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DEPARTMENT OF MINES

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BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

# GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF KEYES No. 303 SASKATCHEWAN

BY

B. R. MacKay, H. N. Hainstock & P. D. Bugg

Water Supply Paper No. 208

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WATER SUPPLY PAPER NO. 208

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Map of the municipality:

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

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

# GROUND WATER RESOURCES OF PART OF THE RURAL MUNICIPALITY OF KEYES, NO. 303, 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 fine 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 given 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 côteau. 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 Keyes, No. 303, and the Key Indian Reserve, comprise an area of approximately 288 square miles in southeastern Saskatchewan. They consist of six full townships described as tps. 32 and 33, ranges 1, 2, and 3, and three fractional townships, described as tps. 31, ranges 1, 2, and 3, W. 2nd mer. That part of the municipality lying north of the northern boundary of township 32 was not examined by the field party and is not included in this discussion. The Key Indian Reserve occupies an area of approximately 21 square miles in township 32, ranges 1 and 2. The southwestern corner of the municipality lies 1 mile east and 30 miles north of the city of Yorkton.

The greater part of the municipality lies within an area that was occupied by the glacial Lake Assiniboine and is mantled by glacial lake clays and sands. A small area in the northeastern corner and another in the southwestern corner are mantled by glacial till that has been modified by wave action. The elevation throughout most of the area under discussion is about 1,600 feet above sea-level, but in the southeastern part it decreases to 1,500 feet above sea-level. The ground surface of the glacial lake clay-covered area is generally very flat with a few shallow valleys. The glacial lake sand-covered area, particularly in the northern part, is very rolling with many small knolls that are formed of light silty clays and sands. Assiniboine river meanders in an easterly direction through a wide, shallow valley that traverses township 32, ranges 1, 2, and 3. Whitesand river occupies a steep-sided valley in the southern part of the area. The valley is from 60 to 100 feet deep and has a very irregular course. Many intermittent creeks flow into both rivers. Numerous lakes are situated in the northern part of this area; those in the northeastern sections are shallow

and become almost dry during periods of drought, whereas those in the north-central part are deeper and during periods of normal rainfall contain 10 to 12 feet of water.

Water-bearing Horizons in the Unconsolidated Deposits

The principal water-bearing horizon in the area covered by lake clays is formed by layers and pockets of sand that occur in the lake clay or at the contact of the lake clay and underlying boulder clay at depths of 10 to 30 feet. A few wells tap aquifers of large areal extent and yield abundant supplies of water. The water from these wells is moderately hard and usable for all farm purposes, and the supply is sufficient for 60 to 100 head of stock. Several farmers as a rule haul from the wells that yield abundant supplies. Most of the shallow wells, however, tap sand aquifers that yield very small or intermittent supplies of water. The water from many wells is not usable for domestic purposes, as it is very highly mineralized, tastes bitter, and acts as a strong laxative. Many farmers haul water from Whitesand river for domestic purposes. Cisterns are used to collect rainwater for drinking and ice is also used for household needs. Due to the flatness of the area, dams cannot be used to retain surface water, but in some sections dugouts could be used. It is not probable that wells sunk to depth in this area would locate water-bearing sands, and if they were encountered the water would probably be too highly mineralized for use. In the SE.$\frac{1}{4}$, sec. 21, tp. 31, range 2, two 80-foot holes were sunk. One was a dry hole and the other encountered only a small seepage of water that was not usable for domestic purposes.

Most of the wells in the glacial lake sand-covered area yield abundant supplies of water. Water is easily located, and a farmer will often use two or more wells for convenience. The water from these wells is moderately hard, usually termed "soft", and is used for drinking, irrigation, and stock purposes. Some of

the wells cannot be pumped or bailed dry, and others will water from 100 to 150 head of stock. It is estimated that some wells would water 500 head of stock, and it is only occasionally that a well will not yield sufficient water for 10 to 30 head of stock. A few wells in this area encounter fine muds below the sand and yield smaller amounts of more highly mineralized water. The water, however, is usable for household purposes and the supply is sufficient for local needs.

A shortage of water is experienced in the areas covered by glacial till. The till consists of a few feet of yellow boulder clay underlain by blue clay. A few pockets or layers of sand occur at various elevations in the clays. Most of the producing wells are from 12 to 25 feet deep, and yield small or intermittent supplies of water. Many holes have been sunk, but most of them were dry or encountered small seepages of water. Farmers residing in the glacial till-covered area in the southwestern corner of the municipality haul water from the town of Canora in the adjoining municipality or from lake Fulton to the north. In the till-covered area in the northeastern corner, Assiniboine river is the main source of water supply for all purposes, and farmers haul from it for distances of 1 to 3 miles. Dugouts could be used in these areas to collect surface water for stock use. Deep drilling is not advised as the water if located would probably not be suitable for domestic or even stock purposes.

## Water-bearing Horizons in the Bedrock

The Marine Shale series underlies the glacial drift throughout the municipality. It has not been encountered by wells, although some have been sunk to an elevation of 1,440 feet above sea-level in the eastern part of the municipality. It is not advisable to drill into the Marine Shale as it rarely contains usable water.

## GROUND WATER CONDITIONS BY TOWNSHIPS

### Township 31, Range 1

This fractional township comprises an area of approximately 23 square miles and consists of sections 19 to 36 inclusive, and parts of sections 13 to 18 inclusive. The area is dissected by many small ravines that flow into Whitesand river which passes through sections 15, 22, 23, and 13, and by Assiniboine river which occupies a shallow valley in parts of sections 34, 35, and 36. The township lies within an area that was occupied by glacial Lake Assiniboine and is mantled by glacial lake deposits. These deposits are very sandy, being composed of beds of bright yellow, silty clay and layers of sands. The deposits are from 1 to 10 feet thick in the eastern part and are underlain by blue boulder clay, but in the western sections they are at least 45 feet thick. In some areas the sands and yellow clays are underlain by dark-coloured muds. A few clumps of poplar and spruce are found in the northern sections.

Abundant supplies of water are obtained from shallow wells in most parts of the township. Several springs in the deeper ravines yield an abundance of moderately hard water that is usable for all farm purposes including irrigation. The wells are from 6 to 45 feet deep and tap beds of sand in yellow clay or extensive deposits of sand. The water is moderately hard and is used for all farm purposes. A few wells yield sufficient water for 60 to 100 head of stock, but most of them yield only enough for 20 to 50 head of stock.

Wells in sections 19, 30, and 32 tap deposits of lake sands from which small supplies of more highly mineralized water are obtained. The water is usually "alkaline", but is used for domestic purposes. The water from wells that yield small and intermittent supplies is usually very highly mineralized, and water from some wells is not usable for domestic or stock use. In such

cases water is hauled from Assiniboine and Whitesand rivers, or from neighbouring wells that yield an abundant supply of water. In those sections where a shortage of water is experienced it is advisable to prospect the upper part of the unconsolidated deposits by means of a small a er before digging a well, as by this means deposits of water-bearing sands may be located.

Township 31, Range 2

This fractional township consists of sections 19 to 36 and parts of sections 13 to 18, an area of approximately 23 square miles. Whitesand river enters the township in section 18, and flows through the central part leaving it in section 13. Its valley is from 60 to 100 feet deep and is joined by several deep tributaries. The average elevation north of the river is 1,600 feet, but south of the river it is 1,550 feet above sea-level. The area is mantled by glacial lake deposits. Deposits of glacial lake sands from 17 to 35 feet in thickness overlie blue boulder clay in the northeastern corner. Throughout the remainder of the area the lake deposits consist of fine-textured, bright yellow clay and dark clay. The yello clay is free from stones. These clay deposits are from 10 to 30 feet thick and in some localities contain thin layers of sand at various depths.

Water is obtained from a few springs along the deeper valleys, from Whitesand river, and from wells. Several of the springs flow throughout the year and yield an abundance of moderately hard water that is usable for domestic and general farm purposes. Other springs have an intermittent flow as they become frozen during the winter. Whitesand river is used extensively as a source of water for stock. Shallow wells sunk in the glacial lake sands usually yield an abundance of water that is usable for all farm purposes including irrigation. A few wells will water from 100 to 150 head of stock, but the supply from the

individual wells is usually sufficient for only 20 to 50 head of stock. The water is moderately hard, being locally termed soft, and is used for all farm purposes.

Wells sunk in the glacial lake clays generally yield only small and intermittent supplies of water. The aquifers are thin layers of sand in the clay, and the water is highly mineralized. The water from some wells cannot be used for household purposes and water is either hauled or cisterns are used to collect rain water.

It does not appear advisable to search for water at depth in the township. An 80-foot hole in the SE.$\frac{1}{4}$, section 21, was dug in blue clay and did not encounter water-bearing deposits. Another 80-foot well in the same quarter-section yields only a small amount of water that is too highly mineralized for domestic use. In the lake clay-covered area the best method for increasing the supply of water is by collecting and retaining surface water by the use of dams or dugouts.

Township 31, Range 3

This fractional township is an area of approximately 23 square miles. The average elevation throughout the township is 1,600 feet above sea-level. The southwestern half of the area is mantled by glacial till and the ground surface is slightly rolling. The remainder of the township is mantled by glacial lake deposits. Parts of sections 13, 14, and 15 are covered by at least 15 feet of glacial lake sands. The other glacial lake deposits are composed of bright yellow and black clays, varying in thickness from a few feet to 20 or 30 feet. The surface of the area covered by lake deposits is very flat to gently undulating. Whitesand river has cut a deep valley through sections 13 and 14, and an intermittent creek occupies a shallow valley in sections 17 and 18. A few lakes and marshy areas occur, but during 1934-1935 they were dry. In years of normal rainfall they usually contain 6 feet of water.

A flowing spring occurs in the NE. $\frac{1}{4}$, section 13, and yields an abundant supply of moderately hard water. The water is suitable for all farm purposes, and several farmers haul water from this spring. Wells sunk in the glacial lake sands yield an abundance of water that is usable for all farm purposes. The wells are from 12 to 15 feet deep and a well in the NE.$\frac{1}{4}$, section 14, cannot be pumped dry. A number of farmers, living 1 to 4 miles from these wells, haul water from them.

In the glacial lake clay-covered area a shortage of water is experienced by most of the residents. A few wells tap thin layers of sand in the lake clay from which small supplies of highly mineralized water are obtained. Water from most of these wells cannot be used for drinking or household purposes as it is bitter and strongly laxative. That from some wells is unfit even for stock. Many shallow holes have been dug in this area in search of usable water.

A shortage of water is also experienced in the glacial till-covered area. Blue boulder clay occurs near the surface and few deposits of water-bearing sand or gravels occur in it. Several wells from 15 to 20 feet deep yield highly mineralized water, but the supply is usually only sufficient for approximately 10 head of stock. The water from these wells is used for household purposes. Sloughs are used to supplement the supply during the summer months, and in winter water is hauled. Water is usually hauled from the town of Canora or from the well in the NW.$\frac{1}{4}$, section 14. Several attempts have been made to locate water at depths of 40 to 60 feet, but most of the holes were dry or obtained only small seepages of water. A 56-foot well in the SW.$\frac{1}{4}$, section 32, taps a bed of sand in the blue clay from which an abundant supply of water is obtained. The water is very hard and "alkaline", and is not usable for drinking or other household uses. It is under sufficient hydrostatic

pressure to rise to a point 20 feet below the surface where it maintains a constant level. The well yields a supply of water sufficient for at least 100 head of stock, and several farmers haul water from this well for stock use. The aquifer is apparently not continuous, as several deeper holes in that locality have failed to encounter water-bearing sand.

If usable water for domestic purposes cannot be located by wells in the glacial till and lake clay-covered areas, rainwater can be collected in cisterns, or water from neighbouring wells that yield usable water can be hauled for domestic needs. It is not advisable to drill to depth in this locality as it is probable that any water located would be more highly mineralized than that from shallow wells. The excavation of deep dugouts in suitable locations to retain surface water is highly recommended.

Township 32, Range 1

With the exception of a small area of glacial till in the northeastern corner, this township is mantled by glacial lake sands and bright yellow, silty clay. Numerous lakes occur in the northwestern and central parts of the area. With the exception of sections 4, 5, and 6, and small parts of sections 7, 8, and 9, the western half of the township lies within the Key Indian Reserve, No. 65. The reservation is very rough and unsuitable for cultivation.

Assiniboine river enters the township in section 7, meanders in an easterly direction through sections 8 and 9, and then flows in a southerly direction leaving the township in section 3. It re-enters the township in section 1, and flows in a northerly direction, leaving in section 25. The river is the main source of water for stock and domestic needs in this township. Three shallow lakes in sections 11, 15, and 22 are also used for stock when they contain water, but during drought periods they become almost dry and the water is too highly mineralized to be used.

Many shallow holes have been sunk in attempting to locate water. In the area south of the Key Indian Reserve the glacial lake sands are fairly thick and wells from 10 to 24 feet deep yield an abundance of moderately soft water that is used for all farm purposes, including irrigation. The wells yield sufficient water for 40 to 100 head of stock. In the eastern half of the township most wells have failed to encounter water-bearing sands or gravels. Small seepages of water are obtained in some places, but the water is so highly mineralized that it cannot be used for any farm purpose. A few farmers have dug dry holes 40 to 56 feet deep, and only small seepages of water were obtained from the blue boulder clay. Wells in the south half of section 14 tap pockets of sand and gravel below clay at a depth of 14 to 26 feet. The water is very highly mineralized and not usable for household purposes, but each well will supply 30 to 40 head of stock. With the exception of the south half of section 14, the residents of this area haul water from Assiniboine river for household and stock purposes. During the winter, ice is hauled and packed for summer use. It is advisable to boil the river water before using it for domestic needs. Deep drilling is not advised in this area. Some surface water may be collected by dugouts.

Township 32, Range 2

Assiniboine river enters the township in section 19 and leaves in section 12. The river is very meandering and occupies a winding, shallow valley. The elevation of the river decreases from 1,550 feet in section 19 to 1,500 feet in section 10. Key brook, a permanent stream that is fed by numerous springs, flows in a southerly direction along the western boundary of the Key Indian Reserve to join Assiniboine river in section 11. Numerous deep lakes are situated in the northern section of this

township. The largest is Witouche lake which lies at an elevation of 1,594 feet above sea-level and contains 20 to 30 feet of water in years of normal rainfall. This township is overlain by thick deposits of glacial lake sands and clays. With the exceptions of sections 5 and 6 the area south of Assiniboine river is very flat or gently sloping. North of the river the ground surface is very undulating with many rounded hills and knolls. This region is sandy and during the drought period of 1929-1934 the sand was badly wind-blown in many sections. With the exception of sections 1 and 2, and parts of sections 11 and 12, the eastern 2 miles of the township lie within the Key Indian Reserve, No. 65. Spruce and poplar are common in the township.

With one exception every farm in this township has an abundance of water. A few dry holes have been sunk, but with further prospecting a sufficient supply of water was located at shallow depth. The wells are from 7 to 57 feet deep and are dug entirely in the glacial lake deposits. In some sections layers of silty clay were encountered above the sand. The water is moderately hard, being locally termed soft, and it is used for all farm purposes including the irrigation of gardens. The individual wells will supply from 60 to 100 head of stock. The supply was apparently not affected by the drought of 1930 to 1934. There should be no difficulty in obtaining adequate supplies of water for local needs in this township.

Township 32, Range 3

With the exception of small, glacial, till-covered areas in sections 6 and 18, this township is mantled by glacial lake deposits. In the southern half of the township the deposits are composed of clay that contains a few scattered deposits of sand. Except for a shallow valley that contains an intermittent creek this area is very flat. The northern half of the township

is mantled by glacial lake sands that in some sections extend from the surface to a depth of at least 25 feet. The ground surface is very undulating and unsuitable for cultivation due to the sandy top-soil. The sand is wind-blown in most of the northern sections. Assiniboine river flows in a southeasterly direction through the northern part of the township. It occupies a wide, shallow valley. Fulton lake in the west-central sections is a permanent body of water, and contained 4 feet of water in 1935. In years of normal rainfall it contains 10 to 12 feet of water. The average elevation in the township is 1,600 feet above sea-level. Clumps of poplar and spruce occur throughout the area, particularly in the swampy sections.

Water supplies are obtained mainly from shallow wells, but a few farmers find it convenient to water their stock at the lakes or Assiniboine river. In the glacial lake clay-covered area in the southern part the wells are from 9 to 32 feet deep and pass through 7 to 20 feet of light-coloured, silty clay and tap a sand aquifer. The individual wells yield sufficient quantities of water for domestic use and 10 to 25 head of stock. The water is hard, and much of it "alkaline", but with few exceptions it is used for all household purposes. In the glacial lake sand-covered area wells from 4 to 25 feet deep yield water that is moderately hard to soft, and which is used for drinking and all farm purposes. Most of the wells yield sufficient water for 50 to 100 head of stock. Water is easily located in this area, but in some sections the yield is not large and two or more wells are used. A 3-foot well in the SE.$\frac{1}{4}$, section 28, is fed by a spring and yields sufficient water for at least 500 head of stock.

In section 6, where the glacial lake deposits are very thin and glacial till occurs at the surface, greater difficulty is experienced in obtaining water at shallow depths. A well in the

NW.$\frac{1}{4}$, section 6, tapped a pocket of fine sand in the blue clay, at a depth of 32 feet, which yields highly mineralized water. This water-bearing deposit is not continuous and in the NE.$\frac{1}{4}$ and SE.$\frac{1}{4}$, section 6, wells were dug to depths of 90 and 99 feet, respectively, before water-bearing beds of gravel were encountered in the blue clay. The wells yield abundant supplies of water. The water in the well in the NE.$\frac{1}{4}$, section 6, is under hydrostatic pressure and rises to a point 30 feet below the surface. Although the water has a large amount of mineral salts in solution it can be used for household purposes. Few wells in this township were affected by the drought of 1930 to 1934. There should be no difficulty experienced in obtaining adequate supplies of water in the township.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF KEYES, NO. 303, SASKATCHEWAN

| Township | 31 | 31 | 31 | 32 | 32 | 32 | Total No. in municipality |
|---|---|---|---|---|---|---|---|
| West of 2nd meridian Range | 1 | 2 | 3 | 1 | 2 | 3 | |
| Total No. of Wells in Township | 74 | 71 | 177 | 106 | 78 | 93 | 599 |
| No. of wells in bedrock | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of wells in glacial drift | 72 | 71 | 177 | 106 | 78 | 93 | 577 |
| No. of wells in alluvium | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Permanency of Water Supply | | | | | | | |
| No. with permanent supply | 54 | 49 | 40 | 28 | 60 | 82 | 313 |
| No. with intermittent supply | 6 | 10 | 9 | 23 | 1 | 0 | 49 |
| No. dry holes | 14 | 12 | 128 | 55 | 17 | 11 | 237 |
| Types of Wells | | | | | | | |
| No. of flowing artesian wells | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of non-flowing artesian wells | 5 | 1 | 7 | 8 | 1 | 5 | 27 |
| No. of non-artesian wells | 55 | 58 | 42 | 43 | 60 | 77 | 335 |
| Quality of Water | | | | | | | |
| No. with hard water | 49 | 46 | 47 | 42 | 30 | 56 | 270 |
| No. with soft water | 11 | 13 | 2 | 9 | 31 | 26 | 92 |
| No. with salty water | 0 | 1 | 1 | 2 | 0 | 0 | 4 |
| No. with "alkaline" water | 5 | 0 | 15 | 31 | 1 | 14 | 66 |
| Depths of Wells | | | | | | | |
| No. from 0 to 50 feet deep | 74 | 69 | 171 | 104 | 76 | 91 | 585 |
| No. from 51 to 100 feet deep | 0 | 2 | 6 | 2 | 2 | 2 | 14 |
| No. from 101 to 150 feet deep | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. from 151 to 200 feet deep | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. from 201 to 500 feet deep | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. from 501 to 1,000 feet deep | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. over 1,000 feet deep | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| How the Water is Used | | | | | | | |
| No. usable for domestic purposes | 54 | 56 | 36 | 17 | 56 | 76 | 295 |
| No. not usable for domestic purposes | 6 | 3 | 13 | 34 | 5 | 6 | 67 |
| No. usable for stock | 58 | 59 | 46 | 33 | 57 | 82 | 335 |
| No. not usable for stock | 2 | 0 | 3 | 18 | 4 | 0 | 27 |
| Sufficiency of Water Supply | | | | | | | |
| No. sufficient for domestic needs | 54 | 49 | 40 | 28 | 60 | 82 | 313 |
| No. insufficient for domestic needs | 6 | 10 | 9 | 23 | 1 | 0 | 49 |
| No. sufficient for stock needs | 44 | 46 | 23 | 22 | 45 | 70 | 250 |
| No. insufficient for stock needs | 16 | 13 | 26 | 29 | 16 | 12 | 112 |

# 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. Resident

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.

## Water from the Unconsolidated Deposits

No samples of water from wells in the municipality of Keyes were taken for analysis. The water from wells sunk in the glacial lake sands is in many cases reported as soft and the total dissolved solid content is probably not very high. The water is usable for drinking and general farm purposes. Care should be taken to see that the shallow wells are not contaminated by polluted surface waters.

The water from shallow wells sunk in the lake clay and glacial till is generally reported to be very hard. That from a number of wells is bitter to the taste, laxative, and not usable for domestic purposes. This water is highly mineralized and the laxative effect and bitter taste are due to the large amount of Epsom salts ($MgSO_4$) and Glauber's salt ($Na_2SO_4$) contained in solution. In those areas where usable water cannot be obtained from wells, many of the residents use water from Whitesand and Assiniboine rivers for drinking and household purposes. The river water should be filtered and boiled before it is used for domestic purposes.

## Water from the Bedrock

No wells in this municipality have encountered the bedrock. Any water that may be obtained from the Marine Shale series will probably be too highly mineralized for farm use.

# WELL RECORDS—Rural Municipality of KEYES NO.303, 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 | NE. | 14 | 31 | 1 | 2 | Dug | 30 | 1,560 | - 10 | 1,550 | 26 | 1,534 | Glacial sand | Hard, clear | | D, S | Sufficient for 10 head stock; also use a pond and river for stock. |
| 2 | NE. | 15 | " | " | " | Dug | 16 | 1,550 | - 11 | 1,539 | 11 | 1,539 | Glacial white sand | Soft, clear | | D, S | Sufficient for local needs. |
| 3 | SE. | 16 | " | " | " | Dug | 18 | 1,520 | - 15 | 1,505 | 15 | 1,515 | Glacial sand | Hard, clear | | D, S | Sufficient for local needs; also several dry holes to a depth of 20 feet. |
| 4 | SW. | 17 | " | " | " | Dug | 22 | 1,555 | - 14 | 1,541 | 14 | 1,541 | Glacial yellow sandy clay | Hard, clear | | D, S | Sufficient for local needs; also a dry hole. |
| 5 | NE. | 18 | " | " | " | Dug | 20 | 1,530 | - 13 | 1,517 | 20 | 1,510 | Glacial gravel | Hard, clear | | D, S | Sufficient for local needs with aid of another well 6 feet deep. |
| 6 | NW. | 19 | " | " | " | Dug | 14 | 1,600 | - 11 | 1,589 | 11 | 1,589 | Glacial drift | Hard, clear | | D, S | Sufficient for 14 head stock; another well 35 feet deep. |
| 7 | SE. | 19 | " | " | " | Dug | 34 | 1,570 | - 22 | 1,548 | 28 | 1,542 | Glacial drift | Soft, clear | | D, S | Sufficient for 30 head stock. |
| 8 | NE. | 19 | " | " | " | Dug | 34 | 1,590 | - 24 | 1,566 | 34 | 1,556 | Glacial gravel | Hard, clear | | D, S, I | Sufficient for 50 head stock. |
| 9 | SW. | 20 | " | " | " | Dug | 24 | 1,570 | - 20 | 1,550 | 20 | 1,550 | Glacial yellow sandy clay | Hard, clear | | D, S, I | Sufficient for 35 head stock. |
| 10 | SE. | 20 | " | " | " | Dug | 32 | 1,550 | - 12 | 1,538 | | | Glacial drift | Hard, clear | | D, S | Sufficient for 40 head stock. |
| 11 | NE. | 20 | " | " | " | Dug | 26 | 1,560 | - 20 | 1,540 | 20 | 1,540 | Glacial yellow sandy clay | Hard, clear | | D, S, I | Sufficient for 15 head stock. |
| 12 | SW. | 21 | " | " | " | Dug | 18 | 1,550 | - 12 | 1,538 | 12 | 1,538 | Glacial yellow sandy clay | Hard, clear | | D, S, I | Insufficient for more than 20 head stock during winter. |
| 13 | SE. | 21 | " | " | " | Dug | 18 | 1,550 | - 17 | 1,533 | 17 | 1,533 | Glacial sand | Hard, clear | | D, S | Insufficient for more than 10 head stock. |
| 14 | NW. | 22 | " | " | " | Dug | 16 | 1,500 | - 12 | 1,488 | 15 | 1,485 | Recent sand | Hard, clear | | D, S | Sufficient for 35 head stock; also a 6-foot well that freezes in winter. |
| 15 | SW. | 22 | " | " | " | Dug | 10 | 1,540 | - 8 | 1,532 | 8 | 1,532 | Glacial sand | Hard, clear | | D, S | Sufficient for local needs; also another well 11 feet deep. |
| 16 | SE. | 22 | " | " | " | Dug | 22 | 1,490 | - 18 | 1,472 | | | Glacial drift | Hard, clear | | D, S | Sufficient only for domestic needs; stock watered at river. |
| 17 | SE. | 23 | " | " | " | Dug | 19 | 1,600 | - 16 | 1,584 | 16 | 1,584 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 35 head stock. |
| 18 | NE. | 23 | " | " | " | Dug | 19 | 1,510 | | | | | Glacial drift | Hard | | D, S | Intermittent supply. |
| 19 | NW. | 24 | " | " | " | Dug | 24 | 1,475 | - 19 | 1,456 | 19 | 1,456 | Glacial sand | Hard, clear, "alkaline" | | D, S | Insufficient for local needs. |
| 20 | NW. | 25 | " | " | " | Dug | 10 | 1,490 | - 8 | 1,482 | 8 | 1,482 | Glacial yellow sandy clay | Soft, clear | | D, S | Sufficient for 20 head stock; also another well. |
| 21 | NE. | 26 | " | " | " | Dug | 30 | 1,510 | | | | | | | | | Dry hole; base in glacial drift; also 2 other wells 20 and 12 feet deep. |
| 22 | SW. | 26 | " | " | " | Dug | 25 | 1,500 | - 15 | 1,485 | | | Glacial drift | Hard, clear | | S | Intermittent supply; use river water for all requirements; also many dry holes. |
| 23 | NE. | 27 | " | " | " | Dug | 6 | 1,510 | 0 | 1,510 | 0 | 1,510 | Glacial sand | Soft, clear | | D, S, I | Intermittent supply; due to freezing in winter. |
| 24 | SE. | 27 | " | " | " | Dug | 25 | 1,530 | - 21 | 1,509 | 21 | 1,509 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 30 head stock. |
| 25 | SW. | 27 | " | " | " | Dug | 25 | 1,530 | - 15 | 1,515 | | | Glacial drift | Hard, clear | | D | Sufficient only for domestic needs; also some dry holes. |
| 26 | SE. | 28 | " | " | " | Dug | 10 | 1,540 | - 5 | 1,535 | 9 | 1,531 | Glacial sand | Soft, clear | | D, S | Sufficient for 20 head stock; also another well and a spring. |
| 27 | NW. | 29 | " | " | " | Dug | 7 | 1,550 | 0 | 1,550 | 0 | 1,550 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 head stock; also several springs. |

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 KEYES NO. 303, 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 | SE. | 29 | 31 | 1 | 2 | Dug | 20 | 1,560 | - 16 | 1,544 | 16 | 1,544 | Glacial sand | Hard, clear | | D, S | Insufficient for more than 15 head stock; also another well 12 feet deep. |
| 29 | SE. | 30 | " | " | " | Dug | 27 | 1,550 | - 20 | 1,530 | 20 | 1,530 | Glacial sandy clay | Hard, clear | | D, S, I | Sufficient for 25 head stock. |
| 30 | NE. | 30 | " | " | " | Dug | 45 | 1,600 | - 35 | 1,565 | 35 | 1,565 | Glacial sand | Hard, clear | | D, S | Sufficient for 16 head stock; also a shallow well. |
| 31 | SW. | 30 | " | " | " | Dug | 35 | 1,600 | - 23 | 1,577 | | | Glacial drift | Hard, clear, "alkaline" | | D, S | Sufficient for local needs. |
| 32 | SE. | 31 | " | " | " | Dug | 14 | 1,560 | - 9 | 1,551 | | | Glacial drift | Hard, clear | | D, S | Sufficient only for domestic needs. |
| 33 | NW. | 32 | " | " | " | Dug | 20 | 1,525 | - 14 | 1,511 | 14 | 1,511 | Glacial red sand | Soft, clear | | D, S | Sufficient for local needs. |
| 34 | SE. | 32 | " | " | " | Dug | 26 | 1,570 | - 20 | 1,550 | | | Glacial drift | Hard, clear | | D, S | Sufficient for local needs. |
| 35 | NE. | 32 | " | " | " | Dug | 16 | 1,520 | - 8 | 1,512 | 8 | 1,512 | Glacial sand | Soft, clear | | D, S | Sufficient for 50 head stock; also dry holes 20 to 45 feet deep. |
| 36 | NW. | 33 | " | " | " | Dug | 19 | 1,570 | - 11 | 1,559 | 19 | 1,551 | Glacial sand | Hard, clear | | D, S | Sufficient supply; also another well 15 feet deep. |
| 37 | SW. | 33 | " | " | " | Dug | 16 | 1,545 | - 13 | 1,532 | 13 | 1,532 | Glacial sand | Soft, clear | | D, S | Sufficient for 35 head stock; also another well with good supply. |
| 38 | SE. | 33 | " | " | " | Dug | 9 | 1,560 | - 3 | 1,557 | 3 | 1,557 | Glacial sand | Hard, clear | | D, S | Sufficient supply; also another well 18 feet deep. |
| 39 | SW. | 34 | " | " | " | Dug | 18 | 1,575 | - 12 | 1,563 | 12 | 1,563 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 100 head stock. |
| 40 | SE. | 34 | " | " | " | Dug | 24 | 1,565 | - 10 | 1,555 | 24 | 1,541 | Glacial sand | Hard | | N | Abundant supply, but not used hauls water from river. |
| 41 | NW. | 35 | " | " | " | Dug | 23 | 1,500 | - 18 | 1,482 | | | Glacial drift | Hard, clear, "alkaline" | | S | Sufficient for 40 head stock; haul water from river for domestic needs. |
| 42 | SW. | 35 | " | " | " | Dug | 10 | 1,510 | - 6 | 1,504 | | | Glacial drift | Hard, cloudy, "alkaline" | | N | Unfit for use; haul water and use river. |
| 43 | SE. | 35 | " | " | " | Dug | 20 | 1,520 | - 15 | 1,505 | | | Glacial drift | Hard, clear, "alkaline" | | S | Sufficient for 40 head stock; haul water for drinking from river. |
| 44 | NW. | 36 | " | " | " | Dug | 13 | 1,490 | - 10 | 1,480 | | | Glacial drift | Hard, clear | | D, S | Sufficient for local needs; stock watered at river. |
| 1 | SW | 13 | 31 | 2 | 2 | Dug | 15 | 1,530 | - 8 | 1,522 | 14 | 1,516 | Glacial sand | Hard, clear | | D | Intermittent supply; stock watered at river |
| 2 | NW. | 13 | " | " | " | Dug | 22 | 1,550 | - 18 | 1,532 | 20 | 1,530 | Glacial sand | Soft, clear | | D, S | Sufficient for 15 head stock. |
| 3 | SW. | 14 | " | " | " | Dug | 12 | 1,580 | - 9 | 1,571 | 9 | 1,571 | Glacial sand | Soft, clear | | D, S | Sufficient for 25 head stock. |
| 4 | NW. | 14 | " | " | " | Bored | 14 | 1,550 | - 8 | 1,542 | 11 | 1,539 | Glacial black sand | Hard, clear | | D, S | Sufficient supply; also a 6-foot well is used. |
| 5 | SW. | 15 | " | " | " | Dug | 10 | 1,560 | - 6 | 1,554 | 6 | 1,554 | Glacial gravel | Hard, clear | | D, S | Sufficient supply; also another shallow well. |
| 6 | NW. | 15 | " | " | " | Dug | 18 | 1,575 | - 14 | 1,561 | 14 | 1,561 | Glacial sand | Hard, clear | | D, S | Sufficient for local needs. |
| 7 | NE. | 16 | " | " | " | Dug | 18 | 1,560 | - 14 | 1,546 | 16 | 1,544 | Glacial sand | Hard, clear | | D, S | Sufficient for 40 head stock. |
| 8 | NE. | 18 | " | " | " | Dug | 14 | 1,550 | - 6 | 1,544 | 11 | 1,539 | Glacial gravel | Soft, clear | | D, S | Sufficient for 10 head stock; also use river for stock. |
| 9 | SE. | 18 | " | " | " | Dug | 24 | 1,550 | - 20 | 1,530 | 22 | 1,528 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 50 head stock. |
| 10 | SW | 18 | " | " | " | Dug | 18 | 1,560 | - 13 | 1,547 | | | Glacial drift | Hard, clear | | D, S | Intermittent supply; also many 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 KEYES NO. 303, 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 | NW. | 18 | 31 | 2 | 2 | Dug | 25 | 1,570 | - 23 | 1,547 | | | Glacial drift | Hard, clear | | D, S | Insufficient for local needs. |
| 12 | SW. | 19 | " | " | " | Dug | 15 | 1,560 | - 5 | 1,555 | | | Glacial gravel | Hard, clear | | D, S | Sufficient for local needs; 2 other similar wells. |
| 13 | NW. | 19 | " | " | " | Dug | 21 | 1,560 | | | | | | | | | Dry hole; base in glacial clay; several other dry holes up to 20 feet deep. |
| 14 | SW. | 20 | " | " | " | Dug | 20 | 1,550 | - 8 | 1,542 | | | Glacial sand | Hard, clear | | D, I | Intermittent supply; also many dry holes to a depth of 20 to 45 feet. |
| 15 | NW | 21 | " | " | " | Dug | 18 | 1,560 | - 12 | 1,548 | 14 | 1,546 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 80 head stock; also a spring on farm. |
| 16 | SW. | 21 | " | " | " | Dug | 23 | 1,550 | - 15 | 1,535 | | | Glacial drift | Hard, clear | | D, S | Intermittent supply. |
| 17 | SE. | 21 | " | " | " | Bored | 80 | 1,600 | - 70 | 1,530 | | | Glacial drift | Hard, clear, salty | | S | Sufficient supply; haul water for domestic use; also an 80-foot dry hole. |
| 18 | NW. | 22 | " | " | " | Dug | 12 | 1,550 | - 4 | 1,546 | 4 | 1,546 | Glacial sand | Hard, clear | | D, S | Intermittent supply; haul water and use river for stock. |
| 19 | SW. | 22 | " | " | " | Dug | 33 | 1,530 | - 29 | 1,501 | 30 | 1,500 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 25 head stock; also a 40-foot well in a ravine. |
| 20 | NW. | 23 | " | " | " | Dug | 22 | 1,550 | - 19 | 1,531 | 19 | 1,531 | Glacial gravel | Hard, clear | | D, S | Intermittent supply; also a 50-foot dry hole; other wells 24 and 13 feet deep. |
| 21 | SW. | 23 | " | " | " | Dug | 20 | 1,580 | - 12 | 1,568 | | | Glacial sandy clay | Hard, clear | | D, S | Intermittent supply; another well 16 feet deep. |
| 22 | NE. | 24 | " | " | " | Dug | 16 | 1,500 | - 13 | 1,487 | 13 | 1,487 | Glacial yellow sandy clay | Hard, clear | | D, S | Sufficient for 25 head stock. |
| 23 | NE. | 25 | " | " | " | Dug | 40 | 1,600 | - 33 | 1,567 | | | Glacial drift | Hard, clear | | S | Sufficient for 15 to 20 head stock; also another well 33 feet deep. |
| 24 | SW. | 26 | " | " | " | Spring | 4 | 1,550 | 0 | 1,550 | 0 | 1,550 | Glacial gravel | Soft, clear | | D, S | Sufficient for 65 head stock. |
| 25 | NE. | 27 | " | " | " | Dug | 17 | 1,600 | - 14 | 1,586 | 15 | 1,585 | Glacial sand | Hard, clear | | D, S | Sufficient for 20 head stock. |
| 26 | SE. | 27 | " | " | " | Dug | 12 | 1,550 | - 7 | 1,543 | 7 | 1,543 | Glacial sand | Soft, clear | | D, S | Sufficient for 35 head stock. |
| 27 | NW. | 27 | " | " | " | Dug | 18 | 1,600 | - 13 | 1,587 | 14 | 1,586 | Glacial sand | Hard, clear | | D, S | Sufficient for 20 head stock; another well 12 feet deep. |
| 28 | NE. | 28 | " | " | " | Dug | 22 | 1,600 | - 17 | 1,583 | 18 | 1,582 | Glacial sand | Hard, clear | | D, S | Sufficient supply; another similar well 38 feet deep. |
| 29 | NW. | 31 | " | " | " | Dug | 26 | 1,605 | - 22 | 1,583 | | | Glacial drift | Hard, clear | | S | Sufficient for 25 head stock; a shallow well is used for domestic needs. |
| 30 | SW. | 31 | " | " | " | Dug | 20 | 1,610 | - 14 | 1,596 | 18 | 1,592 | Glacial sand | Hard, clear | | D, S | Sufficient for local needs; several similar wells. |
| 31 | SE. | 31 | " | " | " | Dug | 26 | 1,610 | - 20 | 1,590 | 20 | 1,590 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 35 head stock. |
| 32 | NE. | 31 | " | " | " | Dug | 30 | 1,615 | - 26 | 1,589 | 26 | 1,589 | Glacial sand | Soft, clear | | D, S | Sufficient for 35 head stock; also another similar well. |
| 33 | SW. | 32 | " | " | " | Dug | 18 | 1,600 | - 15 | 1,585 | 15 | 1,585 | Glacial sand | Hard, clear | | D, S | Sufficient for 30 head stock; also an 8-foot well. |
| 34 | NW. | 33 | " | " | " | Dug | 34 | 1,600 | - 32 | 1,568 | 32 | 1,568 | Glacial sand | Soft, clear | | D, S | Intermittent supply. |
| 35 | SW. | 33 | " | " | " | Dug | 28 | 1,605 | - 25 | 1,580 | 25 | 1,580 | Glacial sand | Soft, clear | | D, S | Sufficient for 25 head stock. |
| 36 | NE. | 33 | " | " | " | Dug | 25 | 1,615 | - 21 | 1,594 | 21 | 1,594 | Glacial sandy clay | Hard, clear | | D, S | Sufficient for 40 head stock. |
| 37 | NW. | 34 | " | " | " | Dug | 23 | 1,610 | - 19 | 1,591 | 20 | 1,590 | Glacial sand | Soft, clear | | D, S | Sufficient for 150 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 KEYES NO.303, 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | SE. | 34 | 31 | 2 | 2 | Dug | 24 | 1,605 | - 21 | 1,584 | 21 | 1,584 | Glacial red sand | Hard, clear | | D, S | Sufficient for local needs. |
| 39 | NW. | 35 | " | " | " | Dug | 30 | 1,610 | - 25 | 1,585 | | | Glacial drift | Hard, clear | | D, S | Insufficient supply; also another similar well; hauls water. |
| 40 | NE. | 35 | " | " | " | Dug | 25 | 1,610 | - 20 | 1,590 | 22 | 1,588 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 50 head stock. |
| 41 | SE. | 36 | " | " | " | Dug | 45 | 1,610 | - 34 | 1,576 | | | Glacial fine sand | Hard, clear | | D, S | Sufficient for local needs. |
| 1 | NE. | 13 | 31 | 3 | 2 | Dug | 4 | 1,590 | 0 | 1,590 | 0 | 1,590 | Glacial sand | Soft, clear | | D, S, I | Sufficient for local needs. |
| 2 | NW. | 13 | " | " | " | Dug | 8 | 1,580 | - 5 | 1,575 | 5 | 1,575 | Glacial sand | Hard, clear | | D, S | Sufficient only for domestic needs; use river for stock. |
| 3 | NE. | 14 | " | " | " | Dug | 12 | 1,560 | - 10 | 1,550 | 10 | 1,550 | Glacial sand and gravel | Soft, clear | | D, S | Sufficient for local needs. |
| 4 | SE. | 14 | " | " | " | Dug | 12 | 1,580 | - 8 | 1,572 | 8 | 1,572 | Glacial gravel | Hard, clear | | D, S | Sufficient for 20 head stock; also use river. |
| 5 | NW. | 14 | " | " | " | Dug | 15 | 1,600 | - 5 | 1,595 | 5 | 1,595 | Glacial sand | Hard, clear | | D, S | Sufficient for 50 to 60 head stock. |
| 6 | NE. | 15 | " | " | " | Dug | 12 | 1,580 | - 9 | 1,571 | 9 | 1,571 | Glacial gravel | Hard, clear | | D, S | Sufficient for 30 head stock. |
| 7 | NW. | 15 | " | " | " | Bored | 45 | 1,560 | - 41 | 1,519 | | | Glacial drift | Hard, cloudy, "alkaline" | | S | Insufficient for local needs; also a 5-foot well with intermittent supply. |
| 8 | NW. | 16 | " | " | " | Dug | 16 | 1,590 | 0 | 1,590 | 15 | 1,575 | Glacial sand | Hard, clear, "alkaline" | | S | Intermittent supply; also many dry holes 20 to 40 feet deep. |
| 9 | NW. | 17 | " | " | " | Dug | 24 | 1,595 | - 10 | 1,585 | 22 | 1,573 | Glacial gravel | Hard, clear, "alkaline" | | S | Sufficient for 10 head stock; also many dry holes. |
| 10 | NW. | 18 | " | " | " | Dug | 12 | 1,610 | - 3 | 1,607 | | | Glacial drift | Hard, clear | | D, S | Intermittent supply; also 3 dry holes 57, 35 and 30 feet deep. |
| 11 | NE. | 19 | " | " | " | Dug | 35 | 1,605 | - 20 | 1,585 | 30 | 1,575 | Glacial sand | Hard, "alkaline" | | S | Intermittent supply; also many dry holes 20 to 55 feet deep. |
| 12 | SW. | 20 | " | " | " | Dug | 25 | 1,605 | - 10 | 1,595 | 22 | 1,583 | Glacial gravel | Hard, clear, "alkaline" | | S | Insufficient for more than 10 head stock; also some dry holes. |
| 13 | SE. | 20 | " | " | " | Dug | 15 | 1,605 | - 11 | 1,594 | | | Glacial drift | Hard, clear | | D, S | Insufficient for more than 10 head stock. |
| 14 | NW. | 22 | " | " | " | Dug | 22 | 1,605 | - 14 | 1,591 | 20 | 1,585 | Glacial sand | Hard, cloudy, "alkaline" | | S | Insufficient for local needs. |
| 15 | SW. | 22 | " | " | " | Dug | 14 | 1,600 | - 10 | 1,590 | 12 | 1,588 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 35 head stock; also another well with small supply. |
| 16 | NE. | 22 | " | " | " | Dug | 36 | 1,600 | - 30 | 1,570 | | | Glacial drift | Hard, clear, "alkaline" | | D, S | Intermittent supply; also 100 test holes to a depth of 40 feet. |
| 17 | SE. | 24 | " | " | " | Dug | 15 | 1,570 | - 12 | 1,558 | | | Glacial drift | Hard, clear | | D, S | Sufficient for 30 head stock; also another similar well. |
| 18 | NE. | 24 | " | " | " | Dug | 30 | 1,595 | - 22 | 1,573 | 30 | 1,565 | Glacial gravel | Hard, clear | | D, S | Sufficient for 50 head stock; 2 other similar wells. |
| 19 | SE. | 25 | " | " | " | Dug | 25 | 1,600 | - 18 | 1,582 | 25 | 1,575 | Glacial sand | Hard, clear, "alkaline" iron | | N | Sufficient supply; but unfit for use. |
| 20 | NE. | 25 | " | " | " | Dug | 22 | 1,610 | - 10 | 1,600 | | | Glacial drift | Hard, clear, "alkaline" | | D, S | Sufficient for 15 to 25 head stock. |
| 21 | NE. | 26 | " | " | " | Dug | 20 | 1,615 | - 10 | 1,605 | 18 | 1,597 | Glacial fine sand | Hard, clear, salty, "alkaline" | | S | Insufficient for local needs. |

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 KEYES NO.303, SASKATCHEWAN

| WELL No. | LOCATION ¼ | Sec. | Tp. | Rge. | Mer. | TYPE OF WELL | DEPTH OF WELL | ALTITUDE WELL (above sea level) | HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface | Elev. | PRINCIPAL WATER-BEARING BED Depth | Elev. | Geological Horizon | CHARACTER OF WATER | TEMP. OF WATER (in °F.) | USE TO WHICH WATER IS PUT | YIELD AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | NE. | 27 | 31 | 3 | 2 | Dug | 29 | 1,610 | - 27 | 1,583 | 27 | 1,583 | Glacial sand | Hard, "alkaline" | | S | Insufficient for more than 5 to 6 head stock; haul water for domestic needs. |
| 23 | NW. | 27 | " | " | " | Dug | 30 | 1,610 | - 10 | 1,600 | 30 | 1,580 | Glacial fine sand | Hard, cloudy | | D, S | Sufficient for 25 head stock. |
| 24 | NW. | 28 | " | " | " | Dug | 29 | 1,610 | - 27 | 1,583 | | | Glacial drift | Hard, cloudy | | S | Intermittent supply. |
| 25 | NW. | 29 | " | " | " | Bored | 57 | 1,600 | - 27 | 1,573 | 24 | 1,576 | Glacial sand | Hard, cloudy, "alkaline" | | N | Unfit for use; and insufficient supply; also a 20-foot well for domestic needs. |
| 26 | NW. | 31 | " | " | " | Bored | 37 | 1,615 | - 25 | 1,590 | 35 | 1,580 | Glacial gravel | Hard, clear | | D, S | Sufficient for 50 head stock; also many dry holes to a depth of 40 feet. |
| 27 | NW. | 32 | " | " | " | Dug | 40 | 1,600 | - 30 | 1,570 | | | Glacial drift | Hard, clear, "alkaline" | | D, S | Insufficient for 10 head stock; also another well with small supply; a 60-foot dry hole. |
| 28 | SW. | 32 | " | " | " | Bored | 56 | 1,600 | - 20 | 1,580 | 56 | 1,544 | Glacial drift | Hard, bitter, "alkaline" | | S | Sufficient for 80 to 100 head stock; also a shallow well for domestic needs; many dry holes. |
| 29 | NE. | 32 | " | " | " | Dug | 30 | 1,600 | - 25 | 1,575 | | | Glacial gravel | Hard, clear | | D, S | Intermittent supply; also many dry holes 20 to 60 feet deep. |
| 30 | SW. | 33 | " | " | " | Dug | 16 | 1,600 | - 14 | 1,586 | | | Glacial drift | Hard, cloudy, bitter | | N | Intermittent supply, and unfit for use; many dry holes 20 to 50 feet deep. |
| 31 | NE. | 33 | " | " | " | Dug | 20 | 1,605 | - 15 | 1,590 | 18 | 1,587 | Glacial sand | Hard, clear | | D, S | Insufficient for more than 10 head stock; 3 other similar wells. |
| 32 | NW. | 34 | " | " | " | Dug | 20 | 1,610 | - 15 | 1,595 | 18 | 1,592 | Glacial sand | Hard, clear | | D, S | Sufficient for 10 head stock; another similar well. |
| 33 | NW. | 35 | " | " | " | Dug | 22 | 1,605 | - 19 | 1,586 | | | Glacial sandy clay | Hard, clear | | D, S | Insufficient for more than 10 head stock; also another well 9 feet deep. |
| 34 | NE. | 35 | " | " | " | Dug | 20 | 1,610 | - 14 | 1,596 | 18 | 1,592 | Glacial sand | Hard, clear | | D, S | Sufficient for 15 head stock; also another similar well. |
| 35 | SE. | 36 | " | " | " | Dug | 26 | 1,605 | - 20 | 1,685 | | | Glacial drift | Hard, red "alkaline" | | D, S | Sufficient for 35 head stock. |
| 1 | NW. | 1 | 32 | 1 | 2 | Dug | 40 | 1,510 | - 25 | 1,485 | | | Glacial drift | Hard, cloudy, salty, "alkaline" | | S | Sufficient for 6 head stock; another similar well; hauls water for domestic needs. |
| 2 | SE. | 2 | " | " | " | Dug | 20 | 1,510 | | | | | | | | | Dry hole; base in glacial blue clay; 4 other similar dry holes. |
| 3 | NE. | 2 | " | " | " | Dug | 16 | 1,510 | - 4 | 1,506 | | | Glacial drift | Hard, clear | | N | Intermittent supply; also 6 dry holes to a depth of 20 feet. |
| 4 | SE. | 4 | " | " | " | Dug | 20 | 1,550 | - 15 | 1,535 | 19 | 1,531 | Glacial sand | Hard, clear | | D, S | Sufficient for 16 head stock; also another similar well. |
| 5 | SW. | 4 | " | " | " | Dug | 12 | 1,550 | - 9 | 1,541 | 9 | 1,541 | Glacial sand | Soft, clear | | D, S | Sufficient for 10 head stock. |
| 6 | NW. | 4 | " | " | " | Dug | 24 | 1,580 | - 22 | 1,558 | 22 | 1,558 | Glacial sand | Hard, clear | | D, S | Sufficient for domestic needs and horses; cattle are watered at river. |
| 7 | SE. | 5 | " | " | " | Dug | 16 | 1,590 | - 9 | 1,581 | 9 | 1,581 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 100 head stock; another well 24 feet deep; also many dry holes to a depth of 25 feet. |
| 8 | NE. | 5 | " | " | " | Dug | 24 | 1,570 | - 2 | 1,568 | 2 | 1,568 | Glacial fine sand | Soft, clear | | D, S, I | Sufficient for 40 head stock; also another well that is not used. |
| 9 | SW. | 5 | " | " | " | Dug | 60 | 1,600 | - 54 | 1,546 | | | Glacial sandy clay | Hard, clear | | D, S | Intermittent supply; also another well with good supply, but poor quality. |
| 10 | SW. | 6 | " | " | " | Dug | 33 | 1,610 | - 30 | 1,580 | 30 | 1,580 | Glacial sand | Hard, clear | | D, S | Sufficient for 10 head stock; also another well 7 feet deep. |
| 11 | SW. | 9 | " | " | " | Dug | 45 | 1,540 | - 40 | 1,500 | | | Glacial sand | Soft, clear | | D, S | Sufficient for 17 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 KEYES NO. 303, SASKATCHEWAN

| WELL No. | LOCATION ¼ | Sec. | Tp. | Rge. | Mer. | TYPE OF WELL | DEPTH OF WELL | ALTITUDE WELL (above sea level) | HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface | Elev. | PRINCIPAL WATER-BEARING BED Depth | Elev. | Geological Horizon | CHARACTER OF WATER | TEMP. OF WATER (in °F.) | USE TO WHICH WATER IS PUT | YIELD AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | SW. | 10 | 32 | 1 | 2 | Dug | 10 | 1,470 | - 7 | 1,463 | 7 | 1,463 | Glacial sand | Soft, clear | | D, S | Sufficient for 30 head stock. |
| 13 | SE. | 11 | " | " | " | Dug | 32 | 1,530 | - 22 | 1,508 | | | Glacial drift | Hard, clear, iron, "alkaline" | | S | Intermittent supply; also another similar well. |
| 14 | NE. | 11 | " | " | " | Dug | 30 | 1,510 | - 12 | 1,498 | | | Glacial drift | Hard, cloudy, "alkaline" | | S | Intermittent supply. |
| 15 | SW. | 12 | " | " | " | Dug | 35 | 1,510 | | | | | | | | | Dry hole; base in glacial blue clay; also 2 other similar dry holes. |
| 16 | NW. | 12 | " | " | " | Dug | 28 | 1,510 | - 20 | 1,490 | | | Glacial drift | Hard, cloudy, "alkaline" | | N | Unfit for use; and intermittent supply; use river water for all requirements. |
| 17 | SE. | 12 | " | " | " | Dug | 15 | 1,460 | - 9 | 1,451 | 9 | 1,451 | Glacial sand | Hard, cloudy | | D | Sufficient for domestic needs; use river for stock. |
| 18 | NE. | 12 | " | " | " | Dug | 20 | 1,460 | | | | | | | | | Dry hole; base in glacial drift; another similar dry hole. |
| 19 | SE. | 14 | " | " | " | Dug | 14 | 1,510 | - 7 | 1,503 | 11 | 1,499 | Glacial gravel | Hard, clear, "alkaline" | | S | Sufficient for 40 head stock. |
| 20 | SW. | 14 | " | " | " | Dug | 26 | 1,520 | - 20 | 1,500 | 25 | 1,495 | Glacial sand | Hard, clear, "alkaline" | | S, I | Sufficient supply; also an 8-foot well for domestic needs. |
| 21 | NE. | 15 | " | " | " | Dug | 15 | 1,545 | - 11 | 1,534 | 12 | 1,533 | Glacial gravelly clay | Hard, cloudy, "alkaline" | | S | Intermittent supply; also 2 dry holes to a depth of 35 feet. |
| 22 | SW. | 15 | " | " | " | Dug | 56 | 1,560 | - 41 | 1,519 | 46 | 1,514 | Glacial black sand | Hard, cloudy, "alkaline" | | S | Abundant supply; also 3 dry holes 20 to 30 feet deep. |
| 23 | SW. | 23 | " | " | " | Bored | 45 | 1,530 | - 40 | 1,490 | | | Glacial drift | Hard, cloudy, "alkaline" | | N | Intermittent supply; also many dry holes. |
| 24 | NW. | 23 | " | " | " | Dug | 30 | 1,530 | - 27 | 1,503 | | | Glacial drift | Hard, cloudy, "alkaline" | | N | Intermittent supply; also a dry hole. |
| 25 | SE. | 23 | " | " | " | Dug | 30 | 1,520 | - 24 | 1,496 | 24 | 1,496 | Glacial gravel | Hard, clear, iron, "alkaline" | | S | Sufficient for 20 head stock; also another well and some dry holes. |
| 26 | NE. | 23 | " | " | " | Dug | 13 | 1,520 | - 10 | 1,510 | 10 | 1,510 | Glacial sand and gravel | Soft, clear | | D, S | Intermittent supply; also 10 other wells to a depth of 30 feet with strongly mineralized water. |
| 27 | SW. | 24 | " | " | " | Dug | 18 | 1,510 | - 4 | 1,506 | | | Glacial drift | Hard, cloudy, "alkaline" | | N | Intermittent supply; also 6 dry holes. |
| 28 | NW. | 24 | " | " | " | Dug | 14 | 1,510 | - 4 | 1,506 | 12 | 1,498 | Glacial gravelly clay | Hard, clear, "alkaline" | | N | Insufficient supply; other similar wells. |
| 29 | SE. | 26 | " | " | " | Dug | 14 | 1,520 | - 8 | 1,512 | 12 | 1,508 | Glacial gravel | Hard, clear, iron, "alkaline" | | S, I | Sufficient for 32 head stock; use ice for domestic needs. |
| 30 | SW. | 34 | " | " | " | Dug | 25 | 1,540 | - 4 | 1,536 | 12 | 1,528 | Glacial sandy clay | Hard, cloudy, "alkaline" | | S | Intermittent supply; also dry holes to depth of 32 feet. |
| 31 | SE. | 34 | " | " | " | Dug | 13 | 1,540 | - 5 | 1,535 | 11 | 1,529 | Glacial sand | Hard, clear, "alkaline" | | S | Sufficient for 25 head stock; also 12 dry holes to a depth of 20 feet. |
| 32 | NW. | 35 | " | " | " | Dug | 14 | 1,530 | - 4 | 1,526 | | | Glacial drift | Hard, clear, "alkaline" | | S | Intermittent supply; also many dry holes to a depth of 50 feet. |
| 33 | NE. | 35 | " | " | " | Dug | 20 | 1,480 | - 2 | 1,478 | 14 | 1,466 | Glacial gravel | Hard, clear, "alkaline" | | D, S | Sufficient for 10 head stock; also another well with soft water. |
| 1 | SE. | 1 | 32 | 2 | 2 | Dug | 33 | 1,590 | - 30 | 1,560 | 30 | 1,560 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 40 head stock; also 2 other wells. |
| 2 | SE. | 2 | " | " | " | Dug | 25 | 1,610 | - 15 | 1,595 | 18 | 1,592 | Glacial gravel | Hard, clear | | D, S, I | Sufficient for 100 head stock; also 3 other wells. |
| 3 | NE. | 2 | " | " | " | Dug | 20 | 1,580 | - 16 | 1,564 | 16 | 1,564 | Glacial sand | Soft, clear | | D | Intermittent supply; uses lake for 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 KEYES NO. 303, 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | SW. | 2 | 32 | 2 | 2 | Dug | 25 | 1,610 | - 20 | 1,590 | 20 | 1,590 | Glacial sand | Hard, clear | | D, S, I | Sufficient for local needs; another similar well. |
| 5 | NW. | 3 | " | " | " | Spring | | 1,590 | | | | | Glacial sand | Soft, clear | | D, S | Sufficient supply. |
| 6 | SE. | 4 | " | " | " | Dug | 44 | 1,610 | - 40 | 1,570 | 40 | 1,570 | Glacial red sand | Hard, clear | | D, S | Sufficient for 10 head stock. |
| 7 | NE. | 4 | " | " | " | Dug | 8 | 1,540 | - 6 | 1,534 | 6 | 1,534 | Glacial sand | Soft, clear | | D | Sufficient supply; use river for stock. |
| 8 | SW. | 4 | " | " | " | Dug | 14 | 1,550 | - 7 | 1,543 | 7 | 1,543 | Glacial yellow sand clay | Soft, clear | | D, S, I | Sufficient for 16 head stock; also a 55-foot well that is not used. |
| 9 | NW. | 4 | " | " | " | Dug | 4 | 1,550 | 0 | 1,550 | 0 | 1,550 | Glacial sand | Soft, clear | | D, S, I | Sufficient supply; also 3 other springs. |
| 10 | SE. | 5 | " | " | " | Dug | 20 | 1,540 | - 15 | 1,525 | 17 | 1,523 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 15 head stock; also 2 other wells. |
| 11 | NE. | 7 | " | " | " | Dug | 35 | 1,610 | - 32 | 1,578 | 32 | 1,578 | Glacial sand | Hard, clear | | D, S | Sufficient for 30 head stock. |
| 12 | NW. | 8 | " | " | " | Dug | 25 | 1,600 | - 23 | 1,577 | 23 | 1,577 | Glacial sand | Hard, cloudy, "alkaline" | | N | Unfit for use; a 10-foot well is used for domestic needs; also a dry hole. |
| 13 | SE. | 9 | " | " | " | Dug | 10 | 1,560 | - 8 | 1,552 | 8 | 1,552 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 head stock; another similar well. |
| 14 | SW. | 12 | " | " | " | Dug | 22 | 1,550 | - 14 | 1,536 | | | Glacial coarse gravel | Soft, clear | | D, S | Sufficient for 20 head stock. |
| 15 | NE. | 15 | " | " | " | Dug | 7 | 1,540 | - 5 | 1,535 | 5 | 1,535 | Glacial gravel | Hard, clear | | D, S, I | Sufficient for 13 head stock; also a 25-foot well that is not used. |
| 16 | SW. | 15 | " | " | " | Dug | 16 | 1,560 | - 11 | 1,549 | 14 | 1,546 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 head stock. |
| 17 | SE. | 16 | " | " | " | Dug | 7 | 1,605 | - 5 | 1,600 | 5 | 1,600 | Glacial sand | Soft, clear | | D, S, I | Sufficient for local needs. |
| 18 | NW. | 16 | " | " | " | Dug | 10 | 1,600 | - 7 | 1,593 | 7 | 1,593 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 11 head stock. |
| 19 | NE. | 18 | " | " | " | Dug | 10 | 1,590 | - 7 | 1,583 | 7 | 1,583 | Glacial sandy clay | Hard, clear | | D, S | Sufficient for 20 head stock; also a 16-foot dry hole. |
| 20 | SW. | 18 | " | " | " | Dug | 27 | 1,610 | - 24 | 1,586 | 24 | 1,586 | Glacial sand | Hard, clear | | D, S | Sufficient for 12 head stock. |
| 21 | SE. | 20 | " | " | " | Dug | 16 | 1,540 | - 12 | 1,528 | 12 | 1,528 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 head stock. |
| 22 | NE. | 20 | " | " | " | Dug | 16 | 1,610 | - 13 | 1,597 | 13 | 1,597 | Glacial gravel | Soft, clear | | D, S, I | Sufficient for local needs. |
| 23 | NW. | 20 | " | " | " | Dug | 15 | 1,575 | - 12 | 1,563 | 12 | 1,563 | Glacial sand | Hard, clear | | D | Sufficient supply; use river for stock needs. |
| 24 | SW. | 21 | " | " | " | Dug | 10 | 1,600 | - 8 | 1,592 | 8 | 1,592 | Glacial sand | Hard, clear | | D, S, I | Insufficient supply; also a 30-foot well and 3 dry holes to a depth of 20 feet. |
| 25 | NW. | 21 | " | " | " | Dug | 14 | 1,610 | - 9 | 1,601 | 9 | 1,601 | Glacial sand | Soft, clear | | D, S | Sufficient for 100 head stock. |
| 26 | SE. | 22 | " | " | " | Dug | 12 | 1,540 | - 9 | 1,531 | 9 | 1,531 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 head stock. |
| 27 | NE. | 22 | " | " | " | Dug | 30 | 1,550 | - 26 | 1,524 | 26 | 1,524 | Glacial sand | Soft, clear | | D, S, I | Sufficient for local needs. |
| 28 | NW. | 27 | " | " | " | Dug | 57 | 1,610 | - 53 | 1,557 | 53 | 1,557 | Glacial sand | Hard, clear | | D, S | Sufficient for 16 head stock; also 8 dry holes to a depth of 25 feet. |
| 29 | SE. | 28 | " | " | " | Dug | 5 | 1,590 | - 2 | 1,588 | 2 | 1,588 | Glacial drift | Soft, clear | | S | Sufficient for 19 head stock; also a 12-foot well for domestic needs. |

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 KEYES NO. 303, 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | NW. | 28 | 32 | 2 | 2 | Dug | 14 | 1,610 | - 11 | 1,599 | 11 | 1,599 | Glacial sand | Hard, clear | | D, S | Sufficient for 25 head stock; also another well. |
| 31 | NE. | 29 | " | " | " | Dug | 5 | 1,605 | - 3 | 1,602 | 3 | 1,602 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 18 head stock; also another well and a spring. |
| 32 | SW. | 30 | " | " | " | Dug | 6 | 1,590 | - 4 | 1,586 | 4 | 1,586 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 10 head stock. |
| 33 | SW. | 31 | " | " | " | Dug | 37 | 1,590 | - 33 | 1,557 | | | Glacial sand | Hard, clear, iron | | D, S | Sufficient for 12 head stock. |
| 34 | NW. | 32 | " | " | " | Dug | 20 | 1,605 | - 16 | 1,589 | 16 | 1,589 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 23 head stock; also an old well that is not used. |
| 35 | SW. | 33 | " | " | " | Dug | 14 | 1,600 | - 12 | 1,588 | 12 | 1,588 | Glacial sand | Soft, clear | | D, S | Sufficient for 14 head stock. |
| 36 | SE. | 33 | " | " | " | Dug | 10 | 1,600 | - 8 | 1,592 | 8 | 1,592 | Glacial sand | Soft, clear | | D, S | Sufficient for 15 head stock; also numerous dry holes. |
| 37 | NW. | 34 | " | " | " | Dug | 16 | 1,600 | - 15 | 1,585 | 15 | 1,585 | Glacial sand | Hard, clear | | D | Insufficient for 8 head stock; 4 other wells to a depth of 24 feet with insufficient supply. |
| 1 | SW. | 1 | 32 | 3 | 2 | Dug | 14 | 1,610 | - 10 | 1,600 | 12 | 1,598 | Glacial sand | Hard, clear | | S | Sufficient for 17 head stock; another well 24 feet deep is used for domestic needs. |
| 2 | SE. | 2 | " | " | " | Dug | 18 | 1,610 | - 12 | 1,598 | 12 | 1,598 | Glacial sand | Hard, clear, "alkaline" | | D, S | Sufficient for 21 head stock; also 2 other wells. |
| 3 | SW. | 3 | " | " | " | Dug | 24 | 1,570 | - 21 | 1,549 | 21 | 1,549 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 45 head stock; another well 4 feet deep. |
| 4 | NW. | 3 | " | " | " | Dug | 20 | 1,600 | - 17 | 1,583 | 17 | 1,583 | Glacial sand | Hard, clear, "alkaline" | | D, S | Sufficient for 15 head stock; also another well. |
| 5 | NE. | 4 | " | " | " | Dug | 22 | 1,610 | - 12 | 1,598 | 20 | 1,590 | Glacial sand | Hard, clear | | D, S, I | Sufficient supply; also 2 other similar wells. |
| 6 | NW. | 4 | " | " | " | Dug | 30 | 1,620 | - 22 | 1,598 | | | Glacial drift | Hard, clear, iron, "alkaline" | | D, S | Insufficient for 30 head stock. |
| 7 | SE. | 5 | " | " | " | Dug | 9 | 1,580 | - 5 | 1,575 | 5 | 1,575 | Glacial gravel | Hard, clear | | S | Sufficient for 12 head stock; also another well. |
| 8 | NW. | 5 | " | " | " | Dug | 22 | 1,610 | - 19 | 1,591 | | | Glacial drift | Hard, clear, "alkaline" | | D, S, I | Sufficient for 8 head stock; also another well. |
| 9 | SE. | 6 | " | " | " | Dug | 99 | 1,600 | - 79 | 1,521 | | | Glacial gravel | Hard, cloudy, "alkaline" | | D, S | Sufficient for 32 head stock; also another well. |
| 10 | NE. | 6 | " | " | " | Dug | 90 | 1,610 | - 30 | 1,580 | 90 | 1,520 | Glacial gravel | Hard, clear | | D, S | Abundant supply; also another well. |
| 11 | NW. | 6 | " | " | " | Bored | 32 | 1,620 | - 22 | 1,598 | 30 | 1,590 | Glacial sand | Hard, cloudy, "alkaline" | | S | Sufficient supply; also a shallow seepage well for domestic needs. |
| 12 | SW. | 8 | " | " | " | Dug | 24 | 1,620 | - 14 | 1,606 | 14 | 1,606 | Glacial sand | Hard, clear, "alkaline" | | D, S | Sufficient supply with aid of 2 other wells. |
| 13 | SE. | 9 | " | " | " | Dug | 20 | 1,620 | - 18 | 1,602 | 18 | 1,602 | Glacial sand | Hard, clear | | D, S | Sufficient for 30 to 40 head stock. |
| 14 | NE. | 11 | " | " | " | Dug | 24 | 1,620 | - 22 | 1,598 | 22 | 1,598 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 50 head stock; also another well. |
| 15 | NE. | 11 | " | " | " | Dug | 27 | 1,610 | - 20 | 1,590 | | | Glacial drift | Soft, clear | | D, S, I | Sufficient for 30 head stock. |
| 16 | SW. | 12 | " | " | " | Dug | 13 | 1,610 | - 6 | 1,604 | 12 | 1,598 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 30 head stock; also another well. |
| 17 | NW. | 12 | " | " | " | Dug | 20 | 1,600 | - 14 | 1,586 | 14 | 1,586 | Glacial sand | Hard, clear | | D, S | Sufficient for 27 head stock; also several dry holes. |
| 18 | NE. | 12 | " | " | " | Dug | 12 | 1,580 | - 8 | 1,572 | 10 | 1,570 | Glacial sand | Hard, clear | | S, I | Sufficient supply; also another well 36 feet deep and some springs. |

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 KEYES NO.303, 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | SE. | 13 | 32 | 3 | 2 | Dug | 20 | 1,610 | - 13 | 1,597 | 18 | 1,592 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 19 head stock. |
| 20 | NE. | 13 | " | " | " | Dug | 30 | 1,610 | - 20 | 1,590 | | | Glacial sand | Hard, clear | | D, S, I | Sufficient for 27 head stock; also another well. |
| 21 | NW. | 13 | " | " | " | Dug | 30 | 1,610 | - 26 | 1,584 | 26 | 1,584 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 13 head stock; another similar well. |
| 22 | SE. | 14 | " | " | " | Dug | 24 | 1,615 | - 20 | 1,595 | 20 | 1,595 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 21 head stock. |
| 23 | NE. | 14 | " | " | " | Dug | 20 | 1,610 | - 15 | 1,595 | 15 | 1,595 | Glacial sand | Hard, clear | | D, S, I | Sufficient for 18 head stock. |
| 24 | SE. | 16 | " | " | " | Dug | 6 | 1,610 | - 4 | 1,606 | 4 | 1,606 | Glacial sand | Hard, clear | | D, S | Sufficient for local needs. |
| 25 | SW. | 17 | " | " | " | Dug | 20 | 1,620 | - 17 | 1,603 | 18 | 1,602 | Glacial sand | Hard, cloudy, "alkaline" | | S | Insufficient for 7 head stock; hauls drinking supply. |
| 26 | NW. | 17 | " | " | " | Dug | 26 | 1,620 | - 21 | 1,599 | 21 | 1,599 | Glacial sand | Soft, clear | | D, S | Sufficient for 15 head stock. |
| 27 | SE. | 18 | " | " | " | Dug | 35 | 1,615 | - 32 | 1,583 | 32 | 1,583 | Glacial sand | Hard, clear | | D, S | Sufficient for 20 head stock; also a spring. |
| 28 | SW. | 20 | " | " | " | Dug | 16 | 1,620 | - 12 | 1,608 | 12 | 1,608 | Glacial sand | Hard, clear | | D, S | Sufficient for 21 head stock; also another well. |
| 29 | SE. | 20 | " | " | " | Dug | 20 | 1,620 | - 16 | 1,604 | 16 | 1,604 | Glacial sand | Hard, clear | | D, S | Sufficient for 14 head stock. |
| 30 | SE. | 21 | " | " | " | Dug | 25 | 1,615 | - 20 | 1,595 | 20 | 1,595 | Glacial sandy clay | Hard, clear | | D, S | Sufficient for 60 head stock; also another well. |
| 31 | NE. | 21 | " | " | " | Dug | 12 | 1,600 | - 8 | 1,592 | 8 | 1,592 | Glacial sand | Hard, clear | | D, S | Sufficient for 12 head stock. |
| 32 | SW. | 22 | " | " | " | Dug | 22 | 1,620 | - 14 | 1,606 | 14 | 1,606 | Glacial sandy clay | Hard, clear | | D, S | Sufficient for 10 head stock; also another well. |
| 33 | SE. | 22 | " | " | " | Dug | 16 | 1,615 | - 13 | 1,602 | 13 | 1,602 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 20 to 30 head stock; also another similar well. |
| 34 | NW. | 23 | " | " | " | Spring | | 1,600 | 0 | 1,600 | 0 | 1,600 | Glacial drift | Soft, clear | | D, S, I | Abundant supply. |
| 35 | SE. | 23 | " | " | " | Dug | 35 | 1,620 | - 32 | 1,588 | 32 | 1,588 | Glacial sand | Hard, clear | | D | Sufficient for domestic needs; stock watered at river. |
| 36 | NE. | 23 | " | " | " | Dug | 10 | 1,580 | - 8 | 1,572 | 8 | 1,572 | Glacial sand | Soft, clear | | D, S | Sufficient only for domestic needs; stock watered at river. |
| 37 | NW. | 24 | " | " | " | Dug | 12 | 1,590 | - 8 | 1,582 | 8 | 1,582 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 24 head stock. |
| 38 | NE. | 25 | " | " | " | Dug | 10 | 1,600 | - 6 | 1,594 | 6 | 1,594 | Glacial gravel | Hard, clear | | D, S, I | Sufficient for 12 head stock. |
| 39 | SE. | 26 | " | " | " | Dug | 13 | 1,590 | - 11 | 1,579 | 11 | 1,579 | Glacial sand | Soft, clear | | D, S | Sufficient for 10 head stock; also another well. |
| 40 | NE. | 26 | " | " | " | Dug | 20 | 1,610 | - 10 | 1,600 | 10 | 1,600 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 17 head stock. |
| 41 | SE. | 28 | " | " | " | Dug | 3 | 1,580 | 0 | 1,580 | 0 | 1,580 | Glacial gravel | Soft, clear | | D, S | Abundant supply. |
| 42 | NW. | 29 | " | " | " | Dug | 14 | 1,620 | - 11 | 1,609 | 11 | 1,609 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 14 head stock; also some dry holes to a depth of 12 feet. |
| 43 | SE. | 30 | " | " | " | Dug | 4 | 1,620 | - 2 | 1,618 | 2 | 1,618 | Glacial sand | Soft, clear | | D, S | Sufficient for 30 head stock. |
| 44 | NE. | 30 | " | " | " | Dug | 16 | 1,615 | - 14 | 1,601 | 14 | 1,601 | Glacial sand | Hard, clear | | D, S | Sufficient for 16 head stock. |
| 45 | NE. | 32 | " | " | " | Dug | 44 | 1,600 | | | | | | | | | Dry hole; base in glacial clay; 4 other 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 KEYES NO. 303, SASKATCHEWAN

| WELL No. | LOCATION ¼ | Sec. | Tp. | Rge. | Mer. | TYPE OF WELL | DEPTH OF WELL | ALTITUDE WELL (above sea level) | HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface | Elev. | PRINCIPAL WATER-BEARING BED Depth | Elev. | Geological Horizon | CHARACTER OF WATER | TEMP. OF WATER (in °F.) | USE TO WHICH WATER IS PUT | YIELD AND REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | SE. | 33 | 32 | 3 | 2 | Dug | 10 | 1,610 | - 8 | 1,602 | 8 | 1,602 | Glacial sand | Soft, clear | | D, S | Sufficient for 20 head stock; also uses river for stock. |
| 47 | NW. | 34 | " | " | " | Dug | 12 | 1,610 | - 10 | 1,600 | 10 | 1,600 | Glacial sand | Soft, clear | | D, S, I | Sufficiant for 16 head stock. |
| 48 | SE. | 34 | " | " | " | Dug | 18 | 1,615 | - 16 | 1,599 | 16 | 1,599 | Glacial sand | Soft, clear | | D, S, | Sufficient for 27 head stock; also another well. |
| 49 | NE. | 34 | " | " | " | Dug | 12 | 1,620 | - 7 | 1,613 | 7 | 1 613 | Glacial sand | Soft, clear | | D, S, I | Sufficient for 12 head stock. |
| 50 | SE. | 35 | " | " | " | Dug | 40 | 1,620 | - 36 | 1,584 | 36 | 1,584 | Glacial gravel | Soft, clear | | D, S, I | Sufficient supply; also another well. |
| 51 | NE. | 35 | " | " | " | Dug | 20 | 1,630 | - 18 | 1,612 | 18 | 1,612 | Glacial sand | Hard, clear | | D, S | Sufficient for 25 head stock. |
| 52 | NW. | 36 | " | " | " | Dug | 16 | 1,610 | - 13 | 1,597 | 13 | 1,597 | Glacial sand | Soft, clear | | D, S, I | Sufficient for local needs; also a spring on farm. |
| 53 | NE. | 36 | " | " | " | Dug | 24 | 1,605 | - 22 | 1,583 | 22 | 1,583 | Glacial sand | Hard, clear | | D | Sufficient supply; uses lake for 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.