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US Army Corps
of Engineers

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TECHNICAL REPORT GL-88-5

GEOLOGICAL INVESTIGA
OF THE
PEARL RIVER BASI

by

J. B. Dunbar

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Eng
PO Box 631
Vicksburg, Mississippi 39180-0631

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NOV 04 1993
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Vicksburg, Mississippi

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icksburg, Mississippi

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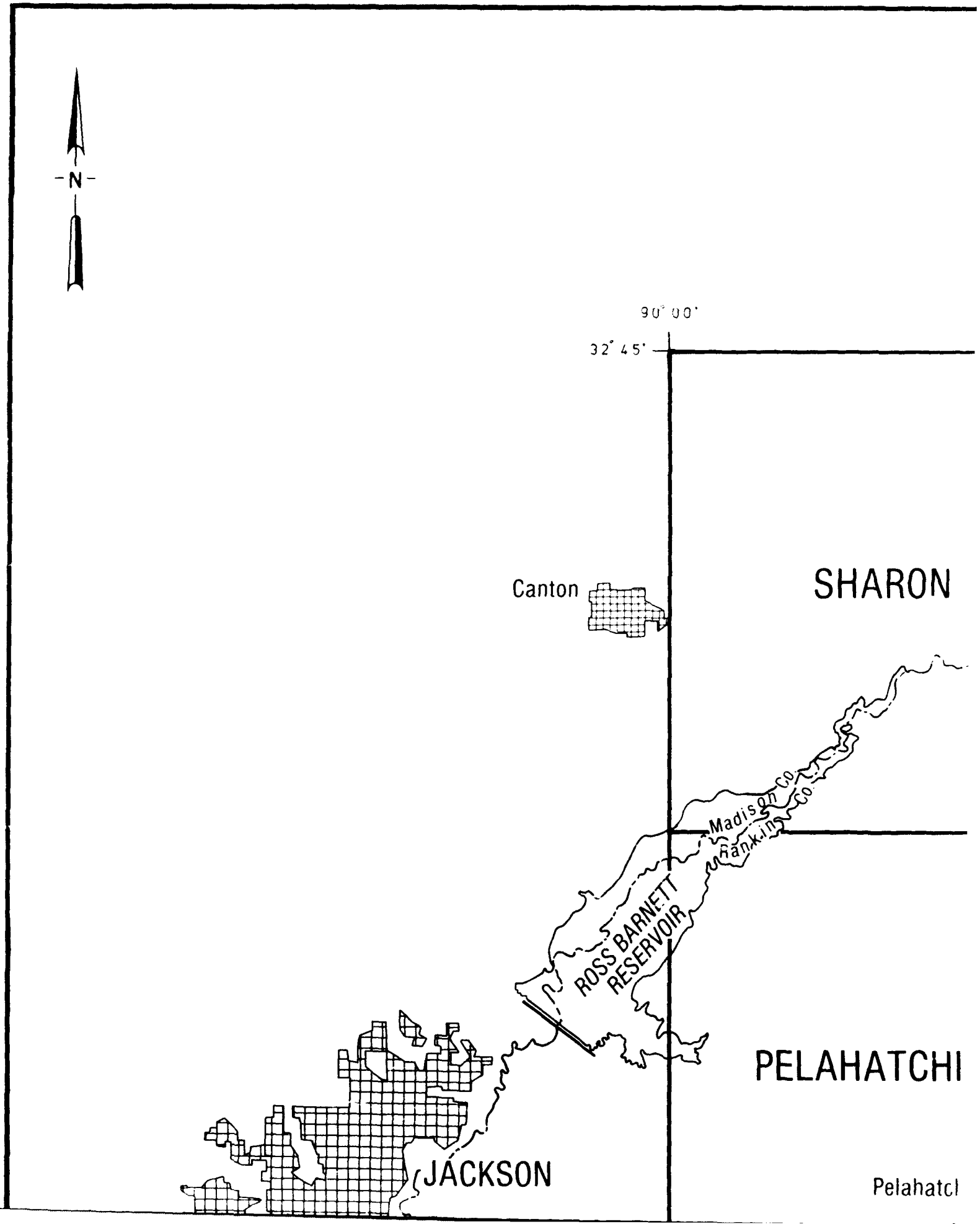
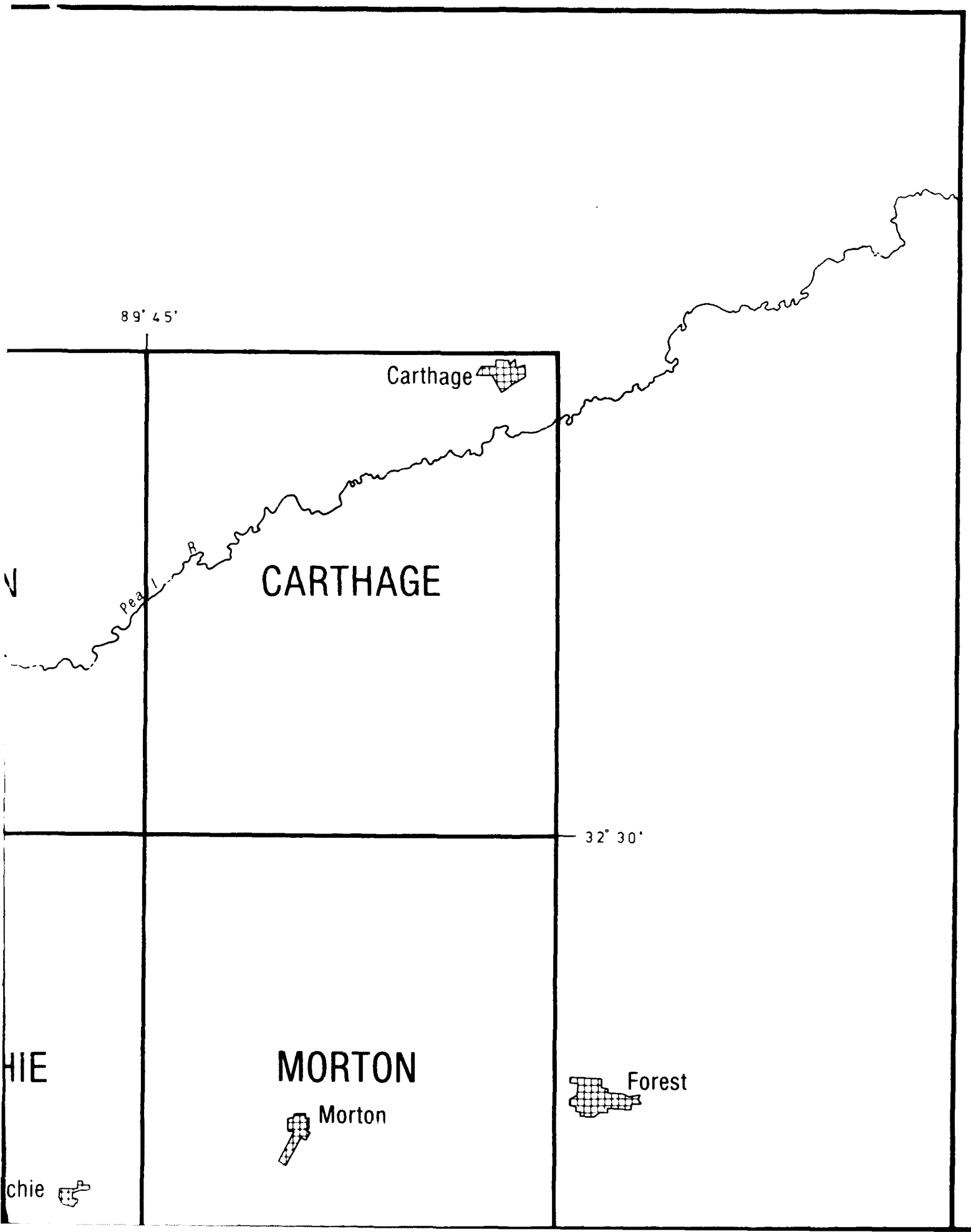
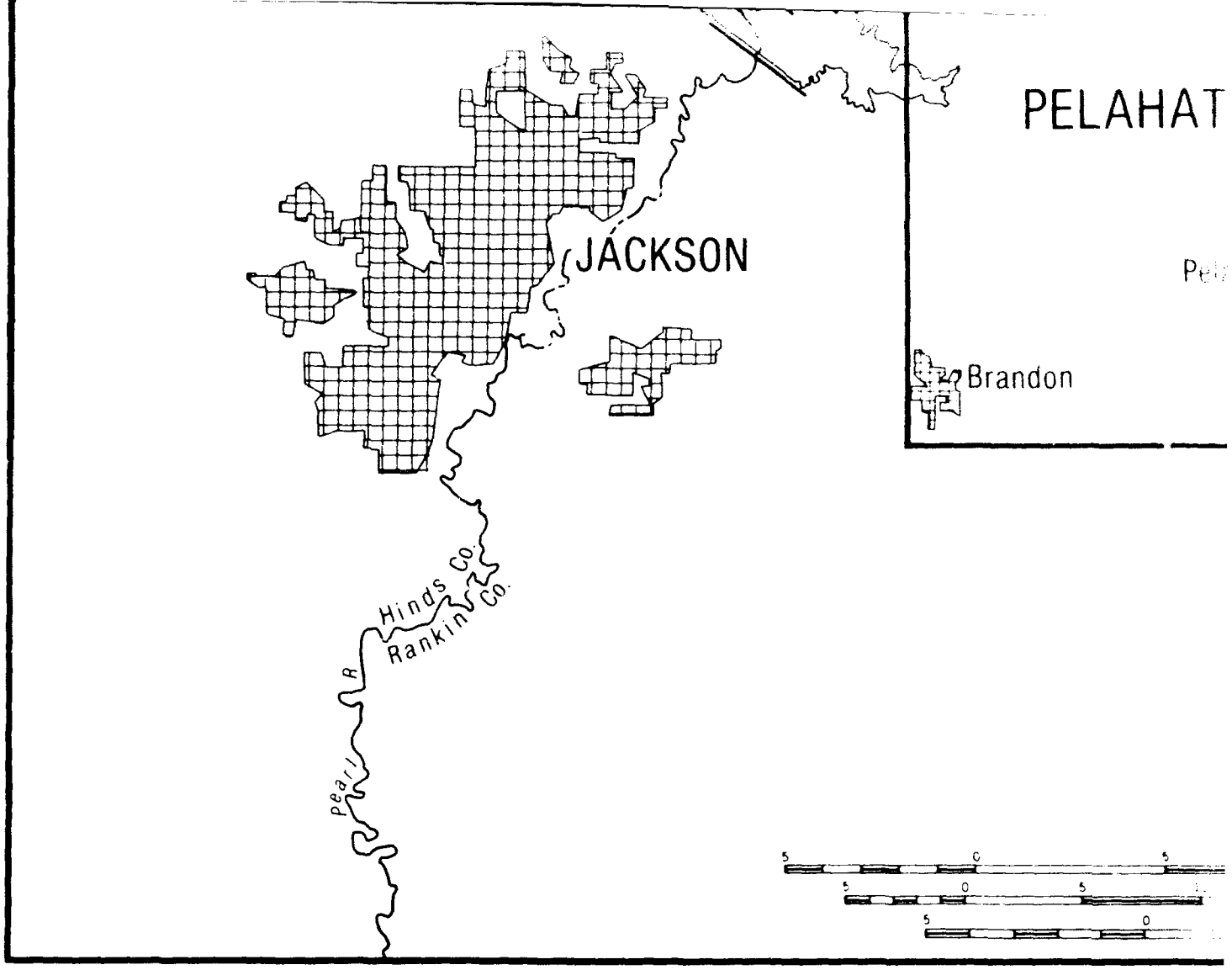
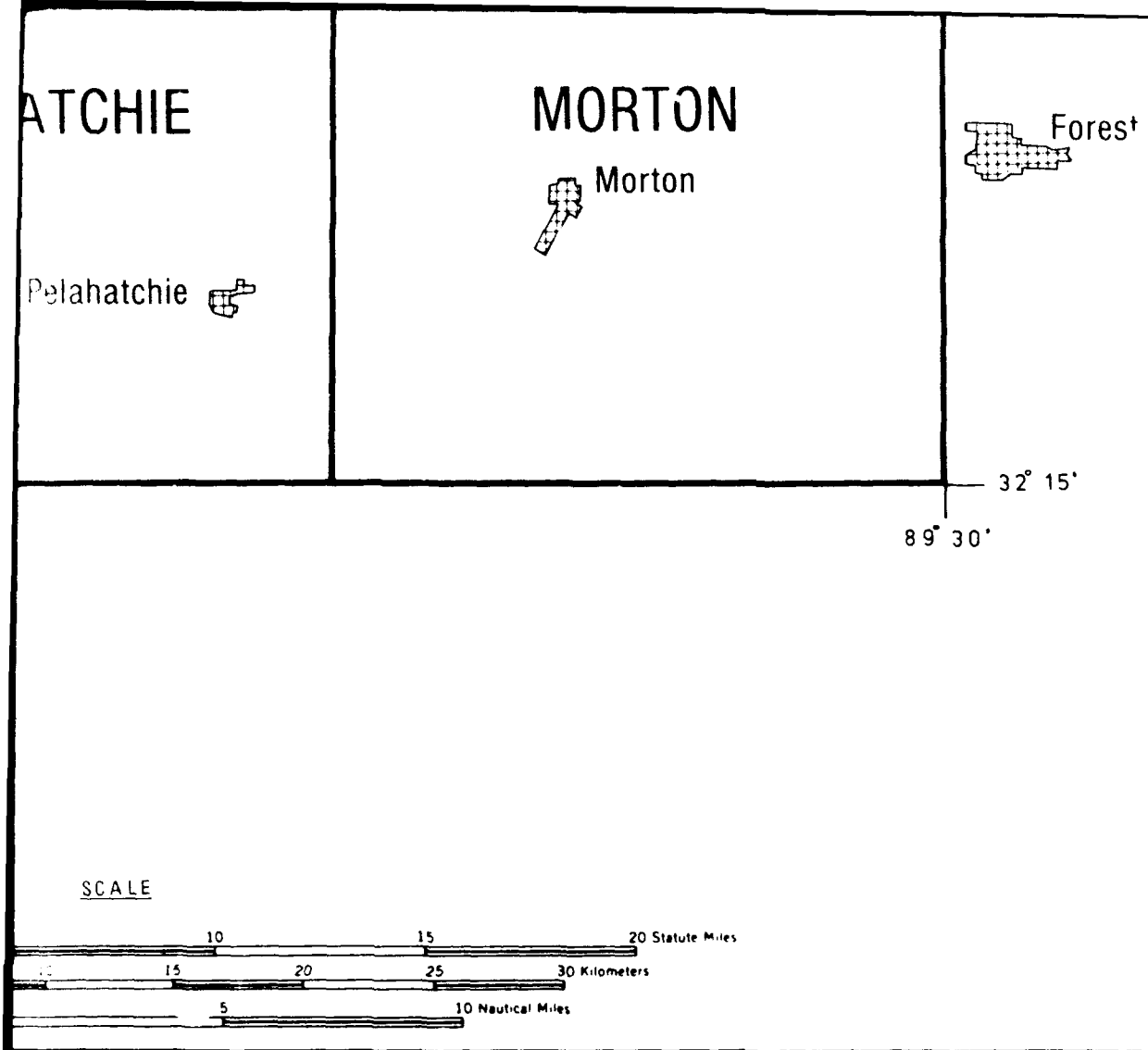

N
90° 00'
32° 45'
Canton
SHARON
Madison Co.
Rankin Co.
ROSS BARNETT RESERVOIR
PELAHATCHI
JACKSON
Pelahatcl


89° 45'
Carthage
Pearl R
CARTHAGE
32° 30'
HIE
MORTON
Morton
Forest
chie



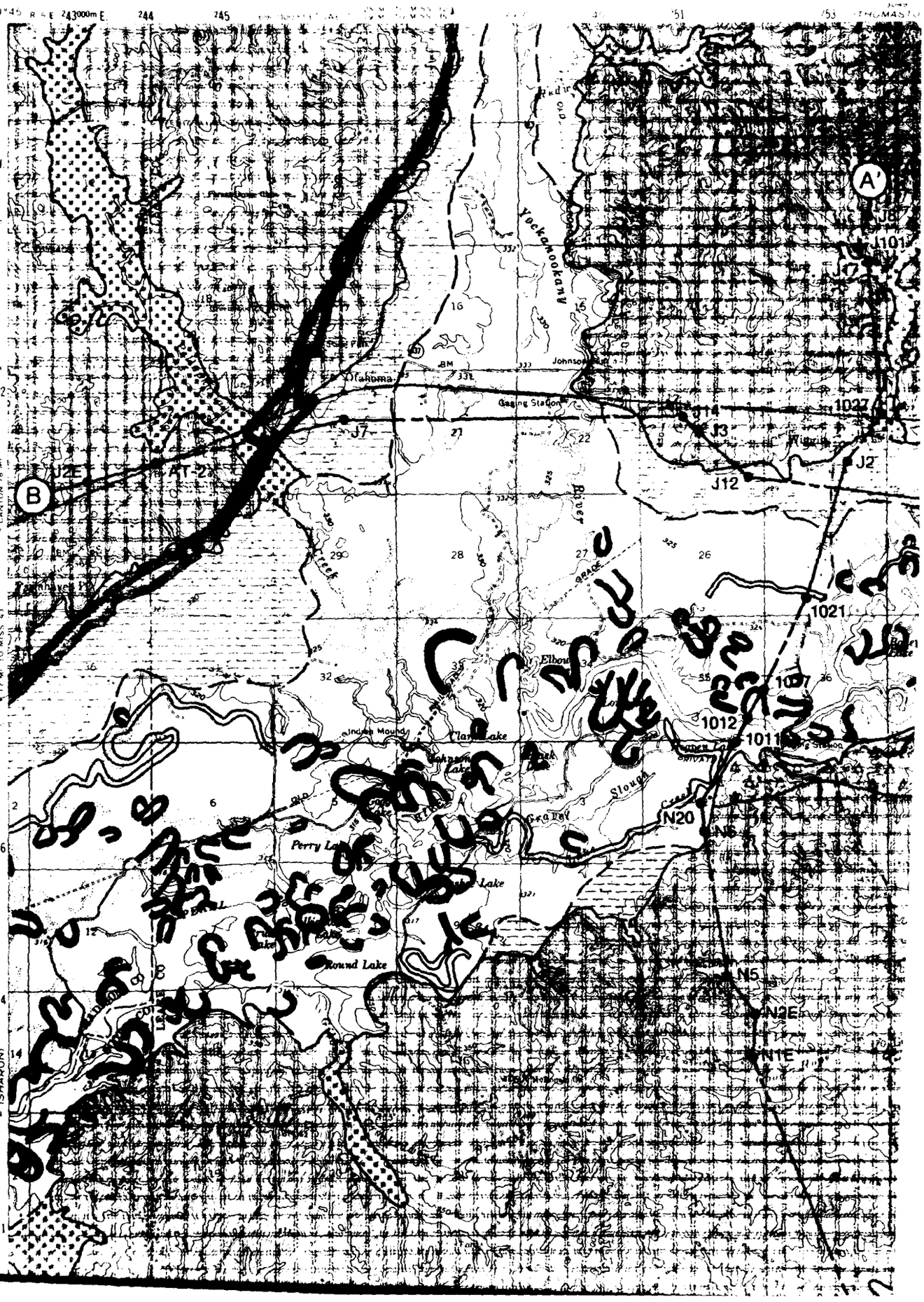
GEOLOGICA
PEARL I



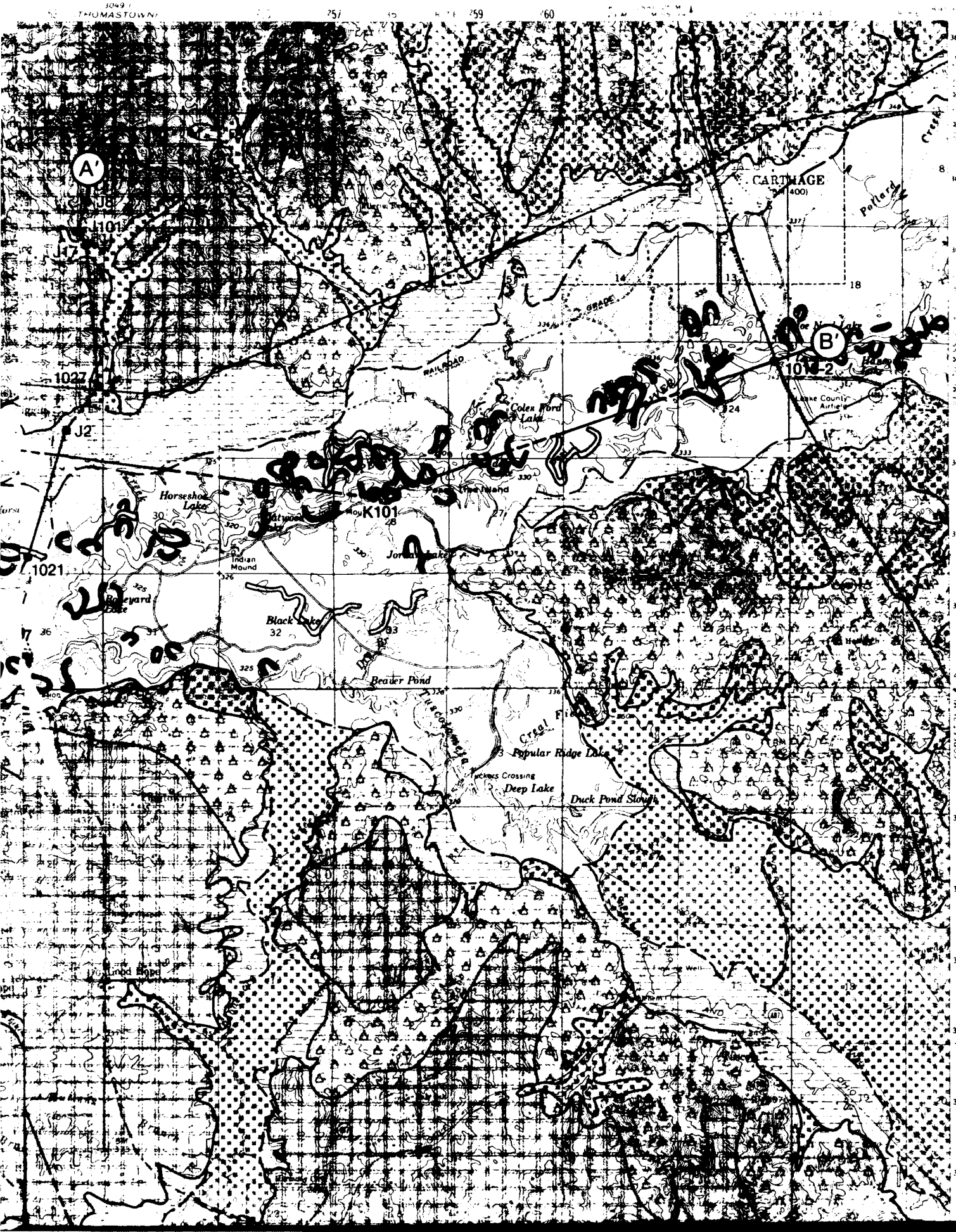
AL INVESTIGATION
RIVER BASIN

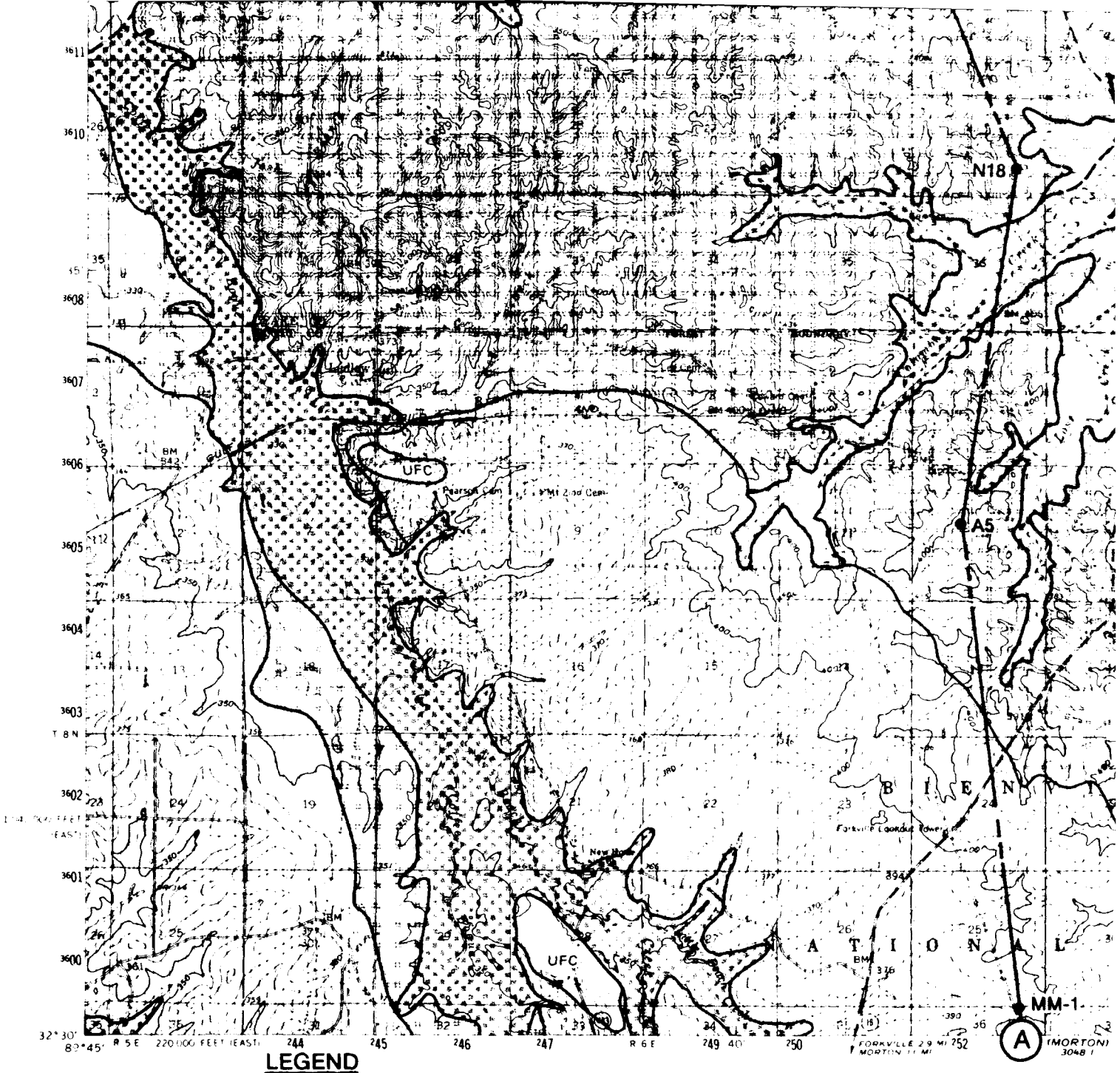
Accesion For
NTIS CRA&I ☑
DTIC TAB ☐
Unannounced ☐
Justification
By
Distribution /
Availability Codes
Dist | Avail and / or Special
A-1

U.S. ARMY
CORPS OF ENGINEERS



CARTHAGE QUADRANGLE
MISSISSIPPI





LEGEND

QUATERNARY

HOLOCENE

- POINT BAR
- ABANDONED CHANNEL
- ABANDONED COURSE
- UNDIFFERENTIATED ALLUVIUM
- COLLUVIAL/ALLUVIAL FAN

PLEISTOCENE

- TERRACE

QUATERNARY/TERTIARY

PLIO-PLEISTOCENE

- UFC — UPLAND FLUVIAL COMPLEX

TERTIARY

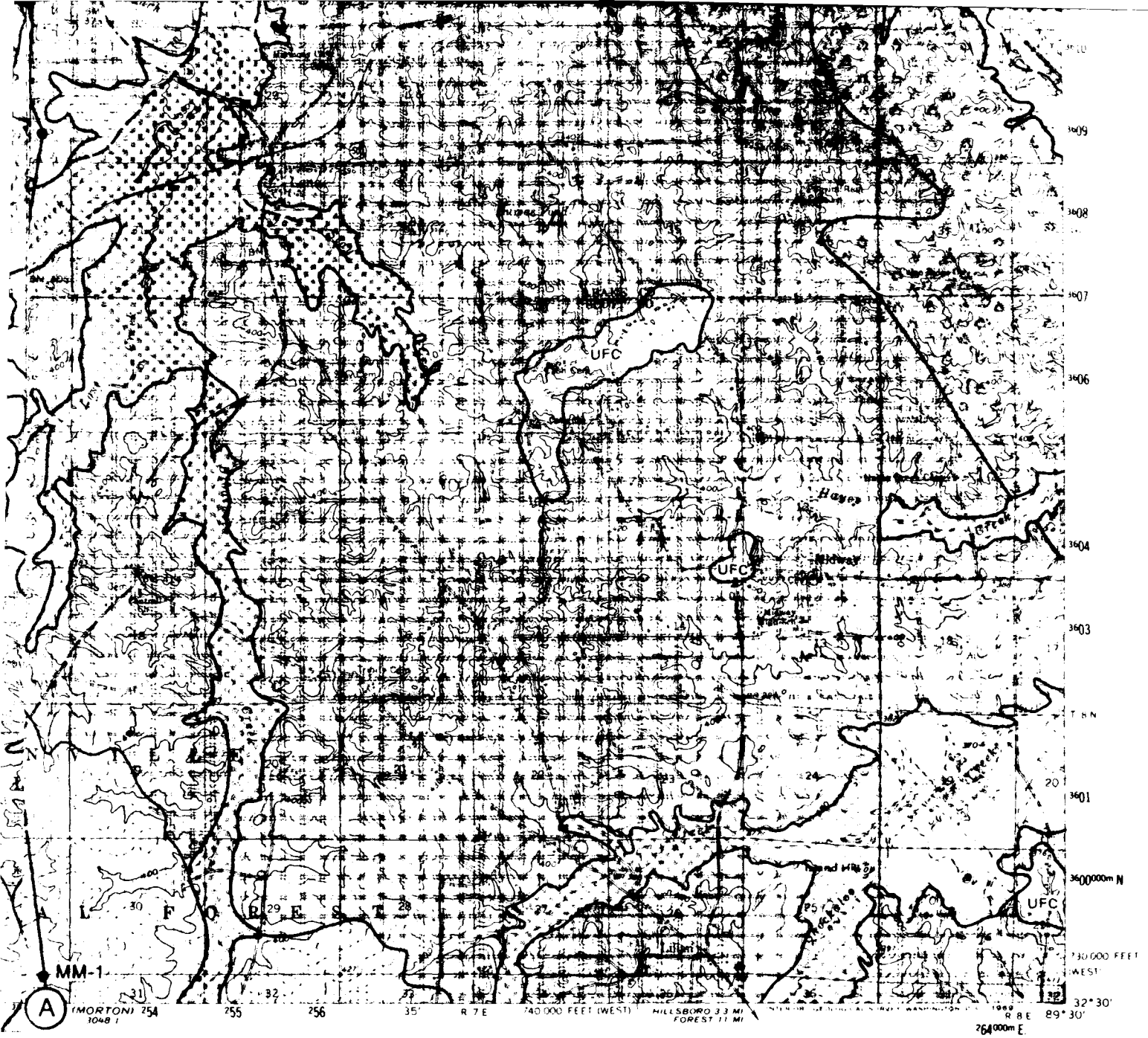
EOCENE

- JACKSON GROUP (YAZOO AND MOODYS BRANCH FORMATIONS)
- COCKFIELD FORMATION
- COOK MOUNTAIN FORMATION
- KOSCIUSKO FORMATION

- ● BORINGS USED ON CROSS SECTIONS
- — — INDEFINITE CONTACT

NOTE: Upland geolog
Geology," Mis
"Geologic Stud
Mississippi G
Map of Missis

CARTHAGE (a)



SCALE 1:62500

0 1 2 3 4 MILES

0 3000 6000 9000 12000 15000 18000 21000 FEET

5 0 1 2 3 4 5 KILOMETERS

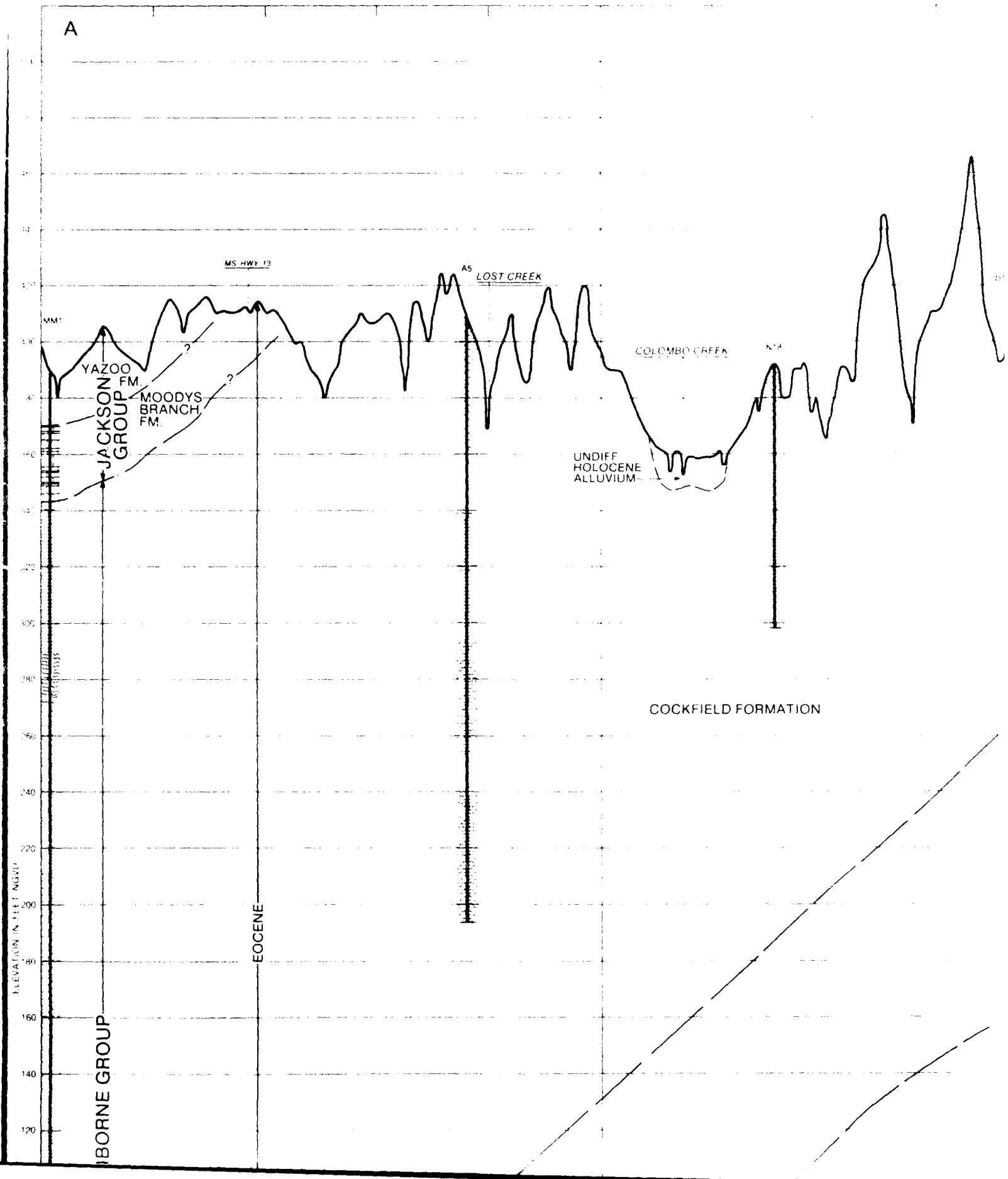
CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

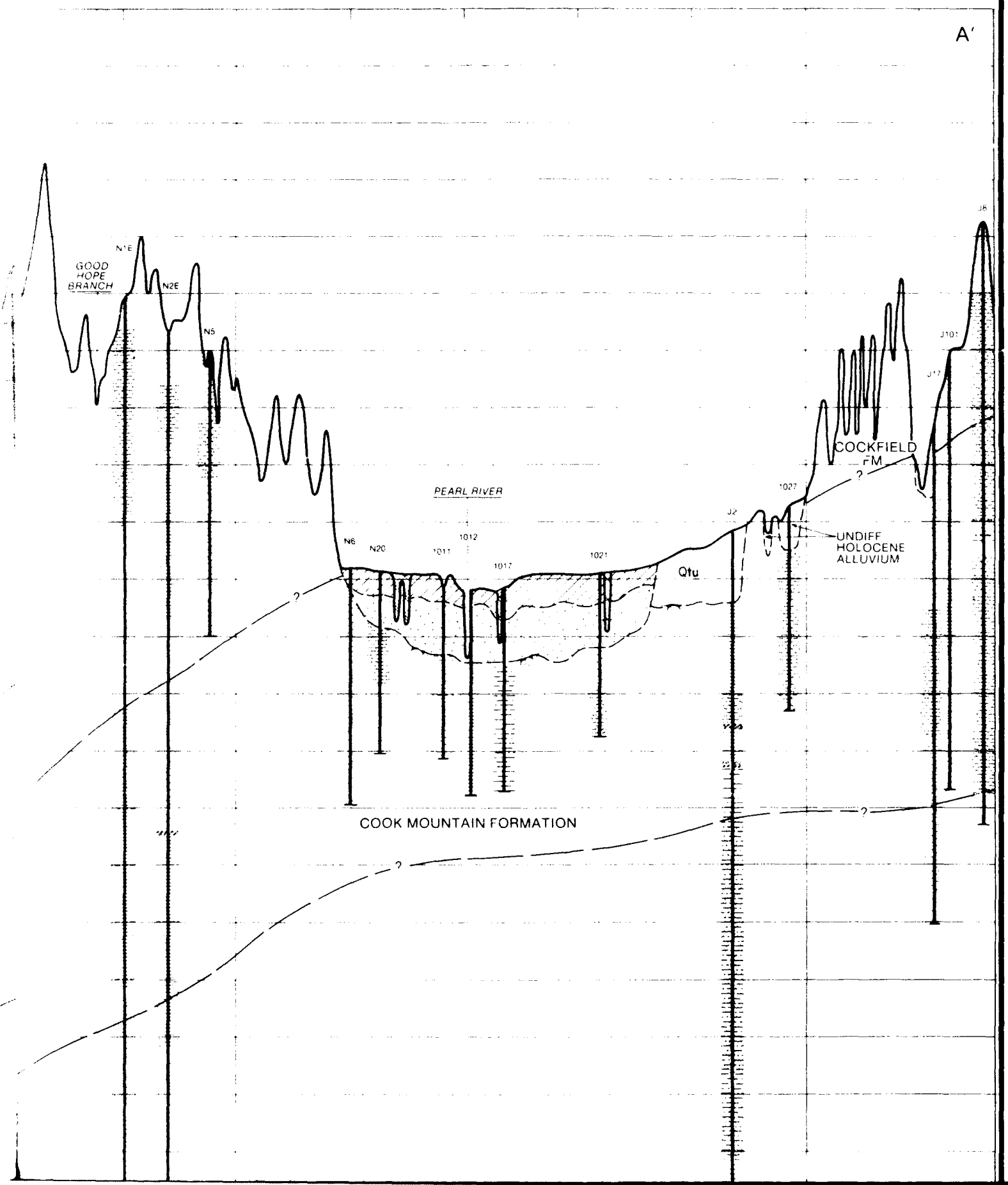
Upland geologic contacts based on work by Priddy (1960), "Madison County Geology," Mississippi State Geological Survey Bulletin No. 88; Brown (1960), "Geologic Study Along Highway 16 from Alabama Line to Canton, Mississippi," Mississippi Geologic Survey Bulletin No. 89; and Moore (1969), "Geologic Map of Mississippi," Mississippi Geologic Survey.

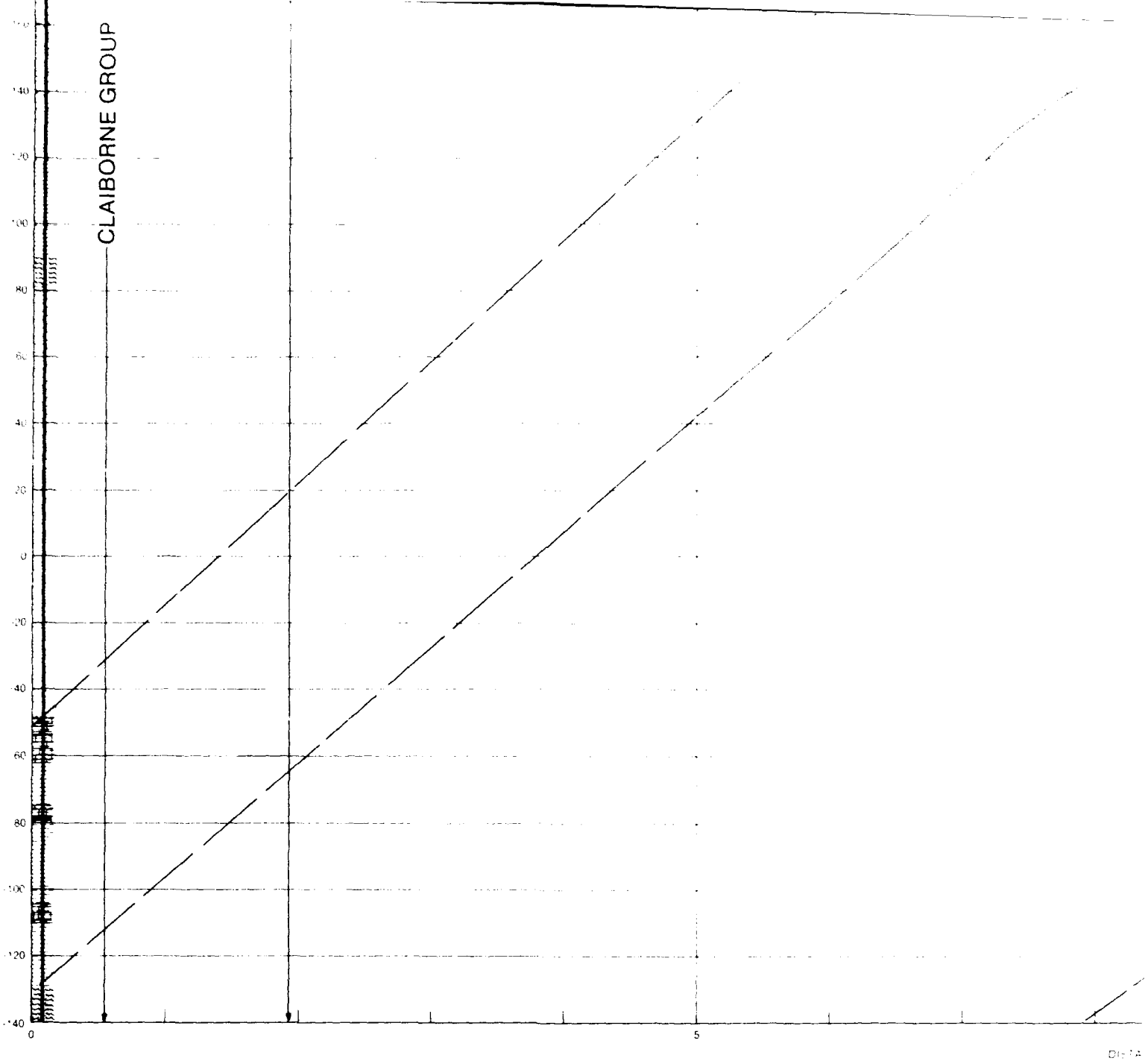
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SURFACE GEOLOGY

CARTHAGE, MS


A
MS HWY 13
A5
LOST CREEK
COLOMBO CREEK
YAZOO FM.
MOODYS BRANCH FM.
JACKSON GROUP
UNDIFF HOLOCENE ALLUVIUM
COCKFIELD FORMATION
EOCENE
BORNE GROUP
ELEVATION IN FEET NGVD
160
140
120


A'
GOOD HOPE BRANCH
N1E
N2E
N5
N6
N20
1011
1012
1017
1021
PEARL RIVER
Qtu
J2
1027
UNDIFF HOLOCENE ALLUVIUM
COCKFIELD FM
J101
J6
COOK MOUNTAIN FORMATION
?



LEGEND

ENVIRONMENTS OF DEPOSITION

TOPSTRATUM
- POINT BAR
- ABANDONED CHANNEL
- ABANDONED COURSE

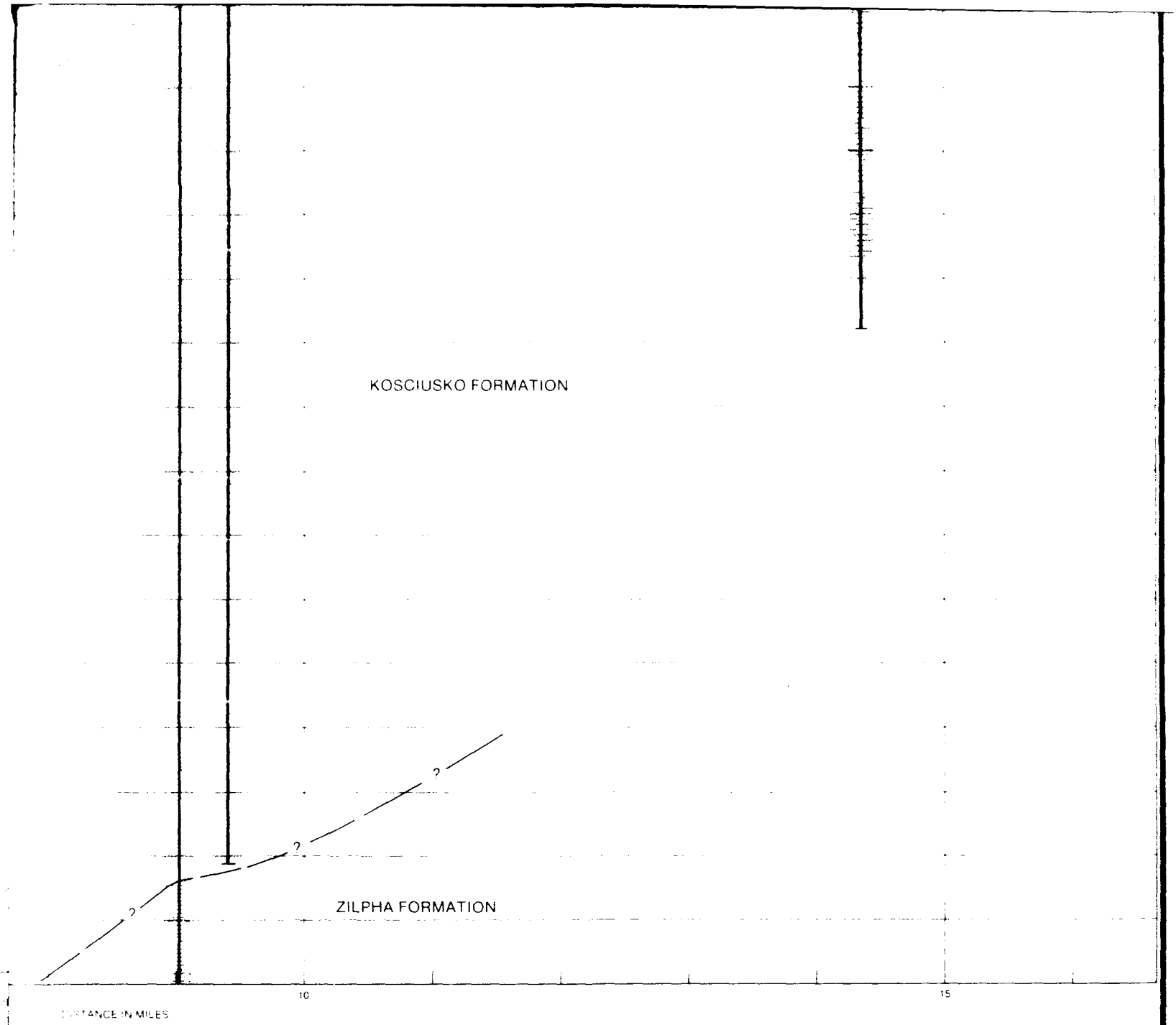
SUBSTRATUM
- UNDIFFERENTIATED SAND

LITHOLOGIC TYPES

- CLAY
- MARL
- SAND
- SHALE
- ROCKS
- LIGNITE

MAPPING SYMBOLS

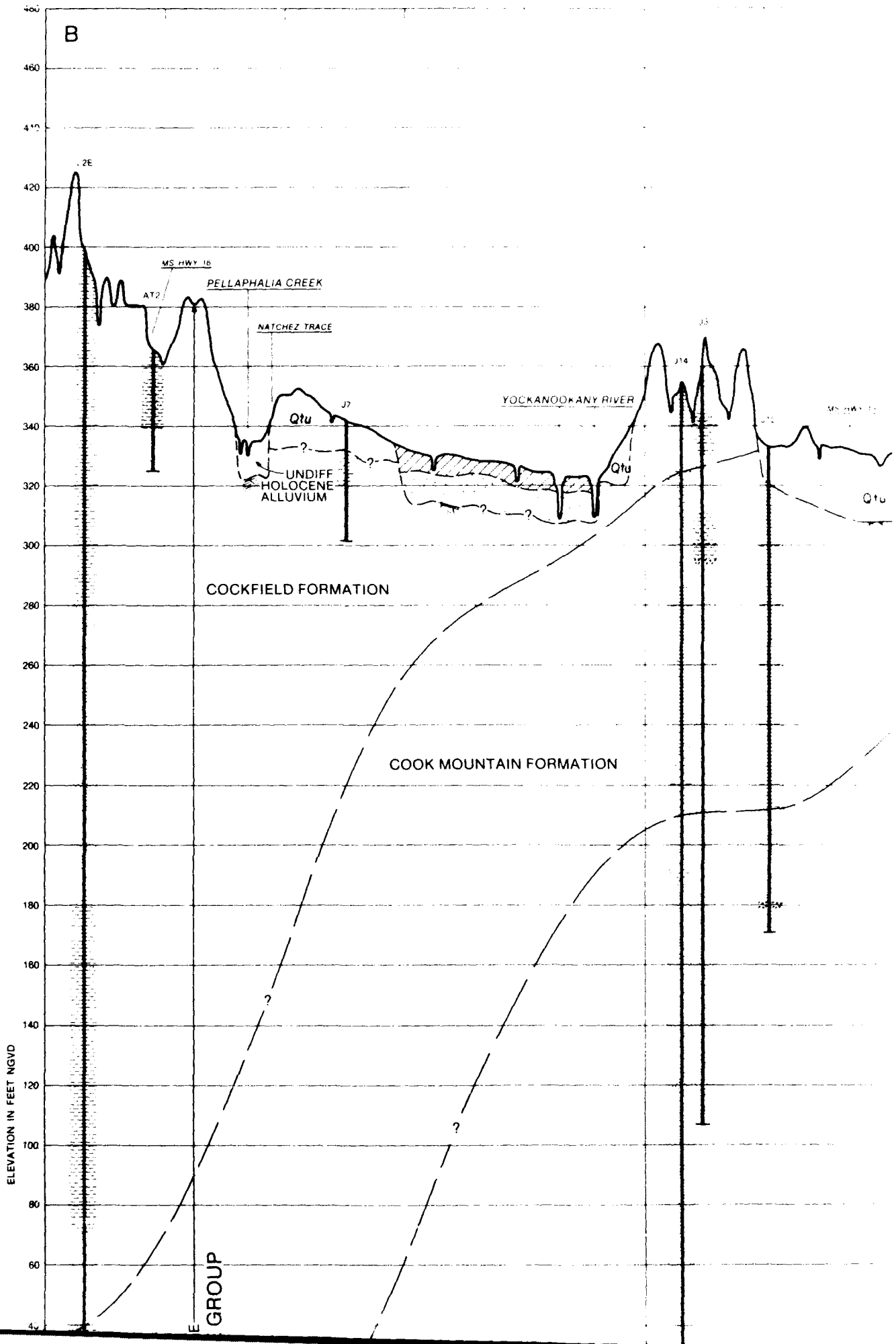
- Qtu — UNDIFFERENTIATED TERRACE
- TERTIARY SURFACE

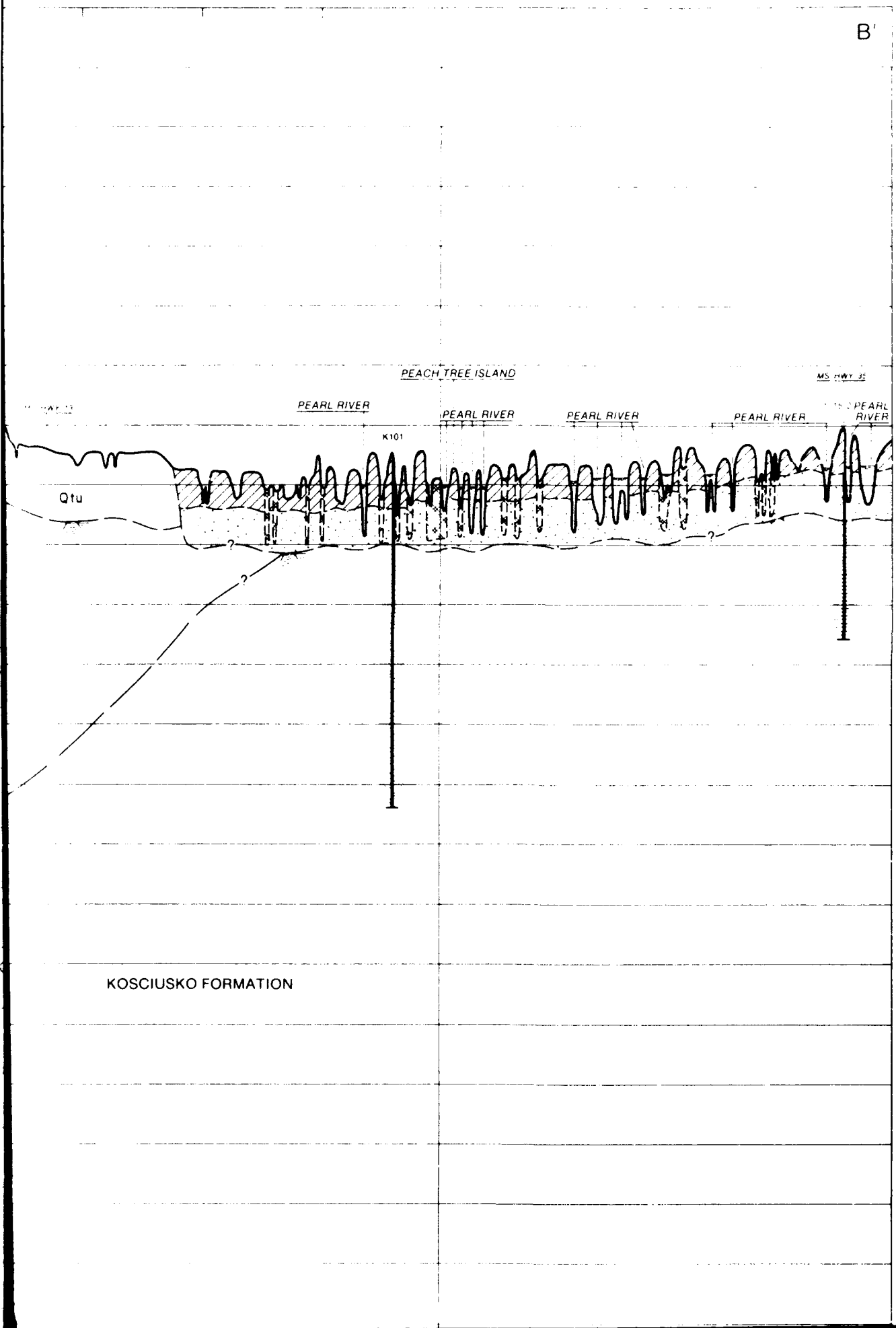


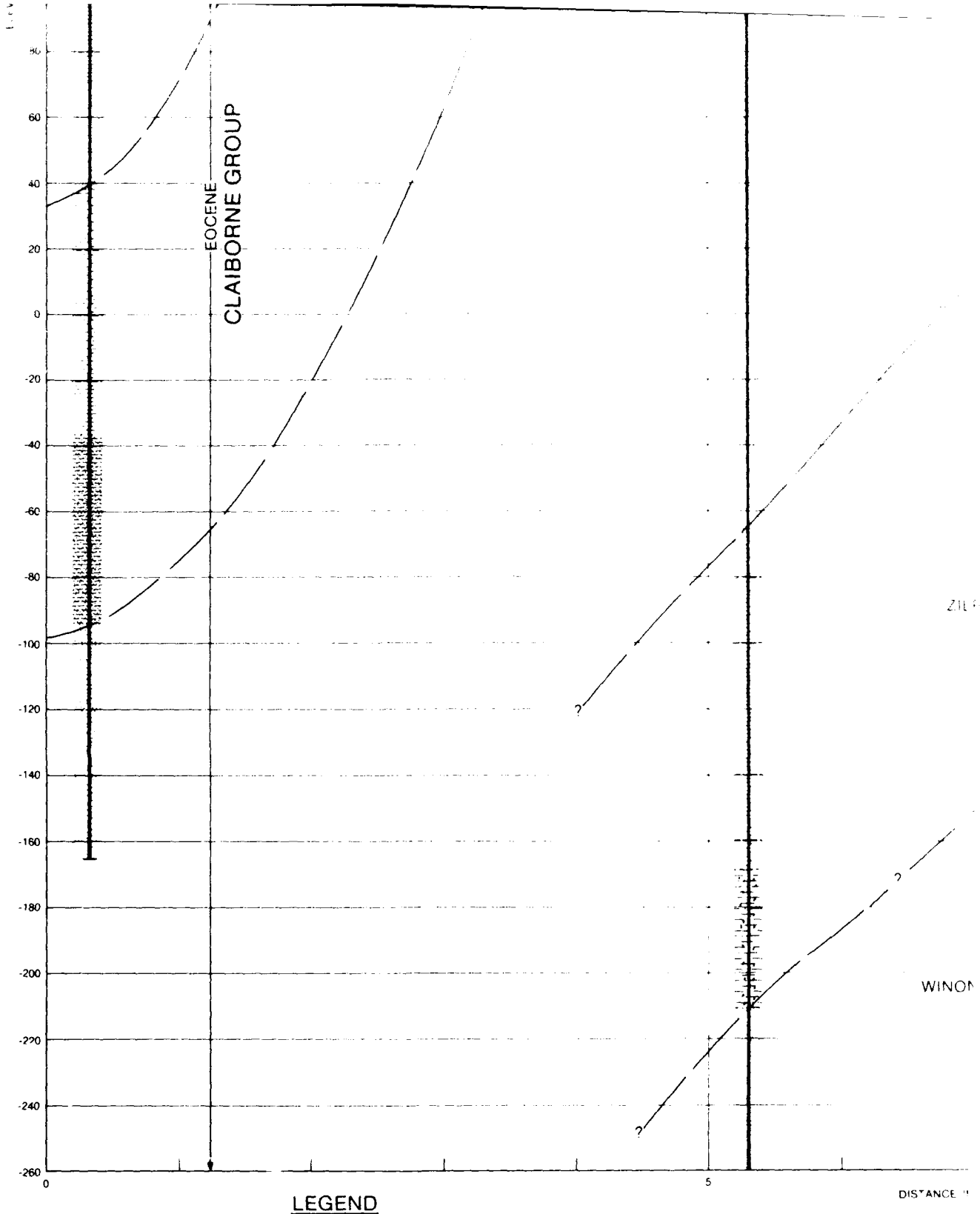
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SECTION A-A'

CARTHAGE, MS.


B
ELEVATION IN FEET NGVD
460
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
MS HWY 16
PELLAPHALIA CREEK
NATCHEZ TRACE
YOCKANOOKANY RIVER
AT2
J7
J14
Qtu
UNDIFF
HOLOCENE
ALLUVIUM
COCKFIELD FORMATION
COOK MOUNTAIN FORMATION
GROUP


B'
PEACH TREE ISLAND
MS HWY 35
PEARL RIVER
PEARL RIVER
PEARL RIVER
PEARL RIVER
PEARL RIVER
K101
Qtu
?
?
?
KOSCIUSKO FORMATION



LEGEND

ENVIRONMENTS OF DEPOSITION

TOPSTRATUM
- POINT BAR
- ABANDONED CHANNEL
- ABANDONED COURSE

SUBSTRATUM
- UNDIFFERENTIATED SAND

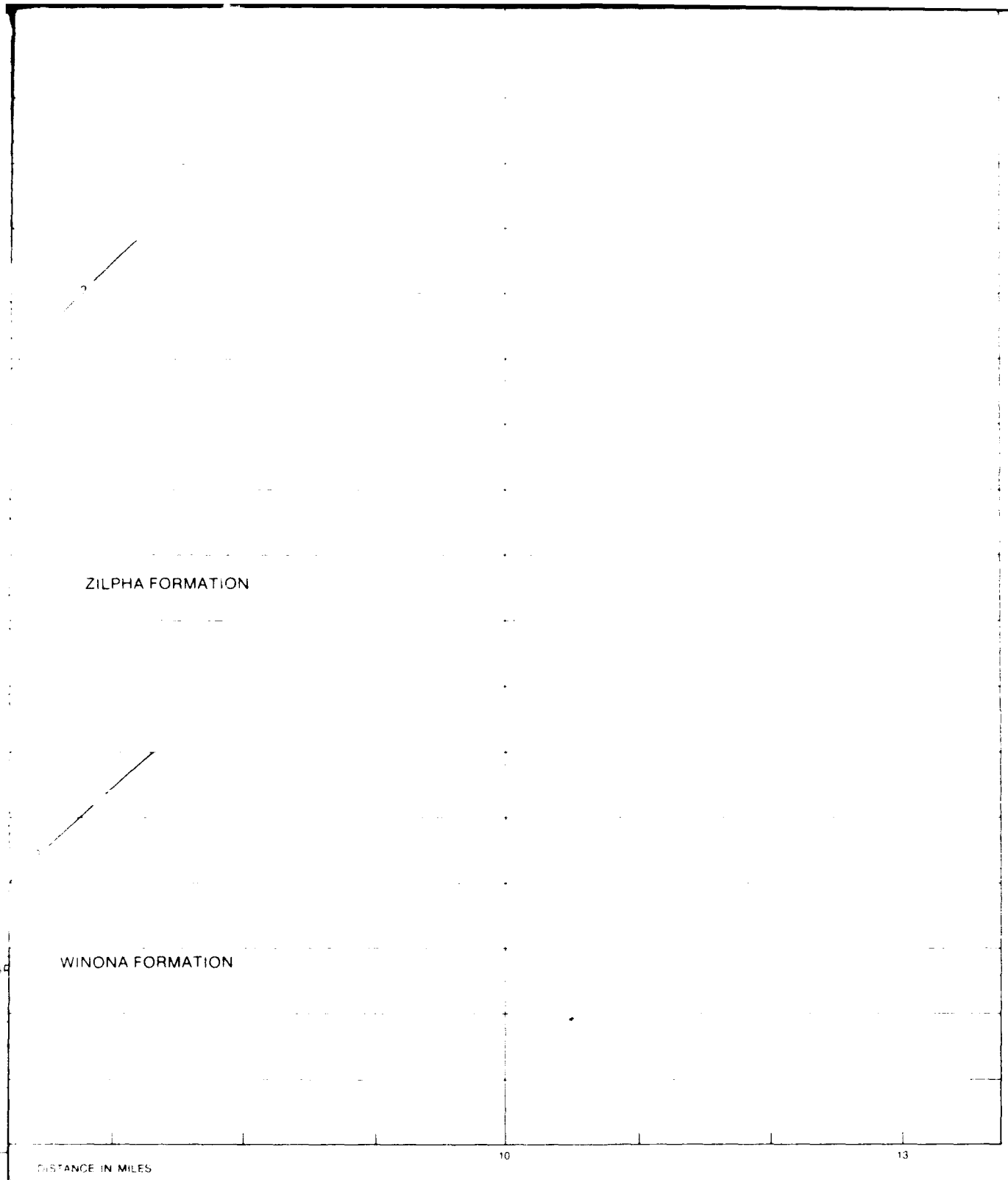
TERTIARY SURFACE

LITHOLOGIC TYPES

- CLAY
- ROCKS
- SAND
- SHALE

MAPPING SYMBOLS

- Qtu — UNDIFFERENTIATED TERRACE

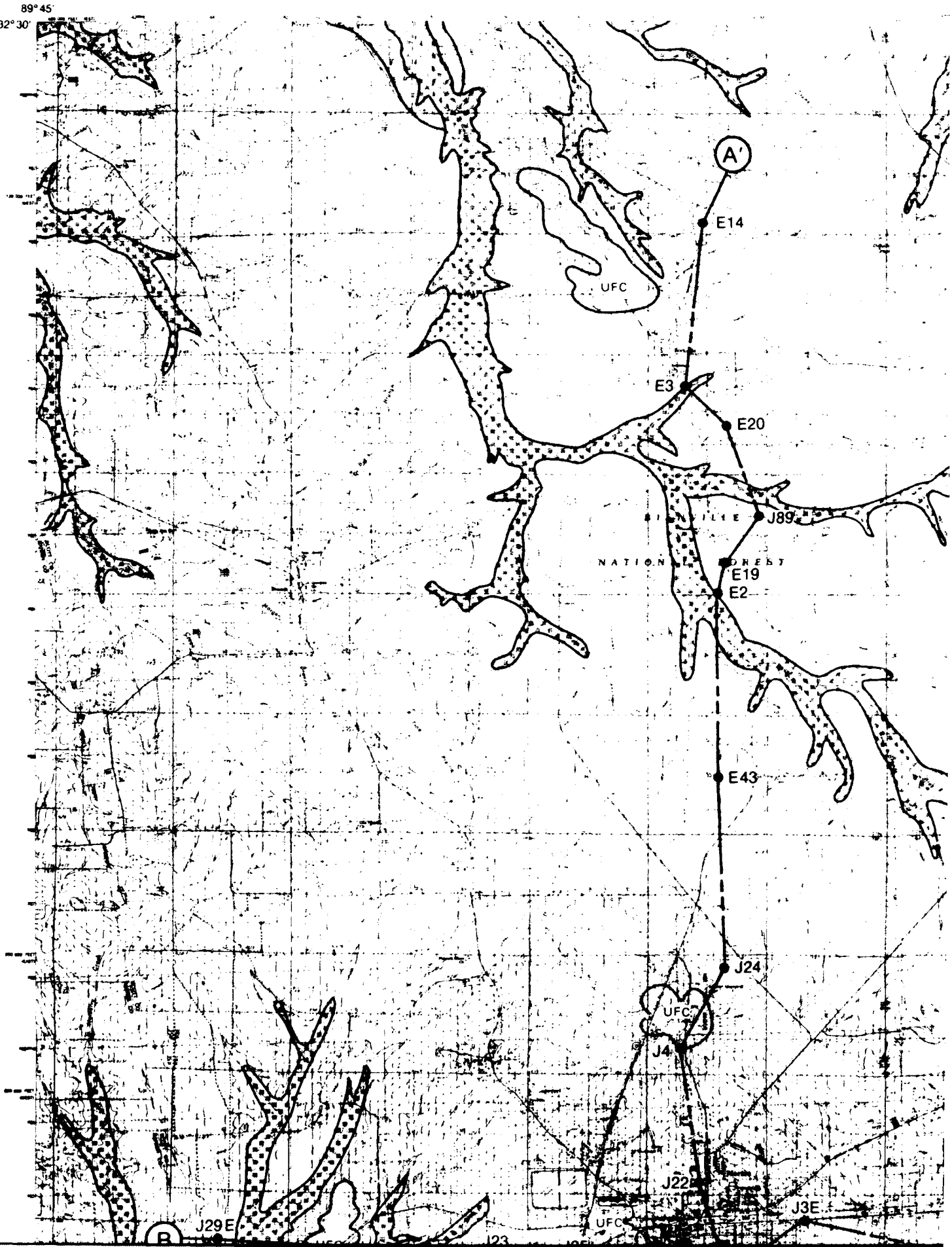


GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

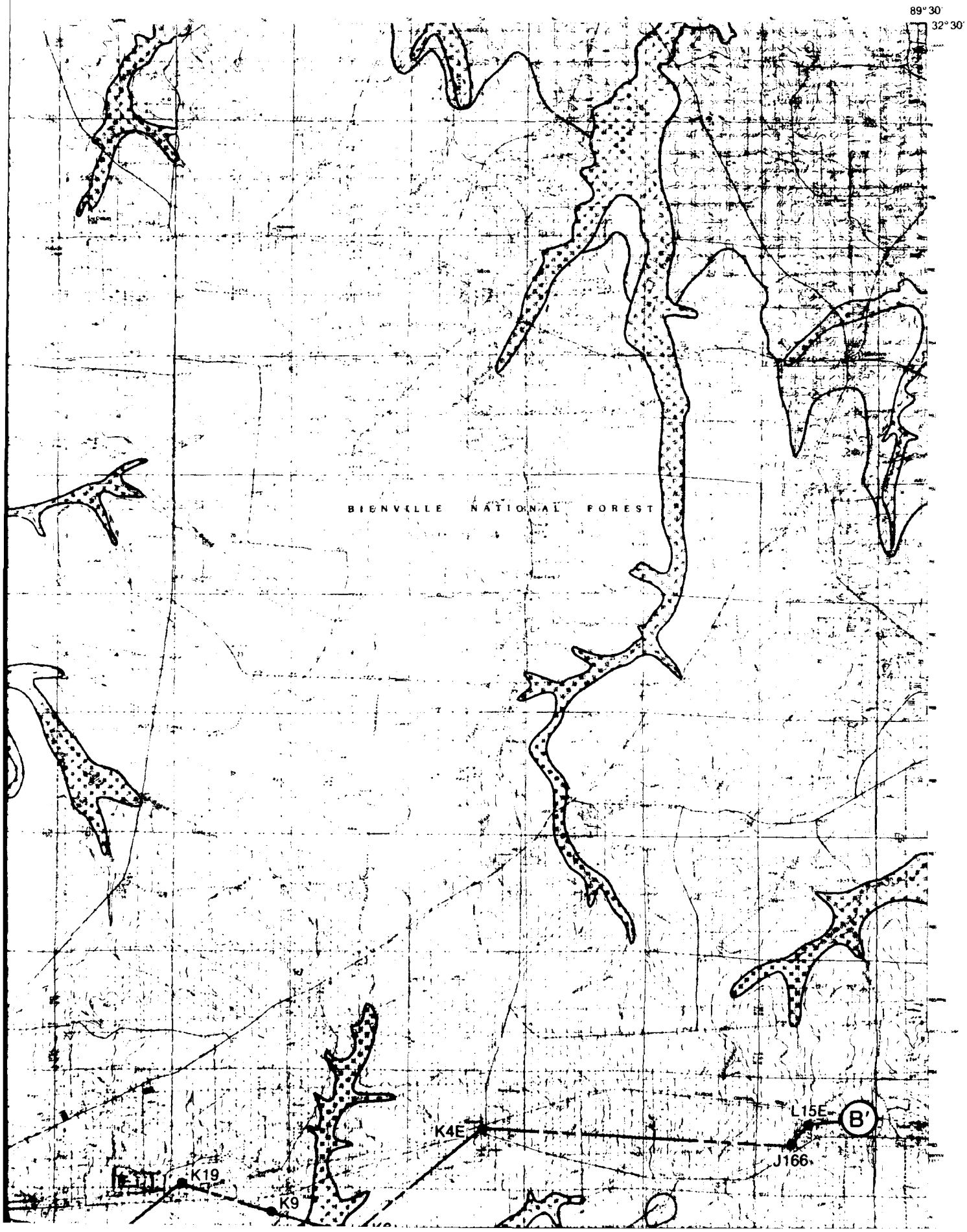
SECTION B-B'

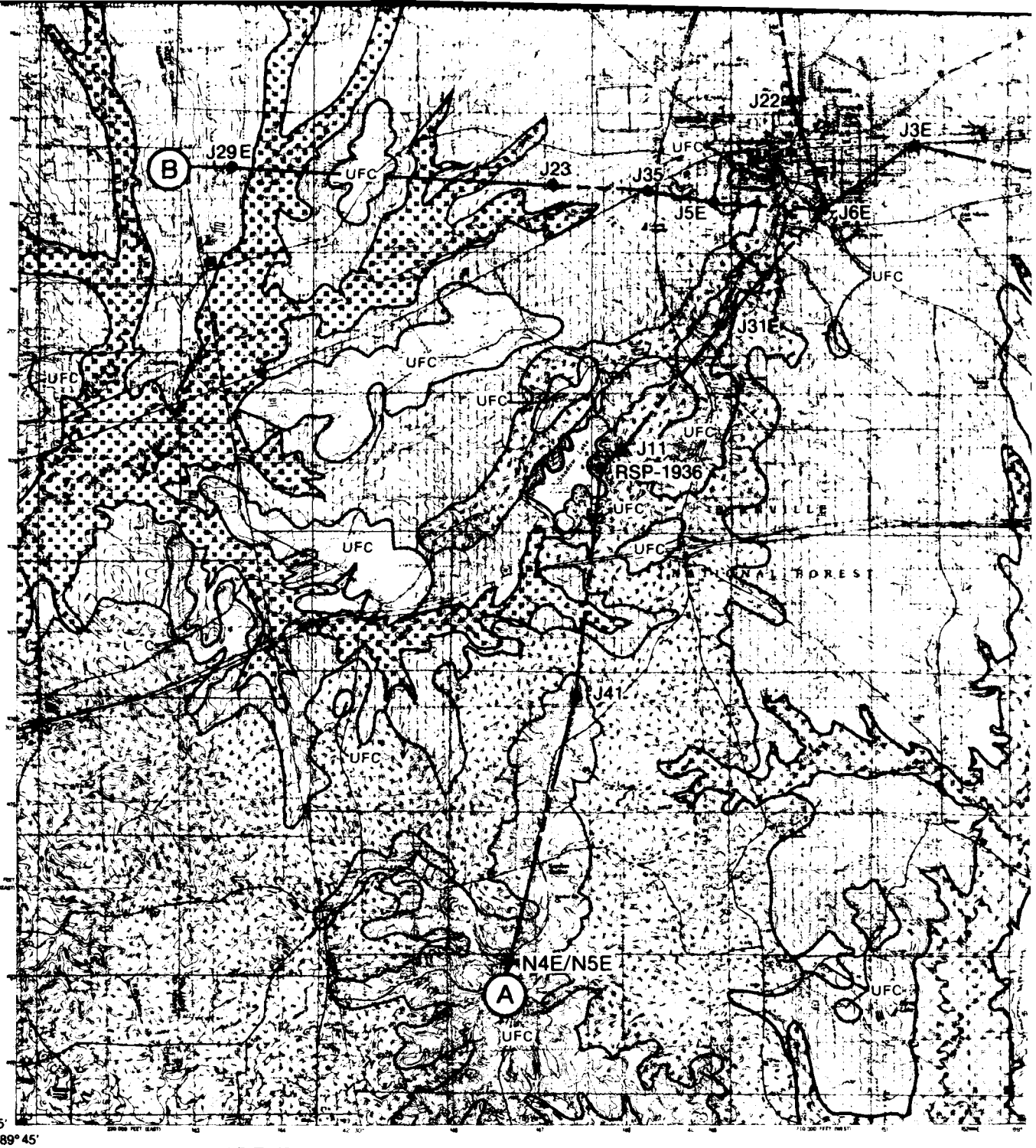
CARTHAGE, MS.

U.S. ARMY
CORPS OF ENGINEERS



MORTON QUADRANGLE
MISSISSIPPI





LEGEND

QUATERNARY

HOLOCENE

UNDIFFERENTIATED ALLUVIUM

QUATERNARY/TERTIARY

PLIO-PLEISTOCENE

UFC UPLAND FLUVIAL COMPLEX

TERTIARY

OLIGOCENE

VICKSBURG GROUP (UNDIFFERENTIATED)

FOREST HILL FORMATION

EOCENE

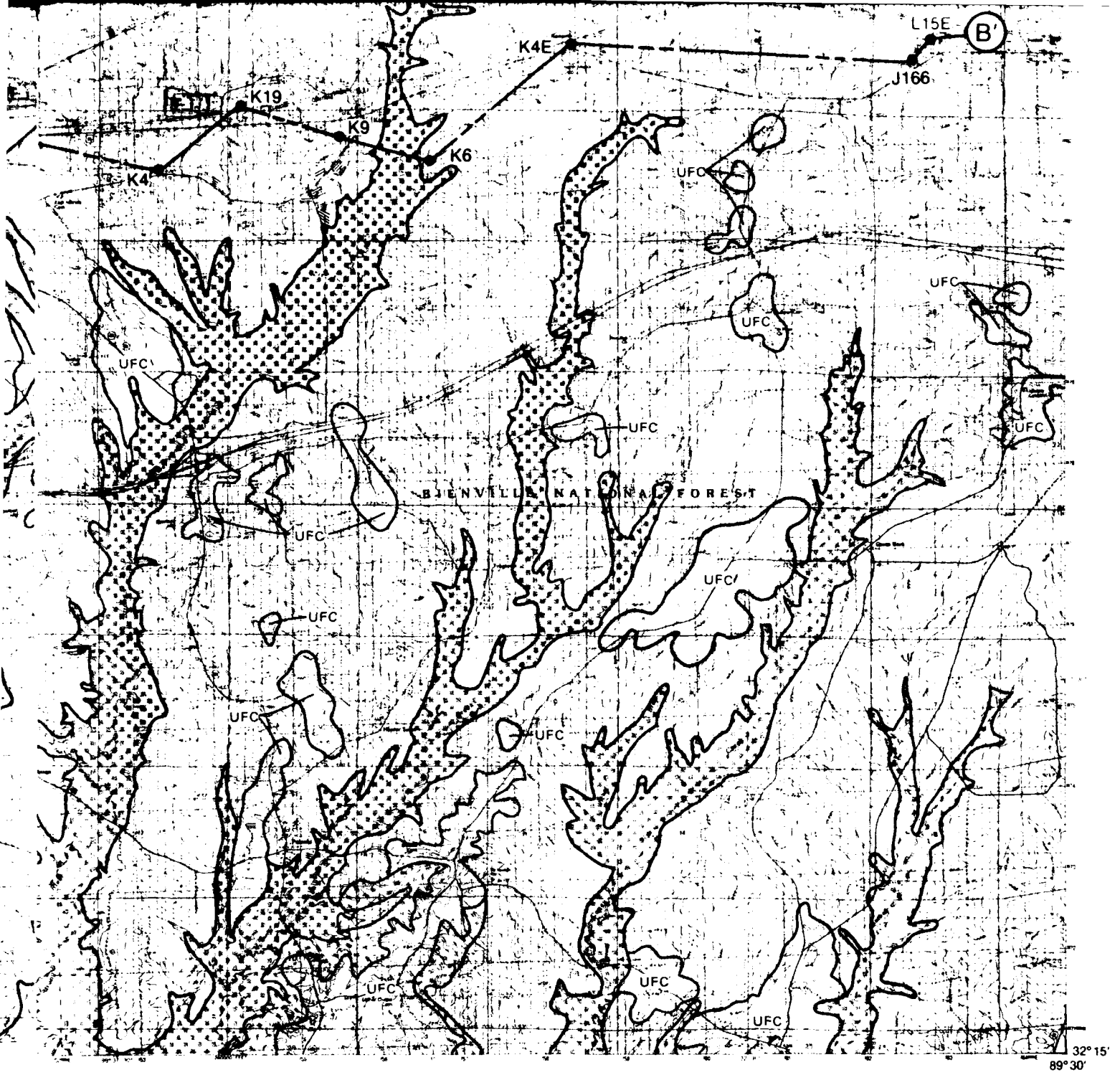
JACKSON GROUP (YAZOO AND MOODYS BRANCH FORMATIONS)

COCKFIELD FORMATION

● BORINGS USED ON CROSS SECTIONS

NOTE: Upland geologic
Geology," Mississ

MORTON (a)



SCALE 1:62500

0 1 2 3 4 MILES

3000 6000 9000 12000 15000 18000 21000 FEET

0 1 2 3 4 5 KILOMETERS

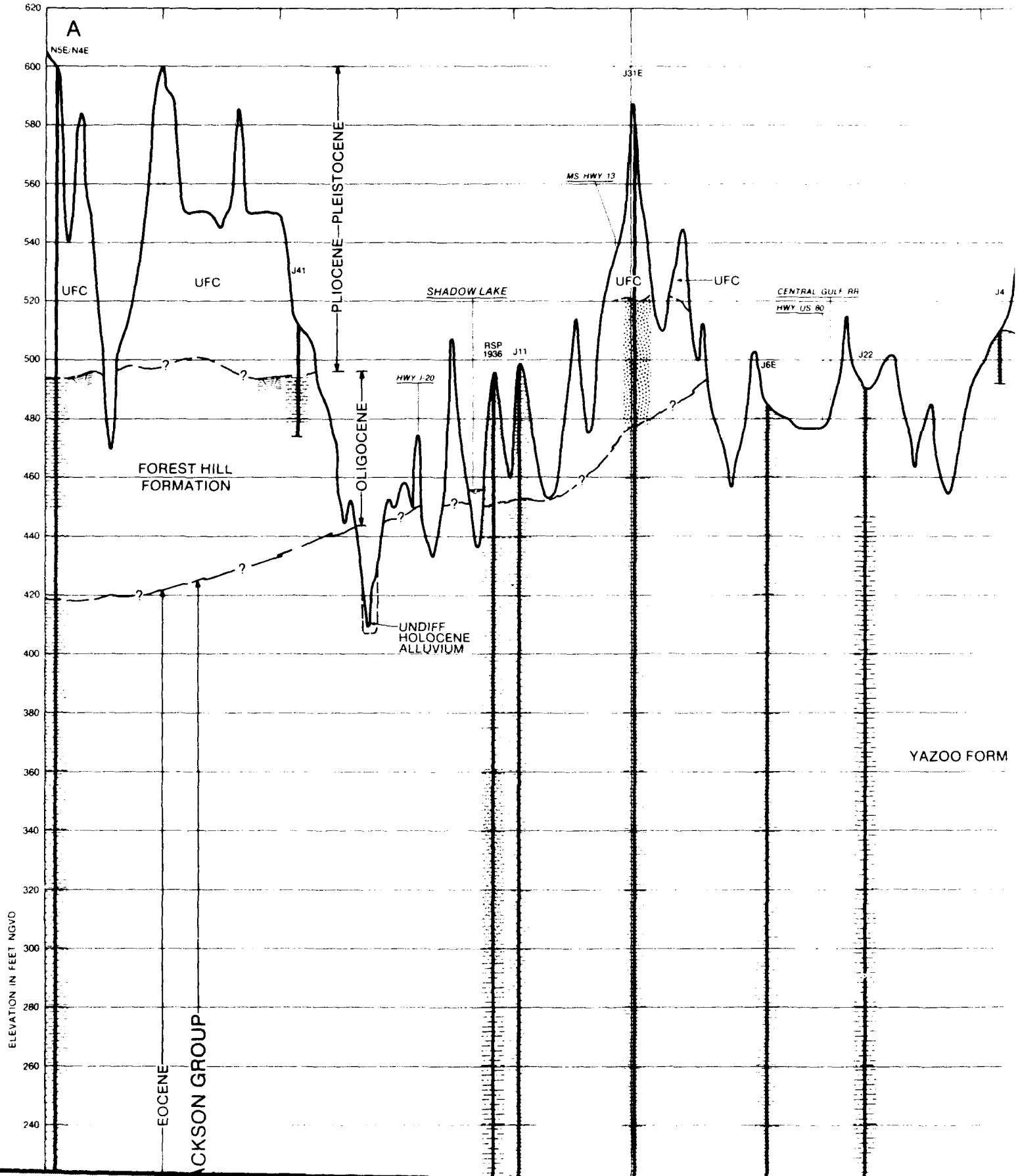
CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

tacts
Geolo d geologic contacts based on work by Morse (1942), "Scott County
y Mississippi Geologic Survey Bulletin No. 49.

GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SURFACE GEOLOGY

MORTON, MS


A
NSE/N4E
J31E
MS HWY 13
PLIOCENE—PLEISTOCENE
UFC
UFC
J41
UFC
UFC
SHADOW LAKE
CENTRAL GULF RR
HWY US 80
J4
RSP
1936
J11
J6E
J22
HWY I-20
OLIGOCENE
FOREST HILL
FORMATION
UNDIFF
HOLOCENE
ALLUVIUM
YAZOO FORM
EOCENE
CKSON GROUP
ELEVATION IN FEET NGVD
620
600
580
560
540
520
500
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420
400
380
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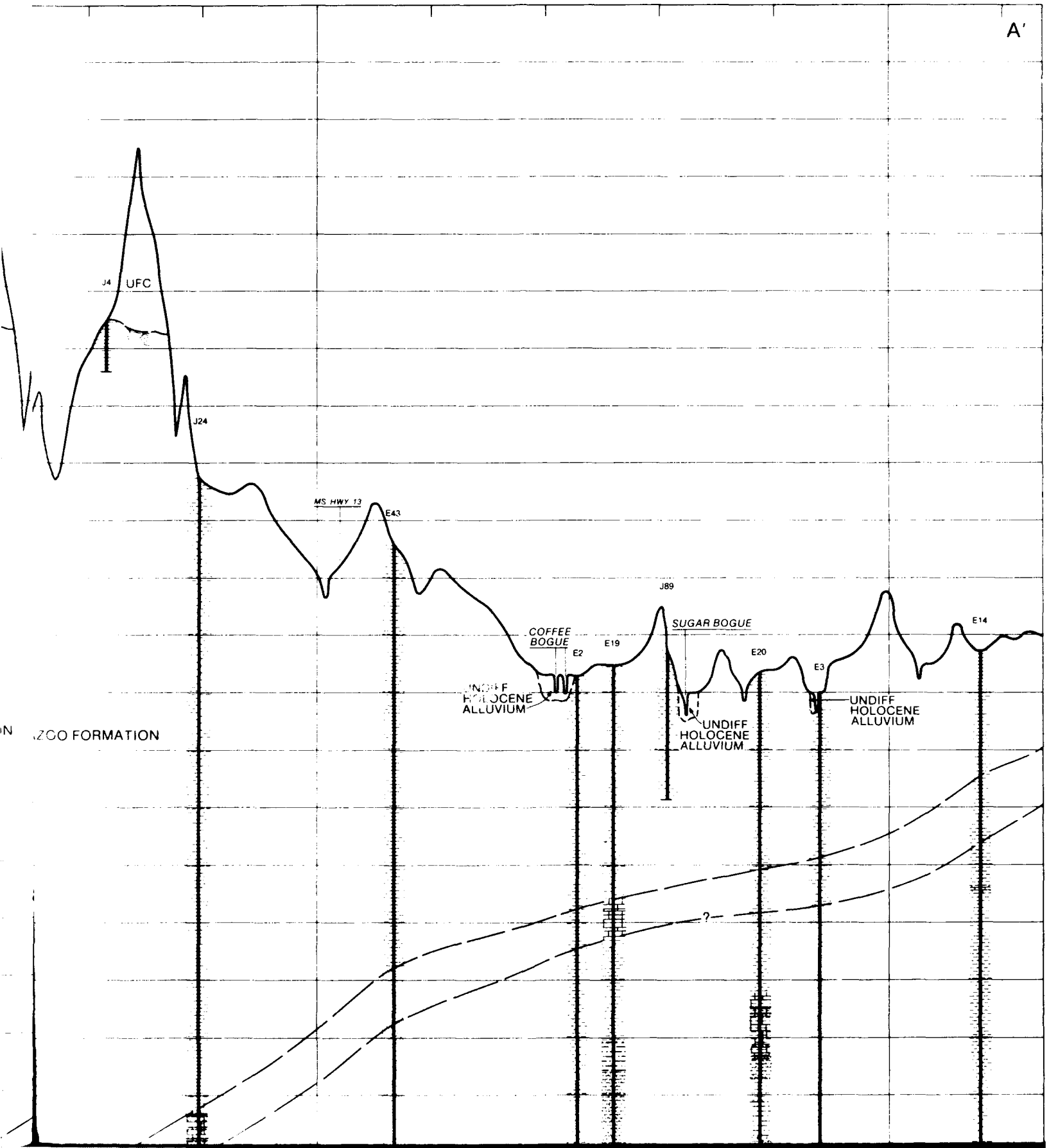
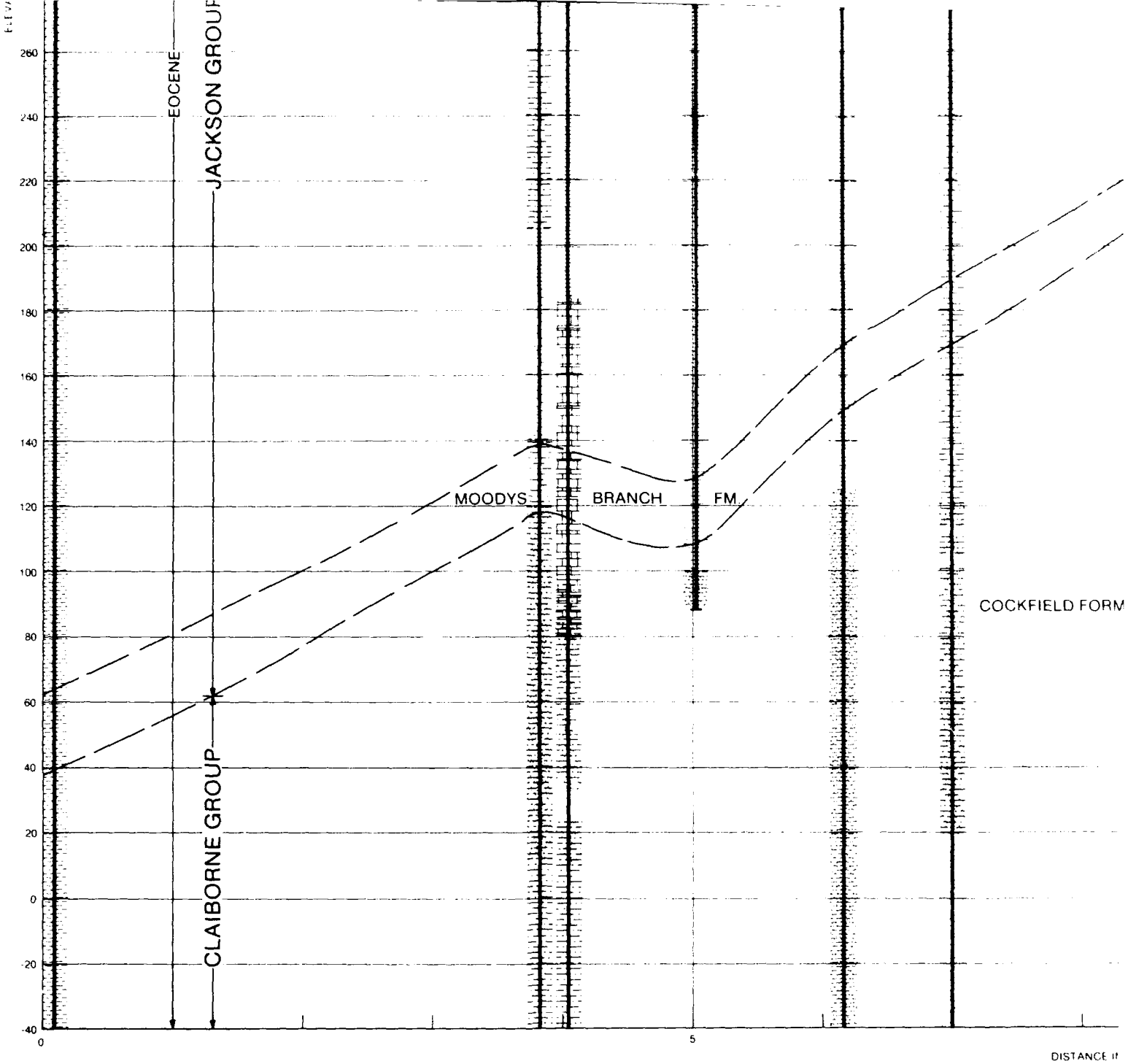
340
320
300
280
260
240


A'
J4
UFC
J24
MS HWY 13
E43
COFFEE BOGUE
E2
E19
J89
SUGAR BOGUE
E20
E3
E14
UNDIFF HOLOCENE ALLUVIUM
UNDIFF HOLOCENE ALLUVIUM
UNDIFF HOLOCENE ALLUVIUM
ZOO FORMATION
?



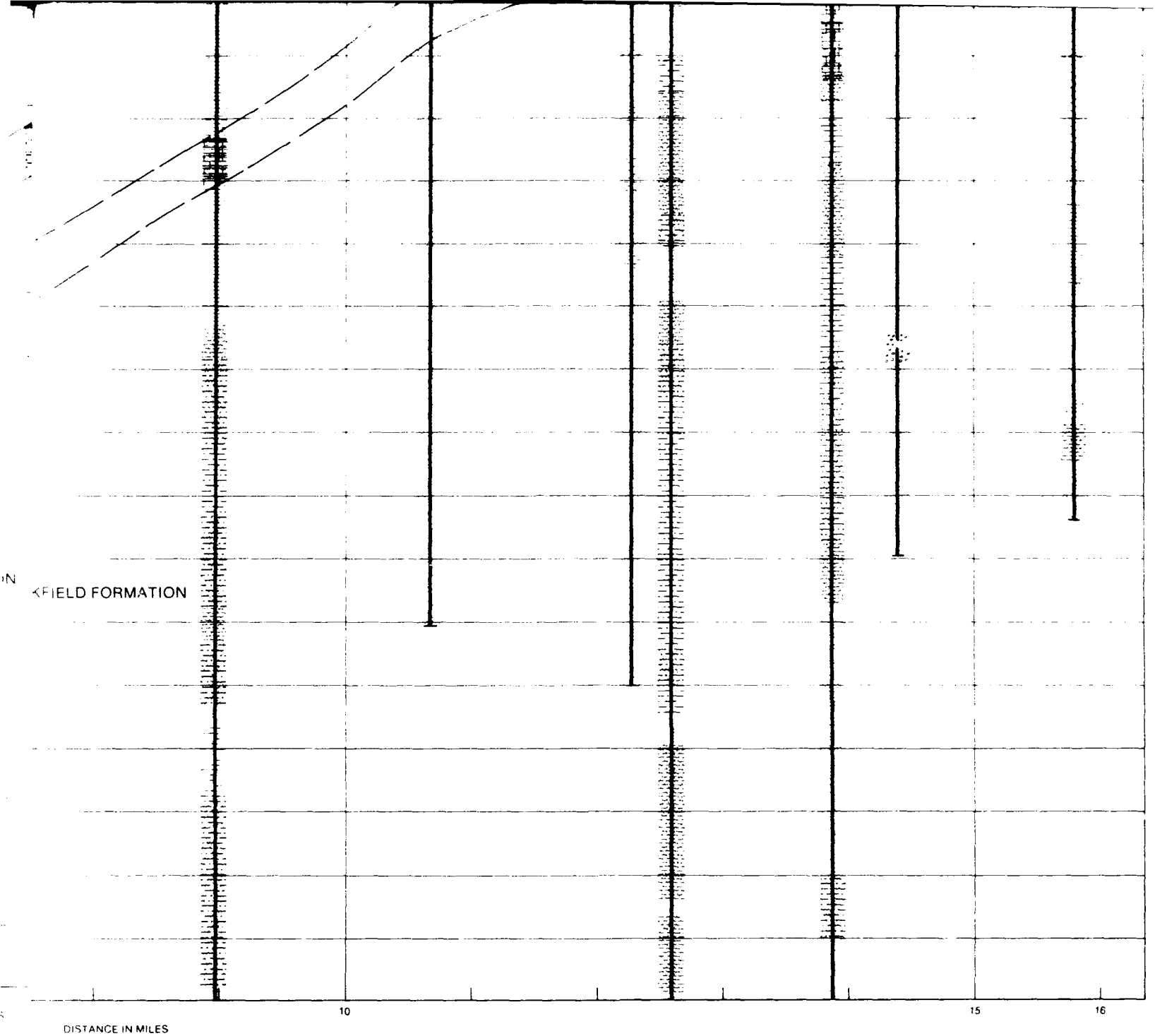
LEGEND

LITHOLOGIC TYPES

- CLAY
- SAND
- ROCKS
- MARL
- SHALE
- COARSE MATERIAL

MAPPING SYMBOLS

- UFC — UPLAND FLUVIAL COMPLEX
- TERTIARY SURFACE

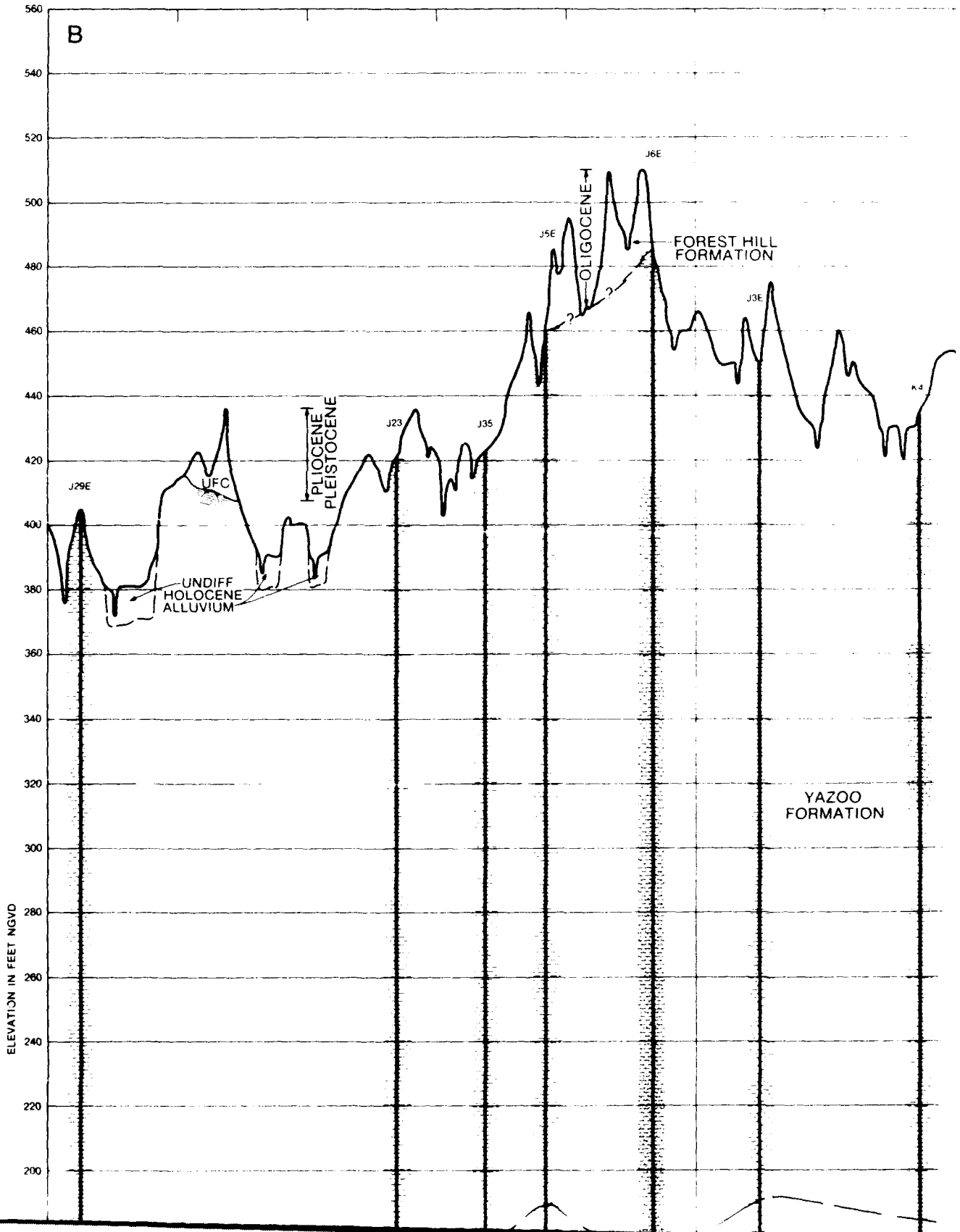


GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SECTION A-A'

MORTON, MS.

MORTON (


B
560
540
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420
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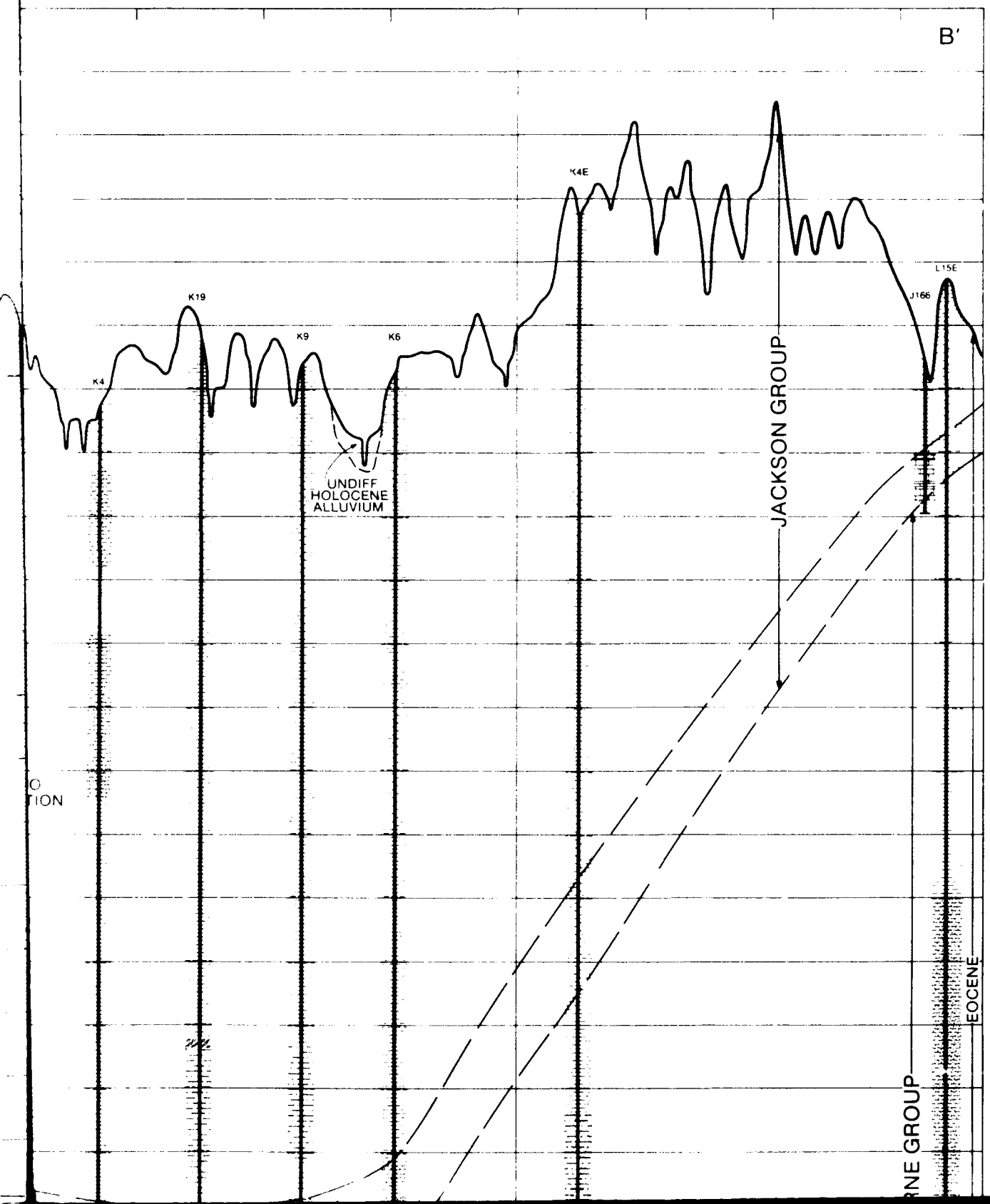
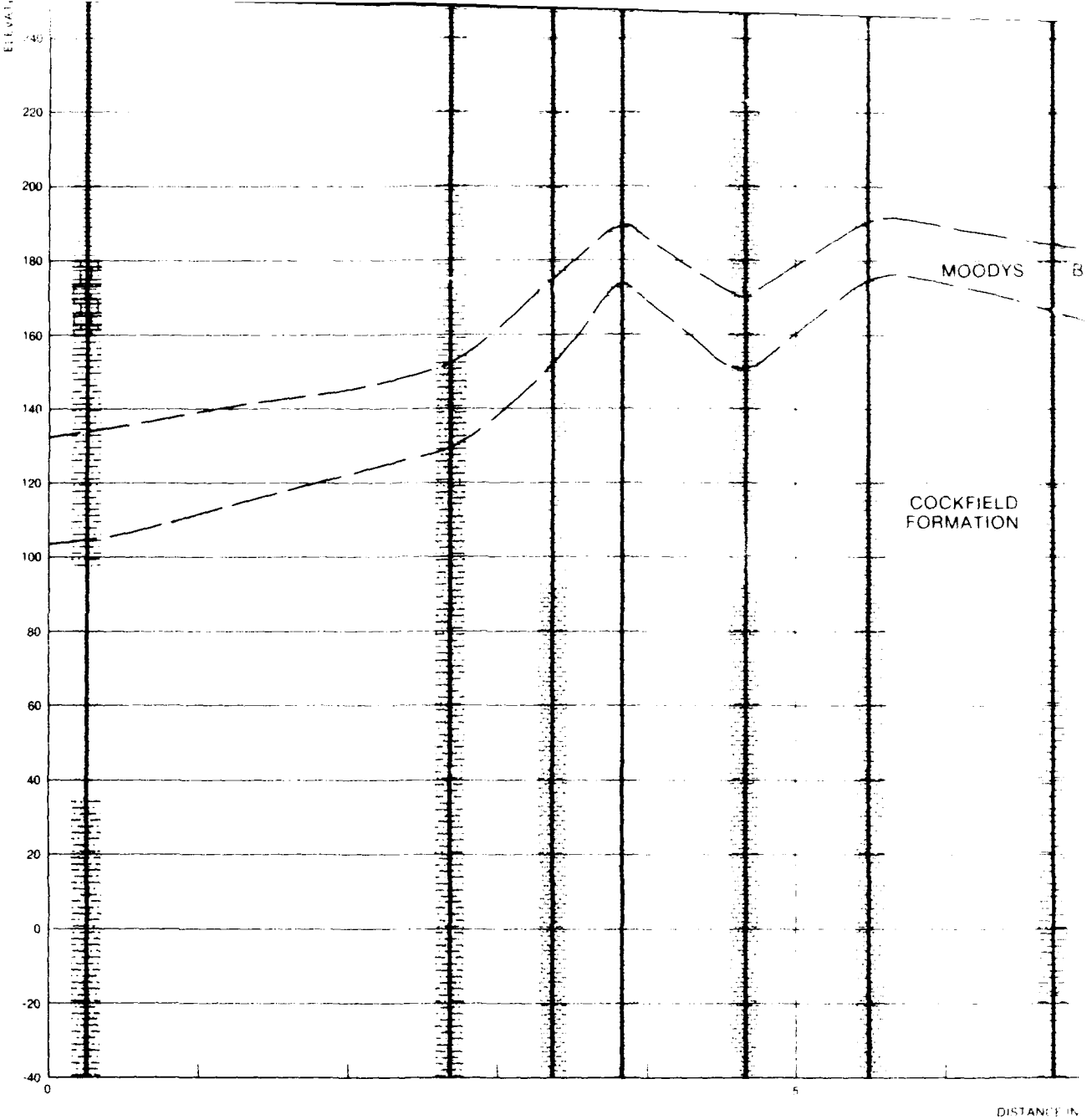
380
360
340
320
300
280
260
240
220
200
ELEVATION IN FEET NGVD
J29E
UFC
UNDIFF
HOLOCENE
ALLUVIUM
PLIOCENE
PLEISTOCENE
J23
J35
J5E
OLIGOCENE
J6E
FOREST HILL
FORMATION
J3E
YAZOO
FORMATION


B'
K4
K19
K9
K6
K4E
J166
L15E
UNDIFF
HOLOCENE
ALLUVIUM
JACKSON GROUP
EOCENE
RNE GROUP
O
TION



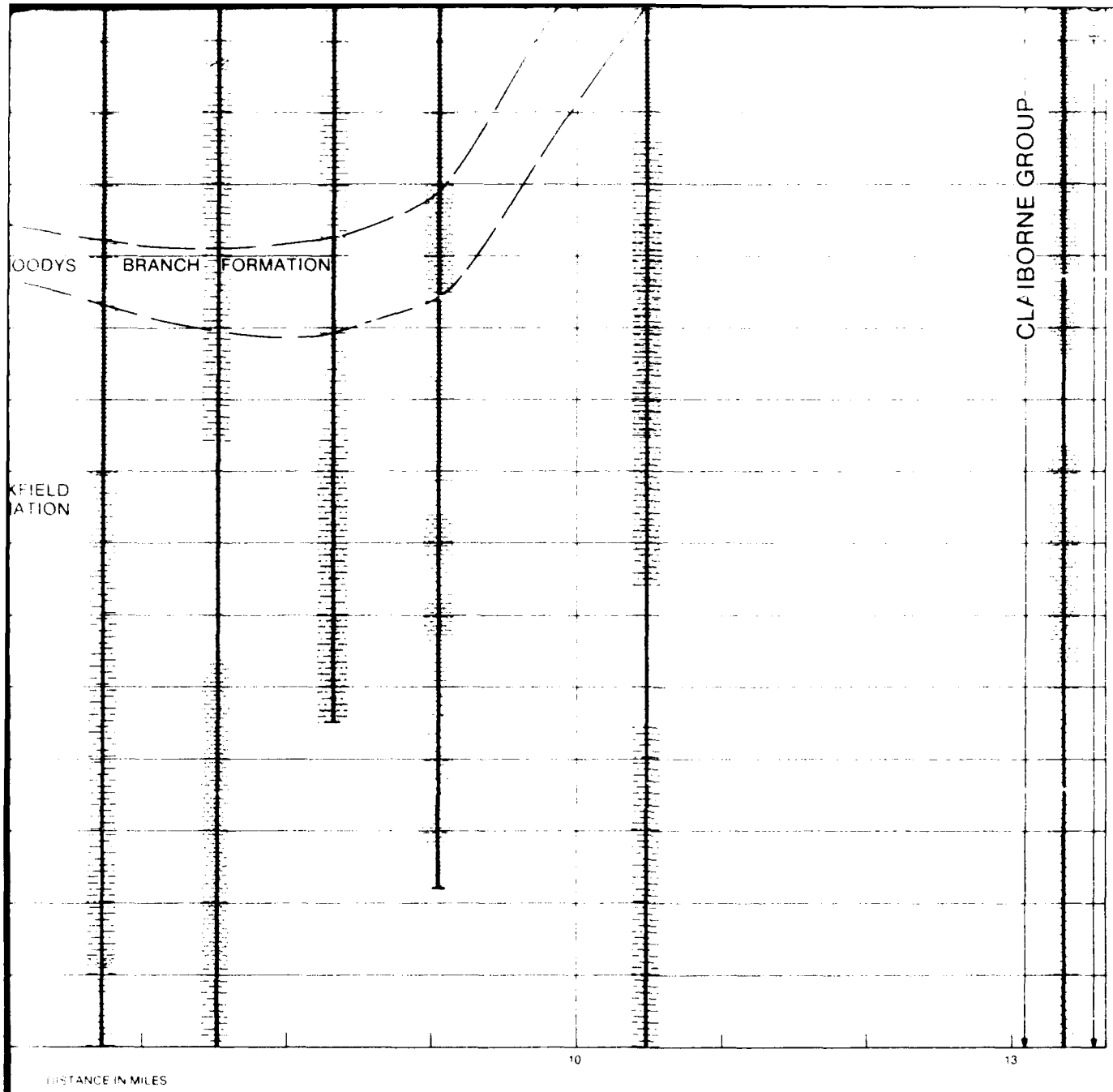
LEGEND

LITHOLOGIC TYPES

- CLAY
- SAND
- ROCKS
- MARL
- SHALE

MAPPING SYMBOLS

- Qtu — UNDIFFERENTIATED TERRACE
- TERTIARY SURFACE

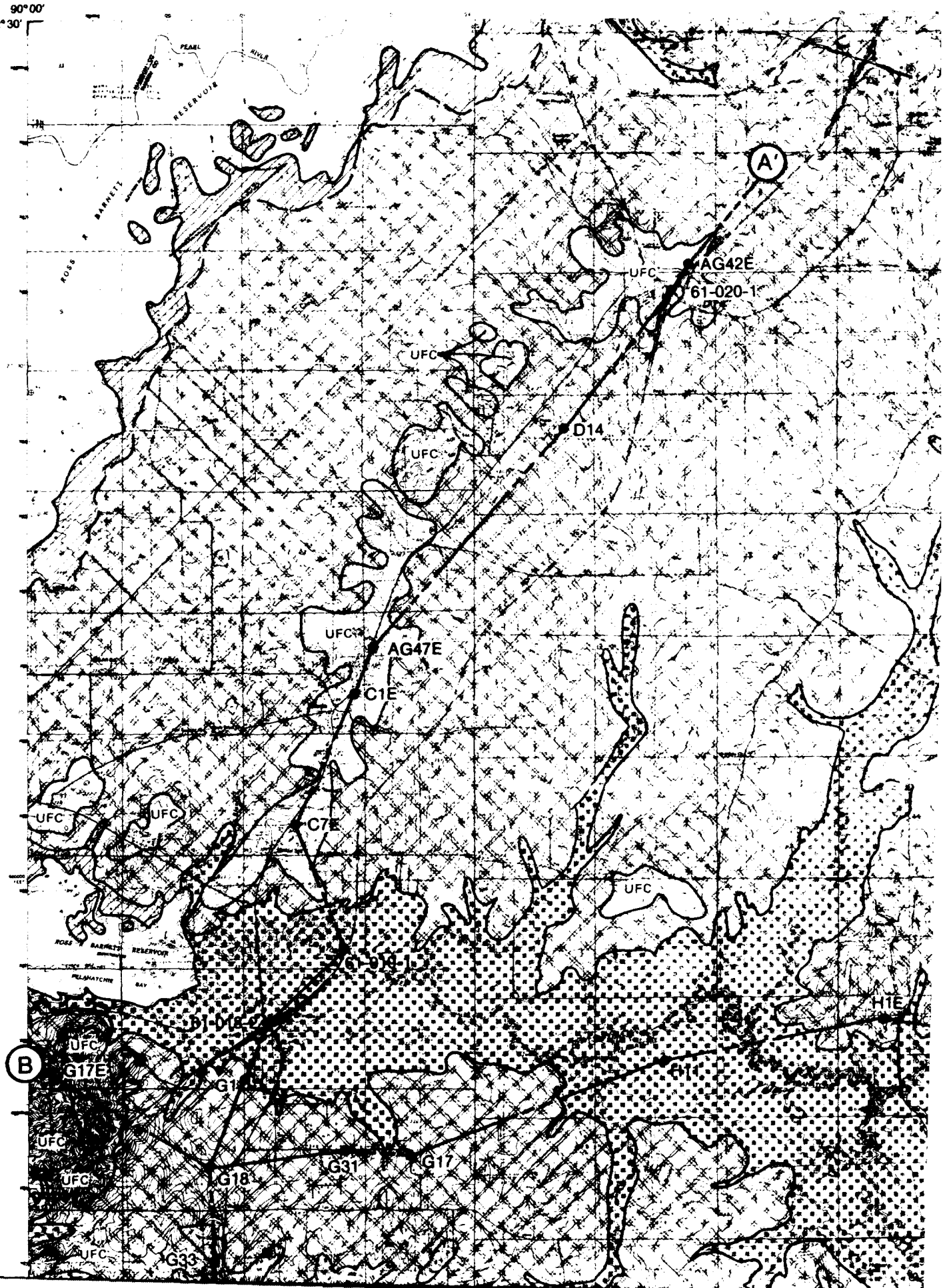


GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

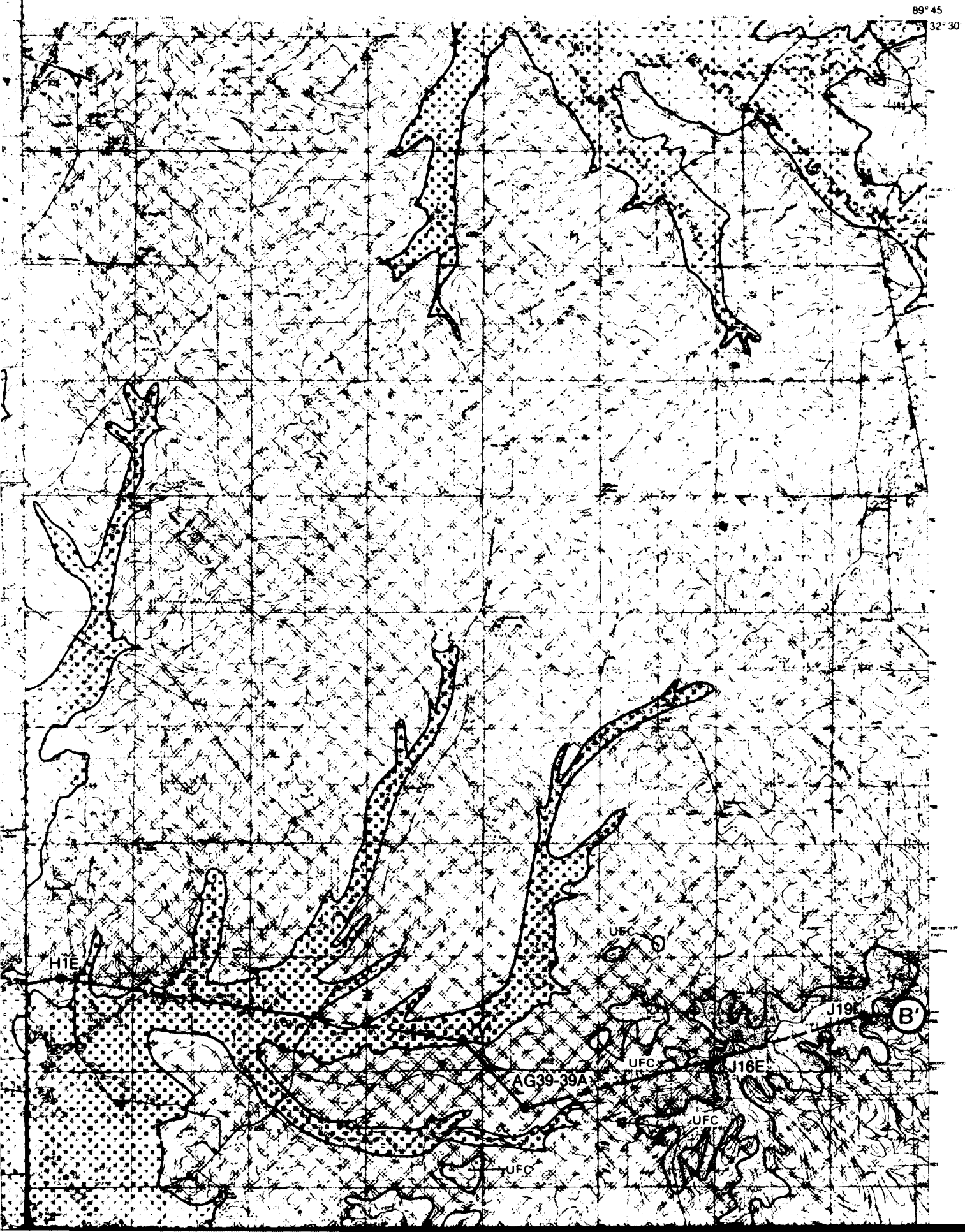
SECTION B-B'

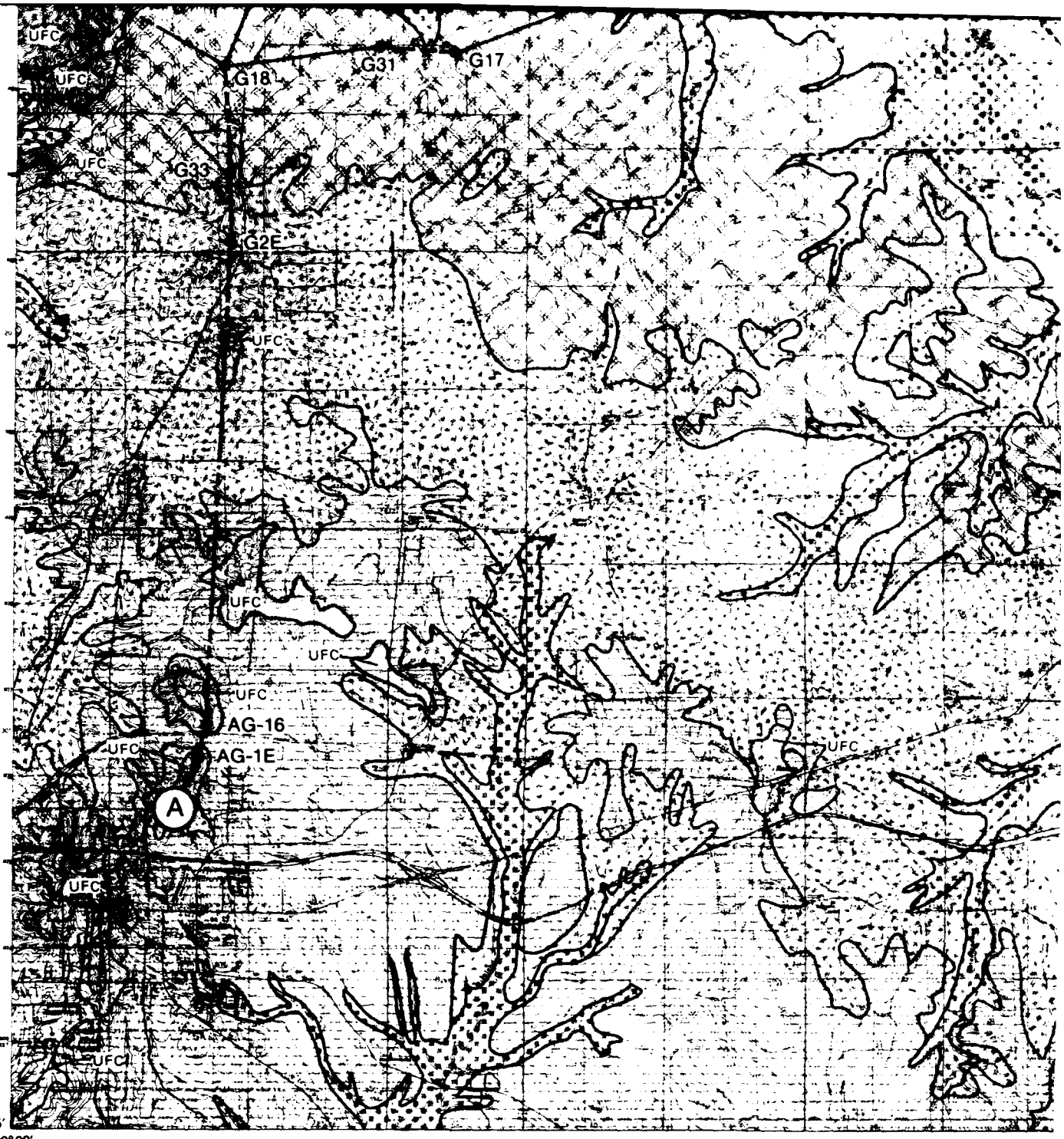
MORTON, MS.

U.S. ARMY
CORPS OF ENGINEERS



PELAHATCHIE QUADRANGLE
MISSISSIPPI





LEGEND

QUATERNARY

HOLOCENE

- UNDIFFERENTIATED ALLUVIUM
- SHALLOW LACUSTRINE

QUATERNARY/TERTIARY

PLIO-PLEISTOCENE

- UFC — UPLAND FLUVIAL COMPLEX

TERTIARY

MIOCENE

- CATAHOULA FORMATION

OLIGOCENE

- VICKSBURG GROUP (UNDIFFERENTIATED)
- FOREST HILL FORMATION

EOCENE

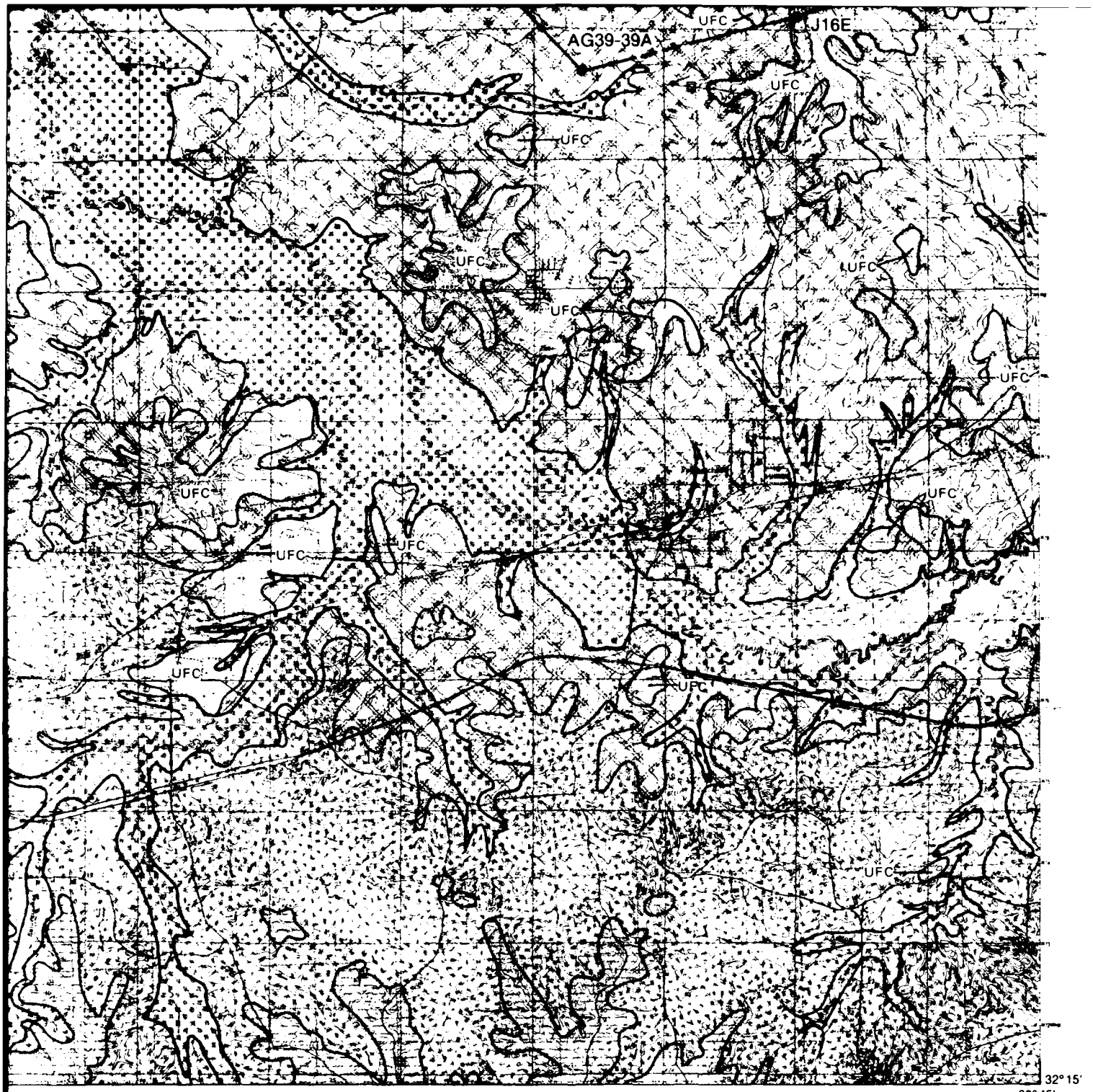
- YAZOO FORMATION

● BORINGS USED ON CROSS SECTIONS

1 0 1
3000 0 3000 6000
1 5 0 1

CONTO
DOTTED LINES
DATU

NOTE: Upland geologic contacts ba
County Geologic and Minera
115; and Morse (1942), "Sc
Bulletin No. 49.



SCALE 1:62500

1 2 3 4 MILES

0 6000 9000 12000 15000 18000 21000 FEET

1 2 3 4 5 KILOMETERS

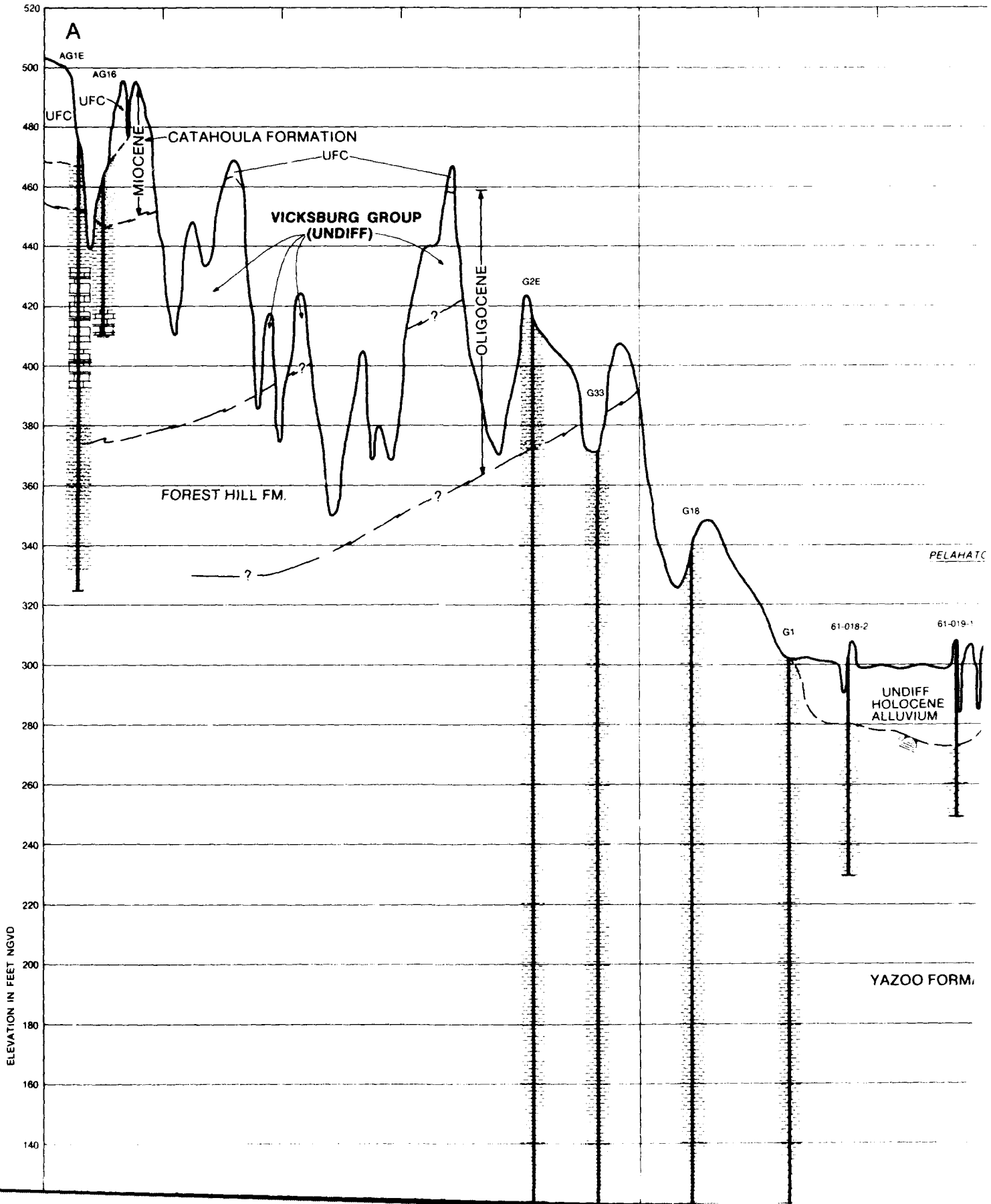
CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

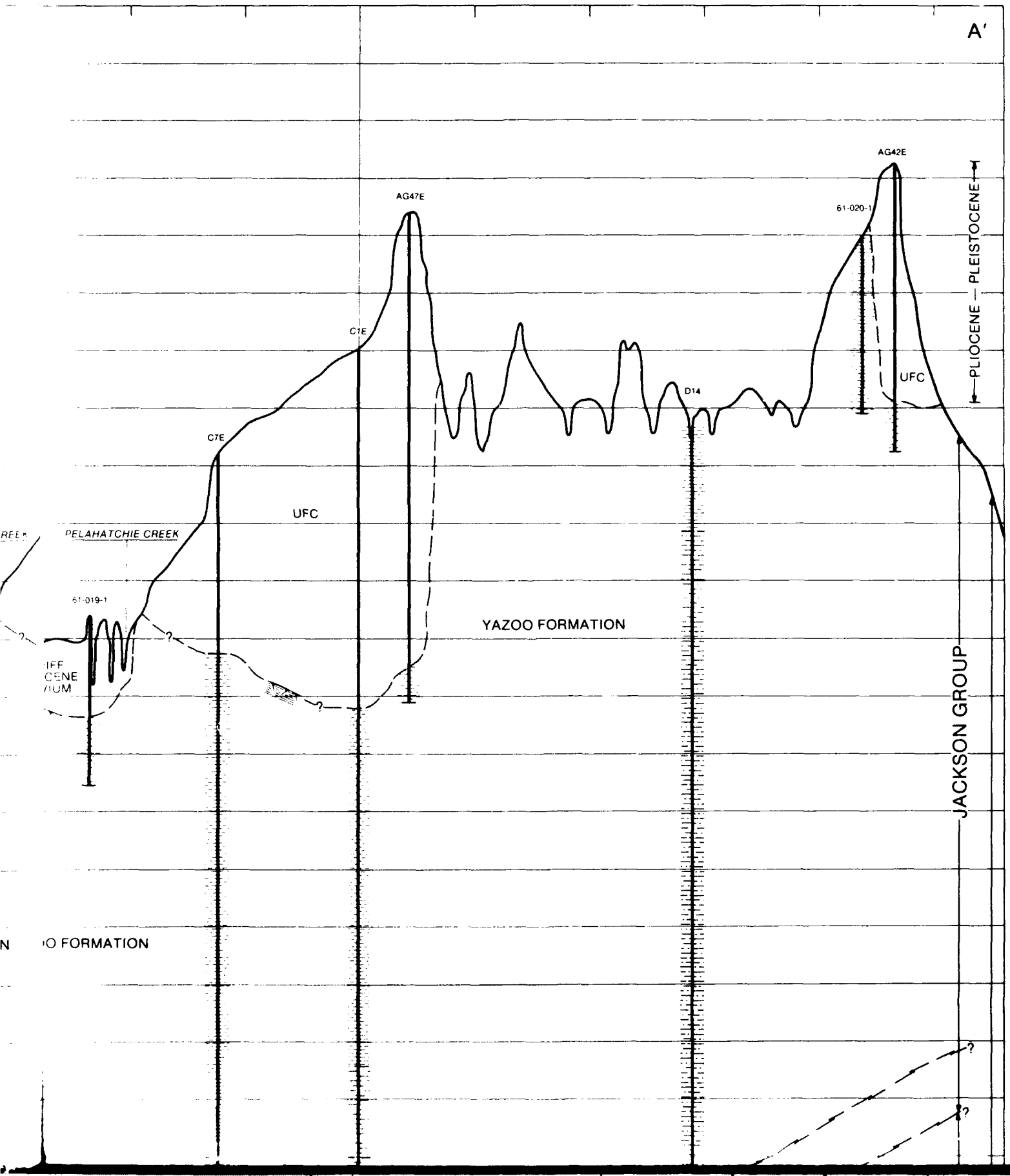
c contacts based on work by Baughman et al. (1971), "Rankin
c and Mineral Resources," Mississippi State Survey Bulletin No.
e (1942), "Scott County Geology," Mississippi Geologic Survey

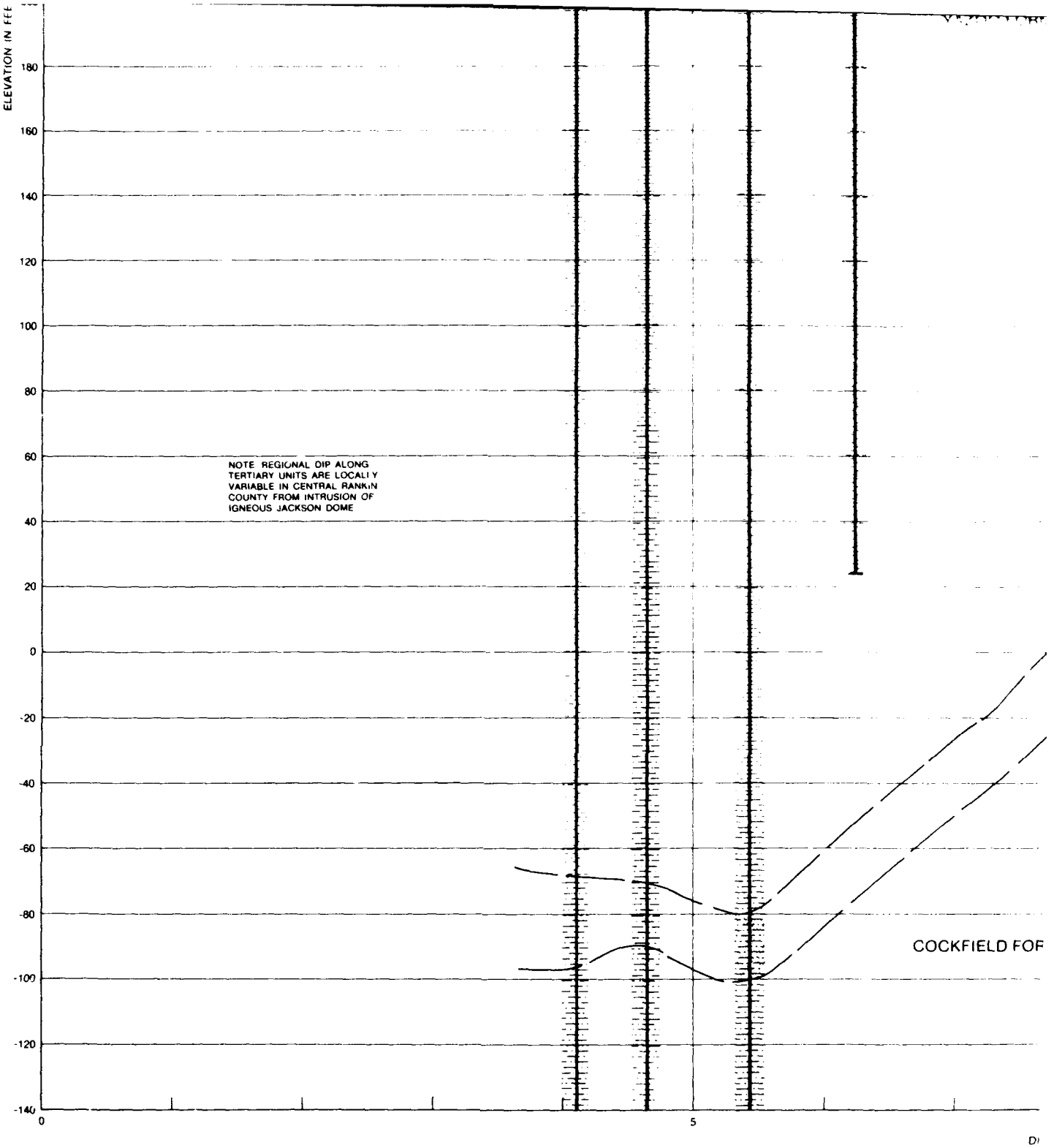
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SURFACE GEOLOGY

PELAHATCHIE, MS


A
AG1E
AG16
UFC
UFC
CATAHOULA FORMATION
MIOCENE
UFC
VICKSBURG GROUP
(UNDIFF)
OLIGOCENE
G2E
G33
FOREST HILL FM.
G18
PELAHATC
G1
61-018-2
61-019-1
UNDIFF
HOLOCENE
ALLUVIUM
YAZOO FORM
ELEVATION IN FEET NGVD
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140


A'
AG42E
AG47E
61-020-1
C7E
C7E
D14
UFC
UFC
PLIOCENE — PLEISTOCENE
PELAHATCHIE CREEK
61-019-1
YAZOO FORMATION
JACKSON GROUP
O FORMATION



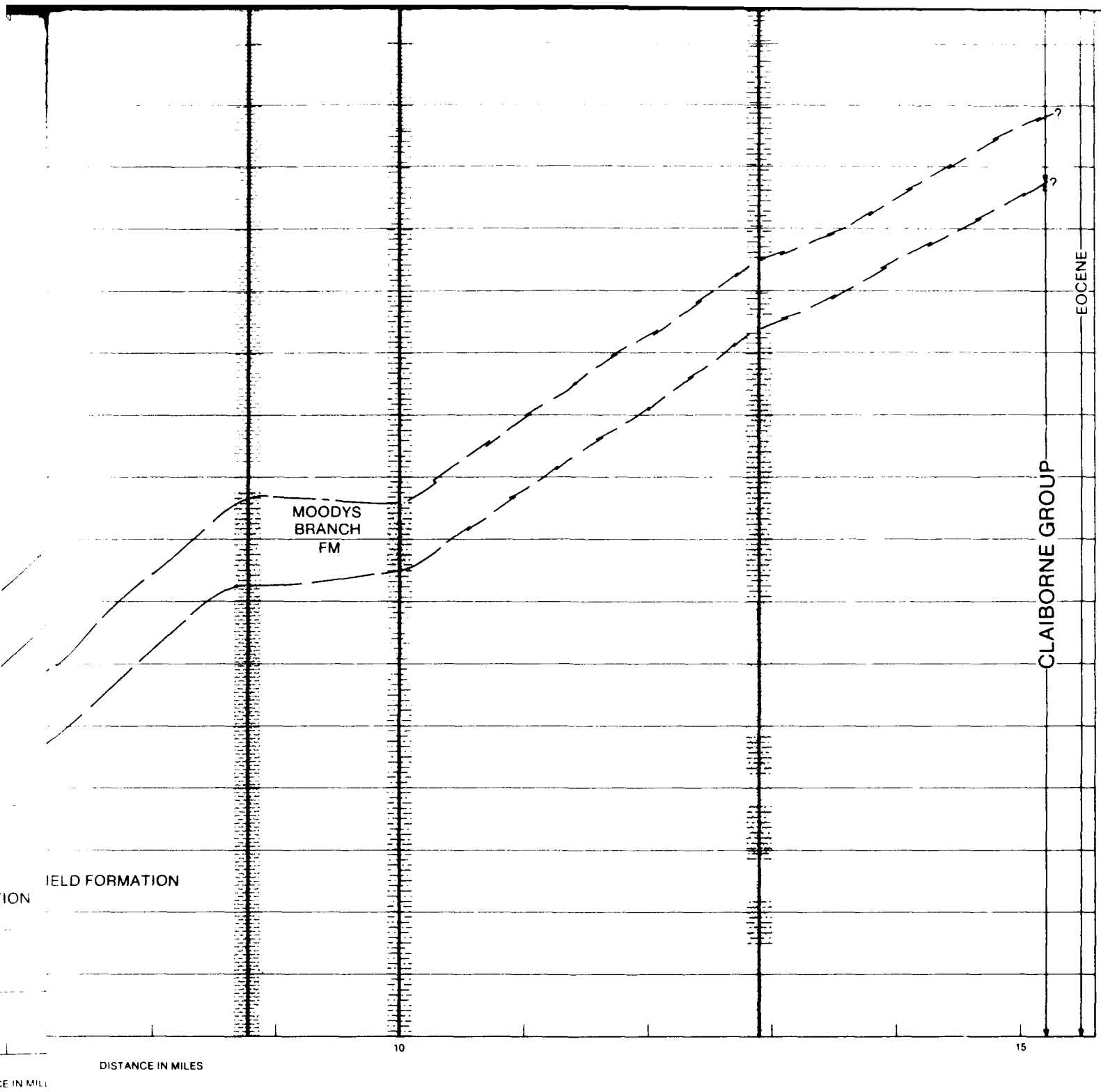
LEGEND

LITHOLOGIC TYPES

- CLAY
- MARL
- SAND
- SHALE

MAPPING SYMBOLS

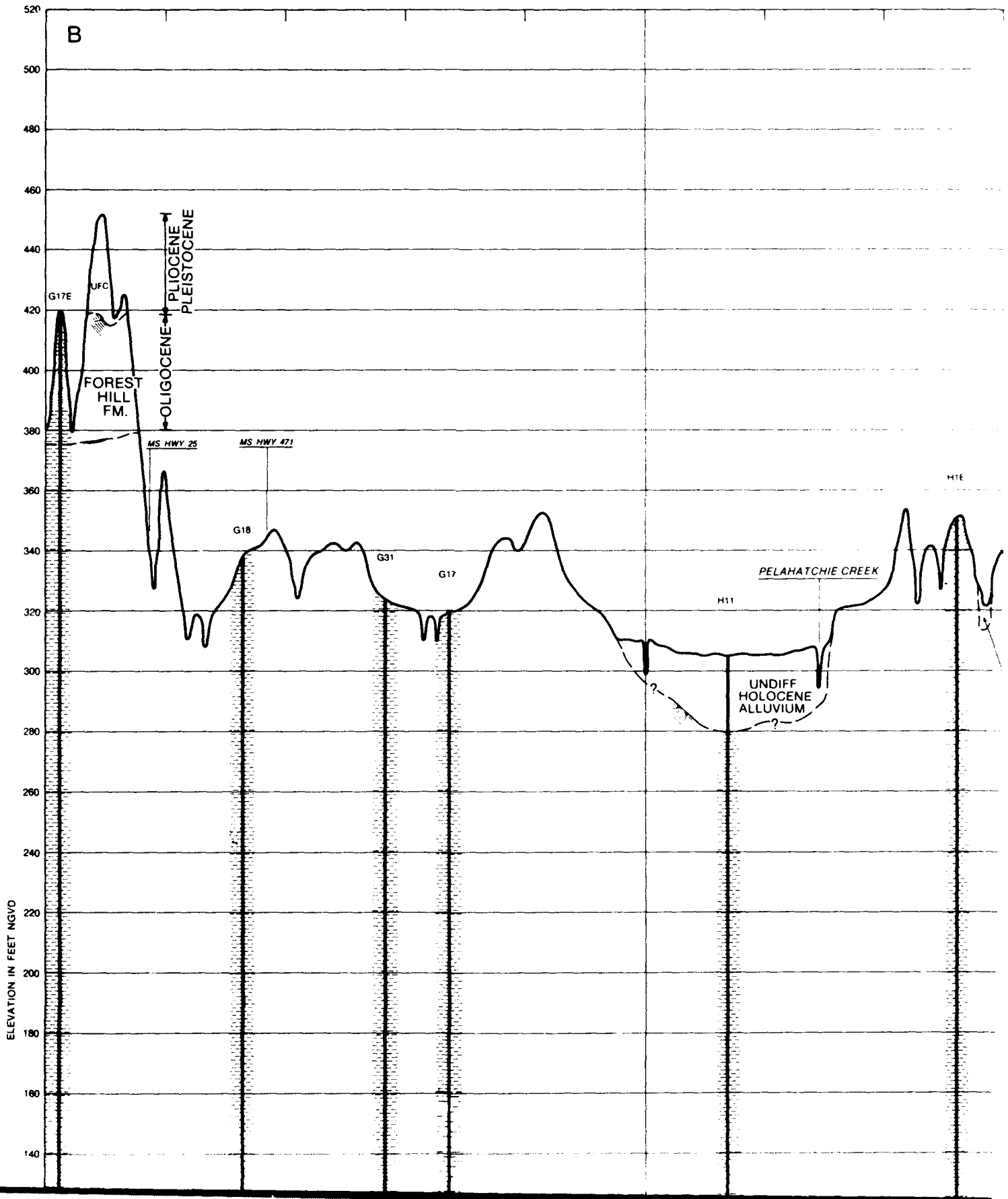
- UFC — UPLAND FLUVIAL COMPLEX
- TERTIARY SURFACE

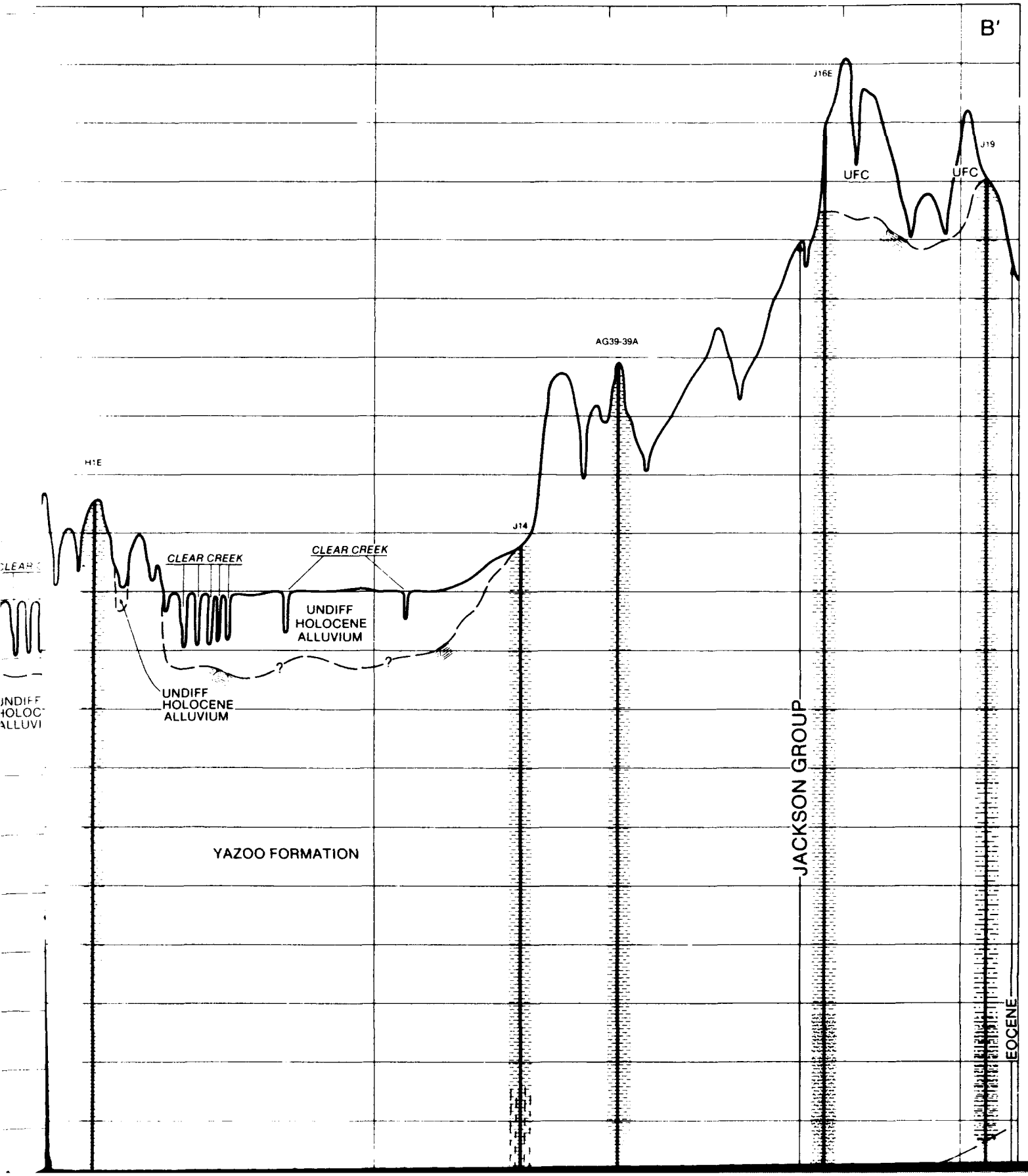


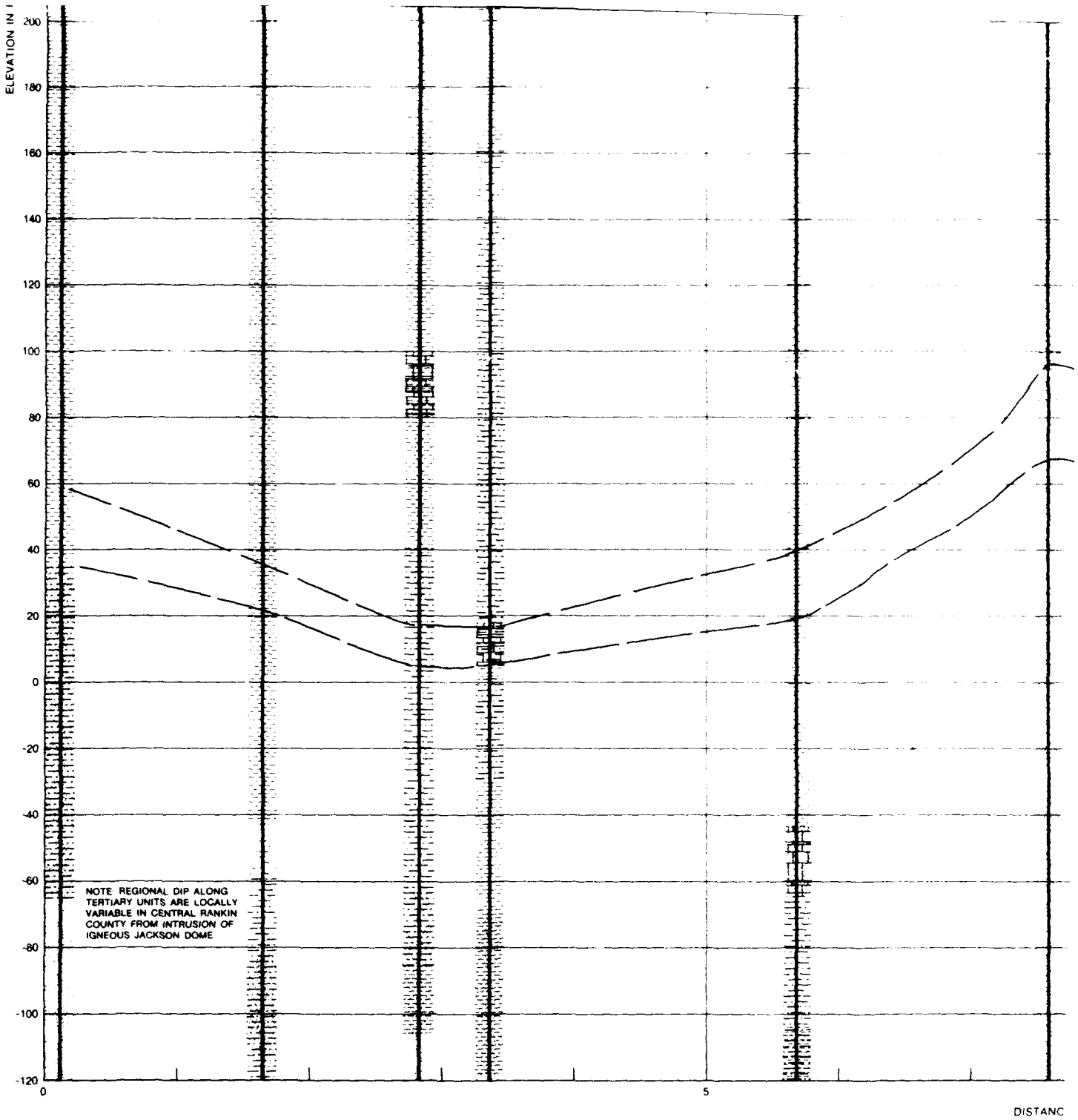
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SECTION A-A'

PELAHATCHIE, MS.


B
ELEVATION IN FEET NGVD
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
G17E
UFC
FOREST HILL FM.
OLIGOCENE
PLIOCENE
PLEISTOCENE
MS HWY 25
MS HWY 471
G18
G31
G17
H11
PELAHATCHIE CREEK
UNDIFF HOLOCENE ALLUVIUM
H1E


B'
J16E
J19
UFC
UFC
AG39-39A
H1E
J14
CLEAR CREEK
CLEAR CREEK
UNDIFF
HOLOCENE
ALLUVIUM
UNDIFF
HOLOCENE
ALLUVIUM
YAZOO FORMATION
JACKSON GROUP
EOCENE



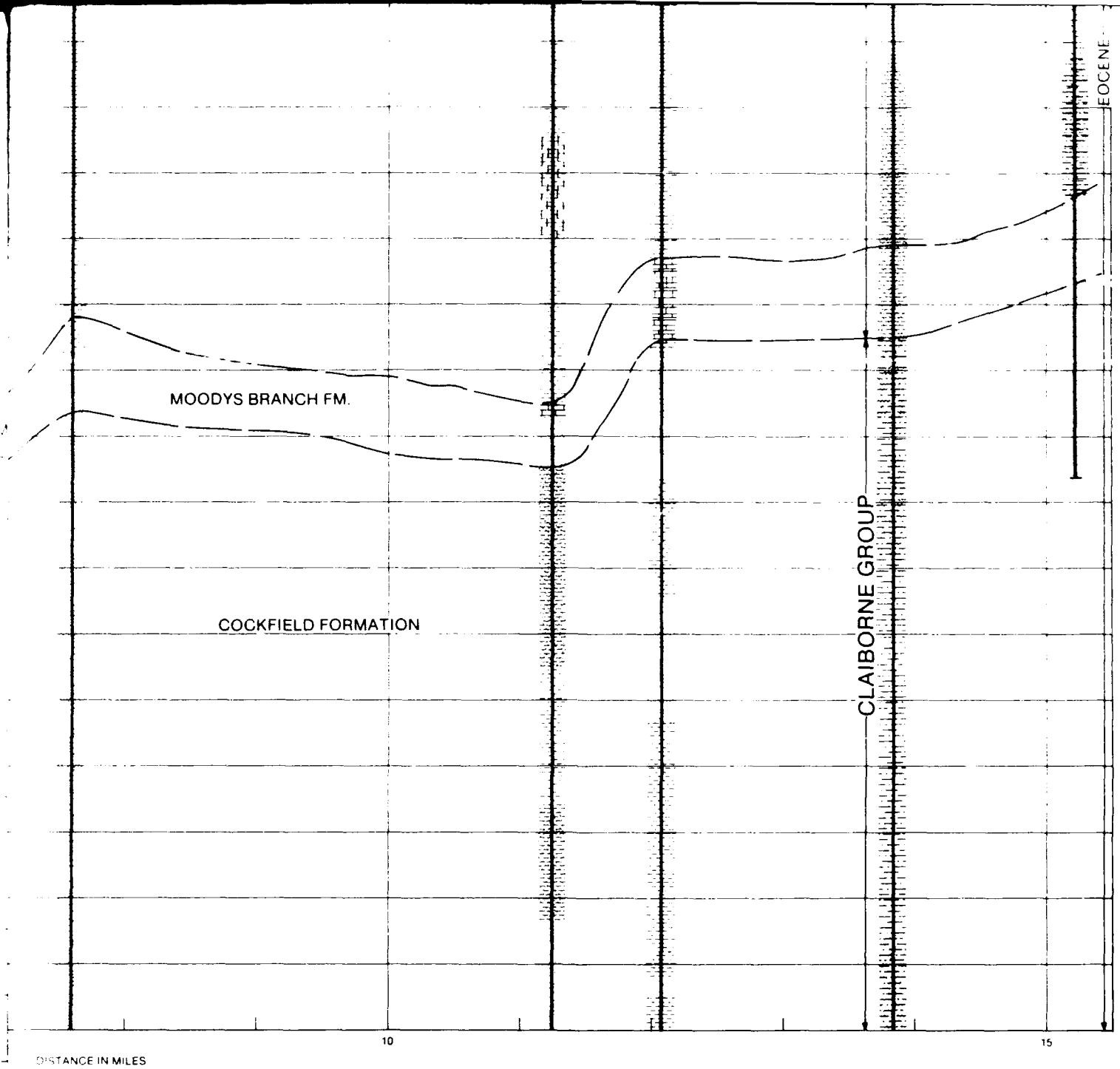
LEGEND

LITHOLOGIC TYPES

- CLAY
- MARL
- SAND
- SHALE

MAPPING SYMBOLS

- UFC — UPLAND FLUVIAL COMPLEX
- TERTIARY SURFACE

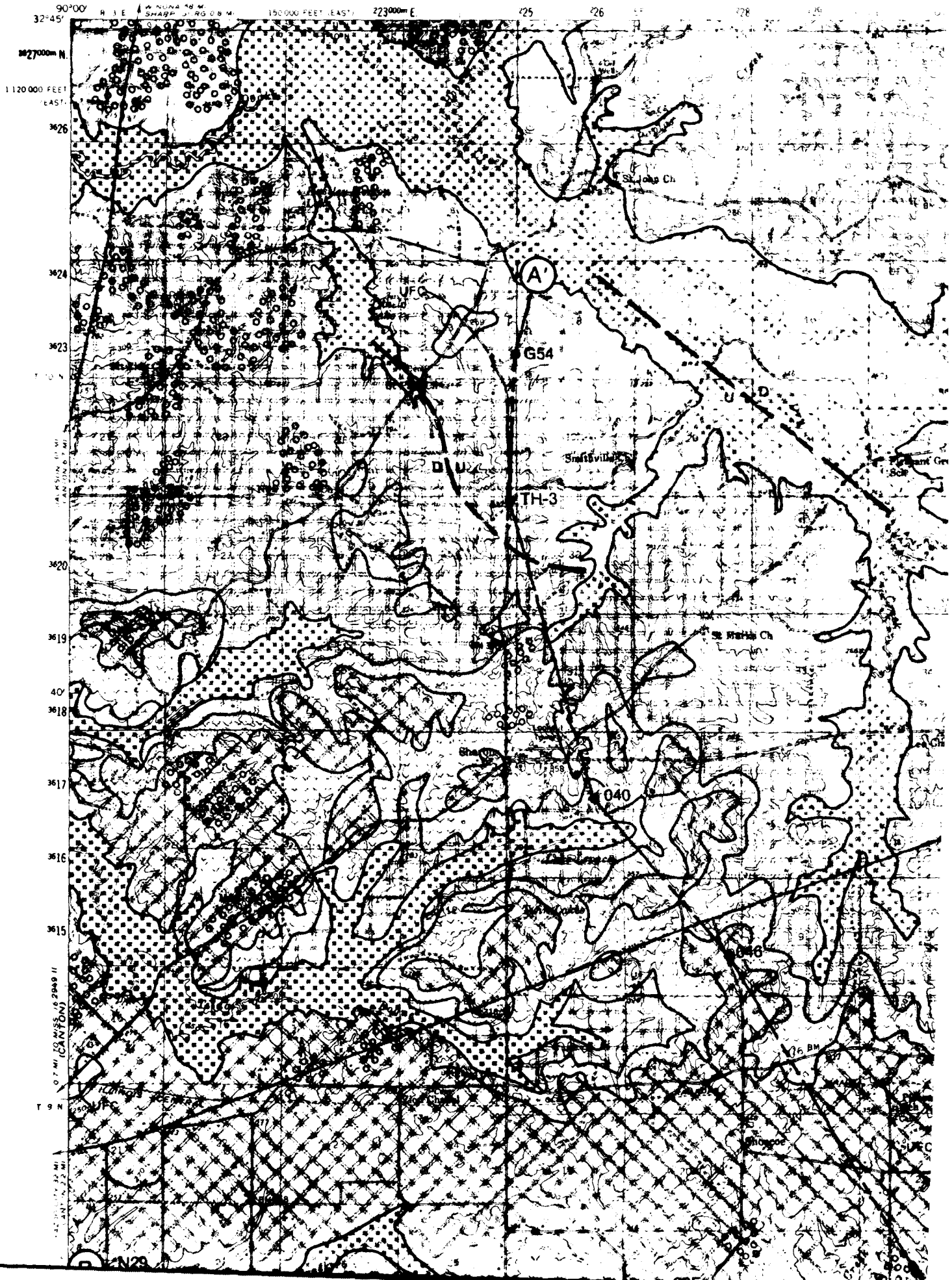


GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

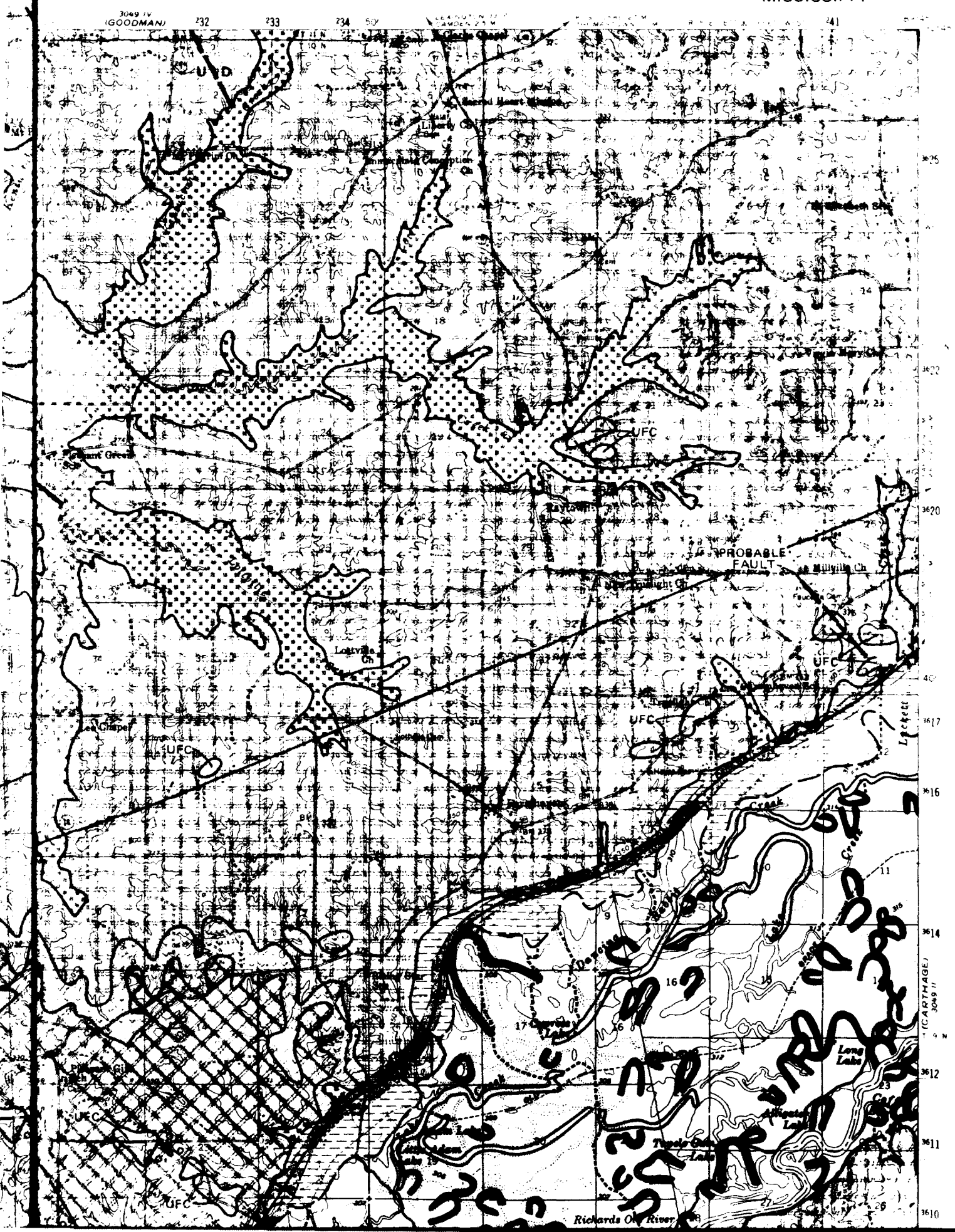
SECTION B-B′

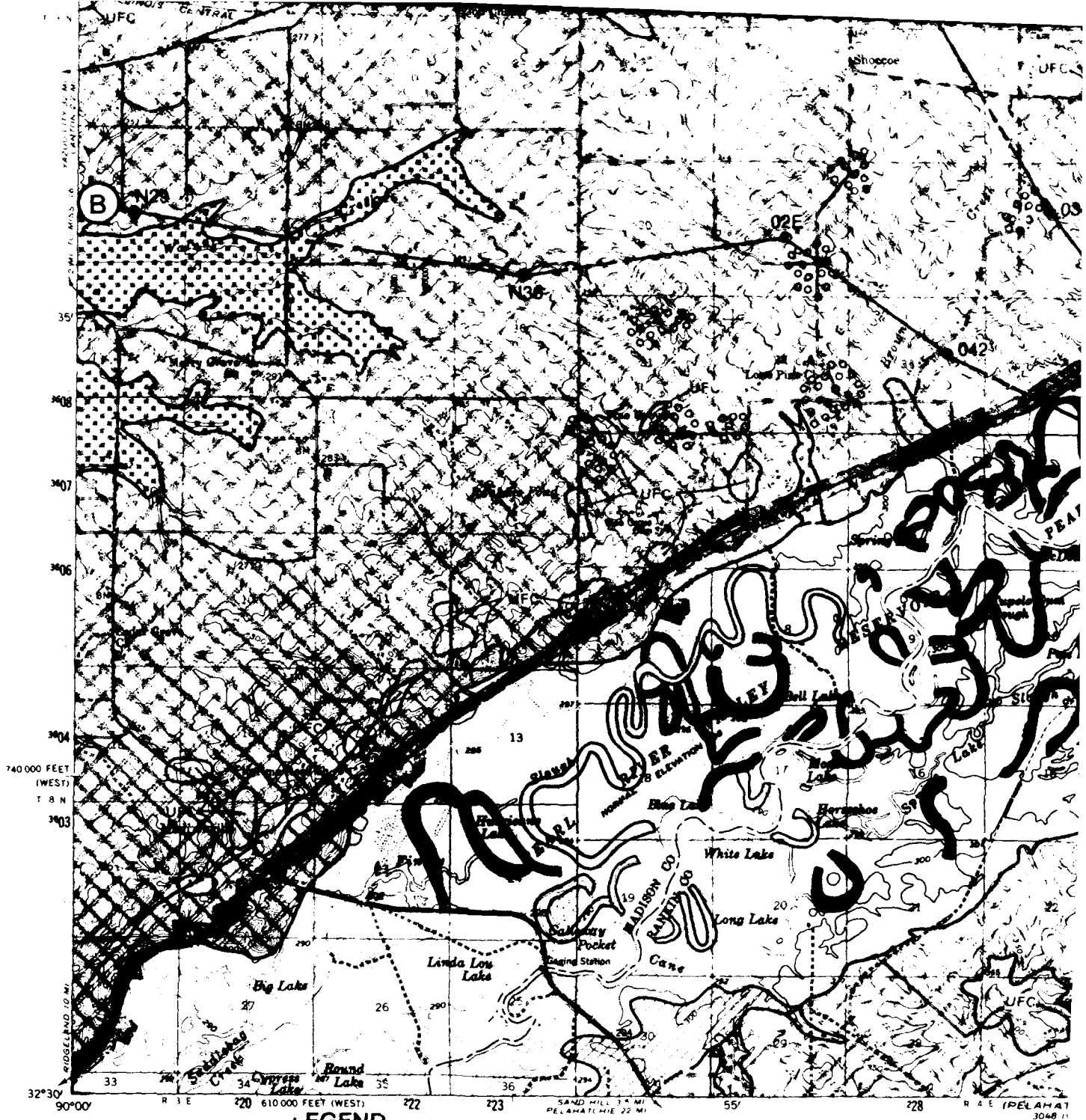
PELAHATCHIE, MS.

U.S. ARMY
CORPS OF ENGINEERS



SHARON QUADRANGLE
MISSISSIPPI





LEGEND

QUATERNARY

HOLOCENE

- POINT BAR
- ABANDONED CHANNEL
- ABANDONED COURSE
- UNDIFFERENTIATED ALLUVIUM
- SHALLOW LACUSTRINE
- COLLUVIAL/ALLUVIAL FAN

PLEISTOCENE

- TERRACE
- LOESS

QUATERNARY/TERTIARY

PLIO-PLEISTOCENE

- UFC — UPLAND FLUVIAL COMPLEX

TERTIARY

EOCENE

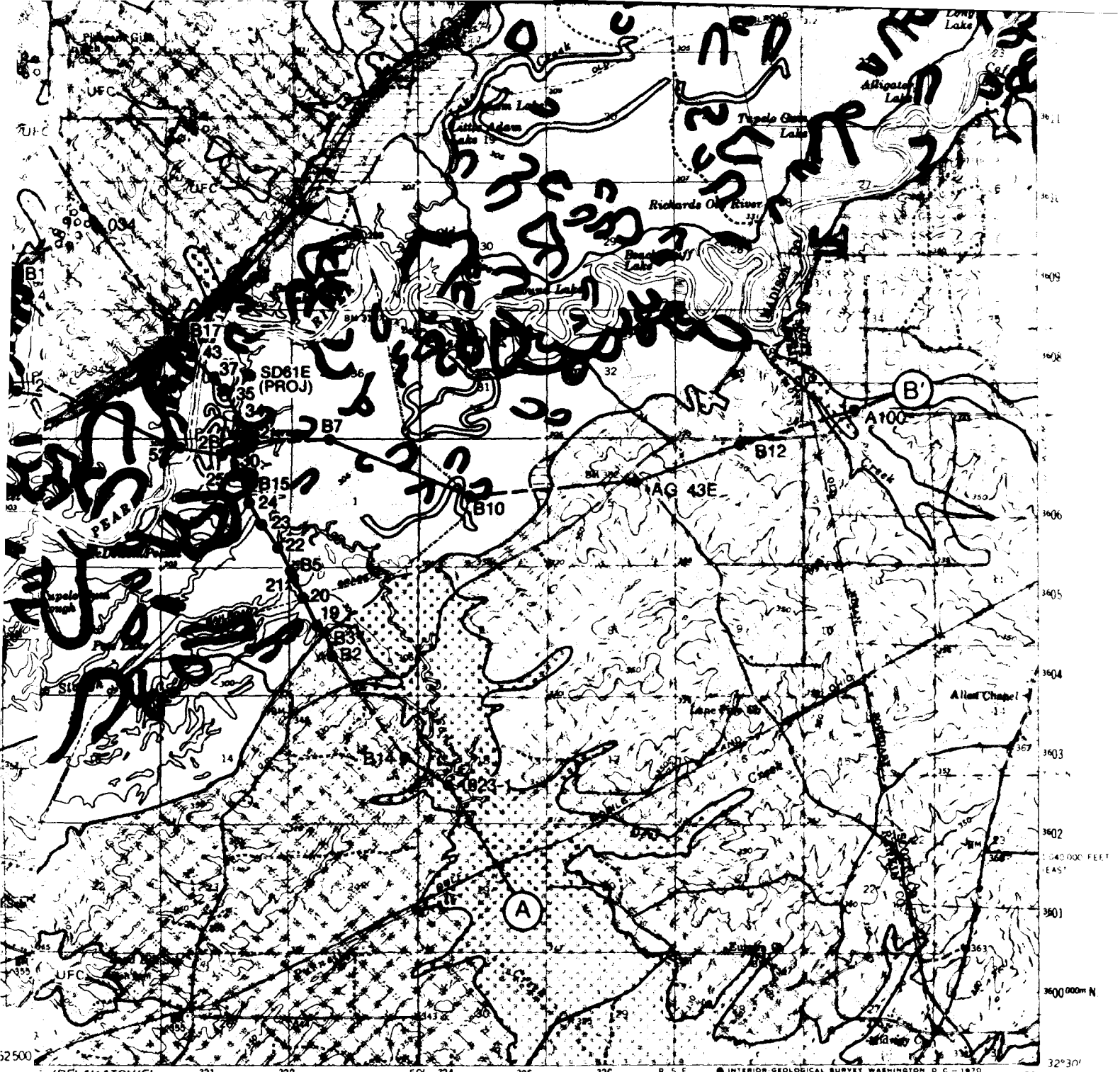
- YAZOO FORMATION
- MOODYS BRANCH FORMATION
- COCKFIELD FORMATION
- INDEFINITE CONTACT
- U/D — FAULT
- ● BORINGS USED ON CROSS SECTIONS

SC

CONTOU
DOTTED LINES
DATUM

NOTE: Upland geologic contacts base
Geology," Mississippi State Ge
(1971), "Rankin County Geolog
Bulletin No. 115; and Brown
Alabama Line to Canton, Missis

SHARON (a)



SCALE 1:62500

VAL 1 2 3 4 MILES

IT 5 FC 6000 9000 12000 15000 18000 21000 FEET

SEA L 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 10 FEET

DOTTED LINES REPRESENT 5-FOOT CONTOURS

DATUM IS MEAN SEA LEVEL

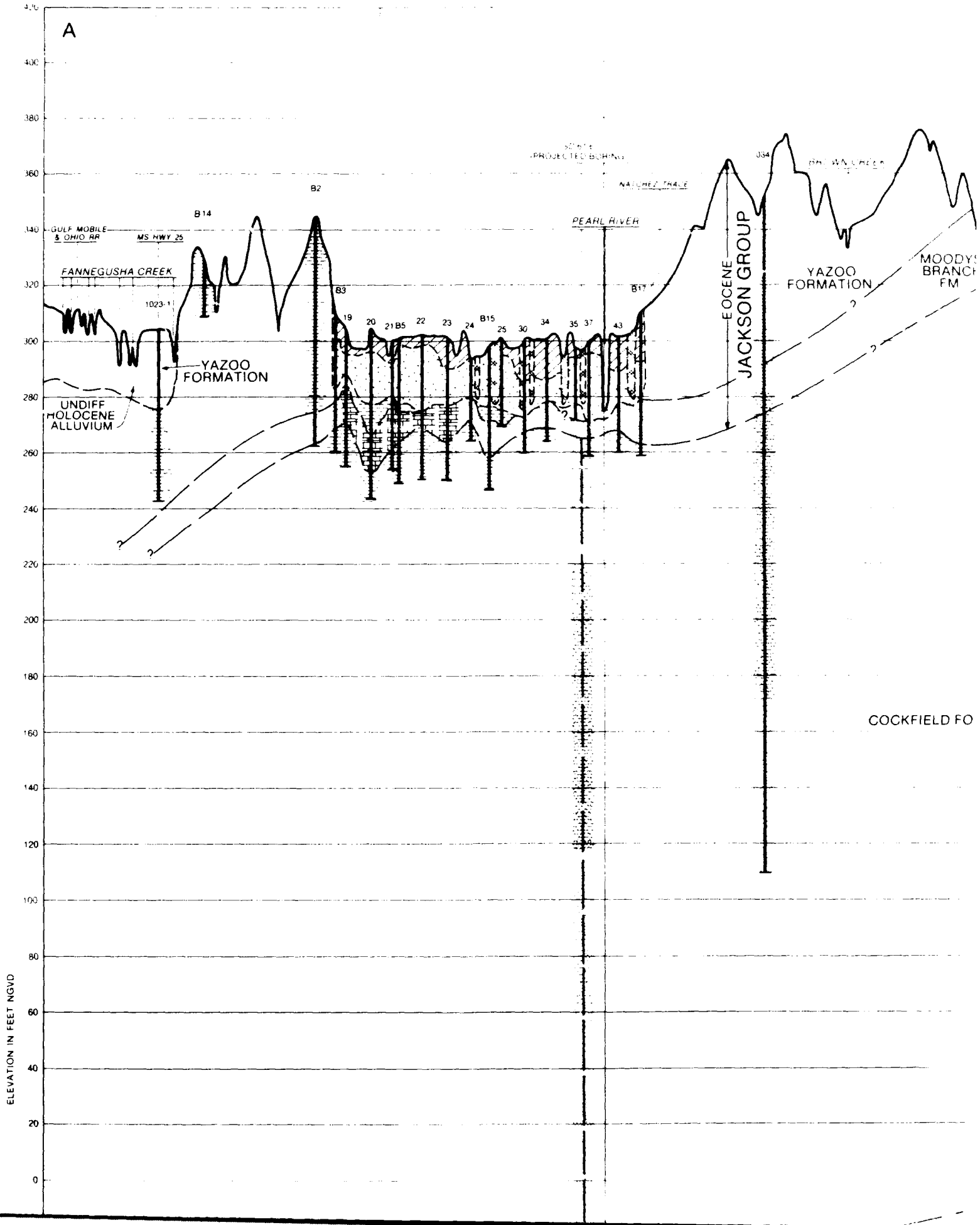
wor
l Su
Mine
Ge
Miss

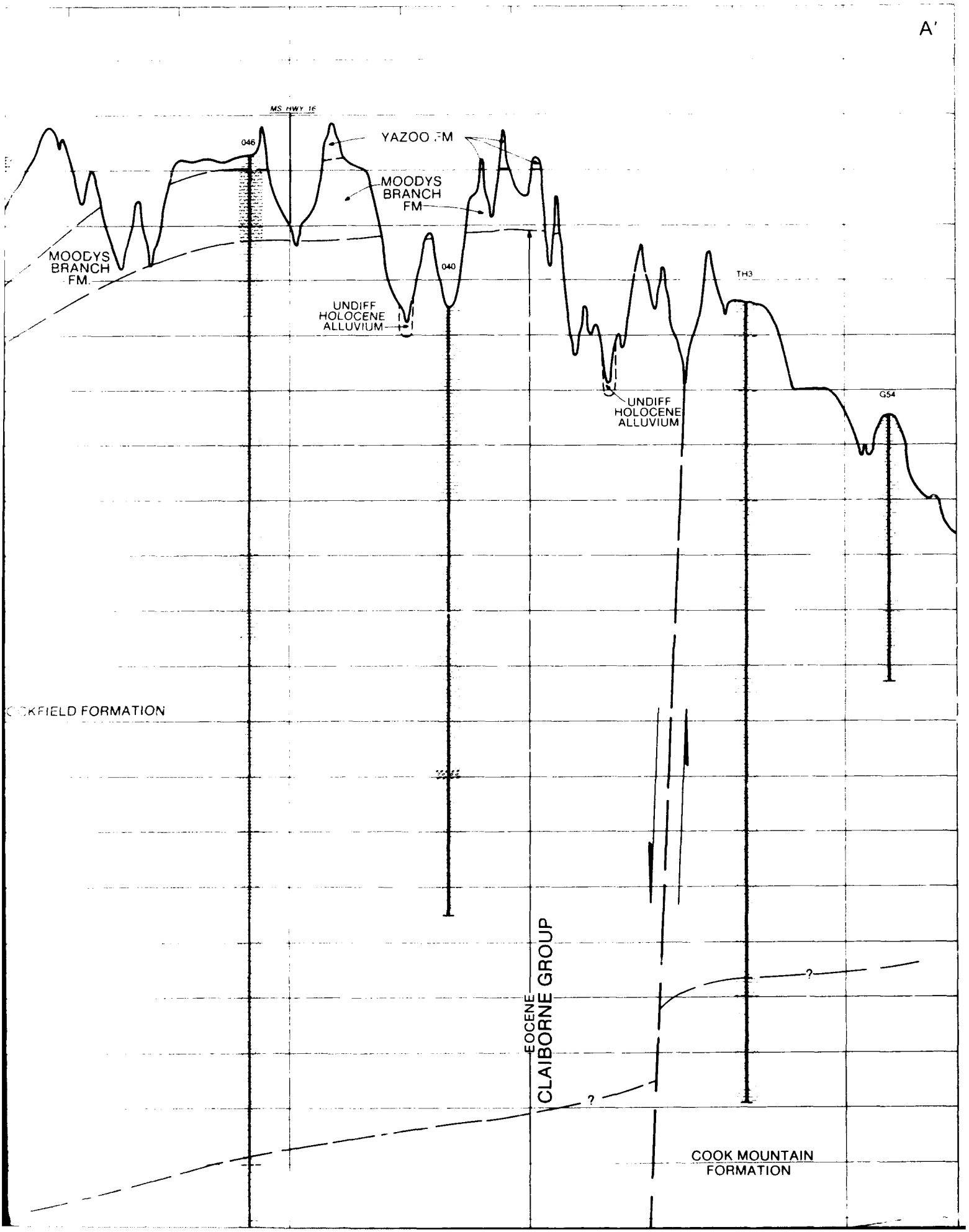
ntacts based on work by Priddy (1960), "Madison County
State Geological Survey Bulletin No. 88; Baughman et al.
nty Geology and Mineral Resources," Mississippi State Survey
nd Brown (1960), Geologic Study Along Highway 16 from
nton, Mississippi," Mississippi Geologic Survey Bulletin No. 89.

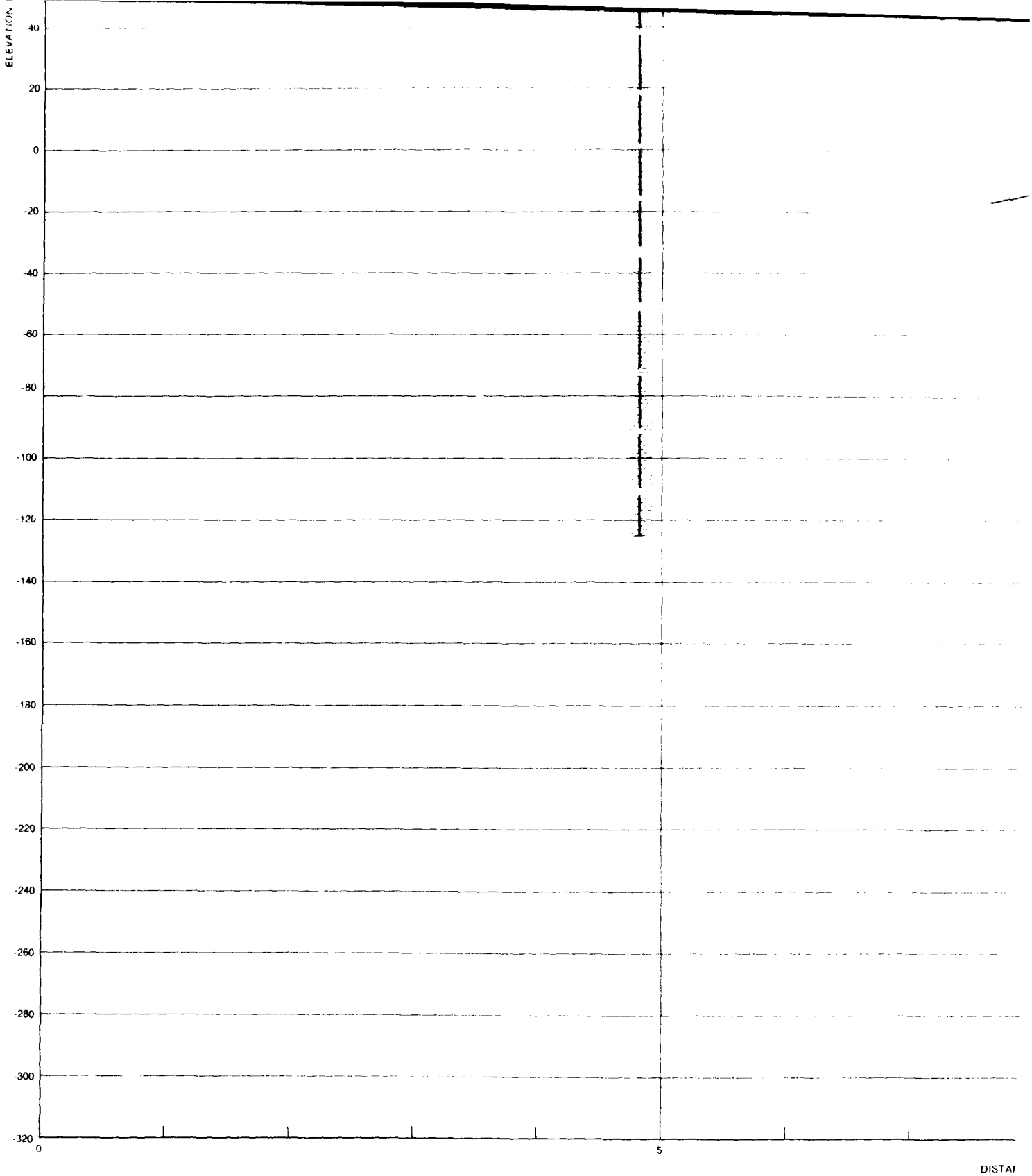
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SURFACE GEOLOGY

SHARON, MS


A
ELEVATION IN FEET NGVD
GULF MOBILE & OHIO RR
MS HWY 25
FANNEGUSHA CREEK
1023-1
B14
B2
B3
19
20
21 B5
22
23
24
B15
25
30
34
35
37
43
B17
PEARL RIVER
NATCHEZ TRACE
YAZOO FORMATION
UNDIFF HOLOCENE ALLUVIUM
EOCENE
JACKSON GROUP
YAZOO FORMATION
MOODYS BRANCH FM
COCKFIELD FO


A'
MS HWY 16
046
YAZOO FM
MOODYS
BRANCH
FM
MOODYS
BRANCH
FM.
040
TH3
UNDIFF
HOLOCENE
ALLUVIUM
UNDIFF
HOLOCENE
ALLUVIUM
G54
CKFIELD FORMATION
EOCENE
CLAIBORNE GROUP
?
?
COOK MOUNTAIN
FORMATION



LEGEND

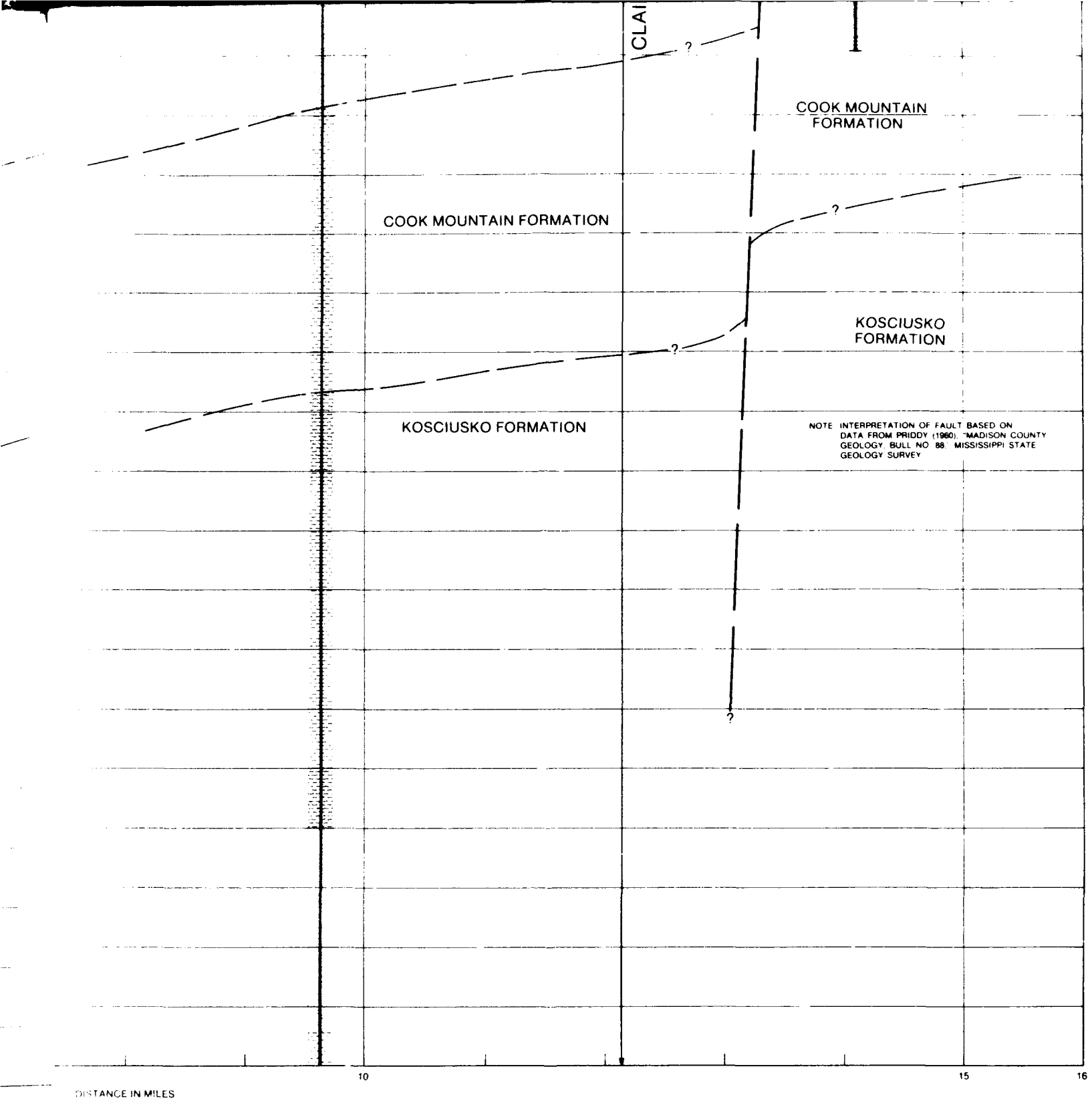
ENVIRONMENTS OF DEPOSITION

TOPSTRATUM
- POINT BAR
- ABANDONED CHANNEL

SUBSTRATUM
- UNDIFFERENTIATED SAND

LITHOLOGIC TYPES

- CLAY
- MARL
- SAND
- SHALE
- ROCKS

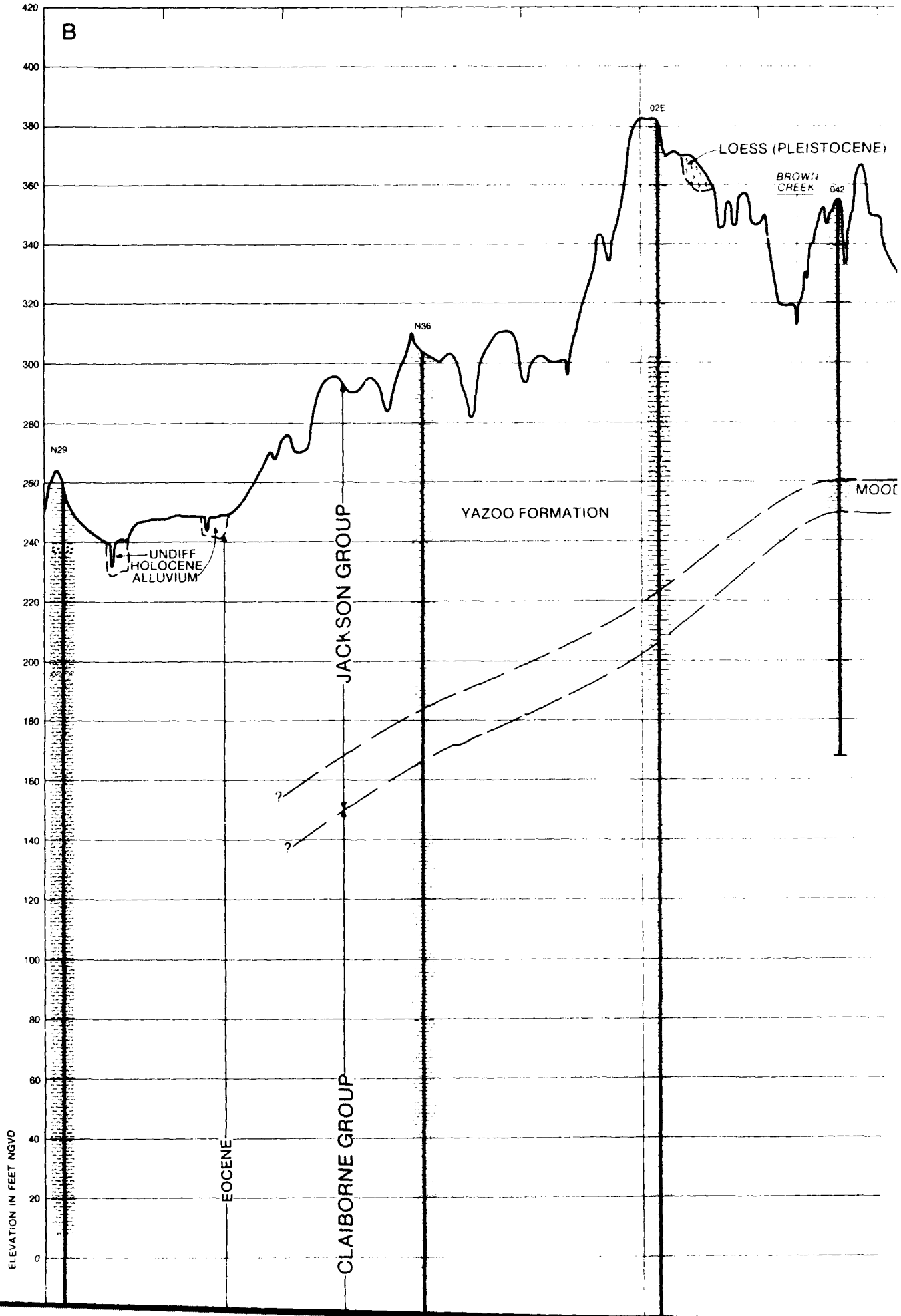


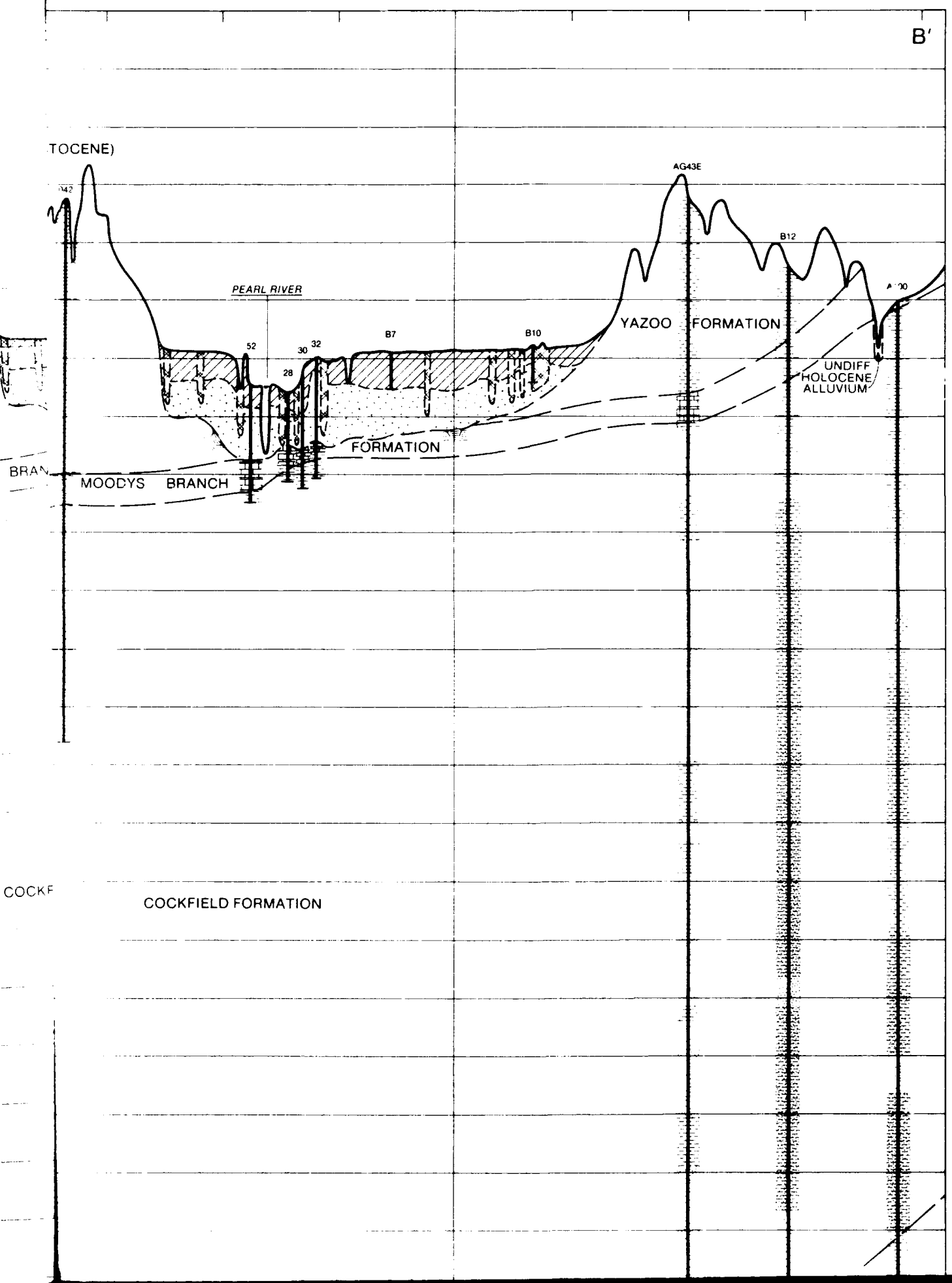
GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

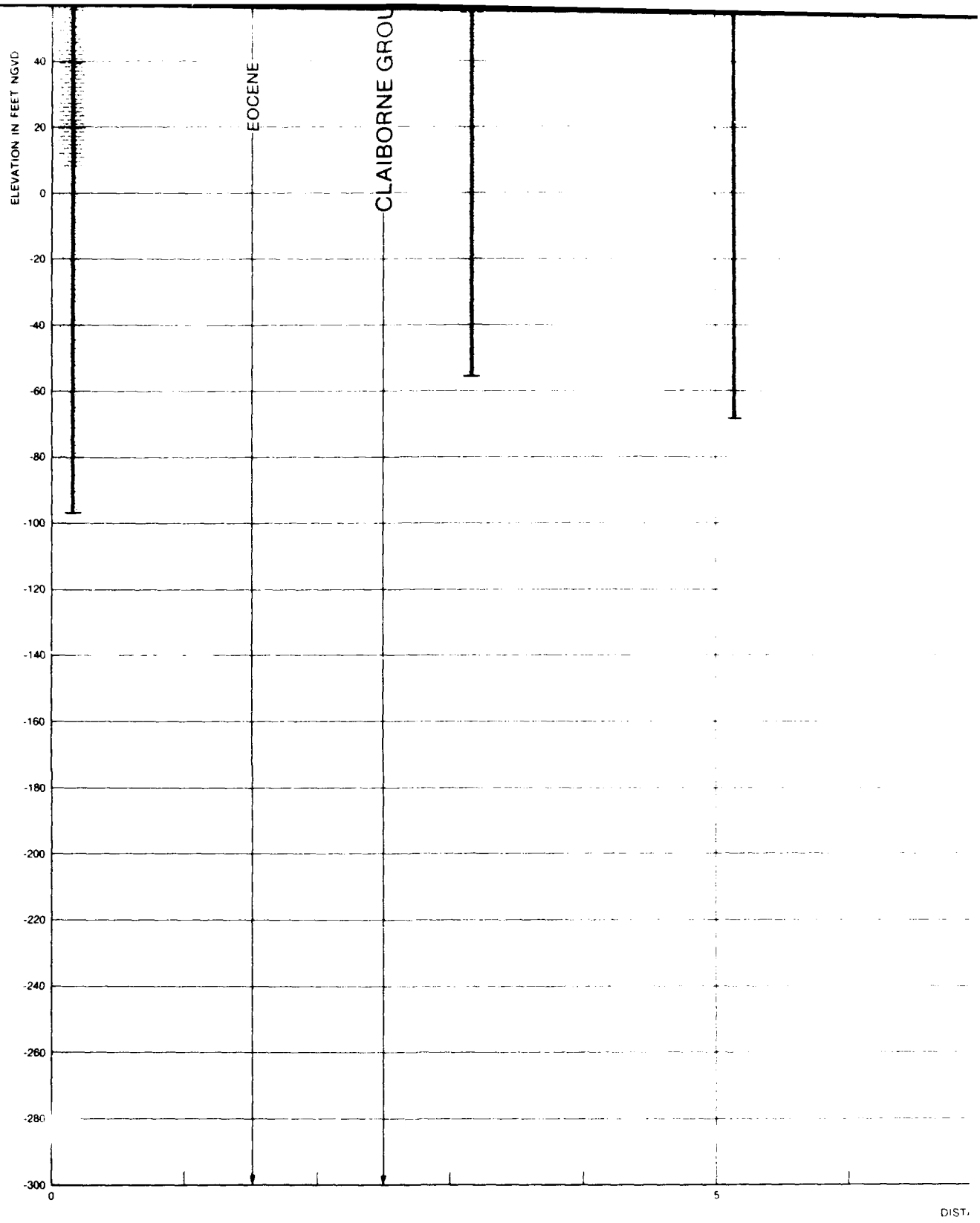
SECTION A-A'

SHARON, MS.

SHARON


B
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
ELEVATION IN FEET NGVD
N29
N36
02E
042
LOESS (PLEISTOCENE)
BROWN CREEK
MOOD
YAZOO FORMATION
UNDIFF HOLOCENE ALLUVIUM
JACKSON GROUP
CLAIBORNE GROUP
EOCENE
?
?


B'
TOCENE)
AG43E
B12
PEARL RIVER
52
30
32
28
B7
B10
YAZOO FORMATION
UNDIFF
HOLOCENE
ALLUVIUM
FORMATION
BRA
MOODYS BRANCH
COCKF
COCKFIELD FORMATION



LEGEND

ENVIRONMENTS OF DEPOSITION

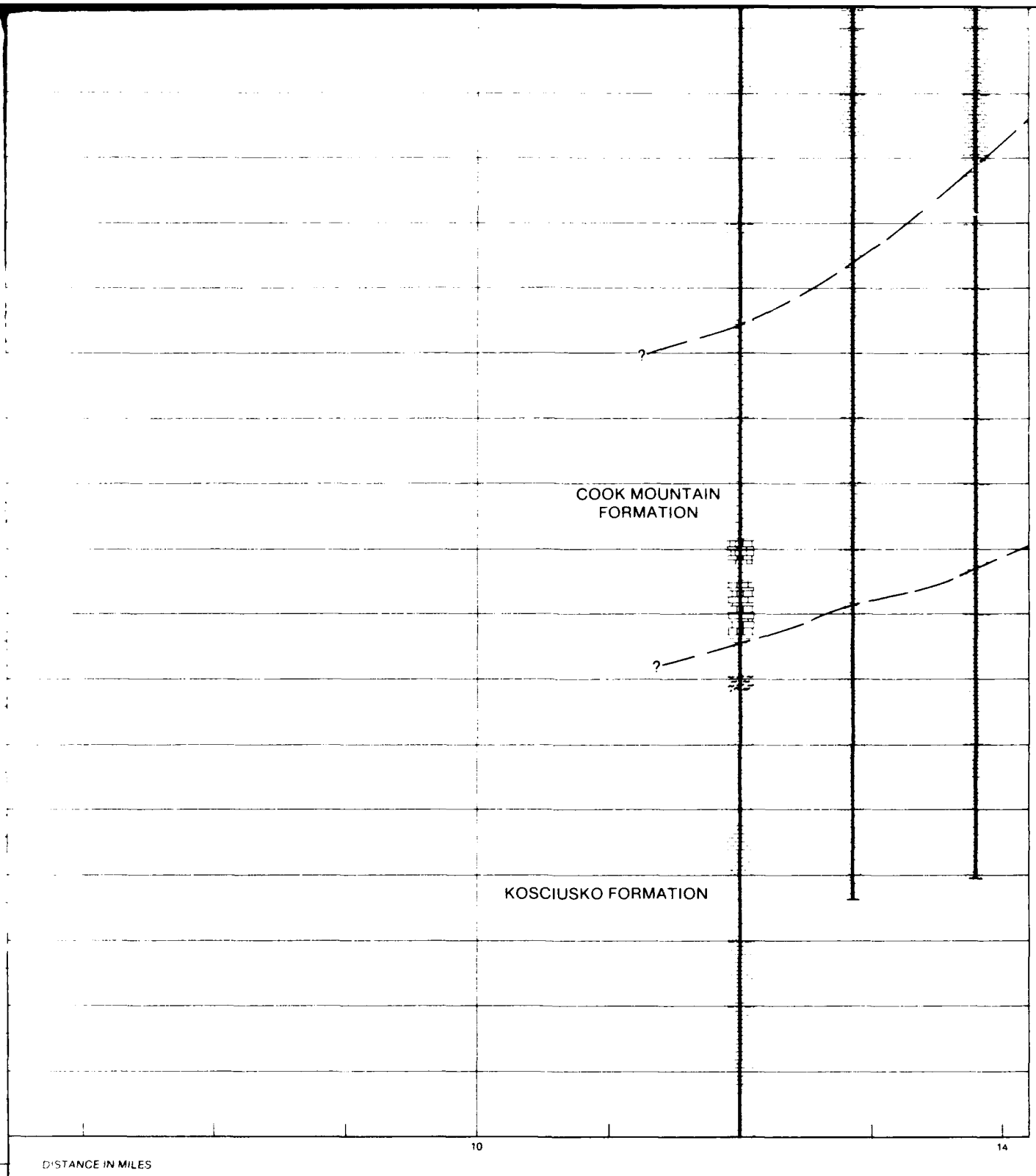
TOPSTRATUM
- POINT BAR
- ABANDONED CHANNEL

SUBSTRATUM
- UNDIFFERENTIATED SAND

TERTIARY SURFACE

LITHOLOGIC TYPES

- CLAY
- SAND
- ROCKS
- MARL
- SHALE
- LIGNITE



GEOLOGICAL INVESTIGATION
PEARL RIVER BASIN

SECTION B-B'

SHARON, MS.