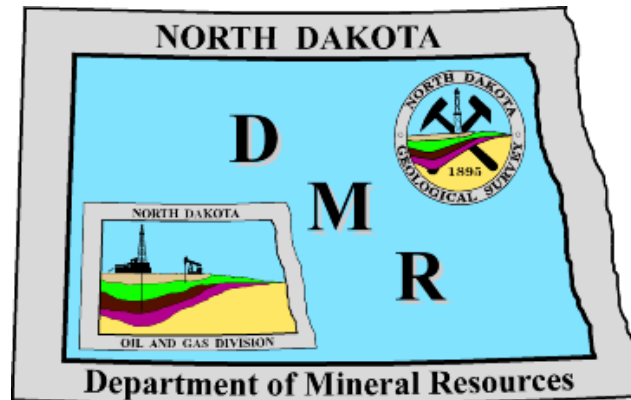


North Dakota Industrial Commission

03/03/2014

11:30 a.m. Presentation of the Department of Mineral Resources review of North Dakota Petroleum Council Flaring Task Force Report and Consideration of implementation steps

<http://www.oilgas.nd.gov>



<http://www.state.nd.us/ndgs>

***600 East Boulevard Ave. - Dept 405
Bismarck, ND 58505-0840
(701) 328-8020 (701) 328-8000***

NDIC Goals

- Reduce Flared volume
- Reduce number of wells flaring
- Reduce duration of flaring from wells

NDPC Task Force Goals

- Reduce number of wells flaring



Delays to Gas Connection

- Single Biggest Challenge to connect gas
 - Securing landowner permission for connection activities — Legislature – DMR participating in ROW task force
 - up to 180 days or longer
- Biggest obstacles and time delays
 - Delays in zoning by counties and townships for midstream facilities — Counties
 - Short construction season/weather — Nature
 - Limited number of available construction crews — Industry (Housing)
 - Review of permits for natural gas fueled equipment — Department of Health and EPA

Identified 11 intersects between Task Force Goals and NDIC regulations

- NDIC regulations can be a powerful incentive / disincentive
 - >Identify possible unintended consequences
- Discuss potential NDIC actions suggested by Task Force
 - >What agency analysis suggests will work and what won't
 - >Recommended NDIC action items

NDPC Task Force Goals

• Reduce Flared volume



85% Capture in Two Years

- Capture 74% by 4th Qtr. 2014
 - Recent processing expansion, BMPs
- Capture 77% by 1st Qtr. 2015
 - Continue capacity build out
 - Operational efficiencies
- Capture 85% by 1st Qtr. 2016
 - New recently announced processing plants
 - Value added North Dakota markets



90% Capture by 2020

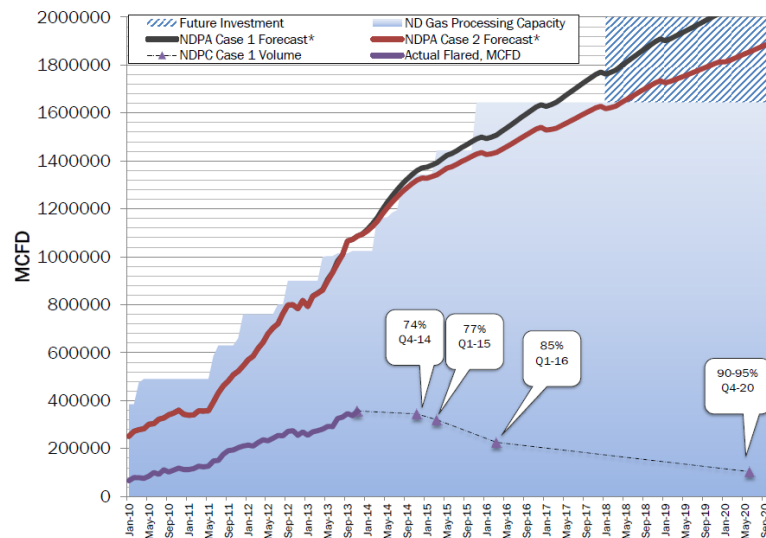
.....with potential for 95% capture

- This plan allows for increased future oil production while reducing flaring
- Achieving this goal, requires full engagement by the industry, state, counties, NDIC, tribe, and landowners to implement this plan

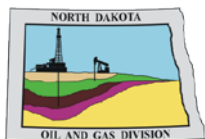
www.ndoil.org



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* NDPA Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning

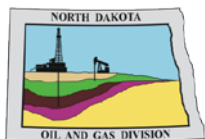


North Dakota Monthly Gas Flared



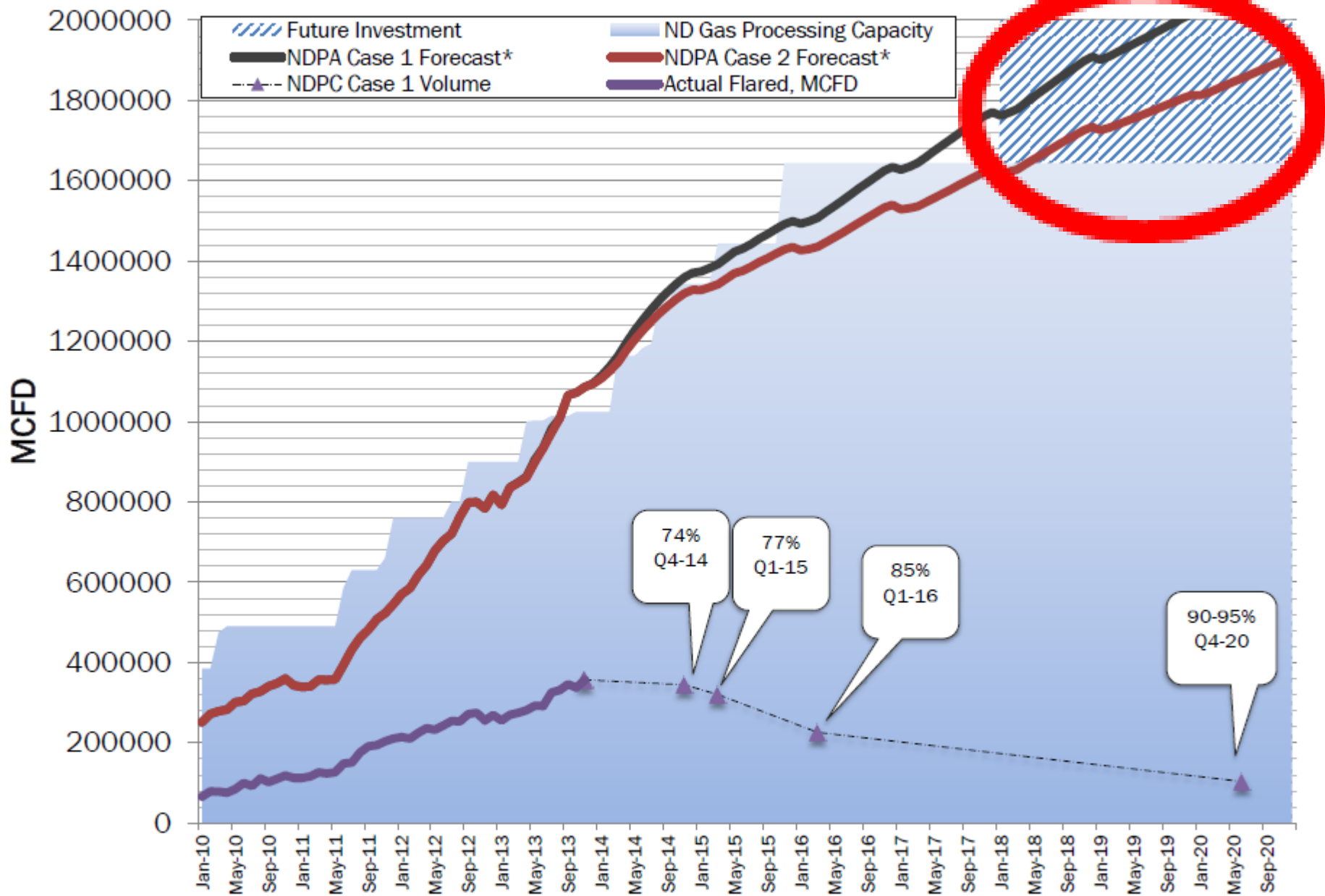
Natural Gas Processing Capacity, Million Cubic Feet Per Day

Owner Company	Facility	County	2006	2008	2010	2011	2012	2013	2014	2015
North Dakota										
ONEOK	Lignite	Burke	6	6	6	6	6	6	6	6
ONEOK	Marmath	Slope	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
ONEOK	Grasslands	McKenzie	63	100	100	100	100	100	100	100
ONEOK	Stateline I	Williams	NA	NA	NA	NA	100	100	100	100
ONEOK	Stateline II	Williams	NA	NA	NA	NA	NA	100	100	100
ONEOK	Garden Creek I	McKenzie	NA	NA	NA	100	100	100	100	100
ONEOK	Garden Creek II	McKenzie	NA	NA	NA	NA	NA	NA	100	100
ONEOK	Garden Creek III	McKenzie	NA	NA	NA	NA	NA	NA	NA	100
ONEOK	Lonesome Creek	McKenzie	NA	NA	NA	NA	NA	NA	NA	200
Petro Hunt	Little Knife	Billings	32	32	32	32	32	32	32	32
True Oil	Red Wing Creek	McKenzie	4	4	4	4	4	10	10	10
Sterling Energy	Ambrose	Divide	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
EOG Resources	Stanley	Mountrail	NA	20	0*	0*	0*	0*	0*	0*
Whiting Oil & Gas	Robinson Lake	Mountrail	NA	30	45	90	90	90	110	110
Whiting Oil & Gas	Ray	Williams	NA	10	NA	NA	NA	NA	10	10
Whiting Oil & Gas	Belfield	Stark	NA	NA	NA	30	30	35	35	35
XTO - Nesson	Ray	Williams	NA	10	10	10	10	10	10	10
Hess	Tioga	Williams	110	110	110	110	110	110	250	250
Hiland Partners	Badlands	Bowman	4	40	40	40	40	40	40	40
Hiland Partners	Norse	Divide	NA	NA	25	25	25	25	25	25
Hiland Partners	Watford City	McKenzie	NA	NA	NA	50	90	90	90	90
Summit Resources	Knutson	Billings	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
Targa Resources	Badlands	McKenzie	NA	NA	NA	45	45	45	45	45
USG Midstream Bakken	DeWitt	Divide	NA	NA	NA	NA	NA	3	3	3
Caliber Midstream	Caliber Midstream	McKenzie	NA	NA	NA	NA	NA	10	10	10
Plains	Ross	Mountrail	NA	NA	NA	NA	NA	NA	50-75	50-75
Aux Sable - Chicago, IL										
Aux Sable	Prairie Rose	Mountrail	NA	NA	110	110	110	110	110	110
		Total, MMCFD	227	370	490	760	900	1024	1344-1369	1644-1669

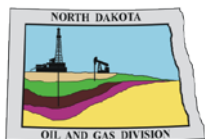


North Dakota Monthly Gas Flared





* NDPA Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning



North Dakota Monthly Gas Flared



NDPC Task Force Goals

- Reduce number of wells flaring



New Permit Requirement

- Gas Capture Plan (GCP)

- Forces gas capture planning prior to drilling
- GCP may include at the discretion of NDIC:
 - Location map gathering system connection, processing plant(s) identified
 - Flowback strategy (rate, duration, plan for multi-well start up)
 - Current system capacity and utilization
 - Time period for connection

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- 1,100 to 2,700 wells/year = 2,000 expected
 - 2014 drilling = 1,537 permits to drill approved and 829 pending approval
 - 185-195 rigs for 12 months
 - 2015-2019 drilling = 1,099 orders approved for 7,075 more wells
 - 3 orders for 28 wells / SU
 - 1 order for 22 wells / SU
 - 1 order for 21 wells / SU
 - 3 orders for 19 wells / SU
 - 3 orders for 18 wells / SU
 - 3 orders for 17 wells / SU
 - 6 orders for 16 wells / SU
 - 7 orders for 15 wells / SU
 - 40 orders for 14 wells / SU
 - 5 orders for 13 wells / SU
 - 25 orders for 12 wells / SU
 - 5 orders for 11 wells / SU
 - 35 orders for 10 wells / SU
 - 14 orders for 9 wells / SU
 - 155 orders for 8 wells / SU
 - 219 orders for 7 wells / SU
 - 107 orders for 6 wells / SU
 - 81 orders for 5 wells / SU
 - 416 orders for 4 wells / SU
- 266 orders for approximately 1,700 increased density wells pending approval

Gas Capture Plans

- Should be required for future increased density, temporary spacing, and proper spacing cases
- Add requirement of affidavit that GCP has been provided to listed gathering companies in area
- Will have to be required as part of the application for permit to drill (APD) in order to effect the nearly 9,000 wells already approved for increased density drilling

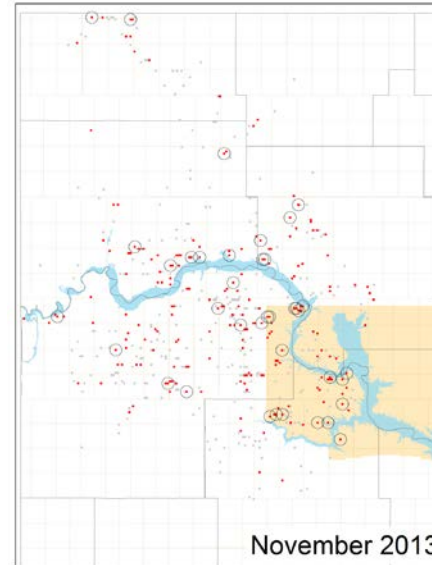
NDPC Task Force Goals

- Reduce number of wells flaring
- Reduce duration of flaring from wells



Gas Capture Plan Milestones

- June 1, 2014: All new APDs must have a GCP
- For all existing flaring wells, the producer will submit a GCP
 - September 1, 2014: large volume wells (based on Nov NDPA data) 60% is from 216 wells >300 MCFD, 50% connected to sales
 - March 1, 2015: all other wells flaring longer than 90-days, excluding marginal wells



Geographic Distribution of Locations with Flaring Rates Greater than 300 MCFD

- June 222 Locations
- July 270 Locations
- August 242 Locations
- September 237 Locations
- October 227 Locations
- November 216 Locations

- Location Where Flare Rate Was >300 MCFD in November
- Location Where Flare Rate Was >300 MCFD in Previous 5 Months
- Location Where Flare Rate Remained >300 MCFD June-November (42 locations)

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Gas Capture Plans

- June 1 requirement as part of the APD reasonable
- Confidential if filed with APD
 - >Add requirement of affidavit that GCP has been provided to listed gathering companies in area
- Large volume well and 90 day non-marginal well requirements ineffective
 - >Production and flaring data is 2 months old when filed (Jan 2014 data filed Mar 2014)
 - >Gas production and flaring data is frequently amended for up to 12 months
 - >Enforcing the longer than 90-day requirement may conflict with NDCC 38-08-06.4 (allows 1 year)
 - >North Dakota allows 1 year due to 6 month construction season with 12 month drilling season

NDPC Task Force Goals

- Reduce flared volume
- Reduce number of wells flaring
- Reduce duration of flaring from wells



Regulatory Consequences

- At the discretion of NDIC, penalty for failure to comply
 - Failure to submit GCP
 - New wells – suspension or denial of permit
 - Existing wells – curtail production where no detriment to well or reservoir
 - Failure to comply with GCP
 - Curtail production
 - Not meeting flowback strategy
 - Mitigating circumstances may allow extension (i.e., economic evaluation, operator's overall capture rate, ROW, safety, weather, work crews, etc.)

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- Suspension or denial of permit would conflict with NDAC 43-02-03-16 (allowed only for causing waste or violating correlative rights) and NDAC 43-02-03-16.2 (allowed upon the application of an owner in the spacing or drilling unit)
 - >Adding requirement of GCP and affidavit that GCP has been provided to listed gathering companies in area is allowed under NDAC 43-02-03-16
- Curtailing production is a powerful incentive, but can also be a powerful disincentive
 - >Must be tailored to the distance from existing gathering systems, development phase, and GCP
 - >Currently 340 active Bakken pools

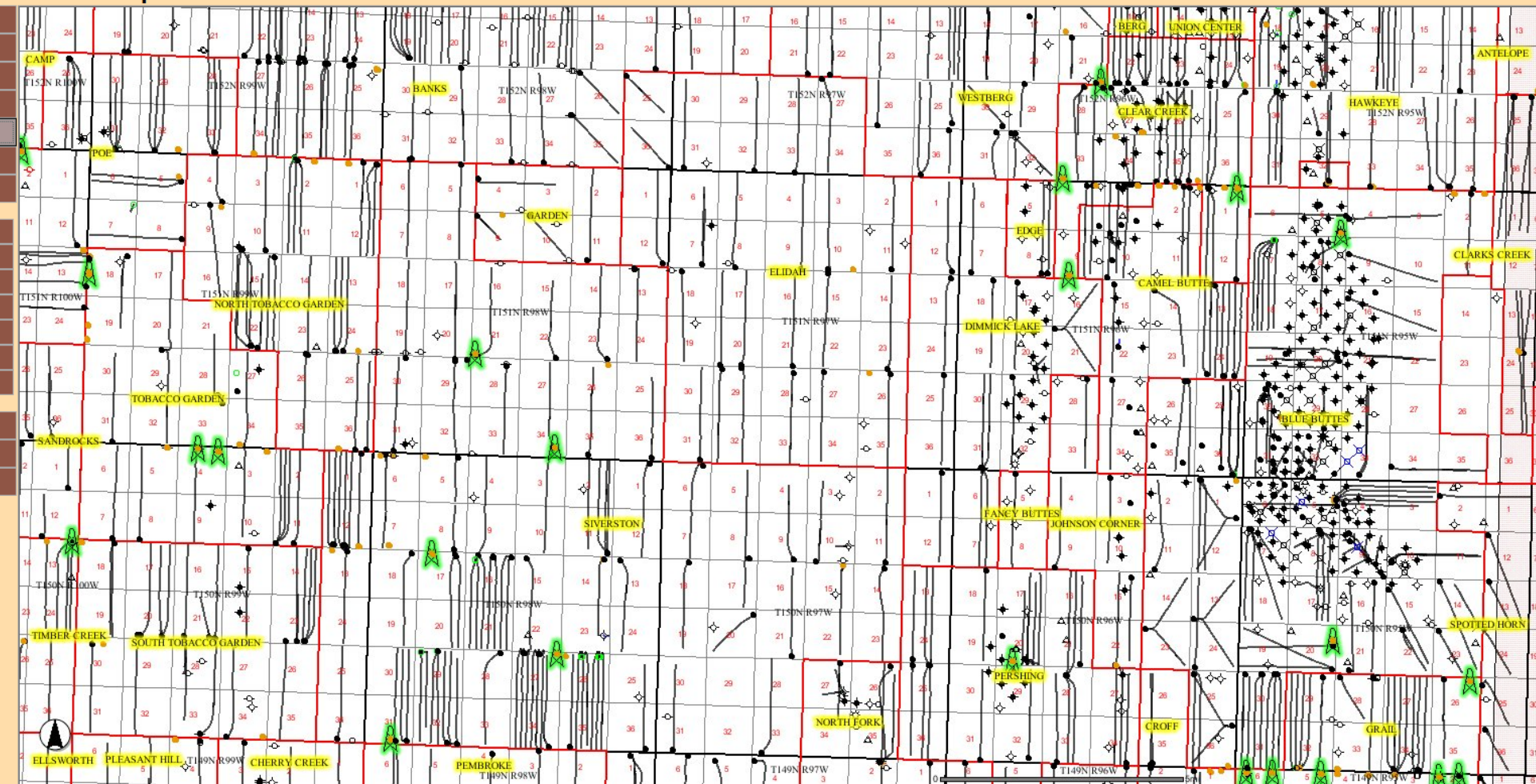
Flaring in North Dakota

Typical Field Rules

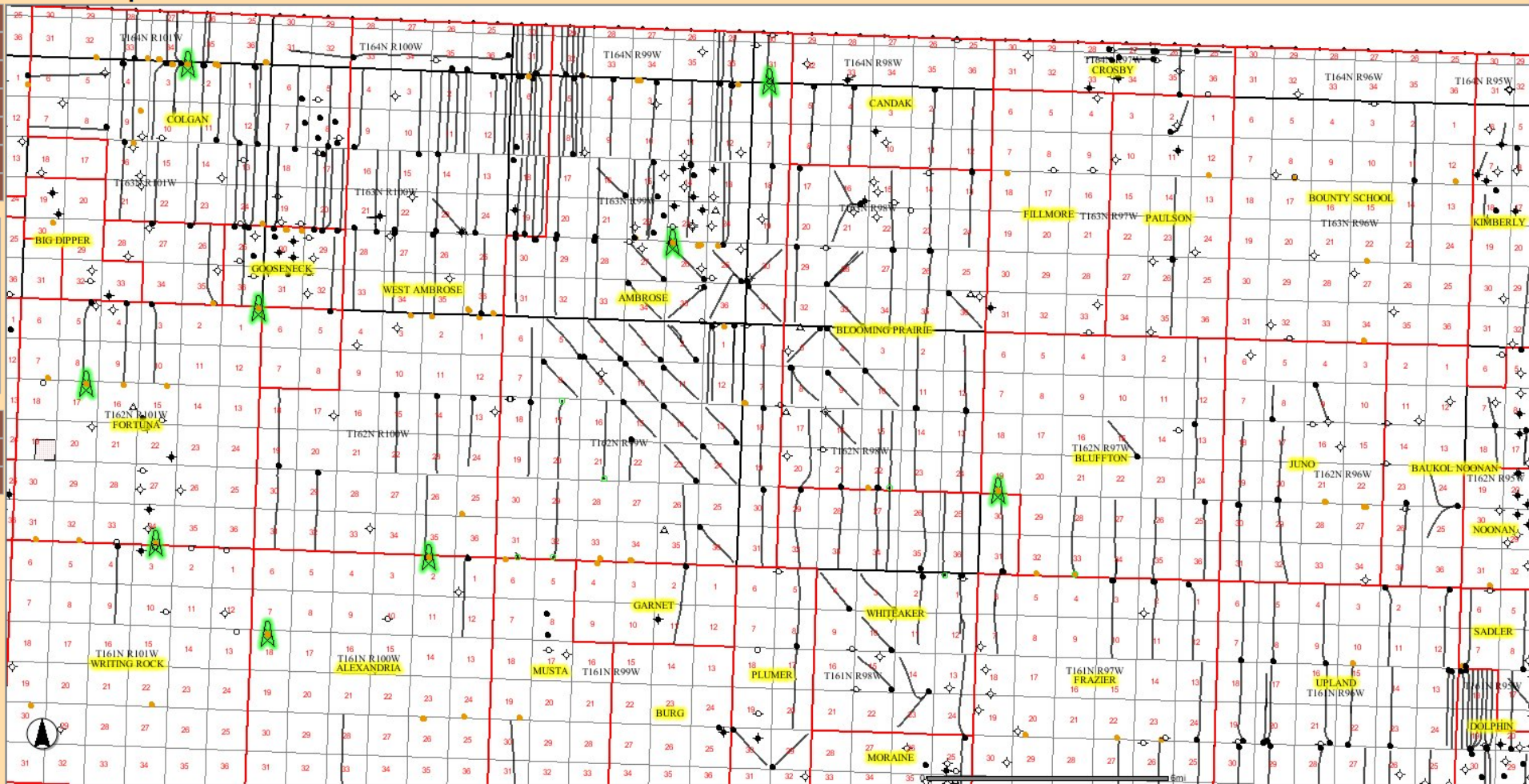
(XX) All wells in the XX-Bakken Pool shall be allowed to produce at a **maximum efficient rate for a period of 60 days** commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run; after that, oil production from such wells shall not exceed an average of **200 barrels per day for a period of 60 days**; after that, oil production from such wells shall not exceed an average of **150 barrels per day for a period of 60 days, thereafter, oil production from such wells shall not exceed an average of 100 barrels of oil per day; if and when such wells are connected to a gas gathering and processing facility the foregoing restrictions shall be removed, and the wells shall be allowed to produce at a maximum efficient rate.** The Director is authorized to issue an administrative order allowing unrestricted production at a maximum efficient rate for a period not to exceed 120 days, commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run, if the necessity therefor can be demonstrated to his satisfaction.

(XX) If the flaring of gas produced with crude oil from the Nelson Bridge-Bakken Pool causes, or threatens to cause, degradation of ambient air quality, production from the pool shall be further restricted.

Gas Subscription: ArcIMS Viewer

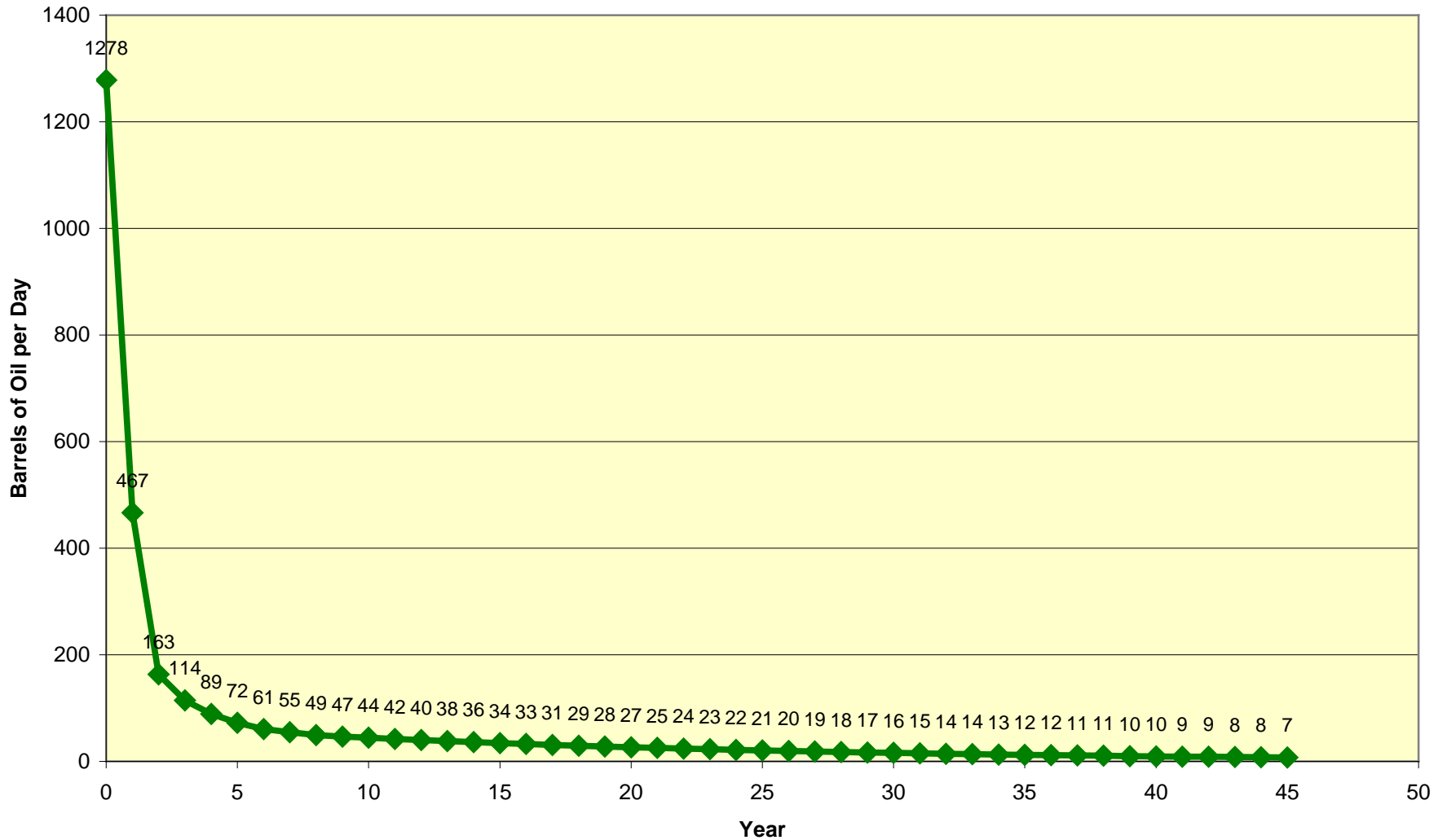


Gas Subscription: ArcIMS Viewer



Oil Fields
Selection cleared.

Typical Bakken Well Production

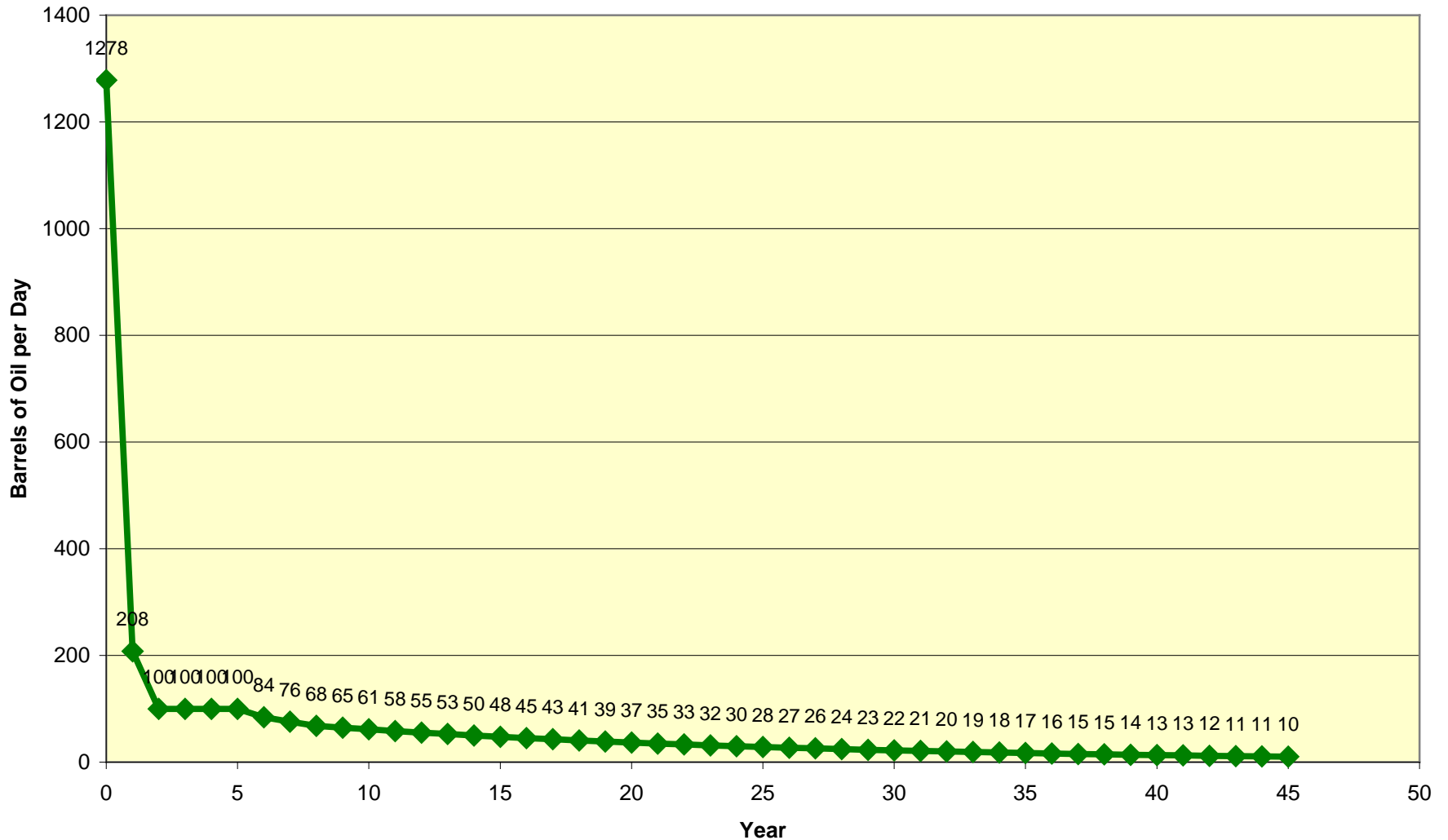


gas production taxes	\$45,584	\$14,187	\$4,966	\$3,476	\$2,711	\$2,196	\$1,845	\$1,660	\$1,494	\$1,420	\$1,349
oil production taxes	\$2,353,641	\$732,530	\$256,385	\$179,470	\$139,986	\$113,389	\$95,247	\$85,722	\$77,150	\$73,292	\$69,628
total production taxes	\$2,399,226	\$746,717	\$261,351	\$182,946	\$142,698	\$115,585	\$97,091	\$87,382	\$78,644	\$74,712	\$70,976
extraction taxes	\$2,504,615	\$793,574	\$277,751	\$194,426	\$151,652	\$122,838	\$103,184	\$92,866	\$83,579	\$79,400	\$75,430
sales taxes	\$435,140	\$404,241	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626
royalties	\$7,845,471	\$2,441,766	\$854,618	\$598,233	\$466,621	\$377,963	\$317,489	\$285,740	\$257,166	\$244,308	\$232,093
operating expense	\$2,602,038	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102
wages	\$2,128,669	\$1,140,633	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002
ND economy	\$17,915,160	\$5,657,033	\$1,577,450	\$1,159,334	\$944,701	\$800,117	\$701,495	\$649,718	\$603,120	\$582,150	\$562,229
Net Profit		\$8,993,562	\$3,550,258	\$2,430,062	\$1,855,028	\$1,467,664	\$1,203,441	\$1,064,724	\$939,878	\$883,698	\$830,326
Cumulative Net Profit	\$20,210,668	\$46,562	\$3,596,821	\$6,026,883	\$7,881,910	\$9,349,574	\$10,553,015	\$11,617,738	\$12,557,616	\$13,441,314	\$14,271,641
oil & gas value	\$47,072,828	\$14,650,596	\$5,127,708	\$3,589,396	\$2,799,729	\$2,267,780	\$1,904,935	\$1,714,442	\$1,542,998	\$1,465,848	\$1,392,555
Average BOPD	#	467	163	114	89	72	61	55	49	47	44
BO		170,317	59,611	41,728	32,547	26,363	22,145	19,931	17,938	17,041	16,189
Cumulative BO	677,622	170,317	229,927	271,655	304,202	330,566	352,711	372,642	390,580	407,621	423,809
Year	44 0	1	2	3	4	5	6	7	8	9	10
Total											
<div> <div>\$86.02 Oil price per barrel</div> <div>\$0.00 gas price per MCF</div> <div>\$0.08 natural gas tax rate</div> <div>\$1,503,096 Vertical Dry Hole</div> <div>\$2,505,160 Vertical Producing Well</div> <div>\$6,262,900 Horizontal Dry Hole</div> <div>\$8,947,000 Horizontal Producing Well</div> <div>\$10,842 Monthly Operating Cost</div> <div>16.7% Royalty rate</div> </div>											

12 months and 170,000 barrels of oil to pay out

Impact of Current Field Rule Production Curtailment

Typical Bakken Well Production



Impact of Current Field Rule Production Curtailment

gas production taxes	\$43,474	\$6,324	\$3,040	\$3,040	\$3,040	\$3,040	\$2,554	\$2,299	\$2,069	\$1,965	\$1,867
oil production taxes	\$2,244,657	\$326,531	\$156,986	\$156,986	\$156,986	\$156,986	\$131,868	\$118,681	\$106,813	\$101,473	\$96,399
total production taxes	\$2,288,130	\$332,855	\$160,027	\$160,027	\$160,027	\$160,027	\$134,422	\$120,980	\$108,882	\$103,438	\$98,266
extraction taxes	\$2,369,184	\$353,742	\$170,068	\$170,068	\$170,068	\$170,068	\$142,857	\$128,572	\$115,714	\$109,929	\$104,432
sales taxes	\$435,140	\$404,241	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626	\$1,626
royalties	\$7,482,189	\$1,088,437	\$523,287	\$523,287	\$523,287	\$523,287	\$439,561	\$395,605	\$356,044	\$338,242	\$321,330
operating expense	\$2,602,038	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102	\$130,102
wages	\$2,128,669	\$1,140,633	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002	\$52,002
ND economy	\$17,305,350	\$3,450,011	\$1,037,112	\$1,037,112	\$1,037,112	\$1,037,112	\$900,571	\$828,887	\$764,371	\$735,339	\$707,759
Net Profit		\$3,080,611	\$2,102,610	\$2,102,610	\$2,102,610	\$2,102,610	\$1,736,796	\$1,544,743	\$1,371,896	\$1,294,115	\$1,220,222
Cumulative Net Profit	\$18,640,781	-\$5,866,389	-\$3,763,778	-\$1,661,168	\$441,442	\$2,544,052	\$4,280,848	\$5,825,591	\$7,197,487	\$8,491,602	\$9,711,824
oil & gas value	\$44,893,132	\$6,530,622	\$3,139,722	\$3,139,722	\$3,139,722	\$3,139,722	\$2,637,367	\$2,373,630	\$2,136,267	\$2,029,454	\$1,927,981
Average BOPD	#	208	100	100	100	100	84	76	68	65	61
BO		75,920	36,500	36,500	36,500	36,500	30,660	27,594	24,835	23,593	22,413
Cumulative BO	722,139	75,920	112,420	148,920	185,420	221,920	252,580	280,174	305,009	328,601	351,015
Year	50 0	1	2	3	4	5	6	7	8	9	10
Total											

\$86.02 Oil price per barrel

\$0.00 gas price per MCF

\$0.08 natural gas tax rate

\$1,503,096 Vertical Dry Hole

\$2,505,160 Vertical Producing Well

\$6,262,900 Horizontal Dry Hole

\$8,947,000 Horizontal Producing Well

\$10,842 Monthly Operating Cost

16.7% Royalty rate

39 months and 170,000 barrels of oil to pay out

Comments from operators and midstream companies:

>Enormous reduction in drilling

>Reduced gathering and processing investment

NDPC Task Force Goals

- Reduce flared volume
- Reduce number of wells flaring
- Reduce duration of flaring from wells



Midstream Planning and Tracking

- Midstream companies meet with NDIC on a regular basis (i.e., annual, bi-annual) to status operations and updates
- Suggested reporting to include:
 - Percent gas captured by gathering system
 - Gathering forecast by gathering system
 - Status plant processing capacity and gathering capacity with future obligations and capture targets
 - Utilization and downtime/interruptions of service
 - Field compression downtime / Plant downtime/maintenance

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- Contracts dedicate gas over large areas / long time periods / numerous wells to a gathering company
 - >Production curtailment may constitute a temporary force majeure / release
 - >Temporary release provides window of opportunity for well site processes
- Semi-annual meetings (before and after each construction season) would allow DMR to gauge effect of Gas Capture Plans, production curtailments, contracts, and service interruptions
- Gathering companies indicate they are signing confidentiality agreements with operators
- Information will have to be aggregated to protect confidential client data

NDPC Task Force Goals

- Reduce flared volume
- Reduce number of wells flaring
- Reduce duration of flaring from wells



Pipeline Hotline

- NDIC develop and manage “hotline” for reporting surface owner issue related to pipelines
- Establish follow-up mechanism with company and surface owner to ensure quality control
- Provide landowner with easy notification system for problems and concerns

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- DMR recommends dedicating IT resources to develop a web based incident report form
 - >Surface owner could report problems with legal land description and photographs required
 - >Database for HB1333-NDAC 43-02-03-29 could use legal description to identify pipeline operator(s)
 - >Pipeline operators will have to maintain a list of contacts
 - >Multiple complaints or significant issues would result in dispatch of DMR field inspector, notice of violation, and potential complaint with civil penalties
 - >Agriculture Commission Mediation Services could be utilized

NDPC Task Force Goals

- Reduce flared volume
- Reduce number of wells flaring
- Reduce duration of flaring from wells



Flare Reporting and Monitoring

- Non-FBIR/FBIR flaring tracked separately
- Revise current NDIC gas production and sales report to include:
 - Non-routine flaring operations - safety, power outages, pressure control, pigging, etc.
 - Well testing and flowback operations
- NDPA report on target capture status to NDIC
 - 4rd Qtr. 2014
 - 2nd Qtr. 2015
 - 1st Qtr. 2016

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- Pipeline Authority has the ability to track flaring on-off Fort Berthold, to track capture status and report to NDIC**
- Revising NDIC gas production and sales report not recommended**
 - >Production and flaring data is 2 months old when filed (Jan 2014 data filed Mar 2014)**
 - >Gas production and flaring data is frequently amended for up to 12 months**
 - >Of 9,631 producing wells in Nov 2014 – 74% flare 0 or are stripper wells flaring 1-15 MCFD**
 - >IT resources of 6-9 man months required to modify database, modify all auditing queries, modify reporting schema, and re-train over 150 operators**
 - >Current processes using Maximum Efficient Rate (MER) exemptions and Form 4 (Sundries) are adequate for approving and monitoring non-routine and well testing flaring**

NDIC Action Items

- 1. Require Gas Capture Plans for all future increased density, temporary spacing, and proper spacing cases**
- 2. Require Gas Capture Plans for all application for permit to drill (APD) after June 1, 2014**
 - a. Add requirement of affidavit that GCP has been provided to listed gathering companies in area**
- 3. Meet semi-annually with gathering companies to gauge effect of Gas Capture Plans, production curtailments, contracts, and service interruptions**
- 4. Dedicate IT resources to develop a web based pipeline incident report form**
- 5. Direct Pipeline Authority to track flaring on-off Fort Berthold and to track and report capture status vs goals**
- 6. Docket for hearing a motion to review and revise all Bakken and Three Forks field rules governing production curtailment**