WATER RESOURCES

OF

THE CLARENCE VALLEY

SURVEY OF THIRTY N.S.W. RIVER VALLEYS

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WATER RESOURCES OF THE CLARENCE RIVER VALLEY

PREFACE

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MINISTER FOR CONSERVATION

NEW SOUTH WALES

In accordance with the policy of the New South Wales Liberal-Country Party Government announced prior to its election to office at the May, 1965 State Elections, I directed the Water Conservation and Irrigation Commission to undertake a survey of the State's water resources on an individual valley basis to enable the formulation of a balanced and soundly based programme of water conservation.

The survey, which will be completed this year, involves the preparation of twenty five separate reports covering thirty major river valleys of the State and represents the largest and most comprehensive study of its type ever undertaken in Australia.

In the survey, studies are being made of the physiography, climate, groundwater potential and surface water resources of each valley. In addition to reviewing current water requirements, assessments are being undertaken of possible future water development.

Reports are being prepared progressively and those issued to date have covered fourteen major valleys. This report on the water resources of the Clarence River Valley is the eleventh to be issued.

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May, 1968.

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WATER RESOURCES OF THE CLARENCE RIVER VALLEY

1. INTRODUCTION.

Water is essential to the continued existence of human life and with ever increasing demands being imposed by modern societies the availability of suitable supplies has become a major factor controlling development.

Both primary and secondary industry make heavy demands for water. About a thousand pounds of water is needed to produce a single pound of food whilst nearly three hundred pounds of water is required in the production of each pound of steel.

Although there is an abundance of water on Earth only a very small percentage of it is in a form or location suitable for use in meeting domestic, industrial and agricultural demands.

The total volume of water on Earth is about 320 million cubic miles of which about 97.2 percent is in the oceans and too saline for direct consumptive use. A further 2 percent lies frozen in the polar regions while underground water comprises over 99.5 percent of the remaining 0.8 percent.

Surface water contained in lakes and streams therefore represents only about 0.004 percent of the total volume of water on Earth.

Australia is often referred to as the world's driest continent. The average annual rainfall is only about 1½ feet compared with the averages of about 2 feet for Africa, Asia and Europe and almost 4½ feet for South America.

Over much of the Australian continent average monthly rainfall does not exceed the potential evaporation loss in any month of the year. It is not surprising therefore that on the basis of surface water resources the comparison between Australia and other continents is even more unfavourable.

The average annual surface water resources of the Australian mainland have been assessed at about 240 million acre feet. These resources are equivalent to a depth of less than 2 inches over the whole continent as against depths of about 7 inches for Africa, 9 inches for Asia and Europe and 19 inches for South America.

As there are no streams on the Australian mainland which are permanently snow fed, flows are largely dependent on the occurrence of runoff producing storms. For this reason Australian streams tend to exhibit a more highly variable flow than those in other continents.

The average annual rainfall of the Clarence River Valley has been assessed at approximately 42 inches and is about twice the average value for New South Wales. However within the valley the average annual rainfall varies from almost 80 inches near Dorrigo to about 30 inches on the northern and southern extremities of the valley near the Great Dividing Range.

The average annual surface water resources of the Clarence Valley have been assessed at 4,000,000 acre feet which is equivalent to an average of about 9 inches of rainfall occurring without loss over the whole valley.

On a square mile of catchment area basis the surface water resources of the Clarence Valley are approximately five times the average for the whole of New South Wales and about one sixth greater than the average for coastal New South Wales.

2. PHYSIOGRAPHIC FEATURES.

The main features of the Clarence River Valley are shown at Figure 1, and generalised land slopes are indicated at Figure 2.

The valley is bounded on the west by the Great Dividing Range, which does not generally rise to any great elevation above the surrounding plateau, and for the most part traverses undulating or hilly country. It does, however, contain some high peaks, and in the central and southern portions the mountains of Bajimba, Capoompeta, and Ben Lomond all rise to elevations equalling or exceeding 5,000 feet.

In places, the tablelands extend for some distance to the east of the Divide before the country falls away into steep, dissected valleys leading to the Clarence River. The main tableland areas, characterised by undulating or even flat country, are those between the Maryland and Boonoo Boonoo Rivers (elevation from 2,000 to 3,000 feet), east of Tenterfield (elevation mainly around 3,000 feet), and from the Gibraltar Range to Ben Lomond (elevation 3,000 to 4,000 feet).

Many of the streams draining the New England Tablelands such as the Maryland, Cataract and Mann Rivers initially flow north or north east, roughly parallel to the Divide, before turning east to flow towards the coast.

The southern boundary is formed by an eastward spur of the Great Dividing Range and including the Balblair and Doughboy Ranges, and also Chandler's Peak, Round Mountain and Mount Darkie, which all rise to elevations greater than 5,000 feet.

Streams drain generally northward from this boundary, and plateau areas are again in evidence, extending for some distance north of the boundary. Between Ben Lomond and Ebor the general plateau elevation ranges between 3,000 and 4,000 feet, and around Dorrigo it is in the vicinity of 2,500 feet. East of Ulong, the country is broken and deeply dissected by the headwaters of the Orara River and its tributaries.

From Mount Darkie eastwards, the southern boundary is the crest of a very steep escarpment facing southwards. Southward from this crest, the terrain drops rapidly to the floor of the Bellinger River Valley, which adjoins the Clarence Valley in this area.

The section of the eastern boundary of the valley from about Coff's Harbour to Yamba consists of a relatively low range of hills, with some peaks higher than 1,000 feet but generally around 600 feet. Land slopes along these hills, which are known in their northern section as The Coast Range, are mainly hilly to steep.

The northern part of the eastern boundary is formed by the Richmond Range, sweeping first in a westerly direction from the coast, and then northwards to join the McPherson Range near Woodenbong. The McPherson Range and part of the Great Dividing Range constitute the northern boundary of the valley.

Running west from the coast, the Richmond Range is initially at a relatively low elevation, and traverses mainly undulating and hilly country to a point about thirty miles inland. From this point to the McPherson Range, it rises as a narrow ridge from 1,000 feet in the south to over 1,500 feet.

in the north and is flanked by rugged slopes on both the eastern and western sides.

The McPherson Range and the northern end of the Great Dividing Range are also high ridges, with rugged slopes on the southern side, where the country falls away to the valleys of the northern tributaries of the Clarence. The ridge elevation varies from about 1,800 feet at the lowest point to over 4,000 feet on one peak.

Within these boundaries a variety of land forms exist. The northern tributaries of the upper Clarence flow southwards and have generally widened their valleys in the soft, sedimentary rocks, resulting in the development of considerable areas of good, arable land. Some of these streams, such as Koreelah and Tooloom Creeks, have also formed alluvial flood plains. Between the valleys are steep, basalt capped ridges supporting a dense vegetative cover.

Open country with conspicuous sandstone hills, between which are wide, terraced alluvial flats at various levels, occurs in the vicinity of Tabulam.

The streams flowing east from the New England Tablelands, from the Maryland River in the north to the Sara River in the south, enter some very rugged country after they leave the plateau margin. On their descent to the lowlands they have become entrenched in deep valleys and gorges and the surrounding country is deeply dissected by their tributaries. Much of this broken country is suitable only for low density grazing.

The Guy Fawkes River and the Nymboida River, draining the south of the Valley, also enter rugged, dissected country after leaving the plateau along the southern boundary. The Orara River, however, is characterised by a broader and flatter valley, and by the development of flood plains bordering the main stream. Rugged slopes exist to the west of the river, as the country rises to the divide between the Orara and Nymboida systems; but to the east, there is only one rugged area near Coff's Harbour, and the remainder is either undulating or hilly.

Below the western and southern plateaux, the country is predominantly rugged downstream as far as Copmanhurst, with only relatively narrow fingers of less precipitously sloping land extending along the floors of the valleys of some of the streams.

Downstream from Copmanhurst, where the Clarence River comes within tidal influence, the valley commences to open out, and there are large areas of alluvial flats and undulating country between Copmanhurst and the coast. Most of the intensive agriculture of the Clarence Valley is concentrated in this fertile area, which also includes the main centres of population, principal of which is the City of Grafton.

Details of land slopes over the Clarence Valley are given at Table 1, which shows that only about one sixth of the valley can be classified as having a generally flat surface. A further one sixth is undulating to hilly, while country classified as hilly to steep, which is generally unsuitable for cropping but can provide useful grazing, occupies about one third of the Valley. Rugged or mountainous terrain, which is of only limited value even for grazing and is generally heavily timbered, occupies the remaining one third. It is thus apparent that rugged and steep slopes are predominant in the Clarence Valley, and that arable land is of limited extent, being confined by virtue of topography alone to about one third of the area.

TABLE 1.

Classification	Percentage of Area of Valley
Mostly flat - Slopes up to 3 degrees	17%
Undulating to Hilly - Slopes from 3 to 8 degrees	17%
Hilly to Steep - Slopes from 8 to 15 degrees	33%
Rugged or Mountainous - Slopes exceeding 15 degrees	33%

The original land cover of the valley has been little disturbed over much of the central, rugged area, but medium or heavy clearing has taken place in other sections to make way for pastoral and agricultural development. The natural timber species encompass a fairly wide field, the prevailing climate producing some of the State's most valuable hardwood and brushwood forests.

Hardwood timbers are found in open Eucalypt forests which occur over most of the valley. In some of the drier sections in the west and north, a number of inland species occur in association with some of the more drought

resistant of the coastal species. In the higher rainfall areas, good stands of mixed hardwood occur, attaining heights up to 150 feet and more.

Rain forests are found on the coastal plateaux and range tops. They are of the sub-tropical jungle type and carry dense stands of species occurring in several stories, and bound together with vines. A considerable quantity of valuable softwood cabinet timber is produced from these forests.

A valuable sub-type which, in New South Wales, is found only on the far north coast, is the Hoop Pine. This species, now largely eliminated, originally encroached on both the hardwood and brushwood forests of the Clarence Valley.

3. CLIMATIC FEATURES.

Rainfall

Rainfall in the Clarence River Valley is controlled to a large extent by topography, with marked rain shadows occurring in the lower valleys on both the northern and southern tributaries.

In the north, annual median rainfalls exceed 45 inches along the high country of the Richmond Range, but fall to below 35 inches in the valleys to the west of the range. (The median is that rainfall equalled or exceeded on 50 percent of occasions). A similar shadowing effect is evident in the south, where annual median rainfalls range up to more than 70 inches around Dorrigo, but decrease to less than 35 inches in the "shadowed" area north and west of Wongwibinda. In the vicinity of the Gibraltar Range, extending from the western boundary of the valley, annual medians exceed 40 inches; while in the lower part of the valley, they decrease from about 55 inches on the coast to about 35 inches west of Grafton. The distribution of annual median rainfalls is shown at Figure 3 and the distributions of monthly medians are shown at Figures 4 to 15.

Except for the coastal fringe, where the monthly rainfalltends to be more uniformly distributed, the valley experiences a distinct wet period from December to April, when about 55 percent of the annual rainfall is received. On the coast this relatively wet period continues until June. Over the entire valley, median monthly rainfalls from December to March are greater than 2½

inches. In the higher rainfall areas they exceed 4 inches and are in excess of 8½ inches at some stations.

The months from May to September, in which about 27 percent of the annual rainfall is received are relatively dry. In August, the driest month of the year, only about 4 percent of the annual rainfall is received. Median rainfalls in this month exceed 2 inches only on the coastal fringe, and on the higher parts of the ranges in the south and west, while in the remainder of the valley the median is less than 1½ inches.

Annual rainfalls recorded at twenty three selected locations are listed at Appendices 1 to 4.

Very heavy rain may occur when a depression is located off the coast of northern New South Wales or southern Queensland. Under these conditions falls of 9 inches in 24 hours are not uncommon. The highest total recorded during a 24 hour period ending 9 a.m. was 22.47 inches on 22nd January 1959 at Dorrigo. Monthly totals exceeding 18 inches can occur at all stations, while in the higher rainfall areas, monthly totals exceeding 28 inches are experienced on occasions. The highest monthly total on record for a station in the Clarence River Valley is 55.80 inches at Dorrigo in June, 1950.

The tables at Appendix 5 show the following data on a monthly and annual basis for twelve selected locations:

(i) The maximum and minimum rainfalls.

(ii) The 10th, 30th, 50th, 70th and 90th percentiles.

(A rainfall observation less than the 10th percentile can be expected once in ten years on the average. Similarly a rainfall observation less than the 70th percentile can be expected seven times in ten years, or alternatively a rainfall observation greater than the 70th percentile can be expected on an average of three years in ten).

In individual months, very low totals may sometimes be recorded. It is unusual, however, for dry spells to continue for more than a few months on the coast. On rare occasions, dry spells inland, particularly in the areas of the rain shadows, may continue for more than six months. However even in the relatively dry months inland (May to September), more than 6 inches of rain are received on 90 percent of occasions, and more than 12 inches are received on an average of one year in two.

In Appendix 6, the minimum recorded rainfalls for periods of up to twelve months are tabulated for Killarney, Drake, Clarence Heads, Grafton, Beulah and Wongwibinda. The tables list the minimum cumulative rainfalls commencing in each month of the year and continuing for up to twelve months.

Temperature.

The temperature regime of the valley is reasonably well recorded. Average monthly and yearly temperatures for selected stations are listed at Tables 2 to 7 as follows:-

(i) Clarence Heads, Table 2, which is representative of the coastal fringe;

(ii) Harwood Mill, Table 3, which is representative of locations slightly inland from the coast;

(iii) Glenugie and Grafton, Tables 4 and 5, which are representative of the lower central portion of the valley;

(iv) Killarney and Tenterfield, Tables 6 and 7, which are representative of the tablelands.

TABLE 2.

CLARENCE HEADS (Elevation 99 feet)

Average Temperature (^{o}F) Based on 29 years of record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	78.9	79.3	77.6	74.5	70.1	66.3	65.3	67.2	70.3	72.9	75.3	77.3	72.9
Average Minimum	68.2	68.4	66.2	61.2	55.6	51.3	49.6	50.5	55.2	59.7	63.4	66.2	59.6
Average Mean	73.5	73.8	71.9	67.9	62.9	58.9	57.5	58.8	62.7	66.3	69.3	71.9	66.3
Extreme Highest on Record 110.0^{o}F							Extreme Lowest on Record 36.0^{o}F						

TABLE 3

HARWOOD MILL (Elevation 50 feet)

Average Temperature (^{o}F) Based on 30 years of record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	85.2	84.4	82.4	79.1	74.5	70.5	70.3	71.9	76.1	79.5	82.6	84.6	78.4
Average Minimum	67.3	67.0	64.7	59.7	54.2	49.2	47.8	48.6	53.0	57.7	62.1	64.8	58.0
Average Mean	76.3	75.7	73.5	69.4	64.3	59.9	59.1	60.3	64.5	68.6	72.3	74.7	68.2
Extreme Highest on Record 112.0^{o}F							Extreme Lowest on Record 26.0^{o}F						

TABLE 4

GLENUGIE (Elevation 40 feet)

Average Temperature (°F) Based on 10 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	85.4	84.7	82.7	77.7	74.0	68.9	68.4	70.9	75.5	79.1	82.7	84.8	77.9
Average Minimum	64.1	64.9	61.9	52.5	45.6	40.5	37.6	39.1	45.5	52.5	58.3	62.4	52.1
Average Mean	74.7	74.8	72.3	65.1	59.8	54.7	53.0	55.0	60.5	65.8	70.5	73.6	65.0
Extreme Highest on Record 111.0°F							Extreme Lowest on Record 23.0°F						

TABLE 5

GRAFTON (Elevation 21 feet)

Average Temperature (°F) Based on 29 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	89.1	88.0	85.3	81.8	76.0	70.9	70.6	73.4	78.6	82.6	85.9	87.8	80.8
Average Minimum	67.2	66.9	64.1	58.5	51.5	46.2	43.9	45.4	50.6	56.7	61.8	65.0	56.5
Average Mean	78.2	77.3	74.7	70.1	63.8	58.6	57.3	59.4	64.6	69.6	73.8	76.4	68.6
Extreme Highest on Record 114.0°F							Extreme Lowest on Record 24.0°F						

TABLE 6

KILLARNEY (Elevation 1,691 feet)

Average Temperature (°F) Based on 28 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	85.5	83.7	80.5	75.4	68.4	63.3	62.2	65.4	71.3	77.8	82.2	84.4	75.0
Average Minimum	60.5	60.3	57.2	49.9	43.1	37.9	36.9	36.8	41.3	48.6	54.7	57.8	48.7
Average Mean	73.0	72.0	68.9	62.7	55.7	50.6	49.2	51.1	56.3	63.2	68.4	71.1	61.9
Extreme Highest on Record 106.9°F							Extreme Lowest on Record 16.0°F						

TABLE 7

TENTERFIELD (Elevation 2,831 feet)

Average Temperature (°F) Based on 28 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	81.8	80.1	79.6	70.7	63.4	57.9	56.9	60.1	66.5	73.0	77.7	80.3	70.4
Average Minimum	57.6	57.0	54.0	47.3	40.6	36.1	34.2	35.6	40.4	46.9	51.9	55.4	46.4
Average Mean	69.7	68.6	65.3	59.0	52.1	47.0	45.6	47.9	53.5	59.9	64.8	67.9	58.4
Extreme Highest on Record 101.5°F							Extreme Lowest on Record 18.0°F						

Warm to hot weather is experienced from October to April. On the coastal fringe, conditions are usually tempered by cooling north-easterly sea breezes. This fact is well illustrated by Tables 2 and 3. Average maxima in these months at Harwood Mill, about ten miles inland from the coast, are about 6 degrees warmer than the corresponding figures for Clarence Heads. For the remainder of the year average maxima range from the mid-sixties to the mid-seventies. In the summer months, very hot conditions can occur when north-westerly winds bring dry hot air from Central Australia, and temperatures over 90 degrees occur frequently in areas away from the coast.

Average winter minima inland from the coast are, in general, about 22 degrees cooler than the summer values. On occasions of clear skies and light winds in winter, very low overnight temperatures occur. Apart from the coastal strip, where air temperatures below freezing (32°F) are extremely rare, all places in the valley can expect extreme temperatures lower than 26°F. Extreme temperatures lower than 18°F can be expected to occur in the west of the valley at elevations above 1,500 feet.

Frosts

The immediate coastal strip is practically frost free. Away from the coast, however, frosts occur several times per year. At Grafton an average of about three light frosts are recorded per year, usually in the months of June and July. On the higher parts of the New England Tablelands, an average of about forty severe frosts are experienced per year, and the season usually extends from mid-April to the end of October. However, frosts have been reported as early as mid-March and as late as mid-November.

Sunshine

Estimates of the average duration of bright sunshine over the valley are shown at Table 8. These estimates are based on cloud observations, and are expressed in hours per day.

TABLE 8.

Average Duration of Bright Sunshine in Hours Per Day.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
8.4	8.0	7.6	7.4	6.5	6.7	7.3	8.1	8.2	8.3	8.5	8.9	7.8

Evaporation

Estimates of average monthly and annual evaporation (from a sunken pan), together with estimates of the standard deviations, are shown at Table 9.

TABLE 9

Estimates of average monthly and annual evaporation in inches.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Evaporation	6.4	3.9	3.8	2.8	2.8	1.8	1.4	2.7	3.5	4.3	5.6	7.0	46.3
Standard Deviation	1.1	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.7	1.2	1.0	3.8

Wind

Strong winds occur over the Clarence River Valley from time to time, associated with one of the following conditions:-

1. Strong east to south-east winds, associated with deep depressions centred off the northern New South Wales coast. These depressions often originate as tropical cyclones, and may still be of cyclonic intensity when they affect the Clarence Valley. Under these conditions, wind speeds may exceed 60 miles per hour on the coast, but are somewhat less inland.

2. Violent squalls associated with severe local storms such as thunderstorms or frontal squalls. Gusts under these conditions can be of the order of 100 miles per hour over limited areas.

Table 10 gives the extreme wind gust likely to be experienced for various return periods in the valley.

TABLE 10.

Estimated Extreme Wind Gusts to be Expected for Given Return Periods.

Return Period (Years)	10	20	50	100
Extreme Wind Gust Equalled or Exceeded (M.P.H.)	85	90	100	105

4. GROUNDWATER POTENTIAL.

The surface geological formations of the Clarence River Valley are indicated on the map at Figure 16.

The valley includes large areas of high country with considerable relief, the western and northern boundaries being defined by the main ridge of the Great Dividing Range and the McPherson Range.

Granite, which is part of the great New England Batholith, underlies most of the high country in the west, whilst basalts cap much of the elevated ground in the south, southwest and north. In the central southern area, silurian strata outcrop in the less elevated, but often quite precipitous, valleys of the Little and Nymboida Rivers.

Carboniferous mudstones, tuffs and sandstones outcrop in the Upper Clarence Valley in the vicinity of the junction of the Clarence and Cataract Rivers. Permian strata flank this zone of Carboniferous rocks on the west, and also overlie the older Silurian meta-sediments in a meridional zone north-west of Ebor.

Sediments of Mesozoic age cover most of the eastern half of the valley. They comprise part of the geological structure known as the Clarence-Moreton Basin, which, as its name implies, extends from the valley of the Clarence River northwards to Moreton Bay near Brisbane. Grafton is centrally situated in the southern part of this elongated basin, on the youngest formation known as the Grafton Beds. Concentrically disposed to the south about the Grafton Beds are the Kangaroo Creek Formation, the Walloon (or Mallangánee) Coal Measures, and sediments of Triassic-Jurassic age. These sediments extend northwards to the State border through the eastern half of the Upper Clarence Valley. Outcrops of older, Triassic rocks occur in the south-western part of the valley, in the upper catchment of the Nymboida River.

Discontinuous alluvial flats have been built up throughout most of the length of the Upper Clarence, and on some of the tributary creeks. In the vicinity of Copmanhurst there are some high level alluvial deposits, whilst downstream there are some quite extensive alluvial flats on the insides of large, entrenched meanders. Just above Grafton the broad alluvial plains commence, and these continue almost to the coast, where there are aeolian sands and raised beaches.

Relatively little use is made of groundwater in the Clarence Valley. Huge areas of the valley are virtually in their natural state with dense timber cover, and probably less than one third of the total area is developed. Much

of the country which is grazed or farmed is underlain by strata which are unfavourable to the occurrence of groundwater of good quality. In addition due to the near permanence of many of the streams in the valley adequate stock water is usually readily available.

Records of bores or wells in the entire valley number less than fifty, but it is known that there are a large number of wells in the river flats, which provide stock and domestic supplies. As far as is known, irrigation from groundwater sources is virtually non-existent in the valley.

The discussion of the groundwater potential of the Clarence Valley is facilitated if it is considered under the following three classifications, based on the mode of occurrence of the water and the nature of the strata in which it is held.

Jointed Rocks, which contain water in the cracks, joints and fractures, but are themselves impervious.

Porous Rocks, usually sandstones, which may contain water in the openings between the cemented sand grains.

Unconsolidated Deposits, in which water is stored in sands and/or gravels associated with fluviatile alluvium, or in accumulations of beach and dune sands near the coast.

Jointed Rocks.

This group includes all the rock types and formations underlying the rough and elevated parts of the valley.

The oldest rocks are the Silurian strata which occur mainly in the hilly central and southern parts. They are best described as meta-sediments and include mainly slates, phyllites, quartzites and greywackes. Although the strike of these strata is generally north, the dips vary over quite a wide range. Faults are common, and as a rule the strata are heavily fractured, particularly in the case of the harder, more resistant greywackes and quartzites. It is in these latter types of strata that conditions favourable to the occurrence of useful stock supplies of groundwater can be expected, but there is some doubt as to the suitability of the water for domestic or garden use.

The Carboniferous and Permian strata, which include sandstones, tuffs, lavas, cherts and limestones, are believed to offer similar prospects. However this belief is based on very limited information.

The granites of the Great Divide have been deeply dissected by the headwaters of all the eastward flowing tributaries. Mechanical erosion by frost and water rapidly removes the products of chemical weathering, so that rocky outcrops in the form of tors and "bald" hills are common. Elsewhere, such elevated masses of granite have generally proved unfavourable to the occurrence of groundwater, and there is no reason to believe that conditions in the Clarence Valley would be any different.

Of the jointed rocks, the basalts are most likely to produce useful supplies of groundwater. They occur as cappings, usually of fairly limited extent, overlying any of the earlier formations. Some large areas of basalt are located in the vicinities of Woodenbong, Glencoe, Ebor and Dorrigo, and it is these which provide the most favourable conditions for the occurrence of groundwater.

Springs are common and it is known that some, originating in the Dorrigo Plateau basalt, yield sufficient water to maintain flows in streams which rise in this vicinity. Wells and bores on suitable sites can be expected to provide useful supplies for stock, domestic and garden use, although the water would probably require softening for domestic use. Yields ranging up to 1,000 gallons per hour are obtained at depths varying from 10 to 30 feet in the case of wells, and from 50 to 250 feet in the case of bores. However most bores would be successful at depths less than 100 feet. For example, a bore in high basalt country north-east of Glencoe, penetrated 50 feet of decomposed basalt, followed by 12 feet of hard basalt, and yielded good quality water at the rate of 500 gallons per hour.

Porous Rocks.

Strata within this group are part of the Clarence-Moreton Basin, which is elongated in a north-south direction and extends from about 30 miles south of Grafton, into Queensland. The ages of the sediments range throughout most of the Mesozoic era. The country underlain by the southern part of this Basin is mainly hilly, and is intersected by a number of creeks which flow into the Clarence River.

The oldest rocks in the Basin are the Triassic Coal Measures, which form relatively small outcrops near Nymboida. Although no details have been recorded for bores in these sediments, the water can be expected to be brackish and suitable only for cattle and sheep.

Overlying these strata are a group of sandstones, conglomerates, siltstones and claystones of doubtful age, shown as Triassic-Jurassic deposits at Figure 16. This series outcrops in an almost unbroken line around the perimeter of the southern portion of the Clarence-Moreton Basin. The rocks it contains are largely impervious, and the outcome of boring in them is somewhat speculative, although it is probable that stock supplies could be obtained by boring on selected sites.

Nearer the centre of the Basin, the Walloon Coal Measures outcrop. They include shales, sandstones and coal seams, and it is known that although bores in them have produced adequate supplies of water, the salinity is such that the water is sometimes unsuitable for even stock use.

The Kangaroo Creek Formation, which consists mainly of sandstones, with some conglomeratic horizons, overlies the Walloon Coal Measures. Records of a number of bores in this formation indicate that water can usually be obtained from depths of less than 100 feet. Yields may range up to 800 gallons per hour, and the water quality is usually suitable for domestic, garden and stock use. A yield of 5,000 gallons per hour is said to have been obtained from a 68 feet bore in these sandstones, where they outcrop to the south west of Maclean, but it seems likely that this unusually high yield may have been due to strong fracturing associated with a fault in this area.

The claystones, siltstones and thin sandstones of the Grafton Formation are the youngest beds in the sequence and they occupy a central position in the Basin; they outcrop in a wide meridional zone to the north and south of Grafton. Numerous bores have been constructed in these strata in the adjoining Richmond Valley, but none are recorded in the Clarence Valley. However it is reasonable to expect that conditions would be similar in both valleys, and it is considered that bores in this formation would yield useful stock supplies from depths usually less than 100 feet. Water quality is expected to be reasonably good with total salinities greater than 100, but rarely exceeding 300, parts per hundred thousand.

Unconsolidated Materials.

Shallow alluvial deposits of limited extent occur in the upper reaches of the Clarence River and along some of its tributaries upstream of Tabulam The thickness of these deposits is uncertain, but a number of wells have encountered sands and gravels at depths greater than 30 feet, and a bore near

Tabulam encountered unconsolidated sands at 59 feet. The yields of wells in these flats range from a few hundred to more than 2,000 gallons per hour, and there is a considerable variation in water quality. No analyses are available, but descriptions of the quality vary from "excellent" and "good" to "very hard" and "brackish". This wide variation in quality is attributed to the influence of groundwater originating in the underlying Mesozoic strata. It is probable that occasional supplies suitable for limited irrigation could be obtained, but as far as is known, there are no landholders in the Upper Clarence Valley using groundwater for irrigation.

From Tabulam to the vicinity of Copmanhurst, there are occasional narrow, low level alluvial flats, and near Copmanhurst there are some fairly extensive areas of dissected high level alluvium. The high level alluvium is believed to pre-date the uplift responsible for the ruggedness of much of the Clarence Valley, and is probably of Tertiary age. At the highest point this alluvium is nearly 200 feet above the present river bed, and much of it is about 100 feet above the river.

There is no record of bores in the low level flats and it is unlikely that they have any worthwhile potential. A few bores have been constructed in the high level alluvium upstream of Copmanhurst, the deepest being 94 feet but no bore has penetrated the full thickness of this alluvium, the tendency being to cease boring as soon as a suitable sand bed is encountered. Yields are small and the water quality is said to be good, being suitable for use on a garden. In keeping with the surface elevation of the sites, the static water levels are quite deep at 70 to 80 feet.

Between Grafton and Copmanhurst there appear to be several levels of alluvium, but they have not been investigated in detail. The broad alluvial plains which flank the lower reaches of the river commence just upstream of Grafton. Below Grafton the flats are composed of estuarine muds, sands and silts, which were deposited as an internal delta in the mouth of the river as the sea level rose following the melting of the Pleistocene ice caps. Upstream of Grafton the deposited material is coarser, and therefore Grafton appears to mark the transition from a fluviatile to an estuarine environment.

Wells in the fluviatile alluvium have encountered quite coarse sands and gravels and yields as high as 15,000 gallons per hour have been recorded, although such yields are exceptional. However it does appear that there is some potential for irrigation from groundwater in this vicinity. Nothing is known of the deeper alluvium in this area, the only records held being of shallow wells which rarely exceed a depth of 30 feet.

In the extensive flats downstream of Grafton, results show that only the upper 30 feet or so of alluvium contains water of reasonable quality. Below this level, bores reveal that the strata are mainly black muds and silts with shelly layers, and that the water in them ranges from brackish to highly saline. The quality of the groundwater in the top layers is known to vary with seasonal conditions, but normally, useful stock supplies are obtainable from wells between 10 and 20 feet deep.

It is in the natural levees flanking the river that the best supplies are obtained. These levees have been formed by floods, when silt laden waters overtop the river bank, lose their velocity and hence their transporting power and quickly deposit their load of silt and sand. Wells and spear points, located at sites on these levees, usually produce good quality water from depths of the order of 20 feet. Yields are normally adequate for stock, domestic and garden use, and one well is said to have been pumped at an estimated rate of 8,000 gallons per hour for a drawdown of only 4 feet.

However it is likely that pumping at high rates would cause poorer quality water to be drawn into the well during dry seasons as the lens of good quality water in the levee is depleted. Indeed, in some wells, the water level fluctuates with the tides, establishing that a fairly direct connection with the river exists. There is no doubt that if sufficient water were withdrawn during dry times, the river water, which is salty during periods of low flow, would move towards these wells. There are thus serious limitations on the development of supplies suitable for even small scale irrigation.

There are two areas of beach and dune sands near the coast. The one on the south side of the river is narrower and more swampy than that on the north side. Both are characterised by raw sandy soils and low scrubby vegetation.

Some parts are low lying and swampy and contain accumulations of decayed vegetable matter. This environment causes the groundwater to be peaty and acidic, whilst the presence of certain bacteria is responsible for contamination by sulphuretted hydrogen.

Spear points are the most common method of extracting supplies of water for stock, domestic and garden use. At Yamba, two screened bores provide good supplies of water from sands at 45 feet; at last report one was being used for a town supply and the other for a hotel. In the sands on the north side of the river there are two bores, one 64 feet and the other 66 feet deep. The water quality is said to be good, and the yields are 6,000 and 4,000 gallons per hour, respectively.

It is considered that these areas of aeolian and beach sands offer the best potential for supplies of good quality groundwater in the Clarence Valley. However, the soils are poor and generally unsuited for most agricultural pursuits, and the utilisation of the water is mainly confined to small market gardens, camping grounds and caravan parks, holiday homes etc. In some instances it may be practicable and economic to extract water from the sand beds for irrigation of crops on adjacent better soils, but extensive development is unlikely to take place until there is a substantial demand for town or industrial use.

5. STREAM GAUGING STATIONS.

Records of streamflow are obtained from gauging stations, where stream heights are recorded either by visual reading of a gauge, or else continuously by an automatic recording instrument. Each gauging station is calibrated by making a number of measurements of the rates of flow over a range of gauge heights and the flow corresponding to any gauge height can then be deduced. From the recorded gauge heights and the derived calibrations, continuous records of streamflow are then computed.

The units commonly used for the expression of streamflow are the cusec and the acre foot. "Cusec" is an abbreviation of "Cubic foot per second", and is a unit of measurement of the rate of flow. One cusec is approximately equal to 374 gallons per minute. "Acre foot" is a unit of measurement of volume.

One acre foot of water is the volume which would cover an area of one acre to a uniform depth of one foot, and is approximately equal to 270,000 gallons. A flow of one cusec discharges a volume of approximately two acre feet in twenty four hours.

In the Clarence River Valley, the earliest stream gauging stations installed were at Nymboida on the Nymboida River, and at Tabulam on the Clarence River, where records commenced in 1908 and 1909 respectively. The next stations to be established were at The Gorge (Clarence River) in 1917, and at Jackadgery (Mitchell River) in 1919.

A further twelve gauging stations, most of them on the headwater streams, were established during the nineteen twenties, but the majority of these were closed down in the depression years of the early thirties because of lack of funds for their operation. Later in the nineteen thirties, three of the discontinued stations were re-established, and in the nineteen forties a further four stations were recommenced and six new stations established. In the nineteen fifties and sixties, twenty six new stations were installed, the majority of which were for short term hydro-electric investigations and have since been discontinued.

Of the twenty eight stations currently in operation in the valley, twenty four are equipped with automatic recorders. Thirteen of these recorders are long term instruments and eleven are weekly, pressure operated units. The density of gauging stations, equivalent to about 3.2 stations per 1,000 square miles, may be compared with present approximate densities of 2.2 stations per 1,000 square miles for New South Wales, 0.5 stations for Australia, and less than three stations for America.

It is proposed to expand the present network by the establishment of approximately fifteen additional stations, bringing the density to about 5 stations per 1,000 square miles, and to improve the standard of recording at a number of existing stations by installing long term recorders. The ultimate coverage to be provided should furnish adequate information for the investigation and design of future water conservation or utilisation schemes.

Existing and discontinued gauging stations in the Clarence River Valley are shown at Figure 17, and are listed at Table 11 on page 20.

TABLE 11

Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation
Maryland River	Wylie Creek	144	Pressure recorder	1953 to date
Boonoo Boonoo River	Stanthorpe Road *	22	Staff gauge	1929 to 1931
Boonoo Boonoo River	Wilnor *	52	Float recorder	1921 to 1929) 1951 to 1962)
Bookookoorara River	Undercliffe *	49	Pressure recorder	1921 to 1931) 1948 to 1958)
Koreelah Creek	Hewetson's Mill	89	Pressure recorder	1954 to date
Lindsay Creek	Woodenbong	3.8	Float recorder	1960 to date
Tooloom Creek	Tooloom Falls	119	Pressure recorder	1955 to 1958) 1964 to date)
Cataract River	Sandy Hill	91	Float recorder	1952 to date
Peacock Creek	Bonalbo	18	Float recorder	1960 to date
Gorge Creek	Bonalbo	16	Float recorder	1960 to date
Clarence River	Tabulam	1710	Float recorder	1909 to date
Rocky River	Glen Elgin *	18	Pressure recorder	1951 to 1961
Rocky River	Billyrimba	380	Pressure recorder	1951 to date
Mann River	Shannon Vale	130	Pressure recorder	1951 to date
Mann River	Mitchell	340	Pressure recorder	1945 to date
Henry River	Newton Boyd	150	Pressure recorder	1951 to date
Deer Park River	Deer Vale *	4	Pressure recorder	1925 to 1931) 1948 to 1958)
Nymboida River	Bostobrick	85	Float recorder	1948 to date
Little Murray River	North Dorrigo	40	Float recorder	1947 to date
Rocky Creek	Dorrigo*	5.6	Staff gauge	1923 to 1931) 1948 to 1961)
Bielsdown Creek	Dorrigo No. 1 *	12	Staff gauge	1923 to 1931
Bielsdown Creek	Dorrigo Nos. 2 & 3	30	Float recorder	1947 to date
Wild Cattle Creek	Megan	12	Pressure recorder	1951 to date
Major's Creek	Grafton Road *	4.6	Staff gauge	1925 to 1931) 1936 to 1959)
Jock's Water	Maida Vale *	3.6	Staff gauge	1925 to 1931) 1936 to 1961)
Blicks River	Hernani	27	Pressure recorder	1950 to date
Blicks River	Dundurrabin	97	Pressure recorder	1948 to date
Little Nymboida River	Timmsvale *	12	Pressure recorder	1951 to 1961
Camp Creek	Lowanna *	3.5	Pressure recorder	1951 to 1958
Mole Creek	Moleton *	8	Float recorder	1951 to 1960
Bobo Creek	Brooklana *	15	Staff gauge	1948 to 1957
Bobo Creek	Bobo Nursery	31	Float recorder	1951 to date
Kelly's Creek	Dam Site *	8.1	Pressure recorder	1955 to 1958
Cloud's Creek	Cloud's Creek *	24	Float recorder	1952 to 1962
Sheepstation Creek	Above Cloud's Creek*	6.6	Float recorder	1952 to 1961
Nymboida River	Nymboida	640	Float recorder	1908 to date
Guy Fawkes River	Ebor *	12	Pressure recorder	1923 to 1931) 1936 to 1961)
Aberfoyle River	Aberfoyle	77	Pressure recorder	1951 to date
Little River	Broadmeadows	1030	Staff gauge	1945 to date
Nymboida River	Buccarumbi	2030	Staff gauge	1921 to date
Mitchell River	Jackadgery	3010	Servo manometer pressure recorder	1919 to date
Dandahra Creek North Arm	The Huts *	15	Float recorder	1951 to 1962
Dandahra Creek South Arm	Dam Site *	9.5	Float recorder	1951 to 1962
Clarence River	The Gorge *	6190	Staff gauge	1917 to 1922
Clarence River	Lilydale	6440	Servomanometer pressure recorder	1922 to date
Orara River	Karangi No. 1 *	22	Staff gauge	1925 to 1930
Orara River	Karangi No. 2	51	Staff gauge	1951 to date
Orara River	Bawden Bridge	690	Float recorder	1955 to date
Orara River	Ramornie	755	Staff gauge	1964 to date

* Discontinued Stations.

6. CATCHMENT YIELDS.

The water yields at the stream gauging stations in the Clarence River Valley, in terms of average annual flows, are shown at Table 12 on page 22, together with the numbers of complete years of computed records on which the averages are based. Stations for which averages are not shown include those where the periods of records are too short for the averages to have any significance, and those where, because of lack of information concerning stream heights or discharges, flow records are not sufficiently complete.

Details of the recorded maximum, minimum, mean and total flows for each month of record are tabulated at Appendices 7 to 19 for thirteen stations, as indicated in the final column of Table 12.

In addition, diversions to the Nymboida Power Station are tabulated at Appendix 20. These diversions which commenced in November 1924 are of interest in assessing catchment water yields as water is drawn from the Nymboida River and discharged into the Orara River.

The diversions are quite substantial and as a result the flows since November 1924 at the three downstream stations at Buccarumbi (Nymboida River), Jackadgery (Mitchell River) and Lilydale (Clarence River) are not representative of the natural yields of the respective catchments. A brief description of the Nymboida Scheme is included in Section 13 at page 42.

TABLE 12.

Stream	Station	Complete Years of Computed Records	Average Yield over Period of Complete Years of Record			Notes
			Ac.Ft./ Annum	Cusecs	Gallons/ Minute	
Maryland River	Wylie Creek	7	45,000	62	23,000	
Boonoo Boonoo River	Stanthorpe Road	-	-	-	-	1
Boonoo Boonoo River	Wilnor	12	28,600	39	15,000	1
Bookookoorara River	Undercliffe	16	21,200	29	11,000	1
Koreelah Creek	Hewetson's Mill	10	63,700	87	33,000	3
Lindsay Creek	Woodenbong	-	-	-	-	
Tooloom Creek	Tooloom Falls	-	-	-	-	
Cataract River	Sandy Hill	13	56,200	77	29,000	
Peacock Creek	Bonalbo	-	-	-	-	
Gorge Creek	Bonalbo	-	-	-	-	
Clarence River	Tabulam	57	737,000	1010	378,000	3
Rocky River	Glen Elgin	9	10,800	15	5,600	1
Rocky River	Billyrimba	13	180,000	246	92,000	3
Mann River	Shannon Vale	10	38,100	52	19,000	
Mann River	Mitchell	16	132,000	181	68,000	3
Henry River	Newton Boyd	9	38,000	52	19,000	
Deer Park River	Deer Vale	14	21,400	29	11,000	1
Nymboida River	Bostobrick	18	143,000	196	73,000	3
Little Murray River	North Dorrigo	18	106,000	145	54,000	
Rocky Creek	Dorrigo	19	19,200	26	9,700	1
Bielsdown Creek	Dorrigo No. 1	6	27,000	37	14,000	1
Bielsdown Creek	Dorrigo Nos. 2 & 3	19	95,200	130	49,000	3
Wild Cattle Creek	Megan	14	40,400	55	21,000	
Major's Creek	Grafton Road	21	11,000	15	5,600	1
Jock's Water	Maida Vale	26	9,400	13	4,900	1
Blicks River	Hernani	15	37,800	52	19,000	
Blicks River	Dundurrabin	18	102,000	140	52,000	3
Little Nymboida River	Timmsvale	8	23,100	32	12,000	1
Camp Creek	Lowanna	6	6,440	9	3,400	1
Mole Creek	Moleton	5	13,900	19	7,100	1
Bobo Creek	Brooklana	8	79,000	108	40,000	1
Bobo Creek	Bobo Nursery	14	87,400	120	45,000	
Kelly's Creek	Dam Site	-	-	-	-	1
Cloud's Creek	Cloud's Creek	9	19,400	27	10,000	1
Sheepstation Creek	Above Cloud's Creek	8	4,440	6	2,200	1
Nymboida River	Nymboida	58	663,000	908	340,000	3
Guy Fawkes River	Ebor	31	30,600	42	16,000	1
Aberfoyle River	Aberfoyle	14	21,000	29	11,000	
Little River	Broadmeadows	19	376,000	516	193,000	3
Nymboida River	Buccarumbi	41	1,070,000	1460	546,000	3 & 4
Mitchell River	Jackadgery	42	1,410,000	1930	722,000	3 & 4
Dandahra Creek North Arm	The Huts	10	26,100	36	13,000	1
Dandahra Creek South Arm	Dam Site	10	15,500	21	7,900	1
Clarence River	The Gorge	4	2,130,000	2920	1,090,000	1
Clarence River	Lilydale	42	3,046,000	4170	1,560,000	3 & 4
Orara River	Karangi No. 1	-	-	-	-	1
Orara River	Karangi No. 2	15	160,000	219	82,000	3
Orara River	Bawden Bridge	-	-	-	-	2
Orara River	Ramornie	-	-	-	-	

NOTES:
1. Discontinued station.
2. Flood years not computed. Averages, which would therefore be biased, are not shown.
3. Monthly maximum, minimum, mean and total flows tabulated in Appendices.
4. Yields have been based only on the records since November 1924 when Nymboida Power Station diversion commenced.

7. AVERAGE ANNUAL RUNOFF

Reasonably long term records of streamflow are available at several locations in the Clarence Valley, the longest being the 58 years of records for Nymboida and the 57 years for Tabulam. Using these records as a base for correlation, long term average flows have been assessed for other gauging stations and sub-catchments within the valley, and these are listed at Table 13. The assessed long term average runoff from the whole valley is also shown in the table, together with that for the adjoining Richmond River Valley, which is included for the purpose of comparison.

TABLE 13.

Region	Area in Square Miles	Average Annual Rainfall in Inches	Long Term Average Annual Runoff			
			Acre Feet	Inches	Percentage Runoff	Percent of Total Clarence Valley Runoff
Clarence Valley	8,750	42	4,000,000	8.6	20%	100%
Clarence River above Tabulam	1,710	38	737,000	8.1	21%	18%
Rocky River	690	40	300,000	8.2	20%	8%
Clarence River above Mitchell River Junction	2,940	39	1,340,000	8.5	22%	34%
Bielsdown Creek above Dorrigo	30	77	75,000	47	61%	2%
Nymboida River above Nymboida	640	55	663,000	19	36%	17%
Little River above Nymboida River Junction	1,350	37	440,000	6.1	16%	11%
Mann River above Nymboida River Junction	720	37	220,000	5.7	15%	6%
Mitchell River and all tributaries	3,260	41	1,540,000	8.9	22%	38%
Clarence River above Lilydale	6,440	40	3,046,000	8.9	22%	76%
Orara River	780	48	500,000	12	25%	12%
Richmond Valley	2,680	51	1,600,000	11.2	22%	--

From Table 13 it can be seen that the best water yielding section of the valley is the highland area around Dorrigo, where the average annual rainfall ranges up to almost eighty inches. Rainfall over the catchment of the Nymboida River, which drains this area, is about 30 percent greater than the average over the whole Clarence Valley; and on the basis of equivalent depth over the catchment area, the runoff of this stream, equal to 36 percent of the rainfall, is more than twice that of the whole valley. The very high yields in this area are exemplified by the flows in Bielsdown Creek, a tributary of the Nymboida River, where the average annual runoff is equivalent to a depth of 47 inches over the catchment, or 61 percent of the rainfall, which averages 77 inches.

The effect on streamflows of the large rain shadow occurring over the catchments of the Little and Mann Rivers, is well illustrated by Table 13. Expressed as depths over their catchments, the runoffs of these two streams, which average 16 percent and 15 percent respectively of their catchment rainfalls, are less than three quarters of the average for the whole valley.

The Mitchell and Clarence Rivers, above their junction, are similar in respect of catchment area, rainfall and runoff. The average annual yield of the Mitchell River only slightly exceeds that of the Clarence.

The Clarence Valley, with a catchment area of 8,750 square miles, is the largest coastal river valley in New South Wales, the next valley in order of size being that of the Hawkesbury River, covering some 8,400 square miles. The surface water resources of the Clarence, averaging 4,000,000 acre feet per annum, are more than twice those of any other coastal valley; while on the basis of equivalent depth of runoff over the catchment, they are nearly 20 percent greater than the average for Coastal New South Wales.

In terms of both percentage of annual rainfall and depth of runoff over the catchment, the surface water resources of the Clarence River Valley are less than those of the adjacent Richmond River Valley. This situation results from a combination of lower average rainfall and a decreasing rate of runoff per square mile with increase in catchment area for the larger Clarence Valley.

8. VARIABILITY OF STREAMFLOWS.

In common with most other streams in New South Wales, flows in the Clarence River and its tributaries exhibit a considerable degree of variability. Table 14 on page 26 sets out the range of annual, monthly and instantaneous flows, expressed proportionately to mean flows, which have been recorded at thirteen selected gauging stations.

It is apparent from this table that although there have been large variations in annual flows the variations are even more marked in monthly flows and most marked in instantaneous flows. The greatest variation in annual flows has been at Tabulam, on the Clarence River, where they have ranged from 4.4 times the mean to 3.1 percent of the mean, a ratio of about 140 to 1, in 57 years of record. The smallest variation has been at Dorrigo on Bielsdown Creek, where annual flows have ranged from 2.2 times the mean to 23 percent of the mean, a ratio of about 10 to 1, in 19 years of record.

It is of interest to compare the variability of flows in the Clarence Valley with that of flows for similar sized catchments in the valley of the Macquarie River, a major stream draining westward from the Great Dividing Range. Although the ratios of maximum to mean flow are generally of the same order of magnitude in both valleys, the ratios of minimum to mean flow are predominantly higher in the Clarence than in the Macquarie. In the case of annual flows, these ratios, expressed as percentages, range up to 26 percent in the Clarence but only to 19 percent in the Macquarie. In the Clarence, the ratios equal or exceed 22 percent at four of the thirteen stations, but in the Macquarie, they equal or exceed only 4.6 percent at five out of nine selected gauging stations upstream from and including Dubbo. It is therefore apparent that flows are generally less variable in the coastal valley of the Clarence River than they are in the inland valley of the Macquarie River.

In the Nymboida River, which drains the high rainfall section in the south east, flows have generally been less variable than in other sections of the valley. This lesser variability is most evident in the minimum flows, which, at Bostobrick, Dorrigo and Nymboida, are generally higher in relation to mean flows than they are at the other stations.

At only two of the thirteen selected stations has flow completely ceased for one full calendar month, and both of these stations are in the northern part of the valley. Flows have completely ceased for shorter periods at eight of the thirteen stations.

Variations in recorded monthly flows are illustrated graphically at Figures 18, 19, 20 and 21 for eight gauging stations as indicated at Table 14.

TABLE 14.

Stream	Station	Period of Records	Maximum and Minimum Recorded Flows Maximum-Ratio to Mean (Minimum-Percentage of Mean)			Hydrograph of Monthly Flows Shown at Figure Indicated
			Annual	Monthly	Instantaneous	
Koreelah Creek	Hewetson's Mill	1954 to date	3.4 (4.9%)	21 (0)	205 (0)	
Clarence River	Tabulam	1909 to date	4.4 (3.1%)	17 (0)	237 (0)	18
Rocky River	Billyrimba	1951 to date	3.0 (24%)	17 (4.1%)	219 (0)	20
Mann River	Mitchell	1945 to date	3.0 (20%)	18 (1.3%)	663 (0)	20
Nymboida River	Bostobrick	1948 to date	2.7 (26%)	10 (6.0%)	179 (3.5%)	19
Bielsdown Creek	Dorrigo Nos. 2 and 3	1947 to date	2.2 (23%)	8 (3.0%)	279 (1.6%)	
Blicks River	Dundurrabin	1948 to date	3.6 (15%)	15 (3.5%)	199 (0.3%)	
Nymboida River	Nymboida	1908 to date	3.7 (22%)	11 (6.0%)	218 (2.9%)	19
Little River	Broadmeadows	1945 to date	3.5 (16%)	13 (0.1%)	157 (0)	
Nymboida River	Buccarumbi	1923 to date	4.0 (13%)	18 (0.1%)	200 (0)	
Mitchell River	Jackadgery	1919 to date	4.0 (13%)	20 (0.04%)	251 (0)	21
Clarence River	Lilydale	1922 to date	4.1 (14%)	14 (0.2%)	168 (0)	21
Orara River	Karangi No. 2	1951 to date	2.0 (15%)	11 (0.5%)	114 (0.2%)	20

9. PERSISTENCE OF STREAMFLOWS

The flow duration graphs at Figures 22, 23, 24 and 25 indicate the persistence of dry weather flows at eight selected gauging stations, and Tables 15 and 16 set out the flows corresponding to various frequencies at the same stations.

TABLE 15

Percent of Time Flow Equalled or Exceeded	Corresponding Flows in Cusecs			
	Clarence River at Tabulam	Nymboida River at Nymboida	Rocky River at Billyrimba	Mann River at Mitchell
10	1,500	1,600	350	210
30	340	610	140	48
50	130	350	80	20
70	50	220	40	4
90	15	120	15	1
95	5	80	8	0.5
98	0			
100		27	0	0

TABLE 16

Percent of Time Flow Equalled or Exceeded	Corresponding Flows in Cusecs			
	Little River at Broadmeadows	Blicks River at Dundurrabin	Bielsdown Creek at Dorrigo	Orara River at Karangi
10	1,000	295	265	320
30	300	100	100	85
50	140	50	52	40
70	64	27	30	20
90	17	10	8	7
95	8	5	4	3
99	0			
100		0.4	2	0.5

From the graphs and tables, it can be seen that the persistence of low flows is reasonably good throughout the valley. At only four of the eight stations have zero flows occurred in the period of record, and even at these stations, the greatest incidence of zero flow represents only 2 percent of the total time (Clarence River at Tabulam)

The Nymboida River at Nymboida possesses the best low flow persistence, with flows of 120 cusecs or more having been experienced for 90 percent of the time, and flows of 80 cusecs or more having occurred for 95 percent of the time,

Flow duration graphs and tables have not been included for the three gauging stations at Buccarumbi, Jackadgery and Lilydale, which are all downstream from Nymboida. These data have been omitted because the persistence of recorded low flows would not be representative of natural conditions, due to the substantial diversions made from the Nymboida River through the Nymboida Power Station.

The low flow characteristics of the eight stations referred to in Tables 15 and 16 are compared in a different way on the composite flow duration graph at Figure 26, which shows the flows at all stations expressed as cusecs per square mile of catchment area. When the stations are compared in this way, it is apparent that the best persistence of flow occurs at Dorrigo (Bielsdown Creek) while the persistences at Karangi (Orara River), Nymboida (Nymboida River) and Dundurrabin (Blicks River), are superior to those at the remaining stations. The station at Mitchell (Mann River) has the poorest persistence of flow of the eight stations considered.

10. OCCURRENCE OF FLOODING.

Flooding in the Clarence River Valley upstream from Copmanhurst is generally confined to the immediate vicinity of the stream channels, and flood damage is mainly limited to that affecting communications, roads, culverts, bridges and low level farm installations such as fences. In this section of the valley the only significant alluvial development is in the valleys of some of the northern tributaries such as Koreelah Creek and Tooloom Creek; and farming and grazing lands in these areas have, at times, been inundated for short periods. In severe floods, some stock losses have occurred, and some communities have been isolated for a time.

Downstream from Copmanhurst, the valley gradually broadens and in the lower reaches the river is flanked by extensive areas of low lying flats. Natural riverside levees give partial protection to the lower areas behind them but they also inhibit drainage of floodwaters, which consequently often inundate the low flats for lengthy periods, causing considerable loss of production.

Towns and villages along the lower river, notably Grafton, South Grafton, Ulmarra and Maclean, have suffered inundation in major floods. The Clarence River County Council is at present undertaking flood mitigation work in the Lower Clarence, which consists broadly of extending the levee system, and constructing works which will promote rapid drainage from the low lying areas following future floods.

The graph at Figure 27 shows the incidence of recorded floods which have exceeded 15 feet on the Prince Street gauge in Grafton since 1839. Flood levels shown prior to 1945, when the Prince Street gauge was erected, were observed on various gauges and at different locations, but all have been reduced, for the sake of comparison, to equivalent levels at the Prince Street gauge. Early flood levels were obtained from historical records, and it is possible that prior to about 1920, floods additional to those shown may have occurred without having been recorded.

Forty floods exceeding 15 feet are known to have occurred since 1839, an average of one flood every three years. The longest periods without any recorded floods were the 27 years from 1894 to 1920, and the 16 years from 1929 to 1944. Notable groupings of floods occurred from 1887 to 1893, when ten floods were experienced in seven years and from 1954 to 1963 when eleven floods were recorded in ten years. The most recent flood in the valley occurred during January 1968.

Figure 27 also shows the number of floods which have been recorded in each month of the year. Most floods have occurred in the late summer and autumn months from January to April, or in the winter months of June and July, while no floods greater than 15 feet have been experienced in the months from September to December. More floods have occurred in February than in any other single month.

The highest flood ever recorded occurred in March 1890, when a peak level equivalent to 24'-0" was reached on the Prince Street gauge. Flood peaks exceeding 23 feet on this gauge occurred in 1887, 1890, 1893, 1950, 1954, 1963 and 1967.

At the gauging station at Lilydale, some 40 river miles upstream from Grafton, the highest flood recorded since records commenced in 1922 was in February 1954, when the peak gauge height reached was 68'-1", equivalent to

an estimated peak discharge of 700,000 cusecs. In March 1946 the peak flood level was 67'-0" (equivalent to an estimated discharge of 670,000 cusecs) and in June 1950 the flood level reached 65'-5" on the gauge, estimated to be equivalent to about 630,000 cusecs. A major flood occurred in June 1967 in the Clarence Valley and stream gaugings carried out at Lilydale during this flood indicated that a peak discharge of 520,000 cusecs (61.4 feet) occurred at that station. The highest calendar month runoff was in February 1956, with a discharge of over 3.6 million acre feet, equivalent to over 14 times the average monthly flow; while the highest calendar year runoff was in 1950, with a discharge of over 12 million acre feet, more than four times the average.

The February 1954 flood was caused by a tropical depression which moved southward down the Queensland and New South Wales coasts. A detailed investigation which was made into the hydrological features of this flood, revealed that some extremely high rainfall and runoff rates were recorded, particularly on the elevated areas close to the coast.

During the storm period of about 40 hours, total rainfalls recorded were up to 24 inches on the Richmond Range, in the north, and up to 39 inches on the Dorrigo Plateau, in the south. At Dorrigo, the maximum rainfall rates reported at an unofficial rainfall station included 16 inches in 6 hours (2.7 inches per hour), 23.6 inches in 12 hours (2.0 inches per hour), and 31.5 inches in 24 hours (1.3 inches per hour). These rainfalls are not for the standard 24 hour period commencing at 9 a.m. and are therefore not comparable with official readings for this storm. In the Bielsdown Creek at Dorrigo No. 2, the peak discharge was estimated at 36,200 cusecs, equivalent to more than 1,200 cusecs per square mile of catchment area. The total flood runoff in this stream was assessed at 31,000 acre feet, equivalent to 19.4 inches over the catchment area, or 61 percent of the catchment rainfall of 31.5 inches.

THE JUNE 1967 FLOOD

During June 1967 heavy rainfall occurred over the northern coastal section of New South Wales. Gales and flood rains were experienced in the north coast region during the periods 12th to 14th June and 25th to 28th June as a result of intense rain depressions which formed off the Central Queensland Coast and then moved slowly southward down the Queensland and New South Wales Coasts and out across the Tasman Sea.

As a result of these depressions very heavy to flood rainfalls occurred over the Clarence Valley. In the south eastern section at Dorrigo the monthly total of more than 44 inches was the second highest which has been recorded since the commencement of regular measurements in 1905 and corresponded to 56 percent of the average annual rainfall.

The heaviest rainfalls were recorded during the period from 10th to 14th June, with Dorrigo receiving in excess of 25 inches in these five days. As a result of the widespread nature of the heavy rainfall in the period, substantial floods occurred in all streams in the valley.

At Grafton, the Clarence River reached its peak level on 14th June when a height of 23 feet 1 inch was recorded at the Prince Street gauge. Although higher flood levels have been reached on six previous occasions since 1839, the peak level of the June 1967 flood was only 11 inches less than the highest recorded flood level of 24 feet in March 1890.

Streamflow measurements obtained by the Clarence River County Council during the June 1967 flood showed that the Clarence River at Lilydale reached an estimated peak discharge of about 520,000 cusecs on 13th June 1967. This discharge, which is equivalent to a flow of 81 cusecs per square mile of catchment area, is about 180,000 cusecs less than the highest recorded discharge at the station which occurred in February 1954.

A number of streamflow measurements were taken at Grafton and Lilydale during the June 1967 flood. At Grafton the peak discharge was estimated to be 564,000 cusecs with observed surface velocities up to 11.1 feet per second, or about 7.6 miles per hour. Measurements at Lilydale shortly before the peak of the flood recorded surface velocities up to 13.9 feet per second or 9.5 miles per hour.

Details of the 1967 flood heights and discharges at selected locations in the Clarence River Valley are compared with statistics for maximum recorded floods in Tables 17 and 18.

TABLE 17

Stream	Station	Period of Record	Gauge Heights and Peak Discharges	
			June 1967	Maximum Recorded Flood
Clarence River	Grafton *	1839 to date	23'-1" 564,000 cusecs	March 1890 24'-0"
Clarence River	Lilydale	1922 to date	61.4' 520,000 cusecs	February 1954 68'-1" 700,000 cusecs
Clarence River	Tabulam	1909 to date	38'-1½" 163,000 cusecs	June 1948 44'-6" 240,000 cusecs
Mitchell River	Jackadgery	1919 to date	38'-5" 360,000 cusecs	July 1921 43'-0" 480,000 cusecs
Nymboida River	Buccarumbi	1921 to date	44.6' 255,000 cusecs	January 1959 49'-0" 284,000 cusecs
Nymboida River	Nymboida	1908 to date	34.65' 103,000 cusecs	February 1954 46'-10½" 198,000 cusecs

* Discharge only available for June 1967 Flood.

TABLE 18.

Stream	Station	June 1967		Maximum Recorded Flood	
		Cusecs	Cusecs per Square Mile of Catchment	Cusecs	Cusecs per Square Mile of Catchment
Koreelah Creek	Hewetson's Mill	6,200	70	17,800	200
Clarence River	Tabulam	163,000	95	240,000	140
Rocky River	Billyrimba	32,000	84	54,000	140
Mann River	Mitchell	80,000	235	120,000	350
Nymboida River	Bostobrick	20,000	235	35,000	410
Bielsdown Creek	Dorrigo	11,300	377	36,200	1,200
Blicks River	Dundurrabin	26,300	271	28,000	290
Nymboida River	Nymboida	103,000	161	198,000	310
Little River	Broadmeadows	58,000	56	81,000	79
Nymboida River	Buccarumbi	255,000	126	284,000	140
Mitchell River	Jackadgery	360,000	120	480,000	160
Clarence River	Lilydale	520,000	81	700,000	109
Orara River	Karangi	15,400	302	25,000	490

11. DROUGHT PERIODS.

There is no generally accepted formula which defines in quantitative terms either the degree or duration of dryness which constitutes a drought. It is apparent that any attempt at such a definition would have to take into account a number of factors, including the severity of the water supply deficiency compared with both the supply usually received and the supply needed to maintain development at its usual level, as well as the hardship and loss of production caused by the deficiency.

However, it can be stated that in the Australian context, the prime indicator of drought conditions is the occurrence of rainfall and streamflows at levels significantly lower than usual, for periods of some months or years in duration.

The annual rainfalls in inches recorded at Grafton, Dorrigo, Tabulam, Killarney, Wongwibinda and Red Range are shown at Figures 28, 29 and 30. The average, lowest recorded annual and the lowest consecutive 12 monthly rainfalls recorded at these six locations are as follows:-

	Average	Calendar Year	Consecutive 12 Monthly Period
Grafton	38.12"	16.29" in 1915	16.29" Jan. 1915 to Dec. 1915
Dorrigo	78.86"	40.86" in 1940	34.71" May 1964 to Apr. 1965
Tabulam	38.24"	17.30" in 1918	14.67" Nov. 1901 to Oct. 1902
Killarney	29.12"	14.39" in 1902	9.37" Oct. 1901 to Sept. 1902
Wongwibinda	35.86"	18.94" in 1960	18.84" Feb. 1960 to Jan. 1961
Red Range	37.35"	18.89" in 1940	18.72" Dec. 1939 to Nov. 1940

Annual rainfalls were below the average values for at least two years in succession at all six locations, in 1912/1913, 1918/1919, 1935/1936 and 1940/1941.

Streamflows at many gauging stations in the Clarence River Valley have completely ceased at some time during the periods of record although in most cases the durations have not been great. In the northern section, all gauged streams with the exception of Lindsay Creek at Woodenbong, where records are only of short duration, have been known to cease flowing.

In the south west, the only gauging stations where flow has not ceased are at Shannon Vale on the Mann River, and at Ebor on the Guy Fawkes River. At these stations, the minimum flows recorded were 0.2 cusec and 0.5 cusec respectively.

In the south east, most of the gauged streams have never ceased flowing in the periods of records, but flows have been reduced to very small percentages of average in the majority of them. The lowest streamflows recorded at gauging stations in this section of the valley include 27 cusecs at Nymboida (average 908 cusecs), 7 cusecs at Bostobrick (average 196 cusecs) and 5.6 cusecs at North Dorrigo (average 145 cusecs).

In the central part of the Clarence Valley, flows have completely ceased at Jackadgery (Mitchell River), and Lilydale (Clarence River), and have been as low as 0.3 cusec in the short periods of record at the two stations on Dandahra Creek. No extremely low flows have been recorded at Bawden Bridge, where the Orara River carries water diverted from the Nymboida River through the Nymboida Power Station, as well as its own natural flow.

Table 19 sets out the lowest flows recorded at nine selected gauging stations, ogether with the total number of days of record on which these flows occurred, nd the months in which they were recorded. The table also gives details of the owest total flows recorded in any twelve monthly period at each station. This nformation indicates that the years 1915/1916, 1923/1924, 1932, 1936, 1940, 951/1952, 1953/1954, 1957/1958 and 1965 were characterised by extremely low flows.

TABLE 19.

Stream	Station	Minimum Recorded Flow			Minimum Twelve Monthly Flow	
		Cusecs	Maximum Number of Consecutive Days	Date of Occurrence	Acre Feet	Period of Occurrence
Clarence River	Tabulam	0	80	Sept. to Nov. 1915	19,300	Feb. 1923 to Jan. 1924
Rocky River	Billyrimba	0	12	Dec. 1953 to Jan. 1954	31,800	June 1957 to May 1958
Mann River	Mitchell	0	4	Jan. 1947	14,500	June 1957 to May 1958
Bielsdown Creek	Dorrigo	2.3	5	Feb. 1952	24,200	April 1957 to March 1958
Blicks River	Dundurrabin	0.5	9	Feb. 1952	15,800	July 1964 to June 1965
Nymboida River	Nymboida	27	10	Nov. 1915 Dec. 1951	112,000	March 1915 to Feb. 1916
Mitchell River	Jackadgery	0	12	Nov. 1940	236,000	Jan. to Dec. 1940
Clarence River	Lilydale	0	8	Nov. to Dec. 1936	307,000	June 1923 to May 1924
Orara River	Karangi	0.5	24	Jan. to Feb. 1952	11,000	July 1964 to June 1965

Examination of the monthly flow records of Tabulam, Nymboida and Lilydale indicates that periods of significant duration when flows were predominantly below average have occurred on about ten occasions in the last 55 years.

At Tabulam the total flow of 19,300 acre feet for the twelve monthly period February 1923 to January 1924 was equivalent to only about 2½ percent of the average annual flow while at Nymboida and Lilydale the minimum twelve monthly flows were equivalent to about 17 percent and 10 percent of the respective average annual flows. The minimum twelve monthly flows at the other stations listed in Table 19 have ranged from about 6 percent of average at Karangi to almost 25 percent of the average at Dorrigo.

12. THE 1964 TO 1966 DROUGHT.

Commencing during 1964, a period of very low rainfall was experienced over much of New South Wales. In most of the Clarence River Valley, the dry period began in about May 1964 and continued until May 1965, being broken only by rainfalls a little higher than normal at some locations in November 1964. Falls higher than usual were registered in June, July and August 1965, with some very heavy rains occurring in July. From September 1965 to July 1966 rainfalls were variable but were generally below normal except for quite substantial rain which occurred in December 1965. From August 1966 to May 1967 the monthly rainfall registrations within the Clarence River Valley were about normal apart from January and March 1967 when higher than normal rainfall produced minor nuisance flooding in the lower Clarence Valley.

However in June 1967 flood producing rains were experienced over the majority of the Clarence River catchment. At Grafton nearly 21 inches of rainfall was recorded for June 1967; over 10 inches being received during the two days from 12th to 13th June. Dorrigo received over 25 inches in 5 days from 10th to 14th June 1967 inclusive and later in the month received 9 inches in the 4 days prior to 28th June.

Along the western fringe of the valley, the drought followed a slightly different pattern. Rainfalls continued around normal until October 1964, but conditions were then very dry from November 1964 until June 1965. The heavy coastal rains of July 1965 brought falls which were more than double the normal in the west of the valley. The next relief came in December 1965 when substantial falls were received, but as in the rest of the valley, conditions then remained predominantly dry until August 1966.

Table 20 on page 36 shows the monthly rainfalls recorded at three selected locations between January 1964 and March 1968. The minimum twelve monthly totals in the period ranged from 17.10 inches at Tabulam to 34.71 inches at Dorrigo. At all three locations, the minimum twelve monthly falls during the 1964-1966 drought occurred within the period of thirteen months from May 1964 to May 1965.

TABLE 20

Monthly Rainfalls in Points

Year	1964			1965		
Month	Grafton	Dorrigo	Tabulam	Grafton	Dorrigo	Tabulam
January	242	578	283	213	678	101
February	626	1036	868	175	402	200
March	1124	2231	694	2	125	151
April	656	902	413	28	451	107
May	117	105	249	64	132	124
June	37	71	55	175	490	168
July	83	108	100	572	2318	909
August	116	202	65	111	296	104
September	132	148	107	74	82	98
October	173	298	131	67	389	123
November	310	418	178	358	329	324
December	434	465	391	743	1704	847
Totals	4050	6562	3534	2582	7396	3256

Year	1966			1967		
Month	Grafton	Dorrigo	Tabulam	Grafton	Dorrigo	Tabulam
January	34	300	50	1073	2173	717
February	498	433	632	97	713	181
March	546	431	160	900	1686	783
April	293	351	246	293	1410	195
May	37	83	8	138	267	142
June	196	302	79	2062	4437	1327
July	15	23	2	135	179	104
August	375	378	545	193	315	134
September	152	151	194	55	152	68
October	440	587	316	358	966	718
November	567	553	407	101	321	173
December	379	320	193	215	531	256
Totals	3532	3912	2750	5620	13150	4798

Year	1968					
Month	Grafton	Dorrigo	Tabulam	Grafton	Dorrigo	Tabulam
January	805	1796	678			
February	481	608	1037			
March	355	599	231			
Minimum twelve monthly totals during Period January 1964 to March, 1968				1767	3471	1710

Streamflows tended to reflect the pattern of rainfalls throughout the drought, with, however, some significant modifications. In the western part of the valley, flows persisted at reasonable levels until about the end of 1964, but diminished rapidly during 1965. The rain in July 1965 was apparently mostly absorbed in satisfying the severe soil moisture deficit, as monthly flows remained at less than one quarter of the average values until November

1965. The December 1965 rain produced reasonable flows in some streams in the valley but at others only minor increases resulted. Flows then generally continued at less than one quarter of average from January to June 1966.

In the remainder of the valley, streamflows had generally diminished to less than one quarter of average by August 1964, and apart from some minor rises late in 1964, they continued low until June 1965. The heavy rain in July 1965 resulted in quite considerable rises occurring, but flows quickly decreased in the ensuing months until December 1965, when good rain again caused substantial increases in flows. The prior soil moisture deficit, however, was apparently quite severe, since by the following month, in January 1966, the only streams where monthly flows were more than one quarter of the average, were those draining the Dorrigo Plateau. By April 1966, flows in these streams had again been reduced, and flows in all streams remained at low levels until July 1966.

After July 1966 streamflows commenced to improve and widespread relief was afforded by high rainfall in the first half of 1967 culminating in the June 1967 flood. Although below average flows were experienced for a period following the June 1967 flood substantial rises again occurred in all streams in the valley in January 1968.

The results of recent streamflow measurements are shown in Table 21.

TABLE 21.

Stream	Station	Average Flow (Cusecs)	Flow Measurements		
			Date	Cusecs	Gallons/Minute
Koreelah Creek	Hewetson's Mill	87	27.3.68	15	5,600
Clarence River	Tabulam	1,010	17.4.68	153	57,200
Mann River	Mitchell	181	11.4.68	11	4,100
Little River	Broadmeadows	516	10.4.68	51	19,100
Nymboida River	Nymboida	908	8.4.68	392	147,000
Clarence River	Lilydale	4,170	9.4.68	1,000	374,000

The minimum flows recorded during the drought at twenty one selected gauging stations are detailed at Table 22 on page 39. This table lists, for each station, the minimum instantaneous flow recorded, and the month or months in which this minimum flow occurred; and it also shows the minimum total flow recorded in any period of 60 consecutive days, together with the period in which this flow occurred.

From Table 22 it can be seen that the most severe effect on streamflows occurred in the streams draining the western highlands and the northern sections of the valley. The Maryland River, Tooloom Creek, the Clarence River at Tabulam, and the Aberfoyle River all completely ceased flowing, the first two for periods in excess of 60 days. Flows at five other of the selected stations on streams draining these areas were reduced to one cusec or less.

In the south eastern part of the valley the low flow periods were less severe and at the selected stations, they ranged upwards from 4 cusecs. The highest minimum flow was at Nymboida (40 cusecs), while the highest minimum 60 days flow of 10,000 acre feet, equivalent to an average rate of flow of 86 cusecs also occurred at this station.

In the northern and western streams in the valley the minimum flows generally occurred between March and June 1965, although at some stations the minima were experienced in the first half of 1966. In the south east of the valley, the minimum flows tended to occur earlier, and were generally experienced between October 1964 and June 1965.

TABLE 22.

Stream	Station	Minimum Streamflows during the 1964 to 1966 Drought				
		Minimum Recorded Flow		Minimum Discharge over a 60 Day Period		
		Cusecs	Months of Occurrence	Acre Feet	Equivalent cusecs	Period of Occurrence
Maryland River	Wylie Creek	0	Feb. to July 1965	0	0	Feb. to April 1965 May to July 1965
Koreelah Creek	Hewetson's Mill	0.02	Nov. 1965	27	0.2	March to May 1965
Tooloom Creek	Tooloom Falls	0	Nov. 1964, March to June 1965	0	0	March to May 1965
Cataract River	Sandy Hill	0.7	Nov. 1965	240	2.0	March to May 1965
Clarence River	Tabulam	0	April 1965	470	3.9	March to May 1965
Rocky River	Billyrimba	8	March, April, May, Nov. 1965	1,260	10	March to May 1965
Mann River	Shannon Vale	0.2	Jan, Feb, 1966	97	0.8	Jan. to March 1966
Henry River	Newton Boyd	0.3	March, April, 1966	82	0.7	April to June 1966
Nymboida River	Bostobrick	20	Dec. 1964, Jan. 1965	3,180	26	Nov. 1964 to Jan. 1965
Little Murray River	North Dorrigo	14	Dec. 1964	2,150	18	Nov. 1964 to Jan. 1965
Bielsdown Creek	Dorrigo	12	Oct, Nov, Dec, 1964. Jan, Feb, March, April, May, June, Nov. 1965	1,470	12	Oct. to Dec. 1964 April to June 1965
Blicks River	Hernani	4	Sept, Nov, Dec, 1964. Jan, June, Nov, 1965	730	6.0	April to June 1965
Blicks River	Dundurrabin	6	June 1965	980	8.1	April to June 1965
Bobo Creek	Bobo Nursery	4	Oct, Nov, 1964	1,070	8.9	Sept. to Nov. 1964
Nymboida River	Nymboida	40	Nov. 1965	10,300	86	April to June 1965
Aberfoyle River	Aberfoyle	0	Feb, Mar, Apr, May, Nov, Dec, 1965, Jan, Feb, Mar, Apr, 1966	1	0.01	March to May 1965
Little River	Broadmeadows	1	Mar, Apr, 1965	930	7.8	April to June 1965
Nymboida River	Buccarumbi	2	April 1965, April 1966	1,600	13	March to May 1965
Mitchell River	Jackadgery	4	April 1965	1,940	16	March to May 1965
Clarence River	Lilydale	10	April 1965	4,160	35	March to May 1965
Orara River	Karangi	6	April, June, Nov, 1965	930	7.7	Dec. 1964 to Feb. 1965

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT.

Although the Clarence River Valley possesses surface water resources which are greater than those of any other coastal river valley in New South Wales, and equal to approximately one fifth of those of the complete Murray-Darling Drainage Division, nearly fifty times its size, relatively little use is made of its waters for irrigation. This situation is a result of a number of factors, principally the rugged topography of much of the valley, which renders it unsuitable for irrigation, and the high and relatively regular rainfall which occurs in some of the fertile areas, rendering irrigation less economically rewarding than it is elsewhere in the State.

Agricultural activities in the valley are influenced by climate, topography and soil types, the chief pursuits being beef cattle raising, dairying, wool growing, and the growing of sugar cane, while vegetables, mainly potatoes, are grown in some localities.

Wool growing is confined to the tableland areas along the Great Dividing Range and to the south western section of the valley. Beef cattle raising is the primary activity in most of the rugged country in the centre of the valley, and is a secondary activity on the tablelands and nearer the coast. Potatoes are grown mainly in the south, in the Dorrigo-Ebor-Ben Lomond area. None of these activities traditionally involve significant irrigation, but together with forestry, they cover the greater part of the Clarence Valley.

Dairying is undertaken in four principal districts. These are the Dorrigo Plateau, the Orara Valley, the eastern portion of the Upper Clarence Valley from about Tabulam to Woodenbong, and the Lower Clarence Valley around and to the east of Grafton. This industry, with its associated intensive agriculture of fodder crops, normally generates a demand for irrigation but in the high rainfall area around Dorrigo it is operated using dry farming methods. Therefore it is only in the remaining three of the four dairying districts that irrigation has attained any significance, and the demand for it has been augmented in the Lower Clarence area by the growing of sugar cane.

The graph at Figure 31 shows the growth in both the numbers of irrigation licenses issued and the total area licensed for irrigation between 1944 and 1967. In June 1944, 21 licenses were in force authorising the irrigation of

167 acres of land, the average area applicable to each license being about 8 acres. At the end of June 1967, these figures had increased to 225 licenses covering 3890 acres, at an average of about 17 acres per license. This average area per license is similar to the corresponding figures for other New South Wales coastal river valleys, such as the Richmond (15 acres per license), the Lower Hunter (14 acres), and the Bega (13 acres).

Of the total license area of 3890 acres, about 1600 acres are located along the Clarence River and its tributaries above Tabulam, 1325 acres are in the Lower Clarence area below the junction with the Mitchell River and approximately 400 acres are in the Orara River Valley. Only 300 acres are licensed for irrigation in the remainder of the Clarence Valley, which extends from Tabulam to just below the Mitchell River junction. The Mitchell River and its tributaries, which include the Nymboida and Little Rivers and cover an area of over 3,000 square miles, or approximately one third of the whole valley, has only 216 acres licensed for irrigation.

Based on an annual application of two feet of water being made to all licensed areas, the total existing irrigation demand in the valley is assessed as being equal to a flow of about sixteen cusecs, during an irrigation season of eight months.

Licenses under the Water Act have also been issued for the diversion of surface water for other than irrigation purposes, such as stock watering, mining, and town, industrial, domestic and commercial use. At the end of June 1967, 69 such licenses were in force authorising diversions totalling more than 224,000 gallons per minute or about 600 cusecs, of which about 400 cusecs are authorised for diversion from the Nymboida River for use in the hydro-electricity generating project near Nymboida. These diversions include those for water supplies to the towns of Coff's Harbour (from the Orara River) and Dorrigo (from Rocky Creek) as well as to a number of other centres.

The largest existing water supply scheme in the Clarence Valley is that which draws water from the Nymboida River near Nymboida, for supply to the City of Grafton and to other towns in the Lower Clarence area including Ulmarra Maclean and Yamba. Supplies are also made from this system for stock watering purposes in the lower valley.

This scheme is integrated with the Nymboida hydro-electricity generating project. A low weir across the Nymboida River near the village of Nymboida impounds a storage of about 250 million gallons (over 900 acre feet), at an elevation of about 580 feet above sea level. From the storage, water is gravitated through two tunnels, driven under a ridge to the east of the river. From the tunnel exits, three penstocks, each 60 inches in diameter, lead to the Nymboida Power Station, located a little over a mile to the east of the Nymboida River, at an elevation of about 370 feet above sea level on the floor of the valley of a tri utary of the Orara River. The water from the power station is discharged into this tributary, Goolang Creek, which joins Blaxlands Creek and enters the Orara River about a mile downstream from Coutt's Crossing.

From one of the tunnel exits, and from tappings into the upper ends of the penstocks, two steel mains, 18 inches and 10 inches in diameter, deliver water by gravitation over a distance of approximately 25 miles to Grafton, from where it is distributed to the other towns.

The total capacity of the diversion works is approximately 150,000 gallons per minute (400 cusecs), and the capacity of the Grafton and Lower Clarence supply, now about 2,400 gallons per minute (6.4 cusecs), is in the process of being augmented to about 5,600 gallons per minute (15 cusecs).

The water diverted to the Nymboida Power Station is returned to the river system after it has been used to generate electrical power. When allowance is made for this factor the total consumptive diversion capacity of licensed water supplies in the Clarence Valley is reduced from 224,000 gallons per minute (600 cusecs) to 74,000 gallons per minute (198 cusecs).

The maximum demands of licensed irrigation, water supply and riparian usage, for the Clarence River Valley under present conditions are given in Table 23.

TABLE 23

Type of Requirement	Estimated Maximum Demand	
	Cusecs	Gallons per Minute
Irrigation (3890 acres at 2 feet per season)	16	6,000
Town, Industrial and Stock Water Supplies	198	74,000
Riparian Usage	95	36,000
Total Present Demand	309	116,000

The estimated total maximum present demand of 309 cusecs exclusive of transmission losses is widely distributed throughout the valley. Table 24 sets out the areas licensed for irrigation and the total demand in various sections of the valley.

TABLE 24.

Section of Valley	Area Licensed for Irrigation at June, 1967 (Acres)	Combined Demand of Irrigation, Water Supply and Riparian Usage	
		Cusecs	Gallons Per Minute
Koreelah Creek and tributaries	262	4	1,500
Tooloom Creek and tributaries	458	6	2,300
Duck Creek and tributaries	218	4	1,500
Other eastern tributaries of the Clarence River above Tabulam	367	7	2,700
Western tributaries of Upper Clarence River	304	50	18,700
Clarence River between Mitchell River Junction and Tabulam	312	14	5,300
Mitchell River and tributaries	216	40	15,000
Clarence River below Mitchell River Junction	703	120	45,000
Orara River and tributaries	428	24	9,000
Other Lower Clarence River tributaries	622	40	15,000
Total Clarence River Valley	3,890	309	116,000

14. POSSIBLE IRRIGATION DEVELOPMENT.

Irrigation development in the valley will be influenced by a number of physical limitations of which the main ones are the suitability of the surface water supply as governed by the extent of upstream penetration of tidal salt water, the topography of the country, flood liability, and the occurrence of soil types which would prove satisfactory under sustained irrigation.

Tidal influence extends to the vicinity of Copmanhurst, upstream of Grafton but during periods of river freshes irrigation is practised downstream to beyond Ulmarra. Large areas of land around Grafton and downstream, which

may be otherwise suitable for irrigation, are subject to periodic flooding and the lower sections have drainage difficulties. Some of the older alluvial soils in the valley may be deficient in mineral content, notably phosphorus and may also have permeability problems.

The determination of the extent of irrigable areas is complex. A comprehensive study of the difficulties outlined above has not been made and the following Table 25 giving details of irrigable areas is intended only as a guide to the distribution of land which is readily commanded from the main river and tributaries.

TABLE 25.

Location	Possible Irrigable Area (Acres)
Clarence River.	
(i) Upstream of Mitchell River Junction	4,400
(ii) Downstream of Mitchell River Junction including Alumy Creek and tributaries downstream of Grafton.	36,000
Orara River and Tributaries.	2,200
Nymboida River and Tributaries.	800
Mitchell River and Tributaries other than the Nymboida River.	
(i) Upstream of Nymboida River Junction	400
(ii) Downstream of Nymboida River Junction	400
Rocky River and Tributaries	300
Tributaries above Tabulam	4,500
Tributaries between Mitchell and Orara Rivers	500
Coalbrook Creek and Tributaries	500
Total	50,000

It is apparent from Table 25 that more than 70 percent of the area tentatively assessed as being suitable and readily irrigable lies downstream of the Mitchell River Junction and most of this is also within the tidal range.

Thus effective development of irrigation on these lands would be dependent upon the provision of a fresh water supply by construction of a barrage on the lower river or by conveyance of water to the irrigable areas by pipeline.

Due to the nature of the river channel construction of a barrage would be extremely costly and would possess some serious disadvantages including its effect on the fishing industry and the likelihood of it increasing flood and drainage problems. It would also introduce navigational difficulties.

Several schemes have been investigated for conveying water to lands on both banks of the Clarence River from Grafton to Lawrence, Maclean and Yamba. One such proposal involved the conveyance of waters discharged from the Nymboida Power Station into Goolang Creek, by pipeline to a storage on Tea-Tree Creek from whence reticulation could be made to those lands downstream of Grafton. This scheme was to provide a supply of irrigation water to over 800 holdings and a domestic and stock supply to about 1,300 holdings. However because of its high estimated capital and operational costs the scheme was not economically attractive. The estimated present day cost of this scheme is over $20 million and the cost of water about $70.00 per acre foot.

A preliminary investigation into supplying the alluvial flats between Grafton and Maclean by pumping water from fresh water lakes adjacent to the coast showed this proposal also to be uneconomic. The estimated present day cost of water per acre foot for this scheme is in excess of $80.00.

With the exception of areas in the upper and lower sections of the valley, the topography is generally suitable for the construction of farm dams. In addition, due to the temporal pattern of rainfall over the Clarence Valley, farm dams could provide an economic source of water for supplemental irrigation.

Although there have been relatively few farm dams constructed primarily for irrigation purposes to date, it is expected that farm dams will provide significant supplies of water for irrigation in the future.

15. INVESTIGATION OF STORAGE PROPOSALS.

The Commission has undertaken preliminary investigation including surveys and core drilling of a number of sites in the valley for multi-purpose dams including irrigation, hydro-electric power generation and flood mitigation. However in each case the costs were relatively high having regard to the likely benefits.

Furthermore streamflow records indicate that the natural flow of the river is normally sufficient to meet the requirements of existing irrigation development except within the tidal reach. However, as has already been mentioned provision of a fresh water supply to lands fronting the tidal reach would be costly.

Sites investigated by the Commission are shown on Figure 32. These include two on the Nymboida River, one immediately upstream of the confluence of Cloud's Creek and the other immediately downstream thereof. Preliminary drilling was carried out on the former site which was considered the most favourable.

Sites have been surveyed on Goclang Creek 2 miles upstream from the confluence with Blaxland's Creek and on Tea Tree Creek 4 miles upstream from the confluence with the Orara River. However these sites were associated with the proposal which envisaged utilisation of water discharged from the Nymboida Power Station for the provision of a domestic, stock and irrigation water supply to holdings adjacent to the Clarence River as far downstream as Lawrence, Maclean and Yamba.

In 1955 the Clarence River Advisory Committee, (comprising representatives of the Department of Public Works, Electricity Commission, Conservation Authority, Water Conservation and Irrigation Commission, Northern Rivers County Council and the Clarence Regional Development Committee) reported, inter alia, that:-

(i) for economic reasons the proposal as recommended in 1950 by the Clarence River Water Resources Investigations Committee for the construction of a dam at The Gorge site for the dual purpose of hydro-electric power generation and flood mitigation should not be adopted;

(ii) for the same reasons, a dam having no value for the purpose of hydro-electric power generation should not be considered at The Gorge site for the purpose of flood prevention only;

(iii) in view of the power potentialities of the Clarence Valley, the investigation of the power development at present in progress should be continued until completion, but such investigations should have regard to the economic factors mentioned in the conclusions, with particular reference to the effect inundation of storage areas will have on agricultural and pastoral production.

Following this the Electricity Commission, in conjunction with the Northern Rivers County Council and the Department of Public Works, undertook further investigations concerning the hydro-electric potential of streams in the Clarence Valley but concluded that the development of conventional hydro-electric power was not warranted. Current investigations by the Electricity Commission are in connection with pumped storage proposals for hydro-electric power generation.

The long term water conservation programme envisages the construction of major dams in the Upper Clarence, Nymboida and Orara Valleys.

Investigations of sites for these dams has so far been of a preliminary nature as it is likely that some considerable time will elapse before their construction is warranted by the requirements of irrigation development.

16. ACKNOWLEDGMENT.

The Water Conservation and Irrigation Commission wishes to acknowledge the assistance given in the preparation of this report by the Director, Bureau of Meteorology in providing the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps; and by the New South Wales Department of Public Works in providing details of the various town water supply schemes, and also to the Clarence River County Council which supplied details of stream gaugings made by their officers during the June 1967 flood.

Appendix 1
Sheet 1

ANNUAL RAINFALLS
(Points)

Year	Killarney	Old Koreelah	Woodenbong	Wylie Creek	Rivertree	Old Bonalbo	Year
1890	3583						1890
1891	3798						1891
1892	4334						1892
1893	5357				*		1893
1894	3428				3918		1894
1895	2951				3352		1895
1896	3694				4405		1896
1897	3526				4011		1897
1898	2789				3366		1898
1899	3245				3204		1899
1900	1903				2493		1900
1901	2558				2847		1901
1902	1439				1571		1902
1903	2742				3564		1903
1904	2396				3151		1904
1905	2312				2785		1905
1906	3376				3301		1906
1907	2991				2921		1907
1908	2683				3397		1908
1909	2694				3111		1909
1910	2599				3237		1910
1911	2231				2708		1911
1912	2490				2899		1912
1913	2246	3243			2519		1913
1914	3191	3584		*	3458		1914
1915	1764	1889		1536	1589	*	1915
1916	3440	3810		3312	-	4679	1916
1917	3312	4070		3820	4047	*	1917
1918	1491	2069		1485	2870	*	1918
1919	1934	2171		*	2198	*	1919
1920	2791	3399		-	3804	-	1920
1921	2981	4048		-	3810	-	1921
1922	2139	2488		*	2724	-	1922
1923	1889	2010		1576	1859	-	1923
1924	3550	3682		3187	4441		1924
1925	3271	4356		3130	4322	*	1925
1926	2082	1952		1828	1900	*	1926
1927	3441	4226		3351	-	*	1927
1928	3808	5269		3957	4684	4296	1928
1929	2870	3803		2343	3103	2928	1929
1930	2682	3684		2928	3444	*	1930
1931	3255	4026		3310	3166	*	1931
1932	2796	2471		2197	2441	*	1932
1933	3095	3788		3355	3755	5052	1933
1934	3152	3748	4086	3538	3360	3039	1934
1935	2454	2845	3716	2579	2825	2729	1935
1936	1989	2748	2488	2334	2177	2101	1936
1937	3080	3512	4659	4142	4101	4814	1937
1938	2686	3397	3867	2651	2853	4876	1938
1939	2691	3292	4648	3518	3175	4034	1939
1940	2686	3203	3173	2043	2020	2688	1940
1941	2372	3091	2937	2481	2643	2925	1941
1942	3055	3660	4466	3469	4144	4376	1942
1943	3313	3519	4027	2506	3903	3536	1943

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Killarney	Old Koreelah	Woodenbong	Wylie Creek	Rivertree	Old Bonalbo	Year
1944	2508	2823	2950	1896	2959	3074	1944
1945	2786	3501	3615	2895	3882	4157	1945
1946	2783	3659	3814	3152	3976	3685	1946
1947	3852	4715	5373	5049	4811	4546	1947
1948	3117	3571	4372	3643	5104	*	1948
1949	3094	3895	3821	3991	5621	4336	1949
1950	4232	5184	6233	5604	7338	5511	1950
1951	2570	2989	3700	2673	*	3947	1951
1952	2901	2851	3186	3748	*	2866	1952
1953	1818	2155	3082	2397	*	3226	1953
1954	4032	4535	6155	4489	3386	5598	1954
1955	2973	3979	4845	4085	*	4028	1955
1956	3641	4564	5884	5221	*	5834	1956
1957	1622	2087	2368	2161		2290	1957
1958	3124	2934	3819	3744		4415	1958
1959	3721	5199	6734	5410		6886	1959
1960	2360	2327	2533	2511		2453	1960
1961	3174	3776	4731	3342		4246	1961
1962	3442	4080	4729	4275		4538	1962
1963	2927	3680	4842	3620		4274	1963
1964	3113	3130	3944	3757		3272	1964

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Tenterfield	Drake	Tabulam	Glen Elgin	Banyabba State Forest	Copmanhurst	Year
1871	3260						1871
1872	3714						1872
1873	3558						1873
1874	2591						1874
1875	2278						1875
1876	3814						1876
1877	2027						1877
1878	2908						1878
1879	5091						1879
1880	2237						1880
1881	1997						1881
1882	3372						1882
1883	2864						1883
1884	2734						1884
1885	2577						1885
1886	4583						1886
1887	4550		*				1887
1888	1844		3178				1888
1889	3551		*				1889
1890	4820		6266				1890
1891	4066		4684				1891
1892	5630	5895	4745				1892
1893	4660	7742	7205				1893
1894	3553	5114	3887				1894
1895	3096	3760	3961				1895
1896	3507	4716	4788				1896
1897	3780	3698	3536				1897
1898	2354	3840	3260				1898
1899	3001	3800	3809				1899
1900	2779	2642	2582				1900
1901	2685	3567	3220				1901
1902	2634	2237	2659				1902
1903	4113	4162	4318			*	1903
1904	3386	3740	3591			3847	1904
1905	2981	3457	2942			3327	1905
1906	3206	3903	3615			3799	1906
1907	3271	3175	2685			3368	1907
1908	2961	3945	4351			*	1908
1909	3201	3597	3267			*	1909
1910	3355	3709	3372	3103		3534	1910
1911	2444	3885	3069	3608		*	1911
1912	2741	3196	3148	3491		*	1912
1913	2609	3054	3038	3380		*	1913
1914	3071	4349	*	4257		*	1914
1915	1692	1664	1970	1660		*	1915
1916	3122	3986	*	3383		4674	1916
1917	4369	4291	3481	3678		4304	1917
1918	2500	2886	1730	2465		2335	1918
1919	2190	3934	3488	3466		2898	1919
1920	2880	3585	3348	3801		3142	1920
1921	4502	5905	5066	6204		5964	1921
1922	2893	3177	2841	2600		3461	1922
1923	1888	2212	2839	2460		2426	1923
1924	3389	4213	4666	4097		3775	1924

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Tenterfield	Drake	Tabulam	Glen Elgin	Banyabba State Forest	Copmanhurst	Year
1925	3980	4983	4716	4059		5141	1925
1926	2516	2734	2629	2791		2733	1926
1927	3567	4091	5005	3512		4166	1927
1928	3650	5598	4391	6389		5638	1928
1929	3375	3885	3526	4108		3983	1929
1930	3006	4983	3516	4060		3880	1930
1931	3135	4166	3773	3733		3584	1931
1932	2511	3049	2644	3523		2721	1932
1933	4109	5175	5060	5180		4528	1933
1934	3648	4419	4198	4498		4453	1934
1935	2649	3251	3098	3104		3690	1935
1936	2870	3100	2983	2999		2350	1936
1937	3052	4912	4697	3914		4840	1937
1938	2584	3530	3785	3396		4478	1938
1939	3336	3708	4437	3404		3741	1939
1940	2260	2332	2457	2520	2808	3274	1940
1941	2968	3533	3229	2365	3755	3611	1941
1942	3488	4222	3806	4032	4054	4437	1942
1943	2922	3857	3018	3124	3624	3146	1943
1944	2670	3308	2864	2913	4332	3033	1944
1945	3935	5510	4237	4635	5142	4439	1945
1946	3000	4556	3426	3530	4648	4164	1946
1947	4468	6432	5075	4689	6037	4577	1947
1948	3192	5373	3983	3854	6199	5050	1948
1949	3570	4525	4902	3737	5318	4392	1949
1950	5042	7075	7125	6957	10697	8158	1950
1951	3049	3432	3688	3442	4297	3202	1951
1952	3557	3232	3314	4458	*	3705	1952
1953	2330	2731	3557	3370	*	2962	1953
1954	4042	5960	5641	6266	8245	6989	1954
1955	2817	5433	4700	4033	5631	4913	1955
1956	4338	5936	5452	5466	*	5629	1956
1957	1948	2492	2160	2991	2567	2485	1957
1958	3540	3438	3359	3722	3953	4097	1958
1959	4855	6014	5737	*	6479	6303	1959
1960	2455	2527	2469	2844	1974	1848	1960
1961	3713	3821	4138	4319	*	5218	1961
1962	5442	5623	4620	*	8576	6365	1962
1963	3772	5385	5045	5016		6039	1963
1964	3324	4048	3534	3423		3415	1964

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Clarence Heads	Grafton	Dalmorton	Red Range	Beulah	Aberfoyle	Year
1867		4499					1867
1868		*					1868
1869		*					1869
1870		*					1870
1871		*					1871
1872		3528					1872
1873		4292					1873
1874		3101					1874
1875		3650					1875
1876		3570					1876
1877	*	*					1877
1878	4492	*					1878
1879	6440	5258					1879
1880	3194	2676					1880
1881	4528	2323					1881
1882	4450	2799					1882
1883	4842	3435					1883
1884	6160	2690					1884
1885	3214	2592				*	1885
1886	6610	3965				3943	1886
1887	7608	5688				4052	1887
1888	3843	3272				2337	1888
1889	7831	4064				3255	1889
1890	7891	6855		*		4742	1890
1891	7259	4418		4785		3561	1891
1892	6935	5204		5672		5108	1892
1893	6374	5745		5322		4981	1893
1894	6822	4485		3777		3600	1894
1895	5135	3371		3663		3318	1895
1896	5540	4041	*	3920		2871	1896
1897	6285	3137	3221	3323	*	2768	1897
1898	5538	3369	3384	2929	3115	2497	1898
1899	8056	4882	3952	3801	3286	3237	1899
1900	4999	2971	3351	3363	4296	3233	1900
1901	5194	3211	3724	*	3481	2736	1901
1902	3465	2524	2353	*	3279	2376	1902
1903	5302	4180	3904	4423	4349	4304	1903
1904	5015	3753	3474	3536	3439	2493	1904
1905	3906	3785	4783	3107	3793	2531	1905
1906	5451	3523	3859	4129	3911	2555	1906
1907	5032	3318	*	3622	4087	3012	1907
1908	4891	3390	3556	3085	3922	2905	1908
1909	5481	2878	3464	3921	4230	2527	1909
1910	5694	3745	3633	3842	4440	3637	1910
1911	4864	3527	4012	3687	3792	2862	1911
1912	4949	3185	3499	3290	3893	2877	1912
1913	5408	3370	3571	3508	3475	3022	1913
1914	7467	3578	4472	4247	3401	3289	1914
1915	2669	1629	1882	1964	2943	1804	1915
1916	6120	3856	3749	4493	4779	3605	1916
1917	6576	4227	4415	5029	4956	3620	1917
1918	4150	2169	2431	2914	2351	1762	1918
1919	5281	2954	3624	2862	2355	2552	1919
1920	5310	3369	3661	3517	4016	2717	1920

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Clarence Heads	Grafton	Dalmorton	Red Range	Beulah	Aberfoyle	Year
1921	9402	6791	6588	5853	5722	4968	1921
1922	5068	3579	3155	2914	3076	2070	1922
1923	4974	2827	2055	2037	3580	1967	1923
1924	6036	3181	3349	3614	4914	3275	1924
1925	6994	4015	4406	3843	3900	2412	1925
1926	4550	2249	2858	2800	2823	2216	1926
1927	5557	3348	4065	3256	3245	2847	1927
1928	4247	4625	5993	4751	4714	3592	1928
1929	7014	4024	5157	3440	3642	3381	1929
1930	6898	3132	4458	3819	3950	*	1930
1931	4884	3247	3717	4696	5269	*	1931
1932	2897	2440	3378	3208	3249	*	1932
1933	6825	3919	5679	4816	5247	4020	1933
1934	6219	3867	5085	4472	4423	*	1934
1935	5228	3023	3389	2903	2881	*	1935
1936	4486	2288	2969	2501	3222	*	1936
1937	6592	4252	4179	3786	3138	3180	1937
1938	5611	3130	3746	3813	3910	2939	1938
1939	4659	3631	3579	3194	3693	2382	1939
1940	4645	3095	3257	1889	2342	1821	1940
1941	4475	3084	2460	2628	4038	1758	1941
1942	4594	4101	*	3317	3945	3320	1942
1943	5788	3040	3063	3293	3643	*	1943
1944	5488	3867	3605	3128	2949	*	1944
1945	5382	4012	4392	3654	4303		1945
1946	4453	4319	4405	3225	3684		1946
1947	5943	5129	*	4245	4520		1947
1948	4600	4693	*	3346	3927		1948
1949	6081	4463	6391	4116	5423		1949
1950	10693	7270	*	5688	5596		1950
1951	4879	3475	3113	2727	3103		1951
1952	5220	3835	3452	4619	5261		1952
1953	4775	3276	3091	3052	3026		1953
1954	8576	5854	4761	4383			1954
1955	5690	4623	4831	4010			1955
1956	5902	5409	4618	4950			1956
1957	4193	2516	*	3062			1957
1958	6668	3656	*	3548			1958
1959	7817	6276	*	5757			1959
1960	3970	2196	1959	2556			1960
1961	6727	4424	*	3864			1961
1962	9600	6732	*	4324			1962
1963	8628	5913	6294	4318			1963
1964	6339	4050	3664	3781			1964

* Incomplete Records.

ANNUAL RAINFALLS
(Points)

Year	Wongwibinda	Dorrigo	Brooklana	Orara Upper	Woolgoolga	Year
1886	4176					1886
1887	4502				9267	1887
1888	2795				5214	1888
1889	3422				6622	1889
1890	5470				10350	1890
1891	4450				7883	1891
1892	5062				6818	1892
1893	4957				7900	1893
1894	3973				6404	1894
1895	3197				6747	1895
1896	3097				5099	1896
1897	2841				5451	1897
1898	2295				6626	1898
1899	2964			*	7801	1899
1900	3569			4850	5208	1900
1901	3484			6094	5298	1901
1902	2467			1907	3089	1902
1903	4042			5586	5935	1903
1904	2821			*	6393	1904
1905	3637	*		6662	5511	1905
1906	3174	8598		*	7077	1906
1907	3189	*		5015	4907	1907
1908	3034	*	*	6216	5514	1908
1909	3103	*	4415	3941	4589	1909
1910	3321	*	7819	7341	5948	1910
1911	3390	*	8456	7640	5021	1911
1912	3297	*	5956	*	5316	1912
1913	3360	7067	7132	*	5350	1913
1914	3631	*	8551	*	8134	1914
1915	1955	*	1462	*	2791	1915
1916	3468	*	*	6588	4678	1916
1917	3716	*	-	6293	5688	1917
1918	2430	*	*	5351	4588	1918
1919	2962	6638	-	6722	5482	1919
1920	3437	7231	5842	6844	6029	1920
1921	5466	13276	11735	12523	10037	1921
1922	2835	8019	7435	7558	7179	1922
1923	2592	6888	6104	6405	5697	1923
1924	3825	6260	5721	4980	5453	1924
1925	3410	9563	10830	9390	8790	1925
1926	2942	6328	5431	4549	5787	1926
1927	2522	6964	5842	6518	6717	1927
1928	4530	8873	8787	7428	7542	1928
1929	3644	8881	8709	8337	7999	1929
1930	3467	6597	6790	6455	5488	1930
1931	3439	7995	6192	7114	4876	1931
1932	3455	5204	4303	5701	3977	1932
1933	4801	9741	8190	8939	8315	1933
1934	4073	7922	7236	8394	6999	1934
1935	2362	5914	4188	5086	4741	1935
1936	3214	6567	5107	5976	-	1936
1937	3551	8664	8396	10155	*	1937
1938	*	7900	6583	7359	6096	1938
1939	*	6791	6822	7009	4813	1939
1940	2755	4086	4164	4771	*	1940
1941	2568	4766	3835	4513	-	1941
1942	3753	6689	6106	5644	-	1942
1943	3735	6143	5352	7456	-	1943
1944	3496	6549	5407	5473	*	1944
1945	3857	8813	5661	6554	5193	1945
1946	3379	6251	5179	6289	3944	1946
1947	4769	8247	6578	7807	4832	1947

ANNUAL RAINFALLS
(Points)

Year	Wongwibinda	Dorrigo	Brooklana	Orara Upper	Woolgoolga	Year
1948	3573	8071	7115	6917	4497	1948
1949	5409	9747	7283	7697	4870	1949
1950	6332	16351	13497	14910	10483	1950
1951	3020	7657	5321	6731	6094	1951
1952	4419	7062	5832	6229	*	1952
1953	2736	6386	4732	6628	*	1953
1954	3972	11569	10704	12723	*	1954
1955	4023	9078	8968	9334	*	1955
1956	5102	9735	9993	11368	*	1956
1957	2512	5838	4867	5801	*	1957
1958	3792	6931	5234	7652	*	1958
1959	5260	12379	10436	11078	*	1959
1960	1894	6049	5227	6393	5673	1960
1961	3288	7010	7364	7915	7769	1961
1962	4469	12522	11734	11993	10650	1962
1963	4391	10634	10393	12518	9336	1963
1964	2832	6562	5082	7049	5579	1964

* Incomplete Records.

STATISTICAL RAINFALL DATA.
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Killarney (Period 75 years)	Minimum	19	1	8	5	0	0	0	3	0	0	0	15	1439
	10%	113	99	61	22	14	10	22	26	36	72	59	90	1922
	30%	234	170	150	92	76	63	93	65	88	128	164	236	2593
	50%	288	245	259	165	124	144	155	98	155	222	230	350	2927
	70%	446	382	412	234	186	226	233	175	233	304	363	437	3247
	90%	721	717	634	322	338	477	354	256	323	452	543	591	3752
	Maximum	1121	1712	1133	786	461	1249	703	417	640	740	862	1088	5357
Drake (Period 73 years)	Minimum	108	40	13	0	0	0	0	0	6	7	0	0	1664
	10%	184	136	120	62	27	22	15	19	20	68	72	127	2678
	30%	328	298	311	122	101	63	76	61	82	163	174	295	3472
	50%	526	442	434	227	160	141	147	101	149	241	285	439	3885
	70%	738	662	689	347	289	261	257	176	252	340	405	575	4504
	90%	1230	1197	1180	621	531	664	512	326	353	554	746	894	5901
	Maximum	1526	3535	1419	1324	1071	1575	1103	454	686	817	1108	1307	7742
Tabulam (Period 74 years)	Minimum	58	12	0	0	0	0	0	0	0	0	0	4	1730
	10%	166	97	152	47	22	0	5	13	27	76	71	113	2637
	30%	322	310	289	108	91	57	58	60	77	155	156	280	3225
	50%	451	423	454	222	152	136	122	93	159	215	256	387	3574
	70%	584	595	678	339	267	268	216	165	247	322	415	527	4371
	90%	1016	1325	1002	579	489	510	490	294	371	559	701	902	5071
	Maximum	1817	2845	1916	1223	1008	1250	919	457	552	771	1250	1078	7205
Clarence Heads (Period 87 years)	Minimum	52	23	53	50	15	5	0	0	5	6	3	32	2669
	10%	155	191	248	141	117	66	33	48	48	93	55	115	4114
	30%	306	357	450	352	366	193	170	145	120	156	147	259	4881
	50%	470	541	649	528	492	411	260	227	197	271	272	351	5451
	70%	697	683	868	715	723	601	471	362	322	334	381	562	6317
	90%	1165	1172	1204	1244	1163	1277	1177	791	525	578	625	909	7820
	Maximum	1886	2411	2020	2334	2964	1818	2785	2204	894	1042	1301	1386	10693

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Grafton (Period 86 years)	Minimum	71	1	32	13	0	0	0	0	0	4	5	7	1629
	10%	145	94	109	69	29	12	19	19	27	71	75	125	2522
	30%	275	218	221	137	117	76	52	54	86	134	158	200	3188
	50%	436	354	410	248	181	118	101	94	137	201	287	354	3605
	70%	656	625	595	380	295	314	222	153	245	303	383	486	4097
	90%	1082	1101	903	688	537	655	546	402	388	553	528	797	5705
	Maximum	1498	1742	1917	1244	1952	1451	1719	898	623	898	1321	1102	7270
Dalmorton (Period 58 years)	Minimum	30	54	29	0	0	0	0	0	0	0	9	0	1882
	10%	172	100	137	28	11	8	0	11	30	98	92	125	2457
	30%	376	222	241	130	106	59	42	43	76	160	176	250	3382
	50%	483	332	442	233	185	107	107	119	132	234	297	427	3647
	70%	696	559	608	333	326	261	214	204	215	318	413	582	4243
	90%	966	866	1024	586	579	577	507	332	331	449	636	852	5209
	Maximum	1390	2272	1912	1042	1894	1157	978	820	700	990	1660	1298	6588
Red Range (Period 72 years)	Minimum	56	39	30	11	0	0	7	0	21	38	28	65	1889
	10%	189	111	103	50	36	52	65	43	43	100	95	139	2749
	30%	316	235	220	126	117	121	131	135	128	182	182	280	3253
	50%	471	333	366	203	179	219	206	186	186	262	311	417	3658
	70%	589	605	470	279	245	316	289	233	273	364	433	518	4117
	90%	811	837	735	459	443	587	468	370	468	603	663	768	4910
	Maximum	1155	1656	985	882	969	1080	903	542	609	830	1136	1077	5853
Beulah (Period 56 years)	Minimum	34	22	36	0	10	8	0	11	20	59	33	24	2342
	10%	123	81	70	36	43	100	108	64	74	112	119	133	2924
	30%	228	193	170	128	109	211	191	149	145	222	234	239	3297
	50%	421	352	250	172	164	281	263	262	221	325	336	381	3843
	70%	520	505	418	249	239	435	376	334	362	414	441	514	4216
	90%	802	780	624	457	473	533	624	524	537	561	635	793	5251
	Maximum	1228	913	821	649	800	673	844	856	792	1307	1192	1068	5722

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Wongwibinda (Period 52 years)	Minimum	52	92	57	0	0	8	8	6	10	31	34	74	1955
	10%	178	128	80	32	29	52	39	34	48	78	76	184	2483
	30%	307	204	187	117	87	104	90	73	105	171	208	290	3091
	50%	446	295	292	207	171	173	146	121	154	238	332	404	3416
	70%	570	426	483	320	250	273	239	180	251	327	420	581	3638
	90%	828	815	721	463	382	517	454	327	361	438	576	807	4720
	Maximum	1331	1343	1169	835	865	922	897	506	646	821	1235	1117	5470
Dorrigo (Period 48 years)	Minimum	244	60	125	84	17	13	3	3	0	31	21	168	4086
	10%	428	246	423	205	51	36	20	22	21	136	115	191	5906
	30%	591	476	769	404	258	156	104	95	118	256	183	486	6588
	50%	858	938	900	590	399	299	199	205	235	350	367	703	7149
	70%	1122	1324	1523	906	727	627	507	326	410	555	600	844	8709
	90%	1696	2476	2269	1475	1110	1794	1537	864	609	844	1094	1494	11650
	Maximum	3978	3537	2491	2735	2442	5580	2973	1932	1458	1133	1841	1779	16351
Orara Upper (Period 59 years)	Minimum	122	43	54	33	0	0	0	8	0	23	14	74	1907
	10%	256	197	292	182	41	20	14	34	14	113	90	131	4850
	30%	446	449	697	411	209	86	92	84	105	189	204	344	6216
	50%	620	743	924	582	368	257	211	166	218	282	404	525	6722
	70%	1015	1357	1483	924	629	664	317	280	346	397	588	816	7640
	90%	1519	2190	2064	1562	1350	1284	1336	979	767	813	1237	1231	11368
	Maximum	2721	3651	2726	3986	2691	3915	2312	1755	1535	1127	2495	1692	14910
Woolgoolga (Period 63 years)	Minimum	0	19	48	16	23	0	0	11	3	43	6	77	2791
	10%	183	160	152	154	109	26	34	55	56	103	144	130	4588
	30%	280	426	568	354	275	126	160	102	145	198	204	294	5231
	50%	496	594	700	486	432	302	213	209	211	330	303	422	5697
	70%	732	949	962	826	670	665	531	318	292	423	433	665	6804
	90%	1531	1512	1575	1599	1233	1209	1192	878	619	736	723	951	9076
	Maximum	3182	2062	2622	2520	2094	1909	2715	1305	1345	1634	2259	2329	10650

MINIMUM RAINFALL RECORDED IN PERIODS OF UP TO TWELVE MONTHS
COMMENCING IN THE MONTH INDICATED
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Killarney	1	19	1	8	5	0	0	0	3	0	0	0	15
	2	148	59	62	15	29	22	10	33	56	0	61	112
	3	289	98	86	75	47	61	82	136	56	294	175	328
	4	328	98	149	122	86	161	154	188	317	501	370	375
	5	328	161	169	184	220	233	333	502	512	631	417	414
	6	391	181	263	256	308	381	522	643	725	678	456	414
	7	411	275	306	328	438	577	663	872	861	717	456	477
	8	505	318	640	706	716	755	892	1100	900	717	519	497
	9	548	652	756	933	812	968	1118	1216	900	780	539	591
	10	882	829	1034	1080	1025	1150	1234	1219	963	800	633	634
	11	1192	1107	1130	1293	1524	1266	1384	1282	983	894	676	968
	12	1439	1203	1343	1607	1640	1448	1447	1302	1077	937	1010	1278
Drake	1	108	40	13	0	0	0	0	0	6	7	0	0
	2	321	105	108	48	35	0	28	21	49	89	75	306
	3	336	170	151	74	48	36	57	65	186	240	324	642
	4	585	191	171	103	63	159	102	266	457	489	837	707
	5	735	211	243	190	255	309	345	483	725	1014	963	772
	6	755	283	288	320	424	411	630	732	1134	1264	1028	793
	7	827	328	385	519	498	630	842	1286	1438	1329	1049	813
	8	872	425	586	757	768	1068	1352	1551	1640	1350	1069	885
	9	969	626	969	910	1164	1378	1632	1890	1661	1370	1141	930
	10	1170	1046	1341	1224	1563	1663	1963	1911	1681	1442	1186	1027
	11	1292	1481	1642	1739	1959	2104	2074	1931	1753	1487	1283	1228
	12	1664	1782	2063	2071	2285	2128	2094	2003	1798	1584	1484	1648

MINIMUM RAINFALL RECORDED IN PERIODS OF UP TO TWELVE MONTHS
COMMENCING IN THE MONTH INDICATED
(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Clarence Heads	1	52	23	53	50	15	5	0	0	5	6	3	32
	2	211	172	208	219	132	48	43	44	85	56	84	161
	3	311	524	667	377	138	48	152	111	208	190	211	504
	4	709	1109	968	458	235	276	321	258	343	484	554	847
	5	1248	1367	1046	573	447	555	379	434	532	733	950	1131
	6	1662	1574	1142	864	813	685	555	582	931	1131	1483	1575
	7	1813	1670	1409	1157	936	870	703	1073	1327	1819	1954	2012
	8	1950	1937	1673	1353	1232	991	1269	1469	2136	2202	2148	2122
	9	2299	2154	1808	1442	1579	1334	1665	2359	2354	2445	2355	2300
	10	2485	2204	2022	1831	1922	1730	2554	2580	2621	2652	2698	2442
	11	2535	2338	2409	2406	2318	2776	2703	2794	2901	2927	2851	2645
	12	2669	2725	2961	2909	2963	3264	2861	3127	3079	3069	3054	2811
Grafton	1	71	1	32	13	0	0	0	0	0	4	5	7
	2	238	147	66	65	29	11	8	33	81	23	159	309
	3	297	273	198	142	32	28	64	144	110	235	407	394
	4	658	294	275	263	37	172	175	225	322	523	555	635
	5	904	371	323	301	248	276	277	437	545	623	730	989
	6	935	499	377	486	443	295	489	643	723	1061	1084	1066
	7	967	614	619	598	564	507	683	826	1178	1271	1105	1143
	8	1097	947	695	621	783	813	878	1253	1426	1292	1182	1271
	9	1394	1053	816	1075	1031	913	1293	1651	1447	1369	1310	1386
	10	1398	1142	1203	1296	1131	1361	1691	1732	1524	1497	1425	1719
	11	1417	1354	1524	1396	1713	1865	1784	1809	1652	1612	1758	1916
	12	1629	1675	1729	1925	1967	2021	1861	1937	1767	1945	2016	1921

MINIMUM RAINFALL RECORDED IN PERIODS OF UP TO TWELVE MONTHS COMMENCING IN THE MONTH INDICATED

(Points)

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Beulah	1	34	22	36	0	10	8	0	11	20	59	33	24
	2	68	69	81	38	102	49	75	108	169	114	129	201
	3	290	204	183	277	102	124	156	364	224	188	443	603
	4	486	294	414	277	177	293	397	521	298	571	845	842
	5	528	554	492	352	346	446	645	778	647	973	1071	921
	6	761	603	627	521	499	694	1018	1080	1049	1212	1099	931
	7	1028	978	796	674	747	1026	1208	1482	1288	1348	1109	1191
	8	1222	1148	949	922	1272	1247	1610	1721	1424	1504	1369	1240
	9	1391	1392	1197	1472	1412	1649	1849	1857	1598	1732	1418	1615
	10	1544	1640	1661	1661	1814	1888	1985	2171	1808	1801	1793	1671
	11	1792	1707	1801	2063	2053	2024	2254	2241	1877	1989	1913	1977
	12	2342	1847	2203	2302	2189	2324	2369	2310	2065	2041	2219	2016
Wongwibinda	1	52	92	57	0	0	8	8	6	10	31	34	74
	2	281	192	122	23	54	16	24	63	126	96	208	238
	3	346	222	167	166	62	57	129	162	212	349	456	658
	4	691	277	227	175	103	175	235	312	522	710	725	840
	5	766	409	235	216	242	265	434	694	770	824	907	1046
	6	949	417	276	457	520	464	840	942	1115	1006	1164	1099
	7	1059	458	514	710	716	988	1088	1287	1320	1263	1247	1183
	8	1195	778	770	993	1157	1376	1415	1501	1577	1346	1393	1249
	9	1311	952	1050	1486	1464	1662	1597	1758	1660	1492	1662	1429
	10	1359	1295	1589	1747	1910	1844	1854	1841	1806	1849	1813	1539
	11	1407	1807	1957	2005	2217	2101	1937	1987	1980	2081	1952	1814
	12	1955	2169	2219	2255	2474	2184	2083	2344	2160	2191	2227	1967

KOREELAH CREEK AT HEWETSON'S MILL

LOCATION:	Latitude 28°26' Longitude 152°23'
PERIOD OF ESTABLISHMENT:	October 1954 to date
COMPLETE YEARS OF COMPUTED RECORDS:	10
ZERO OF GAUGE:	R.L. 35.71 Assumed Datum. Approximately 1,600 feet above sea level.
CATCHMENT AREA:	89 square miles
CONTROL:	Gravel bar
EQUIPMENT:	Pressure Recorder installed November 1964 Staff Gauge range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 80
	(b) Maximum observation in cusecs : 1,940
	(c) Minimum observation in cusecs : 0.1
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	17,800 cusecs.
MEAN DAILY DISCHARGE FOR 10 YEARS:	87 cusecs
MEAN ANNUAL DISCHARGE FOR 10 YEARS:	63,700 acre feet.

KOREELAH CREEK AT HEWETSONS MILL

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	150	11	34	2,032
Dec.	30	5	10.6	658
Total	..	..	..	..

Year 1955

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	23	4	7.2	444
Feb.	315	4	36	2,004
Mar.	12600	11	683	42,350
Apr.	6640	67	542	32,520
May	3050	57	257	15,928
June	170	38	64	3,832
July	190	23	42	2,608
Aug.	47	23	33	2,068
Sept.	78	16	25	1,488
Oct.	760	9	57	3,520
Nov.	30	4	14	830
Dec.	170	2.5	27	1,695
Total	..	..	..	109,287

Year 1956

Jan.	6400	4	250	15,496
Feb.	5880	16	1127	65,390
Mar.	1980	97	347	21,482
Apr.	640	52	111	6,640
May	6640	34	235	14,566
June	1980	34	191	11,454
July	90	23	38	2,326
Aug.	23	23	23	1,426
Sept.	23	16	20	1,192
Oct.	16	7	12.2	756
Nov.	7	4	5.7	342
Dec.	1900	4	52	3,242
Total	..	..	..	144,302

Year 1957

Jan.	390	5	14	892
Feb.	23	7	10	584
Mar.	47	6.2	12	728
Apr.	7	4	5.2	316
May	3.5	2.2	2.5	160
June	4	2.2	2.8	168
July	23	3.5	7	425
Aug.	530	2.5	22	1,380
Sept.	11	2.2	5	325
Oct.	2.2	0.4	1.2	76
Nov.	7	0.1	1.8	106
Dec.	0.1	0	0	2
Total	..	..	..	5,162

Year 1958

Jan.	0	0	0	0
Feb.	104	0	14	788
Mar.	67	2	11	702
Apr.	315	2.5	38	2,277
May	10	1.2	4.4	274
June	3810	0.9	130	7,826
July	30	3.5	8	493
Aug.	11	2.5	4.3	267
Sept.	16	2	4.9	292
Oct.	5.5	0.8	2.9	182
Nov.	2.5	0.3	1	62
Dec.	2220	0.3	146	9,080
Total	..	..	..	22,243

Year 1959

Jan.	3120	11	329	20,422
Feb.	17800	25	1994	111,660
Mar.	4180	7	439	27,190
Apr.	366	17	84	5,018
May	17	14	15	928
June	17	11	14.7	882
July	366	11	32	2,014
Aug.	14	6.5	7.2	448
Sept.	830	7	32	1,912
Oct.	2770	6.5	129	7,994
Nov.	6400	14.5	536	32,130
Dec.	1740	31	127	7,896
Total	..	..	..	218,494

Year 1960

Jan.	98	9	32	1,992
Feb.	57	5	24	1,364
Mar.	2700	11.5	135	8,346
Apr.	20	13	16.6	996
May	33	9	14.9	924
June	33	13	15.1	908
July	36	11	15.2	940
Aug.	86	5	12.3	762
Sept.	5	1.5	2.9	172
Oct.	5	1.2	2.1	132
Nov.	9	0.9	2	120
Dec.	7	0.8	2.9	178
Total	..	..	..	16,834

Year 1961

Jan.	5	0.8	2.5	158
Feb.	13800	0.4	288	16,120
Mar.	48	6	15	942
Apr.	15	5	7.5	454
May	27	4	8	506
June	187	6	23	1,398
July	630	3	40	2,450
Aug.	32	5	13	790
Sept.	8	4	4.9	294
Oct.	52	3	14	864
Nov.	112	4	20	1,182
Dec.	920	8	96	5,934
Total	..	..	..	31,092

KOREELAH CREEK AT HEWETSONS MILL

Year 1962

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2190	11	255	15,836
Feb.	89	7	20	1,100
Mar.	3740	5	252	15,646
Apr.		No Records		
May		No Records		
June	13	7	10	584
July	8880	9	533	33,036
Aug.	56	11	21	1,288
Sept.	26	9	12	734
Oct.	11	4	8	490
Nov.	6	2	4	240
Dec.	140	2	22	1,332
Total	..	..	..	..

Year 1963

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	6175	8	134	8,300
Feb.		No Records		
Mar.	9880	2	888	55,060
Apr.	360	15	73	4,410
May		No Records		
June	27	20	24	1,410
July	20	20	20	1,240
Aug.	20	20	20	1,240
Sept.	20	9	14	856
Oct.	9	2	5.5	340
Nov.	120	5	12	738
Dec.	206	2	36	2,216
Total	..	..	..	..

Year 1964

Jan.	5	2	3	190
Feb.	139	2	21	1,218
Mar.	1500	9	355	22,000
Apr.	700	27	200	12,000
May	1740	14	78	4,864
June	830	14	207	12,412
July	182	5	31	1,910
Aug.	9	9	9	558
Sept.	9	5	7.3	436
Oct.	5	2	3.0	187
Nov.	14	1.5	3.1	188
Dec.	No Records			330*
Total	..	..	..	56,293*

Year 1965

Jan.	No Records			200*
Feb.	No Records			100*
Mar.	2.5	0.1	1.3	78
Apr.	0.1	0.1	0.1	5
May	2.5	0.1	0.6	35
June	12	0.1	3.8	227
July	11130	4.5	259	16,100
Aug.	29	7	12	726
Sept.	4920	4.5	66	3,970
Oct.	29	3.5	5.8	358
Nov.	2.5	0	1.0	58
Dec.	5320	1.0	134	8,280
Total	..	..	..	30,137*

Year 1966

Jan.	10	2.5	4.8	298
Feb.	12	2.5	5.0	278
Mar.	10	0.5	4.2	258
Apr.	2.5	0.1	1.0	61
May	3.5	0.1	1.1	70
June	18	0.1	3.7	220
July	2.5	1	1.4	88
Aug.	320	0	13	822
Sept.	37	1	6.1	365
Oct.	2.5	1	1.3	80
Nov.	139	0	8	482
Dec.	4.5	0.1	1.7	105
Total	..	..	..	3,127

Year 1967

Jan.	37	0.1	44	274
Feb.	320	1	17	926
Mar.	6130	7	332	20,600
Apr.	580	16	42	2,510
May	520	6	20	1,240
June	6220	94	458	27,500
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

* Estimated

CLARENCE RIVER AT TABULAM

LOCATION:	Latitude 28°53' Longitude 152°34'
PERIOD OF ESTABLISHMENT:	May 1909 to date
COMPLETE YEARS OF COMPUTED RECORDS:	57 years.
ZERO OF GAUGE:	R.L. 467.99 Railway Datum.
CATCHMENT AREA:	1,710 square miles
CONTROL:	Gravel bar.
EQUIPMENT:	Float Recorder installed February, 1956 Staff gauge, range 0 to 45 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 242
	(b) Maximum observation in cusecs : 94,127
	(c) Minimum observation in cusecs : 0.05
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	240,000 cusecs
MEAN DAILY DISCHARGE FOR 57 YEARS:	1,010 cusecs
MEAN ANNUAL DISCHARGE FOR 57 YEARS:	737,000 acre feet.

CLARENCE RIVER AT TABULAM

Year 1909					Year 1910				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	2390	184	1185	73,468
Feb.	..	..	..	..	Feb.	3780	15	1684	94,338
Mar.	..	..	..	..	Mar.	10000	83	2756	170,888
Apr.	..	..	..	..	Apr.	1420	145	535	32,130
May	..	..	..	..	May	228	70	127	7,900
June	..	..	..	..	June	5230	145	1127	67,622
July	252	3	101	6,294	July	2550	145	614	38,078
Aug.	145	15	48	2,998	Aug.	590	328	388	24,070
Sept.	590	31	393	23,592	Sept.	184	31	95	5,676
Oct.	387	8	135	8,342	Oct.	590	145	234	15,734
Nov.	818	15	266	15,980	Nov.	700	145	420	25,218
Dec.	2018	418	1146	71,084	Dec.	2710	302	1193	73,986
Total	..	..	..	..	Total	..	..	..	629,108

Year 1911					Year 1912				
Jan.	45000	387	12906	800,218	Jan.	0	0	0	0
Feb.	8870	3980	6813	381,530	Feb.	228	0	45	2,616
Mar.	5690	998	3215	199,328	Mar.	2470	277	1048	65,008
Apr.	904	40	260	15,726	Apr.	184	0	43	1,308
May	228	112	129	8,016	May	0	0	0	0
June	112	59	75	4,486	June	11030	0	3494	209,628
July	163	49	84	5,206	July	3480	904	2066	128,124
Aug.	302	49	139	8,620	Aug.	1600	112	565	35,032
Sept.	184	40	97	5,794	Sept.	228	40	132	7,910
Oct.	145	31	72	4,450	Oct.	2710	83	609	37,774
Nov.	70	3	32	1,946	Nov.	205	8	59	3,514
Dec.	23	0	2	124	Dec.	1366	184	663	41,100
Total	..	..	..	1,435,444	Total	..	..	..	532,014

Year 1913					Year 1914				
Jan.	1098	252	616	38,190	Jan.	2166	418	1078	66,866
Feb.	277	31	95	4,746	Feb.	3190	387	1112	62,276
Mar.	No Records			3,100*	Mar.	19970	5570	14664	909,160
Apr.	818	49	436	26,174	Apr.	13800	555	3942	236,538
May	19020	31	5561	344,768	May	1150	387	726	45,032
June	14370	1420	5616	336,988	June	1946	228	943	56,964
July	13420	1204	6018	361,086	July	1420	451	969	60,072
Aug.	3380	302	1090	67,564	Aug.	1098	15	192	11,892
Sept.	738	205	442	26,512	Sept.	23	9	16	968
Oct.	1666	357	855	53,010	Oct.	83	9	45	2,842
Nov.	700	70	177	10,624	Nov.	1096	40	329	19,742
Dec.	2315	59	837	51,884	Dec.	2630	128	862	53,450
Total	..	..	..	1,324,646*	Total	..	..	..	1,525,806

Year 1915					Year 1916				
Jan.	No Records			109,000*	Jan.	1098	40	435	26,980
Feb.	No Records			13,000*	Feb.	1312	145	458	26,540
Mar.	0	0	0	0	Mar.	7115	1538	4269	264,660
Apr.	6	0	3	208	Apr.	20160	40	5260	315,582
May	555	6	178	11,020	May	1098	40	234	14,532
June	17	0	3	216	June	83	31	59	3,510
July	6	0	1	60	July	112	49	79	4,892
Aug.	23	0	2	120	Aug.	112	70	91	5,634
Sept.	23	0	3	172	Sept.	98	70	85	5,094
Oct.	0	0	0	0	Oct.	112	59	85	5,260
Nov.	0	0	0	0	Nov.	1204	59	240	14,980
Dec.	1366	2	635	39,352	Dec.	1538	23	352	21,850
Total	..	..	..	173,148*	Total	..	..	..	709,514

* Estimated.

CLARENCE RIVER AT TABULAM

Year 1917					Year 1918				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	2550	40	459	28,466	Jan.	12100	184	1322	81,982
Feb.	49500	387	4024	225,364	Feb.	1096	83	392	21,990
Mar.	1420	112	518	32,124	Mar.	328	40	180	11,146
Apr.	112	23	69	4,138	Apr.	451	112	240	14,438
May	23	13	17	1,050	May	520	70	163	11,206
June	20	13	16	960	June	70	31	43	2,606
July	17	9	13	802	July	59	40	51	3,174
Aug.	15	9	12	738	Aug.	112	49	74	4,584
Sept.	2550	13	452	27,138	Sept.	70	40	48	2,872
Oct.	700	112	327	20,258	Oct.	40	3	24	1,482
Nov.	28140	112	2759	165,522	Nov.	6	4	5.5	336
Dec.	14940	387	2061	127,794	Dec.	357	17	157	9,756
Total	..	..	..	634,354	Total	..	..	..	165,572

Year 1919					Year 1920				
Jan.	40	4	9	562	Jan.	818	23	237	14,704
Feb.	6	4	5	292	Feb.	112	14	30	1,730
Mar.	19020	6	1150	71,290	Mar.	105	9	37	2,292
Apr.	387	59	131	7,890	Apr	27	4	12	718
May	31550	70	1578	94,684	May	818	17	125	7,752
June	2950	184	760	45,582	June	1420	27	201	12,054
July	163	10	82	5,104	July	2240	70	416	25,810
Aug.	40	9	15	918	Aug.	2390	59	333	20,676
Sept.	9	4	5	214	Sept.	520	59	178	10,688
Oct.	6	4	4.5	276	Oct.	2870	31	345	21,360
Nov.	9	4	4.3	258	Nov.	1339	59	256	15,336
Dec.	451	13	194	12,076	Dec.	778	17	233	14,472
Total	..	..	..	239,146	Total	..	..	..	147,592

Year 1921					Year 1922				
Jan.	207	14	75	4,672	Jan.	17880	252	1668	103,438
Feb.	87	18	35	1,958	Feb.	14180	130	1662	93,090
Mar.	898	11	209	12,990	Mar.	3190	140	763	47,308
Apr.	2790	140	685	41,132	Apr.	140	46	87	5,232
May	3190	140	518	32,170	May	46	22	34	2,094
June	20540	451	2601	156,078	June	59	18	36	2,146
July	181000	555	9526	590,582	July	334	14	104	6,436
Aug.	1643	275	647	40,168	Aug.	451	25	81	5,014
Sept.	15510	241	1682	100,906	Sept.	521	14	119	7,372
Oct.	1096	207	575	35,642	Oct.	103	10	40	2,494
Nov.	451	46	161	9,686	Nov.	660	10	104	6,278
Dec.	16110	35	1209	74,976	Dec.	252	10	106	6,578
Total	..	..	..	1,100,958	Total	..	..	..	287,480

Year 1923					Year 1924				
Jan.	363	14	11	6,914	Jan.	No	Records		3,600*
Feb.	10	4	6.5	364	Feb.	No	Records		12,600*
Mar.	18	3	7	456	Mar.	No	Records		1,200*
Apr.	304	2	75	4,500	Apr.	No	Records		3,800*
May	304	12	80	4,950	May	No	Records		1,000*
June	12	8	10	600	June	No	Records		6,600*
July	13	6	9	580	July	No	Records		45,800*
Aug.	200	6	42	2,606	Aug.	No	Records		3,900*
Sept.	32	4	12	726	Sept.	No	Records		1,900*
Oct.	4	0.5	2.2	129	Oct.	No	Records		1,400*
Nov.	0.5	0	0.2	13	Nov.	No	Records		85,700*
Dec.	67	0	12	778	Dec.	No	Records		33,800*
Total	..	..	..	22,616	Total	..	..	..	201,300*

* Estimated.

CLARENCE RIVER AT TABULAM

Year 1925

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			66,500*
Feb.	No Records			55,700*
Mar.	No Records			301,400*
Apr.	No Records			114,700*
May	No Records			112,300*
June	No Records			310,000*
July	No Records			42,100*
Aug.	No Records			56,800*
Sept.	No Records			26,300*
Oct.	No Records			6,400*
Nov.	No Records			57,700*
Dec.	No Records			11,300*
Total	..	..	..	1,161,200*

Year 1926

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			85,500*
Feb.	No Records			7,800*
Mar.	17	8	11	730
Apr.	51	12	27	1,628
May	111	17	55	3,434
June	111	60	83	5,034
July	66	33	54	3,348
Aug.	33	21	26	1,648
Sept.	33	8	15	920
Oct.	8	1.5	4.2	252
Nov.	1.5	0	0.7	43
Dec.	1300	0	388	22,080
Total	..	..	..	132,417*

Year 1927

Jan.	No Records			296,000*
Feb.	No Records			54,000*
Mar.	9864	183	1183	73,406
Apr.	12660	164	1489	89,346
May	164	66	107	6,666
June	462	60	141	8,510
July	96	43	59	3,708
Aug.	43	17	28	1,720
Sept.	17	12	14	844
Oct.	81	12	19	1,200
Nov.	700	5	64	3,852
Dec.	1520	103	428	26,524
Total	..	..	..	565,776*

Year 1928

Jan.	1695	145	462	28,648
Feb.	14200	145	15242	884,018
Mar.	3480	341	1243	77,070
Apr.	40940	268	5426	325,572
May	1410	431	792	49,100
June	3680	291	669	40,144
July	8570	400	1445	89,606
Aug.	885	202	398	24,690
Sept.	202	66	136	8,162
Oct.	183	43	83	5,162
Nov.	66	12	29	1,744
Dec.	127	12	40	2,486
Total	..	..	..	1,536,402

Year 1929

Jan.	3030	24	367	22,798
Feb.	9180	96	2112	118,258
Mar.	9020	183	1052	65,252
Apr.	30670	400	3215	192,922
May	370	145	218	13,482
June	1304	127	620	37,204
July	13230	183	925	57,332
Aug.	268	111	166	10,310
Sept.	111	48	78	4,700
Oct.	3780	33	431	26,718
Nov.	268	33	70	4,224
Dec.	33	8	17	1,044
Total	..	..	..	554,244

Year 1930

Jan.	835	12	144	8,932
Feb.	431	54	151	8,474
Mar.	400	43	152	9,410
Apr.	3780	145	527	31,618
May	30525	183	2867	177,778
June	18070	497	4853	291,150
July	12660	572	2413	149,600
Aug.	2470	245	577	35,756
Sept.	614	145	285	17,136
Oct.	2165	145	432	26,768
Nov.	164	66	110	6,616
Dec.	81	24	40	2,494
Total	..	..	..	765,732

Year 1931

Jan.	370	12	40	2,498
Feb.	23400	12	2680	150,088
Mar.	3480	111	735	45,588
Apr.	1820	183	462	27,750
May	3380	245	797	49,424
June	572	202	313	18,772
July	No Records			13,800*
Aug.	202	96	168	10,432
Sept.	127	81	95	5,704
Oct.	127	24	52	3,242
Nov.	111	33	69	4,158
Dec.	23400	81	2543	157,660
Total	..	..	..	489,116*

Year 1932

Jan.	291	33	105	6,484
Feb.	33	24	25	1,444
Mar.	21	12	14	868
Apr.	291	12	115	6,892
May	96	33	49	3,062
June	127	38	73	4,402
July	96	33	58	3,592
Aug.	33	17	29	1,776
Sept.	291	12	85	5,078
Oct.	127	21	59	3,650
Nov.	1955	17	343	20,582
Dec.	341	43	115	7,154
Total	..	..	..	64,984

* Estimated.

CLARENCE RIVER AT TABULAM

Year 1933

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	7115	17	640	39,710
Feb.	1635	66	310	17,340
Mar.	81	17	41	2,540
Apr.	2240	17	257	15,420
May	2240	43	241	14,936
June	700	43	152	9,136
July	15510	66	1162	72,048
Aug.	630	112	258	16,026
Sept.	520	43	109	6,518
Oct.	5455	129	802	49,754
Nov.	15787	96	2431	145,840
Dec.	9720	520	2551	158,180
Total	..	..	..	547,448

Year 1934

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	45000	305	3090	191,586
Feb.	5340	179	740	41,418
Mar.	630	112	245	15,198
Apr.	6430	168	1220	73,228
May	5930	264	954	59,128
June	410	168	244	14,664
July	6430	168	726	45,034
Aug.	2270	264	686	42,542
Sept.	1500	213	510	30,608
Oct.	410	112	185	11,492
Nov.	148	66	106	6,340
Dec.	3450	81	740	45,896
Total	..	..	..	577,134

Year 1935

Jan.	3190	148	468	29,018
Feb.	590	66	235	13,142
Mar.	1440	66	279	17,302
Apr.	148	54	84	5,062
May	81	54	66	4,122
June	66	33	46	2,760
July	900	43	230	14,256
Aug.	81	43	51	3,162
Sept.	1740	33	270	16,208
Oct.	2340	73	434	26,918
Nov.	96	17	39	2,358
Dec.	2790	12	322	19,340
Total	..	..	..	153,648

Year 1936

Jan.	850	48	172	10,636
Feb.	148	33	66	3,844
Mar.	15910	54	1327	82,278
Apr.	475	68	157	9,428
May	68	38	52	3,200
June	68	38	46	2,770
July	102	52	67	4,162
Aug.	68	12	30	1,790
Sept.	18	8	13	788
Oct.	370	5	51	3,162
Nov.	5	3	3	190
Dec.	205	1	16	968
Total	..	..	..	123,216

Year 1937

Jan.	9020	18	747	46,306
Feb.	3900	27	708	39,660
Mar.	55250	120	4273	264,930
Apr.	440	102	243	14,602
May	102	38	67	4,152
June	85	38	60	3,618
July	85	52	64	4,000
Aug.	630	45	124	7,698
Sept.	340	27	114	6,870
Oct.	205	12	52	3,216
Nov.	3810	27	899	53,956
Dec.	4690	160	907	56,244
Total	..	..	..	505,252

Year 1938

Jan.	60875	38	3654	226,518
Feb.	14370	280	1518	85,010
Mar.	5930	85	1172	72,668
Apr.	5455	230	1253	75,170
May	24460	160	1557	96,538
June	1380	290	489	29,320
July	320	213	237	14,706
Aug.	550	168	256	15,870
Sept.	238	81	127	7,600
Oct.	410	54	142	8.812
Nov.	1800	43	162	9,708
Dec.	510	8	88	5,454
Total	..	..	..	647,374

Year 1939

Jan.	27	3	10	604
Feb.	27	3	9	524
Mar.	11740	5	2434	150,886
Apr.	4690	230	1276	76,580
May	475	160	263	16,308
June	2060	129	422	25,312
July	3990	129	482	29,916
Aug.	5340	112	544	33,756
Sept.	112	43	67	4,012
Oct.	96	24	54	3,354
Nov.	480	24	92	5,514
Dec.	480	24	136	8,420
Total	..	..	..	355,186

Year 1940

Jan.	148	17	52	3,248
Feb.	264	17	83	4,824
Mar.	19020	43	1180	73,150
Apr.	139	18	58	3,506
May	18	12	14	876
June	18	8	10	588
July	22	8	13	782
Aug.	8	5	6	360
Sept.	5	3	4	232
Oct.	3	1	2	114
Nov.	1	0	0.1	4
Dec.	1000	0	305	18,892
Total	..	..	..	106,576

CLARENCE RIVER AT TABULAM

Year 1941					Year 1942				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	16510	85	1809	112,142	Jan.	139	3	30	1,890
Feb.	8420	238	1298	72,684	Feb.	45740	18	4317	241,750
Mar.	4795	168	982	60,870	Mar.	1270	160	395	24,470
Apr.	760	168	282	16,924	Apr.	184	54	90	5,382
May	6175	96	326	20,216	May	75	12	43	2,656
June	10170	320	1684	101,030	June	75	36	56	3,348
July	320	112	201	12,452	July	590	36	136	8,430
Aug.	112	66	78	4,846	Aug.	81	24	53	3,180
Sept.	54	24	37	2,198	Sept.	54	17	25	1,522
Oct.	17	8	12	752	Oct.	2480	17	469	29,094
Nov.	66	8	20	1,196	Nov.	168	43	109	6,550
Dec.	148	5	18	1,106	Dec.	8720	17	515	31,910
Total	..	..	..	406,416	Total	..	..	..	360,182

Year 1943					Year 1944				
Jan.	13230	163	1943	120,472	Jan.	No Records			197,000*
Feb.	255	61	120	6,730	Feb.	No Records			97,000*
Mar.	1270	12	75	4,674	Mar.	503	81	165	10,216
Apr.	163	12	49	2,966	Apr.	170	55	88	5,272
May	18	8	12	744	May	42	16	28	1,732
June	36	12	22	1,294	June	55	16	38	2,288
July	No Records			1,600*	July	1960	42	307	19,056
Aug.	No Records			300*	Aug.	7440	109	1437	89,116
Sept.	No Records			3,600*	Sept.	1185	124	212	12,730
Oct.	No Records			2,200*	Oct.	133	16	70	4,366
Nov.	No Records			10,700*	Nov.	124	13	39	2,312
Dec.	No Records			85,800*	Dec.	81	2	24	1,460
Total	..	..	..	241,080*	Total	..	..	..	442,548*

Year 1945					Year 1946				
Jan.	418	4	77	4,766	Jan.	6680	5	904	56,076
Feb.	2560	5	274	15,362	Feb.	10400	109	2748	164,898
Mar.	1210	10	215	13,304	Mar.	50700	890	3656	226,696
Apr.	61	7	25	1,522	Apr.	17800	180	3156	189,380
May	29	10	20	1,256	May	244	109	164	10,158
June	14000	29	7333	439,982	June	124	62	91	5,488
July	4380	160	1037	64,314	July	68	42	54	3,344
Aug.	356	109	220	13,646	Aug.	35	10	19	1,208
Sept.	325	81	191	11,446	Sept.	1185	10	208	13,498
Oct.	141	48	84	5,218	Oct.	102	26	63	3,878
Nov.	68	10	34	2,054	Nov.	340	23	119	7,122
Dec.	600	16	146	8,788	Dec.	418	22	195	12,112
Total	..	..	..	581,658	Total	..	..	..	693,858

Year 1947					Year 1948				
Jan.	48200	10	4100	254,200	Jan.	296	109	204	12,678
Feb.	40900	3110	7855	439,860	Feb.	170	29	81	4,684
Mar.	19300	643	4312	267,330	Mar.	4180	88	1070	66,350
Apr.	4980	787	2872	178,034	Apr.	3540	560	1782	106,918
May	787	387	486	30,126	May	50700	282	4153	257,500
June	450	210	299	17,950	June	240000	141	17445	1,046,714
July	221	81	144	8,912	July	2165	418	1025	63,522
Aug.	190	55	110	6,826	Aug.	522	282	396	24,534
Sept.	1680	55	574	34,426	Sept.	3900	141	731	43,864
Oct.	124	42	77	4,772	Oct.	1680	109	378	23,452
Nov.	180	55	104	6,264	Nov.	371	124	204	12,238
Dec.	5680	68	2163	134,078	Dec.	221	109	162	10,034
Total	..	..	..	1,382,778	Total	..	..	..	1,672,488

* Estimated.

CLARENCE RIVER AT TABULAM

Year 1949

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	713	81	256	15,840
Feb.	1680	180	367	20,544
Mar.	57700	787	9538	591,372
Apr.	3280	787	1775	106,492
May	838	210	527	32,654
June	4180	340	1674	100,414
July	1930	387	1020	63,238
Aug.	1710	109	707	43,802
Sept.	1800	325	832	49,914
Oct.	17600	522	3034	188,122
Nov.	6180	1440	3477	208,610
Dec.	2200	296	713	44,180
Total	..	..	..	1,465,182

Year 1950

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2130	180	892	55,332
Feb.	8100	787	3066	171,722
Mar.	48200	2200	5653	350,470
Apr.	2200	1680	1965	117,900
May	450	221	347	21,518
June	157000	418	12078	724,712
July	25000	4480	9418	583,920
Aug.	17200	1620	4828	299,330
Sept.	3810	1380	2282	136,900
Oct.	17200	1350	6001	372,060
Nov.	4580	1440	3089	185,340
Dec.	3810	2200	3160	195,900
Total	..	..	..	3,215,104

Year 1951

Jan.	No	Records		618,000*
Feb.	No	Records		336,000*
Mar.	No	Records		451,000*
Apr.	No	Records		79,000*
May	No	Records		39,000*
June	No	Records		34,000*
July	No	Records		19,000*
Aug.	No	Records		10,000*
Sept.	No	Records		14,000*
Oct.	No	Records		11,000*
Nov.	No	Records		4,800*
Dec.	No	Records		1,000*
Total	..	..	..	1,616,800*

Year 1952

Jan.	No	Records		500*
Feb.	No	Records		1,600*
Mar.	No	Records		28,000*
Apr.	No	Records		30,000*
May	No	Records		26,000*
June	No	Records		24,000*
July	No	Records		9,000*
Aug.	No	Records		147,000*
Sept.	No	Records		6,000*
Oct.	No	Records		57,300*
Nov.	No	Records		20,000*
Dec.	No	Records		8,000*
Total	..	..	..	357,400*

Year 1953

Jan.	No	Records		37,000*
Feb.	No	Records		64,000*
Mar.	No	Records		221,000*
Apr.	No	Records		46,000*
May	No	Records		31,000*
June	No	Records		13,000*
July	No	Records		6,000*
Aug.	No	Records		4,000*
Sept.	No	Records		3,000*
Oct.	No	Records		3,600*
Nov.	No	Records		4,200*
Dec.	No	Records		300*
Total	..	..	..	433,100*

Year 1954

Jan.	No	Records		300*
Feb.	No	Records		468,000*
Mar.	No	Records		89,500*
Apr.	No	Records		26,000*
May	No	Records		9,000*
June	No	Records		53,500*
July	No	Records		631,000*
Aug.	No	Records		112,000*
Sept.	No	Records		34,100*
Oct.	No	Records		272,000*
Nov.	No	Records		83,000*
Dec.	No	Records		31,000*
Total	..	..	..	1,809,400*

Year 1955

Jan.	570	265	407	25,246
Feb.	370	194	254	14,200
Mar.	131000	216	8004	496,238
Apr.	55900	1060	4040	242,408
May	No	Records		390,000*
June	No	Records		120,000*
July	No	Records		55,000*
Aug.	No	Records		29,000*
Sept.	No	Records		24,000*
Oct.	No	Records		30,000*
Nov.	No	Records		30,000*
Dec.	No	Records		77,000*
Total	..	..	..	1,533,092*

Year 1956

Jan.	No	Records		290,000*
Feb.	200000	989	17200	1,000,000
Mar.	28900	3480	6142	380,814
Apr.	5240	750	1918	115,100
May	58750	790	4262	264,250
June	19800	408	1975	118,472
July	3208	480	1093	67,756
Aug.	480	253	337	20,920
Sept.	273	223	249	14,920
Oct.	223	124	153	9,500
Nov.	173	51	100	6,048
Dec.	7520	51	620	38,430
Total	..	..	..	2,326,210*

* Estimated.

CLARENCE RIVER AT TABULAM

Year 1957

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3020	123	358	22,188
Feb.	985	89	259	14,498
Mar.	360	123	217	13,442
Apr.	193	138	160	9,580
May	148	23	65	4,076
June	51	18	34	2,046
July	193	48	83	5,126
Aug.	2850	51	317	19,656
Sept.	479	65	126	7,564
Oct.	338	18	75	4,648
Nov.	121	11	48	2,888
Dec.	11	0.3	3	182
Total	..	..	..	105,894

Year 1958

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	62	0.7	9.6	595
Feb.	368	39	86	4,842
Mar.	1888	47	284	17,626
Apr.	1045	62	262	15,712
May	148	41	73	4,578
June	15500	41	1008	60,478
July	525	72	174	10,784
Aug.	301	56	128	7,954
Sept.	144	36	55	3,300
Oct.	144	22	58	3,572
Nov.	20	3	10	608
Dec.	3020	3	316	19,610
Total	..	..	..	149,659

Year 1959

Jan.	74500	393	6508	403,504
Feb.	129300	830	6916	387,286
Mar.	37000	535	4801	297,646
Apr.	6560	550	1732	103,902
May	520	290	379	23,484
June	275	154	211	12,658
July	1870	144	363	22,512
Aug.	246	88	137	8,486
Sept.	1095	123	340	20,386
Oct.	2150	143	353	21,912
Nov.	46900	490	5403	324,188
Dec.	20350	790	3970	246,162
Total	..	..	..	1,872,126

Year 1960

Jan.	1660	345	729	45,190
Feb	460	232	351	20,334
Mar.	4825	158	666	41,316
Apr.	192	110	148	8,866
May	465	101	170	10,562
June	300	101	156	9,338
July	286	128	167	10,384
Aug.	570	85	164	10,190
Sept.	85	42	54	3,260
Oct.	216	20	47	2,918
Nov.	42	16	26	1,570
Dec.	92	12	43	2,684
Total	..	..	..	166,612

Year 1961

Jan.	32	4	13	832
Feb.	39400	3	1612	90,290
Mar.	660	132	223	13,808
Apr.	211	88	124	7,452
May	1005	58	111	6,920
June	1420	32	289	17,346
July	3847	28	350	21,668
Aug.	645	113	278	17,258
Sept.	177	72	118	7,080
Oct.	742	58	280	17,390
Nov.	5050	42	547	32,792
Dec.	23400	342	1842	114,200
Total	..	..	..	347,036

Year 1962

Jan.	195000	690	5270	326,720
Feb.	2610	234	657	36,808
Mar.	19100	188	2464	152,742
Apr.	75000	570	4648	278,920
May	525	282	358	22,236
June	306	143	201	12,074
July	70000	143	2792	173,112
Aug.	1800	363	591	36,614
Sept.	406	226	282	16,924
Oct.	239	73	129	8,026
Nov.	136	34	56	3,366
Dec.	15000	40	1176	72,934
Total	..	..	..	1,140,476

Year 1963

Jan.	76000	465	5040	312,520
Feb.	6895	226	939	52,598
Mar.	15200	189	2772	171,894
Apr.	5330	555	1387	83,202
May	112666	725	6798	421,450
June	1280	510	744	44,652
July	495	226	344	21,344
Aug.	675	162	222	13,798
Sept.	525	91	161	9,682
Oct.	187	59	93	5,750
Nov.	4160	62	551	33,084
Dec.	6750	219	1519	94,160
Total	..	..	..	1,264,134

Year 1964

Jan.	840	88	201	12,486
Feb.	6170	99	699	40,558
Mar.	19800	356	2737	169,666
Apr.	19800	450	2234	134,000
May	1280	330	602	37,300
June	3730	272	585	35,100
July	1730	216	400	24,800
Aug.	244	128	167	10,400
Sept.	148	52	90	5,390
Oct.	360	64	146	9,040
Nov.	390	52	98	5,900
Dec.	216	16	78	4,830
Total	..	..	..	489,470

CLARENCE RIVER AT TABULAM

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	790	4	62	3,850
Feb.	1170	16	114	6,400
Mar.	42	1.5	10.3	637
Apr.	4.0	0	2.6	157
May	16	4	8	512
June	42	4	10.4	626
July	118000	13	4161	258,000
Aug.	590	110	226	14,040
Sept.	2720	94	316	18,900
Oct.	244	39	63	3,920
Nov.	86	8	27	1,620
Dec.	25800	51	2783	173,000
Total	..	..	..	481,662

Year 1966

Month	Discharge in Cusecs			Discharge For Month Acre Feet
	Max.	Min.	Mean	
Jan.	260	45	106	6,580
Feb.	1430	78	273	15,300
Mar.	94	33	618	3,760
Apr.	58	8	26	1,560
May	86	12	32	1,980
June	94	12	37	2,200
July	28	8	18	1,140
Aug.	725	8	114	7,050
Sept.	580	57	155	9,300
Oct.	510	28	89	5,530
Nov.	545	33	127	7,620
Dec.	157	12	39	2,400
Total	..	..	..	64,420

Year 1967

Jan.	4730	38	373	23,100
Feb.	2140	83	337	18,900
Mar.	104300	310	5860	363,000
Apr.	2605	265	745	44,700
May	2605	182	419	26,000
June	162600	145	12500	749,800
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

ROCKY RIVER AT BILLYRIMBA

LOCATION:	Latitude 29°12' Longitude 152°15'
PERIOD OF ESTABLISHMENT:	November 1951 to date
COMPLETE YEARS OF COMPUTED RECORDS:	13 years
ZERO OF GAUGE:	R.L. 25.60 Assumed Datum. Approximately 1,000 feet above sea level.
CATCHMENT AREA:	380 square miles
CONTROL:	Rock and boulders
EQUIPMENT:	Pressure Recorder installed November 1951 Staff gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 95
	(b) Maximum observation in cusecs : 2,000
	(c) Minimum observation in cusecs : 1.5
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	54,000 cusecs
MEAN DAILY DISCHARGE FOR 13 YEARS:	246 cusecs
MEAN ANNUAL DISCHARGE FOR 13 YEARS:	180,000 acre feet

ROCKY RIVER AT BILLYRIMBA

Year 1952

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	108	4	20	1,260
Feb.	245	1	50	2,908
Mar.	1020	18	127	7,854
Apr.	336	50	115	6,892
May	186	45	92	5,692
June	410	37	100	6,012
July	122	45	63	3,896
Aug.	2420	73	293	18,164
Sept.	130	54	89	5,324
Oct.	1470	54	320	19,814
Nov.	450	37	120	7,220
Dec.	450	18	62	3,852
Total	..	..	..	88,888

Year 1953

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	245	37	82	5,090
Feb.	11250	18	705	39,516
Mar.	3470	108	450	27,888
Apr.	410	73	147	8,844
May	450	54	110	6,808
June	63	37	54	3,216
July	45	18	37	2,280
Aug.	122	21	37	2,292
Sept.	73	18	31	1,866
Oct.	95	10	22	1,362
Nov.	30	4	13	788
Dec.	175	0	26	1,618
Total	..	..	..	101,568

Year 1954

Jan.	30	0	10	620
Feb.	40000	30	1544	86,482
Mar.	750	24	173	10,712
Apr.	54	21	30	1,784
May	37	24	31	1,904
June	354	37	104	6,448
July	19200	45	1651	102,378
Aug.	245	122	174	10,788
Sept.	155	63	94	5,876
Oct.	5240	73	908	56,308
Nov.	1020	122	277	16,596
Dec.	570	108	172	10,674
Total	..	..	..	310,570

Year 1955

Jan.	850	63	317	19,656
Feb.	336	122	182	10,190
Mar.	21400	122	1171	72,594
Apr.	1870	219	528	31,700
May	13100	245	1143	70,862
June	705	175	309	18,568
July	304	137	178	11,064
Aug.	175	84	113	6,990
Sept.	111	84	92	5,520
Oct.	196	54	87	5,372
Nov.	95	24	51	3,036
Dec.	304	18	67	4,142
Total	..	..	..	259,694

Year 1956

Jan.	15100	18	503	31,210
Feb.	54000	336	4295	249,134
Mar.	1710	858	1325	82,174
Apr.	2160	266	584	35,050
May	5890	266	827	51,292
June	4390	227	399	23,936
July	533	206	329	20,414
Aug.	206	126	161	9,954
Sept.	142	104	126	7,556
Oct.	151	74	109	6,774
Nov.	79	59	68	4,090
Dec.	69	42	59	3,686
Total	..	..	..	525,270

Year 1957

Jan.	206	28	87	5,420
Feb.	582	28	160	8,952
Mar.	716	69	136	8,450
Apr.	59	46	52	3,104
May	54	28	34	2,116
June	46	22	30	1,786
July	69	22	33	2,016
Aug.	281	22	49	3,048
Sept.	91	16	44	2,634
Oct.	380	8	32	1,987
Nov.	159	5	30	1,820
Dec.	206	4	36	2,230
Total	..	..	..	43,566

Year 1958

Jan.	458	4	36	2,180
Feb.	219	18	63	3,512
Mar.	705	10	93	5,806
Apr.	63	30	49	2,950
May	54	18	29	1,822
June	900	18	90	5,404
July	129	18	54	3,352
Aug.	185	10	48	3,004
Sept.	245	30	57	3,406
Oct.	84	14	40	2,488
Nov.	54	4	13	794
Dec.	530	4	159	9,874
Total	..	..	..	44,592

Year 1959

Jan.	22680	37	1603	99,396
Feb.	11500	196	746	41,792
Mar.	6085	134	625	38,728
Apr.	499	134	271	16,236
May	134	50	99	6,122
June	91	50	67	4,014
July	345	50	104	6,426
Aug.	91	35	59	3,668
Sept.	134	50	74	4,440
Oct.	134	50	68	4,238
Nov.	6150	42	752	45,150
Dec.	No Records			
Total	..	..	..	..

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ROCKY RIVER AT BILLYRIMBA

Year 1960

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.		No Records		
Feb.	625	100	215	12,460
Mar.		No Records		
Apr.	248	62	107	6,418
May.	272	52	114	7,044
June		No Records		
July		No Records		
Aug.	206	44	71	4,408
Sept.	62	30	40	2,420
Oct.	72	25	33	2,022
Nov.	25	13.5	18	10,600
Dec.	139	12	37	2,304
Total	..	..	..	..

Year 1961

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	27	6	15	938
Feb.	4500	4	165	9,216
Mar.	100	25	54	3,358
Apr.	100	36	51	3,034
May.	72	25	38	2,360
June	166	30	56	3,390
July	206	25	49	3,050
Aug.	148	30	49	3,054
Sept.	115	25	42	2,524
Oct.	1540	25	223	1,382
Nov.	1360	25	121	7,244
Dec.	2400	72	397	24,628
Total	..	..	.	64,178

Year 1962

Jan.	4100	166	1060	65,696
Feb.	2500	122	269	15,052
Mar.	2050	122	457	28,352
Apr.	23780	226	1498	89,866
May	378	139	205	12,708
June	148	93	113	6,774
July	19200	93	1073	66,500
Aug.	540	130	211	13,100
Sept.	270	104	144	8,630
Oct.	245	65	93	5,780
Nov.	137	47	65	3,900
Dec.	3300	39	282	17,500
Total	..	..	..	333,858

Year 1963

Jan.	23040	156	1603	99,400
Feb.	1450	89	182	10,200
Mar.	1050	104	225	13,900
Apr.	625	104	201	12,100
May	28600	156	1553	96,300
June	348	156	226	13,500
July	156	89	123	7,650
Aug.	104	77	87	5,420
Sept.	104	47	66	3,980
Oct.	178	39	74	4,590
Nov.	540	39	134	8,034
Dec	3400	120	548	34,000
Total	..	..	..	309,070

Year 1964

Jan.	499	65	143	8,880
Feb.	200	56	113	6,550
Mar.	13750	178	724	44,900
Apr.	3700	137	470	28,200
May	378	120	187	11,600
June	222	89	128	7,670
July	104	65	88	5,300
Aug.	156	47	74	4,600
Sept.	104	47	61	3,650
Oct.	270	56	104	6,460
Nov.	458	39	77	4,630
Dec.	348	16	44	2,700
Total	..	..	..	135,140

Year 1965

Jan.	47	16	24	1,490
Feb.	200	16	38	2,120
Mar.	39	8	12	730
Apr.	16	8	11	656
May	16	8	14	888
June	32	12	17	1,000
July	12100	16	527	32,700
Aug.	120	39	55	3,440
Sept.	458	32	72	4,310
Oct.	39	16	23	1,400
Nov.	56	8	20	1,220
Dec.	1900	12	373	23,100
Total	..	..	..	73,054

Year 1966

Jan.	47	20	30	1,830
Feb.	245	16	59	3,300
Mar.	670	18	64	3,950
Apr.	47	16	22	1,310
May	39	16	19	1,150
June	32	12	19	1,120
July	16	12	15	896
Aug.	458	10	58	3,590
Sept.	417	25	84	5,050
Oct.	1630	20	100	6,180
Nov.	3600	43	264	15,800
Dec.	104	12	33	2,060
Total	..	..	..	46,236

Year 1967

Jan.	13900	25	359	22,300
Feb.	1120	52	133	7,460
Mar.	31200	62	1370	85,200
Apr.	570	115	283	17,000
May	180	62	103	6,420
June	31800	62	2580	155,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

MANN RIVER AT MITCHELL

LOCATION:	Latitude 29°42' Longitude 152°07'
PERIOD OF ESTABLISHMENT:	October 1945 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	16 years.
ZERO OF GAUGE:	R.L. 51.60 Assumed Datum. Approximately 1,800 feet above sea level.
CATCHMENT AREA:	340 square miles.
CONTROL:	Rock bar.
EQUIPMENT:	Pressure Recorder installed October 1952. Staff gauge, range 0 to 30 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 114
	(b) Maximum observation in cusecs : 4,554
	(c) Minimum observation in cusecs : 2.6
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	120,000 cusecs.
MEAN DAILY DISCHARGE FOR 16 YEARS:	181 cusecs.
MEAN ANNUAL DISCHARGE FOR 16 YEARS:	132,000 acre feet.

MANN RIVER AT MITCHELL

Year 1945

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	87	5	20	1,178
Dec.	87	8	34	2,080
Total	..	..	..	..

Year 1946

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2140	4	116	7,204
Feb.	37	7	20	1,096
Mar.	25400	8	700	43,414
Apr.	520	37	132	7,894
May	87	19	36	2,246
June	19	12	15	904
July	33	10	21	1,294
Aug.	9	5	7	430
Sept.	2140	5	99	5,942
Oct.	131	6	21	1,304
Nov.	142	3	33	1,958
Dec.	45	6	17	1,050
Total	..	..	..	74,736

Year 1947

Jan.	119	0	11	697
Feb.	2140	13	217	12,142
Mar.	6250	100	677	42,000
Apr.	800	100	216	12,958
May	148	37	56	3,486
June	64	19	32	1,948
July	45	15	27	1,650
Aug.	1180	12	97	5,994
Sept.	15500	30	735	44,084
Oct.	1640	24	134	8,290
Nov.	368	19	79	4,746
Dec.	3500	45	301	18,664
Total	..	..	..	156,659

Year 1948

Jan.	7560	19	220	13,632
Feb.	87	6	15	898
Mar.	327	37	96	5,944
Apr.	37	7	18	1,054
May	368	7	70	4,364
June	19500	6	774	46,462
July	4280	64	184	11,398
Aug.	414	24	99	6,152
Sept.	327	24	59	3,544
Oct.	75	6	18	1,090
Nov.	1800	9	61	3,656
Dec.	54	7	18	1,140
Total	..	..	..	99,334

Year 1949

Jan.	4420	5	163	10,090
Feb.	18400	5	760	42,574
Mar.	1480	45	197	12,214
Apr.	87	24	45	2,682
May	87	15	24	1,470
June	520	19	99	5,936
July	2340	19	218	13,528
Aug.	1640	45	181	11,198
Sept.	3760	75	515	30,874
Oct.	4280	87	1002	62,102
Nov.	1960	64	253	15,192
Dec.	186	24	74	4,608
Total	..	..	..	212,468

Year 1950

Jan.	No Records			
Feb.	No Records			
Mar.	No Records			
Apr.	No Records			
May	No Records			
June	No Records			
July	No Records			
Aug.	No Records			
Sept.	No Records			
Oct.	No Records			
Nov.	5140	131	996	59,776
Dec.	327	54	142	8,790
Total	..	..	..	..

Year 1951

Jan.	2780	54	397	24,642
Feb.	1040	87	161	9,026
Mar.	800	87	190	11,782
Apr.	115	45	64	3,818
May	123	37	58	3,610
June	920	41	295	17,682
July	166	54	83	5,150
Aug.	690	54	192	11,908
Sept.	60	30	43	2,608
Oct.	37	9	23	1,406
Nov.	45	5	8	502
Dec.	24	3	7	436
Total	..	..	..	92,570

Year 1952

Jan.	19	2	8	472
Feb.	520	1	69	4,023
Mar.	2780	15	141	8,717
Apr.	233	30	77	4,602
May	414	19	89	5,520
June	2730	30	237	14,214
July	600	49	89	5,336
Aug.	No Records			43,800*
Sept.	520	54	92	5,524
Oct.	2890	54	272	16,878
Nov.	292	30	75	4,510
Dec.	920	9	42	2,606
Total	..	..	..	116,202*

MANN RIVER AT MITCHELL

Year 1953					Year 1954				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	131	19	54	3,328	Jan.	5	0.5	2.3	140
Feb.	30900	9	1244	69,650	Feb.	37000	5	711	39,792
Mar.	1640	87	226	14,030	Mar.	112	9	33	2,026
Apr.	115	30	55	3,276	Apr.	9	9	9	540
May	186	30	66	4,116	May	34	7	13	810
June	30	19	23	1,398	June	73	14	24	1,430
July	45	15	22	1,344	July	1640	11	187	11,624
Aug.	148	15	41	2,514	Aug.	520	42	96	5,938
Sept.	208	12	36	2,136	Sept.	62	18	28	1,686
Oct.	87	8	19	1,192	Oct.	10900	18	736	45,624
Nov.	9	4	6	334	Nov.	3000	62	351	21,078
Dec.	12	1	4	228	Dec.	327	73	128	7,908
Total	..	..	..	103,554	Total	..	..	..	138,596

Year 1955					Year 1956				
Jan.	194	22	83	5,118	Jan.	9100	4	346	21,440
Feb.	18400	25	838	46,912	Feb.	120000	157	3405	197,504
Mar.	3500	51	255	15,832	Mar.	980	212	345	21,420
Apr.	3500	62	197	11,816	Apr.	2140	115	252	15,102
May	3240	98	332	20,576	May	6250	157	477	29,592
June	1640	126	214	12,830	June	15500	109	700	41,970
July	520	85	147	9,114	July	5470	157	477	29,568
Aug.	142	73	101	6,244	Aug.	645	109	155	9,582
Sept.	62	42	49	2,910	Sept.	232	109	118	7,066
Oct.	157	32	80	4,932	Oct.	2340	85	182	11,262
Nov.	175	4	42	2,512	Nov.	183	18	59	3,544
Dec.	115	4	24	1,484	Dec.	67	7	29	1,772
Total	..	..	..	140,280	Total	..	..	..	389,822

Year 1957					Year 1958				
Jan.	115	4	61	3,772	Jan.	45	3	6.1	378
Feb.	1250	9	141	7,890	Feb.	87	8	25	1,404
Mar.	400	19	76	4,684	Mar.	800	9	65	4,020
Apr.	54	19	29	1,762	Apr.	27	7	13.4	804
May	30	12	18	1,094	May	24	6.2	12.2	758
June	30	13.5	17	1,026	June	75	7	17.3	1,036
July	37	15	19.1	1,184	July	54	12	21	1,304
Aug.	275	15	33	2,020	Aug.	75	12	30	1,876
Sept.	75	7	18.3	1,100	Sept.	2560	19	176	10,556
Oct.	19	1.7	6.9	428	Oct.	2140	19	116	7,204
Nov.	30	2.5	9.4	566	Nov.	19	5	9.4	562
Dec.	93	1.5	12.4	766	Dec.	230	6	25	1,574
Total	..	..	..	26,292	Total	..	..	..	31,476

Year 1959					Year 1960				
Jan.	18400	7	1529	94,782	Jan.	260	45	95	5,906
Feb.	490	108	251	14,062	Feb.	1320	30	151	8,770
Mar.	3500	87	356	22,090	Mar.	272	58	116	7,180
Apr.	4280	45	241	14,482	Apr.	40	18	30	1,776
May	75	30	39	2,446	May	No Records			2,300*
June	87	19	31	1,888	June	No Records			2,000*
July	440	24	118	7,336	July	222	22	96	5,950
Aug.	75	19	38	2,348	Aug.	340	27	99	6,110
Sept.	1180	19	100	6,012	Sept.	81	18	29	1,712
Oct.	800	30	90	5,580	Oct.	33	10	17	1,080
Nov.	2140	64	291	17,438	Nov.	33	6	12	730
Dec.	6970	75	737	45,666	Dec.	40	6	14	846
Total	..	..	..	234,130	Total	..	..	..	44,360*

* Estimated.

MANN RIVER AT MITCHELL

Year 1961

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	12.5	6	8.1	502
Feb.	222	5	20	1,134
Mar.	22	10	14	844
Apr.	16	8	11	676
May	18	8	10	606
June	38	10	16	970
July	95	9.5	24	1,460
Aug.	111	21	38	2,340
Sept.	58	14	25	1,504
Oct.	130	14	51	3,140
Nov.	4560	10	223	13,364
Dec.	2560	33	183	11,358
Total	..	..	..	37,898

Year 1962

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	13000	95	743	46,092
Feb.	272	100	181	10,144
Mar.	No Records			6,820*
Apr.	410	33	132	7,948
May	197	33	65	4,010
June	95	30	51	3,040
July	18400	18	593	36,800
Aug.	4020	40	299	18,500
Sept.	310	69	117	7,010
Oct.	1180	33	88	5,430
Nov.	111	18	27	1,640
Dec.	No Records			
Total	..	..	..	..

Year 1963

Jan.	15500	40	294	18,200
Feb.	169	15	66	3,670
Mar.	162	19	59	3,630
Apr.	800	24	95	5,690
May	108000	43	2190	136,000
June	360	120	214	12,830
July	102	43	74	4,580
Aug.	1960	33	117	7,230
Sept.	255	36	64	3,820
Oct.	74	12	34	2,120
Nov.	700	8	84	5,020
Dec.	800	29	251	15,600
Total	..	..	..	218,390

Year 1964

Jan.	2140	12	114	7,060
Feb.	102	19	44	2,560
Mar.	7110	52	468	29,000
Apr.	700	43	83	4,970
May	102	36	50	3,090
June	No Records			
July	4280	24	251	15,500
Aug.	No Records			
Sept.	No Records			
Oct.	No Records			
Nov.	No Records			
Dec.	No Records			
Total	..	..	..	..

Year 1965

Jan.		No Records		
Feb.		No Records		
Mar.		No Records		
Apr.		No Records		
May		No Records		
June		No Records		
July		No Records		
Aug.		No Records		
Sept.		No Records		
Oct.		No Records		
Nov.		No Records		
Dec.		No Records		
Total	..	..	..	..

Year 1966

Jan.	No Records			
Feb.	15	3.5	7.8	436
Mar.	24	2.5	6.4	394
Apr.	7.0	2.0	3.7	220
May	9.0	3.5	5.0	312
June	12	5.0	8.0	478
July	5	3.5	4.5	278
Aug.	610	5	40	2,480
Sept.	222	15	44	2,660
Oct.	450	12	59	3,680
Nov.	18400	29	376	22,500
Dec.	310	4	36	2,260
Total	..	..	..	..

Year 1967

Jan.	140	19	58	3,460
Feb.	19	5	12	664
Mar.	1960	19	154	9,570
Apr.	123	36	58	3,460
May	93	19	28	1,750
June	80000	19	2120	127,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

* Estimated

NYMBOIDA RIVER AT BOSTOBRICK

LOCATION:	Latitude 30°15' Longitude 152°36'
PERIOD OF ESTABLISHMENT:	September, 1948 to date
COMPLETE YEARS OF COMPUTED RECORDS:	18 years
ZERO OF GAUGE:	R.L. 72.88 Assumed Datum. Approximately 2,000 feet above sea level.
CATCHMENT AREA:	85 square miles
CONTROL:	Rock bar
EQUIPMENT:	Float Recorder installed April 1958. Staff gauge, range 0 to 25 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 109
	(b) Maximum observation in cusecs : 4,446
	(c) Minimum observation in cusecs : 10
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	35,000 cusecs
MEAN DAILY DISCHARGE FOR 18 YEARS:	196 cusecs
MEAN ANNUAL DISCHARGE FOR 18 YEARS:	143,000 acre feet.

NYMBOIDA RIVER AT BOSTOBRICK

Year 1948					Year 1949				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	1020	23	98	6,080
Feb.	..	..	..	..	Feb.	241	33	78	4,340
Mar.	..	..	..	..	Mar.	2080	148	502	21,130
Apr.	..	..	..	..	Apr.	492	132	218	13,054
May	..	..	..	..	May	148	80	108	6,692
June	..	..	..	..	June	880	70	110	6,628
July	..	..	..	..	July	2320	61	175	10,836
Aug.	..	..	..	..	Aug.	5000	104	437	27,070
Sept.	..	..	..	..	Sept.	430	164	281	16,870
Oct.	58	32	41	2,556	Oct.	600	132	213	13,226
Nov.	164	32	43	2,590	Nov.	3680	118	212	12,726
Dec.	78	28	38	2,328	Dec.	200	90	138	8,544
Total	..	..	..	..	Total	..	..	..	147,196

Year 1950					Year 1951				
Jan.	4140	70	303	18,792	Jan.	2720	241	571	35,378
Feb.	4420	118	602	33,710	Feb.	1280	200	363	20,328
Mar.	492	200	315	19,506	Mar.	970	241	383	23,728
Apr.	600	220	307	18,434	Apr.	344	118	182	10,930
May	316	104	174	10,802	May	148	80	101	6,276
June	35000	90	2084	125,024	June	1220	80	250	15,008
July	3230	517	949	58,828	July	132	80	103	6,396
Aug.	No Records			28,400*	Aug.	90	53	67	4,130
Sept.	401	164	216	12,980	Sept.	53	38	46	2,730
Oct.	880	164	312	19,366	Oct.	53	28	37	2,302
Nov.	1020	148	394	23,648	Nov.	90	23	28	1,694
Dec.	714	164	309	19,178	Dec.	38	15	24	1,488
Total	..	..	..	388,668*	Total	..	..	..	130,388

Year 1952					Year 1953				
Jan.	33	9	19	1,204	Jan.	372	33	93	5,742
Feb.	316	9	60	3,476	Feb.	2350	38	359	20,104
Mar.	372	45	103	6,362	Mar.	4420	164	394	24,480
Apr.	118	38	65	3,906	Apr.	289	90	159	9,530
May	70	33	44	2,736	May	164	61	93	5,794
June	241	28	52	3,126	June	70	45	55	3,292
July	241	28	53	3,296	July	45	33	41	2,512
Aug.	4800	70	579	35,906	Aug.	61	33	36	2,210
Sept.	164	70	107	6,416	Sept.	53	23	29	1,766
Oct.	241	61	89	5,490	Oct.	61	15	22	1,362
Nov.	70	33	43	2,636	Nov.	23	9	13	764
Dec.	132	33	40	2,450	Dec.	41	7	12	718
Total	..	..	..	77,004	Total	..	..	..	78,274

Year 1954					Year 1955				
Jan.	38	7	25	1,562	Jan.	430	90	186	11,508
Feb.	31480	28	808	45,268	Feb.	526	132	231	12,926
Mar.	460	90	220	13,614	Mar.	1020	181	429	26,618
Apr.	No Records			3,500*	Apr.	3860	200	543	32,568
May	344	53	135	8,388	May	1280	241	378	23,428
June	344	61	125	7,494	June	316	132	190	11,416
July	2320	61	407	25,254	July	132	80	111	6,902
Aug.	492	118	173	10,754	Aug.	80	53	63	3,902
Sept.	835	61	192	11,548	Sept.	140	45	62	3,726
Oct.	752	132	283	17,560	Oct.	90	33	54	3,328
Nov.	638	132	261	15,672	Nov.	70	28	41	2,466
Dec.	316	104	146	9,060	Dec.	No Records			14,000*
Total	..	..	..	169,674	Total	..	..	..	152,788*

* Estimated.

NYMBOIDA RIVER AT BOSTOBRICK

Year 1956

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			20,000*
Feb.	No Records			95,000*
Mar.	No Records			55,000*
Apr.	600	118	315	18,906
May	3590	132	781	48,452
June	2890	111	434	26,064
July	164	80	112	6,956
Aug.	No Records			4,000*
Sept.	61	38	48	2,974
Oct.	38	30	34	2,104
Nov.	38	23	27	1,648
Dec.	75	19	49	3,038
Total	..	..	..	284,142*

Year 1957

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	104	19	45	2,778
Feb.	3680	41	217	12,130
Mar.	2240	61	276	17,116
Apr.	1170	33	81	4,888
May	53	35	40	2,457
June	30	23	26	1,588
July	87	23	31	1,932
Aug.	1020	19	113	7,004
Sept.	430	28	103	6,200
Oct.	118	19	32	2,010
Nov.	132	12	55	3,316
Dec.	132	12	39	2,408
Total	..	..	..	63,827

Year 1958

Jan.	156	38	64	3,968
Feb.	No Records			6,000*
Mar.	401	53	166	10,314
Apr.	401	35	163	9,766
May	122	54	73	4,542
June	740	40	119	7,160
July	92	54	73	4,526
Aug.	402	54	96	5,940
Sept.	138	46	55	3,298
Oct.	72	30	39	2,446
Nov.	50	26	29	1,766
Dec.	645	35	91	5,656
Total	..	..	..	65,382*

Year 1959

Jan.	28800	85	1120	69,422
Feb.	2950	240	455	25,474
Mar.	3200	227	499	30,908
Apr.	580	164	292	17,510
May	164	85	122	7,578
June	366	60	89	5,312
July	300	66	117	7,264
Aug.	174	66	85	5,268
Sept.	440	85	136	8,184
Oct.	183	66	82	5,094
Nov.	4660	72	458	27,480
Dec.	560	130	202	12,518
Total	..	..	..	222,012

Year 1960

Jan.	560	99	167	10,332
Feb.	645	92	173	10,016
Mar.	1840	138	359	22,248
Apr.	240	92	139	8,364
May	332	54	94	5,846
June	174	66	95	5,692
July	155	50	64	3,988
Aug.	92	37	45	2,774
Sept.	54	30	35	2,084
Oct.	78	26	32	1,958
Nov.	46	22	26	1,578
Dec.	240	22	33	2,028
Total	..	..	..	76,908

Year 1961

Jan.	255	22	59	3,636
Feb.	1380	37	136	7,628
Mar.	130	54	89	5,506
Apr.	99	54	73	4,374
May	114	40	53	3,290
June	560	85	150	8,994
July	174	50	64	3,956
Aug.	193	46	62	3,874
Sept.	402	43	98	5,896
Oct.	600	60	140	8,700
Nov.	316	66	106	6,380
Dec.	1760	85	184	11,400
Total	..	..	..	73,634

Year 1962

Jan.	1060	215	341	21,200
Feb.	690	138	195	10,900
Mar.	622	138	280	17,300
Apr.	17900	174	1001	60,100
May	730	138	227	14,100
June	138	78	98	5,890
July	13300	66	692	42,900
Aug.	460	106	161	9,960
Sept.	200	66	92	5,510
Oct.	187	50	63	3,910
Nov.	175	43	56	3,360
Dec.	1970	37	303	18,800
Total	..	..	..	213,930

Year 1963

Jan.	4900	200	702	43,500
Feb.	650	130	172	9,640
Mar.	600	114	272	16,800
Apr.	1280	114	252	15,100
May	25100	230	1185	73,500
June	No Records			14,000*
July	230	92	143	8,840
Aug.	92	66	83	5,150
Sept.	165	46	56	3,400
Oct.	675	54	119	7,380
Nov.	550	66	119	7,120
Dec.	1650	106	303	18,800
Total	..	..	..	223,230

* Estimated.

NYMBOIDA RIVER AT BOSTOBRICK

Year 1964					Year 1965				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	820	92	139	8,600	Jan.	550	20	47	2,910
Feb.	850	78	156	9,040	Feb.	215	37	54	3,000
Mar.	7420	146	544	33,750	Mar.	92	32	38	2,350
Apr.	1610	175	390	23,400	Apr.	106	32	37	2,230
May	265	106	154	9,520	May	37	24	30	1,850
June	114	66	88	5,260	June	122	22	37	2,230
July	114	50	63	3,930	July	7570	37	347	21,500
Aug.	92	40	47	2,890	Aug.	165	65	105	6,480
Sept.	66	32	38	2,310	Sept.	97	35	59	3,530
Oct.	92	26	33	2,060	Oct.	165	35	42	2,590
Nov.	155	26	34	2,020	Nov.	265	23	37	2,190
Dec.	32	20	24	1,520	Dec.	940	111	275	17,000
Total	..	..	..	104,300	Total	..	..	..	67,860

Year 1966					Year 1967				
Jan.	482	59	92	5,690	Jan.	4940	49	260	16,100
Feb.	375	54	89	4,980	Feb	850	132	237	13,300
Mar.	200	41	54	3,330	Mar.	1440	187	461	28,600
Apr.	165	27	42	2,500	Apr.	1620	175	524	31,400
May	104	27	33	2,070	May	175	90	129	7,990
June	175	27	41	2,470	June	20000	84	1590	95,400
July	30	20	25	1,530	July				
Aug.	147	20	35	2,150	Aug.				
Sept.	78	24	35	2,110	Sept.				
Oct.	600	20	45	2,770	Oct.				
Nov.	760	41	89	5,360	Nov.				
Dec.	247	27	41	2,570	Dec.				
Total	..	..	..	37,530	Total				

BIELSDOWN CREEK AT DORRIGO NOS. 2 AND 3

LOCATION:	Latitude 30°18' Longitude 152°43'
PERIOD OF ESTABLISHMENT:	February, 1947 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	19 years
ZERO OF GAUGE:	R.L. 2054.46 Railway Datum (No. 3 Station)
CATCHMENT AREA:	30 square miles
CONTROL:	No. 2 Station - Rock and gravel No. 3 Station - Gravel bar
EQUIPMENT:	Float recorder installed August 1955. Staff gauge, range 0 to 30 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 127 (b) Maximum observation in cusecs : 994 (c) Minimum observation in cusecs : 5
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	36,200 cusecs
MEAN DAILY DISCHARGE FOR 19 YEARS:	130 cusecs
MEAN ANNUAL DISCHARGE FOR 19 YEARS:	95,200 acre feet.
REMARKS:	The No. 2 station, consisting of a staff gauge, was abandoned following installation of the No. 3 station, some 200 yards downstream, in August 1955.

BIELSDOWN CREEK AT DORRIGO

Year 1947					Year 1948				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecss			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	181	60	80	4,968
Feb.	..	..	..	..	Feb.	64	34	47	2,728
Mar.	..	..	..	..	Mar.	2300	37	278	17,250
Apr.	..	..	..	..	Apr.	272	52	114	6,818
May	..	..	..	..	May	2840	52	168	10,434
June	..	..	..	..	June	6490	44	490	29,414
July	..	..	..	..	July	146	38	80	4,968
Aug.	..	..	..	..	Aug.	57	28	42	2,608
Sept.	88	13	22	1,304	Sept.	158	23	40	2,390
Oct.	18	11	14	886	Oct.	38	23	29	1,822
Nov.	314	9	48	2,866	Nov.	38	13	24	1,414
Dec.	580	60	164	10,176	Dec.	38	13	25	1,536
Total	..	..	..	..	Total	..	..	..	86,350

Year 1949					Year 1950				
Jan.	265	13	46	2,882	Jan.	1900	26	120	7,452
Feb.	482	30	79	4,438	Feb.	1230	52	228	12,770
Mar.	1600	158	422	26,146	Mar.	468	110	186	11,512
Apr.	412	87	166	9,984	Apr.	342	145	217	13,048
May	146	50	67	4,178	May	300	69	141	8,732
June	82	44	59	3,540	June	30000	34	1146	68,740
July	594	38	74	4,580	July	840	146	378	23,432
Aug.	20100	44	508	31,522	Aug.	1880	98	262	16,216
Sept.	163	18	58	3,454	Sept.	186	73	112	6,704
Oct.	44	11	18	1,142	Oct.	484	67	223	13,842
Nov.	342	9	44	2,612	Nov.	1170	73	194	11,670
Dec.	110	37	55	3,420	Dec.	1120	112	278	17,238
Total	..	..	..	97,898	Total	..	..	..	211,356

Year 1951					Year 1952				
Jan.	4200	186	521	32,294	Jan.	25	3	8	476
Feb.	520	128	249	13,924	Feb.	420	2	49	2,820
Mar.	3940	112	501	31,056	Mar.	276	58	110	6,818
Apr.	276	62	113	6,770	Apr.	146	62	77	4,648
May	62	32	50	3,130	May	112	39	55	3,402
June	1070	32	147	8,806	June	112	25	46	2,744
July	73	35	55	3,386	July	320	18	35	2,176
Aug.	54	20	28	1,720	Aug.	6700	54	443	27,442
Sept.	32	14	20	1,230	Sept.	98	41	60	3,572
Oct.	46	11	22	1,380	Oct.	85	32	43	2,654
Nov.	32	8	14	830	Nov.	32	14	20	1,188
Dec.	12	4	9	568	Dec.	68	12	19	1,182
Total	..	..	..	105,094	Total	..	..	..	59,122

Year 1953					Year 1954				
Jan.	252	12	63	3,922	Jan.	25	2	9	550
Feb.	1770	46	396	22,170	Feb.	36200	6	787	44,068
Mar.	2720	128	360	22,318	Mar.	500	95	186	11,504
Apr.	252	62	112	6,696	Apr.	149	62	87	3,204
May	85	32	48	2,960	May	298	53	125	7,746
June	32	25	26	1,548	June	470	95	164	9,828
July	23	12	18	1,090	July	5020	72	391	24,238
Aug.	35	12	17	1,082	Aug.	440	72	107	6,632
Sept.	32	8	14	830	Sept.	840	41	148	8,898
Oct.	54	8	11	666	Oct.	890	108	178	11,034
Nov.	16	3	5	332	Nov.	640	67	172	10,330
Dec.	8	2	4	236	Dec.	370	57	95	5,906
Total	..	..	..	63,850	Total	..	..	..	143,938

BIELSDOWN CREEK AT DORRIGO

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	350	53	121	7,518
Feb.	352	108	166	9,306
Mar.	1350	127	333	20,622
Apr.	2500	127	330	19,820
May	855	88	190	11,754
June	135	49	82	4,898
July	76	31	53	3,310
Aug.	48	20	32	1,990
Sept.	298	18	47	2,818
Oct.	442	22	50	3,088
Nov.	71	18	40	2,404
Dec.	3675	18.5	191	11,816
Total	..	..	..	99,344

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3405	46	204	12,643
Feb.	10800	214	831	48,176
Mar.	4710	207	496	30,770
Apr.	805	81	164	9,826
May	1100	48	103	6,422
June	900	26	61	3,682
July	60	20	40	2,460
Aug.	42	16	25	1,540
Sept.	42	13	21	1,242
Oct.	23	10	16	990
Nov.	20	10	13	782
Dec.	54	10	16	990
Total	..	..	..	119,523

Year 1957

Jan.	42	10	16	998
Feb.	2750	14	173	9,698
Mar.	1235	81	252	15,622
Apr.	760	36	58	3,452
May	31	16	25	1,534
June	23	13	19	1,132
July	26	13	18	1,098
Aug.	1880	13	57	3,508
Sept.	74	26	34	2,020
Oct.	174	16	23	1,442
Nov.	88	15	22	1,294
Dec.	190	13	20	1,218
Total	..	..	..	43,016

Year 1958

Jan.	83	16	25	1,572
Feb.	168	23	36	2,044
Mar.	827	23	63	3,924
Apr.	2,155	47	197	11,794
May	160	47	84	5,182
June	850	42	172	10,342
July	124	47	74	4,614
Aug.	520	42	70	4,348
Sept.	47	26	34	2,022
Oct.	26	18	23	1,410
Nov.	70	16	20	1,188
Dec.	737	16	37	2,316
Total	..	..	..	50,756

Year 1959

Jan.	23250	37	767	47,574
Feb.	3370	176	440	24,660
Mar.	2970	112	389	24,120
Apr.	380	62	143	8,582
May	62	37	49	3,054
June	112	31	41	2,460
July	890	34	74	4,608
Aug.	62	40	49	3,008
Sept.	840	43	96	5,778
Oct.	66	40	48	2,976
Nov.	6120	47	418	25,058
Dec.	385	70	99	6,168
Total	..	..	..	158,046

Year 1960

Jan.	2550	46	152	9,416
Feb.	815	70	182	10,570
Mar.	3615	104	428	26,546
Apr.	250	60	99	5,948
May	315	39	63	3,922
June	80	46	58	3,466
July	46	33	40	2,452
Aug.	36	26	30	1,834
Sept.	60	26	31	1,858
Oct.	201	7	18	1,108
Nov.	21	14	16	976
Dec.	21	9	13	794
Total	..	..	..	68,890

Year 1961

Jan.	116	7	18	1,138
Feb.	1260	11	114	6,376
Mar.	147	57	81	5,040
Apr.	126	57	76	4,584
May	105	33	50	3,076
June	580	75	147	8,822
July	85	40	50	3,112
Aug.	137	26	43	2,690
Sept.	2260	33	103	3,198
Oct.	244	33	74	4,612
Nov.	75	33	44	2,660
Dec.	408	40	84	5,190
Total	..	..	..	50,498

Year 1962

Jan.	1010	95	259	16,074
Feb.	1410	66	126	7,042
Mar.	870	57	184	11,416
Apr.	10400	93	758	45,500
May	1010	71	171	10,600
June	79	46	57	3,400
July	17000	40	564	34,900
Aug.	152	49	65	4,030
Sept.	135	33	41	2,440
Oct.	49	26	30	1,860
Nov.	182	24	30	1,810
Dec.	2290	22	209	13,000
Total	..	..	..	152,072

BIELSDOWN CREEK AT DORRIGO

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3180	102	411	25,500
Feb.	392	44	75	4,220
Mar.	1740	44	336	20,800
Apr.	3860	66	336	20,100
May	12600	113	694	43,000
June	2140	64	116	6,980
July	120	50	71	4,420
Aug.	50	34	39	2,410
Sept.	64	27	30	1,810
Oct.	540	27	81	5,000
Nov.	850	47	899	5,400
Dec.	2290	67	163	10,100
Total	..	..	..	149,740

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	275	47	71	4,400
Feb.	3120	42	156	9,080
Mar.	9440	118	501	31,000
Apr.	1400	142	282	16,900
May	142	47	78	4,860
June	47	30	36	2,180
July	42	20	24	1,520
Aug.	67	17	18	1,100
Sept.	17	14	15	888
Oct.	26	12	13	794
Nov.	38	12	12	740
Dec.	47	12	13	812
Total	..	..	..	74,274

Year 1965

Jan.	38	12	17	1,070
Feb.	67	12	18	996
Mar.	90	12	19	1,150
Apr.	56	12	15	924
May	38	12	13	776
June	275	12	24	1,410
July	12600	17	379	23,500
Aug.	118	47	62	3,840
Sept.	47	23	31	1,870
Oct.	229	17	25	1,560
Nov.	90	12	157	942
Dec.	7340	38	220	13,700
Total	..	..	..	51,738

Year 1966

Jan.	90	34	53	3,290
Feb.	158	26	38	2,110
Mar.	186	23	30	1,840
Apr.	252	20	26	1,540
May	23	17	17	1,070
June	287	17	23	1,400
July	14	14	14	868
Aug.	26	14	16	964
Sept.	17	17	17	1,020
Oct.	1025	17	30	1,860
Nov.	610	34	72	4,310
Dec.	167	27	32	2,010
Total	..	..	..	22,282

Year 1967

Jan.	9440	30	256	15,900
Feb.	1890	104	234	13,100
Mar.	1470	200	467	29,000
Apr.	2500	118	535	32,100
May	125	48	73	4,530
June	11330	44	1060	63,600
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

BLICKS RIVER AT DUNDURRABIN

LOCATION:	Latitude 30°12' Longitude 152°33'
PERIOD OF ESTABLISHMENT:	September 1948 to date
COMPLETE YEARS OF COMPUTED RECORDS:	18 years
ZERO OF GAUGE:	R.L. 76.14 Assumed Datum. Approximately 2,100 feet above sea level.
CATCHMENT AREA:	97 square miles
CONTROL:	Rock
EQUIPMENT:	Pressure recorder installed March 1953 Staff gauge, range 0 to 25 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 104
	(b) Maximum observation in cusecs : 10,500
	(c) Minimum observation in cusecs : 3
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	28,000 cusecs
MEAN DAILY DISCHARGE FOR 18 YEARS:	140 cusecs
MEAN ANNUAL DISCHARGE FOR 18 YEARS:	102,000 acre feet

BLICKS RIVER AT DUNDURRABIN

Year 1956					Year 1957				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	2580	18	172	10,640	Jan.	57	11	18	1,136
Feb.	6398	212	910	52,752	Feb.	1260	15	119	6,664
Mar.	1600	335	626	38,788	Mar.	840	48	103	6,414
Apr.	3100	150	429	25,732	Apr.	47	34	38	2,312
May	4300	117	311	19,316	May	34	19	23	1,406
June	1015	67	180	10,798	June	21	17	18	1,114
July	136	63	95	5,930	July	37	15	18	1,134
Aug.	64	44	53	3,294	Aug.	570	15	38	2,364
Sept.	48	35	41	2,466	Sept.	51	15	28	1,672
Oct.	44	22	32	1,956	Oct.	36	11	13	860
Nov.	240	15	21	1,278	Nov.	No Records			1,200*
Dec.	76	11	25	1,548	Dec.	No Records			1,600*
Total	..	..	..	174,498	Total	..	..	..	27,876*

Year 1958					Year 1959				
Jan.	217	15	30	1,878	Jan.	28000	31	1040	64,270
Feb.	1430	17	53	2,966	Feb.	5060	156	446	24,988
Mar.	600	12	38	2,361	Mar.	4100	173	417	25,872
Apr.	136	19	57	3,450	Apr.	600	128	250	15,022
May	45	15	27	1,658	May	120	75	95	5,888
June	485	13	93	5,554	June	75	46	62	3,744
July	79	19	35	2,192	July	217	39	85	5,290
Aug.	415	17	66	4,102	Aug.	75	34	47	2,908
Sept.	240	19	33	1,974	Sept.	180	46	77	4,616
Oct.	29	6	16	976	Oct.	146	34	53	3,284
Nov.	50	4	7.2	430	Nov.	3600	52	419	25,136
Dec.	1260	5	44	2,706	Dec.	1060	97	191	11,844
Total	..	..	..	30,247	Total	..	..	..	192,862

Year 1960					Year 1961				
Jan.	380	60	96	5,962	Jan.	67	5	13	826
Feb.	240	55	80	4,616	Feb.	1010	11	75	4,228
Mar.	1160	70	193	11,964	Mar.	61	20	32	2,000
Apr.	76	40	58	3,468	Apr.	49	20	33	1,960
May	112	27	46	2,846	May	38	13	19	1,190
June	84	34	52	3,146	June	139	28	53	3,160
July	60	25	32	1,966	July	88	17	26	1,620
Aug.	67	15	23	1,428	Aug.	150	17	37	2,320
Sept.	29	11	14	828	Sept.	150	13	48	2,900
Oct.	75	6	12	770	Oct.	450	23	86	5,340
Nov.	39	5	8.4	502	Nov.	164	28	56	3,390
Dec.	560	4	22	1,336	Dec.	1560	38	165	10,200
Total	..	..	..	38,832	Total	..	..	..	39,134

Year 1962					Year 1963				
Jan.	1630	139	292	18,100	Jan.	4540	164	686	42,500
Feb.	640	74	128	7,180	Feb.	425	79	122	6,820
Mar.	600	74	188	11,700	Mar.	380	62	126	7,780
Apr.	6700	104	486	29,100	Apr,	1010	56	157	9,410
May	290	62	107	6,650	May	20800	180	1040	64,600
June	56	31	40	2,400	June	720	100	162	9,700
July	12800	23	494	30,600	July	180	56	91	5,620
Aug.	415	70	133	8,250	Aug.	50	35	42	2,610
Sept.	217	40	57	3,410	Sept.	120	28	38	2,270
Oct.	150	23	38	2,370	Oct.	560	40	76	4,680
Nov.	560	19	52	3,120	Nov.	350	38	69	4,150
Dec.	2500	19	324	20,100	Dec.	1060	61	214	13,300
Total	..	..	..	142,980	Total	..	..	..	173,440

BLICKS RIVER AT DUNDURRABIN

Year 1964					Year 1965				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	600	55	82	5,100	Jan.	640	9	38	2,380
Feb.	600	28	70	4,080	Feb.	415	23	37	2,060
Mar.	4540	88	318	19,700	Mar.	28	8	12	732
Apr.	1500	100	221	13,300	Apr.	15	7.0	8.9	534
May	150	67	94	5,840	May	17	7	8.6	534
June	104	43	60	3,590	June	38	6.0	10	618
July	96	28	43	2,660	July	5480	9	176	10,900
Aug.	104	17	26	1,600	Aug.	81	17	41	2,520
Sept.	33	25	19	1,110	Sept.	38	11	22	1,350
Oct.	61	13	20	1,240	Oct.	20	11	12	720
Nov.	265	11	25	1,490	Nov.	11	11	11	660
Dec.	112	9	13	824	Dec.	2170	28	144	8,930
Total	..	..	..	60,534	Total	..	..	..	31,938

Year 1966					Year 1967				
Jan.	164	20	28	1,760	Jan.	5340	28	281	17,400
Feb.	55	15	21	1,200	Feb.	485	74	137	7,680
Mar.	104	9	14	890	Mar.	880	112	302	18,700
Apr.	104	7	12	708	Apr.	1260	104	380	22,800
May	55	9	11	682	May	104	43	68	4,190
June	43	8	23	788	June	26300	38	983	59,000
July	6	5	5	326	July				
Aug.	104	5	14	894	Aug.				
Sept.	49	8	19	1,120	Sept.				
Oct.	129	13	22	1,370	Oct.				
Nov.	1110	15	65	3,870	Nov.				
Dec.	720	9	26	1,600	Dec.				
Total	..	..	..	15,208	Total				

NYMBOIDA RIVER AT NYMBOIDA

LOCATION:	Latitude 29°59' Longitude 152°43'
PERIOD OF ESTABLISHMENT:	December 1908 to date
COMPLETE YEARS OF COMPUTED RECORDS:	58 years
ZERO OF GAUGE:	R.L. 600.56 Grafton Standard Water Supply Datum.
CATCHMENT AREA:	640 square miles
CONTROL:	Gravel Bar
EQUIPMENT:	Float recorder installed December, 1954 Staff gauge, range 0 to 40 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 273
	(b) Maximum observation in cusecs : 122,000
	(c) Minimum observation in cusecs : 35
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	198,000 cusecs
MEAN DAILY DISCHARGE FOR 58 YEARS:	908 cusecs
MEAN ANNUAL DISCHARGE FOR 58 YEARS:	663,000 acre feet

NYMBOIDA RIVER AT NYMBOIDA

Year 1909

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	380	182	244	15,144
Feb.	970	170	315	17,710
Mar.	4390	345	904	56,040
Apr.	1020	250	404	24,216
May	310	207	254	15,734
June	220	147	182	10,938
July	207	118	143	8,870
Aug.	118	86	102	6,312
Sept.	109	72	91	5,466
Oct.	93	66	78	4,866
Nov.	535	54	142	8,502
Dec.	2290	79	434	26,908
Total	..	..	..	200,706

Year 1910

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	14560	250	1876	116,296
Feb.	820	310	477	26,694
Mar.	8150	295	2331	144,530
Apr.	2090	720	1478	88,660
May	845	310	477	29,572
June	3230	310	607	36,400
July	345	220	259	16,070
Aug.	195	127	169	10,456
Sept.	195	86	105	6,306
Oct.	380	79	118	7,310
Nov.	580	93	186	11,174
Dec.	3730	147	464	28,738
Total	..	..	..	522,206

Year 1911

Jan.	13470	195	2503	155,200
Feb.	14560	1420	4870	272,720
Mar.	5400	795	1830	113,444
Apr.	771	380	533	31,992
May	455	265	363	22,494
June	250	195	227	13,586
July	1470	195	349	21,650
Aug.	11440	170	888	55,080
Sept.	820	265	380	22,850
Oct.	670	195	276	17,130
Nov.	820	158	255	15,296
Dec.	820	93	342	21,174
Total	..	..	..	762,616

Year 1912

Jan.	580	127	204	12,656
Feb.	4970	66	573	33,222
Mar.	5290	345	950	58,946
Apr.	495	220	294	17,652
May	220	170	188	11,628
June	10960	159	799	47,932
July	2000	220	469	29,084
Aug.	1420	310	530	31,810
Sept.	310	158	206	12,364
Oct.	220	93	135	8,374
Nov.	170	93	117	7,024
Dec.	720	101	166	10,278
Total	..	..	..	280,970

Year 1913

Jan.	235	93	154	9,566
Feb.	310	127	191	10,718
Mar.	147	93	116	7,222
Apr.	19400	109	2538	152,286
May	5630	970	1997	123,800
June	1730	558	1159	69,536
July	1730	345	690	42,800
Aug.	363	195	266	16,496
Sept.	1020	147	228	13,698
Oct.	1020	170	437	27,104
Nov.	195	170	174	10,416
Dec.	415	147	231	14,346
Total	..	..	..	497,988

Year 1914

Jan.	580	127	236	14,626
Feb.	4970	127	621	34,796
Mar.	8710	720	2090	129,590
Apr.	1630	127	867	52,032
May	535	127	311	19,292
June	30940	147	1991	119,480
July	6545	250	952	59,028
Aug.	558	310	399	24,722
Sept.	720	250	324	19,420
Oct.	19400	250	3116	193,220
Nov.	10490	720	2487	149,200
Dec.	1420	380	937	58,100
Total	..	..	..	873,506

Year 1915

Jan.	1120	195	497	30,786
Feb.	1630	220	533	29,860
Mar.	495	195	286	17,760
Apr.	345	170	217	13,028
May	670	93	303	18,780
June	345	109	148	8,888
July	109	93	98	6,070
Aug.	118	72	86	5,336
Sept.	109	60	69	4,146
Oct.	49	35	42	2,634
Nov.	220	27	45	2,678
Dec.	195	54	100	6,222
Total	..	..	..	146,188

Year 1916

Jan.	170	54	81	5,018
Feb.	2900	66	376	21,828
Mar.	820	127	292	18,084
Apr.	13470	415	2025	121,496
May	22060	397	2072	128,468
June	455	207	314	18,824
July	195	170	185	11,464
Aug.	415	170	209	12,934
Sept.	170	147	151	9,054
Oct.	455	127	303	18,762
Nov.	310	137	184	11,020
Dec.	3770	415	1482	91,896
Total	..	..	..	468,848

NYMBOIDA RIVER AT NYMBOIDA

Year 1917

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	3930	345	970	60,126
Feb.	3890	580	1342	75,164
Mar.	2200	435	813	50,404
Apr.	435	150	294	17,550
May	430	169	253	15,676
June	205	154	178	10,696
July	179	115	142	8,830
Aug.	124	95	108	6,686
Sept.	210	77	122	7,306
Oct.	137	70	99	6,144
Nov.	39190	77	3159	189,570
Dec.	1120	365	649	40,240
Total	..	..	..	488,392

Year 1918

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	4050	465	1092	67,716
Feb.	830	335	500	28,146
Mar.	12600	580	1220	75,660
Apr.	2740	483	836	50,190
May	1750	430	775	48,028
June	430	210	314	18,848
July	267	205	220	13,614
Aug.	225	150	184	11,380
Sept.	155	123	138	8,268
Oct.	169	99	116	7,208
Nov.	119	70	92	5,504
Dec.	119	64	80	4,990
Total	..	..	..	339,552

Year 1919

Jan.	107	61	77	4,774
Feb.	150	57	81	4,510
Mar.	48190	150	2086	129,344
Apr.	2170	350	793	47,556
May	8570	520	1028	63,706
June	3440	500	1184	70,950
July	500	293	386	23,930
Aug.	341	225	282	17,492
Sept.	225	147	199	11,934
Oct.	315	136	169	10,482
Nov.	225	105	137	8,216
Dec.	805	125	260	16,136
Total	..	..	..	409,030

Year 1920

Jan.	3440	540	1091	67,642
Feb.	1730	385	751	43,570
Mar.	862	385	497	30,790
Apr.	1040	377	524	31,456
May	760	350	474	29,406
June	2170	300	568	34,058
July	715	315	500	30,976
Aug.	726	315	423	26,234
Sept.	520	300	373	22,406
Oct.	4300	255	702	43,522
Nov.	4770	315	963	57,806
Dec.	550	285	396	24,560
Total	..	..	..	442,426

Year 1921

Jan.	9580	255	1138	70,576
Feb.	3580	760	1159	64,916
Mar.	3890	670	1334	82,620
Apr.	3890	782	1594	95,630
May	52000	580	6518	404,138
June	14560	850	2687	161,224
July	81300	1040	5986	371,160
Aug.	2000	540	1084	67,194
Sept.	1580	500	720	43,266
Oct.	1330	350	523	32,402
Nov.	540	259	343	20,564
Dec.	12940	225	1452	90,048
Total	..	..	..	1,503,738

Year 1922

Jan.	8290	430	1426	88,464
Feb.	29380	430	4609	258,098
Mar.	5800	603	1521	94,310
Apr.	580	341	426	25,548
May	1330	240	485	30,036
June	715	200	437	26,226
July	20380	315	1331	82,516
Aug.	6750	420	993	61,548
Sept.	26100	350	1929	115,754
Oct.	827	350	516	31,996
Nov.	385	233	304	18,250
Dec.	420	197	287	17,772
Total	..	..	..	850,518

Year 1923

Jan.	1355	171	323	20,032
Feb.	270	147	184	10,282
Mar.	1580	147	342	21,232
Apr.	10030	204	2468	148,102
May	2840	368	867	53,748
June	540	240	301	18,038
July	625	171	225	13,978
Aug.	1630	204	421	26,112
Sept.	1405	262	410	24,642
Oct.	625	177	240	14,890
Nov.	178	105	134	8,042
Dec.	270	75	137	8,500
Total	..	..	..	367,598

Year 1924

Jan.	385	75	145	9,000
Feb.	540	120	255	14,796
Mar.	500	136	253	15,674
Apr.	875	194	323	19,366
May	285	159	206	12,764
June	8990	147	829	49,722
July	8290	300	1257	77,920
Aug.	990	315	507	31,458
Sept.	403	211	262	15,704
Oct.	285	125	163	10,124
Nov.	1630	276	438	26,280
Dec.	540	225	323	20,010
Total	..	..	..	302,818

NYMBOIDA RIVER AT NYMBOIDA

Year 1925

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1230	255	399	24,720
Feb.	1310	285	567	31,766
Mar.	8720	250	1314	81,464
Apr.	1935	491	883	53,008
May	21500	483	2451	151,962
June	30320	392	3947	236,798
July	1763	392	750	46,482
Aug.	1500	305	426	26,384
Sept.	400	196	252	15,102
Oct.	203	152	174	10,754
Nov.	3790	180	822	49,298
Dec.	8720	340	781	48,406
Total	..	..	..	776,144

Year 1926

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	8170	523	1320	81,812
Feb.	523	293	378	21,184
Mar.	3010	223	386	23,920
Apr.	1416	285	549	32,966
May	5240	245	712	44,152
June	1025	393	503	30,174
July	5800	377	1023	63,452
Aug.	381	240	295	18,276
Sept.	250	170	202	12,128
Oct.	185	115	143	8,870
Nov.	110	70	88	5,300
Dec.	1625	58	339	21,030
Total	..	..	..	363,264

Year 1927

Jan.	39960	228	2514	155,864
Feb.	2039	430	764	42,700
Mar.	1405	419	579	35,874
Apr.	12900	474	1241	74,444
May	469	288	368	22,830
June	439	237	270	16,146
July	227	165	191	11,862
Aug.	160	115	137	8,474
Sept.	152	86	105	6,306
Oct.	700	88	168	10,414
Nov.	5075	115	527	31,608
Dec.	6630	400	836	51,816
Total	..	..	..	468,398

Year 1928

Jan.	6630	370	1575	97,650
Feb.	39090	827	7673	445,034
Mar.	2125	720	1185	73,450
Apr.	15800	840	3467	208,032
May	1975	650	1067	66,166
June	34590	505	2180	130,786
July	2950	720	1269	78,678
Aug.	710	401	569	35,308
Sept.	406	257	319	19,138
Oct.	284	170	229	14,228
Nov.	375	134	173	10,398
Dec.	820	128	233	14,440
Total	..	..	..	1,193,308

Year 1929

Jan.	2150	117	414	25,660
Feb.	16800	257	4329	242,414
Mar.	31825	445	2412	149,524
Apr.	25020	393	2488	149,260
May	660	384	492	30,478
June	16800	287	1075	64,514
July	4390	410	861	53,378
Aug.	600	306	372	23,068
Sept.	10320	257	765	45,910
Oct.	16800	333	1420	88,056
Nov.	620	280	422	25,340
Dec.	295	174	228	14,150
Total	..	..	..	895,778

Year 1930

Jan.	4670	170	461	28,572
Feb.	1155	227	399	22,318
Mar.	12810	265	1353	83,908
Apr.	7380	650	1362	81,698
May	14555	760	1818	112,740
June	11760	840	2547	152,844
July	3220	727	1525	94,582
Aug.	685	300	503	31,216
Sept.	410	212	295	17,728
Oct.	400	205	262	16,240
Nov.	380	148	184	11,054
Dec.	233	96	136	8,428
Total	..	..	..	661,328

Year 1931

Jan.	620	96	168	10,420
Feb.	10620	120	1588	88,910
Mar.	7120	300	901	55,862
Apr.	9280	352	1396	83,756
May	2050	631	1125	69,744
June	840	380	542	32,512
July	885	282	403	24,996
Aug.	727	192	265	16,252
Sept.	205	138	171	10,284
Oct.	143	106	122	7,578
Nov.	665	143	207	12,408
Dec.	16600	143	1272	78,860
Total	..	..	..	491,582

Year 1932

Jan.	665	199	327	20,264
Feb.	380	158	212	12,294
Mar.	158	116	128	7,958
Apr.	930	145	267	16,038
May	370	158	224	13,866
June	440	169	242	14,514
July	750	163	225	13,954
Aug.	193	124	144	8,908
Sept.	18870	116	1380	82,796
Oct.	805	273	464	28,776
Nov.	2770	222	547	32,804
Dec.	467	204	294	18,206
Total	..	..	..	270,378

NYMBOIDA RIVER AT NYMBOIDA

Year 1933

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	8370	145	1461	90,590
Feb.	1800	330	645	36,116
Mar.	560	236	314	19,450
Apr.	4690	242	547	32,842
May	255	161	203	12,586
June	29280	156	3020	181,222
July	58860	455	3177	196,982
Aug.	2265	525	939	58,230
Sept.	2590	322	561	33,664
Oct.	24780	545	2004	124,274
Nov.	3720	655	1377	82,604
Dec.	3880	830	1687	104,570
Total	..	..	..	973,130

Year 1934

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	7380	750	1390	98,606
Feb.	21500	840	2663	149,050
Mar.	1820	710	1133	70,216
Apr.	6030	1000	2249	134,950
May	22650	860	2170	134,568
June	910	505	660	39,592
July	10320	395	886	54,930
Aug.	3500	595	1098	68,084
Sept.	4300	666	1334	80,038
Oct.	700	243	547	33,916
Nov.	655	357	471	28,244
Dec.	1670	348	768	47,642
Total	..	..	..	939,836

Year 1935

Jan.	3830	465	926	57,426
Feb.	3308	415	923	51,690
Mar.	6390	590	1250	77,506
Apr.	765	330	456	27,368
May	345	249	286	17,760
June	249	186	207	12,414
July	828	173	308	19,115
Aug.	210	161	180	11,182
Sept.	1427	151	288	17,260
Oct.	330	162	216	13,428
Nov.	185	134	153	9,192
Dec.	680	134	248	15,394
Total	..	..	..	329,736

Year 1936

Jan.	915	161	393	24,368
Feb.	3360	210	587	34,054
Mar.	15610	650	1992	123,524
Apr.	4190	485	1019	61,128
May	1500	345	532	32,954
June	680	294	405	24,302
July	315	204	253	15,692
Aug.	217	139	173	10,720
Sept.	285	119	156	9,380
Oct.	129	79	103	6,380
Nov.	92	53	66	3,988
Dec.	9430	30	311	19,282
Total	..	..	..	365,772

Year 1937

Jan.	9430	162	603	37,354
Feb.	31100	210	3760	210,540
Mar.	51900	1031	3434	212,920
Apr.	1850	460	756	45,360
May	450	265	343	21,254
June	2335	257	453	27,180
July	450	274	332	20,606
Aug.	335	233	272	16,838
Sept.	335	180	221	13,288
Oct.	885	163	244	15,112
Nov.	5810	335	1530	91,820
Dec.	3220	575	1091	67,652
Total	..	..	..	779,924

Year 1938

Jan.	39380	410	3211	199,084
Feb.	37940	830	2742	153,582
Mar.	6510	495	838	51,940
Apr.	21280	655	2712	162,702
May	12100	535	1361	84,400
June	1420	615	830	49,780
July	655	415	504	31,250
Aug.	455	305	367	22,780
Sept.	340	243	285	17,116
Oct.	340	243	277	17,266
Nov.	740	215	294	17,640
Dec.	495	177	236	14,636
Total	..	..	..	822,176

Year 1939

Jan.	1320	123	284	17,582
Feb.	375	143	207	11,618
Mar.	39,670	143	2790	173,000
Apr.	2190	655	1123	67,390
May	910	415	551	34,168
June	700	340	410	24,580
July	700	273	320	19,862
Aug.	2810	175	349	21,642
Sept.	175	130	152	9,114
Oct.	5590	200	630	39,086
Nov.	1770	375	526	31,546
Dec.	2690	255	566	35,064
Total	..	..	..	484,652

Year 1940

Jan.	570	255	397	24,600
Feb.	920	175	313	18,140
Mar.	43600	130	2960	183,534
Apr.	980	285	394	23,630
May	315	204	251	15,586
June	315	156	196	11,662
July	204	134	159	9,854
Aug.	380	114	159	9,668
Sept.	134	87	109	6,518
Oct.	105	64	82	5,068
Nov.	71	38	55	3,302
Dec.	1660	64	332	20,574
Total	..	..	..	332,136

NYMBOIDA RIVER AT NYMBOIDA

Year 1941					Year 1942				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	4800	156	923	57,198	Jan.	96	32	48	2,994
Feb.	4800	450	992	55,550	Feb.	7510	64	1312	73,448
Mar.	2630	385	800	49,584	Mar.	2340	255	647	40,056
Apr.	530	350	426	25,590	Apr.	485	204	288	17,292
May	350	225	265	16,420	May	230	156	174	10,784
June	765	230	361	21,660	June	450	145	187	11,220
July	485	179	235	14,620	July	560	134	203	12,596
Aug.	179	134	156	9,702	Aug.	156	105	132	8,208
Sept.	134	87	109	6,538	Sept.	114	71	93	5,552
Oct.	145	79	90	5,594	Oct.	9430	64	939	58,208
Nov.	380	71	116	6,978	Nov.	10940	285	1126	67,560
Dec.	96	38	55	3,404	Dec.	10620	285	1037	64,290
Total	..	..	..	272,838	Total	..	..	..	372,208

Year 1943					Year 1944				
Jan.	6150	415	1531	94,950	Jan.	26850	625	3167	196,364
Feb.	560	285	389	21,790	Feb.	2000	400	859	49,830
Mar.	705	195	279	17,326	Mar.	1480	365	608	37,730
Apr.	790	207	336	20,168	Apr.	830	305	428	25,690
May	3230	195	441	27,332	May	305	171	225	13,964
June	940	280	438	26,260	June	220	109	147	8,840
July	280	164	208	12,882	July	1190	109	383	23,748
Aug.	860	140	233	14,476	Aug.	48190	171	2393	148,352
Sept.	860	190	345	20,719	Sept.	1420	438	675	40,526
Oct.	1030	205	335	20,740	Oct.	438	214	291	18,044
Nov.	8010	235	1007	60,432	Nov.	205	122	177	10,642
Dec.	14010	415	1762	109,220	Dec.	180	122	146	9,032
Total	..	..	..	446,295	Total	..	..	..	582,762

Year 1945					Year 1946				
Jan.	362	80	156	9,680	Jan.	2500	138	351	21,752
Feb.	362	64	147	8,236	Feb.	10490	150	1106	61,914
Mar.	287	80	137	8,524	Mar.	137000	504	6173	382,762
Apr.	785	122	214	12,818	Apr.	5700	512	1536	92,178
May	180	149	156	9,672	May	583	273	374	23,194
June	96000	250	5155	309,294	June	273	168	218	13,102
July	20270	470	1840	114,068	July	187	135	158	9,796
Aug.	840	310	496	30,770	Aug.	135	90	119	7,380
Sept.	371	228	271	16,270	Sept.	352	90	128	7,698
Oct.	310	104	197	12,212	Oct.	168	76	103	6,364
Nov.	1520	104	316	18,982	Nov.	135	63	93	5,564
Dec.	802	175	323	20,000	Dec.	187	51	95	5,908
Total	..	..	..	570,526	Total	..	..	..	638,612

Year 1947					Year 1948				
Jan.	11300	51	770	47,748	Jan.	1450	465	757	46,950
Feb.	27700	413	2572	144,064	Feb.	680	285	427	24,750
Mar.	34590	805	2925	181,358	Mar.	14650	465	2503	155,158
Apr.	11260	805	2329	139,740	Apr.	1800	400	734	44,950
May	805	500	621	38,520	May	40540	500	2580	159,988
June	500	285	339	20,320	June	57500	430	4713	282,776
July	285	215	233	14,420	July	1470	580	937	58,100
Aug.	400	170	207	12,880	Aug.	580	280	369	22,870
Sept.	400	150	214	12,850	Sept.	280	220	232	13,920
Oct.	190	94	152	9,452	Oct.	250	127	195	12,096
Nov.	1165	94	336	20,134	Nov.	250	127	151	9,084
Dec.	5020	565	1700	105,420	Dec.	170	109	135	8,372
Total	..	..	..	746,906	Total	..	..	..	839,014

NYMBOIDA RIVER AT NYMBOIDA

Year 1949

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	6580	127	487	30,182
Feb.	1270	147	475	26,584
Mar.	23900	820	4347	269,510
Apr.	3000	580	1242	74,490
May	770	380	492	30,510
June	1120	310	452	27,100
July	7830	250	864	53,614
Aug.	56600	345	2351	145,716
Sept.	3250	720	1499	89,988
Oct.	6250	580	1137	70,520
Nov.	5410	415	840	50,382
Dec.	1170	415	663	41,130
Total	..	..	..	909,726

Year 1950

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	87600	280	2903	180,014
Feb.	37300	720	3826	214,270
Mar.	6000	970	2165	134,214
Apr.	6000	1420	2107	126,402
May	1680	495	965	59,800
June	172000	415	10514	630,862
July	33500	2360	7358	456,216
Aug.	13900	1400	3601	223,228
Sept.	3000	979	1426	85,556
Oct.	5250	879	2123	131,634
Nov.	11800	879	2526	151,552
Dec.	5000	929	1826	113,198
Total	..	..	..	2,506,946

Year 1951

Jan.	No Records			250,000*
Feb.	11250	1150	2424	135,790
Mar.	15100	1200	3501	217,088
Apr.	2640	640	1088	65,300
May	840	400	539	33,406
June	14600	400	1663	99,782
July	640	365	477	29,612
Aug.	640	275	339	21,046
Sept.	275	188	228	13,698
Oct.	275	138	184	11,400
Nov.	188	78	115	6,888
Dec.	115	64	83	5,140
Total	..	..	..	889,150*

Year 1952

Jan.	188	39	74	4,598
Feb.	2850	30	253	14,698
Mar.	4160	245	575	35,664
Apr.	610	245	370	22,190
May	275	191	225	13,936
June	5950	140	412	24,692
July	1100	165	251	15,578
Aug.	47264	305	3157	195,746
Sept.	685	296	432	25,902
Oct.	610	245	345	21,374
Nov.	275	158	208	12,466
Dec.	218	100	133	8,258
Total	..	..	..	395,102

Year 1953

Jan.	2070	140	443	27,492
Feb.	18333	231	2700	151,198
Mar.	22400	685	2263	140,300
Apr.	1470	575	798	47,858
May	685	275	493	30,576
June	276	191	225	13,500
July	178	157	165	10,240
Aug.	158	140	143	8,890
Sept.	140	100	116	6,940
Oct.	140	85	102	6,294
Nov.	93	47	65	3,914
Dec.	100	40	67	4,160
Total	..	..	..	451,362

Year 1954

Jan.	245	55	121	7,506
Feb.	198000	110	6758	378,450
Mar.	1620	450	929	57,608
Apr.	506	332	406	24,348
May	1529	285	558	34,618
June	2270	370	739	44,358
July	39700	351	3375	209,272
Aug.	1620	450	817	50,628
Sept.	12180	316	1285	77,120
Oct.	13000	1220	2896	179,560
Nov.	19300	585	3077	184,624
Dec.	No Records			48,500*
Total	..	..	..	1,296,592*

Year 1955

Jan.	No Records			78,000*
Feb.	No Records			114,000*
Mar.	37100	1270	3489	216,298
Apr.	45064	1170	3851	231,080
May	35200	917	2706	167,790
June	1295	585	840	50,374
July	1070	220	345	32,692
Aug.	390	271	326	20,094
Sept.	2000	244	353	21,184
Oct.	1095	220	332	20,560
Nov.	450	196	269	16,130
Dec.	12500	176	1261	78,182
Total	..	..	..	1,046,384*

Year 1956

Jan.	56300	352	2385	147,880
Feb.	65800	2340	8341	483,790
Mar.	17400	2810	5482	339,910
Apr.	9040	1030	2653	159,200
May	12200	730	3016	186,970
June	No Records			105,000*
July	820	437	579	35,910
Aug.	437	168	323	20,044
Sept.	352	253	297	17,830
Oct.	253	183	220	13,656
Nov.	216	126	158	9,456
Dec.	373	126	188	11,660
Total	..	..	..	1,531,306*

* Estimated

NYMBOIDA RIVER AT NYMBOIDA

Year 1957

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	272	105	157	9,714
Feb.	10700	139	1302	72,900
Mar.	7650	482	1506	93,342
Apr.	1360	272	378	22,706
May	272	183	210	13,006
June	183	105	152	9,094
July	234	105	134	8,284
Aug.	7880	105	382	23,672
Sept.	482	126	190	11,414
Oct.	460	87	117	7,236
Nov.	415	66	137	8,238
Dec.	730	66	117	7,264
Total	..	..	..	286,870

Year 1958

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	505	79	164	10,158
Feb.	1390	153	302	16,918
Mar.	2060	126	555	34,418
Apr.	7440	234	1048	62,884
May	642	139	281	17,448
June	4630	126	1036	62,150
July	790	253	396	24,554
Aug.	8640	234	644	39,916
Sept.	394	168	233	13,980
Oct.	272	126	182	11,304
Nov.	253	105	138	8,306
Dec.	1090	105	302	18,730
Total	..	..	..	320,766

Year 1959

Jan.	133600	234	5352	331,804
Feb.	43100	1360	3232	180,980
Mar.	31300	1360	3288	203,852
Apr.	4760	770	1798	107,890
May	770	504	617	38,226
June	1200	335	430	25,812
July	850	315	486	30,130
Aug.	458	297	356	22,058
Sept.	3180	317	652	39,106
Oct.	630	330	402	24,920
Nov.	29000	390	3112	186,730
Dec.	3910	660	1352	83,850
Total	..	..	..	1,275,358

Year 1960

Jan.	8180	485	1001	62,090
Feb.	3130	510	941	54,580
Mar.	17600	720	2398	148,700
Apr.	930	460	659	39,520
May	1685	330	468	29,020
June	540	330	398	23,890
July	350	250	300	18,580
Aug.	330	158	214	13,254
Sept.	212	93	129	7,716
Oct.	315	73	140	8,654
Nov.	133	70	93	5,578
Dec.	360	40	89	5,538
Total	..	..	..	417,120

Year 1961

Jan.	550	46	141	8,710
Feb.	16000	87	787	44,100
Mar.	810	275	410	25,500
Apr.	600	275	384	23,100
May	520	120	247	15,300
June	5780	370	1020	61,400
July	520	213	298	18,500
Aug.	1310	213	313	19,400
Sept.	7200	179	560	33,600
Oct.	2920	213	630	39,100
Nov.	2160	290	604	36,200
Dec.	10200	415	1620	100,000
Total	..	..	..	424,910

Year 1962

Jan.	13600	980	2300	144,000
Feb.	7200	370	1030	57,600
Mar.	6040	370	1250	77,400
Apr.	51000	860	5720	343,000
May	5260	465	1030	64,100
June	575	330	420	25,200
July	94800	290	3900	242,000
Aug.	4880	500	875	54,200
Sept.	800	360	450	27,000
Oct.	620	310	360	22,300
Nov.	620	220	290	17,400
Dec.	20700	200	2150	134,000
Total	..	..	..	1,208,200

Year 1963

Jan.	26900	980	4640	288,000
Feb.	1930	620	898	50,300
Mar.	9450	620	1840	114,000
Apr.	26600	500	2470	148,000
May	89900	1490	7080	439,000
June	8400	665	1090	65,400
July	1120	462	645	40,000
Aug.	No Records			24,000*
Sept.	2160	230	349	20,900
Oct.	2810	295	524	32,500
Nov.	2920	370	574	34,500
Dec.	7800	415	1520	94,500
Total	..	..	..	1,351,100*

Year 1964

Jan.	2295	415	572	35,500
Feb.	2070	370	677	39,300
Mar.	No Records			170,000*
Apr.	No Records			115,000*
May	1120	435	643	39,900
June	565	295	366	22,000
July	460	230	288	17,900
Aug.	410	180	212	13,130
Sept.	215	150	176	10,600
Oct.	215	100	143	8,870
Nov.	1190	100	190	11,400
Dec.	213	77	118	7,300
Total	..	..	..	490,900*

* Estimated.

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NYMBOIDA RIVER AT NYMBOIDA

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	860	77	168	10,400
Feb.	290	120	199	11,200
Mar.	370	77	133	8,230
Apr.	290	60	101	6,050
May	179	68	100	6,180
June	740	60	126	7,550
July	48100	108	1820	113,000
Aug.	625	267	397	24,600
Sept.	340	165	261	15,600
Oct.	440	123	175	10,800
Nov.	9300	40	106	6,368
Dec.	10800	515	2106	131,000
Total	..	..	..	350,978

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	600	123	369	22,900
Feb.	1070	100	307	17,200
Mar.	465	192	258	16,000
Apr.	930	125	209	12,600
May	230	125	159	9,870
June	1380	110	210	12,600
July	157	85	123	7,600
Aug.	590	98	177	11,000
Sept.	565	108	166	9,950
Oct.	785	135	298	18,500
Nov.	11800	225	856	51,400
Dec.	355	120	192	11,900
Total	..	..	..	201,520

Year 1967

Jan.	96900	287	2072	128,000
Feb.	7950	630	1503	84,200
Mar.	7650	800	2670	166,000
Apr.	8100	860	2415	145,000
May	860	392	580	36,000
June	103500	370	8800	528,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

LITTLE RIVER AT BROADMEADOWS

LOCATION:	Latitude 29°51' Longitude 152° 18'
PERIOD OF ESTABLISHMENT:	October, 1945 to date
COMPLETE YEARS OF COMPUTED RECORDS:	19 years
ZERO OF GAUGE:	R.L. 60.81 Assumed Datum. Approximately 1,000 feet above sea level.
CATCHMENT AREA:	1,030 square miles
CONTROL:	Rock and gravel
EQUIPMENT:	Staff gauge, range 0 to 30 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 91
	(b) Maximum observation in cusecs : 3,002
	(c) Minimum observation in cusecs : 2
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	81,000 cusecs
MEAN DAILY DISCHARGE FOR 19 YEARS:	516 cusecs
MEAN ANNUAL DISCHARGE FOR 19 YEARS:	376,000 acre feet.

LITTLE RIVER AT BROADMEADOWS

Year 1945					Year 1946				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	5740	7	193	11,942
Feb.	..	..	..	..	Feb.	450	14	131	7,362
Mar.	..	..	..	..	Mar.	No Records			350,000*
Apr.	..	..	..	..	Apr.	No Records			18,000*
May	..	..	..	..	May	No Records			7,000*
June	..	..	..	..	June	44	27	33	1,972
July	..	..	..	..	July	47	16	34	2,090
Aug.	..	..	..	..	Aug.	16	5	9	576
Sept.	..	..	..	..	Sept.	354	3	43	2,576
Oct.	..	..	..	..	Oct.	No Records			3,500*
Nov.	319	6	63	3,768	Nov.	206	5	34	2,056
Dec.	585	21	89	5,506	Dec.	62	6	17	1,040
Total	..	..	..	..	Total	..	..	..	408,114*

Year 1947					Year 1948				
Jan.	860	3	133	8,268	Jan.	3295	118	585	36,260
Feb.	4400	94	1038	58,152	Feb.	222	57	97	5,604
Mar.	27400	153	1540	95,502	Mar.	1560	153	538	33,334
Apr.	4680	261	755	45,312	Apr.	336	81	159	9,526
May	247	126	167	10,334	May	4080	95	485	30,040
June	134	62	95	5,730	June	13720	88	1210	72,588
July	62	56	60	3,690	July	627	174	310	19,242
Aug.	568	40	119	7,382	Aug.	438	102	153	9,462
Sept.	2380	81	439	26,310	Sept.	780	62	143	8,574
Oct.	385	51	114	7,074	Oct.	134	9	47	2,904
Nov.	1040	30	141	8,494	Nov.	587	12	93	5,594
Dec.	1495	153	721	44,684	Dec.	306	9	68	4,246
Total	..	..	..	320,932	Total	..	..	..	237,374

Year 1949					Year 1950				
Jan.	3190	22	316	19,590	Jan.	14600	62	1253	77,714
Feb.	1860	15	290	16,234	Feb.	29100	198	2398	134,290
Mar.	2380	276	897	55,622	Mar.	1012	306	534	33,126
Apr.	548	118	245	14,686	Apr.	2875	222	534	33,114
May	247	75	124	7,668	May	247	153	201	12,444
June	1630	82	229	13,740	June	65200	143	3832	229,890
July	8990	75	830	51,470	July	27400	1150	6164	382,184
Aug.	17000	163	1353	83,874	Aug.	4810	522	1228	76,158
Sept.	2290	306	808	48,462	Sept.	2800	357	865	51,880
Oct.	6820	306	1591	98,630	Oct.	5210	714	2019	125,202
Nov.	6200	163	967	58,036	Nov.	12116	438	2065	123,888
Dec.	1940	88	420	26,056	Dec.	1287	204	493	30,580
Total	..	..	..	494,068	Total	..	..	..	1,310,470

Year 1951					Year 1952				
Jan.	No Records				Jan.	228	0	34	2,100
Feb.	3000	396	1057	59,170	Feb.	2290	0	282	16,370
Mar.	6350	321	948	58,804	Mar.	2610	72	407	25,232
Apr.	357	120	225	13,476	Apr.	820	72	278	16,670
May	438	86	156	9,684	May	357	72	125	7,780
June	1930	102	565	33,892	June	1370	48	312	18,710
July	522	120	220	13,654	July	480	86	151	9,354
Aug.	820	120	235	14,580	Aug.	24000	228	1439	89,212
Sept.	120	36	63	3,770	Sept.	714	138	272	16,294
Oct.	66	4	27	1,656	Oct.	2610	120	528	32,762
Nov.	3	0	0.8	46	Nov.	875	60	171	10,278
Dec.	23	0	2.5	156	Dec.	389	8	55	3,420
Total	..	..	..	..	Total	..	..	..	248,182

LITTLE RIVER AT BROADMEADOWS

Year 1953

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	438	72	186	11,506
Feb.	27400	27	2440	136,654
Mar.	2705	226	559	34,638
Apr.	380	75	164	9,854
May	756	63	163	10,080
June	63	37	50	3,012
July	89	29	44	2,730
Aug.	159	26	54	3,370
Sept.	126	9	49	2,958
Oct.	82	6	25	1,530
Nov.	9	0	3.5	212
Dec.	9	0	2.5	156
Total	..	..	..	216,700

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	33	0	6	360
Feb.	27400	9	1109	62,120
Mar.	1570	33	218	13,490
Apr.	159	26	60	3,572
May	251	23	59	3,664
June	380	47	112	6,736
July	3050	42	460	28,548
Aug.	756	97	184	11,388
Sept.	915	42	150	8,990
Oct.	3000	75	531	32,892
Nov.	2290	140	639	38,758
Dec.	756	122	295	18,278
Total	..	..	..	228,396

Year 1955

Jan.	1570	89	438	27,142
Feb.	12000	105	1324	74,118
Mar.	2290	465	944	58,534
Apr.	1500	159	817	48,990
May	13080	264	949	58,822
June	606	251	356	21,382
July	606	159	242	14,998
Aug.	202	75	122	7,544
Sept.	159	42	79	4,714
Oct.	888	35	145	8,970
Nov.	250	17	87	5,248
Dec.	568	13	151	9,388
Total	..	..	..	339,850

Year 1956

Jan.	13000	13	976	60,508
Feb.	27400	225	5184	300,672
Mar.	1910	709	1174	72,760
Apr.	20600	276	1776	106,582
May	10750	336	1082	67,054
June	9600	191	804	48,220
July	1130	276	570	35,364
Aug.	370	120	198	12,280
Sept.	291	86	148	8,862
Oct.	225	54	104	6,456
Nov.	138	11	46	2,780
Dec.	103	9	34	2,126
Total	..	..	..	723,664

Year 1957

Jan.	444	6	61	3,762
Feb.	1700	21	314	17,572
Mar.	614	69	239	14,840
Apr.	191	29	61	3,650
May	29	13	19	1,154
June	25	13	16	962
July	41	17	21	1,306
Aug.	970	16	93	5,764
Sept.	225	8	46	2,766
Oct.	13	0	34	210
Nov.	86	0	20	1,210
Dec.	758	0	107	6,634
Total	..	..	..	59,832

Year 1958

Jan.	861	13	161	9,968
Feb.	2100	57	382	21,372
Mar.	245	32	184	11,404
Apr.	312	32	113	6,782
May	90	22	46	2,822
June	695	25	154	9,236
July	141	32	66	4,080
Aug.	405	32	115	7,102
Sept.	795	47	127	7,590
Oct.	248	22	82	5,082
Nov.	39	4	16	934
Dec.	1950	14	352	21,840
Total	..	..	..	108,220

Year 1959

Jan.	81000	132	3405	211,114
Feb.	13940	348	1190	66,664
Mar.	14600	380	1753	108,710
Apr.	1730	252	693	41,576
May	252	104	167	19,628
June	600	76	115	6,870
July	1000	120	308	19,110
Aug.	228	54	123	7,640
Sept.	520	89	247	14,810
Oct.	645	37	168	10,386
Nov.	16000	160	1482	88,912
Dec.	4430	252	1099	68,132
Total	..	..	..	654,552

Year 1960

Jan.	1380	89	401	24,856
Feb.	2610	89	493	28,612
Mar.	2180	120	454	28,132
Apr.	252	76	145	8,704
May	480	64	122	7,562
June	252	89	146	8,790
July	302	89	176	10,922
Aug.	520	76	291	18,026
Sept.	No Records			
Oct.	No Records			
Nov.	70	4	25	1,514
Dec.	76	26	44	2,708
Total	..	..	..	..

LITTLE RIVER AT BROADMEADOWS.

Year 1961

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	17	2	8.6	530
Feb.	3510	23	571	32,000
Mar.	196	72	110	6,800
Apr.	122	60	76	4,560
May	66	19	36	2,220
June	790	55	222	13,300
July	350	55	145	8,960
Aug.	270	46	91	5,630
Sept.	105	36	72	4,300
Oct.	560	46	213	13,200
Nov.	2010	46	383	23,000
Dec.	7600	690	1880	117,000
Total	..	..	..	231,500

Year 1962

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	20600	690	3920	243,000
Feb.	3000	252	808	45,300
Mar.	2600	197	774	48,000
Apr.	7750	210	1136	68,200
May	690	197	349	21,600
June	343	74	148	8,870
July	24000	74	1706	106,000
Aug.	2600	172	630	39,100
Sept.	224	96	152	9,100
Oct.	1160	39	163	10,100
Nov.	197	39	92	5,520
Dec.	2400	39	434	26,900
Total	..	..	..	631,690

Year 1963

Jan.	21720	202	2470	153,000
Feb.	570	92	200	11,200
Mar.	4480	137	1020	63,300
Apr.	1480	70	394	23,700
May	59800	400	3960	246,000
June	1160	282	492	29,500
July	460	137	259	16,100
Aug.	1480	137	260	16,100
Sept.	670	81	157	9,420
Oct.	1020	59	180	11,100
Nov.	2600	59	291	17,450
Dec.	2900	105	623	38,600
Total	..	..	..	635,470

Year 1964

Jan.	2600	137	537	33,300
Feb.	228	59	126	7,340
Mar.	16000	92	1566	97,100
Apr.	3410	92	470	28,200
May	355	81	178	11,100
June	228	92	127	7,650
July	1480	81	377	23,400
Aug.	670	59	115	7,120
Sept.	670	44	132	7,900
Oct.	310	53	117	7,270
Nov.	2600	92	534	32,000
Dec.	1740	3	192	11,900
Total	..	..	..	274,280

Year 1965

Jan.	282	9	37	2,270
Feb.	137	13	34	1,930
Mar.	13	1	4.5	282
Apr.	40	1	11.5	688
May	19	5	7	436
June	19	5	9.1	548
July	7190	13	520	32,200
Aug.	157	25	77	4,770
Sept.	59	32	38	2,250
Oct.	No Records			500*
Nov.	No Records			3,000*
Dec.	No Records			50,000*
Total	..	..	..	98,874*

Year 1966

Jan.	137	25	57	3,540
Feb.	179	19	73	4,070
Mar.	81	9	33	2,020
Apr.	59	1	15	916
May	59	9	23	1,450
June	70	9	31	1,850
July	19	5	11	654
Aug.	254	4	46	2,840
Sept.	254	32	71	4,240
Oct.	960	32	145	8,970
Nov.	7190	59	464	27,900
Dec.	120	9	47	2,890
Total	..	..	..	61,340

Year 1967

Jan.	8500	13	1229	76,200
Feb.	2010	13	401	22,400
Mar.	4150	120	1191	73,800
Apr.	1480	105	393	23,600
May	105	59	83	5,150
June	58000	59	4393	264,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

* Estimated.

NYMBOIDA RIVER AT BUCCARUMBI

LOCATION:	Latitude 29°50' Longitude 152°35'
PERIOD OF ESTABLISHMENT:	March 1921 to date
COMPLETE YEARS OF COMPUTED RECORDS:	43 years
ZERO OF GAUGE:	R.L. 61.60 Assumed Datum. Approximately 500 feet above sea level
CATCHMENT AREA:	2,030 square miles
CONTROL:	Rock bar
EQUIPMENT:	Staff gauge, range 0 to 60 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 216
	(b) Maximum observation in cusecs : 28,200
	(c) Minimum observation in cusecs : 0.21
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	284,000 cusecs
MEAN DAILY DISCHARGE FOR 41 YEARS:	1,460 cusecs
MEAN ANNUAL DISCHARGE FOR 41 YEARS:	1,070,000 acre feet.
REMARKS:	Records commenced in January 1923. Since November 1924 flows at this station have been affected by the diversions from Nymboida Power Station to the Orara River. Consequently mean daily and annual discharges have been given for the 41 complete years of record since commencement of the diversions.

NYMBOIDA RIVER AT BUCCARUMBI

Year 1923

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1710	147	473	29,312
Feb.	250	113	149	8,336
Mar.	990	130	311	19,330
Apr.	11430	185	2958	177,470
May	3760	420	1060	65,740
June	550	205	315	18,900
July	670	185	247	15,310
Aug.	1270	275	524	32,500
Sept.	1480	275	514	30,840
Oct.	515	185	262	16,220
Nov.	205	97	136	8,156
Dec.	300	76	136	8,442
Total	..	..	..	430,556

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	445	76	158	9,826
Feb.	810	147	387	22,424
Mar.	590	165	290	17,950
Apr.	810	205	360	21,610
May	300	165	224	13,900
June	6420	147	839	50,374
July	9770	355	2360	146,270
Aug.	2180	415	726	45,020
Sept.	1060	250	372	22,320
Oct.	250	147	188	11,674
Nov.	5010	165	1186	71,140
Dec.	1060	300	543	33,670
Total	..	..	..	466,178

Year 1925

Jan.	3900	300	848	52,560
Feb.	2800	380	1008	56,440
Mar.	5790	355	1804	111,850
Apr.	3110	590	1286	77,280
May	19560	590	2909	180,320
June	35000	515	4980	298,770
July	2800	515	1130	70,060
Aug.	2300	380	707	43,860
Sept.	No Records			
Oct.	225	147	174	10,790
Nov.	3760	165	1145	68,720
Dec.	8920	355	1080	66,938
Total	..	..	..	..

Year 1926

Jan.	9260	590	2008	124,524
Feb.	550	225	367	20,550
Mar.	2410	205	387	24,010
Apr.	1830	300	654	39,270
May	5470	225	889	55,120
June	1270	515	661	39,670
July	6270	480	1440	89,260
Aug.	480	275	357	22,160
Sept.	275	165	213	12,800
Oct.	215	97	128	7,916
Nov.	97	48	62	3,694
Dec.	4160	29	920	37,042
Total	..	..	..	496,016

Year 1927

Jan.	69800	415	5254	325,722
Feb.	4300	670	1358	76,070
Mar.	4030	515	1176	72,950
Apr.	6420	550	1569	94,150
May	590	250	382	23,710
June	380	225	259	15,570
July	205	130	170	10,534
Aug.	130	83	107	6,624
Sept.	113	64	74	4,418
Oct.	760	80	203	12,580
Nov.	5950	113	612	36,720
Dec.	7220	550	1184	73,400
Total	..	..	..	752,448

Year 1928

Jan.	7560	380	2430	150,660
Feb.	211000	1130	26746	1,551,288
Mar.	3920	990	1978	122,660
Apr.	23160	1270	7029	421,730
May	3130	990	1659	102,830
June	27200	630	3366	202,180
July	5040	1510	2781	172,440
Aug.	1350	515	910	56,440
Sept.	515	275	387	23,240
Oct.	380	165	265	16,450
Nov.	990	97	195	11,706
Dec.	1200	97	341	21,124
Total	..	..	..	2,852,738

Year 1929

Jan.	1510	83	454	26,120
Feb.	21200	300	7645	428,120
Mar.	20950	930	3239	200,830
Apr.	45500	930	4286	257,180
May	810	445	641	39,760
June	11980	300	835	50,090
July	5450	515	1286	79,760
Aug.	1770	415	675	41,830
Sept.	11770	275	1441	86,650
Oct.	19730	380	3415	211,740
Nov.	670	300	489	29,340
Dec.	300	147	205	12,720
Total	..	..	..	1,464,140

Year 1930

Jan.	3020	130	500	30,972
Feb.	3460	225	702	39,290
Mar.	11560	250	2106	130,580
Apr.	5730	760	1682	100,920
May	8470	930	2329	144,390
June	19250	1200	5518	331,090
July	8130	1200	2842	176,230
Aug.	2700	550	929	57,580
Sept.	810	300	473	28,390
Oct.	930	250	413	25,630
Nov.	300	130	200	11,986
Dec.	185	58	103	6,368
Total	..	..	..	1,083,426

NYMBOIDA RIVER AT BUCCARUMBI

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	590	58	140	8,666
Feb.	9200	64	1644	92,082
Mar.	4280	415	1199	74,360
Apr.	8070	415	1688	101,290
May	3620	840	1734	107,488
June	1990	630	925	55,500
July	3620	480	951	58,940
Aug.	445	225	349	21,630
Sept.	630	130	225	13,524
Oct.	225	55	115	7,130
Nov.	840	147	266	15,976
Dec.	18110	147	2255	139,784
Total	..	..	..	696,370

Year 1932

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3020	165	447	27,710
Feb.	250	97	172	9,962
Mar.	250	64	94	5,842
Apr.	1220	83	446	26,744
May	445	147	249	15,456
June	415	165	280	16,790
July	890	165	307	19,040
Aug.	225	97	140	8,696
Sept.	27800	83	1768	106,060
Oct.	1810	380	772	47,870
Nov.	4010	275	1035	62,120
Dec.	990	225	455	28,240
Total	..	..	..	374,510

Year 1933

Jan.	16740	165	3121	193,492
Feb.	3750	380	1044	58,460
Mar.	590	185	290	18,010
Apr.	3380	185	450	27,010
May	225	97	160	9,928
June	28400	97	2783	166,994
July	134500	550	6384	395,822
Aug.	3380	750	1514	93,860
Sept.	2790	380	785	48,670
Oct.	74000	790	4176	258,900
Nov.	12050	1220	3195	191,700
Dec.	6220	1280	2401	148,892
Total	..	..	..	1,611,738

Year 1934

Jan.	9530	790	2267	140,540
Feb.	32600	990	4131	231,344
Mar.	2170	670	1334	82,720
Apr.	5900	1100	2587	155,220
May	20680	750	2016	125,010
June	990	515	699	41,970
July	10670	355	980	60,760
Aug.	6060	750	1536	95,260
Sept.	8250	750	1976	118,560
Oct.	1280	480	708	43,900
Nov.	2080	325	611	36,680
Dec.	4140	250	1396	86,520
Total	..	..	..	1,218,484

Year 1935

Jan.	13480	515	2341	145,156
Feb.	3260	480	1074	60,170
Mar.	3880	515	1305	80,880
Apr.	750	250	410	24,590
May	300	130	192	11,902
June	147	48	94	5,620
July	1100	113	342	21,190
Aug.	165	70	104	6,452
Sept.	2080	58	366	21,952
Oct.	790	83	272	16,872
Nov.	83	13	43	2,570
Dec.	710	9	164	10,190
Total	..	..	..	407,544

Year 1936

Jan.	1220	22	377	23,352
Feb.	2080	205	601	34,890
Mar.	16290	710	1902	117,914
Apr.	3750	515	1099	65,970
May	1280	325	565	35,010
June	670	300	431	25,840
July	300	185	230	14,260
Aug.	710	37	140	8,690
Sept.	750	58	170	10,212
Oct.	97	13	35	2,192
Nov.	13	9	10	588
Dec.	4270	1	395	24,502
Total	..	..	..	363,420

Year 1937

Jan.	4510	132	767	47,546
Feb.	30700	115	4213	235,968
Mar.	100200	1070	5976	369,924
Apr.	1850	455	866	51,980
May	455	150	275	17,038
June	2130	132	494	29,616
July	560	210	316	19,582
Aug.	420	132	222	13,790
Sept.	1760	70	277	16,622
Oct.	960	34	246	15,226
Nov.	5230	150	1577	94,610
Dec.	2440	390	961	59,570
Total	..	..	..	971,472

Year 1938

Jan.	40800	169	2767	171,526
Feb.	44300	860	3526	197,460
Mar.	3680	330	687	42,608
Apr.	18560	490	2267	136,024
May	20600	420	2002	124,174
June	2050	560	982	58,920
July	600	340	443	27,490
Aug.	3200	232	639	39,638
Sept.	405	84	183	11,006
Oct.	3560	84	386	23,916
Nov.	1380	45	195	11,712
Dec.	1100	9	123	7,612
Total	..	..	..	852,086

NYMBOIDA RIVER AT BUCCARUMBI

Year 1939

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	980	6	118	7,312
Feb.	370	4	40	2,216
Mar.	42700	6	4473	277,314
Apr.	2900	710	1418	85,080
May	710	300	486	29,000
June	1280	83	313	18,794
July	275	48	131	8,114
Aug.	3500	70	406	25,150
Sept.	70	17	30	1,798
Oct.	3820	29	602	37,318
Nov.	920	84	372	22,300
Dec.	2340	25	493	30,560
Total	..	..	..	544,956

Year 1940

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	700	45	314	19,474
Feb.	1170	13	237	13,754
Mar.	58400	9	1612	99,970
Apr.	1040	70	269	16,148
May	70	13	33	2,054
June	97	9	15	884
July	97	9	27	1,646
Aug.	113	9	19	1,186
Sept.	17	2	6	360
Oct.	2	1	1.4	88
Nov.	1160	0	25	1,472
Dec.	990	22	232	14,404
Total	..	..	..	171,440

Year 1941

Jan.	7210	48	1766	109,492
Feb.	4270	390	1057	59,190
Mar.	3280	280	985	61,080
Apr.	680	169	394	23,660
May	150	34	78	4,844
June	810	70	264	15,844
July	280	34	62	3,824
Aug.	34	13	21	1,308
Sept.	18	4	9	520
Oct.	9	4	5	314
Nov.	169	4	15	914
Dec.	99	1	15	926
Total	..	..	..	281,916

Year 1942

Jan.	34	0	8	486
Feb.	11660	13	2263	126,730
Mar.	3500	115	780	48,362
Apr.	415	29	100	5,976
May	70	22	27	1,692
June	550	22	61	3,638
July	1640	37	233	14,422
Aug.	97	22	52	3,254
Sept.	22	2	8	468
Oct.	5140	1	849	52,636
Nov.	16970	275	1448	86,894
Dec.	13960	83	1451	89,944
Total	..	..	..	434,502

Year 1943

Jan.	28100	340	3364	208,568
Feb.	2140	45	368	20,582
Mar.	1460	4	99	6,120
Apr.	1460	4	147	8,850
May	1270	4	221	13,684
June	640	19	205	12,276
July	19	6	9	560
Aug.	1720	6	135	8,366
Sept.	840	26	186	11,166
Oct.	1890	19	205	12,682
Nov.	13360	26	1389	83,338
Dec.	10410	186	1591	98,640
Total	..	..	..	484,832

Year 1944

Jan.	51400	560	5025	311,526
Feb.	3520	340	1037	60,160
Mar.	1720	67	429	26,588
Apr.	600	9	176	10,570
May	19	2	6	348
June	19	6	13	766
July	1640	9	311	19,270
Aug.	80400	19	4074	252,580
Sept.	1980	186	695	41,708
Oct.	310	19	70	4,344
Nov.	147	4	38	2,256
Dec.	13	0	2	128
Total	..	..	..	730,244

Year 1945

Jan.	166	1	37	2,284
Feb.	1280	13	200	11,182
Mar.	570	5	94	5,830
Apr.	660	5	62	3,748
May	80	11	27	1,656
June	148500	26	7435	446,088
July	21300	420	2326	144,234
Aug.	810	120	406	25,156
Sept.	1620	59	251	15,104
Oct.	80	15	45	2,782
Nov.	990	3	203	12,170
Dec.	1440	11	222	13,774
Total	..	..	..	684,008

Year 1946

Jan.	6210	8	414	25,680
Feb.	10220	33	1103	61,754
Mar.	No Records			1,000,000*
Apr.	No Records			100,000*
May	385	67	207	12,818
June	67	34	44	2,662
July	67	25	45	2,800
Aug.	25	6	12	764
Sept.	365	4	50	3,018
Oct.	265	9	64	3,986
Nov.	245	6	43	2,556
Dec.	67	9	26	1,600
Total	..	..	..	1,217,638*

NYMBOIDA RIVER AT BUCCARUMBI

Year 1947					Year 1948				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	10980	6	1097	67,900	Jan.	6550	225	1075	66,652
Feb.	34000	245	6561	367,394	Feb.	325	0.5	143	8,290
Mar.	83800	552	7287	451,766	Mar.	17000	225	3469	215,066
Apr.	16120	648	3758	225,496	Apr.	2300	148	608	36,498
May	640	245	399	24,708	May	51400	225	3327	206,256
June	245	67	141	8.464	June	104000	129	8389	503,352
July	96	34	63	3,916	July	1550	305	795	49,274
Aug.	345	4	60	3,718	Aug.	490	96	247	15,332
Sept.	4840	25	573	34,406	Sept.	774	44	155	9,284
Oct.	285	25	87	5,396	Oct.	167	13	39	2,404
Nov.	1610	4	251	15,046	Nov.	569	18	188	11,296
Dec.	9650	265	2882	178,658	Dec.	624	55	204	12,662
Total	..	..	..	1,386,868	Total	..	..	..	1,136,366

Year 1949					Year 1950				
Jan.	16700	112	1408	87,270	Jan.	116400	245	4764	295,394
Feb.	2800	112	811	45,404	Feb.	67500	808	7324	410,118
Mar.	36300	1210	5730	355,252	Mar.	8150	1080	2541	157,540
Apr.	2720	711	1289	77,320	Apr.	4180	1260	2170	130,180
May	1080	391	596	36,924	May	1490	596	954	59,146
June	3700	265	692	41,500	June	266000	490	18819	1,129,140
July	23200	205	2120	131,450	July	54500	2260	15216	943,376
Aug.	33000	465	3818	236,704	Aug.	17000	1490	3778	234,220
Sept.	3810	957	1814	108,828	Sept.	4140	1130	1664	99,868
Oct.	23500	957	2591	160,652	Oct.	16700	830	4470	277,126
Nov.	6280	596	1492	89,544	Nov.	20300	830	4345	260,710
Dec.	2320	391	1006	62,388	Dec.	5500	715	1883	116,726
Total	..	..	..	1,433,236	Total	..	..	..	4,113,544

Year 1951					Year 1952				
Jan.	36000	1370	4828	299,320	Jan.	355	11	68	4,204
Feb.	12700	1310	2673	149,714	Feb.	2330	27	367	21,290
Mar.	24200	1430	4291	266,068	Mar.	2890	92	642	39,782
Apr.	2410	465	988	59,260	Apr.	1010	103	380	22,828
May	890	248	405	25,110	May	302	61	148	8,866
June	15800	183	1943	116,604	June	3720	61	523	31,386
July	770	199	413	25,598	July	1190	81	186	11,584
Aug.	1190	127	314	19,452	Aug.	92000	231	5699	353,346
Sept.	115	52	79	4,736	Sept.	950	127	332	19,926
Oct.	71	18	42	2,614	Oct.	2410	127	445	27,593
Nov.	18	4	9	520	Nov.	510	38	144	8,622
Dec.	22	3	8	480	Dec.	248	7	38	2,374
Total	..	..	..	969,476	Total	..	..	..	551,806

Year 1953					Year 1954				
Jan.	1770	71	468	28,986	Jan.	222	5	37	2,276
Feb.	72000	81	6881	385,338	Feb.	272000	29	9926	555,874
Mar.	34600	302	2903	179,994	Mar.	5250	119	1259	78,048
Apr.	1560	168	682	40,950	Apr.	1270	54	293	17,582
May	1190	115	287	17,778	May	987	23	254	15,748
June	115	61	77	4,608	June	2400	90	615	36,870
July	92	44	63	3,928	July	61500	65	4710	292,014
Aug.	133	38	58	3,594	Aug.	2180	193	593	36,764
Sept.	214	22	60	3,578	Sept.	15100	65	1574	94,436
Oct.	81	18	35	2,184	Oct.	17600	381	3775	234,042
Nov.	32	8	13	772	Nov.	35300	344	3786	227,144
Dec.	30	5	12	716	Dec.	3090	344	1044	64,728
Total	..	..	..	672,426	Total	..	..	..	1,655,526

NYMBOIDA RIVER AT BUCCARUMBI

Year 1955					Year 1956				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	6950	246	1425	88,370	Jan.	108000	13	4589	284,494
Feb.	22100	550	3750	210,308	Feb.	117100	2110	19262	1,117,180
Mar.	75000	1840	6094	377,820	Mar.	28300	4000	9591	594,640
Apr.	108000	1250	7541	452,460	Apr.	78000	1360	6153	369,460
May	42200	1140	5329	330,380	May	78000	710	5173	320,740
June	1970	530	953	57,180	June	32800	332	1803	108,166
July	820	290	456	28,286	July	2110	381	939	58,198
Aug.	322	111	178	11,024	Aug.	412	154	242	15,028
Sept.	1050	64	180	10,780	Sept.	310	99	181	10,846
Oct.	1140	55	209	12,928	Oct.	217	47	127	7,864
Nov.	332	13	102	6,128	Nov.	111	17	58	3,494
Dec.	8400	10	1151	71,356	Dec.	99	13	55	3,410
Total	..	..	..	1,657,020	Total	..	..	..	2,893,520

Year 1957					Year 1958				
Jan.	290	10	70	4,368	Jan.	530	17	166	10,314
Feb.	12200	7	1744	97,708	Feb.	2840	125	476	26,668
Mar.	6160	252	2006	124,390	Mar.	5790	55	942	58,410
Apr.	530	55	163	9,758	Apr.	3480	23	916	54,972
May	55	17	30	1,830	May	530	47	168	10,412
June	39	13	17	1,048	June	4000	39	1005	60,298
July	39	23	27	1,666	July	570	47	195	12,078
Aug.	4350	17	316	19,570	Aug.	9920	39	802	49,726
Sept.	332	7	70	4,200	Sept.	820	12	133	7,994
Oct.	7	1	3	198	Oct.	152	31	81	5,050
Nov.	87	0	35	2,072	Nov.	31	2	9	566
Dec.	290	0	64	3,993	Dec.	2110	4	360	22,348
Total	..	..	..	270,801	Total	..	..	..	318,836

Year 1959					Year 1960				
Jan.	284000	120	14602	905,354	Jan.	7040	144	1114	69,082
Feb.	100000	1410	6624	370,960	Feb.	3600	270	1129	65,490
Mar.	3910	1330	7121	441,500	Mar.	22600	600	3084	191,230
Apr.	11400	830	3422	205,340	Apr.	780	195	522	31,310
May	780	195	421	26,130	May	177	75	113	7,004
June	195	107	144	8,638	June	560	65	161	9,632
July	2000	107	611	37,892	July	300	107	155	9,596
Aug.	300	107	158	9,822	Aug.	690	75	179	11,082
Sept.	2850	107	584	35,012	Sept.	130	45	73	4,374
Oct.	1230	75	364	22,540	Oct.	270	16	55	3,402
Nov.	52900	160	6763	405,760	Nov.	65	10	26	1,582
Dec.	16000	825	3159	195,870	Dec.	130	10	35	2,180
Total	..	..	..	2,664,818	Total	..	..	..	405,964

Year 1961					Year 1962				
Jan.	144	10	32	1,998	Jan.	32500	1090	6013	373 000
Feb.	22100	13	1746	97,804	Feb.	4550	690	1886	106,000
Mar.	690	37	241	14,944	Mar.	5800	440	1830	113,000
Apr.	480	45	158	9,474	Apr.	87400	970	7920	475,000
May	107	13	45	2,812	May	3600	520	1154	71,600
June	5800	107	745	45,254	June	690	107	280	16,800
July	440	30	105	6,506	July	124800	96	6535	405,000
Aug.	645	55	182	11,266	Aug.	5000	520	1116	69,200
Sept.	2340	45	361	21,672	Sept.	870	195	334	20,000
Oct.	2700	55	548	33,950	Oct.	970	55	175	10,900
Nov.	3150	75	802	48,106	Nov.	440	45	152	9,148
Dec.	19000	270	2949	182,830	Dec.	28900	45	3255	202,000
Total	..	..	..	476,616	Total	..	..	..	1,871,648

NYMBOIDA RIVER AT BUCCARUMBI

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	75000	1030	7640	474,000
Feb.	2400	520	1074	60,200
Mar.	8150	480	2495	155,000
Apr.	36500	520	3900	234,000
May	260000	2100	16304	1,010,000
June	4550	690	1439	86,300
July	1800	335	671	41,600
Aug.	920	160	264	16,400
Sept.	1700	85	341	20,500
Oct.	2650	130	425	26,300
Nov.	2650	130	511	31,700
Dec.	10300	335	2886	179,000
Total	..	..	..	2,335,000

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	5100	185	817	50,600
Feb.	5800	83	731	42,400
Mar.	88500	800	5371	333,000
Apr.	30400	1090	2870	172,000
May	1500	235	702	43,500
June	640	120	176	16,500
July	720	95	232	14,400
Aug.	385	36	109	6,780
Sept.	133	60	83	5,000
Oct.	560	50	199	12,360
Nov.	1800	71	315	18,900
Dec.	350	25	83	5,170
Total	..	..	..	720,610

Year 1965

Jan.	760	25	115	7,110
Feb.	210	25	92	5,140
Mar.	83	4	25	1,550
Apr.	30	2	13.6	814
May	42	13	18.3	1,130
June	350	10	40	2,410
July	61000	20	2864	178,000
Aug.	490	60	172	10,700
Sept.	133	20	85	5,090
Oct.	148	7	33	2,040
Nov.	3600	4	103	6,190
Dec.	14750	420	3474	215,000
Total	..	..	..	435,174

Year 1966

Jan.	350	25	100	6,210
Feb.	600	16	110	6,170
Mar.	83	20	40	2,470
Apr.	385	2	37	2,200
May	50	16	26	1,610
June	680	13	59	3,560
July	15	0	9	566
Aug.	460	0	76	4,700
Sept.	345	54	107	6,430
Oct.	1090	43	221	13,700
Nov.	28900	110	1500	90,300
Dec.	185	11	75	4,640
Total	..	..	..	142,556

Year 1967

Jan.	134600	80	5683	352,400
Feb.	5800	490	1408	78,800
Mar.	17800	720	4659	288,900
Apr.	5500	680	2380	142,800
May	680	165	404	25,060
June	255000	110	23175	1,390,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total	..	..	..	..

MITCHELL RIVER AT JACKADGERY

LOCATION:	Latitude 29°34' Longitude 152°33'
PERIOD OF ESTABLISHMENT:	May, 1919 to date
COMPLETE YEARS OF COMPUTED RECORDS:	47 years
ZERO OF GAUGE:	R.L. 30.63 Assumed Datum. Approximately 300 feet above sea level.
CATCHMENT AREA:	3,010 square miles
CONTROL:	Rock and boulders
EQUIPMENT:	Stevens Manometer-Servo unit (range 50 feet) and long term recorder installed October 1963. Staff gauge, range 0 to 45 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 197 (b) Maximum observation in cusecs : 131,300 (c) Minimum observation in cusecs : 0.3
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	480,000 cusecs
MEAN DAILY DISCHARGE FOR 42 YEARS:	1,930 cusecs
MEAN ANNUAL DISCHARGE FOR 42 YEARS:	1,410,000 acre feet
REMARKS:	Since November 1924 flows at this station have been affected by the diversions from Nymboida Power Station to the Orara River. Consequently mean daily and annual discharges have been given for the 42 complete years of record since commencement of the diversions.

MITCHELL RIVER AT JACKADGERY

Year 1919

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			
Feb.	No Records			
Mar.	No Records			
Apr.	No Records			
May	No Records			
June	5660	620	1676	100,580
July	620	270	408	25,286
Aug.	762	173	275	17,036
Sept.	173	110	137	8,236
Oct.	173	92	109	6,774
Nov.	354	92	140	8,436
Dec.	3290	110	596	36,950
Total	..	..	..	..

Year 1920

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	6460	240	2013	124,806
Feb.	1340	500	765	44,386
Mar.	762	314	488	30,246
Apr.	692	314	486	29,204
May	692	314	475	29,488
June	2180	314	554	33,256
July	1760	455	679	42,116
Aug.	2330	354	685	42,410
Sept.	1240	270	522	31,340
Oct.	5170	404	867	53,760
Nov.	2630	404	847	50,800
Dec.	762	314	480	29,748
Total	..	..	..	541,560

Year 1921

Month	Max.	Min.	Mean	Acre Feet
Jan.	7020	314	1128	69,920
Feb.	7020	620	1342	75,156
Mar.	3290	620	1465	90,856
Apr.	6740	840	2242	134,514
May	184200	655	13747	852,284
June	56400	1830	8998	539,870
July	480000	1760	20310	1,243,390
Aug.	5660	1070	2268	140,610
Sept.	14800	1170	2924	175,480
Oct.	6740	916	1722	106,778
Nov.	2630	530	1014	60,874
Dec.	54000	354	3323	206,044
Total	..	..	..	3,695,776

Year 1922

Month	Max.	Min.	Mean	Acre Feet
Jan.	30600	692	3536	219,206
Feb.	40400	620	5253	294,166
Mar.	8730	762	2327	144,252
Apr.	762	455	558	33,462
May	1460	314	566	35,094
June	878	404	570	34,744
July	17800	455	1140	70,664
Aug.	3860	560	1183	73,216
Sept.	25000	530	2723	163,404
Oct.	986	455	658	40,816
Nov.	1240	270	460	27,636
Dec.	1170	270	619	38,380
Total	..	..	..	1,175,040

Year 1923

Month	Max.	Min.	Mean	Acre Feet
Jan.	2480	240	643	39,868
Feb.	314	220	238	13,356
Mar.	1170	173	409	25,334
Apr.	10220	350	2632	157,926
May	3860	220	1113	69,037
June	455	270	359	21,546
July	692	314	275	17,048
Aug.	1240	220	550	34,120
Sept.	1340	130	571	34,258
Oct.	620	220	296	18,366
Nov.	240	130	170	10,198
Dec.	354	110	163	10,076
Total	..	..	..	451,132

Year 1924

Month	Max.	Min.	Mean	Acre Feet
Jan.	404	110	210	13,038
Feb.	1760	150	496	28,790
Mar.	560	240	335	20,744
Apr.	727	240	373	32,398
May	314	220	271	17,200
June	6740	173	876	52,558
July	11750	429	2318	143,718
Aug.	1600	455	840	52,110
Sept.	2180	314	627	37,636
Oct.	314	173	248	14,346
Nov.	6460	314	1939	116,324
Dec.	1340	429	700	43,384
Total	..	..	..	562,246

Year 1925

Month	Max.	Min.	Mean	Acre Feet
Jan.	3565	404	1339	82,994
Feb.	4270	560	1344	75,292
Mar.	9320	500	2219	137,562
Apr.	3290	762	1379	82,756
May	20200	692	2815	174,520
June	64700	620	7033	421,976
July	2940	656	1321	81,886
Aug.	3470	500	987	62,200
Sept.	1120	270	494	29,660
Oct.	270	173	220	13,610
Nov.	2860	230	1405	84,294
Dec.	8440	455	1237	76,704
Total	..	..	..	1,322,454

Year 1926

Month	Max.	Min.	Mean	Acre Feet
Jan.	7860	762	2153	133,592
Feb.	692	270	457	25,602
Mar.	1900	230	398	24,684
Apr.	1600	334	682	40,948
May	4700	255	945	58,590
June	1205	560	701	42,054
July	5410	560	1377	85,388
Aug.	560	314	410	25,408
Sept.	314	196	251	15,052
Oct.	240	120	160	9,902
Nov.	130	63	83	5,004
Dec.	5410	54	836	51,834
Total	..	..	..	517,958

MITCHELL RIVER AT JACKADGERY

Year 1927

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	98000	560	7144	442,924
Feb.	5410	810	1515	84,852
Mar.	4930	697	4151	87,752
Apr.	12380	697	1892	133,554
May	697	330	483	29,984
June	670	292	360	21,604
July	292	193	228	14,178
Aug.	177	112	140	8,690
Sept.	177	77	94	5,686
Oct.	810	112	270	17,680
Nov.	2320	193	482	28,900
Dec.	5107	670	1309	81,184
Total	..	..	..	936,088

Year 1928

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	14550	510	2478	153,646
Feb.	265800	1215	41963	2,433,858
Mar.	6460	1210	2363	146,494
Apr.	32000	1720	7607	456,394
May	3660	1260	1867	114,656
June	62000	820	4236	254,142
July	8510	1840	3523	218,406
Aug.	1720	685	1151	71,334
Sept.	685	330	514	30,848
Oct.	565	144	366	22,658
Nov.	2090	134	271	16,272
Dec.	1160	134	416	25,790
Total	..	..	..	3,945,608

Year 1929

Month	Max.	Min.	Mean	Acre Feet
Jan.	1840	144	499	30,920
Feb.	25000	370	7822	438,044
Mar.	35500	900	3824	237,076
Apr.	74600	980	5767	345,994
May	980	537	743	46,070
June	23800	390	1024	61,424
July	9620	565	1440	89,292
Aug.	3110	510	804	49,844
Sept.	9320	370	1135	68,116
Oct.	34100	435	3237	200,714
Nov.	820	330	578	34,674
Dec.	310	166	236	14,660
Total	..	..	..	1,616,828

Year 1930

Month	Max.	Min.	Mean	Acre Feet
Jan.	4060	166	681	42,214
Feb.	4060	310	960	53,774
Mar.	9620	330	2097	130,000
Apr.	6190	685	1857	111,554
May	23200	1065	3528	218,716
June	29200	1260	6523	391,360
July	13800	1428	3637	225,472
Aug.	3470	685	1242	76,978
Sept.	1160	435	697	41,822
Oct.	1260	410	548	33,974
Nov.	485	178	300	17,978
Dec.	310	77	151	9,374
Total	..	..	..	1,353,216

Year 1931

Month	Max.	Min.	Mean	Acre Feet
Jan.	625	49	164	10,148
Feb.	10820	62	1756	98,320
Mar.	4270	410	1478	91,610
Apr.	8200	510	1973	118,356
May	8200	1113	2137	132,466
June	7460	750	1460	87,473
July	5920	750	1396	86,574
Aug.	18	430	494	3,063
Sept.	685	192	324	19,444
Oct.	625	108	202	12,830
Nov.	980	165	367	22,002
Dec.	17800	330	3396	210,574
Total	..	..	..	920,538

Year 1932

Month	Max.	Min.	Mean	Acre Feet
Jan.	2630	206	632	39,196
Feb.	330	134	216	12,552
Mar.	243	62	103	6,416
Apr.	1160	157	548	32,870
May	510	178	298	18,444
June	565	220	347	20,846
July	820	220	344	21,308
Aug.	271	125	181	11,238
Sept.	32000	100	2398	143,862
Oct.	1960	460	936	58,030
Nov.	4060	350	1210	72,586
Dec.	1160	271	586	36,348
Total	..	..	..	473,696

Year 1933

Month	Max.	Min.	Mean	Acre Feet
Jan.	18400	206	3743	232,058
Feb.	6190	460	1404	79,230
Mar.	10777	565	206	21,554
Apr.	2940	220	264	33,822
May	350	165	253	15,690
June	23800	144	2904	174,222
July	159200	685	7583	470,124
Aug.	4700	930	2053	127,278
Sept.	3860	460	950	57,024
Oct.	30600	900	4388	272,026
Nov.	4480	1485	4104	46,926
Dec.	7900	148	2902	179,900
Total	..	..	..	1,909,174

Year 1934

Month	Max.	Min.	Mean	Acre Feet
Jan.	17800	900	3279	203,324
Feb.	41400	1260	6165	345,230
Mar.	2630	750	1496	92,714
Apr.	9790	1315	3670	220,206
May	23800	1113	2820	174,810
June	1260	625	819	49,156
July	10220	35	1161	71,974
Aug.	9790	980	2098	130,094
Sept.	13300	820	3082	184,930
Oct.	1720	565	922	57,036
Nov.	220	435	749	44,958
Dec.	6740	330	1888	117,056
Total	..	..	..	1,691,458

MITCHELL RIVER AT JACKADGERY

Year 1935

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	10460	625	2868	177,790
Feb.	3380	410	1225	68,600
Mar.	5770	565	1254	96,352
Apr.	708	290	442	26,540
May	330	191	246	15,250
June	191	84	134	8,034
July	1160	116	399	24,756
Aug.	220	92	145	8,980
Sept.	2355	84	457	27,480
Oct.	1600	155	453	28,098
Nov.	166	3	60	3,598
Dec.	750	3	214	13,276
Total	..	..	..	498,724

Year 1936

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1260	17	392	24,314
Feb.	2490	191	613	35,574
Mar.	12700	370	2208	136,870
Apr.	3290	540	1133	67,980
May	1260	303	552	34,192
June	690	303	427	25,614
July	430	230	286	17,728
Aug.	810	62	229	14,200
Sept.	730	76	227	13,632
Oct.	101	7	45	2,780
Nov.	7	3	5	316
Dec.	6880	1	564	34,958
Total	..	..	..	408,158

Year 1937

Jan.	6740	247	1001	62,036
Feb.	30600	198	4410	246,982
Mar.	128800	1160	8699	538,702
Apr.	1830	455	885	53,100
May	455	169	275	17,040
June	1950	144	512	30,734
July	540	265	324	20,102
Aug.	385	169	273	16,918
Sept.	2070	69	404	24,214
Oct.	970	34	243	15,064
Nov.	4450	265	1657	99,410
Dec.	2270	445	1092	67,680
Total	..	..	..	1,191,982

Year 1938

Jan.	62000	171	4498	278,846
Feb.	35400	1180	4402	246,516
Mar.	5230	295	798	49,450
Apr.	14100	530	2116	126,940
May	35400	365	3143	194,870
June	2490	530	1074	64,460
July	750	330	480	29,764
Aug.	3290	365	829	51,380
Sept.	507	140	272	16,305
Oct.	2490	140	474	29,377
Nov.	1180	64	225	13,501
Dec.	2050	17	221	13,731
Total	..	..	..	1,115,140

Year 1939

Jan.	950	3	83	5,162
Feb.	630	1	84	4,726
Mar.	47800	0	4938	306,130
Apr.	6760	810	2103	126,186
May	810	293	540	33,464
June	1730	215	415	24,886
July	630	120	264	16,346
Aug.	5860	120	587	36,402
Sept.	137	29	58	3,456
Oct.	4270	22	575	35,676
Nov.	1060	146	375	22,490
Dec.	2610	29	481	29,832
Total	..	..	..	644,752

Year 1940

Jan.	880	104	351	21,776
Feb.	1350	22	331	19,220
Mar.	71000	17	2310	143,210
Apr.	1020	116	296	17,756
May	167	20	53	3,258
June	23	12	16	942
July	131	15	45	2,794
Aug.	116	10	21	1,288
Sept.	30	3	11	644
Oct.	3	0	0.9	53
Nov.	330	0	11	667
Dec.	1100	102	395	24,462
Total	..	..	..	236,070

Year 1941

Jan.	11700	102	2583	160,114
Feb.	5440	405	1258	70,450
Mar.	4640	280	1308	81,102
Apr.	750	265	431	25,870
May	238	61	116	7,184
June	1440	102	363	21,766
July	405	56	107	6,606
Aug.	56	23	33	2,044
Sept.	23	4	14	828
Oct.	4	0	1	82
Nov.	38	0	18	1,106
Dec.	116	2	22	1,372
Total	..	..	..	378,524

Year 1942

Jan.	4	0	1	72
Feb.	12220	23	3325	186,180
Mar.	3000	225	856	53,110
Apr.	630	66	194	11,660
May	89	30	47	2,898
June	188	30	65	3,926
July	2160	51	491	30,448
Aug.	177	38	94	5,824
Sept.	38	8	19	1,160
Oct.	6530	5	988	61,262
Nov.	10790	295	1467	88,026
Dec.	10400	131	1184	73,426
Total	..	..	..	517,992

MITCHELL RIVER AT JACKADGERY

Year 1943					Year 1944				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	33600	295	4110	254,824	Jan.	66200	660	5739	355,844
Feb.	2050	77	395	22,124	Feb.	6300	293	1287	74,632
Mar.	810	12	81	5,046	Mar.	2050	104	412	25,568
Apr.	445	17	118	7,076	Apr.	472	22	187	11,246
May	1530	17	191	11,824	May	22	7	10	650
June	630	47	250	15,014	June	29	11	16	978
July	38	17	24	1,492	July	1020	17	312	19,316
Aug.	810	20	143	8,862	Aug.	101600	40	5203	322,586
Sept.	750	56	199	11,946	Sept.	2160	330	792	47,542
Oct.	1395	42	204	12,618	Oct.	330	30	111	6,872
Nov.	18000	77	1917	115,038	Nov.	131	12	59	3,554
Dec.	6300	212	1390	86,180	Dec.	15	0	3	190
Total	..	..	..	552,044	Total	..	..	..	868,978

Year 1945					Year 1946				
Jan.	330	0	61	3,802	Jan.	5230	0	497	30,802
Feb.	2160	17	331	18,544	Feb.	8280	5	1246	69,752
Mar.	1440	23	240	14,866	Mar.	415500	321	26941	1,670,322
Apr.	555	17	103	6,170	Apr.	5100	605	1429	85,750
May	148	38	61	3,780	May	550	177	345	21,378
June	223000	66	10518	631,108	June	159	54	85	5,098
July	35400	465	2947	182,708	July	96	54	73	4,532
Aug.	1100	265	594	36,840	Aug.	49	18	29	1,812
Sept.	2050	131	421	25,234	Sept.	840	11	158	9,464
Oct.	167	61	103	6,414	Oct.	450	25	132	8,162
Nov.	1020	17	248	14,860	Nov.	550	25	144	8,652
Dec.	1630	66	270	16,768	Dec.	270	31	95	5,890
Total	..	..	..	961,094	Total	..	..	..	1,921,614

Year 1947					Year 1948				
Jan.	13700	28	1258	77,992	Jan.	6760	475	1523	94,410
Feb.	44500	750	7010	392,576	Feb.	690	96	314	18,180
Mar.	95000	1250	7660	474,934	Mar.	16400	355	3305	204,884
Apr.	25800	1410	4664	279,810	Apr.	2300	310	926	55,586
May	1290	525	823	51,022	May	53600	450	3490	216,340
June	500	96	275	16,528	June	113700	355	10115	606,930
July	142	70	91	5,616	July	3100	605	1353	83,884
Aug.	840	44	192	11,932	Aug.	1100	270	517	32,024
Sept.	4700	177	1108	66,482	Sept.	1500	70	307	18,408
Oct.	720	96	271	16,804	Oct.	500	17	87	5,424
Nov.	2300	70	458	27,502	Nov.	1100	20	164	9,822
Dec.	9635	660	2955	183,216	Dec.	500	18	89	5,538
Total	..	..	..	1,604,414	Total	..	..	..	1,351,430

Year 1949					Year 1950				
Jan.	13700	25	1051	65,174	Jan.	118300	96	5953	369,116
Feb.	7490	34	973	54,492	Feb.	102700	780	9477	530,692
Mar.	33500	1545	6493	402,584	Mar.	12800	1330	4132	256,210
Apr.	4220	605	1529	91,748	Apr.	9480	1860	3331	199,830
May	1250	270	514	32,006	May	2070	632	1165	72,222
June	3720	159	593	35,590	June	349000	461	23303	1,398,180
July	17300	96	1668	103,386	July	75800	4500	19834	1,229,722
Aug.	49000	355	3830	237,436	Aug.	18200	2125	5757	356,910
Sept.	8320	965	2545	152,706	Sept.	8320	1340	2545	152,670
Oct.	23900	965	4058	251,576	Oct.	18350	1530	7010	434,606
Nov.	8320	525	1943	116,598	Nov.	24600	1340	6392	383,514
Dec.	3400	310	1241	76,928	Dec.	9180	1340	2863	177,514
Total	..	..	..	1,620,224	Total	..	..	..	5,561,186

MITCHELL RIVER AT JACKADGERY

Year 1951

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	59900	1630	7210	446,996
Feb.	14900	1630	4364	244,364
Mar.	26900	1850	5929	367,568
Apr.	4390	670	1376	82,532
May	1090	421	247	40,142
June	13700	383	2202	132,098
July	1250	346	658	40,786
Aug.	1340	262	537	33,292
Sept.	248	106	158	9,484
Oct.	142	36	94	5,834
Nov.	39	13	25	1,474
Dec.	33	3	11	708
Total	..	..	..	1,405,278

Year 1952

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	294	21	68	4,220
Feb.	4135	6	585	33,958
Mar.	8040	185	1200	74,396
Apr.	2300	208	686	41,144
May	775	162	324	20,106
June	5700	123	931	55,874
July	1170	173	319	19,780
Aug.	120000	440	8697	539,226
Sept.	1170	235	564	38,810
Oct.	4050	248	1032	63,966
Nov.	1170	106	342	20,528
Dec.	440	23	89	5,514
Total	..	..	..	912,522

Year 1953

Jan.	3720	90	745	46,184
Feb.	109000	59	8578	480,366
Mar.	39000	1015	4261	264,170
Apr.	2420	278	850	50,978
May	1630	221	438	27,126
June	208	106	136	8,184
July	162	76	105	6,534
Aug.	208	59	97	6,020
Sept.	482	39	133	7,958
Oct.	115	23	55	3,408
Nov.	42	8	20	1,174
Dec.	15	3	10	616
Total	..	..	..	902,718

Year 1954

Jan.	123	1	29	1,810
Feb.	350000	46	11595	649,298
Mar.	6320	221	1331	82,544
Apr.	482	83	196	11,782
May	1340	64	343	21,268
June	3400	185	734	44,066
July	91800	162	5379	333,472
Aug.	2800	402	815	50,518
Sept.	13700	142	1367	82,012
Oct.	30200	670	5079	314,910
Nov.	46600	526	4352	261,146
Dec.	3250	526	1164	72,170
Total	..	..	..	1,924,996

Year 1955

Jan.	10850	402	2218	137,502
Feb.	32000	935	4132	231,388
Mar.	109000	2210	8896	551,576
Apr.	142000	1850	8249	494,968
May	131000	1620	7018	435,128
June	3240	994	1674	100,458
July	2460	550	942	58,430
Aug.	820	274	431	26,738
Sept.	877	197	296	17,746
Oct.	1510	110	362	22,416
Nov.	655	48	209	12,526
Dec.	9180	44	1397	86,618
Total	..	..	..	2,175,494

Year 1956

Jan.	154000	148	6988	433,234
Feb.	186800	3780	27023	1,567,328
Mar.	46000	5790	11906	738,182
Apr.	40000	1850	6576	394,562
May	138200	1790	8248	511,384
June	68600	764	4260	255,590
July	5150	820	1947	120,688
Aug.	1300	329	617	38,252
Sept.	764	225	407	24,422
Oct.	2090	197	397	24,602
Nov.	310	59	154	9,226
Dec.	197	47	111	6,858
Total	..	..	..	4,124,328

Year 1957

Jan.	709	39	138	8,522
Feb.	12500	39	2266	126,874
Mar.	5790	453	1790	110,960
Apr.	764	94	271	16,240
May	148	44	77	4,770
June	68	51	55	3,294
July	110	55	75	4,624
Aug.	5310	51	457	28,336
Sept.	994	29	166	9,958
Oct.	68	9	19	1,220
Nov.	240	8	67	4,026
Dec.	256	2	73	4,544
Total	..	..	..	323,368

Year 1958

Jan.	709	59	211	13,072
Feb.	2980	256	1048	58,682
Mar.	16000	132	1634	101,330
Apr.	5500	123	1009	60,540
May	747	76	265	16,458
June	5200	76	1208	72,482
July	885	83	316	19,594
Aug.	5100	76	715	44,353
Sept.	1250	123	342	20,538
Oct.	670	54	267	16,578
Nov.	54	14	32	1,906
Dec.	2950	16	699	43,324
Total	..	..	..	468,857

MITCHELL RIVER AT JACKADGERY

Year 1959

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	367000	364	19279	1,195,290
Feb.	131000	2590	9998	559,886
Mar.	80000	2460	10056	623,492
Apr.	11450	975	3895	233,700
May	975	370	613	37,994
June	465	192	277	16,640
July	4230	217	944	58,544
Aug.	515	150	280	17,364
Sept.	3240	180	965	57,904
Oct.	1510	180	475	29,470
Nov.	71000	415	9932	595,942
Dec.	34800	835	4772	295,882
Total	..	..	..	3,722,108

Year 1960

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	6140	465	1660	102,934
Feb.	4680	415	1614	93,630
Mar.	19500	715	3360	208,324
Apr.	1130	330	683	40,980
May	2210	170	360	22,294
June	640	160	301	18,082
July	540	205	307	19,054
Aug.	1050	116	289	17,894
Sept.	160	63	104	6,218
Oct.	245	29	76	4,696
Nov.	94	18	44	2,644
Dec.	140	75	67	4,144
Total	..	..	..	540,894

Year 1961

Jan.	94	21	38	2,352
Feb.	24000	29	2125	119,014
Mar.	1028	94	409	25,348
Apr.	709	119	297	17,802
May	148	55	85	5,296
June	6760	225	1001	60,988
July	550	51	149	9,210
Aug.	709	119	267	16,542
Sept.	4680	80	556	33,382
Oct.	3640	59	1059	65,678
Nov.	6330	100	1430	85,792
Dec.	18000	530	3970	246,120
Total	..	..	..	687,524

Year 1962

Jan.	44800	1990	7503	465,200
Feb.	5630	870	2537	142,100
Mar.	11600	630	3052	189,210
Apr.	120450	930	10948	656,910
May	5310	720	1580	97,940
June	1080	225	397	23,834
July	160400	212	9428	584,512
Aug.	8320	700	1971	122,220
Sept.	1140	420	589	35,362
Oct.	1300	114	288	17,878
Nov.	380	100	186	11,166
Dec.	50000	75	4133	256,234
Total	..	..	..	2,602,566

Year 1963

Jan.	160000	1300	14180	879,156
Feb.	2600	550	1207	67,574
Mar.	10700	700	2940	182,290
Apr.	48400	760	4680	280,800
May	404250	2750	26007	1,612,410
June	5960	1060	1970	118,194
July	2100	525	884	54,820
Aug.	1060	340	468	29,010
Sept.	1750	150	399	23,968
Oct.	2382	200	566	35,094
Nov.	2960	190	730	43,816
Dec.	11700	480	3263	202,330
Total	..	..	..	3,529,462

Year 1964

Jan.	6060	330	926	57,394
Feb.	5830	193	857	49,718
Mar.	121550	950	6368	394,824
Apr.	36800	835	3304	198,268
May	1773	420	912	56,550
June	950	225	406	24,382
July	1793	220	460	18,500
Aug.	910	110	214	13,200
Sept.	2300	110	185	11,100
Oct.	2150	130	466	28,900
Nov.	3720	130	424	25,400
Dec.	870	35	162	10,000
Total	..	..	..	981,136

Year 1965

Jan.	740	30	152	9,450
Feb.	402	46	147	8,260
Mar.	90	6	35	2,170
Apr.	26	4	16	934
May	35	17	25	1,540
June	317	14	25	1,470
July	78500	30	2830	175,300
Aug.	625	90	231	14,300
Sept.	255	59	147	8,790
Oct.	950	22	63	3,930
Nov.	1210	17	79	4,760
Dec.	16300	495	4349	270,000
Total	..	..	..	500,904

Year 1966

Jan.	470	35	163	10,110
Feb.	680	22	155	8,690
Mar.	1410	40	107	6,660
Apr.	310	19	55	3,320
May	80	27	49	3,010
June	465	21	69	4,150
July	47	14	27	1,690
Aug.	525	11	106	6,570
Sept.	465	62	153	9,180
Oct.	1740	62	315	19,500
Nov.	29120	162	1710	102,000
Dec.	400	26	126	7,800
Total	..	..	..	182,680

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MITCHELL RIVER AT JACKADGERY

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	173400	46	4877	302,000
Feb.	15600	720	2290	128,000
Mar.	42400	1000	6580	408,000
Apr.	9600	960	3720	223,000
May	880	275	605	37,500
June	357000	175	31200	1,870,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

CLARENCE RIVER AT LILYDALE

LOCATION:	Latitude 29°31' Longitude 152°41'
PERIOD OF ESTABLISHMENT:	March 1922 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	45 years.
ZERO OF GAUGE:	R.L. 36.78 Assumed Datum. Approximately 100 feet above sea level.
CATCHMENT AREA:	6,440 square miles.
CONTROL:	Gravel bar.
EQUIPMENT:	Exactel Servomanometer (range 91 feet), and long term recorder installed in 1965. Staff gauge, range 0 to 80 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 241
	(b) Maximum observation in cusecs : 520,000
	(c) Minimum observation in cusecs : 1.6
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	700,000 cusecs.
MEAN DAILY DISCHARGE FOR 42 YEARS:	4,170 cusecs.
MEAN ANNUAL DISCHARGE FOR 42 YEARS:	3,046,000 acre feet.
REMARKS:	Since November 1924 flows at this station have been affected by the diversions from Nymboida Power Station to the Orara River. Consequently mean daily and annual discharges have been given for the 42 complete years of record since commencement of the diversions.

CLARENCE RIVER AT LILYDALE

Year 1922

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			357,000*
Feb.	No Records			687,000*
Mar.	No Records			263,000*
Apr.	1320	706	946	56,790
May	1880	472	780	48,388
June	1100	606	785	47,108
July	13670	884	1559	96,708
Aug.	4820	706	1443	89,436
Sept.	22525	606	3042	182,532
Oct.	1320	656	875	54,224
Nov.	1500	302	649	38,950
Dec.	1590	397	862	53,418
Total	..	..	..	1,974,554*

Year 1923

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2980	333	1037	64,322
Feb.	333	244	262	14,658
Mar.	1165	244	456	28,292
Apr.	11000	302	2958	177,492
May	4975	514	1474	91,396
June	808	333	466	27,980
July	397	244	292	18,118
Aug.	1500	364	608	37,674
Sept.	1410	302	582	34,950
Oct.	808	217	310	19,202
Nov.	217	90	144	8,942
Dec.	364	75	147	9,110
Total	..	..	..	532,136

Year 1924

Jan.	706	190	266	16,496
Feb.	1780	472	1035	60,032
Mar.	656	364	465	28,834
Apr.	606	364	458	27,464
May	364	244	300	18,598
June	6420	244	1316	78,942
July	16575	656	4318	261,738
Aug.	2470	757	1209	74,972
Sept.	2298	430	850	51,004
Oct.	514	273	350	21,710
Nov.	11975	514	4607	276,430
Dec.	2384	924	1409	87,398
Total	..	..	..	1,003,618

Year 1925

Jan.	3080	757	1926	119,404
Feb.	9000	1426	3043	171,920
Mar.	58900	1976	10578	655,842
Apr.	9200	2070	4502	270,150
May	32760	1780	6558	406,612
June	108700	1500	16705	1,002,300
July	5600	1426	2639	163,640
Aug.	10575	1104	2513	155,790
Sept.	3925	656	1260	75,624
Oct.	656	302	421	26,114
Nov.	15450	302	3164	189,898
Dec.	7200	808	1840	114,018
Total	..	..	..	3,351,312

Year 1926

Jan.	26460	1560	4912	304,516
Feb.	1625	397	879	49,228
Mar.	1760	364	543	33,670
Apr.	1760	472	1007	60,408
May	4500	364	1075	66,676
June	1560	808	1008	60,494
July	4650	757	1576	97,680
Aug.	757	397	556	34,462
Sept.	397	287	329	19,760
Oct.	317	100	187	11,600
Nov.	121	44	67	4,032
Dec.	7200	33	1605	99,534
Total	..	..	..	842,060

Year 1927

Jan.	128900	757	17049	1,057,030
Feb.	16125	1426	4006	224,324
Mar.	17025	1232	3455	214,242
Apr.	23200	1164	3299	239,398
May	1164	514	745	46,190
June	1044	514	631	37,874
July	514	287	352	21,820
Aug.	273	134	190	11,756
Sept.	190	75	105	6,286
Oct.	895	176	350	21,728
Nov.	2858	273	581	34,874
Dec.	8500	1104	2333	144,674
Total	..	..	..	2,060,196

Year 1928

Jan.	14233	984	3895	241,462
Feb.	251400	2054	51435	2,983,240
Mar.	10350	2858	5352	331,812
Apr.	130500	3190	17830	1,069,820
May	8500	2470	3970	246,152
June	51600	2015	6946	416,738
July	17250	3024	6782	420,518
Aug.	3425	1493	2322	143,946
Sept.	1493	837	1171	70,244
Oct.	1005	550	791	49,054
Nov.	1415	388	569	34,120
Dec.	1375	388	802	48,706
Total	..	..	..	6,055,812

Year 1929

Jan.	4080	530	1209	74,946
Feb.	34500	790	11756	658,370
Mar.	33300	1635	5591	346,644
Apr.	132000	2125	12691	761,434
May	1870	970	1416	87,816
June	405	850	1147	68,812
July	3300	970	3497	216,838
Aug.	2925	910	1308	81,088
Sept.	9215	635	1432	85,910
Oct.	37260	660	5352	331,840
Nov.	1255	550	895	53,680
Dec.	510	240	352	21,822
Total	..	..	..	2,789,200

* Estimated.

CLARENCE RIVER AT LILYDALE

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	5610	300	980	60,742
Feb.	6550	635	1976	110,664
Mar.	10560	635	3013	186,792
Apr.	7800	1680	3223	193,370
May	71000	1590	8903	552,000
June	58500	2745	16645	998,720
July	30000	2745	8339	517,024
Aug.	10050	1335	3081	191,032
Sept.	3110	820	1491	89,444
Oct.	3780	700	1344	83,320
Nov.	735	352	541	32,462
Dec.	510	170	264	16,378
Total	..	..	..	3,031,948

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	735	140	261	16,158
Feb.	34500	130	5554	311,006
Mar.	8100	685	3580	221,940
Apr.	9215	1005	2968	178,054
May	11050	1590	3850	238,740
June	4730	1255	2136	128,192
July	5800	1180	2198	136,254
Aug.	1040	475	764	47,348
Sept.	790	335	491	29,462
Oct.	590	160	288	17,846
Nov.	910	190	459	27,522
Dec.	61100	335	9281	575,400
Total	..	..	..	1,927,922

Year 1932

Jan.	3500	285	890	55,208
Feb.	440	180	299	17,340
Mar.	180	90	124	7,680
Apr.	1970	170	809	48,522
May	550	270	392	24,316
June	790	317	501	30,082
July	970	300	446	27,622
Aug.	335	170	257	15,934
Sept.	22750	130	2582	154,922
Oct.	2573	590	1194	74,032
Nov.	7700	457	2014	120,814
Dec.	2515	510	1037	64,320
Total	..	..	..	640,792

Year 1933

Jan.	30900	335	5063	333,906
Feb.	12800	790	2526	141,460
Mar.	735	285	464	28,740
Apr.	5070	270	1071	64,244
May	2515	335	590	36,550
June	33200	335	4576	274,580
July	204000	910	13125	813,742
Aug.	7820	1590	3284	203,620
Sept.	2630	790	1360	81,590
Oct.	75600	1970	8937	554,084
Nov.	35900	2400	9383	562,988
Dec.	16470	3500	7772	481,860
Total	..	..	..	3,577,364

Year 1934

Jan.	80500	1680	8699	539,344
Feb.	51600	1830	9431	528,146
Mar.	4750	1250	2383	147,720
Apr.	19350	2430	7708	462,462
May	27600	1980	5863	363,478
June	2370	995	1391	83,440
July	19500	730	2421	150,080
Aug.	16740	1770	4338	268,940
Sept.	12790	1500	4123	247,410
Oct.	2400	940	1331	82,536
Nov.	2400	763	1225	73,486
Dec.	12790	635	3736	231,660
Total	..	..	.	3,178,702

Year 1935

Jan.	19630	1100	4355	269,990
Feb.	3800	555	2076	116,258
Mar.	4110	970	2508	155,480
Apr.	1880	345	937	56,206
May	1540	375	710	44,010
June	375	187	277	16,604
July	2720	293	852	52,890
Aug.	475	170	277	17,150
Sept.	2380	136	686	41,184
Oct.	3950	345	1230	76,240
Nov.	515	78	196	11,738
Dec.	2840	78	671	41,590
Total	..	..	..	899,340

Year 1936

Jan.	2490	136	685	42,440
Feb.	1620	225	795	46,120
Mar.	27900	640	5047	312,936
Apr.	3360	910	1708	102,480
May	1540	475	696	43,150
June	910	405	549	32,950
July	475	318	371	23,000
Aug.	910	78	344	21,344
Sept.	745	78	248	14,878
Oct.	405	28	128	7,928
Nov.	24	0	11	686
Dec.	5160	0	616	38,150
Total	..	..	..	686,062

Year 1937

Jan.	12980	292	1713	106,176
Feb.	41230	225	6640	371,830
Mar.	237000	1460	21443	1,329,496
Apr.	2070	910	1394	83,660
May	855	405	567	35,170
June	1460	345	697	41,850
July	745	440	519	32,190
Aug.	745	405	516	31,990
Sept.	2170	205	618	37,094
Oct.	1100	170	429	26,608
Nov.	10570	225	3367	202,040
Dec.	6020	1250	2519	156,180
Total	..	..	..	2,454,284

CLARENCE RIVER AT LILYDALE

Year 1938

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	155670	505	11768	729,606
Feb.	50000	2090	6813	381,508
Mar.	11050	780	2260	140,128
Apr.	24160	1330	4309	258,566
May	86500	960	8817	546,646
June	6690	1325	2308	141,980
July	1520	775	1004	62,260
Aug.	2880	840	1249	77,430
Sept.	1235	335	572	34,310
Oct.	4170	335	838	51,974
Nov.	2320	213	502	30,110
Dec.	4350	72	601	37,234
Total	..	..	..	2,491,752

Year 1939

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1150	39	121	7,526
Feb.	1150	39	238	13,356
Mar.	33500	30	9958	617,410
Apr.	19220	1950	5430	325,774
May	1730	840	1261	78,210
June	2320	595	947	56,824
July	2070	450	928	57,520
Aug.	9350	370	1677	103,962
Sept.	370	148	216	12,954
Oct.	5470	148	725	44,970
Nov.	1840	545	999	59,956
Dec.	3660	72	1007	62,448
Total	..	..	..	1,440,910

Year 1940

Jan.	3420	335	820	50,860
Feb.	2320	114	858	49,754
Mar.	63000	168	4795	297,274
Apr.	1950	410	987	58,760
May	410	106	178	11,014
June	106	85	91	5,478
July	179	72	121	7,518
Aug.	85	49	60	3,704
Sept.	840	26	91	5,442
Oct.	26	10	15	924
Nov.	840	6	48	2,854
Dec.	3030	114	1442	89,412
Total	..	..	..	582,994

Year 1941

Jan.	22880	710	7328	454,522
Feb.	23460	1420	5075	284,222
Mar.	14340	910	4391	272,244
Apr.	3340	1150	1549	92,940
May	985	352	748	46,368
June	13300	910	3317	199,050
July	910	370	627	38,904
Aug.	370	168	236	14,628
Sept.	168	72	116	6,976
Oct.	72	15	34	2,112
Nov.	190	10	86	5,186
Dec.	168	10	66	4,114
Total	..	..	..	1,421,266

Year 1942

Jan.	169	8	59	3,636
Feb.	62500	99	10639	595,762
Mar.	5470	1170	2158	133,820
Apr.	1780	335	629	37,760
May	455	149	247	15,330
June	720	191	298	17,854
July	3000	191	909	56,374
Aug.	455	114	256	15,914
Sept.	114	39	72	4,412
Oct.	8890	30	1768	109,620
Nov.	15930	550	2175	130,516
Dec.	20340	39	2191	128,382
Total	..	..	..	1,249,380

Year 1943

Jan.	56400	920	8999	557,918
Feb.	3160	300	863	48,314
Mar.	455	85	149	9,260
Apr.	1260	72	373	22,356
May	780	66	232	14,402
June	780	99	316	18,962
July	114	49	83	5,126
Aug.	595	39	205	12,706
Sept.	1065	122	340	20,388
Oct.	1620	85	313	19,428
Nov.	21180	190	2754	165,246
Dec.	36900	335	3755	232,790
Total	..	..	..	1,126,896

Year 1944

Jan.	88300	1460	12140	752,670
Feb.	18390	920	4023	233,360
Mar.	1560	395	909	56,380
Apr.	1080	150	576	34,542
May	141	60	90	5,420
June	122	99	102	6,140
July	2700	99	1159	71,832
Aug.	117300	191	11140	690,624
Sept.	4710	660	1493	89,560
Oct.	600	23	205	12,716
Nov.	169	39	99	5,954
Dec.	131	17	52	3,252
Total	..	..	..	1,962,450

Year 1945

Jan.	720	30	208	12,926
Feb.	7760	17	884	49,512
Mar.	7760	149	949	58,860
Apr.	550	149	360	21,620
May	228	131	167	10,372
June	418000	215	28536	1,712,154
July	9650	1640	3900	241,800
Aug.	2330	590	1134	70,280
Sept.	2090	435	969	58,136
Oct.	960	210	331	20,512
Nov.	2700	121	581	34,838
Dec.	1860	230	739	45,838
Total	..	..	..	1,336,848

CLARENCE RIVER AT LILYDALE

Year 1946

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	12390	190	1789	110,892
Feb.	24490	481	5704	319,428
Mar.	670000	2610	31772	1,969,852
Apr.	15370	1290	5602	336,150
May	1290	430	885	54,900
June	430	159	286	17,162
July	235	170	210	12,992
Aug.	171	107	135	8,392
Sept.	1380	94	287	17,248
Oct.	1290	121	327	20,250
Nov.	1040	107	268	16,054
Dec.	1120	138	388	24,064
Total	..	..	..	2,907,384

Year 1947

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	100900	107	9358	580,198
Feb.	145000	2970	25408	1,422,834
Mar.	172330	2370	21865	1,355,660
Apr.	90100	2850	12943	776,580
May	No Records			110,000*
June	No Records			49,000*
July	No Records			23,400*
Aug.	No Records			28,000*
Sept.	No Records			141,000*
Oct.	No Records			32,400*
Nov.	No Records			55,000*
Dec.	No Records			457,000*
Total	..	..	..	5,031,072*

Year 1948

Jan.	No Records			152,000*
Feb.	No Records			34,100*
Mar.	No Records			382,000*
Apr.	No Records			224,000*
May	No Records			720,000*
June	No Records			2,280,000*
July	No Records			209,000*
Aug.	No Records			77,500*
Sept.	No Records			84,700*
Oct.	No Records			41,900*
Nov.	No Records			33,200*
Dec.	No Records			24,800*
Total	..	..	..	4,263,200*

Year 1949

Jan.	No Records			111,000*
Feb.	No Records			102,000*
Mar.	No Records			1,440,000*
Apr.	No Records			270,000*
May	No Records			88,000*
June	No Records			191,500*
July	No Records			230,000*
Aug.	No Records			400,000*
Sept.	No Records			256,000*
Oct.	No Records			670,000*
Nov.	No Records			472,000*
Dec.	No Records			173,000*
Total	..	..	..	4,403,500*

Year 1950

Jan.	159000	207	7724	478,876
Feb.	192000	1040	23926	1,339,908
Mar.	91900	4110	13878	860,460
Apr.	17400	3220	7917	475,040
May	4110	1260	2438	151,160
June	630000	965	44532	2,671,948
July	178000	8600	43524	2,698,526
Aug.	48400	6040	13450	833,960
Sept.	13100	3950	6481	388,860
Oct.	50400	4450	16969	1,052,060
Nov.	31000	3650	12066	723,980
Dec.	18400	3650	6910	428,480
Total	..	..	..	12,103,258

Year 1951

Jan.	158300	3650	24846	1,540,460
Feb.	109900	5140	15460	865,640
Mar.	107500	4790	16990	1,053,240
Apr.	6040	1960	3652	219,120
May	2520	1190	1647	102,100
June	18100	961	3741	224,444
July	2000	910	1293	80,160
Aug.	1740	720	999	61,940
Sept.	720	380	500	30,002
Oct.	486	210	364	22,560
Nov.	210	94	148	8,886
Dec.	94	62	70	4,340
Total	..	..	..	4,212,892

Year 19

Jan.	140	62	100	6,230
Feb.	4320	40	872	50,564
Mar.	11700	433	2158	133,820
Apr.	5340	600	1546	92,760
May	1820	540	1057	65,520
June	5760	486	1728	103,692
July	980	486	672	41,672
Aug.	121300	850	11820	732,826
Sept.	1740	540	959	57,560
Oct.	No Records			117,000*
Nov.	3000	380	998	59,886
Dec.	910	114	287	17,822
Total	..	..	..	1,479,352*

Year 1953

Jan.	8820	334	1745	108,168
Feb.	178000	334	12651	708,430
Mar.	81100	2290	11384	705,786
Apr.	5560	1050	2136	128,160
May	3330	720	1238	76,760
June	720	334	453	27,174
July	290	248	282	17,476
Aug.	425	187	224	13,896
Sept.	378	131	258	15,510
Oct.	220	88	165	10,228
Nov.	255	32	136	8,132
Dec.	32	12	22	1,378
Total	..	..	..	1,821,098

* Estimated.

CLARENCE RIVER AT LILYDALE

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	158	12	52	3,216
Feb.	700000	88	29821	1,669,998
Mar.	12000	777	3712	230,130
Apr.	1130	387	658	39,510
May	1760	301	685	42,484
June	7770	610	2110	126,594
July	281200	489	21880	1,356,566
Aug.	19600	1340	3543	219,660
Sept.	11200	610	2538	152,304
Oct.	77800	2080	13558	840,620
Nov.	56400	1550	7693	461,578
Dec.	4610	1340	2198	136,300
Total	..	..	..	5,278,960

Year 1955

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	16200	610	4118	255,302
Feb.	25900	1660	4998	279,860
Mar.	292100	3200	27206	1,686,792
Apr.	159000	4620	20286	1,219,180
May	242300	8000	17839	1,106,004
June	9000	2800	4607	276,440
July	4110	1840	2391	148,260
Aug.	1950	930	1215	75,360
Sept.	1340	852	968	58,080
Oct.	3500	495	1150	71,272
Nov.	2290	300	726	43,558
Dec.	8600	200	3239	200,848
Total	..	..	..	5,420,956

Year 1956

Jan.	207300	780	13420	832,040
Feb.	441000	5000	62211	3,608,260
Mar.	89500	9300	29688	1,840,634
Apr.	39100	3630	11256	675,340
May	229500	3430	17880	1,108,560
June	93700	2080	7894	473,646
July	5880	2000	3612	223,940
Aug.	2520	1020	1471	91,200
Sept.	1170	730	953	57,200
Oct.	1320	520	745	46,220
Nov.	570	215	388	23,286
Dec.	6900	185	892	55,288
Total	..	..	..	9,035,614

Year 1957

Jan.	2690	248	711	44,106
Feb.	8860	248	2556	143,120
Mar.	5880	1020	2335	144,800
Apr.	950	330	532	31,900
May	330	158	221	13,716
June	248	158	165	9,882
July	520	215	284	17,578
Aug.	5280	158	732	45,404
Sept.	2780	112	530	31,774
Oct.	248	33	77	4,774
Nov.	520	33	197	11,804
Dec.	215	10	45	2,784
Total	..	..	..	501,642

Year 1958

Jan.	2000	58	385	23,894
Feb.	2960	470	1276	71,440
Mar.	19200	248	2405	149,136
Apr.	2870	375	1525	91,520
May	1470	215	593	36,782
June	15200	215	2227	133,626
July	1550	330	804	49,860
Aug.	5880	248	1230	76,276
Sept.	1250	330	570	34,230
Oct.	840	215	421	26,082
Nov.	185	58	104	6,262
Dec.	3630	285	1221	75,720
Total	..	..	..	774,828

Year 1959

Jan.	425000	1700	34587	2,144,400
Feb.	280400	4120	21249	1,189,920
Mar.	111900	3500	18273	1,132,940
Apr.	23600	2480	7434	446,020
May	2350	1180	1615	100,140
June	1180	640	894	53,620
July	4500	700	1481	91,820
Aug.	1360	580	799	49,540
Sept.	3750	640	1640	98,380
Oct.	2350	530	1111	68,900
Nov.	138000	1270	20410	1,224,620
Dec.	39100	3360	11899	737,720
Total	..	..	..	7,338,020

Year 1960

Jan.	6370	1390	2930	181,680
Feb.	4060	1310	2482	143,960
Mar.	22300	1650	4798	297,460
Apr.	1920	780	1358	81,500
May	2430	650	773	47,900
June	2200	650	1020	61,200
July	850	590	709	43,940
Aug.	990	370	623	38,640
Sept.	370	140	256	15,348
Oct.	530	140	253	15,668
Nov.	370	80	163	9,796
Dec.	470	60	217	13,460
Total	..	..	..	950,552

Year 1961

Jan.	110	60	72	4,480
Feb.	64500	80	5831	326,560
Mar.	2430	590	1040	64,500
Apr.	1650	530	829	49,760
May	1070	280	431	26,700
June	2430	530	1417	85,040
July	3250	280	645	39,960
Aug.	1480	530	840	52,080
Sept.	3250	320	771	46,280
Oct.	4410	280	2083	129,120
Nov.	8250	370	2427	145,640
Dec.	42100	1830	8267	506,340
Total	..	..	..	1,476,460

CLARENCE RIVER AT LILYDALE

Year 1962

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	52000	4300	16600	1,030,000
Feb.	6285	2100	3800	213,000
Mar.	30700	1390	6490	402,000
Apr.	252300	3300	25800	1,550,000
May	5800	1900	2760	171,000
June	1900	700	1140	68,600
July	270400	620	22100	1,370,000
Aug.	12120	2020	3760	233,000
Sept.	2140	1240	1620	97,100
Oct.	2270	490	778	48,200
Nov.	700	330	440	26,400
Dec.	117300	330	7070	439,000
Total	..	..	..	5,648,300

Year 1963

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	227100	3350	27300	1,690,000
Feb	12000	1420	3290	184,000
Mar.	33600	1520	8820	547,000
Apr.	51600	2280	8410	504,000
May	491000	5770	48200	2,990,000
June	5970	2910	4240	254,000
July	4200	1400	2140	133,000
Aug.	1920	960	1200	74,100
Sept.	2650	450	983	59,000
Oct.	3170	650	1110	68,900
Nov.	6500	510	1960	118,000
Dec.	20400	1810	6970	432,000
Total	..	..	..	7,054,000

Year 1964

Jan.	3900	880	1690	105,000
Feb.	10760	800	2530	147,000
Mar.	182000	2270	16400	1,020,000
Apr.	56400	2520	9340	560,000
May	5450	1830	3020	187,000
June	3800	980	1650	98,800
July	2650	740	1380	85,300
Aug.	1330	430	662	41,000
Sept.	820	340	454	27,200
Oct.	2160	340	925	57,400
Nov.	3500	340	969	58,200
Dec.	900	130	371	23,000
Total	..	..	..	2,409,900

Year 1965

Jan.	1150	130	356	22,100
Feb.	1240	150	413	23,100
Mar.	920	20	150	9,300
Apr.	40	10	29	1,740
May	50	40	46	2,860
June	95	30	56	3,350
July	211100	70	9714	602,000
Aug.	1810	310	752	46,660
Sept.	2470	310	730	43,800
Oct.	540	125	222	13,740
Nov.	660	60	162	9,750
Dec.	33400	490	8720	540,000
Total	..	..	..	1,318,360

Year 1966

Jan.	1300	180	491	30,500
Feb.	1390	150	635	35,600
Mar.	790	150	399	24,700
Apr.	440	100	191	11,430
May	340	100	179	11,120
June	260	100	165	9,910
July	170	52	97	6,000
Aug.	1645	40	358	22,200
Sept.	1390	310	612	36,700
Oct.	2475	190	594	36,800
Nov.	28900	450	2850	171,000
Dec.	840	117	352	21,800
Total	..	..	..	417,760

Year 1967

Jan.	184600	235	7217	447,000
Feb.	39800	1340	4405	247,000
Mar.	106600	2550	20225	1,254,000
Apr.	10340	2100	5585	335,000
May	4070	840	1648	102,000
June	510000	690	58700	3,524,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

ORARA RIVER AT KARANGI NO. 2

LOCATION:	Latitude 30°15' Longitude 153°02'
PERIOD OF ESTABLISHMENT:	July 1951 to date
COMPLETE YEARS OF COMPUTED RECORDS:	15 years
ZERO OF GAUGE:	R.L. 81.58 Assumed Datum. Approximately 300 feet above sea level.
CATCHMENT AREA:	51 square miles
CONTROL:	Concrete measuring weir
EQUIPMENT:	Staff gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 87
	(b) Maximum observation in cusecs : 550
	(c) Minimum observation in cusecs : 2.7
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	25,000 cusecs
MEAN DAILY DISCHARGE FOR 15 YEARS:	219 cusecs
MEAN ANNUAL DISCHARGE FOR 15 YEARS:	160,000 acre feet.

ORARA RIVER AT KARANGI

Year 1951					Year 1952				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	2	0.5	1.1	69
Feb.	..	..	..	..	Feb.	487	0.5	40	2,331
Mar.	..	..	..	..	Mar.	400	36	82	5,054
Apr.	..	..	..	..	Apr.	1150	36	111	6,638
May	..	..	..	..	May	71	21	38	2,340
June	..	..	..	..	June	4430	13	137	8,224
July	..	..	..	..	July	36	17	23	1,428
Aug.	58	21	34	2,082	Aug.	12460	21	593	36,794
Sept.	21	13	19	1,156	Sept.	71	21	38	2,286
Oct.	17	9	15	910	Oct.	49	21	25	1,578
Nov.	9	3.5	6	376	Nov.	17	3.5	10	600
Dec.	3.5	2	2.4	151	Dec.	6	0.5	2.4	151
Total	..	..	..	..	Total	..	..	..	67,493

Year 1953					Year 1954				
Jan.	1210	1	69	4,278	Jan.	13	1.5	7	410
Feb.	7000	21	1049	59,744	Feb.	25000	9	1092	61,140
Mar.	13820	126	901	55,832	Mar.	241	42	115	7,130
Apr.	487	55	141	8,486	Apr.	879	42	94	5,630
May	109	55	78	4,866	May	372	42	107	6,652
June	73	24	38	2,270	June	372	49	94	5,628
July	20	16	18	1,128	July	18500	42	703	43,570
Aug.	16	10	14	848	Aug.	169	36	68	4,240
Sept.	13	7	12	708	Sept.	7000	25	383	23,006
Oct.	10	7	7	464	Oct.	1400	126	300	18,594
Nov.	7	3	5	292	Nov.	10010	58	566	33,948
Dec.	3	1.5	2.2	138	Dec.	5800	42	162	10,026
Total	..	..	..	139,054	Total	..	..	..	219,974

Year 1955					Year 1956				
Jan.	10700	36	413	25,598	Jan.	5650	41	358	22,214
Feb.	196	79	130	7,262	Feb.	20300	143	2446	141,876
Mar.	9570	96	715	44,326	Mar.	11400	226	1448	89,752
Apr.	19800	168	897	53,846	Apr.	508	96	201	12,050
May	17600	66	464	28,754	May	14600	66	529	32,799
June	143	56	89	5,318	June	7620	41	262	15,722
July	56	34	48	2,976	July	119	41	66	4,064
Aug.	34	25	29	1,774	Aug.	56	25	39	2,394
Sept.	1800	21	68	4,092	Sept.	25	21	24	1,428
Oct.	746	21	64	3,954	Oct.	21	15	18	1,134
Nov.	66	18	39	2,312	Nov.	15	6.5	11	651
Dec.	1920	12	270	16,758	Dec.	56	6.5	16	981
Total	..	..	..	196,970	Total	..	..	..	325,056

Year 1957					Year 1958				
Jan.	25	9	13	824	Jan.	41	6.5	12	739
Feb.	1190	6.5	211	11,818	Feb.	48	6.5	20	1,097
Mar.	4430	66	404	25,040	Mar.	4430	15	180	11,156
Apr.	66	29	42	2,550	Apr.	6200	41	318	19,060
May	29	18	22	1,366	May	119	41	68	4,226
June	18	9	14	852	June	4100	41	318	19,060
July	15	9	12	738	July	226	34	75	4,660
Aug.	5400	12	181	11,222	Aug.	7400	29	282	17,510
Sept.	96	21	37	2,202	Sept.	48	29	41	2,450
Oct.	18	9	13	786	Oct.	29	15	23	1,446
Nov.	15	4.5	9	543	Nov.	15	9	12	750
Dec.	21	4.5	9	553	Dec.	29	9	13	806
Total	..	..	..	58,494	Total	..	..	..	82,960

ORARA RIVER AT KARANGI

Year 1959

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	20000	25	970	60,148
Feb.	16900	119	1220	68,300
Mar.	10500	119	741	45,916
Apr.	1290	79	248	14,904
May	72	48	57	3,564
June	56	34	44	2,666
July	765	29	107	6,636
Aug.	56	25	37	2,272
Sept.	3510	34	209	12,524
Oct.	79	34	44	2,716
Nov.	18900	34	948	56,894
Dec.	196	66	98	6,092
Total	..	..	..	282,632

Year 1960

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	5100	41	396	24,552
Feb.	2160	56	232	13,472
Mar.	7300	119	800	49,620
Apr.	549	56	126	7,544
May	226	41	75	4,658
June	119	41	62	3,696
July	No Records			2,000*
Aug.	24	18	21	1,316
Sept.	17	13	15	878
Oct.	24	10	13	792
Nov.	14	10	11	670
Dec.	10	5	75	462
Total	..	..	..	109,660*

Year 1961

Jan.	24	45	9.2	572
Feb.	2000	13	233	13,046
Mar.	210	52	89	5,494
Apr.	139	41	63	3,788
May	549	28	68	4,202
June	3645	61	329	19,738
July	56	33	40	2,506
Aug.	52	27	34	2,110
Sept.	3420	24	151	9,046
Oct.	429	39	95	5,904
Nov.	61	34	50	2,972
Dec.	1090	46	146	9,082
Total	..	..	..	78,460

Year 1962

Jan.	6200	61	504	31,230
Feb.	591	69	178	9,960
Mar.	4520	61	452	28,048
Apr.	19000	117	1819	109,120
May	2880	84	393	24,348
June	88	44	56	3,370
July	12000	38	1045	64,800
Aug.	468	59	122	7,560
Sept.	61	38	47	2,820
Oct.	36	22	28	1,710
Nov.	22	17.0	20	1,170
Dec.	3340	15.0	201	12,500
Total	..	..	..	296,636

Year 1963

Jan.	5600	94	524	32,500
Feb.	111	56	73	4,070
Mar.	6700	98	952	59,100
Apr.	17600	94	1081	64,900
May	19200	78	1816	113,000
June	3340	78	300	18,000
July	160	61	85	5,290
Aug.	56	36	43	2,670
Sept.	620	18.0	60	3,570
Oct.	116	38	72	4,440
Nov.	670	29	86	5,170
Dec.	850	48	204	12,700
Total	..	..	..	325,410

Year 1964

Jan.	116	32	57	3,540
Feb.	4430	38	526	30,000
Mar.	18950	80	852	52,800
Apr.	5000	112	515	30,900
May	170	57	92	5,720
June	57	34	46	2,770
July	38	22	29	1,780
Aug.	38	16.0	20	1,260
Sept	19.0	14.0	15.9	956
Oct.	14.0	9.0	11.6	719
Nov.	59	10.0	19.0	1,140
Dec.	22	8.0	13.3	822
Total	..	..	..	132,407

Year 1965

Jan.	8.5	7.0	7.6	469
Feb.	11.0	7.0	8.0	448
Mar.	20	7.0	14.5	900
Apr.	14.0	6.0	10.9	653
May.	14.0	6.5	8.8	546
June	135	6.0	23	1,350
July	7300	22	354	21,900
Aug.	53	25	34	2,090
Sept.	27	15.0	22	1,350
Oct.	16.0	11.0	13.0	805
Nov.	3340	6.0	146	8,730
Dec.	955	59	253	15,700
Total	..	..	..	54,941

Year 1966

Jan.	59	20	31	1,920
Feb.	130	14	31	1,740
Mar.	27	19	22	1,360
Apr.	330	11	44	2,620
May	55	19	29	1,770
June	570	16	54	3,240
July	27	14	20	1,250
Aug.	19	13	15	940
Sept.	24	14	18	1,090
Oct.	23	13	17	1,080
Nov.	1890	19	110	6,630
Dec.	23	13	18	1,090
Total	..	..	..	24,730

ORARA RIVER AT KARANGI

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	19600	14	811	50,300
Feb.	1040	56	192	10,700
Mar.	1240	120	412	25,500
Apr.	1240	77	332	19,900
May	89	40	66	4,110
June	15400	35	2850	171,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

NYMBOIDA POWER STATION DIVERSIONS

The Nymboida Power Station is a hydro-electric generating station operated by the Northern Rivers County Council, with headquarters at Grafton.

A low weir has been built across the Nymboida River about three miles downstream from the gauging station at Nymboida, and it impounds a storage of about 250 million gallons, or some 900 acre feet. From the weir storage, water is diverted through two tunnels which pass under a ridge to the east of the river. The water is then led into penstocks which descend to the power station, located on the floor of the valley of Goolang Creek, a little over one mile to the east of the Nymboida River and about 200 feet lower than the Nymboida River weir. Tailwater from the power station passes into Goolang Creek, and thence into Blaxland's Creek, which joins the Orara River about one mile downstream from Coutts Crossing.

Details of the diversions, which commenced in 1924, are recorded by the Northern Rivers County Council.

In the forty-two years from 1925 to 1966, the average annual diversion has been 131,000 acre feet, equivalent to a continuous flow of 179 cusecs. The maximum annual diversion was over 263,000 acre feet (360 cusecs) in 1950, and the maximum monthly diversion was 23,550 acre feet (392 cusecs) in September 1956.

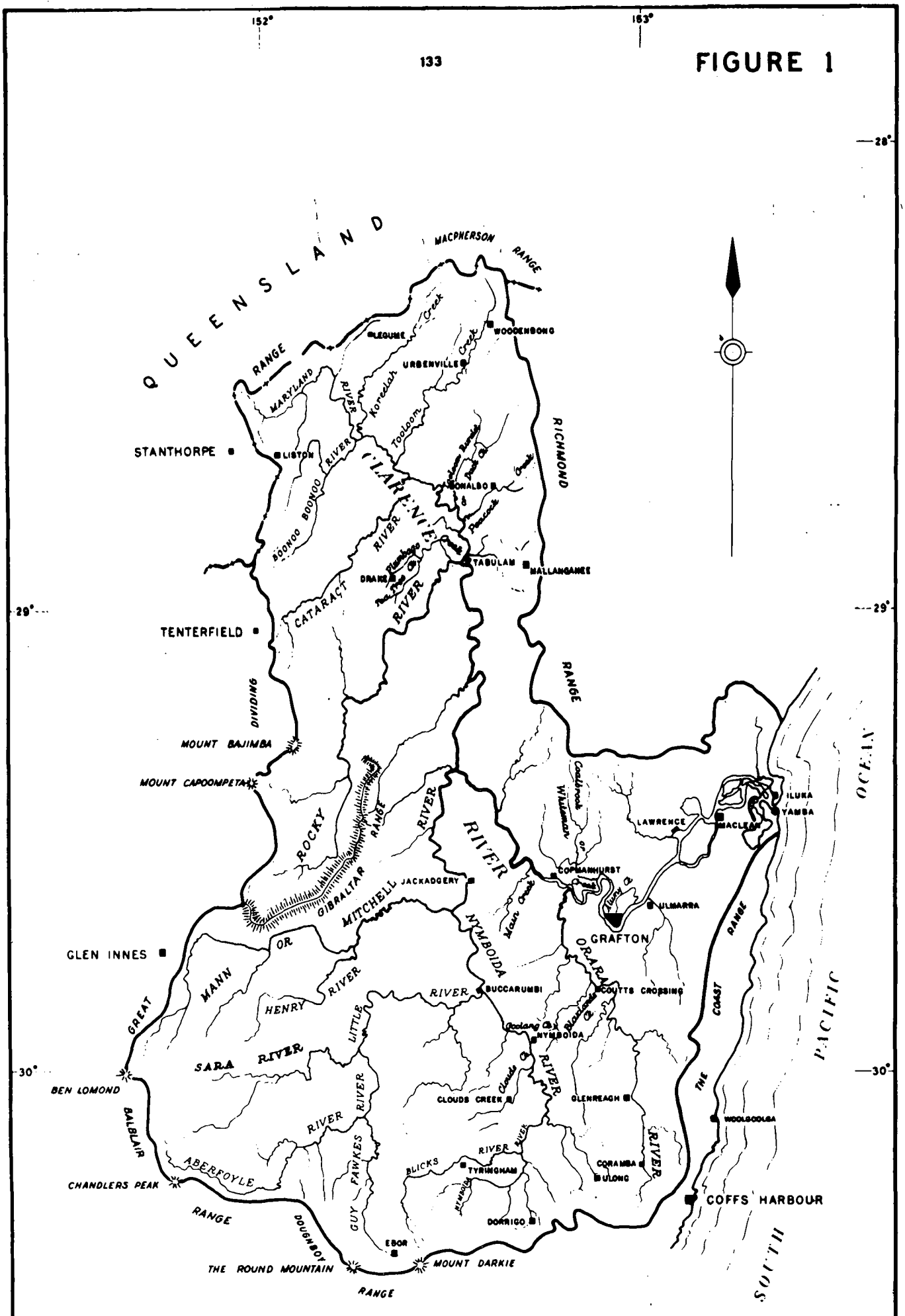
NYMBOIDA POWER STATION
Monthly Diversions in Acre Feet.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1925													6250
1926													9500
1927													11460
1928													12750
1929													15760
1930			NO MONTHLY DIVERSIONS AVAILABLE FOR 1924 TO 1937										19100
1931													21800
1932													24000
1933													23360
1934													59100
1935													72600
1936													77700
1937													97300
1938	9672	9672	10498	9092	9528	9342	9614	9478	9368	10008	9662	7166	113100
1939	6748	6724	11506	11310	11740	11092	11694	11356	8900	12104	12380	12714	128268
1940	13504	10648	10950	12970	11380	7896	6642	6258	4722	3720	2166	11022	101878
1941	12694	12888	14366	13290	12814	12334	10228	7050	4278	3788	4262	1618	109610
1942	1632	12170	14376	13672	8626	8880	9722	6016	4178	9938	13934	14748	117892
1943	15044	13760	11600	12804	12940	15008	10024	11486	13366	15254	13778	15646	160704
1944	15628	15388	16642	14732	10786	9080	14280	12032	14742	13460	8658	7394	152822
1945	7616	6772	7572	10226	9222	13858	15220	15662	14066	10476	10324	15238	136252

NYMBOIDA POWER STATION
Monthly Diversions in Acre Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1946	12624	13058	16270	15678	17138	13120	8950	5598	6298	5748	4818	6292	125592
1947	8898	15138	16934	17486	17152	17084	13220	10598	10776	7362	10166	16572	161386
1948	19206	17388	18516	18328	18502	16302	19590	19560	16448	12322	11264	9030	196456
1949	14188	14570	21442	21120	21424	20778	20274	21476	22140	22500	21466	22170	243548
1950	22266	21126	23278	22380	22628	20746	22748	22804	21270	21788	20684	21384	263102
1951	21826	19732	21484	18900	19700	19800	19600	16100	13800	11450	5910	5200	193502
1952	1970	1460	16100	17200	10130	13800	9180	19100	19300	17100	10850	7800	143990
1953	13760	15150	19800	21000	19700	14350	9980	7100	5500	4350	1980	1820	134490
1954	6419	11300	19340	17950	17410	18420	18200	19100	18120	18490	18630	19840	203219
1955	19770	18000	20410	19980	20420	19830	20470	19450	17340	16910	15300	17810	225690
1956	20140	19770	22020	19880	19870	19350	20000	19850	23550	12830	7560	1150	205970
1957	9580	17410	21620	20030	13340	9070	8430	8820	13320	6100	7280	6210	141210
1958	9240	13780	18380	20070	19920	19510	20600	20460	16440	10740	6370	14880	190390
1959	19130	19140	21040	20530	10820	19560	20450	29800	20070	20300	20340	20680	241860
1960	20440	19100	21750	20590	20730	20400	17220	11540	8010	7440	5320	5180	177720
1961	8520	13910	20460	19510	14860	20910	18650	17150	17300	20700	20200	21100	213270
1962	21200	19510	21700	20000	21800	20700	20300	21500	20300	17800	15600	17050	237460
1963	22150	19500	20970	20750	21700	20900	21440	21588	16550	10960	20462	21333	248303
1964	20692	19907	21300	21055	21142	20076	17366	12722	9793	8200	9224	6567	188044
1965	9529	10233	7446	5986	5992	6399	14837	20265	13846	10033	6147	22521	133234
1966	19874	15607	13481	9715	8320	9663	6246	9206	9637	13979	20247	12844	148819
1967	20021	19568	21823	21203	21346	20026							

FIGURE 1



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLARENCE RIVER VALLEY

MILES 10 5 0 10 20 30 MILES
SCALE

FIGURE 2

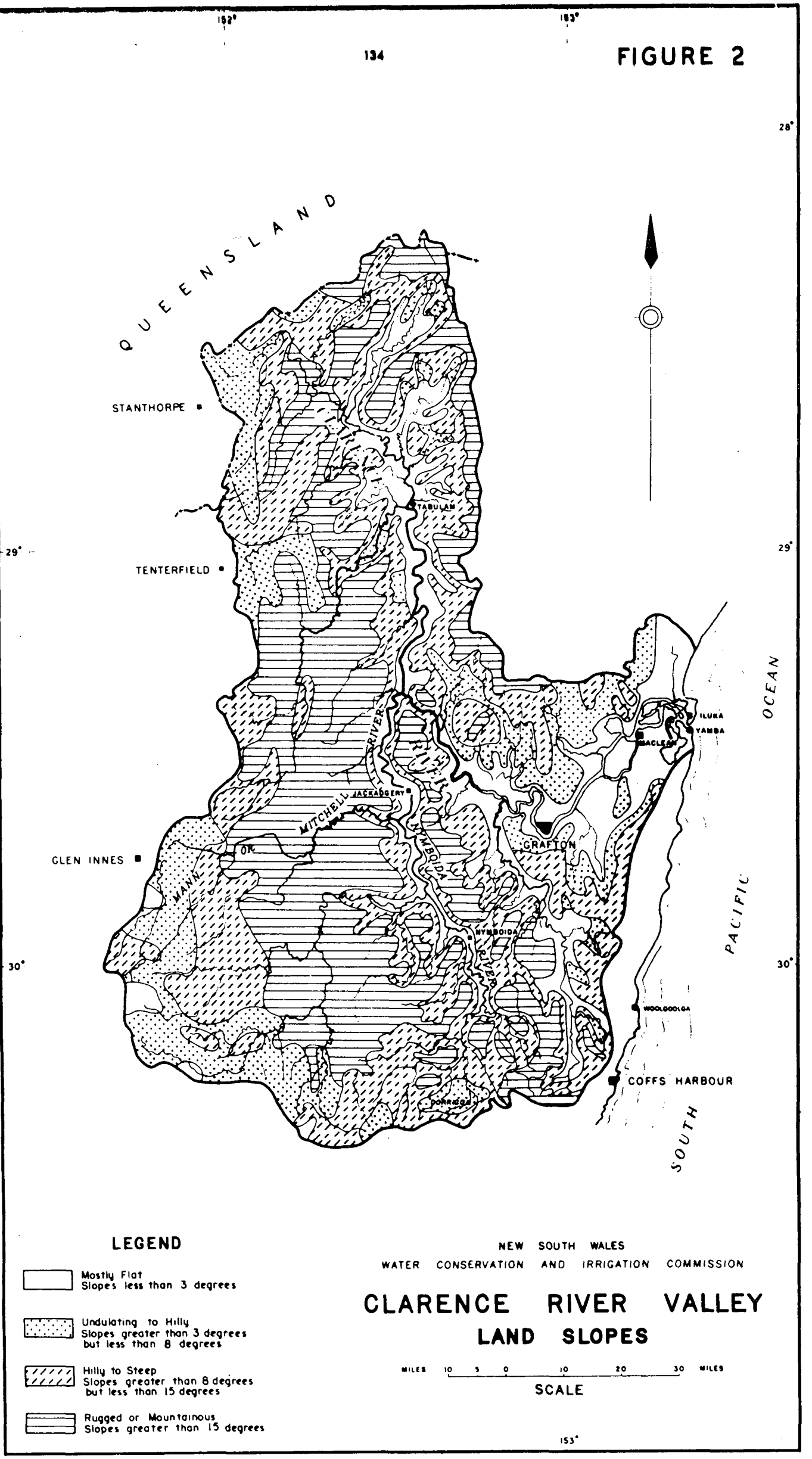
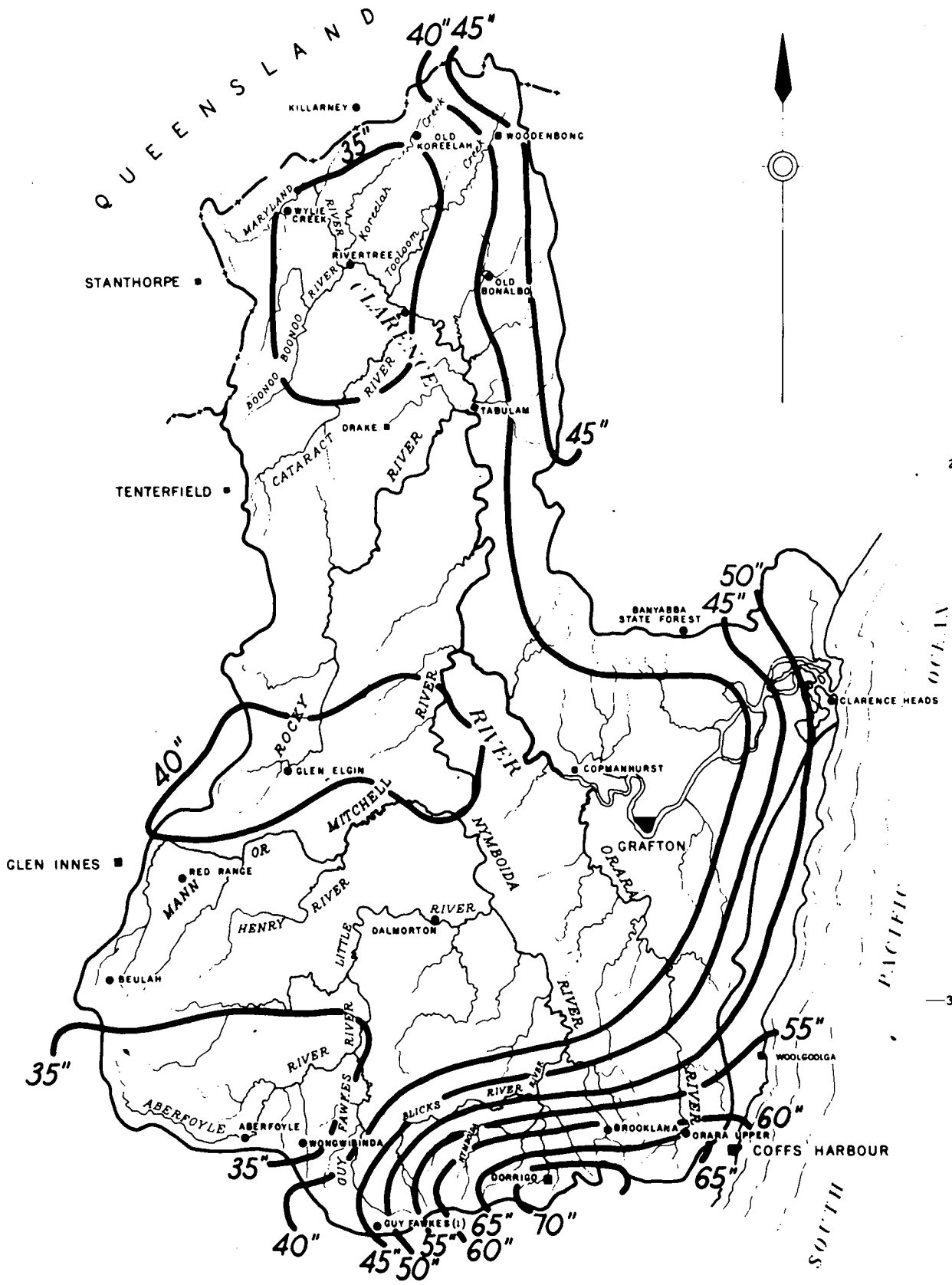

152°
153°
28°
29°
30°
QUEENSLAND
STANTHORPE
TENTERFIELD
GLEN INNES
TABULAM
JACKADGERY
MITCHELL
RIVER
MANN
OR.
NYMBOIDA
RIVER
NYMBOIDA
GRAFTON
ILUKA
YAMBA
MACLEAN
WOOLGOOLGA
COFFS HARBOUR
DORRIGO
PACIFIC
OCEAN
SOUTH
LEGEND
Mostly Flat
Slopes less than 3 degrees
Undulating to Hilly
Slopes greater than 3 degrees
but less than 8 degrees
Hilly to Steep
Slopes greater than 8 degrees
but less than 15 degrees
Rugged or Mountainous
Slopes greater than 15 degrees
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
CLARENCE RIVER VALLEY
LAND SLOPES
MILES 10 5 0 10 20 30 MILES
SCALE

FIGURE 3



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

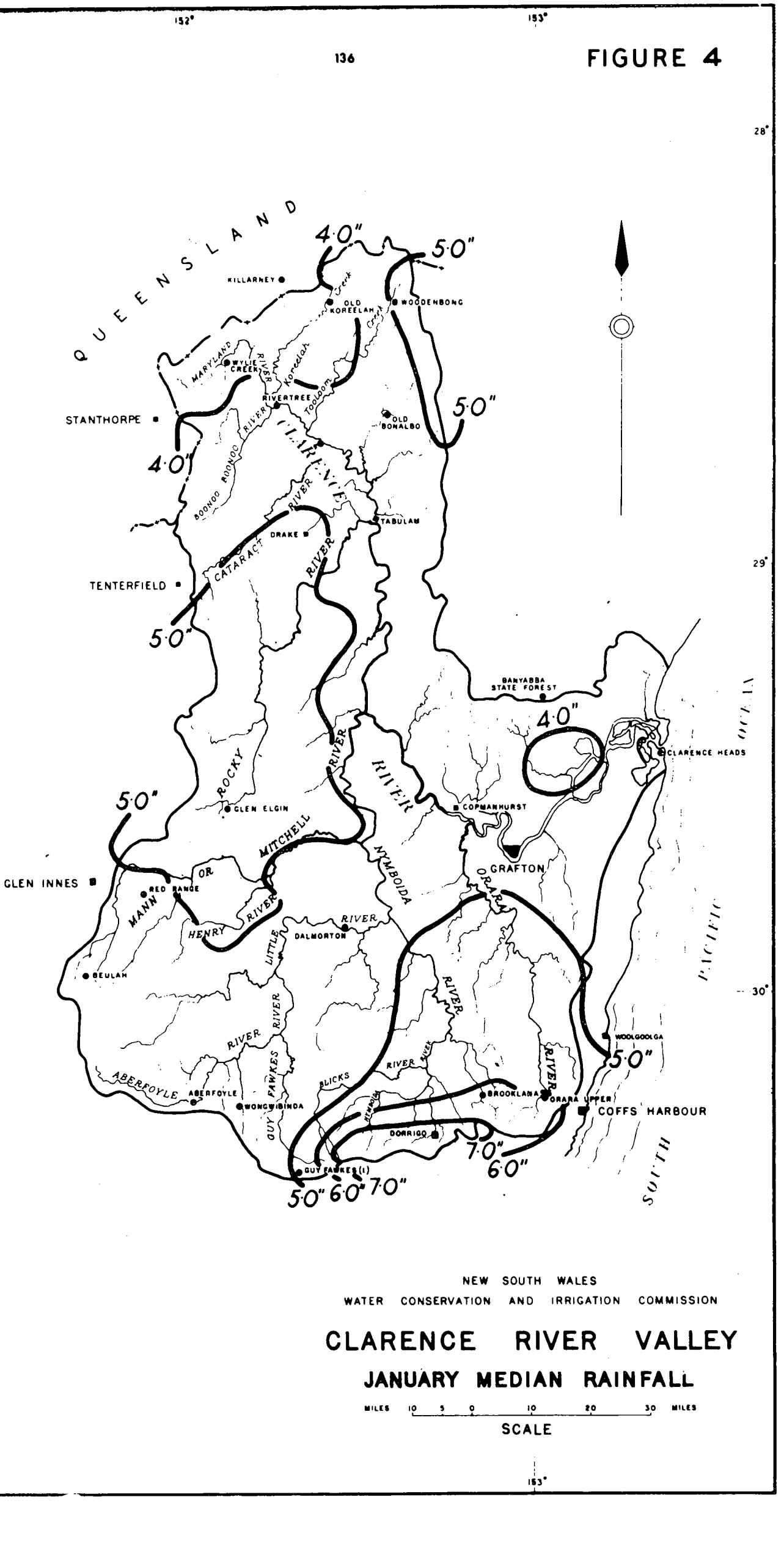
CLARENCE RIVER VALLEY

ANNUAL MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 4



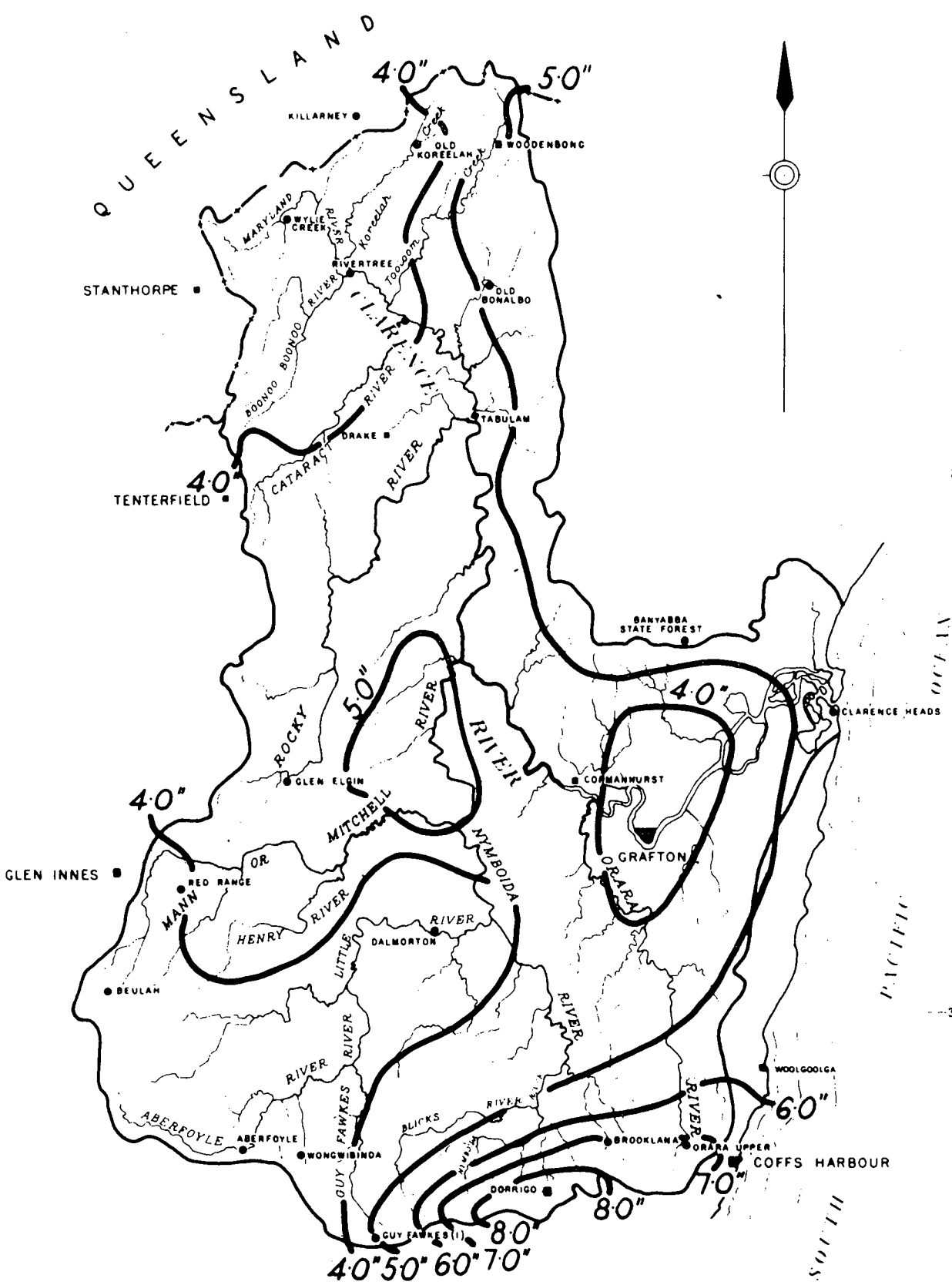
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLARENCE RIVER VALLEY

JANUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES
SCALE

FIGURE 5



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

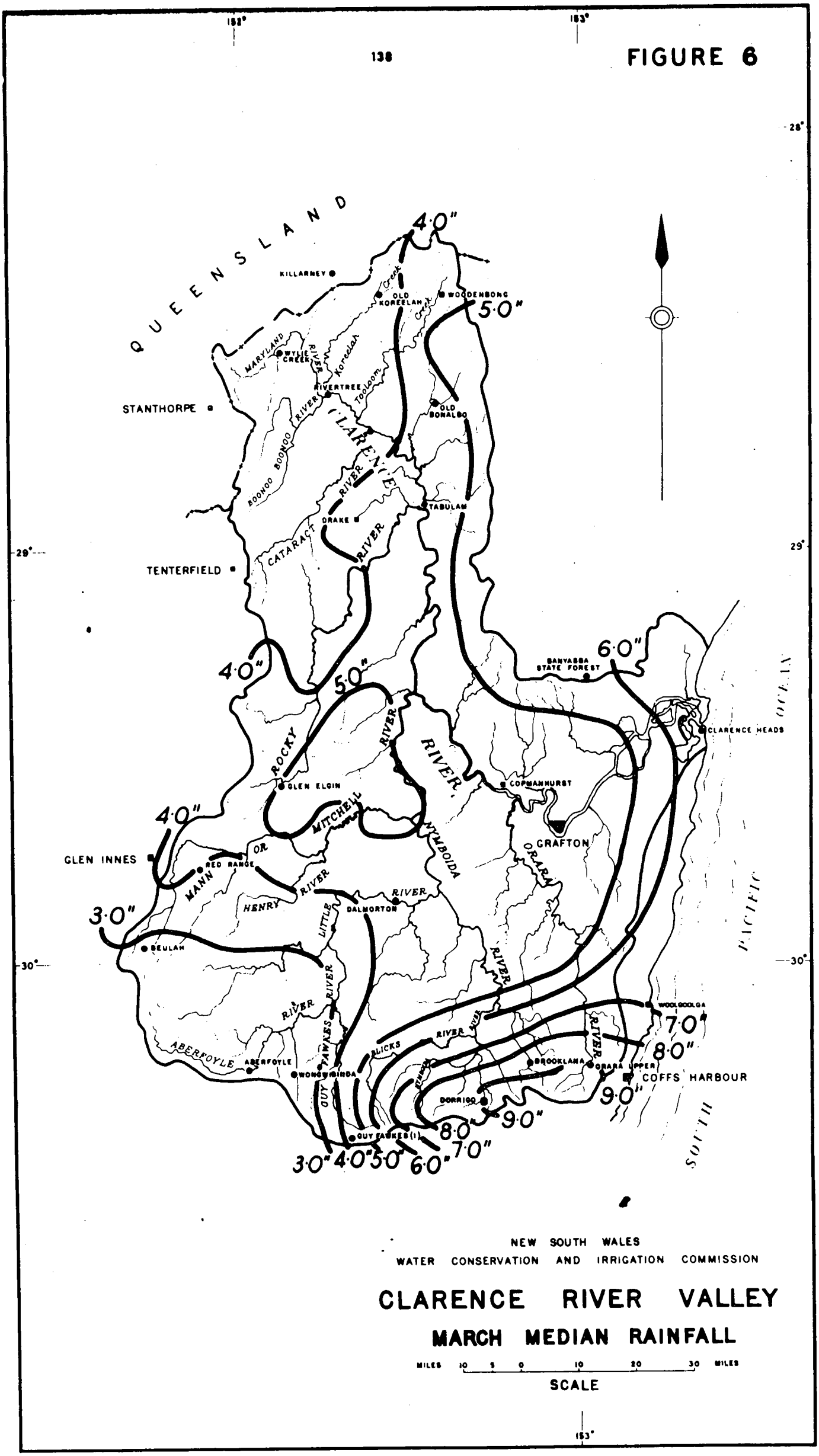
CLARENCE RIVER VALLEY

FEBRUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 6



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

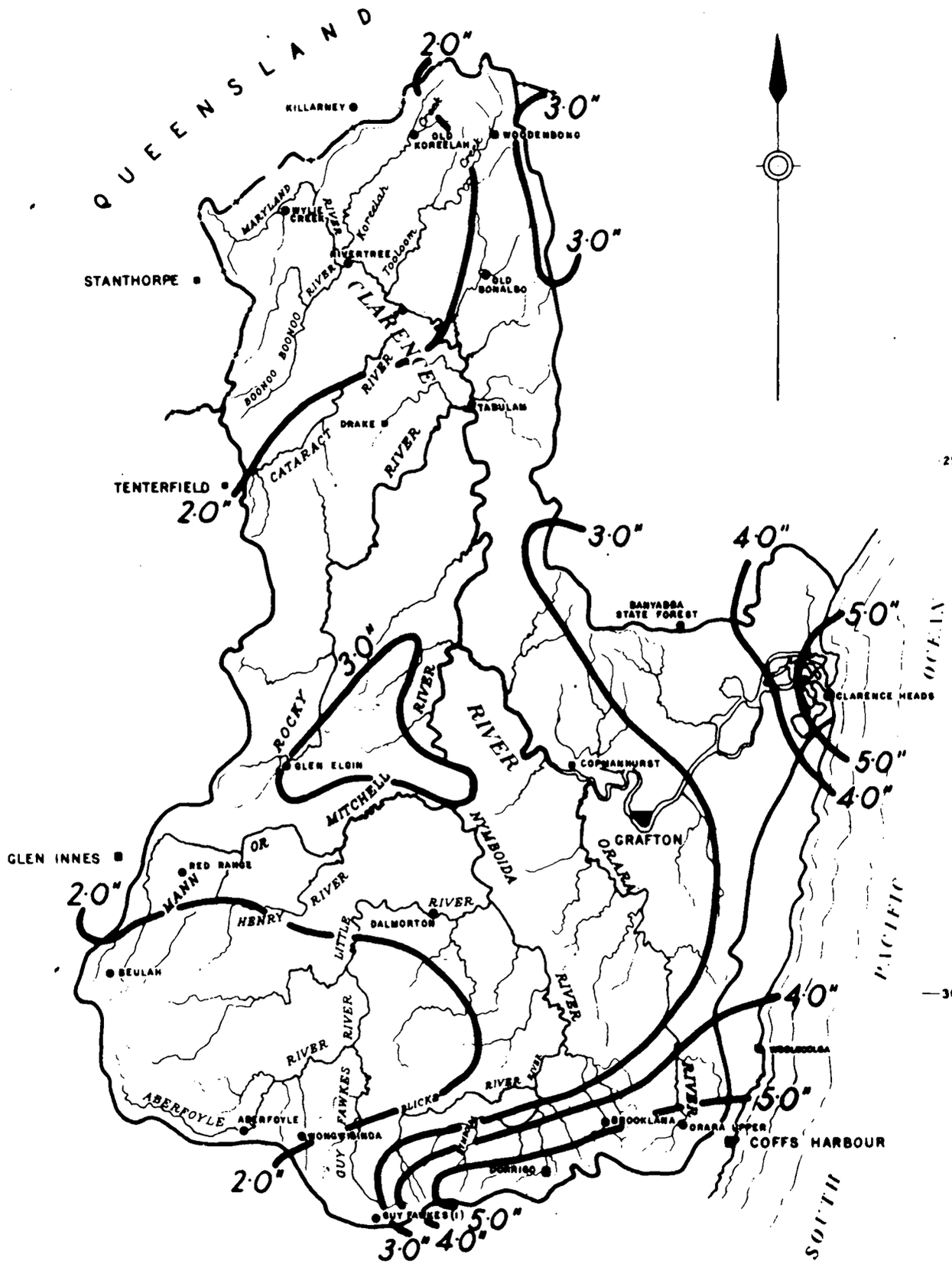
CLARENCE RIVER VALLEY

MARCH MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 7



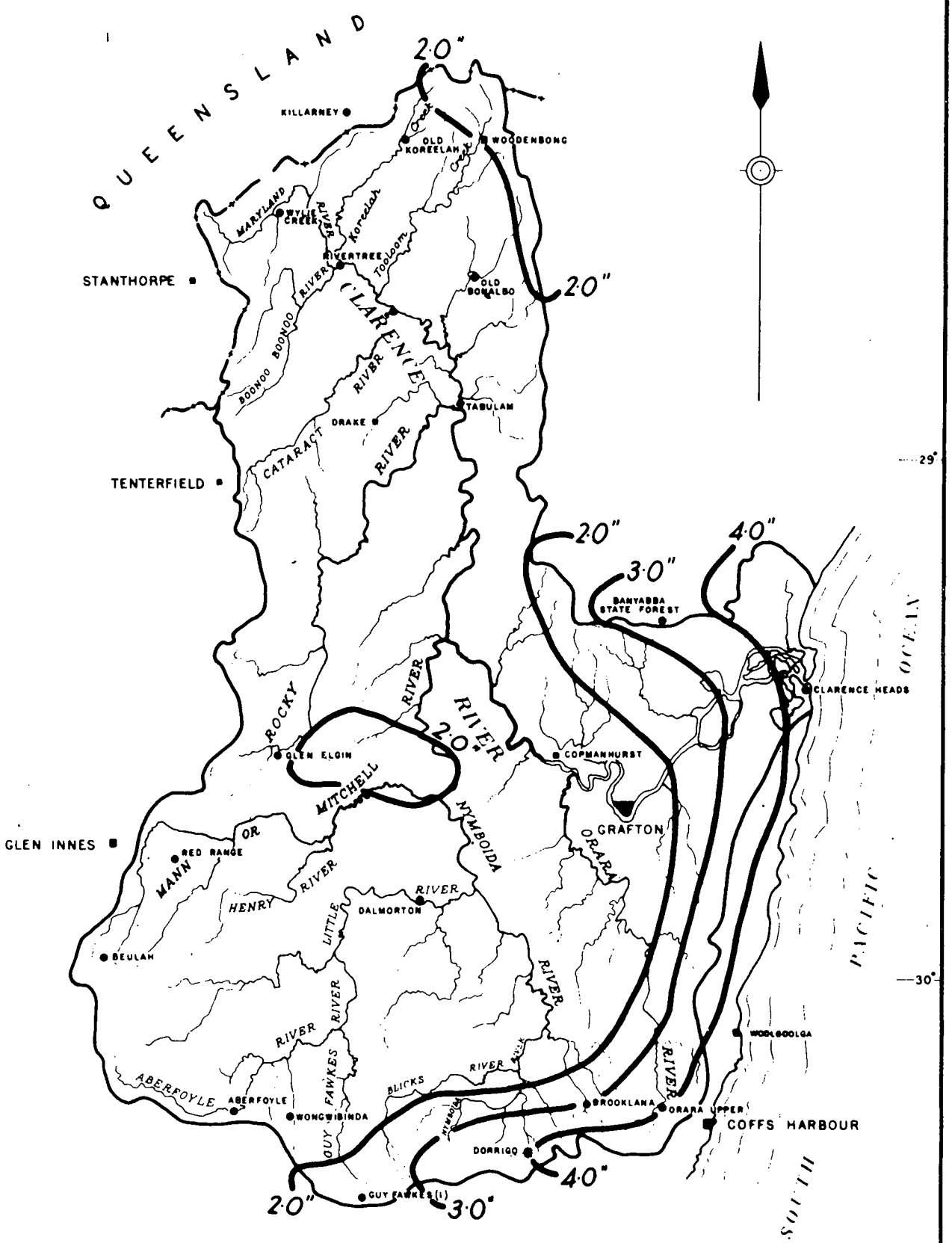
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

CLARENCE RIVER VALLEY

APRIL MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES
SCALE

FIGURE 8



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

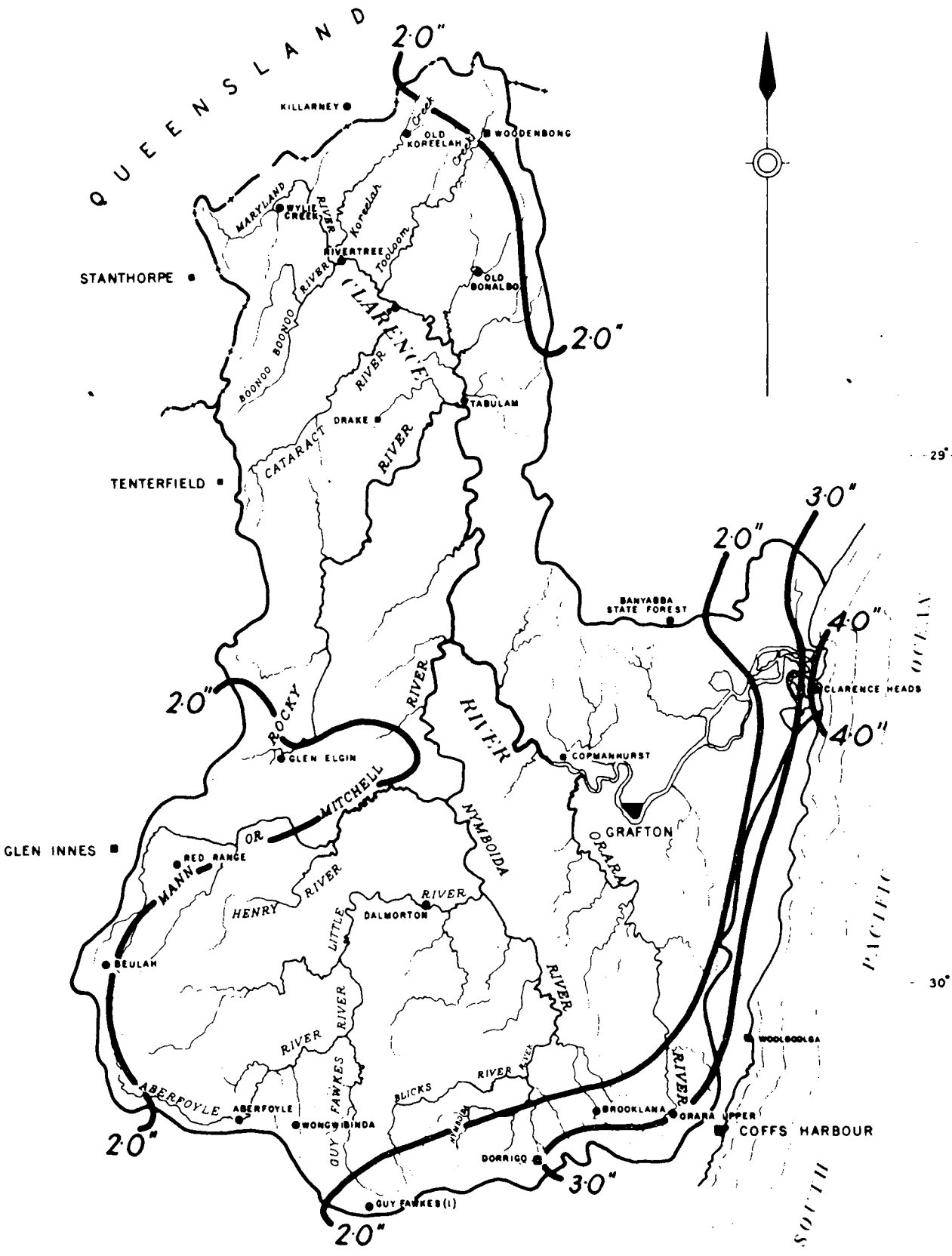
CLARENCE RIVER VALLEY

MAY MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 9



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

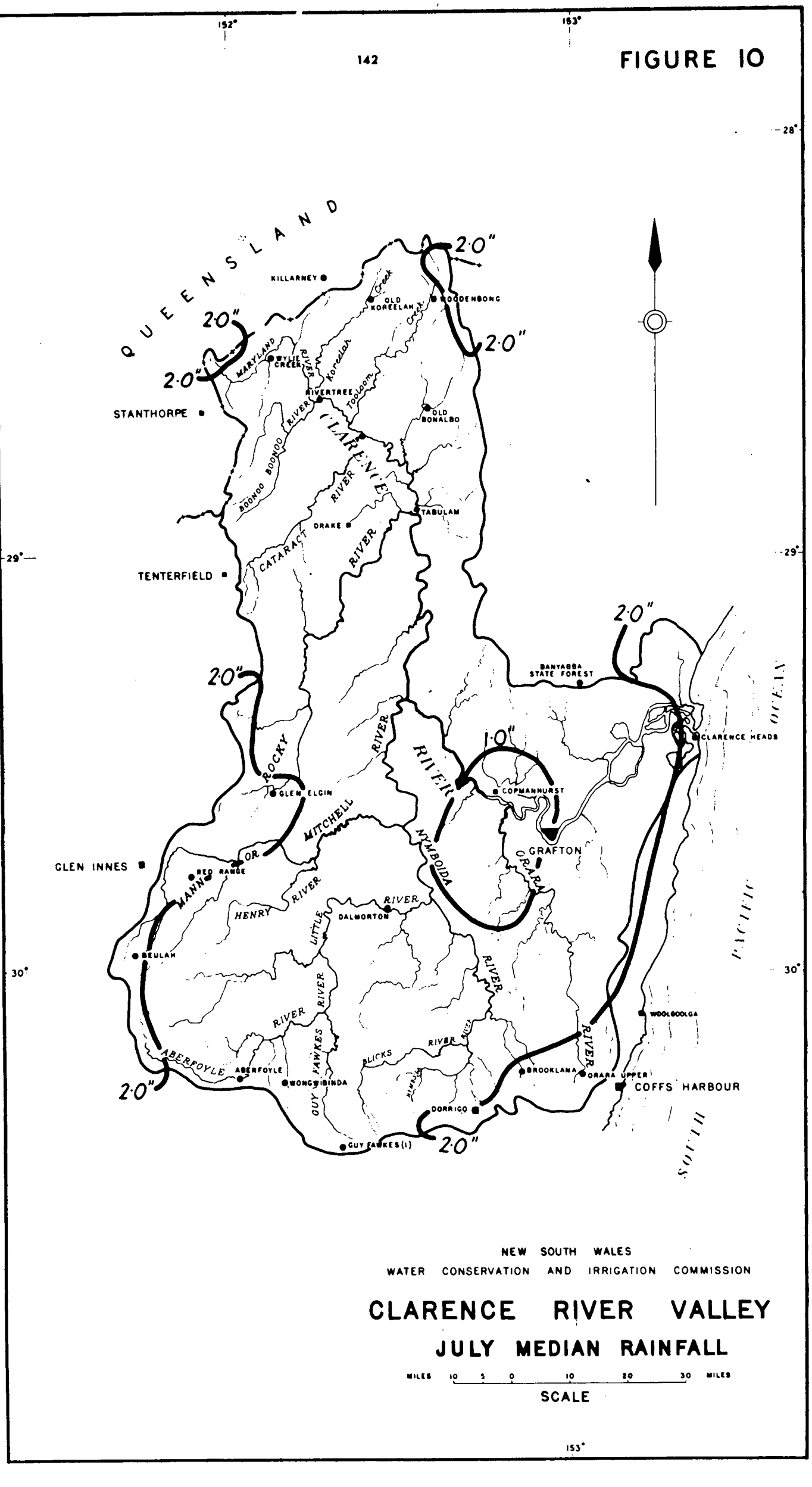
CLARENCE RIVER VALLEY

JUNE MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 10



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

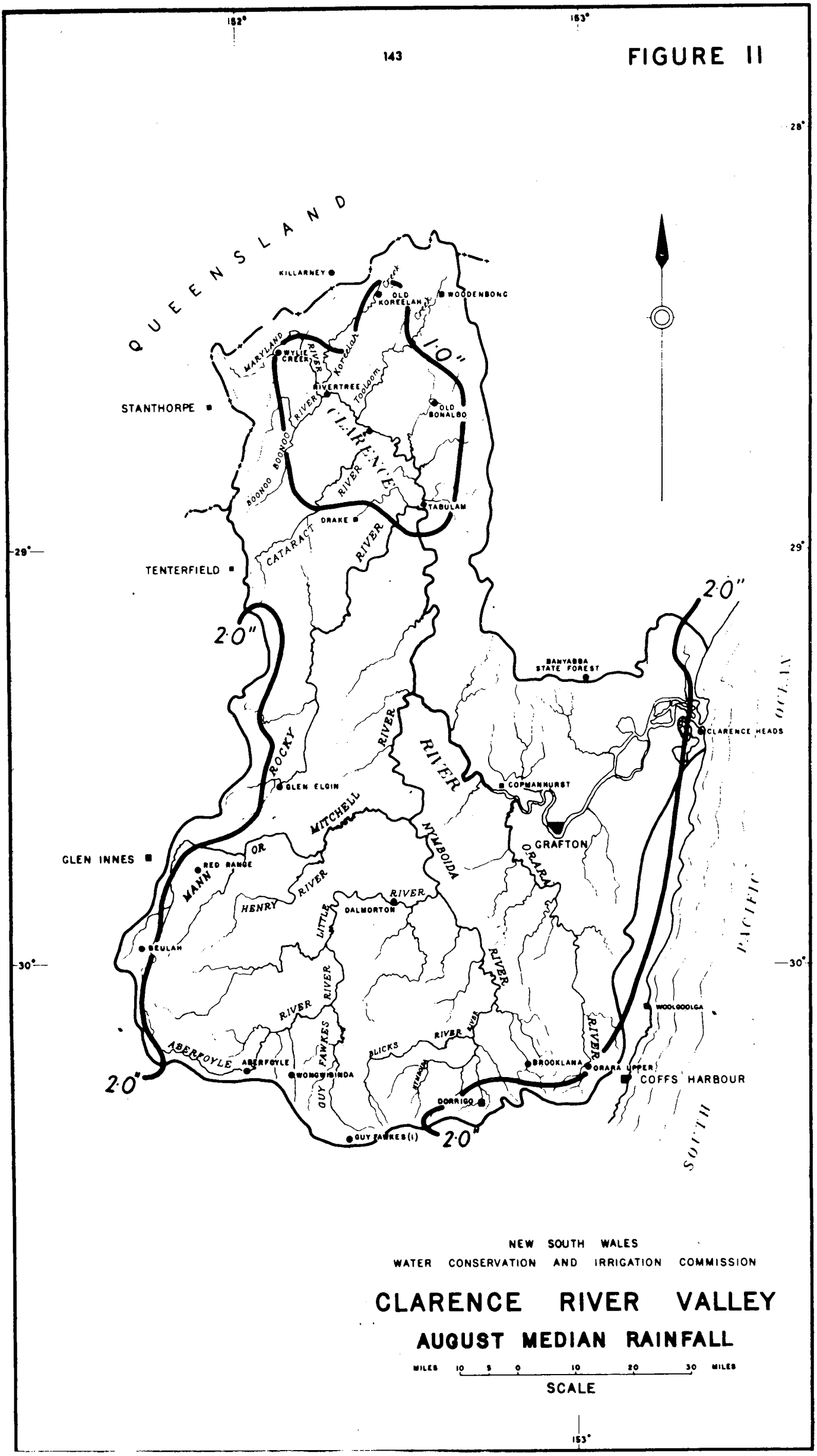
CLARENCE RIVER VALLEY

JULY MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 11



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

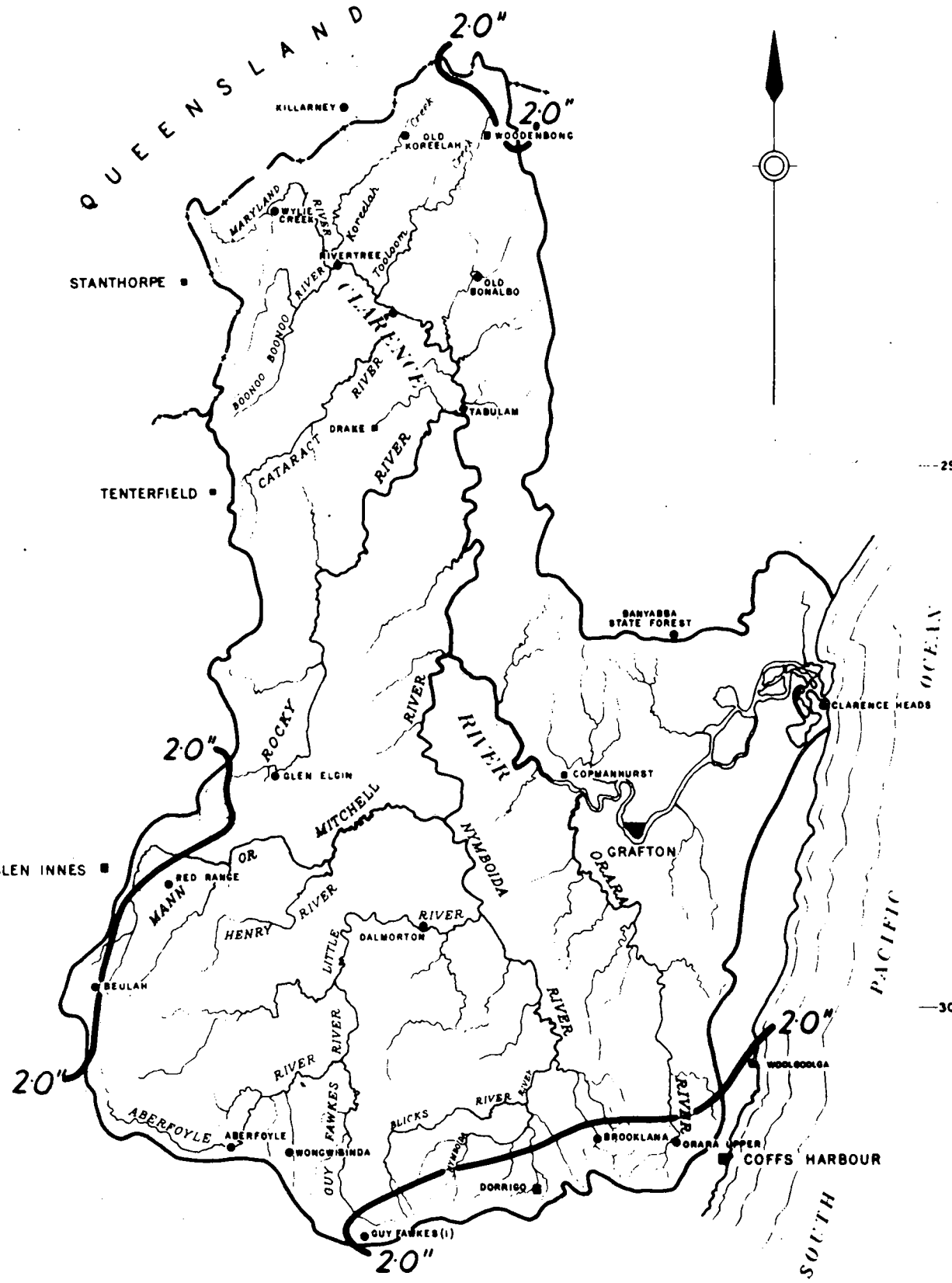
CLARENCE RIVER VALLEY

AUGUST MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 12



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

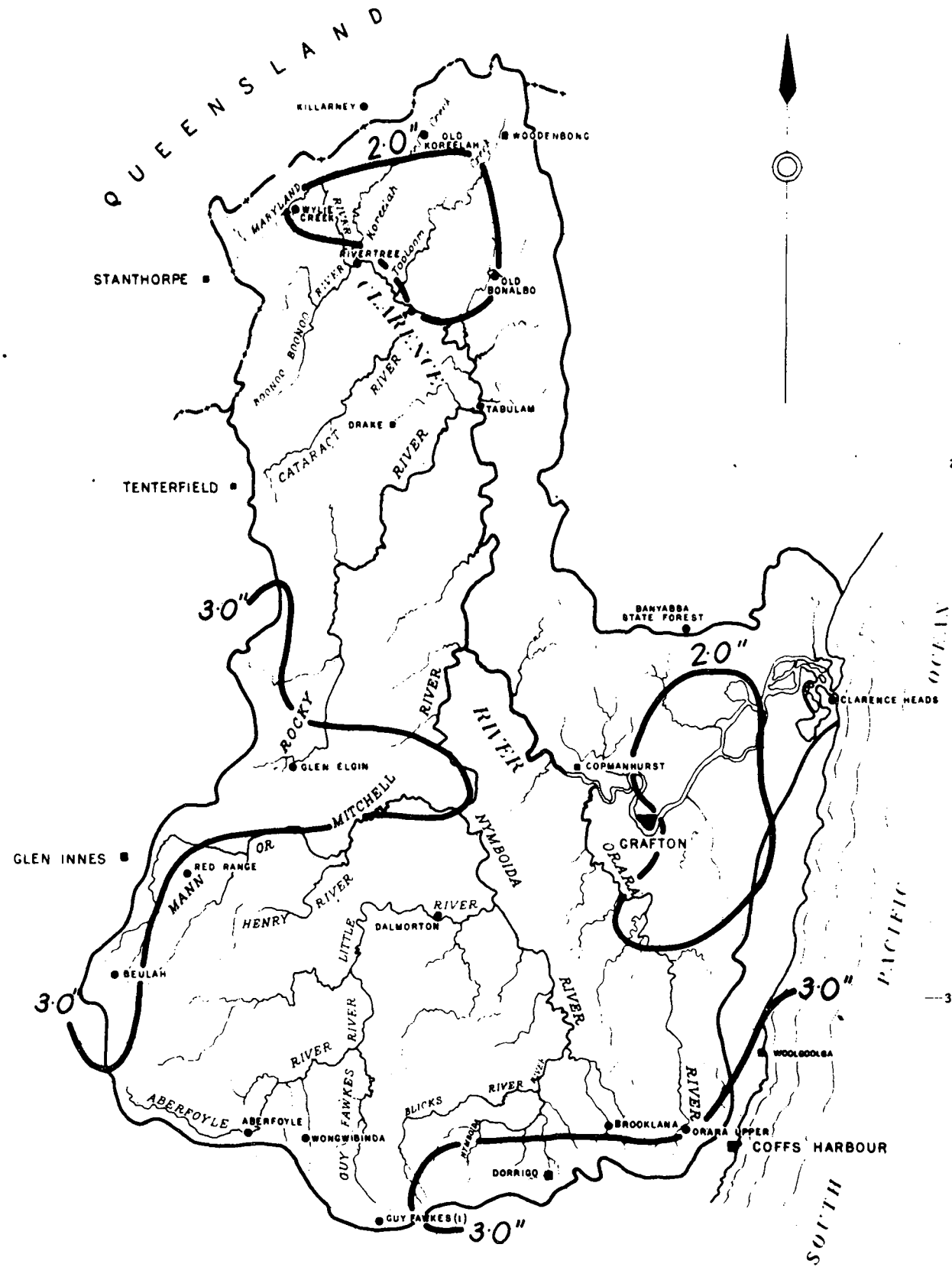
CLARENCE RIVER VALLEY

SEPTEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 13



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

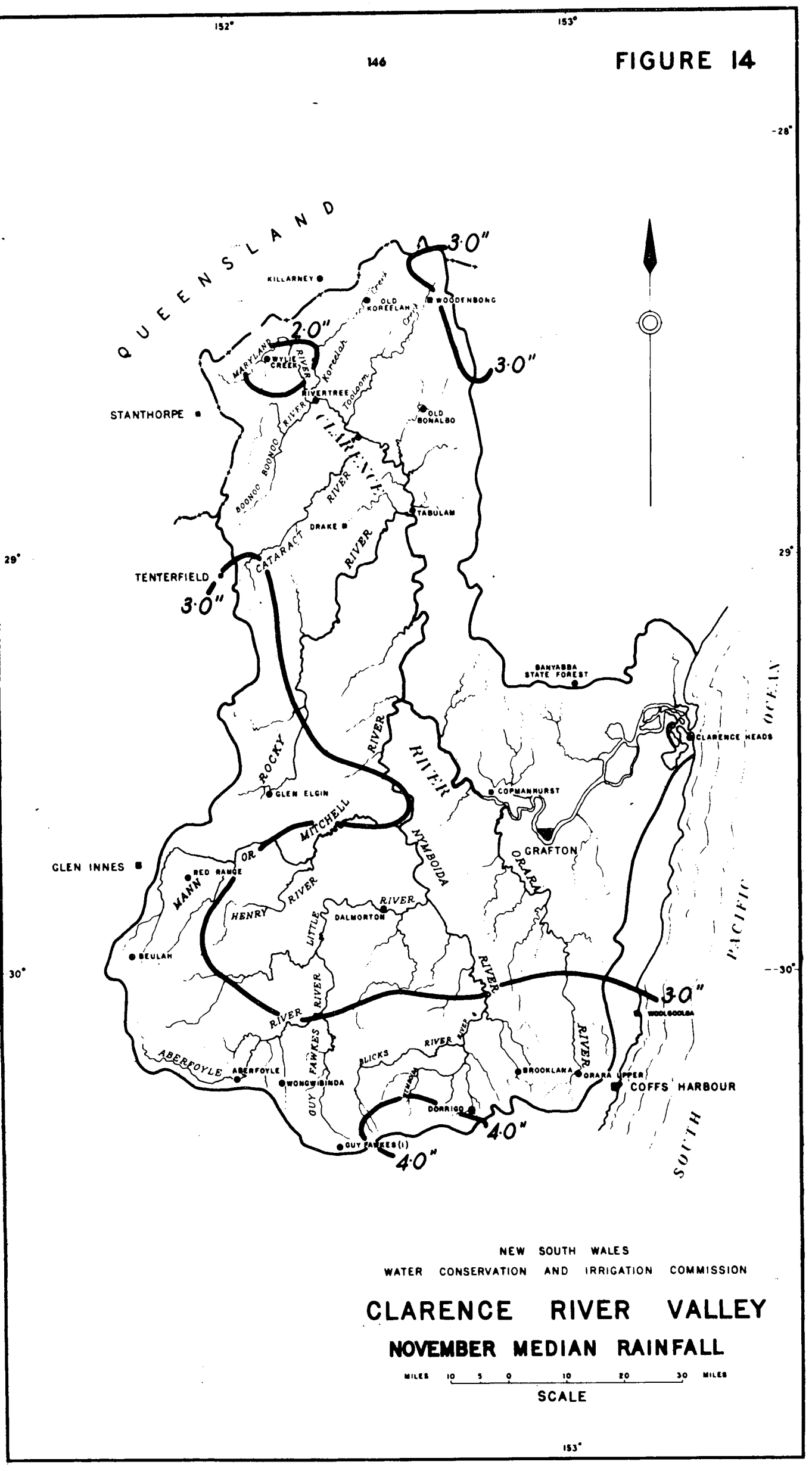
CLARENCE RIVER VALLEY

OCTOBER MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 14



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

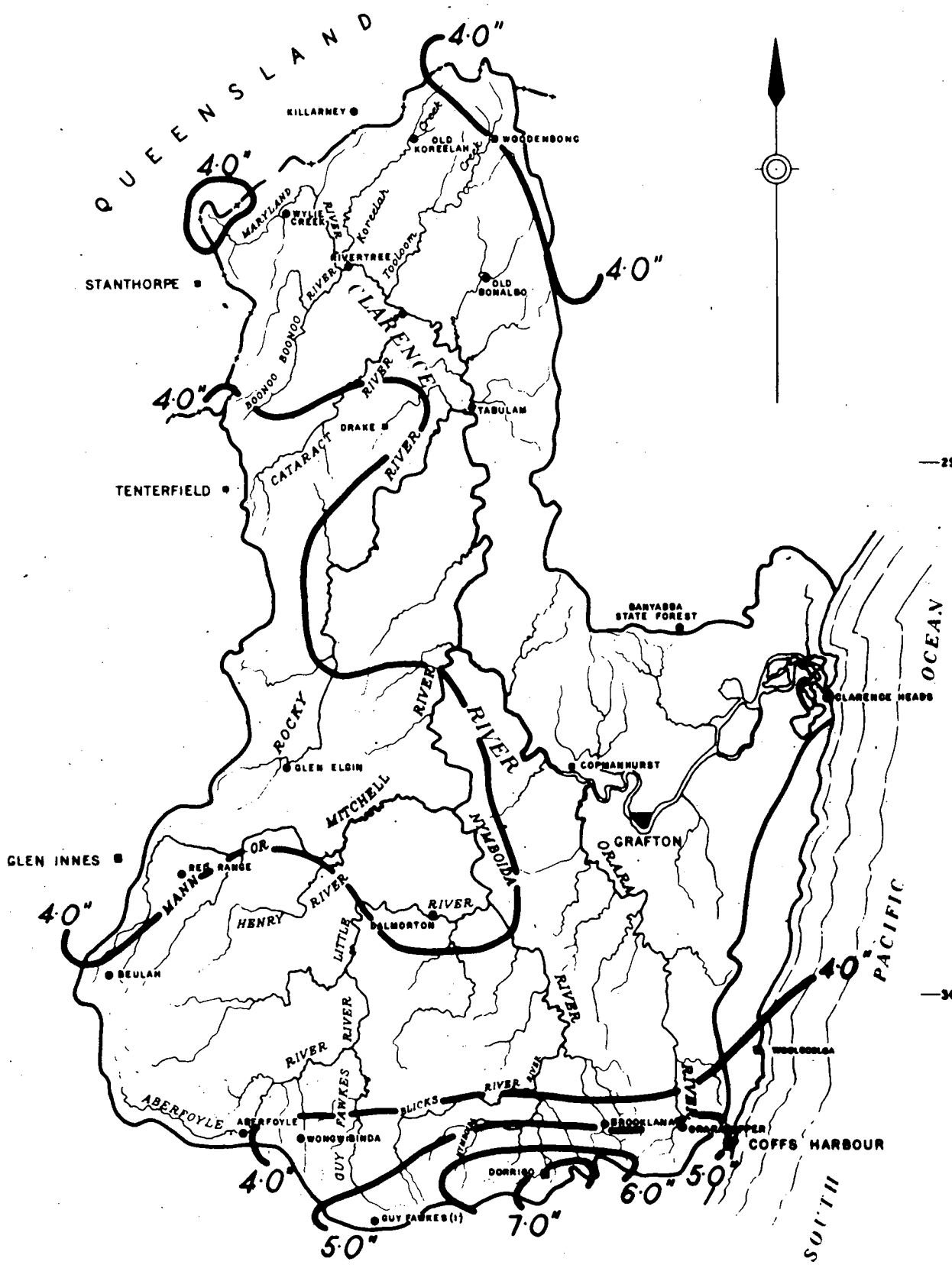
CLARENCE RIVER VALLEY

NOVEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

FIGURE 15



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

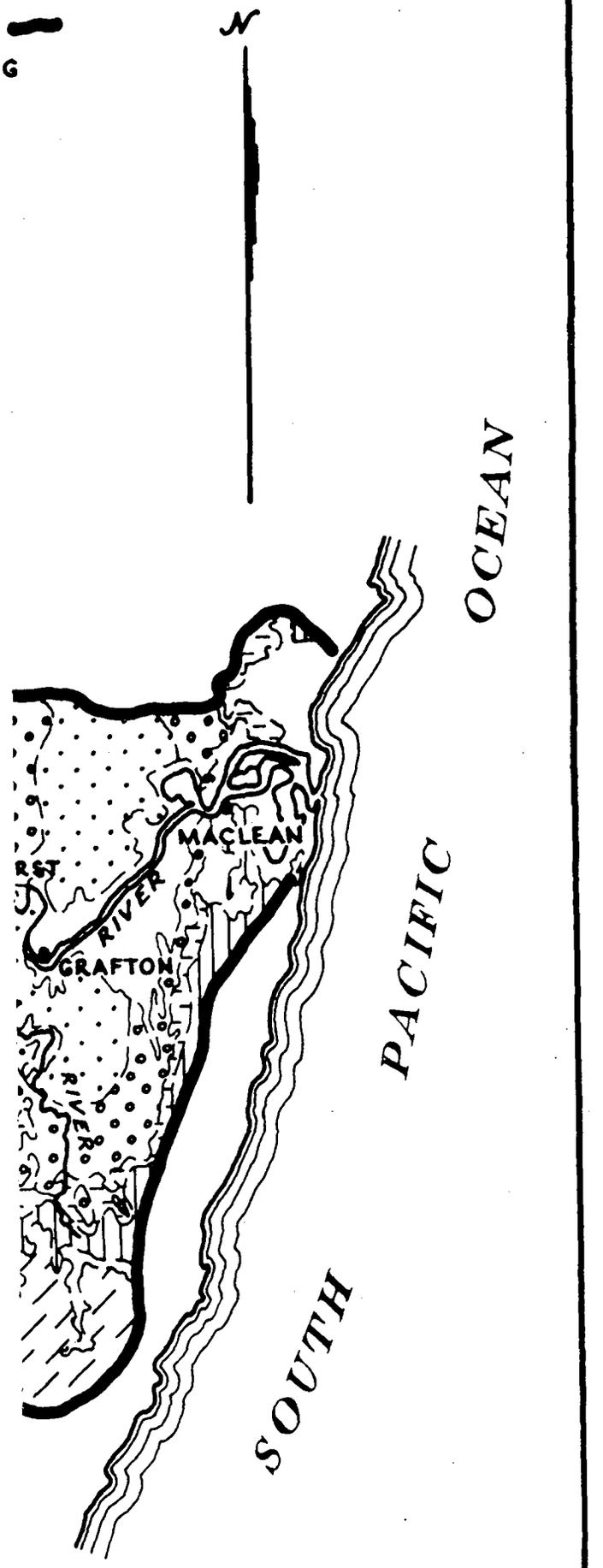
CLARENCE RIVER VALLEY

DECEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 30 MILES

SCALE

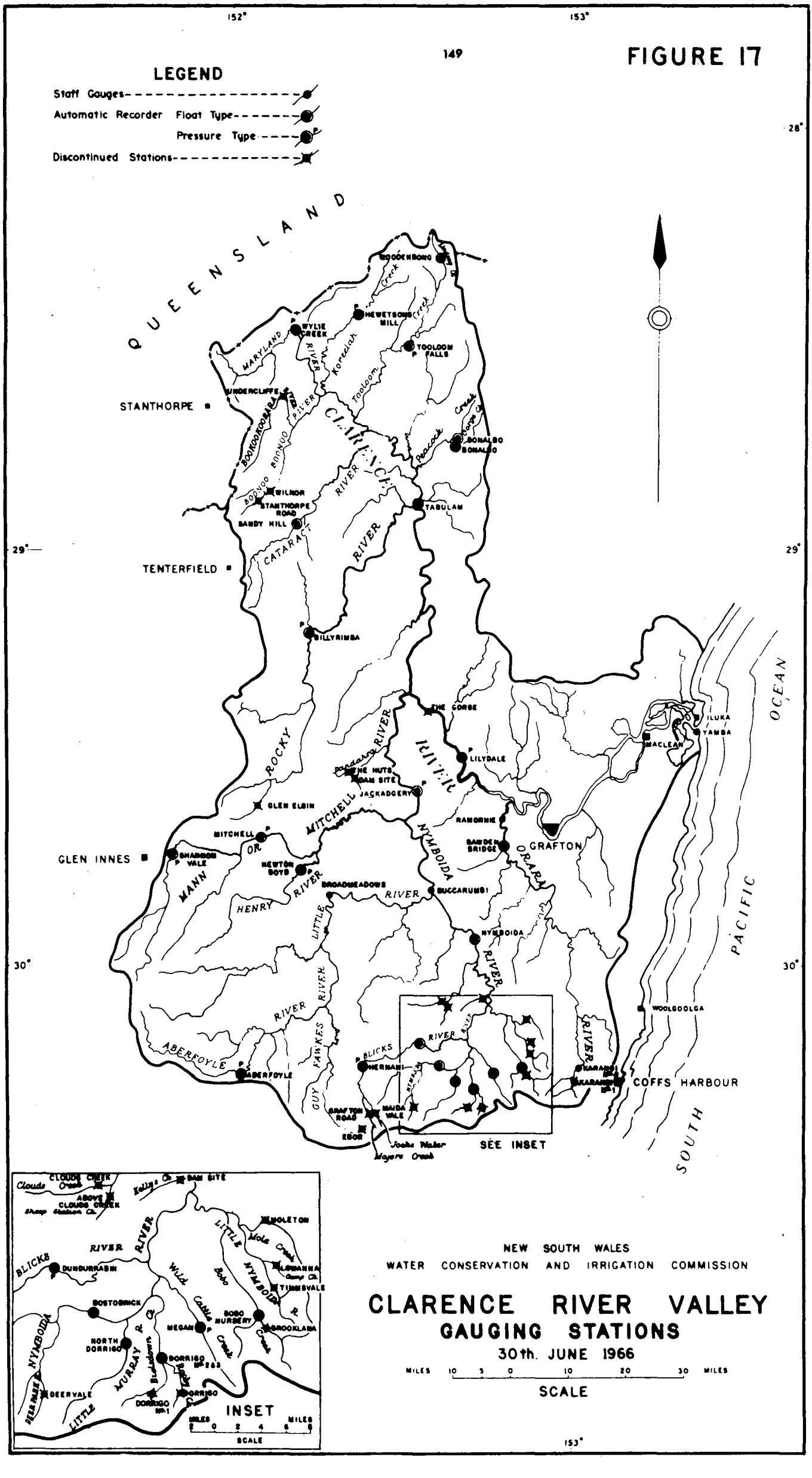
FIGURE 16



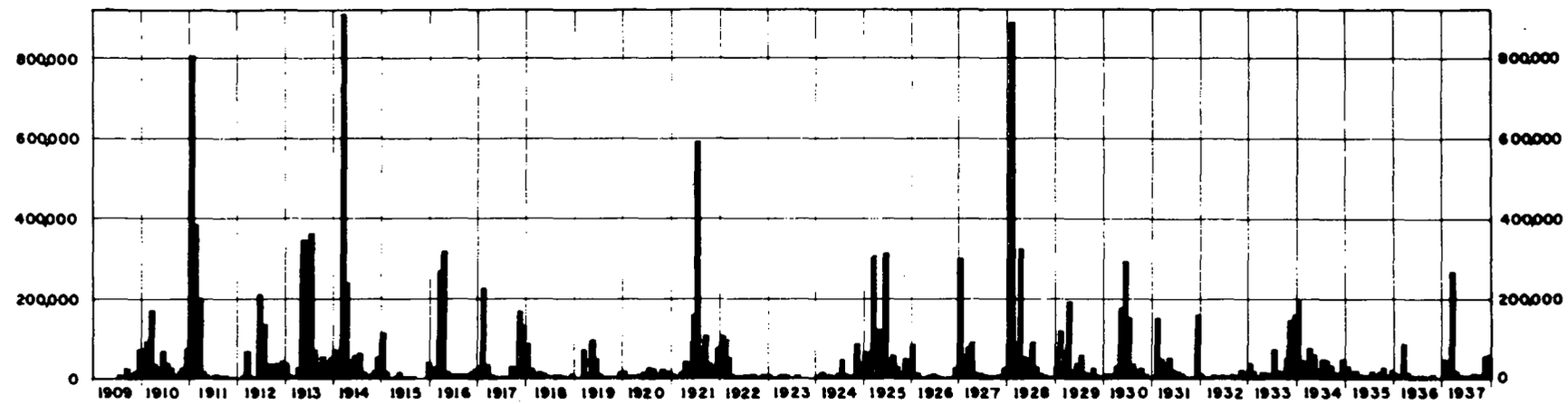
N COMMISSION
LLEY
IONS

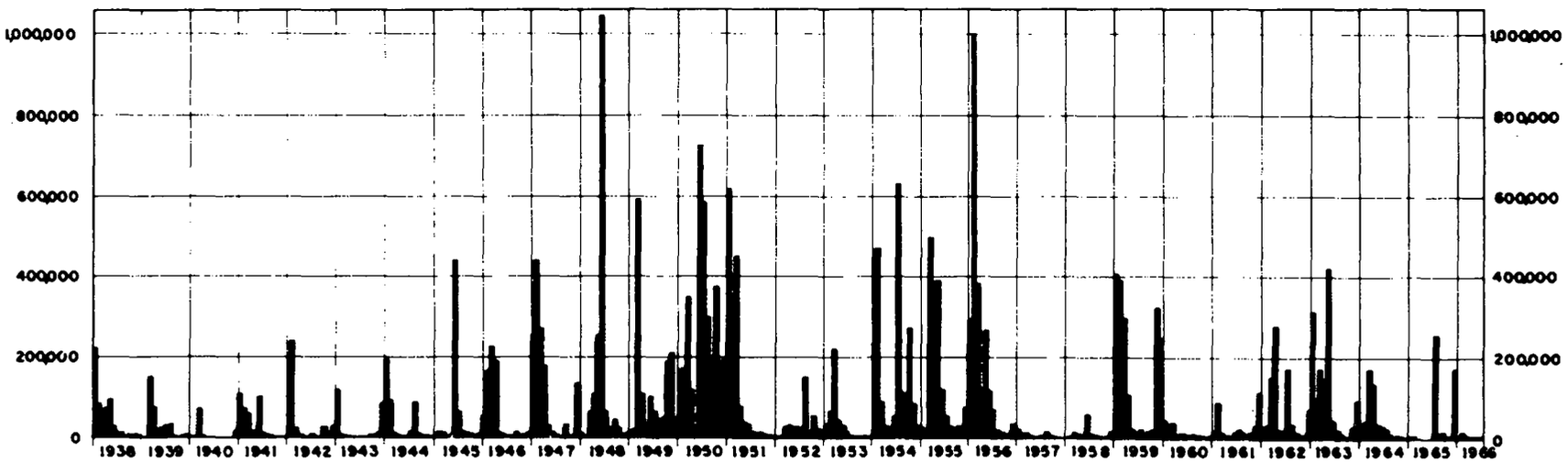
0 50 MILES

FIGURE 17


LEGEND
Staff Gauges
Automatic Recorder Float Type
Pressure Type
Discontinued Stations
152°
153°
28°
29°
30°
QUEENSLAND
STANTHORPE
TENTERFIELD
GLEN INNES
GRAFTON
COFFS HARBOUR
MACLEAN
ILUKA
YAMBA
WOOLGOOLGA
BOONDOONGA
WYLIE CREEK
HEWETSONS MILL
TOOLOOM FALLS
UNDERCLIFFE
BONALBO
WILNOR
STANTHORPE ROAD
SANDY HILL
TABULAM
BILLYRIMBA
THE GORGE
LILYDALE
THE HUTS
DAM SITE
JACKADGERY
GLEN ELGIN
MITCHELL
SHANNON VALE
NEWTON BOYD
BROADMEADOWS
BUCCARUMBI
RAMORNIE
BAWDEN BRIDGE
NYMBOIDA
ABERFOYLE
BLICKS
HERMAN
GRAFTON ROAD
MAIDA VALE
EGOR
Joshua Water
Mayers Creek
SEE INSET
CLARENCE
RIVER
MARYLAND
BOOKOOKOORA
BOONOO
Koreelah
Tooloom
Boonoo
Cataract
Rocky
Mann
Henry
Little
Guy Fawkes
Aberfoyle
Orara
Nymboida
Bellinger
Clarence
OCEAN
PACIFIC
SOUTH
INSET
CLOUDS CREEK
ABOVE
DAM SITE
Clouds Creek
Sheep Station Ck.
Kellys Ck.
RIVER
BLICKS
DUNDURRABIN
BOSTOBRICK
NORTH DORRIGO
DORRIGO
DORRIGO NP
DEERVALE
MEGAN
SOBO NURSERY
BROOKLANA
LOWANNA
TIMBISVALE
HOLETON
Mole Creek
Wild Cattle Creek
Sobo Creek
Bluegum Ck.
Murray R.
Nymboida
Little
Bellinger
MILES
SCALE
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
CLARENCE RIVER VALLEY
GAUGING STATIONS
30th. JUNE 1966
MILES 10 5 0 10 20 30 MILES
SCALE

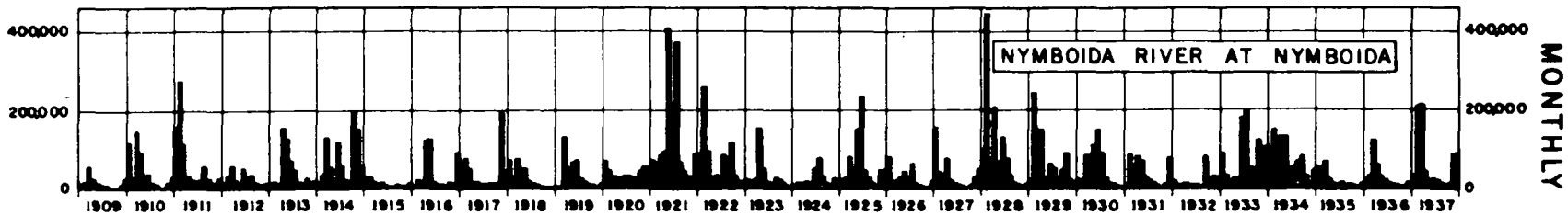
MONTHLY DISCHARGE IN ACRE FEET

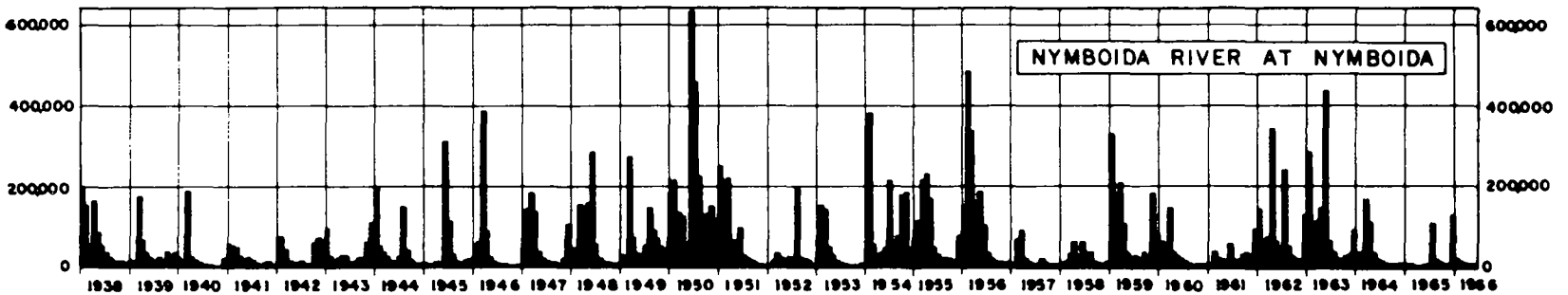




HYDROGRAPH OF MONTHLY DISCHARGE CLARENCE RIVER AT TABULAM

FIGURE 18

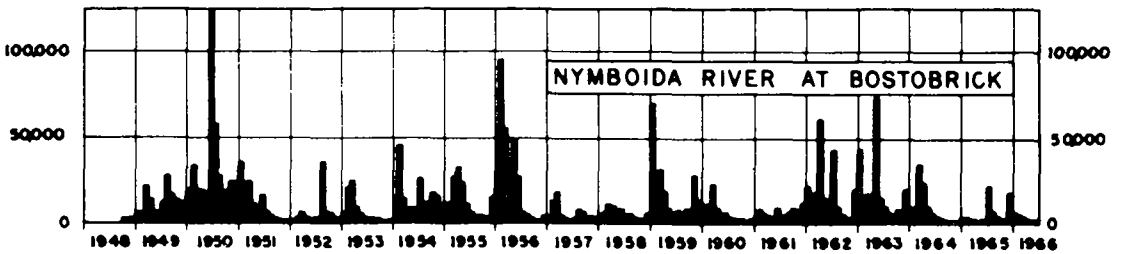




HYDROGRAPHS OF MONTHLY DISCHARGE

NYMBOIDA RIVER AT NYMBOIDA

NYMBOIDA RIVER AT BOSTOBRICK



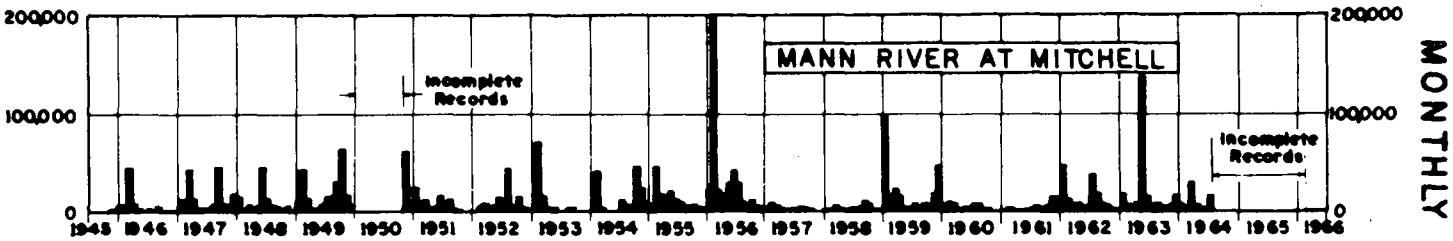
MONTHLY DISCHARGE IN ACRE FEET

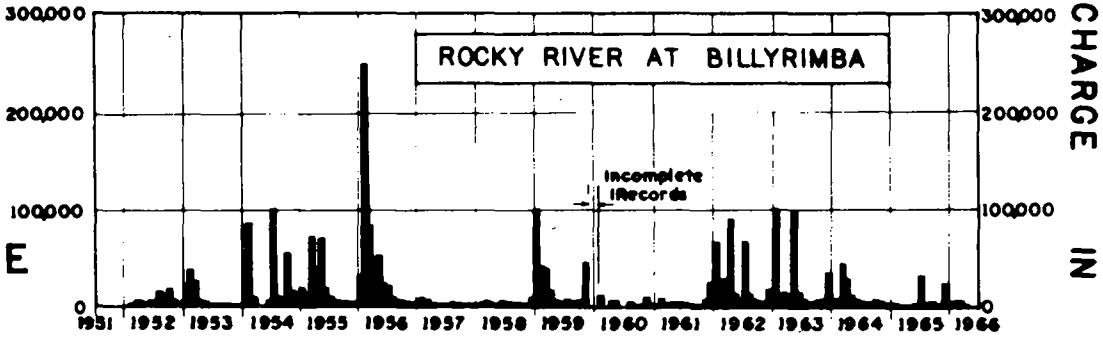
FIGURE 19

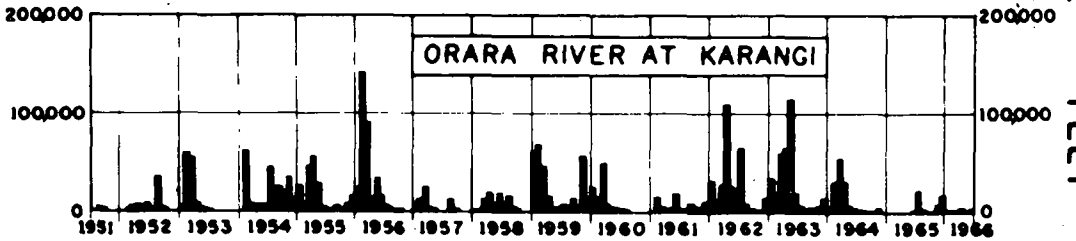
FIGURE 20

HYDROGRAPHS OF MONTHLY DISCHARGE

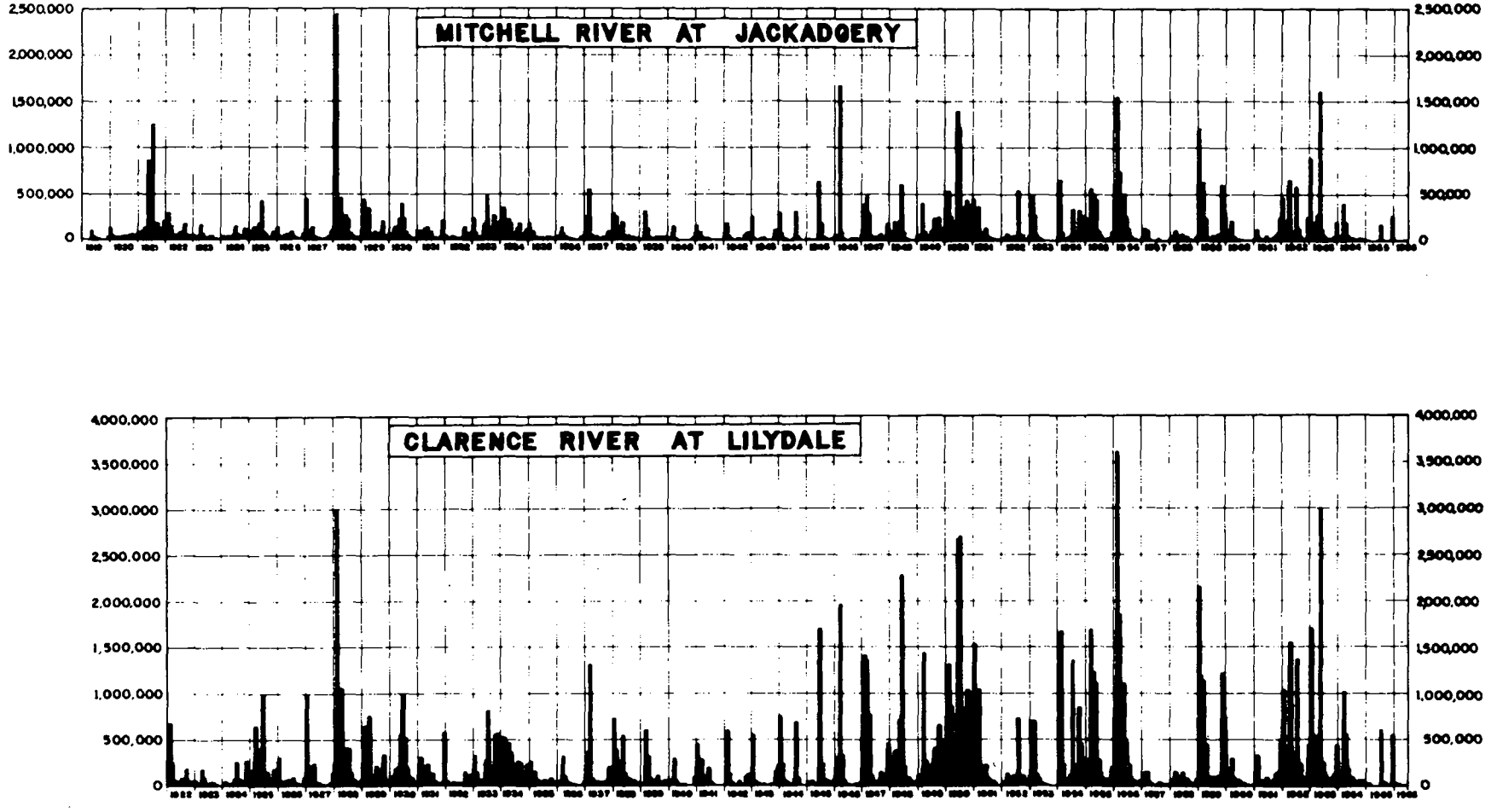
MANN RIVER AT MITCHELL
ROCKY RIVER AT BILLYRIMBA
ORARA RIVER AT KARANGI







MONTHLY DISCHARGE IN ACRE FEET



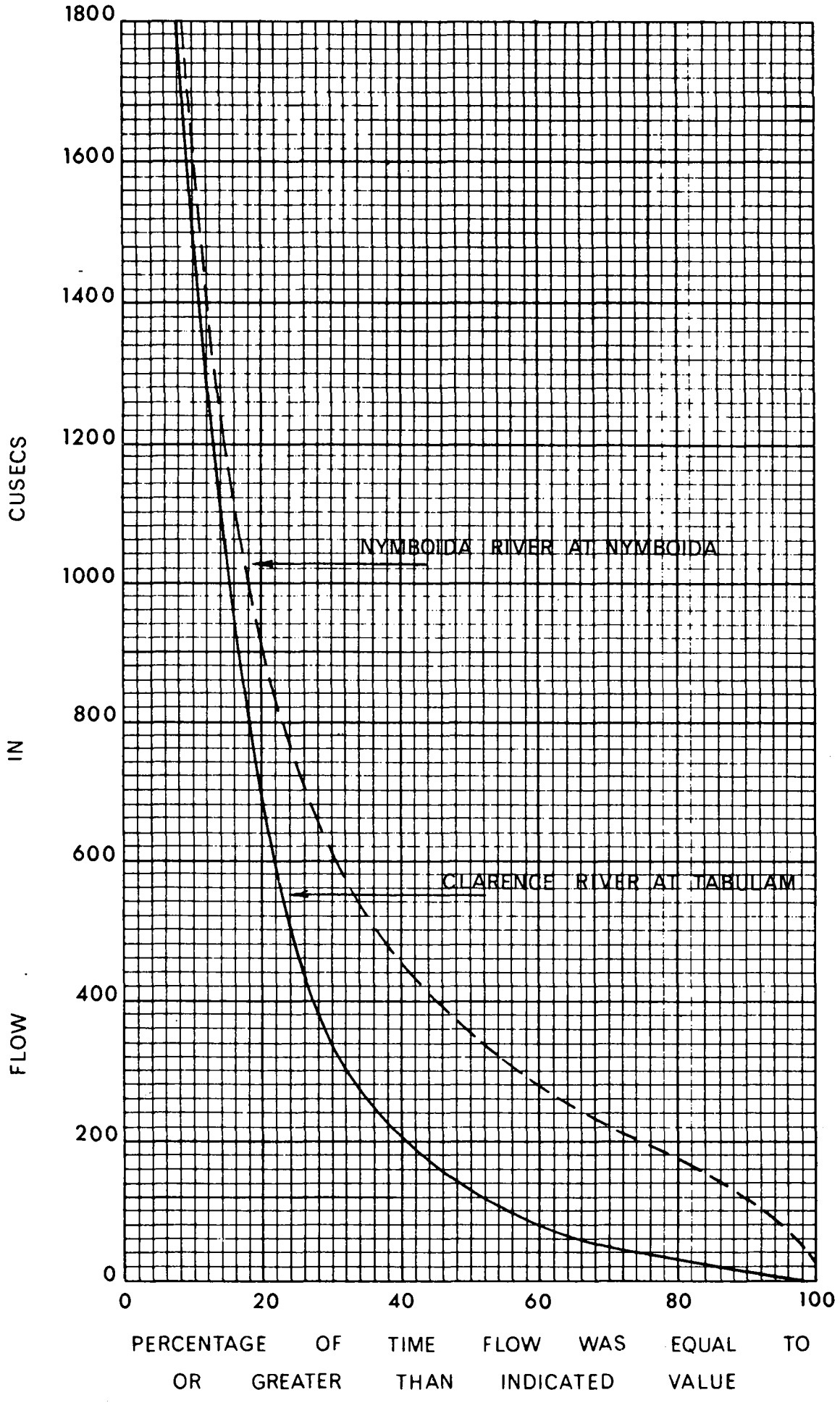
MONTHLY DISCHARGE IN ACRE FEET

FIGURE 21

HYDROGRAPHS OF MONTHLY DISCHARGE

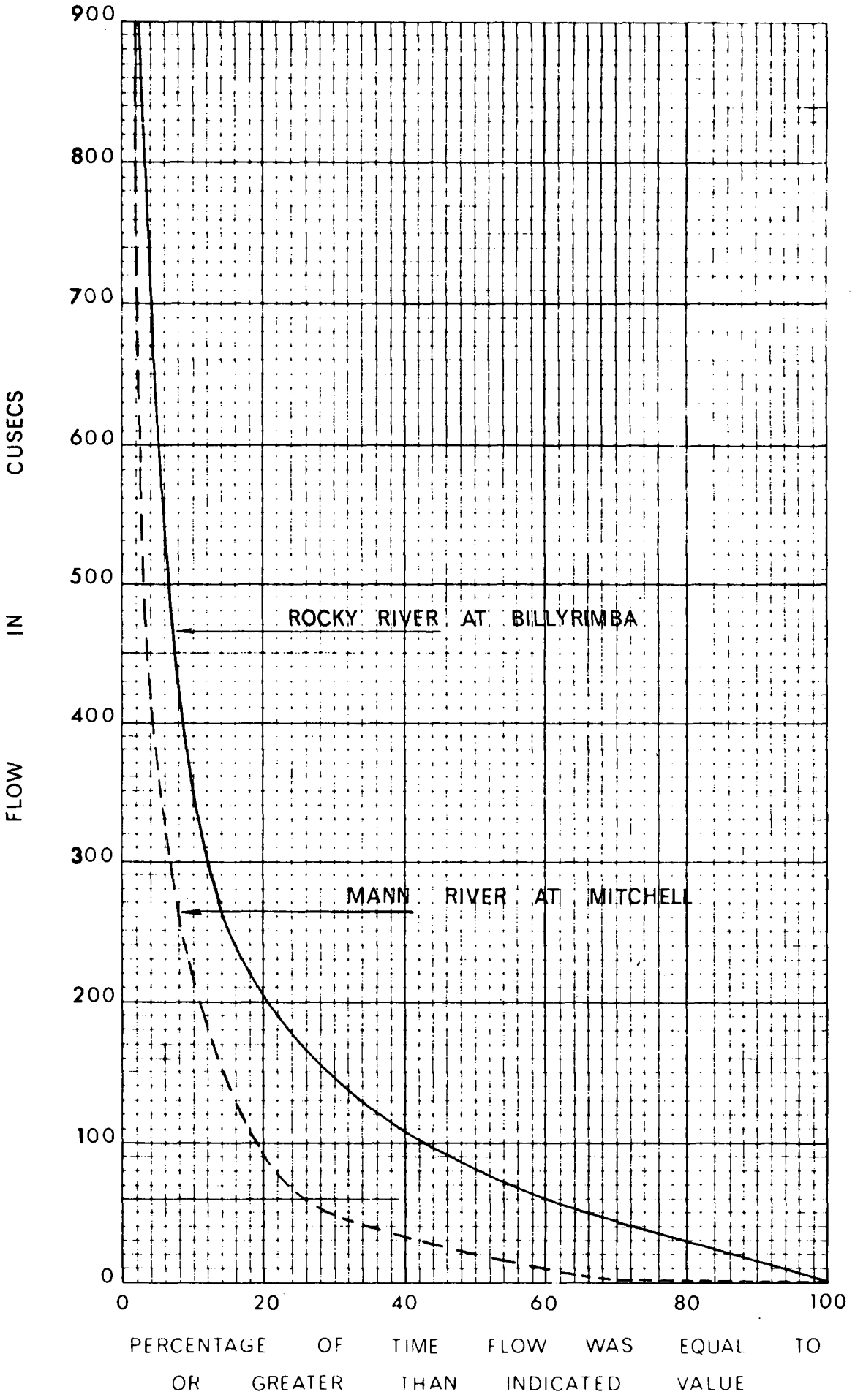
MITCHELL RIVER AT JACKADGERY — CLARENCE RIVER AT LILYDALE

FIGURE 22



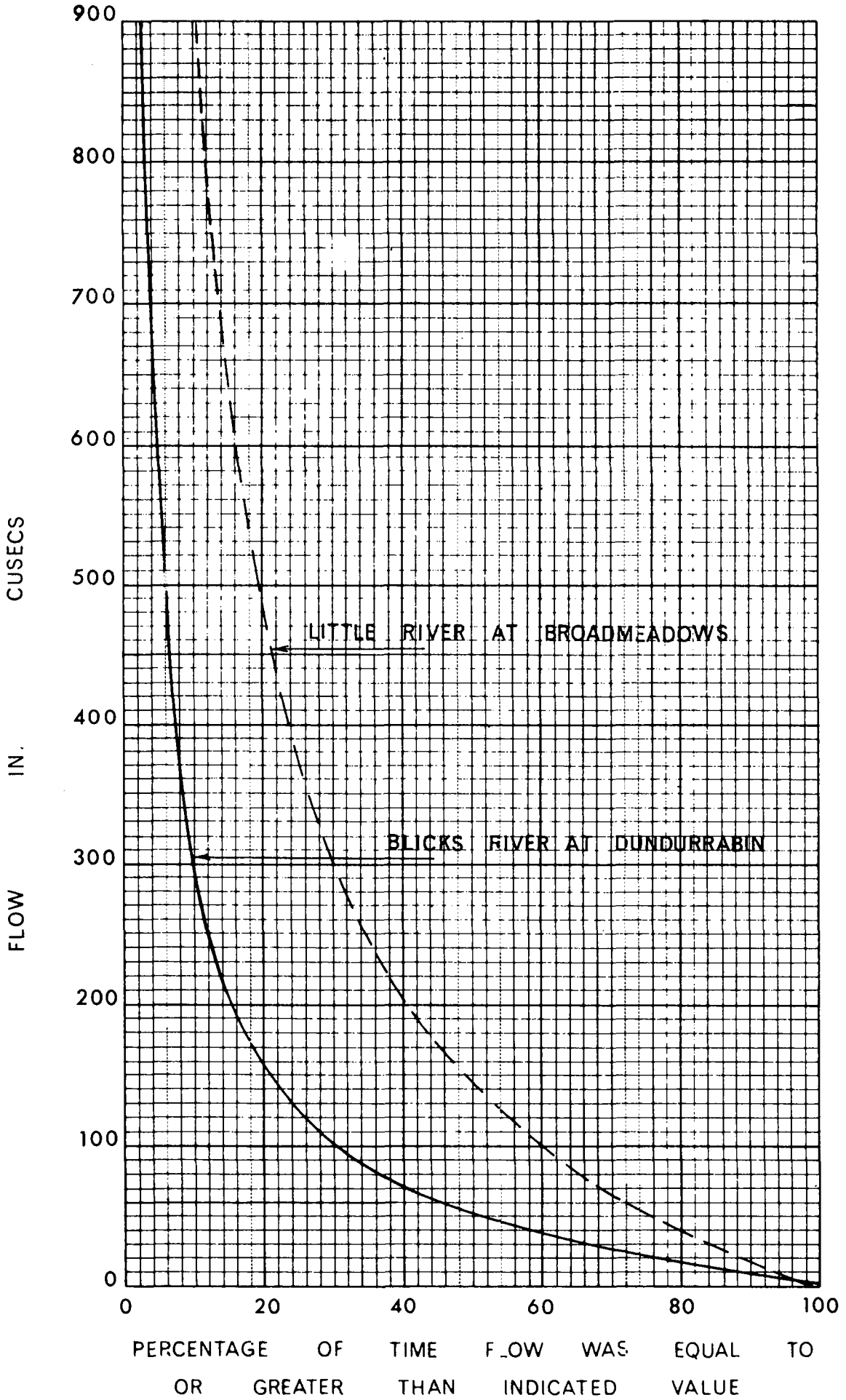
FLOW DURATION CURVES FOR NYMBOIDA RIVER AT NYMBOIDA CLARENCE RIVER AT TABULAM

FIGURE 23



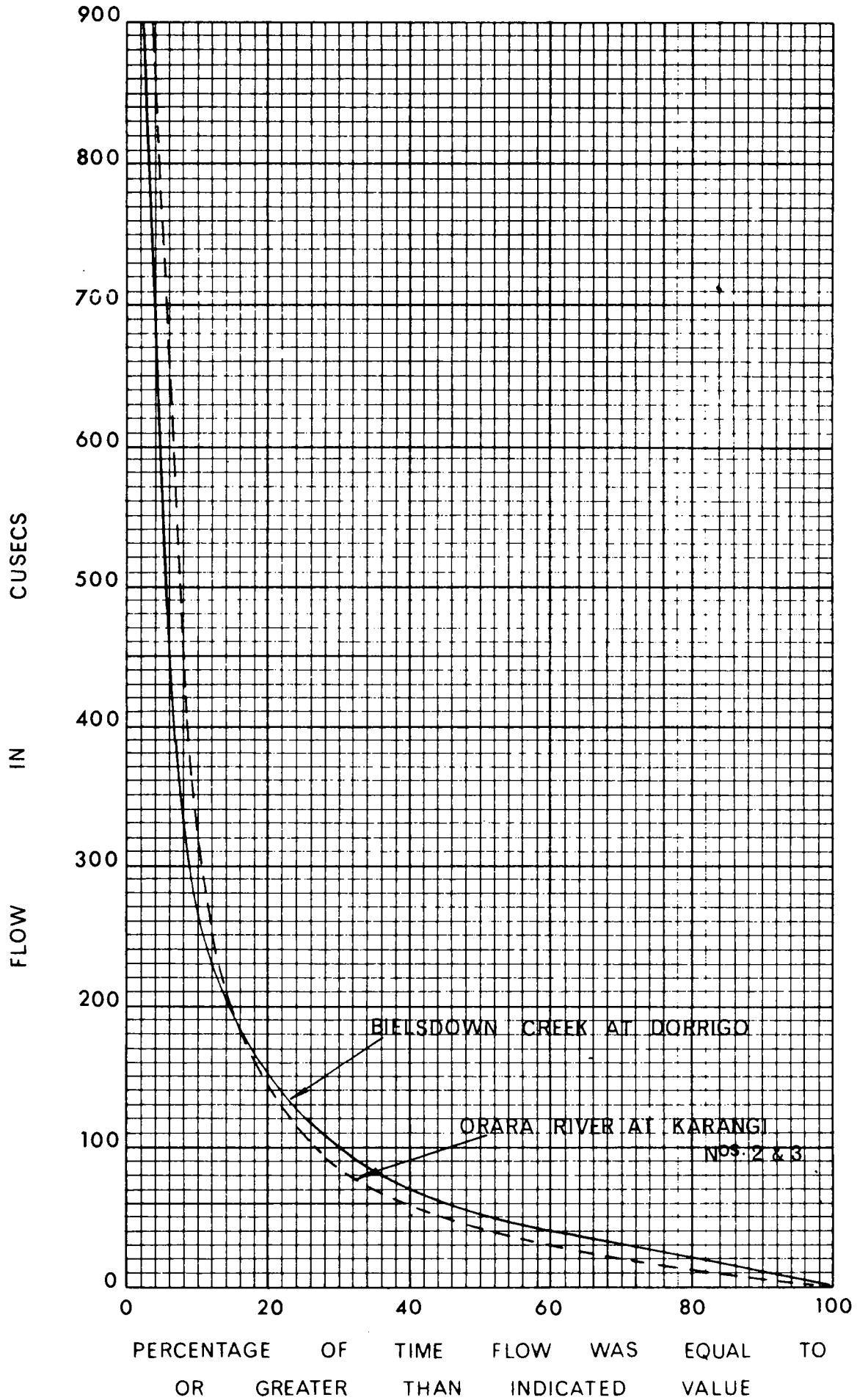
FLOW DURATION CURVES FOR ROCKY RIVER AT BILLYRIMBA MANN RIVER AT MITCHELL

FIGURE 24



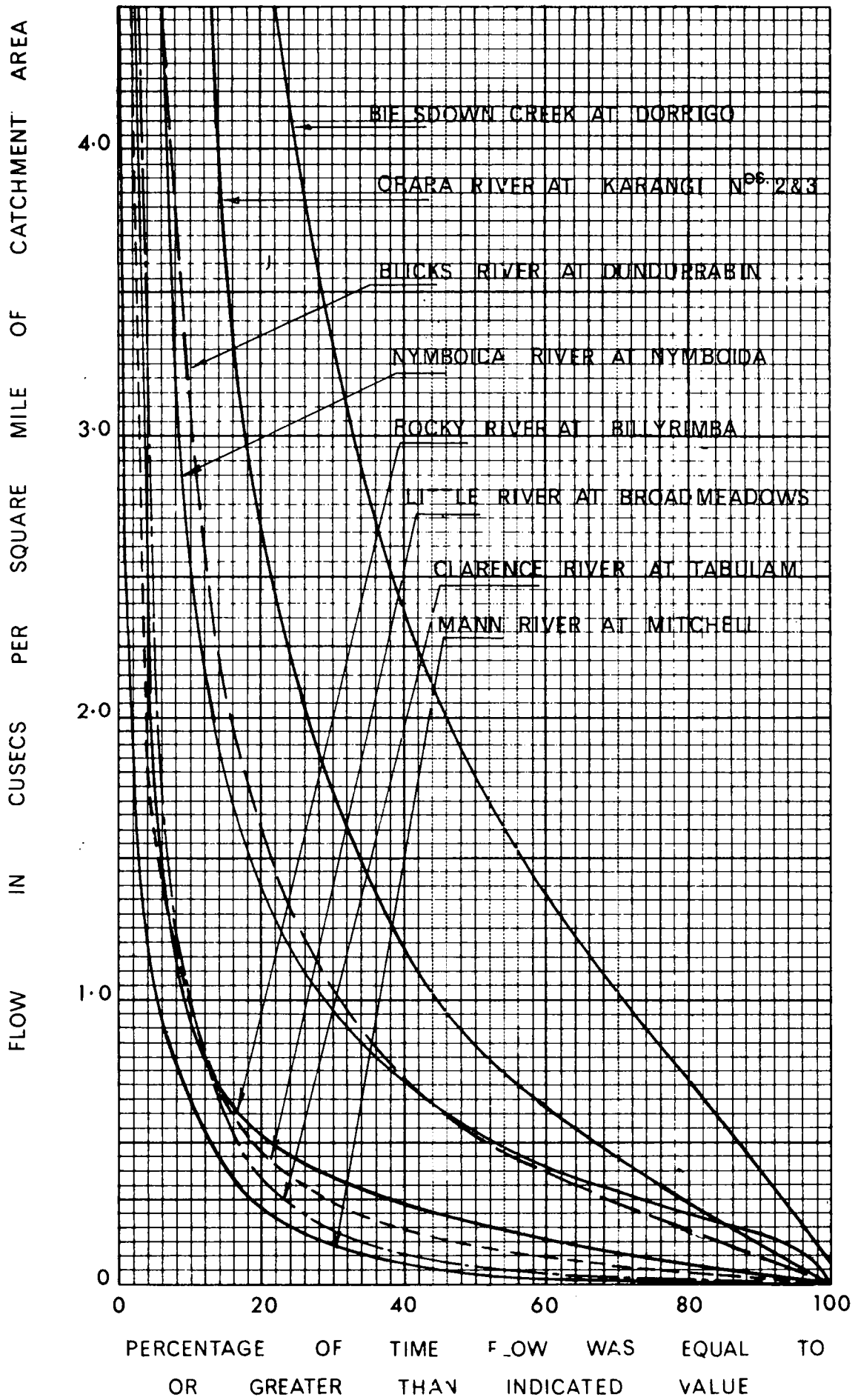
FLOW DURATION CURVES FOR LITTLE RIVER AT BROADMEADOWS BLICKS RIVER AT DUNDURRABIN.

FIGURE 25



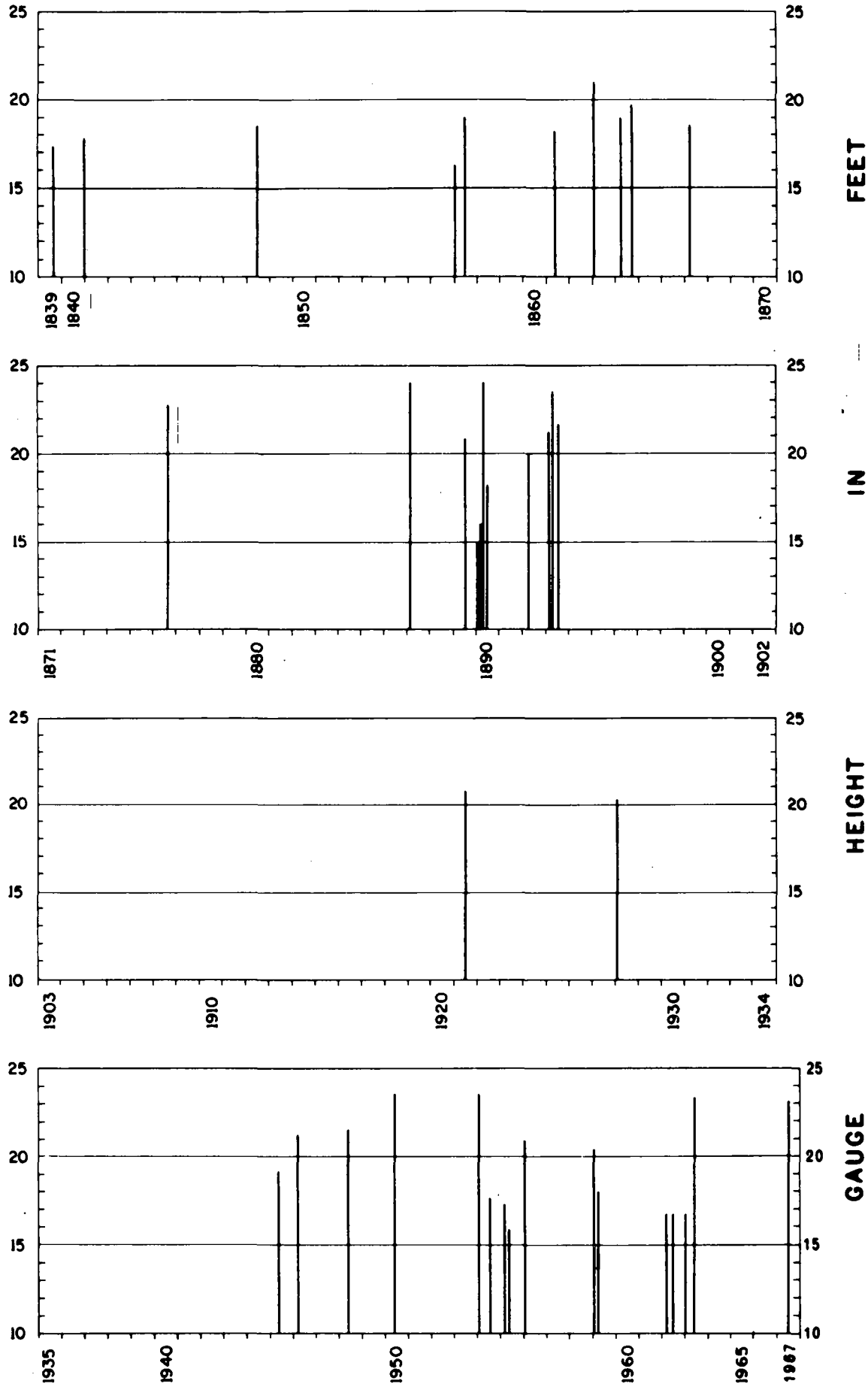
FLOW DURATION CURVES FOR BIELSDOWN CREEK AT DORRIGO ORARA RIVER AT KARANGI

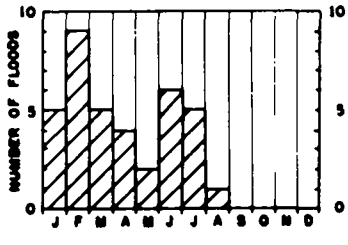
FIGURE 26



FLOW DURATION CURVES FOR CLARENCE RIVER & TRIBUTARIES.

FIGURE 27





NOTE

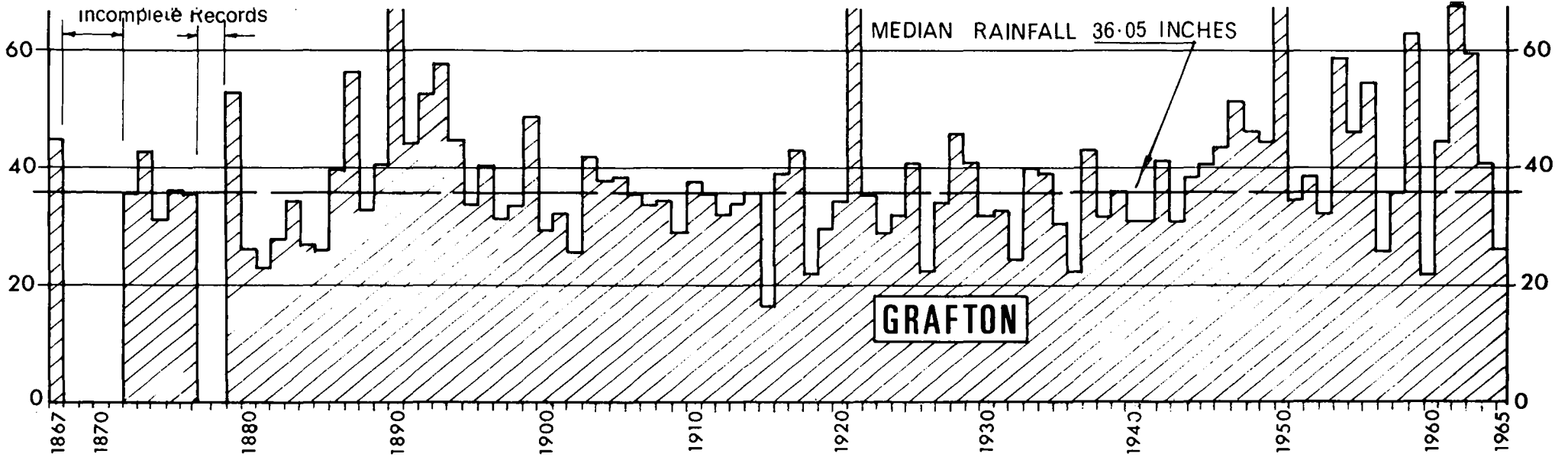
FLOOD PEAKS ARE PLOTTED AS THE EQUIVALENT LEVEL AT THE PRINCE STREET GAUGE, ESTABLISHED AT GRAFTON IN 1945

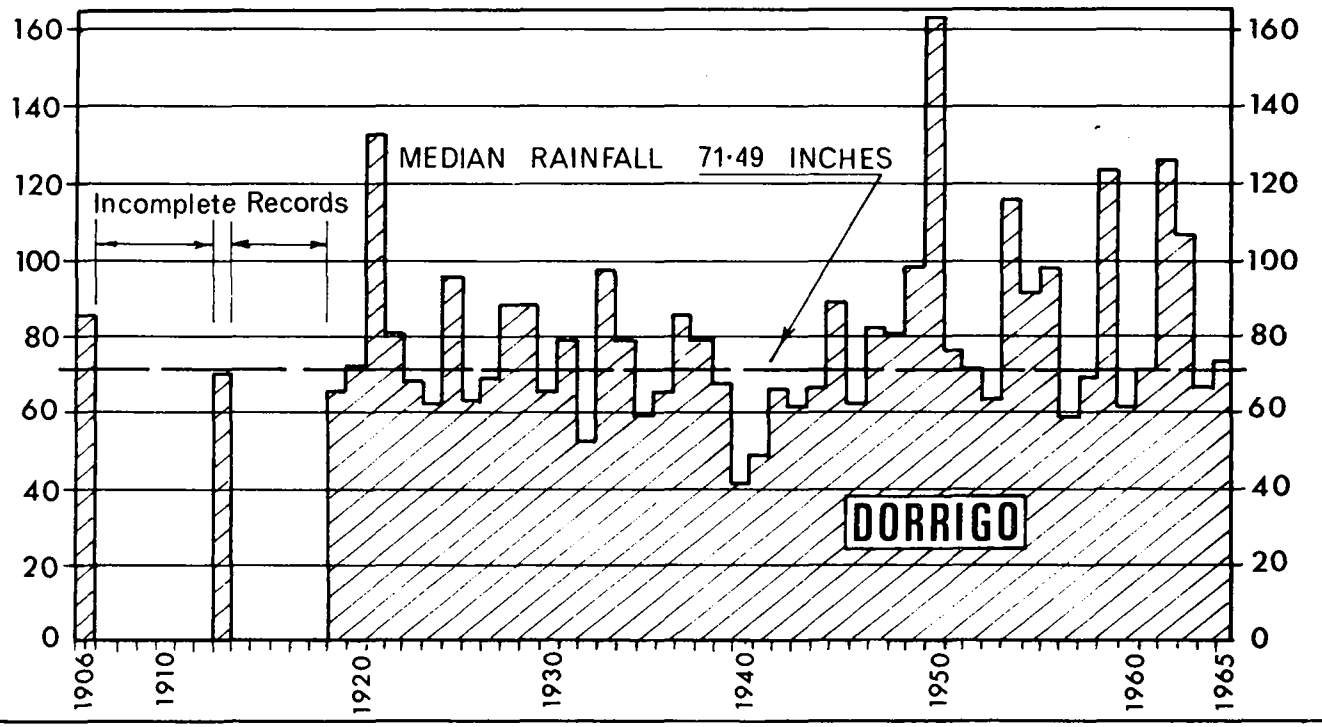
GAUGE ZERO IS R.L. 1·86 STANDARD DATUM

FLOOD PEAKS EXCEEDING 15 FEET AT GRAFTON

FIGURE 28

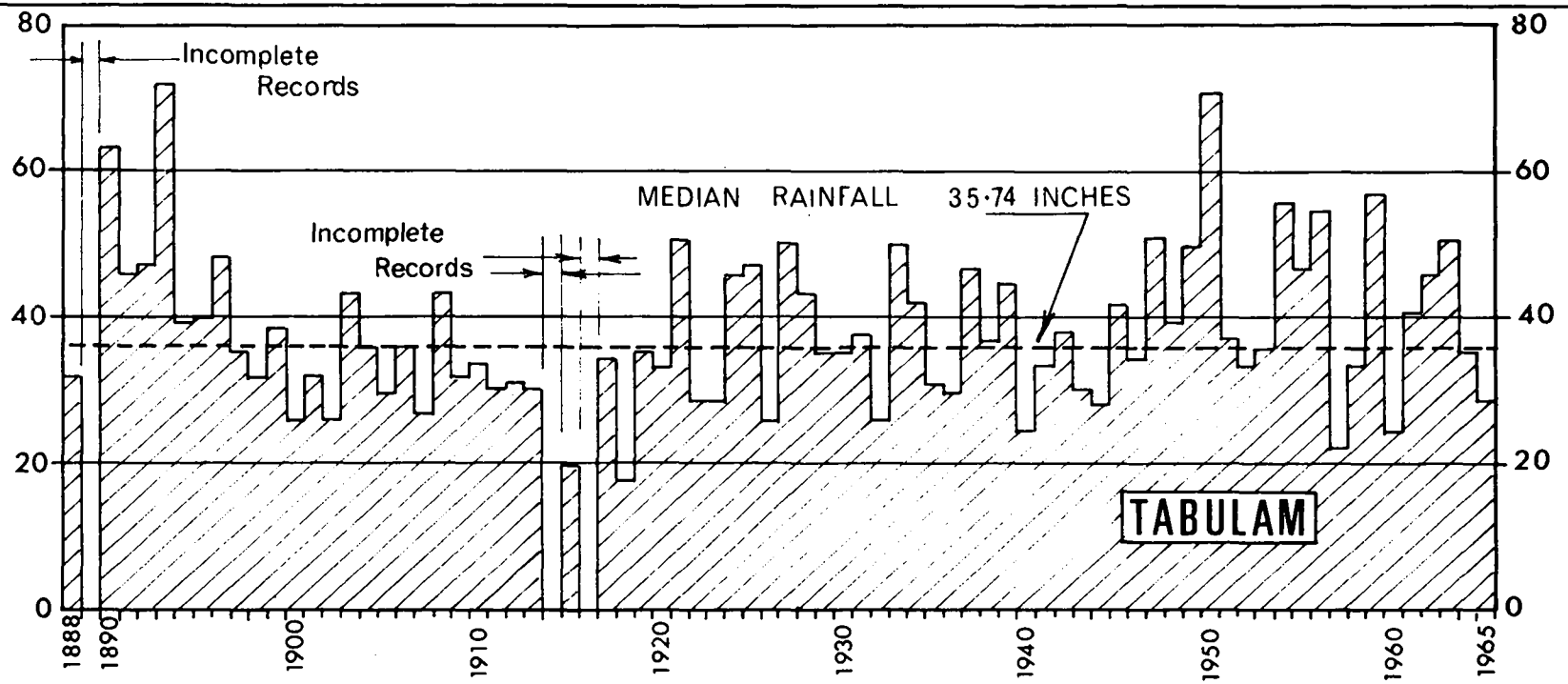
ANNUAL RAINFALLS
GRAFTON
DORRIGO

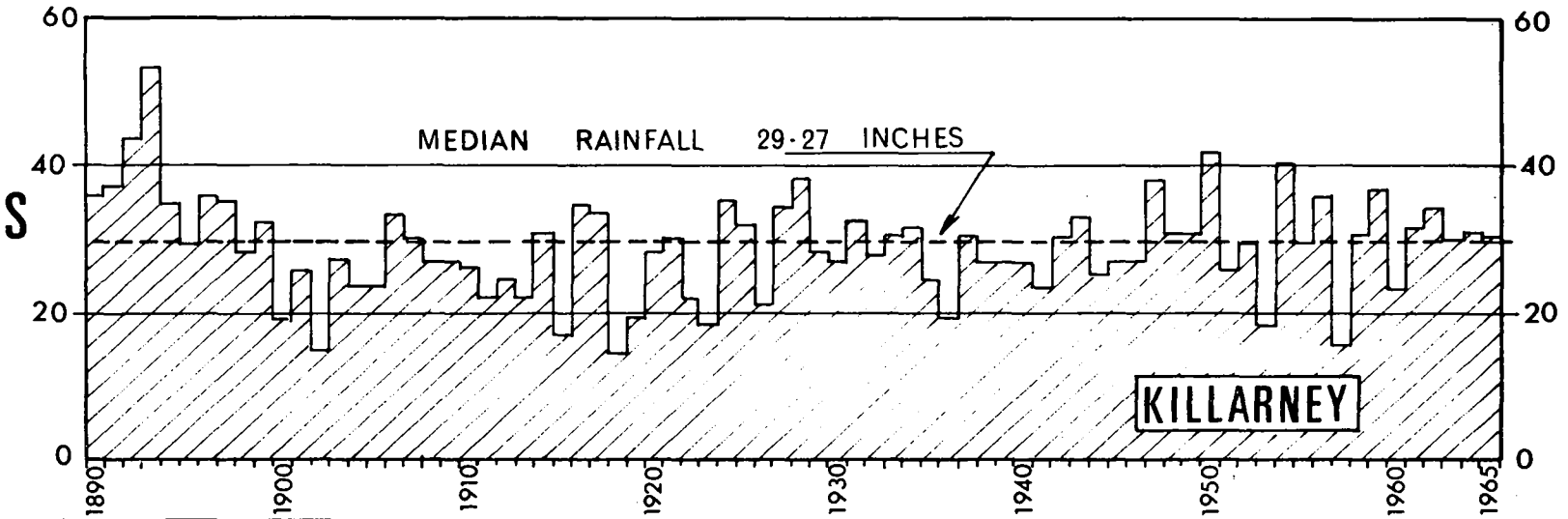




ANNUAL RAINFALL IN INCHES

ANNUAL RAINFALLS
TABULAM
KILLARNEY





ANNUAL RAINFALL IN INCHES

FIGURE 29

FIGURE 30

ANNUAL RAINFALLS
WONGWIBINDA
RED RANGE

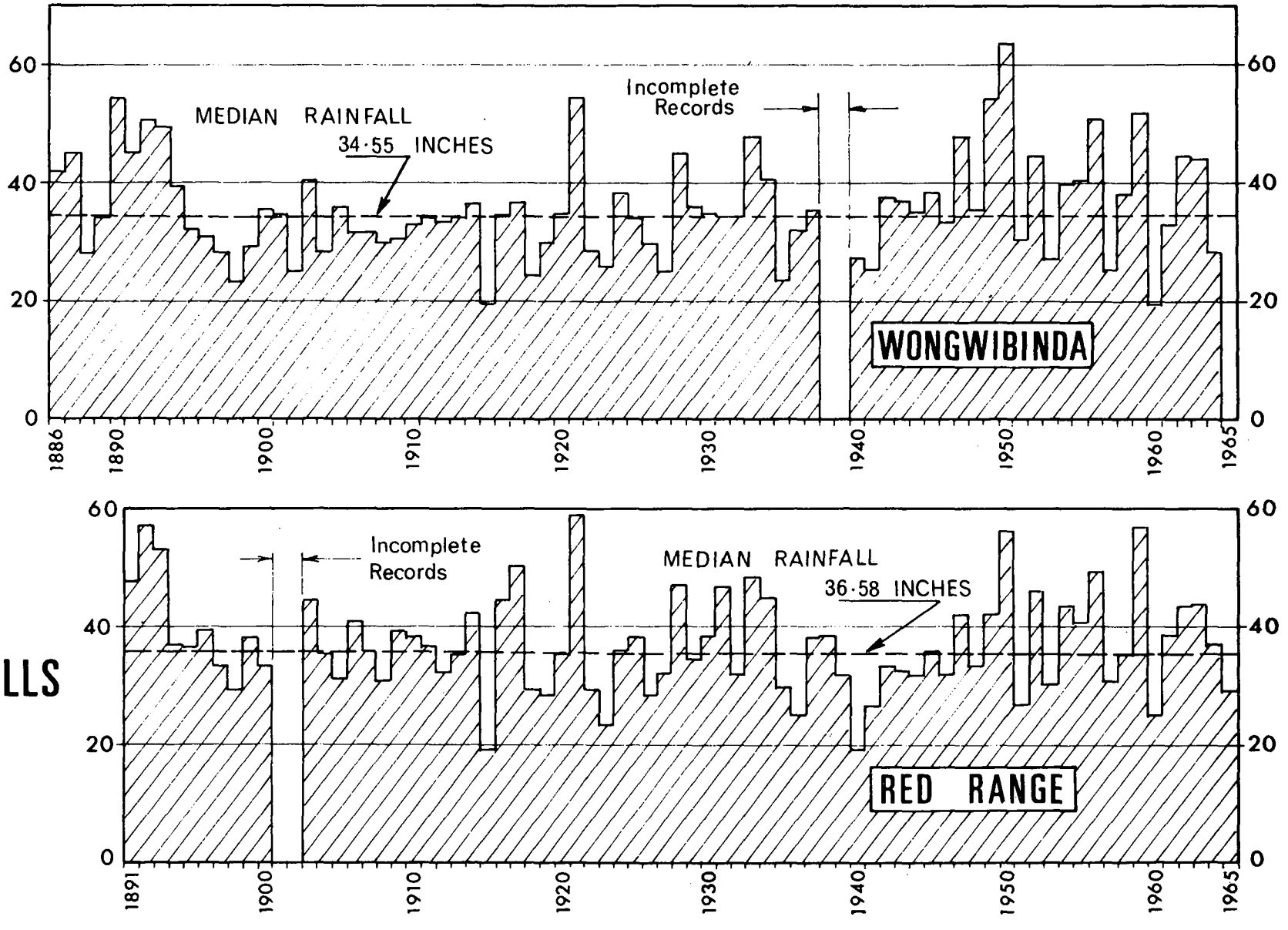
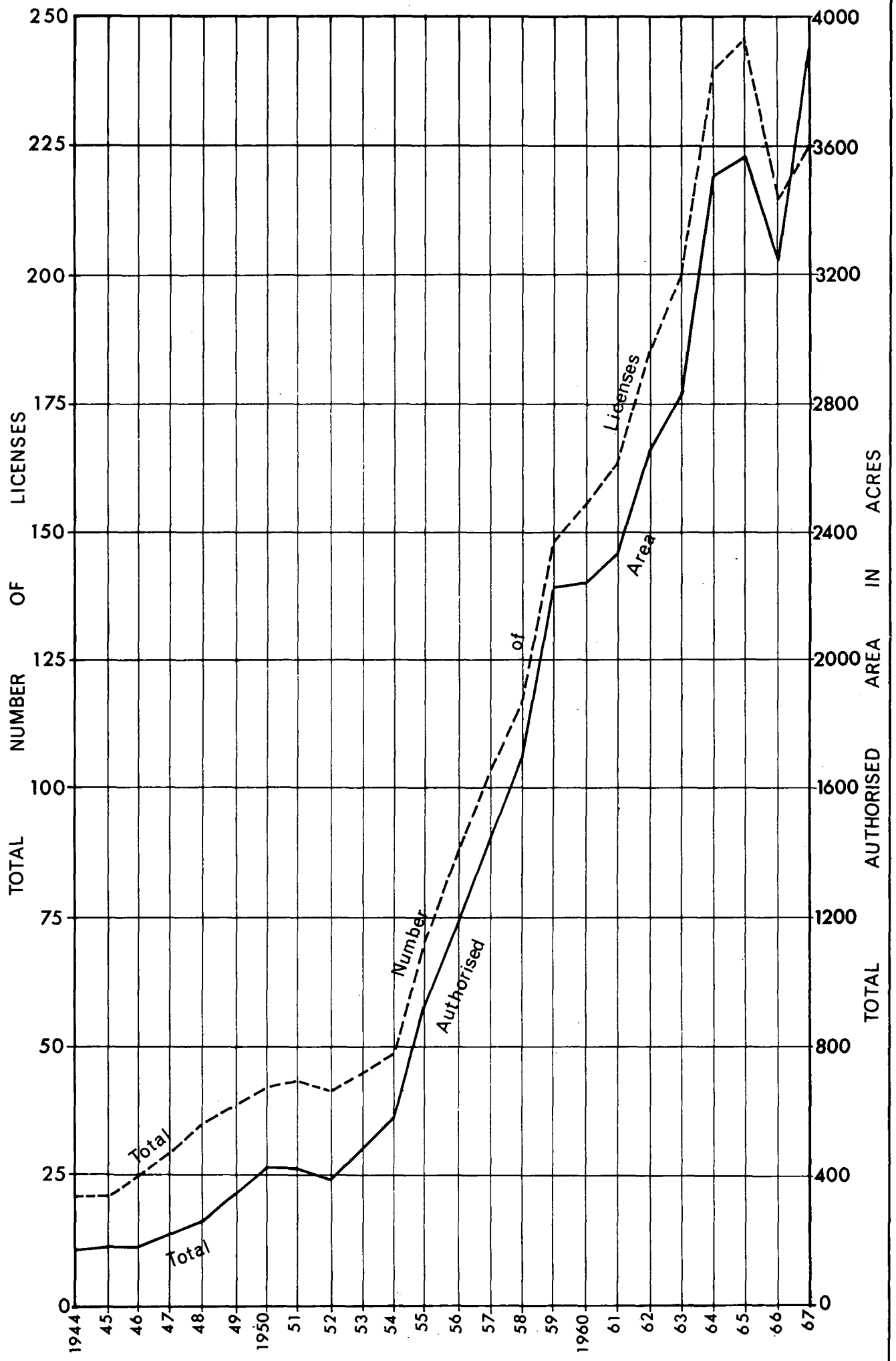
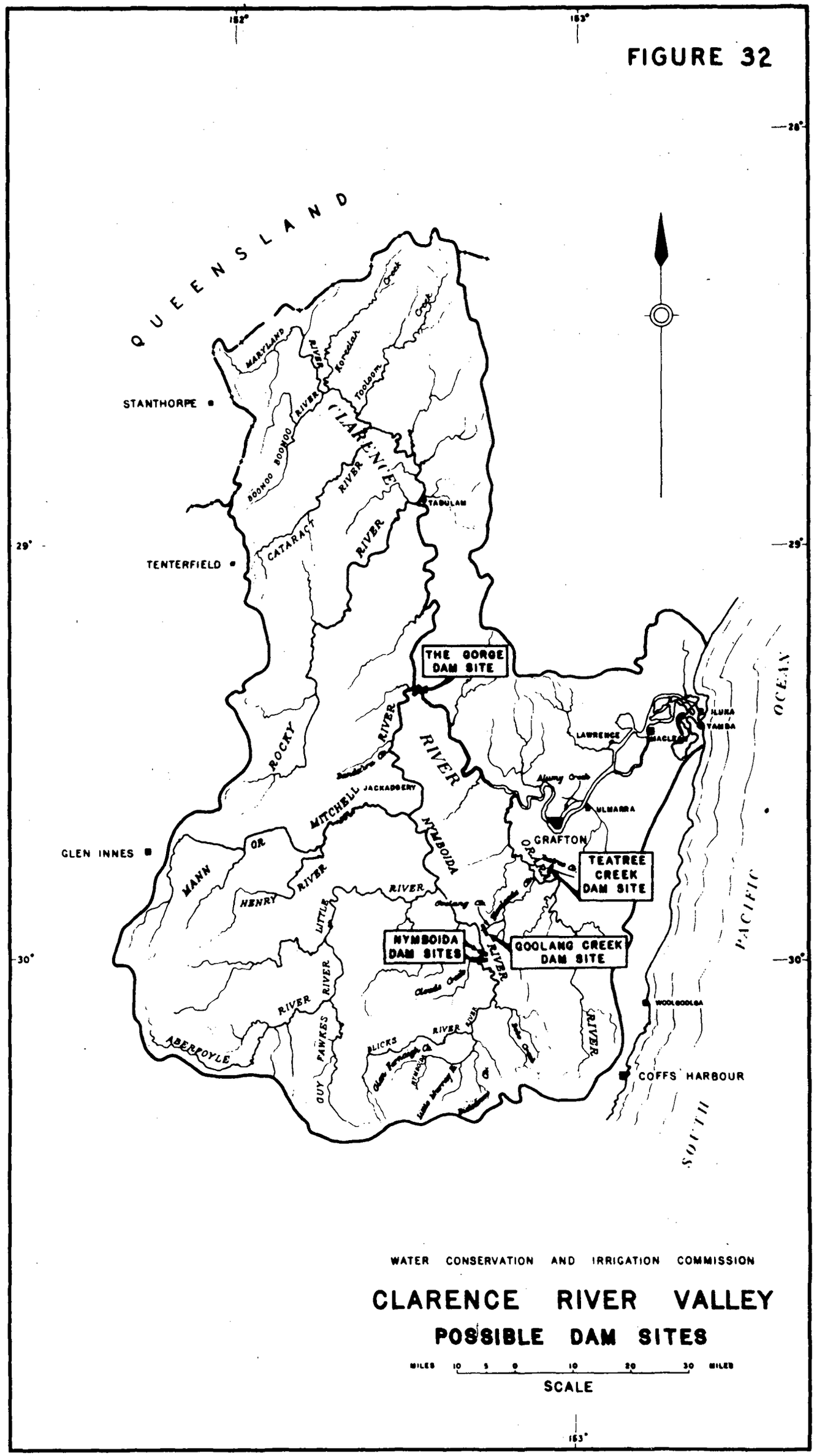


FIGURE 31



CLARENCE RIVER VALLEY
AREA AUTHORISED FOR IRRIGATION & TOTAL NUMBER OF LICENSES AT 30th JUNE FOR EACH YEAR INDICATED

FIGURE 32



WATER CONSERVATION AND IRRIGATION COMMISSION

CLARENCE RIVER VALLEY

POSSIBLE DAM SITES

MILES 10 5 0 10 20 30 MILES

SCALE