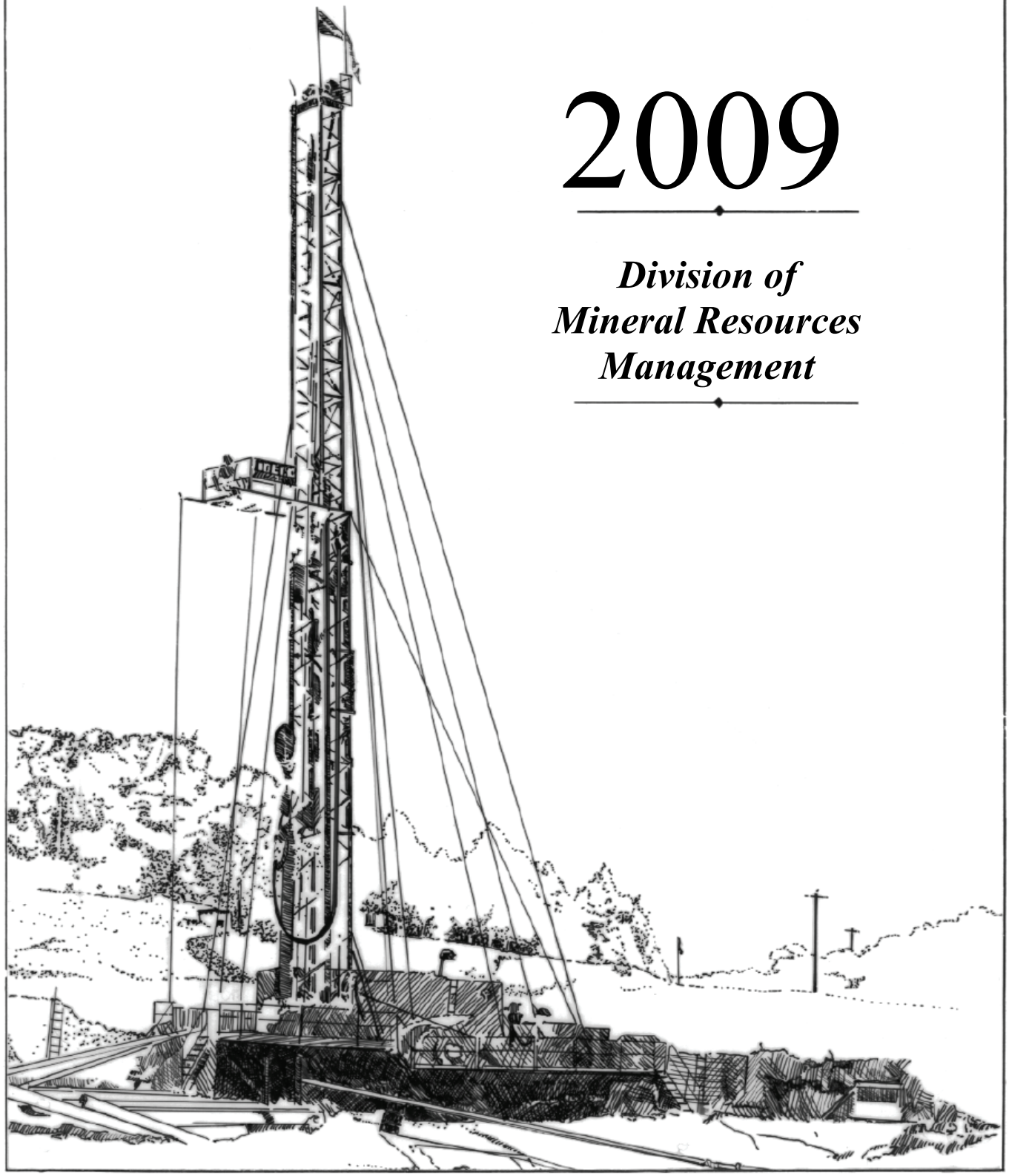
SUMMARY OF OHIO OIL AND GAS ACTIVITIES



2009

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*.

Introduction

This forty-fifth 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 govermental agencies. This report includes data submitted through March 5, 2010. You may also note that some 2008 statistics have been adjusted to include well completion reports received after last year's cut-off date. The 2008 report estimated 1,049 wells were drilled; the total number has been revised to 1,083. There are no major revisions in this year's report.

Highlights include:

- 5,682 registered well owners, including 4,202 domestic owners, operating 64,427 wells.
- Issued 1,482 permits, including 734 drilling permits.
- Issued 195 urbanized area permits in 19 counties.
- Drilled an estimated 556 oil and gas wells in 40 of Ohio's 88 counties.
- Licking County was the most active county with 58 wells drilled.
- Produced 5,008,609 barrels of crude oil, at an average price of $55.56 per barrel.
- Produced more than 88 billion cubic feet of natural gas, at an average price of $4.36 per mcf.
- The combined market value of crude oil and natural gas production was $665,439,649.
- 388 wells were plugged including 10 contracted by the Orphan Well Program.

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

- Distributed 145 copies of RBDMS, our oil and gas well database;
- Reorganized the Oil and Gas website.

We are currently working on:

- Substitute Senate Bill 165, a comprehensive update of the Ohio Revised Code 1509, was passed by the Senate on December 15, 2009. It is anticipated that the House will likely vote on it March 16, 2010.

Tom Tugend was hired as Deputy Chief of the Oil and Gas Program, effective April 12, 2010.

Mike McCormac
Manager, DMRM Oil and Gas Permitting Program

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Permitting

The Division issued 1,482 permits, a decrease of 820 (35.6%) from 2008 (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, compared to 13 days in 2008.

Permits issued to drill for oil and gas totaled 734, a 48.6% decrease (694 permits) from last year. These permits included 632 new permits and 102 re-issued permits. Clinton sandstone permits decreased by 468 for a total of 427 and accounted for 58% of all drill permits. Devonian shale permits decreased by 101 for a total of 68, including 13 issued for Marcellus shale, and accounted for 9% of all drill permits. Deep well permits decreased by 22 for a total of 111 and accounted for 15% 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 decreased by 84 for a total of 58 (8% of the total).

Six hundred and thirty-four plugging permits were issued, a decrease of 83 (11.6%) from 2008, which includes 9 permits for the Orphan Well Program.

Notable permitting highlights for 2009 include:

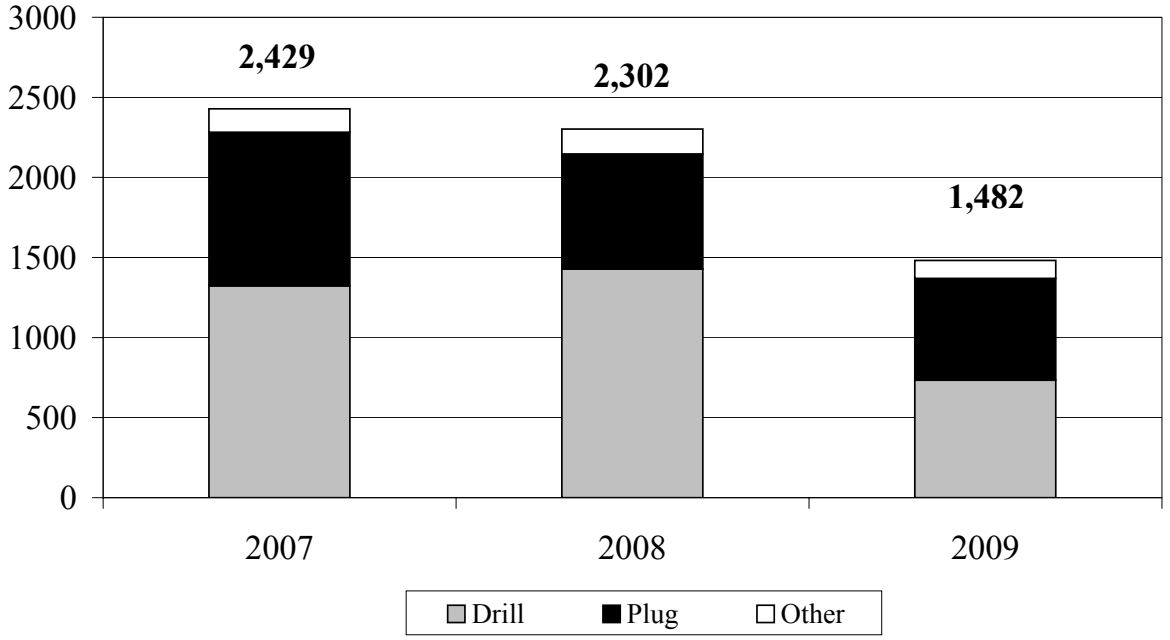
- Issued 195 urbanized area permits (a decrease of 123) in 19 counties. The top five counties were Cuyahoga (43), Summit (28), Trumbull (24), Lake (22) and Geauga (15);
- Reviewed 26 mandatory pooling applications;
- Processed 48,877 production reports for 2008.

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 2009, 57 bonds were released and 121 new owners were registered.

Section staff also manages all information and records concerning current well ownership and well transfers. During 2009, records were managed for 5,682 registered well owners including 4,202 domestic owners and 1,480 commercial owners. Staff also recorded 3,375 changes in well ownership. There are 64,427 active wells in Ohio.

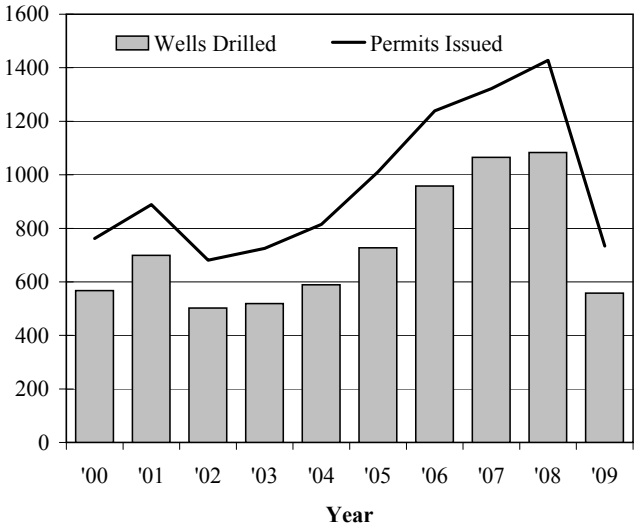
Figure 1 - Oil & Gas Permits Issued 2007 - 2009



Drilling

A drastic reduction in market prices resulted in the lowest number of wells drilled since 2003 (Appendix I). In 2009, an estimated 558 oil and gas wells were drilled, which was a decrease of 525 wells (48.5%) from 2008 (Figure 2). Wells were drilled in 40 of Ohio's 88 counties, a decrease of 4 (Figure 3).

Figure 2 - Drill Permits vs. Wells Drilled 2000 - 2009



Completions

Of the well completion reports submitted by March 5, 2010 to the division, 398 were productive and 40 were dry holes, for a 91% completion rate (Table I).

- Total footage is estimated at 2,136,112 feet compared to 4,185,414 for 2008.
- Average well depth was 3,828 feet, a decrease of 37 feet per well.
- The median well depth was 3,745 feet.
- Total depths ranged from 487 feet in the Lower Freeport coal (Harrison County) to 7,750 feet in the Beekmantown dolomite (Tuscarawas 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. Licking County had wells drilled to five different geologic zones. The Ohio Shale and Clinton sandstone 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 58% percent of all wells drilled. An estimated 321 wells were drilled, 317 less than the 638 wells drilled in 2008. Clinton sandstone wells averaged 3,735 feet in depth, a decrease of 344 feet per well. Clinton sandstone wells were drilled in 25 counties, the same as last year. The most active counties were Knox (46), Cuyahoga and Licking (43 each), Geauga (28) and Trumbull (23).

An estimated 94 wells were drilled to the Ohio Shale, a decrease of 57 wells. One of these wells was horizontally drilled, compared to 16 in 2008. Drilling occurred in 9 counties. Noble County led with 35 wells followed by Monroe (23) and Guernsey (15). The average depth per well was 3,464 feet, an increase of 115 feet per well.

An estimated 43 Berea Sandstone wells were drilled, 72 less than last year. Drilling occurred in 12 counties. Licking led with 9 wells followed by Ashland, Coshocton and Perry (6 each).

Drilling to the Knox formation decreased. There were 80 wells drilled, 22 less than in 2008. Drilling was evenly distributed among formations: Beekmantown (27), Rose Run (28) and Trempealeau (25). Drilling occurred in 16 counties with Tuscarawas (22), Muskingum (10) and Huron (9) the most active.

Wells Completed by Month and Owner

Drilling activity averaged 47 wells per month compared to 90 per month in 2008. July was the most active month with 64 wells (Figure 4).

One hundred and forty-three owners drilled wells in 2009. Ninety-four percent of these owners drilled 10 wells or less. The highest number of wells drilled by a single owner was 66 (Figure 5) and the 10 most active operators drilled 50% (282) of all wells.

Wells Completed by Type of Tool

Rotary tools drilled the majority of wells. Cable-tool rigs drilled 45 wells and operated in 10 counties. Licking (15) and Knox (12) Counties had the highest number of cable tool operations. Cable tool depths ranged from 524 feet (Washington County) to 3,407 feet (Coshocton County). The average depth per well drilled by cable tool was 1,861 feet, an in-

Figure 3 - Wells Drilled and Completions Received by County 2009

crease of 36 feet; rotary-drilled wells averaged 4,046 feet, an increase of 49 feet per well.

Plug-back and Deepen Operations

Eleven wells were dry in their permitted formation but plugged back to produce a shallower zone. Another 20 existing wells were plugged back to producing zones, and two existing wells were drilled to a deeper producing formation.

TABLE I – DRILLING OPERATIONS BY TYPE OF WELL – 2009			
	Drilled	**Converted**	**Total Footage**
Productive Wells	398		1,511,920
Dry Holes	40		164,832
Reopened Wells	9		0
Lost Holes	3		4,514
Gas Storage Wells	22	2	66,381
Conventional Brine Injection Wells	5	2	10,753
Stratigraphic Test Wells	1		1,984
Solution Mining Wells	4		10,596
TOTAL	**482**	**4**	**1,770,980**

Ten Most Active Counties

Licking County was ranked first with 58 wells drilled, a decrease of 2 wells (Table IV). The majority of these wells were drilled to the Clinton sandstone. Monroe County, having ranked first for five consecutive years, dropped to sixth with a decline of 50 wells drilled. Urbanized drilling accounted for every well in Cuyahoga County.

Seven of these counties were in the top-ten last year. The last time Coshocton, Guernsey and Noble Counties were in the top-ten was 2006. With the exception of six counties, every other county had a decline in drilling. The biggest decreases took place in Geauga (41), Stark and Trumbull (36 each), and Tuscarawas (31) 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 Devonian Shale. Forty-one directional drilling permits were issued to drill wells in 13 counties, which was a deline of 30 permits from 2008. Five were to horizontally drill in the Devonian Shale. The majority of remaining permits were issued to the Clinton sandstone in northeastern Ohio. The most active counties were Cuyahoga (9), Mahoning (7) and Summit (6).

Exploratory Wells

Exploratory drilling remains constant as a percentage to the total number of wells drilled. Forty-nine wells (11%) of all wells completed were classified as exploratory which is comparable to 2008 (Figure 6). Of these, 35 were productive and 14 were dry, representing a 71% success rate. Wells were drilled in 20 counties. Meigs and Noble Counties each had 7 exploratory wells.

The majority of exploratory wells were classified as either ‘outposts’ (23) or ‘deeper pool wildcats’ (18). Productive rates were as follows: ‘outposts’ at 83% and ‘deeper pool wildcats’ at 61%.

Wells drilled to the Devonian Shale (16) and below the Knox unconformity (24) accounted for the majority of exploratory activity. Drilling to the Devonian Shale continues to expand geographically each year as new areas are explored. All but two of these wells were reported as productive. The challenge in some of these areas is the lack of pipline access. Wells drilled to formations below the Knox unconformity such as the Beekmantown dolomite, Rose Run sandstone and Trempealeau dolomite are almost always seismic prospects. Nine of these wells were dry holes.

TABLE II - OIL AND GAS COMPLETION STATISTICS BY COUNTY – 2009

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	580	2,984	Berea	2	2	0	0	4	50.00	6,068	1,284	7,352
Ashtabula	2,803	3,509	Clinton	9	0	0	0	9	100.00	29,101	0	29,101
Athens	1,279	2,060	Ohio Shale	3	0	0	0	3	100.00	5,950	0	5,950
Belmont	5,710	5,920	Ohio Shale	0	0	1	0	1	100.00	5,934	0	5,934
Carroll	5,217	5,810	Clinton	2	0	0	0	2	100.00	11,232	0	11,232
Columbiana	5,224	5,302	Clinton	1	0	0	0	1	100.00	5,405	0	5,405
Coshocton	825	4,583	Clinton	13	2	0	1	15	86.67	41,616	7,957	49,573
Cuyahoga	3,298	3,654	Clinton	42	0	1	0	43	100.00	156,441	0	156,441
Fairfield	2,491	4,398	Rose Run	1	0	0	1	2	50.00	4,460	4,488	8,948
Gallia	1,886	1,908	Berea	1	0	0	0	1	100.00	2,005	0	2,005
Geauga	3,510	4,275	Clinton	26	0	0	0	26	100.00	103,385	0	103,385
Guernsey	1,788	7,500	Ohio Shale	8	3	3	0	14	78.57	56,771	22,515	79,286
Harrison	487	619	Coal	2	0	0	0	2	100.00	1,106	0	1,106
Holmes	3,608	5,676	Clinton	9	0	0	1	10	90.00	37,034	6,493	43,527
Huron	3,072	3,291	Trempealeau	2	1	1	1	5	60.00	9,910	6,438	16,348
Knox	2,096	4,636	Clinton	34	0	2	0	36	100.00	101,726	0	101,726
Lake	2,924	3,431	Clinton	9	0	0	1	10	90.00	30,147	6,311	36,458
Licking	597	4,297	Clinton	43	4	2	2	51	88.24	105,154	11,142	116,296
Lorain	2,725	2,770	Clinton	1	0	0	0	1	100.00	2,871	0	2,871
Mahoning	5,191	5,711	Clinton	18	0	0	0	18	100.00	100,106	0	100,106
Meigs	1,468	5,656	Ohio Shale	1	0	5	2	8	75.00	14,493	3,322	17,815
Monroe	1,380	4,778	Ohio Shale	22	0	2	0	24	100.00	66,214	0	66,214
Morgan	505	5,043	Berea	6	0	0	0	6	100.00	11,985	0	11,985
Morrow	3,082	3,108	Trempealeau	1	0	0	0	1	100.00	3,205	0	3,205
Muskingum	1,210	6,905	Beekmantown	6	1	6	0	13	92.31	66,339	6,234	72,573
Noble	1,564	4,710	Ohio Shale	19	0	7	0	26	100.00	114,445	0	114,445
Perry	1,165	3,080	Clinton	3	1	0	1	5	60.00	7,417	6,856	14,273
Pickaway	2,592	3,007	Rose Run	2	5	0	1	8	25.00	5,649	16,331	21,980
Portage	4,084	4,509	Clinton	5	0	0	0	5	100.00	22,270	0	22,270
Sandusky	1,410	1,450	Trenton	0	0	1	1	2	50.00	1,696	2,773	4,469
Stark	4,665	5,224	Clinton	6	0	0	0	6	100.00	32,349	0	32,349
Summit	3,565	4,150	Clinton	22	0	0	0	22	100.00	88,234	0	88,234
Trumbull	4,043	5,386	Clinton	17	0	1	0	18	100.00	90,111	0	90,111
Tuscarawas	1,165	7,426	Beekmantown	13	6	3	1	23	69.57	111,796	50,605	162,401
Washington	870	3,960	Oriskany	4	0	0	1	5	80.00	14,695	524	15,219
Wayne	3,759	5,521	Clinton	10	1	0	1	12	83.33	44,600	11,559	56,159
TOTAL				**363**	**26**	**35**	**14**	**438**	**90.87**	**1,511,920**	**164,832**	**1,676,752**

Note: No completion information was available at the time of this printing for the following counties: Jackson, Lawrence, Medina and Williams.

TABLE III - OIL AND GAS COMPLETION STATISTICS BY PRODUCING ZONE – 2009

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 – Salt Sand)	505	870	4	0	0	1	5	80.00	3,208	524	3,732
Mississippian (Keener)	1,350	1,380	0	0	1	0	1	100.00	1,450	0	1,450
Mississippian (1st & 2nd Berea)	597	1,678	17	7	0	1	25	68.00	19,938	6,349	26,287
Devonian (Ohio Shale)	1,393	5,770	46	0	14	2	62	96.77	211,445	3,322	214,767
Devonian (Oriskany)	3,934	4,778	2	0	1	0	3	100.00	15,096	0	15,096
Silurian (Clinton - Medina)	2,096	6,905	269	0	3	0	272	100.00	1,015,937	0	1,015,937
Ordovician (Trenton/Black River)	1,410	3,772	0	0	1	1	2	50.00	1,696	3,772	5,468
Ordovician (Beekmantown)	6,804	7,667	13	6	8	0	27	77.78	153,872	44,868	198,740
Cambro-Ordovician (Rose Run)	2,592	7,500	5	9	3	4	21	38.10	39,983	69,350	109,333
Cambrian (Trempealeau – Mt. Simon)	2,563	5,676	7	4	4	4	19	57.89	49,295	30,336	79,631
Precambrian	6,256	6,311	0	0	0	1	1	0.00	0	6,311	6,311
TOTAL			**363**	**26**	**35**	**14**	**438**	**90.87**	**1,511,920**	**164,832**	**1,676,752**

Figure 4 - Wells Completed by Month
2008 - 2009

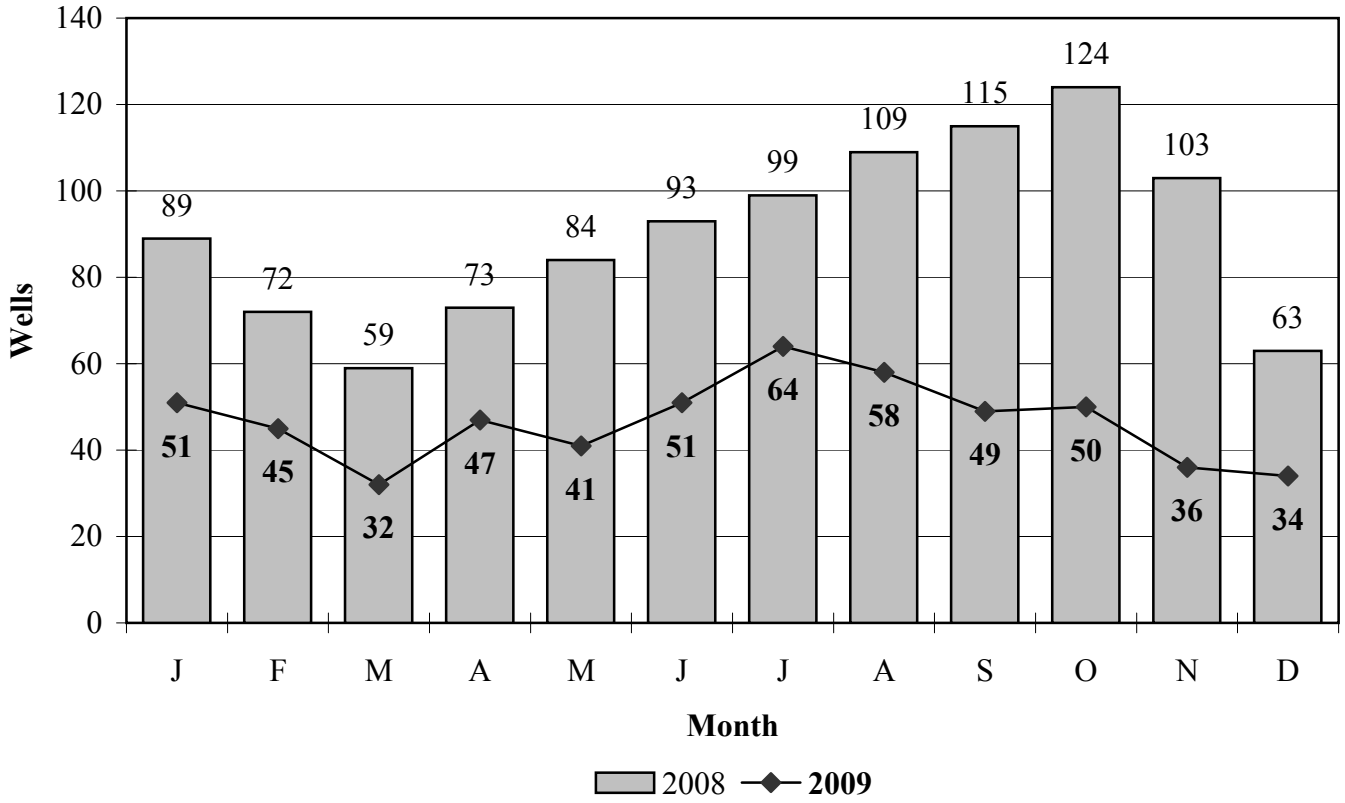


Figure 5 - Wells Completed by Owner
2009

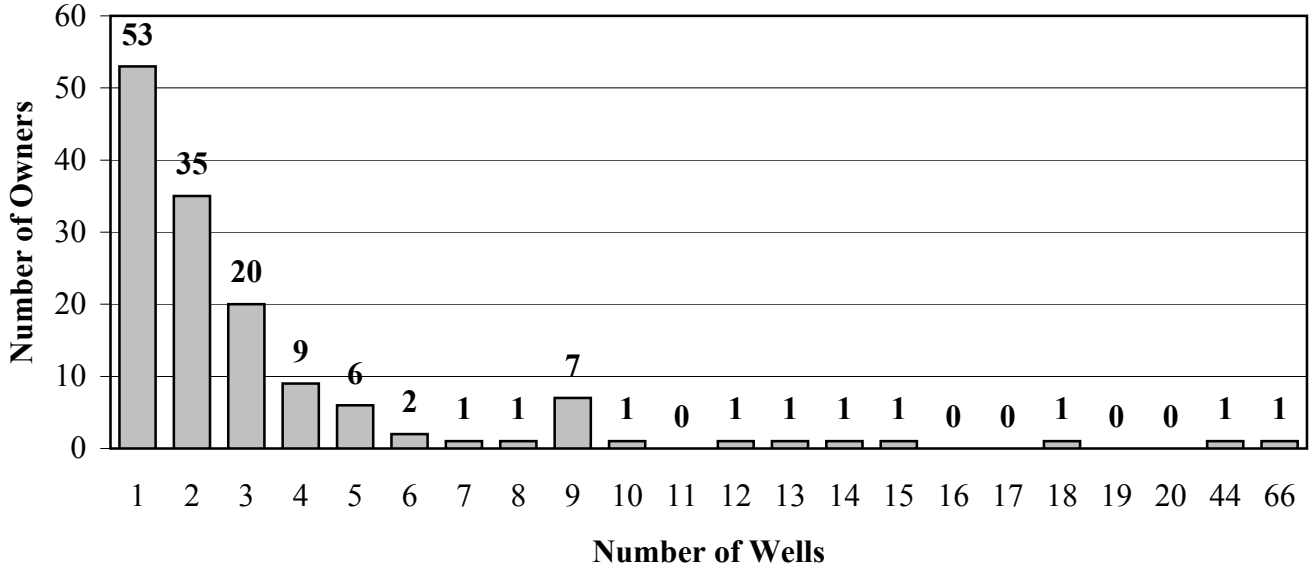
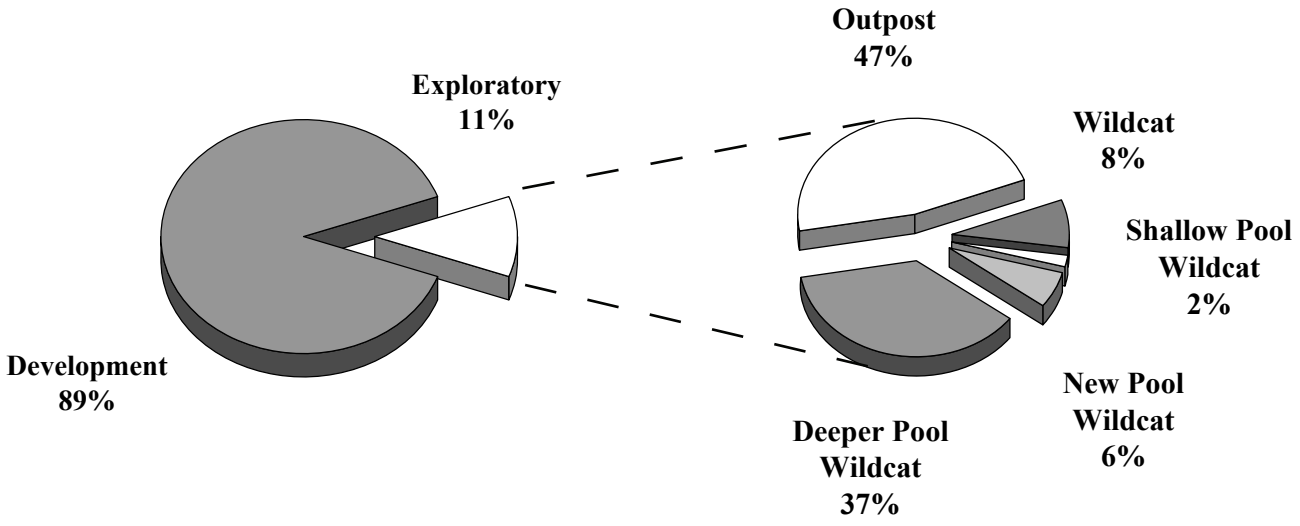


TABLE IV - TEN MOST ACTIVE COUNTIES - 2009					
2009 Rank	County	Wells Drilled	2008 Rank	Avg. Depth Per Well	Est. Footage Drilled
1	Licking	58	(5)	2,280	132,240
2	Knox	49	(4)	2,826	138,474
3	Cuyahoga	43	(2)	3,638	156,441
4	Noble	35	(11)	4,402	154,070
5	Geauga	28	(3)	3,976	111,328
6	Guernsey	25	(16)	5,663	141,575
6	Monroe	25	(1)	2,759	68,975
8	Coshocton	24	(15)	3,305	79,320
9	Trumbull	23	(7)	5,006	115,138
9	Tuscarawas	23	(6)	7,061	162,403

Figure 6 - Development vs. Exploratory Wells 2009



County Drilling Depth Records

There were no new drilling depth records. The deepest well drilled by county is listed in Appendix II.

Production

Ohio's total reported crude oil production was 5,008,609 barrels (Figure 7, Table V), a decrease of 545,626 barrels (9.82%) from 2008. In 2009, daily production averaged 13,722 barrels compared to 15,217 barrels in 2008. Through 2009, Ohio wells have produced 1,131,743,052 barrels.

Ohio wells produced 88,824,419 mcf of natural gas, an increase of 3,966,404 mcf (4.67%) from 2008 (Figure 7, Table V). Gas production figures include an estimated 879,450 mcf of natural gas used on the lease. In 2009, daily production averaged 243,355 mcf compared to 232,488 mcf in 2008. Through 2009, Ohio wells have cumulatively produced 8,441,976,724 mcf of natural gas.

The 2009 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 2000 - 2009

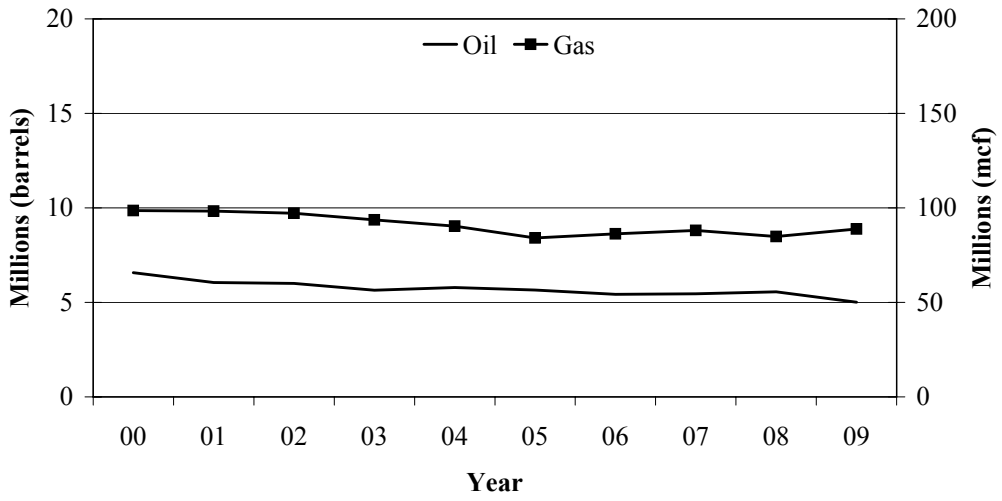


TABLE V – CRUDE OIL & NATURAL GAS PRODUCTION, RESERVES & CONSUMPTION – 2000 - 2009

	OIL (thousands of barrels)		GAS (mmcf)		
Year	Production	Reserves	Production	Reserves	Consumption
2000	6,574	59,000	98,551	1,185,000	890,962
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	792,339
2009	5,009	N/A	88,824	N/A	N/A

Market Value

Crude oil production valued at $278,272,810 decreased 46.6% ($242,676,390) from its 2008 value. The average price per barrel was $55.56, a 40.8% decrease from 2008's record average price of $93.79 per barrel (Table VI). Posted oil prices ranged from a low of $28.75 (Feb. 13th) to a high of $75.00 (Oct. 22nd) per barrel. During 2009, the daily posted price for Ohio crude oil was on average $6.05 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 53.3% ($441,959,752) to $387,166,839. The average price paid per mcf was $4.36 in 2009, a decrease of $5.41 per mcf from 2008 (Table VI). The Appalachian price index, based on a weighted average between Columbia and Dominion, ranged from a low of $2.93 in September to a high of $6.61 in January.

Ohio's combined oil and gas market value decreased by 50.7% ($684,636,142). The total dollar value of $665,439,649 is the lowest since 2002 (Figure 8).

TABLE VI - AVERAGE WELLHEAD PRICE OF OIL & GAS – 2000 - 2009

Year	Oil $/Bbl	Gas $/Mcf
2000	$26.76	$4.06
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

Plugging Activity

Plugging activity significantly declined by 110 wells (22%). Figure 9 compares plugging and drilling activity. In 2009, 388 wells were plugged compared to 498 in 2008. This total does not include dry or lost holes that were plugged in 2009. Ten of these wells were plugged through the Orphan Well Program including 5 funded through the Landowner Grants Program. Additionally, 4 previously plugged wells were reopened for the purpose of replugging them.

Wells were plugged in 47 counties (Figure 10). Muskingum County (47) was the most active plugging county followed by Coshocton (39), Licking (34), Knox and Wayne (25 each).

Figure 8 - Dollar Value of Oil & Gas 2000 - 2009

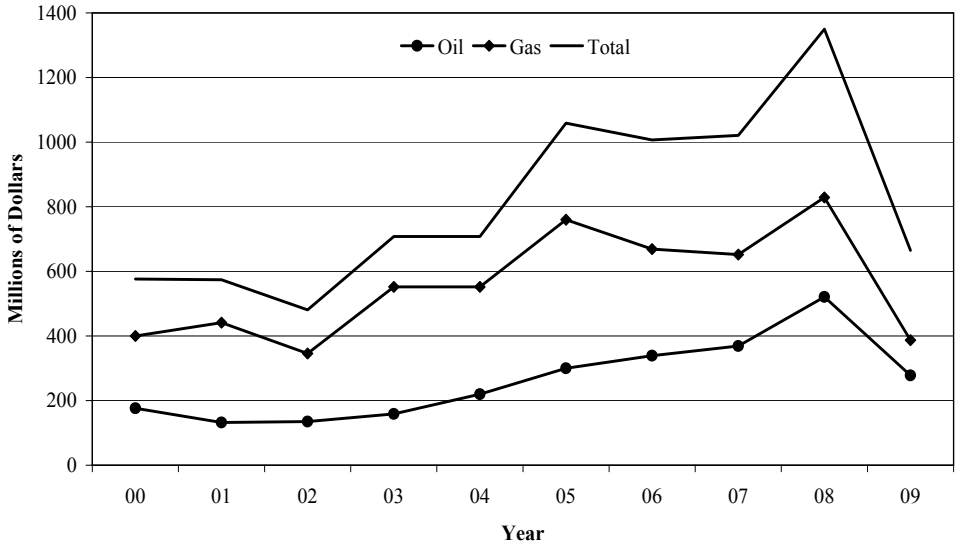


Figure 9 - Wells Plugged vs. Wells Drilled
2000 - 2009

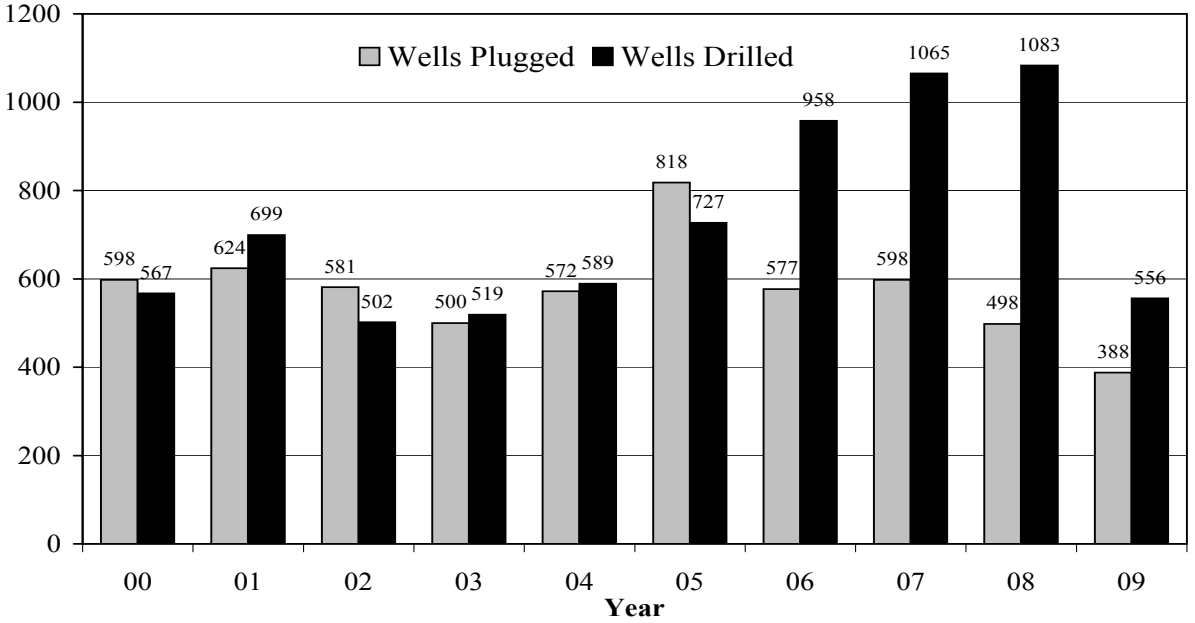


Figure 10 - Wells Plugged by County
2009

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

Appendix 1 - 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	430	72	502	8	46	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	915	45	960	89	134	636	8	18	23
2007	1,023	46	1,069	90	157	672	7	35	32
2008	1,025	58	1,083	119	155	661	1	21	38
2009	518	40	558	43	94	321	1	28	25
TOTAL (k)	220,818	42,516	263,334	12,834	4,458	80,136	71,114	3,021	5,671

References

1. 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.
2. Years 1950-2009: 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

a. 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.
b. Ohio's first commercial oil and gas well was put into production in 1860 at Macksburg in Washington County.
c. 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.
d. Ohio was the nation's leading oil producer in 1896.
e. Widespread acceptance of the hydraulic fracture method for increasing production in 1953.
f. Morrow County Oil Boom in 1963.
g. Creation of Ohio Division of Oil and Gas in 1965.
h. Tight formation tax credit.
i. Creation of Ohio Division of Mineral Resources Management in 2000.
j. Urbanized Drilling Law (HB 278) went into effect September 16, 2004.
k. Total number of wells may actually be 275,334 (See footnote c)

Appendix II - COUNTY DRILLING DEPTH RECORDS

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	POI ENERGY	1	LAUTANEN	09/01/85	7124	GRANITE	DPWC
ATHENS	DOVER	3062	QUAKER STATE	2	MILLFIELD 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	MEAD	586	FIRST ENERGY GEN. CORP.	1	MRCSP-FEGENCO	02/05/07	8384	QUEENSTON	ST
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	EAST	1850	NEWSTAR ENERGY USA INC.	1	BRYAN UNIT	03/30/97	9460	TREMPEALEAU	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	BARNWELL 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	CAESARS CREEK	D-7	SUN OIL CO.	1	WM. M. HENRY	04/15/40	1958	KNOX	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	FWC
LAKE	LEROY	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	GOSHEN	2718	BELDEN & BLAKE CO.	4-11979	R. & R. BRICKER	07/07/97	8600	TREMPEALEAU	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	OLIVE	442	SINCLAIR-PRAIRIE OIL CO.	1	W. T. LONGWORTH	05/04/44	7466	TRENTON	FWC
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

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(740) 439-5495 (fax)

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