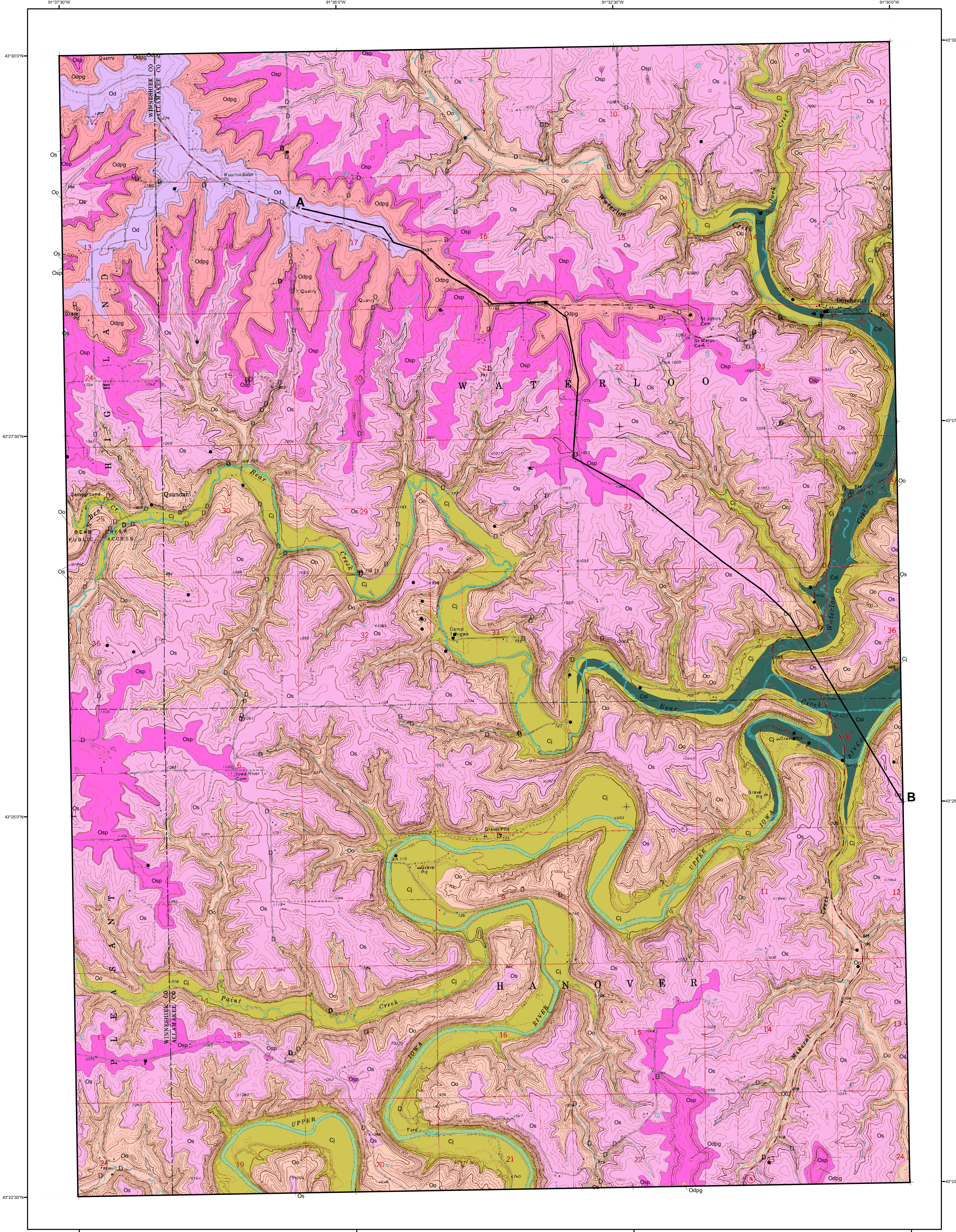


Bedrock Geology of the Dorchester (Iowa) 7.5' Quadrangle



LEGEND

CENOZOIC

QUATERNARY SYSTEM

Qu - **Undifferentiated unconsolidated sediment** Consists of loamy soils developed in loess of variable thickness, and alluvial clay, silt, sand and gravel. This unit only shown on the cross-section and not on the map.

PALEOZOIC

ORDOVICIAN SYSTEM

Od - **Limestone** (Dunleith Formation) Limestone with minor thin interbedded shale. This is the lower of two successive major cavern and karst-forming bedrock map units of the Galena Group. The formation consists of fossiliferous limestone and argillaceous limestone with common chert nodules; only the lower 15 m (50 ft) of this formation occurs in the northwest portion of the map. Springs may occur near the base and sinkholes and karst features may be present.

Odpg - **Shale, Limestone, and Dolomite** (Decorah, and underlying Platteville, and Glenwood formations) A unit of green-grey shales, dense limestones, argillaceous limestones, and dolomite with average thickness of 25 to 26 m (80 to 85 ft). The upper division, the Decorah Formation, consists of 12 to 14 m (39 to 46 ft) of interbedded fossiliferous green-grey shale and limestone. The middle division, the Platteville Formation, consists of 7.5 m (25 ft) of limestone, argillaceous limestone, and dolomite; it serves as a source of quarried aggregate along with the underlying St. Peter. It forms distinctive elongate ridges in upland landscape positions. The lower division, the Glenwood Formation, consists of 2 to 3 m (7 to 9 ft) of green-grey shale with minor siltstone to fine sandstone. This map unit, especially the Decorah and Glenwood subdivisions, is rarely exposed except in man-made excavations or cuts.

Osp - **Sandstone** (St. Peter Sandstone Formation) A moderately resistant unit forming distinctive elongate ridges in upland landscape positions, especially where capped by Platteville Formation limestone of map unit Odpg. It generally ranges from 18 to 23 m (60 to 75 ft) in thickness, but may attain thicker sections where it overlies paleotopographic low areas on the high-relief surface of unconformity with underlying units. A white to tan, and occasionally red to orange-stained, pure quartz sandstone, it ranges from hard cemented at the top to friable. Locally, may serve as a source of fill sand.

Os - **Dolomite and Sandstone** (Shakopee Formation) A variably resistant slope to ledge-forming unit ranging in thickness from 17 to 30 m (55 to 100 ft). Composed of interbedded dolomite, sandy dolomite and sandstone with a prominent 8 to 10 m (26 to 33 ft) thick horizontally stratified sandstone (New Richmond Sandstone Member) occupying its lower part. Contains some chert nodules, and has distinctive oolitic and stromatolite facies. Small springs locally occur near its base and it may host karst caverns.

Oo - **Dolomite** (Oneta Formation) A highly resistant ledge and cliff-forming unit of up to 60 m (200 ft) of dolomite that has chert nodules, small calcite crystal filled cavities, and stromatolite facies. May host karst cavities, caverns, and springs. Interbeds of fine-grained sandstone occur in the lower 8 m (25 ft). Serves as a source of high quality aggregate.

CAMBRIAN SYSTEM

Cj - **Sandstone** (Jordan Sandstone Formation) A friable to weakly cemented quartzose and feldspathic, fine- to coarse-grained sandstone, that typically displays well-developed cross-stratification. Thickness varies between 28 to 34 m (90 to 110 ft).

Csl - **Siltstone and Dolomite** (St. Lawrence Formation) A unit of thin-bedded dolomitic siltstone and silty dolomite with variable glauconite pellet content. Thickness averages 20 m (65 ft). Not known to be exposed, but present at the bedrock surface beneath alluvium of major drainages in the eastern portion of the map area.

• **Drill Holes**

D **Outcrops**

Adjacent 7.5' Quadrangles

SPRING GROVE	WILMINGTON	EITZEN
HIGHLANDVILLE	DORCHESTER	WALKON, NW
FREEPORT	HANOVER	WALKON

Quadrangle Location

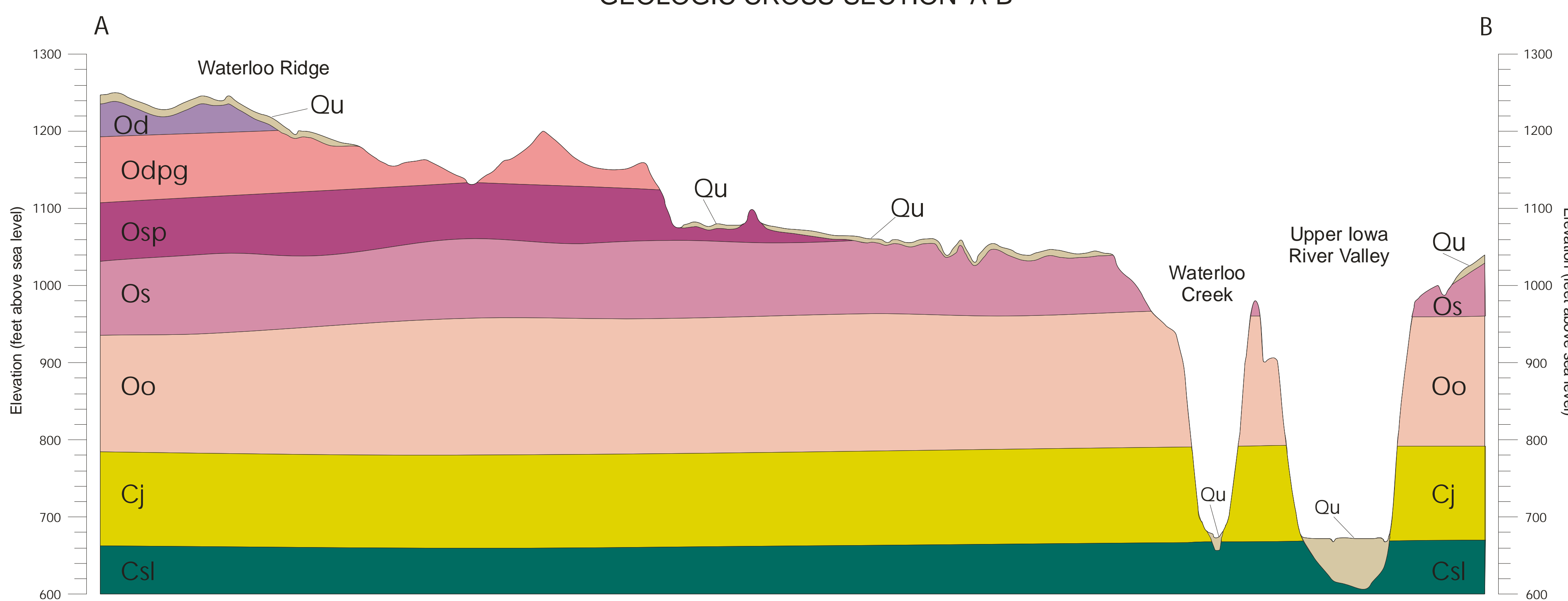


Base map from USGS Dorchester 7.5' Digital Raster Graphic (IGS GIS file DRGB42.TIF) which was scanned from the Dorchester 7.5' Topographic Quadrangle map, published by US Geological Survey in 1981. Topographic contours and land features based on 1975 aerial photography, field checked in 1977. Land elevation contours (20' interval) based on NGVD 1929.

Iowa Geological Survey digital cartographic file Dorchester08Quad_bedrock.mxd, version 8/18/08 (ArcGIS 9.2). Map projection and coordinate system based on Universal Transverse Mercator (UTM) Zone 15, datum NAD83.

The map and cross section are based on interpretations of the best available information at the time of mapping. Map interpretations are not a substitute for detailed site specific studies.

GEOLOGIC CROSS-SECTION A-B



GEOLOGIC MAPPING OF THE UPPER IOWA RIVER WATERSHED: PHASE 4: Dorchester 7.5' Quadrangle

Iowa Geological Survey
Open File Map OFM-08-5
August 2008

prepared by

Robert McKay¹, Huaibao Liu¹, Jean Young², and James D. Gigliano¹

¹Iowa Geological Survey, Iowa City, Iowa
²Luther College, Decorah, Iowa

Iowa Department of Natural Resources, Richard A. Leopold, Director
Iowa Geological Survey, Robert D. Libra, State Geologist

Supported in part by the U.S. Geological Survey
Cooperative Agreement Number 07HQAG0087
National Cooperative Geologic Mapping Program (STATEMAP)

ACKNOWLEDGMENTS

We thank the staff of the Northeast Iowa RC & D for their efforts in helping to initiate this mapping project and for supporting our work in the Upper Iowa River watershed. New subsurface geologic data was generated by the University of Iowa students Kristy Hanley and Kelly Wilhelm who produced descriptive logs of water well drill samples. Luther College in Decorah actively participated in the project through subcontract 07-7380-01 for field mapping support. Luther College students Gabriel Demuth and Carl Haakenstad were participants in field and office work in support of the mapping effort. Birgitta Meade and Jean Young of Luther College were instrumental in accurately locating and elevating water wells in the map area. Amy Sabin (IGS) prepared well samples for stratigraphic logging, and Andy Asell and Chris Kathe (IGS) provided GIS mapping technical help. Assistance obtaining drilling records and geologic information was provided by the Allamakee County Engineers Office.