CANADA
DEPARTMENT OF MINES

HON. T. A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER

BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF WOLSELEY No. 155 SASKATCHEWAN

BY

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

Water Supply Paper No. 95

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GROUND WATER RESOURCES OF THE RURAL MUNICIPALITY OF WOLSELEY, NO. 155 SASKATCHEWAN

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.

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.

Pervious 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 Wolseley embraces an approximate area of 296 square miles in southeastern Saskatchewan. It consists of six full townships described as tps. 16 and 17, ranges 8, 9, and 10; three partial townships described as tps. 18, ranges 8, 9, and 10, and part of the fractional township 19A, and part of sec. 1, tp. 19, range 8, all W. 2nd mer. The main line of the Canadian Pacific railway crosses the centre of the municipality in an east-west direction and on it are located the village of Summerberry and the town of Wolseley. A branch line of the Canadian Pacific railway runs in a southeasterly direction from Wolseley.

Qu'Appelle river forms the northern boundary of the municipality and its valley is the main topographical feature in the area. This valley is approximately 1 mile wide and its floor is 350 feet to 400 feet below plain level. During the freshet season large volumes of water overflow the river banks in many places and it deposits sand, gravel, silt, and clay on the flood-plain. The accumulated thickness of this deposit is about 40 feet. The banks of the valley slope very steeply, and for a distance of 3 or 4 miles south of the valley the slightly undulating surface of the plain is broken by numerous gorge-like ravines which frequently contain intermittent streams. The two largest ravines contain Adair and Summerberry creeks. These ravines are also floored by Recent stream gravels and sands.

The elevation of the surface rises gradually from 1,900 feet at the top of the valley to approximately 1,960 feet along the Canadian Pacific railway. From the railway the elevation increases rapidly in a southerly direction, attaining 2,260 feet in the southwestern corner and over 2,200 feet near the southeastern corner. The greater part of the municipality is mantled by glacial till, but the southwestern and southeastern corners, and a small area in townships 17 and 18, range 8, are covered by moraine. The ground surface of these moraine-covered areas is very undulating and contains numerous, undrained depressions. To the east of Summerberry there is a flat area that marks the site of an old glacial lake. In this area glacial lake clays overlie the till, and the elevation of the lake basin is approximately 30 feet lower than the surrounding plain. The greater part of the municipality is fairly thickly wooded with poplar. Large, shallow, "alkaline" flats occur in the northern sections of township 16, ranges 9 and 10.

Water-bearing Horizons in the Unconsolidated Deposits

The glacial drift is extremely thick and is probably in excess of 350 feet everywhere in the municipality. It is largely composed of impervious blue clay, but the upper 20 to 40 feet consists of yellow, brown, or black clay. Every producing well that has been dug, bored, or drilled in this municipality derives its water from an aquifer in the glacial drift or Recent alluvium. The deepest well in the municipality is 382 feet and it is located in the NE.$\frac{1}{4}$, sec. 29, tp. 16, range 10. Water-bearing horizons of sand or gravel occur within the glacial drift except in the area outlined by the "A" boundary line on the map.

The uppermost water-bearing horizon is located within 50 feet of the surface and is composed of sand or gravel that usually underlies the yellow, red, brown, or black clays. In some areas, however, a strip of blue clay 5 to 20 feet thick underlies the lighter clays and overlies the sand and gravel. The supply of water derived from this water-bearing horizon is extremely variable, but there are districts in the municipality in which fairly abundant supplies of water can be obtained from it. These districts are: the greater part of the southeastern half of township 17, range 9; the southern 2 mile strip of township 17, range 8, all of the glacial till-covered area in the southern

6-mile strip of the municipality and the floors of ravines and Qu'Appelle valley. Practically every well in the districts enumerated is less than 50 feet deep. The drought of 1930 to 1934 depleted the supply of water from these wells, but only a few wells yielded an insufficient supply of water to meet the farmer's requirements. In general, an individual well will water 40 head of stock regardless of the seasonal rainfall. The water is hard and slightly mineralized, but is suitable for drinking. In many places the water is under slight pressure, especially where the aquifer is overlain by a layer of impervious, blue clay. The floors of ravines and valleys are always suitable places for digging wells, since the deposits of stream sands and gravels contain large supplies of water. Springs are commonly found in the ravines and at the base of the banks of Qu'Appelle valley. The best spring encountered by the field party was located in the SE.$\frac{1}{4}$, sec. 22, tp. 18, range 10. This spring delivers 30 gallons of water a minute. In the moraine-covered areas in the southern 6-mile strip of the municipality, in townships 17 and 18, range 10; in the northwestern half of township 17, range 9, and in the northern 4 miles of township 17, range 8, it is quite difficult to locate a permanent supply of water within 50 feet of the surface. In these areas the water supply is being obtained at depths greater than 50 feet below the surface.

Two aquifers appear to have been tapped by bored and drilled wells in the northern 4 miles of township 17, range 8; the northwestern half of township 17, range 9, and in townships 17 and 18, range 10. These aquifers occur at approximate elevations of 1,840 and 1,720 feet above sea-level. These two water-bearing horizons are more continuous in township 17, range 9, where the first horizon is usually composed of sand and the second of gravel. In the northern 4 miles of township 17, range 8, a permanent supply of water is assured by drilling to depths of less than 150 feet, and in the northwestern half of township 17, range 9, a permanent supply of water can be obtained at depths of slightly less than 200 to 225 feet. In townships 17 and 18, range 10, the first water-bearing horizon at an elevation of approximately 1,840 feet becomes less continuous and is apparently in the form of pockets, since several dry holes have been bored to an elevation below that of the horizon. No great difficulty is experienced, however, in striking the second horizon at an elevation of approximately 1,720 feet.

In the moraine-covered district in the southwestern corner of the municipality a general water-bearing horizon occurs at an elevation ranging from 2,000 to 2,080 feet above sea-level. It has been tapped by a flowing artesian well located in the SE.$\frac{1}{4}$, sec. 10, tp. 16, range 10, as well as by many other wells to the north.

The water from all these bored and drilled wells is hard and mineralized, and the water from the deeper wells usually contains iron. The degree of mineralization of the water is extremely variable even in wells that have tapped the same water-bearing horizon, but as a rule farmers use the water for drinking as well as for stock. The water in all the wells is under pressure and the drought of 1930 to 1934 affected the supply very slightly or not at all. Many of the wells have never been pumped dry. In the area outlined by the "A" boundary line on the accompanying map, it is almost impossible to obtain any large quantity of water. In this entire area there are not more than six wells that deliver a moderate supply of water and they are located in the floors of ravines. The farmers depend entirely on dugouts, dams, and Qu'Appelle river for a water supply. Numerous dry holes have been dug, bored, and drilled in an attempt to obtain water. Sand or gravel beds are occasionally encountered, but in almost every instance they do not contain water. Drinking water is usually obtained from shallow seepage wells dug beside depressions.

The village of Summerberry is obtaining an adequate supply of water from shallow wells, but the town of Wolseley has no satisfactory source of water and much of the water needed is tanked from two wells located to the northwest of the town.

With the exception of townships 18 and 19A, range 8, and township 18, range 9, it is believed that a permanent supply of mineralized water that is suitable for stock and usually for drinking, can be obtained by drilling to depths of less than 300 feet below the surface.

Water-bearing Horizons in the Bedrock

Throughout the municipality the glacial drift is believed to be underlain by the Marine Shale series. There is not a single well in the municipality that has encountered the bedrock, although several wells have been drilled to depths ranging from 300 feet to 382 feet below the surface. There are no outcrops of shale in Qu'Appelle valley and the valley floor is at an elevation of approximately 1,550 feet above sea-level. Only in a few places has usable water been obtained from an aquifer in the Marine Shale. The water when obtained at depth is always too highly mineralized to be used for any farm purpose. It is not advisable, therefore, to drill into the shales.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 16, Range 8

The elevation of this township decreases gradually from 2,215 feet in the southwestern corner to a little less than 2,000 feet in the northeastern corner. The greater part of the township is mantled by a moraine that is part of the Moose Mountain terminal moraine. The northeastern and northern parts of the township are covered by glacial till. The ground surface of the area covered by the glacial moraine is very undulating and is characterized by numerous, large, undrained depressions. This is particularly true in the southwestern part of the township. The largest lake, located in sections 9 and 16, has been known to contain 20 feet of water, but in 1934 it held only 6 feet of water, and all other lakes and sloughs were completely dry. The moraine-covered district is thickly wooded with poplar and very little of the land in sections 5, 6, 7, 8, 9, 16, 17, 18, 19, and 20 is under cultivation. The ground surface of the glacial till-covered area is slightly undulating. This area and the lower slopes of the moraine-covered district are broken by many small ravines. The largest ravine passes through sections 1, 12, 24, 23, 26, and 35 and it contains water in the spring of the year only. Numerous springs occur along the banks of these ravines.

The thickness of the glacial drift is not known, but it is probably at least 400 feet. The deepest well in the township is 110 feet deep, and is located in the NE.$\frac{1}{4}$, section 4.

In the till-covered area, water is being obtained at depths ranging from 12 to 42 feet. The sand and gravel aquifer usually lies beneath a deposit of yellow clay, but in many of the deeper wells a strip of blue clay separates the yellow clay from the aquifer. The water is generally under slight pressure, probably owing to the fact that the sand and gravel layer extends into high land to the southwest. The water is hard, slightly mineralized, and suitable for drinking. An individual well will water 40 head of stock even in prolonged drought periods.

In the moraine-covered area, most of the wells have been bored to depths ranging from 40 to 110 feet below the surface. The sands and gravels forming these aquifers have apparently been deposited as pockets rather than in a continuous layer, since a number of dry holes have been made to a maximum depth of 110 feet in this part of the township. The supply of water obtained from the sand and gravel pockets is quite variable. For instance, a bored well 80 feet deep in the SE.$\frac{1}{4}$, section 4, yields an intermittent supply of water, whereas an 85-foot well in the NE.$\frac{1}{4}$, section 9, yields an abundant quantity of water that rises to a point 65 feet below the surface. The size of the sand or gravel pocket tapped has a direct influence on the amount of water obtained. The drought years of 1930 to 1934 affected the supply of water from these wells, but it was sufficient for local needs. The water from these bored wells is hard and usually too highly mineralized to be suitable for drinking.

Of the thirty-two farmers interviewed in the township, only eight were forced to tank water during the drought. In years of average rainfall there would be an abundant quantity of surface water in small lakes and sloughs that could be utilized for stock purposes. Many farmers in the eastern half of the township, have built small dams in ravines traversing their property. The largest of these is located in the SE.$\frac{1}{4}$, section 12, where the farmer has constructed a dam that will store a body of water 15 feet deep from which stock are watered throughout the year. A 5-foot artesian well is located in a slight depression in the NW.$\frac{1}{4}$, section 14. The water is hard, has a low mineral content, and the supply is abundant.

No attempts have been made to obtain water at depths exceeding 110 feet, but it is probable that water could be obtained at greater depths. Dugouts, or dams, are recommended as means of storing a supply of slightly mineralized water for stock use.

Township 16, Range 9

The southwestern corner and most of the eastern half of this township are mantled by part of a large moraine. The remainder of the township is covered by glacial till. The ground surface of the moraine-covered areas is rolling, thickly wooded with poplar, and contains numerous, undrained depressions. The largest of these is located in section 1, and covers an area of approximately 150 acres. In exceptionally wet seasons it holds 16 feet of water, but it was dry during 1933 and 1934. In the northern 2 miles of the township, the till-covered area is flat, devoid of tree growth, and is characterized by large, shallow, "alkali" flats, but in the southern part it is undulating and the ground surface is broken by small ravines.

Of the forty-five farmers interviewed in this township, nine were forced to haul water for stock during the drought, and eight of these farmers are located in the moraine-covered area in the eastern part of the township. All the wells in the township have been dug or bored to depths ranging from 10 to 135 feet below the surface. Within this range there seems to be two fairly general water-bearing horizons. The log of a 60-foot well, located in the SE.$\frac{1}{4}$, section 4, is characteristic of the materials penetrated by wells in this township. This well was bored through 15 feet of yellow clay, 2 feet of sand, 42 feet of blue clay, and 1 foot or more of sand. The first sand layer is absent in places, but many wells have tapped it in the township and the supply of water obtained, although dependant upon the amount of rainfall, is fairly abundant. The water is hard, slightly mineralized, and is suitable for drinking. The thickness of the second sand or gravel bed is not known, as when the aquifer is tapped the water rises under pressure in the well and the well is not further deepened. The supply of water is abundant and there are many wells that have never been pumped dry, although the drought slightly lowered the water level. The water is more highly mineralized than that from the first sand layer due to the overlying deposit of blue clay from which the mineral salts are derived, but it is being used for drinking.

Farmers located in the till-covered area, experience little difficulty in obtaining water from wells, but in the moraine-covered areas the sand and gravel have apparently been deposited in pockets and several unsuccessful attempts are often made before an aquifer is located. For instance, a farmer in the SE.$\frac{1}{4}$, section 1, has bored ten dry holes that are 75 to 110 feet deep and he is still without a permanent supply of water; whereas his neighbour on the NE.$\frac{1}{4}$, section 2, obtained an abundant supply of water in a sand aquifer at a depth of 40 feet below the surface. Again, on the NE.$\frac{1}{4}$, section 26, there have been seventeen dry holes bored from 50 to 111 feet deep. However, when a sand or gravel pocket is tapped in the moraine-covered area, the quantity of water derived is very abundant. In years of average rainfall the numerous, undrained depressions hold much surface water. Dugouts could be excavated in this district, since the topography is favourable and the surface water is much better for stock than the mineralized water from the deeper wells.

Flowing artesian wells occur in the northwestern part of the township. They encounter an aquifer composed of gravel at an elevation of 1,980 feet above sea-level. The water is not under great pressure and barely rises above the land surface. Two non-flowing artesian wells in the NW.$\frac{1}{4}$, section 19, and the NW.$\frac{1}{4}$, section 20, apparently strike the same aquifer and the water in both wells rises to a point 10 feet below the surface.

There are no deep drilled wells in the township, hence definite possibilities of striking water at depth are not known. Information obtained from the logs of wells in adjoining townships shows that the glacial drift in this area is at least 350 feet thick. It is probable that sand or gravel water-bearing horizons occur at depth in the blue clay which forms a large part of the glacial drift.

The glacial drift is underlain by Marine Shale and it is inadvisable to drill into this shale in an effort to obtain usable water.

Township 16, Range 10

The elevation of the ground surface decreases gradually from 2,285 feet in the southwestern corner to 2,000 feet in the northeastern corner of the township. Part of a glacial moraine covers the southwestern four-fifths of the township and the remaining northern portion is mantled with glacial till. Numerous coulees drain the moraine-covered district. The largest of these passes through sections 2, 11, 14, 23, 26, and 35, and is occupied by a small, intermittent tributary of Adair creek. The ground surface of the moraine-covered district is rolling and contains many sloughs and draws, whereas the ground surface of the glacial till-covered district is quite flat. Large, shallow, "alkaline" sloughs occur in sections 25, 26, 35, and 36. The moraine-covered district is wooded with poplar, the growth becoming more dense in the western 2 miles of the township.

Three general water-bearing horizons have been tapped by wells in this township. The uppermost water-bearing horizon consists of pockets of sand or gravel that lie beneath a deposit of yellow clay. These sand and gravel pockets are tapped by hand-dug wells and the supply of water obtained is very variable. Shallow wells dug in ravines obtain abundant supplies of water that are not easily depleted by drought conditions. A good example of this type of well is located in a draw in the NE.$\frac{1}{4}$, section 1. This well is 9 feet deep and in years of average rainfall the water overflows the casing. The drought lowered the water level, but the quantity is oversufficient for 50 head of stock. The shallow wells that are dug on the plain, and which tap the first water-bearing horizon within 25 feet of the surface, are dependant upon the amount of rainfall for their supply. This type of well is common in the southwestern and western sections of the township and consequently this area was very short of water during the drought. Nine farmers in this part of the township have been forced to tank water and this district is the only one in the township where the well water supply is considered poor.

The second water-bearing horizon is usually tapped by bored wells and its extent seems to be fairly general over the township. It lies at an elevation ranging from 2,000 feet to 2,080 feet above sea-level; the depth of the wells tapping this horizon depends upon the elevation of the ground surface, and in the highland in the southwestern quarter of the township wells must be approximately 200 feet deep. The artesian well in the SE.$\frac{1}{4}$, section 10, tapped this aquifer at an elevation of 2,006 feet or at a depth of 194 feet, whereas a well in the NW.$\frac{1}{4}$, section 22, tapped it at an elevation of 2,010 feet, or at a depth of 70 feet. The water from this horizon is under great pressure, and the supply is affected very slightly by prolonged drought periods. The water is hard and mineralized, but it can be used for drinking. Those farmers in the southwestern and western parts of the township who are short of water are advised to drill to this water-bearing horizon for a permanent supply. Many dry holes have been dug and bored to depths of 75 and 85 feet in this district, but they were not deep enough as the elevation of the ground surface in this area is comparatively high.

The third water-bearing horizon has been tapped by one well located in the NE.$\frac{1}{4}$, section 29. It tapped a sand bed at a depth of 382 feet, or at an elevation of 1,743 feet. The water rises to a point 175 feet below the surface and this level has remained constant since 1922, regardless of rainfall conditions. The water is hard, "alkaline", and contains iron, but is being used for drinking. The aquifer of this well is in the glacial drift, so that the drift is very thick in this locality. The material penetrated is largely composed of blue clay and it probably extends to the underlying bedrock or Marine Shale series. It is probable that the base of the 382-foot well is quite close to the surface of the shale, and farmers are advised to refrain from drilling into the bedrock since the shale does not contain suitable water-bearing horizons.

Farmers are advised to bore or drill to the second water-bearing horizon in the glacial drift to obtain a permanent supply of water.

Many of the small coulées offer favourable locations for the construction of dams, and the impervious subsoil throughout the township is suitable for the excavation of dugouts. These two methods of retaining a supply of surface water for stock use are recommended in this township.

Township 17, Range 8

The elevation in this township decreases rapidly from 2,100 feet at the southern boundary to approximately 1,940 feet at the Canadian Pacific railway. To the north of the railway the elevation is fairly constant at 1,940 feet, but it increases to 1,960 feet in the northeastern corner of the township. East of the village of Summerberry a flat, basin-like area marks the site of an old glacial lake. This area is mantled by glacial lake clays and the top soil is blacker and heavier than that of the surrounding area that is covered by glacial till. A small area in the northeastern corner is overlain by part of a moraine. With the exception of the flat lake bed, the remainder of the township is gently undulating.

A fairly abundant supply of water can be obtained in this township. In the southern 2 miles of the township the majority of the wells are from 12 to 40 feet in depth and only four of them yield an insufficient supply of water. In general, the individual wells will water 25 head of stock, even during drought periods. One of the better wells in this area is a 16-foot well dug in the NW.$\frac{1}{4}$, section 10. This well was used by the Canadian Pacific railway until 1915. The aquifer is gravel and the water rises under pressure to a point 8 feet below the surface. Several farmers tank from this well and although the drought of 1930-1934 lowered the water-level, the supply is still very abundant. The water is typical of the shallow well water in this township, being hard and "alkaline", but it is used for drinking. The village of Summerberry derives its water supply from a number of shallow wells dug to depths ranging from 15 feet to 30 feet below the surface.

In the northern 4 miles of the township most of the wells have been bored to depths ranging from 60 feet to 135 feet below the surface. In this area a fairly general water-bearing horizon appears to be present at an elevation ranging from 1,750 feet to 1,850 feet above sea-level. The aquifer is generally a fine sand, but a few wells have struck gravel. The water is under hydrostatic pressure and it is hard and rather highly mineralized. In most cases farmers are using it for drinking, although it acts as a laxative upon those unaccustomed to its use. The supply is abundant and the wells were only slightly affected by the drought of 1930 to 1934. The few farmers who depend upon shallow wells for stock in this area are advised that bored or drilled wells to a depth of approximately 125 feet below the surface are almost certain to encounter a permanent supply of water.

The deepest well in the township was drilled to a depth of 170 feet below the surface in the NW.$\frac{1}{4}$, section 29. The material usually encountered in making a well in this township in descending order is 10 to 40 feet of yellow-grey or white clay, a thin sand or gravel layer, and blue clay which occasionally contains thin layers of "hardpan" and sand or gravel. The total thickness of the glacial drift is not definitely known, but it is quite probable that it is in excess of 350 feet.

Many farmers in this township use dugouts as a source of water for stock, even though abundant quantities of mineralized water can be obtained by boring or drilling. The dugouts are more convenient and the surface water is better for stock than the highly mineralized water from the deep wells.

Township 17, Range 9

The entire township is a slightly undulating plain that is mantled by glacial till. There is a gradual decrease in elevation of approximately 80 feet from the southern border to the northern limit of the township. A shallow coulée traverses the southeastern corner and another small coulée passes through sections 26, 35, and 36 in the northeastern corner. A fairly dense growth of poplar trees occurs in the northwestern quarter of the township.

The glacial drift is very thick and is thought to be in excess of 350 or even 400 feet. The deepest well, 260 feet, in the NE.$\frac{1}{4}$, section 32, is deriving its water supply from the glacial drift. A pre-glacial stream valley, 15 to 20 miles wide, appears to follow very closely the present valley of Qu'Appelle river. It is quite probable that the deep, drilled wells located in the northern part of this township have encountered sand or gravel beds that lie within the debris in this buried stream channel.

This township is well supplied with water. Only six of the forty-six farmers interviewed by the field party were unable to obtain a sufficient supply of water on their own land. In the southeastern part of the township, or in sections 1 to 15 inclusive, and the southern halves of sections 22, 23, and 24, practically all the wells are less than 48 feet deep. Farmers experience little difficulty in striking water-bearing sands or gravels within this depth. The sand or gravel usually underlies a deposit of yellow or red clay and a thin strip of blue clay, and the water obtained is hard and fairly highly mineralized. It is being used for drinking and an individual well will generally water 25 to 40 head of stock regardless of the seasonal rainfall. An abundant supply of water can be readily obtained by wells dug in the floor of the shallow coulée traversing the southeastern corner of the township. Springs are also in evidence along this coulée and farmers living adjacent to it have built small dams for conserving the spring run-off water for stock purposes. In the western and northern parts of the township there are very few shallow wells that produce a permanent supply of water. Evidently the beds of sand or gravel within the upper 50 feet of the drift in the southeastern sections do not extend northwards. Farmers in the north and western sections are forced to bore or drill for a permanent supply of water. In this area there are two distinct water-bearing horizons that have been tapped by wells. The uppermost water-bearing horizon consists of a bed of fine sand and less often gravel at an approximate elevation of 1,840 feet above sea-level. Wells that have tapped this aquifer are located in the NE.$\frac{1}{4}$, section 13; NW.$\frac{1}{4}$, section 16; SW.$\frac{1}{4}$ and NW.$\frac{1}{4}$, section 17; NE.$\frac{1}{4}$, section 23; SE.$\frac{1}{4}$, section 24; SW.$\frac{1}{4}$, section 27; and the SE.$\frac{1}{4}$, section 29. The second water-bearing horizon consists of a bed of gravel at an approximate elevation of 1,720 feet above sea-level. Wells that have tapped this aquifer are located in the SW.$\frac{1}{4}$, section 7; SW.$\frac{1}{4}$, section 20; NE.$\frac{1}{4}$, section 26; SW.$\frac{1}{4}$, section 28; SW.$\frac{1}{4}$, section 29; and the SE. and NE.$\frac{1}{4}$, section 30. It is interesting to note that the first water-bearing horizon, consisting of fine sand, is struck in a 117-foot well in the SE.$\frac{1}{4}$, section 29, and the second water-bearing horizon, consisting of gravel, is struck in a 250-foot well in the SW.$\frac{1}{4}$, section 29, thereby clearly revealing the presence of the two separate aquifers. The water from both aquifers is under pressure; it is hard and highly mineralized and farmers describe it as being hard, "alkaline", and containing iron. The supply is abundant and was unaffected by the prolonged drought of 1930 to 1934. It is believed that both these aquifers occur in the glacial drift that fills the buried pre-glacial stream valley. A material locally termed "sea-mud" was encountered in a 164-foot well in the NW.$\frac{1}{4}$, section 16. It occurs at a depth of 85 feet below the surface and is probably peaty material of interglacial age. A similar material was found in a bored well in the municipality of Indian Head, immediately to the west of this municipality. It is interesting to note that in the two localities this material was encountered at the same depth below the surface, namely 85 feet, and at the same elevation above sea-level, 1,900 feet.

Township 17, Range 10

This township is a gently undulating plain and the elevation decreases in a southwest to northeast direction. The eastern part of the township is broken by two ravines which trend in a northerly direction towards Qu'Appelle valley. One of these ravines contains the intermittent stream Adair creek and the other contains a tributary stream that joins Adair creek in section 36. At the confluence of the two streams the ravine widens and becomes approximately 150 feet to 175 feet deep. Scattered clumps of poplar occur over the township and they become more dense in the north-central and eastern sections.

With the exception of the floor of the gorge-like ravine, which is covered by Recent stream gravels and sand, the entire township is covered by glacial till. The glacial deposit is very thick and in places is probably in excess of 350 feet. This drift mantle is usually composed of an upper part, approximately 20 feet thick, of yellow or red clay containing boulders and a lower part, 200 to over 300 feet thick, consisting of black, brown, or blue clay containing layers of sand and gravel. The gravel layers are usually not more than 5 feet thick, but beds of sand 40 feet thick have been encountered.

The supply of ground water obtained from the glacial drift in this township is variable. Farmers experience considerable difficulty in striking a suitable water-bearing horizon by hand-digging methods within 50 feet of the surface. Only seven wells in the township, less than 50 feet deep, yielded a satisfactory supply of water during the drought of 1930 to 1934. The sand and gravel apparently occur in pockets rather than in a continuous layer and the extent and thickness of the pocket has a direct influence on the amount of water obtained in an individual well. Nine farmers in the township were forced to tank water during the drought of 1930 to 1934, as their shallow wells did not yield sufficient water for stock requirements.

The two water-bearing horizons referred to in the description of township 17, range 9, appear to extend into this township. The uppermost horizon in this township, however, consists of pockets of sand rather than a continuous layer. This is shown by the logs of two wells. A 108-foot well in the NW.$\frac{1}{4}$, section 20, located the sand at an elevation of 1,862 feet and the abundant quantity of water obtained is not readily affected by drought conditions. The water rises to a point 8 feet below the surface. In the NE.$\frac{1}{4}$, section 22, however, a hole 120 feet deep was dry, and the base of the hole was at an elevation of 1,840 feet.

Three wells in the township have been drilled to the second water-bearing horizon. They are located in the SW.$\frac{1}{4}$, section 12; the SW.$\frac{1}{4}$, section 24; and the SE.$\frac{1}{4}$, section 28, and they are 180, 200, and 215 feet deep, respectively. The abundant supply of water yielded by these three wells is under a hydrostatic pressure and rises to points 60, 165, and 100 feet below the surface, respectively. The quality of the water is the same in all three wells. It was described as being hard and containing iron, but not "alkaline", and it is suitable for drinking purposes.

It is suggested in drilling a well in this township that if a satisfactory supply of water is not located at the level where the first water-bearing horizon generally lies, namely 100 to 150 feet below the surface, the drilling be continued to the second water-bearing horizon where abundant supplies of hard and not too highly mineralized water will almost certainly be obtained. Many dry holes and wells that yield intermittent supplies have been bored to depths of 120 feet or less below the surface, but no dry holes have been drilled beyond the second water-bearing horizon.

The town of Wolseley has been unable to secure a satisfactory supply of drinkable water. Abundant supplies of highly mineralized water can be located at a depth of 85 feet below the surface, and numerous wells that yield small and unsatisfactory supplies of water have been dug and bored to depths ranging from 20 feet to 65 feet below the surface. Much of the water for the town is obtained from wells in the SW.$\frac{1}{4}$, sec. 15, and the NW.$\frac{1}{4}$, sec. 20 at depths of 90 and 108 feet, respectively. If deep drilling here has not already been tried this should be done to test the water possibilities of the two deeper water horizons known to exist elsewhere in this township.

Township 18, Range 8

Only the part of this township that lies to the southeast of Qu'Appelle river is discussed in this report. Qu'Appelle valley is approximately 1 mile wide and the floor of the valley lies at an approximate elevation of 1,550 feet above sea-level. The south banks of the valley rise abruptly to the plain which has an elevation of 1,920 feet. Numerous, deep, short ravines or gullies interrupt the slightly undulating plain surface immediately to the south of the valley. The two largest ravines, one of them containing Summerberry creek, are about 3 miles in length and are located in the western part of the township.

The flood-plains of Qu'Appelle river and the two deep ravines are floored by Recent stream deposits of silts, sands, and gravels. A portion of the southeastern quarter of the township is covered by part of a moraine and the ground surface is slightly more undulating in this district than it is in the remainder of the township which is covered with glacial till. With the exception of the floor of Qu'Appelle valley and the southern 2 miles of the township the ground surface is thickly wooded with poplar.

The ground water conditions of this township are extremely poor. There are only two wells, located in the SE.$\frac{1}{4}$, section 2, and the NW.$\frac{1}{4}$, section 20, that deliver a sufficient supply of water for the farmer's requirements and they have both been dug in ravines. The glacial deposit to a depth of 350 feet does not contain water-bearing horizons; numerous wells have been dug, bored, and drilled to a minimum elevation of 1,590 feet above sea-level without obtaining a permanent supply of water. In some wells small beds of sand are occasionally found in the glacial drift, but almost invariably the sand does not contain water. A well, 327 feet deep, drilled in the NW.$\frac{1}{4}$, section 16, struck a 25-foot bed of dry sand at a depth of 300 feet below the surface, and a 110-foot well in the SE.$\frac{1}{4}$, section 36, also struck a very fine sand that did not contain water. A well, 50 feet deep in the SE.$\frac{1}{4}$, section 14, struck a small lens of water-bearing sand, but the water was too highly mineralized to be used for any farm purpose. Farmers have abandoned the hope of obtaining a permanent supply of well water in this township and depend entirely on dams, dugouts, and small springs in ravines as a source of water for stock. Each farmer usually possesses a shallow seepage well dug beside a slough or in a draw, that yields a sufficient supply of water for domestic purposes. Farmers who do not have dams or large dugouts are forced to tank water for their stock during the summer and either haul water or melt snow during the winter. The Provincial Government has constructed a dam on Summerberry creek in the SW.$\frac{1}{4}$, section 9, and the water retained by this dam is used by many farmers. It is indeed strange that so thick a deposit of glacial drift found in this district does not contain a single water-bearing horizon either at depth or close to the ground surface, but practical experience has proved that this is true. This may be due in part at least to the fact that Qu'Appelle River channel is below the water horizon. The area in which poor ground water conditions exist extends eastward into the municipality of Elcapo.

Marine shale probably underlies the glacial drift throughout the township, but the contact of the drift and bedrock was not encountered. The contact, however, is below 350 feet of the surface. It is inadvisable to drill into the shale in a search for water. Since a supply of water cannot be obtained in wells in this township, farmers are advised to continue the excavating of deep dugouts or the construction of small dams to retain a supply of surface water for stock use.

Township 18, Range 9

Qu'Appelle river, which forms the northern boundary of the municipality, meanders in an easterly direction through the centre of this township. Only the part of the township lying to the south of the river is discussed in this report. Numerous, deep, short gullies break the gently rolling ground surface of the glacial till-covered plain that occurs to the south of the river. These gullies drain the surface water in the freshet season from the plains to Qu'Appelle river. The deepest ravine passes through sections 6, 7, and 18 and it contains a small, intermittent stream, Adair creek. The slopes of the ravines and the south bank of Qu'Appelle valley are thickly wooded with poplar and alders, but the floor of Qu'Appelle valley and the plain are devoid of any tree growth.

The ground water conditions of this township are identical with those of township 18, range 8. Water in any substantial quantities can be located only in the Recent deposits of stream sands or gravels that occur on the floors of ravines of Qu'Appelle valley. The deepest hole made in an attempt to locate water was in the NW.$\frac{1}{4}$, section 1, where a well was bored 90 feet deep without striking a water-bearing horizon. It is extremely doubtful if water can be obtained by boring or drilling to any depth in the glacial drift in this township. In view of the numerous unsuccessful attempts made in the township immediately east it is inadvisable for farmers to endeavour to secure a permanent supply of well water in this township. Every effort should be confined to the construction of small rock-filled dams in ravines and to the excavation of deep dugouts in suitable depressions.

At the present time farmers depend almost entirely on these artificial means of collecting and storing surface water.

Farmers who own small dugouts that will not hold water over the winter months are forced to tank water or melt snow for stock purposes. Shallow seepage wells, dug near sloughs or in small coulées, usually supply sufficient water for domestic needs.

Springs are quite numerous along the banks of Qu'Appelle valley and along Adair creek and farmers use them for stock and drinking, the water being hard and only slightly mineralized. Fairly abundant supplies of hard slightly "alkaline" water are obtained in wells less than 30 feet deep on the flood-plain of Qu'Appelle river.

Township 18, Range 10

Only the part of the township that lies to the south of Qu'Appelle river is discussed in this report. The elevation decreases from 1,950 feet along the southern boundary to 1,850 feet at the river valley, and then decreases abruptly to 1,550 feet at the river level. Numerous, short, deep ravines break the gently rolling surface of the plain in the vicinity of the river. The flood-plain of Qu'Appelle river is covered by Recent deposits of silts, sands, and gravels, and the plain is mantled by boulder clay or glacial till. The slopes of the valleys are thickly wooded with poplar.

Unlike township 18, ranges 8 and 9, water-bearing horizons of sand or gravel do occur in the thick deposit of glacial drift in this township. Shallow dug wells less than 40 feet deep do not yield a permanent supply of water and are easily affected by drought conditions. Those wells that have been dug in the floors of ravines and Qu'Appelle valley obtain fairly abundant supplies of slightly mineralized water within 30 feet of the surface. The two water-bearing horizons that appear to occur throughout the three central townships of the municipality extend into this township. The upper water-bearing horizon is not so clearly defined as the second, but wells that have tapped it at an approximate elevation of 1,840 feet are located in the SW.¼, section 4, and the NW.¼, section 18, but it is to be noted that a 300-foot dry hole in the SW.¼, section 20, and a 140-foot dry hole in the SW.¼, section 22, failed to strike the aquifer. The water is hard and fairly highly mineralized and the hydrostatic pressure raises the water to points 22 to 68 feet below the surface in the wells on section 4 and 18.

The second water-bearing horizon, located at an approximate elevation of 1,720 feet above sea-level, has been tapped by wells in the NW.¼, section 2, NW.¼, section 16, and the NW.¼, section 18. It is to be noted that both the first and second water-bearing horizons were struck in different wells on the NW.¼, section 18. The water from the second water-bearing horizon is described as hard, containing iron, and not "alkaline" and it can be used for drinking. The water is under pressure and the abundant supply was not decreased by the drought of 1930 to 1934.

A third water-bearing horizon has apparently been encountered at a depth of 350 feet by a well drilled in the SW.¼, section 21. The aquifer is a very fine sand located at an elevation of 1,520 feet above sea-level, and an abundant supply of water was obtained. Unfortunately the fine sand plugged the well casing and rendered the well useless. This is the deepest well in the township and it gives a rough indication of the thickness of the glacial drift in this locality.

Eight farmers in the township depend entirely on dams, dugouts, or Qu'Appelle river for a supply of water for stock. If the dams or dugouts do not hold water throughout the autumn and winter months water must be hauled or snow melted for stock use. These farmers have shallow seepage wells that yield a sufficient supply for domestic use. Should finances permit the drilling of deep wells in these localities, an abundant supply can probably be obtained. The second water-bearing horizon occurs at an elevation of 1,720 feet and appears to be the best horizon to drill to, as the water from it is not too highly mineralized. A spring located on the SE.$\frac{1}{4}$, section 22, delivers 30 gallons of water a minute.

Township 19A, Range 8

Only sections 1, 2, and 12 and parts of sections 3 and 11 of this fractional township occur in this municipality and are discussed in this report. Over one-half of this small area is occupied by Qu'Appelle valley. The floor of the valley is mantled by Recent deposits of silts, sand, and gravel, whereas the slopes of the valley and the plain are covered by glacial till. The area is thickly wooded with poplar.

Three farmers were interviewed in this small area, two of whom use wells, 16 and 20 feet deep, that have been dug in the floor of the valley. A good supply of hard, slightly mineralized but drinkable water is obtained from these wells. These farmers also use Qu'Appelle river for watering stock and they have sufficient water on their farms to meet local requirements. The farmer in the SE.$\frac{1}{4}$, section 1, has dug, bored, and drilled sixty-six dry holes ranging from 10 feet to 250 feet in depth. Blue clay comprised the bulk of the material penetrated in these wells, but a non-water-bearing bed of gravel was located at approximately 180 feet below the surface. This farmer uses a dugout for stock purposes and when it becomes dry, water for both house and stock use is hauled, or snow is melted. It is inadvisable to spend money on further drilling operations in section 1, as it lies within an area in which no water-bearing horizons have been located above an elevation of 1,600 feet above sea-level.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF WOLSELEY, NO. 155, SASKATCHEWAN

West of 2nd meridian — Township / Range	16 / 8	16 / 9	16 / 10	17 / 8	17 / 9	17 / 10	18 / 8	18 / 9	18 / 10	19A / 8	Total No. in Municipality
Total No. of Wells in Township	132	136	125	84	80	87	89	32	75	71	911
No. of wells in bedrock	0	0	0	0	0	0	0	0	0	0	0
No. of wells in glacial drift	132	136	125	84	80	87	86	12	74	67	883
No. of wells in alluvium	0	0	0	0	0	0	3	20	1	4	28
Permanency of Water Supply											
No. with permanent supply	76	57	69	62	49	50	18	29	34	4	448
No. with intermittent supply	3	3	4	10	3	3	24	1	6	1	58
No. dry holes	53	76	52	12	28	34	47	2	35	66	405
Types of Wells											
No. of flowing artesian wells	1	3	2	0	0	0	0	0	0	0	6
No. of non-flowing artesian wells	19	20	17	26	31	14	0	0	10	0	137
No. of non-artesian wells	59	37	54	46	21	39	42	30	30	5	363
Quality of Water											
No. with hard water	78	58	69	69	52	53	42	28	36	5	490
No. with soft water	1	2	4	3	0	0	0	2	4	0	16
No. with salty water	0	0	0	0	0	0	0	0	0	0	0
No. with "alkaline" water	9	12	9	27	26	11	16	3	3	2	118
Depths of wells											
No. from 0 to 50 feet deep	99	79	102	63	42	43	65	28	43	44	608
No. from 51 to 100 feet deep	27	46	17	12	21	39	15	4	23	10	214
No. from 101 to 150 feet deep	6	11	4	8	7	2	5	0	3	10	56
No. from 151 to 200 feet deep	0	0	1	1	4	2	1	0	3	5	17
No. from 201 to 500 feet deep	0	0	1	0	6	1	3	0	3	2	16
No. from 501 to 1,000 feet deep	0	0	0	0	0	0	0	0	0	0	0
No. over 1,000 feet deep	0	0	0	0	0	0	0	0	0	0	0
How the Water is used											
No. usable for domestic purposes	71	53	64	50	46	42	39	27	37	5	434
No. not usable for domestic purposes	8	7	9	22	6	11	3	3	3	0	72
No. usable for stock	72	58	70	71	50	47	40	29	37	5	479
No. not usable for stock	7	2	3	1	2	6	2	1	3	0	27
Sufficiency of Water Supply											
No. sufficient for domestic needs	76	56	67	62	49	50	18	29	32	4	443
No. insufficient for domestic needs	3	4	6	10	3	3	24	1	8	1	63
No. sufficient for stock needs	72	51	52	49	43	36	11	24	25	4	367
No. insufficient for stock needs	7	9	21	23	9	17	31	6	15	1	139

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 Wolseley, No. 155, Saskatchewan.

No.	LOCATION					Depth of Well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS									Source of Water
	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	$CaCl_2$	
1	NE.	4	16	8	2	110	2,683										2,683									x 1
2	NE.	7	17	8	2	23	1,766										1,766	(4)	(1)		(2)		(3)		(5)	x 1
3	SW.	27	17	9	2	124	2,380	1,600	1500	100	46	175	200	256	1357	408	2,107	175	248		763		845	76		x 1
4	SW.	15	17	10	2	90	1,483										1,483	(4)	(1)		(2)		(3)		(5)	x 1
5	SE.	22	18	10	2	Spring	1,860	850	800	50	46	145	80	155	1107	517	1,775	143		2	459		1,095	76		x 1

Water samples indicated thus, x 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 ($CaCO_3$).

Analyses 2 and 4 by Provincial Analyst, Regina.
For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

The five samples shown on the analysis table were taken from wells whose aquifers lie within the glacial drift. Although the waters are derived from variable depths in the glacial deposit, there is a marked similarity in the constituent salts that compose the total dissolved content of each sample. The three main salts in solution are the sulphates of sodium, magnesium, and calcium.

The high percentage of sodium sulphate, and magnesium sulphate contained in these waters would have a laxative effect on people unaccustomed to their use. The lowest total dissolved solid content of the five samples is 1,483 parts per million. This sample, No. 4 was taken from a well that is being extensively used to supply water to the town of Wolseley. The well water that is used by the village of Summerberry, sample No. 2, has a slightly higher total dissolved solid content. The constituent salts of sample No. 1 were not recorded, but the total dissolved solid content of 2,683 parts per million would render the water unsuitable for drinking, although it is satisfactory for stock. None of the waters analysed can be termed good drinking water, but they are satisfactory for stock use.

Water from the Bedrock

Water is not being obtained from the bedrock in this municipality. The water that has been obtained in places in adjacent municipalities from the Marine Shale contains so much magnesium sulphate, sodium sulphate, and sodium chloride in solution that it cannot be used for any farm purpose.

WELL RECORDS—Rural Municipality of WOLSELEY, NO. 155, 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.	1	16	8	2	Bored	50	2,150	- 30	2,120	47	2,103	Glacial gravel	Soft, iron		D	Uses 2 springs to water 65 head stock.
2	NW.	1	"	"	"	Bored	75	2,155	- 12	2,143	75	2,080	Glacial sand	Hard, "alkaline"		D, S, I	Abundant supply for 60 head stock. A few dry holes.
3	NE.	2	"	"	"	Dug	25	2,160	- 20	2,140			Glacial sand	Hard		D, S	Sufficient for 15 head stock.
4	SE.	4	"	"	"	Bored	80	2,190	- 76	2,114	19	2,171	Glacial sand	Hard		D	Intermittent supply. 5 dry holes to 110 feet. Tanks water for 25 head stock.
5	NE.	4	"	"	"	Bored	110	2,180	- 60	2,120	90	2,090	Glacial sand	Hard, iron		D, S, I	Sufficient for 30 head stock. #.
6	NW.	6	"	"	"	Dug	12	2,215	- 9	2,206	10	2,205	Glacial sandy clay	Hard, "alkaline"		D	6 dry holes to 70 feet. Tanks water from a lake for stock.
7	NE.	9	"	"	"	Bored	85	2,185	- 65	2,120	80	2,105	Glacial sand	Hard, "alkaline"		D, S	Abundant supply of mineralized water. 1 dry hole, 100 feet deep.
8	NW.	12	"	"	"	Dug & Drilled	60	2,140	- 3	2,137	45	2,095	Glacial fine sand	Hard, iron		D, S	Abundant supply for 10 head stock. 3 dry holes to 50 feet.
9	SE.	12	"	"	"	Dug	16	2,090	- 6	2,084			Glacial drift	Hard, "alkaline"		D	Uses a dam to water 35 head stock. Dam holds 15 feet of water.
10	SE.	13	"	"	"	Dug	35	2,100	- 12	2,088			Glacial sand	Hard, iron, "alkaline"		D, S, I	Uses a spring and a dam also. Abundant supply of water.
11	SE.	14	"	"	"	Bored	52	2,150	- 20	2,130	30	2,120	Glacial sand	Hard, iron, "alkaline"		D, S	Insufficient for 40 head stock. Water was passed by analyst.
12	NW.	14	"	"	"	Dug	5	2,135	+ 1	2,136	3	2,132	Glacial gravel	Hard		D, S	Water flows the year round. Abundant supply for 50 head stock.
13	NW.	21	"	"	"	Dug	35	2,180	- 20	2,160	33	2,147	Glacial sand	Hard, "alkaline"		D	Uses 25-foot well for stock. A few dry holes.
14	SE.	21	"	"	"	Dug	26	2,175					Glacial drift			N	Tanks water from a lake and uses two dugouts for stock.
15	SW.	22	"	"	"	Bored	50	2,135	- 35	2,100	49	2,086	Glacial fine sand	Hard		D	Insufficient water from 1931 to 1934. Tanks water. 12 dry holes to 50 feet.
16	NW.	22	"	"	"	Bored	60	2,170	- 7	2,163			Glacial sand	Hard		D, S	Sufficient for 35 head stock.
17	NE.	25	"	"	"	Dug	12	2,045	- 1	2,044	5	2,040	Glacial gravel	Hard, iron		D, S	Abundant supply for 50 head stock. 7 dry holes to 70 feet.
18	NW.	25	"	"	"	Dug	23	2,060	- 12	2,048	22	2,038	Glacial sand	Hard, iron, "alkaline"		D, S	Abundant supply for 15 head stock.
19	NE.	26	"	"	"	Dug	28	2,040	- 23	2,017			Glacial sand	Hard, cloudy		S, I	Good supply for 25 head stock. Tanks drinking water.
20	SE.	27	"	"	"	Dug	20	2,145	- 10	2,135	20	2,125	Glacial gravel	Hard, iron		D, S, I	Abundant supply of water.
21	NE.	27	"	"	"	Dug	16	2,150	- 10	2,140			Glacial sand	Hard		D, S	Good supply for 35 head stock. Also uses a dam in summer.
22	SE.	28	"	"	"	Bored	40	2,170	- 32	2,138	30	2,140	Glacial sand	Hard		D	Tanks water for stock. 1 dry hole 40 feet deep.
23	SW.	29	"	"	"	Bored	64	2,190	- 44	2,146	60	2,130	Glacial sand	Hard		D, S	Abundant supply for 30 head stock.
24	SE.	30	"	"	"	Bored	32	2,210	- 20	2,190	20	2,190	Glacial sand	Hard		D, S	Abundant supply for 30 head stock. Uses a dam. 3 dry holes to 90 feet.
25	SE.	31	"	"	"	Bored	20	2,140	- 12	2,128			Glacial drift	Hard, iron "alkaline"		D, S	Insufficient for 25 head stock. Intermittent supply in 1934.
26	NE.	33	"	"	"	Dug	20	2,130	- 6	2,124	18	2,112	Glacial sand	Hard, iron		D, S, I	Abundant supply for 50 head stock. Also uses a spring and a dam.
27	NW.	34	"	"	"	Dug	30	2,145	- 19	2,126	28	2,117	Glacial sand	Hard		D	A similar well used for 30 head stock. Also uses a spring and dugout.

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 WOLSELEY, NO. 155, 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	NW.	35	16	8	2	Bored	22	2,080	- 14	2,066	21	2,059	Glacial coarse sand	Hard, iron		D, S	Good supply for 30 head stock. Water readily found on this farm.
29	NE.	35	"	"	"	Bored	35	2,040	- 20	2,020			Glacial sand	Hard		D, S	Abundant supply for 40 head stock. 2 dry holes 40 feet deep.
30	SW.	36	"	"	"	Bored	42	2,000	- 22	1,978	40	1,960	Glacial sand	Hard, iron		D, S	Good supply for 30 head stock. Also uses swamp for stock.
31	NW.	36	"	"	"	Dug	8	2,010	- 4	2,006			Glacial drift	Hard, "alkaline"		D, S	Seepage water from a creek. One other well not used.
1	SE.	1	16	9	2	Bored	110	2,230					Glacial drift				9 other dry holes 75 to 110 feet deep. Tanks water and melts snow.
2	NE.	2	"	"	"	Bored	41	2,215	- 32	2,183	40	2,175	Glacial sand	Hard		D, S	Abundant supply for 15 head stock.
3	NW.	2	"	"	"	Dug	31	2,210	- 15	2,195	27	2,183	Glacial sand	Hard		D, S	Insufficient for 10 head stock. Tanks water from neighbour.
4	SE.	3	"	"	"	Bored	51	2,190	- 42	2,148	45	2,145	Glacial gravel	Hard		D, S	Abundant supply for 40 head stock. 10 dry holes to 40 feet.
5	SE.	4	"	"	"	Bored	60	2,170	- 40	2,130	59	2,111	Glacial fine sand	Hard, "alkaline"		D, S	Well has never been pumped dry.
6	SW.	5	"	"	"	Bored	135	2,170	- 60	2,110			Glacial sand	Hard, iron		D, S	Good supply for 30 head stock. 1 dry hole 40 feet deep.
7	SE.	6	"	"	"	Drilled	89	2,175	- 50	2,125	80	2,095	Glacial sand	Hard		D, S	Abundant supply.
8	SE.	8	"	"	"	Dug	15	2,090	- 13	2,077	16	2,074	Glacial gravel	Hard, iron		D, S, I	Well can be pumped dry, but always refills to same level. Good supply.
9	NW.	9	"	"	"	Bored	70	2,100	- 30	2,070			Glacial drift	Hard, iron		D, S	Sufficient for 20 head stock. Also uses creek for stock.
10	NW.	10	"	"	"	Dug	32	2,155	- 24	2,131			Glacial sandy clay	Hard		D, S	Good supply. Uses a dam and a 50-foot well also.
11	SE.	10	"	"	"	Dug	48	2,200					Glacial drift				Dry hole. 5 other dry holes. Uses a slough and tanks water.
12	NW.	11	"	"	"	Dug	39	2,120	- 25	2,095			Glacial sand	Hard		D, S	Sufficient for 15 head stock.
13	NE.	11	"	"	"	Bored	40	2,210	- 36	2,174	36	2,174	Glacial sand	Hard		D, S	Intermittent supply. Tanks water and melts snow. Dry holes.
14	NW.	12	"	"	"	Bored	38	2,220	- 26	2,194	36	2,184	Glacial fine sand	Hard		D, S	Insufficient in dry years. Has been tanking water since 1931.
15	SE.	12	"	"	"	Dug	20	2,230	- 10	2,220	18	2,212	Glacial sand	Hard, iron		D	Poor supply. Uses small dam and tanks water. Many dry holes to 60 feet.
16	NE.	14	"	"	"	Bored	38	2,200	- 29	2,171	19	2,181	Glacial gravel	Hard		D, S	Good supply for 50 head stock. Also uses 43-foot well and a dugout.
17	SW.	14	"	"	"	Dug	38	2,210	- 30	2,180			Glacial sand	Hard		D, S, I	Abundant supply for 50 head stock.
18	NW.	15	"	"	"	Dug	24	2,140	- 2	2,138	20	2,120	Glacial fine sand	Hard		D, S, I	Abundant supply. 1 dry drilled hole 130 feet deep.
19	NE.	16	"	"	"	Bored	46	2,140	- 25	2,115	40	2,100	Glacial sand	Hard		D, S	Sufficient for 30 head stock. Spring fed dam also used.
20	SW.	16	"	"	"	Dug	22	2,100	- 14	2,086			Glacial sandy clay	Hard		D, S	Good supply for 35 head stock.
21	NW.	16	"	"	"	Bored	68	2,040	- 40	2,000			Glacial drift	Hard, iron		D, S	Sufficient for 20 head stock. Also uses a spring for stock.
22	SE.	17	"	"	"	Dug	20	2,050	- 14	2,036	18	2,032	Glacial sand	Hard		D, S, I	Abundant supply for 30 head stock.
23	SE.	18	"	"	"	Dug	10	2,100	- 7	2,093	0	2,100	Glacial sand	Soft		S, I	Sufficient supply for 10 head stock. Tanks drinking water.

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 WOLSELEY, NO. 155, 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
24	NW.	18	16	9	2	Dug		2,075	+ 1	2,076			Glacial sand	Hard, iron		D, S	Good supply for 30 head stock. Also uses a spring for stock.
25	NW.	19	"	"	"	Dug	30	2,025	- 10	2,015			Glacial gravel	Hard, iron		D, S	Abundant supply for 20 head stock. Also uses a spring.
26	SE.	19	"	"	"	Bored	70	2,050	+ 1	2,051	70	1,980	Glacial gravel	Soft		D, S	Abundant supply for 30 head stock.
27	SW.	20	"	"	"	Dug	23	2,055	- 16	2,039	22	2,033	Glacial coarse sand	Very hard		D, S, I	Abundant supply for 100 head stock.
28	NW.	20	"	"	"	Dug	40	2,050	- 10	2,040			Glacial sand	Hard, "alkaline"		D, S	Sufficient for at least 20 head stock.
29	NE.	20	"	"	"	Dug	16	2,050	- 12	2,038			Glacial drift	Hard		D, S, I	Good supply.
30	SW.	22	"	"	"	Bored	60	2,140	- 5	2,135	55	2,085	Glacial sand	Hard, "alkaline"		D, S, I	Sufficient for 10 head stock, but supply decreased greatly in drought years.
31	NE.	22	"	"	"	Dug	40	2,150	- 35	2,115	34	2,116	Glacial gravel	Hard, iron		D, S	Good supply for 15 head stock.
32	NE.	23	"	"	"	Bored	28	2,185	- 18	2,167			Glacial gravel	Hard, odour		D, S, I	Pumps dry but refills in ½ hour. Good supply.
33	NW.	24	"	"	"	Bored	30	2,190	- 26	2,164	16	2,174	Glacial sand	Hard, "alkaline"		D, S	Water has bad effect on horses. Fair supply.
34	SE.	24	"	"	"	Bored	98	2,215	- 70	2,145	90	2,125	Glacial sand	Hard, iron, "alkaline"		D, S	Sufficient for 35 head stock. 7 dry holes to 70 feet.
35	SE.	25	"	"	"	Bored	90	2,175	- 50	2,125	90	2,085	Glacial sand	Hard, iron		D, S	Well is plugging with sand. Insufficient supply for 35 head stock. Dry holes.
36	NE.	26	"	"	"	Bored	111	2,120					Glacial drift				17 dry holes 50 to 111 feet deep. Has tanked water for 20 years.
37	NW.	27	"	"	"	Bored	26	2,100	- 13	2,087	24	2,076	Glacial sand	Hard, "alkaline"		S	Good supply for 50 head stock. Uses a dugout and a spring.
38	NW.	28	"	"	"	Dug	42	2,040	- 34	2,006	40	2,000	Glacial fine sand	Hard, "alkaline"		D, S	Abundant supply for 15 head stock.
39	SE.	29	"	"	"	Dug	35	2,060	- 10	2,050	35	2,025	Glacial sand	Hard, iron		D, S, I	Sufficient for 50 head stock.
40	NW.	29	"	"	"	Bored	45	2,035	+ 1	2,036			Glacial drift	Hard, iron, "alkaline"		D, S	Abundant supply for 20 head stock.
41	NW.	31	"	"	"	Bored	70	2,020	- 60	1,960	60	1,960	Glacial sand	Hard, "alkaline"		D, S, I	Insufficient supply. Also uses a spring for stock.
42	NE.	31	"	"	"	Dug	20	2,040	- 18	2,022			Glacial sand	Hard, "alkaline"		D, S	Good supply for 50 head stock. One other well used.
43	NW.	34	"	"	"	Bored	30	2,030	- 21	2,009	28	2,002	Glacial fine sand	Hard, "alkaline"		S	Intermittent supply. Tanks water for drinking and stock.
44	SE.	34	"	"	"	Bored	80	2,080	- 20	2,060	79	2,001	Glacial gravel	Hard, iron, sulphur		D, S	Abundant supply for 35 head stock.
1	NE.	1	16	10	2	Dug	9	2,160	+ 1	2,161			Glacial drift	Soft		D, S, I	Abundant supply for 50 head stock.
2	SW.	2	"	"	"	Bored	30	2,205	- 18	2,187			Glacial sand	Hard, iron, "alkaline"		D, S	Good supply. Uses a large dugout for stock also.
3	NE.	4	"	"	"	Bored	100	2,225	- 25	2,200	90	2,135	Glacial sand	Hard		D, S	Abundant supply.
4	NW.	5	"	"	"	Dug	8	2,270	- 4	2,266			Glacial drift	Soft		D, S	Intermittent supply. Hauls water. 2 dry holes to 60 feet.
5	SE.	6	"	"	"	Dug	10	2,285	0	2,285	9	2,276	Glacial sand	Hard		S	Insufficient for 30 head stock. Tanks stock and drinking water. Dry holes.

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 WOLSELEY, NO. 155, SASKATCHEWAN.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
6	NE.	7	16	10	2	Dug	18	2,270	0	2,270			Glacial drift	Soft		D, S	Intermittent supply. Tanks water. 5 dry holes to 84 feet.
7	NW.	10	"	"	"	Bored	95	2,200	- 30	2,170			Glacial sand	Hard, iron		D, S	Insufficient for 50 head stock in winter. Well is probably plugged.
8	SE.	10	"	"	"	Drilled	194	2,200	+ 1	2,201	194	2,006	Glacial fine sand	Very hard, iron		D, S	Abundant supply of good stock water.
9	NE.	12	"	"	"	Bored	70	2,135	- 60	2,075	60	2,075	Glacial sand	Hard		D, S	One other similar well. Good supply. 20 dry holes to 50 feet.
10	NE.	14	"	"	"	Bored	42	2,065	- 5	2,060	40	2,025	Glacial gravel	Hard		D, S, I	Well has never been pumped dry.
11	SW.	14	"	"	"	Bored	70	2,100	- 30	2,070	60	2,040	Glacial sand	Hard, iron		D, S	Abundant supply for 40 head stock. 3 springs on the farm.
12	SE.	16	"	"	"	Dug	5	2,150	0	2,150	2	2,148	Glacial black gravel	Hard		D, S	Sufficient for 50 head stock.
13	SE.	18	"	"	"	Dug	25	2,255	- 10	2,245			Glacial gravel	Hard		D, S	Insufficient for 30 head stock. Tanks water ½ mile in winter.
14	NE.	18	"	"	"	Dug	13	2,255	- 8	2,247	9	2,246	Glacial gravel	Hard		D, S, I	Abundant supply for 75 head stock.
15	SE.	19	"	"	"	Dug	24	2,225	- 22	2,203	8	2,217	Glacial fine sand	Hard		D, S	Intermittent supply. Tanks water summer and winter.
16	SW.	20	"	"	"	Dug	14	2,190	- 6	2,184	13	2,177	Glacial gravel	Hard		D, S	Insufficient for 15 head stock. 2 dry holes to 45 feet.
17	NW.	20	"	"	"	Bored	25	2,200					Glacial drift				Dry hole. Uses a dam and tanks water.
18	SE.	20	"	"	"	Dug	23	2,200	- 15	2,185	21	2,179	Glacial white sand	Hard, "alkaline"		S	Poor supply. Tanks water. Many dry holes.
19	SW.	21	"	"	"	Dug	20	2,190	- 10	2,180	18	2,172	Glacial sand	Soft		D, S	Uses a dam and tanks water. Intermittent supply.
20	NW.	21	"	"	"	Bored	109	2,140	- 74	2,066	100	2,040	Glacial sand	Hard		D, S	Good supply for 50 head stock. Also uses 2 dams.
21	NW.	22	"	"	"	Bored	70	2,080	- 17	2,063			Glacial gravel	Hard, iron, "alkaline"		D, S	Good supply for 50 head stock.
22	NE.	22	"	"	"	Dug	5	2,080	0	2,080	5	2,075	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 50 head stock.
23	SW.	23	"	"	"	Dug	2	2,075	0	2,075	0	2,075	Glacial sand	Hard		D, S	Sufficient for 20 head stock.
24	NW.	24	"	"	"	Bored	50	2,035	- 20	2,015			Glacial sand	Hard, iron, "alkaline"		D, S	Good supply for 20 head stock.
25	SW.	26	"	"	"	Bored	40	2,040	- 10	2,030	38	2,002	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 60 head stock.
26	NE.	27	"	"	"	Dug	15	2,035	- 4	2,031	0	2,035	Glacial sand	Hard, iron		D, S	Sufficient for 50 head stock. Water easily found on this farm.
27	NW.	28	"	"	"	Bored	90	2,125	- 20	2,105			Glacial sand	Hard		D, S	Good supply for 30 head stock. Also uses a dam.
28	NE.	29	"	"	"	Drilled	382	2,125	-175	1,950	382	1,743	Glacial sand	Hard, iron, "alkaline"		D, S	Abundant supply. 6 dry holes to 110 feet.
29	NW.	32	"	"	"	Bored	28	2,110	- 18	2,092	26	2,084	Glacial gravel	Hard		S	Sufficient for 60 head stock. Shallow well used for house.
30	SE.	32	"	"	"	Bored	90	2,110	- 60	2,050	80	2,030	Glacial sand	Hard, "alkaline"		D, S	Abundant supply for 50 head stock. Also uses a dam in coulée.
31	NE.	32	"	"	"	Dug	65	2,100	- 25	2,075			Glacial drift	Hard		S, I	Good supply. Uses 50-foot well for house. Also uses a spring for stock.
32	SE.	33	"	"	"	Bored	90	2,050	- 50	2,000	85	1,965	Glacial sand	Hard		D, S	Abundant supply for 30 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.

WOLSELEY, NO. 155, SASKATCHEWAN. B 4-4

WELL RECORDS—Rural Municipality of WOLSELEY, NO. 155, 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	HEIGHT TO WHICH WATER WILL RISE: Elev.	PRINCIPAL WATER-BEARING BED: Depth	PRINCIPAL WATER-BEARING BED: Elev.	PRINCIPAL WATER-BEARING BED: Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
33	SE.	35	16	10	2	Bored	27	1,975	- 8	1,967			Glacial sand	Hard, "alkaline"		S	Abundant supply for 40 head stock. 2 dry holes to 40 feet.
34	SW.	35	"	"	"	Dug	14	1,975	- 10	1,965	0	1,975	Glacial sand	Hard		D, S, I	Good supply for 10 head stock.
35	NE.	36	"	"	"	Bored	58	2,010	- 10	2,000			Glacial drift	Hard, iron		D, S, I	Abundant supply for 30 head stock. Many springs on this farm.
1	SW.	2	17	8	2	Bored	40	2,060	- 32	2,028			Glacial fine sand	Hard, iron, "alkaline"		D, S	Insufficient supply. Uses a small dugout for stock.
2	SE.	3	"	"	"	Bored	47	2,075	- 24	2,051	47	2,028	Glacial gravel	Hard		D, S	Good supply for 20 head stock. Stock watered at spring in summer.
3	SW.	3	"	"	"	Bored	30	2,025	-24	2,001			Glacial drift	Hard, iron, "alkaline"		D, S	Insufficient supply. Good supply of hard water in a spring.
4	SW.	4	"	"	"	Bored	48	2,100	- 27	2,073	48	2,052	Glacial coarse gravel	Hard, iron		D, S	Abundant supply.
5	NW.	4	"	"	"	Dug	18	2,050	- 14	2,036	14	2,036	Glacial sand, gravel	Hard, "alkaline"		S	Sufficient for 25 head stock. Laxative effect on stock. Hauls drinking water.
6	NE.	4	"	"	"	Bored	90	2,030	- 16	2,014	90	1,940	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 15 head stock.
7	SE.	5	"	"	"	Dug	12	2,090	- 4	2,086	10	2,080	Glacial gravel	Hard, "alkaline"		S	Sufficient supply.
8	NW.	6	"	"	"	Dug	12	2,025	- 6	2,019	10	2,015	Glacial fine sand	Hard, iron, "alkaline"		D	Sufficient for house use.
9	SE.	6	"	"	"	Dug	23	2,050	- 3	2,047			Glacial drift	Hard, "alkaline"		S	Another similar 14-foot well. Sufficient supply.
10	SW.	7	"	"	"	Dug	14	2,000	- 6	1,994	10	1,990	Glacial fine sand	Hard, iron, "alkaline"		S	Sufficient for 25 head stock.
11	NE.	7	"	"	"	Bored	23	1,946	- 12	1,934	20	1,926	Glacial fine sand	Hard		D, S	Village well of Summerberry. Sufficient supply; 10 shallow private wells. #.
12	SW.	8	"	"	"	Bored	22	1,960	- 10	1,950	22	1,938	Glacial sand, stones	Hard		D, S	Uses a 27-foot well for stock and also a dam. Good supply.
13	NE.	9	"	"	"	Dug	20	1,950	- 16	1,934	16	1,934	Glacial sand	Hard, "alkaline"		S	Waters at least 40 head stock.
14	SW.	10	"	"	"	Dug	12	1,975	- 8	1,967	12	1,963	Glacial sand	Soft		D, S	Good supply for 30 head stock.
15	NW.	10	"	"	"	Dug	16	1,975	- 8	1,967	16	1,959	Glacial gravel	Hard, "alkaline"		D, S	Abundant supply. Well was used by C. P. R. until 1915.
16	NE.	11	"	"	"	Dug	18	1,930	- 14	1,916	18	1,912	Glacial gravel	Hard		D, S	Sufficient for at least 50 head stock.
17	NW.	13	"	"	"	Bored	67	1,925	- 8	1,917	67	1,858	Glacial coarse gravel	Soft		D, S	Well has never been pumped dry.
18	SE.	16	"	"	"	Dug	19	1,940	- 13	1,927			Glacial sand	Hard, "alkaline"		D, S	Poor supply. Uses a dugout in summer and tanks water in winter.
19	NE.	17	"	"	"	Dug	20	1,940	- 18	1,922			Glacial drift	Hard, "alkaline"		S	Very poor supply. Tanks water from Summerberry.
20	SE.	18	"	"	"	Bored	70	1,945	- 30	1,915	70	1,875	Glacial sand	Hard, iron		D, S	Good supply for 25 head stock.
21	SE.	21	"	"	"	Dug	20	1,935	- 10	1,925	20	1,915	Glacial sand	Hard		D, S	Sufficient for 20 head stock. One other 10-foot well.
22	SW.	21	"	"	"	Bored	65	1,930	- 20	1,910			Glacial gray sandy clay	Hard, iron		D, S	Insufficient supply. Delivers 4 barrels a day. Tanks water.
23	NW.	21	"	"	"	Dug	50	1,925	- 48	1,877			Glacial drift	Hard, "alkaline		D, S	Several wells deliver a very poor supply of water. Many dry holes.
24	SE.	23	"	"	"	Bored	50	1,930					Glacial gravel	Hard, iron		D, S	Insufficient for 25 head stock. 2 other wells and a dugout.

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 WOLSLEY, NO. 155, 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
25	NE.	23	17	8	2	Bored	66	1,940	- 52	1,888			Glacial sandy clay	Hard, "alkaline"		D, S	Sufficient supply. Another 38-foot well with good supply.
26	NW.	24	"	"	"	Bored	90	1,925	- 60	1,865	90	1,835	Glacial fine sand	Hard, iron		S	Abundant supply.
27	SE.	25	"	"	"	Drilled	115	1,940	- 80	1,860	115	1,825	Glacial fine sand	Hard, iron		D, S	Abundant supply for 40 head stock. Several bored wells filled in.
28	NW.	25	"	"	"	Bored	87	1,940	- 47	1,893	87	1,853	Glacial fine sand	Hard, iron, "alkaline"		D, S	Abundant supply for 60 head stock. Also owns a dugout.
29	SE	26	"	"	"	Bored	120	1,940	-100	1,840	120	1,820	Glacial gravel	Hard, iron		D, S	Abundant supply for 35 head stock. Uses 2 dugouts for stock.
30	SE.	27	"	"	"	Bored	72	1,935	- 15	1,920	72	1,863	Glacial gravel	Hard, iron		D, S	Good supply for 50 head stock.
31	SW.	27	"	"	"	Bored	80	1,935					Glacial drift				Dry hole.
32	SW.	27	"	"	"	Bored	70	1,930	- 30	1,900	70	1,860	Glacial gravel	Hard, "alkaline"		D, S	Abundant supply.
33	NW.	28	"	"	"	Drilled	125	1,920	- 20	1,900	125	1,795	Glacial gravel	Very hard		S	Large supply. Plenty of water for 30 head stock.
34	NW.	28	"	"	"	Dug	30	1,920	- 20	1,900	30	1,890	Glacial sand	Soft		D	Good supply for the house.
35	NW.	29	"	"	"	Drilled	170	1,930	- 70	1,860	170	1,760	Glacial gravel	Hard, iron	42	D, S	Abundant supply for 20 head stock.
36	SW.	30	"	"	"	Bored	96	1,950	- 78	1,872	78	1,872	Glacial sand	Hard, iron		D, S	Sufficient for 60 head stock.
37	NE.	31	"	"	"	Dug	20	1,910	- 10	1,900			Glacial drift	Hard		D	A dam is used for watering 27 head stock.
38	SW.	32	"	"	"	Bored	108	1,920	- 55	1,865	100	1,820	Glacial gravel	Hard, iron	42	D, S	Abundant supply.
39	NW.	33	"	"	"	Bored	125	1,910					Glacial sand	Hard, iron		D, S	Abundant supply for 15 head stock. Also owns a dam.
40	NE.	33	"	"	"	Dug	10	1,915	0	1,915			Glacial drift	Hard		D, S	Intermittent supply. Uses a dugout and tanks in dry years.
41	NW.	34	"	"	"	Bored	125	1,925					Glacial sand	Hard, iron		S	Has watered 30 head stock. Uses a dugout. Seepage house well.
42	SW.	35	"	"	"	Bored	125	1,945					Glacial sand	Hard, iron		D, S	Sufficient supply.
43	NE.	35	"	"	"	Bored	65	1,950					Glacial drift				Dry hole. Struck gas at 65 feet in clay.
44	SE.	36	"	"	"	Bored	135	1,945	-100	1,845	135	1,810	Glacial white sand	Hard		D, S	Partially plugged with sand. Uses a dugout. Many dry holes.
1	SW.	1	17	9	2	Dug	15	2,045	0	2,045	15	2,030	Glacial gravel	Hard, "alkaline"		D, S	Sufficient supply of water.
2	SW.	1	"	"	"	Bored	80	2,040	- 10	2,030			Glacial drift	Hard, iron, "alkaline"		D, S	Poor supply. 12 dry holes to 90 feet. Uses 2 dams in a coulée.
3	SE.	2	"	"	"	Bored	40	2,050	- 20	2,030			Glacial drift	Hard, "alkaline"		S	Sufficient for 25 head stock. Dam holds good supply of water.
4	NW.	2	"	"	"	Dug	20	2,000	- 17	1,983			Glacial drift	Hard, "alkaline"		D, S	Sufficient for 30 head stock. Uses springs in creek bed also.
5	NE.	2	"	"	"	Bored	35	2,000	- 27	1,973	30	1,970	Glacial sand, gravel	Hard, "alkaline"		D, S	Good supply for 30 head stock.
6	SE.	3	"	"	"	Dug	30	2,000	- 27	1,973			Glacial drift	Hard, "alkaline"		D, S	Well and spring in creek bed water 20 head stock.
7	SW	4	"	"	"	Bored	30	2,010	- 10	2,000			Glacial gravel	Hard, "alkaline"		D, S	Good supply for 20 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 WOLSELEY, NO. 155, SASKATCHEWAN.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
8	NW.	4	17	9	2	Bored	45	1,995	- 25	1,970			Glacial drift	Hard, "alkaline"		D, S	Good supply for 30 head stock.
9	NW.	5	"	"	"	Bored	40	2,005	- 10	1,995			Glacial drift	Hard, iron, "alkaline"		D, S	Sufficient supply.
10	SE.	5	"	"	"	Bored	28	2,000	- 8	1,992			Glacial drift	Hard, "alkaline"		S	Cribbing in poor shape and well is seldom used.
11	SE.	6	"	"	"	Bored	25	2,015	- 10	2,005	25	1,990	Glacial fine sand	Hard, "alkaline"		D, S	Good supply for 50 head stock.
12	NE.	6	"	"	"	Bored	45	2,005	- 15	1,990			Glacial gravel	Hard, iron		D, S	Previous to caving in, this well yielded a good supply.
13	SW.	7	"	"	"	Drilled	148	1,990	- 45	1,945	148	1,842	Glacial gravel	Hard, iron		D, S	Sufficient supply.
14	NE.	11	"	"	"	Dug	15	1,990	- 9	1,981			Glacial drift	Hard, "alkaline"		S	Sufficient for 25 head stock. Hauls drinking water.
15	SE.	12	"	"	"	Dug	24	1,950	- 19	1,931	21	1,929	Glacial sand	Hard, iron, "alkaline"		D, S	Sufficient for 25 head stock. Also uses a dam.
16	NE.	12	"	"	"	Dug	15	1,950	- 10	1,940	10	1,940	Glacial sand	Hard, "alkaline"		D, S	Sufficient for 15 head stock.
17	SE.	13	"	"	"	Bored	48	1,960	- 28	1,932			Glacial sand	Hard, iron, "alkaline"		D, S	Will water 100 head stock.
18	NE.	13	"	"	"	Bored	112	1,955					Glacial drift	Hard, iron		D, S	
19	SW.	14	"	"	"	Bored	32	1,980			32	1,948	Glacial gravel	Hard		D, S	Sufficient for 30 head stock. Uses a small dugout for stock.
20	SE.	15	"	"	"	Dug	22	1,985	- 11	1,974			Glacial sand	Hard, iron, "alkaline"		D, S	Sufficient supply.
21	SE.	16	"	"	"	Dug	19	1,980	- 10	1,970	19	1,961	Glacial coarse gravel	Hard, iron, "alkaline"		D, S	Abundant supply for 40 head stock. Several dry holes.
22	NW.	16	"	"	"	Drilled	164	1,975	- 42	1,933	161	1,814	Glacial coarse gravel	Hard, iron, "alkaline"		D, S	Abundant supply for 40 head stock.
23	SW.	17	"	"	"	Bored	74	1,985	- 30	1,955	74	1,911	Glacial fine sand	Hard		D, S	Abundant supply for 40 head stock.
24	NW.	17	"	"	"	Bored	84	1,980	- 64	1,916	83	1,897	Glacial gravel	Hard, iron	42	D, S	Abundant supply for 25 head stock. Uses a small dam also.
25	SE	18	"	"	"	Bored	28	1,985	- 18	1,967	18	1,967	Glacial sand	Hard		D, S	Poor supply. Several dry holes, one being bored to 159 feet. Uses dugouts and hauls water
26	NW.	18	"	"	"	Dug	50	1,980					Glacial drift				Dry hole.
27	NE.	18	"	"	"	Bored	56	1,975	- 50	1,925	50	1,925	Glacial gravel	Hard, "alkaline"		D	Very poor supply. Hauls water for stock. 70-foot dry hole.
28	NE.	19	"	"	"	Dug	25	1,960					Glacial drift	Hard		D, S	Seepage well beside a dam. No permanent water supply on farm.
29	SW.	20	"	"	"	Drilled	215	1,975					Glacial drift	Hard, iron		D, S	Abundant supply.
30	SE.	22	"	"	"	Bored	45	1,970	- 20	1,950			Glacial drift	Hard, "alkaline"		D, S	Sufficient for 60 head stock.
31	SE.	23	"	"	"	Bored	42	1,960					Glacial gravel	Hard, "alkaline"		S	Has watered 50 head stock.
32	NE.	23	"	"	"	Drilled	135	1,955	- 95	1,860	135	1,820	Glacial gravel	Hard, iron, soda.		D, S	Sufficient for at least 60 head stock. Several dry holes to 90 feet. Also owns a dam.
33	SE.	24	"	"	"	Drilled	112	1,955	- 50	1,905	112	1,843	Glacial sand	Hard, iron	41	D, S	Good supply for 25 head stock.
34	SW.	24	"	"	"	Bored	60	1,960	- 30	1,930			Glacial sand	Hard, iron, "alkaline"		D, S	Tanked water in 1931 and 1932. Owns a dam for stock purposes.

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 WOLSELEY, NO. 155, 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
35	NE.	26	17	9	2	Drilled	180	1,945	- 80	1,865			Glacial gravel	Hard, iron	42	D, S	Abundant supply for 25 head stock.
36	SW.	27	"	"	"	Drilled	124	1,960	- 60	1,900			Glacial fine sand	Hard, iron	44	D, S	Abundant supply for 50 head s tock. #.
37	SW.	28	"	"	"	Drilled	190	1,960	- 130	1,830			Glacial sand	Hard, iron, "alkaline"	42	D, S	Abundant supply for 100 head stock. Uses dam also.
38	SE.	29	"	"	"	Drilled	117	1,955	- 90	1,865	117	1,838	Glacial fine sand	Hard, iron, "alkaline"	46	D, S	Abundant supply.
39	SW.	29	"	"	"	Drilled	250	1,955			250	1,705	Glacial gravel	Hard, rion, "alkaline"	42	D, S	Abundant supply.
40	SE.	30	"	"	"	Drilled	240	1,960	-100	1,860	240	1,720	Glacial gravel	Hard, iron	44	D, S	Abundant supply.
41	NE.	30	"	"	"	Drilled	252	1,950	-100	1,850	252	1,698	Glacial gravel	Hard, iron		D, S	Abundant supply.
42	SW.	32	"	"	"	Drilled		1,945					Glacial drift	Hard, iron		D, S	Sufficient supply.
43	NE.	32	"	"	"	Drilled	260	1,920					Glacial drift				Dry hole. Another 219-foot dry hole. Uses slough and shallow seepage well.
44	NE.	34	"	"	"	Dug	25	1,900	0	1,900			Glacial drift	Hard		D	Uses a large dam for watering stock.
45	SW.	36	"	"	"	Dug	14	1,910	0	1,910			Glacial drift	Hard		D, S	Seepage well dug beside a dam.
46	NW.	36	"	"	"	Dug	10	1,910	0	1,910			Glacial drift	Hard		D	Use two dams for stock water.
1	SE.	1	"	10	"	Bored	60	2,050	- 10	2,040	60	1,990	Glacial sand	Hard, iron, odour		S	Abundant supply for 50 head stock.
2	SE.	2	"	"	"	Bored	50	1,975	- 41	1,934	41	1,934	Glacial gravel	Hard		D, S	Insufficient supply. 3 dry holes 80 feet deep.
3	NW.	3	"	"	"	Bored	25	2,000	- 5	1,995			Glacial sand	Hard		D, S	Insufficient in winter of 1934; supply decreases every winter.
4	NE.	4	"	"	"	Dug	15	1,995	- 10	1,985			Glacial fine sand	Hard, iron, "alkaline"		D, S	Insufficient for 30 head stock in dry years.
5	NW.	6	"	"	"	Dug	45	2,090	- 35	2,055	45	2,045	Glacial sand	Hard		D, S	Waters about 100 head stock.
6	NE.	6	"	"	"	Dug	20	2,050	- 4	2,046	20	2,030	Glacial sand	Hard		D, S	Abundant supply for 65 head s tock. Uses a dam and a spring.
7	NE.	8	"	"	"	Dug	22	2,020	- 20	2,000			Glacial drift	Hard, "alkaline"		S	Poor supply and tanks water for drinking and stock.
8	NW.	9	"	"	"	Dug	22	1,995	- 12	1,983			Glacial drift	Hard, black, odour, "alkaline"		S	Enough water for 4 head stock. Uses a dam and hauls drinking water.
9	NE.	11	"	"	"	Bored	63	1,955					Glacial gravel	Hard		D	Small supply. Many wells bored with small supplies. Town of Wolseley obtains water SW¼, section 15.
10	SW.	12	"	"	"	Drilled	180	1,950	- 60	1,890			Glacial drift	Hard, iron		D, S	Abundant supply for 30 head s tock. Uses creek in summer.
11	SW.	15	"	"	"	Bored	90	1,975	- 3	1,972			Glacial fine sand	Hard, "alkaline"		D, S	Town of Wolseley obtains its water supply from this well. Dry holes 20 to 100 feet deep. #.
12	SW.	16	"	"	"	Bored	88	1,990	- 11	1,979	85	1,905	Glacial sand	Hard		D, S	Sufficient for 80 head stock. 9 dry holes 60 to 75 feet deep.
13	SW.	17	"	"	"	Bored	42	2,010	- 10	2,000	42	1,968	Glacial sand	Hard		D, S	Well has watered 40 head stock.
14	SE.	17	"	"	"	Dug	24	1,995	- 20	1,975	20	1,975	Glacial sand	Hard		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 WOLSELEY, NO. 155, 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
15	NE.	18	17	10	2	Bored	70	2,015	- 35	1,980	70	1,945	Glacial sand	Hard, iron, "alkaline"		D, S	Good supply for 40 head stock. Small lake on this farm.
16	NE.	19	"	"	"	Bored	72	1,995					Glacial sand	Hard, iron, "alkaline"		D, S	Abundant supply. Also uses a dugout for stock.
17	SE.	20	"	"	"	Dug	14	1,975	- 9	1,966			Glacial coarse sand	Hard		D, S	Sufficient for 20 head stock only. 1 dry hole 90 feet deep.
18	NW.	20	"	"	"	Bored	108	1,970	- 8	1,962	108	1,862	Glacial sand	Hard		D, S	17 farmers tanked from this well in the dry years. Water also hauled into Wolseley. Dry holes to 78 feet deep.
19	SE.	21	"	"	"	Bored	70	1,975	- 69	1,906	69	1,906	Glacial gravel	Hard, iron, "alkaline"		D, S	Sufficient for 30 head stock. 65 foot well gives small supply.
20	NE.	22	"	"	"	Dug	40	1,960	0	1,960			Glacial drift	Hard, "alkaline"		N	Intermittent supply. Hauls drinking and stock water.
21	SW.	23	"	"	"	Dug	20	1,925	- 10	1,915	20	1,905	Glacial sand	Hard		D, S	Abundant supply for 50 head stock. Also uses springs in coulée.
22	SW.	24	"	"	"	Drilled	200	1,950	-165	1,785			Glacial fine sand	Hard, iron		D, S	Abundant supply.
23	SE.	25	"	"	"	Dug	8	1,825	- 5	1,820	5	1,820	Glacial white gravel	Hard		D	Uses a dam for stock.
24	NE.	25	"	"	"	Spring		1,800	0	1,800			Glacial sand	Hard		D, S	Continuous small flow of water.
25	SE.	28	"	"	"	Drilled	215	1,960	-100	1,860			Glacial fine sand	Hard, iron		D, S	Abundant supply for 50 head stock.
26	NE.	28	"	"	"	Bored	65	1,970	- 50	1,920			Glacial sandy clay	Hard		D, S	Very small supply. Several dry holes. Tanks nearly all stock water.
27	NE.	30	"	"	"	Dug	65	1,975	- 31	1,944	60	1,915	Glacial gravel	Hard, iron, "alkaline"		D, S	Abundant supply for 100 head stock. Uses a dugout. Many dry holes to 30 feet.
28	NW.	31	"	"	"	Dug	56	1,955	- 16	1,939			Glacial drift	Hard		S	Intermittent supply. Two shallow separate wells wells.
29	SW.	32	"	"	"	Dug	20	1,960					Glacial sand	Hard		D, S	Sufficient supply with one other 14-foot well.
30	NE.	32	"	"	"	Bored	75	1,955	- 64	1,891			Glacial drift	Hard, iron		S	Poor supply. Tanks most of the water for stock.
31	SW.	35	"	"	"	Bored	75	1,945	- 60	1,885			Glacial gray sand				3 seepage wells 22, 30 and 42 feet deep that are also used.
1	NE.	1	18	8	2	Dug	20	1,945	- 4	1,941			Glacial drift	Hard		D	Seepage well beside a dugout. Tanks water and melts snow.
2	NE.	2	"	"	"	Bored	140	1,955					Glacial drift				Dry hole. Another dry hole 110 feet deep. Uses a dugout for stock.
3	SE.	2	"	"	"	Dug	35	1,955	- 3	1,952	30	1,925	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 30 head stock. Dry holes to 170 feet. Uses a dugout.
4	SW.	4	"	"	"	Dug	6	1,900	0	1,900			Glacial drift	Hard, "alkaline"		D	Intermittent supply. Uses 2 dams for stock. Many seepage wells.
5	SE.	5	"	"	"	Dug	11	1,900	- 5	1,895			Glacial drift	Hard		D, S	Intermittent supply. Dam provides permanent supply for stock.
6	SW.	6	"	"	"	Dug	12	1,890	- 4	1,886			Glacial drift	Hard		D, S	Water level varies with level of water in dam.
7	NW.	6	"	"	"	Dug	18	1,850	- 10	1,840			Glacial sand	Hard, "alkaline"		D	A dam is used for stock. Many dry holes to 100 feet.
8	NE.	8	"	"	"	Bored	36	1,905					Glacial drift				Dry hole. Uses a dugout and springs for 50 head stock.
9	SW.	9	"	"	"	Dug	20	1,910	- 8	1,902			Glacial gravel	Hard		D	A large government dam is located on the farm.

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 WOLSELEY, NO. 155, 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
10	NE.	9	18	8	2	Dug	12	1,940	- 2	1,938			Glacial drift	Hard		D, S	Intermittent supply. Uses a dugout for stock. 100-foot dry hole.
11	SE.	10	"	"	"	Dug	14	1,940	- 4	1,936			Glacial drift	Hard, "alkaline"		D, S	Intermittent supply. Uses a dugout for stock.
12	NW.	10	"	"	"	Dug	8	1,945	- 2	1,943			Glacial drift	Hard, "alkaline"		D, S	Slough seepage well. 107-foot bored dry hole.
13	NE.	10	"	"	"	Dug	18	1,940	0	1,940			Glacial black sandy clay	Hard, "alkaline"		D, S	Intermittent supply. Uses a small dugout for stock.
14	SE.	11	"	"	"	Dug	17	1,950	0	1,950			Glacial drift	Hard		D, S	Intermittent supply. 4 dry holes to 225 feet. Uses dugout and melts snow.
15	SW.	12	"	"	"	Dug	18	1,945					Glacial drift	Hard		D	Seepage water from a dugout.
16	NW.	12	"	"	"	Drilled	350	1,950					Glacial drift				Dry hole. Several dry holes 40 feet deep.
17	NE.	12	"	"	"	Dug	5	1,930	0	1,930			Glacial drift	Hard, "alkaline"		D, S	Intermittent supply.
18	SE.	13	"	"	"	Dug	8	1,945	- 2	1,943			Glacial drift	Hard		D	Intermittent supply. Uses sloughs and hauls water for stock.
19	SE.	14	"	"	"	Bored	50	1,950	- 20	1,930	25	1,925	Glacial sand	Hard, very "alkaline"		N	Water is too mineralized for use. Dry holes to 80 feet. Uses 4 dugouts.
20	NW.	14	"	"	"	Dug	15	1,945	0	1,945	15	1,930	Glacial gravel	Hard, "alkaline"		D, S	Intermittent supply. Uses a dugout for 45 head stock. Many dry holes.
21	SE.	16	"	"	"	Dug	15	1,920	0	1,920			Glacial drift	Hard		D	Slough seepage well. Dugout used for stock. Dry hole 90 feet deep.
22	NW.	16	"	"	"	Drilled	327	1,920					Glacial drift				Dry hole.
23	NE.	17	"	"	"	Dug	12	1,905	- 6	1,899			Glacial drift	Hard, "alkaline"		D	Seepage water from a dam. Stock are watered at the dam.
24	SE.	18	"	"	"	Spring		1,850	0	1,850			Recent stream gravel	Hard, iron		S	
25	NE.	18	"	"	"	Spring		1,600	0	1,600			Glacial sand	Hard, iron		D, S	Continous flow of water.
26	NW.	20	"	"	"	Dug	22	1,575	- 18	1,557	20	1,555	Recent river sand	Hard, iron		D, S	Good and sufficient supply.
27	SE.	22	"	"	"	Dug	9	1,930	0	1,930			Glacial drift	Hard, "alkaline"		D	Intermittent supply. Waters stock at a neighbour's farm.
28	SE.	23	"	"	"	Dug	10	1,925	0	1,925			Glacial sandy clay	Hard, "alkaline"		D	Intermittent supply. Waters 60 head stock at a dugout. Many dry holes and an 80-foot well gave unusable water.
29	NE.	23	"	"	"	Dug	14	1,925	- 6	1,919	7	1,918	Glacial gravel	Hard, "alkaline"		D, S	Very poor supply. Uses dugout. Tanks and melt snow for stock. Dry holes.
30	NW.	25	"	"	"	Dug	17	1,925	- 15	1,910			Glacial drift	Hard		D, S	Intermittent supply. 2 other similar seepage wells.
31	NW.	27	"	"	"	Dug	20	1,900	0	1,900	18	1,882	Glacial sand	Hard, "alkaline"		D	Poor supply. Uses a dam for stock purposes.
32	NW.	28	"	"	"	Bored	80	1,600	- 68	1,532	75	1,525	Glacial sand, gravel	Hard		D, S	Sufficient for house only. Dry holes. Waters stock at Qu'Appelle River.
33	NE.	33	"	"	"	Dug	14	1,550	- 11	1,539			Recent river sand	Hard, "alkaline"		D, S	Waters stock at the river.
34	SE.	36	"	"	"	Bored	25	1,945	- 15	1,930			Glacial gravel	Hard		D	Poor supply. 100-foot dry hole.
35	SE.	36	"	"	"	Dug	12	1,925	- 1	1,924	5	1,920	Glacial gravel	Hard, "alkaline"		D, S	Poor supply. 125-foot dry hole. Melts snow and hauls water.

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 WOLSELEY, NO. 155, 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	NW.	1	18	9	2	Bored	90	1,875					Glacial drift				Dry hole. Uses a dam for stock and tanks drinking water.
2	NW.	2	"	"	"	Bored	60	1,885	- 48	1,837			Glacial sand	Hard, iron		S	Sufficient for 15 head stock only. Uses a dam for stock.
3	NW.	4	"	"	"	Bored	40	1,880					Glacial drift	Soft		S	6-foot well in coulée used for house. Uses a dam for stock.
4	NE.	4	"	"	"	Dug	11	1,840	- 5	1,835			Glacial gravel	Hard		D, S	Sufficient for house use. 2 dams are used for stock.
5	NW.	5	"	"	"	Dug	14	1,905	- 5	1,900			Glacial drift	Soft		D, S	Seepage water from a dam. Dam used for stock.
6	SE.	6	"	"	"	Spring		1,700	0	1,700			Recent stream sand	Hard, iron		S	Continuous small flow. Uses a dam for stock.
7	SW.	8	"	"	"	Dug	12	1,850	- 4	1,846			Glacial drift	Hard, "alkaline"		D, S	Seepage water from a dam.
8	NW.	8	"	"	"	Dug	12	1,800	- 7	1,793			Recent stream gravel	Hard		D, S	Waters 40 head stock. Well is situated ½ mile from buildings.
9	NW.	12	"	"	"	Dug	12	1,800	- 8	1,792			Glacial gravel	Hard		D, S	Well became dry in 1929.
10	NE.	12	"	"	"	Spring		1,750	0	1,750			Recent stream gravel				Continuous flow but seldom used. Waters stock at a dam.
11	NW.	14	"	"	"	Dug	14	1,560	- 9	1,551	14	1,546	Recent river sand	Hard, "alkaline"		D, S	Sufficient for 10 head stock only. Waters stock by river and springs.
12	NW.	14	"	"	"	Bored	50	1,550	- 48	1,502			Recent river sand	Hard		D	Intermittent supply.
13	NW.	16	"	"	"	Dug	14	1,530	- 8	1,522	8	1,522	Recent river sand	Hard		D, S	Sufficient for 40 head stock. only.
14	SW.	17	"	"	"	Dug	21	1,560					Recent river sand	Hard		N	Well partly caved in. Not used at present.
15	NW.	17	"	"	"	Dug	25	1,550	- 21	1,529			Recent river sand	Hard, iron, "alkaline"		D, S	Waters at least 20 head stock.
16	SE.	18	"	"	"	Dug	33	1,530	- 28	1,502	28	1,502	Recent river sand	Hard		D,S	Seepage water from the river.
1	NW.	2	18	10	2	Drilled	200	1,925					Glacial sand	Hard, iron		D, S	Abundant supply. Neighbours haul from this well.
2	SE.	3	"	"	"	Bored	28	1,930	- 8	1,922			Glacial drift	Hard, "alkaline"		D	Intermittent supply. Tanks stock water. 30-foot dry hole.
3	SW.	4	"	"	"	Drilled	68	1,955	- 22	1,933	68	1,887	Glacial sand	Hard, iron		D, S	Good supply for 40 head stock.
4	SE.	8	"	"	"	Bored	30	1,930	- 10	1,920			Glacial gravel	Hard, iron		D, S	Insufficient for 15 head stock. Hauls water from government dam.
5	NW.	8	"	"	"	Dug	14	1,920	0	1,920			Glacial drift	Hard		S	Poor supply. Hauls water for stock and house use. Dry holes.
6	NW.	9	"	"	"	Drilled	280	1,900	- 140	1,760	280	1,620	Glacial gravel	Hard, iron		D, S	Abundant supply. 2 dry holes 30 feet deep.
7	NE.	11	"	"	"	Dug	25	1,855	- 20	1,835			Glacial drift	Hard		D, S	Intermittent supply. Tanks water winter and summer.
8	SW.	13	"	"	"	Spring		1,650	0	1,650			Glacial white sand	Hard, iron		D, S	Continuous strong flow.
9	NE.	13	"	"	"	Dug	35	1,575	- 30	1,545	5	1,570	Recent river sand	Hard		D, S	Intermittent supply. Waters stock at the Qu'Appelle River.
10	SW.	14	"	"	"	Dug	15	1,890	- 4	1,886			Glacial sand	Hard, iron		D, S	Sufficient for 25 head stock. Also uses a dam.

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 WOLSELEY, NO. 155, 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
11	SE.	16	18	10	2	Dug	15	1,800					Glacial fine sand	Hard		N	Well plugged with sand. Uses dam and tanks house water.
12	SW.	16	"	"	"	Bored	14	1,900	- 3	1,897	12	1,888	Glacial red sand	Hard			
13	NW.	16	"	"	"	Drilled	280	1,860	-100	1,760	140	1,720	Glacial fine sand	Hard, iron		N	Good supply but sand plugged the pipes. Never used.
14	NW.	16	"	"	"	Dug	14	1,860	- 10	1,850	11	1,849	Glacial gravel	Hard		D, S	Good supply. 3 farmers tank from this well. Another similar well.
15	NW.	18	"	"	"	Drilled	180	1,910	- 80	1,830	180	1,730	Glacial sand	Hard		N	Good supply but not in use.
16	NW.	18	"	"	"	Dug	80	1,910	- 68	1,842	80	1,830	Glacial gravel	Hard, "alkaline"		N	Good supply. Uses a dam. 16 dry holes to 70 feet.
17	SW.	20	"	"	"	Dug	9	1,830	- 4	1,826	9	1,821	Glacial gravel	Hard		D, S	Good supply for 20 head stock. Dry holes 50 to 300 feet. Uses a dam.
18	SW.	21	"	"	"	Bored	40	1,860	- 33	1,827			Glacial gravel	Hard		D, S	Good supply. 350' drilled well rendered useless by sand plugging; uses dam and springs.
19	SE.	22	"	"	"	Spring		1,600	0	1,600			Glacial white sand	Hard, iron		D, S	Delivers 30 gallons per minute. #.
20	SW.	22	"	"	"	Bored	140	1,860	-139	1,721	139	1,721	Glacial sand	Hard		D	Well yields 2 pails of water at a time. Many dry holes.
21	SE.	23	"	"	"	Spring		1,560	0	1,560			Glacial fine sand	Hard, iron, "alkaline"		D, S	Waters stock at river also. Many shallow springs.
22	SE.	30	"	"	"	Dug	22	1,820	- 17	1,803			Glacial gravel	Soft		D, S	Sufficient for 40 head stock. Uses a dam. Dry hole 70 feet deep.
23	SW.	30	"	"	"	Dug	21	1,850	- 3	1,847			Glacial sand	Soft		D, S	Intermittent supply. Uses a dam for stock.
24	NW.	30	"	"	"	Dug	20	1,750	- 18	1,732			Glacial sand	Hard		D	Poor supply. Hauls water and uses creek for stock.
1	SE.	1	19A	8	2	Dug	12	1,920	- 9	1,911			Glacial drift	Hard, "alkaline"		D, S	Intermittent supply. Numerouse dry holes to 250 feet deep. Hauls water, melts snow and uses a dugout.
2	SE.	3	"	"	"	Dug	16	1,540	- 13	1,527	13	1,527	Recent stream sand	Hard		D, S	Fair supply. Uses springs and the rivdr for stock.
3	SE.	11	"	"	"	Bored	20	1,550	- 13	1,537	10	1,540	Recent stream sand	Hard, "alkaline"		D, S	Good supply. Also uses the river for watering 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.