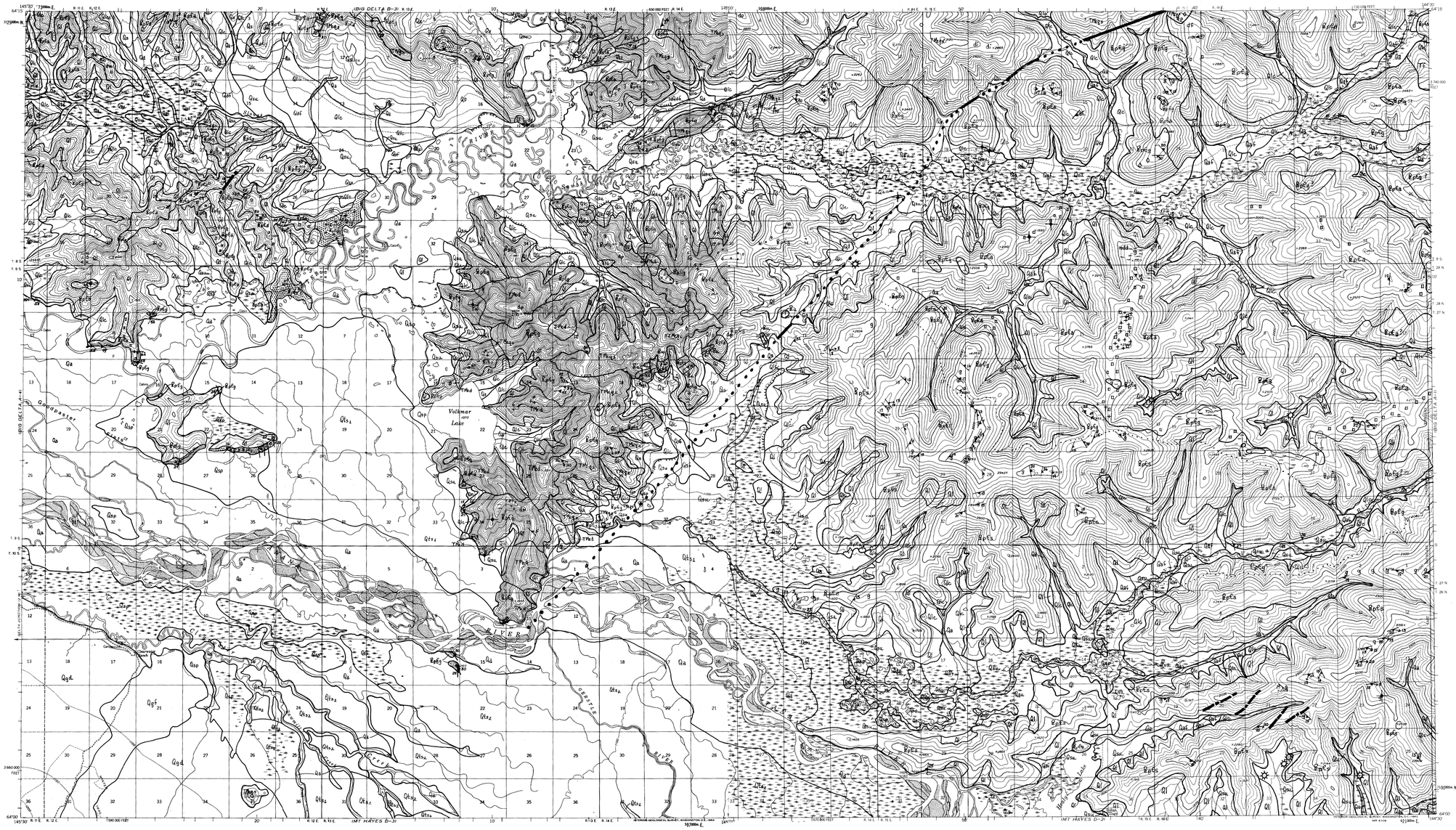
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-869
WEBER, OTHERS--GEOLOGY, BIG DELTA A-2
AND A-3 QUADS., ALASKA



BASE FROM U. S. GEOLOGICAL SURVEY 1:63,360
BIG DELTA A-2 AND A-3, 1955

SCALE 1:63 360

1 ½ 0 1 2 3 4 5 MILES
1 .5 0 1 2 3 4 5 KILOMETERS

INDEX MAP

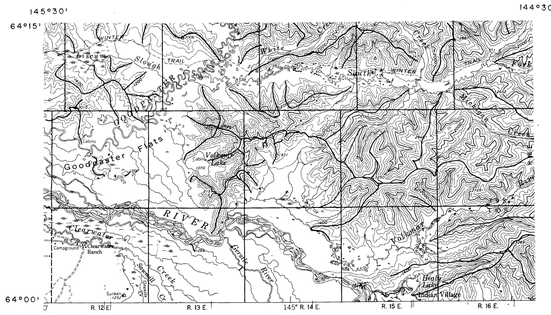
RECONNAISSANCE GEOLOGIC MAP OF THE BIG DELTA A-2 AND A-3 QUADRANGLES, ALASKA

BY

FLORENCE R. WEBER, HELEN L. FOSTER, AND TERRY E. C. KEITH

1977

SURFICIAL DEPOSITS PRIMARILY BASED ON INTERPRETATION OF AERIAL PHOTOGRAPHS BY F. R. WEBER. FIELDWORK DONE FROM AUGUST 20 TO SEPTEMBER 10, 1974 BY F. R. WEBER, H. L. FOSTER, T. E. C. KEITH, AND ALICE CANTELOW

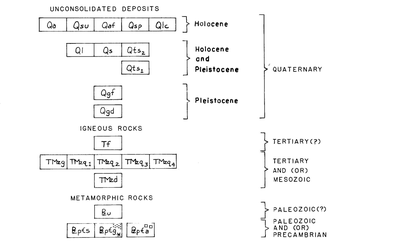


MAP OF BIG DELTA A-2 AND A-3 QUADRANGLES SHOWING LOCATION OF FIELD OBSERVATIONS

TRAVERSE
POINT OBSERVATION

EXPLANATION

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Qa ALLUVIUM--Gravel, sand, or silt, gray or buff; locally contains small amounts of dark-colored organic silt and peat. Coarse-grained sand in streams in hills but largely silt on the Tanana River flood plain and on the lower courses of major streams

Qsu SILT, UNDIFFERENTIATED--Primarily alluvial with some colluvial sediment, mixed with a considerable amount of organic material; medium gray to dark gray; mostly perennially frozen and contains much ice

Qaf ALLUVIUM OF FAN DEPOSITS--Gravel, sand, and silt, rarely boulders; several shades of gray and brown. Composition varies widely and reflects local source materials. Well to poorly stratified; well to poorly sorted

Qsp SILT AND PEAT--Organic silt, black or mottled gray and brown. Deposited in swamps. Mostly perennially frozen

Qlc COLLUVIUM, ALLUVIUM, AND REWORKED LOESS--A mixture of gravel, sand, and silt, including peat and locally reworked eolian sand; many shades of gray and brown. Generally occupies an intermediate position between bottom-land alluvial silt and eolian loess. Forms terraces or aprons like slopes on low hillsides and in small valleys

Ql LOESS--Silt, eolian; light-brown to brownish-gray, massive, unconsolidated, well-sorted, poorly stratified; locally mottled by iron stains. Contains some eolian sand on slopes facing the Tanana River flood plain in the vicinity of Healy Lake and on the hills north of Liscum Slough

Qs EOLIAN SAND--Medium-yellowish-gray to olive-gray, unconsolidated; forms dunes as much as 21 m high in the hills north of Liscum Slough

Qts_2 YOUNGER STREAM TERRACE DEPOSITS--Silt, silty sand, sand, or gravel, brown, dark-brown, or gray. Mantled and interbedded with peat and organic silt. Forms low terraces on the Gerstle River flood plain and fan

Qts_1 OLDER STREAM TERRACE DEPOSITS--Sand and gravel mantled locally by organic silt and peat, brown, dark-brown, or gray. Mostly older deposits of the Gerstle River drainage, probably primarily glacial outwash

Qgf GLACIAL STREAM AND FAN DEPOSITS OF DONNELLY GLACIATION--Gravel, sand, and silt, light-yellowish-brown. Outwash derived from glaciers in the Granite Mountains, south of the map area

Qgd GLACIAL STREAM AND FAN DEPOSITS OF DELTA GLACIATION--Pebble to boulder gravel mantled in places by silt and peat deposits and low sand sheets, light-yellowish-brown, poorly stratified. Derived primarily from the Delta River drainage and from a few small streams originating in the Granite Mountains, largely outwash of Pleistocene Delta Glaciation with Holocene alluvial channels

IGNEOUS ROCKS

Tf FELSIC INTRUSIVE ROCKS--Light-yellowish-gray; orange-brown color where altered. Mostly porphyritic with phenocrysts of quartz and feldspar, and less commonly of hornblende and biotite. Quartz crystals commonly doubly terminated, some embayed. Disseminated sulfides occur locally. These rocks occur in dikes, sills, and small plutons

TTbq GRANITIC ROCKS, UNDIFFERENTIATED--Quartz monzonite, fine- to coarse-grained, medium-light-gray; large potassium feldspar phenocrysts, biotite most common mafic mineral

$TTbq_1$ QUARTZ MONZONITE--Light-gray, coarse-grained; large potassium-feldspar phenocrysts; biotite common; trace of green hornblende

$TTbq_2$ QUARTZ MONZONITE--Light-gray, medium- to coarse-grained; slightly porphyritic with potassium-feldspar phenocrysts as much as 1 cm in length; biotite common; weathers to rounded boulders

$TTbq_3$ QUARTZ MONZONITE--Light-gray, medium-grained; potassium feldspar, perthite, oligoclase, quartz, muscovite, biotite

$TTbq_4$ QUARTZ MONZONITE--Very light gray, fine-grained; orthoclase and oligoclase, quartz, and sphene. Mafic mineral is dark-olive-green hornblende; occurs at YARM "sunken" near south edge of map

TTbd DIORITE--Medium-gray to medium-dark-gray, fine- to medium-grained; dark-green to pale-brown hornblende, red-brown biotite abundant in some localities. Foliation or flow banding near margins

METAMORPHIC ROCKS

Au ULTRAMAFIC ROCKS--Fine- to coarse-grained, greenish-black and light-greenish-gray; contains serpentine (usually antigorite), talc, actinolite, chlorite, brucite, and magnetite. Small outcrops locally include well-foliated layers and zones of coarse-grained, massive amphibole-chlorite-magnetite rocks. Compressed foliated basaltic(?) probably indicates peridotite source. Generally weather brown and are bare of vegetation

PZgcs QUARTZITE AND SCHIST--Quartzite, feldspathic quartzite and quartz-mica schist, medium-light-gray to medium-gray. Quartzite, some of which shows original bedding, dominates the section. Quartz-biotite schist with oligoclase, potassium feldspar, garnet, clinozoisite, epidote, and minor muscovite is common. Most of the quartzite and schist are garnetiferous; actinolitic hornblende and staurolite occur in some schists. Potassium feldspar locally forms tiny porphyroblasts in the schists. In places the rocks are gneissic reflecting differences in original lithology. Upper-greenschist to amphibolite facies, but many rocks show retrograde effects. Metamorphic grade, in the A-2 quadrangle east of the long northeast-trending fault, may increase slightly toward the east and northeast

PZgcg QUARTZ-BIOTITE GNEISS--Medium-grained, light-gray to medium-light-gray; very quartzitic; in places contains tiny porphyroblasts of potassium feldspar. Micas locally abundant and rock schistose. Some very light gray or white quartz-feldspar gneiss, probably orthogneiss. Dark-greenish-gray hornblende gneiss commonly borders augen gneiss. Some of the gneiss bordering the dioritic and granitic plutons is pyroxene-hornfels facies with sillimanite, cordierite, and diopside

Areas of white gneiss composed primarily of quartz and feldspar

Zone of recrystallized cataclastic rocks

PZgcb AUGEN GNEISS AND BIOTITE GNEISS WITH HETEROBLASTIC TEXTURE--Medium-light-gray, medium- to coarse-grained; augen composed mostly of white potassium feldspar and range from 1 to 10 cm in diameter, generally about 4 cm. Augen are closely spaced to widely scattered or absent. Plagioclase is oligoclase to andesine; biotite is scarce to abundant. Included also is biotite gneiss, very feldspathic and compositionally similar to augen gneiss except that augen are not developed. Foliation is well developed but locally obscure in gneiss with very large, closely spaced augen. Augen gneiss in the hills near Liscum Slough strongly retrograded. Variable amounts of muscovite occur in some augen gneiss; some of the muscovite crosscuts earlier foliation

Areas known to have abundant augen

Contact--approximate or inferred, dotted where indefinite

Fault--dotted where concealed or inferred

Lineament observed on aerial photographs. Most lineaments are probably faults; a few may be dikes

Terrace scarp

Rubble of granitic rocks mixed with rocks of the unit mapped

Rubble of gneiss or schist mixed with rocks of the unit mapped

Augen gneiss mixed with rocks of the unit mapped

g Garnetiferous rocks

Strike and dip of foliation
- Inclined
- Vertical
- Horizontal

df Felsic dike
di Intermediate dike
dm Mafic dike
dp Pegmatite dike
mdd Metadiabase dike
Amphibole-bearing rocks
Pingo

Interior--Geological Survey, Reston, Va.--1977

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