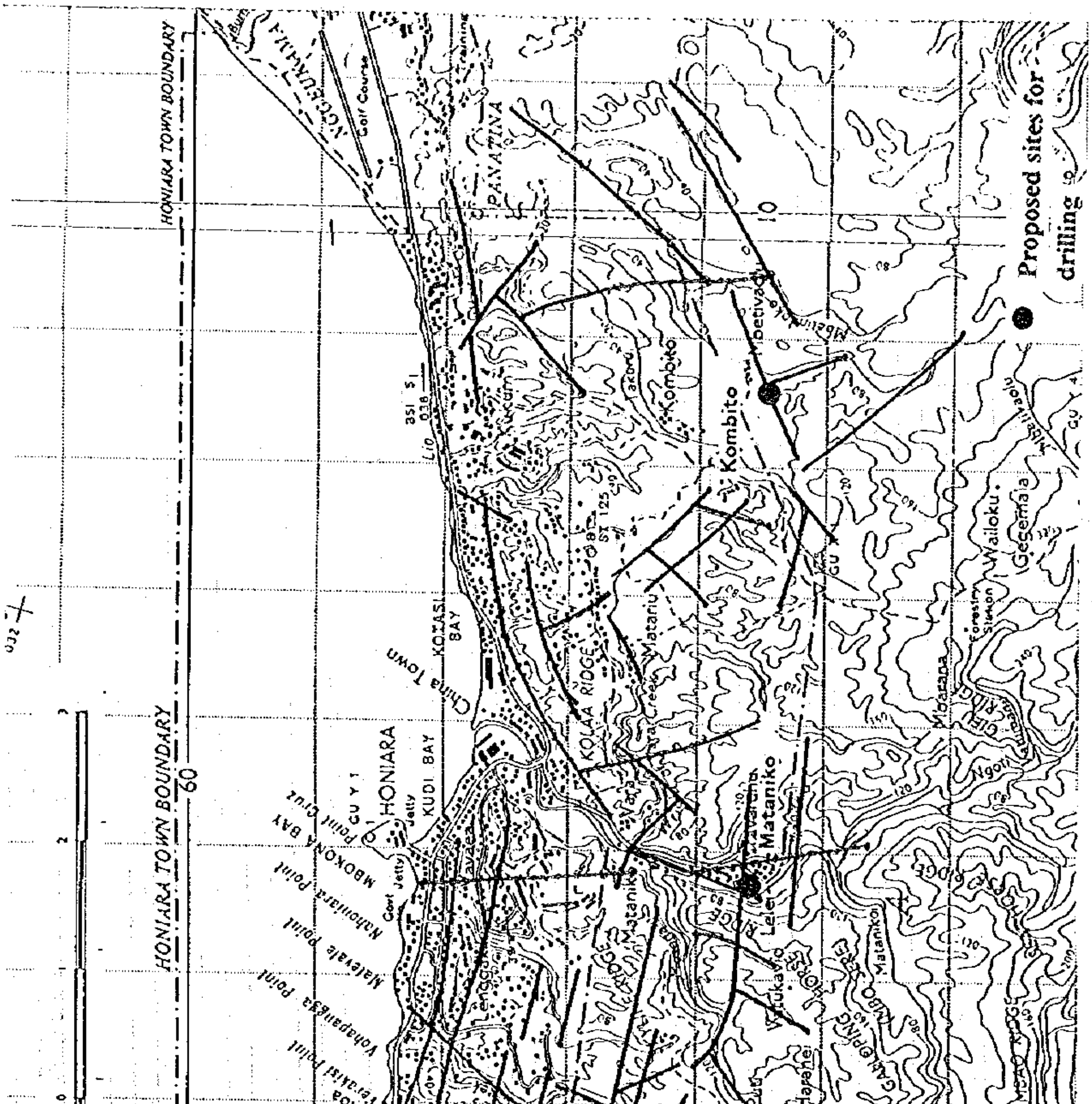


FIGURE 1 Lineaments by Aerial Photograph Interpretation

other sites was completed. All the results of VLF sounding are attached in the Appendix.

Identification of Aquifer

The honiara Beds comprising alternating sandstones, siltstones and conglomerates, are the target of groundwater development in this study. Sandstones and conglomerates with high permeability form aquifers, however, it is impossible to locate each sandstone / conglomerate layer individually by electrical resistivity sounding. Furthermore, the boundary of the geological formation does not usually correspond with the boundary of zones defined by electrical resistivity. Electrical resistivity sounding provides information on the average value of electrical resistivity of strata comprising sandstones / siltstones / conglomerates. The information makes it possible to identify zones which can be aquifers from zones which can not be aquifers. Aquifers and aquitards will be judged based on the assumption described above. The relationship between the value of electrical resistivity and lithology is shown in Table 2.

Table 2

Geology		Resistivity	Identification	Note
Alluvium	Surface soil	3 - 1,100	Aquitard	Resistivity values vary widely
	Sand and gravel	11 - 180	Aquifer	
	Clay	2 - 6	Aquitard	
Honiara Beds	Limestone	11 - 1,320	Aquifer	Potential aquifers show resistivity value of 10 - 50 Ω m
	Sandstone dominant zone	12 - 280	Aquifer	Potential aquifers show resistivity value of 10 - 50 Ω m
	Siltstone dominant zone	5	Aquitard	
Saline water encroachment zone		> 2	Aquitard	

The locations of aquifers distributed at each site derived from the results of geophysical prospecting are as follows:

(1) White River Site

VLF sounding detected anomalies caused by fracture zones at seven points in the downstream area of white River spring. Electrical resistivity sounding detected aquifers located at depths of 30-100m.

(2) Rove Site

VLF sounding detected anomalies caused by fracture zones at three points in the downstream area of Rove spring. Electrical resistivity sounding detected aquifers located at depths of 20-80m.

(3) Mataniko Site

Up to now three boreholes have been drilled at the Mataniko site, and aquifers comprising Honiara sandstones have been found at depths of around 30m and 90m. VLF sounding detected anomalies caused by fracture zones at seven points within the site. This site is located at the intersection of two major faults notable in the study area, and development of fracture zones bearing water is expected.

(4) Kombito Site

In recent years, hydrogeological surveys were carried out at the Kombito site, and the groundwater potential at this site is highly estimated. From geological information being accumulated by EC drilling, limestone and sandstones have been found and are known to form aquifers at the site. Electrical resistivity sounding detected aquifers located at depth of 20-80m.

(5) Panatina Site

There are three boreholes 500m from the seashore at Panatina site, and problems caused by saline water encroachment in aquifers will occur accompaning any new groundwater development at the site. Electrical resistivity sounding detected the front of saline water encroachment located 200m from the seashore, namely, 300m toward the seashore from the existing boreholes. It is considered that encroachment of saline water will not to progress further from the current position, under the condition that the yield from the existing boreholes remains the same. Increasing in the yield will cause saline water to advance in the aquifers, and once the aquifer is contaminated by saline water, it is difficult to clean it up. Therefore, new groundwater development should not be undertaken at the Panatina site.

(6) Ndondo Creek Site

There is one borehole at 700m inland from the seashore at the Ndondo creek site. The water quality has some problem which may have been caused by saline water encroachment. Electrical resistivity sounding detected the front of saline water encroachment at 200m from the seashore, which indicates that saline water encroachment has not reached the existing boreholes. The problems in water quality are considered to be caused by characteristics of materials forming aquifers at the Ndondo creek site.

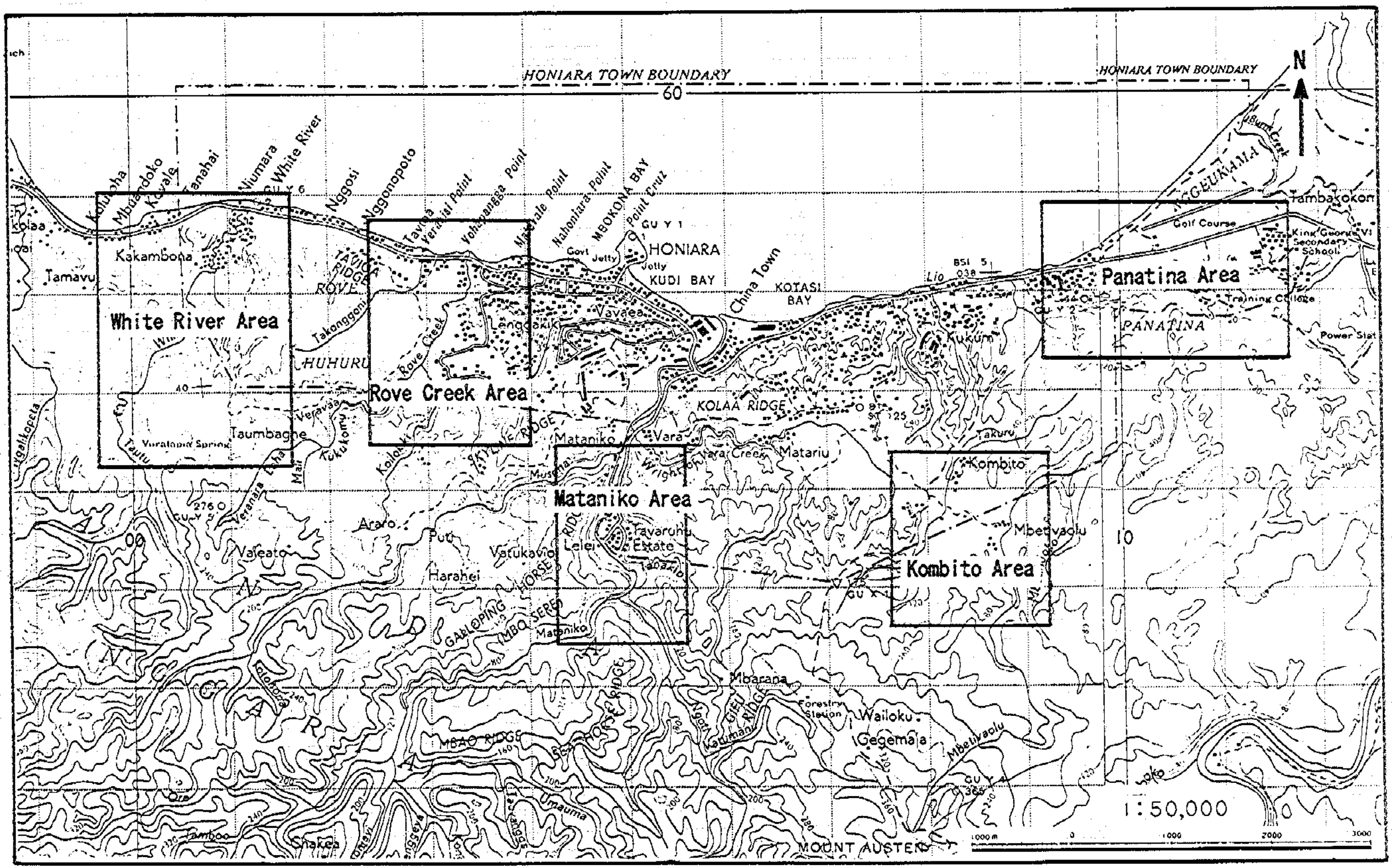


FIGURE 2-1 Situation Map of Geophysical Prospecting in Honiara City

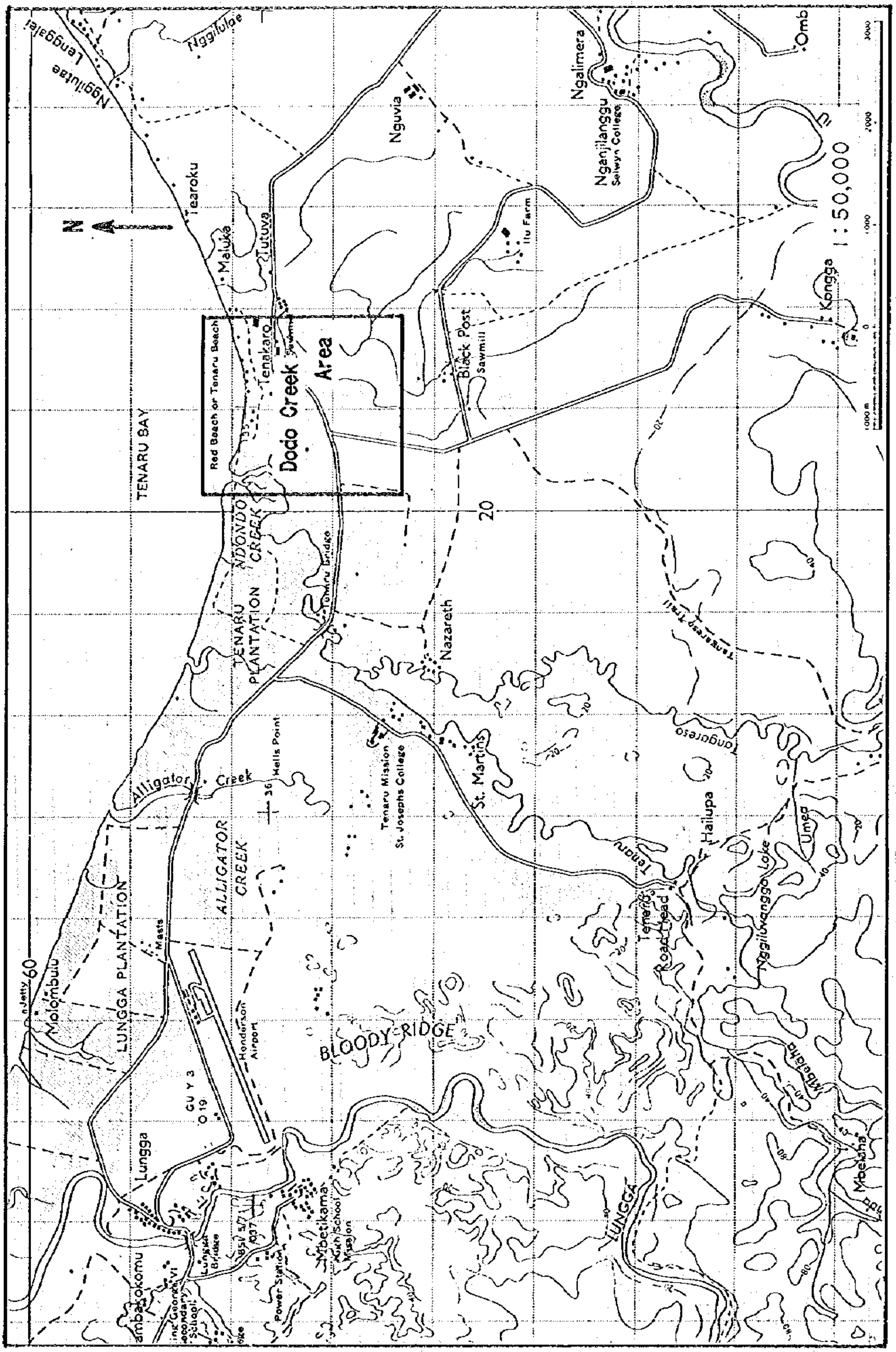


FIGURE 2-2 Situation Map of Geophysical Prospecting in Dodo Creek

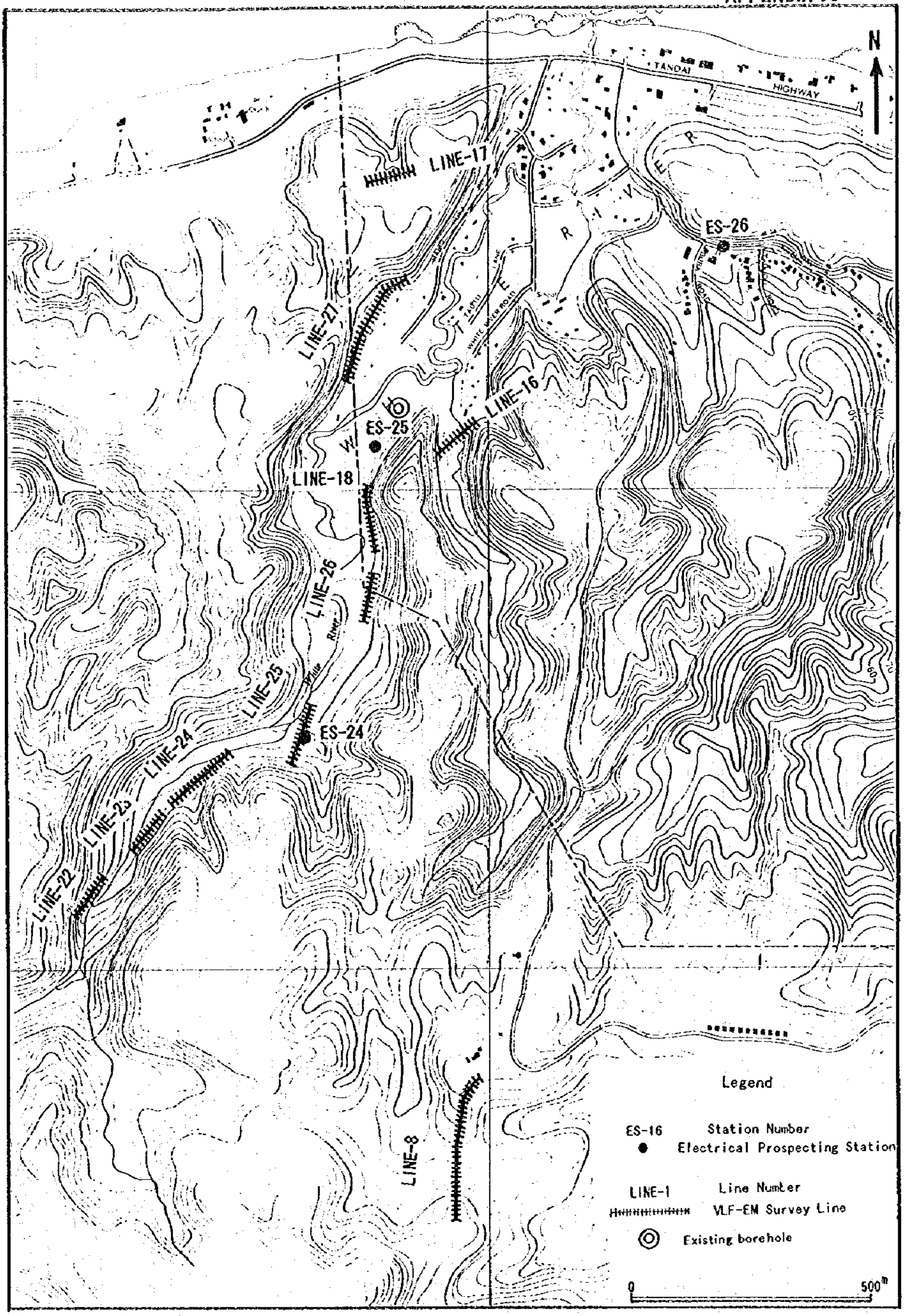


FIGURE 3 Location Map in White River Area

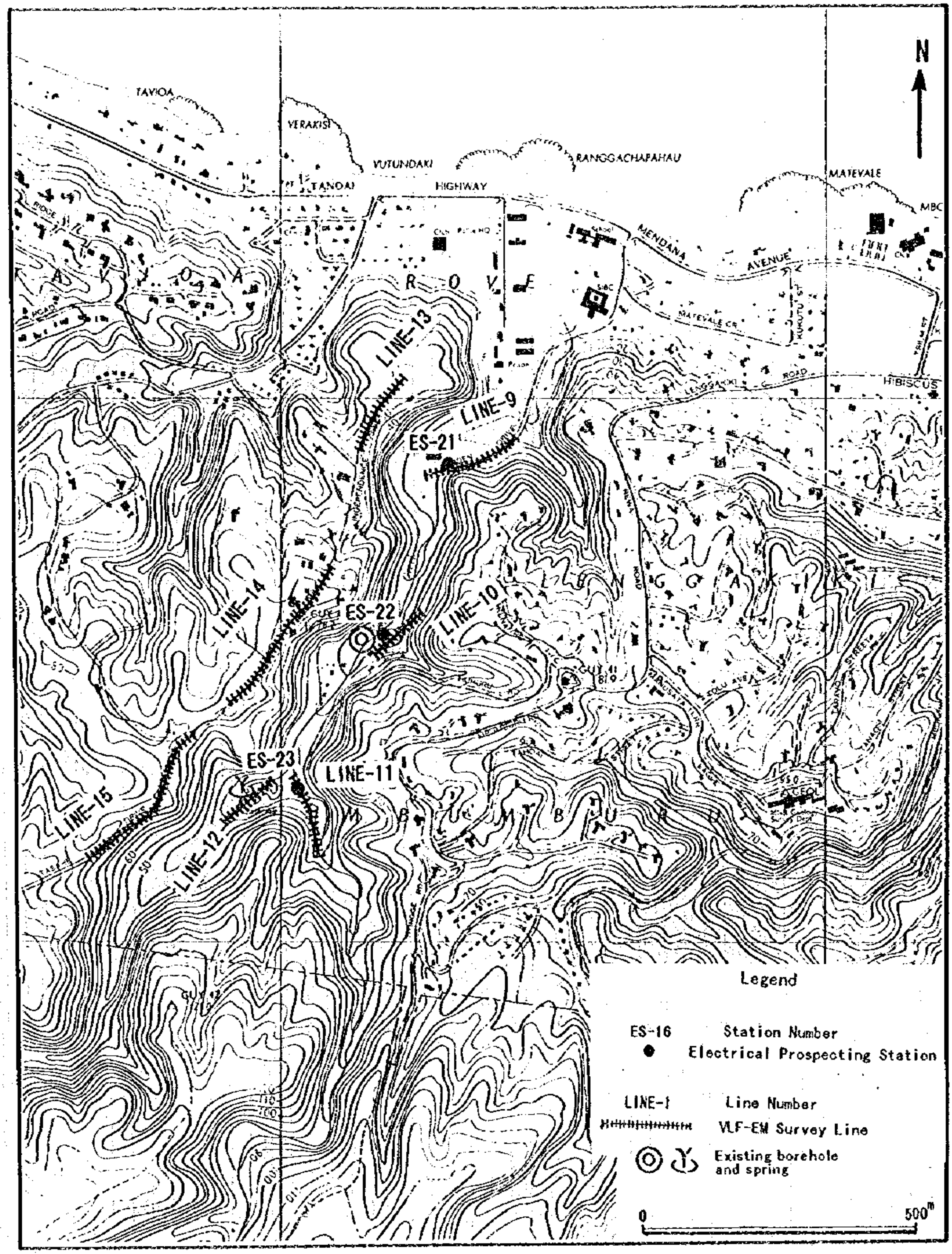


FIGURE 4 Location Map in Rove Creek Area

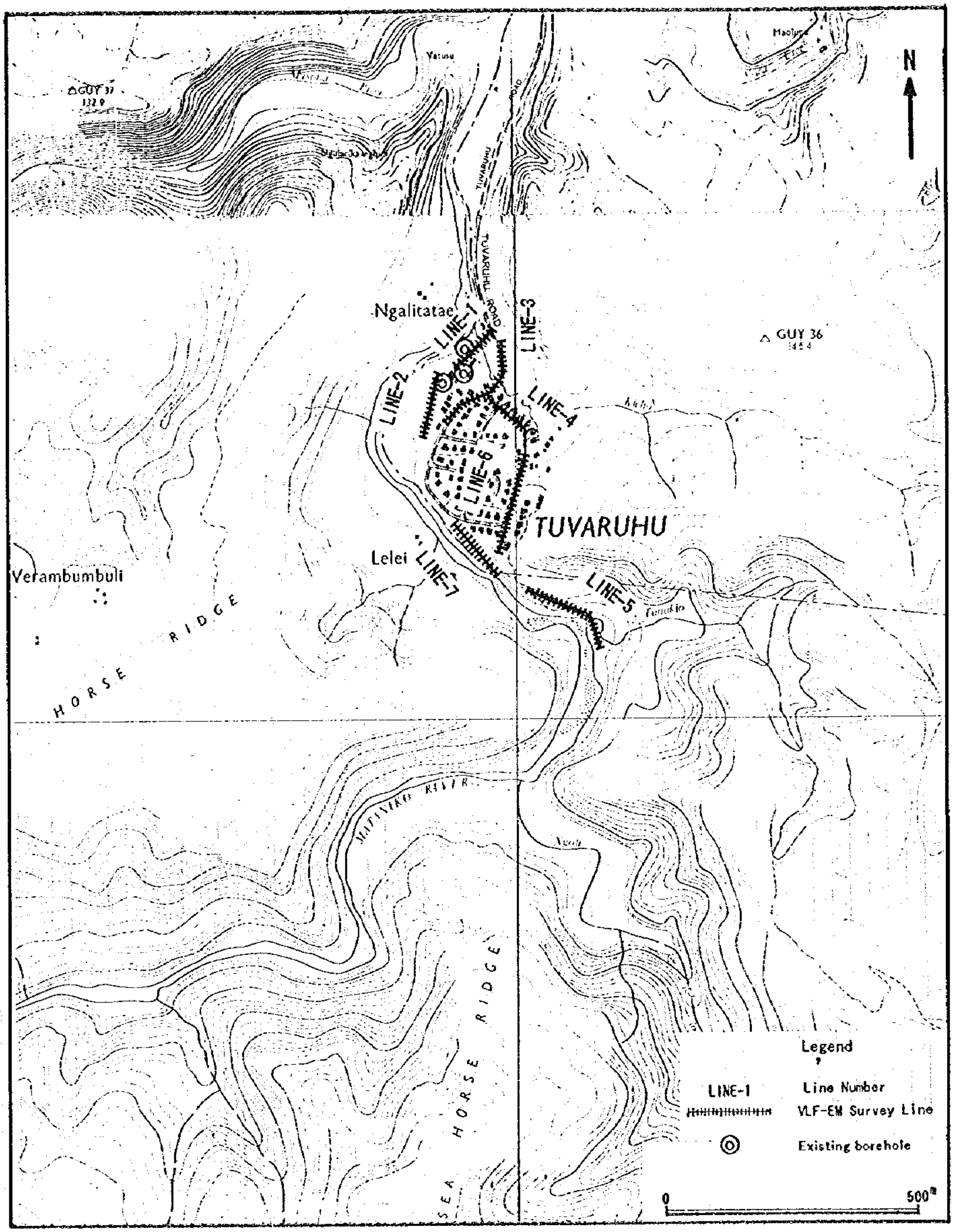


FIGURE 5 Location Map in Mataniko Area

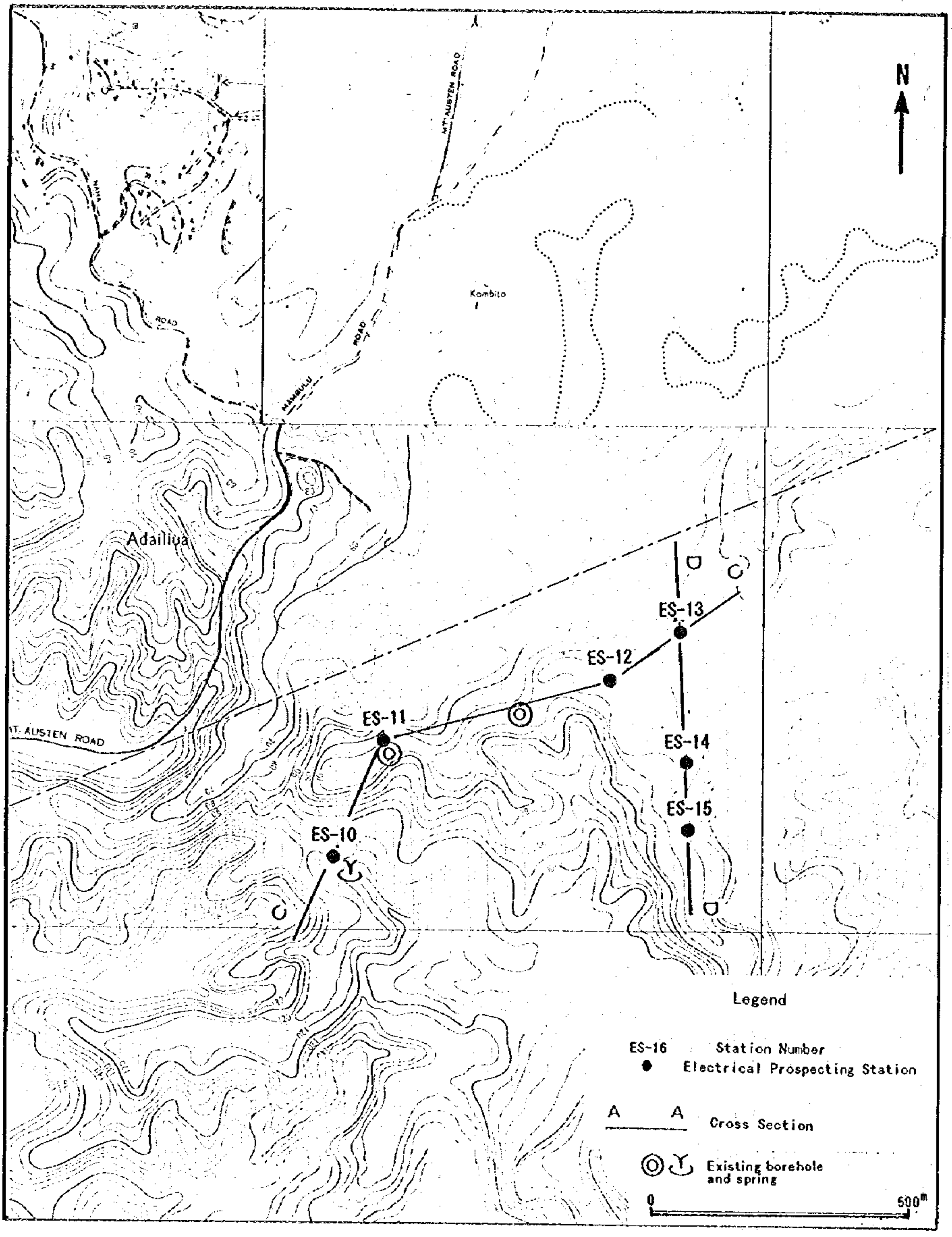


FIGURE 6 Location Map in Kombito Area

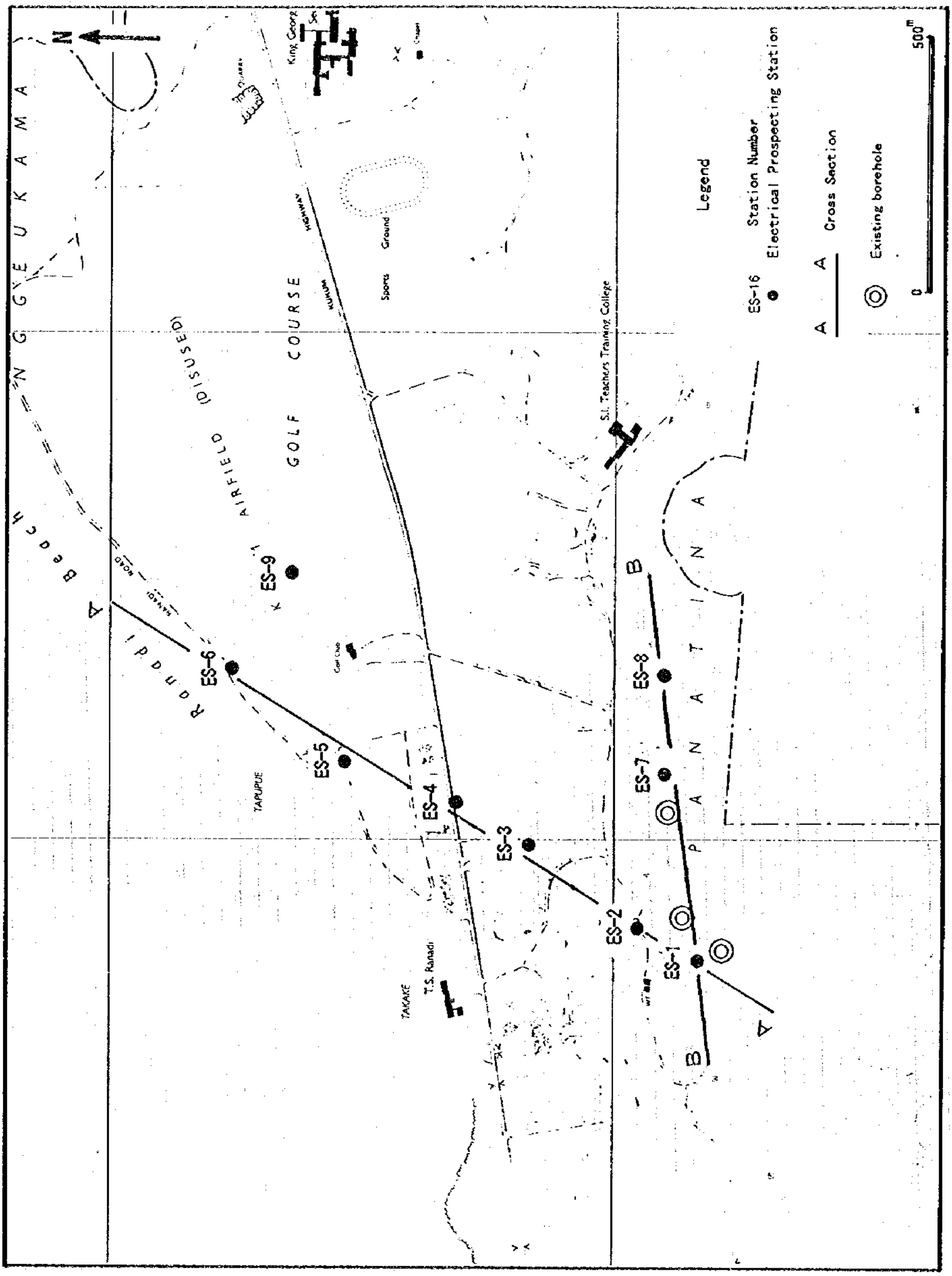


FIGURE 7 Location Map in Panatina Area

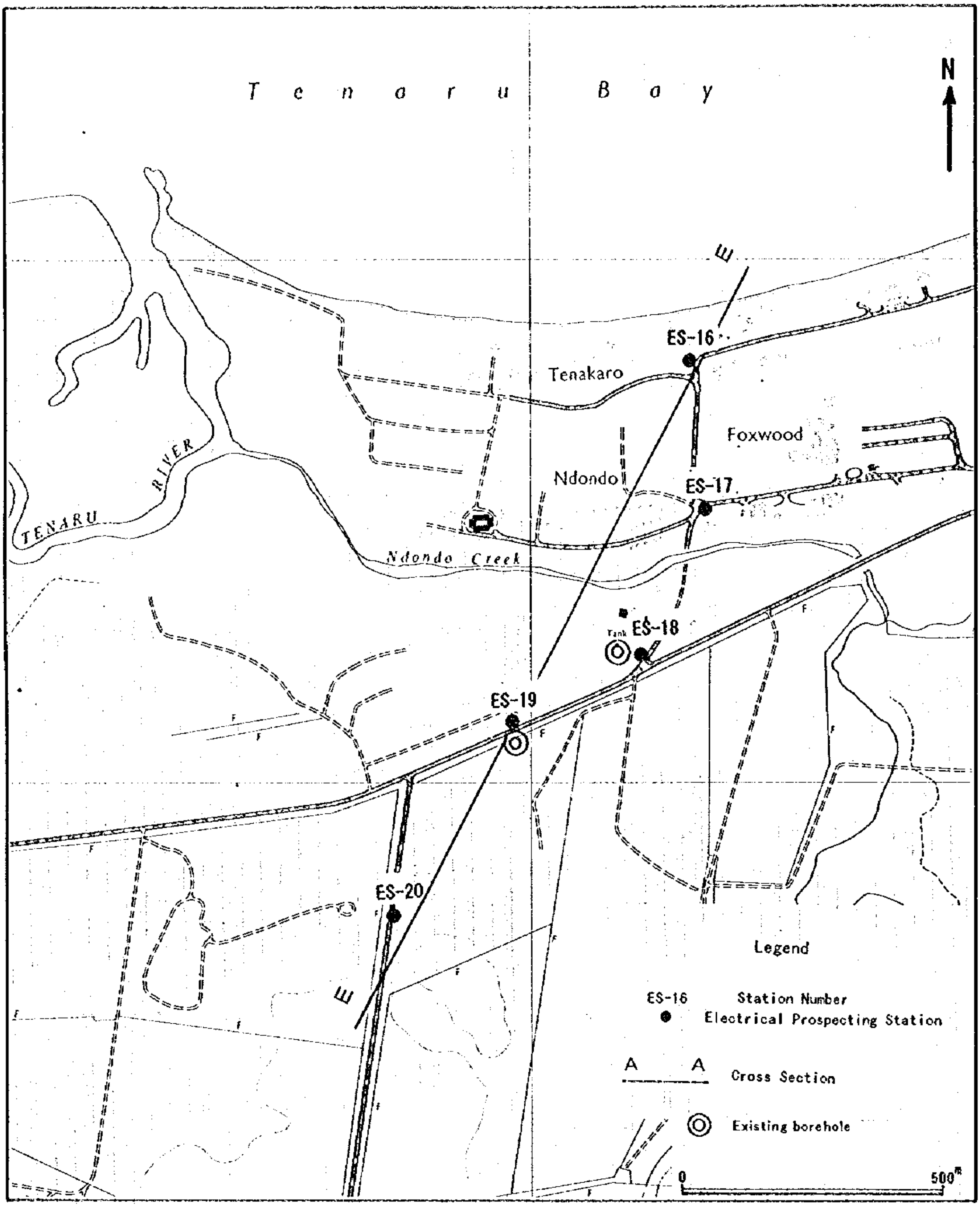


FIGURE 8 Location Map in Dodo Creek Area

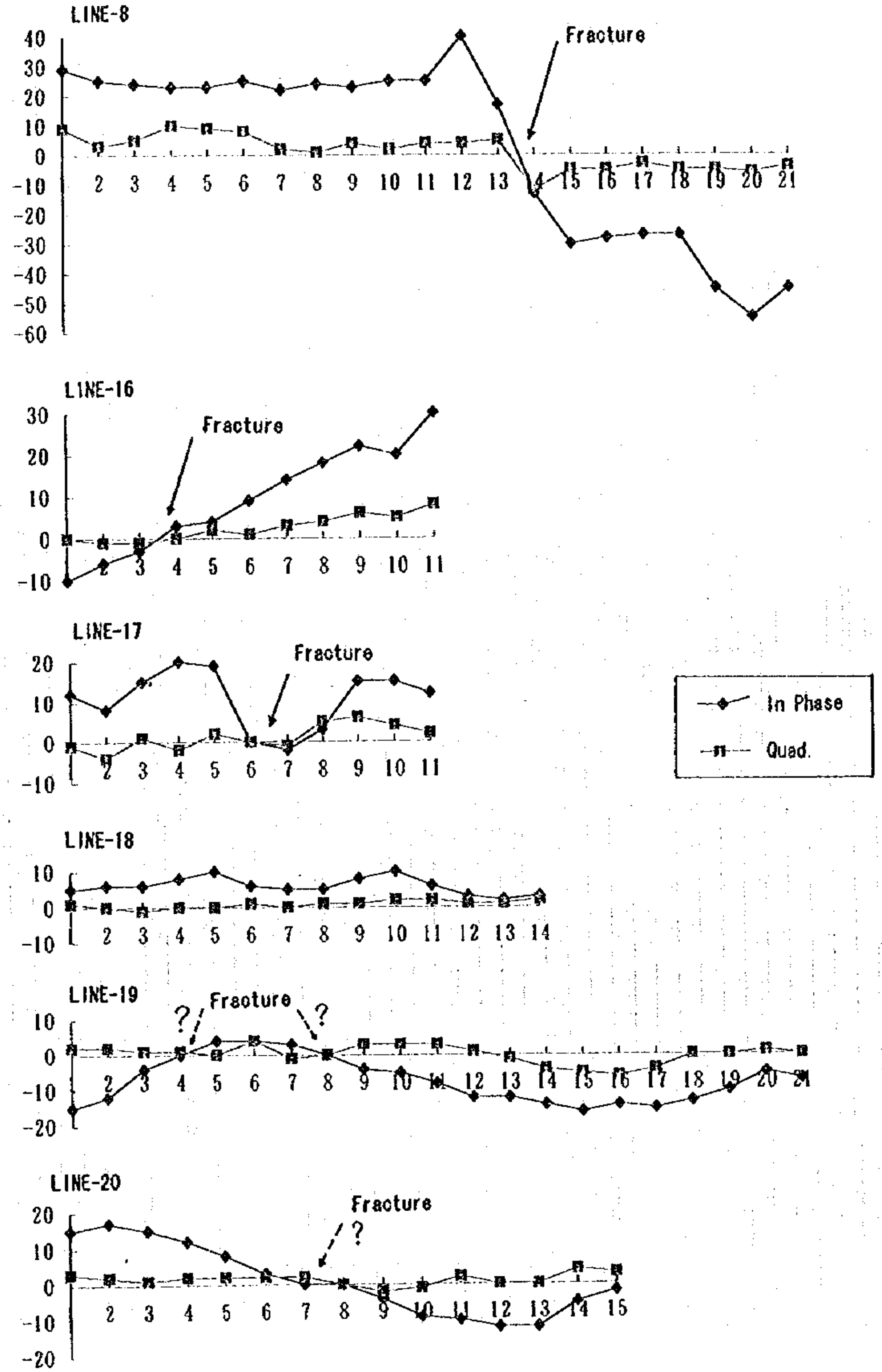


FIGURE 9 VLF-EM Inphase and Quadrature Profiles in White River Area(1)

APPENDIX-6C

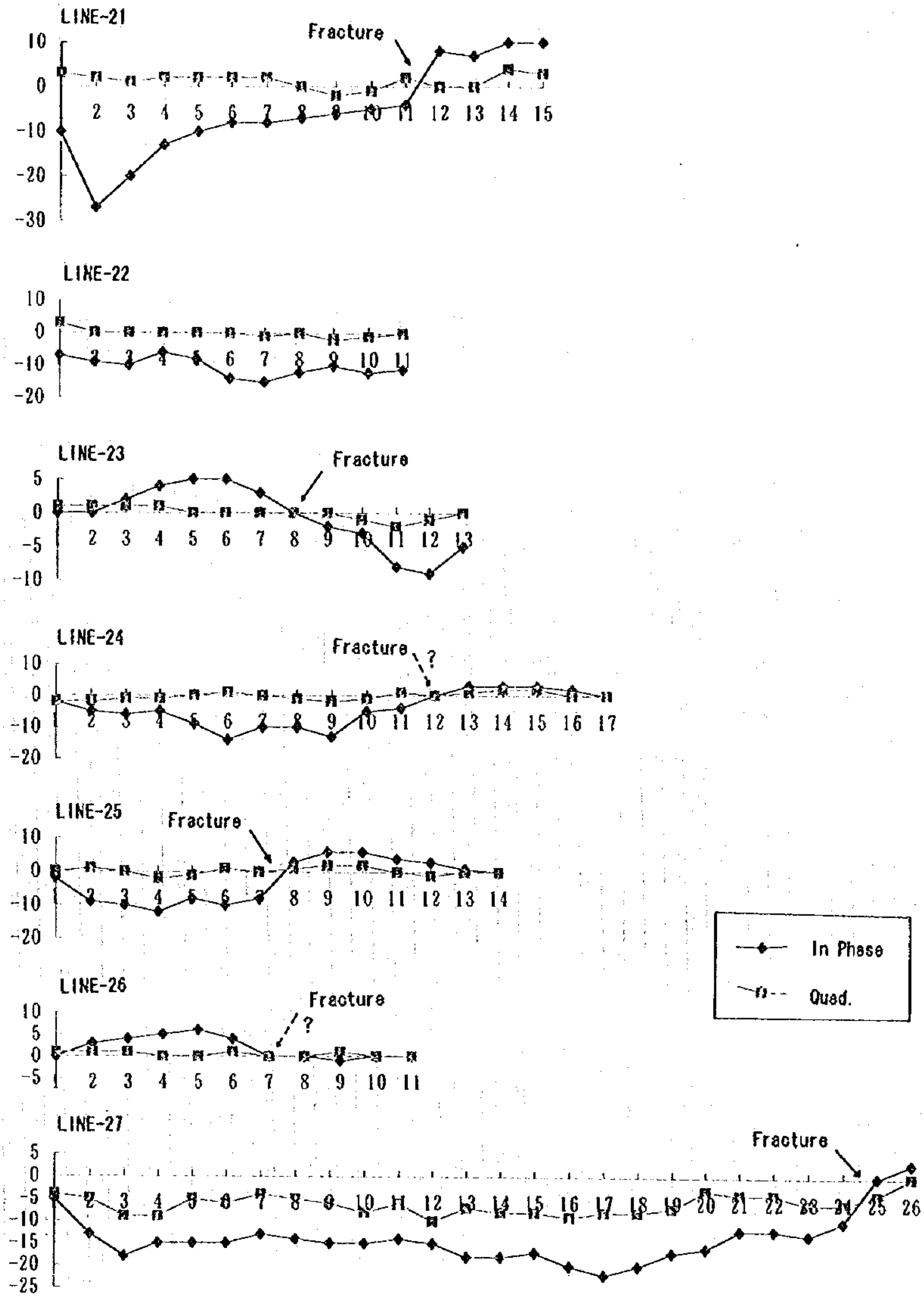


FIGURE 10 VLF-EM Inphase and Quadrature Profiles in White River Area(2)

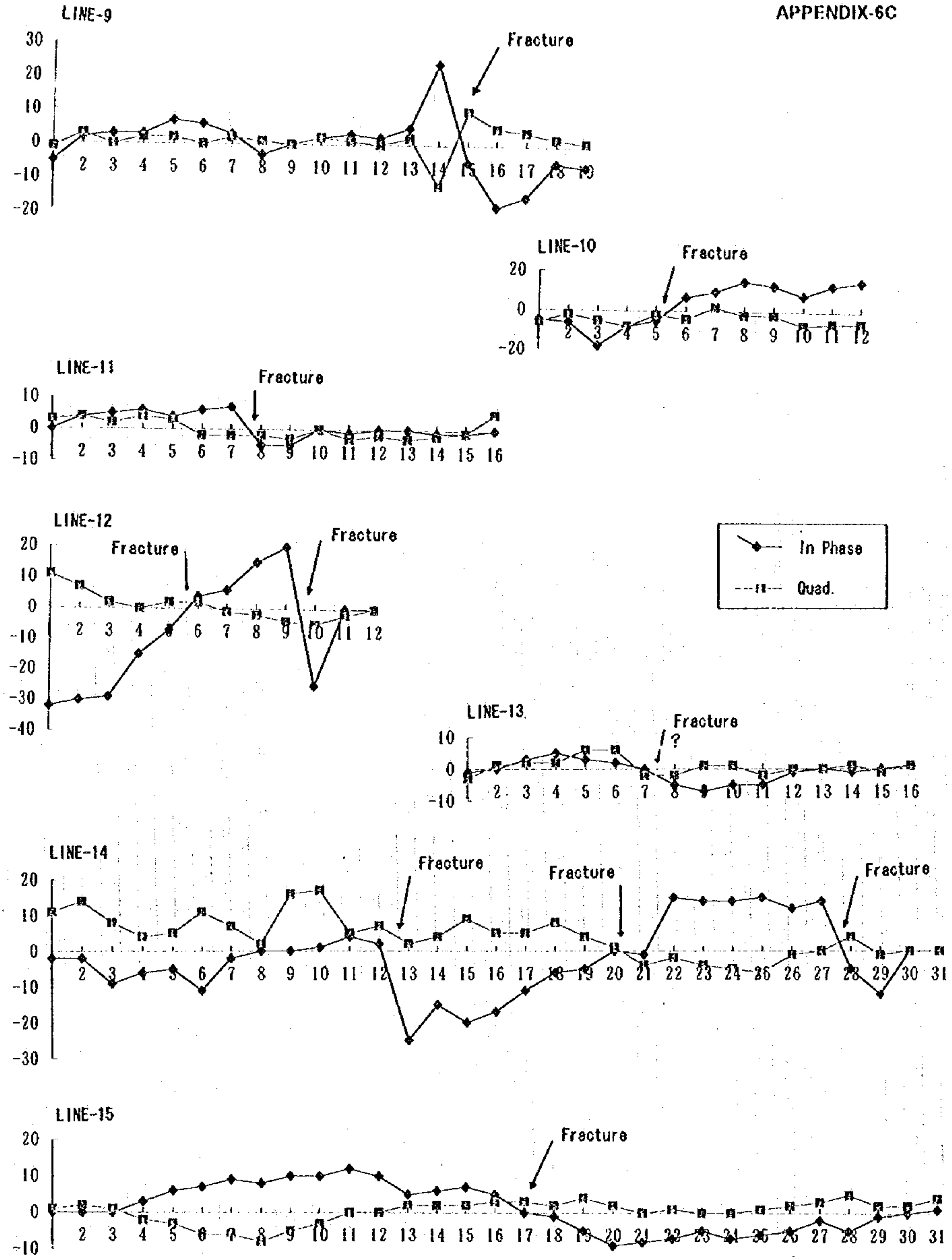


FIGURE 11 VLF-EM Inphase and Quadrature Profiles in Rove Creek Area

APPENDIX-6C

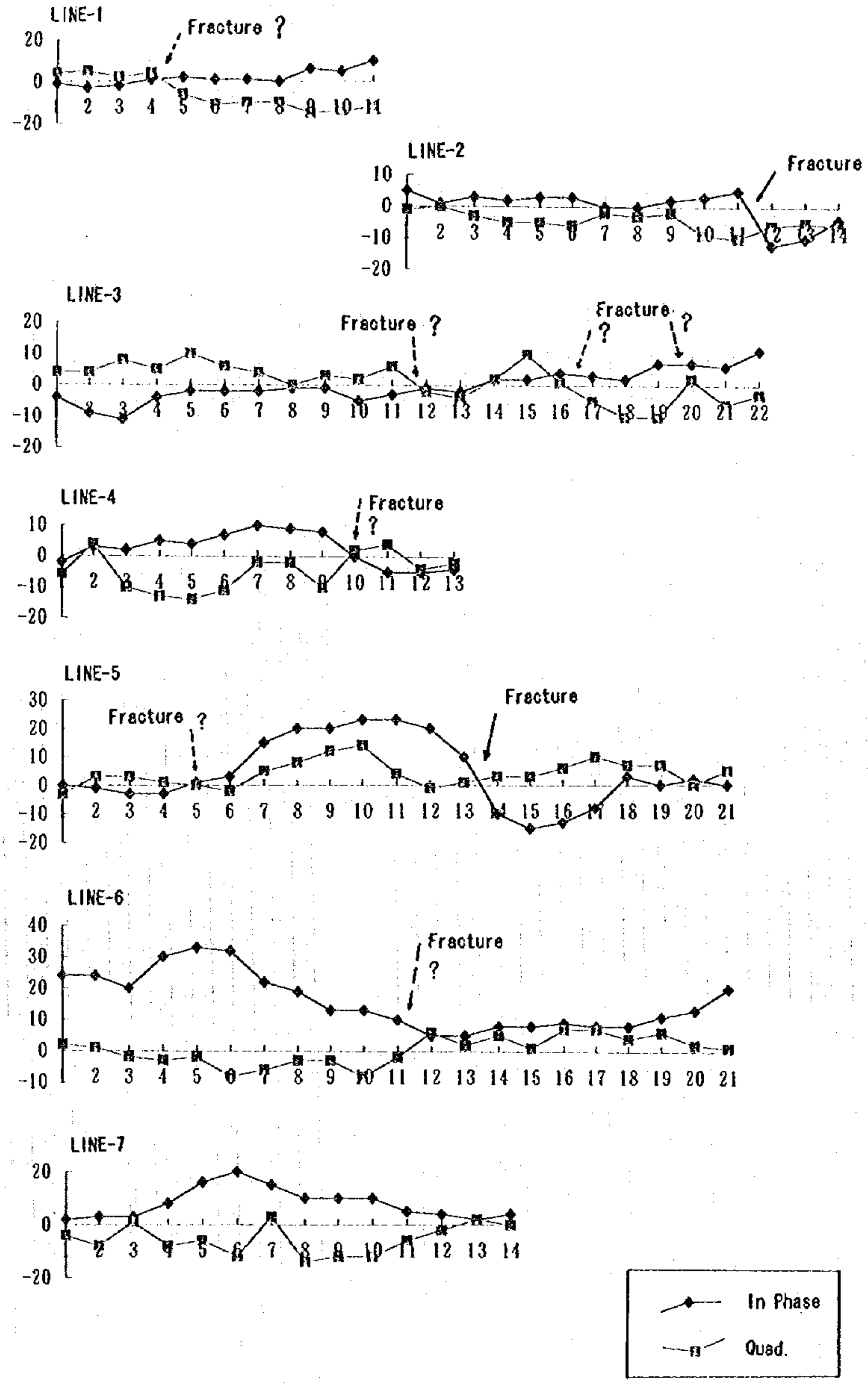


FIGURE 12 VLF-EM Inphase and Quadrature Profiles in Mataniko Area

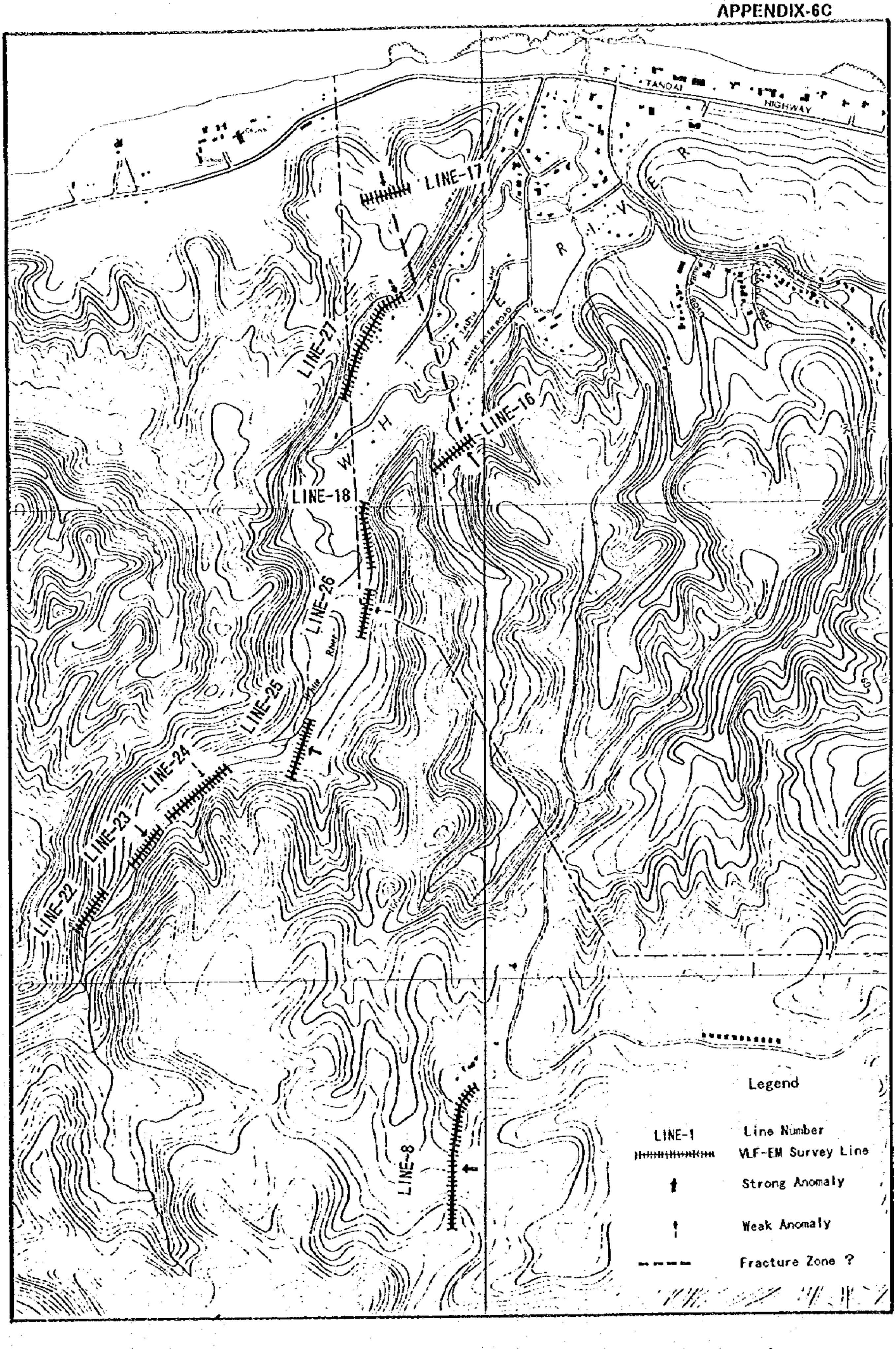


FIGURE 13 Fracture Zone Inferred by VLF-EM Survey in White River Area

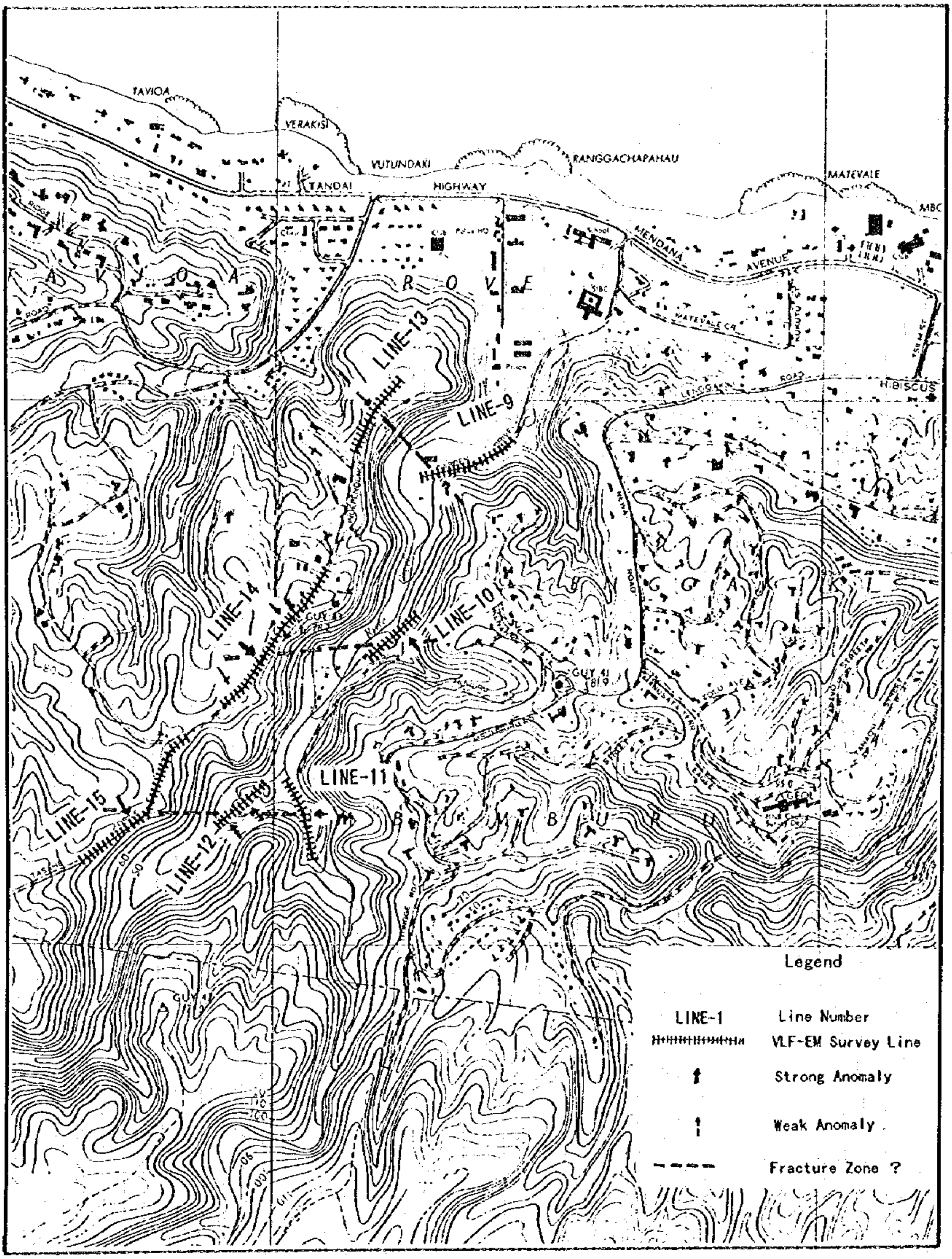


FIGURE 14 Fracture Zone Inferred by VLF-EM Survey in Rove Creek Area

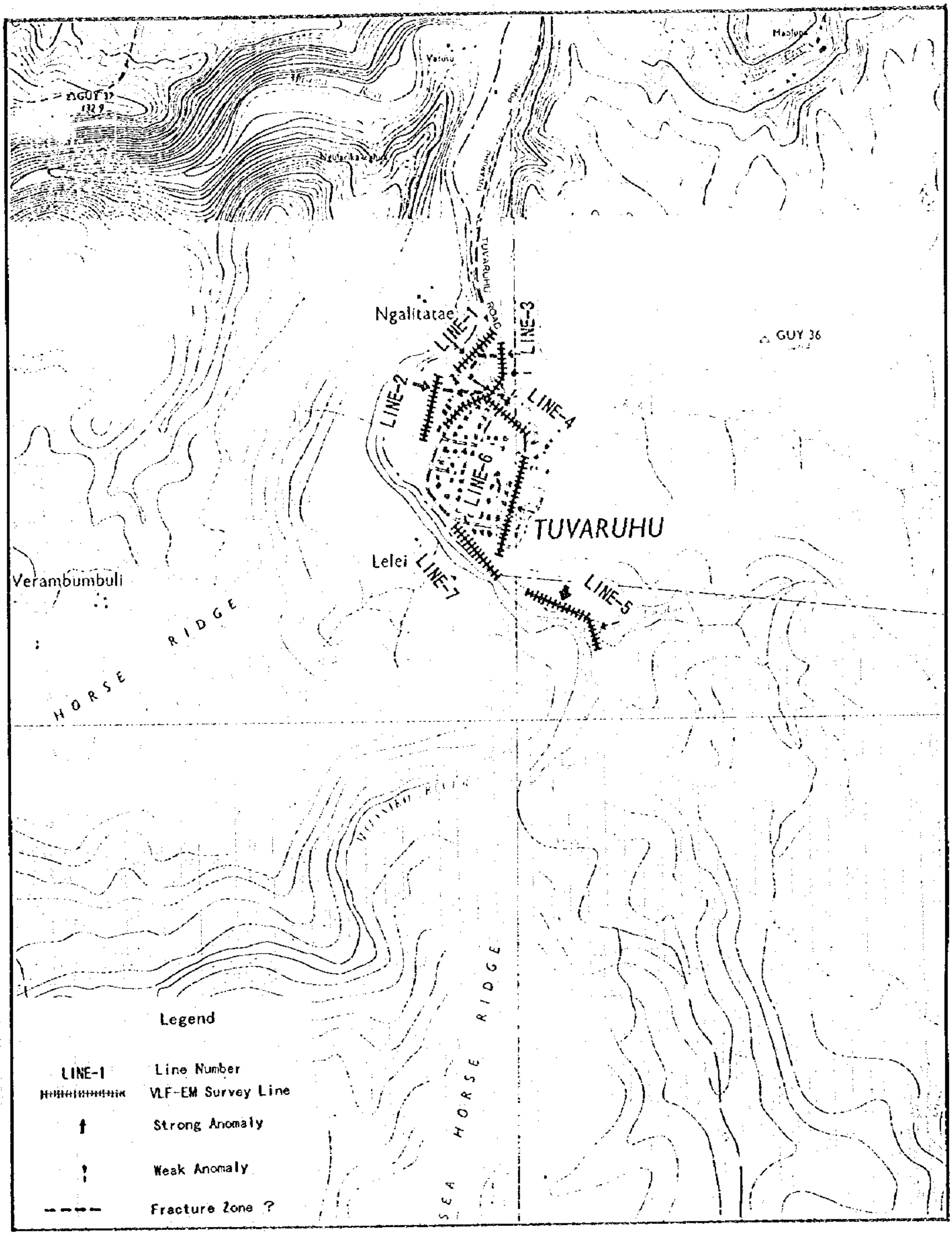


FIGURE 15 Fracture Zone Inferred by VLF-EM Survey in Mataniko Area

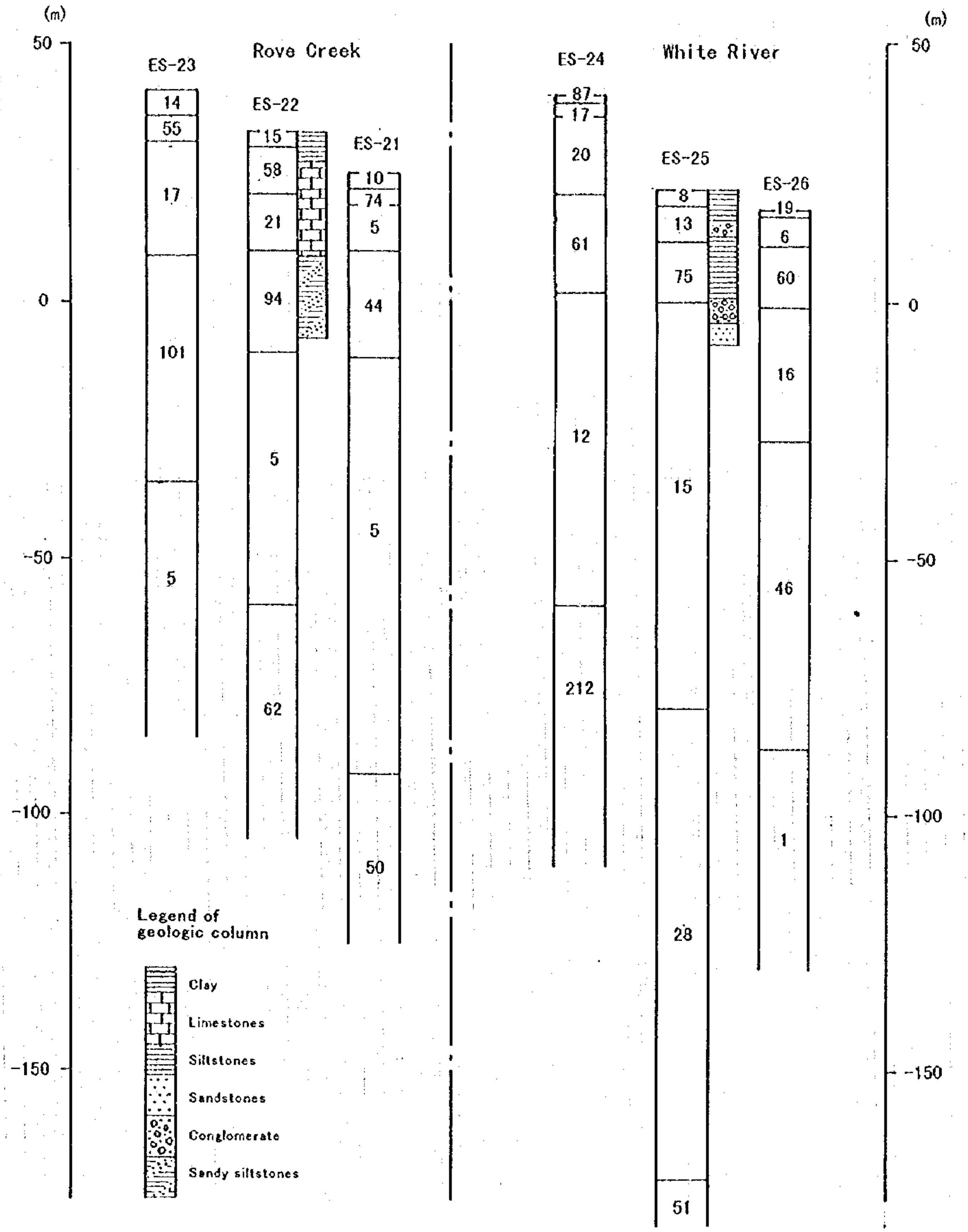


FIGURE 16 Resistivity Structure Model in Rove Creek and White River

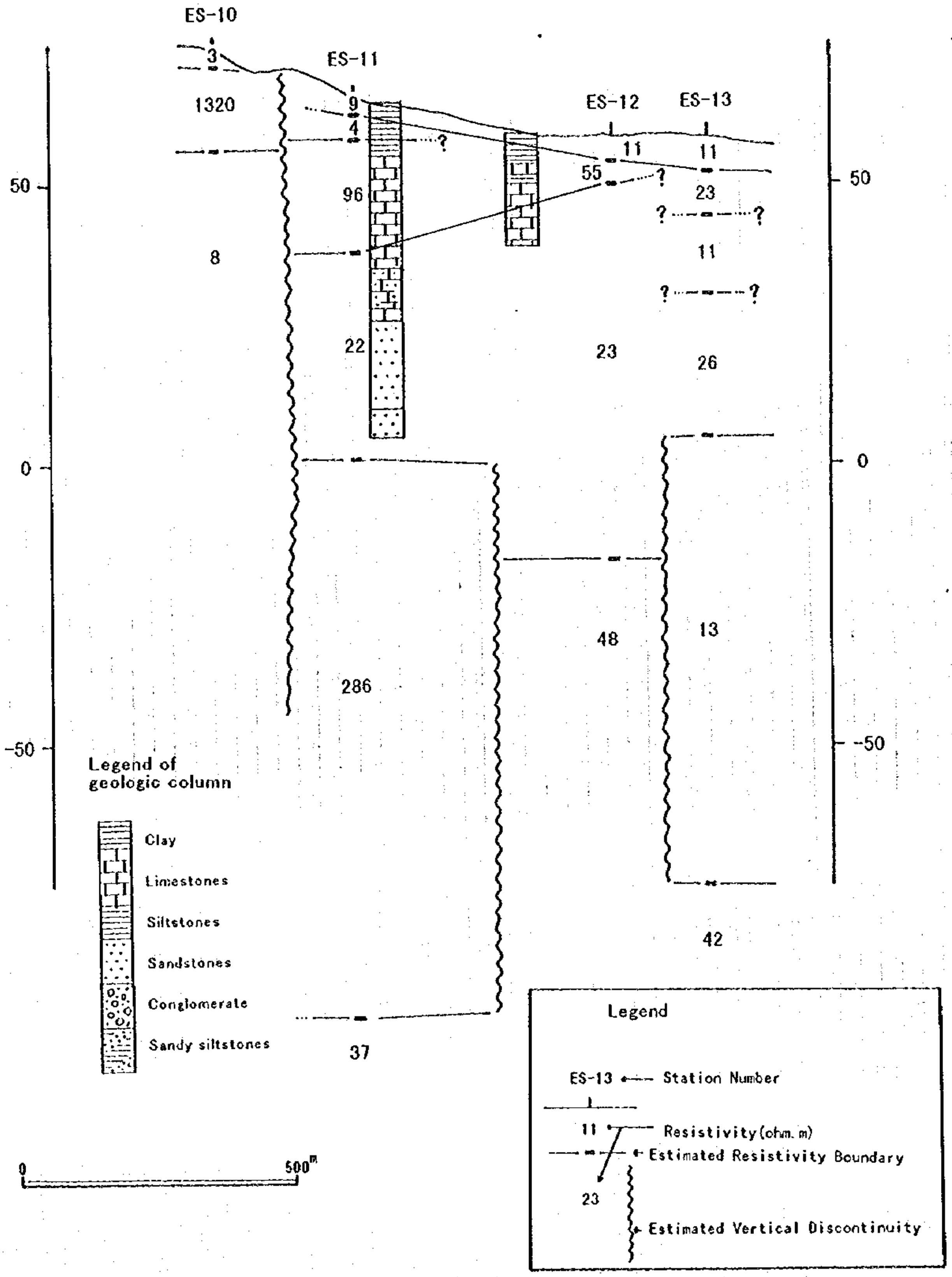


FIGURE 17 Resistivity Structure for Section C-C in Kombito Area

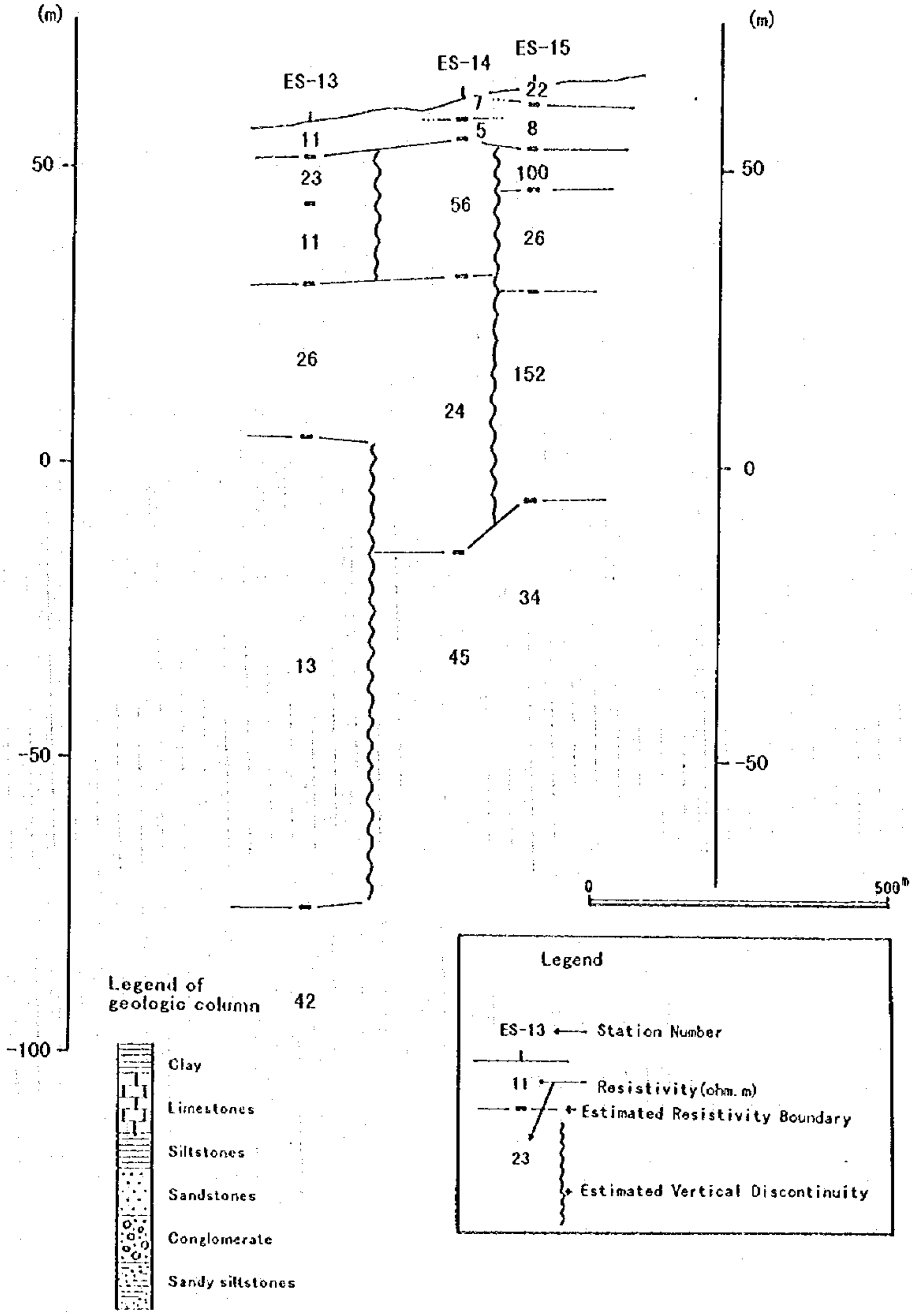


FIGURE 18 Resistivity Structure for Section D-D in Kombito Area

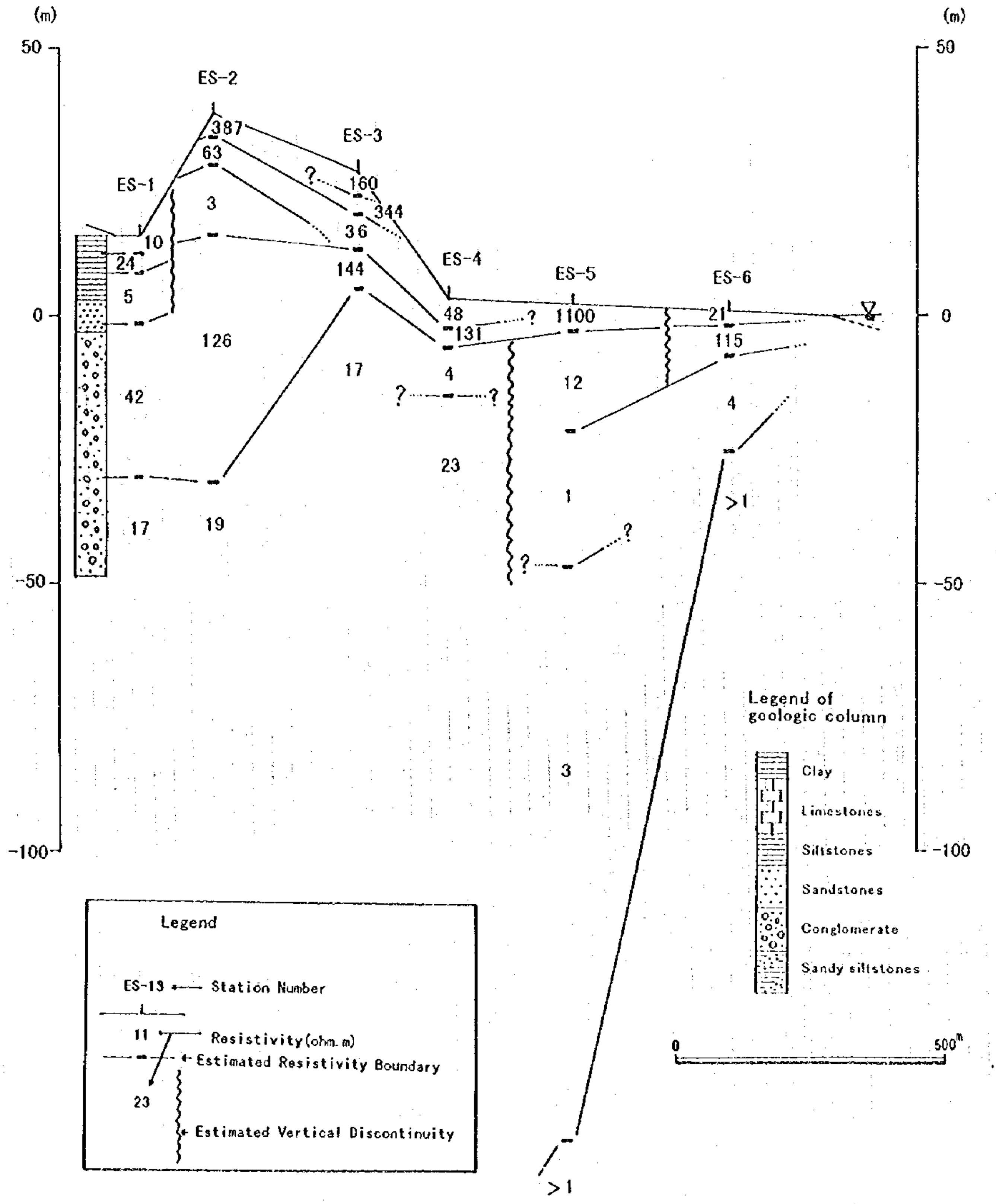


FIGURE 19 Resistivity Structure for Section A-A in Panatina Area

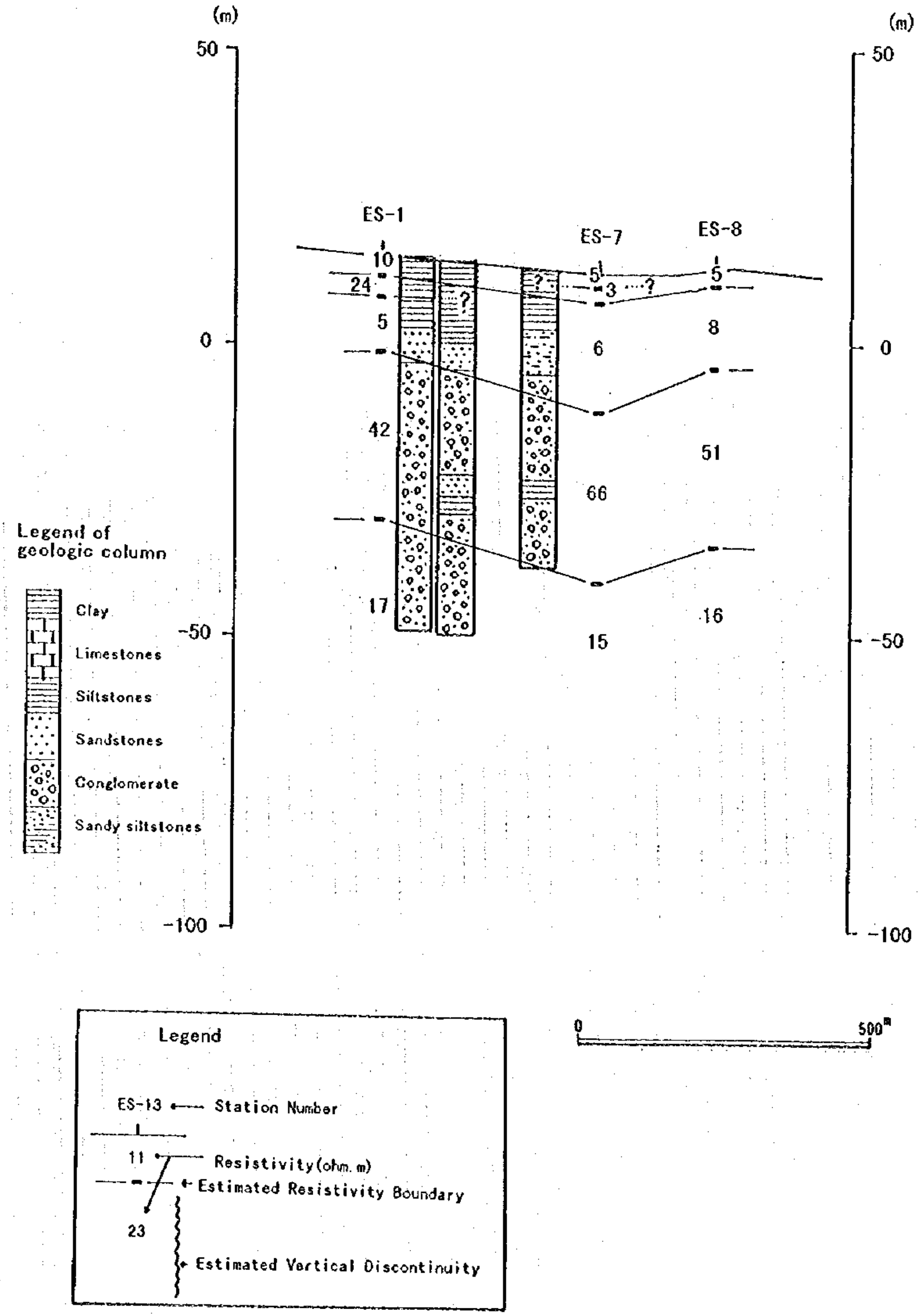


FIGURE 20 Resistivity Structure for Section B-B in Panatina Area

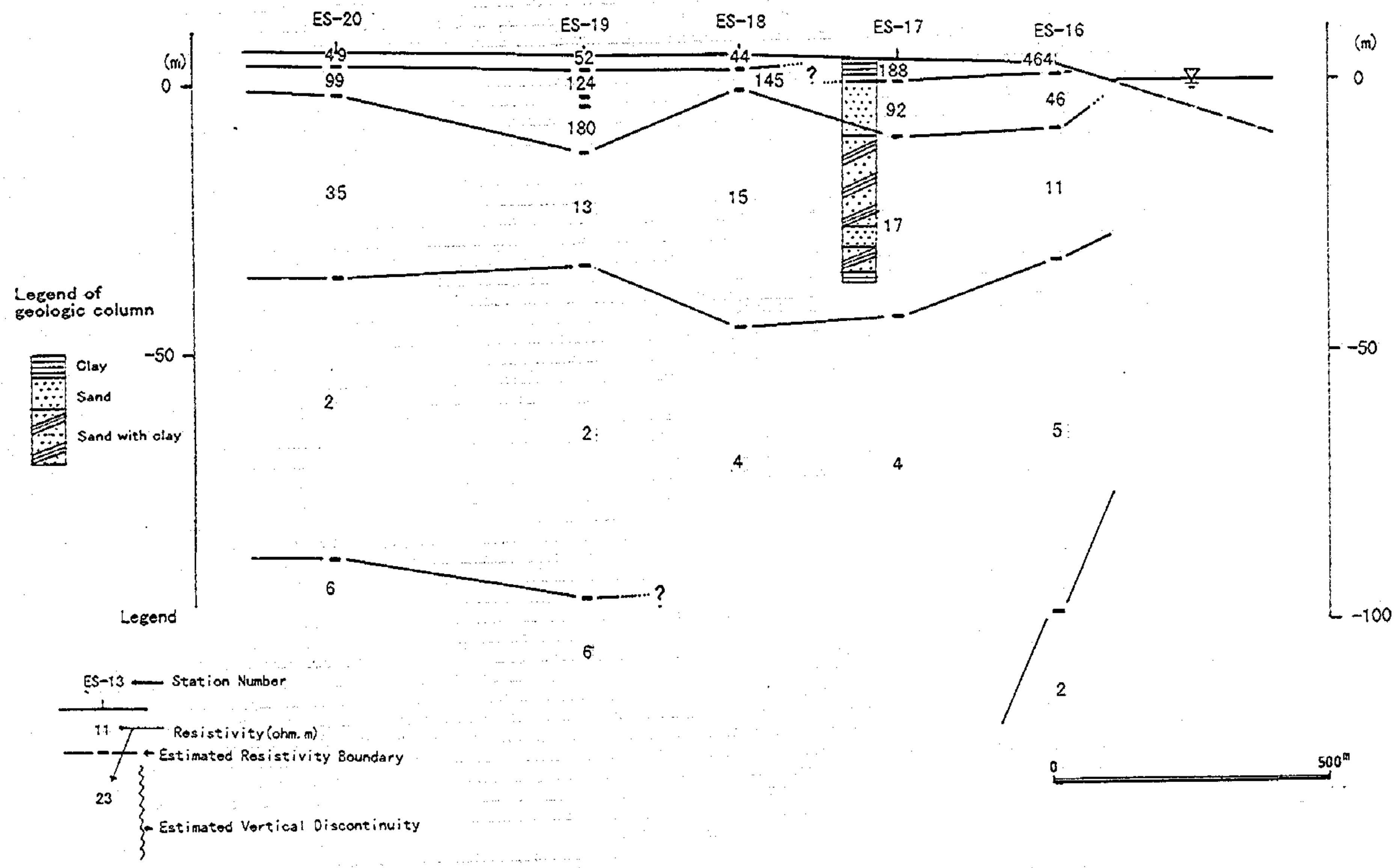


FIGURE 21 Resistivity Structure for Section E-E in Dodo Creek Area

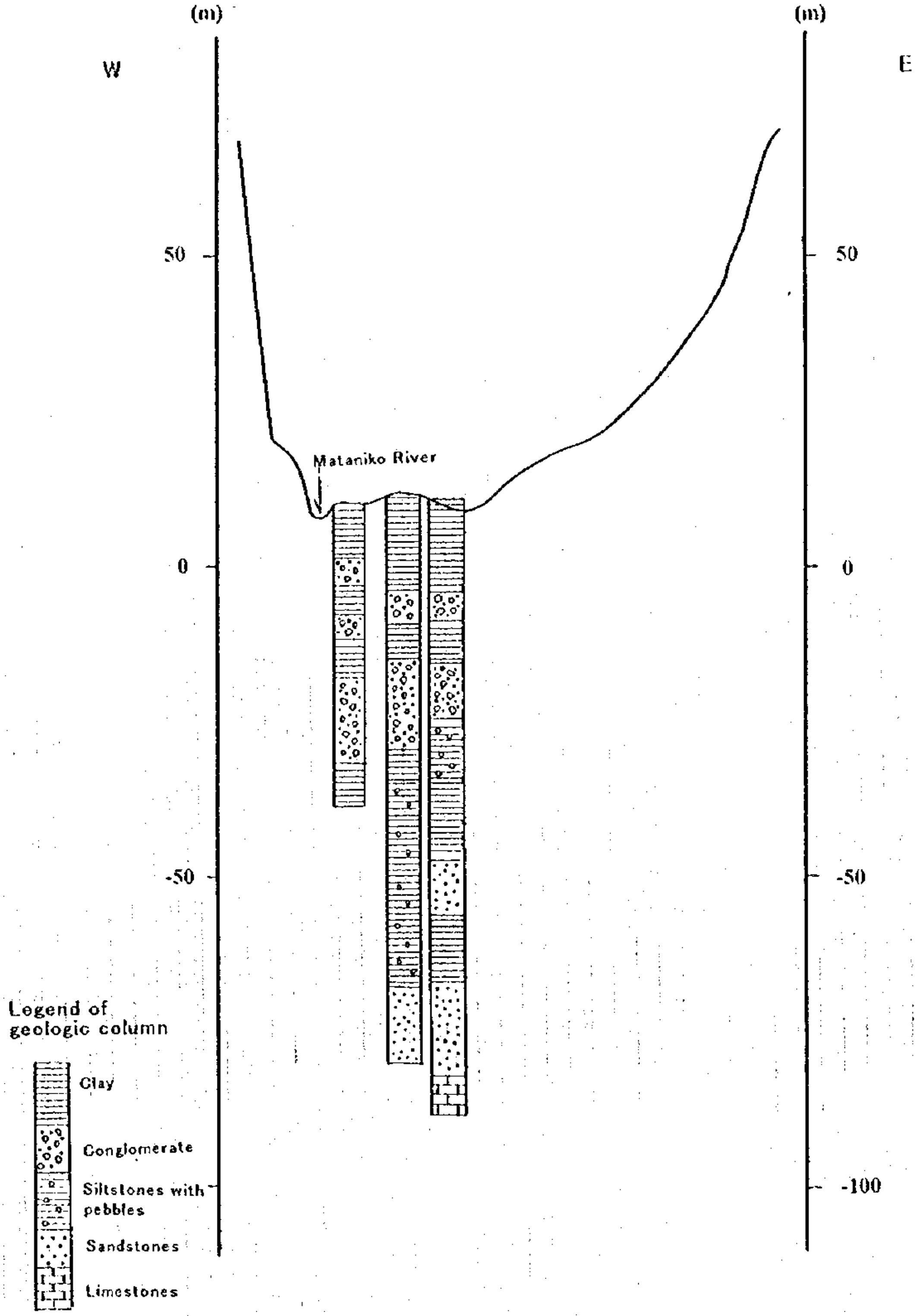
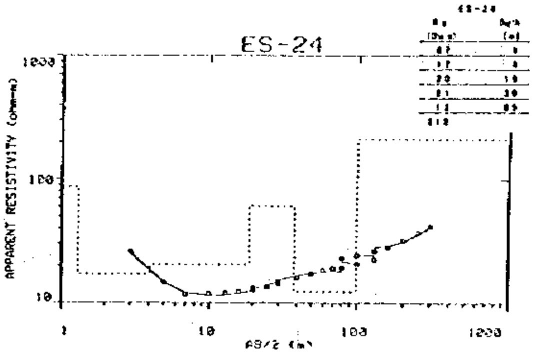
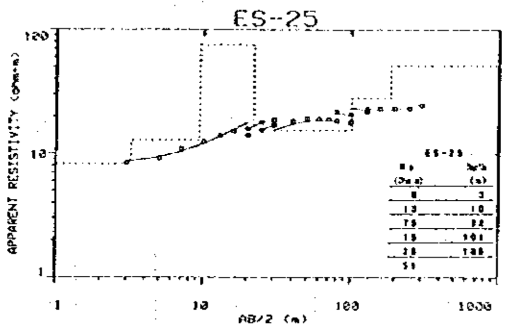
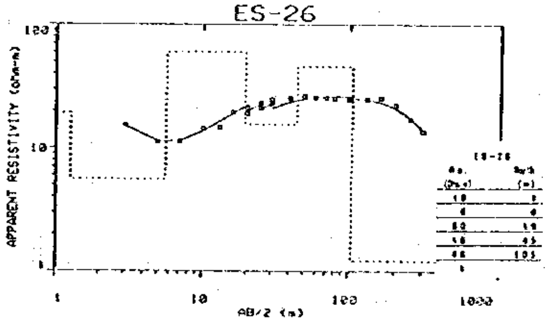


FIGURE 22 Geological Structure of Mataniko Site from existing data

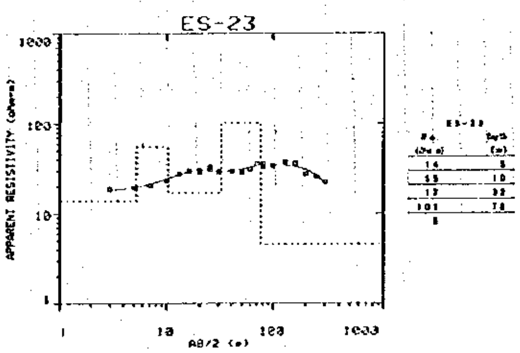
Rove Site

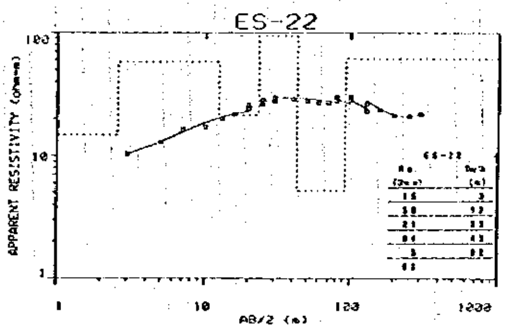






White River Site





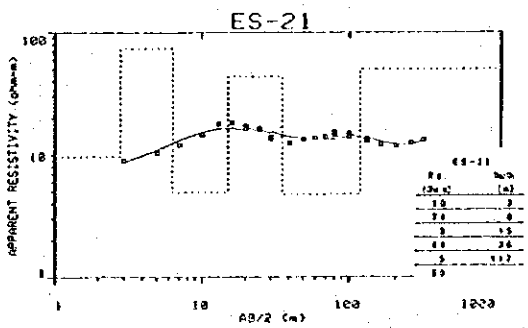


FIGURE 23 VES Interpretation(1)

APPENDIX-6C

Kombito Site

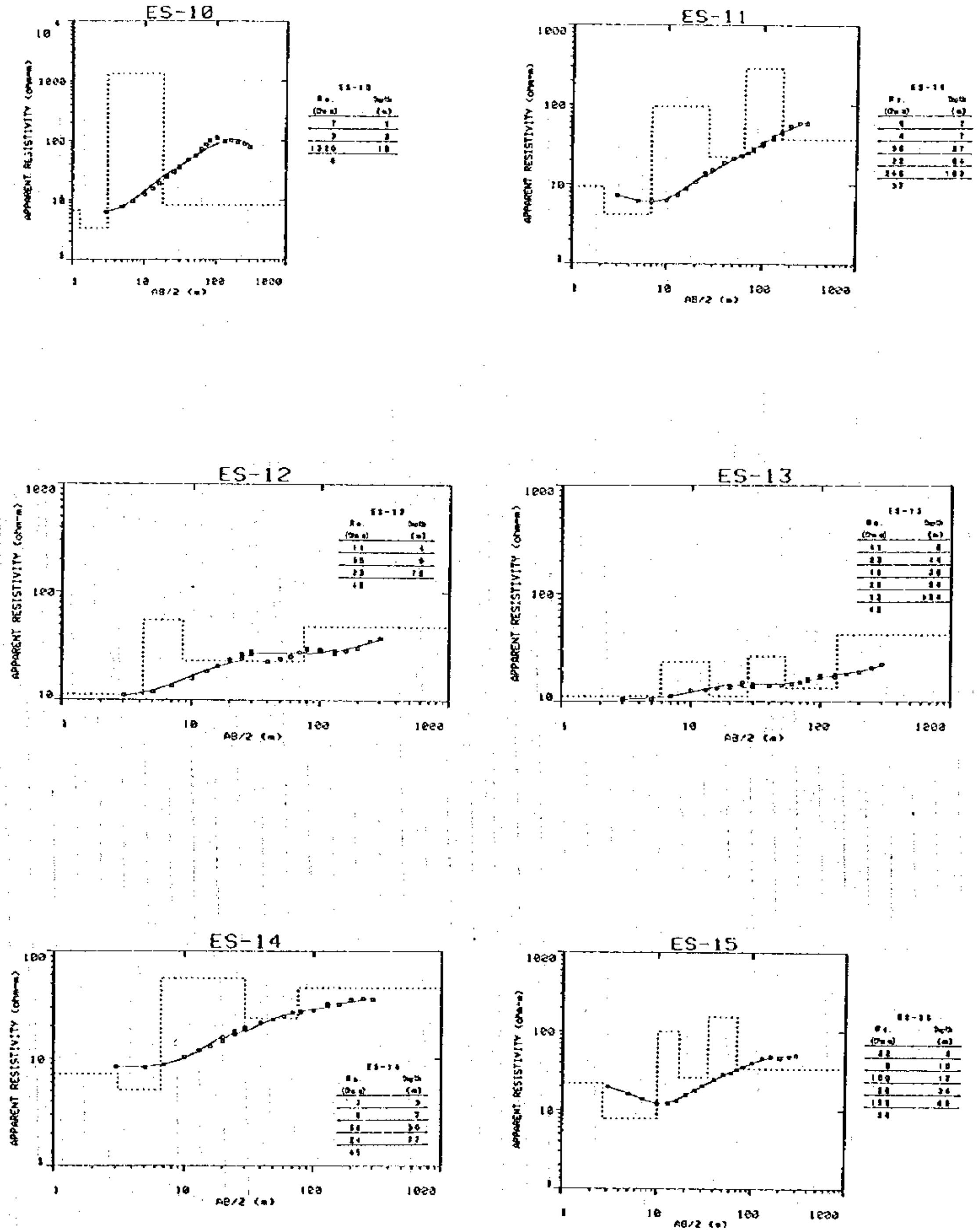
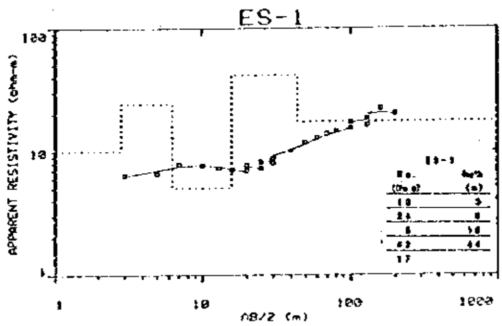
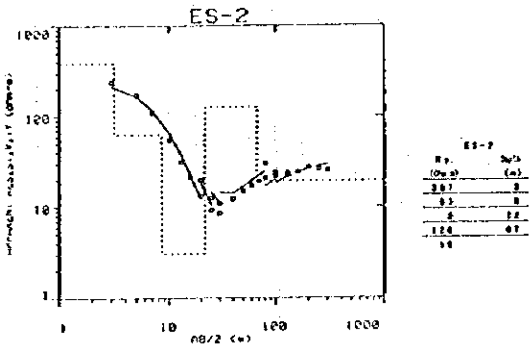
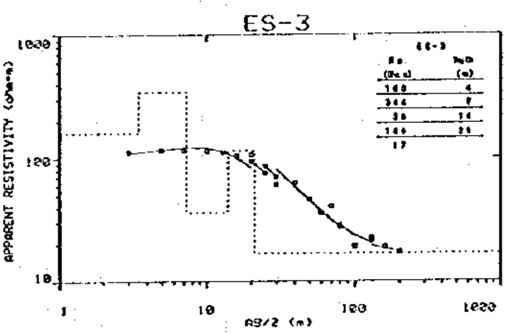
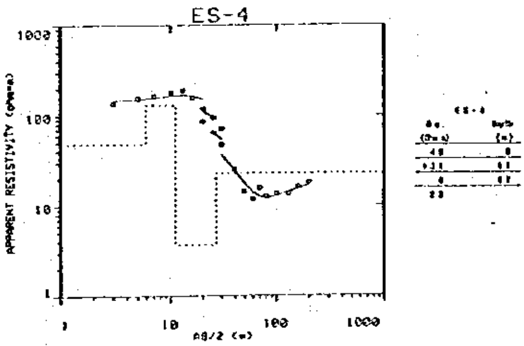


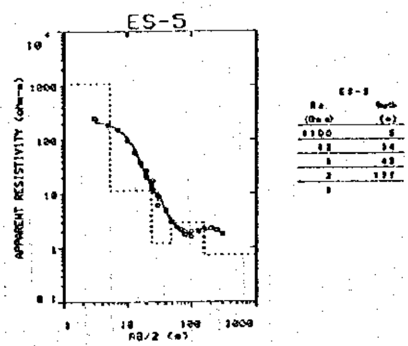
FIGURE 24 VES Interpretation(2)

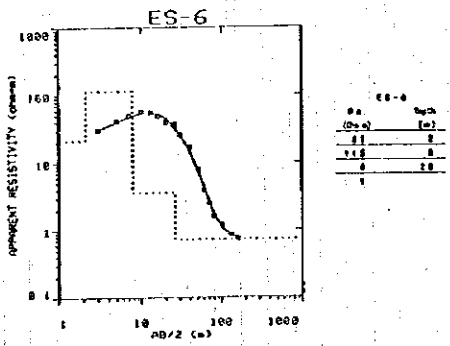


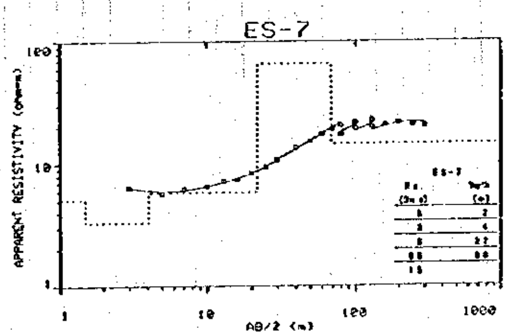


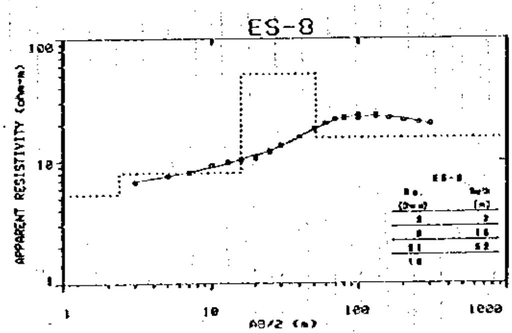












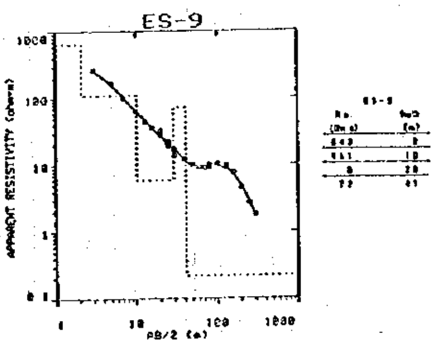
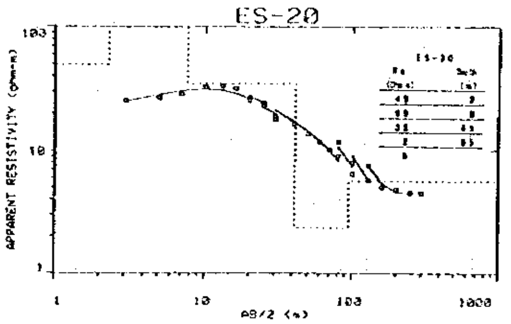
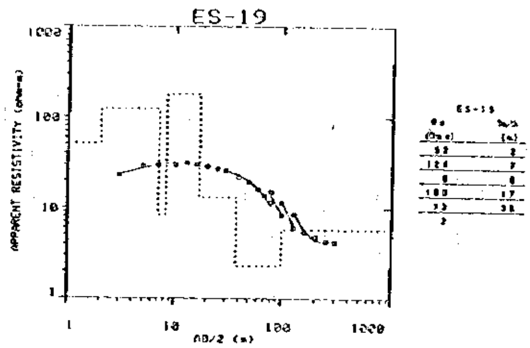


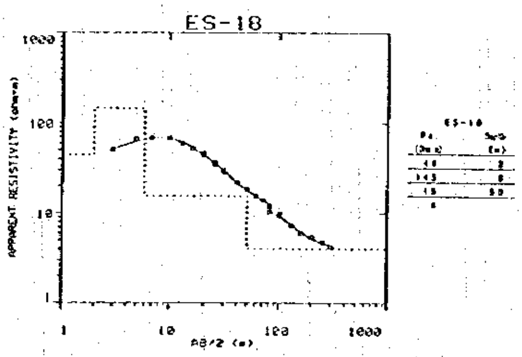
FIGURE 25 VES Interpretation(3)

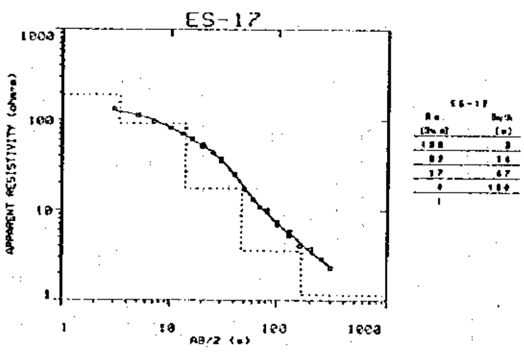
APPENDIX-6C

Ndondo Creek Site









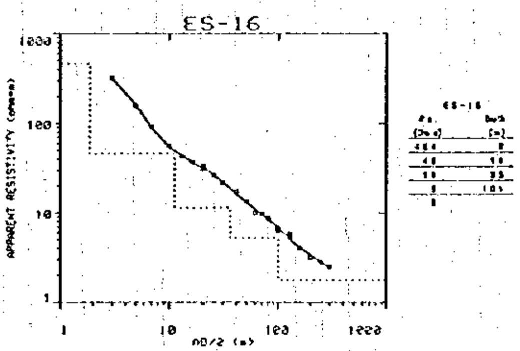


FIGURE 26 VES Interpretation(4)

Available Groundwater Development Potential

Available yields from boreholes at each site were estimated using the aquifer parameters of each site.

(1)Hydrogeological Parameters of Aquifers

Hydrogeological parameters of aquifers are shown in Table 1 based on both the existing reports and the results of this study.

Table 1 Aquifer Parameters

site	Aquifer geology	Aquifer thickness	Static groundwater level	Hydraulic conductivity	Radius of influence
White River	Honiara sandstones	>15m	G.L.-5m	4.4m/day	1,000m
Mataniko	Honiara sandstones	28m	G.L.-2m	2.0m/day	400m
Kombito	Honiara sandstones	>30m	G.L.-1m	4.4m/day	1,200m

Information on aquifer parameters indicated in the existing reports is insufficient, therefore, the parameters shown in Table 1 should be considered to be standard values in the study area without high accuracy.

(2) Depth and Diameter of Borehole

Depths and diameters of newly planned boreholes are designed as shown in Table 2.

Depth of Borehole
Depth of boreholes are designed by site based on the results of electrical resistivity sounding

Diameter of Borehole
The diameter of borehole affects well efficiency and its life span, as well as capacity of the power pump installed in the borehole. Boreholes of 6 inch diameter are currently common in Honiara city, and there are many cases where boreholes collapse and aquifer materials such as sand flow into the borehole due to insufficient diameter. As a result, open area of the screen is clogged with sand and the borehole yield decreases. For example, replacement of the existing boreholes is now under consideration st Panatina site due to an obvious decrease in yield. Moreover, pump capacity currently installed in the existing boreholes of 6 inch diameter is limited with an abstraction rate of less than 10l/s, and an increase in the rate is impossible. Taking this fact into account, the final diameter of the designed boreholes should be 8 inches.

Table 2 Depth and Diameter of Borehole

Site		Depth of well	Diameter of well
White River	No.1	80m	8 inches
	No.2	80m	
Mataniko	Well field	80m	
Kombito	Well field	100m	

(3) Designed Yield

Yield from each borehole was estimated using formulas shown below. Both groundwater draw down of the borehole and borehole geometry in a well field affect the yield of the borehole. Yields with allowable draw down were calculated considering well interference with the existing wells

Single Borehole

$$Q = s \times (2 \pi k m) / \ln(R / r)$$

APPENDIX-6D

Standard Well Structure

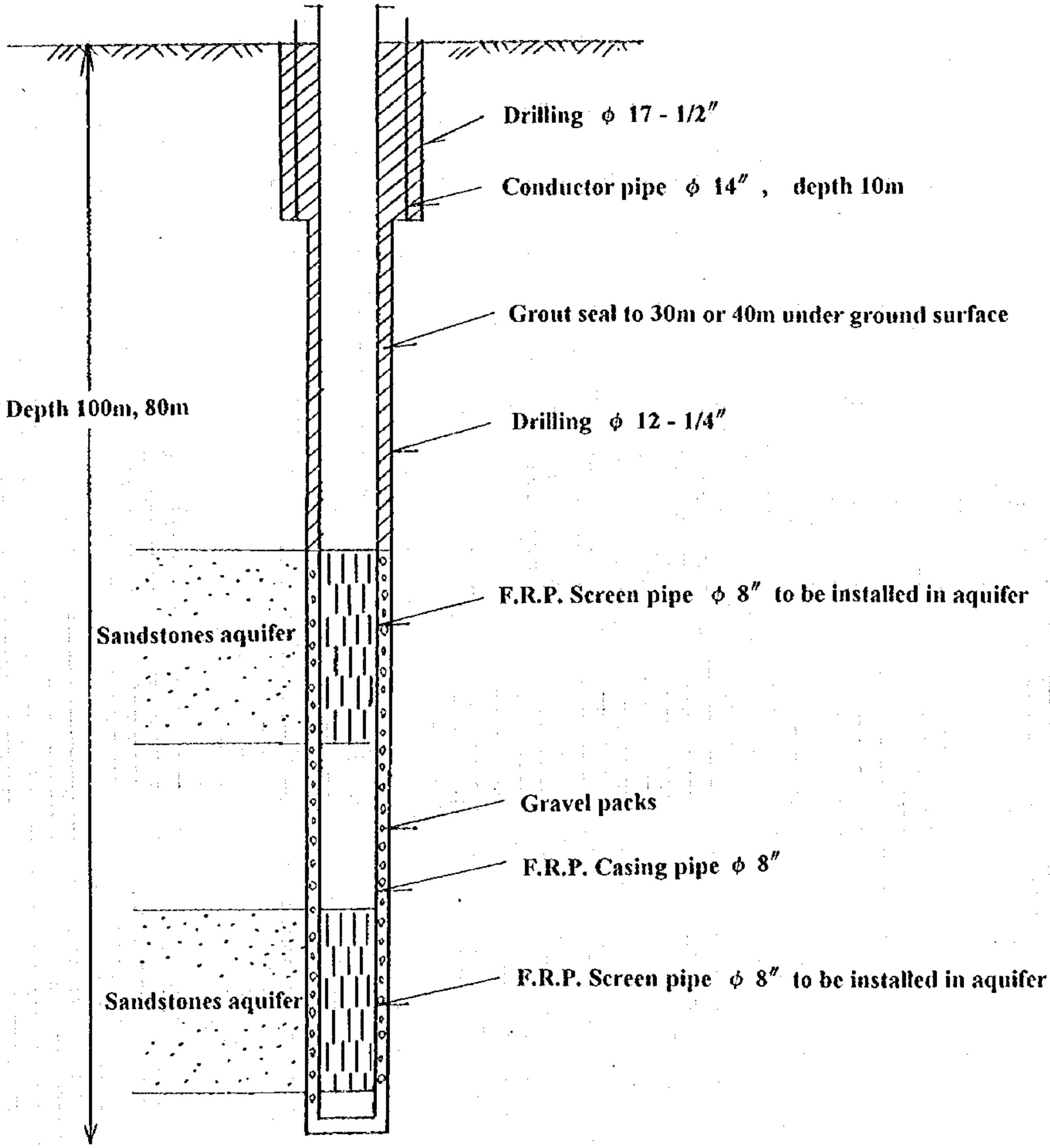


FIGURE 1 Standard Well Structure

Where、 Q : Yield(m^3/day)
s : Draw down of borehole(m)
k : Hydraulic conductivity (m/day)
m : Aquifer thickness (m)
R : Radius of influence (m)
r : Radius of borehole (m)

Well Field

Draw down of No.i borehole in a well field having n boreholes with yield of Q is calculated using the following formula ;

$$s_i = Q / (2\pi k m) \times [\ \ln(R / r_i) + \ln(R / r_{i1}) + \ln(R / r_{i2}) + \cdots + \ln(R / r_{in})]$$

Where Q : Yield (m^3/day)
s_i : Draw down of No.i borehole (m)
k : Hydraulic conductivity (m/day)
m : Aquifer thickness (m)
R : Radius of influence (m)
r_i : Radius of No.i borehole (m)
r_{ik} : Distance between No.i and No.k boreholes (m)

Result of Calculation
Result of calculation by site is shown in Table 3.

Table 3 Yield by Site

site		Number	Yield(m^3/day)		Draw down	Note
			1 borehole	total		
White River	No.1	2	870	3,480	25m	Draw down should be less than proposed value to prevent saline water encroachment.
	No.2	2	870		25m	Well must be sealed off to prevent groundwater contamination.
Mataniko	well field	5	620	*3,100	31m	Yield should be less than proposed value to reduce well interference to existing wells.
Kombito	well field	2	900	1,800	19m	Yield should be less than proposed value to reduce well interference to EC wells.

Note * ; Yield of existing boreholes may decrease by well interference. The total yield of boreholes in Mataniko site, therefore, may be 620m^3/day × 7 boreholes = 4,340 m^3/day.

(4) Groundwater Development Potential

The groundwater development potential is defined as the total groundwater volume able to be developed in the study area. Apart from groundwater volume to be abstracted from a borehole, it is necessary to estimate the total groundwater volume able to be abstracted from the entire study area. Groundwater development potential in a river basin is the same as annual groundwater recharge in the river basin, and it is estimated from the water balance relationship as shown below;

Water balance in a river basin:
Precipitation = Evapotranspiration + River flow + Groundwater flow out to other basins and the sea
Where River flow = Direct runoff + Baseflow

Groundwater development potential in a river basin:
groundwater development potential
= Groundwater recharge = Baseflow + Groundwater flow out to other basins and the sea

Discharge measurements have not been carried out in the study area. Consequently, groundwater development potential was estimated using hydrological data of the Rungga river basin next to the study area.

Water balance in Rungga river basin

Precipitation (4,400mm/year) = Evapotranspiration (1,400 mm/year) + River flow (1,860 mm/year) + (Groundwater out flow) (1,140 mm/year)

where River flow (1,860 mm/year) = Direct runoff (890 mm/year) + Baseflow (970 mm/year)

Annual precipitation differs greatly from that of the other basins. On the other hand, annual evapotranspiration is considered to be almost the same among many river basins. Therefore, the rest of (precipitation - evapotranspiration) may be distributed to the other elements constituting the water balance formula in the same ratio as that of the Lungga river .

Based on the above, groundwater development potential is estimated as follows;

Groundwater development potential = (Precipitation - Evapotranspiration) ×70 %

Groundwater development potential is obtained by applying the relationship to the study area.

Groundwater development potential in the study area

= (2,500mm/year − 1,400mm/year) ×70 %

= 700 mm/year

As a result, groundwater development potential in the study area is assumed 700 mm/year.
Total groundwater development potential by river basin, where drilling sites are located, are shown in table 4.

Table 4 Groundwater Development Potential by River Basin

Site	Area of river basin up stream of site (km^2)	Groundwater potential
White River	10.2	20,000m^3/day
Rove	4.8	9,200 m^3/day
Mataniko	40.0	77,000 m^3/day
Kombito	4.4	8,400 m^3/day

Total yield of new boreholes planned in this project and the existing boreholes are less than the groundwater development potential corresponding to the river basin.This means that the borehole drilling plan of this project is reasonable in terms of groundwater development potential of the river basins .

Values shown in Table 4 are groundwater development potential in the river basin. However, this project will develop confined aquifers, whose groundwater basins are not equivalent to the river basins where the aquifers are located. The groundwater basins of confined aquifers in the study area are considered to be larger than the river basins. It follows that actual groundwater development potential in each site may be greater than those shown in Table 4.

Calculation of yield of proposed well (1)

Single borehole

$Q = s \times (2\pi k m) / \ln(R/r)$

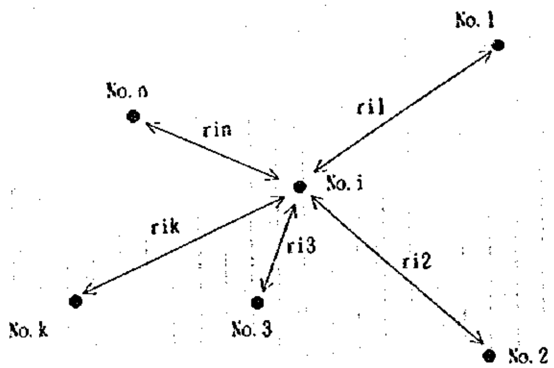
Where,			
	Q	:	Yield(m^3/day)
	s	:	Draw down of borehole(m)
	k	:	Hydraulic conductivity (m/day)
	m	:	Aquifer thickness (m)
	R	:	Radius of influence (m)
	r	:	Radius of borehole (m)

Well field

Draw down of borehole No.i in a well field having n boreholes with yield of Q is calculated s follows;

$s_i = Q / (2\pi k m) \times [\ \ln(R/r_i) + \ln(R/r_{i1}) + \ln(R/r_{i2}) + \cdot\cdot\cdot + \ln(R/r_{in})]$

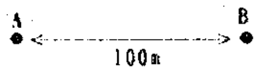
Where			
	Q	:	Yield (m^3/day)
	s_i	:	Draw down of No.i borehole (m)
	k	:	Hydraulic conductivity (m/day)
	m	:	Aquifer thickness (m)
	R	:	Radius of influence (m)
	r_i	:	Radius of No.i borehole (m)
	r_{ik}	:	Distance between No.i and No.k boreholes (m)



White River

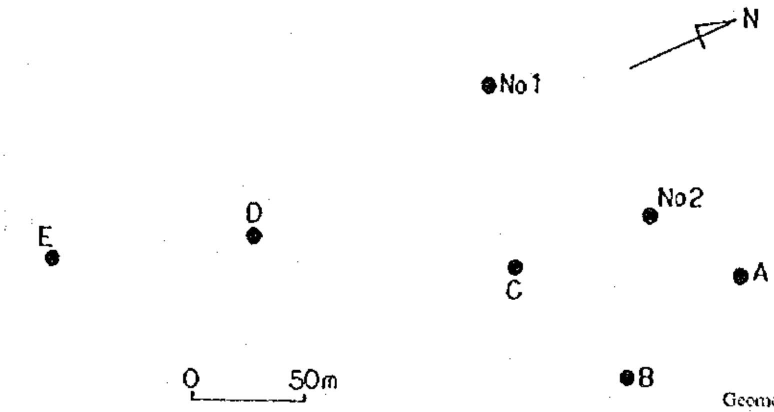
Well to be calculated		Hydraulic conductivity (k) (m/day)	Thickness of aquifer (m) (m)	Yield (Q) (m3/day)	Draw down (s) (m)	Radius of influence (R) (m)	Distance (rik) A (m)	Distance (rik) B (m)
No.1	A	4.4	15	870	24.12	1000	0.102	100
	B	4.4	15	870	24.12	1000	100	0.102
No.2	A	4.4	15	870	24.12	1000	0.102	100
	B	4.4	15	870	24.12	1000	100	0.102

Geometry of well field A,B : proposed wells



Calculation of yield of proposed well (2)

Mataniko site



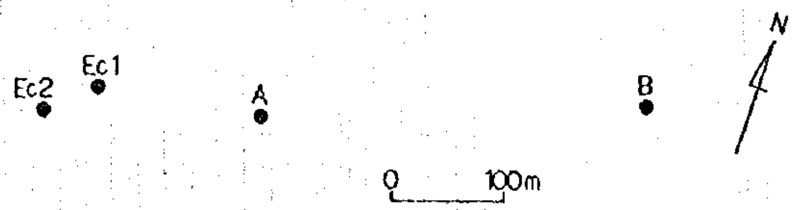
Geometry of well field

No.1, No.2 : Exising

A - F : Proposed

Well to be calculated	Hydraulic conductivity (k) (m/day)	Thickness of aquifer (m) (m)	Yield (Q) (m3/day)	Draw down (s) (m)	Radius of influence (R) (m)	Distance (rik) No.1 (m)	No.2 (m)	A (m)	B (m)	C (m)	D (m)	E (m)
No.1	2	28	620	27.64	400	.076	90	135	140	80	120	205
No.2	2	28	620	30.27	400	90	.076	45	70	60	170	260
A	2	28	620	27.73	400	135	45	.102	65	95	210	300
B	2	28	620	28.17	400	140	70	65	.102	65	175	255
C	2	28	620	29.93	400	80	60	95	65	.102	115	200
D	2	28	620	25.64	400	120	170	210	175	115	.102	90
E	2	28	620	21.68	400	205	260	300	255	200	90	.102

Kombito site



Geometry of well field

Ec1, Ec2 : Exising

A - B : Proposed

Well to be calculated	Hydraulic conductivity (k) (m/day)	Thickness of aquifer (m) (m)	Yield (Q) (m3/day)	Draw down (s) (m)	Radius of influence (R) (m)	Distance (rik) Ec1 (m)	Ec2 (m)	A (m)	B (m)
Ec1	4.4	30	900	18.50	1800	0.127	50	140	470
Ec2	4.4	30	900	18.12	1800	50	0.127	180	520
A	4.4	30	900	17.73	1800	140	180	0.102	330
B	4.4	30	900	15.26	1800	470	520	330	0.102

References

Group	Name of Information
Genearl	Development Framework: Policies, Strategies and Programe of Action 1995-1998
	SIWA 5 Year Engineering Plan
	Honiara Water Supply - Inprovements to Existing Systems, 5 Year Plan for Capital Works
	SIWA Coporate Policy Manual
	SIWA Report from the Provinces, February 1996
	SOLOMAN ISLANDS EIA GUIDELINES
	Government Organization Chart
	Honiara Housing Survey
	Labour Force Statistics 1992
	Prioritisation of possible Project Components for JICA Honiara Project
	Environmental Impact Assessment Policy
	SIWA Cycle report
	SIWA Revenue and Expenditure for the Year 1995
	SIWA Main Financial Report As at the end of June 1995
	Project Design Document
	Review on MTWU
	SIWA Salary structure
	SIWA Updated Organization Chart
	SIG Recurrent Estimates
Natural/Hydro-geological conditions	Proposal for Detailed Geological and Hydrogeological Mapping of East Honiara
	Hydrogeological Assessment of the White River Catchment Area and the White River Source
	Preliminary Water Resources Assessment of the Ngoli Sub-catchment near Honiara
	Water Supply - East Honiara Kombito Boreholes Aquifer Test & Evaluation
	Assessment of Honiara water supply Well investigation in Panatina Valley
	Hydrogeological study in Guadalcanal Plains
	Geology of the Honiara Area
	Meteorology data (1986-1995)
	Aerial photograph (1:20,00 8sheets, 1:15,000 10sheets)
	Earth-quake Reports
Water Supply	Profile sheet (1 - 4)
	Record Drawing (25 - 35, missing 29)
	Record Plan Sheet (1 - 16)
	Design Drawing of Kombito (446-451, 603989)
	Guadalcanal Map (1/50000), 4 sheets
	Guadalcanal Map (1/10000), 6 sheets
	Guadalcanal Map (1/2500), 14 sheets
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Cost Estimates	New Zealand Construction Handbook, 1995
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