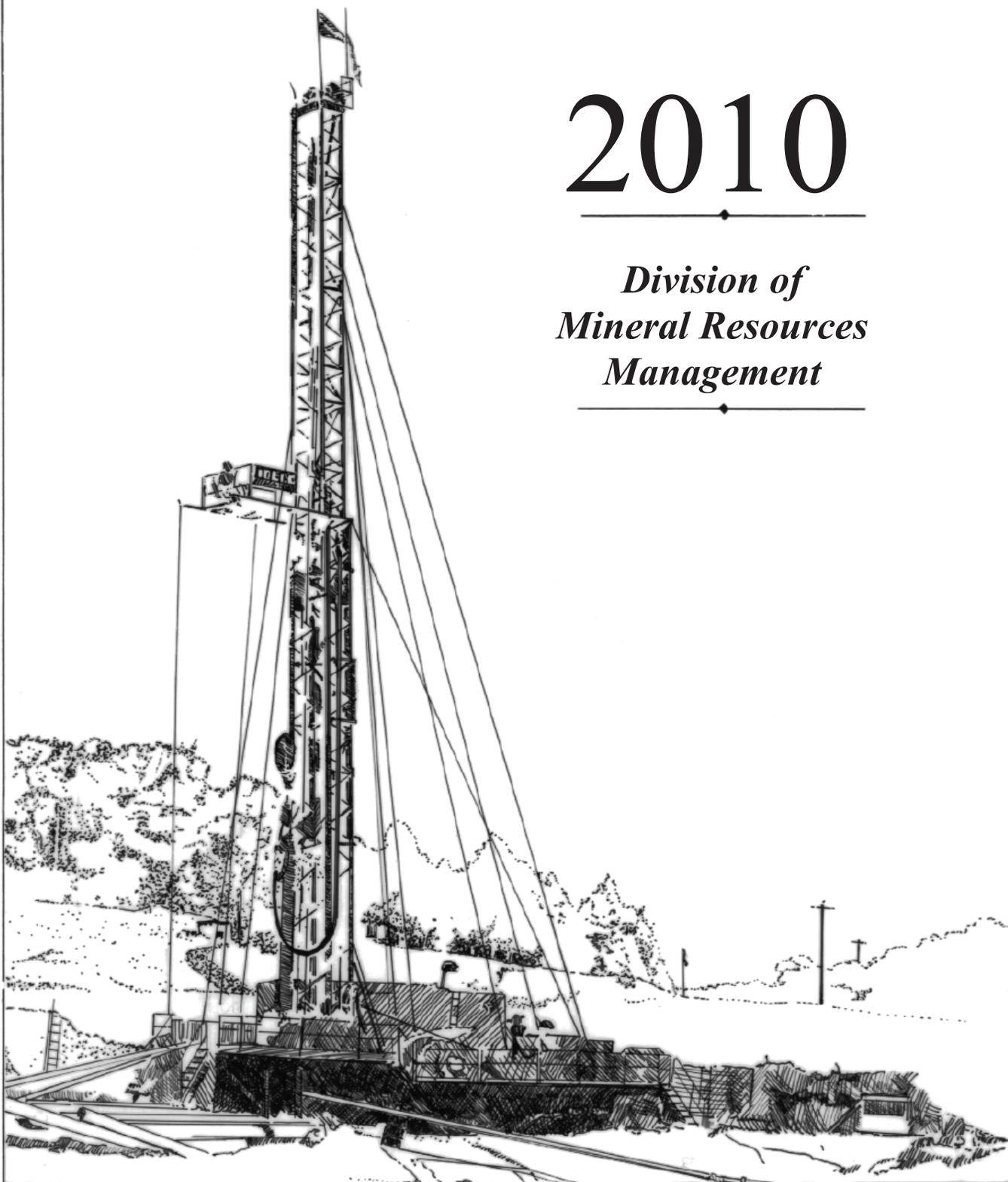


# SUMMARY OF OHIO OIL AND GAS ACTIVITIES

# 2010

*Division of  
Mineral Resources  
Management*



## Who We Are

The Division of Mineral Resources Management provides for the safe and environmentally sound development and restoration of mineral and fossil fuel extraction sites.

Diverse and comprehensive programs address the environmental and safety aspects of the coal and mineral mining, and oil and gas extraction industries, while maintaining high standards of regulatory effectiveness.

The division also plugs abandoned oil and gas wells and restores abandoned mine lands, enforces mining safety laws, ensures protection of freshwater resources, and maintains a database of oil and gas well owners.

Program and support services include Permitting/Hydrology/Bonding, Field Inspection/Enforcement, Abandoned Mine Lands, Mine Safety, and Administration/Human Resources/Financial Support.

Expertise is provided by a professional staff of geologists, environmental specialists, engineers, blasting specialists, soil scientists, hydrologists, archaeologists, and hydrogeologists.

Funding for programs comes from severance taxes on coal, minerals, oil and gas; federal grants; and general revenue funds.

For more information about the division, go to [www.ohiodnr.com/mineral](http://www.ohiodnr.com/mineral).

## Introduction

This forty-sixth edition of the Summary of Ohio Oil & Gas Activities (**The McCormac Report**) remains dedicated to accurately presenting statistics that may reflect trends important to Ohio's oil and gas industry, citizens and other governmental agencies. This report includes data submitted through February 25, 2011. You may also note that some 2009 statistics have been adjusted to include well completion reports received after last year's cut-off date. The 2009 report estimated 558 wells were drilled; the total number has been revised to 563. There are no major revisions in this year's report.

### **Highlights include:**

- 5,664 registered well owners, including 4,200 domestic owners, operating 64,378 wells.
- Issued 1,512 permits, including 651 drilling permits.
- Issued 182 urbanized area permits in 16 counties.
- Drilled an estimated 431 oil and gas wells in 44 of Ohio's 88 counties.
- Cuyahoga County was the most active county with 37 wells drilled.
- Well drilled to a record-setting depth of 13,727 feet in Belmont County.
- Produced 4,784,690 barrels of crude oil, at an average price of \$74.42 per barrel.
- Produced more than 78 billion cubic feet of natural gas, at an average price of \$4.68 per mcf.
- The combined market value of crude oil and natural gas production was \$718,089,496.
- 429 wells were plugged including 12 contracted by the Orphan Well Program.

### **To make oil and gas well data more accessible, the Division:**

- Distributed 191 copies of RBDMS, our oil and gas well database.
- Upgraded RBDMS to Access 2007 and Access 2010.
- Developed a new RBDMS weekly update that includes the entire database.

### **We are currently working on:**

- Implementation of Substitute Senate Bill 165. This bill went into effect June 30, 2010 and is the most significant update to the Oil & Gas Law in history. Broadly, it focused on three areas: updating Ohio's oil and gas law to improve protection of public health, safety and the environment; making changes to Ohio's Urban Drilling Program to address a variety of issues that had arisen since its formal inception; and increasing revenues in order to provide an adequate and sustainable funding level for the Oil and Gas Program.

Mike McCormac  
Manager, DMRM Oil and Gas Permitting Program

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## Permitting

The Division issued 1,512 permits, an increase of 30 (2.0%) from 2009 (Figure 1). This total includes permits issued to convert, deepen, drill, plug back, plug and abandon, reissue and reopen. Permits were issued in 12 days on average, the same as in 2009.

Permits issued to drill for oil and gas totaled 651, a 11.3% decrease (83 permits) from last year. These permits included 552 new permits and 99 re-issued permits. Clinton sandstone permits decreased by 120 for a total of 307 and accounted for 47% of all drill permits. Devonian shale permits decreased by 13 for a total of 55, including 15 issued for Marcellus shale, and accounted for 8% of all drill permits. Deep well permits increased by 41 for a total of 152 and accounted for 23% of all drill permits. Deep well permits are those issued to drill to formations below the Cambro-Ordovician Knox unconformity such as the Beekmantown dolomite, Rose Run sandstone, Trempealeau dolomite and Mt. Simon Sandstone. Berea Sandstone permits increased by 17 for a total of 75 (12% of the total).

Seven hundred and forty plugging permits were issued, an increase of 106 (16.7%) from 2009, which includes 20 permits for the Orphan Well Program.

Notable permitting highlights for 2010 include:

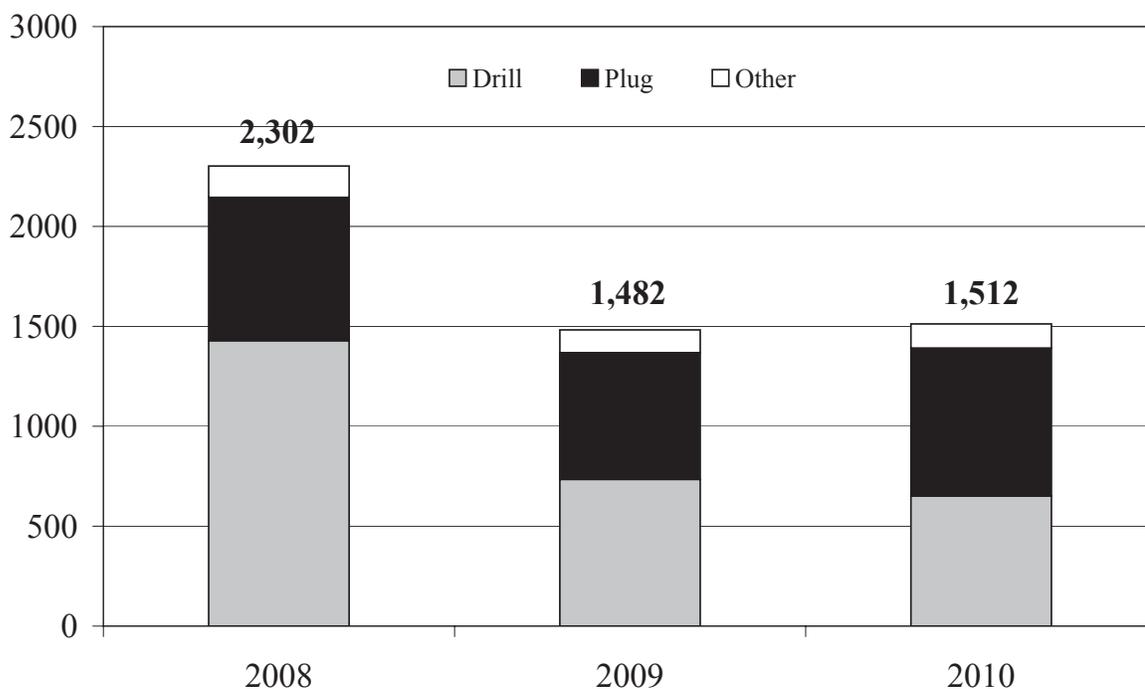
- Issued 182 urbanized area permits (a decrease of 13) in 16 counties. The top five counties were Cuyahoga (58), Summit (23), Trumbull (20), Mahoning (16), Portage and Stark (12 each);
- Reviewed 17 mandatory pooling applications;
- Processed 51,230 production reports for 2009.

## Bonding/Ownership

Oil and gas well bond release does not occur until an owner has successfully plugged and restored or transferred ownership and liability of *all* oil and gas wells under the operator's permits in Ohio. During 2010, 95 bonds were released and 146 new owners were registered.

Section staff also manages all information and records concerning current well ownership and well transfers. During 2010, records were managed for 5,664 registered well owners including 4,200 domestic owners and 1,464 commercial owners. Staff also recorded 5,908 changes in well ownership. There are 64,378 active wells in Ohio.

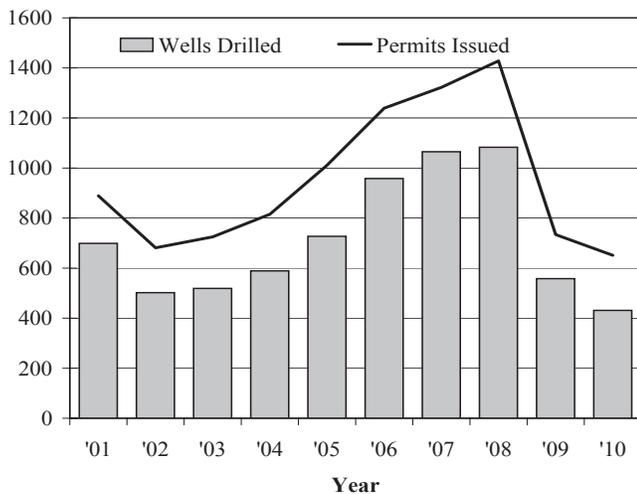
**Figure 1 - Oil & Gas Permits Issued  
2008 - 2010**



## Drilling

A continued reduction in market prices resulted in the lowest number of wells drilled since at least 1887 (Appendix I). In 2010, an estimated 431 oil and gas wells were drilled, which was a decrease of 132 wells (23.5%) from 2009 (Figure 2). Wells were drilled in 44 of Ohio's 88 counties, an increase of four (Figure 3).

**Figure 2 - Drill Permits vs. Wells Drilled 2001 - 2010**



## Completions

Of the well completion reports submitted by February 25, 2011 to the division, 312 were productive and 45 were dry holes, for a 87% completion rate (Table I).

- Total footage is estimated at 1,719,634 feet compared to 2,155,252 for 2009.
- Average well depth was 3,990 feet, an increase of 162 feet per well.
- The median well depth was 3,924 feet.
- Total depths ranged from 465 feet in the Berea Sandstone (Licking County) to 10,491 feet in the Trempealeau dolomite (Belmont County).

A summary of oil and gas completion statistics by county appears in Table II.

Completion zones ranged from the Pennsylvanian Coal to the Precambrian granite. Guernsey, Monroe and Washington Counties had wells drilled to four different geologic zones. The Clinton sandstone and Knox formations accounted for 74% of all wells drilled. A summary of oil and gas completion statistics by producing zones appears in Table III.

## Formation Highlights

The Clinton sandstone was the most actively drilled zone accounting for 53% percent of all wells drilled. An estimated 230 wells were drilled, 90 less than the 320 wells drilled in 2009. Clinton sandstone wells averaged 4,147 feet in depth, an increase of 412 feet per well. Clinton sandstone wells were drilled in 21 counties, four less than last year. The most active counties were Cuyahoga (37), Trumbull (26), Knox (25), Summit (22) and Stark (19).

An estimated 48 Berea Sandstone wells were drilled, five more than last year. Drilling occurred in 13 counties. Washington led with eight wells followed by Ashland (7).

An estimated 40 wells were drilled to the Ohio Shale, a decrease of 57 wells. Drilling occurred in six counties. Monroe County led with 16 wells followed by Guernsey (8) and Noble (7). The average depth per well was 3,223 feet, a decrease of 241 feet per well.

Drilling to the Knox formation increased. There were 87 wells drilled, seven more than in 2009. Drilling occurred in these formations: Beekmantown (27), Rose Run (18) and Trempealeau (42). Drilling occurred in 24 counties with Tuscarawas (17), Morrow (13) and Knox (7) the most active.

## Wells Completed by Month and Owner

Drilling activity averaged 36 wells per month compared to 47 per month in 2009. October was the most active month with 53 wells (Figure 4).

One hundred and twenty-six owners drilled wells in 2010. Ninety-two percent of these owners drilled less than 10 wells. The highest number of wells drilled by a single owner was 27 (Figure 5) and the 10 most active operators drilled 37% (158) of all wells.

## Wells Completed by Type of Tool

Rotary tools drilled the majority of wells. Cable-tool rigs drilled 37 wells and operated in eight counties. Knox (9) and Licking (7) Counties had the highest number of cable tool operations. Cable tool depths ranged from 583 feet (Ashland County) to 3,635 feet (Coshocton County). The average depth per well drilled by cable tool was 1,908 feet, an increase of 47 feet; rotary-drilled wells averaged 4,230 feet, an increase of 184 feet per well.



**TABLE I – DRILLING OPERATIONS BY TYPE OF WELL – 2010**

	<b>Drilled</b>	<b>Converted</b>	<b>Total Footage</b>
Productive Wells	319		1,222,950
Dry Holes	38		201,424
Reopened Wells	13		0
Lost Holes	6		12,518
Gas Storage Wells	1		2,445
Conventional Brine Injection Wells	6	6	13,011
Stratigraphic Test Wells	1		6,950
Solution Mining Wells	2		6,300
<b>TOTAL</b>	<b>386</b>	<b>6</b>	<b>1,465,598</b>

### Ten Most Active Counties

Cuyahoga County was ranked first with 37 wells drilled, a decrease of six wells (Table IV). Urbanized drilling accounted for every well in this county. All of these wells were drilled to the Clinton sandstone. Licking County, ranked first in 2009, dropped to fourth with a decline of 35 wells.

Eight of these counties were in the top-ten last year. These new counties were last in the top ten as follows: Muskingum and Stark (2008), Mahoning (2007) and Summit (1995). The largest increases were in Stark (15) and Carroll (12). The largest decreases, in addition to Licking, took place in Noble (27), Geauga (16), Tuscarawas (14) and Knox (13) Counties.

### Directional Drilling

This technology is generally being used to access oil and gas in the following ways: under environmentally sensitive areas or densely populated areas, and horizontally in the Marcellus Shale. Forty-five directional drilling permits were issued to drill wells in 12 counties, which was an increase of four permits from 2009. Five were to horizontally drill in the Marcellus Shale. The majority of remaining permits were issued to the Clinton sandstone in northeastern Ohio. The most active counties were Cuyahoga (16), Summit (8) and Mahoning (6).

### Exploratory Wells

Exploratory drilling remains constant as a percentage to the total number of wells drilled. Thirty-eight wells (9%) of all wells completed were classified as exploratory which is comparable to 2009 (Figure 6). Of these, 22 were productive and 16 were dry, representing a 58% success rate.

Wells were drilled in 18 counties. Muskingum (8), Guernsey and Knox (4 each) were the most active counties. Other notable exploratory wells were drilled throughout the state ranging from Lucas (NW) to Greene (SW) to Mahoning (NE) to Belmont (E).

The majority of exploratory wells were classified as either ‘outposts’ (18) or ‘deeper pool wildcats’ (15). Productive rates were as follows: ‘outposts’ - 66% and ‘deeper pool wildcats’ - 40%.

Wells drilled below the Knox unconformity (26) accounted for the majority of exploratory activity. Wells drilled to formations below the Knox unconformity such as the Beekmantown dolomite, Rose Run sandstone, and Trempealeau dolomite are almost always seismic prospects. Sixteen of these wells were dry holes.

Unprecedented leasing activity for the Marcellus and Utica shales should lead to exploratory drilling in these formations in 2011.

**TABLE II - OIL AND GAS COMPLETION STATISTICS BY COUNTY – 2010**

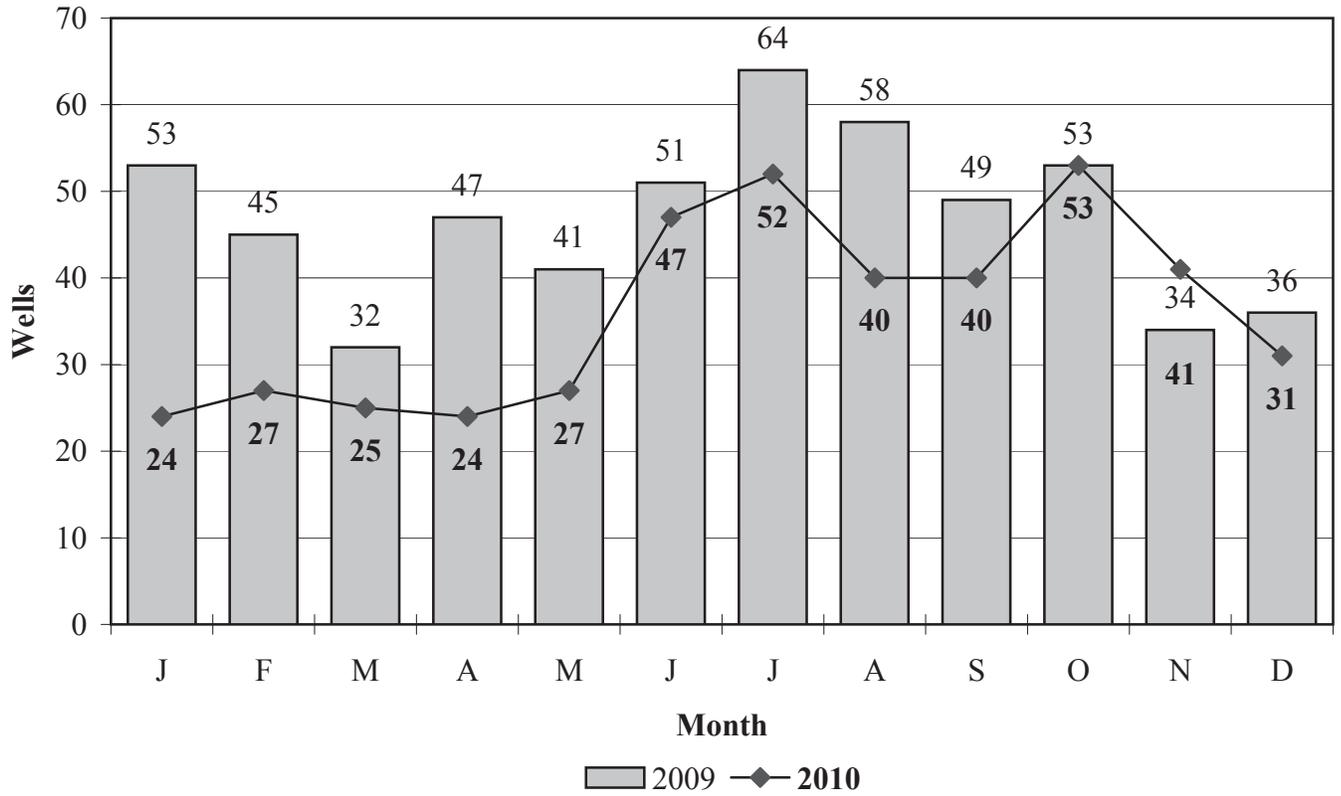
County	Depth Range of Reservoirs		Major Targeted Reservoirs	Development		Exploratory		Total Wells	Percent Productive	Drilled Footage		
	Shallow	Deep		Productive	Dry	Productive	Dry			Productive	Dry	Total
Ashland	481	830	Berea	2	4	0	0	6	33.33	1,563	2749	4312
Ashtabula	2,749	2,900	Clinton	4	0	0	0	4	100.00	12,057	0	12,057
Athens	1,157	1,176	Berea	1	0	0	0	1	100.00	1,200	0	1,200
Auglaize	890	1,147	Trenton	1	0	0	0	1	100.00	2,692	0	2692
Belmont	9,585	10,116	Trempealeau	0	0	0	1	1	0.00	0	10,491	10,491
Carroll	5,052	8,339	Clinton	10	0	2	1	13	92.31	71,642	9,503	81,145
Coshocton	770	6,755	Clinton	14	1	0	0	15	93.33	51,014	6,597	57,611
Cuyahoga	2,980	3,723	Clinton	25	3	0	0	28	89.29	91,553	9,830	101,383
Delaware	3,237	3,343	Trenton	1	0	0	0	1	100.00	3,343	0	3,343
Fairfield	619	4,434	Rose Run	0	2	0	2	4	0.00	0	15,096	15,096
Geauga	3,502	4,216	Clinton	10	0	0	0	10	100.00	39,865	0	39865
Greene	1,710	1,805	Trempealeau	0	0	0	1	1	0.00	0	3,347	3,347
Guernsey	908	7,885	Ohio Shale	10	1	2	2	15	80.00	52,370	22,276	74,646
Harrison	484	1,067	Coal	1	0	2	0	3	100.00	2,083	0	2,083
Holmes	602	5,655	Rose Run	2	0	0	1	3	66.67	6,484	5,375	11,859
Huron	3,245	3,494	Trempealeau	6	0	0	0	6	100.00	20,410	0	20,410
Jefferson	4,906	4,936	Oriskany	1	0	0	0	1	100.00	4,986	0	4,986
Knox	1,222	4,572	Clinton	21	1	2	2	26	88.46	68,494	14,237	82,731
Lake	2,965	3,380	Clinton	1	0	2	0	3	100.00	9,985	0	9,985
Lawrence	579	869	Cow Run	4	0	0	0	4	100.00	3,338	0	3,338
Licking	466	3,095	Clinton	16	2	1	0	19	89.47	39,182	1,209	40,391
Lucas	1,265	1,541	Trenton	0	0	0	1	1	0.00	0	2,080	2,080
Mahoning	5,078	5,958	Clinton	15	0	0	1	16	93.75	86,537	9,192	95,729
Marion	2,735	2,745	Trempealeau	1	0	0	0	1	100.00	2,829	0	2,829
Medina	3,132	3,194	Clinton	0	1	0	0	1	0.00	0	5,548	5,548
Meigs	1,289	1,830	Ohio Shale	3	0	1	0	4	100.00	7,110	0	7,110
Monroe	1,342	6,060	Ohio Shale	16	0	2	0	18	100.00	55,670	0	55,670
Morgan	1,133	1,601	Berea	5	0	0	0	5	100.00	7,030	0	7,030
Morrow	3,307	4,100	Trempealeau	5	5	0	0	10	50.00	19,012	18,722	37,734
Muskingum	2,930	7,159	Beekmantown	11	1	6	2	20	85.00	112,024	20,877	132,901
Noble	1,489	5,761	Ohio Shale	7	0	1	0	8	100.00	28,087	0	28,087
Perry	1,145	1,197	Berea	1	2	0	0	3	33.33	1,195	1,787	2,982
Portage	4,009	7,386	Clinton	15	0	0	0	15	100.00	72,994	0	72,994
Richland	3,572	3,844	Trempealeau	1	0	0	0	1	100.00	3,844	0	3,844
Sandusky	1,379	2,165	Trenton	2	1	0	1	4	50.00	3,250	3,745	6,995
Stark	4,132	7,556	Clinton	14	3	0	0	17	82.35	72,609	20,344	92,953
Summit	3,472	4,274	Clinton	18	0	0	0	18	100.00	72,050	0	72,050
Trumbull	3,998	5,476	Clinton	25	1	0	0	26	96.15	128,491	4,755	133,246
Tuscarawas	930	8,040	Berea	7	0	1	1	9	88.89	28,321	8,245	36,566
Washington	1,143	2,490	Berea	11	0	0	0	11	100.00	22,290	0	22,290
Wayne	5,335	6,470	Trempealeau	3	1	0	0	4	75.00	17,346	5,419	22,765
				<b>290</b>	<b>29</b>	<b>22</b>	<b>16</b>	<b>357</b>	<b>87.39</b>	<b>1,222,950</b>	<b>201,424</b>	<b>1,424,374</b>

Note: No completion information was available at the time of this printing for the following counties: Columbiana, Hocking and Ross.

**TABLE III - OIL AND GAS COMPLETION STATISTICS BY PRODUCING ZONE – 2010**

Producing Zones	Reservoir Depth Range		Development Wells		Exploratory Wells		Total Wells	Percent Productive	Drilled Footage		
	Shallow	Deep	Productive	Dry	Productive	Dry			Productive	Dry	Total
	Pennsylvanian (Coal - Maxton)	484	1,274	6	0	2			0	8	100.00
Mississippian (Keener - Squaw)	908	1,440	2	0	0	0	2	100.00	2,425	0	2,425
Mississippian (1st & 2nd Berea)	466	2,848	30	8	1	0	39	79.49	43,781	5,745	49,526
Devonian (Ohio Shale)	1,222	5,725	29	0	5	0	34	100.00	109,566	0	109,566
Devonian (Oriskany)	4,906	6,060	1	0	1	0	2	100.00	11,186	0	11,186
Silurian (Clinton - Medina)	2,105	5,958	181	5	2	0	188	97.34	762,533	17,105	779,638
Ordovician (Trenton)	890	8,339	3	1	1	0	5	80.00	14,942	1,580	16,522
Ordovician (Beekmantown)	6,234	7,885	13	2	7	5	27	74.07	139,041	51,398	190,439
Cambro-Ordovician (Rose Run)	3,237	8,185	6	5	1	3	15	46.67	49,444	49,020	98,464
Cambrian (Trempealeau – Mt. Simon)	2,735	10,116	19	8	2	7	36	58.33	83,010	73,229	156,239
Precambrian	3,015	3,343	0	0	0	1	1	0.00	0	3,347	3,347
<b>TOTAL</b>			<b>290</b>	<b>29</b>	<b>22</b>	<b>16</b>	<b>357</b>	<b>87.39</b>	<b>1,222,950</b>	<b>201,424</b>	<b>1,424,374</b>

**Figure 4 - Wells Completed by Month  
2009 - 2010**



**Figure 5 - Wells Completed by Owner  
2010**

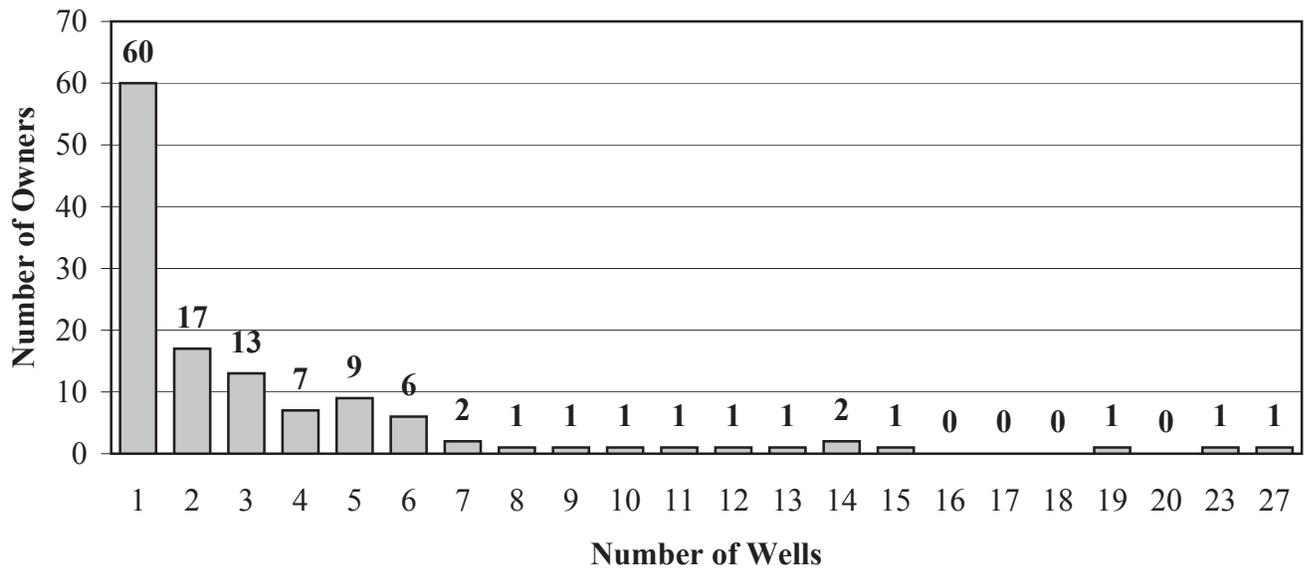
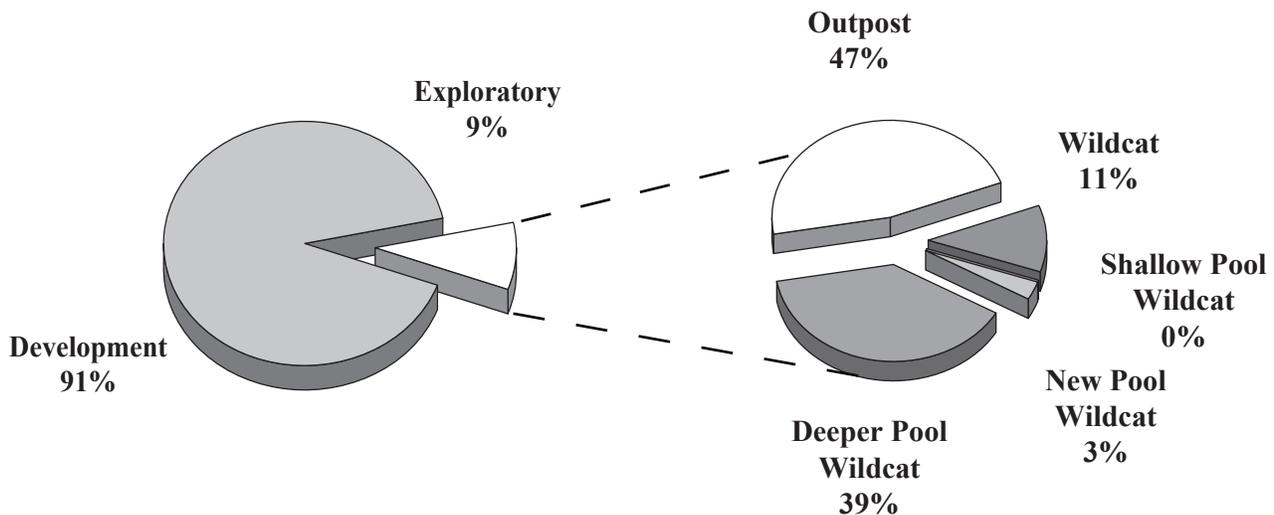


TABLE IV - TEN MOST ACTIVE COUNTIES - 2010					
2010 Rank	County	Wells Drilled	2009 Rank	Avg. Depth Per Well	Est. Footage Drilled
1	Cuyahoga	37	(3)	3,621	133,977
2	Knox	34	(2)	3,182	108,188
3	Trumbull	26	(9)	5,125	133,250
4	Licking	24	(1)	2,126	51,024
5	Stark	23	(21)	5,468	125,764
6	Monroe	22	(6)	3,093	68,046
6	Summit	22	(11)	4,003	88,066
8	Muskingum	21	(13)	6,645	139,545
9	Coshocton	19	(8)	3,841	72,979
10	Guernsey	16	(6)	4,976	79,616
10	Mahoning	16	(12)	5,983	95,728
10	Portage	16	(21)	4,866	77,856

**Figure 6 - Development vs. Exploratory Wells  
2010**



### County Drilling Depth Records

There were 5 new drilling depth records including a new record for the deepest well ever drilled. In Belmont County, a well was drilled 13,727 feet into the Precambrian Granite, 5,343 feet deeper than the former record holding well drilled in 2007. This is also the state record replacing the previous record of 11,442 feet in Noble County from 1967 (Appendix II).

In Carroll County, a well was drilled 9,503 feet

into the Rose Run Sandstone, 43 feet deeper than the former record holding well drilled in 1997. In Greene County, a well was drilled 3,347 feet into the Precambrian Granite, 1,389 feet deeper than the former record holding well drilled in 1940. In Mahoning County, a well was drilled 9,192 feet into the Trempealeau dolomite, 592 feet deeper than the former record holding well drilled in 1997. In Meigs County, a well was drilled 9,082 feet into the Trempealeau dolomite, 1,616 feet deeper than the former record holding well drilled in 1944.

## Production

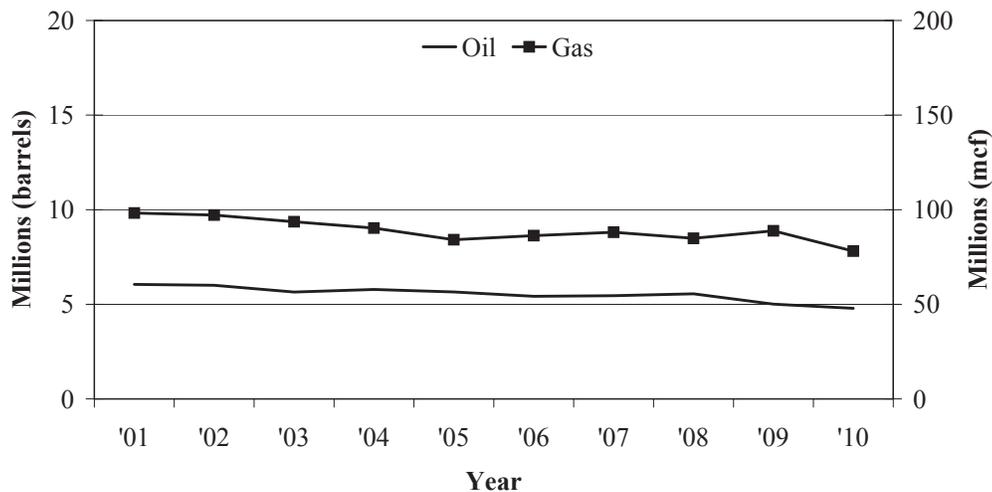
Ohio's total reported crude oil production was 4,784,690 barrels (Figure 7, Table V), a decrease of 223,919 barrels (4.47%) from 2009. In 2010, daily production averaged 13,109 barrels compared to 13,722 barrels in 2009. Through 2010, Ohio wells have produced 1,136,527,742 barrels.

Ohio wells produced 78,121,523 mcf of natural gas, a decrease of 10,702,896 mcf (12%) from 2009

(Figure 7, Table V). Gas production figures include an estimated 773,480 mcf of natural gas used on the lease. In 2010, daily production averaged 214,032 mcf compared to 243,355 mcf in 2009. Through 2010, Ohio wells have cumulatively produced 8,520,098,247 mcf of natural gas.

The 2010 production totals were compiled by the Ohio Oil and Gas Association; oil reserve, gas reserve and gas consumption totals are based on data from the Department of Energy, Energy Information Administration.

**Figure 7 - Oil & Gas Production  
2001 - 2010**



**TABLE V – CRUDE OIL & NATURAL GAS PRODUCTION, RESERVES & CONSUMPTION – 2001 - 2010**

Year	OIL (thousands of barrels)		GAS (mmcf)		
	Production	Reserves	Production	Reserves	Consumption
2001	6,050	46,000	98,255	970,000	804,243
2002	6,004	67,000	97,154	1,117,000	830,955
2003	5,647	66,000	93,641	1,126,000	848,388
2004	5,785	49,000	90,301	974,000	825,753
2005	5,652	46,000	84,135	898,000	825,961
2006	5,422	49,000	86,315	975,000	742,440
2007	5,455	48,000	88,095	1,027,000	806,350
2008	5,554	38,000	84,858	985,000	792,247
2009	5,009	38,000	88,824	896,000	738,596
2010	4,785	N/A	78,122	N/A	N/A

## Market Value

Crude oil production valued at \$356,089,056 increased 27.96% (\$77,816,246) from its 2009 value. The average price per barrel was \$74.42, a 34% increase from 2009's average price of \$55.56 per barrel (Table VI). Posted oil prices ranged from a low of \$61.75 (May 21<sup>st</sup>) to a high of \$87.50 (Dec. 27<sup>th</sup>) per barrel. During 2010, the daily posted price for Ohio crude oil was on average \$5.09 less than the

near-month settle price for crude oil (CL) at the New York Mercantile Exchange (NYMEX).

The market value of natural gas decreased 6.5% (\$25,166,399) to \$362,000,440. The average price paid per mcf was \$4.68 in 2010, an increase of \$0.32 per mcf from 2009 (Table VI). The Appalachian price index, based on a weighted average between Columbia and Dominion, ranged from a low of \$3.42 in November to a high of \$6.21 in January.

Ohio's combined oil and gas market value increased by 4.89% (\$33,453,354). The total dollar value of \$718,089,496 is the lowest since 2003 (Figure 8).

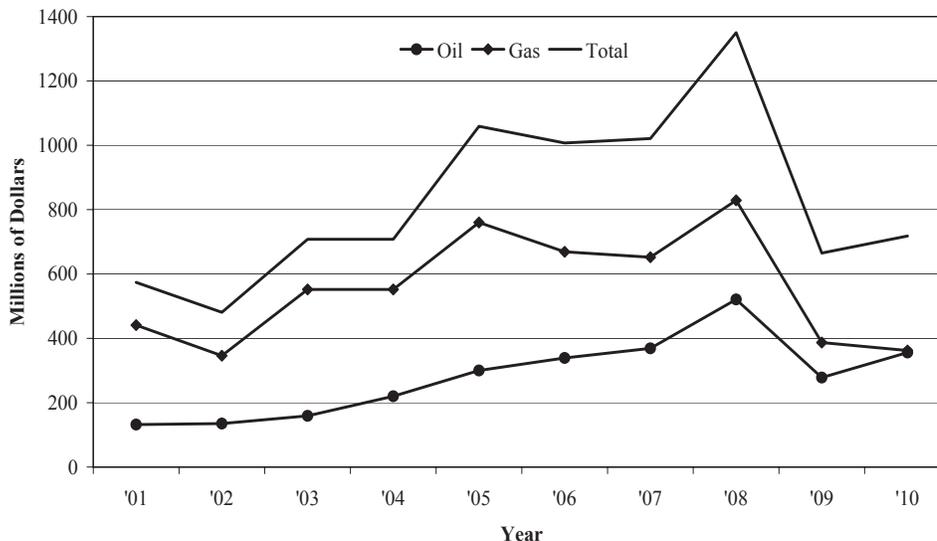
Year	Oil \$/Bbl	Gas \$/Mcf
2001	\$21.84	\$4.49
2002	\$22.50	\$3.56
2003	\$27.64	\$5.90
2004	\$38.00	\$6.65
2005	\$53.03	\$9.03
2006	\$62.43	\$7.75
2007	\$67.69	\$7.40
2008	\$93.79	\$9.77
2009	\$55.56	\$4.36
2010	\$74.42	\$4.68

## Plugging Activity

Plugging activity declined slightly by three wells. Figure 9 compares plugging and drilling activity. In 2010, 429 wells were plugged compared to 432 in 2009. (Note: The 2009 total was revised from 388.) This total does not include dry or lost holes that were plugged in 2010. Twelve of these wells were plugged through the Orphan Well Program including four funded through the Landowner Grants Program. Additionally, two previously plugged wells were reopened for the purpose of replugging them.

Wells were plugged in 40 counties (Figure 10). Muskingum County (40) was the most active plugging county followed by Ashtabula (35), Coshocton and Perry (33 each), and Licking (28).

**Figure 8 - Dollar Value of Oil & Gas  
2001 - 2010**





### Appendix 1 - WELLS DRILLED IN OHIO

Year	Productive	Dry	Total	Berea	Ohio Shale	Clinton	Trenton	Rose Run	Cambrian
Prior (a) 1888 (b)	6,022	---	6,022				2,234		
1888 (1)	617	---	617				542		
1889	1,590	132	1,722				702		
1890	2,497	96	2,593				2,151		
1891	1,709	56	1,765				1,572		
1892	1,551	38	1,589				1,465		
1893	2,067	46	2,113				1,877		
1894 (c)	3,216	85	3,301				3,001		
1895	6,020	127	6,147				5,559		
1896 (d)	5,600	856	6,456				4,339		
1897	3,442	300	3,742			987	2,755		
1898	3,338	172	3,510			132	2,852		
1899	6,399	408	6,807			151	4,469		
1900	6,098	457	6,555			116	5,013		
1901	4,559	573	5,132			148	3,524		
1902	5,651	649	6,300			306	4,213		
1903	5,880	777	6,657			352	4,072		
1904	4,974	858	5,832			382	3,141		
1905	3,027	680	3,707			400	1,578		
1906	2,903	681	3,584			388	1,535		
1907	2,146	611	2,757			521	890		
1908	2,083	695	2,778			522	848		
1909	2,881	966	3,847			694	873		
1910	2,059	670	2,729			668	572		
1911	2,270	507	2,777			641	527		
1912	3,527	956	4,483			926	551		
1913	2,560	603	3,163			643	972		
1914	2,371	534	2,905			943	861		
1915	1,672	498	2,170			952	260		
1916	2,028	525	2,553			469	699		
1917	1,864	504	2,368			587	535		
1918	1,708	446	2,154			605	466		
1919	2,486	585	3,071			940	385		
1920	2,421	722	3,143			1,240	565		
1921	1,675	620	2,295			853	461		

### Appendix 1 - WELLS DRILLED IN OHIO

Year	Productive	Dry	Total	Berea	Ohio Shale	Clinton	Trenton	Rose Run	Cambrian
1922	1,989	607	2,596			906	522		
1923	1,779	537	2,316			642	697		
1924	1,704	439	2,143			605	592		
1925	1,680	414	2,094			434	627		
1926	1,722	382	2,104			522	460		
1927	1,286	337	1,623				262		
1928	1,305	395	1,700				204		
1929	1,936	634	2,570				191		
1930	1,562	572	2,134				205		
1931	789	287	1,076				148		
1932	546	224	770				124		
1933	496	183	679				123		
1934	883	276	1,159				103		
1935	544	192	736				94		
1936	754	246	1,000				81		
1937	813	432	1,245						
1938	622	288	910						
1939	713	319	1,032						
1940	818	410	1,228						
1941	1,034	527	1,561						
1942	652	356	1,008						
1943	625	391	1,016						
1944	647	393	1,040						
1945	649	385	1,034						
1946	885	408	1,293						
1947	899	484	1,383						
1948	921	534	1,455						
1949	626	426	1,052						
1950 (2)	666	476	1,142	436	8	418	25		3
1951	626	435	1,061	394	10	406	18		6
1952	670	470	1,140	368	15	459	47		2
1953 (e)	711	386	1,097	359	21	402	30		6
1954	788	407	1,195	441	13	395	25		2
1955	898	336	1,234						

### Appendix 1 - WELLS DRILLED IN OHIO

Year	Productive	Dry	Total	Berea	Ohio Shale	Clinton	Trenton	Rose Run	Cambrian
1956	878	367	1,245	364	13	663	32		5
1957	773	268	1,041	260	12	579	21		2
1958	852	316	1,168	303	13	650	19		5
1959	843	315	1,158	300	11	672	20		13
1960	707	309	1,016	218	5	597	7		20
1961	809	295	1,104	257	10	619	4		42
1962	820	326	1,146	358	2	542	10		72
1963 (f)	748	407	1,155	266	2	443	14	4	302
1964	1,075	1,579	2,654	197	2	499	34	9	1,800
1965 (g)	904	801	1,705	195	2	635	53	16	729
1966	872	399	1,271	227	4	692	18	8	261
1967	953	258	1,211	170	17	853	18	4	132
1968	988	229	1,217	136	66	832	21	6	81
1969	926	183	1,109	104	17	863	13	10	56
1970	1,165	190	1,355	84	15	1,146	5	6	42
1971	1,065	173	1,238	98	11	1,038	5	5	37
1972	1,125	168	1,293	112	21	1,082	3	10	32
1973	1,337	166	1,503	76	31	1,345	5	5	26
1974	1,601	167	1,768	91	13	1,587	3	8	31
1975	1,105	115	1,220	62	6	1,103	5	17	22
1976	1,774	164	1,938	165	30	1,631	38	18	16
1977	2,455	171	2,626	390	34	2,083	33	11	15
1978 (h)	3,132	283	3,415	430	22	2,834	22	27	12
1979	3,480	179	3,659	542	131	2,848	22	29	23
1980	4,935	165	5,100	867	78	3,734	1	24	31
1981	5,685	400	6,085	733	543	4,366		16	50
1982	4,488	342	4,830	756	458	3,426		11	4
1983	4,000	299	4,299	557	533	3,203	1	7	51
1984	4,593	370	4,963	612	329	3,827		9	65
1985	3,546	214	3,760	345	315	3,042		19	94
1986	1,725	125	1,850	185	76	1,482		28	62
1987	1,721	161	1,882	153	40	1,454		70	55
1988	1,267	156	1,423	112	43	1,037		94	62
1989	1,153	159	1,312	69	145	890		92	77
1990	1,147	180	1,327	61	97	863		143	102

WELLS DRILLED IN OHIO									
Year	Productive	Dry	Total	Berea	Ohio Shale	Clinton	Trenton	Rose Run	Cambrian
1991	1,001	170	1,171	89	89	794		116	108
1992	710	165	875	100	51	465		139	87
1993	643	180	823	60	35	330	2	260	89
1994	601	182	783	26	13	301	9	269	75
1995	507	163	670	25	11	253	2	202	94
1996	559	166	725	35	42	253	1	219	90
1997	620	178	798	33	20	277	0	223	110
1998	383	135	518	66	16	154	0	161	61
1999	407	95	502	32	65	177	5	106	55
2000 (i)	455	112	567	18	14	281	3	124	77
2001	599	100	699	36	29	396	1	113	58
2002	432	72	504	8	48	265	0	88	47
2003	454	65	519	30	60	257	2	82	40
2004 (j)	534	55	589	32	97	319	1	66	24
2005	658	69	727	48	116	409	7	45	50
2006	914	45	959	89	134	636	8	18	23
2007	1,022	46	1,068	90	157	672	7	35	32
2008	1,026	61	1,087	123	155	661	1	21	38
2009	517	46	563	43	97	320	2	30	25
2010 (k)	386	45	431	48	40	230	5	18	42
TOTAL (l)	221,204	42,570	263,774	12,886	4,503	80,365	71,120	3,041	5,713

References

- Years 1888-1950: Alkire, Robert L., 1951, Oil and Gas Production, History, Regulation, Secondary Recovery and Bibliography, 8, part 2 of Ohio Division of Geological Survey Report of Investigations: 45-46 pp.
- Years 1950-2010: Statistics from Annual Oil & Gas Statistical Reports published by Ohio Division's of Mineral Resources Management, Oil and Gas and Geological Survey. Numbers were not available for blank formation fields.

Historical Footnotes

- Ohio lays claim to the first discovery of oil from a drilled well. In 1814, saltwater well drillers struck oil in Olive Township of Noble County at 475 feet.
- Ohio's first commercial oil and gas well was put into production in 1860 at Macksburg in Washington County.
- Alkire notes that the statistics for years 1894-1904 were incomplete and estimated that the total number of wells not accounted for during those years is approximately 12,000.
- Ohio was the nation's leading oil producer in 1896.
- Widespread acceptance of the hydraulic fracture method for increasing production in 1953.
- Morrow County Oil Boom in 1963.
- Creation of Ohio Division of Oil and Gas in 1965.
- Tight formation tax credit.
- Creation of Ohio Division of Mineral Resources Management in 2000.
- Urbanized Drilling Law (HB 278) went into effect September 16, 2004.
- Senate Bill 165 went into effect June 30, 2010.
- Total number of wells may actually be 275,774. (See footnote c)

Appendix II - COUNTY DRILLING DEPTH RECORDS - 2010

COUNTY	TOWNSHIP	PERMIT NO.	OPERATOR	WELL NO.	LEASE NAME	COMPLETION DATE	TOTAL DEPTH	FORMATION AT T.D.	WELL CLASS
ADAMS	FRANKLIN	11	OXFORD OIL CO.	1	J. RUSSELL & M. TENER	07/07/79	3886	GRANITE WASH	FWC
ALLEN	SPENCER	64	ALCO OIL CO.	2	POHLMAN, FRUEND, ETZ HORN	12/31/65	3266	GRANITE	FWC
ASHLAND	LAKE	1762	ROY STEWART	1	KENNETH & REX MASHER	02/04/60	5485	TREMPEALEAU	DPWC
ASHTABULA	NEW LYME	2272	POENERGY	1	LAUTANEN	09/01/85	7124	GRANITE	DPWC
ATHENS	DOVER	3062	QUAKER STATE	2	MILFIELD COAL & MINING	07/17/84	6525	ROSE RUN	FWC
AUGLAIZE	ST. MARYS	71	WEST OHIO OIL & GAS	1	D. & B. HOELSCHER	12/05/70	3067	GRANITE	DPWC
BELMONT	PEASE	611	DAVID R. HILL INC.	1	GEORGETOWN MARINE	12/06/10	13727	GRANITE	DPWC
BROWN	STERLING	6	SPENCER PETROLEUM CORP.	1	GRIFFITH	03/13/93	3350	GRANITE	FWC
BUTLER	LEMON	4	ARMCO STEEL CORP.	1	ARMCO STEEL CORP.	03/12/67	3296	"MIDDLE RUN"	IWDW
CARROLL	LEE	2059	ANSCHUTZ EXPLOR. CORP.	1	WHITE	09/15/10	9503	ROSE RUN	DPWC
CHAMPAIGN	WAYNE	20	INDUSTRIAL GAS ASSOC.	1	P. & C. HOFFMAN	06/26/78	3325	MT. SIMON	FWC
CLARK	MADISON	D-2	T. D. FRIEND	1	MATTISON	06/14/26	4647	PRE MT. SIMON	FWC
CLERMONT	STONELICK	3	CONTINENTAL OIL CO.	1	C. WIKOFF	07/03/60	3435	MT. SIMON	FWC
CLINTON	WILSON	10	STOCKER & SITLER INC.	1	COY	01/18/83	3603	GRANITE	FWC
COLUMBIANA	HANOVER	648	MANAGEMENT CONTROL	3	F. MURRAY	07/28/70	10242	GRANITE	DPWC
COSHOCTON	CRAWFORD	6397	LAKE REGION OIL INC.	2	LEVI M. TROYER	07/23/92	7950	MT. SIMON	DPWC
CRAWFORD	VERNON	6	HAYNES O&G ENTERPRISES	1	DON D. CRUM	01/09/63	3879	EAU CLAIRE	FWC
CUYAHOGA	MAYFIELD	1625	BASS ENERGY CO. INC.	1	MARCONI MEDICAL SYSTEMS	03/07/01	6550	GRANITE	DPWC
DARKE	GREENVILLE	13-A	UNKNOWN	1	EDWARD BARNES	05/26/06	2850	CAMBRIAN	FWC
DEFIANCE	MARK	28	S. E. BROWN	1	P. HAVER	10/22/62	3606	MT. SIMON	FWC
DELAWARE	TRENTON	354	R.C. POLING CO. INC.	1	COCKRELL-GODSHALL UNIT	01/22/91	4873	GRANITE	DPWC
ERIE	FLORENCE	19	SUN OIL CO.	1	A. HERMAN ETAL.	05/01/67	4466	GRANITE	SWIW
FAIRFIELD	RUSH CREEK	1136	HOPEWELL O. & G. DEV. CO.	1	R. BIGHAM	06/16/94	5924	GRANITE	DPWC
FAYETTE	UNION	1	KEWANEE OIL CO.	1	E. HOPKINS	07/12/57	4708	GRANITE	FWC
FRANKLIN	PLEASANT	7	LIBERTY PETR. PRODUCING CO.	1	OAKHURST COUNTRY CLUB	08/08/64	3753	MT. SIMON	FWC
FULTON	CHESTERFIELD	47	LIBERTY PETR. CORP.	1	CLYDE JOHNSTON	03/21/69	3793	MT. SIMON	FWC
GALLIA	HARRISON	985	BAKERWELL INC.	1	JARRELL UNIT	03/24/04	7146	TREMPEALEAU	FWC
GEAUGA	TROY	1534	LOMAK PETROLEUM	1	J. VOYTKO	07/01/88	6888	TREMPEALEAU	DPWC
GREENE	ROSS	4	TATUM PETR. CO. LLC.	1	KELLY GREENE	08/17/10	3347	GRANITE	FWC
GUERNSEY	WESTLAND	4067	DAVID R. HILL, INC.	1	DEVCO UNIT	03/16/08	8897	GRANITE	DPWC
HAMILTON	CROSBY	1	CONTINENTAL OIL CO.	1	WALTER C. BRISBIN	11/01/59	2730	EAU CLAIRE	FWC
HANCOCK	UNION	139	FRANK M. DEVER	1	C. & M. FRAZIER	06/02/64	3017	GRANITE	FWC
HARDIN	DUDLEY	79	MCMAHON-BULLINGTON	1	WOLF	01/07/64	3002	KNOX	FWC
HARRISON	GREEN	355	STOCKER & SITLER INC.	1	CHARLENE SCHANEY ETAL.	07/30/79	10288	TREMPEALEAU	DPWC
HENRY	HARRISON	36	CALLANDER & KIMBREL	1	K. HALL	10/10/73	3480	GRANITE	DPWC
HIGHLAND	FAIRFIELD	7	OHIO VALLEY OIL & GAS	1	COURTNEY	01/20/72	3610	GRANITE	FWC
HOCKING	STARR	1222	E. J. DUNIGAN	1	M. & H. HOCKMAN	06/30/66	6495	MT. SIMON	FWC
HOLMES	SALT CREEK	1283	G.C. & J.A. PARKER	1	DAN D. TROYER	11/12/63	7369	TREMPEALEAU	FWC
HURON	WAKEMAN	103	APPALACHIAN EXPLOR. INC.	1	WOLF	10/05/81	4574	GRANITE WASH	FWC
JACKSON	FRANKLIN	76	WORTHINGTON OIL CO.	1	G. & I. WOOD	07/08/64	6320	GRANITE	FWC
JEFFERSON	STEUBENVILLE	452	KST OIL & GAS CO. INC.	1	HUBERTA MINING CO. INC.	03/23/84	8053	CLINTON	DPWC
KNOX	PIKE	1413	DAVID L. CANTWAY	1	E. CUNNINGHAM	08/07/61	5745	GRANITE	DPWC
LAKE	LERROY	1094	GREAT PLAINS EXPL. LTD.	1	VROOMAN	01/24/04	6355	GRANITE	DPWC

COUNTY	TOWNSHIP	PERMIT NO.	OPERATOR	WELL NO.	LEASE NAME	COMPLETION DATE	TOTAL DEPTH	FORMATION AT T.D.	WELL CLASS
LAWRENCE	SYMMES	174	J. STANLEY GOLDBERG	1	A. PAYNE	04/01/66	7002	GRANITE	FWC
LICKING	PERRY	4792	RONALD F. MORAN	1	RON MORAN	03/08/84	6237	GRANITE	SWIW
LOGAN	JEFFERSON	86	WORTHINGTON OIL CO.	1	LENA COMER	05/11/76	3402	MT. SIMON	FWC
LORAIN	GRAFTON	1370	KENOIL/KEN R. MILLER	1	LAWRENCE PALL	08/24/91	5018	TREMPEALEAU	DPWC
LUCAS	HARDING	60	LIBERTY PETR. CORP.	1	KETRING UNIT	08/24/72	3915	GRANITE	FWC
MADISON	FAIRFIELD	3	AMERADA PETR. CORP.	1	J. HUME	11/01/65	3631	GRANITE	FWC
MAHONING	YOUNGSTOWN	3127	D & L ENERGY, INC.	1	NORTH STAR	05/13/10	9192	GRANITE	DPWC
MARION	CLARIDON	8	UNITED PRODUCING	1	H. & M. MITCHELL	03/14/62	3672	GRANITE	FWC
MEDINA	HINCKLEY	1143	WISER OIL CO.	1-A	F. L. SMITH	01/03/59	7040	GRANITE	FWC
MEIGS	LEBANON	3651	MURPHY OIL CO.	3	M. MCKELVEY	02/10/09	9082	TREMPEALEAU	DPWC
MERCER	CENTER	141	HARNER UNION OIL CO.	2	M. & M. YEWEY	02/09/71	3215	GRANITE	DPWC
MIAMI	LOST CREEK	3	NATIONAL ASSOC. PETR.	1	E. WALKER	10/30/58	3513	GRANITE	FWC
MONROE	MALAGA	3287	TRANS ATLANTIC ENERGY	2	HUDSON	01/22/89	7507	CLINTON	DPWC
MONTGOMERY	MAD RIVER	D-2	DAYTON	M	DAYTON	01/1887	2440	UNKNOWN	UNKN.
MORGAN	CENTER	4533	ARTEX OIL COMPANY	1	BICKFORD UNIT	08/20/05	8222	ROSE RUN	DPWC
MORROW	PERRY	3737	STAR EXPL. CORP.	1	R. & W. BREWER	12/19/86	5000	GRANITE	DPWC
MUSKINGUM	HIGHLAND	7959	CGAS EXPLORATION INC.	7-2108	G. VICKERS	07/07/97	7316	TREMPEALEAU	DPWC
NOBLE	ELK	1278	AMERADA PETR. CORP.	1	R. ULLMAN	02/01/67	11442	GRANITE	DPWC
OTTAWA	CARROLL	50	FRED E. FITZGERALD	1	RAYMOND ARNDT	08/07/68	2287	ST. PETER	FWC
PAULDING	JACKSON	13	MT. PLEASANT MINES LTD.	1	H. & E. AREND	10/30/76	3440	GRANITE	FWC
PERRY	JACKSON	6595	R.C. POLING CO. INC.	1	RUSH CREEK PARTNERS, ETAL.	04/20/85	6395	GRANITE	SWIW
PICKAWAY	PICKAWAY	24	RAMCO OIL & GAS CORP.	1	M. KERNS	01/17/85	4500	GRANITE	FWC
PIKE	BEAVER	1	FRANK D. STAHLER	1	R. BAPST	06/14/50	4227	ST. PETER?	FWC
PORTAGE	DEERFIELD	2860	VIKING RESOURCES CORP.	1	VIKING RESOURCES CORP.	05/24/82	8800	GRANITE WASH	DPWC
PREBLE	WASHINGTON	D-3	DOC TOLLIVER	3	A. H. CHRISTMAN	06/01/29	1750	ST. PETER	FWC
PUTNAM	LIBERTY	31	OHIO OIL CO.	1	L. BARLAGE	03/21/44	3377	GRANITE	FWC
RICHLAND	WASHINGTON	431	TRI-STATE PRODUCING CO.	2	C. & K. SCOTT	09/05/66	5503	GRANITE	DPWC
ROSS	GREEN	8	WELL SUPERVISION INC.	1	M. IMMELL	08/24/64	4168	MT. SIMON	FWC
SANDUSKY	TOWNSEND	77	EAST OHIO GAS CO.	2	V. & I. HAFF	11/17/60	3128	GRANITE	FWC
SCIOTO	GREEN	212	USS CHEMICALS/US STEEL	1	USS CHEMICALS/US STEEL	07/05/68	5617	GRANITE	IWDW
SENECA	ADAMS	128	ASHLAND OIL	1	W. STIGAMIRE	01/24/65	3175	MT. SIMON	FWC
SHELBY	SALEM	13	GUMP OIL CO.	1	J. & B. FOGY	11/10/56	3360	GRANITE	FWC
STARK	PARIS	5052	VIKING RESOURCES CORP.	1	HANNA UNIT	09/02/97	8292	ROSE RUN	POOL
SUMMIT	TWINSBURG	1591	K.S.T. OIL & GAS CO.	5	K.S.T. OIL & GAS CO.	07/18/84	7225	GRANITE WASH	SWIW
TRUMBULL	WEATHERSFIELD	3670	D & L ENERGY, INC.	1	NMC METALS	03/14/98	7722	TREMPEALEAU	DPWC
TUSCARAWAS	SALEM	5334	OHIO GEOLOGICAL SURVEY	1	OHIO GEOLOGICAL SURVEY CO2	06/09/07	8695	GRANITE	ST
UNION	DOVER	69	FUNK EXPLORATION	1	YODER	08/15/84	3500	GRANITE	FWC
VAN WERT	JENNINGS	44	WEST OHIO GAS CO.	5	A. & M. MILLER	01/05/73	3242	GRANITE	DPWC
VINTON	VINTON	924	COLUMBIA NAT. RES. INC.	723984	MORRIS	03/25/00	5700	TREMPEALEAU	FWC
WARREN	WAYNE	C-2627	OHIO GEOLOGICAL SURVEY	DS-2	AMERICAN AGGREGATES CORP.	04/26/89	5380	"MIDDLE RUN"	CORE
WASHINGTON	LAWRENCE	8666	CARTER RESOURCES	1	STRAUSS UNIT	12/06/89	10200	ROSE RUN	DPWC
WAYNE	CHIPPEWA	71	EAST OHIO GAS CO.	2	N. STEINER	08/12/61	6919	GRANITE	DPWC
WILLIAMS	BRIDGEWATER	46	COLUMBIA GAS TRANS.	11061	COOK	12/31/71	4497	GRANITE WASH	FWC
WOOD	LIBERTY	D-6	J. S. BRAILEY	1	S. KILLIAN	08/25/37	2927	GRANITE	DPWC
WYANDOT	JACKSON	D-8	DIBBLE & MILLER	1	P. PARSELL	03/07/47	5632	GRANITE	FWC

# Division of Mineral Resources Management Regional Offices



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Total copies printed: 1000 • Unit cost: \$0.92 • Publication date: 3/11