LOCATION OF SINKHOLES IN NORTHEAST IOWA

R.W. Glue, G.R. Holberg, T.J. Gepert, B.E. Noye, and J.E. Gopner
IOWA GEOLOGICAL SURVEY 1981

- Sinkholes mapped from soil surveys and other field surveys.
- Sinkholes mapped from aerial photography and probable sinkholes mapped from soil surveys and other field surveys.
- Probable sinkholes mapped from aerial photography.

Scale: 1:500,000
Karst-Susceptible Geologic Units

Map delineation shows the approximate distribution of bedrock units which exhibit surface karst features.

System

Symbol — comments

Jurassic

J — "Fort Dodge" gypsum beds — the surface of the gypsum exhibits solutional features which are filled with Quaternary sediments; no active sinkholes or solution cavities known.

Mississippian

M — Mississippian rocks undifferentiated; local karst development evident in Des Moines Basin (in the Burlington Limestone and St. Louis Limestone), Marshall County (Hampshire Formation), and Humboldt County (Gilmore City Formation).

Devonian

D — Devonian rocks — majority of karst formed in the Cedar Valley Formation; minor areas of karst development in the Lima Creek, Shell Rock, and Wayzata Formations.

Silurian

S — Silurian rocks Undifferentiated — wide spread karst development.

Ordovician

Om — Maquoketa Formation — This formation is dominantly shale but karst features occur locally, developed in carbonate rocks present in the lower part of the formation. Karst features may be related to steaming into karst developed in the underlying Galena Group.

G — Galena Group — extensive karst development; minor karst developed in lower portion of the Group (the Decorah and Platteville Formations).

Cambrian-Ordovician

C-O — Cambrian-Ordovician rocks undifferentiated — sandstones, dolomites, and minor shale units; karst features shown are developed in Prairie du Chien Group, dolomites.

KARST FEATURES IN IOWA

G.R. Hallberg, M.J. Bounk, and T.J. Kemmis

IOWA GEOLOGICAL SURVEY

1981

Areas with numerous sinkholes, and related features

Other known karst features (caves, karst springs, etc.)

Scale: 1:1,000,000
LOCATION OF BEDROCK OUTCROP
IN NORTHEAST IOWA

Compiled by J.E. Gonyer, G.R. Hallberg,
R.W. Graeff, G.A. Ludvigson, S.G. Pearson
IOWA GEOLOGICAL SURVEY
1981

Mapped areas indicate less than 5 feet of soil mantle over bedrock and actual bedrock exposure.
Shallow-bedrock, non-karst areas of local hazard conditions; generally not underlain by carbonate aquifers.

I. Area dominated by Cambrian and Ordovician sandstones and carbonate rocks, outcrop area of Cambro-Ordovician Aquifer.

II. Area underlain by thick Maquoketa shale; degree of hazard subject to local geologic conditions.

III. Area underlain by Devonian and Mississippian age shales and shaly carbonates; degree of hazard subject to local geologic conditions.
NITRATE VALUES GREATER THAN 45 MG/L FROM WELLS OF ALL DEPTHS
N.W. Jensen, G.R. Hallberg, and B.E. Hoyer
IOWA GEOLOGICAL SURVEY 1981

Sample Size

Percentage of analyses >45 mg/l

N<=10
N=10-50
N>50

Town number for sample center

Scale

From UHL Data (1977-1980)
NITRATE VALUES GREATER THAN 45 MG/L
FROM WELLS LESS THAN 100 FEET DEEP

N.W. Jensen, G.R. Hallberg, and B.E. Hoyer
IOWA GEOLOGICAL SURVEY
1981

Sample Size
N<10
N=10-50
N=50

Percentage of analyses
>45 mg/l
0-4%
5-9%
10-19%
20-29%
>29%

Town number for sample center

From UHL Data (1977-1980)
COLIFORM BACTERIA ANALYSES FOUND UNSATISFACTORY OR UNSAFE FROM WELLS OF ALL DEPTHS
N.W. Jensen, B.E. Hoyer, and G.R. Hallberg IOWA GEOLOGICAL SURVEY 1981

Sample Size Percentage of analyses unsatisfactory or unsafe
N<10 0-4%
N=10-50 5-19%
N=50 20-34%
N=>50 35-50%
N=>50 >50%

Town number for sample center

From UHL Data (1977-1980)
MEDIAN NITRATE CONCENTRATION FROM WELLS
50 TO 150 FEET IN DEPTH
G.R. Holford and B.E. Hoyer
IOWA GEOLOGICAL SURVEY 1981

- Town number for sample center
- Median nitrate concentration-mg/l/Number of samples
- Median <10 mg/l
- Median 10-20 mg/l
- Median >20 mg/l

Area of potential surface hazard to bedrock aquifers

Scale

From UHL Data (1977-1980)
POTENTIOMETRIC SURFACE OF
THE SILURIAN-DEVONIAN AQUIFER
IN NORTHEAST IOWA

P.J. Harick
IOWA GEOLOGICAL SURVEY
1981

Contour Interval = 50 feet
Principal Streams

Scale
1:500,000

Approximate Groundwater Level of Aquifer
PRINCIPAL STREAMS AND
SURFACE WATER DIVIDES
IN NORTHEAST IOWA

IOWA GEOLOGICAL SURVEY
1981

Regional Divide
Major Basin Divide
Sub-Basin Divide
Principal Streams

Scale
1:500,000

PLATE 13.