



LEGISLATIVE UPDATE: PORE SPACE USE IN NORTH DAKOTA

Reice Haase, Policy Advisor
North Dakota Office of the Governor

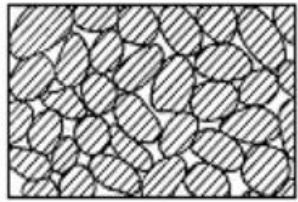


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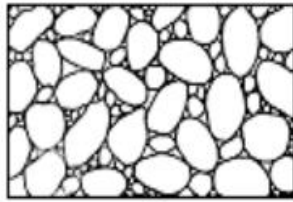


- What is pore space?
- Why is it important?
- Historical overview
- *Mosser v. Denbury* case
- Context in other states
- ND Senate Bill 2344
- Lessons learned

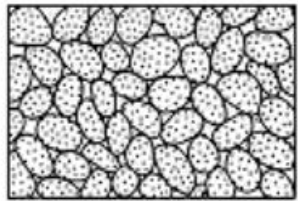
"PORE SPACE" MEANS A CAVITY OR VOID IN A SUBSURFACE SEDIMENTARY STRATUM



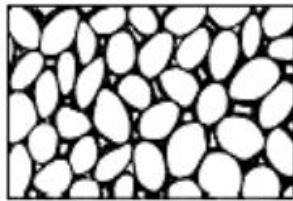
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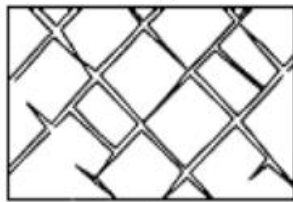
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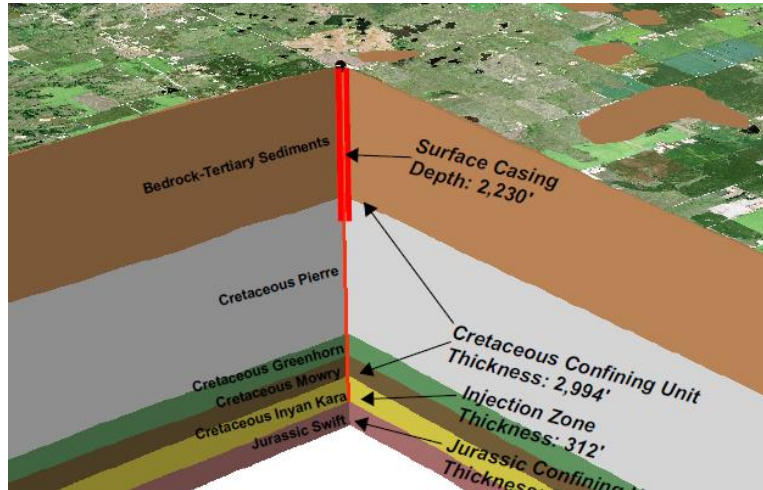
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- Defined in North Dakota Century Code (NDCC 47-31-02)
- Ease of movement within pore space is a function of both porosity and permeability
- Can be naturally or artificially created

Porosity, or the measure of pore space within a substance, is higher in sandstone (A-D) vs. fractures in shale (E-F).

(Source: A.M. Piper)

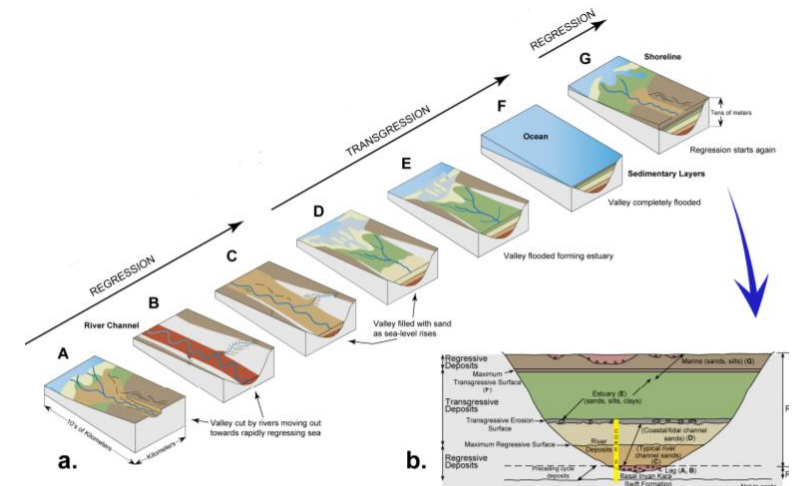
PRODUCED WATER IS DISPOSED OF IN THE DAKOTA AQUIFER



- The Inyan Kara is located ~5,000' deep in the Williston Basin, overlain by ~3,000' of impermeable shales



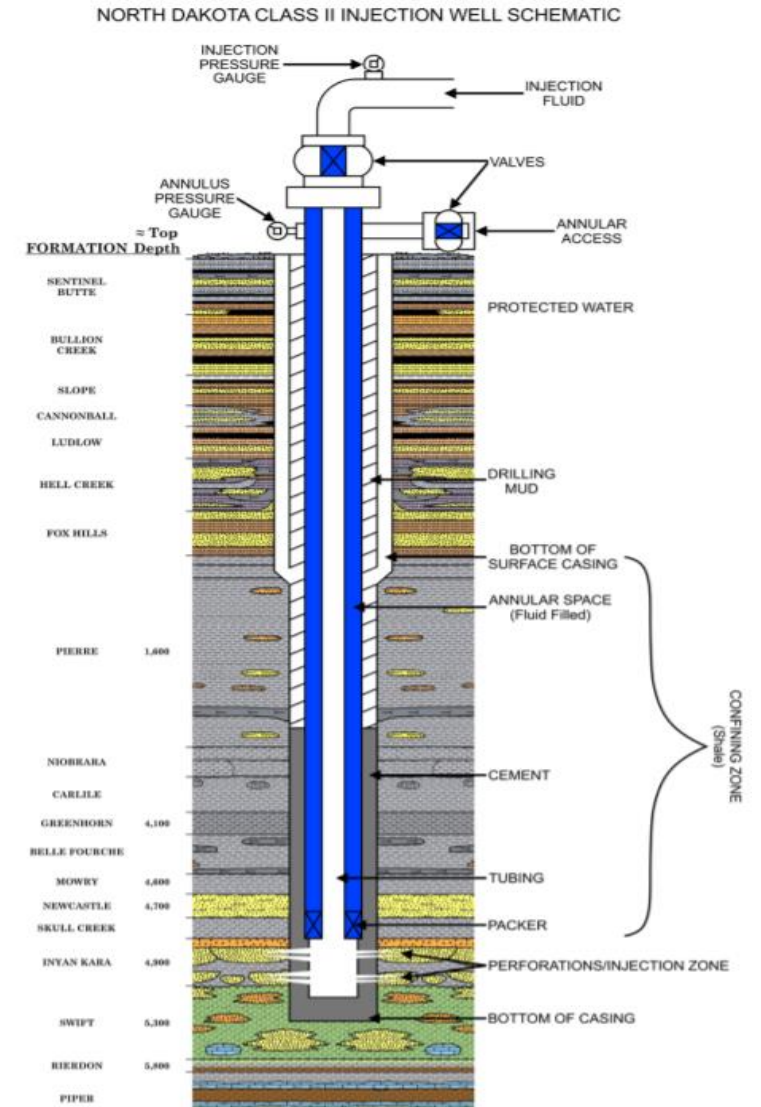
- The Dakota Aquifer occupies the pore space of the Inyan Kara Formation



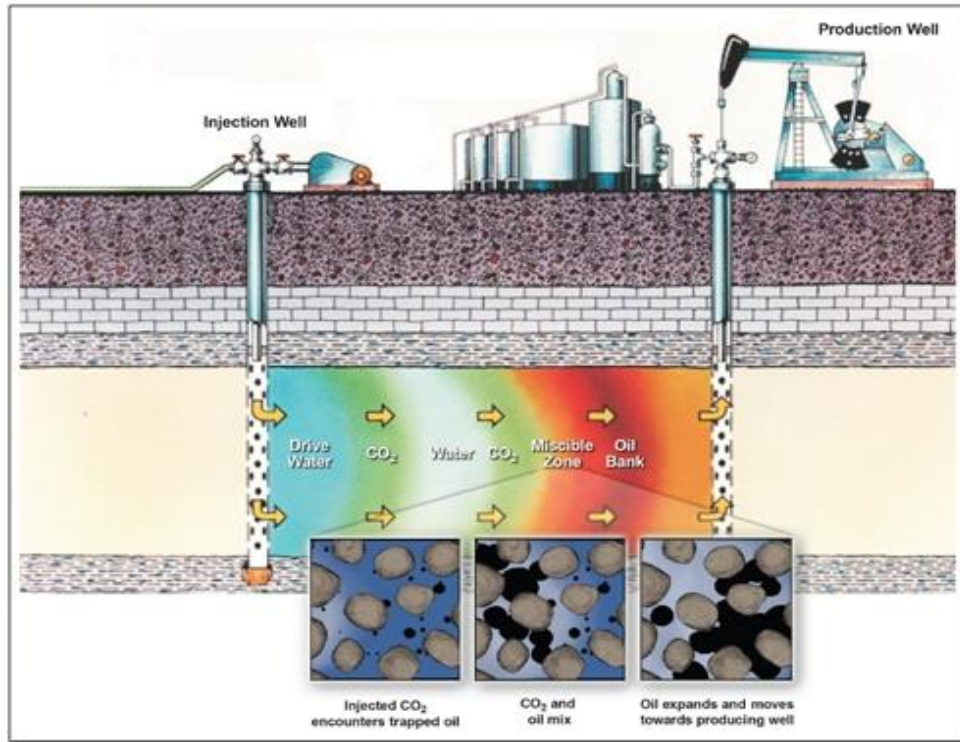
- The Inyan Kara consists of valley deposits of sandstone (20-30% porosity) interbedded in siltstone, claystone, and shale

UNDERGROUND INJECTION IS THE ONLY DISPOSAL METHOD WHICH ISOLATES WASTE

- Produced water TDS ~250,000 ppm
- Dakota aquifer TDS > 10,000 ppm
- In ND, injection began in 1970s
- EPA aquifer exemption in 1983
- Over 600 Class II UIC wells currently injecting
- No documented cases of induced seismicity or contamination of drinking water



PORE SPACE IS TEMPORARILY USED TO FACILITATE ENHANCED OIL RECOVERY



Typical enhanced oil recovery operation using CO2
(Image: US Department of Energy)

- In ND, water-flooding has been the typical EOR strategy
- EERC has been researching CO2 potential for the last decade
- CO2 could allow at least 1 billion barrels of additional oil recovery
- CO2 EOR would transform emissions into a marketable commodity

TITLE TO PORE SPACE HAS ALWAYS BEEN VESTED WITH THE SURFACE ESTATE

1864:
Northern
Pacific
Railroad
Grant



1951: First Oil
Production in
ND



1979: ND
Surface
Damages
Act



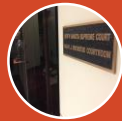
2017: ND
Supreme
Court
*Mosser v.
Denbury*



1877:
Revised
Codes of
Dakota
Territory



1979: ND
Supreme
Court *Hunt
v.
Kerbaugh*



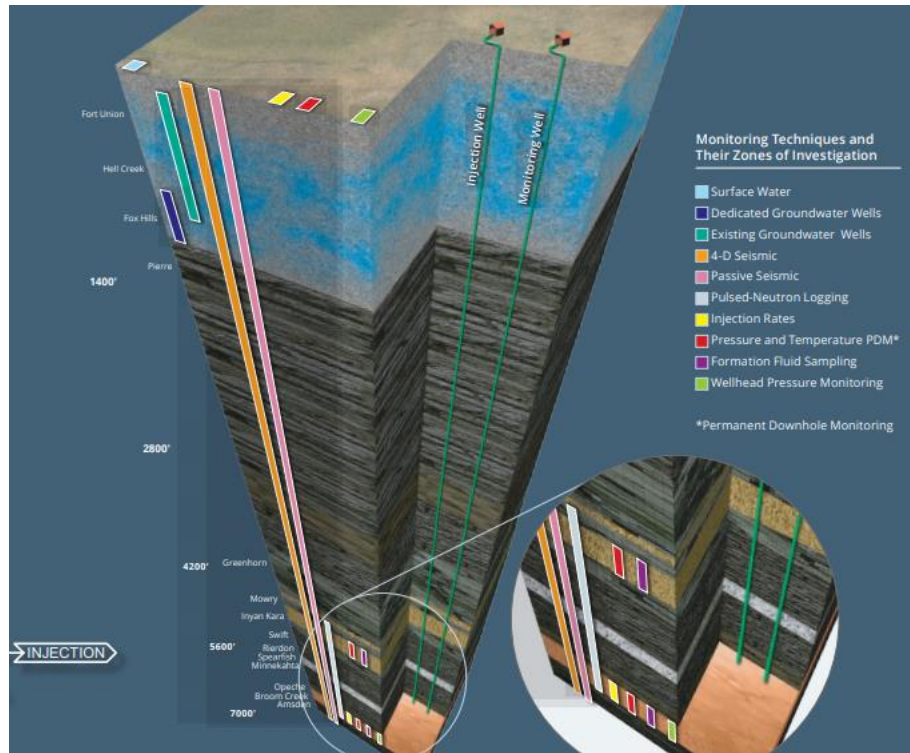
2009: ND
Subsurface
Pore Space
Act



2019: ND
Senate Bill
2344



ND SUPREME COURT TIED SUBSURFACE PORE SPACE POLICY TO SURFACE DAMAGES ACT



Western North Dakota injection well model, demonstrating injection monitoring techniques. (Image: EERC)

- According to 2017 *Mosser v. Denbury* Case, pore space use is a damage
- Surface owners entitled to compensation for a mineral developer's use of subsurface pore space
- Compensation is due regardless of surface owner's ability to use or any plans to access the pore space
- Court refused to speculate on how a surface owner could demonstrate or quantify a damage

MOSSER DECISION LED TO UNCERTAINTY REGARDING PORE SPACE USE

- Injection migration modeling difficult, dependent on local geology, injection rate, and pressure
- No “grandfathering” existing injection wells
- Neighboring landowner “veto” due to claimed migration
- Existing compensation threatened, as surface owners may be required to share payments with neighboring landowners



Injection well in western North Dakota, with 1/4-mile Area-of-Review highlighted in red. Photo on the left was July 2005, while photo on the right was May 2017, showing residential growth in the area. (Image: Google Earth)

STATES ARE SPLIT ON PORE SPACE, LACK OF CLEAR POLICY

Arkansas	Undecided, proposed surface owner in 2011 failed Senate
Colorado	Undecided, proposed surface owner, no action taken
Kansas	Undecided, proposed mineral owner in 2011 failed Proposed surface owner in 2012 failed
Kentucky	Undecided, case law suggests mineral owner
Louisiana	Undecided, case law suggests surface owner
Michigan	Undecided, case law suggests surface owner
Montana	Surface owner per 2009 Senate bill
New Mexico	Undecided, proposed surface owner in 2009 failed Surface owner entitled to damages per case law
New York	Undecided, case law suggests surface owner
North Dakota	Surface owner, use and migration not a damage per SB 2344
Oklahoma	Surface owner per case law and statute
Pennsylvania	Undecided, case law suggests surface owner
Texas	Undecided, conflicting case law
West Virginia	Undecided, case law suggests surface owner
Wyoming	Surface owner per 2008 House bill

ND SB 2344 WAS DRAFTED TO ADDRESS UNCERTAINTY WHILE PRESERVING TITLE TO PORE SPACE

- SB 2344 was introduced in the 2019 legislative session to clarify legislative intent of subsurface pore space policy
- Included policy statement supporting use of pore space to facilitate production
- Amended NDCC 38-11.1 to separate surface damages act from subsurface pore space policy

It is in the public interest for a person conducting operations authorized by the commission under this chapter to use as much of a subsurface geologic formation as reasonably necessary to allow for unit operations for enhanced oil recovery, utilization of carbon dioxide for enhanced recovery of oil, gas, and other minerals, disposal operations, or any other operation authorized by this chapter.

"Land" means the solid material of earth, regardless of ingredients, but excludes pore space.

"Mineral developer" means the person who acquires the mineral estate or lease for the purpose of extracting or using the minerals for nonagricultural purposes.

"Mineral estate" means an estate in or ownership of all or part of the minerals underlying a specified tract of land.

"Minerals" means oil and gas.

"Pore space" means a cavity or void, naturally or artificially created, in a subsurface sedimentary stratum.

"Surface estate" means an estate in or ownership of the surface of a particular tract of land.

"Surface owner" means any person who holds record title to the surface of the land as an owner estate on which a drilling operation occurs or is conducted.

The owner of the surface estate upon which the surface location of a disposal well is located does not lose, and may not be deemed to have lost, a claim for trespass, nuisance, or other tort if the operator of the disposal well commences or continues operations of the disposal well in violation of subsections 2 or 3.

OPPOSITION TO SB 2344 FOCUSED ON DEFINITION OF LAND AND MIGRATION

- SB 2344 received no opposition in the Senate
- NW Landowners Association, individual landowners, and two ND attorneys testified in opposition during House committee hearings
- Opposition focused on definition of land and “taking of property”
- Seven House subcommittees and two conference committee meetings were held
- SB 2344 was amended to clarify title to pore space, preserve claims to trespass if operator is in violation



A Watford City attorney, testifying before the ND House Energy and Natural Resources Committee, compares subsurface pore space to a sponge (Image: Bismarck Tribune)

SUPPORT FOR SB 2344 CITED NEED FOR CLARITY, LEGISLATIVE INTENT

- Supporters included NDIC, ND Governor's Office, ND Agriculture Commissioner, NDPC, EERC, City and County of Bowman, Bowman County Development Corporation, Lignite Energy Council, three attorneys, and several landowners
- SB 2344 needed to clarify legislative intent of pore space policy
- Clarity needed to enable use of CO2 for EOR
- Compensation protection for landowners who have or wish to drill an injection well
- "Reverse takings" due to "neighbor vetoes"



Attendees listen to conference committee discussion for SB 2344

(Image: Bismarck Tribune)

ND SB 2344 RECEIVED SUPPORT FROM MAJORITY OF BOTH HOUSE AND SENATE



Representative George Keiser speaks in favor of SB 2344 on the House floor (Image: Bismarck Tribune)

- February 12, 2019: SB 2344 passes Senate unanimously
- March 1, 2019: SB 2344 is heard in the House Energy and Natural Resources Committee
- March 28, 2019: SB 2344 passes House 65-26 after 30 minutes of debate
- April 15, 2019: Conference committee votes unanimously to recommend Do Pass on amended bill
- April 16, 2019: Senate concurs with amendments by a vote of 34-12
- April 17, 2019: House concurs with amendments by a vote of 66-24

OPPOSITION FILED LAWSUIT JULY 29, 2019

- State of North Dakota, NDIC, Board of Trust Lands, Governor, and Attorney General listed as defendants
- “State of North Dakota has invaded and taken possession of pore space”
- Counts 1-4: Taking of private property
- Count 5: Bars access to courts
- Count 6: Unconstitutionally vague
- Count 7: Unequal privileges
- Count 8: Impermissible gift and violation of Public Trust Doctrine



Derrick Braaten, attorney for NW Landowners, discusses the pore space lawsuit at a press conference
(Image: Bismarck Tribune)

STAKEHOLDER CONSULTATION WAS KEY TO SUCCESS, BUT EARLY ENGAGEMENT WOULD HAVE STREAMLINED PROCESS



A Watford City attorney and landowner testifies in support of SB 2344 during a House subcommittee hearing

(Image: Western Dakota Energy Association)

- Supporting testimony from industry experts, landowners, communities, and Agriculture Commissioner prevented an early death
- Landowners and stakeholders provided vital feedback and recommendations during subcommittee meetings
- Effective education includes individual meetings with legislators
- Early engagement would have likely improved perception



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Dakota

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