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1935

STATE OF ILLINOIS  
HENRY HORNER, *Governor*



DATA ON THE GROUND WATERS OF  
LAKE COUNTY, ILLINOIS

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DEPARTMENT OF REGISTRATION AND EDUCATION  
STATE WATER SURVEY DIVISION

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# DATA ON THE GROUND WATERS OF LAKE COUNTY, ILLINOIS

## INTRODUCTION

Lake County occupies the northeastern corner of the State of Illinois. It is favored with about 20 miles of Lake Michigan shore line and embraces an area of about 469 square miles.

The topography is rolling but at the same time has a gentle rise from a mean sea level elevation of about + 650 feet at the top of the lake shore bluffs to elevations of + 800 to + 850 feet along the western boundary, an extreme elevation of + 950 feet being attained in the northwest corner of the County.

Drainage is provided for the eastern half of the County by the Skokie River, North Fork of the Chicago River, and the Des Plaines River. The western half is dotted with more than 40 lakes, varying in area from 10 acres to 1500 acres. Some of these have outlets through small streams or swampy ground into the Des Plaines River, but a majority find an ultimate outlet into the Fox River.

Lake County has been topographically surveyed and the surface relief is well depicted on Geological Survey Quadrangle maps, of which five are required for the entire county. They are as follows: Waukegan, Grays Lake, and Barrington Quadrangles on a scale of about 1 inch = 1 mile, and Highland Park and Wheeling Quadrangles on a scale of 1 inch = 2,000 feet. These may be secured from the State Geological Survey at Urbana, Illinois.

The natural beauty of the landscape throughout the County and its nearness to the City of Chicago has, without doubt, been largely responsible for the development of large stock farms and country estates.

The rolling topography has also provided ideal locations for private estates and Golf and Country Clubs, of which latter there are now some 34. A considerable industrial development is to be found at Waukegan and North Chicago, while the residential communities of Lake Bluff, Lake Forest, Highland Park, Highwood, and Libertyville represent outstanding municipal developments suburban to Chicago. This brief summary of the region serves to justify its choice as the first county for a detailed ground water survey.

Two original sources of information were open, namely, the records of the well drilling contractor and the owner, both of which were drawn upon freely. In addition, much material was supplied by the State Geological

Survey from its files of Well Logs. It was anticipated at the start, however, that data concerning many of the older wells would be unobtainable due to their abandonment, changes in property ownership, or the removal or death of the driller. Therefore, the nearly 600 wells which are listed represent only about 75% of the total for which information was sought.

Readers of this bulletin are requested to advise the State Water Survey Division relative to additional information on old or new wells which may be in their possession, so that the record may be further supplemented and made as complete as possible.

*Scope.* The data include as far as possible the location, depth, log, water levels and yield of wells; field information concerning unusual characteristics such as the occurrence of "gas" or hydrogen sulfide, and chemical analyses of samples taken from typical wells from the different aquifers.

The data are presented in tabular form in part III which constitutes the main body of the report. Preceding the tables is a discussion of Engineering data and field observations (part I) and chemical characteristics (part II).

## PART I

ENGINEERING DATA AND FIELD  
OBSERVATIONS

BY

W. D. GERBER

GRAVEL WELLS

Based on the data collected it appears that sand and gravel beds of variable extent, thickness, and depth underlie the entire county. These are found as deposits in valleys eroded in the Niagaran dolomite, as lenses in the glacial drift and as valley train fillings along certain valleys.

Sand and gravel wells predominate in the western half of the county. It is known that many gravel wells are in use in the vicinity of Libertyville. Also, information was presented by a driller that about a mile north of the Village of Deerfield there was a strip of country a mile or more in width wherein it was always possible to bring in strong wells of good water from the gravel.

Subsequent study of subsurface conditions as presented in the well logs disclosed three major valleys and several smaller valleys in the Niagaran dolomite. The gravel water area north of Deerfield, above referred to, turned out to be a wide, deep, gorge in the dolomite of almost canyon proportions. This valley discharged in the direction of the lake between Fort Sheridan and Highwood and extended in a generally westerly direction past the Village of Half Day.

The Village of Libertyville lies directly over a rather wide "V-shaped" valley which discharges into Lake Michigan at a point north of Lake Bluff. From this point the valley extends in a general westerly direction north of Mundelein, thence southerly to Gilmer, thence westerly to the south of Wauconda, and thence south westerly to the western limit of the county.

The third large valley has an outlet in the direction of Lake Michigan about a mile north of Waukegan and extends in a westerly direction under Third Lake, Round Lake, and Long Lake to the Fox Lake area. A branch of considerable size extends in a north westerly direction, from its junction with the main valley east of Fourth Lake, under Deep Lake and Cedar Lake into the Fax Lake area. A second branch extends, from its junction with the main valley north of Gurnee, in a northerly direction under the present valley of the Des Plaines River to above Russell near the State Line.

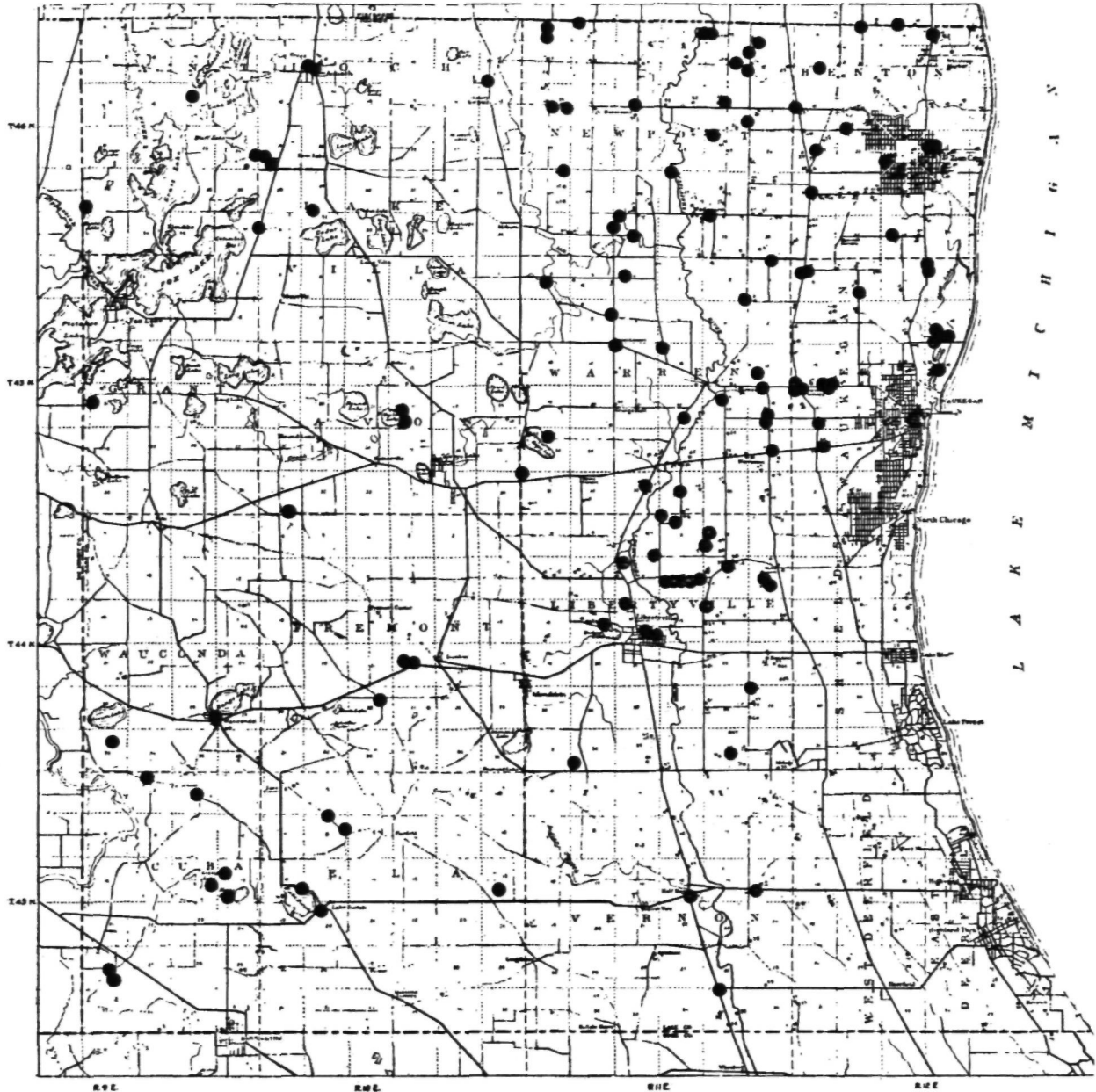


FIG. I.—Wells finished in sand and gravel.

A fourth valley is only some six or seven miles in length and extends, from a point at Lake Michigan northeast of Zion, in a westerly direction for about four miles thence northerly to the State line and beyond.

All these valleys are filled in the major part with deposits of sand and gravel capable of supplying considerable quantities of water.

*Yield.* The volume of water which may be extracted from a sand and gravel well depends upon the extent, thickness, and porosity of the deposit, i.e., the size of the storage and the opportunity for replenishment.

Most sand and gravel wells in the County are of the private or farm type and a delivery of from three to seven gallons per minute is all that is usually required even though more may be available.

The municipalities of Antioch with its two wells, Wauconda with one, and Lake Zurich with its two wells depend entirely upon sand and gravel deposits to supply their needs for water. The average daily pumpage approximates 45,000, 10,000, and 25,000 gallons, respectively, with large increases over these figures during the summer months.

Underlying Libertyville is the thick sand and gravel deposit occupying the buried valley previously described. This deposit furnishes a considerable portion of the Municipal water supply. One five-inch well equipped with an air-lift yields more than 300 gallons per minute.

*"Sulfur"* Hydrogen sulfide, "Sulfur" odor in water, is usually considered objectionable, though some people enjoy the flavor if it is not too strong.

As a rule, gravel well waters contain but little, if any, hydrogen sulfide, but several exceptions have been found.

A majority of well drilling contractors in Lake County are of the opinion that the hydrogen sulfide gas is to be found in the top of the limestone. If this is the case, and there seems to be considerable justification for this conclusion, the sulfur water obtained from gravel wells is likely to be the result of an outflow of such water from the rock into the gravel reservoir. The infrequency with which sulfur gas is found in gravel and sand well waters leads to the conclusion that the prospect of obtaining such a water is reasonably remote.

*Oily and Gassy Waters.* Data collected indicate that gravel and sand wells do not yield oily or gassy waters.

#### NIAGARAN DOLOMITE WELLS

Below the mantle of drift is the Niagaran dolomite formation and it is into this formation that most of the wells in the eastern half of the county extend. Dolomite is characteristically somewhat porous. Much of the water secured in the dolomite is found in cracks, crevices, and solution channels, which are generally abundant through this formation. In some places the rock appears to be badly shattered and a large storage capacity is thus afforded. On the other hand, in locations where the rock is but little cracked or broken only small amounts of water are obtained.

*Yield.* Most of the limestone wells considered were private water supplies and under this classification usually yielded all the water required by the owners. Occasionally spots occur where practically no water is found but such occurrences are unusual. The Villages of Lake Bluff, Mundelein and Round Lake secure a portion of their water supply from the dolomite.

The municipality of Lake Bluff has one well which draws water from the Niagaran dolomite at the rate of approximately 50 gallons per minute.



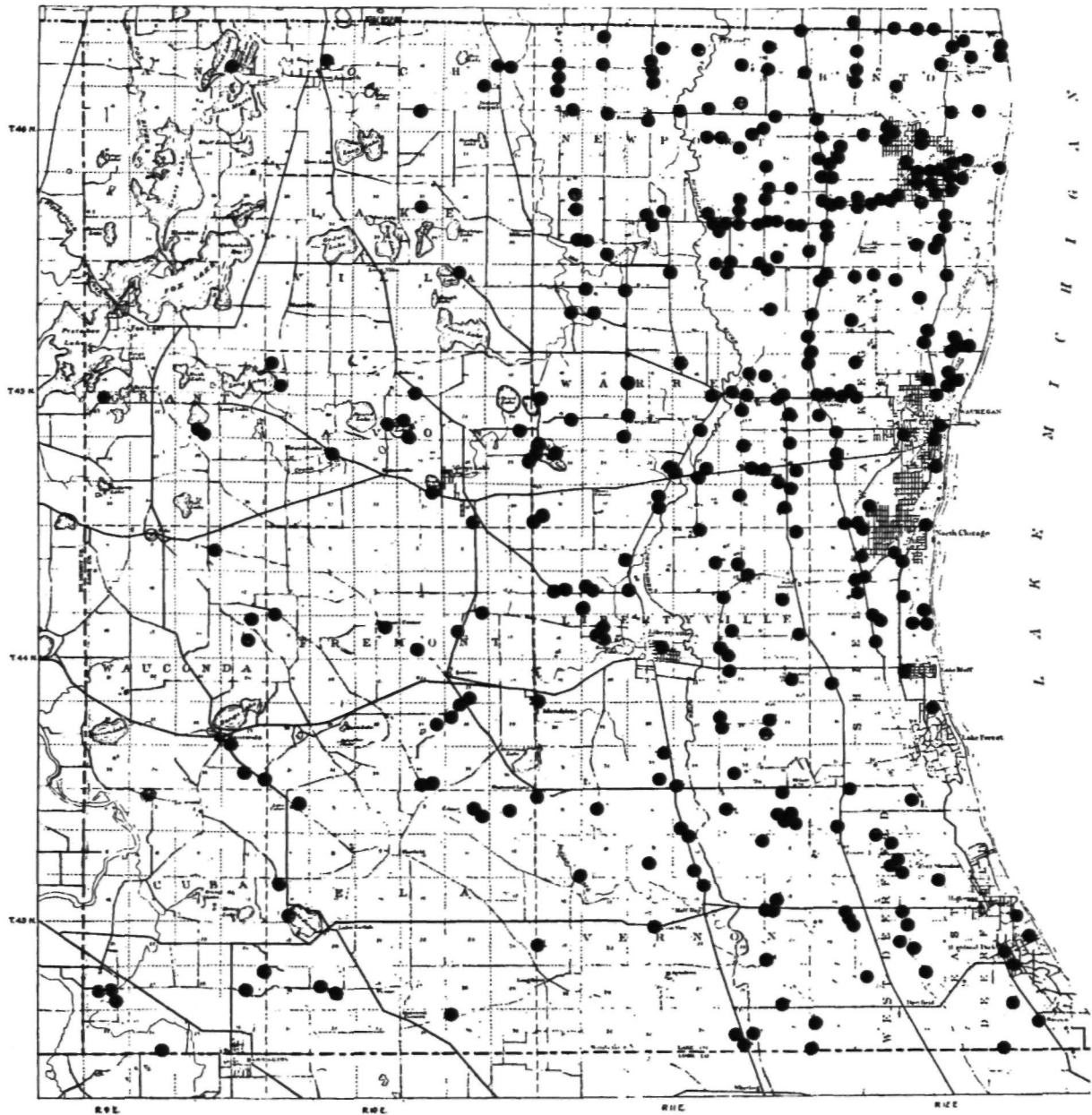


FIG. II.—Wells finished in Niagaran limestone.

The Village of Mundelein has two wells penetrating into the Niagaran dolomite. It is reported that the older of these wells has produced 75 gallons per minute over a two day period of continuous pumping. It is likely that both wells would yield from 100 g.p.m. to 125 g.p.m. should occasion demand.

Round Lake is another small village which secures its supply of water from the dolomite. When this well was new (1912) a discharge of 150 g.p.m. over a period of twenty-four hours was obtained.

"Sulfur." There seems to be ample evidence to prove that hydrogen sulfide gas is a product of the dolomite (Niagaran formation). Some drill-

ers have reported finding the gas in deeper lying structures, but the evidence is too fragmentary to permit positive conclusions.

It has been generally accepted that the ridge, along whose summit Waukegan Road is located, marks the eastern limit of sulfur water wells. The data collected, however, indicate that this eastern limit, if in fact there really is one, is several miles east of Waukegan Road.

A well located over a mile and a quarter east of Winthrop Harbor was reported to have yielded sulfur water when first drilled, a fact which would place the eastern boundary of sulfur water at or beyond the lake shore.

On the other hand, of all the numerous wells drilled in the City of Zion, none yield sulfur with the exception of a well on the north near the NE. corner of the NW.  $\frac{1}{4}$  of Sec. 21, a well on the south in the NE. corner of the SW.  $\frac{1}{4}$  of Sec. 28, and several wells to the west in Sec. 29.

Wells yielding sulfur odors are found: on the sandy flats to the north-east and east of Waukegan, in North Chicago, in Lake Forest, in the southern part of Highland Park, (Ravinia Park), and just over the line in Cook County, all of which is testimony to prove that wells yielding water containing hydrogen sulfide gas are at least possibilities as far east as the lake shore.

Because of the fact that a majority of the wells in the eight eastern townships penetrate into the dolomite, many wells yielding water containing hydrogen sulfide gas are found in this area, and conversely since the number of wells penetrating the limestone in the eight western townships are in the minority the record shows but a few "sulfur wells" in this area. However, the few such wells recorded are widely scattered and would thus tend to lend support to the theory that hydrogen sulfide gas is a possibility from limestone wells at any point in the County.

In so far as the present wells are concerned there exists a considerable variation in the strength or amount of gas given off, ranging from a mere trace to concentrations so strong as to make the water extremely unpleasant.

An interesting feature in connection with the yield of sulfur odor from wells, came to light when owners were questioned about the water quality. A number reported that the gas was more pronounced and the water more turbid on hot days or at times preceding a storm. Since a difference in barometric pressure is known to affect the yield of springs, it is quite possible that a change in barometric pressure may be responsible for the increase of gas liberated at such times.

It would be highly advantageous to be able to advise any prospective well owner or driller at what depths a high sulfur water would be found. Close cooperation between owner, driller, and scientific investigators will, over a period of years, add much to the fund of information, and may permit the formation of definite conclusions in the matter.

*Oily and Gassy Waters.* It has been known for a considerable time that some well waters in Lake County are rendered unpalatable by reason of small quantities of petroleum oil and gas.

In the case of oil the amount is small, consisting usually of large drops or "gobs" of heavy black material having a strong petroleum oil odor.

One or two instances were reported where enough oil was blown out to smear the well rig. As a rule an "oily" well has some gas but there appear to be instances where oil without gas and gas without oil have been noticed.

Of the large number of wells drilled in Lake County records were obtained of but 31 which gave oily and gassy water. All of these were found to be located in the eastern half of the county and to lie in a fairly straight line extending from the northwestern corner of Newport Township in a south easterly direction to the southeast portion of Deerfield Township.

None of these wells ever produced oil or gas in commercial quantities and a review of the data by the State Geological Survey indicates that prospects for Commercial production is not favorable.

The 31 wells producing these oily and gassy waters are somewhat scattered and for convenience in discussion may be divided into three groups.

The northern group consists of three wells, one showing gas only, one oil only, and the third both oil and gas. The first two are located in Section 7 and Section 18, respectively, of Newport Township, while the third is located in Section 12 of Antioch Township.

The central group consists of four wells, one showing oil alone and three gas alone. They are located from 2 to 5 miles west of the City of Waukegan in the southeastern part of Warren Township.

The southern group is by far the largest and perhaps should be subdivided into three subgroups as there are 3 to 4 miles intervening between some of the wells.

The main cluster in this southern group consists of some 20 wells located in the southeastern part of Libertyville Township, the northeastern part of Vernon Township, and the northwestern part of Deerfield Township.

In this area a number of the wells yield water so strongly charged with oil or gas that it has a strong kerosene taste and is very unpalatable. The water from one such well is used in a hot water heating system. The gas accumulates in the radiators and will burn when the vents in the radiators are opened.

A well drilled in 1931 in Section 25 Libertyville Township produced gas at 47 pounds closed pressure, while a second well some 60 to 70 feet away shows both oil and gas but the closed pressure of the latter was only 5 pounds.

Another well in the same section some 500 feet away yields water with a very objectionable taste. The water contains gas in sufficient quantities to burn as the water flows into the farm tank.

In Section 13, Deerfield Township, two wells have been drilled on the same farm, the last one in 1930. The water cannot be used on account of the oil flavor.

A second subdivision of the southern group is represented by a single well in the SW. cor. of Sec. 31, Deerfield Township. Gas only is found in this well.

The third subdivision of the southern group is found in a cluster of three wells, one each in Sections 28 and 36, Deerfield Township, and the third just south of the county line in the northeast corner of Sec. 1, Northfield Township, Cook County.

#### DEEP WELLS

More or less incomplete records are available for 59 wells extending as deep or deeper than the St. Peter sandstone. Of these 59 wells 29 terminate in or penetrate completely the St. Peter sandstone, while 30 pass entirely through it and terminate in the sandstones of the Cambrian system. Nine of these wells may be classified as Dresbach sandstone wells and 21 Mt. Simon sandstone wells.

#### ST. PETER SANDSTONE WELLS

Of the 29 St. Peter sandstone wells 25 are found in the eight eastern townships of the county and only 4 in the eight western townships.

The depths vary from a minimum of 825 feet to a maximum of 1276 feet, while the depths of 22 wells fall within the range of 900 feet and 1050 feet.

Some uncertainty is manifest in some of the construction records of wells into the St. Peter sandstone and deeper formations in that the contractor reported entering the St. Peter sandstone at a certain depth, but the studies of the Geological Survey indicate that in some instances, at least, the sandstone reported as St. Peter is in reality the Glenwood. This formation consists of a relatively thin stratum of sandstone resting on a relatively thin stratum of dolomitic rock, the two strata occupying a position between the bottom of the Galena-Platteville dolomite and the top of the St. Peter sandstone and varying in total thickness from 40 feet to 80 feet.

It is very evident that one well, at least, of this group which was thought to have penetrated the St. Peter sandstone, is in reality finished in the Glenwood sandstone only a few feet above the St. Peter sandstone. Because of the evident intent and a depth so close to the St. Peter sandstone this well has been classed as a St. Peter well.

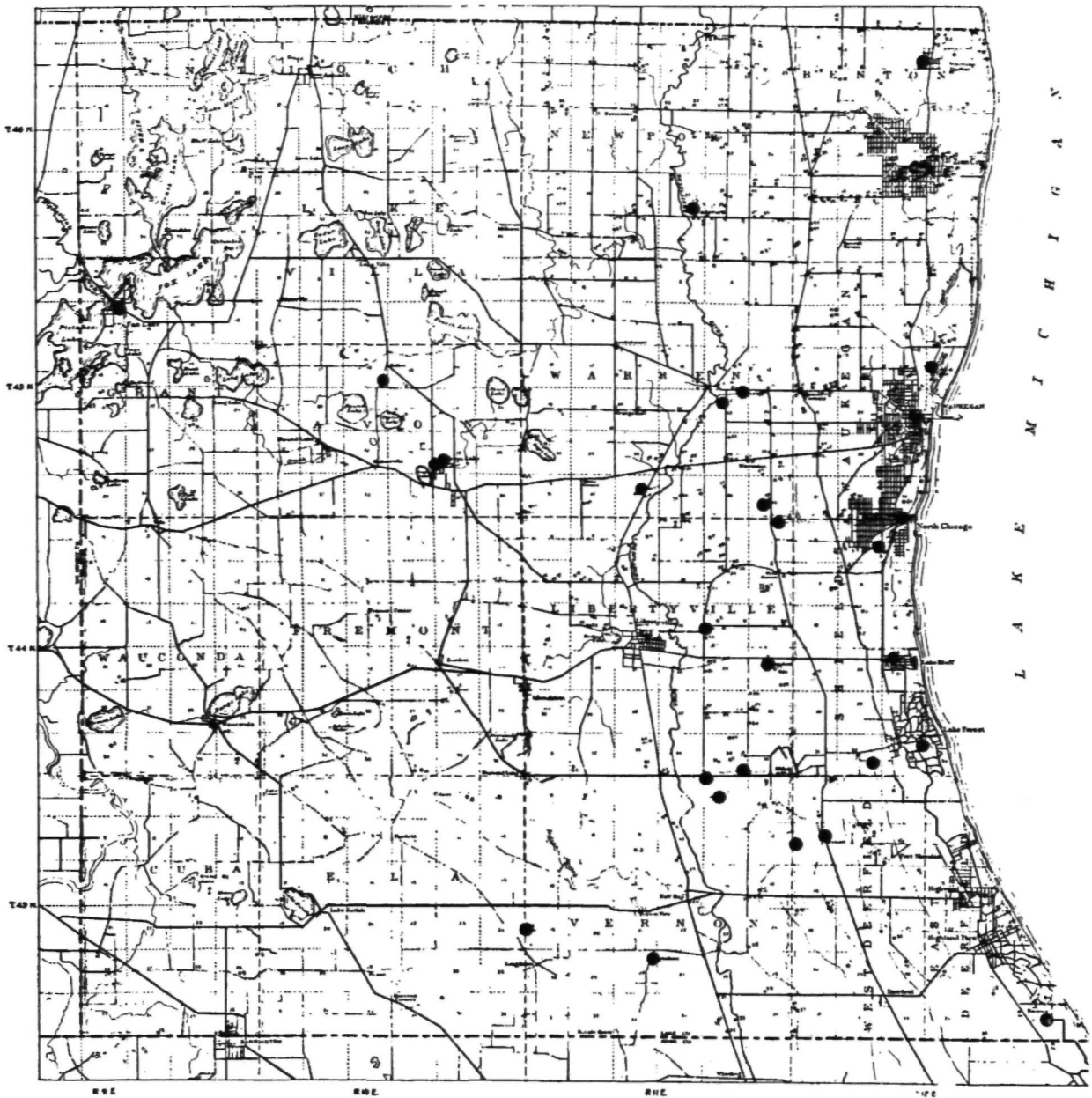


FIG. III.—Wells finished in St. Peter sandstone.

Of the remaining wells 20 terminate in and 8 completely penetrate the St. Peter sandstone. The casing records of many of these wells are not available and therefore it is not possible to set up a quality for the St. Peter well waters. However, there are three factors of much importance to the user which may be considered as fairly representative of the water from this aquifer, i.e., hardness, iron, and residue upon evaporation.

*Yield.* For years the St. Peter sandstone has been recognized in the northern part of the State as an important aquifer and many municipalities as well as industries and individuals have constructed wells into it.

In the beginning many of these wells flowed at the surface but more recently most St. Peter wells require pumping. In general it may safely be assumed that at least 75 g.p.m. can be obtained from the St. Peter sandstone provided the well bore is not too small.

In Lake County two municipalities obtain their entire supply from the St. Peter, i.e., Winthrop Harbor and Fox Lake while the village of Grays Lake obtains part of its supply from this aquifer. In addition a number of golf courses, industries, institutions, and country estates obtain adequate supplies from this formation.

*"Sulfur."* Four wells in this group report hydrogen sulfide. From what stratum it emanates is not known but on the basis of the opinion of many well contractors that the sulfur is encountered in the upper limestone and also from the fact that it has been customary to use minimum amounts of casing it is entirely possible for sulfur water to enter the well from some uncased portion of the hole above the St. Peter sandstone.

Corroded or pitted casing offers another possibility for the entrance of outside water.

*Oily and Gassy Waters.* Oil and hydrocarbon gas are not found in the St. Peter sandstone of Northern Illinois. However, at one well of the St. Peter group a highly effervescent non-odorous water was obtained. The determination and classification of such conditions is reserved for a later and more specialized study of water quality.

#### WELLS DEEPER THAN THE ST. PETER SANDSTONE

The deeper the well, the more complicated becomes the problem of reviewing the conditions entering into the matter of water quality, for the reason that quantity or yield is usually considered the first prerequisite and to secure high yields it has been assumed that every water-yielding stratum must be left open or uncased, so that the water from each may freely enter the well.

It is now known that this idea may be erroneous for it is not unusual to find that water from one stratum will flow freely through the well bore into another stratum. Sometimes this absorbing stratum is below and sometimes it is above the one producing the water. During periods of pumping all aquifers may yield some water and again it is entirely possible that some one or two aquifers are capable of yielding much more water than is required. Therefore, it is reasonable to expect that large volumes of water may at all times pass into non-productive and porous strata, especially during periods when the pumps are idle. This fact may seriously affect the yield of the well and result in material shortening of its life.

Because of these conditions, which may be brought about during the course of construction of the well, or, later develop through corroded and

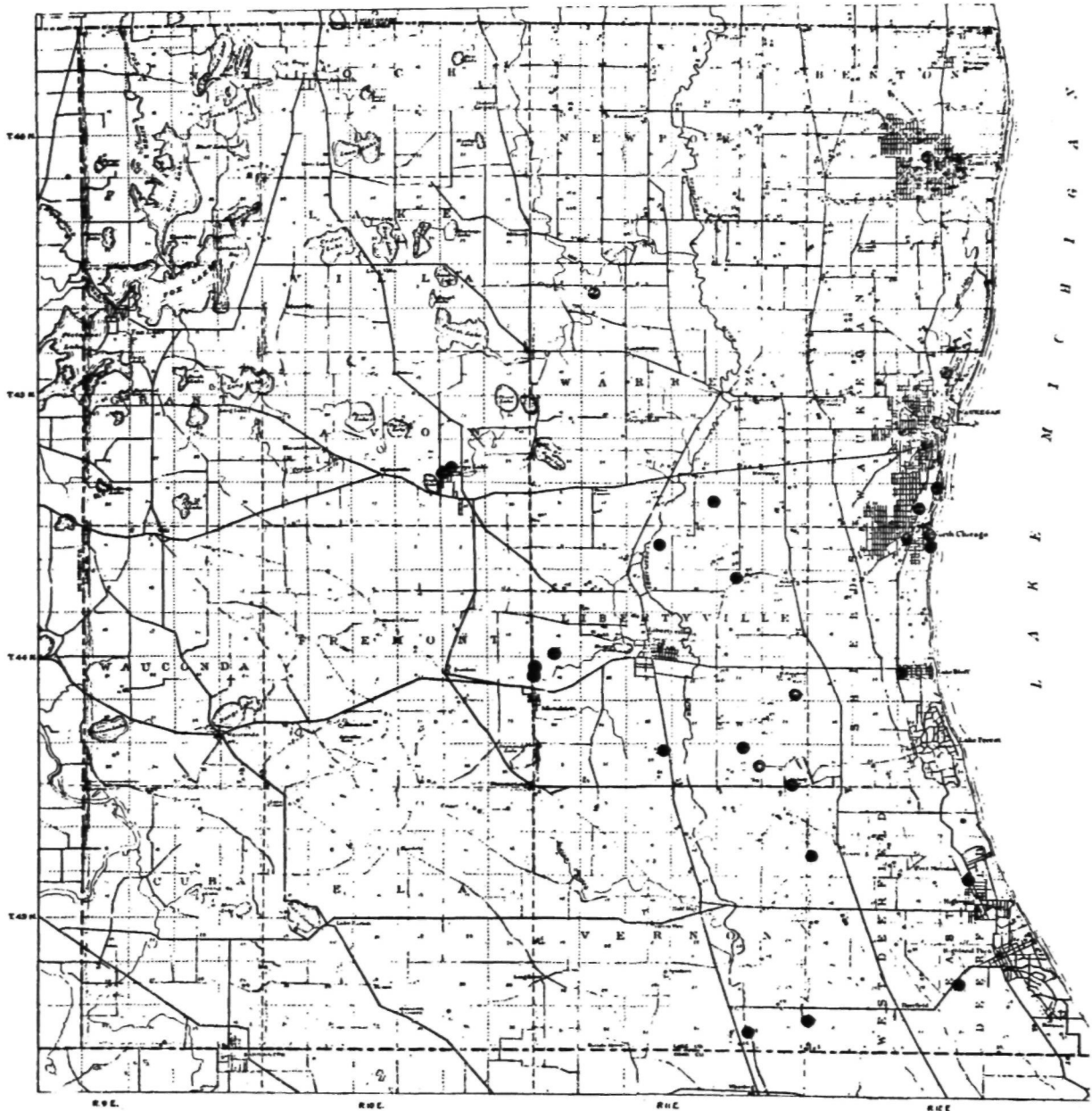


FIG. IV.—Wells finished in Cambrian sandstone.

leaky casing, the analyses of the water from these deep wells do not in most cases represent the exact quality of water in the aquifer found at the bottom of the hole. The analysis only represents the quality of water actually delivered by the well and which may be a commingling of water from several aquifers, good and bad.

In some localities and under certain conditions this movement of water through the well bore from one aquifer to another may result in lowering the quality of water in other wells in that general neighborhood.

Of the 30 wells in Lake County penetrating the Cambrian system, 8 may be considered as entering or passing through the Dresbach sandstone, while the remainder penetrates the deeper Mt. Simon sandstone.

It is likely that a maximum depth of 1450 feet would completely pierce the Dresbach sandstone at most locations in the County. The minimum so far recorded is 1255 feet.

Mt. Simon wells range from a minimum of 1550 to 2269 feet, the latter figure being that of the deepest well on record in the county.

*Yield.* The two Cambrian sandstones, the Dresbach, and the Mt. Simon are capable of producing large quantities of water. In Lake County the Dresbach sandstone may be expected to produce from 150 g.p.m. to 200 g.p.m. while the Mt. Simon is capable of yielding better than 1,000 g.p.m. These figures are influenced by the diameter of the well and the type of pump installed.

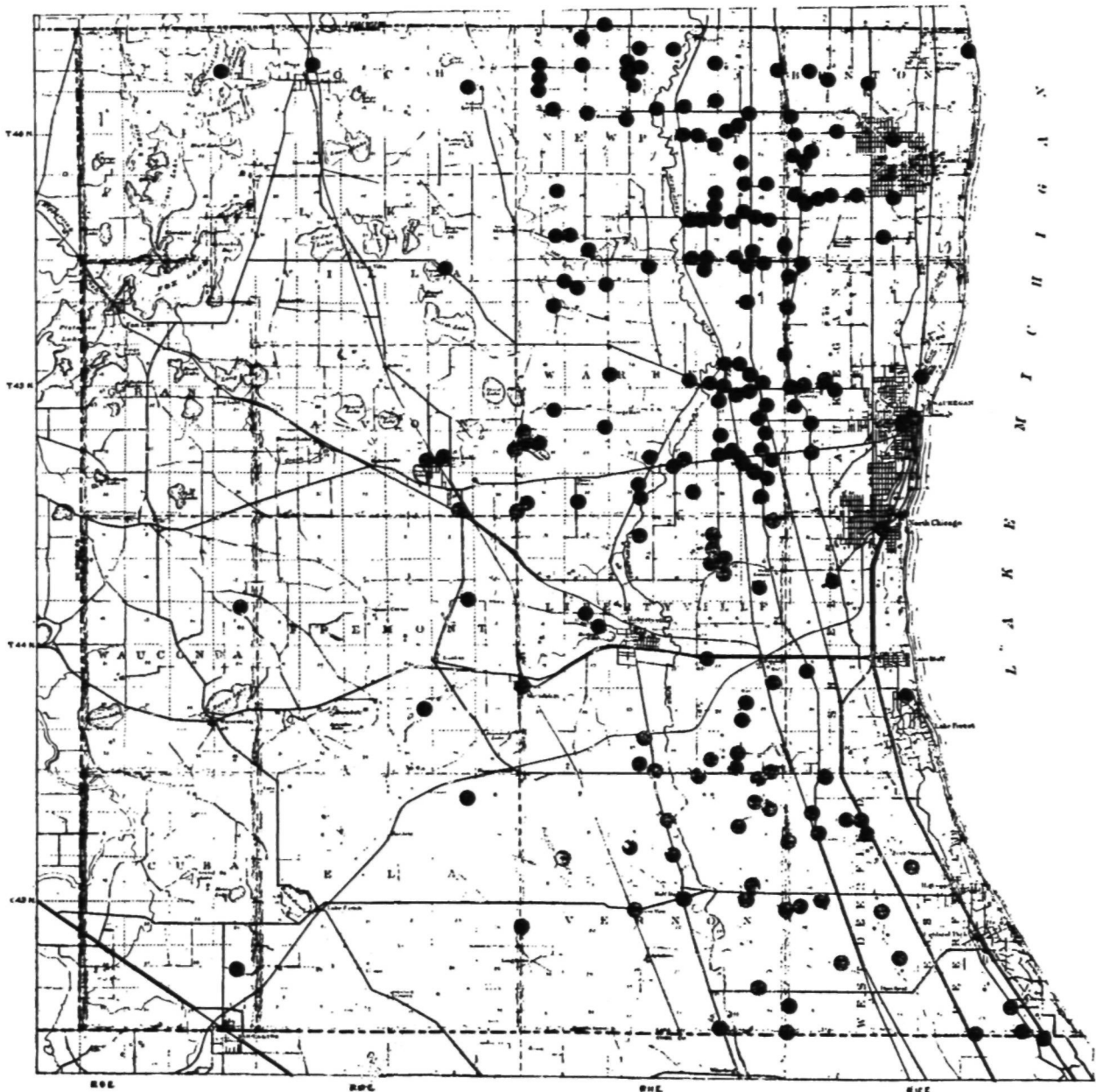


FIG. V.—Wells yielding sulfureted hydrogen gas with the water.



At Zion flowing wells are obtained from the Cambrian sandstone. A portion of the needs of the village of Grays Lake is supplied from these formations, while all of the supply required for the city of North Chicago is drawn from these aquifers.

In addition the village of Lake Bluff obtains part of its supply, and the Institution, St. Mary of the Lake, (Mundelein) obtains all of its supply from the Cambrian sandstones.

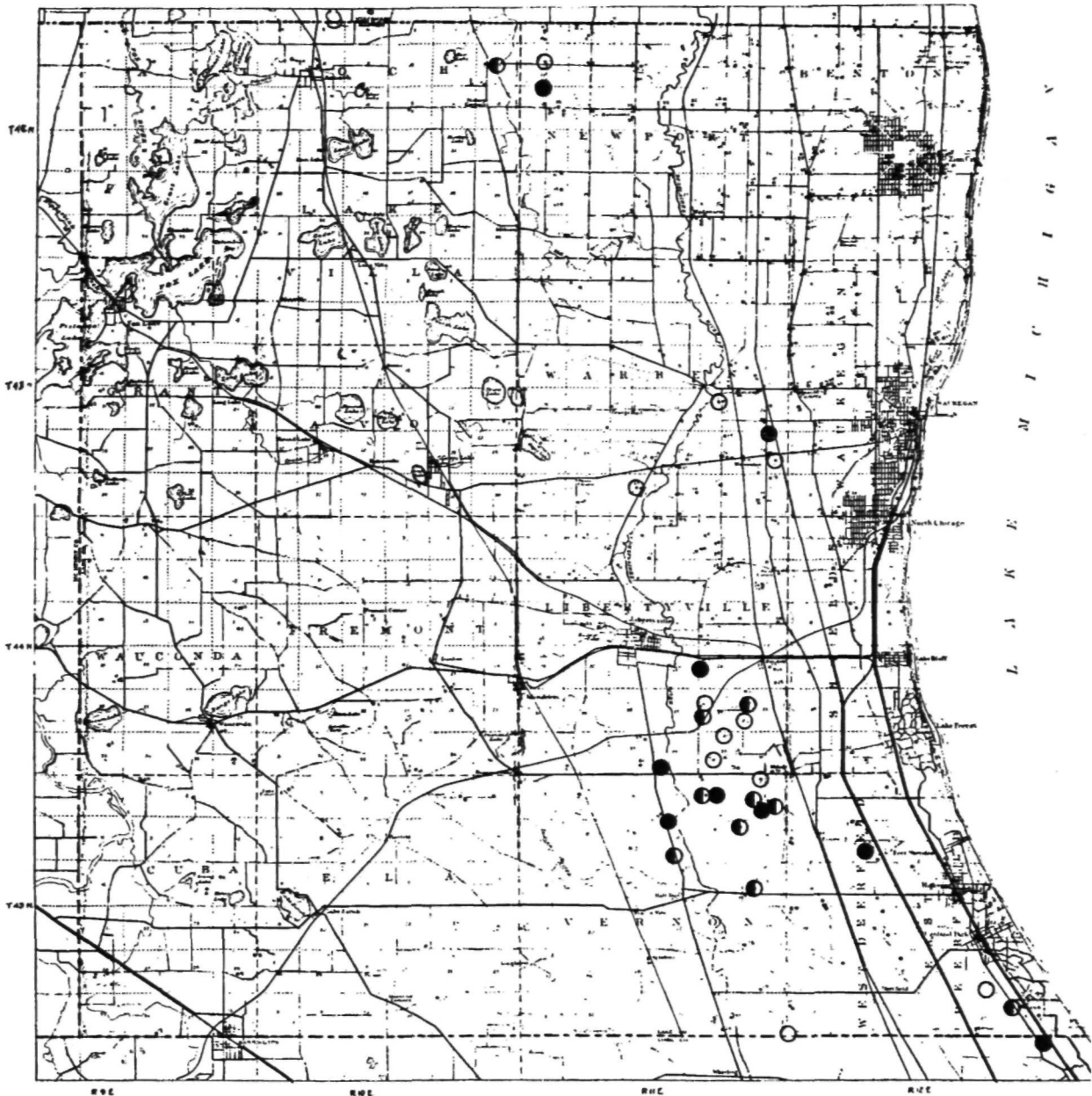


FIG. VI.—Wells contaminated with oil and gas.

Oil present ●  
Gas present ○

*Sulfur.* Hydrogen sulfide odors are found in 14 wells, 6 Dresbach and 8 Mt. Simon. As has been previously mentioned most drillers in this county think this objectionable gas comes from the lime-rock and yet in drilling a 1672-foot well in the central part of the county the contractor in his notes on its construction mentions that sulfur gas was encountered at several depths, the last being at the depth of 1670 feet, and, in an attempt to eliminate the odor, a concrete plug 33 feet in thickness was placed in the bottom. The detailed log of the well records a continuous string of casing from the surface to a depth of 1465 feet, being seated in a limestone formation just above the Mt. Simon sandstone. In spite of these precautions an objectionable amount of sulfur odor was to be noticed in the water as soon as the pumping equipment was installed and is still in evidence four and a half years after its completion. This is the only reliable record in Lake County of a case of sulfur gas in a water pumped exclusively from a deep lying aquifer.

*Oily and Gassy Waters.* Oil and hydrocarbon gas have never been found in the Cambrian sandstones. Of the 30 wells drilled into these sandstones only one, completed in 1931, is located southeasterly of Libertyville and within the zones previously described where oily and gassy waters are found. During the construction of this well the driller reported that he passed through a formation, near the top, which gave off gas, but no oil was noticed. The gas was prevented from entering the well by the installation of a string of casing.

## PART II

## DISCUSSION OF CHEMICAL DATA

BY

S. M. MCCLURE, D. TARVIN, and A. M. BUSWELL

This Lake County study furnishes extensive material for a study of the possible close correlation among the mineral content of waters with the geological formation yielding them. The following considerations indicate the suitability of the region for such a study: (1) the area, about twenty miles square (455 sq. m.) is sufficiently large; (2) the geological formations are gently dipping sedimentary strata, little disturbed by faulting or folding and (3) contain four important water-bearing formations besides the glacial drift; (4) an adequate number of recent analyses, (278), are available and represent each of the five aquifers of the area.

## PREVIOUS WORK

Among the earliest works in this area is that of Udden "Geographical Classification of the Waters of Illinois", Bul. 4, (Ill.) State Water Survey, 1908 (published also as Bul. 10 (Ill.) S.G.S.) in which the Lake County water-bearing strata are recognized and analyses are given. Anderson ("Artesian Waters of Northern Illinois", Bul. 34, (Ill.) S.G.S., 1919) gives a resume of geological structure and notes that "the mineral content of waters from the drift and Niagara limestone have shown considerable variation", but found it "impossible to draw any detailed conclusions regarding the waters from the deeper strata." Thwaites ("Stratigraphy and Geological Structure of Northern Illinois with Special Reference to Underground Water Supplies", Rept. of Invest. No. 13, 1927) recognizes the more recent subdivisions of Cambrian sandstones in the area and the absence of Prairie du Chien group of dolomites from a part of the county (p. 23). Gerber ("Water Supplies in Lake County, Illinois", Abstracted in V. 25, No. 4, p. 146 Trans. Ill. S.A.S. 1933) gives a preliminary report of his work in this area. The completed report is presented in the following pages.

## STRATIGRAPHY AND STRUCTURE

The entire county is covered by glacial drift of late Wisconsin age and is crossed by the Lake Shore moraine in the eastern part and the thicker Valpariso moraine along the western boundary. The drift, perhaps containing somewhat more gravel and sand lenses than in other similar sections,

covers three large pre-glacial valleys and, accordingly, has abnormal (up to 300 ft.) thickness in these sections. The drift, while somewhat less extensively utilized as a water source than in many regions in the state, is the first aquifer considered.

The drift is underlain by the fissured Niagara limestone; this formation has a south eastward dip of 10-12 feet per mile and varies from 125-250 feet in thickness. It is the second aquifer in descending order and is the source of a majority of the water samples analyzed. It is believed that the series from this stratum is the most nearly complete and accurate of the five groups considered.

Below the Niagara lie the impervious Mowequa shale and the Galena-Platteville dolomites for an average thickness of about 450 feet; these lie on the eroded surface of the St. Peter sandstone, the third aquifer of the region. As this sandstone, in turn, was deposited on an older erosion surface, it varies widely from an average of about 200 feet. The dip of this formation is to the southeast and is somewhat greater than that of the Niagara.

Two Cambrian sandstones, the Dresbach and the deeper Mt. Simon, are the fourth and fifth aquifers. The Dresbach is usually separated from the St. Peter by the Prairie du Chien dolomite and the thinner Mazomanic formation but the dolomite is reported absent in parts of Lake County. The Eau Claire shales and sandstones overlie the very thick Mt. Simon sandstone. (The Cambrian sandstones were formerly considered together as the "Potsdam sandstones" but decided differences in the mineralization of waters from each make a distinction desirable.)

The topography features and geological structure are taken from Anderson ("The Artesian Waters of Northern Illinois", Bul. 34, (Ill.) S.G.S., 1919, p. 179-189); however, formations are designated as in Thwaites' correlation of 1927 ("Stratigraphy and Geologic Structure of Northern Illinois With Special Reference to Underground Water Supplies." Rept. of Inv.—No. 13, (Ill.) S.G.S., 1927, table facing p. 10).

#### DATA AND TREATMENT: CONCLUSION

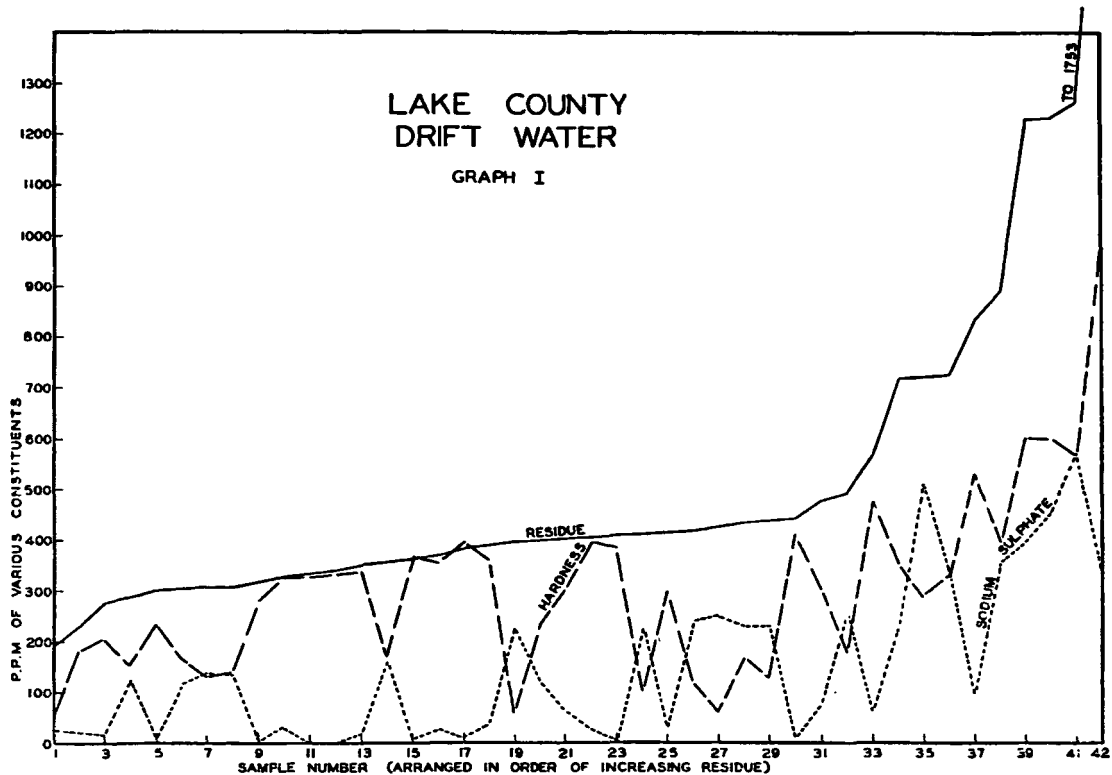
##### (DRIFT WATER)

For the first aquifer, the glacial drift, analyses were available for 54 wells. The median and extreme variations for residue, hardness, three positive ions (Ca, Mg, Na) two negative ions (Cl, SO<sub>4</sub>) with six or more hypothetical combinations of these ions as salts, are summarized in Table I. The variation between the maximum and minimum of any one constituent is generally at least ten-fold and occasionally much over 100 fold in extreme instances. The chloride and sodium chloride contents are lower than might be anticipated.

TABLE I  
SHOWING VARIATION IN AQUIFERS  
LAKE COUNTY

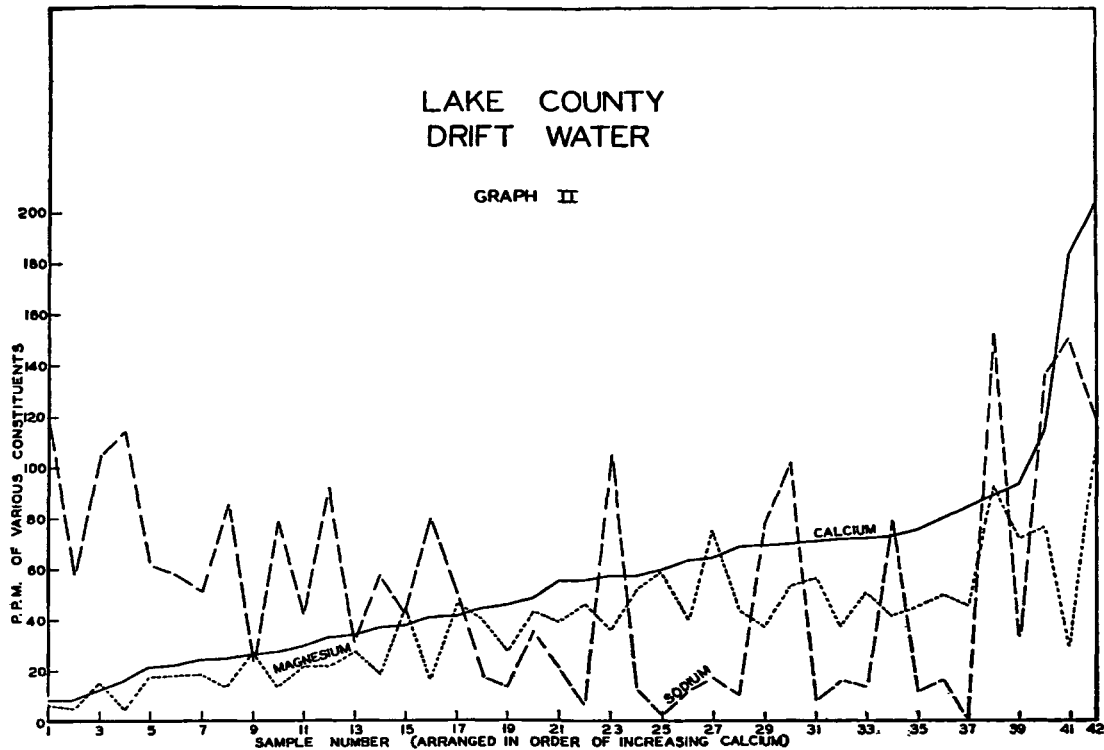
|                     | (54)<br>Drift |     |      | (169)<br>Niagara |       |       | (29)<br>St. Peter |       |       | Dresbach (10)<br>Cambrian |       |       | Mt. Simon (16)<br>Cambrian |       |       |
|---------------------|---------------|-----|------|------------------|-------|-------|-------------------|-------|-------|---------------------------|-------|-------|----------------------------|-------|-------|
|                     | high          | low | med. | high             | low   | med.  | high              | low   | med.  | high                      | low   | med.  | high                       | low   | med.  |
| Residue.....        | 1753          | 193 | 406  | 1693             | 188   | 410   | 1466              | 300   | 550   | 594                       | 255   | 393   | 923                        | 160   | 550   |
| Hardness.....       | 977           | 58  | 344  | 943              | 7     | 145   | 784               | 55    | 317   | 408                       | 132   | 258   | 514                        | 150   | 340   |
| Sodium (+K).....    | 153           | 1   | 58   | 558              | 2     | 95    | 146               | 9     | 65    | 131                       | 10    | 24    | 198                        | 2     | 31    |
| Magnesium.....      | 114           | 5   | 45   | 114              | 3     | 19    | 51                | 8     | 24    | 30                        | 12    | 19    | 26                         | 13    | 20    |
| Calcium.....        | 203           | 9   | 67   | 190              | 1     | 26    | 105               | 8     | 83    | 127                       | 22    | 74    | 171                        | 37    | 92    |
| Sulphate.....       | 1103          | 3   | 185  | 1078             | 1     | 116   | 412               | 1     | 156   | 190                       | 10    | 61    | 336                        | 35    | 172   |
| Chloride.....       | 22            | 1   | 4    | 325              | 2     | 9     | 114               | 1     | 22    | 21                        | 3     | 8     | 290                        | 6     | 13    |
| Sod. Chloride.....  | 36            | 1   | 36   | 536              | 3     | 16    | 154               | 2     | 36    | 34                        | 4     | 18    | 478                        | 4     | 14    |
| Sod. Sulphate.....  | 454           | 1   | 81   | 492              | 1     | 153   | 274               | 2     | 136   | 198                       | 15    | 53    | 151                        | 0     | 77    |
| Sod. Carbonate..... | 91            | 4   | 26   | 837              | 3     | 92    | 202               | 0     | 42    | 261                       | 0     | 16    | 13                         | 0     | 0     |
| Mag. Sulphate.....  | 570           | 4   | 102  | 563              | 2     | 110   | 202               | 0     | 95    | 109                       | 0     | 40    | 129                        | 0     | 96    |
| Mag. Carbonate..... | 209           | 5   | 94   | 234              | 2     | 37    | 141               | 0     | 41    | 106                       | 0     | 64    | 73                         | 0     | 20    |
| Cal. Carbonate..... | 216           | 18  | 107  | 220              | 1     | 67    | 255               | 21    | 190   | 252                       | 55    | 190   | 260                        | 68    | 230   |
| Cal. Sulphate.....  | 578           | 27  | 102  | 552              | 6     | 47    | 91                | 0     | 14    | .....                     | ..... | ..... | 269                        | 0     | 115   |
| Cal. Silicate.....  | 33            | 11  | 23   | .....            | ..... | ..... | .....             | ..... | ..... | .....                     | ..... | ..... | .....                      | ..... | ..... |

A study of the concentration of each mineral constituent shows a wide and uniform range with little tendency toward any average or centralized (modal) grouping. These facts were determined most readily by means of graphs for each constituent in the mineralization. By arranging the samples in order of increasing concentration for a particular constituent and plotting the concentration in parts per million, a curve of more or less even ascent was obtained, though the end members of each series generally increase the slope. The uniform absence of 'plateaus' on the curve emphasize the lack of any pronounced grouping (central tendency) in the series. For example, the residues of 42 drift water samples are shown in graph I.



It was thought that perhaps some relation might be found between the various concentration of the minerals themselves, i.e., high residue might generally result from high calcium, sodium or magnesium. By plotting a "base" graph as described in the preceding paragraph and plotting on it the concentration of any other one of the constituents from the same wells, the relationship becomes apparent. This is shown in graph II where calcium concentration is the "base" curve on which the sodium-magnesium concentrations are superimposed. The hardness and sodium sulphate relation to residue is shown in Graph I. Except where some predetermined relation exists, as between hardness and calcium carbonate, no indication of any general relationship between any two constituents appeared.

From the data available, it is apparent that the waters of the glacial drift in the area have too great a range in mineralization (except in case of the chloride content) for any consistent correlation or classification of samples. The chloride content is exceptional and uniformly low.



#### NIAGARA SAMPLES—DATA AND CONCLUSIONS

The samples from the Niagara limestone, 169 in number, constitute the largest series from any one aquifer. These samples should be relatively free from admixtures of waters from other formations as most of the wells into the limestone, being cased to prevent caving of the drift walls, exclude water from the overlying formation, a condition not general in the case of the three deeper aquifers.

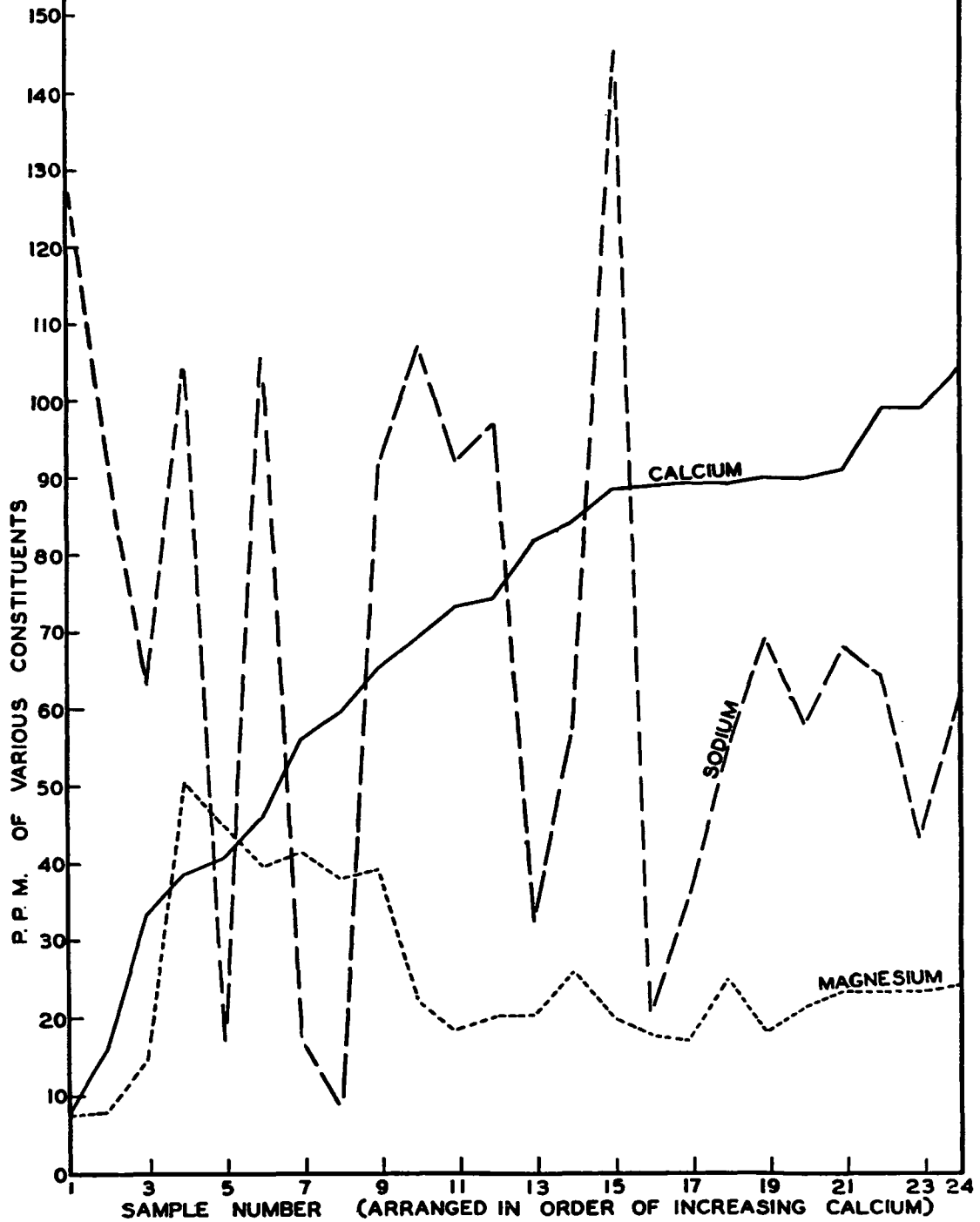
The variations in mineral constituents, summarized in Table I, show somewhat wider ranges from the median concentrations than in case of the drift waters, as more than a thousand-fold variation exists in one constituent, ( $\text{SO}_4$ ). Likewise, no correspondence between the concentration of any two minerals was noted when the comparisons were made by graphs produced as in the treatment of the drift-water data. Again, within the limitations of the data used, it may be safely concluded that no one constitution is typical of the Niagara limestone waters.

#### ST. PETER SAMPLES—DATA AND CONCLUSIONS

Waters from the third aquifer, the St. Peter sandstone, are represented by 29 analyses. The variations of the constituents are shown in Table I.

LAKE COUNTY  
ST. PETER WATER

GRAPH III





These waters are more uniform in mineralization than those of any other series studied. Two-thirds (1) are class II waters (have both carbonate and non-carbonate hardness), (2) have a range in residue between 500-750 p.p.m., and (3) in hardness, between 200-350 p.p.m. The individual minerals, however, vary widely in amounts and show no mutual relations; this is shown in the Ca-Mg-Na graph (III). It is to be concluded that while the variations are less than in the two previous series, the range is again too wide for practical use.

#### DRESBACH AND MT. SIMON WELLS—DISCUSSION AND CONCLUSIONS

The wells into the Cambrian sandstones are the least numerous; there are 10 Dresbach and 16 Mt. Simon samples. Moreover, these samples may contain a large but unknown amount of water from other formations; the Dresbach wells frequently do not have the flow from the St. Peter cased off and the deeper Mt. Simon may represent an admixture of both St. Peter and the Dresbach flows with its own. The analyses selected are believed to represent the more nearly typical waters from each Cambrian sandstone and the characteristic differences in composition of the two series is evident. The results are summarized in Table I. In view of the wide ranges in the constituents, as well as the lack of reciprocal concentration in any pair of constituents in a series, no particular composition can be considered as typical of water supply of either aquifer.

#### GENERAL CONCLUSION

The conclusion reached in the case of the waters from the glacial drift apparently applies to each aquifer. Accordingly, within the area considered and on the basis of the data available, it may be stated that the water from each aquifer shows too wide a range in mineralization with too slight a tendency toward any composition typical or characteristic of the series as a whole, for any valid prediction of the mineralization of a sample from any aquifer in the area.

## PART III

## TABULATION OF DATA FOR WELLS IN

|                       |                     |
|-----------------------|---------------------|
| BENTON TOWNSHIP       | ANTIOCH TOWNSHIP    |
| WAUKEGAN TOWNSHIP     | LAKE VILLA TOWNSHIP |
| SHIELDS TOWNSHIP      | AVON TOWNSHIP .     |
| DEERFIELD TOWNSHIP    | FREMONT TOWNSHIP    |
| NEWPORT TOWNSHIP      | ELA TOWNSHIP        |
| WARREN TOWNSHIP       | GRANT TOWNSHIP      |
| LIBERTYVILLE TOWNSHIP | WAUCONDA TOWNSHIP   |
| VERNON TOWNSHIP       | CUBA TOWNSHIP       |

| No.   | Description   |
|---|---|
| BENTON TOWNSHIP—T. 46 N., R. 12 E. of 3rd P. M. |   |
| 1   | M. J. Zollman, owner; location 1400'E. & 600'N. of S. W. Cor. Sec. 2. Ground surface elevation 590 ft.* Depth to limestone 118'. Total depth 118'. Yield 10 G. P. M.    |
| 2   | Needham, owner. Location N.W. Cor. S.W. ¼ Sec. 2. Ground surface elevation 585 ft.* Depth to limestone 113'. Total depth 157'.  |
| 3   | Spencer, owner. Location 1000'S. & 1000'E. N.W. Cor. S.W. M Sec. 3. Ground surface elevation 633 ft.* Total depth 128' finished in gravel.                              |
| 4   | J. Johansen & Son, owner. Location 1150'N. & 2200'E. S.W. Cor. Sec. 3. Ground surface elevation 620 ft.* Depth to limestone 116'. Total depth 130'. Flows 7.5-10 G.P.M. |
| 5   | Monark Lock Company, owner. Location 500'N. & 900'E. S.W. Cor. Sec. 3. Ground surface elevation 625 ft.* Depth to limestone 128'. Total depth 133'.                     |
| 6   | Peter Larson, owner, location 100'N. & 1100'W. N.E. Cor. S.E. ¼ Sec. 4. Ground surface elevation 644 ft.* Depth to limestone 138'. Total depth 169'.                    |
| 7   | Wendorf (formerly Mitchel), owner, location 100'N. & 900'E. N.W. Cor. S.W. ¼ Sec. 4. Ground surface elevation 653 ft.* Depth to limestone 141'. Total depth 158'.       |
| 8   | Casterton, owner, location 150'N. & 500'W. N.E. Cor. S.E. ¼ Sec. 5. Ground surface elevation 660 ft.* Depth to limestone 145'. Total depth 165'.                        |
| 9   | Charles Smith, owner, location 2200'W. 8c 100's. N.E. Cor. S.E. ¼ Sec. 5. Ground surface elevation 690 ft.* Total depth 57' finished in gravel.                         |
| 10  | John Gould, owner, location 800'N. & 500'W. N.E. Cor. S.E. ¼ Sec. 6. Ground surface elevation 740 ft.* Depth to limestone 220'. Total depth 240'.                       |
| 11  | J. R. Connell, owner, location 200'S. & 2100'W. N.E. Cor. S.E. ¼ Sec. 7. Ground surface elevation 743 ft.* Total depth 140' finished in gravel.                         |
| 12  | Joslovski, owner, location 50'E. & 1200'N. S.W. Cor. Sec. 8. Ground surface elevation 727 ft.* Depth to limestone 193'. Total depth 227'.                               |
| 13  | N. Prairie School, location 100'E. & 100'N. S.W. Cor. N.W. ¼ Sec. 8. Ground surface elevation 733 ft.* Depth to limestone 200'. Total depth 220'.                       |
| 14  | E. A. Foreman, owner, location 200'E. & 2400'N. S.W. Cor. N. W. ¼ Sec. 8. Ground surface elevation 742 ft.* Depth to limestone 210'. Total depth 220'.                  |
| 15  | Fred Korner, owner, location 200'W. & 800'N. S.E. Cor. Sec. 8. Ground surface elevation 690 ft.* Depth to limestone 155'. Total depth 180'.                             |
| 16  | Winthrop Harbor, location 1500'S. & 250'W. N.E. Cor. Sec. 9. Ground surface elevation 650 ft.* Depth to limestone 153'. Total depth 957'.                               |
| 17  | Kenosha Wheel Co., location 2000'W. & 800'S. N.E. Cor. Sec. 10. Ground surface elevation 585 ft.* Flows.  |
| 18  | Needham, owner, location 1400'E. & 400'S. N.W. Cor. Sec. 11. Ground surface elevation 585 ft.* Depth to limestone 116'. Total depth 144'.                               |
| 19  | Camp Logan, location 1000'W. & 500'N. S.E. Cor. N.E. ¼ Sec. 15. Ground surface elevation 590 ft.* Depth to limestone 180'. Total depth 180'.                            |
| 20  | Wm. Slater, owner, location 900'E. & 200'N. S.W. Cor. N.W. ¼ Sec. 15. Ground surface elevation 625 ft.* Depth to limestone 116'. Total depth 140'.                      |
| 21  | (Zion), location 300'W. & 60'N. S.E. Cor. S.W. ¼ Sec. 16 (21 & Ezekial, Zion). Ground surface elevation 650 ft.* Depth to limestone 156'. Total depth 165'.             |
| 22  | Ed. C. Peterson, owner, location 800'W. & 200'S. N.E. Cor. Sec. 17. Ground surface elevation 705 ft.* Depth to limestone 178½'. Total depth 185'.                       |
| 23  | C. W. Crosby, Zion, owner; location 375'N. & 500'W. S.E. Cor. Sec. 17. Ground surface elevation 670 ft.* Depth to limestone 162'. Total depth 176'. Yield 5 G. P. M.    |
| 24  | Pierce, Zion, owner; location 1275'W. & 1050'N. S.E. Cor. Sec. 17. Ground surface elevation 690 ft.* Depth to limestone 189'. Total depth 189'.                         |
| 25  | C. N. Richards, owner, location 1100'E. & 100'N. S.W. Cor. Sec. 17. Ground surface elevation 705 ft.* Depth originally 200', now only 60'.                              |
| 26  | S. L. Crawford, owner, location 100'N. & 400'E. S.W. Cor. N.W. ¼ Sec. 18. Ground surface elevation 722 ft.* Total depth 18'.  |
| 27  | W. W. G. Scott, owner, location 800'E. & 500'S. N.W. Cor. S.W. ¼ Sec. 18. Ground surface elevation 730 ft.* Depth to limestone 230'. Total depth 233'.                  |
| 28  | W. A. Scott, owner, location 125'S. & 1300'E. N.W. Cor. Sec. 19. Ground surface elevation 750 ft.* Depth to limestone 233'. Total depth 248'.                           |
| 29  | C. H. Leach Est., location 1200'E. & 2400'N. S.W. Cor. Sec. 19. Ground surface elevation 750 ft.* Total depth 250'. Yield 7 G. P. M.                                    |
| 30  | Geo. Strochan, owner, location 1700'E. & 300'N. S.W. Cor. Sec. 19. Ground surface elevation 742 ft.* Depth to limestone 236'. Total depth 237'.                         |
| 31  | Tony Durka, owner, location 2000'E. & 300'N. S.W. Cor. Sec. 19. Ground surface elevation 750 ft.* Depth to limestone 240'. Total depth 255'.                            |
| 32  | Location 2600'E. & 2000'N. S.W. Cor. Sec. 19. Ground surface elevation 736 ft.* Depth to limestone 228'. Total depth 246'.  |
| 33  | V. T. Noffzieger, owner, location 2100'W. & 2100'N. S.E. Cor. Sec. 19. Ground surface elevation 733 ft.* Depth to limestone 224'. Total depth 225'. Yield 7 G. P. M.    |

\*Above sea level.



| No.                       | Description   |
|---------------------------|---|
| BENTON TOWNSHIP—continued |   |
| 34                        | Frank L. Beierle, owner, location, 2300'W. & 2400'N. S.E. Cor. Sec. 19. Ground surface elevation 730 ft.* Total depth 85'.  |
| 35                        | Frank L. Davis, owner, location 1500'W. & 1200'S. N.E. Cor. Sec. 19. Ground surface elevation 722 ft.* Total depth 265'. Yield 7 G. P. M.   |
| 36                        | Charles Samsan, owner, location 500'S. & 3300'W. N.E. Cor. Sec. 20. Ground surface elevation 702 ft.* Depth to limestone 188'. Total depth 211'.  |
| 37                        | (Zion), location 720'S. & 0'W. N.E. Cor. N.W. ¼ Sec. 21. Ground surface elevation 650 ft.* Total depth to limestone 156'. Total depth 166'.   |
| 38                        | (Zion), location 400'S. & 1000'E. N.W. Cor. S.W. ¼ Sec. 21. Ground surface elevation 660 ft.* Depth to limestone 165'. Total depth 180'.  |
| 39                        | (Zion), location 600'E. & 1200'S. N.W. Cor. S.W. ¼ of Sec. 21. Ground surface elevation 665 ft.* Total depth 98' finished in gravel.  |
| 40                        | (Zion), location 350'W. & 900'N. S.E. Cor. S.W. ¼ Sec. 21. Ground surface elevation 655 ft.* Depth to limestone 154'. Total depth 154'.   |
| 41                        | (Zion), location 350'W. & 375'N. S.E. Cor. S.W. ¼ Sec. 21. Ground surface elevation 652 ft.* Depth to limestone 163'. Total depth 163'.   |
| 42                        | W. F. Loblaw, Zion, owner; location 1400'W. & 875'N. S.E. Cor. Sec. 21. Ground surface elevation 645 ft.* Depth to limestone 160'. Total depth 160'. Yield 20 G. P. M.  |
| 43                        | Shiloh Park, Zion, location 280'S. & 1010'E. N.W. Cor. S.E. ¼ Sec. 21. Ground surface elevation 648 ft.* Depth to limestone 165'. Depth to St. Peter sandstone 850'. Depth to Dresbach sandstone 1160'. Depth to Mt. Simon sandstone 1535'. Total depth 1569'. Flows 200 G. P. M. |
| 44                        | City well, Zion, location 510'W. & 1480'S. N.E. Cor. S.E. ¼ Sec. 21. Ground surface elevation 635 ft.* Depth to limestone 163'. Depth to St. Peter sandstone 896'. Total depth 1025'. Yield 400 G. P. M.  |
| 45                        | Heat Plant, Zion, location 125'W. & 1550'S. N.E. Cor. S.E. ¼ Sec. 21. Ground surface elevation 635 ft.* Depth to limestone 164'. Total depth 175'. Yield 7 G. P. M.   |
| 46                        | Creamery, Zion, location 80'W. & 1680'S. N.E. Cor. S.E. ¼ Sec. 21. Ground surface elevation 635 ft.* Depth to limestone 162'. Depth to St. Peter sandstone. 895'. Total depth 969'. Yield 300 G. P. M.  |
| 47                        | Bishop, Zion, owner, location 1150'E. & 1800'S. N.W. Cor. Sec. 22. Ground surface elevation 615 ft.* Total depth 160'. Yield 4 G. P. M.   |
| 48                        | (Zion), location 700'E. & 650'N. S.W. Cor. N.W. ¼ Sec. 22. Ground surface elevation 618 ft.* Total depth 15V finished in gravel.  |
| 49                        | Zion Hotel, Zion, location 200'E. & 400'S. N.W. Cor. S.W. ¼ Sec. 22. Ground surface elevation 630 ft.* Depth to limestone 147'. Total depth 225'.   |
| 50                        | Chief of Police, Zion, owner; location 750'E. & 500'N. S.W. Cor. Sec. 22. Ground surface elevation 613 ft.* Yield 3 G. P. M.  |
| 51                        | (Zion), location 1300'E. & 700'S. N.W. Cor. S.W. ¼ Sec. 22. Ground surface elevation 611 ft.* Depth to limestone 137'. Total depth 154'.  |
| 52                        | Edina Park, Zion, location 320'S. & 888'W. N.E. Cor. S.W. ¼ Sec. 22. Ground surface elevation 595 ft.* Total depth 1500'. Flows 40 G. P. M.   |
| 53                        | At Bakery, Old Power Plant (Zion), location 700'N. & 450'W. S.E. Cor. S.W. ¼ Sec. 22. Ground surface elevation 595 ft.*   |
| 54                        | Art. Well No. 1, Zion, location 570'N. & 510'W. S.E. Cor. S.W. ¼ Sec. 22. Ground surface elevation 595 ft.* Total depth 1370'. Flows 10 G. P. M.  |
| 55                        | Candy Factory, Zion, location 450'W. & 50'N. S.E. Cor. S.W. ¼ Sec. 22. Ground surface elevation 595 ft.* Total depth 135'.  |
| 56                        | Laundry Well, Zion, location 140'N. & 160'W. S.E. Cor. S.W. ¼ Sec. 22. Ground surface elevation 595 ft.*  |
| 57                        | Lace Factory No. 1, Zion, location 175'E. & 1630'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 588 ft.* Total depth 227'. Yield 15 G. P. M.   |
| 58                        | Lace Factory No. 2, Zion, location 175'E. & 1725'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 588 ft.* Total depth 75'.  |
| 59                        | Lace Factory Nos. 3-4-5, Zion, location 400'E. & 1600'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 58 ft.* Total depth 50-60' finished in gravel. Yield 50 G. P. M.  |
| 60                        | Lace Factory No. 6, Zion, location 300'E. & 1550'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 588 ft.* Total depth 226'. Yield 35 G. P. M.   |
| 61                        | Lace Factory No. 7, Zion, location 300'E. & 1380'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 588 ft.* Total depth 232'. Yield 35 G. P. M.   |
| 62                        | Print Shop, Zion, location 200'E. & 200'S. N.W. Cor. S.E. ¼ Sec. 22. Ground surface elevation 588 ft.* Total depth 108'. Yield 5 G. P. M.   |
| 63                        | Zion Estates, Zion, location 1300'E. & 1300'N. S.W. Cor. Sec. 23. Ground surface elevation 585 ft.* Depth to limestone 105'. Total depth 138'.  |
| 64                        | 31st & Elizabeth, Zion; location 900'E. & 1300'N. S.W. Cor. N.W. ¼ Sec. 27. Ground surface elevation 617 ft.* Depth to limestone 132'. Total depth 149'.  |
| 65                        | George Shaw, owner, location 100'E. & 1600'S. N.W. Cor. S.W. ¼ Sec. 27. Ground surface elevation 636 ft.* Depth to limestone 150'. Total depth 156'.  |

\*Above sea level.

| Total dissolved solids | Silica SiO <sub>2</sub> | Iron Fe | Calcium Ca | Magnesium Mg | Potassium and Sodium Na + K | M. O. Alkalinity CaCO <sub>3</sub> | Sulfate SO <sub>4</sub> | Chloride Cl | Nitrate NO <sub>3</sub> | Total hardness CaCO <sub>3</sub> | W=Well No.<br>L=Lab. No.             |
|------------------------|-------------------------|---------|------------|--------------|-----------------------------|------------------------------------|-------------------------|-------------|-------------------------|----------------------------------|--------------------------------------|
| 293.0                  | 10.0                    | .....   | 9.9        | 4.6          | 95.5                        | 172.0                              | .4                      | 55.0        | 1.6                     | 43.0                             | W-34<br>W-35<br>L-67501<br>W-36      |
| Note:                  | H <sub>2</sub> S slight | .....   | .....      | .....        | .....                       | .....                              | .....                   | .....       | .....                   | .....                            | W-37<br>W-38<br>W-39<br>W-40<br>W-41 |
| 360.0                  | 10.0                    | .....   | 14.3       | 8.2          | 102.5                       | 138.0                              | 100.3                   | 35.0        | 1.1                     | 69.0                             | W-42<br>L-68688                      |
| 680.0                  | 12.0                    | .4      | 134.4      | 20.5         | 44.7                        | 250.0                              | 239.1                   | 13.0        | .....                   | 420.0                            | W-43<br>L-64617                      |
| 587.0                  | 19.7                    | .3      | 90.1       | 26.7         | Na 56.0<br>K 13.0           | 250.0                              | 143.7                   | 28.0        | .9                      | 335.7                            | W-44<br>L-56083                      |
| 552.0                  | .....                   | .8      | .....      | .....        | .....                       | 200.0                              | .....                   | 44.0        | .....                   | 144.0                            | W-45<br>L-64620                      |
| 660.0                  | .....                   | .1      | .....      | .....        | .....                       | 236.0                              | .....                   | 100.0       | .....                   | 224.0                            | W-46<br>L-64619                      |
| 293.0                  | 21.0                    | .2      | 24.2       | 18.8         | 48.8                        | 164.0                              | 64.0                    | 9.0         | 1.2                     | 137.0                            | W-47<br>L-68680<br>W-48<br>W-49      |
| 391.0                  | 11.0                    | .2      | 12.8       | 8.9          | 113.6                       | 146.0                              | 90.8                    | 53.0        | 1.8                     | 69.0                             | W-50<br>L-68687<br>W-51              |
| 620.0                  | .....                   | .6      | .....      | .....        | .....                       | 256.0                              | .....                   | 11.0        | .....                   | 384.0                            | W-52<br>L-64618<br>W-53              |
| 594.0                  | 15.0                    | .4      | 127.0      | 22.2         | 24.8                        | 252.0                              | 190.0                   | 9.0         | 1.1                     | 408.0                            | W-54<br>L-68232<br>W-55<br>W-56      |
| 382.0                  | .....                   | .2      | .....      | .....        | .....                       | 172.0                              | .....                   | 23.0        | .....                   | 144.0                            | W-57<br>L-64623<br>W-58              |
| 556.0                  | .....                   | 3.0     | .....      | .....        | .....                       | 282.0                              | .....                   | .....       | .....                   | 344.0                            | W-59<br>L-64624                      |
| 408.0                  | .....                   | .....   | .....      | .....        | .....                       | 142.0                              | .....                   | 36.0        | .....                   | 104.0                            | W-60<br>L-64625                      |
| 344.0                  | .....                   | .2      | .....      | .....        | .....                       | 138.0                              | .....                   | 19.0        | .....                   | 144.0                            | W-61<br>L-64626                      |
| 295.0                  | .....                   | T       | .....      | .....        | .....                       | 154.0                              | .....                   | 11.0        | .....                   | 144.0                            | W-62<br>L-64622<br>W-63<br>W-64      |
| 361.0                  | 20.0                    | .6      | 26.6       | 19.1         | 69.7                        | 170.0                              | 107.9                   | 11.0        | .....                   | 145.0                            | W-65<br>L-67723                      |

| No.                                  | Description   |
|--------------------------------------|---|
| BENTON TOWNSHIP—continued            |   |
| 66                                   | 3100 Emmous, Zion, location 950'W. & 1275'N. S.E. Cor. N.E. ¼ Sec. 28. Ground surface elevation 638 ft.* Depth to limestone 148'. Total depth 190'.       |
| 67                                   | Henry Shaw, Zion, owner; location 1350'W. & 450'S. N.E. Cor. Sec. 28. Ground surface elevation 645 ft.* Depth to limestone 160'. Total depth 200'.        |
| 68                                   | 2906 Ezekiel, Zion; location 350'W. & 200'S. N.E. Cor. N.W. ¼ Sec. 28. Ground surface elevation 649 ft.* Depth to limestone 155'. Total depth 180'.       |
| 69                                   | Tuttle, 2913 Gabriel, Zion, owner; location 1750'E. & 275'S. N.W. Cor. Sec. 28. Ground surface elevation 648 ft.* Total depth 160'.                       |
| 70                                   | Earl Cook, owner, location 2500'E. & 200'S. N.W. Cor. S.W. ¼ Sec. 28. Ground surface elevation 625 ft.* Depth to limestone 135'. Total depth 149'. Flows. |
| 71                                   | Guschausky, owner, location 250'W. & 650'N. S.E. Cor. N.E. ¼ Sec. 29. Ground surface elevation 670 ft.* Depth to limestone 184'. Total depth 190'.        |
| 72                                   | A. C. Anderson Res., location 100'N. & 900'W. S.E. Cor. N.E. ¼ Sec. 29. Ground surface elevation 680 ft.* Total depth 192'.                               |
| 73                                   | A. C. Anderson Farm, location 400'S. & 900'W. N.E. Cor. S.E. ¼ Sec. 29. Ground surface elevation 680 ft.* Total depth 192'.                               |
| 74                                   | T. W. Eliason, owner, location 200'N. & 800'E. S.W. Cor. N.E. ¼ Sec. 29. Ground surface elevation 675 ft.* Depth to limestone 202'. Total depth 205'.     |
| 75                                   | Location 200'S. & 200'W. N.E. Cor. S.W. ¼ Sec. 29. Ground surface elevation 688 ft.* Depth to limestone 200'. Total depth 203'.                           |
| 76                                   | Julia A. Crabtree, owner, location 100'N. & 400'E. S.W. Cor. N.W. ¼ Sec. 29. Ground surface elevation 730 ft.* Depth to limestone 228'. Total depth 249'. |
| 77                                   | A. C. Paul, owner, location 200'S. & 500'E. N.W. Cor. S.W. ¼ Sec. 29. Ground surface elevation 732 ft.* Depth to limestone 210'. Total depth 240'.        |
| 78                                   | Location 200'S. & 1000'W. N.E. Cor. S.E. ¼ Sec. 30. Ground surface elevation 730 ft.* Depth to limestone 200'. Total depth 275'.                          |
| 79                                   | F. H. Bartlett, owner, location 200'S. & 1700'W. N.E. Cor. S.E. ¼ Sec. 30. Ground surface elevation 735 ft.* Depth to limestone 144'. Total depth 178'.   |
| 80                                   | F. H. Bartlett, owner, location 200'S. & 2200'E. N.W. Cor. S.W. ¼ Sec. 30. Ground surface elevation 747 ft.* Depth to limestone 158'. Total depth 173'.   |
| 81                                   | Hicoria Estates, location 2200'E. & 2400'S. N.W. Cor. Sec. 30. Ground surface elevation 747 ft.* Total depth 85' finished in gravel.                      |
| 82                                   | Howe School, location 1900'E. & 2600'N. S.W. Cor. Sec. 30. Ground surface elevation 743 ft.* Depth to limestone 215'. Total depth 215'.                   |
| 83                                   | Location 2100'E. & 500'S. N.W. Cor. Sec. 31. Ground surface elevation 734 ft.* Total depth 190'?  |
| 84                                   | E. D. Kelley, owner, location 2200'E. & 1000'S. N.W. Cor. Sec. 31. Ground surface elevation 730 ft.* Depth to limestone 216'. Total depth 240'.           |
| 85                                   | Orchard Hill Golf Club, location 100'E. & 1800'N. S.W. Cor. Sec. 31. Ground surface elevation 698 ft.* Depth to limestone 178'. Total depth 197'.         |
| 86                                   | Pine View Cemetery, location 100'N. & 1300'E. S.W. Cor. N.W. ¼ Sec. 33. Ground surface elevation 650 ft.* Total depth 118' finished in gravel.            |
| 87                                   | Paul Hudson; owner, location 200'S. & 500'W. N.E. Cor. S.W. ¼ Sec. 33. Ground surface elevation 640 ft.* Depth to limestone 126'. Total depth 126'.       |
| 88                                   | Joe Darrow, owner, location 100'S. & 800'W. N.E. Cor. S.E. ¼ Sec. 33. Ground surface elevation 640 ft.* Depth to limestone 130'. Total depth 150'.        |
| 89                                   | Michael Baranovic, owner, 100' N. & 600'W. S.E. Cor. N.E. ¼ Sec. 33. Ground surface elevation 637 ft.* Depth to limestone 130'. Total depth 130'.         |
| 90                                   | Burgess, owner, location 400'S. & 200'E. N.W. Cor. Sec. 34. Ground surface elevation 632 ft.* Depth to limestone 127'. Total depth 129'.                  |
| WAUKEGAN TOWNSHIP—T. 45 N., R. 12 E. |   |
| 1                                    | Russell Jack, owner, location 400'E. & 700'S. N.W. Cor. Sec. 3. Ground surface elevation 633 ft.* Total depth 12'.  |
| 2                                    | Roy Brascher, owner, location 1000'S. & 400'E. N.W. Cor. Sec. 3. Ground surface elevation 633 ft.*  |
| 3                                    | Paul Hudson, owner, location 500'E. & 1500'S. N.W. Cor. Sec. 3. Ground surface elevation 633 ft.* Total depth 18'.  |
| 4                                    | J. R. Cadmore place, location 700'S. & 100'W. center Sec. 4. Ground surface elevation 662 ft.* Total depth 150'.  |
| 5                                    | C. H. Holdridge Home, location 300'W. & 1450'S. N.E. Cor. Sec. 5. Ground surface elevation 655 ft.* Depth to limestone 130'. Total depth 168'.            |
| 6                                    | C. H. Holdridge Farm, location 900'S. & 2400'W. N.E. Cor. Sec. 5. Ground surface elevation 682 ft.* Total depth 170'.                                     |
| 7                                    | Olson Farm, location 1200'S. & 300'E. N.W. Cor. Sec. 5. Ground surface elevation 692 ft.* Depth to limestone 172'. Total depth 175'.                      |
| 8                                    | Bonnie Brook Golf Club, owner, location 2500'E. & 2800'S. N.W. Cor. Sec. 5. Ground surface elevation 670 ft.*   |

\*Above sea level.





| No.                         | Description   |
|-----------------------------|---|
| WAUKEGAN TOWNSHIP—continued |   |
| 9                           | Mary P. Smith, owner, location 900'N. & 100'E. S.W. Cor. S.E. ¼ Sec. 5. Ground surface elevation 675 ft.* Total depth 175'.   |
| 10                          | Fred Bartlett, Sub'n., location 1100'S. & 1900'E. N.W. Cor. Sec. 6. Ground surface elevation 736 ft.* Depth to limestone 241'. Total depth 267'.  |
| 11                          | A. Ludas, owner, location 1300'E. & 1600'S. N.W. Cor. Sec. 6. Ground surface elevation 731 ft.* Total depth 130'.   |
| 12                          | A. Ludas, owner, location 1300'E. & 1600'S. N.W. Cor. Sec. 6. Ground surface elevation 731 ft.* Depth to limestone 227'. Total depth 227'.  |
| 13                          | Clare McKee Dahlia Farm, Greenbay, location 1500'S. & 1650'E. N.W. Cor. Sec. 6. Ground surface elevation 733 ft.* Total depth 109' finished in gravel.  |
| 14                          | Santi Salvatore, owner, location 500'E. & 300'S. N.W. Cor. Sec. 7. Ground surface elevation 720 ft.* Total depth 190'.  |
| 15                          | J. L. Burris, owner, location 2000'N & 50'E. S.W. Cor. Sec. 7. Ground surface elevation 730 ft.* Depth to limestone 200'. Total depth 230'.   |
| 16                          | Fred Bartlett, Sub'n., location 200'N. & 300'E. S.W. Cor. Sec. 7. Ground surface elevation 728 ft.* Depth to limestone 246'. Total depth 246'.  |
| 17                          | A. R. Daugherty, owner, location 300'W. & 200'N. S.E. Cor. N.E. ¼ Sec. 7. Ground surface elevation 710 ft.* Total depth 60'.  |
| 18                          | Katz, owner, location 1100'S. & 300'W. N.E. Cor. Sec. 7. Ground surface elevation 711 ft.* Depth to limestone 222'. Total depth 227'.   |
| 19                          | Katz, owner, location 200'W. & 500'S. N.E. Cor. Sec. 7. Ground surface elevation 711 ft.* Total depth 50-60'.   |
| 21                          | Glen Flora Country Club, owner, location 2500'N. & 1800'W. S.E. Cor. Sec. 9. Ground surface elevation 650 ft.* Depth to limestone 206'. Total depth 211'.   |
| 22                          | A. M. Sick, owner, location 300'E. & 1200'N. S.W. Cor. S.E. ¼ Sec. 9. Ground surface elevation 665 ft.* Depth to limestone 161'. Total depth 188'.  |
| 23                          | Johns-Manville, No. 1, location 2500'E. & 700'N. S.W. Cor. Sec. 10. Ground surface elevation 588 ft.* Depth to limestone 108'. Total depth 108'.  |
| 24                          | Johns-Manville, No. 2, location 1560'E. & 850'N. S.W. Cor. Sec. 10. Ground surface elevation 588 ft.* Depth to limestone 112'. Total depth 127'.  |
| 25                          | Johns-Manville, No. 3, location 1480'E. & 1220'N. S.W. Cor. Sec. 10. Ground surface elevation 588 ft.* Depth to limestone 115'. Total depth 132'.   |
| 26                          | Johns-Manville, No. 4, location 1310'E. & 400'N. S.W. Cor. Sec. 10. Ground surface elevation 588 ft.* Depth to limestone 115'. Total depth 132'.  |
| 27                          | Greiss-Pfleger Tannery, location in S.W. 40A. N.W. ¼ Sec. 15. Ground surface elevation 588 ft.* Depth to limestone 95'. Total depth 95'.  |
| 28                          | Greiss-Pfleger Tannery, location in S.W. 40A. N.W. ¼ Sec. 15. Ground surface elevation 588 ft.* Depth to limestone 112'. Depth to St. Peter sandstone 840'. Depth to Dresbach sandstone 1150'. Depth to Mt. Simon sandstone 1540'. Total depth 1670'. Yield 1400 G. P. M. |
| 29                          | Pacific Boiler Company, location 1500'E. & 650'S. of N.W. Cor. S.W. X Sec. 15. Ground surface elevation 588 ft.* Depth to limestone 95½'. Total depth 95½'.   |
| 30                          | North Shore Gas Company, owner, N. well 320'E. & 1600'N. S.W. Cor. Sec. 15. S. well 260'E. & 975'N. S.W. Cor. Sec. 15. Ground surface elevation 588 ft.* Depth to limestone 95'. Total depth 95'. Flows 0.25 G. P. M.   |
| 31                          | W. I. Lyon, owner, location 200'N. & 900'W. S.E. Cor. Sec. 16. Ground surface elevation 630 ft.* Depth to limestone 150'. Total depth 160'.   |
| 32                          | Stewart Avenue well, location 1600'W. & 1800'N. S.E. Cor. Sec. 16. Ground surface elevation 640 ft.* Depth to limestone 166'. Total depth 174'. Yield 3 G. P. M.  |
| 33                          | Dayenian, owner, location 1000'S. & 100'E. N.W. Cor. Sec. 17. Ground surface elevation 694 ft.* Depth to limestone 188'. Total depth 198'.  |
| 34                          | Alfred Asma, owner, location 100'E. & 100'N. S.W. Cor. Sec. 17. Ground surface elevation 702 ft.* Depth to limestone 189'. Total depth 196'. Yield 3 G. P. M.   |
| 35                          | Geo. May, owner, location 500'N. & 100'W. S.E. Cor. Sec. 18. Ground surface elevation 701 ft.* Depth to limestone 189'. Total depth 195'.   |
| 36                          | John Erdal, owner, location 600'W. & 400'N. S.E. Cor. Sec. 18. Ground surface elevation 609 ft.* Total depth 65' finished in gravel.  |
| 37                          | F. R. Wilby, owner, location 100'N. & 1000'W. S.E. Cor. Sec. 18. Ground surface elevation 713 ft.* Total depth 69' finished in gravel.  |
| 38                          | Irving Hayman, owner, location 1300'W. & 100'N. S.E. Cor. Sec. 18. Ground surface elevation 713 ft.* Depth to limestone 193'. Total depth 193'.   |
| 39                          | Lake County Genl. Hospital, location 400'N. & 200'W. S.E. Cor. S.W. X Sec. 18. Ground surface elevation 720 ft.* Depth to limestone 200'.   |
| 40                          | Fred B. Gillis, owner, location 25'E. & 1600'S. N.W. Cor. Sec. 18. Ground surface elevation 721 ft.* Total depth 160'.  |
| 41                          | Shell Filling Station, location 900'E. & 200'N. S.W. Cor. Sec. 18. Ground surface elevation 718 ft.* Depth to limestone 202'. Total depth 231'. Yield 3 G. P. M.  |
| 42                          | Lew Wall, owner, location 100'N. & 700'E. S.W. Cor. Sec. 18. Ground surface elevation 719 ft.* Total depth 106' finished in gravel.   |

\*Above sea level.



| No.                                 | Description   |
|-------------------------------------|---|
| WAUKEGAN TOWNSHIP—continued         |   |
| 43                                  | G. T. Spaulding, owner, location 100'S. & 800'E. N.W. Cor. Sec. 19. Ground surface elevation 718 ft.* Total depth 101' finished in gravel.  |
| 44                                  | Spaulding Cor. School, location 100'S. & 1000'E. N.W. Cor. Sec. 19. Ground surface elevation 720 ft.* Total depth 107' finished in gravel.  |
| 45                                  | Waukegan Nursery, location 1700'E. & 2000'S. N.W. Cor. Sec. 19. Ground surface elevation 710 ft.* Depth to limestone 149'. Total depth 350'.  |
| 46                                  | Heckinger & Watt, owner, location 1000'N. & 2000'W. S.E. Cor. Sec. 19. Ground surface elevation 720 ft.* Depth to limestone 165'. Total depth 210'.   |
| 47                                  | Texaco Filling Station, location 800'N. & 2000'W. S.E. Cor. Sec. 19. Ground surface elevation 720 ft.* Total depth 98' finished in gravel.  |
| 48                                  | High School, location 500'E. & 700'N. S.W. Cor. Sec. 21. Ground surface elevation 650 ft.* Depth to limestone 149'. Total depth 298'. (About).  |
| 49                                  | Clayton Hotel, location 1000'W. & 2200'N. S.E. Cor. Sec. 21. Ground surface elevation 638 ft.* Total depth 1000'.   |
| 50                                  | C. & N. W. Ry., owner, location 1700'N. & 550'W. S.E. Cor. Sec. 21. Ground surface elevation 595 ft.* Total depth 2200'. Flows.   |
| 51.                                 | Gas Co. (North Shore) owner, location 100'W. & 1400'N. S.E. Cor. Sec. 21. Ground surface elevation 588 ft.* Depth to limestone 95'. Total depth 100'.   |
| 52                                  | A. L. Brumund Co. Dairy, location 100'. & 1100'W. S.E. Cor. Sec. 21. Ground surface elevation 630 ft.* Depth to limestone 153'. Total depth 160'. Yield 30 G. P. M.   |
| 53                                  | Waukegan National Bank, owner, location 1375'W. & 1335'N. S.E. Cor. Sec. 21. Ground surface elevation 642 ft.* Total depth 150'. Yield 20 G. P. M.  |
| 54                                  | Maple Grove Dairy, location 1000'W. & 1900'N. S.E. Cor. Sec. 28. Ground surface elevation 632 ft.* Total depth 198'.  |
| 54a                                 | Waukegan South Side School, location 750'S. & 1600'W. N.E. Cor. Sec. 28. Ground surface elevation 666 ft.* Depth to limestone 186'. Total depth 2002½'.   |
| 55                                  | Minogue, J. F., owner, location 1350'W. & 2100'S. N.E. Cor. Sec. 30. Ground surface elevation 702 ft.* Total depth 31'. Yield 3 G. P. M.  |
| 56                                  | Chicken Hot Dog Stand, location 1600'S. & 2100'W. N.E. Cor. Sec. 30. Ground surface elevation 715 ft.* Depth to limestone 227'. Total depth 228'.   |
| 57                                  | Standard Oil Filling Station, location 2100'W. & 2600'N. S.E. Cor. Sec. 30. Ground surface elevation 720 ft.* Depth to limestone 189'. Total depth 231'. Yield 5 G. P. M.   |
| 58                                  | N. Shore Cem. Ass'n., owner, location 400'N. & 1200'W. S.E. Cor. Sec. 31. (greenhouse). Ground surface elevation 720 ft.* Depth to limestone 203'. Total depth 204'.  |
| 59                                  | N. Shore Cem. Ass'n. Pres. Home, location 300'E. & 500'N. S. W. Cor. Sec. 32 (J. Western house). Ground surface elevation 710 ft.* Depth to limestone 115'. Total depth 368'. Yield 75 G. P. M.   |
| 60                                  | George Victor, owner, location 100'S. & 1450'E. N.W. Cor. S.W. ¼ Sec. 32. Ground surface elevation 700 ft.* Depth to limestone 163'. Total depth 180'.  |
| 61                                  | Am. Steel & Wire Co. No. 2, owner, location 700'W. & 1800'S. N.E. Cor. Sec. 33. Ground surface elevation 595 ft.* Depth to limestone 80'. Depth to St. Peter sandstone 860'. Total depth 2058'.   |
| 61                                  | Am. Steel & Wire Co. No. 4, owner, location 700'W. & 1400'S. N.E. Cor. Sec. 33.   |
| 61a                                 | Am. Steel & Wire Co. No. 5, owner, location, 650'W. & 500'S. N.E. Cor. Sec. 33. Ground surface elevation 595 ft.* Depth to limestone 80'. Depth to St. Peter sandstone 860'. Total depth 2035'.   |
| 62                                  | Abbott Laboratories, owner, location 2500'E. & 2100'N. S.W. Cor. Sec. 33. Ground surface elevation 655 ft.* Depth to limestone 100'. Depth to St. Peter sandstone 880'. Depth to Dresbach sandstone 1190'. Depth to Mt. Simon sandstone 1375'. Total depth 1600'. |
| 63                                  | Rifle Range, owner, location in S. W. Cor. S.E. ¼ Sec. 33, 75' E. Belt Track. Ground surface elevation 660 ft.* Depth to limestone 150'. Total depth 200'.  |
| 64                                  | Cyclone Fence Company, owner, location 2400'E. & 250'N. S.W. Cor. Sec. 33. Ground surface elevation 658 ft.* Total depth 970'.  |
| SHIELDS TOWNSHIP—T. 44 N., R. 12 E. |   |
| 1                                   | City of N. Chicago, owner, location N. well 1270'W. & 1430'S. N.E. Cor. Sec. 4. Ground surface elevation 585 ft.* Depth to limestone 110'. Depth to St. Peter sandstone 880'. Total depth 1695'.  |
| 2                                   | City of N. Chicago, owner, location S. Well 1270'W. & 1495'S. N.E. Cor. Sec. 4. Ground surface elevation 585 ft.* Depth to limestone 110'. Depth to St. Peter sandstone 880'. Total depth 2269'.  |
| 3                                   | Vulcan-Louisville Smelting, owner, location 1200'E. & 1300'S. N.W. Cor. Sec. 4. Ground surface elevation 645 ft.* Depth to limestone 149'. Total depth 2100'.   |
| 4                                   | Sager Lock, owner, location 250'E. & 1400'N. S.W. Cor. Sec. 4. Ground surface elevation 640 ft.* Total depth 210'.  |

\* Above sea level.



| No.                                   | Description   |
|---------------------------------------|---|
| SHIELDS TOWNSHIP—continued            |   |
| 5                                     | Chi Hwd Foundry Co., owner, location 1800'N. & 200'W. S.E. Cor. Sec. 5. Ground surface elevation 647 ft.* Total depth to limestone 137½'. Total depth 928'.   |
| 6                                     | Chi Hwd Foundry Co., owner, location 1800'N. & 200'W. S.E. Cor. Sec. 5. Ground surface elevation 647 ft.* Depth to limestone 137½'. Total depth 206'.   |
| 8                                     | Peterson, owner, location 850'E. & 1600'N. S.W. Cor. Sec. 5. Ground surface elevation 720 ft.* Depth to limestone 207'. Total depth 216'.   |
| 9                                     | N. Shore Cem. Ass'n., owner, location 100's. & 800'E. N.W. Cor. Sec. 5. Ground surface elevation 705 ft.* Depth to limestone 168'. Total depth 168'.  |
| 11                                    | E. A. Roberts, owner, location 300'E. & 2500'N. S.W. Cor. Sec. 8. Ground surface elevation 705 ft.* Depth to limestone 236'. Total depth 245'. Yield 3 G. P. M.   |
| 12                                    | Ed. T. Novak, owner, location 1000'S. & 50'E. N.W. Cor. Sec. 8. Ground surface elevation 704 ft.* Depth to limestone 213'. Total depth 218'.  |
| 13                                    | Shell Gas Sta. 5 points, location 1000'E. & 1100'S. N.W. Cor. Sec. 8. Ground surface elevation 720 ft.* Depth to limestone 247'. Total depth 247'.  |
| 14                                    | Shore-Acres Golf Club, owner, location 2900'E. of S.W. Cor. Sec. 9. Ground surface elevation 655 ft.* Depth to limestone 185'. Total depth 285'.  |
| 15                                    | Shore-Acres Golf Club, owner, location 500'E. & 2600'S. N.W. Cor. Sec. 9 (Barn). Ground surface elevation 650 ft.* Depth to limestone 185'. Total depth 210'.   |
| 16                                    | Arden Shore, owner, location 1000'S. & 3100'E. N.W. Cor. Sec. 16. Ground surface elevation 650 ft.* Depth to limestone 212'. Total depth 248'.  |
| 17                                    | Donnelly Est., location 1500'E. & 1200'S. N.W. Cor. Sec. 16. Ground surface elevation 658 ft.* Depth to limestone 204'. Total depth 204'.   |
| 18                                    | P. O. Armour, owner, location 100'W. & 800'S. center Sec. 17. Ground surface elevation 712 ft.* Depth to limestone 228'. Total depth 244'.  |
| 19                                    | E. H. Reynolds old, location 2100'E. & 100'S. N.W. Cor. Sec. 17. Ground surface elevation 710 ft.* Depth to limestone 222'. Total depth 350'.   |
| 20                                    | E. H. Reynolds new, location 2800'E. & 700'S. N.W. Cor. Sec. 17, ground surface elevation 702 ft.* Depth to limestone 234'. Total depth 355'.   |
| 21                                    | Knollwood, C. C. owner, location 480'S. & 30'E. Center Sec. 19. Ground surface elevation 682 ft.* Depth to limestone 195'. Total depth 565'. Yield 35 G. P. M.  |
| 22                                    | Lake Bluff Orphanage, location 1200'W. & 1035'S. of N.E. Cor. N.W. ¼ Sec. 21. Ground surface elevation 667 ft.* Depth to limestone 185'. Depth to St. Peter sandstone 900'. Total depth 900'+.  |
| 23                                    | Lake Bluff Village, owner, location 500'E. and 1600'S. N.W. Cor. Sec. 21. Ground surface elevation 680 ft.* Depth to limestone 190'. Total depth 498'.  |
| 24                                    | Old Claney Est., location 1450'W. & 800'S. N.E. Cor. Sec. 28. Ground surface elevation 663 ft.* Depth to limestone 165'. Total depth 250'.  |
| 25                                    | Niblock, owner, location 2300'E. & 2400'N. S.W. Cor. Sec. 32. Ground surface elevation 657 ft.* Depth to limestone 180'. Total depth 265'.  |
| 26                                    | Onwensia Golf Club, owner, location 1600'N. & 950'W. S.E. Cor. Sec. 32. Ground surface elevation 657 ft.* Total depth 1023'.  |
| 27                                    | Lake Forest Uni., owner, location 1040'S. & 225'W. N.E. Cor. Sec. 33. Ground surface elevation 650 ft.* Depth to limestone 153'. Depth to St. Peter sandstone 910'. Total depth 1050'.  |
| 28                                    | Lake Bluff Village, owner, location 500'E. & 1600'S. N.W. Cor. Sec. 21. Ground surface elevation 680 ft.* Depth to limestone 190'. Total depth 1804'.   |
| DEERFIELD TOWNSHIP—T. 43 N., R. 12 E. |   |
| 1                                     | L. F. Swift, owner, location 1540'E. & 1700'S. N.W. Cor. Sec. 4. Ground surface elevation 697 ft.* Depth to limestone 180'. Total depth 220'.   |
| 2                                     | E. I. Cudahy, owner, location 700'W. & 300'S. N.E. Cor. Sec. 6. Ground surface elevation 675 ft.* Depth to limestone 156'. Total depth 156'.  |
| 3                                     | E. I. Cudahy, owner, location 700'W. & 500'S. N.E. Cor. Sec. 6. Ground surface elevation 675 ft.* Depth to limestone 156'. Total depth 157'.  |
| 4                                     | J. P. Resing (E. C. Hosier) owner, location 850'N. & 2300'W. S.E. Cor. Sec. 6. Ground surface elevation 675 ft.* Depth to limestone 164'. Total depth 204'.   |
| 5                                     | Swift Garage, location 1400'W. & 1600'S. N.E. Cor. Sec. 7. Ground surface elevation 675 ft.* Depth to limestone 153'. Depth to St. Peter sandstone 870'. Total depth 907'.  |
| 6                                     | A. D. Lasker (Old), location 440'E. & 40'N. S.W. Cor. S.W. ¼ N.W. ¼ Sec. 7. Ground surface elevation 696 ft.* Depth to limestone 154'. Total depth 912'.  |
| 6                                     | A. D. Lasker (New), location 460'E. & 10'N. S.W. Cor. S.W. ¼ N.W. ¼ Sec. 7. Ground surface elevation 696 ft.* Depth to limestone 153'. Depth to St. Peter sandstone 920'. Depth to Dresbach sandstone 1210'. Depth to Mt. Simon sandstone 1640'. Total depth 2002'. Yield 1000 G. P. M. |
| 8                                     | P. R. Lamont, owner, location 250'E. & 50'S. N.W. Cor. N.E. ¼ Sec. 8. Ground surface elevation 696 ft.* Total depth 450'. Yield 30 G. P. M.   |

\*Above sea level.



| No.                          | Description   |
|------------------------------|---|
| TEERFIELD TOWNSHIP—continued |   |
| 9                            | L. F. Swift, owner, location 2000'W. & 400'S. N.E. Cor. Sec. 8. Ground surface elevation 692 ft.* Depth to limestone 200'. Total depth 280'.  |
| 10                           | Location 1000'S. & 700'W. N.E. Cor. Sec. 8. Ground surface elevation 685 ft.* Depth to limestone 183'. Total depth 185'.  |
| 11                           | North Est., location 1800'N. & 300'W. S.E. Cor. Sec. 8. Ground surface elevation 700 ft.* Depth to limestone 204'. Total depth 226'.  |
| 12                           | McCormick, owner, location 1400'N. & 800'W. S.E. Cor. Sec. 8. Ground surface elevation 685 ft.* Depth to limestone 175'. Total depth 375'.  |
| 13                           | Ridge Farm Preventorium, location 300'E. & 400'N. S.W. Cor. Sec. 9. Ground surface elevation 691 ft.* Depth to limestone 185'. Total depth 433'.  |
| 14                           | Moraine Hotel, location 3200'E. & 600'N. S.W. Cor. Sec. 14. Ground surface elevation 675 ft.* Depth to limestone 164'. Total depth 166'.  |
| 15                           | C. N. S. & M. Elec. Co., owner, location 1650'W. & 200'S. N.E. Cor. Sec. 15. Ground surface elevation 690 ft.* Depth to limestone 183'. Total depth 1753'.  |
| 16                           | Old Elm C. C., owner, location 600'E. & 800'N. S.W. Cor. N.E. ¼ N.E. ¼ Sec. 16. Ground surface elevation 650 ft.* Depth to limestone 205'. Total depth 22J'.  |
| 17                           | John Alexander, owner, location 700'N. & 350'E. S.W. Cor. Sec. 16. Ground surface elevation 680 ft.* Depth to limestone 212'. Total depth 212'.   |
| 18                           | James O'Conner, owner, location 700'N. & 900'W. S.E. Cor. Sec. 18. Ground surface elevation 690 ft.* Depth to limestone 165'. Total depth 225'.   |
| 19                           | Lawrence O'Conner, owner, location 200'N. & 700'W. S.E. Cor. Sec. 18. Ground surface elevation 690 ft.* Depth to limestone 185'. Total depth 185'.  |
| 20                           | John Caroon, owner, location 100'S. & 500'W. N.E. Cor. Sec. 19. Ground surface elevation 690 ft.* Depth to limestone 202'. Total depth 20V'.  |
| 21                           | Elias Mayer, owner, well No. 1, location 1880'E. & 75'S. N.W. Cor. Sec. 19. Well No. 2 1580'E. & 120'S. N.W. Cor. Sec. 19. Ground surface elevation 680 ft.* Depth to limestone 185'. Total depth 375'.   |
| 22                           | Will Glader, owner, location 550'S. & 1200'E. N.W. Cor. Sec. 21. Ground surface elevation 670 ft.* Depth to limestone 216'. Total depth 250'.   |
| 23                           | Martin Insul, owner, location ½ mi. N. & 50'E. S.W. Cor. Sec. 21. Ground surface elevation 672 ft.* Depth to limestone 175'. Total depth 250'.  |
| 24                           | Bahr Nursery, location S.W. Cor. N.E. ¼ S.W. ¼ Sec. 21. Ground surface elevation 667 ft.* Depth to limestone 204'. Total depth 204'.  |
| 25                           | Old Clark Place, location 500'W. & 3200'N. S.E. Cor. Sec. 23. Ground surface elevation 660 ft.* Depth to limestone 185'. Total depth 225'.  |
| 26                           | Wink Bottling Works, location 2350'E. & 1100'N. S.W. Cor. Sec. 23. Ground surface elevation 690 ft.* Depth to limestone 195'. Total depth 240'.   |
| 27                           | Santa Bros. Dairy, location 350'S. & 200'E. N.W. Cor. N.E. ¼ Sec. 26. Ground surface elevation 687 ft.* Depth to limestone 163'. Total depth 290'.  |
| 28                           | Dr. W. D. N. Moore, owner, location 400'N. & 200'E. S.W. Cor. S.E. ¼ Sec. 26. Ground surface elevation 652 ft.* Depth to limestone 120'. Total depth 133'.  |
| 29                           | C. & N. W. Ry., Blodget, owner, location 2250'E. & 2100'S. N.W. Cor. Sec. 27. Ground surface elevation 645 ft.* Depth to limestone 120'. Depth to St. Peter sandstone 860'. Depth to Dresbach sandstone 1200'. Depth to Mt. Simon sandstone 1520'. Total depth 1760'. |
| 30                           | Coolidge, owner, location 1000'S. & 2000'W. N.E. Cor. Sec. 28. Ground surface elevation 670 ft.* Depth to limestone 155'. Total depth 210'.   |
| 31                           | Aug. Zeissing, owner, location 1150'E. & 1600'S. N.W. Cor. Sec. 29. Ground surface elevation 692 ft.* Depth to limestone 180'. Total depth 180'.  |
| 32                           | Vernon Ridge C. C., owner, location 1500'S. & 400'E. N.W. Cor. Sec. 31. Ground surface elevation 665 ft.* Depth to limestone 152'. Depth to St. Peter sandstone 790'. Depth to Dresbach sandstone 1225'. Total depth 1443'. Yield 50 G. P. M.                         |
| 33                           | Vernon Ridge C. C., owner, location 1750'S. & 950'E. N.W. Cor. Sec. 31. Ground surface elevation 685 ft.* Depth to limestone 158'. Total depth 160'. Yield 10 G. P. M.  |
| 34                           | John L. Walker, owner, location 500'E. & 300'N. S.W. Cor. Sec. 31. Ground surface elevation 678 ft.* Depth to limestone 160'. Total depth 170'.   |
| 35                           | Location 100'N. & 1700'E. of S.W. Cor. Sec. 35. Ground surface elevation 645 ft.* Depth to limestone 138'. Total depth 165'.  |
| 36                           | Card Place, location 700'E. & 1700'S. of N.W. Cor. Sec. 36. Ground surface elevation 655 ft.* Depth to limestone 135'. Total depth 135'.  |
| 37                           | Ravinia Park, location 1400'W. & 2500'N. S.E. Cor. Sec. 36. Ground surface elevation 670 ft.* Depth to limestone 161'. Depth to St. Peter sandstone 886'. Total depth 1096'.  |
| 38                           | Forest Preserve (Cook County), location 650'W. & 300'S. N.E. Cor. Sec. 1. T. 42 N., R. 12 E. Ground surface elevation 680 ft.* Depth to limestone 165'. Total depth 175'.   |

\*Above sea level.





| No.                                 | Description  |
|-------------------------------------|--|
| NEWPORT TOWNSHIP—T. 46 N., R. 11 E. |  |
| 1                                   | Fosland Filling Station, location 1200'W. & 100'S. N.E. Cor. S.E. ¼ Sec. 1. Ground surface elevation 708 ft.* Depth to limestone 188'. Total depth 193'.               |
| 2                                   | C. & N. W. Ry., owner, location on Ry. R. of W. & close to So. Line Sec. 1. Ground surface elevation 710 ft.* Total depth 170' finished in gravel.                     |
| 3                                   | Casterton Bros., owner, location 250'E. & 300'N. S.W. Cor. S.W. ¼ Sec. 1. Ground surface elevation 715 ft.* Depth to limestone 188'. Total depth 195'.                 |
| 4                                   | J. A. Reeves place, location 1300'N. & 300'E. S.W. Cor. S.W. ¼ Sec. 2. Ground surface elevation 674 ft.* Total depth 150' finished in gravel.                          |
| 5                                   | Russell Hotel, location 1300'N. & 50'E. S.W. Cor. S.W. ¼ Sec. 2. Ground surface elevation 674 ft.* Total depth 103' finished in gravel.                                |
| 6                                   | Grennan, owner, location 300'W. & 1000'N. S.E. Cor. S.W. ¼ Sec. 5. Ground surface elevation 795 ft.* Depth to limestone 257'. Total depth 300'.                        |
| 7                                   | M. Hogan, owner, location 200'N. & 300'W. of N.E. Cor. S.E. ¼ Sec. 5. Ground surface elevation 790 ft.* Total depth 250'.  |
| 8                                   | Geo. B. Kelley, owner, location 1600'W. & 305'S. N.E. Cor. S.W. ¼ Sec. 5. Ground surface elevation 815 ft.* Depth to limestone (likely gravel) 118'. Total depth 120'. |
| 9                                   | John White, owner, location 100'W. & 1100'S. N.E. Cor. S.W. ¼ Sec. 6. Ground surface elevation 792 ft.* Total depth 55' finished in gravel.                            |
| 10                                  | Fred Crawford, owner, location 200'W. & 2000'S. N.E. Cor. S.W. ¼ Sec. 6. Ground surface elevation 792 ft.* Total depth 30' finished in gravel.                         |
| 11                                  | Geo. Vose, owner, location 200'W. & 350'N. S.E. Cor. N.W. ¼ Sec. 7. Ground surface elevation 810 ft.* Depth to limestone 275'. Total depth 291'.                       |
| 12                                  | W. Newport School, location 1200'S. & 100'W. Center Sec. 7. Ground surface elevation 780 ft.* Depth to limestone 256'. Total depth 261'.                               |
| 13                                  | George Anderson, owner, location 300'W. & 400'N. Center Sec. 8. Ground surface elevation 760 ft.* Depth to limestone 260'. Total depth 260'.                           |
| 14                                  | Mt. Rest. Cem., location 600'E. & 100'S. Center, Sec. 9. Ground surface elevation 730 ft.* Depth to limestone 173'. Total depth 186'.                                  |
| 15                                  | Rosecrans School, location 50'E. & 300'S. Center, Sec. 9. Ground surface elevation 723 ft.*  |
| 16                                  | J. C. Cermak, owner, location 1600'S. & 200'E. Center, Sec. 9. Ground surface elevation 730 ft.* Depth to limestone 207'. Total depth 215'.                            |
| 17                                  | L. P. Hanna, owner, location 100'E. & 500'N. S.W. Cor. N.E. ¼ Sec. 9. Ground surface elevation 728 ft.* Depth to limestone 198'. Total depth 210'.                     |
| 18                                  | Tony Zkurusky, owner, location 200'S. & 1300'W. N.E. Cor. Sec. 9. Ground surface elevation 735 ft.* Depth to limestone 190'. Total depth 200'.                         |
| 19                                  | Grant Murrie, owner, location 300'S. & 2500'E. N.W. Cor. N.W. ¼ Sec. 10. Ground surface elevation 692 ft.* Depth to limestone 178'. Total depth 180'. Yield 5 G. P. M. |
| 20                                  | John Noll, owner, location 700'N. & 200'W. Center Sec. 11. Ground surface elevation 680 ft.* Depth to limestone 151'. Total depth 210'.                                |
| 21                                  | Nels Johnson, owner, location 200'N. & 1000'E. S.W. Cor. N.E. ¼ Sec. 11. Ground surface elevation 680 ft.* Total depth 20' finished in gravel.                         |
| 22                                  | W. D. Connell, owner, location 100'W. & 1000'S. N.E. Cor. Sec. 11. Ground surface elevation 705 ft.* Total depth 50' finished in gravel.                               |
| 23                                  | A. Johnson, owner, location 600'S. & 200'W. N.E. Cor. S.E. ¼ Sec. 11. Ground surface elevation 685 ft.* Total depth 130' finished in gravel.                           |
| 24                                  | Russell School, location 100'E. & 100'N. S.W. Cor. N.W. ¼ Sec. 12. Ground surface elevation 683 ft.* Depth to limestone 140'. Total depth 168'.                        |
| 25                                  | Roy Ferry, owner, location 100'S. & 600'W. N.E. Cor. S.E. ¼ Sec. 12. Ground surface elevation 730 ft.* Depth to limestone 220'. Total depth 227'.                      |
| 26                                  | Public Service Farm, location 200'S. & 1100'E. N.W. Cor. S.W. ¼ Sec. 13. Ground surface elevation 699 ft.* Depth to limestone 140'. Total depth 141'.                  |
| 27                                  | C. M. Eddy Farm, location 200'W. & 700'N. Center, Sec. 14. Ground surface elevation 750 ft.* Total depth 200' finished in gravel.                                      |
| 28                                  | Anton Peterson, owner, location 100'W. & 1300'N. Center, Sec. 14. Ground surface elevation 750 ft.* Depth to limestone 220'. Total depth 230'.                         |
| 29                                  | Ben Sawokin, No. 1, location 100'W. & 1100'N. S.E. Cor. Sec. 14. Ground surface elevation 720 ft.* Total depth 100'.   |
| 30                                  | Ben Sawokin, No. 2, location 100'W. & 1110'N. S.E. Cor. Sec. 14. Ground surface elevation 720 ft.* Total depth 300'.   |
| 31                                  | Lone Oak School, location 100'N. & 1300'W. S.E. Cor. Sec. 14. Ground surface elevation 725 ft.* Total depth 425'.  |
| 32                                  | H. C. Ames, owner, location 600'N. & 1300'W. S.E. Cor. N.E. ¼ Sec. 15. Ground surface elevation 734 ft.* Depth to limestone 112'. Total depth 212'.                    |
| 33                                  | Tony Leable, owner, location 200'N. & 600'E. of River in N.W. ¼ Sec. 15. Ground surface elevation 675 ft.* Depth to limestone 144'. Total depth 160'.                  |
| 34                                  | G. Kendry & T. Deely, owner, location 100'W. & 100'N. Center Sec. 16. Ground surface elevation 724 ft.* Total depth 30' finished in gravel.                            |

\*Above sea level.



| No.                        | Description  |
|----------------------------|--|
| NEWPORT TOWNSHIP—continued |  |
| 35                         | Ed. Leable, owner, location 1600'N. & 2400'E. S.W. Cor. Sec. 16. Ground surface elevation 730 ft.* Depth to limestone 211'. Total depth 230'.                            |
| 36                         | Welch Farm, location 300'E. & 200'S. Center Sec. 17. Ground surface elevation 750 ft.* Depth to limestone 222'. Total depth 234'.  |
| 37                         | Emmet W. King, owner, location 200'S. & 400'W. N.E. Cor. S.E. ¼ Sec. 18. Ground surface elevation 790 ft.* Total depth 170' finished in gravel.                          |
| 38                         | George A. Thompson, owner, location 50'N. & 1400'E. Center, Sec. 18. Ground surface elevation 793 ft.* Depth to limestone 262'. Total depth 264'.                        |
| 39                         | Carney Bros., owner, location 100'S. & 400'E. Center, Sec. 18. Ground surface elevation 800'. Total depth 180' finished in gravel.                                       |
| 40                         | N. K. Reese, owner, location 200'W. & 300'S. N.E. Cor. N.W. ¼ Sec. 18. Ground surface elevation 780'. Depth to limestone 248'. Total depth 258'.                         |
| 41                         | Albert Shapanek, owner, location 200'S. & 1400'W. N.E. Cor. Sec. 22. Ground surface elevation 688 ft.*   |
| 42                         | Emmitt Hastings, owner, location 100'S. & 200'E. N.W. Cor. Sec. 23. Ground surface elevation 720 ft.* Depth to limestone 227'. Total depth 237'.                         |
| 43                         | Wm. Hogan, owner, location 700'S. & 1000'E. N.W. Cor. Sec. 23. Ground surface elevation 740 ft.* Total depth 200* finished in sand.                                      |
| 44                         | Nellie Riordan, owner, location 300'W. & 1300'S. N.E. Cor. N.W. ¼ Sec. 23. Ground surface elevation 727 ft.* Depth to limestone 210'. Total depth 220'.                  |
| 45                         | Wm. Stichr, owner, location 200'E. & 1400'N. S.W. Cor. Sec. 24. Ground surface elevation 707 ft.* Depth to limestone 215'. Total depth 220'.                             |
| 46                         | J. H. Bartlett, owner, location 1000'S. & 500'E. N.W. Cor. Sec. 25. Ground surface elevation 716 ft.* Depth to limestone 225'. Total depth 226'.                         |
| 47                         | Joe Adams, owner, location 1000'S. & 2000'W. N.E. Cor. Sec. 25. Ground surface elevation 732 ft.* Depth to limestone 240'. Total depth 240'.                             |
| 48                         | Albert Iwanski, owner, location 150'E. & 200'N. S.W. Cor. N.W. ¼ Sec. 25. Ground surface elevation 720 ft.* Depth to limestone 240'. Total depth 240'.                   |
| 49                         | Richer Nursery, location 100'N. & 600'E. S.W. Cor. Sec. 25. Ground surface elevation 725 ft.* Total depth 180'.  |
| 50                         | C. W. Alcock, owner, location 200'N. & 1500'E. S.W. Cor. Sec. 25. Ground surface elevation 710 ft.* Depth to limestone 197'. Total depth 201'.                           |
| 51                         | Geo. Bartlett, owner, location 100'W. & 2400'S. N.E. Cor. N.W. ¼ Sec. 26. Ground surface elevation 722 ft.* Depth to limestone 206'. Total depth 218'.                   |
| 52                         | Fred C. Shea, owner, location 200'W. & 1300'N. S.E. Cor. S.W. ¼ Sec. 26. Ground surface elevation 730 ft.* Depth to limestone 275'. Total depth 278'.                    |
| 53                         | LeRoy Dietmyer, owner, location 100'N. & 300'E. S.W. Cor. Sec. 26. Ground surface elevation 710 ft.* Depth to limestone 243'. Total depth 246'.                          |
| 54                         | Ray Kelley, owner, location 1000'W. & 100'N. S.E. Cor. Sec. 27. Ground surface elevation 680 ft.* Depth to limestone 181'. Total depth 185'.                             |
| 55                         | C. M. & St. P. Ry., owner, location 1000'N. & 1300'W. S.E. Cor. Sec. 27. Ground surface elevation 675 ft.* Total depth 173'.   |
| 56                         | C. M. & St. P. Ry., owner, location 1000'N. & 1300'W. S.E. Cor. Sec. 27. Ground surface elevation 675 ft.* Total depth 1195'.  |
| 57                         | E. C. Hastings, owner, location 100'S. & 1400'E. N.W. Cor. Sec. 27. Ground surface elevation 680 ft.* Total depth 137' finished in gravel.                               |
| 58                         | Location 1000'W. & 1200'N. S.E. Cor. Sec. 28. Ground surface elevation 725 ft.* Depth to limestone 235'. Total depth 235'.   |
| 59                         | Thomas Dennehy, owner, location 200'W. & 700'N. S.E. Cor. S.W. ¼ Sec. 28. Ground surface elevation 732 ft.* Depth to limestone 234'. Total depth 294'.                   |
| 60                         | Thomas Dennehy, owner, location 100'W. & 400'N. S.E. Cor. S.W. ¼ Sec. 28. Ground surface elevation 731 ft.* Depth to limestone 228'. Total depth 228'. Yield 15 G. P. M. |
| 61                         | Albert E. Peirce (two), owner, location 200'S. & 660'W. N.E. Cor. Sec. 30. Ground surface elevation 775 ft.* Total depth 178' finished in gravel.                        |
| 62                         | Thorne, owner, N. Well, location 700'W. & 200'D'S. N.E. Cor. Sec. 30. Ground surface elevation 755 ft.* Depth to limestone 228'. Total depth 322'.                       |
| 63                         | Thorne, owner, S. Well, location 700'W. & 1300'N. S.E. Cor. Sec. 30. Ground surface elevation 740 ft.* Depth to limestone 242'. Total depth 248'.                        |
| 64                         | Onwensia Hunt Club, location 100'N. & 300'W. S.E. Cor. N.E. ¼ Sec. 31. Ground surface elevation 730 ft.* Total depth 340'.   |
| 65                         | Onwensia Hunt Club Managers House, location 200'N. & 200'E. S.W. Cor. N.W. ¼ Sec. 32. Ground surface elevation 742 ft.* Total depth 280'.                                |
| 66                         | Onwensia Hunt Club Stables, location 400'E. & 1200'S. Center, Sec. 32. Ground surface elevation 700 ft.* Depth to limestone 197'. Total depth 300'. Flows slightly.      |
| 67                         | James Simpson Stables, location 1600'S. & 10'E. of N.W. Cor. Sec. 33. Ground surface elevation 730 ft.* Total depth 233' finished in sand.                               |
| 68                         | James Simpson Mgrs. House, location 200'S. & 700'E. N.W. Cor. Sec. 33. Ground surface elevation 720 ft.* Total depth 96' finished in gravel.                             |

\*Above sea level.



| No:                                | Description  |
|------------------------------------|--|
| NEWPORT TOWNSHIP—continued         |  |
| 69                                 | James Simpson New Res., location 100'E. & ISO'S. Center Sec. 33. Ground surface elevation 700 ft.* Total depth 98½' finished in gravel.  |
| 70                                 | Dietmeyer Farm, location 100'E. & 100'S. N.W. Cor. N.E. ¼ Sec. 33. Ground surface elevation 726 ft.* Depth to limestone 215'. Total depth 220'.  |
| 71                                 | F. O. Foster, owner, location 1200'W. & 30'S. N.E. Cor. Sec. 34. Ground surface elevation 675 ft.* Total depth 175'.   |
| 71a                                | George Cashmore, owner, location 700'W. & 100'S. of N.E. Cor. Sec. 34. Ground surface elevation 682 ft.* Depth to limestone 179'. Total depth 181'.  |
| 72                                 | Clark, owner, location 600'W. & 100'S. N.E. Cor. Sec. 34. Ground surface elevation 685 ft.* Depth to limestone 210'. Total depth 235'.   |
| 73                                 | Charles Casmore & Paxton, owner, location 500'S. N.E. Cor. Sec. 34. Ground surface elevation 704 ft.* Depth to limestone 230'. Total depth 240'.   |
| 74                                 | Sullivan, owner, location 800'S. & 10'W. N.E. Cor. Sec. 34. Ground surface elevation 700 ft.* Depth to limestone 228'. Total depth 231'.   |
| 75                                 | Glen Gyzen, owner, location 200'W. & 200'N. S.E. Cor. Sec. 34. Ground surface elevation 708 ft.* Depth to limestone 227'. Total depth 227'.  |
| 76                                 | Geo. Cashmore, owner, location 100'S. & 800'E. N.W. Cor. Sec. 35. Ground surface elevation 715 ft.* Total depth 193' finished in sand and gravel.  |
| 77                                 | J. M. Lahey, owner, location 100'S. & 200'W. N.E. Cor. N.W. ¼ Sec. 35. Ground surface elevation 745 ft.* Total depth 247'.   |
| 78                                 | Woodsworth School, location 50'S. & 700'W. N.E. Cor. Sec. 35. Ground surface elevation 742 ft.* Depth to limestone 264'. Total depth 296'.   |
| 79                                 | Mrs. R. Ester, owner, location 400'N. & 1350'E. S.W. Cor. Sec. 35. Ground surface elevation 710 ft.* Total depth 220'.   |
| 80                                 | J. E. Shalley, owner, location 300'N. & 500'W. S.E. Cor. Sec. 35. Ground surface elevation 710 ft.* Depth to limestone 200'. Total depth 230'.   |
| 81                                 | Bartlett Sub., location 100'S. & 1640'W. of N. E. Cor. Sec. 36. Ground surface elevation 724 ft.* Depth to limestone 261'. Total depth 266'.   |
| 82                                 | Chas. Kisonis, owner, location 100'S. & 1200'W. of N.E. Cor. Sec. 36. Ground surface elevation 725 ft.* Depth to limestone 200'. Total depth 210'.   |
| 83                                 | C. & N. W. Ry., owner, location 1000'N. & 1400'E. of S. W. Cor. Sec. 36. Ground surface elevation 698 ft.* Depth to limestone 190'. Total depth 190'.  |
| WARREN TOWNSHIP—T. 45 N., R. 11 E. |  |
| 1                                  | W. H. Finel Est., location 100'S. & 300'E. N.W. Cor. N.E. ¼ Sec. 1. Ground surface elevation 720 ft.* Total depth 208' finished in sand.   |
| 2                                  | Fred Worth, owner, location 200'S. & 400'E. N.W. Cor. Sec. 1. Ground surface elevation 700 ft.* Depth to limestone 220'. Total depth 343'.   |
| 3                                  | E. L. Shaw, owner, location 100'N. & 900'E. S.W. Cor. Sec. 1. Ground surface elevation 680 ft.* Total depth 200'+.   |
| 4                                  | Mrs. Hawkins, owner, location, 100'W. & 100'N. S.E. Cor. Sec. 2. Ground surface elevation 690 ft.* Total depth 160' finished in gravel.  |
| 5                                  | John Reynold, owner, location, 500'S. & 1000'E. N.W. Cor. Sec. 2. Ground surface elevation 690 ft.* Total depth 170'.  |
| 6                                  | Frank Clark, owner, location 200'W. & 900'S. N.E. Cor. Sec. 4. Ground surface elevation 700 ft.* Depth to limestone 212'. Total depth 212'.  |
| 7                                  | Mary Matson, owner, location 250'N. & 1300'E. S.W. Cor. N.W. ¼ Sec. 4. Ground surface elevation 745 ft.* Total depth not known, but finished in gravel.  |
| 8                                  | McCaughy, owner, location 100'W. & 400'S. N.E. Cor. S.E. ¼ Sec. 5. Ground surface elevation 730 ft.* Depth to limestone 207'. Total depth 209'.  |
| 9                                  | F. S. Rickords, owner, location 1400'E. & 900'S. N.W. Cor. S.W. ¼ Sec. 5. Ground surface elevation 750 ft.* Depth to limestone 228'. Depth to St. Peter sandstone 920'. Depth to Dresbach sandstone 1155'. Total depth 1255'. Yield 100 G. P. M. |
| 10                                 | S. S. Neil Place (D. M. Ryerson), location 200'S. & 400'E. N.W. Cor. S.W. ¼ Sec. 5. Ground surface elevation 750 ft.* Total depth 200'.  |
| 11                                 | Wm. Mitchell, owner, location 2700'W. & 2000'N. S.E. Cor. Sec. 6. Ground surface elevation 730 ft.* Total depth 144' finished in gravel. Yield 12 G. P. M.   |
| 12                                 | A. B. Dick, owner, location 1100'W. & 400'S. N.E. Cor. Sec. 7. Ground surface elevation 751 ft.* Depth to limestone 231'. Total depth 271'.  |
| 13                                 | Old Hoffman place, location 1300'E. & 600'S. N.W. Cor. Sec. 8. Ground surface elevation 742 ft.* Total depth 342'.   |
| 14                                 | Sterns School, location 100'W. & 2000'S. N.E. Cor. Sec. 8. Ground surface elevation 746 ft.* Total depth 108' finished in gravel.  |
| 15                                 | Chittenden Sta. C. & N. W. Ry., location 300'N. & 200'W. S.E. Cor. S.W. ¼ Sec. 13. Ground surface elevation 698 ft.* Depth to limestone 164'. Total depth 167'.  |
| 16                                 | Walter C. Hadden, owner, location 1200'E. & 1600'N. S.W. Cor. Sec. 13. Ground surface elevation 693 ft.* Total depth 182' finished in gravel.  |

\*Above sea level.



| No.                       | Description   |
|---------------------------|---|
| WARREN TOWNSHIP—continued |   |
| 17                        | Gurnee Park Estates, location 100'S. & 200'E. N.W. Cor. S.W. ¼ Sec. 13. Ground surface elevation 690 ft.* Depth to limestone 185'. Total depth 187'.                            |
| 18                        | Wm. F. Flood, owner, location 160CW. & 220CS. N.E. Cor. Sec. 14. Ground surface elevation 670 ft.* Depth to limestone 181'. Total depth 182'.                                   |
| 19                        | Viking Home, location 170CW. & 30CN. S.E. Cor. Sec. 14. Ground surface elevation 670 ft.* Depth to limestone 100'. Total depth 160'.  |
| 20                        | Irving Worth, owner, location 60CN. & 160CE. S.W. Cor. Sec. 14. Ground surface elevation 662 ft.* Depth to limestone 146'. Total depth 166'.                                    |
| 21                        | John Krentzer, owner, location 60CW. & 10CN. S.E. Cor. Sec. 15. Ground surface elevation 690 ft.* Depth to limestone 161'. Total depth 176'.                                    |
| 22                        | Whittenburg, owner, location 100'S. Grand Ave. & 700'W. of E. Line. Sec. 15. Ground surface elevation 690 ft.* Depth to limestone 170'. Total depth 171'.                       |
| 23                        | S. W. Ames, owner, location 900'E. & 1100'S. N.W. Cor. Sec. 15. Ground surface elevation 744 ft.* Depth to limestone 29C. Total depth 297'. Yield 3 G. P. M.                    |
| 24                        | Sherman Sponenberg Farm, location 60CS. & 50CE. N.W. Cor. Sec. 15. Ground surface elevation 748 ft.* Total depth 229' finished in gravel.                                       |
| 25                        | Miller, owner, location 20CS. & 150'S. N.W. Cor. Sec. 16. Ground surface elevation 746 ft.* Total depth 246' finished in sand and gravel.                                       |
| 26                        | Joe Podesta, owner, location 20CE. & 150CN. S.W. Cor. Sec. 16. Ground surface elevation 750 ft.* Depth to limestone 24C. Total depth 252'.                                      |
| 27                        | Nelson R. Reese (Druce Lake) owner, location 100CE. & 100'S. N.W. Cor. Sec. 19. Ground surface elevation 780 ft.* Depth to limestone 298'. Total depth 305'.                    |
| 28                        | E. J. Griffen, owner, location 100'S. & 1250'W. N.E. Cor. S.E. ¼ Sec. 19. Ground surface elevation 794 ft.* Depth to limestone 285'. Total depth 297'.                          |
| 29                        | Wm. Beck, owner, location 300'N. & 20CW. S.E. Cor. Sec. 20. Ground surface elevation 747 ft.* Depth to limestone 205'. Total depth 240'.  |
| 30                        | S. G. Jacobs, owner, location 10CE. & 20CN. S.W. Cor. N.W. ¼ Sec. 21. Ground surface elevation 760 ft.* Depth to limestone 200'. Total depth 204'.                              |
| 31                        | Broomell Bros., owner, (Well No. 1), location 2100'W. & 1150'N. S.E. Cor. Sec. 22. Ground surface elevation 710 ft.* Depth to limestone 165'. Total depth 225'.                 |
| 32                        | Broomell Bros., owner, (Well No. 2.), location 2000'W. & 120CN. S.E. Cor. Sec. 22. Ground surface elevation 711 ft.* Depth to limestone 168'. Total depth 255'.                 |
| 33                        | Broomell Bros., owner, (Well No. 3), location 2080'W. & 1330'N. S.E. Cor. Sec. 22. Ground surface elevation 713 ft.* Depth to limestone 168'. Total depth 248'.                 |
| 34                        | Broomell Bros., owner, (Well No. 4), location 200CW. & 107CN. S.E. Cor. Sec. 22. Ground surface elevation 708 ft.* Total depth 158' finished in gravel.                         |
| 35                        | Gurnee High School, location 160CS. & 220CE. N.W. Cor. Sec. 23. Ground surface elevation 672 ft.* Depth to limestone 138'. Depth to St. Peter sandstone 875'. Total depth 916'. |
| 36                        | Gurnee High School, location 160CS. 8c 220CE. N.W. Cor. Sec. 23. Ground surface elevation 672 ft.* Total depth 122' finished in sand and gravel.                                |
| 37                        | Schyver, owner, location 1500'S. & 15CE. of N.W. Cor. N.E. ¼ Sec. 23. Ground surface elevation 675 ft.* Depth to limestone 138'. Total depth 182'.                              |
| 38                        | S. Sponenberg Homestead, location 100'S. & 700'W. N.E. Cor. Sec. 23. Ground surface elevation 680 ft.* Total depth 100C+.   |
| 39                        | N. Sponenberg, owner, location 100'S. & 150CE. N.W. Cor. Sec. 24. Ground surface elevation 685 ft.* Depth to limestone 178'. Total depth 181'.                                  |
| 40                        | J. H. Sponenberg, owner, location 100'S. & 1575'E. N.W. Cor. Sec. 24. Ground surface elevation 685 ft.* Total depth 108' finished in sand and gravel.                           |
| 41                        | C. & N. W. Ry., owner, location 200CS. & 200CW. N.E. Cor. Sec. 24. Ground surface elevation 700 ft.* Depth to limestone 154'. Total depth 160'.                                 |
| 42                        | H. G. Wilder, owner, (house, well No. 1), location 230CE. & 1400'N. S.W. Cor. Sec. 24. Ground surface elevation 723 ft.* Total depth 65' finished in gravel.                    |
| 43                        | H. G. Wilder, owner, (barn, well No. 2), location 2300'E. & 140CN. S.W. Cor. Sec. 24. Ground surface elevation 723 ft.* Total depth 165'.                                       |
| 44                        | Erwin Holt, owner, location 200'W. & 110CN. S.E. Cor. S.W. ¼ Sec. 24. Ground surface elevation 721 ft.* Total depth 45' finished in gravel.                                     |
| 45                        | Mohrman Farm, location 30CE. & 100'S. N.W. Cor. N.E. ¼ Sec. 25. Ground surface elevation 720 ft.* Depth to limestone 165'. Total depth 165'.                                    |
| 46                        | Old Lee Flood Farm, location 250CE. 8c 220CS. N.W. Cor. Sec. 25. Ground surface elevation 722 ft.* Total depth 25C.   |
| 47                        | A. J. Touby, owner, location 210CW. 8c 250CN. S.E. Cor. Sec. 25. Ground surface elevation 720 ft.* Total depth 97' finished in gravel.  |
| 48                        | Thos. E. Wilson, owner, location 1400'W. & 1600'N. S.E. Cor. Sec. 25. Ground surface elevation 705 ft.* Depth to limestone 142'. Total depth 157½'.                             |
| 49                        | Thos. E. Wilson, owner, (pasture well), location 1600'E. & 100'N. S.W. Cor. Sec. 25. Ground surface elevation 721 ft.* Depth to limestone 142'. Total depth 154'.               |

\*Above sea level.





| No.                       | Description   |
|---------------------------|---|
| WARREN TOWNSHIP—continued |   |
| 50                        | Ella Merriman, owner, location 200'W. & 1800'N. S.E. Cor. Sec. 26. Ground surface elevation 707 ft.* Depth to limestone 158'. Total depth 160'.   |
| 51                        | Location 200'W. & 2000'N. S.E. Cor. Sec. 26. Ground surface elevation 708'. Total depth 300'.   |
| 52                        | E. C. Burandt, owner, location 1300'W. & 1800'N. S.E. Cor. Sec. 26. Ground surface elevation 722 ft.* Depth to limestone 170'. Total depth 175'. Yield 5 G. P. M.   |
| 53                        | A. Stahl, owner, location 1900'W. & 2000'N. S.E. Cor. Sec. 26. Ground surface elevation 729 ft.* Depth to limestone 157'. Total depth 163'.   |
| 54                        | Harry Howard, owner, location 300'E. & 500'S. N.W. Cor. N.E. ¼ Sec. 26. Ground surface elevation 715 ft.* Depth to limestone 145'. Total depth 235'.  |
| 55                        | N. W. MacChesney, owner, location 1700'N. & 1400'W. S.E. Cor. Sec. 27. Ground surface elevation 692 ft.* Total depth 180'. Yield 10 G. P. M.  |
| 56                        | N. W. MacChesney Gardners Cottage, location 900'N. & 2600'W. S.E. Cor. Sec. 27. Ground surface elevation 690 ft.* Depth to limestone 108'.  |
| 57                        | Chester MacChesney, owner, location 2550'E. & 800'N. S.W. Cor. Sec. 27. Ground surface elevation 690 ft.* Depth to limestone 108'. Total depth 173'.  |
| 58                        | School Dist. 54, owner, location 25'E. & 1250'N. S.W. Cor. Sec. 27. Ground surface elevation 685 ft.* Depth to limestone 131'. Total depth 136'.  |
| 59                        | Spinney Run Farm (A. L. Farwell, owner), location 300'W. & 2000'N. S.E. Cor. Sec. 28. Ground surface elevation 734 ft.* Depth to limestone 172'. Total depth 220'. Yield 15 G. P. M.  |
| 60                        | James Mogg, owner, location 2500'W. & 1200'S. N.E. Cor. Sec. 30. Ground surface elevation 800'. Total depth 158' finished in sand and gravel.   |
| 61                        | Idlewild Sub., location N.W. ¼ Sec. 30. Ground surface elevation 785 ft.* Depth to limestone 276'. Total depth 397'.  |
| 62                        | P. Knukel Inn (H. S. Zabel, owner), location 800'E. & 500'S. N.W. Cor. Sec. 30. Ground surface elevation 782 ft.* Depth to limestone 274'. Total depth 294'.  |
| 63                        | P. Knukel Inn (H. S. Zabel, owner), location 1000'E. & 600'S. N.W. Cor. Sec. 30. Ground surface elevation 780 ft.* Depth to limestone 275'. Total depth 275'.   |
| 64                        | John A. Swanson, owner, location 300'E. & 1900'S. N.W. Cor. Sec. 30. Ground surface elevation 782 ft.* Depth to limestone 274'. Total depth 278'. Yield 3 G. P. M.  |
| 65                        | Gages Lake School, location 150'S. & 150'E. N.W. Cor. Sec. 31. Ground surface elevation 810 ft.* Total depth 141' finished in gravel.   |
| 66                        | Fred W. Dobe, owner, well No. 1, location 125'E. & 650'N. S.W. Cor. Sec. 31. Ground surface elevation 812 ft.* Depth to limestone 271'. Total depth 271'.   |
| 67                        | Fred W. Dobe, owner, well No. 2, location 1000'E. & 1300'N. S.W. Cor. Sec. 31. Ground surface elevation 810 ft.* Depth to limestone 272'. Total depth 272'.   |
| 68                        | Frank Day, owner, location 1600'N. & 1500'E. S.W. Cor. Sec. 32. Ground surface elevation 756 ft.* Total depth 150'.   |
| 69                        | Theo. Dickinson, owner, location 2100'W. & 600'S. N.E. Cor. Sec. 33. Ground surface elevation 740 ft.* Depth to limestone 160'. Depth to St. Peter sandstone 840'. Total depth 986'. Yield 15 G. P. M.  |
| 70                        | Lee Flood, owner, well No. 1, location 1600'S. & 1600'W. N.E. Cor. Sec. 33. Ground surface elevation 705 ft.* Depth to limestone 141'. Total depth 147'.  |
| 71                        | Lee Flood, owner, well No. 2, location 1700'S. & 1600'W. N.E. Cor. Sec. 33. Ground surface elevation 705 ft.* Depth to limestone 144'. Total depth 421'.  |
| 72                        | Lee Flood, owner, well No. 3, location 1650'S. & 1550'W. N.E. Cor. Sec. 33. Ground surface elevation 703 ft.* Total depth 70' finished in gravel.   |
| 73                        | Serbian Orphanage, location 1600'W. & 2500'S. N.E. Cor. Sec. 33. Ground surface elevation 690 ft.* Depth to limestone 141'. Total depth 159'.   |
| 74                        | Emil Van Haecke, owner, location 2450'E. & 2400'S. N.W. Cor. Sec. 34. Ground surface elevation 702 ft.* Total depth 110' finished in sand.  |
| 75                        | Victor Lahti, owner, location 200'E. & 200'N. S.W. Cor. S.E. ¼ Sec. 34. Ground surface elevation 710 ft.* Total depth 36'.  |
| 76                        | Wm. Bartholamay Est., location 2100'S. & 200'W. N.E. Cor. Sec. 34. Ground surface elevation 730 ft.* Depth to limestone 160'. Depth to St. Peter sandstone 870'. Depth to Dresbach sandstone 1130'. Depth to Mt. Simon sandstone 1475'. Total depth 1639'. Yield 100 G. P. M. |
| 77                        | Elizabeth Kellev, owner, location 1300'S. & 2450'E. N.W. Cor. Sec. 35. Ground surface elevation 730 ft.* Depth to limestone 150'. Total depth 150'.   |
| 78                        | Thos. E. Wilson, owner, (Meadow Lake Farm), location 2000'W. & 500'S. N.E. Cor. Sec. 36. Ground surface elevation 714 ft.*  |
| 79                        | B. F. Stein, owner, location 2300'N. & 2400'E. S.W. Cor. Sec. 36. Ground surface elevation 720 ft.* Depth to limestone 166'. Total depth 185'.  |
| 80                        | B. F. Stein, owner, location 1800'E. & 1600'N. S.W. Cor. Sec. 36. Ground surface elevation 720 ft.* Depth to limestone 160'. Depth to St. Peter sandstone 900'. Total depth 1010'.  |

\*Above sea level.



| No.                                      | Description   |
|--|---|
| LIBERTYVILLE TOWNSHIP—T. 44 N., R. 11 E. |   |
| 1  | Thomas E. Wilson, owner, location 300'S. & 800'E. N.W. Cor. N.E. ¼ Sec. 1. Ground surface elevation 715 ft.* Depth to limestone 168'. Depth to St. Peter sandstone 915'. Total depth 1055'.   |
| 2  | Thomas E. Wilson, owner, location 400'S. & 1150'S. N.W. Cor. N.E. ¼ Sec. 1. Ground surface elevation 712 ft.* Depth to limestone 169'. Total depth 185'.  |
| 3  | Masterton Place, location 800'N. & 400'W. S.E. Cor. S.W. ¼ Sec. 2. Ground surface elevation 702 ft.* Depth to limestone 184'. Total depth 188'.   |
| 4  | M. Hapick, owner, location 2000'N. & 300'W. S.E. Cor. S.W. ¼ Sec. 2. Ground surface elevation 707 ft.* Total depth 198'.  |
| 5  | Celia Hamel, owner, location 300'N. & 600'E. S.W. Cor. N.W. ¼ Sec. 2. Ground surface elevation 703 ft.* Total depth 11' finished in gravel.   |
| 6  | B. Kristan, owner, location 300'E. & 1250'N. S.W. d r. Sec. 2. Ground surface elevation 690 ft.* Total depth 47' finished in gravel.  |
| 7  | Jane Stein, owner, location 1000'N. & 300'W. S.E. Cor. Sec. 3. Ground surface elevation 690 ft.* Total depth 165'.  |
| 8  | W. H. Burandt, owner, location 400'S. & 400'E. N.W. Cor. N.E. ¼ Sec. 3. Ground surface elevation 702 ft.* Depth to limestone 140'. Total depth 144'.  |
| 9  | John Suhling, owner, location 1250'S. & 1800'E. N.W. Cor. Sec. 3. Ground surface elevation 700 ft.* Total depth 75' finished in sand.   |
| 10                                       | Budd Farm Home, location 200'S. & 200'E. N.W. Cor. Sec. 3. Ground surface elevation 702 ft.* Total depth 87' finished in gravel.  |
| 11                                       | Budd Mem'l Home, location 1300'W. & 2800'N. S.E. Cor. Sec. 4. Ground surface elevation 680 ft.* Depth to limestone 133'. Depth to St. Peter sandstone 864'. Depth to Dresbach sandstone 1219'. Total depth 1276'. Yield 150 G. P. M.  |
| 12                                       | Emil Naumann, owner, location 500'W. & 100'N. S.E. Cor. Sec. 4. Ground surface elevation 672 ft.* Total depth 54' finished in gravel.   |
| 13                                       | M. Casey, owner, location 1200'S. & 125'W. N.E. Cor. S.E. ¼ Sec. 5. Ground surface elevation 690 ft.* Depth to limestone 148½'. Total depth 150'.   |
| 14                                       | Liberty Oil Co., owner, location 2550'S. & 2940'W. N.E. Cor. Sec. 7. Ground surface elevation 735 ft.* Depth to limestone 212'. Total depth 212'.   |
| 15                                       | Libertyville, C. C. owner, location 250'N. & 1300'W. S.E. Cor. N.E. ¼ Sec. 7. Ground surface elevation 750 ft.* Depth to limestone 220'. Total depth 334'.  |
| 16                                       | Bush School, location 100'E. & 700'N. S.W. Cor. Sec. 8. Ground surface elevation 742 ft.* Depth to limestone 225'. Total depth 237'.  |
| 17                                       | Leesley Nursery, owner, (well No. 1), location 100'N. & 20'W. S.E. Cor. W. ½ NW¼ Sec. 8. Ground surface elevation 720 ft.* Depth to limestone 171'. Total depth 252'.   |
| 18                                       | Leesley Nursery, owner, (well No. 2), location 700'N. & 600'E. S.W. Cor. N.W. ¼ Sec. 8. Ground surface elevation 710 ft.* Depth to limestone 164'. Total depth 263'.  |
| 19                                       | Henry Boysen, Jr., owner, location 100'E. & 100'N. S.W. Cor. N.W. ¼ Sec. 9. Ground surface elevation 704 ft.* Depth to limestone 154'. Total depth 178'.  |
| 20                                       | Henry Meyer, owner, location 700'S. & 1000'E. N.W. Cor. Sec. 9. Ground surface elevation 675 ft.* Total depth 140' finished in gravel. Flows.   |
| 21                                       | Arthur Swandt, owner, location 500'W. & 100'S. N.E. Cor. S.E. ¼ Sec. 10. Ground surface elevation 685 ft.* Total depth 118' finished in gravel. Yield 3 G. P. M.  |
| 22                                       | John Reinberg, owner, location 600'S. & 600'E. N.W. Cor. S.W. ¼ Sec. 11. Ground surface elevation 704 ft.* Depth to limestone 170'. Total depth 200'. Yield 6 G. P. M.  |
| 23                                       | Ascension Cem., location 1000'S. & 275'W. N.E. Cor. N.W. ¼ Sec. 11. Ground surface elevation 695 ft.* Depth to limestone 168'. Depth to St. Peter sandstone 900'. Depth to Dresbach sandstone 1180'. Depth to Mt. Simon sandstone 1580'. Total depth 1715'. Yield 60 G. P. M. |
| 24                                       | Oak Grove School, location 300'E. & 1200'S. N.W. Cor. N.E. ¼ Sec. 11. Ground surface elevation 691 ft.* Total depth 132' finished in gravel.  |
| 25                                       | B. Kristan, owner, location 700'E. & 600'S. N.W. Cor. N.E. ¼ Sec. 11. Ground surface elevation 693 ft.* Total depth 183'.   |
| 26                                       | Hollands, owner, location 1400'W. & 700'S. N.E. Cor. Sec. 11. Ground surface elevation 692 ft.* Depth to limestone 160'. Total depth 190'.  |
| 27                                       | Roy D. Keehn, owner, (Ken-Ro-Ka), No. 1, location 300'S. & 2100'E. N.W. Cor. S.W. ¼ Sec. 12. Ground surface elevation 697 ft.* Total depth 168' finished in gravel.   |
| 28                                       | Roy D. Keehn, owner, (Ken-Ro-Ka), No. 2, location 400'S. & 2150'E. N.W. Cor. S.W. ¼ Sec. 12. Ground surface elevation 697 ft.* Total depth 165' finished in gravel.   |
| 29                                       | Roy D. Keehn, owner, (Ken-Ro-Ka), No. 3, location 800'S. & 2000'E. N.W. Cor. S.W. ¼ Sec. 12. Ground surface elevation 690 ft.* Depth to limestone 186'. Total depth 192'.   |
| 30                                       | E. J. Schager, owner, location 150'N. & 1100'W. S.E. Cor. N.E. ¼ Sec. 13. Ground surface elevation 710 ft.* Depth to limestone 215'. Total depth 215'.  |
| 31                                       | John Griffith, owner, location 1550'E. & 600'N. S.W. Cor. N.W. ¼ Sec. 14. Ground surface elevation 702 ft.* Depth to limestone 200'. Total depth 240'.  |
| 32                                       | John V. Farwell, owner, location 300'E. & 1800'N. S.W. Cor. N.W. ¼ Sec. 14. Ground surface elevation 700 ft.* Total depth 85' finished in gravel.   |

\*Above sea level.



| No.                               | Description  |
|-----------------------------------|--|
| I LIBERTYVILLE TOWNSHIP—continued |  |
| 33                                | Andrew Malloney (Folly Farm) owner, location 200'E. & 300'S. N.W. Cor. S.W. ¼ Sec. 14. Ground surface elevation 695 ft.* Depth to limestone 215'. Depth to St. Peter sandstone 900'. Total depth 1142'. Yield 30 G. P. M.  |
| 34                                | Hart, owner, location 150'E. & 1000'N. S.W. Cor. Sec. 14. Ground surface elevation 690 ft.* Depth to limestone 200'. Total depth 227'.   |
| 35                                | Wm. E. Webster, owner, location 750'E. & 400'N. S.W. Cor. Sec. 14. Ground surface elevation 700 ft.* Depth to limestone 180'. Total depth 290'.  |
| 36                                | Foulds Milling Co., location 600'W. & 1000'N. S.E. Cor. Sec. 16. Ground surface elevation 665 ft.* Total depth 181' finished in gravel.  |
| 37                                | Libertyville new well No. 5, location 1400'N. & 1100'W. S.E. Cor. Sec. 16. Ground surface elevation 670 ft.* Depth to limestone 187'. Total depth 251'. Yield 500 G. P. M.   |
| 38                                | Libertyville old well No. 4, location 1400'N. & 1700'W. S.E. Cor. Sec. 16. Ground surface elevation 680 ft.* Depth to limestone 200'. Total depth 240'.  |
| 39                                | Libertyville old well No. 2, location 1400'N. & 1700'W. S.E. Cor. Sec. 16. Ground surface elevation 680 ft.* Total depth 180' finished in gravel.  |
| 40                                | Lake County Poor Farm, location 500'S. & 1200'E. N.W. Cor. Sec. 16. Ground surface elevation 710 ft.* Total depth 88' finished in gravel.  |
| 41                                | R. B. Swift, owner, location 2500'E. & 1500'S. N.W. Cor. Sec. 17. Ground surface elevation 710 ft.* Depth to limestone 186'. Total depth 193'. Yield 5 G. P. M.  |
| 42                                | Joe Malloy, owner, location 2500'N. & 2000'E. S.W. Cor. Sec. 17. Ground surface elevation 720 ft.* Depth to limestone 197'. Total depth 198'.  |
| 43                                | Hamilton Wilde, owner, location 2400'N. & 2300'E. S.W. Cor. Sec. 17. Ground surface elevation 719 ft.* Depth to limestone 198'. Total depth 198'.  |
| 44                                | G. W. Peck, owner, location 1200'W. & 2100'N. S.E. Cor. Sec. 17. Ground surface elevation 710 ft.* Total depth 173' finished in sand and gravel.   |
| 45                                | St. Mary of the Lake Seminary (well No. 3), location 300'N. S.E. Cor. S.W. ¼ Sec. 18. Ground surface elevation 765 ft.* Depth to limestone 226'. Depth to St. Peter sandstone 930'. Depth to Dresbach sandstone 1170'. Depth to Mt. Simon sandstone 1630'. Total depth 1919'. Yield 175 G. P. M. |
| 46                                | St. Mary of the Lake Seminary (well No. 1), location 1590'S. & 312'E. N.W. Cor. Sec. 19. Ground surface elevation 729 ft.* Depth to limestone 258'. Depth to St. Peter sandstone 860'. Depth to Dresbach sandstone 1240'. Total depth 1318'.   |
| 47                                | St. Mary of the Lake Seminary (well No. 2), location 1590'S. & 318'E. N.W. Cor. Sec. 19. Ground surface elevation 729 ft.* Depth to limestone 258'. Depth to St. Peter sandstone 860'. Depth to Dresbach sandstone 1240'. Total depth 1282'.   |
| 48                                | Mundelein (old well), location 620'E. & 190'N. S.W. Cor. Sec. 19. Ground surface elevation 765 ft.* Depth to limestone 235'. Total depth 242'. Yield 25 G. P. M.   |
| 49                                | Mundelein (new well), location 680'E. & 190'N. S.W. Cor. Sec. 19. Ground surface elevation 765 ft.* Depth to limestone 235'. Total depth 285'. Yield 50 G. P. M.   |
| 50                                | Duba Farm, location 1200'E. & 1500'S. N.W. Cor. Sec. 23. Ground surface elevation 711 ft.* Depth to limestone 142'. Total depth 144'.  |
| 51                                | St. Mary's Convent, location 200'E. & 2300'N. S.W. Cor. Sec. 23. Ground surface elevation 708 ft.* Total depth 180'.   |
| 52                                | C. M. & St. P. Ry., Roundout, owner, location 2300'E. & 1900'S. N.W. Cor. Sec. 24. Ground surface elevation 675 ft.* Depth to limestone 140'. Depth to St. Peter sandstone 900'. Total depth 1144'.  |
| 53                                | Tom Barnes, owner, location 2000'W. & 2600'S. N.E. Cor. Sec. 24. Ground surface elevation 678 ft.* Depth to limestone 144'. Total depth 161'.  |
| 54                                | Geo. Everett, owner, location 1500'W. & 2200'N. S.E. Cor. Sec. 24. Ground surface elevation 675 ft.* Depth to limestone 170'. Total depth 218'.  |
| 55                                | Knollwood, C. C. owner, location 700'N. & 1220'W. S.E. Cor. Sec. 24. Ground surface elevation 670 ft.* Depth to limestone 145'. Depth to St. Peter sandstone 918'. Depth to Dresbach sandstone 1207'. Total depth 1602'. Yield 300 G. P. M.  |
| 56                                | James B. Waller, owner, location 200'S. & 200'E. N.W. Cor. Sec. 25. Ground surface elevation 692 ft.* Total depth 60' finished in gravel.  |
| 57                                | Charles True, owner, well No. 1, location 680'N. & 550'E. S.W. Cor. N.W. ¼ Sec. 25. Ground surface elevation 690 ft.* Depth to limestone 161'. Total depth 177'.   |
| 58                                | Charles True, owner, well No. 2, location 630'N. & 500'E. S.W. Cor. N.W. ¼ Sec. 25. Ground surface elevation 690 ft.* Depth to limestone 161'. Total depth 185'. Yield 50 G. P. M.   |
| 59                                | John Horan, owner, location 200'E. & 400'N. S.W. Cor. N.W. ¼ Sec. 25. Ground surface elevation 695 ft.* Total depth 250'.  |
| 60                                | Dornbush, owner, location 150'E. & 1300'N. S.W. Cor. Sec. 25. Ground surface elevation 690 ft.* Depth to limestone 141'. Total depth 164'.   |
| 61                                | C. G. Graham, owner, location 200'E. & 500'N. S.W. Cor. N.W. ¼ Sec. 26. Ground surface elevation 675 ft.* Total depth 180'.  |
| 62                                | Paul Harper, owner, location 75'S. & 300'E. N.W. Cor. S.W. ¼ Sec. 26. Ground surface elevation 672 ft.* Depth to limestone 145'. Total depth 165'.   |

\*Above sea level.

| Total dissolved solids  | Silica SiO <sub>2</sub>  | Iron Fe | Calcium Ca   | Magnesium Mg | Potassium and Sodium Na+K | M. O. Alkalinity CaCO <sub>3</sub> | Sulfate SO <sub>4</sub> | Chloride Cl | Nitrate NO <sub>3</sub> | Total hardness CaCO <sub>3</sub> | W=Well No.<br>L=Lab. No. |
|-------------------------|--|---------|--------------|--------------|---------------------------|------------------------------------|-------------------------|-------------|-------------------------|----------------------------------|--------------------------|
| 770.0                   | 25.0   | T       | 66.9         | 40.8         | 93.2                      | 100.0                              | 412.0                   | 6.0         | 1.1                     | 334.0                            | W-33<br>L-67811          |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-34                     |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-35                     |
| 746.0                   |  | .1      |              |              |                           | 116.0                              |                         | 4.0         |                         | 344.0                            | W-36<br>L-64399          |
| 666.0                   |  | .2      |              |              |                           | 116.0                              |                         | 5.0         |                         | 424.0                            | W-37<br>L-64394          |
| 657.0                   | 12.0   | .2      | 61.3         | 39.2         | 95.5                      | 118.0                              | 382.0                   | 5.0         | .1                      | 314.0                            | W-38<br>L-69282          |
| 730.0                   | 15.6   | .8      | 70.8         | 38.9         | Na 78.8<br>K 8.0          | 110.0                              | 364.6                   | 4.0         | 1.2                     | 336.0                            | W-39<br>L-38318          |
| 670.0                   |  |         |              |              |                           | 104.0                              |                         | 5.0         |                         | 344.0                            | W-40<br>L-64398          |
| 672.0<br>Note:          | 14.0<br>H <sub>2</sub> S present.                              |         | 49.6         | 34.4         | 112.3                     | 106.0                              | 377.5                   | 10.0        |                         | 265.0                            | W-41<br>L-64811<br>W-42  |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-43                     |
| 724.0<br>Note:          | 14.0<br>H <sub>2</sub> S present.                              |         | 74.0         | 42.4         | 79.5                      | 104.0                              | 404.2                   | 5.0         | 1.8                     | 359.0                            | W-44<br>L-68683          |
| 361.0                   | 12.0   |         | 80.5         | 22.4         | 19.3                      | 262.0                              | 58.4                    | 9.0         | 1.5                     | 293.0                            | W-45<br>L-68345          |
| 368.0                   | 14.0   | 3.0     | 80.6         | 21.8         | 22.6                      | 258.0                              | 61.8                    | 11.0        | .6                      | 290.0                            | W-46<br>L-66506          |
| 255.0                   | 10.0   | 4.0     | 23.2         | 18.3         | 46.7                      | 192.0                              | 23.2                    | 12.0        | 1.2                     | 132.0                            | W-47<br>L-65507          |
| 422.0                   |  | T       |              |              |                           | 144.0                              |                         | 8.0         |                         | 144.0                            | W-48<br>L-64642          |
| 405.0<br>Note:<br>Note: | 12.0<br>H <sub>2</sub> S present.<br>H <sub>2</sub> S present, |         | 21.7         | 17.0         | 85.7                      | 140.0                              | 153.0                   | 8.0         | .6                      | 124.0                            | W-49<br>L-65822<br>W-50  |
|                         |  |         | oil present. |              |                           |                                    |                         |             |                         |                                  | W-51                     |
| 550.0                   |  | .2      |              |              |                           | 238.0                              |                         | 21.0        |                         | 427.0                            | W-52<br>L-64627          |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-53                     |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-54                     |
| 486.0<br>Note:          | 14.0<br>H <sub>2</sub> S present.                              | .5      | 22.2         | 30.8         | 131.8                     | 428.0                              | 10.5                    | 21.0        |                         | 181.0                            | W-55<br>L-64630          |
|                         |  |         |              |              |                           |                                    |                         |             |                         |                                  | W-56                     |
| Note:                   | Oil and gas present.   |         |              |              |                           |                                    |                         |             |                         |                                  | W-57                     |
| 576.0<br>Note:          | 25.0<br>Oil and gas present.                                   | 1.0     | 72.5         | 42.7         | 78.5                      | 496.0                              | 1.6                     | 21.0        | 1.5                     | 356.0                            | W-58<br>L-68679          |
| 579.0<br>Note:          | 23.0<br>H <sub>2</sub> S present, gas present,                 | 3.0     | 70.0         | 39.2         | 85.7                      | 490.0                              | 8.0                     | 17.0        | .9                      | 336.0                            | W-59<br>L-67808          |
| 1267.0<br>Note:         | 23.0<br>H <sub>2</sub> S present, gas present,                 | 4.0     | 18.1         | 11.0         | 475.2                     | 646.0                              | 17.7                    | 325.5       | 1.5                     | 91.0                             | W-60<br>L-68677          |
| 725.0<br>Note:          | 24.0<br>Gas present.   | 2.4     | 88.2         | 67.5         | 103.0                     | 704.0                              |                         | 13.0        | .2                      | 498.0                            | W-61<br>L-67809          |
| 613.0<br>Note:          | 22.0<br>Gas present, oil taste.                                |         | 76.0         | 50.0         | 98.5                      | 594.0                              |                         | 11.0        | 1.2                     | 395.0                            | W-62<br>L-68497          |

| No.                                | Description   |
|------------------------------------|---|
| LIBERTYVILLE TOWNSHIP—continued    |   |
| 63                                 | Sam Insul, owner, location 1000'N. & 425'E. S.W. Cor. Sec. 32 (3 wells in Cluster). Ground surface elevation 720 ft.* Total depth 52' finished in gravel.   |
| 64                                 | Sam Insul, owner, location 800'S. & 1100'W. N.E. Cor. Sec. 33. Ground surface elevation 690 ft.* Total depth 1300'.   |
| 65                                 | Sam Insul, owner, location 800'S. & 1100'W. N.E. Cor. Sec. 33. Ground surface elevation 690 ft.* Total depth 150'.  |
| 66                                 | Joseph M. Patterson, owner, location 1500'W. & 1100'N. S.E. Cor. Sec. 33. Ground surface elevation 678 ft.* Depth to limestone 105'. Total depth 205'.  |
| 67                                 | Joseph M. Patterson, owner, location 300'E. & 150'N. S.W. Cor. Sec. 34. Ground surface elevation 674 ft.* Depth to limestone 105'. Total depth 165'.  |
| 68                                 | Joseph M. Patterson, owner, location 300'E. & 200'N. S.W. Cor. Sec. 34. Ground surface elevation 673 ft.* Depth to limestone 95'. Total depth 120'.   |
| 69                                 | Dillon Sub., location 500'S. & 2100'W. of N.E. Cor. Sec. 35. Ground surface elevation 710 ft.* Depth to limestone 185'. Depth to St. Peter sandstone 935'. Depth to Dresbach sandstone 1240'. Total depth 1600'.  |
| 70                                 | F. C. Farwell, owner, location 1700'E. & 1700'N. S.W. Cor. Sec. 35. Ground surface elevation 662 ft.* Depth to limestone 105'. Total depth 128'.  |
| 71                                 | F. C. Farwell, owner, location 3000'E. & 1900'N. S.W. Cor. Sec. 35. Ground surface elevation 670 ft.* Total depth 122' finished in gravel.  |
| 72                                 | Paul Llewellyn, owner, location 450'W. & 650'N. S.E. Cor. Sec. 35. Ground surface elevation 685 ft.* Depth to limestone 116'. Depth to St. Peter sandstone 920'. Total depth 1036'. Yield 12 G. P. M.   |
| 73                                 | J. O. Armour, owner, location 125'W. & 60'S. N.E. Cor. S.E. ¼ Sec. 35. Ground surface elevation 702 ft.* Depth to limestone 170'. Depth to St. Peter sandstone 910'. Depth to Dresbach sandstone 1230'. Total depth 1350'.                                    |
| 74                                 | Melody Farm C. C, owner, location 200'N. & 3450'E. S.W. Cor. Sec. 36. Ground surface elevation 683 ft.* Depth to limestone 147'. Depth to St. Peter sandstone 930'. Depth to Dresbach sandstone 1240'. Depth to Mt. Simon sandstone 1670'. Total depth 1920'. |
| VERNON TOWNSHIP—T. 43 N.. R. 11 E. |   |
| 1                                  | T. J. Harper (Res.), location 100'W. & 600'S. Center Sec. 1. Ground surface elevation 700 ft.* Depth to limestone 162'. Total depth 270'.   |
| 2                                  | F. D. Sadler (Nursery Ho.), location 100'W. & 1550'S. Center Sec. 1. Ground surface elevation 688 ft.* Depth to limestone 150'. Total depth 182'.   |
| 3                                  | F. D. Sadler (res.), location 600'W. & 600'S. Center Sec. 1. Ground surface elevation 698 ft.* Depth to limestone 155'. Total depth 264'.   |
| 4                                  | Frank Redman place, location 1650'E. & 2200'N. S.W. Cor. Sec. 1. Ground surface elevation 695 ft.* Depth to limestone 180'. Total depth 180'.   |
| 5                                  | Frank Wawak, owner, location 600'S. & 400'W. N.E. Cor. N.W. ¼ Sec. 1. Ground surface elevation 690 ft.* Depth to limestone 154'. Total depth 238'.  |
| 6                                  | Charles H. Morse (well No. 3), location ½ mile S. & 700'W. N.E. Cor. N.W. ¼ Sec. 2. Ground surface elevation 690 ft.* Depth to limestone 95'. Total depth 956'.   |
| 7                                  | Charles H. Morse (well No. 2), location ½ mile S. & 1700'W. N.E. Cor. N.W. ¼ Sec. 2. Ground surface elevation 672 ft.* Depth to limestone 60'. Total depth 140'.  |
| 8                                  | Charles H. Morse (well No. 1), location 300'S. & 200'E. N.W. Cor. Sec. 2. Ground surface elevation 686 ft.* Depth to limestone 110½'. Total depth 964'.   |
| 9                                  | Joseph Cudahy, owner, location 900'E. & 700'N. S.W. Cor. Sec. 3. Ground surface elevation 672 ft.* Depth to limestone 105'. Total depth 170'.   |
| 10                                 | Clemments, owner, location 1800'E. & 2300'S. N.W. Cor. Sec. 5. Ground surface elevation 731 ft.* Depth to limestone 203'. Total depth 204'.   |
| 11                                 | Diamond Lake School, location 850'S. & 100'E. N.W. Cor. Sec. 6. Ground surface elevation 760 ft.* Depth to limestone 240'. Total depth 402'.  |
| 12                                 | D. V. Hale, owner, location 100'W. & 200'N. S.E. Cor. Sec. 7. Ground surface elevation 718 ft.* Depth to limestone 180'. Total depth 180'.  |
| 13                                 | Townner, owner, location 2550'W. & 1600'N. S.E. Cor. Sec. 9. Ground surface elevation 708 ft.* Depth to limestone 140'. Total depth 160'.   |
| 14                                 | Nancy Banke farm, location 1800'E. & 150'S. N.W. Cor. Sec. 10. Ground surface elevation 665 ft.* Depth to limestone 100'. Total depth 300'+.  |
| 16                                 | Durn, owner, location 800'N. & 2400'E. S.W. Cor. Sec. 10. Ground surface elevation 660 ft.* Depth to limestone 144'. Total depth 157'.  |
| 17                                 | Old James Lyon place, location 200'W. & 800'S. N.E. Cor. Sec. 11. Ground surface elevation 681 ft.* Depth to limestone 135'. Total depth 155'.  |
| 18                                 | Emil Hanson, owner, (well No. 1), location 1400'E. & 2100'N. S.W. Cor. Sec. 13. Ground surface elevation 684 ft.* Depth to limestone 125'. Total depth 125'.  |
| 19                                 | Emil Hanson, owner, (well No. 2), location 1400'E. & 2100'N. S.W. Cor. Sec. 13. Ground surface elevation 684 ft.* Depth to limestone 125'. Total depth 173'.  |

\*Above sea level.





| No.                                | Description   |
|------------------------------------|---|
| VERNON TOWNSHIP—continued          |   |
| 20                                 | John P. Anderson, owner, (well No. 1), location 900'E. & 1300'N. S.W. Cor. Sec. 13. Ground surface elevation 685 ft.* Total depth 140' finished in gravel.        |
| 21                                 | John P. Anderson, owner, (well No. 2), location 1000'E. & 1350'N. S.W. Cor. Sec. 13. Ground surface elevation 685 ft.* Depth to limestone 168'. Total depth 180'. |
| 22                                 | Swan Johnson, owner, location 300'E. & 1300'N. S.W. Cor. Sec. 13. Ground surface elevation 685 ft.* Depth to limestone 176'. Total depth 180'.                    |
| 23                                 | Littrell, owner, location 1950'W. & 1000'S. N.E. Cor. Sec. 15. Ground surface elevation 663 ft.* Depth to limestone 178'. Total depth 180'.                       |
| 24                                 | Sinclair Filling Station, location 1900'W. & 1400'N. S.E. Cor. Sec. 15. Ground surface elevation 655 ft.* Total depth 46' finished in gravel.                     |
| 25                                 | Kildeer, C. C. (north well), location 2140'N. & 150'E. S.W. Cor. Sec. 19. Ground surface elevation 720 ft.* Total depth to limestone 153'. Total depth 320'.      |
| 26                                 | Kildeer, C. C. (south well), location 2140'N. & 150'E. S.W. Cor. Sec. 19. Ground surface elevation 720 ft.* Depth to limestone 153'. Total depth 928'.            |
| 27                                 | Charles Sprage, owner, location 1900'W. & 500'S. N.E. Cor. Sec. 21. Ground surface elevation 690 ft.* Depth to limestone 116'. Total depth 120'.                  |
| 28                                 | Danmann, owner, location 200'E. & 800'N. S.W. Cor. Sec. 24. Ground surface elevation 675 ft.* Depth to limestone 140'. Total depth 194'.                          |
| 29                                 | J. A. Kiesgan, owner, location 450'N. & 2500'E. S.W. Cor. Sec. 25. Ground surface elevation 657 ft.* Depth to limestone 132'. Total depth 132'.                   |
| 30                                 | Geo. Weiland (greenhouse), location 400'W. & 1250'S. N.E. Cor. Sec. 28. Ground surface elevation 680 ft.* Depth to limestone 146'. Total depth 825'.              |
| 31                                 | Wm. Hanson Filling station, location 1300'E. & 100'S. N.W. Cor. Sec. 35. Ground surface elevation 645 ft.* Total depth 93' finished in gravel. Flows.             |
| 32                                 | Columbia Golf Club, location 1450'E. & 2000'N. S.W. Cor. Sec. 35. Ground surface elevation 644 ft.* Depth to limestone 124'. Total depth 280'. Flows.             |
| 33                                 | Columbia Gardens Sub., location 1800'W. & 2100'N. S.E. Cor. Sec. 35. Ground surface elevation 638 ft.* Depth to limestone 100'. Total depth 345'.                 |
| 34                                 | Monroe State Bank, owner, location 950'N. & 25'E. S.W. Cor. S.E. ¼ Sec. 35. Ground surface elevation 648 ft.* Depth to limestone 122'. Total depth 135'.          |
| ANTIOCH TOWNSHIP—T. 46 N. R. 10 E. |   |
| 1                                  | Village of Antioch (well No. 1), location 1300'E. & 1900'N. S.W. Cor. Sec. 8. Ground surface elevation 780 ft.* Total depth 216' finished in gravel.              |
| 2                                  | Village of Antioch (well No. 2), location 1000'E. & 1900'N. S.W. Cor. Sec. 8. Ground surface elevation 780 ft.* Total depth 220' finished in gravel.              |
| 3                                  | Chain O'Lakes Laundry, location 1200'E. & 1800'N. S.W. Cor. Sec. 8. Ground surface elevation 780 ft.* Total depth 140' finished in gravel.                        |
| 4                                  | Antioch Creamery, location 2350'E. & 1900'S. N.W. Cor. Sec. 8. Ground surface elevation 780 ft.* Depth to limestone 240'. Total depth 330'.                       |
| 5                                  | N. C. Christianson, owner, location 200'N. & 500'W. S.E. Cor. Sec. 11. Ground surface elevation 811 ft.* Depth to limestone 275'. Total depth 300'.               |
| 6                                  | School Dist. 27, owner, location 150'N. & 1220'E. S.W. Cor. Sec. 12. Ground surface elevation 793 ft.* Total depth 160' finished in gravel.                       |
| 7                                  | Sorenson, owner, location 1150'E. of N.W. Cor. S.W. ¼ Sec. 12. Ground surface elevation 782 ft.* Depth to limestone 240'. Total depth 320'.                       |
| 8                                  | Edwards, owner, location 200'S. & 2300'E. N.W. Cor. S.W. ¼ Sec. 12. Ground surface elevation 770 ft.* Depth to limestone 230'. Total depth 289*.                  |
| 9                                  | A. Colegrove, owner, location 200'S. & ½ mile E. of N.W. Cor. of S.W. ¼ Sec. 15. Ground surface elevation 781 ft.* Depth to limestone 240'. Total depth 240'.     |
| ANTIOCH TOWNSHIP—T. 46 N., R. 9 E. |   |
| 10                                 | Chain O'Lakes C. C. (well No. 1), location 50'E. & 1600'N. S.W. Cor. Sec. 19. Ground surface elevation 770 ft.* Total depth 105' finished in gravel.              |
| 11                                 | Chain O'Lakes C. C. (well No. 2), location 800'E. & 1300'N. S.W. Cor. Sec. 19. Ground surface elevation 795 ft.* Total depth 119½' finished in gravel.            |
| 12                                 | Chain O'Lakes C. C. (well No. 3), location 1300'E. & 900'N. S.W. Cor. Sec. 19. Ground surface elevation 800 ft.* Total depth 123' finished in gravel.             |
| 13                                 | Ed. Whitt, owner, location 1500'E. & 2500'N. S.W. Cor. Sec. 12. Ground surface elevation 740 ft.* Depth to limestone 222'. Total depth 224'.                      |
| 14                                 | Channel Lake C. C., location 1500'S. & 2500'E. N.W. Cor. Sec. 14. Ground surface elevation 745 ft.* Total depth 28' finished in gravel.                           |
| 15                                 | Fox Lake C. C., location 400'E. & 600'N. S.W. Cor. Sec. 28. Ground surface elevation 800 ft.* Total depth 152' finished in gravel. Yield 5 G. P. M.               |

\*Above sea level.



| No.                                    | Description   |
|--|---|
| LAKE VILLA TOWNSHIP—T. 46 N., R. 10 E. |   |
| 1                                      | Wm. Gelden, owner, location 1400'N. & 2600'E. S.W. Cor. Sec. 27. Ground surface elevation 840 ft.* Depth to limestone 320'. Total depth 320'.   |
| 2                                      | C. W. Christiansen, owner, (well No. 1), location 200'N. & 1450'E. S.W. Cor. Sec. 29. Ground surface elevation 822 ft.* Total depth 317' finished in quick sand. Yield 5 G. P. M.   |
| 3                                      | C. W. Christiansen, owner, (well No. 2), location 250'N. & 1500'E. S.W. Cor. Sec. 29. Ground surface elevation 821 ft.* Total depth 137' finished in gravel and sand.<br>Cedar Crest C. C. (well No. 1), location 100'E. & 1800'S. N.W. Cor. Sec. 31. Ground surface elevation 795 ft.* Total depth 180' finished in gravel.<br>Cedar Crest C. C. (well No. 2), location 375'E. & 2200'S. N.W. Cor. Sec. 31. Ground surface elevation 800 ft.* Total depth 300' finished in gravel. |
| LAKE VILLA TOWNSHIP—T. 45 N., R. 10 E. |   |
| 4                                      | Lindenhurst Farm, owner, location 900'S. & 2000'E. N.W. Cor. Sec. 2. Ground surface elevation 785 ft.* Depth to limestone 275'. Total depth 275'.   |
| AVON TOWNSHIP—T. 45 N., R. 10 E.       |   |
| 1                                      | Harry Edwards, owner, location 100'N. & 2200'E. S.W. Cor. Sec. 15. Ground surface elevation 796 ft.* Depth to limestone 278'. Total depth 279'.   |
| 2                                      | Round Lake C. C. owner, location 500'W. & 825'N. S.E. Cor. Sec. 16. Ground surface elevation 780 ft.* Depth to limestone 240'. Depth to St. Peter sandstone 815'. Total depth 1056'.  |
| 3                                      | Schlichter, owner, location N.W. ¼ Sec. 18. Ground surface elevation 746 ft.* Depth to limestone 262'. Total depth 280'.  |
| 4                                      | C. S. Tuttle, owner, location S.W. ¼ Sec. 18. Ground surface elevation 760 ft.* Depth to limestone 279'. Total depth 294'.  |
| 5                                      | C. M. Macfarlane, owner, (well No. 1), location 1100'W. & 1760'N. S.E. Cor. Sec. 21. Ground surface elevation 785 ft.* Depth to limestone 274'. Total depth 351'.   |
| 6                                      | C. M. Macfarlane, owner, (well No. 2), location 300'N. & 1280'E. S.W. Cor. Sec. 22. Ground surface elevation 792 ft.* Depth to limestone 252'. Total depth 379'.  |
| 7                                      | Location 1750'E. & 1350'N. S.W. Cor. Sec. 22. Ground surface elevation 779 ft.* Total depth 243' finished in gravel.  |
| 8                                      | Nelson & Nelson, owner, location 1750'E. & 1750'N. S.W. Cor. Sec. 22. Ground surface elevation 782 ft.* Total depth 232' finished in gravel.  |
| 9                                      | Gustaw Tilgner, owner, location 750'E. & 2900'S. N.W. Cor. Sec. 22. Ground surface elevation 785 ft.* Depth to limestone 277'. Total depth 278'.  |
| 10                                     | Krumrey Farm, location 1500'W. & 1100'N. S.E. Cor. Sec. 24. Ground surface elevation 776'.* Depth to limestone 246'. Total depth 258'.  |
| 11                                     | Brae Loch C. C. location 20'W. & 2350'S. N.E. Cor. Sec. 25. Ground surface elevation 800 ft.* Depth to limestone 273'. Total depth 293'.  |
| 12                                     | Grays Lake Gelatin Co. owner, (well No. 2), location 1000'E. & 1500'N. S.W. Cor. Sec. 26. Ground surface elevation 785 ft.* Depth to limestone 230'. Depth to St. Peter sandstone 890'. Total depth 1040'.  |
| 13                                     | Grays Lake Gelatin Co. owner, (well No. 1), location 1000'E. & 1500'N. S.W. Cor. Sec. 26. Ground surface elevation 785 ft.* Depth to limestone 230'. Depth to St. Peter sandstone 890'. Total depth 1640'.  |
| 14                                     | Village of Grays Lake (well No. 1), location 840'E. & 1200'N. S.W. Cor. Sec. 26. Ground surface elevation 785 ft.* Depth to limestone 240'. Depth to St. Peter sandstone 900'. Total depth 1039'.   |
| 15                                     | Village of Grays Lake (well No. 2), location 840'E. & 1200'N. S.W. Cor. Sec. 26. Ground surface elevation 785 ft.* Depth to limestone 240'. Depth to St. Peter sandstone 900'. Total depth 1323'.   |
| 16                                     | Village of Round Lake, owner, location 2200'W. & 1600'S. N.E. Cor. Sec. 29. Ground surface elevation 798 ft.* Depth to limestone 230'. Total depth 350'.  |
| 17                                     | Fort Hill School, location 100'N. & 1000'E. S.W. Cor. S.E. ¼ Sec. 31. Ground surface elevation 798 ft.* Total depth 148' finished in gravel.  |
| 18                                     | Maud Weaks, owner, location 1600'W. & 1000'S. N.E. Cor. Sec. 34. Ground surface elevation 800 ft.* Depth to limestone 245'. Total depth 261'.   |
| 19                                     | Charles Peterson, owner, location 600'N. & 1450'W. S.E. Cor. Sec. 35. Ground surface elevation 800 ft.* Depth to limestone 231'. Total depth 231'.  |
| FREMONT TOWNSHIP—T. 44 N., R. 10 E.    |   |
| 1                                      | Flora M. Reed, owner, location 1200'E. & 100'N. S.W. Cor. Sec. 7. Ground surface elevation 800 ft.* Depth to limestone 220'. Total depth 228'.  |
| 2                                      | F. A. Wirtz, owner, location 200'N. & 600'W. S.E. Cor. Sec. 11. Ground surface elevation 830 ft.* Depth to limestone 276'. Total depth 316'. Yield 15 G. P. M.  |

\*Above sea level.

| Total dissolved solids         | Silica SiO <sub>2</sub>           | Iron Fe   | Calcium Ca   | Magnesium Mg | Potassium and Sodium Na+ K | M. O. Alkalinity CaCO <sub>3</sub> | Sulfate SO <sub>4</sub> | Chloride Cl | Nitrate NO <sub>3</sub> | Total hardness CaCO <sub>3</sub> | W=Well No.<br>L=Lab. No.                                      |
|--------------------------------|-----------------------------------|-----------|--------------|--------------|----------------------------|------------------------------------|-------------------------|-------------|-------------------------|----------------------------------|---|
| 224.0<br>(Well No. 1)          | 12.0                              | .2        | 3.0          | 2.5          | 82.6                       | 180.0                              | 1.0                     | 11.0        | 1.3                     | 18.0                             | W-1<br>L-68344<br>W-2   |
| 643.0<br>346.0<br>(Well No. 2) | 22.0                              | 1.2<br>.4 | 76.0         | 75.7         | 19.1                       | 286.0<br>240.0                     | 242.                    | 2.0<br>2.0  | 1.1                     | 501.0<br>344.0                   | W-2<br>L-68342<br>W-3<br>L-64410<br>W-3                       |
| Note:                          | H <sub>2</sub> S present.         |           |              |              |                            |                                    |                         |             |                         |                                  | W-4   |
| 343.0                          | 10.0                              | .4        | 16.6         | 9.6          | 93.2                       | 186.0                              | 29.6                    | 47.0        | 1.2                     | 81.0                             | W-1<br>W-2<br>W-3<br>W-4                                      |
| 509.0<br>500.0                 |                                   | .3        |              |              |                            | 158.0<br>134.0                     |                         | 1.0<br>6.0  |                         | 224.0                            | W-5<br>L-58319<br>W-6<br>L-64392<br>W-7<br>W-8<br>W-9<br>W-10 |
| 252.0<br>Note:                 | H <sub>2</sub> S present.         |           |              |              |                            | 120.0                              |                         | 7.0         |                         | 104.0                            | W-11<br>L-64403<br>W-12                                       |
| 336.0<br>Note:                 | H <sub>2</sub> S present.         |           | 53.3         | 21.1         | 43.1                       | 232.0                              | 56.4                    | 16.0        |                         | 220.0                            | W-13<br>L-64393   |
| 450.0<br>Note:                 | H <sub>2</sub> S present.         | .2        | 41.8         | 46.1         | 17.7                       |                                    | 160.3                   | 5.5         | 1.4                     | 293.6                            | W-14<br>L-40919   |
| 341.0<br>Note:                 | H <sub>2</sub> S present.         | .2        | 71.5         | 19.2         | Na 26.8<br>K 11.1          | 250.0                              | 44.9                    | 8.0         | .5                      | 258.0                            | W-15<br>L-62539   |
| 438.0<br>428.0                 | 12.8<br>7.0                       | .3<br>2.2 | 34.5<br>28.0 | 22.4<br>31.2 | Na 60.5<br>K 20.7          | 106.0<br>126.0                     | 214.0<br>206.0          | 5.0<br>4.0  | .9<br>0.1               | 178.0<br>198.0                   | W-16<br>L-48663<br>W-17<br>L-70806                            |
| 430.0<br>Note:                 | 7.0<br>H <sub>2</sub> S present.  | T         | 21.3         | 19.3         | 90.0                       | 98.0                               | 213.0                   | 6.0         | 0.5                     | 132.0                            | W-18<br>L-70802<br>W-19                                       |
| 784.0<br>Note:                 | 14.0<br>H <sub>2</sub> S present. | .1        | 62.0         | 43.8         | 136.2                      | 88.0                               | 504.0                   | 15.0        |                         | 335.0                            | W-1<br>W-2<br>L-64812   |

| No.                              | Description  |
|----------------------------------|--|
| FREEMONT TOWNSHIP—continued      |  |
| 3                                | H. Grabbe, owner, location 1600'E. & 2000'S. N.W. Cor. Sec. 14. Ground surface elevation 820 ft.* Depth to limestone 300'. Total depth 350'.   |
| 4                                | Geo. Bauernschmitt, owner, location 2000'E. & 1200'N. S.W. Cor. Sec. 15. Ground surface elevation 825 ft.* Depth to limestone 284'. Total depth 285'.                                  |
| 5                                | St. Mary Ch., location 1400'W. & 1500'S. N.E. Cor. Sec. 16. Ground surface elevation 823 ft.* Depth to limestone 275'. Total depth 318'.   |
| 6                                | Tolman, owner, (well No. 1), location 2000'E. & 2400'S. N.W. Cor. Sec. 22. Ground surface elevation 850 ft.* Total depth 212' finished in gravel.                                      |
| 7                                | Tolman, owner, (well No. 2), location 1300'E. & 2400'S. N.W. Cor. Sec. 22. Ground surface elevation 840 ft.* Total depth 225' finished in gravel.                                      |
| 8                                | Model Farm, location 300'N. & 2550'E. S.W. Cor. Sec. 23. Ground surface elevation 840 ft.* Depth to limestone 294'. Total depth 370'. Yield 35 G. P. M.                                |
| 9                                | Country Side C. C, location Golf Course, 230'S. & 1600'E. N.W. Cor. Sec. 26. Ground surface elevation 832 ft.* Depth to limestone 285'. Total depth 335'. Yield 40 G. P. M.            |
| 10                               | Country Side C. C, location The Club, 700'E. & 1400'S. N.W. Cor. Sec. 26. Ground surface elevation 828 ft.* Depth to limestone 305'. Total depth 312'. Yield 6 G. P. M.                |
| 11                               | Country Side Lake Develop., location 900'W. & 60'N. S.E. Cor. N.E. ¼ Sec. 27. Ground surface elevation 845 ft.* Depth to limestone 300'. Total depth 333'.                             |
| 12                               | Joe Hertell, owner, location 1600'W. & 1600'S. N.E. Cor. Sec. 28. Ground surface elevation 822 ft.* Total depth 289' finished in gravel.   |
| 13                               | A. G. Schwerman, owner, location 2400'W. & 700'N. S.E. Cor. Sec. 34. Ground surface elevation 830 ft.* Depth to limestone 300'. Total depth 402'.                                      |
| 14                               | Thome, owner, location 1600'W. & 750'N. S.E. Cor. Sec. 34. Ground surface elevation 815 ft.* Depth to limestone 287'. Total depth 295'.  |
| ELA TOWNSHIP—T. 43 N., R. 10 E.  |  |
| 1                                | Philip Morse, owner, location 200'N. & 2300'E. S.W. Cor. N.W. ¼ Sec. 1. Ground surface elevation 770 ft.* Depth to limestone 240'. Total depth 256'.                                   |
| 2                                | J. C. Zipprich, owner, location 900'W. & 2300'N. S.E. Cor. Sec. 2. Ground surface elevation 760 ft.* Depth to limestone 190'. Total depth 565'. Yield 6 G. P. M.                       |
| 3                                | Ed. Understock, owner, location 1500'W. & 2400'S. N.E. Cor. Sec. 2. Ground surface elevation 761 ft.* Depth to limestone 190'. Total depth 560'.                                       |
| 4                                | Aug. Puhlmar, owner, location 1100'W. & 1600'S. N.E. Cor. Sec. 6. Ground surface elevation 861 ft.* Depth to limestone 284'. Total depth 300'.   |
| 5                                | A. E. Lohman, owner, location 2300'W. & 150'S. N.E. Cor. Sec. 8. Ground surface elevation 865 ft.* Total depth 160' finished in gravel.  |
| 6                                | Heideman Est., location 1800'S. & 300'W. N.E. Cor. Sec. 8. Ground surface elevation 890 ft.* Total depth 288' finished in gravel.  |
| 7                                | Adolph Kalbremer, owner, location S.E. Cor. S.W. ¼ Sec. 13. Ground surface elevation 755 ft.* Total depth 182' finished in gravel.   |
| 8                                | Lake Zurich Golf Club, location 1100'S. & 300'W. N.E. Cor. S.E. ¼ Sec. 18. Ground surface elevation 867 ft.* Total depth 165' finished in gravel.                                      |
| 9                                | Clover Hill Farm, location 700'S. & 800'W. N.E. Cor. N.W. ¼ Sec. 18. Ground surface elevation 830 ft.* Depth to limestone 244'. Total depth 247½'.                                     |
| 10                               | R. A. Lietz, owner, location 175'E. & 600'N. S.W. Cor. S.E. ¼ Sec. 18. Ground surface elevation 861 ft.* Depth to limestone 278'. Total depth 278'.                                    |
| 11                               | Village of Lake Zurich, location 600'S. & 1900'E. N.W. Cor. Sec. 20. Ground surface elevation 855 ft.* Total depth 214' finished in gravel.  |
| 12                               | Drugan & Lake Farm, location 700'E. & 700'S. N.W. Cor. Sec. 35. Ground surface elevation 763 ft.* Depth to limestone 193'. Total depth 310'.   |
| 13                               | F. C. Reese, owner, location 200'N. & 1000'E. S.W. Cor. N.W. ¼ Sec. 29. Ground surface elevation 862 ft.* Depth to limestone 280'. Total depth 288'.                                   |
| 14                               | Rudolph Fisher, owner, location 200'S. & 2000'W. N.E. Cor. S.E. ¼ Sec. 29. Ground surface elevation 890 ft.* Depth to limestone 292'. Total depth 309'.                                |
| GRANT TOWNSHIP—T. 45 N., R. 9 E. |  |
| 1                                | Village of Fox Lake, owner, location 500'W. & 900'S. N.E. Cor. Sec. 9. Ground surface elevation 770 ft.* Depth to limestone 245'. Depth to St. Peter sandstone 810'. Total depth 945'. |
| 2                                | Pistaqua Heights C. C, location 700'S. & 2200'E. N.W. Cor. Sec. 21. Ground surface elevation 770 ft.* Total depth 300'.  |
| 3                                | Pistaqua Club House, location 2200'S. & 1200'E. N.W. Cor. Sec. 21. Ground surface elevation 752 ft.* Total depth 35' finished in gravel.   |
| 4                                | Wooster Lake Camp No. 1, location 425'N. & 625'E. S.W. Cor. S.E. ¼ Sec. 23. Ground surface elevation 773 ft.* Depth to limestone 200'. Total depth 225'.                               |
| 5                                | Wooster Lake Camp No. 2, location 718'N. & 240'E. S.W. Cor. S.E. ¼ Sec. 23. Ground surface elevation 765 ft.* Depth to limestone 192'. Total depth 200'.                               |

\*Above sea level.



| No.                                 | Description  |
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| WAUCONDA TOWNSHIP—T. 44 N., R. 9 E. |  |
| 1                                   | Tom Vasse, owner, location 500'W. & 2300'N. S.E. Cor. Sec. 2. Ground surface elevation 801 ft.* Depth to limestone 180'. Total depth 203'.   |
| 2                                   | Volo Cath. Church, location 2500'E. & 900'S. N.W. Cor. Sec. 3. Ground surface elevation 79S ft.* Depth to limestone 202'. Total depth 224'.  |
| 3                                   | J. R. Rooney, owner, (home well No. 1), location 400'S. & 1900'W. N.E. Cor. Sec. 13. Ground surface elevation 801 ft.* Depth to limestone 214'. Total depth 229'. Yield 4 G. P. M. |
| 4                                   | J. R. Rooney, owner, (home well No. 2), location 500'S. & 2300'W. N.E. Cor. Sec. 13. Ground surface elevation 803 ft.* Depth to limestone 215'. Total depth 635'.                  |
| 5                                   | Frank Nordmeyer, owner, location 2100'N. & 2000'W. S.E. Cor. Sec. 13. Ground surface elevation 821 ft.* Depth to limestone 250'. Total depth 276'. Yield 6 G. P. M.                |
| 6                                   | R. W. Campbell, owner, location 1000'E. & 150'N. S.W. Cor. Sec. 25. Ground surface elevation 802 ft.* Depth to limestone 225'. Total depth 255'. Yield 3 G. P. M.                  |
| 7                                   | Village of Wauconda, owner, location 200'W. & 1500'N. S.E. Cor. Sec. 26. Ground surface elevation 790 ft.* Total "depth 132' finished in gravel.                                   |
| 8                                   | Belaire, C. C, location 1500'S. & 1700'W. N.E. Cor. Sec. 33. Ground surface elevation 740 ft.* Total depth 70' finished in gravel.   |
| 9                                   | Wauconda, C. C, location 2300'W. & 500'S. N.E. Cor. S.E. ¼ Sec. 36. Ground surface elevation 800 ft.* Depth to limestone 227'. Total depth 227'.                                   |
| 10                                  | Shady Rest, location 150'W. & 1300'N. S.E. Cor. Sec. 36. Ground surface elevation 842 ft.* Depth to limestone 255'. Total depth 270'.  |
| CUBA TOWNSHIP—T. 43 N., R. 9 E.     |  |
| 1                                   | Tower Lake School, location 2300'W. & 2300'N. S.E. Cor. Sec. 2. Ground surface elevation 780 ft.* Total depth 150' finished in gravel.   |
| 2                                   | Walter Maechler, owner, location 350'S. & 1040'W. Center Sec. 2. Ground surface elevation 750 ft.*   |
| 3                                   | John Roberts, owner, location 600'S. & 100'W. N.E. Cor. N.W. ¼ Sec. 3. Ground surface elevation 770 ft.* Depth to limestone 220'. Total depth 250'.                                |
| 4                                   | John Roberts, owner, (well No. 6), location 700'S. & 200'W. N.E. Cor. N.W. ¼ Sec. 3. Ground surface elevation 755 ft.* Total depth 172' finished in gravel.                        |
| 5                                   | Biltmore, C. C, (well No. 2), location 1790'S. & 950'E. N.W. Cor. Sec. 13. Ground surface elevation 775 ft.* Total depth 74' finished in gravel.                                   |
| 6                                   | Biltmore, C. C, (well at Club House), location 1250'W. & 1800'S. Center Sec. 13. Ground surface elevation 810 ft.*   |
| 7                                   | Biltmore, C. C, (well No. 1), location 2000'N. & 625'W. S.E. Cor. Sec. 14. Ground surface elevation 790 ft.* Total depth 100' finished in gravel.                                  |
| 8                                   | Sheldon Clark, owner, location 700'S. & 200'W. N.E. Cor. Sec. 25. Ground surface elevation 870 ft.* Depth to limestone 247'. Total depth 302'.                                     |
| 9                                   | Arthur J. Donovan, owner, location 2200'W. & 2150'N. S.E. Cor. Sec. 25. Ground surface elevation 846 ft.* Depth to limestone 246'. Total depth 320'.                               |
| 10                                  | Harry E. Miller, owner. Ground surface elevation 800 ft.* Total depth 124' finished in gravel.   |
| 11                                  | Harry E. Miller (well No. 8), owner, location 100'S. & 1900'E. N.W. Cor. S.W. ¼ Sec. 28. Ground surface elevation 800 ft.* Depth to limestone 164'. Total depth 265'.              |
| 12                                  | Nixon Hall, owner, location 2000'W. & 2400'N. S.E. Cor. Sec. 28. Ground surface elevation 775 ft.* Total depth 142' finished in gravel. Yield 4 G. P. M.                           |
| 13                                  | R. W. Buckley, owner, location 1500'W. & 1600'N. S.E. Cor. Sec. 28. Ground surface elevation 790 ft.* Depth to limestone 168'. Total depth 178'.                                   |
| 14                                  | Barrington Hills C. C, location 1400'W. & 250'N. S.E. Cor. Sec. 34. Ground surface elevation 820 ft.* Depth to limestone 180'. Total depth 240'.                                   |

\*Above sea level.

