# PLATE 1. GEOLOGY OF MCKENZIE COUNTY

PART 1 PLATE 1
BULLETIN 80

NORTH DAKOTA GEOLOGICAL SURVEY
NORTH DAKOTA STATE WATER COMMISSION

SCALE 0 1 2 3 4 5 Km
0 1 2 3 4 Mi

## EXPLANATION

### QUATERNARY SYSTEM

**RECENT**

Qaf — Alluvial Floodplain
Brownish gray silt and clay with minor amounts of sand and gravel deposited as floodplain deposits along recent drainage.

Qat — Alluvial Terrace
Flat or gently sloping bench of brownish gray silt and clay with minor amounts of sand or gravel deposited along floodplains of major drainages.

**PLEISTOCENE**

**COLEHARBOR GROUP**

Qct — Till facies; yellowish brown unsorted clay, silt, sand, pebbles, cobbles and boulders.

Qcc — Silt and clay facies; brownish gray silt and clay deposited in temporary lakes.

Qcs — Sand and gravel facies; glacial sand and gravel deposited as kame terrace deposits.

### TERTIARY SYSTEM

**PLIOCENE**

Tw — Wiota gravel
Brownish gray, sand and gravel, generally well rounded pebbles and cobbles, fairly well sorted.

**EOCENE–PALEOCENE**

**GOLDEN VALLEY FORMATION**

Tgv — Camel Butte Member: sand, yellowish brown, fine grained, micaceous with minor amounts of silt and clay.

Bear Den Member: clay and silt, light gray to purplish gray with a middle orange weathering zone.

**PALEOCENE**

**SENTINEL BUTTE FORMATION**

Tsb — Interbedded brownish gray and gray silt, clay, sand and lignite; some bentonitic clay and petrified wood zones.

**TONGUE RIVER FORMATION**

Ttr — Interbedded buff and light gray sand, silt, clay and lignite.

# PLATE 2. CROSS SECTION OF DAKOTA GROUP IN MCKENZIE COUNTY

A

SHELL - USA 14-33-10
NDGS NO. 6611
149-104-33 SWSW
K.B. 2140

W.H. HUNT - CROSS NO. 1
NDGS NO. 8592
149-102-32
K.B. 2426

POGO PROD. - JOHNSRUD NO. 1-3
NDGS NO. 9180
149-98-3
K.B. 2220

A'

FLYING J - FEDERAL NO. 1-30
NDGS NO. 8366
149-95-30
K.B. 2552

BELLE FOURCHE FORMATION

MOWRY FORMATION

NEWCASTLE FORMATION

SKULL CREEK FORMATION

INYAN KARA FORMATION

JURASSIC SYSTEM

5000

5500

5500

5500

6000

EXPLANATION

SANDSTONE

MUDSTONE OR SHALE

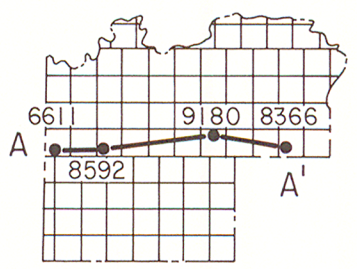


PLATE 3. NORTH-SOUTH CROSS SECTION OF POST-PIERRE STRATA IN MCKENZIE COUNTY

B

GULF - LINDVIG NO. 1-11-30
NDGS NO. 9309
153-101-11 DD
K.B. 2108

KERR MC GEE - LAW NO. 1
NDGS NO. 5748
148-102-9 CD
K.B. 2445

B'

GRACE MAGPIE - FEDERAL NO. 4-32
NDGS NO. 9297
145-101-32 DB
K.B. 2337

NDGS NO. 5380
145-101-32
K.B. 2173

SENTINEL BUTTE FORMATION

TONGUE RIVER FORMATION

SLOPE CANNONBALL AND LUDLOW FORMATION

HELL CREEK FORMATION

FOX HILLS FORMATION

PIERRE FORMATION

500
1000
500
1000
500
1000
700
1000
1500
2000

EXPLANATION

Lithology interpreted from logs

SAND
SILT, CLAY
LIGNITE

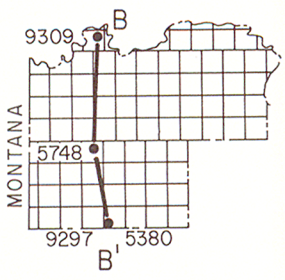
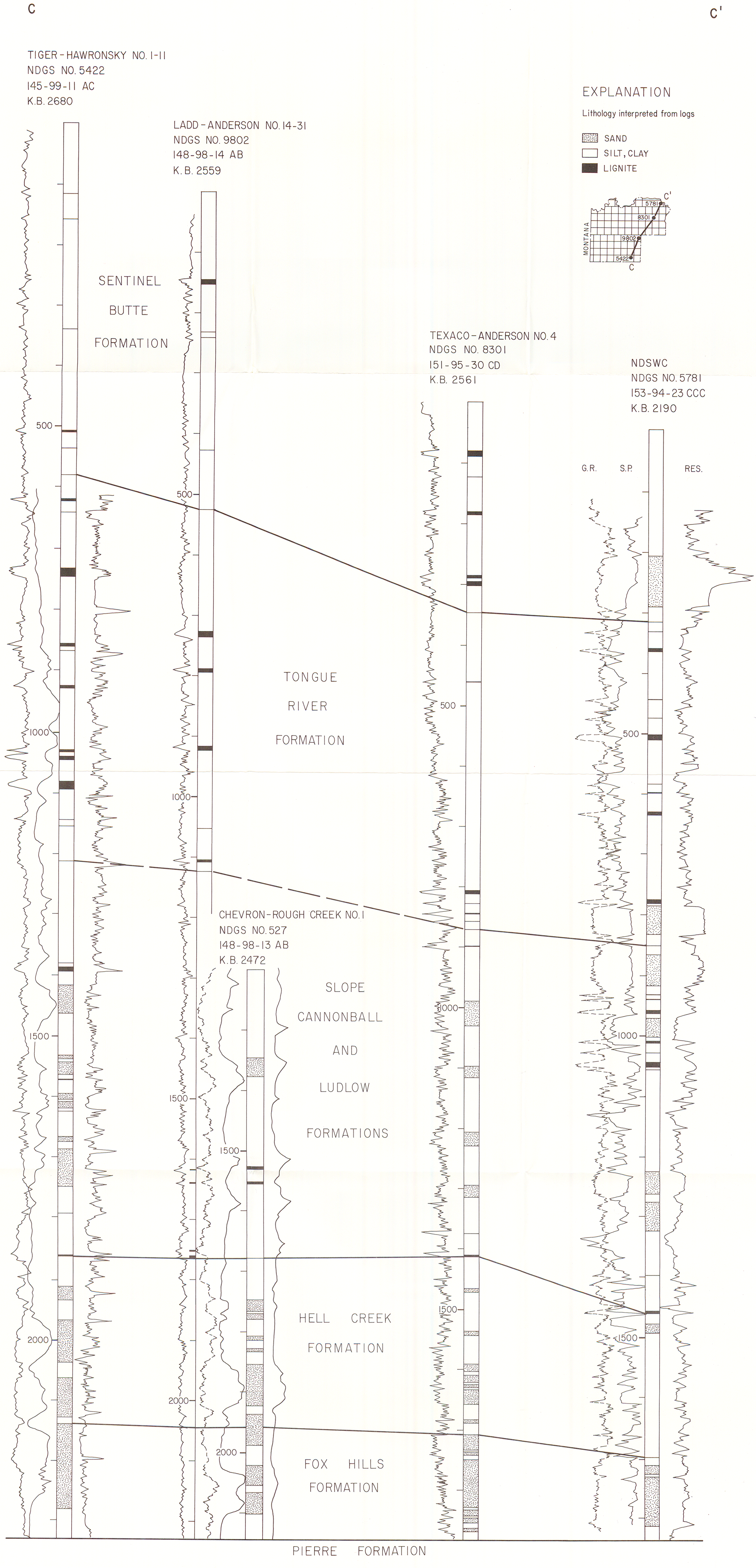


PLATE 4. NORTHEAST - SOUTHWEST CROSS SECTION OF POST-PIERRE STRATA IN MCKENZIE COUNTY



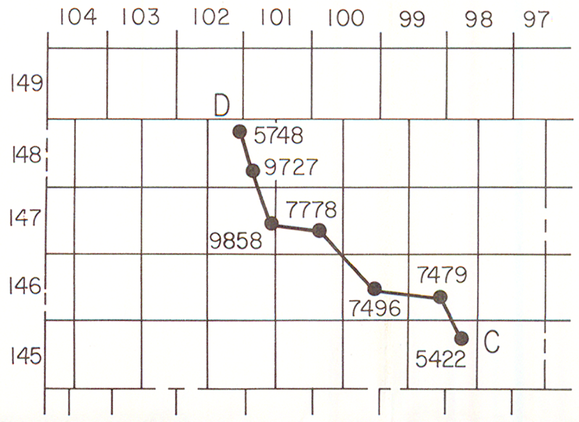
# PLATE 5. CROSS SECTION OF FORT UNION STRATA IN SOUTHERN MCKENZIE COUNTY

D

EXPLANATION

Lithology interpreted from logs

- Sand
- Mudstone or Silt
- Lignite




KERR McGEE-LAW NO.1
NDGS NO. 5748
148-102-9 CD
K.B. 2445

PENNZOIL-SPRING CREEK NO. 27-31 BN
NDGS NO. 9727
148-102-27 AB
K.B. 2268

PENNZOIL-SNOWCOVER NO. 13-33 BN
NDGS NO. 9858
147-102-13 CB
K.B. 2344

PENNZOIL-SESTOL NO. 23-11 BN
NDGS NO. 7778
147-101-23 BB
K.B. 2149

PENNZOIL-ROUGH RIDER NO. 16-24
NDGS NO. 7496
146-100-16 CD
K.B. 2621

W.H. HUNT-DEWHIRST NO.1
NDGS NO. 9394
146-98-15 BD
K.B. 2589

TIGER-HAWRONSKY NO. 1-11
NDGS NO. 5422
145-99-11 AC
K.B. 2680

C

SENTINEL BUTTE FORMATION

TONGUE RIVER FORMATION

SLOPE FORMATION

500

1000