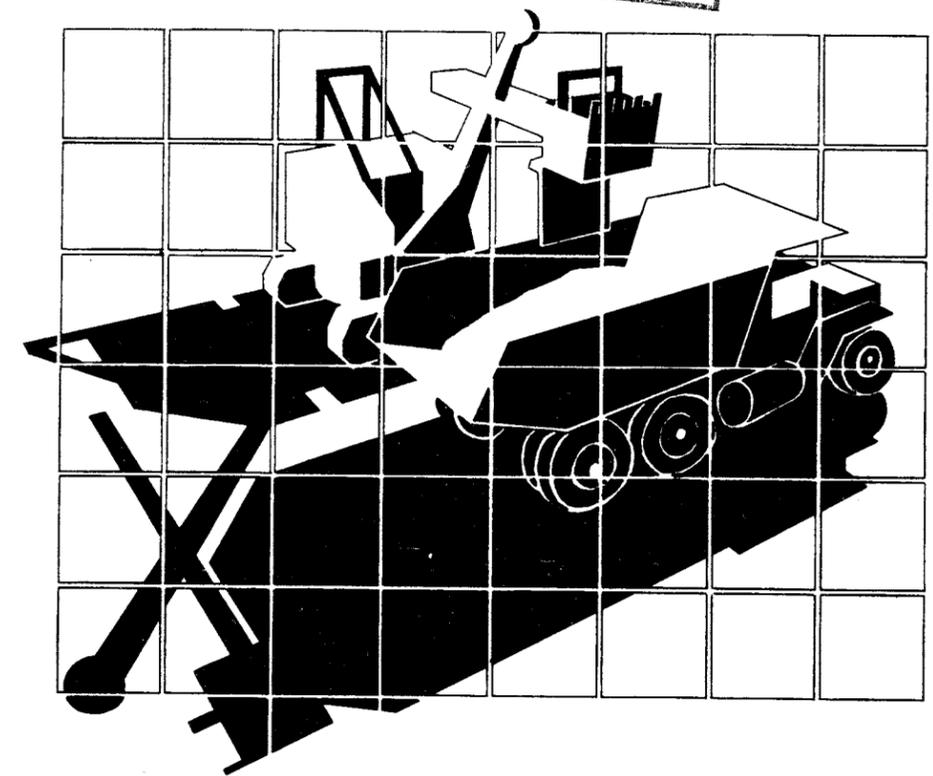


STATE OF MICHIGAN
DEPARTMENT OF CONSERVATION
GERALD E. EDDY, DIRECTOR
GEOLOGICAL SURVEY DIVISION
WILLIAM L. DAOUST, STATE GEOLOGIST

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MINERAL INDUSTRIES

MICHIGAN



1959



NOVEMBER 1959

1 MILLION YEARS AGO

WATER
SAND
GRAVEL
PEAT
MARL
CLAY

GYPSUM
LIMESTONE
SHALE

SALT
BRINE
OIL
GAS

COPPER

IRON



NO RECORD
IN MICHIGAN

MESOZOIC
plus
CENOZOIC

215 MILLION
YEARS AGO

PALEOZOIC
PENNSYLVANIAN
MISSISSIPPIAN
DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN

530 MILLION YEARS AGO

WORLD-WIDE
LOST INTERVAL
YEMENAWAN

1000 MILLION YEARS AGO

PRECAMBRIAN
MURONIAN
ARCHEAN

2000 MILLION YEARS AGO

MICHIGAN'S ROCK COLUMN AND TIME SCALE

DEPARTMENT OF CONSERVATION
1959

EARTH ORIGIN 5000(?) MILLION YEARS AGO

MICHIGAN

MINERAL INDUSTRIES

1958

by

Harry O. Sorensen
Emery T. Carlson

FOREWORD

This report is a record of the Michigan Mineral Industries for the calendar year 1958. Metallic (iron and copper) and fuel (petroleum, natural gas, and natural gasoline) statistics were compiled by the Michigan Geological Survey. Non-metallic (all other) statistics were compiled in cooperation with the United States Bureau of Mines.

The section on developments in the mineral industries was prepared from office and field conferences with mineral producers, and from articles published in Pit and Quarry, Rock Products, Mining Journal, and other trade journals.

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LATE DEVELOPMENTS IN MICHIGAN'S MINERAL INDUSTRIES

In the early months of 1959, there were expectations that a new record construction peak (predicted by Peter B. B. Andrews, Rock Products' Consulting Economist and Chairman of the Board of Analysts of Future Sales Rating) would result in increased productivity for Michigan's mineral industries. By midyear, however, the threatened strike in the steel industry became a reality entailing a sharp cut-back in several of the state's leading mineral commodities. On the other hand, some mineral operators continued programs of improvement and expansion. The year 1959 is characterized by the following noteworthy events.

Underground mines increased working time at the start of 1959. M. A. Hanna Co. stepped up its work to 6 days in its 4 iron mines in the Iron River district. Pickands Mather & Co.'s operations on the Gogebic Range increased to a full 4-day week of 16 shifts after working 12 shifts for some time. North Range Mining Co. reopened the Penokee mine at Ironwood idled since March of 1958.

The M. A. Hanna Co.'s new 20 foot circular shaft near Iron River is in operation. This 2,740 ft. shaft serves the Homer and Wauseca mines for an expected annual production of 1 million tons of iron ore. Hanna's new Groveland open pit mine and beneficiation plant, near Randville, is in production. Estimated reserve on the 3000 acres is 100,000,000 tons of ore. First shipment of 65% concentrate went to the Granite Steel Co. in Illinois. When full 24-hour operation is reached, about 180 men will be employed. This is the third iron ore beneficiation plant to be established in the Northern Peninsula.

Expansion started early in 1959 on the Cleveland-Cliffs beneficiation plant at Humboldt to bring it up to a production level of 600,000 tons of pellets annually. Facilities include expansion of the crushing, grinding and flotation section of the plant and construction of an agglomerating section at the concentrator. The company is also planning a new pelletizing process for their beneficiation plant at Republic in the hopes of an eventual 2 million tons annual production of high grade pellets there. The Mather "A" mine at Ishpeming Cleveland-Cliffs is installing one of the world's largest slope conveyors. The belt will have a center distance of 3,791 feet and will carry 700 tons per hour of iron ore. The ore will be carried from the 12th to the 9th levels - an elevation of about 800 feet. When all the material has been excavated for the conveyor location in the mine and all succeeding sections of the belt have been added, a total of over 7,500 feet of belting will be operated on this unit.

Pickands Mather and Co.'s Buck mine at Caspian reopened in April after having been closed since July, 1958. Opened on a trial basis, miners work on a straight company account rate as in contract mines and agreed to maintain production at the rate prevailing when the mine closed.

The Republic Steel Corp., as in the case of Pickands Mather and Co., is shipping from a single mine on the Menominee Range, the Tobin at Crystal Falls. The Tobin was closed October 16, 1957 except for pumping and maintenance through 1958. Repair work was begun on March 9, 1959. Republic leased the adjacent Genesee Mine on May 1955 and will mine and hoist through the Tobin shaft after driving a 300 foot drift.

North Range Mining Co. closed the Warner at Amasa on May 1, 1958. The closing was made permanent on Sept. 27, 1958 and the lease was dropped in November of last year. The Book mine at Alpha is still held pending increased demand for iron ore.

The Bradley open pit mine at Iron Mountain closed upon the death of Edward C. Bradley. The mine, operated by Mr. Bradley and his sons, produced a high silica ore for the Jackson Iron and Steel Co. A total of 313,941 tons of ore was produced the last 11 years of its 20-year existence.

Great Lakes Steel \$100 million construction and expansion program was announced in February. A new 80-inch strip mill will be built on 70 acres adjoining the Detroit Edison Plant on River Rouge. This new installation is 1/2 mile from the main plant at Ecorse. Completion is scheduled for the middle of 1961 - part of a \$300 million expansion program by the parent National Steel Corp.

Reconditioning of Quincy Mining Co. No. 5 copper smelting at Ripley was completed in June and commenced handling concentrates on hand.

The Branch of Ferrous metals and Ferroalloys, U. S. Bureau of Mines, reported that the first progress report on the Bureau's integrated study of the iron ores of the Lake Superior District will be published in Fiscal 1959. The study includes investigation of geology, exploration, and development on all major iron ranges in the Lake Superior District. Eventually each range will be sampled systematically to determine the mineral combination present and appropriate mineral dressing methods. As part of the study the Bureau is sponsoring research fellowships at the University of Minnesota and Michigan College of Mining and Technology on (1) diamond drilling; (2) the primary iron minerals of Lake Superior District; (3) flotation of iron-magnetic iron minerals present in taconite; and (4) flotation of undeslimed iron ores.

The Northern Peninsula Oil Refining Inc., of Rapid River announced in June, plans for construction of an oil refinery. The refinery will be on U. S. 41 in Rapid River and will refine crude oil from the Trans-Canada pipeline traversing the area. The plant would market straight run gasoline, kerosene, range oil, diesel fuel, gas, oil and residential fuels within an 100 mile radius of Rapid River.

Grand Rapids Gravel Company recently announced its intention to purchase Postma Gravel Company of Grand Rapids. Acquisition of this property obtains an additional 200 acres of gravel land and boosts the firm truck fleet to 80, including 55 ready-mix transit units. The company announced this purchase should guarantee operations for 25 or 30 years.

Construction of the new Dundee Cement plant at Dundee continues with expectation of opening January 1, 1960. The 30-million dollar plant, with its newly developed quarry in the Dundee formation, will have two kilns of the double-dumbbell type, 15 feet and 16 feet 6 inches in diameter and 460 feet long. Other features include two raw grinding and three finish grinding mills.

General Portland Cement Co. and Consolidated Cement Co. merged April 30 and the re-elected directors of both companies have become members of the board of the combined company. The firm has an annual capacity of 25,000,000 barrels making it the fifth largest in the U. S. Consolidated formerly operated three plants located at Cement City, Michigan; Paulding, Ohio; and Fredonia, Kansas.

National Gypsum Co. of Buffalo, N. Y., recently exchanged more than 1 million shares of stock, valued at some \$67 million, to acquire Huron Portland Cement Co. Huron will continue under the direction of Paul H. Townsend who has been president for many years, and will have its own sales force, production units, accounting, and research facilities.

Completion of a new cement distributing plant at St. Joseph is planned by the Huron Cement Company. This facility, the company's 13th distributing plant, will have ten silos with a combined storage capacity of 150,000 barrels.

The first shipload of raw gypsum, from National Gypsum Company's new quarry near Tawas City was made in May from their new dock, 1100 feet south of Tawas City. Most of its lake shipments will be to the company's plants at Waukegan, Illinois and later to Lorain, Ohio (now under construction) for processing into wallboard, lathe, plaster and other gypsum building products.

Michigan Limestone Division (U. S. Steel Corp.) reported that during 1958 41,000 visitors from 41 states and 14 countries used the lookout station provided at their Rogers City quarry.

Drummond Dolomite, Inc. continued to develop reserves on Drummond Island, much of this under state lease. Intensive exploration on 2700 acres since 1956 has resulted in proving up some 150,000,000 tons of high quality dolomite extending from the northern tip of Huron Bay westward to Warner's Cover and Canoe Bay. Drummond Dolomite now processes ten sizes of crushed stone for the metallurgical, chemical, and construction industries at the rate of 2,500,000 tons a year. The plant was moved to Drummond Island from Sturgeon Bay, Wisconsin, in 1944.

With a process developed by Dow Chemical Company molten slag from wet-bottom slag top boilers can be converted from a waste material to a marketable lightweight aggregate product. The material produced by the process is suitable for use in concrete masonry units, precast concrete units, precast concrete wall and roof sections and in lightweight concrete. The aggregate, produced and marketed on a limited scale, has been trademarked Dowlite.

Warning to the nation's industrial users of fresh water comes from the Bureau of Mines Director, Marling Ankeny: "the nation's water requirements for the next 25 years probably will double the present quantity required. Therefore, adequate supplies for the expansion will require major efforts by private and governmental organizations not only in constructing new dams, reservoirs, and distributing systems, but also in conserving and reusing our water supplies and controlling pollution."

MINERAL PRODUCTION

1958

GENERAL REVIEW

Only Precambrian and Paleozoic rocks are found in Michigan. No deposits of the Mesozoic era are in the State and the bedrock for the most part is mantled by the unconsolidated glacial deposits of the Pleistocene Epoch.

The Precambrian rocks which are at or near the surface in the western part of the Northern Peninsula are chiefly igneous and metamorphic.

The Paleozoic rocks of the Michigan basin are sedimentary - sandstones, conglomerates, shales, limestones and dolomites, gypsum, and salt. The youngest Paleozoic rocks are in the central part of the Southern Peninsula, and are flanked in circular fashion by older Paleozoic rocks, the oldest, the Cambrian, coming to the surface in the Northern Peninsula.

The occurrence of valuable minerals was known very early in the History of Michigan. The presence of copper was known in the 17th century by the Jesuits and other early voyageurs who discovered the "Ontonagon Copper Boulder" and other fragments of float copper. In 1840 Douglass Houghton, the first State Geologist of Michigan, definitely proved the presence of large quantities of native copper in the Keweenaw peninsula. Copper mining began in 1844. Iron ore was discovered in 1844 near Negaunee by Wm. A. Burt in charge of the U. S. Land Survey party working under the direction of Douglass Houghton. The first company for the mining of iron ore was organized in 1845 but regular shipments were not made until 1856.

Gypsum was discovered at Grand Rapids as early as 1827, and coal at Spring Arbor, Jackson County, in 1835. Salt springs were known to the Indians before the coming of the white man. The first borings for salt production were carried on in conjunction with the lumber industry as waste products of the mills could be utilized as fuel for the evaporation of salt brines.

The presence of limestones, shales, clays, sandstones, glass sand, and marl are noted in the reports of Douglass Houghton from 1838 to 1840. Limestone quarries were opened for lime-burning in Monroe County over one hundred years ago by the early settlers, whose trails from Toledo to Detroit passed directly across the limestone exposures. Limestone was quarried for use in the old fort and other buildings at Mackinac Island about 1780. The first successful portland cement plant was begun in 1896.

Between the years 1870 and 1920 many wells were drilled for oil in different parts of the State. However, drilling was not systematic and little production was obtained. In 1925 a small oil field was developed at Saginaw. Oil was discovered in greater quantities at Muskegon in 1927 and near Mt. Pleasant in 1928.

During 1958 the value of all Michigan mineral production decreased 14 per cent. Metallic mineral value decreased 29 per cent, fuel 7 per cent, and nonmetallic minerals 6 per cent.

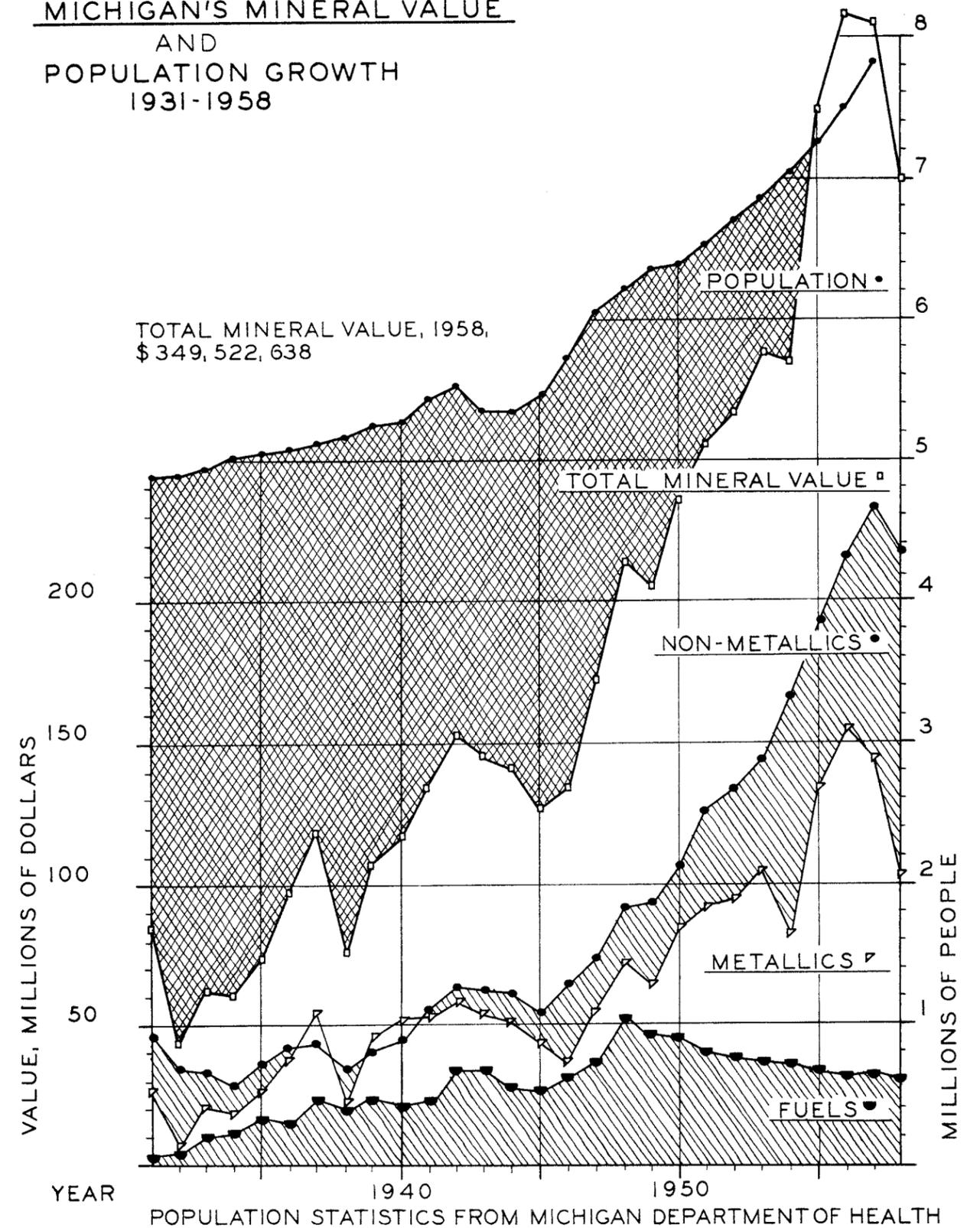
Approximately 40 per cent of the total value of Michigan's minerals entered into the Great Lakes trade. Large quantities of iron ore, cement, limestone, dolomite and gypsum were shipped from Marquette, Escanaba, Port Inland, Port Dolomite, Drummond Island, Petoskey, Rogers City, Stoneport, Alpena, Tawas City, and Alabaster for destinations in Minnesota, Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, and New York as well as in Michigan.

In volume of mineral production in 1958 in the United States Michigan ranks: First in salt, gypsum, peat, and marl; Second in iron ore, sand and gravel, stone, bromine, and magnesium compounds; Fourth in cement; Fifth in copper.

The following table gives the value of Michigan Mineral Production in 1958:

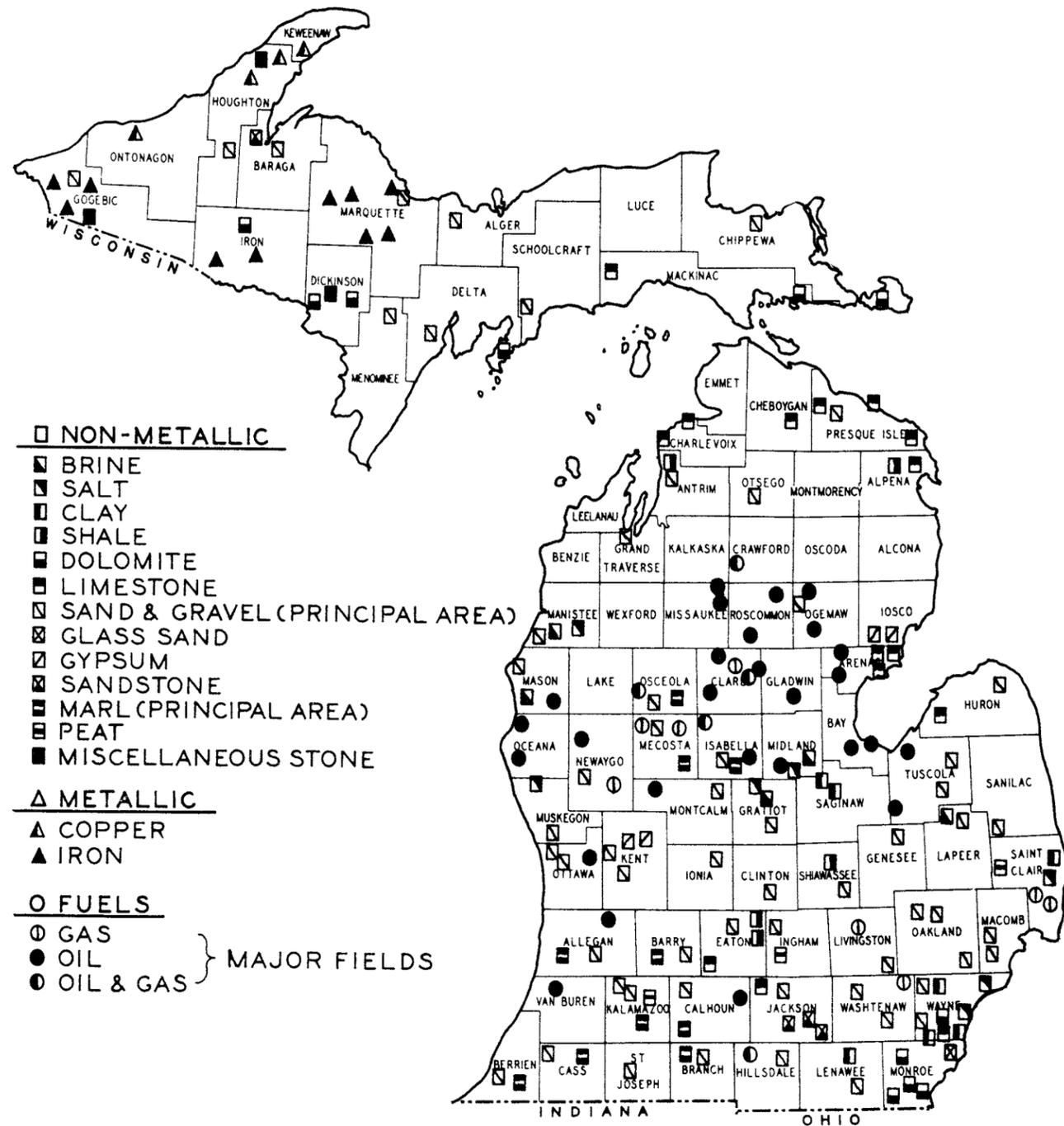
	Value	Per Cent
Nonmetallics	\$ 217,702,916	62.3
Metallics	102,118,749	29.2
Fuels	29,700,973	8.5
	\$ 349,522,638	100.0

MICHIGAN'S MINERAL VALUE AND POPULATION GROWTH 1931-1958



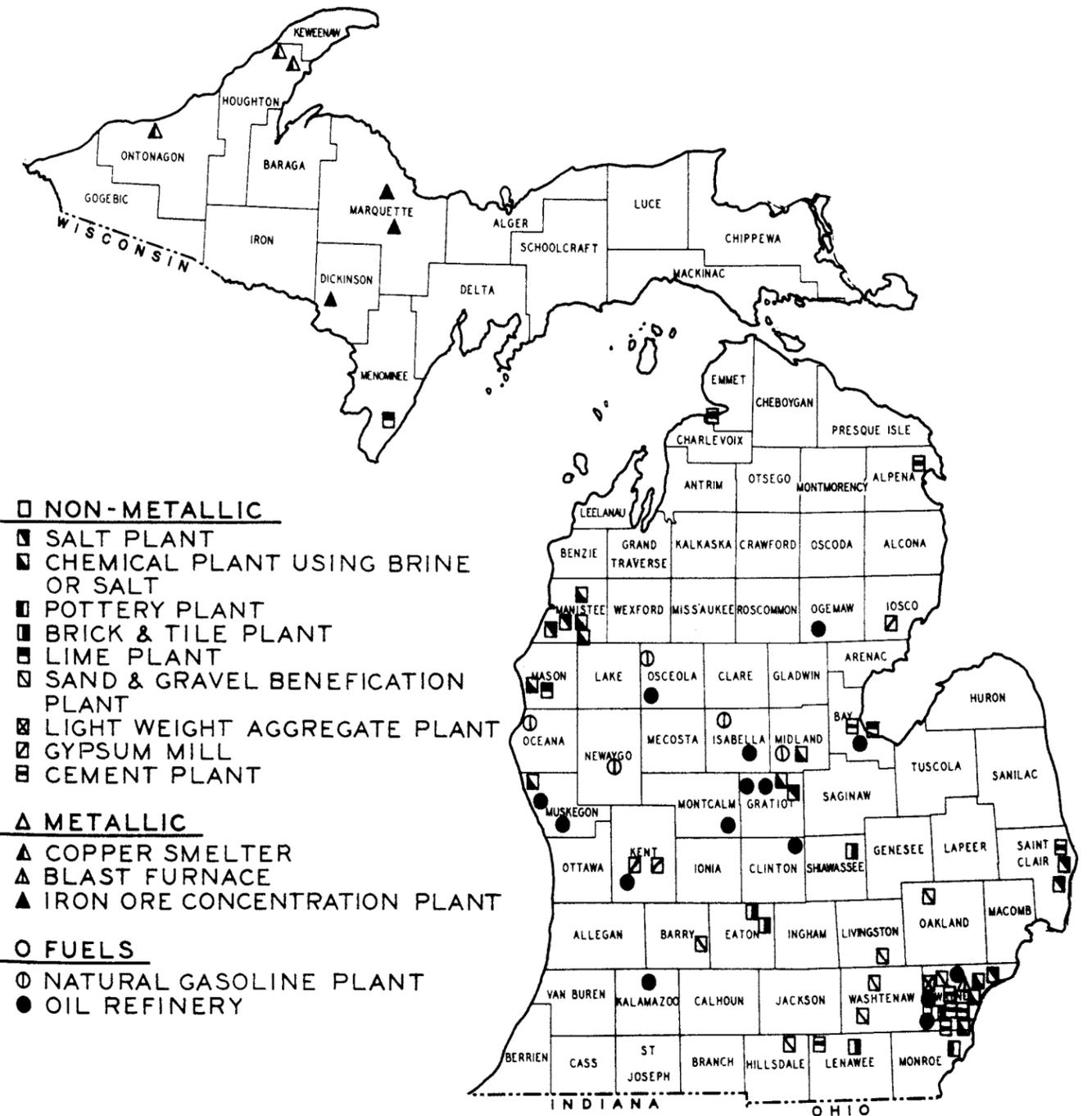
MICHIGAN
DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

PRODUCTION MAP, 1959



MICHIGAN
DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

PROCESSING MAP, 1959



METALLIC MINERALS*

Iron Ore

Geological formation - Huronian. Iron ore is a mineral containing iron in such quantity, grade, and chemical combination as to make extraction commercially profitable. A large number of minerals are iron-bearing, however, only four, magnetite, hematite, limonite, and siderite, are important as a source of the metal. Hematite is the principal mineral utilized in Michigan. The most important iron-bearing rocks are of middle Huronian age.

Shipments of iron ore in 1958, from 26 underground mines and 5 open pits comprised 8,210,906 long tons (2,240 lbs.), a decrease of 37 per cent from 1957. Although value of shipments dropped \$39,901,270 iron ore continued to rank first of minerals produced. Dates of first and last lake shipments of ore in 1958 from Michigan ports were Escanaba, May 1 - December 5 and Marquette - April 26 - December 7.

Republic Steel Corporation during the year temporarily discontinued operations at its Tobin iron ore mine near Crystal Falls. The mine is on stand-by for an indefinite period because of economic conditions and a surplus of iron ore.

The Buck mine of Pickands Mather and Company on the Menominee Range discontinued mining operations at midnight, July 24, for an indefinite period. The Buck group includes the Buck, Zimmerman, and Fogarty mines in Caspian and Gaastra. In addition to the Buck and Tobin, the Book suspended mining operations and the Warner mine was closed. Menominee Range mines still operating were the Sherwood and Bristol of Inland Steel Company and the Homer, Wauseca, Hiawatha No. 1 and 2 and the Cannon of the M. A. Hanna Company.

On the Marquette Range, the Cleveland Cliffs Iron Company mines were operated on a curtailed schedule during much of the year.

On August 25th, Pickands Mather and Company recalled 617 men at the Newport and Geneva mines at Ironwood. Operations were resumed on a three weeks per month schedule. The mines had been idle for three months. The Penokee mine of North Range Mining Company was idle during much of the year.

The M. A. Hanna Company continued the sinking of its new 20 foot circular shaft begun June 18, 1957 at Iron River, Iron County. The new shaft will serve the Homer and Wauseca mines and will have three hoists - two for ore and one for men and materials. The two 9 ton ore skips will handle 15½ tons each and will operate at 1890 feet per minute. A friction type hoist was installed, the second in use in Michigan.

M. A. Hanna Company commenced construction of the Groveland plant east of Randville. The plant will use spirals and flotation to beneficiate low-grade ore comparable to that being treated at the Humboldt and Republic plants operated by Cleveland-Cliffs Iron Company. It was scheduled to be ready for operation in 1959.

*Metallic statistics compiled by Michigan Geological Survey

Marquette Iron Mining Company completed its program of diamond drilling on the low-grade Empire iron property at Palmer, six miles south of Negaunee.

IRON ORE SHIPMENTS BY RANGES, 1958

Range	No. of Mines		Iron Ore Shipments		Long Tons
	Underground	Open Pit	Direct Shipping	Siliceous	Total
Marquette	10	4	3,599,319	122,820	3,722,139
Menominee	11	1	3,080,024	15,215	3,095,239
Gogebic	5	-	1,393,528	-	1,393,528
	26	5	8,072,871	138,035	8,210,906

SHIPMENTS AND VALUE OF IRON ORE, 1954-1958

Year	Shipments (Long Tons)	Value
1954	9,722,882	\$ 69,226,417
1955	14,148,123	107,890,161
1956	12,536,302	105,688,087
1957	13,126,746	110,605,689
1958	8,210,906	70,704,419

COPPER

Geological formation - Keweenaw. Copper is present in many horizons throughout the Keweenaw series which extends from the tip of the Keweenaw Peninsula south and westward into Wisconsin. The copper mines of Houghton and Keweenaw counties produce native copper from the lava flows and interbedded conglomerates, but the White Pine Mine, in Ontonagon County, produces mostly copper sulphide (chalcocite) from the Nonesuch Shale. Some copper is also produced in Houghton County by reclamation of stamp sand tailings of earlier mill operations.

Michigan produced 122,059,023 pounds of copper during 1958, an increase of 7 per cent in production. The value of copper, however, decreased 7 per cent to \$31,414,330 due to a lower average price. Average price used for calculating the value of copper was 25.7 cents per pound in 1958 and 29.6 cents in 1957.

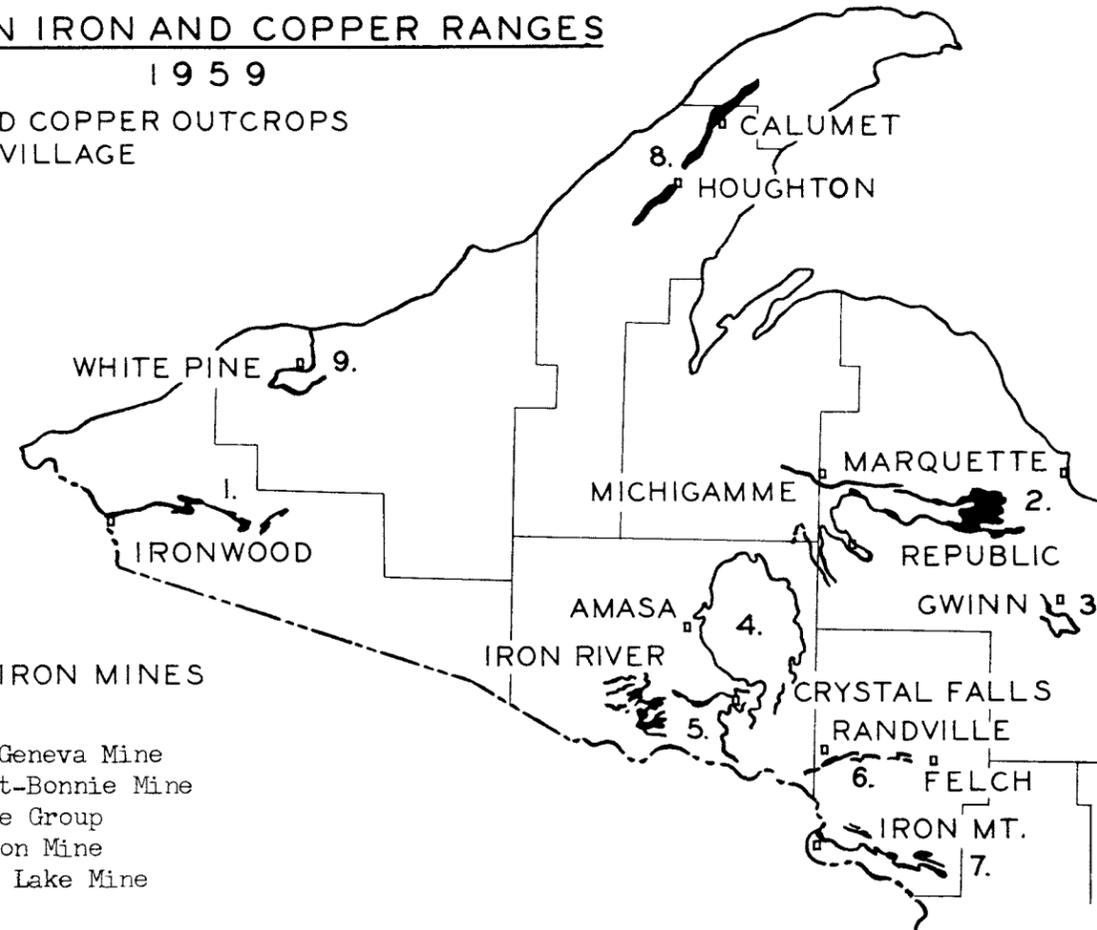
COPPER PRODUCTION BY COUNTIES, 1958

County	Mines	Reclamations	Copper Production (Pounds)		
			Mines	Reclamation	Total
Houghton	4	3	11,244,623	5,100,407	16,345,030
Keweenaw	6	-	23,886,930		23,886,930
Ontonagon	2	-	81,827,063		81,827,063
	12	3	116,958,616	5,100,407	122,059,023

MICHIGAN IRON AND COPPER RANGES

1959

— IRON AND COPPER OUTCROPS
 □ CITY OR VILLAGE



OPERATING IRON MINES

1. GOGEBIC

Davis-Geneva Mine
 Newport-Bonnie Mine
 Penokee Group
 Peterson Mine
 Sunday Lake Mine

2. MARQUETTE

Bunker Hill Mine
 Champion Open Pit
 Cliffs Shaft Mine
 Greenwood Mine
 Humboldt Open Pit
 Maas Race Course Mine
 Mather "A" Mine
 Mather "B" Mine
 Morris Mine
 Ohio-Webster Open Pit
 Republic Open Pit
 Tilden Open Pit
 Tracy Mine
 Volunteer-Maitland Open Pit

3. GWINN

(not active)

4. AMASA OVAL

(not active)

5. IRON RIVER - CRYSTAL FALLS

Baltic Group
 Book Mine
 Bristol-Youngstown Mine
 Cannon Mine
 Hiawatha Mine
 Homer-Cardiff-Minckler Mine

Sherwood Mine
 Tobin Mine
 Wauseca-Aronson Mine

6. FELCH

Groveland Open Pit

7. EAST MENOMINEE

(not active)

OPERATING COPPER MINES AND RECLAMATION PLANTS

8. NATIVE COPPER

Ahmeek Mine
 Allouez No. 3 Mine
 Calumet and Hecla Reclamation
 Centennial Mine
 Champion Mine
 Osceola Mine
 Peninsula Mine
 Quincy Mining Co. Reclamation
 Seneca No. 2 Mine

9. COPPER SULFIDE

White Pine Mine

The Quincy Reclamation was temporarily closed the first of the year because of the depressed copper market and was not reopened until late in the fall. 17

In spite of the sharp drop in copper prices, exploration continued for copper in the Keweenawan formations. The United States Metal Refining Company, on their 20,000 acres of controlled property north of Wakefield completed during the year its year-long diamond drilling program. On the basis of 132,000 feet of drilling the company has estimated a deposit of about 50,600,000 short tons of copper-bearing shale with an average content of 1.52 percent. An additional 54,000,000 short tons of lower grade shale with an average content of 1.04 per cent also exists. A 215 foot shaft was excavated to determine the character of the formation and for sampling. This was a part of a program to determine the economic potential of the deposit.

The Bear Creek Mining Company made lease application for copper exploration and development involving 933 acres of upland within the Porcupine Mountains State Park and 5,200 acres of Lake Superior bottom lands. However, the Conservation Commission unanimously declared its opposition to mining in the Porcupine Mountains at its formal meeting in Lansing, January 9, 1959. The lease application was withdrawn.

COPPER PRODUCTION 1954 - 1958

Year	Quantity (Pounds)	Value
1954	44,786,803	\$ 13,298,994
1955	99,996,160	37,489,560
1956	123,280,235	51,531,138
1957	113,647,143	33,629,326
1958	122,059,023	31,414,330

FUELS*

Petroleum

Petroleum production decreased for the 12th consecutive year in 1958 to 9,308,018 barrels, 8 per cent below 1957 and the lowest recorded since 1933. At the end of 1958, 4,006 producing wells were in 41 counties. Approximately 61 per cent of the total output was from Montcalm, Isabella, Bay, Osceola, Ogemaw, Arenac, Clare, and Hillsdale counties; more than half a million barrels were produced in each of these counties.

During the year 413 wells were completed (166 oil producers, 20 gas producers, 227 dry holes). Of these completions 152 were wildcats (11 oil producers, 7 gas producers, and 134 dry holes). The remaining 261 completions were field wells (155 oil producers, 13 gas producers, and 93 dry holes).

Fifteen refineries, in ten counties, processed more than 99 per cent of the crude oil produced in Michigan during 1958. The combined normal daily capacity of all Michigan refineries is approximately 179,000 barrels.

Detailed information for oil and gas operations is recorded in "1958 Summary of Operations, Oil and Gas Fields", available from Michigan Geological Survey.

* Fuel statistics compiled by Michigan Geological Survey

PETROLEUM PRODUCTION AND ACCUMULATED OIL BY FORMATION, 1958

Formation	Production		Accumulated	
	Bbls.	Per Cent	Bbls.	Per Cent
Marshall	1,583	.02	62,555	.02
Berea	19,462	.21	2,116,018	.51
Traverse	1,448,231	15.56	84,690,555	20.39
Dundee	4,527,027	48.63	298,145,110	71.78
Detroit River	2,571,719	27.63	28,400,267	6.84
Salina-Niagaran	131,956	1.42	218,649	.05
Trenton	608,040	6.53	1,713,912	.41
Total	9,308,019	100.00	415,347,066	100.00

PETROLEUM AND NATURAL GAS PRODUCTION, 1954 - 1958

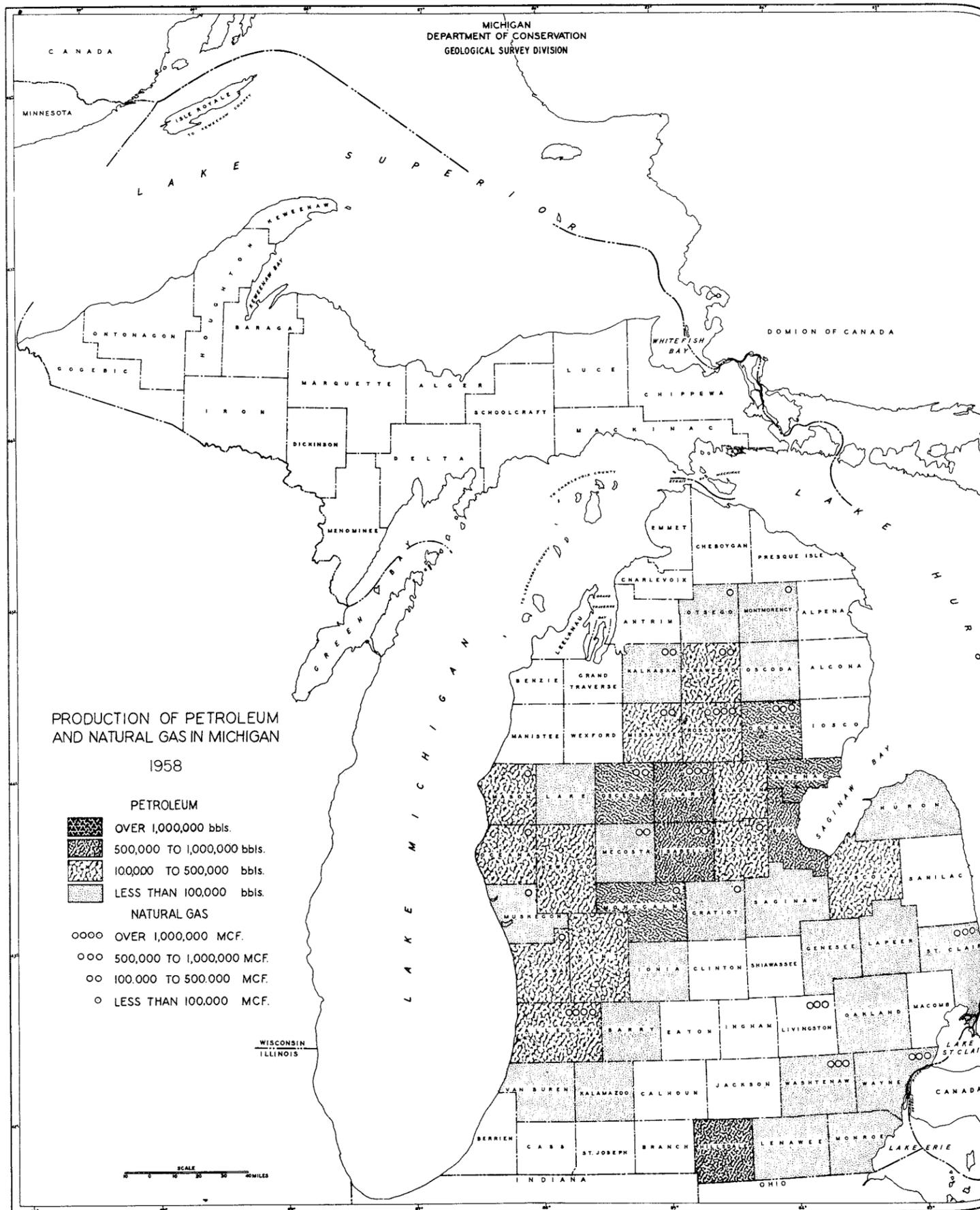
Year	Petroleum		Natural Gas	
	Barrels	Value	M. Cu. Ft.	Value
1954	12,028,059	\$ 34,279,968	2,698,175	\$ 997,180
1955	11,265,832	32,074,018	6,787,697	1,187,846
1956	10,739,697	30,607,137	8,840,933	1,556,575
1957	10,168,602	30,505,806	6,639,813	929,574
1958	9,308,018	27,924,954	10,964,378	1,424,852

NATURAL GAS

Over 63 per cent of the natural gas produced in Michigan has been from the Michigan Stray-Marshall formations. Natural gas production increased 65 per cent to 10,964,378,000 cubic feet in 1958 the largest production since 1950 when 13,614,024,000 cubic feet were produced. Of this amount 4 billion cubic feet was oil well gas. Natural gas was produced from 180 wells in 23 counties. Allegan, Roscommon, Wayne, Ogemaw, Washtenaw, and Clare counties were the leading producers with 68 per cent of the State's total.

GAS PRODUCTION AND ACCUMULATED GAS PRODUCTION BY FORMATIONS - 1958

Formations	Production		Accumulated	
	(M. cu.ft.)	Per Cent	(M. cu.ft.)	Per Cent
Glacial Drift			8,020	.00
Michigan-Stray-Marshall	837,548	7.64	209,113,465	63.77
Berea	36,383	.33	10,305,192	3.27
Antrim	11,307	.10	149,895	.04
Traverse	73,696	.67	11,267,530	3.43
Dundee	318,049	2.90	42,463,312	12.92
Detroit River	673,880	6.15	2,216,425	.68
Richfield	2,931,004	26.73	14,468,589	4.43
Salina-Niagaran	4,863,216	44.36	29,330,062	8.84
Trenton	1,219,295	11.12	5,539,021	1.69
Unassigned			3,050,143	.93
Total	10,964,378	100.00	327,911,654	100.00



NATURAL GASOLINE

Michigan in 1958 produced from oil well gas a total of 3,511,671 gallons of natural gasoline and allied products valued at \$351,167. Crawford County, with 79 per cent of the State total, ranked first among the six producing counties.

NATURAL GASOLINE PRODUCTION, 1954 - 1958

Year	Quantity (Gallons)	Value
1954	3,898,312	\$ 389,831
1955	3,612,912	361,291
1956	3,740,916	374,092
1957	3,495,703	349,570
1958	3,511,671	351,167

NONMETALLIC MINERALS

Portland Cement

Portland cement is an artificial chemical combination of lime, silica, alumina, iron oxide, and small amounts of other ingredients to which gypsum is added to regulate the set. Chief raw materials used in cement manufacturing in Michigan are limestone, and shale or clay. These raw materials are obtained from Paleozoic limestone and shales and from Pleistocene clays.

Portland cement was produced by eight cement plants in the State. Antrim shale from Alpena County and Ellsworth shale from Antrim County were used by the northern plants. All southern plants use local glacial or lake clays. The greater part of the limestone used was from the Traverse and Dundee formations quarried in the northern part of the Southern Peninsula. All gypsum was purchased.

RAW MATERIAL USED IN THE MANUFACTURE OF PORTLAND CEMENT, 1958

Raw Material	Short Tons
Limestone	4,920,945
Clay and shale	1,493,069
Gypsum	142,319

Cement shipments declined 1,133,044 barrels and the value declined \$1,172,636 in 1958 in spite of a price increase. This was the first decline in 15 years in the value of cement shipped. Alpena County continued to be the leading producer; Wayne County ranked second. Portland cement was produced also in Bay, Emmet, Lenawee and St. Clair counties.

Construction was begun in June, 1958, on the Dundee Cement Company's new 4,500,000 bbl. capacity cement plant near Dundee. The plant, scheduled for completion in 18 months, will cost an estimated \$30,000,000 and will employ 200 persons. Gypsum for the new plant will be shipped in through the Monroe port and limestone and clay are available at Dundee where stripping of overburden for the new quarry was in progress during the year.

Huron Portland Cement Company was erecting a building to house two new finishing mills to add 5,000 barrels to its daily grinding capacity. An addition has been made to its powerhouse to enclose a 12,500 kilowatt turbine-generator. The company completed purchase of Wyandotte Chemical Corporation's limestone quarry at Alpena as of January 1, 1958. The approximately 146 employees of the quarry are on the Huron payroll. The company employs 1,250 at the Alpena plant.

A historical marker was placed at the Huron Alpena location, marking the site of one of the world's largest cement plants. The Michigan Historical Commission said the plaque recognizes the company's contributions to Michigan's growth in the last 50 years. Cement production began at the plant in 1918.

PORTLAND CEMENT SHIPMENTS, 1954 - 1958

Year	Shipments (barrels)	Value	Rank in U.S.	Number of Plants
1954	18,106,975	\$ 50,460,566	5	7
1955	19,738,400	58,048,378	4	7
1956	21,880,222	67,798,262	4	8
1957	22,045,034	71,605,137	4	8
1958	20,911,990	70,542,501	4	8

SALT

Geological Formations - Marshall, Detroit River, Dundee, Salina.

Almost the entire Southern Peninsula of Michigan is underlain by great thicknesses of rock salt - one of the largest basins of salt deposition in the world. Artificial brines produced by dissolving salt from the Salina formation are recovered by eight plants in Manistee, Midland, Muskegon, St. Clair, and Wayne counties. The brine is used for production of evaporated salt and for use in chemical plants. Salina rock salt mined at Detroit is reached by a shaft approximately 1,100 feet in depth. Evaporated salt is produced from natural brines drawn from the Marshall and Dundee formations at St. Louis, Gratiot County, and from artificial brines from the Detroit River formation at Manistee, Manistee County. Artificial brines from the Detroit River and Salina formations are used at the chemical plant in Midland, Midland County.

MICHIGAN ROCK SALT DEVELOPMENT

1959

Approximately 55 per cent of the salt was used by chemical plants in Wayne, Midland and Muskegon counties. Over 2.5 million tons of salt were used in the manufacture of soda ash, chlorine, and other chemicals.

Approximately 19 per cent of the total production was dried and evaporated salt.

During 1958, 4,266,688 short tons of salt valued at \$ 33,018,368 were produced. Wayne ranked first of the six counties producing salt - followed by St. Clair, Manistee, Midland, Muskegon, and Gratiot. Four companies in Wayne County reported a combined total of 3,022,764 tons or approximately 71 per cent of the State's total output.

USES OF SALT, 1958

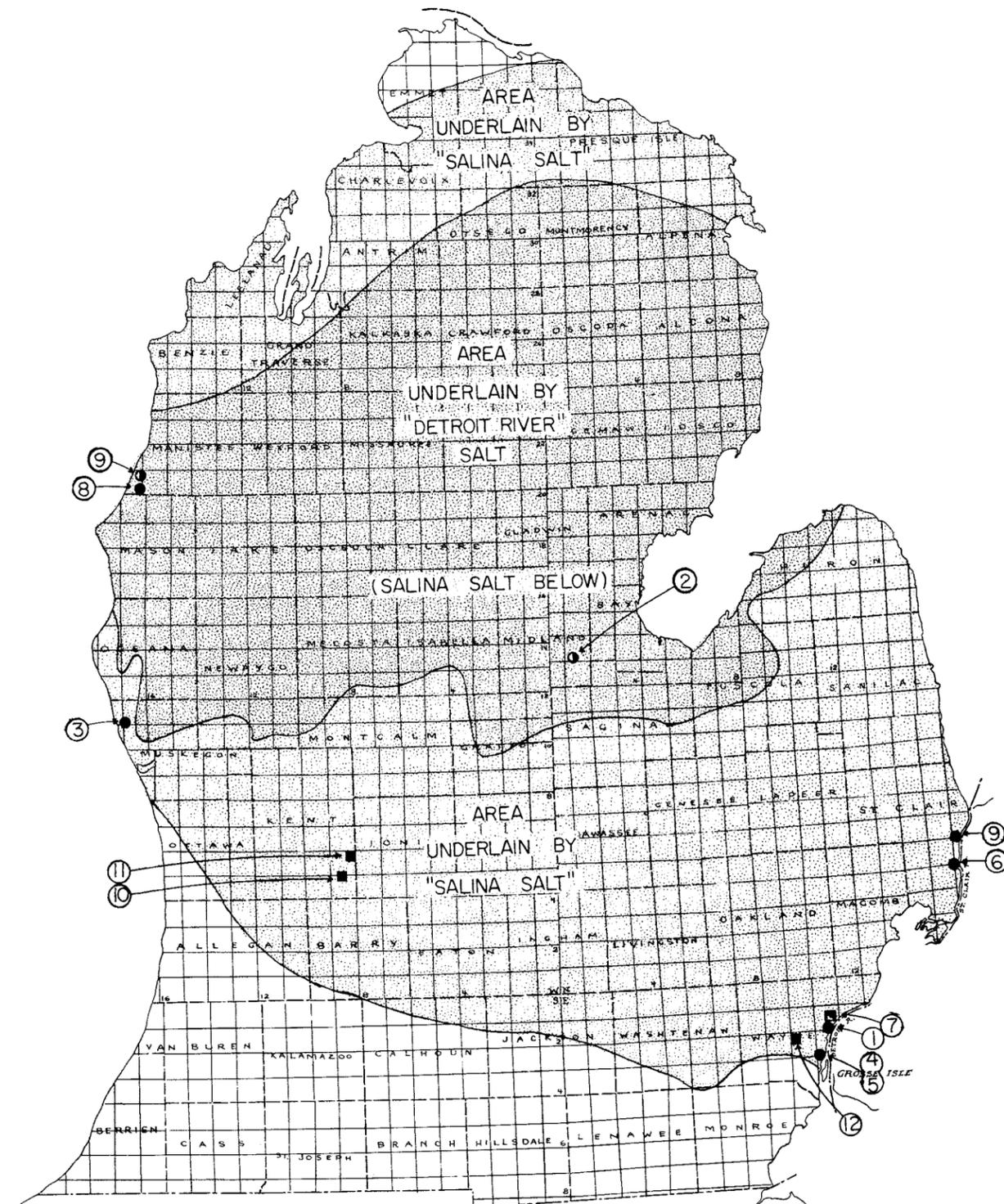
Uses	Quantity (short tons)	Per Cent
Chemical	2,543,116	60
Highway, Dust and Ice Control	685,251	16
Textile, Hides and Packers	169,345	4
Livestock	161,874	4
Food Processing	108,464	2
Table and Other Household	73,175	2
Water Treatment	40,949	1
Other	132,336	3
Undistributed	352,178	8
Total	4,266,688	100

Diamond Crystal Salt Company, St. Clair, completed a \$400,000 addition to its main office building. The company announced the employment of a relatively new technique in the drilling method of extracting salt, known as hydrofracting.

The Solvay Process Division of Allied Chemical and Dye Corp. discontinued its brine field on Zug Island, Wayne County, during the year.

SALT PRODUCTION, 1954 - 1958

Year	Quantity (short tons)	Value	Per Cent U.S. Total	Rank in U.S.
1954	5,063,633	\$ 29,396,812	24.5	1
1955	4,975,442	31,668,351	21.9	1
1956	5,548,178	35,643,860	22.9	1
1957	5,225,425	41,072,497	21.9	1
1958	4,266,688	33,018,368	-	1



CHEMICAL PLANTS

1. Allied Chemical & Dye Corp. (soda ash)
2. The Dow Chemical Corp. (chlorine, other chemicals)
3. Hooker Electrochemical Co. (chlorine, hydrogen, caustic soda)
4. Pennsalt Chemical Corp. (chlorine, caustic soda)
5. Wyandotte Chemical Corp. (chlorine, soda ash)

LPG STORAGE RESERVOIRS

10. Skelly Oil Co.
11. Cities Service
12. Sun Oil Co.

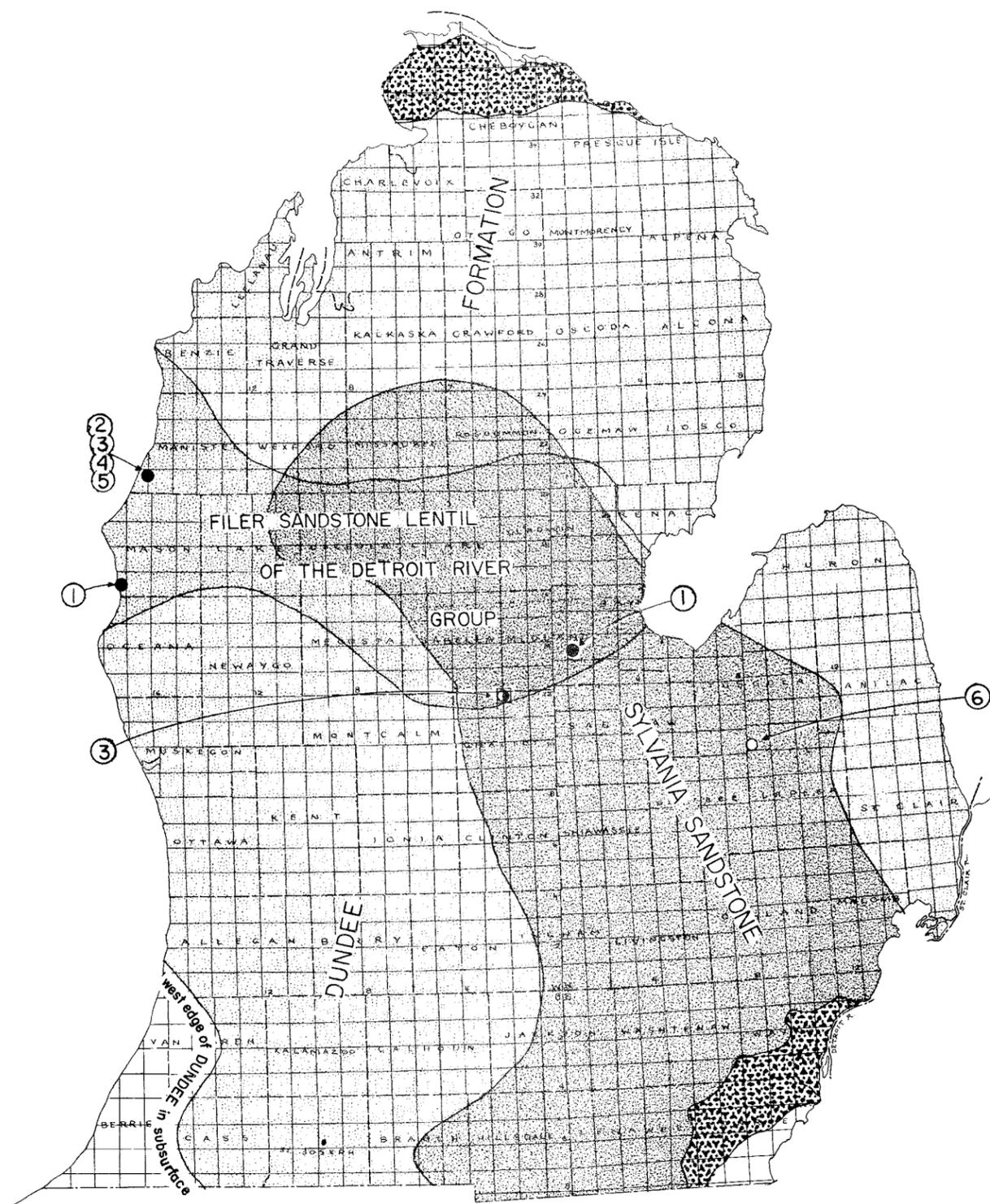
SALT PLANTS

6. Diamond Crystal Salt Co.
7. International Salt Co., Inc.
8. Manistee Salt Works
9. Morton Salt Co.

- artificial brine - "Salina" salt
- ⊙ artificial brine - "Detroit River" salt
- ⊖ artificial brine - "Salina & Detroit River" salts
- mine - "Salina" salt
- LPG - "Salina" salt

MICHIGAN NATURAL BRINE DEVELOPMENT

1959



CHEMICAL PLANTS

- | | |
|---|---|
| 1. The Dow Chemical Co. (bromine, calcium magnesium chloride, magnesium compounds, potash) | ○ Dundee brine |
| 2. Great Lakes Chemical Corp. (bromine) | ● Detroit River brine |
| 3. Michigan Chemical Corp. (bromine, calcium magnesium chloride, magnesium compounds, salt) | □ Sylvania brine |
| 4. Morton Salt Co. (bromine, calcium magnesium chloride, magnesium compounds) | ○ Dundee & Detroit River brine |
| 5. Wilkinson Chemical Co. (calcium magnesium chloride) | ▨ area of shallow drift and outcrop of brine bearing formations |

NATURAL SALINES

25

Geological Formation - Sylvania, Detroit River.

Natural brine recovered from the Sylvania formation is used by chemical companies in Midland and Gratiot counties. Brine from the Filer sandstone of the Detroit River formation is produced in Mason and Manistee counties. These natural brines are source material for many chemicals and chemical compounds.

Bromine was produced in 1958 by four companies in six plants in Gratiot, Manistee, Mason and Midland counties. Magnesium compounds were produced by four companies in Gratiot, Manistee, Mason and Midland counties. Calcium-chloride and calcium-magnesium chloride were produced by three companies in Gratiot, Lapeer, Mason, and Midland counties. Only one company, The Dow Chemical Company at Midland, reported production of potassium salts from natural brines.

The value of the natural salines recovered by the chemical plants from natural brines in 1958 increased 12.5 per cent over the 1957 value. The highest value was recorded for bromine, followed by magnesium compounds, calcium-magnesium chloride and potash.

Harbison-Walker Refractories Co. produced refractory magnesia for the first full year in 1958 at its new plant at Ludington. The new facility operates in a raw materials production tieup with the Dow Chemical Company plant at Ludington. Dow furnishes magnesium hydrate through a pipeline.

VALUE OF NATURAL SALINES*, 1954-1958

Year	Value
1954	\$ 31,099,382
1955	34,282,204
1956	37,873,042
1957	37,664,914
1958	42,360,677

*Includes: Bromine, Calcium chloride and calcium-magnesium chloride, magnesium compounds, and potash.

SAND AND GRAVEL

Sand and gravel are obtained from glacial deposits - kames, eskers, outwash plains, deltas of glacial streams, beach ridges, glacial drainage channels, beds of former glacial lakes and in less concentrated deposits in the glacial drift; from present-day beaches, river channels, and lakes; and from sand dunes. Sand is also obtained from the Lower Devonian Sylvania sandstones, a very pure quartz sandstone with very loosely cemented grains of uniform fineness.

Production and value of sand and gravel decreased somewhat in 1958 to 39,871,202 short tons valued at \$34,615,648. This decrease was due to decreased road construction and a lesser demand for materials by the building industry. Sixty-nine per cent of the total sand and gravel output was used in road construction and 20 per cent for structural purposes.

Production of sand and gravel was reported from 81 of Michigan's 83 counties. Approximately 50 per cent of the total production was from 9 counties: in order of rank, Oakland, Wayne, Livingston, Kent, Washtenaw, Ottawa, Macomb, Tuscola, and Ionia. About 15 per cent of the state total was produced in Oakland County. Each of the other counties produced more than 1,000,000 tons. About 77 per cent of the State's total was reported by commercial producers and the remaining 23 per cent was non-commercial production by county road commissions and other governmental agencies.

USES OF SAND AND GRAVEL, 1958

Uses	Quantity (short tons)	Value	Per Cent of total
Structural sand	4,009,404	\$ 3,230,480	10.1
Paving and road sand	5,346,821	4,238,632	13.4
Molding sand	1,792,447	2,321,388	4.5
Fill sand	1,404,270	506,677	3.5
Other sand*	548,725	1,346,039	1.4
Paving and road gravel	22,306,749	17,991,491	55.9
Structural gravel	3,951,430	4,579,200	9.9
Railroad ballast gravel	158,341	169,760	0.4
Other gravel	353,015	231,981	0.9
Total	39,871,202	\$ 34,615,648	100.0%

* Includes glass sand, engine sand, filter sand, railroad ballast sand, grinding and polishing sand, and other sand.

PRODUCTION OF SAND AND GRAVEL, 1954 - 1958

Year	Quantity (short tons)	Value	Rank in U.S.
1954	32,035,729	\$ 25,458,503	2
1955	37,269,709	29,565,730	2
1956	42,149,946	35,145,953	2
1957	41,837,894	35,144,352	2
1958	39,871,202	34,615,648	2

STONE

Geological formations - Bayport, Marshall, Traverse, Dundee-Rogers City, Detroit River, Bass Island, Engadine, Burnt Bluff, Trenton, Keweenaw, Huronian.

Approximately 56 per cent of the limestone and dolomite produced in Michigan in 1958 was quarried from the Rogers City-Dundee, Detroit River, and Traverse limestone formations in Presque Isle, Charlevoix, Cheboygan, Emmet, Alpena, and Wayne counties. The remaining 44 per cent was from Mackinac, Chippewa, Huron, Eaton, Jackson, Arenac, Monroe, Delta, Dickinson, and Houghton counties. Dimensional limestone was produced in Charlevoix, Eaton, Huron, and Presque Isle counties.

Sandstone for rough construction, rubble, and flagging stone was quarried from the Marshall sandstone of Mississippian age in Jackson and Calhoun counties.

Basalt from Precambrian rocks was crushed and used for road construction in Houghton County.

Stone production and value declined to 18,584,890 tons and \$19,997,244 in 1958 due to a sharp decrease in the demand for limestone for flux.

STONE PRODUCTION, 1958

Commodity	Quantity (short tons)	Value
Limestone and dolomite:		
Crushed	18,522,072*	\$ 19,754,092
Dimensional	14,140	76,171
Sandstone:		
Dimensional	18,026	132,981
Basalt:		
Crushed	30,652	34,000
Total	18,584,890	\$ 19,997,244

*Does not include 8,208,577 short tons of limestone valued at \$6,421,508 used in the manufacture of cement and lime.

USES OF CRUSHED LIMESTONE AND DOLOMITE, 1958

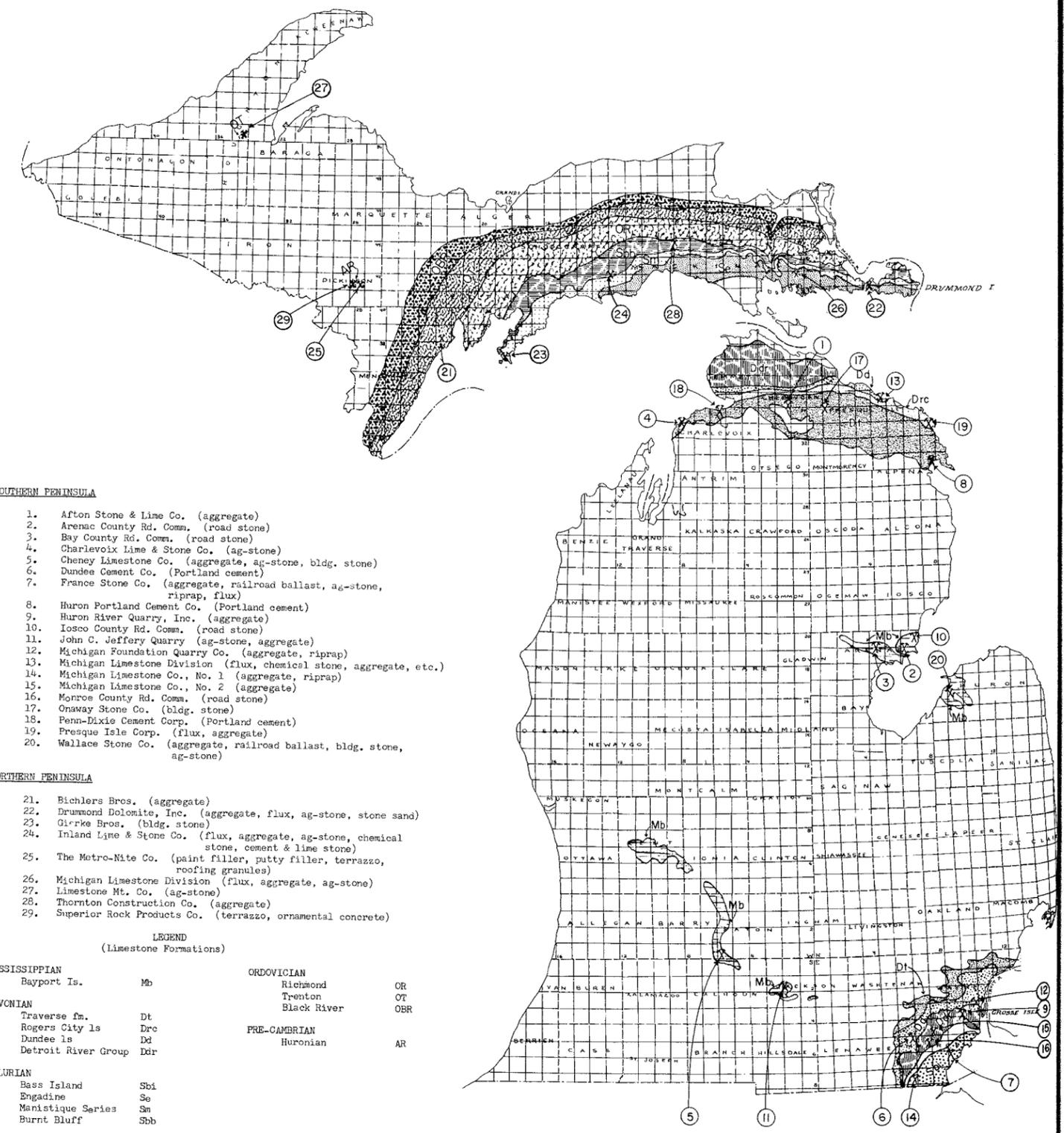
Uses	Per Cent of Total	Quantity (short tons)	Value
Flux	47.6	8,821,169	\$ 9,064,220
Concrete and road metal	32.8	6,063,671	6,694,585
Chemical*	16.1	2,985,530	3,011,461
Agricultural	2.6	486,653	694,633
Other**	.9	165,049	289,193
Total	100.0	18,522,072	\$ 19,754,092

* Includes: Alkali, calcium-carbide, sugar, glass and paper

**Includes: Paint filler, asphalt, dust for coal mines, mineral food, R. R. ballast, stone sand, and others.

MICHIGAN LIMESTONE DEVELOPMENTS

1959



Drummond Dolomite Corporation announced plans for a \$2,500,000 expansion program on Drummond Island. Plans include construction of a six mile railroad on the island between the old and new quarries. The present plant now processes 10 sizes of crushed stone for metallurgical, chemical, and construction trades. The expansion program, already started with clearing of timber, was scheduled for completion in about 3 years.

PRODUCTION OF STONE, 1954-1958

Year	Quantity (short tons)	Value	Rank in U.S.
1954	19,461,818	\$ 17,526,743	3
1955	25,312,294	23,361,852	3
1956*	33,926,000	30,951,782	2
1957*	34,377,960	34,132,045	2
1958*	26,793,457	26,418,732	2

*Includes: Limestone used in the manufacture of cement and lime.

CLAY AND SHALE

Geological formations - Glacial Drift, Saginaw, Ellsworth, Antrim.

Clay and shale are produced at widespread localities throughout the state. Antrim shale from Alpena County and Ellsworth shale from Antrim County quarries are used in the manufacture of Portland cement. Saginaw shale is used by three plants for manufacture of tile in Eaton and Shiawassee counties. All other tile, brick, pottery, lightweight aggregate and cement plants operating in the state use clay from local surface deposits. Clay produced in Saginaw County is sold for oil well drilling mud, for molding sand bond and for fertilizer.

During 1958, 1,948,444 short tons of clay and shale, valued at \$2,191,909, were produced. Wayne County led in production and value with 36 per cent of the state's total output, followed by Alpena, Saginaw, and St. Clair counties. Approximately 77 per cent of all raw clay and shale produced was used by the cement industry. The remaining 23 per cent was used for the manufacture of a small quantity of prepared clays and for clay products - brick, tile, pottery, and lightweight aggregate.

About 76 per cent of the raw material for the manufacture of clay products is from glacial clay and the balance is from shale deposits.

PRODUCTION OF CLAY AND SHALE, AND CLAY PRODUCTS, 1954 - 1958

Year	Raw Clay and Shale Quantity (short tons)	Value	Clay Products
1954	1,890,950	\$ 1,940,408	\$ 7,331,998
1955	1,937,593	2,091,077	7,292,477
1956	2,110,030	2,401,051	6,951,866
1957	2,031,890	2,266,599	6,851,113
1958	1,948,444	2,191,909	6,786,247

GYPSUM

Geological formation - Michigan.

Gypsum is quarried at Alabaster and near Tawas City, Iosco County, and is mined in two underground mines at Grand Rapids, Kent County. The raw material is processed in gypsum mills at National City, Grand Rapids, River Rouge, East Chicago, Indiana, and Waukegan, Illinois. Principal uses for gypsum are in the manufacture of plaster, wallboard, and allied building materials and as a Portland cement retarder.

Michigan has ranked first in the production of crude gypsum since 1945, producing about 18 per cent of the national total. In 1958, Michigan produced 1,330,889 short tons of crude gypsum valued at \$4,824,431.

National Gypsum Company signed a 10 year contract with Boland and Cornelius, lake vessel operators, to transport gypsum from its quarry at Tawas City to the sites of new plants at Waukegan, Illinois, and Lorain, Ohio. Stockpiling was commenced at the Waukegan plant site to be ready for the plant opening scheduled for the spring of 1959. Initial production at the Lorain plant is scheduled for the spring of 1960.

The Grand Rapids mine of Bestwall Gypsum Co. was awarded the "Sentinels of Safety" trophy in the nonmetal group of the 1958 National Safety Competition. The mine was operated 220,111 manhours without a lost-time injury.

PRODUCTION OF GYPSUM, 1954-1958

Year	Quantity (short tons)	Value	Per Cent of U.S.	Rank in U.S.
1954	1,693,279	\$ 5,035,550	18	1
1955	1,762,105	5,660,587	17	1
1956	1,715,832	5,861,152	17	1
1957	1,385,952	4,822,810	17	1
1958	1,330,889	4,824,431	-	1

LIME

Geological formations - Dundee, Burnt Bluff.

Raw stone for the manufacture of lime was obtained from the high calcium Dundee limestone in Presque Isle County and the Burnt Bluff limestone in Mackinac County.

Four companies produced quick lime and hydrated lime in the state. Production of lime in Michigan increased approximately 56 per cent and the value 55 per cent during 1958. Mason County continued to rank first in production. Ninety-six per cent of the lime sold and used was quick lime.

Until about 1900, when the chemical industries began to grow rapidly, lime was used almost entirely in construction and agriculture. Since then, progressively larger amounts have been employed in chemical and processing industries. All lime produced in the state is now sold or used for chemical and industrial use.

Lime is used to soften and purify water, to make glass, petrochemicals, bleaches, pharmaceuticals, insecticides, sugar, and leather; as a causticizing agent in paper and pulp manufacturing; and as a flux in the purification of steel.

The sale of the Limestone Products Company, Menominee, to the Northwestern - Hanna Fuel Company, Minneapolis, was announced during the year.

PEAT

Geological formation - Pleistocene. Peat is partly decomposed and more or less disintegrated vegetable matter that has accumulated in places where ordinary decay or chemical decomposition of the material has been retarded by immersion in water. A peat deposit is an accumulation of many generations of plants from one or several groups of vegetation. Thus, an individual bog may contain several different types of peat. Peat deposits of Michigan are largely in muskegs and grass-sedge marshes in basins of glacial origin. Although the most extensive deposits are in the Northern Peninsula, the bogs near centers of population in the Southern Peninsula are more important commercially. It has been estimated that the reserves of peat in Michigan total 1 billion tons.

Production increased substantially in 1958 to 107,342 tons valued at \$1,683,980. Michigan, with about one-third of the total, led all states in production followed by Florida and Washington.

Most of the peat produced was used for general soil improvement purposes. Small amounts were used in pottery, in mixed fertilizers, for packing flowers for shipments, and for several miscellaneous uses.

PRODUCTION OF PEAT, 1954-1958

Year	Quantity (short tons)	Value	Per Cent of U.S.	Rank in U.S.
1954	27,847	\$ 429,116	11.4	3
1955	30,000	465,000	11.0	3
1956	31,111	474,899	10.7	3
1957	80,271	1,406,195	25.4	1
1958	107,342	1,683,980	32.7	1

MARL

Geological formation - Pleistocene.

Michigan marl is a nearly pure amorphous calcium carbonate. Many of the large and some of the smaller lake beds of the state contain marl layers of varying thickness. In some lakes the marl is a narrow rim or shelf around the margin which in places has developed considerable thickness. The deposits of marl are limited in extent and thickness by the depression which confines them. Deposits range in area from merely a fraction of an acre to several square miles and may be from 10 to 15 feet thick. More than 30 feet of marl is of rare occurrence.

All marl produced in the state is used for agricultural purposes. Commercial marl production was reported in 18 counties during 1958. Kalamazoo County ranked first, followed by Isabella, Branch, Barry, and Calhoun counties. These counties produced approximately 67 per cent of the state output. Michigan was the leading producer of calcareous marl in 1958 with a reported production of 230,105 tons.

PRODUCTION OF MARL, 1954-1958

Year	Quantity (short tons)	Value	Rank in U.S.
1954	106,668	\$ 37,724	1
1955	119,313	57,176	1
1956	157,246	94,821	1
1957	137,020	70,635	1
1958	230,105	130,231	1

GEM STONES

A small quantity of semi-precious gems, chiefly agates and thomsonite were reported collected from the beaches of the Keweenaw Peninsula. The following minerals and stones are frequently collected in the state and when cut and polished are attractive enough to be classed as semi-precious gem stones:

Agate	Chert	Jasper	Rose Quartz
Amethyst	Chlorastrolite	Jaspilite	Thomsonite
Carnelian	Datolite	Petoskey Stone	Topaz
Chalcedony	Garnet	Prehnite	Tourmaline

VALUE OF MICHIGAN'S MINERALS AND MINERAL PRODUCTION 1943-1958

Year	Dollars	Year	Dollars
1943	\$ 147,113,888	1951	\$ 257,529,882
1944	140,493,319	1952	267,089,423
1945	128,046,408	1953	287,693,135
1946	133,682,135	1954	286,549,922
1947	170,269,272	1955	371,356,604
1948	214,115,771	1956	406,563,233
1949	207,607,694	1957	406,809,600
1950	238,474,008	1958	349,522,638

MINERAL PRODUCTS OF MICHIGAN, 1958 (1)

PRODUCT	UNIT	QUANTITY	VALUE	RANK IN U.S. (2)
Iron Ore	Long Ton	\$ 8,210,906	\$ 70,704,419	2
Cement	Barrels	20,911,990	70,432,501	4
Natural Salines (3)	-	-	42,360,677	1
Sand and Gravel	Short Ton	39,871,202	34,615,648	2
Salt	Short Ton	4,266,688	33,018,368	1
Copper	Pounds	122,059,023	31,414,330	6
Petroleum	Barrels	9,308,018	27,924,954	17
Stone (4)	Short Ton	18,584,890	19,997,224	2
Clay Products	-	-	6,786,247	-
Gypsum	Short Ton	1,330,889	4,824,431	1
Clay and Shale (5)	Short Ton	1,946,794	-	-
Peat	Short Ton	107,342	1,683,980	1
Natural Gas	M.Cu.Ft.	10,964,378	1,424,852	19
Natural Gasoline	Gallons	3,511,671	351,167	15
Marl	Short Ton	230,105	130,231	1
Miscellaneous (6)	-	-	3,853,609	-

TOTAL

\$ 349,522,638

(1) Metallic and fuel statistics compiled by Michigan Geological Survey

(2) Based upon quantity

(3) Includes bromine, magnesium compounds, calcium-magnesium, chloride, and potash

(4) Does not include 8,208,577 short tons of limestone valued at \$6,421,508

(5) Used in the manufacture of cement and clay products

(6) Includes lime, sulfur, mineral pigments, gem stones, and clay

TABLE II

MINERAL PRODUCTS OF MICHIGAN, 1957 (1)

PRODUCT	UNIT	QUANTITY	VALUE	RANK IN U.S. (2)
Iron Ore	Long Tons	\$ 13,126,746	\$ 110,605,689	2
Cement	Barrels	22,045,034	71,605,137	4
Salt	Short Tons	5,225,425	41,072,497	1
Natural Salines (3)	-	-	37,664,914	1
Sand and Gravel	Short Tons	41,837,894	35,144,352	2
Copper	Pounds	113,647,143	33,629,326	6
Petroleum	Barrels	10,168,602	30,505,806	13
Stone (4)	Short Tons	28,599,562	30,008,637	2
Clay Products	-	-	6,851,113	-
Gypsum	Short Tons	1,385,952	4,822,810	1
Clay and Shale (5)	Short Tons	2,031,890	-	8
Natural Gas	M. Cu. Ft.	6,639,813	929,574	17
Natural Gasoline	Gallons	3,495,703	349,570	15
Marl	Short Tons	137,020	70,635	1
Miscellaneous (6)	-	-	3,509,340	-

TOTAL \$ 406,809,600

- (1) Metallic and fuel statistics compiled by Michigan Geological Survey
- (2) Based upon quantity
- (3) Includes: bromine, magnesium compounds, calcium-magnesium chloride, and potash
- (4) Does not include 5,778,398 short tons of limestone valued at \$4,123,408 used in the manufacture of cement and lime
- (5) Used in the manufacture of cement and clay products
- (6) Includes: Lime, silver, sulfur, mineral pigments, peat, gem stones, and clay

PRODUCTION AND VALUE
OF
MINERALS AND MINERAL PRODUCTS
BY COUNTIES

1958

All counties reported mineral production for 1958. Wayne, Marquette, Alpena, Midland, Iron, and Ontonagon led all others in value, contributing 52 per cent of the state's total.

The quantity and value of mineral production are given on a county basis, where possible. In some cases it has been necessary to show the county value as an undistributed total or to combine them as one group at the end of the county breakdown portion to avoid disclosure of individual company operations. The number in parentheses, following the county name, indicates the county's rank in the state in value of mineral production. Figures in parentheses, following a mineral resource, show the rank of the county in production.

All indicated tonnage is in short tons (2,000 lbs.) with the exception of iron ore, which is reported in long tons (2,240 lbs.)

Mineral producers contributing production data for 1958 are listed, by county, below production data. Location of the operation, when known, is given by section, township, and range, or nearest city to operation.

	Quantity	Value
ALCONA (70)		
Sand and gravel		**
Alcona County Road Comm.	NE SW 7 25N 6E SE SW 7 26N 9E NW NE 11 26N 9E NE NW 3 25N 9E	Sand and gravel
The Taber Co.		Sand and gravel
ALGER (65)		
Sand and gravel	263,458 tons	\$ 214,809
Alger Co. Road Comm.	6 47N 20W	Sand and gravel
Duluth South Shore and Atlantic Railroad Co.	Near Au Train	Sand and gravel
Fox Valley Construction Co.	NE NE 10 46N 18W SE SE 35 46N 21W SW NW 32 46N 22W	Sand and gravel
Michigan State Hwy. Dept.		Sand and gravel

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
ALLEGAN (40)			
Petroleum		230,864 bbls.	\$ 692,592
Natural gas (1st, 31%)		3,438,615 M.cu.ft.	412,634
Sand and gravel		402,688 tons	268,167
Marl (6th, 6%)		13,620 tons	8,094
Total value			\$ 1,381,487
Cleo L. Arndt	Douglas (3½ mi. E. on 130th st.)	Marl	
	NW 23 3N 16W	Sand and gravel	
Gerald Arnsman	Allegan (1½ mi. N.)	Marl	
Bernard Damvelo	22 4N 12W	Marl	
Huitt and Son	NE SW 9 2N 13 W	Sand and gravel	
Mid-American Eng. Corp.	Near Allegan	Sand and gravel	
Emil Pavlak	NE NW 12 2N 12W	Marl	
Pickitt and Schreur	NW SE 5 1N 14W	Sand and gravel	
	SW NE 34 3N 13W		
	NE 1 3N 13W		
H. R. Vernon	NW 5 2N 16W	Sand and gravel	
Ben Waanders	NE NE 20 2N 13W	Sand and gravel	
West Shore Construction Co., Inc.	19 1N 14W	Sand and gravel	
	26 3N 14W		
	NW SE 29 4N 12W		
John G. Yerington	SW SE 17 2N 11W	Sand and gravel	
ALPENA (3)			
Cement (1st),			
Stone - crushed limestone			
Shale* (2nd), Sand and gravel			**
Gilliland Gravel Co.	W½ NW 13 32N 8E	Sand and gravel	
Huron Portland Cement Co.	NE 30 31N 7E	Shale	
	24 31N 8E	Cement	
	13 31N 8E	Limestone-crushed	
Michigan State Hwy. Dept.	SE SW 33 30N 6E	Sand and gravel	
Percy McKinnon	NE SE 23 32N 8E	Sand and gravel	

*Value of shale used in manufacture of cement not included in county total.

**Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
ANTRIM (73)			
Sand and Gravel		131,763 tons	\$ 85,701
Shale* (5th)			
Antrim Co. Rd. Comm.	NE NE 16 31N 6W	Sand and gravel	
	SE 26 32N 8W		
	NE SW 36 32N 9W		
Michigan State Hwy. Dept.		Sand and gravel	
Penn-Dixie Portland Cement Co.	SE 23 32N 8W	Shale	
The Taber Co.	SE 35 30N 6W	Sand and gravel	
ARENAC (29)			
Petroleum (6th, 7%)		613,072 bbls.	\$ 1,839,216
Undistributed: Stone, Sand and gravel			273,698
Total Value			\$ 2,112,914
Arenac Co. Rd. Comm.	NW 5 19N 7E	Sand and gravel	
Bay Co. Rd. Comm.	34 20N 5E	Limestone	
Eastman Gravel Pit	SW NW 36 19N 5E	Sand and gravel	
Iosco Co. Rd. Comm.	SW 24 20N 7E	Limestone	
BARAGA (79)			
Sand and Gravel		66,487 tons	\$ 39,530
Baraga Co. Rd. Comm.	NW 23 51N 31W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	

*Value of shale used in manufacture of cement not included in county total.

		<u>Quantity</u>	<u>Value</u>
BARRY (53)			
Sand and Gravel		463,064 tons	\$ 384,654
Undistributed: Petroleum, Marl			<u>90,321</u>
Total Value			\$ 474,975
Barry Co. Rd. Comm.	SW NW 25 2N 10W	Sand and gravel	
	SW NW 29 3N 9W		
	SE NW 4 4N 9W		
Bender Gravel Co.	SW NW 12 3N 9W	Sand and gravel	
Cole Gravel Co.	6 and 7 4N 10W	Sand and gravel	
E. R. Hamilton	13 2N 7W	Marl	
Michigan State Hwy. Dept.		Sand and gravel	
Nashville Gravel Co.	14 and 15 2N 7W	Sand and gravel	
Schau Bros.	23 2N 10W	Sand and gravel	
	28 2N 10W	Marl	
West Shore Constr. Co.	1 4N 7W	Sand and gravel	
	8 3N 7W		
	21 4N 10W		

BAY (10)

Cement (3rd), Petroleum (3rd, 8%), Lime, Sand and Gravel			**
Aetna Portland Cement Co.	Bay City	Portland Cement	
Michigan State Hwy. Dept.		Sand and gravel	
Monitor Sugar Co. Div.	Bay City	Lime	

BENZIE (83)

Sand and Gravel		13,342 tons	\$ 13,342
Michigan State Hwy. Dept.		Sand and gravel	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
BERRIEN (56)			
Sand and Gravel		558,002 tons	\$ 377,171
Marl		10,877 tons	<u>5,783</u>
Total Value			\$ 382,954
Ireland and Lester Co.	NW NW 24 4S 19W	Sand and gravel	
Harold Kiell	Niles (2 mi. N on US 31)	Sand and gravel	
	24 8S 20W	Marl	
Hugh Martel	20 8S 20W	Marl	
Robert Martin			
Michigan State Hwy. Dept.		Sand and gravel	
Portage-Manley Sand Co.		Sand	
Producers Core Sand Corp.	36 6S 20W	Sand	
Wakeman and Neva Ryno	Coloma	Sand and gravel	
C. H. Spies	4S 17W	Marl	
John G. Yerington	SW SW 29 3S 17W	Sand and gravel	
	SE SE 28 6S 18W		
	SE NW 35 6S 18W		
	SE SE 19 7S 18W		
	NE SW 36 7S 18W		
	Healey Pit		
	Howell Pit		
	Ryno Pit		
	Rhode Pit		
	Whaley Pit		

BRANCH (52)

Undistributed: Sand and Gravel, Marl (3rd)			\$ 501,789
Branch Co. Rd. Comm.	NE SE 19 6S 6W	Sand and gravel	
Case Bros.	21 6S 7W	Marl	
Pickitt and Schreur		Sand and gravel	
H. Stukey Co.	SW SE 4 6S 6W	Sand and gravel	
Woodward-Pollack Lbr. Co.	NW SW 21 6S 6W	Sand and gravel	

CALHOUN (59)

Sand and Gravel		430,196 tons	\$ 318,161
Marl (5th, 7%)		15,378 tons	<u>9,787</u>
Total Value			\$ 327,948
Carl Avery	2 Pits near Marshall	Marl	
City Eng. Battle Creek		Sand and gravel	
Battle Creek Gravel Co.	SW NE 15 1S 7W	Sand and gravel	
	NW SE 33 1S 8W		
	SW SE 4 2S 8W		
Calhoun Co. Rd. Comm.		Sand and gravel	
Emil Combs	NE SE 18 4S 5W	Sand and gravel	
Pickitt and Schreur	Various pits	Sand and gravel	
Clyde M. Reed	21 4S 7W	Marl	
Harlan Spoor	23 4S 7W	Marl	

		<u>Quantity</u>	<u>Value</u>
CASS (68)			
Sand and Gravel		293,542 tons	\$ 168,678
Marl		7,700 tons	4,620
Total Value			<u>\$ 173,298</u>
Cass Co. Rd. Comm.	SE SE 17 6S 13W NE NE 20 5S 13W NE SE 16 6S 15W	Sand and gravel	
Richard Grabmeyer	15 5S 16W	Marl	
Nieb Concrete Products Co.	NW NW 15 7S 16W	Sand and gravel	
Pickitt and Schreur	NE SW 10 5S 16W	Sand and gravel	
Otto Poehlman Jr.	13 7S 16W	Marl	
John G. Yerington	NE SW 28 7S 13W	Sand and gravel	
CHARLEVOIX (77)			
Sand and Gravel		56,510 tons	\$ 39,958
Stone		8,426 tons	18,809
Total Value			<u>\$ 58,767</u>
Charlevoix Co. Rd. Comm.	SE SE 5 32N 7W NW SW 13 32N 5W SE NW 27 33N 6W NW NE 28 33N 7W SE NE 5 33N 8W	Sand and gravel	
Charlevoix Lime and Stone Co.	29 34N 8W	Limestone-crushed	
Michigan State Hwy. Dept.		Sand and gravel	
CHEBOYGAN (75)			
Sand and Gravel, Stone		**	
Afton Stone and Lime Co.	SE 25 35N 2W	Limestone-crushed	
Hugh H. Mason and Sons	SE SW 32 33N 3W	Sand and gravel	
The Taber Co.	Various pits	Sand and gravel	
CHIPPEWA (25)			
Stone (3rd), Sand and Gravel			\$2,719,677
Chippewa Co. Rd. Comm.	NW SE 15 45N 2W E 6 46N 5W	Sand and gravel	
Drummond Dolomite, Inc.	NW NW 25 47N 1W		
I. L. Whitehead Co.	E SW 36 42N 5E N NW 23 45N 2W E 6 46N 5W NE 17 46N 7W NE SE 35 47N 1W SE SW 14 47N 1W NW NW 28 47N 3W	Dolomite-crushed Sand and gravel	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
CLARE (32)			
Petroleum (7th, 6%)		603,672 bbls.	\$ 1,811,016
Natural Gas		714,225 M.cu.ft.	85,707
Total Value			<u>\$ 1,896,723</u>
CLINTON (57)			
Sand and Gravel		398,112 tons	\$ 358,476
Shale*			
American Vitriified Products	SE 34 5N 4W	Shale	
Boichot Concrete Products	NE SW 3 5N 2W	Sand and gravel	
Clinton Co. Rd. Comm.		Sand and gravel	
Gillette Sand and Gravel	25 5N 1W	Sand and gravel	
Grand Ledge Clay Products	SE 34 5N 4W	Shale	
Michigan State Hwy. Dept.		Sand and gravel	
Walling Gravel Co.	SE NW 34 8N 2W	Sand and gravel	
Ronald Weaver	13 6N 1W	Sand and gravel	
CRAWFORD (44)			
Petroleum		182,406 bbls.	\$ 547,218
Natural Gasoline (1st, 79%)		2,755,200 gals.	275,520
Sand and Gravel		116,153 tons	80,709
Natural Gas		498,768 M.cu.ft.	59,852
Total Value			<u>\$ 963,299</u>
Crawford Co. Rd. Comm.	SE NW 27 25N 2W NW SW 9 25N 3W SW SW 27 26N 3W S SW 28 26N 3W 34 26N 3W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	

* Value of shale used in manufacture of clay products not included in county total.

DELTA (60)		Quantity	Value
Undistributed: Sand and Gravel, Stone			\$ 322,219
Bichler Bros.	NE 12 39N 23W SW 1 39N 23E	Sand and gravel Limestone-crushed	
Cloverland Milling and Supply Co.	NE SE 16 40N 22W	Sand and gravel	
Days River Sand and Gravel Co.	15 40N 22W	Sand and gravel	
Delta Co. Rd. Comm.	SE SW 10 37N 24W NE NE 5 38N 24W SW NE 12 39N 23W NE SW 24 40N 20W NW NE 28 40N 23W	Sand and gravel Sand and gravel	
Fox Valley Constr. Co.	NE NW 28 39N 23W Diedrich Pit Bergstrom Pit	Dolomite-crushed Sand and gravel	
Thornton Constr. Co.	NE NW 28 39N 23W	Dolomite-crushed	

DICKINSON (54)

Sand and Gravel		305,562 tons	\$ 255,529
Stone		4,683 tons	106,634
Iron Ore		15,215 tons	64,055
Total Value			\$ 426,218
Dickinson Co. Rd. Comm.	SE NW 7 41N 27W C SE 20 42N 28W SE 28 42N 30W	Sand and gravel	
Fox Valley Constr. Co.	SE NE 20 39N 28W SE SW 23 40N 31W	Sand and gravel	
Jackson Iron and Steel Co.		Iron Ore	
Bradley Open Pit	25 40N 31W	Dolomite-crushed	
The Metro-Nite Co.	NW 35 42N 28W	Sand and gravel	
Michigan State Hwy. Dept.		Hornblende Schist-crushed	
Superior Rock Products Co.	SW SE 30 42N 29W SE SE 19 42N 29W NW SW 35 42N 30W	Feldspar-crushed Dolomite-crushed	

EATON (37)		Quantity	Value
Undistributed: Clay Products (3rd), Sand and Gravel, Stone, Shale*			\$ 1,649,631
American Vitrified Products	NE 10 4N 4W	Tile	
Cheney Limestone Co.	NE 29 1N 6W	Limestone-crushed	
O. E. Gooding and Co.	E NW 13 2N 3W	Sand and gravel	
Grand Ledge Clay Products	SE 3 4N 6W	Shale-Tile	
Pryor Bros.	NW SW 7 2N 4W SW SE 3 3N 3W SE NW 15 3N 3W SE NE 7 3N 4W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Vermontville Gravel Co.	W NE 20 3N 6W	Sand and gravel	
West Shore Constr. Co.	32 1N 5W 28 2N 4W	Sand and gravel	
	Swafford Pit Bust Pit		
EMMET (12)			
Portland Cement, Stone, Sand and Gravel			**
Michigan State Hwy. Dept.		Sand and gravel	
Penn-Dixie Cement Corp.	2 34 N 6W	Limestone-crushed, Portland Cement	
GENESEE (51)			
Sand and Gravel		513,357 tons	\$ 495,948
Petroleum		3,996 bbls.	11,988
Total Value			\$ 507,936
Ferguson Excavating Co.	Richfield Twp.	Sand and gravel	
Kurtz Gravel Co.	SE SW 1 8N 7E SE NE 20 8N 7E SW SE 1 8N 7E	Sand and gravel	
Mathews Gravel Co.		Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Paul C. Miller	NE NW 10 9N 8E	Sand and gravel	
Otisville Stone Co.	S NE 13 9N 8E	Sand and gravel	
John Post and Sons	SW NW 7 6N 5E	Sand and gravel	
Saginaw Core Sand Co.	SE NE 28 9N 8E	Sand and gravel	
Justus Snellenberger	SE 16 9N 5E	Sand and gravel	

* Value of shale used in manufacture of clay products not included in county total.

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
GLADWIN (38)			
Petroleum (9th, 5%)		493,489 bbls.	\$ 1,480,467
Sand and Gravel		52,618 tons	<u>42,200</u>
Total Value			\$ 1,522,667
Gladwin Co. Rd. Comm.	S SE 26 18N 2W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
GOGEBIC (7)			
Iron Ore (3rd, 17%)		1,393,528 tons	\$11,802,903
Sand and Gravel		213,011 tons	<u>180,873</u>
Total Value			\$11,983,776
Fox Valley Construction Co.	NE SW 13 47N 46W SE NE 17 49N 45W	Sand and gravel	
Gogebic Co. Rd. Comm.	NE SW 17 45N 38W SW SE 13 45N 39W SE SW 8 48N 46W	Sand and gravel	
Ironwood Concrete Products Co.	5 47N 47W	Sand and gravel	
Lake Superior Gravel Co.	NW SW 31 48N 46W NW SW 33 48N 46W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
North Range Mining Co.		Iron Ore	
Penokee Group	Ironwood		
Elmer Puspanen	SE NW 33 48N 46W	Sand and gravel	
Pickands Mather and Co.		Iron Ore	
Davis Geneva Mine	18, 19 47N 46W		
Newport Bonnie Mine	24 47N 46W		
Peterson Mine	16, 17 47N 46W		
Sunday Lake Mine	9 47N 45W		
Pittsburgh Pacific Co.		Iron Ore	
Wakefield Mine	Wakefield		
GRAND TRAVERSE (76)			
Sand and Gravel			**
Michigan State Hwy. Dept.		Sand and gravel	
Paul C. Miller	SE NW 6 26N 10W SW SW 2 26N 11W SW NW 34 26N 11W Thacker Pit Robertson Pit Harris Pit Olson Pit Sears Pit	Sand and gravel	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
GRATIOT (17)			
Bromine (3rd), Salt, Magnesium Compounds, Calcium-Magnesium Chloride, Sand and gravel, petroleum			**
Gratiot Co. Rd. Comm.	NW SE 34 11N 4W NW NW 18 12N 4W	Sand and gravel	
Michigan Chemical Corp.	St. Louis	Bromine, Calcium-Magnesium Chloride, Magnesium Compounds, Salt	
Michigan State Hwy. Dept.		Sand and gravel	
Mid-America Eng. Corp.		Sand and gravel	
North Star Gravel Co.	NW SE 22 10N 2W NE SE 34 11N 4W	Sand and gravel	
P and B Gravel Co.	9 10N 1W	Sand and gravel	
The Taber Co.		Sand and gravel	
HILLSDALE (28)			
Petroleum (8th, 6%)		527,253 bbls.	\$ 1,581,759
Sand and Gravel		685,087 tons	<u>537,699</u>
Marl		644 tons	<u>386</u>
Total Value			\$ 2,119,844
Bundy Hill Gravel Co.	7 & 8 5S 1W	Sand and gravel	
Comstock Constr. Co.	23 8S 2W	Sand and gravel	
H. Eckley	8S 2W	Sand and gravel	
O. E. Gooding and Co.	NE SW 23 8S 2W	Sand and gravel	
John Hess	4 5S 3W	Marl	
Hillsdale Co. Rd. Comm.	NE NE 15 5S 2W NE SE 11 5S 3W SE NW 22 5S 4W SE SE 9 6S 3W NE NW 9 6S 3W SW SE 5 7S 2W NW NE 10 7S 2W SW SE 25 7S 2W NW NE 33 7S 3W SE SE 1 7S 4W SE NE 30 7S 4W NE SW 23 8S 2W	Sand and gravel	
Hoover Bros.		Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Northwest Materials, Inc.	SW 23 8S 2W	Sand and gravel	
Pickitt and Schreur		Sand and gravel	
Art Russell's Concrete	14 6S 3W	Sand and gravel	
Saginaw Core Sand Co.		Sand and gravel	
Southern Mich, Materials, Inc.	NW SW 23 8S 2W	Sand and gravel	
Lowell W. Stukey		Marl	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
HOUGHTON (18)			
Copper (3rd, 13%) Undistributed, Stone, Sand and Gravel Total Value		16,345,030	\$ 4,206,720
			<u>94,261</u>
			\$ 4,300,981
Calumet and Hecla, Inc. Centennial Mine Osceola Mine Reclamation Copper Range Co. Champion Mine Reclamation Copper Range R.R. Co. Houghton Co. Rd. Comm. Limestone Mountain Co. Michigan State Hwy. Dept. Quincy Mining Co. Reclamation	18 56N 32W 23 56N 33W 12 55N 33W 31 54N 34W Redridge NW SW 33 55N 33W SE 15 54N 34W NW NE 17 56N 32W Arcadian Mine SW 24 51N 35W	Copper Copper Sand and gravel Trap Rock - crushed Dolomite-crushed Sand and gravel Copper	

HURON (43)

Stone (5th), Sand and Gravel, Petroleum			\$1,049,441
Huron Co. Rd. Comm. O. E. Gooding and Co.	SE SE 17 16N 13E SW SW 35 16N 13E Rooney Pit	Sand and gravel Sand and gravel	
Michigan State Hwy. Dept. Wagner Sand and Gravel	SW SW 22 16N 15E SE NE 20 16N 13E NE SW 27 16N 15E	Sand and gravel Sand and gravel	
The Wallace Stone Co.	SW NE 5 16N 10E	Limestone-crushed and dimensional	

INGHAM (49)

Sand and Gravel		766,831 tons	\$ 641,421
Central Michigan Sand and Gravel Cheney Gravel Co. Fisher Supply Co. Ford and Co.	SE SW 24 3N 2W SW SE 11 3N 2W 34 4N 2W SE 19 3N 2W	Sand and gravel Sand and gravel Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
INGHAM (contd.)			
Ingham Co. Rd. Comm.	NE SW 16 1N 2W E SW 21 1N 2W NE NE 10 2N 1E SE NE 15 2N 1E SE NW 14 2N 2E NE NW 26 2N 2E SW SE 7 2N 2W SW SE 34 3N 1E SW SE 25 3N 2E NE NW 25 3N 2W SE SE 30 3N 2W	Sand and gravel	
S. E. Ketchum and Sons Mason Gravel Co. Scarlett Gravel Co. Ronald Weaver	NW 36 3N 2W 25 2N 2W 25 3N 2W 11 1N 2W 14, 34 2N 1E 9 2N 1W	Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
	7, 24, 25, 34 2N 2W 25, 35 3N 2W	Sand and gravel	
West Lansing Gravel Co.	SE 3 4N 2W	Sand and gravel	

IONIA (47)

Sand and Gravel (9th, 3%) Petroleum		980,467 tons	\$ 814,849
		3,381 bbls.	<u>11,143</u>
			\$ 825,992
Ionia Co. Rd. Comm.	NE SW 18 5N 5W SE NE 24 5N 7W SE SE 8 6N 5W NW SW 28 6N 5W NE SW 15 7N 5W SW SE 21 7N 6W NW NE 33 7N 7W 30 7N 5W	Sand and gravel Sand and gravel Sand and gravel	
Harold L. Martin Michigan State Hwy. Dept. Pickitt and Schreur	NW SE 21 7N 6W NE NE 16 7N 5W	Sand and gravel Sand and gravel	

IOSCO (19)

Gypsum (1st)			**
National Gypsum Co. U. S. Gypsum Co.	35 22N 6E 27 21N 7E	Gypsum Gypsum	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
IRON (5)			
Iron (2nd, 38%)		3,080,024 tons	\$ 25,047,063
Sand and Gravel		130,825 tons	143,841
Total Value			\$ 25,190,904
M. A. Hanna Co.		Iron Ore	
Cannon Mine	36 43N 35W		
Hiawatha Mine	35, 36 43N 35W		
Homer-Cardiff-Minckler	22, 23 43N 35W		
Wauseca-Aronson Mine	23 43N 35W		
Inland Steel Co.		Iron Ore	
Bristol-Youngstown Mine	19, 20 43N 32W		
Sherwood Mine	23 43N 35W		
Iron Co. Rd. Comm.	SW SW 29 42N 32W	Sand and gravel	
	NW NE 18 43N 32W		
	SW SW 7 43N 35W		
	SE NW 1 43N 36W		
	SW SE 8 44N 33W		
	SE NW 15 44N 33W		
	NE NE 22 44N 33W		
	NE NW 36 44N 34W		
	NW NW 10 44N 37W		
	NW SW 20 45N 33W		
Iron River Lbr. and Fuel Co.	SW SW 6 43N 35W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
North Range Mining Co.		Iron Ore	
Book Mine	12 42N 33W		
Pickands Mather Co.		Iron Ore	
Baltic Group	6, 7 42N 34W		
Fortune Lake	24, 25, 26 43N 33W		
Republic Steel Corp.		Iron Ore	
Monongahela Mine	36 43N 33W		
Tobin-Columbia Mine	30, 31 43N 32W		

ISABELLA (22)

Petroleum (2nd, 9.9%)	923,765 bbls.	\$ 2,771,295
Sand and Gravel	269,779 tons	199,484
Natural Gas	374,623 M.cu.ft.	44,955
Marl (2nd, 21%)	48,184 tons	26,988
Natural Gasoline (2nd, 7%)	252,506 gals.	25,251
Total Value		\$ 3,067,973

Gatehouse Bros.	35 15N 6W	Marl
George Hubscher	22 14N 5W	Sand and gravel
	7 16N 3W	
Stewart and Schaefer		Marl
William Stuart	12 15N 5W	Marl
C. Utterback	35 15N 6W	Sand and gravel

		<u>Quantity</u>	<u>Value</u>
JACKSON (50)			
Sand and Gravel		436,436 tons	\$ 383,609
Stone		51,826 tons	207,981
Marl		9,518 tons	4,011
			\$ 595,601
Barnes and Brothers	Horton	Marl	
W. A. Cecil and Sons	Concord	Sand and gravel	
O. E. Gooding and Co.	SW SW 35 1S 2E	Sand and gravel	
John Hess	Hanover	Marl	
Jackson Co. Rd. Comm.	SE SE 29 1S 1W	Sand and gravel	
Jeffery Limestone Co.	SE 30 2S 2W	Limestone-crushed	
Klump Bros.	SE SE 1 2S 2E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Original Sandstone Quarry	NE NW 6 4S 2E	Sandstone	
Palmer Sand and Gravel	SW NW 8 3S 1E	Sand and gravel	
Ray Sandstone Quarry	NE NW 6 4S 2E	Sandstone	
Star Sandstone Co.	SW SE 31 3S 2E	Sandstone	
Gordon D. Stevick	NW SE 26 2S 1W	Sand and gravel	
	SE SW 17 3S 2E		
Willson Bros.	Rives Junction	Sand and gravel	

KALAMAZOO (48)

Sand and Gravel	731,976 tons	\$ 721,133
Marl (1st, 24%)	54,278 tons	31,527
Petroleum	2,516 bbls.	7,548
		\$ 760,208

American Aggregates Corp.	SW NW 15 1S 11W	Sand and gravel
Roy Coville	Climax	Marl
Concrete Products & Building Supplies	NE SE 8 2S 11W	Sand and gravel
Gravel Producers, Inc.	Portage and Cooper Twps.	Sand and gravel
Lawrence Hayward	Brady and Climax Twps.	Marl
Michigan State Hwy. Dept.		Sand and gravel
Pickitt and Schreur	NE NW 34 1S 11W	Sand and gravel
Fred Rumz	30 4S 10W	Marl
Dan Slack	9 1S 12W	Marl
John G. Yerington	NW SW 19 1S 9W	Sand and gravel

KALKASKA (66)

Petroleum	41,178 bbls.	\$ 123,534
Natural gas	498,769 M.cu.ft.	59,852
Sand and Gravel	57,770 tons	31,316
Total Value		\$ 214,702

Kalkaska Co. Rd. Comm.	25N 8W	Sand and gravel
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		<u>Quantity</u>	<u>Value</u>
KENT (23)			
Sand and Gravel (4th, 5%) Undistributed: Gypsum (2nd), Petroleum, Natural Gas Total Value		2,151,363 tons	\$ 1,767,453 <u>1,236,435</u> \$ 3,003,888
Bestwall Gypsum Co. The Chesapeake and Ohio R. R. Co. Coit Ave. Gravel Co. Ed. DeVries and Sons Grande Brick Co. City Eng. Grand Rapids Grand Rapids Gravel Co.	SW 34 7N 12W 9 6N 12W 29 8N 11W NE 22 7N 12W Grand Rapids	Gypsum Sand and gravel Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
Grand Rapids Gypsum Co. Kent Co. Rd. Comm.	SE SW 3 6N 12W NW NE 9 6N 12W SE NW 9 6N 12W NE NW 16 6N 12W SW SW 33 7N 12W NE 34 7N 12W NE SW 27 5N 10W SE SE 20 6N 9W NE NE 32 7N 9W SE SW 11 10N 12W	Sand and gravel Sand and gravel	
Michigan State Hwy. Dept. Paul C. Miller Northeast Gravel Co. Pekaer and Van Doorn H. F. Postma Gravel Co.	16 10N 11W NE SW 24 8N 11W NE NE 16 6N 12W SE SW 8 6N 12W SW SE 9 6N 12W	Sand and gravel Sand and gravel Sand and gravel Sand and gravel	
Pickitt and Schreur	NE NE 10 6N 9W NE NW 25 5N 12W SW SE 23 8N 11W	Sand and gravel	
Riverside Sand and Gravel Co. United States Gypsum Co. West Shore Constr. Co.	SE SW 33 7N 12W NE 34 7N 12W NW NE 16 6N 12W Beasecker Pit	Sand and gravel Gypsum Sand and gravel	

KEWEENAW (14)

Copper (2nd, 20%) Sand and Gravel Total Value		23,886,930 lbs. 103,364 tons	\$ 6,147,779 <u>121,988</u> \$ 6,269,767
Calumet and Hecla, Inc. Ahmeek No. 2 Allouez No. 3 Peninsula Seneca No. 2 Keweenaw Co. Rd. Comm. Michigan State Hwy. Dept. Thornton Constr. Co.	28 57N 32W 32 57N 32W 28 57N 32W 27 57N 32W SW NE 29 58N 30W	Copper Sand and gravel Sand and gravel Sand and gravel	

		<u>Quantity</u>	<u>Value</u>
LAKE (72)			
Sand and Gravel Petroleum Total Value		158,400 tons 6,140 bbls.	\$ 84,795 <u>18,420</u> \$103,215
Michigan State Hwy. Dept. Lake Co. Rd. Comm.	SE NE 23 18N 13W NW SE 10 20N 14W	Sand and gravel Sand and gravel	
LAPEER (64)			
Sand and Gravel Petroleum Total Value		430,101 tons 119 bbls.	\$ 224,694 <u>357</u> \$ 225,051
Lapeer Co. Rd. Comm.	NE SE 11 6 N 10E NE NW 1 8 N 9E SE SW 30 8 N 10E SW SE 16 9 N 10E NW SW 28 9 N 12E	Sand and gravel	
Michigan State Hwy. Dept. Pine Sand and Gravel	NW SW 28 9 N 12E NW 12 7 N 10E	Sand and gravel Sand and gravel	
LEELANAU (78)			
Sand and Gravel Leelanau Co. Rd. Comm.	NE NW 16 28N 13W SW SE 12 29N 13W SW NW 19 32N 10W	114,613 tons	\$ 57,307
LENAWEE (20)			
Undistributed: Cement, Sand and Gravel, Clay Products, Clay*			\$ 3,806,090
Adrian Sand and Gravel Comfort Brick and Tile Co. Consolidated Cement Corp.	Adrian SW 2 6S 5E NE 5 5S 1E SW 5 7S 1E	Sand and gravel Clay and tile Portland cement Clay	
O. E. Gooding and Co.	SW NE 13 8S 1E Tirb Pit Tecumseh Pit Dowling Pit Alger Pit Onstead Pit Dubois Pit Thomas Pit	Sand and gravel	

* Value of clay used in manufacture of cement and clay products not included in county breakdown.

		<u>Quantity</u>	<u>Value</u>
LENAWEE (contd.)			
Lenawee Co. Rd. Comm.	SE SE 4 6S 4E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Stamm Bros. Gravel Co.	SW NE 19 7S 3E	Sand and gravel	
Tecumseh Gravel Co.	SW NE 4 6S 4E	Sand and gravel	
Tecumseh Materials, Inc.	NE SE 4 6S 4E	Sand and gravel	
John Woerner	SE SW 28 6S 3E	Sand and gravel	
LIVINGSTON (24)			
Sand and Gravel (3rd, 6%)		2,258,275 tons	\$ 2,669,798
Natural Gas		559,906 M.cu.ft.	67,189
Total Value			\$ 2,736,987
American Aggregates Corp.	NE NE 11 1N 6E	Sand and gravel	
D. and J. Gravel Co.	SW SW 32 3N 4E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Ronald Weaver	32 3N 4E	Sand and gravel	
LUCE (67)			
Sand and Gravel		182,367 tons	\$ 174,787
Fox Valley Construction Co.	SE SW 28 45N 11W	Sand and gravel	
Luce Co. Rd. Comm.	SW SE 11 45N 10W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
MACKINAC (16)			
Stone (2nd), Sand and Gravel			**
Inland Lime and Stone Co.	6 42N 12W	Limestone-crushed	
Mackinac Aggregates Corp.	7 and 8 42N 1 W	Sand and gravel	
Mike Mangene	SE NE 24 42N 1 E	Sand and gravel	
Michigan Limestone Div.			
U. S. Steel Corp.	10 42N 1 E	Limestone-crushed	
Michigan State Hwy. Dept.		Sand and gravel	
Lawrence Tamlyn	SW SW 6 40N 3 W	Sand and gravel	
Thornton Constr. Co., Inc.	NW NW 6 44N 8 W	Limestone-crushed	

* Value of clay used in manufacture of cement and clay products not included in county total.

**Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
MACOMB (42)			
Sand and Gravel (7th, 4%)		1,530,510 tons	\$ 1,198,716
Advance Bldg. Materials Inc.	NE NW 8 4N 12E	Sand and gravel	
	SE NE 31 3N 12E		
Great Lakes Gravel Co.	NW NW 31 3N 12E	Sand and gravel	
Hygrade Sand and Gravel Co.	NE 8 4N 12E	Sand and gravel	
Fred Kaatz	16 4N 14E	Sand and gravel	
Macomb Co. Rd. Comm.	8 4N 12E	Sand and gravel	
	22 5N 12E		
	19 5N 13E		
Macomb Sand and Gravel	SW SW 30 3N 12E	Sand and gravel	
Maertens Sand and Gravel	SE NE 30 3N 12E	Sand and gravel	
	SE SW 5 4N 12E	Sand and gravel	
Louis Marsack and Sons	NW NW 3 1N 13E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Morgan Sand and Gravel	30 3N 12E	Sand and gravel	
Ray Industries, Inc.	NE SW 18 3N 12E	Sand and gravel	
S. K. Rogers	21 3N 14E	Sand and gravel	
Smith Sand and Gravel Co.	NW SE 8 4N 12E	Sand and gravel	
Underwood Sand and Gravel Co.	19 3N 12E	Sand and gravel	
Wolverine Contractors Inc.		Sand and gravel	
Allen Zavitz	2N 14E	Sand and gravel	
MANISTEE (8)			
Undistributed: Salt (4th), Magnesium Compounds (1st), Bromine (2nd), Sand and Gravel			\$11,925,724
Frank L. Gauthier	23 23N 16W	Sand and gravel	
Great Lakes Chemical Corp.	SE SW 18 21N 16W	Bromine	
Manistee Co. Rd. Comm.	6 and 7 23N 14W	Sand and gravel	
Manistee Salt Works	Manistee	Salt	
Michigan Chemical Corp.	NW 7 21N 16W	Bromine	
Michigan State Hwy. Dept.		Sand and gravel	
Morton Chemical Co.	12 21N 7W	Bromine, Calcium Magnesium Chloride, Magnesium Compounds	
Morton Salt Co.		Salt	
Sand Products Corp.	N $\frac{1}{2}$ 11 21N 17W	Sand	
Standard Lime and Cement Co.	SE 18 21N 16W	Magnesium Compounds	

		<u>Quantity</u>	<u>Value</u>
MARQUETTE (2)			
Iron (1st, 45%)		3,722,139 tons	\$33,790,398
Sand and Gravel		467,527 tons	427,295
Total Value			<u>\$34,217,693</u>
The Cleveland Cliffs Iron Co.		Iron Ore	
Bunker Hill Mine	6 47N 26W		
Cambria-Jackson Mine	35, 36 48N 27W		
Cliffs Shaft Mine	3, 9, 10 47N 27W		
Humbolt Open Pit	10, 15 47N 29W		
Maas Race Course Mine	31 48N 26W		
Mather "A" Mine	2 47N 27W		
Mather "B" Mine	1 47N 27W		
Republic Open Pit	7 46N 29W		
Tilden Open Pit	26 47N 27W		
Inland Steel Co.		Iron Ore	
Morris Mine	1, 2 47N 28W		
Greenwood Mine	14, 23 47N 28W		
Jones and Laughlin Steel Corp.		Iron Ore	
Tracy Mine	7, 8, 48N 26W		
Lake Superior and Ishpeming R.R.		Sand and gravel	
A. Lindberg and Sons, Inc.	SE SE 8 47N 24W	Sand and gravel	
	NW NW 17 47N 25W		
	NE NW 5 47N 26W		
	SE SE 36 48N 28W		
City Eng. Marquette		Sand and gravel	
Marquette Co. Rd. Comm.	NE NW 1 45N 23W	Sand and gravel	
	SE SW 36 46N 23W		
	NW SE 4 47N 29W		
Michigan State Hwy. Dept.		Sand and gravel	
North Range Mining Co.		Iron Ore	
Champion Mine	31 48N 29W		
Pickands Mather and Co.		Iron Ore	
Volunteer-Maitland			
Open Pit	25, 30 47N 26W		

MASON (13)			
Calcium-Magnesium Chloride (2nd)			
Lime (1st), Magnesium Compounds (3rd),			
Petroleum, Bromine, Sand and Gravel,			
Natural Gasoline, Natural Gas			**
The Dow Chemical Co.	NW SW 23 18N 18W	Bromine, Calcium-	
		Magnesium Chloride,	
		Magnesium Compounds,	
		Lime	
Mason Co. Rd. Comm.	SW SW 11 18N 15W	Sand and gravel	
	18 18N 16W		
Michigan State Hwy. Dept.		Sand and gravel	
Sargent Sand Co.	SW 33 19N 18W	Sand	

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
MECOSTA (58)			
Petroleum		74,710 bbls.	\$224,130
Sand and Gravel		146,770 tons	71,864
Natural Gas		270,729 M.cu.ft.	32,487
Marl		9,984 tons	5,360
Total Value			<u>\$333,841</u>
Central Concrete Products	14 15N 10W	Sand and gravel	
Wilson Frost	17 13N 7W	Marl	
Mecosta Co. Rd. Comm.	NE NE 32 15N 9W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Orville Truman	13N 8W	Marl	

MENOMINEE (45)			
Undistributed: Lime (3rd),			
Sand and Gravel			\$939,156
Fox Valley Constr. Co.	SW 17 36N 28W	Sand and gravel	
	NW NW 19 38N 25W		
	NW SW 2 38N 27W		
Menominee Co. Rd. Comm.	SE NE 33 35N 26W	Sand and gravel	
	NE NE 9 39N 25W		
Northwestern-Hanna Fuel Co.	Menominee	Lime	
Walsh Sand and Gravel Co.	SW SW 21 33N 27W	Sand and gravel	

MIDLAND (4)			
Bromine (1st), Salt (2nd), Calcium-			
Magnesium Chloride (1st), Magnesium			
Compounds (1st), Petroleum, Potash(1st),			
Sand and Gravel, Natural Gasoline,			
Natural Gas			**
The Dow Chemical Co.	Midland	Bromine, Calcium-	
		Magnesium Chloride,	
		Potash, Magnesium	
		Compounds, Salt	
Fisher Sand and Gravel Co.	NE SW 19 14N 2E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Saginaw Core Sand Co.	SE 21 13N 2E	Sand	
	NW 34 13N 2E		

** Mineral value included under undistributed at end of county breakdown.

		<u>Quantity</u>	<u>Value</u>
MISSAUKEE (41)			
Petroleum (10th, 5%)		431,873 bbls.	\$1,295,619
Natural Gas		138,572 M.cu.ft.	16,629
Undistributed: Sand and Gravel, Natural Gas, Marl			<u>53,995</u>
Total Value			\$ 1,360,905
C. Stanley Hooker	3 21N 7W	Marl	
Pickitt and Schreur		Sand and gravel	

MONROE (33)			
Undistributed: Stone (4th), Clay Products, Petroleum, Clay*, Sand and Gravel			\$1,808,956
The France Stone Co.	SE 7 7S 9E	Dolomite-crushed	
Maybee Stone Co.	29 5S 8E	Dolomite-crushed	
Michigan State Hwy. Dept.		Sand and gravel	
Michigan Stone Co.	SW 25 8S 6E	Dolomite-crushed	
Monroe Co. Rd. Comm.	SW 13 6S 7E	Dolomite-crushed	
F. W. Ritter Sons Co., Inc.	SE 16 5S 10E	Clay-Pottery	

MONTCALM (21)			
Petroleum (1st, 10%)		954,539 bbls.	\$2,863,517
Sand and Gravel		371,637 tons	152,593
Natural Gas		83,569 M.cu.ft.	<u>100,283</u>
Total Value			\$3,116,393
The Dyer Co.	SE SE 8 12N 5W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Montcalm Co. Rd. Comm.	NE SE 13 10N 6W	Sand and gravel	
	NE NE 24 10N 6W		
	NE NW 10 11N 8W		
	SE SE 8 12N 5W		
Frank H. Stoerk	Pierson	Sand and gravel	

MONTMORENCY (81)			
Sand and Gravel		52,347 tons	\$ 29,815
Petroleum		86 bbls.	<u>258</u>
Total Value			\$ 30,073
Montmorency Co. Rd. Comm.	SW NW 27 30N 1E	Sand and gravel	
	NE NW 28 30N 1E		
	NE NW 9 32N 4E		
	11 30N 4E		

* Value of clay used in manufacture of clay products not included in county total.

		<u>Quantity</u>	<u>Value</u>
MUSKEGON (35)			
Undistributed: Sand and Gravel, Salt, Petroleum, Natural Gas			\$1,674,733
Hooker Electro-Chemical Co.	NE 31 12N 17W	Salt	
Michigan State Hwy. Dept.		Sand and gravel	
Paul C. Miller	E SE 32 10N 13W	Sand and gravel	
Nugent Sand Co., Inc.	3 9N 17W	Sand	
Oceana Sand and Gravel, Inc.	12N 16W	Sand and gravel	
Sand Products Corp.	E $\frac{1}{2}$ 28 10N 17W	Sand	

NEWAYGO (55)			
Petroleum		122,260 bbls.	\$ 366,780
Sand and Gravel		56,448 tons	38,438
Marl		2,582 tons	<u>1,549</u>
Total Value			\$ 406,767
K. and V. Gravel Co.	NE NW 21 12N 12W	Sand and gravel	
Dennis Lettinga	29 11N 11W	Marl	
Michigan State Hwy. Dept.		Sand and gravel	
Paul C. Miller	Croton Pit	Sand and gravel	

OAKLAND (15)			
Sand and Gravel (1st, 15%)		6,048,208 tons	\$5,695,135
Petroleum		1,030 bbls.	<u>3,090</u>
Total Value			\$5,698,225
American Aggregates Corp.	NE NW 22 5N 10E	Sand and gravel	
American Stone Products		Sand and gravel	
Floyd Beardslee	S $\frac{1}{2}$ SE 2 2N 10E	Sand and gravel	
	NE NW 11 2N 10E		
The Benjamin Pit	SW 35 2N 9E	Sand and gravel	
Ray Betham and Son	13 1N 7E	Sand and gravel	
Beardslee Gravel Pit	NW NW 7 3N 9E	Sand and gravel	
	SW SE 36 4N 8E		
J. Gladstone and Son	NE 8 3N 11E	Sand and gravel	
O. E. Gooding and Co.	NW NE 33 2N 7E	Sand and gravel	
	NE SE 34 2N 7E		
	SW SW 32 5N 9E		
Holly Mfg. and Mining Co.	NE SE 32 5N 8E	Sand and gravel	
John R. Sand and Gravel Co.	SE 4 4N 10E	Sand and gravel	
Kemler Bros.	SW SW 36 5N 11E	Sand and gravel	
Koan Gravel Co.	SE NE 28 5N 7E	Sand and gravel	
Koenig Coal and Supply Co.	NW 1 3N 8E	Sand and gravel	
	SW SE 24 5N 10E		

			Quantity	Value
OAKLAND (contd.)				
A. S. Leffler Gravel Co.	NE NE 5	4N 8E	Sand and gravel	
Michigan State Hwy. Dept.			Sand and gravel	
Mickelson Corp.	NE NW 21	3N 8E	Sand and gravel	
Paul C. Miller	Rupp Pit		Sand and gravel	
	Wissusik Pit			
New Hudson Sand and Gravel	NW NE 33	2N 7E	Sand and gravel	
Oakland Sand and Gravel	SE SE 8	2N 8E	Sand and gravel	
Oxford Mining Co.	4	4N 8E	Sand and gravel	
Oakland Co. Rd. Comm.	SE SE 9	2N 8E	Sand and gravel	
	NW NW 1	3N 10E		
	SE SW 8	4N 8E		
	SE SW 32	5N 9E		
	SW SE 36	5N 11E		
Pontiac City Eng.			Sand and gravel	
Slaters Bald Mountain				
Gravel Pit	SW 36	4N 10E	Sand and gravel	
Underwood Sand and Gravel Co.	SW 2	3N 10E	Sand and gravel	
Lyle J. Walker Sand and Gravel	SE SW 2	2N 11E	Sand and gravel	
F. S. Ward	NW NE 7	3N 9E	Sand and gravel	
Wolverine Contractors Inc.			Sand and gravel	

OCEANA (46)

Petroleum	302,660 bbls.	\$907,980
Undistributed: Natural Gas,		
Sand and Gravel, Marl		<u>22,338</u>
Total Value		\$930,318
Ted Lamdrix	25 16N 18W	Marl
Michigan State Hwy. Dept.		Sand and gravel

OGEMAW (30)

Petroleum (5th, 7%)	619,861 bbls.	\$1,859,583
Sand and Gravel	224,603 tons	149,418
Natural Gas (4th, 7%)	742,609 M.cu.ft.	<u>89,113</u>
Total Value		\$2,098,114
Ehinger Bros.		Sand and gravel
Ogemaw Co. Rd. Comm.	NE SE 3	21N 1E
	NE SE 6	21N 2E
	NW SW 5	22N 2E
	NE SE 6	22N 2E
	NW SE 33	22N 3E
Walter Rosevear	NE SE 6	22N 2E
The Taber Co.	SW SW 21	22N 3E
C. Utterback		Sand and gravel

		Quantity	Value
ONTONAGON (6)			
Copper (1st, 67%)		81,827,063 lbs.	\$21,059,831
Sand and Gravel		312,976 tons	<u>219,811</u>
Total Value			\$21,279,642
Calumet and Hecla Inc.		Copper	
Caledonia Mine	Greenland		
Fox Valley Construction Co.	NE SE 13 51N 43W	Sand and gravel	
	NW SW 18 51N 42W		
Michigan State Hwy. Dept.		Sand and gravel	
Ontonagon Co. Rd. Comm.	Various Pits	Sand and gravel	
White Pine Copper Co.		Copper	
White Pine Mine	4, 5, 9 5N 42W		
OSCEOLA (26)			
Petroleum (4th, 7%)		703,301 bbls.	\$2,109,903
Sand and Gravel		283,355 tons	259,140
Undistributed: Natural Gas,			
Marl			<u>52,628</u>
Total Value			\$2,421,671
C. Stanley Hooker	24 20N 10W	Marl	
	1 20N 8W		
Michigan State Hwy. Dept.		Sand and gravel	
The Taber Co.	Newman Pit	Sand and gravel	
	Hog St. ram pit		
The Wallace Stone Co.		Sand and gravel	
Hersey Sand and Gravel Div.	NW SW 20 17N 9W		
OSCODA (82)			
Sand and Gravel		10,303 tons	\$10,303
Petroleum		1,902 bbls.	<u>5,706</u>
Total Value			\$16,009
Michigan State Hwy. Dept.		Sand and gravel	
OTSEGO (80)			
Sand and Gravel		57,855 tons	\$36,979
Natural Gas		11,307 M.cu.ft.	1,357
Petroleum		238 bbls.	<u>714</u>
Total Value			\$39,050
Hutchins Sand and Gravel	SE NE 17 29N 3W	Sand and gravel	
Otsego Co. Rd. Comm.	SW NW 16 29N 3W	Sand and gravel	
	NW SW 2 30N 3W		
	NW NW 3 31N 3W		
	NW NE 29 31N 3W		

		Quantity	Value
OTTAWA (27)			
Sand and Gravel (6th, 4%)		1,743,473 tons	\$1,760,787
Petroleum		127,904 bbls.	383,712
Marl		3,755 tons	2,253
Natural Gas		8,350 M.cu.ft.	1,002
Total Value			\$2,147,754
Construction Aggregates			
Corp.	SE SW 16 8N 15W	Sand and gravel	
Henry DeWent	SW SW 22 6N 13W	Sand and gravel	
William Huizenga	24 5N 15W	Sand and gravel	
Tom Johnston Gravel Co.	7 7N 14W	Sand and gravel	
Henry Koster	23 6N 13W	Marl	
Ralph Meyers	West Olive	Marl	
Michigan State Hwy. Dept.		Sand and gravel	
Pickitt and Schreur	Ottawa Co. Pit.	Sand and gravel	
Standard Sand Co.	NW 4 7N 16W	Sand	
West Shore Constr. Co.	15 5N 13W	Sand and gravel	
	20 5N 14W		
	3 6N 13W		
	4 9N 13W		
	32 9N 13W		
PRESQUE ISLE (11)			
Stone (1st), Sand and Gravel (10th)			**
Michigan Limestone Div. -			
U. S. Steel Corp.	23 35N 5E	Limestone-crushed	
Michigan State Hwy. Dept.		Sand and gravel	
Onaway Stone Co.	5 34N 2E	Limestone-dimensional	
Straits Aggregate and Equipment Corp.	NE NW 19 34N 4E	Sand and gravel	
	NW SW 26 35N 5E		
Presque Isle Corp.	2 33N 8E	Limestone-crushed	
ROSCOMMON (39)			
Petroleum		369,216 bbls.	\$1,107,648
Sand and Gravel		345,354 tons	225,580
Natural Gas (2nd, 10%)		1,051,882 M.cu.ft.	126,226
Natural Gasoline (3rd, 6%)		206,458 gals.	20,646
Total Value			\$1,480,100
Michigan State Hwy. Dept.		Sand and gravel	
Delmar Stanley Gravel Co.	SE SE 24 24N 4W	Sand and gravel	

** Mineral value included under undistributed at end of county breakdown.

		Quantity	Value
SAGINAW (61)			
Undistributed: Petroleum, Clay*, Sand and Gravel			\$303,237
Aetna Portland Cement Co.	SW 35 12N 3E	Clay	
Michigan State Hwy. Dept.		Sand and gravel	
Minco Products Corp.	NW NW 1 11N 3E	Clay	
Ronald Weaver	SE SE 14 9N 2E	Sand and gravel	
SANILAC (62)			
Sand and Gravel		474,693 tons	\$270,542
O. E. Gooding and Co.	25 14N 13E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Sanilac Co. Rd. Comm.	SW SW 23 9N 14E	Sand and gravel	
Van Camp's Gravel Pit	SW SE 28 10N 15E	Sand and gravel	
SCHOOLCRAFT (74)			
Sand and Gravel			**
Fox Valley Constr. Co.	NE NW 15 41N 17W	Sand and gravel	
	NW SW 24 43N 16W		
Schoolcraft Co. Rd. Comm.	SE SW 7 41N 17W	Sand and gravel	
SHIAWASSEE (34)			
Undistributed: Clay Products (2nd), Sand and Gravel, Shale*			\$1,697,435
Harry Fuoss	SW SW 30 6N 3E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
The Michigan Vitriified Tile Co.	SE 22 7N 3E	Shale-Tile	
Pickitt and Schreur		Sand and gravel	
Shenk Gravel Co.	NW NW 2 6N 4E	Sand and gravel	
	NE NE 2 6N 4E		
Valley Gravel Co.	SE SW 3 6N 2E	Sand and gravel	
Ronald Weaver	NE SW 16 5N 2E	Sand and gravel	
	17 5N 4E		
	SE SW 3 6N 2E		
	SW SE 16 7N 1E		
	NE SE 14 8N 3E		

* Value of Shale used in manufacture of clay products not included in state total.

** Mineral value included under undistributed at end of county breakdown.

		Quantity	Value
ST. CLAIR (9)			
Salt (3rd), Cement, Petroleum, Sand and Gravel, Clay* (4th), Natural Gas			**
William Click, Sr.	NE NW 27 7N 15E	Sand and gravel	
The Diamond Crystal Salt Co.	St. Clair	Evaporated Salt	
Lakeport Sand and Gravel Co.	NW SE 20 8N 17E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Morton Salt Co.	Marysville	Evaporated Salt	
Peerless Cement Corp.	Port Huron 32 6N 16E	Portland cement Clay	
Port Huron Sand and Gravel	Port Huron	Sand and gravel	
St. Clair Co. Hwy. Comm.	NE NW 17 7N 15E SE NW 29 8N 16E	Sand and gravel	

ST. JOSEPH (69)

Undistributed: Sand and Gravel			
Marl			\$171,694
Aggregates Processors, Inc.	NE 7 8S 11W	Sand and gravel	
Coy Drake	12 5S 12W	Marl	
Robert Bros.	6S 12W	Marl	
St. Joseph Co. Rd. Comm.	NW 8 8S 11W	Sand and gravel	

TUSCOLA (36)

Undistributed: Sand and Gravel (8th, 3%) Petroleum, Calcium-Magnesium Chloride			\$1,658,019
Anderson Sand and Gravel Co.	NW SW 19 11N 9E NE NE 20 11N 9E	Sand and gravel	
Bernthel Sand and Gravel Co.	SW SE 6 11N 9E	Sand and gravel	
Cass City Concrete Products	SE SW 4 13N 11E	Sand and gravel	
Comstock Constr. Co.	8 10E 11N	Sand and gravel	
Great Lakes Foundry Sand Co.	near Vassar	Sand	
Hile Bros.	NW SE 3 12N 8E	Sand and gravel	
C. R. Hunt	SE 33 14N 11E	Sand and gravel	
Kester Sand and Gravel	SE 21 10N 8E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Peterhans Bros.	SW NE 35 13N 9E	Sand and gravel	
Powell and Brock	23 13N 7E	Sand and gravel	
Saginaw Core Sand Co.	NW 27 10N 7E	Sand	
Sargent Sand Co.	5 10N 9E	Sand and gravel	
Tuckey's Sand and Gravel	33 14N 10E	Sand and gravel	
Vaughans Gravel & Excavating	NE NE 25 12N 8E	Sand and gravel	
Wilkinson Chemical Co.	Mayville	Calcium-Magnesium Chloride	

** Value of clay used in manufacture of Portland Cement not included in county total.

	Quantity	Value
VAN BUREN (63)		
Sand and Gravel	221,053 tons	\$168,703
Petroleum	28,262 bbls.	84,786
Marl	456 tons	274
Total Value		\$253,763
Garrett Sand Co.	NE 5 2S 17W	Sand
Clarence Harter	33 2S 13W	Marl
Otis Klett	3S 14W	Sand and gravel
Pickitt and Schreur	NW SW 24 3S 14W	Sand and gravel
Standard Sand Co.	2S 17W	Sand and gravel
John G. Yerington	NE SW 24 3S 14W NE SE 24 3S 15W	Sand and gravel
Swartz Pit		

WASHTENAW (31)

Sand and Gravel (5th, 5%) Petroleum	1,840,348 tons 60,965 bbls.	\$1,737,861 182,895
Natural Gas (5th, 7%)	727,534 M.cu.ft.	87,304
Total Value		\$2,008,060
Dexter Gravel Co.	SW SE 5 2S 5E	Sand and gravel
O. E. Gooding and Co.	SW SE 22 1S 5E NE SW 34 2S 5E NE SW 23 3S 4E SW 7 4S 3E	Sand and gravel
Breitenwisher Pit		
Deatrick Pit		
Gale Pit		
Gauss Pit		
Harris Pit		
Heller Pit		
Wiedmayer Pit		
Killins Gravel Co.	SE SE 25 2S 3E SW SW 25 2S 5E	Sand and gravel
Kruse Gravel Pit	32 2S 7E	Sand and gravel
Scio Gravel Co.		Sand and gravel
Lamar Thunn	SW NE 25 3S 7E	Sand and gravel
Whittaker and Gooding Co.	SW NW 10 2S 5E SW NE 19 2S 7E NE NE 15 3S 6E	Sand and gravel
Youngs Sand and Gravel	SW SW 16 1S 3E NE NE 15 3S 6E SW 23 3S 7E	Sand and gravel
Washtenaw Co. Rd. Comm.	24 3S 5E	Sand and gravel

		<u>Quantity</u>	<u>Value</u>
WAYNE (1)			
Salt (1st)		3,022,764 tons	\$14,004,554
Clay Products (1st)			3,422,247
Sand and Gravel (2nd, 6%)		2,261,327 tons	2,786,179
Natural Gas (3rd, 7%)		765,957 M.cu.ft.	91,915
Petroleum		10,527 bbls.	31,581
Clay*(1st)		649,882 tons	
Undistributed: Cement (2nd), Stone, Sulfur			<u>18,450,135</u>
Total Value			\$38,786,611
Allied Chemical Dye Corp.	Trenton	Soda Ash	
Aurora Gasoline Co.	Detroit	Sulfur	
Clippert Brick Co.	NW 21 2S 11E	Clay Brick	
Dachille Trucking Co.	Various pits	Sand and gravel	
W. L. Emery Co.		Sand and gravel	
Flat Rock Clay Products	NW SE 30 4S 10E	Clay-Tile	
Huron River Quarry Corp.	36 4S 9E	Dolomite-crushed	
International Salt Co., Inc.	SW 32 2S 11E	Rock Salt	
Lightweight Aggregate Corp.	NE 27 1S 9E	Clay-Lightweight Aggregate	
Manning and Locklin Gravel Co.	NW SW 2 1S 8E	Sand and gravel	
Michigan Foundation Quarry Co.	7 4S 11E	Limestone-crushed	
Michigan Silica Co.	SW NE 15 5S 10E	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
Moore Bros. Sand and Gravel	E SE 9 3S 9E	Sand and gravel	
Al Morgan Sand	Various pits	Sand and gravel	
Northville Sand and Gravel	SE NE 8 1S 8E	Sand and gravel	
Peerless Cement Corp.	Detroit	Cement	
Penn Salt Chemical Corp.	Wyandotte	Chlorine, Caustic Soda	
Thomson Sand and Gravel	8 1S 8E	Sand and gravel	
U. S. Gypsum Co.	River Rouge	Gypsum Products	
Wayne Sand and Gravel Co.	NW SE 12 3S 8E	Sand and gravel	
Wyandotte Chemical Corp.	Wyandotte	Chlorine, Soda Ash, Portland Cement	

WEXFORD (71)

Sand and Gravel		122,278 tons	\$ 110,048
Leo Dunbar	SW NE 15 21N 9W	Sand and gravel	
Michigan State Hwy. Dept.		Sand and gravel	
The Taber Co.	NE SE 33 23N 10W SE NE 33 24N 9W	Sand and gravel	

* Value of clay used in manufacture of cement and clay products not included in county total.

	<u>Quantity</u>	<u>Value</u>
UNDISTRIBUTED		
Not segregated by counties (includes Alcona, Alpena, Bay, Cheboygan, Emmet, Grand Traverse, Gratiot, Iosco, Mackinac, Mason, Midland, Presque Isle, Schoolcraft, St. Clair)		\$ 124,854,189
Peat	107,342 tons	1,683,980
Undistributed: Lime, Mineral Pigments, Sand and Gravel, Gem Stones		<u>1,338,925</u>
Total value		\$ 127,877,094
Champion, Inc.		Sand and gravel
The Cleveland-Cliffs Iron Co.		Mineral Pigments
Cravens Peat Moss	NW SE 3 3S 10W	Peat
Green Thumb Peat Humus Co.	24 7N 12E	Peat
Keweenaw Agate Shop	Ahmeek	Gem Stones
Michigan Peat, Inc.	24 7N 12E	Peat
Perry Peat Co., Inc.	Morris	Peat
Pickands Mather and Co.		Mineral Pigments
Irving L. Pratt and Sons	SE SW 35 19N 17W	Peat
U. S. Forest Service		Sand and gravel
<hr/>		
TOTAL STATE VALUE		\$ 349,522,638

DIRECTORY OF PRODUCERS OF MINERALS
AND
MINERAL PRODUCTS, 1958

CHEMICAL PLANTS

(Using Natural Brine or Salt)

<u>Name and Address</u>	<u>Raw Material</u>	<u>Plant Location</u>
Allied Chemical & Dye Corp. The Solvay Process Division P.O. Box 271 Syracuse 1 New York	Salt	Detroit, Wayne Co.
The Dow Chemical Company Midland, Michigan	Natural brine and salt	Midland, Midland Co. Ludington, Mason Co.
Great Lakes Chemical Corp. 502 Michigan National Bank Building Grand Rapids 2 Michigan	Natural brine	Filer City, Manistee Co.
Hooker Electrochemical Co. Niagara Falls, New York	Salt	Montague, Muskegon Co.
Michigan Chemical Corp. 500 North Bankson St. Louis, Michigan	Natural brine	St. Louis, Gratiot Co. East Lake, Manistee Co.
Morton Chemical Company 110 N. Wacker Drive Chicago 6 Illinois	Natural brine	Manistee, Manistee Co.
Pennsalt Chemicals Corp. Wyandotte, Michigan	Salt	Wyandotte, Wayne Co.
Standard Lime & Cement Co. 2000 First National Bank Building Baltimore 3 Maryland	Natural brine	Stronack, Manistee Co.
Wyandotte Chemical Corp. Wyandotte, Michigan	Salt	Wyandotte, Wayne Co.

PRODUCERS OF BROMINE, CALCIUM- MAGNESIUM CHLORIDE,
MAGNESIUM COMPOUNDS AND POTASH

(From Well Brines)

	Bromine	Calcium- Magnesium Chloride	Magnesium Compounds	Potash	
Dow Chemical Company	X	X	X		Mason
Dow Chemical Company	X	X	X	X	Midland
Great Lakes Chemical Corp.	X				Manistee
Michigan Chemical Corp.	X	X	X		Gratiot
Michigan Chemical Corp.	X				Manistee
Morton Chemical Company	X		X		Manistee
Standard Lime & Cement Co.			X		Manistee
Wilkinson Chemical Co.		X			Lapeer

CEMENT MANUFACTURERS

<u>Name and Address</u>	<u>Plant Location</u>
Aetna Portland Cement Company P. O. Box 392 Bay City, Michigan	Bay City, Bay Co.
Consolidated Cement Corporation 1003 National Bank Building Jackson, Michigan	Cement City, Lenawee Co.
Huron Portland Cement Co. 1325 Ford Building Detroit, Michigan	Alpena, Alpena Co.
Peerless Cement Company Division of American Cement Corp. 1144 Free Press Building Detroit 26 Michigan	Detroit, Wayne Co. (2 plants) Port Huron, St. Clair Co.
Penn-Dixie Cement Corp. P. O. Box No. 152 Nazareth, Pa.	Petoskey, Emmet Co.
Wyandotte Chemical Corporation Wyandotte, Michigan	Wyandotte, Wayne Co.

CLAY PRODUCERS*

<u>Name and Address</u>	<u>Pit Location</u>
Minco Products Corporation Box 367 2305 Miller Road South Saginaw, Michigan	Near Paines, Saginaw Co. Section 1, T 11 N, R 3 E
Robinson Clay Products Company 65 West State Street Akron 9 Ohio	Near Rockland, Ontonagon Co. Section 17, T 50 N, R 39 W

*Producers of clay used in clay products, Portland cement, and lightweight aggregate manufacturers not included.

CLAY PRODUCTS PRODUCERS

(Brick, Tile, Pottery, Lightweight Aggregate)

<u>Name and Address</u>	<u>Raw Material</u>	<u>Plant Location</u>
American Vitrified Products Co. 701 National City Bank Bldg. Cleveland, Ohio	Shale	Grand Ledge, Eaton Co. (Tile)
Clippert Brick Company Wyoming and Southern Avenues Detroit 10 Michigan	Clay	Near Dearborn, Wayne Co. (Brick)
Comfort Brick and Tile Co. R.F.D. 1 Tecumseh, Michigan	Clay	Tecumseh, Lenawee Co. (Tile)
Flat Rock Clay Products Co. Flat Rock 3 Michigan	Clay	Flat Rock, Wayne Co. (Tile)
Grand Ledge Clay Products Co. West Jefferson Street Grand Ledge, Michigan	Shale	Grand Ledge, Eaton Co. (Tile)
Lightweight Aggregate Corp. 12720 Merriman Road Livonia, Michigan	Clay	Livonia, Wayne Co. (Lightweight aggregate)
The Michigan Vitrified Tile Co. P. O. Box 450 Findlay, Ohio	Shale	Corunna, Shiawassee Co. (Tile)
F.W. Ritter Sons Company, Inc. South Rockwood, Michigan	Clay	South Rockwood, Monroe Co. (Pottery)

GYPSUM PRODUCERS

<u>Name and Address</u>	<u>Mine or Quarry Location</u>	<u>Mill Location</u>
Bestwall Gypsum Co. 120 East Lancaster Avenue Ardmore, Pennsylvania	Grand Rapids, Kent County (mine)	Grand Rapids, Kent Co.
Grand Rapids Gypsum Company 1204 Peoples National Bank Bldg. Grand Rapids 2 Michigan	Grand Rapids, Kent County (mine)	Grand Rapids, Kent Co.
National Gypsum Company 325 Delaware Avenue Buffalo 2 New York	National City Iosco Co. (quarry)	National City, Iosco County
United States Gypsum Company 300 West Adams Street Chicago 6 Illinois	Alabaster, Iosco Co. (quarry)	Grand Rapids, Kent Co. River Rouge, Wayne Co.

LIME PRODUCERS

<u>Name and Address</u>	<u>Plant Location</u>
The Dow Chemical Company Ludington Division Midland, Michigan	Ludington, Mason County
Northwestern-Hanna Fuel Co. McKnight Bldg. 2nd Ave. South at 5th St. Minneapolis 1 Minnesota	Menominee, Menominee Co.
Monitor Sugar Company Division Robert Gage Coal Company South Euclid Avenue Bay City, Michigan	Bay City, Bay County

IRON MINING COMPANIES

<u>Name and Address</u>	<u>Mine Locations (Counties)</u>
The Cleveland-Cliffs Iron Company 14th Floor Union Commerce Building Cleveland 14 Ohio	Iron, Marquette
M. A. Hanna Company 1300 Leader Building Cleveland 14 Ohio	Iron and Marquette
Inland Steel Company 30 W. Monroe St. Chicago 3 Illinois	Iron and Marquette
Jackson Iron and Steel Company Jackson, Ohio	Dickinson
Jones and Laughlin Steel Corporation 401 Liberty Avenue Gateway Center Pittsburgh 30 Pennsylvania	Marquette
North Range Mining Company Negaunee, Michigan	Iron, Marquette, Gogebic
Pickands Mather and Company 2000 Union Commerce Building Cleveland 14 Ohio	Gogebic, Iron, Marquette, Dickinson
Republic Steel Corporation Republic Building Cleveland 1 Ohio	Iron

COPPER PRODUCERS

<u>Name and Address</u>	<u>Mine Locations(Counties)</u>
Calumet and Hecla, Incorporated Calumet, Michigan	Houghton and Keweenaw
Copper Range Co. Painsdale, Michigan	Houghton
Quincy Mining Co. Hancock, Michigan	Houghton
White Pine Copper Co. 24 Federal Street Boston, Mass.	Ontonagon

MARL PRODUCERS

<u>Name</u>	<u>Address</u>	<u>Pit Location (County)</u>
	A.	
Frank Alfredson James Anger Cleo L. Arndt Gerald Arnsman D. C. Austin Carl Avery	Whitehall Big Rapids R.R. #1, Fennville R.R. #1, Hopkins R.R. #2, Coldwater R.R. #1, Athens	Muskegon Mecosta Allegan Allegan Branch Calhoun
	B.	
Barnes Brothers Lee Bertrand La Verne Brizendine Mathew J. Brown	Horton Mattawan 308 Pennsylvania Ave., Dowagiac R.F.D. #3, Byron Center	Jackson Van Buren Cass Kent
	C.	
Case Brothers Lawrence Chipman Cleveland and Taylor Roy Coville William Currier	R.R. #1, Sherwood Fenwick R.R. #2, Fremont, Ind. R.R. #1, Climax R.R. #1, Caledonia	Branch Montcalm Branch, Hillsdale Kalamazoo Kent
	D.	
Bernard Damveld Arnie Delebaugh Calvin Dixon Coy Drake	R.R. #1, Dorr R.F.D. #2, Union City Bronson R.R. #1, Three Rivers	Allegan Calhoun Branch St. Joseph
	F.	
David Flora Wilson Frost	1306 Fulford Street, Kalamazoo R.R. #2, Blanchard	Kalamazoo Mecosta
	G.	
Gatehouse Bros. Richard Grabmeyer	Weidman R.R. #1, Dowagiac	Isabella Cass

Marl Producers (Contd.)

<u>Name</u>	<u>Address</u>	<u>Pit Location County</u>
H.		
William Hacker	R.R. #1, Athens	Calhoun
E. R. Hamilton	R.R. #3, Nashville	Barry
Clarence Harter	R.R. #3, Paw Paw	Van Buren
Glen Hayward	R. R. #3, Quincy	Branch
Lawrence Hayward	Box 371, Vicksburg	Kalamazoo
John Hess	R.R. #1, Hanover	Hillsdale
C. Stanley Hooker	608 Colvax Street, Cadillac	Missaukee, Osceola
K.		
Glen Kermeen	R.R. #1, Middleville	Barry
Leslie Knox	Colon	St. Joseph
Henry Koster	1090 Rosewood, Jenison	Ottawa
L.		
Ted Lambrix	R.R. #3, Hart	Oceana
Dennis Lettinga	Grant	Newaygo
Ray Luegge	R.R. #1, Three Rivers	St. Joseph
Emmet J. Lutz	R.R. #1, Sherwood	Branch
M.		
Hugh Martel	Three Oaks	Berrien
Martin Bros.	Three Oaks	Berrien
Claude Mastin	Climax	Kalamazoo
Robert Medley	R.R. #1, Onondaga	Ingham
Ralph Meyers	R.F.D. #2 West Olive	Ottawa
Loren A. Mills	Kalamazoo	Kalamazoo
O.		
Outman Bros.	Six Lakes	Montcalm
P.		
Emil Pavlak	R.R. #2, Hopkins	Allegan
Bernard Pipher	Jones	Cass
Otto Poehlman, Jr.	R.R. #2, Cassopolis	Cass
R.		
C. E. Reed	R.R. #2, Union City	Calhoun
Reed and Frisbie	Colon	St. Joseph
Robert Brothers	R.R. #1, Three Rivers	St. Joseph
Fred Runz	R.R. #2, Vicksburg	Kalamazoo

Marl Producers (Contd.)

S.		
Schau Bros.	2882 Bronson Blvd., Kalamazoo	Barry
Dan Slack	R.R. #4, Kalamazoo	Kalamazoo
Murland Smart	Burr Oak	St. Joseph
Harlan Spoor	R.R. #1, Burlington	Calhoun
C. H. Spies	R.F.D. #2, Box 414, Benton Harbor	Berrien
Thomas Springer	R.R. #2, Vicksburg	Kalamazoo
Bert Stenger	Doster	Allegan
Stewart and Schaefer	R.R. #1, Weidman	Isabella
Lowell W. Stukey	R.R. #1, Reading	Hillsdale
T.		
Orville Truman	Mecosta	Mecosta
W.		
Clifford Williams	Nottawa	St. Joseph
Marion E. Wolkins	R.R. #1, Bristol	Lake
Kenneth L. Wood	Colon	St. Joseph
Z.		
Zylstra Bros.	Howard City	Montcalm

PEAT PRODUCERS

<u>Name and Address</u>	<u>Pit Location</u>
Anderson Peat Co. Imlay City, Michigan	Near Capac, Lapeer County
Appleman Peat Ida, Michigan	Near Ida, Monroe County
Cravens Peat Moss R.F.D. #4, Box 359 Kalamazoo, Michigan	Near Kalamazoo, Kalamazoo County
Green Thumb Peat Humus Co. Capac, Michigan	Near Capac, St. Clair and Lapeer counties
Bud Green's Genuine Peat Moss 726 Stockbridge Avenue Kalamazoo, Michigan	Near Kalamazoo, Kalamazoo County
Michigan Peat, Inc. New York, New York	Near Capac, Lapeer and St. Clair counties
Perry Peat Co., Inc. Box 667 Morrice, Michigan	Near Morrice, Shiawassee County
Irving L. Pratt and Son Scottville, Michigan	Near Scottville, Mason County
Royal Peat Company 3137 Phillips Avenue Berkeley, Michigan	
Howard Smith Peat Fair Acres Farm Mason, Michigan	Near Mason, Ingham County

SALT COMPANIES

<u>Name and Address</u>	<u>Product</u>	<u>Plant Location</u>
Diamond Crystal Salt Co. 916 S. Riverside St. Clair, Michigan	Evaporated Salt	St. Clair, St. Clair Co.
International Salt Co., Inc. Scranton, Pennsylvania	Rock Salt	Detroit, Wayne County
Manistee Salt Works 800 South Vandeventer Ave. St. Louis, 10, Missouri	Evaporated Salt	Manistee, Manistee Co.
Michigan Salt Co. 500 North Bankson St. Louis, Michigan	Evaporated Salt	St. Louis, Gratiot Co.
Morton Salt Company 120 South LaSalle St. Chicago, Illinois	Evaporated Salt	Manistee, Manistee Co. Marysville, St. Clair Co.

(Addresses are all in Michigan unless otherwise designated)

<u>Name and Address</u>	<u>Pit Location</u>
A.	
Adrian Sand and Gravel, Adrian Advance Bldg. Materials Co., 46461 Ryan Road Utica	Lenawee
Aggregates Processors, Box 566, White Pigeon American Aggregates Corp., Greenville, Ohio	Macomb St. Joseph Kalamazoo, Livingston** Oakland
American Stone Products, Sashabow Rd., Oxford Andersen Sand & Gravel Co., 1700 S. Werdock St., Saginaw	Oakland
Aremaughs Gravel Pit, Ithaca Arndt, Cleo L., Fennville Augusta Sand and Gravel Co., Augusta	Tuscola Gratiot Allegan Calhoun
B.	
Battle Creek Gravel Co. 3800 Dickman Highway, Battle Creek	Calhoun
Floyd Beardslee, 725 E. Square Lake Rd., Pontiac	Oakland
Bender Gravel Co., 822 Benton St., Hastings	Barry
The Benjamin Pit, 30404 W. 14 Mile Rd., Farmington	Oakland
Bernthel Sand & Gravel Co., R.F.D. #2, Reese	Tuscola
Ray Betham and Son, 12040 Mettetal, Detroit	Oakland
Bichler Bros., 1615 Ludington, Escanaba	Delta
Blades Construction Co., Beaverton	Clare
Boichot Concrete Products Corp. 1800 Turner St., Lansing	Clinton
Bundy Hill Gravel Co., Somerset Center	Hillsdale**
J. V. Burkett, St. Joseph	Berrien
C.	
Caspian Lbr. Co., Caspian	Iron, Baraga, Gogebic, Houghton Marquette, Ontonagon
Cass City Concrete Products Co., Cass City	Tuscola
W.A. Cecil & Son, 400 Albion Rd., Concord	Jackson
Central Concrete Products Co. Inc., Route #2 Big Rapids	Mecosta
Central Michigan Sand and Gravel, P.O. Box 5, East Lansing	Ingham
Champion, Inc., Iron Mountain	Dickinson, Iron, Mackinac, Marquette, Menominee
Cheney Gravel Co., Inc., Willoughby Rd., Holt	Ingham

<u>Name and Address</u>	<u>Pit Location (County)</u>
C. (contd.)	
William Click, Sr., 8783 Bryce Road., Goodells	St. Clair
Cloverland Milling Supply Co., 801 Superior Ave., Gladstone	Delta
Coit Avenue Gravel Co., 4772 Coit Ave., N.E. Grand Rapids	Kent
Cole Gravel Co., Route #1, Wayland	Barry
Emil Combs, Route #1, Tekonsha	Calhoun
Comstock Constr., Co., Box 172, Bay City	Tuscola, Hillsdale
Concrete Products and Building Supply 1800 Ravine Rd., Kalamazoo	Kalamazoo
Construction Aggregates Corp., 33 N. LaSalle St. Chicago, Ill.	Ottawa (Dredge) St. Clair (Dredge)
Construction Materials Corp., Cleveland	Kalamazoo
Consumers Sand and Gravel, Kalamazoo	
Cross and White, 3849 Three Mile Road, Grand Rapids	Kent
H. C. Cushman, Star Route, Sears	Osceola
D.	
D. & J. Gravel Co., Route 1, Fowlerville	Livingston
Dachill Trucking Co., 18945 W. 8 Mile Rd., Detroit	Wayne
Van E. Daily, 410 W. Sibley St., Howell	Livingston
Roy Dayringer, Route 4, Ithaca	Gratiot
Days River Sand & Gravel Co., Route #1, Gladstone	Delta
Emil DeSander, 321 W. Sheridan Rd., Lansing	Ingham
Edward De Vries & Sons, 959 Bristol Ave., Grand Rapids 4	Kent
Henry De Went, U. S. 21, Hudsonville	Ottawa
De Witt Gravel Co., U.S. 27 at Clark Rd., Lansing	Clinton
Dexter Gravel Co., 7100 Dexter Ann Arbor Road, Dexter	Washtenaw
Leo Dunbar, 7658 U.S. 131, Cadillac	Wexford
Dyer Company, McBrides	Montcalm
E.	
East Side Gravel Co., 205 E. Valley Rd., Lansing	Ingham
Eastman Gravel Pit, Route #1, Standish	Arenac
H. Eckley, Pioneer, Ohio	Hillsdale
Ehinger Bros., West Branch	Ogemaw
W. L. Emery Co., 1375 E. Jefferson Ave., Detroit	Wayne (Dredge)
A. J. Etkin, Oak Park	Oakland

Commercial Sand and Gravel Producers (contd.)

Name and Address

F.

Ferguson Excavating Co., 5360 N. State Rd.
 Davison
 Fiser Supply Co., 1617 E. Jolly Rd., Lansing
 Fisher Sand & Gravel Co., 921 S. Jefferson Ave.
 Midland
 Foley & Beardslee, Route #3, Clarkston
 Ford and Co., 5960 S. Cedar, Holt
 Harry Fuoss, Route 1, Durand
 Fox Valley Constr. Co., Box 827, Appleton, Wisc.

G.

Garrett Sand Co., 411 Phoenix St., South Haven
 Frank L. Gauthier, Onkema
 Jerry George, Harrisville
 Gillett Sand and Gravel, Route #1, Haslett
 Gilliland Gravel Co., Route #2, Alpena
 Gillisee Constr. Co., Grand Rapids
 J. Gladstone and Son, 423 Oak St., Rochester
 O.E. Gooding Co., 5800 Cherry Hill Rd.,
 Ypsilanti
 Grande Brick Co., 1456 Fuller Ave., S.E.
 Grand Rapids 7
 Grand Rapids Gravel Co., 2200 Chicago Dr., S.W.
 Grand Rapids 9
 Gravel Producers, Inc., 106 E. Kilgore Rd.
 Kalamazoo
 Great Lakes Foundry Sand Co., 720 United Artists
 Building, Detroit
 Great Lakes Gravel Co., 2900 Auburn Road, Utica

H.

Harvey G. Hall, 2854 20th Ave., Port Huron
 Kenneth Hodgins and Sons, Marquette
 Hile Bros., Rt. #2, Caro
 Holland Construction Co., Holland
 Holly Manufacturing and Mining Company
 Box 299, Flint

Pit Location (County)

Genesee
 Ingham
 Midland
 Oakland
 Ingham
 Shiawassee
 Alger, Delta, Dickinson,
 Gogebic, Luce, Menominee,
 Ontonagon, Schoolcraft

Van Buren
 Manistee
 Alcona
 Clinton
 Alpena
 Kent
 Oakland
 Eaton, Hillsdale, Huron,
 Jackson**, Lenawee, Oakland,
 Sanilac, Washtenaw

Kent

Kent

Kalamazoo

Tuscola
 Macomb

St. Clair
 Marquette
 Tuscola
 Allegan

Oakland**

Commercial Sand and Gravel Producers (contd.)

Name and Address

H. (contd.)

Hoover Bros., 1137 Tripp Rd., Waldron
 George Hubscher & Son, Box 411,
 Mt. Pleasant
 Huit & Sons, 322 Water St., Allegan
 William Huizenga, Route #2, Zeeland
 C. R. Hunt, Cass City
 E. J. Hurley Sand and Gravel Co., 4811 Hughes Rd.,
 Lansing
 Hutchins Sand & Gravel, Rodney C. Hutchins
 320 S. Maple, Gaylord
 Hygrade Sand & Gravel Corp., 5000 E. 31 Mile Rd.,
 Romeo

I.

Ireland & Lester Co., 220 N. Wayne St., St. Joseph
 Iron River Lbr. and Fuel Co., Iron River
 Ironwood Concrete & Products Co., Route #1,
 Box 7A Ironwood

J.

Lewis James, 2957 Detroit Rd., Niles
 John R. Sand and Gravel Co., 1865 Indianwood Rd.
 Lake Orion
 Tom Johnston Gravel Co., 114 LaFayette St.,
 Grand Haven

K.

K. & V. Gravel Co., Route #1, Fremont
 Fred Kaatz, 62701 Richmond Road, Richmond
 Harold Keill, Route #3, Niles
 Kemler Bros., 5900 Cobb Creek Ct., Rochester
 Kester Sand and Gravel, Route #2, Millington
 S.E. Ketchum & Sons, Route #3, Mason
 Killins Gravel Co., 3305 Liberty Rd., Ann Arbor
 Klett Construction Co., Hartford
 Klumpp Bros., 4950 Loveland Rd., Grass Lake
 Koan Gravel Co., Route #1, Holly
 Koenig Sand and Gravel, Oxford
 Kruse Gravel Pit, 1090 Clark Rd., Ypsilanti
 Kurtz Gravel Co., G-5300 N. Dort Hwy., Flint

Pit Location (County)

Hillsdale

Isabella
 Allegan
 Ottawa
 Tuscola

Ingham

Otsego

Macomb

Berrien (Dredge)
 Iron

Gogebic

Berrien

Oakland

Ottawa

Newaygo

Macomb

Berrien

Oakland

Tuscola

Ingham

Washtenaw**

Van Buren

Jackson

Oakland

Oakland

Washtenaw

Genesee

Commercial Sand and Gravel Producers (contd.)

<u>Name and Address</u>	<u>Pit Location (County)</u>
L.	
Lake Superior Gravel Co., Bessemer Lakeport Sand and Gravel Co., 7244 2nd St. Lakeport	Gogebic
A. Lindberg & Sons, Inc., Box 154, Ishpeming Loselle Construction Co., Wyandotte	St. Clair Marquette Wayne
M.	
Mackinac Aggregates Corp. 245 Marquette, St. Ignace	Mackinac
Macomb Sand & Gravel, 3295 Auburn Road, Utica	Macomb
Maertens Sand and Gravel Co., 1036 Buckingham Grosse Pointe	Macomb Wayne
Main Sand and Gravel, Detroit 19	Ingham
Hugh T. McKenzie, 1401 Glenrose, Lansing	Alpena
McKinnon Gravel Co., Alpena	Mackinac
Mike Mangine, Cedarville	Genesee
John McKenzie, 13164 Seymour Rd., Montrose	Wayne
Manning-Locklin Gravel Co., Box 216, Northville	St. Clair
McGaw Block, Yale	Macomb
Louis Marsack & Sons, 23633 Denhurst, St. Clair Shores	Ionia
H.L. Martin Gravel Co., Box 154, Westphalia	Ingham
Mason Gravel Co., Mason	
Hugh H. Mason and Sons, 302 N. Center Ave., Gaylord	Cheboygan
Mathews Gravel Co., G-6226 E. Mt. Morris Rd. Mt. Morris	Genesee Wayne
Michigan Silica Co., Rockwood	Oakland
Mickelson Bros., 1745 Seymore Lake Road, Oxford	
Mid American Eng. Corp., 716 Old Orchard Prof. Bldg., Skokie, Illinois	Allegan, Gratiot
Paul C. Miller, 10300 Sparta Ave., Sparta	Kent, Grand Traverse, Genesee, Newaygo, Muskegon, Oakland
	St. Clair
	Wayne
	Livingston, Macomb
	Wayne
	Muskegon
N.	
Nashville Gravel Co., R.F.D. #2, Nashville	Barry**
New Hudson Sand and Gravel, New Hudson	Oakland
Nieb Concrete Products, 1406 South 11th St., Niles	Cass
North Star Gravel Co., Ithaca	Gratiot
Northeast Gravel and Excavating Co., 4300 Cannosburg Road, Belmont	Kent
Northville Sand & Gravel Co., 18275 Beck Rd. Northville	Wayne

Commercial Sand and Gravel Producers (contd.)

<u>Name and Address</u>	<u>Pit Location (County)</u>
N. (contd.)	
Nugent Sand Co., Inc., 2875 Lincoln St., Muskegon Northwest Materials, Inc., Bryan, Ohio	Muskegon Hillsdale
O.	
Oakland Sand & Gravel Co., 741 Glengary Road Route 3, Walled Lake	Oakland Muskegon
Oceana Sand and Gravel, Inc., Hesperia	Lenawee
Oldfield Co., Adrian	Ingham
Okemos Sand and Gravel, 1873 Hamilton Rd., Okemos	Genesee
Otisville Stone Co., 5300 N. Dort Hwy., Flint	Oakland
Oxford Mining Co., Davisburg	
P.	
P. and B. Gravel Co., Route #3, Ithaca	Gratiot
Cy Page, Manitou Beach	Lenawee
Edward Palmer & Son, 2531 E. South, Jackson	Jackson
Pekaar & Van Doorn, 2774 28th St., Grand Rapids 9	Kent
Perron Construction Co., Detroit	Oakland
William Perry & Son, Peffer St., Harbor Springs	Emmet
Peterhans Bros., Caro	Tuscola
Harold Peters, Washed Sand & Gravel, Decker	Sanilac
Pickitt and Schreur, Box #149, Allegan	Allegan, Branch, Calhoun, Cass, Hillsdale, Ionia, Kalamazoo, Kent, Missaukee, Ottawa, Shiawassee, Tuscola, Washtenaw**
Elmer Pilspanen, Route #1, Box 80, Bessemer	Gogebic
Pine Sand & Gravel, 2690 Imlay City Rd., Lapeer	Lapeer
Polhamus Gravel Co., Ovid	Shiawassee
Polver Gravel Co., Alpena	Alpena
Port Huron Sand and Gravel, 2854 20th Ave., Port Huron	St. Clair
Portage-Manley Sand Co., Rockton, Ill.	Berrien
John Post & Sons, R.F.D. 2, Swartz Creek	Genesee
H.F. Postma, 3643 28th St., S.W., Grand Rapids	Kent
Powell and Brock Co., Fairgrove	Tuscola
Producers Core Sand Corp., 323 Warren Bldg., Michigan City, Ind.	Berrien
Pryor Bros., 725 N. Cochran, Charlotte	Eaton
R.	
Ray Industries, Inc., P.O. Box 165, Oxford	Macomb
Ed Reetz, Box 58, W. Branch	Ogemaw
Bernie Rief, Fraser	Macomb
Riverside Sand & Gravel Co., 1050 Maynard Ave., S.W., Grand Rapids 4	Kent
Walter Rosevear Pit, West Branch	Ogemaw

Commercial Sand and Gravel Producers (contd.)

<u>Name and Address</u>	<u>Pit Location (County)</u>
R. (contd.)	
Rosteck Contractors, 32634 Utica Rd., Fraser	Macomb
Art Russell's Concrete Products, R.F.D. #1 Hillsdale	Hillsdale
S.K. Rogers, 48301 Sugar Bush Rd., New Baltimore	Macomb
Wakeman and Neva Ryno, Route #1, Coloma	Berrien
S.	
Ray Sablain, Inc., 2827 S. Cedar St., Lansing Saginaw Core Sand Co., Saginaw	Ingham Hillsdale, Midland, Tuscola
Salem Gravel and Constr. Co., Inc., Box 45, 5 Mile and Curtis Rd., Salem	Oakland
Mrs. Hilma Samuelson, Chatham Sand Products Corp., 2489 First Nat'l. Bank Bldg., Detroit	Alger
Saunders and Son, Ravenna	Manistee, Muskegon
Scarlett Gravel, 1721 S. Cedar, Holt	Kent
Sargent Sand Co., 2840 Bay Rd., Saginaw	Ingham
Justus Snelenberger, 1545 W. Fry Road, Burt	Tuscola, Mason
Scio Gravel Co., 2911 W. Delhi, Box 233, Ann Arbor	Genesee
Shenk Gravel Co., Donald Shenk, Sr., Durand	Washtenaw
Lawrence B. Skinner, 4536 Packard Rd., Ypsilanti	Shiawassee
Slaters Bald Mtn., 451 E. Wilson Ave., Pontiac, 16	Washtenaw
Smith Sand and Gravel Co., Inc. 65985 Mound Road, Romeo	Oakland
South Haven Sand Co., P.O. 290, Grand Haven	Macomb
Southern Michigan Materials Co., Bryan, Ohio	Van Buren
Stamm Bros. Gravel Co., Route 1, Adrian	Hillsdale
Standard Sand Co., 14201 Lake Shore Ave., P.O. Box 290, Grand Haven	Lenawee
Gordon D. Stevick, 424 Patty Ave., Jackson	Ottawa, Van Buren
Frank H. Stoerk, Pierson	Jackson
Straits Aggregate & Equipment Corp., Box 569 East Tawas	Montcalm
H. Stukey, R.F.D. #2, Coldwater	Presque Isle
Delmar Stanley Gravel Co., Roscommon	Branch
Walter Sutton, 1603 Maple St., Niles	Roscommon
Wallace Syers, Hesperia	Berrien
	Newaygo

Commercial Sand and Gravel Producers (contd.)

<u>Name and Address</u>	<u>Pit Location (County)</u>
T.	
The Taber Co., 125 Front Ave., N.W. Grand Rapids	Alcona, Antrim, Cheboygan, Gratiot, Keweenaw, Osceola Ogemaw, Wexford
Lawrence Tamlyn, 125 Burdette St., St. Ignace	Mackinac
Tecumseh Gravel Co., P.O. Box 496, Tecumseh	Lenawee
Tecumseh Materials, Inc., Tecumseh	Lenawee
Thompson Sand & Gravel, 48399 W. 7 Mile Road Northville	Wayne
Thornton Constr. Co., Hancock	Keweenaw
Lamar Thumm, 117 S. Grove St., Ypsilanti	Washtenaw
Robert Thiel, Chesaning	Saginaw
Tuckey's Sand and Gravel, Cass City	Tuscola
U.	
Underwood Sand & Gravel Co., 2255 Hamlin Rd., Utica	Oakland, Macomb
U.S. Aggregates, 3430 Ormond Rd., Davisburg	Oakland
C. Utterback, R.F.D. #2, Mt. Pleasant	Isabella, Ogemaw
Union City Gravel Co., Union City	Branch
V.	
Valley Gravel Co., Route 4, Owosso	Shiawassee
Van Camps, 2405 Peck Rd., Croswell	Sanilac
Shirley Van Deusen, Twining	Arenac
Van Enkevorts Bros., Bark River	Delta
Chuck Vaughan Gravel and Excavating, 2685 Deckerville Rd., Caro	Tuscola
Vermontville Gravel Co., Karl S. Benson, Route 1, Vermontville	Eaton
H.R. Vernon, Route 2, Fenville	Allegan
W.	
Ben Waanders, Box 30, Allegan	Allegan
Aubrey Wagner, 220 North 3rd St., Harbor Beach	Huron
Lyle J. Walker Sand & Gravel, Box 201, Hew Hudson	Oakland
Wallace Stone Co., Hersey Sand & Gravel Div., Hersey	Osceola
Walling Gravel Co., P.O. Box 52, St. Johns	Clinton
Walsh Sand and Gravel Co., 13th St., Menominee	Menominee
F.S. Ward, Route 1, Clarkston	Oakland
Wayne Sand & Gravel Co., 40330 Tyler Road, Wayne	Wayne
Ronald Weaver, Box 116, Dansville	Shiawassee, Clinton, Ingham, Saginaw, Livingston
West Lansing Gravel Co., 1911 Pattengill Ave.	Ingham
West Shore Constr. Co., Zeeland	Allegan, Barry, Eaton, Kent, Ottawa

Commercial Sand and Gravel Producers (contd.)

<u>Name and Address</u>	<u>Pit Location (County)</u>
W. contd.)	
Wexford Gravel Co., P.O. 472, Cadillac	Wexford
I. L. Whitehead Co., Sault Ste. Marie	Chippewa
White Lake Gravel, Inc., 622 S. Main, Clawson	Oakland
Whittaker & Gooding Co., 5800 Cherry Hill Rd., Ypsilanti	Washtenaw
Williams Bros., Ionia	Ionia
Olga Winkka, 404 Center St., Marquette	Alger
John Woerner, R.F.D. #4, Adrian	Lenawee
Wolverine Contractors, Inc., 19440 James Couzens Highway, Detroit 35	Macomb, Oakland
Woodward-Pollock Lbr. Co., 120 W. Chicago St., Coldwater	Branch
Willson Bros., Rives Junction	Jackson
Y.	
Earl Yaklin, Seymour Rd., Montrose	Ogemaw
John G. Yerington, Route 3, Box 34,	Allegan, Berrien, Cass, Kalamazoo, Van Buren
Youngs Sand & Gravel, Harold-George Young 9095 S. Huron River Drive, Ypsilanti	Washtenaw
Z.	
Zahns Sand & Gravel, 2315 Ellsworth Rd. Ann Arbor	Washtenaw
Allen Zavitz, 37835 Mallast, Mt. Clemens	Macomb
Zeigler Sand and Gravel, 901 W. State, Hastings	Barry

** Includes heavy-media separation

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Afton Stone and Lime Co. Afton, Michigan	Limestone, crushed	North of Afton Sec. 25, T.35N., R.2W. Cheboygan County
Arenac County Road Commission	Limestone, crushed (non-commercial)	Northeast of Au Gres Sec. 5, T.19N., R.7E. Arenac County
Bichler Bros. 1615 Ludington Esanaba, Michigan	Limestone, crushed	Sec. 1, T.39N., 23E. Delta County
Bay County Road Commission	Limestone, crushed (non-commercial)	near Omer Sec. 34 T.20N., R.5E. Arenac County
Canary Hill Stone Quarry Route 2, Hillsdale	Sandstone (dimensional)	West of Hillsdale Hillsdale County
Charlevoix Lime & Stone Co. Vanderbilt, Michigan	Limestone, crushed	West of Charlevoix Sec. 29, T.34N., R.8W. Charlevoix County
Cheney Limestone Company Bellevue, Michigan	Limestone, crushed and dimensional	West of Bellevue Sec. 20, T.1N., R.6W. Eaton County
De Roche Bros. Keweenaw Bay, Michigan	Sandstone (dimensional)	Sec. 34, T.52N., 33W. Baraga County
Drummond Dolomite, Inc. P.O. Box 688 Sheboygan, Wisconsin	Dolomite, crushed	West end Drummond Is. Sec. 24, T.42N., R.5E. Chippewa County
Fiborn Limestone Co. Saulte Ste. Marie Ontario, Canada	Limestone, crushed	Sec. 16, T.44N., R.7W. Mackinac County
Earl A. Flock 50 Waubascon Rd. Battle Creek, Michigan	Sandstone	East of Battle Creek Sec. 22, T.2S., R.7W. Calhoun County
The France Stone Co. 1800 Toledo Trust Bldg. Toledo 14 Ohio	Dolomite, crushed	Monroe Sec. 7, T.7S., R.9E. Monroe County
Gierke Brothers Fairport, Michigan	Dolomite, dimensional	North of Fairport Sec. 4, T.37N., R.19W. Delta County
Gogebic County Road Commission	Miscellaneous stone (non-commercial)	Gogebic County

Stone Producers - contd.

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Houghton County Road Commission Hancock, Michigan	Basalt, crushed (non-commercial)	Houghton County
Huron Portland Cement Co. 1325 Ford Bldg. Detroit, Michigan	Limestone, crushed	Alpena Sec. 24, T.31N., R.8E. Alpena County
Huron River Quarry Corp. 2668 E. Huron River Drive Flat Rock, Michigan	Dolomite, crushed	West of Flat Rock Sec. 36, T.4S., R.9E. Wayne County
Inland Lime and Stone Co. Manistique, Michigan	Limestone, crushed	North of Hunt Spur Sec. 6, T.42N., R.12W. Mackinac County
Iosco County Road Commission	Limestone, crushed (non-commercial)	Northeast of Au Gres Sec. 24, T.20N., R.7E. Arenac County
City of Iron Mountain Iron Mountain, Michigan	Granite, crushed	Dickinson County
John C. Jeffery Box 107 Parma, Michigan	Limestone, crushed	Northeast of Parma Sec. 19, R.2S., R.2W. Jackson County
Limestone Mountain Co. 1028 Ethel Ave. Hancock, Michigan	Dolomite, crushed	Near Pelkie Sec. 23, T.51N., 35W. Houghton County
Maybee Stone Co. Maybee, Michigan	Dolomite, crushed	Near Maybee, Sec. 29, 5S., 8E. Monroe County
The Metro-nite Company P.O. Box 116, Station F. Milwaukee 9 Wisconsin	Dolomite, crushed	Near Felch Sec. 26, T.42N., R.28W. Dickinson County
Michigan Foundation Quarry Company 1110 W. Jefferson Ave. Trenton, Michigan	Limestone, crushed	Trenton Sec. 7, T.4S., R.11E. Wayne County
Michigan Limestone Div. U.S. Steel Corporation 170 East Woodward Ave. Rogers City, Michigan	Limestone, crushed	Near Rogers City Sec. 23, T.35N., R.5E. Presque Isle County and
" "	Dolomite, crushed	near Cedarville Sec. 10, R.42N., R.1 E. Mackinac County

Stone Producers - contd.

<u>Name and Address</u>	<u>Type of Stone</u>	<u>Quarry Location</u>
Michigan Silica Co.	Sandstone, crushed	near Rockwood Sec. 15, T.5S., R.10E. Wayne County
Michigan Stone Co. R.F.D. #2 Ottawa Lake, Michigan	Dolomite, crushed	East of Ottawa Lake Sec. 25, T.8S., R.6E. Monroe County
Monroe County Road Commission Monroe, Michigan	Dolomite, crushed (non-commercial)	East of Dundee Sec. 13, T.6S., R.7E. Monroe County
Onaway Stone Co. Onaway, Michigan	Limestone, dimensional	North of Onaway Sec. 5, T.34N., R.2E. Presque Isle County
The Original Sandstone Quarry Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E. Jackson County
Penn-Dixie Cement Corp. 60 E. 42nd St. New York 17 New York	Limestone, crushed	West of Petoskey Sec. 3, T.34N., R.6W. Emmet County
Presque Isle Corporation P.O. Box 321 Alpena, Michigan	Limestone, crushed	Sec. 2, T.33N., R.8E. Presque Isle County
Ray Sandstone Quarry 303 Nottawaseppe Napoleon, Michigan	Sandstone	East of Napoleon Sec. 6, T.4S., R.2E. Jackson County
Star Sandstone Co. Box 102 Napoleon, Michigan	Sandstone	East of Napoleon Sec. 31, T.3S., R.2E. Jackson County
Superior Rock Products Company Sagola, Michigan	Dolomite, crushed Mica Schist, crushed Feldspar, crushed	East of Randville Sec. 35, T.42N., R.30W. Secs. 19 and 30, R.42N., R.29W., Dickinson County
Thornton Construction Co. Hancock, Michigan	Dolomite, crushed	Sec. 28, T.39N., R.23W. Delta County and Sec. 6, R.44N., R.8W. Mackinac County
Delbert W. Turner 1607 N. Rose St. Kalamazoo, Michigan	Sandstone	Marshall Sec. 29, T.19N., R.7E. Calhoun County
The Wallace Stone Co. Bayport, Michigan	Limestone, crushed and dimensional	Southeast of Bayport Sec. 5 & 6, R.16N., R.10E. Huron County

GENERALIZED COLUMNAR SECTION OF MICHIGAN

MICHIGAN GEOLOGICAL SURVEY DIVISION

SYSTEM, SERIES	FORMATION, GROUP	LITHOLOGY	THICKNESS	ECONOMIC PRODUCTS
RECENT				
PLEISTOCENE	GLACIAL DRIFT	SAND, GRAVEL, CLAY, boulders, marl	0-1000	SAND, GRAVEL, PEAT, MARL, FRESH WATER
"PERMO-CARBONIFEROUS"	"RED-BEDS"	SHALE, CLAY, SANDY SHALE, gypsum		
PENNSYLVANIAN	GRAND RIVER	SANDSTONE, sandy shale	80-95	BUILDING STONE, FRESH WATER
	SAGINAW	SHALE, SANDSTONE, limestone, coal	20-535	SHALE, COAL, FRESH WATER, BRINE, GAS
MISSISSIPPIAN	BAY PORT	LIMESTONE, SANDY OR CHERTY LIMESTONE, SANDSTONE	2-100	LIMESTONE, FRESH WATER
	MICHIGAN	SHALE, gypsum, anhydrite, sandstone	0-500	GYPSUM
	"MICHIGAN STRAY"	SANDSTONE	0-80	GAS
	MARSHALL	SANDSTONE, sandy shale	100-400	FRESH WATER, BRINE, BUILDING STONE
	COLDWATER	SHALE, sandstone, limestone	500-1100	SHALE, FRESH WATER
	SUNBURY	SHALE	0-140	
	BEREA - BEDFORD	SANDSTONE, SHALE	0-325	GAS, OIL
DEVONIAN	ELLSWORTH - ANTRIM	SHALE, limestone	100-950	SHALE, GAS
	TRAVERSE	LIMESTONE, SHALE	100-800	LIMESTONE, OIL, GAS, FRESH WATER
	BELL	SHALE, Limestone	0-80	SHALE
	ROGERS CITY - DUNDEE	LIMESTONE	0-475	LIMESTONE, OIL, GAS, FRESH WATER
	DETROIT RIVER	DOLOMITE, limestone, salt anhydrite	150-1400	LIMESTONE, DOLOMITE, OIL, GAS, SALT, BRINE, FRESH WATER
	SYLVANIA	SANDSTONE, SANDY DOLOMITE	0-550	GLASS SAND, FRESH WATER
SILURIAN	BOIS BLANC	DOLOMITE, CHERTY DOLOMITE	0-1000	
	BASS ISLAND	DOLOMITE	50-570	DOLOMITE, FRESH WATER
	SALINA	SALT, DOLOMITE, Shale, anhydrite	50-4000	SALT, GAS, OIL
	NIAGARAN (Guelph - Lockport - Engadine) (Manistique - Burnt Bluff) (Cataract)	DOLOMITE, Limestone, shale	150-800	LIMESTONE, DOLOMITE, OIL, GAS, FRESH WATER
ORDOVICIAN	CINCINNATIAN (Richmond) (Maysville - Eden)	SHALE, LIMESTONE	250-800	
	TRENTON - BLACK RIVER	LIMESTONE, DOLOMITE	200-1000	OIL, GAS, LIMESTONE, FRESH WATER
	ST PETER	SANDSTONE	0-150	FRESH WATER
OZARKIAN OR CANADIAN	PRAIRIE DU CHIEN	DOLOMITE, Shale	0-410	
	HERMANVILLE	DOLOMITE, SANDY DOLOMITE, sandstone	15-500	
CAMBRIAN	LAKE SUPERIOR (Munising) (Jacobsville)	SANDSTONE	500-2000	BUILDING STONE, FRESH WATER
ALGONKIAN	KEWEENAW (Copper formations)	LAVA FLOWS, conglomerate, shale, sandstone	9800-35000	COPPER, SILVER, ROAD METAL, SEMI-PRECIOUS GEM STONES
	KILLARNEY GRANITE	GRANITE, GNEISS, diorite, syenite		
	HURONIAN (Iron formations)	SLATES, HEMATITE, SCHIST, QUARTZITE, GRANITE, marble, dolomite	2000+	IRON ORE, ROOFING SLATE, ROAD METAL, GRAPHITE, MARBLE
ARCHEAN	LAURENTIAN	SCHIST, GNEISS, GRANITE		ROAD METAL, BUILDING STONE, VERDE ANTIQUE, TALC, GOLD
	KEEWATIN	SCHIST, GREENSTONE, SLATE		ROAD METAL