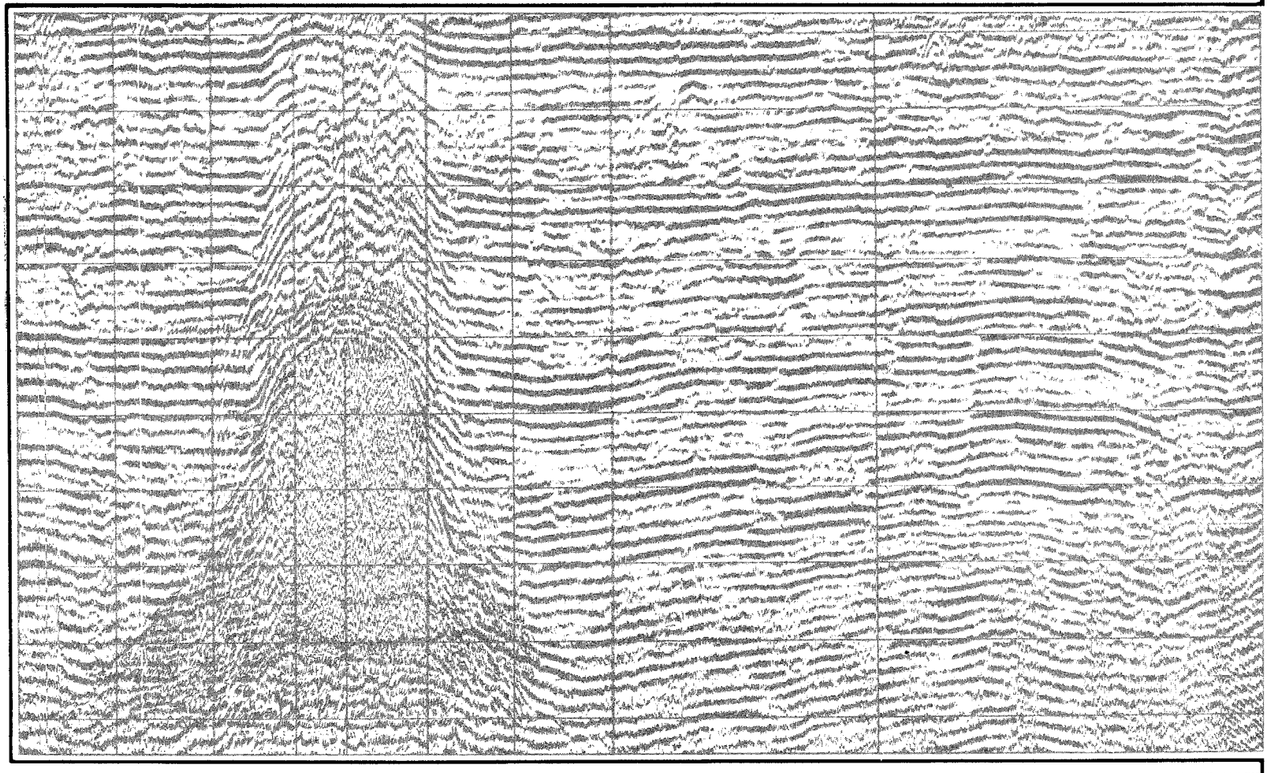
MICHIGAN'S OIL AND GAS FIELDS, 1970

ANNUAL STATISTICAL SUMMARY 14



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ACKNOWLEDGEMENTS

The Geological Survey Division, Department of Natural Resources, being charged with the administration of the state's oil and gas laws, has maintained an exceptional collection of oil and gas field records for many years. The state's first oil field was discovered about 1886 at Port Huron, but its recognition as a petroleum province did not start until about 1925 when the Saginaw field was found. Information covering these early activities was published from time to time in various Survey publications. Eventually there evolved a small annual publication devoted solely to oil and gas activities.

The first oil and gas summary was published about 1932. The early issues, from 1932 through 1946, were unbound mimeographed pages summarizing some of the year's activities and statistical data. They were of limited distribution and few copies are now available. As the petroleum industry grew in importance to the state's economy, the summaries were expanded and improved in response to the needs of industry and government agencies for various kinds of oil and gas field information. New items are added from time to time and others are deleted when no longer useful.

Some of the statistical data and other types of information maintained for incorporation into the summaries is also provided to such groups as the American Association of Petroleum Geologists, American Petroleum Institute, U. S. Bureau of Mines, the Independent Petroleum Association of America, and others for incorporation into their respective publications.

This issue thus brings together under one cover many oil and gas field statistical data not usually found in any other industry or government publication. Oil and gas field data of historical and general interest are included and thus preserved herein for future reference. This summary is, therefore, a source of information most useful in evaluating Michigan's past history and future prospects as an oil and gas province. Furthermore, the gathering, maintenance and compilation of the many data contained in the summary reflects, in part, the varied functions of the Oil and Gas Section of the Geological Survey.

The oil and gas summaries are not printed in large quantities. They are distributed to various government agencies in all 50 states, to numerous libraries in the United States and several abroad, and to many individuals and companies engaged in oil and gas or other mineral industries. Current and some back issues are available at nominal cost from Publications Room as noted inside the front cover.

Oil and Gas Section supervisors who directed staff members in the gathering and maintenance of basic records, and who assembled and contributed specific data are:

R. M. Acker, Geologist in charge, Oil and Gas Section.

V. F. Sargent, Geologist and Head, Regulatory Control Unit--Data under the headings "Number of Oil or Gas Wells" and "Brine Production" as shown in Table 3, and Tables 4 and 5 (Gas Storage Reservoirs).

W. G. Smiley, Geologist and Head, Production and Proration Unit--All oil and gas production data, valuations, refinery and LPG storage data, secondary recovery data, and oil recovery per acre drilled (Table 3).

G. D. Ells, Geologist and Head, Petroleum Geology Unit--General drilling statistics and well completion data, discovery well and deep test data, drilled acreage figures, cumulative records, and other summary information not specifically provided by those mentioned above.

Inquiries concerning information contained in this summary should be directed to the appropriate Oil and Gas Section unit personnel as noted above.

Oil and gas production figures cited herein are obtained from Michigan Department of Revenue records and are maintained and compiled by the Production and Proration Unit. Gas import figures are from Michigan Public Service Commission, Gas Section, compilations. All hydrocarbon production figures are preliminary and subject to correction as warranted.

Cover Photo: Simulated seismic profile showing discontinuity and arching of lower reflecting horizons thus indicating an anomaly which may be a buried reef or a salt plug. The reef fields of northern Michigan have been found by seismic prospecting.

Manuscript preparation by G. D. Ells, assisted by secretarial and staff members of the Petroleum Geology and General Geology Units.

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Lansing, Michigan
June, 1971

MICHIGAN'S OIL AND GAS FIELDS, 1970

INTRODUCTION

This issue of Michigan's oil and gas field statistical summary presents data related to various facets of the State's exploration and producing industry during 1970. Certain useful indicies which show the trend of activities from year to year are shown in chart form and compared, where useful, to data for prior years. In addition, the summary contains abundant information of an historical nature, useful in oil and gas field evaluation.

Certain figures for 1970, such as the number of exploratory, development, and service wells drilled, and the number of discoveries, may differ from figures reported by regional or national trade journals and by petroleum industry reporting services. Differences are minor and due to methods of gathering and reporting well drilling data, and determining a cut-off date for reporting statistics on a yearly basis.

The kinds of data listed herein are mainly derived from records received and maintained by the Geological Survey Division. The kinds of data reported in these oil and gas summaries have been treated uniformly from year to year and reflect as near as possible the actual figures that should be credited to the year as noted.

Part 1 of this publication summarizes significant information on oil and gas field activities and related work of the Oil and Gas Section of the Geological Survey during 1970. Part 2 contains specific information on Michigan's oil and gas fields and other related activities for 1970. Part 3 contains cumulative records of importance to the petroleum industry. Data for 1970 has been included in the cumulative records.

1970 STATISTICAL DATA

A total of 425 regular oil and gas permits were issued during 1970. They were divided as follows:

Exploratory wells	165
Development wells	144
Gas storage facility wells	115
LPG storage	1

Included in the 425 permits was 1 issued to reopen and test a previously drilled dry hole. Also, 13 permits issued in 1969 and 1970 were terminated after permittee failed to commence drilling within 6 months after issuance of the permit. In addition, 30 deepening permits and 1 BDW permit were issued. No geological test permits were issued during the year. Table 2, page 10 shows the distribution of permits by county.

The geographic distribution of oil and gas permits issued through a three-year period, including 1970, is as follows:

DRILLING PERMITS BY DISTRICT

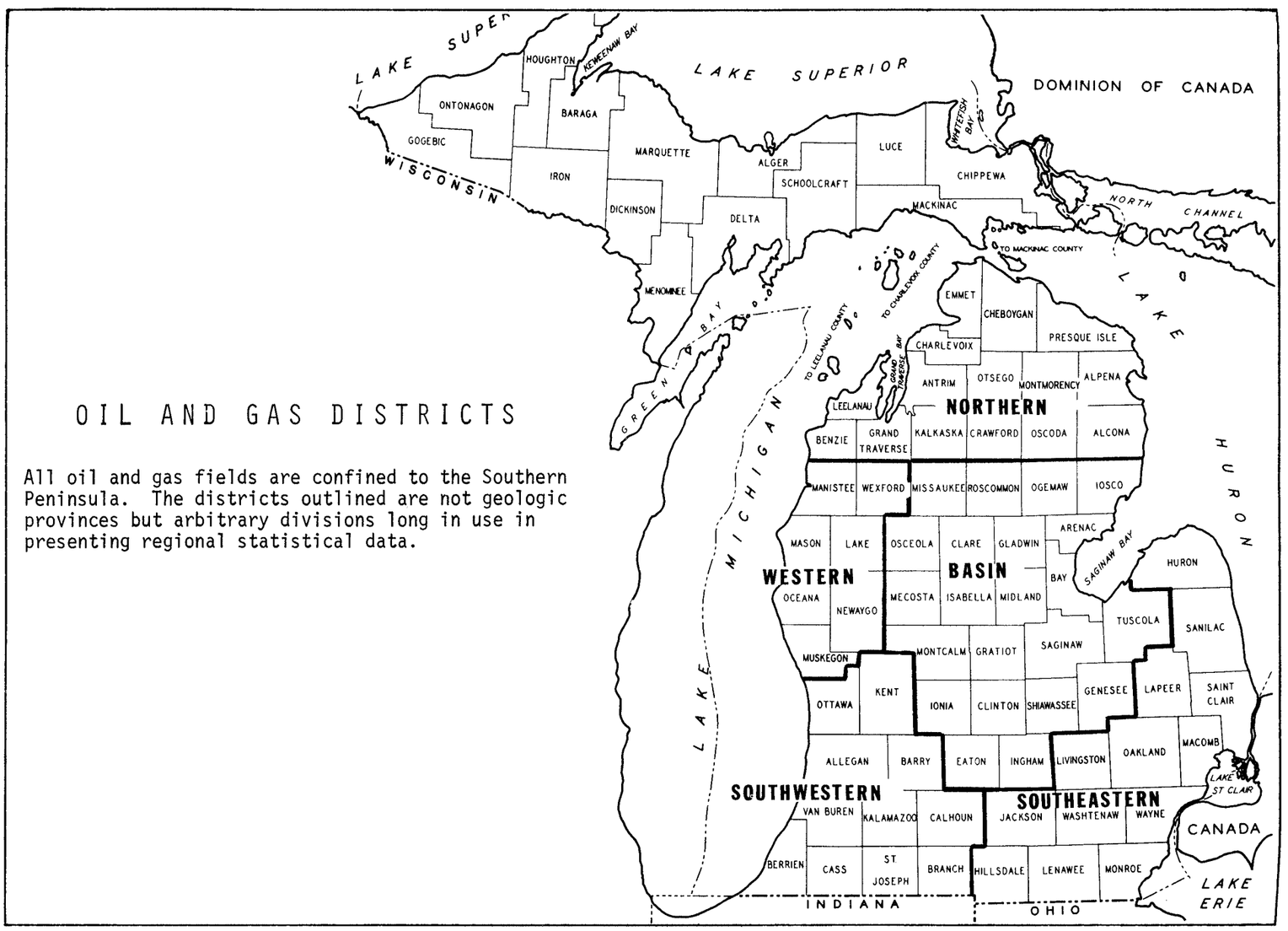
DISTRICTS	Permits Issued		
	1968	1969	1970
Basin	88	113	169
Northern	17	32	52
Southeastern	143	126	121
Southwestern	61	41	33
Western	69	67	50
Totals	378	379	425

The fluctuation in regular permits issued for gas storage facility wells, LPG and other types over a three-year span is as follows:

TYPE OF SERVICE WELL	1968	1969	1970
Gas storage	27	48	115
LPG, Wtr. Inj., Brine Disposal, etc.	9	10	1
Totals	36	58	116

OIL AND GAS DISTRICTS

All oil and gas fields are confined to the Southern Peninsula. The districts outlined are not geologic provinces but arbitrary divisions long in use in presenting regional statistical data.



* * * WELL COMPLETIONS * * *

There were 277 new-hole exploratory and development wells which reached total depth and were completed as producers or dry holes during 1970. The figure does not include service wells, old wells drilled to deeper objectives, reworks, or others not directly related to new-hole oil and gas exploratory or development drilling. In addition, 111 new-hole service wells were completed during the year. These do not include reworked wells. The fluctuation in exploratory, development and service well completions over a three year period are as follows:

EXPLORATORY AND DEVELOPMENT WELL COMPLETIONS

Year	Exploratory Wells			Development Wells			Totals
	Oil	Gas	Dry	Oil	Gas	Dry	
1968	9	4	151	61	8	100	333
1969	7	3	148	66	6	91	321
1970	8	6	139	43	9	72	277

SERVICE WELL COMPLETIONS

Year	GS	INJ	LPG	SWD	Totals
1968	27	2	6	0	35
1969	20	5	0	1	26
1970	110	0	3	0	113

The average depth of exploratory wells drilled in 1970 was about 4,025 feet as compared with an average depth of 3,445 feet the prior year. Development well depths averaged about 3,661 feet as compared with an average depth of 3,435 the prior year. Service well depths averaged about 1,463 feet. Most of them were completed in shallow Mississippian Stray Sandstone reservoirs. The fluctuation in total drilled footage, including a few old wells deepened to new objectives, over a three-year period is as follows:

Well Class	Amount of Drilled Footage		
	1968	1969	1970
Exploratory	522,384	544,160	615,952
Development	564,827	559,936	454,016
Service	76,026*	69,126**	162,344
	1,163,237	1,173,222	1,232,312

* Corrected figure. Shown as 776,026 in Annual Statistical Summary 10.
** Included LPG, GS, BDW, and water injection wells.

The following exploratory and development statistics and drilled footage figures for Michigan have been extracted from: Quarterly Review of Drilling Statistics for the United States, Vol. IV, No. 4, March 1971, American Petroleum Institute. The differences between these statistics and Geological Survey figures are very minor. They are due primarily to methods of establishing cut-off dates for handling statistics and internal decisions relating to final status of a completed well as determined by the Survey.

API EXPLORATORY AND DEVELOPMENT WELL COMPLETIONS

Year	Exploratory Wells			Development Wells			Totals
	Oil	Gas	Dry	Oil	Gas	Dry	
1970	9	7	139	40	12	76	283

API DRILLED FOOTAGE STATISTICS 1970

Exploratory Wells			Development Wells			Totals
Oil	Gas	Dry	Oil	Gas	Dry	
53,482	36,500	524,799	133,636	42,137	283,211	1,073,765

* * * OIL AND GAS PRODUCTION * * *

Oil production amounted to 11,693,488 barrels as compared with 12,212,882 barrels produced in 1969. Production from new pools found in 1970 may lessen the general decline, and this should be reflected in 1971 figures. Gas production increased from 36,162,173 Mcf to 39,252,013 Mcf. Again, the Albion-Scipio Trend pools produced about 47% of the states oil and about 29% of the gas in 1970.

Oil and gas production by individual field and pool is found in Part 2, Table 4. Annual and cumulative production by year, geologic formation, and county is found in Part 3.

Production by county is shown on the adjacent page, Table 2. Production by month and oil and gas district is as follows:

OIL AND GAS PRODUCTION BY MONTH

	Barrels Oil	MCF Gas
January	972,395	3,730,029
February	905,063	3,292,276
March	973,773	4,625,798
April	979,058	3,620,342
May	969,574	3,479,072
June	962,299	3,387,377
July	990,338	3,490,398
August	978,409	3,384,986
September	941,025	3,369,750
October	1,037,188	2,406,351
November	981,722	2,184,016
December	1,002,644	2,281,618
Totals	11,693,488	39,252,013

OIL AND GAS PRODUCTION BY DISTRICT

District	Barrels Oil	MCF Gas
Basin	3,577,620	1,629,319
Northern	947,750	644,354
Southeastern	4,706,538	32,203,445
Southwestern	2,096,526	4,774,816
Western	365,054	79
Totals	11,693,488	39,252,013

* * * OIL AND GAS VALUATION * * *

Effective November 30, 1970, there was a $.25 per barrel increase in sales price for all grades of Michigan oil. The average price paid at the wellhead was $3.10 per barrel. The value of this mineral resource amounted to $36,246,376 as compared with $37,494,318 in 1969.

The average price of Michigan produced gas sold at the wellhead was about $.27 per Mcf. The value of this product amounted to about $10,476,482 as compared with $9,296,332 in 1969.

The estimated value of LPG's produced in 1970 was about $2.52 per barrel, or about $.06 per gallon. The value of this product amounted to about $4,479,764 as compared with $5,332,053 in 1970.

* * * LPG PRODUCTION * * *

Total LPG production in 1970 amounted to about 1,777,684 barrels as compared with 2,115,894 barrels produced in 1969. LPG's are stripped from Michigan produced gas and gas imported via pipeline from western sources. Additional details on LPG production and gas plant operations are found in Part 2.

* * * OIL AND GAS IMPORTS AND EXPORTS * * *

Domestic imports of crude oil via pipeline from western and midwestern states in 1970 amounted to 24,462,575 barrels, a decrease from the 26,842,727 barrels imported in 1969. Canadian imports via pipeline from western Canada oil fields increased from 12,463,050 barrels in 1969 to 17,698,262 barrels in 1970. Total imports amounted to 42,160,837 as compared with 39,305,777 barrels in 1969. Exports of Michigan produced crude oil to northern Indiana (Ft. Wayne) and Ohio (Cleveland) refineries or terminals amounted to 512,335 barrels, a decrease from the 675,533 barrels exported in 1969. Imports and exports of crude oil by month are shown in chart form on the following page.

1970 OIL IMPORTS (Bbls.)

	Domestic	Canadian	Total
January	1,597,107	1,825,345	3,422,452
February	1,192,598	1,808,128	3,000,726
March	2,089,158	1,839,448	3,928,606
April	2,086,744	1,127,849	3,214,593
May	2,122,157	1,281,158	3,403,315
June	2,268,391	1,124,010	3,392,401
July	2,404,363	1,198,777	3,603,140
August	1,814,571	1,392,939	3,207,510
September	2,409,532	1,392,902	3,802,434
October	1,957,882	1,610,417	3,568,299
November	2,513,469	1,437,814	3,951,283
December	2,006,603	1,659,475	3,666,078
Totals	24,462,575	17,698,262	42,160,837

Gas imports to Michigan markets and gas storage fields via pipelines, primarily from Texas, Louisiana, Oklahoma and Kansas fields, increased over 90 billion cf in 1970. Compilations by the Gas Section, Michigan Public Service Commission, show gas imports of 860,091,576 Mcf. as compared with 769,675,508 Mcf. in 1969. Monthly imports of gas in 1970 were as follows:

1970 PIPELINE GAS IMPORTS (Mcf.)

January	45,574,224
February	43,828,730
March	57,159,821
April	74,570,620
May	90,149,106
June	91,371,474
July	95,130,798
August	90,707,691
September	83,585,605
October	80,213,448
November	56,828,173
December	50,971,886
Total	860,091,576

1970 OIL EXPORTS (Bbls.)

January	57,872
February	50,591
March	50,045
April	48,471
May	46,271
June	17,196
July	58,958
August	39,610
September	41,001
October	37,012
November	30,456
December	34,855
Total	512,335

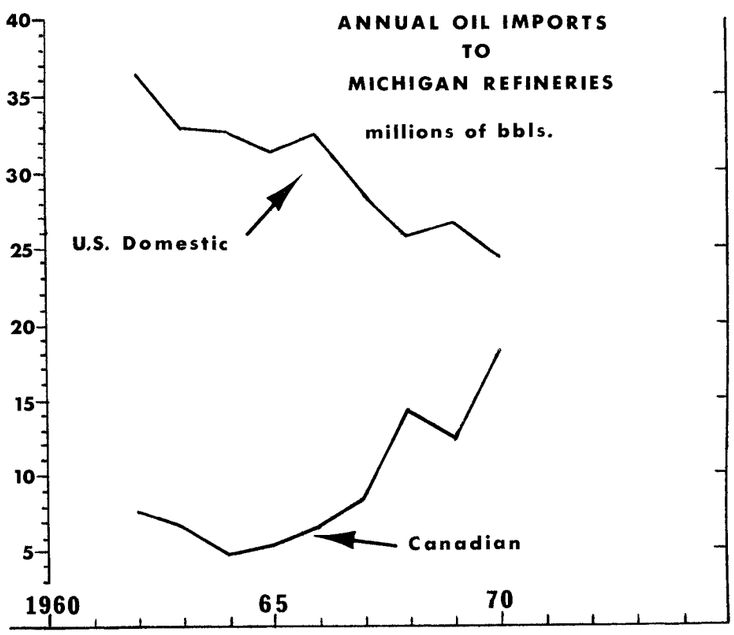


TABLE 1 -- OIL AND GAS PRODUCTION BY COUNTY IN 1970

County	Barrels Oil	MCF Gas
Allegan	130,485	274,220
Arenac	226,288	---
Barry	10,262	---
Bay	248,916	---
Calhoun	1,827,699	4,220,253
Clare	462,037	161,004
Crawford	495,816	484,466
Genesee	27,322	---
Gladwin	299,467	---
Gratiot	10,719	3,895
Hillsdale	2,601,532	5,089,598
Huron	1,412	---
Ingham	6,370	---
Isabella	200,784	29,811
Jackson	1,047,526	2,430,499
Kalkaska	164,574	---
Kent	62,668	11,436
Lake	211,809	---
Lapeer	61,993	45,433
Lenawee	214	7,036
Livingston	535	---
Macomb	5,103	6,646,184
Mason	37,115	---
Mecosta	172,480	104,003
Midland	184,299	---
Missaukee	558,806	664,962
Monroe	2,153	---
Montcalm	113,023	3,668
Muskegon	32,008	---
Newaygo	17,368	79
Oakland	442	---
Oceana	66,750	---
Ogemaw	299,023	373,286
Osceola	507,319	47,867
Oscoda	1,187	---
Otsego	284,680	159,892
Ottawa	59,478	268,906
Presque Isle	1,491	---
Roscommon	166,932	240,819
Saginaw	21,475	---
Shiawassee	9,026	---
St. Clair	976,631	17,984,692
Tuscola	63,324	---
Van Buren	5,933	---
Washtenaw	3,746	---
Wayne	5,244	---
Totals	11,693,487	39,252,013

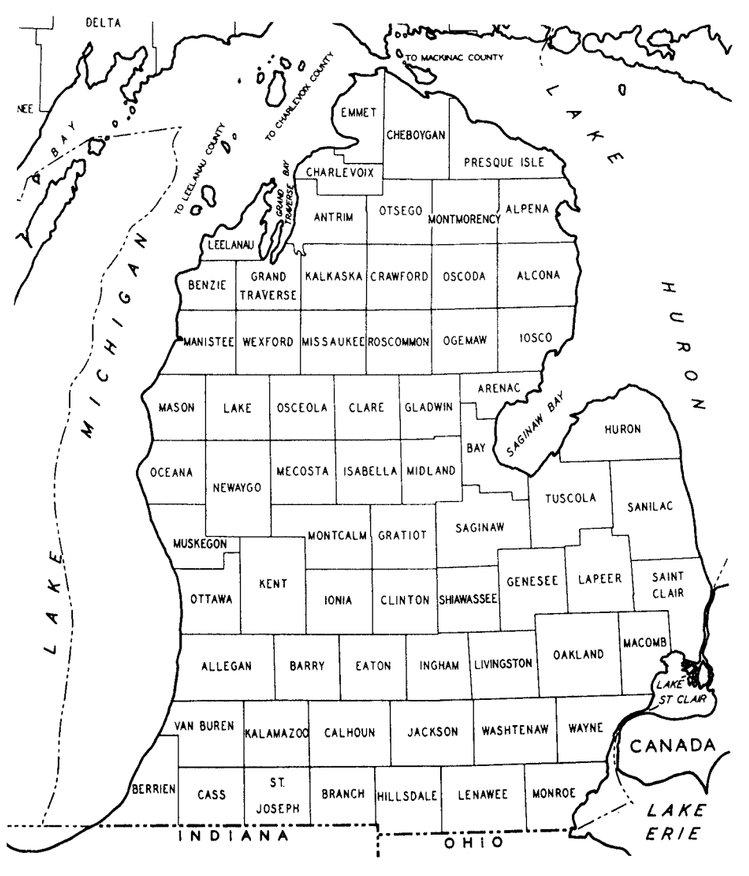


TABLE 2 DRILLING PERMITS AND WELL COMPLETIONS BY COUNTY, 1970 (Sheet 1 of 2)

Classification of New Hole Completions

Does not include reworked wells or old wells drilled deeper

COUNTY	OIL AND GAS PERMITS ISSUED	OIL AND GAS TESTS		RESULTS			SERVICE WELLS		TOTAL COMPLETIONS
		Exploratory	Development	Oil Wells	Gas Wells	Dry Holes	G.S.	L.P.G.	
Alcona	1	1				1			1
Allegan	4	1	1			2			2
Antrim	3	3				3			3
Barry	1								0
Benzie	4	4				4			4
Branch	2	2				2			2
Calhoun	22	1	16	6		11			17
Cass	1	1				1			1
Cheboygan	2	2				2			2
Clare	35	1				1	34		35
Crawford	2		3	1		2			3
Eaton	6	4				4			4
Emmet	2	2				2			2
Genesee	13		10	9		1			10
Gladwin	2		1			1			1
Grand Traverse	7	4	1		2	3			5
Gratiot	2								0
Hillsdale	22	6	14	5	1	14			20
Ingham	7	3		1		2			3
Isabella	14	2	2	1		3	26		30
Jackson	6	3	1			4			4
Kalamazoo	1	1				1			1
Kalkaska	13	9	3	3	2	7			12
Lake	3	4	2	2		4			6
Lapeer	8		5	4		1			5
Lenawee	3	1				1			1
Livingston	8	2	4		4	2			6

Table 2 DRILLING PERMITS AND WELL COMPLETIONS BY COUNTY, 1970 (Sheet 2 of 2)

Macomb	15	17	2			19			19
Mason	8	6	3	1		8			9
Mecosta	6	3	2	1		4			5
Midland	1								0
Missaukee	4	1	3			4			4
Montcalm	29	7	5	3		9	9		21
Muskegon	4	3	3	1	1	4			6
Newaygo	6	2				2	6		8
Oakland	6	2	1			3			3
Oceana	26	15	10	2		23			25
Osceola	48	4	1	1		4	34		38
Oscoda	1								0
Otsego	15	3	9	4	1	7			12
Ottawa	1	1				1			1
Presque Isle	2	3				3			3
Sanilac	1	1				1			1
Shiawassee	1	1				1			1
St. Clair	51	22	22	5	4	35	1		45
St. Joseph	1	1				1			1
Tuscola	1	1			1				1
Wayne	1							3	3
Wexford	3	3				3			3
Totals									
49 Counties	425	153	124	50	16	211	110	3	389

└ Includes 8 permits which were issued and terminated in 1970

* * * DISCOVERY WELLS * * *

The discovery-to-dry hole ratio for all exploratory wells drilled and completed during the year was about 1:11 compared with 1:12 in 1969. In the Northern District as outlined on the preceeding Oil and Gas District map, 31 exploratory wells were drilled and completed during the year. The discovery ratio in that district was a little better than 1:3, an exceedingly high success ratio. In 1969 the ratio was about 1:5 for the district. The new fields in the region, all Niagaran reef reservoirs, were found by seismic or gravimeter surveys.

The most significant discoveries (and exploratory failures) were drilled in the Northern District. The majority of failures were drilled on geophysical anomalies, presumably reflecting Niagaran reef build-ups. Also of importance, a new reef area was opened up at the southern edge of the Basin District in Ingham. The new reef discovery marks the first commercial oil or gas production from Ingham County. Elsewhere in the state, most discoveries were found in established producing regions. The locations of new fields and pools are shown on map segments below and on center spread.

Few of the new discoveries appear to have an ultimate oil or gas yield greater than a Class E field as defined below. Some of the new reef fields have been tentatively rated as Class D. The classifications are based on potential yields as defined by the American Association of Petroleum Geologists, Committee on statistics of Drilling.

Class A - Over 50 million barrels oil or 300 BCF gas
Class B - 25-50 million barrels oil or 150-300 BCF gas
Class C - 10-25 million barrels oil or 60-150 BCF gas
Class D - 1-10 million barrels oil or 6-60 BCF gas
Class E - 1 million barrels or less oil or less than 6 BCF gas
Class F - Abandoned as non-profitable

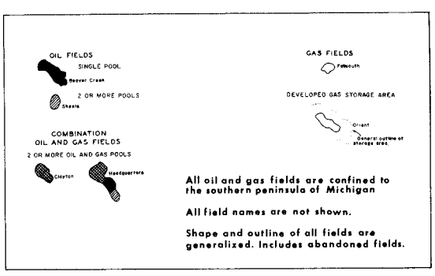
From stratigraphically youngest to oldest, about 1% of all exploratory wells were quit in Mississippian, Michigan Stray-Marshall sandstone formations; 10% in Devonian, Traverse Limestone; 8% in Devonian, Dundee and 8% in Reed City rocks; 1% in Devonian Detroit River Group rocks; 57% in Middle Silurian, Niagaran rocks; 3% in Middle Ordovician, Trenton-Black River rocks; 11% in St. Peter Sandstone and Prairie du Chien rocks; and about 1% in Cambrian or older rocks. Several hundred feet of basement rock was drilled in the single Precambrian test, Livingston County. The sizeable increase in wells drilled only to Niagaran rocks (about 37% in 1969) reflects the high interest in Niagaran exploration in the northern part of the state. An analysis of discoveries according to reservoir formation for a three-year period is shown on the following chart.

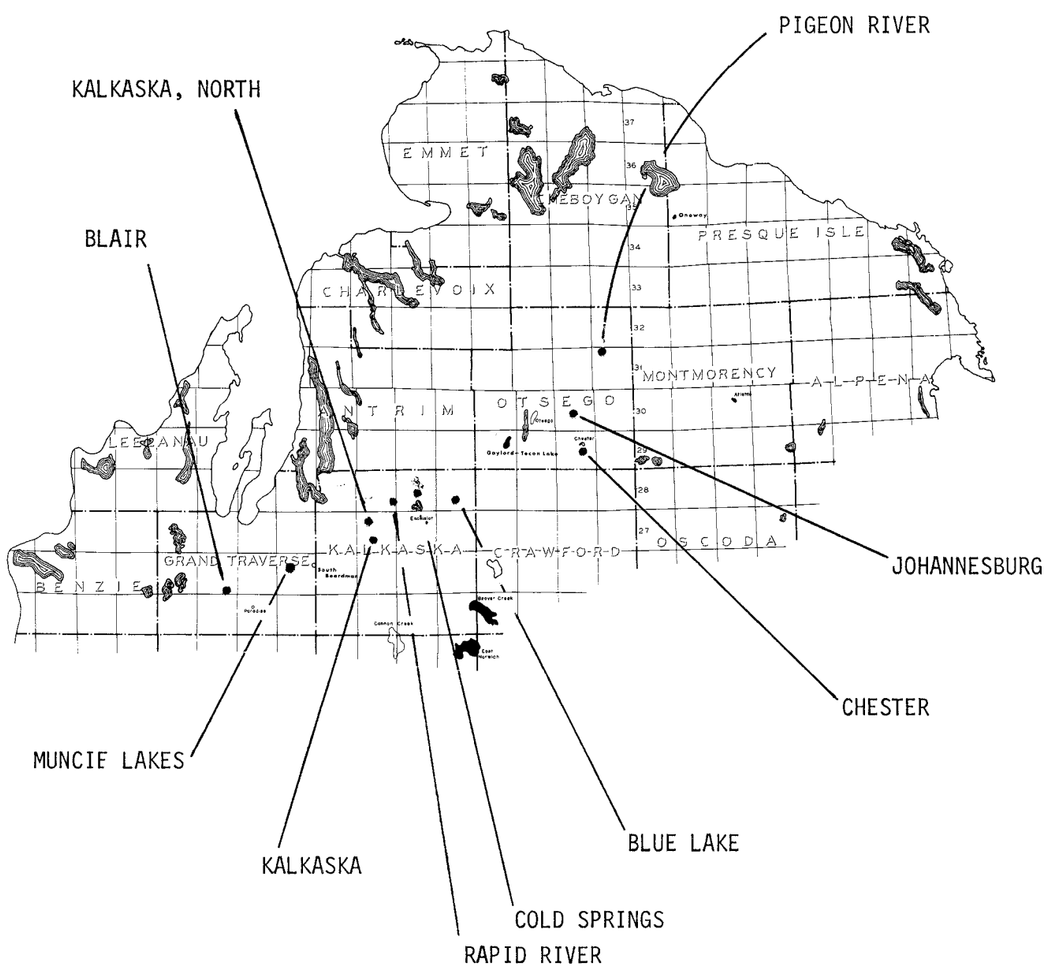
ANALYSIS OF DISCOVERY WELLS BY GEOLOGIC SYSTEM

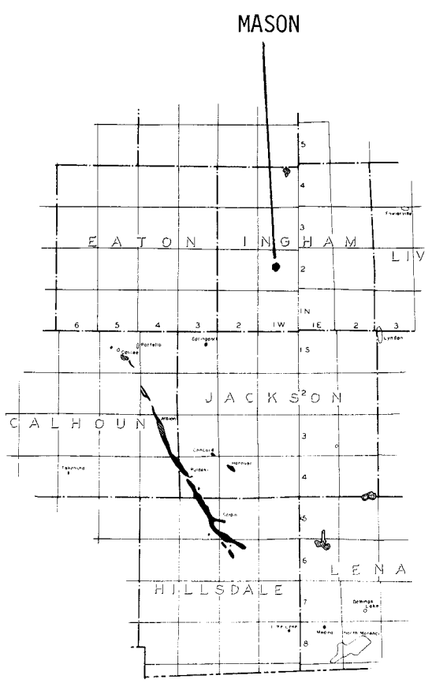
System	Formation or Pay	Number of Discoveries 1968	1969	1970
Pennsylvanian		-	-	-
Mississippian	"Michigan Stray Ss."	1	-	-
	"Berea"	-	-	2
Devonian	Antrim Shale	-	-	-
	"Traverse Lime"	6	3	-
	Dundee	1	-	1
	"Reed City"	1	-	2
	Detroit River "Sour Zone"	-	1	1
	Richfield	1	1	-
Silurian	Salina A-1 or A-2	-	-	-
	Niagaran Reef*	4	4	12
Ordovician	Trenton-Black River	-	1	-
	Prairie du Chien	-	-	-
Cambrian	(Gas Shows Reported)	-	-	-

* Most reefs also have associated Salina A-1 oil or gas pays.

Significant new reef discoveries in northern and southern parts of the Southern Peninsula. See discovery well data on next page.







1970 DISCOVERY WELLS

Field	County, Location, Permit No.	Operator and Lease	Comp. Date	Depth to Pay	Total Depth	Initial Production n=(N)IP BOPD	Initial Production t=(T)IP MCFGPD	Prod. Form.	Basis for Loc.	AAPG Pool Class
NEW FIELDS										
Blair	Grand Traverse 34-26N-11W SP 27977	Shell Oil Co. Thomas #1-34	6-8	5826	6316		5543[t] & Cond.	Niagaran	Seis.	E
Blue Lake	Kalkaska 28-28N-5W SP 28229	Amoco Production Co. State-Blue Lake #1-28	12-3	7105	7450		3000[t] Cond.	Niagaran	Seis.	D
Cold Springs	Kalkaska 21-28N-6W SP 27866	Amoco Production Co. Simpson #1	1-20	6764	7315	F100[t]		Niagaran	Seis.	D
Columbus Sec. 32(a)	St. Clair 32-5N-15E SP 27864	Collins Bros. Oil Bartell & Ricossa Comm. #1	12-14	2983	3023		2300[t]	Niagaran	Sub.	E
Fostoria	Tuscola 14-10N-9E SP 28104	A. G. Hill Roy Brown et al #1	7-31	1514	3267		SIGW	Berea	Sub.	E
Fountain	Mason 12-19N-16W SP 28158	Miller Bros. J. & E. Lavas #1	10-6	2442	2448	P35[t]		Reed City	Sub.	E
Johannesburg	Otsego 21-30N-2W SP 28089	Shell Oil Co. J. E. Donovan #1-21	8-30	5772	6483	F898[t]		Niagaran	Seis.	E
Kalkaska	Kalkaska 28-27N-7W SP 28081	Shell Oil Co. Longfield #1-28	8-4	7129	7415	F117 Cond. & 2538[t]		Niagaran	Seis.	E
Kalkaska, North	Kalkaska 5-27N-7W SP 28131	Shell Oil Co. State-Kalkaska #1-5	9-11	6318	6911	F329[t]		Niagaran	Seis.	F
Luther, North	Lake 8-19N-11W SP 27723	Bermax Oil Co., Inc. Konarski #1	1-20	3518	3555	P14[t]		Reed City	Sub.	E
Mason	Ingham 16-2N-1W SP 28173	Mobil Oil Corp. Ellsworth Brown #1	9-29	4165	4537	F322 & 393 Mcf.		Niagaran	Seis.	E
Muncie Lakes	Grand Traverse 8-26N-9W SP 28161	Shell Oil Co. State-Union #1-8	10-17	6267	6666		6620[t] & Cond.	Niagaran	Seis.	E
NEW FIELDS, Continued										
Pigeon River	Otsego 4-31N-1W SP 28006	Northern Michigan Exploration Co. State-Charlton #1-4	6-28	4766	5270	F829[t]		Niagaran	Grav.?	E
Rapid River	Kalkaska 24-28N-7W SP 28230	Amoco Production Co. State-Rapid River #1-24	12-15	6590	6810	F266 & 1700 Mcf.		Niagaran	Seis.	D
NEW POOL DISCOVERIES										
Chester(b)	Otsego 15-29N-2W SP 27917	Shell Oil & M. L. Welch State-Chester #N-1	4-30	5930	6697		2811[t] & 79 Bbls. Cond.	Niagaran	Sub.	D
Home, Sec. 26	Montcalm 27-12N-6W SP 27978	Burks White Harold Graham #2	5-15	3513	3520	F5/hr.		Dundee	Sub.	E
Otter Lake(c)	Genesee 11-9N-8E SP 27599	Hobson Oil Co. Leo Sammon #1	8-25	2968	3142	F100[t]		Det. River Sour Zone	Sub.	E
Rich(d)	Lapeer 21-10N-10E SP 26866	Huron Oil & Mid-State O. & G. Gary Eynon #1	7-13	1380	PBTD 1489		SIGW	Berea	Sub.	E

(a) 1969 discovery reported in 1970 statistics.
(b) Drilled as development well. New pool discovery in Upper Niagaran reef section.
(c) Completed as D & A in 1969. See footnotes, page 49, Table 3
(d) Completed as D & A in Richfield in 1969. PB to Berea in 1970.

NOTE: t=T(IP) refers to initial production after acid, sand-fracture, or a combination of well stimulation methods.

n=N(IP) refers to natural potential or production.

DEEP TESTS

County Location	Permit Number	Operator and Lease	System and Formation	Total Depth	Basis for Loc.	Explo. Class	Remarks
Alcona 30-28N-5E	28231	North American Drlg. Co. #2 Cranberry Ranch	Sil., Niagaran	6560	Acreage	NFW	
Antrim 36-29N-7W	28021	Shell Oil Co. #1-36 Sanders	Sil., Clinton	6637	Seis.	NFW	
Antrim 13-29N-5W	27931	Shell Oil Co. #1-13 State-Mancelona	Sil., Niagaran	6635	Seis.	NFW	
Antrim 32-29N-5W	28184	Pan American Petrol. Corp. #1-32 State-Mancelona	Sil., Clinton	7024	Seis.	NFW	
Benzie 27-26N-13W	28132	Pan American Petrol. Corp. #1-27 State-Inland	Sil., Clinton	5391	Seis.	NFW	
Benzie 33-26N-14W	28034	Shell Oil Co. #1-33 State-Homestead	Sil., Clinton	4955	Seis.	NFW	
Benzie 1-25N-14W	28109	Northern Mich. Explor. Co. #1-1 State-Weldon	Sil., Clinton	5250	Grav.?	NFW	
Benzie 29-25N-14W	27899	McClure Oil Co. #1 State-Weldon	Sil., Clinton	5003	Grav.?	NFW	
Cheboygan 34-34N-1E	28084	McClure Oil Co. #1-34 State-Forest	Sil., Niagaran	3678	Grav.?	NFW	
Cheboygan 3-33N-1W	27976	Shell Oil Co. #1-3 State-Nunda	Sil., Clinton	4276	Seis.	NFW	S. G. on D.S.T.
Crawford 21-25N-4W	28110	Union Oil Co., California #C-4 State-Beaver Creek	Ord., St. Peter	10,142	-	DPT	PB to Richfield
Emmet 2-36N-5W	28177	Atlantic Inland Oil Corp. #1 Jurek	Sil., Clinton	2478	Acreage?	NFW	
Emmet 35-37N-4W	28212	Atlantic Inland Oil Corp. #1 White & Burns	Ord., St. Peter	3958	Acreage?	NFW	
Grand Traverse 32-27N-12W	28041	A. G. Hill #1 Pattinson	Sil., Clinton	5280	Grav.	NFW	
Grand Traverse 32-27N-10W	27860	Northern Mich. Explor. Co. #1 Goff et al	Sil., Niagaran	5894	Grav.?	NFW	
Ingham 29-3N-2E	28145	Mobil Oil Corp. #1 Bearse & Hill	Sil., Cabot Head	4980	Seis.	NFW	
Ingham 21-3N-2E	27910	Mobil Oil Corp. #1 Jorgensen et al	Sil., Cabot Head	5003	Seis.	NFW	
Kalkaska 8-28N-6W	28108	Sorvat Oil Co. #1 Stein	Sil., Clinton	7152	Grav.?	NFW	
Kalkaska 23-27N-8W	28024	Northern Mich. Explor. Co. #1-23 State-Kalkaska	Sil., Clinton	7015	Grav.?	NFW	
Kalkaska 16-26N-5W	28187	Shell Oil Co. #L-16 Consumers Power Co.	Sil., Niagaran	8018	Seis.	NFW	
Livingston 11-3N-5E	27986	Mobil Oil Corp. #1 Messmore	Precambrian	7589	Grav. Geomorph.	NFW	S. O. & G. in Trenton
Muskegon 1-12N-18W	28208	The MOCO #1 Lowden	Sil., Niagaran	3850	Grav.?	NFW	
Newaygo 11-11N-13W	28137	Chapman Drlg. & Tribal Oil #1 Brydges	Ord., Black River	6201	Sub.	NFW	S. G. in Silurian
Newaygo 8-15N-14W	27893	Island Lake Oil & Gas #1 Andrews et al	Sil., Clinton	5460	Sub.	NFW	
Oakland 35-4N-8E	28258	Texaco, Inc. #1 Huntoon	Cambrian?	6500	Grav.	NFW	
Oceana 12-13N-17W	28169	McClure Oil & Patrick Pet. #1 Huls	Sil., Clinton	4330	Grav.?	NFW	
Oceana 14-15N-18W	28220	McClure Oil & Patrick Pet. #1 Longcore et al	Sil., Clinton	4200	Grav.?	NFW	
Oceana 14-14N-18W	28178	McClure Oil & Patrick Pet. #1 Diepen	Sil., Clinton	4092	Grav.?	NFW	
Oceana 20-14N-17W	28203	Chapman Drlg. & Tribal Oil #1 Garcia Comm.	Sil., Clinton	4245	Grav.?	NFW	
Otsego 3-32N-1W	28103	Pennzoil United, Inc. #1-3 State-Corwith	Sil., Clinton	4870	Acreage?	NFW	
Presque Isle 35-34N-4E	27920	Pan American Petrol. Corp. #1 Trapp	Sil., Clinton	3734	Seis.	NFW	
Presque Isle 7-34N-5E	27874	McClure Oil Co. #1 Bruning et al	Sil., Niagaran	3205	Grav.?	NFW	S. O. & G. on D.S.T.
Presque Isle 23-33N-2E	28083	McClure Oil Co. #1-23 State-Allis	Sil., Niagaran	3984	Grav.	NFW	
Shiawassee 5-5N-2E	27907	Mobil Oil Corp. #1 Jelinek-Ferris Unit	Cambrian	7056	Grav.?	NFW	
Wexford 10-24N-12W	28222	Shell Oil Co. #1-10 Copley	Sil., Niagaran	6446	Seis.	NFW	

ALL DEEP TESTS WERE DRY AND ABANDONED.

* * * DEEP TESTS * * *

No firm criteria have been established for designating dry-hole exploratory wells in the Michigan basin as important deep tests. Selections are most often based on the geologic age of the strata penetrated in reference to the location of the test within the basin, and the relative abundancy of similar tests in the area. Actual drilled depth is not the determining factor. For example, most of the nearly 1300 wells drilled to date in St. Clair County have reached total depth in Middle Silurian-Niagaran rocks. These wells are scattered throughout the county, so it is unlikely that any future exploratory well reaching total depth in Silurian rocks would be classified as a deep test. Only a few wells in St. Clair County have penetrated Ordovician or older strata. Any well drilled in St. Clair County to strata older than Silurian would probably be considered as a deep test at this stage of development.

Deeper pool tests in designated fields may also qualify as deep tests. Table 3, Michigan Oil and Gas Fields, shows the deepest depth and formation or pool penetrated and tested. The deepest hole drilled to date was located in the Rose City field, Ogemaw County, and reached a total depth of 12,996 feet in Cambrian rocks. The deepest hole drilled during 1970 was a deeper pool test in the Beaver Creek field, Crawford County. Total depth for this well was 10,142 feet in St. Peter sandstone. It is the first well to be drilled to Ordovician rocks in Crawford County.

Exploratory wells designated as deep tests are listed on the preceding pages. All were dry holes and most were drilled in connection with Niagaran exploration in the northern part of the basin. One Precambrian test was drilled northeast of the Howell anticline, Livingston County. Precambrian age determinations have been made by Mobil Oil Corporation but have not been released to the public. The location of Precambrian tests drilled in the Southern Peninsula are listed on page 60. Well records are available for all listed wells.

* * * STATE ACREAGE UNDER LEASE * * *

State-owned lands under lease for oil and gas development as of December 31, 1970 amounted to 981,934 acres. Revenue from oil and gas rental, royalty and other fees for the year 1970 amounted to $560,029.48. No bonus moneys were received for 1970. The above data was provided by the Lands Division of the Department of Natural Resources.

PART 2, OIL AND GAS FIELDS
EXPLANATION

Part 2 brings together general information mainly on Michigan's oil and gas fields, gas storage reservoirs, LPG storage facilities, gas plant operations and refinery facilities. Oil and gas fields are listed alphabetically by field name. Developed and undeveloped gas storage reservoirs, all of which were originally classified as oil or gas accumulations, are also integrated in the listing, but for convenience they are also shown on separate tables.

MICHIGAN OIL AND GAS FIELDS, TABLE 3 The symbol on the left margin of the table indicates the official classification of fields and pools at the end of the year. Field names are listed in the second column and the producing pool, or pools, are shown under the heading Producing Formation or Pool. Most fields consist of one pool with oil or gas production coming from a single formation. Some fields have 2 or more separate pools, each producing from a different formation or stratigraphic interval and at a different depth.

Location of Fields according to township, range and sections are found at the bottom of the field block. The listed sections are those which have, or have had, producing wells assigned to the field.

The Pay Zone part of the table generally refers to data for the discovery well. The indicated pay thickness generally relates to the amount of pay opened or perforated in the discovery well and does not necessarily indicate total net pay for the reservoir.

The Deepest Formation Tested column indicates the deepest total depth and formation penetrated in the field.

The Number of Oil and Gas Wells column indicates the number of successful field wells drilled in the field to the end of the specified year, the number completed as producing wells during the year, the number of producing wells abandoned during the year, the number producing at the end of the year, and the number shut-in or shut-down at the end of the year. Most of the latter category are producible wells, but for various reasons they were not in operation.

The Drilled Acres column indicates the total number of acres assigned to the field or pool according to individual well drilling units assigned to each producing well completed in the field or pool. A field may have a 10 or 20-acre drilling unit for one pool and a 40-acre drilling unit for a deeper formation pool within the field. During the development of a field or pool, the drilling unit size may change, thus subsequent wells are assigned acreage accordingly. In past years, drilling units generally have been 10, 20, or 40 acres. During 1969, a few new pools in the Northern District were assigned 80, 160, and 640-acre units. Gas well units, especially for Michigan Stray Sandstone reservoirs, have generally been 160-acre units. Other sizes currently in use for gas wells are 40, 80, 320, and 640-acre units. Changes in drilling units, off pattern wells, etc. complicate the maintenance of accurate acreage figures during the life of a given field or individual pool. The figures cited in the column are not entirely accurate, but do provide as near as possible an indication of the areal size of the field. Where possible, drilled acreage is shown for individual pools. The figures do not indicate the areal extent of the oil or gas reservoir.

Recovery Per Drilled Acre figures for oil pools result from dividing the drilled acres figure into the cumulative oil production figure.

GAS FIELDS. Because of slow field development, small reserves, or lack of marketing facilities, some fields are listed as "shut-in" and show no production figures. Others produce small quantities of unmetered gas and are not considered commercial. Production from these fields is used for domestic purposes and, in some cases, lease fuel.

GAS STORAGE RESERVOIRS. Most gas storage reservoirs were originally classified as gas fields or pools. Upon depletion or near depletion of native gas, they were converted to storage reservoirs. Undeveloped gas reservoirs are gas pools that have been designated to become storage reservoirs at some future time.

The producing sections listed in gas storage reservoir tables do not necessarily relate to current gas storage area or boundaries. The sections, or parts of sections, listed are those which contained at least one producible oil or gas well assigned to the field or pool prior to conversion to gas storage. Also, the sections do not necessarily relate to potential or future gas storage area or boundary.

LPG STORAGE. Surface and underground storage facilities for liquified petroleum gas.

OIL WELL GAS. This is casinghead gas produced incidental to the production of oil from pools or fields generally classified as oil accumulations.

OIL AND GAS WELL RECORDS. Descriptive geological logs and drillers logs are available for over 27,500 Michigan oil and gas tests, including exploratory and development wells. Individual logs may be purchased at small cost from the Geological Survey Division.

WELL SAMPLE SETS. Well cuttings for over 9,000 wells are available for inspection at the Geological Survey, Lansing, Michigan. Samples are contained in glass vials arranged in open trays. The Survey does not maintain a core collection.

Other sample and core repositories are located at:

Subsurface Laboratory, Department of Geology, University of Michigan, Ann Arbor, Michigan.

Department of Geology, Wayne State University, Detroit, Michigan.

Department of Geology, Western Michigan University, Kalamazoo, Michigan.

Department of Geology, Michigan State University, East Lansing, Michigan.

Department of Geography, Central Michigan University, Mt. Pleasant, Michigan.

TABLE 3 MICHIGAN OIL AND GAS FIELDS

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◕ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☼ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS (1970): TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	ADAIR	ST. CLAIR	1961	SALINA-NIAGARAN	2719	10 D	41.4	NIAGARAN	2755	18	0	1	15	6	12,832	290,849	0	468,773	560	519	142	0	142
		CHINA TWP., 4N-16E, SECTION 7 CASCO TWP., 4N-15E, SECTIONS 12, 13																					
●	ADAMS	ARENAC-BAY	1937	TRAVERSE	2032	15 L	37.0	BOIS BLANC	5079	24	0	0	8	4					240		20	3	23
●			1937	DUNDEE	2958	15 L	34.7			31	0	0	17	1					310		8	*10	18
●			1956	DETROIT RIVER SZ	3943	5 L	39.6	}															
●			1941	RICHFIELD	4278	5 L	35.5	}		31	0	0	8	1	18,572	1,462,517			1080	897	0	2	2
		ADAMS TWP., 19N-3E, SECTIONS 21, 23, 24, 25, 26, 27, 34, 35, 36 DEEP RIVER TWP., 19N-4E, SECTION 31 GIBSON TWP., 18N-3E SECTIONS 1, 2 THE 8 WELLS INCLUDE 5 RICHFIELD, 1 SOUR ZONE, AND 2 DUAL COMPLETIONS, RICHFIELD & SOUR ZONE																					
☼	ADAMS, NORTH	ARENAC	1942	BEREA	1605	1 S		DUNDEE	3101	1	ABANDONED 1948							1,280	40				
●			1940	DUNDEE	2905	15 D	32.0	DETROIT RIVER	4489	49	0	0	19	2	28,008	9,251,781			470	19,685	3,670	1	3671
		ADAMS TWP., 19N-3E, SECTIONS 11, 14, 15, 22, 23, 27 BEREA PRODUCTION - SECTION 4																					
☼	ADAMS, SEC. 8	HILLSDALE	1962	TRAVERSE	1420	4 L		PRAIRIE DU CHIEN	4169	1	ABANDONED 1965							18,919	20				
		ADAMS TWP., 6S-2W, SECTION 8																					
●	AKRON	TUSCOLA	1936	DUNDEE	2678	17 L	37.3	SYLVANIA	4130	50	0	0	34	6					1100		0	*136	136
●			1938	DETROIT RIVER SZ	3422	11 D	35.9	}		27	0	0	19	3	38,843	1,849,263			500	1,156	0	*32	32
●			1954	RICHFIELD	3774	6 D	39.2	}		THE 19 WELLS INCLUDE 2 RICHFIELD, 13 SOUR ZONE AND 4 DUAL COMPLETIONS, SOUR ZONE & DUNDEE													
		AKRON TWP., 14N-8E, SECTIONS 19, 20, 21, 28, 29, 30 WISNER TWP., 14N-7E, SECTIONS 22, 23, 24, 25, 26																					
●	ALAMO	KALAMAZOO	1949	TRAVERSE	1310	2 L		TRAVERSE	1420	16	ABANDONED 1962					27,545			160	172			
		ALAMO TWP., 1S-12W, SECTIONS 19, 29, 30																					
☼	ALBION	CALHOUN	1941	TRAVERSE	1610	7 L		PRAIRIE DU CHIEN	4623	4	ABANDONED 1948							6,114	120				
		ALBION TWP., 3S-4W, SECTIONS 14, 15																					
		ALBION-PULASKI-SCIPIO TREND: FIELD AND PRODUCTION DATA LISTED BY TOWNSHIP AND COUNTY																					
☼	CAL-LEE	CALHOUN	1962	NIAGARAN	3036	8 D		PRAIRIE DU CHIEN	4912	6	0	0	6	5			54,904	834,450	320				
		LEE TWP., 1S-5W, SECTIONS 16, 22																					
●	LEE TWP.	CALHOUN	1961	NIAGARAN	3060	20 D	24.2	PRAIRIE DU CHIEN	4912	1	0	0	1	1		5,269			80	66			
●			1960	TRENTON-BLACK RIVER	4600	24+ D				27	6	2	20	1	284,188	1,681,760			410	4,102	120	*22	142
		LEE TWP., 1S-5W, SECTIONS 17, 22, 23, 25, 26, 36																					
●	SHERIDAN TWP.	CALHOUN	1960	TRENTON-BLACK RIVER	4179	10+ D	40.0	PRAIRIE DU CHIEN	4791	45	0	1	38	2	419,940	3,945,881	555,284	1,745,390	810	4,871	1,027	0	1027
		SHERIDAN TWP., 2S-4W, SECTIONS 17, 18, 19, 20, 21, 28, 33																					
●	ALBION TWP.	CALHOUN	1958	TRENTON-BLACK RIVER	3952	? D	44.0	PRAIRIE DU CHIEN	4623	143	0	0	137	11	1,017,394	19,493,948	2,622,383	30,994,957	2760	7,063	3,001	5	3006
		ALBION TWP., 3S-4W, SECTIONS 3, 4, 10, 11, 14, 15, 22, 23, 26, 27, 35, 36																					
●	PULASKI-HOMER TWPS.	JACKSON-CALHOUN	1959	TRENTON-BLACK RIVER	3766	66+ D	39.6	PRAIRIE DU CHIEN	4395	140	0	0	135	5	1,120,253	22,429,501	3,167,142	29,449,073	2680	8,369	7,709	0	7709
		PULASKI TWP., 4S-3W, SECTIONS 6, 7, 8, 17, 18, 19, 20, 21, 28, 29, 32, 33, 34 HOMER TWP., 4S-4W, SECTIONS 1, 12																					
●	SCIPIO-FAYETTE-MOSCOW TWPS.	HILLSDALE	1957	TRENTON-BLACK RIVER	3576	50+ D	41.4	PRAIRIE DU CHIEN	4202	200	6	0	185	11	2,257,957	39,532,348	3,986,444	36,998,480	3490	11,327	4,895	0	4895
		SCIPIO TWP., 5S-3W, SECTIONS 3, 4, 10, 11, 12, 13, 14, 15, 23, 24, 25, 26 FAYETTE TWP., 5S-3W, SECTIONS 35, 36 MOSCOW TWP., 5S-2W, SECTIONS 19, 31, 32																					
●	ADAMS TWP.	HILLSDALE	1959	TRENTON-BLACK RIVER	3984	6+ D	42.0	PRAIRIE DU CHIEN	4162	55	0	1	44	3	343,579	6,348,641	1,103,154	6,736,081	930	6,826	1,003	0	1003
		ADAMS TWP., 6S-2W, SECTIONS 3, 4, 5, 6, 8, 10, 16, 17																					
	TREND TOTAL									617	12	4	566	39	5,443,311	93,437,348	11,424,407	105,923,981	11,500	8,125	17,755	27	17,782
		SEE CENTER SPREAD MAP FOR TOWNSHIPS ASSOCIATED WITH ALBION-SCIPIO TREND																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
☒ ALGONAC	ST. CLAIR	1947	ANTRIM	302	6 SH		CABOT HEAD	2504	2	ABANDONED 1951						7,830	80				
	CLAY TWP., 3N-16E, SECTIONS 20, 29																				
◐ ALLEGAN	ALLEGAN	1937	TRAVERSE	1563	2 L	38.0	CINCINNATIAN	2987	18	ABANDONED 1961					15,577		180	87			
	ALLEGAN TWP., 2N-13W, SECTIONS 2, 5, 9, 10, 13, 22, 23, 26, 27, 34, 35, 36																				
☼ ALPINE	ST. CLAIR	1963	NIAGARAN	3151	25 D		CLINTON	3470	3	2	0	3	2			239,263	677,558	120		1	0	1
	WALES TWP., 6N-15E, SECTION 32																				
● ARBELA	TUSCOLA	1946	DUNDEE	2557	7 L	35.3	DETROIT RIVER	3375	35	0	0	2		3,059	325,806			350	931	0	0	0
	ARBELA TWP., 10N-7E, SECTIONS 28, 33, 34																				
◐ ASHLAND, SEC. 8	NEWAYGO	1959	TRAVERSE	2238	1 L		TRAVERSE	2239	1	ABANDONED 1962					267			10	27			
	ASHLAND TWP., 11N-13W, SECTION 8																				
☼ ASHTON	OSCEOLA	1946	MICHIGAN STRAY	1215	2 S		DETROIT RIVER	3779	3	0	0	1	1			0	205,680	400				
●		1945	TRAVERSE	2950	4 L	42.0			4	0	0	3						80		535	0	535
●		1945	DUNDEE	3645	5 L	40.0			4	0	0	4		10,836	447,275			200	1,597	0	1	1
	LINCOLN TWP., 18N-10W, SECTIONS 5, 6																				
☒ ASHTON, EAST	OSCEOLA	1962	MICHIGAN STRAY	1297	5 S		REED CITY	3750	1	0	1	0	ABANDONED 1970			0	0	160				
	LINCOLN TWP., 18N-10W, SECTION 3																				
● ATLANTA	MONTMORENCY	1945	DETROIT RIVER	2183	5 D	36.2	DETROIT RIVER	2350	3	0	0	1		0	7,688			30	256			
	AVERY TWP., 30N-3E, SECTIONS 10, 15																				
● AU GRES	ARENAC	1956	DETROIT RIVER SZ	3822	14 L	31.4	RICHFIELD	4315	DETROIT RIVER SZ COMBINED WITH RICHFIELD													
●		1953	RICHFIELD	4152	11 L	36.5			4	0	0	3		1,858	48,754			160	305	0	1	1
	AU GRES TWP., 19N-6E, SECTIONS 2, 3, 10, 11								THE 3 WELLS INCLUDE 2 RICHFIELD AND 1 RICHFIELD AND SOUR ZONE													
⊕ AUSTIN	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																				
◐ BANGOR	VAN BUREN	1939	TRAVERSE	1002	2 L	29.5	TRENTON	2552	65	ABANDONED 1959					933,965			610	1,531			
	BANGOR TWP., 2S-16W, SECTIONS 4, 5, 9, 10, 14, 15, 16, 21, 28, 29																				
● BARD	GLADWIN	1949	DUNDEE	3933	6 L	42.8	DUNDEE	4017	17	0	0	3	2	796	572,515			170	3,368	20	0	20
	BEAVERTON TWP., 17N-2W, SECTIONS 5, 6 GROUT TWP., 18N-2W, SECTIONS 31, 32																				
◐ BARTON	NEWAYGO	1947	TRAVERSE	3097	1 L	30.0	DETROIT RIVER	3745	3	ABANDONED 1963					20,227			50	405			
	BARTON TWP., 16N-11W, SECTION 16																				
◐ BEAVER, SEC. 31	BAY	1954	BEREA	2413	16 SL		SYLVANIA	4754	1	ABANDONED 1961					926			10	93			
	BEAVER TWP., 15N-3E, SECTION 31																				
● BEAVER CREEK UNIT	CRAWFORD-KALKASKA	1947	RICHFIELD	4160	20 D	44.7	ST. PETER	10,142	105	1	0	52		597,839	7,946,963	425,068	17,271,846	4240	1,874	561	0	561
	BEAVER CREEK TWP., 25N-4W, SECTIONS 7, 8, 16, 17, 18, 19, 20, 21, 27, 28, 29 GARFIELD TWP., 25N-5W, SECTIONS 12, 13																				
● BEAVERTON	GLADWIN	1934	DUNDEE	3929	12 L	41.3	RICHFIELD	5225	26	0	0	4	1	4,180	873,041			330	2,646	71	0	71
	BEAVERTON TWP., 17N-2W, SECTIONS 2, 3, 11, 13																				
● BEAVERTON, SOUTH	GLADWIN	1956	TRAVERSE	3231	6 L	41.0	DETROIT RIVER	4977	TRAVERSE COMBINED WITH DUNDEE													
●		1936	DUNDEE	3845	12 L	34.5			33	0	0	19	1	20,013	1,647,915			700	2,354	124	3	127
	BEAVERTON TWP., 17N-2W, SECTIONS 26, 27, 35, 36 TOBACCO TWP., 17N-1W, SECTION 31								THE 19 WELLS INCLUDE 18 DUNDEE AND 1 DUNDEE & TRAVERSE													
● BEAVERTON, WEST	GLADWIN	1943	DUNDEE	3876	2 L	41.2	DETROIT RIVER	5094	7	0	0	4		11,746	166,734			260	641	9	0	9
	BEAVERTON TWP., 17N-2W, SECTION 19																				
⊕ BELLE RIVER MILLS	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																				

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
● BELLY ACHERS	MONTCALM	1944	DUNDEE	3470	1.3 D	48.2	DUNDEE	3615	7	0	0	3	1	254	335,095			220	1,523	200	0	200
	HOME TWP., 12N-6W, SECTIONS 11, 14																					
◐ BENONA, SEC. 13	OCEANA	1949	TRAVERSE	1640	3 L		DETROIT RIVER	2276	2	ABANDONED 1956					4,951			20	248			
	BENONA TWP., 14N-18W, SECTION 13																					
● BENTLEY	GLADWIN	1952	TRAVERSE	2855	6 L	34.1	SYLVANIA	5114	TRAVERSE COMBINED WITH DUNDEE & RICHFIELD													
●		1937	DUNDEE	3510	13 L	42.1			87	0	2	40	1							121	*7	128
●		1952	RICHFIELD	4440	14 L	40.0			1	0	0	1	1	37,675	2,834,276			1920	1,476	0	0	0
	BENTLEY TWP., 17N-2E, SECTIONS 16, 17, 18, 19, 20, 21, 27, 28, 29, 34, 35								THE 41 WELLS INCLUDE 40 DUNDEE AND 1 MULTIPLE COMPLETION TRAVERSE, DUNDEE, & RICHFIELD													
● BERLIN	ST. CLAIR	1960	NIAGARAN	3800	25 D	42.8	CINCINNATIAN	4310	4	0	0	3		842	339,456			140	2,425			
	BERLIN TWP., 6N-13E, SECTIONS 32, 33																					
☒ BEVENS LAKE	MECOSTA	1952	MICHIGAN STRAY	1244	6 S		REED CITY	3731	3	ABANDONED 1969						0	515,505					
●		1951	TRAVERSE	2997	1 L	44.2			4	0	0	1		692	90,557			40	2,264	93	0	93
☼		1951	DUNDEE	3536	11 L				3	0	0	1				73,917	822,413	320				
	GREEN TWP., 16N-10W, SECTION 13																					
● BIG HAND	ST. CLAIR	1961	NIAGARAN	2898	5+ D	39.5	CLINTON	3097	9	0	0	9		43,694	674,600	54,914	99,136	200	3,373	42	0	42
	COLUMBUS TWP., 5N-15E, SECTIONS 24, 25																					
☒ BIG PRAIRIE	NEWAYGO	1944	MICHIGAN STRAY	1030	5 S		REED CITY	3322	1	ABANDONED 1961							152,864	160				
	BIG PRAIRIE TWP., 13N-11W, SECTION 16																					
☒ BIG PRAIRIE, SEC. 33	NEWAYGO	1947	DUNDEE	2896	2 L		DUNDEE	2900	1	ABANDONED 1952							62,324	40				
	BIG PRAIRIE TWP., 13N-11W, SECTION 33																					
☒ BIG RAPIDS	MECOSTA	1943	MICHIGAN STRAY	1145	7 S		REED CITY	3595	9	ABANDONED 1969						0	2,393,033	1440				
☼		1965	DUNDEE	3420	6 L				1	0	0	1				0	44,498	160				
	BIG RAPIDS TWP., 15N-10W, SECTIONS 3, 9, 10, 11, 13																					
● BILLINGS	GLADWIN	1949	DUNDEE	3549	6 L	39.7	RICHFIELD	4995	20	0	0	19						400		2	0	2
●		1950	DETROIT RIVER	4070	7 D	43.5			10	0	0	9		11,916	773,309			200	1,289	0	0	0
	BILLINGS TWP., 17N-1E, SECTIONS 2, 3, 10, 11																					
● BILLINGS, SOUTH	GLADWIN	1957	DUNDEE	3540	5 ?	39.5	DETROIT RIVER	4152	8	0	0	8		8,351	152,029			70	2,172	0	1	1
	BILLINGS TWP., 17N-1E, SECTIONS 12, 13 BENTLEY TWP., 17N-2E, SECTION 18																					
● BIRCH-BELA	SAGINAW-TUSCOLA	1951	DUNDEE	2504	7 L	36.0	DETROIT RIVER	3263	30	0	0	30		18,704	273,490			340	804	0	*8	8
	BIRCH RUN TWP., 10N-6E, SECTIONS 25, 36 ARBELA TWP., 10N-7E, SECTIONS 30, 31, 32																					
◐ BIRCH RUN	SAGINAW	1934	BEREA	1530	5 S	43.3	DUNDEE	2646	26	ABANDONED 1951					215,876			250	864			
●		1954	DUNDEE	2536	10 L	36.2	DUNDEE	2716	34	0	0	32	2	14,667	510,243			480	1,063	0	*1	1
	BIRCH RUN TWP., 10N-6E, SECTIONS 19, 20, 21 (BEREA) BIRCH RUN TWP., 10N-6E, SECTIONS 19, 20, 29 TAYMOUTH TWP., 10N-5E, SECTION 13 (DUNDEE)																					
◐ BISHOP	NEWAYGO	1950	TRAVERSE	2226	3 L		TRAVERSE	2238	7	ABANDONED 1952					33,327			110	303			
	GARFIELD TWP., 12N-13W, SECTIONS 19, 20, 30																					
☼ BLAIR	GRAND TRAVERSE	1970	NIAGARAN REEF	5826	124 D	60 COND.	CLINTON	6316	1	1	0	1	1	0	0	0	0	160	SHUT IN FOR MARKET			
	BLAIR TWP., 26N-11W, SECTION 34																					
☼ BLISSFIELD	LENAWEE	1963	TRENTON-BLACK RIVER	2686	9 D		GLENWOOD	3251	1	0	0	1		69	495	7,036	46,710	40	GAS RESERVOIR PRODUCING SMALL QUANTITIES OF OIL			
	BLISSFIELD TWP., 7S-5E, SECTION 5																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	BLOOMER	MONTCALM-IONIA	1944	TRAVERSE	2640	3.3 L	42.3	DETROIT RIVER	3271	29	0	1	4	2	6,568	1,944,121			530	3,668	413	0	413
		BLOOMER TWP., 9N-5W, SECTIONS 31, 32 BUSHNELL TWP., 9N-6W, SECTION 36 NORTH PLAINS TWP., 8N-5W, SECTIONS 5, 6																					
◐	BLOOMER, SEC. 18	MONTCALM	1936	TRAVERSE	2717	6 L		DUNDEE	3138	1	ABANDONED 1936					814			10	81			
		BLOOMER TWP., 9N-5W, SECTION 18																					
●	BLOOMINGDALE	VAN BUREN	1938	TRAVERSE	1244	4 L	42.0	TRENTON	3090	431	0	1	26	10	5,273	9,987,343			4040	2,472	387	9	396
		BLOOMINGDALE TWP., 1S-14W, SECTIONS 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 24 COLUMBIA TWP., 1S-15W, SECTIONS 1, 2, 10, 11, 12, 13, 14, 15, 16, 23, 24 PINE GROVE TWP., 1S-13W, SECTION 18																					
☼	BLUE LAKE	KALKASKA	1970	NIAGARAN REEF	7105	30 D	60 COND.	CLINTON	7449	1	1	0	1	1	0	0	0	0	40	SHUT IN FOR MARKET			
		BLUE LAKE TWP., 28N-5W, SECTION 28																					
●	BOYD	ST. CLAIR	1958	SALINA-NIAGARAN	2457	292 D	37.7	PRECAMBRIAN	4634	49	0	2	41	5	87,637	1,684,155	960,129	13,270,137	1840	915	373	*10	383
		CASCO TWP., 4N-15E, SECTIONS 29, 31, 32, W½ 28, W½ 33 IRA TWP., 3N-15E, SECTIONS 5, 6																					
◐	BREEDSVILLE	VAN BUREN	1943	TRAVERSE	1061	2 L	33.0	DETROIT RIVER	1445	32	ABANDONED 1961					285,584			300	952			
		GENEVA TWP., 1S-16W, SECTIONS 23, 24, 25, 26																					
●	BRINTON	ISABELLA	1967	DUNDEE	4082	3 D		DUNDEE	4085	1	0	0	1		3,173	17,195			40	430	80	0	80
		COLDWATER TWP., 16N-6W, SECTION 5																					
⊖	BROOMFIELD-DEERFIELD	REFER TO TABLE 5 UNDEVELOPED GAS STORAGE RESERVOIRS																					
●	BUCKEYE, NORTH	GLADWIN	1936	DUNDEE	3615	14 L	39.0	SYLVANIA	5351	287	0	2	58	16	108,225	19,155,352		9,834	3030	6,322	2,357	*20	2,377
		BUCKEYE TWP., 18N-1W, SECTIONS 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15 HAY TWP., 18N-1E, SECTIONS 15, 16, 21, 22																					
●	BUCKEYE, SOUTH	GLADWIN	1956	TRAVERSE	2891	3 D	42.0	DETROIT RIVER	4802	7	ABANDONED 1960 - PRODUCTION COMBINED WITH BUCKEYE, SOUTH DUNDEE												
●			1936	DUNDEE	3570	11 L	39.0			197	0	0	27		18,701	4,982,176			2270	2,195	10	*26	36
●			1964	DETROIT RIVER SZ	4481	14 D	46.0			1	0	0	1		7,248	77,402			40	1,935	0	0	0
		BUCKEYE TWP., 18N-1W, SECTIONS 22, 23, 24, 25, 26, 27, 35, 36 HAY TWP., 18N-1E, SECTION 33 BILLINGS TWP., 17N-1E, SECTIONS 4, 9, 10 TOBACCO TWP., 17N-1W, SECTION 1																					
●	BURDELL	OSCEOLA	1959	DUNDEE	3678	4 L		REED CITY	3804	6	0	0	2		2,593	148,853			120	1,240	60	0	60
◐			1960	REED CITY	3802	2 Q				1	ABANDONED 1969								40				
		BURDELL TWP., 20N-10W, SECTION 19																					
◐	BUSHNELL	MONTCALM	1935	DUNDEE	3105	2 L	33.9	DUNDEE	3125	1	ABANDONED 1939					4,035			10	403			
		BUSHNELL TWP., 9N-6W, SECTION 1																					
◐	BUTMAN	GLADWIN	1950	TRAVERSE	2789	2 L		SYLVANIA	5027	1	ABANDONED 1953 - PRODUCTION COMBINED WITH BUTMAN RICHFIELD												
◐			1949	DUNDEE	3596	6 L	41.4			1	ABANDONED 1963 - PRODUCTION COMBINED WITH BUTMAN RICHFIELD												
●			1949	RICHFIELD	4921	10 D	41.6			5	0	0	5		6,200	303,031			240	1,263	25	1	26
		BUTMAN TWP., 20N-1W, SECTION 12 (TRAVERSE); BUTMAN TWP., 20N-1W, SECTIONS 11, 12, 13, 14 (DUNDEE & RICHFIELD)																					
☼	CAL-LEE	REFER TO ALBION-PULASKI-SCIPIO TREND																					
☒	CANNON CREEK	MISSAUKEE-KALKASKA	1950	TRAVERSE	2695	11 L		RICHFIELD	4810	21	ABANDONED 1956							851,369	3360				
		NORWICH TWP., 24N-6W, SECTIONS 6, 7, 18 PIONEER TWP., 28N-7W, SECTIONS 1, 2, 12, 13 GARFIELD TWP., 25N-6W, SECTION 31 GARFIELD TWP., 25N-7W, SECTIONS 25, 36																					
☼	CAPAC	ST. CLAIR	1961	NIAGARAN	4505	6 D		MT. SIMON Ss	6337	54	0	0	48		400 CONDENSATE	5,529	2,184,848	15,792,034	9120		0	*6	6
		MUSSEY TWP., 7N-13E, SECTIONS 4, 5, 8, 9, 16, 17, 18, 19, 20, 21, 28, 29, 32, 33 LYNN TWP., 8N-13E, SECTIONS 21, 27, 28, 29, 32, 33, 34 GAS RESERVOIR PRODUCING SMALL QUANTITIES OF OIL																					
●	CAREY LAKE	NEWAYGO	1966	REED CITY	3411	2 D		REED CITY	3413	2	0	0	2	2	0	19,021			80	238	TO PLUG		
		GOODWELL TWP., 14N-11W, SECTION 26																					
◐	CASCO	ALLEGAN-VAN BUREN	1940	TRAVERSE	1095	1.5 L	38.6	TRAVERSE	1115	9	ABANDONED 1959					17,382			50	348			
		CASCO TWP., 1N-16W, SECTIONS 34, 35 GENEVA TWP., 1S-16W, SECTION 4																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	CAT CREEK	OSCEOLA	1968	DUNDEE	3696	4 L		DUNDEE	3890	7	1	0	7		86,410	234,111			280	836	1,265	0	1,265
		HERSEY TWP., 17N-9W, SECTIONS 4, 9																					
●	CATO	MONTCALM-MECOSTA	1944	REED CITY	3542	3 D	44.7	DETROIT RIVER	3731	21	1	0	10		29,737	998,157			630	1,584	2,095	0	2,095
		CATO TWP., 12N-8W, SECTIONS 3, 4, 6, 8, 9 DEERFIELD TWP., 13N-9W, SECTION 36																					
☼	CEDAR	OSCEOLA	1945	MICHIGAN STRAY	1490	7 S		SYLVANIA	5165	5	0	0	4	1			0	1,402,820	800		LEASE OPERATION		
●			1943	DUNDEE	3810	2 L	46.0			10	0	0	7						400		1,650	0	1,650
●			1945	RICHFIELD	5060	6 L	44.7			2	0	0	2		13,160	1,106,364			60	2,405	0	0	0
		CEDAR TWP., 18N-9W, SECTIONS 27, 28, 32, 33 (MICHIGAN STRAY) CEDAR TWP., 18N-9W, SECTIONS 10, 27, 28, 33, 34 (DUNDEE AND RICHFIELD)																					
☒	CEDAR CREEK	MUSKEGON	1940	"BEREA"	1125	7 D		DUNDEE	2252	7	ABANDONED 1960							624,528	1120				
		CEDAR CREEK TWP., 11N-15W, SECTIONS 7, 17, 18, 19, 20, 32																					
◐	CEDAR CREEK SEC. 23	MUSKEGON	1949	TRAVERSE	1951	2 L		DUNDEE	2453	2	ABANDONED 1968					2,652			50	53			
		CEDAR CREEK TWP., 11N-15W, SECTION 23																					
●	CHASE	LAKE	1943	"BEREA"	2460	4 SL		DETROIT RIVER	3734	2	0	0	1		194	8,165			20	408	0	0	0
		CHASE TWP., 17N-11W, SECTIONS 19, 29																					
◐	CHERRY GROVE	WEXFORD	1952	TRAVERSE	3145	4 D		DUNDEE	3998	1	ABANDONED 1953					4,814			10	481			
		CHERRY GROVE TWP., 21N-10W, SECTION 27																					
☼	CHERRY GROVE SEC. 13	WEXFORD	1957	MICHIGAN STRAY	1326	35 S		DUNDEE	4080	5	0	0	1	1			0	924,719	640		TO PLUG		
○		CHERRY GROVE TWP., 21N-10W, SECTION 13 CLAM LAKE TWP., 21N-9W, SECTIONS 7, 18																					
◐	CHESHIRE	ALLEGAN	1947	TRAVERSE	1289	2 L	35	TRAVERSE	1348	3	ABANDONED 1958					9,290			30	310			
		CHESHIRE TWP., 1N-14W, SECTIONS 26, 27																					
☼	CHESTER	OTSEGO	1965	ANTRIM	1360	? SH		NIAGARAN	6870	16	0	0	16	3			129,070	287,158	640		275	0	275
		CHESTER TWP., 29N-2W, SECTIONS 10, 11, 14, 15, 16																					
◐		OTSEGO	1951	A2 CARBONATE & LOWER NIAGARAN	6610	5 D	41.0	NIAGARAN	6870	1	ABANDONED 1956					2,752			40	69			
		CHESTER TWP., 29N-2W, SECTION 15																					
☼		OTSEGO	1970	NIAGARAN REEF	5930	348 D	COND.	CLINTON	6697	1	1	0	1		18,714 CONDENSATE	18,714	296,897*	296,897*	160				
		CHESTER TWP., 29N-2W, SECTION 15															*GAS PRODUCED IN 1970 BEING CARRIED IN 1971 RECORDS							
●	CHESTERFIELD	MACOMB	1962	NIAGARAN	2508	7 D	40.3	CLINTON	2707	7	0	1	2		5,103	42,734	0	124,698	280	153	0	0	0
		CHESTERFIELD TWP., 3N-14E, SECTION 28, 29																					
☼	CHINA BELLE	ST. CLAIR	1963	NIAGARAN	2365	15 D		NIAGARAN	2451	3	0	0	3		414	2,047	76,335	442,593	120		15	0	15
		CHINA TWP., 4N-16E, SECTIONS 34, 35															GAS RESERVOIR PRODUCING SMALL QUANTITIES OIL						
◐	CHINA, SEC. 12	ST. CLAIR	1962	NIAGARAN	2509	11 D	39.1	CLINTON	2631	2	0	2	0		ABANDONED 1970	11,895	0	27,721	80	149			
		CHINA TWP., 4N-16E, SECTION 12																					
◐	CHINA, SEC. 31	ST. CLAIR	1959	SALINA	2378	13 D		CLINTON	2641	1	ABANDONED IN 1964; PRODUCTION COMBINED WITH COTTRELLVILLE IN 1962												
		CHINA TWP., 4N-16E, SECTION 31																					
☼	CHINA, SOUTH	ST. CLAIR	1961	SALINA-NIAGARAN	2324	14 D		CLINTON	2743	11	0	0	5	3	DOMESTIC USE		0	523,443	440		12	0	12
		CHINA TWP., 4N-16E, SECTIONS 28, 33, 34 COTTRELLVILLE TWP., 3N-16E, SECTIONS 3, 4																					
◐	CHIPPEWA, SEC. 10	ISABELLA	1961	TRAVERSE	3193	1 L		TRAVERSE	3220	1	ABANDONED 1964					1,250		PRODUCTION CARRIED IN MT. PLEASANT FIELD TOTALS					
		CHIPPEWA TWP., 14N-3W, SECTION 10																					
☼	CLARE CITY	CLARE-ISABELLA	1937	MICHIGAN STRAY	1290	5 S		DUNDEE	3865	8	0	0	1				0	2,294,990	720		DOMESTIC USE		
		GRANT TWP., 17N-4W, SECTIONS 25, 26, 35, 36 SHERIDAN TWP., 17N-3W, SECTION 31 WISE TWP., 16N-3W, SECTION 6																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY	PAY ZONE OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970 TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS. PRODUCED IN 1970	OIL PRODUCTION - BBLS. CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf. PRODUCED IN 1970	GAS PRODUCTION - Mcf. CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION DISPOSAL SUBSURFACE	BRINE PRODUCTION DISPOSAL SURFACE	BRINE PRODUCTION TOTAL BBLS. DAY
●	CLARE CITY	CLARE-ISABELLA	1938	MICHIGAN STRAY	1303	2 S	30.2	DUNDEE	3853	7	0	0	4	1	1,161	76,229			120	635			
		GRANT TWP., 17N-4W, SECTIONS 24, 35, 36 WISE TWP., 16N-3W, SECTION 6																					
☼	CLAYTON	ARENAC	1936	BEREA	1180	10 S		SYLVANIA	4163	31	0	0	17	2			0	5,111,048	1560	DOMESTIC USE & LEASE OPERATION			
		CLAYTON TWP., 20N-4E, SECTIONS 4, 5, 8, 9, 10, 11, 14, 15																					
●	CLAYTON	ARENAC-OGEMAW	1935	DUNDEE	2465	12 DL	34.2	SYLVANIA	4163	80	0	0	47	5	PRODUCTION COMBINED WITH DETROIT RIVER				1290		1,152	18	1,170
●			1953	DETROIT RIVER	3507	9 D	45.9	)															
●			1947	RICHFIELD	3790	9 D	36.2	)		5	0	0	5		45,933	6,337,448			200	4,253	0	0	0
		CLAYTON TWP., 20N-4E, SECTIONS 3, 4, 5, 8, 9, 10, 11 RICHLAND TWP., 21N-4E, SECTION 31 MILLS TWP., 21N-3E, SECTION 36 THE 5 WELLS INCLUDE 3 RICHFIELD, 1 SOUR ZONE AND 1 DUAL COMPLETION RICHFIELD & SOUR ZONE																					
◐	CLEAR LAKE	VAN BUREN	1950	TRAVERSE	1380	1 L		TRAVERSE	1399	14	ABANDONED 1953					17,490			140	125			
		PINE GROVE TWP., 1S-13W, SECTIONS 3, 4, 9, 10																					
◐	CLINTON	WASHTENAW	1953	TRAVERSE	986	2 D		TRENTON	3606	2	ABANDONED 1962					2,093			20	105			
		BRIDGEWATER TWP., 4S-4E, SECTION 28																					
◐	COFFEE LAKE	VAN BUREN	1946	TRAVERSE	1128	1 L		TRAVERSE	1130	11	ABANDONED 1954					34,649			110	315			
		COLUMBIA TWP., 1S-15W, SECTIONS 17, 18																					
	COLD SPRINGS	KALKASKA	1970	NIAGARAN REEF	6764	45 D	45.6	CLINTON	7315	1	1	0	1		50,736	50,736			80	634	0	*23	23
		COLD SPRINGS TWP., 28N-6W, SECTION 21																					
⊖	COLDWATER	REFER TO TABLE 5 UNDEVELOPED GAS STORAGE RESERVOIRS																					
●	COLDWATER	ISABELLA	1944	DUNDEE	3692	25 L	48.0	DETROIT RIVER	5090	81	0	0	52	21	75,600	21,773,655	0	6,311,307	3200	6,804	25,115	0	25,115
		COLDWATER TWP., 16N-6W, SECTIONS 19, 20, 21, 28, 29, 30, 31, 32, 33, 34 SHERMAN TWP., 15N-6W, SECTIONS 5, 6																					
◐	COLDWATER, SOUTH	ISABELLA	1951	DUNDEE	3739	4 D		DUNDEE	3743	1	ABANDONED 1959					10,941			20	547			
		SHERMAN TWP., 15N-6W, SECTION 8																					
●	COLE LAKE	NEWAYGO	1968	TRAVERSE	2928	8 L		TRAVERSE	2938	2	0	0	2	2	2,392	24,247			40	606			
		BARTON TWP., 16N-11W, SECTIONS 29, 30																					
☼	COLFAX	MECOSTA	1945	MICHIGAN STRAY	1240	8 S		DETROIT RIVER	4043	4	0	0	1				0	485,844	640		DOMESTIC USE		
◐			1964	DUNDEE	3503	25 L	43.0			2	ABANDONED 1967					2,260			40	57			
☼			1957	DUNDEE-REED CITY	3474	9 D				1	0	0	1				0	5,121	160		DOMESTIC USE		
		COLFAX TWP., 15N-9W, SECTIONS 4, 5																					
☼	COLLIN	ST. CLAIR	1968	SALINA-NIAGARAN	2196	4 D		NIAGARAN	2364	2	0	0	2		0	2,019	271,656	330,745	80	25	2	0	2
		COTTRELLVILLE TWP., 3N-16E, SECTION 20																					
☼	COLUMBUS	ST. CLAIR	1964	SALINA-NIAGARAN	2738	190 D		CLINTON	3232	8	0	0	8	8		137	259,611	12,538,178	320				
		COLUMBUS TWP., 5N-15E, SECTIONS 15, 16, 21, 22																TO CONVERT TO GAS STORAGE RESERVOIR					
●	COLUMBUS, SEC. 3	ST. CLAIR	1968	NIAGARAN	3105	15 D		NIAGARAN	3250	23	3	0	23	2	382,202	563,022			460	1,224	132	*15	147
		COLUMBUS TWP., 5N-15E, SECTIONS 3, 10 WALES TWP., 6N-15E, SECTION 34																					
☼	COLUMBUS, SEC. 23	ST. CLAIR	1965	NIAGARAN	2900	46+ D		CLINTON	3122	6	0	0	6		1,729	10,119	149,255	652,747	240	42	80	0	80
		COLUMBUS TWP., 5N-15E, SECTION 23																GAS RESERVOIR PRODUCING SMALL QUANTITIES OF OIL					
	COLUMBUS, SEC. 32	ST. CLAIR	1970	NIAGARAN REEF	2983	16 D		NIAGARAN	3023	1	1	0	1	1	SHUT-IN FOR MARKET				40				
		COLUMBUS TWP., 5N-15E, SECTION 32																					
●	COLUMBUS, NORTH	ST. CLAIR	1968	NIAGARAN	3266	8 D		NIAGARAN	3326	10	2	0	10	1	156,558	233,770			240	974	68	*31	99
		COLUMBUS TWP., 5N-15E, SECTIONS 5, 6																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY	PAY ZONE OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970 TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS. PRODUCED IN 1970	OIL PRODUCTION - BBLS. CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf. PRODUCED IN 1970	GAS PRODUCTION - Mcf. CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION DISPOSAL SUBSURFACE	BRINE PRODUCTION DISPOSAL SURFACE	BRINE PRODUCTION TOTAL BBLS. DAY
☼	COLUMBUS, WEST	ST. CLAIR	1967	SALINA-NIAGARAN	3183	144 D		CLINTON	3370	13	0	0	13	5			5,851,198	12,782,525	520		100	0	100
		COLUMBUS TWP., 5N-15E, SECTIONS 7, 17, 18																					
◐	COMSTOCK, SEC. 5	KALAMAZOO	1949	TRAVERSE	1430	3 L		TRAVERSE	1480	2	ABANDONED 1952					974			20	49			
		COMSTOCK TWP., 2S-10W, SECTION 5																					
◐	CONCORD	JACKSON	1953	TRAVERSE	1627	1 L		SALINA	2417	5	ABANDONED 1958					6,437			50	129			
		CONCORD TWP., 3S-3W, SECTIONS 35, 36																					
☒	COON CREEK	MACOMB	1963	NIAGARAN	3034	20 D		NIAGARAN	3093	2	ABANDONED 1968							134,116	80				
		LENOX TWP., 4N-14E, SECTION 18																					
☒	COOPERSVILLE	OTTAWA	1939	"BEREA"	1240	5 D		TRAVERSE	1900	3	ABANDONED 1959							108,839	240				
		WRIGHT TWP., 8N-13W, SECTIONS 7, 19																					
●	COTTRELLVILLE	ST. CLAIR	1961	SALINA-NIAGARAN	2262	6 D	38.7	CLINTON	2511	12	0	1	7	1	8,650	117,304			280	419	0	1	1
		CHINA TWP., 4N-16E, SECTION 31 COTTRELLVILLE TWP., 3N-16E, SECTIONS 6, 7, 8 IRA TWP., 3N-15E, SEK SECTION 1, NEK SECTION 12																					
☼	COTTRELLVILLE	ST. CLAIR	1959	SALINA-NIAGARAN	2293	37 D		CLINTON	2511	2	0	0	2				182,649	2,013,845	240		20	0	20
		COTTRELLVILLE TWP., 3N-16E, SECTIONS 6, 7, 8																					
⊕	CRANBERRY LAKE	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
◐	CRANBERRY LAKE	CLARE	1952	TRAVERSE	3120	7 L	39.0	RICHFIELD	5223	7	ABANDONED 1965 PRODUCTION COMBINED WITH CRANBERRY LAKE DUNDEE AND RICHFIELD												
●			1943	DUNDEE	3835	2 L	42.8			8	0	0	3	1	PRODUCTION COMBINED WITH RICHFIELD				70		600	0	600
◐			1953	DETROIT RIVER SZ	4804	16 D	48.8			1	ABANDONED 1962 PRODUCTION COMBINED WITH CRANBERRY LAKE DUNDEE AND RICHFIELD												
●			1951	RICHFIELD	5048	15 D	51.0			17	0	0	6		24,656	1,497,218			680	1,996	25	0	25
		WINTERFIELD TWP., 20N-6W, SECTIONS 1, 2, 11, 12																					
◐	CRANBERRY LAKE,EAST	CLARE	1963	TRAVERSE	3057	6 L	39.2	DETROIT RIVER	5139	1	ABANDONED 1964							PRODUCTION COMBINED WITH DUNDEE AND RICHFIELD					
●			1963	DUNDEE	3760	6 L	43.5			4	0	0	4						200		941	0	941
●			1964	RICHFIELD	5087	12 D	44.0			2	0	0	2		46,653	534,219			80	1,908	2	0	2
		SUMMERFIELD TWP., 20N-5W, SECTIONS 7, 8, 17 THE 2 RICHFIELD WELLS INCLUDE 1 DUNDEE AND RICHFIELD DUAL COMPLETION																					
◐	CROOKED LAKE	ALLEGAN	1949	TRAVERSE	1278	1 L		TRAVERSE	1312	2	ABANDONED 1956					115,452			40	2,886			
		CLYDE TWP., 2N-15W, SECTION 25																					
⊕	CROTON	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
◐	CROTON	NEWAYGO	1951	TRAVERSE	2543	2 L		SALINA	3993	10	ABANDONED 1958					91,678			200	458			
		CROTON TWP., 12N-11W, SECTIONS 20, 29																					
◐	CRUMP	BAY	1950	DUNDEE	3294	7 L		DUNDEE	3354	1	ABANDONED 1951					1,043			10	104			
		GARFIELD TWP., 16N-3E, SECTION 23																					
●	CRYSTAL	MONTCALM	1954	TRAVERSE	2769	4 L	41.8	DETROIT RIVER	3391	2	0	0	1						20		375	0	375
●			1935	DUNDEE	3187	4 D	43.5			193	0	0	7		7,213	7,795,402			2000	3,859	700	0	700
		CRYSTAL TWP., 10N-5W, SECTIONS 1, 2, 3, 4, 10, 11, 12, 13 FERRIS TWP., 11N-5W, SECTIONS 26, 34, 35, 36																					
●	CRYSTAL VALLEY	OCEANA	1945	TRAVERSE	1809	3 L	37.0	ST. PETER Sa	6062	5	0	0	1	1					50		TO PLUG		
●			1957	DUNDEE	2575	12 D	42.5			19	0	0	1	1	0	203,747			420	434	TO PLUG		
		CRYSTAL TWP., 16N-16W, SECTIONS 9, 10, 11, 14, 15, 16																					
☒	CRYSTAL VALLEY	OCEANA	1946	DUNDEE	2400	7 L		TRENTON-BLACK RIVER	5985	4	ABANDONED 1966							*162,079	160				
☒			1961	SALINA	4102	10 D				1	ABANDONED 1966							*PRODUCTION COMBINED	40				
		CRYSTAL TWP., 16N-16W, SECTIONS 9, 10, 11, 14, 15, 16																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	CRYSTAL VALLEY, SOUTH	OCEANA	1969	TRAVERSE	1739	1 L		TRAVERSE	1740	1	0	0	1		5,142	5,412			40	135	0	5	5
		CRYSTAL TWP., 16N-16W, SECTION 20																					
●	CURRIE	ISABELLA	1936	DUNDEE	3918	2 D	45.9	DUNDEE	4042	2	0	0	2		989	202,822			40	5,071	0	0	0
		VERNON TWP., 16N-4W, SECTIONS 5, 8																					
◐	DALLAS	CLINTON	1942	TRAVERSE	2482	2 L		DETROIT RIVER	2934	3	ABANDONED 1948					3,085			40	770			
		DALLAS TWP., 7N-4W, SECTION 21																					
●	DALTON	MUSKEGON	1940	TRAVERSE	1851	5 L	40.0	DUNDEE	2515	16	0	0	5		202	107,788			300	359	0	0	0
		DALTON TWP., 11N-16W, SECTIONS 10, 11, 15																					
☒	DAY	MONTCALM	1934	MICHIGAN STRAY	1352	4 S		MARSHALL	1395	2	ABANDONED 1944							8,494	80				
		DAY TWP., 11N-6W, SECTION 1 HOME TWP., 12N-6W, SECTION 36																					
◐	DAY	MONTCALM	1946	TRAVERSE	2900	2 L	43.0	DUNDEE	3387	1	ABANDONED 1967					3,095			10	310			
◐			1946	DUNDEE	3337	2 L				2	ABANDONED 1954					16,239			20	812			
		DAY TWP., 11N-6W, SECTION 25 (TRAVERSE); DAY TWP., 11N-6W, SECTION 36 (DUNDEE)																					
☼	DEEP RIVER	ARENAC	1936	BEREA	1490	10 S		SYLVANIA	4311	12	0	0	3				0	1,609,812	1520		DOMESTIC USE		
		DEEP RIVER TWP., 19N-4E, SECTIONS 7, 8, 16, 17, 18, 20																					
●	DEEP RIVER	ARENAC	1944	DUNDEE	2795	195 D	35.8	RICHFIELD	4258	106	0	1	40	13	72,933	26,401,440			1060	24,907	6,745	0	6,745
●			1953	RICHFIELD	(CONSOLIDATED WITH STERLING DETROIT RIVER-RICHFIELD IN 1954) THE 40 WELLS INCLUDE 39 DUNDEE AND 1 TRAVERSE																			
		DEEP RIVER TWP., 19N-4E, SECTIONS 6, 7, 8, 9, 14, 15, 16, 23, 24																					
●	DEERFIELD	MONROE	1920	TRENTON	2115	10 L	42.7	CAMBRIAN	3250	47	0	0	20	16	2,153	711,799			450	1,582	1	0	1
		DUNDEE TWP., 6S-6E, SECTIONS 19, 29, 30 SUMMERFIELD TWP., 6S-6E, SECTION 31																					
☼	DEMINGS LAKE	LENAWEE	1968	TRAVERSE	734	2 L		TRAVERSE	741	1	0	0	1	1			0	0	40		NO MARKET		
		DOVER TWP., 7S-2E, SECTION 27																					
●	DENNISON	OTTAWA	1963	TRAVERSE	1874	4 L	38.0	SALINA	3202	15	0	4	2	2	239	312,956			300	1,043	TO PLUG		
		POLKTON TWP., 8N-14W, SECTIONS 21, 27, 28																					
☒	DIAMOND CRYSTAL SALT	ST. CLAIR	1927	NIAGARAN	2483	17 D		NIAGARAN	2500	1	ABANDONED 1931							136,445	40				
		ST. CLAIR TWP., 5N-17E, SECTION 31																					
●	DIAMOND SPRINGS	ALLEGAN	1938	TRAVERSE	1461	3 L	41.0	SALINA	2651	56	0	0	7		214	1,006,535			420	2,397	165	0	165
●			1958	SALINA-E ZONE	2389	21 D	25.5			3	0	0	3	1	1,666	56,374			30	1,879	0	40	40
		OVERISEL TWP., 4N-14W, SECTION 36 SALEM TWP., 4N-13W, SECTION 31 HEATH TWP., 3N-14W, SECTION 1 MONTEREY TWP., 3N-13W, SECTION 6																					
●	DORR	ALLEGAN	1938	TRAVERSE	1617	4 L	41.0	NIAGARAN	3319	41	0	0	4	1	1,020	419,866			410	1,024	0	13	13
●			1955	DETROIT RIVER	2082	6 D	38.0			14	0	0	4		152	72,792			280	260	30	2	32
●			1956	SALINA	2922	7 D	17.0			18	0	0	12	2	5,205	297,489	54,478	1,187,274	540	551	37	12	49
		DORR TWP., 4N-12W, SECTIONS 19, 29, 30, 31, 32, 33 SALEM TWP., 4N-13W, SECTION 25																					
☼	DORR	ALLEGAN	1957	DETROIT RIVER	1918	1 D		NIAGARAN	3319	1	0	0	1	1			0	4,710	160		NO MARKET		
		DORR TWP., 4N-12W, SECTION 33																					
☒	DORR, SEC. 17	ALLEGAN	1951	"BEREA"	953	8 D		TRAVERSE	1642	1	ABANDONED 1967							0	40				
		DORR TWP., 4N-12W, SECTION 17																					
☼	DORR, SEC. 21	ALLEGAN	1940	"BEREA"	957	1 D		TRAVERSE	1687	1	0	0	1				0	0	40		DOMESTIC USE		
		DORR TWP., 4N-12W, SECTION 21																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	DOUGLASS	MONTCALM	1945	DUNDEE	3400	2 L	47.1	DUNDEE	3458	6	0	0	1		1,032	247,802			120	2,065	175	0	175
		DOUGLASS TWP., 11N-7W, SECTION 1																					
☒	DOUGLASS	MONTCALM	1943	MICHIGAN STRAY	1190	5 S		DUNDEE	3423	4	ABANDONED 1951							184,806	640				
		DOUGLASS TWP., 11N-7W, SECTIONS 27, 28																					
◐	DOUGLASS, SEC. 3	MONTCALM	1954	TRAVERSE	3025	8 L		DUNDEE	3666	1	ABANDONED 1956					3,155			20	158			
		DOUGLASS TWP., 11N-7W, SECTION 3																					
●	DUNNINGVILLE	ALLEGAN	1950	TRAVERSE	1435	3 L	38.0	TRAVERSE	1438	5	0	0	1		336	119,758			50	2,395	30	0	30
		HEATH TWP., 3N-14W, SECTIONS 22, 27, 33																					
●	DWIGHT	HURON	1945	DETROIT RIVER	2862	4 L	36.2	SYLVANIA	3290	1	0	0	1		568	41,165			40	1,029	2	0	2
		DWIGHT TWP., 18N-13E, SECTION 21																					
☼	EAST CHINA	ST. CLAIR	1969	NIAGARAN	2344	19 D		NIAGARAN	2363	1	0	0	1	1			0	0	40		SHUT-IN FOR MARKET		
		EAST CHINA TWP., 4N-16E, SECTION 25																					
◐	EAST NORWICH	MISSAUKEE-ROSCOMMON	1944	TRAVERSE	2410	1 L		BASS ISLANDS	5520	1	ABANDONED 1944 PRODUCTION COMBINED WITH EAST NORWICH RICHFIELD												
◐			1942	DUNDEE	3082	4 L	44.2			1	ABANDONED 1947 PRODUCTION COMBINED WITH EAST NORWICH RICHFIELD												
●			1942	RICHFIELD	4390	14 D	40.9			100	0	0	74	1	251,608	8,333,979	624,886	6,264,191	4360	1,911	159	0	159
		NORWICH TWP., 24N-5W, SECTION 16 (TRAVERSE), SECTION 14 (DUNDEE) LYON TWP., 24N-4W, SECTIONS 6, 7, 18 (RICHFIELD) THE 74 WELLS INCLUDE 61 RICHFIELD AND 12 SOUR ZONE & 1 RICHFIELD & SOUR ZONE																					
		NORWICH TWP., 24N-5W, SECTIONS 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22 (RICHFIELD)																					
●	EDEN	MASON	1948	TRAVERSE	1679	3 L	34.5	CAMBRIAN	7249	10	0	0	5	4					90		200	0	200
☼			1958	TRAVERSE	1960	7 L				1	0	0	1	1					160				
●			1948	DUNDEE	2240	2 L	45.3			38	0	0	27	16					380		1,595	0	1,595
●			1948	REED CITY	2345	8 D	42.8			5	0	0	2	1	12,070	2,935,382	0	275,801	40	5,756	10	0	10
		EDEN TWP., 17N-16W, SECTION 26 (TRAVERSE GAS) SECTIONS 25, 26, 35, 36 (TRAVERSE, DUNDEE, REED CITY OIL COMBINED IN ABOVE FIGURES)																					
●	EDENVILLE	MIDLAND	1938	DUNDEE	3790	8 L	41.0	DUNDEE	3962	36	0	0	1		630	1,365,504			370	3,691	10	0	10
		EDENVILLE TWP., 16N-1W, SECTIONS 5, 26, 27																					
☼	EDENVILLE, SEC. 5	MIDLAND	1956	SAGINAW FM.	382	12 S		DUNDEE	4028	3	0	0	2	2			0	0	160		TO PLUG		
		EDENVILLE TWP., 16N-1W, SECTION 5																					
●	EDMORE	MONTCALM	1933	TRAVERSE	3102	4 L	43.2	DUNDEE	3613	35	0	0	8	1	10,359	1,359,810	0	1,094,960	500	2,720	870	0	870
		HOME TWP., 12N-6W, SECTIONS 2, 3, 9, 10, 11																					
⊖	EDMORE-RICHLAND	REFER TO TABLE 5 UNDEVELOPED GAS STORAGE RESERVOIRS																					
●	EDWARDS	OGEMAW	1951	DUNDEE	3362	10 L		SYLVANIA-BOIS BLANC	5260	4	0	0	3	1	3,467	29,883			90	332	450	0	450
		EDWARDS TWP., 21N-1E, SECTION 15																					
☒	EGELSTON	MUSKEGON	1951	"BEREA"	1120	5 D		DUNDEE	2282	7	ABANDONED 1966							291,097	1120				
		EGELSTON TWP., 10N-15W, SECTIONS 3, 4, 9, 10, 15																					
☒	ELBA	GRATIOT	1928	MICHIGAN STRAY	670	10 S		DUNDEE	3044	10	ABANDONED 1957							246,058	520				
◐			1927	TRAVERSE	2440	2 L	47.0			8	ABANDONED 1962					42,925			90	477			
		ELBA TWP., 9N-1W, SECTIONS 9, 14, 15, 16 (MICHIGAN STRAY) SECTIONS 14, 15, 22, 23 (TRAVERSE)																					
●	ELBRIDGE	OCEANA	1961	TRAVERSE	2112	2 L	39.4	REED CITY	2725	19	0	0	10	10	0	414,945			380	1,092	TO PLUG		
		ELBRIDGE TWP., 15N-16W, SECTIONS 22, 26, 27, 28																					
◐	ELKLAND	TUSCOLA	1946	DUNDEE	2653	14 L		SYLVANIA	3735	2	ABANDONED 1947					1,546			20	77			
		ELKLAND TWP., 14N-11E, SECTION 31 NOVESTA TWP., 13N-11E, SECTION 6																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◉ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ⊗ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	ELMWOOD	TUSCOLA	1945	DUNDEE	2740	8 L	31.3	BOIS BLANC	3945	10	0	0	7	1	3,865	79,973			90	889	33	0	33
		ELMWOOD TWP., 14N-10E, SECTIONS 17, 20, 21																					
☼	ENSLEY	NEWAYGO	1958	MARSHALL	826	5 S		DETROIT RIVER	3018	8	0	0	8	8	SHUT-IN		0	906,626	1280		MAY CONVERT TO STORAGE		
◉			1954	TRAVERSE	2439	2 L				6	ABANDONED 1959					70,415			120	587			
		ENSLEY TWP., 11N-11W, SECTIONS 6, 7, 8, 17, 18 GRANT TWP., 11N-12W, SECTION 12 (MARSHALL) ENSLEY TWP., 11N-11W, SECTIONS 6, 7, 8 (TRAVERSE)																					
●	ENTERPRISE	MISSAUKEE-ROSCOMMON	1943	RICHFIELD	4405	15 D	41.8	RICHFIELD	4625	32	0	0	20		77,888	2,316,652	40,076	747,493	1280	1,810	23	0	23
		ENTERPRISE TWP., 23N-5W, SECTIONS 10, 11, 12, 13, 14 LAKE TWP., 23N-4W, SECTION 18																					
☼	ENTERPRISE, SEC.32	MISSAUKEE	1953	MICHIGAN STRAY	1986	5 S		DETROIT RIVER	4200	2	0	0	2	1			0	0	320		DOMESTIC USE		
		ENTERPRISE TWP., 23N-5W, SECTION 32 BUTTERFIELD TWP., 22N-5W, SECTION 4																					
◉	ENTRICAN	MONTCALM	1966	TRAVERSE	2870	4 L		DUNDEE	3426	1	ABANDONED 1968				0	441			40	10			
●			1967	DUNDEE	3312	2 D				2	0	0	1		1,279	6,004			40	150	600	0	600
		DOUGLASS TWP., 11N-7W, SECTION 21																					
●	ESSEXVILLE	BAY	1944	DUNDEE	2835	17 L	35.3	SYLVANIA	4130	50	0	0	41		47,401	3,337,486	0	3,267	1730	1,929	107	0	107
		HAMPTON TWP., 14N-6E, SECTIONS 7, 8, 9, 15, 16, 17, 18 HAMPTON TWP., 14N-5E, SECTION 12																					
◉	EVART	OSCEOLA	1942	DUNDEE	3755	6 L	46.3	SYLVANIA	5292	29	0	3	0		989	3,812,127	ABANDONED 1970		1100	3,466			
		OSCEOLA TWP., 18N-8W, SECTIONS 21, 22, 23, 25, 26, 27, 28																					
⊖	EVART	REFER TO TABLE 5 UNDEVELOPED GAS STORAGE RESERVOIRS																					
●	EXCELSIOR	KALKASKA	1950	TRAVERSE	2003	2 L	33.4	TRAVERSE	2136	1	0	1	0		0	10,455	ABANDONED 1970		10	1,045			
		EXCELSIOR TWP., 27N-6W, SECTION 11																					
☼	FALMOUTH	MISSAUKEE	1962	MICHIGAN STRAY	1279	3 S		REED CITY	4035	8	0	0	1				0	1,102,815	1280		DOMESTIC USE		
		AETNA TWP., 22N-6W, SECTIONS 30, 31 REEDER TWP., 22N-7W, SECTIONS 25, 36																					
◉	FERRY	OCEANA	1960	TRAVERSE	1949	2 L	41.0	REED CITY	2581	14	0	3	0		0	164,263	ABANDONED 1970		280	587			
		FERRY TWP., 14N-16W, SECTIONS 16, 20, 21																					
☼	FERRY, SEC. 25	OCEANA	1961	"BEREA"	1310	5 D		REED CITY	2650	1	0	0	1				0	0	40		DOMESTIC USE		
		FERRY TWP., 14N-16W, SECTION 25																					
●	FILLMORE	ALLEGAN-OTTAWA	1940	TRAVERSE	1516	2.7 L	41.1	NIAGARAN	3045	63	0	0	10		2,191	969,256			770	1,259	99	3	102
☼			1959	SALINA A-2 CARB.	2632	16 D	}			11	0	1	9				439,005	3,390,359	1500				
☼			1959	SALINA A-1 CARB.	2792	16 D	}	PRODUCTION COMBINED WITH SALINA A2 ABOVE											1600				
		FILLMORE TWP., 4N-15W, SECTIONS 2, 3, 11, 12 HOLLAND TWP., 5N-15W, SECTIONS 27, 34, 35 (TRAVERSE OIL) FILLMORE TWP., SECTIONS 2, 3 HOLLAND TWP., SECTIONS 34, 35 (SALINA GAS)																					
◉	FOREST RIVER	OCEANA	1965	TRAVERSE	1954	1 L		DUNDEE	2598	1	ABANDONED 1965					667			40	17			
		COLFAX TWP., 16N-15W, SECTION 12																					
◉	FORK	MECOSTA	1942	DUNDEE	3845	8 L	49.0	BOIS BLANC	5294	64	ABANDONED 1969					7,777,026			2700	2,880			
◉			1945	RICHFIELD	5001	11 D	54.8			1	ABANDONED 1966				PRODUCTION COMBINED WITH FORK DUNDEE		0	854,415					
		FORK TWP., 16N-7W, SECTIONS 4, 5, 6, 7, 8, 16, 18 CHIPPEWA TWP., 16N-8W, SECTIONS 1, 12																					
⊗	FORK, EAST	MECOSTA	1942	MICHIGAN STRAY	1480	5 S		DUNDEE	3865	4	ABANDONED 1946							102,708	640				
		FORK TWP., 16N-7W, SECTIONS 2, 11																					
☼	FORK, NORTH	OSCEOLA	1956	MICHIGAN STRAY	1433	19 S		DUNDEE	3982	1	0	0	1				0	60,178	160		DOMESTIC USE		
●			1951	DUNDEE	3788	3 D	45.8			6	0	0	1	1	0	153,661			120	1,281			
		ORIENT TWP., 17N-7W, SECTION 33 (MICHIGAN STRAY) SECTIONS 28, 33 (DUNDEE)																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◉ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ⊗ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
☼	FORK, WEST	MECOSTA	1943	MICHIGAN STRAY	1490	5 S		SYLVANIA	5198	17	0	0	2				0	2,405,559	2880		DOMESTIC USE		
		FORK TWP., 16N-7W, SECTIONS 5, 6, 7, 8, 16 CHIPPEWA TWP., 16N-8W, SECTIONS 1, 2 EVART TWP., 17N-8W, SECTIONS 35, 36																					
⊗	FORWARD	MISSAUKEE	1961	MICHIGAN STRAY	1393	7 S		DETROIT RIVER	5225	6	ABANDONED 1969								960				
		RIVERSIDE TWP., 21N-7W, SECTIONS 25, 36 CLAM UNION TWP., 21N-6W, SECTION 31																					
☼	FOSTORIA	TUSCOLA	1970	BEREA	1514	16 S		RICHFIELD	3267	1	1	0	1				0	0	160		SHUT-IN		
		WATERTOWN TWP., 10N-9E, SECTION 14																					
●	FOUNTAIN	MASON	1970	REED CITY	2442	6 D		REED CITY	2448	1	1	0	1		0	0			40				
		SHERMAN TWP., 19N-16W, SECTION 12																					
☼	FOUR CORNERS	ST. CLAIR	1966	SALINA-NIAGARAN	2205	212 D		CLINTON	2638	2	0	0	2				366,243	875,308	80				
		CASCO TWP., 4N-15E, SECTION 36 IRA TWP., 3N-15E, SECTION 1																					
☼	FOWLERVILLE	LIVINGSTON	1961	SALINA-NIAGARAN	3880	45 D		PRAIRIE DU CHIEN	5685	7	4	0	7	7			0	0	1120		SHUT-IN		
		HANDY TWP., 3N-3E, SECTIONS 1, 2, 12 CONWAY TWP., 4N-3E, SECTION 35																					
●	FREEDOM	WASHTENAW	1954	TRENTON	3963	20 D	43.5	CAMBRO-ORDOVICIAN	4691	1	ABANDONED 1956					7,217			40	180			
		FREEDOM TWP., 3S-4E, SECTION 8																					
⊕	FREEMAN-LINCOLN	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
●	FREEMAN-REDDING	CLARE	1938	DUNDEE	3885	19 L	44.4	SYLVANIA	5462	170	0	1	17	2	26,180	16,582,997			2800	5,922	4,285	12	4,297
		REDDING TWP., 19N-6W, SECTIONS 27, 28, 29, 32, 33, 34 FREEMAN TWP., 18N-6W, SECTIONS 3, 4																					
◉	FREEMAN, SEC. 15	CLARE	1963	DUNDEE	3894	8 L	41.0	DUNDEE	3902	1	ABANDONED 1965					736			40	18			
		FREEMAN TWP., 18N-6W, SECTION 15																					
◉	FREEPORT	BARRY	1949	TRAVERSE	2031	3 L		DETROIT RIVER	2430	1	ABANDONED 1951					19,229			10	1,923			
		CARLTON TWP., 4N-8W, SECTION 6																					
⊗	FREMONT	ISABELLA	1941	MICHIGAN STRAY	1235	5 S		DUNDEE	3700	5	ABANDONED 1956							381,330	800				
◉			1938	DUNDEE	3696	4 D				2	ABANDONED 1956					3,045			30	102			
		FREMONT TWP., 13N-5W, SECTIONS 20, 21, 22, 27, 28 (MICHIGAN STRAY) SECTIONS 5, 8 (DUNDEE)																					
☼	FREMONT, SEC. 32	ISABELLA	1958	MICHIGAN STRAY	1264	6 S		DUNDEE	3619	1	0	0	1				1,114	27,134	160				
◉			1957	TRAVERSE	3058	2 L				1	ABANDONED 1958					892			10	89			
		FREMONT TWP., 13N-5W, SECTION 32																					
⊗	FREMONT	SAGINAW	1937	DUNDEE	3125	1 L		DUNDEE	3150	2	ABANDONED 1947					2,000			20	100			
		FREMONT TWP., 11N-2E, SECTIONS 3, 5																					
◉	GARFIELD	CLARE	1946	DETROIT RIVER	5038	10 S		SYLVANIA	5307	1	ABANDONED 1948					13,769		535,811	40	344			
		GARFIELD TWP., 17N-6W, SECTION 18																					
●	GAYLORD-TEGON LAKE	OTSEGO	1969	NIAGARAN	6180	57 D	47	NIAGARAN	6420	4	2	0	4	1	152,307	165,075	684*	684*	640	258	245	0	245
		HAYES TWP., 29N-4W, SECTIONS 2, 11, 12, 14																*GAS PRODUCED IN 1970 BEING CARRIED IN 1971 RECORDS					
◉	GENEVA	MIDLAND	1935	DUNDEE	3671	2 L		DETROIT RIVER	3898	8	ABANDONED 1969					63,143			70	902			
		GENEVA TWP., 15N-2W, SECTIONS 19, 20, 29						ABANDONED IN 1960, REACTIVATED IN 1967															
●	GENEVA	VAN BUREN	1940	TRAVERSE	1042	2 L	31.5	TRENTON	2950	77	0	0	1	1	0	495,063			760	651			
		GENEVA TWP., 1S-16W, SECTIONS 20, 21, 22, 27, 28, 29, 32, 33																					
◉	GIBSON	BAY	1935	TRAVERSE	2036	4 L		DETROIT RIVER	4343	12	ABANDONED 1957					51,892			130	399			
◉			1950	DUNDEE	2942	4 L				1	ABANDONED 1952				PRODUCTION COMBINED WITH GIBSON TRAVERSE								
		GIBSON TWP., 18N-3E, SECTIONS 1, 2, 11, 12 DUNDEE PRODUCTION - SECTION 2																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	GIBSON, SEC. 20	BAY	1951	DUNDEE	3097	11 L		DUNDEE	3195	3	0	1	2		827	29,739			30	991			
		GIBSON TWP., 18N-3E, SECTIONS 20, 29																					
●	GILBERT LAKE	OCEANA	1956	TRAVERSE	2032	8 L	42.5	REED CITY	2711	3	0	0	1	1	0	50,733			30	1,691	TO PLUG		
		COLFAX TWP., 16N-15W, SECTION 34																					
☒	GILMORE	ISABELLA	1945	MICHIGAN STRAY	1560	3 S		DUNDEE	4091	6	ABANDONED 1952							203,312	320				
		GILMORE TWP., 16N-5W, SECTIONS 25, 26, 36 VERNON TWP., 16N-4W, SECTION 31																					
●	GILMORE	ISABELLA	1955	DUNDEE	3803	3 L	48.6	DUNDEE	3812	12	0	0	3		5,219	383,921			120	3,199	1,300	0	1,300
		GILMORE TWP., 16N-5W, SECTIONS 30, 31, 32 NOTTAWA TWP., 15N-5W, SECTION 5																					
●	GOODWELL	NEWAYGO	1943	TRAVERSE	2760	12 L	43.0	BASS ISLANDS	4342	31	0	0	2		3,102	1,116,627			1240	901	17	*12	29
		GOODWELL TWP., 14N-11W, SECTIONS 5, 6, 7, 8, 9, 16, 17																					
⊕	GOODWELL	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
☒	GOODWELL, EAST	NEWAYGO	1945	MICHIGAN STRAY	1190	4 S		DETROIT RIVER	3498	2	ABANDONED 1950							7,504	200				
		GOODWELL TWP., 14N-11W, SECTIONS 23, 24																					
☒	GRANT	MASON	1929	GLACIAL DRIFT	632	1 S		DUNDEE	2385	3	ABANDONED 1955							8,020	120				
		GRANT TWP., 20N-17W, SECTION 15																					
●	GRANT, SEC. 29	HURON	1953	DETROIT RIVER	3358	8 D	38.8	BOIS BLANC	3918	3	0	0	3		844	19,151			120	160	0	1	1
		GRANT TWP., 15N-11E, SECTION 29																					
☒	GREEN	MECOSTA	1946	MICHIGAN STRAY	1250	3 S		REED CITY	3710	2	ABANDONED 1951							73,368	320				
		GREEN TWP., 16N-10W, SECTION 18																					
●	GREEN OAK	LIVINGSTON	1967	TRENTON-BLACK RIVER	4682	10 D		BLACK RIVER	5560	1	0	1	0		535	2,836	ABANDONED 1970		40	71			
		GREEN OAK TWP., 1N-6E, SECTION 14																					
●	GREENWOOD, SEC. 3	CLARE	1968	TRAVERSE	3438	14 L		DUNDEE	4048	1	0	0	1		9,088	32,051			20	1,603	300	0	300
		GREENWOOD TWP., 19N-5W, SECTION 3																					
●	GREENWOOD, SEC. 11	CLARE	1952	DUNDEE	4054	10 L		RICHFIELD	5432	1	ABANDONED 1953					1,324			10	132			
		GREENWOOD TWP., 19N-5W, SECTION 11																					
●	GROUT	GLADWIN	1940	DUNDEE	3825	4 L		DETROIT RIVER	5240	5	ABANDONED 1957				PRODUCTION COMBINED WITH GROUT RICHFIELD								
●			1958	DETROIT RIVER SZ	4801	12 D				1	ABANDONED 1963				PRODUCTION COMBINED WITH GROUT RICHFIELD								
●			1956	RICHFIELD	5039	10 D	41.7			17	0	1	12		62,173	1,445,357			680	2,126	209	1	210
		GROUT TWP., 18N-2W, SECTIONS 10, 11, 14, 15																					
☒	HAMILTON	CLARE	1940	MICHIGAN STRAY	1270	3 S		RICHFIELD	5395	4	ABANDONED 1954							275,606	440				
●			1940	DUNDEE	4041	10 L	41.8			3	ABANDONED 1959				PRODUCTION COMBINED WITH HAMILTON RICHFIELD				30				
●			1952	RICHFIELD	5145	12 D	42.2			45	0	0	27		280,597	5,039,576	138,205	3,435,766	1800	2,800	930	0	930
		HAMILTON TWP., 19N-3W, SECTIONS 5, 6, 7, 8, 15 HAYES TWP., 19N-4W, SECTIONS 1, 2 FROST TWP., 20N-4W, SECTIONS 35, 36 MICHIGAN STRAY IN HAMILTON TWP., SECTIONS 15, 23, 26																					
⊕	HAMILTON, NORTH	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
☒	HAMLIN	MASON	1952	SALINA-NIAGARAN	3950	? D		CAMBRIAN	6622	1	ABANDONED 1962							0	160				
●			1952	NIAGARAN	4224	20 D	46.2			1	ABANDONED 1958					60,532			40	1,513			
		HAMLIN TWP., 19N-18W, SECTION 27																					
●	HANOVER	JACKSON	1959	TRENTON-BLACK RIVER	4012	120+ D	43.0	PRAIRIE DU CHIEN	4604	10	0	3	7	3	33,448	1,280,097	60,638	503,340	180	7,112	380	0	380
		HANOVER TWP., 4S-2W, SECTIONS 8, 9																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☒ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	HARDY DAM	MECOSTA	1966	REED CITY	3351	5 D	44.8	DETROIT RIVER	3482	22	0	1	20		149,481	938,863			880	1,067	2,902	0	2,902
		AETNA TWP., 13N-10W, SECTIONS 5, 6, 7, 8																					
☒	HARRISON	CLARE	1945	MICHIGAN STRAY	1675	3 S		SYLVANIA	5633	7	ABANDONED 1962							598,465	760				
●			1945	DUNDEE	4190	13 L	39.7			2	0	0	2		2,565	150,130			80	1,877	0	*17	17
		LINCOLN TWP., 18N-5W, SECTIONS 1, 12, 13 HATTON TWP., 18N-4W, SECTIONS 6, 7 (MICHIGAN STRAY) DUNDEE IN HATTON TWP., SECTION 7																					
●	HART	OCEANA	1933	TRAVERSE	1911	54 D	34.0	ST. PETER Ss	5531	17	ABANDONED 1936					116,275			150	775			
		HART TWP., 15N-17W, SECTION 36 ELBRIDGE TWP., 15N-16W, SECTION 31																					
☼	HARTWICK	OSCEOLA	1968	MICHIGAN STRAY	1681	25 S		MICHIGAN STRAY	1706	1	0	0	1	1					160		NO MARKET		
		HARTWICK TWP., 19N-8W, SECTION 11																					
●	HATTON	CLARE	1941	DUNDEE	3945	2 L		DUNDEE	4000	4	ABANDONED 1948					139,272			160	870			
		HATTON TWP., 18N-4W, SECTION 31 LINCOLN TWP., 18N-5W, SECTION 36																					
●	HAWKHEAD	ALLEGAN	1946	TRAVERSE	1103	1 L	36.0	DETROIT RIVER	1385	16	ABANDONED 1960					68,292			160	427			
		CASCO TWP., 1N-16W, SECTIONS 20, 29																					
☼	HEADQUARTERS	CLARE-ROSCOMMON	1945	MICHIGAN STRAY	1340	6 S		BOIS BLANC	5929	12	0	0	2	2					1760				
●			1941	TRAVERSE	3356	5 L	42.3			47	0	2	3	1					1400		150	5	155
●			1958	DUNDEE	3899	12 L	39.9			1	0	0	1	1					10				
●			1942	DETROIT RIVER SZ	4946	13 D	43.7	}															
●			1952	RICHFIELD	5147	23 D	42.6	}		60	0	2	41	17	55,423	10,135,189	0	2,522,668	2320	2,717	0	*49	49
		ROSCOMMON TWP., 21N-3W, SECTIONS 17, 19, 20, 21, 28, 29, 30, 32, 33, 34 FRANKLIN TWP., 20N-3W, SECTION 3, 4, 10, 11, 15 THE 41 WELLS INCLUDE 12 RICHFIELD, 24 SOUR ZONE AND 5 RICHFIELD & SOUR ZONE																					
●	HEATH	ALLEGAN	1948	TRAVERSE	1498	2 L	38.0	SALINA	2716	25	0	0	4		1,417	206,671			270	765	0	3	3
		HEATH TWP., 3N-14W, SECTIONS 11, 12, 13, 14																					
☒	HEATH, SEC. 21	ALLEGAN	1960	SALINA	2492	19 D		SALINA	2789	1	ABANDONED 1965							63,430	160				
		HEATH TWP., 3N-14W, SECTION 21																					
●	HEATH, SEC. 35	ALLEGAN	1945	TRAVERSE	1468	2 L		TRAVERSE	1470	1	ABANDONED 1946					559			10	56			
		HEATH TWP., 3N-14W, SECTION 35																					
☼	HESSEN	ST. CLAIR	1965	NIAGARAN	2499	261 D		NIAGARAN	2887	16	0	0	16	2	12,140	80,557	1,256,417	8,262,967	640	126	73	0	73
		CASCO TWP., 4N-15E, SECTIONS 2, 3, 10, 11 COLUMBUS TWP., 5N-15E, SECTIONS 34, 35																					
●	HILLIARDS	ALLEGAN	1944	TRAVERSE	1576	1.2 L		NIAGARAN	3157	17	ABANDONED 1961					124,401			300	415			
☼			1958	SALINA A-1 CARB.	2938	30 D				6	0	0	6	3	810	10,154	49,646	2,093,280	960	11			
		HOPKINS TWP., 3N-12W, SECTIONS 4, 5 (TRAVERSE) DORR TWP., 4N-12W, SECTION 34 HOPKINS TWP., 3N-12W, SECTIONS 3, 4, 10 (SALINA)																					
●	HOLTON	MUSKEGON	1948	TRAVERSE	1993	1 L	37.3	DUNDEE	2554	3	ABANDONED 1963					95,911			60	1,598			
		HOLTON TWP., 12N-15W, SECTIONS 4, 9																					
●	HOME, SEC. 26	MONTCALM	1964	TRAVERSE	3096	10 L	45.3	REED CITY	3618	2	1	1	1		244	1,843			20	92			
●			1970	DUNDEE	3513	7 L		DUNDEE	3520	3	2	0	3		13,344	13,344			120	111	30	3	33
		HOME TWP., 12N-6W, SECTIONS 26, 27 (TRAVERSE) SECTION 27 (DUNDEE)																					
●	HOPE	BARRY	1939	TRAVERSE	1869	3 L	37.6	PRAIRIE DU CHIEN	4944	66	0	0	37	1	9,133	612,746			650	943	0	5	5
		HOPE TWP., 2N-9W, SECTIONS 26, 27, 28, 33, 34, 35 BARRY TWP., 1N-9W, SECTIONS 1, 2, 3, 12																					
●	HOPKINS	ALLEGAN	1939	TRAVERSE	1633	4 L	41.5	DETROIT RIVER	1965	10	ABANDONED 1956					145,513			110	1,323			
		HOPKINS TWP., 3N-12W, SECTIONS 22, 23																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ⊗ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

	FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
●	HOPKINS, SOUTH	ALLEGAN	1948	TRAVERSE	1538	3 L	38.0	TRAVERSE	1611	35	0	0	1		321	267,537			330	811	0	1	1
		HOPKINS TWP., 3N-12W, SECTIONS 19, 30, 31, 32																					
●	HOPKINS, WEST	ALLEGAN	1941	TRAVERSE	1371	2 L	41.5	CLINTON	3140	31	ABANDONED 1951					388,777			370	1,051			
◐			1956	SALINA	2755	7 D	17.9			2	ABANDONED 1968					1,849			20	92			
		HOPKINS TWP., 3N-12W, SECTIONS 7, 18																					
⊕	HOWELL	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
●	HUBBARDSTON	IONIA	1947	DUNDEE	3028	5 L		DUNDEE	3072	5	ABANDONED 1959					48,479			50	970			
		NORTH PLAINS TWP., 8N-5W, SECTION 4																					
●	HUBER	NEWAYGO	1955	TRAVERSE	2109	2 L	41.3	DETROIT RIVER	3400	13	0	0	5	2	2,317	548,858			260	2,111	520	0	520
		DENVER TWP., 14N-14W, SECTIONS 4, 5, 8																					
⊕	IRA	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
⊗	ISABELLA	ISABELLA	1949	MICHIGAN STRAY	1454	7 S		DETROIT RIVER	3993	6	ABANDONED 1956							335,791	240				
●			1948	DUNDEE	3783	9 D	46.9			20	0	0	1		593	824,327	0	138,559	370	2,228			
		ISABELLA TWP., 15N-4W, SECTIONS 7, 18 (MICHIGAN STRAY) ISABELLA TWP., SECTIONS 7, 18 NOTTAWA TWP., 15N-5W, SECTIONS 12, 13 (DUNDEE)																					
☼	ITHACA	GRATIOT	1943	MICHIGAN STRAY	900	16 S		DUNDEE	3419	5	ABANDONED 1965							1,320,995	800				
		ARCADIA TWP., 11N-3W, SECTIONS 25, 35, 36																					
●	JEFFERSON	CASS	1961	TRAVERSE	710	3 L	32.0	PRAIRIE DU CHIEN	2603	20	0	0	7	7	0	101,330			400	253	TO PLUG		
		JEFFERSON TWP., 7S-15W, SECTIONS 22, 23, 26, 27, 35																					
●	JEROME	MIDLAND	1947	DUNDEE	3743	10 L	39.0	DETROIT RIVER	4001	12	0	0	3		2,711	234,001			260	900	6	0	6
		JEROME TWP., 15N-1W, SECTIONS 6, 7, 8																					
●	JOHANNESBURG	OTSEGO	1970	NIAGARAN REEF	5772	283 D		CLINTON	6483	1	1	0	1		58,906	58,906			80	736			
		CHESTER TWP., 30N-2W, SECTION 21																					
●	JOHNSTOWN	BARRY	1951	TRAVERSE	1870	2 L	37.0	TRAVERSE	1899	5	0	0	2		1,129	29,868			50	597	0	4	4
		JOHNSTOWN TWP., 1N-8W, SECTIONS 7, 8, 17																					
☼	KALKASKA	KALKASKA	1970	NIAGARAN REEF	7129	28 D	65.3 COND.	CLINTON	7408	1	1	0	1		172 (CONDENSATE)	172			160	1	SHUT-IN FOR MARKET		
		KALKASKA TWP., 27N-7W, SECTION 28																					
●	KALKASKA, NORTH	KALKASKA	1970	NIAGARAN REEF	6314	68 D	41.5	CLINTON	6921	1	1	0	1		11,643	11,643			80	145	0	25	25
		KALKASKA TWP., 27N-7W, SECTION 5																					
●	KAWKAWLIN	BAY	1941	BEREA	1505	4 S	38.0	ST. PETER Ss	10,477	4	0	0	4	1					40				
●			1938	DUNDEE	2830	45 L	35.0			320	0	0	294	9			0	4,590	6400		462	25	487
●			1939	DETROIT RIVER	3515	5 D	42.0			9	0	0	8	1	186,384	14,134,021			280	2,103	1	0	1
⊗			1941	SALINA	7760	16 D				1	ABANDONED 1946							NO RECORD	40				
		MONITOR TWP., 14N-4E, SECTION 2 (SALINA) KAWKAWLIN TWP., 15N-4E, SECTIONS 26, 27, 28, 29, 33, 34, 35, 36 MONITOR TWP., 14N-4E, SECTIONS 1, 2, 3, 11, 12 BANGOR TWP., 14N-5E, SECTIONS 4, 5, 6, 7, 8, 9																					
		BANGOR TWP., 15N-5E, SECTION 31																					
●	KIMBALL LAKE	NEWAYGO	1947	TRAVERSE	2332	6 L	43.0	ST. PETER Ss	6689	106	0	0	3		1,082	6,223,649	0	2,123,316	2120	2,936	0	1,680	1,680
●			1955	REED CITY	2852	37 ?	39.2			2	0	0	1						20	GAS TO OPERATE TRAVERSE WELLS			
		GARFIELD TWP., 12N-13W, SECTIONS 2, 10, 11, 12, 13, 14, 15, 24																					
●	LACOTA	VAN BUREN	1946	TRAVERSE	1110	2 L		TRAVERSE	1208	11	ABANDONED 1955					51,904			120	433			
		GENEVA TWP., 1S-16W, SECTIONS 9, 10																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION: ● ACTIVE OIL FIELD OR POOL ◐ ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ⊗ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

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●	LAKEFIELD	SAGINAW	1937	DUNDEE	3185	12 L	39.0	DUNDEE	3197	1	0	0	1		832	27,326			10	2,733			
		LAKEFIELD TWP., 11N-1E, SECTION 1																					
●	LAKETON	MUSKEGON	1965	TRAVERSE	1698	4 L	41.4	REED CITY	2199	8	0	0	7		28,400	229,663			200	1,148	260	0	260
		LAKETON TWP., 10N-17W, SECTIONS 10, 15																					
●	LAKEVIEW	MONTCALM	1961	TRAVERSE	2941	4 L	42.5	REED CITY	3495	2	0	0	2		0	7,488			20	374			
		CATO TWP., 12N-8W, SECTION 22																					
◐	LAKE GEORGE	CLARE	1954	DUNDEE	3968	2 L	43.8	DUNDEE	3997	10	0	0	3	1	4,084	355,517			100	3,555	350	0	350
		LINCOLN TWP., 18N-5W, SECTION 6																					
◐	LARKIN	MIDLAND	1935	BEREA	2473	4 S	39.0	DUNDEE	3829	2	ABANDONED 1945					7,070			20	353			
		LARKIN TWP., 15N-2E, SECTIONS 21, 32																					
●	LAWTON	VAN BUREN	1939	TRAVERSE	1140	1 L	37.5	TRENTON	2775	65	0	0	8	1	662	209,012			650	322	14	2	16
		PORTER TWP., 4S-13W, SECTIONS 5, 8, 17, 18, 19, 20 DECATUR TWP., 4S-14W, SECTION 24																					
⊗	LEATON	ISABELLA	1935	MICHIGAN STRAY	1240	2 S		DUNDEE	3710	5	ABANDONED 1940							185,609	400				
●			1929	DUNDEE	3657	7.5 L	43.0	DETROIT RIVER	4390	40	0	0	2		4,643	1,757,627			500	3,515	200	0	200
		DENVER TWP., 15N-3W, SECTIONS 17, 19 (MICHIGAN STRAY) DENVER TWP., SECTIONS 19, 30 31 ISABELLA TWP., 15N-4W, SECTIONS 24, 25 (DUNDEE)																					
◐	LEBANON	CLINTON	1948	TRAVERSE	2548	1 L		TRAVERSE	2570	1	ABANDONED 1950					1,036			10	104			
		LEBANON TWP., 8N-4W, SECTION 34																					
◐	LEE	ALLEGAN	1941	TRAVERSE	1170	1 L		TRAVERSE	1207	6	ABANDONED 1952					3,030			60	51			
		LEE TWP., 1N-15W, SECTIONS 18, 19 CASCO TWP., 1N-16W, SECTION 13																					
◐	LEE, SOUTH	ALLEGAN	1949	TRAVERSE	1171	1 L		TRENTON	2960	12	ABANDONED 1953					91,117			120	759			
		LEE TWP., 1N-15W, SECTION 31 CASCO TWP., 1N-16W, SECTION 36																					
⊕	LENOX	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
⊗	LEONARD	OAKLAND	1963	NIAGARAN	4245	21 D		CLINTON	4450	4	0	0	4	4			0	0	160		SHUT-IN FOR MARKET		
		ADDISON TWP., 5N-11E, SECTIONS 14, 15, 22																					
●	LEROY	OSCEOLA	1965	REED CITY	3796	4 D		REED CITY	3800	2	0	0	2		2,873	25,862			80	323			
		LEROY TWP., 19N-10W, SECTION 27																					
◐	LIME LAKE	HILLSDALE	1960	PRAIRIE DU CHIEN	3461	5 D	44.6	PRAIRIE DU CHIEN	3533	1	ABANDONED 1965					7,842			20	392			
		WRIGHT TWP., 8S-1W, SECTION 11																					
●	LINCOLN, SEC. 18	ARENAC	1957	TRAVERSE	2717	1 L		DUNDEE	3062	2	0	0	2		166	COMBINED WITH SECTION 31 PRODUCTION			20			TRACE	
		LINCOLN TWP., 18N-4E, SECTION 18																					
◐	LINCOLN, SEC. 31	ARENAC	1963	DUNDEE	2942	10 D	34.9	DUNDEE	2986	1	ABANDONED 1968					2,872			10	96			
		LINCOLN TWP., 18N-4E, SECTION 31																					
☼	LOGAN	MASON	1941	RICHFIELD	3260	5 S		RICHFIELD	3330	2	0	0	2	2	0	228	0	13,289	80				
		LOGAN TWP., 17N-15W, SECTIONS 9, 16																					
☼	LOGAN	OGEMAW	1949	WEIR	1230	11 S		RICHFIELD	4537	PRODUCTION COMBINED WITH BEREA													
☼			1944	BEREA	1420	6 S				16	0	0	14	4			89,299	897,294	2240				
		LOGAN TWP., 22N-4E, SECTIONS 16, 17, 18, 20, 23, 25, 26 CHURCHILL TWP., 22N-3E, SECTIONS 1, 11, 12																					
●	LUCHT	BAY	1949	TRAVERSE	2230	3 L	37.2	DUNDEE	3240	5	0	0	1		911	192,791			50	3,856		TRACE	
		PINCONNING TWP., 17N-4E, SECTION 29																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ● ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☼ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

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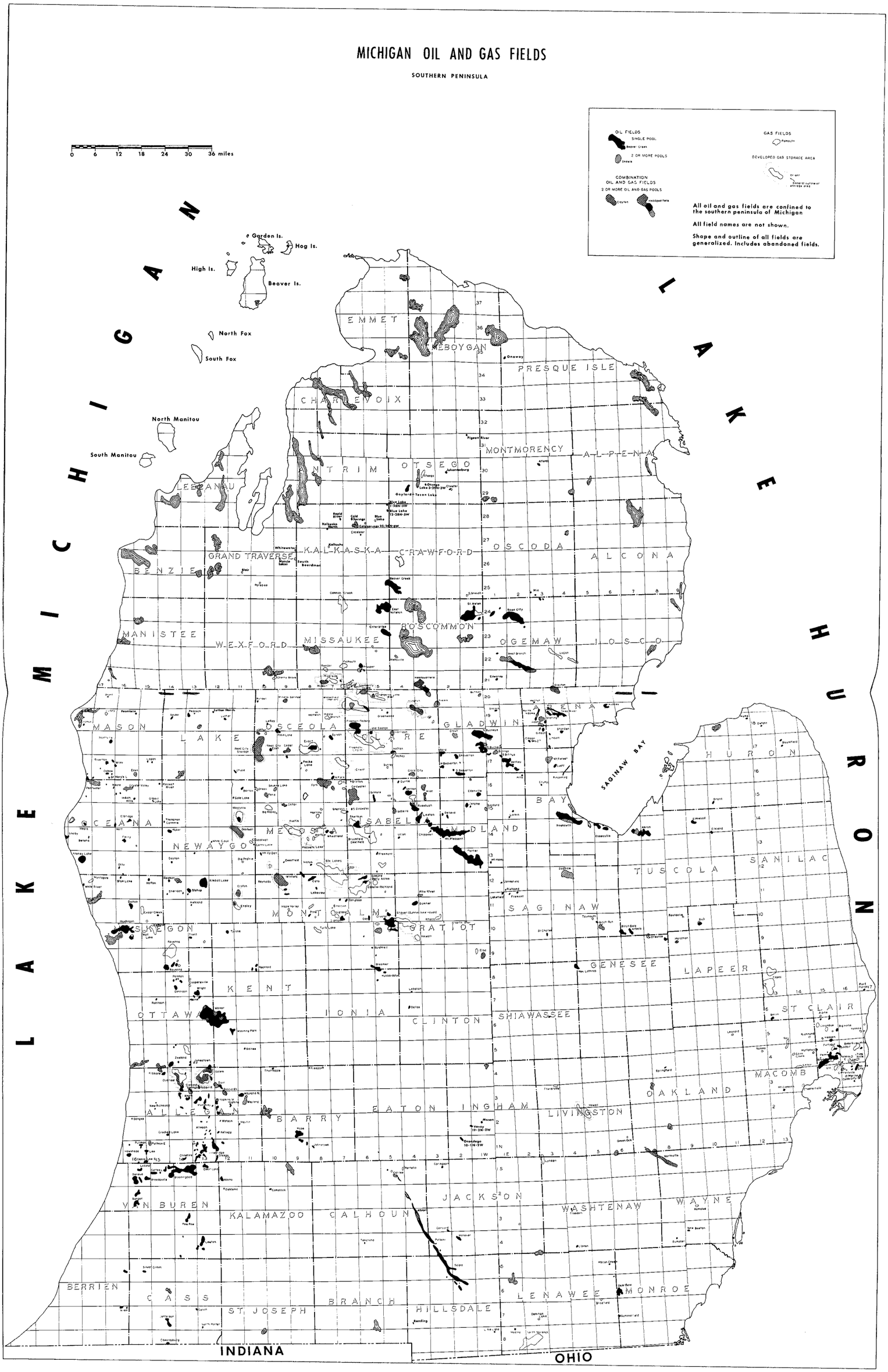
LUTHER	LAKE	1965	TRAVERSE	2565	2 L	42.0	REED CITY	3362	1	0	0	1		0	27,716			20	1,386			
	NEWKIRK TWP., 19N-12W, SECTION 14																					
LUTHER, NORTH	LAKE	1970	REED CITY	3518	17 D		REED CITY	3556	2	2	0	2		2,888	2,888			80	36			
	ELLSWORTH TWP., 19N-11W, SECTIONS 7, 8																					
LYNDON	WASHTENAW-LIVINGSTON	1958	TRAVERSE	1311	6 D		TRENTON	4702	6	0	0	6	4			0	375,600	960		DOMESTIC USE		
		1959	DETROIT RIVER	1733	11 D				PRODUCTION COMBINED WITH TRAVERSE													
	LYNDON TWP., 1S-3E, SECTIONS 6, 7 UNADILLA TWP., 1N-3E, SECTION 31																					
MACON CREEK	LENAWEE	1961	TRENTON-BLACK RIVER	2548	364 D		TRENTON-BLACK RIVER	3303	1	0	0	1		145	928			40	23			
	MACON TWP., 5S-5E, SECTION 23																					
MANISTEE	MANISTEE	1959	SALINA	3616	94 D		NIAGARAN	4165	1	ABANDONED 1961							0	160				
	FILER TWP., 21N-17W, SECTION 24																					
MAPLE VALLEY, SEC. 16	MONTCALM	1958	MICHIGAN STRAY	1120	5 S		REED CITY	3365	1	0	0	1					0	160		DOMESTIC USE		
	MAPLE VALLEY TWP., 11N-9W, SECTION 16																					
MARATHON	LAPEER	1955	BEREA	1449	18 S		DETROIT RIVER	3090	4	0	0	4	3	0	186	19,227	19,227	40	5	DESIGNATED AS GAS RESERVOIR IN 1970		
		1969	DETROIT RIVER SZ	3013	47 D				4	2	0	4		10,559	13,083			200	65	0	*10	10
	MARATHON TWP., 9N-9E, SECTIONS 16, 17, 21 (DETROIT RIVER SZ) SECTION 16 (BEREA)																					
MARINE CITY	ST. CLAIR	1955	SALINA-NIAGARAN	2176	21 D	38.0	CLINTON	2428	18	0	1	13	3	26,590	325,455	361,886	3,689,088	660	493	95	0	95
	COTTRELLVILLE TWP., 3N-16E, SECTIONS 2, 3, 10, 11, 15																					
MARINE CITY, SOUTH	ST. CLAIR	1962	SALINA-NIAGARAN	2100	4 D	38.7	NIAGARAN	2251	13	1	0	12	3	13,321	102,590			520	197	10	0	10
		1962	SALINA A-1 CARB.	2100	4 D											106,185	821,239					
	COTTRELLVILLE TWP., 3N-16E, SECTIONS 23, 26, 27								GAS WELLS COMBINED WITH OIL WELL TOTALS													
MARION (WINTERFIELD)	REFER TO TABLE 4 DEVELOPED GAS STORAGE RESERVOIRS																					
MARNE	OTTAWA	1940	"BEREA"	1170	3 L		TRAVERSE	1904	2	ABANDONED 1946					6,253			20	313			
	TALLMADGE TWP., 7N-13W, SECTION 5 WRIGHT TWP., 8N-13W, SECTION 32																					
MARSAC CREEK	ST. CLAIR	1965	SALINA-NIAGARAN	2450	190 D		CLINTON	2903	5	0	0	5	2	0	1,681	614,765	2,563,557	200	8	10	0	10
	CASCO TWP., 4N-15E, SECTIONS 29, 30						ONE WELL PRODUCING OIL AND GAS															
MARTIN	ALLEGAN	1948	TRAVERSE	1617	1 L	36.0	ST. PETER Ss	4290	2	ABANDONED 1960					2,188			20	109			
	MARTIN TWP., 2N-11W, SECTION 18																					
MARTINY	MECOSTA	1934	MICHIGAN STRAY	1370	2 S		DETROIT RIVER	3807	5	0	0	4				20,714	1,185,033	680				
	MARTINY TWP., 15N-8W, SECTIONS 12, 22, 23																					
MASON	INGHAM	1970	NIAGARAN REEF	4165	39 D	49.4	CLINTON	4537	1	1	0	1		6,371	6,371			80	80			
	VEVAY TWP., 2N-1W, SECTION 16																					
MCBAIN	MISSAUKEE	1959	DUNDEE	3969	15 L	45.0	DUNDEE	3973	24	0	0	23	1	93,943	2,788,727			920	3,031	6,552	0	6,552
	RIVERSIDE TWP., 21N-7W, SECTIONS 19, 20, 30 RICHLAND TWP., 21N-8W, SECTION 24																					
MCKAY	CLARE	1929	MICHIGAN STRAY	1400	3 S		DETROIT RIVER	4055	9	0	0	2	1				712,626	360		DOMESTIC USE		
	GRANT TWP., 17N-4W, SECTION 6 SURREY TWP., 17N-5W, SECTION 1 HATTON TWP., 18N-4W, SECTION 31																					
MEARS	OCEANA	1951	TRAVERSE	1745	2.5 DL	36.1	REED CITY	2347	11	ABANDONED 1959					105,807			110	622			
		1949	DUNDEE	2210	3 L	32.2			3	ABANDONED 1959					PRODUCTION COMBINED WITH MEARS TRAVERSE			60				
	GOLDEN TWP., 15N-18W, SECTIONS 34, 35																					

MICHIGAN OIL AND GAS FIELDS Continued

POOL CLASSIFICATION ● ACTIVE OIL FIELD OR POOL ● ABANDONED OIL FIELD OR POOL ☼ ACTIVE GAS FIELD OR POOL ☼ ABANDONED GAS FIELD OR POOL ⊕ GAS STORAGE RESERVOIR ⊖ UNDEVELOPED GAS STORAGE RESERVOIR

FIELD NAME	COUNTY TOWNSHIP PRODUCING SECTIONS	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY	PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL or GAS WELLS 1970: TO END	COMP. IN	ABAND. IN	PRODUCING AT END	SHUT IN OR SHUT DOWN	OIL PRODUCTION - BBLS.: PRODUCED IN 1970	OIL PRODUCTION - BBLS.: CUMULATIVE THROUGH 1970	GAS PRODUCTION - Mcf.: PRODUCED IN 1970	GAS PRODUCTION - Mcf.: CUMULATIVE THROUGH 1970	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION: DISPOSAL SUBSURFACE	BRINE PRODUCTION: DISPOSAL SURFACE	BRINE PRODUCTION: TOTAL BBLS. DAY
MEDINA	LENAWEE	1961	TRENTON-BLACK RIVER	2921	18 D	40	PRAIRIE DU CHIEN	3487	1	0	0	1		0	4,324			40	108			
	MEDINA TWP., 8S-1E, SECTION 3								CONVERTED TO GAS WELL FOR DOMESTIC USE													
MECOSTA	MECOSTA	1966	MICHIGAN STRAY	1345	10 S		DUNDEE	3709	2	0	0	2				8,218	105,071	320				
	MORTON TWP., 14N-8W, SECTION 10																					
MECOSTA LAKE	MECOSTA	1953	MICHIGAN STRAY	1314	12 S		DUNDEE	3690	2	ABANDONED 1956							84,071	320				
	MORTON TWP., 14N-8W, SECTIONS 17, 20																					
MIDDLE BRANCH	OSCEOLA	1964	MICHIGAN STRAY	1630	10 S		DETROIT RIVER	4283	4	0	0	2				6,338	249,468	640				
	MIDDLE BRANCH TWP., 19N-7W, SECTIONS 17, 18																					
MILLS, SEC. 1	MIDLAND	1957	DUNDEE	3450	2 D		DUNDEE	3463	1	0	0	1		0	7,784			10	778	0	*2	2
	MILLS TWP., 16N-2E, SECTION 1																					
MINERAL SPRINGS	OSCEOLA	1952	MICHIGAN STRAY	1397	3 S		DETROIT RIVER	3963	4	ABANDONED 1960							288,762	480				
		1951	DUNDEE	3854	7 D	44.5			12	0	0	1		933	300,358			240	1,251	70	0	70
	SHERMAN TWP., 20N-9W, SECTIONS 16, 20, 21																					
MIO	OGEMAW-OSCODA	1946	RICHFIELD	4219	6 D	32.9	CLINTON	8544	4	0	0	2		1,188	53,835			160	336			
	MENTOR TWP., 25N-3E, SECTIONS 30, 32 ROSE TWP., 24N-3E, SECTIONS 3, 4																					
MOFFATT, SEC. 34	ARENAC	1964	TRAVERSE	2100	4 D		DUNDEE	3027	1	0	0	1	1	0	357			10	36			
		1953	DUNDEE	2984	4 L				1	ABANDONED 1956					8,392			10	839			
	MOFFATT TWP., 20N-3E, SECTION 34																					
MONTAGUE	MUSKEGON	1953	SALINA-NIAGARAN	3734?	80 D		TRENTON	4517	3	0	2	0		ABANDONED 1970		0	41,482	480		DOMESTIC USE		
	MONTAGUE TWP., 12N-17W, SECTION 7 WHITE RIVER TWP., 12N-18W, SECTION 12																					
MONTEREY	ALLEGAN	1938	TRAVERSE	1618	3 L	37.6	CINCINNATIAN	3266	99	0	0	11		2,291	1,008,222			1030	978	0	5	5
	MONTEREY TWP., 3N-13W, SECTIONS 2, 4, 8, 9, 10, 11, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 27, 32, 36																					
MORTON	MECOSTA	1946	MICHIGAN STRAY	1279	2 S		DUNDEE	3691	2	0	0	1					118,377	320		DOMESTIC USE		
	MORTON TWP., 14N-8W, SECTIONS 15, 22																					
MT. CLEMENS	MACOMB	1961	SALINA	2590	18 D		CAMBRIAN ?	4695	1	0	0	1			65		0	40	2	DOMESTIC USE		
	MACOMB TWP., 3N-13E, SECTION 34			ORIGINALLY OIL WELL CONVERTED TO A DOMESTIC GAS WELL 1967																		
MT. FOREST	BAY	1952	TRAVERSE	2124	2 L	36.2	RICHFIELD	4305	4	0	0	2						80		31	0	31
				2224	3 L																	
		1947	DUNDEE	3025	9 D	34.1			37	0	0	26	1	9,086	854,805			960	890	0	8	8
	PINCONNING TWP., 17N-4E, SECTIONS 18, 19 MT. FOREST TWP., 17N-3E, SECTIONS 13, 24																					
MT. FOREST, SEC. 1	BAY	1946	DUNDEE	2960	2 L		DUNDEE	3057	1	ABANDONED 1946					1,906			10	191			
	MT. FOREST TWP., 17N-3E, SECTION 1																					
MT. HALEY	MIDLAND	1934	DUNDEE	3477	3 D	39.6	DUNDEE	3500	1	ABANDONED 1947					36,069			10	3,607			
	MT. HALEY TWP., 13N-1E, SECTION 28																					
MT. PLEASANT	ISABELLA-MIDLAND	1928	DUNDEE	3545	15 L	41.8	SYLVANIA	4821	485	0	0	144	11	94,717	27,476,159		7,809,323	5710	4,812	844	49	893
				THE 144 WELLS INCLUDE 139 DUNDEE, 1 TRAVERSE AND 4 DUNDEE & TRAVERSE																		
	GREENDALE TWP., 14N-2W, SECTIONS 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 LEE TWP., 14N-1W, SECTIONS 7, 8, 18 CHIPPEWA TWP., 14N-3W, SECTIONS 1, 2, 3, 4, 11, 12, 13 DENVER TWP., 15N-3W, SECTIONS 28, 33, 34																					
MUNCIE LAKES	GRAND TRAVERSE	1970	NIAGARAN REEF	6267	97 D	COND.	NIAGARAN	6666	1	1	0	1		SHUT-IN FOR MARKET				40				
	UNION TWP., 26N-9W, SECTION 8																					


MICHIGAN OIL AND GAS FIELDS
SOUTHERN PENINSULA
0 6 12 18 24 30 36 miles
OIL FIELDS
SINGLE POOL
2 OR MORE POOLS
COMBINATION OIL AND GAS FIELDS
2 OR MORE OIL AND GAS POOLS
GAS FIELDS
DEVELOPED GAS STORAGE AREA
All oil and gas fields are confined to the southern peninsula of Michigan
All field names are not shown.
Shape and outline of all fields are generalized. Includes abandoned fields.
LAKE MICHIGAN
LAKE HURON
Garden Is.
Hog Is.
High Is.
Beaver Is.
North Fox
South Fox
North Manitou
South Manitou
EMMET
CHARLEVOIX
PRESQUE ISLE
MONTMORENCY
ALPENA
ANTRIM
OTSEGO
LEELANAU
GRAND TRAVERSE
KALKASKA
CRAWFORD
OSCODA
ALCONA
BENZIE
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
OGEMAW
IOSCO
MASON
LAKE
OSCEOLA
CLARE
GLADWIN
ARENAC
HURON
SAGINAW BAY
BAY
OCEANA
NEWAYGO
MECOSTA
ISABELLA
MIDLAND
TUSCOLA
SANILAC
MONTCALM
GRATIOT
SAGINAW
MUSKEGON
GENESEE
LAPEER
KENT
OTTAWA
IONIA
CLINTON
SHIAWASSEE
ST CLAIR
MACOMB
OAKLAND
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
BERRIEN
CASS
ST JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE
INDIANA
OHIO