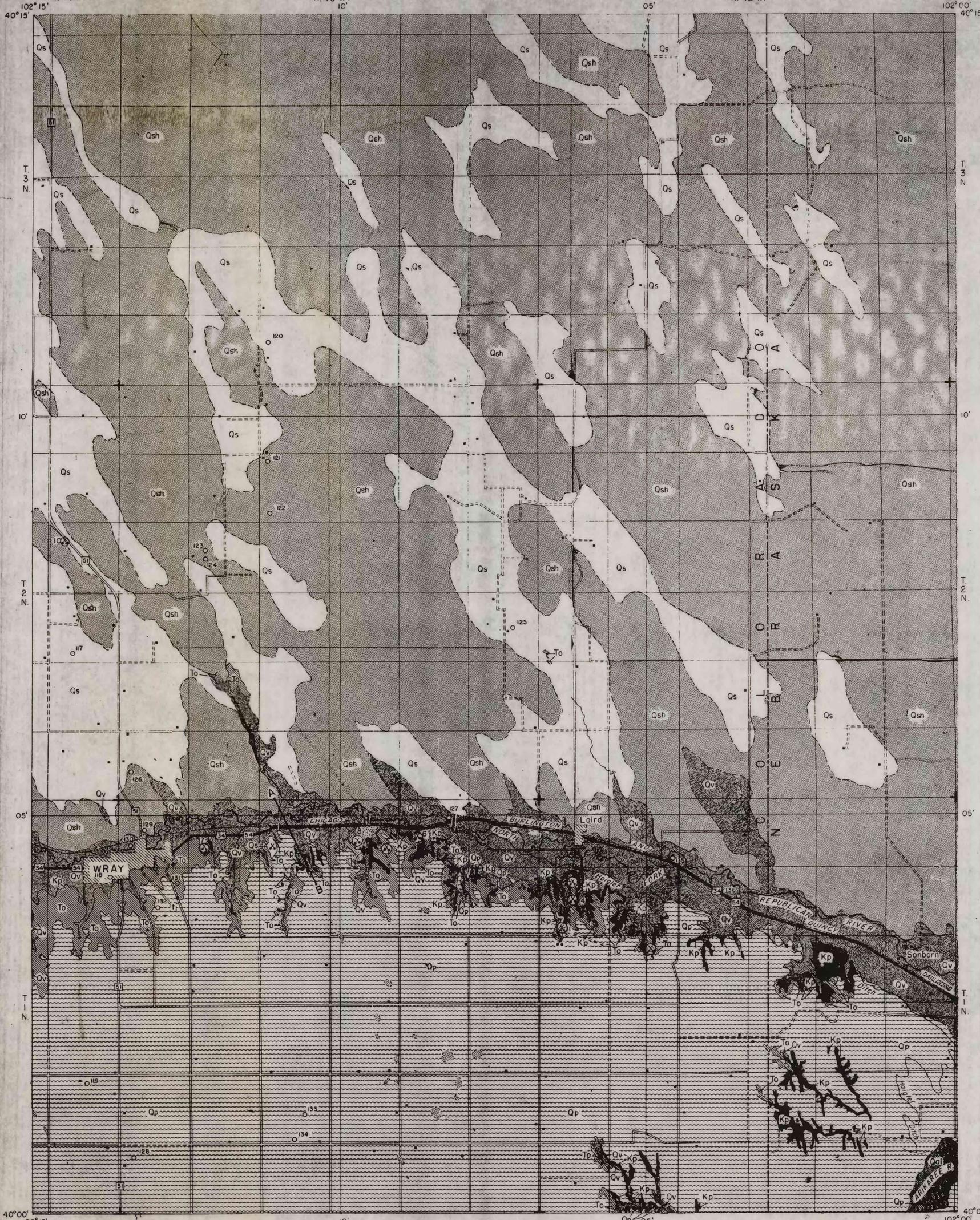


R. 44 W.

R. 43 W.

R. 42 W.

OFB 51-11



EXPLANATION

- Qal**  
Alluvium  
Unconsolidated silt, sand, and gravel in stream valleys
- Qsh**  
Sand Hills formation  
Wind-deposited quartz sand. May be suitable for use as plaster sand, blending sand, mineral filler. Constant maintenance of roads is necessary in the sand hill area to keep roads free of drifting sand.
- Qv**  
Valley fill  
Unconsolidated stream-laid sands, silts, and gravels. Gravel was used for surfacing locally. Sand may be used as blending sand, silt for earth-fill dam construction. May be removed with hand tools.
- Qp**  
Pleurian loess  
Fine-grained, calcareous, porous, yellowish-gray, wind-deposited silt. Suitable for mineral filler and earth-fill dam material; also is a possible source of ceramic slag aggregate. Fair to poor subgrade material. Stands in vertical cuts when dry; unstable when water saturated. Easily moved by power shovel.
- Qs**  
Pleistocene gravels, sands, and clay  
Locally consolidated reddish-brown, calcareous, stream-laid sands and gravels overlain by sandy silt and clay. Gravels suitable for base-course and surfacing. Sandy silt and clay suitable for binder. Easily removed with power shovel.
- Q**  
Ogallala formation  
Sand, gravel, and silt cemented by varying amounts of calcium carbonate. Some beds of volcanic ash. Gravel suitable for use as ballast and base, top-course surfacing. Volcanic ash suitable for cleansing powders, mineral filler, pozzolanic material. May be removed with hand tools or power shovel.
- Kp**  
Pierre shale  
Thin-bedded, pale olive to dark yellowish orange, iron-stained shale, with selenite and some bentonite. Sticky when wet; easily moved with hand tools when dry.

Recent  
Late Pleistocene and Recent  
QUATERNARY  
Pleistocene  
Miocene - Pliocene  
TERTIARY  
Upper Cretaceous  
CRETACEOUS

Geologic contact

Indefinite geologic contact  
(Includes gradational contacts, and indefinite boundaries of surficial deposits; used only where zones of indefiniteness is wide, with respect to the scale of the map.)

Sand and gravel pits, worked out

Sand and gravel pits, operating  
(Numbers refer to data in table)

Wells  
(Numbers refer to data in Geological Survey files)

U. S. Highway

U. S. Highway No.

State Highway No.

Primary roads

Secondary roads

Railway

State line

Township and section lines

Township corner

Towns

Buildings

Cemetery

Stream

Intermittent stream

Irrigation ditch

Intermittent pond

Lake or pond

Spring

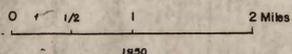
A — B  
Line of cross section

Base map compiled from General Land Office township plats  
Drainage and culture from aerial photographs  
provided by U. S. Department of Agriculture

Geology mapped in 1948



GEOLOGIC MAP AND SECTION  
OF THE  
WRAY NO. 4 QUADRANGLE, COLORADO-NEBRASKA  
GEOLOGY AND CONSTRUCTION MATERIALS  
By Dorothy R. Townsend and Jessie M. Tompkin  
Scale 1:48,000

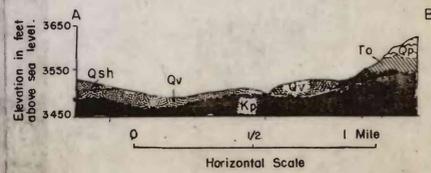


1950

U. S. Geological Survey

OPEN FILE REPORT

This map is preliminary and has not been edited or revised for conformity with Geological Survey standards or nomenclature.



CROSS SECTION A - B