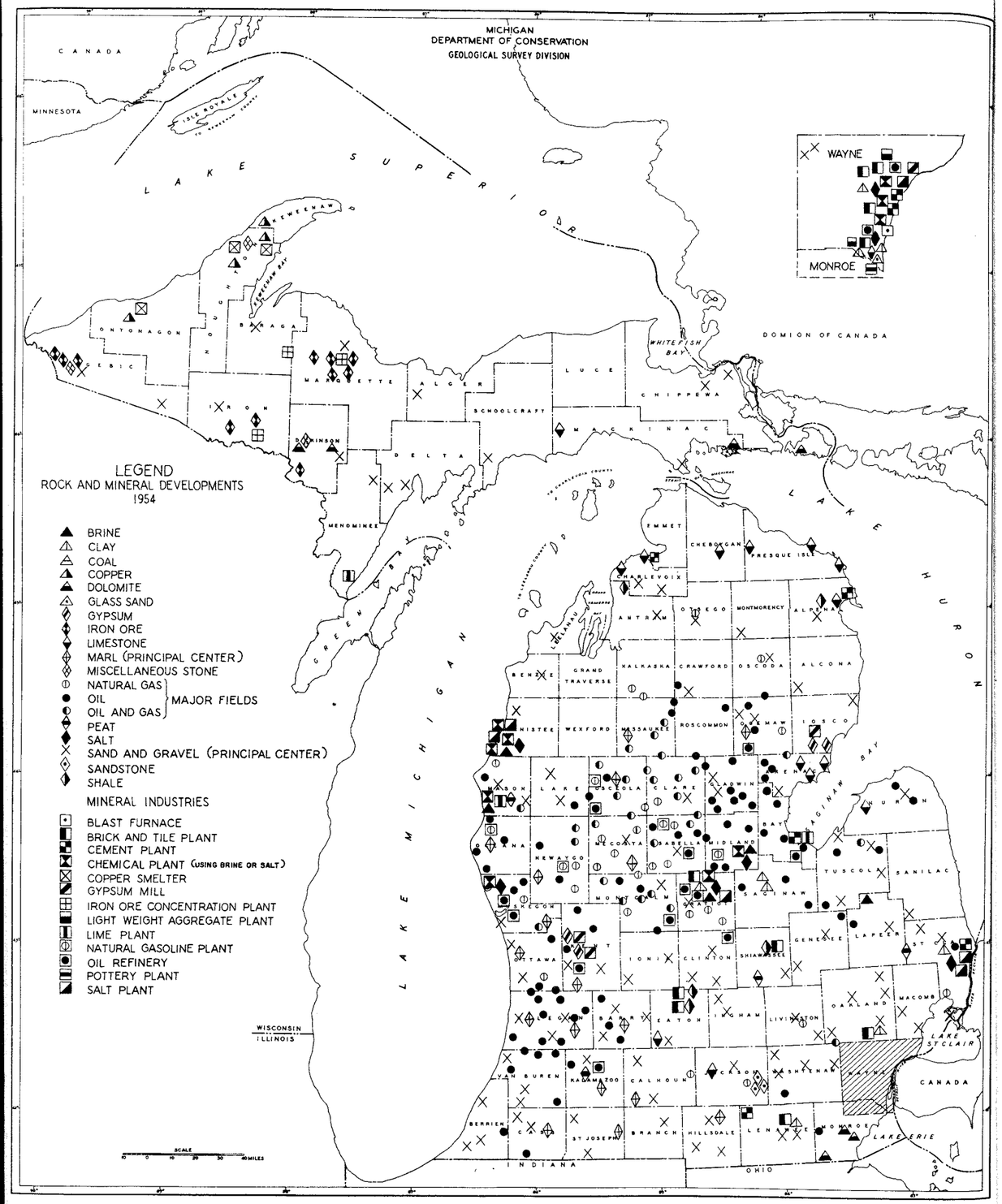
MICHIGAN
DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

MICHIGAN'S MINERAL INDUSTRIES

1953



LEGEND
ROCK AND MINERAL DEVELOPMENTS
1954

- BRINE
- CLAY
- COAL
- COPPER
- DOLOMITE
- GLASS SAND
- GYPSUM
- IRON ORE
- LIMESTONE
- MARL (PRINCIPAL CENTER)
- MISCELLANEOUS STONE
- NATURAL GAS, OIL, OIL AND GAS — MAJOR FIELDS
- PEAT
- SALT
- SAND AND GRAVEL (PRINCIPAL CENTER)
- SANDSTONE
- SHALE

MINERAL INDUSTRIES

- BLAST FURNACE
- BRICK AND TILE PLANT
- CEMENT PLANT
- CHEMICAL PLANT (USING BRINE OR SALT)
- COPPER SMELTER
- GYPSUM MILL
- IRON ORE CONCENTRATION PLANT
- LIGHT WEIGHT AGGREGATE PLANT
- LIME PLANT
- NATURAL GASOLINE PLANT
- OIL REFINERY
- POTTERY PLANT
- SALT PLANT

STATE OF MICHIGAN

DEPARTMENT OF CONSERVATION
Gerald E. Eddy, Director

GEOLOGICAL SURVEY DIVISION
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MICHIGAN'S

MINERAL INDUSTRIES

1953

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E.T. Carlson

APRIL, 1955

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RECENT DEVELOPMENTS IN MICHIGAN'S MINERAL INDUSTRIES*

The International Salt Company, now operating a mine in southern Detroit, purchased all rights to mine salt beneath the Detroit-Wayne airport, about 10 miles west of their present mine. Since the salt is 1,200 feet below the surface in the Salina formation mining will not interfere with airport operations.

The Hooker Electro-Chemical Company opened a new plant about 2 miles southwest of Montague, Muskegon County. Artificial brines formed from Salina salt are used for the production of caustic soda, hydrogen, and chlorine. It is expected that two other companies will soon be located in this new chemical-industry center. Du Pont will build a plant for the manufacture of Neoprene rubber, utilizing hydrogen and chlorine from the Hooker plant. Another basic ingredient for Neoprene, acetylene gas, will be supplied from a plant to be erected by Union Carbon and Carbide Corporation.

A new 60-89 Superior gyratory crusher was installed at the new $15,000,000 Presque Isle quarry, 3 miles north of Bell, Presque Isle County. The new crusher--- built by Allis Chalmers Manufacturing Company---is one of the largest of its kind. It has an 8- to 9-inch setting on the open side, a $1\frac{1}{2}$-inch throw, and will handle 1,800 to 2,000 tons per hour. The quarry (formerly Lake of the Woods quarry) will be operated by Kelley Island Lime and Transport Company and is a joint venture of five major steel companies. Construction of the plant which includes secondary and tertiary crushers and a screening building is nearing completion. It is expected that shipments will begin in 1955.

United States Steel Corporation, Michigan Limestone Division, opened a new quarry near Cedarville, Mackinac County. A primary crusher has been erected on the quarry floor and the crushed stone is hauled over a 6-mile rail line to Port Dolomite. Here secondary and tertiary crushers and a screen plant will process the stone into eight grades ranging from 3- to 5-inch flux stone to rice size (1/16 inch). Shipments which will begin 1955, are expected to reach 3,000,000 tons of high-grade dolomite annually.

The Nashville Gravel Pit, Nashville, Barry County, started production on a 200-acre site late in 1954. The tract has been estimated to contain 2,000,000 cubic yards of gravel.

The first commercial application of "beneficiation" of gravel in Michigan involved the installation of a heavy media separation unit to up-grade materials at a plant near Northville, Wayne County. This plant is unique in that it has been adapted for operation with portable crushing, screening, and washing units. The process removes objectionable chert and shale to meet Michigan State Highway Department and Wayne County material specifications.

The first copper was poured at the new White Pine mine, Ontonagon County, in January 1955. Construction of the mine plant and underground development, which began in 1952, is now essentially completed and it is expected that operations will reach capacity production about mid year.

*Sources: Pit and Quarry, Rock Products, Mining Journal and other trade journals; industrialists; and field work.

A contract has been awarded by the Cleveland Cliffs Iron Company for construction of a pelletizing plant at Eagle Mills, between Negaunee and Marquette, Marquette County. The plant will be used to pelletize the high grade iron ore concentrates to be produced at the Republic mine and will have an initial capacity of about 550,000 tons per year.

Late in 1954 Penn-Dixie Cement Corporation purchased the Petoskey Portland Cement Company plant at Petoskey, Emmet County. A $1,000,000 modernization and expansion program was immediately announced which would include installation of new crushing equipment and cooler and quarry improvements. The plant will now operate under the Penn-Dixie name.

Peerless Cement Corporation announced that a new $7,000,000 cement plant with an annual capacity of 1,000,000 barrels would be erected in the Detroit area. The plant is being built on a 14-acre site and is expected to be completed in late 1956 or early 1957. Distribution of cement will be largely in Detroit and near vicinity.

SUMMARY OF MINERAL INDUSTRIES

1953

The mineral industries of Michigan in 1953, for the seventh consecutive year, broke all former state records for value of mineral products. The value of $287,693,135 was a six per cent increase over the former record value of $267,089,923 set in 1952. New all-time highs were reported for the stone, clay and shale, sand and gravel, and cement industries.

Fuels (petroleum, natural gas, and natural gasoline) decreased in both production and value. The continuous yearly decline of these commodities is largely due to failure to find new fields of importance and the depletion of present oil and gas fields. Production of metallic minerals (iron ore and copper) was up due to recovery of production losses resulting from labor strikes in 1952. Total value of non-metallic minerals (includes all other minerals produced in the state) increased 5 per cent or $7,132,637 over 1952.

In volume of total United States' production, Michigan ranked first in gypsum, salt, and calcium magnesium chloride; second in iron ore, and magnesium compounds and bromine; and fourth in peat.

The principle mineral developments and industries in Michigan are shown on the frontispiece map. Production and value of minerals and mineral products for 1953 and 1952 are shown in Table I and II. The total value of Michigan minerals for 1953 is as follows:

	Value	Per cent
Metallic minerals (iron and copper)	$105,235,715	36.6
Fuels (petroleum, natural gas, natural gasoline)	37,332,526	13.0
Non-metallic minerals and mineral products (all others)	145,124,894	50.4
Total	$287,693,135	100.0

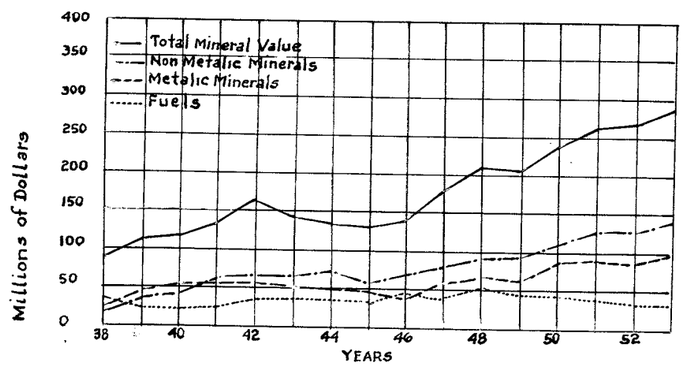

Figure 1. Graph showing relative value of mineral production in Michigan since 1938

Metallic Minerals

IRON ORE: Shipments of ore from northern Michigan iron ranges totaled 13,380,756 tons for the 1953 season--an increase of 1,582,506 tons over 1952. This increase was largely due to the increased steel output by the mills and their need to replenish winter stock piles reduced during the 1952 strikes. Shipments were from the ports at Marquette, Escanaba, and Ashland, Wisconsin to mills in Detroit and in Indiana, Illinois, Ohio, New York and Pennsylvania.

Construction of surface plants, shaft sinking, and underground development progressed at three new mines--the Tracy, Marquette County; the Cannon, Iron County; and the Peterson, Gogebic County. All three new shafts will be used for hoisting ore in 1955, but capacity production will not be established before 1956. Rehabilitation of the Old Carpenter shaft, south of Crystal Falls, Iron County, was completed and underground development began. This shaft will be used to mine the iron ore on the adjacent Lawrence property.

Stripping of surface overburden at the Fortune Lake mine, west of Crystal Falls, Iron County, was continued in 1953. During the last part of the year a small amount of ore was shipped from this open pit. Stripping at the Loomis, a small open pit mine in Wakefield, Gogebic County, was completed and all ore mined during 1953. In the Iron River district, the Davidson mine was abandoned due to exhaustion of mineable ore. A neighboring mine, the James, was also nearing exhaustion and abandonment was expected in early 1954.

Development of Michigan's large reserves of low-grade iron ore continued. At Humboldt, Marquette County, the Ford Motor Company and The Cleveland Cliffs Iron Company in a joint venture opened the Humboldt mine and continued construction of the beneficiation plant. The low-grade ore (jasper and specular hematite) will be mined by open pit methods, hauled to the plant where it will be crushed to 65 mesh and the iron ore concentrated by froth flotation. Production of concentrate will begin in early 1954. Work was started on a similar beneficiation plant at Republic, Marquette County, by Cleveland Cliffs in 1953. This plant, somewhat larger than that at Humboldt, is scheduled for production in late 1955.

The Ohio Beneficiation plant, west of Michigamme, in Baraga County, operated during the shipping season. Production of iron ore concentrate at this plant began in 1952 by Cleveland Cliffs Iron Company. Late in 1953 the North Range Mining Company announced that it planned to concentrate low-grade ore at the Book mine near Alpha, Iron County. A heavy media plant will be used to beneficiate ore mined underground.

Iron Ore Shipments by Ranges, 1953.

Range	Number of mines		Iron ore shipped (Long tons)		
	Underground	Open pit	Direct shipping	Siliceous	Total
Marquette	11	4	5,222,773	348,729	$ 5,571,502
Menominee	14	3	4,577,180	43,727	4,620,902
Gogebic	6	1	3,188,352	--	3,188,352
Total	31	8	12,988,305	392,451	$13,380,756

Shipments and Value of Iron Ore, 1948-1953

Year	Shipments (Long tons)	Value
1948	12,768,167	$59,394,187
1949	10,737,137	57,722,248
1950	12,926,756	73,214,839
1951	13,673,873	78,120,718
1952	11,798,250	83,942,523
1953	13,380,756	91,402,764

COPPER: The major development in Michigan's copper industry during 1953 was the materialization of the White Pine Copper Company's venture in Ontonagon County. A complete new townsite, as well as mill, smelter, and other plant facilities were under construction and underground development of the ore body started. The White Pine mine is unique insofar as Michigan is concerned in that the ore is in the Nonsuch shale and is mainly copper sulfide (chalcocite) with minor amounts of native copper. Presently operating copper mines in Houghton and Keweenaw counties obtain native copper from the Keweenawan lava flows and interbedded rhyolite conglomerates. Production from the White Pine mine is expected early in 1955 at a rate of 75,000,000 pounds of copper per year.

The Calumet and Hecla Inc. Lake Lindon reclamation plant was not operated in 1953. The company continued dewatering operations and rehabilitation of the Osceola mine. Production is expected early in 1955.

Copper Production, 1953

County	Number of		Copper production (Pounds)		
	Mines	Reclamations	Mines	Reclamation	Total
Houghton	3	2	*13,655,942	7,106,641	20,762,583
Keweenaw	6	0	27,237,107	...	27,237,107
Total	9	2	40,893,049	7,106,641	47,999,690

*Includes a small output from Ontonagon County.

Copper Production, 1948-1953

Year	Quantity (Pounds)	Value
1948	53,434,042	$12,242,216
1949	38,498,167	7,380,099
1950	51,788,017	10,997,185
1951	49,297,864	12,077,976
1952	43,939,304	10,820,054
1953	47,999,690	13,832,951

Fuels

PETROLEUM: At the end of 1953 there were 4,089 producing wells in 38 counties. Approximately 38 per cent of the total output was from Arenac, Isabella and Oceana counties--each contributing more than one million barrels.

Fifteen refineries, in 11 counties, processed more than 99 per cent of the state's crude oil. Of the total oil refined in the state, Michigan supplied nearly one-third; the remaining two-thirds was imported from out-of-state. The combined normal daily refining capacity of all Michigan plants is approximately 138,500 barrels. A review of 1953 operations for oil and gas is recorded in the "1953 Summary of Operations, Oil and Gas Fields", Michigan Geological Survey.

NATURAL GAS: Natural gas production declined 18.3 per cent to 7,089,985,000 cubic feet. Of this amount 2.96 billion cubic feet was oil-well gas. Natural gas was produced from 304 wells in 20 counties. Clare, Crawford and Livingston counties led, with 52 per cent of the state's total--each producing more than one billion cubic feet.

Oil- and Gas-Producing Formations, 1953

Formations	Oil production *(Barrels)	Gas production *(M. cu. ft.)
"Michigan Stray"	1,400	2,573,100
Marshall	...	1,097,400
Berea	30,800	149,400
Antrim	...	14,000
Traverse	3,002,000	55,500
Dundee	6,640,800	785,800
Detroit River	2,577,500	1,339,100
Saline-Niagaran	24,800	1,075,600
Trenton	7,200	...
Total	12,284,500	7,089,900

*Estimated

Petroleum and Natural Gas Production, 1948-1953

Year	Petroleum Quantity (Barrels)	Petroleum Value	Natural Gas Quantity (M. cu. ft.)	Natural Gas Value
1948	16,871,046	$48,348,084	21,369,587	$3,040,403
1949	16,517,333	45,610,021	14,660,247	2,101,845
1950	15,826,148	43,157,905	12,614,024	1,967,788
1951	13,926,518	37,949,762	10,524,495	1,641,821
1952	13,251,387	36,176,306	8,677,737	1,353,727
1953	12,284,510	35,644,982	7,089,985	1,246,106

NATURAL GASOLINE: In 1953, Michigan produced from oil-well gas 4,414,371 gallons of natural gasoline and allied products. Of the seven counties producing natural gasoline Crawford ranked first with 62 per cent of the total state output.

Natural Gasoline Production, 1948-1953

Year	Quantity (Gallons)	Value
1948	4,402,062	$419,000
1949	4,268,880	330,518
1950	5,218,794	349,660
1951	6,871,119	687,112
1952	5,330,139	533,014
1953	4,414,351	441,438

. . . . . .

Non-Metallic Minerals

PORTLAND CEMENT: Portland cement shipments and value increased for the ninth consecutive year. Nearly all plants operated at or near capacity during the year. Alpena County continued as the leading producer, with Wayne County ranking second. Other producing counties were Bay, Emmet, Lenawee and St. Clair.

Raw materials used in cement manufacturing included clay, shale, limestone and gypsum. Antrim shale from Alpena County and Ellsworth shale from Antrim County were used by the northern plants; all southern plants used local clays. The greater portion of the limestone was from the Traverse and Dundee formations in the northern part of the Southern Peninsula. All gypsum was purchased.

Raw Material used in the Manufacture of Portland Cement, 1953

Raw material	Short tons
Limestone	*3,878,109
Clay and shale	1,160,066
Gypsum	114,617

*Includes lime mud.

Several improvements were made by various cement manufacturers to meet increasing demands for cement throughout the Great Lakes region. A 6,000 ton, self unloading vessel--the Paul H. Townsend--was added to the fleet of the Huron Portland Cement Company plant at Alpena. Also expansion of the mill was planned to include four new kilns and raw- and finish-grinding equipment to increase the capacity of the world's largest cement plant by about 25 per cent. The addition of five new storage silos for a total of 11 by the company at its Detroit distributing plant assisted greatly in overcoming the cement shortage in the Detroit area.

During 1953 a clinker-grinding ball mill was installed by the Aetna Portland Cement Company at Bay City and a new kiln and raw mill installation planned to be in operation during 1954.

To facilitate loading of clinkers into barges for delivery, Peerless Cement Corporation installed a new clinker conveying system at their Port Huron plant. A clay mill was also added at Port Huron and nearly 200 feet of the No.1kiln was replaced with a new section. At their Detroit plant an electrical precipitator was installed to be in operation early in 1954.

Portland Cement Shipments, 1948-1953

Year	Shipments (Barrels)	Value	Rank in U.S.	No. of plants
1948	11,116,911	$23,533,001	5	7
1949	12,747,791	28,823,055	5	7
1950	12,854,423	29,619,766	5	7
1951	14,112,639	35,121,324	5	7
1952	14,760,783	36,819,041	5	7
1953	15,853,096	41,860,464	-	7

STONE: Stone production hit a new all-time high in 1953, largely due to greater demands for flux stone because of the steel companies efforts to overcome losses caused by labor strikes in 1952. More than a million tons of limestone or dolomite were produced from each of the following counties: Alpena, Chippewa, Mackinac and Presque Isle. Stone was also quarried in Arenac, Cheboygan, Dickinson, Eaton, Emmet, Huron, Jackson, Monroe and Wayne counties.

Other stone produced during 1953 included dimensional limestone from Eaton, Huron, Monroe and Presque Isle counties; sandstone (rough construction, rubbles and flagging stone) from Jackson County; and crushed basalt (road construction) from Houghton County.

Stone Production, 1953

	Quantity (Short tons)	Value
Limestone and dolomite		
Crushed	21,396,451	$17,318,854
Dimensional	4,849	53,425
Sandstone		
Dimensional	1,256	7,385
Basalt		
Crushed	51,310	62,586
Total	*21,453,866	$17,442,250

*Does not include 7.3 million tons of limestone used in the manufacture of Portland cement and lime.

Approximately 70 per cent of Michigan's total limestone and dolomite output was quarried from the Devonian, Rogers City, Dundee and Traverse limestones in Presque Isle, Alpena, Wayne and Emmet counties. The remaining 30 per cent was from the Niagaran limestones and dolomites in Mackinac and Chippewa counties; the Bayport limestone in Huron, Eaton, Jackson, and Arenac counties; and the Bass Island dolomites of Monroe County.

Uses of Crushed Limestone and Dolomite, 1953

Uses	Per cent of total	Quantity (Short tons)	Value
Flux	59.6	12,746,549	$9,780,588
Chemical uses*	19.2	4,113,217	2,848,731
Concrete, road metal	16.7	3,579,375	3,671,514
Agricultural	3.0	650,442	601,588
Railroad ballast	.6	124,580	151,136
Others**	.8	179,375	228,297
Total	99.9	21,393,538	$17,281,854

* Includes alkali, calcium-carbide, sugar, glass, paper.
** Includes putty filler, riprap, asphalt, roof filler, carbon, mineral feeds, stone sand and others.

Plans for establishment of a quarrying and processing plant at Cedarville in the Northern Peninsula went into effect during 1953. The project, expected to produce approximately 3,000,000 tons of metallurgical quality dolomite annually, will be the United States Steel Corporation's first waterborne dolomite source on the Great Lakes. Stone will be quarried from the Engadine formation at the company's 10,000-acre site, 6 miles northeast of Cedarville, and transported by railroad to the mill east of Cedarville. The location on McKay Bay will be called Port Dolomite.

The construction of a $12,000,000 limestone plant north of Bell, Presque Isle County, began in 1953. The project will be financed by five steel companies and operated by Kelley Island Lime & Transport Co. The former Lake of the Woods quarry, operated by Kelley Island from 1932 to 1949, will be reopened to provide high-calcium flux stone from the Rogers City and Dundee formations. Shore fill was under way during 1953 for a mammoth stone loading pier to extend 1,200 feet into Lake Huron and a dock to extend another 1,000 feet for boat loading facilities. Tunnels were under construction for two conveyor systems to move rock from the quarry to the pier. Footing has been laid for a large machine shop between the pier and the quarry. The capacity of the plant is expected to be 8,000,000 tons of stone annually.

Production of Stone, 1948-1953

Year	Quantity (Short tons)	Value	Rank in U.S.
1948	19,710,576	$13,906,111	3
1949	19,546,670	13,387,334	4
1950	19,095,703	15,389,684	3
1951	20,935,767	17,082,206	3
1952	18,001,080	15,590,573	4
1953	21,453,866	17,442,250	-

SAND AND GRAVEL: Another new record for sand and gravel production was set in 1953. Sand and gravel used for paving and road purposes accounted for more than three-fifths of the output or approximately 20 per cent over 1952. Structural sand and gravel production was down about 100,000 tons and molding sand was up 235,000 tons.

Production was reported from all but five counties with Oakland ranking first. Approximately 50 per cent of the state's total production was from Oakland, Livingston, Ottawa, Wayne, Washtenaw, Macomb and Kent counties-- each producing more than 1,000,000 tons. Commercial producers accounted for 24,209,362 tons of sand and gravel. The remaining 6,250,301 tons were non-commercial sand and gravel, reported by county road commissions and other governmental agencies.

Uses of Sand and Gravel, 1953

Uses	Quantity (Short tons)	Value	Per cent of total
Molding sand	1,965,807	$ 1,978,565	6.5
Structural sand	3,641,863	2,589,998	12.0
Paving and road sand	3,677,639	2,610,486	12.1
Other sand*	778,916	1,020,747	2.6
Structural gravel	3,815,209	3,795,671	12.5
Paving and road gravel	15,977,046	10,759,907	52.4
Railroad ballast gravel	506,727	349,729	1.6
Other gravel	96,456	65,699	0.3
Total	30,459,663	$23,170,802	100.0

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

Production of Sand and Gravel, 1948-1953

Year	Quantity (Short tons)	Value	Rank in U.S.
1948	20,671,078	$14,071,712	2
1949	20,475,996	13,992,903	2
1950	24,559,253	16,699,203	2
1951	24,688,264	18,324,872	2
1952	27,126,339	21,050,125	2
1953	30,459,663	23,170,802	-

SALT: Although short of the 1951 all-time high Michigan again ranked first in the nation, producing one-fourth of the total output for the United States. Of the five counties producing salt, Wayne County was first with four companies reporting a combined total of 3,913,285 tons or approximately 76 per cent of the state's total output. The producing counties were Midland, St. Clair, Manistee and Gratiot.

Approximately 70 per cent of the salt produced was used by chemical plants in Wayne and Midland counties. Soda ash manufacturing accounted for nearly 2.2 million tons, and chlorine, bleaches, chlorides, and other chemicals 1.4 million tons. Dried and evaporated salt accounted for 7 per cent and was used largely for food processing, dust and ice control, livestock and other farm uses, water treatment, metallurgy, textile processing, hides and leather, and refrigeration. Salt exported to other states accounted for 20 per cent, and to Canada approximately 3 per cent of the state's total production.

Of the four brine and salt-producing formations--Marshall, Dundee, Detroit River and Salina--the Salina was by far the greatest contributor. Artificial brines, formed by dissolving rock salt from the Salina were recovered by five plants in St. Clair and Wayne counties for production of evaporated salt and for use in chemical plants. Salina rock salt was mined at Detroit by means of a shaft approximately 1,100 feet in depth. Evaporated salt was produced from natural brines from the Marshall and Dundee formations at St. Louis and from artificial brines from the Detroit River formation at Manistee. Artificial brine from the Detroit River formation was used at the chemical plant at Midland.

Uses of Salt, 1953

Uses	Quantity (Short tons)
Chemical	3,565,000
Food processing	355,000
Highway, dust and ice control	321,000
Livestock	229,000
Table and other household	142,000
Water treatment	118,000
Metallurgy	65,000
Textile, hides and leather processing	64,000
Refrigeration	56,000
Agriculture	19,000
Other	193,000
Total	5,127,000

Salt Production, 1948-1953

Year	Quantity (Short tons)	Value	Rank in U.S.	Per cent of U.S. total
1948	4,387,879	$16,265,743	1	26.7
1949	4,064,106	16,009,117	1	26.1
1950	4,446,667	19,178,765	1	26.7
1951	5,137,639	21,221,330	1	25.4
1952	4,778,347	21,446,382	1	24.4
1953	5,127,387	22,171,988	1	24.7

CLAY AND SHALE: Michigan attained a new record high for raw clay and shale production in 1953, with 11 counties producing. Wayne County lead with 36 per cent of the state's total output, followed by Alpena, Saginaw and St. Clair counties. Approximately 70 per cent of the raw clay and shale produced was consumed by the Portland cement industry. The remaining 30 per cent was used for the manufacture of clay products and a small quantity for prepared clays.

CLAY PRODUCTS: Michigan's clay products include brick, tile, pottery and light-weight aggregate. Three tile plants used Saginaw shale as raw material; all other plants utilized local clays. Surface clays furnished 80 per cent of the raw material used in clay products manufacturing, and shale 20 per cent.

Production of Clay and Shale and Clay Products, 1948-1953

Year	Raw clay and shale: Quantity *(Short tons)	Raw clay and shale: *Value	Clay products: Estimated value
1948	1,308,170	$ 985,740	$3,764,000
1949	1,363,440	1,013,250	3,650,000
1950	1,426,659	1,137,002	5,499,000
1951	1,531,732	1,592,137	5,112,000
1952	1,580,123	1,615,122	4,534,000
1953	1,605,804	1,646,113	6,995,181

*Sold or used: value of clay used in cement and heavy clay products not included in total value of state.

GYPSUM: For the ninth consecutive year Michigan ranked first in the nation in the production of gypsum although total production was below that of the 1951 record year.

All gypsum was obtained from the Michigan formation from two quarries in Iosco County and two mines in Kent County. Iosco County ranked above Kent County in production. The manufacture of prefabricated products (lath, wallboard, and sheathing) is by far the most important use of this commodity.

Production of Gypsum, 1948-1953

Year	Quantity (Short tons)	Value	Per cent of U.S.	Rank in U.S.
1948	1,309,331	$3,617,868	18	1
1949	1,264,511	3,470,294	19	1
1950	1,474,210	4,090,777	18	1
1951	1,566,276	4,402,725	18	1
1952	1,487,642	4,200,418	18	1
1953	1,446,973	4,091,002	18	1

PEAT: Five concerns in four counties reported peat production during 1953. Lapeer County remained first, followed by Shiawassee, Kalamazoo and Mason counties. Michigan peat is used almost exclusively for horticultural purposes. Its largest market is as a soil conditioner for lawns, golf courses, gardens, nurseries, and greenhouses. It is estimated by the United States Bureau of Mines that Michigan, Minnesota and Wisconsin contain 75 per cent of the nation's total peat reserves.

Production of Peat, 1948-1953

Year	Quantity (Short tons)	Value	Per cent of U.S.	Rank in U.S.
1948	12,425	$154,500	...	4
1949	...	...	...	5
1950	13,625	186,000	10.4	4
1951	20,180	320,100	10.4	5
1952	36,020	430,156	16.6	2
1953	25,439	257,176	12.5	4

MARL: Commercial marl production was reported by 27 producers in 18 counties during 1953. Isabella County ranked first, followed closely by Allegan, Kalamazoo and Mecosta counties. Combined, these counties produced approximately 55 per cent of the state's output. The large decrease in value of marl for 1953 is misleading and should not be compared with values of former years. Normally the value of marl is based at or near $1.00 per cubic yard. In 1953, however, evaluation by most producers was 50 cents per cubic yard or less. All marl was used for agricultural purposes.

Production of Marl, 1948-1953

Year	Quantity (Short tons)	Value	Rank in U.S.
1948	...	...	...
1949	1,500	$ 1,500	...
1950	218,429	122,212	1
1951	144,731	125,212	1
1952	130,613	119,705	1
1953	183,685	72,781	...

LIME: Lime production for Michigan's three plants was about 14 per cent below that of 1952. Paper, chemical and industrial uses, water purification, and metallurgy consumed approximately 90 per cent of the total output. Smaller amounts of lime were used in sewage and trade waste treatment; in tanneries; in the manufacture of sugar, brick (sand-lime) and insecticides; petroleum refining; food and food by-products; and wood distillation. Mason County continued to rank first in production, followed by Menominee and Bay counties.

Stone quarried in northern Michigan from the high-calcium Dundee of Presque Isle County and the Burnt Bluff limestone of Mackinac County served as raw material for the lime industry.

BROMINE, CALCIUM-MAGNESIUM CHLORIDE, MAGNESIUM COMPOUNDS, POTASH: The value of the natural salines--bromine, calcium-magnesium chloride, magnesium compounds, and potash recovered from natural brines by the chemical plants decreased 2 per cent below 1952. Bromine production increased considerably to meet demands for ethylene debromide used for gasoline anti-knock compounds, whereas production of other saline commodities decreased. Only one plant (Dow Chemical Company, Midland County) reported production of potassium salts from natural brines.

Sales of calcium-magnesium chloride were principally for stabilization of dirt roads and dust control. Another important use for calcium chloride is "freeze-proofing" coal, iron ore and other materials shipped in bulk in railroad cars or stockpiled in the open. Magnesium compounds have a variety of uses and are of particular importance in the manufacture of fertilizers, oxychloride cement, rayon and rubber. Magnesium chloride is used predominately in the production of metallic magnesium. Magnesium sulfate, carbonate, oxide and hydroxide are used extensively in pharmaceuticals.

Chemical companies in Midland and Gratiot counties used natural brines from the Marshall, Dundee and Sylvania formations; companies in Mason and Manistee counties used brines from the Filer sandstone of the Detroit River formation.

Production of Bromine and Calcium-Magnesium Chloride, 1948-1953

	Bromine				Magnesium Compounds		
Year	Quantity (Pounds)	Value	Per cent of U.S. total	Rank in U.S.	Quantity (Tons)	Value	Rank in U.S.
1948	17,666,243	$5,435,940	23.2	2	34,500	$3,577,000	3
1949	28,034,765	7,023,211	32.0	2	*	*	...
1950	*	*	...	2	59,036	4,998,342	2
1951	*	*	...	2	*	*	1
1952	*	*	...	2	*	*	2
1953	*	*	...	2	43,190	4,591,922	2

*Data concealed.

Value of Michigan's Minerals
and
Mineral Products
1938-1952

Year	Value	Year	Value
1938	$ 75,897,923	1946	$133,672,135
1939	109,867,740	1947	170,269,272
1940	117,991,285	1948	214,115,771
1941	135,492,921	1949	207,607,694
1942	152,624,946	1950	238,474,008
1943	147,113,888	1951	257,529,882
1944	140,493,319	1952	267,089,423
1945	128,046,408	1953	283,924,677

TABLE I

MINERAL PRODUCTS OF MICHIGAN, 1953[1]

Product	Unit	Quantity	Value	Rank in U.S.[2]
Iron ore	Long tons	13,380,756	$91,402,764	2
Portland cement	Barrels	15,853,096	41,860,464	...
Petroleum	Barrels	12,284,510	35,644,982	...
Sand and gravel	Short tons	30,459,663	23,170,802	...
Salt	Short tons	5,127,387	22,171,988	1
Stone[3]	Short tons	21,453,866	17,442,250	...
Copper	Pounds	47,999,690	13,832,951	...
Clay products	...	...	6,995,000	...
Magnesium compounds	Short tons	43,190	4,591,922	2
Gypsum	Short tons	1,446,973	4,091,002	1
Clay and shale, raw	Short tons	1,605,804	(4)	...
Natural gas	M. cu. ft.	7,089,985	1,246,106	...
Natural gasoline	Gallons	4,414,371	441,438	...
Peat	Short tons	25,439	257,176	4
Marl	Short tons	183,685	72,781	...
Miscellaneous[5]	...	...	24,471,509	...
Total			$287,693,135	

(1) Statistics compiled in co-operation with the United States Bureau of Mines.

(2) Based upon quantity.

(3) Limestone used in the manufacture of Portland cement and lime not included.

(4) Value of clay and shale used in clay products and cement industries not included in state total value; value of other clays included under miscellaneous.

(5) Includes bromine, calcium chloride, calcium-magnesium chloride, clay, lime, and potassium salts.

TABLE II

MINERAL PRODUCTS OF MICHIGAN, 1952[1]

Product	Unit	Quantity	Value	Rank in U.S.[2]
Iron ore	Long tons	11,798,250	$ 83,942,523	2
Portland cement	Barrels	14,760,783	36,819,041	5
Petroleum	Barrels	13,251,387	36,176,306	...
Salt	Short tons	4,778,347	21,446,382	1
Sand and gravel	Short tons	27,126,339	21,050,125	2
Stone[3]	Short tons	18,001,080	15,590,573	4
Copper	Pounds	43,939,304	10,820,054	...
Clay products	...	...	4,534,000	...
Gypsum	Short tons	1,487,642	4,200,418	1
Natural gas	M. cu. ft.	8,677,737	1,353,727	...
Clay and shale, raw	Short tons	1,580,123	(4)	
Natural gasoline	Gallons	5,330,139	533,014	...
Peat	Short tons	36,020	430,156	2
Marl	Short tons	130,613	119,705	1
Miscellaneous[5]	...	...	30,073,203	
Total			$267,089,423	

(1) Statistics compiled in cooperation with the United States Bureau of Mines.

(2) Based upon quantity.

(3) Limestone used in the manufacture of Portland cement and lime not included.

(4) Value of clay and shale used in clay products and cement industries not included in state total value; value of other clays included under miscellaneous.

(5) Includes bromine, magnesium compounds, calcium chloride, calcium-magnesium chloride, clay, coal, lime, and potassium salts.

PRODUCTION AND VALUE
of
MINERALS AND MINERAL PRODUCTS
BY COUNTIES

1953

All counties, except Grand Traverse, reported mineral production for 1953. Marquette, Iron, Wayne, Midland, and Gogebic led all others in value, contributing 48 percent 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 combine counties or to show the county value as an undistributed total to avoid disclosure of individual company operations. The numeral 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 the production of that resource and the county's percentage of the state's total 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 and their products are listed, by counties, below production data. Location of the operation, when known, is given by section, township, and range.

		Quantity	Value
ALCONA (70)			
Sand and gravel		371,400 tons	$ 77,055
Alcona County Road Commission	NE¼ SW¼ Sec. 7, T.25N., R.6E.) SE¼ SW¼ Sec. 7, T.26N., R.9E.) NW¼ NE¼ Sec.11, T.26N., R.9E.)	Sand and gravel	
E. P. Brady and Co.		Sand and gravel	
Harry Pickitt		Sand and gravel	
ALGER (76)			
Sand and gravel		59,992 tons	$ 37,213
Alger County Rd. Comm.		Sand and gravel	
Duluth, So. Shore & Atlantic Ry.		Sand and gravel	
Ed Culver	NE¼ SE¼ Sec.32, T.45N., R.22W.	Sand and gravel	
Leonard Johnson		Sand and gravel	
Olga Winka		Sand and gravel	

		Quantity	Value
ALLEGAN (36)			
Petroleum (15th, 2%)		275,843 bbls.	$ 800,392
Sand and gravel (12th, 2%)		592,820 tons	300,042
Marl (2nd)		25,367 tons	6,647
Natural gas		25,711 M.cu.ft.	4,519
Total value			$1,111,600
Cleo L. Arndt			Sand and gravel
L. Z. Arndt			Marl
Gerald Arnsman			Marl
Emil Pavlak			Marl
Harry Pickitt	SW¼ NE¼ Sec.34,T.3N.,R.13W.)		
	NW¼ SW¼ Sec. 5,T.1N.,R.14W.)		Sand and gravel
Ben Waanders			Sand and gravel
John Yerington	NE¼ NE¼ Sec.22,T.3N.,R.15W.)		
	SE¼ NW¼ Sec.15,T.4N.,R.11W.)		Sand and gravel
ALPENA (6)			
Portland cement (1st), stone-crushed limestone (4th), shale* (2nd), sand and gravel			(Combined with Presque Isle Co.)
E. P. Brady and Co.	NE¼ NE¼ Sec.2,T.30N.,R.6E.		Sand and gravel
Huron Portland Cement	NE¼ Sec.30,T.31N.,R.7E.		Shale
Company	Sec.24,T.31N.,R.8E.		Portland cement
Harry Pickitt			Sand and gravel
Wyandotte Chemical Corp.	Sec.13,T.31N.,R.8E.		Limestone-crushed
ANTRIM (73)			
Shale*, sand and gravel			(Combined with Cheboygan Co.)
Antrim County Rd. Comm.	NE¼ SW¼ Sec.36,T.32N.,R.9W.		Sand and gravel
	NE¼ NE¼ Sec.19,T.30N.,R.6W.)		
Petoskey Portland Cement Company	SE¼ Sec.23,T.32N.,R.8W.		Shale
The Taber Co.			Sand and gravel

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

		Quantity	Value
ARENAC (12)			
Petroleum (1st, 17%), stone-crushed limestone, sand and gravel			$6,006,908
Arenac County Rd. Comm.	NW¼ Sec.5,T.19N.,R.7E.		Limestone
Deep River Block and Sand Co.			Sand and gravel
Eaatman Gravel pit			Sand and gravel
BARAGA (44)			
Iron ore		124,615 tons	$ 878,648
Sand and gravel		43,125	19,369
Total value			$ 897,917
Baraga County Road Commission	SW¼ NE¼ Sec.23,T.51N.,R.32W.)		
	SW¼ SE¼ Sec. 7,T.49N.,R.33W.)		Sand and gravel
	SW¼ SW¼ Sec.20,T.49N.,R.33W.)		
The Cleveland-Cliffs Iron Company			
Ohio-Webster mine	Sec. 22,26,27,T.48N.,R.31W.		Iron ore
Duluth, South Shore and Atlantic Ry.			Sand and gravel
BARRY (62)			
Petroleum		37,685 bbls.	$ 109,347
Undistributed: Sand and gravel, marl			52,819
Total value			$ 162,166
Barry County Road Commission	SE¼ NW¼ Sec. 4,T.4N.,R.9W.)		
	SW¼ NW¼ Sec.29,T.3N.,R.9W.)		Sand and gravel
	SW¼ NW¼ Sec.25,T.2N.,R.10W.)		
H. A. Carlton Schau			Sand and marl
Hawthorn and Steinback			Sand and gravel
Lancaster Sand and Gravel Company	NW¼ NW¼ Sec.18,T.13N.,R.8W.		Sand and gravel
A. D. Pennock	SW¼ NW¼ Sec.1,T.2N.,R.7W.		Sand and gravel
John G. Yerington			Sand and gravel
West Shore Construction			Sand and gravel

		Quantity	Value
BAY (11)			
Undistributed: Portland cement (3rd Petroleum (6th, 6%), lime (3rd)			$6,400,515
Aetna Portland Cement Company	Bay City		Portland cement
Monitor Sugar Co. Div.	Bay City		Lime
BENZIE (81)			
Sand and gravel		41,850 tons	$18,600
Benzie County Road Commission	SE¼ SW¼ Sec.8,T.25N.,R.13W.) SE¼ NE¼ Sec.8,T.26N.,R.14W.) SE¼ SW¼ Sec.16,T.27N.,R.13W.) SE¼ NE¼ Sec.31,T.27N.,R.13W.) NW¼ SE¼ Sec.26,T.27N.,R.15W.)		Sand and gravel
BERRIEN (57)			
Sand and gravel		464,760 tons	$267,463
Petroleum		3,677 bbls.	10,669
Total value			$278,132
Ireland and Lester Co.	NW¼ NW¼ Sec.24,T.4S.,R.19W.		Sand and gravel
Harold Kiell			Sand and gravel
Nieb Concrete Products			Sand and gravel
Producers Core Sand Corp.			Sand
John G. Yerington	NE¼ SW¼ Sec.36,T.7S.,R.18W.		Sand and gravel
BRANCH (66)			
Sand and gravel		175,711 tons	$ 98,495
Branch County Road Commission			Sand and gravel
H. Stukey Co.	SW¼ SE¼ Sec.4,T.6S.,R.6W.		Sand and gravel

		Quantity	Value
CALHOUN (54)			
Undistributed: Sand and gravel (14th, 2%), marl (5th)			$ 352,725
Carl Avery			Marl
Battle Creek Gravel Co.	SW¼ NW¼ Sec.15,T.1S.,R.7W.) NW¼ SE¼ Sec.33,T.1S.,R.8W.) SW¼ SE¼ Sec. 4,T.2S.,R.8W.)		Sand and gravel
Emil Combs			Sand and gravel
Harry Pickitt			Sand and gravel
Clyde M. Reed			Marl
West Shore Constr. Co.			Sand and gravel
John G. Yerington			Sand and gravel
CASS (65)			
Undistributed: Sand and gravel, marl			$ 102,066
Grand Brizendine			Marl
Cass Co. Rd. Comm.	NE¼ NE¼ Sec.20,T.5S.,R.13W.) SE¼ SE¼ Sec.17,T.6S.,R.13W.) NE¼ SE¼ Sec.16,T.6S.,R.15W.)		Sand and gravel
Heide's Sand and Gravel			Sand and gravel
Frank R. Hixon			Marl
Harry Pickitt			Sand and gravel
John G. Yerington	NW¼ SE¼ Sec.10,T.5S.,R.16W.		Sand and gravel
CHARLEVOIX (72)			
Sand and gravel		138,653 tons	$ 53,046
Charlevoix Co. Road Commission	NW¼ SW¼ Sec.13,T.32N.,R.5W.) SE¼ NW¼ Sec.27,T.33N.,R.6W.) SE¼ SE¼ Sec.5,T.32N.,R.7W.) NW¼ NE¼ Sec.28,T.33N.,R.7W.) SE¼ NE¼ Sec.5,T.33N.,R.8W.)		Sand and gravel

		Quantity	Value
CHEBOYGAN (79)			
		(Includes Antrim County)	
Stone--crushed limestone, sand and gravel			$66,571
Hugh M. Mason	SE¼ SW¼ Sec.32,T.33N.,R.3W.	Sand and gravel	
Ralph Tanner & Assoc.	SE¼ Sec.25,T.35N.,R.2W.	Limestone-crushed	
CHIPPEWA (21)			
Stone--crushed dolomite (3rd), sand and gravel		(Combined with Mackinac Co.)	
Chippewa Co. Rd. Comm.	NW¼ SE¼ Sec.15,T.45N.,R.2W.	Sand and gravel	
Drummond Dolomite, Inc.	Sec. 36,T.42N.,R.5E.	Dolomite	
C. L. Whitehead	NW¼ SW¼ Sec.30,T.47N.,R.3W.) S½ NW¼ Sec.23,T.45N.,R.2W.) E½ Sec. 6,T.46N.,R.5W.) NE¼ SE¼ Sec.35,T.47N.,R.1W.)	Sand and gravel	
CLARE (28)			
Petroleum (7th, 5%)		645,304 bbls.	$1,872,427
Natural gas (1st, 22%)		1,570,342 M.cu.ft.	295,998
Sand and gravel		15,000 tons	12,500
Total value			$2,160,925
Fisher Sand and Gravel Co.		Sand and gravel	
CLINTON (59)			
Sand and gravel		310,986 tons	$230,646
Boichot Concrete Products Corp.	NE¼ SW¼ Sec. 3,T.5N.,R.2W.) NW¼ NW¼ Sec.24,T.5N.,R.2W.)	Sand and gravel	
Clinton Co. Rd. Comm.	NE¼ Sec.13,T.5N.,R.4W.	Sand and gravel	
Edward Light		Sand and gravel	
Harry Pickitt		Sand and gravel	
Walling Gravel Co.		Sand and gravel	

		Quantity	Value
CRAWFORD (34)			
Petroleum (13th, 2%)		298,561 bbls.	$ 866,311
Natural gasoline (1st, 62%)		2,752,640 gal.	275,264
Natural gas (2nd, 15%)		1,090,632 M. cu. ft.	191,679
Sand and gravel		17,159 tons	7,919
Total value			$1,341,173
Crawford Co. Road Commission	NW¼ SW¼ Sec.9,T.25N.,R.3W.) SW¼ SW¼ Sec.27,T.26N.,R.3W.)	Sand and gravel	
DELTA (63)			
Sand and gravel		(Combined with Menominee Co.)	
Bickler Brothers	SW¼ SE¼ Sec.1,T.39N.,R.23W.	Sand and gravel	
Cloverland Milling & Supply Co.		Sand and gravel	
Days River Sand & Gravel Co.		Sand and gravel	
Delta Co. Commission	SE¼ SW¼ Sec.10,T.37N.,R.24W.) NE¼ NE¼ Sec. 5,T.38N.,R.24W.) NE¼ SW¼ Sec.24,T.40N.,R.20W.) NW¼ NE¼ Sec.28,T.40N.,R.23W.)	Sand and gravel	
Van Enkevorts Bros.	SE¼ NE¼ Sec. 8,T.38N.,R.24W.	Sand and gravel	
DICKINSON (55)			
Undistributed - stone--crushed dolomite, iron ore, sand and gravel			$336,774
Champion, Inc.			Sand and gravel
Dickinson Co. Rd. Comm.	SE¼ NW¼ Sec.7,T.41N.,R.27W.	Sand and gravel	
Globe Iron Co.-- Globe-Cornell (open pit)	Sec.20,T.40N.,R.30W.	Iron ore	
Jackson Iron & Steel Co. Bradley (open pit)	Sec.25,T.40N.,R.31W.	Iron ore	
Superior Rock Products Company	SW¼ SE¼ Sec.30,T.42N.,R.29W.) NW¼ SE¼ Sec.34,T.42N.,R.30W.) SW¼ NW¼ Sec.35,T.42N.,R.30W.)	Dolomite, feldspar, Mica schist--crushed " " "	
The Metro-Nite Co.	SE¼ SW¼ Sec.26,T.42N.,R.28W.	Dolomite--crushed	

	Quantity	Value

EATON (32)

Clay products		$1,242,000 est.
Stone--crushed and dimensional limestone	111,669 tons	205,366
Shale*	49,685 tons	49,685
Sand and gravel	124,938 tons	56,652
Total value		$1,504,018

American Vitrified Products Co.	NE¼ Sec.10,T.4N.,R.4W.	Shale -- tile
F.G. Cheney Limestone Company	NW¼ SE¼ Sec.20,T.1N.,R.6W.	Limestone-crushed
Eaton County Road Comm.		Sand and gravel
Grand Ledge Clay Products Co.	SE¼ Sec.3,T.4N.,R.6W.	Shale--tile
West Shore Constr. Co.	NW¼ NE¼ Sec.18,T.1N.,R.5W.	Sand and gravel

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

EMMET (18)

Portland cement (4th), stone--crushed limestone (Combined with Manistee Co.)

Petoskey Portland Cement Company	Sec. 2,T.34N.,R.6W.	(Portland cement, (limestone-crushed

GENESEE (53)

Sand and gravel	492,932 tons	$340,018
Petroleum	5,857 bbls.	16,995
Total value		$357,013

Hanson Gravel Co.		Sand and gravel
A.S. Leffler Gravel Co.	SW¼ SE¼ Sec.7,T.8N.,R.8E.	Sand and gravel
John Post and Sons	SW¼ NW¼ Sec.7,T.6N.,R.5E.	Sand and gravel
Justus Snelenberger		Sand and gravel

GLADWIN (31)

Petroleum (9th,4%)	547,133 bbls.	$1,587,572
Sand and gravel	37,500 tons	15,750
Total value		$1,603,322

Gladwin Co. Hwy. Dept.	SE¼ SE¼ Sec.26,T.18N.,R.2W.) SE¼ NE¼ Sec. 7,T.19N.,R.2W.) NE¼ NE¼ Sec. 5,T.20N.,R.1W.)	Sand and gravel

	Quantity	Value

GOGEBIC (5)

Iron ore (3rd, 24%)	3,188,352 tons	$22,022,378
Sand and gravel	154,152 tons	105,844
Stone	25,000 tons	25,000
Total value		$22,153,222

Gogebic County Road Commission	SE¼ NW¼ Sec.28,T.44N.,R.39W.) S½ NW¼ Sec.13,T.45N.,R.39W.) SE¼ SW¼ Sec. 8,T.48N.,R.46W.)	Sand and gravel, stone
Charles R. Hemkes Co.		Sand and gravel
Ironwood City Highway Department	NE¼ SE¼ Sec.34,T.47N.,R.47W.	Sand and gravel
Lake Superior Gravel Company	NW¼ SW¼ Sec.31,T.48N.,R.46W.) NW¼ SW¼ Sec.33,T.48N.,R.46W.)	Sand and gravel
Oliver Iron Mining Div.-- Davis Geneva Mine	Sec. 18,19,T.47N.,R.46W.	Iron ore
Pickands Mather & Co.-- Anvil-Palms-Keweenaw Mine	Sec.11,14,T.47N.,R.46W.)	Iron ore
Newport-Bonnie Mine	Sec.24,T.47N.,R.46W.)	
Peterson Mine	Sec.16,17,T.47N.,R.46W.)	
Sunday Lake Mine	Sec. 9,10,T.47N.,R.45W.)	
Emil Piispanen		Sand and gravel
Republic Steel Corp.-- Penokee Group	Sec.23,T.47N.,R.47W.	Iron ore

GRAND TRAVERSE

No production reported.

GRATIOT (19)

Salt 95th) magnesium compounds (3rd), bromine (3rd), calcium-magnesium chloride (3rd), sand and gravel, clay products, natural gas (8th, 3%), clay*, petroleum (Combined with Midland Co.)

Clay Products Co.	NE¼ Sec. 25,T.12N.,R.3W.	Clay - tile
Roy Dayringer	NW¼ SE¼ Sec.9,T.10N.,R.1W.	Sand and gravel
Gratiot Co. Rd. Comm.	NW¼ NW¼ Sec.18,T.12N.,R.4W.) NW¼ SE¼ Sec.34,T.11N.,R.4W.)	Sand and gravel
Michigan Chemical Corp.	St. Louis	Bromine,Calcium-magnesium chloride, magneisum compounds, salt

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

		Quantity	Value
Gratiot (contd.)			
North Star Washed Sand and Gravel	NW¼ SE¼ Sec.22,T.10N.,R.21W.) NE¼ SE¼ Sec.34,T.11N.,R.4W.)		Sand and gravel
The Taber Co.			Sand and gravel

HILLSDALE (60)

Sand and gravel		340,501 tons	$172,425
Marl (6th)		11,625 tons	3,750
Total value			$176,175
Barnes and Van Antwerp			Marl
Elliott Ice and Coal Co.	SE¼ SE¼ Sec.15,T.6S.,R.3W.		
Hillsdale Co. Rd. Comm.	NE¼ SE¼ Sec.11,T.5S.,R.3W.)		
	SE¼ SE¼ Sec. 9,T.6S.,R.3W.)		
	SW¼ SE¼ Sec.5,T.7S.,R.2W.)		
	SW¼ SE¼ Sec.25,T.7S.,R.2W.)		Sand and gravel
	SE¼ SE¼ Sec.1,T.7S.,R.4W.)		
	SE¼ NE¼ Sec.30,T.7S.,R.4W.)		
Hoover Bros.	NE¼ SW¼ Sec.23,T.8S.,R.2W.		Sand and gravel
Virgil Kintigh			Marl
Northwest Materials, Inc.			Sand and gravel
Southern Michigan Materials, Inc.			Sand and gravel

HOUGHTON (13)

Copper (2nd, 41%)		19,779,610 lbs.	$5,696,132
Stone -- trap rock		26,310 tons	37,586
Sand and gravel		10,243 tons	1,149
Total value			$5,734,867
Calumet and Hecla Inc.			
Centennial Mine	Sec.18,T.56N.,R.32W.)		
North Kearsarge Mine	Sec.5,T.56N.,R.32W.)		Copper
Osceola Mine	Sec.23,T.56N.,R.33W.)		
Reclamation	Sec.12,T.55N.,R.33W.)		
Copper Range R. R. Co.			Sand and gravel
Copper Range Co.--			
Champion	Sec.31,T.54N.,R.34W.		Copper
Duluth South Shore & Atlantic Ry.			Sand and gravel
Houghton County Rd. Comm.			Trap rock-crushed
Quincy Mining Co.--			
Reclamation	Sec.23,T.55N.,R.33W.		Copper

		Quantity	Value

HURON (46)

Stone--crushed and dimensional limestone (6th), sand and gravel, petroleum			(Combined with Saginaw Co.)
E. P. Brady & Co.			Sand and gravel
Glen Comstock			Sand and gravel
Huron Co. Road Comm.	SE¼ SE¼ Sec.17,T.16N.,R.13E.		Sand and gravel
LaCrosse Sand and Gravel Co.			Sand and gravel
The Wallace Stone Co.	Sec. 5,T.16N.,R.10E.		Limestone-crushed, and dimensional
N. Weitzel			Sand and gravel

INGHAM (68)

Sand and gravel		126,059 tons	$88,305
The Ferris Co.			Sand and gravel
Ingham Co. Road Comm.	NE¼ NW¼ Sec.25,T.3N.,R.2W.)		
	SE¼ NE¼ Sec.15,T.2N.,R.1E.)		Sand and gravel
	NE¼ NE¼ Sec.10,T.2N.,R.1E.)		
Lansing City Engineer	SW¼ NE¼ Sec.11,T.3N.,R.2W.		Sand and gravel
Harry Pickitt			Sand and gravel
Ray Sablain	SW¼ SW¼ Sec.2,T.3N.,R.2W.)		Sand and gravel
	SE¼ SE¼ Sec.27,T.4N.,R.2W.)		

IONIA (59)

Sand and gravel		271,556 tons	$ 158,170
Petroleum		40,500 bbls.	117,516
Total value			$ 275,686
Ionia Co. Road Comm.	NE¼ SW¼ Sec.18,T.5N.,R.5W.)		
	SE¼ SE¼ Sec. 8,T.6N.,R.5W.)		Sand and gravel
	NW¼ NE¼ Sec.33,T.7N.,R.7W.)		
H.L. Martin Gravel Co.			Sand and gravel
Harry Pickitt	NE¼ NE¼ Sec.16,T.7N.,R.5W.)		Sand and gravel
	NW¼ SE¼ Sec.21,T.7N.,R.6W.)		
John G. Yerington	SE¼ NW¼ Sec.16,T.6N.,R.8W.		Sand and gravel

IOSCO (20)

Gypsum (1st), sand and gravel			(Combined with Lapeer Co.)

		Quantity	Value
Iosco (contd.)			
Detroit & Mackinac Ry. Company	NE¼ NE¼ Sec.6,T.24N.,R.9E.		Sand and gravel
National Gypsum Co.	Sec. 16,T.21N.,R.6E.		Gypsum
U. S. Gypsum Co.	Sec. 27,T.21N.,R.7E.		

IRON (2)

Iron ore (2nd,34%), sand and gravel			$30,306,494
Champion, Inc.	NE¼ NW¼ Sec.1,T.43N.,R.36W.		Sand and gravel
The Cleveland-Cliffs Iron Company--			
Cannon Mine	Sec.36,T.43N.,R.35W.)		
Hiawatha Mine	Secs.35,36,T.43N.,R.35W.)		Iron ore
Homer-Cardiff Minckler Mine	Secs.22,23,T.43N.,R.35W.)		
Spies-Virgil Mine	Sec.24,T.43N.,R.35W.)		
Wauseca-Aronson Mine	Sec.23,T.43N.,R.35W.)		
Inland Steel Co.--			
Bristol-Youngstown Mine	Secs.19,20,T.43N.,R.32W.)		Iron ore
Sherwood Mine	Sec.23,T.43N.,R.35W.)		
North Range Mining Co.--			
Book Mine	Sec.12,T.42N.,R.33W.)		Iron ore
Warner	Sec. 9,T.44N.,R.33W.)		
Pickands Mather and Co.--			
Baltic Group	Secs. 6,7,T.42N.,R.34W.)		
Fortune Lake Mine	Secs.24,25,26,T.43N.,R.33W.)		
Lawrence Mine	Sec.36,T.43N.,R.33W.)		Iron ore
Volunteer-Maitland Mine	Sec.30,T.47N.,R.26W.) Sec.25,T.47N.,R.27W.)		
Republic Steel Corp.--			
Monongahela Mine	Sec.36,T.43N.,R.33W.)		Iron ore
Tobin-Columbia Mine	Secs.30,31,T.43N.,R.32W.)		

ISABELLA (15)

Petroleum (2nd, 12%)		1,521,140 bbls.	$4,413,770
Natural gas (4th, 13%)		950,651 M.cu.ft.	167,087
Natural gasoline (3rd, 13%)		592,316 gal.	59,232
Undistributed: sand and gravel, marl (1st)			35,576
Total value			$4,675,665
Leon Burr			Marl
C. Utterback			Sand and gravel

		Quantity	Value
JACKSON (52)			
Sand and gravel (13th, 2%)		559,104 tons	$ 381,429
Stone--crushed limestone and sandstone		35,256 tons	73,285
Petroleum		2,525 bbls.	7,327
Total value			$ 462,041
Jackson Co. Rd. Comm.	SE¼ SE¼ Sec.29,T.1S.,R.1W.		Sand and gravel
John C. Jeffery	SE¼ Sec.30,T.2S.,R.2W.		Limestone-crushed
Klumpp Brothers	SE¼ SE¼ Sec.1,T.2S.,R.2E.		Sand and gravel
Edward Palmer and Son			Sand and gravel
Harry Pickitt			Sand and gravel
Ray Sandstone Quarry	NE¼ NW¼ Sec.6,T.4S.,R.2E.		Sandstone-dimensional
Sager Concrete Products			Sand and gravel
Star Sandstone Co.	SW¼ SE¼ Sec.31,T.3S.,R.2E.		Sandstone-dimensional

KALAMAZOO (49)

Sand and gravel (8th, 3%)		862,781 tons	$ 616,918
Petroleum		519 bbls.	1,506
Undistributed: Marl (3rd), peat			12,626
Total value			$ 631,050
American Aggregate Corp.	SW¼ NW¼ Sec.15,T.1S.,R.11W.		Sand and gravel
Amos G. Baker			Sand and gravel
Craven's Peat Moss			Peat
Gravel Producers, Inc.			Sand and gravel
Casper H. Hass Co.			Sand and gravel
Lawrence Hayward			Marl
Albert Peters			Sand and gravel
Harry Pickitt			Sand and gravel
Dan Slack			Marl
John G. Yerington	NW¼ SW¼ Sec.19,T.1S.,R.9W.		Sand and gravel

KALKASKA (51)

Petroleum		122,947 bbls.	$ 356,745
Natural gasoline (2nd, 16%)		688,160 gal.	68,816
Natural gas (11th, 2%)		132,385 M.cu.ft.	23,267
Sand and gravel		41,109 tons	12,955
Total value			$ 461,783
Kalkaska Co. Rd. Comm.			Sand and gravel

			Quantity		Value
KENT (25)					
Sand and gravel (7th, 4%)			1,330,253	tons	$1,107,379
Natural gas			25,818	M.cu.ft.	4,538
Marl			7,500	tons	3,000
Undistributed: Gypsum (2nd), Petroleum					1,411,290
Total value					$2,526,207
Certain-Teed Products Corporation	SW¼	Sec.34,T.7N.,R.12W.			Gypsum
Coit Avenue Gravel Co.					Sand and gravel
Ed DeVries and Sons					Sand and gravel
Grand Rapids Gravel Co.	SE¼ SW¼	Sec.3,T.6N.,R.12W.)			
	NW¼ NE¼	Sec.9,T.6N.,R.12W.)			Sand and gravel
Grand Rapids Plaster Co.	NE¼	Sec.34,T.7N.,R.12W.			Gypsum
Grande Brick Co.					Sand and gravel
Kent Co. Rd. Comm.	SE¼ SE¼	Sec.20,T.6N.,R.9W.)			
	SE¼ SW¼	Sec.11,T.10N.,R.12W.)			Sand and gravel
	NE¼ NE¼	Sec.32,T.7N.,R.9W.)			
	NE¼ SW¼	Sec.27,T.5N.,R.10W.)			
Harry A. Olthouse					Marl
Pekaar and Van Doorn	NW¼ NE¼	Sec.16,T.6N.,R.12W.			Sand and gravel
Rocks Sand & Gravel Co.	NE¼ NE¼	Sec.9,T.6N.,R.12W.			Sand and gravel
United States Gypsum Co.	NE¼	Sec.34,T.7N.,R.12W.			Gypsum
West Shore Constr. Co.	NW¼ NE¼	Sec.16,T.6N.,R.12W.			Sand and gravel
KEWEENAW (9)					
Copper (1st, 57%)			27,237,107	lbs.	$7,853,742
Calumet and Hecla, Inc.--					
Ahmeek & Allouez	Sec.28,T.57N.,R.32W.)				
Allouez No. 3	Sec.32,T.57N.,R.32W.)				
Douglas	Sec.28,T.57N.,R.32W.)				
Iroquois	Sec.22,T.57N.,R.32W.)				Copper
Peninsula	Sec.28,T.57N.,R.32W.)				
Seneca No. 2	Sec.27,T.57N.,R.32W.)				
LAKE (64)					
Petroleum			36,495	bbls.	$105,895
Sand and gravel			73,163	tons	24,584
Total					$130,479
Lake Co. Rd. Comm.	SE¼ NE¼	Sec.23,T.18N.,R.13W.)			
	NW¼ SE¼	Sec.10,T.20N.,R.14W.)			Sand and gravel
The Taber Co.					Sand and gravel

			Quantity		Value
LAPEER (51)					
Peat (1st), sand and gravel, calcium-magnesium chloride (4th)					$3,602,441
(Includes Iosco Co.)					
Green Thumb Peat Humus Co.		Sec.24,T.7N.,R.12E.			Peat
Lapeer Co. Rd. Comm.	SE¼ SW¼	Sec.30,T.8N.,R.10E.)			
	SW¼ SE¼	Sec.16,T.9N.,R.10E.)			Sand and gravel
	SW¼ NW¼	Sec.28,T.9N.,R.12E.)			
Michigan Peat Inc.		Sec.24,T.7N.,R.12E.			Peat
E. J. Pine Sand & Gravel	NW¼	Sec.12,T.7N.,R.10E.			Sand and gravel
Wilkinson Chemical Co.					Calcium-magnesium chloride
LEELANAU (80)					
Sand and gravel			63,832	tons	$ 22,797
Leelanau Co. Rd. Comm.	SW¼ NW¼	Sec.19,T.32N.,R.10W.)			
	NE¼ NW¼	Sec.16,T.28N.,R.13W.)			Sand and gravel
	SW¼ SE¼	Sec.12,T.29N.,R.13W.)			
LENAWEE (16)					
Sand and gravel			295,436	tons	$ 145,948
Undistributed: Portland cement (5th), clay products, clay*					3,522,114
Total value					$3,668,062
Comfort Brick and Tile Company	SW¼	Sec.2,T.6S.,R.5E.			Tile
Consolidated Cement Corporation	NE¼	Sec.5,T.5S.,R.1E.			Portland cement
Donald F. Clark					Sand and gravel
Lenawee Co. Rd. Comm.	SE¼ SE¼	Sec.4,T.6S.,R.4E.)			
	NW¼ NW¼	Sec.9,T.6S.,R.4E.)			Sand and gravel
Stamm Bros. Gravel Co.	SW¼ NE¼	Sec.19,T.7S.,R.3E.			Sand and gravel
Tecumseh Gravel Co.	SW¼ NE¼	Sec.4,T.6S.,R.4E.			Sand and gravel
John Woerner					Sand and gravel
LIVINGSTON (24)					
Sand and gravel (2nd, 8%)			2,509,566	tons	$2,534,217
Natural gas (3rd, 15%)			1,029,814	M.cu.ft.	180,990
Total value					$2,715,207

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

		Quantity	Value
Livingston -(contd.)			
American Aggregate Corp.	NE¼ NE¼ Sec.11,T.1N.,R.6E.		Sand and gravel
Brighton Sand and Gravel			Sand and gravel
Van E. Daily			Sand and gravel
Harry Pickitt			Sand and gravel

LUCE (71)

Sand and gravel		44,052 tons	$ 58,947
E. P. Brady and Co.			Sand and gravel
Luce Co. Road Comm.			Sand and gravel

MACKINAC (17)

Stone--crushed limestone (2nd), sand and gravel			$6,636,059 (Includes Chippewa County)
E. P. Brady & Co.			Sand and gravel
Duluth, So. Shore Atlantic Ry.	NW¼ SW¼ Sec.7,T.40N.,R.3W.		Sand and gravel
Inland Lime and Stone Company	Sec.6,T.42N.,R.12W.		Limestone crushed

MACOMB (42)

Sand and gravel (6th, 5%)		1,446,991 tons	$1,014,312
Advance Building Materials Co.			Sand and gravel
Daniel J. Bollig			Sand and gravel
Dachill Trucking Co.			Sand and gravel
Macomb Co. Rd. Comm.	Sec.17,T.4N.,R.12E.		
Macomb Sand and Gravel	SW¼ SW¼ Sec.30,T.3N.,R.12E.		Sand and gravel
Maertens Sand & Gravel Company	SE¼ NE¼ Sec.30,T.3N.,R.12E.		Sand and gravel
Louis Marsack & Sons	NW¼ NW¼ Sec.3,T.1N.,R.13E.		Sand and gravel
Michigan Sand & Gravel	SW¼ NE¼ Sec.19,T.3N.,R.12E.		Sand and gravel
Morgan Sand and Gravel			Sand and gravel
P.O. Underwood and L.A. Barry			Sand and gravel
Ray Industries, Inc.	NE¼ SW¼ Sec.18,T.3N.,R.12E.		Sand and gravel

		Quantity	Value
MANISTEE (10)			
Salt (4th), Magnesium compounds (1st), bromine (3rd), sand and gravel (11th, 2%)			$11,245,355 (Includes Emmet County)
Great Lakes Chemical Corporation	SE¼ SW¼ Sec.18,T.21N.,R.16W.		Bromine
Manistee Co. Rd. Comm.	NE¼ NW¼ Sec.18,T.22N.,R.14W.) NW¼ SE¼ Sec.26,T.24N.,R.16W.)		Sand and gravel
Mich. Chemical Corp.	NW¼ Sec.7,T.21N.,R.16W.		Bromine
Morton Salt Co.	Sec. 12, T.21N.,R.17W.		Bromine, magnesium comp., salt
Sand Products Corp.	N½ Sec. 11, T.21N.,R.17W.		Sand
Standard Lime & Stone Company	SE¼ Sec.18,T.21N.,R.16W.		Magnesium compounds

MARQUETTE (1)

Iron ore (1st. 41%)		5,446,887 tons	$38,084,931
Sand and gravel		256,605 tons	208,851
Total value			$38,293,782
Champion, Inc.	NW¼ NE¼ Sec.26,T.48N.,R.30W.)		Sand and gravel
The Cleveland Cliffs Iron Co.--			
Athens-Bunker Hill Mine	Sec.6,T.47N.,R.26W.)		
Cambria-Jackson Mine	Secs.35,36,T.48N.,R.27W.)		
Cliffs Shaft Mine	Secs. 3,9,10,T.47N.,R.27W.)		
Humboldt Open Pit	Secs.10-15,T.47N.,R.29W.)		
Lloyd-East Lloyd Mine	Sec.6,T.47N.,R.27W.)		Iron ore
Maas-Race Course Mine	Sec.31,T.48N.,R.26W.)		
Mather "A" Mine	Sec.2,T.47N.,R.27W.)		
Mather "B" Mine	Sec.1,T.47N.,R.27W.)		
Republic Open Pit	Sec.7,T.46N.,R.29W.)		
Tilden Open Pit	Sec. 26,T.47N.,R.27W.)		
M.A. Hanna Co.--			
New Richmond open pit	Sec.27,T.47N.,R.26W.		Iron ore
Inland Steel Co.--			
Morris Mine	Secs.1,2,T.47N.,R.28W.)		Iron ore
Greenwood Mine	Secs. 14,23,T.47N.,R.28W.)		
Jones & Laughlin Steel Corporation--			
Tracy Mine	Secs.7,8,T.47N.,R.26W.		Iron ore
Lake Superior & Ishpeming Ry. Co.			Sand and gravel
A. Lindberg & Sons, Inc.	NW¼ SE¼ Sec.8,T.47N.,R.25W.		Sand and gravel
Marquette Co. Rd. Comm.			Sand and gravel
North Range Mining Co.--			
Blueberry Mine	Secs.3,4,T.47N.,R.28W.)		
Champion Mine	Sec.31,T.48N.,R.29W.)		
Pickands Mather & Co.--			
Volunteer-Maitland open pit	Secs. 25,30,T.47N.,R.26W.		Iron ore

		Quantity	Value

MASON (23)

Magnesium compounds (4th), lime (1st), bromine (4th), calcium-magnesium chloride (2nd), petroleum, sand and gravel, peat — (Combined with Osceola County)

The Dow Chemical Co.	NW¼ SW¼ Sec.23,T.18N.,R.18W.	Bromine, calcium-magnesium chloride, Magnesium compounds.
The Dow Chemical Co.	NW¼ SW¼ Sec.23,T.18N.,R.18W.	Lime
Mason Co. Rd. Comm.	SW¼ SW¼ Sec.11,T.18N.,R.15W.	Sand and gravel
Irving L. Pratt & Son	SE¼ SW¼ Sec.35,T.19N.,R.17W.	Peat
Sargent Sand Co.	NW¼ NW¼ Sec.33,T.19N.,R.18W.	Sand

MECOSTA (45)

Petroleum	217,645 bbls.	$631,523
Natural gas (5th, 9%)	624,860 M.cu.ft.	109,829
Undistributed: Marl (4th), sand and gravel		18,407
Total value		$759,759

Arthur Bell		Marl
Mecosta Co. Road Comm.	NE¼ NE¼ Sec.32,T.15N.,R.9W.	Sand and gravel
L. Truman and Son		Marl

MENOMINEE (48)

Lime (2nd), sand and gravel — $823,058 (Includes Delta County)

Limestone Products Co.	Menominee	Lime
Menominee Co. Rd. Comm.	NE¼ NE¼ Sec.9,T.39N.,R.25W.	Sand and gravel

MIDLAND (4)

Bromine (1st), calcium-magnesium chloride (1st), magnesium compounds (2nd), petroleum (11th, 4%), salt (2nd), potash (1st), natural gas, natural gasoline (5th, 3%) — $26,020,464 (Includes Gratiot Co.)

The Dow Chemical Co.	Midland	Bromine, calcium-magnesium chloride, magnesium compounds, potash.

		Quantity	Value

MISSUAKEE (30)

Petroleum (8th, 5%)	643,387 bbls.	$1,866,865
Natural gasoline (4th, 4%)	193,309 gal.	19,331
Undistributed: Natural gas and marl		3,465
Total value		$1,889,661

C. Stanley Hooker	Marl
Roy Rosted	Marl

MONROE (43)

Stone--crushed dolomite (5th), clay products, petroleum, clay* — $1,031,917

The France Stone Co.	SE¼ Sec.7,T.7S.,R.9E.	Dolomite-crushed
Michigan Stone Co.	SW¼ Sec.25,T.8S.,R.6E.	Dolomite-crushed
Monroe Co. Road Comm.	SW¼ Sec.13,T.6S.,R.7E.	Dolomite-crushed
F.W. Ritter Sons Co.Inc.	NW¼ Sec.21,T.5S.,R.10E.	Clay-pottery

MONTCALM (40)

Petroleum (14th, 2%)	287,129 bbls.	$833,139
Sand and gravel	477,551 tons	193,194
Natural gas (9th, 2%)	163,722 M.cu.ft.	28,774
Marl	6,070 tons	2,428
Total value		$1,057,535

A. L. Dyer and Sons	SE¼ SE¼ Sec.8,T.12N.,R.5W.	Sand and gravel
Montcalm Co. Road Comm.	NE¼ NE¼ Sec.24,T.10N.,R.6W.)	
	NE¼ SE¼ Sec.13,T.10N.,R.6W.)	Sand and gravel
Leo W. Speese		Marl
Frank H. Stoerk		Sand and gravel

MONTMORENCY (75)

Sand and gravel	55,785 tons	$36,604
Petroleum	880 bbls.	2,553
Total value		$39,157

E. P. Brady and Co.		Sand and gravel
Montmorency Co. Rd. Comm.	NE¼ NW¼ Sec.9,T.32N.,R.4E.)	Sand and gravel
	SW¼ NW¼ Sec.27,T.30N.,R.1E.)	

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

	Quantity		Value
MUSKEGON (38)			
Undistributed: Sand and gravel (10th, 2%), petroleum, natural gas (10th, 2%), marl			$1,064,128
Nugent Sand Co.	Muskegon		Sand
Sand Products Corp.	C E½ Sec.28,T.10N.,R.17W.		Sand
Melvin Wolf & Lee Brandon			Marl
NEWAYGO (39)			
Petroleum (12th, 3%)	326,496	bbls.	$947,367
Natural gas (7th, 5%)	356,979	M.cu.ft.	62,739
Natural gasoline	12,300	gal.	1,230
Undistributed: sand and gravel, marl			41,312
Total value			$1,052,648
Leo W. Speese			Marl
The Taber Co.			Sand and gravel
West Shore Constr. Co.			Sand and gravel
OAKLAND (14)			
Sand and gravel (1st, 16%)	4,971,143	tons	$4,486,712
Clay products			522,000 est.
Clay*	20,894		20,894
Total value			$5,008,712
American Aggregate Corp.	NE¼ NW¼ Sec.22,T.5N.,R.10E.		Sand and gravel
Floyd Beardslee	SW¼ SE¼ Sec.2,T.2N.,R.10E.)		
	NE¼ NW¼ Sec.11,T.2N.,R.10E.)		Sand and gravel
	SE¼ SE¼ Sec.2,T.2N.,R.10E.		
M. J. Bowers			Sand and gravel
Dachill Trucking Co.			Sand and gravel
Foley and Beardslee	NW¼ NW¼ Sec.7,T.3N.,R.9E.)		Sand and gravel
	SW¼ SE¼ Sec.36,T.4N.,R.8E.)		
John R. Sand & Gravel Co.	S½ Sec.4,T.4N.,R.10E.		Sand and gravel
Koenig Coal & Supply Co.	SW¼ SE¼ Sec.24,T.5N.,R.10E.		Sand and gravel
McLane Bros. Sand and Gravel			Sand and gravel
Michelson Bros.	NE¼ Sec.29,T.5N.,R.10E.		Sand and gravel
Oakland Co. Road Comm.	SW¼ SE¼ Sec.36,T.5N.,R.11E.)		
	SE¼ SE¼ Sec.9,T.2N.,R.8E.)		Sand and gravel
	SE¼ SW¼ Sec.32,T.5N.,R.9E.)		
	SE¼ SW¼ Sec.8,T.4N.,R.8E.)		

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

	Quantity		Value
Oakland (contd.)			
Oakland Sand & Gravel Co.			Sand and gravel
Slaters Bald Mt.	SW¼ SW¼ Sec.36,T.4N.,R.10E.		Sand and gravel
P.O. Underwood and L. A. Barry	SW¼ Sec.2,T.3N.,R.10E.		Sand and gravel
Lyle J. Walker Sand & Gravel	SE¼ SW¼ Sec.2,T.2N.,R.11E.		Sand and gravel
F. S. Ward	NW¼ NE¼ Sec.7,T.3N.,R.9E.		Sand and gravel
OCEANA (22)			
Petroleum (3rd, 8%)	1,034,892	bbls.	$3,002,865
Natural gas	76,592	M.cu.ft.	13,461
Natural gasoline	24,527	gal.	2,453
Undistributed: Sand and gravel, marl			29,444
Total value			$3,048,223
Bechman Bros.			Marl
West Shore Constr. Co.			Sand and gravel
OGEMAW (26)			
Petroleum (4th, 7%)	806,501	bbls.	$2,340,159
Undistributed: sand and gravel, marl			112,226
Total value			$2,452,385
E. P. Brady & Co.			Sand and gravel
Dan Dunn			Marl
Ehinger Bros.			Sand and gravel
Ogemaw Co. Rd. Comm.	NW¼ NW¼ Sec.28,T.22N.,R.3E.)		
	NE¼ SE¼ Sec.3,T.21N.,R.1E.)		Sand and gravel
	NE¼ SE¼ Sec.6,T.22N.,R.2E.)		
Harry Pickitt			Sand and gravel
Ed Reetz	NE¼ SE¼ Sec.35,T.23N.,R.2E.		Sand and gravel
Walter Rosevear Pit	NE¼ SE¼ Sec.6,T.22N.,R.2E.		Sand and gravel
C. Stanley Hooker			Marl
The Taber Co.			Sand and gravel
ONTONAGON (56)			
Copper (3rd, 2%)	982,973	bbls.	$283,077
Sand and gravel	130,570	tons	16,764
Total value			$299,841

		Quantity	Value
Ontonagon (contd.)			
Duluth, So. Shore & Atlantic Ry.			Sand and gravel
Ontonagon Co. Road Comm.			Sand and gravel
White Pine Copper Co.--			
White Pine Mine	Secs. 4,5,9,T.50N.,R.42W.		Copper

OSCEOLA (27)

Petroleum (5th, 7%), natural gas (6th, 8%), sand and gravel, marl		$5,247,193
C. Stanley Hooker		Marl
Hutchins Sand and Gravel		Sand and gravel

OSCODA (77)

Undistributed: Sand and gravel, petroleum		$24,344
E. P. Brady Co.	SW¼ NW¼ Sec.26,T.28N.,R.3E.	Sand and gravel

OTSEGO (74)

Sand and gravel	58,846	tons	$36,327
Natural gas	14,027	M. cu. ft.	2,465
Petroleum	354	bbls.	1,027
Total value			$39,819

Hutchins Sand and Gravel Company	SE¼ NE¼ Sec.17,T.29N.,R.3W.	Sand and gravel
Otsego Co., Rd. Comm.	NW¼ SW¼ Sec.2,T.30N.,R.3W.) NW¼ NE¼ Sec.29,T.31N.,R.3W.) NW¼ NW¼ Sec.3,T.31N.,R.3W.)	Sand and gravel

OTTAWA (29)

Sand and gravel (3rd, 6%)	1,786,631	tons	$1,543,793
Petroleum	128,920	bbls.	374,077
Marl	6,075	tons	1,830
Natural gas	3,368	M.cu.ft.	592
Total value			$1,920,292

		Quantity	Value
Ottawa (contd.)			
Construction Aggregate Corporation	SE¼ SW¼ Sec.16,T.8N.,R.15W.		Sand and gravel
Vernon C. Harris			Marl
Thomas F. Johnson			Sand and gravel
Ralph Meyers			Marl
Standard Sand Co.	NW¼ Sec.4,T.7N.,R.16W.		Sand and gravel
West Shore Constr.	SW¼ SE¼ Sec.24,T.5N.,R.15W.		Sand and gravel
Wierenga Bros.			Marl

PRESQUE ISLE (8)

Stone--crushed limestone (1st), sand and gravel		$28,152,297 (Includes Alpena Co.)
E.P. Brady and Co.		Sand and gravel
Michigan Limestone Div., U.S. Steel Corp.	Sec.23,T.35N.,R.5E.	Limestone-crushed
Onaway Stone Co.	Sec. 5,T.34N.,R.2E.	Limestone dimensional

ROSCOMMON (33)

Petroleum (10th, 4%)	466,555	bbls.	$1,353,765
Undistributed: Sand and gravel, natural gas			11,832
Total value			$1,365,597
The Taber Company			Sand and gravel

SAGINAW (69)

Clay* (3rd), petroleum, sand and gravel		$136,542 (Includes Huron County)
Minco Products Corp.	NW¼ NW¼ Sec.1,T.11N.,R.3E.	Clay
Saginaw Brick Co.		Sand and gravel

SANILAC (67)

Sand and gravel	287,160	tons	$89,175
Sanilac County Road Comm.			Sand and gravel

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

		Quantity	Value
SCHOOLCRAFT (78)			
Sand and gravel		32,759 tons	$24,266
Schoolcraft Co. Rd. Comm.	SE¼ SW¼ Sec.7,T.41N.,R.17W.	Sand and gravel	

SHIAWASSEE (35)

Clay products, sand and gravel, shale*, peat (2nd) — (Combined with St. Clair Co.)

Ann Arbor R.R. Co.		Sand and gravel
Harry Gauss		Sand and gravel
The Michigan Vitrified Tile Co.	SE¼ Sec.22,T.7N.,R.3E.	Tile
Shenk Gravel Co.	NW¼ NW¼ Sec.2,T.6N.,R.4E.) NE¼ NE¼ Sec.2,T.6N.,R.4E.)	Sand and gravel
Ronald Weaver	NE¼ SW¼ Sec.16,T.5N.,R.2E.	Sand and gravel

ST. CLAIR (7)

Salt (3rd), Portland cement (6th), clay* (4th), sand and gravel — $9,705,076 (Includes Shiawassee Co.)

The General Foods Corp.	St. Clair	Evaporated salt
Vern Malesworth		Sand and gravel
Morton Salt Co.	Marysville	Evaporated salt
Peerless Cement Corp.	Port Huron	Portland cement
Port Huron City Engineer		Sand and gravel

ST. JOSEPH (61)

Undistributed: Sand and gravel, marl — $164,564

Aggregate Processors, Inc.	Sand and gravel
Harry Pickitt	Sand and gravel
Reed & Wood	Marl
Kehneth L. Wood	Marl
St. Joseph Co. Rd. Comm.	Sand and gravel

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

		Quantity	Value
TUSCOLA (41)			
Sand and gravel (9th, 3%)		748,125 tons	$ 886,367
Petroleum		50,623 bbls.	146,889
Total value			$1,033,256
Anderson Sand and Gravel Company	NW¼ NE¼ Sec.20,T.11N.,R.9E.) NW¼ SW¼ Sec.19,T.11N.,R.9E.)		Sand and gravel
Benthal Sand and Gravel	SW¼ SE¼ Sec.6,T.11N.,R.9E.		Sand and gravel
Great Lakes Foundry Sand Co.			Sand
C. R. Hunt			Sand and gravel
Sargent Sand Co.			Sand
E. L. Schwaderer	SW¼ SE¼ Sec.33,T.14N.,R.11E.) NW¼ NE¼ Sec.33,T.12N.,R.10E.) NW¼ SE¼ Sec.36,T.12N.,R.11E.) NW¼ NW¼ Sec.16,T.13N.,R.10E.) NW¼ SW¼ Sec.34,T.14N.,R.11E.)		Sand and gravel
Tuscola Co. Rd. Comm.			Sand and gravel

VAN BUREN (47)

Petroleum		174,344 bbls.	$505,880
Sand and gravel		373,692 tons	198,987
Total value			$704,867
James B. Michell			Sand and gravel
Harry Pickitt	NW¼ SW¼ Sec.24,T.3S.,R.14W.		Sand and gravel
John G. Yerington	NE¼ NE¼ Sec.33,T.4S.,R.15W.) SE¼ SE¼ Sec.12,T.3S.,R.15W.) SW¼ NW¼ Sec.11,T.3S.,R.15W.)		Sand and gravel

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WASHTENAW (37)

Sand and gravel (5th, 5%)		1,522,833 tons	$1,084,392
Natural gas		20,068 M.cu.ft.	3,527
Total value			$1,087,919
E. S. Albertson			Sand and gravel
Chubb Sand and Gravel			Sand and gravel
Dexter Gravel Co.			Sand and gravel
Killians Gravel Co.	SE¼ SE¼ Sec.25,T.2S.,R.3E.		Sand and gravel
Harry Pickitt			Sand and gravel
Salem Gravel & Constr. Co., Inc.			Sand and gravel

		Quantity	Value
Washtenaw (contd.)			
Washtenaw Co. Rd. Comm.	SE¼ SW¼ Sec.23,T.3S.,R.7E.) NE¼ SW¼ Sec.23,T.8S.,R.4E.) NE¼ SW¼ Sec. 9,T.2S.,R.6E.) SE¼ NE¼ Sec.14,T.1S.,R.4E.)		Sand and gravel
Whittaker & Gooding Co.	SW¼ NE¼ Sec.19,T.2S.,R.7E.		Sand and gravel
Youngs Sand & Gravel Co.	SW¼ SW¼ Sec.16,T.1S.,R.3E.		Sand and gravel

WAYNE (3)

Salt (1st)		3,913,285 bbls.	$9,866,205
Sand and gravel (4th, 5%)		1,633,774 tons.	2,024,364
Undistributed: Portland cement (2nd), clay products, clay*(1st), stone--crushed limestone			14,014,172
Total value			$25,904,741
Allied Chemical & Dye Corp.	Trenton		Chlorine, soda ash, caustic soda, etc.
Clippert Brick Co.	NW¼ Sec.21,T.2S.,R.11E.		Brick
Dachill Trucking Co.			Sand and gravel
Daniel Brick Co.			Brick
E. L. Emery Co.			Sand and gravel
Flat Rock Clay Products	NW¼ SE¼ Sec.30,T.4S.,R.10E.		Tile
International Salt Co., Inc.	SW¼ Sec.32,T.2S.,R.11E.		Rock salt
Lightweight Aggregate Corp.	NE¼ Sec.27,T.2S.,R.11E.		Clay-lightweight aggregate
Manning J. Locklin Gravel Co.	NW¼ SW¼ Sec.2,T.1S.,R.8E.		Sand and gravel
Michigan Silica Co.	SW¼ NE¼ Sec.15,T.3N.,R.10E.		Silica sand
Northville Sand & Gravel Co.	SE¼ NE¼ Sec.8,T.1S.,R.8E.		Sand and gravel
Peerless Cement Corp.	Detroit		Portland cement
Pennsylvania Salt Mfg. Company	Wyandotte		Chlorine, caustic soda.
Harry Pickitt	SE¼ NE¼ Sec.8,T.1S.,R.8E.		Sand and gravel
U. S. Gypsum Co.	River Rouge		Gypsum products
Wyandotte Chemical Corp.	Wyandotte		Soda ash, chlorine, caustic soda, etc.
Wyandotte Chemical Corp.	Wyandotte		Portland cement

WEXFORD (82)

Petroleum		1,299 bbls.	$3,769

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

	Quantity	Value
UNDISTRIBUTED		
Sand and gravel		$912,472
Bureau of Forestry		Sand and gravel
Bureau of Pub. Rd. Dept. of Commerce		Sand and gravel
Kelly Island Lime and Transport Co. L. St. Clair		Sand
Michigan State Hwy. Department		Sand and gravel

TOTAL STATE VALUE $287,693,316

DIRECTORY OF PRODUCERS OF MINERALS and MINERAL PRODUCTS, 1953

CHEMICAL PLANTS

(Using Natural Brine or Salt)

Name and Address	Raw Material	Plant Location
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.
Michigan Chemical Corporation 500 North Bankson St. Louis, Michigan	Natural brine	St. Louis, Gratiot Co. East Lake, Manistee Co.
Morton Salt Company 120 South La Salle Street Chicago, Illinois	Natural brine	Manistee, Manistee Co.
Pennsylvania Salt Manufacturing Company 1000 Widener Building Philadelphia 7 Pensylvania	Salt	Wyandotte, Wayne Co.
Standard Lime & Stone Company 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 Salt Company	X		X		Manistee
Standard Lime & Stone Company			X		Manistee
Wilkinson Chemical Company		X			Tuscola

CEMENT MANUFACTURERS

Name and Address	Plant Location
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 Company 1325 Ford Building Detroit, Michigan	Alpena, Alpena Co.
Peerless Cement Corporation 1144 Free Press Building Detroit 26 Michigan	Detroit, Wayne Co. Port Huron, St. Clair Co.
Petoskey Portland Cement Company 438 East Lake Street Petoskey, Michigan	Petoskey, Emmet Co.
Wyandotte Chemical Corporation Wyandotte, Michigan (Operated by Huron Portland Cement Company)	Wyandotte, Wayne Co.

CLAY PRODUCERS*

Name and Address	Pit Location
Minco Products Corporation Box 367 2305 Miller Road South Saginaw, Michigan	Near Paines, Saginaw Co. Section 1, T.11N.,R.3E.
Robinson Clay Products Company 65 West State Street Akron 9 Ohio	Near Rockland, Ontonagon Co. Section 17, T.50N.,R.39W.
Saginaw Clay Products Box 275 Saginaw, Michigan	Near Paines, Saginaw Co. Section 1, T.11N.,R.3E.

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

CLAY PRODUCTS PRODUCERS
(Brick, Tile, Pottery, Lightweight Aggregate)

Name and address	Raw Material	Plant Location
American Vitrified Products Co. 701 National City Bank Building Cleveland, Ohio	Shale	Grand Ledge, Eaton (Tile)
Clay Products Company R.F.D. No. 2 St. Louis, Michigan	Clay	St. Louis, Gratiot Co. (Tile)
Clippert Brick Company Wyoming and Southern Avenues Detroit 10 Michigan	Clay	Near Dearborn, Wayne Co. (Brick)
Comfort Brick and Tile Company R.F.D. No. 1 Tecumseh, Michigan	Clay	Tecumseh, Lenawee Co. (Tile)
Flat Rock Clay Products Company 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. 12601 Merriman Road Livonia, Michigan	Clay	Livonia, Wayne Co. (Lightweight aggregate)
The Michigan Vitrified Tile Co. P. O. Box 59 Findlay, Ohio	Shale	Corunna, Shiawassee Co. (Tile)
Natco Corporation 327 Fifth Avenue Pittsburgh 22 Pennsylvania	Clay	Franklin, Oakland Co. (Tile)
F. W. Ritter Sons Company, Inc. South Rockwood, Michigan	Clay	South Rockwood, Monroe Co. (Pottery)

GYPSUM PRODUCERS

Name and Address	Mine or Quarry Location	Mill Location
Certain-Teed Products Corp. 120 East Lancaster Avenue Ardmore, Pennsylvania	Grand Rapids, Kent Co. (mine)	Grand Rapids, Kent Co.
Grand Rapids Plaster Company 1204 Peoples National Bank Bldg. Grand Rapids 2 Michigan	Grand Rapids, Kent Co. (mine)	Grand Rapids, Kent Co.
National Gypsum Company 325 Delaware Avenue Buffalo 2 New York	National City, Iosco Co. (quarry)	National City, Iosco Co.
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

Name and Address	Plant Location
The Dow Chemical Company Ludington Division Midland, Michigan	Ludington, Mason Co.
Limestone Products Company 320 First Street Menominee, Michigan	Menominee, Menominee Co.
Monitor Sugar Company Division Robert Gage Coal Company South Euclid Avenue Bay City, Michigan	Bay City, Bay Co.

IRON MINING COMPANIES

Name and Address	Mine Locations (Counties)
The Cleveland-Cliffs Iron Company 14th Floor Union Commerce Building Cleveland 14 Ohio	Baraga, Iron, Marquette
Globe Iron Company Jackson, Ohio	Dickinson
M. A. Hanna Company 1300 Leader Building Cleveland 14 Ohio	Iron and Marquette
Inland Steel Company 38 South Dearborn Street 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
Oliver Iron Mining Division U. S. Steel Corporation Wolvin Building Duluth 2 Minnesota	Gogebic
Pickands Mather and Company 2000 Union Commerce Building Cleveland 14 Ohio	Gogebic, Iron, Marquette
Republic Steel Corporation Republic Building Cleveland 1 Ohio	Iron

COPPER PRODUCERS

Name and Address	Mine Locations (Counties)
Calumet and Hecla, Incorporated Calument, Michigan	Houghton and Keweenaw
Copper Range Co. Painsdale, Michigan	Houghton
Quincy Mining Co. Hancock, Michigan	Houghton
White Pine Copper Co. 53 West Jackson Blvd. Chicago, Illinois	Ontonagon

MARL PRODUCERS

Name	Address	Pit Location (County)
	A.	
L. Z. Arndt	R.F.D. #2, Fennville	Allegan
Gerald Arnsman	R.F.D. #1, Hopkins	Allegan
Carl Avery	Athens	Calhoun
	B.	
Barnes & Van Antwerp	Horton	Hillsdale
Bechman Bros.	Shelby	Oceana
Grant Brizendine	R.F.D. #2, Edwardsburg	Cass
Arthur Bell		Mecosta
*Lester O. Brown	1720 Colfax Ave. Benton Harbor	Berrien
Leon Burr	708 Arnold St., Mt. Pleasant	Isabella, Mecosta
	D.	
Dan Dunn	R.F.D. #1, Alger	Ogemaw
	E.	
*Ehinger Bros.	West Branch	Ogemaw
	G.	
*John Gaylord	Fennville	Allegan
	H.	
Vernon C. Harris	Ravenna	Ottawa
Lawrence Hayward	Scotts	Kalamazoo
Frank R. Hixon	R.F.D. #2, Marcellus	Cass
C. Stanley Hooker	608 Colfax St., Cadillac	Osceola, Missaukee, Newaygo
	K.	
Virgil Kintigh	R.F.D. #2, Jonesville	Hillsdale
	L.	
*Ted Lambrix	R.F.D. #1, Pentwater	Oceana

*Producers with no output in 1953.

Marl Producers (contd.)

Name	Address	Pit Location (County)
	M.	
Ralph Meyers	R.F.D. #1, West Olive	Ottawa
	O.	
Harry H. Olthouse	R.F.D. #2, Caledonia	Kent
	P.	
Emil Pavlak	R.F.D. #2, Hopkins	Allegan
	R.	
Clyde M. Reed	Union City	Calhoun
Roy Rostad	Lake City	Missaukee
	S.	
H. A. Carlton Schau	620 Terrace Ave., Kalamazoo	Barry
Leo W. Speese	Morley	Montcalm, Newaygo
Dan Slack	R.F.D. #4, Kalamazoo	Kalamazoo
*Joseph Steck	R.F.D. #1, Vandalia	Cass
*C. H. Spies	R.F.D. #2, Benton Harbor	Berrien
	T.	
Lawrence Truman & Son	Mecosta	Mecosta
	W.	
Wierenga Bros.	Spring Lake	Ottawa
*Gifferd Wilson	R.F.D. #2, Eaton Rapids	Eaton
Kenneth L. Wood	Colon	St. Joseph
Melvin Woolf and Lee Brandon	Ravenna	Muskegon
Raymond Wyngarden	Reeman	Newaygo

*Producers with no output in 1953

PEAT PRODUCERS

Name and Address	Pit Location
Cravens Peat Moss R.F.D. #5, Box 359 Kalamazoo, Michigan	Near Kalamazoo, Kalamazoo County
Green Thumb Peat Humus Company Capac, Michigan	Near Capac, St. Clair and Lapeer counties
Michigan Peat, Incorporated 267 Fifth Avenue New York 16, New York	Near Capac, Lapeer and St. Clair counties
Perry Peat Company, Incorporated Box 667 Monroe, Michigan	Near Morrice, Shiawassee County
Irving L. Pratt & Son Scottville, Michigan	Near Scottville, Mason County

SALT COMPANIES

Name and Address	Product	Plant Location
Diamond Crystal Salt Co. 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 Chemical Corp. 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.

COMMERCIAL SAND AND GRAVEL PRODUCERS

(Addresses are all in Michigan unless otherwise designated)

Name and Address	Pit Location (County)
A.	
Advance Building Materials Co., 46461 Ryan Road, Utica	Macomb
E. S. Albertson, 4060 Platt Road, Ann Arbor	Washtenaw
American Aggregates Corp., Greenville, Ohio	Kalamazoo, Livingston, Oakland
Anderson Sand and Gravel Co., 401 Atwater, Saginaw	Tuscola
Cleo L. Arndt, Fennville	Allegan
Aggregate Processors, Inc., White Pigeon	St. Joseph
B.	
Amos G. Baker, 487 Academy St., Kalamazoo	Kalamazoo
Battle Creek Gravel Co., 3800 Dickman Highway, Battle Creek	Calhoun
Floyd Bearslee, Route #3, Pontiac	Oakland
Benthal Sand and Gravel, Reese	Tuscola
Bichler Brothers, 703 Ludington St., Escanaba	Delta
Boichot Concrete Products Corp., 1800 Turner St., Lansing	Clinton
Daniel J. Bollig, 38068 Lakeshore Drive, Mt. Clemens	Macomb
M. J. Bowers, 30404 West 14 Mile Road, Farmington	Oakland
E. P. Brady and Co., 900 Citizens Bank Bldg. Flint	(Alpena, Alcona, Huron, (Luce, Mackinac, Mont- (morency, Presque Isle, (Ogemaw, Oscoda.
C.	
Champion, Incorporated, Iron Mountain	Dickinson, Iron, Marquette
Chubb Sand and Gravel, 7505 Chubb Road, Northville	Washtenaw
Donald F. Clark, Morenci	Lenawee
Cloverland Milling and Supply Company, 801 Superior Ave., Gladstone	Delta
Emil Combs, Route 1, Tekonsha	Calhoun
Coit Ave. Gravel Co., 4766 Coit Ave., N.E. Grand Rapids	Kent
Glenn Comstock, Bay City	Huron
Construction Aggregates Corporation, 33 North La Salle Street, Chicago, Illinois	Ottawa (Dredge)
Ed Culver, Kiva	Alger

Commercial Sand and Gravel Producers (contd.)

Name and Address	Pit Location (County)
D.	
Dachill Trucking Co., 18945 W. 8 Mile Rd. Detroit	Macomb, Wayne
Van E. Dailey, 410 West Sibley St., Howell	Livingston
Roy Dayringer, Route 4, Ithaca	Gratiot
Days River Sand and Gravel Co., Route 1, Gladstone	Delta
Deep River Block and Sand Company, Standish	Arenac
Ed. DeVries and Sons, 1400 Walker NW., Grand Rapids	Kent
A. L. Dyer and Sons. McBride	Montcalm
Dexter Gravel Co., 7100 Dexter Road, Dexter	Washtenaw
E.	
Eastman Gravel Pit, R.F.D. #1, Weidman	Arenac
Ehinger Brothers, West Branch	Ogemaw
Elliott Ice and Coal Company, Hillsdale	Hillsdale
W. L. Emery Company, 1375 E. Jefferson Ave. Detroit	Wayne (Dredge)
F.	
Harry Fuoss, Route 1, Durand	Shiawassee
The Ferris Company, Mason	Ingham
Fisher Sand and Gravel Company, Route 2, Midland	Clare
Foley and Bearslee, Route 3, Clarkston	Oakland
G.	
Grande Brick Co., 1456 Fuller SE, Grand Rapids	Kent
Grand Rapids Gravel Co., 2100 Chicago Drive SW, Grand Rapids	Kent
Gravel Producers, Incorporated, 100 E. Kilgrove Road, Kalamazoo	Kalamazoo
Great Lakes Foundry Sand Company, 720 United Artists Bldg., Detroit	Tuscola
H.	
Casper H. Haas Company, 217 Sydelle Avenue, Kalamazoo	Kalamazoo
Hansen Gravel Company, 6430 Pierson Road, Flushing	Genesee
Hauthorn and Steenbock, Route 2, Hastings	Barry
Heide's Sand and Gravel, Route 1, Niles	Berrien, Cass
Charles R. Hemkes Company, Wakefield	Gogebic
Hersey Gravel Company, Hersey	Osceola
Hoover Brothers, Waldron	Hillsdale
C. R. Hunt, Cass City	Tuscola
Hutchins Sand and Gravel Company, Gaylord	Otsego

Commercial Sand and Gravel Producers (contd.)

Name and Address	Pit Location (County)
I.	
Ireland and Lester Co., 220 N. Wayne, St. Joseph	Berrien (Dredge)
J.	
John R. Sand and Gravel Co., 1865 Indiawood Road, Lake Orion	Oakland
Leonard Johnson, Box 31, Chatham	Alger
Thomas F. Johnson, 114 Lafayette St., Grand Haven	Ottawa
K.	
Kelley Isle Lime and Transport Company, Sandusky, Ohio	Various (Dredge)
Harold Keill, Route 3, Niles	Berrien
Killins Gravel Company, 3305 Liberty Road, Ann Arbor	Washtenaw
Klumpp Brothers Gravel Company, 4950 Loveland Road, Chelsea	Washtenaw, Jackson
Koenig Coal and Supply Company, 1486 Gratiot Ave., Detroit	Oakland
L.	
LaCrosse Sand and Gravel Co.	Huron
Lake Superior Gravel Company, Ramsay	Gogebic
Lancaster Sand and Gravel, 1130 South Market, Hastings	Barry
A. S. Leffler Gravel Company, Davison	Genesee
Ed. Light, 300 South Ottawa, St. Johns	Ionia, Clinton
A. Lindberg and Sons, Incorporated, Box 134, Ishpeming	Marquette
M.	
Macomb Sand and Gravel Company, 3295 Auburn Road, Utica	Macomb
Maertens Sand and Gravel Company, 1036 Buckingham, Grose Point	Macomb
Manning and Locklin Gravel Company, Box 216, Northville	Wayne
Louis Marsack and Sons, 34381 Jefferson Ave. Mt. Clemens	Macomb
H. L. Martin Gravel Company, Box 154, Westphalia	Ionia
Hugh H. Mason and Sons, 302 N. Center Ave., Gaylord	Cheboygan

Commercial Sand and Gravel Producers (contd.)

Name and Address	Pit Location (County)
M. (contd.)	
McLane Brothers Sand and Gravel, 2282 Auburn, Pontiac	Oakland
James B. Michell, Route 3, South Haven	Van Buren (Dredge)
Michigan Sand and Gravel, Utica	Macomb
Michigan Silica Company, Rockwood	Wayne
Mickelson Brothers, 1741 School Road, Rochester	Oakland
Morgan Sand and Gravel Company, Utica	Macomb
Vern Molesworth, Yale	St. Clair
N.	
Nieb Concrete Products, Route 1, Niles	Berrien
North Star Washed Sand and Gravel Co., Ithaca	Gratiot
Northville Sand and Gravel Co., 18276 Beck Rd., Northville	Wayne
Northwest Materials, Incorporated, Bryan, Ohio	Hillsdale
Nugent Sand Company, Incorporated, P. O. Box 506, Muskegon	Muskegon
O.	
Oakland Sand and Gravel Co., 741 Glengarry Road, Route 3, Walled Lake	Oakland
P.	
Emil Plispanen, Bessemer	Gogebic
Edward Palmer and Son, 2527 East South, Jackson	Jackson
Pekaar and Van Doorn, 2774 28th Street, SW, Grand Rapids	Kent
A. D. Pennock, Nashville	Barry
Albert Peters, 5911 Mt. Vernon Road, Kalamazoo	Kalamazoo
Harry Pickitt, 409 Hubbard Street, Allegan	(Allegan, Alcona, Calhoun, Clinton, Alpena, (Ingham, Ionia, Jackson, (Cass, Kalamazoo, Ogemaw, (Livingston, St. Joseph, (Van Buren, Washtenaw, (Wayne
E. J. Pine Sand and Gravel, Lapeer	Lapeer
John Post and Sons, Route 2, Swartz Creek	Genesee
Producers Core Sand Corporation, Michigan City, Indiana (Plant at Sawyer, Michigan)	Berrien

Commercial Sand and Gravel Producers (contd.)

Name and Address	Pit Location (County)
R.	
Ray Industries, Incorporated, P. O. Box 165, Detroit	Macomb
Rocks Sand and Gravel Company, 2500 Chicago Drive, SW, Grand Rapids	Kent
Walter Rosevear Pit, West Branch	Ogemaw
S.	
Ray Sablain, Incorporated, 2827 South Cedar St., Lansing	Ingham
Sager Concrete Products, 1139 South Dettman Road, Jackson	Jackson
Saginaw Brick Company, Wood Street, Saginaw	Saginaw
Salem Gravel and Construction Co., Inc. 5 Mile-Curtis Road, Salem	Washtenaw
Sand Products Corporation, 2489 First National Bank Building, Detroit	(Macomb, Manistee (Muskegon
Sargent Sand Company, 2840 Bay Road, Saginaw	Mason, Tuscola (Dredge)
E. L. Schwaderer, Cass City	Tuscola
Shenk Gravel Company, Durand	Shiawassee
Justus Snelenberger, R.F.D. 1, Burt	Genesee
Slaters Bald Mtn., 53-55 N. Parke Street	Oakland
Southern Michigan Materials, Inc.	Hillsdale
Stamm Brothers Gravel Comapny, R. R. 1, Adrian	Lenawee
Standard Sand Company, 14201 Lake Shore Avenue, Grand Haven	Ottawa
Frank H. Stoerk, Pierson	Montcalm
H. Stukey, Coldwater	Branch
T.	
The Taber Company, 125 Front Ave., NW, Grand Rapids	(Antrim, Gratiot, Lake, (Newaygo, Ogemaw, (Roscommon
Tecumseh Gravel Company, Box 444, Tecumseh	Lenawee
U.	
P. O. Underwood and L. A. Berry, 16525 Woodward Avenue, Detroit	Macomb
C. Utterback, Route 2, Mt. Pleasant	Isabella
V.	
Van Enkevorts Brothers, Bark River	Delta

Commercial Sand and Gravel Producers (contd.)

Name and Address	Pit Location (County)
W.	
Ben Waanders, Route 5, Allegan	Allegan
Lyle J. Walker Sand and Gravel, 21040 Coolidge Highway, Rochester	Oakland
Walling Gravel Company, P. O. Box 52, St. Johns	Clinton
F. S. Ward, Route, 1, Clarkston	Oakland
Ronald Weaver, R.F.D. No. 1, Owosso	Shiawassee
N. Weitzel, Bad Axe	Huron
West Shore Construction Co., Zeeland	(Calhoun, Barry, Eaton, (Kent, Newaygo, Oceana, (Ottawa
I. L. Whitehead Company, Sault Ste. Marie	Chippewa
Whittakker and Gooding Company, 5800 Cherry Hill Road, Ypsilanti	Washtenaw
Olga Winkka, Box 726, Marquette	Alger
John Woerner	Lenawee
Y.	
John G. Yerington, R.R. 3, Box 34, Benton Harbor	(Allegan, Barry, Berrien, (Calhoun, Cass, Ionia, (Kalamazoo, Van Buren.
Youngs Sand and Gravel Co., 8975 Huron River Drive, Ypsilanti	Washtenaw

STONE PRODUCERS

Name and Address	Type of Stone	Quarry Location
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)	East of Omer Sec.16,T.19N.,R.6E. Arenac County
F. G. Cheney Limestone Company, Incorporated Bellevue, Michigan	Limestone, crushed and dimensional	West of Bellevue Sec.20,T.1N.,R.6W. Eaton County
Drummond Dolomite, Inc. P. O. Box 688 Sheboygan, Wisconsin	Dolomite, crushed	Western end Drummond Is. Sec.24,T.42N.,R.5E. Chippewa County
Fiborn Limestone Co. Sault Ste. Marie Ontario, Canada	Limestone, crushed	Sec.16,T.44N.,R.7W. Mackinac County
The France Stone Company 1800 Toledo Trust Bldg. Toledo 14 Ohio	Dolomite, crushed	Monroe Sec.7,T.7S.,R.9E. Monroe County
Gogebic County Road Commission	Miscellaneous stone (non-commercial)	Gogebic County
Houghton County Road Commission Hancock, Michigan	Basalt, crushed	Houghton County
Inland Lime and Stone Company Manistique, Michigan	Limestone, crushed	North of Hunt Spur Sec.6,T.42N.,R.12W. Mackinac County
John C. Jeffery Box 107 Parma, Michigan	Limestone, crushed	Northeast of Parma Sec.19,T.2S.,R.2W. Jackson County
The Metro-nite Company 3523 W. Silver Spring Drive Milwaukee 9 Wisconsin	Dolomite, crushed	Near Felch Sec.26,T.42N.,R.28W. Dickinson County
Michigan Foundation Quarry Company Trenton, Michigan	Limestone, crushed	Trenton Sec.7,T.4S.,R.11E. Wayne County

Stone Producers - contd.

Name and Address	Type of Stone	Quarry Location
Michigan Limestone Division U. S. Steel Corporation 170 East Woodward Avenue Rogers City, Michigan	Limestone, crushed	Near Rogers City Sec.23,T.35N.,R.5E. Presque Isle County
Michigan Stone Company R.F.D. No. 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 Company Onaway, Michigan	Limestone, dimensional	North of Onaway Sec.5,T.34N.,R.2E. Presque Isle County
Petoskey Portland Cement Company Petoskey, Michigan	Limestone, crushed	West of Petoskey Sec.3,T.34N.,R.6W. Emmet County
Ray Sandstone Quarry 303 Nottawaseppee Napoleon, Michigan	Sandstone	East of Napoleon Sec.6,T.4S.,R.2E. Jackson County
Star Sandstone Company 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, T.42N., R.29W. Dickinson County
The Wallace Stone Company Bayport, Michigan	Limestone, crushed and dimensional	Southeast of Bayport Sec.6,T.16N.,R.10E. Huron County
Wyandotte Chemicals Corporation Wyandotte, Michigan	Limestone, crushed	Alpena Sec.24,T.31N.,R.8E. Alpena County