

AREAL GEOLOGY

OF THE
IONA QUADRANGLE

STATE OF SOUTH DAKOTA
G.T. MICKELSON, GOVERNOR

STATE GEOLOGICAL SURVEY
E.P. ROTHROCK, STATE GEOLOGIST

EXPLANATION

SEDIMENTARY ROCKS

Qal
Alluvium
(Recent flood plain deposits of streams)

Ql
Loess
(Wind deposited fan dust, silt and soil covering all older formations)

Qoa
Older Alluvium
(Flood plain lowest terrace along Missouri River)

Qtg₂
Younger Terrace Gravels
(Post-glacial terrace sand, gravel and silt)

Qwg
Ground Moraine
(Wisconsin glacial boulder clay (fill) and drift loess covering)

Qta
Older Terrace Gravels
(Deposited by ancient White River gravels to and possibly during time of formation of Missouri River)

Qib
Lake Beds
(Thin bedded silts, clays and sands with basal gravel, deposited in glacial flutes, formed by damming of White River by glacial ice advancing up valley)

Qkg
Late Kansan Gravels
(Deposited by pre-glacial White River drainage containing tree elephant and horse fossils not older than late Kansan)

Tb
Bijou Formation
(Gravels, sand, clay, volcanic ash, bentonite and green quartzite and conglomerate containing fossil mammals of Barstovian-Clovisian stages)

Kpm
Moberg Member
(Chalky marl, bentonitic, weathering tan)

Kpvc
Virgin Creek Member
(Massive blue-gray bentonitic clay weathering brown-gray)

Kpsv
Sully Member
(Upper Vandyke facies (Kpsv) brownish weathering partly bedded or banded bentonitic clay, with layer of light blue-gray limestone concretions 110 ft above base Middle Cocene (Kpsv) Bentonite, gray with numerous nodules fossiliferous black manganese and iron concretions on surface. Black Creek light gray limy bentonite thin basal layer of siltstone to fine sandstone, silty, tan to yellow)

Kps
Gregory Member
(Bentonitic clay weathering brownish to rusty, with limestone concretions in part fossiliferous)

Kps
Sharon Springs Member
(Laminated and resistant dark blue-gray to blackish blue shale, with light gray alum-bearing bentonite beds, secondary gypsum and copper (malachite), maximum thickness, 36 ft)

Kns
Smoky Hill Member
(Light blue-gray chert, weathering cream, yellow or tan, with some light gray bentonite layers and veins of gypsum and calcite, iron stained upper part of top. Outcrop in steep bluffs above river level)

Kps
Niobrara Formation

Kps
Upper Cretaceous

Kps
Middle Pliocene

Kps
Pleistocene

Kps
Recent

DRAINAGE

CULTURE

Buildings
(House, church and school)

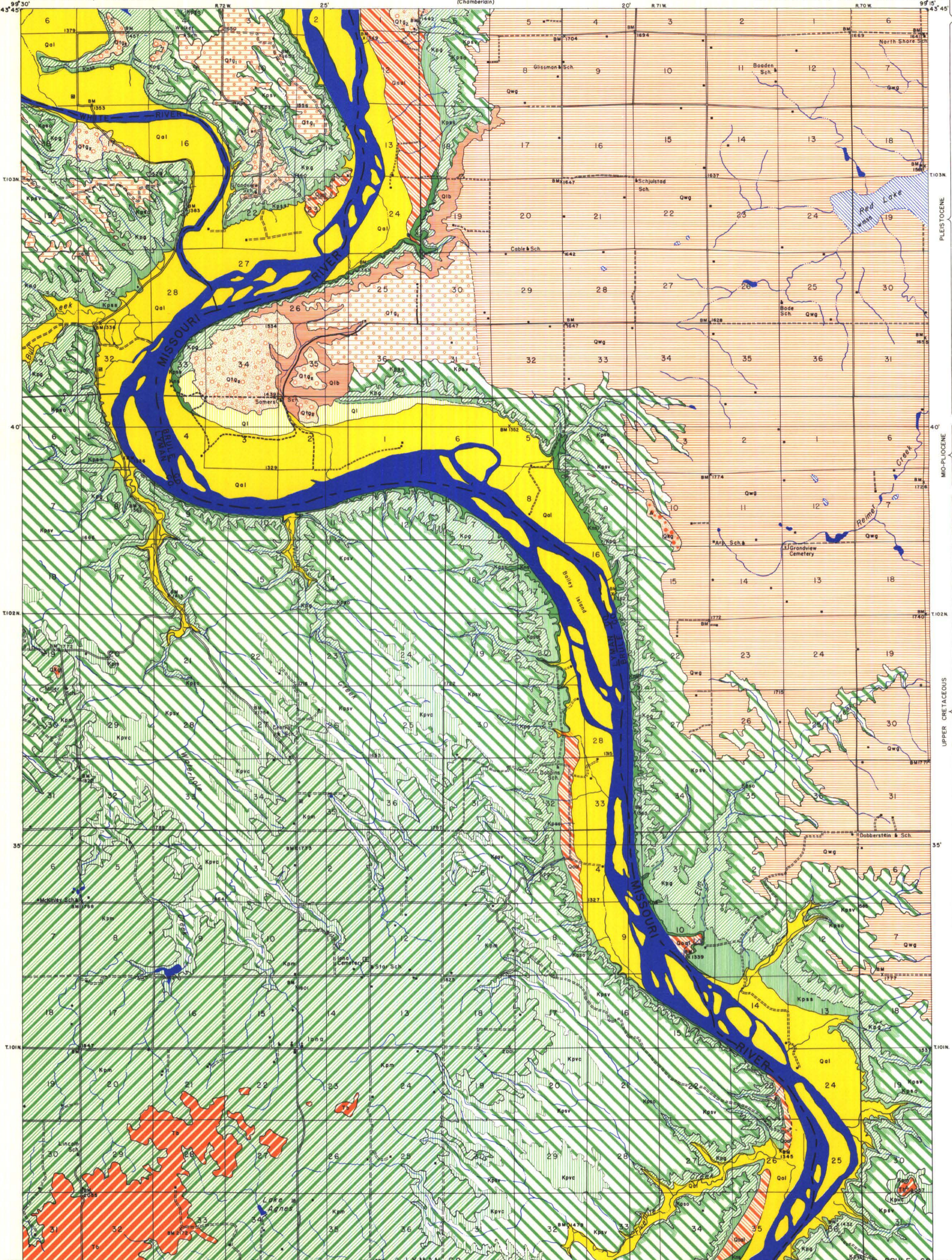
Roads and Trails

Altitudes
(In feet above sea level)

Bench Marks
(Monument marking point of known altitude)

Triangulation Stations
(Monument marking point of exact geographic location)

Gravel Pits and Quarries



Geology by Brewster Baldwin and C.L. Baker
Assisted by Ralph Miller and Jesse Qualm
Surveyed in 1948

Based on maps by Corps of Engineers
U.S. Army, and Geodetic data from U.S.
Coast and Geodetic Survey, and U.S.G.S.
Iona Quadrangle

Scale 1:50,000

APPROXIMATE MEAN
DECLINATION 1946

1952