



WATER RESOURCES
OF THE
SHOALHAVEN VALLEY

SURVEY OF THIRTY N.S.W. RIVER VALLEYS

REPORT N°8 — OCTOBER 1967

WATER RESOURCES OF THE SHOALHAVEN RIVER VALLEY

PREFACE

BY THE HON. JACK G. BEALE, M.E., A.S.T.C. Mech. Eng.,
M.I.E. Aust., M.ASCE., M.A.S.M.E., M.A.S.A.E., M.L.A.

MINISTER FOR CONSERVATION

NEW SOUTH WALES

In accordance with the policy of the New South Wales Liberal-Country Party Government announced prior to the May, 1965 State Elections, I directed the Water Conservation and Irrigation Commission of New South Wales to undertake a comprehensive valley survey of the State's water resources as a prerequisite to the formulation of a balanced and soundly-based programme of water conservation.

The survey will be the largest and most comprehensive study of water resources ever undertaken in Australia. It will embrace thirty major river valleys of the State and will cover all the main aspects of their physiography, climate and water resources - both surface and underground - together with a review of current and possible future water requirements.

As it will be some time before the whole survey can be completed, separate reports are being issued for the individual river valleys. This report on the Water Resources of the Shoalhaven River Valley is the eighth report to be completed.



JACK G. BEALE. M.L.A.

October, 1967.

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WATER RESOURCES OF THE SHOALHAVEN RIVER VALLEY

1. INTRODUCTION.

Man is dependent on reliable and adequate water supplies, not only for agricultural and industrial development, but for his very existence.

About three quarters of the Earth's surface is permanently covered by water in the oceans and polar ice caps, the remaining quarter comprising the land masses. The total volume of water on Earth, in all its forms, has been estimated to be about 320 million cubic miles. However, it is difficult to adequately relate the magnitude of this volume to other natural resources, particularly when it is considered that one cubic mile is equivalent to about a million million gallons.

Obviously the usefulness of this resource is most limited as about 97.2 percent is in the oceans and a further 2 percent is held in the polar icecaps. In addition, as underground water comprises over 99.5 percent of the remaining 0.8 percent, the amount of fresh water contained in lakes and streams approximates to only 0.004 percent of the total volume of water on Earth.

In an effort to ensure that adequate water supplies would be available, early civilizations established their villages near major rivers and, mainly because of the limited amounts of water needed, supplies were generally adequate. However the water requirements of modern civilizations are of such magnitudes that it is normally not possible to satisfy major industrial or large area irrigation demands in the absence of large water conservation dams on the streams.

Modern society makes huge demands on water supplies for domestic, industrial and agricultural purposes. In the production of a ton of paper about 60 tons of water are used; a ton of steel requires about 300 tons of water and a ton of food requires about 1,000 tons of water.

Annual water requirements of crops are usually of the order of two to three feet depth and during a drought period it is necessary to provide a major proportion of this requirement by irrigation. The relative magnitude of this demand can be assessed when it is realised that a depth of three feet over an area of only one acre is equivalent to over 800,000 gallons.

The gross water resources of any country are usually considered to be the total amount of precipitation, comprised of rainfall or snow, which falls on the land. The surface water resources are usually regarded as the amounts of water in rivers and lakes.

In comparison with all of the other continents, Australia has the least average annual precipitation, the average rainfall being only about $1\frac{1}{2}$ feet whereas Africa, Asia, Europe and North America all receive about 2 feet and South America receives an average of almost $4\frac{1}{2}$ feet.

However, when losses, due to the natural processes of evaporation, transpiration and seepage are deducted from the average rainfalls of the continents, the residuals, or surface water resources, show that Australia has a comparative runoff much less than indicated by the average rainfalls. The average annual surface water resources of the Australian mainland have been assessed at about 240 million acre feet which is equivalent to a depth of less than 2 inches over the continental area. In comparison, runoffs for the other continents are about 7 inches in Africa, 9 inches in Asia and Europe, 11 inches in North America and about 19 inches in South America.

Due to the relatively flat topography of the Australian continent, there are no areas that are permanently covered by snow and as a result, streamflows in Australia are largely dependent upon the occurrence of runoff producing storms. Australian streams therefore tend to exhibit greater variability in flow than those of other continents.

The extreme variability of flows in the majority of Australian streams and the prolonged duration of severe droughts makes it imperative that water conservation dams be constructed if assured water supplies are to be maintained over the full period of each drought.

The surface water resources of the Shoalhaven River Valley have been assessed as averaging about 1,460,000 acre feet per annum. As the average annual rainfall over the valley is 35 inches, the surface water resources are equivalent to a runoff of about 28 percent.

On a square mile basis, the surface water resources of the Shoalhaven River Valley are about $1\frac{1}{3}$ times the average for coastal basins in New South Wales and over five times the average for the total area of the State.

2. PHYSIOGRAPHIC FEATURES.

The extent of the Shoalhaven River Valley, as adopted for the purposes of this report, is shown at Figure 1; the total area of the valley is about 2,820 square miles.

The headwaters of the Shoalhaven River rise in the extreme south of the valley in mountainous country in the vicinity of the Euranbene and Bald Mountains, the latter being over 4,800 feet in elevation. The river flows almost due north to near Majors Creek, being joined on the left bank by Jinden and Jerrabattgulla Creeks both of which rise in rugged country to the west of the Shoalhaven River. Notable peaks in the Jerrabattgulla Creek catchment are The Bald Peak and Mount Cowangerong, both of which are about 4,500 feet in elevation.

Below Majors Creek the Shoalhaven River sweeps generally to the north-east and is joined by Jembaicumbene and Gillamatong Creeks on the right bank and Reedy and Boro Creeks on the left bank. The town of Braidwood is located on Gillamatong Creek about five miles upstream of the Shoalhaven River Junction.

The western boundary of the Shoalhaven River Valley is formed by the Great Dividing Range and whilst steep land slopes prevail along the boundary to the south-west of Braidwood, the divide in the section from Mount Fairy to near Goulburn is characterised by relatively flat slopes and is ill-defined.

About sixteen miles to the north of Braidwood the Shoalhaven River is joined by a major tributary, the Mongarlowe River, which rises near Sugarloaf Mountain in the Budawang Range. The Mongarlowe River travels a distance of about twenty five miles in a northerly direction and passes through Monga and Mongarlowe before turning to the north-west and joining the Shoalhaven River about sixteen miles north of Braidwood. The catchment of the Mongarlowe River is comprised of mountainous topography in the upper sections along the eastern boundary, and undulating to hilly land forms in the lower section near the Shoalhaven River.

The Corang River rises in the Budawang Range in the vicinity of The Peak (elevation 2,800 feet) and joins the Shoalhaven River about three miles west of Nerriga. Below Nerriga, the Shoalhaven River is joined on the right bank by another major tributary, the Endrick River, which rises in the Budawang Range in mountainous terrain and features a number of waterfalls in its course to the main river valley.

Above Welcome Reef the Shoalhaven River passes through generally undulating country; however, from Welcome Reef where the river enters a narrow gorge to a point about four miles west of Nowra, it travels through mountainous country.

Nerrimunga Creek, a left bank tributary of the Shoalhaven River, rises in hilly country to the east of Lake Bathurst and enters a steep sided gorge before joining the Shoalhaven River about five miles downstream of the Endrick River. Bungonia Creek commences in hilly to steep terrain about ten miles east of Goulburn and passes through Bungonia before entering a canyon which extends almost to the junction of the creek and the Shoalhaven River. Barbers Creek rises in undulating country near Tallong and, in similar fashion to Bungonia Creek, enters a steep gorge before joining the Shoalhaven River about one mile downstream of the Bungonia Creek junction.

The southern tributaries of the Shoalhaven River downstream of the Endrick River drain a large plateau area bounded by the Turpentine Range on the south-east. The majority of defined streams in this area commence on the relatively flat plateau and fall over the escarpment edge into steep sided valleys. The four main streams in this area are Ettrema, Bundundah, Danjera and Yarramunmun Creeks all of which drain into Yalwal Creek which joins the Shoalhaven River about twelve miles west of Nowra.

The remaining major tributary of the Shoalhaven River is the Kangaroo River, the upper tributaries of which rise in the Robertson - Moss Vale plateau. This river travels generally in a westerly direction over a distance of about thirty miles before joining the Shoalhaven River some twenty miles upstream of Nowra. Whilst the Kangaroo River traverses rugged mountainous terrain and waterfalls for parts of its length, there are limited areas of alluvial flats which are used for dairying. About two miles upstream of the Kangaroo - Shoalhaven River junction the Kangaroo River is joined by Bundanoon Creek on its right bank. This creek commences in undulating country near Bundanoon and, in common with the streams in this area, drops rapidly into a steep sided valley in its lower reaches.

About ten miles upstream of Nowra the Shoalhaven River emerges onto a plain and from Burrier to the mouth flows through increasingly wide alluvial flats. The alluvial flats extend northwards up the valley of Broughton Creek to the town of Berry and southwards to the vicinity of Jervis Bay.

In the lower Shoalhaven Valley dairying is the principal agricultural industry; the dairying area extending from the upper reaches of Broughton Creek over the alluvial flats south-east of Nowra. The main secondary agricultural industry in this section of the valley is the growing of fodder, such as maize, lucerne and oats.

Land use in the upper Shoalhaven Valley is mainly confined to the grazing of sheep for wool and, where suitable areas occur, for the production of fat lambs. In some minor areas of the upper valley cattle grazing is the predominant industry.

Many sections of the valley, particularly in the dissected plateau area west of Nowra are uninhabited and largely unused for any type of agricultural pursuit.

Land slopes in the Shoalhaven River Valley are shown at Figure 2. The flat areas in the valley, with slopes less than 3 degrees, are very limited and comprise only 8 percent of the total valley area. Undulating to hilly land forms, with slopes between about 3 and 8 degrees, predominate and occur over nearly half of the valley (44 percent of the total area). Hilly to steep areas (slopes between 8 degrees and 15 degrees) make up a further 17 percent of the valley while the remaining 31 percent is comprised of mountainous sections with slopes greater than 15 degrees.

3. CLIMATIC FEATURES.

Rainfall.

The distribution of rainfall over the Shoalhaven River Valley is controlled to a large extent by orographic effects, rainfall in general increasing with increasing elevation. Annual median rainfalls of the order of 60 inches are found over the high ground which forms the headwaters of the Kangaroo River in the vicinity of Robertson. (The median is that rainfall equalled or exceeded on fifty percent of occasions).

Another high rainfall area exists over the range which separates the valleys of the Clyde and upper Shoalhaven Rivers, the annual median rainfall reaching a maximum of about 50 inches over the higher slopes east of Braidwood. To the west of this high rainfall area a marked rain shadow exists, annual median rainfalls decreasing to less than 25 inches. Along the coastal plain the annual median rainfall varies between about 35 and 45 inches.

The distribution of annual median rainfall over the catchment is shown at Figure 3 whilst the distribution of monthly median rainfalls are shown at Figures 4 to 15 inclusive.

In general, the spatial distribution of monthly rainfall throughout the area is similar to the annual rainfall distribution. Although the region lies in latitudes in which the distribution of rainfall throughout the year would be expected to be uniform, in general higher monthly rainfall is experienced in the months December to April when about 50 percent of the annual amount is received. In the period August to November inclusive only about 25 percent of the annual amount is generally received.

The Australian Alps shelter the region from most south to west airstreams which are the predominant rain producing airstreams over southern New South Wales in the winter and spring months. May, June and July each receive about 8 percent of the annual rainfall while August is the driest month on the average receiving about 5 percent of the annual rainfall.

In August median rainfalls vary from about 2 to 2½ inches over the higher rainfall areas to less than 1 inch in the rain shadow areas.

The wettest month varies from station to station in the valley but occurs in one of the months from January to April inclusive. The wettest month median values vary from 3½ to 4½ inches over the high rainfall areas to less than 2 inches over the rain shadow area.

Monthly and annual rainfalls recorded at Bateman's Bay, Berry, Braidwood, Bundanoon, Bungonia, Jervis Bay, Krawarree, Lower Boro, Milton, Mount Fairy, Nowra and Robertson are given in Appendices 1 to 12 respectively.

Very heavy storm rainfalls may occur over the valley when an active depression is centred off the New South Wales coast just north of the valley. Storms of this type affect the area on an average of about twice a year and they may occur in any month of the year. The highest falls on record for a 24 hour period ending 9 a.m. are 20.83 inches on 13th January 1911 and 20.05 inches on 14th February 1898 at Brogers Creek.
530 mm

Monthly totals of more than 20 inches have been recorded at all stations except those lying in the rain shadow along the upper valley. In this area highest monthly totals vary from 13 to 17 inches. Notably high monthly totals are 47.4 inches at Araluen, just outside the boundary of the valley and 42.5 inches at Robertson which were recorded in May 1925 and May 1943 respectively.

The tables at Appendix 13 show on a monthly and annual basis for Bateman's Bay, Berry, Braidwood, Bundanoon, Bungonia, Jervis Bay, Krawarree, Lower Boro, Milton, Mount Fairy, Nowra and Robertson the following data:

- (1) The maximum and minimum rainfall totals on record.
- (2) The 10th, 30th, 50th, 70th and 90th percentiles.

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

Minimum rainfalls recorded at Bateman's Bay, Berry, Braidwood, Bundanoon, Jervis Bay and Nowra are shown in the tables at Appendix 14. The tables indicate the minimum cumulative rainfall commencing in any month of the year and continuing for up to 12 months, which have occurred at these stations.

Although very low rainfall totals have been recorded for a few consecutive months, prolonged dry spells are infrequent, particularly on the coast and over the higher rainfall areas. Except for the rainshadow area, at least $7\frac{3}{4}$ inches are received on 90 percent of occasions in any consecutive six month period. The corresponding figure for any consecutive 12 month period is $17\frac{3}{4}$ inches.

Temperature.

The temperature regime of the valley is reasonably well recorded. The average monthly and yearly temperatures for available stations are listed in Tables 1 to 4 as follows:

Tables 1 and 2 Jervis Bay and Wollongong respectively, which may be taken as representative of the immediate coastal area of the valley.

Table 3 Nowra which is representative of locations on the coastal plain inland from the sea.

Table 4 Braidwood, representative of the areas of the valley about 2,500 feet above sea level.

TABLE 1

JERVIS BAY (Elevation 257 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	74.5	75.0	73.3	68.8	64.4	60.2	58.9	61.0	64.3	67.7	70.2	73.0	67.6
Average Minimum	63.0	64.0	62.7	58.5	53.8	50.5	48.6	49.5	52.2	55.3	58.3	61.3	56.5
Average Daily	68.8	69.5	68.0	63.6	59.1	55.4	53.8	55.2	58.3	61.5	64.3	67.1	62.0
Highest on Record 109.0						Lowest on Record 38.0							

TABLE 2

WOLLONGONG (Elevation 33 feet)

Average Temperature (°F) Based on 30 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	78.4	78.4	76.3	72.1	67.1	62.5	61.7	64.1	68.4	71.8	74.3	76.7	71.0
Average Minimum	62.6	63.1	60.9	56.4	51.9	48.3	47.1	47.7	50.7	54.1	57.3	60.8	55.1
Average Daily	70.5	70.8	68.6	64.3	59.5	55.4	54.3	55.9	59.5	63.0	65.8	68.7	63.0
Highest on Record 115.2						Lowest on Record 33.6							

TABLE 3

NOWRA (Elevation 50 feet)

Average Temperature (°F) Based on 16 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	81.3	81.1	78.3	73.0	67.1	62.4	61.9	65.2	70.1	74.9	77.2	79.6	72.7
Average Minimum	60.5	61.8	58.7	53.4	49.9	47.0	45.3	45.5	48.9	52.0	54.7	58.7	53.0
Average Daily	70.9	71.5	68.5	63.2	58.5	54.7	53.6	55.3	59.3	63.5	65.9	69.1	62.8
Highest on Record 110.0						Lowest on Record 31.5							

TABLE 4

BRAIDWOOD (Elevation 2,500 feet)

Average Temperature (°F) Based on 30 Years of Record

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	78.5	78.3	73.2	65.3	58.2	52.8	52.0	54.9	60.8	66.8	71.9	76.3	65.8
Average Minimum	51.6	51.5	48.6	42.7	36.0	31.8	30.6	32.4	36.4	41.0	44.9	48.8	41.4
Average Daily	65.1	64.9	60.9	54.0	47.1	42.3	41.3	43.7	48.6	53.9	58.4	62.5	53.6
Highest on Record				105.0				Lowest on Record				14.5	

During the months October to March, warm weather is experienced with average maxima varying from the mid seventies to the low eighties over the lower parts of the valley away from the coast. Somewhat cooler conditions occur over the higher parts of the valley and also on the coast where sea breezes tend to reduce maximum temperatures. Days are mild to cool for the remainder of the year except over the more elevated areas during the winter months where days are rather cold.

Occasionally very hot days are experienced in summer when dry north westerly winds blow from Central Australia. Wollongong has experienced an extreme temperature of 115°F. On the average, temperatures above 100°F are recorded about twice per year on the coast. A greater frequency of occurrence would be expected over low level areas inland.

On the coast average minima are about 10°F to 15°F cooler than corresponding maxima. Inland, however, ranges of 20°F or more may occur. In winter on occasions of clear skies and light winds very low overnight temperatures occur particularly at the higher stations of the region. At Braidwood, an extreme minimum temperature of 14.5°F has been recorded.

Frost.

Frost incidence increases from almost nil on the coast to more than 90 days per year over the higher parts of the hinterland where frosts can occur at any time of the year. Severe frosts, however, are usually confined to the months April to October inclusive in the highest areas with the season becoming shorter at lower elevations.

Sunshine.

Estimates of the average number of hours of bright sunshine per day in each month for the valley are shown in Table 5. These estimates are based on cloud amount observations.

TABLE 5
Estimated Average Daily Duration of Bright Sunshine
(Hours)

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
8.1	7.8	7.1	6.7	6.1	5.8	6.5	6.9	7.7	8.0	8.3	8.2	7.3

Evaporation.

Estimates of the average monthly and annual evaporation from an Australian standard sunken tank are shown in Table 6 together with estimates of the standard deviations. These estimates are based on radiation, air temperature and humidity considerations.

TABLE 6
Estimated Average Monthly and Annual Evaporation
(Inches)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Evapor- ation	5.5	4.2	3.8	2.6	1.8	1.4	1.6	1.6	2.4	3.5	5.1	5.5	39.0
Standard Deviation	0.9	0.9	0.7	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.7	0.8	3.0

Wind.

Strong winds and squalls occur over the region from time to time in association with meteorological conditions as follows:

1. Easterly to southerly winds with mean speeds of up to 50 miles per hour and gusts up to 70 miles per hour or more may occur on the coast when a deep depression is located just off the southern New South Wales or eastern Victorian coast.
2. Strong north to north-west winds with mean wind speeds of the order of 50 miles per hour with gusts on occasions reaching 70 miles per hour have been recorded at Port Kembla as the pressure gradient tightens ahead of an approaching southerly change. Similar winds would be expected to occur over the Shoalhaven Valley particularly on the coast.

3. The highest wind gusts on record in the valley are associated with severe local squalls such as thunderstorms or frontal squalls. Table 7 gives the extreme wind gust likely to be experienced in the valley for various return periods.

TABLE 7

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

Return Period (Years)	10	20	50	100
Extreme Wind Gust Equalled or Exceeded (Miles Per Hour)	85	90	100	105

4. GROUNDWATER POTENTIAL.

Like many of the coastal rivers of New South Wales the catchment of the Shoalhaven River provides convincing evidence of earth movements in Tertiary time which raised most of the valley several thousand feet.

The greater part of the valley comprises portion of the Southern Tablelands; the original gradients, and to some extent the mature form of the valleys of the main stream and many of its tributaries, are still maintained upstream of a series of waterfalls, by which the streams leave the plateau. After plunging into deep gorges they flow through rugged country before the main valley opens out and river flats of relatively recent age appear on the inside of the entrenched meanders.

In the vicinity of Nowra the broad alluvial plains commence and continue almost to the sea, where there are raised beaches and wind blown sands along the coastline.

The geological map at Figure 16 shows the area to be geologically complex, particularly in the southern and western parts, where a considerable variety of older Palaeozoic strata (Ordovician, Silurian and Devonian) occur, including greywackes, slates, quartzites, sandstones, shales, siltstones, limestones and interbedded volcanics. These ancient rocks have been strongly folded and faulted, and invaded by granites and allied intrusions believed to be of Devonian and Carboniferous age.

The northern and eastern parts of the valley are underlain by more recent strata which comprise the southern section of the Sydney Basin. These Permian and Mesozoic strata include mainly shales, sandstones and conglomerates with some contemporaneous volcanic rocks.

There are remnants of Tertiary river deposits on the Tableland, some of which are capped by basalt of Late Tertiary age. Pleistocene and Recent alluvia occur in some of the upland valleys and flank the Shoalhaven River in its lower reaches. There are sand beds on the north side of the mouth of the Shoalhaven River which extend some miles to the north behind Seven Mile Beach.

Discussion of the groundwater potential of this valley is facilitated if three main subdivisions, based on the mode of occurrence of the water and the nature of the strata in which it is stored, are used; viz. Jointed Rocks, which although themselves impervious, may contain water in the partings, fractures, bedding planes, joint systems etc; Porous Rocks, usually sandstones, which may contain water in openings between cemented sand grains; and Unconsolidated Deposits, in which water may be stored in the pore spaces in sands and/or gravels associated with alluvial material, or in accumulations of aeolian and beach sands near the coast.

In the Shoalhaven River Valley, groundwater is utilized mainly for watering stock, whilst irrigation from this source is the exception rather than the rule. Records of bores in the valley are relatively few, but are sufficient to indicate that the general groundwater potential of the area for stock watering facilities is good but that the potential for irrigation is poor.

Jointed Rocks.

With the exception of those parts of the valley underlain by the Hawkesbury Sandstone and the alluvial and beach sand deposits, the Shoalhaven River catchment is underlain by strata in which the groundwater is contained in cracks, fissures, partings and joints in the rocks. Included in this group are a variety of metamorphic rocks, indurated sedimentary strata and plutonic and volcanic igneous rocks. The water bearing potential of this group varies considerably, the outcome of boring for water depending on many factors

including the rock type, the degree of weathering and jointing, the relative elevation and relief at the bore site, the amount and distribution of the rainfall, and the ability of the rain to percolate through the soils which have been produced by the local environment.

The oldest strata in this group are of Ordovician age (more than 400 million years old) which include mainly greywacke, chert, slate, quartzite, sandstone and limestone. Dips vary over a wide range, but the strike is usually north-north-west. Faulting is common and there is a tendency for the harder, more resistant strata (greywacke, chert and quartzite in particular) to be heavily fractured. It is in these rocks that conditions favourable to the occurrence of groundwater are to be expected, although less competent strata such as slates may also yield useful supplies of water.

Bores in these strata, located at favourable sites, can usually be relied on to yield useful supplies of stock water. Yields of 300 to 400 gallons per hour are likely and in some instances (although none have been recorded in this valley) supplies greatly exceeding 1,000 gallons per hour have been obtained from such strata.

The salinity of the waters varies, it being usual for higher yielding bores to produce better quality water. Total salinities range from about 50 to 300 parts per hundred thousand, with the sodium chloride content ranging up to 200 parts per hundred thousand. The waters are fairly hard, and even where the Total Salinity is low, softening is usually required to make the water suitable for domestic use.

Most failures in these strata can be attributed to either poor sites or failure to bore deep enough into the sometimes rather hard strata.

The Silurian strata outcrop in several meridionally disposed zones in the western part of the valley. They include slates, phyllites and limestones comprising a sequence of metamorphic rocks and a series of volcanic rocks. Overlying them and the older Ordovician there are a number of formations of Upper Devonian age which include similar rock sequences to the Silurian; volcanic rocks are interbedded with sedimentary beds, which have been less metamorphosed than the older strata and are best described as meta-sediments.

However both systems of rocks have lost any original porosity they may have possessed (except the limestones which in some areas e.g. near Bungonia, are cavernous), and hence they are included with the jointed rocks.

The outcome of boring in these strata is essentially the same as in the Ordovician rocks where useful stock supplies are normally obtainable at selected sites, with occasional yields in excess of 1,000 gallons per hour of "good" quality water. The salinity limits also are essentially the same, although "salty" springs which have been observed issuing from some small outcrops of Devonian strata north of Bungonia (the outcrops are too small to appear on the map) suggest that in the Devonian shales there is a higher saline content in the contained groundwater than is the case in the harder strata.

Permian rocks underlie most of the eastern part of the Shoalhaven River Valley. Once again the sequence contains sedimentary and volcanic rocks including conglomerates, sandstones, siltstones, shales, tuffs, lavas, cherts and coal seams. The sediments have been indurated and are largely impervious except for joints, partings and other secondary openings.

The Megalong Conglomerate which outcrops over extensive areas to the west and south of Nowra contains conglomerates, sandstones and siltstones which have been little prospected for groundwater in this valley. However the occasional bore in this and nearby catchments suggests that useful supplies of fair to good quality groundwater can be expected from bores from 50 to 200 feet deep.

The overlying Berry Formation which includes a large proportion of shales and siltstones has not proved a reliable water-bearing formation, supplies ranging from less than 100 gallons per hour to as much as 3,000 gallons per hour being recorded. The few analyses available show the salinity of groundwater from the Berry shales to be quite low, a Total Saline content less than 100 parts per hundred thousand being usual. A bore in the township of Berry which penetrated 85 feet of shale yielded 600 gallons per hour for a drawdown of only 8 feet of the available 74 feet. The analysis of water from this bore shows a Total Salinity of 32 parts per hundred thousand, Alkalinity (as Sodium Carbonate) 18 parts per hundred thousand, Hardness (as Calcium Carbonate) 10 parts per hundred thousand and pH 6.6.

The Gerringong Volcanics, which include some thick, well jointed tuffaceous sandstones have produced some surprisingly high yields. A number of bores less than 100 feet deep located in the vicinity of Gerringong yield supplies well in excess of 1,000 gallons per hour, one bore being equipped to produce 6,000 gallons per hour for irrigation. Water from this bore has a Total Saline content of 144 parts per hundred thousand, a Hardness of 80 parts per hundred thousand and a pH of 6.8.

An unusually high yielding bore in this sequence is located only a few miles west of Gerringong. It encountered heavily jointed tuffaceous sandstones at 166 feet from which a large flow of about 40,000 gallons per hour was obtained. The driller who constructed this bore reported that blocks of sandstone of housebrick size were brought to the surface by the great velocity of the water. An analysis of this water shows: Total Salinity 61.9 parts per hundred thousand; Hardness (as Calcium Carbonate) 30.8 parts per hundred thousand and pH 7.7. The considerable head of water encountered in this bore probably results from an intake in the higher country to the west.

The Illawarra Coal Measures are much more important for their coal content than for their groundwater potential. As far as is known there are no bores in this valley producing water from these strata, but it is known that they normally yield brackish water in other parts of the Sydney Basin.

The granites, which form the backbone of the Great Dividing Range some 4,000 feet high in the south-western part of the valley, and also outcrop over considerable areas near Braidwood and Bungonia, are expected to be useful water bearers only where they are deeply weathered. However there are no records of bores in them, although it is known that springs are fairly common in the general vicinity of Braidwood.

A well twenty two feet deep, located near Majors Creek yielded 100 gallons per hour from the weathered granite and it is considered that relatively small supplies suitable for stock watering should be obtainable from bores on satisfactory sites. In areas of high relief, such as are found near the western divide, the depth of weathering is unlikely to be sufficient to provide worthwhile supplies of groundwater and the limited amount of jointing found in granites suggests that boring in them would be speculative. Some small but valuable supplies are obtained from springs, which are fairly common.

Basalts of Tertiary age form some small cappings in rough country east of Lower Boro, but the major outcrops are confined to the area forming the divide east from Robertson. It is in the larger outcrops of basalt that the best groundwater prospects are expected.

Bores at good sites can be expected to yield supplies suitable for stock watering and, after softening, for domestic use. Recorded yields range from 200 to 1,000 gallons per hour and in most instances the water has proved suitable for garden use. The analysis of a water sample from a bore of depth 80 feet in basalt in the vicinity of the headwaters of Bundanoon Creek shows a Total Saline content of 40.9 parts per hundred thousand, Alkali (as Sodium Carbonate) 14.3 parts per hundred thousand, Hardness (as Calcium Carbonate) 10 parts per hundred thousand and pH 4.4.

Porous Rocks.

The Triassic strata which comprise part of the southern end of the Sydney Basin contain the only rocks in this group from which useful supplies of groundwater are obtained.

Of them, the Lower Triassic Narrabeen group which consists of clayey sandstones, silts and shales, have only a small area of outcrop, the main exposures being along the flanks of the Moss Vale - Robertson plateau. The strata are relatively impervious and in this area have no significant groundwater potential.

The overlying Hawkesbury Sandstones, which are well exposed in the vertical cliffs flanking the valleys of Bundanoon Creek and the Kangaroo River, underlie most of the plateau occupying the northern edge of the Shoalhaven River Valley and outcrop over much of it. Cappings of the Wianamatta group obscure them in the more elevated parts and there are also some extensive areas of basalt near Robertson and Moss Vale.

The Hawkesbury Sandstones have a maximum thickness of about 800 feet but usually they contain only a few relatively thin porous zones. However in this southern part of the Sydney Basin the zones are thicker and more persistent than elsewhere.

Most bores constructed entirely in these sandstones yield supplies of the order of 800 to 1,000 gallons per hour of water with a salinity less than 10 parts per hundred thousand. A number of aquifers are encountered, the yield from each successively deeper aquifer usually being greater than the one above.

A bore near Fitzroy Falls is typical of the conditions in this sandstone formation. Strata penetrated are sandstones of various colours, white, yellow and pale grey being the most common. Aquifers occurred at 27 - 30 feet, 101 - 108 feet and 167 - 182 feet, the respective supplies being 20, 180 and 630 gallons per hour; at 630 gallons per hour only one third of the available drawdown was utilized, indicating that a supply of about 1,200 gallons per hour could be obtained.

A partial analysis of the water from this bore gave: Total Salinity of 6.4 parts per hundred thousand; Chloride (as Sodium Chloride 2 parts per hundred thousand and pH 5.8. The low salinity and somewhat acid pH are typical of the waters from the Hawkesbury Sandstone where they are not influenced by the overlying Wianamatta group which consists essentially of shales with occasional thin beds of sandstone.

As is the case elsewhere in the Sydney Basin, the Wianamatta group almost invariably yields saline waters which are usually suitable only for stock, and are rarely suitable for watering even very salt tolerant plant life. The saline water from the shales is believed to be responsible for the poorer than usual quality of the water in the upper aquifers of Hawkesbury Sandstone where they underlie and are close to shale outcrops. In cases where bores penetrate an appreciable thickness of the Wianamatta Shales it may be necessary to cement off the shallower aquifers in order to prevent contamination of the better quality water which can usually be obtained by boring several hundred feet into the Hawkesbury Sandstones.

Unconsolidated Material.

There are two distinct generations of alluvium in the Southern Tablelands, the first being probably of Tertiary age whilst the second is believed to have been deposited during the Pleistocene period.

The actual base of the Tertiary alluvium is often as much as 100 feet above the present stream beds, these clays, sands and gravels having been built up by ancestral streams prior to the uplift of the tablelands. Occasionally these ancient gravels have been silicified into "silcrete", possibly due to contact metamorphism by basalts which have since been removed by erosion.

Because of their elevation the sands and gravels in the Tertiary alluvium are of little or no importance as a source of groundwater.

The distribution of the Pleistocene (and possibly more recent) alluvium on the Tablelands suggests that there has been some late or post Tertiary movement along some of the numerous faults. The geological map (Figure 16) shows some extensive areas of alluvium in the valley of the main stream to the north and west of Braidwood and also in some of the tributary valleys.

As far as is known no bores have been constructed in these areas, but adjacent catchments indicate there may be over 200 feet of alluvial material with some thin but extensive beds of sand and gravel beneath the larger flats. Large yields are not anticipated but supplies of several thousand gallons per hour of good quality water appear possible in some areas. It is believed that the more recent alluvium on the smaller tributaries is not more than 30 or 40 feet thick, but it seems likely that suitably sited wells or bores would yield useful supplies of stock water and perhaps limited irrigation supplies.

After the main river leaves the plateau it flows through a deep gorge, and there is no alluvial development of any consequence until the valley slowly begins to open out downstream of its confluence with the Kangaroo River. Here some narrow flats occur on the inside of the entrenched meanders. These isolated flats are believed to be of fluvial origin, and it is considered that there would be little difficulty in obtaining supplies for stock purposes from either bores or wells at depths between 20 and 50 feet.

For some 10 or 12 miles upstream of Nowra the river is tidal and the alluvium is of estuarine origin, having been deposited in a brackish or salt water environment. There is a considerable thickness of this usually dark coloured, silty and muddy alluvium. Test boring carried out by the Metropolitan Water Sewerage and Drainage Board at the downstream end of Long Reach (a few miles upstream of Nowra) encountered 180 feet of mud, silt and sand without reaching bedrock, and seismic surveys indicate a maximum thickness of the order of 300 feet of salt water charged sediments. In the vicinity of Nowra the river leaves its confined valley and flows across an extensive alluvial plain which is underlain by deltaic deposits, chiefly black sands silts and muds with occasional bands of material containing shells of marine origin. Much of the area is low lying and swampy.

As is the case elsewhere along the coast, most of the groundwater stored in this alluvium is either brackish or salty, and the occasional supply of good quality water is the result of especially favourable conditions, such as may be found in the levees or in areas where sands occur at, or very close to, the surface. In both cases direct infiltration of local rainfall forms a lens of fresh water which displaces the brackish or saline water and virtually "floats" on the more dense, salty water. In such conditions good quality water rarely extends below 20 - 25 feet from the surface, after which any bore or well is likely to encounter brackish or salty water.

The levees offer the best prospects for useful supplies of groundwater, and wells or spearpoints located on them usually produce water suitable for stock, domestic and garden use, although the yields are very variable, ranging from a few hundred to more than one thousand gallons per hour.

Away from the levees there is a fairly rapid deterioration in the water quality so that shallow supplies are usually suitable only for stock watering. During dry periods the water table may fall several feet and there is often a corresponding increase in the salinity of the shallow groundwater. However runoff from the side slopes will sometimes result in the occurrence of localized zones of good quality water. Such a zone occurs on the north side of the Shoalhaven River in an area near Meroo, which is located towards the edge of the alluvial plain between Nowra and Berry.

There is a considerable development of alluvial flats on Broughton Creek, and upstream of Berry the water table is known to be shallow, and the quality of the water good. Although there are no records of wells in this alluvium being used to supply water for irrigation it seems likely that sufficient water could be obtained for this purpose from suitable wells. Downstream of Berry, where the Broughton Creek flats merge with those of the Shoalhaven River, the environment at the time of deposition was estuarine, and hence the prospects of obtaining good quality water are believed to be similar to those on the main flats, (i.e. chiefly brackish to saline water with occasional lenses of better quality water).

To the north of the mouth of the Shoalhaven River there is an extensive area of aeolian and beach sands which runs parallel to Seven Mile Beach for a width of about three quarters of a mile. Behind the beach there are low lying swampy areas which contain accumulations of decayed vegetable matter. This

environment is typical of the conditions under which the sands have accumulated, and is responsible for peaty and acid groundwater which is often encountered in areas of beach sands.

Utilization of the water from these sands is confined to camping grounds, caravan parks and occasional domestic supplies which are usually obtained from spearpoints not more than 15 feet deep. It is probable that supplies suitable for irrigation could be obtained from bores or batteries of spearpoints in these sands, but the poor soils which occur in the beach sand areas are likely to restrict this type of development.

Although there are probably two or three square miles of these sand beds which would yield water of low salinity suitable for town or industrial water supplies, the elongated shape of the area would make large scale extraction of water from the area quite costly. If this were practicable, it may well be possible to obtain several million gallons per day of water (possibly requiring treatment by aeration and limedosing) from this source.

5. STREAM GAUGING STATIONS.

Streamflow originates in the precipitation of atmospheric moisture which is mainly evaporated from the oceans and is carried over the land masses by weather systems. Runoff is generally recognised to be that component of precipitation which appears as flow in streams after evaporation, transpiration and deep seepage losses have been satisfied.

In most areas of New South Wales rainfall records have been obtained for relatively long periods of time. Therefore, it could be expected that if satisfactory estimates were able to be made of losses due to evaporation, transpiration and deep seepage the remainder of the precipitation, or runoff, could be reliably assessed. However, despite intensive research, no suitable method has yet been formulated of relating runoff and rainfall for any catchment to a satisfactory degree of accuracy in the absence of any stream flow information.

In water resources and other hydrologic investigations it is therefore essential to have basic streamflow data available in order to enable satisfactory results and conclusions to be obtained. In addition it is most desirable that these streamflow records cover as long a period as possible.

Two basic steps are involved in streamflow measurement, the first being the measurement of river level, or gauge height, in relation to a constant datum and the second being the correlation of measured height with stream discharge.

River heights are normally obtained by visual observation of the level of the water surface on a graduated scale, or staff gauge, which is installed on the river bank or on bridge piers. However these measurements only indicate the water level at the time of observation and therefore it is desirable to record the continuous variation of river levels between the times of actual readings. This may be effected by means of a continuous graphical or digital record which is produced by a float or pressure actuated recorder.

Measurements of stream discharge are made by use of a current meter to measure flow velocities, and survey methods to measure the area of effective flow. The combination of flow velocities, in feet per second, and effective areas, in square feet, gives the discharge of the stream in cubic feet per second or cusecs.

Relations are established, by means of graphs, between gauge heights and corresponding discharges based on all streamflow measurements at the gauging station and, in stable channels, these relations tend to remain relatively constant. The relationships are employed to estimate stream discharges for periods when gauge heights, but not measured flows, are available for the station. It is therefore possible to derive continuous streamflow records at any station using gauge height data and the gauge height - discharge relationship.

Stream discharges are normally given in terms of cusecs, one cusec flowing for twelve hours being approximately equal to one acre foot or the volume of water which would cover an area of one acre to a depth of one foot. An additional unit which is frequently used in catchment yield studies is inches depth over the total catchment area.

The installation of stream gauging stations in the Shoalhaven River Valley commenced with the erection of a station at Welcome Reef in 1909. Additional stations were installed on the Shoalhaven River at Warri in 1914 and on both the Corang and Mongarlowe Rivers at Hockeys and Charleyong respectively in 1924.

At present there are eight stream gauging stations in the valley which are operated by the Water Conservation and Irrigation Commission. In addition the Metropolitan Water Sewerage and Drainage Board is currently operating seven permanent and six temporary gauging stations but only limited periods of records are available for these stations.

Due to the short periods of record available for the Board's stream gauging stations flow statistics represent only a small sample of flow regimes and therefore are unlikely to be indicative of long term flow conditions. Details of statistics for the Board's stream gauging stations have therefore not been included in the tables of flow statistics given later in this report.

The current gauging stations are situated so as to measure the runoff from about ninety percent of the Shoalhaven River Valley. The density of permanent streamflow stations in the Shoalhaven River Valley of about five stations per thousand square miles, is slightly more than the density for Coastal New South Wales and is substantially greater than the New South Wales and Australian averages of 2.2 stations and 0.5 stations respectively.

Some difficulties have been experienced in maintaining continuous operation of stream gauging stations in the valley. These difficulties stem from the sparse distribution of population over the valley particularly in the rugged, relatively inaccessible, areas of high runoff. As a result, seven stream gauging stations, installed at various times from 1924, have had to be discontinued, due mainly to unavailability of gauge readers.

The locations of existing and discontinued gauging stations in the Shoalhaven River Valley are shown in Figure 17 and relevant operational details of each station are given in Table 8.

TABLE 8.

Stream	Station	Catchment Area: (Square Miles)	Type of Gauge	Period of Operation
<u>1. Water Conservation and Irrigation Commission</u>				
Mongarlowe River	Mongarlowe	50	Staff Gauge	1949 to date
Mongarlowe River	Marlowe	175	Float Recorder	1945 to date
Corang River	Hockeys	62	Pressure Recorder	1924 to date
Endrick River	Nowra Road	81	Float Recorder	1953 to date
Kangaroo River	Kangaroo Valley	93	Staff Gauge	1954 to date
Shoalhaven River	Warri	560	Staff Gauge	1914 to date
Shoalhaven River	Welcome Reef	1,070	Pressure Recorder	1909 to date

TABLE 8 (CONT.)

Stream	Station	Catchment Area (Square Miles)	Type of Gauge	Period of Operation
Shoalhaven River	Nowra Pumping Station	2,460	Pressure Recorder	1964 to date
Jerrabattgulla Creek	Kain *	48	Staff Gauge	1950 to 1952
Shoalhaven River	Kadoona *	105	Staff Gauge	(1950 to 1953) (1957 to 1958)
Shoalhaven River	Valeview *	145	Staff Gauge	1926 to 1931
Mongarlowe River	Monga *	15	Staff Gauge	1949 to 1953
Mongarlowe River	Charleyong *	177	Pressure Recorder	1924 to 1954
Endrick River	Nerriga *	57	Staff Gauge	1949 to 1953
Bulee Brook	Nerriga *	13	Pressure Recorder	1949 to 1953
2. Metropolitan Water Sewerage and Drainage Board.				
Kangaroo River	Hampden Bridge	128	Pressure Recorder	1966 to date
Kangaroo Creek	Cooke's Crossing	22	Pressure Recorder	1966 to date
Broger's Creek	Clinton Park	26	Pressure Recorder	1966 to date
Geringong Creek	Nellsville	11	Pressure Recorder	1966 to date
Barangary Creek	Willow Glen	18	Pressure Recorder	1966 to date
Barangary Creek	Ascot	34	Pressure Recorder	1967 to date
Shoalhaven River	Grassy Gully	2,495	Servo-manometer Recorder	1965 to date
Shoalhaven River	Nowra Ø	2,595	Pressure Recorder	1965 to date
Shoalhaven River	Strong's Gauge Ø	2,584	Pressure Recorder	1965 to date
Shoalhaven River	Humbug Reach Ø	2,576	Pressure Recorder	1965 to date
Shoalhaven River	Bangalee Ø	2,572	Pressure Recorder	1965 to date
Shoalhaven River	Long Reach Ø	2,566	Pressure Recorder	1965 to date
Shoalhaven River	Mountjoy Ø	2,559	Pressure Recorder	1965 to date

Ø Temporary stations installed for model studies.

* Discontinued station.

6. CATCHMENT YIELDS.

The systematic and regular recording of streamflow in the Shoalhaven River Valley has provided a substantial volume of hydrologic data for estimation of water yield from the various sections of the valley. The water yield, or runoff, from a natural catchment is dependent on many factors, the main ones being annual rainfall, catchment area, topography and geology. In addition other factors which control the runoff resulting from a particular storm are rainfall intensity, vegetal cover and soil moisture conditions.

Over the sixteen year period commencing in 1950 the average discharge of the Mongarlowe River at Mongarlowe was 86,600 acre feet per annum which is equivalent to an average flow of 119 cusecs (44,400 gallons per minute). At the gauging station located on the Mongarlowe River at Marlowe the average flow

over a twenty one year period has been 173,000 acre feet per annum (237 cusecs). However, this latter station measures runoff from a catchment area of more than three times that above Mongarlowe, and therefore these yields are consistent with hydrologic principles.

At the Corang River at Hockeys the average annual flow over a forty two year period was 58,100 acre feet (80 cusecs) or about 30,000 gallons per minute. Over the period of available record of thirteen years the discharge of the Endrick River at Nowra Road has been about 105,000 acre feet per annum (143 cusecs) or about 54,000 gallons per minute.

Records of streamflow for the Kangaroo River at Kangaroo Valley indicate that the average annual runoff at this station over a nine year period was 227,000 acre feet (310 cusecs) or 116,000 gallons per minute.

Over a thirty two year period the flow of the Shoalhaven River at Warri was 171,000 acre feet per annum (234 cusecs). At Welcome Reef on the Shoalhaven River the average discharge over a fifty two year period of record was 467,000 acre feet per annum (640 cusecs).

For comparative purposes the yields at various streamflow stations, over the respective periods of available records are given in Table 9. Details of monthly maximum, minimum and mean flows for the gauging stations located on the Mongarlowe River at Marlowe, the Shoalhaven River at Welcome Reef, the Corang River at Hockeys, the Endrick River at Nowra Road and the Kangaroo River at Kangaroo Valley are given in Appendices 15 to 19 inclusive.

TABLE 9.

Stream	Station	Years of Complete Records	Average Annual Yield Over Period of Complete Years of Record		
			Acre Feet Per Annum	Cusecs	Gallons Per Minute
Mongarlowe River	Mongarlowe	17	84,000	115	43,000
Mongarlowe River	Marlowe	21	173,000	237	89,000
Corang River	Hockeys	42	58,100	80	30,000
Endrick River	Nowra Road	13	105,000	143	54,000
Kangaroo River	Kangaroo Valley	9	227,000	310	116,000
Shoalhaven River	Warri	32	171,000	234	88,000
Shoalhaven River	Welcome Reef	52	467,000	640	240,000

7. AVERAGE ANNUAL RUNOFF.

Based on the streamflow records available for the Shoalhaven River at Welcome Reef, over the period from 1909 to date, estimates have been prepared of the long term average annual runoffs of selected sub-catchments in the Shoalhaven River Valley.

These estimates indicate that the average annual surface water resources of the Shoalhaven River Valley are of the order of 1,460,000 acre feet (396,000 million gallons) which is equivalent to a continuous rate of 750,000 gallons per minute. On a square mile of catchment area basis this runoff is more than one third greater than the average for coastal basins in New South Wales and over five times the average for the State.

In the following Table 10 the estimated long term average annual runoff of the Shoalhaven River Valley is compared with the corresponding runoffs for the Hawkesbury and Bega Valleys.

TABLE 10.

Basin	Catchment Area in Square Miles	Estimated Long Term Average Annual Runoff		
		Acre Feet per Annum	Acre Feet per Annum per square mile	Percentage Runoff
Shoalhaven Valley	2,820	1,460,000	520	28%
Hawkesbury Valley	8,390	1,850,000	220	11%
Bega Valley	740	400,000	540	27%

A previous estimate of the long term average annual runoff for the Shoalhaven River Valley was given in the 1963 publication "Review of Australia's Water Resources" as 1,230,000 acre feet per annum. This estimate was based on periods of records of 46 years at Welcome Reef as compared with the 52 years now available.

The average annual runoff of the Shoalhaven River Valley is equivalent to about 28 percent of the annual rainfall over the valley and, when compared with other adjacent valleys, this percentage is comparatively high.

However, the high estimated runoff of the Shoalhaven River Valley is attributable to the high yielding areas in the north of the valley where consistently high rainfalls occur.

The percentage runoff for the adjacent Hawkesbury River Valley, (given in Table 10), of 11 percent appears to be relatively low when compared with the Shoalhaven River Valley. However, the runoff from a catchment tends to decrease with increase in area and as the Hawkesbury River catchment is about three times that of the Shoalhaven River the percentage runoffs are compatible.

8. VARIABILITY OF STREAMFLOWS.

Whilst average annual discharges are commonly used for the comparison of long term yields from a catchment they do not indicate the variability of flows from year to year. The variability of annual flows from a catchment is of utmost importance in the planning of water resources projects; the greater the variability, the more difficult it is to economically utilise the available surface water resources of a valley.

In common with the majority of other streams in New South Wales the streams in the Shoalhaven River Valley exhibit a high degree of variability. An indication of the variability of streamflows at selected stations in the valley is given in Table 11. This table indicates the maximum, minimum and mean discharges recorded at the stations over the periods of available records.

TABLE 11

Stream	Station	Period of Computed Records	Recorded Discharge		
			Maximum	Minimum	Mean
Mongarlowe River	Marlowe	August 1945 to June 1967	47,200 cusecs (17,700,000 g.p.m.)	2 cusecs (750 g.p.m.)	237 cusecs (89,000 g.p.m.)
Corang River	Hockeys	September 1924 to June 1967	34,700 cusecs (13,000,000 g.p.m.)	0	80 cusecs (30,000 g.p.m.)
Endrick River	Nowra Road	July 1953 to June 1967	28,000 cusecs (10,500,000 g.p.m.)	0	143 cusecs (54,000 g.p.m.)
Kangaroo River	Kangaroo Valley	July 1954 to June 1967	81,000 cusecs (30,300,000 g.p.m.)	0.7 cusecs (260 g.p.m.)	310 cusecs (116,000 g.p.m.)
Shoalhaven River	Welcome Reef	June 1909 to June 1967	313,000 cusecs (117,000,000 g.p.m.)	0	640 cusecs (240,000 g.p.m.)

Available streamflow records indicate that there is a high degree of variability in the annual water resources of the Shoalhaven River Valley. On the Shoalhaven River at Welcome Reef the maximum annual discharge occurred in 1950 and was nearly two million acre feet or over four times the average annual discharge. As the minimum annual discharge at this location was about 38,000 acre feet, the ratio of maximum annual to minimum annual flow was in excess of fifty to one.

The maximum monthly flow recorded at Welcome Reef was nearly 900,000 acre feet in May 1925 which is equivalent to more than twenty times the average monthly flow. During the month of January 1919, no flow was recorded at this station for the entire month.

On both the Corang River at Hockeys and the Mongarlowe River at Marlowe the maximum recorded annual discharge was about 2½ times the mean annual flow. The minimum annual flows at these stations were only about 10 percent of the mean.

The recorded maximum and minimum annual discharges of the Kangaroo River at Kangaroo Valley were about double, and one quarter respectively of the mean flow.

The monthly variations in streamflows always exhibit a greater variability than annual discharges, the maximum monthly flows at Nowra Road, Marlowe and Hockeys being seven, ten and twenty three times the respective mean monthly flows.

Histograms of monthly streamflows recorded at the stream gauging stations at Welcome Reef, Marlowe, Hockeys, Nowra Road and Kangaroo Valley are shown in Figures 18 to 20 inclusive; these Figures illustrate the high degree of variability of streamflows in the valley. Furthermore examination of Figures 18 to 20 indicates that no apparent periodic trend occurs in runoff.

The mean monthly rainfalls in the valley are relatively uniformly distributed throughout the year. The mean monthly rainfall at Braidwood varies from about $2\frac{1}{2}$ inches in the summer months from December to March inclusive to about 2 inches in the months from July to September. A similar pattern in average monthly rainfalls also occurs at Nowra, however, as the average annual rainfall at Nowra is about $1\frac{1}{2}$ times that recorded at Braidwood, the average monthly rainfalls are substantially greater, the maximum being nearly four inches in the summer months and about $2\frac{1}{2}$ inches in the winter months.

9. PERSISTENCE OF STREAMFLOWS.

Flows in the majority of streams in the Shoalhaven River Valley tend to continue for significant periods of time after the cessation of rainfall. The conclusion which may be drawn from this is that contributions to streamflow from groundwater are relatively high and of extended duration.

A procedure commonly employed to enable comparison of streamflow persistence to be made between stations is the preparation of graphs showing flow duration curves. These curves indicate the cumulative percentages of time that discharges have varied from the minimum flow, which in many instances is zero, up to the maximum discharge or any other selected flow. Flow duration curves are constructed to show the percentages of time that flows were equal to or greater than (or alternatively equal to or less than) any selected discharge. The flow duration curves and data given in this report correspond to the percentages of time that flows were equal to or greater than any selected flow.

The flow duration curve of the Mongarlowe River at Marlowe is given at Figure 21 and the frequencies of flow at this station are given in the following Table 12.

TABLE 12.

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	385	144,000
30	114	42,700
50	50	18,700
70	22	8,200
90	8	3,000
95	5	1,900
100	2	700

The duration curve of discharge for the Corang River at Hockeys is shown at Figure 22 and the flow frequency statistics for this station are given in the following Table 13.

TABLE 13.

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	90	33,700
30	22	8,200
50	10	3,700
70	3	1,100
90	1	400
95	0.5	200
97	0	0
100	0	0

The flow duration curve for the Endrick River at Nowra Road is appended at Figure 23 and flow frequency data corresponding to the curve are given in the following Table 14.

TABLE 14.

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	185	69,300
30	49	18,300
50	24	9,000
70	8	3,000
90	2	700
95	1	400
100	0	0

At Figure 24 the flow duration curve for the Kangaroo River at Kangaroo Valley is shown and flow data corresponding to the curve are given in the following Table 15.

TABLE 15.

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	500	187,000
30	122	45,700
50	74	27,700
70	40	15,000
90	11	4,100
95	5	1,900
98	2	700
100	0.7	300

The flow duration curve for the Shoalhaven River at Welcome Reef is appended at Figure 25 and the flow frequency statistics for this station are given in the following Table 16.

TABLE 16.

Percentage of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	900	337,000
30	265	99,000
50	131	49,000
70	70	26,200
90	30	11,200
95	17	6,400
100	0	0

Whilst the flow duration curves shown at Figures 21 to 25 indicate the frequency of various flows at the particular stations they do not permit a comparison to be made of the relative flow duration characteristics of the various sub-catchments in the valley.

To enable these comparisons to be made, the flow duration curves for the five stations have been replotted in the form of duration curves of flow per square mile of catchment area and are shown at Figure 26.

The curves shown at Figure 26 indicate that, of the five selected stations the Kangaroo River at Kangaroo Valley exhibits by far the highest persistence of flow. The high runoff recorded at this station is attributed to the high average annual rainfall of nearly sixty inches over the catchment and the relatively steep topography of the Kangaroo Valley.

The duration curves of flow per square mile for the Endrick River at Nowra Road and the Mongarlowe River at Marlowe are very similar. This result is to be expected as the catchments are located in relatively close proximity to each other and have generally similar topography.

The catchment of the Corang River at Hockeys is situated between the Endrick and Mongarlowe River catchments and could therefore be expected to provide similar flow persistence characteristics per unit area of catchment. However as indicated at Figure 26 flow frequencies of the Corang River at Hockeys are substantially below those of the other adjoining catchments. This difference in flow characteristics is attributable to the different periods of record available for the three stations, the flow frequencies for the Corang River at Hockeys being based on 42 years of record, whereas the frequencies for the Endrick River at Nowra Road and the Mongarlowe River at Marlowe are based on 13 years and 21 years respectively.

The duration curve of discharge for the Shoalhaven River at Welcome Reef is substantially below those of all the other selected stations. However as the catchment area above Welcome Reef is more than six times greater than any of the other catchments studied and as yields normally decrease as the catchment area increases, this result is to be expected.

10. OCCURRENCE OF FLOODING.

Major floods are not of frequent occurrence in the Shoalhaven River Valley. Upstream of Nowra there are no major centres of population located on the Shoalhaven River and any flooding which has occurred in towns in the upper Shoalhaven Valley is due to localised runoff.

Flooding of the low lying areas near Nowra has occurred as a result of local heavy rainfall in association with minor floods in the Shoalhaven River. However, medium and major floods at Nowra are mainly due to flood runoffs from the upper Shoalhaven River catchment. Below Nowra flood heights are influenced by the timing of the flood hydrograph in relation to tidal behaviour.

The distribution and magnitudes of flood heights greater than fifteen feet (equivalent to a discharge of about 22,000 cusecs), which have been recorded for the Shoalhaven River at Welcome Reef over the period from 1909 to 1966, are indicated at Figure 27. The highest recorded flood at this location occurred in May, 1925 when the river reached a maximum gauge height of 55 feet 6 inches. The estimated corresponding peak discharge at this station was 313,000 cusecs which is equivalent to a runoff of nearly 300 cusecs per square mile.

No records are available for the May, 1925 flood for the gauging stations at Nowra Road, Marlowe or Kangaroo Valley. The estimated maximum discharge of the Corang River at Hockeys during this flood was about 17,000 cusecs which is only the fourth highest flood recorded at this location since 1924.

The second highest flood recorded at Welcome Reef occurred in October, 1959 when a peak height of 42 feet 2 inches was recorded. The estimated discharge of 164,000 cusecs corresponding to this height is little more than half of the maximum May, 1925 discharge. Maximum discharges recorded during the October, 1959 flood at other gauging stations in the valley were of major magnitudes. At the stations located on the Mongarlowe River at Marlowe and the Kangaroo River at Kangaroo Valley the October, 1959 flood was the highest recorded over the periods of available records.

Details of the eight highest floods recorded for the Shoalhaven River at Welcome Reef from 1909 to 1966 are given in the following Table 17.

TABLE 17.

Month	Maximum Flood Height	Estimated Maximum Flow (Cusecs)
May 1925	55 ft. 6 ins.	313,000
October 1959	42 ft. 2 ins.	164,000
October 1916	40 ft. 0 ins.	130,000
April 1945	37 ft. 0 ins.	124,000
May 1943	31 ft. 3 ins.	85,000
June 1952	30 ft. 1 ins.	78,500
July 1959	30 ft. 0 ins.	78,000
July 1922	29 ft. 0 ins.	72,000

Because of the damage which has been occasioned by past floods, the Shoalhaven Shire Council is at present undertaking a programme of works (with 80 percent of the finance being provided by the Commonwealth and State Governments in equal shares), designed to reduce inflow of floodwaters to low lying land and to improve drainage of floodwaters during the falling stages of a flood. The works comprise a system of low levees, drains and flood gates in the flood liable areas downstream of Nowra.

11. DROUGHT PERIODS.

There does not appear to be any specific definition of the term "drought". Generally it is considered to be an extended period of low rainfall at any location. However the criteria used in assessing if an area is under drought conditions vary with geographical location, average rainfall and normal crop requirements. For example a continuous period of twelve months with low rainfalls may be considered to be a drought on a coastal catchment whereas such rainfalls may be considered to be normal on an inland catchment.

In general an area is considered to be under drought conditions when the soil moisture is insufficient for the requirements of the majority of crops during the growing season or when water shortages for domestic, industrial or municipal purposes are experienced. A prime indicator of drought conditions is a diminished or exhausted rate of streamflow.

Graphs showing average annual rainfalls at Robertson and Nowra and at Mount Fairy and Braidwood are given at Figures 28 and 29 respectively. These graphs indicate that the lowest calendar year rainfalls at Braidwood and Nowra were 15.47 inches and 20.62 inches in 1944 and 1895 respectively. In addition the graphs show that the longest period of below average rainfall at the majority of the stations appeared to occur from about 1901 to 1911 and this would seem to be the most critical drought period for the Shoalhaven Valley since records commenced in 1887 at Braidwood.

However, a second period of low rainfall occurred from about 1935 to 1944 and this period was almost as severe particularly in coastal sections of the valley. As indicated at Figures 28 and 29 other shorter periods of

below average rainfall have occurred but these have been alleviated somewhat by above average rainfalls during preceding or following years.

A feature of the annual rainfall graphs is the relative reliability of rainfall at Robertson (Figure 28). In addition to the high average rainfall of nearly 64 inches, years of below average rainfall do not extend for significant periods, the longest period of below average rainfall being only about six years (1905 - 1910). However, during this six year period the average rainfall was about 45 inches which was so distributed during the period to be adequate for most agricultural purposes.

Since the commencement of regular recording of streamflows of the Mongarlowe River at Marlowe in 1945 the minimum twelve monthly flow occurred from October, 1964 to September, 1965 and was 16,400 acre feet. This flow corresponds to only 9 percent of the average annual discharge at this station.

At the gauging station located on the Corang River at Hockeys the minimum flow during a twelve month period was only 3,100 acre feet (from March, 1941 to February, 1942) or 5 percent of the average annual flow recorded at this location since 1924.

The minimum twelve monthly discharge of the Endrick River at Nowra Road since 1953 was about 7,100 acre feet from October, 1964 to September, 1965. This discharge corresponds to about 7 percent of the average annual flow.

The gauging station located on the Kangaroo River at Kangaroo Valley was established in July, 1954 and since that date the minimum twelve monthly flow was about 24,000 acre feet from September, 1964 to August, 1965. As the average annual flow at this station is of the order of 230,000 acre feet the minimum twelve monthly flow corresponds to about 11 percent of the average.

Over the period of available records from 1909 for the Shoalhaven River at Welcome Reef the lowest flow over any period of twelve successive months has been 37,100 acre feet from December 1939 to November 1940 as compared with the flow of 85,500 acre feet from February 1965 to January 1966. These flows are equivalent to only 8 percent and 18 percent respectively of the average annual flow.

The minimum twelve monthly flows at selected stations in the Shoalhaven River Valley and their percentages of the respective average annual flows at the stations are given in the following Table 18.

TABLE 18.

Stream	Station	Minimum Twelve Monthly Flow		
		Period	Acre Feet	Percentage of Mean Annual Flow
Mongarlowe River	Marlowe	Oct. 1964 to Sept. 1965	16,400	9%
Corang River	Hockeys	March 1941 to Feb. 1942	3,100	5%
Endrick River	Nowra Road	Oct. 1964 to Sept. 1965	7,100	7%
Kangaroo River	Kangaroo Valley	Sept. 1964 to Aug. 1965	24,000	11%
Shoalhaven River	Welcome Reef	Dec. 1939 to Nov. 1940	37,100	8%

As previously indicated, streamflows in the Shoalhaven River Valley are relatively persistent. An indication of this persistency can be obtained by consideration of periods of zero flow, if any, recorded at each gauging station.

Over the period of available records for the Shoalhaven River at Welcome Reef from 1909 to date there have been several periods of zero flow, the most prolonged being of 76 days duration from December, 1918 to February, 1919. However the total percentage of time during which no flow has occurred at this station is less than one percent.

The longest period of zero flow experienced on the Corang River at Hockeys since 1924 was 97 days from November, 1928 to February, 1929. At this station the total percentage of time during which no flow has occurred is about 3½ percent.

The station on the Endrick River at Nowra Road was established in July, 1953 and since that date there have been only fourteen days of zero flow which corresponds to only about 0.3 percent of the total time.

At the stations located on the Mongarlowe River at Marlowe and on the Kangaroo River at Kangaroo Valley there have been no periods of zero flow over the total periods of record.

The minimum thirty day and sixty day volumes of flow which have been recorded at the five selected stations are shown in the following Table 19.

TABLE 19

Stream	Station	Minimum Recorded Flow (Acre Feet)	
		Thirty Days	Sixty Days
Mongarlowe River	Marlowe	195 (Dec. 1954 to Jan. 1955)	452 (Dec. 1954 to Jan. 1955)
Corang River	Hockeys	0 (Nov. 1928 to Feb. 1929)	0 (Nov. 1928 to Feb. 1929)
Endrick River	Nowra Road	11 (March to April 1965)	77 (Feb. to April 1965)
Kangaroo River	Kangaroo Valley	63 (March to April 1965)	213 (Feb. to April 1965)
Shoalhaven River	Welcome Reef	0 (Dec. 1918 to Feb. 1919)	0 (Dec. 1918 to Feb. 1919)

As indicated in Table 19 the minimum thirty and sixty day volumes recorded on the Endrick River at Nowra Road and the Kangaroo River at Kangaroo Valley occurred during 1965. However these stations were not established until 1953 and 1954 respectively and therefore the records do not cover earlier critical drought periods.

12. THE 1964-1966 DROUGHT.

From late 1964 to early 1966 a period of extremely low rainfall was experienced in the Shoalhaven River Valley. At Nowra the twelve monthly rainfall from October, 1964 to September, 1965 inclusive was 21.90 inches which is about 43 percent greater than the minimum rainfall over a twelve month period recorded at this location since 1896.

The minimum twelve monthly rainfall at Braidwood during the 1964-1966 drought was 14.23 inches from September, 1964 to August, 1965, this rainfall being about 33 percent greater than the minimum twelve monthly rainfall recorded over a period of 80 years.

The recorded monthly rainfalls at Braidwood, Robertson and Nowra over the period from July, 1964 to June, 1967 are shown in Table 20.

TABLE 20

Month	Rainfall (Points)		
	Braidwood	Robertson	Nowra
July 1964	201	84	46
August 1964	291	282	216
September 1964	174	200	146
October 1964	399	378	300
November 1964	153	276	148
December 1964	253	174	256
January 1965	7	113	154
February 1965	53	121	65
March 1965	1	44	6
April 1965	44	521	336
May 1965	31	213	216
June 1965	154	422	279
July 1965	86	484	292
August 1965	68	78	45
September 1965	279	354	93
October 1965	603	1,273	765
November 1965	62	127	70
December 1965	276	487	386
January 1966	81	145	84
February 1966	374	846	313
March 1966	146	898	298
April 1966	13	124	39
May 1966	91	61	29
June 1966	335	1,044	626
July 1966	118	142	106
August 1966	152	282	133
September 1966	261	427	215
October 1966	393	585	451
November 1966	598	2,101	857
December 1966	746	449	345
January 1967	321	793	588
February 1967	44	300	161
March 1967	159	772	257
April 1967	26	135	91
May 1967	106	153	83
June 1967	158	1,365	535
Totals October 1964 to September 1965	1,528	3,178	2,190
Totals July 1964 to June 1967	7,257	16,253	9,030

Critically low flows of extended duration were experienced in streams in the Shoalhaven River Valley during the years 1964 to 1966. The minimum twelve monthly flows recorded at the stations at Marlowe, Hockeys, Nowra Road, Kangaroo Valley and Welcome Reef are shown in the following Table 21.

TABLE 21.

Stream	Station	Minimum Twelve Monthly Flow During 1964-66 Drought		
		Period	Acre Feet	Percentage of Mean Annual Flow
Mongarlowe River	Marlowe	Oct. 1964 to Sept. 1965	16,400	9%
Corang River	Hockeys	Dec. 1964 to Nov. 1965	3,200	5%
Endrick River	Nowra Road	Oct. 1964 to Sept. 1965	7,100	7%
Kangaroo River	Kangaroo Valley	Sept. 1964 to Aug. 1965	24,000	11%
Shoalhaven River	Welcome Reef	Feb. 1965 to Jan. 1966.	85,500	18%

Comparison of the twelve monthly discharges shown in the foregoing Table 21 with the minimum twelve monthly flows given in Table 18 in Section 11 shows that over a twelve month period the discharges recorded at Marlowe, Nowra Road and Kangaroo Valley during the 1964-1966 drought were the lowest recorded since commencement of records at these locations.

In addition the minimum 1964-1966 drought period discharge over twelve months at Hockeys was about 3,200 acre feet or only about 100 acre feet greater than the minimum recorded at this location since 1924. However the minimum twelve monthly flow of the Shoalhaven River at Welcome Reef during the 1964-1966 drought was more than double the minimum flow of 37,000 acre feet recorded during the years 1939-1940.

All streams in the valley experienced extremely low or zero flows during the 1964-1966 drought period. A schedule of the minimum thirty day and sixty day discharges at Marlowe, Hockeys, Nowra Road, Kangaroo Valley and Welcome Reef is given in Table 22.

TABLE 22.

Stream	Station	Minimum Total Flow During 1964 - 1966 (Acre Feet)	
		Thirty Days	Sixty Days
Mongarlowe River	Marlowe	250	1,080
Corang River	Hockeys	0	3
Endrick River	Nowra Road	11	77
Kangaroo River	Kangaroo Valley	63	213
Shoalhaven River	Welcome Reef	1,750	4,500

Comparison of Table 22 with Table 19 given in Section 11 shows that, with the exception of the station at Welcome Reef, minimum thirty and sixty day flows during the 1964-1966 drought, either equalled or approached the minimum corresponding discharges recorded at all the stations.

The 1964-1966 drought conditions were alleviated by the occurrence of above average rainfalls in October, 1965 when over six, seven and twelve inches were recorded at Braidwood, Nowra and Robertson respectively. Additional above average rainfalls occurred in December, 1965 and February, 1966 and resulted in appreciable increases in flows in all streams in the valley.

Since February, 1966, rainfall in the Shoalhaven Valley has been adequate for most agricultural purposes. Details of recent streamflow measurements obtained at the gauging stations located at Marlowe, Hockeys, Nowra Road, Kangaroo Valley and Welcome Reef are given in the following Table 23.

TABLE 23.

Stream	Station	Date of Measurement	Measured Flow (Cusecs)
Mongarlowe River	Marlowe	29.5.1967	18
Corang River	Hockeys	29.5.1967	3
Endrick River	Nowra Road	29.5.1967	5
Kangaroo River	Kangaroo Valley	1.6.1967	23
Shoalhaven River	Welcome Reef	29.5.1967	79

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT.

Intensive dairying in the coastal section of the valley and the grazing of sheep for wool and mutton in the inland sections are the main rural activities in the Shoalhaven River Valley; secondary rural activities are the growing of fodder and the grazing of cattle. Currently the biggest industrial use is by the Wiggins Teape Shoalhaven Paper Mill which has a daily water requirement of about 3½ million gallons.

The area authorised for irrigation under the Water Act has increased from 333 acres at June, 1945 to about 3,100 acres at June, 1967 and the total number of irrigation licenses has increased from 18 in 1945 to 118 in 1967. The area presently authorised for irrigation is by far the greatest area licensed in the Shoalhaven River Valley, being some 600 acres above the next highest licensed area of 2,500 acres in 1959. The variation in the total number of irrigation licenses and corresponding areas over the period from June, 1945 to June, 1967 is shown at Figure 30.

The average area per license has remained relatively constant at about 20 acres since 1945, and at June, 1967 was 27 acres per license.

Whilst there are no major water conservation or flood mitigation storages constructed in the Shoalhaven River Valley there are a number of minor storages constructed for town water supply purposes.

The Wingecarribee Shire Council has constructed a concrete arch dam of maximum height 100 feet over Bundanoon Creek. This storage, which was completed in 1959, has a maximum capacity of 450 million gallons (1,650 acre feet) and provides water supplies to Moss Vale, Bundanoon, Exeter, Berrima and Sutton Forest.

The Shoalhaven Shire Council has constructed two minor dams for water supply purposes in the coastal section of the valley. The largest of these storages, which is located on Flat Rock Creek, retains a maximum storage volume of 140 million gallons (515 acre feet). The other storage is the Cambewarra Dam with a maximum capacity of about 9 million gallons (33 acre feet).

In addition the Shoalhaven Shire Council pumps water from the Shoalhaven River at Burrier for domestic and industrial purposes, the maximum pumping rate being 7,300 gallons per minute. The Shoalhaven Shire Council proposes to construct a storage of capacity 2,300 million gallons (8,500 acre feet) on Danjera Creek near Yalwal for water supply purposes.

Water supply for the town of Braidwood is obtained by pumping at a rate of 200 gallons per minute from the Shoalhaven River at a point about $4\frac{1}{2}$ miles west of the town. The town of Kangaroo Valley has been similarly provided with water supplies by pumping from the Kangaroo River (the works being completed in October 1956) at a maximum rate of 500 gallons per minute.

The estimated maximum requirements in the Shoalhaven River Valley under present conditions for irrigation under license, water supply and riparian usage (not including transmission losses) are given in Table 24.

TABLE 24.

Requirement	Cusecs	Acre Feet per Annum
Irrigation under license (3,140 acres at 2 feet per 8 month season)	13	9,500
Town, commercial and stock water supplies	48	35,000
Riparian usage	51	37,200
Totals	112	81,700

As indicated in Table 24 there is a limited demand for irrigation in the Shoalhaven River Valley, the irrigation demand representing only about nine percent of the estimated maximum total demand exclusive of transmission losses.

The areas authorised for irrigation on the Shoalhaven River and its tributaries at 30th June, 1967 and the estimated total demands for each tributary and selected sections of the Shoalhaven River (including town and industrial water supplies and riparian usage but excluding transmission losses) are shown in Table 25.

TABLE 25.

Stream	Area Authorised for Irrigation at 30th June, 1967 (Acres)	Total Demand	
		Cusecs	Acre Feet per Annum
Brundee Swamp	20	0.5	370
Flat Rock Creek	-	1.5	1,100
Barringella Creek	17	0.2	140
Broughton Creek	432	3.8	2,800
Bomaderry Creek	70	2.5	1,800
Bugong Creek	60	0.5	370
Kangaroo River	1,718	16.6	12,100
Joarima Creek	-	0.8	580
Bugonia Creek	8	1.2	880
Shoalhaven River below Endrick River	55	46.3	33,800
Endrick River	-	4.0	2,900
Bindee Brook	21	0.4	290
Mongarlowe River	75	4.7	3,400
Shoalhaven River between Mongarlowe and Endrick Rivers	-	1.6	1,200
Corang River	20	1.4	1,000
Bombay and Gillamatong Creeks	47	1.4	1,000
Jembaicumbene Creek	15	0.5	370
Shoalhaven River below Jembaicumbene Creek to Mongarlowe River	575	21.1	15,400
Shoalhaven River above Jembaicumbene Creek	10	3.0	2,200
Totals	3,143	112.0	81,700

The foregoing requirements given in Table 25 do not include any allowance for transmission losses due to evaporation from the stream surface and seepage into the bed and banks of each channel. These losses, which can be of substantial magnitudes particularly during drought periods, are related to flow levels in the stream channels and groundwater conditions and therefore can be expected to vary widely depending on antecedent meteorological conditions.

14. POSSIBLE IRRIGATION DEVELOPMENT.

Provision of an assured water supply would enable the present production of vegetables, pasture and fodder crops to be increased by more intensive irrigation.

The areas which appear suitable for irrigation have been determined with the assistance of aerial photographs. The extent of areas assessed as suitable for irrigation is summarised in Table 26 below:-

TABLE 26

Name of Stream	Assessed Area Suitable for Irrigation (Acres)
Shoalhaven River:	
Above Jembaicumbene Creek confluence	3,300
Junction Jembaicumbene Creek to junction Mongarlowe River	1,950
Junction Mongarlowe River to junction Endrick River	100
Junction Endrick River to limit of tidal influence	50
Limit of tidal influence to Nowra	1,400
Below Nowra	4,500
Tributaries of Shoalhaven River:	
Creekhaven Creek	1,500
Jembaicumbene Creek and tributaries	3,700
Bombay Creek and tributaries	800
Gillamatong Creek	2,400
Durrans Durra Creek and tributaries	1,100
Reedy Creek and tributaries	2,300
Bore Creek and tributaries	1,500
Mongarlowe River	800
Corang River and tributaries	600
Kangaroo River and tributaries	3,400
Benaderry Creek and tributaries	700
Broughton Creek and tributaries	4,600
Remaining tributaries	5,300
TOTAL	40,000

A factor which could govern the extent and rate of irrigation development is the unfavourable distribution of suitable and irrigable areas. Of the total area of 40,000 acres assessed as being suitable for irrigation, approximately 6,000 acres lie within the tidal influence which extends 30 miles upstream from the coast to Burrier. Effective development of irrigation in this area would be dependent upon the provision of a fresh water supply by construction of barrages on the lower river or by conveyance of water to the irrigable areas by pipeline.

Due to the nature of the main river channel construction of a barrage on the river proper would be extremely costly and would introduce flood drainage and navigational difficulties.

Considerable areas on the Shoalhaven River below Nowra and on Broughton and Crookhaven Creeks are flood liable. Because of the nature of the drainage

pattern within the Shoalhaven Catchment, a significant proportion of the areas suitable for irrigation lie on smaller streams which command only minor catchments possessing limited streamflow potential.

15. INVESTIGATION OF STORAGE PROPOSALS.

When consideration was initially given to the construction of a major storage dam on the Shoalhaven River it was envisaged as a multi-purpose project including not only the provision of water for irrigation but also for the town of Nowra and other centres of population. In addition there also exists a considerable potential for hydro-electric power generation.

This situation led to the constitution of the Shoalhaven River Water Supply Investigation Committee in 1947 for the purpose of investigating and reporting upon proposals for the utilisation of water from the Shoalhaven River.

The Committee recommended that the then five local Councils in the Shoalhaven Area should consider a district water supply scheme with the Shoalhaven River as the main source of supply. Such a scheme was approved by the Shoalhaven Shire Council shortly after its inauguration in 1948.

This Committee, during the period 1947-52, gave consideration to a scheme involving the construction of a storage dam at Devil's Bridge (or alternatively Welcome Reef), subsidiary storages on the Endrick and Corang Rivers, a tunnel 19 miles in length to the head of Conjola Creek together with the necessary balancing storage, pressure pipes to power stations and gravitation mains to service reservoirs. The scheme also envisaged the reticulation of water to hydro-electric generating stations and to towns and farms on the coastal strip between Kiama and Ulladulla.

The Committee, in its investigations, paid regard to the expected economics of hydro-electric power generation together with the likely revenue from water in the Local Government areas of Nowra, Cambewarra, Ulladulla, Clyde, Berry, Broughton Vale, Gerringong, Kiama, Jamberoo, Shellharbour, North Illawarra and Wollongong. (These areas later became the Shoalhaven Shire, Kiama and Shellharbour Municipalities and the City of Greater Wollongong).

In addition the Committee carried out an economic survey of the area and as a consequence concluded that with some irrigation on each farm and a dependable stock water supply, an appreciable increase in production and a stabilisation of the dairy industry might be expected.

Although consideration was given at the time to the possibility of sharing the cost of storage with the Metropolitan Water Sewerage and Drainage Board, the Board did not have any immediate need for water from the Shoalhaven River. However by 1960 the Board found it necessary to consider the means by which the demand of the rapidly growing Illawarra District could be supplemented and, having concluded that the Shoalhaven Valley was the obvious future source of supply, asked the Government to reconvene the Committee. This was done in September 1960.

In October, 1963 the Committee submitted its report to the Minister for Conservation concluding amongst other things that, provided adequate water supplies were reserved for stock and licensed irrigation purposes, the aspect of greatest importance in the development of the surface water resources of the Shoalhaven Valley is the provision of supplies to meet the present and future domestic and industrial needs of the valley and the rapidly expanding Illawarra District. Broadly the Committee recommended that the Metropolitan Water Sewerage and Drainage Board should be permitted to divert some water subject to suitable provision being made for:

- (a) stock and domestic water supplies;
- (b) town water supplies other than those in the Shoalhaven Shire;
- (c) areas irrigated from pumps licensed under Part II of the Water Act;
- (d) special requirements of the Shoalhaven Shire due to a contractual obligation to a paper mill.

In respect of the requirements of the Metropolitan Water Sewerage and Drainage Board, the Investigating Committee concerned itself primarily with the South Coast area on the basis that the Board's allocation of water from the Shoalhaven Valley to meet its requirements in the Sydney Metropolitan Area would be subsequently recommended by a future Committee. The Board's investigations have confirmed that the increasing metropolitan requirements could necessitate substantial utilisation of water from the Shoalhaven River.

The Commission's long term programme envisages construction of storages for irrigation and domestic and stock purposes at an estimated cost of \$12 million on the upper Shoalhaven and Endrick Rivers (the approximate locations of these and other dam sites previously considered are indicated at Figure 31).

Selection of the actual storage sites has not yet been made by the Commission. Before this is possible, a thorough examination of the river valley will be essential followed by detailed investigation of potential storage sites.

The Metropolitan Water Sewerage and Drainage Board (utilising the services of the Snowy Mountains Hydro-Electric Authority) is investigating proposals for augmentation of the Board's whole storage and distribution system so as to provide for domestic and industrial supplies for its South Coast and Sydney Metropolitan Areas. These investigations are being undertaken in respect of proposals both in the Board's area of operations and in the Shoalhaven Valley.

In August, 1966 the Premier approved the constitution of the Shoalhaven River Water Supply Standing Committee to comprise representatives of the Water Conservation and Irrigation Commission (as Chairman and Convenor), Department of Public Works, Metropolitan Water Sewerage and Drainage Board and Electricity Commission for the purpose of reviewing from time to time the manner in which the water resources of the Shoalhaven River should be utilised in the best interests of the State. This Committee would consider any proposals for the use of Shoalhaven waters referred by the Minister for Conservation, including those arising from current investigations by the Metropolitan Water Sewerage and Drainage Board.

16. ACKNOWLEDGMENT.

The Water Conservation and Irrigation Commission gratefully acknowledges the assistance provided by the Director, Bureau of Meteorology, in supplying the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps for inclusion in this report, the New South Wales Department of Public Works in providing details of the various town water supply schemes and the Metropolitan Water Sewerage and Drainage Board in supplying details of stream gauging stations and information concerning investigation of storage proposals.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1895							NO RECORDS				40	73	
1896	244	448	343	12	439	1061	77	239	78	111	259	191	3502
1897	414	186	52	354	348	681	73	441	257	199	42	329	3376
1898	85	1134	86	78	379	603	67	560	103	260	25	68	3448
1899	145	14	111	573	275	932	248	996	390	490	271	66	4511
1900	330	165	269	478	1421	717	748	70	221	21	535	265	5240
1901	279	72	273	146	35	106	147	1139	251	158	116	64	2786
1902	264	46	173	70	138	91	600	262	127	291	104	913	3079
1903	65	63	95	47	168	188	411	223	797	196	226	692	3171
1904	243	90	256	705	172	33	1309	55	53	113	62	105	3196
1905	216	266	139	360	178	213	61	60	33	336	30	267	2159
1906	143	99	1175	53	175	13	30	578	310	176	123	99	2974
1907	431	181	304	253	76	720	26	46	32	45	179	107	2400
1908	104	616	86	604	123	60	75	697	80	128	162	15	2750
1909	243	733	45	17	28	579	378	76	92	183	71	431	2876
1910	1582	47	344	82	24	175	361	37	152	298	270	552	3924
1911	1376	179	422	30	489	98	326	283	262	53	228	185	3931
1912	133	570	861	27	252	315	964	47	45	80	320	71	3685

BATEMAN'S BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1913	49	43	411	894	1767	1600	118	12	303	171	65	93	5526
1914	75	32	1686	557	224	155	659	35	804	229	300	583	5359
1915	413	128	76	428	175	304	211	56	459	92	99	355	2796
1916	385	350	611	395	105	86	353	145	871	1247	461	533	5542
1917	305	254	670	590	475	194	40	70	324	160	570	217	3869
1918	916	400	97	471	80	32	746	147	115	73	248	62	3387
1919	79	1564	195	187	849	18	72	158	170	149	388	471	4300
1920	1485	129	350	113	85	91	192	102	206	88	275	1606	4722
1921	237	570	265	661	570	340	145	45	257	141	105	1106	4442
1922	823	421	50	205	106	249	1263	119	489	352	49	188	4314
1923	220	123	89	207	20	350	147	156	675	276	203	469	2935
1924	245	269	349	420	159	201	535	96	128	129	564	615	3710
1925	535	405	261	102	3749	585	102	76	23	110	280	68	6296
1926	376	48	677	348	266	339	171	54	178	100	2	265	2824
1927	235	53	174	1312	358	29	110	42	381	275	436	81	3486
1928	171	782	1027	206	194	679	280	80	28	74	49	179	3749
1929	84	1885	265	540	310	15	107	892	136	536	669	291	5730
1930	185	59	300	202	875	852	103	43	71	550	98	457	3795

BATEMAN'S BAY RAINFALL STATISTICS
 (Points)

BATEMAN'S BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1931	136	139	254	1372	626	228	383	17	429	319	278	227	4408
1932	14	411	759	138	285	31	542	559	346	345	510	375	4315
1933	860	70	339	607	310	302	406	76	239	261	552	305	4327
1934	2230	950	209	922	556	823	1168	437	165	256	258	222	8196
1935	322	418	215	445	169	350	125	37	260	307	409	348	3405
1936	251	365	665	199	153	293	180	107	125	79	109	597	3123
1937	331	142	893	116	52	783	68	507	104	300	105	129	3530
1938	356	436	202	75	237	44	178	666	76	684	148	53	3155
1939	442	115	805	443	129	75	121	272	229	221	402	131	3385
1940	204	61	19	667	128	24	47	12	415	69	116	438	2200
1941	409	396	215	431	90	64	62	277	392	224	83	162	2805
1942	56	309	863	89	235	148	42	0	89	628	1011	127	3597
1943	271	58	118	151	1620	81	14	421	244	604	536	530	4648
1944	122	79	74	283	746	42	102	187	21	80	91	207	2034
1945	387	454	119	2235	195	838	115	21	57	230	97	217	4965
1946	292	244	95	338	137	619	0	104	98	134	677	49	2787
1947	55	461	63	293	45	382	20	453	79	85	380	586	2902
1948	1057	426	117	115	581	523	7	15	74	261	243	220	3639

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1949	524	319	558	142	402	1218	233	86	195	202	489	176	4544
1950	656	490	1333	983	728	787	751	185	296	478	181	180	7048
1951	596	492	25	31	261	1321	146	346	945	395	124	55	4737
1952	105	106	651	1477	266	1507	317	619	113	740	543	452	6896
1953	207	109	78	108	1510	7	36	127	88	288	61	135	2754
1954	301	948	40	34	8	97	112	14	63	289	178	238	2322
1955	342	1059	247	112	954	172	117	71	132	227	203	285	3921
1956	165	1132	1269	194	749	1003	467	120	150	595	222	142	6208
1957	22	502	124	13	2	374	824	481	48	16	55	365	2826
1958	701	391	401	131	32	897	137	127	120	130	31	239	3337
1959	433	485	787	247	52	421	674	156	123	1494	618	243	5733
1960	314	116	670	146	176	104	491	101	495	302	187	959	4061
1961	341	362	1171	90	45	367	641	678	409	356	1392	1060	6912
1962	551	472	309	122	213	0	122	252	706	195	158	528	3628
1963	303	270	593	1022	1736	667	568	226	451	86	279	884	7085
1964	60	168	203	1190	196	718	43	399	77	153	437	318	3962
1965	65	89	53	236	278	231	184	40	159	841	100	272	2548
1966	192	339	173	36	N.R.	817							NO RECORDS

BATEMAN'S BAY RAINFALL STATISTICS
(Points)

BERRY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1887	831	741	457	865	445	787	393	749	128	383	782	888	7449
1888	158	251	93	81	80	192	88	125	453	229	40	1414	3204
1889	270	259	114	408	1038	191	579	181	316	182	756	386	4680
1890	326	1941	2285	1261	316	1101	1068	32	194	225	451	282	9482
1891	657	279	541	1277	237	2542	605	391	800	92	360	237	8018
1892	1444	418	1888	1302	139	60	324	526	860	922	269	669	8821
1893	1222	731	2072	490	103	641	610	46	94	526	443	232	7210
1894	895	628	2036	546	48	258	154	65	795	150	76	809	6460
1895	1991	586	318	504	79	84	40	449	516	33	190	147	4937
1896	233	949	460	6	395	1540	66	210	11	369	468	397	5104
1897	429	167	56	944	703	1527	472	296	430	175	85	812	5896
1898	1028	1272	143	126	1009	737	300	681	107	338	6	363	6110
1899	196	44	325	843	217	1262	502	1947	307	569	534	105	6851
1900	642	197	798	561	2410	948	1578	116	353	85	1341	320	9349
1901	352	193	629	289	118	187	464	910	421	343	185	32	4123
1902	772	170	255	172	119	50	419	592	150	719	243	617	4278
1903	140	370	338	210	432	380	477	454	725	412	141	466	4545
1904	210	686	355	1009	182	17	2037	84	282	221	69	53	5205

BERRY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1905	172	229	148	591	675	451	43	62	142	314	378	186	3391
1906	162	132	910	53	107	0	7	735	85	229	149	153	2722
1907	291	142	409	212	305	976	12	31	19	14	235	99	2745
1908	287	1331	5	270	163	14	304	970	67	148	125	114	3798
1909	242	616	8	10	192	694	196	173	246	194	84	1180	3835
1910	868	83	790	291	131	176	992	3	131	277	180	747	4669
1911	2024	421	797	501	458	24	571	581	211	164	188	278	6218
1912	70	628	830	319	521	682	1324	196	30	45	587	119	5351
1913	172	175	940	1380	2439	1292	225	52	208	243	93	102	7321
1914	118	97	2329	150	527	269	861	337	889	463	525	1412	7977
1915	266	231	356	464	935	533	819	172	211	94	32	650	4763
1916	182	398	537	400	317	209	385	191	789	1511	457	1218	6594
1917	780	453	362	1150	268	284	53	67	687	168	1163	493	5928
1918	1963	436	99	532	30	112	2028	136	306	155	357	71	6225
1919	165	1198	775	225	1305	46	212	90	247	452	341	555	5611
1920	1049	121	194	114	30	47	225	198	454	148	235	2597	5412
1921	912	476	492	1558	1979	210	876	47	414	165	174	840	8143
1922	892	764	135	295	266	149	1735	168	523	559	5	222	5713

BERRY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1923	485	546	206	718	60	557	751	347	629	348	248	421	5316
1924	318	384	611	838	619	207	403	119	203	159	398	468	4727
1925	968	443	211	195	2372	1079	76	183	69	56	491	227	6370
1926	292	78	889	582	650	355	492	81	233	67	39	397	4155
1927	633	100	231	1910	345	167	86	3	232	292	583	253	4835
1928	324	900	1088	466	105	1388	665	31	45	89	90	212	5403
1929	53	2203	414	491	645	121	337	747	311	874	540	236	6972
1930	212	128	607	427	443	1611	185	117	30	399	149	1085	5393
1931	153	312	567	862	336	139	1032	15	1010	275	446	719	5866
1932	109	362	674	276	225	88	433	281	889	150	295	233	4015
1933	1013	62	537	575	508	266	676	8	288	302	820	490	5545
1934	971	1719	354	2094	406	767	726	608	514	194	297	367	9017
1935	392	708	424	376	161	455	166	16	383	497	177	636	4391
1936	448	795	999	387	229	314	117	62	163	104	45	651	4314
1937	314	369	1028	161	76	1216	199	238	62	626	556	350	5195
1938	581	366	221	288	485	29	198	1827	183	736	270	45	5229
1939	436	44	1324	646	206	45	217	280	351	506	183	53	4291
1940	244	165	31	632	101	250	51	38	427	61	466	783	3249

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1941	557	369	66	241	140	174	70	248	357	270	175	70	2737
1942	76	235	575	239	144	217	125	87	47	766	898	188	3597
1943	139	229	261	130	3099	120	43	633	449	692	698	191	6684
1944	249	102	76	406	811	161	203	388	98	130	55	135	2814
1945	476	351	242	1397	420	938	172	46	28	169	169	222	4630
1946	174	551	319	1035	182	518	0	7	110	164	567	85	3712
1947	264	646	171	637	168	299	40	317	53	230	525	1030	4380
1948	1120	554	324	142	1161	953	101	58	190	127	123	379	5232
1949	666	563	981	138	734	1258	231	176	476	147	522	210	6093
1950	1069	1111	1720	1472	1165	2242	1098	194	494	834	478	234	12111
1951	1009	842	446	18	535	1707	408	245	1003	188	31	214	6646
1952	258	267	753	1638	278	1520	519	1589	34	936	250	450	8492
1953	346	305	525	108	2004	17	191	244	166	518	190	115	4729
1954	831	1177	82	106	193	327	294	209	193	440	412	377	4641
1955	710	1312	431	323	1045	359	82	96	85	175	386	652	5656
1956	358	2006	1191	336	1193	837	286	268	146	654	173	98	7546
1957	212	511	267	17	9	164	766	526	75	110	79	400	3136
1958	404	1783	1062	860	49	702	189	311	257	171	119	558	6465
1959	628	1286	1687	196	55	362	632	164	397	2802	484	171	8864

BERRY RAINFALL STATISTICS
(Points)

BERRY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1960	512	361	466	232	384	410	560	419	413	702	324	1073	5856
1961	348	527	1270	281	93	407	407	1098	335	359	3199	967	9291
1962	890	523	157	373	972	0	241	549	833	259	115	1084	5996
1963	517	434	1804	1203	992	654	292	716	319	227	450	961	8569
1964	299	86	379	1110	147	1525	34	348	149	371	177	312	4937
1965	227	94	6	406	312	389	354	50	206	1545	131	474	4194
1966	189	759	430	164	15	814	N.R.	204	192	520	1058	448	
1967	784	273	437	103	133	949							

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1887	NO RECORDS												480
1888	170	80	170	0	55	24	92	23	177	110	50	776	1727
1889	247	106	17	195	558	146	63	172	200	190	401	44	2339
1890	122	741	769	57	303	349	194	82	190	235	242	143	3427
1891	NO RECORDS												
1892	357	226	455	200	205	55	90	195	1174	524	144	173	3798
1893	395	138	115	646	149	379	137	82	16	392	228	174	2851
1894	N.R.	288	694	345	59	319	2	118	139	195	10	213	
1895	654	161	45	45	69	9	3	131	144	104	16	166	1547
1896	176	350	210	59	622	684	11	200	27	68	248	38	2693
1897	343	80	50	107	145	463	104	327	212	195	46	201	2273
1898	65	1274	34	17	172	392	51	448	52	242	5	33	2785
1899	102	32	53	301	87	374	413	766	169	178	373	54	2902
1900	183	159	307	398	735	317	655	113	124	20	482	155	3648
1901	232	27	138	101	8	63	63	695	102	299	165	40	1933
1902	165	0	150	24	31	69	223	154	123	272	87	761	2059
1903	92	102	173	105	80	133	403	114	356	317	53	345	2273
1904	218	267	100	402	141	25	497	23	75	193	68	225	2234

BRAIDWOOD RAINFALL STATISTICS
(Points)

BRAIDWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1905	225	170	87	276	163	206	68	22	37	266	69	147	1736
1906	123	13	689	66	107	8	19	378	269	154	145	153	2124
1907	357	142	113	143	32	298	39	28	73	69	293	61	1648
1908	160	263	64	287	170	28	54	456	123	89	389	63	2146
1909	173	564	39	53	39	366	291	145	67	225	51	266	2279
1910	675	26	298	39	9	135	396	9	186	180	282	260	2495
1911	803	110	617	10	337	120	227	143	222	130	153	118	2990
1912	101	454	472	116	87	226	614	131	108	63	97	167	2636
1913	112	62	401	282	884	645	83	87	92	221	17	215	3101
1914	93	50	1145	178	35	67	321	10	241	149	409	535	3233
1915	300	86	184	193	64	332	94	124	559	60	11	307	2314
1916	132	452	266	374	82	163	251	190	482	1123	317	253	4085
1917	222	373	100	134	82	230	96	155	238	246	508	120	2504
1918	495	308	98	162	41	24	422	191	50	99	156	49	2095
1919	3	582	104	170	392	43	52	126	186	94	261	641	2654
1920	759	159	271	120	21	121	231	163	193	146	158	1093	3435
1921	192	225	254	375	455	232	125	102	150	265	69	749	3193
1922	453	275	82	83	75	195	1356	102	263	84	23	200	3191

BRAIDWOOD RAINFALL STATISTICS
(Points)

1923	161	14	83	64	32	405	229	133	279	306	187	278	2171
1924	199	245	184	206	55	93	272	67	149	152	405	390	2417
1925	218	208	207	44	2614	513	126	144	72	123	328	33	4630
1926	161	26	495	248	335	262	141	142	118	68	16	256	2268
1927	429	35	123	541	274	43	23	54	211	288	448	196	2665
1928	185	581	404	140	59	298	158	83	46	75	45	119	2193
1929	28	749	218	246	133	16	82	324	208	125	335	193	2657
1930	31	119	93	104	346	463	158	71	70	342	37	271	2105
1931	44	23	200	510	730	332	226	69	262	182	345	285	3208
1932	6	45	708	247	159	38	224	429	220	110	207	280	2673
1933	264	6	97	240	187	113	296	39	190	163	376	350	2321
1934	784	697	104	334	99	644	624	272	155	439	406	307	4865
1935	310	350	107	415	26	86	81	45	204	440	70	348	2482
1936	317	375	463	124	77	489	214	179	120	46	34	415	2853
1937	399	53	416	60	67	239	67	379	194	349	212	345	2780
1938	392	227	270	101	134	71	83	767	124	444	258	26	2897
1939	219	58	609	489	150	103	93	303	76	349	163	134	2746
1940	201	21	23	550	125	43	23	52	337	36	76	327	1814

BRAIDWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1941	690	384	274	104	122	112	19	112	378	106	84	82	2467
1942	50	199	490	19	281	235	118	76	102	441	452	198	2661
1943	220	43	50	255	1015	39	42	223	222	327	339	251	3026
1944	81	72	303	197	430	10	91	29	17	125	59	166	1580
1945	451	218	82	977	75	481	61	125	25	251	231	211	3188
1946	357	230	253	340	81	345	22	39	65	108	368	116	2324
1947	37	512	151	184	70	338	76	270	144	79	299	590	2550
1948	563	512	95	142	557	346	24	19	111	163	125	336	2993
1949	273	281	340	68	325	549	164	32	225	278	435	87	3057
1950	360	384	938	555	528	479	401	94	100	496	299	174	4808
1951	507	449	24	32	104	830	82	290	570	287	105	76	3356
1952	89	118	531	549	168	767	268	513	184	484	517	555	4743
1953	257	139	47	19	852	14	31	99	122	229	144	150	2103
1954	214	523	17	47	31	60	72	39	116	190	309	101	1719
1955	159	483	300	139	649	93	61	183	74	281	225	204	2851
1956	327	818	621	221	549	652	300	106	123	262	37	53	4069
1957	9	153	144	34	7	268	527	248	49	29	131	287	1886
1958	288	286	169	127	67	432	174	165	144	239	44	290	2425

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1959	276	479	461	261	25	662	564	63	141	1110	738	244	5024
1960	356	88	227	87	201	49	553	74	477	221	232	820	3385
1961	279	358	573	97	34	250	497	388	286	385	634	556	4337
1962	599	464	170	59	185	2	211	193	569	154	113	535	3254
1963	377	321	449	545	362	223	252	166	342	129	148	291	3605
1964	58	77	137	495	138	291	201	291	174	399	153	253	2667
1965	7	53	1	44	31	154	86	68	279	603	62	276	1664
1966	81	374	146	13	91	335	118	152	261	393	598	746	3308
1967	321	44	159	26	106	158							

BRAIDWOOD RAINFALL STATISTICS
(Points)

BUNDANOON P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1902	297	61	269	208	129	72	369	167	82	1367	339	594	3954
1903	162	133	197	201	224	370	284	401	336	518	244	462	3532
1904	262	375	289	705	165	13	1942	74	173	366	120	48	4532
1905	216	220	120	348	200	262	22	76	151	289	66	503	2473
1906	86	77	1023	37	252	76	55	548	201	235	302	113	3005
1907	362	51	701	210	394	659	34	44	83	40	211	176	2965
1908	141	810	50	142	191	48	168	936	150	94	253	67	3050
1909	191	350	50	4	160	848	139	141	208	236	48	689	3064
1910	859	30	628	121	72	187	1200	5	202	273	259	758	4594
1911	1464	468	805	245	349	45	413	454	305	48	295	263	5154
1912	166	461	593	305	400	135	1101	226	40	170	120	85	3802
1913	180	63	660	380	1410	1151	97	0	144	392	132	160	4769
1914	160	60	1466	65	261	285	675	133	510	460	400	967	5442
1915	208	66	425	140	380	630	390	130	252	83	10	335	3049
1916	40	387	170	640	185	218	310	224	494	1760	533	350	5311
1917	620	382	195	625	80	318	30	187	535	172	408	201	3753
1918	1141	495	158	320	60	40	583	99	336	150	146	35	3563
1919	86	716	256	252	969	29	159	123	45	270	234	780	3919

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1920	878	163	247	145	19	125	175	395	135	166	279	1923	4650
1921	517	316	434	970	1131	137	1038	162	267	137	176	788	6073
1922	1488	407	63	283	173	171	1584	142	404	306	19	266	5306
1923	305	63	79	672	47	619	636	268	330	268	171	244	3702
1924	374	150	429	621	412	259	281	62	313	166	489	293	3849
1925	658	552	285	164	1914	1059	87	152	40	103	396	68	5478
1926	199	111	819	594	588	295	592	126	184	30	30	351	3919
1927	418	146	134	1628	346	140	48	22	253	278	534	115	4062
1928	216	877	377	505	168	930	656	152	73	146	65	89	4254
1929	134	1631	427	201	281	148	230	434	432	462	669	244	5293
1930	144	257	373	191	503	1276	246	149	48	352	146	781	4466
1931	166	282	408	1129	374	128	603	19	525	214	309	386	4543
1932	44	283	726	383	194	82	353	374	1052	94	276	234	4095
1933	607	16	293	603	450	230	632	13	338	261	613	567	4623
1934	608	1720	327	629	233	653	557	409	467	238	359	612	6812
1935	550	558	217	274	125	200	171	35	215	444	184	520	3493
1936	505	748	422	351	253	335	143	132	106	110	18	563	3686
1937	295	319	632	62	63	983	161	316	151	325	342	374	4023

BUNDANOON P.O. RAINFALL STATISTICS
(Points)

BUNDANOON P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1938	412	323	181	397	215	110	96	1133	56	795	446	8	4072
1939	324	117	1106	322	239	38	70	265	444	380	163	55	3523
1940	338	41	7	493	167	199	35	51	515	93	304	921	3164
1941	460	280	76	130	125	122	58	216	208	243	151	63	2132
1942	51	215	1475	71	237	338	155	58	82	1641	880	278	5481
1943	122	170	155	198	2838	73	63	412	657	453	278	441	5860
1944	67	61	94	193	834	106	131	292	88	89	46	100	2101
1945	532	477	168	1064	338	864	189	93	59	109	147	245	4285
1946	123	519	147	882	70	479	24	9	118	128	466	104	3069
1947	163	919	200	586	151	155	100	261	81	192	449	701	3958
1948	842	400	81	135	562	705	49	40	171	161	100	553	3799
1949	560	447	810	133	574	1593	188	169	460	255	362	195	5746
1950	541	784	1390	603	1017	2306	775	91	200	542	454	128	8831
1951	1868	539	371	18	211	2134	277	324	1057	205	35	36	7075
1952	331	278	561	1000	327	659	1119	1700	42	514	324	597	7452
1953	289	266	208	56	1142	16	73	196	229	222	137	143	2977
1954	547	1190	105	130	67	116	265	123	278	433	488	158	3900
1955	383	1231	348	175	1107	241	125	100	74	181	372	490	4827

BUNDANOON P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1956	620	2889	1140	344	494	674	287	329	108	643	66	81	7675
1957	217	969	217	43	31	344	582	567	33	121	146	385	3655
1958	855	1127	657	528	76	612	448	188	160	243	74	779	5747
1959	842	656	806	312	40	650	670	154	345	1801	397	250	6923
1960	634	430	567	170	484	337	754	174	361	497	261	1073	5742
1961	503	312	1112	299	92	621	345	1206	247	299	1268	1032	7336
1962	1134	793	205	540	1071	11	423	291	689	243	106	998	6504
1963	471	601	1298	618	544	519	396	814	780	288	378	793	7500
1964	139	135	583	826	132	1866	95	190	165	427	231	220	5009
1965	111	77	20	483	45	213	400	42	229	1106	85	353	3164
1966	67	574	196	109	71	519	88	155	233	529	536	546	3623
1967	493	208	360	124	130	672							

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1883	NO RECORDS	37	144	463	431	68	26	35	168	212	111	13	
1884	82	44	41	354	106	323	406	50	156	307	102	8	1979
1885	1029	49	133	185	43	237	196	28	57	56	224	388	2625
1886	195	21	73	181	71	85	245	328	51	319	202	510	2281
1887	775	382	266	310	153	319	147	331	176	241	343	639	4082
1888	29	335	121	18	81	62	15	61	171	25	9	803	1730
1889	214	160	18	280	332	183	116	193	152	136	381	390	2367
1890	176	676	732	36	153	396	283	118	163	315	282	71	3401
1891	628	140	55	505	152	1595	134	233	349	174	285	130	4380
1892	504	70	761	114	131	61	127	213	774	398	119	227	3499
1893	506	215	474	476	271	318	160	92	79	266	345	186	3388
1894	656	343	827	233	62	245	57	111	237	179	100	246	3296
1895	580	141	22	42	78	55	56	174	142	48	41	195	1574
1896	200	305	326	74	236	479	36	162	39	162	412	143	2574
1897	199	2	53	200	139	495	212	291	261	126	34	272	2284
1898	183	614	31	40	133	167	169	380	87	330	25	102	2261
1899	63	23	51	182	106	381	223	656	178	86	338	80	2467
1900	191	84	320	308	675	288	653	118	211	55	462	146	3511

BUNGONIA (INVERARY PARK) RAINFALL STATISTICS
(Points)

BUNGONIA (INVERARY PARK) RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1901	462	27	285	122	13	130	100	532	148	231	198	26	2274
1902	125	30	159	16	20	96	127	62	109	364	140	423	1671
1903	73	136	205	226	125	111	292	155	454	370	68	501	2716
1904	329	281	104	401	115	68	559	64	153	237	110	88	2509
1905	232	125	101	341	272	290	88	45	88	216	45	254	2097
1906	53	37	499	112	128	129	82	349	191	202	300	164	2246
1907	230	46	215	167	82	363	49	57	116	50	329	302	2006
1908	312	459	23	84	155	80	86	450	138	71	289	44	2191
1909	219	478	71	10	24	211	171	152	68	215	21	234	1874
1910	383	12	399	29	17	133	403	26	155	154	262	461	2434
1911	729	109	393	11	303	112	231	163	217	76	166	617	3127
1912	24	211	283	125	25	232	489	122	163	99	73	54	1900
1913	80	52	450	182	778	409	81	95	78	335	83	89	2712
1914	40	68	966	132	63	65	280	18	240	139	312	608	2931
1915	206	42	321	143	90	508	153	123	276	60	11	248	2181
1916	116	201	287	542	40	242	253	190	449	597	956	371	3644
1917	275	189	179	121	92	166	96	270	272	251	415	187	2513
1918	578	396	89	173	66	46	320	204	91	141	113	31	2248

BUNGONIA (INVERARY PARK) RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1919	59	190	26	136	360	64	87	133	113	232	191	482	2073
1920	533	175	214	77	17	113	231	354	138	153	196	703	2904
1921	132	139	280	470	628	119	176	73	137	155	85	344	2738
1922	350	262	33	250	77	88	1027	70	279	93	13	244	2786
1923	189	13	129	71	70	445	282	144	408	175	188	194	2308
1924	122	453	107	257	52	79	197	93	243	220	468	167	2458
1925	346	132	98	28	1292	552	124	109	78	68	392	11	3230
1926	143	34	577	541	351	239	135	145	97	53	0	192	2507
1927	184	19	94	253	258	26	65	83	174	271	354	94	1875
1928	312	1173	445	284	56	282	302	116	98	91	20	20	3199
1929	27	657	395	232	92	63	78	333	103	179	453	126	2738
1930	49	54	58	103	245	454	212	157	86	332	51	313	2114
1931	149	97	514	435	158	139	153	127	293	186	227	284	2762
1932	0	66	391	268	96	76	187	275	232	111	212	188	2102
1933	347	0	134	285	102	69	185	19	239	144	218	140	1882
1934	449	629	95	325	78	398	461	310	123	243	288	124	3523
1935	300	438	160	505	15	75	124	82	212	447	113	355	2826
1936	361	349	258	123	62	271	174	193	91	86	26	506	2500
1937	171	178	389	38	65	135	80	246	194	308	173	311	2288

BUNGONIA (INVERARY PARK) RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1938	363	251	198	176	141	74	91	820	139	473	92	0	2838
1939	237	58	411	324	24	111	78	307	162	304	141	50	2207
1940	139	3	0	356	158	55	37	38	291	58	140	394	1669
1941	304	294	114	74	106	158	32	119	256	187	175	68	2087
1942	28	215	177	37	219	288	140	108	83	208	464	306	2273
1943	156	42	31	221	913	47	69	286	258	443	269	359	3094
1944	135	32	34	116	329	26	116	77	52	95	111	124	1247
1945	470	300	144	481	131	386	122	181	93	131	248	153	2840
1946	335	315	92	283	72	384	137	53	68	90	316	76	2221
1947	16	775	67	258	89	120	167	246	125	221	417	510	3011
1948	368	274	137	110	601	477	35	63	54	107	50	373	2649
1949	301	244	373	49	395	710	101	52	304	310	541	185	3765
1950	158	667	813	431	538	502	407	67	164	493	254	86	4580
1951	439	381	97	69	76	958	112	261	449	178	33	67	3120
1952	337	182	546	454	176	324	227	407	86	451	205	605	4000
1953	192	115	48	151	716	33	62	81	113	154	104	163	1932
1954	77	479	9	48	20	91	103	63	134	290	390	61	1765
1955	303	467	145	N.R.	740	186	95	180	93	226	327	269	
1956	286	713	1109	465	377	679			NO RECORDS				

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1899			NO RECORDS				657	1341	282	784	348	215	
1900	314	181	761	1652	1685	756	1186	134	601	38	851	147	8306
1901	319	152	552	1240	135	305	697	1371	309	348	153	0	5581
1902	385	208	681	213	268	255	807	809	90	632	136	611	5095
1903	94	439	260	135	1062	205	726	931	351	318	248	680	5449
1904	348	490	579	1004	209	93	935	150	477	282	38	111	4716
1905	151	173	228	484	753	461	94	185	115	457	121	496	3718
1906	96	76	718	178	170	133	22	444	291	132	118	153	2531
1907	509	164	240	279	304	927	139	105	92	55	325	117	3256
1907	165	738	222	390	283	221	683	744	313	191	99	160	4209
1909	290	798	83	55	214	475	348	215	365	159	52	540	3594
1910	458	86	548	90	151	245	477	155	152	281	316	510	3469
1911	1266	165	777	145	372	83	511	690	171	108	324	318	4930
1912	176	404	476	210	530	532	994	172	91	51	207	172	4015
1913	59	70	410	466	1516	926	173	19	460	409	111	53	4672
1914	149	75	2253	283	547	247	1051	309	526	219	434	862	6955
1915	392	165	379	1062	343	567	604	139	325	219	15	435	4645
1916	124	320	415	410	236	283	421	177	841	1086	544	874	5731

JERVIS BAY RAINFALL STATISTICS
(Points)

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1917	456	277	290	661	328	388	52	116	669	441	918	510	5106
1918	1490	466	126	1360	81	61	1905	339	307	102	164	8	6409
1919	15	1084	451	210	1243	150	239	189	318	473	241	923	5536
1920	678	70	371	243	59	99	241	182	320	82	214	1026	3585
1921	271	269	278	1247	1507	495	333	103	148	92	144	391	5278
1922	422	650	62	343	598	208	791	282	507	361	40	483	4747
1923	302	213	303	487	107	604	640	514	334	201	118	332	4155
1924	360	239	527	518	673	301	386	77	162	178	368	282	4071
1925	483	247	316	100	2030	863	294	458	70	141	329	63	5394
1926	496	28	349	458	785	326	296	215	314	55	20	427	3769
1927	441	102	262	747	423	348	193	61	283	213	394	223	3690
1928	460	639	1088	514	194	1072	572	186	140	175	76	93	5209
1929	19	1497	249	593	997	150	271	391	188	354	414	246	5369
1930	207	103	262	498	343	604	237	221	60	316	126	425	3402
1931	203	182	405	401	303	305	1272	81	525	163	465	343	4648
1932	17	199	414	511	206	142	263	569	443	244	160	520	3688
1933	743	89	262	304	214	132	351	95	199	214	376	301	3280
1934	1485	849	241	1380	579	1317	764	630	538	358	374	343	8858

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1935	347	419	275	349	324	520	210	42	227	292	319	443	3767
1936	196	516	603	249	239	445	246	193	205	83	80	609	3664
1937	361	171	638	371	52	1437	313	410	92	266	299	214	4624
1938	412	208	260	181	288	47	458	862	131	453	164	30	3494
1939	208	25	589	603	196	80	413	381	250	322	212	124	3403
1940	93	19	42	311	352	221	173	56	340	45	269	383	2304
1941	531	413	128	419	166	184	168	357	446	232	255	32	3331
1942	26	223	431	135	232	446	257	93	45	432	504	223	3047
1943	195	86	202	166	1845	181	39	479	300	723	442	327	4985
1944	62	49	64	414	623	217	194	521	74	119	125	117	2579
1945	485	289	152	1181	379	521	286	96	77	120	194	157	3937
1946	128	345	352	373	112	617	14	19	147	224	305	63	2699
1947	163	241	155	640	405	419	73	418	91	262	554	691	4112
1948	968	213	190	276	542	529	194	160	127	236	211	243	3889
1949	730	543	389	252	437	870	293	108	878	300	533	138	5471
1950	620	721	958	1188	803	1388	983	300	402	623	431	128	8545
1951	440	365	442	233	725	1446	641	357	832	301	139	128	6049
1952	164	97	517	1779	236	1180	271	1720	49	924	299	329	7565

JERVIS BAY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1953	243	161	638	78	1119	93	298	399	156	422	180	136	3923
1954	200	1002	95	205	123	301	168	426	294	430	286	405	3935
1955	915	751	595	156	954	633	445	77	90	169	291	513	5589
1956	298	1065	1223	293	1362	841	475	230	199	604	169	143	6902
1957	72	396	108	3	23	167	1218	598	105	34	101	254	3079
1958	311	1680	802	1115	74	926	208	444	160	213	85	696	6714
1959	385	656	1732	168	458	951	781	81	418	2125	274	379	8408
1960	347	237	777	289	223	799	432	854	605	849	270	777	6459
1961	279	533	2128	488	260	35	762	1074	345	218	2627	738	9817
1962	726	339	113	337	723	21	171	765	558	257	184	820	5014
1963	640	379	1001	1046	1085	1656	837	686	279	280	161	604	8654
1964	306	85	210	1103	359	766	62	252	223	385	498	254	4503
1965	212	134	48	695	583	354	191	114	217	739	108	214	3609
1966	202	655	719	171	129	734	290	468	180	602	784	340	5274
1967	417	87	257	84	263	415							

KRAWARREE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1898	NO RECORDS		17	16	102	27	38	64	88	226	20	15	
1899	90	32	25	498	198	241	648	806	45	130	119	72	2904
1900	279	147	310	427	801	235	1197	22	225	40	460	105	4248
1901	87	31	25	498	202	45	117	661	210	391	121	21	2409
1902	308	0	253	30	0	0	335	139	20	160	141	735	2131
1903	35	39	54	111	23	150	90	165	515	85	110	440	1817
1904	238	14	120	10	5	20	290	7	10	90	29	14	847
1905	325	335	430	282	135	265	127	50	106	391	130	64	2640
1906	4	35	468	15	255	63	34	265	303	203	340	275	2260
1907	468	227	266	240	70	647	40	123	90	66	240	405	2882
1908	363	401	205	510	198	231	303	760	248	178	341	90	3828
1909	346	276	50	45	33	501	232	65	36	218	22	172	1996
1910	577	20	314	35	25	120	336	59	164	243	140	223	2256
1911	1299	212	399	19	275	64	137	115	290	234	155	195	3394
1912	96	897	220	71	73	272	989	29	218	69	107	180	3221
1913	114	22	351	228	672	1381	40	3	163	224	25	105	3328
1914	5	63	1339	340	17	36	218	12	217	200	155	559	3161
1915	122	61	0	140	23	218	88	47	619	5	0	416	1739

KRAWAREE RAINFALL STATISTICS

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1916	278		NO RECORDS		72	80	191	136	706	1322	695	390	3802
1917	374	350	745	294	42	180	100	465	219	250	428	355	2309
1918	580	260	165	379	29	20	536	100	92	66	62	270	2483
1919	20	582	126	145	327	40	108	101	130	149	315	440	3307
1920	836	222	290	132	50	106	107	72	132	189	292	879	3517
1921	545	398	326	688	357	256	63	0	65	140	98	581	4195
1922	556	554	0	57	72	212	1901	93	545	110	10	85	2421
1923	119	17	192	105	48	277	140	110	600	265	151	397	2544
1924	224	280	90	170	0	127	152	91	125	135	705	445	4810
1925	251	367	150	10	2700	666	83	50	40	115	298	80	
1926					NO RECORDS					59	20	308	
1927	458	53	154	465	232	13	53	17	223	280	467	167	2582
1928	175	767	471	80	9	183	73	6	28	47	9	127	1975
1929	59	1330	216	372	104	15	26	550	276	256	446	227	3877
1930	1	76	191	106	366	260	128	59	42	357	4	320	1910
1931	37	10	177	231	377	225	85	25	204	241	287	127	2026
1932	0	97	515	243	152	21	144	240	262	117	213	160	2164
1933	431	0	84	289	82	146	310	33	245	214	624	369	2827

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1934	1228	938	150	316	178	627	1047	379	133	370	461	237	6064
1935	287	330	95	599	19	104	57	29	253	602	161	318	2854
1936	335	446	577	149	111	439	179	146	39	51	40	373	2885
1937	359	81	670	95	55	165	64	250	178	374	216	351	2858
1938	298	43	100	108	196	93	87	883	140	319	258	17	2542
1939	331	111	552	484	31	87	3	404	28	189	206	103	2529
1940	176	68	0	575	102	58	14	40	497	18	126	429	2103
1941	671	395	185	53	145	39	10	71	209	137	140	100	2155
1942	107	122	563	33	267	158	117	51	62	456	581	167	2684
1943	288	120	157	188	898	30	28	205	208	377	474	438	3411
1944	125	60	178	148	1102	8	200	54	18	133	50	224	2300
1945	360	318	40	745	47	553	52	111	60	258	223	244	3011
1946	258	323	213	202	93	478	42	30	80	140	506	26	2391
1947	23	991	159	140	83	103	38	150	73	81	442	641	2924
1948	652	557	95	138	836	616	7	21	64	303	130	287	3706
1949	227	346	942	77	383	684	69	23	282	283	279	46	3641
1950	372	543	1300	413	360	462	334	83	120	606	264	179	5036
1951	667	909	100	46	139	874	55	355	375	338	83	143	4084

KWARRE RAINFALL STATISTICS
(Pounds)

KRAWAREE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1952	269	116	441	597	194	1255	205	408	33	556	523	511	5108
1953	350	336	89	58	858	4	15	130	171	165	56	142	2374
1954	239	674	3	57	0	111	64	67	80	203	316	106	1920
1955	177	576	397	638	534	51	38	95	54	308	142	562	3572
1956	767	714	925	383	895	1038	400	48	67	350	28	43	5708
1957	11	171	192	18	0	275	718	321	61	48	140	352	2307
1958	460	296	147	120	37	482	159	194	168	111	159	397	2730
1959	352	369	574	271	13	613	592	77	186	1684	608	167	5506
1960	223	78	459	78	197	72	961	72	440	245	219	917	3961
1961	181	346	849	138	31	212	657	332	423	444	1529	628	5770
1962	537	689	131	42	115	0	148	230	853	147	115	797	3804
1963	372	285	456	556	613	301	270	201	250	141	247	483	4175
1964	34	48	424	707	159	152	121	495	182	339	238	206	3105
1965	49	60	15	101	25	134	53	74	252	553	87	542	1945
1966	128	362	268	16	61	305							

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1903	43	132	121	118	50	83	252	94	454	262	50	308	1967
1904	198	140	48	276	224	33	285	44	98	125	60	185	1716
1905	260	145	98	195	174	193	80	40	49	235	32	175	1676
1906	33	55	548	72	96	94	46	250	214	239	173	121	1941
1907	309	277	80	194	30	405	37	30	83	32	304	85	1866
1908	50	293	41	170	143	50	58	421	165	109	209	11	1720
1909	336	648	57	79					NO RECORDS				
1910				NO RECORDS					212	169	228	380	
1911	579	69	218	0	318	133	187	97	89	98	128	134	2050
1912	52	235	322	61	18	164	422	171	129	52	90	230	1946
1913	51	43	278	211	635	342	88	42	64	187	24	192	2157
1914	24	38	802	134	73	51	228	12	173	57	238	472	2302
1915	192	82	176	71	108	252	91	86	509	96	0	111	1774
1916	97	117	96	383	63	152	288	191	362	415	352	225	2741
1917	93	148	148	56	79	157	167	210	230	196	358	206	2048
1918	525	211	49	117	52	47	207	180	29	64	171	13	1665
1919	0	417	103	222	186	38	32	167	82	146	150	409	1952
1920	489	113	315	151	14	120	208	182	116	151	158	568	2585

LOWER BORO RAINFALL STATISTICS
(Points)

LOWER BORO RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1921	184	243	127	264	523	173	77	66	127	202	106	346	2438
1922	410	201	36	122	55	111	929	29	225	110	31	182	2441
1923	156	14	41	48	79	328	244	58	241	209	159	275	1852
1924	170	320	95	207	82	82	56	112	163	131	542	172	2132
1925	185	108	105	44	1695	510	104	216	29	164	250	0	3410
1926	92	46	320	256	270	200	94	118	79	48	12	164	1699
1927	440	11	55	135	179	47	40	78	171	263	424	115	1958
1928	163	656	362	228	32	285	141	75	23	77	47	81	2170
1929	6	554	260	171	69	32	34	375	111	152	517	165	2446
1930	27	58	54	162	274	318	162	69	55	324	40	264	1807
1931	69	59	188	350	376	228	190	39	241	193	228	213	2374
1932	7	18	370	398	135	59	132	246	150	61	216	154	1946
1933	354	6	74	200	105	87	153	0	205	144	208	252	1788
1934	712	374	36	418	50	482	371	275	74	293	422	188	3695
1935	374	348	83	522	23	50	81	42	139	499	48	296	2505
1936	353	409	235	171	66	265	189	229	77	98	17	353	2462
1937	356	249	330	52	65	112	33	237	121	285	147	238	2225
1938	383	192	171	124	86	81	71	619	127	492	172	1	2519
1939	206	35	827	313	57	115	75	269	68	353	163	69	2550

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1940	140	14	5	546	141	13	26	44	240	83	97	242	1591
1941	572	336	45	60	149	119	20	127	303	97	122	44	1994
1942	40	221	144	22	269	287	120	106	91	217	369	75	1961
1943	170	17	72	199	899	42	56	250	263	285	335	254	2842
1944	95	35	91	126	293	20	101	51	11	94	78	129	1124
1945	351	217	62	887	54	305	85	99	30	143	228	106	2567
1946	288	188	127	171	46	320	30	23	77	90	303	169	1832
1947	19	463	182	224	49	91	122	257	155	80	289	620	2551
1948	446	473	151	103	579	353	41	24	120	124	28	247	2689
1949	90	218	296	33	389	446	170	28	146	301	460	106	2683
1950	452	467	934	436	488	353	426	64	121	711	316	109	4877
1951	378	363	32	31	85	642	134	343	310	285	53	14	2670
1952	116	55	299	512	242	576	157	345	146	464	358	504	3774
1953	186	56	57	42	640	40	52	94	134	204	200	156	1861
1954	83	412	8	50	29	71	93	71	104	310	377	61	1669
1955	210	582	363	91	644	131	80	252	61	144	347	227	3132
1956	234	563	787	263	348	765	318	156	138	318	44	28	3962
1957	47	138	169	55	18	188	454	218	28	30	44	246	1635

LOWER BORO RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1877	185	156	763	356	945	67	581	17	726	645	176	225	4842
1878	28	1578	114	234	67	156	365	361	444	33	459	325	4164
1879	756	666	371	89	1284	277	95	597	1510	255	330	290	6520
1880	127	585	984	1060	104	34	504	25	274	339	551	96	4683
1881	549	328	247	122	610	204	153	74	232	1124	277	200	4120
1882	118	51	427	1312	229	490	46	257	51	1141	469	315	4906
1883	396	912	96	1013	1565	45	39	43	329	286	100	143	4967
1884	194	85	218	954	316	468	744	24	108	368	351	82	3912
1885	603	67	148	201	104	535	563	86	64	134	248	455	3208
1886	399	112	149	431	26	140	260	250	81	536	295	341	3020
1887	675	545	268	1086	512	840	282	479	461	201	724	1051	7124
1888	227	238	104	13	79	203	10	169	173	258	134	1192	2800
1889	572	229	252	189	881	112	791	298	346	164	484	183	4501
1890	219	1235	2516	200	373	803	1098	105	249	250	245	197	7490
1891) 1898)	NO RECORDS												
1899	214	48	274	549	365	1616	548	1082	238	460	427	141	5962
1900	363	489	434	428	1240	677	959	218	255	45	877	270	6255
1901	210	115	328	250	0	233	344	1028	321	217	70	16	3132
1902	601	101	171	110	315	137	681	397	90	704	176	605	4088

MILTON RAINFALL STATISTICS
(Points)

MILTON RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1903	154	109	163	80	218	60	330	315	620	280	181	452	2962
1904	144	295	368	1116	187	33	1453	37	132	106	48	73	3992
1905	327	385	203	404	341	453	43	46	59	376	87	345	3069
1906	120	155	937	34	285	31	30	592	203	146	185	134	2852
1907	450	209	512	780	323	724	27	45	60	31	263	222	3646
1908	187	836	105	645	148	62	156	1021	97	154	188	101	3700
1909	413	1360	38	163	305	645	355	193	131	219	101	629	4552
1910	1162	138	499	139	321	186	568	29	244	308	344	943	4881
1911	2040	259	395	16	547	44	613	534	161	111	162	150	5032
1912	187	342	854	307	454	437	1413	74	55	85	627	145	4980
1913	96	88	583	965	1231	1700	174	15	242	351	324	50	5819
1914	113	72	1680	496	390	251	859	135	787	402	760	376	6821
1915	350	137	168	848	121	1044	456	137	169	169	41	364	4004
1916	252	492	758	441	346	140	319	213	694	2639	435	541	7270
1917	566	468	297	1062	720	247	42	32	428	167	773	296	5098
1918	917	479	160	398	76	143	1678	111	258	87	362	68	4737
1919	28	1930	685	306	1238	33	175	161	226	409	205	491	5887
1920	798	73	275	117	76	57	224	190	285	104	245	1699	4143

MILTON RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1921	281	666	306	966	1444	240	325	81	227	156	354	542	5588
1922	1070	571	128	411	281	161	1032	138	638	473	105	298	5306
1923	293	203	257	608	22	561	496	254	509	198	149	592	4142
1924	355	280	360	708	323	436	615	28	180	137	378	478	4278
1925	921	393	305	45	3743	663	76	163	62	207	578	185	7341
1926	487	29	1004	767	515	420	321	65	344	72	0	314	4338
1927	386	83	198	2117	421	106	130	9	415	278	590	151	4884
1928	343	1150	1535	489	241	1665	342	87	77	128	82	236	6375
1929	98	2577	292	504	823	49	245	668	144	469	549	182	6600
1930	315	90	670	654	498	1156	141	181	79	427	219	644	5073
1931	270	228	438	935	409	157	617	0	473	202	411	176	4316
1932	26	383	750	385	210	76	539	378	644	284	464	378	4517
1933	798	74	506	443	409	295	386	40	173	332	490	543	4489
1934	965	1117	442	1245	592	1164	741	634	396	321	363	407	8387
1935	372	505	288	498	128	376	95	43	225	437	421	373	3761
1936	473	482	1359	332	188	490	144	140	170	66	109	592	4545
1937	414	252	1129	103	30	1248	198	503	85	486	312	160	4920
1938	484	290	212	179	416	30	79	831	48	750	303	76	3698

MILTON RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1939	358	45	1091	639	237	95	154	192	342	332	325	96	3966
1940	198	39	20	489	225	194	145	36	511	100	394	357	2708
1941	573	398	126	294	69	126	33	218	591	255	249	112	3044
1942	81	263	778	195	247	164	82	29	44	974	1361	218	4436
1943	331	137	152	241	2484	73	44	574	374	1025	570	422	6427
1944	197	90	59	453	562	43	117	250	22	79	98	129	2099
1945	527	340	266	1507	459	810	195	21	26	281	381	257	5070
1946	241	395	114	601	67	755	0	22	169	183	578	114	3239
1947	152	523	135	860	130	309	22	374	49	240	591	924	4309
1948	1364	347	211	113	748	732	69	37	78	152	195	476	4522
1949	492	737	756	222	519	1433	186	210	433	167	848	191	6194
1950	1026	918	1998	1906	1655	1322	1363	229	386	682	273	260	12018
1951	1013	676	131	23	695	1920	261	427	1680	469	186	76	7557
1952	133	188	1192	1243	369	1278	432	1435	98	1030	325	499	8222
1953	235	252	318	151	1757	12	179	139	142	373	164	173	3895
1954	236	1040	47	63	48	110	222	420	209	366	265	205	3231
1955	679	1205	597	248	1134	374	117	55	177	174	206	527	5493
1956	416	1447	1118	238	679	1213	365	284	175	553	155	114	6757

MILTON RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1957	93	498	350	11	0	299	936	657	79	39	85	368	3415
1958	402	1187	1071	486	54	818	242	238	162	256	104	490	5510
1959	448	657	1168	310	83	547	473	196	118	2512	498	327	7337
1960	379	213	497	148	248	415	532	290	482	410	186	923	4723
1961	207	381	1646	80	132	390	585	946	331	477	1970	1290	8435
1962	733	575	177	472	576	0	170	398	657	236	193	773	4960
1963	528	438	1204	1125	1414	610	247	331	611	154	204	1050	7916
1964	59	40	259	1318	169	972	38	288	72	332	279	382	4208
1965	254	42	15	317	159	330	251	45	155	1330	113	314	3325
1966	143	763	387	68	44	787	182	N.R.	310	320	739	420	
1967	456	183	270	313	145	528							

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1899					NO RECORDS					18	381	32	
1900	217	84	341	460	847	287	526	162	204	19	551	281	3979
1901	257	23	225	156	35	133	91	391	193	283	245	31	2063
1902	109	19	184	12	8	118	89	92	82	180	83	679	1655
1903	68	245	204	276	91	174	360	84	532	435	119	284	2872
1904	269	270	41	221	123	69	268	76	97	267	102	146	1949
1905	187	187	106	184	182	350	170	82	82	250	64	145	1989
1906	16	116	426	138	157	227	90	319	296	316	243	163	2507
1907	371	76	90	115	32	281	66	88	113	53	256	130	1671
1908	108	295	11	265	207	86	150	400	193	34	256	61	2066
1909	262	542	77	98	51	418	248	191	80	159	44	178	2348
1910	553	145	315	35	28	165	196	39	259	214	219	322	2490
1911	622	126	329	7	369	206	271	118	278	85	298	144	2853
1912	68	175	463	17	13	181	507	214	228	114	107	97	2184
1913	86	103	366	190	686	313	82	125	105	227	21	261	2565
1914	95	42	715	199	71	80	299	14	139	104	154	505	2417
1915	267	135	229	159	156	422	237	190	537	204	10	239	2785
1916	127	158	241	517	93	330	337	252	390	540	408	261	3654

MT. FAIRY RAINFALL STATISTICS
 (Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1917	415	367	54	116	160	230	183	343	300	367	404	226	3165
1918	425	222	81	187	117	143	359	304	56	127	128	16	2165
1919	24	154	107	147	340	81	98	165	92	135	151	507	2001
1920	485	124	338	94	23	182	245	262	165	186	208	594	2906
1921	285	268	157	379	526	291	155	130	140	202	150	345	3028
1922	306	211	65	270	91	177	1085	121	255	96	51	249	2977
1923	219	12	68	46	124	505	316	128	352	318	253	335	2676
1924	129	344	33	179	94	139	163	204	230	182	538	206	2441
1925	206	249	86	60	1593	569	186	258	97	173	198	12	3687
1926	61	48	423	294	351	230	167	202	140	75	23	129	2143
1927	520	40	82	76	216	33	66	170	155	365	521	93	2337
1928	98	681	438	226	85	275	165	96	75	115	55	67	2376
1929	10	490	321	178	95	66	69	563	117	125	387	267	2678
1930	27	67	49	228	195	383	216	151	104	435	81	373	2309
1931	102	110	300	377	598	383	190	110	392	213	183	212	3170
1932	10	55	461	211	138	163	197	225	137	101	229	168	2095
1933	407	6	101	271	156	130	318	18	308	157	NO RECORDS		
1934) 1945)	NO RECORDS												
1946	433	257	136	252	63	243	168	67	72	87	296	88	2162

MT. FAIRY RAINFALL STATISTICS
 (Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1947	0	252	95	156	61	130	234	182	214	91	271	728	2384
1948	602	424	50	201	719	229	11	57	107	152	45	375	2972
1949	172	238	425	28	515	536	212	28	260	218	411	121	3164
1950	305	350	1068	525	249	437	87	80	574	373	115	528	4691
1951	329	238	0	78	146	564	223	254	309	387	130	78	2736
1952	116	118	347	556	153	622	116	98	210	462	120	452	3370
1953	201	45	90	80	596	122	107	99	154	75	253	115	1937
1954	65	386	0	33	26	45	70	50	51	293	405	88	1512
1955	184	399	293	115	562	217	154	439	37	100	424	376	3300
1956	285	437	777	656	341	787	280	298	149	336	104	53	4503
1957	45	103	118	65	35	180	361	338	0	40	54	338	1677
1958	393	284	150	115	135	268	312	169	208	263	108	252	2657
1959	173	421	590	442	40	1054	412	120	145	895	676	50	5018
1960	201	89	232	100	285	36	477	86	483	258	181	698	3126
1961	146	215	729	199	21	176	418	215	119	342	912	423	3915
1962	504	272	118	180	212	17	211	307	502	220	101	539	3183
1963	337	458	224	342	341	303	313	198	308	156	154	343	3477
1964	171	37	155	703	127	159	336	196	241	512	148	239	3024

MT. FAIRY RAINFALL STATISTICS
 (Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1896				NO RECORDS				195	30	316	420	240	
1897	398	98	49	757	537	1147	292	207	415	100	29	451	4480
1898	587	929	67	56	533	510	147	368	77	275	0	364	3913
1899	59	2	111	409	191	668	362	1351	199	425	277	47	4101
1900	154	68	443	285	1718	697	810	70	227	62	827	78	5439
1901	273	136	322	290	25	124	297	639	308	283	109	33	2839
1902	440	49	126	25	76	69	420	438	79	555	186	542	3005
1903	136	147	148	176	300	181	403	529	525	315	136	358	3354
1904	190	418	308	936	107	0	1850	68	170	370	48	14	4479
1905	186	126	103	511	478	466	37	40	86	283	109	374	2999
1906	123	117	946	17	137	0	3	689	128	194	138	105	2597
1907	385	56	303	216	415	760	11	21	19	5	179	129	2499
1908	160	923	81	120	194	8	259	827	67	78	92	25	2834
1909	112	551	0	0	167	551	281	169	77	183	20	581	2700
1910	710	24	472	92	149	119	727	0	126	197	215	532	3329
1911	2021	265	478	106	411	21	376	372	194	121	162	274	4801
1912	67	412	582	217	316	354	1091	74	50	143	300	37	3643
1913	44	64	701	604	1509	1105	138	26	151	336	72	58	4808

NORRA P. O. RAINFALL STATISTICS
 (Points)

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1914	76	35	1899	206	223	209	576	155	754	243	436	834	5646
1915	114	94	305	375	152	951	638	114	225	100	25	250	3343
1916	82	273	437	358	258	177	302	197	662	1537	383	572	5238
1917	444	460	297	896	189	211	48	67	432	239	696	221	4200
1918	1624	324	155	465	38	21	1106	123	144	122	186	8	4316
1919	47	1003	428	171	768	17	112	105	109	310	271	708	4049
1920	797	69	189	48	0	62	135	194	299	124	196	1787	3900
1921	554	267	207	752	1521	85	330	20	86	101	144	588	4655
1922	654	462	54	233	156	130	1255	72	361	149	8	163	3697
1923	282	323	198	314	46	511	458	215	424	188	179	250	3388
1924	262	272	275	735	346	263	558	199	143	199	234	390	3876
1925	825	379	96	143	2512	639	54	200	0	66	394	33	5341
1926	235	30	554	531	382	265	262	73	193	67	19	243	2854
1927	318	62	274	1539	273	80	86	0	214	236	439	137	3658
1928	286	552	611	333	94	859	616	79	52	109	28	157	3776
1929	55	1727	238	235	388	89	214	691	225	495	414	145	4916
1930	119	59	186	196	430	1654	177	85	49	316	80	699	4050
1931	134	144	370	542	324	118	782	3	817	192	341	548	4315

NOWRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1932	48	156	575	410	186	57	342	230	585	141	272	302	3304
1933	986	27	256	391	300	143	348	39	250	205	377	325	3647
1934	827	1388	162	1195	331	758	560	366	391	188	286	413	6865
1935	351	494	196	381	93	366	129	25	219	340	181	543	3318
1936	296	480	712	168	82	299	94	85	166	75	30	471	2958
1937	404	153	454	92	58	665	196	267	133	399	245	183	3249
1938	241	237	155	151	346	12	132	1379	118	588	102	47	3508
1939	290	38	762	329	86	33	101	157	190	300	142	46	2474
1940	105	37	10	475	83	126	67	28	451	64	179	439	2084
1941	422	263	25	290	114	164	62	157	481	202	135	65	2380
1942	10	177	521	133	147	247	89	47	17	678	678	137	2881
1943	161	167	159	84	2105	84	13	339	301	608	477	260	4758
1944	95	17	12	386	723	88	150	220	94	103	81	93	2062
1945	391	251	176	1243	339	520	120	56	30	172	130	145	3573
1946	196	351	84	556	128	511	0	7	114	132	508	103	2690
1947	93	553	152	491	201	199	23	223	55	186	430	625	3231
1948	902	221	162	94	694	842	66	24	94	95	68	232	3494
1949	423	349	624	107	529	1155	206	121	413	257	586	153	4923

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1950	844	835	1039	799	1037	1949	765	155	213	682	385	147	8850
1951	632	937	241	16	327	1700	438	201	966	136	38	56	5688
1952	317	144	627	1318	147	1090	343	1200	18	672	240	343	6459
1953	159	269	241	125	1040	0	145	130	149	290	101	133	2782
1954	438	968	43	47	116	98	182	139	244	315	370	195	3155
1955	540	836	237	202	896	282	46	63	77	167	313	399	4058
1956	292	1971	1056	346	689	638	259	234	120	585	213	27	6430
1957	164	447	120	12	10	241	828	391	59	28	106	344	2750
1958	342	1450	642	575	45	694	216	168	142	116	50	423	4863
1959	471	671	1148	229	57	370	560	117	198	2600	306	266	6993
1960	317	238	594	161	329	295	421	302	348	450	241	746	4442
1961	208	327	1149	191	44	318	392	920	195	318	2290	956	7308
1962	868	490	212	261	725	3	95	364	547	206	49	762	4582
1963	693	292	1092	1239	706	545	227	569	257	208	144	934	6906
1964	125	39	301	953	119	1050	46	216	146	300	148	256	3699
1965	154	65	6	336	216	279	292	45	93	765	70	385	2706
1966	102	582	298	39	29	626	106	133	215	451	857	345	3783
1967	588	161	257	91	90	497							

NORRA P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	695	2074	2782	602	425	1229	1171	145	352	222	698	236	10631
1891	720	211	420	984	135	1934	257	305	424	171	351	181	6093
1892	540	324	2207	1193	252	42	495	1025	1373	933	382	317	9083
1893	1290	258	2394	304	96	1303	388	86	224	315	331.	232	7221
1894	796	535	2724	703	93	386	239	142	512	184	60	308	6682
1895	2326	970	541	302	170	89	85	386	461	107	178	268	5883
1896	120	810	592	36	560	1489	115	177	41	324	588	235	5087
1897	296	192	96	887	725	1317	1030	357	424	148	100	825	6397
1898	775	1285	217	110	877	872	400	753	248	363	15	192	6107
1899	97	38	445	485	296	1331	1089	2784	196	455	392	118	7726
1900	399	313	755	446	1744	1402	2375	117	315	57	821	141	8885
1901	408	185	524	491	97	228	515	1043	278	270	178	32	4249
1902	385	41	189	240	130	79	937	278	137	1595	251	1407	5669
1903	141	78	379	308	408	453	491	588	940	493	329	804	5412
1904	283	528	467	1221	189	25	3185	140	346	370	86	133	6973
1905	242	423	216	1020	403	397	129	98	149	416	118	861	4472
1906	261	171	1063	52	550	35	28	1248	255	340	332	198	4533
1907	835	85	535	50	608	969	50	55	60	23	274	196	3740

ROBERTSON P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	283	1618	113	226	310	119	349	1450	191	248	218	104	5229
1909	290	667	97	42	191	828	318	140	452	221	88	861	4195
1910	912	108	825	272	176	215	1589	30	195	369	168	886	5745
1911	2720	999	694	828	520	731	647	631	240	136	422	193	8761
1912	185	736	669	331	591	663	1684	321	118	87	316	125	5826
1913	172	121	698	715	2078	2069	399	0	198	184	142	226	7002
1914	142	171					NO RECORDS						
1915					NO RECORDS				283	86	0	608	
1916	352	553	319	412	342	162	485	307	811	2064	703	665	7175
1917	393	372	279	1068	115	328	78	24	846	139	732	312	4686
1918	1580	N.R.	133	NO RECORDS		66			NO RECORDS				
1919							NO RECORDS						
1920							NO RECORDS						
1921							NO RECORDS						
1922	1282	633	103	318	224	152	2317	335	724	252	12	265	6617
1923	237	111	127	721	70	681	1176	558	277	349	161	288	4756
1924	445	280	577	973	496	274	512	143	268	192	425	523	5108
1925	953	657	338	150	2927	1500	55	327	116	110	394	156	7683
1926	359	33	948	759	726	633	777	124	258	65	0	694	5376

ROBERTSON P.O. RAINFALL STATISTICS
(Points)

ROBERTSON P.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1927	486	171	372	2998	595	143	114	4	295	414	682	341	6615
1928	537	1474	698	551	287	1719	964	101	13	137	58	114	6653
1929	13	2460	327	689	504	193	274	818	547	1251	657	124	7857
1930	258	166	430	299	543	1587	205	75	32	324	152	1133	5204
1931	92	153	519	1517	462	101	1324	13	599	161	361	433	5735
1932	20	349	573	281	325	45	533	357	1523	79	225	198	4508
1933	959	52	600	1043	744	208	934	5	591	241	627	652	6656
1934	909	2047	341	886	672	601	1181	481	785	221	441	1195	9760
1935	560	566	350	314	158	198	215	15	596	582	234	538	4326
1936	654	641	731	644	377	557	178	174	84	73	8	599	4720
1937	380	489	1571	242	76	1751	299	483	112	471	726	421	7021
1938	658	617	135	539	410	55	170	2171	150	1190	220	25	6340
1939	266	19	1481	639	253	86	163	287	490	359	357	23	4423
1940	465	56	18	504	180	220	51	84	539	100	209	980	3406
1941	535	386	109	341	188	184	79	267	434	319	202	103	3147
1942	37	385	2001	86	125	519	278	31	42	2422	1004	211	7141
1943	276	185	191	150	4252	81	49	898	815	571	566	559	8593
1944	177	97	136	580	1098	120	383	559	72	90	39	117	3468
1945	723	468	178	1460	568	1664	367	115	117	104	240	261	6265

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1946	211	502	287	1580	149	788	57	17	132	176	509	78	4486
1947	190	1300	205	715	172	203	76	326	62	202	429	1378	5258
1948	1114	312	180	182	1279	1253	94	34	309	171	92	434	5454
1949	1044	653	1160	182	948	2488	224	192	444	298	632	220	8485
1950	1022	931	1880	1409	1221	2716	965	208	323	799	544	207	12225
1951	1909	1377	457	20	540	2522	574	363	1159	252	34	174	9381
1952	288	356	753	1484	286	1664	1370	1979	45	1027	346	569	10167
1953	412	429	396	100	1862	17	201	170	273	286	248	163	4557
1954	696	1515	176	101	123	151	377	229	301	567	542	290	5068
1955	607	909	411	477	1912	358	128	72	161	281	430	902	6648
1956	522	3242	2072	148	1049	1071	409	318	183	875	58	162	10109
1957	237	1122	212	22	6	453	899	735	24	77	128	330	4245
1958	624	1185	918	535	53	660	284	210	275	254	171	448	5617
1959	1239	814	1528	230	158	592	1060	216	259	2607	529	317	949
1960	415	377	496	203	624	527	945	327	520	751	266	1787	7238
1961	465	520	1531	738	136	591	371	1479	514	1046	2858	2062	12311
1962	1010	1132	313	658	1181	8	540	805	814	341	164	950	7916
1963	828	480	2133	1515	1269	840	438	1162	750	293	322	1467	11497
1964	272	316	562	1775	190	2736	84	282	200	378	276	174	7245
1965	113	121	44	521	213	422	484	78	354	1273	127	487	4237
1966	145	846	898	124	61	1044	142	282	427	585	2101	449	7104
1967	800	300	772	135	153	1366							

ROBERTSON P.O. RAINFALL STATISTICS
(Points)

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Bateman's Bay (Period 69 Years)	Minimum	14	14	19	12	2	0	0	0	21	16	2	15	2034
	10%	65	53	63	34	35	29	36	21	48	74	49	66	2754
	30%	185	123	124	116	137	98	102	70	98	130	109	162	3171
	50%	279	270	265	207	213	302	147	127	165	221	222	239	3685
	70%	387	436	422	445	379	603	378	272	296	298	320	431	4408
	90%	860	948	893	983	954	932	748	619	495	595	564	692	6208
	Maximum	2230	1885	1686	2235	3749	1600	1309	1139	945	1494	1392	1606	8196
Berry (Period 71 Years)	Minimum	53	44	5	6	9	0	0	3	11	14	5	32	2722
	10%	143	100	84	106	79	45	45	31	45	86	47	88	3277
	30%	243	233	259	240	176	171	180	86	138	162	171	211	4596
	50%	352	398	431	408	317	299	304	191	233	229	250	350	5316
	70%	735	628	706	634	569	749	540	325	423	404	453	518	6221
	90%	1065	1257	1297	1364	1283	1376	1061	745	794	733	676	1002	8118
	Maximum	2024	2203	2329	2094	3099	2542	2037	1947	1010	1511	1341	2597	12111
Braidwood (Period 70 Years)	Minimum	3	0	17	10	7	2	3	9	17	20	5	26	1547
	10%	45	26	47	34	31	24	23	29	50	68	34	53	1891
	30%	160	87	101	98	71	88	77	84	109	125	85	151	2289
	50%	219	213	184	142	129	224	149	132	146	191	164	220	2663
	70%	338	356	302	259	252	341	252	192	212	276	306	291	3048
	90%	595	560	605	508	646	634	524	425	355	440	447	556	4083
	Maximum	803	1274	1145	977	2614	830	1356	767	570	1123	738	1093	5024

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Bundanoon (Period 63 Years)	Minimum	40	16	7	4	19	10	22	0	33	30	10	8	2101
	10%	100	61	80	63	65	39	48	27	51	93	47	65	3023
	30%	193	179	198	178	165	135	133	123	137	167	146	163	3762
	50%	338	350	348	305	239	262	265	167	208	243	259	293	4254
	70%	546	535	591	538	410	621	443	286	336	363	361	561	5303
	90%	870	1064	1110	860	1093	1114	933	559	531	603	515	870	7014
	Maximum	1868	2889	1475	1628	2838	2306	1942	1700	1057	1801	1268	1923	8831
Bungonia (Period 71 years)	Minimum	0	0	0	10	13	26	15	18	39	25	0	0	1247
	10%	42	21	31	36	24	56	56	50	70	58	25	45	1874
	30%	141	63	93	111	74	90	98	83	100	129	103	124	2215
	50%	206	175	159	181	106	166	140	133	135	179	196	192	2507
	70%	346	296	320	281	165	318	212	221	214	257	288	325	2839
	90%	569	587	568	467	588	492	405	353	302	392	414	510	3521
	Maximum	1029	1173	966	542	1292	1595	1027	820	774	597	541	803	4580
Jervis Bay (Period 65 Years)	Minimum	15	19	42	3	23	21	14	19	45	34	15	0	2304
	10%	68	73	111	135	110	93	86	77	85	71	78	63	3185
	30%	196	165	258	248	230	220	239	154	151	177	151	156	3757
	50%	314	241	379	373	343	388	333	252	283	257	241	327	4645
	70%	444	423	557	515	603	607	611	444	346	355	324	486	5405
	90%	735	818	975	1209	1291	1115	987	827	575	627	516	754	7861
	Maximum	1490	1680	2253	1779	2030	1656	1905	1720	878	2125	2627	1026	9817

STATISTICAL RAINFALL DATA

(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Krawarree (Period 64 Years)	Minimum	0	0	0	10	0	0	3	0	10	5	0	14	847
	10%	22	21	33	32	11	18	27	19	35	59	27	45	1986
	30%	150	77	139	88	48	80	64	51	77	136	124	135	2400
	50%	283	268	199	149	125	173	119	94	166	203	184	226	2870
	70%	368	368	412	328	244	274	225	198	224	282	295	397	3545
	90%	660	741	708	586	819	657	688	480	469	418	515	605	4923
	Maximum	1299	1330	1339	745	2700	1381	1901	883	853	1684	1529	917	6064
Lower Boro (Period 59 Years)	Minimum	0	6	5	0	14	13	20	0	11	30	0	0	1124
	10%	27	18	41	44	31	38	34	29	30	61	31	28	1676
	30%	93	69	80	103	65	83	80	69	89	110	90	121	1946
	50%	185	192	151	170	108	157	134	118	129	187	171	188	2225
	70%	351	294	260	224	242	285	208	218	189	262	289	252	2585
	90%	489	473	548	418	579	482	399	302	310	415	424	504	3695
	Maximum	712	656	934	887	1695	765	929	619	509	1008	560	790	4877
Milton (Period 80 Years)	Minimum	26	29	20	11	0	0	0	0	22	31	0	16	2099
	10%	99	72	114	80	67	43	39	25	59	85	98	96	3075
	30%	211	166	211	207	195	140	147	76	131	168	187	182	4127
	50%	356	341	323	419	332	297	260	192	225	268	287	306	4703
	70%	490	518	648	643	539	595	502	310	345	394	418	470	5505
	90%	921	1183	1190	1124	1280	1244	928	655	636	745	623	918	7341
	Maximum	2040	2577	2516	2117	3743	1920	1678	1435	1680	2639	1970	1699	12018

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Mount Fairy (Period 52 Years)	Minimum	0	12	0	7	8	17	11	14	0	19	10	12	1512
	10%	25	41	43	34	27	67	74	60	73	75	47	55	1941
	30%	107	109	90	113	90	157	155	99	112	124	108	130	2296
	50%	194	199	194	179	142	222	204	163	160	203	167	239	2666
	70%	287	270	330	230	253	304	282	216	255	284	256	338	3038
	90%	498	433	552	500	597	556	416	341	456	435	492	536	3847
	Maximum	622	681	1068	703	1593	1054	1085	563	574	895	912	728	5018
Nowra (Period 67 Years)	Minimum	10	2	0	0	0	0	0	0	0	5	0	8	2062
	10%	65	37	53	48	46	16	44	23	50	73	29	36	2671
	30%	159	139	160	164	141	118	130	73	111	138	107	137	3271
	50%	290	267	256	285	273	263	259	157	190	202	181	250	3776
	70%	432	455	476	443	413	535	399	232	254	313	294	440	4541
	90%	830	943	965	904	1038	1093	788	689	529	592	483	716	6436
	Maximum	2021	1971	1899	1539	2512	1949	1850	1379	966	2600	2290	1787	8850
Robertson (Period 69 Years)	Minimum	13	19	18	20	6	8	28	0	13	23	0	23	3147
	10%	141	78	127	86	97	55	76	24	60	87	58	114	4249
	30%	283	258	313	272	188	198	205	140	191	184	171	193	5204
	50%	445	468	467	491	403	527	383	278	277	286	276	288	6265
	70%	696	667	698	721	595	969	647	386	461	378	425	559	7221
	90%	1114	1474	2001	1460	1279	1751	1324	1162	814	1046	698	1133	9760
	Maximum	2720	3242	2782	2998	4252	2736	3185	2784	1523	2607	2858	2062	12311

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bateman's Bay	1	14	14	19	12	2	0	0	0	21	16	2	15
	2	92	80	56	15	105	43	22	77	64	71	93	104
	3	223	205	82	139	199	83	96	123	119	280	233	163
	4	270	373	179	251	211	258	149	231	330	386	252	338
	5	438	518	291	265	294	432	328	388	414	456	363	617
	6	626	779	305	328	583	523	435	494	608	623	733	755
	7	1037	958	368	617	761	730	539	655	726	891	871	846
	8	1162	1222	657	795	999	1043	889	1009	1142	1029	962	1281
	9	1526	1356	835	1033	1321	1242	1232	1369	1280	1120	1393	1293
	10	1646	1558	1073	1375	1420	1571	1706	1547	1371	1713	1549	1631
	11	1762	1912	1415	1780	1837	2065	1843	1760	1766	1773	1693	1777
	12	2034	2073	1919	2185	2378	2073	2028	1821	1826	1806	2029	1893
Berry	1	53	44	5	6	9	0	0	3	11	14	5	32
	2	215	178	18	26	77	7	7	50	33	106	122	146
	3	427	425	210	160	114	256	62	64	224	320	294	317
	4	583	459	385	167	440	476	76	255	367	444	410	493
	5	663	506	534	566	620	760	311	398	489	653	671	947
	6	855	731	659	859	928	805	410	520	861	892	1115	1114
	7	943	910	1112	1216	1034	1170	697	913	1174	1263	1287	1278
	8	1068	1363	1341	1288	1465	1440	1138	1258	1330	1455	1451	1527
	9	1521	1531	1381	1518	1580	1675	1850	1849	1522	2001	1710	1565
	10	1750	1632	1811	1809	1815	2075	2303	2355	2216	2126	1748	1815
	11	1790	2180	1887	1951	2281	2412	2459	2446	2391	2213	1990	2053
	12	2722	2256	2122	2360	2519	2633	2480	2453	2570	2260	2236	2519

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Braidwood	1	3	0	17	10	7	2	3	9	17	20	5	26
	2	51	44	51	41	65	12	43	46	78	71	38	52
	3	187	161	95	123	81	118	126	170	166	239	99	167
	4	322	193	155	126	202	147	209	230	285	267	172	220
	5	347	274	171	249	318	272	321	368	313	414	225	379
	6	439	332	266	365	460	331	487	396	466	467	430	400
	7	632	463	382	505	476	497	554	677	519	629	437	479
	8	816	607	550	521	642	749	745	887	815	661	644	702
	9	939	711	566	687	818	951	1018	921	822	943	867	856
	10	1211	727	732	863	1114	1248	1172	928	1045	1166	1021	979
	11	1298	893	908	1213	1378	1368	1228	1196	1268	1320	1144	1251
	12	1547	1069	1258	1423	1437	1621	1496	1526	1422	1443	1416	1338
Bundanoon	1	40	16	7	4	19	10	22	0	33	30	10	8
	2	128	48	54	74	100	89	33	127	123	60	71	114
	3	222	348	214	289	305	210	151	167	223	235	265	328
	4	415	564	418	420	452	356	201	366	323	417	448	441
	5	755	699	511	651	700	626	412	525	507	618	604	662
	6	1036	791	727	859	828	752	588	659	658	984	915	822
	7	1251	993	935	1102	1066	852	729	884	1155	1009	1075	1300
	8	1331	1215	1178	1253	1186	1112	1145	1337	1159	1169	1463	1335
	9	1615	1458	1329	1316	1237	1327	1589	1685	1319	1809	1498	1386
	10	1904	1609	1392	1367	1452	1801	1731	1885	1892	1878	1549	1663
	11	1970	1672	1443	1582	2040	2294	1922	1936	2060	1929	1783	1952
	12	2101	1723	1658	2362	2502	2461	1970	2104	2171	2149	2072	2018

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Jervis Bay	1	15	19	42	3	23	21	14	19	45	34	15	0
	2	111	61	111	26	142	155	33	138	139	75	149	23
	3	154	372	134	193	325	450	180	252	240	274	187	236
	4	465	530	301	503	581	777	391	487	435	289	388	278
	5	602	697	892	824	901	835	709	644	503	559	490	589
	6	769	1083	1155	1144	983	1104	772	689	650	812	801	745
	7	1211	1174	1495	1226	1197	1293	935	822	1060	1123	914	912
	8	1267	1514	1540	1440	1463	1552	1176	1232	1373	1475	1081	1335
	9	1607	1559	1809	1641	1664	1793	1331	1698	1717	1685	1547	1391
	10	1652	1828	2192	2037	1905	1936	1971	1947	1884	1869	1603	1731
	11	1921	2211	2389	2278	2060	2247	2240	2114	2119	1925	1943	1776
	12	2304	2734	2630	2433	2443	2599	2589	2500	2175	2265	1988	2045
Nowra	1	10	2	0	0	0	0	0	0	0	5	0	8
	2	61	29	0	22	59	3	7	40	24	86	62	55
	3	124	200	142	110	140	166	51	45	189	195	206	145
	4	510	276	296	157	304	343	56	224	262	307	241	198
	5	710	345	434	439	547	616	235	353	374	577	340	673
	6	785	503	625	680	801	736	364	480	638	640	780	749
	7	903	697	869	862	831	829	524	712	830	858	858	818
	8	931	996	1051	999	1055	1074	892	987	925	1025	927	949
	9	1382	1120	1247	1384	1160	1111	1088	1462	1092	1210	1091	977
	10	1446	1316	1695	1489	1197	1121	1563	1545	1514	1391	1119	1428
	11	1625	1958	1705	1526	1207	1596	1646	1671	1581	1419	1570	1492
	12	2062	1968	1882	1536	1682	1679	1772	1738	1609	1790	1634	1671

MONGARLOWE RIVER AT MARLOWE.

LOCATION: Latitude 35°16' Longitude 149°55'

PERIOD OF ESTABLISHMENT: August 1945 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 21

ZERO OF GAUGE: R.L. 45.04 Assumed Datum.

CATCHMENT AREA: 175 Square Miles.

CONTROL: Rock Bar.

EQUIPMENT: Automatic Recorder (Float Type) installed January 1954.
Staff Gauge, range 0 to 30 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 131
- (b) Maximum observation
in cusecs : 2,928
- (c) Minimum observation
in cusecs : 3.2

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 47,200 cusecs.

MEAN DAILY DISCHARGE FOR 21 YEARS: 237 cusecs.

MEAN ANNUAL DISCHARGE FOR 21 YEARS: 173,000 acre feet.

MONGARLOWE RIVER AT MARLOWE

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.	242	4	24	1,460
Feb.	..	..	..	..	Feb.	30	6	12	700
Mar.	..	..	..	..	Mar.	15	10	11	672
Apr.	..	..	..	..	Apr.	383	10	45	2,688
May	..	..	..	..	May	30	15	20	1,224
June	..	..	..	..	June	970	15	104	6,236
July	..	..	..	..	July	75	15	33	2,050
Aug.	64	30	44	2,744	Aug.	15	10	12	770
Sept.	30	21	26	1,584	Sept.	10	6	8	472
Oct.	50	15	22	1,394	Oct.	10	3	6	368
Nov.	269	15	29	1,724	Nov.	99	3	23	1,386
Dec.	15	6	11	676	Dec.	26	6	13	816
Total	..	..	..	..	Total	..	..	..	18,842

Year 1947

Year 1948

Jan.	6	2	5	320	Jan.	1070	80	214	13,240
Feb.	8660	2	471	26,422	Feb.	No Records			3,920*
Mar.	191	30	57	3,524	Mar.	No Records			2,640*
Apr.	167	21	50	2,994	Apr.	No Records			1,660*
May	40	21	26	1,616	May	No Records			68,300*
June	30	21	24	1,442	June	No Records			17,600*
July	21	15	17	1,074	July	No Records			2,040*
Aug.	80	12	25	1,558	Aug.	No Records			1,190*
Sept.	64	10	22	1,304	Sept.	No Records			710*
Oct.	13	6	9	572	Oct.	No Records			580*
Nov.	80	6	13	806	Nov.	No Records			470*
Dec.	692	21	167	10,024	Dec.	No Records			320*
Total	..	..	..	51,656	Total	..	..	..	112,670*

* Estimated.

MONGARLOWE RIVER AT MARLOWE

Year 1949

Year 1950

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.	418	10	79	4,860	Jan.	No Records			7,930*
Feb.	No Records			480*	Feb.	No Records			37,200*
Mar.	No Records			13,000*	Mar.	No Records			69,600*
Apr.	No Records			630*	Apr.	No Records			95,000*
May	No Records			25,400*	May	No Records			47,500*
June	No Records			107,900*	June	No Records			78,400*
July	No Records			20,750*	July	No Records			41,500*
Aug.	No Records			6,660*	Aug.	No Records			12,600*
Sept.	No Records			4,690*	Sept.	No Records			5,170*
Oct.	No Records			3,500*	Oct.	No Records			26,000*
Nov.	No Records			4,640*	Nov.	No Records			7,280*
Dec.	No Records			1,800*	Dec.	No Records			2,340*
Total	..	..	..	194,310*	Total	..	..	..	430,520*

Year 1951

Year 1952

Jan.	No Records			31,000*	Jan.	50	10	20	1,244
Feb.	No Records			34,000*	Feb.	15	10	12	668
Mar.	No Records			8,350*	Mar.	1880	10	10.4	6,446
Apr.	80	40	51	3,056	Apr.	7500	30	431	25,854
May	50	15	37	2,306	May	920	99	208	12,892
June	18600	18	1224	73,438	June	25000	64	1408	84,472
July	1425	99	287	17,820	July	8500	151	635	39,406
Aug.	1020	64	152	9,398	Aug.	10700	225	1317	81,660
Sept.	9200	50	478	28,696	Sept.	225	47	133	8,008
Oct.	3280	64	294	18,214	Oct.	1120	30	152	9,450
Nov.	120	40	59	3,560	Nov.	1645	92	239	14,362
Dec.	64	21	40	2,464	Dec.	613	110	224	13,876
Total	..	..	..	232,264*	Total	..	..	..	298,338

* Estimated.

MONGARLOWE RIVER AT MARLOWE

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.	1220	75	197	12,234	Jan.	35	7	17	1,038
Feb.	277	92	137	7,674	Feb.	13500	19	397	22,216
Mar.	130	60	81	5,048	Mar.	200	36	80	4,934
Apr.	69	35	50	3,010	Apr.	37	21	29	1,768
May	11000	35	881	54,624	May	27	16	20	1,246
June	225	60	115	6,920	June	30	13	16	970
July	75	47	60	3,718	July	27	13	16	980
Aug.	110	35	51	3,090	Aug.	16	9	12	738
Sept.	35	26	28	1,686	Sept.	15	9	10	612
Oct.	75	7	32	1,976	Oct.	No Records			320*
Nov.	47	19	25	1,476	Nov.	No Records			260*
Dec.	26	4	11	712	Dec.	4.4	3	3.6	224
Total	..	..	..	102,168	Total	..	..	..	35,306*

Year 1955

Year 1956

Jan.	3.4	3.4	3.4	210	Jan.	148	8	19	1,160
Feb.	No Records			8,000*	Feb.	20700	13	1271	73,730
Mar.	6050	69	304	18,838	Mar.	13500	277	1064	65,988
Apr.	11900	27	143	8,558	Apr.	1120	106	244	14,668
May	14900	91	733	45,424	May	5800	106	436	27,010
June	332	73	149	8,910	June	12300	126	1014	60,814
July	106	52*	64	3,940	July	10100	172	507	31,412
Aug.	64	27	42	2,592	Aug.	362	78	139	8,644
Sept.	38	21	26	1,554	Sept.	116	52	69	4,122
Oct.	137	16	28	1,706	Oct.	2000	52	203	12,592
Nov.	106	9	15	904	Nov.	69	32	50	2,972
Dec.	27	9	13	776	Dec.	30	17	24	1,486
Total	..	..	..	101,412*	Total	..	..	..	304,598

* Estimated.

MONGARLOWE RIVER AT MARLOWE

Year 1957

Year 1958

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.	16	11	13	832	Jan.	390	6	34	2,132
Feb.	426	9	38	2,110	Feb.	10000	30	517	28,966
Mar.	38	16	23	1,442	Mar.	1210	47	169	10,476
Apr.	23	10	16	950	Apr.	47	25	34	2,022
May	10	5	8	490	May	35	25	30	1,860
June	No Records			2,300*	June	20500	20	485	29,082
July	11200	29	515	31,920	July	7760	54	241	14,972
Aug.	3795	46	347	21,518	Aug.	137	35	52	3,228
Sept.	390	47	120	7,184	Sept.	47	30	36	2,166
Oct.	47	30	34	2,138	Oct.	74	20	35	2,182
Nov.	30	12	23	1,376	Nov.	20	12	15	888
Dec.	92	7	13	788	Dec.	164	12	25	1,564
Total	..	..	..	73,048*	Total	..	..	..	99,538

Year 1959

Year 1960

Jan.	238	16	60	3,724	Jan.	455	30	67	4,138
Feb.	1450	40	145	8,130	Feb.	54	25	32	1,856
Mar.	3540	72	306	18,950	Mar.	692	25	106	6,594
Apr.	4420	72	298	17,884	Apr.	207	40	62	3,744
May	63	40	48	2,986	May	222	35	49	3,014
June	17300	30	719	43,128	June	54	25	37	2,204
July	35100	103	1288	79,884	July	23600	25	1041	64,540
Aug.	277	82	141	8,740	Aug.	192	63	100	6,222
Sept.	82	40	64	3,848	Sept.	1054	51	202	12,138
Oct.	47200	40	2313	143,408	Oct.	278	61	104	6,470
Nov.	7120	254	655	39,300	Nov.	72	39	51	3,082
Dec.	546	72	172	10,686	Dec.	13200	38	691	42,872
Total	..	..	..	380,668	Total	..	..	..	156,874

* Estimated.

MONGARLOWE RIVER AT MARLOWE

Year 1961				Year 1962					
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.	1695	59	174	10,806	Jan.	5600	219	563	34,914
Feb.	80	46	57	3,180	Feb.	13400	131	691	38,694
Mar.	17900	49	894	55,418	Mar.	1270	121	260	16,138
Apr.	453	80	183	10,960	Apr.	228	76	113	6,796
May	91	49	60	3,720	May	1210	61	141	8,758
June	2870	51	282	16,916	June	91	50	65	3,922
July	4942	81	483	28,698	July	1018	50	121	7,528
Aug.	5500	101	501	31,090	Aug.	429	60	131	8,148
Sept.	1192	161	355	21,298	Sept.	12100	60	905	54,312
Oct.	7168	89	370	22,966	Oct.	253	80	136	8,438
Nov.	36800	78	1609	96,520	Nov.	152	49	71	4,338
Dec.	9072	243	706	43,744	Dec.	1520	46	198	12,266
Total	..	..	..	345,316	Total	..	..	..	204,252

Year 1963				Year 1964					
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.	775	60	101	6,244	Jan.	99	37	58	3,590
Feb.	900	57	157	8,790	Feb.	48	22	30	1,766
Mar.	7280	57	549	34,050	Mar.	211	22	36	2,254
Apr.	35700	85	1038	62,306	Apr.	3388	26	342	20,530
May	16200	288	904	56,080	May	181	65	110	6,852
June	5500	197	472	28,352	June	5680	60	380	22,790
July	4000	152	454	28,140	July	90	65	78	4,826
Aug.	2660	90	176	10,938	Aug.	1390	46	126	7,818
Sept.	9200	67	459	27,534	Sept.	192	41	65	3,890
Oct.	601	80	176	10,910	Oct.	922	31	59	3,682
Nov.	501	63	103	6,206	Nov.	302	27	65	3,918
Dec.	2241	53	421	26,104	Dec.	85	20	29	1,830
Total	..	..	..	305,654	Total	..	..	..	83,746

MONGARLOWE RIVER AT MARLOWE

Year 1965

Year 1966

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.	23	14	18	1,118	Jan.	16	8	11	700
Feb.	16	10	13	752	Feb.	259	7	32	1,802
Mar.	11	7	8	516	Mar.	42	15	23	1,448
Apr.	16	6	10	588	Apr.	15	9	11	686
May	11	8	9	560	May	13	9	11	656
June	27	7	10	606	June	1048	10	117	7,020
July	51	10	16	977	July	51	22	28	1,765
Aug.	12	9	11	664	Aug.	216	18	22	1,355
Sept.	69	8	19	1,154	Sept.	378	34	950	5,703
Oct.	2461	7	181	11,200	Oct.	326	31	55	3,382
Nov.	89	18	34	2,034	Nov.	14950	32	797	47,796
Dec.	73	14	27	1,658	Dec.	2510	57	157	9,724
Total	..	..	..	21,827	Total	..	..	..	82,037

Year 1967

Jan.	206	29	54	3,352
Feb.	135	31	47	2,630
Mar.	260	40	70	4,322
Apr.	61	24	35	2,128
May	46	20	25	1,575
June	253	18	81	4,864
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

SHOALHAVEN RIVER AT WELCOME REEF

LOCATION: Latitude 35°10' Longitude 150°00'

PERIOD OF ESTABLISHMENT: June, 1909 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 52

ZERO OF GAUGE: 100.10 Assumed Datum.

CATCHMENT AREA: 1,070 Square Miles.

CONTROL: Rock Bar.

EQUIPMENT: Automatic Recorder (pressure type) installed November 1955
Staff gauge, range 0 to 50 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 195
- (b) Maximum observation in cusecs : 2,615
- (c) Minimum observation in cusecs : 0.03

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 313,000 cusecs.

MEAN DAILY DISCHARGE FOR 52 YEARS: 640 cusecs.

MEAN ANNUAL DISCHARGE FOR 52 YEARS: 467,000 acre feet.

REMARKS: Periods of missing records computed by correlation with Shoalhaven River at Warri and Mongarlowe River at Charlyong.

SHOALHAVEN RIVER AT WELCOME REEF

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.	2627	30	542	33,620
Feb.	..	..	..	..	Feb.	14280	68	423	23,706
Mar.	..	..	..	..	Mar.	536	52	163	10,146
Apr.	..	..	..	..	Apr.	108	68	86	5,162
May	..	..	..	..	May	68	48	53	3,316
June	..	..	..	..	June	98	46	67	4,016
July	7830	145	619	38,342	July	4400	52	430	26,658
Aug.	145	104	123	7,628	Aug.	145	104	126	7,808
Sept.	139	87	106	6,388	Sept.	157	87	107	6,454
Oct.	145	48	66	4,120	Oct.	139	48	66	4,118
Nov.	108	24	48	2,904	Nov.	108	24	49	2,942
Dec.	139	8	32	1,998	Dec.	1405	44	171	10,636
Total	..	..	..	..	Total	..	..	..	138,582

Year 1911

Year 1912

Jan.	20250	52	2189	135,736	Jan.	238	9	37	2,318
Feb.	2322	93	650	36,404	Feb.	870	6	196	11,396
Mar.	3100	75	546	33,872	Mar.	2627	93	331	20,516
Apr.	226	70	130	7,824	Apr.	1252	124	270	16,200
May	2322	37	321	19,906	May	178	41	91	5,654
June	569	104	173	10,400	June	238	70	131	7,876
July	5190	104	384	23,802	July	31870	104	2662	165,024
Aug.	1748	93	277	17,168	Aug.	2092	195	738	45,760
Sept.	803	120	213	12,802	Sept.	670	111	195	11,716
Oct.	403	70	148	9,166	Oct.	120	75	94	5,830
Nov.	93	34	57	3,446	Nov.	803	48	111	6,670
Dec.	1405	24	86	5,330	Dec.	1176	37	99	6,124
Total	..	..	..	315,856	Total	..	..	..	305,084

SHOALHAVEN RIVER AT WELCOME REEF

Year 1913

Year 1914

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.	139	48	79	4,918	Jan.	93	37	54	3,372
Feb.	66	0	13	924	Feb.	37	16	24	1,336
Mar.	1252	15	141	8,722	Mar.	42200	5	3069	190,300
Apr.	306	61	115	6,904	Apr.	2289	306	759	45,534
May	44700	93	2185	135,474	May	736	171	328	20,314
June	59000	536	4823	289,392	June	803	116	173	10,386
July	6480	403	2031	125,892	July	10200	214	1105	68,512
Aug.	1023	178	486	30,136	Aug.	348	116	187	11,610
Sept.	186	120	142	8,536	Sept.	2551	81	454	27,228
Oct.	536	98	186	11,552	Oct.	946	111	255	15,836
Nov.	129	56	86	5,180	Nov.	670	151	264	15,848
Dec.	1023	30	121	7,520	Dec.	15600	93	626	38,842
Total	..	..	..	635,150	Total	..	..	..	449,118

Year 1915

Year 1916

Jan.	5050	139	834	51,744	Jan.	736	87	154	9,560
Feb.	139	61	89	4,984	Feb.	2398	52	192	11,148
Mar.	111	30	48	3,002	Mar.	1787	151	641	39,726
Apr.	306	93	194	11,670	Apr.	3600	129	562	33,752
May	120	81	97	6,030	May	164	56	91	5,636
June	4900	75	543	32,610	June	214	54	122	7,320
July	946	93	245	15,192	July	1710	54	188	11,662
Aug.	536	104	177	10,994	Aug.	3600	104	395	24,496
Sept.	13900	70	1689	101,360	Sept.	22700	93	806	48,356
Oct.	670	93	226	13,986	Oct.	130000	375	10839	672,012
Nov.	87	41	62	3,744	Nov.	803	186	366	21,944
Dec.	238	30	59	3,682	Dec.	8070	164	875	54,250
Total	..	..	..	258,998	Total	..	..	..	939,862

SHOALHAVEN RIVER AT WELCOME REEF

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.	270	75	127	7,866	Jan.	4000	30	604	37,464
Feb.	736	111	225	12,616	Feb.	8550	164	1274	71,374
Mar.	736	87	176	10,928	Mar.	1405	81	253	15,734
Apr.	536	52	101	6,086	Apr.	151	70	92	5,538
May	803	56	197	12,184	May	93	37	61	3,770
June	120	56	95	5,676	June	34	15	22	1,336
July	70	30	45	2,784	July	3300	11	417	25,850
Aug.	120	52	87	5,386	Aug.	946	214	484	30,032
Sept.	348	66	139	8,350	Sept.	195	66	113	6,766
Oct.	2016	75	523	32,440	Oct.	66	34	48	2,974
Nov.	10200	44	454	27,244	Nov.	120	19	41	2,482
Dec.	1023	51	285	17,686	Dec.	13	0	2	124
Total	..	..	..	149,246	Total	..	..	..	203,444

Year 1919

Year 1920

Jan.	0	0	0	0	Jan.	15400	238	2616	162,196
Feb.	12600	0	820	45,954	Feb.	2474	139	858	49,746
Mar.	2398	66	241	14,920	Mar.	1405	111	358	22,216
Apr.	670	61	224	13,438	Apr.	151	75	107	6,416
May	1100	34	160	9,928	May	81	66	74	4,622
June	403	120	183	11,006	June	81	56	66	3,970
July	120	58	87	5,384	July	803	61	159	9,888
Aug.	139	48	69	4,290	Aug.	238	75	115	7,178
Sept.	238	98	147	8,844	Sept.	870	70	137	8,220
Oct.	93	24	49	2,928	Oct.	803	44	112	6,970
Nov.	37	22	29	1,742	Nov.	75	24	40	2,428
Dec.	1481	48	406	25,192	Dec.	28600	37	2176	134,890
Total	..	..	..	143,626	Total	..	..	..	418,740

SHOALHAVEN RIVER AT WELCOME REEF

Year 1921

Year 1922

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.	946	120	453	28,100	Jan.	21100	195	2110	130,820
Feb.	1710	75	426	23,888	Feb.	946	87	236	13,236
Mar.	1863	151	571	35,436	Mar.	946	61	201	12,462
Apr.	12400	111	1488	89,316	Apr.	139	30	54	3,242
May	2780	87	1131	70,168	May	178	75	104	6,496
June	10200	214	1342	80,552	June	238	98	153	9,200
July	1405	195	581	36,036	July	72000	98	8423	522,244
Aug.	603	151	314	19,476	Aug.	6150	129	1323	82,036
Sept.	238	93	151	9,060	Sept.	3200	164	966	57,974
Oct.	120	56	77	4,790	Oct.	946	139	302	18,728
Nov.	87	48	54	3,470	Nov.	270	70	132	7,940
Dec.	4000	37	504	31,262	Dec.	306	56	111	6,902
Total	..	..	..	431,554	Total	..	..	..	871,280

Year 1923

Year 1924

Jan.	803	24	91	5,638	Jan.	93	24	46	2,842
Feb.	56	16	32	1,802	Feb.	536	34	114	6,628
Mar.	19	11	14	870	Mar.	52	11	25	1,562
Apr.	22	6	13	812	Apr.	178	24	78	4,654
May	48	19	34	2,100	May	75	44	56	3,468
June	611	30	78	4,666	June	93	42	61	3,662
July	1176	93	369	22,924	July	1405	48	165	10,206
Aug.	1328	48	249	15,416	Aug.	120	56	86	5,316
Sept.	7320	34	988	59,306	Sept.	56	34	45	2,688
Oct.	238	66	94	5,826	Oct.	139	19	49	3,014
Nov.	803	70	211	12,666	Nov.	No Records			9,100*
Dec.	93	22	51	3,210	Dec.	946	56	157	9,744
Total	..	..	..	135,236	Total	..	..	..	62,884*

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

Year 1925

Year 1926

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.	No Records			17,300*	Jan.	360	45	138	8,570
Feb.	946	98	357	20,014	Feb.	40	14	23	1,268
Mar.	151	52	89	5,494	Mar.	1030	15	184	11,436
Apr.	61	34	49	2,954	Apr.	896	82	241	14,444
May	313000	23	14408	893,314	May	896	60	198	12,236
June	16880	560	2516	150,854	June	1470	162	411	24,658
July	1910	342	828	51,356	July	1150	134	243	15,060
Aug.	No Records			26,700*	Aug.	970	99	180	11,148
Sept.	336	168	247	14,842	Sept.	203	60	87	5,218
Oct.	203	108	136	8,418	Oct.	108	32	59	3,632
Nov.	414	90	203	12,164	Nov.	32	10	18	1,110
Dec.	220	47	71	4,430	Dec.	27	8	15	926
Total	..	..	..	1,207,840*	Total	..	..	..	109,706

Year 1927

Year 1928

Jan.	970	40	126	7,838	Jan.	No Records			2,700*
Feb.	90	14	25	1,388	Feb.	15600	40	1427	82,800
Mar.	34	12	19	1,182	Mar.	2100	82	530	32,860
Apr.	9300	11	606	36,376	Apr.	3100	129	442	26,546
May	1150	99	249	15,426	May	150	90	118	7,350
June	94	70	81	4,842	June	3300	82	654	39,238
July	90	50	63	3,894	July	353	54	229	14,178
Aug.	60	40	48	3,006	Aug.	126	32	137	8,494
Sept.	134	32	47	2,814	Sept.	72	42	56	3,372
Oct.	324	50	109	6,730	Oct.	50	20	39	2,402
Nov.	427	50	124	7,458	Nov.	20	0	7	406
Dec.	174	45	70	4,362	Dec.	18	6	7	478
Total	..	..	..	95,316	Total	..	..	..	220,824*

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

Year 1929

Year 1930

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.	5	1	3	168	Jan.	197	40	66	4,082
Feb.	No Records			129,000*	Feb.	246	26	63	3,536
Mar.	687	197	342	21,232	Mar.	77	17	38	2,352
Apr.	No Records			96,000*	Apr.	77	17	37	2,224
May	197	126	153	9,490	May	No Records			21,000*
June	131	84	100	6,024	June	6320	56	1038	62,274
July	93	62	77	4,806	July	822	143	389	24,148
Aug.	No Records			57,000*	Aug.	246	77	118	7,340
Sept.	No Records			17,700*	Sept.	98	59	81	4,848
Oct.	No Records			33,000*	Oct.	323	42	136	8,466
Nov.	1845	131	402	24,146	Nov.	155	36	82	4,930
Dec.	323	50	105	6,530	Dec.	155	36	68	4,238
Total	..	..	..	405,096*	Total	..	..	..	149,438*

Year 1931

Year 1932

Jan.	70	13	37	2,288	Jan.	36	6	17	1,078
Feb.	14	0	8	462	Feb.	32	6	17	982
Mar.	88	4	35	2,176	Mar.	1030	14	256	15,866
Apr.	5050	23	433	26,004	Apr.	569	77	184	11,060
May	12800	121	864	53,600	May	168	29	65	4,014
June	10200	264	1529	91,724	June	346	66	102	6,120
July	3200	112	675	41,868	July	346	50	117	7,250
Aug.	370	93	167	10,380	Aug.	3600	112	493	30,576
Sept.	450	112	208	12,524	Sept.	2390	102	585	35,102
Oct.	155	77	114	7,084	Oct.	370	121	245	15,224
Nov.	346	47	131	7,864	Nov.	370	77	137	8,238
Dec.	155	40	79	4,914	Dec.	93	40	63	3,922
Total	..	..	..	260,888	Total	..	..	..	139,432

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

Year 1933

Year 1934

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.	748	0	142	8,782	Jan.	55600	155	3212	199,136
Feb.	121	29	58	3,246	Feb.	55600	323	4332	242,584
Mar.	62	17	26	1,596	Mar.	1380	306	624	38,696
Apr.	748	45	136	8,170	Apr.	12800	284	1000	60,026
May	284	26	88	5,462	May	730	177	334	20,700
June	131	70	96	5,772	June	22500	357	2345	140,686
July	687	84	215	13,334	July	32300	264	3304	204,852
Aug.	370	77	154	9,584	Aug.	23200	575	2877	178,360
Sept.	450	56	104	6,236	Sept.	1900	246	626	37,588
Oct.	1530	62	310	19,228	Oct.	7300	228	700	43,396
Nov.	1230	45	229	13,762	Nov.	3800	210	545	32,692
Dec.	1230	264	424	26,286	Dec.	1800	193	448	27,810
Total	..	..	..	121,458	Total	..	..	..	1,226,526

Year 1935

Year 1936

Jan.	950	193	418	25,908	Jan.	No	Records	14,400*	
Feb.	2700	78	516	28,904	Feb.	246	88	154	8,942
Mar.	264	122	191	11,846	Mar.	3100	162	698	43,280
Apr.	2700	122	586	35,154	Apr.	575	162	278	16,708
May	284	148	200	12,394	May	210	122	146	9,078
June	264	135	174	10,420	June	13500	122	844	50,674
July	177	122	147	9,100	July	13500	122	913	56,632
Aug.	148	88	117	7,280	Aug.	4000	210	543	33,694
Sept.	730	98	196	11,792	Sept.	451	69	201	12,070
Oct.	2400	65	421	26,104	Oct.	122	69	87	5,388
Nov.	489	148	246	14,788	Nov.	78	24	50	3,004
Dec.	1300	78	206	12,792	Dec.	1540	19	202	12,548
Total	..	..	..	206,482	Total	..	..	..	266,418*

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

Year 1937

Year 1938

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.	575	46	194	12,012	Jan.	2700	66	433	26,842
Feb.	730	46	104	5,804	Feb.	1600	82	290	16,252
Mar.	4600	57	575	35,638	Mar.	414	60	140	8,686
Apr.	270	99	146	8,768	Apr.	118	50	77	4,620
May	118	74	93	5,788	May	1150	45	120	7,428
June	288	90	153	9,170	June	253	50	105	6,318
July	174	90	130	8,060	July	No Records			5,800*
Aug.	970	66	210	13,024	Aug.	No Records			113,000*
Sept.	2190	118	317	19,026	Sept.	No Records			24,900*
Oct.	387	118	201	12,482	Oct.	No Records			20,000*
Nov.	1150	129	362	21,720	Nov.	No Records			12,300*
Dec.	623	55	177	11,976	Dec.	368	42	115	7,144
Total	..	..	..	163,468	Total	..	..	..	253,290*

Year 1939

Year 1940

Jan.	425	35	86	5,316	Jan.	168	14	63	3,884
Feb.	160	28	77	4,314	Feb.	16	4	11	654
Mar.	1900	28	477	29,546	Mar.	6	6	6	372
Apr.	6600	320	1689	101,324	Apr.	730	4	124	7,436
May	575	193	289	17,912	May	168	50	89	5,494
June	177	98	135	8,090	June	50	42	47	2,832
July	451	78	148	9,178	July	46	33	38	2,384
Aug.	2800	78	615	38,104	Aug.	39	22	34	2,086
Sept.	344	87	146	9,028	Sept.	410	23	63	3,784
Oct.	650	97	217	13,454	Oct.	260	21	80	4,980
Nov.	114	58	88	5,252	Nov.	No Records			900*
Dec.	58	14	37	2,304	Dec.	No Records			2,900*
Total	..	..	..	243,822	Total	..	..	..	37,706*

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

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.	No Records			33,000*	Jan.	0.6	0	0.1	6
Feb.	8600	112	706	39,524	Feb.	135	0	44	1,328
Mar.	155	58	94	5,824	Mar.	7300	1	476	29,506
Apr.	94	42	57	3,422	Apr.	625	52	127	7,600
May	106	46	59	3,650	May	283	42	83	5,172
June	58	46	55	3,298	June	950	55	187	11,218
July	54	39	44	2,708	July	410	58	119	7,394
Aug.	58	29	41	2,544	Aug.	58	41	50	3,098
Sept.	730	42	121	7,238	Sept.	58	27	39	2,344
Oct.	73	20	38	2,332	Oct.	17900	21	1157	71,754
Nov.	46	9	21	1,220	Nov.	No Records			72,000*
Dec.	9	0	3	183	Dec.	489	85	225	13,946
Total	..	..	..	104,943*	Total	..	..	..	225,366*

Year 1943

Year 1944

Jan.	530	66	187	11,610	Jan.	265	85	120	7,424
Feb.	58	37	45	2,514	Feb.	104	44	64	3,712
Mar.	37	24	31	1,938	Mar.	140	37	60	3,580
Apr.	211	24	48	2,880	Apr.	85	12	49	2,968
May	85000	27	5423	336,216	May	19400	37	1312	81,352
June	975	190	436	26,168	June	780	188	337	20,244
July	190	91	125	7,724	July	1450	104	237	14,682
Aug.	780	91	276	17,100	Aug.	111	85	96	5,948
Sept.	1290	150	436	26,154	Sept.	85	55	67	4,026
Oct.	6200	150	1045	64,790	Oct.	66	33	50	3,070
Nov.	2760	265	732	43,946	Nov.	37	13	21	1,266
Dec.	1535	265	631	39,136	Dec.	131	4	25	1,576
Total	..	..	..	580,176	Total	..	..	..	149,848

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

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.	165	0	37	2,870	Jan.	491	11	53	3,304
Feb.	975	18	99	5,554	Feb.	85	17	46	2,548
Mar.	91	12	25	1,562	Mar.	48	25	35	2,172
Apr.	124000	21	5195	311,702	Apr.	270	31	87	5,196
May	No Records			11,000*	May	92	45	64	3,964
June	36300	80	2690	161,380	June	No Records			27,000*
July	510	172	281	17,422	July	975	66	146	9,082
Aug.	432	130	211	13,088	Aug.	66	44	54	3,366
Sept.	136	85	107	6,390	Sept.	44	28	37	2,198
Oct.	205	60	90	5,604	Oct.	44	23	32	1,990
Nov.	352	50	97	5,818	Nov.	No Records			11,000*
Dec.	55	25	41	2,536	Dec.	73	18	40	2,468
Total	..	..	..	544,926*	Total	..	..	..	74,288*

Year 1947				Year 1948					
Jan.	32	4	14	862	Jan.	7620	150	1180	73,180
Feb.	14500	0	1258	70,430	Feb.	3260	111	587	34,022
Mar.	780	51	122	7,540	Mar.	835	89	181	11,210
Apr.	104	44	67	3,994	Apr.	87	70	73	4,372
May	66	44	57	3,518	May	68000	70	3061	189,762
June	97	44	60	3,588	June	8200	144	1728	103,694
July	49	39	44	2,760	July	725	144	344	21,316
Aug.	515	39	74	4,600	Aug.	138	97	112	7,284
Sept.	165	31	64	3,830	Sept.	104	64	86	5,140
Oct.	35	15	27	1,664	Oct.	123	48	69	4,290
Nov.	85	15	40	2,386	Nov.	60	37	47	2,870
Dec.	9800	41	1022	61,300	Dec.	37	24	28	1,740
Total	..	..	..	166,472	Total	..	..	..	458,880

* Estimated.

SHOALHAVEN RIVER AT WELCOME REEF

Year 1949

Year 1950

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.			No Records		Jan.	3810	33	626	38,828
Feb.			No Records		Feb.	3670	80	1000	56,022
Mar.			No Records		Mar.	45500	165	5517	342,054
Apr.			No Records		Apr.	45500	671	5589	335,342
May			No Records		May	22200	575	4913	304,620
June	36500	15	7073	424,360	June	18140	835	4699	281,958
July	2640	364	1220	75,656	July	13420	671	3451	213,976
Aug.	566	108	215	13,304	Aug.	2300	671	986	61,154
Sept.	671	104	198	11,860	Sept.	671	246	456	27,356
Oct.	960	118	330	20,472	Oct.	25000	223	2759	171,062
Nov.	4230	85	657	39,448	Nov.	9800	417	1126	67,582
Dec.	671	70	173	10,746	Dec.	417	148	249	15,420
Total	..	..	..	..	Total	..	..	..	1,915,374

Year 1951

Year 1952

Jan.	4230	136	966	59,870	Jan.	148	60	85	5,260
Feb.	25200	223	3778	211,586	Feb.	108	60	66	3,946
Mar.	2000	270	575	35,654	Mar.	1450	50	255	15,788
Apr.	270	148	227	13,590	Apr.	11000	55	2465	147,888
May	148	136	139	8,600	May	3395	725	1509	93,582
June	40200	136	5262	315,724	June	78500	295	7297	437,846
July	2410	671	1402	86,924	July	17100	781	1944	120,506
Aug.	8200	531	2078	128,828	Aug.	37000	638	5674	351,808
Sept.	40200	322	3349	200,918	Sept.	685	396	529	31,724
Oct.	1625	453	1001	62,080	Oct.	9600	299	1530	94,886
Nov.	453	270	353	21,204	Nov.	9600	329	2360	141,612
Dec.	246	78	167	10,364	Dec.	2880	781	1337	82,870
Total	..	..	..	1,155,342	Total	..	..	..	1,527,716

SHOALHAVEN RIVER AT WELCOME REEF

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.	975	510	661	40,988	Jan.	102	24	40	2,446
Feb.	3000	215	550	30,806	Feb.	14700	27	1354	75,818
Mar.	240	154	197	12,230	Mar.	435	122	251	15,584
Apr.	154	102	122	7,308	Apr.	122	36	46	2,756
May	32500	95	4488	278,226	May	53	44	48	2,956
June	830	215	523	31,366	June	76	40	53	3,174
July	215	172	186	11,526	July	53	36	41	2,516
Aug.	182	154	164	10,146	Aug.	No Records			
Sept.	329	138	185	11,106	Sept.	No Records			
Oct.	172	124	148	9,148	Oct.	No Records			
Nov.	154	52	99	5,938	Nov.	No Records			
Dec.	52	24	36	2,214	Dec.	No Records			
Total	..	..	..	451,002	Total	..	..	..	..

Year 1955

Year 1956

Jan.	No Records				Jan.	No Records			
Feb.	No Records				Feb.	27800	113	3147	182,500
Mar.	No Records				Mar.	No Records			
Apr.	No Records				Apr.	No Records			
May	No Records				May	No Records			
June	No Records				June	No Records			
July	No Records				July	No Records			
Aug.	No Records				Aug.	No Records			
Sept.	No Records				Sept.	No Records			
Oct.	No Records				Oct.	No Records			
Nov.	No Records				Nov.	No Records			
Dec.	No Records				Dec.	No Records			
Total	..	..	..	..	Total	...	..	..	..

SHOALHAVEN RIVER AT WELCOME REEF

Year 1957

Year 1958

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.			No Records		Jan.	1320	33	112	6,946
Feb.			No Records		Feb.	11400	180	867	48,552
Mar.			No Records		Mar.	725	85	237	14,698
Apr.			No Records		Apr.	189	85	105	6,314
May			No Records		May	93	68	80	4,962
June			No Records		June	2000	68	139	8,358
July			No Records		July	30600	197	1292	80,086
Aug.			No Records		Aug.	755	165	266	16,468
Sept.			No Records		Sept.	215	93	156	9,690
Oct.			No Records		Oct.	430	93	179	11,078
Nov.			No Records		Nov.	93	44	59	3,572
Dec.			No Records		Dec.	430	54	88	5,480
Total	Total	..	..	..	216,204

Year 1959

Year 1960

Jan.	330	58	130	8,062	Jan.	1715	168	359	21,532
Feb.	1450	93	279	15,624	Feb.	215	107	142	8,236
Mar.	19600	215	1376	85,282	Mar.	760	98	266	16,470
Apr.	25000	277	1638	98,292	Apr.	326	117	177	10,608
May	290	150	187	11,592	May	345	117	169	10,490
June	41600	123	2887	178,998	June	168	112	131	7,858
July	78000	303	4746	294,270	July	39000	135	2331	144,542
Aug.	965	375	462	28,668	Aug.	975	280	511	31,686
Sept.	375	271	340	20,390	Sept.	11000	255	1292	77,538
Oct.	164000	232	8472	525,294	Oct.	700	325	476	29,520
Nov.	19600	1045	3109	186,534	Nov.	325	170	208	12,490
Dec.	2640	295	782	48,510	Dec.	27800	147	3331	206,500
Total	..	..	..	1,501,516	Total	..	..	..	577,470

SHOALHAVEN RIVER AT WELCOME REEF

Year 1961

Year 1962

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.	3810	205	686	42,522	Jan.	12300	720	1937	120,110
Feb.	195	178	186	10,412	Feb.	17700	560	2419	135,444
Mar.	35600	195	3291	204,018	Mar.	2760	435	783	48,560
Apr.	1450	390	629	37,748	Apr.	620	255	384	23,010
May	390	215	281	17,414	May	1535	214	363	22,500
June	3130	215	601	36,052	June	283	168	201	12,030
July	20030	295	2315	143,560	July	1045	160	310	19,200
Aug.	18970	375	1892	117,290	Aug.	1715	183	455	28,190
Sept.	11660	620	1674	100,428	Sept.	48500	168	3615	216,900
Oct.	9800	325	1303	80,778	Oct.	885	251	486	30,110
Nov.	41900	370	5159	309,514	Nov.	520	161	264	15,860
Dec.	17100	1012	3387	209,974	Dec.	3395	161	865	53,624
Total	..	..	..	1,309,710	Total	..	..	..	725,538

Year 1963

Year 1964

Jan.	1953	260	531	32,936	Jan.	318	134	206	12,768
Feb.	2300	281	663	37,136	Feb.	147	83	114	6,596
Mar.	9400	270	1302	80,714	Mar.	292	83	126	7,784
Apr.	49800	318	2608	156,460	Apr.	7430	83	1185	71,100
May	30600	1290	4277	265,170	May	520	195	302	18,708
June	11880	730	1817	109,040	June	22200	230	1617	97,000
July	14500	640	2309	143,160	July	2000	376	731	45,316
Aug.	8200	410	774	47,970	Aug.	7070	212	733	45,440
Sept.	19600	270	1985	119,108	Sept.	780	346	467	28,040
Oct.	2300	298	713	44,188	Oct.	2300	230	404	25,074
Nov.	1210	230	396	23,744	Nov.	2200	162	494	29,642
Dec.	7070	195	1339	83,000	Dec.	346	122	168	10,386
Total	..	..	..	1,142,626	Total	..	..	..	397,854

SHOALHAVEN RIVER AT WELCOME REEF

Year 1965

Year 1966

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.	110	58	74	4,558	Jan.	80	38	52	3,230
Feb.	66	48	58	3,228	Feb.	364	42	103	5,740
Mar.	44	29	33	2,060	Mar.	143	51	92	5,696
Apr.	64	34	43	2,602	Apr.	63	51	53	3,196
May	58	48	49	3,040	May	63	48	53	3,282
June	106	44	57	3,420	June	1170	51	270	16,210
July	133	53	79	4,884	July	200	76	107	6,654
Aug.	100	48	71	4,388	Aug.	300	64	112	6,936
Sept.	220	48	110	6,618	Sept.	2640	122	401	24,056
Oct.	2300	40	503	31,232	Oct.	975	110	274	17,018
Nov.	440	48	146	8,770	Nov.	53000	101	4338	260,264
Dec.	660	48	191	11,862	Dec.	4090	230	624	38,688
Total	..	..	..	86,662	Total	..	..	..	390,970

Year 1967

Jan.	590	190	268	16,596
Feb.	590	110	165	9,232
Mar.	355	82	137	8,514
Apr.	110	65	85	5,118
May	110	59	75	4,664
June	280	71	161	9,666
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

CORANG RIVER AT HOCKEYS

LOCATION: Latitude 35°09' Longitude 150°02'

PERIOD OF ESTABLISHMENT: September 1924 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 42

ZERO OF GAUGE: R.L. 1780.23 Water Conservation Datum.

CATCHMENT AREA: 62 Square Miles.

CONTROL: Rock Bar.

EQUIPMENT: Automatic Recorder (Pressure type) installed August, 1926.
Staff Gauge, range 0 to 25 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 261
- (b) Maximum observation in cusecs : 1,700
- (c) Minimum observation in cusecs : 0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 34,700 cusecs

MEAN DAILY DISCHARGE FOR 42 YEARS: 80 cusecs.

MEAN ANNUAL DISCHARGE FOR 42 YEARS: 58,100 acre feet

CORANG RIVER AT HOCKEYS

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.	10	2.6	5.3	329	Jan.	5.5	0.7	2.1	128
Feb.	4.7	0.7	1.8	106	Feb.	0.7	0.1	0.4	22
Mar.	52	0.8	6.2	386	Mar.	.05	0	0.01	0.6
Apr.	3410	1	160	9,618	Apr.	0.15	0	0.05	3
May	121	10	33	2,062	May	0.6	0.1	0.3	16
June	8685	12	394	23,640	June	4	0.2	0.5	32
July	44	13	11	1,244	July	54	0.7	6.3	390
Aug.	460	7.2	30	1,832	Aug.	4	1	2.2	135
Sept.	22	8.1	13	770	Sept.	44	1	8	468
Oct.	440	4	17	1,046	Oct.	2920	0.8	136	8,444
Nov.	260	4	26	1,584	Nov.	34	4.7	11	686
Dec.	82	1.8	7.6	472	Dec.	28	4	12	764
Total	..	..	..	43,089	Total	..	..	..	11,089

Year 1966

Year 1967

Jan.	5.4	1.3	2.5	154	Jan.	44	4.3	31	1,952
Feb.	1305	1.3	59	3,328	Feb.	44	6	12	689
Mar.	101	7	17	1,046	Mar.	183	6	25	1,561
Apr.	8.1	1.4	3.3	198	Apr.	39	3.7	9.4	566
May	1.8	0.8	1.2	77	May	34	2.5	4.8	300
June	1117	1	86	5,188	June	432	1.6	58	3,508
July	10	1.3	6.2	384	July				
Aug.	49	4.3	6.7	418	Aug.				
Sept.	440	10	40	2,406	Sept.				
Oct.	380	9	37	2,304	Oct.				
Nov.	2120	16	147	8,828	Nov.				
Dec.	800	9	78	4,810	Dec.				
Total	..	..	..	29,141	Total				

CORANG RIVER AT HOCKEYS

Year 1928

Year 1929

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.	2	0.8	1.3	80	Jan.	0	0	0	0
Feb.	824	0.6	131	8,100	Feb.	2805	0	261	14,632
Mar.	3035	6	137	8,500	Mar.	242	9	35	2,200
Apr.	526	14	71	4,250	Apr.	574	6	51	3,054
May	16	4	9	546	May	60	6	17	1,082
June	2170	5	225	13,512	June	22	6	23	1,388
July	292	24	73	4,568	July	35	4	8	522
Aug.	94	13	33	2,058	Aug.	5790	9	198	12,356
Sept.	13	5	9	560	Sept.	305	17	46	2,754
Oct.	5	0	5	310	Oct.	1410	6	67	4,150
Nov.	2	0	0.2	12	Nov.	193	11	38	2,302
Dec.	0	0	0	0	Dec.	11	4	7	460
Total	..	..	..	42,496	Total	..	..	..	44,900

Year 1930

Year 1931

Jan.	7	1	2	144	Jan.	30	1	6	376
Feb.	22	1	5	288	Feb.	2	0.5	1	58
Mar.	96	1	12	796	Mar.	93	0.5	14	852
Apr.	44	3	9	554	Apr.	4310	3	271	16,254
May	3280	5	144	8,928	May	13300	18	173	10,702
June	7060	26	352	21,104	June	89	18	40	2,416
July	365	16	55	3,438	July	2860	15	140	8,654
Aug.	16	7	10	638	Aug.	15	5	9	554
Sept.	7	3	5	316	Sept.	553	5	50	3,024
Oct.	39	3	7	444	Oct.	42	4	10	596
Nov.	5	1	2	112	Nov.	9	2	5	274
Dec.	106	1	12	742	Dec.	42	2	12	720
Total	..	..	..	37,504	Total	..	..	..	44,480

CORANG RIVER AT HOCKEYS

Year 1932

Year 1933

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.	1.5	0	0.1	9	Jan.	210	0	22	1,380
Feb.	39	0	4	228	Feb.	36	1.5	8	458
Mar.	710	0	27	1,686	Mar.	105	0	7.3	454
Apr.	42	5	13	806	Apr.	590	7.6	63	3,788
May	160	2	13	826	May	770	5	65	4,042
June	9	2	6	340	June	260	18	42	2,514
July	226	2	30	1,852	July	870	18	81	5,000
Aug.	420	12	56	3,486	Aug.	57	12	24	1,480
Sept.	553	9	162	9,704	Sept.	356	5	36	2,168
Oct.	48	9	20	1,264	Oct.	630	5	49	3,020
Nov.	48	3	14	820	Nov.	790	2	42	2,526
Dec.	7	2	3	208	Dec.	128	9	27	1,696
Total	..	..	..	21,229	Total	..	..	..	28,526

Year 1934

Year 1935

Jan.	4610	5	107	6,648	Jan.	356	15	50	3,106
Feb.	6240	9	455	25,502	Feb.	226	9	61	3,442
Mar.	180	12	35	2,170	Mar.	74	6	21	1,314
Apr.	9160	19	239	14,378	Apr.	330	5	42	2,496
May	420	23	45	2,800	May	19	5	10	638
June	3760	31	223	13,378	June	202	5	24	1,424
July	1750	19	208	12,894	July	12	5	8	498
Aug.	6535	42	236	14,606	Aug.	6	2	3	210
Sept.	89	11	34	2,068	Sept.	70	2	10	586
Oct.	139	7	17	1,018	Oct.	1620	1	65	4,082
Nov.	117	3	11	658	Nov.	62	3	11	698
Dec.	370	9	41	2,538	Dec.	800	4	35	2,172
Total	..	..	..	98,658	Total	..	..	..	20,666

CORANG RIVER AT HOCKEYS

Year 1936

Year 1937

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.	235	4	25	1,560	Jan.	166	3	26	1,624
Feb.	168	3	15	874	Feb.	290	3	18	830
Mar.	3760	10	176	10,884	Mar.	1620	10	90	5,608
Apr.	300	13	35	2,114	Apr.	10	3	6	340
May	70	6	13	802	May	3	2	2.4	146
June	8780	8	103	6,182	June	1140	2	98	5,878
July	55	16	25	1,578	July	134	10	32	1,986
Aug.	55	8	14	886	Aug.	780	8	48	2,950
Sept.	16	4	8	488	Sept.	117	8	27	1,636
Oct.	4	1	3	158	Oct.	54	8	18	1,098
Nov.	2	0.2	1	61	Nov.	315	16	64	3,826
Dec.	195	0	20	1,240	Dec.	48	3	11	698
Total	..	..	..	26,827	Total	...	..	..	26,620

Year 1938

Year 1939

Jan.	820	1	44	2,720	Jan.	89	0	10	630
Feb.	480	4	45	2,532	Feb.	15	0.5	2	150
Mar.	24	4	8	494	Mar.	1700	0.5	328	20,358
Apr.	134	3	13	780	Apr.	2725	16	135	8,098
May	250	3	16	996	May	1140	13	94	5,846
June	16	4	6	356	June	20	3	9	576
July	6	3	3.2	202	July	13	4	7	436
Aug.	10700	3	342	21,122	Aug.	37	4	10	618
Sept.	54	9	26	1,344	Sept.	3490	2	58	3,468
Oct.	8495	5	118	12,082	Oct.	134	13	38	2,378
Nov.	48	11	21	1,242	Nov.	20	8	14	826
Dec.	12	1	3	176	Dec.	8	0.5	3	180
Total	..	..	..	44,046	Total	..	..	..	43,564

CORANG RIVER AT HOCKEYS

Year 1940

Year 1941

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.	62	0.5	7	416	Jan.	920	1	35	2,186
Feb.	0.5	0	0.1	8	Feb.	480	4	60	3,358
Mar.	0	0	0	0	Mar.	4	0.5	2.6	159
Apr.	85	0	9	590	Apr.	42	0	6.7	407
May	77	2	13	808	May	10	2	4	238
June	3.5	1	2.5	123	June	4	2	3	196
July	8	1	2.9	169	July	2	1	1	70
Aug.	2	0.3	0.9	58	Aug.	20	0.3	2	138
Sept.	186	0	11	634	Sept.	430	4	25	1,506
Oct.	151	0.5	18	1,134	Oct.	37	2	6	376
Nov.	0.5	0	0.1	3.5	Nov.	2	0.1	0.7	42
Dec.	590	1	28	1,710	Dec.	0.1	0	0.005	0.3
Total	..	..	..	5,654	Total	..	..	..	8,676

Year 1942

Year 1943

Jan.	0	0	0	0	Jan.	290	3	29	1,824
Feb.	3	0	0.5	26	Feb.	3	0.5	2	105
Mar.	8495	0	263	16,294	Mar.	1.6	0.5	1	58
Apr.	109	6	19	1,164	Apr.	17	1.6	3.4	204
May	32	3	9	560	May	34700	0.5	1854	114,968
June	330	8	26	1,566	June	100	8	25	1,506
July	16	6	21	648	July	10	5	7	416
Aug.	4	2	3.4	210	Aug.	365	4.2	60	3,742
Sept.	2	0.5	1.2	73	Sept.	272	24	73	4,374
Oct.	7800	0.3	452	28,008	Oct.	1180	24	125	7,776
Nov.	1250	16	147	8,844	Nov.	296	18	41	2,438
Dec.	55	4	17	1,068	Dec.	930	13	67	4,180
Total	..	..	..	58,461	Total	..	..	..	141,591

CORANG RIVER AT HOCKEYS

Year 1944

Year 1945

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.	13	2	4	258	Jan.	234	0	12	768
Feb.	2	0.1	0.7	42	Feb.	138	0.5	10	612
Mar.	0.1	0	0.04	2.6	Mar.	6	0.3	1.8	112
Apr.	1.5	0	0.3	18	Apr.	24800	1.5	602	36,152
May	4075	0.3	152	9,424	May	49	8	14	842
June	36	13	18	1,078	June	11700	.8	691	40,266
July	59	12	20	1,222	July	24	16	18	1,144
Aug.	66	8	13	826	Aug.	18	5.5	10	602
Sept.	8	3	5	280	Sept.	4	2	3	180
Oct.	3	0.4	1	78	Oct.	3	2	2	130
Nov.	0.4	0.1	0.2	12	Nov.	260	1.5	12	736
Dec.	0	0	0	0	Dec.	2.5	1	1	92
Total	..	..	..	13,241	Total	..	..	..	81,636

Year 1946

Year 1947

Jan.	65	0.5	2	144	Jan.	1	0	0.1	5.6
Feb.	65	0.5	14	777	Feb.	5320	0	165	9,258
Mar.	9	1	2	125	Mar.	65	2.5	9	538
Apr.	1155	1	73	4,378	Apr.	800	2	63	3,788
May	138	10	22	1,326	May	25	3	8	480
June	4410	10	120	7,224	June	440	5.5	31	1,852
July	35	6	13	798	July	5.5	3.5	5	300
Aug.	6	2	3	222	Aug.	247	2.5	15	916
Sept.	2.5	1.5	2	114	Sept.	16	3	7	408
Oct.	2	0.3	1	68	Oct.	3	1.5	2	142
Nov.	183	0.3	13	790	Nov.	13	1.5	3	172
Dec.	3.5	0.4	1.5	96	Dec.	4120	2	151	9,394
Total	..	..	..	16,062	Total	..	..	..	27,254

CORANG RIVER AT HOCKEYS

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.	1881	8	157	9,450	Jan.	1605	3	81	5,046
Feb.	25	8	10	606	Feb.	13	2.5	7	366
Mar.	65	6	16	996	Mar.	1780	8	243	15,088
Apr.	10	4	5	308	Apr.	20	6	10	588
May	5705	6	176	10,936	May	3280	6	146	9,074
June	1080	8	125	7,482	June	4975	25	458	27,512
July	58	10	21	1,292	July	98	13	37	2,292
Aug.	8	6	7	428	Aug.	52	10	22	1,382
Sept.	4	3	4	232	Sept.	234	20	57	3,454
Oct.	4	2	3	166	Oct.	35	8	13	828
Nov.	2	0.5	1	74	Nov.	234	4	28	1,702
Dec.	81	0.2	3	176	Dec.	40	4	11	700
Total	..	..	..	32,146	Total	..	..	..	68,032

Year 1950

Year 1951

Jan.	3280	2	74	4,574	Jan.	5100	4	456	28,260
Feb.	1080	13	177	9,890	Feb.	669	10	256	14,316
Mar.	1305	16	371	23,016	Mar.	81	6	17	1,076
Apr.	2025	13	258	15,476	Apr.	6	2.5	4	236
May	580	8	110	6,814	May	3	2.5	3	166
June	3580	138	861	51,640	June	16500	2	1034	62,016
July	No Records			7,900*	July	1055	8	101	6,274
Aug.	145	27	47	2,908	Aug.	244	20	50	3,124
Sept.	160	13	30	1,828	Sept.	16500	8	404	24,266
Oct.	5085	8	221	13,722	Oct.	1755	13	99	6,162
Nov.	171	15	32	1,852	Nov.	13	3	6	356
Dec.	30	4	10	642	Dec.	3	1.5	2	130
Total	..	..	..	140,262*	Total	..	..	..	146,382

* Estimated

CORANG RIVER AT HOCKEYS

Year 1952

Year 1953

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.	3	0.3	1	72	Jan.	780	25	63	3,932
Feb.	8	0.1	1	79	Feb.	149	10	31	1,724
Mar.	3653	2	100	6,234	Mar.	35	8	18	1,142
Apr.	7750	10	262	15,722	Apr.	10	2.5	51	306
May	1505	25	113	6,992	May	6800	2.5	612	37,968
June	14300	13	459	27,546	June	46	10	19	1,124
July	8500	13	276	17,152	July	10	4	8	480
Aug.	5460	25	657	40,712	Aug.	6	4	4.3	266
Sept.	30	8	16	982	Sept.	3	2.5	2.8	168
Oct.	840	6	63	3,916	Oct.	16	2.5	4.7	294
Nov.	1780	6	176	10,588	Nov.	3	1	2.1	126
Dec.	171	20	62	3,858	Dec.	2	0	0.5	29
Total	..	..	..	133,853	Total	..	..	..	47,559

Year 1954

Year 1955

Jan.	7.8	0.1	0.9	54	Jan.	175	0.1	16	976
Feb.	6310	0.3	191	10,688	Feb.	4810	3.5	225	12,600
Mar.	40	25	9.3	576	Mar.	1630	20	144	8,956
Apr.	2.5	1.5	1.8	110	Apr.	6240	3.5	75	4,492
May	1.5	1	1.1	68	May	6460	13	299	18,566
June	5	1.5	2.2	129	June	395	20	62	3,746
July	25	1.2	4.9	306	July	73	10	17	1,028
Aug.	3.5	1.5	2	124	Aug.	16	7	11	670
Sept.	5	1	1.5	91	Sept.	7	3.5	5.3	316
Oct.	106	0.5	8.6	433	Oct.	7	3.5	5.2	321
Nov.	135	1.7	20	1,196	Nov.	33	0.3	3.1	186
Dec.	1.5	0.5	1	64	Dec.	73	0.5	4.2	262
Total	..	..	..	13,839	Total	..	..	..	52,119

CORANG RIVER AT HOCKEYS

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.	125	1.5	12	750	Jan.	8.5	0.4	3.6	222
Feb.	11500	5	747	43,352	Feb.	818	0.1	63	3,544
Mar.	5835	40	755	46,834	Mar.	48	5	11	668
Apr.	486	13	64	3,848	Apr.	13	1.5	3	180
May	5085	16	176	10,914	May	1	0.4	0.6	38
June	7450	25	429	25,720	June	2010	0.5	69	4,168
July	6610	35	178	11,048	July	9065	13	236	14,646
Aug.	185	16	57	3,506	Aug.	1960	12	178	11,014
Sept.	16	7	13	792	Sept.	101	9	26	1,580
Oct.	4265	16	139	8,648	Oct.	8.1	1.8	4.3	265
Nov.	10	2.5	6	375	Nov.	2.6	0.2	1.3	76
Dec.	3.5	0.4	2.1	129	Dec.	0.5	0	0.1	6
Total	..	..	..	155,916	Total	..	..	..	36,407

Year 1958

Year 1959

Jan.	195	0.6	9.4	585	Jan.	440	2.6	51	3,165
Feb.	10700	9	348	19,482	Feb.	2470	12	116	6,488
Mar.	2690	7.2	187	11,600	Mar.	2840	26	161	10,010
Apr.	91	7.2	16	940	Apr.	3850	15	143	8,608
May	16.5	4	9	556	May	15	7.2	10	650
June	10400	4	228	13,674	June	7060	5.5	279	16,768
July	3940	16	104	6,478	July	13600	22	407	25,288
Aug.	24	5.5	11	676	Aug.	67	20	29	1,822
Sept.	12	6.3	8	496	Sept.	101	15	25	1,492
Oct.	39	5.5	12	742	Oct.	13900	12	681	42,194
Nov.	12	0.8	2.1	124	Nov.	1380	34	150	8,982
Dec.	172	1.8	13	796	Dec.	365	9	49	3,016
Total	..	..	..	56,149	Total	..	..	..	128,483

CORANG RIVER AT HOCKEYS

Year 1960

Year 1961

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.	34	2.6	15	909	Jan.	480	8	31	1,938
Feb.	44	4	9.3	542	Feb.	12	5	7.4	413
Mar.	640	7.2	51	3,142	Mar.	11000	13	474	29,418
Apr.	121	6.4	20	1,225	Apr.	74	15	27	1,626
May	440	4	22	1,370	May	67	10	13	800
June	60	10	17	1,026	June	2155	10	129	7,730
July	7210	8	236	14,652	July	3670	20	166	10,266
Aug.	101	12	28	1,766	Aug.	3940	15	328	20,312
Sept.	440	11	67	4,040	Sept.	560	26	94	5,608
Oct.	201	11	33	2,048	Oct.	2690	12	130	8,090
Nov.	41	8	14	824	Nov.	6685	9	362	21,740
Dec.	9360	9	329	20,382	Dec.	2610	22	252	15,610
Total	..	..	..	51,926	Total	..	..	..	123,551

Year 1962

Year 1963

Jan.	3040	26	176	10,896	Jan.	74	12	22	1,336
Feb.	9065	20	278	15,516	Feb.	2155	18	120	6,700
Mar.	1030	22	85	5,266	Mar.	4075	15	254	15,760
Apr.	720	15	64	3,846	Apr.	20600	15	326	19,562
May	3200	15	146	9,046	May	4865	44	264	16,356
June	25	10	15	872	June	3080	34	162	9,700
July	660	8	54	3,346	July	2505	30	147	9,088
Aug.	350	11	59	3,634	Aug.	2025	15	61	3,796
Sept.	4660	15	352	21,108	Sept.	5900	10	258	15,474
Oct.	67	13	26	1,632	Oct.	178	15	45	2,766
Nov.	44	4	12	732	Nov.	247	12	33	2,004
Dec.	2190	5.5	140	8,676	Dec.	3160	8.1	167	10,372
Total	..	..	..	84,570	Total	..	..	..	112,914

CORANG RIVER AT HOCKEYS

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.	10	2.6	5.3	329	Jan.	5.5	0.7	2.1	128
Feb.	4.7	0.7	1.8	106	Feb.	0.7	0.1	0.4	22
Mar.	52	0.8	6.2	386	Mar.	.05	0	0.01	0.6
Apr.	3410	1	160	9,618	Apr.	0.15	0	0.05	3
May	121	10	33	2,062	May	0.6	0.1	0.3	16
June	8685	12	394	23,640	June	4	0.2	0.5	32
July	44	13	11	1,244	July	54	0.7	6.3	390
Aug.	460	7.2	30	1,832	Aug.	4	1	2.2	135
Sept.	22	8.1	13	770	Sept.	44	1	8	468
Oct.	440	4	17	1,046	Oct.	2920	0.8	136	8,444
Nov.	260	4	26	1,584	Nov.	34	4.7	11	686
Dec.	82	1.8	7.6	472	Dec.	28	4	12	764
Total	..	..	..	43,089	Total	..	..	..	11,089

Year 1966

Year 1967

Jan.	5.4	1.3	2.5	154	Jan.	44	4.3	31	1,952
Feb.	1305	1.3	59	3,328	Feb.	44	6	12	689
Mar.	101	7	17	1,046	Mar.	183	6	25	1,561
Apr.	8.1	1.4	3.3	198	Apr.	39	3.7	9.4	566
May	1.8	0.8	1.2	77	May	34	2.5	4.8	300
June	1117	1	86	5,188	June	432	1.6	58	3,508
July	10	1.3	6.2	384	July				
Aug.	49	4.3	6.7	418	Aug.				
Sept.	440	10	40	2,406	Sept.				
Oct.	380	9	37	2,304	Oct.				
Nov.	2120	16	147	8,828	Nov.				
Dec.	800	9	78	4,810	Dec.				
Total	..	..	..	29,141	Total				

ENDRICK RIVER AT NOWRA ROAD

LOCATION: Latitude 35°05' Longitude 150°07'

PERIOD OF ESTABLISHMENT: July, 1953 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 13

ZERO OF GAUGE: R.L. 1747.88 Water Conservation Datum.

CATCHMENT AREA: 81 Square Miles.

CONTROL: Concrete Causeway.

EQUIPMENT: Automatic Recorder (Float Type)
installed November 1953.
Staff Gauge, range 0 to 20 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 125
- (b) Maximum observation
in cusecs : 2,836
- (c) Minimum observation
in cusecs : 0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 28,000 cusecs.

MEAN DAILY DISCHARGE FOR 13 YEARS: 143 cusecs.

MEAN ANNUAL DISCHARGE FOR 13 YEARS: 105,000 acre feet.

ENDRICK RIVER AT NOWRA ROAD.

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.	Jan.	2.9	0.5	1.6	98
Feb.	Feb.	11000	1.4	269	15,039
Mar.	Mar.	63	2.9	11	706
Apr.	Apr.	2.9	2.3	2.7	164
May	May	2.9	1.7	2.2	139
June	June	13	2.3	3.5	212
July	July	39	2	8.2	502
Aug.	Aug.	38	2.6	7.1	442
Sept.	Sept.	7.6	1.9	3.2	191
Oct.	Oct.	212	1.0	11	652
Nov.	Nov.	242	1.7	20	1,224
Dec.	5.7	0.5	1.2	74	Dec.	1	1	1	62
Total	Total	..	..	..	19,431

Year 1955

Year 1956

Jan.	105	0	7.8	486	Jan.	265	3.7	23	1,418
Feb.	6900	8.4	237	13,266	Feb.	19200	12	965	55,964
Mar.	1980	27	162	10,072	Mar.	7875	59	621	38,506
Apr.	11000	5.7	96	5,742	Apr.	389	28	68	4,076
May	11500	10	491	30,454	May	8400	47	270	16,740
June	2050	37	135	8,114	June	13200	37	677	40,606
July	215	30	41	2,570	July	12600	44	309	19,144
Aug.	85	10	26	1,596	Aug.	841	22	85	5,300
Sept.	17	4.5	7.9	472	Sept.	203	18	40	2,408
Oct.	10	2.3	5.4	334	Oct.	6715	22	183	11,350
Nov.	44	0.8	3.4	206	Nov.	28	6.2	11	684
Dec.	215	1.5	17	1,052	Dec.	7	1.0	4.2	258
Total	..	..	..	74,364	Total	..	..	..	196,454

ENDRICK RIVER AT NOWRA ROAD

Year 1957

Year 1958

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.	10	1	5.7	352	Jan.	203	0.5	10	616
Feb.	4780	3.8	97	5,442	Feb.	8550	12	441	24,712
Mar.	50	7	14	846	Mar.	2860	9	152	9,454
Apr.	10	3	4.7	284	Apr.	244	9	26	1,556
May	4.5	3.4	3.8	238	May	19	6	9.7	604
June	3255	4.5	73	4,364	June	16500	6	367	22,050
July	12800	7	345	21,382	July	7430	24	165	10,256
Aug.	3520	24	257	15,906	Aug.	155	15	25	1,558
Sept.	178	15	50	3,012	Sept.	37	11	18	1,050
Oct.	15	5	8.2	508	Oct.	56	6.5	15	936
Nov.	20	0.8	4.2	249	Nov.	37	2	3.9	234
Dec.	2	0.8	0.4	32	Dec.	142	3	19	1,154
Total	..	..	..	52,615	Total	..	..	..	74,180

Year 1959

Year 1960

Jan.	470	4	76	4,694	Jan.	142	8.7	26	1,656
Feb.	2750	15	113	6,356	Feb.	51	6.8	14	836
Mar.	9730	26	317	19,658	Mar.	1200	8.7	67	4,160
Apr.	5255	22	203	12,208	Apr.	129	11	23	1,380
May	22	11	14	832	May	1980	11	70	4,364
June	12600	8	395	23,684	June	675	17	49	2,966
July	27300	32	638	39,578	July	13000	22	318	19,722
Aug.	1200	37	91	5,612	Aug.	1155	17	66	4,088
Sept.	76	22	39	2,366	Sept.	1460	12	162	9,692
Oct.	27700	16	1031	63,912	Oct.	1460	22	85	5,290
Nov.	1580	59	227	13,634	Nov.	44	17	28	1,708
Dec.	350	26	74	4,610	Dec.	13700	17	513	31,818
Total	..	..	..	197,144	Total	..	..	..	87,680

ENDRICK RIVER AT NOWRA ROAD

Year 1961

Year 1962

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.	815	14	76	4,726	Jan.	4920	54	266	16,502
Feb.	168	14	21	1,148	Feb.	11500	31	327	18,304
Mar.	21400	14	786	48,730	Mar.	2820	29	93	5,738
Apr.	360	31	63	3,772	Apr.	1042	26	88	5,282
May	104	21	27	1,656	May	2407	23	154	9,526
June	2905	23	201	12,032	June	45	18	28	1,664
July	6840	48	271	16,806	July	1065	17	74	4,574
Aug.	6590	44	485	30,052	Aug.	855	18	108	6,692
Sept.	2905	44	219	13,150	Sept.	5865	17	381	22,836
Oct.	4500	26	206	12,792	Oct.	180	20	41	2,554
Nov.	11300	25	557	33,404	Nov.	76	8	19	1,122
Dec.	5903	48	436	27,532	Dec.	3295	8	182	11,304
Total	..	..	..	205,800	Total	..	..	..	106,092

Year 1963

Year 1964

Jan.	710	18	73	2,408	Jan.	25	6.8	14	852
Feb.	2500	22	128	7,188	Feb.	8.8	3.2	5.5	318
Mar.	7235	15	369	22,872	Mar.	200	4.6	22	1,342
Apr.	28000	34	485	29,116	Apr.	8550	4.6	365	21,877
May	5370	41	352	21,814	May	196	22	44	2,738
June	6590	56	273	16,394	June	11200	20	675	40,526
July	4000	44	286	17,750	July	61	20	33	2,058
Aug.	6900	24	140	8,684	Aug.	1020	9.1	56	3,490
Sept.	10400	22	369	22,130	Sept.	30	9.2	18	1,074
Oct.	563	26	81	5,030	Oct.	569	6.8	21	1,300
Nov.	4215	17.5	37	2,230	Nov.	515	4.6	30	1,780
Dec.	4890	12.7	267	16,540	Dec.	76	2.0	8.1	500
Total	..	..	..	172,156	Total	..	..	..	77,855

ENDRICK RIVER AT NOWRA ROAD

Year 1965

Year 1966

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.	4	1	2.1	132	Jan.	3	0.6	1.5	932
Feb.	1.8	1.0	1.3	76	Feb.	2640	0.9	80	4,500
Mar.	0.8	0.1	0.4	24	Mar.	805	7.5	35	2,164
Apr.	4	0	1.2	73	Apr.	13	3.5	5.4	324
May	4.6	1.4	1.8	113	May	10	3.1	4.2	260
June	11	1.4	3	180	June	3664	4.2	224	13,418
July	395	2.8	29	1,814	July	210	13	27	1,684
Aug.	13	2.9	5.4	335	Aug.	3187	12	46	2,832
Sept.	94	2.2	13	797	Sept.	1065	16	79	4,738
Oct.	3430	1.5	235	14,558	Oct.	385	15	53	3,307
Nov.	37	2.8	9.7	584	Nov.	15820	21	569	34,148
Dec.	1532	3	62	3,842	Dec.	668	23	67	4,183
Total	..	..	..	22,528	Total	..	..	..	72,490

Year 1967

Jan.	2442	12	82	5,107
Feb.	101	9.5	21	1,176
Mar.	413	8.3	34	2,084
Apr.	77	5.3	14	824
May	14	3.7	5.8	357
June	1896	4.8	152	9100
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

KANGAROO RIVER AT KANGAROO VALLEY

LOCATION: Latitude 34°44' Longitude 150°31'

PERIOD OF ESTABLISHMENT: July, 1954 to date.

COMPLETE YEARS OF COMPUTED RECORDS: 9.

ZERO OF GAUGE: R.L. 38.31 Assumed Datum.

CATCHMENT AREA: 93 Square Miles.

CONTROL: Rock Bar.

EQUIPMENT: Staff gauge, range 0 to 50 feet.

CURRENT METER OBSERVATIONS:

- (a) Number obtained : 102
- (b) Maximum observation
in cusecs : 15,120
- (c) Minimum observation
in cusecs : 0.8

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 81,000 cusecs.

MEAN DAILY DISCHARGE FOR 9 YEARS: 310 cusecs.

MEAN ANNUAL DISCHARGE FOR 9 YEARS: 227,000 acre feet.

KANGAROO RIVER AT KANGAROO VALLEY

Year 1954					Year 1955				
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.	580	5.3	53	3,270
Feb.	..	..	..	..	Feb.	10340	35	726	40,674
Mar.	..	..	..	..	Mar.	1330	98	312	19,348
Apr.	..	..	..	..	Apr.	195	66	91	5,474
May	..	..	..	..	May	48400	82	1066	66,100
June	..	..	..	..	June	890	82	187	11,224
July	..	..	..	..	July	107	52	77	4,794
Aug.	154	13	42	2,630	Aug.	52	19	39	2,396
Sept.	144	13	25	1,486	Sept.	52	19	35	2,098
Oct.	605	7.5	81	5,032	Oct.	30	6.2	13	786
Nov.	680	25	191	11,470	Nov.	580	3	59	3,550
Dec.	57	13	29	1,790	Dec.	1055	52	366	22,662
Total	..	..	..	..	Total	..	..	..	182,376

Year 1956					Year 1957				
Jan.	No	Records			Jan.	10	1.1	3.5	219
Feb.	No	Records			Feb.	7060	1.8	1232	68,964
Mar.	8500	195	1826	113,210	Mar.	64	39	52	3,210
Apr.	3600	255	1293	80,140	Apr.	39	15	22	1,298
May	36600	135	1537	95,308	May	15	1.8	10	600
June	36600	39	1271	76,236	June		No	Records	
July	890	96	291	18,036	July		No	Records	
Aug.	244	39	117	6,998	Aug.		No	Records	
Sept.	64	21	38	2,312	Sept.		No	Records	
Oct.	8260	21	450	27,918	Oct.		No	Records	
Nov.	51	21	39	2,192	Nov.	21	2.4	10	590
Dec.	39	4.8	22	1,408	Dec.	8.2	1	2	126
Total	..	..	..	..	Total	..	..	..	..

KANGAROO RIVER AT KANGAROO VALLEY

Year 1958

Year 1959

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.	171	9	24	1,506	Jan.	2320	8	117	19,652
Feb.	7060	37	538	30,134	Feb.	47000	54	753	42,160
Mar.	11620	57	707	43,848	Mar.	No Records			
Apr.	1110	53	223	13,372	Apr.	No Records			
May	140	34	68	4,216	May	145	47	64	3,980
June	11380	31	257	15,436	June	2200	33	192	11,492
July	5700	57	240	14,856	July	46700	72	936	58,014
Aug.	135	35	54	3,348	Aug.	605	78	137	8,478
Sept.	135	30	40	2,402	Sept.	680	64	135	8,112
Oct.	72	15	32	1,984	Oct.	81000	58	2236	138,602
Nov.	15	5.2	8.3	500	Nov.	1495	135	454	27,214
Dec.	125	8	29	1,794	Dec.	135	39	90	5,610
Total	..	..	..	133,396	Total	..	..	..	..

Year 1960

Year 1961

Jan.	308	33	87	5,410	Jan.	1840	64	192	11,876
Feb.	440	21	64	3,696	Feb.	323	52	89	4,960
Mar.	680	52	158	9,804	Mar.	40700	39	1071	64,270
Apr.	142	37	73	4,354	Apr.	730	90	201	12,072
May	1055	26	133	8,270	May	144	66	90	5,558
June	3200	52	193	11,506	June	1440	74	257	15,396
July	10020	78	710	44,036	July	2110	78	184	11,416
Aug.	945	64	153	9,492	Aug.	10420	66	792	49,094
Sept.	705	64	222	13,330	Sept.	1960	110	294	17,622
Oct.	1900	42	252	15,628	Oct.	1440	64	160	9,896
Nov.	177	52	87	5,206	Nov.	50000	42	2247	134,808
Dec.	14900	52	1105	68,530	Dec.	16200	144	1167	72,358
Total	..	..	..	199,262	Total	..	..	..	409,326

KANGAROO RIVER AT KANGAROO VALLEY

Year 1962

Year 1963

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.	7910	142	572	35,448	Jan.	1605	64	184	11,426
Feb.	11860	115	896	50,174	Feb.	233	39	83	4,660
Mar.	310	90	180	11,164	Mar.	42000	30	1938	118,656
Apr.	1220	82	266	15,938	Apr.	75000	116	1758	105,458
May	16600	82	583	36,158	May	3750	195	788	48,880
June	149	66	95	5,672	June	4150	149	437	26,226
July	630	55	181	11,224	July	1780	115	296	18,380
Aug.	1900	55	303	18,816	Aug.	13180	50	631	39,114
Sept.	3100	66	481	29,824	Sept.	3700	64	493	29,602
Oct.	214	59	99	6,168	Oct.	290	66	133	8,218
Nov.	134	29	53	3,154	Nov.	144	116	128	7,664
Dec.	1660	24	208	12,920	Dec.	8340	98	926	57,436
Total	..	..	..	236,660	Total	..	..	..	475,720

Year 1964

Year 1965

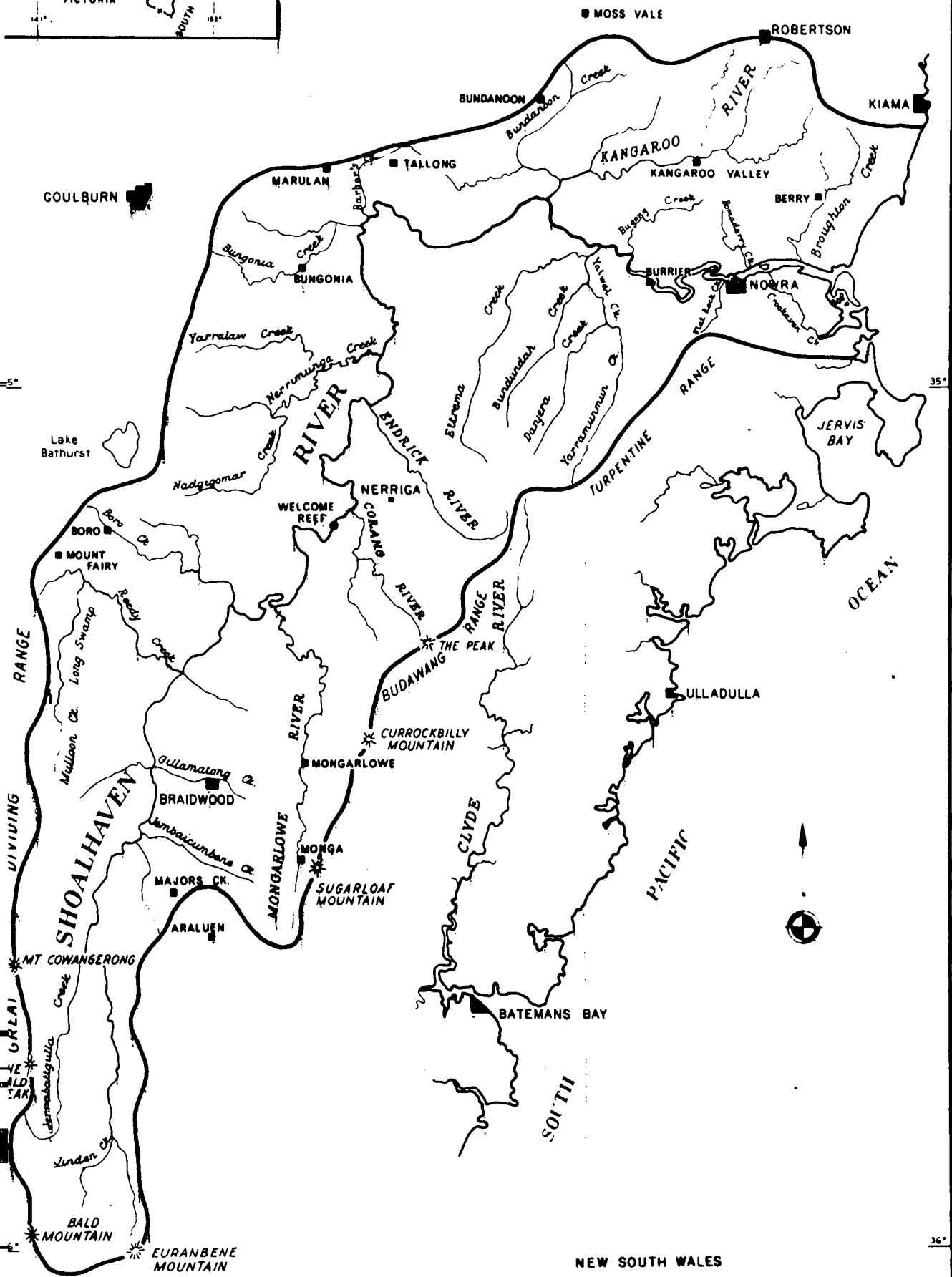
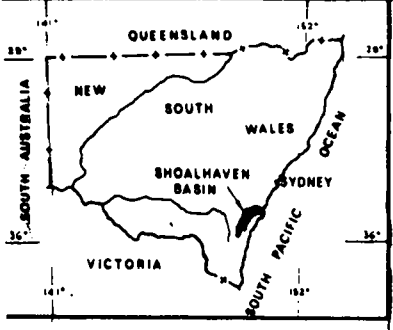
Jan.	154	43	78	4,860	Jan.	11	3	6.8	420
Feb.	52	29	40	2,340	Feb.	4.5	2	3	161
Mar.	2260	29	155	9,616	Mar.	1.6	1	1.3	76
Apr.	4050	29	683	41,008	Apr.	135	0.7	38	2,294
May	154	66	104	6,444	May	62	7.3	13	786
June	47000	66	1989	119,318	June	244	4.4	34	2,052
July	130	43	70	4,328	July	1550	17	131	8,102
Aug.	83	25	36	2,246	Aug.	35	17	27	1,662
Sept.	34	25	31	1,892	Sept.	54	15	34	2,058
Oct.	25	11	17	1,040	Oct.	5000	7	547	33,916
Nov.	480	11	39	2,318	Nov.	135	25	55	3,306
Dec.	47	4	11	668	Dec.	835	52	145	8,990
Total	..	..	..	196,078	Total	..	..	..	63,823

KANGAROO RIVER AT KANGAROO VALLEY

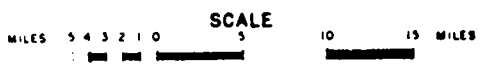
Year 1966

Year 1967

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.	54	7	23	1,436	Jan.	2750	19	291	18,052
Feb.	2960	7	358	20,032	Feb.	290	82	112	6,264
Mar.	3150	21	298	18,470	Mar.	2560	64	425	26,370
Apr.	94	30	49	2,948	Apr.	80	39	48	2,902
May	35	14	21	1,328	May	39	21	28	1,756
June	1768	14	266	15,986	June	3850	21	401	24,070
July	72	39	46	2,872	July				
Aug.	323	14	48	2,950	Aug.				
Sept.	156	21	76	4,538	Sept.				
Oct.	80	21	36	2,260	Oct.				
Nov.	16000	39	972	58,320	Nov.				
Dec.	1720	52	194	12,058	Dec.				
Total	..	..	..	143,198	Total				



NEW SOUTH WALES
WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY



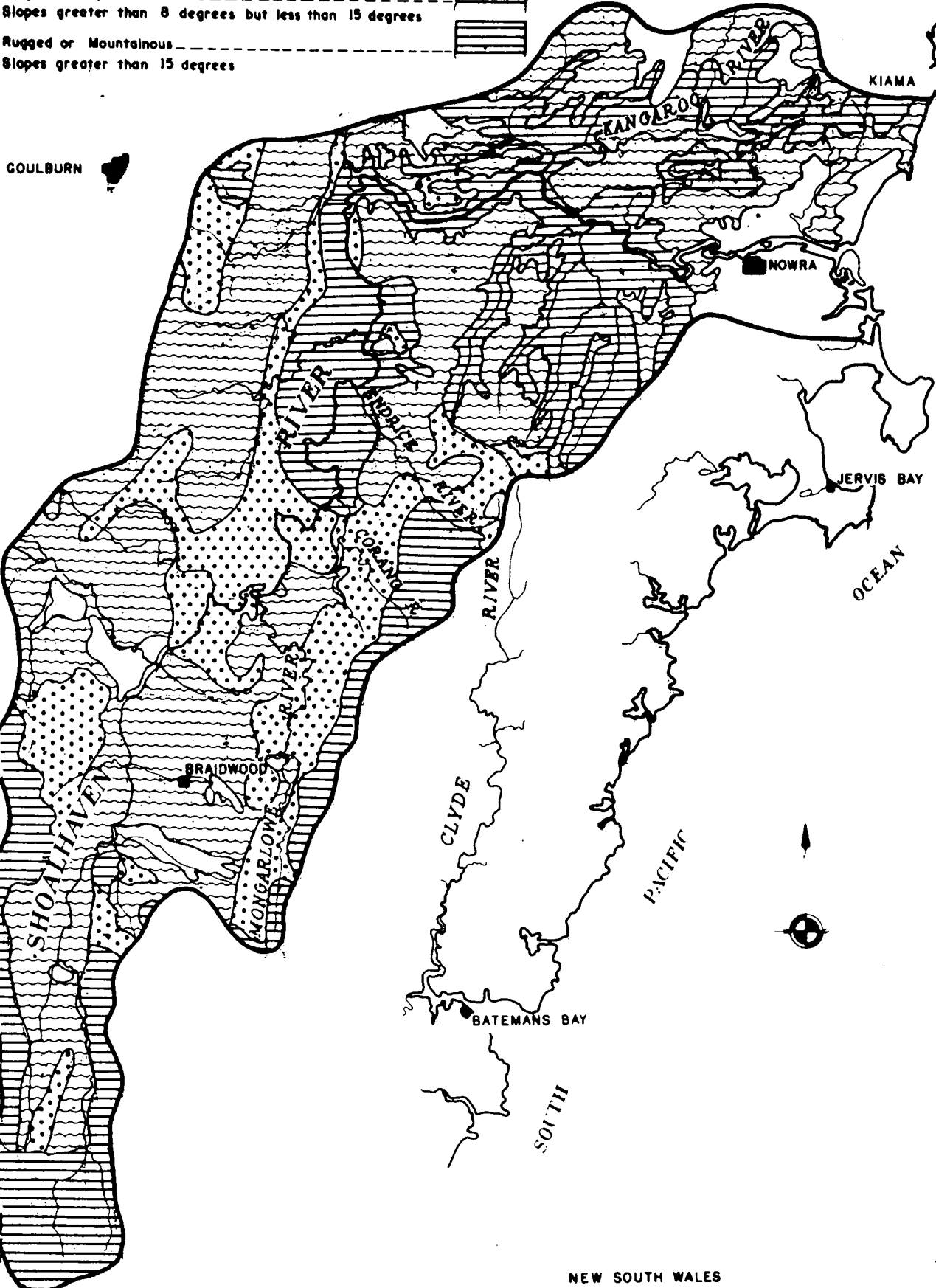
LEGEND

150

150° 30'

- Mostly Flat _____ [White box]
- Slopes less than 3 degrees
- Undulating to Hilly _____ [Wavy lines]
- Slopes greater than 3 degrees but less than 8 degrees
- Hilly to Steep _____ [Dotted pattern]
- Slopes greater than 8 degrees but less than 15 degrees
- Rugged or Mountainous _____ [Horizontal lines]
- Slopes greater than 15 degrees

GOULBURN



35°

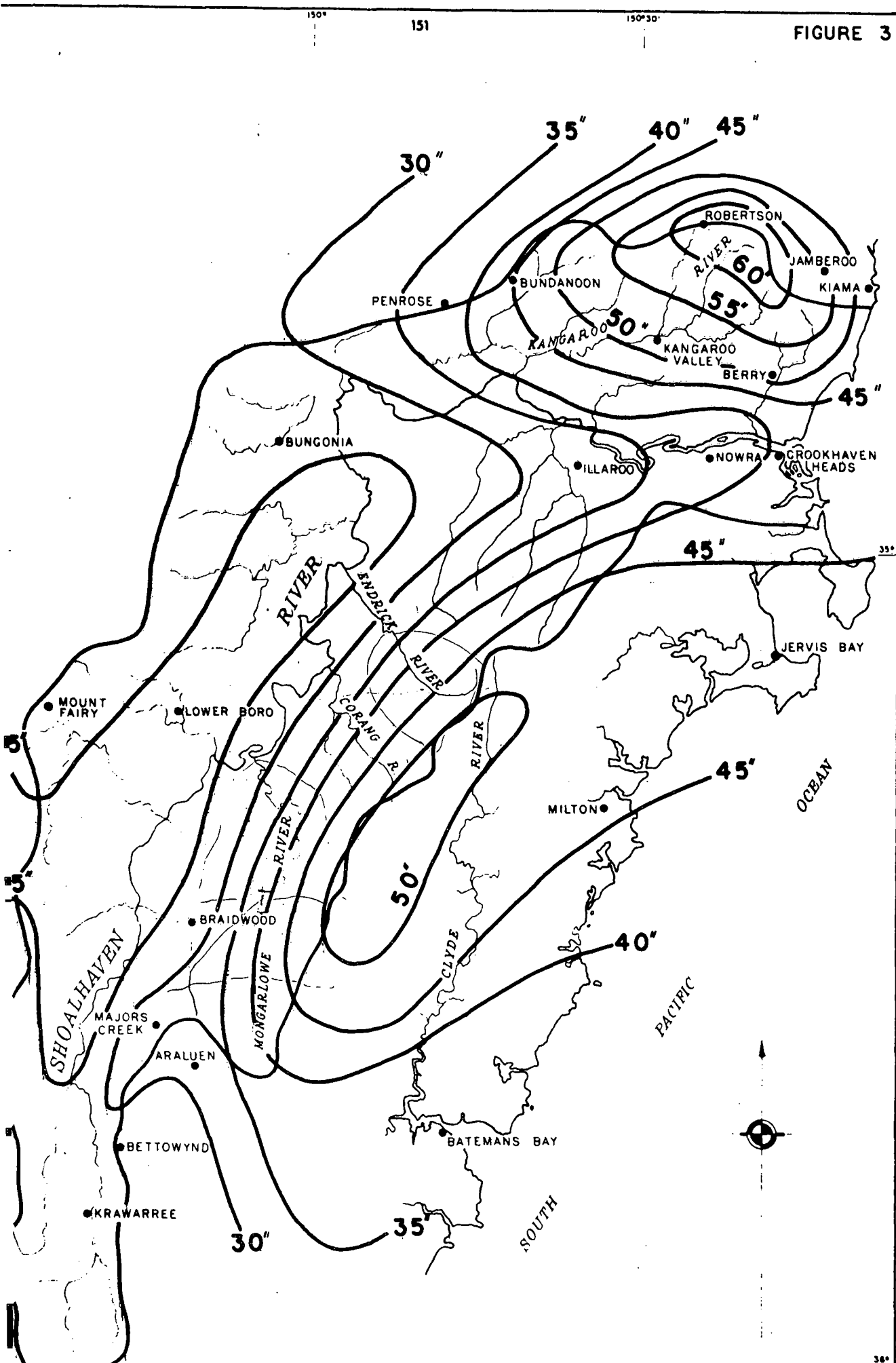
36°

NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
LAND SLOPES

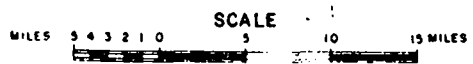


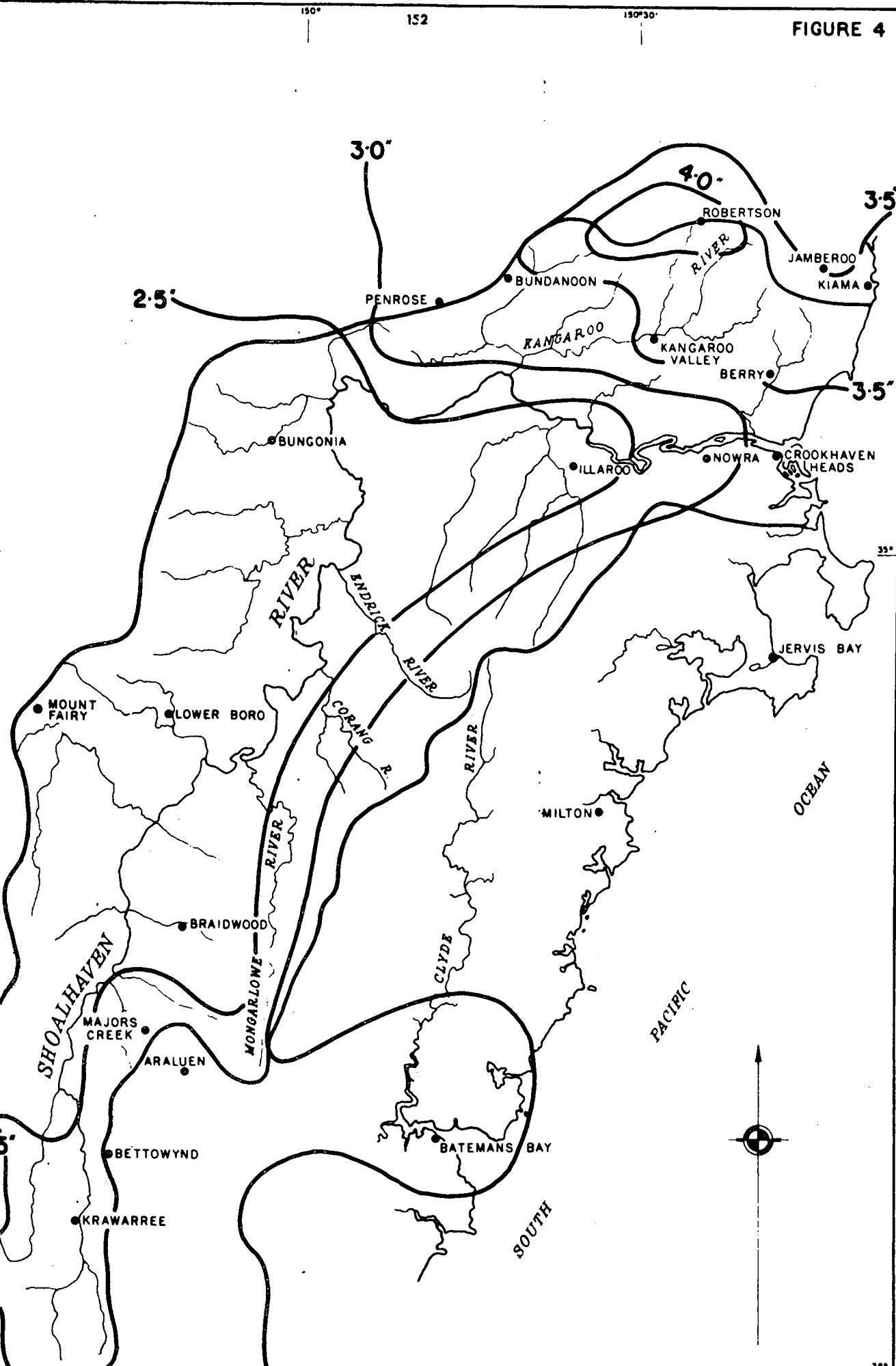
150°

150° 30'



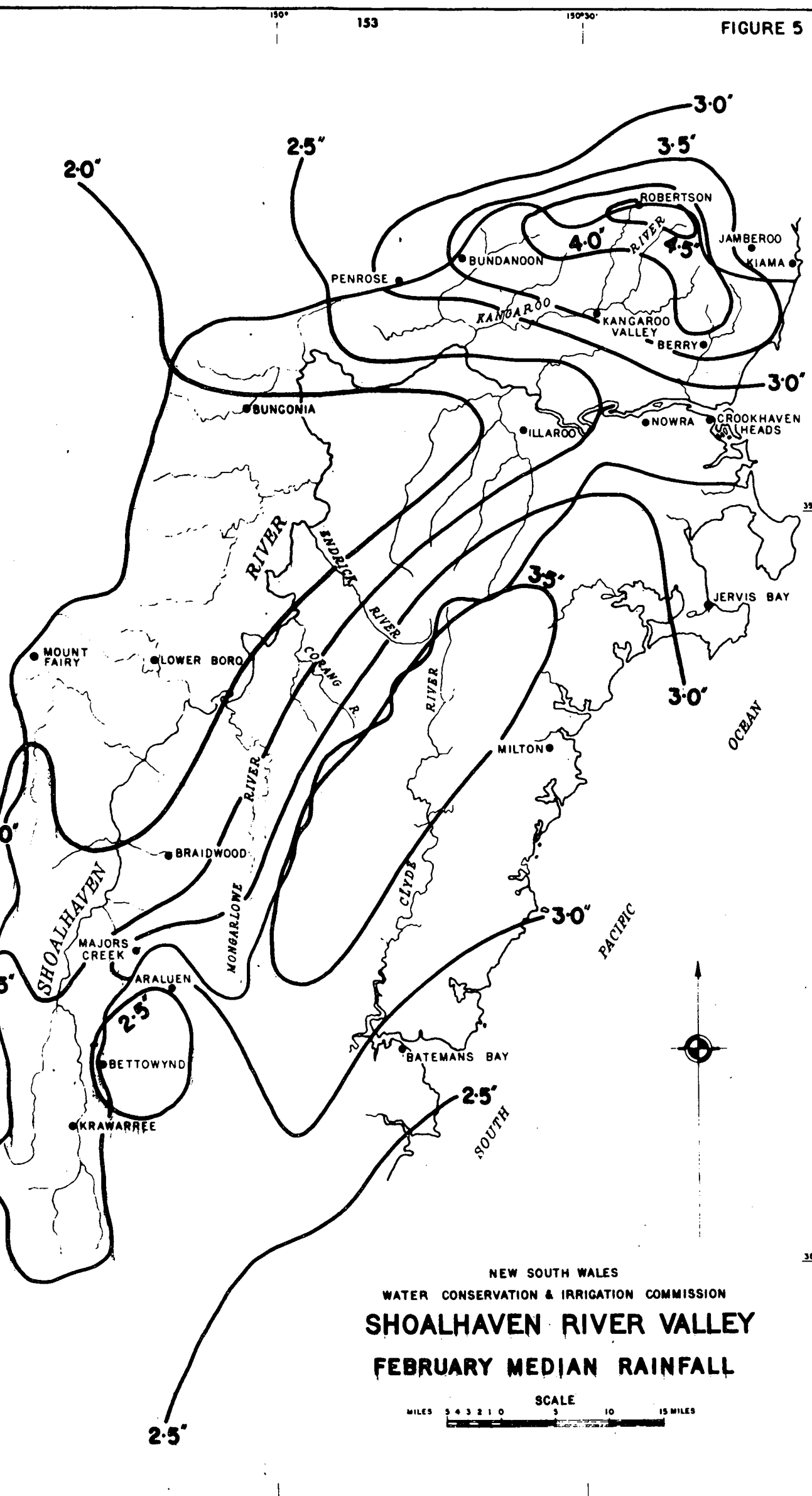
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
ANNUAL MEDIAN RAINFALL





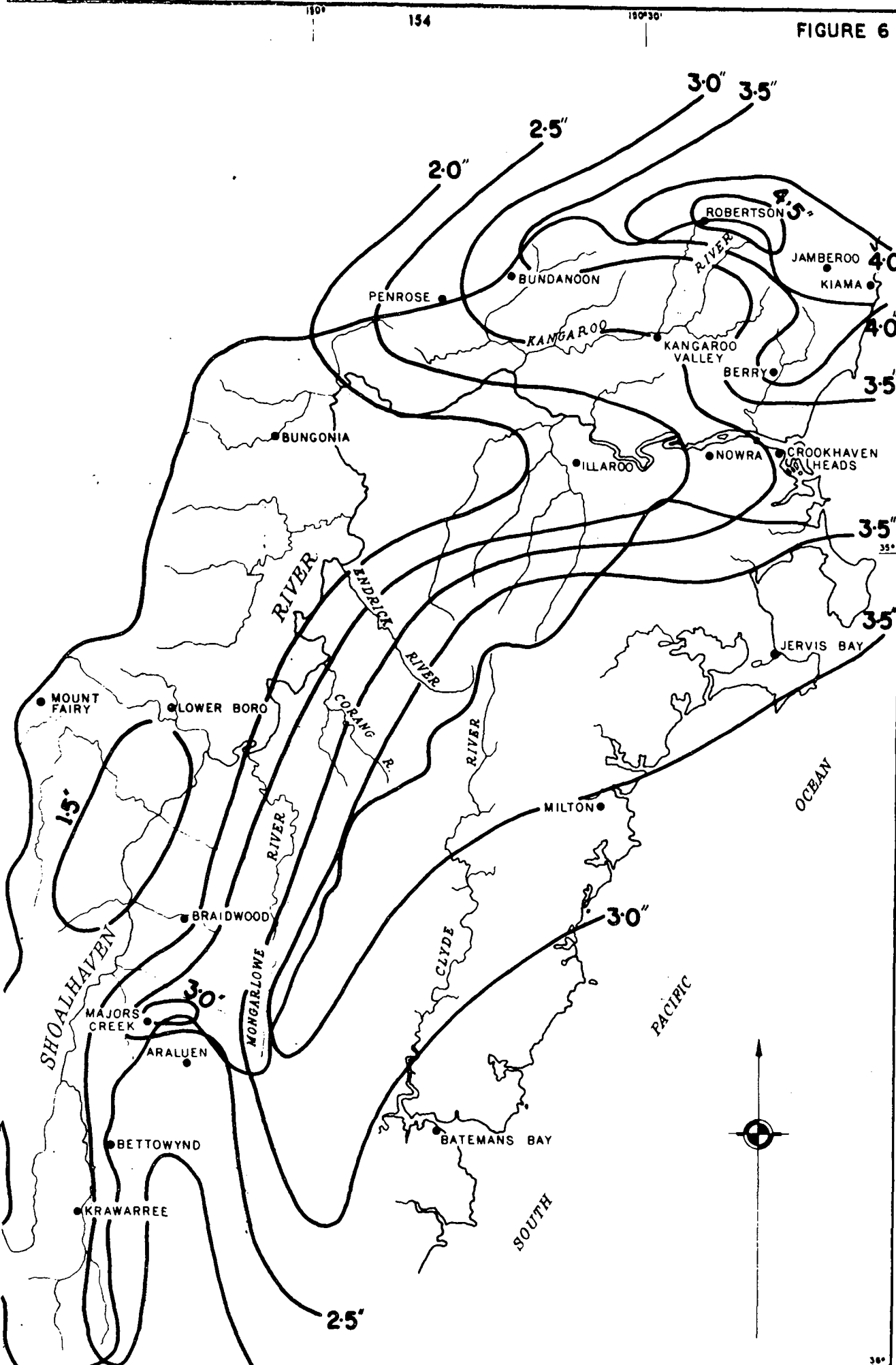
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
JANUARY MEDIAN RAINFALL





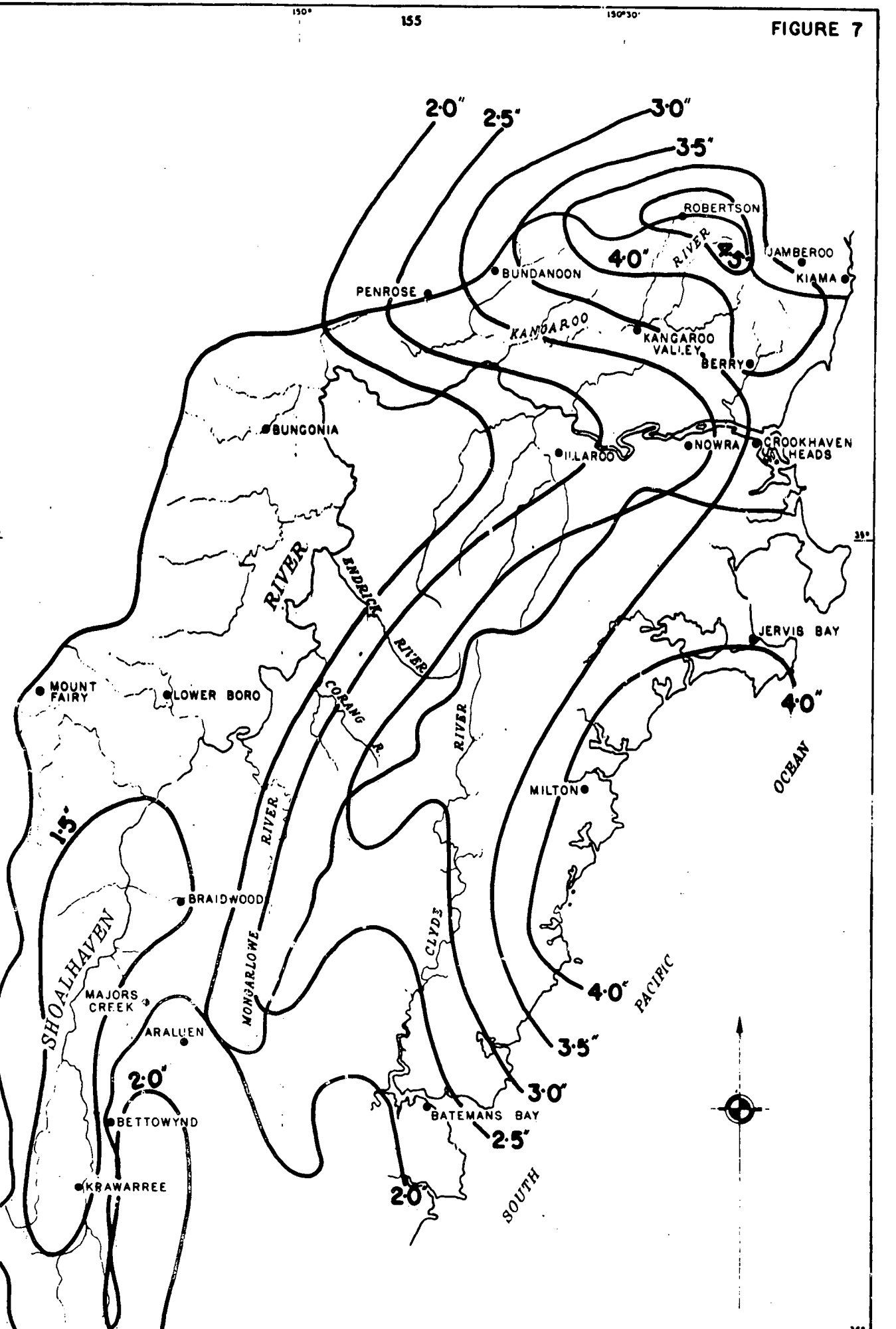
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
FEBRUARY MEDIAN RAINFALL



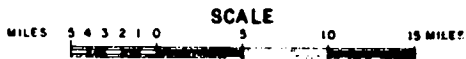


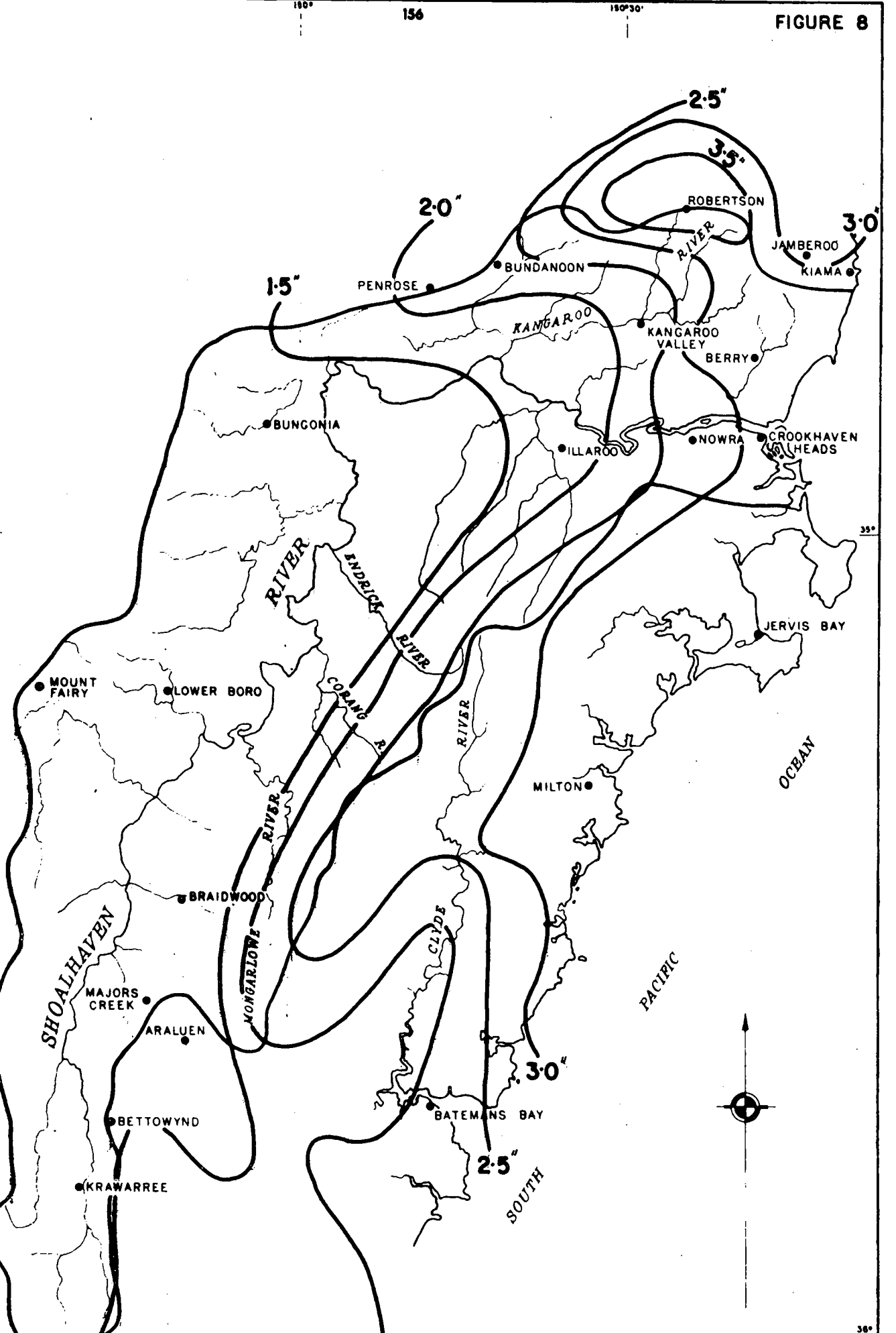
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
MARCH MEDIAN RAINFALL



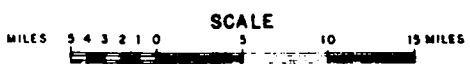


NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
APRIL MEDIAN RAINFALL





NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
MAY MEDIAN RAINFALL



1.5"

2.0"

2.5"

3.0"

2.5"

3.5"

3.0"

1.5"

2.0"

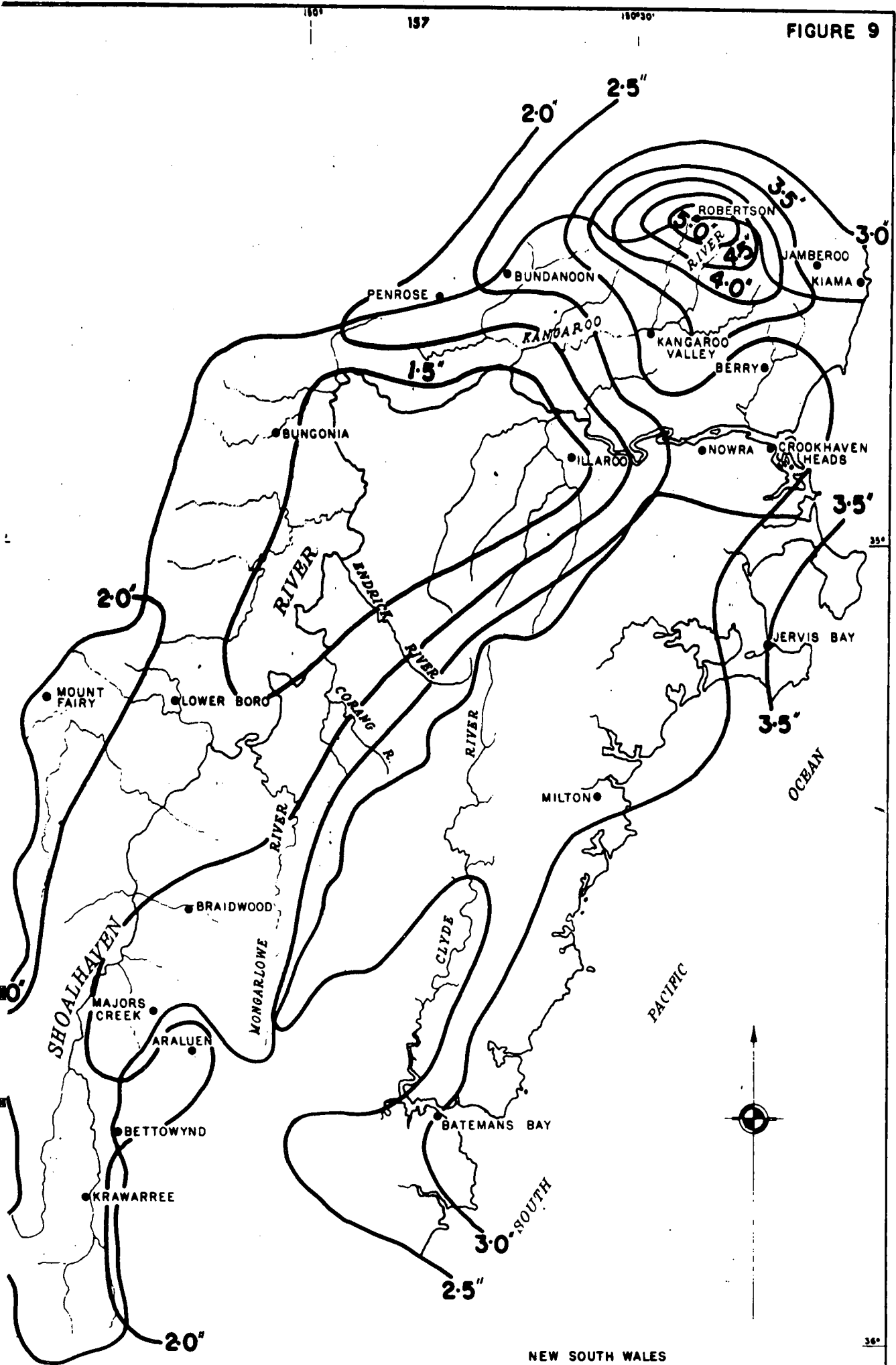
1.5"

35°

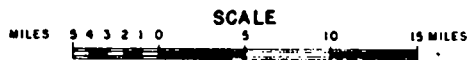
36°

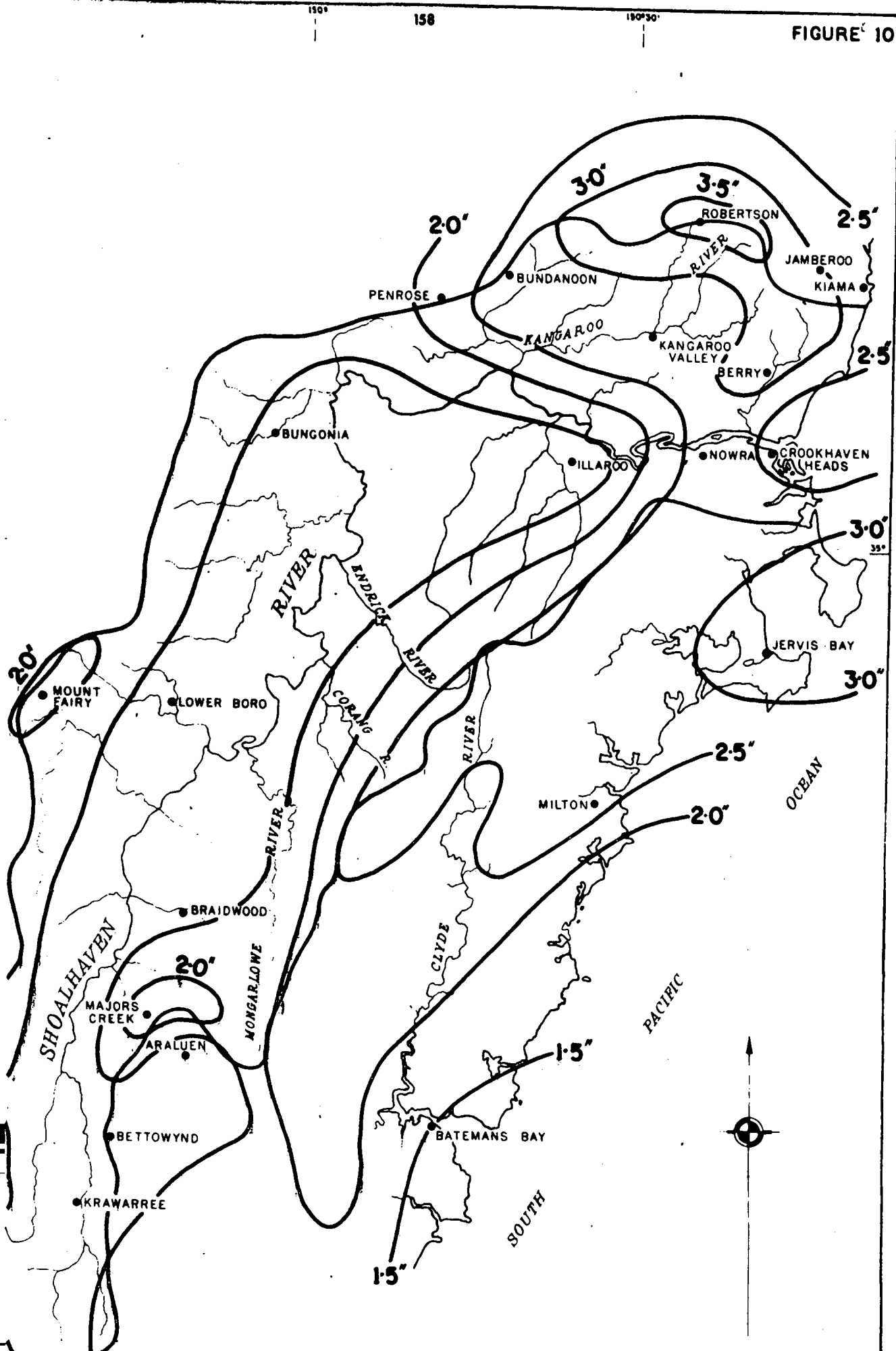
150°

150°30'

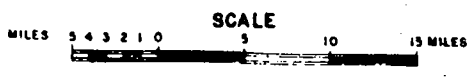


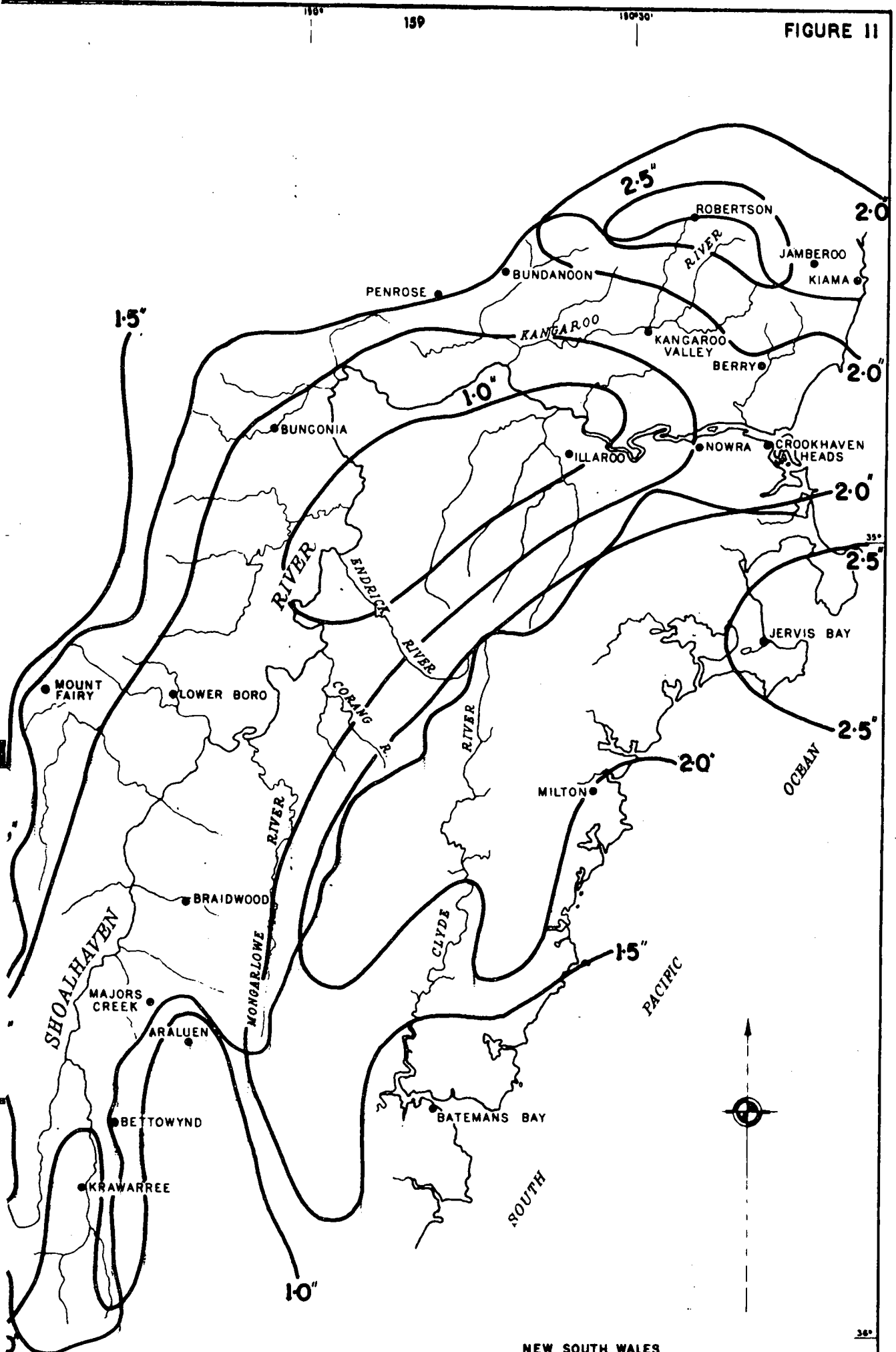
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
JUNE MEDIAN RAINFALL



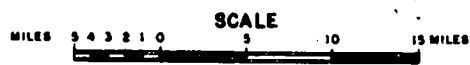


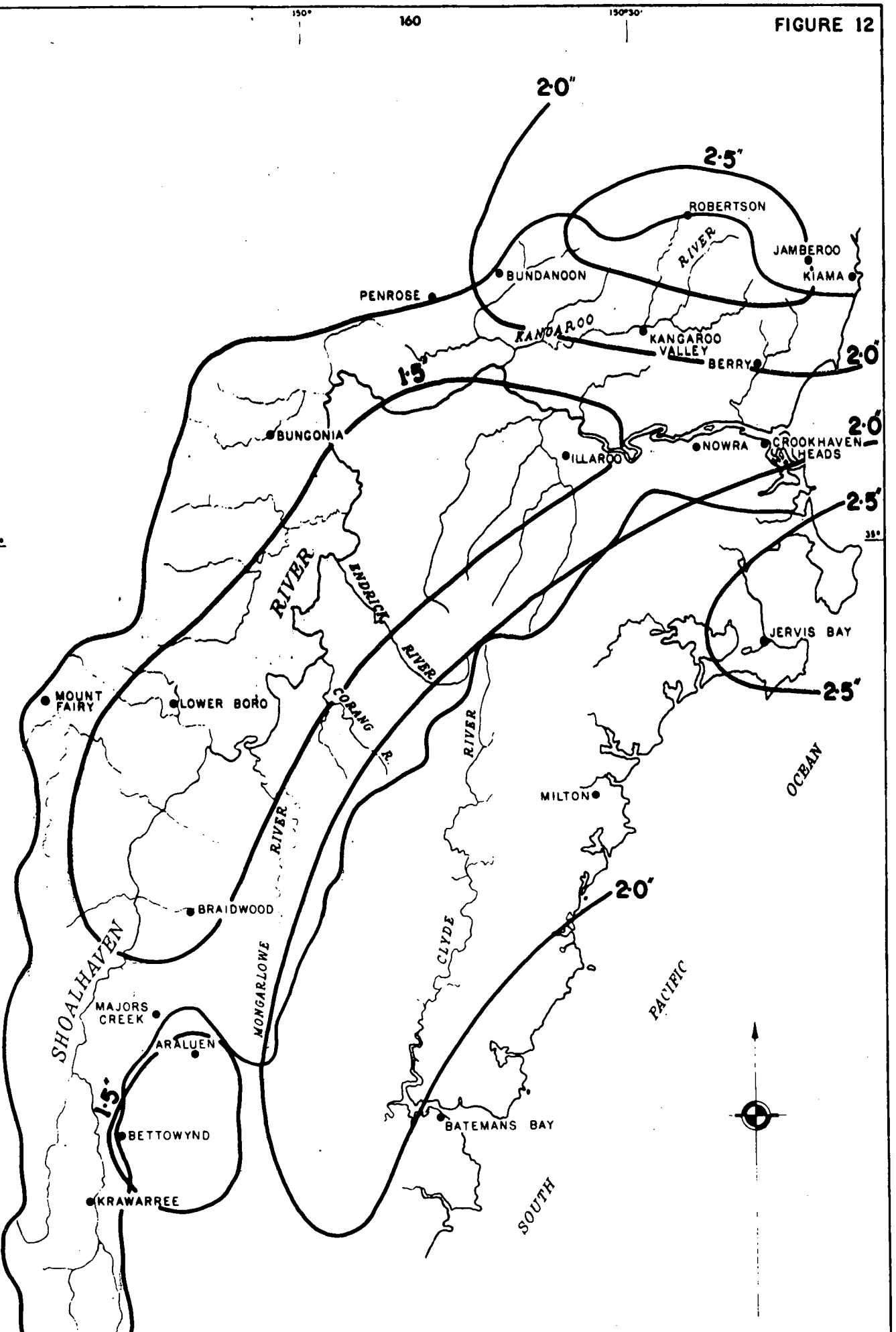
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
JULY MEDIAN RAINFALL



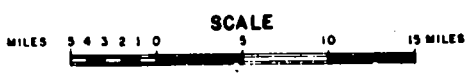


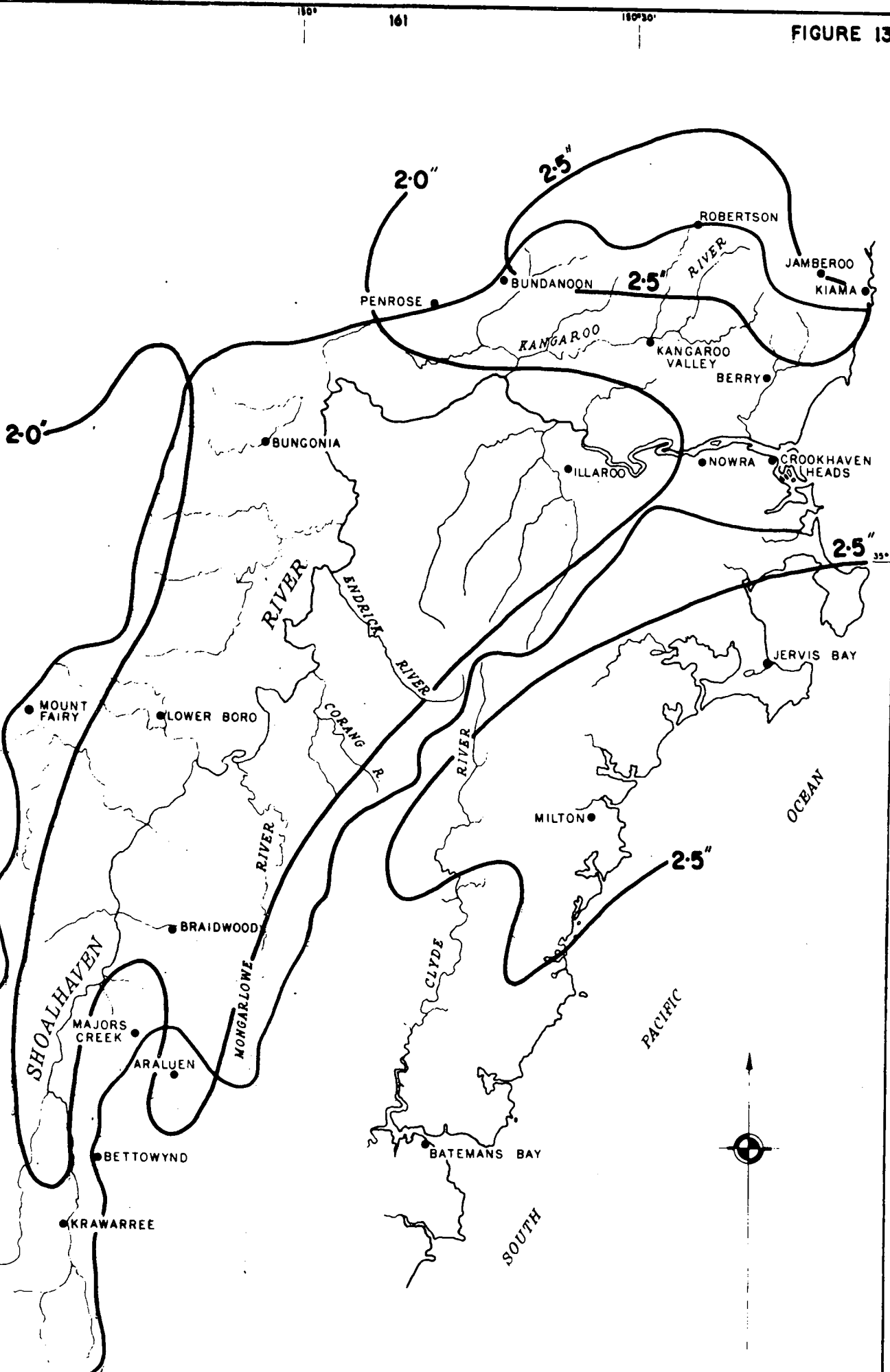
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
AUGUST MEDIAN RAINFALL



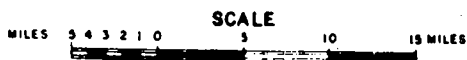


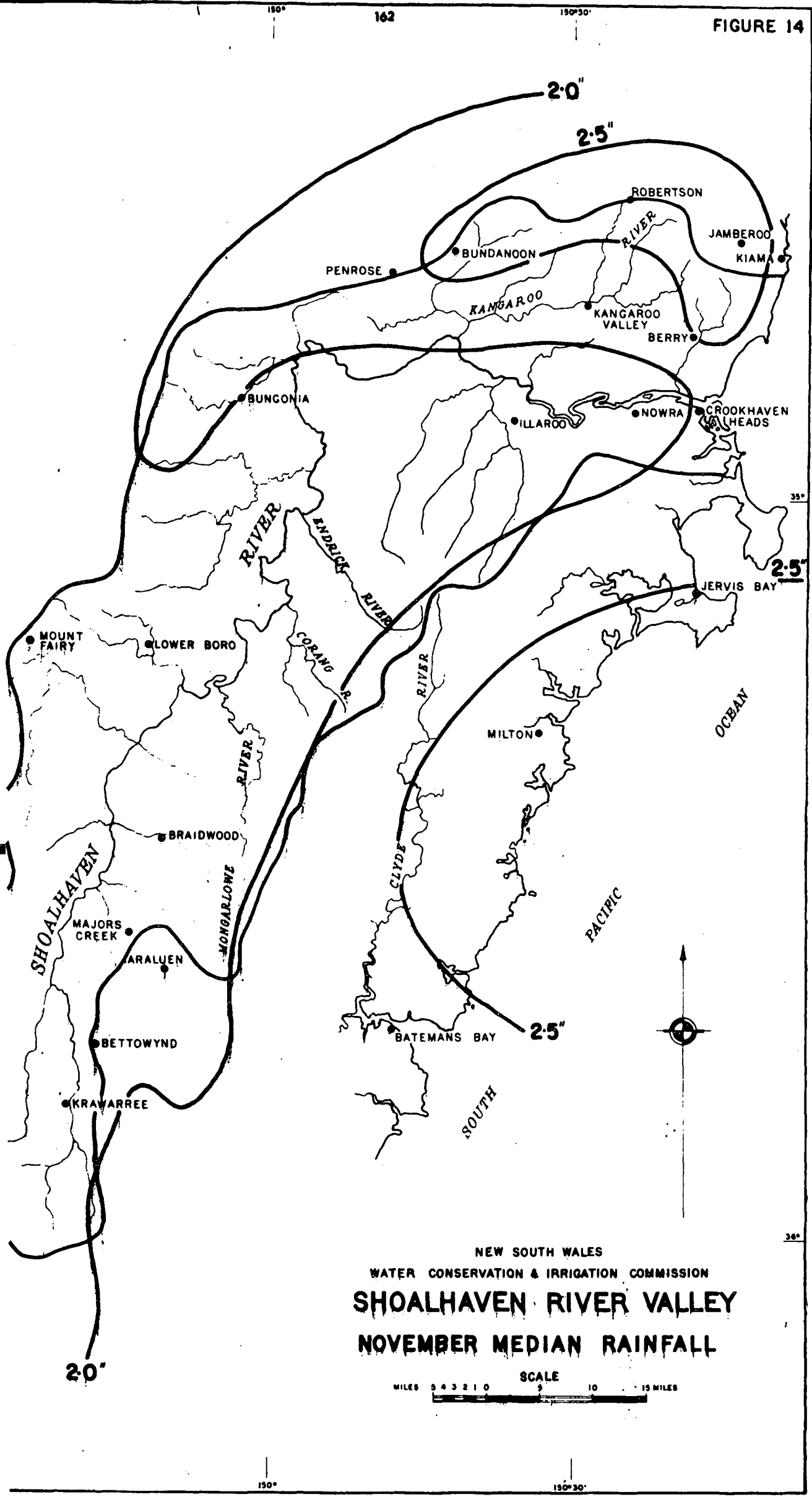
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
SEPTEMBER MEDIAN RAINFALL





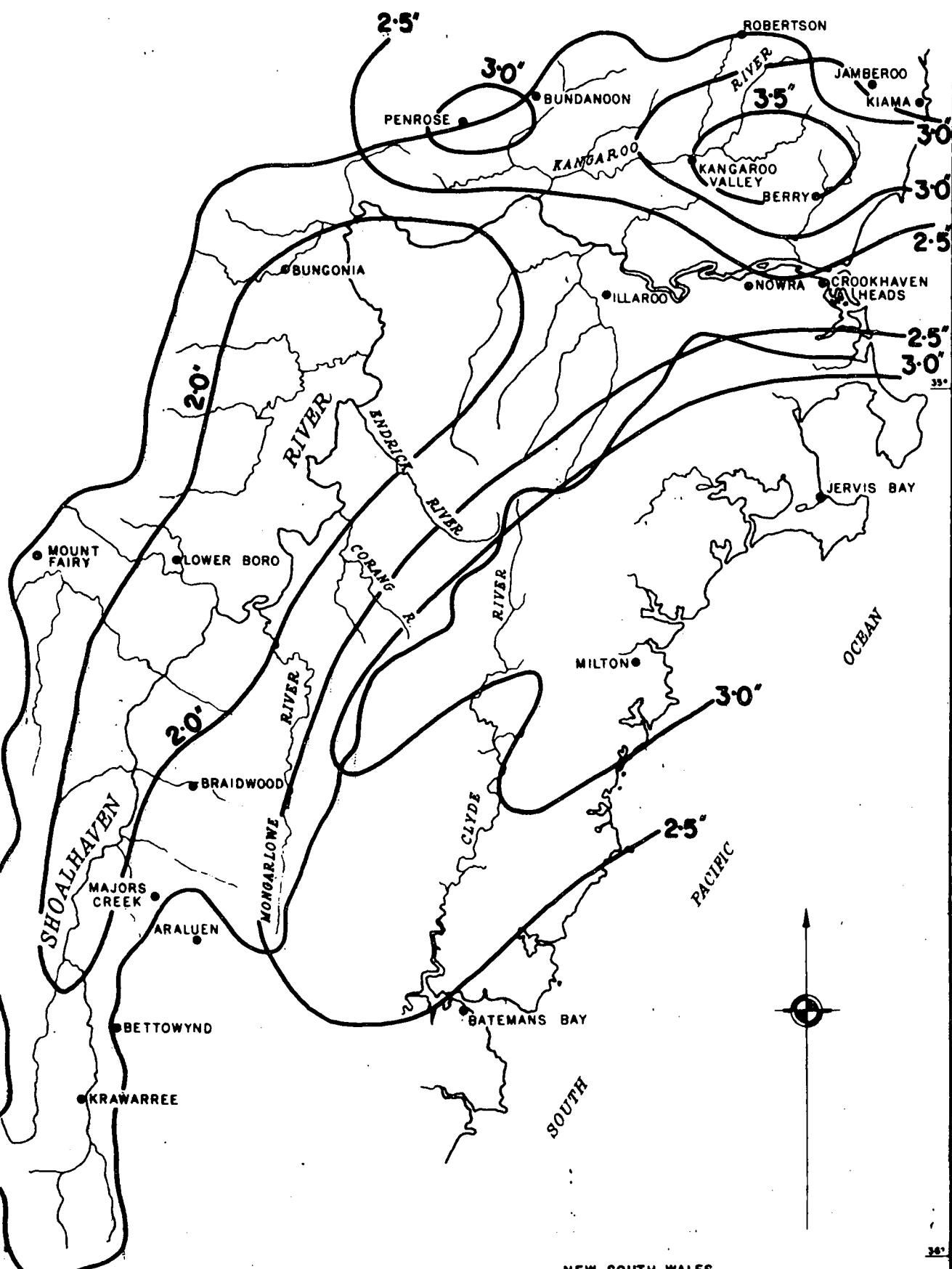
NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
OCTOBER MEDIAN RAINFALL



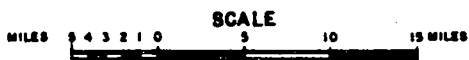


NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
NOVEMBER MEDIAN RAINFALL

SCALE
 MILES 5 4 3 2 1 0 5 10 15 MILES



NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
DECEMBER MEDIAN RAINFALL

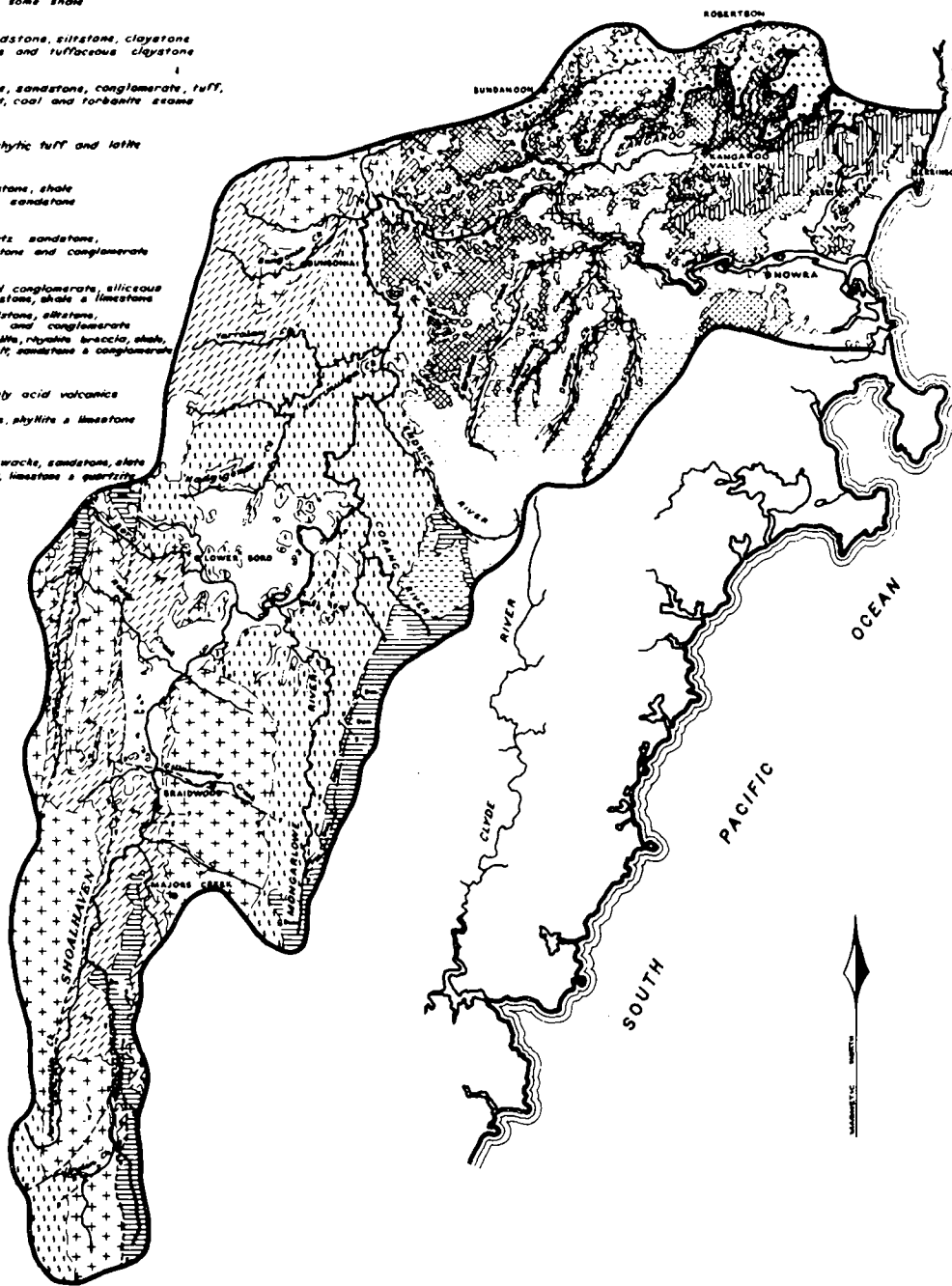


LEGEND

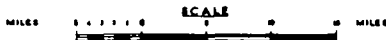
- ERTIARY-RECENT**
 - Clay, sand, gravel, lignite & silcrete
- CLASSIC**
 - Wianamatta Group**
 - Liverpool Sub-group** Shale with some sandstone beds
 - Kawtesbury Sandstone** Quartz sandstone with some shale
 - Narrabeen Group** Sandstone, siltstone, claystone, shale and tuffaceous claystone
 - Illawarra Coal Measures** Shale, sandstone, conglomerate, tuff, chert, coal and torbanite seams
- ERMIAN**
 - Garrigong Volcanics** Trachytic tuff and latite
 - Berry Formation** Siltstone, shale and sandstone
 - Megalong Conglomerate** Quartz sandstone, siltstone and conglomerate
- YONIAN**
 - Merrimbula Formation** Basal conglomerate, siliceous sandstone, shale & limestone
 - Comerong Volcanics** Sandstone, siltstone, slate and conglomerate
 - Comerong Volcanics** Rhyolite, rhyolite breccia, shale, basalt, sandstone & conglomerate
- URIAN**
 - Mainly acid volcanics
 - Slate, phyllite & limestone
- DOVICIAN**
 - Graywacke, sandstone, slate, chert, limestone & quartzite

IGNEOUS

- Granite & porphyry
- Basalt
- Rhyolite
- Fault

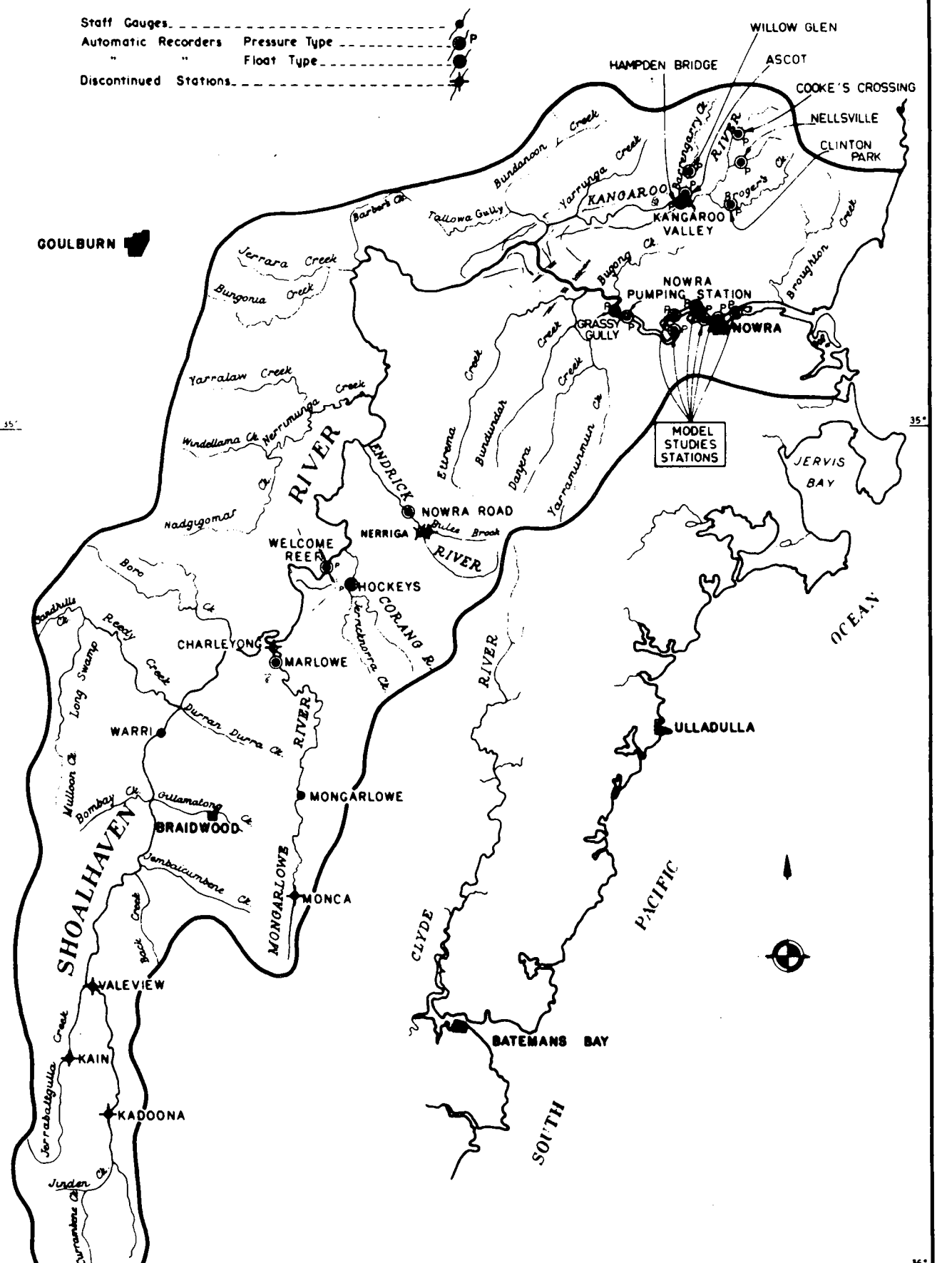


NEW SOUTH WALES
 WATER CONSERVATION AND IRRIGATION COMMISSION
**SHOALHAVEN RIVER VALLEY
 GEOLOGICAL FORMATIONS**



LEGEND

- Staff Gauges.
- Automatic Recorders Pressure Type
- " " Float Type
- Discontinued Stations.



NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
**SHOALHAVEN RIVER VALLEY
 GAUGING STATIONS**

30th. JUNE 1966



GOULBURN

35°

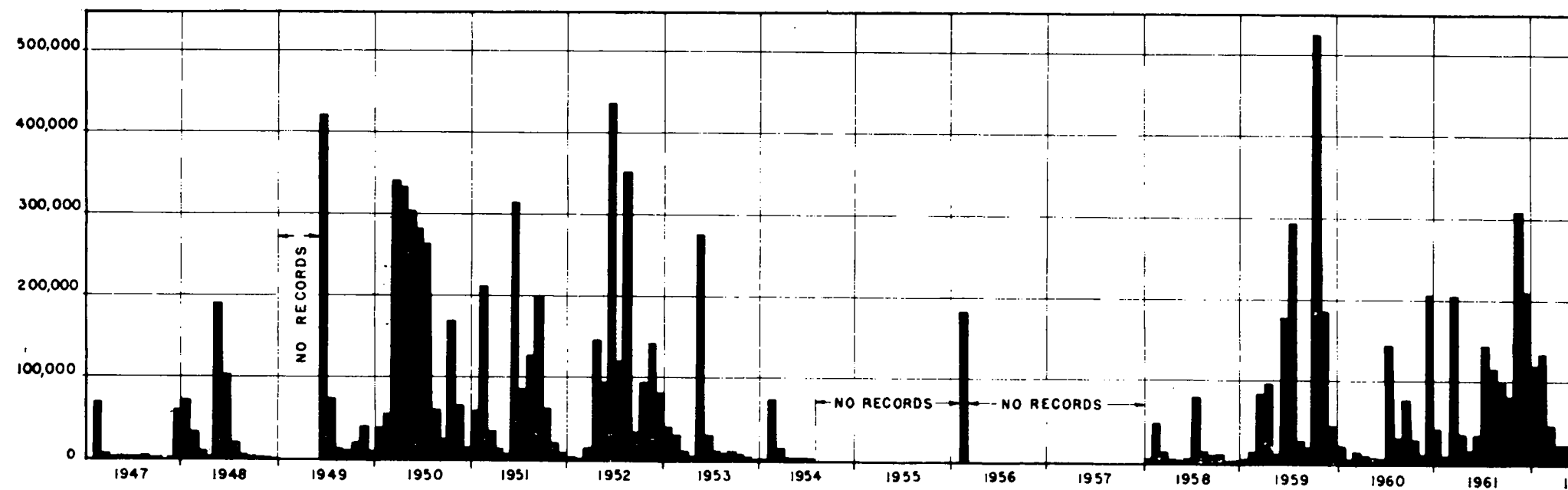
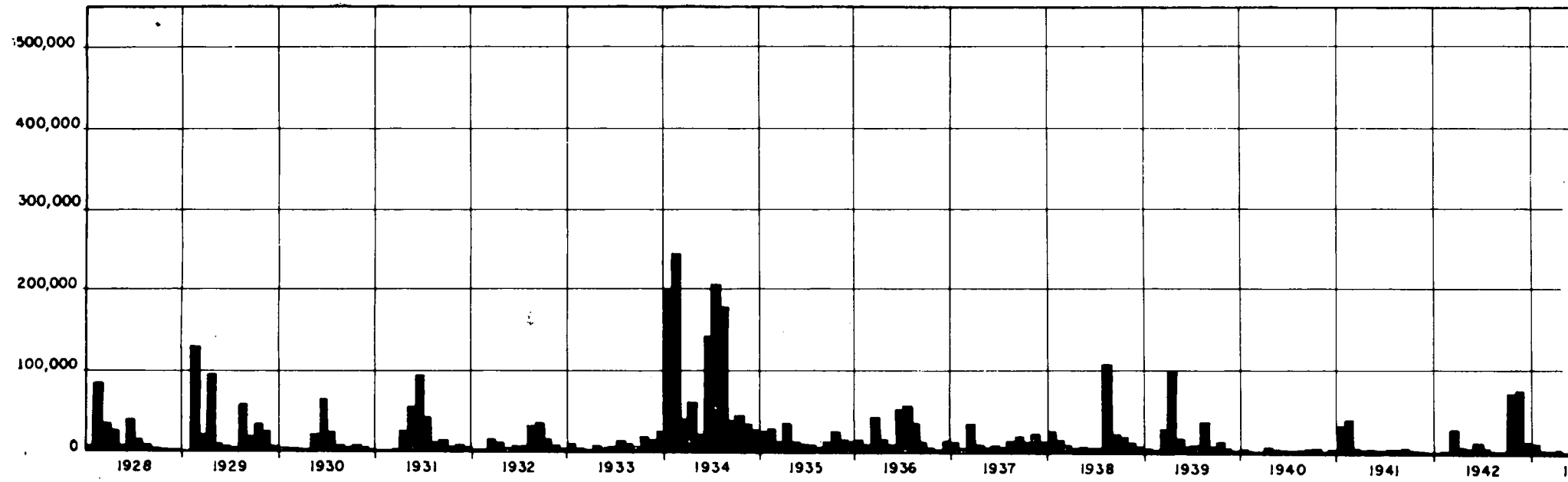
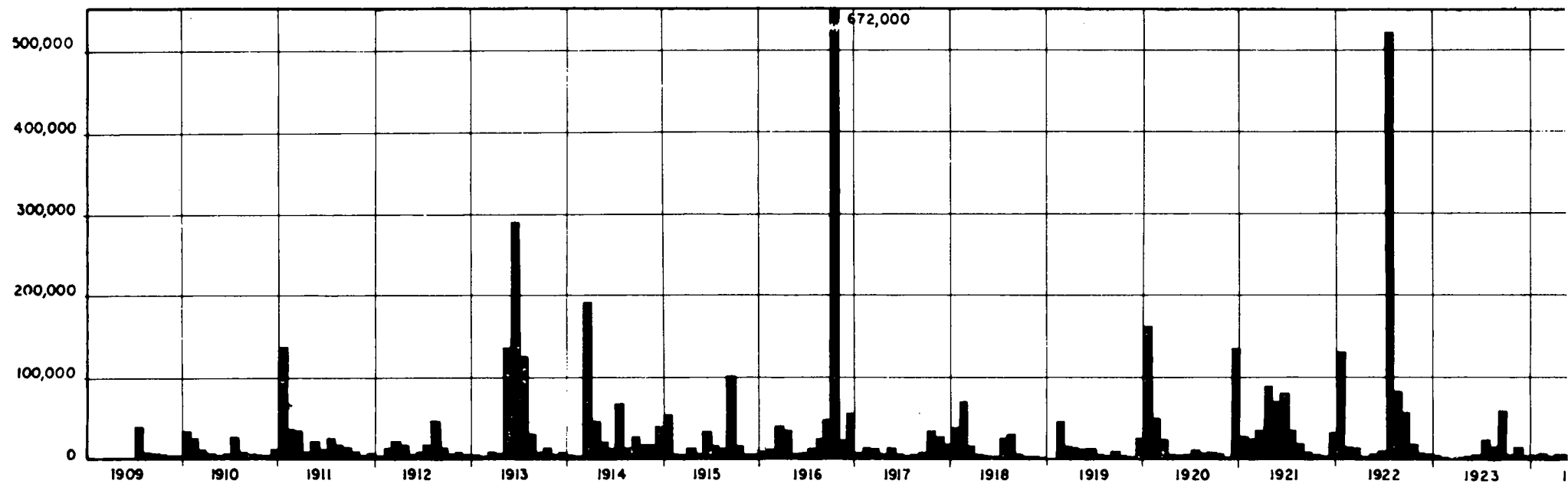
35°

36°

36°

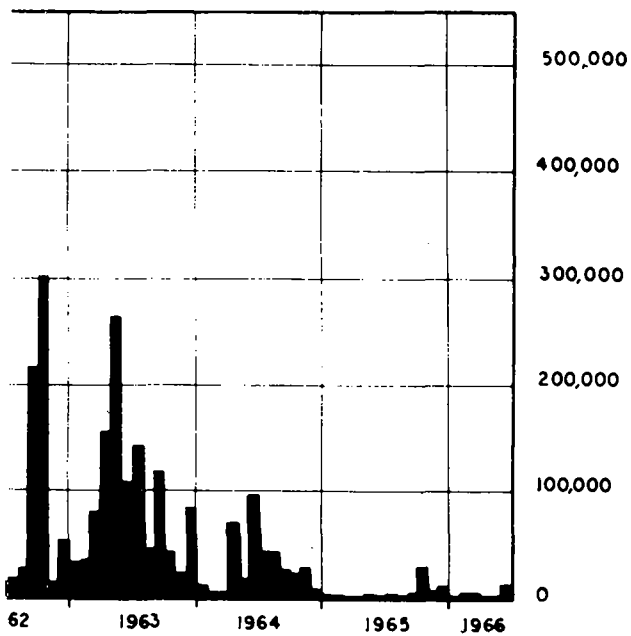
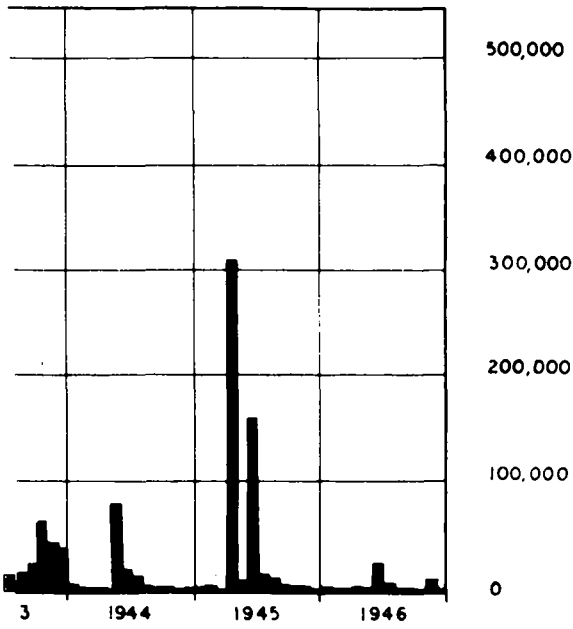
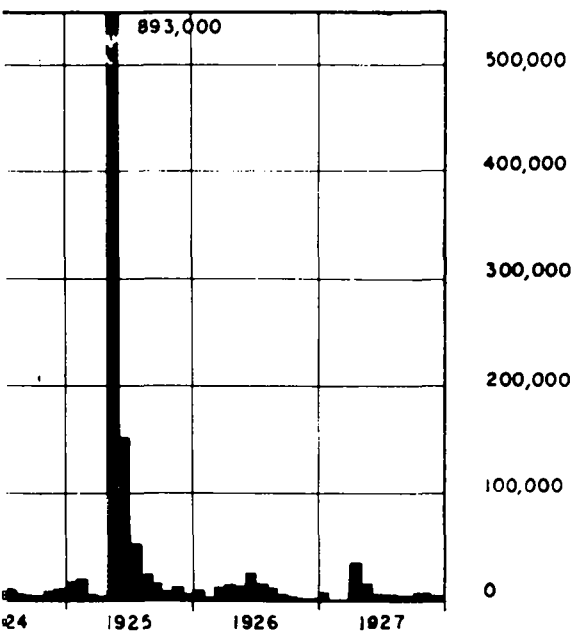
150°

150° 30'



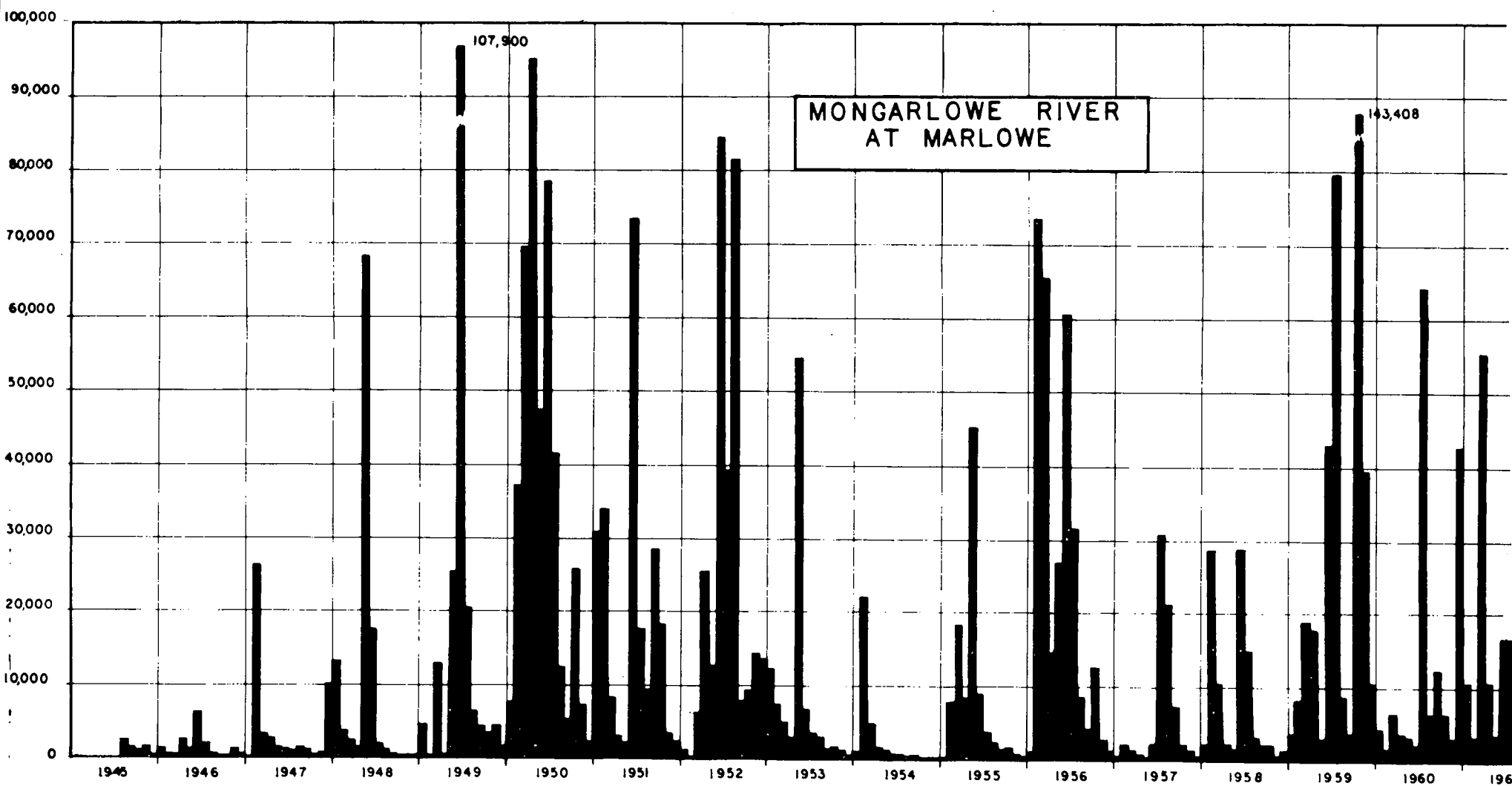
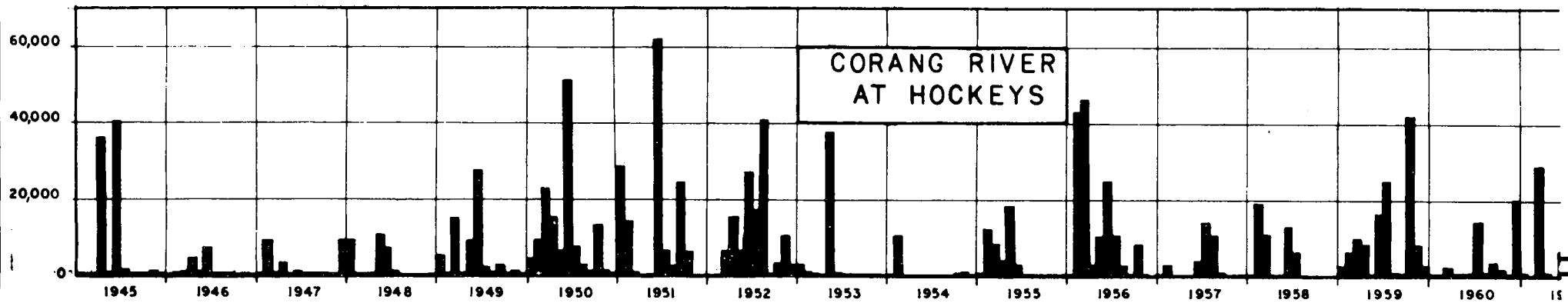
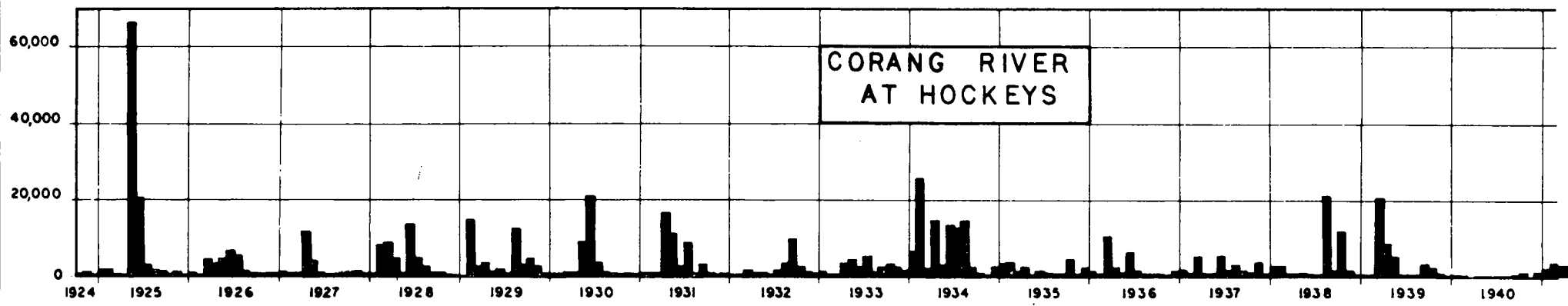
HYDROGRAPH OF MONTHLY DISCHARGES FOR SHOALHAVEN RIVER

FIGURE 18



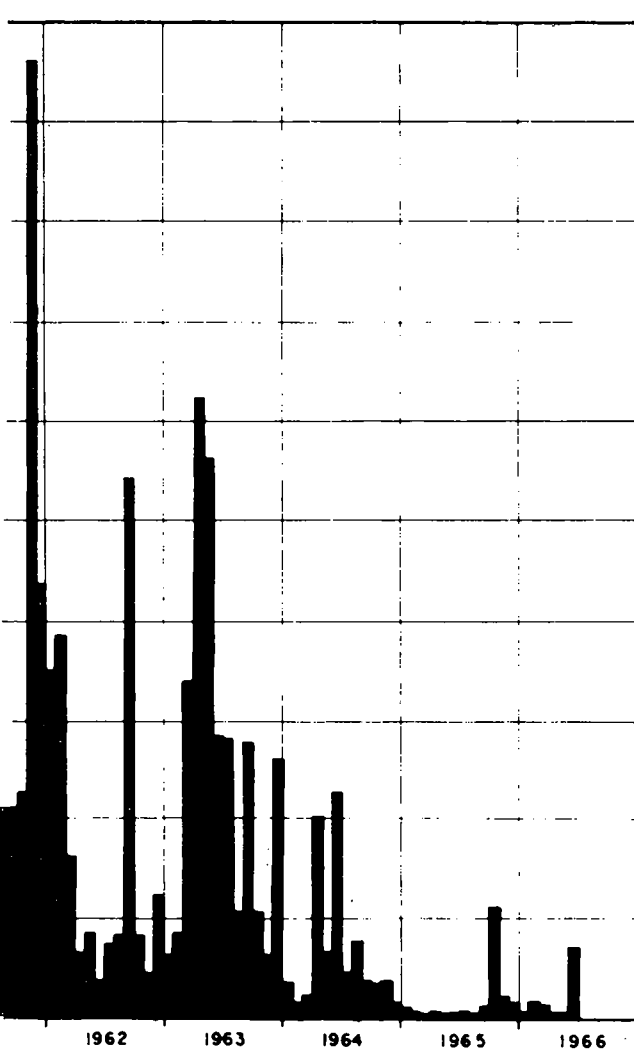
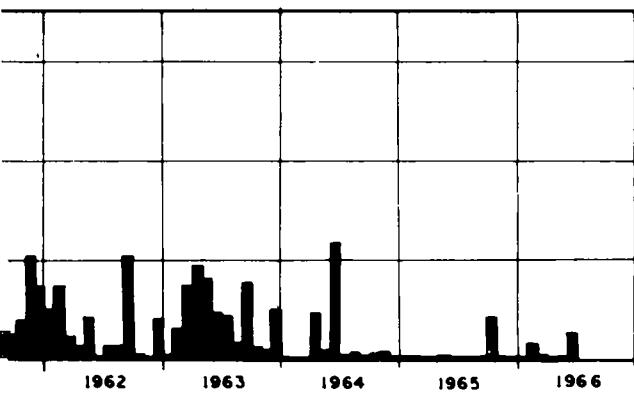
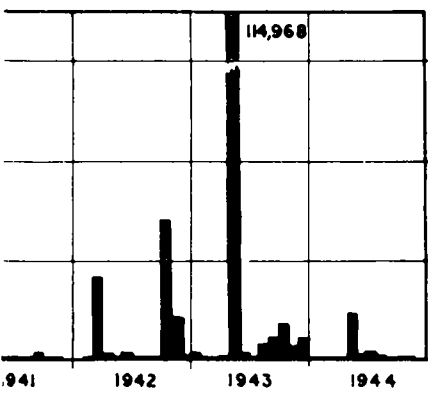
MONTHLY DISCHARGE IN ACRE FEET

AT WELCOME REEF



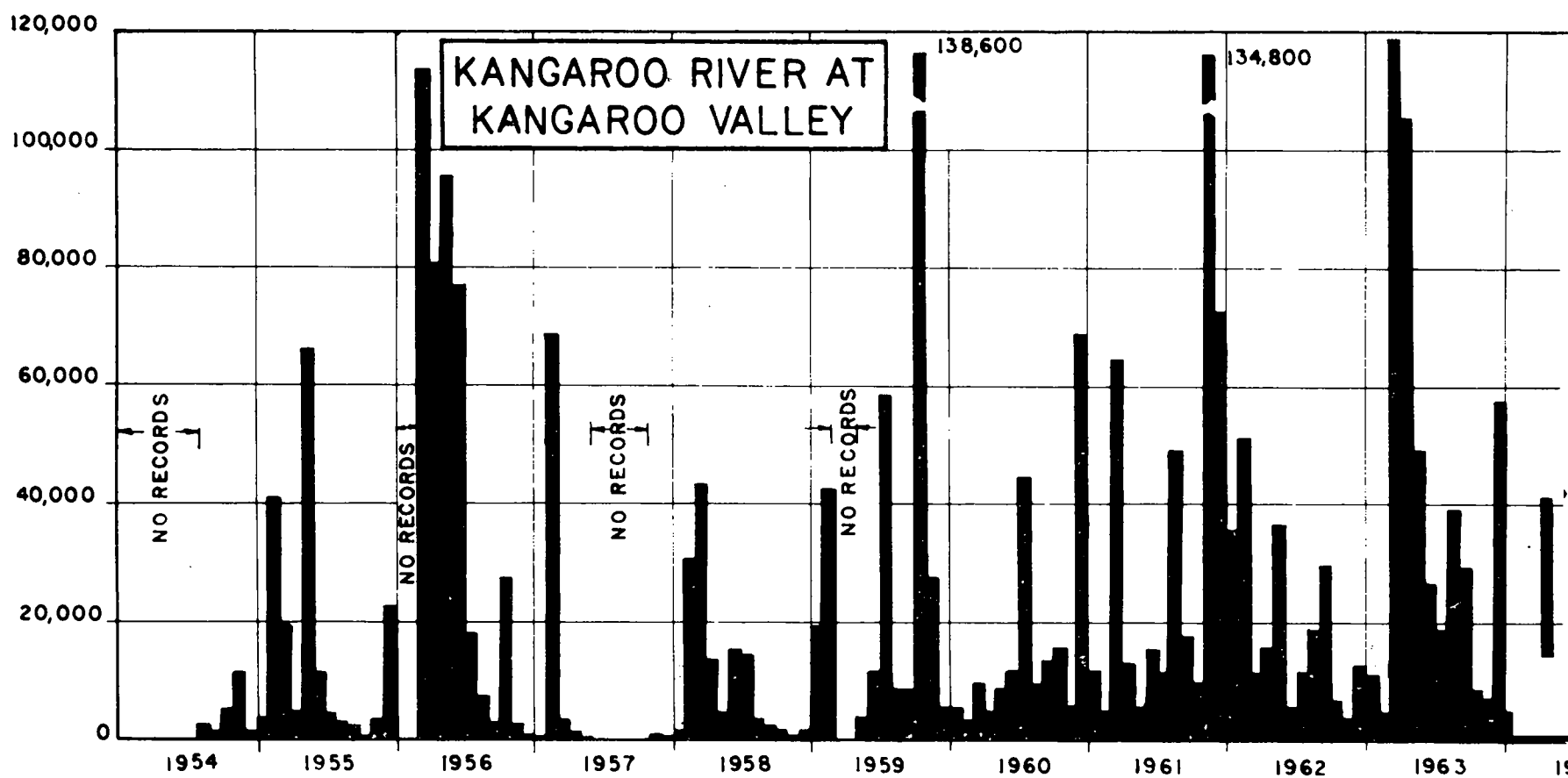
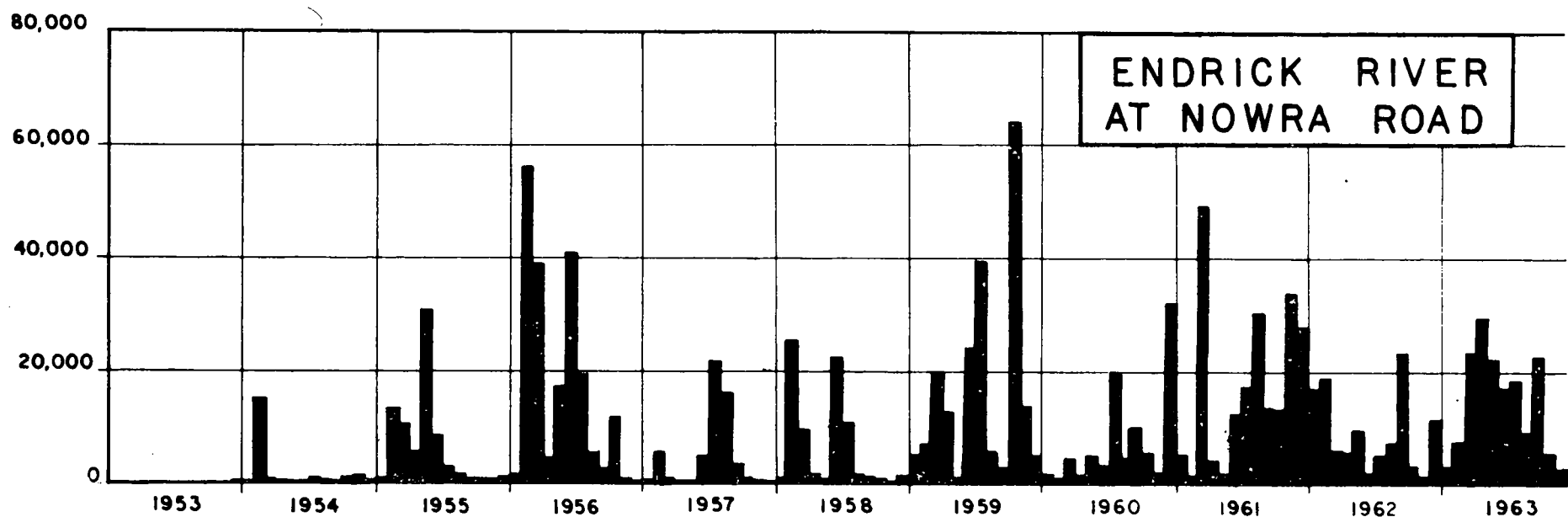
HYDROGRAPHS OF MONTHLY DISCHARGE
FOR CORANG RIVER AT HOCKEYS AND MONGARLOWE RIV

FIGURE 19



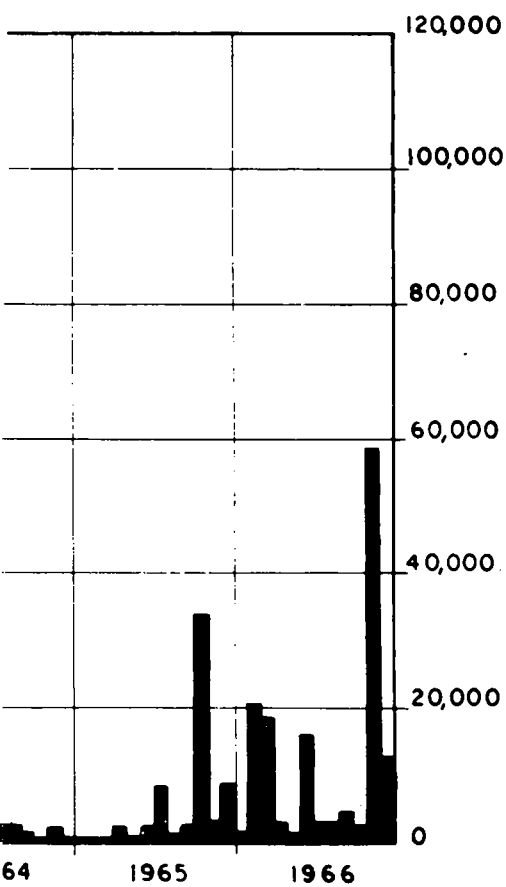
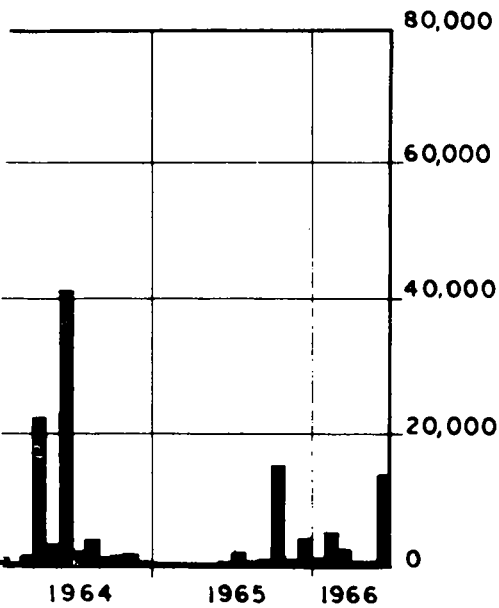
MONTHLY DISCHARGE IN ACRE FEET

ER AT MARLOWE



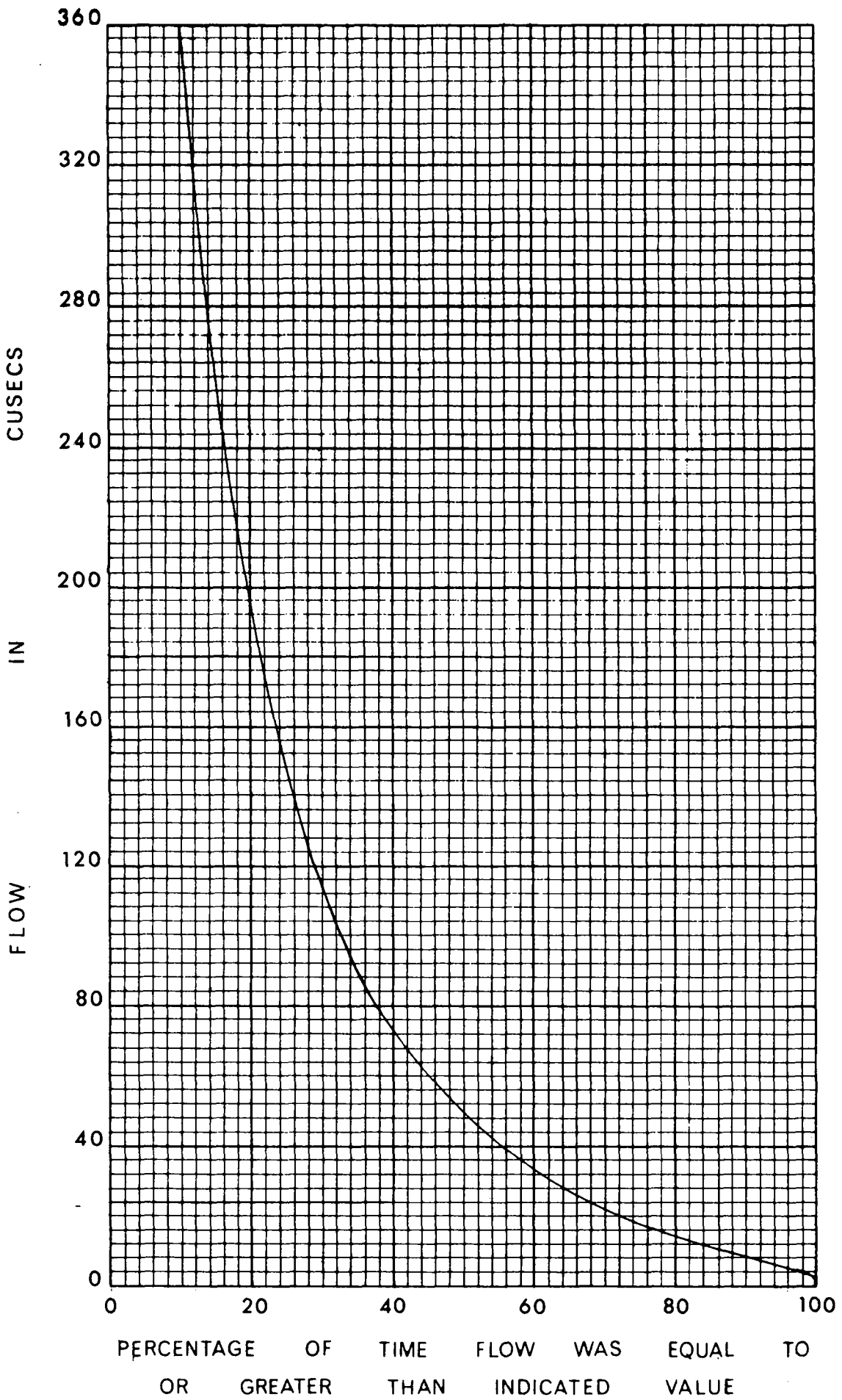
**HYDROGRAPHS OF MONTHLY DISCHARGE FOR
AT NOWRA ROAD AND KANGAROO RIVER AT K.**

FIGURE 20

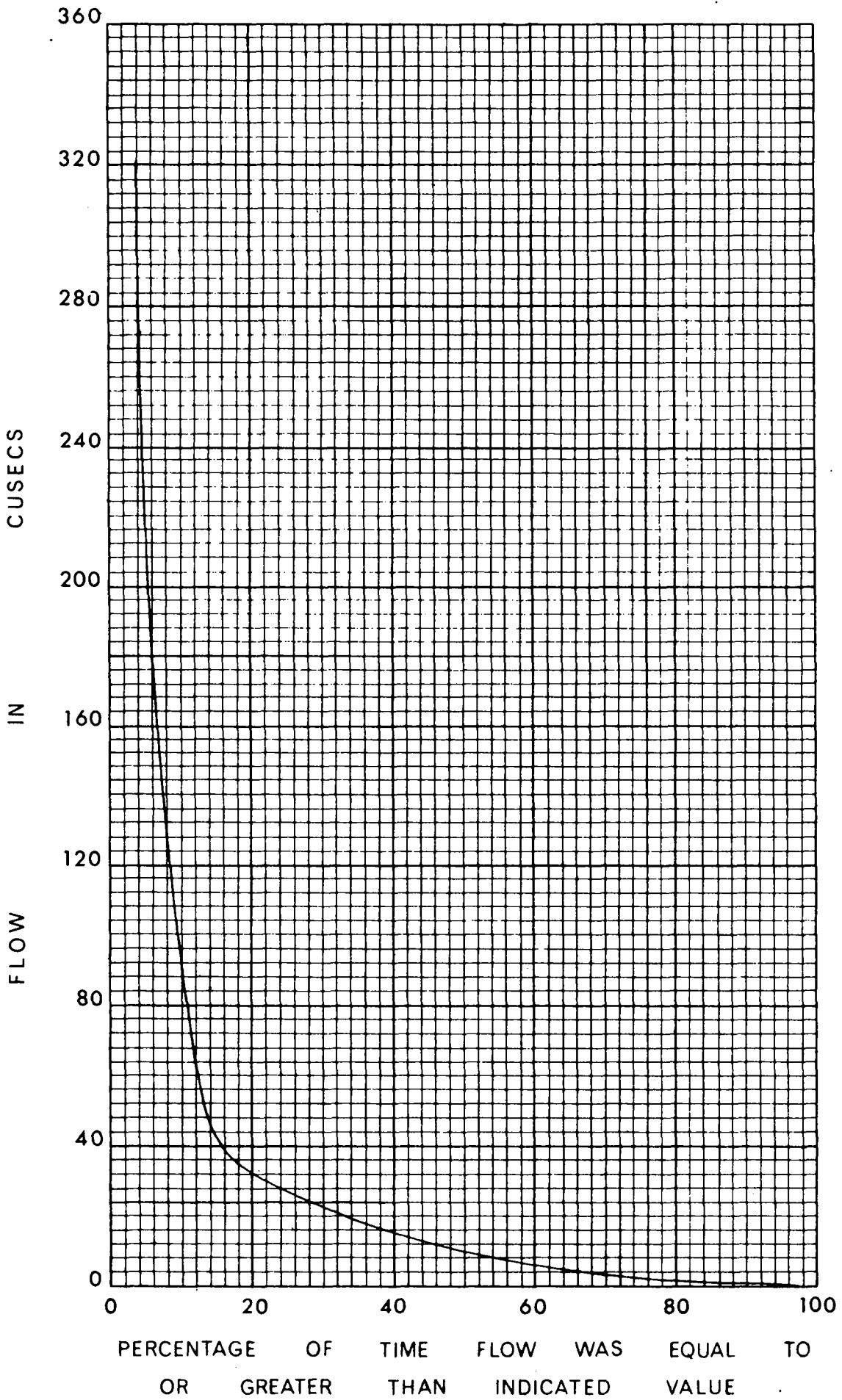


MONTHLY DISCHARGE IN ACRE FEET

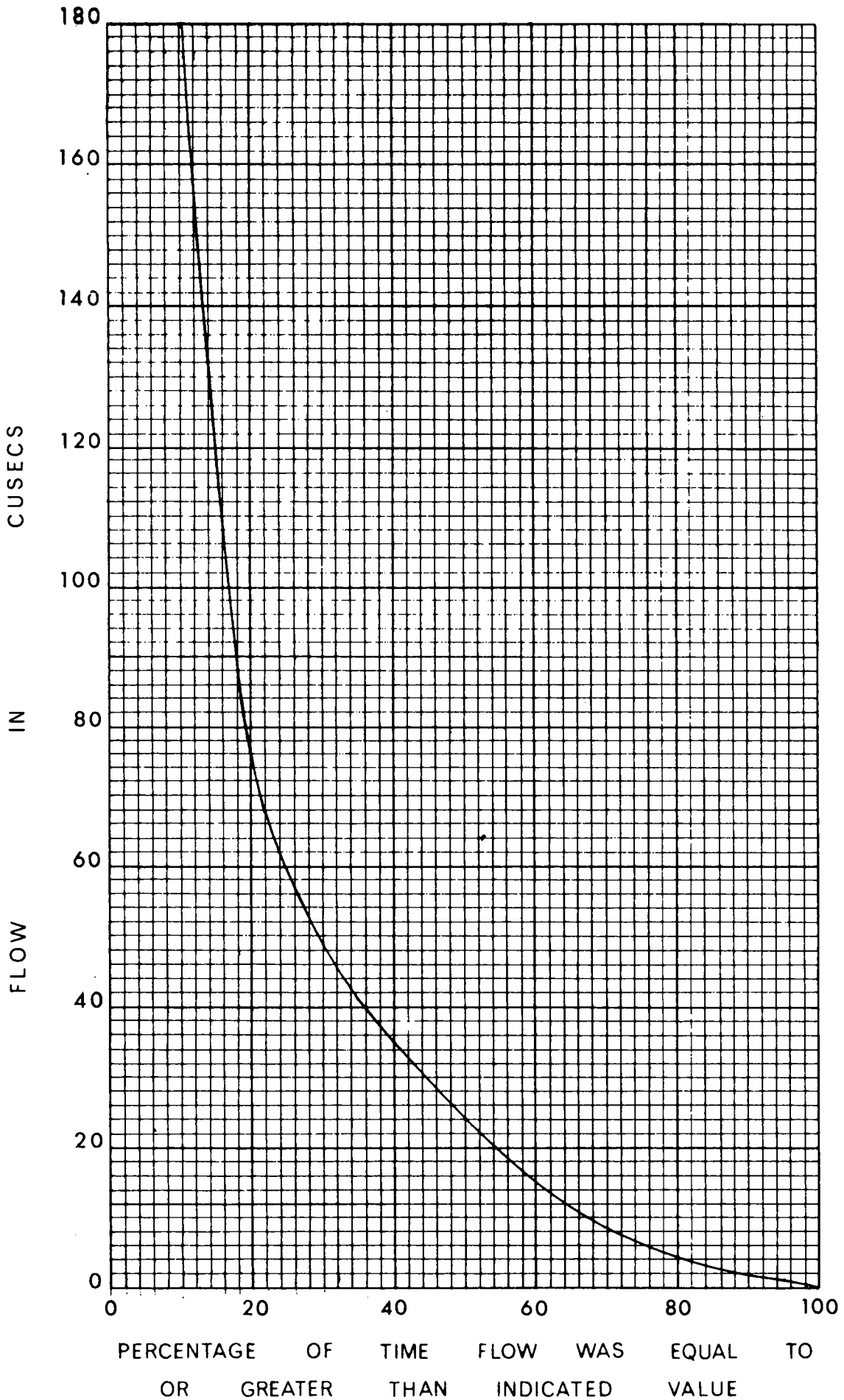
ENDRICK RIVER
LANGAROO VALLEY



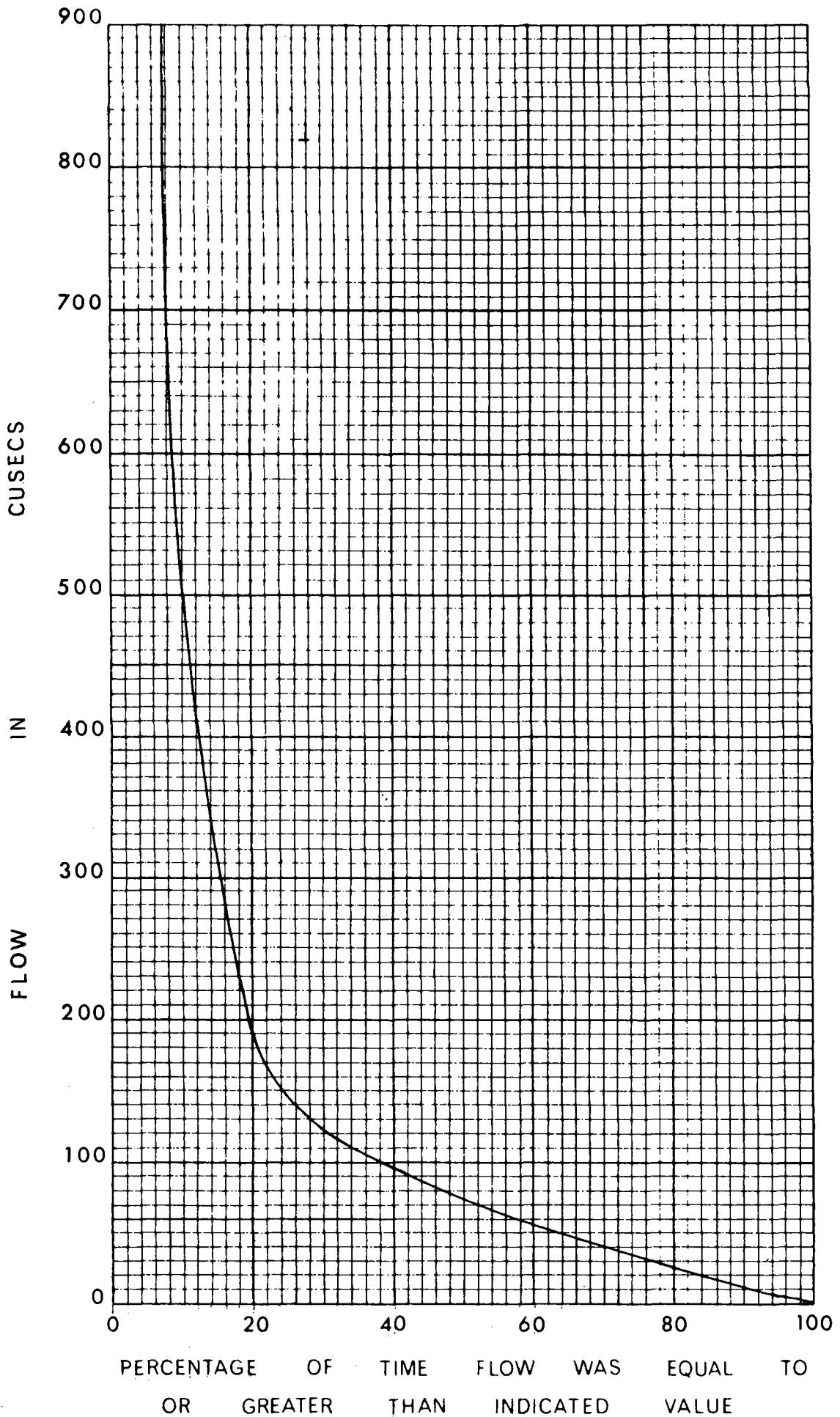
**FLOW DURATION CURVE FOR
MONGARLOWE RIVER AT MARLOWE**



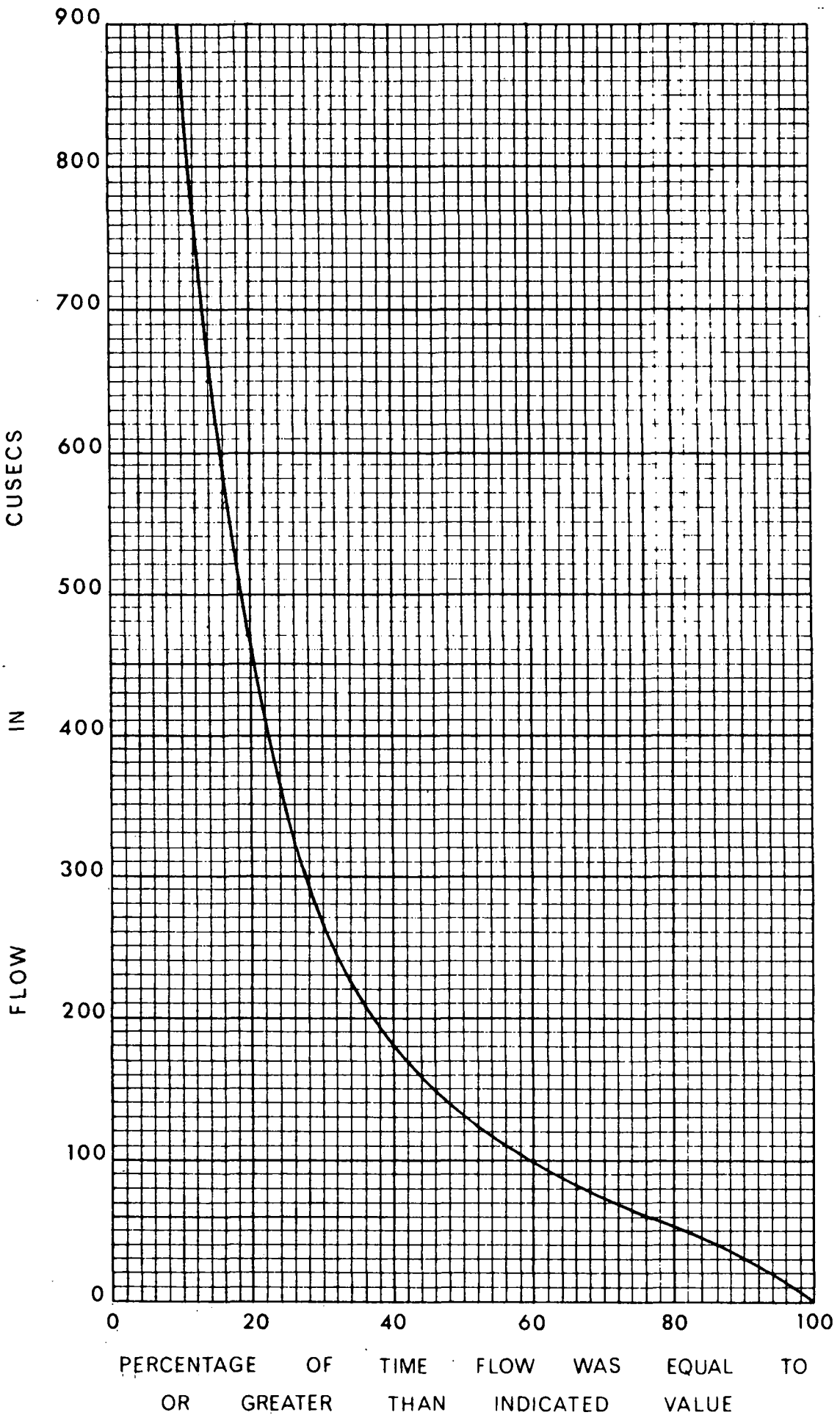
**FLOW DURATION CURVE FOR
CORANG RIVER AT HOCKEYS**



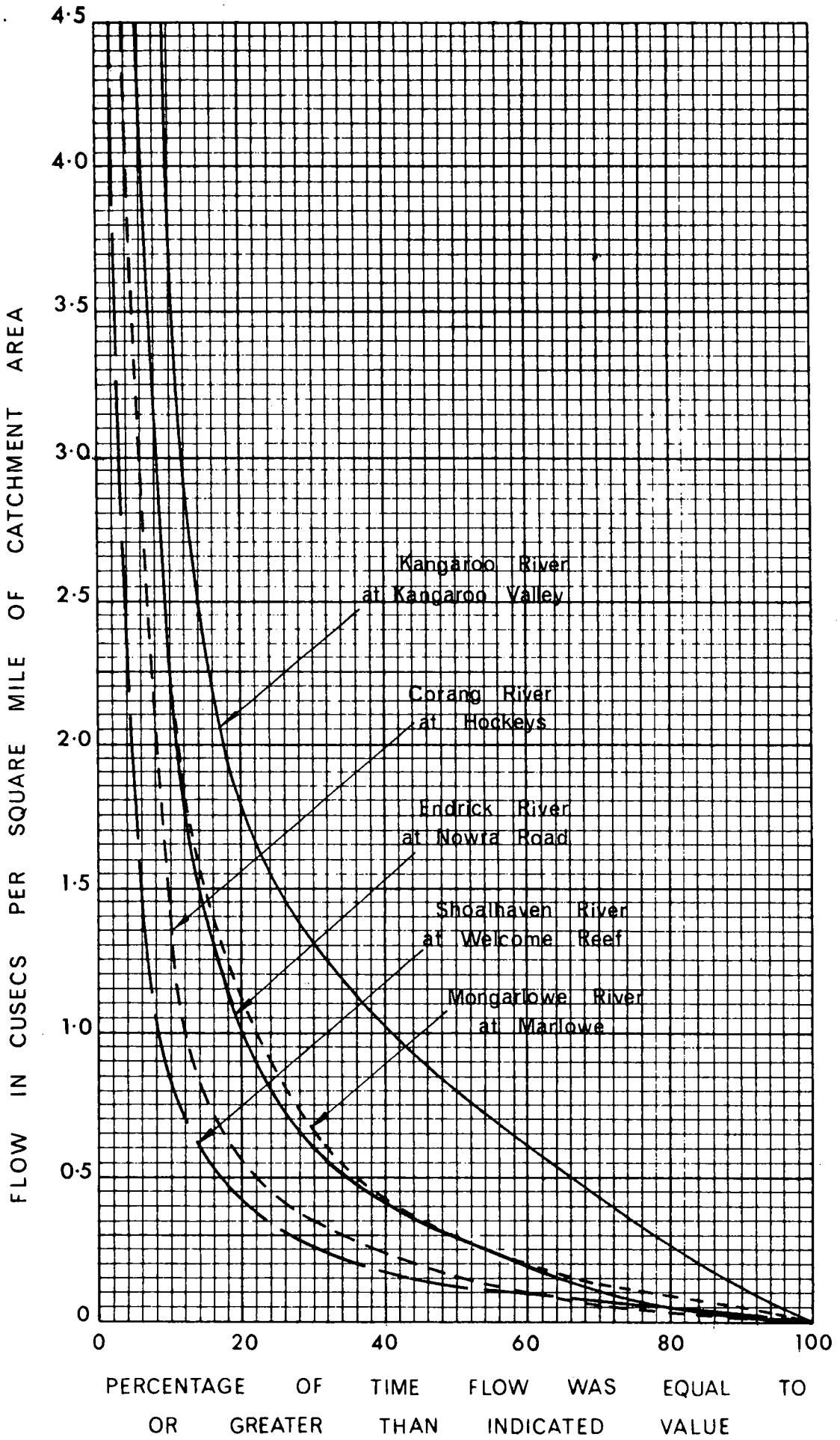
**FLOW DURATION CURVE FOR
ENDRICK RIVER AT NOWRA ROAD**



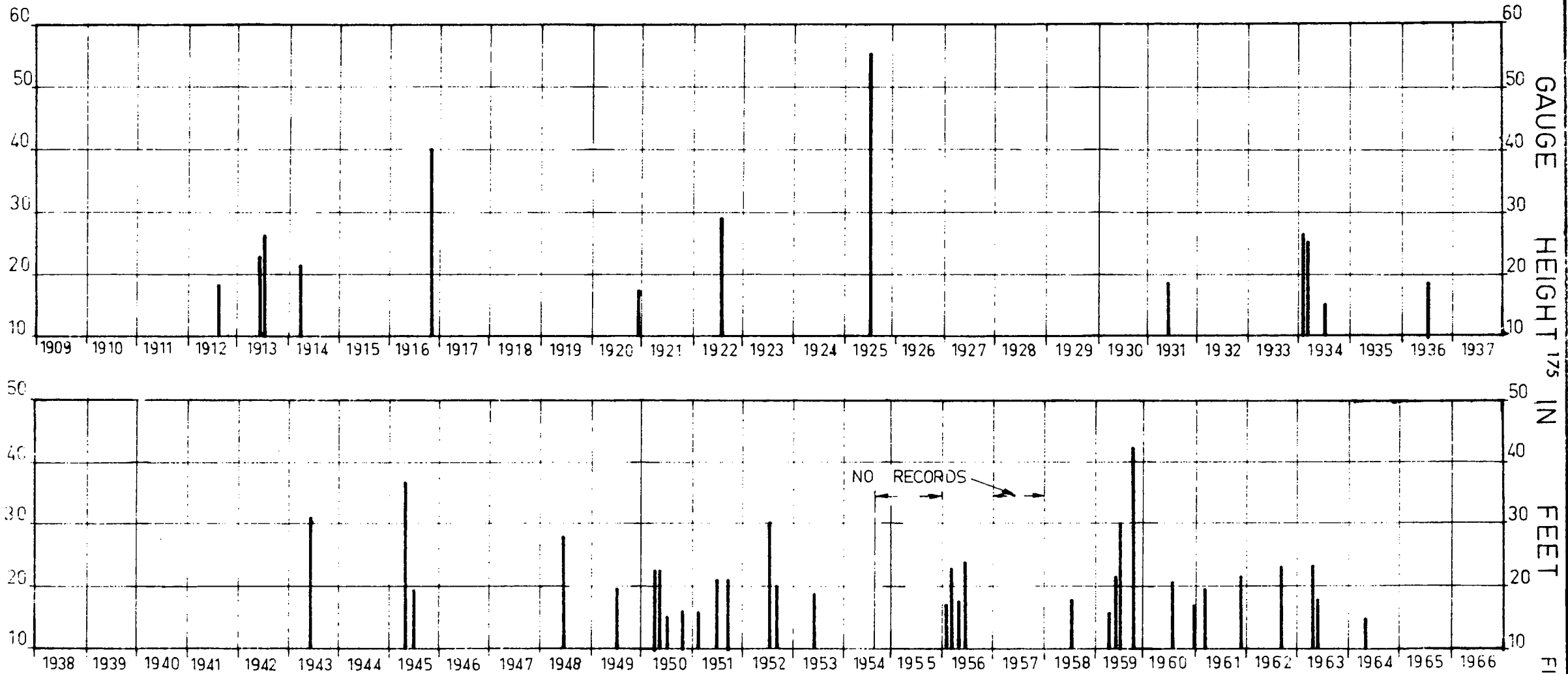
**FLOW DURATION CURVE FOR
KANGAROO RIVER AT KANGAROO VALLEY**



FLOW DURATION CURVE FOR SHOALHAVEN RIVER AT WELCOME REEF

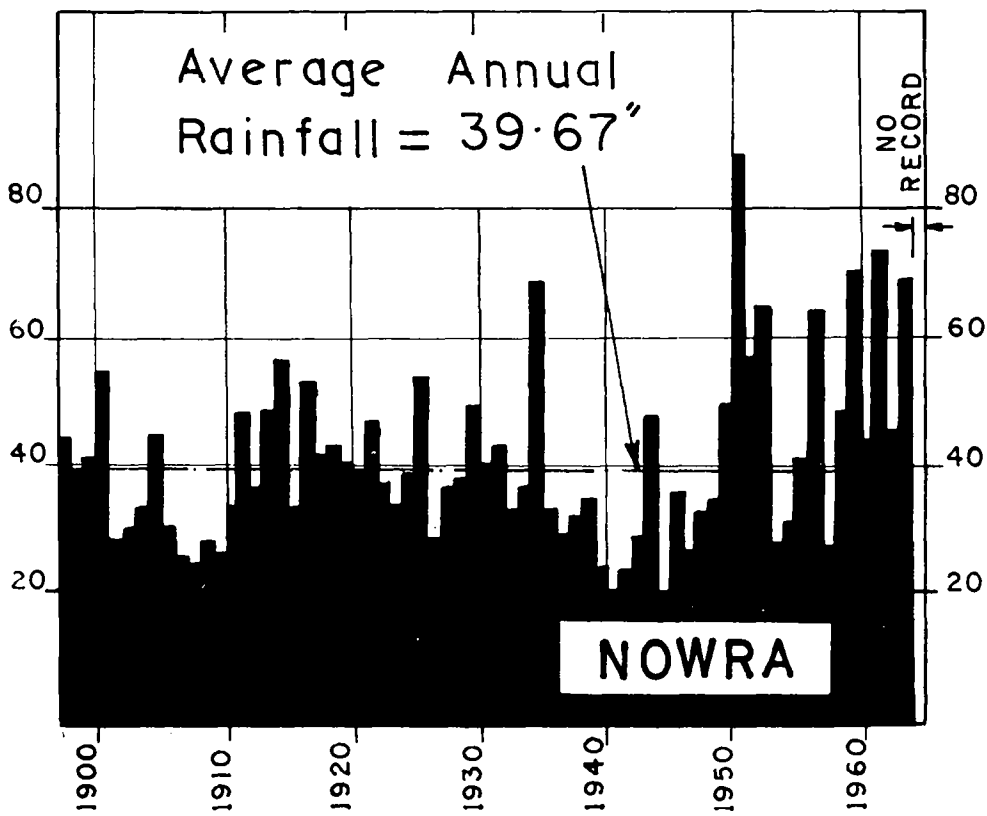
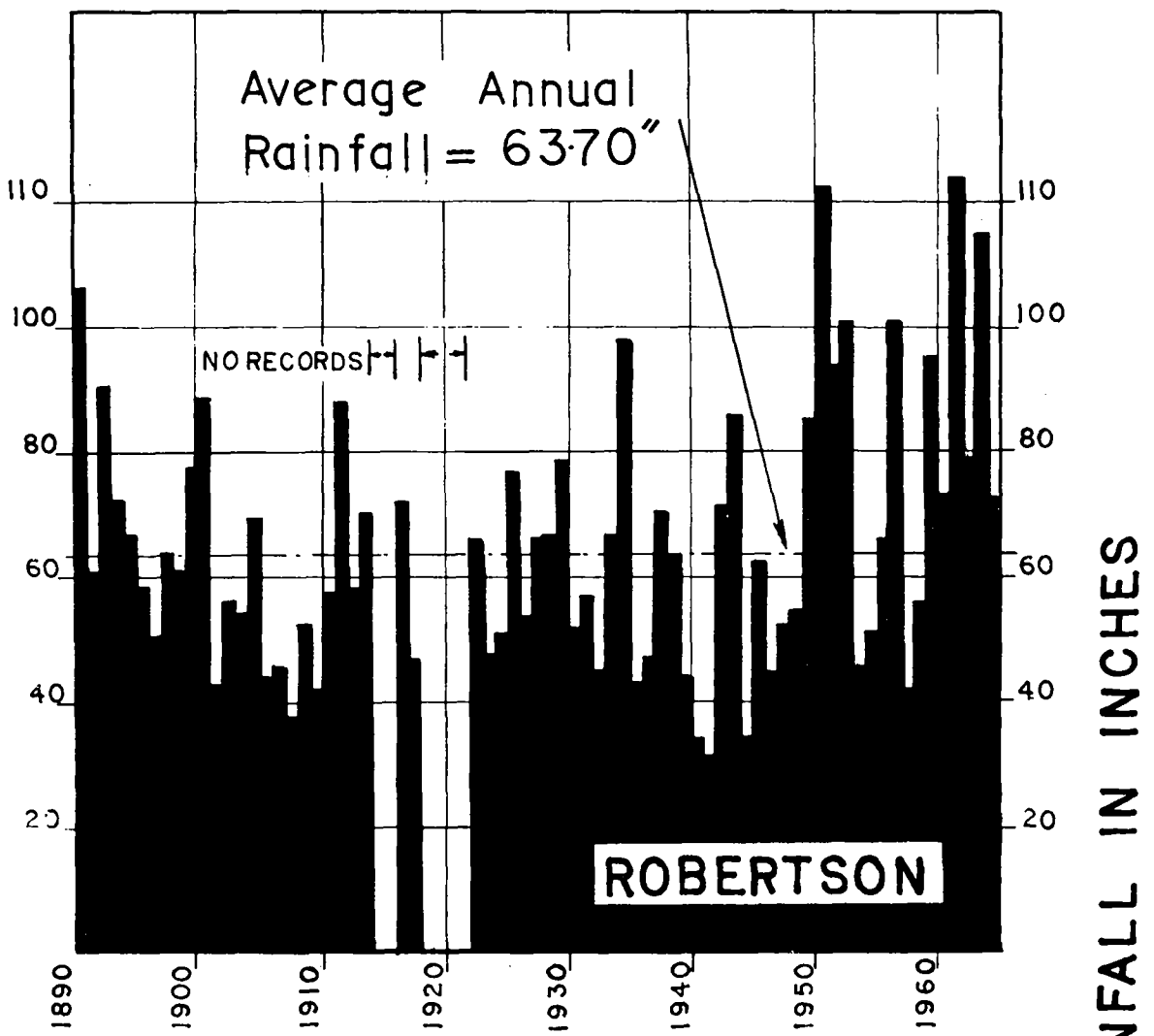


FLOW DURATION CURVES FOR SHOALHAVEN VALLEY

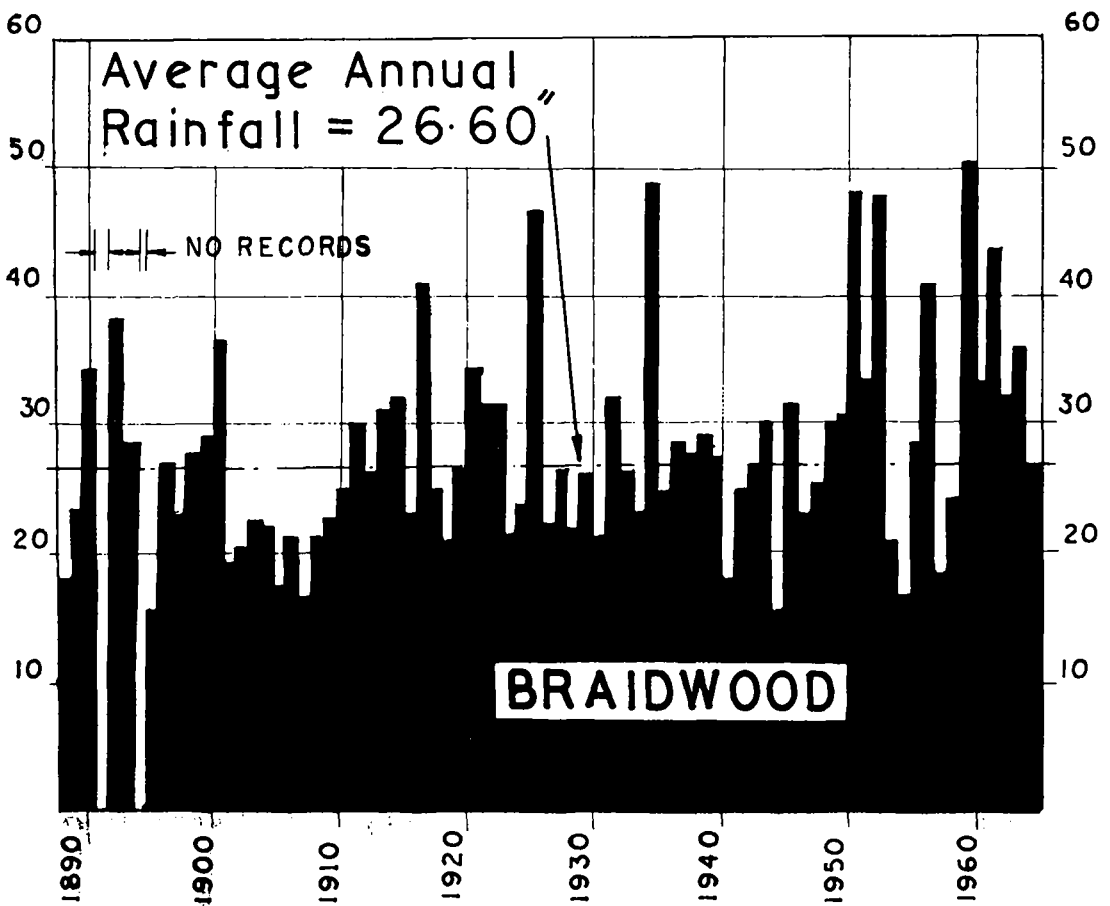
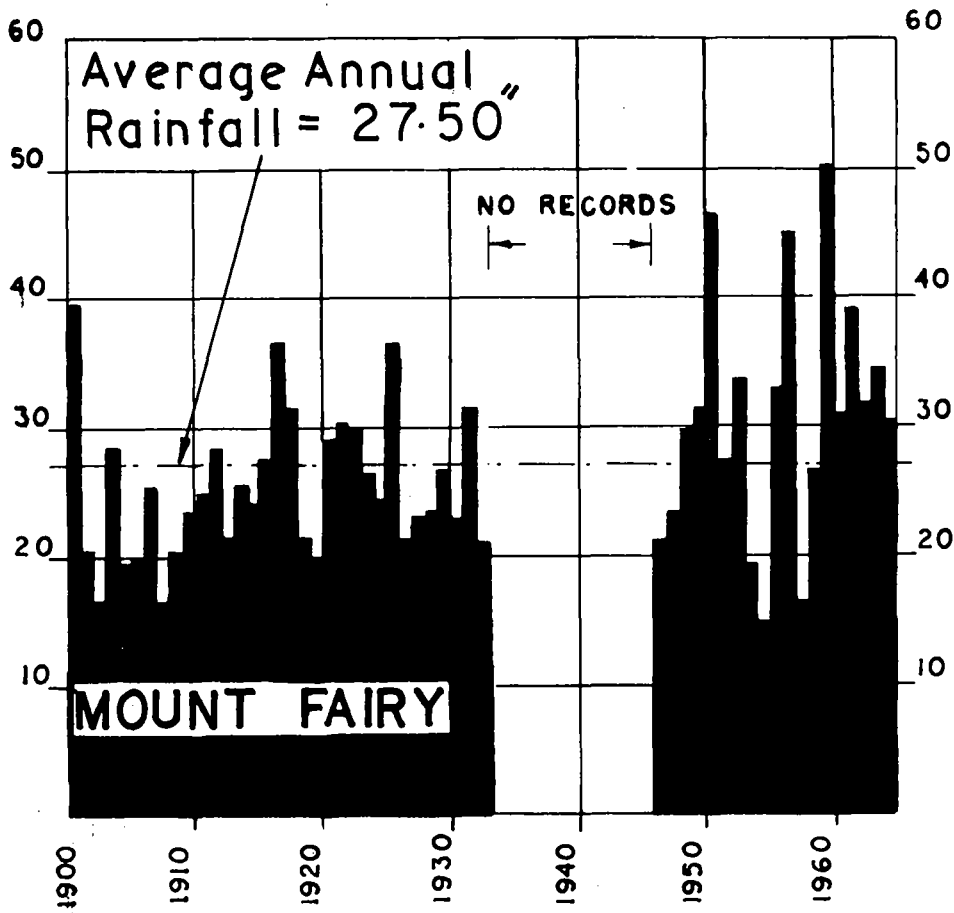


FLOOD PEAKS EXCEEDING 15 FEET AT WELCOME REEF

FIGURE 27

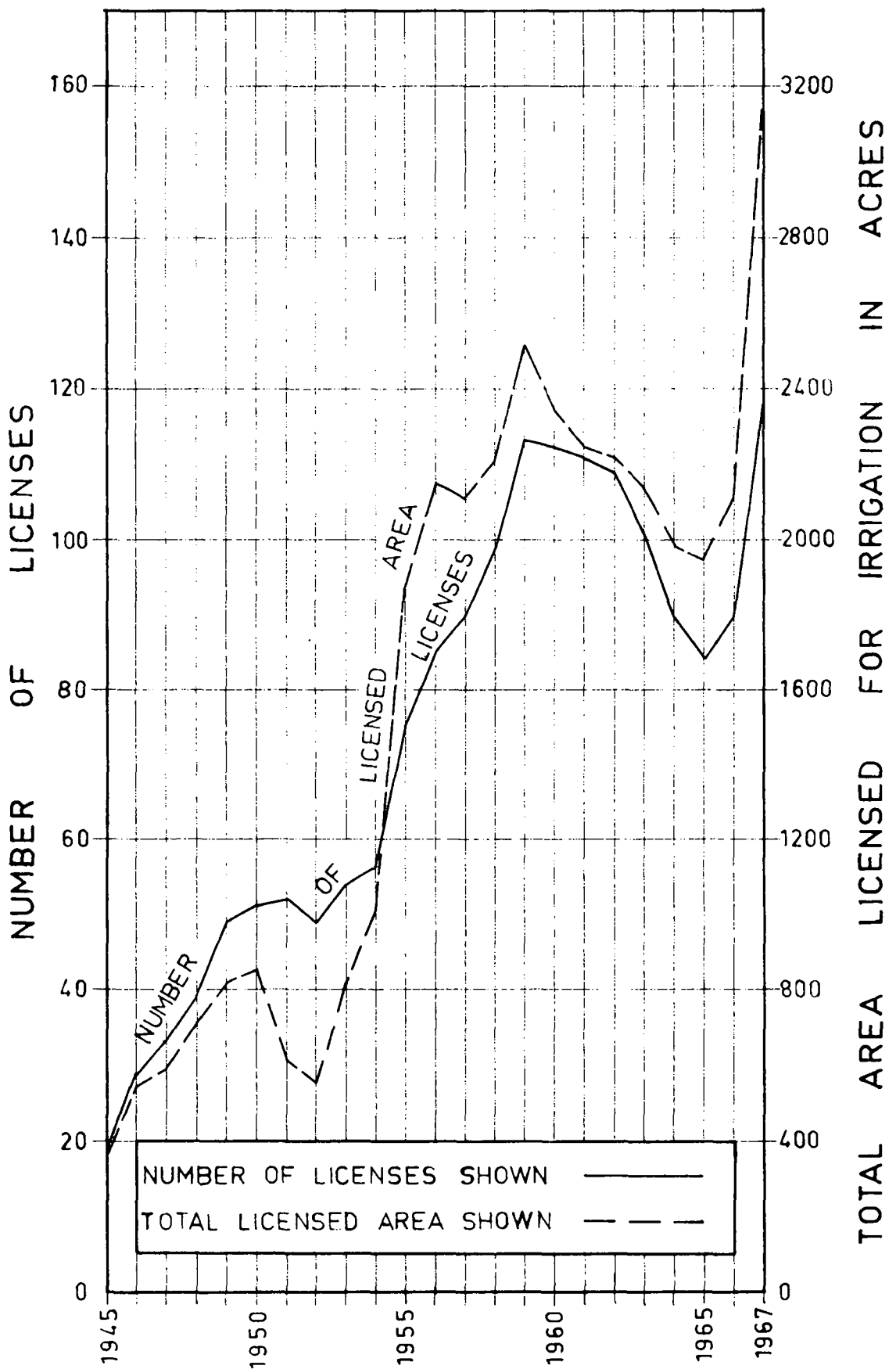


ANNUAL RAINFALLS AT ROBERTSON AND NOWRA



ANNUAL RAINFALL IN INCHES

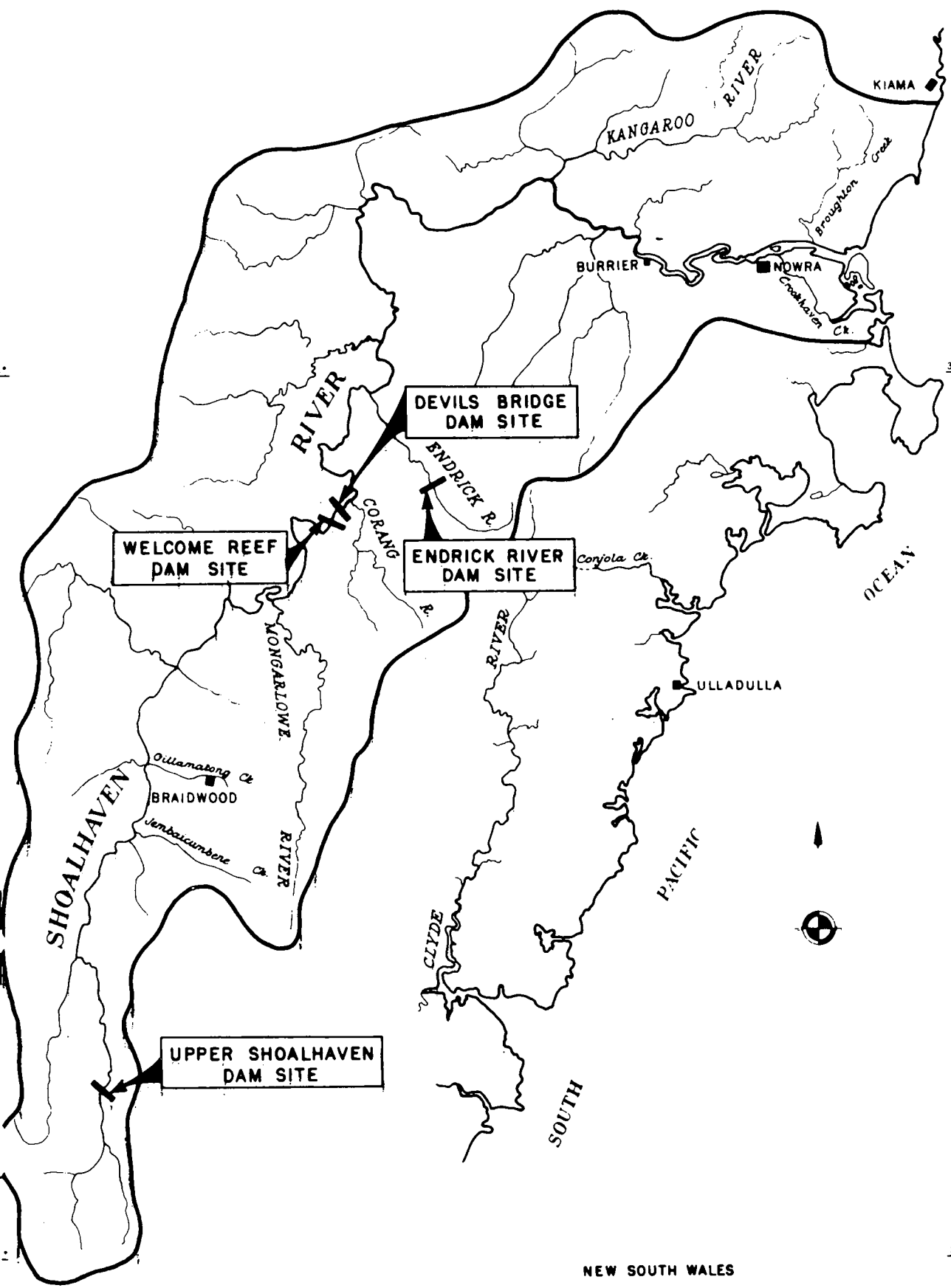
ANNUAL RAINFALLS AT
MOUNT FAIRY AND BRAIDWOOD



SHOALHAVEN RIVER VALLEY

AREA AUTHORISED FOR IRRIGATION AND

TOTAL NUMBER OF LICENSES AT 30TH JUNE FOR EACH YEAR INDICATED



NEW SOUTH WALES
 WATER CONSERVATION & IRRIGATION COMMISSION
SHOALHAVEN RIVER VALLEY
WATER CONSERVATION DAM SITES

