

Revealing Data...

Examples and insights from ISGS NGGDPP data
preservation projects

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ILLINOIS STATE
GEOLOGICAL SURVEY
PRAIRIE RESEARCH INSTITUTE



ILLINOIS

Revealing Data

- Overview of NGGDPP projects
- What can projects and project data reveal?
- An occasional tangential topic of interest

ISGS NGGDPP projects

- We've accumulated a lot of data since 1905
- ISGS NGGDPP project areas -- since 2008
 - Boring and Well records
 - Field Notes
 - Hand Samples and Fossils
 - Photographic Images – prints, negatives, slides
 - Geophysical logs
 - Groundwater Potential surveys
 - Clay Mineralogy
 - Fluorspar and Lead-Zinc districts historical data
 - Lake Michigan core data

Typical projects involve

- Data Entry – usually/always
- Scanning/digitizing – often
- Geolocation - often

Data Entry



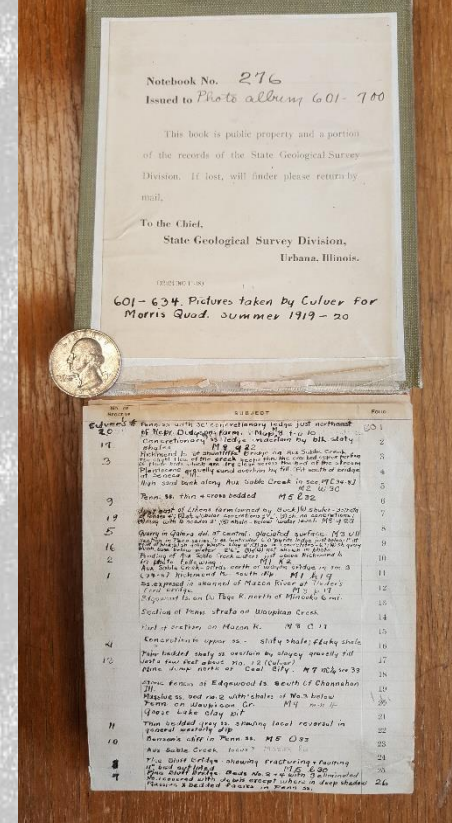
- Usually develop custom database for data entry
 - Layout on the screen and tab order optimize data entry and minimize error
 - Use dropdown picklists wherever possible to standardize the range of input
 - Where possible, validate data as entered
 - Encourage and implement design improvement suggestions from data entry staff
 - Include queries to perform checks across the entire dataset
- Typically use Microsoft Access
- Quick, easy, and flexible



Data Entry

- Yes, be careful entering data, but also:
- Be especially careful when entering location
 - Wrong location often translates into lost data
- Enter text exactly as originally written
 - including abbreviations, which may not be what you think they are
- Include “Issues” field in data entry form

Data Entry

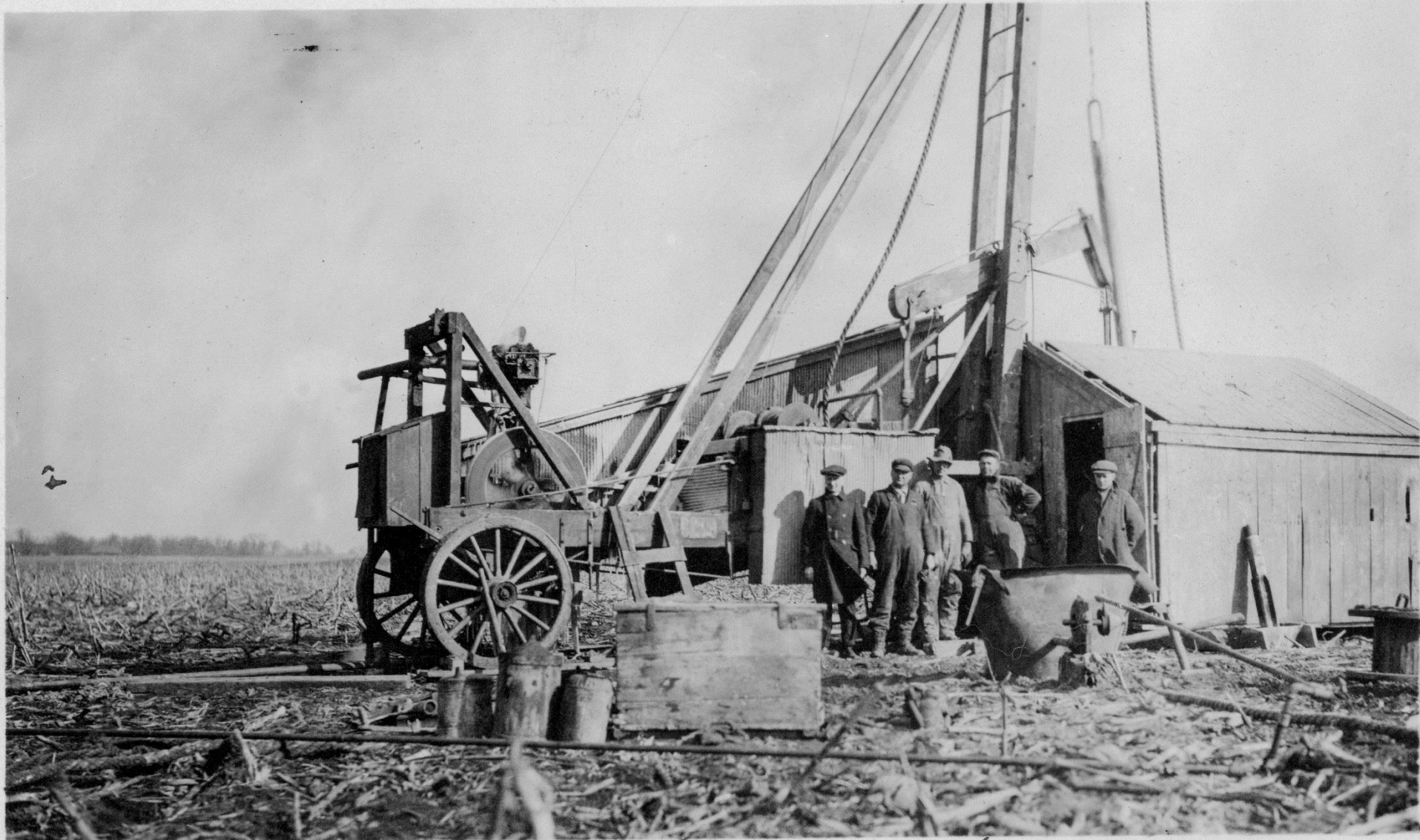


- Handwritten text:
- can be unclear and/or difficult to read
- ...and open to subjective interpretation
- Original scans can be useful for possible later (re-)interpretation

592	Drillers of Kewanee well. ask L.C. Mylin	92
	Blair Oil Well No. 1 Feb. 1920 - Co. = C.H. Wetmore.	
593	Pumped 45 bbls. 1st. 3 days. 2 views	93
594	Same as 591	94

“Blair Oil Well No. 1 Feb. 1920” ?
or
“Blair Oil Well No. 1 Feb. 1920” ?

Data Entry



Blair Oil Well #1 July 1920 Edgar & Sons E.A. Benoit

Use all clues when deciphering handwritten text

Data Entry...would you believe...this is July? 🗨️



Blair Oil Well No 1 July 1920

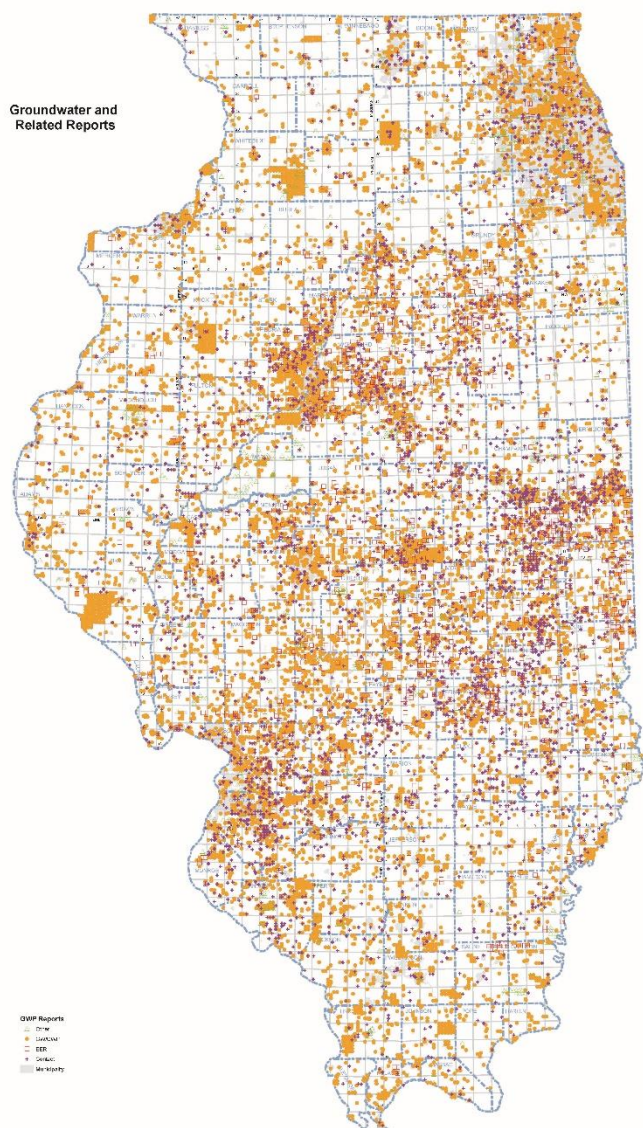
E. H. Renoist

(yes, month likely unimportant here, but that's not the point)

Scanning



- Majority of projects utilize scanning
- Rarely, opt not to scan to minimize project size/scope
- Example: Groundwater Potential Reports
- Geospatial index to paper data (~27K locations, ~20K reports)

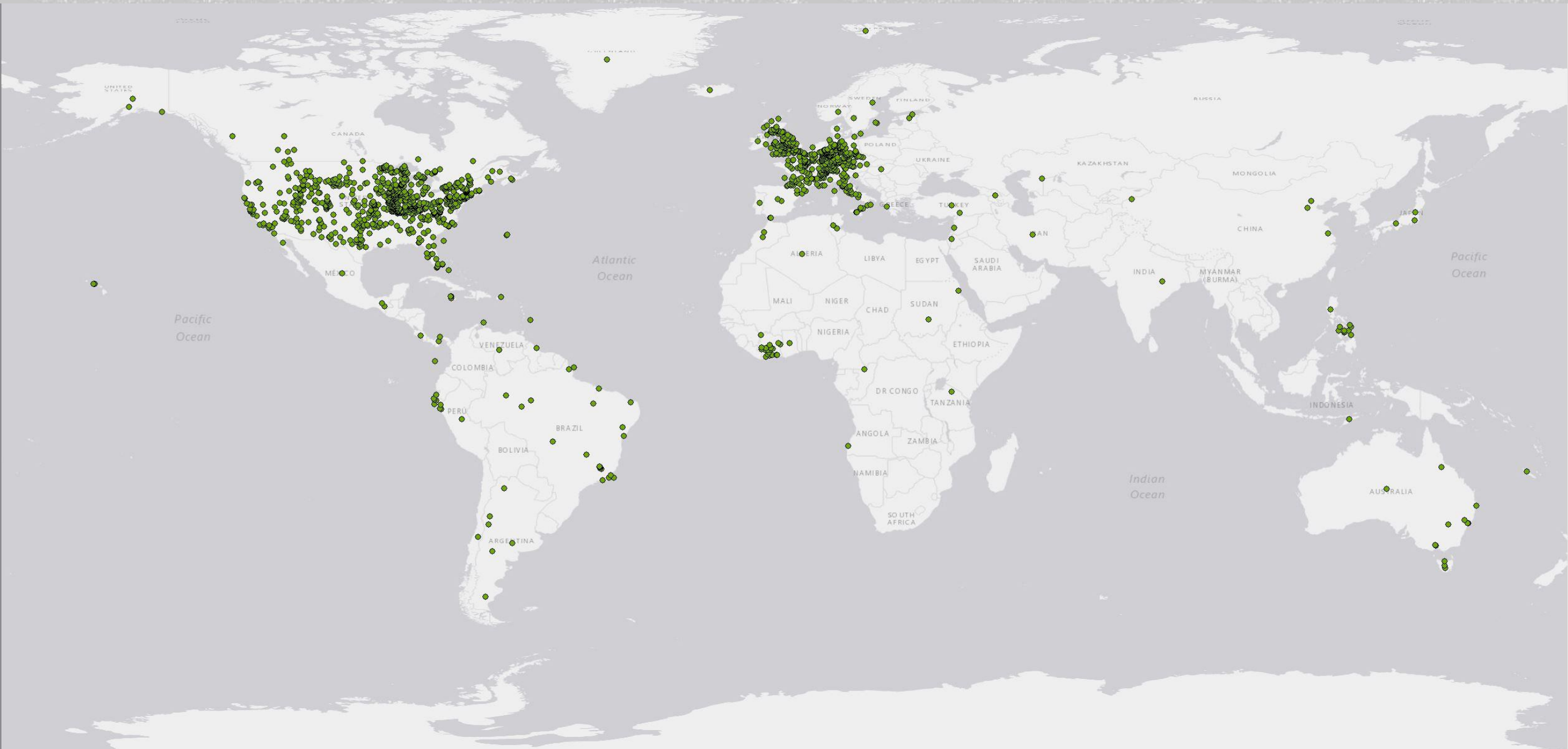




Geo-Location, location, location...

- At the risk of being repetitive: location is critical
- Wrong location: corresponding data effectively invisible
- more later...

Carozzi Hand Sample Collection



Revealing Data

- What else can we learn from the “now-digital” data?





Revealing Data...Revealing Errors...

- Sure, we might make a few data entry errors, but...
- Geologists also make errors in the original data
- Correcting original errors can be time consuming
- But correcting erroneous data...especially location...
- ...improves discoverability

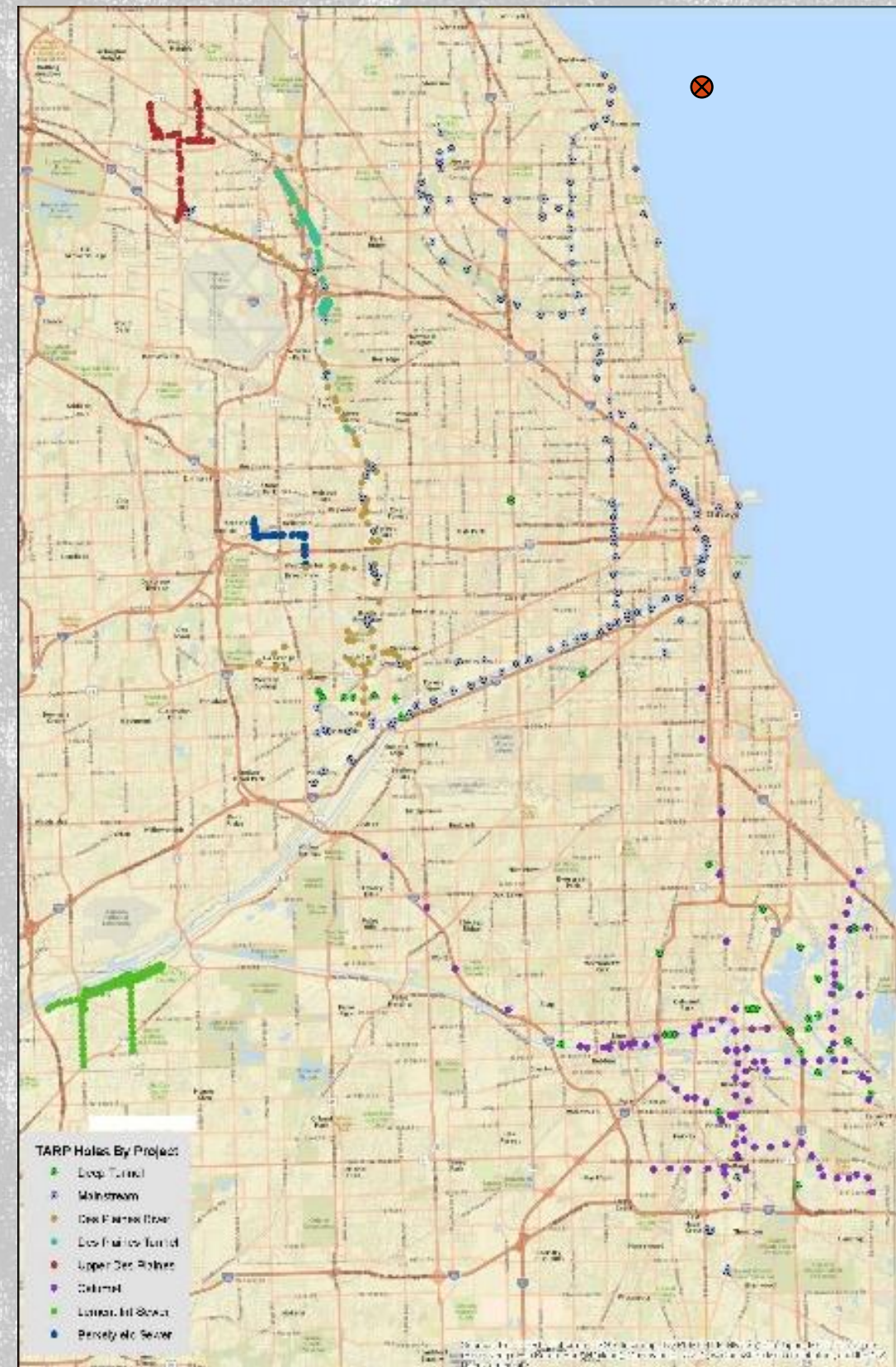
Revealing Errors...



- Invalid PLSS location is common
 - (often discovered when rejected by coordinate generation software)
- PLSS location long string of many parts
- All must be precisely entered (or accurately transcribed)
- Typical error example: 1E instead of 1W

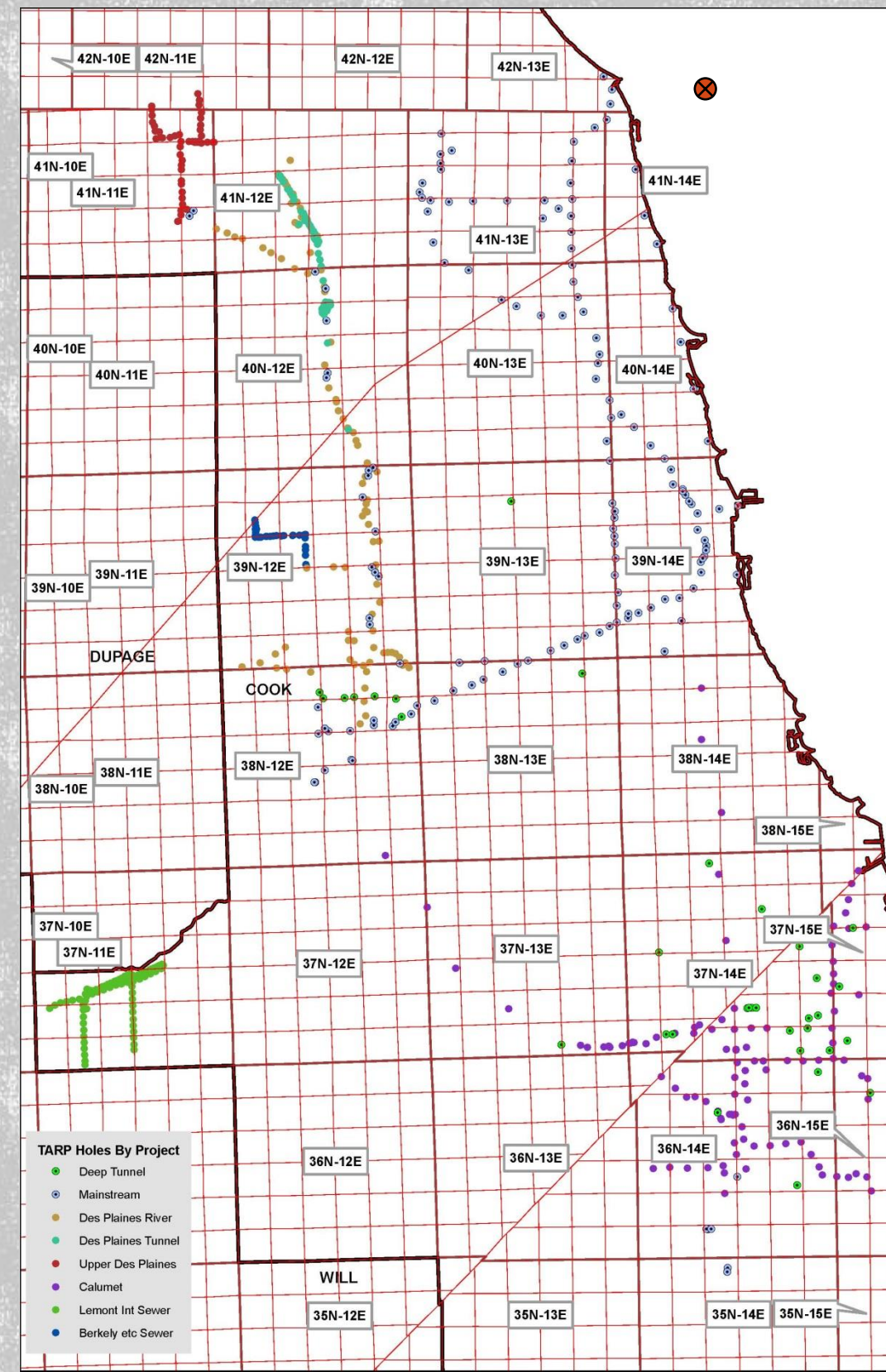
Revealing Errors...

- Chicago Tunnel and Reservoir Plan
 - Surveyed location on log plotted in Lake Michigan
 - With some sleuthing, discovered two digits transposed
- BTW: we have all these deep cores
- ...but no proper place to store them



Revealing Errors...

- Chicago Tunnel and Reservoir Plan
 - Surveyed location on log plotted in Lake Michigan
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Revealing Errors...



Fortunately some issues pop out on simple review...

Hazewell Co. 0403 Joins preceding print	59
Two unnamed prints	60
Lehigh Company's crushing plant RQ-1407	61

How would you enter #60?

...how about: "Two venomed prints"



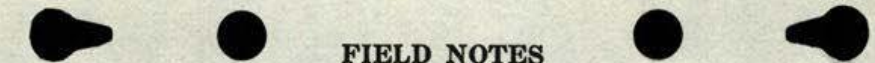
Revealing Connections

- Disparate datasets can be linked in various ways:
- Location – match locations
- Keywords – through metadata and possibly OCR'd text
- Codes – unknown reference located

Examples:

Connections between Field Notes and Historic Photographs

Revealing Connections...by location



FIELD NOTES Illinois State Geological Survey

(0823.C)

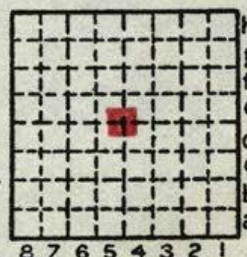
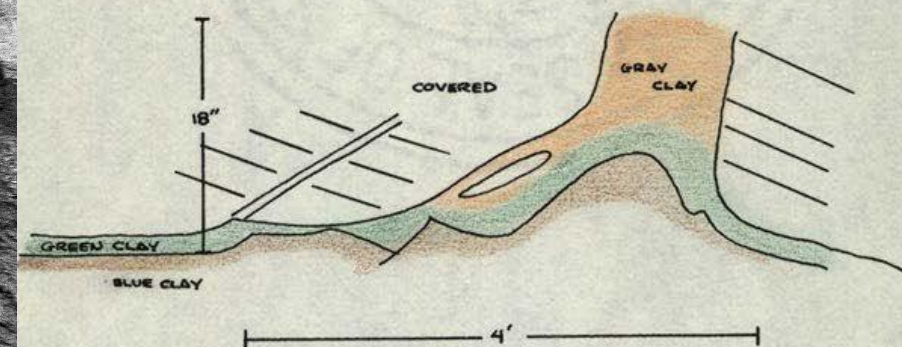
1916

Near Rushville. Near center section 23, 2N-1W.
Outcrop No. 5 coal.

Has black slate roof with concretion, 3'-4' thick
with limestone cap rock.

Coal is one place cut by a seam of calcite and
sulphur like horseback, certainly never forced
into coal....black slate cut by numerous clay
seams.

Get following, roll in creek, took two pictures,
8-3 sec., 16-3 sec.

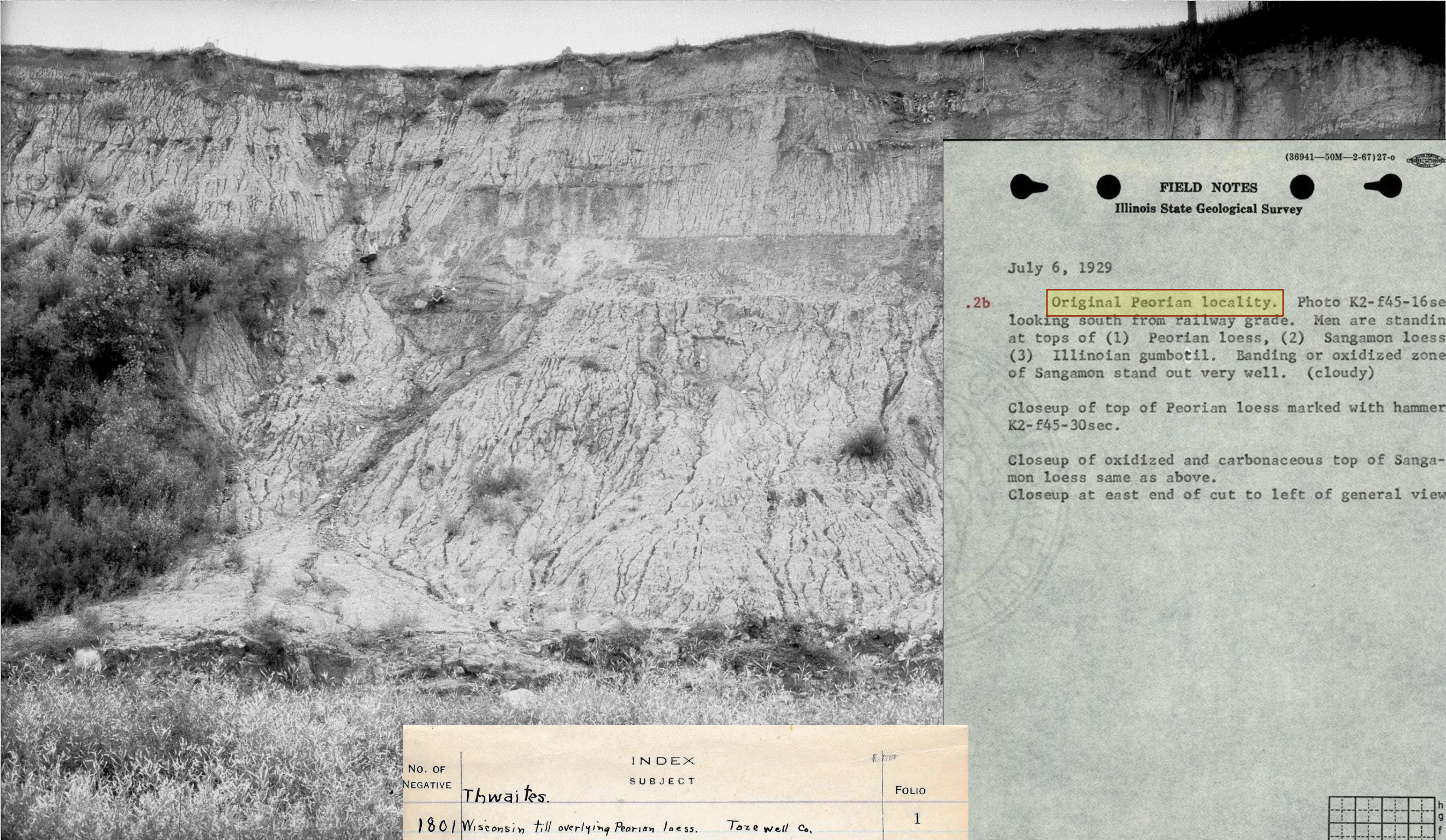


By G.H. Cady Date 1916

Quadrangle Beardstown

County Schuyler Sec. 23 T 2N R 1W

Revealing Connections...by text keyword search



(36941—50M—2-67) 27-o

FIELD NOTES
Illinois State Geological Survey

July 6, 1929

.2b

Original Peorian locality.

Photo K2-f45-16sec. looking south from railway grade. Men are standing at tops of (1) Peorian loess, (2) Sangamon loess, (3) Illinoian gumbotil. Banding or oxidized zones of Sangamon stand out very well. (cloudy)

Closeup of top of Peorian loess marked with hammer K2-f45-30sec.

Closeup of oxidized and carbonaceous top of Sangamon loess same as above.
Closeup at east end of cut to left of general view.

By F.T. Thwaites Date 1929

Quadrangle Mackinaw

County Tazewell Sec. 30 T 26N R 3W

h						
g						
f						
e						
d						
c						
b						
a						
	8	7	6	5	4	3 2 1

No. OF NEGATIVE	INDEX SUBJECT	FOLIO
	Thwaites.	
1801	Wisconsin till overlying Peorian loess. Tazewell Co.	1
1802	Sangamon even with soil zone at top. Tazewell Co.	2
1803	Original Peorian locality from R.R. track. Tazewell Co.	3
1804	Thrust fault in Pennsylvanian shales Vermillion Co.	4
1805	Outcrop of Pennsylvanian limestone beneath till. Vermillion Co.	5
1806	Carbonaceous bands in top of Sangamon loess. Tread south from State Hwy. 4 1/2 mi. west of El Dorado Woodford Co.	6

Revealing Connections...by text keyword search



(36941—50M—2-67) 27-o

FIELD NOTES

Illinois State Geological Survey

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By F.T. Thwaites Date 1929

Quadrangle Mackinaw

County Tazewell Sec. 30 T 26N R 3W

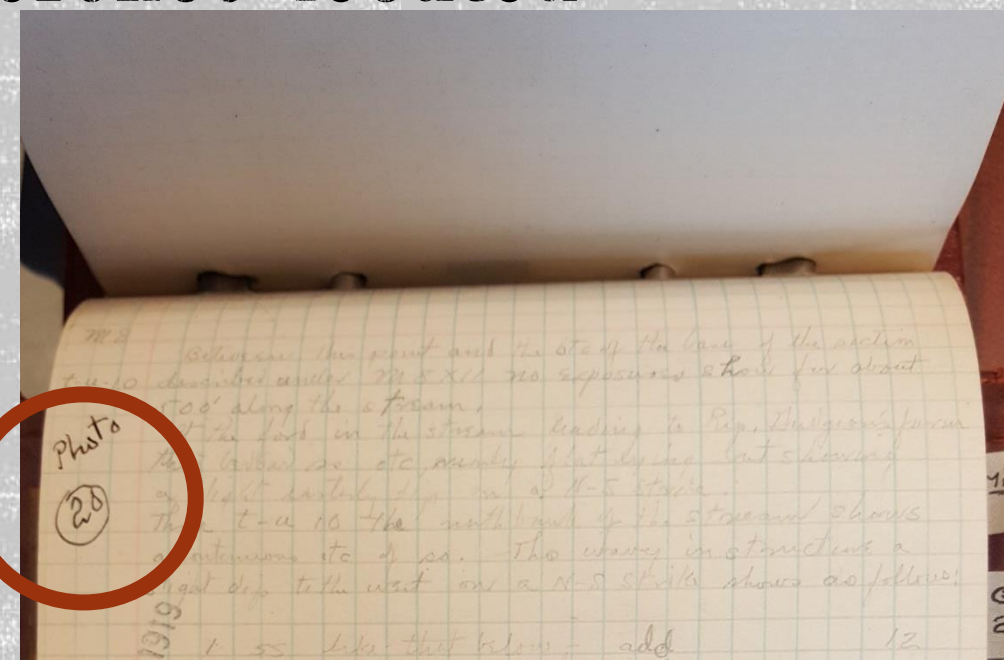
8 7 6 5 4 3 2 1

h g f e d c b a

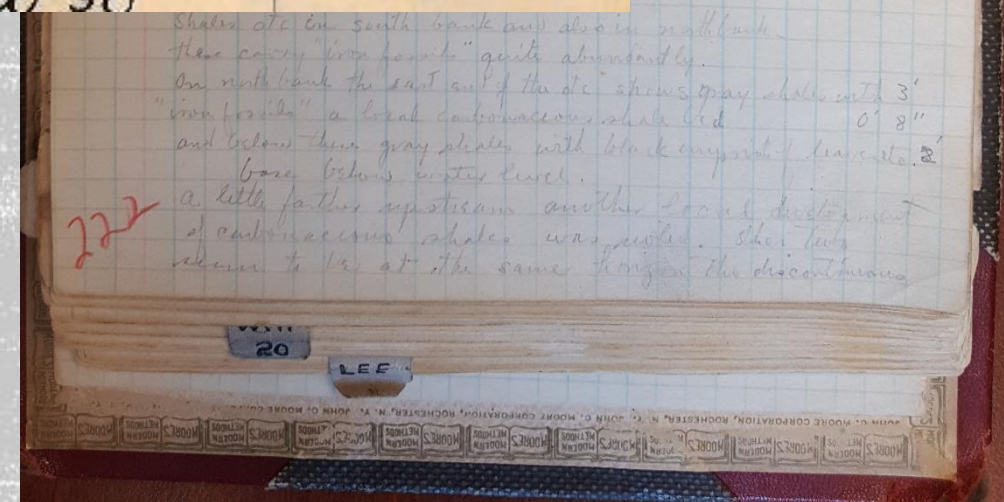


Revealing Connections...obscure reference located

- In this case, an “old number” is referenced in the original image index
- Referenced only in original field notes – wasn’t transferred to typed field notes
- BTW-“Repr.”, “Rip”, “Rep”...



NO. OF NEGATIVE	SUBJECT	FOLIO
Curver's # 2012 17	Penn. ss. with 30' concretionary ledge just northeast of Repr. Dudgeon's farm. : Map ^M 8 t-u 10 Concretionary ss. ledge underlain by blk. slaty shales. Map 8 t-u 10	60 1 2 3 4 5



Revealing Connections...a bit of a tangent



Kampsville from East bank of Illinois River, Delta at center left



Google Street View of Kampsville across Illinois River

Revealing Connections...another tangent...

Gravel pit in 1919...
...does Kame still exist?



(36941-50M-2-67) 27-0



FIELD NOTES

Illinois State Geological Survey

1919

.6a

(1131.3001)

Sec. 31-39N-7E, SW/4, SE/4, SW/4

224 Kame-hill, conical in shape, one of most perfect ones I have seen, 35' high, 100 yards through base. Gravel exposed on slope in pit and on top where excavated for tank? (Photo)

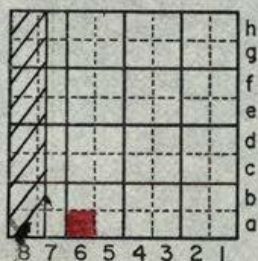
By M. M. Leighton

Date 1919

Quadrangle Geneva

County Kane

Sec. 31 T 39N R 7E





Current imagery



Current imagery enhanced with LIDAR elevations



Google Street View

Revealing Data — another look:

- What else can the digital data help tell us?
- Patterns and trends

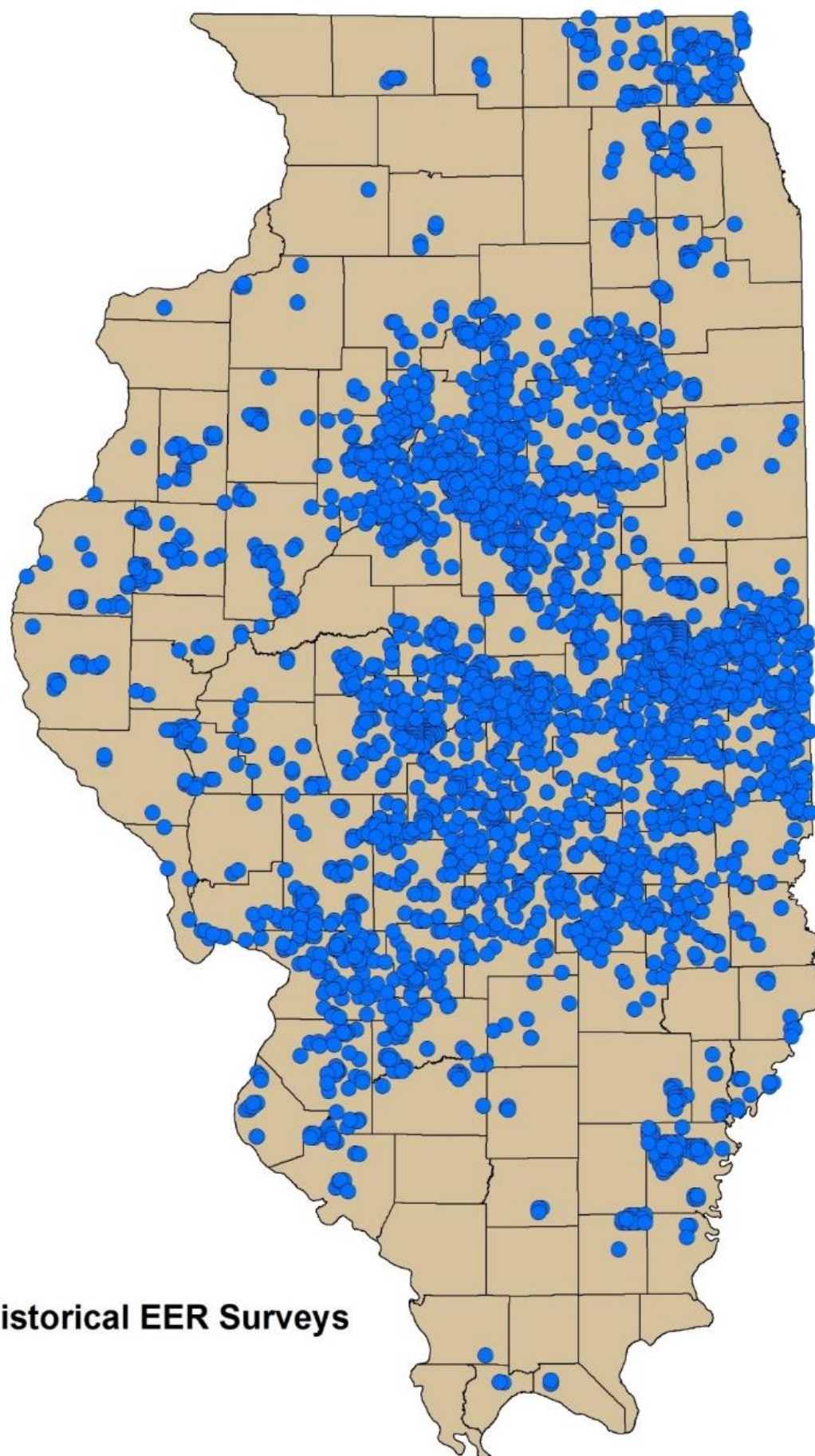


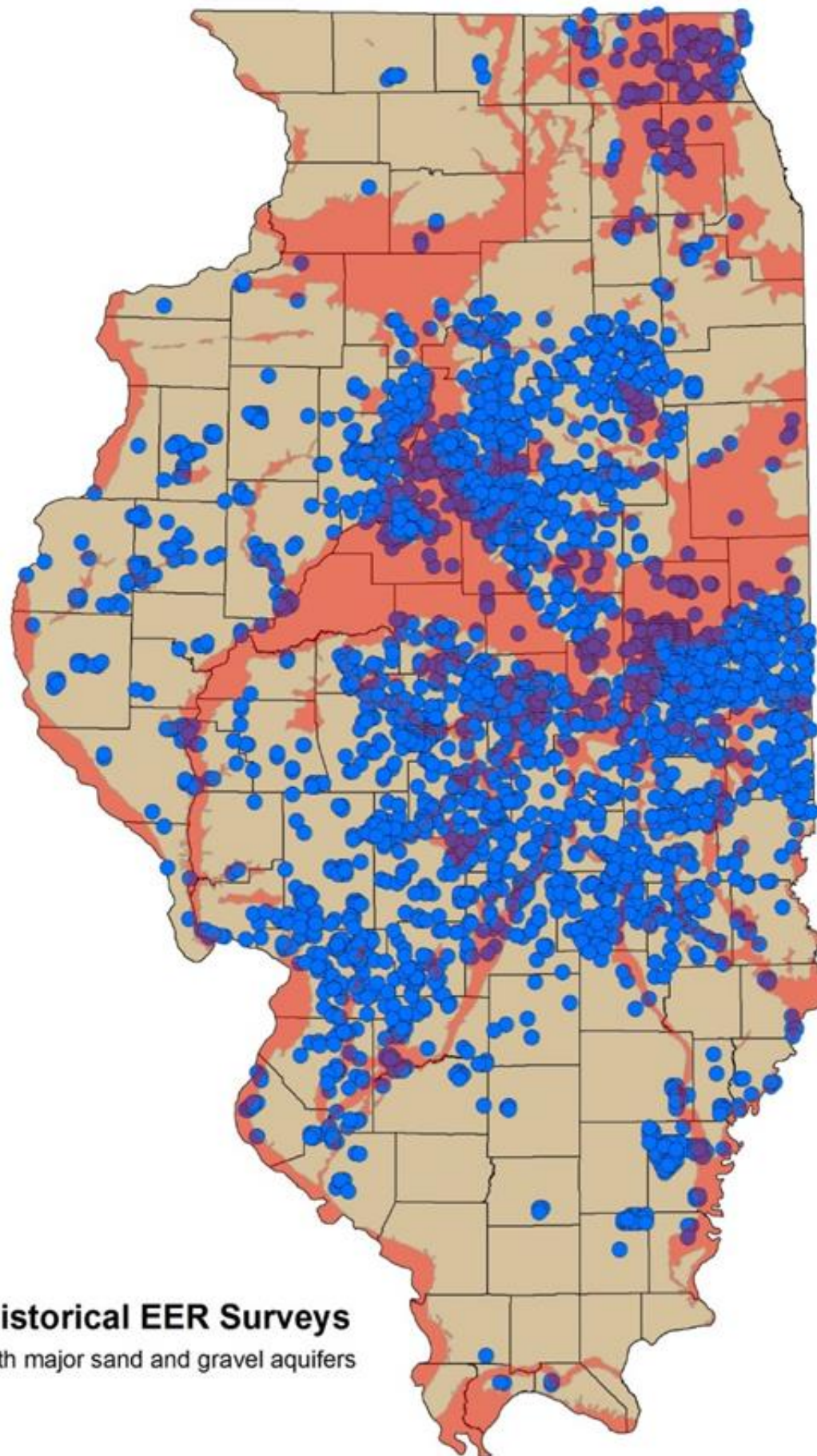
Revealing Patterns

Electrical Earth Resistivity
Surveys

Typically used to help locate
potential water sources

Historical EER Surveys





Historical EER Surveys
with major sand and gravel aquifers



Revealing Patterns

Electrical Earth Resistivity
Surveys

Typically used to help locate
potential water sources

With:

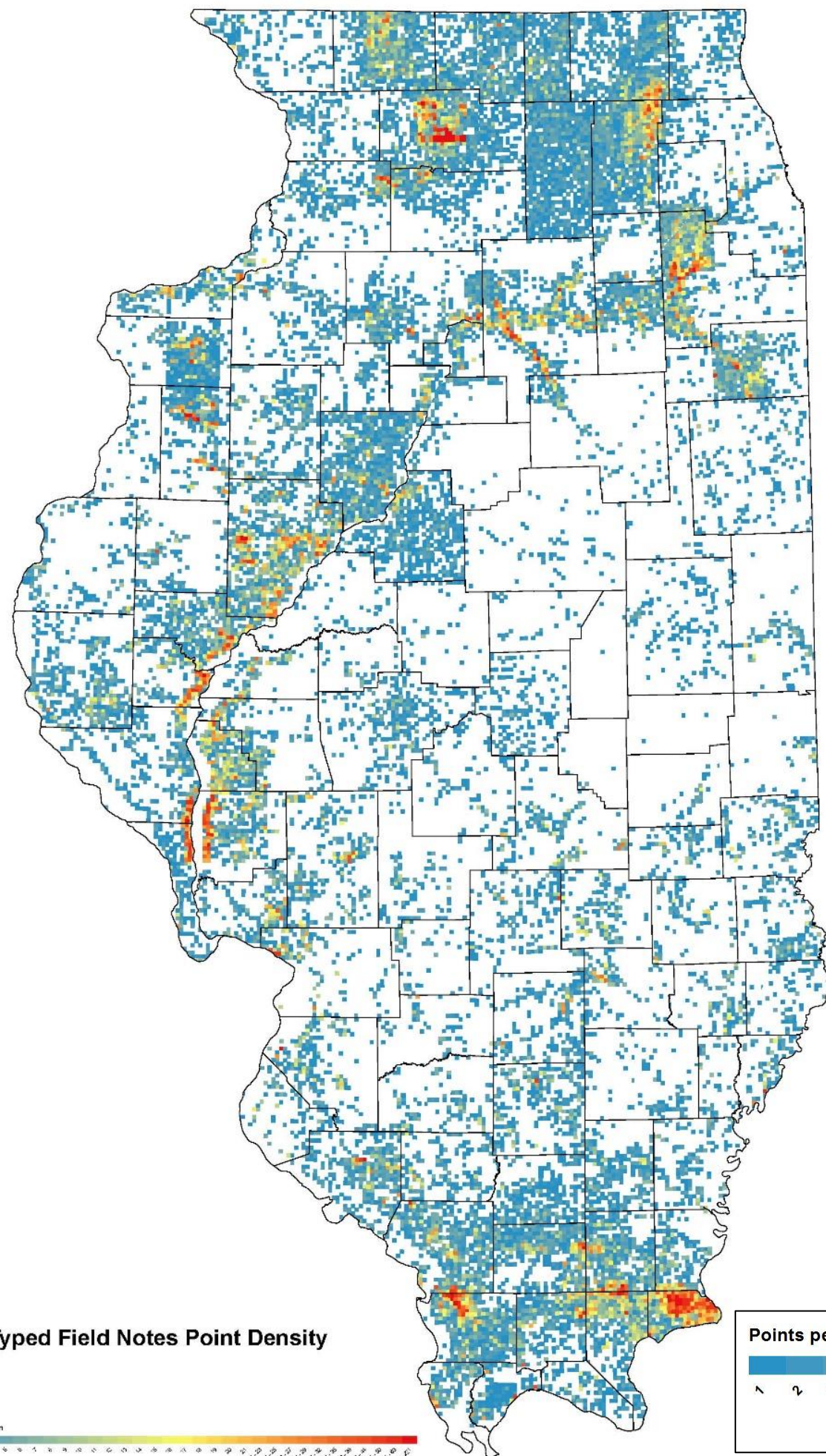
Major Sand and Gravel
Aquifers



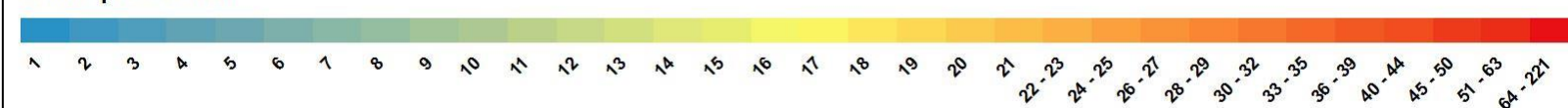
Revealing Patterns

Typed Field Notes

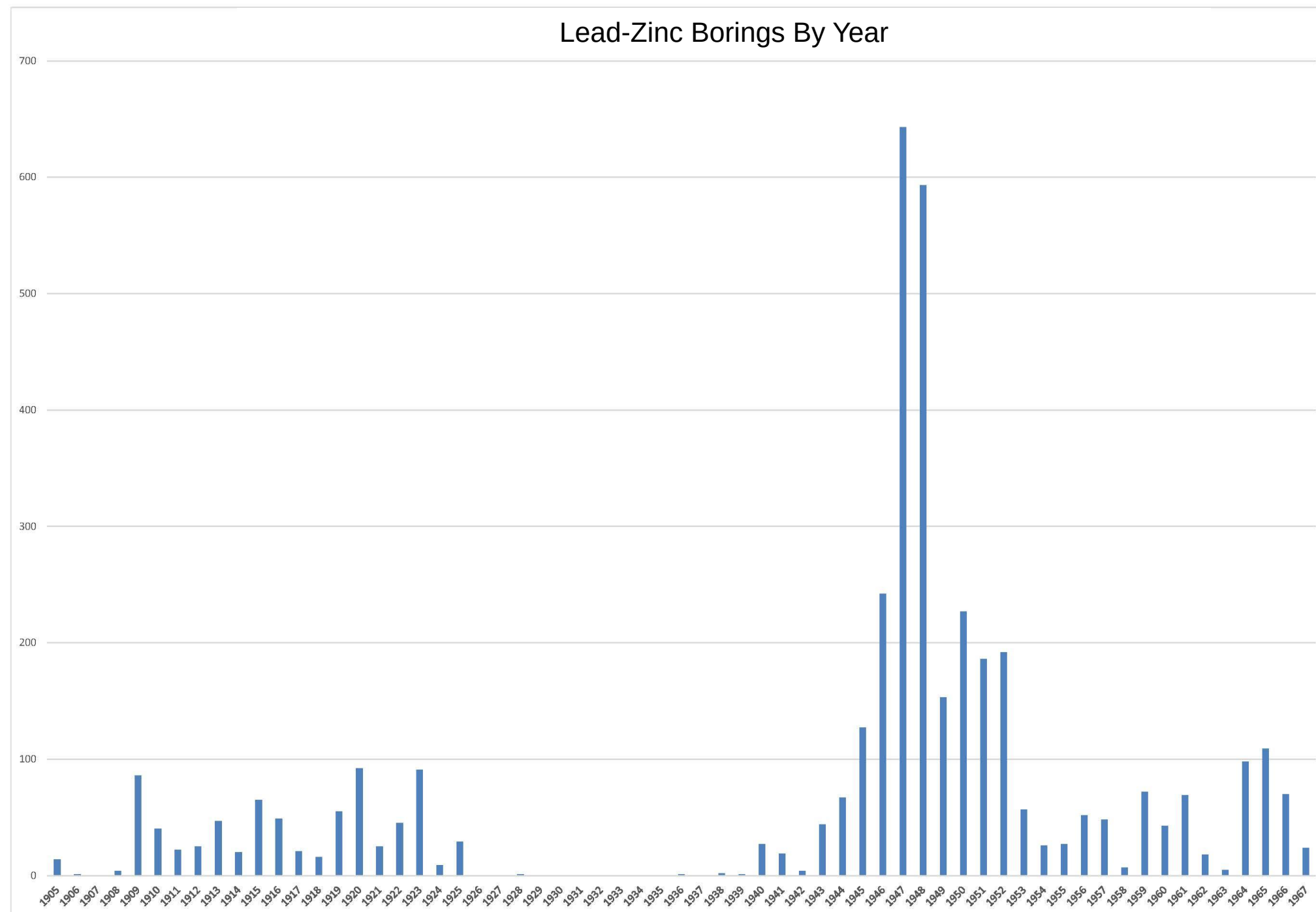
Number of points (notes) per section



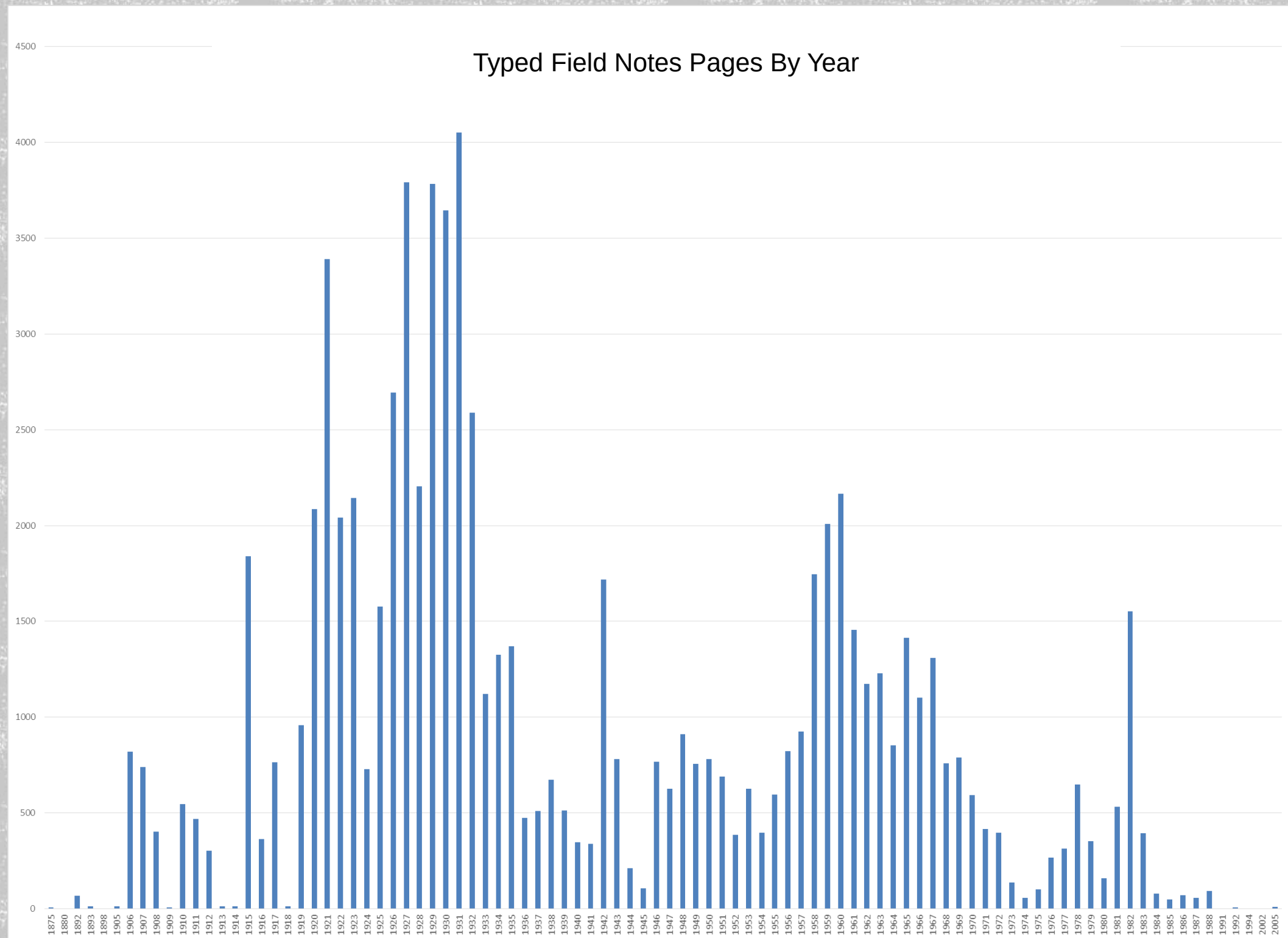
Points per Section



Revealing Patterns



Revealing Patterns



Revealing Data — a last look:

- Field notes and other documents often contain non-geological information:
- Historical
- Industrial
- Environmental
- Archaeological
- Infrastructure
- ...and/or just plain interesting facts and observations...

Historical

FIELD NOTES Illinois State Geological Survey

Outcrop No.: G1 (M.J.A.)
Formation: Trivoli sandstone
Thickness: 10'± exposed (H.R.Wanless)
Grain size:
Sedimentary structures:
Cross-bedding:
1. S 62° E, S 35° E
2. S 12° W, S 31° E
3. S 27° E, S 38° E

(34-3N-8W) J.M.W.

1928.

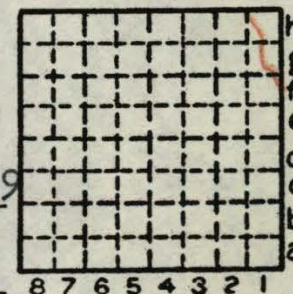
NE/4 section 34 and NW/4 section 35. Hollow up
which road passes.

Outcrops of sandstone and sandy shale only
were seen which probably overlie the Bellerophon
limestone.

I never smelled mash stronger than it was here.
The St. Louis bootleggers must draw part of
their supply from here.

"I never smelled mash stronger than it was here. The St. Louis bootleggers must draw part of their supply from here."

By M.J. Andresen Date Summer, 1959
J.M. Weller 1928
Quadrangle Belleville
County Madison Sec. 34 T. 3N R. 8W



Environmental

TES
gical Survey

(36941-50M-2-67)27-0



June 27, 1927

Examination of reported deposits of native mercury in Lake County.

"...at request of Mr. Nearly...examine basis of reports of deposits of native mercury..."

material are many minute beads of mercury. These samples were said to be taken from lot 42, block 53.

Mr C. Carlson's basement, about 1/3 of a block south of the intersection of 22nd street and Kristan Ave., North Chicago, west side of street, in southeast corner of basement, beads of mercury occur on the floor, between bricks in lower part of wall and in

"...in the basement, beads of mercury occur on the floor...and between bricks of wall..." [...several other reports]

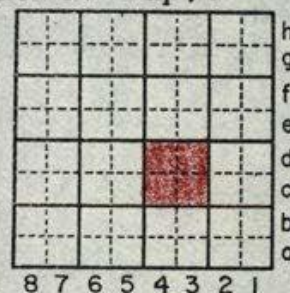
occurs in the top soil where damp, along the wall, also in the basement in the pores of concrete of the house next door south belonging to Mr. J. Masec. The beads are said to accumulate on the floor. It is reported that there was sulphur well 35' deep and now filled in, about 75 yds north of C. Carlson's house just across the slough (see attached map).

(continued next page)

By M. M. Leighton Date 1927

Quadrangle Waukegan

County Lake Sec. 5 T 44N R 12E



FIELD NOTES

Illinois State Geological Survey

(36941-50M-2-67)27-0



P-2

In constructing Fulton School located on 23rd street between Kristan and Kemble Ave., it is reported that they excavated 14' to hardpan. The ground above was gravelly. It is reported that mercury was so school, that the pupils used to their inkwells.

from Carlson's house an excavation unaltered glacial drift. This showed no signs of mercury. The same was true in the excavation for a house on 19th street between Elizabeth and Seymour streets. The till here is calcareous.

On Jackson street, just south of 18th street, beads of mercury occur under a back porch in black dirt which appears to be a fill.

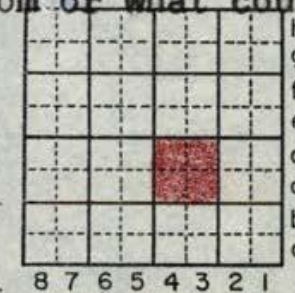
e city
oria and
Catholic

So far as known, the occurrences of native mercury in North Chicago and Waukegan are in connection with man-made fills. There are no known occurrences in undisturbed glacial drift. The source of mercury in the man-made fill is conjecture. No one seems to know just where the materials came from or what could be the source of mercury in them.

By M. M. Leighton Date 1927

Quadrangle Waukegan

County Lake Sec. 31 T 45N R 12E



Industrial

NOTES
Geological Survey

FIELD NOTES
Illinois State Geological Survey

June 27, 1927

Examination of reported deposits of native mercury in Lake County.

At the request of Mr. Nearly, I came to Waukegan this afternoon to examine the basis of the reports of native mercury. Mr. William J. Fulton displays

P-2

In constructing Fulton School located on 23rd street between Kristan and Kemble Ave., it is reported that they excavated 14' to hardpan. The ground above was gravelly. It is reported that mercury was so common around this school, that the pupils used to obtain beads for their inkwells.

"...the occurrences of native mercury...are in connection with man-made fills..."

of the intersection of 22nd street and Kristan Ave., North Chicago, west side of street, in southeast corner of basement, beads of mercury were found in floor, black floor, feet

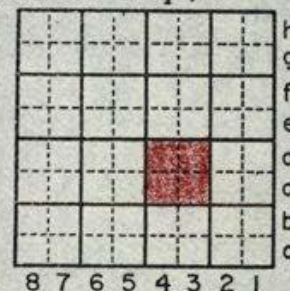
On the occurrence also in the basement in the pores of concrete of the house next door south belonging to Mr. J. Masec. The beads are said to accumulate on the floor. It is reported that there was sulphur well 35' deep and now filled in, about 75 yds north of C. Carlson's house just across the slough (see attached map).

(continued next page)

By M. M. Leighton Date 1927

Quadrangle Waukegan

County Lake Sec. 5 T44N R 12E



calcareous.

On Jackson street, just south of 18th street, beads

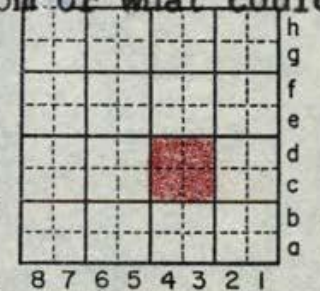
"The source of mercury in the man-made fill is conjecture. No one seems to know just where the materials came from or what could be the source of the mercury in them."

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By M. M. Leighton Date 1927

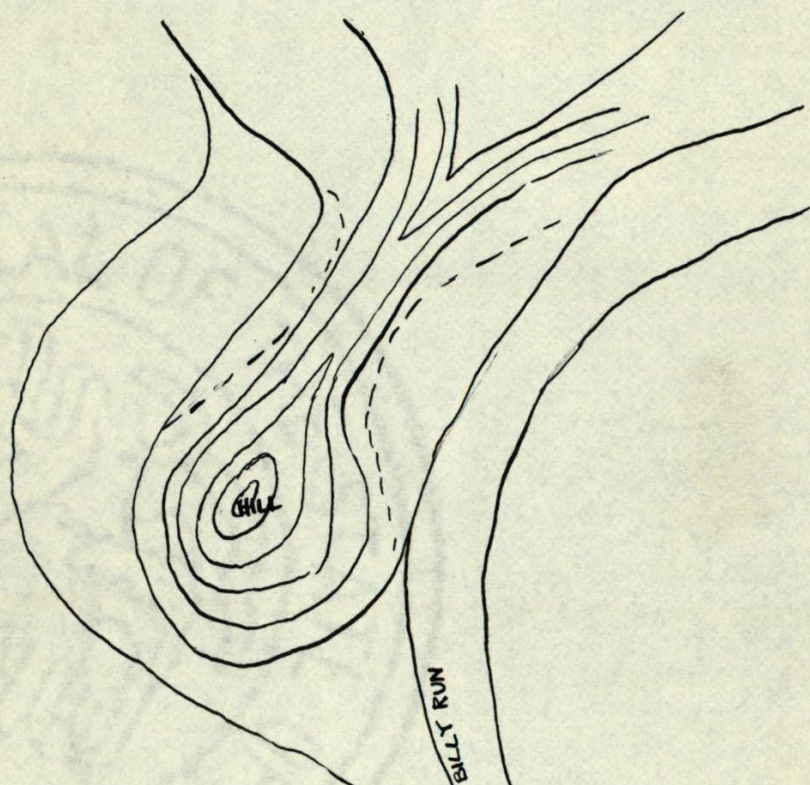
Quadrangle Waukegan

County Lake Sec. 31 T45N R 12E



January 3, 1908
Morris, Illinois

Sec. 24. Farm of A.M. Canaday - (J.H. Ridings)
Along Billy Run



"...two skeletons found..."

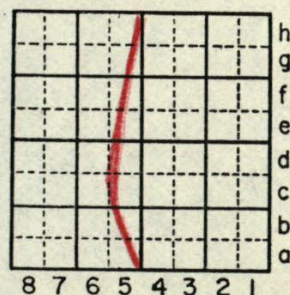
On the hill noted in this map two skeletons have been found, one of an adult and one of a child. The structure of the hill is about as follows:

Gravel - 11' at top
Blue clay - 1'
Sand - 15' to level of creek.
(cont.)

By G.H. Cady Date 1908

Quadrangle Morris

County Grundy Sec. 24 T 33N R 6E



"...human bones found near..."

lde

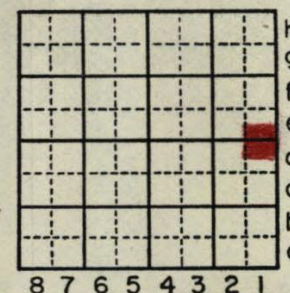
The human bones found near Sears were within 4' of the top of the loess bluff of the clay pit of the Blackhawk Mfg. Co. The loess at the top of the cliff at this place was pried off with crowbars and in the debris that fell to the base of the cliff was the human bones. They were not more than 4' below the surface. No human bones have been found in this vicinity that were not within 3-5' of the top of the ground. Horns of an elk were found in the loess about 50' below the surface. These horns were undoubtedly old but there is no possibility that the human bones are of the age of the loess, or anything earlier than the indians. This is the west end of Blackhawks Watch toward ridges and it is probable that many indians were buried on this hill.

"...it is probable that many Indians were buried on this hill..."

By T.E. Savage Date 1906?

Quadrangle Milan

County Rock Island Sec. 14 T 17N R 2W



Infrastructure



MAY 1916

Before using waterbound macadam - Lehigh Stone Co.

Infrastructure



MAY 1919

After using waterbound macadam - Lehigh Stone Co.

?!.

Jo Daviess County
Sec. Ref. 101

65
66 (Continued)
Collar Elevation: 822.64
Depth of Hole: 201'
Location: Snyder

Date Completed: 8-24-59
Drilled by: Eagle-Picher
Logged by: C. M. Stock
Type of Drilling: Churn



<u>Depth</u>		<u>Lithology</u>	<u>% Zn</u>	<u>% Pb</u>
<u>From</u>	<u>To</u>			

Serial No. 66
Hole No. E-67
Collar Elevation: 827.98
Depth of Hole: 210'
Location: Snyder

Date Completed: 8-27-59
Drilled by: Eagle-Picher
Logged by: C. M. Stock
Type of Drilling: Churn

<u>Depth</u>		<u>Lithology</u>
<u>From</u>	<u>To</u>	
0	10	Soil, clay and loose rock
10	77	Buff rock
77	105	Drab and chert (some water)
105	110	Drab and chert - trace lead
110	170	Drab and chert - trace of iron
170	175	Drab and chert - lead shines and trace of zinc
175	177.5	Drab and gray rock and trace of lead

"Note:

*...drill hole...could not be logged because
the cuttings were all destroyed by pigs."*

cuttings
were all destroyed by pigs. The driller's helper laid the cuttings out under an oak tree and the pigs up-rooted the cuttings and sod around this tree to get at the acorns. They were chasing the pigs away continually, but yesterday we had a severe rain storm and the driller laid off and went home early. The rain had also washed away some of these cuttings.

Lambert Schloeman (driller) is excellent in picking out beds and determining grade of mineralization so I am forwarding a copy of his log to you.

CMS.

Water Table: 115'

<u>Depth</u>		<u>Assays</u>	<u>% Zn</u>	<u>% Pb</u>
<u>From</u>	<u>To</u>			

Drillers are just as good as geologists at making excuses.



The End...



*"For those of you who don't know Mr. Ingham—
he's our institutional memory."*



Ist das nicht ern Schnitzelbank
Ja das ist ein " " "

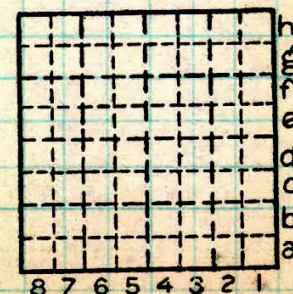
Lichtputzer
Kreuz und quer
Alte schraube
Grosses glas
Haufen mist
Dicke frau
Langer mann
Hirnverbrannt

Hin und her
Schiesgewehr
Damen haube
Oxenhas
Schnickel fritz
Fette sau
Tannenbaum
Strumpfenband

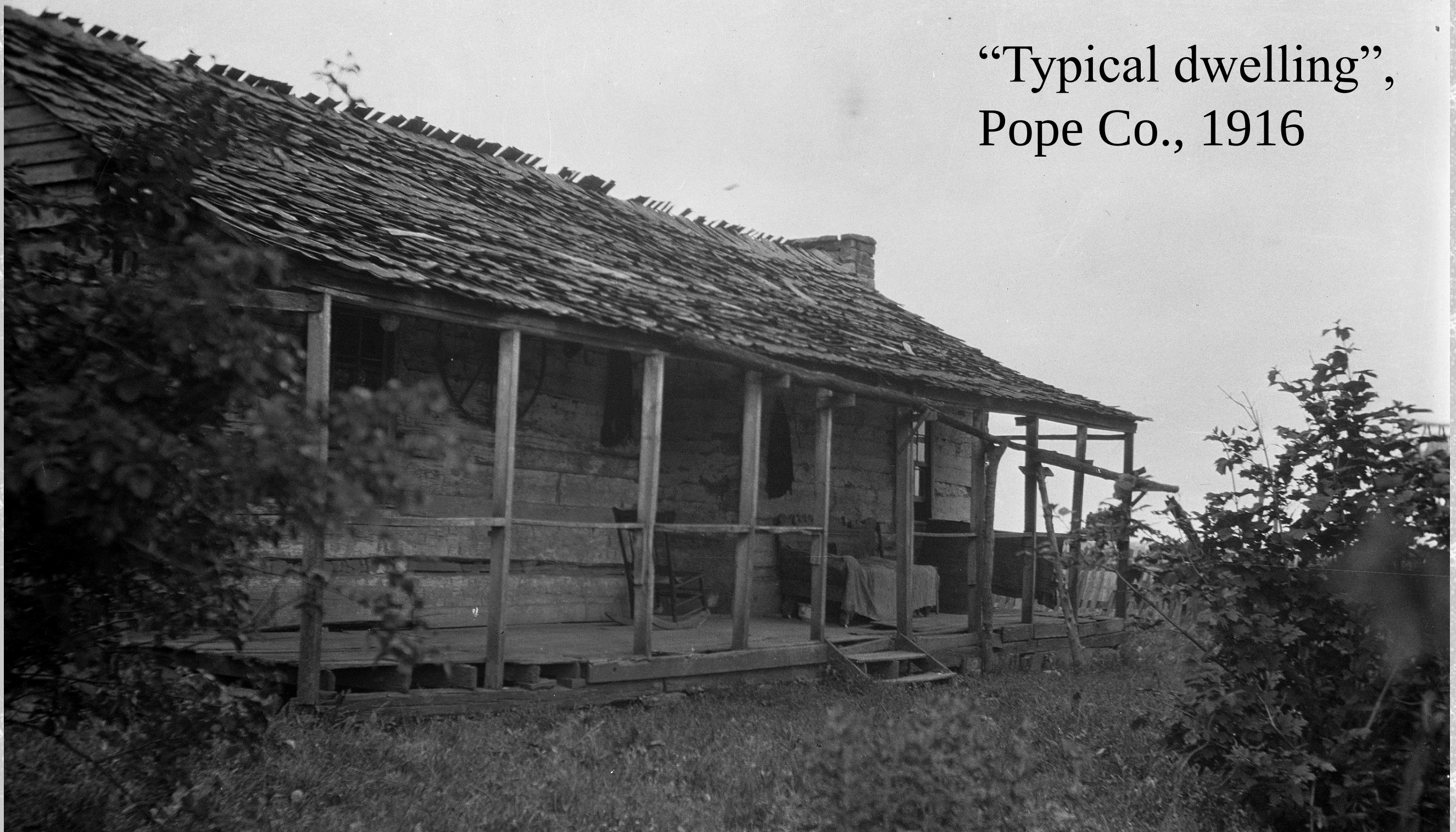
Date..... T..... R.....

Quad..... Part.....

County..... Index No.....



“Typical dwelling”,
Pope Co., 1916













PROSPECTUS
OF THE
ROSE CLARE
LEAD AND SPAR MINING CO.
ROSE CLARE,
HARDIN COUNTY, ILLS.

J. M. Jackson
Property

PRINTED BY JOHN P. MORTON & CO., LOUISVILLE, KY.

Lead Mine Prospectus dated March 1872

J. M. Jackson

THE
ROSE CLARE LEAD MINES,
ROSE CLARE,
HARDIN COUNTY, ILLINOIS.

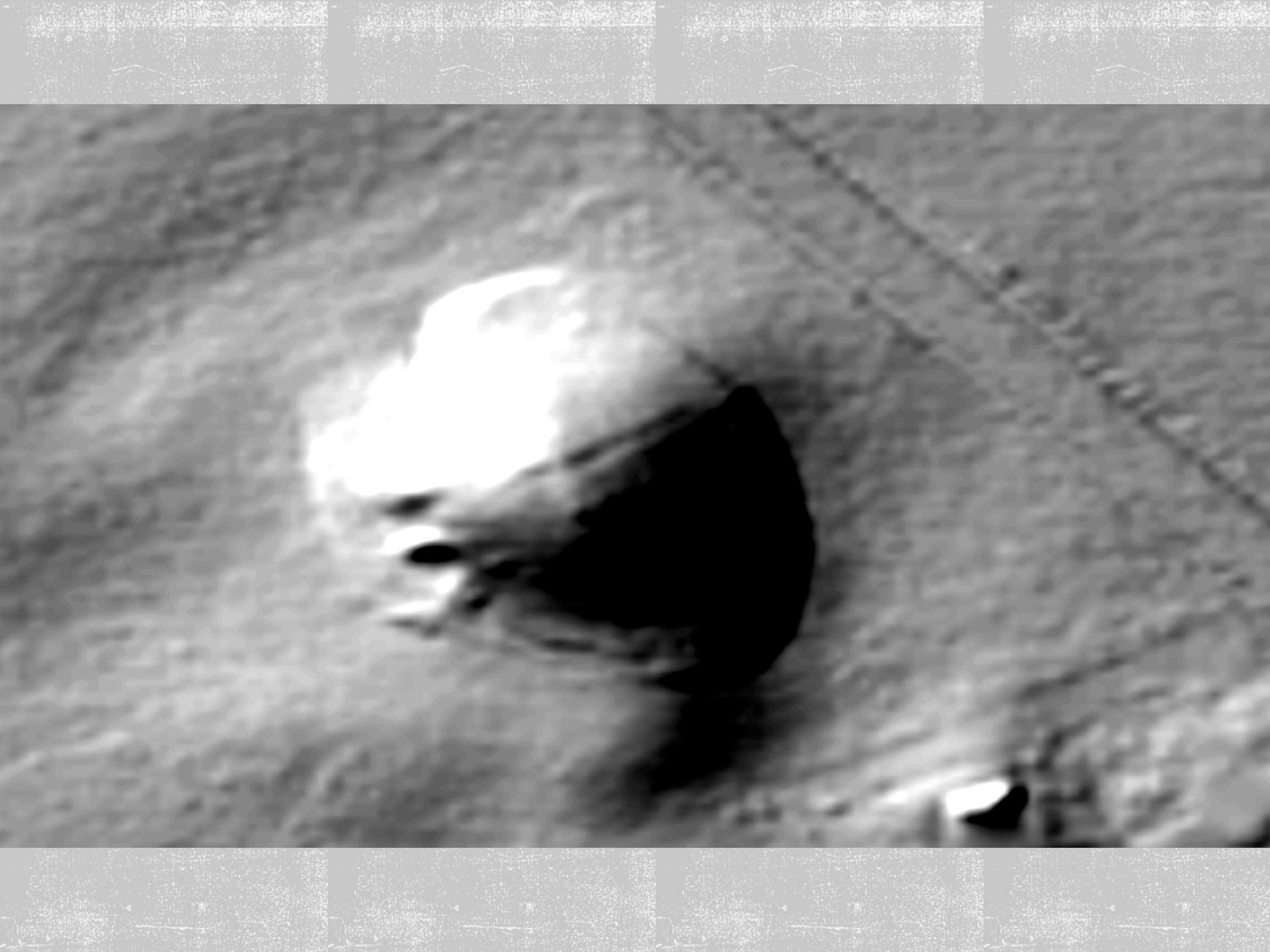
Situation.—THE ROSE CLARE LEAD MINES are situated on the *Ohio River*, in *Southern Illinois*, thirty-eight miles below *Shawneetown* and ninety-five miles above *Cairo*.

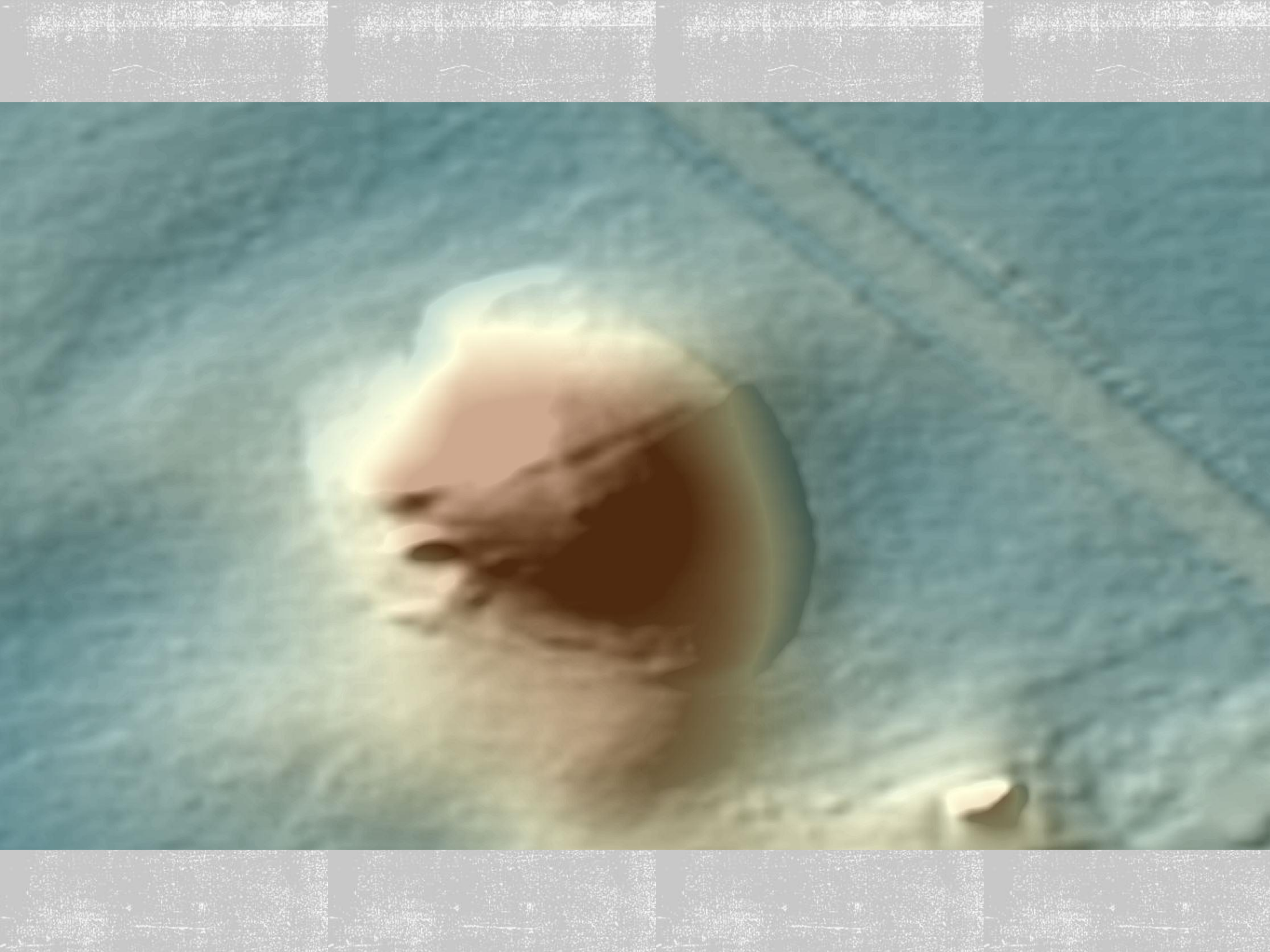
The first, and at present the deepest, shaft (two hundred and ten feet in depth) of the *Rose Clare Company* is one half mile from the north bank of the river and about twenty rods west of Main Street, in *Rose Clare*.

The River.—The river at this point is always in a navigable stage, there being, within the crescent formed by the river, never less than twenty-five feet of water. The landing is always good, being against an abrupt rock-shore for about a mile along the river, with a flat rock-surface of several thousand square yards, and a high, permanent bank skirting the front of the town.

The Rose Clare Mines have become famous, and, although they have only been worked less than two years, have been developed sufficient to show them to be one of the richest mines in the world, all of which can be shown to those that wish to take stock in the company.

LOUISVILLE, KY., March, 1872.







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6	21 ft. of Ogishian, from west of M. 5. 1922. (stripping of sand (No. 2) north east of M. 5. 1922.)	28
12	Michell mine near Myers. M. 4. 1919.	29
12	Section, structure in shales of Penn series nearby just above Johnny Run. M. 9. 1922.	30
14	Thin bedded shaly sandstone overlain by gravelly fill, above Johnson Run. 55 yds east of them.	31
4	Gravelly sandstone, from ss on New table Creek at Cedar Creek. M. 5. 1922.	32
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	Gravelly sandstone, from ss on New table Creek at Cedar Creek. M. 5. 1922.	50

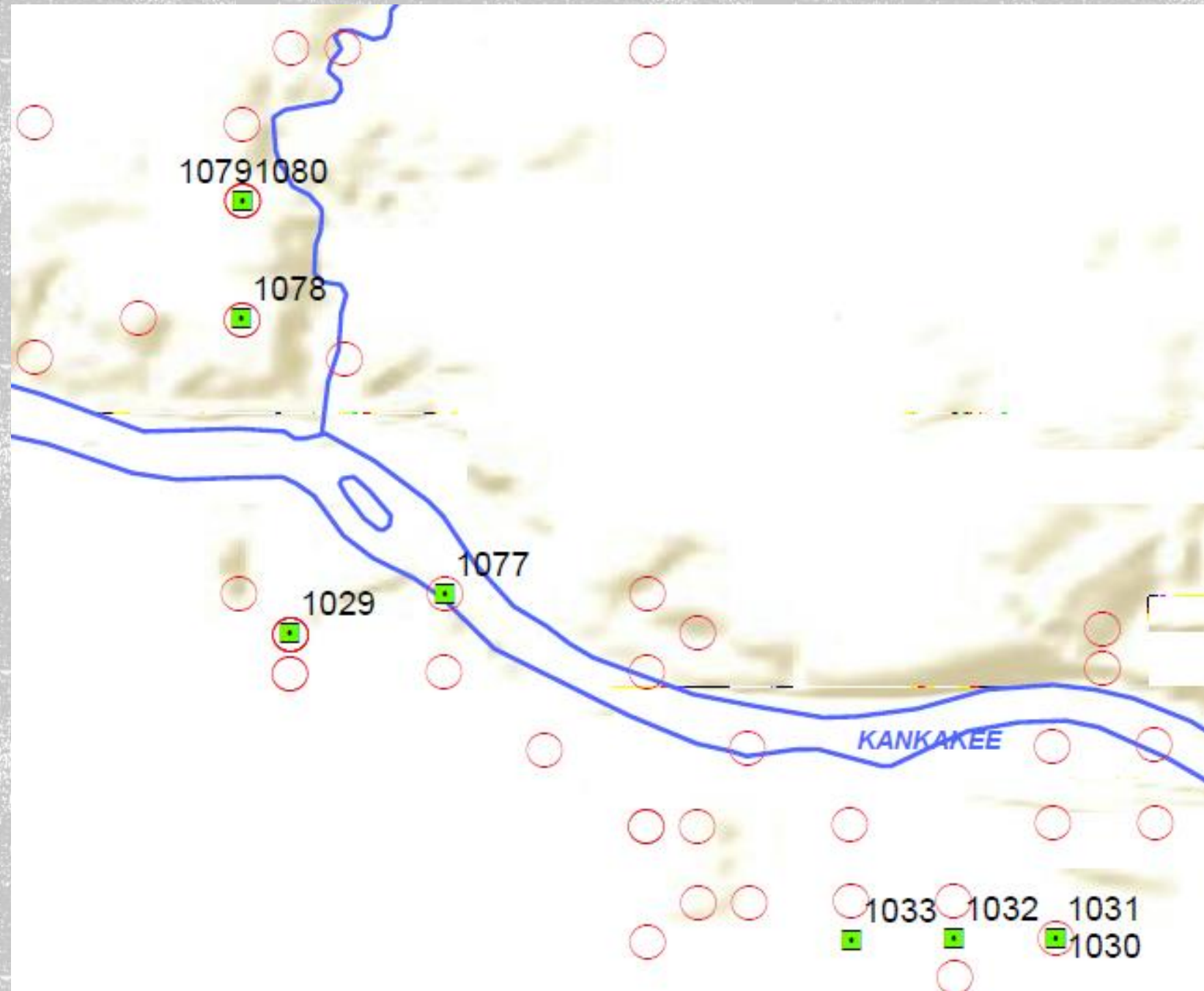
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Greene Co. 1034 Penn Shale 35	57
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Gravelly, N. E. S. 33 Goose Lake 1/2 mi. E. of	62
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Revealing Connections...by location



Now that we have BOTH
field notes and historic
photographs
geolocated...

...we can view their
locations together.



Kankakee River,
Kankakee County
Field Notes and
Historic Photographs

Revealing Connections...by location



(36941-303-2-87)27-a

FIELD NOTES

Illinois State Geological Survey

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(36941-303-2-87)27-c

FIELD NOTES

Illinois State Geological Survey

P-2

.3h
(0723.69) Davis Creek:-
then a coarse sand layer 2'-6', then coarse gravel with clay. These layers make a pronounced "cyncline" in the axis of which they are thickest, but the blue layer is beneath the water. On the south side of the syncline the blue layer goes up nearly vertical. It contains a streak of brown gravel. On its basal or south contact there is an iron stain 1"-2" on sand which abuts gravel. The layer disappears above, and in turn the silt and sand layers are cut by the gravel-clay topping. South of this is a dense clay (till) in creek, with coarse rubble for 2'-4', then medium to fine sand, then coarse clayey sand with numerous pebbles and cobbles, then the gravel clay top. Blue clay is dense, very dark, and overlying silt is also dense and dark buff weathers in across vally, a flat on rock or gravel, limestone forms a cliff. Just south a few rods this limestone Banks of coarse glacial gravel.

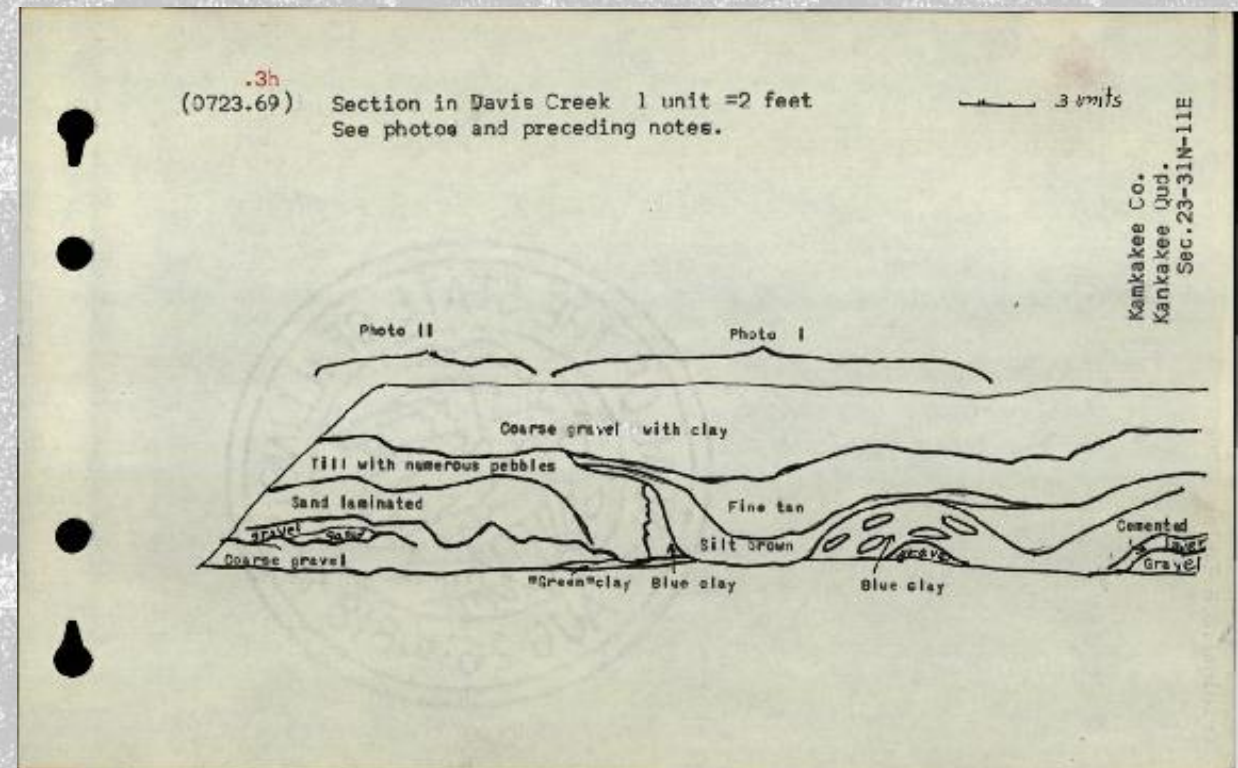
.3fg
(0723.67) Till bluff 45'-50' high. Gravel at base and top. Dark buff dense clayey till, sandier below that weathers into a friable light clay with rectangular "fractures". Large blocks of cemented gravel in bluff. Some 25' above flat and many form a ledge, but more was found in place. Across the flat, here 20-30 rods wide, the west wall is of limestone, in place. Limestone in place in creek just above. Rocks dip south.



By G.E.Ekblaw Date 1923

Quadrangle Kankakee

County Kankakee Sec. 23 T 31N R 11E



Revealing Connections...by location



XVIII. Section along west side of Davis Creek, showing gravel over sand over silt, with blue till at base, hardly visible in photograph. Shows synclinal structure, a feature of these deposits that is difficult to explain. To the north (right) the deposits are very much folded into open synclines and anticlines, that are covered unconformably by the gravel at the top.

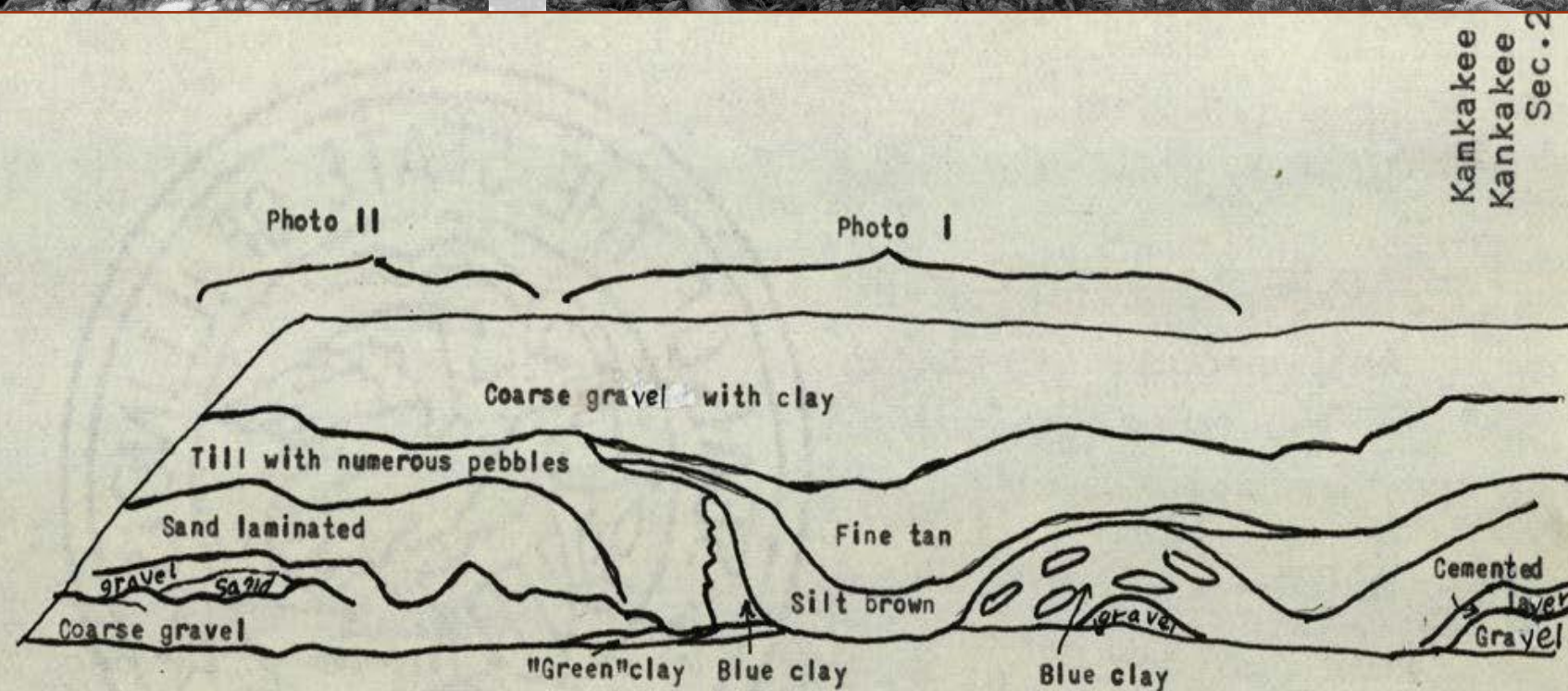
Kankakee Quadrangle 0723.69.

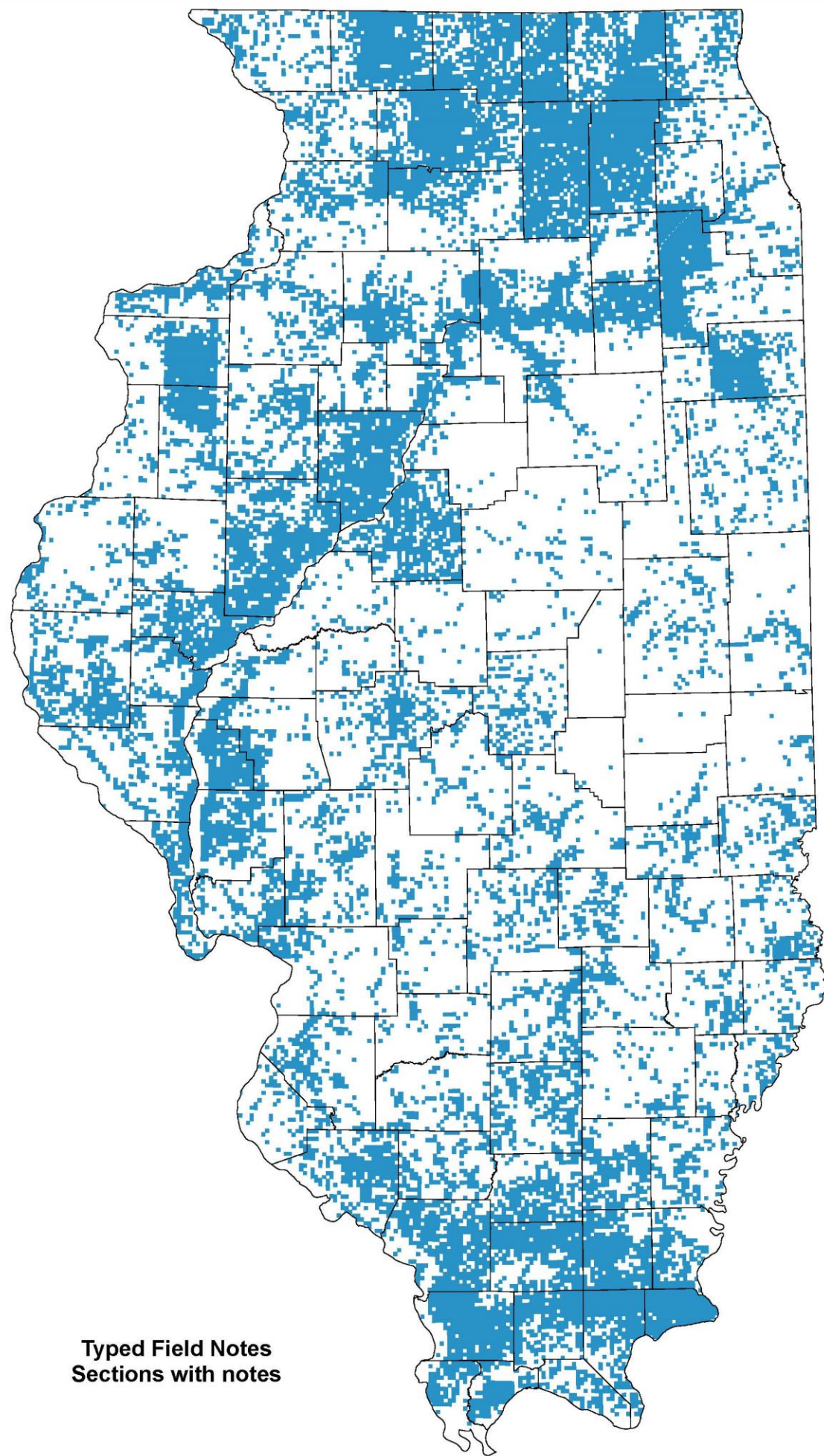
Eckblaw

July 7, 1923

1079

Revealing Connections...by location





Typed Field Notes
Sections with notes



Revealing Patterns

Typed Field Notes

Sections with notes