Stand up for the Mahomet Aquifer!

The risks of CO_2 pollution

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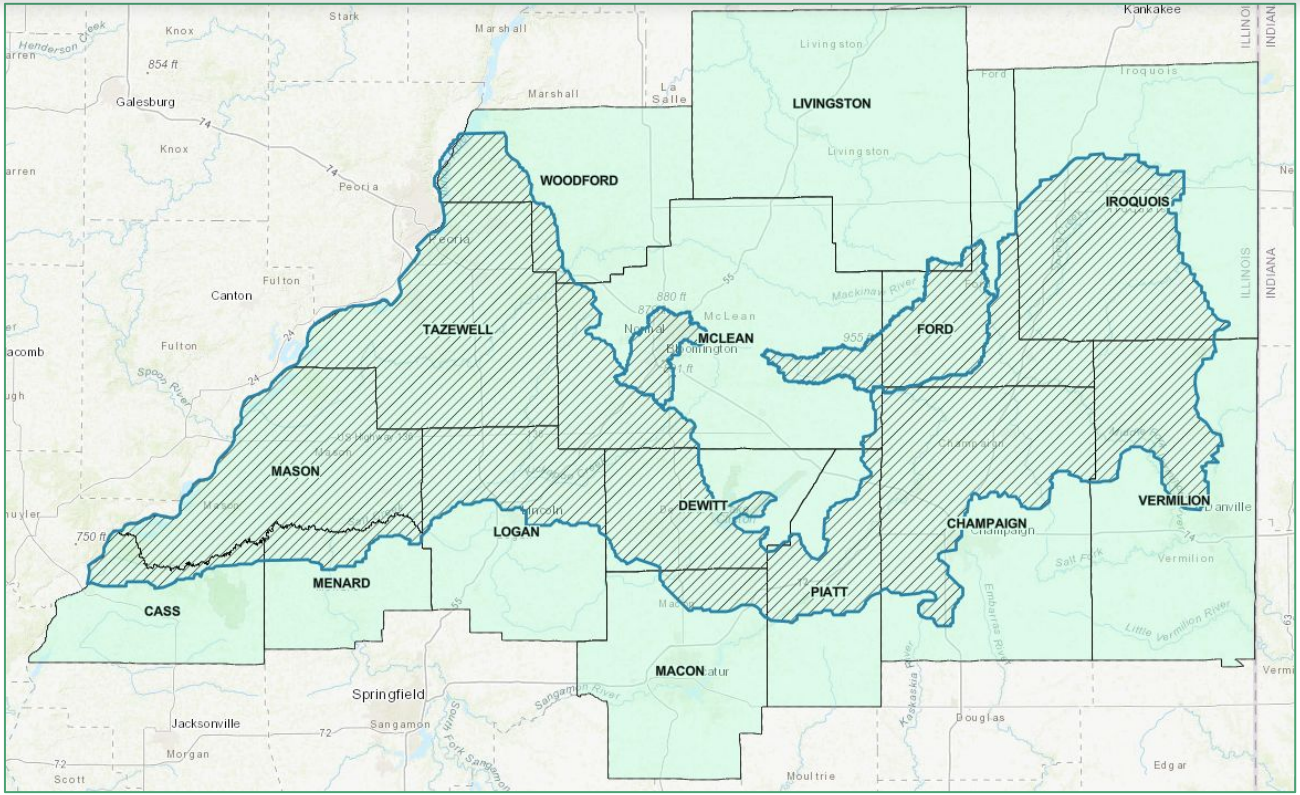
The Mahomet Aquifer

US EPA Sole-Source Designated Aquifer

"Project Review Area" depicted, includes recharge zones

Provides drinking water for nearly 1 million people

Serves more than 100 communities as well as businesses, industries, and farmers (crop irrigation)



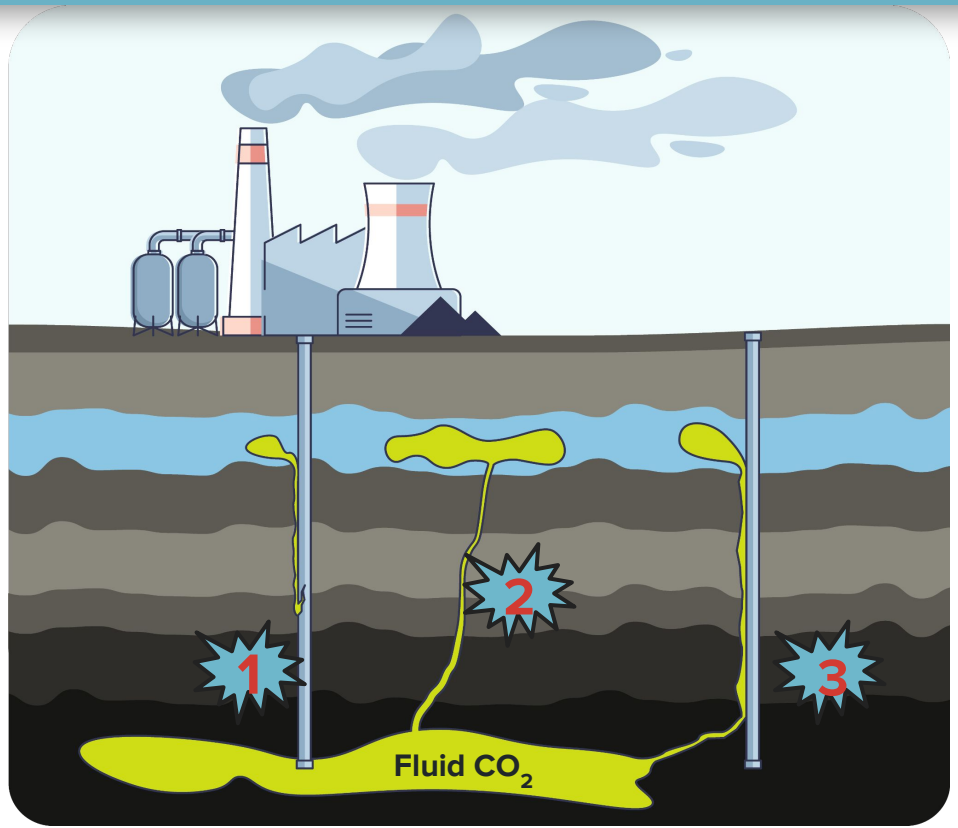
The Mahomet Aquifer

I ♥ my Aquifer!

No toxic chemical waste in the Clinton Landfill

Protect the Mahomet Aquifer!

Carbon Sequestration



Mahomet Aquifer

Leak Pathways

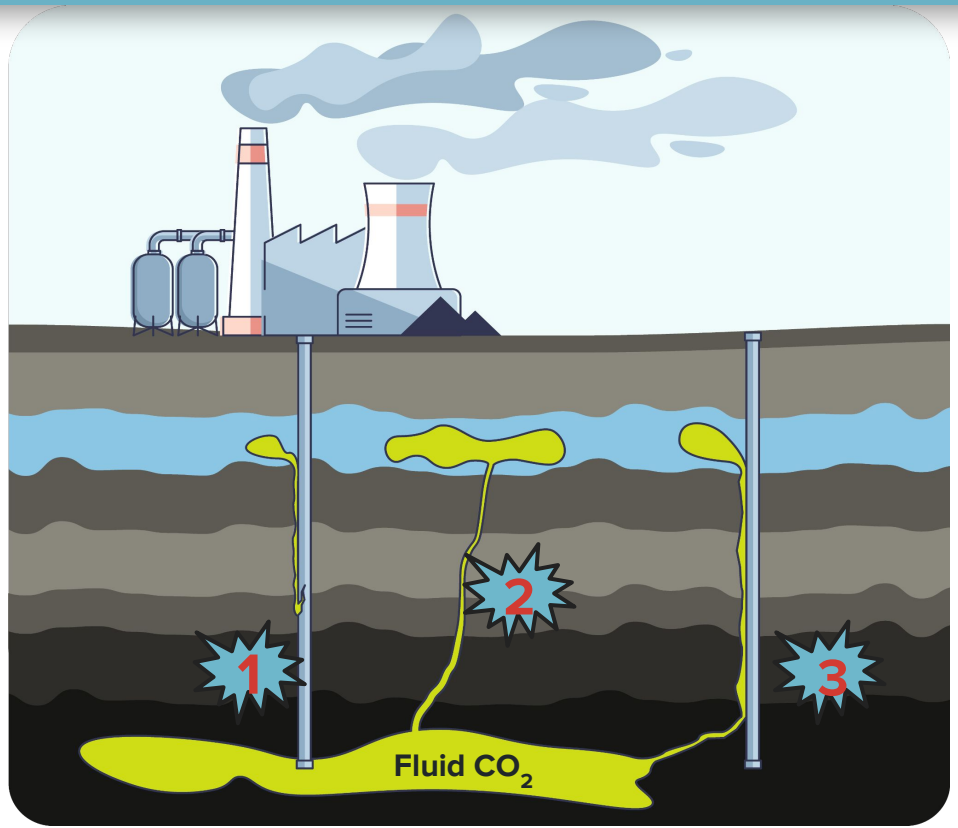
1. Injection Well
2. Caprock Failure
3. Abandoned Wells

Risks

- Acidification
- Salinization
- Heavy Metal Contamination

Mt. Simon Sandstone Saline Aquifer

Carbon Sequestration



Threats identified by Department of Energy:

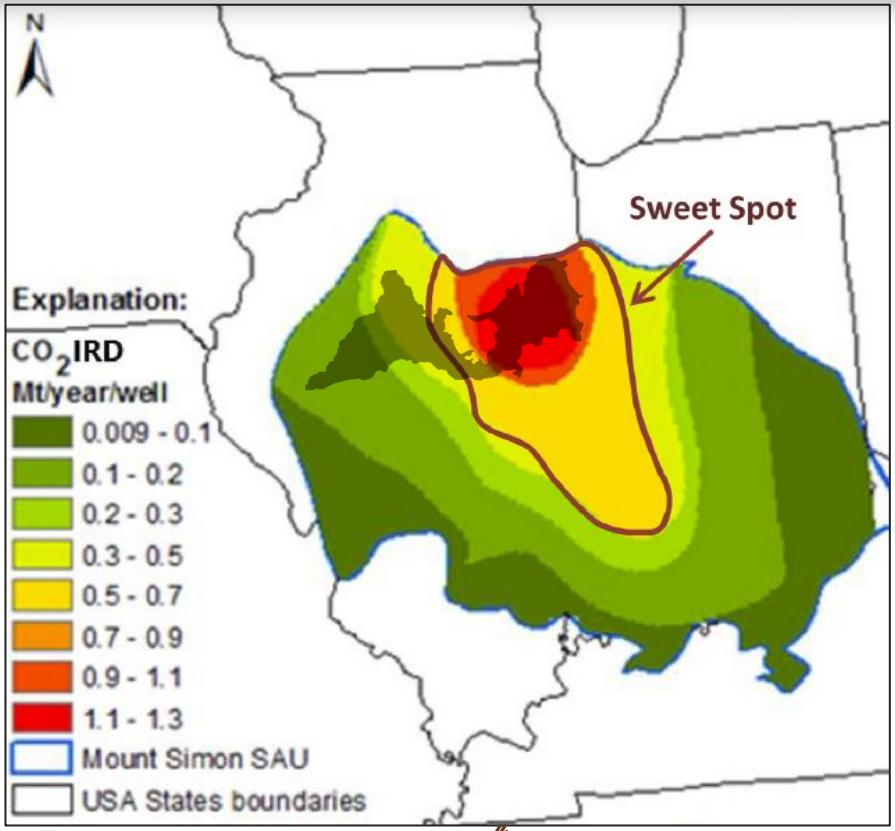
"**Acidification of USDW** from CO_2 infiltration, thereby affecting human, animal, and plant environments if the groundwater is produced and used"

"**USDW becoming saline** from displacement of natural brine into USDW thereby affecting human, animal, and plant environments if the groundwater is produced and used."

"**USDW becoming contaminated with toxic heavy metals**, colloids, or other particulates dissolved and/or mobilized from CO_2 infiltration within or into USDW; thereby affecting human, animal, and plant environments if the groundwater is produced and used."

Overview of Potential Failure Modes and Effects Associated with CO2 Injection and Storage Operations in Saline Formations. DOE & National Energy Technology Laboratory, 2020

Why here? Why now?



CCS projects that could affect the Mahomet (so far)

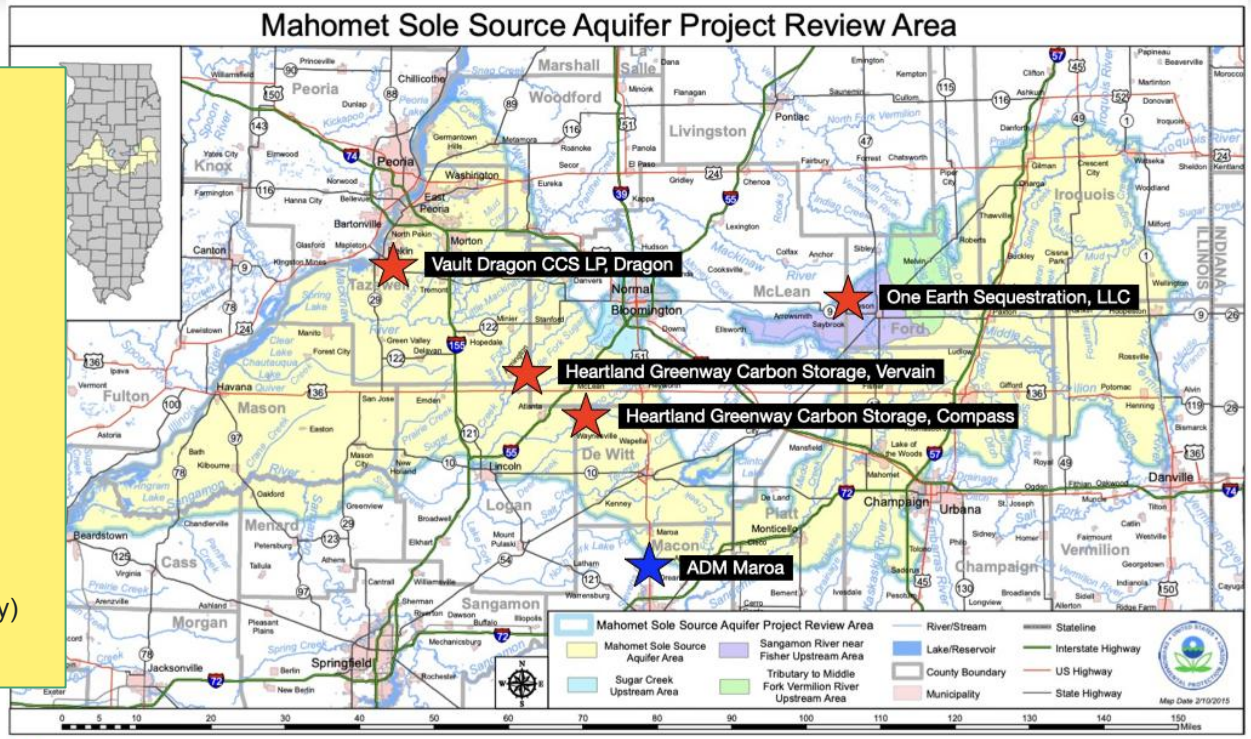
One Earth Sequestration, LLC
90 MMT CO_2

Heartland Greenway Carbon Storage, Vervain
62.5 MMT CO_2

Heartland Greenway Carbon Storage, Compass
62.5 MMT CO_2

Vault Dragon CCS LP, Dragon
Application not yet available

ADM Maroa (just outside aquifer boundary)
39.6 MMT CO_2



Existing Regulation of Sequestration

Federal - Class VI Well Permit

- US EPA administered via the Safe Drinking Water Act
  - Site characterization, monitoring requirements, emergency plan, reporting, etc.

State Legislation passed last spring - Public Act 103-0651 “SAFE CCS Act”

- Illinois EPA administers Sequestration Permit
  - Soil gas monitoring, water impact report
  - Alternate water supply if there is a leak
  - Non-consenting landowner protections
  - Minimum 30 years post closure care

- Does not include a Mahomet Aquifer Sequestration Ban **despite requests** from Mahomet Aquifer legislators

A Gap - No Alternative Source of Drinking Water

The SAFE CCS Act requires a sequestration operator to “provide an alternate supply of potable drinking water”

The U.S. EPA sole-source designation means that “there are no reasonably available alternative drinking water sources should the aquifer become contaminated"

For the Mahomet Aquifer:

- **Surface water source availability** - For **92% of the public water suppliers**, an alternative surface water source is not economically feasible
- **Groundwater source availability** - For **77% of the public water suppliers**, an alternative groundwater source is not economically feasible

ADM leaks - The facts

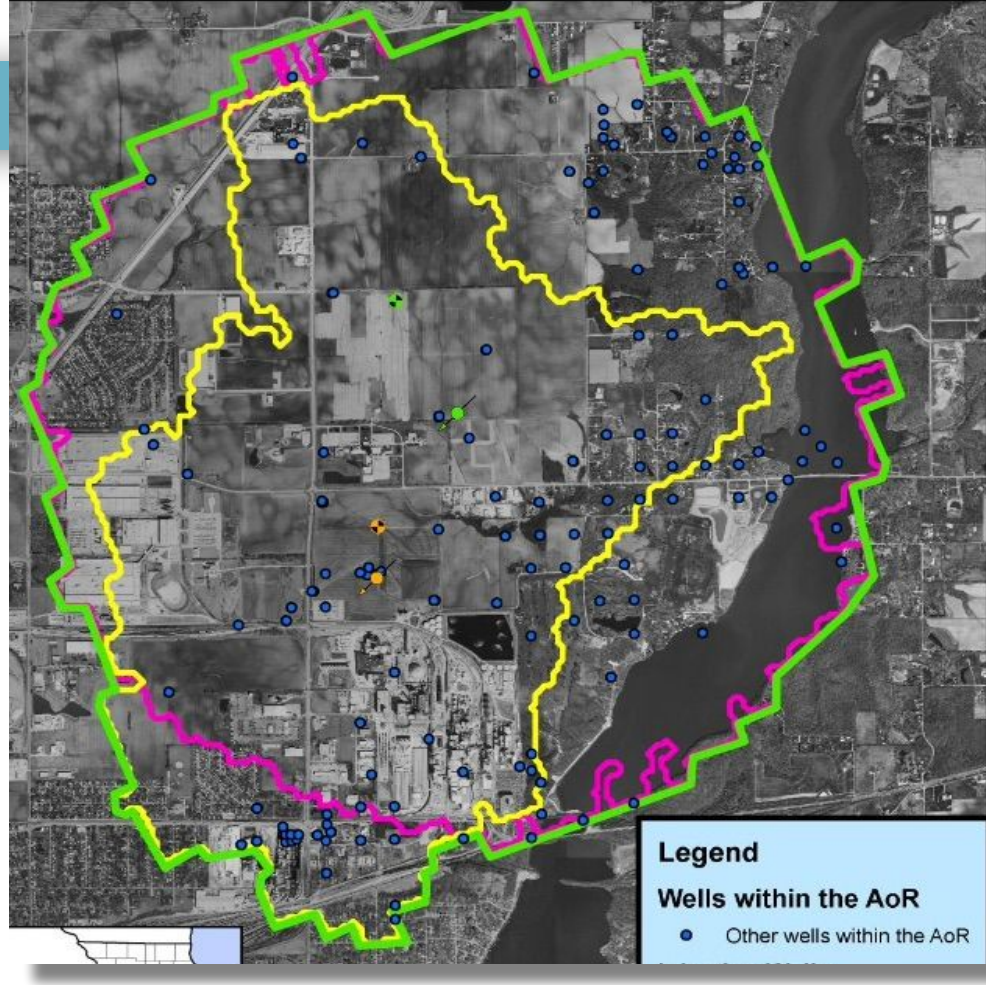
ADM's Decatur Sequestration Facility:

- Two injection and two monitoring wells
- Only operating EPA-approved Class VI project in the country

Pilot project. Operated from 2011 to 2014. Stored 1 MMT CO_2

Commercial scale project. Illinois Industrial Carbon Capture and Storage Project:

- Began injecting in 2017
- Stored an additional 3.5 MMT CO_2 to date, just half of what was promised



ADM leaks - The facts

January 2022 thru December 2022. Monitoring well malfunctions, leaks and is partially plugged

October 2023. Fully plugs and takes well out of production after identifying corrosion

June 2024. EPA inspects all wells

August 2024. EPA issues Notice of Violation to ADM

September 2024. E&E News Politico breaks story about ADM's monitoring well leak ADM identified in March. EPA issues Administrative Order on Consent

October 2024. Leak in second monitoring well discovered. ADM stops injecting - But operated for one year with just one monitoring well

November 2024. ADM identifies 24 wells that can serve as CO_2 escape routes

ADM Decatur's Industrial Carbon Capture and Storage Project is the **ONLY** operating **U.S. EPA permitted** Class VI well project in the country

Within seven years, both of its monitoring wells have **LEAKED**

ADM leaks - The facts

COMPANY FAILURES

Design. Selected “best available technology” but not proven. Allowed CO_2 to leak from Mt. Simon Formation to the Ironton-Galesville Formation above the cap rock

Material. Used 13 chrome steel, which corrodes in a saline aquifer

Operational:

- **Did not follow their emergency plan**. Kept injecting CO_2, but should have shut down
- Injected and operated for 12 months with just one monitoring well
- **Did not notify** Gov. Pritzker, local governments or the general public

ADM leaks - The facts

EPA FAILURES

Approved project with **material and design flaws** that resulted in well corrosion and allowed CO_2 to migrate above the cap rock

Allowed injection with **one of two required monitoring wells** for 12 months

- Didn't require company to stop injecting CO_2 as required by EPA-approved emergency plan
- Waited until August 2024 to issue a Notice of Violation, and September 2024 to issue an Administrative Order on Consent

Never told ADM to stop injecting CO_2

ADM leaks - The facts

EPA acknowledges risk

With the Mahomet, there should be ZERO risk and no uncertainty. But:

> "…EPA acknowledges that while there is an **inherent level of uncertainty in the early stages of any injection project**, this uncertainty will diminish as operational and post-injection monitoring data is collected and the model is validated."

Source: U.S. EPA Response to Comments for Draft Modified Class VI Permit Issued to Archer Daniels Midland. November 2016.

CCS is happening at an unprecedented scale

Projects under review by the U.S. EPA are **over 100 times** the size of ADM's Decatur Project

The four projects that would inject CO_2 through and store it under the Mahomet Aquifer's Project Review Area are over **50 times the size** of ADM's Decatur Project

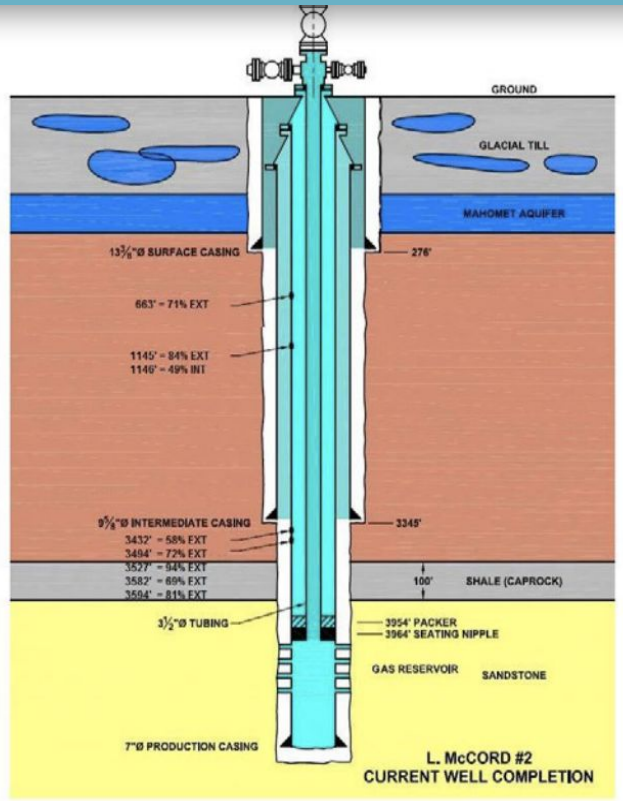
Draft permits from U.S. EPA released starting February 2025. All projects could be approved by September 2025

Note: The U.S. EPA has not yet posted the Class VI well permit application for Dragon CCS LLP. Therefore, neither the amount of CO2 that will be stored nor the years of operation are yet known

Project Name	Counties	CO_2 stored per year per well (MMT)	Number of wells	Years in operation	Total CO_2 (MMT)
ADM Decatur					
Phase 1, pilot	Macon	0.33	1	3	1.00
Phase 2, "commercial"	Macon	0.50	1	7	3.50
Total CO_2 stored, ADM					**4.50**
ADM Decatur, Phase 2	Macon	0.50	1	4	2.00
ADM Decatur, Phase 3	Macon	1.10	1	12	14.30
ADM Maroa	Macon	1.10	3	12	39.60
One Earth *	McLean, Ford	1.50	3	20	90.00
Navigator Vervain *	McLean, Logan	1.25	2	25	62.50
Navigator Compass *	DeWitt	1.25	2	25	62.50
Navigator HGP	Christian	1.00	6	30	180.00
Marquis Energy	Putnam	1.50	1	5	7.50
Dragon CCS LP *	Tazewell	??	1	??	??
All other projects					**458.40**

*refers to projects that would be located w/in the footprint of the Mahomet Aquifer's Project Review Area

People's Gas Leak … A lesson learned from natural gas storage



Methane leak

There is **just one** natural gas storage reservoir under the Mahomet… and it leaked!

Peoples Gas knew its McCord #2 well was corroding as early as 1995, but did nothing until it a leak was discovered in **December 2016** by a Peoples Gas employee:

- This leak contaminated drinking water, which was - at that time - flammable
- By 2020, the estimate of providing replacement water to affected residents was **$10,000,000**
- **Eight years later**, residents still do not have replacement water

This example, coupled with that of ADM's recent leaks, underscores why we need to ban injection of CO_2 through, and storage of it under the Mahomet Aquifer and its Project Review Area

Regulation is a Risk
But a Ban is Certain

What we need:

- **Support for a legislative ban**
  - Ask your municipality and county to adopt a resolution that supports a legislative Mahomet Aquifer Project Review Area Ban!
  - You can find a sample resolution and fact sheets posted in the Action Guide on ProtectTheMahomet.com
- **Adopt a County Ban**
  - Ask your county to adopt a moratorium while they consider adopting a ban on injection of CO2 through and storage of CO_2 under the Mahomet Aquifer and its recharge areas. Vist the Action Guide on ProtectTheMahomet.com for a sample moratorium
  - Ford and DeWitt Counties already have passed bans to protect the Mahomet Aquifer and its project Review Area from CO_2 pollution
  - Review this memorandum from U of I Professor Eric Freyfogle, which provides the legal basis for adopting a ban

Stand up for the Mahomet Aquifer!

Prepared by:

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Pam Richart is a trained land use and environmental planner who co-directs Eco-Justice Collaborative, a non-profit located in Champaign, Illinois. EJC promotes climate solutions that integrate environmental, economic, and social justice. Prior to EJC, Richart was a principal and co-owner of Planning Resources Inc., an environmental and land use planning firm in Chicago's western suburbs. In that role, she directed and conducted analyses for public transportation projects across the Midwest, developing public involvement programs to build consensus on complex proposals.

Andrew Rehn, Prairie River Network
Andrew Rehn is Director of Climate Policy at Prairie Rivers Network, a Champaign-based non-profit. PRN uses the creative power of science, law, and collective action to protect and restore our rivers, return healthy soils and diverse wildlife to our lands, and transform how we care for the earth and for each other. Andrew, who joined the firm in 2015, has a B.S. and M.S degree in civil engineering. He provides technical and policy expertise in support of PRN's energy and coal pollution programs.