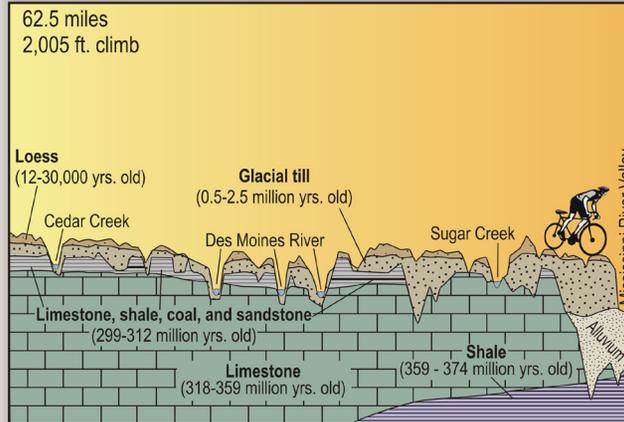


RAGBRAI Geo-quiz

- The ____ River is the longest in the United States.
a. Mississippi b. Des Moines c. Nile d. Missouri
- Which day of RAGBRAI had the most climb?
a. Day 1 b. Day 2 c. Day 4 d. Day 6
- Approximately 16,000 years ago, an extension of the Laurentide Ice Sheet surged from Canada into north-central Iowa and deposited the _____.
a. Loess Hills b. Des Moines Lobe c. Fremont Channel
- Which state park was originally called King's State Park?
a. Springbrook b. Water Works Park c. Red Rock
- Calcium carbonate (CaCO₃) is the primary component of what common Iowa rock type?
a. shale b. moraine c. limestone d. till
- At over 50,000 acres, Red Rock Reservoir and its associated lands constitute Iowa's largest expanse of public lands.
a. True b. False
- Fossil bones of what two species of mammoth were found near the town of Oskaloosa?
a. Columbia & Washington b. Woolly & Prickly
c. Wisconsinan & Iowan d. Columbia & Woolly
- The maximum concentration level (MCL) for nitrate in drinking water is ____ milligrams per liter (mg/L)?
a. 2 b. 5.5 c. 10 d. 25
- What pre-historic creature was the first animal to crawl on land?
a. tetrapod b. ipod c. moped d. trilobite
- The ____ is the state rock of Iowa.
a. garnet b. agate c. geode d. coral

ANSWERS: 1.d, 2.b, 3.b, 4.a, 5.c, 6.a, 7.d, 8.c, 9.a, 10.c

Day 7 Milestones



Start: Fairfield

Lacey-Keosauqua State Park: 20 miles

Des Moines River: 20 & 26 miles

Lindsey Wilderness Area (Bonaparte): 31 miles

Pollmiller Park (West Point): 50 miles

Mississippi River Alluvial Plain: 59 miles

Finish: Fort Madison – 62.5 miles



For More Information...

The Natural History of Lacey-Keosauqua State Park, Van Buren County, Iowa; 2004

<ftp://ftp.igsb.uiowa.edu/igspubs/pdf/GSI-076.pdf>

Van Buren County Conservation - Lindsay Wilderness

www.vbcountyconservation.com/lindsay-wilderness.html

Geode: Iowa's State Rock (brochure)

<ftp://ftp.igsb.uiowa.edu/igspubs/pdf/EM-03.pdf>

COVER PHOTO: *The Iowa State Penitentiary at Fort Madison in 1949.*

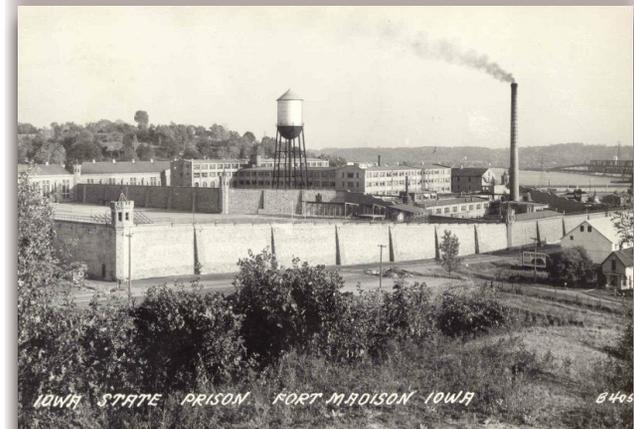
RAGBRAI

Day 7

Saturday, July 27

2013

Learn about the Land



Iowa DNR - Geological and Water Survey

109 Trowbridge Hall

Iowa City, IA 52242

www.igsb.uiowa.edu

US Geological Survey - IA Water Science Center

400 S. Clinton St.

Iowa City, IA 52240

<http://ia.water.usgs.gov>

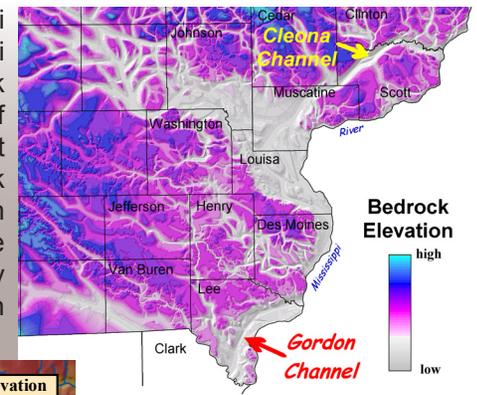
Iowa Limestone Producers Association

5907 Meredith Dr., Suite A

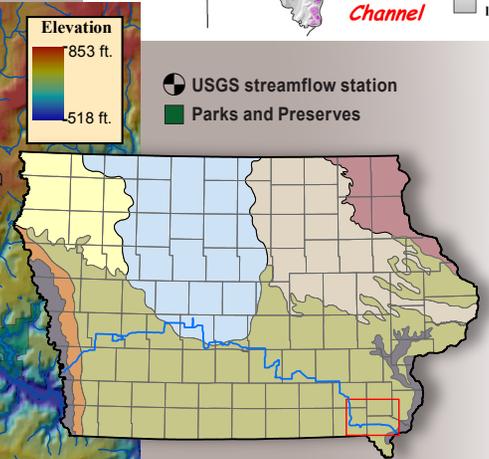
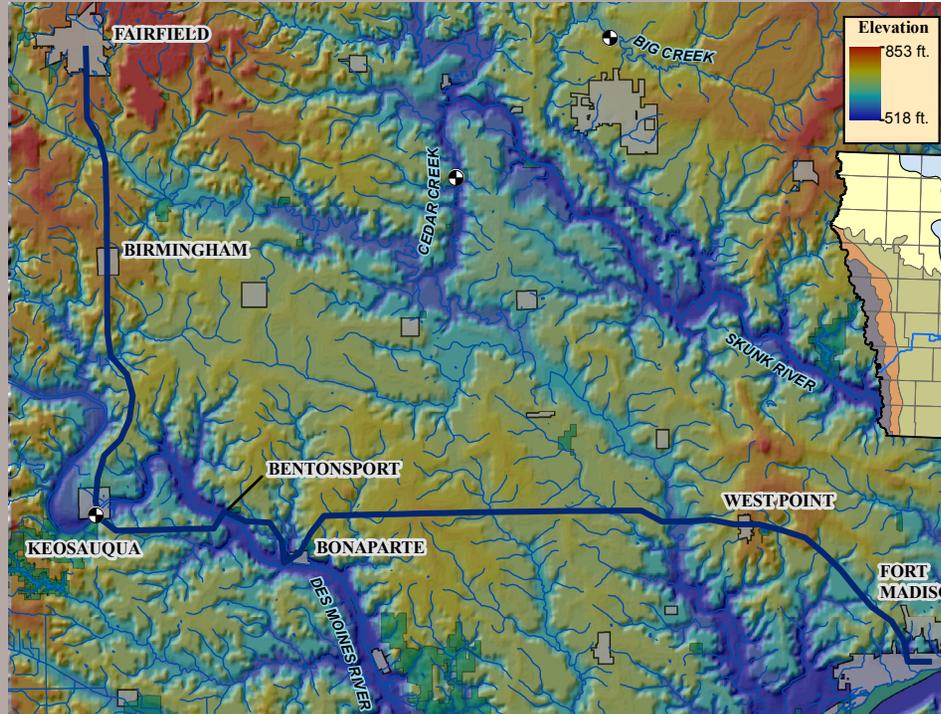
Des Moines, IA 50322

www.limestone.org

The **Gordon Channel** is an ancient river valley incised into the bedrock of Lee County, Iowa. It extends from the Mississippi River Valley westward along the Lee/Des Moines county line, then south across Lee County and into Clark County, Missouri where it rejoins the Mississippi. It is very similar to, and appears to be a continuation of, the Cleona Channel, another bedrock valley located about 30 miles north in Louisa County, Iowa that was incised by the Mississippi River hundreds of thousands of years ago. However, recent research has identified “Salt and Pepper” sand in several water wells in the Gordon Channel. “Salt and Pepper” sand is an informal name that was applied to Paleocene sands and silts that are characterized by obsidian (black volcanic glass) grains (pepper) mixed with the clear to white quartz grains (salt). These sediments were carried eastward from the newly-forming Rocky Mountains just prior to the first glacial advances and were moving through the Gordon Channel before the ancestral Mississippi River shifted to its current location. This implies that the Gordon Channel was incised into bedrock by the ancestral Iowa River and was carrying sediments from the Rocky Mountains prior to the first glacial advances. More research is required to determine if the Mississippi River ever occupied the Gordon Channel.



A few miles west of West Point riders will leave the Southern Iowa Drift Plain landform region and will finish the ride on the **Illinoian till plain**. The boundary is subtle due to the loess cover, but the underlying glacial materials are much younger than those you have been riding across for the previous two and a half days. The Illinoian Glacial Episode occurred around 300,000 to 130,000 years ago when the Lake Michigan Lobe glacier advanced from the northeast and reached into Iowa, diverting the drainage of the Mississippi River to the west. The Illinoian till is the only northeastern sourced till in Iowa (most advanced from the north or northwest), with evidence based on eastern-derived erratics and west-facing terminal moraines. The eastern source makes the till composition unique. The abundance of illite, dolomite and Pennsylvanian lithologies, including coal and black shale fragments, is diagnostic for these deposits. In Iowa, the Illinoian till extends from south of Fort Madison north to the mouth of the Wapsipinicon River and only advanced into Iowa a short distance, between four to twenty miles.



Today's ride will take place through prime **geode country**. Nearly all the creek beds leading to the Des Moines River from Keosauqua to the Bonaparte area will likely have a few geodes in them. These geodes eroded out of the Mississippian Warsaw Shale Formation. The majority of the geodes are made of quartz, and if you're lucky, once it is cracked open there will be sparkly crystals awaiting your gaze!



The **Iowa State Penitentiary** at Fort Madison, constructed in 1839, the year after Iowa became a territory and seven years before it became a state, is the oldest penal institution west of the Mississippi River. Constructed in Romanesque style from Burlington Formation limestone, the original cell block is still in use, and three of the prison houses are listed on the National Register of Historic Places. Iowa's only maximum security prison, the facility includes a 550 person maximum security unit and a 169 person minimum security unit. The historic penitentiary will be replaced early next year by a new \$130 million dollar LEED Gold certified 800-bed maximum-security correctional center being constructed about 1 mile north of the current facility.

