Institute of Natural Resource Sustainability
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ILLINOIS STATE GEOLOGICAL SURVEY
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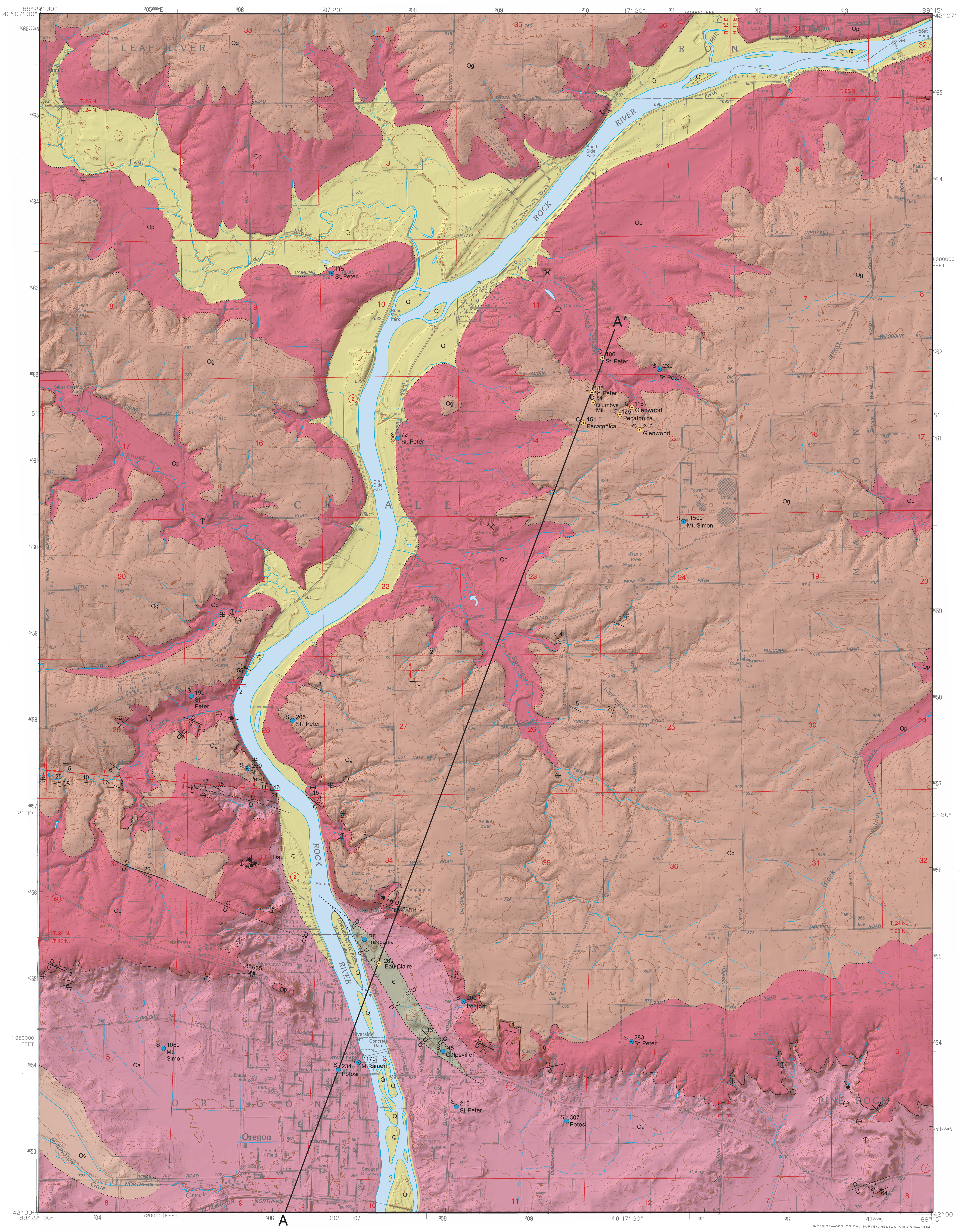
Bedrock Geology of Oregon Quadrangle

Ogle County, Illinois

STATEMAP Oregon-BG

Mary J. Seid

2010



EXPLANATION

Quaternary	Q	Quaternary: Cahokia Formation, Peoria Silt, Equality Formation, Henry Formation, Roxana Silt, Glasford Formation	Holocene and Pleistocene
	Unconformity		
Ordovician	Og	Galena Group: Dunleith Formation, Guttenberg Formation	Mohawkian
Ordovician	Op	Platteville Group: Quimbys Mill Formation, Nachusa Formation, Grand Detour Formation, Mifflin Formation, Pecatonica Formation	Mohawkian
	Unconformity		
Ordovician	Oa	Ancell Group: Glenwood Formation, St. Peter Sandstone	Mohawkian
	Unconformity		
Ordovician	Os	Shakopee Dolomite	Ibexian
		Units removed by faulting	
Cambrian	€	Cambrian: Potosi Dolomite, Franconia Formation	St. Croixan

Symbols

- 40 — Strike and dip of bedding; number indicates degree of dip
- Horizontal bedding
- Vertical joint
- Inclined joint; box on down–dip side
- Active quarry
- Abandoned quarry

Drill Holes

from which subsurface data were obtained

- Stratigraphic boring
- Water well
- C 125 St. Peter — Labels indicate samples (s) or core (c). Numeric label indicates total depth of boring in feet. Unit label denotes formation at bottom. Dot indicates location accurate within 100 feet.

Line Symbols

dashed where inferred, dotted where concealed

- Contact
- Anticline
- Syncline; direction of plunge indicated by arrow
- U/D — Fault; U on upthrown side, D on downthrown side
- A—A′ — Line of cross section

Note: Well and boring records are on file at the ISGS Geological Records Unit and are available online from the ISGS Web site.

Base map compiled by Illinois State Geological Survey from digital data (Raster Feature Separates) provided by the United States Geological Survey. Compiled from aerial photographs taken 1977. Field checked 1981. Map edited 1983.

North American Datum of 1927 (NAD 27)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16

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SCALE 1:24,000
1 — 1/2 — 0 — 1 MILE
1000 — 0 — 1000 — 2000 — 3000 — 4000 — 5000 — 6000 — 7000 FEET
1 — .5 — 0 — 1 KILOMETER

BASE MAP CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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Geology based on field work by Mary J. Seid, 2009–2010.

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This map has not undergone the formal Illinois Geologic Quadrangle map review process. Whether or when this map will be formally reviewed and published depends on the resources and priorities of the ISGS.

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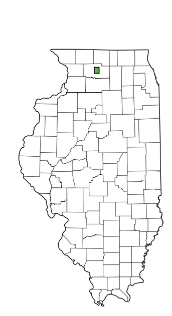
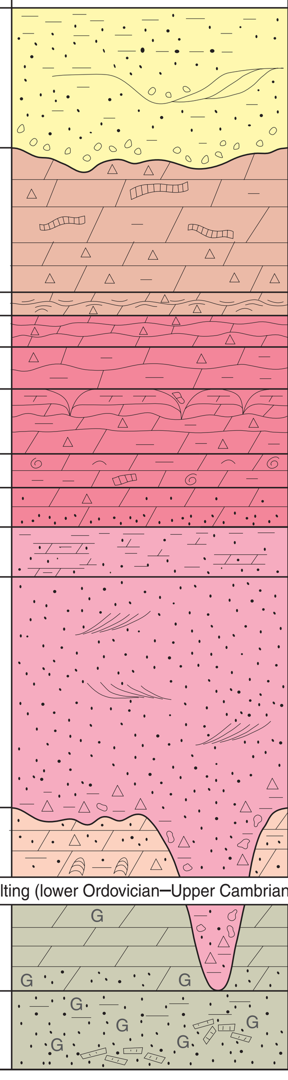


1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 German Valley
2 Seward
3 Kishwaukee
4 Mount Morris
5 Stillman Valley
6 Grand Detour
7 Daysville
8 Chana

2° — TRUE NORTH — MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2010

ROAD CLASSIFICATION
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- State Route



SYSTEM	SERIES	GROUP	FORMATION	THICKNESS (feet)		UNIT
QUATERNARY	HOLOCENE AND PLEISTOCENE		Cahokia Peoria Silt Equality Henry Roxana Silt Glasford	2–200		A
ORDOVICIAN	MOHAWKIAN	Galena	Dunleith	0–100	0–77	B
			Guttenberg		0–5	C
		Platteville	Quimbys Mill	105–120	15	D
			Nachusa		15–25	E
			Grand Detour		35–43	F
			Mifflin		10–15	G
			Pecatonica		21–33	H
		Ancell	Glenwood	250–450	10–35	I
			St. Peter Kress Member		240–425	J
	IBEXIAN	Prairie du Chien	Shakopee	0–80		K
units removed by faulting (lower Ordovician–Upper Cambrian)						
CAMBRIAN	ST. CROIXAN		Potosi	25–62+		L
			Franconia	85		M

A Cahokia Formation, Peoria Silt, Equality Formation, Henry Formation, and Roxana Silt Sand, gravel, silt and clay. Sand is light gray to brown-gray, coarse to fine grained, poorly sorted, ranges from weakly stratified to well stratified. Sand and clay occur as laminae or cross bedded channels found on the floodplains and creeks. Gravels are angular to sub-rounded, composed of chert, quartz and rock fragments of igneous, metamorphic and local sedimentary origin. Silt is brown and gray. Clay is gray to yellow and intermixed with sand and silt layers. Unconformable with units below.

B Dunleith Formation Dolomite. Light gray on fresh surface, fine- to coarse-grained, crystalline; dark olive green or pale orange-tan on weathered face. Massive beds comprise thin, wavy, indistinct bedding, and some beds are separated by thin, carbonaceous greenish shale partings. Moldic porosity can occur on fresh faces; a pitted surface, or beehive weathering, commonly occurs on weathered faces. Light gray to white chert occurs in flat slabs or lenses; the chert can be irregularly scattered throughout or form well-defined layers. A few *Receptaculites* zones occur in this formation but not in the Platteville Group; the occurrence of the calcareous algae *Receptaculites* is useful to distinguish Galena dolomites from the Platteville Group. When identifying the formations of the Galena Group in the field, the crystalline texture is characteristic and is the key to telling it apart from the formations of the Platteville Group. Several K-bentonite beds that are one-inch-thick or less have been identified from the Dunleith. Stylolites and hardground omission surfaces occur locally at the basal contact, but the two formations otherwise appear to be conformable.

C Guttenberg Formation Dolomite and shale. Dolomite is orange and dense; shale is reddish brown or pale green and occurs as wavy, thin partings. It is wavy bedded, is called "Oilrock" in the mining district, locally contains pea-sized vugs, and forms a re-entrant in weathered quarry or outcrop exposures. Small, white chert nodules and lenses are rare in the area. Fossils are generally abundant; strophomenid brachiopods are the most conspicuous and ubiquitous, including the brachiopods *Sowerbyella punctostriata* and to a lesser extent *Rafinesquina trentonensis*. The Elkport and Dickeyville K-bentonite Beds have been identified in the Guttenberg; the Dickeyville was sampled and analyzed on Thorpe farm, 2150' WL, 4350'SL, Sec. 2, T23N, R10E (Kolata et al. 1986). The Guttenberg can be absent or extremely thinned from solution of the limestone within the formation. The high shale content can make this a useful horizon for electric log correlation. The lower contact is conformable with the Quimbys Mill.

D Quimbys Mill Formation Dolomite, shale, and chert. Dolomite is mostly orange-brown, pure to argillaceous, lithographic; in thin, wavy, smooth, and well-defined beds; and mottled with gray limestone in places. Shale is olive gray, occurs in thin, wavy partings, and is more common at the top of the unit. Chert nodules and beds are common in core hole C-13651, ranging in color from light gray to yellowish gray to yellowish brown or white. Unit contains fossil-moldic pores, has a chalky texture, and is burrowed along bedding planes. Fauna is not abundant but can include *Öpikina* and *Streptelasma*; *Chondrites* is a common trace fossil in the middle of the unit. The characteristic feature of the Quimbys Mill is that it fractures with smooth, curved surfaces; it is called "the glassrock" in the Mississippi Valley zinc-lead mining district. In general, the top of the unit is ferruginous and is capped by a prominent hardground omission surface. The basal contact is sharp but conformable with the Nachusa.

E Nachusa Formation Dolomite. Dolomite is yellow- to orange-brown, pure to argillaceous, mostly medium crystalline, mottled with light gray limestone. White or light brownish gray chert occurs in nodules or thin beds; chert is less abundant in the Nachusa than in the overlying Quimbys Mill. Bedding appears massive but consists of medium to thick, tight beds where weathered. When identifying the Nachusa in the field, the fossil-moldic porosity, fine- to medium-grained texture, and massively bedded appearance are key characteristics; it could be mistaken for the Galena Group dolomites in many cases. Fossils are generally moderately abundant in the lower part and include the tabulate coral *Foerstephyllum* and the trace fossils *Palaeophycus* and *Chondrites*. The lower contact is gradational to sharp but conformable with the Grand Detour below.

F Grand Detour Formation Dolomite, limestone, and shale. Dolomite is orange-brown when weathered, light brown when fresh; limestone is gray when fresh and can have a distinctive dark blue-gray color. The Grand Detour varies vertically from fine- to medium-grained, from thick to thin bedded, and from pure to argillaceous. Packages of thin beds can appear massive. Shale is greenish gray, red-brown, or dark gray; it occurs generally in the upper part as wispy partings, but partings are not strong enough to cause the rock to cleave on those surfaces. The fauna is reported to be abundant and diverse, including the solitary rugose coral Streptelasma, the rhombiferan cystoids *Coronocystis durandensis*, the lithistid sponges *Anthaspidella* and *Zittelella*, and the trace fossils *Palaeophycus* and *Buthotrephis (Chondrites)*. Hundreds of horn corals can be concentrated on the shaly horizons (Kolata, personal communication). Solution cavities at the top of the unit were observed in the Steve Benesh and Sons Quarry (NW Sec. 23, T24N, R10E); cavities were filled with greenish gray shale and large, jumbled blocks of dolomite. The shale content makes this a useful horizon for electric log correlation. The basal contact is conformable with the Mifflin and can contain a thin K-bentonite bed.

G Mifflin Formation Dolomite and limestone. Dolomite is orange and mottled with gray limestone. Limestone and dolomite are very fine-grained to lithographic in thin, wavy beds separated by green or gray shale. The unit is the most shale-rich formation in the Platteville (Kolata personal communication). The Mifflin is locally very fossiliferous and contains various well-preserved bryozoans, brachiopods, bivalves, gastropods, ostracodes, and trilobite fragments. (Willman and Kolata 1978). In some places, the upper part contains a prominent hardground omission surface and a 6-inch-thick bed of shaly dolomite or limestone. The base is in sharp contact with the Pecatonica and is marked by a thin, rusty-colored surface, which appears to represent submarine chemical erosion of the carbonate sea floor.

H Pecatonica Formation Dolomite. Orange-brown, very fine-grained, argillaceous and can be mottled with gray fine- to very fine-grained limestone. White chert is moderately abundant. The lower part of the Pecatonica contains abundant fine to medium well-rounded sand grains (St. Peter-type). Phosphatic pellets are known to occur in the Pecatonica (Templeton 1951). The unit is mostly medium bedded but can be thick bedded in places. Fossils are less abundant than in other Platteville formations. The lower contact can be sharp or gradational and marks a widespread unconformity of low relief in the region.

I Glenwood Formation Sandstone, shale, and shaly dolomite. Sandstone is usually white to gray but is orange or blue in places, quartz arenite, very fine-grained with scattered coarse grains, well-rounded (St. Peter-type), thinly bedded, dolomitic in places, friable and poorly lithified. Shale is reddish brown when weathered, blue- to green-gray when fresh, fissile, wavy bedded in places. Shaly dolomite is light blue-green with yellow mottles or streaks in thin to medium, tabular, blocky beds, and can appear rubbly. In the lower 10 feet, 1mm diameter vertical tubes occur, which results in tiny round pinhead-sized holes on weathered bedding surfaces. The Glenwood is characterized by abrupt lateral changes in lithology, and in some places it is absent. It is very poorly exposed in the study area; the best exposure is in a St. Peter quarry about two miles southwest of Oregon. The basal contact was observed in the same quarry face and showed a sharp angular unconformity with the St. Peter below.

J St. Peter Sandstone Sandstone and chert. Sandstone is white to light gray when fresh, light yellow brown when weathered, quartz arenite, fine- to coarse-grained but mostly medium grained, well-rounded, frosted, generally well-sorted, thinly to massively bedded, poorly cemented, and friable. Bedding varies from thinly laminated rhythmic bedding to large cross bedding. It weathers to white sand and forms broad hills in most of its outcrop area; but where overlain by the Glenwood and Platteville Group dolomites, it is a bluff-former and contains small sapping alcoves. The upper 50 feet contains green streaks along bedding planes; the color seems to stain the exterior of the grains. The basal Kress Member is present in a City of Oregon water well (Sample Set 64615, Sec. 3, T23N, R10E); it contains 78 feet of chalky, white chert, which has been weathered to tripoli; it is oolitic in part, and contains sandy, reddish brown shale. The Kress Member is not present everywhere and was not observed in outcrop within the study area. The St. Peter is penetrated, in some places, by white silicified veins that cut at various angles to bedding; the veins were probably introduced from hydrothermal sources and seem to be present in close proximity to inferred faults. The lower contact is sharp, unconformable, and scoured into several older formations as a result of pre-St. Peter uplift and erosion; the unconformity has considerable local relief.

K Shakopee Dolomite Dolomite, sandstone, shale, and chert. Dolomite is blue-gray when fresh, weathering to buff, whitish, red-brown, or gray-green, crystalline, fine- to medium-grained, pure to argillaceous, and breaks with a conchoidal to hackly fracture. It forms thin to thick lenticular beds; bedding surfaces vary from rough and hummocky to smooth and flat, show mud-cracks or ripplemarks, and are partly coated with films of green clay. The Shakopee contains thin beds of medium-grained, cross-bedded sandstone, greenish gray shale, buff siltstone and bands and nodules of sandy, oolitic chert. Algal stromatolite domes (*Cryptozoon minnesotense*) occur on the order of one foot wide in the region, but none were identified in the study area. The only exposure of Shakopee within the study area is a float exposure reported by Templeton (ca. 1940) in E ½ NE ¼ Sec. 8, T23N, R10E; he reported another exposure just west of the quadrangle (Templeton ca. 1942) about 1700' WL, 4000' NL, Sec. 6, 23N, 10E. The Shakopee either rests conformably on the New Richmond and/or Oneota Formations, neither of which is exposed in the study area, or is separated from them by only a minor unconformity.

L Potosi Dolomite Dolomite, with interbedded shale, siltstone, and sandstone. Dolomite is highly variable in color, occurring as pink, buff, gray, yellow, red, brown, purplish, or green, or any mottled combination of these colors. It is very fine-grained but can be medium- to coarse-grained, dense to porous, and very hard; bedding is massive when fresh, but weathers into thin, irregular, discontinuous layers. Disseminated clay, silt, sand, and glauconite are present in highly variable quantities; locally, it is moderately glauconitic. Pyrite, white chert, and siliceous oolites occur sparingly. Shales are green, pale gray, red, purple or brown; they are soft, silty, sandy, locally glauconitic, and rarely micaceous; beds are typically thin but can form layers up to 15 feet thick. Siltstones occur near the top of the unit, are purple to green, glauconitic and thin. Sandstones are white to light green and buff, are silty and dolomitic in places, and are dominantly fine to medium grained. Grains vary from angular to well rounded, are unconsolidated to hard, and occur in beds less than 5 feet thick. The heavy mineral suite of the Potosi includes garnet, zircon, tourmaline, and titanium. Fossils appear to be absent. Small vugs lined with crystalline quartz are present to abundant; this feature forms one of the most characteristic features of the formation. The nature of the basal contact is unknown.

M Franconia Formation Sandstone, conglomerate, siltstone, and shale. Sandstone is light gray to greenish gray, very fine-grained to fine-grained, subrounded, and bedding is thinly laminated; glauconite is abundant and forms thin bands. Conglomerate is composed of elongate clasts of the sandstone, which are oriented at various angles to bedding, and the matrix is light gray, fine-grained sandstone; it is commonly known as the "flat-pebble conglomerate". (Kolata, personal communication).Siltstone is medium gray to brownish gray; it is interbedded with shale, which is olive gray to medium gray, silty in places, commonly glauconitic, dolomitic, and thinly laminated in planar to wavy beds. Many parts of the unit are stained with orange iron oxide. Horizontal burrows occur in many places throughout the unit. Small vugs occur and are lined with pinkish brown siderite. The basal contact is not exposed in the quadrangle, and the relation of the Franconia to the underlying Ironton-Galesville interval is uncertain.

Introduction

The Oregon 7.5-minute Quadrangle is located in north-central Illinois in the south-central part of Ogle County, Illinois, about 20 miles southwest of Rockford, 40 miles south of the Illinois-Wisconsin border, 90 miles northeast of the Quad Cities and 110 miles west of Chicago. It covers approximately a 55 square mile area that is bounded by 42° 00' 00" and 42° 07' 30" North latitude and 89° 15' 00" and 89° 22' 30" West longitude. The Oregon 7.5-minute Quadrangle occupies the southeast quarter of the Oregon 15-minute Quadrangle. It is bordered by eight 7.5-minute quadrangles, clockwise from top-left: German Valley, Seward, Kishwaukee, Stillman Valley, Chana, Daysville, Grand Detour, and Mount Morris. It includes the townships of Oregon, Pine Rock, Rockvale, Marion, Leaf River, and Byron. The Rock River enters from the northeast and flows southward through the center of the quadrangle. It lies within the Rock River Hill Country of the Central Lowland Province. Agricultural, commercial, industrial, and residential developments currently drive the region's economy.

The Ancell Group is the uppermost bedrock in the southern part of the quadrangle, and successively, the Platteville Group and Galena Group cover the uplands in the northern part of the quadrangle. Portions of this area were previously mapped by Bevan (1924) and Templeton (1940) but remain unpublished.

The field work for this map was completed in 2009 and 2010 by the author. The Illinois Water Well database and the Illinois State Geological Survey Geological Records Unit were accessed for water well records. Drill cuttings or sample sets (SS) were examined for subsurface data. Several rock cores within the quadrangle were examined at the ISGS Annex.

Stratigraphy

The bedrock formations that underlie the Oregon Quadrangle are Cambrian and Ordovician magnesian carbonates and siliciclastics. The sediments were all deposited in near-shore or marine environments. The Cambrian rocks are all assigned to the St. Croixan Series. The Ordovician strata comprise the Ibexian (Ross 1993) and Mohawkian Series (Thompson 1991), and they are further divided into the Prairie du Chien, Ancell, Platteville, and Galena Groups.

The Oregon Quadrangle contains one of the two reported outcrops in Illinois of the Franconia Formation, which is the oldest formation exposed in the quadrangle and in the state. In most places, the Franconia Formation is overlain by the Potosi Dolomite; the nature of the contact between the formations is unknown. Just to the east of the Rock River and the city of Oregon in Sec. 3, T23N, R10E, the Franconia is directly overlain by the St. Peter Sandstone, from which it is separated by an angular unconformity. The Cambrian Franconia Formation and Potosi Dolomite are mapped as a single unit because outcrop control is poor and surface exposure is limited.

The stratigraphic interval between the Cambrian Potosi Dolomite and the Ordovician St. Peter Sandstone has been locally thinned by pre-St. Peter warping and erosion. In the southwestern quarter of the quadrangle, the St. Peter Sandstone overlies the Shakopee Dolomite; but in the remaining three-fourths of the quadrangle, the St. Peter scours down to formations as low as the Potosi Dolomite (Willman et al. 1975, p. 59). Locally, the St. Peter Sandstone overlies the Franconia Formation (in City of Oregon water well, SS 64615, Sec. 3, T23N, R10E).

The St. Peter Sandstone and the overlying shales and sandy dolomites of the Glenwood Formation compose the Ancell Group; the St. Peter and Glenwood are mapped as a single unit. The St. Peter Sandstone covers the southern lowlands, lies under thick Quaternary sand and gravel deposits beneath the city of Oregon, and underlies State Route 64, which runs east to west through the quadrangle. The St. Peter underlies the main tributary of the Rock River near Oregon and probably to at least as far north as Byron. It is massive, extremely pure quartz sandstone and a major aquifer in the region. The Glenwood Formation is separated from the St. Peter by a sharp and angular unconformity.

The dolomites and limestones of the Platteville Group are mapped as a single unit. The thicknesses of the Pecatonica, Mifflin, Grand Detour, Nachusa, and Quimbys Mill Formations range from 10 to 43 feet, which does not justify a mappable unit at the 1:24,000 scale. The combined thicknesses of the five formations ranges from 105 to 120 feet, which constitutes a mappable unit.

Similarly, the dolomites of the Galena Group are mapped as one unit. The absence or thinness of the Guttenberg Formation in the Oregon area require that it be combined with the overlying Dunleith Formation.

Glacial and post-glacial deposits occur in the quadrangle. As this is a bedrock geologic map, Quaternary unconsolidated sediments are not differentiated. Most of the area was covered with ice during the Illinois glacial episode, and the southern part contains sediments from the Wisconsin glacial episode. Quaternary sediments are mapped only along Leaf River and Rock River where bedrock information is lacking.

Structural Geology

The Oregon Quadrangle is located near the terminations of two regional structural highs, the Wisconsin Arch and the Kankakee Arch, and lies just to the north of the Illinois Basin. The LaSalle Anticlinorium, a discrete zone of basement faults with drape-folds in Paleozoic sedimentary cover, trends north-south and extends southward from the Sandwich Fault Zone. Northward from the Oregon Quadrangle, the regional dip is to the north-northeast, away from the Sandwich Fault Zone. Southward from the quadrangle, regional dips are to the southwest. There are two major regional fault zones that are recognized in the area, the Sandwich Fault Zone and the Plum River Fault Zone. Several minor structural features were also recognized by Templeton (1951).

Geologists have argued that there may be a connection between the Sandwich and Plum River Fault Zones in the vicinity of the Oregon and Mount Morris 7.5-minute Quadrangles. The northwest and northeast trending faults and shear zones within a three-mile radius of Oregon suggest a genetic relationship to the larger fault zones. However, the connections between these major structures has not been examined.

Faulting within the Oregon Quadrangle

Faults within the quadrangle generally trend northwest, but some trend northeast. Fractures and shear zones, as described by Templeton (1951), are high angle and have displacements of less than 50 feet. The faults outline a series of horsts and grabens, as in the Stronghold Fault that strikes northwestward through Secs. 28 and 33, T24N, R10E. Since many of the faults are on strike with the Sandwich Fault Zone, it is probable that faulting within the quadrangle is genetically related to movement along the Sandwich Fault Zone.

Several small faults and numerous shear zones were documented by Templeton (1951) but are not shown on this map. Descriptions of several faults and shear zones within the quadrangle are found in Templeton's field notes in the Map Room of the Illinois State Geological Survey.

Sandwich Fault Zone

The Sandwich Fault Zone extends from Manhattan in Will County and continues to the northwest for about 85 miles, to near Oregon. The fault zone is about one-half to two miles wide and is downthrown on the northeast side as much as 800 to 900 feet (Templeton and Willman 1952) at its midpoint in southeastern De Kalb County (Kolata et al. 1978). Kolata et al. (1978) show the faulting in Oregon to be just to the north of the northern terminus of the Sandwich Fault Zone. Just to the south of Oregon, in the Grand Detour 7.5-minute quadrangle, the Sandwich Fault Zone has between 0 to 300 feet of structural relief. The fault zone has undergone several movements throughout geologic time, first in Devonian and then in late Paleozoic time; this later movement was a major event and was contemporaneous with the deformation of the La Salle Anticlinorium. No quaternary movements have been documented.

Plum River Fault Zone

The Plum River Fault Zone trends east-west through Carroll and Ogle Counties, extending westward across the Mississippi River into Iowa. The fault zone is defined by a narrow belt of high-angle faults with a maximum of 270 feet of displacement, with the north side downthrown (Bunker et al. 1985). The displacement decreases eastward and is 100 to 200 feet about nine miles north of Oregon. The fault system was mapped on the basis of limited outcrop control along with borehole data (Kolata and Buschbach 1976). Although not numerous, there are outcrops showing fracture zones, faults, and cataclastically deformed rock in Illinois.

Strike-slip component of faulting

Marshak et al. (2003) studied several examples of United States continental interior platform faulting, including the Sandwich and Plum River Fault Zones. They reexamined the observations made by Templeton (1951) and interpreted the faults near Oregon as a subparallel, en echelon fault array dominated by dip-slip with a component of strike-slip movements.

Minor Structural Features

Several minor faults and folds, which have short lateral extent, were recognized by Templeton (1951) by surface outcrops and well records. They are discussed herein and are listed in alphabetical order.

The Ashton Arch (Willman and Templeton 1951; Kolata et al. 1978; Templeton 1951) is a broad feature that lies on the southwestern (upthrown) block of the Sandwich Fault Zone. It trends roughly parallel to the fault zone and extends from southern Ogle County to northeastern La Salle County. It reaches a structural high in Ogle County with a maximum structural relief of about 500 feet. Farther to the southeast, it merges with the La Salle Anticlinorium in the center of Lee County.

The Oregon Anticline was recognized by Bevan (1935b, 1939), Willman and Templeton (1951), and Kolata et al. (1978, 1983). It is a broad, low flexure located on the northeast (downthrown) side of the Sandwich Fault Zone, and it trends parallel to the axis of the fault zone (Nelson 1995). The maximum structural relief on the Franconia Formation is 200 to 300 feet. The Oregon Anticline is probably genetically related to the fault zone.

The Mud Creek Fault Zone, named by Nelson (1995, p. 86) was observed by Templeton and Willman (1952) in a small abandoned quarry just to the west of Oregon, in the Mount Morris Quadrangle (NW SW SE Sec. 30, T24N, R10E). The fault and associated monocline strike westward and have a cumulative displacement of 100 feet downthrown on the north. The exposure is now heavily vegetated and geologic relationships are no longer visible.

The Mud Creek Syncline (Templeton 1951, p. 55) trends northeastward through Mud Creek for a distance of about 4.5 miles. It is about one-third to 1.5-miles wide. The structural relief does not exceed 100 feet.

The Silver Creek Anticline (Templeton 1951, p. 56) extends northwestward from the center of the Oregon quadrangle (Sec. 21, T24N, R10E) through Silver Creek, to near Leaf River. It is about nine miles long, with an average width of about one mile. The anticline is fairly symmetrical, has a structural relief of around 50 feet or less, and dips on the limbs do not exceed three degrees.

The Stronghold Dome (Templeton 1951, p. 38-45) is a small but high structural dome that has brought St. Peter Sandstone to the surface in an area chiefly underlain by Galena and Platteville dolomites. It trends north-south and is about one-half mile wide and one-third mile long. Much faulting occurs near the dome, with the major fault trends striking about N59°W.

Thrust faulting was reported by Bevan (1935a) in Oregon. He observed an abundant amount of St. Peter silicified fault breccia, an along strike trend of the breccia, and repeats of the Franconia-Potosi interval. He concluded that a local thrust fault occurs about 1500' EL, 3300' NL, Sec. 3, T23N, R10E. Templeton (1951, p. 30-37) discussed Bevan's conclusion in his report but proposed that St. Peter erosion and possibly faulting could explain the angular relationship between the Franconia and St. Peter at this locality. The writer concludes that the orientation of the fault plane can not be described given the available outcrops and surface data. The fault that separates the Franconia and St. Peter exposures here is believed to be a concealed, high-angle, dip-slip fault.

Economic Resources

Oil and gas

The dolomites and limestones of the Galena Group produce oil throughout the Illinois Basin. Oil and gas prospects are unlikely because the Galena (equivalent to Trenton or Kimmswick) dolomites outcrop at the surface, and any oil has long since escaped. Probable source rocks above the Galena, the Ordovician Maquoketa and Devonian New Albany Shales, also are eroded at the surface.

Sulfide deposits

Sulfide deposits of the Mississippi Valley Type, including galena and sphalerite, have been found throughout the northern Illinois region (Freiburg 2010). However, the occurrence of sulfide deposits of commercial value near Oregon is unlikely. The only evidence of sphalerite in the Oregon Quadrangle was a small crystal found in a vug in the Franconia Formation at 55.2 feet depth in the borehole drilled for this study (Dirksen #1) in Sec. 3, T23N, R10E.

Sand and Gravel

Unconsolidated sand and gravel deposits occur in thick, discontinuous pods within the quadrangle. In Coon Creek (SW Sec. 21, T24N, R10E), the sand and gravel deposits are being utilized on-site for golf course maintenance. On the west bank of a southward-flowing tributary to Honey Creek (SE corner, Sec. 1, T23N, R10E), a large, abandoned sand and gravel pit was examined. Sand and gravel deposits are extensive throughout the area and will provide necessary resources for the future development of the region.

Pure quartz sand is mined for industrial use from the St. Peter Sandstone about three miles southwest of the city of Oregon in the adjacent Daysville Quadrangle. The sandstone is poorly cemented and friable because its clay content is low. The purity and thickness of the St. Peter Sandstone make it a viable resource for glass manufacturing and enhanced recovery from hydrocarbon reservoirs.

Stone

Dolomite is extensively quarried from the Platteville and lower Galena Groups. The dolomite is primarily used for road gravel, fill and aggregate, and was formerly quarried for dimension stone on the Stronghold property in SW Sec. 28, T24N, R10E. Three commercial quarries are active within the quadrangle—Thorpe Quarry (center of Sec. 2, T23N, R10E), Martin Quarry (NE Sec. 32, T24N, R10E), and Steve Benesh and Sons (NW Sec. 23, T24N, R10E). Nine small pits probably quarried stone for local uses; these pits are unnamed and abandoned. All of the quarry exposures provided important information about the stratigraphic relationships and structural features within the quadrangle.

Natural Hazards

Karst

The Platteville and Galena Group dolomites lie at the surface in the majority of the quadrangle beneath thin glacial drift or loess deposits. The dolomite is subjected to weathering and erosion, which can cause sinkholes to form and lead to karstification. Sinkholes were discovered within the quadrangle in the Dunleith Formation.

Earthquakes

Several dozens of joints, fractures, and faults occur within the quadrangle, but it is believed that they are inactive. The connections of fault and fold zones to regional seismicity in the northern Illinois region is poorly understood. Using the record of past seismicity, there is low seismic risk in the region.

Landslides

The glacial till and loess deposits range from 0 to 15-feet-thick in the study area. At the head of a small ravine (1800' EL, 4250' NL, Sec. 2, T23N, R10E), a slump scarp was observed in Quaternary deposits atop Platteville dolomites. Quaternary unconsolidated deposits (till and loess) are rich in clay and silt, and when saturated during periods of heavy and consistent rainfall, they can cause landslides.

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