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BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF SOUTH Qu'APPELLE No. 157 SASKATCHEWAN

BY

B. R. MacKay, H. N. Hainstock & G. L. Scott

Water Supply Paper No. 104

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INTRODUCTION

Lack of rainfall during the years 1930 to 1934 over a large part of the Prairie Provinces brought about an acute shortage both in the larger supplies of surface water used for irrigation and the smaller supplies of ground water required for domestic purposes and for stock. In an effort to relieve the serious situation the Geological Survey began an extensive study of the problem from the standpoint of domestic uses and stock raising. During the field season of 1935 an area of 80,000 square miles, comprising all that part of Saskatchewan south of the north boundary of township 32, was systematically examined, records of approximately 60,000 wells were obtained, and 720 samples of water were collected for analyses. The facts obtained have been classified and the information pertaining to any well is readily accessible. The examination of so large an area and the interpretation of the data collected were possible because the bedrock geology and the Pleistocene deposits had been studied previously by McLearn, Warren, Rose, Stansfield, Wickenden, Russell, and others of the Geological Survey. The Department of Natural Resources of Saskatchewan and local well drillers assisted considerably in supplying several hundred well records. The base maps used were supplied by the Topographical Surveys Branch of the Department of the Interior.

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Figure 1. Map showing surface and bedrock geology that affect the ground water supply.

Figure 2. Map showing relief and the location and types of wells.

Publication of Results

The essential information pertaining to the ground water conditions is being published in reports, one being issued for each municipality. Copies of these reports are being sent to the secretary treasurers of the municipalities and to certain Provincial and Federal Departments, where they can be consulted by residents of the municipalities or by other persons, or they may be obtained by writing direct to the Director, Bureau of Economic Geology, Department of Mines, Ottawa. Should anyone require more detailed information than that contained in the reports such additional information as the Geological Survey possesses can be obtained on application to the director. In making such request the applicant should indicate the exact location of the area by giving the quarter section, township, range, and meridian concerning which further information is desired.

The reports are written principally for farm residents, municipal bodies, and well drillers who are either planning to sink new wells or to deepen existing wells. Technical terms used in the reports are defined in the glossary.

How to Use the Report

Anyone desiring information about ground water in any particular locality should read first the part dealing with the municipality as a whole in order to understand more fully the part of the report that deals with the place in which he is interested. At the same time he should study the two figures accompanying the report. Figure 1 shows the surface and bedrock geology as related to the ground water supply, and Figure 2 shows the relief and the location and type of water wells. Relief is shown by lines of equal elevation called "contours". The elevation above sea-level

is given on some or all of the contour lines on the figure.

If one intends to sink a well and wishes to find the approximate depth to a water-bearing horizon, he must learn: (1) the elevation of the site, and (2) the probable elevation of the water-bearing bed. The elevation of the well site is obtained by marking its position on the map, Figure 2, and estimating its elevation with respect to the two contour lines between which it lies and whose elevations are give on the figure. Where contour lines are not shown on the figure, the elevations of adjacent wells as indicated in the Table of Well Records accompanying each report can be used. The approximate elevation of the water-bearing horizon at the well-site can be obtained from the Table of Well Records by noting the elevation of the water-bearing horizon in surrounding wells and by estimating from these known elevations its elevation at the well-site.[1] If the water-bearing horizon is in bedrock the depth to water can be estimated fairly accurately in this way. If the water-bearing horizon is in unconsolidated deposits such as gravel, sand, clay, or glacial debris, however, the estimated elevation is less reliable, because the water-bearing horizon may be inclined, or may be in lenses or in sand beds which may lie at various horizons and may be of small lateral extent. In calculating the depth to water, care should be taken that the water-bearing horizons selected from the Table of Well Records be all in the same geological horizon either in the glacial drift or in the bedrock. From the data in the Table

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[1] If the well-site is near the edge of the municipality, the map and report dealing with the adjoining municipality should be consulted in order to obtain the needed information about nearby wells.

of Well Records it is also possible to form some idea of the quality and quantity of the water likely to be found in the proposed well.

GLOSSARY OF TERMS USED

Alkaline. The term "alkaline" has been applied rather loosely to some ground waters. In the Prairie Provinces a water is usually described as "alkaline" when it contains a large amount of salts, chiefly sodium sulphate and magnesium sulphate in solution. Water that tastes strongly of common salt is described as "salty". Many "alkaline" waters may be used for stock. Most of the so-called "alkaline" waters are more correctly termed "sulphate waters".

Alluvium. Deposits of earth, clay, silt, sand, gravel, and other material on the flood-plains of modern streams and in lake beds.

Aquifer or Water-bearing Horizon. A water-bearing bed, lens, or pocket in unconsolidated deposits or in bedrock.

Buried pre-Glacial Stream Channels. A channel carved into the bedrock by a stream before the advance of the continental ice-sheet, and subsequently either partly or wholly filled in by sands, gravels, and boulder clay deposited by the ice-sheet or later agencies.

Bedrock. Bedrock, as here used, refers to partly or wholly consolidated deposits of gravel, sand, silt, clay, and marl that are older than the glacial drift.

Coal Seam. The same as a coal bed. A deposit of carbonaceous material formed from the remains of plants by partial decomposition and burial.

Contour. A line on a map joining points that have the same elevation above sea-level.

Continental Ice-sheet. The great ice-sheet that covered most of the surface of Canada many thousands of years ago.

Escarpment. A cliff or a relatively steep slope separating level or gently sloping areas.

Flood-plain. A flat part in a river valley ordinarily above water but covered by water when the river is in flood.

Glacial Drift. The loose, unconsolidated surface deposits of sand, gravel, and clay, or a mixture of these, that were deposited by the continental ice-sheet. Clay containing boulders forms part of the drift and is referred to as glacial till or boulder clay. The glacial drift occurs in several forms:

(1) Ground Moraine. A boulder clay or till plain (includes areas where the glacial drift is very thin and the surface uneven).

(2) Terminal Moraine or Moraine. A hilly tract of country formed by glacial drift that was laid down at the margin of the continental ice-sheet during its retreat. The surface is characterized by irregular hills and undrained basins.

(3) Glacial Outwash. Sand and gravel plains or deltas formed by streams that issued from the continental ice-sheet.

(4) Glacial Lake Deposits. Sand and clay plains formed in glacial lakes during the retreat of the ice-sheet.

Ground Water. Sub-surface water, or water that occurs below the surface of the land.

Hydrostatic Pressure. The pressure that causes water in a well to rise above the point at which it is struck.

Impervious or Impermeable. Beds, such as fine clays or shale, are considered to be impervious or impermeable when they do not permit of the perceptible passage or movement of the ground water.

Porvious or Permeable. Beds are pervious when they permit of the perceptible passage or movement of ground water, as for example porous sands, gravel, and sandstone.

Pre-Glacial Land Surface. The surface of the land before it was covered by the continental ice-sheet.

Recent Deposits. Deposits that have been laid down by the agencies of water and wind since the disappearance of the continental ice-sheet.

Unconsolidated Deposits. The mantle or covering of alluvium and glacial drift consisting of loose sand, gravel, clay, and boulders that overlie the bedrock.

Water Table. The upper limit of the part of the ground wholly saturated with water. This may be very near the surface or many feet below it.

Wells. Holes sunk into the earth so as to reach a supply of water. When no water is obtained they are referred to as dry holes. Wells in which water is encountered are of three classes.

(1) Wells in which the water is under sufficient pressure to flow above the surface of the ground. These are called Flowing Artesian Wells.

(2) Wells in which the water is under pressure but does not rise to the surface. These wells are called Non-Flowing Artesian Wells.

(3) Wells in which the water does not rise above the water table. These wells are called Non-Artesian Wells.

NAMES AND DESCRIPTIONS OF GEOLOGICAL FORMATIONS, REFERRED TO IN THESE REPORTS

Wood Mountain Formation. The name given to a series of gravel and sand beds which have a maximum thickness of 50 feet, and which occur as isolated patches on the higher parts of Wood mountain. This is the youngest bedrock formation and, where present, overlies the Ravenscrag formation.

Cypress Hills Formation. The name given to a series of conglomerates and sand beds which occur in the southwest corner of Saskatchewan, and rest upon the Ravenscrag or older formations. The formation is 30 to 125 feet thick.

Ravenscrag Formation. The name given to a thick series of light-coloured sandstones and shales containing one or more thick lignite coal seams. This formation is 500 to 1,000 feet thick, and covers a large part of southern Saskatchewan. The principal coal deposits of the province occur in this formation.

Whitemud Formation. The name given to a series of white, grey, and buff coloured clays and sands. The formation is 10 to 75 feet thick. At its base this formation grades in places into coarse, limy sand beds having a maximum thickness of 40 feet.

Eastend Formation. The name given to a series of fine-grained sands and silts. It has been recognized at various localities over the southern part of the province, from the Alberta boundary ~~east~~ to the escarpment of Missouri coteau. The thickness of the formation seldom exceeds 40 feet.

Bearpaw Formation. The Bearpaw consists mostly of incoherent dark grey to dark brownish grey, partly bentonitic shales, weathering light grey, or, in places where much iron

is present, buff. Beds of sand occur in places in the lower part of the formation. It forms the uppermost bedrock formation over much of western and southwestern Saskatchewan and has a maximum thickness of 700 feet or somewhat more.

Belly River Formation. The Belly River consists mostly of non-marine sand, shale, and coal, and underlies the Bearpaw in the western part of the area. It passes eastward and northeastward into marine shale. The principal area of transition is in the western half of the area where the Belly River is mostly thinner than it is to the west and includes marine zones. In the southwestern corner of the area it has a thickness of several hundred feet.

Marine Shale Series. This series of beds consists of dark grey to dark brownish grey, plastic shales, and underlies the central and northeastern parts of Saskatchewan. It includes beds equivalent to the Bearpaw, Belly River, and older formations that underlie the western part of the area.

WATER-BEARING HORIZONS OF THE MUNICIPALITY

The rural municipality of South Qu'Appelle comprises an area of 348.5 square miles in southeastern Saskatchewan. It consists of nine full townships described as tps. 17, 18, and 19, ranges 14, 15, and 16, secs. 1 to 6 inclusive, tp. 20, range 15, and secs. 1 to 11, 14 to 18, and the southern halves of secs. 19 to 23, tp. 20, range 16, all W. 2nd mer. The centre of the municipality is approximately 27 miles northeast of the city of Regina. The main line of the Canadian Pacific railway traverses the municipality in an east-west direction and on it are located the town of Qu'Appelle and the hamlet of McLean. A branch line of the Canadian National railway, which runs from Regina to Melville, passes through the northwestern part of the municipality, and on it are located the hamlets of Avonhurst and Edgeley.

The greater part of the municipality is covered by moraine. Approximately 45 square miles in the southwestern corner, a smaller area in the northeastern corner, and a large district in the vicinity of Avonhurst and Edgeley in the northern part of the municipality, are mantled by glacial till or boulder clay. An area of approximately 4 square miles in the centre of township 17, range 14, is covered with glacial outwash sands and gravels.

A height of land runs diagonally across township 17, range 15, and township 18, range 16 in a southeast to northwest direction. The surface drainage of almost the entire municipality eventually reaches Qu'Appelle river. Echo creek and a tributary stream flow intermittently through township 19, ranges 15 and 14, towards Qu'Appelle river. There is a long, wide depression passing through townships 18, ranges 16 and 15, and townships 17, ranges 15 and 14, that drains some surface water to Strawberry lakes.

The ground surface is undulating over the entire municipality and it is particularly rough in the moraine-covered districts. Small coulées and large, undrained depressions are very

numerous, but there are no large permanent bodies of water or flowing streams. The municipality is thickly wooded with poplar, the growth being more dense in the moraine-covered area than in the glacial till-covered districts.

Water-bearing Horizons in the Unconsolidated Deposits

The unconsolidated deposits are very thick in this municipality and in some sections they are definitely known to be in excess of 400 feet. Only one well in the municipality is definitely known to have encountered the Marine Shale series. This well is located in the SW. $\frac{1}{4}$, sec. 2, tp. 20, range 15. It is 300 feet deep and struck "soapstone" at an elevation of 1,750 feet above sea-level. Other deep drilled dry holes may have entered the bedrock, but this is uncertain. The greatest depth at which an aquifer in the glacial drift was encountered is 415 feet, and the well tapping this horizon is located in the NW. $\frac{1}{4}$, sec. 18, tp. 18, range 14. The base of this well is at an elevation of 1,760 feet above sea-level. From the above information it is logical to conclude that the elevation of the surface of the Marine Shale series in this area is at or somewhat below 1,750 feet.

The bulk of the glacial drift consists of impervious, blue clay. Usually there is a top covering of approximately 25 feet of yellow, red, or brown boulder clay. Layers of hard-pan, not greater than 7 feet thick, are commonly struck in deep, drilled wells. Discontinuous beds of sand and gravel occur at various depths in the glacial drift.

The upper 100 feet of the glacial drift contains small layers of sand, and larger pockets or lenses of sand and gravel. There does not seem to be any continuity or regularity in the occurrence of the sand or gravel deposits, but in some townships the deposits of sand and gravel are more extensive than in others. For instance, farmers in township 17, range 14, and in the southern

5 miles of township 18, range 14, experience little difficulty in obtaining sufficient but not abundant supplies of water from hand dug wells less than 40 feet deep. In the four townships west of these two townships the sand and gravel deposits become more scattered and farmers experience more difficulty in striking water within 100 feet of the surface, either by dug or bored wells. It is not uncommon to find one farmer obtaining an abundant supply of water from a 60-foot bored well, whereas his neighbour has dug and bored numerous dry holes to a maximum depth of 120 feet. The poorest well water conditions in the municipality exist in township 19, range 14. The deepest well in this township is 90 feet and since the sand and gravel deposits are very scarce in the upper 100 feet of the glacial drift many farmers were very short of water during the drought of 1930 to 1934. In the southern six townships, and township 19, range 14, there are not more than 20 drilled or bored wells over 100 feet deep. Of these seven townships, township 17, range 14, and townships 18, ranges 14 and 16, have the best water supply; the remainder excepting township 19, range 14, where the supply is poor, may be said to have a spotty or patchy water supply. Where possible, farmers dig wells in the floors of small coulées or near undrained depressions where sand and gravel predominate and the seepage is rapid. The quality of the water is usually better in these shallow dug wells, since the sand and gravel bed is thick and the water does not come into contact with the blue clay which apparently is the chief source for most of the dissolved mineral salts in the ground water. Fairly abundant quantities of slightly mineralized water are obtained at depths of less than 20 feet below the surface from the glacial outwash sands and gravels in township 17, range 14. Water that is struck in an aquifer that lies above the blue clay is seldom under hydrostatic pressure. The supply derived from extensive deposits of sand and gravel is less affected by the amount of rainfall than is the supply from the smaller deposits.

When a well taps an aquifer that underlies the impervious blue clay, the water derived usually rises under a slight pressure, and the supply is not so readily affected by drought periods as that from the aquifer overlying the blue clay.

The towns of Qu'Appelle and Edgeley depend almost entirely on dug or drilled wells less than 40 feet deep for drinking water. The town of Qu'Appelle owns a drilled well that yields an abundant supply, but the water is seldom used as it is too highly mineralized for drinking. The shallow wells in Qu'Appelle and McLean were greatly affected by the drought and the residents of McLean were forced to buy water from the Canadian Pacific Railway Company. The seven or eight shallow wells in Qu'Appelle were barely able to meet the population requirements. The water is hard and slightly "alkaline".

Drilling to depths in excess of 100 feet in this municipality has been successful in general. In township 18, range 14, townships 19, ranges 15 and 16, and the partial townships 20, ranges 15 and 16, there are approximately fifty producing, drilled wells that range in depth from 110 to 415 feet. Within this same area there are probably not more than six farmers who have failed to obtain a permanent supply of water by drilling to depth. There appear to be three separate and fairly continuous water-bearing horizons that lie at elevations of 2,000 to 1,900 feet, 1,875 to 1,825 feet, and at 1,775 feet above sea-level. The aquifer in the shallower wells is usually gravel or coarse sand and in the deeper wells it is a fine sand locally termed "pepper and salt" sand. The water in all these drilled wells is hard and contains iron. The deeper wells usually yield more highly mineralized water especially those that tap an aquifer near the base of the drift than do those that tap the coarser aquifers at shallower depths. The water rises under a very high pressure especially in the drilled wells in township 19, range 15, where, as a rule, the water-level stands at a point only 10 feet

below the surface. In a 168-foot well in the NW. $\frac{1}{4}$, section 25, of this township, the water rises to a point 6 feet above the surface. The supply of water is very abundant and was unaffected by the drought conditions of 1930 to 1934. The flowing artesian well yields 8 gallons of water a minute. The maintenance costs of the deeper wells is usually high because of the trouble experienced by the fine sand that composes the aquifer plugging the casing and partly or entirely shutting off the supply. The possibilities of obtaining flowing artesian wells are good in the northeastern part of township 19, range 15.

The ground water conditions of the municipality as a whole are fairly good. Three areas are outlined on the accompanying map by the "A" boundary lines, within which farmers experience great difficulty in securing permanent supplies of water at depths of less than 100 feet below the surface. In these districts it is advisable to drill to depths in excess of 100 feet for water.

The topography of the municipality is favourable for the construction of small dams and the impervious nature of the subsoil makes the use of deep dugouts practical.

Water-bearing Horizons in the Bedrock

Only one well in the municipality has encountered water in the bedrock Marine Shale series. This well is situated in the SW. $\frac{1}{4}$, sec. 2, tp. 20, range 15. A very small supply of water was obtained. The water was analysed and pronounced unfit for any farm purposes, and the well is not in use. Dry holes 370 feet to 525 feet deep, which are believed to have been drilled partly in the bedrock, are located in the SE. $\frac{1}{4}$, sec. 35, tp. 19, range 15; the NW. $\frac{1}{4}$, sec. 31, tp. 19, range 16, and the SE. $\frac{1}{4}$, sec. 3, and the SE. $\frac{1}{4}$, sec. 4, tp. 20, range 16.

It is inadvisable to drill into the shale or "soapstone" as it is often termed by well-drillers, as it contains little or no usable water. The bedrock lies at an approximate elevation of 1,750

feet above sea-level and it is very probable that wells in the NW. $\frac{1}{4}$, sec. 18, tp. 18, range 14, and in the SW. $\frac{1}{4}$, sec. 1, and the SW. $\frac{1}{4}$, sec. 3, tp. 20, range 15, are deriving their supply of water from a fine sand bed that lies at the contact between the glacial drift and the bedrock. These wells are 415, 240, and 300 feet deep, respectively, and tap aquifers at elevations of 1,760, 1,775, and 1,765 feet above sea-level, the differences in depths of the wells corresponding to the increase or decrease of the surface elevation.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 17, Range 14

In the central sections of the township there is a chain of six lakes, the largest of which is about 125 acres in area and the smallest about 25 acres. These lakes lie in a basin 4 miles long and 1 mile wide that is mantled by glacial outwash sands and gravels. The remainder of the township is overlain by moraine. There is a slight increase in elevation from the eastern to the western boundaries of the township and the drainage is to the east and southeast. The ground surface is rough and rolling and numerous, large, deep, undrained depressions occur. Long, shallow ravines, which carry small rivulets of run-off water in the spring, interrupt the undulating surface of the township. The entire township is thickly wooded with poplar.

The supply of well water in the township is considered good, and only two farmers did not have a sufficient quantity of water to meet their requirements during the drought of 1930 to 1934. Three water-bearing horizons have been tapped by wells in this township. The uppermost horizon consists of beds of sand and gravel that underlie the yellow boulder clay or the upper part of the drift. The yellow clay is seldom more than 20 feet thick, so that this upper water-bearing horizon is readily reached by hand dug wells. Farmers experience very little difficulty in striking water at shallow depths and the sand and gravel deposit is especially thick and extensive in the area that is mantled by glacial outwash sands and gravels. At least twenty farmers in the township derive their water supply from dug wells that tap this uppermost water-bearing horizon. The supply is affected by the amount of seasonal precipitation, but the thickness and extent of the water-bearing beds are so great that the drought of 1930 to 1934 only slightly affected the supply in most of the wells. The water is slightly mineralized and suitable for drinking. Four shallow wells located in the NE. $\frac{1}{4}$, section 19; NE. $\frac{1}{4}$, section 24;

SW. $\frac{1}{4}$, section 29, and the SW. $\frac{1}{4}$, section 35, yield large supplies of soft water and several farmers tank water for laundry purposes from the well on the NE. $\frac{1}{4}$, section 19.

The second water-bearing horizon is generally tapped by bored wells 40 to 60 feet deep. This sand aquifer underlies a deposit of blue clay and the water derived is hard and "alkaline". The hydrostatic pressure raises the water to a point 20 feet below the surface and the abundant supply of water obtained is not easily affected by variable seasonal precipitation. The water has no harmful effects on stock, but it is too highly mineralized to be suitable for drinking. In the deeper 60-foot bored wells a layer of hardpan 2 to 7 feet thick, as a rule immediately overlies the sand aquifer. At least twelve farmers in the township use this type of well as a source of water supply.

The third water-bearing horizon has been tapped by two drilled wells located in the NE. $\frac{1}{4}$, section 28, and the SW. $\frac{1}{4}$, section 34. The aquifer tapped by these wells is sand and is located at an approximate elevation of 2,100 feet above sea-level, or at depths of 96 to 98 feet, respectively. A 7-foot layer of hard, brown clay immediately overlies the sand aquifer. The water in the first well is hard, contains iron, and is being used for drinking as well as for stock. The quality of the water in the second well was similar, but more "alkaline", and it had a dark colour. This well is now abandoned. The hydrostatic pressure raises the water to a point 40 feet below the surface in both wells.

The thickness of the glacial drift is not definitely known since there are no wells deeper than 98 feet in the township. It is believed that the bedrock does not lie above an elevation of 1,700 to 1,750 feet, so that the glacial drift would be approximately 450 to 500 feet thick. The glacial drift is composed mainly of blue clay, but it is probable that there are water-bearing horizons of sand and gravel within the clay.

The undulating nature of the ground surface presents numerous locations for the excavation of deep dugouts. This method of collecting and storing run-off water is recommended, although the majority of the farmers in this township do not require a dugout, since the supply of water from their wells is quite sufficient for local requirements.

Township 17, Range 15

The greater part of this township is mantled by moraine, the western border being covered by glacial till. The ground surface is undulating and large sloughs are numerous. A low-lying, marshy area cuts across section 36 in a northwest-southeast direction. Several small ravines in the northeastern half of the township drain the surface water in an east to southeastern direction. The drainage of the southwestern half of the township is towards the west and southwest. The township is thickly wooded with poplar.

The supply of ground water is not as good in this township as it is in township 17, range 14. The uppermost water-bearing horizon of sand and gravel that underlies the yellow clay is not thick or extensive and consequently, with the exception of the northern 2 miles where shallow wells are dug in the floors of small ravines, shallow, hand dug wells are scarce. In the southern 4 miles of the township there are only two or three hand dug wells that yield a satisfactory supply of water. The majority of these dug wells were dug beside sloughs and they only yield a small, intermittent quantity of water, depending on the amount of rainfall. The 15 to 30 feet of yellow clay underlying the top soil is usually underlain by blue clay with very little or no sand or gravel separating the two materials. Bored and drilled wells are, therefore, the chief source of water for most of the farmers. The deepest producing well is 170 feet and is located in the NE. $\frac{1}{4}$, section 7, but a dry hole was drilled 200 feet deep in the SE. $\frac{1}{4}$, section 6. Between depths of

40 feet and 170 feet below the surface the sand and gravel has apparently been deposited in pockets rather than in continuous layers, and farmers are not at all certain of obtaining a permanent supply of water within depths of 100 feet below the surface. For instance, a well in the NW. ¼, section 22, struck a pocket of coarse gravel at a depth of 53 feet below the surface and a fairly abundant supply of water was obtained, whereas the farmer in the NE. ¼, section 21, has bored many wells to a maximum depth of 100 feet below the surface without striking a sand or gravel aquifer. The pocket arrangement of the sand and gravel deposits is further illustrated by the extremely variable quantities of water derived from wells that have tapped an aquifer. Generally the water rises under hydrostatic pressure and the supply is not easily affected by drought periods. The water is hard and appreciably mineralized and although suitable for stock it is not considered good drinking water. The best drinking water is found in shallow 8-to 12-foot wells that have been dug in the thick deposits of gravel and sand that occur in the floors of small coulées in the northern part of the township. An area in the central part of the township comprising sections 9,10, 11,15,16,19,20, and 21, has no producing wells.

The glacial drift is very thick and is probably in excess of 450 feet. It appears that more satisfactory results will be obtained by drilling rather than by boring in this township. It is improbable that the blue clay extends to the bedrock without the occurrence of sand or gravel beds within it. Since permanent supplies of water are not assured within 100 feet of the surface, it is advisable for the farmer to be prepared to drill to depths in excess of 100 feet, but it is inadvisable to drill much deeper than 450 feet since the underlying Marine Shale series does not yield adequate supplies of usable water. The undulating topography of the township is favourable for the excavation of dugouts. Where drilling cannot be financed, a dugout at least 12 feet deep, excavated in a

suitable location, will be found satisfactory as a means of collecting and storing surface water for stock use.

Township 17, Range 16

With the exception of a narrow strip in the south-central part that is mantled by moraine, this township is covered by boulder clay or glacial till. The elevation of the ground surface decreases from 2,250 feet at the northeastern corner to approximately 2,140 feet at the southwestern corner of the township. The ground surface is undulating to quite hilly and is thickly wooded in the northeastern portion of the township, but as the elevation decreases towards the southwest the ground surface becomes less undulating and the poplar growth gradually thins out. Numerous sloughs occur in the northeastern half of the township.

The glacial drift is very thick and probably extends downward to an elevation of 1,700 feet. The uppermost 10 to 30 feet of glacial drift is usually composed of yellow, sandy, boulder clay, and it is underlain by a thick deposit of impervious, blue boulder clay that is believed to extend to the shale bedrock. A small layer of sand or gravel often separates the yellow clay from the blue clay and thick beds of gravel occur at various depths within the blue clay. Fairly thick deposits of sand and gravel that occur within 15 feet of the surface are found only in the floors of small ravines.

Wells are usually dug by hand to the first water-bearing horizon that is formed by the sand layer underlying the yellow clay. The supply of water in the aquifer is easily affected by variations in seasonal rainfall and wells tapping it cannot be depended upon to water very many head of stock. These wells are often used only for domestic purposes since the water from them is of better quality than that from the deeper wells and the supply is not large. Occasionally, abundant supplies of water are obtained from shallow wells, but they are almost invariably located in ravines or small draws.

Most of the wells in this township have been bored, and fewer wells have been drilled, to gravel aquifers that occur at depth in the blue clay. These wells are usually from 70 feet to 160 feet deep and the aquifers are tapped at elevations ranging from 2,020 feet to 2,120 feet above sea-level, depending on the surface elevation. The supply of water obtained is usually abundant and is only slightly affected by prolonged drought periods. The water is hard and highly mineralized and is not considered good drinking water, but is quite satisfactory for stock. The water is under pressure and the constant and abundant supply makes these bored wells excellent sources of water for stock.

In an area in the west-central part of the township, embracing sections 7, 17, 18, 19, 20, 21, 28, 29, and 30, permanent supplies of water have been very difficult to locate at any depth. Numerous wells have been bored and drilled in this district and if water is obtained the supply is very small. In sections 18 and 19, wells 110 and 125 feet deep encountered layers of gravel, but they did not contain water. In the SE. $\frac{1}{4}$, section 28, twenty-seven unsuccessful attempts to locate water were made, the deepest dry hole being 300 feet. At the base of this 300-foot well a layer of hardpan was encountered that could not be pierced. In the SW. $\frac{1}{4}$, section 20, a 270-foot dry hole was drilled and the following materials were encountered in descending order: yellowish brown boulder clay, bluish brown boulder clay, blue-grey sand mixed with shale fragments, and white sand. The farmers in this area depend on shallow seepage wells, sloughs, small dams, and dugouts for a supply of water for stock purposes.

Township 18, Range 14

The elevation of the ground surface in this township decreases in a northeasterly direction, the difference in elevation between the southwestern corner and the northeastern corner being approximately 150 feet. The entire township is overlain by moraine

and the ground surface is rolling and broken by several shallow coulées that drain the surface water to the northeast. Large, undrained depressions are of common occurrence and the township is fairly thickly wooded with poplar.

The well-water conditions of this township are considered quite good. The great majority of the farmers in the southern 5 miles of the township experience very little difficulty in obtaining substantial supplies of water from hand dug wells less than 25 feet deep. The extensive sand and gravel deposit that was encountered at a depth of 20 to 25 feet, and which was overlain by 3 to 15 feet of yellow clay in township 17, range 14, extends northwards into the southern 5 miles of this township. The only localities in the southern 5 miles wherein farmers are unable to obtain a sufficient supply of water from shallow wells are in the NE. ¼, section 7, NW. ¼, section 10, NE. ¼, section 12, SW. ¼, section 15, SW. ¼, section 16, NE. ¼, section 18, and section 26. The supply of water obtained from wells tapping these deposits in other sections in the southern 5 miles of the township is not abundant and the drought of 1930 to 1934 affected them to some degree, but the sand and gravel deposits are fairly thick and so extensive that sufficient quantities of water can always be obtained for 25 to 50 head of stock. The wells can be pumped dry, but they refill rapidly, even though the water is not under pressure. The water is suitable for drinking. The farmer on the SE. ¼, section 27, uses a sand-point as a means of securing water for household purposes. In the northern mile of the township farmers experience difficulty in obtaining a permanent supply of water from shallow wells. An exception is a 14-foot well that was dug through 3 feet yellow clay, 7 feet gravel, and 4 feet fine sand in the SE. ¼, section 32. The water level varies according to the amount of seasonal precipitation, but the supply is abundant. An indication of the constant and abundant supply is shown by the fact that during the Riel rebellion of 1885 troops used this well as a

source of water.

Throughout the township farmers who are unable to secure water at shallow depths have made many unsuccessful attempts to obtain a permanent water supply by boring to depths ranging from 50 to 150 feet below the surface. It appears, however, that large supplies of water can be obtained by drilling to depths in excess of 150 feet. Six drilled wells in various parts of the township have tapped three deep water-bearing horizons. The first water-bearing horizon consisting of sand was struck by a 168-foot drilled well in the SE. $\frac{1}{4}$, section 30, at an elevation of 1,990 feet. The hydrostatic pressure was sufficient to raise the water to a point 78 feet below the surface; the water was described as being hard and containing iron. The second water-bearing horizon was tapped by four drilled wells in theNW. $\frac{1}{4}$, section 17, the NW. $\frac{1}{4}$, section 24, NW. $\frac{1}{4}$, section 25, and in the town of Qu'Appelle. This aquifer is described as being a "pepper and salt", fine sand that lies at an elevation of 1,835 to 1,880 feet above sea-level. The wells are 325, 230, 250, and 315 feet deep, respectively, depending upon the elevation of the ground surface. The hydrostatic pressure raises the water to a level approximately 150 feet below the surface in all four wells. The water is hard, "alkaline", and has a high iron content. The well in the town of Qu'Appelle is not used extensively by the inhabitants as the water is highly mineralized. Shallow dug wells are used by the majority of the residents. The third water-bearing horizon is tapped by a 415-foot drilled well in the NW. $\frac{1}{4}$, section 18. This aquifer is composed of fine sand, which occurs at an elevation of 1,760 feet above sea-level. The hydrostatic pressure is sufficient to raise the water to a point 250 feet below the surface. The water is hard and "alkaline". The supply from these six drilled wells is abundant and the drought of 1930 to 1934 had no apparent effect on the amount of water obtained.

Apparently, there are no continuous water-bearing horizons between depths of 50 and 150 feet in the glacial drift, since many holes have been bored within this range without obtaining water. To date, drilling to depths in excess of 150 feet have met with success in this township, and if a permanent supply of water cannot be obtained at shallow depths farmers are advised to drill for water. It is inadvisable to drill deeper than an elevation of 1,750 feet, however, since the Marine Shale series is believed to occur at approximately this elevation. It is doubtful if dugouts will be successful in this township due to the sandy nature of the upper 25 feet of the glacial drift.

Township 18, Range 15

A height of land at an approximate elevation of 2,275 feet crosses the southwestern corner of this township and passes in a northwesterly direction through township 18, range 16. From this height of land the ground surface slopes to the southwest and northeast, the elevation decreasing to 2,250 feet at the southwestern corner and to 2,140 feet at the northeastern corner. The ground surface is rolling and is cut by a number of long, shallow coulées. Sloughs are numerous, a particularly large depression that will hold 6 feet of water in years of normal rainfall occurs in the NW. $\frac{1}{4}$, section 15. A long, wide depression runs diagonally across the township through sections 2,10,16,20, and 19. The land is thickly wooded with clumps of poplar. The entire township is mantled by moraine. The glacial drift is very thick, probably in excess of 400 feet, as in township 18, range 14, a well was drilled to a depth of 415 feet or to an elevation of 1,760 feet without encountering bedrock.

Of the forty-three farmers interviewed in this township, six are not obtaining sufficient water from wells to meet their requirements. The majority of the remaining thirty-seven farmers

are deriving a sufficient but not an abundant supply of water from shallow, hand dug wells. These wells are seldom more than 25 feet deep if dug on the plain, and not more than 10 or 12 feet deep if dug in a coulée. The aquifer is sand or gravel and it is overlain by a layer of sandy, yellow, boulder clay. The drought of 1930-1934 decreased the supply in many of these wells, but an individual well can generally be depended upon to water 25 to 40 head of stock. A 10-foot well in the long, wide coulée in the NW. $\frac{1}{4}$, section 2, will water 200 head of stock. The water is not under pressure, but after pumping, these shallow wells refill quickly. When a thin layer of blue clay overlies the aquifer, however, the water is under a slight pressure, but in such wells the water is more highly mineralized.

Seven wells in the western part of the township have been bored or drilled to depths ranging from 55 to 80 feet below the surface. An 80-foot well on the NW. $\frac{1}{4}$, section 5 is representative of these wells and it penetrated 20 feet yellow clay and 60 feet blue clay before encountering the aquifer. When the gravel was tapped, the water rushed up under pressure to a point 30 feet below the surface. The supply is oversufficient for 50 head of stock and drought years have only a slight affect on the supply. The water is hard, slightly "alkaline", and contains iron, but it is being used for drinking.

Two wells, one 160 feet deep in the NE. $\frac{1}{4}$, section 34, and another 296 feet deep in the SE. $\frac{1}{4}$, section 36, tap the first and second water-bearing horizons, respectively, that are discussed in the part of this report dealing with township 18, range 14. The 160-foot well encounters a gravel aquifer at an elevation of 1,985 feet and the water rises to a point 70 feet below the surface. The supply is abundant and constant, and the water is hard and contains sulphuretted hydrogen and a large amount of iron, but it is being used for drinking. The 296-foot well struck an aquifer in a layer of vegetable material that is locally termed "sea-mud" at an elevation

of 1,855 feet, which corresponds to the elevation of the second water-bearing horizon of "pepper and salt", fine sand mentioned in township 18, range 14. The hydrostatic pressure raises the water to a point 167 feet below the surface, but the abundant supply of water has been shut off by the "sea-mud" plugging the casing. The water is hard, slightly "alkaline", and contains iron. There are very few dry holes of any considerable depth in the township except in the NW. $\frac{1}{4}$, section 9, where four dry holes have been bored to depths ranging from 80 to 100 feet through clay containing occasional small layers of hardpan.

Due to the great thickness of the glacial drift and the success of existing bored and drilled wells, the probabilities of striking water at depth in the glacial drift in this township are considered good.

A spring located on the SW. $\frac{1}{4}$, section 33, delivers a constant and abundant supply of water. The people of Qu'Appelle have contemplated piping this water into the town by means of a gravity pipe line. The water was described as being hard and having a slight iron content. This spring is not being used at present.

Township 18, Range 16

A height of land at an approximate elevation of 2,260 to 2,280 feet extends across the centre of the township in a south-easterly direction. A valley approximately $\frac{1}{4}$ of a mile wide and 30 to 40 feet deep, passes through sections 29,33,34,27,26, and 25, on the eastern side of the height of land, and contains a small, intermittent creek that flows only in the freshet season. The south-western portion of the township is mantled with glacial till, whereas the remainder is covered by moraine. The topography of the moraine-covered areas is characterized by many irregular hills and undrained depressions but that of the till-covered district is only slightly undulating. The entire township is thickly wooded with poplar.

Only six farmers in this township were forced to tank water for stock purposes during the drought of 1930 to 1934. All the wells, with the exception of two, have been dug or bored to depths of less than 100 feet, the majority of them being 20 to 50 feet deep.

With the exception of a 37-foot bored well in the NE. $\frac{1}{4}$, section 35, all wells in the northern 2 miles of the township are less than 20 feet deep. These wells have been dug through a top covering of yellow clay into a gravel, or less commonly, a sand aquifer. Wells dug on the plains will water about 25 to 35 head of stock, but there are wells that have been dug in the valley, of which a 12-foot well in the NE. $\frac{1}{4}$, section 27, is a good example, that will water 100 head of stock. As a rule the water is hard and slightly mineralized and is suitable for drinking, but a 16-foot well in the NE. $\frac{1}{4}$, section 28, yields water that is too salty even for stock use.

In the southern 4 miles of the township bored wells are predominant. A bored well usually penetrates the following materials: 10 to 20 feet of sandy, yellow clay, and 10 to 30 feet blue clay, before a gravel aquifer is encountered. The water rises under a slight pressure, and the supply of water obtained is abundant and is not readily affected by drought conditions. Many of these wells have never been pumped dry. The water is hard and more highly mineralized than water from shallow wells that do not encounter the blue clay, but it is being used for drinking. It produces no ill effects on stock and the constant and abundant supply makes these bored wells excellent sources of water for stock use.

One drilled well is located in the NE. $\frac{1}{4}$, section 18, and another in the village of McLean. The well in the NE. $\frac{1}{4}$, section 18, struck a 14-foot bed of gravel at a depth of 138 feet below the surface or at an elevation of 2,120 feet. The water derived is hard and "alkaline", but it is used for drinking. This well cannot be

pumped dry and the drought did not alter the supply. The Canadian Pacific Railway Company drilled a well 495 feet deep in the village of McLean. Some water was obtained, but the supply was not sufficient for locomotive use and the well was abandoned. The base of this well is at an elevation of 1,785 feet above sea-level and is not in the bedrock. The log of this well is given by Dawson in Trans. Roy. Society, Canada, Sect. IV, 1886. It is believed that the contact between the glacial drift and the bedrock in this area is about 1,750 feet above sea-level. The Canadian Pacific Railway uses a well that taps a gravel aquifer and is 8 feet square and 12 feet deep. This well can be pumped dry and although the drough period lowered the water-level 4 feet the supply in 1935 was quite abundant. Several farmers used this well during the drought and water from it was supplied to the village of McLean at a price of $10 per annum. There are several other shallow wells in McLean, but their supply was greatly depleted by the drought and was not sufficient for local requirements.

Well water conditions in this township are considered good; and the possibilities of striking a permanent supply of water within 100 feet below the surface everywhere in the township are very favourable.

Township 19, Range 14

Echo creek, a small intermittent stream, flows in a northeasterly direction across the northwestern corner of the township, An intermittent tributary stream flows northward through sections 4,3,10,14,23,26, and 35. A triangular-shaped area in the northeastern part of the township is mantled by glacial till. This area is at a lower elevation than the surrounding moraine-covered area. A small area in sections 6,7,18, and 19, is also covered by glacial till. The ground surface is undulating and thickly wooded with poplar.

With the exception of a 90-foot drilled well in the SE. $\frac{1}{4}$, section 25, every well in this township has been either dug or bored to depths less than 90 feet below the surface, the majority ranging from 20 to 50 feet deep. There is no continuous water-bearing horizon of sand or gravel lying within the upper 90 feet of the glacial drift, the water-bearing beds consisting of scattered pockets of sand or gravel. Due to the limited distribution of the gravel deposits, the supply of water in this township was scarce during the drought of 1930 to 1934. Most of the wells have been dug or bored beside sloughs or in small depressions in order to secure the maximum amount of seepage water, and in years of average rainfall farmers are able to secure in this way a sufficient supply of water for stock use. Usually the farmer has dug or bored more than one well and uses them all in order to secure sufficient water to meet his requirements. The water from the majority of the wells is too highly mineralized to be used for drinking. Three wells that deliver an abundant supply of water under hydrostatic pressure are located in the NW. $\frac{1}{4}$, section 12, NW. $\frac{1}{4}$, section 19, and the SE. $\frac{1}{4}$, section 25. They are 75,34, and 90 feet deep, respectively, and the water rises to points 30,17, and 65 feet below the surface. These wells have tapped pockets of sand and gravel and not a continuous, well-defined bed. In section 12, many dry holes were dug and bored to depths ranging from 20 to 90 feet before the 75-foot well struck the gravel. A fairly abundant supply of water can be obtained from shallow wells dug in the coulées, and springs are fairly numerous, but the water is hard and highly mineralized and unsuitable for drinking.

Several farmers have constructed small dams on the creeks that will retain sufficient water for stock use during the summer months only. There are very few dugouts and consequently many farmers were forced to tank water during the drought. A few farmers have been unable to secure water on their land, but no holes have

been made in excess of 90 feet. Thirty dry holes were dug on the SW. $\frac{1}{4}$, section 5. The glacial drift is at least 300 feet thick and it is probable that there are water-bearing horizons of sand and gravel within this thick deposit. Should attempts be made to locate water at depth in the glacial drift, it is recommended that drilling machines rather than boring machines be used.

Township 19, Range 15

The greater part of the township is mantled with glacial till, small areas in the northeastern, southeastern, and southwestern corners being covered by moraine. Echo creek, and a tributary stream, occur in the southeastern corner and flow intermittently in a northerly direction. The elevation of the ground surface increases from 2,000 feet in the northeastern corner to 2,200 feet in the southwestern corner. The surface of the moraine-covered area in the northeastern part of the township is more undulating and hilly than it is in the glacial till-covered area. In the northern part of sections 31 and 32 there is a low, swampy, "alkali" flat that extends northward into township 20, range 15. In years of average rainfall this flat contains water, but during the drought it was dry and covered with a white coating of sodium sulphate and magnesium sulphate. The township is fairly thickly wooded with poplar.

Most of the wells in the township have been dug or bored to depths less than 50 feet below the surface. In general, these wells yield an unsatisfactory supply of highly mineralized water and are easily affected by variations in seasonal rainfall. Sandy, yellow boulder clay underlies the top soil to a maximum depth of 25 feet and is underlain by blue boulder clay. Thin layers of sand occur at various elevations in the blue clay, and widely scattered pockets of sand and gravel are occasionally tapped, but the supply of water obtained from them depends largely upon their size and extent. Shallow wells that tap small seams of sand in the upper 50 feet of the drift yield small supplies of water and are easily

affected by drought conditions, but they seldom become completely dry. In years of average rainfall two or three of these shallow wells located near sloughs or hollows would yield sufficient water for 25 to 40 head of stock. However, in drought years, the supply is insufficient.

Eight drilled wells in various localities in the northern 4 miles of the township have tapped two distinct water-bearing horizons at elevations of 1,950 feet, and approximately 1,850 feet above sea-level. These elevations correspond to the elevations of the first and second horizons described in township 18, ranges 14 and 15, and it is quite possible that they can be correlated. The uppermost horizon was tapped in the NW. $\frac{1}{4}$, section 19, SE. $\frac{1}{4}$, section 20, and the NE. $\frac{1}{4}$, section 34, at depths of 175, 160, and 105 feet below the surface, respectively. The difference in depths corresponds to the difference in surface elevation. The aquifer is coarse sand or gravel and the hydrostatic pressure raises the water to a point 10 feet below the surface in the first two wells, and 12 feet below the surface in the third well. The supply was unaffected by the drought years. The water is hard, mineralized, and contains a considerable amount of iron in solution, but it is being used for drinking.

The lower water-bearing horizon was tapped by wells in the SE. $\frac{1}{4}$, section 16, NW. $\frac{1}{4}$, section 25, SE. $\frac{1}{4}$, section 28, SW. $\frac{1}{4}$, section 29, and the SE. $\frac{1}{4}$, section 36. The wells are 240, 168, 240, 215, and 190 feet deep, respectively. The water is under high hydrostatic pressure, the lowest pressure being in the 215-foot well where it rises to a point 15 feet below the surface. The wells in section 25 and 36 are flowing artesian, the water rising to a point 6 feet above the surface in the former well, and to a point slightly above the ground surface in the latter well. Each of these artesian wells yields 8 gallons of hard, mineralized water a minute. The yield was not reduced by the drought. The water is used for drinking as well as for stock.

In the SE. $\frac{1}{4}$, section 35, two dry holes 425 feet and 525 feet deep were drilled to elevations of 1,620 feet and 1,520 feet above sea-level. It is difficult to understand why one of these wells did not encounter one of the two water-bearing horizons that have been definitely located by eight other drilled wells at widely separated locations in the township. A drilled well 1 mile to the north in township 20, range 15, encountered the "soapstone" or Marine Shale series at an elevation of 1,750 feet above sea-level, so that it is very probable that these two holes were drilled a considered distance into the Marine Shale series which, in this part of Saskatchewan, rarely contains water-bearing horizons. The glacial blue clay is often mistaken for the Marine Shale or "soapstone", as it is locally termed.

Notwithstanding the occurrence of these two drilled dry holes, the evidence is sufficient to state that drilling possibilities are good in this township, and farmers contemplating making a well are advised to drill rather than bore since it is doubtful if there is a definite water-bearing horizon within 100 feet of the surface.

Several springs are located along the course of Echo creek, but the water is too highly mineralized to be drinkable. An exceptionally good dugout is located on the SW. $\frac{1}{4}$, section 28. This dugout watered 30 head of stock throughout the year, even during the drought of 1930 to 1934. The village of Edgely derives a fairly abundant supply of water from a 47-foot bored well. The water is quite highly mineralized and the supply has been constant since the well was made in 1914. The water rises under pressure from a gravel and sand aquifer to a point 27 feet below the surface.

Possibilities of striking a permanent supply of water by hand dug or bored wells are only fair, but drilling possibilities are good in this township.

Township 19, Range 16

The elevation of the ground surface in this township slopes gradually from approximately 2,275 feet in the southwestern corner to 2,050 feet in the northeastern corner. The lower lying area in the northeastern portion of the township is mantled with glacial till and the ground surface is slightly undulating. The remainder of the township is covered by moraine and the ground surface is more hilly and thickly wooded than that of the glacial till-covered area.

A dry hole 490 feet deep, in the NW. $\frac{1}{4}$, section 31, probably entered bedrock. The point of contact between the drift and the bedrock was not determined, but it is probable that the contact lies at an elevation of about 1,750 feet above sea-level. The upper 100 feet of the glacial drift is composed of approximately 25 feet of sandy, yellow boulder clay, which underlies the top soil, and 75 feet of blue clay. Within this upper 100 feet of drift small, discontinuous, 6-inch to 2-foot layers of sand occur at various elevations. Occasionally these layers widen out and form fairly large pockets or lenses. Wells in the township that have been dug or bored less than 100 feet deep yield an extremely variable supply of water depending largely upon the continuity and thickness of the aquifer. A typical example of the well water conditions in the upper 100 feet of the glacial drift is shown by wells in section 4. In the SW. $\frac{1}{4}$ of the section a 50-foot well struck a 14-foot bed of gravel that yields an abundant supply of water which rises to a point 18 feet below the surface. This well has never been pumped dry. In the NW. $\frac{1}{4}$ of the section, a 77-foot bored well struck a layer of gravel 18 inches thick at a depth of 60 feet below the surface, which yields a very small supply of water that is not under pressure. On the NE. $\frac{1}{4}$ of the section, twenty-five intermittent or dry wells have been dug and bored to depths ranging from 25 to 80 feet below the surface.

The water in the majority of these dug and bored wells is too highly mineralized to be suitable for drinking. Farmers experience considerable difficulty in obtaining a permanent supply of well water within the upper 100 feet of the glacial drift due to the scarcity and uneven distribution of the sand and gravel deposits.

In the northern 3 miles of the township fourteen wells have been drilled to depths greater than 100 feet and, with the exception of the 490-foot dry hole in the NW. $\frac{1}{4}$, section 31, they have obtained an abundant supply of water. The deepest producing well, 290 feet, was drilled in the NE. $\frac{1}{4}$, section 35, and its base is at an elevation of 1,785 feet. This elevation is believed to be very near the contact of the glacial drift and the bedrock. The shallowest well, 103 feet deep, located in the NW. $\frac{1}{4}$, section 21, taps an aquifer at an elevation of 2,080 feet. Between elevations of 2,080 feet and 1,785 feet there are a number of water-bearing horizons, two of which can be correlated with the water-bearing horizon described in township 19, range 15. The water rises under great pressure to a point 40 feet below the surface as an average. In the 265-foot well in the SW. $\frac{1}{4}$, section 25, the water rises to a point 2 feet below the surface. It is very probable that the water-bearing horizons roughly parallel the slope of the ground surface of the highland to the southwest, and the height of the water table in this highland probably provides the required head to impart such a high pressure to the water. The water is of better quality than that from the wells less than 100 feet deep. It is described as being hard and contains iron, but not as being "alkaline". It is being used for drinking as well as for stock. The drought of 1930 to 1934 caused no perceptible decrease in the supply of these wells. A 240-foot well in the NE. $\frac{1}{4}$, section 22, has been rendered useless by sand plugging the casing.

The probabilities of striking water by drilling to depths greater than 100 feet are much better than the probabilities of obtaining a permanent supply by digging or boring to depths less than 100 feet.

The hamlet of Avonhurst derives a fairly abundant supply of water from a 30-foot bored well.

Township 20, Range 15

Only sections 1 to 6 inclusive in the municipality of South Qu'Appelle are discussed in this report. With the exception of the eastern two-thirds of section 1, which is covered by moraine, the area under discussion is mantled with glacial till. The ground surface in sections 1 to 3 is undulating and thickly wooded, but sections 4, 5, and 6 have a fairly flat ground surface with very little tree growth. The west half of section 5 and all of section 6 are very flat and in years of average rainfall this area is a marsh, and is sometimes referred to as an "alkali" flat.

In these six sections four drilled wells have tapped two separate and distinct water-bearing horizons. A 200-foot well in the NW. $\frac{1}{4}$, section 4, and 160-foot well in the SW. $\frac{1}{4}$, section 4, have tapped a coarse sand aquifer at an approximate elevation of 1,880 feet above sea-level. This sand underlies a thin layer of hardpan (cemented or hard material) and the water rises to a point 35 feet below the surface. The supply of hard, slightly "alkaline" water is abundant and was not decreased by the small rainfall in the drought years; 100 head of stock can easily be watered at either one of these wells. The water is also used for drinking.

A 240-foot well in the SW. $\frac{1}{4}$, section 1, and a 300-foot well in the SW. $\frac{1}{4}$, section 3, tap a fine sand aquifer at an elevation of 1,770 feet above sea-level. The water rises under hydrostatic pressure to points 140 feet and 25 feet, respectively, below the surface, and the supply is abundant and was unaffected by drought conditions. The well on the SW. $\frac{1}{4}$, section 1, has apparently been partly clogged with fine sand particles that compose the aquifer. The water is hard and too highly mineralized to be used for drinking, but it is suitable for stock. Both farmers use shallow seepage wells

dug beside sloughs as a source for household water. The only other shallow well in the six sections is a 40-foot dug well in the NW. $\frac{1}{4}$, section 6. An abundant supply of water, under pressure, is obtained from a gravel pocket that lies beneath a deposit of yellow clay and blue clay.

A drilled well on the SW. $\frac{1}{4}$, section 2, is believed to have encountered the Marine Shale series since "soapstone" was reported as occurring at the base of the well. The well is 300 feet deep and its base is at an approximate elevation of 1,750 feet. A poor supply of water was obtained and the water on being analysed was found to be unfit for any farm purpose. Farmers are advised to confine drilling operations to the glacial drift and to refrain from drilling into the Marine Shale.

Township 20, Range 16

Only sections 1 to 11, 14 to 18, and the south halves of sections 19 to 23 inclusive, of this township, are contained in this municipality. The elevation of the ground surface decreases gradually from 2,175 feet in section 6 to 2,050 feet in section 23. The western 2 miles are mantled by moraine, whereas the remainder of the sections are covered with glacial till. Small sloughs are common and the area is thickly wooded with poplar.

Water conditions of the township are similar to those described in township 19, range 16. The upper 100 feet of the glacial drift is composed generally of 10 to 25 feet yellow boulder clay and 75 to 90 feet of blue clay. Small layers of sand and occasional large pockets of sand and gravel are irregularly interspersed through the blue clay. The wells that have been dug or bored less than 100 feet deep yield an extremely variable supply of water, depending upon the thickness and extent of the aquifer. A 60-foot bored well in the NE. $\frac{1}{4}$, section 2, has tapped a pocket of sand or gravel and the water rises to a point 20 feet below the surface. This well has never been pumped dry. The farmer on the

SE. $\frac{1}{4}$, section 3, has bored six wells, five of which were dry, and one yields only two barrels of water a day. He has also drilled three dry holes to a maximum depth of 400 feet. This farmer hauls water for 30 head of stock. The water conditions as shown by the wells in sections 2 and 3, are typical of what be expected in the upper 100 feet of the drift throughout the township. Wells drilled or bored to depths greater than 100 feet below the surface have generally, but not always, obtained water. Five wells in the township have apparently tapped a common aquifer composed of coarse sand or gravel, at elevations ranging from 1,900 to 1,955 feet. These wells are located in the SE. $\frac{1}{4}$, section 7, SE. $\frac{1}{4}$, and NE. $\frac{1}{4}$, section 10, SE. $\frac{1}{4}$, section 16, and NE. $\frac{1}{4}$, section 17, and they are 200, 104, 98, 111, and 114 feet deep, respectively, the differences in depth varying with the surface elevation. The water rises to points 15 to 50 feet below the surface in the four shallower wells and to a point 100 feet below the surface in the 200-foot well. The supply is abundant and is not affected by variations in seasonal rainfall, and in many of the wells the water-level is not lowered by continuous pumping. The water is hard, and contains iron which gives it a yellowish red colour. The water from most of the wells is being used for drinking although it has an unpleasant taste.

Three drilled wells located on the SE. $\frac{1}{4}$, section 6, NW. $\frac{1}{4}$, section 16, and the NW. $\frac{1}{4}$, section 17, tap a second water-bearing horizon composed of fine white sand, at elevations varying from 1,790 to 1,835 feet, or at depths of 275, 245, and 217 feet, respectively. The hydrostatic pressure raises the water to a point 35 feet below the surface and the supply is very abundant. The difficulty with these wells is that the fine sand is apt to clog the screens. The 245-foot well has already been almost completely plugged with sand and the 217-foot well is gradually having its supply shut off by the sand. The water is hard, contains iron, and was described as being slightly "alkaline". Several farmers tanked

from the well on the SE. $\frac{1}{4}$, section 6, during the drought. The two separate water-bearing horizons tapped by this group of wells are not continuous. A 145-foot well bored in the SE. $\frac{1}{4}$, section 9, failed to strike the first water-bearing horizon of coarse sand or gravel. Two holes, 370 and 410 feet deep, were also drilled in the SE. $\frac{1}{4}$, section 4, without encountering any water-bearing horizons. The dry holes over 350 feet deep have possibly encountered the Marine Shale or "soapstone", as it is often termed.

The drilling method is preferable to the boring method in this township. The probabilities of striking water at depths in excess of 100 feet below the surface are better than at depths of less than 100 feet. The depth to the contact between the bedrock and glacial drift has not been determined, but it is inadvisable to drill to depths greater than 350 feet.

Olsens pond, formed by a dam, located in the SW. $\frac{1}{4}$, sec. 34, tp. 19, range 16, is being used by many farmers who have been forced to tank water for stock purposes. Two wells, 8 and 15 feet deep, in the SE. $\frac{1}{4}$, section 22, dug in a large surface deposit of sand, yield an abundant supply of water and many farmers haul drinking water from them.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

West of 2nd meridian — Township / Range	17 / 14	17 / 15	17 / 16	18 / 14	18 / 15	18 / 16	19 / 14	19 / 15	19 / 16	20 / 15	20 / 16	Total No. in municipality
Total No. of Wells in Township	51	70	117	105	74	77	102	61	167	9	44	877
No. of wells in bedrock	0	0	0	0	0	0	0	2	1	1	4	8
No. of wells in glacial drift	51	70	117	105	74	77	102	59	166	8	40	869
No. of wells in alluvium	0	0	0	0	0	0	0	0	0	0	0	0
Permanency of Water Supply												
No. with permanent supply	48	44	54	60	68	60	73	49	55	8	26	545
No. with intermittent supply	3	3	4	1	1	9	3	2	3	1	1	31
No. dry holes	0	23	59	44	5	8	26	10	109	0	17	301
Types of Wells												
No. of flowing artesian wells	0	0	0	0	0	0	0	2	0	0	0	2
No. of non-flowing artesian wells	15	15	22	32	12	21	6	14	24	5	13	179
No. of non-artesian wells	36	32	36	29	57	48	70	35	34	4	14	395
Quality of Water												
No. with hard water	45	42	50	52	61	67	73	50	50	9	27	526
No. with soft water	6	5	8	9	8	2	3	1	8	0	0	50
No. with salty water	0	0	0	0	0	1	0	0	0	0	1	2
No. with "alkaline" water	19	16	18	24	19	13	45	18	14	4	12	202
Depths of Wells												
No. from 0 to 50 feet deep	44	46	38	84	60	56	93	46	84	3	17	571
No. from 51 to 100 feet deep	7	20	36	15	11	19	9	5	57	0	14	193
No. from 101 to 150 feet deep	0	2	26	0	1	0	0	1	12	1	4	17
No. from 151 to 200 feet deep	0	2	12	1	1	1	0	4	6	2	1	30
No. from 201 to 500 feet deep	0	0	5	5	1	1	0	4	8	3	8	35
No. from 501 to 1,000 feet deep	0	0	0	0	0	0	0	1	0	0	0	1
No. over 1,000 feet deep	0	0	0	0	0	0	0	0	0	0	0	0
How the Water is Used												
No. usable for domestic purposes	47	40	44	51	55	60	49	41	44	6	21	458
No. not usable for domestic purposes	4	7	14	10	14	9	27	10	14	3	6	118
No. usable for stock	50	44	54	58	61	65	74	48	54	8	24	540
No. not usable for stock	1	3	4	3	8	4	2	3	4	1	3	36
Sufficiency of Water Supply												
No. sufficient for domestic needs	48	43	52	58	67	57	73	49	54	8	25	534
No. insufficient for domestic needs	3	4	6	3	2	12	3	2	4	1	2	42
No. sufficient for stock needs	44	34	36	45	57	50	56	43	43	6	14	428
No. insufficient for stock needs	7	13	22	16	12	19	20	8	15	3	13	148

ANALYSES AND QUALITY OF WATER

General Statement

Samples of water from representative wells in surface deposits and bedrock were taken for analyses. Except as otherwise stated in the table of analyses the samples were analysed in the laboratory of the Borings Division of the Geological Survey by the usual standard methods. The quantities of the following constituents were determined; total dissolved mineral solids, calcium oxide, magnesium oxide, sodium oxide by difference, sulphate, chloride, and alkalinity. The alkalinity referred to here is the calcium carbonate equivalent of all acid used in neutralizing the carbonates of sodium, calcium, and magnesium. The results of the analyses are given in parts per million--that is, parts by weight of the constituents in 1,000,000 parts of water; for example, 1 ounce of material dissolved in 10 gallons of water is equal to 625 parts per million. The samples were not examined for bacteria, and thus a water that may be termed suitable for use on the basis of its mineral salt content might be condemned on account of its bacteria content. Waters that are high in bacteria content have usually been polluted by surface waters.

Total Dissolved Mineral Solids

The term "total dissolved mineral solids" as here used refers to the residue remaining when a sample of water is evaporated to dryness. It is generally considered that waters that have less than 1,000 parts per million of dissolved solids are suitable for ordinary uses, but in the Prairie Provinces this figure is often exceeded. Nearly all waters that contain more than 1,000 parts per million of total solids have a taste due to the dissolved mineral matter. Residents

accustomed to the waters may use those that have much more than 1,000 parts per million of dissolved solids without any marked inconvenience, although most persons not used to highly mineralized water would find such waters highly objectionable.

Mineral Substances Present

Calcium and Magnesium

The calcium (Ca) and magnesium (Mg) content of water is dissolved from rocks and soils, but mostly from limestone, dolomite, and gypsum. The calcium and magnesium salts impart hardness to water. The magnesium salts are laxative, especially magnesium sulphate (Epsom salts, $MgSO_4$), and they are more detrimental to health than the lime or calcium salts. The calcium salts have no laxative or other deleterious effects. The scale found on the inside of steam boilers and tea-kettles is formed from these mineral salts.

Sodium

The salts of sodium are next in importance to those of calcium and magnesium. Of these, sodium sulphate (Glauber's salt, Na_2SO_4) is usually in excess of sodium chloride (common salt, NaCl). These sodium salts are dissolved from rocks and soils. When there is a large amount of sodium sulphate present the water is laxative and unfit for domestic use. Sodium carbonate (Na_2CO_3) "black alkali", sodium sulphate "white alkali", and sodium chloride are injurious to vegetation.

Sulphates

Sulphates (SO_4) are one of the common constituents of natural water. The sulphate salts most commonly found are sodium sulphate, magnesium sulphate, and calcium sulphate ($CaSO_4$). When the water contains large quantities of the sulphate of sodium it is injurious to vegetation.

Chlorides

Chlorides are common constituents of all natural water and are dissolved in small quantities from rocks. They usually occur as sodium chloride and if the quantity of salt is much over 400 parts per million the water has a brackish taste.

Iron

Iron (Fe) is dissolved from many rocks and the surface deposits derived from them, and also from well casings, water pipes, and other fixtures. More than 0.1 part per million of iron in solution will settle as a red precipitate upon exposure to the air. A water that contains a considerable amount of iron will stain porcelain, enamelled ware, and clothing that is washed in it, and when used for drinking purposes has a tendency to cause constipation, but the iron can be almost completely removed by aeration and filtration of the water.

Hardness

Calcium and magnesium salts impart hardness to water. Hardness of water is commonly recognized by its soap-destroying powers as shown by the difficulty of obtaining lather with soap. The total hardness of a water is the hardness of the water in its original state. Total hardness is divided into "permanent hardness" and "temporary hardness". Permanent hardness is the hardness of the water remaining after the sample has been boiled and it represents the amount of mineral salts that cannot be removed by boiling. Temporary hardness is the difference between the total hardness and the permanent hardness and represents the amount of mineral salts that can be removed by boiling. Temporary hardness is due mainly to the bicarbonates of calcium and magnesium and iron, and permanent harness to the sulphates and chlorides of calcium and magnesium. The permanent hardness

can be partly eliminated by adding simple chemical softeners such as ammonia or sodium carbonate, or many prepared softeners. Water that contains a large amount of sodium carbonate and small amounts of calcium and magnesium salts is soft, but if the calcium and magnesium salts are present in large amounts the water is hard. Water that has a total hardness of 300 parts per million or more is usually classed as excessively hard. Many of the Saskatchewan water samples have a total hardness greatly in excess of 300 parts per million; when the total hardness exceeded 3,000 parts per million no exact hardness determination was made. Also no determination for temporary hardness was made on waters having a total hardness less than 50 parts per million. As the determinations of the soap hardness in some cases were made after the samples had been stored for some time, the temporary hardness of some of the waters as they come from the wells probably is higher than that given in the table of analyses.

Analyses of Water Samples from the Municipality of South Qu'Appelle, No. 157, Saskatchewan

LOCATION						Depth of well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS								Source of water
No.	Qtr.	Sec.	Tp.	Rge.	Mer.			Total	Perm.	Temp.	Cl.	Alkalinity	CaO	MgO	SO_4	Na_2O	Solids	$CaCO_3$	$CaSO_4$	$MgCO_3$	$MgSO_4$	Na_2CO_3	Na_2SO_4	NaCl	
1.	SE.	32	18	14	2	50	10,220	3,000+	3,000+	N.D.	220	670	670	1,688	5,986	1,150	8,930	670	717		5,030		2,150	363	*1
2.	NE.	28	18	16	2	16	11,920	3,000	3,000	-	85	375	1,180	1,696	8,028	786	11,261	375	4,058		5,054		1,634	140	*1
3.	NW.	25	19	15	2	168	571																		*1
4.	SE.	10	19	16	2	27	2,349	Bacteria		5,900	in 1	C.C.					2,349		(2)		(3)	(4)	(1)	(5)	*1

Water samples indicated thus, *1, are from glacial drift.
Analyses are reported in parts per million; where numbers (1), (2), (3), (4), and (5) are used instead of parts per million, they represent the relative amounts in which the five main constituents are present in the water.
Hardness is the soap hardness expressed as calcium carbonate ($CaCO_3$).
Analysis No. 4 by Provincial Analyst, Regina.
For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

Analyses Nos. 1 and 2, shown on the Table of Analyses, are of water samples taken from wells by the field party, not because the water was characteristic of the well water in the municipality, but because the water was obviously highly mineralized. These two samples have a total dissolved solid content of 10,220 and 11,920 parts per million. These amounts are excessively high and the water is unfit for drinking and for stock use. The total dissolved solid content of the water from both wells is composed very largely of sulphate salts, but relatively small amounts of calcium carbonate and sodium chloride are also present.

The third sample is from the flowing artesian well in the NW. $\frac{1}{4}$, sec. 25, tp. 19, range 15, and only the total dissolved solid content figure is shown. This total dissolved solid content of 571 parts per million is comparatively low for water from a deep well that taps an aquifer in the glacial drift. This water, unless contaminated by surface water containing sewage, is suitable for both drinking and stock use, and if there is an absence of sodium carbonate it could be used for small irrigation projects.

The fourth sample is more representative of the type of water that is to be expected from the glacial drift. It has a total dissolved solid content of 2,349 parts per million and is essentially a sulphate water, a very common type of water in southern Saskatchewan. A small amount of sodium carbonate is also present and this "black alkali" would prevent the use of the water for irrigation purposes. The water was termed hard and "alkaline" by the owner of the well. The bacteria count of 5,900 in one cubic centimetre of water is rather high and it is probably due to the presence of this high content of bacteria that the Provincial Analyst condemned the water. No bacilli coli were present.

Water from the Bedrock

Water from the Marine Shale series was obtained in one well in the SW. $\frac{1}{4}$, sec. 2, tp. 70, range 15. The water has been analysed and found unfit for either human or stock use on account of the high dissolved mineral salt content. Only in a few places has water been obtained from the Marine Shale series in this part of Saskatchewan, and it has invariably been too highly mineralized to be used for drinking or for stock. The predominant mineral salts in solution in the water from the shale are sodium sulphate, magnesium sulphate, and sodium chloride.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
1	SE.	2	17	14	2	Dug	18	2,180	0	2,180			Glacial gravel	Hard	45	D, S	Fair supply; seepage derived from a small creek
2	NE.	3	"	"	"	Bored	33	2,195	- 16	2,179	33	2,162	Glacial sand	Hard, "alkaline"		D, S	Abundant supply.
3	NW.	4	"	"	"	Dug	21	2,200	- 14	2,186			Glacial sand	Hard, "alkaline"	45	D, S	Fair supply of laxative producing water.
4	SE.	5	"	"	"	Dug	14	2,200	- 12	2,188			Glacial sand	Hard, "alkaline"		D	Another 6-foot well delivers a good supply of water.
5	NW.	5	"	"	"	Bored	48	2,210	- 27	2,183	48	2,162	Glacial sand	Hard, "alkaline"		D, S	Sufficient supply.
6	SW.	7	"	"	"	Bored	42	2,210	- 21	2,189	42	2,168	Glacial sand	Hard		D, S	Sufficient supply.
7	NE.	7	"	"	"	Dug	21	2,205	- 12	2,193			Glacial sand	Hard, "alkaline"	44	D, S	Intermittent supply; well was dry in 1931.
8	NE.	8	"	"	"	Dug	8	2,200	- 6	2,194	6	2,194	Glacial sand	Hard	45	D, S	Good supply.
9	NW.	10	"	"	"	Dug	40	2,195	- 33	2,162			Glacial gravel	Hard, "alkaline"	43	D, S	Poor supply and insufficient.
10	SE.	14	"	"	"	Dug	3	2,170	- 1	2,169	- 1	2,169	Glacial sand	Hard, "alkaline"	45	D, S	Seepage from a lake; good supply but freezes in winter.
11	SW.	16	"	"	"	Bored	44	2,200	- 28	2,172	44	2,156	Glacial fine sand	Hard, "alkaline"	45	D, S	Good supply of highly mineralized water.
12	NE.	17	"	"	"	Bored	40	2,200	- 20	2,180	40	2,160	Glacial fine sand	Hard	45	D, S	Abundant supply.
13	NE.	18	"	"	"	Dug	13	2,190	- 11	2,179	11	2,179	Glacial gravel	Hard		D, S	Sufficient supply.
14	NE.	19	"	"	"	Dug	12	2,200	- 2	2,198			Glacial sand	Soft	44	D, S	Abundant supply. Farmers tank washing water from this well.
15	SE.	20	"	"	"	Dug	7	2,190	0	2,190	0	2,190	Glacial fine sand	Hard, yellow colour		D, S	Abundant supply.
16	SW.	21	"	"	"	Dug	13	2,200	- 10	2,190	10	2,190	Glacial sand	Hard	43	D, S	Abundant supply; very fast seepage.
17	NW.	21	"	"	"	Dug	11	2,190	- 8	2,182			Glacial sand	Hard	45	D, S	Good supply.
18	NW.	22	"	"	"	Bored	60	2,195	- 30	2,165	60	2,135	Glacial sand	Hard	42	D, S	Abundant supply.
19	NE.	22	"	"	"	Bored	65	2,190	- 35	2,155	50	2,140	Glacial sand	Hard, "alkaline"		D, S	Sufficient supply; a 40-foot well delivers highly mineralized water.
20	SW.	24	"	"	"	Dug	7	2,180	- 3	2,177			Glacial sand	Hard		D, S	Sufficient supply.
21	NE.	24	"	"	"	Dug	8	2,190	- 3	2,187			Glacial sand	Soft		D, S	Sufficient supply.
22	SW.	25	"	"	"	Bored	60	2,190	- 40	2,150	60	2,130	Glacial sand and gravel	Hard, "alkaline"	45	D, S	Good supply.
23	NW.	26	"	"	"	Bored	67	2,200	- 27	2,173	67	2,133	Glacial sand and gravel	Hard, "alkaline"		D, S	Abundant supply; one other 24-foot intermittent well.
24	NE.	26	"	"	"	Dug	12	2,195	- 9	2,186			Glacial sand	Hard, yellow colour		S	Fair supply; another 12-foot well used for drinking.
25	SE.	27	"	"	"	Bored	22	2,200					Glacial drift	Hard		D, S	School well; intermittent supply.
26	SW.	27	"	"	"	Dug	17	2,200	- 10	2,190			Glacial sand	Hard, "alkaline"	45	D, S	Slow seepage well; another 9-foot well delivers a good supply.
27	NE.	28	"	"	"	Drilled	96	2,200	- 40	2,160	90	2,110	Glacial sand	Hard, iron	45	D, S	Good supply for 90 head stock.

NOTE—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
28	SW.	29	17	14	2	Dug	9	2,205	− 3	2,202			Glacial sand	Soft	45	D, S	Abundant supply.
29	NE.	29	"	"	"	Dug	14	2,205	− 10	2,195	10	2,195	Glacial sand	Hard		D, S	Sufficient for 15 head stock.
30	NE.	31	"	"	"	Dug	38	2,200	− 24	2,176	38	2,162	Glacial sand	Hard, "alkaline"	43	D, S	Sufficient supply.
31	NW.	32	"	"	"	Dug	27	2,210	− 20	2,190			Glacial sand	Hard, "alkaline"	45	D, S	Sufficient for 40 head stock.
32	NW.	34	"	"	"	Bored	16	2,195	− 6	2,189	16	2,179	Glacial sand	Hard	45	D, S	Abundant supply.
33	SW.	34	"	"	"	Drilled	98	2,190	− 40	2,150	96	2,094	Glacial sand	Hard, iron, "alkaline"		N	
34	SE.	34	"	"	"	Bored	60	2,200	− 20	2,180	60	2,140	Glacial sand	Hard, "alkaline"	45	D, S	Good supply of highly mineralized water; also uses a dugout.
35	SW.	35	"	"	"	Dug	12	2,190	− 7	2,183			Glacial sand	Soft	45	D, S	Fair supply; uses springs in pasture for stock.
36	NW.	36	"	"	"	Dug	4	2,175	− 2	2,173	2	2,173	Glacial sand	Soft, "alkaline"		S	Seepage water from a dugout; tanks water from section 35 for drinking.
1	NW.	1	17	15	2	Dug	12	2,210	− 8	2,202			Glacial sand	Soft		D, S	Good supply for 20 head stock.
2	SE.	1	"	"	"	Drilled	50	2,205	− 43	2,162			Glacial sand	Hard, iron		D, S	Abundant supply; well has not been pumped dry.
3	NE.	2	"	"	"	Dug	14	2,215	− 10	2,205			Glacial sand and gravel	Hard	45	D, S	Poor supply; sufficient for house use; uses another [illegible]-foot well also.
4	NW.	3	"	"	"	Dug	35	2,215	− 32	2,183	32	2,183	Glacial gravel	Hard, "alkaline"	43	D, S	Fair supply of highly mineralized water.
5	SE.	3	"	"	"	Bored	88	2,210	− 81	2,129	76	2,134	Glacial sand	Hard, iron		D, S	Fair supply of good water; analysed and found drinkable.
6	NW.	4	"	"	"	Bored	120	2,210	−110	2,100	120	2,090	Glacial fine sand	Hard, "alkaline"	43	D, S	Delivers 5 barrels a day; fine sand plugs the casing.
7	NW.	5	"	"	"	Bored	134	2,220	−127	2,093			Glacial fine sand	Hard, iron, "alkaline"	44	D, S	Poor supply of laxative producing water.
8	SE.	6	"	"	"	Bored	92	2,210	− 72	2,138	90	2,120	Glacial sand	Hard, "alkaline"	44	D, S	Sufficient supply; one dry hole 200 feet deep.
9	SW.	6	"	"	"	Drilled	84	2,215	− 64	2,151	84	2,131	Glacial fine sand	Hard, iron, "alkaline"	40	D, S	Abundant supply.
10	NE.	7	"	"	"	Bored	170	2,225	−110	2,115	170	2,055	Glacial gravel	Hard, "alkaline"	40	S	Abundant supply, but water imparts laxative effect to some stock.
11	NE.	9	"	"	"	Bored	40	2,215	− 39	2,176	39	2,176	Glacial gravel	Hard	40	D	Very poor supply.
12	NW.	10	"	"	"	Dug	40	2,215					Glacial drift				Dry hole; 2 other dry holes 13 and 15 feet deep.
13	NE.	10	"	"	"	Bored	80	2,215					Glacial sand	Hard, iron	42	D, S	Poor supply; intermittent supply in drought years; dry in 1934.
14	SE.	11	"	"	"	Bored	75	2,215	− 65	2,150			Glacial sand	Hard, iron	42	D, S	Poor supply; intermittent supply in drought years; dry in 1934.
15	NW.	12	"	"	"	Bored	90	2,210	− 50	2,160			Glacial sand	Hard, "alkaline"	43	D, S	Sufficient supply; one other 60-foot well.
16	NE.	12	"	"	"	Dug	18	2,205					Glacial drift				Dry hole; uses neighbour's wells.
17	NE.	12	"	"	"	Bored	32	2,210	− 26	2,184			Glacial drift	Hard	42	D, S	Sufficient supply.

NOTE—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

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18	NE.	13	17	15	2	Bored	100	2,210	- 30	2,180	100	2,110	Glacial gravel	Hard, "alkaline"		S	Sufficient supply; water imparts a laxative effect.
19	NW.	13	"	"	"	Dug	25	2,210					Glacial drift				Dry hole.
20	NE.	14	"	"	"	Bored	45	2,215	- 29	2,186	45	2,170	Glacial sand	Hard, clear	43	D, S	Sufficient supply.
21	SE.	14	"	"	"	Bored	40	2,210	- 25	2,185	40	2,170	Glacial sand	Hard	42	D, S	Sufficient supply; one other 40-foot well also used.
22	SE.	15	"	"	"	Dug	20	2,220	- 19	2,201			Glacial drift	Hard	43	D	Intermittent supply; 1 dry hole 80 feet deep.
23	NW.	17	"	"	"	Bored	60	2,225	- 45	2,180	55	2,170	Glacial gravel	Hard	43	D, S	Abundant supply.
24	NW.	18	"	"	"	Bored	58	2,230	- 38	2,192	58	2,172	Glacial gravel	Hard		D, S	Abundant supply.
25	SE.	19	"	"	"	Bored	45	2,230	- 39	2,191			Glacial sandy gravel	Hard		D, S	Poor supply; insufficient for stock purposes.
26	NW.	20	"	"	"	Bored	100	2,225					Glacial drift				Dry hole.
27	NE.	20	"	"	"			2,225					Glacial drift				Dry holes.
28	NW.	21	"	"	"	Dug	30	2,220					Glacial drift				Dry hole; 4 other dry holes and one hole 100 feet deep gave bad water. Hauls water.
29	NE.	21	"	"	"	Bored	23	2,220	- 21	2,199			Glacial gravel	Hard, "alkaline"		D, S	Very poor supply; dry holes to a depth of 100 feet.
30	NW.	22	"	"	"	Bored	53	2,225	- 14	2,211	53	2,172	Glacial coarse gravel	Hard	42	D, S	Sufficient supply.
31	SW.	23	"	"	"	Bored	60	2,220	- 45	2,175	60	2,160	Glacial gravel	Hard	43	D, S	Sufficient supply.
32	NE.	24	"	"	"	Dug	15	2,205	- 11	2,194			Glacial sandy gravel	Hard	43	D, S	Poor supply, and insufficient fof local needs.
33	NW.	25	"	"	"	Dug and Bored	40	2,210	- 23	2,187			Glacial sand	Hard, "alkaline"		D, S	Insufficient supply; several dry holes.
34	NE.	25	"	"	"	Dug	9	2,195	- 6	2,189			Glacial gravel	Hard	44	D, S	Sufficient for 100 head stock.
35	SW.	25	"	"	"	Dug	8	2,195	- 5	2,190			Glacial sand and gravel	Hard	44	S	Sufficient supply.
36	NW.	28	"	"	"	Dug	30	2,240	- 24	2,216			Glacial gravel	Hard	42	D, S	Sufficient supply.
37	NW.	29	"	"	"	Bored	46	2,240	- 37	2,203			Glacial gravel	Hard, sulphur "alkaline"	43	S	Good supply, but water is highly mineralized; tanks drinking water.
38	NW.	30	"	"	"	Dug	8	2,235	- 6	2,229			Glacial gravel	Soft	45	D, S	Sufficient supply.
39	NW.	32	"	"	"	Bored	40	2,260	- 31	2,229			Glacial gravel	Hard	44	D, S	Good supply.
40	NE.	32	"	"	"	Dug	20	2,250					Glacial drift				Dry hole.
41	SW.	33	"	"	"	Bored	36	2,250	- 27	2,223			Glacial gravel	Hard, "alkaline"	44	S	Sufficient supply of highly mineralized water.
42	NW.	34	"	"	"	Dug	35	2,260	- 31	2,229			Glacial gravel	Hard, "alkaline"		S	Delivers 2 barrels a day.
43	SW.	34	"	"	"	Dug	8	2,235	- 4	2,231			Glacial gravel	Soft,	45	D, S	Abundant supply.
44	NE.	35	"	"	"	Dug	10	2,200	- 7	2,193			Glacial gravel	Soft	45	D, S	Sufficient supply.
45	NW.	36	"	"	"	Dug	11	2,195	- 8	2,187			Glacial gravel	Soft	45	D, S	Sufficient for 60 head stock.

NOTE—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
46	NE.	36	17	15	2	Dug	12	2,210	− 8	2,202			Glacial sandy gravel	Hard, "alkaline"	43	D, S	Sufficient supply.
1	SE.	2	17	16	2	Drilled	102	2,205	− 35	2,170	102	2,103	Glacial sand	Hard, iron, "alkaline"		D, S	Insufficient; sand has plugged the casing; Uses 8-foot well.
2	NE.	2	"	"	"	Bored	92	2,200	− 30	2,170	92	2,108	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for at least 100 head stock; 28-foot well used for house.
3	NW.	2	"	"	"	Bored	31	2,200	− 8	2,192			Glacial sand	Hard, "alkaline"		S	Insufficient for 6 head stock; one other intermittent well.
4	SW.	3	"	"	"	Drilled	80	2,165	− 50	2,115	80	2,085	Glacial gravel	Hard, iron		D, S	Sufficient for at least 40 head stock.
5	SW.	4	"	"	"	Bored	80	2,150	− 30	2,120	80	2,070	Glacial sand	Hard		D, S	Sufficient for 40 head stock.
6	SW.	5	"	"	"	Bored	42	2,160	− 26	2,134	40	2,120	Glacial gravel	Hard		D, S, I	Sufficient for 40 head stock.
7	NW.	6	"	"	"	Bored	130	2,140	− 40	2,100	130	2,010	Glacial sand	Hard, iron		D, S	Waters 150 head stock.
8	NE.	7	"	"	"	Bored	95	2,162	− 35	2,127			Glacial sand	Hard, iron, "alkaline"		D, S	Intermittent supply in winter; uses a dug-out for 25 head stock.
9	NE.	8	"	"	"	Bored	95	2,180	− 30	2,150	95	2,085	Glacial gravel	Hard, iron, "alkaline"		S	Sufficient for 150 head stock; 17-foot well used for house.
10	NE.	9	"	"	"	Dug	14	2,200	− 6	2,194	14	2,186	Glacial gravel	Hard		D, S	Pumps dry but refills in 1 hour; sufficient for 35 head stock.
11	SW.	10	"	"	"	Dug	18	2,203	− 9	2,194	15	2,188	Glacial gravel	Soft		D, S	Sufficient for 40 head stock.
12	SE.	11	"	"	"	Bored	77	2,210	− 30	2,180	74	2,136	Glacial gravel	Hard		S	Sufficient for 50 head stock; also uses a 20-foot well for house.
13	NW.	12	"	"	"	Bored	60	2,220	− 30	2,190			Glacial gravel	Hard, "alkaline"		D, S	Barely sufficient for 20 head stock.
14	NE.	12	"	"	"	Bored	80	2,250	− 20	2,230			Glacial drift	Hard		D, S	Sufficient for at least 100 head stock.
15	SE.	12	"	"	"	Bored	77	2,224	− 60	2,164	77	2,147	Glacial drift	Hard, "alkaline"		D, S	Sufficient for 25 head stock.
16	NW.	14	"	"	"	Bored	111	2,235	− 83	2,152	111	2,124	Glacial sand	Hard, iron		D, S	Sufficient for 50 head stock; 8 dry holes 70 to 80 feet deep.
17	SE.	15	"	"	"	Bored	42	2,220	− 15	2,205			Glacial drift	Hard, iron, "alkaline"		D, S	Sufficient for 50 head stock; 1 dry hole 110 feet deep.
18	SW.	17	"	"	"	Bored	47	2,165	− 45	2,120	45	2,120	Glacial sand	Hard, iron, "alkaline"		D, S	Poor supply and insufficient.
19	NW.	18	"	"	"	Bored	110	2,175	−100	2,075			Glacial drift	Hard		D, S	Insufficient for 7 head stock; dry holes to 110 feet.
20	NW.	19	"	"	"	Bored	125	2,200	−120	2,080	115	2,085	Glacial gravel	Hard, "alkaline"		D, S, I	Poor supply; dry holes to 110 feet.
21	NE.	19	"	"	"	Bored	80	2,200	− 78	2,122	78	2,122	Glacial fine sand	Hard, "alkaline"		S	Easily pumped dry; insufficient for 10 head stock; 2 shallow wells and slough also used.
22	SW.	20	"	"	"	Drilled	270	2,225					Glacial drift				Dry hole.
23	SE.	22	"	"	"	Bored	39	2,240	− 24	2,216	27	2,213	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 50 head stock.
24	NW.	23	"	"	"	Bored	69	2,225	− 45	2,180	69	2,156	Glacial gravel	Hard, iron		D, S	Sufficient for 40 head stock.
25	SE.	24	"	"	"	Bored	128	2,240	− 53	2,187	128	2,112	Glacial gravel	Hard		D, S	Sufficient for 50 head stock; also uses a 28-foot well.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
26	NW.	25	17	16	2	Dug	12	2,230	- 5	2,225	7	2,223	Glacial gravel	Soft		S	Sufficient for 75 head stock; well has been used for 50 years.
27	NW.	25	"	"	"	Bored	74	2,250	- 29	2,221	74	2,176	Glacial gravel	Hard, iron		D, S	Sufficient for 175 head stock.
28	SE.	26	"	"	"	Bored	165	2,250	-160	2,090	160	2,090	Glacial sand	Hard, "alkaline"		D, S	Delivers 3 barrels of water a day.
29	NE.	26	"	"	"	Dug	10	2,247	- 5	2,242	8	2,239	Glacial gravel	Soft		S	Sufficient for 100 head stock.
30	NW.	26	"	"	"	Bored	35	2,248	- 11	2,237			Glacial gravel	Hard		D, S	Poor supply.
31	NE.	27	"	"	"	Bored	130	2,250					Glacial drift				Sixteen dry holes.
32	SE.	27	"	"	"	Dug	12	2,240	- 5	2,235			Glacial gravel	Soft		D, S, I	Delivers 24 barrels a day; irrigation results are very good.
33	SW.	27	"	"	"	Bored	132	2,250	- 52	2,198	124	2,126	Glacial sand and gravel	Hard, "alkaline"		D, S	Sufficient for 200 head stock. 1 dry hole 60 feet deep.
34	SE.	28	"	"	"	Bored	25	2,250	- 10	2,240	22	2,228	Glacial gravel	Soft		D	Very poor supply; 27 dry holes made to depths over 300 feet.
35	NE.	28	"	"	"	Bored	121	2,250	- 53	2,197	120	2,130	Glacial sand	Hard, iron		D, S, I	Sufficient for 120 head stock; irrigation results fair.
36	SW.	28	"	"	"	Bored	50	2,235	40	2,195			Glacial drift	Hard, "alkaline"		D, S	Water imparts a laxative effect.
37	SE.	29	"	"	"	Bored	37	2,228	- 28	2,200			Glacial drift	Hard, iron, "alkaline"		D, S	Intermittent supply.
38	SE.	30	"	"	"	Bored	40	2,228	- 39	2,189			Glacial fine sand	Hard		D	Intermittent supply; 4 other wells, but stock refuse the water.
39	NW.	30	"	"	"	Bored	132	2,220	-128	2,092	128	2,092	Glacial gravel	Hard		D, S, I	Sufficient for 40 head stock.
40	NE.	30	"	"	"	Drilled	195	2,240			195	2,045	Glacial fine sand	Hard		N	Well has not been used since 1927.
41	NW.	31	"	"	"	Drilled	165	2,225			165	2,060	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 75 head stock.
42	SE.	32	"	"	"	Bored	114	2,240	- 84	2,156	110	2,130	Glacial gravel	Hard, iron		D, S	Sufficient for at least 20 head stock.
43	NW.	33	"	"	"	Bored	85	2,250	- 62	2,188			Glacial sand	Hard		D, S, I	Sufficient for 50 head stock; irrigation results fair.
44	SW.	34	"	"	"	Bored	80	2,245	- 45	2,200	80	2,165	Glacial coarse gravel	Hard, iron		D, S	Sufficient for 40 head stock.
45	NW.	36	"	"	"	Dug	12	2,250	- 8	2,242	9	2,241	Glacial sand	Hard		D, S	Sufficient for 25 head stock.
46	SW.	36	"	"	"	Dug	9	2,245	- 6	2,239	6	2,239	Glacial gravel	Soft		S	Sufficient for 50 head stock; 14-foot well used for house.
47	SE.	36	"	"	"	Bored	24	2,210	- 18	2,192			Glacial drift	Hard		D, S	Bails dry and refills in 24 hours; sufficient for 10 head stock.
1	NW.	1	18	14	2	Dug	22	2,160	- 20	2,140	20	2,140	Glacial sand	Hard, "alkaline"	43	D, S	Plenty of water on this quarter section.
2	NE.	2	"	"	"	Dug	13	2,155	- 6	2,149	12	2,143	Glacial sand	Hard	42	D, S	Plenty of water on this land.
3	SW.	3	"	"	"	Bored	24	2,170	- 12	2,158	16	2,154	Glacial sand	Hard		D, S	Good supply of water.
4	NW.	3	"	"	"	Dug	8	2,180	- 5	2,175	5	2,175	Glacial gravel	Hard		D, S	Sufficient supply.
5	NE.	4	"	"	"	Dug	7	2,190	- 3	2,187	3	2,187	Glacial sand and gravel	Soft		D, S	Good supply for 40 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
6	SW.	4	18	14	2	Dug	33	2,200	- 30	2,170			Glacial gravel	Hard		S	Insufficient supply.
7	SE.	4	"	"	"	Dug	8	2,190	- 4	2,186			Glacial gravel	Hard		D, S	Sufficient supply; well freezes in winter.
8	SE.	5	"	"	"	Dug	40	2,210	- 33	2,177			Glacial sand	Hard		D, S	Sufficient for house use only.
9	SE.	6	"	"	"	Dug	35	2,205	- 30	2,175	30	2,175	Glacial sand and gravel	Hard		D, S	Good supply; water readily found at shallow depths.
10	NE.	7	"	"	"	Dug		2,180					Glacial drift				Several shallow dry holes; uses dugouts and hauls water.
11	SE.	9	"	"	"	Dug	8	2,175	- 4	2,171			Glacial sandy gravel	Hard		D, S	Sufficient supply; one dry hole 40 feet deep.
12	NE.	10	"	"	"	Dug	18	2,155	- 15	2,140	15	2,140	Glacial sand	Soft	42	D, S	Sufficient supply.
13	NW.	10	"	"	"	Bored	50	2,160					Glacial drift				Several dry holes.
14	SW.	10	"	"	"	Dug	20	2,160	- 17	2,143	17	2,143	Glacial sand and gravel	Soft		D, S	Plenty of water; one other similar well.
15	NW.	11	"	"	"	Dug	12	2,140	- 9	2,131	9	2,131	Glacial gravel	Hard, "alkaline"	44	D, S	Sufficient supply; another 12-foot well with poor supply.
16	NE.	12	"	"	"	Bored		2,150					Glacial gravel				Several bored dry holes.
17	SW.	14	"	"	"	Dug	12	2,145	- 10	2,135	10	2,135	Glacial gravel	Soft	44	D, S	Sufficient supplies.
18	SE.	14	"	"	"	Bored	40	2,150	- 10	2,140	40	2,110	Glacial gravel	Hard, "alkaline"	43	D	Sufficient for stock; water is too mineralized for drinking.
19	SW.	15	"	"	"	Bored	100	2,155					Glacial drift				Dry hole.
20	NE.	15	"	"	"	Spring		2,150	0	2,150			Glacial drift	Soft		S	Sufficient supply; use well on SE.¼, section 16, for drinking.
21	NE.	16	"	"	"	Dug	16	2,140	- 6	2,134			Glacial gravel	Hard, iron	45	D, S	Sufficient supply; seepage water from a creek.
22	SE.	16	"	"	"	Dug	14	2,145	- 7	2,138			Glacial sand	Soft	45	D, S	Plenty of water.
23	SW.	16	"	"	"	Dug	20	2,160	- 15	2,145			Glacial gravel	Hard	45	D, S	Insufficient in drought years.
24	NW.	17	"	"	"	Drilled	325	2,160	-100	2,060	325	1,835	Glacial gravel	Hard, iron, "alkaline"		D, S	Abundant supply, but produces a slight laxative effect on man.
25	NW.	18	"	"	"	Drilled	415	2,175	-249	1,926	415	1,760	Glacial sand	Hard, "alkaline"	42	D, S	Abundant supply, but it produces a laxative effect on man.
26	NE.	18	"	"	"	Dug	28	2,170	- 26	2,144	26	2,144	Glacial fine sand	Hard, "alkaline"		S	Constant but insufficient supply; dry holes 40 to 80 feet deep.
27	SE.	20	"	"	"	Dug	23	2,145	- 17	2,128			Glacial gravel	Hard	43	D, S	Sufficient for 50 head stock.
28	SW.	21	"	"	"	Dug	45	2,140					Glacial drift				Dry hole; an 8-foot well supplies the farm.
29	NW.	23	"	"	"	Dug	16	2,120	- 12	2,108	12	2,108	Glacial gravel	Soft	43	D, S	Sufficient supply; two other shallow wells in use.
30	SW.	23	"	"	"	Dug	10	2,140	- 8	2,132	8	2,132	Glacial gravel	Hard	44	D, S	Sufficient supply.
31	NW.	24	"	"	"	Drilled	230	2,115	-150	1,965	230	1,885	Glacial sand	Hard, iron		D, S	Abundant supply; several dry holes boredto 50 feet.
32	NW.	25	"	"	"	Drilled	250	2,100	-175	1,925	250	1,850	Glacial sand	Hard, iron		D, S	Good supply; another 365-foot well was abandoned.

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WELL RECORDS—Rural Municipality of

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
33	SW.	26	18	14	2	Bored	100	2,100	[illegible]	[illegible]	[illegible]	[illegible]	Glacial drift	[illegible]			Dry hole; tanks water.
34	NE.	26	"	"	"	Dug	16	2,105	− 14	2,091	14	2,091	Glacial sandy gravel	Hard, "alkaline"		S	Well goes dry in August; tanks drinking water.
35	SE.	27	"	"	"	Dug	14	2,090	− 7	2,083			Glacial gravel	Hard, iron, "alkaline"		S	Sufficient supply; uses sand-point for domestic water.
36	SW.	28	"	"	"	Drilled	315	2,140	−158	1,982	270	1,870	Glacial sand	Hard, "alkaline"		D, S	Town well of Qu'Appelle; abundant supply but highly mineralized. Well not used extensively.
37	SW.	28	"	"	"	Dug	25	2,140	− 16	2,124			Glacial sand	Hard, "alkaline"		D, S	Six similar wells in the town; rather short of water in dry years.
38	NE.	29	"	"	"	Dug	26	2,100	− 20	2,080			Glacial sandy gravel	Hard	43	D, S	Sufficient supply; another 20-foot seepage soft water well.
39	SE.	30	"	"	"	Drilled	168	2,155	− 78	2,077	168	1,987	Glacial sand	Hard, iron	44	D, S	Abundant supply.
40	SE.	31	"	"	"	Dug	21	2,140	− 10	2,130	10	2,130	Glacial gravel	Hard	42	D, S	Fair supply; good water according to analyst; 2 dry holes to 96 feet.
41	SE.	32	"	"	"	Drilled	50	2,100	− 24	2,076	50	2,050	Glacial gravel	Hard, "alkaline"		S	Good supply, but water is highly mineralized; another 14-foot well used for the house; #.
42	SW.	32	"	"	"	Dug	15	2,110	− 10	2,100			Glacial gravel	Hard, "alkaline"		N	
43	SE.	33	"	"	"	Dug	30	2,060	− 29	2,031			Glacial sand	Hard, "alkaline"		N	Tanks drinking and stock water.
44	SE.	34	"	"	"	Dug	50	2,070	− 47	2,023			Glacial sand	Hard, "alkaline"	44	D, S	Insufficient supply.
45	NE.	34	"	"	"	Bored	48	2,075	− 42	2,033			Glacial sandy clay	Hard, "alkaline"	38	D	Barely sufficient for house use.
46	NW.	34	"	"	"	Dug	26	2,050	− 21	2,029			Glacial sand	Hard, "alkaline"	42	S	Very poor supply, and acts as a laxative on stock.
47	SW.	35	"	"	"	Bored	80	2,100					Glacial				Dry hole; several shallow seepage wells.
48	SE.	36	"	"	"	Bored	45	2,050	− 20	2,030			Glacial sandy gravel	Hard, "alkaline"	43	D, S	Sufficient supply.
1	NW.	1	18	15	2	Dug	14	2,200	− 11	2,189			Glacial sand	Soft	46	S, D	Sufficient supply.
2	NW.	2	"	"	"	Dug	10	2,110	− 6	2,204			Glacial sand	Hard, "alkaline"	42	S	Sufficient for 200 head stock.
3	NE.	3	"	"	"	Dug	12	2,220	− 6	2,214			Glacial sand	Hard	43	D, S	Sufficient supply.
4	NW.	5	"	"	"	Drilled	80	2,260	− 30	2,230	80	2,180	Glacial gravel	Hard	39	D, S	Very good supply for 35 head stock.
5	NW.	6	"	"	"	Bored	40	2,270	− 24	2,246	40	2,230	Glacial gravel	Hard	38	D, S	Sufficient for 15 head stock.
6	SE.	6	"	"	"	Bored	30	2,260	− 15	2,245			Glacial sand and gravel	Hard, "alkaline"	43	D, S	Well is seldom used; water imparts a laxative effect.
7	SW.	7	"	"	"	Bored	55	2,265	− 40	2,225	55	2,210	Glacial gravel	Hard		D, S	Sufficient for 20 head stock.
8	NW.	7	"	"	"	Bored	72	2,270	− 54	2,216	72	2,198	Glacial gravel	Hard, iron	42	D, S	Sufficient for 30 head stock.
9	SW.	8	"	"	"	Bored	35	2,260	− 20	2,240			Glacial sand	Hard, "alkaline"	43	D, S	Sufficient supply; has 4 other wells but stock refuse water.
10	NW.	9	"	"	"	Bored	100	2,250					Glacial drift				Dry hole; two other dry holes 80 and 84 feet deep.
11	NW.	10	"	"	"	Bored	130	2,240	− 60	2,180	130	2,110	Glacial sand	Hard, "alkaline"	42	D, S	Abundant supply; water imparts a laxative effect on man.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
12	SE.	15	18	15	2	Dug	10	2,225	− 6	2,219			Glacial gravel	Soft	43	D, S	Sufficient for 50 head stock.
13	NE.	16	"	"	"	Dug	9	2,235	− 8	2,227	7	2,228	Glacial sand	Hard	46	D, S	Sufficient supply.
14	NW.	16	"	"	"	Dug	12	2,250	− 4	2,246			Glacial gravel	Soft	44	D, S	Sufficient supply.
15	SW.	16	"	"	"	Bored	60	2,250	− 30	2,220	60	2,190	Glacial gravel	Hard, "alkaline"	43	D, S	Good supply.
16	NE.	17	"	"	"	Drilled	70	2,260	− 55	2,205	70	2,190	Glacial gravel	Hard, iron	43	S	Sufficient for 30 head stock; 8-foot well used for house.
17	SW.	19	"	"	"	Bored	80	2,260	− 68	2,192	80	2,180	Glacial sand	Hard, "alkaline"	44	S	Good supply of mineralized water.
18	SE.	21	"	"	"	Dug	22	2,225	− 14	2,211	22	2,203	Glacial gravel	Hard, "alkaline"	42	D, S	Sufficient supply; water from two 32-foot wells condemned.
19	NE.	21	"	"	"	Bored	33	2,220	− 28	2,192	25	2,195	Glacial gravel	Soft	44	D, S	Fair supply; water pronounced good by analyst.
20	SW.	21	"	"	"	Dug	12	2,230	− 8	2,222			Glacial gravel	Hard		D, S	Plenty of water, fast seepage.
21	NE.	22	"	"	"	Dug	20	2,200	− 12	2,188	18	2,182	Glacial gravel	Hard, "alkaline"	44	D, S	Sufficient for 25 head stock.
22	NW.	22	"	"	"	Bored	18	2,210	− 10	2,200			Glacial gravel	Hard	42	D, S	Sufficient for house use only.
23	NE.	23	"	"	"	Dug	25	2,190	− 21	2,169	23	2,167	Glacial sand	Hard	42	D, S	Sufficient supply; level decreases in August. One other 26-foot well with good supply.
24	NW.	24	"	"	"	Dug	25	2,175	− 17	2,158			Glacial gravel	Hard	44	D, S	Sufficient supply; another well 30 feet deep used.
25	SE.	24	"	"	"	Dug	30	2,180	− 28	2,152	28	2,152	Glacial sand	Hard		D	Intermittent supply; use dugouts for stock.
26	SW.	25	"	"	"	Dug	14	2,175	− 8	2,167			Glacial gravel	Hard	43	D, S	Plenty of water; fast seepage.
27	NE.	25	"	"	"	Bored	14	2,155	− 8	2,147			Glacial sand	Hard	43	D, S	Waters about 10 head stock.
28	SE.	26	"	"	"	Dug	23	2,200	− 20	2,180	20	2,180	Glacial sandy gravel	Soft	44	D, S	Sufficient for 20 head stock.
29	SW.	27	"	"	"	Dug	18	2,200	− 14	2,186			Glacial sand	Hard		D	Very poor supply; 18-foot well used for stock.
30	SE.	28	"	"	"	Bored	32	2,210	− 22	2,188			Glacial sand	Soft	44	D, S	Sufficient for 50 head stock.
31	NE.	28	"	"	"	Dug	15	2,190	− 12	2,178			Glacial sand	Hard	43	D, S	Sufficient supply.
32	SW.	28	"	"	"	Bored	22	2,210	− 19	2,191			Glacial sand	Hard	44	D	Poor supply; two other shallow wells.
33	SE.	29	"	"	"	Dug	6	2,215	− 4	2,211			Glacial sandy gravel	Hard, iron		D, S	Sufficient supply.
34	NE.	30	"	"	"	Bored	40	2,245	− 32	2,213	32	2,213	Glacial gravel	Hard	44	D, S	Sufficient for 40 head stock.
35	NW.	31	"	"	"	Bored	80	2,210	− 30	2,180	80	2,130	Glacial sand	Hard, iron		D, S	Pumps dry after delivering 36 barrels of water.
36	NE.	32	"	"	"	Dug	31	2,200	− 19	2,181			Glacial sand	Hard	43	D, S	Fair supply; one other 12-foot well with "alkaline" water.
37	NW.	32	"	"	"	Dug	25	2,200	− 21	2,179	24	2,176	Glacial fine sand	Hard, "alkaline"		N	17-foot well used for stock; hauls drinking water.
38	NE.	33	"	"	"	Dug	6	2,170	− 4	2,166			Glacial sand gravel	Hard, iron	45	D, S	Sufficient supply.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
39	SW.	33	18	15	2	Spring		2,200					Glacial gravel	Hard, iron	45	D	Continuous flow of water; has been considered a possible source for the town of Qu'Appelle.
40	NE.	34	"	"	"	Drilled	160	2,145	- 70	2,075	160	1,985	Glacial gravel	Hard, iron sulphur		D, S	Good supply.
41	SE.	36	"	"	"	Drilled	296	2,150	-167	1,983	295	1,855	Glacial mud and silt	Hard, iron, "alkaline"		N	Plenty of water but the aquifer clogs the pipes; uses a 25-foot well with a good supply.
42	NE.	36	"	"	"	Dug	38	2,135	- 36	2,099			Glacial sand	Hard	43	D, S	Insufficient supply.
43	SW.	36	"	"	"	Dug	20	2,135	- 14	2,121			Glacial gravel	Hard, "alkaline"	43	D, S	Good supply of highly mineralized water.
1	SE.	2	18	16	2	Bored	40	2,260	- 22	2,238	32	2,228	Glacial gravel	Hard		D, S, I	Pumps dry, but refills in half a day; sufficient for 50 head stock.
2	NE.	2	"	"	"	Bored	40	2,275	- 20	2,255			Glacial drift	Hard		S	Intermittent supply; 4 dry holes to 90 feet.
3	NE.	3	"	"	"	Bored	22	2,265	- 10	2,255	22	2,243	Glacial gravel	Hard, iron		D, S	Good supply for 20 head stock; another similar well not in use.
4	NE.	4	"	"	"	Bored	30	2,255	- 14	2,241	30	2,225	Glacial gravel	Hard, iron		D, S	Well has never been pumped dry.
5	SE.	4	"	"	"	Bored	30	2,250	- 14	2,236	26	2,224	Glacial sandy gravel	Hard, iron		D, S	Well has never been pumped dry; fast seepage.
6	NW.	5	"	"	"	Bored	43	2,250	- 42	2,208			Glacial gravel	Hard		D, S	Sufficient for 45 head stock.
7	NE.	5	"	"	"	Bored	68	2,265	62	2,203			Glacial gravel	Hard		D, S	Sufficient for 150 head stock.
8	SE.	5	"	"	"	Bored	72	2,270	- 67	2,203	72	2,198	Glacial fine sand	Hard		D, S	Cannot lower the water level; sufficient for 200 head stock.
9	NW.	5	"	"	"	Bored	50	2,250	- 54	2,196	55	2,195	Glacial sand	Hard, iron		D	Sufficient supply.
10	NE.	7	"	"	"	Bored	55	2,260	- 49	2,211	45	2,215	Glacial gravel	Hard, iron		D, S	Fast seepage; sufficient for 30 head stock.
11	SE.	9	"	"	"	Dug and Bored	29	2,250	- 14	2,236			Glacial gravel	Hard, "alkaline"		D, S	Good supply for 25 head stock.
12	NE.	10	"	"	"	Dug	43	2,270	- 10	2,260			Glacial			S	Intermittent supply; uses 25-foot well for drinking.
13	SW.	10	"	"	"	Bored	40	2,265	- 20	2,245	40	2,225	Glacial gravel	Hard, iron, "alkaline"		D, S	Sufficient for 40 head stock.
14	SE.	12	"	"	"	Bored	40	2,285	- 20	2,265			Glacial gravel	Hard, iron		D, S	One dry hole 98 feet deep; sufficient for 50 head stock; well has never been pumped dry.
15	NW.	12	"	"	"	Bored	40	2,290	- 10	2,280	22	2,268	Glacial gravel	Soft		D, S	Abundant supply for 50 head stock; cannot pump well dry.
16	SE.	13	"	"	"	Dug	12	2,280	- 4	2,276	12	2,268	Glacial sand and gravel	Hard		D	C. P. R. well; abundant supply; water is sold to village of McLean.
17	SE.	13	"	"	"	Dug	15	2,280	- 8	2,272			Glacial sand	Hard		D	Typical well in McLean village; insufficient supply in drought years.
18	SE.	13	"	"	"	Drilled	495	2,280					Probably Glacial drift	Hard		N	C, P. R. well; has been abandoned; insufficient water for locomotives.
19	SE.	14	"	"	"	Bored	55	2,280	- 30	2,250			Glacial gravel	Hard		D, S	Sufficient for 70 head stock.
20	SE.	15	"	"	"	Bored	65	2,275	- 43	2,232			Glacial sand	Hard		D, S	Pumps dry and refills in 2 days; sufficient for 10 head stock.
21	NE.	15	"	"	"	Dug	55	2,285	- 20	2,265			Glacial drift	Hard, "alkaline"		D, S	Intermittent supply; hauls water 3 miles.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
22	NE.	16	18	16	2	Dug	30	2,280	− 22	2,258	20	2,260	Glacial gravel	Hard		D, S	Pumps dry but refills quickly; sufficient for 65 head stock.
23	NE.	17	"	"	"	Dug	27	2,270	− 22	2,248			Glacial drift	Hard		D, S	Sufficient supply.
24	NW.	17	"	"	"	Bored	38	2,265	− 26	2,239	38	2,227	Glacial gravel	Hard		D, S	Sufficient for 10 head stock; farmer on SW.¼, section 20, uses well.
25	NE.	18	"	"	"	Drilled	152	2,260			138	2,122	Glacial gravel	Hard, "alkaline"		D, S	Abundant supply for 50 head stock.
26	SE.	18	"	"	"	Bored	47	2,265	− 27	2,238			Glacial sand	Hard		D, S	Sufficient for 50 head stock.
27	SW.	18	"	"	"	Bored	65	2,265	− 50	2,215			Glacial gravel	Hard, "alkaline"		N	Sufficient for 10 head stock; slow seepage.
28	NW.	19	"	"	"	Dug	14	2,270	− 10	2,260	10	2,260	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 35 head stock; pumps dry and refills in one-half hour.
29	SW.	20	"	"	"	Bored	30	2,260	− 10	2,250			Glacial drift	Hard, "alkaline"		S	Delivers 2 pails a day on the average; dry holes 50, 55, and 75 feet deep.
30	NE.	20	"	"	"	Bored	34	2,280	− 28	2,252	28	2,252	Glacial sand	Hard		D, S, I	Sufficient for 25 head stock; pumps dry and refills in 2 hours.
31	NW.	21	"	"	"	Bored	35	2,265	− 15	2,250	27	2,238	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 25 head stock; pumps dry and refills in one-half day.
32	SE.	21	"	"	"	Dug	24	2,260	− 10	2,250			Glacial drift	Hard, iron		D, S	Sufficient for 40 head stock; never been pumped dry.
33	SW.	22	"	"	"	Dug	26	2,265	− 17	2,248	23	2,242	Glacial sand	Hard		D, S	Pumps dry and refills in one-half day; sufficient for 25 head stock.
34	SE.	22	"	"	"	Dug	20	2,260	− 14	2,246	17	2,243	Glacial gravel	Hard		S	Sufficient for 100 head stock; one other similar well used.
35	SW.	24	"	"	"	Bored	93	2,265	− 75	2,190	93	2,172	Glacial sand	Hard, "alkaline"		D, S	Delivers 5 barrels of water in 2 hours.
36	NE.	25	"	"	"	Dug	13	2,255	− 6	2,249			Glacial fine sand	Hard, iron		S	Sufficient for 30 head stock; one other similar well.
37	NE.	26	"	"	"	Dug	18	2,260	− 11	2,249	18	2,242	Glacial sand	Hard		D, S	Sufficient for 50 head stock.
38	NE.	27	"	"	"	Dug	12	2,235	− 4	2,231			Glacial sand and gravel	Hard, "alkaline"		D, S	Abundant supply for 100 head stock.
39	SE.	27	"	"	"	Dug	16	2,260	− 8	2,252			Glacial sand	Hard		D, S	Delivers 2 barrels of water a day.
40	NE.	28	"	"	"	Dug	16	2,265	− 10	2,255			Glacial gravelly clay	Hard, salty, "alkaline"		N	Water too salty for use; hauls water from SW.¼, section 36. #.
41	NW.	28	"	"	"	Dug	18	2,280	− 13	2,267			Glacial gravel	Hard		D, S	Sufficient for 35 head stock.
42	SE.	30	"	"	"	Dug	20	2,275	− 17	2,258	17	2,258	Glacial gravel	Hard		D, S	Sufficient for 25 head stock.
43	NW.	30	"	"	"	Dug	18	2,270	− 13	2,257	16	2,254	Glacial sand	Hard		D, S	Poor supply in dry years.
44	NE.	30	"	"	"	Dug	14	2,260	− 12	2,248	12	2,248	Glacial sand	Soft		D, S	One other similar well; each sufficiant for 15 head stock.
45	NE.	32	"	"	"	Dug	17	2,260					Glacial drift	Hard		D, S	Sufficient supply.
46	SW.	33	"	"	"	Dug	6	2,240	− 3	2,237			Glacial sand	Hard		D, S	Well refills quickly; sufficient for 30 head stock.
47	NE.	34	"	"	"	Dug	16	2,235	− 8	2,227			Glacial sandy clay	Hard		D, S	Barely sufficient for 25 head stock.
48	NE.	35	"	"	"	Bored	37	2,240	− 22	2,218	37	2,203	Glacial gravel	Hard		D, S	Sufficient for 35 head stock.

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WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
49	SE.	36	18	16	2	Dug	14	2,240	- 10	2,230	10	2,230	Glacial coarse sand	Hard, "alkaline"		S	Sufficient for 10 head stock only in drought years.
1	NW.	2	19	14	2	Dug	22	2,025	- 17	2,008			Glacial drift	Hard, iron, "alkaline"		D, S	Slough seepage well; 40-foot well also used; sufficient supply.
2	SE.	4	"	"	"	Dug	26	2,070	- 19	2,051			Glacial sand	Hard, "alkaline"		D, S	Sufficient supply; dry holes 20 to 50 feet deep.
3	SW.	5	"	"	"	Dug	30	2,100					Glacial drift				Dry holes.
4	NW.	5	"	"	"	Dug	20	2,090	- 16	2,074	16	2,074	Glacial sand	Hard, "alkaline"		D, S	Fair supply for 15 head stock.
5	NW.	6	"	"	"	Dug	17	2,105	- 15	2,090			Glacial sand	Hard, "alkaline"		S	Variable supply; 2 other wells 17 feet deep; Dry holes to 40 feet.
6	SE.	6	"	"	"	Dug	35	2,110	- 28	2,082			Glacial sand and gravel	Hard, "alkaline"		S	Fair supply of highly mineralized water.
7	SW.	7	"	"	"	Dug	20	2,100	- 16	2,084			Glacial sand	Hard, "alkaline"	43	D, S	Sufficient for house use only; uses a dam for stock in summer.
8	SE.	7	"	"	"	Dug	36	2,090	- 30	2,060			Glacial gravel	Hard, "alkaline"	43	S	Sufficient supply, but stock dislike the water; hauls drinking water.
9	SE.	8	"	"	"	Dug	15	2,055	- 10	2,045			Glacial drift	Hard	44	D, S	Slough seepage well; insufficient in dry years.
10	SW.	8	"	"	"	Dug	30	2,075					Glacial drift				Dry holes.
11	SW.	10	"	"	"	Dug	38	2,020	- 36	1,984	36	1,984	Glacial sand	Hard, "alkaline"	42	S	Another 26-foot well also used for stock.
12	NW.	10	"	"	"	Bored	50	2,015	- 47	1,968			Glacial sand	Hard, "alkaline"	40	D	Three wells are necessary to water stock; "alkaline" water
13	SW.	12	"	"	"	Dug	68	2,035	- 64	1,971			Glacial drift	Hard, "alkaline"	43	D, S	Very poor supply; insufficient for 10 head stock.
14	NW.	12	"	"	"	Bored	75	2,020	- 30	1,990	75	1,945	Glacial gravel	Hard, "alkaline"	75	1,9	Abundant supply; several dry holes to 94 feet deep.
15	SW.	13	"	"	"	Bored	80	2,020	- 78	1,942			Glacial drift	Hard, "alkaline"	44	D, S	Insufficient for stock purposes; tanks water.
16	NW.	14	"	"	"	Dug	6	1,990	0	1,990	0	1,990	Glacial gravel	Hard	43	D, S	Good supply for 20 head stock.
17	SW.	14	"	"	"	Dug	34	2,000	- 22	1,978			Glacial drift	Hard	42	D, S	Sufficient supply.
18	SW.	15	"	"	"	Dug	15	2,005	- 5	2,000	15	1,990	Glacial gravel	Hard, "alkaline"		D, S	Good supply of highly mineralized water.
19	NE.	16	"	"	"	Dug	30	2,000	- 22	1,978			Glacial sandy clay	Hard, "alkaline"		S	Sufficient but only fair supply.
20	SE.	16	"	"	"	Bored	20	2,020	- 16	2,004			Glacial gravel	Hard, "alkaline"	41	N	Insufficient and very slow seepage.
21	SE.	17	"	"	"	Bored	20	2,040	- 15	2,025	18	2,022	Glacial gravel	Hard, "alkaline"	41	D, S	Variable supply; unreliable well.
22	SW.	18	"	"	"	Bored	35	2,060	- 17	2,043	29	2,031	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 25 head stock.
23	NW.	19	"	"	"	Dug	34	2,005	- 17	1,988	30	1,975	Glacial gravel	Hard, iron	40	D, S	Good supply.
24	SE.	19	"	"	"	Bored	40	2,025					Glacial drift				Four dry holes.
25	SE.	20	"	"	"	Bored	30	2,010	- 22	1,988			Glacial sand	Hard, "alkaline"		S	Poor supply; 7 other wells with small supply; tanks water.
26	NW.	21	"	"	"	Dug	24	1,990	- 21	1,969			Glacial drift	Hard, "alkaline"		D, S	Intermittent supply.

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WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
27	SW.	21	19	14	2	Dug	8	2,000	− 4	1,996			Glacial gravel	Hard		S	Abundant supply.
28	SW.	22	"	"	"	Bored	25	1,980	− 15	1,965	25	1,955	Glacial sand	Hard	41	D	Uses 40-foot well with a good supply of "alkaline" water for stock.
29	SW.	23	"	"	"	Dug	24	1,975	− 20	1,955			Glacial gravel	Hard, "alkaline"	42	S	Sufficient supply; also a 13-foot well with good supply.
30	NW.	23	"	"	"	Dug	3	1,960	− 1	1,959	1	1,959	Glacial sand	Hard, "alkaline"	43	D, S	Abundant supply of highly mineralized water.
31	SE.	23	"	"	"	Dug	26	2,010	− 22	1,988	18	1,992	Glacial gravel	Hard	43	D, S	Sufficient in wet years only; used another 12-foot soft water well.
32	SE.	25	"	"	"	Drilled	90	2,005	− 65	1,940	90	1,915	Glacial fine sand	Hard, "alkaline"	43	D, S	Good supply of laxative producing water.
33	SE.	26	"	"	"	Dug	28	1,995	− 24	1,971			Glacial drift	Hard	43	D, S	Poor supply.
34	NE.	26	"	"	"	Dug	24	1,975	− 18	1,957	18	1,957	Glacial gravel	Hard	43	D, S	Small supply and insufficient for stock purposes.
35	SW.	27	"	"	"	Dug	18	1,975	− 15	1,960	15	1,960	Glacial fine sand	Soft	38	D, S	Sufficient for 32 head stock.
36	NW.	28	"	"	"	Dug	22	1,965	− 17	1,948			Glacial sand	Hard, "alkaline"	42	D, S	Fair supply, insufficient in dry years; another 24-foot well.
37	NE.	28	"	"	"	Spring		1,960	0	1,960	0	1,960	Glacial sand	Hard	42	D, S	Abundant supply.
38	NE.	29	"	"	"	Dug	18	1,980	− 14	1,966			Glacial drift	Hard, "alkaline"	44	D, S	Well becomes dry in winter.
39	SE.	29	"	"	"	Dug	16	1,980	− 13	1,967	13	1,967	Glacial gravel	Hard, "alkaline"	38	D	Seepage from a dugout; one other 30-foot well in use.
40	SE.	30	"	"	"	Dug	12	1,990	− 6	1,984			Glacial sand	Hard		D, S	Seepage water from a dam; another well, 47-foot well.
41	NE.	31	"	"	"	Dug	22	2,000	− 19	1,981	19	1,981	Glacial gravel	Hard	41	D, S	Sufficient for 7 head stock.
42	NE.	32	"	"	"	Dug	28	1,975	− 8	1,967			Glacial gravel	Hard	44	D, S	Sufficient supply.
43	NW.	32	"	"	"	Dug	18	1,990	− 16	1,974	16	1,974	Glacial gravel	Hard, "alkaline"	42	D, S	Sufficient for 12 head stock.
44	NE.	33	"	"	"	Dug	15	1,955	− 9	1,946			Glacial sand	Hard, "alkaline"	43	D, S	Sufficient for 10 head stock.
45	SW.	33	"	"	"	Dug	20	1,965	− 16	1,949	16	1,949	Glacial sand and gravel	Hard, iron	37	D, S	Sufficient for 15 head stock.
46	SW.	34	"	"	"	Dug	25	1,960	− 15	1,945			Glacial drift	Hard		D,S	Poor supply.
47	SE.	35	"	"	"	Dug	38	1,970	− 30	1,940			Glacial sand	Hard, "alkaline"	43	D, S	Sufficient supply; water imparts a laxative effect.
1	SW.	2	19	15	2	Bored	25	2,140	− 10	2,130			Glacial drift	Hard		S	Intermittent supply; uses a dam and dugout; a spring in coulée too "alkaline" for use.
2	SE.	4	"	"	"	Dug	20	2,175	− 16	2,159	16	2,159	Glacial gravel	Hard, "alkaline"		D, S	Sufficient supply with dugout to water 100 head stock.
3	NE.	6	"	"	"	Dug	16	2,200	− 13	2,187	14	2,186	Glacial sand and gravel	Hard		D, S	Fair supply.
4	NW.	6	"	"	"	Dug	35	2,210	− 33	2,177	33	2,177	Glacial fine sand	Hard		D, S	Sufficient supply.
5	NE.	9	"	"	"	Dug	20	2,130	− 14	2,116			Glacial sand	Hard, "alkaline"	43	S	Sufficient for 15 head stock; water is highly mineralized.
6	SE.	10	"	"	"	Bored	20	2,130	− 14	2,116			Glacial sand	Hard		D, S	Insufficient for stock; supply decreases in winter.

NOTE—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
7	NW.	10	19	15	2	Dug	29	2,120	− 23	2,097	18	2,102	Glacial sand	Hard, iron	45	D, S	Sufficient for 15 head stock.
8	SE.	12	"	"	"	Dug	22	2,100	− 11	2,089	22	2,078	Glacial sand and gravel	Hard		D, S	Sufficient for 30 head stock.
9	SW.	13	"	"	"	Dug	32	2,075	− 15	2,060	32	2,043	Glacial sand	Hard	43	D,S	Sufficient and constant supply.
10	SE.	14	"	"	"	Dug	40	2,080	− 20	2,060			Glacial gravel	Hard	43	D, S	Sufficient for 20 head stock.
11	NW.	14	"	"	"	Dug	15	2,080	− 4	2,076			Glacial clayey gravel	Hard	45	D, S	Seepage water from a dam; also uses a spring; plenty of water for 20 head stock.
12	SE.	15	"	"	"	Bored	48	2,100	− 15	2,085	20	2,080	Glacial sand	Hard		N	Very slow seepage; one 20-foot well with poor supply; short of water.
13	SE.	16	"	"	"	Drilled	240	2,120	− 14	2,106	240	1,880	Glacial gravel	Soft, iron	38	D, S	Abundant supply.
14	SW.	17	"	"	"	Dug	50	2,150	− 40	2,110			Glacial gravel	Hard, iron, "alkaline"	43	S	Sufficient for stock, but the water is highly mineralized.
15	NE.	18	"	"	"	Dug	40	2,150	− 20	2,130	40	2,110	Glacial sand and gravel	Hard, iron, "alkaline"	43	D	Two similar wells and one 15-foot drinking water well; sufficient water for 60 head stock.
16	NW.	19	"	"	"	Drilled	175	2,125	− 10	2,115	175	1,950	Glacial gravel	Hard, iron	42	D, S	Abundant supply.
17	NE.	19	"	"	"	Bored	25	2,100	− 15	2,085	15	2,085	Glacial sand	Hard	44	D, S	Sufficient supply; one dry hole 40 feet deep.
18	SE.	20	"	"	"	Dug	30	2,100	− 24	2,076			Glacial sand and gravel	Hard, iron	40	D	Sufficient for house use.
19	SE.	20	"	"	"	Drilled	160	2,100	− 8	2,092	160	1,940	Glacial gravel	Hard, iron		S	Abundant supply.
20	SE.	22	"	"	"	Dug	35	2,080	− 28	2,052			Glacial sand	Hard, "alkaline"		D, S	Sufficient supply; water imparts a laxative effect to man.
21	NE.	22	"	"	"	Dug	24	2,075	− 19	2,056	19	2,056	Glacial gravel	Hard, "alkaline"	38	D, S	Sufficient for 15 head stock; laxative producing water.
22	NW.	24	"	"	"	Dug	32	2,060	− 15	2,045			Glacial gravel	Hard, "alkaline"	42	D, S	Sufficient for 30 head stock.
23	SW.	24	"	"	"	Dug	18	2,060	− 8	2,052	18	2,042	Glacial fine sand	Hard, "alkaline"	40	D, S	Sufficient for at least 40 head stock.
24	NW.	25	"	"	"	Drilled	168	2,040	+ 6	2,046	168	1,872	Glacial gravel	Hard	43	D, S	Delivers 8 gallons a minute; low mineral content according to analyst. #.
25	NE.	26	"	"	"	Dug	30	2,050	− 25	2,025			Glacial gravel	Hard	42	D, S	Sufficient supply.
26	SW.	26	"	"	"	Dug	19	2,060	− 13	2,047	19	2,041	Glacial fine sand	Hard, iron	38	D, S	Two other wells 30 feet deep; sufficient water for 30 head stock.
27	SE.	26	"	"	"	Dug	35	2,050	− 30	2,020	30	2,020	Glacial gravel	Hard, iron, "alkaline"	42	D, S	Sufficient for 10 head stock.
28	NE.	27	"	"	"	Bored	47	2,070	− 27	2,043	45	2,025	Glacial sand and gravel	Hard, iron, sulphur, soda	42	D	Village well of Edgely; sufficient and constant supply.
29	SE.	28	"	"	"	Drilled	240	2,075	− 8	2,067	240	1,835	Glacial coarse sand	Hard, soda, "alkaline"		D, S	Abundant supply.
30	SW.	28	"	"	"	Dug	20	2,080	− 5	2,075			Glacial gravel	Hard, "alkaline"	42	D, S	Seepage water from a large dugout.
31	SE.	29	"	"	"	Drilled	215	2,085	− 15	2,070	215	1,870	Glacial sand	Hard, iron		D, S	Waters 35 head stock only at one pumping.
32	NW.	30	"	"	"	Bored	80	2,080					Glacial drift				Dry hole; no supply of water on the farm.
33	NE.	30	"	"	"	Dug		2,085					Glacial				Dry holes.

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(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
34	NE.	34	19	15	2	Drilled	105	2,060	- 12	2,048	105	1,955	Glacial coarse sand	Hard, "alkaline"		D, S	Sufficient for 30 head stock at least; owns a 22-foot well with good and constant supply.
35	SW.	34	"	"	"	Bored	58	2,070	- 21	2,049	42	2,028	Glacial gravel	Hard, iron	43	D, S	Good supply for 20 head stock.
36	SE.	35	"	"	"	Drilled	525	2,045					Bedrock Marine Shale				Dry hole; another dry hole 425 feet deep.
37	SE.	36	"	"	"	Drilled	190	2,025	0	2,025	190	1,835	Glacial coarse sand	Hard		D, S	Abundant supply; water flows after well is cleaned.
38	SW.	36	"	"	"	Dug	30	2,030	- 24	2,006			Glacial drift	Hard		D, S	Intermittent supply; tanks water for stock.
1	SW.	1	19	16	2	Bored	47	2,235					Glacial drift	Soft		D, S	Intermittent supply; 23 dry holes, deepest 189 feet; forced to tank water in dry years.
2	NE.	2	"	"	"	Dug	20	2,225					Glacial drift				Dry hole; uses a dugout and tanks water in dry seasons.
3	NW.	2	"	"	"	Bored	48	2,225	- 13	2,212	35	2,190	Glacial sand	Hard		D, S	Poor and insufficient supply; 25 dry holes, the deepest 90 feet.
4	SE.	3	"	"	"	Dug	18	2,250	- 8	2,242			Glacial sand and gravel	Soft		D, S	Slow seepage; but sufficient for 25 head stock.
5	SW.	4	"	"	"	Bored	50	2,260	- 18	2,242	36	2,224	Glacial gravel	Hard, "alkaline"		S	Well has never been pumped dry; use 20-foot for drinking water.
6	NW.	4	"	"	"	Bored	77	2,260	- 51	2,209	60	2,200	Glacial gravel	Hard		S	Uses a dugout for stock also, and tanks drinking water.
7	NE.	4	"	"	"	Bored	30	2,260	- 29	2,231	29	2,231	Glacial fine sand	Hard		D	Hauls water for stock; 25 dry holes 25 to 80 feet deep.
8	SW.	6	"	"	"	Dug	13	2,265	- 5	2,260			Glacial sand	Soft		S	Intermittent supply.
9	NE.	6	"	"	"	Bored	80	2,255	- 2	2,253	70	2,185	Glacial gravel	Hard, iron, "alkaline"		S	Intermittent supply; hauled water in 1934; 3 dry holes 70 feet deep.
10	SW.	7	"	"	"	Drilled	52	2,255	- 32	2,223			Glacial sand	Hard, "alkaline"		N	Dugout used for stock; water in well is too mineralized; one 20-foot dry hole.
11	NE.	9	"	"	"	Bored	60	2,215	- 20	2,195	50	2,165	Glacial sand	Hard, "alkaline"		D, S	Waters 25 head stock; fast seepage; shallow 26-foot well waters 35 head stock.
12	SW.	10	"	"	"	Dug	24	2,245	- 16	2,229			Glacial sand	Hard, "alkaline"		S	Sufficient for 10 head stock only; 20-foot well used for drinking water.
13	SE.	10	"	"	"	Dug	27	2,240	- 18	2,222			Glacial sand	Hard, "alkaline"		D, S	Pumps dry and refills in 2 days. #.
14	SE.	11	"	"	"	Dug	16	2,205	- 10	2,195	8	2,197	Glacial sand	Soft		D, S, I	Very poor supply in dry years; 20 dry holes deepest being 65 feet.
15	NW.	12	"	"	"	Drilled	100	2,180	- 55	2,125	100	2,080	Glacial coarse gravel	Hard, iron		D, S	Well has never been pumped dry.
16	SW.	12	"	"	"	Dug	25	2,210	- 20	2,190	20	2,190	Glacial sand	Hard		D, S	Sufficient for 30 head stock.
17	SE.	13	"	"	"	Bored	85	2,160					Glacial drift				10 dry holes; tanks water for 15 head stock.
18	SW.	14	"	"	"	Bored	40	2,195	- 18	2,177	22	2,173	Glacial yellow sand	Hard, "alkaline"		D, S	Sufficient for 54 head stock.
19	NW.	14	"	"	"	Dug	18	2,220	- 14	2,206	10	2,210	Glacial sand	Hard		D	Delivers 4 barrels a day; 2 similar wells used for stock.
20	SE.	16	"	"	"	Dug	12	2,230	- 8	2,222	8	2,222	Glacial sand	Hard			Sufficient for 25 head stock; another 18-foot similar well.
21	SE.	19	"	"	"	Drilled	154	2,200	- 30	2,170	152	2,048	Glacial sand	Hard, iron, "alkaline"		S	Well has never been pumped dry; hauls drinking water.
22	SW.	19	"	"	"	Bored	115	2,200	- 28	2,172	115	2,085	Glacial sand	Hard		D, S	Abundant supply for 70 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
23	NW.	19	19	16	2	Bored	48	2,170	- 45	2,125			Glacial sand	Hard, "alkaline"		N	
24	NE.	19	"	"	"	Bored	70	2,180	- 45	2,135	45	2,135	Glacial sand	Hard, iron		D, S	Sufficient for 50 head stock.
25	NW.	20	"	"	"	Bored	37	2,180	- 17	2,163	34	2,146	Glacial gravel	Hard, "alkaline"		D, S	Sufficient supply; another 46-foot well with good supply; dry hole 56 feet deep.
26	SE.	20	"	"	"	Dug	15	2,200	- 7	2,193	7	2,193	Glacial sand and gravel	Soft		D, S	Well refills in 10 hours after being bailed dry.
27	SW.	21	"	"	"	Dug	17	2,195	- 11	2,184	10	2,185	Glacial sand	Soft		S	Sufficient for 50 head stock.
28	NW.	21	"	"	"	Bored	103	2,180	- 33	2,147	103	2,077	Glacial drift	Hard, iron		D, S	Well has never been bailed dry.
29	SE.	22	"	"	"	Dug	15	2,180	- 13	2,167	10	2,170	Glacial sand	Hard		D, S	Sufficient for 15 head stock.
30	NE.	22	"	"	"	Drilled	240	2,155			240	1,915	Glacial fine sand	Hard, iron		N	Well has been plugged with sand; hauls water.
31	NW.	22	"	"	"	Bored	45	2,155	- 20	2,135	45	2,110	Glacial sand and gravel	Hard, "alkaline"		D, S, I	Sufficient for 100 head stock; irrigation results are fair.
32	SW.	24	"	"	"	Drilled	183	2,150	- 87	2,063	183	1,967	Glacial black sand				Well delivers 4 gallons a minute.
33	NW.	24	"	"	"	Drilled	178	2,145	- 30	2,115	178	1,967	Glacial gravel	Hard, iron		D, S, I	Abundant supply for 100 head stock.
34	SE.	24	"	"	"	Drilled	220	2,145	- 40	2,105	220	1,925	Glacial sand	Hard, iron		D, S	Well has never been pumped dry.
35	SW.	25	"	"	"	Drilled	265	2,110	- 2	2,108			Glacial gravel	Hard, iron		D, S	Abundant supply.
36	SW.	26	"	"	"	Bored	63	2,155	- 33	2,122	63	2,092	Glacial sand	Hard		D	Used for the house only; stock are watered at sloughs.
37	NW.	26	"	"	"	Dug	30	2,125	- 26	2,099			Glacial gravel	Hard		D	Village well of Avonhurst; sufficient supply.
38	SE.	27	"	"	"	Drilled	232	2,150	- 10	2,140	232	1,918	Glacial gravel	Hard, iron		S	Abundant supply for 60 head stock; 20-foot well used for house.
39	SW.	28	"	"	"	Drilled	250	2,160	- 20	2,140	250	1,910	Glacial gravel	Hard, iron		S	Abundant supply; 30-foot well used for house; 5 dry holes to 100 feet.
40	NE.	28	"	"	"	Bored	36	2,130	- 18	2,112	36	2,094	Glacial drift	Hard, iron, "alkaline"		D, S	Abundant supply for 15 head stock.
41	SE.	29	"	"	"	Bored	40	2,165	- 20	2,145			Glacial sand	Hard		D, S	Insufficient for 15 head stock in summer; uses a dam for stock; 10 dry holes 50 to 120 feet deep.
42	SE.	39	"	"	"	Bored	62	2,175	- 32	2,143	62	2,113	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 20 head stock.
43	NW.	31	"	"	"	Drilled	252	2,145	- 70	2,075	252	1,893	Glacial gravel	Hard, iron		D, S	Abundant supply for 80 head stock; 1 dry hole 490 feet deep.
44	SW.	32	"	"	"	Bored	30	2,130	- 10	2,120	30	2,100	Glacial gravel	Soft		D, S	Well has never been bailed dry; good supply for 20 head stock.
45	SW.	34	"	"	"	Bored	60	2,105			30	2,075	Glacial drift	Hard		N	Very poor supply; uses a dam and melts snow and ice for stock.
46	SE.	34	"	"	"	Dug	20	2,110	- 10	2,100			Glacial gravel	Hard	44	D, S	Sufficient for 30 head stock.
47	NE.	35	"	"	"	Drilled	290	2,075					Glacial drift	Hard, iron		S	Sufficient for 20 head stock; tanks water for the house.
48	NW.	36	"	"	"	Bored	66	2,065	- 18	2,047			Glacial gravel	Hard, iron, "alkaline"		D, S	Sufficient for 100 head stock.
49	NE.	36	"	"	"	Drilled	100	2,055	- 20	2,035	100	1,955	Glacial sand	Hard, iron		D, S, I	Well has never been pumped dry.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE, NO. 157, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
1	SW.	1	20	15	2	Drilled	240	2,015	-140	1,875	240	1,775	Glacial fine sand	Hard, "alkaline"	42	S	Fair supply; probably partly shut off by sand; 14-foot well used for house.
2	SW.	2	"	"	"	Drilled	300	2,050					Bedrock Marine Shale	Hard, very "alkaline"		N	Water was not suitable for any farm purpose; well went dry in 1932.
3	SW.	3	"	"	"	Drilled	300	2,065	- 25	2,040	300	1,765	Glacial sand	Hard, iron		S	Abundant supply, but water is highly mineralized; 16-foot well used for the house.
4	NW.	4	"	"	"	Drilled	200	2,060	- 40	2,020	200	1,860	Glacial coarse sand	Hard, "alkaline"		D, S	Abundant supply.
5	SW	4	"	"	"	Drilled	160	2,060	- 34	2,026	160	1,900	Glacial coarse sand	Hard, "alkaline"	43	D, S	Abundant supply for 100 head stock; another well 200 feet deep.
6	NW.	6	"	"	"	Dug	40	2,050	- 15	2,035	40	2,010	Glacial gravel	Hard	42	D, S	Abundant supply.
1	NE.	2	20	16	2	Bored	60	2,055	- 20	2,035	60	1,995	Glacial drift	Hard, iron		D, S	Well has never been pumped dry.
2	SE.	3	"	"	"	Bored	67	2,080	- 61	2,019	66	2,014	Glacial sand	Hard, "alkaline"		S	Delivers 2 barrels of water a day. 3 dry holes, the deepest being 400 feet; tanks water for 30 head stock.
3	NW.	4	"	"	"	Bored	57	2,095	- 8	2,087			Glacial drift	Hard, "alkaline"		D, S	Poor supply; tanks water for stock.
4	SE.	4	"	"	"	Bored	86	2,095	- 70	2,025	86	2,009	Glacial sand	Hard, iron, "alkaline"		S	Good supply for 50 head stock; 2 dry holes 370 and 410 feet deep.
5	SE.	5	"	"	"	Bored	70	2,095					Glacial sandy clay	Hard, "alkaline"		N	Well yields ½ barrel a day; tanks water for 16 head stock.
6	SE.	6	"	"	"	Drilled	275	2,105	- 50	2,055	275	1,830	Glacial drift	Hard, iron		D, S	Abundant supply for 80 head stock; several farmers tank from this well.
7	NW.	6	"	"	"	Bored	35	2,100	- 11	2,089	16	2,084	Glacial sand	Hard		D, S	Sufficient for 25 head stock.
8	SE.	7	"	"	"	Drilled	200	2,100	-100	2,000	200	1,900	Glacial gravel	Hard, iron		D, S	Well has never been pumped dry.
9	SE.	9	"	"	"	Bored	145	2,100					Glacial drift				Dry hole.
10	NE.	10	"	"	"	Drilled	98	2,045	- 2	2,043	98	1,947	Glacial fine sand	Hard, iron		D, S	Well has never been pumped dry.
11	SE.	10	"	"	"	Drilled	104	2,060	- 20	2,040	104	1,956	Glacial gravel	Hard, iron		S	Pumping cannot lower the water lever.
12	NW.	14	"	"	"	Bored	62	2,030	- 14	2,016	62	1,968	Glacial drift	Hard, iron, salty, "alkaline"		D, S	Sufficient for 35 head stock; analyst condemned the water.
13	NE.	14	"	"	"	Dug	23	2,030	- 21	2,009			Glacial drift	Hard, "alkaline"		N	Very small supply, and stock refuse the water; tanks water for stock.
14	NW.	16	"	"	"	Drilled	245	2,035	- 25	2,010	245	1,790	Glacial sand	Hard, iron, "alkaline"		D, S	Well has given an abundant supply, but is probably plugged with sand.
15	SE.	16	"	"	"	Drilled	111	2,045	- 46	1,999	111	1,934	Glacial gravel	Hard, iron		D, S	Abundant supply for 50 head stock.
16	NE.	17	"	"	"	Drilled	114	2,040	- 40	2,000	114	1,926	Glacial sand	Hard, "alkaline"		D, S	Well has never been pumped dry.
17	NW.	17	"	"	"	Drilled	217	2,045	- 30	2,015	210	1,835	Glacial fine sand	Hard, "alkaline"		D, S	Good supply, but the casing is being gradually filled with sand.
18	SE.	18	"	"	"	Dug	10	2,060	- 6	2,054			Glacial drift	Hard		D, S	Insufficient for 6 head stock.
19	NW.	18	"	"	"	Bored	20	2,050	- 4	2,046			Glacial drift	Hard		D	Sufficient for house use only; one abandoned 270-foot well; several dry holes to 80 feet.
20	SE.	20	"	"	"	Bored	60	2,025	- 20	2,005	20	2,005	Glacial sand	Hard, "alkaline"		N	Intermittent supply; farmer tanks all his water.
21	SW.	21	"	"	"	Bored	25	2,025	- 15	2,010			Glacial sand	Hard, iron, "alkaline"		D, S	Good supply for 15 head stock.
22	SE.	22	"	"	"	Dug	8	2,020	- 3	2,017	3	2,017	Glacial sand and gravel	Hard		D	Good supply; cannot be bailed dry.
23	SW.	22	"	"	"	Bored	49	2,015	- 18	1,997			Glacial drift	Hard, iron		D, S	Sufficient for 50 head stock.
24	NW.	23	"	"	"	Sand-Point	15	2,020	- 14	2,006	14	2,006	Glacial sand	Hard, "alkaline"		D, S	Good supply for 60 head stock.
25	SE.	23	"	"	"	Bored	73	2,040	- 16	2,024	73	1,967	Glacial gravel	Hard		S	Good supply for 25 head stock; hauls drinking water.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of SOUTH QU'APPELLE # 157 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	NE	17	18	16	2		150	2250	-88	2162	132	2118	Glacial gravel				No other information
	SE	15	17	16	2		50	2200	-12	2188	41	2159	" boulder clay	Fresh			" " "
	SE	19	16	16	2		40	2100	-37	2063	37	2063	" gravel	"			" " "
	SE	13	18	16	2		270	2250	-85	2160	267	1983	" sand				" " "

NOTE—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.