



North Dakota Update

January 28, 2022

ND Association of County Engineers



- Statistics
- Bakken Development
- EOR
- IIJA-REGROW
- ARPA – CCUS - Commerce



- **Statistics**
- Bakken Development
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Oil Production

October	1,110,910 barrels/day (final)	
November	1,159,778 barrels/day (all-time high 1,519,037 BOPD Nov 2019)	NM = 1,288,953
	1,116,909 barrels/day or 96% from Bakken and Three Forks	
	42,869 barrels/day or 4% from legacy pools	

Gas Production and Capture

October Production	2,999,281 MCF/day	
94% Capture	2,822,914 MCF/day	
November Production	3,072,306 MCF/day	(all-time high 3,145,172 MCFD Nov 2019)
94% Capture	2,895,119 MCF/day	(all-time high 2,899,998 MCFD Mar 2020)

Gas Capture

Statewide	94%
Statewide Bakken	95%
Non-FBIR Bakken	95%
FBIR Bakken	93%
Trust FBIR Bakken	96%
Fee FBIR	76%

Permits

October	37 drilling and 0 seismic
November	50 drilling and 2 seismic
December	45 drilling and 0 seismic (all-time high 370 in 10/2012)

Rig Count

November	33
December	32 (all-time high 218 on 5/29/12)
Federal surface	1
ND	32
NM	95

Wells Waiting on Completion

October	457
November	416

Inactive Wells

October	1,881
November	1,957

Completions

October	41
November	60
December	81

Producing Wells

October	17164
November	17,238 (preliminary)(NEW all-time high 17,238 November 2021)
	14,940 wells or 87% are now unconventional Bakken – Three Forks wells
	2,298 wells or 13% produce from legacy conventional pools

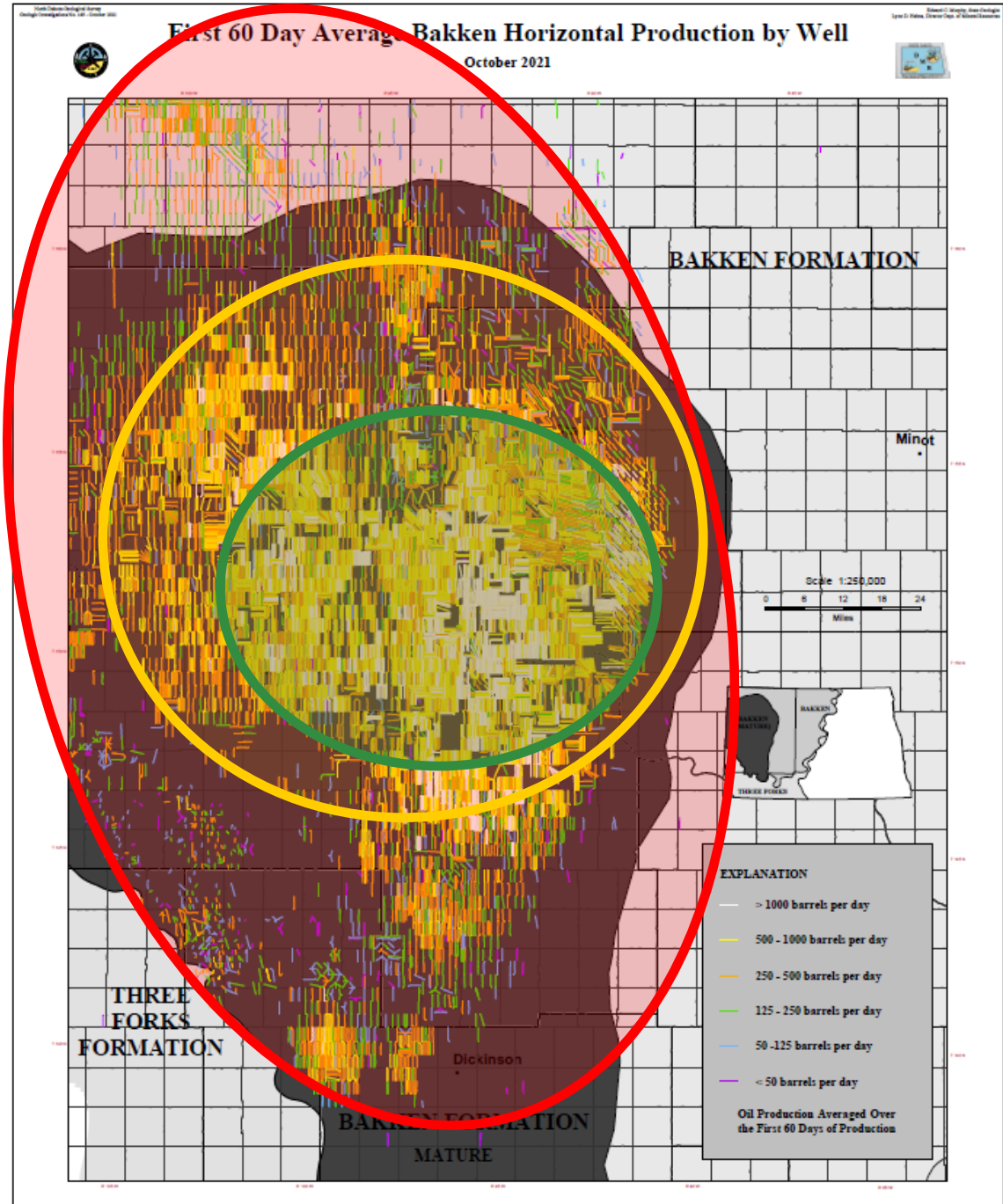


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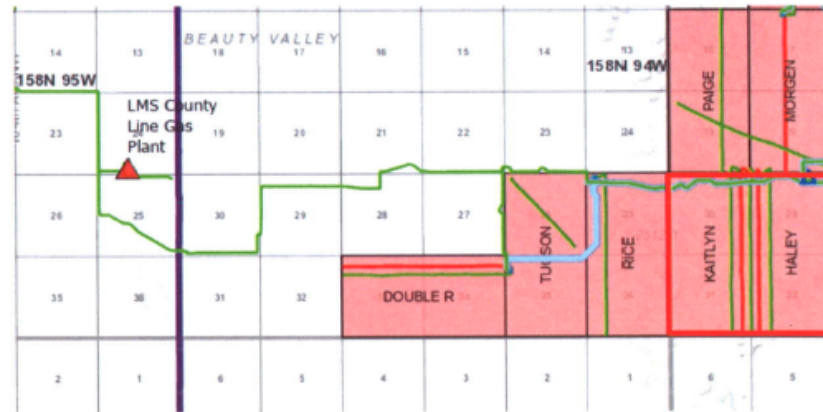
Core=Tier 1
80-85%
+8,000 wells

Tier 2
50%
+8,000 wells

Tier 3
25%
+7,000 wells



Features of Project Location



- 2560-acre Spacing Unit of Interest
- Existing Middle Bakken Horizontal
- Existing Three Forks Horizontal
- Existing Gas Pipeline (LMS)
- Existing Water Pipeline (LMS)

- Location selected based on results and learnings from prior Bakken EOR pilots, specifically the “Stomping Horse” pilot documented in NDIC Case No. 27926.
- Utilizes more recently completed infill wells (August ‘19); limited depletion.
- Accesses rich gas via connection to the gas plant gathering line.
- Liberty operates most of the offsetting DSUs.
- Well & completion design provides for favorable conformance along the horizontal interval using cemented liners with “Plug & Perf” completions.
- Jet pump operations ease well conversion to injection.
- Offset well configuration allows for surveillance and boundaries.

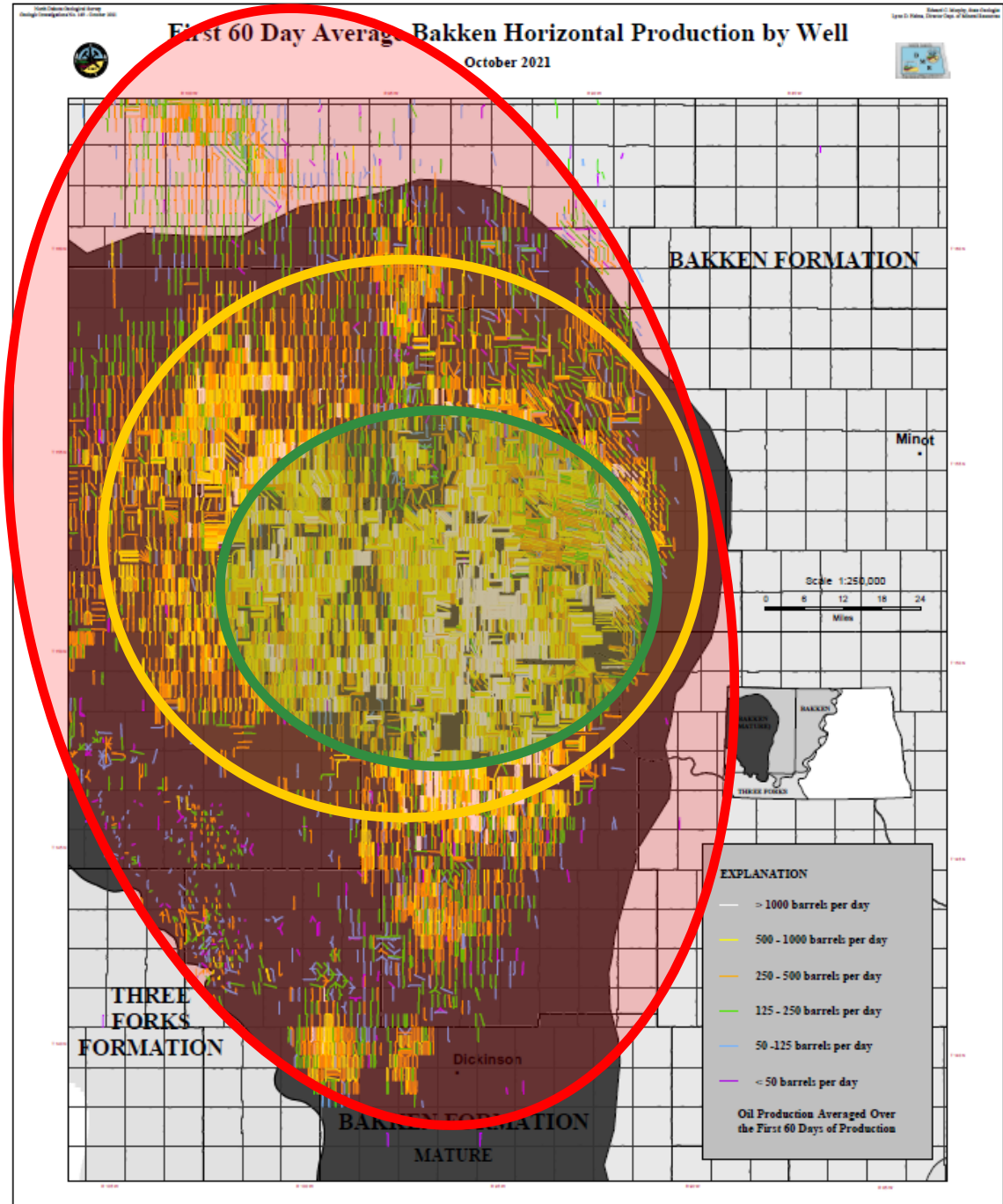
INDUSTRIAL COMMISSION
STATE OF NORTH CAROLINA
DATE 6-17-21 CASE NO. 28830
Prepared by Liberty
Exhibit E-2
Identified By Rospigil



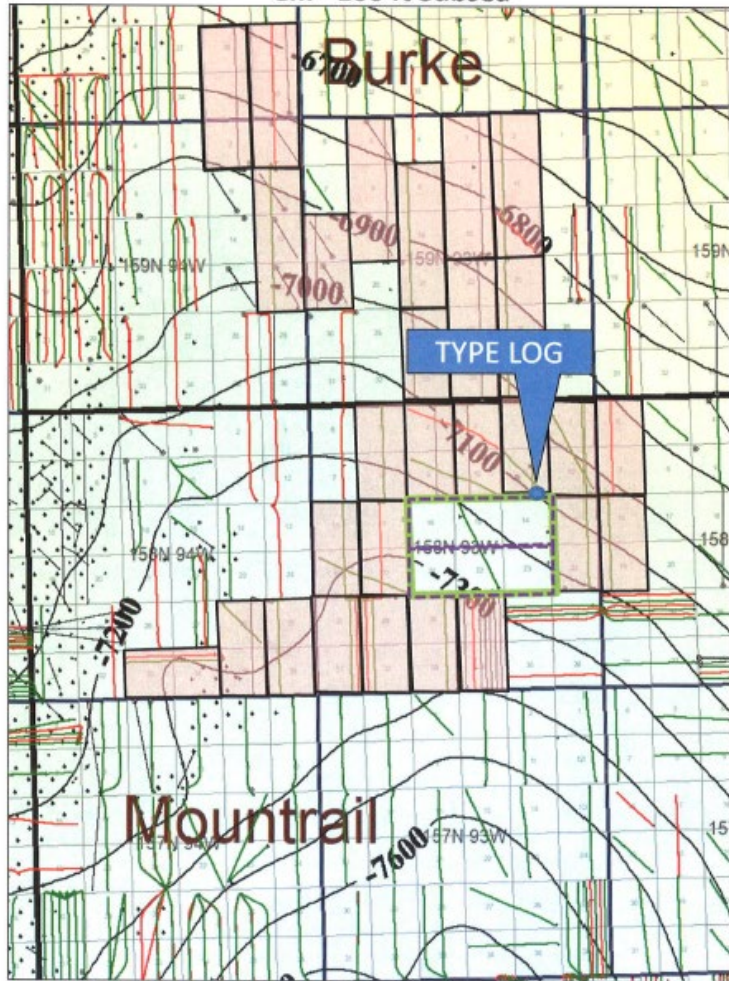
Core=Tier 1
80-85%
+8,000 wells






Tier 2
50%
+8,000 wells

Tier 3
25%
+7,000 wells



Geologic Structure Map
 Top Upper Bakken Shale
 C.I.= 100 ft Subsea



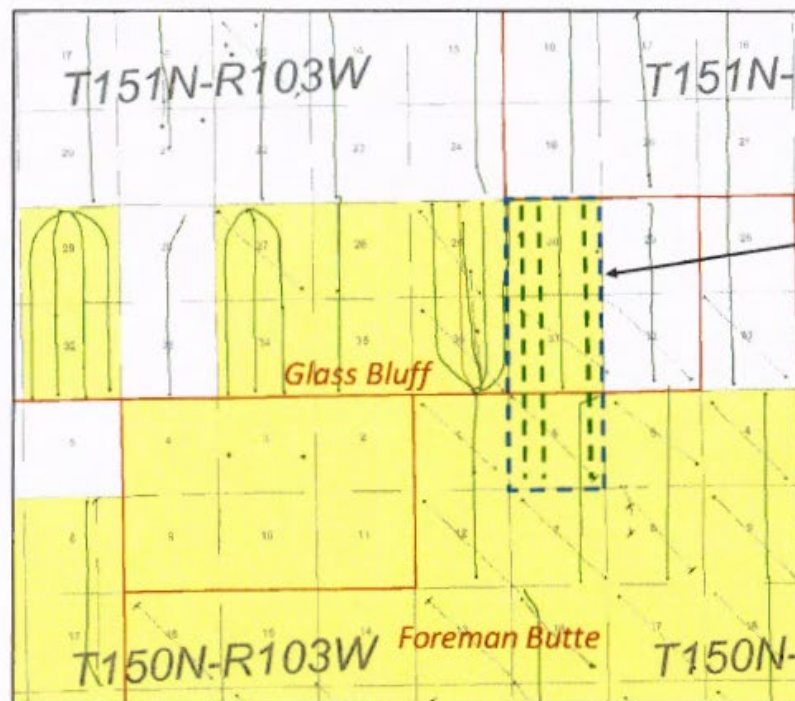
-  - Existing Middle Bakken Horizontal
-  - Existing Three Forks Horizontal
-  - Existing Liberty Spacing unit
-  - Existing 1920-acre Spacing Unit
-  - Proposed 3840-acre Spacing Unit

INDUSTRIAL COMMISSION
 STATE OF NORTH DAKOTA
 6-17-21 Case No. 28831
 Liberty
 G-1
 identified by McChesney



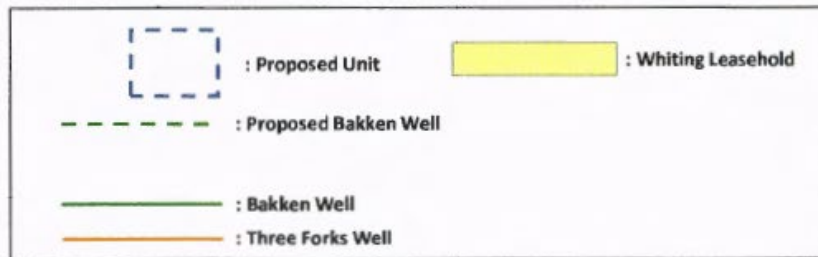
LIBERTY
 RESOURCES


Exhibit G-1
 Case No. 28831



1920-acre Spacing Unit
 Sections 30 & 31 T151N-R102W
 and Section 6 T150N-R102W
 Whiting's working interest =
 56.43%

INDUSTRIAL COMMISSION
 STATE OF NORTH DAKOTA
 DATE 7/28/21 CASE NO. 28861
 Introduced By Whiting
 Exhibit L2
 Identified By Mansfield



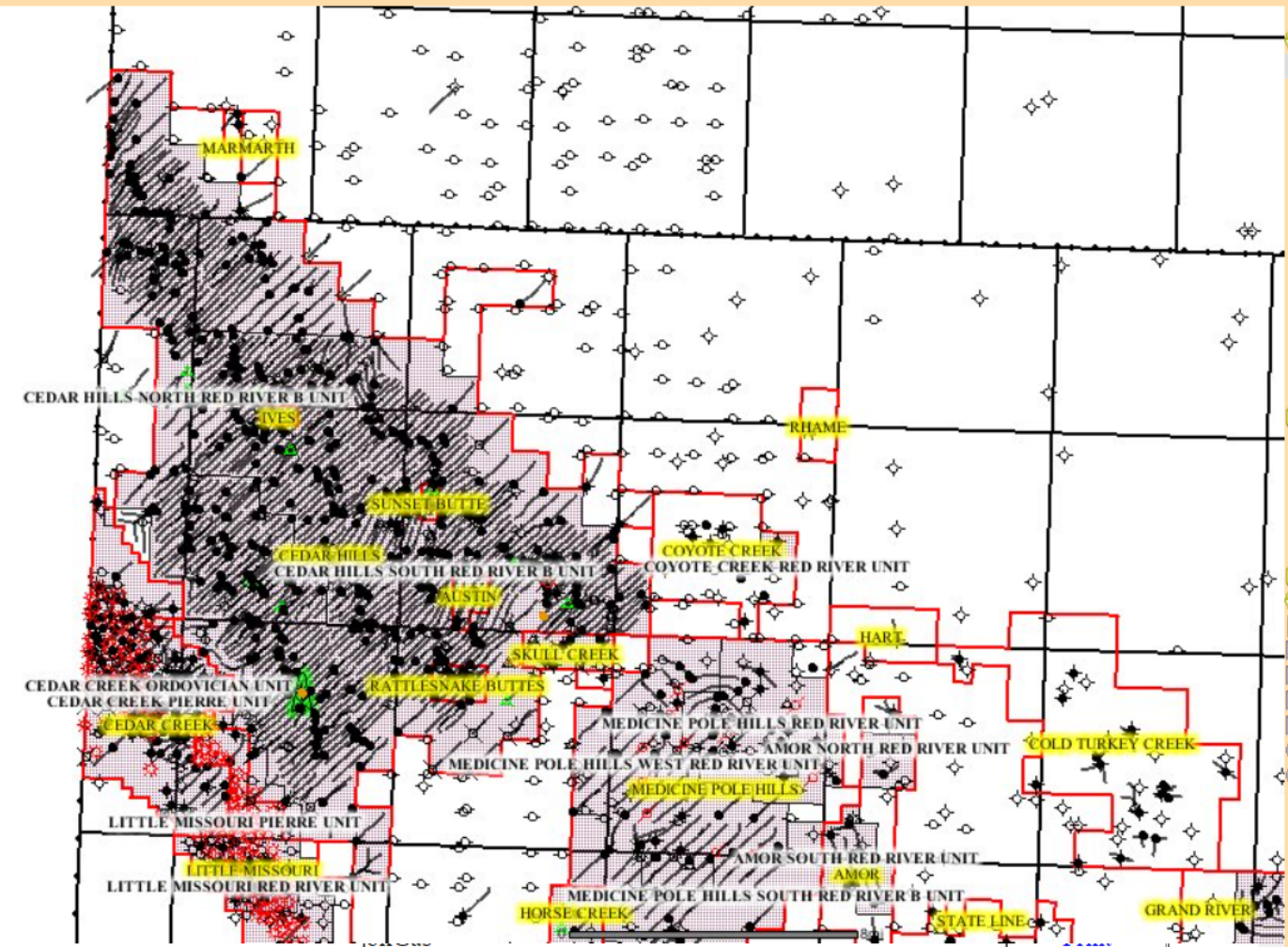
 Whiting Oil and Gas Corporation	
Land Plat	
Case #28861	Exhibit L2 Page 1
D. Mansfield	July 28, 2021



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Oil and Gas : ArcIMS Viewer

- Legend / Layers
- Overview Map
- View Entire State
- Previous View
- Clear Selection
- Search
- Create PDF
- Zoom In
- Zoom Out
- Pan
- Rect Identify
- Select Object
- Buffer
- Distance
- Find Well
- Find Field / Unit
- Find Section
- Browser Settings Suggestion



ND OIL & GAS LAYERS

- Oil and Gas
- Wells
- Permit Status Before Spud
- Rig Location
- Directional Surveys
- Directional Legs
- Horizontal Surveys
- Horizontal Legs
- Cases Docketed
- Oil Fields
- Unit Boundaries
- Inspector Areas
- Drilling / Spacing
- Seismic
- Gas Plants
- Other

Refresh Map

Auto Refresh

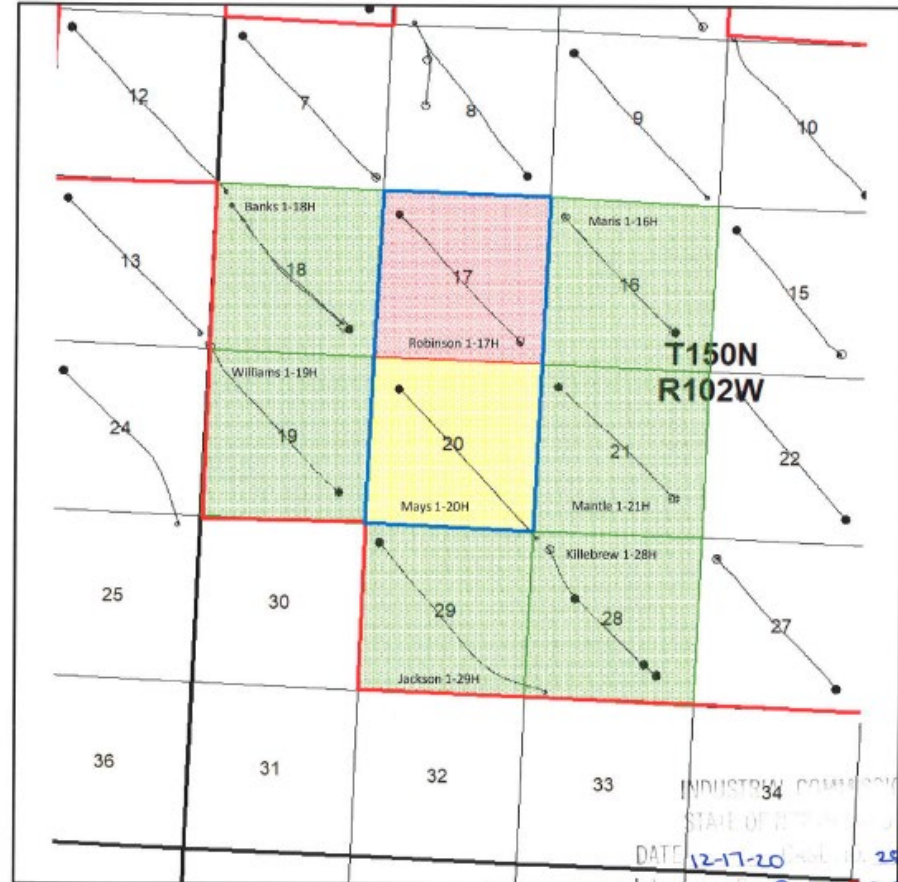
Help:

- A closed group, click to open.
- An open group, click to close.
- A map layer.
- A hidden group/layer, click to make visible.
- A visible group/layer, click to hide.
- A visible layer, but not at this scale.
- A partially visible group, click to make visible.
- An inactive layer, click to make active.
- The active layer.

<input checked="" type="radio"/>	CEDAR HILLS	oilGas	Print
<input type="radio"/>	CENTENNIAL	oilGas	Print
<input type="radio"/>	CHAMA	oilGas	Print
<input type="radio"/>	CHARBONNEAU	oilGas	Print
<input type="radio"/>	CHARLIE BOB	oilGas	Print

Mays Waterflood Test Plat

Foreman Butte Field: Madison Pool

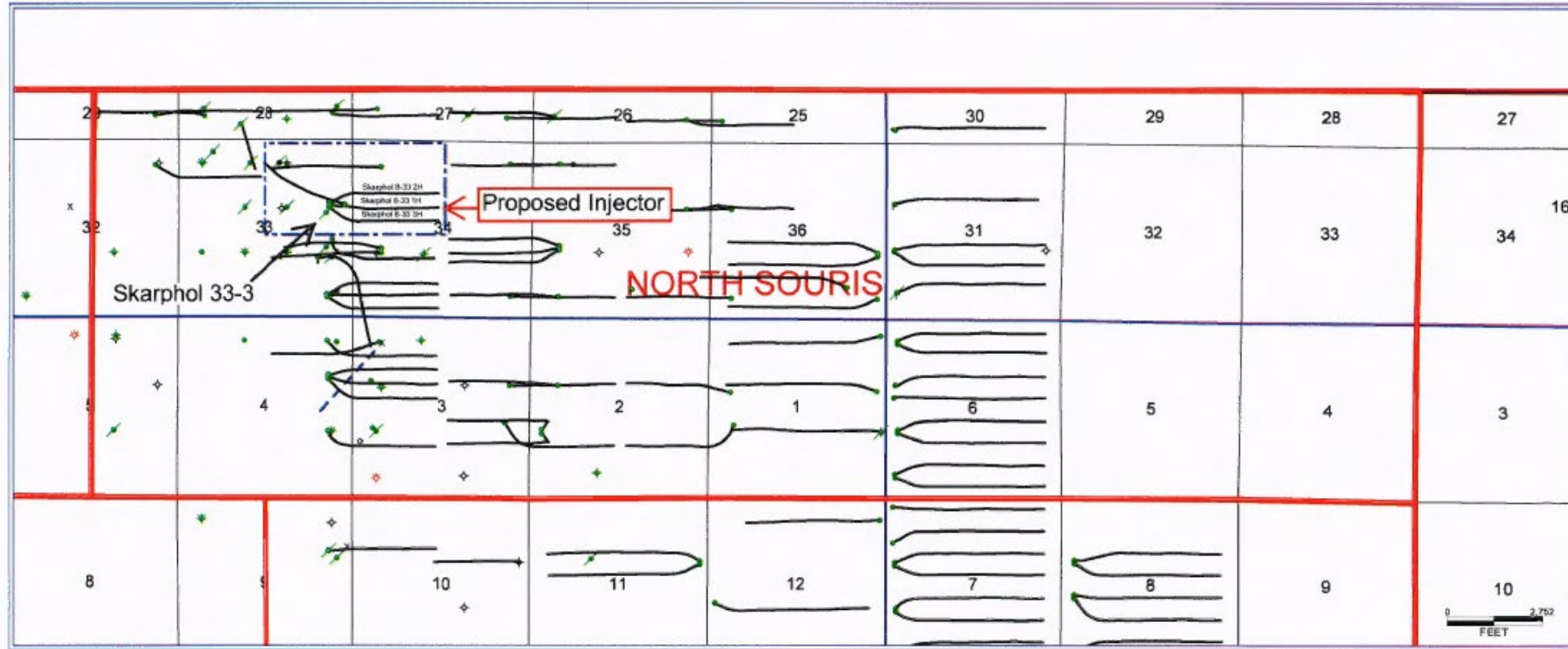


INDUSTRIAL COMMISSION
STATE OF OREGON
DATE 12-17-20 PAGE 4 OF 28572
Identified by Sambson
4
Hatcher

Mays 1-20H – Injector		Mays/Robinson Unit	
Robinson 1-17H – Producer			
6 Monitoring Wells			

Exhibit: 4
Docket Case No. 28572

Proposed horizontal water injection well location and offset vertical type well



Spacing Unit - Case 21763, Ballantyne Oil, LLC leasehold

North Souris Field Boundary

INDUSTRIAL COMMISSION
 STATE OF NORTH DAKOTA
 DATE 8/20/21 CASE NO. 28924
 Introduced By Ballantyne
 Exhibit 2
 Identified By Jennings

Ballantyne Oil, LLC
 Case No. 27266
 Exhibit 2



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Orphaned Well Site Plugging, Remediation, and Restoration
Section 40601 of the Infrastructure Investment and Jobs Act

Grant Timeline

2021

11/15/2021 Enactment of the Infrastructure Investment and Jobs Act. (Section 40601 -)

11/30/2021 Report documented orphan wells as of 11/15/21 to IOGCC

12/30/2021 Notice of Intent to Apply for "Formula" Funding Grant

2022

1/29/2022 Posting of "Formula" Funding Grant amounts online

5/14/2022 Application deadline for "Initial-25" Funding Grants

6/13/2022 (If "Initial-25" Grant Received) - Date funds received by state.

9/11/2022 No less than 90% of "Initial-25" Grant funds received must be *obligated*.

10/11/2022 Earliest date to apply for "Performance-Regulatory Improvement" & "Performance-Matching" Grant that *could allow* for earliest receipt of funds.

12/10/2022 Earliest date "Performance-Regulatory Improvement" & "Performance-Matching" Grant funds may be received.

2023

6/13/2023 Deadline for "Initial-25" Funding Grants to be *obligated*.

6/30/2023 1st "Performance-Matching" Grant fund expensed.

9/30/2023 Final Report on "Initial-25" Funding Grants due.

2031

6/30/2031
Deadline for all "Performance-Matching" Grant eligibility. *Not to exceed a total amount received of \$30,000,000 between 2022-2031 per state.*

2032

12/7/2032 Reimbursement for failure to maintain protections under the "Performance-Regulatory Improvement" Grant Due, *if applicable*.

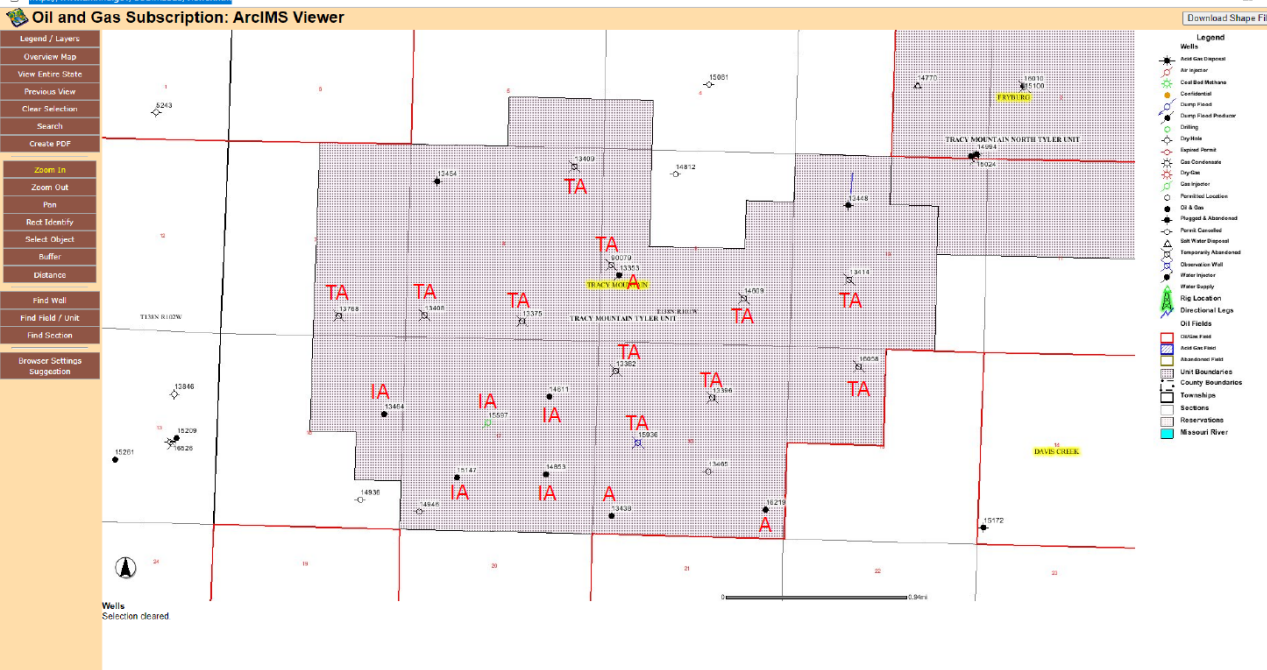
Table 13. Updated Data on Documented Orphan Wells

* Report the number of documented orphan wells as of November 15, 2021, if available. If the reported number relates to a different date, please specify that date.

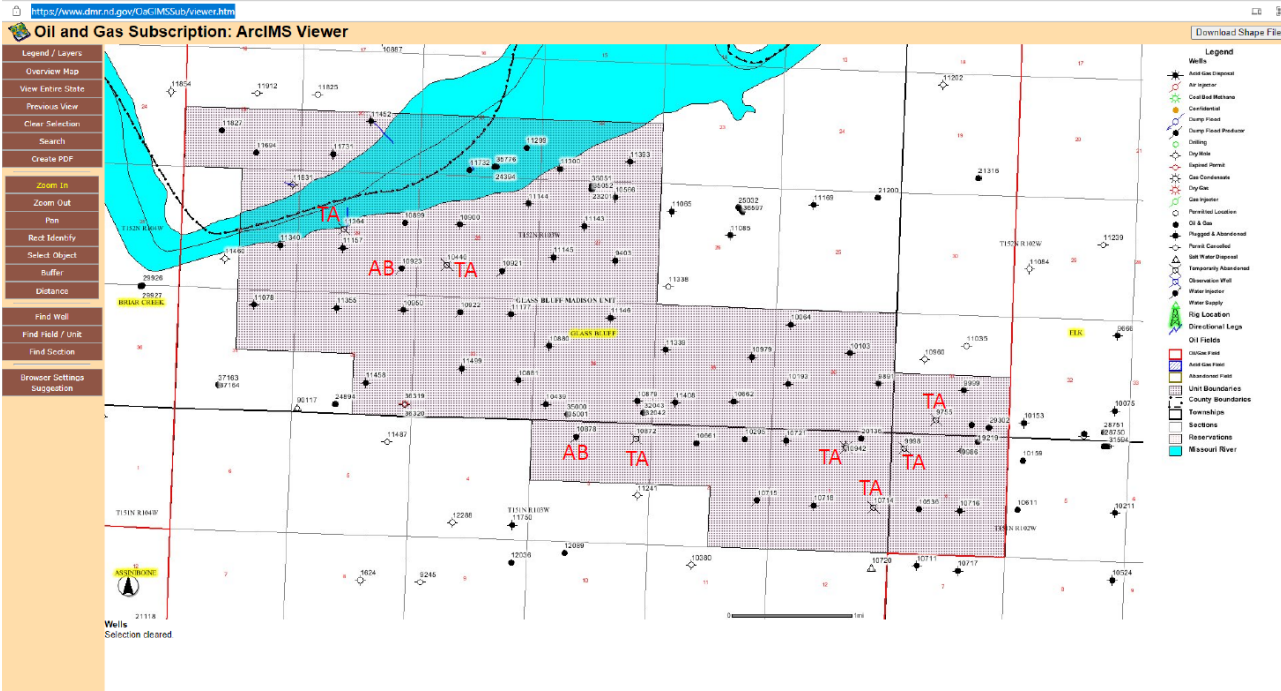
State	Total Documented Orphan Wells*	Documented Orphan Wells on State and Private Lands*	Date of Reported Number if other than November 15, 2021
Alabama			
Alaska			
Arizona			
Arkansas			
California			
Colorado			
Florida			
Georgia			
Idaho			
Illinois			
Indiana			
Kansas			
Kentucky			
Louisiana			
Maryland			
Michigan			
Mississippi			
Missouri			
Montana			
Nebraska			
Nevada			
New Mexico			
New York			
North Carolina			
North Dakota	232	186	11/30/2021
Ohio			
Oklahoma			
Oregon			
Pennsylvania			
South Carolina			
South Dakota			
Tennessee			
Texas			
Utah			
Virginia			
Washington			
West Virginia			
Wyoming			
Totals - States			

Please provide an explanation if the orphan well count differs by 10% or more from the count as of December 31, 2020:

The reduction in wells reported between December 31, 2020 and November 30, 2021 is a result of North Dakota's ongoing plugging and reclamation work completed.



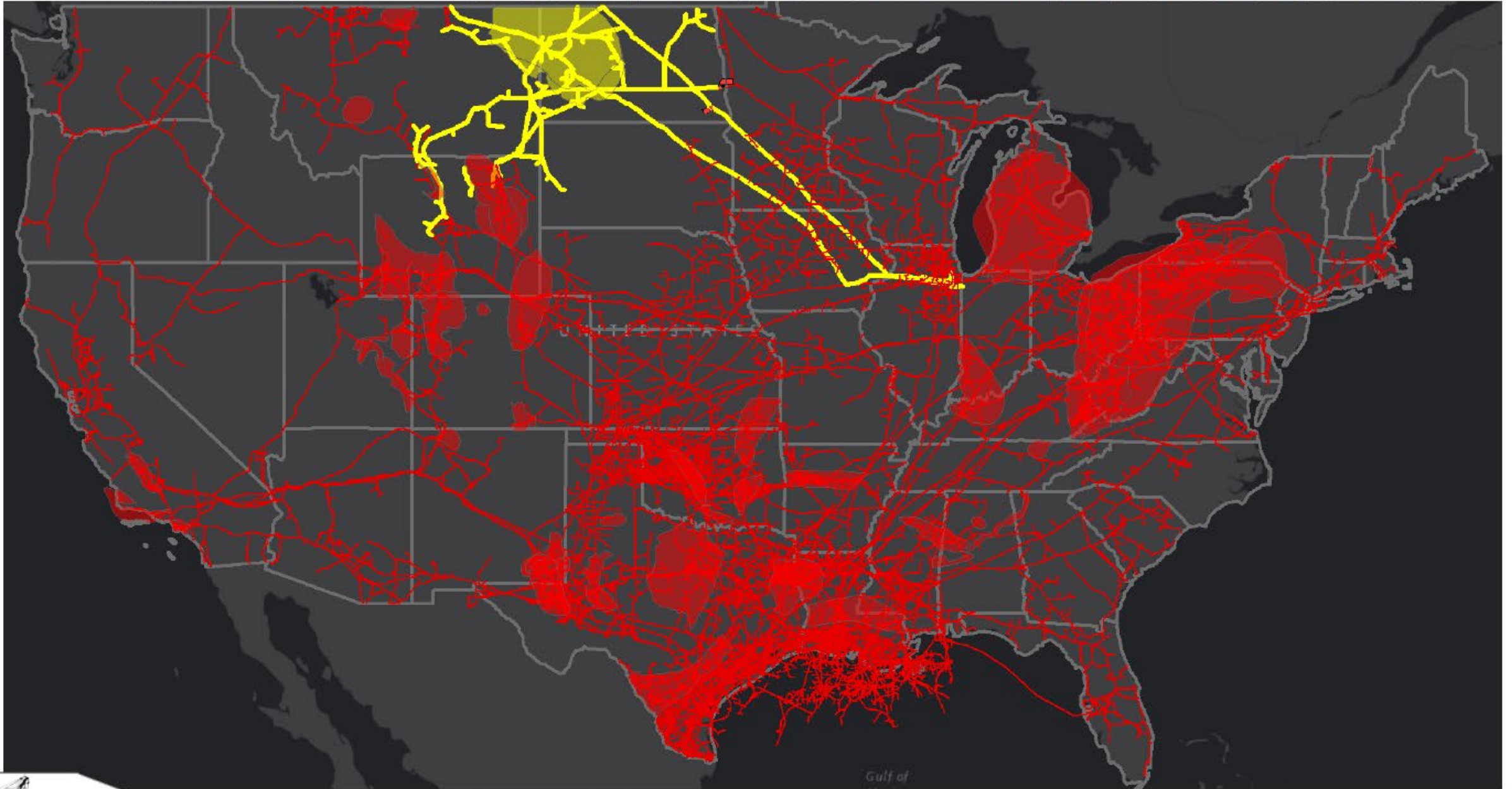
Matching Grants



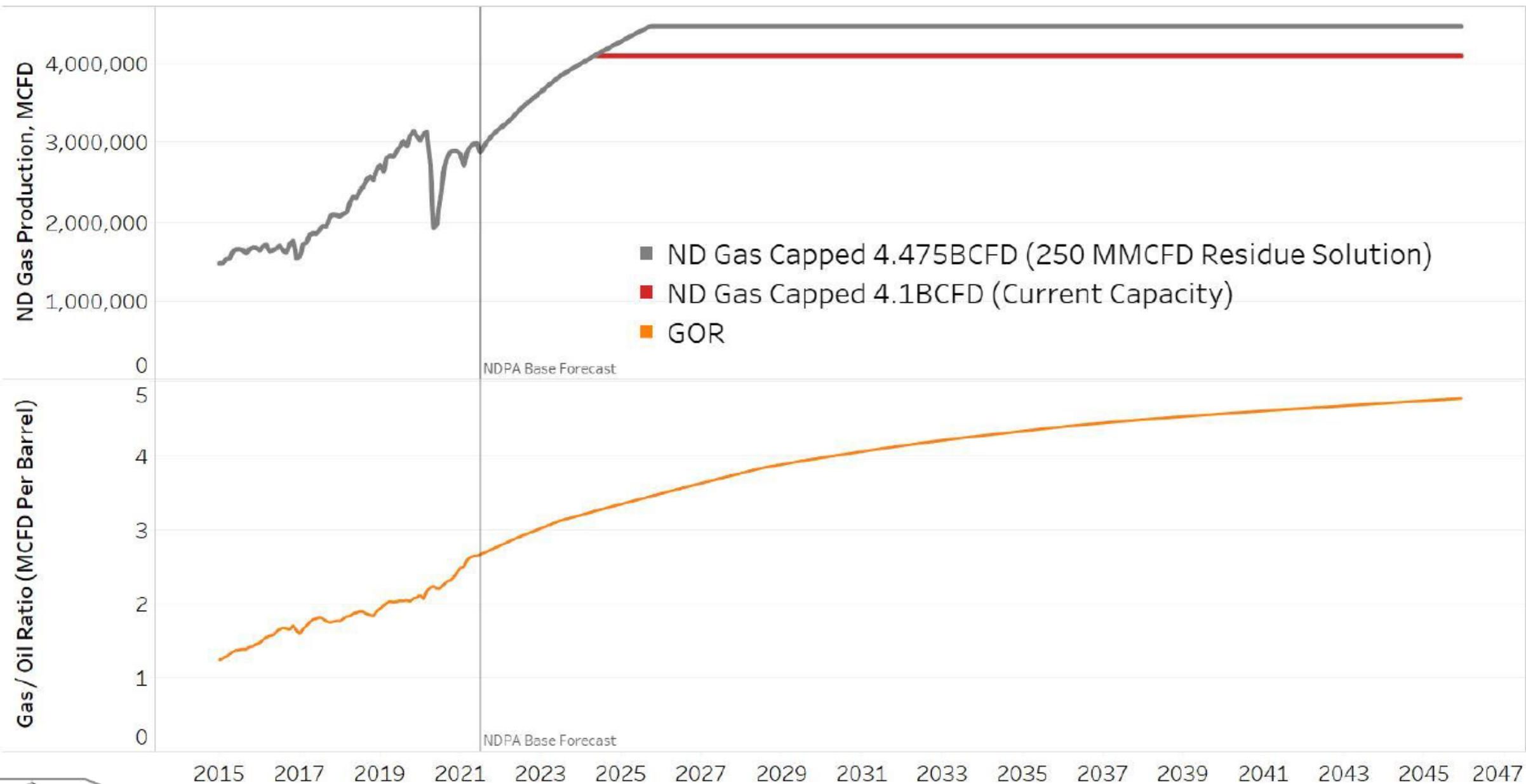


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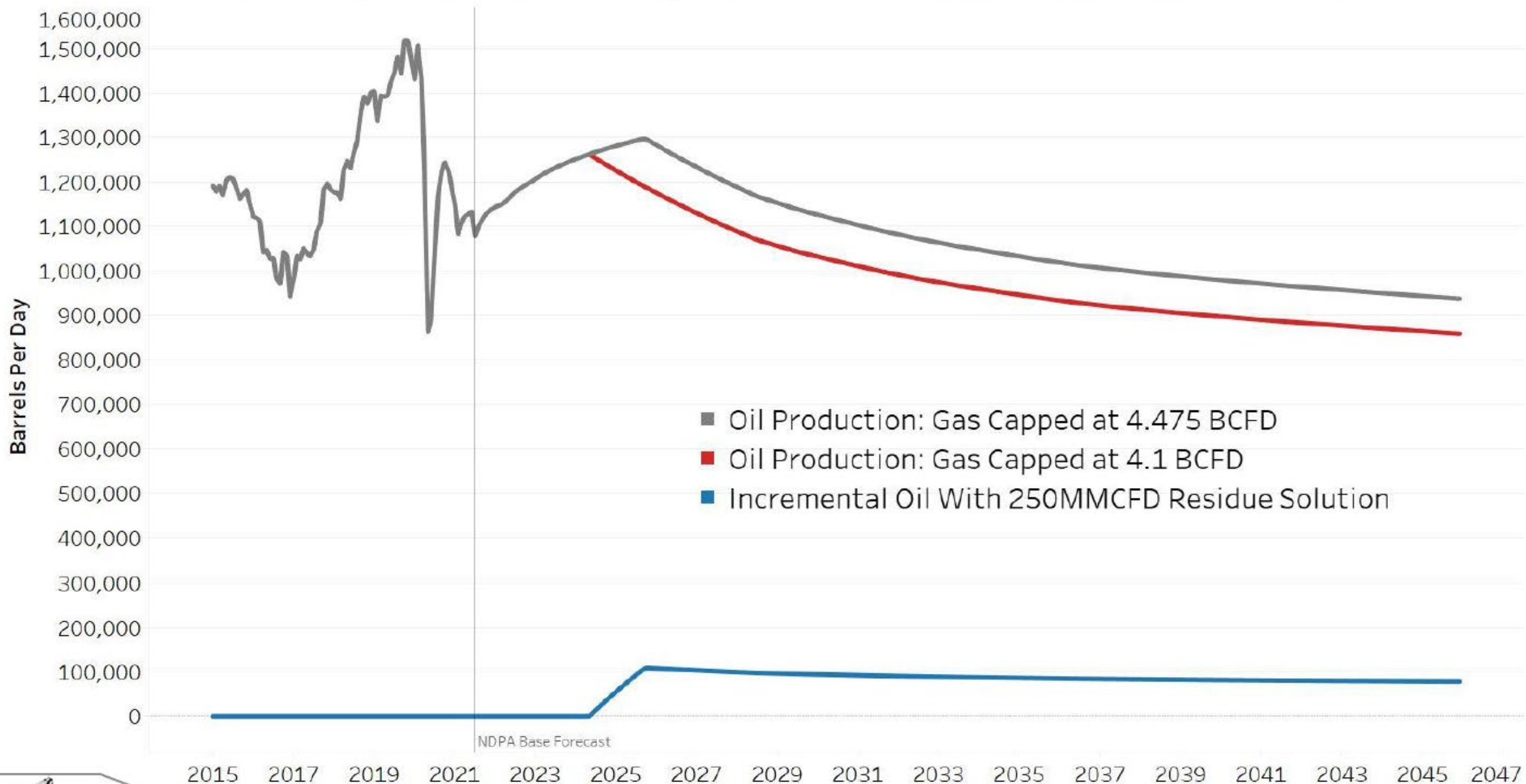
Bakken Natural Gas Infrastructure



Gas Transmission Expected to Limit Oil Production



Gas Transmission Expected to Limit Oil Production

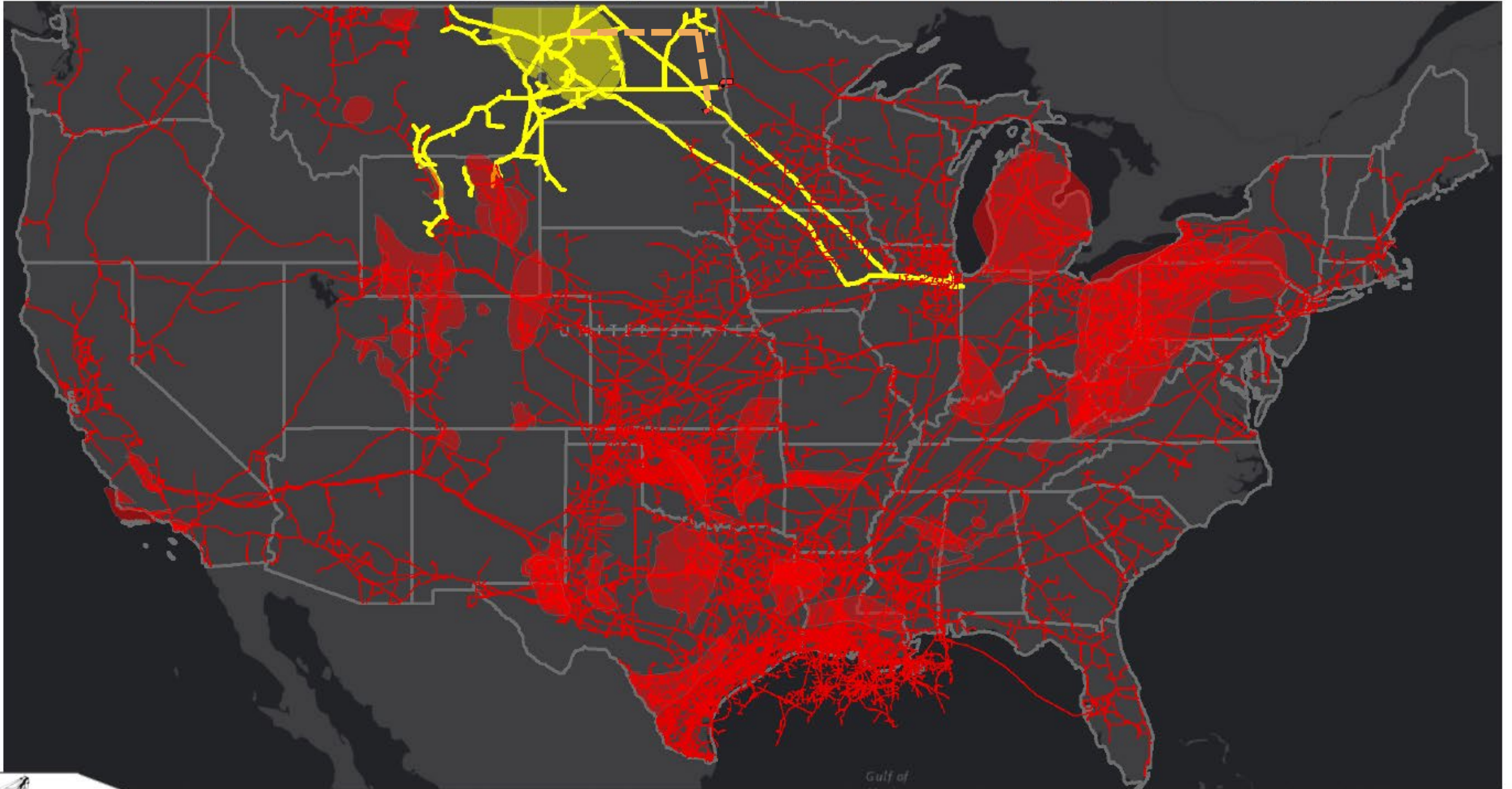


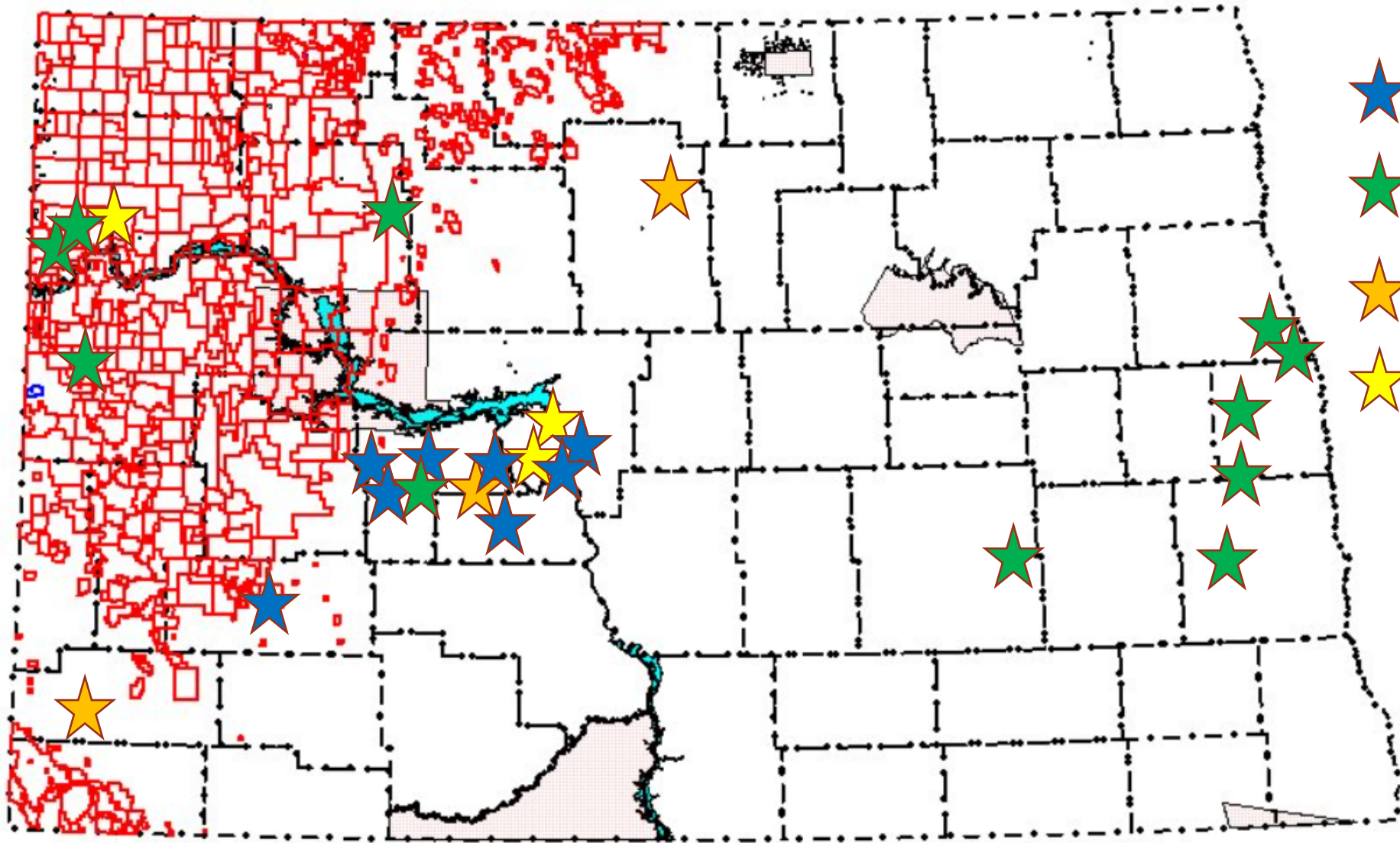
Legislative Appropriation: Senate Bill 2345 Section 1, subsection 1

There is appropriated from federal funds derived from the state fiscal recovery fund, not otherwise appropriated, the sum of \$150,000,000, or so much of the sum as may be necessary, to the Industrial Commission for the purpose of pipeline infrastructure grants to allow for the transportation of natural gas to eastern North Dakota for the period beginning December 1, 2021 and ending June 30, 2023. Of the funds appropriated in this subsection, at least \$10,000,000 must be used for a project to transport natural gas to areas in Grand Forks County.



Bakken Natural Gas Infrastructure





- ★ CCUS
- ★ NG / Industrial
- ★ Minerals
- ★ Data Center



0 88mi



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