Iowa’s Groundwater: How Much, How Good, for How Long?

Bob Libra - State Geologist of Iowa
Iowa DNR
Two Basic Kinds of Aquifers

Unconfined Aquifers - Think Checking Account
- Streams are part of this account

Confined Aquifers - Think One-Time Inheritance

Checking - Not much stored there, it goes fast, but OK if the paychecks keep coming.

Inheritance - Plenty stored there, but once withdrawn, it will be replaced slowly.
Confined Aquifers

Bedrock Aquifer Systems across Iowa
Southwest to Northeast
Threats to Shallow, Unconfined Groundwater

--- Concentration of Demand and Overuse

--- Contamination from Surficial Sources

--- Drought

--- Climate Change
Potential water usage for animal feeding operations and rural water supplies that may serve them

January 9, 2013
2012-13 wasn’t “The Big Drought”

Floyd River at James IA. Drainage Area 886 sq mi.
Threats Deep, Confined Groundwater

-- Concentration of Demand and Overuse ("Mining")

-- Natural Contaminants and Pumping Effects (Arsenic, Radioactive Species, Ammonia, TDS, etc.)

-- Increased use Resulting from Compromised Shallow Groundwater
USGS 413929091322401 079N06W10CCCB 14453 1963 Uofl Treatment Plant

--- Provisional Data Subject to Revision ---

2014:
SWL=280’
378’ asl
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A Reminder: Nitrate Impacts Groundwater

Nitrate Record at Big Spring, Clayton County
Nitrate Sensor Data - Groundwater from DNR Hatchery Springs

IOWA WATER QUALITY INFORMATION SYSTEM - IIHR Hydroscience and Engineering
Summary - Quantity of Water Challenges

• Drought, climate change, concentration of use, quality impacts shallow groundwater.

• Groundwater mining, concentration of demand, natural quality, loss of shallow supplies impact deep groundwater.

Bob Libra
State Geologist - IDNR
robert.libra@dnr.iowa.gov
319-430-2954