

Approved
Hwyngarden
May 20, 1938

AN ECONOMIC EXAMINATION OF NATURAL GAS
IN MECOSTA COUNTY, MICHIGAN

A Thesis Submitted To The Department of Economics
Of Michigan State College of Agriculture And
Applied Science In Partial Fulfillment of The
Requirements For The Master of Arts Degree.

By
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Big Rapids, Michigan
May, 1938

THESIS

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AN ECONOMIC EXAMINATION OF NATURAL GAS
IN MECOSTA COUNTY, MICHIGAN

P R E F A C E

Reasons For Making The Study

Curiosity having been aroused from the association with people who had financial and other interests in the Austin gas field, and having observed the enthusiasm and excitement of people living in the vicinity of the field, the author of this report felt that it would be worth while to make an examination to determine the economic effects resulting from the discovery of natural gas in Mecosta county. This examination was based on the hypothesis that WHENEVER NATURAL GAS IS DISCOVERED IN COMMERCIAL QUANTITIES VARIOUS INTERESTS WILL BENEFIT AND MARKETING PROBLEMS WILL ARISE WHICH ARE PECULIAR TO THAT LOCALITY.

To be more specific, the writer as a director of the Big Rapids Gas Company, which served Big Rapids with manufactured gas, spent considerable time discussing with the other directors the feasibility of securing natural gas for Big Rapids by means of a pipe line from the Broomfield area. The Broomfield area is but a short distance east of Mecosta county. At the time referred to, gas had been discovered there and a market was being developed. The directors of the Big Rapids Gas Company authorized the president

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and general manager, Mr. B. O. Tippy, to make a thorough study to determine the feasibility of bringing gas by pipe line from Broomfield to Big Rapids. While this study was being made by Mr. Tippy, natural gas was discovered in Austin township, Mecosta county, some seven miles southeast of Big Rapids. The writer was present at the directors' meeting when Mr. Tippy reported conversations he had with the discoverers of the Austin field regarding the purchase of natural gas from them. Taggart Bros. Inc. who controlled the gas wells in the Austin field, secured a franchise from the City of Big Rapids authorizing them to serve natural gas within the city. After a period of negotiation the common stock of the Big Rapids Gas Company was sold to Taggart Bros. Inc. Within a short time after the sale was consummated a pipe line had been laid and natural gas was being used in Big Rapids. A few months later a new area was discovered in Hinton township, Mecosta county. Further discovery wells showed that the field extended across Millbrook township, Mecosta county, and into Belvidere township, Montcalm county. Additional drilling followed and proved that the Hinton-Millbrook--Belvidere area contained the largest natural gas reserves of any of the fields so far discovered in the state.

The incentives which suggested the timeliness of an economic examination of natural gas in Mecosta county were: 1st. Experience as a member of the Board of Directors of the Big Rapids Gas Company. 2d. Contact with residents of Mecosta county who exhibited their local pride and enthusiasm over the development of the natural gas fields. 3d. A realization that there was a lack of knowledge

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Acknowledgments

It is extremely difficult to make a definite and complete acknowledgment for all the aid and cooperation received. The sources varied from the literature bearing upon the development of our petroleum resources, including articles in the trade journals and local and city papers, to public records, private records, and several score of personal interviews.

The outline of the report was submitted to Dr. Harald S. Patton, head of the Department of Economics of Michigan State College, who aided very materially in the writing by giving many helpful suggestions. Dr. Herman Wyngarden read the first draft of the manuscript, and following his advice some additional material was added. Carl Worth, gas engineer of the Public Utilities Commission, gave suggestions as to sources from which data could be secured. Dr. R. A. Smith, the State Geologist, explained the relationship existing between his office and those who are conducting exploration work with the hope of finding oil or gas. W. C. Taggart, of Taggart Bros. Inc., who discovered and developed the Austin area, gave considerable time to conferences with the writer and also made available statistical data from his offices. A. W. Flowers, General Manager of the Muskegon Gas Company, arranged for an interview with and the furnishing of data by their gas engineer, Harry Gable. D. E. Karn, Vice-Pres. and General Manager of the Consumers Power Company, gave nearly a half day of his time to discussing the situation and sent one of their gas

engineers, H. L. Fruechtenicht, Jr., to Big Rapids for a personal interview. Delbert Long of the local abstract office aided in the work of securing data regarding oil and gas leases. Public officials were courteous and considerate in making public records available.

Indebtedness is acknowledged and appreciation extended to each and every one whose cooperation aided in carrying on this investigation.

Big Rapids, Michigan
May, 1938

Karl G. Merrill

CHAPTER I

I N T R O D U C T I O N

The Economic Objectives

The purpose of this examination was to determine the nature of the economic effects produced by the discovery of natural gas in Mecosta county. One of the aims was to find out how varied were these effects; another was to show how extensive were the effects. It was hoped that the report would be a contribution to human knowledge in that it would show what marketing problems were involved in the development of the Mecosta county natural gas fields, and how if any way this knowledge might be of benefit when other fields were in process of development. Benefits were to be traced and the beneficiaries indicated. The application of the conservation laws were to be traced and some evaluation made thereof. The control exercise by the Michigan Public Utilities Commission was to be noted with an appraisal of the effectiveness of that control.

Nature and Scope of the Study

This study is of the analytical type and includes a small amount of historical data. Materials, data, etc. were gathered by means of a field study; then evaluated and arranged in logical sequence; conclusions drawn therefrom and stated in the form shown hereafter. The work was started August 1, 1935 and continued

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until April, 1938. During this time many new phases of the work developed.

Michigan ranks as one of the youngest members of the list of states producing oil and natural gas in commercial quantities. The extensive development of the industry began in 1926, and scarcely a year has passed since without the discovery of one or more new oil pools or natural gas areas. The reason that these natural resources were not developed earlier can be attributed to the peculiar geological formation underlying the state. No other part of the continental United States lies so deeply buried under glacial deposits as the lower peninsula of Michigan; therefore practically little stratigraphic information had been available. After the discovery of oil in Saginaw county in 1925 and gas in Muskegon county in 1926, experienced oil men came to the state and the "wildcatting" period began.

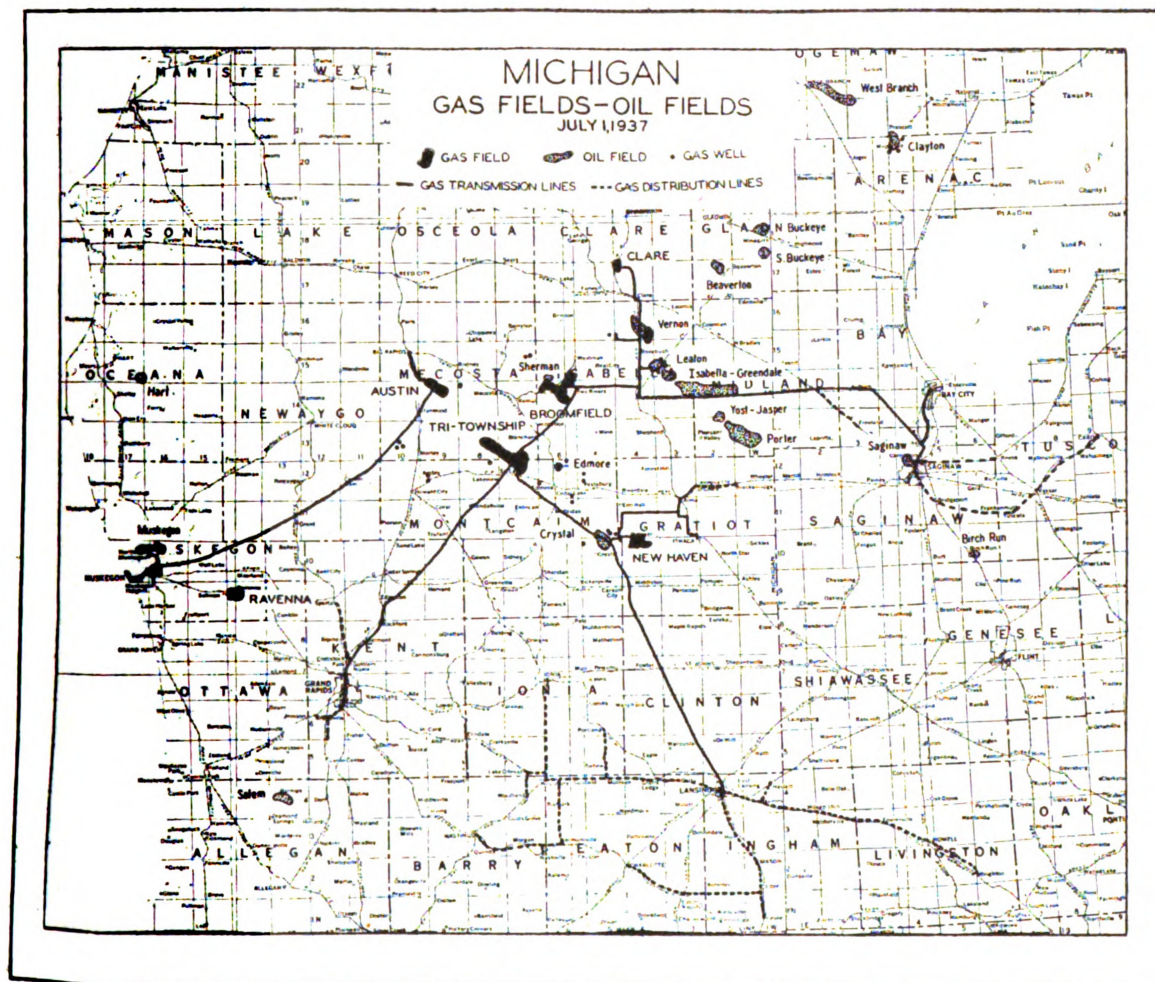
Oil, commonly called "black gold", furnishes the incentive for the search, with gas, sometimes termed the "step child" of the oil industry, relegated to a secondary consideration due to the difficulties encountered in finding a market outlet for natural gas. The search for oil resulted in the discovery of the Vernon, Leaton, Broomfield, Clare, Austin, Hinton-Millbrook-Belvidere, and other scattered areas of natural gas as shown in Figure 1, page 10. It is to be noted that the areas mentioned above which are outside of Mecosta county are connected by pipe line with the area in Mecosta county; therefore consideration of those areas must be included in this study; likewise the territory covered in marketing the gas

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MICHIGAN GAS FIELDS--OIL FIELDS

July 16, 1937



WHERE MICHIGAN OIL AND GAS FINDS HAVE BEEN MADE: The map shows the oil and gas fields in the state of commercial importance. There have been some "shows" of oil and gas in other places but none of economic value. The map shows the present developed gas pools (in black), and the natural gas transmission and distribution lines.

SOURCE:

Map made at the direction of Arthur W. Stace, Director Ann Arbor Bureau, Booth Newspapers, Inc., by Professor K. C. McMurry, chairman of the Geography Department of the University of Michigan. Data supplied by gas and oil records, from copies of maps on file with the Public Utilities Commission, from information available in the Oil and Gas Division of the Michigan Department of Conservation, and from other sources.

(Used by permission of Arthur W. Stace)

Figure I

must be taken into consideration.

Sources of the Data

The sources of data have been widespread. Statistical and other factual information, rules and regulations, blank forms, maps, etc., were secured from the offices of the Public Utilities Commission, the Department of Conservation, the State Geologist, the State Tax Commission, from the Register of Deeds, the County Clerk, the County Treasurer of Mecosta county, from township officers, from the local abstract office, from the Consumers Power Company, the Muskegon Gas Company and the Grand Rapids Gas Light Company. The personal interview was used as a means of securing data from industrial, commercial and residential users of natural gas. First-hand information was secured by visits to different gas and oil fields and to the Oil and Gas Expositions held at Mt. Pleasant in August 1935, 1936 and 1937. Drilling methods were observed, equipment examined, and the "bringing in" of one of the largest gas wells was witnessed.

Limitation of Factual Data

The gas fields are of such recent discovery that the area of some of the fields is not definitely defined. Dispute exists as to the amount of the natural gas reserves in the state, and especially in the Hinton-Millbrook-Belvidere area. Pipe lines from the tri-township field have been serving Lansing and Grand Rapids for less than two years. Litigation is pending

in the courts. Consumers have not had sufficient time to record dependable data for securing comparative costs. The industry is in such an infant state that there is a lack of both public and private financial records.

Validity and Reliability

Attention has been paid both to the validity and the reliability of the data secured. Subjective material has been disregarded whenever the objective could be obtained. Whenever practicability and convenience permitted, the original or official records have been consulted, or statements taken from responsible officials or custodians. Sources of information have been indicated either in the context or by footnotes.

CHAPTER II

ECONOMIC FEATURES OF MECOSTA COUNTY

The purpose of this chapter is to show the economic features of Mecosta county, and the situation which existed just prior to the discovery of natural gas areas within the county.

Location and Extent

Mecosta county lies a short distance west of the center of the Lower Peninsula of Michigan. It is bounded on the north by Osceola county, by Isabella on the east, by Montcalm on the south, and by Newaygo on the west (See Figure 2). The county is square, consisting of sixteen townships which are described in the Government survey as townships 13, 14, 15, and 16 north, ranges 7, 8, 9, and 10 west. The area of the county is 368,640 acres "more or less".

Topography

The surface of the county is rolling, varying from level tracts and gentle slopes to steep hills and deep ravines. The Muskegon river flows through the western tier of townships (See map, Figure 3, page 19), and the Little Muskegon rising in the eastern part of the county flows across the southern townships to empty into the Muskegon just outside of the county, and thence



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into Lake Michigan. The Chippewa river rises in the northeastern part of the county and flows southeast, then east and empties into the Tittabawassee river, thence into the Saginaw river and Saginaw Bay. The waters of Black creek rise in the southeastern portion of the county and eventually empty into the Grand river. Nearly three score lakes⁽¹⁾, varying in size from an acre to nearly 800 acres are situated within the county.

In places the soil is composed of a rich muck, in others a heavy clay; a larger area consists of a rich sandy loam, while those sections originally covered by the pine forests are sandy.

Population

The distinction of being the first white settlers in the territory now known as Mecosta county goes to two men, John Davis and John Parish⁽²⁾. John Davis, born in Belfast, Ireland, May 8, 1826, came to America in 1850 and after spending a season as a sailor on the great lakes, purchases 160 acres of land located on Section 27 of Mecosta township and made a permanent settlement thereon in 1851. He built the first frame barn to be erected within the county in 1856, the lumber being cut with a whipsaw. In 1851, John Parish, a bachelor, settled and cleared a small tract of land within what is now the city limits of Big Rapids; but after three or four years he moved to Green township and later platted the village of Paris. In 1852 William Brockway and wife, Margaret,

1. Scott, I. D., Inland Lakes of Michigan, Geological Bulletin No. 30
 2. Mecosta County Album, Chapman Bros., Chicago, 1883, page 568

set up housekeeping in a shanty on the banks of Mitchell creek, and there their daughter Alice was born February 12, 1853. Records and tradition indicate that she was the first white child born in Big Rapids and in Mecosta county.

Thereafter the settlement was fairly rapid due to lumbering operations and to settlers seeking farm lands. An estimate of the population for 1859 places the number at 1000. The number of inhabitants continued to increase until about 1900; thereafter each census has shown a loss in population. The following table shows the population according to each census since 1870:

TABLE I
POPULATION OF MECOSTA COUNTY
(U. S. Census)

Year	Number of People
1870	5,642
1880	13,973
1890	19,697
1900	20,693
1910	19,466
1920	17,765
1930	15,738

The present population is almost entirely made up of those who trace their ancestry back to English, Irish, German, and Scandinavian stock.

At the present time about two-thirds of the population is found on farms or in the small villages of Mecosta, Remus, Morley, Barryton, Stanwood, Paris and Rodney. These villages depend largely upon agriculture, but benefit considerably during the summer from tourist and resort trade.

The Lumbering Industry

Warren & Ives erected a saw mill on Mitchell creek, in Big Rapids, and on July 4, 1857, sawed the first lumber manufactured within the county.⁽¹⁾ This mill was long known as the "red mill" and it furnished lumber for many of the oldest buildings erected in the vicinity.

As lumbering was the chief inducement for settlement, for many years it was the chief industry of the county. Logs were cut, hauled to the streams and floated to the mills. At that time hardwood was of little value, so the operations were confined to the white pine. By 1887 practically all the large scale lumbering operations had ceased.

Transportation

In October, 1869, the Grand Rapids & Indiana Railroad (now a branch of the Pennsylvanie) begin running trains daily from Grand Rapids to Morley, Mecosta county. By midsummer of 1870 Big Rapids had a daily train service south.

In 1873 the Chicago & West Michigan Railroad began operating a line from Big Rapids to Muskegon. Later this line became a branch of the Pere Marquette System, but becoming unprofitable was discontinued between Big Rapids and White Cloud in 1926.

The Detroit, Lansing & Northern Railroad completed its line to Big Rapids in the Spring of 1880. This road is still being operated as a part of the Pere Marquette System and serves the villages

of Rodney, Mecosta, Remus, and Millbrook.

At the present time (winter 1937-38), the Pere Marquette operates a mixed train out of Big Rapids each morning and back at night. The Pennsylvania Railroad now operates one passenger train north and one south daily from Mackinaw City through Big Rapids to Grand Rapids, and not more than one freight train each way daily. At the Pennsylvania station one man now handles both passenger and freight traffic. Formerly several men were employed.

Buses run several times each day, carrying passenger traffic north and south; two buses a day connect with Mt. Pleasant. Less than car load shipments of freight tend to be handled by the Associated truck lines which makes daily trips north and also south to Grand Rapids. Highway 20 crosses the county from east to west; M 66 crosses the county from north to south near the east boundary of the county. U. S. 131 is a paved highway crossing the Western tier of townships from north to south.

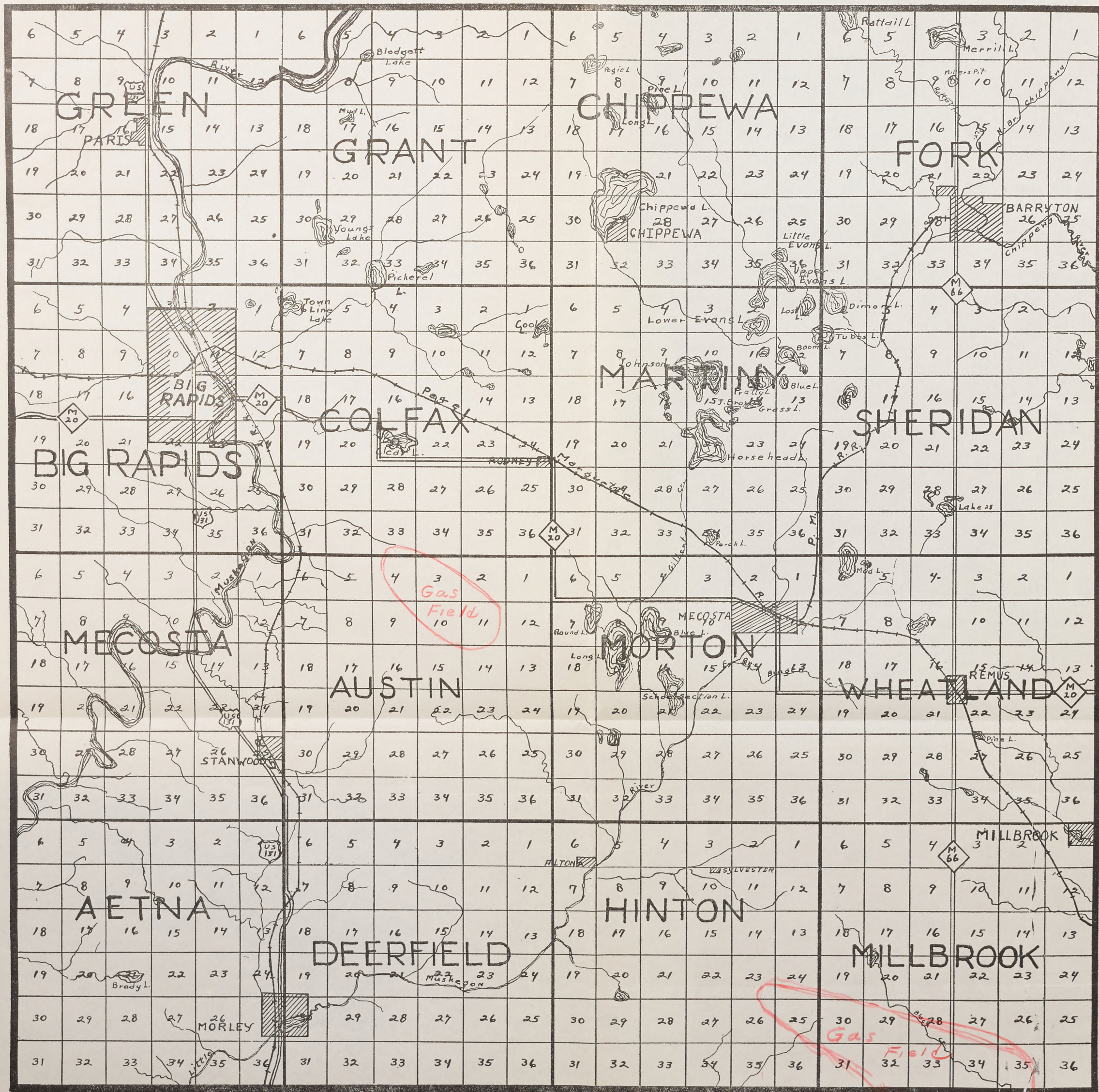
Readjustment

After the large commercial lumbering operations were discontinued, the county started through the cycle of readjustment so familiar to those who have watched the evolution of communities similarly situated when they were forced to cease depending upon lumbering, and were forced to turn to agriculture or other activities. While going through this stage, the panic of 1893 complicated progress. The assessed value of property decreased by more than 50 % from 1883 to 1899, then increased to nearly \$16,500,000 by 1920; the assessed valuation of 1935 had fallen about 33 1/3 % below the 1920 total.

In stock and for sale by The Central Printers, Mt. Pleasant, Michigan

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Changes in property values from the lumbering period in the early 80's to the low valuations of 1899, and the upward trend reaching more than \$16,000,000 in 1920 and a decline to less than \$12,000,000 are shown in Table II.

TABLE II

VALUATION OF PROPERTY IN MECOSTA COUNTY

Source: Supervisors' Journal
Liber A, B, D, & E

Townships, Etc.	1883	1899	1920	1935
Aetna	\$192,480	\$124,450	\$677,455	\$529,852
Austin	267,028	92,348	490,480	357,350
Big Rapids Twp.	312,790	158,180	722,476	480,070
Chippewa	426,680	114,985	575,040	404,960
Colfax	264,842	103,468	774,275	555,695
Deerfield	300,080	149,745	859,625	545,830
Fork	122,795	117,555	881,279	543,139
Grant	240,107	89,565	489,025	298,725
Green	418,676	203,490	966,505	628,510
Hinton	302,298	158,580	1,008,485	667,887
Martiny	424,478	79,710	521,850	356,450
Mecosta	195,035	104,655	1,091,520	1,063,360
Millbrook	564,748	123,515	1,091,595	669,749
Morton	257,680	93,750	635,560	443,250
Sheridan	204,139	102,963	639,866	414,250
Wheatland	424,214	173,340	1,308,575	914,125
City of Big Rapids	1,743,720	1,108,815	3,668,470	2,995,723
Total	\$6,661,790	\$3,099,114	\$16,402,081	\$11,868,315

Note: Rogers Dam, a unit of the Consumers Power Company, is located in Mecosta township, and would account for the large increase in valuation of 1920 and for the fact that the valuation did not show a greater decrease in 1935.

Manufacturing

Big Rapids (population of 4671 by U. S. Census of 1930) has been fortunate in having three furniture factories operate over a long period of years. The Big Rapids Furniture Company was organized in 1872 and has continued until the present time, giving a maximum employment to about 35 men. The Crescent, later the Griswold-Guest, and more recently the M.A. Guest Company, operated from 1887 until, as a result of the depression, the company failed in 1934. Prior to the depression the Guest plant employed a maximum of 85 men. The Falcon Manufacturing Company during the period from 1911 to 1913 employed about 100 men with portable saw mills cutting hardwood within the county, and reached a peak of 163 men employed in its two local plants during the period of 1917 to 1920. Some years ago the smaller plant burned, but the main factory has continued operations, though curtailed, throughout the depression, producing a cheap grade of furniture.

During the lumbering period John and Volney Hanchett opened a small plant to produce swages which were used in setting of saws. This plant continued its growth, producing various types of grinding and sharpening machinery. The present organization is known as the Hanchett Manufacturing Company. The product may be used wherever there is a demand for grinding machines in lumber mills, paper mills, leather processing, automobile plants, etc. Shipments are made to various parts of the United States, Canada, Mexico, to Europe, India, and the Orient. In January, 1935, large machines

were shipped to Russia. In 1935, when running at capacity the plant would employ about 150 men. The plant was enlarged in 1937, so that it could furnish employment to 230 men.

Agriculture

Much of the soil of the county is a light sand which is unfit for farming; a considerable portion is just "fair"; and a still smaller area, estimated not to exceed 15 % ⁽¹⁾ of the total area is excellent farming land. General farming and dairying is the prevailing type of farm operation. Potatoes, cucumbers, and contract vegetables for canning factories are types of money producing crops.

The eastern part of the county is served by a creamery at Remus. The Farmers' Co-operative Creamery, located in Big Rapids, has had a rapid and consistent growth. It now claims to be the largest producing unit within the state. About 3,150,000 pounds of grade 92 butter were churned during 1935, the largest part of which was sold at top prices. This concern stood up in first-class shape during the depression, and was able to meet payments for cream on schedule even during the banking holiday of 1933.

Resort and Tourist Trade

Chippewa Lake and Clear Lake have attracted the summer cottager for many years. Many of the other lakes were growing in popularity previous to the depression. During the summer of 1935 the demand for cottages far exceeded the supply, according to the

1. Veatch, J. O., Agricultural Land Classification and Land Types in Michigan. Bulletin 231, Mich. Agricultural Exp. Station

report of the secretary of the Chamber of Commerce of Big Rapids. The sale of land on the lakes, the building of cottages, and other work in connection with their upkeep have given considerable employment to labor and have increased the sales of the merchants who handle builders' supplies. Cottagers, fishermen, and resorters have proven to be a source of considerable income to the merchants.

Ferris Institute

The late Woodbridge N. Ferris (Governor of Michigan, 1913-1916; U.S. Senator, 1923-1928) opened the Ferris Institute in the fall of 1884. The school grew as the years passed, bringing students to Big Rapids from every county of Michigan, from other states, and from some foreign countries. The several hundred students in attendance each year bring in large sums of money, in the aggregate, which is spent for tuition, room rent, board, amusements, and for general purchases from the merchants.

The Depression and Unemployment

The first year or more of the depression caused little unemployment and hardship; but by December, 1933, the welfare load had become heavy, delinquent taxes continued to increase, and the county government which had no bonded indebtedness prior to the depression soon found itself faced with a serious problem in order to meet its obligations for operating expenses and to care for the needy. The census of 1930 showed that there were 4193 families and 124 single persons on relief----19.8 %⁽¹⁾ of the population.

1. Monthly Bulletin Public Relief Statistics, Michigan Emergency Relief Administration, January, 1935, and November, 1935.

This load had decreased to 726 families and 128 single persons by November, 1935, or to 17.3 %.

Summary

Mecosta county is located west of the center of the Lower Peninsula, in a region once partly covered by white pine forests. The land is not all adapted for farming. Many of the farms occupy sub-marginal land. Only a few of the farmers can be said to be well-to-do. There is very little prospect for the county to become very prosperous, if it is to depend upon agriculture. Nearly three-fourths of the population live on farms or in the small villages. Big Rapids with a population of less than 5,000 is the trading center for the people living in the western half of the county. Factories in Big Rapids give employment to a limited number. While the population would generally be classed as industrious, with the majority owning their own homes; very few would be classed as even moderately wealthy.

CHAPTER III

THE RELATION OF MECOSTA COUNTY TO THE OIL AND GAS
AREAS OF MICHIGAN, AND SKETCH OF
DEVELOPMENTOil and Gas Found in Michigan

As a gas and oil producing state, Michigan is relatively young. The reason why oil and gas were not discovered sooner may be ascribed to the fact of the peculiar geological formation existing in the Lower Peninsula. Since the rock is so deeply buried beneath glacial drift, very little has been known as to the strata. Such information could be obtained in no other way than from deep boring.

Newcombe⁽¹⁾ relates that in the period of the early 1870's the lumbering interests centering in Muskegon on the west side of the state, having considerable waste material which could serve as fuel, made several deep borings near the city of Muskegon but failed to find rock salt. Reports indicate that small quantities of oil were found.

The discovery well in the Muskegon field was located by Hugh D. Crider, geologist for the Dixie Oil Company, and was brought in on December 8, 1927. Development of the field for oil and gas continued for some time, but due to wasteful methods the natural gas reserves were soon depleted.

1. Newcombe, Robert B. Oil and Gas Fields of Michigan. Publication 38, Mich. Geological Series 32 (1933), page 136.

On the eastern side of the state, the Dow Chemical Company⁽¹⁾ had drilled for brine since 1890 but withheld records of their wells, but drillers and residents remembered finding showings of gas and oil, and the Saginaw oil field was discovered in July, 1925. The Mt. Pleasant field was discovered by the completion of the Root well in February, 1928. Later the Porter, Clare, Vernon, and Broomfield areas were developed and furnished an incentive for additional "wild catting".

Prospecting in Mecosta County

The earliest record found in connection with exploration for oil or gas in Mecosta county appears in the Big Rapids Pioneer of August 6, 1887, which refers to proposed prospecting for natural gas, and the August 16, 1887, issue states:

"A meeting of the stockholders in the Big Rapids Natural gas company will be held Thursday evening in the council room. At this time it will be decided whether further effort to raise the additional \$1400 will be put forth. Our faith in the project has not left us yet."

On the Gilbert farm, about two miles south of Big Rapids, a well about 900 feet deep was drilled some 40 years ago. There seems to be some dispute as to the purpose of the drilling, but mineral water was found and intermittent efforts were made over the years to develop it on the basis of the properties of the water.

Dr. Newcombe reports six unsuccessful wells,⁽²⁾ four being drilled deeper than 3700 feet. The Grove well (NW 1/4 NW 1/4 SE 1/4

-
- | | | | |
|----|----------------------|----------|----------|
| 1. | Newcombe, Robert B., | page 155 | Op. cit. |
| 2. | Newcombe, Robert B., | page 235 | Idem |

Sec. 14 T 15 N R 7 W) struck the Michigan "gas sand" at 1387 feet with a showing of gas at three different depths and black oil at 1692 feet, but nothing in deeper formations. Two attempts were made in the vicinity to find gas horizons shown by the Grove well but neither produced gas.

Geological Basis for Exploration

Mecosta county, being located just west of Isabella county where several pools had been found, overlays a geological structure indicating three lines of "highs" or anticlinal foldings:⁽¹⁾

(a) One being the Broomfield "high" extending from Isabella county northwesterly across Sheridan, Chippewa and Fork townships (T 15 N R 7 W; T 16 N R 8 W; T 16 N R 7 W). (b) A second seems to cross from the southeast corner of the county towards Big Rapids. (c) The third may cross in a similar direction across the southwestern part of Deerfield township (T 13 N R 9 W) and through Aetna (T 13 N R 10 W). Thus there appears to be a geological basis to encourage exploration.

Gas and oil appear in a number of forms of rock structure. The anticlinal type, mentioned above, is illustrated by drawings showing a cross section of rock formations in Figure IV, page 28.

Discovery of the Austin Field

W. C. Taggart and his brother James, both born and educated in Big Rapids, formed a partnership and opened the first gasoline

1. Newcombe, Robert B. Op. cit. page 235

ANTICLINAL ROCK STRUCTURE
(Not drawn to scale)

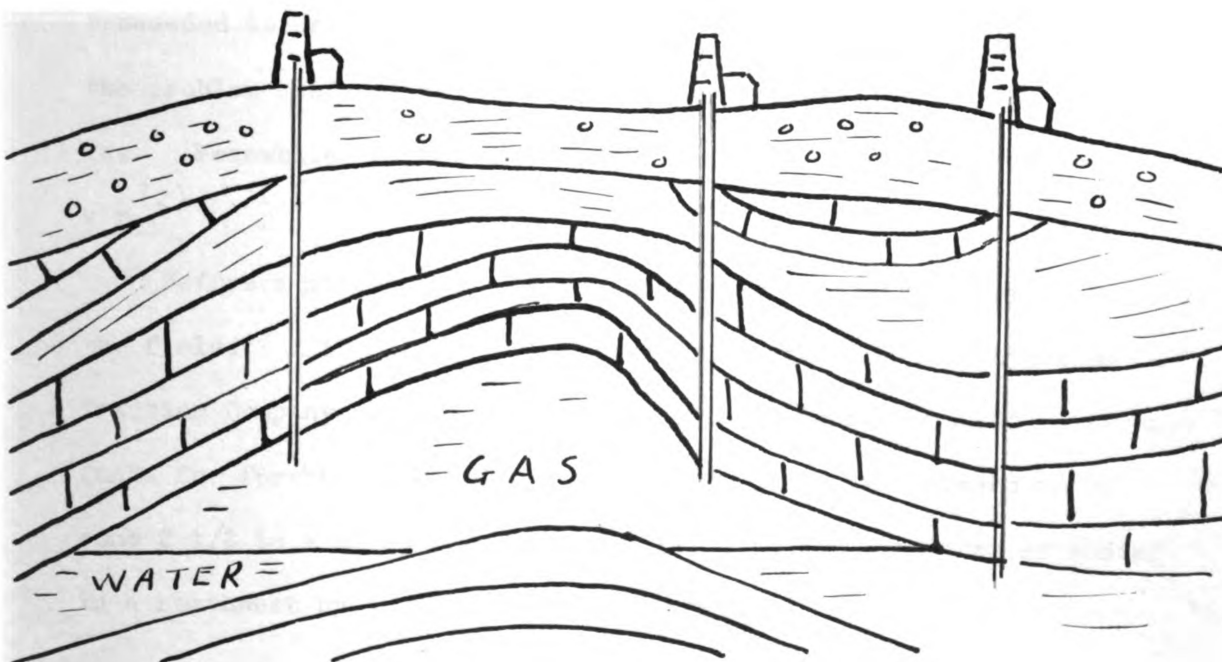
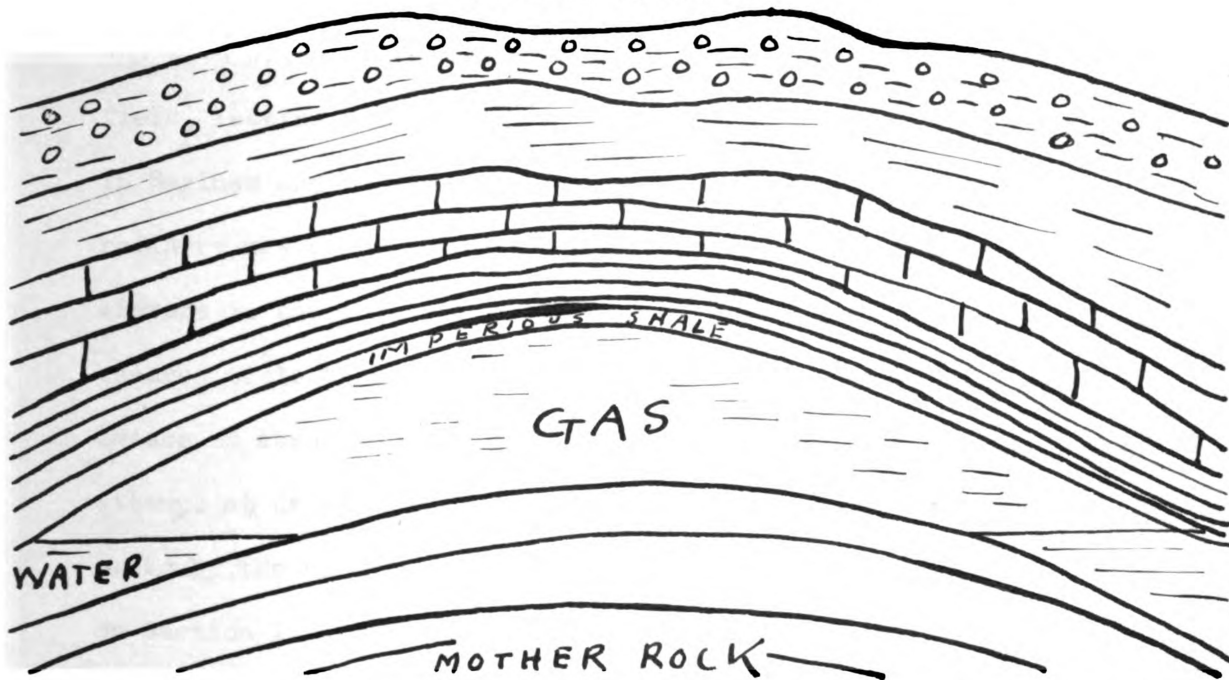


Figure IV

1

station to be operated in the city. Their business prospered and when oil discoveries were made in Michigan they entered the field, leasing and drilling for oil. They erected refineries in Saginaw and in Big Rapids. The crude oil for the Big Rapids refinery was brought in by trucks. The Taggarts were firm believers in the possibility of finding oil in Mecosta county. They secured title to a plot of some 3200 acres in Austin township and leases on about 10,000 acres of adjoining property. Their first attempt at drilling on this acreage was climaxed at the end of five weeks by the bringing in on Thursday, March 16, 1933, of a gas well on Section 11 of Austin township (T 11 N R 9 W). The estimated capacity of the well was 4,000,000 cubic feet of dry gas, daily open flow. Since they were seeking oil rather than gas, they proceeded to drill for another 30 days.⁽¹⁾ Not finding oil, the problem confronting the Taggarts was to find a market for the gas. Meanwhile 120,000,000 cubic feet of gas escaped into the air.⁽²⁾

Before a market could be found, it was necessary to prove the field. After putting down four wells, the American Light & Traction Company was contracted by the Taggarts and induced to advance funds for further proof of the field. The field proved to be some 2 1/2 to 4 miles long and from 1 1/2 to 2 miles wide, extending in a northwest by southeasterly direction.

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1. Taggart, W. C. Personal interview
 2. Gabel, Harry (Gas Engineer American-Michigan Pipe Line Co.)
Testimony before Mich. Pub. Utilities Com., Aug. 7, 1935
 3. Taggart, W. C. Testimony before Mich. Pub. Util. Com. Aug. 7, '35

After the granting of a franchise by the city of Big Rapids to Taggart Bros., Inc. permitting the company to serve natural gas within the city, Mr. B. O. Tippy sold the controlling interest in the Big Rapids Gas Company to Taggart Bros. Inc. W.C. and James Taggart then formed the Mecosta Pipe Line Company, and during the winter of 1933-34 built a pipe line from the Austin field to Big Rapids and began serving consumers with natural gas. During the first year of natural gas service about 174,000,000 cubic feet of gas was used. This compared with about 14,000,000 cubic feet of manufactured gas served the previous year.

Further Development of the Field

The reserves being considered sufficient for furnishing natural gas to Muskegon for a period of ten years, the American Light and Traction Company (parent company of the Muskegon Gas Co.) formed a subsidiary known as the American-Michigan Pipe Line Company, and built a 52 mile line to Muskegon (Figure V) at a cost of about \$382,000. That company purchases gas from the Taggart interests, pipes it to Muskegon, and sells the gas to the Muskegon Gas Company.

Reserves of the Austin field are variously estimated. H.D. Crider, Consulting Geologist for the Michigan Pipe Line Co., estimated as of August 5, 1935, that the field had a "proved" acreage of 3160 acres and "proved" reserves before withdrawals of 12,180,000,000 cubic feet, and that withdrawals to that date were 1,074,985,000 cubic feet. As of January 1, 1935, the United States Bureau of Mines gave an estimate of the initial recoverable reserves which they placed at

MAP SHOWING THE RELATION OF
MECOSTA COUNTY TO THE
GAS FIELDS AND MARKET
OUTLETS

GAS FIELDS

1. Austin
2. Hinton-Millbrook-
Belvidere
3. Broomfield
4. Vernon
5. Clare
6. Muskegon

PIPE LINES

- A. Mecosta Pipe Line Co.
- B. American-Michigan
- C. Grand Rapids L. & G. Co.
- D. Consumers Power Co.
- E. Consumers Power Co.
- F. Gas Corporation of
Michigan

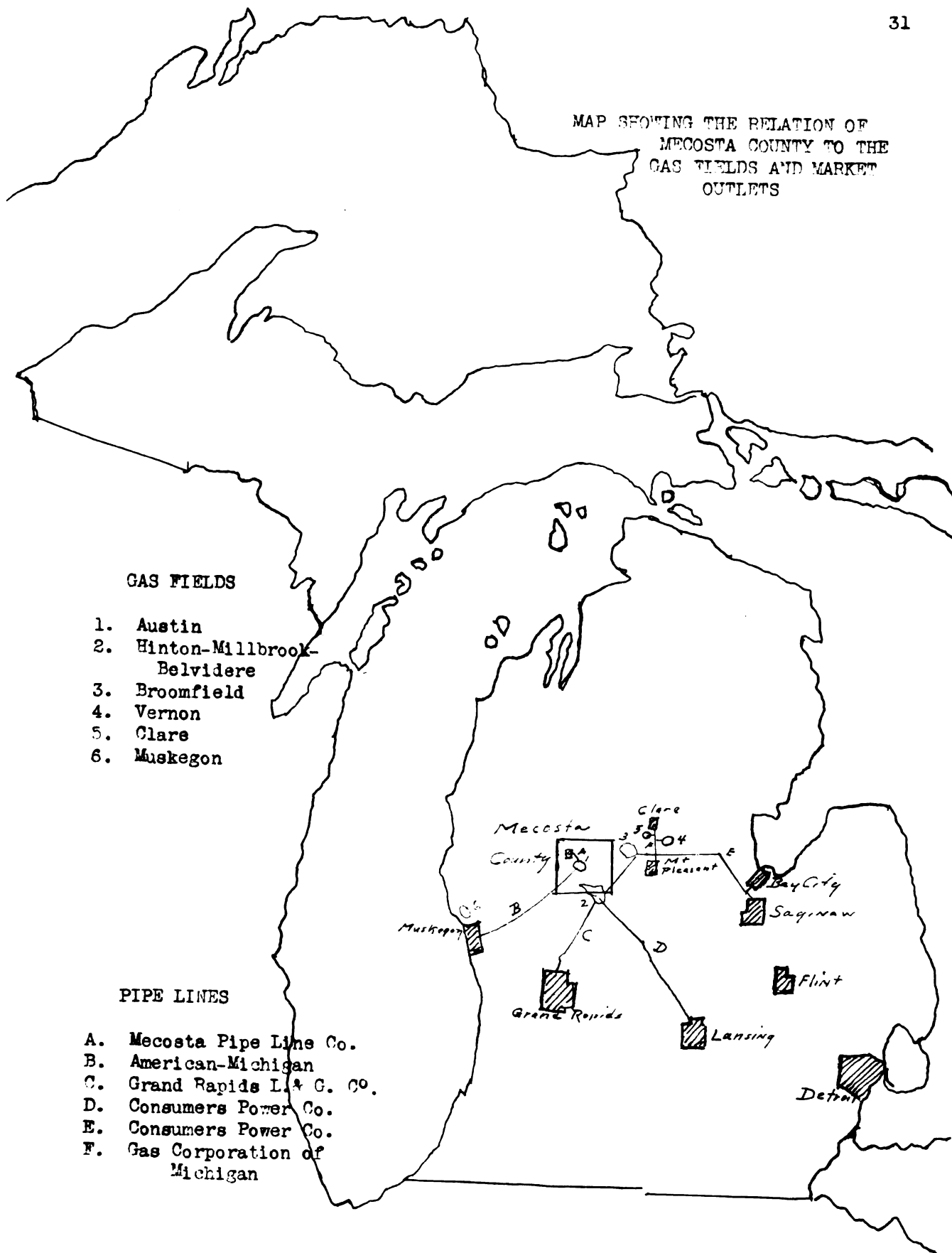


Figure V

9,720,000,000 cubic feet, with possible reserves in extensions of 4,900,000,000 cubic feet. These estimates of so-called reserves are shown in Table III as follows:

TABLE III
ESTIMATE OF MICHIGAN NATURAL GAS RESERVES BY
UNITED STATES BUREAU OF MINES

As of Jan. 1, 1935

Gas Producing Area	Initial Recoverable Reserves, M cu. ft.	Withdrawals M cu. ft.	Net Recoverable Res.
Broomfield	14,800,000	2,570,000	12,230,000
Clare	1,190,000	negligible	1,190,000
Vernon	2,020,000	634,000	1,386,000
Austin	9,720,000	184,000	9,536,000
Hinton-Millbrook-Belvidere	6,660,000	negligible	6,660,000
Martiny-Morton-Millbrook	1,260,000	negligible	1,260,000
Total	<u>35,650,000</u>	<u>3,388,000</u>	<u>32,262,000</u>

The above estimates were made on the basis of a possible recovery of 90 per cent of the gas in the reservoir based on an abandonment rock pressure of 50 pounds. A number of factors enter into the making of estimates, such as the definitely proven acreage, the thickness of the pay (porous rock containing gas), porosity of the rock, reservoir pressure, and temperature. Estimates made by different experts will differ due to different interpretations placed on available data.

As of January 1, 1935, the Bureau of Mines made an estimate of possible extensions as shown by Table IV. These estimates are for Michigan "stray sand" only. The "stray sand" is a layer of sandstone rock which underlies some parts of the state and not other parts, being irregular in its occurrence.

TABLE IV
FUTURE POSSIBLE EXTENSIONS OF GAS FIELDS

Estimate by U. S. Bureau Mines
As of Jan. 1, 1935

Gas Producing Area	Extension of Acreage	Possible Reserves M cu. ft
Broomfield	2,750 Acres	3,700,000
Clare	1,000	1,200,000
Vernon	600	375,000
Austin	1,920	4,900,000
Hinton-Millbrook-Belvidere..	3,500	6,600,000
New Fields (possibly)	24,000	40,000,000
Total of Extensions and new fields		55,775,000

The producing wells in the Austin field as developed prior to December 31, 1935, are shown as numbers 1 to 16 inclusive in Table V. Taggart Bros. No. 21, number 17 in the table, was brought in early in January, 1936. This well topped the Michigan stray sand and pay at 1350 feet, and then drilled into the sand ten feet to a total depth of 1360 feet. The well has an 8 1/4 inch casing. At the time it was brought in, it had the largest open flow of any well in Michigan. The flow blew the mercury from the gauge at a pressure indicating a daily flow of 45,000,000 cubic feet; but the estimate was placed at 50,000,000 cubic feet. Later the well was deepened and capacity rated at 97,000,000 cubic feet. In commenting on this well, the Michigan Oil and Gas News of January 9, 1936, stated:

"Taggarts' rotary crew on Michigan's new gas Colossus were in an uncomfortable and dangerous position as they drilled in and capped the screaming well. The outfit worked with waste stuffed in their ears to protect them. Despite this safeguard they were practically deaf until Monday." (Well was brought in late Sunday afternoon)

TABLE V

GAS WELLS - AUSTIN AREA

Source: The State Conservation Department and the Public Utilities Commission Offices, Lansing, Michigan

Number of Well as shown Figure VI	Name of Well	Driller's Report of Initial Open Flow in M cubic feet
1	Barton No. 1	4,195
2	Fish No. 2	4,000
3	Spitler No. 3	14,400
4	Fish No. 3	30,000
5	Fish No. 4	34,000
6	Johnson No. 8	13,000
7	Shuberg No. 9	15,000
8	Johnson No. 10	15,000
9	Dart No. 1	8,196
10	Mecosta Development No. 1	7,500
11	Alma-Mecosta Gas Corp. Taggart Bros. No. 1	8,000
12	Hal-be-oyle Oil & Gas Corp. Taggart Bros. No. 1	2,000
13	Hal-be-oyle Oil & Gas Corp. Taggart Bros. No. 2	9,000
14	Hal-be-oyle Oil & Gas Corp. Taggart Bros. No. 3	6,500
15	Taggart Bros. No. 4	3,000
16	Totten No. 1	1,250
17	Taggart Bros. No. 21	50,000
18	Rennie No. 1	
19	Hal-be-Oyle Oil & Gas Corp. No. 6	

Note: Taggart Bros. No. 21 was deepened and then had an open flow of 97,000,000 cubic feet.

A map showing the location of each of these wells appears as Figure VI on page 35.

LOCATION OF GAS WELLS IN THE AUSTIN FIELD

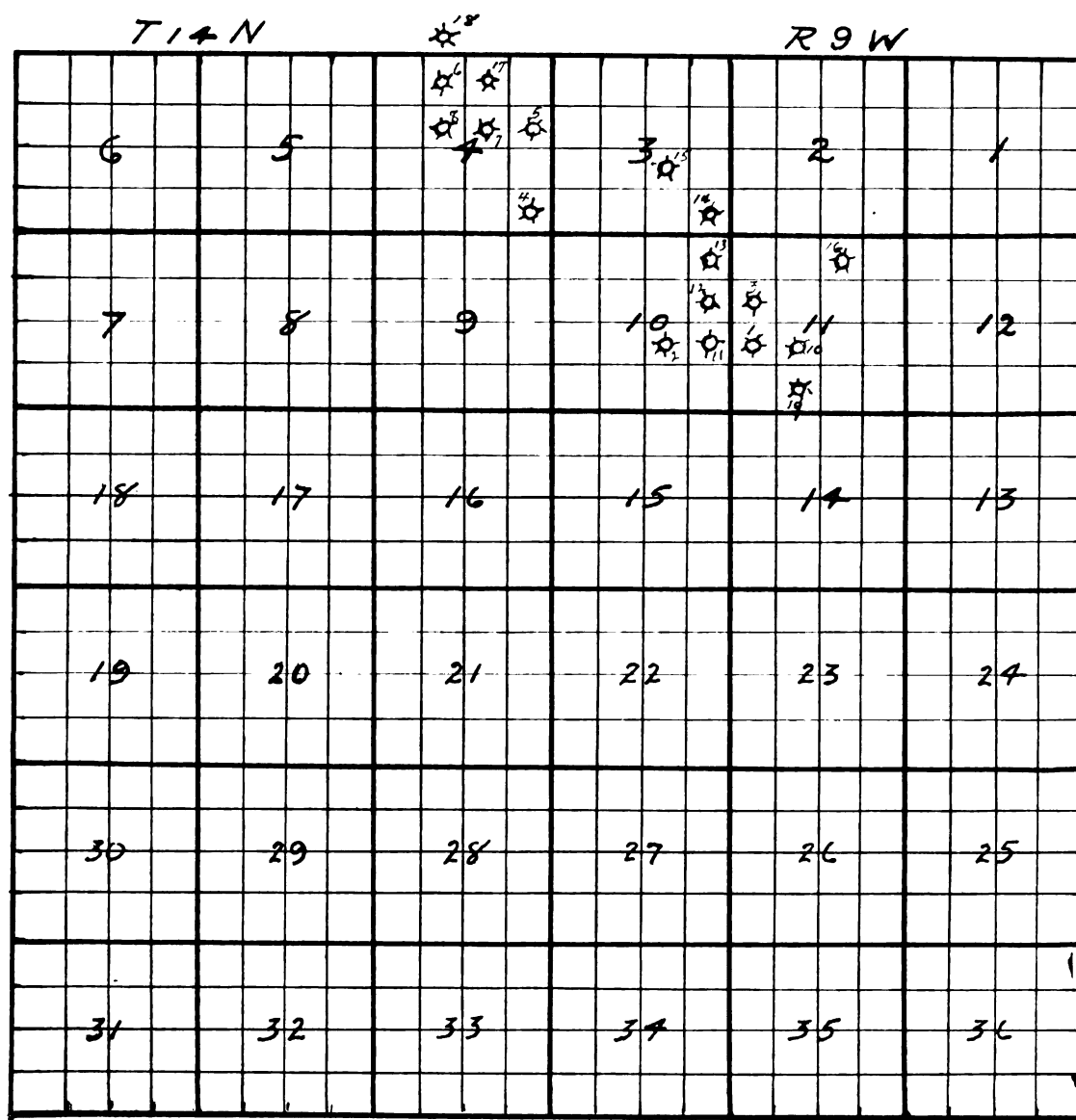


Figure VI

Gas Withdrawn from Austin Area

Since the Austin gas field has been connected to markets by pipe lines to Big Rapids and Muskegon, there appears to be an increased consumption each year. Figures for withdrawals are shown in Table VI.

TABLE VI
WITHDRAWALS FROM THE AUSTIN GAS FIELD

Source: Michigan Department of
Conservation, Nov., 1937

Reported for 1934	178,552,000 cu. ft
1935	772,149,000
1936	1,167,082,000
1st 9 mo. of 1937	841,036,000
Total	<u>2,958,819,000</u>

Note: The Muskegon Gas Company reports total take for all of 1937 to be 1,228,723,459 cu. ft

The Department of Conservation states that it has no figures for wasted gas. It is estimated that 120,000,000 cubic feet was wasted by being blown into the air at the discovery well. A reliable source estimates an additional 330,000,000 cubic feet used for drilling, heaters, blowing drips, etc., making total additional withdrawals of 450,000,000 cubic feet. Mr. W. C. Taggart estimates the additional withdrawals at not to exceed 600,000,000 cubic feet. Taking the larger estimate of withdrawals of waste gas, the total withdrawals to October 1, 1937, would not exceed 3,558,819,000 cubic feet.

Possibilities of the Austin Field

Up to October 1, 1937, a total of 2,958,819,000 cubic feet of gas had been withdrawn from the Austin field, according to the figures issued by the Department of Conservation. At fifteen cents per thousand cubic feet (the customary price at the well), this gas was worth \$433,822.85 at the well.

On the basis of the Bureau of Mines estimate of 9,720,000,000 cubic feet as the original reserve, less the amount withdrawn plus an unreported 450,000,000 cubic feet used in drilling, blown into the air, etc., there would be left in reserve 6,311,181,000 cubic feet, worth about \$946,000. If the larger estimate by Mr. Crider is used, the gas still in the field is worth perhaps \$1,275,000. This would give the Austin field a total possible ultimate return of between \$1,380,000 and \$1,700,000.⁽¹⁾ Out of this would come a severance tax of between \$27,600 and \$34,000; drilling costs of probably from \$6.50 to \$7.75 per foot of depth for each well drilled, depending upon type of equipment used (cable tools or rotary), size of casing, varying labor and material costs, cost of land purchased, sums paid for leases and royalties and other expenses; leaving a balance varying according to the recoverable reserve for profits for the operators.

1. Stace, Arthur W., and Thorn, Willis W., Michigan Natural Gas Is Now Being Supplied From 10 Active Fields. Booth Newspapers, Inc., July 21, 1937 Estimate placed at \$1,284,000.00

Note: The M. P. U. C. has a report from a Col. Miller placing the reserves in the Austin Field as 34,560,000,000 cubic feet.

Discovery of the Tri-Township Field

The discovery of gas in Austin township proved to be a further incentive for exploration along the line of the anticlinal folding or "high" to the southeast, and during 1934 some seven wells were drilled---six being producers. The discovery well, known as Dutmers No. 1 was drilled on SW 1/4 SE 1/4 NW 1/4 Section 23, T 13 N R 8 W (Hinton township) and was brought in May 11, 1934, with the drillers reporting an open flow of 7,520,000 cubic feet. This was followed by the Forgar No. 1 on July 23 with an open flow of 5,360,000. The Forgar well was nearly seven miles southeast of the Dutmers No. 1, being located on Section 11 of Belvidere township, Montcalm county. On August 21, the third well, Sheets No. 1, on Section 35 of Millbrook township was brought in with an open flow of 3,500,000. Three other wells were completed before the end of the year, giving proof that the field was nearly seven miles in length.

During 1935 development proceeded with the glamour and excitement attached to the discovery of an extensive field. A large number of companies were operating in the area, and by the close of the year some sixty odd wells had been drilled---nearly all being producers. See Table VII for a list of these wells.

The producing wells ranged in capacity from 441,000 cubic feet open flow shown by the Youman A 1 on Section 35 Millbrook, to a maximum of 35,000,000 for the Wm. J. Richardson well on Section 3 of Belvidere. A majority of the wells gauged from 5,000,000 cubic feet to 12,000,000, with many between 12,000,000 and 20,000,000.

TABLE VII

G A S W E L L S

HINTON-MILLBROOK-BELVIDERE AREA

Source: Compiled reports in the office of the
Michigan Public Utilities Commission
as at Dec. 26, 1935

Serial No.	Name and Number of Gas Well and Owner or Holder of Lease	Drillers Reports of Initial Open Flow
1.	Dutmers #1 Columbia Oil & Gas Co.	7,520,000 cu. ft.
2.	Forgar #1 Old Dutch Oil & Gas Assoc.	5,360,000
3.	Sheets #1 Bryan & Martin	3,500,000
4.	Garner Bros. #1 Gordon Oil Co.	4,801,000
5.	Byron Youmans #1 Mich. Exploration Co.	6,000,000
6.	Arnette Bros. #1 Columbia Oil & Gas Co.	8,500,000
7.	Isabell Wood #1 Gordon Oil Company	1,000,000
8.	E. Tiffany #1 Gordon Oil Company	7,212,000
9.	R. Freeman #1 Columbia Oil & Gas Co.	7,460,000
10.	Allen Williams #1 Gordon Oil Company	9,126,000
11.	Elsie Taylor #1 Gordon Oil Company	6,250,000
12.	Roberts et al #1 Gordon Oil Co. & Ed. Stewart	11,000,000
13.	Satterlee #1 Charles H. Bell	9,900,000
14.	E. Tiffany #1 Fletcher & Leman	4,845,000
15.	T. Bright #1 Wiser Oil Co.	9,600,000
16.	Schuberg #1 Bundy Hill Nat. Gas & Oil Co.	5,350,000
17.	T. Bright #1 Roy F. Ide	11,500,000
18.	Bissell #1 D. F. Jones	7,960,000
19.	Byron Youmans #2 Mich. Exploration Co.	5,630,000
20.	H. Houghton #1 Stewart-Atha Interest	10,000,000
21.	Trecy #1 Gordon Oil Company	14,000,000
22.	Thompson #1 J. P. Mikesell Tr.	5,890,000
23.	Bailey #1 Charles H. Bell	14,400,000
24.	C. VanHoughton #1 Superior Drill. & Prod. Co.	1,500,000
25.	E. Salesbury #1 Wiser Oil Co.	13,500,000
26.	Garner Bros. #2 Gordon Oil Company	11,200,000
27.	P. Brayley #1 Edmore Oil & Gas Co.	11,000,000
28.	Mockerman #1 Carmanson Oil & Gas Co.	14,100,000
29.	E. P. Taylor #1 Fletcher & Leman	5,600,000
30.	F. A. Winslow #1 Ide & Glavin	2,864,000
31.	Withey et al #1 Gordon Oil Company	8,760,000
32.	G. Wilson #1 Wiser Oil Co.	7,900,000
33.	Keilholtz #1 Mohawk Oil Dev. Co.	6,500,000
34.	T. F. Wilson #1 D. F. Jones	16,750,000
35.	Braley #1 Prudential Oil & Gas Corp.	10,857,000
36.	Clark & Ina Miller Refiners Petroleum Corp.	4,050,000
37.	Bellows Est. #1 L. F. White jr	16,850,000
38.	Alpha Cogswell #1 Edward Stewart	9,860,000

(Continued next page)

TABLE VII

(Continued)

Serial No.	Name and Number of Gas Well and Owner or Holder of Lease	Drillers Reports of Initial Open Flow
39.	Mary Dibeam #1 Gordon Oil & Gas Co.	12,500,000 cu. ft.
40.	F.Garner & F.M.Wilson #1 Wiser Oil Co.	12,780,000
41.	F. L. Stebbins #1 Columbia Oil & Gas Co.	4,950,000
42.	Peter Hough #1 Wiser Oil Co.	10,200,000
43.	Garner Bros. #3 Gordon Oil Company	2,370,000
44.	C. B. Loughlin #1 Gordon Oil & Gas Co.	16,150,000
45.	Houghten #1 Midland Petroleum & Gas Co.	3,000,000
46.	Isabel Wood #1 Ide & Glavin #2 Gas Co.	17,900,000
47.	Perry J. Calkins et al Columbia Oil & Gas Co.	9,800,000
48.	S. J. Bolger #1 D.F. Jones	18,875,000
49.	V. V. Sheets #1 Goll-Graves & Mechling Inc.	728,000
50.	Youmans A-1 Frank V. McCollester	441,000
51.	Saterlee #2 Charles Bell	13,500,000
52.	Wm. J. Richardson #1 Mich. Exploration Co. (deepened for Oil)	35,000,000
53.	J. Dargitz #1 G.G. Hanners	
54.	Statsick #1 Refiners Petroleum Co.	12,000,000
55.	Van Houten #1 LeRoy K. Chamblin	
56.	Houghten #1 LeRoy K. Chamblin	
57.	Ernest Bissell #1 Wiser Oil Co.	
58.	W. J. McAllister #1 Goll-Graves & Mechling Inc.	
59.	Van Houten #1 Michigan & Ohio Oil Co.	
60.	Salisbury #1 Rex Oil & Gas Co.	5,000,000
61.	Amsden #1 Ed. Stewart	5,050,000
62.	Edith Reynolds #1 Refiners Petroleum Corp	
63.	Walter Mackey #1 L.D. Hendershott & H. L. McMillan	17,200,000
64.	Miller #1 J. P. Mikesell Tr	
65.	Bellows Est. #1 Gaylord W. Norton	
66.	Anna Bissell #1 Gordon Oil Company	475,000
67.	Verne Wood #1 Bryan & Martin & Millbrook Oil & Gas Co.	
68.	Academy #1 H.C. Butler--Bruesback & Pearce	
69.	Milo Peterson #1 Fletcher & Leman	13,000,000

The development proceeded at a faster pace during 1936. Several additional wells were drilled during 1937. By January, 1938, there were some 218 gas wells in the tri-township field.

The proven field appears to be about eight miles long. In the northwest portion it is less than one-half mile wide; but gradually widens toward the southeast where it is shown to be about two and one-half miles wide, just north of the village of Six Lakes. The wells showing the greatest open flow are located in Belvidere township.

(See Map of Tri-Township Field in pocket)

Lansing Secures Natural Gas Service

The Consumers Power Company completed a 10 3/4 inch pipe line from the tri-township field to Lansing in time to put on a campaign during the summer and fall of 1936 to secure house-heating customers. The cost of building the line was about \$585,000.⁽¹⁾ These figures do not include costs in the field nor in the various cities where there was a considerable amount of additional expense in order to distribute natural gas.

By the close of 1937, twenty-six communities were being served with natural gas in the Lansing Division of the Consumers Power Company. These communities are listed in Table VIII. As of November 30, 1936, there were 2,602 house-heating customers served by the Lansing Division of the company. As of November, 1937, the house-heating customers totaled 4,192.⁽²⁾

1. White, W. E., Gas Engineer, Consumers Power Co., Letter, Jan. 3, 1938

2. White, W. E. Idem.

This increase in one year's time should not be taken as an average increase to be expected in the years to follow, as that is not the experience of companies supplying natural gas.

TABLE VIII

CITIES AND TOWNS SERVED WITH NATURAL GAS

Lansing Division, Consumers Power
Company, Dec. 31, 1937. (1)

Brighton	Howell	Okemos
Charlotte	Ionia	Portland
East Lansing	Lake Chemung	Sunfield
Eaton Rapids	Lake Lansing	Vermontville
Fowlerville	Lansing	Webberville
Grand Ledge	Lake Odessa	Williamston
Haslett	Mason	Woodbury
Hastings	Muliken	Woodland
Holt	Nashville	

Grand Rapids Secures Natural Gas Service

On December 20, 1935, the Grand Rapids Gas Light Company filed its petition for permission to build a pipe line to the tri-township field. The petition was granted on April 13, 1936; and by the fall of that year natural gas was being served to the customers of the Grand Rapids Gas Light Company. The first petition filed by the Grand Rapids Gas Light Company asked for permission to serve a mixed gas, 50 % natural gas and 50 % manufactured gas. The petition was granted. A second petition to serve 100 % natural gas was denied. The company secured an injunction against the Commission, restraining the Commission from interfering with the company's serving 100 % gas. (See The Import of Judge Hayden's Decision, Chapter VI)

There is a petition before the Public Utilities Commission for a Certificate of Convenience and Necessity to build a pipe line to serve Pontiac, Flint, Jackson, Battle Creek, Kalamazoo and other Michigan cities. Sources of gas named in the petition were Mecosta, Isabella, Montcalm, Gratiot, Shiawassee, Livingston, Wayne, Allegan and Clinton counties.

This petition was filed by the Producers Natural Gas Pipe Line Association and will be heard in Lansing, May 24, 1938.

CHAPTER IV

THE NATURE OF THE NATURAL GAS BUSINESS

Type of Business

The natural gas business may be classified as an extractive industry closely related to mining. The sole proprietorship, the partnership, and the corporation conduct enterprises connected with the industry. The business may be divided into three functional stages; viz., exploration and discovery, transportation to market, and distribution to consumers. The first stage is highly speculative due to the fact that it costs several thousand dollars to put down a test well, and many of the tests result in failure. If gas is discovered, then other wells must be put down to determine whether the field is large enough to warrant the large investment necessary to construct a pipe line to transport the gas to a market. The distributive function is usually performed by a public utility which was in operation prior to the introduction of natural gas.

Natural Gas Defined

Up to the present time science has been able to furnish theories only as to the origin of natural gas. Analysis shows that natural gas contains a number of fixed gases. Methane is the predominating constituent, representing about 80 % in volume. Ordinarily there is from 10 to 20 % of ethane present, some nitrogen,

and often hydrogen sulphide, carbon dioxide, and in some cases helium. These gases are lower members of the series of hydrocarbons which constitute oil. Because the gases result from the same processes as petroleum, natural gas will be found in connection with oil deposits. Due to the fact that gas has a greater penetrating power than oil, it may be found in porous rock at some distance from oil deposits.

Pure natural gas is odorless, colorless, and burns with a slightly luminous flame. It is highly explosive if mixed with air.

When natural gas is associated with oil in the same field---maybe in the same well---it is called "wet gas". The "dry gas" is usually not associated with oil in the sand, and is under high pressure where it occurs in the porous rock.

Wild Catting

Exploration work in unproven territory is termed "wild catting". The "wild catter" prefers to find oil rather than gas, because oil can be marketed with less difficulty. If there is not sufficient oil to warrant building a pipe line, the oil can be taken to market by truck. Natural gas can be marketed only through the use of a pipe line, and there must be sufficient gas to supply a market. For this reason natural gas is looked upon as a "step child" of the oil development industry; in other words, natural gas is often regarded as a consolation prize to those in search of oil.

Problems Confronting the Industry

1. Locating a Gas Field:

In unexplored territory where the rock is as deeply buried under glacial drift as in Michigan, the "wild catter" has very little definite geological data to guide him. He knows something of the general trends in rock structure; but must depend largely on trial and error. Before drilling he must secure leases of sufficient acreage to protect himself in case he makes a discovery. In the Austin and Tri-township fields the gas-bearing rock is found at a depth of between 1200 and 1300 feet. Oil wells in the Michigan oil fields have usually struck oil at from 2700 to 3700 feet. The operator may own a drilling outfit, or he may hire some one to drill for him. These outfits are expensive, and are of two types---cable tools, and the rotary. The cable outfit employs a long steel cable wound around a drum. One end of the cable passes over a pulley at the top of the derrick and is connected to one end of a heavy drill, which operates by being lifted and dropped, thus pounding its way into the rock. The rotary type operates in a manner similar to an auger. Gas wells cost anywhere from \$7,000 to \$10,000, depending upon time when drilled, type of outfit used, thickness of the drift, composition of the rock, size of casing, etc. An oil well operator⁽¹⁾ stated that an oil well approximately 2700 feet deep costs around \$12,000, and wells of 3600 feet cost about \$17,000 to \$18,000 each.

1. Personal communication, Nov. 24, 1937. Name withheld by request.



View of a well
being "brought in".

Photograph courtesy
of Fortney Oil Co.

The smoke-like cloud
issuing from the well
is much darker when
coming from an oil
well than from a gasser.

The gas well gives
forth a loud whistling
sound which may be heard
a long distance.



Rotary equipment drilling
for gas in tri-township field.



Another view of same well.

When gas is discovered, drilling continues several feet into the "pay" (porous rock containing gas); perhaps drilling may continue entirely through the gas bearing stratum. As drilling progresses into the pay, instruments are used to determine the amount of gas flowing from the well. The reading of the instrument (gauge) indicates the amount of gas that would flow from the well in a 24-hour period if permitted to flow unrestricted. The quantity shown by the gauge is termed the "open flow". (See Tables V and VII)

A discovery well not only indicates the presence of natural gas, but also shows quantity of gas which will flow from the well as initial production. It is to be expected that the daily production will decline as gas is withdrawn.

Before a market can be secured, other wells must be drilled and the possibilities of the area estimated. The estimates will be based on the area of the field, thickness of the "pay", porosity of the rock, rock pressure, temperature, etc. The estimates are termed "reserves".

2. Finding a Market:

Any city which is not being served with natural gas may be considered as a potential market. The distance from the city to the field, the size of the city, and the amount of the reserves are important factors. If the reserves are sufficiently large, it is possible that the gas will be piped to a city many hundred miles from the field; e. g., natural gas is brought by pipe line from Texas to Chicago and Detroit. The company furnishing manufactured gas

in some city must be contacted and induced to signify a desire to purchase natural gas. Sometimes the utility furnishing the manufactured gas will take the initiative and seek contracts with the producers in the gas area.

3. Arrange for a Pipe Line:

The third step will be to arrange a plan for financing a pipe line from the gas field to the city where the gas will be used. Pipe lines are expensive to build. In addition to the cost of material and labor, the right of way across property must be purchased, and damages to growing crops, etc. must be paid. The pipe line may be financed in one of three ways: (a) Form a company for the purpose of building the pipe line and induce investors to buy the stock or the bonds of the company. (b) The pipe line may be financed and built by the utility that has contracted to buy the gas. (c) The owners and operators of the gas wells may finance the pipe line.

4. Securing Permission from the State:

The modern state views the marketing of gas as being subject to state control. In Michigan, the Public Utilities Commission has control over granting of pipe-line permits, and supervision over the private utility company serving customers with gas and electricity. Therefore, before gas can be marketed, permission must be secured from the Michigan Public Utilities Commission. If the Commission consents it issues a Certificate of Convenience and Necessity.

Factors Which Produce Conflicts and Controversies

A careful inquiry into the gas situation indicates that a variety of interests will be involved if the field extends over a considerable area. These interests would appear to be:

1. Land owners who lease mineral rights, usually for a $\frac{1}{8}$ royalty.
2. The holders of mineral deeds. There is no custom as to how large or how small an interest may be conveyed by such a deed. One deed is on file in Mecosta county which conveyed a $\frac{1}{640}$ th interest in a certain description.
3. Operating producers who lease and drill with the purpose of having a gas producing well.
4. Promotional producers who lease and offer for sale interests in wells yet to be drilled, and who seek to profit whether the wells become producers or not.
5. Dealers and speculators in royalty interests.
6. Speculators and investors who buy interests in gas leases, wells, or other property anticipated to yield a revenue from the sale of natural gas.
7. The public interest.

With so many people financially involved, some of whom have conflicting interests, it would appear to be very difficult, if not impossible, to proceed in the development of a gas area without causing dissatisfaction and criticism.

In order to show the interests involved in the development of a natural gas area, an illustration dealing with a particular well follows:

John Doe No. 1 Gas Well

John Doe, a farmer living on an 80-acre farm, leases the oil and gas rights in his farm to Richard Roe. He received a down

payment of one dollar. Under the terms of the lease he is to receive a royalty of $1/8$ of all oil or gas produced from the well or wells drilled on his farm. In case a well is not drilled within three months, he is to receive one dollar per acre per annum, payable quarterly in order to continue the lease in effect. (See form of lease in Appendix C) Richard Roe places the lease on record with the Register of Deeds.

A short time thereafter Richard Roe assigns this lease, with other leases which he has taken on property in the same neighborhood, to the Bland Development Corporation. This assignment is placed on record with the Register of Deeds. The corporation did not have sufficient funds to drill a well, so sold an additional \$5,000 worth of stock, at \$5 a share. The smallest sale of stock was for \$50, and the largest was for \$500; the average purchaser paying \$200.

The Bland Development Corporation did not own a drilling outfit; therefore, they let a contract to the Rotary Drilling Company for \$9,350. Before drilling was started an application was made to the State Department of Conservation for a permit to drill a well, to be known as the John Doe No. 1. The application was accompanied by a fee of \$25. The Rotary Drilling Company filed a required bond (See form of Bond, Appendix A). Drilling operations are subject to the supervision of the Supervisor of Wells who is the head of the Department of Conservation. (See Rules and Regulations, Appendix A).

While drilling is in progress, gas is discovered about a mile away, and a speculator approaches John Doe and offers him \$1,000 for

one-half of his $1/8$ royalty interest. John Doe accepts the offer, and gives a mineral deed to the speculator, I. Want Easymoney. The mineral deed is placed on file with the Register of Deeds after the Federal Government stamp tax was paid to the County Treasurer.

Mr. I. Want Easymoney goes to a nearby city and using high pressure sales tactics proceeds to sell fractional parts of his interest to whomsoever will buy. Thomas Thoughtless buys one "royalty acre" in the John Doe farm for \$100. This means he has purchased $1/80$ of the $1/8$ interest retained by John Doe when the lease was granted. The mineral deed received by Thomas Thoughtless is sent to the Register of Deeds of the county where the Doe farm is located. (See Appendix C for form of Mineral Deed)

The drillers strike (top) the gas bearing rock at 1284 feet, and after drilling into the stratum ten feet, gauge the well at 12,500,000 cubic feet. The well was then capped and derrick and rig removed. At that time there was no sale for the gas.

Six months later, enough wells had been completed to define the field. The Utility Gas Company of Blank City contracts with the operators to buy gas from the wells. Application is made to the Public Utilities Commission for permit to build a pipe line. Four months elapses while hearings are being conducted, due to objections having been filed by another city about equal distance from the field. Eventually the Public Utilities Commission issues a Certificate of Convenience and Necessity, and work is started on the pipe line. If no injunctions are issued against building the pipe line, the work may be completed in six or eight weeks. In the

meantime the Utility Gas Company has sent out solicitors to induce home owners to equip their furnaces for burning gas.

When the pipe line is completed, the operating company, the Bland Development Corporation secures a permit from the Public Utilities Commission to connect the well to the pipe line. The take from the various wells having been prorated by the Commission, and since it is summer or early fall and very little gas is being used, the meter at the well shows that for the first month the withdrawals were but 1,500,000 cubic feet. The Commission fixed the price for gas at the well at 15 cents per thousand cubic feet. The operating company received \$225, which is an excellent return for that season of the year. John Doe receives one half of his originally contracted royalty, since he sold by mineral deed one half of his share, or \$14.06. Thomas Thoughtless receives \$0.35. Both are disappointed, dissatisfied and critical, and ready to accept the suggestion that there is a conspiracy in restraint of trade preventing the extension of the markets for natural gas.

Speculation Connected with Oil and Gas

While the entire business of exploration for natural gas, and the development of the areas, and the campaign to secure market outlets are speculative by their very nature; there are two forms of speculation peculiar to the oil and gas areas. These two forms have occurred in connection with the exploitation of the gas areas in Mecosta county. Both are likely to be found in connection with the opening of other areas. These forms are known as the "pool" and the "royalty acre racket".

1. The Pool:

Land owners join a pool because they hope that by so doing they may participate in the profits accruing from the discovery of natural gas or oil on the property of some other member of the pool. The various land owners who join the pool assign to the pool their royalty interest in whatsoever oil, gas, or other minerals which may be found on their respective properties. Each member of the pool, under the terms of the contract, is to receive a specified share of the receipts of the pool.

These pools may be formed on the initiative of several of the land owners, who induce their neighbors to join with them. On the other hand, the pool is likely to be the handiwork of a promoter. The promoter comes in from outside, forms a corporation known as the pool, and induces the land owners to sign up. For his services in promoting the pool, the promoter is entitled under the terms of the contracts to a specified percentage of the receipts of the pool. His contract usually calls for 20 or 25 % of all royalties received by the pool.

The Pipe Line corporation or other common purchaser in paying for the gas or oil taken from a well, divides the payment between the producer and the holder of the royalty interest. (See forms Appendix C, Pipe Line or Common Purchaser---Working Interest---Gas, Royalty Interest---Gas) In the case of the pool, the royalty interest has been assigned to the pool, and usually under the terms of the pooling agreement the proceeds under the royalty are to be paid by the purchaser to the members of the pool according to the terms of a partition order. Now, the purchaser wishes to protect

himself or itself. If payment is made to the wrong person, then that person who should have been paid has legal grounds for a suit to collect. The method used to safe guard the purchaser's interest is to require the pool through its attorney to appear in circuit court and secure what is called an ex parte order confirming and approving the partition or division order. When this has been done, the purchaser makes payment according to the division order.

The Royalty Acre Racket

The second of these peculiar speculative features is known as the "Royalty Acre Racket". By the terms of a mineral deed a promoter may secure from a land owner all or a part interest in the mineral rights vested in the land. An owner of a fee in land may sell all or a part interest in his mineral rights or he may give a lease of the land. The oil or gas lease permits the lessee to enter on the land for the purpose of mining, drilling, building tanks, pipe lines, etc. The usual procedure under the terms of the lease is for the land owner to receive a royalty of $1/8$ of all gas or oil produced on the land. If the land owner sells an interest in his royalty to a speculator who, in turn, sells fractional interests in the royalty to whomsoever can be persuaded to buy, then a considerable number of people may have an interest in the proceeds from the royalty. These interests may be known as "royalty acres." A "royalty acre" may be defined as the interest which each acre of a given tract of land would take in the total royalty to be received under a lease of the entire tract. If a forty acre tract of land is

under lease, then each acre has a $1/40$ interest in the $1/8$ royalty claimed under the terms of the lease. The monetary return from one of these royalty acres might be estimated as follows: When gas is selling at 15 cents a thousand cubic feet at the well (the present price), each acre would be entitled a $1/40$ interest in the $1/8$ royalty due under the terms of the lease----- $1/40$ of $1/8$ of 15 cents for each thousand cubic feet of gas sold from the forty acres.

Purchasers of royalty acres sometimes acquire the right to a very small fraction of the gas sold from a tract of land. The abstract office in Mecosta county reports one deed on file that conveys a $1/640$ interest. Stace and Torn report that a laborer in a Pontiac factory paid \$275 for $1/2560$ interest in a property where there are four gas wells in the Tri-township field. Over a period of eleven months this man received monthly checks ranging from one cent to eleven cents, or a total for the period of forty-nine cents.⁽¹⁾ They mention another case where \$1,000 was paid for $16/5120$ interest in two wells on eighty acres. Of course honest men can sell "royalty acres", and purchasers may receive adequate return; but there is a tendency for chislers to enter the game and for it to develop into a so-called "racket". The Michigan Corporation and Securities Commission has taken cognizance of the situation in respect to gas and oil as well as in other fields. Chairman Olsen recently stated⁽²⁾ that the Com-

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1. Stace & Thorn, Royalty Acre Game is Worst of Rackets in Oil-Gas Fields. Booth Newspapers Inc. July 28, 1937
 2. Olsen, Carl. Personal communication, January, 1938

mission is attempting to cooperate with honest brokers, and at the same time endeavoring to drive the racketeer and chisler from the state.

The Cause and Effect of Over-Drilling

Over-drilling may be defined as that situation where more wells have been drilled into a natural gas reservoir than are needed for the removal of the gas, thus causing many wells to be operated at an annual loss.

When one operator has sufficient acreage under lease so that he practically controls an entire gas area, as the Taggarts have in the Austin field, there is likely to be but little danger of over-drilling. When the field is large and many different firms hold leases, as in Hinton-Millbrook-Belvidere area, there is a tendency to over-drill. Competition forces the different operators to drill more wells than they otherwise would; because they do not want the well of a competitor to draw gas from beneath land they hold under lease. Title to land is frequently held covering but forty or eighty acres in a tract. Each land owner is anxious to have a well on his land in order that he may participate in profits from sale of gas. The closer the wells are spaced, the greater will be the amount of gas available for sale each day, week or month.

During the development of the Tri-township field, wells were drilled on nearly every forty-acre tract. This indicates that there was an investment of from \$7,000 to \$10,000 for each completed well--- a sum of money which must needs be recovered from the sale of gas from

the well before a profit can be realized. Estimates based on the quantity of gas that would be yielded by wells, and experience gained after wells were connected with pipe lines, showed that many wells would be unprofitable. With fewer wells, all the gas could be taken from the gas-bearing layer of rock, and more wells would be profitable.

On the basis of the experience gained, the Department of Conservation changed its rule permitting a well for each forty acres, to a well to each 160 acres. In order that land owners would not suffer from having their gas drawn off by a well on adjacent property, it was arranged by the Department that the royalty from the well should be paid on the basis of an entire 160 acres irrespective of whose land the well was situated. Under this new plan, if a well is put down in the center of 160 acres, each forty acres is entitled to one fourth of the total royalty. The quantity of gas that may be taken from each of the wells in a gas area is determined by proration based on the capacity of each well. In figuring proration, or determining permissible withdrawal per month, a well withdrawing gas from 160 acres would be deemed to have four times the capacity of a well withdrawing gas from 40 acres even though both wells would gauge the same daily open flow capacity.

CHAPTER V
A REVIEW OF THE CONTROVERSIAL ISSUES CONNECTED WITH
THE DEVELOPMENT OF THE TRI-TOWNSHIP
NATURAL GAS AREA

Before the quantity of natural gas contained in the reserves of the Hinton-Millbrook-Belvidere area could be definitely estimated, attempts were made to secure a market, with resulting discontent, confusion and bitterness. Gas was discovered in the area in 1934. By mid-summer of 1935 rumors were current throughout the state that a conspiracy existed, on the part of the public utility companies, for the purpose of resisting the development of the natural gas resources. On account of these rumors the Michigan Public Utilities Commission called a hearing to determine whether or not the rumors had any factual basis. The hearing was held August 7, 1935. The strife had continued up to the present time, April, 1938. The opposing factions do not appear to be willing or able to compromise their differences. It is the purpose of this chapter to review the outstanding controversial issues.

Dissatisfaction with the Petroleum Transportation Company

According to the statements of Mr. D. E. Karn,⁽¹⁾ Vice-President and General Manager, the Consumers Power Company spent \$673,000 in

1. Testimony given at hearing before the Michigan Public Utilities Commission, August 7, 1935

making natural gas available to the consuming public of Bay City, Saginaw, Midland, Auburn, Essexville, Frankenmuth, Caro, Vassar, Reese, Zilwaukee, and Carrollton. The gas serviced to these communities were brought by pipe line from the Broomfield area in Isabella county. Mr. Walter E. White,⁽¹⁾ engineer for the Consumers Power Company, claimed that during the winter of 1934-35 a cold spell caused the use of the maximum amount of gas that could be secured from the Broomfield wells, and that additional gas must be available to warrant the company taking on additional space-heating customers. The Consumers Power Company petitioned for and secured a Certificate of Convenience and Necessity which enabled them to build an extension of some 15 miles southwesterly from the Broomfield area to the Hinton-Millbrook-Belvidere field. They purchased gas from a gathering line. This gathering line, (the Petroleum Transportation Company's line), was built by natural gas well operators of the tri-township field. The formation and operation of this company as a gathering line caused much dissatisfaction and enmity on the part of farmers on whose land wells were located. This was due to the fact that they felt that the line was formed and operated as a means of lowering the price paid them for their royalty. If the Consumers Power Company paid fifteen cents per thousand cubic feet for gas delivered to its pipe line, and the gathering company took three cents for its services, then the price at the well would be but twelve cents. The land owners royalty would then be one eighth of twelve cents, rather than one eighth of fifteen cents.

1. Testimony given at M.P.U.C. hearing, August 7, 1935

Conspiracy to Hinder Marketing of Natural Gas Alleged

By mid-summer of 1935 a rumor was current to the effect that "certain interests" were retarding efforts to develop a market for natural gas. One basis for such a rumor would be the fact that manufactured gas contains approximately 550 B.t.u., while natural gas from the Michigan "stray sands" contains about 1050 B.t.u. Since natural gas is nearly twice as hot as manufactured gas, consumption of gas would be lowered when a change over is made. If natural gas costs 15 cents at the well, transportation costs over a considerable distance will make the natural gas cost the distributing company nearly as much as manufactured gas. These two facts taken into consideration indicate that the income of a gas distributing company will fall off very materially when natural gas is introduced unless customers can be induced to use more gas. Equipment used for burning manufactured gas must be adjusted at a considerable expense to the gas company when natural gas is introduced. Probably another basis for the rumor that "certain interests" were unfavorable to developing markets was that the gas companies in the larger cities of the state were making no apparent effort to secure natural gas.

As a result of these rumors a legislative committee had been appointed to investigate, and the Public Utilities Commission called a public hearing to be held at Lansing on August 7, 1935. Producers, city officials, land owners, and public utility officials were asked to attend. Among those called to give testimony were: W. C. Taggart of Big Rapids, Dr. R. A. Smith, the State Geologist, Dr.

Robert B. Newcombe, the petroleum geologist of the Geological Survey staff, Carl Worth, the gas engineer for the Public Utilities Commission, H.D. Crider, geologist for the American-Michigan Pipe Line Company, Harry Gabel, the gas engineer for the American-Michigan Pipe Line Company, Dr. Virgil D. Kirkham, an economic geologist representing operators, Virgil McClintic representing producers in the Broomfield area, Glen Chamberlin of the Grand Rapids Gas Light Co., Dan E. Karn, Vice-President of Consumers Power Company, and others. Mr. Henry Hunt, secretary for the Michigan Oil and Gas Association, conducted cross examination of witnesses, and any person present was permitted to ask witnesses questions. Mayor Shakespeare of Kalamazoo asked, near the close of the hearing, for the privilege of making a statement and said he was tremendously affected by the fairness of the Commission. Following the hearing rumor called it a whitewash of the big utility companies. Chairman Smith stated that it was the policy of the Commission to be ready and willing to grant a Certificate of Convenience and Necessity for a pipe line whenever the Commission was convinced that there was a sufficient reserve of natural gas to supply the proposed market area for a reasonable time, provided the petitioner could show financial ability to construct the pipe line. There was no testimony introduced which indicated that there were "interests" hindering the marketing of natural gas.

Controversy Over the Granting of Pipe Line Permits

(1) In the early fall of 1935 the Consumers Power Company filed an application for a permit to construct a pipe line from the tri-township field to Lansing. This application was opposed by the

Grand Rapids Gas Light Company (an affiliate of the American Light & Traction Company) on the ground that they had under commitment about 50 % of the proved acreage and felt that the gas should not be diverted to areas more remote from the field than Grand Rapids. At a hearing held October 22, 1935, Ganson Taggart, city attorney for Grand Rapids, asked delay in granting the permit until a study should show sufficient reserves. Independent producers likewise protested because they did not wish the Consumers Power Company to have a monopoly of the field. The hearing was adjourned to November 1. Early in December the permit was granted.

In commenting on the granting of this permit, D. A. Craig, in the January 16th issue of the Michigan Oil and Gas News, stated in part as follows:

"When the Consumers Power Company was granted the right to build a pipe line to Lansing over objections of the farmers, royalty owners, and producers, one of the greatest scandals in Michigan's history had been enacted."

The City Council of Lansing also filed a protest with the Commission, due to the fact that they had started a survey to determine the feasibility of a natural gas system for the city. The taxpayers of Lansing on Tuesday, February 25, 1936, voted on the question of issuing bonds to finance a natural gas collection and distribution system for the city. The proposal failed to receive the necessary three-fifths vote. There were 2710 votes cast in favor of the proposal and 2405 against.⁽¹⁾

1. Michigan Oil Monthly, March, 1936, p. 5

(2) On December 20, 1935, the Grand Rapids Gas Light Company filed its petition for permission to build a pipe line from the tri-township field to Grand Rapids. A similar petition was filed by the Western Michigan Pipe Line Company together with a proposal to take gas from the operators in the tri-township field and sell to the local distributing company. A third application for a pipe line from the field to Grand Rapids was filed by the General Gas Transportation Company. The General Gas Transportation Company was organized by a group of Mt. Pleasant operators who had a large acreage under their control. The date set for hearing these three petitions was January 20, 1936.

A Certificate of Necessity and Convenience was granted to the Grand Rapids Gas Light Company on April 13, 1936. This permit authorized the sale of a mixed gas, 50 % natural gas and 50 % manufactured gas.

At a hearing before the Commission held May 28, 1936, the Grand Rapids Gas Light Company presented a petition for permission to serve 100 % natural gas. The question of granting a permit to serve 100 % natural gas appears to have been decided on the basis of estimates of the reserves in the field, and estimates of the amount of gas needed to satisfy the requirements of the customers served by the Consumers Power Company, and the customers to be served by the Grand Rapids Gas Light Company.⁽¹⁾ In an OPINION and ORDER issued by the Commission on the 24th day of June, 1936, the application was denied.

1. Mich. Public Utilities Commission D-3000 OPINION and ORDER
issued June 24th, 1936

Summary of M. P. U. C. OPINION and ORDER of June 24, 1936

The estimates reviewed by the Commission as stated in the OPINION and ORDER may be summarized in the following table:

TABLE IX

ESTIMATED RESERVES IN TRI-TOWNSHIP FIELD

Source of Estimate	As of	Reserves in cubic feet based on abandonment pressure per square inch of 50 pounds Of 125 pounds	
Max W. Ball	Feb. 3, 1936	27,740,000,000	
Max W. Ball	May 27, 1936	44,148,934,000	
Rollins & Shellhardt	Feb. 1, 1936	29,720,000,000	25,400,000,000
Eng. Dept. of Mich			
Dept. of Conserv.	May 20, 1936	. . . . .	34,000,000,000
Eng. Dept. M. P. U.C. (Exhib. 9-14)		. . . . .	39,000,000,000

The Commission stated that the reserves in the Broomfield and the Crystal-Ferris areas must be taken into consideration with the Hinton-Millbrook-Belvidere field in determining the total quantity of gas available for the markets served by Consumers Power Company and the Grand Rapids Gas Light Company. Based on the estimates and exhibits submitted, the Commission concluded that Grand Rapids market would consume perhaps 3,000,000,000 cubic feet annually. The Consumers Power Company had submitted testimony showing that their requirements for eight years would be 36,900,060,000 cubic feet for the Saginaw-Bay City area and the Lansing area. The latest report of the Bureau of Mines estimated the Broomfield area to have reserves of 5,500,000,000 cubic feet; which was close to the estimate of Ralph

Note: A letter from the offices of the M. P. U. C. of January 10, 1938, stated that the estimates as shown above were the important estimates to date, except an estimate of Col. Charles W. Miller, geologist of the Independent Gas Producers Association. Col. Miller estimated 149,890,000,000 at 50 pounds pressure.

E. Davis, Inc. The Bureau estimated Crystal-Ferris reserves at 2,750,000,000 cubic feet. The Commission assumed that on the basis of estimates and testimony that the reserves might "reasonably be placed at not much in excess of 42,000,000,000 cubic feet of gas", and that the market requirements for serving full natural gas to the communities served "would be approximately 61,000,000,000 cubic feet for an eight year period".⁽¹⁾

The Grand Rapids Gas Light Company decided to defy the Commission and serve 100 % natural gas. Therefore, they secured a temporary injunction against the Commission to prevent it from enforcing its order. On September 24, 1937, Circuit Judge Charles H. Hayden, sitting in Ingham county, ruled that the Commission had no right under the statutes of the state to order the Grand Rapids Gas Light Company to refrain from using natural gas entirely. The decision has been appealed to the Supreme Court of Michigan.⁽²⁾

Fact-finding Committee Appointed by Lieut. Gov. Nowicki

In May, 1937, Lieut. Gov. Nowicki named a committee of five to conduct a thorough study of the natural gas situation and to recommend a policy to be applied. The committee's make-up represented a cross-section of those interested---producers, consumers, and government. He appointed to the committee C.A. Winder, rate engineer of the Michigan Public Utilities Commission, as chairman; Dr. S. G. Bergquist of the department of geology at Michigan State College, secretary; William A. Thomas, geologist for the McClanahan Oil Company, to represent producers who are members of the Oil and Gas Association

1. M. P. U. C. OPINION and ORDER, June 24, 1936, p. 9-10

2. Implications of this decision discussed in Chapter VI p. 85

of Michigan; Roy F. Ide to represent producers not members of the Association; and George F. Garner, tri-township farmer.

An Associated Press article from Lansing published March 26, 1938, quoted the chairman as saying that the committee was split into two factions and were so far apart in their estimates a report would be impossible and useless. Roy F. Ide and George Garner were reported as placing the reserves at 4000,000,000,000 cubic feet, while Dr. Bergquist and William A. Thomas subscribed to the theory that the reserves in Michigan do not exceed 100,000,000,000 cubic feet.⁽¹⁾

P. U. C. Aide Ousted Over Gas Estimate

"C. K. Wirth, gas engineer for the Michigan Public Utilities Commission since 1934, had been ousted Saturday because his estimates of the proven natural gas reserve in the state were lower than those accepted by the Commission. Paul H. Todd, chairman of the Commission, confirmed the report of the dismissal, explaining that Wirth's viewpoint was inconsistent with that of the members of the Commission. 'Mr. Wirth, we consider, has excellent qualifications, but his viewpoint is somewhat prejudiced against the interests of independent Michigan gas producers,' the chairman said. 'He is habitually inclined to give the big interests the break against the Michigan producers.' "

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1. Grand Rapids Press. Gas Fact-Finding Body Dies, Victim of Disagreements. March 26, 1938. p. 3
 2. Grand Rapids Press. Ousts P.U.C. Aide Over Gas Estimate Dec. 4, 1937. p. 2 (Article by William F. Pyper)

Thompson Lease Inc. vs. Consumers Power Co. et al.

(1) On October 4, 1937, the Thompson Lease Inc. filed,⁽¹⁾ in the Circuit Court at Big Rapids, a Bill of Complaint against the Consumers Power Company, Hinton-Belvidere Gas Gathering Co., the Michigan Public Utilities Commission, and the Michigan Supervisor of Wells. This suit has attracted publicity throughout the state, and has been a subject of conversation among men interested in the oil and gas business. Some of the more serious allegations in the case at issue have heretofore served as the subject matter of current rumors. If the evidence offered, when the case comes to trial, proves to be sufficient to establish proof that conditions were and are as charged, then there may follow serious political and financial repercussions.

The chief purpose of the suit appears to be the desire of the plaintiff to be freed from a contract which requires Thompson Lease Inc. to sell the gas from its well to the Consumers Power Co. In addition the plaintiff asks to be relieved from conforming to a regulation of the Michigan Public Utilities Commission. The regulation to which exception is taken requires a well operator to sign a contract to sell gas to a common purchaser, before the Commission will grant a permit to connect the well to a pipe line. The plaintiff also asks the court to require the Supervisor of Wells to assist the plaintiff and others in a proper development of the natural gas resources of the state.

The charges contained in the Bill of Complaint may be summarized as follows:

1. That on October 1, 1935, plaintiff completed drilling of a commercial-producing natural gas well, known as Thompson No. 1, on the NW 1/4 SW 1/4 Sec. 34 T 13 N 7 W (Millbrook township, Mecosta County)
2. That the only pipe line available was owned by the Petroleum Transportation Co. which was an affiliate of the Consumers Power Company, and further that the Petroleum Transportation Co. was created as a screen behind which the Consumers Power Company could create and acquire a monopoly of the natural gas produced or to be produced in said field and elsewhere in Michigan in violation of law and to the damage of the people of the state.
3. That now knowing of such affiliation or conspiracy the plaintiff applied to the Michigan Public Utilities Commission for a standard gas connection permit in order to connect its well to the pipe line, and that the Michigan Public Utilities Commission refused the permit until plaintiff executed a certain gas purchase contract with the Petroleum Transportation Co.---such contract to be in such manner and form as said Petroleum Transportation Co. should direct---and that it did so sign contract.
4. That the Consumers Power Company at that time exercised great political and financial power in Michigan, and that such power was used to influence the Michigan Public Utilities Commission as to function under direction of the Consumers Power Company whenever the Consumers Power Company was financially interested, and that the Michigan Public Utilities Company was so under control knowingly or not as to further conspiracy in restraint of trade and illegal monopoly.
5. That the Consumers Power Company is part of a combine having interests in several states and has interests in Texas and distributes to many states including Michigan, and part of such program is to strifle production of natural gas in Michigan.
6. That a take of 17 1/2 % is permitted by the Michigan Public Utilities Commission, but that the Consumers Power Company schemed to bring producers to ruin and failed to develop markets and resisted extension of markets so that the take from wells is less than 1/2 of

1 % of the daily natural open flow, and that the income of the plaintiff decreased from \$700 per month to less than 70 cents per month and for the last six months the plaintiff has received no income whatever, and that this is typical of other wells under contract to Consumers Power Company, and unless relieved will be "frozen out" and "squeezed out" of business.

7. That the Supervisor of Wells is charged with the duty of proration of production and that since the matters above charged are against public interest he should appear so the people may be freed from the present insidious control by such combine.
8. That the Consumers Power Company has disseminated false information and propoganda regarding reserves in order to prevent people from purchasing natural gas, but that the plaintiff will show that there is sufficient natural gas to supply the Southern Peninsula of Michigan including Detroit for many years, and that the Consumers Power Company has facilities to extend natural gas service to other markets were it permitted by the combine of which it is a part.

The relief asked in the Bill of Complaint is of a threefold nature:

1. That the contract executed by the plaintiff with the Petroleum Transportation Co. be determined to be a contract in restraint of trade and a conspiracy to monopolize natural gas in Michigan against public policy and therefore void.
2. That hereafter the plaintiff may have an order to connect to a pipe line without the Michigan Public Utilities Commission requiring the plaintiff to execute a gas purchase agreement.
3. That the Supervisor of Wells be required to assist the plaintiff and other producers in affecting a conservative and proper development of the natural gas resources of Michigan.

(2) The Michigan Public Utilities Commission filed its Answer to the Bill of Complaint in due form. After admitting certain non-controversial statements made in the Bill of Complaint, the Com-

mission made the following assertions:

1. The Commission admitted fixing the price for gas as alleged in the Complaint.
2. The Commission asserted that it had no knowledge sufficient to form a belief of the affiliation and conspiracy charged.
3. It denied furthering any conspiracy, but admitted that some member or employees may have, as individuals, furthered a conspiracy.
4. In one case the Consumers Power Company did resist the extension of markets; and the Commission believes that is the policy of the Consumers Power Company.

(3) The Answer of the Consumers Power Company may be briefed somewhat as follows:

1. It enters a denial of the charge that the Petroleum Transportation Co. was an affiliate of the defendant or was created by the defendant or was completely controlled by the defendant; but admits purchasing the capital stock of the Petroleum Transportation Co. on the 27th day of March, 1936, and asserts that heretofore the stock of the company was owned by producers in the field.
2. It admits that it approved of the form of the contract executed between producers and the Petroleum Transportation Co. because it contracted with the Petroleum Transportation Co. to purchase its gas and had a large investment to protect.
3. It denies scheming to strifle production or to bring financial ruin to producers.
4. It states that the rules governing withdrawals were adopted in November, 1934.
5. It asserts that the percentage of plaintiff's well of the total open flow of the field was .033 %, as of October, 1937.
6. It enters a denial of the other damaging allegations charged in plaintiff's complaint.

(4) A Consent for Trial has been filed with the clerk of the court. May 16, 1938, is the date set for the trial.

(5) Fifteen Petitions to Intervene were filed, and April 7 and 8 were dates fixed for hearing the petitions.

Now a Petition to Intervene is an application presented to the court by some person or firm not a party to an action pending before the court. The petitioner asks to be allowed to join with either the plaintiff or the defendant because of the fact that the petitioner has a direct interest in the subject matter of the case in question and will gain or lose along with the original parties to the suit when the case is decided.

These petitions all ask to be permitted to intervene in Cause No. 3357, Thompson Lease Inc., Plaintiff vs. Consumers Power Company et al., Defendants.

These petitions all set up similar representations as follows:

1. The petitioner is a corporation organized under Michigan laws.
2. The petitioner is the owner of a mineral lease and gives the description of the property and the well thereon.
3. The petitioner was forced to execute a contract for sale of natural gas to the Consumers Power Company under relative and similar conditions to those in Cause 3357; is now selling and will be forced to continue to sell all gas from said well under the terms and conditions of such contract in order to market any natural gas whatsoever from said well unless relieved from the obligation of the contract.

4. That the contract marked Exhibit A in Cause 3357 is similar in fact and effect to the aforementioned contract executed by petitioner.
5. That the onerous, inequitable and illegal conditions complained of in the Bill of Complaint are generally typical in the entire field.
6. That the petitioner is without adequate relief in the premises except in this court of chancery, and that unless relief is accorded as herein prayed, it will suffer irreparable loss and damage.

The petitions were filed by the following corporations, etc.:

American Gas and Oil Corporation
 Burke Gas and Oil Corporation
 Refiners Petroleum Corporation
 Ide & Glavin No. 2 Gas Company
 Mutual Natural Gas Corporation No. 1-2-4-5-6-8-10
 Edmore Oil and Gas Company
 Ide & Glavin No. 4 Gas Company
 Mecosta Oil & Gas Company
 Prudential Oil & Gas Corporation
 Ide & Glavin No. 5 Gas Company
 Hy-Nor Gas & Oil Corporation
 Ide & Glavin No. 3 Gas Company
 Ide & Glavin No. 8 Gas Company
 Roy F. Ide and Anna E. Ide
 Ide & Glavin No. 6 Gas Company

Anyone examining these petitions will note that they have been filed by R. A. Whitehead, a Lansing Attorney; and further that practically all the petitioners have the same Detroit address. Roy F. Ide, who is one of the petitioners, was a member of the fact-finding committee which failed to agree as to the quantity of natural gas reserves in Michigan.

These petitions came up before the court on April 7 for hearing. During the course of the proceedings, the petitions were withdrawn. Presumably they were withdrawn rather than have an adverse decision by the court. No doubt the court would have rendered

a decision denying the petitioners the right to intervene. Such a decision would be expected because the petitioners could not show that they had a direct interest in the contract executed between Thompson Lease Inc., and the Petroleum Transportation Co. The petitioners have similar contracts, and might avail themselves of like alleged charges if they were to seek relief from the courts.

CHAPTER VI

PUBLIC CONTROL OF THE NATURAL GAS INDUSTRY

The Theory of Government Control

Public control of the natural gas business can be justified on the basis of the belief in the need for conservation of our natural resources and from the public utility concept.

1. CONSERVATION: It has long been a principle of law that the property rights in all material things first vest in the state. Later the state transfers to individuals title to certain material possessions but retains therein the right of eminent domain, and the right known as "police power". The police power is exercised to promote health, safety, the convenience and general welfare of the people as a whole. The individual may not use his property to injure the health or the safety of other people; nor may he use it in such a manner as to become a nuisance, or contrary to the welfare of the people as a whole.

Natural resources which are subject to depletion through use may take on a special public interest which warrants the passing of laws to govern such use and to prevent waste. Deep borings, such as are found in gas wells, may strike fresh water or brine which if not given proper attention may cause damage to adjoining property interests, pollute streams, and injure health, and escaping gas may cause fires or other damage. A gas well on one tract of land may drain the gas from beneath adjoining property. For these and other reasons, legislatures and the courts favor certain restrictions.

These restrictions are worked out under a plan or a series of plans--- in time the plan or plans take the form and shape of a fixed policy, known as a Conservation Policy.

2. The PUBLIC UTILITY status is special and peculiar and not subject to a definition that can be accurate for all places at all times.⁽¹⁾ The courts have certain criteria that they use to determine if any enterprise is a public utility. In general, if a business (a) operates under monopolistic conditions, (b) devotes its property to the public use, (c) renders a service which is considered necessary for the public welfare, (d) and is "peculiarly burdened with the public interest", then courts will hold that it is entitled to the public utility status. Some other tests may be applied; such as (a) does the business hold an exclusive franchise or charter, (b) does it use the public highways, (c) has it the power of eminent domain, Legislative action by itself designating a business a public utility is not final, but must be sustained by the courts.

The public utility has certain rights and duties. It must serve all who apply up to the limit of its capacity, and it must expand its capacity within its market territory as long as it is profitable to do so. It must charge a reasonable price for its services. It must not discriminate among its customers as long as they use the same amount of product or service under similar conditions. The facilities offered must be adequate and safe. In turn it is entitled to collect a fair price and to require the public to conform to reasonable rules and regulations.

1. Dorau, Herbert B. Economic Principles and Problems Farrar & Rinehart, Inc. New York. 1936 Vol. II, p 490-494

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Economically the utilities have some peculiar characteristics which are not evident in the ordinary enterprise. The following points are worthy of note:

1. The fixed capital is not only large, but large in relation to the income produced. This is due to the fact that ordinarily the product cannot be stored, and a capacity must be maintained capable of handling a peak load.
2. Fixed costs are relatively large, and therefore as the business increases, costs per unit decline, and a proportionately larger part of the increased income is profit.
3. Competition is uneconomic because it requires duplication of facilities, and since each competitor is doing business on a smaller scale costs are higher per unit of output and the tendency for cut-throat competition tends toward establishing a return to monopoly.
4. Customers depend upon the enterprise, and lack a dependable substitute at a reasonable price.

Control Exercised By The Conservation Department

The legislature of 1929 added to the duties of the Department of Conservation the supervision and control of exploration for oil and natural gas, and authorized the making of rules and regulations to govern the operation, the use, and the abandonment of oil and gas wells. The act placing control of oil and gas wells under the jurisdiction of the Department of Conservation is known as Act No. 15 of the Public Acts of 1929. Act No. 15 was later amended by Act. No. 185 of the Public Acts of 1931.

As of September 10, 1931, the Director of the Department of Conservation, in accordance with the authority vested in him under the acts referred to above, issued Rules and Regulations to Govern

Oil and Gas Operations in the State of Michigan. (See Appendix A for copy of these rules) In brief these rules cover:

1. The inspection of drilling and operation of oil and gas wells in order to prevent waste or damage to other resources.
2. The supervision of plugging and abandonment of wells.
3. The visiting of operations carried on for discovery.
4. The collection of information concerning wells.
5. The making of rules and prescribing forms for keeping of records by operators.
6. Requiring of tests to prevent waste.
7. Prescribing methods for correcting conditions leading to damage and waste.
8. Determining the percentage of potential capacity of a gas well which may be utilized.
9. Assisting and advising owners and operators in making tests.
10. The issuing of drilling permits on proper application.
11. The requirement that operators file a bond.
12. Regulations for the keeping of a log, or record of the drilling of each well.
13. General rules to be followed by drillers.
14. Methods of appeal to the Oil and Gas Appeals Board.
15. Penalties for the violation of laws and rules.

Control Exercised By The Michigan Public Utilities Commission

1. Authority Conferred in 1929: The Muskegon Gas Field was the first natural gas area to be developed in Michigan. Until that field was practically depleted there were no laws regulating blowing of gas into the air, for proration of production, or for making pipe lines public utilities. Four different pipe lines trans-

ported gas from the field to Muskegon.⁽¹⁾ The wasteful practices indulged in, and the signs of early depletion of the field, hastened the passage of laws regulating the production and distribution of oil and natural gas.

The legislature of 1929, recognizing the necessity of statutory control, enacted legislation known as Act No. 9, Public Acts of 1929. The title of this act states:

"AN ACT to regulate corporations, associations or persons engaged in the business of carrying and transporting natural gas through pipe lines and to regulate the production, purchase and sale of natural gas; to provide for the control and regulation of such corporations, associations and persons by the Michigan Public Utilities Commission; to define the powers and duties of the Commission relative thereto; to prescribe penalties for the violation of the provisions hereof; and to repeal Act number twenty-nine of the Public Acts of eighteen hundred eighty-nine."

As evidence of the recognition of an emergency, Section 20 of the Act states: "An emergency is hereby declared by reason whereof it is necessary for immediate preservation of the public peace, safety, convenience and welfare that this Act take immediate effect." The Act was approved March 19, 1929.

The Act provides, in brief, as follows:

1. That the Public Utilities Commission shall have the control over persons, associations, and corporations engaged in the business of purchasing, transporting, or selling natural gas for use by the public.
2. That the Public Utilities Commission shall make rules and regulations to effect the equitable purchasing and collection of gas, and the prevention of waste in the production and distribution.

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3. That all persons, associations or corporations claiming the right to transport natural gas through pipe lines shall comply with the provisions of the act.
4. That those purchasing gas in a locality served by a pipe line must purchase from all wells which could be reasonably served by the pipe line, and that no preference be given to any producer.
5. That the maximum withdrawal from any well be limited to 25 % of the daily natural flow, unless the Commission due to an emergency shall establish a higher or a lower per centum.
6. That if production is in excess of market demand, then the amount of gas taken be pro-rated among wells according to their capacity.
7. That those desiring to construct a pipe line must petition the Commission for a Certificate of Convenience and Necessity, and that the Commission shall inquire into the necessity and the practicability thereof, and if such lines when constructed will serve the convenience and necessity of the public, the Commission may grant approval.
8. That the operation of pipe lines for hire be deemed common carriers as at common law---and may have the right of eminent domain, and the use of public highways for said pipe lines.
9. That the Commission may prescribe the system of accounts to be kept by common purchasers and carriers.
10. That common purchasers and carriers must file an annual statement on blanks furnished by the Commission, showing expense, income, etc., also copy of contracts entered into for the purchase and sale of gas.
11. That every common purchaser or common carrier of natural gas shall file schedule or rates and prices which it shall pay or charge.
12. That certain penalties are to be applied for violation of the act and the provisions thereof.

2. Certificates of Convenience and Necessity: The Commission, acting under the powers conferred upon it by the Act of 1929, has issued Certificates of Convenience and Necessity for pipe lines to carry natural gas from fields located wholly or partly in Mecosta

county as follows:

1. To Taggart Bros., Inc., for the construction of a pipe line from the Austin field to the City of Big Rapids, a distance of about seven miles.
2. To the American-Michigan Pipe Line Company for gathering and transmitting lines from the Austin field to the City of Muskegon, a distance of about 50 miles. The gas to be sold to the Muskegon Gas Company for distribution to residents of Muskegon and Muskegon Heights.
3. First, to the Consumers Power Company to carry gas from the Broomfield Area, about 14 miles west of Mt. Pleasant, easterly to Bay City and Saginaw; Second, an extension of about 15 miles in a southwesterly direction to the Millbrook, Hinton-Belvidere gas area in Mecosta and Montcalm counties.
4. To the Petroleum Transportation Company (formed by natural gas well owners in the Millbrook-Hinton-Belvidere area) to collect gas and deliver it to the Consumers Power Company pipe lines.
5. To the Consumers Power Company for a pipe line from the Millbrook-Hinton-Belvidere area to the city of Lansing.
6. To the Grand Rapids Gas Light Company to construct a pipe line from the Millbrook-Hinton-Belvidere area to Grand Rapids, a distance of about 45 miles.

3. Production Control---Limitation of Flow: A very important feature of the jurisdiction exercised by the Michigan Public Utilities Commission over the production and distribution of natural gas comes from the recognition by geologists and well operators that to conserve a gas field it is necessary to place a limit on the amount of gas which may be taken from any given well. If no restrictions are enforced and gas is permitted to flow from a well as fast as it will flow, the pressure will soon go down and water will come into the well, and in a short time the well, and the field, will be out of production. This

was well illustrated by the experience in the Muskegon field.

As an aid toward preventing such a catastrophe in other fields, Section 7 of the law⁽¹⁾ provides: -----

"All corporations, associations and persons, whether producing or receiving gas from producers in any productive field are hereby prohibited from taking more than twenty-five per centum of the daily natural flow of any gas well or wells, unless, for good cause shown under the exigencies of the particular case, the Commission shall establish a higher or lower per centum under the prescribed rules and regulations thereof."

Paragraph 12 of the Rules and Regulations Covering the Production, Transmission and Distribution of Natural Gas⁽²⁾ reads as follows:

"The maximum withdrawal rate from any gas well shall average on a yearly basis not more than 17 1/2 % of the natural flow modified by the acreage factor defined in Rule 13, said maximum withdrawal being called allowable annual withdrawal. ----- The following percentages may be taken but not exceeded in any six consecutive months, 66 % of the allowable annual withdrawal last determined; in any one month 12 1/2 % of the allowable annual withdrawal last determined, and in any one day .6 of 1 % of the allowable annual withdrawal last determined."

4. Production Control---Permit For Well Connection: The jurisdiction of the Public Utilities Commission starts at the well mouth as stated in Rule 7⁽³⁾ which reads as follows:

"The jurisdiction of the Commission shall begin at the well mouth when the producer makes application to connect the well with a pipe line."

The owner or operator of the well, before connecting it with a pipe line, must make application on forms provided therefor, and the Com-

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1. Act No. 9, Public Acts of 1929
 2. Order No. 2883, Michigan Public Utilities Commission, effective November 20, 1934, p. 12
 3. Order No. 2883, Idem. p. 10

mission will then issue a standard permit which will specify the rating to be used in determining the withdrawal of gas from the well. In case of an emergency a temporary permit may be issued by wire. With each permit a metal plate is issued showing permit number. This plate must be affixed to the well-head.

Each producer must keep in his office a meter record for each well, and these records are available to authorized representatives of the Commission. The producer is required to fill out and file with the Commission on or before the 25th day of each month FORM 18 giving information for the preceding calendar month as to name and number of well, thousand cubic feet of gas withdrawn, the estimated amount of water from well and certain figures as to well-head pressure.

5. Distribution Control:

Rule 25⁽¹⁾ deals with the authorization to use natural gas.

Rule 26 authorizes the distributor to adopt rules and regulations governing its relations with consumers.

Rule 27 requires the distributor to file with the Commission up-to-date maps of the territory served, and to keep copies of such maps at division or district offices of the distributor.

Rule 28 provides for the inspection by the distributor of all installations before establishing service to an applicant.

Rule 29 to 32 inclusive relate to size of service connections, the house governor or regulator, shut-off on service connections and type of meter installation.

Rule 33 to 40 inclusive apply to meter records, test records, methods of testing meters, accuracy of meters, periodic testing, meter testing equipment and the standardization of testing equipment.

Rules 41 to 45 inclusive govern operating standards, such as the heating value of gas, pressure of gas, specific gravity of gas, purity of gas, and interruptions of service.

Rules 46 to 51 cover transactions with customers, such as complaints, use of meters, meter readings, information on bills, tests upon request by consumer, and adjustment of bills for meter error.

Rule 52 permits the distributor to require a cash deposit from the customer as a guarantee of payment of current bills, requires the payment of interest thereon at 4 % per annum, provides for the return of the deposit when the customer's credit is satisfactorily established, the crediting of the deposit and accrued interest against customer's bill when service is discontinued; the use of a guaranty in lieu of a deposit.

Rule 53 provides for discontinuance of service if a customer's bill remains unpaid for ten days after the expiration of the discount period provided the distributor gives in writing five days' notice.

Rule 54 requires each distributor to file complete rate schedules with the Commission.

Rule 55 makes it obligatory on the distributor to keep on file and open to public inspection a copy of its rate schedule.

Rule 56 and 57 set up regulations for the extensions of gas service to prospective consumers owning premises which are located on a present main, and for free extensions and restricted extensions when prospective consumers are not on line of a present main.

5. Required Forms: The following "forms" are prescribed by the Commission in respect to natural gas: ⁽¹⁾

FORM 15---Application For a Standard Well Connection Permit

FORM 16---Standard Well Connection Permit

FORM 17---Allowable Withdrawal

FORM 18---Producer's Monthly Report

FORM 19-1,2,3 ---Transmission Line Construction Application
(Natural Gas)

FORM 20 ---Tas Transmitters Monthly Report

FORM 21-1,2,3 ---Distribution and Transmission Conversion
Application

FORM 22-1,2 ---Distribution Application

Natural Gas Legislation in 1937

The legislature of 1937 attempted to redefine the duties of the Department of Conservation and of the Public Utilities Commission by two bills which were introduced. One failed of passage, the other passed and is known as Act No. 326, Public Acts of 1937. The title of the act is long, but may be summarized as ----

An act to provide for a supervisor of natural gas wells, to prescribe his powers and duties, and to provide regulations for locating, sinking, drilling, casing, deepening, operating, and plugging of natural gas wells; to provide for payment of fees, to provide for an appeals board, to prohibit waste, and to provide penalties for the violation of the act and to repeal Act No. 15 of 1929 as amended being sections 5696 to 5712 of the compiled laws of 1929.

The law covers several pages, 649 to 659, and raised some question as to the authority of the Department and of the Commission. Both asked the Attorney General to rule or interpret the statute. His opinion as summarized in the Michigan Oil and Gas News of January 14, 1937, is to the effect that the statute does not take any powers from the Commission and confer same on the Department.

The Legislature of 1937 passed an act giving laborers and vendors of material a lien on gas and oil wells. This act is of some importance.⁽¹⁾ Its purpose is well stated in the title:

1. Act No. 146, Public Acts of 1937

"An Act to establish, protect and enforce the rights of laborers, contractors, sub-contractors and material men and other persons furnishing labor, tools or materials or other things of value for the drilling, boring, torpedoing, acidizing, completing operating, or repairing any oil or gas well, or the constructing or repairing of any oil or gas pipe line, oil or gas derrick, or oil tank."

Under this law a lien may be filed within six months of the date when the last labor was performed, or the last material or service furnished. It applies to any and all forms of property connected in any way with the operation of the leasehold upon the premises where the material or labor was furnished and extends to any estate which the lessee has or may thereafter have, and follows the property wherever it may be removed. It is provided that such liens be filed with the Register of Deeds in the county where the well is located, and such filing is constructive notice of the lien. Such a lien continues for one year from date of filing unless proceedings are instituted to enforce the lien. If more than one lien is filed by different parties against the same property, the liens shall be of equal rank and shall share in the proceeds of any sale pro rata. These liens take priority over garnishments irrespective of date of filing and are preferred over other titles, liens, or encumbrances which are given or recorded subsequent to the date of the commencement of the furnishing of material, labor or service.

The Import of Judge Hayden's Decision

After the Grand Rapids Gas Light Company's application for permission to furnish 100 % natural gas in lieu of 50 - 50 % natural and manufactured gas was refused by the Public Utilities Commission

on June 24, 1936, that company secured a temporary injunction enjoining the Michigan Public Utilities Commission from interfering with the company's serving full natural gas in defiance of the Commission's order. On September 24, 1937, Judge Charles H.

Hayden in the Ingham County Circuit Court rendered his decision making the injunction permanent. The judge ruled that the Commission had no right under the statutes of the state to order the Grand Rapids Gas Light Company to refrain from using natural gas entirely. Quoting from his decision:

"I am brought to the conclusion the Grand Rapids company's claim is well-founded. There is no showing that if this order is not enforced the wasting of the natural gas supply of the state will result.

"No claim is made that the company has sought or now is seeking to take natural gas from the producers with whom it contracts in excess of the requirements of its operations.

"I do not think it can be said that the act of the legislature---the construction of which was involved---is broad enough in its scope to justify such limitation by the defendant Commission.

"If the statute were so construed, we obviously would be confronted with the question of its constitutionality.

"For the reasons suggested, I am brought to the conclusion the order of the Commission is not within the scope of the statute, construed in the light of the obvious purpose of the legislature and under constitutional inhibitions."

Several implications are suggested by the ruling; such as,

- (a) The Act of 1929 is unconstitutional in whole or in part. If the legislature has exceeded its authority under the constitution in passing this law, then the parts of the law which do not comply to the constitutional requirements will be held by the courts to be null and void. Some parts only might be held void, or the entire statute. The judge distinctly states that the question of constitutionality might be raised if the same construction is placed on the law as was

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placed on it by the Commission.

- (b) The Commission's power extends only to the prevention of waste. Now the Commission in its order refusing the application of the company did so on the grounds that there was insufficient gas to warrant 100 % for Grand Rapids and to leave a reasonable supply for those already receiving service from the field. The judge emphasizes the question of waste as if it were a paramount issue to be considered when an application is made to go into a gas area for the purpose of securing gas for customers in a new territory. There is an inference in this decision that the purpose of the act is the prevention of waste. In this connection it should be noted that the act confers certain powers on the Commission which were not a matter of controversy in this action.
- (c) The rulings of the Commission may be defied with the expectation that learned counsel may secure decisions unfavorable to the Commission. Constitutionality of the statute may be questioned when an exception to the rulings of the Commission is desired, or the question may be raised that the statute does not give authority to the Commission to make a ruling in the case under dispute. If in this particular case, the Commission can be defied and sustained by the courts, then encouragement is offered to others to go and do likewise.
- (d) So far as control over the production, transportation, and marketing of natural gas, the people of the sovereign state of Michigan are headed back to where they were prior to 1929 when wasteful practices were indulged in at the Muskegon field. This appears to be a break in the chain of control built up since the passing of the laws of 1929. If the Commission cannot maintain its jurisdiction in this case, encouragement is offered to others to question its jurisdiction. Such decisions tend to discourage the Commission, and to encourage the greedy and the careless who are not interested in any conservation policy, but in immediate gain. Heretofore progress has been made in the development of public policy and control. This may be the turning point. With the dissatisfaction and criticism now existing, such a decision may possibly though not probably be the incentive for a movement to limit the power of the Commission.

- (e) The consumer may be exploited by a utility through being induced to invest in expensive equipment for burning gas for heating under conditions where the supply is insufficient to last over any reasonable period of years. In this case the Commission had denied the Grand Rapids Gas Light Company its permission to serve 100 % natural gas on the grounds that there was not sufficient gas to serve both the consuming public in the Lansing area and in the Grand Rapids territory, and that service had started in Lansing and consumers had purchased equipment at a considerable expense. If the Commission cannot limit withdrawals from a field, except as to prevent waste of gas, then perhaps other communities could secure gas from the same area, thus materially shortening the life of the field. If a consumer spends \$125 or more for gas-burning equipment, it would seem that he should be assured of a supply of gas sufficient to last several years. This decision indicates that the Commission lacks the power to regulate withdrawals for the purpose of protecting those customers who have already contracted for service, unless it is shown that the utility is wasting gas.

The Consumers Power Company was a party to the suit before Judge Hayden as an intervening defendant, but did not join the Public Utilities Commission in its appeal to the Supreme Court of the State.⁽¹⁾ The Supreme Court has not yet rendered a decision.

The attitude of the present Commission can be expressed by quoting from a statement by Chairman Todd:⁽²⁾

"It is, I believe, the unanimous opinion of the present Commission that the conditions justify the taking of one hundred per cent natural gas by the Grand Rapids Gas Light Company.

"The matter has been appealed to the Supreme Court simply for the purpose of retaining jurisdiction by the Utilities Commission. An effort was made to adjust the matter through withdrawal of the injunction on the Commission so that a court decision would not be necessary. The Commission was unsuc-

1. Chamberlain, Glenn R., Pres. Grand Rapids Gas Light Co., Letter of Dec. 31, 1937.
 2. Todd, Paul E., Chairman M.P.U.C., Letter of Jan. 6, 1938

cessful, however, in its effort to have the action withdrawn."

In the first paragraph quoted from Chairman Todd's statement he refers to the present Commission. In this connection it should be kept in mind that the personnel of the Commission has been changed since the order was issued denying to the Grand Rapids Gas Light Company permission to serve 100 % natural gas. The order referred to was signed by four members of the Commission. The member from Grand Rapids did not sign. As stated by Chairman Todd, the present Commission is not in sympathy with the Opinion and Order issued on June 24, 1936.

As stated in the second paragraph quoted, the Commission made an effort to have the injunction withdrawn so that there would be no chance of a decision by the court which would overrule or set aside an order of the Commission. In other words, if the matter could have been withdrawn from court, a permit could have been granted----the Commission would have "saved its face", and no precedent set. Now, the Commission must either admit that as a Commission it has no authority to make such a ruling even though there was not a sufficient supply of gas, or else go to the Supreme Court asking for a reversal of Judge Hayden's decision in order to retain its authority in such matters.

CHAPTER VII

EFFECT OF NATURAL GAS PRODUCTION

ON PUBLIC REVENUES

It is the purpose of this chapter to show how the production of natural gas increases the tax revenue of the political units.

The Severance Tax

The present severance tax law was enacted in 1929 and has not been amended or altered. It places a specific tax of two per cent on the gross cash market value of the total production of a gas or oil well, computed as of the time and place where produced. This tax is in lieu of any or all other taxes, state or local, which might be imposed upon property rights inherent in any gas or oil well, leases, production contracts, royalty agreements or any value thereby created. This law is designated as Act No. 35 of the Public Acts of 1929, or as Sections 3604 to 3613 of the Compiled Laws of 1929.

The provisions of this act may be summarized as follows:

1. A tax to be known as a specific tax is levied on each corporation, association or person engaged in the business or severing from the soil oil or gas, and that the firm or corporation on whom the tax is levied is required to make a report to the Michigan Tax Commission on the first of each month, on blanks provided therefor, showing the total amount of gas or oil produced by each well and the actual market value thereof.

2. Any person, etc., who shall receive, purchase or transport any such oil or gas shall likewise report showing the amount of oil or gas received, transported, etc.
3. The tax is to be two per cent of the gross cash market value of total product during the preceding month, to be valued at place and time of severance. The producer is to pay the tax except that if received by a pipe line company, the receiver takes the oil or gas with a tax lien thereon, and the pipe line company is to withhold from the price paid the tax due from separate producers and to pay the same to the state.
4. Production records must be kept open to inspection by the Commission, under a penalty of \$500 to \$1500 for each and every twenty days of failure.
5. The reports must show in detail the disposition made of such oil and gas, to whom sold and location of person receiving.
6. The Commission is given the additional power to require other information or to correct reports if unlawfully made, or if incorrect, and shall certify additions to or penalties to the State Treasurer for collection.
7. The Commission is empowered to examine the books of a firm not making a report, to compute the tax, add the cost of the examination, plus ten per cent of tax as a penalty.
8. The State of Michigan is to have a lien for severance tax and penalties, etc., on the leasehold interest of the person or firm owing the tax.
9. The Attorney General is given the right to secure an injunction in Ingham county against the person or firm failing to comply with the provisions of the act.

The Tax Commission has designed and furnishes forms for making reports. A copy of each of the following forms may be found in Appendix C:

1. Producer's Production Report
2. Pipe Line or Common Purchaser Monthly Statement
(Working Interest---Gas)

3. Pipe Line or Common Purchaser Monthly Statement
(Royalty Interest---Gas)

4. Royalty Owner's Production Report.

Distribution of the Tax

The producer or pipe line common purchaser, when making the required report to the Tax Commission for the preceding month, sends with the statement the remittance made payable to the State Treasurer for the amount of the tax.

Under provisions of Section 3617, Compiled Laws of 1929, amounts so collected into the State Treasury are credited: two-fifths to the state general fund, one-fifth to the county where the well was located, and two fifths to the township in which the oil or gas was produced. The State Treasurer sends the funds belonging to the counties and to the townships to the treasurers of those units.

Income of the County Government in the Form of Fees and Taxes

The county benefits directly in two ways; receipts from the Severance tax and from fees collected by the register of deeds for recording oil and gas leases, discharge of leases, assignment of leases, extension of leases, forfeiture of leases, and mineral deeds.

An examination of the duplicate vouchers in the register of deeds office for Mecosta county disclosed that filing of leases to any extent began in September, 1928, in which month \$1,665.75

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was collected from this source. The primary purpose of leasing prior to 1933 was the hope of finding oil or of disposing of the lease at a profit. Since the discovery of gas, the primary purpose on the part of many of those securing leases has been the hope of locating natural gas. Since purpose is largely subjective or a matter of circumstantial evidence, no effort has been made to determine which of the leases was taken from the hope of finding gas, and which hoped to find oil. Table X shows the receipts from fees over a ten year period.

TABLE X
FEES COLLECTED FOR FILING OIL AND GAS LEASES,
DISCHARGES, ASSIGNMENTS, MINERAL
DEEDS, ETC. IN WECOSTA
COUNTY

Source: Vouchers in Register of Deeds Office

Year	Amount
1928	\$2,651.25
1929	1,500.20
1930	860.40
1931	762.00
1932	229.55
1933	981.40
1934	3,403.75
1935	1,602.20
1936	2,341.90
1937	1,914.15
Total	<u>\$16,246.80</u>

While about as much of the county is under lease now as two years ago (December, 1937), indicating opportunity to file assignments and discharges, it would take a discovery in the western or northwestern part of the county, where but a

small portion is under lease, to renew leasing activities comparative to 1934 or 1936. Likewise the recording of mineral deeds will not continue as in the past unless a new discovery is made.

The Severance tax has produced as follows: \$79.67 in 1934, \$249.90 in 1935, \$580.34 in 1936, and \$784.38 in 1937.⁽¹⁾ This course of revenue should show an increase for 1938 and perhaps over the two or three years following until the marketing areas reach a fairly stable rate of consumption. The revenue will cease when the present fields are exhausted, unless new areas are discovered.

Income to the Townships from Natural Gas

The value of natural gas at the well has been fixed by agreement with the Public Utilities Commission at fifteen cents per thousand cubic feet. Since the Severance tax, under the provisions of the law, is two per cent of the gross cash value at time and place of severance, a simple arithmetical calculation shows that the tax is three-tenths of a cent for each thousand feet of gas taken from a well. The township where the well is located receives two fifths of the tax, or twelve hundredths of a cent for each thousand cubic feet. Taking the figures for the Austin field, as released by the State Tax Commission, showing withdrawals from the time the first gas was marketed up to October 1, 1937, (Table VI, Chapter III) as 2,958,819,000 and multi-

1. McCormick, Lora, County Treasurer, data as of Dec. 30, 1937

plying by .12 of a cent, the revenue accrued to the township would be \$3,550.58. Checking with the township treasurer of Austin township, ⁽¹⁾ the amount which had been received from the State Treasurer up to December 31, 1937, was \$3,361.43, the last payment having been received in September. The receipts of Severance tax by Austin township to January 1, 1938 are shown in Table XI.

TABLE XI

SEVERANCE TAX RECEIPTS FOR AUSTIN TOWNSHIP

Year	Month Received	Amount	Year's total
1934	August	\$ 55.74	\$ 55.74
1935	February	159.32	
	August	499.83	659.15
1936	March	427.39	
	September	782.31	1209.70
1937	March	618.23	
	September	818.61	1436.84
Total			\$3361.43

If the field is from one-third to one-fourth exhausted, bases upon the estimate of the Bureau of Mines or that of H. D. Crider, geologist, then the total expected revenue of the township based on expected revenue over the entire life of the field is likely to be between \$10,650 and \$14,200. When the Severance tax was first received by Austin township, it was voted at the 1935 township election to apply the funds by proration to the various school districts in the township. Later on it was felt that this method was unfair, due to inequalities in the valuations of the various school districts, and it was voted to apply the Severance tax money toward reduction of the county tax assessed

1. Tutt, Charles M., Personal communication. Dec. 31, 1937

against the township. It has been so applied in 1936 and 1937. For the year 1937 the county tax for the township amounted to seven and a half mills and the township paid four and a half mills of this assessment with the Severance tax money.

But a small part of the tri-township field lies in Hinton township, most of the wells in this township being in sections 23 and 25. The open flow capacity of these wells is much less than the average shown by the wells in the broader portion of the field to the southeast. Since this field has had access to markets for but a short time, the tax receipts are probably not yet at their peak. The township treasurer⁽¹⁾ reports having had but one check during 1937. The check was received in May, and amounted to \$93.38. The withdrawals of gas from Hinton township are as follows:⁽²⁾

For 1936	143,724,660 cubic feet
For 1937	218,683,450 cubic feet

Millbrook township, which has a large number of wells, may expect considerable revenue for the next seven or eight years, or possibly longer. There is so much dispute over the amount of the reserves that any estimate of the future revenue of this township is likely to be inaccurate. Since Grand Rapids and Lansing used natural gas for the first time during the winter of 1936-7, it is highly probable that there will be a large increase in the quantity of gas consumed during the winter of 1937-8, and a further increase a year later. The record consumption from the field for a month, according to a report issued January 8, 1938, was 607,000,000

1. Beardslee, Roy. Personal communication. Jan. 3, 1938
 2. Mich. Historical Commission. Personal communication. Jan. 28, 1938

cubic feet for December, 1937. This is an increase of about 125,000,000 cubic feet over that used in the corresponding month of the previous year. The figures for withdrawals from Millbrook township are as follows:

For 1936	675,485,430 cubic feet
For 1937	1,000,176,600 cubic feet

On August 10, 1937, the township of Millbrook received \$607.26 from the state, as a distribution of Severance tax collections. This was the only remittance received during the year, according to the township treasurer.⁽¹⁾ He stated that this amount was about sufficient to take care of the township's "contingent expenses", and that there had been no township tax levied for the past two years.

Assessment on Pipe Lines, Meter Stations, Oil Wells

An assessment is placed on pipe lines, meter stations, and the casings in oil and gas wells. Supervisors who were consulted stated that the assessment was based on the diameter of the pipe line and the number of feet of line in the township. Their response to the question, "How do you know how much to assess per foot," was that they discussed the matter with the pipe line officials, arrived at the best valuation possible in their own judgment keeping in mind that the valuation must be acceptable to the pipe line company. If they placed a valuation on the line which would be regarded by the company as excessive, legal complications might result. The casing (pipe) in a gas well appears

1. Sheets, Bert. Township treasurer. Personal communication, January 3, 1938

to be treated by the various supervisors as personal property.

The assessments on various wells might differ due to the diameter of the casing, but the supervisors indicated that they would consider \$1000 a well as being the usual assessment. The following figures were secured as representing assessments covering pipe lines, meter stations, and well casings for the year 1937:

Millbrook township	(1)	\$129,280	
Colfax township	(2)	2,010	
Austin township	(3)	34,325	(x)
Aetna township	(4)	37,012	
Big Rapids township	(5)	1,500	
Total		<u>\$204,127</u>	

(x) Figures for Austin township are for pipe lines only.

1.	Hadlock, E. M., Supervisor.	Personal communication.	Jan. 11, 1938
2.	Lintemuth, H. R., Supervisor.	Personal communication.	Jan. 8, 1938
3.	Osborne, Roy, Supervisor.	Personal communication.	Jan. 11, 1938
4.	Howarth, Walter, Supervisor.	Personal communication.	Jan. 12, 1938
5.	Cramer, Alfred, Supervisor.	Personal communication.	Jan. 4, 1938

CHAPTER VIII

BENEFITS TO LAND OWNERS, BUSINESS, AND LABOR

Income from Oil and Gas Leases

Leasing on a large scale started in the fall of 1926, but the number of leases filed with the register of deeds for Mecosta county decreased until a low was reached in 1932. Evidence indicates that a great many of the leases were surrendered during this period. Activity increased during 1933, perhaps partly due to the discovery of gas in Broomfield, a short distance from the eastern boundary of the county; but in March, 1933, the Taggarts discovered gas in Austin township, which gave a decided impetus to leasing. Gas was discovered in the southeastern part of the county in 1934, and that year witnessed the highest point of activity in leasing and assignment of leases. An examination of the records of the Mecosta county abstract office made in late December, 1935, showed that Austin township and the three townships in the southeastern part of the county were almost entirely under lease. The abstract office reports as of December 27, 1937, that while some leases have expired and have been discharged other leases have been recorded, so that there has been little change in acreage under lease during the past two years. Recent activity has been on the east half of Martiny township where any acreage not under lease is probably due to the fact that the owner cannot be found or will not lease. Very few leases are for as low a figure as fifty cents an acre per year.

a few leases reach a maximum of \$4 an acre. Mr. Long⁽¹⁾ expressed the opinion that \$1.25 an acre would be a conservative estimate of an average price per acre for all the area of the county under lease. The records were not checked either by sampling or in their entirety to determine the accuracy of his estimate; but others who were in close contact with leasing stated that his estimate agreed closely with their judgment. The percentage of land under lease as determined on an acreage basis for each township of the county is shown in Table XII as follows:

TABLE XII

LAND UNDER LEASE IN MECOSTA COUNTY

Source: The Abstract Office
As of Dec. 24, 1935

Township	Per cent under lease	Acreage Leased
Aetna	58.5	13,478
Austin	87.1	20,067
Big Rapids (x)	15.5	3,575
Chippewa	66.2	15,252
Colfax	84.0	19,363
Deerfield	51.0	11,750
Fork	66.5	15,625
Grant	14.0	3,225
Green	12.3	2,834
Hinton	83.5	19,238
Martiny	47.2	10,875
Mecosta	21.5	4,954
Millbrook	98.0	22,580
Morton	33.8	7,788
Sheridan	57.6	13,271
Wheatland	98.0	22,580
Total		206,455 Acres

x Includes acreage within city limits of Big Rapids

1. Long, Delbert. Mecosta County Abstract Company

An estimate of the sum received by land owners under the terms of leases granted may be arrived at by considering that in a county consisting of 16 townships with about 206,455 acres under lease at an average of \$1.25 an acre, the annual payment would be in the neighborhood of \$257,800. Since there has been about the same acreage under lease for the past two years, the land owners must have received about half a million dollars during that time. A representative of a company holding considerable acreage stated that his company alone had paid more than \$90,000, but he asked that the name of his company be treated as confidential. There is evidence to show that many of the land owners have used lease checks to pay delinquent taxes. Most of the money used to pay for leases comes from outside of the county. The following named companies hold the largest acreage under lease, though there are a number of smaller lease holders:

- Carter Oil Company (A Standard Subsidiary)
- Cities Service
- Daily Crude Oil Company
- Dokenva Oil & Gas Company (Tulsa, Okla.)
- Gordon Oil & Gas Company
- Gulf Refining Company
- Shell Petroleum Company
- Sun Oil Company
- Pure Oil Company
- Taggart Bros., Inc. (Big Rapids)

Income From Mineral Deeds

The Mineral Deed is a deed issued by the owner of land to a purchaser who secures rights to oil, gas, or other minerals to be found on the property. (See form for Mineral Deed, Appendix C) Such a deed may grant a 100 % interest or some fractional interest

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in the mineral rights pertaining to the property. When property is under lease and the land owner has retained a one-eighth royalty in production, he may sell this interest which he has retained, or some fraction thereof. The smallest fractional part found recorded to December, 1937, in Mecosta county was for a $1/640$ interest in the mineral rights vested in a certain description of property. An examination of the records of the register of deeds office showed 190 such deeds recorded prior to December 31, 1935, and that 362 were recorded in 1936, and 64 in 1937. The address of the purchaser was not stated in all of the mineral deeds on record, but when so stated the address was, in most cases, outside of the county. The actual consideration was not usually shown, but many were stamped indicating the payment of the Federal stamp tax which is required whenever the consideration is more than \$100. It did not seem feasible to attempt to estimate the dollar value of the total consideration paid for such deeds.

Income from Royalties

Under the terms of a lease a cash rental is not paid when a producing well is located on a property, but instead, the land owner receives a royalty, or share, in the production of the well. In Michigan the royalty is a one-eighth interest. In the Austin field most of the wells are on Taggart-owned land. The wells not on their land are small producers, and for that reason the separation of production into royalty interest and producers' share is not so important as it is in the tri-township field. In the tri-township

field there are many producers and many land owners. According to figures for withdrawals from Hinton township the royalty interests would share as follows:

1936---	143,724,660 cu. ft. at 15 ¢	\$21,558.70 x 1/8 =	\$2,694.84
1937---	218,683,450 cu. ft. at 15 ¢	32,802.52 x 1/8 =	4,100.31

In Millbrook township, where there are more wells and much larger production, the royalty income is greater. An estimate of the royalties may be based on the following figures:

1936--	675,485,430 cu. ft. at 15 ¢	\$101,322.81 x 1/8 =	\$12,665.35
1937--	1,000,176,600 cu.ft. at 15 ¢	\$150,026.49 x 1/8 =	18,753.31

In both Hinton and Millbrook townships the returns under the royalty contracts are regarded as disappointing. The reason usually assigned for the small returns from each well is that so small a percentage of the capacity of the well is utilized. Perhaps the true explanation is based on the question of estimating the amount of gas available in the field. An acre of land to which a one-eighth lease royalty applies is called a "royalty acre". Because of claims and statements as to the value of royalty acres in this field, the Michigan Public Utilities Commission had a study made to determine what revenue might be expected during the life of the field per royalty acre. These calculations estimate the amount of money that may be expected to be realized from the royalty from the start of production until the well is exhausted. A comparison was set up in relation to "flush" or "open-flow" production, since this is the way wells are usually compared. It should be kept in mind that the "open-flow" is

1. Amount of gas estimated to flow from the well in a 24-hour period if permitted to flow without restriction.

greater the farther the well is drilled into the "pay" sand. As a well is used the amount of gas in the reservoir decreases, the pressure expressed in pounds becomes less, and the capacity of the well measured in daily open flow declines. The estimates set up as a result of the study made by the Commission are shown in the following table:

TABLE XIII

TOTAL ESTIMATED RETURN FROM A ROYALTY ACRE
(Tri-township Area)

Open Flow of Well In Cubic Feet	On Basis of 35 Billions Reserves	On Basis of 50 Billions Reserves
100,000,000	\$328	\$470
75,000,000	246	352
50,000,000	164	235
30,000,000	98	141
20,000,000	66	94
10,000,000	33	47
1,000,000	3	5

Explanation of table: If a well had been gauged at 50,000,000 cubic feet of open flow, and will be used to take the gas from beneath a forty-acre tract of land, then the land owner may expect to receive as his royalty from the sale of gas from the well until such time as the well is exhausted \$164 x 40 or \$6560. If it is believed that the entire field contains 50 billion feet, then use \$235 instead of \$164 in determining total income.

Stace and Thorn (1) state: "There are only two tri-township wells in the 100,000,000 class; five between 75,000,000 and 100,000,000; 25 between 50,000,000 and 75,000,000; 36 between 30,000,000 and 50,000,000; 31 between 20,000,000 and 30,000,000; 30 between 10,000,000 and 20,000,000; 52 between 2,000,000 and 10,000,000; and 31 in the class of 2,000,000 and under." This means that there are only 7 wells in the entire field that may yield between \$246 and \$470 per acre as a

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royalty before the wells are exhausted; 25 wells may produce between \$164 and \$352 per acre; 36 may return to the land owner or other royalty interest between \$98 and \$235; 63 wells should yield somewhere between \$3 an acre and \$47. When it is considered that this field has been over drilled, with wells on each forty acres until a recent ruling of the Department of Conservation fixed one well for each one hundred sixty acres for future drilling, the returns from forty acres may represent a rather modest sum.

Income from Payments for Right of Way and Damages

When pipe lines are laid it is the custom to pay twenty-five cents a rod for the right of way, and if any damage is caused to crops, etc., to pay a reasonable sum for damage done. Since there are several miles of pipe line within the county, it is evident that while each land owner received but a small sum, the total of all payments made for right of way and damages amounted to a considerable sum. The American-Michigan Pipe Line Company paid about \$9,000 for right of way and damages to land owners in Mecosta county. (1)

Effect on Land Values

The real estate agents in Big Rapids state that the fluctuation in value of city property is due in the main to general recovery rather than to discovery of natural gas within the county. Farm values for farms outside the gas fields show little change which may be attributed to natural gas discoveries. In some instances, land that could have been purchased at a low price a few years ago will not be on the market.

1. Gabel, Harry, Gas Engineer for American-Michigan Pipe Line Co.,
Personal communication. Dec. 21, 1937

Effect on Local Business

The introduction of natural gas for space heating in Big Rapids cut into the business of the coal dealers, and reduced the number of cars of coal brought in by the railroads. One coal dealer, the Big Rapids Gas Company, discontinued handling coal.

In general merchants state that natural gas has brought them some business. It is difficult for them to make any accurate estimate of the amount of new business. They remember goods being sold to customers who paid with checks issued by oil and gas companies. In some instances customers paid old book accounts with such checks. Transients working on drilling operations have made purchases, and some supplies such as cement and lumber have been sold to operators. The natural gas business is such that it brings into the field or territory near field very few permanent employees. The trading centers for the people living in the tri-township field are outside the county. Much of the business connected with drilling centers at Mt. Pleasant which is often spoken of as the oil and gas capital of Michigan.

Effect on Labor

After wells are connected to the pipe lines very little labor is required. In the case of the American-Michigan Pipe Line Company, their engineer stated that five men could read the meters and patrol the line from the Austin field to Muskegon. It was their custom to have a man walk along the right of way of the pipe line once each week to see that conditions were satisfactory. When the line was constructed during the depression, about 300 men, divided into

two crews working four days alternately for about a month, were employed in Mecosta county. These men were nearly all residents of the county, as it was the policy of the company to employ local labor so far as practicable. It was stated that many of these men would have been on relief without this employment. About fifty of these men were carried for two months while the work continued in Kewawaygo and Muskegon counties. These fifty men were truck drivers, blasters, straw bosses, etc., and had average earnings of \$270 to \$300 each while employed outside Mecosta county. Taggart Bros., Inc., gave employment to a crew building their line from Austin to Big Rapids. Some of the mains in the city were left on top of the ground during the winter, and placed underground during the following spring and summer, so that employment in Big Rapids continued over several months.

There does not appear to be any evidence of any one losing a job at a factory due to introduction of natural gas, or as janitor or other fireman in a commercial building. These employees devoted time saved to other work. There were three men permanently employed at the manufactured gas plant, and of course that plant closed. There was some loss of employment by men working in coal yards.

CHAPTER IX

BENEFITS TO CONSUMERS

The purpose of this chapter is to show the manner and the nature of the benefits received by consumers of natural gas. The factual material used has been secured mainly from local sources; hence the conclusions shown apply to local consumers, and will hold true elsewhere when conditions are similar.

Methods for Comparing Natural Gas with Other Fuels

Natural gas from the Austin and tri-township fields contains about 1050 B.t.u. per cubic foot as compared with 550 B.t.u. for manufactured gas. Fuel oil, 25.7 Baume, weighs about 7 1/2 pounds per gallon and rates approximately 144,200 B.t.u. per gallon.⁽¹⁾ A short formula for comparing cost of oil and coal is to double the price in cents per gallon of oil and express the result as dollars per ton for coal of equivalent heat value; e. g., oil at four cents a gallon equals \$8 coal. Coal varies in heat content from less than 11,000 B.t.u. per pound to a maximum of close to 15,000 B.t.u. Since coal varies so much in heat units, any short formula for comparative values is inaccurate. Another factor entering into a comparison is the efficiency of equipment. The Committee of Ten-Coal and Heating Industries⁽²⁾ in a discussion of comparative fuel costs makes this statement:

"Except in individual instances where tests have been properly conducted under actual operating conditions,

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1. Kansas City Laboratories, Bulletin No. 15
 2. Committee of Ten-Coal and Heating Industries, Bulletin No. 6, Chicago, 1932

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comparison of fuel costs can be no more than estimates based on some known factors and some assumed factors presumed to represent average conditions. Therefore, cost comparisons are meaningless and without value unless accompanied by full information as to the known and the assumed factors used in arriving at the conclusions."

The Committee suggested the following formula for use in determining the number of cubic feet of gas equivalent to a given quantity of coal:

$$\frac{(\text{Ch or Cs}) \times 2000 \times \text{Hc} \times \text{Ec}}{\text{Hg} \times \text{Eg}} = X$$

When	X	equals	Quantity of fuel to be ascertained
	Cs	equals	Coal Stoker Fired
	Ch	equals	Coal Hand Fired
	Hc	equals	B.t.u. per pound of coal
	Hg	equals	B.t.u. per cubic foot of gas
	Ec	equals	Efficiency of Coal Equipment
	Eg	equals	Efficiency of Gas Equipment

Efficiency of equipment represents the average of plants in reasonably good condition and intelligently operated.

SOLID FUEL:

Hand-firing (residences and small commercial	50 %
Hand-firing (large industrial	55
Stoker-firing (residences and small com'l	65
Stoker-firing (large industrial)	70
Pulverized coal (medium and large plants)	75

GAS:

Conversion burner (warm-air heating)	60 %
Conversion burner (steam or hot water)	65
Special gas furnace (warm air)	70
Special gas furnace (steam or hot water)	75

Coal is priced by the ton, but gas is quoted by the utilities drawing their supply from Austin or the tri-township field not on a flat unit basis but instead on a graduated schedule in accordance with the quantity used. (See rate sheets in Appendix B)

Benefits to Residential User

Since natural gas is relatively twice as hot as manufactured gas, and sells at a lower price per thousand cubic feet, at least in the upper brackets, it is popularly regarded as a cheap fuel.

In the home it generally serves one or more of four purposes; as fuel for cooking, for refrigeration, for heating water, and for house heating. The first three purposes can be performed economically by manufactured gas, but rates are usually prohibitive for house heating, as was the case in Big Rapids. When natural gas is used for cooking or for cooking and refrigeration, a saving in cost can be expected as compared with using manufactured gas. Since natural gas is cheaper than the manufactured gas, there is a tendency to use a larger quantity under similar conditions. In order to determine how costs were comparing in Big Rapids, it was necessary to select a method for securing sufficient data for the purpose. A sampling plan was selected. It was decided that if 5 % of the customers of the Big Rapids Gas Company were used in the sampling process, and names selected at random, enough data would be secured. The Gas Company's records were examined. The charges for gas for use in cooking for a month when manufactured gas was used were taken from the records, and in comparison was set down the charges for the same month one year later when natural gas was used. In each and every case the record showed that the gas bill was lower when natural gas was used. The smallest saving in favor of the natural gas was three cents (\$4.17 for manufactured gas and \$4.14 for natural gas). The largest difference in favor of natural gas

was a decrease from \$4.08 to \$1.36; probably some other factor was responsible for this large drop in amount of a bill. The percentage saved on the total bills included in the sampling was 29.48 %.

When the Big Rapids Gas Company was conducting its campaign to induce home owners to install gas equipment in furnaces, it was stated that the cost of gas would be about the same as the cost of coal, and an appeal was made to other buying motives. This seems to have been the procedure adopted by the other utilities serving gas from Mecosta county. In the New Year's edition of the Grand Rapids Press, January 1, 1938, an advertisement by the Grand Rapids Gas Light Company stated, "And it is heating over 5000 homes automatically for just about what other fuels cost." At the office of the Big Rapids Gas Company it was stated that most houses would use between 50,000 and 60,000 cubic feet of gas a month during the coldest weather. On the basis of 52,600 cubic feet of gas for a month, using the rates charged in Big Rapids, the customer's bill would amount to \$21.45 with the sales tax included. If coal costing \$8.25 a ton (current price for a popular soft coal, January, 1938) with 14,250 B.t.u. per pound rating were burned in a converted hot air furnace the equivalent cost would be \$19.96 calculated under the formula suggested by the Committee of Ten:

$$\frac{Ch \times 2000 \times 14,250 \times 50\%}{1050 \times 60\%} = 52,600 \text{ cubic feet gas}$$

Solving for Ch gives 2.325 tons of coal.

2.325 tons of coal at \$8.25 costs \$19.38 plus .58 tax
or a total of \$19.96.

Note 1. If Pocahontas coal containing 14,850 B.t.u. at \$9.25 were used instead, the formula shows 2.251 tons needed at a cost of \$20.64 plus .62 tax, totaling \$21.16

Note 2. Comparison for Lansing:

52,600 cu. ft. gas using "Objective rate" costs \$28.50
2.325 tons of \$8 coal would cost \$18.60 plus .56 tax.

Note 3. Comparison for Grand Rapids:

52,600 cu. ft. gas, domestic space-heating rate \$25.42

Note 4. Comparison for Muskegon:

52,600 cu. ft. gas, general heating rate \$28.52

N. B. In Notes 2, 3 and 4 the tax not added to cost for gas.

A number of householders were visited in Big Rapids, but as expected few had kept any record of costs over any period of years when using coal; in fact, only three were found who had an adequate record. (This feature of the survey was discontinued.) The three who had kept records, stated that the cost of gas for cooking and heating for the two winters used, compared favorably with the cost of coal averaged for a period of years.

The motives which lead to the use of natural gas for house heating may be stated as:

1. CONVENIENCE: Automatic heat, the pilot is turned on in the early fall, and the only attention thereafter is to adjust the thermostat at the temperature desired. When a family wishes to be gone a few days, the house can be left without attention, and will be warm on their return.
2. CLEANLINESS: No dirt in the basement from coal and ashes, nor tracking or otherwise bringing into other parts of the house coal dust. Where so many use gas for heating, the atmosphere carries less smoke and soot with the result that the snow does not become discolored and yards and streets have a cleaner appearance.

3. PROFIT: Less expense for painting and other exterior and interior decorating and cleaning.
4. PRIDE: The satisfaction which comes from the realization that one owns the type of heating system that furnishes conveniences not possessed by those using other fuels. The home owner who puts in natural gas heating equipment has joined an exclusive group.
5. DESIRE FOR COMFORT: FAMILY AFFECTION: By taking out the coal bin additional space may be available for refinishing the basement into a play room, recreation room, study, or general purpose room.

Benefits to the Commercial User

The store, office building, apartment house, hotel, garage, office building, or public building may be changed over for natural gas heating with certain resulting advantages. It is easier to maintain uniform temperature. There will be little if any loss from frozen pipes and radiators when there is a sudden change and the out-door temperature drops below zero in the night. There may be a saving in labor due to less attention given the heating system. The annoyance which comes from the inconvenience caused by putting in coal is eliminated. There will be less dirt and dust. Where there are many users of gas the smoke nuisance is reduced.

The survey brought out considerable data which substantiated the advantages stated in the paragraph above. The following is interesting and typical:

1. The JUDSON BLOCK is three stories in height, with two stores on the first floor and offices and apartments on second and third floor. Mr. Judson reported a nine-year average cost of coal as \$576.06, with a two year average with gas as \$542.18, plus a saving in janitor service permitting the janitor to spend more time doing other work.

2. The FAIRMEN BLOCK has four stores on the first floor, and offices and apartments on the two floors above. The manager did not give figures showing average heating cost, but stated that his figures showed an average saving amounting to approximately \$90 a year in favor of natural gas.
3. The WESTERN HOTEL reported that natural gas was costing about \$127 a year less than oil cost when they were paying 3 3/4 cents a gallon for oil. The management was well satisfied with gas.
4. The FORD GARAGE reported coal as a fuel cost \$235.50 more for the winter of 1933-4 than gas cost for the winter of 1934-5.
5. Two department stores each stated that there was a slightly lower cost for gas based on comparable figures, but that the main advantage was from labor saved firing and cleaning, and from being relieved from responsibility for giving attention to heating. The manager of one store stated that he credited natural gas with the fact that the employees lost less time due to illness in the winter, which he felt was due to more even heat and the air carrying a smaller quantity of impurities.
6. The Big Rapids public schools operate three grade school buildings and a central plant for the junior and senior high school. Records were examined for a period of eleven years. During that time no new buildings have been erected. The central plant was erected in 1925. During the eleven years fuel costs have varied from a low of \$2556 to a peak of \$3702 per year. Causes of variations were assigned as different fuels used, different men in charge, colder winters, change in costs per unit of fuel, etc. So far gas costs were about the same as the average yearly cost. There was a reported saving in janitors' time equivalent to about one half day for one man daily at the central plant, which left him free for other work.
7. PHELPS FREE LIBRARY records show a somewhat higher cost for gas, but a more even heat is secured with the same equipment (converted furnace), the janitor has more time for other work, and no radiators or pipes have frozen since gas has been used, the thermostat taking care of changes in temperature at night.
8. FERRIS INSTITUTE has had an experience very similar to that of the public schools, having used coal, oil, and gas. Gas has proven to be the most satisfactory fuel.

9. ST. MARY'S CATHOLIC CHURCH. The priest stated that gas was used to heat the church, the school and two houses. In his judgment, the chief advantage was in the saving in cleaning and decorating, and in the maintaining of an even temperature so that a 5 a. m. Mass could be attended in coldest weather without discomfort. It had not been practicable to have the buildings warm so early when coal was used.

Benefits to the Industrial User

1. The HANCHETT MANUFACTURING COMPANY uses gas in manufacturing processes as well as for heat. The chief advantage obtained by use of natural gas is in the labor saved unloading cars. When coal was used, it was bought by the car load and it took considerable labor to unload the cars.
2. The FARMERS' COOPERATIVE CREAMERY uses gas for heat and power and find it highly satisfactory. In a space of twelve consecutive months this concern used 17,681,000 cubic feet of gas.

Big Rapids has experienced a public benefit since natural gas has been so widely used. This benefit comes from the elimination of the smoke nuisance which was experienced when coal was used. In the winter time the city has a much cleaner appearance. This in turn acts as a benefit to property owners as individuals since they do not need to wash the outside walls of buildings nor paint so frequently as was necessary when soft coal was used.

Because Big Rapids is located so near the Austin field, it has the advantage of lower rates than other cities furnished with gas from the Austin and tri-township fields. (See rate schedule for Big Rapids, Appendix E) With rare exceptions the users of gas for heating houses are well satisfied, and they feel that all the claims generally made for natural gas as a fuel are fulfilled. The commercial and the industrial users express themselves as pleased with the results they are obtaining. Sometimes anxiety is expressed

in regard to the exhaustion of the field and the necessity of installing coal burning equipment at some future date.

The villages throughout the county have been considered too small to make it profitable to build pipe lines from the fields to the villages.

CHAPTER X

SUMMARY AND CONCLUSIONS

Summary of the Major Points

(1) Mecosta county is located in that part of the Lower Peninsula of Michigan which was once covered by pine forests; and, as is typical of such regions, only a small portion of the area of the county is well adapted to farming. Nearly three fourths of its 16,000 population live on farms and in small villages and depend on agriculture and the resort trade. Big Rapids is the only city in the county. The county is far from wealthy. Many of the farmers occupy poor land and have a very real struggle for existence. The factories in Big Rapids employ but a few hundred men at rather low wages. The relief rolls carried about 20 % of the population at the time the natural gas development started.

(2) The Austin natural gas field was discovered early in 1933 and gas was piped to Big Rapids during the winter of 1933-4, and as soon as there was proof of a sufficient supply a pipe line was built to Muskegon.

(3) The tri-township field was discovered in May, 1934, and drilling proceeded with great rapidity during 1935 and 1936. The problem of securing a market for the gas was a matter of very serious concern and developed into a contest between the Consumers Power Company and the Grand Rapids Gas Light Company to secure contracts entitling them to purchase the gas from the various wells. In 1936 pipe lines were built to Lansing and to Grand Rapids and

those two cities and smaller communities started using gas from this field.

(4) Farmers and operators were not satisfied with the progress made in developing markets for the tri-township gas, and a real serious controversy developed. Rumors became current to the effect that the "special interests" were conspiring to retard the development of the field. Experts from the U. S. Bureau of Mines and from other places were called in to estimate the reserves and to study the question: but the controversy continues. In Ingham county a circuit judge has issued a permanent injunction against the Michigan Public Utilities Commission restraining it from interfering with the Grand Rapids Gas Light Company when the company decided to violate the order of the Commission. A suit has been started against the Consumers Power Company and the Michigan Public Utilities Commission for the purpose of having a contract between a well operator and the Consumers Power Company declared void on the ground of conspiracy, restraint of trade, and monopoly. The date set for the trial of this case is May 16, 1938. In the meantime an application is before the Michigan Public Utilities Commission for a permit to build a pipe line from this field to Pontiac, Jackson, Battle Creek, Kalamazoo, and other Michigan cities. The date for hearing the application is set for May 24, 1938.

(5) Income from leasing, drilling, royalty receipts, fees and taxes appears to benefit many different groups. The largest source of income to date apparently is from the rent clause of the leases. Several hundred thousand dollars has been disbursed to land owners. Most of the money came from the large oil companies who hold the leases,

Other sources of income to the land owners have been from the sale of royalty interests, receipts from royalties, and as compensation for the privilege of building pipe lines across property, and from employment during the period of building pipe lines. Merchants have benefitted as this money was spent. The county government benefitted as some of the money was used in paying delinquent taxes. People on welfare were given employment. The register of deeds collected \$16,246.80 to December 31, 1937 as filing fees. The severance tax benefitted both the state, the county and the townships. Personal property assessments on casings, meter stations, and pipe lines contributed to tax collections.

(6) The consumers of natural gas from the Mecosta county producing fields are nearly all located outside the county in the Muskegon, Grand Rapids, Lansing, Bay City and Saginaw areas. Big Rapids, in the northwestern part of the county, has the benefit of the lowest gas rates of any of the areas served.

Conclusions

(1) Basing a judgment on the data which is available, the situation in regard to the Austin natural gas field is a satisfactory one. The discoverer, W.C. Taggart, through Taggart Bros., Inc., controls all but 120 acres in the field. He did not have sufficient funds to enable him to put down enough wells to learn the extent of the field; but was able to secure the assistance of the American-Light and Traction Company. When exploration showed a supply of gas sufficient

for eight or ten years' use by Big Rapids and Muskegon, pipe lines were built to these cities. It was fortunate that these cities contained a population which would use the estimated supply over a reasonable period of years. Had the reservoir contained a greater quantity of gas but not sufficient for a city like Grand Rapids, or an even greater quantity, the marketing problem might have been difficult. Due to the fact that Mr. Taggart controls almost all of the acreage, he is able to practice conservative methods and not over drill the field. This enables him to keep his investment in drilling operations down. He can do this because he has no cause to fear that other near by wells may remove gas from his land. This situation tends to relieve the gas consumer who has made an investment in gas-heating equipment from the possibility of some other community securing a pipe line to the field and exhausting the supply in a short time.

(2) An analysis of the situation in the tri-township field indicates a valid basis for the following assumption: Under the capitalistic system greed, cupidity, selfishness, suspicion and ignorance are likely to manifest themselves to a high degree during the development of a large oil or gas field. Since it is more difficult to find a market for gas than it is for oil, there will be a greater tendency when developing a gas field to observe the manifesting of those undesirable qualities of human nature.

In the tri-township field there are many land owners. A large number of companies came in and drilled for gas. In fact, there is a well on nearly every forty-acre tract. This resulted in a large

investment in wells. Promoters both legitimate and of the "Get-rich-quick Wallingford" type came in with their schemes. The field was situated at a considerable distance from a potential market and large utility companies hesitated in announcing plans to take the gas before they were sure of an adequate supply. Suspicion of utility companies on general principles existed or was easy to arouse. Many people concerned were ignorant of any scientific basis for estimating gas reserves or value of gas or oil lands. Hundreds of people wanted to share in the riches being liberated from the ground. Land owners desired large royalties. The purchaser of a mineral deed had but one desire and that was for a profit. Stockholders in corporations holding leases or other interests were anxious for dividends. The operators wanted to get their money back and to realize a profit as quickly as possible in order to start operations elsewhere. Everyone interested in a well knew that it was possible for a well on adjoining land to draw out the gas from under both properties. Others suspicioned the utilities, believing that there was a conspiracy to retard the production of natural gas. These factors, with others, contributed to the controversies which have developed in relation to the tri-township field.

(3) The political factor which enters into the selection of the personnel of the Public Utilities Commission may have had considerable to do with the lack of faith and the distrust which exists in regard to the Commission.

(4) The evidence does not warrant a belief that the supply of natural gas in the tri-township field is sufficient to justify build-

ing pipe lines to other large cities. With one exception, all those who appear qualified by training and experience to submit estimates of the reserves in the field arrive at somewhere near the same conclusions. From data now available it would seem that the supply should last Grand Rapids, Lansing, Bay City, Saginaw and the communities now being served for seven or eight years.

(5) The Department of Conservation in its supervision of drilling and exploration draws very little criticism, and so far as this study is concerned, appears to be efficient and trustworthy in carrying out its duties in so far as they concern natural gas.

(6) The Michigan Public Utilities Commission is in a peculiar position. It is pertinent to draw attention to the fact that the Commission stands as the one agency dealing with natural gas which should not have a selfish interest. The Commission's job is to watch over and protect the interests of the ultimate consumer of natural gas. If it were not for the Commission all those interested in natural gas from the time it is taken from the ground until it reaches the consumer's meter might join in exploiting those who use the gas. It should be the responsibility of the Commission to see that the supply of natural gas is adequate and sufficient to last for a number of years before the Commission grants a permit to bring gas into a community.

Policies Which Might Be Pursued

(1) Since experience has shown that a large part of the controversies engendered in regard to the tri-township field centers around the Michigan Public Utilities Commission, some plan should be

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adopted in order to restore to the people their faith and confidence in the Commission. The following is suggested:

- (a) Discontinue a policy of making appointments to the Commission on the basis of political party expediency, and discontinue the policy of removing them from office when their party affiliation or personal opinion displeases the governor.
 - (b) Adopt the plan of appointing members of the Commission for a period of not less than ten years, perhaps longer, and increase the salary so that it will be a fair compensation to men who have the responsibility of making decisions as to the handling of millions of dollars in cash or property values.
 - (c) Select the members on a basis somewhat as follows: One member to be a lawyer, one an economist who has specialized in public utility economics, one an engineer of reputation and experience, one member should have had experience as an executive with a public utility, the fifth member to be selected from some field not represented by the other four.
- (2) The Commission should publish in pamphlet form general information concerning the many phases of oil and gas exploration and development, and require that a copy be placed in the hands of every person who grants an oil or gas lease. This would serve as a means of furnishing land owners dependable information on which to base their expectations. Whenever oil or gas is discovered in a new

field, the Commission be required to publish as paid advertising in a local paper circulated in that community a series of articles giving information regarding the natural gas and oil business and the speculative features related thereto.

(3) Competent persons should be employed under the direction of the Corporation and Securities Commission to study the problem and to make recommendations for rules or laws to help drive out the racketeer and chisler who deals in oil and gas stocks, leases, mineral deeds or royalty acre interests.

An Evaluation of the Prospects for Adoption of Policies Recommended

(1) In regard to the suggested plan to be used for selecting men for appointment to membership on the Public Utilities Commission, the writer sees nothing at present which would indicate a willingness on the part of the politicians to adopt such a policy. If in connection with the present controversies, the Commission should make a serious blunder such as would call forth public condemnation, then perhaps the politicians might be in a frame of mind to be receptive of such a plan for reorganization of the Commission.

(2) The probability of the adoption of a plan for giving publicity to information dealing with the possibilities and the pitfalls connected with the oil and natural gas business such as suggested in this chapter is remote. The plan was discussed with one official. His reaction was negative. He inferred that it would be a waste of public money because the people would not follow the suggestions, since so many people are naturally receptive of get-rich-quick schemes.

(3) During the month of January, 1938, a letter was received from Chairman Olsen of the Corporation and Securities Commission. In that letter he stated that he and his associates were working on a plan to drive out the chisler and the racketeer and to cooperate with ethical brokers.

A P P E N D I X A

1. LAWS AND RULES AND REGULATIONS TO GOVERN
OIL AND GAS OPERATIONS IN THE
STATE OF MICHIGAN

2. BOND FOR CONFORMANCE WITH LAWS, RULES AND
REGULATIONS GOVERNING OIL AND GAS
OPERATIONS IN THE STATE
OF MICHIGAN

Note:

Verbatim copies made from mimeographed sheets
secured from the Department of Conservation,
December, 1937.

GAS OPERATIONS IN THE STATE OF MICHIGAN

In accordance with Act No. 15, Public Acts of 1929, and Act 185, Public Acts of 1931, the following rules and regulations are hereby issued, and under the provisions of said acts to be effective on and after Sept. 18, 1931.

The Director of the Department of Conservation shall act as Supervisor of Wells. He shall designate such suitable assistants in the Department of Conservation as shall be required to carry out the provisions of the Oil and Gas Conservation Laws.

It shall be the duty of the Supervisor of Wells directly or through his representatives:--

(1) To inspect the locating, drilling, casing, deepening, sealing and operating of oil and gas wells or test holes, so far as the same may endanger, result in waste, or do damage to, the oil and gas, the fresh, brine, and mineral waters, or to other mineral resources, or to life, and property.

(2) To supervise the abandonment and plugging of oil and gas wells or test holes and to see that such work shall be done in accordance with the methods and means prescribed in the Oil and Gas Conservation Laws or by such methods and means as he or his authorized representatives may prescribe or approve in writing.

(3) To visit from time to time operations for the discovery or production of oil and gas, to inspect such operations with a view to preventing waste of oil and gas, damage to formations or deposits containing oil, gas, valuable brines, mineral or fresh waters, or to coal measures or other mineral deposits, injury to life or property, or economic waste; and to issue, in accordance with the provisions of the Oil and Gas Conservation Laws such necessary instructions to owners, operators, well contractors, and drillers as will effectively prevent such waste or damage or danger.

(4) To collect all data and information concerning wells and test holes necessary for the intelligent supervision of the locating, drilling, and redrilling, deepening, shooting, casing, sealing, repairing, operating, abandoning and plugging of the wells that the oil and gas, the fresh, brine, and mineral waters, and other mineral resources, and life and property, may be most efficiently and effectively protected against unnecessary danger, injury, waste, or destruction.

(5) To prescribe the manner and form in which all records of operations, reports, and notices shall be made by owners, operators, contractors, or drillers.

(6) To require that tests shall be made to detect wastes of oil and gas as well as the presence of oil, gas, or water in a well.

(7) To require the correction in a manner to be prescribed or approved by him, of any condition found to exist during the drilling or subsequent to the completion of a well which is causing, or is likely to cause damage to any formation bearing oil, gas, valuable brines, mineral or fresh waters, or to coal measures or other mineral deposits; or which is dangerous to life or property or wasteful of oil or gas.

(8) To determine the percentage of the potential capacity of any gas well which may be utilized when, in his opinion, such action is necessary to protect the gas-producing formations and to specify the time and method for determining the potential capacity of gas wells.

(9) To assist and advise owners or operators of oil and gas wells in making tests and carrying on experiments for the purpose of increasing the efficiency of operation.

(10) To compile statistics of production and value of oil, gas, and natural gas-gasoline.

(11) To issue and enforce such additional rules and regulations as he may find necessary to prevent damage and waste to the oil and gas, the fresh, brine, and mineral waters, the other mineral resources, and to prevent danger to life or property from oil and gas operations.

(12) To require by written notice, immediate suspension of any operation or practice contrary to the requirements of the Oil and Gas Conservation Laws, the rules and regulations made thereunder, or to the written orders of the Supervisor or his representatives, until the owner, operator, well contractor, or driller shall have complied with such requirements or orders.

The term "waste" in addition to its ordinary meaning shall include:

- (a) Escape of natural gas in commercial quantities into the open air from a stratum recognized as a natural gas stratum.
- (b) The intentional drowning with water of a gas stratum capable of producing gas in commercial quantities.
- (c) Underground waste.
- (d) The permitting of any natural gas well to wastefully burn.
- (e) The wasteful use of such gas.

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(13) NO PERSON OR HIS REPRESENTATIVES OR EMPLOYEES SHALL BEGIN THE SINKING OR DRILLING of any oil or gas well or test hole UNTIL he shall have first filed with the Supervisor of Wells a written application and SHALL HAVE RECEIVED A WRITTEN PERMIT signed by the Well Supervisor or his authorized representatives to begin such well or test hole.

The application shall set forth:--

- (a) Exact location of well or test hole which shall show:
 - 1. The legal description of the property or properties giving the section, township, and range in unplatted land, the lot or portion thereof, the block, the recorded plat, and the municipality in platted land.
 - 2. The distance of the proposed well or test hole from the nearest well; the nearest property lines and the distance in two directions from the nearest section corner of quarter post.
- (b) The name of the farm or property.
- (c) The name and address of the lessee or lessees, if any, of the fee.
- (d) The method to be used in drilling (cable, rotary, or combination tools).
- (e) The purpose for which well is to be sunk or drilled.
- (f) The intended depth of the well.
- (g) The oil and gas and water bearing formations which are expected to be penetrated, with an estimate of the depth at which they may be reached.
- (h) The sizes and weights of the casing to be used and an estimate of the depth at which each string of casing will be landed.
- (i) The provisions to be made in addition to casing (such as mud fluid or cement) to exclude fresh water, valuable brines, and protect sands that are cased off.
- (j) The date actual drilling is expected to start.
- (k) The approximate length of time required to drill the well.

The application shall be signed by the owner of the proposed well or test hole, or his authorized representative, and shall be accompanied by the sum of \$25.00 in payment of the permit fee.

The application and permit fee shall be forwarded to the Supervisor of Wells or his authorized representative for approval and upon approval the Supervisor of Wells, or his authorized representative, shall issue in duplicate within five days to the person making proper application a permit to drill or sink such well or test hole in accordance with the terms of the application.

The applicant, upon receipt of the permit, shall EXHIBIT THE PERMIT IN A CONSPICUOUS PLACE AT ALL TIMES at the location of the well.

PROVIDED, however, that NO PERMIT SHALL BE ISSUED TO ANY APPLICANT WHO IS IN VIOLATION OF, or WHO IS NOT COMPLYING WITH the provisions of the Oil and Gas Conservation Laws or with the rules and regulations issued by the Supervisor of Wells of the Department of Conservation, of the State Fire Marshall, and Commissioner of the Department of Insurance.

(14) Every person who has received a written permit for drilling a well or test hole, shall, before actual drilling is begun, file a surety bond by some company authorized to do business in this State in an amount not less than one thousand dollars, or such owner, operator, or driller may file a blanket surety bond of not less than two thousand five hundred dollars or in such amount as the Supervisor of Wells may deem necessary to insure that any and all wells drilled by such person shall be cased, sealed, and/or operated or plugged in accordance with the provisions of this act and/or with the rules and regulations issued by the Supervisor of Wells. Said bond shall cover a period of at least one year from date of issue. It shall be renewed if necessary in order to remain in force and effect until the well shall be properly plugged and abandoned.

(15) No person shall commence the drilling of any well or test hole until he shall have first provided two properly prepared slush pits, into one of which he must deposit sand pumpings and other materials extracted from the well during the process of drilling, and into the other such material as clay or soft shale as shall be suitable for making mud-laden fluid, sand pumpings and such materials shall not be allowed to run over the surface of the land.

(16) Every person who shall drill, or cause to be drilled, a well or test hole penetrating bed rock shall case and seal off each oil, gas, brine, or water stratum or formation to effectually prevent migration of oil, gas, brine, or water to other strata. Such casing or sealing off shall be effected and tested in such manner and by such methods and means as may be prescribed or approved by the Supervisor of Wells or his authorized representative.

It shall be specifically understood in drilling any well or test hole where valuable brines are encountered that are being or are capable of being commercially developed that particular care shall be used in sealing off such brines so that no infiltration or contamination from any source shall occur. The method of sealing off such valuable brines shall be prescribed or approved by the Supervisor of Wells or his authorized representative.

(17) Every operator, contractor, and/or their agents and employees shall take every possible precaution to prevent accidents or fires.

(18) Every owner, operator, or well contractor shall:

(a) While the well or test hole is being drilled KEEP AND PRESERVE at the well being drilled or sunk, AN ACCURATE LOG or record of such well, and shall PROTECT SUCH RECORD FROM DAMAGE OR DESTRUCTION by fire, oil, water, or any other agency, whereby such record may be lost or become illegible.

(b) WITHIN 30 DAYS AFTER THE FIRST COMPLETION of the well or test hole or after completion of any further operations on it, FILE A COMPLETE LOG OR RECORD OF THE SAME DULY SIGNED AND SWORN TO by the owner or operator, with the Supervisor of Wells on forms prescribed by him.

(c) WITHIN 30 DAYS AFTER THE FINAL ABANDONMENT of any well, FILE A COMPLETE RECORD OF THE ABANDONMENT WORK DULY SIGNED AND SWORN TO by the owner or operator with the Supervisor of Wells of forms prescribed by him. The plugging record is to be in addition to the well log or record required in part "b" of Section 18 of these regulations.

(d) UPON REQUEST of the Supervisor of Wells or his authorized representative TAKE AND PRESERVE ADEQUATE SAMPLES of the core cuttings or churnings, or liquids removed from such well or test hole. Containers will be provided by the Supervisor of Wells or his representative for forwarding them promptly to the Geological Survey Division of the Department of Conservation at Lansing.

(e) KEEP AT THE WELL OR AT HIS HEADQUARTERS IN OR ADJACENT TO THE FIELD available for the inspection of the Supervisor of Wells or his representative ACCURATE RECORDS of the drilling, redrilling, deepening, shooting, plugging, or abandoning of all wells and of all alterations to casing; these records to show all formations penetrated; the content of oil, gas, or water, and the character of each, in each formation; the kinds, weights, landed depths, and sizes of casings used in drilling the wells.

(19) If the owner or operator of any such well or test hole shall desire to deepen such well or test hole, in addition to the depth stated in the permit, he shall notify the Supervisor of Wells, or his authorized representative in writing, identifying the well, giving the depth to which it is proposed to deepen the well or test hole, setting forth in detail the plan and/or method, and means to be used in sealing off any oil, gas, water, brine,

or other mineral bearing stratum or formations that have been or are expected to be penetrated in such deepening, also the plan and/or method and means to be used in controlling the well upon completion in the event oil and/or gas is found. Upon receipt of such notice and proposal for deepening the Supervisor of Wells or his representative shall promptly issue a deepening permit:

PROVIDED, however, THAT if in the opinion of the Supervisor of Wells or his authorized representative, the proposed plans and methods and means of effectively and permanently protecting the oil, gas, water, brine, and other mineral bearing strata or formations or of effectively controlling the well in case oil and/or gas is struck, are not adequate and satisfactory, the Supervisor of Wells may refuse to issue such permit for deepening the well, until adequate and satisfactory plans and methods and/or means are submitted by the applicant for a deepening permit. Actual deepening of any well or test hole shall not be started until the deepening permit is issued and is prominently displayed at the well.

(20) NO OWNER OR OPERATOR SHALL PLUG OR ABANDON ANY WELL WITHOUT FIRST NOTIFYING the Supervisor of Wells or his authorized representatives on forms prescribed by him of his intention of and plans and reasons for doing the work and receiving written approval, and in order to effectually confine all oil, gas, or water to its own station shall before removing any casing securely fill the well or test hole with properly prepared mud-laden fluid weighing eleven pounds to the gallon to the bottom of the casing to be removed; after removal of the string of casing, an iron ball of proper diameter shall be placed on the offset so exposed. This procedure shall be repeated for each string of casing removed and upon removal of the last string, the hole shall be filled to the surface with the mud-laden fluid. The filling of the hole with mud-laden fluid shall be effected in such manner and by such means as the Supervisor of Wells or his authorized representative shall prescribe or approve.

PROVIDED, That the hole may be filled to a fresh water level and not to the surface with the mud-laden fluid in case the same is desired to be used as a fresh water well.

PROVIDED, FURTHER, That the Supervisor of Wells MAY PRESCRIBE OR APPROVE IN WRITING, SOME OTHER EQUALLY EFFECTIVE PLUGGING PROCEDURE WHEN conditions make the use of mud-laden fluid or iron balls more difficult or impracticable.

(21) No person shall drill any oil or gas well or test hole WITHIN TWO HUNDRED FEET FROM THE OUTER BOUNDARIES OF ANY PROPERTY, except where the dimensions of the property prevent such spacing or the property is subject to drainage by an adjacent well. Such determination shall be made by the Supervisor of Wells.

(22) NO PERSON SHALL USE GAS TORCHES OR FLAMELAW LIGHTS FOR illuminating purposes, unless he shall have first received written permission of the Supervisor of Wells or his authorized representatives.

(23) NO PERSON SHALL DRILL THROUGH any formation known to contain oil or gas in commercial quantities until the innermost string of casing shall have been equipped with A HIGH PRESSURE MASTER GATE VALVE or a CONTROL HEAD and an OIL SAVER. (The Master Gate Valve or Control Head should not be less than 2,000 pound test) NO CAST IRON STOP COCKS are to be used on the CONTROL HEAD or FLOW LINES unless they first have been approved by the Supervisor of Wells or his authorized representatives. The use of GATE VALVES of not less than 1,000 pounds test is recommended in place of CAST IRON STOP COCKS.

(24) The depth to all CASING POINTS and to the TOP OF ALL OIL AND GAS BEARING FORMATIONS shall be determined by the use of a STEEL MEASURING LINE.

(25) The Supervisor of Wells or his authorized representative must be notified in advance in order that he may WITNESS A CASING AND MASTER SHUTOFF TEST.

(26) PROPER PRECAUTIONS must be taken TO PREVENT oil, gas, or waste products from POLLUTING water supplies, streams, lakes, or do damage to adjoining property.

(27) No person shall use natural gas in its natural state in engines, pumps, or for the blowing of wells, where its pressure is the main or direct operating force unless the exhaust or discharge gas is properly conserved.

(28) NO PERSON SHALL INSTALL OR USE VACUUM PUMPS or other devices for the purpose of putting a vacuum on any gas or oil-bearing stratum, except:--

(a) In the case of CASING-HEAD GAS where the same is utilized, vacuum may be used, but not more than sufficient to gather the casing-head gas into the lines and deliver at the plant.

(b) IN THE FIELDS WHICH ARE DEPLETED OR PRACTICALLY DEPLETED. No vacuum pump shall be installed under this subdivision without first notifying adjacent lease owners and operators and then securing from the Supervisor of Wells written permission to make such installation.

(29) The Supervisor of Wells or his authorized REPRESENTATIVES SHALL HAVE ACCESS TO ALL WELLS AND WELL RECORDS, and all owners, operators, well contractors, and drillers, shall permit the SUPERVISOR of WELLS or his authorized representative to come upon any lease or property operated or controlled by them and to inspect any and all wells, and the record of said wells. All records, logs, samples, and other information and material furnished to the Supervisor of Wells shall be considered confidential for a period of ninety days after completion of the well or test hole, and shall not be open to public inspection during such period.

General Requirements

(30) Every well or test hole penetrating oil, gas, or water bearing strata which has been abandoned and which has not been plugged in accordance with the provisions of this act, shall be forthwith plugged by the owner or operator thereof in the presence of and under the supervision of the Supervisor of Wells or his duly authorized representative, in accordance with the provisions of this act. In case such well or test hole shall not have been properly plugged within thirty days after this act shall have become effective, the Supervisor of Wells shall thereupon ascertain the name and address of the owner or operator thereof, and shall proceed to give personal notice or notice by registered mail of such fact to such owner or operator thereof, after which time such owner or operator shall forthwith take all steps necessary to comply with the provisions of this act and shall thereafter be liable to the penalties herein provided. Hereafter such well or test hole shall be deemed to have been abandoned for the purposes of this act when the same shall have been left with intent on the part of the owner or operator thereof not to renew operations thereat, or, when and after the Supervisor of Wells shall find that such well or test hole is in fact not being operated or worked and shall give written notice thereof to such owner or operator, which notice, shall have been served personally or by registered mail sent to the last known mail address of such owner or operator of such well or test hole:

PROVIDED, however, That in the event the owner or operator does not desire to either plug or operate the well immediately he shall by adequate test, in the presence of the Supervisor of Wells or his authorized representative, give satisfactory proof that the well is in such condition and that by being allowed to continue to remain in its present condition, no damage will be done to any oil, gas, fresh water, brine, or mineral bearing formation which has been penetrated:

PROVIDED FURTHER, That if the tests show the casing to be leaking, water standing in the hole, or any other condition which is causing or might cause damage to the oil, gas, fresh water, brine, or mineral bearing formations, the owner or operator of the well shall immediately do such work as will correct the conditions found.

(31) When any owner or operator of any oil or gas well or test hole which has not been properly cased, plugged, or repaired, cannot be found, the Supervisor of Wells, after having attempted to give notice, in writing, as provided in section 10 of this act, to the owner or operator of such well or test hole, may enter upon the property and case, plug, or repair the well or

or test hole and the cost of such casing, plugging, or repairing shall thereupon be determined by the Supervisor of Wells. Upon demand and refusal to pay by the owner or operator of the well or test hole or in the case the owner or operator of the well or test hole cannot be located, the Supervisor of Wells, in addition to any remedies provided in law, may forthwith, without bond, attach any property of such owner or operator of the well or test hole, in any court of competent jurisdiction.

(32) The PROVISIONS of Act No. 15, Public Acts of 1929, and Act No. 185, Public Acts of 1931, SHALL NOT APPLY TO DRILL HOLES put down for

- (a) EXPLORATION AND EXTRACTION OF IRON OR COPPER in the iron or copper bearing districts, nor to
- (b) FRESH WATER WELLS, to
- (c) DRILL, TEST, and BLAST HOLES IN MINES AND QUARRIES,
- (d) nor to COAL TEST HOLES, NOT EXCEEDING THREE inches in diameter, nor to
- (e) TEST HOLES NOT EXCEEDING FOUR INCHES IN DIAMETER after penetrating bedrock,
- (f) or any OTHER CORE OR TEST HOLE for geological purposes, EXCEPT when any of THESE WELLS or test holes PENETRATE SALT AND MINERAL WATER BEARING FORMATIONS, the owner or operator SHALL PLUG such wells or test holes when completed or abandoned in such manner or by such methods as the Supervisor of Wells may prescribe or approve to effectually prevent migration of the brine or mineral water into the oil, gas, and fresh water bearing formations or to the surface.

(33) The OWNER OR OPERATOR of a well or test hole or his authorized representative and every well contractor or driller SHALL CONFORM to the provisions of the OIL AND GAS CONSERVATION LAWS and to ALL REASONABLE RULES AND REGULATIONS which the Supervisor of Wells may find necessary to issue from time to time to protect and conserve the oil and gas, the fresh, brine, and mineral waters, and other mineral resources from unnecessary waste, danger, damage, or destruction, or to protect life or property, and while drilling, sinking, redrilling, repairing, completing, or operating a well or test hole shall take every reasonable precaution and method and means to prevent fires, explosions, or accidents.

(34) An OIL AND GAS APPEAL BOARD IS CREATED, consisting of the Governor, Secretary of State, and the Attorney General (Section 15, Act No. 15, Public Acts of 1929) and any person, firm, or corporation considering it or himself aggrieved by an order, rule, regulation, or requirement made by the Supervisor of Wells or his authorized representative, may, within twenty-four hours after the attempted enforcement thereof, serve written notice by person, mail, or telephone, under the Supervisor of Wells, that he or it appeals from the order, rule, regulation, or requirement to the Oil and Gas Appeal Board.

The Supervisor of Wells shall forthwith set a day for hearing not later than five days after the receipt of the notice of appeal and shall notify the Board and the appealing party of such date, together with the time and place of hearing. At the hearing the appealing party and the Supervisor of Wells and their witnesses shall be heard, and any other person who may be affected by the decision of the Board may be allowed to intervene. The decision of the Board shall be final and not subject to appeal.

DURING THE PENDENCY OF THE APPEAL, the APPEALING PARTY SHALL OBEY THE order, rule, regulation, or requirement, the validity of which is being questioned by the appeal.

(35) SERVICE OF ANY NOTICE, order, rule, regulation, or requirement, under Act No. 15, Public Acts of 1929, and Act No. 185, Public Acts of 1931, may in the case of a corporation or association be made upon any officer thereof or upon any person in the employ of the corporation or association who may be found at any office or place of business maintained by the corporation or association. In event of the failure to immediately obtain service upon any corporation or association, or upon any individual or partnership, service may be made upon any employee or upon any contractor employed by the individual, partnership, corporation, or association, or upon any employee of the contractor who may be found at the well, and service made as above provided shall be deemed service upon the owner or operator of such well or test hole. SERVICE MAY BE MADE by the Supervisor of Wells, any of his authorized representatives, members of the Michigan State Police, any constable, sheriff, under-sheriff, or deputy-sheriff.

Penalties

Any person, firm, association, or corporation who ABANDONS ANY WELL or test hole WITHOUT PLUGGING the well or test hole in accordance with the provisions of Act No. 15, Public Acts of 1929, and Act No. 185, Public Acts of 1931, shall be guilty of a MISDEMEANOR and shall be punished by a FINE OF ONE HUNDRED DOLLARS OR BY IMPRISONMENT in the county jail for a period of NOT MORE THAN NINETY DAYS or BOTH FINE AND IMPRISONMENT IN THE DISCRETION OF THE COURT.

ANY PERSON FAILING OR NEGLECTING TO COMPLY with or follow any of the provisions of Act No. 15, Public Acts of 1929, and Act No. 185, Public Acts of 1931, or the rules and regulations issued under the said Acts, shall be deemed guilty of a MISDEMEANOR and shall, upon conviction thereof, be liable to pay a fine of NOT MORE THAN ONE HUNDRED DOLLARS, NOR LESS THAN FIFTY DOLLARS, or to IMPRISONMENT FOR NOT MORE THAN NINETY DAYS in the county jail, or to BOTH SUCH FINE AND IMPRISONMENT IN THE DISCRETION OF THE COURT.

Where the OFFENSE IS CONTINUING such failure as to properly plug an abandoned well or test hole, EACH DAY of such failure to comply with or follow any of the provisions of said Act continues, MAY BE CONSIDERED A SEPARATE OFFENSE AND SHALL BE PUNISHABLE AS SUCH.

These regulations are subject to change or alterations at the discretion of the Supervisor of Wells.

(Signed)

Director of the Department
of Conservation and Super-
visor of Wells

Dated: September 10, 1931

BOND FOR CONFORMANCE WITH LAWS, RULES AND
REGULATIONS GOVERNING OIL AND GAS OPERATIONS IN THE
STATE OF MICHIGAN

Know All Men By These Presents, that we, _____
of _____, in the State of _____
as principals, and _____ a corporation
organized and existing under the laws of the State of _____
and duly authorized to transact business in the State of Michigan, as
Surety, are held and firmly bound unto the State of Michigan and the
Supervisor of Wells of the State of Michigan in the sum of _____
Dollars (\$ _____) lawful money of the United States,
for the faithful payment of which, well and truly to be made, we bind
ourselves, our heirs, executors, administrators, successors and assigns,
jointly and severally, firmly by these presents.

(Note: Strike out paragraph below that does not apply)

Whereas, the above bounden principal is about to commence and
prosecute the drilling of a well to prospect for oil, gas or brine
under State of Michigan Permit No. _____ to be known as the _____
Well No. _____ on the following described
land: _____

Or Whereas, the above bounden principal is carrying on operations
for the developing and producing of oil, gas or brine in the State of
Michigan.

Now, Therefore, the condition of this obligation is such that
if the above bounden principal shall, during the term of this bond, and
renewal or renewals, comply with the laws of the State of Michigan and
the rules and regulations prescribed by the Supervisor of Wells of the
State of Michigan in the drilling of wells up to and including the
final plugging and abandonment of the well or wells, the above obliga-
tions are void and of no effect; otherwise, it shall remain in force
and effect.

The term of this bond shall be one year from date hereof, and
shall be renewed if necessary in order to remain in force and effect
until the well or wells shall be properly plugged and abandoned.

In Witness Whereof, the Principal and Surety have hereunto set
their hands and seals this _____ day of _____ 19____

Witnesses.

Principal.

By _____

Attest: _____

Power-of-Attorney or evidence of authority of person executing on
behalf of Surety must be attached.

A P P E N D I X B

COPIES OF UTILITY RATE SCHEDULES

1. The Big Rapids Gas Company
2. The Muskegon Gas Company
3. The Grand Rapids Gas Light Company
4. Consumers Power Company
 - a. Lansing and Alma Divisions
 - b. Saginaw, Bay City and Essexville
 - c. Saginaw and Bay City Divisions
outside the corporate limits of
the cities of Saginaw, Bay City
and Essexville.

M. P. U. C. No., 1

City of BIG RAPIDS

BIG RAPIDS GAS CO.

**SCHEDULE OF RATES, ETC., GOVERNING THE SALE
OF NATURAL GAS, APPLYING TO THE
FOLLOWING TERRITORY**

CITY OF BIG RAPIDS, MICHIGAN



**ISSUED JANUARY 1st, 1934
EFFECTIVE JANUARY 1st, 1934**

Issued by W. C. TAGGART, Treas.

BIG RAPIDS, MICHIGAN

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M. P. U. C. No. 1

Original Sheet No. 1

RULES AND REGULATIONS.**SERVICE AND LIMITATIONS.**

1. **Existing Lines.**—Service will be rendered to the consumer from the Company's nearest pipe line, of sufficient capacity to furnish adequate service and the consumer shall accept the service thus available for his use.
2. **Extensions.**—The Company shall supply gas at the rates which shall from time to time be in force hereunder, to all applicants for gas not in arrears for prior bills owning or occupying premises on streets where gas mains or conductors are laid. When extensions of mains shall be necessary in order to serve any such applicant or applicants, the Company shall make such extensions free of charge to the applicant or applicants if the estimated annual revenue from such applicant or applicants shall be equal to one-half of the estimated cost of such extension; but when the estimated cost of such extension shall be in excess of twice the estimated annual revenue from such applicant or applicants, he or they may be required to make a deposit equal to the difference between the estimated cost of such extension and twice such estimated annual revenue. After the actual revenue derived from such extension for which a deposit so made shall have equalled the actual construction cost of such extension the full amount of all monthly bills to the depositor or depositors shall be refunded to him or them until the entire deposit shall have been so refunded; Provided, the amount of such refund so earned shall, within four years from the date of the installation of the extension, equal the amount of such deposit, any portion of such deposit remaining after four years from the date of such installation to become and be the property of the Company. The cost of such extension shall include all cost of installing the same to the curb line. No deposit shall in any way effect the title of the Company to such extension. The Company shall not be required to install any service or connection upon any premises without the written consent of the owner thereof.
3. **Service Pipes.**—Service Pipes from the curb to the meter will be laid by the Company at the expense of the property owner and will at all times remain subject to the control of the Company. Any alterations made necessary, such as changing of location, or enlargement of service, must be done at the consumer's expense. The Company does not in any case hold itself responsible for a stoppage from frost or other cause, of the service pipes or house pipes. The Company will employ all reasonable means of clearing the pipes to the meter, when stopped from any cause. All pipes beyond or leading from the meter must be cleared at the consumer's expense.

APPARATUS—EASEMENTS.

4. **Consumer's Pipes.**—All pipes and equipment except the Company's meters and accessories in the consumer's side at the point of delivery, necessary to utilize service furnished by the Company, must be installed and maintained by and at the expense of the consumer. The Consumer's pipes shall terminate at the point of delivery, in a manner satisfactory to the Company, for connection with the Company's pipes or apparatus.
5. **Company Property.**—All pipes, apparatus, instruments, meters and materials supplied by the Company shall remain its property, and shall be returned to it by the consumer in the same condition as when received by the consumer except for ordinary wear and depreciation, and the Company may at any time examine, change or repair its property on the premises of the consumer and may remove all such property at, or any time thereafter, the termination of service. All damages or injuries to pipes, apparatus, or materials of the Company on the consumers' premises, caused by any act or neglect by the consumer, shall be made good by the consumer.
6. **Inspection by Company.**—The Company is willing to assist the consumer by advise as to the installation of the consumer's apparatus and to examine the consumer's installation and may refuse to make connection or to commence or continue service whenever such installation is not in proper condition, but no inspection by the Company nor any failure by it, to object to the consumer's installation, nor the fact that it shall make connections with the consumer's installation, shall render the Company in any way liable for any damage or injury resulting from any defective installation of the consumer.
7. **Right of Way.**—The consumer shall make or procure satisfactory conveyance to the Company of right of way for the Company's pipes and apparatus across and upon the property owned and controlled by the consumer, necessary or incidental to the furnishing of service, and shall also furnish shelter satisfactory to the Company for meters or other apparatus of the Company, installed on the consumer's side of the point of delivery, and shall permit access thereto by the Company's employees at all reasonable hours.

M. P. U. C. No. 1

Original Sheet No. 2

RULES AND REGULATIONS.—(Continued)**METERS.**

8. **Installation.**—The Company will install and maintain at its own expense standard meters to measure the gas used by the consumer, and will inspect such meters from time to time.
9. **Notice to Discontinue.**—Notice to discontinue the supply of gas must be given in writing or in person at the office of the Company at least 24 hours in advance. The consumer will be held responsible for all gas consumed until such notice is given and a reasonable time allowed to take the final reading of the meter. Notice of discontinuance of service should not be given to employees of the Company away from the office, as such notice will not be accepted as a binding and formal notification to the Company.
10. When the gas meter has been removed for non-payment of a gas bill, a re-set charge of \$1.00 will be made.

TESTS AND ADJUSTMENTS.

11. The Company at any time upon written request of the consumer will test the meter of such consumer within five days after receipt of such request, provided the consumer will accept the result of such test as a basis for the settlement of the consumer's account; if any such test shall show the average error of the meter to be less than 2 per cent the consumer shall pay the expenses of the test except that where the meter has not been tested at the request of the consumer within a three-years' period immediately preceding such request, the test will be made without charge to the consumer. The Company may at any time at its own expense test any of its meters. An average error of more than 2 per cent will be considered in determining the consumer's use of gas service, during the period covered by the special rule governing the particular class of service, the Company refunding where the meter is fast, and the consumer paying the difference when the meter is slow. The place for setting the meter will be determined by the Company.
12. **Failure to Register.**—If the Company's meter shall fail to register at any time the gas delivered, or consumed, during such failure, in the absence of a more accurate basis, may be determined on the basis of the nearest corresponding equal period of use, when there was no such failure, subject to corresponding credit to the consumer for non-use during such failure. If any appliance or piping connection shall be found on the consumers' premises which prevent the meters from accurately recording the total amount of gas on the premises, the Company may at once remove any such piping or appliances at the consumer's expense, and may estimate the amount of gas so consumed and not registered, as accurately as possible, and the consumer will immediately pay for such gas. The Company shall at all proper times have the right of access to the premises into which gas has been introduced, for the purpose of examining the general service or the removal or inspection of the meter or for such other purpose as may be necessary for the protection of the Company. In case of any wilful, intentional or unnecessary injury to, or interference with, the meter or any connection, made to the house pipes or service, the meter at the option of the Company, may be removed and the service pipe cut off.

BILLS—PAYMENTS—NON-PAYMENTS—SECURITIES.

13. **Bills Are Due** on the date of bill and will normally be rendered at monthly intervals, for all gas furnished during the preceding month, but the Company may at its option render bills at more frequent intervals. The amount of gas passing through the meter as shown by the register on the index will be accepted by the consumer as the correct amount, except as heretofore provided for, under rule No. 11, Tests and Adjustments, and rule No. 12, Failure to Register, and Rule 14, Estimated Bills.
14. **Estimated Bills.**—Where it is impracticable for the Company to obtain a reading of any consumer's meter during the regular period the Company will estimate a reading based on an average of previous bills for a corresponding equal period of use. In case of no previous use of gas the Company will estimate a bill on the basis of like service. Any discrepancy in estimating a gas bill will be corrected when actual reading is obtained.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is essential for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and procedures used to collect and analyze data. It describes how this information is used to identify trends, assess performance, and make informed decisions.

3. The third part of the document focuses on the implementation of these procedures and the role of different departments in ensuring their successful execution. It highlights the need for clear communication and coordination between all stakeholders.

4. The fourth part of the document discusses the challenges faced in the process of data collection and analysis, and offers strategies to overcome these obstacles. It stresses the importance of continuous improvement and adaptation to changing circumstances.

5. The fifth part of the document provides a summary of the key findings and conclusions drawn from the analysis. It reiterates the importance of maintaining accurate records and the need for ongoing monitoring and evaluation.

6. The sixth part of the document offers recommendations for future actions and improvements. It suggests ways to enhance the efficiency of the data collection process and to better utilize the information gathered.

7. The seventh part of the document discusses the broader implications of the findings and the potential impact on the organization's long-term success. It emphasizes the need for a commitment to transparency and accountability at all levels.

8. The eighth part of the document provides a final summary and concludes the report. It expresses confidence in the findings and the potential for positive change through the implementation of the recommended actions.

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M. P. U. C. No. 1

Original Sheet No. 3

RULES AND REGULATIONS.—(Continued)**RULES AND REGULATIONS—(Continued)**

15. **Prompt Payment Net Rates** are allowed on monthly bills, only when bill is paid in full at the Company's office within fifteen days from date of bill, and when no previous bill remains unpaid. Failure to receive bills will not excuse failure to pay, so as to entitle the consumer to net rate. When the last date for net rate falls on a legal holiday, or Sunday, net rate will be allowed on the next business day. Where remittances are made by mail, the bills shall be deemed paid under date of mailing, as shown by post mark.
16. **Failure to receive** the gas bill does not entitle the consumer to net rate.
17. **Checks mailed** in payment of the gas bill must bear post-mark of not later than the last day of net rate as noted on the gas bill to entitle consumer to net rate.
18. **Delinquent Bills—Interest.**—Bills not paid in the net rate period are delinquent, and thereafter shall bear interest at 6 per cent per annum.
19. **Deposits.**—The Company may require a deposit from the consumer to secure payment of bills as they mature; such required deposit shall not exceed the amount of an estimated 90 days' bill, with a minimum of \$3.00. No interest will be paid upon deposits where service is discontinued within six months from the beginning of service. Upon final settlement of consumer's accounts any unused balance of the deposit with accrued interest, if any, will be returned to the consumer. In computing interest no consideration will be given to fractional parts of months and dollars.
20. **Application of Deposit.**—If the consumer shall fail to pay any bill within the net rate period the Company may upon notice discontinue service and apply any deposit made by the consumer in liquidation of such bill.

MISCELLANEOUS.

21. **Company's Obligations.**—The Company shall use reasonable diligence to provide continual service, and having used reasonable diligence shall not be liable to the consumer for failure or interruption of service.
22. **Strikes, Accidents, Etc.**—Neither the Company nor the consumer shall be liable to the other for any act or omission caused directly or indirectly by strikes, labor troubles, accident, litigation, Federal, State or Municipal interference, or other causes not due to neglect, but the cause producing such act or omission shall be removed with all reasonable diligence.
23. **Indemnity to Company.**—The consumer will indemnify, save harmless, and defend the Company against all claims, demands, cost or expense for loss, damage, or injury to persons or property in any manner directly or indirectly connected with or growing out of the serving or use of gas service by the consumer, at or on the consumer's side of the point of delivery.
24. **Company's Remedies.**—The Company in addition to all other legal remedies may terminate or suspend delivery of service for any default or breach of contract in use of gas by the consumer. No such termination or suspension will be made by the Company without forty-eight hours' written notice to the consumer, stating in what particular the contract has been violated, except in cases of theft of gas by the consumer, or dangerous leakage, on the consumer's side of point of delivery, or in case of utilization by the consumer of service in such a manner as to cause danger to persons or property. Failure of the Company at any time to suspend or terminate delivery of service or to resort to any legal remedy or its adoption of either one or the other of such alternatives shall not affect the Company's right to resort to any of such remedies for the same or any future default or breach by the consumer.

BIG RAPIDS GAS CO.

CITY OF BIG RAPIDS

M. P. U. C. No. 1

Original Sheet No. 4

RULES AND REGULATIONS.—(Continued)**25. Applications for Gas Service are to be in the following form:****APPLICATION FOR METER AND GAS.**

No.

.....193.....

THE BIG RAPIDS GAS CO. is hereby requested to supply gas to the undersigned, to be used for illuminating or fuel purposes, or both, and to furnish the meters that are now or may hereafter be required, in the premises known as

STREET—FLOOR.....

NO. AVE.—ROOM..... FLAT NO.

owned by one of the undersigned, and occupied by one of the undersigned, and the undersigned hereby agrees to pay for all gas used promptly, at the regular price and according to the rules of the company; also to hold the undersigned responsible for all gas used on said premises, from the date hereof until forty-eight hours after notice has been duly given at the office of the Company to discontinue the supply under the terms of the aforesaid rules and regulations.

We further agree to all of the rules and regulations of the Company as set forth in its schedule of rates, etc., governing the sale of gas in the City of Big Rapids, which schedule is duly filed with the Michigan Public Utilities Commission and a copy of which may be inspected at the Company's office.

.....
WITNESS.....
PROPERTY OWNER.....
WITNESS.....
CONSUMER**DEFINITIONS—EXPLANATIONS—REMARKS**

1. **Gas Service.**—Is the furnishing of natural gas at a standard pressure and quality for illuminating, fuel, and power purposes.
2. **Point of Delivery.**—Is the outlet of the Company's meter installed for the consumer.
3. **Service Pipes.**—Is that portion of the piping from the Company's main in the street to the point of delivery.
4. **Consumer's Pipes.**—Is that portion of the piping from the point of delivery on the consumer's side to the consumer's appliances.
5. **Quality and Pressure of Gas** is governed by franchise granted to the Company by the City of Big Rapids, October 6th, 1932.
6. **Franchises.**—All Rates are governed by franchise granted to the Company by the City of Big Rapids, October 6th, 1932.

M. P. U. C. No. 1

Original Sheet No. 5

GENERAL GAS RATE

Character of Service

Who May Take the Service:

Any person who complies with the rules and regulations hereinbefore set forth.

Hours of Service:

Twenty-four hours.

Rate:**Rate for Natural Gas Service:**

First 300 cubic feet, 75c net.

Next 1,700 cubic feet at \$1.90 per M cubic feet net

Next 28,000 cubic feet at 40c per M cubic feet net.

All over 30,000 cubic feet 25c per M cubic feet net.

Minimum bill 75c net.

Sales Tax to be added to all gas bills.

Net rate applies to bills paid on or before last discount day.

Bill not paid on or before last discount date will be subject to a delayed payment charge of 10%.

Minimum Charge:

Seventy-five cents net per month for meter regardless of whether or not the consumer makes use of the service during the month.

Contract Form:

Rates are not subject to contract by consumers.

Reference to Rules:

Service governed by Rules and Regulations set forth at Sheets 1, 2 3 and 4 hereof.

(Rates governed by franchise granted the Company by the City of Big Rapids on October 6th, 1932)

Muskegon Gas Company

GENERAL GAS RATE

Who May Take the Service:

Any gas customer

RATES

First	300 cu.ft. or less per month	\$0.75
Next	1700 " per month	\$.145 Per 100 cu.ft.
Next	3000 " " "	.13 " " "
Next	5000 " " "	.12 " " "
Next	10000 " " "	.11 " " "
Next	30000 " " "	.10 " " "
All over	50000 " " "	.075 " " "

or customer may at his option take service under Industrial Rate.

Minimum Charge: \$.75 net or \$1.00 gross per meter per month.

GENERAL HEATING RATE

Who May Take the Service:

Any customer using gas for any purpose provided gas is used as the principal fuel for building heating.

RATE

First 2000 cu. ft. or less per month	\$3.22
All over 2000 cu. ft. per month	\$0.05 Per 100 cu. ft.

Minimum Charge: \$3.22 net or \$3.47 gross per meter per month.

OPTIONAL HEATING RATE

Who May Take the Service:

Any customer using gas for building heating only, who will contract to use or pay for a minimum of 100,000 cu. ft. per month during eight months of the heating season.

RATE:

All gas used per month, \$.035 per 100 cu. ft.

Minimum Charge: \$35.00 net or \$40.00 gross per meter per month, for eight months.

Contract: One year on standard form.

Muskegon Gas Company

INDUSTRIAL GAS RATE

Who May Take the Service:

Any gas customer.

RATE

First 50,000 cu. ft. per month at General Gas Rate	
Next 50,000 cu. ft. " " \$.05 Per 100 cu. ft.	
Next 100,000 cu. ft. " " .04 " " "	
All over 200,000 cu. ft. " " .035 " " "	

Minimum charge: \$50.00 net per meter per month.

Contract: One year on standard form.

Discounts: Above rates are net and apply if monthly bill is paid within ten days of rendition. Otherwise the following applies to the General Gas Rate and to the General Heating Rate: After such period \$.01 per 100 cu.ft. will be added, provided that amount added shall be not less than \$.25 nor more than \$5.00 per bill.

GRAND RAPIDS GAS LIGHT COMPANY

RATE SCHEDULES

SERVICE: Natural Gas--1,050 B.t.u.

These rates apply to the Cities of Grand Rapids, East Grand Rapids, Grandville and Fockford, Village of Sparta, and Townships of Alpine, Byron, Gaines, Grand Rapids, Paris, Plainfield, Sparta, Walker and Wyoming, all in Kent County.

General Service

RATE --- Per meter per month:

First	300 cubic feet or less	.....\$ .75
Next	1,700 cubic feet	.....14.5 c per 100 cubic feet
Next	3,000 cubic feet	.....10.0 c per 100 cubic feet
Next	45,000 cubic feet	..... 8.5 c per 100 cubic feet
All additional		..... 7.5 c per 100 cubic feet

Payment: Above rates are net. If bill is not paid on or before last discount day, 1c per 100 cubic feet will be added; provided, however, that the amount to be added shall not be less than \$.25 per bill, nor more than \$5.00 per bill. Monthly minimum bill---\$1.00 gross; \$.75 net per meter.

Optional Domestic; General Space Heating;
Volume Water Heating; Power

RATE --- Per meter per month:

First	300 cubic feet or less	.....\$.75
Next	1,700 cubic feet	.....14.5 c per 100 cubic feet
All additional		..... 5.0 c per 100 cubic feet

Payment: Same as for General Service

Industrial Service

Rate "A"

Available to any customer agreeing to use not less than 200,000 cu.ft. per month.

RATE --- Per meter per month:

First	200,000 cubic feet or less	.....\$145.00
Next	600,000 cubic feet	5.5 c per 100 cubic feet
Next	500,000 cubic feet	5.0 c per 100 cubic feet
All additional		4.5 c per 100 cubic feet

Payment: The above rates are net. If bill is not paid on or before last discount day, a charge of 2 ¢ will be added; provided, however, that such charge shall not be less than \$5.00 per

more than \$50. Minimum Monthly Bill....\$150 gross; \$145
net per meter.
Term of Contract:At least six months.

Industrial Service
Rate "B"

Available to any customer agreeing to use not less than 1,000,000 cu.
ft. per month.

RATE ---Per meter per month:

First 1,000,000 cubic feet or less\$500
Next 1,000,000 cubic feet.....5.0 c per 100 cubic feet
Next 1,000,000 cubic feet4.5 c per 100 cubic feet
All additional4.0 c per 100 cubic feet

Minimum Monthly Bill.....\$510 gross; \$500 net per meter.
Term of Contract-.....At least six months.

Industrial Service
Rate "C"

Available to any customer agreeing to use not less than 2,200,000 cu.
ft. per month.

RATE ---Per meter per month:

First 2,200,000 cubic feet or less\$1,000
Next 1,000,000 cubic feet4.0 c per 100 cubic feet
Next 1,000,000 cubic feet3.5 c per 100 cubic feet
All additional3.0 c per 100 cubic feet

Minimum Monthly Bill.....\$1,020 gross; \$1,000 net per meter.
Term of Contract-.....At least six months.

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 5

Natural Gas

DOMESTIC RATES

Who May Take the Service:

Any domestic gas customer including gas used for all purposes,
and commercial customers for space heating only.

Rates:

Immediate Rate:

\$.75 per month, net - first 300 cu. ft. or less
1.25 net or \$1.35 gross per M cu. ft. - next 1,700 cu. ft. per month,
1.00 net or 1.10 gross per M cu. ft. - next 3,000 cu. ft. per month,
.85 net or .95 gross per M cu. ft. - over 5,000 cu. ft. per month.

Objective Rate:

\$.75 per month, net - first 300 cu. ft. or less
1.00 net or \$1.10 gross per M cu. ft. - next 1,200 cu. ft. per month,
.75 net or .85 gross per M cu. ft. - next 3,500 cu. ft. per month,
.50 net or .55 gross per M cu. ft. - over 5,000 cu. ft. per month.

Procedure in Applying Immediate and Objective Rates:

A base bill will be established for each customer eligible for
service under this rate as follows:

- (a) For existing customers the base bill will be the cubic feet used
for the same month of the year preceding the effective date of
the above Immediate and Objective Rates computed under the
Immediate Rate.
- (b) For new customers and for those customers taken on during the 12
months preceding the effective date of the Objective and
Immediate Rates, the base bills will be their first 12 months'
use of service computed under the Immediate Rate.

Whenever the customer's bill under the Immediate Rate is equal
to or less than his base bill, the Immediate Rate will apply.

Whenever the customer's bill under the Objective Rate is greater
than his base bill, the Objective Rate will apply.

Whenever the customer's bill under the Immediate Rate will be
greater than his base bill, but under the Objective Rate will be less than
his base bill, customer will be billed the amount of the base bill. No
bill under the Objective Rate will be for less than customer's base bill
and no bill under the Immediate Rate will be for an amount greater than
the base bill.

No customer's base bill will be in excess of \$5.00 net.

Discount:

The difference between the net and gross rates above specified.

Minimum Charge:

75 Cents net per month per customer.

Contract:

Standard Application Form. No time limit given.

Rules:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw.
All other territory under jurisdiction of Michigan Public Utilities
Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan

Effective: On all bills issued on
and after April 1, 1936.

Issued under Authority of Order No.
D-2916 of the Michigan Public
Utilities Commission, dated March 5,
1936.

May Take the Servi
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and commercial customer

1928:

Immediate Rate:
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Objective Rate:
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M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 5A

Natural Gas

DOMESTIC GAS RATES

Who May Take the Service:

Any domestic gas customer including gas used for all purposes, and commercial customers for space heating only.

Rates:

Immediate Rate:

\$.75 per month net - first 300 cu. ft. or less,
1.50 net or \$1.60 gross per M cu. ft. - next 1,700 cu. ft. per month,
1.00 net or 1.10 gross per M cu. ft. - next 3,000 cu. ft. per month,
.85 net or .95 gross per M cu. ft. - over 5,000 cu. ft. per month.

Objective Rate:

\$.75 per month net - first 300 cu. ft. or less
1.00 net or \$1.10 gross per M cu. ft. - next 1,200 cu. ft. per month,
.75 net or .85 gross per M cu. ft. - next 3,500 cu. ft. per month,
.50 net or .55 gross per M cu. ft. - over 5,000 cu. ft. per month.

Procedure in Applying Immediate and Objective Rates:

A base bill will be established for each customer eligible for service under this rate as follows:

- (a) For existing customers the base bill will be one-half the cubic feet of manufactured gas used for the same month of the year preceding the effective date of the above Immediate and Objective Rates computed under the Immediate Rate.
- (b) For new customers and for those customers taken on during the 12 months preceding the effective date of the Objective and Immediate Rates, the base bills will be their first 12 months' use of service computed under the Immediate Rate. For those months of the base period during which the customer used manufactured gas, the cubic feet used during such months shall be divided by two in determining the base bill.

Whenever the customer's bill under the Immediate Rate is equal to or less than his base bill, the Immediate Rate will apply.

Whenever the customer's bill under the Objective Rate is greater than his base bill the Objective Rate will apply.

Whenever the customer's bill under the Immediate Rate will be greater than his base bill, but under the Objective Rate will be less than his base bill, customer will be billed the amount of the base bill. No bill under the Objective Rate will be for less than customer's base bill and no bill under the Immediate Rate will be for an amount greater than the base bill.

No customer's base bill will be in excess of \$5.00 net.

Amount: The difference

Rate Charge: 75 Cts. net per

Amount: Standard Appli

Rate: Service govern

Prohibition: Rates under

Special Taxes:
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Dated: March 19, 1

L. I. Earn, Vice-Pres
Jackson, M

Discount:

The difference between the net and gross rates above specified.

Minimum Charge:

75 Cts. net per month per customer.

Contract:

Standard Application Form. No time limit given.

Rules:

Service governed by Company's standard rules and regulations.

Jurisdiction:

Rates under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan.

Effective: On all bills rendered on
and after April 1, 1936.

Issued under Authority of Order No.
D-2916 of the Michigan Public
Utilities Commission, dated March 5,
1936.

CITIES OF

May Take the Service
Any domestic
by commercial custom
he applies within the
by City and Essexville

Rate:
The charge

Gas Charge
500 cu f
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700 cu f
800 cu f
900 cu f
1,000 cu f
Next 2,000 cu f
All over 3,000 cu f

Minimum Charge:
75 Cts. r

Discount:
Customer
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Term and Form of C
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Rules and Regulation
Service

Jurisdiction:
Rates ar

Special Taxes:
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Issued: October 1
D. E. Karn, Vice-P
Jackson.

Original Sheet No. 5-M

DOMESTIC GAS RATE

CITIES OF SAGINAW - BAY CITY - ESSEXVILLE

Who May Take the Service:

Any domestic gas customer using gas for any purpose;
any commercial customer using gas for space heating only. This
rate applies within the corporate limits of the cities of Saginaw,
Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

500 cu ft or less	-	\$.75 net or \$.85 gross
600 cu ft	-	.85 net or .97 gross
700 cu ft	-	.95 net or 1.09 gross
800 cu ft	-	1.05 net or 1.21 gross
900 cu ft	-	1.15 net or 1.33 gross
1,000 cu ft	-	1.25 net or 1.45 gross
Next 2,000 cu ft	-	1.20 net or 1.40 gross per M cu ft
All over 3,000 cu ft	-	.50 net or .70 gross per M cu ft

Minimum Charge:

75 Cts. net or 85 Cts. gross.

Discount:

Customers will be billed at the above net and gross rates, and
the difference between the gross and net amounts will constitute a dis-
count if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract:

Written application. No time limit.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates are governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or
street rentals against the Company, and which levy has been successfully
maintained, the standard of rates shall be increased within the limits
of such municipalities so as to offset such special charges, and thereby
prevent the customers in other localities from being compelled to share
any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered
on and after November 1, 1937.

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

M. P. U. C. No. 4 - Gas

Consumers Power Company
Natural Gas

Original Sheet No. 8

GENERAL COMMERCIAL RATE

Who May Take the Service:

Any commercial or industrial customer not otherwise specifically provided for in these schedules.

RATE:

\$.75 per month, net - first 300 cu. ft. or less
1.25 net or \$1.35 gross per M cu. ft. - next 1,700 cu. ft. per month,
1.00 net or \$1.10 gross per M cu. ft. - next 3,000 cu. ft. per month,
.85 net or .95 gross per M cu. ft. - over 5,000 cu. ft. per month.

Discount:

The difference between the net and gross rates.

Minimum Charge:

Seventy-five (75) cents net per meter per month.

Contract:

Standard Application Form. No time limit.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville, and Saginaw.
All other territory under jurisdiction of Michigan Public Utilities
Commission.

Special Taxes:

In municipalities which levy special taxes, license fees or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936.

Effective: On all bills rendered
on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager,
Jackson, Michigan.

Issued under Authority of Order
No. D-2916 of the Michigan Public
Utilities Commission, dated
March 5, 1936.

M. P. U. Co. No. 4 - Gas

Consumers Power Company
Natural Gas

Original Sheet No. 8A

GENERAL COMMERCIAL RATE**Who May Take the Service:**

Any commercial or industrial customer not otherwise specifically provided for in these schedules.

RATE:

\$.75 per month net - first 300 cu. ft. or less,
1.50 net or \$1.60 gross per M cu.ft. - next 1,700 cu.ft. per month,
1.00 net or 1.10 gross per M cu.ft. - next 3,000 cu.ft. per month,
.85 net or .95 gross per M cu.ft. - over 5,000 cu.ft. per month.

Discount:

The difference between the net and gross rates above specified.

Minimum Charge:

75 cts. net per meter per month.

Contract:

Standard Application Form. No time limit.

Rules:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

Effective: On all bills rendered
on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan.

Issued under Authority of Order
No. D-2916 of the Michigan Public
Utilities Commission, dated
March 5, 1936.

LANSING DIVISION, SAGINAW SUBURBAN

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8B

Natural Gas

INDUSTRIAL GAS RATE "A"

Who May Take the Service:

Any Commercial or Industrial gas customer.

Rate:

\$30.00 net or \$32.50 gross per month--which shall include 20,000 cu. ft. per month.

1.25 net or \$ 1.30 gross per M cu. ft. - next 40,000 cu. ft. per month.

.60 net or .65 gross per M cu. ft. - over 60,000 cu. ft. per month.

Discount:

The difference between the net and gross rate.

Minimum Charge:

No monthly bill shall be less than \$30.00 net per month.

Contract:

At least one year.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw.

All other territory under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

Effective: On all bills rendered on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan

Issued under Authority of Order No. D-2916 of the Michigan Public Utilities Commission, dated March 5, 1936.

May Take the Service
Any Commercial

Rate:

\$100.00 net or \$
cu. ft. per
60 cts. net
ft. per month
55 cts. net
ft. per month
50 cts. net
ft. per month

Amount:

The difference

Minimum Charge:

No monthly

Contract:

At least

Plus:

Service

Jurisdiction:

Rates &
All other territories
Commission.

Special Taxes:

In municipalities
Street rentals and
maintained, the
such municipalities
the customers in
of such local in

Issued: March 1

D. E. Karn, Vice
Jackson

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8C

Natural Gas

INDUSTRIAL GAS RATE "B"

Who May Take the Service:

Any Commercial or Industrial gas customer.

Rate:

\$100.00 net or \$102.00 gross per month--which shall include 100,000 cu. ft. per month.
60 cts. net or 65 cts. gross per M cu. ft. - next 100,000 cu. ft. per month.
55 cts. net or 58 cts. gross per M cu. ft. - next 200,000 cu. ft. per month.
50 cts. net or 52 cts. gross per M cu. ft. - over 400,000 cu. ft. per month.

Discount:

The difference between the net and gross rates.

Minimum Charge:

No monthly bill shall be less than \$100.00 net per month.

Contract:

At least one year.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw. All other territory under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

Effective: On all bills rendered on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan

Issued under Authority of Order No. D-2916 of the Michigan Public Utilities Commission, dated March 5, 1936.

Original Sheet No. 8C-1

INDUSTRIAL GAS RATE "B"

Who May Take the Service:

Any industrial customer within the corporate limits of the cities of Saginaw, Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

\$100.00 net or \$120.00 gross per month - which shall include 100,000 cu ft per month,
60 Cts. net or 80 Cts. gross per M cu ft - next 100,000 cu ft per month,
55 Cts. net or 75 Cts. gross per M cu ft - next 200,000 cu ft per month,
50 Cts. net or 70 Cts. gross per M cu ft - over 400,000 cu ft per month.

Minimum Charge:

No monthly bill shall be less than \$100.00 net or \$120.00 gross per month.

Discount:

Customers will be billed at the above net and gross rates, and the difference between the gross and net amounts will constitute a discount if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract:

At least one year.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges, and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered on and after November 1, 1937

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

ALMA DIVISION, BAY CITY SUBURBAN, HASTINGS DIVISION,
LANSING DIVISION, SAGINAW SUBURBAN

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8D

Natural Gas

INDUSTRIAL GAS RATE "C"

Who May Take the Service:

Any Commercial or Industrial gas customer.

Rate:

\$200.00 net or \$204.00 gross per month--which shall include 300,000 cu. ft. per month.

55 cts. net or 58 cts. gross per M cu. ft. - next 500,000 cu. ft. per month.

50 cts. net or 52 cts. gross per M cu. ft. - next 500,000 cu. ft. per month.

45 cts. net or 47 cts. gross per M cu. ft. - over 1,300,000 cu. ft. per month.

Discount:

The difference between the net and gross rates.

Minimum Charge:

No monthly bill shall be less than \$200.00 net per month.

Contract:

At least one year.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw. All other territory under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

Effective: On all bills rendered on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan

Issued under Authority of Order No. D-2916 of the Michigan Public Utilities Commission, dated March 5, 1936.

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8D-1

INDUSTRIAL GAS RATE "C"

Who May Take the Service:

Any industrial customer within the corporate limits of the cities of Saginaw, Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

\$200.00 net or \$260.00 gross per month - which shall include 300,000 cu ft per month,
55 Cts. net or 75 Cts. gross per M cu ft - next 500,000 cu ft per month,
50 Cts. net or 70 Cts. gross per M cu ft - next 500,000 cu ft per month,
45 Cts. net or 65 Cts. gross per M cu ft - over 1,300,000 cu ft per month.

Minimum Charge:

No monthly bill shall be less than \$200.00 net or \$260.00 gross per month.

Discount:

Customers will be billed at the above net and gross rates, and the difference between the gross and net amounts will constitute a discount if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract

At least one year.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges, and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered on and after November 1, 1937

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

LANSING DIVISION, SAGINAW SUBURBAN

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8E

Natural Gas

INDUSTRIAL GAS RATE "D"

Who May Take the Service:

Any Commercial or Industrial gas customer.

Rate:

\$500.00 net or \$510.00 gross per month--which shall include 1,000,000 cu. ft. per month.

50 cts. net or 52 cts. gross per M cu. ft. - next 1,000,000 cu. ft. per month.

45 cts. net or 47 cts. gross per M cu. ft. - next 1,000,000 cu. ft. per month.

40 cts. net or 42 cts. gross per M cu. ft. - over 3,000,000 cu. ft. per month.

Discount:

The difference between the net and gross rates.

Minimum Charge:

No monthly bill shall be less than \$500.00 net per month.

Contract:

At least one year.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw.

All other territory under jurisdiction of Michigan Public Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

Effective: On all bills rendered on and after April 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan.

Issued under Authority of Order No. D-2916 of the Michigan Public Utilities Commission, dated March 5, 1936.

Original Sheet No. 8E-1

INDUSTRIAL GAS RATE "D"

Who May Take the Service:

Any industrial customer within the corporate limits of the cities of Saginaw, Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

\$500.00 net or \$700.00 gross per month - which shall include 1,000,000 cu ft per month,
50 Cts. net or 70 Cts. gross per M cu ft - next 1,000,000 cu ft per month,
45 Cts. net or 65 Cts. gross per M cu ft - next 1,000,000 cu ft per month,
40 Cts. net or 60 Cts. gross per M cu ft - over 3,000,000 cu ft per month.

Minimum Charge:

No monthly bill shall be less than \$500.00 net or \$700.00 gross per month.

Discount:

Customers will be billed at the above net and gross rates, and the difference between the gross and net amounts will constitute a discount if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract:

At least one year.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges, and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered on and after November 1, 1937

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES

PHYSICS DEPARTMENT

RECEIVED
JAN 10 1964

TO THE PHYSICS DEPARTMENT

FROM THE PHYSICS DEPARTMENT
OF THE UNIVERSITY OF CHICAGO
RECEIVED
JAN 10 1964

TO THE PHYSICS DEPARTMENT

FROM THE PHYSICS DEPARTMENT
OF THE UNIVERSITY OF CHICAGO
RECEIVED
JAN 10 1964

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OF THE UNIVERSITY OF CHICAGO
RECEIVED
JAN 10 1964

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OF THE UNIVERSITY OF CHICAGO
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JAN 10 1964

TO THE PHYSICS DEPARTMENT
FROM THE PHYSICS DEPARTMENT
OF THE UNIVERSITY OF CHICAGO
RECEIVED
JAN 10 1964

First Revised Sheet No. 8-F
Cancelling Original Sheet No. 8-F

Consumers Power Company

Natural Gas

INDUSTRIAL GAS RATE "E"

Who May Take the Service:

Any Commercial or Industrial Gas customer who guarantees
payment of the annual minimum bill.

Rate:

45 cts. net or 47 cts. gross per M cu. ft. - first 2,200,000
cubic feet per month,
40 cts. net or 42 cts. gross per M cu. ft. - next 1,000,000
cubic feet per month,
35 cts. net or 37 cts. gross per M cu. ft. - next 1,000,000
cubic feet per month,
30 cts. net or 32 cts. gross per M cu. ft. - all over 4,200,000
cubic feet per month.

Discount:

The difference between the above net and gross rates.

Minimum Charge:

The sum of the monthly bills for the year of the contract
period shall not be less than \$12,000.00 net.

Contract:

Written contract for at least one year.

Rules:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Esserville and
Saginaw. All other territory under jurisdiction of Michigan Public
Utilities Commission.

Special Taxes:

In municipalities which levy special taxes, license fees, or
street rentals against the company, and which levy has been successfully
maintained, the standard of rates shall be increased within the limits of
such municipalities so as to offset special charges and thereby prevent the
customers in other localities from being compelled to share any portion of
such local increase.

Issued: August 20, 1936

Effective: On all bills rendered
on and after September 1, 1936.

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan

Issued under Authority of Order No.
D-2916 of the Michigan Public
Utilities Commission dated
September 23, 1936.

M. P. U. C No. 4 - Gas

Consumers Power Company

Original Sheet No. 8-F-1

Natural Gas

INDUSTRIAL GAS RATE "F"
Saginaw-Bay City

Who May Take the Service:

This rate is limited to customers taking service on this rate on special contracts prior to April 1, 1936.

Rate:

\$1,000.00 net or \$1,020.00 gross per month - which shall include
22,000 therms per month,
4.0¢ net or 4.030¢ gross per therm - next 10,000 therms per month,
3.5¢ net or 3.570¢ gross per therm - next 10,000 therms per month,
3.0¢ net or 3.060¢ gross per therm - next 10,000 therms per month,
2.1¢ net or 2.142¢ gross per therm - over 52,000 therms per month.

Discount:

The difference between the net and gross rates.

Minimum Charge:

No monthly bill shall be less than \$1,000.00 net per month.

Contract:

At least three years.

Rules:

Service governed by Standard Rules and Regulations.

Jurisdiction:

Rates governed by contracts in Bay City, Essexville and Saginaw.

Special Terms and Conditions:

The above rate shall be subject to revision under any or all of the following conditions:

1. If the price paid by the Company for gas in the field shall be increased or decreased from the price now paid by the Company.
2. If any unusual investment on the part of the Company may be required to furnish service.
3. If the characteristics of use of the gas by the customers are different.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits

Special Taxes: (Contd.)

of such municipalities so as to offset special charges and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: March 19, 1936

D. E. Karn, Vice-Pres. & Gen'l Manager
Jackson, Michigan.

Effective: On all bills rendered
on and after April 1, 1936.

Issued under Authority of Order No.
D-2916 of the Michigan Public
Utilities Commission, dated March 5,
1936.

M. P. U. C. No. 4 - Gas

Consumers Power Company

Original Sheet No. 8F-2

INDUSTRIAL GAS RATE "E"

Who May Take the Service:

Any industrial customer within the corporate limits of the cities of Saginaw, Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

45 Cts. net or 65 Cts. gross per M cu ft - first 2,200,000
cu ft per month,
40 Cts. net or 60 Cts. gross per M cu ft - next 1,000,000
cu ft per month,
35 Cts. net or 55 Cts. gross per M cu ft - next 1,000,000
cu ft per month,
30 Cts. net or 50 Cts. gross per M cu ft - all over
4,200,000 cu ft per month.

Minimum Charge:

The sum of the monthly bills for the year of the contract period shall not be less than \$12,000 net.

Discount:

Customers will be billed at the above net and gross rates and the difference between the gross and net amounts will constitute a discount if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract:

Written contract for at least one year.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges, and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered
on and after November 1, 1937

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

Original Sheet No. 8-Q

GENERAL COMMERCIAL RATE

CITIES OF SAGINAW - BAY CITY - ESSEXVILLE

Who May Take the Service:

Any commercial or industrial customer within the corporate limits of the cities of Saginaw, Bay City and Essexville.

Rate:

The charge per customer per month shall be:

Gas Charge:

500 cu ft or less	-	\$.75 net or \$.85 gross
600 cu ft	-	.85 net or .97 gross
700 cu ft	-	.95 net or 1.09 gross
800 cu ft	-	1.05 net or 1.21 gross
900 cu ft	-	1.15 net or 1.33 gross
1,000 cu ft	-	1.25 net or 1.45 gross
Next 2,000 cu ft	-	1.20 net or 1.40 gross per M cu ft
Next 2,000 cu ft	-	1.00 net or 1.20 gross per M cu ft
All Over 5,000 cu ft	-	.85 net or 1.05 gross per M cu ft

Minimum Charge:

75 Cts. net or 85 Cts. gross.

Discount:

Customers will be billed at the above net and gross rates, and the difference between the gross and net amounts will constitute a discount if bills are paid in full on or before the due date shown thereon.

Term and Form of Contract:

Written application. No time limit.

Rules and Regulations:

Service governed by Company's Standard Rules and Regulations.

Jurisdiction:

Rates are governed by franchise ordinance or contract.

Special Taxes:

In municipalities which levy special taxes, license fees, or street rentals against the Company, and which levy has been successfully maintained, the standard of rates shall be increased within the limits of such municipalities so as to offset such special charges, and thereby prevent the customers in other localities from being compelled to share any portion of such local increase.

Issued: October 15, 1937

Effective: On all bills rendered
on and after November 1, 1937

D. E. Karn, Vice-Pres. & Gen'l. Mgr.,
Jackson, Michigan.

APPENDIX C

(Forms)

1. MINERAL DEED
2. OIL AND GAS LEASE
3. ASSIGNMENT OF OIL AND GAS LEASE
4. ROYALTY OWNER'S PRODUCTION REPORT
5. PRODUCER'S PRODUCTION REPORT
6. PIPE LINE OR COMMON PURCHASER MONTHLY STATEMENT
(Royalty Interest--Gas)
7. PIPE LINE OR COMMON PURCHASER MONTHLY STATEMENT
(Working Interest--Gas)

MINERAL DEED

Know All Men By These Presents:

That

of _____ County, State of _____ for and in consideration of the sum of _____ Dollars (\$ _____) cash in hand paid by

hereinafter called Grantee _____, and other good and valuable considerations, the receipt of which is hereby acknowledged, have granted, sold, conveyed, assigned and delivered, and by these presents do grant, sell, convey, assign and deliver unto said Grantee _____ an undivided _____ interest in and to all of the oil, gas, and other minerals in and under, and that may be produced from the following described land situated in _____ County, State of _____ to-wit:

of Section _____ Township _____ Range _____ containing _____ acres more or less, together with the right of ingress and egress at all times for the purpose of mining, drilling and exploring said lands for oil, gas and other minerals and removing the same therefrom.

Said land being now under an oil and gas lease executed in favor of _____, it is understood and agreed that this sale is made subject to the terms of said lease, but covers and includes _____ of all of the oil royalty; and gas rental or royalty due and to be paid under the terms of said lease insofar as it covers the lands above described.

It is understood and agreed that _____ of the money rentals which may be paid to extend the term within which a well may be begun under the terms of said lease is to be paid to the said Grantee _____ and in the event that the above described lease for any reason becomes cancelled or forfeited, then and in that event an undivided _____ of the lease interests and all future rentals on said land for oil, gas and other mineral privileges shall be owned by the said Grantee _____ owning _____ of all oil, gas and other minerals in and under said lands, together with _____ interest in all future events. To have and to hold the above described property, together with all and singular the rights and appurtenances thereto in anywise belonging unto the said Grantee _____ herein, _____ heirs and assigns forever; and Grantor _____ do hereby bind _____ heirs, executors and administrators to warrant and forever defend all and singular the said property unto the said Grantee _____ herein, _____ heirs and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

Witness _____ hand this _____ day of _____, 193 _____

ACKNOWLEDGMENT

STATE OF }
COUNTY OF } ss.

BE IT REMEMBERED, That on this.....day ofA. D. 19....., before me,
a Notary Public in and for said County and State, personally appeared
.....to me known to be
the identical person.... described in and who executed the within and foregoing instrument and acknowledg-
ed to me thatexecuted the same as.....free and voluntary act and deed for the uses
and purposes therein set forth.

In Witness Whereof, I have hereunto set my official signature and affixed my notarial seal, the day
and year first above written.

My commission expiresNotary Public

MINERAL DEED

FROM

TO

193

Township Range

County

of Acres

TE OF

ty of } ss.

This instrument was filed for record on

day of , 193

o'clock.....M., and duly recorded

ook Page..... of the

ds of this office.

County Clerk—Register of Deeds

Deputy

n Recorded

Return to

OIL AND GAS LEASE

AGREEMENT, Made and entered into the _____ day of _____, 19____
by and between _____

of hereinafter called lessor (whether one or more), and.....
 hereinafter called lessee:

WITNESSETH: That the said lessor, for and in consideration of _____ Dollar__ cash in hand paid, the receipt of which is hereby acknowledged, and of the covenants and agreements hereinafter contained on the part of lessee to be paid, kept and performed, ha_____ granted, demised, leased and let, and by these presents do_____ grant, lease and let unto the said lessee for the sole and only purpose of mining and operating for oil and gas and of laying pipe lines and of building tanks, power stations and structures thereon to produce, save and take care of said products, all that certain tract of land situated in the County of _____, State of Michigan, described as follows, to-wit:

.....and containing acres, more or less.

It is agreed that this lease shall remain in force for a term of years from this date, said term being hereinafter called "Primary Term," and as long thereafter as oil or gas, or either of them is produced from said land by the lessee.

In consideration of the premises, the said lessee covenants and agrees:

1st. To deliver to the credit of lessor, free of cost, in the pipe line to which lessee may connect its wells, the equal one-eighth (1/8) part of all oil produced and saved from the leased premises.

2nd. To pay to lessor, as royalty for gas from each well where gas only is found, while the same is being sold or used off the premises, one-eighth (1/8) of the market price at the wells of the amount so sold or used, the lessor to have gas free of charge from any gas well on the leased premises for all stoves and inside lights in the principal dwelling house on said land during the time by making lessor's own connections with the well at lessor's own risk and expense.

3rd. To pay to lessor as royalty for gas produced from any oil well and used by lessee for the manufacture of gasoline, one-eighth ($\frac{1}{8}$) of the market value of such gas. If such gas is sold by lessee, then lessee agrees to pay lessor, as royalty, one-eighth ($\frac{1}{8}$) of the net proceeds derived from the sale of said casinghead gas at the wells.

If no well be commenced on said land on or before the _____ day of _____, 19____, this lease shall terminate as to both parties, unless the lessee on or before that date shall pay or tender to the lessor, or to the lessor's credit in the _____ Bank _____ at _____ or its successors, which shall continue as the depository, regardless of changes in the ownership of said land, the sum of _____

of deferring the commencement of a well for _____ months from said date. In like manner and upon like payments or tenders the commencement of a well may be further deferred for like periods of the same number of months successively. And it is understood and agreed that the consideration first recited herein, the down payment, covers not only the privilege granted to the date when said first rental is payable as aforesaid, but also the lessee's option of extending that period as aforesaid, and any and all other rights conferred.

Should the first well drilled on the above described land be a dry hole, then and in that event, if a second well is not commenced on said land within _____ months thereafter, this lease shall terminate as to both parties, unless the lessee on or before the expiration of said _____ months shall resume the payment of rentals in the same amount and in the same manner as hereinbefore provided. And it is agreed that upon the resumption of the payment of rentals, as before provided, that the last preceding paragraph hereof shall continue in force just as though there had been no interruption in the rental payments.

If, at the expiration of the primary term of this lease, oil or gas is not being produced on the leased premises but lessee is then engaged in drilling for oil or gas, then this lease shall continue in force so long as drilling operations are being continuously prosecuted on the leased premises; and drilling operations shall be considered to be continuously prosecuted if not more than sixty (60) days shall elapse between the completion or abandonment of one well and the beginning of operations for the drilling of a subsequent well. If oil or gas shall be discovered and produced in paying quantities from any such well or wells drilled or being drilled at or after the expiration of the primary term of this lease, this lease shall continue in force so long as oil or gas shall be produced from the leased premises.

If said lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, then the royalties and rentals herein provided for shall be paid the said lessor only in proportion which lessor's interest bears to the whole and undivided fee.

Lessee shall have the right to use, free of cost, gas, oil and water produced on said land for all operations thereon, except from water wells of lessor. When requested by lessor, lessee shall bury pipe below plow depth. No well shall be drilled nearer than 200 feet to the house or barn now on said premises without the written consent of the lessor. Lessee shall pay for damages caused by all operations to growing crops on said land. Lessee shall have the right at any time to remove all machinery and fixtures placed on said premises, including the right to draw and remove casing.

If the estate of either party hereto is assigned—and the privilege of assigning in whole or in part is expressly allowed—the covenants hereof shall extend to their heirs, executors, administrators, successors, or assigns, but no change in the ownership of the land or assignment of rentals or royalties shall be binding on the lessee until after the lessee has been furnished with a written transfer or assignment, or a certified copy thereof; and it is hereby agreed that in the event this lease shall be assigned as to a part or as to parts of the above described lands and the assignee or assignees of such part or parts shall fail or make default in the payment of the proportionate part of the rents due from him or them, such default shall not operate to defeat or affect this lease in so far as it covers a part or parts of said lands upon which the said lessee or any assignees thereof shall make due payment of said rental.

Lessee shall have the exclusive right to build, operate and maintain pits, reservoirs, pickup stations and plants for the purpose of picking up and conserving the waste oil that flows down the creeks, ravines and across the land embraced in this lease, whether said oil is produced from lands covered by this lease or other lands, and lessor shall be entitled to receive the royalty hereinbefore reserved on all such oil so saved.

Title to the minerals vested in grantee under this grant shall not end or revert to grantor until there is a complete, absolute and intentional abandonment by grantee of each and all of the purposes, expressed, or implied, of this grant and every part and parcel of the premises described in this grant.

Lessor hereby warrants and agrees to defend the title to the lands herein described and agrees that lessee shall have the right at any time to redeem for lessor, by payment, any mortgages, taxes, or other liens on the above described lands, in the event of default of payment by lessor, and be subrogated to the rights of the holder thereof.

IN TESTIMONY WHEREOF WE SIGN, This the day of..... 193.....

WITNESS

(SEAL)

(SEAL)

(SEAL)

(SEAL)

(SEAL)

(SEAL)

(SEAL)

STATE OF _____ }
COUNTY OF _____ } SS.

ACKNOWLEDGMENT

On this _____ day of _____, A. D. 193____, before me, the undersigned, a Notary Public in and for said County, in the State aforesaid, personally appeared _____

to me known as the person _____ described in and who executed the foregoing instrument and acknowledged that he _____ had executed the same as _____ free act and deed.

Notary Public in and for _____ County

My Commission Expires _____ 19 _____ (Acting in _____ County, Michigan)

STATE OF _____ }
COUNTY OF _____ } SS.

ACKNOWLEDGMENT

On this _____ day of _____, A. D. 193____, before me, the undersigned, a Notary Public, in and for said county, in the State aforesaid, personally appeared _____

to me known as the person _____ described in and who executed the foregoing instrument and acknowledged that he _____ had executed the same as _____ free act and deed.

Notary Public in and for _____ County

My Commission Expires _____ 19 _____ (Acting in _____ County, Michigan)

STATE OF _____ }
COUNTY OF _____ } SS.

ACKNOWLEDGMENT FOR CORPORATION

On this _____ day of _____ A. D. 193____, before me, the undersigned, a Notary Public in and for said county, in the State aforesaid, personally appeared _____ to me personally known, who, being

by me duly sworn, did say that he is the _____ President of _____, and that the seal affixed to said instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said _____ acknowledged said instrument to be the free act and deed of said corporation.

Notary Public in and for _____ County

My Commission Expires _____ 19 _____ (Acting in _____ County, Michigan)

No. _____	
OIL AND GAS LEASE	
FROM	TO
Dated _____ 193____	
Section _____ Township _____ Range _____	No. Acres _____
County, Michigan	
STATE OF _____ } COUNTY OF _____ } SS. 2	
This instrument was filed for record on the _____ day of _____ 193____ at _____ o'clock _____ M., and duly recorded in Book _____ Page _____ of the records of this of _____	
By _____ Register of Deeds	
When Recorded _____	
Return to _____	

ASSIGNMENT OF OIL AND GAS LEASE

Whereas, On the day of, 19....., a certain oil and gas mining lease was made and entered into by and between Lessor... and Lessee ... covering the following described land in the county of and State of to wit:

Said lease being recorded in the office of the Register of Deeds of said County, in Liber Page
and

WHEREAS, The said lease _____ and all rights thereunder or incident thereto are now owned by

NOW, THEREFORE, For and in consideration of One Dollar (and other good and valuable considerations), the receipt of which is hereby acknowledged the undersigned, the present owner___ of the said lease.. and all rights thereunder or incident thereto do..... hereby bargain, sell, transfer, assign and convey of the right, title and interest of the original lessee and present owner ___ in and to said lease___ and rights thereunder insofar as it covers the

together with all personal property used or obtained in connection therewith unto _____
 _____ and _____ heirs, successors and assigns.
 And for the same consideration, the undersigned for _____ and _____ heirs, successors and
 representatives do... covenant with the said assignee, _____ heirs, successors or assigns that _____
 the lawful owner... of the said lease... and rights and interests thereunder and of the personal property thereon or used in
 connection therewith; that the undersigned ha... good right and authority to sell and convey the same, and that said rights,
 interest and property are free and clear from all liens and encumbrances, and that all rentals and royalties due and pay-
 able thereunder have been duly paid.

IN WITNESS WHEREOF, the undersigned owner... and assignor... ha... signed and sealed this instrument this
..... day of 193.....

WITNESS

..... (SEAL)
..... (SEAL)
..... (SEAL)
..... (SEAL)
..... (SEAL)
..... (SEAL)
..... (SEAL)

(SEVEN)
(SEVEN)

STATE OF }
COUNTY OF } SS.

ACKNOWLEDGMENT

On this day of A. D. 19....., before me, the undersigned, a
Notary Public in and for the County and State aforesaid, personally appeared.....

to me known to be the person described in and who executed the foregoing instrument and acknowledged that..... he
executed the same as free act and deed.

Notary Public in and for County
Acting in County, Michigan

My Commission Expires.....

STATE OF }
COUNTY OF } SS.

ACKNOWLEDGMENT FOR CORPORATION

On this day of A. D. 193....., before me, the undersigned, a Notary Public
in and for said County, in the State aforesaid, personally appeared

..... to me personally known, who, being
by me duly sworn, did say that he is the President of.....
....., and that the seal affixed to said
instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corpora-
tion by authority of its board of directors, and said acknowledged said instrument to
be the free act and deed of said corporation.

Notary Public in and for County

My commission expires: (Acting in County, Michigan)

Assignment of Oil and Gas Lease

FROM

TO

193.....

Township Range.....

County, Michigan

STATE OF MICHIGAN

} SS.

Instrument was filed for record on the

193..... at

..... M., and duly recorded in Book

..... of the records of this office.

Register of Deeds

Deputy

Recorded

in to

ROYALTY OWNER'S PRODUCTION REPORT

STATEMENT to the Michigan State Tax Commission showing, as required by law, the total received by

NAME.....	ADDRESS.....
-----------	--------------

as royalty on the production of _____ for the monthly period beginning _____, 19____, and ending _____, 19____.

(Oil or Gas)

the name of the producer; the name and location of each lease and the total royalty received therefrom, and the amount of gross production tax due thereon.

[illegible]

BBLs. OR M. FT.....

BBLs. OR M. FT.....

BBLs. OR M. FT.....

AMOUNT OF TAX (2 per cent of the Gross Cash Market Value) \$-----
(See Note 2 above).

NOTICE—Make Remittance payable to State Treasurer of Michigan sending same with this statement to State Tax Commission at Lansing. (See Note 2 above.)

INSTRUCTIONS

(READ CAREFULLY)

This statement must be filed with the State Tax Commission on or before the twentieth day of each month for the month preceding, and must cover the full amount received for the production during that preceding month.

In preparing the statement it is necessary that all information required on the form be given in full. The proper officer must execute the affidavit as prescribed before some person authorized by law to administer oaths.

The actual producer of oil or natural gas is required to report the entire gross production from all leases, both commercial and restricted (departmental) including any royalties or interest that any other person may have in same. Oil and gas must be reported on separate sheets.

The severance tax is to be computed at two per cent of the gross cash market value of the total production. For the purpose of preparing this statement the term "Gross Production" is to be construed as meaning all products produced during the monthly period, preceding.

Tax on gross production of oil and gas becomes delinquent twenty days after the expiration of each monthly period, and a penalty of ten per cent per annum will be charged together with the costs of examination by the State Tax Commission.

Additional information and forms for making up this report may be had by applying to the State Tax Commission, Lansing, Michigan.

Michigan State Tax Commission.

FILE NO. (Fill Out Blanks Below)

ROYALTY REPORT

Statement By Name Address OF ROYALTY PRODUCTION Oil or Gas For Month Ending, 19

NOTICE Address All Correspondence Concerning This Report to Name Position or Title Address (Do Not Write in this Space)

Section 1. There is hereby levied upon each corporation, association, or person engaged in the business of severing from the soil oil or gas, a specific tax to be known as the severance tax. Each corporation, association, or person owning, controlling, managing, operating or leasing, in this State, any oil well or gas well, or any such corporation, association or person who produces in any other manner, any oil or gas by taking it from the earth, in this State, shall make monthly, on the first day of each month of each year, a report to the Michigan State Tax Commission in the form and manner prescribed by such Commission showing the total amount of oil or gas produced by such corporation, association or person from each well or other-wise, during the month preceding and the actual market value thereof at the time of production.

Section 2. Every corporation, association, person, common carrier, pipe line company or common purchaser, who shall receive or purchase or transport any such oil or gas, shall likewise make such a monthly report in the form and manner required by the State Tax Commission, showing the total amount of such oil and gas received, purchased, stored or transported during the preceding month, and the actual market value thereof at the time it is received, purchased, stored or transported, and such other information as may be required by the Commission.

Section 4. Each corporation, association or person mentioned and included in sections one and two of this act shall make, keep and preserve a full and complete record of all such oil produced in this State during the time so engaged in its production, and said record shall be open at all times to the inspection of the Michigan Tax Commission. Any corporation, association or person failing to comply with this requirement shall be subject to a penalty of not less than five hundred and not more than fifteen hundred dollars payable to the State of Michigan, and such penalty shall accrue for each twenty days of failure to comply with this section with reference to each separate oil or gas well.

SECTIONS 1, 2 AND 4 OF ACT NO. 35—PUBLIC ACTS OF 1929.

I, the undersigned, upon oath do depose and say that I am the

SS. COUNTY OF STATE OF MICHIGAN.

Subscribed and sworn to before me this day of, 19

My commission expires, 19

Notary Public.

of the within named that I have read the within report and am fully informed as to the subject matter thereof; that the same embraces a full and complete statement of the total or gross royalty for the period as specified, and that the unit price or prices stated includes any and all premiums or bonus for which sold; and that to the best of my knowledge and belief said report is in all respects true and correct.

AFFIDAVIT

This form must be filled out and returned to STATE TAX COMMISSION even though remittance is not required.

File No. _____

NAME..... ADDRESS.....

during the monthly period beginning....., 19....., and ending....., 19.....; the name and location of each lease and the production therefrom; the ROYALTY INTEREST of production and to whom payable; and the WORKING INTEREST of production, together with the actual cash thereof and the amount of gross production tax due thereon.

AMOUNT OF TAX (2 per cent of THE GROSS CASH MARKET VALUE) \$.....
SEE NOTE 2 ABOVE.)

INSTRUCTIONS

(READ CAREFULLY)

This statement must be filed with the State Tax Commission on or before the twentieth day of each month for the month preceding, and must cover the full amount received for the production during that preceding month.

In preparing the statement it is necessary that all information required on the form be given in full. The proper officer must execute the affidavit as prescribed before some person authorized by law to administer oaths.

The actual producer of oil or natural gas is required to report the entire gross production from all leases, both commercial and restricted (departmental) including any royalties or interest that any other person may have in same. Oil and gas must be reported on separate sheets.

The severance tax is to be computed at two per cent of the gross cash market value of the total production. For the purpose of preparing this statement the term "Gross Production" is to be construed as meaning all products produced during the monthly period, preceding.

Tax on gross production of oil and gas becomes delinquent twenty days after the expiration of each monthly period, and a penalty of ten per cent per annum will be charged together with the costs of examination by the State Tax Commission.

Additional information and forms for making up this report may be had by applying to the State Tax Commission, Lansing, Michigan.

Michigan State Tax Commission.

FILE NO. (Fill Out Blanks Below)

PRODUCER'S REPORT

Statement By

Name

Address OF

GROSS PRODUCTION

Oil or Gas

For Month Ending, 19

NOTICE

Address All Correspondence Concerning This Report to

Name

Position or Title

Address

(Do Not Write in this Space)

SECTION 1. There is hereby levied upon each corporation, association, or person engaged in the business of severing from the soil oil or gas, a specific tax to be known as the severance tax. Each corporation, association, or person owning, controlling, managing, operating or leasing, in this State, any oil well or gas well, or any such corporation, association, or person who produces in any other manner, any oil or gas by taking it from the earth, in this State, shall make monthly, on the first day of each month of each year, a report to the Michigan State Tax Commission in the form and manner prescribed by such Commission showing the total amount of oil or gas produced by such corporation, association or person from each well or other-wise, during the month preceding and the actual market value thereof at the time of production.

SECTION 2. Every corporation, association, person, common carrier, pipe line company or common purchaser, who shall receive or purchase or transport any such oil or gas, shall likewise make such a monthly report in the form and manner required by the State Tax Commission, showing the total amount of such oil and gas received, purchased, stored or transported during the preceding month, and the actual market value thereof at the time it is received, purchased, stored or transported, and such other information as may be required by the Commission.

SECTION 4. Each corporation, association or person mentioned and included in sections one and two of this act shall make, keep and preserve a full and complete record of all such oil produced in this State during the time so engaged in its production, and said record shall be open at all times to the inspection of the Michigan Tax Commission. Any corporation, association or person failing to comply with this requirement shall be subject to a penalty of not less than five hundred and not more than fifteen hundred dollars payable to the State of Michigan, and such penalty shall accrue for each twenty days of failure to comply with this section with reference to each separate oil or gas well.

SECTIONS 1, 2 AND 4 OF ACT NO. 35—PUBLIC ACTS OF 1929.

I, the undersigned, upon oath do depose and say that I am the.

SS. COUNTY OF.

STATE OF MICHIGAN,

of the within named

thereof; that the same embraces a full and complete statement of the total or gross royalty for the period as specified, and that the unit price or prices stated includes any and all premiums or bonus for which sold; and that to the best of my knowledge and belief said report is in all respects true and correct.

Subscribed and sworn to before me this, day of, 19

My commission expires, 19

Notary Public.

MONTHLY STATEMENT

Location of Principal Office

Total amount of gas received, purchased, stored, or transported during the month period beginning 19.....

(NOTE: Read instructions printed on reverse side of this blank before filling out columns below.)

NOTICE: Make remittance payable to State Treasurer of Michigan sending same with this statement to State Tax Commission at Lansing.

AFFIDAVIT

I, the undersigned, upon oath do depose and say that I am the

of the within-named.

of the within-named.....
That I have read the foregoing and within statement and schedules; that I am fully informed of the statements therein contained and that the same are to my knowledge true and correct.

STATE OF

88.

COUNTY OF _____

BE IT REMEMBERED THAT ON THIS.....day of....., 192....., before me, the undersigned a Notary

Public in and for the above-named State and County, personally appeared _____
to me known, and being duly sworn stated that he had read the within and foregoing schedule and statement and has full knowledge of the contents
contained therein and in my presence subscribed his name thereto.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal at _____
on the day and date last written.

(SEAL)

Notary Public

My commission expires

No.....	
(Fill Out the Blanks Below)	
(ROYALTY INTEREST)	
Monthly Statement	
OF	
For Month Ending.....	19.....
Name, title and address of officer to whom correspondence concerning this report should be addressed.	
Name	
Title	
Address	
(Do not write in this space)	

INSTRUCTIONS

This statement must be filled out and filed with the State Tax Commission on or before the twentieth day of each month, respectively, of each year, and must cover the month period preceding, respectively, of each year.

In preparing the statement, it is essential that all the information required on the blank be given. The proper officer must execute the affidavit as prescribed before some person authorized by law to administer oaths.

Only Gas purchased from royalty owners is required to be shown on this statement, but the NAME AND ADDRESS of the PRODUCER of such royalty must be shown in line designated for that purpose.

Use this form for reporting "royalty interest" only. Separate form is furnished for reporting "working interest."

The State Tax Commission in accepting this statement reserves the right to require any additional information they may deem necessary.

Blanks for making this statement may be had by applying to the State Tax Commission, Lansing, Michigan.

Michigan State Tax Commission

SECTIONS 1, 2 AND 4 OF ACT NO. 35—PUBLIC ACTS OF 1929.

Section 1. There is hereby levied upon each corporation, association, or person engaged in the business of severing from the soil oil or gas, a specific tax to be known as the severance tax. Each corporation, association, or person owning, controlling, managing, operating or leasing, in this State, any oil well or gas well, or any such corporation, association or person who produces in any other manner, any oil or gas by taking it from the earth, in this State, shall make monthly, on the first day of each month of each year, a report to the Michigan State Tax Commission in the form and manner prescribed by such Commission showing the total amount of oil or gas produced by such corporation, association or person from each well or otherwise, during the month preceding and the actual market value thereof at the time of production.

Section 2. Every corporation, association, person, common carrier, pipe line company or common purchaser, who shall receive or purchase or transport any such oil or gas, shall likewise make such a monthly report in the form and manner required by the State Tax Commission, showing the total amount of such oil and gas received, purchased, stored or transported during the preceding month, and the actual market value thereof at the time it is received, purchased, stored or transported, and such other information as may be required by the Commission.

Section 4. Each corporation, association or person mentioned and included in sections one and two of this act shall make, keep and preserve a full and complete record of all such oil produced in this State during the time so engaged in its production, and said record shall be open at all times to the inspection of the Michigan Tax Commission. Any corporation, association or person failing to comply with this requirement shall be subject to a penalty of not less than five hundred and not more than fifteen hundred dollars payable to the State of Michigan, and such penalty shall accrue for each twenty days of failure to comply with this section with reference to each separate oil or gas well.

(WORKING INTEREST—GAS)

of

Location of Principal Office

To the MICHIGAN STATE TAX COMMISSION, Lansing, Michigan.

Total amount of gas received, purchased, stored, or transported during the month period beginning.....19.....

and ending _____ 19____, both dates included. The following prices which represent the actual market value at the time of receiving, purchasing, storing, or transporting, were paid for gas over this period.

(NOTE: Read instructions printed on reverse side of this blank before filling out columns below.)

NAME OF PRODUCER (Arrange Alphabetically)	ADDRESS	LOCATION Qr. Sec. Twp. R.	TOTAL AMOUNT PURCHASED M. Cu. Ft.	PRICE Per M. Feet	TOTAL AMOUNT PAID

NOTICE: Make remittance payable to State Treasurer of Michigan sending same with this statement to State Tax Commission at Lansing.

of the within-named

That I have read the foregoing and within statement and schedules; that I am fully informed of the statements therein contained and that the same are to my knowledge true and correct.

STATE OF

COUNTY OF

ss.

BE IT REMEMBERED THAT ON THIS day of , 19 , before me, the undersigned, a Notary

Public in and for the above-named State and County, personally appeared to me known, and being duly sworn stated that he had read the within and foregoing schedule and statement and has full knowledge of the contents contained therein and in my presence subscribed his name thereto.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal at on the day and date last written.

(SEAL)

Notary Public

My commission expires

No.	(Fill Out the Blanks Below) (WORKING INTEREST) Monthly Statement OF	For Month Ending 19	Name	Title	Address
		Name, title and address of officer to whom correspondence concerning this report should be addressed.			(Do not write in this space)

INSTRUCTIONS

This statement must be filled out and filed with the State Tax Commission on the first day of each month, respectively, of each year, and must cover the month period preceding, respectively, of each year.

In preparing the statement, it is essential that all the information required on the blank be given. The proper officer must execute the affidavit as prescribed before some person authorized by law to administer oaths.

Only that part of the gas purchased from the original producer is required to be shown on this statement. The gas purchased from distributors or other purchasers, who bought the same from the original producer, is not required to be shown.

Use this form for reporting "working interest" only. Separate form is furnished for reporting "royalty interest."

The State Tax Commission in accepting this statement reserves the right to require any additional information they may deem necessary.

Blanks for making this statement may be had by applying to the State Tax Commission, Lansing, Michigan.

Michigan State Tax Commission.

SECTIONS 1, 2 AND 4 OF ACT NO. 35—PUBLIC ACTS OF 1929.

Section 1. There is hereby levied upon each corporation, association, or person engaged in the business of severing from the soil oil or gas, a specific tax to be known as the severance tax. Each corporation, association, or person owning, controlling, managing, operating or leasing, in this State, any oil well or gas well, or any such corporation, association or person who produces in any other manner, any oil or gas by taking it from the earth, in this State, shall make monthly, on the first day of each month of each year, a report to the Michigan State Tax Commission in the form and manner prescribed by such Commission showing the total amount of oil or gas produced by such corporation, association or person from each well or otherwise, during the month preceding and the actual market value thereof at the time of production.

Section 2. Every corporation, association, person, common carrier, pipe line company or common purchaser, who shall receive or purchase or transport any such oil or gas, shall likewise make such a monthly report in the form and manner required by the State Tax Commission, showing the total amount of such oil and gas received, purchased, stored or transported during the preceding month, and the actual market value thereof at the time it is received, purchased, stored or transported, and such other information as may be required by the Commission.

Section 4. Each corporation, association or person mentioned and included in sections one and two of this act shall make, keep and preserve a full and complete record of all such oil produced in this State during the time so engaged in its production, and said record shall be open at all times to the inspection of the Michigan Tax Commission. Any corporation, association or person failing to comply with this requirement shall be subject to a penalty of not less than five hundred and not more than fifteen hundred dollars payable to the State of Michigan, and such penalty shall accrue for each twenty days of failure to comply with this section with reference to each separate oil or gas well.

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