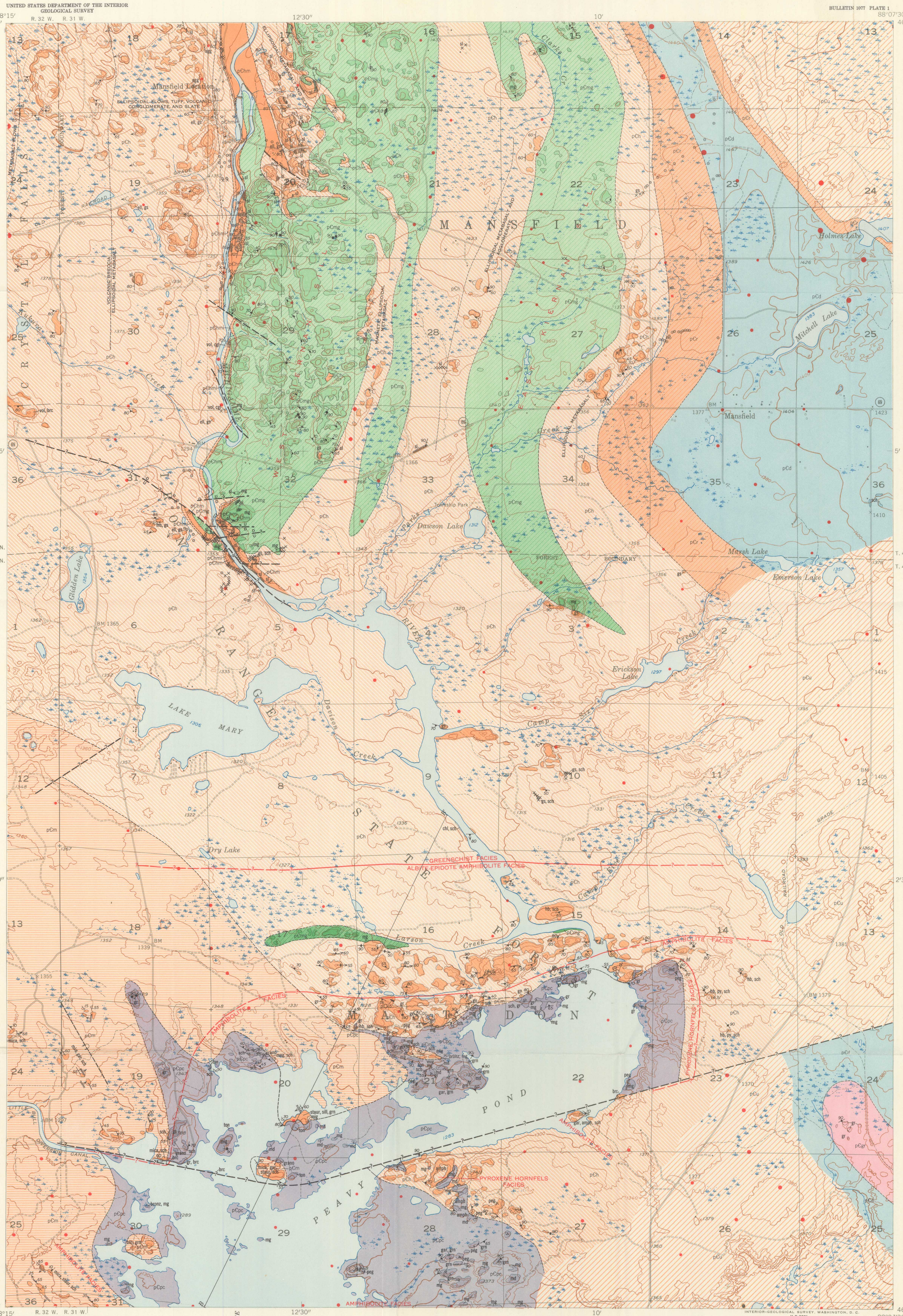
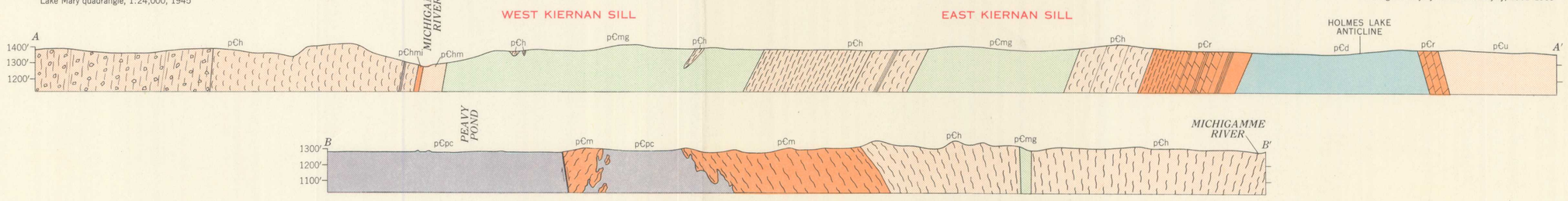


Base from Geological Survey map of Lake Mary quadrangle, 1:24,000, 1945

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.
M R-3751

Geologic survey by Richard W. Bayley, 1951–1953



GEOLOGIC MAP AND STRUCTURE SECTIONS OF THE LAKE MARY QUADRANGLE, MICHIGAN

Scale 1:24,000

1 0 1 Mile

Contour interval 20 feet
Datum is mean sea level

EXPLANATION

Upper Precambrian — Keweenawan series

pCkd — Diabase dikes
Unaltered diabase and olivine diabase. Occurs as narrow dikes in the West Kiernan sill and the Hemlock formation

UNCONFORMITY

Middle Precambrian — Animikie series

pCpc — Peavy Pond complex
Chiefly hornblende metagabbro, but includes metanorite, metadiorite, metatonalite, granodiorite, and granite. Metasedimentary inclusions are indicated by stippled areas in outcrops

pCmg, sl — Metagabbro
Includes metaperidotite, metagabbro, granophyre, and amphibolite. Occurs in East and West Kiernan sills and related dikes. Includes small bodies of slate, sl, shown only in outcrops

Baraga group

pCm — Michigamme slate
Consists of metamorphosed graywacke and slate. Includes quartzose and micaceous metagraywacke, quartz-mica schist, quartz-staurolite-mica schist, garnet-mica schist, biotite granulite, garnet-staurolite granulite, and staurolite-sillimanite-garnet granulite

UNCONFORMITY

pChmi, sl, pCh, pChm — Hemlock formation
Includes ellipsoidal metabasalt, tuff, agglomerate, volcanic breccia, and volcanic slate in the northern part of the area; hornblende schist, pyroxene-hornblende hornfels, and pyroxene hornfels in the southern part of the area. Slate, sl, delineated within outcrops; other lithologic units are separated locally and designated by annotation on map. Mansfield iron-bearing slate member, pChm, is mostly slate but contains some iron formation, pChmi, particularly in the uppermost part

UNCONFORMITY(?)

pCr — Randville dolomite
Includes arkose, arkosic dolomite, dolomite, and dolomitic and sericitic slate

UNCONFORMITY

Lower Precambrian

pCgr — Porphyritic red granite
Age uncertain

pCd — Dickinson group
Includes quartz-sericite magnetite schist, biotite-chlorite-magnetite schist, and red felsite, probably all of volcanic origin

pCu — Undifferentiated Precambrian rocks
Concealed by Pleistocene glacial deposits

PRECAMBRIAN

Contact
Long dashes where approximately located; short dashes where hidden or inferred

Fault, approximately located
Queried where hidden or inferred. U, upthrown side; D, downthrown side

Fault, showing relative movement

Overturned syncline, showing the approximate trace of the axial plane and direction of dip of the limbs

Limit of outcrop

80 Strike and dip of beds

90 Strike of vertical beds

65 Strike and dip of overturned beds

45 Plunge of minor anticline

60 Plunge of minor syncline

Arrow indicates tops of beds as determined from pillow structures in metabasalts

Arrow indicates tops of beds as determined from graded graywacke beds

80 Strike and dip of foliation

90 Strike of vertical foliation

80 20 Strike and dip of foliation and plunge of lineation

50 Strike of vertical foliation and plunge of lineation

80 Strike and dip of rhythmic layering, in the West Kiernan sill only

90 Strike of vertical rhythmic layering, in the West Kiernan sill only

75 Strike and dip of cleavage in slate

90 Strike of vertical cleavage

68 General strike of plicated beds and plunge of minor folds

50 Strike and dip of joints

90 Strike of vertical joints

× Test pit or trench

Abandoned mine shaft

Diamond-drill hole; may be vertical or inclined

Less than 100 gammas

100–500 gammas

500–1000 gammas

More than 1000 gammas

Crests of magnetic anomalies as determined by total intensity airborne magnetometer survey

ABBREVIATIONS

agg	agglomerate
amph	amphibole or amphibolite
bio	biotite
brc	breccia
bronz	bronzite
cgl	conglomerate or conglomeratic
chl	chlorite
ell	ellipsoidal
gar	garnet
gn	gneiss
gr	granite
grano	granodiorite
grn	granulite
gs	greenstone
hb	hornblende
hf	hornfels
mag	magnetic
md	metadiorite
mg	metagabbro
mica	mica
mig	migmatite
ms	massive
peg	pegmatite
py	pyroxene
sch	schistose or schist
sill	sillimanite
sl	slate
staur	staurolite
ton	tonalite
vs	vesicular
vol	volcanic

GREENSCHIST FACIES
ALBITE-EPIDOTE AMPHIBOLITE FACIES
Isofacies, dashed and queried where inferred

1°
TRUE NORTH
MAGNETIC NORTH