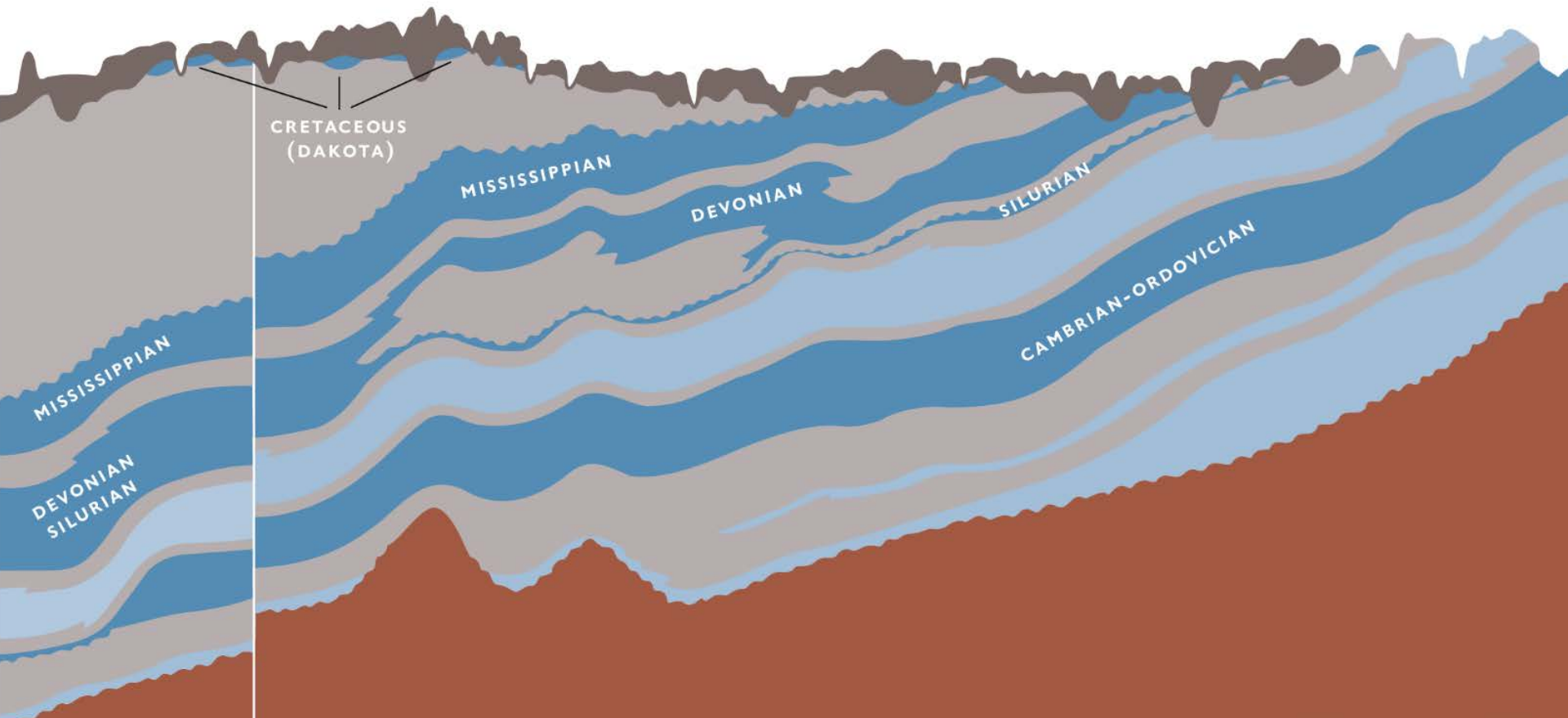


The IGS' Water-Level Network



Rick Langel, IGS; Jacob King, IIHR

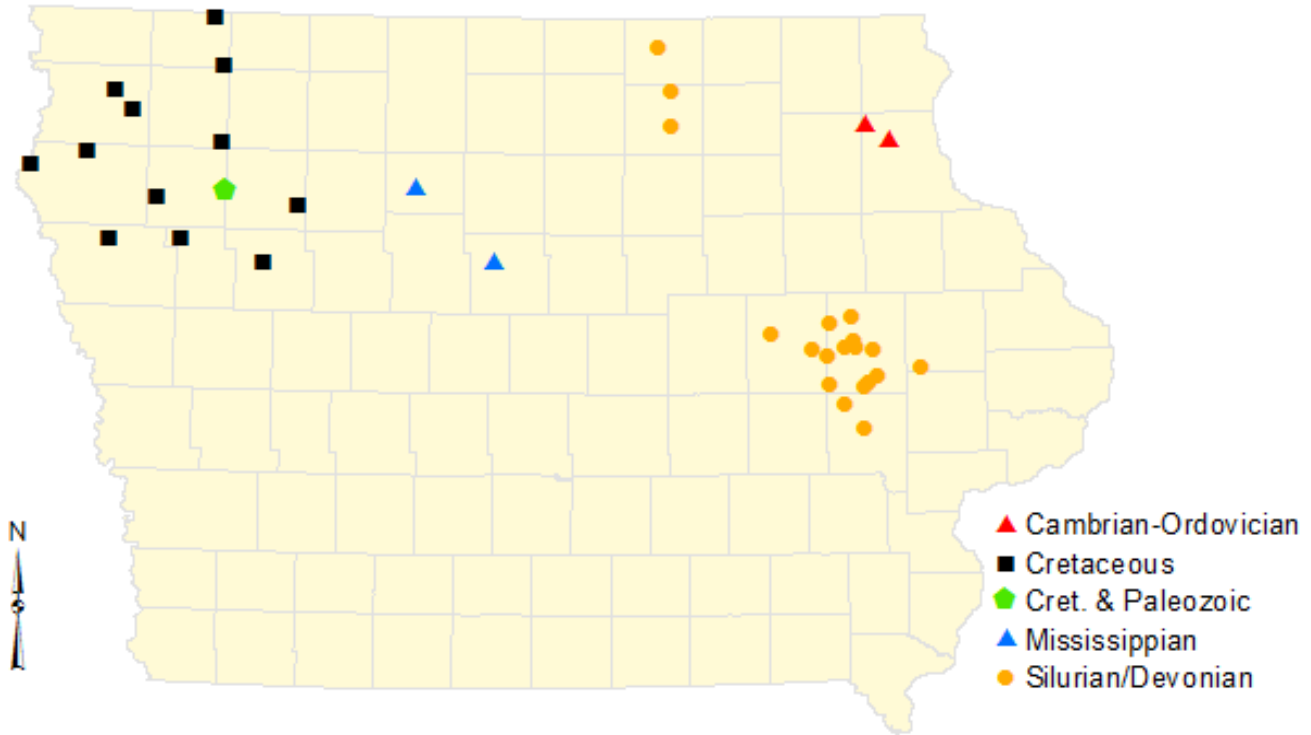


IGS' Water-Level Network Wells

60 wells at 36 locations

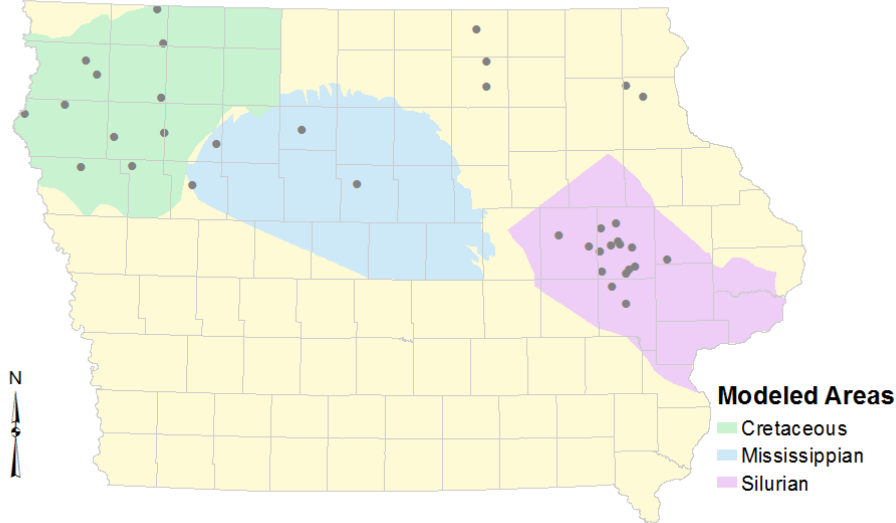
All are dedicated monitoring wells

Many have long-term data records (part of a previous IGS/USGS level network)

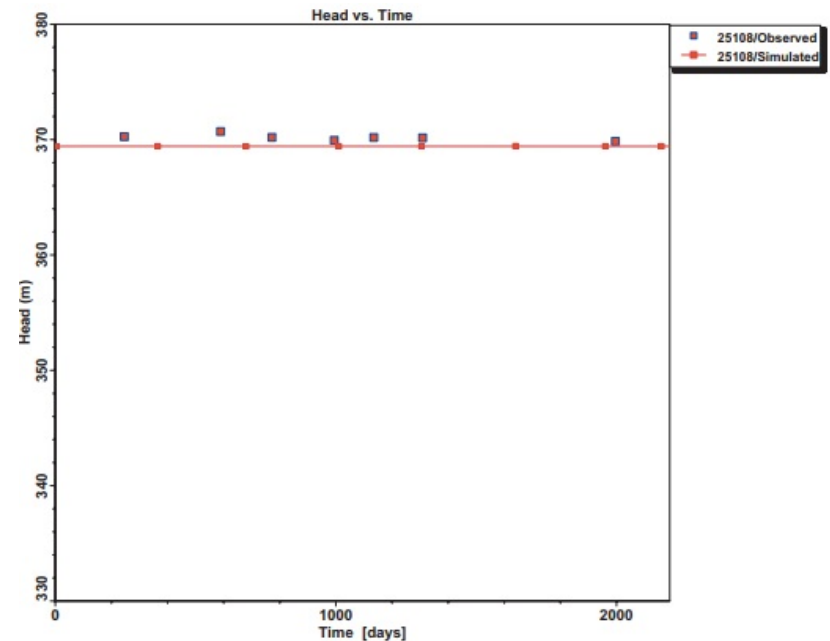


Network Goal #1 – Provide data for calibration of groundwater models to evaluate aquifer sustainability

Bedrock aquifers modeled that utilized water-level data

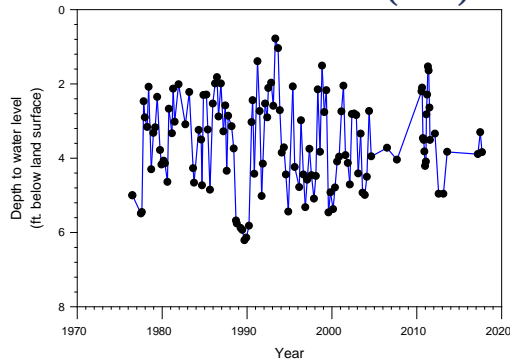


Well water-levels used to evaluate model

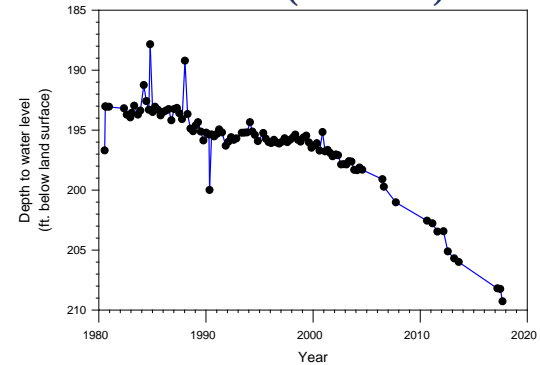


Network Goal #2 – Provide a historical record of water-level changes in the state's aquifers

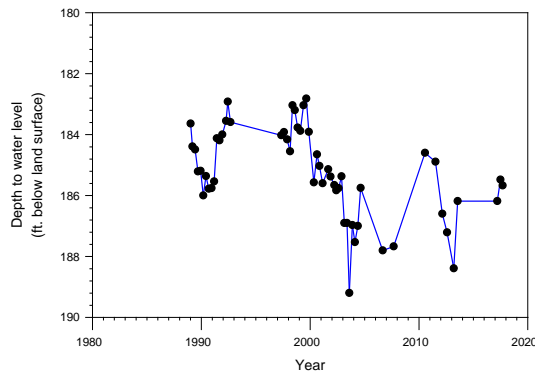
White Oak Cr. (Sil.)



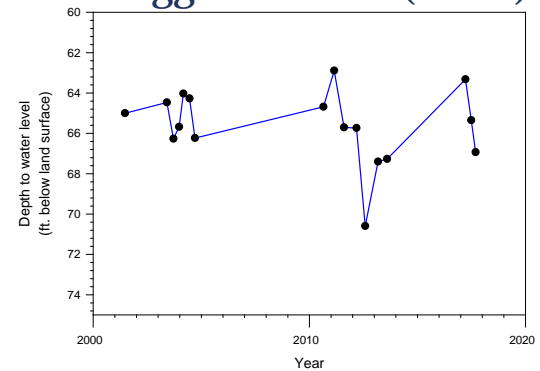
D-44 (Dakota)



BS2-G (Camb.-Ordo.)



Briggs Woods 3 (Miss.)



Current NGWMN project

Current status – currently selecting and classifying wells

- All well data (ex. lithological data, construction data, & historic water-level) has been entered into IGS well database

All IGS network wells meet NGWMN minimum data requirements

- Prototype web services have been developed

Plans – goal is to be completed by February 2018

- Coordinate with USGS to finalize well selection and classification
- Enter wells into the Well Registry
- Finalize web services

Planned strategy for NGWMN selection

Strategy for selecting wells

- Is the well completed in a single or multiple geologic formation?
- Do the wells meet the recommended NGWMN density?

Strategy for classifying into subnetworks

- Does the wells historic water-levels show trends?
- Do modeling results indicate any significant changes to water levels near the wells?
- How many CAFOs exist a 1 mile radius of the well?
- How many DNR issues water-use permits within a 3 mi. radius?
- Does the well fall within a capture zone of a public water supply well?

Sites are all dedicated monitoring wells = Trend sites

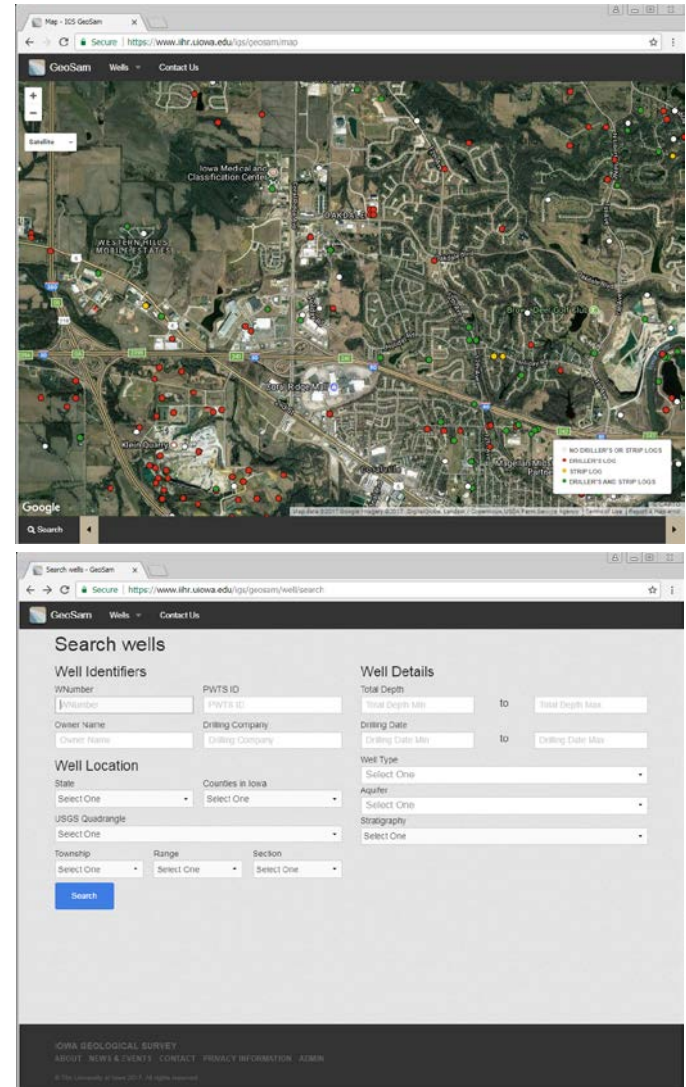
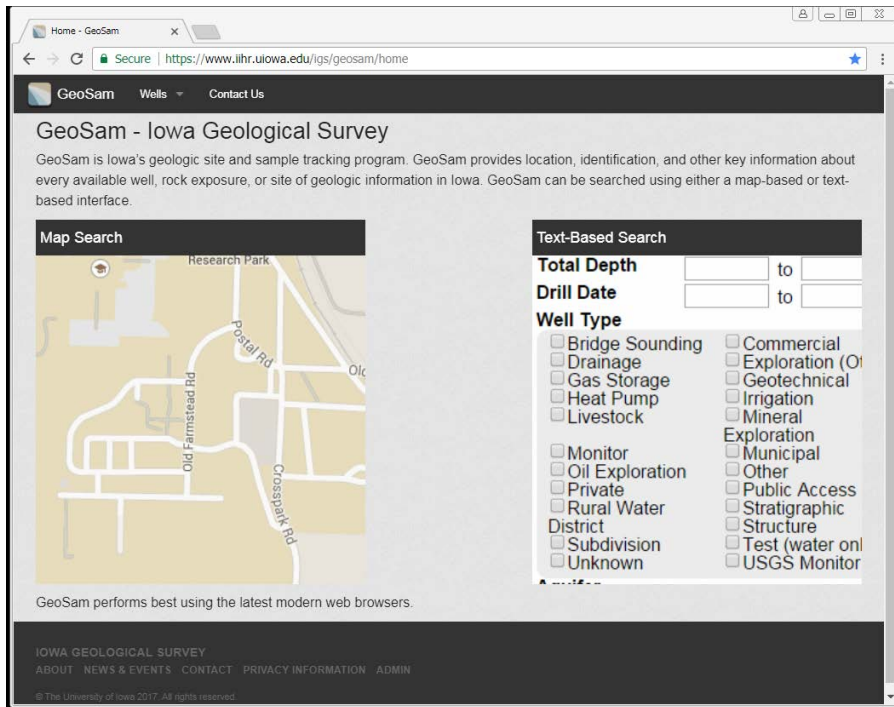
Anticipated additions to the NGWMN

Aquifer	# IGS wells	Est. to NGWMN	Comments
Quaternary	5	?	Is NWGMN interested in till wells?
Cretaceous	13	10-12	Some questions about casing; one well is damaged and needs repair
Mississippian	6	4	Multiple wells completed in same formation
Silurian/Devonian	33	15-25	Some wells open multiple formation
Cambrian-Ordovician	2	2	
Paleozoic	1	?	Open to multiple Camb./Ord. formations

Differences between NGWMN protocols

1. Need to establish permanent measuring points
2. Need to establish a procedure for calibrating e-lines

IGS' well database – GeoSam



Well General Info

Date Received	10/30/1989	State	Iowa
Owner Name	Igs	County	Johnson
Alt Name	QOW #1 (Silurian)	Quadrangle	Iowa City West, Iowa
WNumber	30000	Township	T80N
PWTS ID	0	Range	R7W
PWS ID	0	Section	25
Storet ID	0	Quarter	SE NW SE NW
SDWIS ID	0	Latitude	41.7065430000
USGS ID	414221091361101	Longitude	-91.6059390000
Project	Unknown	Accuracy	Calc +/- 230 ft
Operator	Iowa Geological Survey	UTM X	615963
		UTM Y	4618134

Site Type	Drilled hole	Drilling Company	Igs/Usigs
Well Status	Unknown	Drilling Date	01/02/1990
Field Located	Yes	Drilling Method	Rotary
Elevation	804 ft	Bedrock Depth	171 ft
Elevation Accuracy	Topo Map Accurate to 5 ft	Well Depth	532 ft
Landscape Position	Upland	Total Depth	532 ft
		Well Types	Exploration (Other)
		Aquifers	

Casing

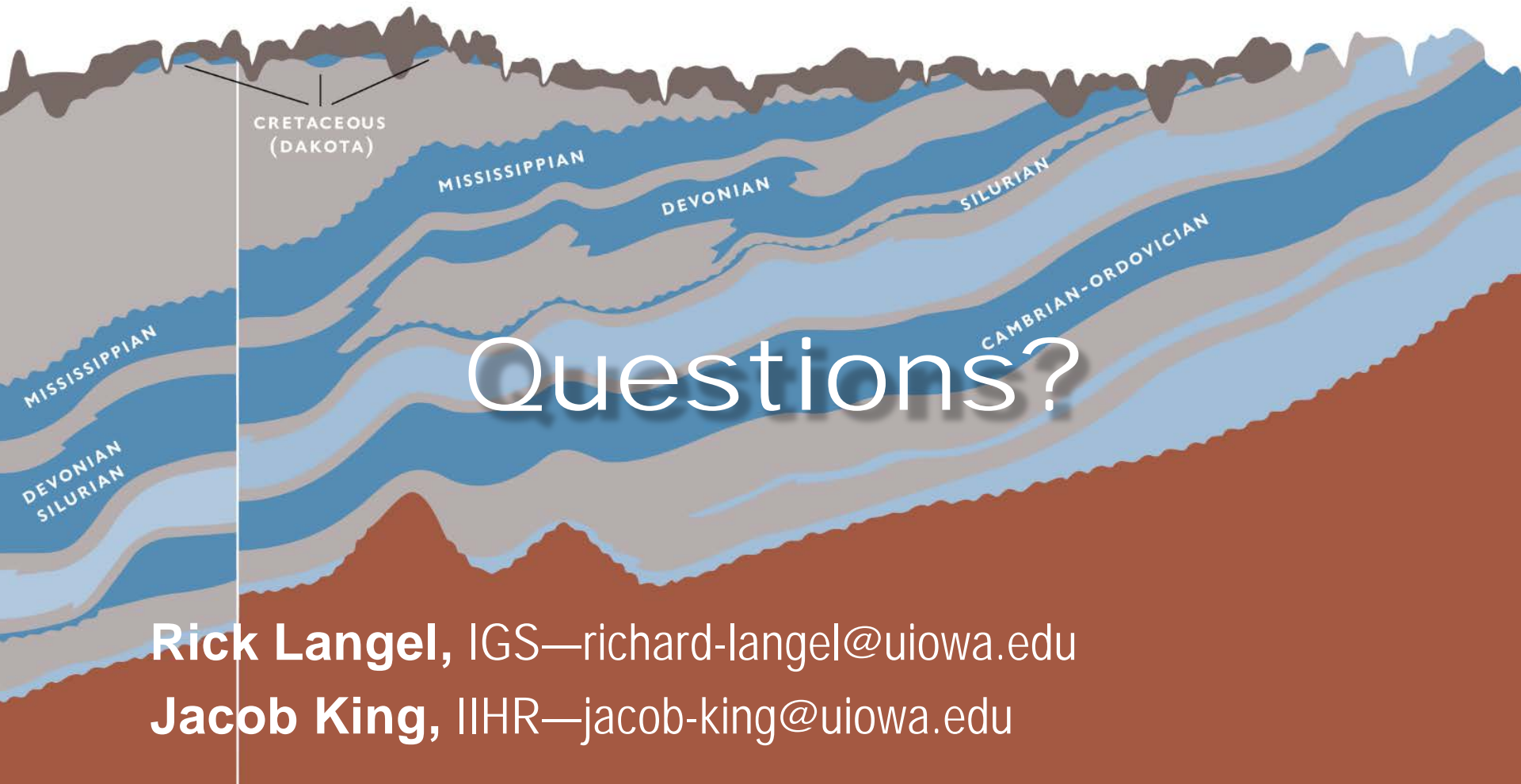
Date	Casing Type	Start Depth	End Depth
05/15/1990	Steel	2.00 ft	319.00 ft
Date	05/15/1990	Casing Type	Steel
Start Depth	2.40 ft	End Depth	319.00 ft
Diameter	5.00 in	Amount	321.60 ft
Comments			
07/19/1990	Steel	0.00 ft	164.00 ft
07/19/1990	Steel	310.00 ft	361.00 ft

Formations

Start Depth	End Depth	Formation Lithology	
0.00 ft	2.00 ft	silts	
Formation Lithology	silts to ss	Formation Color	No Color Noted
Start Depth	0.00 ft	End Depth	2.00 ft
Comments			
2.00 ft	15.00 ft	clay	
15.00 ft	21.00 ft	clay	
21.00 ft	26.00 ft	clay	
26.00 ft	33.00 ft	clay	
33.00 ft	36.00 ft	ss	
36.00 ft	41.00 ft	ss	
41.00 ft	46.00 ft	sand and gravel	
46.00 ft	74.00 ft	ss	
74.00 ft	80.00 ft	ss	
80.00 ft	135.00 ft	ss	
135.00 ft	137.00 ft	sand and gravel	
137.00 ft	142.00 ft	ss	
142.00 ft	171.00 ft	ss	
171.00 ft	172.00 ft	sandstone	
172.00 ft	188.00 ft	sandstone	

Water Levels and Production

Date	Static Water Level	Yield	
05/15/1990	214.00 ft	0 gallons per minute	
Date	01/02/1990	Start Time	
Aquifer	Unknown	Yield	40 gallons per minute
Static Water Level	214.00 ft	Yield Method	Unknown
Pumping Water Level	0 ft	Pump Test	No
Measurement	Unknown	Pump Test	0 mins
Pump Method	Unknown	Duration	
Comments			
04/19/1990	223.60 ft	0 gallons per minute	
12/13/1990	233.70 ft	0 gallons per minute	
01/07/1991	235.50 ft	0 gallons per minute	
01/09/1991	235.60 ft	0 gallons per minute	
05/15/1991	235.60 ft	0 gallons per minute	
02/06/1991	235.60 ft	0 gallons per minute	
04/15/1991	239.40 ft	0 gallons per minute	
07/20/1991	245.90 ft	0 gallons per minute	
08/28/1991	242.40 ft	0 gallons per minute	
11/20/1991	234.50 ft	0 gallons per minute	
11/22/1991	252.80 ft	0 gallons per minute	
02/26/1992	251.50 ft	0 gallons per minute	



Rick Langel, IGS—richard-langel@uiowa.edu

Jacob King, IIHR—jacob-king@uiowa.edu

