WATER RESOURCES

OF

THE MACLEAY VALLEY

SURVEY OF THIRTY N.S.W. RIVER VALLEYS

REPORT Nº 12 — MAY 1968

WATER RESOURCES OF THE MACLEAY VALLEY

PREFACE

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MINISTER FOR CONSERVATION

NEW SOUTH WALES

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

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

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

Reports are being prepared progressively and those issued to date have covered fifteen major valleys. This report on the water resources of the Macleay Valley is the twelfth to be issued.

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May, 1968.

WATER RESOURCES OF THE MACLEAY VALLEY

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WATER RESOURCES OF THE MACLEAY VALLEY.

1. INTRODUCTION.

A modern society makes huge demands on water for domestic, agricultural and industrial purposes. When it is realised that an average of 1,000 tons of water is required to produce either a ton of food or four tons of steel it is apparent that water resources are a major factor influencing the development of a nation.

By far the greater part of the water on Earth, over 99 percent, is contained in the oceans and the polar ice caps. The former is too saline for use without expensive treatment and the polar ice caps are too remote from populated areas to be of benefit. Surface water contained in streams and lakes is the most convenient supply for man's consumptive use but these resources amount to less than one two-hundredth of the Earth's total water resources.

Many countries have relatively abundant water resources. The South American continent receives an average annual rainfall of almost 4½ feet while the continents of Africa, Asia and Europe have averages of about 2 feet. However Australia is the world's driest continent and has an average annual rainfall of only about 1½ feet.

In contrast to many other continents, none of the streams on the Australian mainland are permanently snow fed. Furthermore over much of the Australian continent, the average monthly rainfall does not exceed the potential evaporation loss in any month of the year. It is not surprising therefore that our surface water resources are relatively meagre in comparison with those of the other continents.

The average annual surface water resources of the Australian mainland have been assessed at 240 million acre feet, a volume which is equivalent to a depth of less than 2 inches over the continent. The corresponding average annual values for the continents of Africa, North America and South America are about ½ foot, 1 foot and 1½ feet respectively.

New South Wales receives an average annual rainfall of about 20 inches and its average annual surface water resources have been assessed at 30 million acre feet. These resources are equivalent to an average depth of water or an average rainfall occurring without loss of about 1.8 inches over the whole of the State.

The State's water resources are not evenly distributed. The average annual surface water resources of Coastal New South Wales have been estimated as being equivalent to about 7 inches of rainfall occurring without loss compared with about one inch for Inland New South Wales.

The Macleay Valley receives an average annual rainfall of about 38 inches and its average annual surface water resources have been assessed at about 1,500,000 acre feet, equivalent to an average of about 6½ inches of rainfall occurring without loss over the whole of the valley. On a catchment area basis, the surface water resources of the Macleay Valley are considerably greater than the average value for Australia but somewhat less than the average values for the other major valleys on the north coast of New South Wales.

In common with the rest of the Australian continent the surface water supply in the Macleay Valley has been found to vary considerably from year to year.

2. PHYSIOGRAPHIC FEATURES.

The Macleay River drains an area of about 4,340 square miles extending inland from the coast for a distance of about 100 miles to the Great Dividing Range. The major centres of population in the valley are Armidale, Kempsey, Walcha and Guyra.

The elevation of the Macleay Valley varies from almost mean sea level in the low lying areas of the lower valley below Kempsey to more than 5,200 feet above sea level at Point Lookout and The Round Mountain.

The valley is widest in its western section along the tablelands, where the major tributaries of the Macleay River rise. These tableland areas comprise about one third of the total area of the valley.

The Chandler, Muddy and Apsley Rivers are the principal tributaries of the Macleay River. These streams leave the tablelands by way of waterfalls and combine to form the Macleay River in a well defined gorge section which intersects the escarpment between the coastal and tableland sections of the valley.

The Chandler River rises in country over 5,000 feet above sea level in a satellite spur of the Great Dividing Range known as Doughboy Range and drains the northern section of the tablelands. After being joined by its principal

tributaries Wollomombi Creek and the Oaky and Styx Rivers, the Chandler River joins the Muddy River in the gorge country below the tablelands about 30 miles south east of Armidale and forms the Macleay River.

The principal tributaries of the Muddy River are the Gara River and Salisbury Waters. These streams rise in the Great Dividing Range at elevations of about 4,500 feet and 3,500 feet above sea level respectively and drain the central tablelands section of the valley between Ben Lomond and Wollun.

The Apsley River joins the Macleay River about five miles below the junction of the Chandler and Muddy Rivers. It drains the southern area of the tablelands, rising near Mt. Sugarloaf at about 3,700 feet above sea level. In the gorge country below the tablelands it is joined by the Tia and Yarrowitch Rivers.

The central section of the Macleay Valley between the Apsley River junction and Kempsey is marked by decreasing width and the absence of major tributary streams. However there are a considerable number of minor tributaries including Kunderang Brook, George's Creek, Dyke River, Five Day Creek, Nulla Nulla Creek, Parrabel Creek, Hickey's Creek and Dungay Creek.

The rugged and heavily timbered country which characterises the escarpment region extends downstream to about Hickey's Creek. However on some of the tributary streams, notably Five Day, Nulla Nulla and Parrabel Creeks there are some areas of open and less steeply sloping land.

From Hickey's Creek to about ten miles above Kempsey where the Macleay River comes within tidal influence, the topography becomes progressively less severe and large areas have been cleared of their original forest cover and utilised for agriculture.

After passing through Kempsey, the Macleay River flows through a broad flood plain which extends generally to the coastal sand dunes fronting the South Pacific Ocean, and enters the ocean near the village of South West Rocks.

The coastal flood plain varies in elevation from about 20 feet above sea level on the higher ground along the natural river levees near Kempsey to almost sea level in some of the lower swamp lands on the upper Belmore River area. The existence of extensive areas of extremely low lying land away from the immediate vicinity of the river levees has resulted in the construction of

a system of drainage channels to the Macleay River and the natural watercourses such as the Belmore River and Kinchela, Christmas and Clybucca Creeks.

In the vicinity of Cresent Head where the swamp lands of the Macleay River Valley are connected to similar swamps in the Hastings Valley by a depression known as Connection Creek, a floodway has been constructed through the coastal sand dunes to permit the drainage of floodwaters directly to the ocean.

The lower valley below Kempsey and the tablelands area between Armidale and Walcha can be classified as being almost entirely flat with land slopes less than 3 degrees. These areas comprise about one sixth of the total area of the valley. The remainder of the valley is comprised of approximately equal areas of undulating to steep country with land slopes between 3 and 15 degrees and rugged or mountainous country with land slopes greater than 15 degrees.

The tableland and lowland areas are characterised by sparsely timbered country. However the escarpment region and steeper tableland sections of the valley support areas of dense mixed eucalyptus forest. In the higher rainfall areas of these sections, the fertile loams of basaltic origin support rain forest vegetation.

Topography is an important factor influencing land use in the valley. On the tablelands, beef cattle grazing and sheep grazing for wool are generally the dominant activities. However in the Guyra-Ben Lomond and Armidale-Walcha districts, suitable soils have encouraged the intensive cultivation of such crops as maize, oats, lucerne, vegetables and fruit.

The eastern area of the valley is also extensively used for agricultural production being almost entirely devoted to dairying, beef cattle grazing and the growing of associated fodder crops. However the steep and rugged slopes of the escarpment between the tablelands and coastal sections of the valley are of little agricultural use and are principally used as a source of timber.

The principal features and generalised land slopes of the Macleay Valley are shown at Figures 1 and 2.

3. CLIMATIC FEATURES.

Rainfall.

The Macleay River Valley is well watered and with the exception of a section of the upper catchment just to the east of the New England Tableland, the median annual rainfall exceeds 35 inches over the entire valley. (The median is the value which is equalled or exceeded on 50 percent of occasions).

Along the northern boundary the median annual rainfall varies from about 29 inches at Aberfoyle to more than 50 inches between Point Lookout and Denleigh. From the Macleay River to the northern boundary of the valley between Point Lookout and Denleigh the median annual rainfall increases at a rate of about an inch per mile.

At Beulah near the north western corner of the valley, the median annual rainfall is about 38 inches. However areas along the tablelands near Armidale receive a median annual rainfall of only about 30 inches. The lowest median annual rainfall on the western boundary of the valley is about 29 inches at Salisbury Court.

Median annual rainfall is fairly uniform at about 50 inches along the southern boundary of the valley. The maximum of about 60 inches occurs near Rocky Peak.

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

There is a marked seasonal variation in rainfall. At most locations in the valley, the median rainfall of the wettest month is more than three times that of the driest month.

The wettest month occurs in March at Kempsey. However at Bellbrook and higher elevations in the valley January is the wettest month. The median rainfall in the wettest month varies from 3.19 inches at Salisbury Court to 4.68 inches at Kempsey.

The driest month is also earlier in the upper valley. The lowest median monthly rainfall occurs in September at Kempsey, August at Bellbrook and along the north eastern boundary, July in the central section of the valley and May on the edge of the New England Tableland. The median rainfall in the driest month varies from 0.93 inches at Kunderang to 1.65 inches at Beulah.

The isohyets of median monthly rainfall show a minimum in all months along the centre of the valley from Salisbury Court through Kunderang to Bellbrook. The highest rainfall occurs on the southern and western boundaries during August and on the north eastern and southern boundaries during the period from December to May inclusive. In other months the median rainfall is fairly uniform along the boundaries of the valley.

High monthly rainfall totals occur more frequently in the coastal section of the valley. At Kempsey monthly totals in excess of 10 inches have occurred in all months of the year while at Bellbrook ten inches has been recorded in all months except October. Further inland, falls of 10 inches have been exceeded during the summer months and occasionally in the other months.

Monthly and annual rainfalls recorded at Armidale, Bellbrook, Guy Fawkes, Guyra, Kempsey, Kunderang, Salisbury Court, Walcha, Wollomombi and Wongwibinda are given at Appendices 1 to 10 respectively.

There is considerable variability from year to year in the amount of rainfall which occurs in a particular month. The 30th percentile value is generally slightly less than two thirds of the median value while the 70th percentile value is generally more than one third greater than the median value. A rainfall lying within the range from the 30th to 70th percentile values may be regarded as being "usual" or "about average."

In the Macleay Valley, the ratio of the highest to the lowest value of "about average" rainfall is more than two at most locations in most months. This indicates that the rainfall in the valley can be classed as being of moderately high variability and moderately low reliability. In the winter months rainfall at the lower end of the "about average" range is less than the requirements of pastures and crops.

The 10th percentile value, which is not reached on an average of one year in ten indicates very dry conditions. Dry conditions extending over several months are indicated by the value being less than half the median for three or more months. This occurs on an average of one year in ten for a sequence of three months commencing in June, July or August. It is not infrequent for insufficient rainfall to be received during the spring and early summer months.

The tables at Appendix 11 show on a monthly and annual basis for Armidale, Bellbrook, Guyra, Kempsey, Kunderang, Salisbury Court, Walcha, Wollomombi and Wongwibinda the following data:

(i) The maximum and minimum rainfalls.

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

An observation less than the 10th percentile value has occurred in one tenth of the years of record and has been equalled or exceeded in nine tenths of these years. In any particular month, the chance of rainfall being less than the 10th percentile value is one in ten, and of being equal or greater than the 10th percentile value is nine in ten. Similarly for the 70th percentile value, the chances are seven in ten and three in ten respectively.

The tables at Appendix 12 show the minimum recorded rainfall for periods of up to twelve months, commencing in each month of the year for Armidale, Bellbrook, Guyra, Kempsey, Salisbury Court, Walcha, Wollomombi and Wongwibinda.

Temperature.

Records of daily temperatures are available for Kempsey, Armidale, Guyra, Uralla and Styx River State Forest. The monthly and annual average maximum and average minimum temperatures at Kempsey West, Styx River State Forest, Armidale and Guyra are given in Tables 1 to 4 respectively.

TABLE 1.

KEMPSEY WEST (Elevation 31 feet)

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

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	86.0	85.0	82.8	78.2	72.7	67.8	67.6	70.8	75.9	79.4	82.4	84.3	77.7
Average Minimum	63.1	63.4	61.0	55.2	48.9	43.8	42.2	43.3	47.5	53.1	57.7	61.4	53.4
Highest on Record 116.0						Lowest on Record 18.0							

TABLE 2

STYX RIVER STATE FOREST (Elevation about 3,600 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	73.2	72.2	68.9	63.8	57.0	53.2	52.6	54.3	59.6	66.7	70.7	74.6	63.9
Average Minimum	53.7	55.2	52.6	46.4	40.8	36.7	34.5	36.0	40.0	46.2	49.7	53.5	45.4
Highest on Record 100.0						Lowest on Record 14.0							

TABLE 3

ARMIDALE (Elevation 3,333 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	80.8	79.5	75.3	68.4	61.2	55.3	54.0	57.2	63.8	70.4	76.1	79.3	68.4
Average Minimum	56.5	55.8	52.1	45.6	39.2	34.9	33.8	34.4	38.9	45.1	50.3	54.3	45.1
Highest on Record 103.4						Lowest on Record 14.0							

TABLE 4

GUYRA (Elevation 4,330 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	77.6	74.9	71.4	65.4	58.3	52.3	50.4	54.0	60.8	66.9	71.6	75.9	64.9
Average Minimum	51.5	50.7	47.9	41.5	36.1	32.1	30.7	31.8	35.7	40.8	45.4	49.3	41.1
Highest on Record 100.0						Lowest on Record 15.0							

The temperatures at Kempsey are influenced in summer by the proximity of the ocean. Consequently the maximum temperatures are slightly lower and the minimum temperatures slightly higher than would occur inland at Bellbrook. However conditions at Kempsey can be taken as indicative of those at elevations of less than 1,000 feet.

In the higher rugged country, temperatures are influenced by both elevation and the effects of surrounding terrain. In these areas the observation site may be affected by cold air at night draining down or forming a stagnant pool or by heated air in the day time being trapped or being carried away by valley winds. The peculiarities of the various sites during the day are less pronounced than those at night

Frosts.

Except in the lower part of the valley, frosts are common in winter and early spring and occur occasionally in autumn and late spring. On the edge of the tableland the average length of the frost free period is 200 days and below Bellbrook at least 300 days.

Snow.

Snow may occur on high ground above 3,000 feet at any time between June and October in association with very cold south to south-south-west winds. However snow is an infrequent occurrence and rarely lies on the ground for significant periods of time.

Sunshine.

Estimates of the average daily duration of bright sunshine on the tablelands and near the coast are given in Table 5.

TABLE 5.

Average Hours of Bright Sunshine Per Day
(as indicated by amount of cloud)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Armidale	8.5	8.1	7.4	7.3	6.4	5.8	6.0	7.4	7.9	8.6	9.0	9.1	7.5
Kempsey	8.3	8.1	7.2	7.0	6.3	6.2	6.5	7.5	7.6	8.0	8.1	9.1	7.5

The central part of the valley is probably slightly less cloudy than either the edge of the tableland or the area near the coast because some influences causing cloudiness do not extend much east of the ranges and others causing coastal cloudiness do not extend far inland.

Evaporation.

The monthly and annual average evaporation over the Macleay Valley has been estimated from observation of cloud and wet and dry bulb temperatures. These estimates which are for the evaporation from a sunken tank in which the water surface is flush with the ground are given in Table 6.

TABLE 6

Estimated Average Monthly and Annual Evaporation in Macleay Valley
(Sunken Tank)

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Evaporation (inches)	5.7	3.7	3.5	2.7	2.6	1.6	1.3	2.4	2.8	4.0	5.3	5.7	41.3
Standard Deviation (inches)	0.8	0.7	0.7	0.5	0.4	0.4	0.4	0.4	0.5	0.7	0.9	0.9	3.8

During 1965 "Class A" evaporation pans were installed at Armidale and Kempsey. The exposure and results of these differ from those of sunken tanks. However, the amount of available record is insufficient to warrant inclusion in this report.

Wind.

Although the valley is in a region of light winds, strong winds occur when a depression (often a tropical cyclone) is off the coast. However due to the effects of the rugged terrain these winds do not maintain their strength far inland.

Kempsey and Armidale are less sheltered than the central section of the valley where the country is more rugged and timbered.

The effect of local reinforcement of wind is not known but at Kempsey the valley may strengthen gusts from the northwest associated with thunderstorms.

Southerly busters which affect Sydney and the south coast of New South Wales do not maintain their intensity as far north as Kempsey.

As anemometer readings are not available for the Macleay Valley estimates have been made of the maximum likely wind gusts at Kempsey and Armidale. These estimates are given in Table 7.

TABLE 7

Maximum Speed of Wind Gusts at Armidale and Kempsey Expected With Given Return Periods

Return Period (years)	10	20	50	100
Speed (miles per hour)	85	95	100	105

4. GROUNDWATER POTENTIAL.

The western part of the Macleay River Valley is portion of the New England Plateau where the landscape is one of maturity and low relief, in spite of its considerable elevation. The various headwater streams leave the plateau by means of waterfalls which plunge into deep gorges through rugged country with considerable relief. Further downstream, in the vicinity of Bellbrook, river flats begin to appear on the inside of the entrenched meanders. In this vicinity high level river gravels testify to the mature state of the

river prior to the uplift of the New England massif. Near Kempsey the river is flanked by broad alluvial plains which continue almost to the coast where raised beaches and aeolian sands occur.

The earth movement responsible for the varied topography of this region took place at the close of Tertiary time, more than one million years ago. The uplift was greatest and most rapid in the west, and elevated the headwater streams comprising the Wollomombi, Chandler, Gara, Salisbury, Apsley and Yarrowitch Rivers, so that the original gradients and mature form of the valleys are still maintained upstream of the waterfalls. A series of faults were developed to the east, and it is probable that the present day waterfalls originated at fault scarps from which they have since receded by erosion of the mature valleys.

The areas of mature topography on the plateau to the west have been extensively cleared and developed for pastoral pursuits, chiefly wool production, whilst in the Lower Macleay, dairying is the main industry. The deeply dissected country between the tablelands and the lower valley is still virtually undeveloped.

As indicated on the geological map at Figure 16 more than half the catchment is underlain by Silurian metamorphic rocks into which granites have been intruded. Outcrops of granite of limited extent occur throughout the valley, indicating that the vast New England granite batholith extends eastwards beneath the Silurian strata at no great depth. This is substantiated by the presence in the Silurian strata of an unusual amount of milky quartz in the form of sheets parallel to the bedding planes and as irregular veins and reefs.

Conglomerates, tuffs, sandstones and mudstones of Carboniferous age outcrop to the north, south and west of Kempsey. Both marine and terrestrial strata occur and there is evidence of a glacial period at the time of deposition of the latter. Overlying these strata are calcareous shales with bands of sandstone and conglomerate, followed by a limestone horizon. These sedimentary rocks are of Lower Permian age and, like the Carboniferous sequence, they contain boulders termed "erratics", and faceted and striated pebbles, suggesting a fluvio-glacial origin for some of the beds. The main outcrops of Permian strata occur in an arcuate form to the south of Bellbrook and in meridional zones to the north and south of Wollomombi.

Granites believed to be of late Permian age are found mainly in the western part of the valley, the only exception being a small outcrop on the coast near South West Rocks.

Between the intrusion of the granite and the deposition of the next (Tertiary) stratum so far recognized in this valley, there is a time gap of about 200 million years. The Tertiary sediments are semi-consolidated, and occur mainly in the general vicinity of Armidale; they include clays, sands and gravels (or mudstones, sandstones and conglomerates as the case may be), which are usually overlain by basalts, also of Tertiary age. These basalts were extruded as extensive flows which originally must have covered most of the western and central parts of the valley. However erosion has reduced their outcrop to a few large areas and a considerable number of smaller "cappings".

Pleistocene and Recent alluvia and sand beds occur in the eastern half of the valley, downstream from the vicinity of Bellbrook to the coast. Upstream of Kempsey the alluvial flats are of fluviatile origin but below Kempsey they comprise an internal delta which has been built up under estuarine conditions.

On the basis of its mode of occurrence and the nature of the strata in which it is stored, groundwater may be discussed in three general subdivisions of rocks; Jointed Rocks, which although themselves impervious, may contain water in the cracks; Porous Rocks, usually sandstones, which may contain water in openings between cemented sand grains; and Unconsolidated Deposits, in which water may be stored in sands and/or gravels associated with alluvial material, or in accumulations of aeolian and beach sands near the coastline.

In this valley, groundwater is utilised quite extensively for stock watering, except in the rugged, virtually undeveloped country between the edge of the New England plateau and the coastal plains. In the plateau area most bores and wells obtain supplies of groundwater from cracks, joints and fractures in the various types of rock, which are themselves impervious, whilst in the coastal plain most supplies are obtained from unconsolidated sands and gravels associated with the alluvium or from aeolian or beach sands near the coast. The only representatives of the Porous Rocks occur in the semi-consolidated Tertiary sediments near Armidale.

Jointed Rocks.

With the exception of the relatively small areas of Tertiary sediments, Pleistocene and Recent alluvia and beach sands, the Macleay catchment is underlain by strata which fall within this group. The rocks include indurated sedimentary strata, a variety of metamorphic rocks, and plutonic and volcanic igneous rocks. The water bearing potential of this group varies considerably, the results of boring depending on many factors including the rock type, 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 the local environment has produced.

The oldest rocks in this group are the Silurian metamorphics which include mainly slates, phyllites, quartzites and greywackes. Dips vary over a wide range but the strike is essentially meridional. Faulting is common, and as a rule the strata are heavily fractured, particularly in the case of the harder, more resistant quartzites and greywackes. It is in these strata that favourable groundwater conditions are most likely to occur.

In these strata, bores located on favourable sites almost invariably yield useful stock supplies from depths which rarely exceed 100 feet. In some instances supplies of the order of 1,000 gallons per hour of good quality water have been obtained. Almost all failures can be attributed to poor sites or insufficient depth of boring.

The salinity of the water is rarely higher than 100 parts per hundred thousand and although usually too hard for domestic use without softening, it is almost invariably suitable for watering gardens.

The Carboniferous and Permian strata include cherts, tuffs, lavas, sandstones, mudstones, limestones, blocky slates and greywackes, and are expected to have a rather similar groundwater potential to the Silurian rocks. Bores in the Permian cherts and sandstones in the adjoining Macintyre River Valley have occasionally yielded supplies suitable for limited irrigation, and failures have been rare. However there are no records of bores in these strata in the Macleay Valley.

The granites which mainly outcrop in the central and western parts of the catchment are believed to be offshoots of the main New England Batholith to the west. The groundwater potential of the granites is only fair, as is shown by

experience in the Kentucky orchard area which is located near the Great Dividing Range to the north-west of Walcha. This is an area of relatively subdued relief, and most successful bores have encountered water at depths less than 100 feet in weathered granite. However the degree of weathering of the granite and the thickness of the decomposed material is very variable and probably almost half the bores constructed in the area have failed to produce worthwhile supplies because hard granite was encountered at relatively shallow depths. Yields from bores in the granite rarely exceed 300 gallons per hour and the salinity of the waters is usually less than 100 parts per hundred thousand.

There are numerous large and small basaltic cappings throughout the more elevated parts of the valley, and near Guyra and Walcha there are extensive remnants of the vast flows of basalt which originally must have covered most of the New England Plateau. There is evidence to show that the basalts were erupted in a series of flows which reveal varying characteristics such as "honeycomb" (vesicular) layers, columnar jointing, and weathered zones between flows. These variations tend to make the basalts reliable water bearing rocks, particularly where the area of outcrop is large enough to provide significant reservoir capacity.

Depending on local conditions, water may be obtained from sources in the basalts varying from springs, through shallow wells, to bores over 200 feet deep. Yields in the range 500 to 1,000 gallons per hour are common and some recorded bores appear to be capable of producing several thousand gallons per hour.

The water from basalts is characteristically hard, but the saline content is usually less than 100 parts per hundred thousand. An analysis of water from a bore near Walcha showed a Total Salinity of 54 parts per hundred thousand, a Hardness of 39 parts per hundred thousand, a Residual Alkali content of 6 parts per hundred thousand and a pH of 7.8. Such waters require softening if they are to be used for domestic purposes, but are suitable for stock and irrigation use.

Porous Rocks.

The total area of outcrop of the rocks in the valley which fit this category is small. The clays, sandstones and conglomerates, which frequently show evidence of lateritization, usually occur beneath cappings of Tertiary basalt. Outcrops commonly occur towards the base of basalt capped hills and

on the map they appear as fringes of sedimentary strata surrounding or flanking basaltic residuals. Some Tertiary sediments encountered in bores which have penetrated the overlying basalt, have been metamorphosed into grey billy and allied siliceous rocks, whilst in other cases they are still unconsolidated.

These sediments are usually fairly elevated with respect to the surrounding country and hence cannot be expected to contain reliable aquifers except in particularly favourable locations. There are only a few bores recorded which are known to have obtained water from this sequence, the aquifers being in lateritized sediments or sand and gravel. Yields from the consolidated sediments are small (about 100 gallons per hour) but bores which encountered sands beneath basalt have yielded as much as 1,000 gallons per hour.

The quality is usually described as good or potable. The only recorded analysis of these waters shows a Total Salinity of 40 parts per hundred thousand for a sample from a bore in lateritized sediments.

Unconsolidated Deposits.

There are some areas of alluvium in the mature valleys of the tributaries which rise on the New England Plateau. On the major streams such as the Gara and Apsley Rivers, the flats are as much as half a mile wide whilst on the smaller tributaries they are relatively narrower. The results of a number of bores have shown that the alluvium in the more extensive river flats may be as much as 100 feet thick.

No large yields have been recorded, but the records of several bores near Walcha and others north of Armidale suggest that there is some irrigation potential and that it may well be possible to obtain supplies of the order of 5,000 gallons per hour or more.

Most of the existing wells and bores provide stock, domestic and garden supplies. An analysis of water from a bore near Walcha shows a Total Salinity of 32.0 parts per hundred thousand, a Residual Alkalinity of 7 parts per hundred thousand, a Hardness of 15 parts per hundred thousand and a pH of 6.6. It is expected that the quality of the water in the alluvia in other tributary valleys would be similar, although variations are to be expected as a result of differing rock types in their catchments and other factors.

Between the eastern edge of the plateau and Bellbrook, there is no significant development of alluvium because the streams are actively eroding their valleys, but downstream from Bellbrook to the vicinity of Kempsey there are patches of high level alluvium (believed to be remnants of Tertiary river flats) which are located some distance from, and perched above, the floor of the present valley. On the inside of the entrenched meanders there are river flats which increase in size towards Kempsey.

In this fluviatile alluvium there is usually little difficulty in obtaining supplies for stock purposes from bores or wells, at depths usually between 20 and 50 feet. The water quality is mostly good and is usually suitable for domestic and garden use, although softening may be necessary for domestic use.

The presence of coarse gravels in the alluvium upstream of Kempsey suggests that it should be possible to obtain large supplies suitable for irrigation from bores or wells. Kempsey obtains its town supply from a large diameter well 50 feet deep, located on the flats some five miles upstream from the town. The yield is stated to exceed 100,000 gallons per hour, and apart from some iron content the quality is very good. However it is pointed out that the perched high level gravels are unfavourable to the occurrence of useful groundwater supplies.

The extensive flats downstream of Kempsey have an area of about 100 square miles, much of which is low lying and swampy. A series of bores constructed in 1909 by the Department of Public Works in connection with a proposed drainage scheme revealed a thickness of over 100 feet of estuarine alluvium consisting of black sands, silts and muds and occasional shelly bands. Most of the bores recorded brackish or salty water, the exceptions being those constructed in the sand beds near the coast and three in the alluvium in which fresh water was recorded down to about 40 feet with brackish water below this level.

There is considerable lateral and vertical variation in the permeability of the alluvium, the best and most consistent zones being in the levees which floods have built up between the river and the low lying areas away from the river.

The levees offer the best prospects for useful supplies of groundwater, and wells or spearpoints located on them usually produce good quality water from depths of the order of 20 feet. Yields are normally adequate for stock,

domestic and garden use, but are very variable. A well at Smithtown, some miles downstream of Kempsey has been pumped at 5,000 gallons per hour for long periods, whilst others within a radius of 200 yards can be pumped out at much lower rates. It is of interest that the salinity of the water from the high yielding well was found to vary with the periodicity of the tides, allowing for a time lag presumably due to the well being about 160 yards from the river.

Away from the levees there is a gradual deterioration in the water quality, and supplies from wells not deeper than 20 or 30 feet are usually suitable only for stock watering, whilst beyond this depth the water is brackish or salty. During dry periods there may be a considerable fall in the water table level and a corresponding increase in the salinity. Better yields of lower salinity water are sometimes obtained from localised shallow sands in which percolating waters, derived from rainfall, either directly or by concentration of runoff from the side slopes, have flushed away the original saline material.

The zone of sand beds near the coast is believed to offer the best groundwater potential in the area east of Kempsey. To the south of the mouth of the Macleay River there is a ridge of dune sand, parallel to the coast rising to heights greater than 100 feet. A low lying area of sand flanks the ridge and there are some swampy areas which contain accumulations of decayed vegetable matter. This environment, which is typical of the conditions under which the sands have accumulated, causes the groundwater to be peaty and acid, whilst the presence of certain bacteria is responsible for the frequently found contamination by sulphuretted hydrogen.

Five of the bores sunk by the Department of Public Works in this sandy area encountered fresh water in white, yellow and brown sands. A bore located west of the main ridge penetrated 100 feet of sand containing fresh water. In some of the bores, estuarine silts and muds are intercalated with the beach sands. Although the water is described as fresh, some aquifers contain dark-coloured water indicating the presence of organic matter.

Utilization of the water from the sand beds is confined to small market gardens, camping grounds and caravan parks, holiday homes etc. especially in the vicinity of South West Rocks and Crescent Head. However there is reason to believe that these sand beds are capable of yielding several million gallons per day of low salinity water which it may be possible to use for general water supply purposes or for the irrigation of crops on the nearby areas with better soils.

5. STREAM GAUGING STATIONS.

The proper appraisal of any scheme for the development of surface water resources is largely dependent upon the adequacy of the basic streamflow data. It is therefore desirable to obtain records of streamflow at a number of selected locations in a valley.

This is achieved by establishing gauging stations at which stream heights may be recorded either from visual observation of a gauge or by an automatic water level recorder. These gauging stations are calibrated by actual measurements over a range of flows to enable continuous records of streamflow to be derived.

The measurement of streamflow in the Macleay Valley commenced in 1918 with the establishment of gauging stations on the Styx River at Jeogla and the Tia River at Riverglade. Additional stations were established in 1923 on the Chandler River at Chandler and Wollomombi Creek at Wollomombi and in 1924 stations were established on the Oaky, Gara, Apsley and Yarrowitch Rivers and Commissioner's Water.

The first gauging station on the Macleay River was established at Turner's Flat in 1945. However this station was not operated between December 1949 and April 1953.

In 1946 a second station was established on the Macleay River at Comara but this station was discontinued in 1950 in favour of a superior site at Lower Creek whilst the flood warning station installed at Bellbrook in 1945 commenced operation in 1953 as a full gauging station.

At the present time the Water Conservation and Irrigation Commission is operating a total of 15 stations in the valley. Included among these stations is the station on the Macleay River at Kempsey Railway Bridge which was established in 1957 for the measurement of flood flows. As this station is in the tidal section of the Macleay River it is not suitable for the continuous measurement of streamflow.

The locations of the existing and discontinued stations are shown on Figure 17 and relevant details for each of the stations are given in Table 8.

TABLE 8

Stream	Station	Catchment Area in Square Miles	Type of Gauge	Period of Operation
Wollomombi Creek	Coninside	145	Float Recorder	1948 to date
Wollomombi Creek	Wollomombi *	157	Staff Gauge	1923 to 1929
Chandler River	Euringilly (Fassifern)	79	Pressure Recorder	1948 to date
Chandler River	Chandler *	117	Staff Gauge	1923 to 1931
Oaky River	Yooroonah No. 1 *	15	Staff Gauge	1925 to 1931
Oaky River	Yooroonah No. 2 *	18	Pressure Recorder	1948 to 1961
Oaky River	Above Oaky Dam (The Falls)	52	Pressure Recorder	1956 to date
Oaky River	Kempsey Road *	78	Pressure Recorder	1924 to 1956
Serpentine River	The Hatchery	8	Float Recorder	1952 to date
Styx River	Serpentine (Hyatt's Flat)	30	Float Recorder	1956 to date
Styx River	Jeogla No. 1 *	64	Pressure Recorder	1918 to 1938
Styx River	Jeogla No. 2	65	Pressure Recorder	1938 to date
Commissioner's Water	Eathorpe No. 1 *	140	Staff Gauge	1924 to 1931
Commissioner's Water	Tiverton (Eathorpe No. 2) *	148	Pressure Recorder	1948 to 1963
Gara River	Gara No. 1 *	157	Staff Gauge	1924 to 1931
Gara River	Gara No. 2	157	Pressure Recorder	1949 to date
Apsley River	Waterloo *	320	Staff Gauge	1924 to 1931
Apsley River	Apsley Falls	340	Float Recorder	1952 to date
Tia River	Tia	97	Float Recorder	1927 to date
Tia River	Riverglade *	100	Staff Gauge	1918 to 1928
Yarrowitch River	Yarrowitch No. 1 *	33	Staff Gauge	1927 to 1931
Yarrowitch River	Yarrowitch No. 2	33	Pressure Recorder	1936 to date
Yarrowitch River	Yarrabindi *	50	Staff Gauge	1924 to 1929
George's Creek	Big Hill	50	Pressure Recorder	1963 to date
George's Creek	George's Creek Post Office *	61	Staff Gauge	1946 to 1963
Macleay River	Lower Creek	3100	Staff Gauge	1950 to date
Macleay River	Comara *	3150	Staff Gauge	1946 to 1950
Macleay River	Bellbrook	3450	Staff Gauge	1953 to date
Macleay River	Turner's Flat	3800	Staff Gauge	(1945 to 1949 (1953 to date
Macleay River	Kempsey Railway Bridge	4000	Float Recorder	1957 to date

* Discontinued Station.

The present network of gauging stations in the valley includes 6 stations equipped with automatic float operated recorders, 6 stations equipped with automatic pressure operated recorders and 3 stations equipped with staff gauges from which daily readings are obtained.

The density of stations in the valley of about 3.3 stations per thousand square miles compares favourably with the average of 2.2 stations per thousand square miles for New South Wales, 0.5 stations for Australia and less than 3 stations for America.

The Commission intends to expand the network of gauging stations in the Macleay Valley by the installation of four additional stations. The ultimate coverage to be provided has been designed to provide adequate basic data for the general assessment of surface water resources and the investigation of future surface water supply schemes.

6. CATCHMENT YIELDS.

The water yield of a catchment is dependent upon a number of factors including the various physical characteristics of the catchment and the amount and distribution of precipitation. Because the rainfall-runoff relationship is extremely complex, it is the continuous measurement of streamflow which provides the basic information for assessment of surface water yield.

The reasonably long periods of streamflow records which are available for a number of locations in the Macleay Valley have provided a considerable amount of information for the estimation of the water yield of various streams in the valley.

The average annual yields for the complete years of computed records at existing and discontinued gauging stations in the valley for which records have been obtained for a significant period are given in Table 9.

TABLE 9

Stream	Station	Catchment Area in Square Miles	Complete Years of Computed Records	Average Annual Yield over Period of Complete Years of Records		
				Acre Feet per Annum	Cusecs	Gallons per Minute
Wollomombi Creek	Coninside	145	21	41,300	57	21,000
Chandler River	Euringilly	79	18	37,100	51	19,000
Chandler River	Chandler *	117	6	94,500	129	48,000
Oaky River	Yooroonah *	18	12	19,500	27	10,000
Oaky River	Above Oaky Dam	52	9	33,000	45	17,000
Oaky River	Kempsey Road*	78	31	40,200	55	21,000
Serpentine River	The Hatchery	8	13	27,700	38	14,000
Styx River	Serpentine	30	10	68,900	94	35,000
Styx River	Jeogla	65	48	94,400	129	48,000
Commissioner's Water	Tiverton *	148	17	35,600	49	18,000
Gara River	Gara	157	24	45,800	63	23,000
Apsley River	Apsley Falls	340	18	65,700	90	34,000
Tia River	Tia	97	48	55,900	77	29,000
Yarrowitch River	Yarrowitch	33	31	16,800	23	8,600
Macleay River	Lower Creek	3,100	16	1,070,000	1,470	550,000
Macleay River	Bellbrook	3,450	13	1,380,000	1,890	710,000
Macleay River	Turner's Flat	3,800	16	1,501,000	2,060	770,000

* Discontinued Stations.

At Appendices 13 to 23 details are given of the recorded maximum, minimum and mean flows for each month of records at the gauging stations on Wollomombi Creek at Coninside, Chandler River at Euringilly, Styx River at Jeogla, Commissioner's Water at Tiverton, Gara River at Gara, Apsley River at Apsley Falls, Tia River at Tia, Yarrowitch River at Yarrowitch and Macleay River at Lower Creek, Bellbrook and Turner's Flat.

7. AVERAGE ANNUAL RUNOFF.

Although gauging stations were established on the tributary streams in 1918, regular measurement of the flow of the Macleay River did not commence until the gauging station at Turner's Flat was established in 1945. Consequently the current estimate of the long term average annual runoff from the Macleay River Valley has been partly based on streamflow correlations with the adjoining Clarence River catchment and with the long period stations on the Styx River at Jeogla and the Tia River at Tia.

On this basis the average annual runoff from the Macleay River Valley has been assessed as being of the order of 1,500,000 acre feet per annum, which is equivalent to a continuous flow of about 2,050 cusecs or 770,000 gallons per minute.

The previous estimate of the long term average annual runoff of the Macleay Valley as given in the 1963 Australian Water Resources Council publication "Review of Australia's Water Resources" was 1,100,000 acre feet per annum. This estimate was based on only 9 complete years of record at Turner's Flat and did not include the records since 1960 which have been used in making the revised assessment.

On a square mile of catchment area basis, the average annual runoff from the Macleay Valley is about nine tenths of the average for Coastal New South Wales and about three and a half times the average for Australia.

The volume of average annual runoff in the valley represents about 17 percent of the volume of the average annual rainfall over the valley. In Table 10 a comparison is made between the estimated average annual runoff statistics for the Macleay and other valleys on the north coast of New South Wales.

TABLE 10

River Valley	Catchment Area in Square Miles	Estimated Long Term Average Annual Runoff		
		Acre Feet	Acre Feet per Square Mile	Percentage Runoff
Macleay	4,340	1,500,000	350	17
Clarence	8,750	4,000,000	460	20
Richmond	2,680	1,600,000	600	22

Whilst the percentage runoff from the Macleay, Richmond and Clarence Valleys is fairly similar, the Macleay Valley has a considerably lower runoff per square mile than either the smaller Richmond Valley or the larger Clarence Valley. However this is to be expected as the Macleay Valley has a lower average annual rainfall than either of the other two valleys.

8. VARIABILITY OF STREAMFLOWS.

Streamflows in the Macleay River Valley exhibit a high degree of variability. Records for the gauging stations on the lower Macleay River over a period of about 16 years indicate that the annual runoff from the valley has ranged from about 8 percent to about 240 percent of the average of 1,500,000 acre feet per annum.

The variation of the recorded annual flows at the gauging stations on the Macleay River at Lower Creek, Bellbrook and Turner's Flat is shown at Figure 18.

The tableland tributary streams show even greater variations in their annual flows and on the Gara River at Gara the variation has been from about 12 percent to nearly 600 percent over a period of 24 years.

On a monthly basis the degree of variability is even more marked. At Turner's Flat the monthly flow of the Macleay River has varied from less than one hundredth to more than thirteen times the average monthly flow whilst the monthly flow of the Gara River at Gara has varied from zero to the equivalent of about twenty-five times the average value.

A comparison of the variations in recorded monthly flows for the stream gauging stations on the Styx River at Jeogla, Gara River at Gara and Apsley River at Apsley Falls is shown at Figure 19. A similar diagram showing the variations in recorded monthly flows of the Macleay River at Lower Creek, Bellbrook and Turner's Flat is given at Figure 20.

Figures 21 and 22 show the seasonal variation in rainfall and streamflow in the valley. They indicate that the valley generally experiences its highest rainfalls and streamflows during summer and early autumn.

Although August is normally one of the driest months, the highest recorded flood in the Macleay River at Kempsey since 1863 occurred in August 1949. During this flood the Macleay River reached estimated peak discharges of 460,000 cusecs at Bellbrook and 505,000 cusecs at Turner's Flat. The volume of runoff that passed Turner's Flat in this flood was approximately equal to the average annual runoff.

In contrast to the peak flows recorded in August 1949, the Macleay River ceased to flow at both Bellbrook and Turner's Flat in December 1957 thus indicating the extreme variability in the recorded instantaneous flows at these

locations. An indication of the range of recorded maximum and minimum flows at selected gauging stations in the valley is given in Table 11. The variation in maximum recorded flow per unit of catchment area is from a minimum of about 124 cusecs per square mile for the Apsley River at Apsley Falls to a maximum of about 477 cusecs per square mile for the Styx River at Jeogla.

TABLE 11.

Stream	Station	Period of Computed Records	Computed Discharge in Cusecs (Equivalent Discharge in Gallons Per Minute)		
			Maximum	Minimum	Mean
Macleay River	Turner's Flat	October 1945 to December 1949 April 1953 to June 1967	505,000 (189,000,000)	0	2,060 (770,000)
Macleay River	Bellbrook	April 1953 to June 1967	460,000 (172,000,000)	0	1,890 (710,000)
Apsley River	Apsley Falls	October 1924 to August 1931 December 1952 to June 1967	42,100 (15,800,000)	0	90 (34,000)
Tia River	Tia	May 1918 to June 1967	14,600 (5,450,000)	0	77 (29,000)
Yarrowitch River	Yarrowitch	July 1928 to August 1931 June 1936 to June 1967	4,600 (1,720,000)	0	23 (8,600)
Gara River	Gara	January 1924 to August 1931 May 1949 to June 1967	30,000 (11,200,000)	0	63 (23,000)
Commissioner's Water	Tiverton	January 1927 to August 1931 June 1948 to January 1963	30,000 (11,200,000)	0	49 (18,000)
Wollomombi Creek	Coninside	November 1923 to October 1929 April 1948 to June 1967	28,200 (10,600,000	0	57 (21,000)
Chandler River	Euringilly	May 1948 to June 1967	21,000 (7,880,000	0	51 (19,000)
Styx River	Jeogla	April 1918 to June 1967	31,000 (11,600,000)	0.5 (190)	129 (48,000)

9. PERSISTENCE OF STREAMFLOWS.

In general, streamflows in the Macleay Valley persist for reasonable periods after the occurrence of heavy rain. This would indicate that the valley has a reasonably high groundwater storage capacity which is able to sustain flows for some considerable time without the occurrence of significant rainfall.

An indication of the persistence of dry weather flows in the Macleay Valley may be obtained from the flow duration graphs for the gauging stations on Wollomombi Creek at Coninside, Styx River at Jeogla, Commissioner's Water at Tiverton, Gara River at Gara, Apsley River at Apsley Falls, Tia River at Tia and Macleay River at Lower Creek and Turner's Flat which are shown at Figures 23 to 30 inclusive.

The rates of flow corresponding to various frequencies at each of these stations are given in Tables 12 to 19 inclusive.

TABLE 12.

WOLLOMOMBI CREEK AT CONINSIDE

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	73	27,300
30	17	6,360
50	7.5	2,800
70	3.5	1,300
90	0.7	260
95	0.2	70
100	0	0

TABLE 13

STYX RIVER AT JEOGLA

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	280	104,700
30	106	39,600
50	55	20,600
70	27	10,100
90	10	3,700
95	7	2,600
100	0.5	190

TABLE 14.

COMMISSIONER'S WATER AT TIVERTON

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	53	19,800
30	11	4,100
50	4.5	1,700
70	2.0	750
90	0.3	110
95	0.1	40
100	0	0

TABLE 15.

GARA RIVER AT GARA

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	95	35,500
30	22	8,200
50	9	3,400
70	2.5	940
90	0	0
95	0	0
100	0	0

TABLE 16

APSLEY RIVER AT APSLEY FALLS

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	90	33,700
30	24	9,000
50	9	3,400
70	3	1,100
90	0.1	40
95	0	0
100	0	0

TABLE 17

TIA RIVER AT TIA

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	137	51,200
30	60	22,400
50	33	12,300
70	18	6,700
90	.7	2,600
95	3	1,100
99	0.5	190
100	0	0

TABLE 18

MACLEAY RIVER AT LOWER CREEK

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	3,000	1,120,000
30	800	300,000
50	400	150,000
70	180	67,000
90	60	22,000
95	28	10,500
100	0	0

TABLE 19

MACLEAY RIVER AT TURNER'S FLAT

Percent of Time Flow Equalled or Exceeded	Corresponding Flows	
	Cusecs	Gallons Per Minute
10	3,500	1,309,000
30	970	363,000
50	460	172,000
70	205	76,700
90	68	25,400
95	30	11,200
98	20	7,500
100	0	0

In general the flow duration graphs and the data given in Tables 12 to 19 inclusive have been based on the full period of available records at the respective stations. However as the New England County Council commenced diversions from Bullock Creek in the Styx River catchment to the Oaky River catchment on 24th June 1964, the graph and data for the gauging station on the Styx River at Jeogla have been based only on records prior to the commencement of the diversions.

To enable the flow duration characteristics of the various streams in the valley to be compared more directly, the composite flow duration graph at Figure 31 has been prepared. This graph which gives the flows at the selected gauging stations in terms of cusecs per square mile of catchment area indicates that the Styx River and adjacent headwater streams draining the northern section of the valley have the best low flow persistence characteristics. It also indicates that the streams draining the central tablelands section of the valley have the poorest low flow persistence characteristics.

10. OCCURRENCE OF FLOODING

Historical records of floods at Kempsey and at Smithtown about 12 miles further downstream, indicate that the lower Macleay Valley has experienced a total of 49 floods in the past 105 years, the most recent occurring in January 1968. In this report a flood has been classified as a rise in the Macleay River which reaches a peak height of at least 12 feet (R.L. 14.05 Standard Datum) on the gauge at Kempsey Road Bridge.

Due to the steep nature of the central section of its valley, floods in the Macleay River are characterised by rapid rates of rise, the town of Kempsey being subjected to severe flooding on several occasions.

Since 1862 a total of seven major floods reaching peak heights in excess of 22 feet at Kempsey have been recorded. Available data indicates that a further ten floods have exceeded the medium flood stage of 19 feet. A diagram indicating the magnitude and occurrence of floods exceeding 12 feet on the Kempsey Road Bridge gauge since 1946, the date from which reliable records of peak flood levels at Kempsey are available, is shown at Figure 32.

Floods have occurred more frequently in February than in any other month of the year and only one flood has been recorded as occurring in the spring and early summer. The number of floods recorded at Kempsey since 1862 for each month of the year is shown below.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
5	13	6	5	2	7	5	5	0	0	1	0	49

The highest recorded flood at Kempsey occurred in August 1949 when a peak height of 26 feet was reached on the gauge at the Kempsey Road Bridge. Ten months later in June 1950, the second highest recorded flood level of 25 feet 6 inches was reached.

Both floods caused severe damage in the valley, particularly at and downstream of Kempsey where over 100,000 acres of land were inundated. In the 1949 flood six lives were lost, stock losses exceeded 9,000 head and in Kempsey alone a total of 35 dwellings and business premises were destroyed. In addition the productivity of dairy herds was reduced for a period of up to six months after the flood.

Other severe floods which have been experienced in the lower valley were recorded in February 1875 (approximately 25 feet), June 1893 (24 feet 9 inches) and May 1963 (23 feet 5 inches).

The June 1967 Flood.

Severe flooding occurred on the northern coastal rivers of New South Wales during June 1967. These floods were produced by intense tropical cyclones which, during their passage down the east coast of Australia brought heavy rains to the north coast of New South Wales.

The Macleay River Valley, during June 1967, experienced higher than normal rainfalls on the majority of the catchment with coastal and northern areas receiving four to five times the rainfalls recorded on the lower southern and western extremities of the catchment. At Kempsey more than 10 inches of rain were registered in the five day period from 10th to 14th June whilst inland at Armidale more than 2 inches were recorded during the same period. The total monthly rainfall at Kempsey of 22 inches is the highest June rainfall recorded since commencement of regular measurements in 1882 and is about six times the monthly average for June.

Twenty four hour rainfalls recorded in the valley during June 1967 include 3½ inches at Kempsey, more than 7 inches at Bellbrook and about 1 inch at Armidale.

The floods produced by rainfalls recorded from 10th to 14th June 1967, although of less magnitude than the maximum recorded previously, did nevertheless create flooding problems especially in the lower Macleay Valley. At Kempsey, the maximum height reached on the Traffic Bridge Gauge, was 19 ft. 9 ins. with

the result that floodwaters entered Central Kempsey and also inundated extensive farming areas downstream of Kempsey. The June 1967 flood at Kempsey was the equal tenth highest on record, but was 6 ft. 3 ins. below the maximum recorded of August 1949.

Streamflow data obtained at upstream gauging stations during this flood has shown that the north western tributaries of the Macleay River, including the Styx and Chandler tributaries contributed considerably more runoff to the floods in the lower valley than did the streams which drain the south and south western regions of the Macleay catchment. Details of peak discharges in cusecs and cusecs per square mile for the June 1967 flood and for the maximum recorded flood for selected stream gauging stations in the Macleay River are shown at Table 20.

TABLE 20

Stream	Station	Catchment Area in Square Miles	Maximum Recorded Flood Discharges		June 1967 Flood Discharges	
			Cusecs	Cusecs per sq.mile	Cusecs	Cusecs per sq.mile
Wollomombi Creek	Coninside	134	28,200	194	11,200	77
Chandler River	Euringilly	79	21,000	266	10,800	137
Styx River	Jeogla	65	31,000	477	17,200	265
Gara River	Gara	157	30,000	191	4,000	26
Apsley River	Apsley Falls	340	42,100	124	2,320	6.8
Tia River	Tia	97	14,600	151	690	7.1
Macleay River	Bellbrook	3,450	460,000	133	140,000	41
Macleay River	Turner's Flat	3,800	505,000	133	170,000	45

The measurement of streamflow in the valley did not commence until 1918 and consequently no information is available for peak flows in the 1875 and 1893 floods. Details of the peak flows in the Macleay River at Lower Creek, Bellbrook and Kempsey in the 1949, 1950, 1963 and 1967 floods are given in Table 21.

TABLE 21

Location	Catchment Area (Square miles)	Estimated Peak Flow (Cusecs)			
		August 1949 Flood	June 1950 Flood	May 1963 Flood	June 1967 Flood
Lower Creek	3,100	No Record	No Record	273,000	134,000
Bellbrook	3,450	460,000	450,000	368,000	140,000
Kempsey	4,000	466,000	443,000	349,000	201,000

In 1951 as a result of the damage and losses suffered in the 1949 and 1950 floods, the then Minister for Conservation approved the appointment of the Macleay Valley Flood Mitigation Committee to investigate and report on measures to mitigate flooding in the lower Macleay Valley. This Committee presented its

report in September 1953 and in 1955 the Macleay River County Council commenced the recommended works.

This flood mitigation scheme was designed to provide a degree of protection from flooding for the lower valley and to facilitate the rapid drainage of the flood plain after inundation. The programme is currently being undertaken with financial assistance from the State and Federal Governments.

11. DROUGHT PERIODS.

The term "drought" has no commonly accepted definition but is often used to describe a period when soil moisture is insufficient to meet the requirements of most pasture and crops and there is a shortage of supply for domestic, commercial, industrial or stock watering purposes. Below average precipitation and a diminished rate of streamflow are normally the prime indicators of drought conditions in a valley.

A diagram showing the annual rainfalls recorded at Armidale and Kempsey from 1858 and 1882 respectively is given at Figure 33. This diagram indicates that the lowest calendar year rainfalls recorded at the two locations were 16.61 inches (1874) and 19.57 inches (1902) respectively.

At Armidale 17.17 inches were recorded in 1862 while in 1888 and 1965 the totals did not reach 19 inches. Rainfalls of less than 20 inches were also recorded in 1918, 1919, 1923 and 1940.

Extremely dry years have occurred less frequently at Kempsey than at Armidale. With the exception of 1902 (19.57 inches), 1915 (22.10 inches) and 1909 (24.40 inches) the recorded calendar year rainfall at Kempsey has always exceeded 27 inches. However in 1900, 1901, 1907, 1918, 1940, 1941 and 1965 the rainfall was less than 30 inches.

Both Kempsey and Armidale have experienced prolonged sequences of below average annual rainfall. At Armidale a sequence of 12 consecutive years of below average annual rainfall occurred from 1935 to 1946 inclusive whilst at Kempsey the annual rainfall was below average for a 13 year period from 1900 to 1912 inclusive.

The minimum recorded twelve monthly rainfalls may be considerably less than the minimum recorded calendar year totals. At Armidale the minimum twelve monthly total of 14.50 inches which was recorded in the period December

1964 to November 1965 inclusive is over 2 inches less than the lowest calendar year total.

At Kempsey the total rainfall of 15.73 inches for the period November 1901 to October 1902 is the lowest recorded twelve monthly total and is nearly 4 inches less than the minimum recorded calendar year rainfall. It is also about 3 inches less than the twelve monthly total of 18.90 inches for the period May 1964 to April 1965.

Since the commencement of stream gauging in the valley in 1918 the worst sequences of low streamflows in the valley generally, over a twelve monthly period, occurred in the 1918-1919, 1940-1942 and 1964-1966 droughts. The minimum recorded twelve monthly flows at selected gauging stations in the valley are given in Table 22.

TABLE 22

Stream	Station	Period of Records	Minimum Recorded Twelve Monthly Flow		
			Twelve Monthly Period Commencing	Acre Feet	Percent of Average
Macleay River	Turner's Flat	(1945 to 1949 (1953 to date	July, 1964	163,000	10%
Styx River	Jeogla	1918 to date	January 1940	10,900	11%
Gara River	Gara	(1924 to 1931 (1949 to date	December 1964	1,130	2%
Apsley River	Apsley Falls	(1924 to 1931 (1952 to date	December 1964	1,000	1%
Tia River	Tia	1918 to date	January 1940	3,970	7%

The Macleay River at Turner's Flat has ceased flowing only once during the period of records which commence in 1945. The period of no flow covered a total of 16 days and occurred in December 1957.

The Styx River at Jeogla has not ceased to flow at any time in the last 48 years. The lowest flow recorded is 0.5 cusecs which occurred for a period of 4 days in February 1919.

The Gara River at Gara has been known to cease flowing for lengthy periods on many occasions. The longest periods of recorded zero flow are 142 days from August 1926 to December 1926, 71 days from February 1965 to April 1965 and 64 days from March 1966 to May 1966. In all, a total of 1,083 days of zero flow have been recorded during the period of operation of the station to 30th June 1967.

The longest recorded periods of zero flow in the Apsley River at Apsley Falls are 65 days from December 1953 to February 1954, 63 days from October to December 1926 and 59 days from April to June 1966. Over the period of records to 30th June 1967, zero flow has been recorded on a total of 533 days.

At the gauging station on the Tia River at Tia, zero flow has been recorded only once since the establishment of the station in 1918. The period of zero flow covered 32 days in January and February 1942.

12. THE 1964-1966 DROUGHT.

Since April 1964 the Macleay Valley has experienced several extended periods of extremely low rainfall. The recorded monthly rainfalls at Kempsey, Bellbrook and Armidale for the period May 1964 to March 1968 are set out in Table 23.

MONTHLY RAINFALL IN POINTS
TABLE 23

Year	1964			1965		
Month	Kempsey	Bellbrook	Armidale	Kempsey	Bellbrook	Armidale
January				107	178	192
February				170	236	108
March				175	8	8
April				311	197	125
May	100	68	83	159	99	52
June	179	108	93	302	82	116
July	57	97	366	422	589	186
August	262	102	108	144	108	82
September	96	73	224	63	34	92
October	159	132	284	312	253	166
November	96	134	228	132	419	198
December	133	134	141	712	823	559
Totals				3,009	3,026	1,884

Year	1966			1967		
Month	Kempsey	Bellbrook	Armidale	Kempsey	Bellbrook	Armidale
January	107	84	114	1,137	944	497
February	614	489	241	427	259	342
March	445	422	243	714	815	449
April	413	93	58	646	695	62
May	84	42	91	105	124	80
June	205	143	132	2,194	2,397	443
July	4	2	34	70	54	64
August	186	152	333	769	210	173
September	95	38	161	157	113	100
October	292	443	429	556	728	465
November	749	453	568	98	77	40
December	66	154	290	241	252	156
Totals	3,260	2,515	2,696	7,114	6,668	2,871

Year	1968					
Month	Kempsey	Bellbrook	Armidale	Kempsey	Bellbrook	Armidale
January	1,542	1,640	708			
February	355	253	105			
March	348	330	329			
Minimum twelve monthly totals during period May 1964 to March 1968				1,845	1,467	1,466

In some tableland areas of the valley the rainfall during the period from December 1964 to November 1965 was the lowest twelve monthly total ever recorded. At Armidale the total of 14.66 inches for this period is almost one inch less than the previous lowest recorded twelve monthly total.

In the lower valley the lowest twelve monthly rainfalls in the recent drought occurred from May 1964 to April 1965. At Kempsey the total of 18.45 inches for this twelve monthly period was only about 2½ inches greater than the minimum recorded total which occurred in the twelve months ending October 1902.

As a result of the low rainfall, streamflows in the valley diminished rapidly during the latter half of 1964 and by January 1965 many of the streams draining the central tablelands section of the valley had ceased flowing. The low flows persisted during 1965 and although reasonable rises occurred in all streams in the valley in July and December these produced only a temporary relief.

Most streams in the valley remained at very low levels during the first ten months in 1966. However in November 1966 as a result of useful rainfalls over the valley, conditions again showed some improvement. Above average rainfalls in most months from January to April 1967 enabled a continuation in the recovery from the drought whilst floods occurred in June 1967 and January 1968.

The results of recent streamflow measurements at selected gauging stations in the valley are given in Table 24.

TABLE 24

Stream	Station	Average Flow (Cusecs)	Flow Measurements		
			Date	Cusecs	Gallons/ Minute
Apsley River	Apsley Falls	90	25.3.68	1.6	600
Gara River	Gara	63	4.3.68	0.2	75
Chandler River	Euringilly	51	4.3.68	70	26,200
Styx River	Jeogla	129	5.3.68	138	51,600
Macleay River	Lower Creek	1,470	6.4.68	904	338,000
Macleay River	Bellbrook	1,890	7.3.68	1117	418,000
Macleay River	Turner's Flat	2,060	2.4.68	546	204,000

During the 1964-1966 drought, extremely low flows occurred for extended periods in many streams in the valley. The minimum total flows at selected gauging stations in the valley for periods of 30 days, 3 months, 6 months and 12 months are given in Table 25.

TABLE 25

Stream	Station	Minimum Flow During 1964-66 Drought (Acre Feet)			
		30 days	3 months	6 months	12 months
Tia River	Tia	130	680	1,480	6,420
Yarrowitch River	Yarrowitch	70	350	890	2,590
Apsley River	Apsley Falls	0	1	90	1,010
Gara River	Gara	0	0	5	1,130
Wollomombi Creek	Coninside	0	1	390	1,830
Chandler River	Euringilly	0	0	710	1,750
Styx River	Jeogla	420	1,730	5,650	12,600
Macleay River	Lower Creek	1,100	4,600	17,000	114,600
Macleay River	Bellbrook	1,280	5,850	22,600	161,800
Macleay River	Turner's Flat	1,720	7,090	24,600	163,300

Streamflow records indicate that the Macleay River did not cease flowing at any stage during the 1964-66 drought. The minimum rates of flow recorded at the gauging stations at Lower Creek and Turner's Flat were 11 cusecs and 10 cusecs respectively.

The Tia River at Tia, Yarrowitch River at Yarrowitch and Styx River at Jeogla also flowed continuously during the drought. However the minimum flows were less than 4 percent of average at each of the stations.

Extended periods of zero flow were recorded at the gauging stations on the Apsley, Gara and Chandler Rivers and Wollomombi Creek. However these streams which drain the central tablelands section of the valley have ceased flowing for extended periods during previous droughts.

The minimum flows which were recorded in the valley over a three monthly period during the 1964-1966 drought are comparable with, and in some cases less than, the minimum flows which have been recorded in earlier droughts. In Table 26 a comparison is made of the minimum three monthly flows recorded at selected gauging stations in the valley in the 1918-19, 1925-26, 1940-42, 1953-54, 1957-58 and 1964-66 droughts.

TABLE 26

Stream	Station	Minimum Three Monthly Flows (Acre Feet)					
		1918-19	1925-26	1940-42	1953-54	1957-58	1964-66
Tia River	Tia	2,190	2,260	560	1,210	1,240	680
Yarrowitch River	Yarrowitch	*	*	94	160	360	350
Apsley River	Apsley Falls	*	36	*	98	120	1
Gara River	Gara	*	0	*	320	110	0
Wollomombi Creek	Coninside	*	48	*	270	150	1
Styx River	Jeogla	1,010	1,810	720	1,390	1,890	1,730
Macleay River	Turner's Flat	*	*	*	10,500	7,700	7,090

* No Records.

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT.

Dairying and beef cattle grazing are the principal agricultural activities of the Macleay Valley and although fodder crops are grown in some areas to supplement natural pastures, the present demand on streamflow for irrigation is not very great.

Since 1944 the area authorised for irrigation by license under the Water Act has increased from about 50 acres to about 1,400 acres at 30th June 1967. Over the same period the number of licenses for irrigation has increased from 5 to 76. A graph showing details of the variation in number of licenses and authorised area for irrigation since 1944 is shown at Figure 34.

The most rapid rate of growth in both the number of licenses and the area authorised for irrigation occurred between 1954 and 1959. This period was followed by a decline until 1965 when, as a result of the recent drought, an increase again occurred. However the present number of licenses in the valley is less than the peak values reached in 1959 but the current total area authorised for irrigation is about 40 percent greater than that licensed in 1959.

Substantial volumes of water are required for various town, industrial and miscellaneous water supply purposes in the valley. At 30th June 1967, there were 15 licensed water supply schemes having a total capacity of about 38,600 gallons per minute (103 cusecs). Three town water supply schemes which were commissioned prior to November 1930 and are therefore not required to be

licensed under the Water Act increase the total capacity of the water supply schemes in the valley to about 40,500 gallons per minute (108 cusecs).

Included amongst the water supply works are dams on the Oaky and Gara Rivers and on Dumaresq and Puddledock Creeks.

The Oaky River Dam is the biggest storage in the valley. It has a capacity of about 2,500 acre feet and is operated by the New England County Council for hydro-electric power generation. The natural inflow to this dam is augmented by diversions from the headwaters of Snowy Creek in the Clarence River catchment and from Bullock Creek, a tributary of the Serpentine River in the Styx River catchment.

The diversion cutting from Snowy Creek was commissioned in July 1961 and is licensed to divert flows of up to about 10 cusecs into the Oaky River catchment. The diversion from Bullock Creek, which commenced in June 1964, involves pumping at a maximum rate of 3,500 gallons per minute (about 9.3 cusecs) from a small storage of about 2 million gallons (7.4 acre feet) capacity.

The dams on the Gara River and Dumaresq and Puddledock Creeks have capacities of about 60 million gallons (220 acre feet) 98 million gallons (360 acre feet) and 209 million gallons (770 acre feet) respectively and provide the water supply for Armidale.

Guyra draws its water from a dam on the Gara (or Gyra) River which has a capacity of about 28 million gallons (100 acre feet).

Kempsey, the principal town in the lower valley obtains its water supply at a rate of up to 1,100 gallons per minute (about 3 cusecs) from a well in the Macleay River, a short distance above tidal influence.

The estimated maximum demands on surface water in the valley under present conditions are given in Table 27.

TABLE 27.

Type of Requirement	Estimated Maximum Demand	
	Cusecs	Gallons Per Minute
Irrigation (1,422 acres at 2.0 feet for an eight months season)	6	2,300
Town, Industrial and Stock Water Supply	108	40,500
Riparian Usage	23	8,600
Total Present Maximum Demand	137	51,300

The estimated total maximum present demand of about 137 cusecs for the whole valley, represents only about one sixteenth of the average flow of the Macleay River at Turner's Flat and is exceeded at Turner's Flat during about 80 percent of the time.

Several additional water supply schemes are proposed in the valley. The construction of a dam on the Gara River at Malpas is in an advanced stage. This dam, which is being constructed for the Armidale City Council, is to have a capacity of about 10,000 acre feet.

Construction has commenced on a water supply scheme for the lower Macleay River Valley. When completed the scheme will involve the supply of about 2,100,000 gallons of water per day (about 4 cusecs) to satisfy domestic, industrial and stock water requirements in the towns and villages along the lower Macleay River.

There is a significant demand for streamflow on many of the tributary streams in the valley. A comparison of the authorised areas for irrigation and, as at 30th June, 1967, the total estimated maximum water requirement (including water supply and riparian usage but excluding transmission losses) under present conditions for the Macleay River and its tributaries is given in Table 28.

TABLE 28.

Stream	Area Authorised for Irrigation at June 1967 (Acres)	Estimated Present Maximum Water Requirement	
		Cusecs	Gallons Per Minute
Macleay River above George's Creek	0	1.3	490
Macleay River between George's Creek and Bellbrook	45	2.4	900
Macleay River between Bellbrook and Dungay Creek	142	5.7	2,140
Macleay River below Dungay Creek	113	3.5	1,310
Chandler River	0	2.0	750
Chandler River tributaries			
Wollomombi Creek	45	0.7	250
Oaky River	0	80.5	30,200
Styx River tributaries	0	18.4	6,900
Muddy River	0	1.5	560
Muddy River tributaries			
Dumaresq Creek	79	1.1	410
Gara River	82	4.1	1,540
Salisbury Waters	25	0.6	220
Miscellaneous	82	3.1	1,160
Apsley River	65	2.3	860
Apsley River tributaries			
Ohio Creek	135	1.0	370
Maney's Creek	158	1.1	410
Tia River	40	0.6	220
Yarrowitch River	58	0.7	250
Miscellaneous	37	0.6	220
George's Creek	10	0.6	220
Nulla Nulla Creek and tributaries	18	0.6	220
Hickey's Creek and tributaries	75	1.0	370
Munga Creek	10	0.6	220
Dungay Creek	90	0.9	340
Belmore River	20	0.6	220
Clybucca Creek	68	0.8	300
Miscellaneous	25	0.7	250
Totals	1,422	137	51,300

An examination of available streamflow records has indicated that during the critical low flow periods in 1957 and 1965 many of the headwater streams experienced extended periods when the flow was insufficient to meet the estimated present maximum requirements as set out in Table 28.

14. POSSIBLE IRRIGATION DEVELOPMENT.

It is unlikely that the present form of irrigation development would change as a result of the release of regulated flows following the construction of storages in the Macleay Valley. Some increase in areas under irrigated pastures and fodder crops for dairy cattle and stock fattening is to be expected once an assured water supply is provided.

An assessment of areas which appear suitable for irrigation in the valley has been made with the assistance of aerial photograph interpretation. The extent of suitable areas so determined in the various sections of the valley is summarised in Table 29.

TABLE 29.

Section of Valley	Assessed Area Suitable for Irrigation (Acres)
Macleay River below tidal influence	12,000
Macleay River above tidal influence	3,500
Tributaries of the Macleay River below the Apsley River junction	6,500
Apsley, Chandler and Muddy Rivers and tributaries	4,000
Total	26,000

Almost one half of the area tentatively assessed as being suitable for irrigation is within the flood plain of the Macleay River below tidal influence where river water is normally too saline for irrigation use particularly in drought times when the intrusion of salt water upstream is greatest.

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

Due to the nature of the river channel, construction of a barrage would be extremely costly and would possess some serious disadvantages including the introduction of navigational problems and the likelihood of it increasing flood and drainage problems.

Other factors which could limit the degree of ultimate irrigation development include the liability to flooding of downstream areas and the possibility of major element deficiencies in some of the soil types in the valley.

Due to the generally steep topography of the valley and the limited number of suitable sites, little development of farm dams, as a source of supplemental irrigation supply, has occurred to date. However the temporal pattern of rainfall is such that farm dams can be constructed economically in areas of suitable topography and it is anticipated that some water supplies for future development will be provided by these works.

15. INVESTIGATIONS OF STORAGE PROPOSALS.

Following serious flooding in the lower river in 1949 and again in 1950 an investigation of possible flood mitigation storages was carried out by the Commission on behalf of the Macleay River Flood Mitigation Committee.

Eight possible sites shown in Figure 35 were selected as being topographically suitable sites for large storages and of these No. 3 site above the junction of Sunday Creek with the Macleay River was considered to offer the best possibilities owing to superior foundations and a favourable cross section.

A preliminary geological examination of this site has indicated the rock foundation in the river bed and on the abutments to be sound granite, free from major jointing. The granite belt on which the dam site is located is confined to a short section of the river upstream of Georges Creek. Most of the other dam sites are on rocks of sedimentary origin which do not provide such a satisfactory foundation.

Investigation of the proposals showed however, that due to the considerable catchment area below the dam sites and the high intensity of storm rainfall which may occur over this lower section of the valley, the provision of flood mitigation storages at these sites would not control floods in the lower Macleay Valley to a stage which would ensure adequate protection to the agricultural industry of the river flats. Whilst these sites were selected primarily with the object of providing large storage capacities as far downstream as practicable for flood mitigation purposes, some of these sites would be suitable for water conservation storages.

BEST DAM
SITE

The Commission's long term programme envisages the construction of a major dam on the upper reaches of the Macleay River. Investigation of sites for this dam has so far been of a preliminary nature as it is likely that some considerable time will elapse before its construction is warranted by the requirements of irrigation development.

16. ACKNOWLEDGMENT.

The Water Conservation and Irrigation Commission wishes to acknowledge the assistance given in the preparation of this report by the Director, Bureau of Meteorology in providing the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps; and by the New South Wales Department of Public Works in providing details of the various town water supply schemes.

Appendix 1
Sheet 1

ARMIDALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1858	141	7	555	168	233	139	135	108	189	721	247	342	2985
1859	295	491	179	44	275	263	216	193	136	230	539	425	3285
1860	88	125	274			NO	RECORDS			323	263	152	
1861	407	982	95	538	57	465	422	332	183	133	64	430	4108
1862	220	387	258	32	76	212	44	74	169	28	27	190	1717
1863	1081	645	497	931	156	533	187	209	379	636	387	293	5934
1864	142	1101	715	126	132	463	475	823	1	3	303	1	4285
1865	137	262	60	327	300	266	176	82	294	350	839	1137	4230
1866	455	395	7	65	212	620	400	115	45	380	915	322	3931
1867-1870						NO	RECORDS						
1871			NO	RECORDS		259	111	144	35	287	459	379	
1872	798	429	313	32	18	152	219	110	208	573	188	322	3362
1873	692	367	187	133	134	370	82	189	76	106	225	310	2871
1874	210	165	5	154	32	70	18	162	146	196	250	253	1661
1875	169	493	328	377	384	124	368	304	327	229	335	316	3754
1876	45	230	252	321	550	652	458	146	510	361	303	745	4573
1877	727	77	156	50	323	NO	RECORDS	199	210	183	103	287	
1878	236	1237	251	28	148	136	173	112	573	277	63	292	3526
1879	273	723	493	273	485	364	179	704	N.R.	26	146	448	
1880	78	11	490	296	176	240	161	21	461	338	392	241	2905
1881	732	142	91	106	112	54	116	185	302	176	212	55	2283
1882	69	586	101	218	98	327	204	116	25	330	483	278	2835
1883	460	421	139	367	311	21	62	135	172	534	367	214	3203
1884	83	125	95	125	212	210	347	59	315	195	506	106	2378
1885	480	364	234	91	79	302	110	37	251	112	211	337	2608
1886	311	50	112	212	204	429	231	414	97	401	429	140	3030
1887	579	355	290	204	80	214	96	243	103	229	328	795	3516
1888	187	429	124	15	73	89	35	42	161	310	57	338	1860
1889	224	81	247	196	343	294	198	166	222	146	324	229	2670
1890	821	758	714	272	241	340	244	96	272	454	306	454	4972
1891	978	146	289	221	67	482	155	213	425	51	348	517	3892
1892	212	98	338	404	209	302	209	204	458	630	745	692	4501
1893	284	445	927	430	109	748	250	221	35	367	360	175	4351
1894	723	171	899	235	155	206	161	86	246	485	283	109	3759
1895	1006	202	158	57	92	70	51	58	220	190	500	774	3378
1896	353	503	185	90	117	88	218	322	38	166	406	483	2969

Appendix 1
Sheet 2

ARMIDALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1897	208	79	90	35	96	289	330	152	207	177	347	800	2810
1898	361	182	102	26	187	287	83	146	322	160	95	128	2079
1899	440	70	109	323	125	207	173	214	249	198	279	250	2637
1900	118	198	462	256	381	249	538	38	210	45	211	298	3004
1901	253	215	212	153	246	222	146	409	89	362	186	164	2657
1902	241	207	151	58	17	109	38	226	206	238	307	404	2202
1903	30	49	212	196	302	642	394	351	498	304	512	351	3841
1904	33	164	527	305	345	118	372	112	274	236	224	165	2875
1905	405	284	547	445	175	98	131	116	28	231	205	375	3040
1906	337	594	412	51	78	85	133	397	295	253	235	223	3093
1907	432	171	561	59	69	368	48	152	57	236	490	296	2939
1908	413	654	409	298	40	160	99	247	314	114	238	119	3105
1909	60	546	93	190	82	219	89	323	88	127	486	152	2455
1910	680	159	463	74	74	302	219	164	31	333	157	509	3165
1911	615	388	199	74	124	103	197	175	195	187	437	184	2878
1912	73	477	172	0	16	247	379	183	160	273	69	99	2148
1913	322	234	346	228	459	351	82	110	180	297	162	280	3051
1914	473	273	431	22	177	385	68	33	8	329	513	574	3286
1915	156	243	72	213	265	194	291	108	251	89	34	576	2492
1916	283	333	195	536	138	282	184	354	134	261	452	566	3718
1917	582	439	43	11	81	75	137	138	544	271	843	202	3366
1918	486	225	82	272	27	53	120	247	36	125	234	78	1985
1919	260	60	278	172	288	54	36	68	60	106	120	493	1995
1920	402	138	128	84	180	588	227	244	303	177	279	320	3070
1921	349	295	290	144	535	545	598	51	313	349	299	948	4716
1922	103	346	118	135	92	177	276	123	186	315	117	477	2465
1923	223	24	207	108	13	195	178	100	321	230	98	262	1959
1924	238	497	106	316	66	242	379	247	231	291	483	264	3360
1925	294	131	199	42	260	121	84	272	25	126	404	237	2195
1926	524	191	285	167	190	211	199	111	117	44	16	389	2444
1927	635	69	212	277	17	156	45	16	28	256	624	194	2529
1928	417	1031	197	306	54	590	243	41	103	159	190	419	3750
1929	249	576	146	371	46	133	103	268	416	311	277	88	2984
1930	293	179	267	160	103	485	227	229	122	433	218	116	2832
1931	377	289	551	420	247	389	227	92	214	81	319	693	3899
1932	203	137	268	258	71	103	266	102	652	393	436	177	3066

Appendix 1
Sheet 3

ARMIDALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1933	787	75	26	124	111	286	541	102	340	595	389	171	3547
1934	576	548	52	436	68	34	336	196	285	290	196	599	3616
1935	606	153	116	65	59	68	225	81	449	210	110	167	2309
1936	584	347	245	94	256	106	270	253	243	33	43	526	3000
1937	405	176	576	70	51	445	87	195	127	248	332	284	2996
1938	570	226	42	266	309	53	170	221	85	296	434	99	2771
1939	458	31	654	88	43	246	141	197	31	131	292	215	2527
1940	103	287	294	156	42	70	3	56	113	161	177	527	1989
1941	755	343	715	23	54	337	42	55	27	369	279	39	3038
1942	126	581	237	31	62	192	435	47	141	495	295	357	2999
1943	351	153	37	181	127	158	151	292	417	215	470	549	3101
1944	646	163	45	33	206	44	252	425	107	140	116	237	2414
1945	270	410	45	173	169	319	254	269	176	83	358	200	2726
1946	447	181	582	215	105	71	52	4	295	187	265	400	2804
1947	233	785	496	272	68	25	135	184	248	156	422	899	3923
1948	515	313	263	195	151	291	124	172	323	111	288	182	2928
1949	290	631	211	133	184	311	308	1133	370	635	539	247	4992
1950	354	618	376	116	146	1056	636	192	208	593	740	114	5149
1951	689	119	303	135	142	353	94	360	52	55	162	181	2645
1952	347	566	266	172	182	285	181	679	262	559	158	304	3961
1953	296	831	202	97	255	17	116	277	73	140	304	155	2763
1954	238	652	39	80	160	151	156	173	190	462	390	319	3010
1955	347	816	89	247	191	240	118	143	176	765	213	314	3659
1956	447	1212	217	157	368	418	97	78	165	371	82	225	3837
1957	330	400	205	183	4	55	135	305	36	114	122	519	2408
1958	192	449	347	103	163	171	97	234	281	245	268	665	3215
1959	657	420	288	82	34	120	280	32	396	243	661	806	4019
1960	418	438	92	352	158	134	212	125	139	158	402	225	2898
1961	106	401	101	85	70	66	189	198	113	246	660	296	2531
1962	553	200	346	165	321	47	336	166	252	314	258	474	3432
1963	440	125	546	199	778	168	113	303	30	199	293	403	3597
1964	764	92	509	225	83	93	366	108	224	284	228	141	3117
1965	192	108	8	125	52	116	186	82	92	166	198	559	1884
1966	114	241	243	58	91	132	34	333	161	429	568	290	2694

Appendix 2
Sheet 1

BELLBROOK RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1889		NO	RECORDS		450	13	534	746	265	182	508	421	
1890	997	1888	2272	218	333	230	314	43	184	233	347	335	7394
1891	861	288	518	306	299	773	110	174	354	156	328	319	4486
1892	425	248	1195	1629	175	135	248	264	311	503	621	641	6395
1893	507	1728	1008	213	127	1322	83	257	92	424	301	101	6163
1894	683	892	1890	263	181	116	12	11	178	507	281	339	5353
1895	1889	441	195	84	47	8	9	19	163	245	553	933	4586
1896	169	734	300	43	108	127	99	104	180	107	955	353	3279
1897	191	209	294	56	246	336	584	130	56	48	40	1415	3605
1898	610	422	531	65	478	961	68	198	502	185	54	338	4412
1899	203	166	379	266	332	165	763	878	407	231	409	285	4484
1900	61	264	184	142	595	252	798	30	180	9	231	426	3172
1901	468	334	869	128	367	285	68	244	56	469	319	158	3765
1902	306	101	68	107	21	38	39	75	116	472	371	339	2053
1903	136	431	622	67	295	1263	511	389	182	366	417	586	5265
1904	131	213	446	962	371	22	592	100	165	350	154	276	3782
1905	302	512	394	709	221	47	17	47	31	231	173	407	3091
1906	162	340	523	153	310	50	4	588	614	521	201	207	3673
1907	502	689	600	146	168	129	35	10	0	81	297	416	3073
1908	223	1074	587	282	52	27	108	421	149	100	558	358	3939
1909	48	273	188	229	103	124	85	72	124	213	579	692	2730
1910	773	246	1013	353	64	294	5	11	50	361	182	501	3853
1911	1188	1189	361	105	194	0	301	633	200	150	476	235	5032
1912	140	1105	498	40	130	245	405	130	40	245	53	429	3460
1913	218	340	325	1131	1019	454	89	22	281	249	120	297	4545
1914	380	514	658	3	326	636	80	102	300	762	553	736	5050
1915	236	423	75	213	720	93	90	96	54	59	76	213	2348
1916	267	521	157	840	655	105	33	140	100	229	305	860	4212
1917	617	393	161	65	194	26	54	54	517	260	1438	381	4160
1918	831	357	467	375	180	44	77	247	47	154	137	189	3105
1919	378	226	845	450	647	76	58	1	28	239	137	341	3426
1920	839	474	236	285	231	179	347	38	230	332	340	306	3837
1921	862	385	636	297	1531	522	1523	45	174	307	233	800	7315
1922	141	958	44	38	440	48	450	351	639	241	221	341	3912
1923	366	80	158	983	6	61	290	304	274	226	40	410	3198
1924	289	510	225	269	34	429	909	151	78	266	640	343	4143

Appendix 2
Sheet 2

BELLBROOK RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1925	518	292	484	257	554	746	0	337	43	182	638	511	4562
1926	363	72	487	263	243	264	317	85	18	31	5	662	2810
1927	597	238	190	476	61	100	30	10	9	465	713	521	3409
1928	1050	1170	449	840	187	657	210	50	8	170	293	236	5320
1929	305	3056	204	344	134	403	218	150	519	980	390	192	6895
1930	388	419	1049	582	555	988	156	120	18	285	252	228	5040
1931	151	625	662	1241	272	72	207	37	43	15	328	838	4491
1932	122	136	333	362	206	44	225	46	1096	466	574	74	3684
1933	1090	18	198	496	21	1293	1407	38	598	603	407	1058	7227
1934	256	943	361	668	318	0	163	173	336	170	112	666	4166
1935	332	287	570	12	0	0	454	7	727	197	24	721	3331
1936	619	802	712	328	94	136	49	18	243	110	43	791	3945
1937	635	1189	938	198	30	461	126	246	56	350	738	363	5330
1938	1614	823	107	666	534	42	41	142	186	280	394	35	4864
1939	324	0	1636	636	147	133	25	103	161	366	68	394	3893
1940	336	64	620	221	49	108	7	75	45	164	313	685	2687
1941	772	527	383	170	180	111	103	14	7	95	311	51	2724
1942	60	819	256	53	743	197	239	5	34	826	514	1025	4071
1943	373	114	219	178	622	38	38	388	280	488	595	758	4091
1944	1132	326	132	56	80	112	440	1277	76	90	129	235	4085
1945	334	410	60	368	173	1196	398	124	110	245	770	521	4709
1946	494	627	1684	441	27	6	0	0	220	88	182	321	4090
1947	630	1452	633	357	118	8	10	81	179	137	649	1296	5560
1948	478	241	895	190	858	1150	125	74	245	21	283	310	4870
1949	502	780	999	258	276	240	623	1557	293	412	440	339	6719
1950	620	728	415	385	62	2574	738	923	184	382	788	277	8076
1951	1158	579	1447	60	156	704	0	144	4	99	50	149	4550
1952	188	845	433	351	105	311	359	1450	78	431	72	322	4945
1953	967	1194	886	103	269	0	15	192	56	151	65	165	4013
1954	401	1997	157	183	308	183	562	188	414	594	417	569	5973
1955	775	676	985	718	416	63	29	0	207	429	71	925	5339
1956	519	2786	1417	412	379	356	13	51	127	172	15	136	6383
1957	197	876	417	33	4	31	115	264	34	227	172	148	2518
1958	635	402	306	582	101	556	0	541	145	99	41	969	4377
1959	1540	555	1538	68	49	300	257	111	466	337	1443	689	7353
1960	553	502	500	277	191	135	39	21	63	267	148	174	2870
1961	244	773	415	216	146	283	89	74	71	625	236	671	3843
1962	896	275	653	1407	525	10	824	149	144	188	125	1777	6973
1963	693	518	999	1077	1829	375	17	129	762	336	511	585	7831
1964	505	481	838	523	68	108	97	102	73	132	134	134	3195
1965	178	236	8	197	99	82	589	108	34	253	419	823	3026
1966	84	489	422	93	42	143	2	152	38	443	453	154	2515

Appendix 3
Sheet 1

GUY FAWKES RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	813	2112	2244	355	460	90	180	0	267	372	460	415	7768
1891	871	394	728	244	269	747	182	327	342	90	975	270	5439
1892	225	145	1314	2059	279	336	210	95	304	625	345	660	6597
1893	746	1480	1544	446	310	1508	178	370	105	633	290	107	7717
1894	785	622	1358	531	275	180	48	47	122	603	225	235	5031
1895	1582	614	165	118	101	37	33	32	345	192	647	1185	5051
1896	381	679	138	91	106	94	138	41	135	88	1066	570	3527
1897	235	221	237	10	76	547	546	124	127	208	146	1009	3486
1898	463	540	789	94	493	426	15	180	398	140	149	219	3906
1899	465	272	487	309	154	246	1340	485	348	403	537	454	5500
1900	258	349	424	246	550	419	487	90	215	55	400	443	3936
1901	383	312	422	197	375	341	164	396	52	269	168	136	3215
1902	629	130	282	26	8	81	37	253	80	532	656	451	3165
1903	245	186	345	203	234	1260	550	419	325	439	548	562	5316
1904	200	261	263	641	394	68	597	93	215	208	461	284	3685
1905	316	546	577	540	272	66	41	70	49	222	204	517	3420
1906	521	529	1050	480	473	74	16	700	360	228	384	431	5246
1907	773	491	879	179	125	403	86	61	0	193	229	480	3899
1908	597	1022	580	540	57	64	160	1064	170	88	883	466	5691
1909	254	764	428	218	116	134	100	113	101	193	652	591	3664
1910	855	241	1488	413	126	405	0	20	92	353	377	467	4837
1911	1265	1500	451	120	226	11	556	772	162	145	413	112	5733
1912	437	1044	756	25	92	488	678	193	62	264	257	227	4523
1913	241	343	248	1420	797	679	151	0	373	125	80	318	4775
1914	471	767	1009	4	267	909	417	180	108	1108	891	445	6576
1915	121	372	85	325	295	25	120	175	72	67	134	482	2273
1916	340	487	243	560	1097	104	127	266	158	491	251	501	4625
1917	643	640	300	77	62	50	27	145	291	254	1356	478	4323
1918	791	214	415	717	188	25	131	115	1234	201	284	177	3381
1919	477	510	1290	479	428	236	157	18	17	188	319	771	4890
1920	1004	494	272	309	295	349	552	101	398	427	365	266	4832
1921	745	315	744	232	1355	576	2466	72	444	321	270	1118	8658
1922	269	1717	112	11	996	361	471	470	955	429	319	518	6628
1923	451	140	487	2100	0	154	276	613	183	284	3	303	4994
1924	448	338	402	302	91	843	818	129	109	245	648	520	4893
1925	739	424	1242	483	1408	1512	12	227	71	121	526	349	7114

Appendix 3
Sheet 2

GUY FAWKES RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	962	96	394	315	999	307	778	50	17	26	12	842	4798
1927	1180	256	396	506	0	131	0	17	198	379	728	496	4287
1928	1131	2605	418	1121	383	1136	298	35	12	188	193	564	8084
1929	732	1556	1019	700	21	1161			NO RECORDS				
1930	731	328	640	897	627	1138	155	158	65	287	220	124	5370
1931	477	1272	804	866	251	317	125	35	316	46	617	775	5901
1932	443	233	293	794	511	63	227	10	1214	236	900	200	5124
1933	1043	218	350	293	42	1392	1060	125	467	703	447	1060	7200
1934	572	1231	615	815	655	50	632	268	573	296	441	1102	7250
1935	634	730	243	95	60	112	382	0	423	258	45	432	3414
1936	925	659	1252	371	702	344	53	178	265	74	139	1297	6259
1937	420	1811	1266	370	36	710	232	257	144	455	856	440	6997
1938	1101	569	440	1212	795	274	168	298	160	189	489	180	5875
1939	547	53	1916	760	116	71	100	391	396	833	243	586	6012
1940	611	171	753	324	49	198	100	254	82	270	332	609	3753
1941	1119	486	756	179	332	181	182	46	3	210	342	73	3909
1942	169	1044	591	55	56	338	384	25	54	824	505	843	4888
1943	659	346	369	131	564	107	65	338	263	395	668	890	4795
1944	1026	248	372	117	110	197	447	1484	133	174	236	401	4945
1945	333	453	214	370	359	2052	819	129	145	164	643	575	6256
1946	423	523	1972	325	25	17	2	7	289	269	NO RECORDS		
1947	1170	1375	855	806	289	17	10	224	180	205	645	NR	

Appendix 4
Sheet 1

GUYRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1886	NR	57	211	272	324	508	226	766	155	647	441	165	
1887	754	516	288	255	117	347	227	289	181	178	370	731	4253
1888	282	671	165	16	35	59	28	11	208	323	95	392	2285
1889	508	285	281	494	478	431	266	222	178	280	492	240	4155
1890	831	773	802	420	313	400	230	97	239	617	347	475	5544
1891	1128	294	380	163	90	470	198	273	557	171	421	407	4552
1892	333	63	481	534					NO RECORDS				
1893							NO RECORDS						
1894							NO RECORDS						
1895							NO RECORDS					774	
1896	320	466	219	156	211	129	322	284	160	156	476	553	3452
1897	458	107	131	28	83	308	370	182	313	299	58	603	2940
1898	286	244	78	14	188	224	110	254	292	168	122	321	2301
1899	600	141	126	226	120	236	160	154	177	331	257	299	2827
1900	164	524	470	244	281	267	393	33	152	63	309	579	3479
1901	195	296	443	271	239	337	168	615	31	341	194	165	3295
1902	298	123	169	63	81	141	61	266	165	310	409	605	2691
1903	27	40	217	278	269	582	483	339	729	353	352	457	4126
1904	49	197	534	395	514	160	311	157	206	274	228	204	3229
1905	317	293	359	548	293	130	207	121	24	267	223	826	3608
1906	564	124	440	15	85	153	172	354	281	366	282	280	3116
1907	743	240	756	105	90	412	69	245	65	312	441	357	3835
1908	203	586	361	306	75	235	106	457	407	243	144	393	3516
1909	0	643	166	231	51	304	185	439	107	211	598	214	3149
1910	603	106	817	89	61	387	431	186	94	573	220	328	3895
1911	740	429	166	244	196	147	276	182	228	331	464	179	3582
1912	85	438	326	13	24	365	522	238	183	340	249	124	2907
1913	451	374	460	243	573	447	107	104	126	370	73	297	3625
1914	406	451	667	88	183	363	138	27	71	445	587	664	4090
1915	164	241	30	198	263	214	367	184	346	116	72	738	2933
1916	415	489	215	517	184	384	431	462	183	418	565	578	4841
1917	739	432	208	71	50	159	238	246	665	252	1009	370	4439
1918	521	184	196	167	70	22	96	353	51	156	264	156	2236
1919	153	121	347	310	342	54	63	82	33	246	58	372	2181
1920	507	135	182	96	194	767	404	337	335	222	326	409	3914
1921	104	254	501	122	799	423	683	140	353	726	280	980	5365

Appendix 4
Sheet 2

GUYRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1922	190	342	124	119	58	161	331	164	303	194	286	622	2894
1923	184	34	243	112	47	295	262	114	363	140	207	551	2552
1924	249	382	118	297	82	366	495	322	303	363	689	400	4066
1925	366	152	167	63	369	154	209	299	20	231	578	239	2847
1926	169	368	342	242	268	283	250	167	149	117	35	565	2955
1927	747	83	330	517	31	148	81	51	30	301	659	405	3383
1928	409	1017	169	329	110	285	425	25	124	326	271	319	3809
1929	215	608	254	366	111	199	138	325	264	360	241	219	3300
1930	369	308	438	179	98	489	293	307	181	336	276	106	3380
1931	425	251	1114	578	492	524	255	101	376	147	453	534	5250
1932	406	172	254	470	87	127	203	98	527	280	435	227	3286
1933	1101	59	9	186	245	459	520	145	358	696	414	422	4614
1934	404	552	42	310	63	118	351	321	352	534	468	685	4200
1935	494	131	60	42	118	65	273	84	373	243	145	217	2245
1936	332	164	258	117	129	175	372	208	174	51	56	594	2630
1937	388	385	456	74	71	338	99	169	182	206	253	308	2929
1938	378	263	43	196	363	127	194	268	100	433	634	64	3063
1939	413	90	424	103	38	298	176	219	45	160	249	429	2644
1940	396	279	287	162	61	80	17	72	180	116	194	394	2238
1941	608	267	614	74	116	478	95	58	52	423	456	129	3370
1942	274	448	333	24	99	257	487	44	139	602	294	476	3477
1943	445	199	36	156	59	218	223	197	194	225	670	373	2995
1944	553	98	38	69	233	71	353	559	93	180	103	259	2609
1945	555	652	29	179	208	371	255	317	291	117	335	301	3610
1946	693	334	614	164	84	124	109	0	265	160	334	260	3141
1947	179	447	273	324	49	51	193	289	398	342	453	511	3509
1948	590	428	418	130	141	310	176	149	249	146	385	283	3405
1949	450	659	242	156	109	252	163	218	442	830	623	267	4411
1950	496	610	220	206	139	1060	555	103	290	588	665	15	4947
1951	613	203	295	123	133	577	100	289	95	37	127	189	2781
1952	303	550	242	189	278	397	225	649	191	816	144	627	4611
1953	402	962	211	44	174	35	129	232	75	221	197	132	2814
1954	147	618	10	42	125	179	219	161	152	652	523	393	3221
1955	258	961	75	153	234	328	182	176	140	640	191	349	3687
1956	651	1029	123	270	483	405	173	77	221	406	110	174	4122
1957	238	405	300	162	14	94	161	218	41	281	71	199	2184

GUYRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1958	279	554	234	77	193	131	139	327	404	414	199	602	3553
1959	1003	518	430	112	97	108	280	26	275	346	568	812	4575
1960	178	629	74	264	261	138	255	163	134	129	357	124	2706
1961	79	628	183	94	68	144	235	269	120	359	741	248	3168
1962	1079	206	220	181	363	72	472	311	170	317	169	564	4124
1963	595	189	488	109	750	245	166	351	28	216	457	391	3985
1964	424	193	527	213	190	111	333	148	316	408	379	132	3374
1965	290	113	6	130	75	164	208	131	196	103	153	701	2270
1966	51	334	402	172	149	130	41	429	139	518	542	450	3357

Appendix 5
Sheet 1

KEMPSEY WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1882	130	661	173	260	239	592	154	125	8	745	327	369	3783
1883	763	927	183	504	800	0	186	201	203	252	309	225	4553
1884	134	192	153	350	462	225	746	78	246	270	316	263	3435
1885	780	310	67	407	132	329	216	11	138	125	94	901	3510
1886	558	106	74	191	145	359	677	139	357	291	372	326	3595
1887	500	1112	910	868	570	230	346	1189	52	42	262	1295	7376
1888						NO RECORDS							
1889	440	167	297	642	613	47	761	1253	662	118	351	257	5608
1890	1530	2382	1587	310	386	291	492	130	215	238	291	852	8704
1891	699	499	574	208	474	592	135	183	478	60	525	801	5228
1892	402	1069	891	1483	202	224	132	261	175	769	434	622	6664
1893	310	1290	1860	274	231	1178	60	313	118	836	228	91	6789
1894	726	721	2431	471	198	159	11	52	247	518	122	308	5964
1895	2264	493	159	120	5	0	2	4	210	132	516	601	4506
1896	202	551	284	15	212	169	102	170	70	113	1163	294	3345
1897	100	98	400	134	298	695	431	203	47	26	41	1229	3702
1898	516	451	423	85	843	1825	105	346	524	68	34	385	5605
1899	400	269	249	121	327	317	799	1473	872	350	185	313	5675
1900	30	175	131	129	755	481	834	2	76	22	262	94	2991
1901	260	169	476	147	238	179	109	256	72	516	172	136	2730
1902	127	56	257	94	6	45	44	98	116	422	374	318	1957
1903	222	199	522	182	377	817	634	340	364	207	270	464	4598
1904	191	262	330	1176	283	10	781	170	86	326	301	62	3978
1905	313	663	197	767	347	36	5	35	23	144	197	372	3099
1906	83	204	630	403	322	19	1	1245	770	210	293	181	4361
1907	574	425	606	17	278	389	9	20	0	167	182	240	2907
1908	42	1176	526	293	101	20	222	575.	77	17	402	222	3673
1909	95	195	233	242	150	126	51	57	197	201	486	407	2440
1910	726	205	1225	763	100	490	3	35	25	287	159	427	4445
1911	959	964	464	93	203	20	448	632	113	231	290	138	4555
1912	187	678	474	48	65	286	910	143	52	169	316	464	3792
1913	341	437	89	817	1289	990	103	18	351	285	139	217	5076
1914	120	431	1226	25	460	864	122	131	1193	1719	535	494	7320
1915	227	402	55	187	667	44	76	113	58	37	35	309	2210
1916	267	342	279	1135	699	67	31	209	116	177	345	582	4249
1917	344	253	452	160	303	148	44	112	362	302	1228	418	4126

Appendix 5
Sheet 2

KEMPSEY WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1918	662	414	325	371	367	22	87	114	179	122	97	226	2986
1919	250	232	763	225	771	157	109	0	14	236	239	326	3322
1920	855	278	195	306	184	199	500	41	292	282	419	273	3824
1921	984	187	290	477	1549	669	1174	72	265	319	138	447	6571
1922	397	1594	34	98	342	292	1137	450	630	155	130	203	5462
1923	270	188	326	1380	11	122	428	414	230	167	41	605	4182
1924	504	219	245	500	181	270	655	179	164	231	597	324	4069
1925	284	385	769	248	794	493	6	411	9	136	849	650	5034
1926	357	390	407	222	290	376	536	97	64	34	5	656	3434
1927	1008	325	325	623	2	113	19	5	77	380	894	448	4219
1928	1165	907	370	628	245	942	218	29	0	369	178	154	5205
1929	272	3474	629	686	185	341	310	240	443	1061	162	41	7844
1930	411	475	786	1049	564	985	272	136	13	148	67	241	5147
1931	116	403	470	1543	220	87	186	46	65	19	328	881	4364
1932	214	236	190	479	282	58	276	34	1181	329	385	105	3769
1933	802	10	178	1108	43	1650	1072	73	1012	587	396	710	7641
1934	235	1173	851	1624	587	23	764	196	693	169	200	338	6853
1935	531	939	594	166	56	2	382	54	841	200	102	444	4311
1936	523	492	731	286	146	126	29	37	173	245	35	846	3669
1937	607	561	893	343	36	567	209	268	39	340	817	252	4932
1938	904	746	149	503	590	58	116	229	124	274	221	37	3951
1939	295	0	1332	311	101	100	35	277	277	481	337	250	3796
1940	336	123	783	257	15	89	36	161	52	248	111	573	2784
1941	659	364	449	209	255	155	238	26	10	161	204	104	2834
1942	118	998	511	132	82	372	233	28	54	999	435	424	4386
1943	512	111	206	127	990	22	21	369	295	204	1116	765	4738
1944	1001	100	168	54	52	205	464	840	98	121	229	233	3565
1945	583	422	61	299	313	1294	591	151	68	215	1065	270	5332
1946	505	387	1328	755	108	9	6	20	198	213	200	222	3951
1947	371	1137	594	627	242	23	11	101	119	174	527	1339	5265
1948	375	112	982	162	704	1188	106	26	237	21	315	265	4493
1949	1079	678	699	333	164	158	577	1479	375	299	378	271	6490
1950	390	793	502	390	130	2186	1732	866	262	387	1183	460	9281
1951	1155	449	928	118	142	882	0	143	32	129	49	103	4130
1952	125	665	468	282	209	517	342	1306	122	429	80	234	4779
1953	702	1259	565	326	400	0	45	182	36	274	87	90	3966

Appendix 5
Sheet 3

KEMPSEY WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1954	251	1924	184	320	427	243	348	309		NO RECORDS			
1955							NO RECORDS						
1956			NO RECORDS			789	40	85	101	N.R.	36	281	
1957	136	897	688	143	0	45	280	533	2	216	38	121	3099
1958	346	609	518	653	53	593	6	609	185	99	54	1098	4823
1959	1057	694	829	172	75	366	392	249	529	285	1132	477	6257
1960	689	676	642	211	201	220	30	52	66	134	269	70	3260
1961	314	879	529	228	293	673	95	115	76	700	296	374	4572
1962	1178	136	704	1891	841	24	1070	510	250	132	259	893	7888
1963	522	228	1842	2282	1684	421	29	198	325	248	362	720	8861
1964	563	728	1081	836	100	179	57	262	96	159	96	133	4290
1965	107	170	175	311	159	302	422	144	63	312	132	712	3009
1966	107	614	445	413	84	205	4	186	93	292	749	66	3260

Appendix 6
Sheet 1

KUNDERANG E. (KENEBREE) RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1900	107	210	174	121	328	100	610	30	143	10	298	406	2537
1901	262	322	401	130	275	134	55	245	55	285	109	110	2383
1902	250	98	228	67	49	39	49	88	52	356	374	365	2015
1903	63	64	284	160	275	652	334	346	298	418	441	525	3860
1904	33	150	238	623	271	57	221	54	140	163	156	131	2237
1905	480	344	378	422	153	53	27	28	21	207	112	325	2550
1906	276	393	276	140	165	20	20	343	306	300	376	285	2900
1907	514	553	509	66	92	227	23	64	43	81	395	428	2995
1908	353	628	306	303	68	67	63	249	184	87	524	234	3066
1909	41	554	114	216	26	181	66	133	53	132	534	394	2444
1910	637	105	772	75	96	234	28	62	46	306	188	308	2857
1911	913	399	239	154	150	23	208	270	100	131	479	80	3146
1912	135	722	219	4	79	202	200	127	88	128	166	164	2234
1913	106	241	251	508	754	379	51	42	235	194	84	264	3109
1914	296	325	480	0	237	390	52	33	30	366	663	504	3376
1915	168	202	76	343	547	51	124	64	117	85	55	211	2043
1916	196	534	120	506	257	153	68	135	153	204	416	494	3236
1917	417	346	122	76	86	42	33	29	472	123	853	259	2858
1918	505	112	143	218	126	63	51	117	26	90	124	239	1814
1919	320	159	395	288	280	22	10	2	16	71	112	374	2049
1920	414	196	139	106	133	240	130	93	191	145	202	223	2212
1921	238	276	368	178	607	332	952	7	181	304	186	445	4074
1922	79	351	29	30	122	130	252	130	221	150	215	332	2041
1923	403	16	270	224	3	70	112	148	148	173	43	229	1839
1924	256	617	424	254	48	137	614	155	119	277	504	240	3645
1925	437	263	131	112	315	324	20	163	13	89	586	618	3071
1926	380	112	356	276	132	163	172	154	15	69	97	575	2501
1927	656	266	283	228	0	53	44	0	17	272	588	312	2719
1928	501	1088	267	442	62	593	145	31	22	86	238	488	3963
1929	365	1873	178	292	81	217	99	222	407	416	176	135	4461
1930	188	365	525	386	328	385	172	112	29	196	187	85	2958
1931	133	175	393	488	192	137	153	47	118	83	167	449	2535
1932	293	158	301	78	101	114	284	10	612	379	359	172	2861
1933	946	28	161	313	10	498	759	53	409	664	403	438	4682
1934	322	676	67	264	116	36	508	106	253	196	240	413	3197
1935	402	182	127	40	29	98	87	14	431	127	34	372	1943

KUNDERANG E. (KENEBREE) RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1936	697	427	319	146	86	52	114	76	131	44	12	565	2669
1937	377	362	445	24	34	249	83	113	0	224	476	395	2782
1938	283	599	38	577	257	27	51	127	129	174	358	34	2654
1939	487	74	1040	247	39	137	27	98	60	324	137	418	3088
1940	182	129	413	70	29	103	19	17	55	170	133	374	1694
1941	720	217	348	136	46	129	19	14	15	166	309	42	2161
1942	37	412	155	0	0	156	326	0	22	487	615	258	2468
1943	288	0	16	86	103	39	39	174	322	68	346	434	1915
1944	537	100	27	59	146	30	223	637	48	81	152	198	2238
1945	336	359	43	218	144	563	331	126	96	118	312	323	2969
1946	410	196	980	140	57	36	14	0	224	61	390	137	2645
1947	202	754	294	141	NO	RECORDS	8	69	155	125	415	726	
1948	376	213	295	NO	RECORDS		67	78	165	24	219	267	
1949	316	392	332	123	43	214	452	1215	263	352	343	310	4355
1950	319	509	241	225	51	1368	297	335	102	382	482	147	4458
1951	677	257	658	84	90	266	0	134	0	0	116	112	2394
1952	188	459	439	331	71	177	175	294	150	423	40	360	3107
1953	349	1115	251	72	60	0	43	100	52	121	132	231	2526
1954	182	946	94	124	72	60	493		NO	RECORDS			

Appendix 7
Sheet 1

SALISBURY COURT RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1893	NR	570	459	492	204	705	165	251	72	461	503	108	
1894	615	153	830	298	128	196	181	130	212	517	192	153	3605
1895	867	220	18	39	136	112	118	61	240	347	589	573	3320
1896	406	452	126	91	125	118	222	298	56	203	311	766	3174
1897	319	103	132	6	105	281	366	160	214	227	33	533	2479
1898	488	370	78	9	185	256	107	254	295	182	108	199	2531
1899	335	82	39	350	90	280	68	281	297	157	324	316	2619
1900	132	345	366	351	365	350	440	62	221	51	100	457	3240
1901	244	456	239	221	216	216	184	410	25	290	201	129	2831
1902	113	102	97	56	20	145	40	243	191	192	264	425	1888
1903	55	74	306	300	316	415	363	321	771	440	470	432	4263
1904	57	196	433	215	343	153	371	86	245	221	135	155	2610
1905	347	378	376	325	172	122	173	144	22	193	128	440	2820
1906	212	226	345	13	66	87	183	307	343	247	416	233	2678
1907	274	65	688	72	82	299	106	257	55	211	580	408	3097
1908	93	517	529	121	54	200	106	285	440	209	223	134	2911
1909	157	682	64	188	75	350	113	367	90	138	539	187	2950
1910	750	80	472	70	82	287	196	149	65	677	265	536	3629
1911	584	430	223	176	118	150	175	117	228	141	438	99	2879
1912	60	384	170	0	22	263	369	225	113	330	155	26	2117
1913	366	279	153	185	441	327	85	89	144	237	38	366	2710
1914	641	126	438	51	214	252	122	7	27	229	374	679	3160
1915	131	99	66	192	232	306	397	137	296	163	36	419	2474
1916	364	180	267	507	37	351	204	311	190	323	394	558	3686
1917	654	264	168	68	95	183	218	126	644	147	719	274	3560
1918	563	91	44	230	74	87	95	342	20	162	287	65	2060
1919	331	245	154	125	213	61	35	90	65	177	170	470	2136
1920	219	389	117	110	117	682	284	382	380	264	155	322	3421
1921	218	116	321	184	508	434	441	48	280	410	176	634	3770
1922	152	244	109	193	6	123	320	111	160	254	151	684	2507
1923	193	138	126	24	30	358	215	80	303	90	160	406	2123
1924	310	504	120	315	67	176	372	189	263	255	652	178	3401
1925	225	195	150	19	257	63	148	222	43	148	524	177	2171
1926	374	253	360	320	270	233	230	161	190	37	34	438	2900
1927	470	14	291	250	19	103	17	40	16	228	793	271	2512
1928	307	1121	579	296	33	444	303	34	81	151	262	234	3845

Appendix 7
Sheet 2

SALISBURY COURT RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1929	190	642	99	345	27	91	71	439	147	208	158	61	2478
1930	84	52	284	65	83	468	178	200	148	333	236	91	2222
1931	226	254	552	397	400	474	223	99	290	121	251	691	3978
1932	222	129	231	124	40	86	245	80	559	410	282	157	2565
1933	524	50	0	40	146	233	430	66	272	642	420	239	3062
1934	283	638	16	333	5	82	359	248	292	435	384	436	3511
1935	664	146	38	88	51	62	191	107	328	234	83	250	2242
1936	549	295	329	62	178	126	336	170	235	51	46	491	2868
1937	431	174	394	69	98	241	119	157	76	155	244	199	2357
1938	222	199	78	204	280	84	258	385	153	167	291	25	2346
1939	362	23	432	93	40	216	112	249	17	179	253	290	2266
1940	86	281	404	170	16	37	0	33	146	187	300	213	1873
1941	993	164	659	21	84	373	49	66	50	337	251	16	3063
1942	89	384	415	0	138	222	456	52	156	422	354	394	3082
1943	523	204	7	113	169	167	159	199	424	170	440	467	3042
1944	474	173	52	44	220	18	208	396	74	87	64	220	2030
1945	227	705	16	154	189	228	170	324	104	111	339	256	2823
1946	684	160	468	160	164	110	34	2	245	101	232	309	2669
1947	177	441	337	226	41	52	112	176	192	191	414	799	3158
1948	796	298	238	98	128	369	120	134	211	106	214	233	2945
1949	396	476	119	169	154	328	226	918	346	505	329	316	4282
1950	291	403	130	176	260	917	788	127	170	713	761	69	4805
1951	676	338	247	117	150	375	142	351	85	5	129	303	2918
1952	200	479	193	201	225	315	130	563	177	590	73	334	3480
1953	333	718	155	69	303	35	171	357	108	265	194	58	2766
1954	181	707	42	76	88	224	122	129	113	517	425	346	2970
1955	298	1059	23	209	175	349	170	201	155	750	232	236	3857
1956	651	939	241	170	558	478	184	79	212	379	102	247	4240
1957	454	316	90	132	4	117	186	261	50	56	30	360	2056
1958	280	506	151	62	162	89	139	217	321	376	115	797	3215
1959	386	407	162	76	85	48	220	6	233	215	454	563	2855
1960	292	493	40	260	234	105	285	168	145	255	324	216	2817
1961	148	424	171	103	71	100	260	256	77	247	886	235	2978
1962	657	412	174	125	344	32	230	222	191	413	199	530	3529
1963	459	225	495	216	647	204	130	332	57	196	265	294	3520
1964	676	107	420	249	111	118	352	146	393	354	196	168	3290
1965	211	120	45	145	35	129	165	132	163	194	241	566	2146
1966	174	272	320	109	136	135	85	391	139	356	470	490	3077

WALCHA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1880	122	134	379	133	160	171	115	28	251	251	189	127	2060
1881	460	339	57	51	84	110	72	208	262	226	189	48	2106
1882	70	264	65	317	141	403	117	150	15	476	531	1023	3572
1883	292	506	39	252	478	51	59	299	260	320	423	91	3070
1884	30	280	96	83	132	202	362	35	438	99	326	107	2190
1885	340	407	259	129	117	397	71	52	260	146	203	171	2552
1886	861	74	50	489	232	279	210	492	106	198	233	84	3308
1887	587	420	366	315	136	395	96	243	103	229	328	795	4013
1888	188	803	137	39	52	49	80	28	258	317	231	434	2616
1889	275	253	183	295	359	383	213	188	184	289	352	281	3255
1890	540	531	703	134	296	392	236	116	260	463	253	346	4270
1891	858	95	267	152	60	437	191	212	470	124	533	353	3752
1892	304	179	355	281	205	275	154	253	453	477	627	636	4199
1893	281	598	690	284	155	675	182	233	86	372	327	190	4073
1894	444	88	750	222	120	225	133	22	190	449	72	189	2904
1895	790	110	51	55	117	103	84	65	216	229	642	667	3129
1896	386	571	185	56	130	94	207	237	57	161	329	543	2956
1897	385	38	106	13	45	154	295	213	177	219	133	352	2130
1898	401	388	28	8	129	243	83	168	206	69	144	160	2027
1899	284	65	47	446	80	277	97	271	285	161	345	237	2595
1900	120	198	441	348	334	338	425	45	194	16	276	351	3086
1901	140	103	275	207	196	214	142	414	46	281	144	146	2308
1902	269	130	41	42	58	148	88	153	234	515	83	466	2227
1903	0	7	487	536	273	511	334	324	618	574	276	337	4277
1904	190	280	310	177	326	170	405	45	198	225	165	304	2795
1905	350	316	472	410	212	139	221	149	30	213	85	292	2889
1906	142	252	378	81	97	89	167	424	403	238	588	222	3081
1907	328	163	800	35	208	411	57	153	85	143	467	562	3412
1908	189	530	715	185	49	193	79	367	531	120	153	475	3586
1909	97	552	26	174	153	360	132	329	129	183	704	290	3129
1910	755	85	475	62	47	300	315	219	54	463	303	534	3612
1911	527	490	313	95	167	202	221	213	314	160	593	287	3582
1912	77	411	158	11	73	325	415	266	151	386	218	162	2653
1913	261	435	255	274	479	316	88	150	205	200	52	401	3116
1914	438	239	470	55	197	236	99	6	10	318	708	624	3400
1915	188	444	108	300	483	296	445	199	301	222	58	439	3483

Appendix 8
Sheet 2

WALCHA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1916	320	385	106	403	77	443	260	372	308	329	480	663	4146
1917	663	375	193	36	115	236	208	210	747	346	965	304	4398
1918	557	26	28	152	36	34	164	417	66	145	422	140	2187
1919	563	52	144	129	296	67	45	76	77	175	121	308	2053
1920	350	277	124	97	147	684	393	511	326	254	288	363	3814
1921	107	103	585	244	487	576	523	106	285	446	269	711	4442
1922	217	349	66	145	51	129	474	124	145	205	186	533	2624
1923	167	107	102	63	20	376	266	156	428	153	151	313	2302
1924	460	657	85	341	107	208	424	215	282	364	505	154	3802
1925	288	67	309	7	211	115	177	279	36	168	872	253	2782
1926	335	369	447	442	247	291	255	230	213	87	78	460	3454
1927	760	10	199	369	20	127	39	51	42	287	739	258	2901
1928	417	1011	614	339	57	647	405	17	152	285	222	399	4565
1929	530	1203	78	375	45	227	86	512	359	137	289	64	3905
1930	98	308	204	216	136	869	369	233	122	509	200	292	3556
1931	246	278	384	501	470	372	282	166	190	90	257	582	3818
1932	217	160	318	107	50	81	189	155	645	398	322	307	2949
1933	1130	41	16	193	109	231	388	35	367	561	316	325	3712
1934	436	568	10	320	13	70	574	312	324	412	204	833	4076
1935	853	198	45	87	69	56	197	150	444	231	72	218	2620
1936	677	583	424	112	169	142	390	257	272	84	53	622	3785
1937	382	258	482	143	101	220	124	370	143	215	307	267	3012
1938	381	431	22	166	269	137	207	338	82	269	380	58	2740
1939	404	75	563	223	61	229	138	316	31	211	425	313	2989
1940	145	364	493	149	36	26	19	61	204	238	175	715	2625
1941	921	241	674	35	121	349	54	137	77	392	213	68	3282
1942	150	587	531	0	130	190	679	126	205	518	473	299	3888
1943	652	212	70	283	123	139	124	168	502	134	357	428	3192
1944	568	187	25	103	240	20	248	402	115	89	89	317	2403
1945	283	942	59	240	213	305	179	333	94	153	238	339	3378
1946	382	122	594	161	152	129	65	8	231	144	213	472	2673
1947	382	721	269	193	71	55	146	154	243	269	420	692	3615
1948	461	436	396	134	224	373	99	169	259	63	185	376	3175
1949	388	448	206	267	88	322	296	591	466	449	646	280	4447
1950	318	473	71	192	193	878	765	199	104	597	698	11	4499
1951	542	151	180	147	114	440	186	318	64	28	55	168	2393

WALCHA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1952	188	562	289	152	240	318	93	607	163	435	33	335	3415
1953	249	642	204	31	363	15	135	375	117	186	172	20	2509
1954	230	654	79	54	100	206	137	143	111	604	420	303	3041
1955	464	983	68	273	199	275	162	208	248	665	346	286	4177
1956	370	972	480	111	496	435	146	144	116	431	88	246	4035
1957	550	566	239	119	6	100	234	246	71	75	46	343	2595
1958	385	210	220	70	191	160	129	231	273	336	169	796	3170
1959	346	404	260	113	57	71	221	32	259	325	647	481	3216
1960	375	354	82	169	217	57	291	170	193	351	367	307	2933
1961	213	589	144	141	68	99	224	256	112	488	943	278	3555
1962	703	387	213	186	300	17	250	272	130	530	330	454	3772
1963	462	191	403	281	698	197	111	292	120	216	455	287	3713
1964	658	54	418	219	92	135	348	164	259	432	233	207	3219
1965	230	111	38	111	56	105	213	125	188	208	159	433	1977
1966	30	129	199	65	107	144	69	306	190	429	512	405	2585

Appendix 9
Sheet 1

WOLLOMOMBI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1901	406	280	395	96	237	188	106	342	91	249	115	137	2642
1902	310	121	112	24	40	30	45	135	112	255	325	354	1863
1903	177	114	312	304	182	889	354	305	241	354	471	461	4164
1904	30	186	340	426	266	25	420	22	181	173	160	248	2477
1905	385	251	469	466	226	27	38	82	37	137	140	379	2637
1906	829	317	343	156	63	47	19	401	272	210	171	294	3122
1907	235	598	753	34	61	199	90	74	19	250	302	326	2941
1908	161	718	363	271	51	41	71	432	185	81	397	253	3024
1909	126	638	110	214	75	146	102	165	126	246	519	259	2726
1910	690	239	668	78	86	129	48	47	81	461	170	407	3104
1911	912	425	447	78	133	18	305	424	206	223	630	124	3925
1912	71	1068	132	0	19	147	349	76	84	213	134	202	2495
1913	463	199	214	500	479	306	41	46	201	179	180	222	3030
1914	559	133	490	26	196	523	100	42	95	657	344	523	3688
1915	109	225	69	257	366	69	125	44	140	39	81	511	2035
1916	276	352	325	440	530	155	168	170	58	239	337	480	3530
1917	733	299	76	88	138	29	32	97	335	389	853	225	3294
1918	424	124	162	215	15	63	70	126	81	82	224	198	1784
1919	173	60	463	342	393	69	72	25	22	110	83	415	2227
1920	367	249	200	202	133	252	242	117	195	161	254	290	2662
1921	264	200	376	79	566	406	926	22	227	345	348	775	4534
1922	96	286	53	29	165	117	220	171	254	230	157	391	2169
1923	405	62	155	284	7	88	77	356	179	262	41	218	2134
1924	213	492	58	244	66	262	589	218	143	211	561	446	3503
1925	345	196	229	95	354	174	36	187	54	159	419	430	2678
1926	243	246	184	236	172	229	277	81	39	65	45	590	2407
1927	758	102	203	298	10	50	20	28	14	262	448	297	2490
1928	439	1228	110	152	164	751	113	58	55	166	278	448	3962
1929	239	945	234	203	36	257	154	188	437	231	164	149	3237
1930	305	137	431	376	94	454	91	128	57	268	226	86	2653
1931	291	518	633	413	210	225	195	32	83	77	278	508	3463
1932	344	73	271	278	110	83	239	57	591	264	494	185	2989
1933	888	84	93	204	52	559	455	89	247	606	542	374	4193
1934	462	619	96	344	191	19	271	137	326	155	304	675	3599
1935	463	333	96	37	66	23	240	36	360	106	95	298	2153
1936	419	458	318	158	194	84	135	77	255	37	53	814	3002

WOLLOMOMBI RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1937	431	401	345	153	22	399	85	142	141	278	446	422	3265
1938	324	377	93	431	150	82	87	143	220	194	605	191	2897
1939	381	0	702	156	79	162	65	139	71	200	379	292	2626
1940	372	133	342	167	20	143	2	89	69	222	207	252	2018
1941	719	254	516	76	103	120	42	15	16	190	334	93	2478
1942	315	509	201	35	17	206	265	18	69	723	440	371	3169
1943	262	106	53	177	179	81	67	267	189	274	784	514	2953
1944	698	240	125	26	99	61	235	697	99	114	191	305	2890
1945	553	458	164	259	172	668	307	158	192	51	567	469	4018
1946	582	272	802	216	43	50	14	4	207	170	259	414	3033
1947	474	364	289	292	87	16	42	101	186	183	310	774	3118
1948	231	419	428	62	126	569	98	119	240	137	147	337	2913
1949	690	475	179	242	137	214	530	1009	283	509	841	316	5425
1950	359	557	373	236	116	1640	419	300	215	468	682	206	5571
1951	626	295	401	110	178	435	30	145	7	31	92	190	2540
1952	200	584	278	228	145	146	356	623	133	525	59	320	3597
1953	293	893	311	106	190	0	55	193	48	152	99	187	2527
1954	203	992	69	52	215	152	214	214	222	503	294	567	3697
1955	415	625	264	293	243	93	73	27	202	631	145	431	3442
1956	803	969	385	211	170	177	28	69	267	193	59	230	3561
1957	489	431	248	116	3	46	171	296	22	212	65	316	2415
1958	563	386	376	181	88	214	22	175	274	161	83	746	3269
1959	898	476	676	149	66	205	187	86	173	275	711	687	4589
1960	471	473	188	212	110	143	119	53	112	139	277	178	2475
1961	441	591	110	92	100	195	124	182	135	290	586	507	3353
1962	753	330	402	748	345	11	618	96	165	174	190	530	4362
1963	399	334	528	243	938	257	45	178	83	252	389	418	4064
1964	399	216	665	164	87	116	189	79	87	252	305	186	2745
1965	328	243	5	183	85	134	564	139	91	301	114	455	2642
1966	155	408	342	166	79	113	15	272	119	411	407	325	2812

WONGWIBINDA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1885			NO RECORDS					29	280	155	321	711	
1886	730	306	208	269	262	401	369	273	144	440	586	188	4176
1887	1331	265	375	288	92	102	118	481	76	57	437	880	4502
1888	230	832	57	82	56	80	38	38	163	328	208	683	2795
1889	324	355	373	442	467	112	279	217	173	140	250	290	3422
1890	842	996	1169	378	200	203	195	33	256	424	390	384	5470
1891	739	218	292	225	183	451	238	454	464	132	660	394	4450
1892	329	318	750	835	279	327	124	110	368	546	503	573	5062
1893	312	934	768	245	228	922	232	198	65	536	359	158	4957
1894	796	284	864	330	169	232	28	45	155	687	244	139	3973
1895	972	182	60	113	46	8	8	41	320	174	396	877	3197
1896	230	709	126	81	119	104	131	171	140	77	384	825	3097
1897	489	92	100	30	55	346	475	142	238	219	83	572	2841
1898	287	222	188	38	373	247	96	181	314	99	67	183	2295
1899	370	105	182	257	83	146	357	276	243	387	297	261	2964
1900	260	501	482	118	386	112	466	75	128	31	429	581	3569
1901	333	322	639	320	262	103	78	506	79	239	413	190	3484
1902	419	194	214	29	53	84	66	180	110	275	447	396	2467
1903	165	200	349	177	273	743	427	308	315	237	393	455	4042
1904	215	254	292	472	265	67	305	68	154	203	210	316	2821
1905	604	368	584	519	316	53	35	116	15	214	135	678	3637
1906	641	245	342	77	148	58	43	370	281	313	211	445	3174
1907	526	424	638	99	130	258	117	121	12	255	406	203	3189
1908	146	601	394	199	51	98	88	335	234	124	578	186	3034
1909	52	595	373	175	98	179	75	172	192	213	570	409	3103
1910	625	155	583	197	53	203	88	63	56	370	320	608	3321
1911	697	529	287	73	197	26	178	282	148	177	487	309	3390
1912	281	775	339	0	23	522	368	84	89	328	153	335	3297
1913	208	204	503	443	665	447	99	27	200	218	73	273	3360
1914	453	122	655	28	202	416	90	33	84	369	619	560	3631
1915	112	169	65	345	174	84	139	107	116	48	48	548	1955
1916	506	412	117	518	249	125	180	140	104	251	246	620	3468
1917	586	423	161	77	102	65	55	87	346	298	1235	281	3716
1918	568	212	125	368	88	146	77	120	126	106	364	130	2430
1919	307	446	493	362	366	30	73	28	44	90	199	524	2962
1920	915	113	239	177	212	377	247	113	250	292	202	300	3437

WONGWIBINDA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1921	217	154	451	154	865	504	897	64	391	434	218	1117	5466
1922	146	528	99	23	45	158	327	169	225	255	208	652	2835
1923	440	204	280	164	16	202	146	161	221	328	34	396	2592
1924	304	663	174	389	22	270	714	122	91	225	505	346	3825
1925	732	243	215	125	344	250	55	274	10	116	537	509	3410
1926	513	136	268	216	263	261	208	74	86	81	71	765	2942
1927	592	143	160	288	0	113	18	6	105	278	420	399	2522
1928	542	1343	239	260	116	659	176	40	23	213	316	603	4530
1929	410	1113	260	152	29	199	120	273	265	334	201	288	3644
1930	501	130	814	246	209	727	146	172	60	254	134	74	3467
1931	248	345	545	322	411	167	210	46	134	100	245	666	3439
1932	326	164	647	488	126	52	174	49	646	172	424	187	3455
1933	1050	127	72	293	59	370	655	174	269	821	456	455	4801
1934	474	739	62	395	107	115	376	250	281	327	345	602	4073
1935	555	218	103	80	187	27	274	52	420	165	87	194	2362
1936	496	389	303	153	207	142	181	109	283	37	89	825	3214
1937	355	396	644	72	30	305	93	148	154	419	354	581	3551
1938	455	733	100					NO RECORDS					
1939							NO RECORDS						
1940	247	375	440	213	31	125	17	42	73	134	175	883	2755
1941	848	190	519	114	38	157	40	14	5	270	238	135	2568
1942	187	590	261	47	55	300	368	8	62	642	614	619	3753
1943	436	217	235	134	158	150	86	235	183	283	855	763	3735
1944	1049	72	316	52	135	42	338	791	87	136	172	306	3496
1945	384	567	52	279	255	613	239	116	202	145	414	591	3857
1946	569	410	960	182	36	40	15	0	319	163	308	377	3379
1947	1020	678	414	235	121	46	79	195	317	281	588	795	4769
1948	559	200	447	122	242	679	133	158	265	65	224	479	3573
1949	429	701	314	271	214	183	559	617	359	679	714	369	5409
1950	700	770	178	244	73	1464	808	225	525	513	754	78	6332
1951	874	240	438	74	266	463	23	168	25	43	159	247	3020
1952	337	879	225	292	198	213	193	737	108	595	157	485	4419
1953	522	982	250	102	101	0	55	221	28	201	170	104	2736
1954	207	916	2	86	156	231	251	180	162	775	460	546	3972
1955	433	1021	222	457	444	85	165	12	83	431	95	575	4023
1956	1138	1189	419	388	475	426	117	45	128	246	77	454	5102

WONGWIBINDA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1957	359	555	228	122	8	58	141	300	28	219	78	416	2512
1958	607	859	272	303	99	202	21	291	312	107	134	585	3792
1959	1335	398	940	140	120	164	202	96	193	396	645	631	5260
1960	225	359	126	182	133	91	141	60	80	107	228	162	1894
1961	215	757	172	149	67	188	172	160	99	335	474	500	3288
1962	941	649	443	400	249	3	562	170	150	208	244	450	4469
1963	642	221	447	207	934	127	70	171	47	294	579	652	4391
1964	408	292	537	112	153	77	200	127	181	326	248	171	2832
1965	339	233	10	154	62	76	449	61	103	289	239	693	2708
1966	186	372	207	141	178	93	19	378	252	370	392	416	3004

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Armidale (Period 85 years)	Minimum	30	11	26	0	4	17	3	4	8	33	16	39	1860
	10%	103	73	64	34	41	54	52	42	31	99	105	112	2199
	30%	252	164	127	93	77	108	116	108	113	165	213	192	2667
	50%	353	273	212	167	125	207	173	172	206	238	293	280	2999
	70%	474	423	310	226	188	292	233	230	272	312	394	407	3301
	90%	703	639	555	358	315	460	375	352	416	489	512	676	3938
	Maximum	1006	1212	927	536	778	1056	636	1133	652	765	843	948	5149
Bellbrook (Period 53 years)	Minimum	48	0	44	3	0	0	0	0	0	9	5	35	2053
	10%	133	88	117	47	28	14	8	10	18	52	47	190	2762
	30%	240	266	227	147	104	52	55	46	54	156	175	307	3489
	50%	363	410	394	266	194	127	108	100	161	231	305	381	3945
	70%	581	605	597	374	331	292	299	151	240	327	415	573	4490
	90%	975	1144	921	840	652	977	695	408	566	508	687	851	5326
	Maximum	1614	3056	1684	1241	1531	1293	1523	1277	1096	980	1438	1415	7315
Guyra (i) (Period 69 years)	Minimum	0	34	9	13	14	22	17	0	20	37	35	15	2181
	10%	147	106	42	42	50	72	96	51	41	117	73	132	2552
	30%	258	197	169	105	84	144	166	148	126	216	207	248	2940
	50%	402	308	242	162	129	235	223	197	182	301	286	357	3374
	70%	496	451	359	242	233	337	322	289	291	360	453	476	3687
	90%	739	643	534	366	369	478	483	354	398	602	634	627	4575
	Maximum	1101	1029	1114	578	799	1060	683	649	729	830	1009	980	5365

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Kempsey West (Period 65 years)	Minimum	30	0	34	15	2	0	0	0	0	17	5	37	1957
	10%	117	112	155	90	40	20	6	20	19	36	46	99	2878
	30%	266	235	289	165	161	83	50	56	70	160	170	234	3795
	50%	390	414	468	293	245	179	135	143	124	215	270	313	4361
	70%	588	663	629	483	369	483	434	257	267	305	387	450	5159
	90%	1004	1174	1225	1119	761	1065	813	850	724	546	867	779	6815
	Maximum	2264	3474	2431	1624	1549	2186	1732	1479	1193	1719	1228	1339	9281
Kunderang E (Kenebree) (Period 52 years)	Minimum	33	0	16	0	0	0	0	0	0	0	12	34	1694
	10%	87	81	50	33	27	28	19	8	15	68	64	111	1965
	30%	249	181	160	86	60	57	48	46	48	115	150	228	2393
	50%	321	299	268	157	98	135	93	103	109	168	239	311	2694
	70%	414	400	369	265	154	218	201	136	181	278	390	396	3073
	90%	671	662	520	474	324	466	491	323	381	406	570	501	4041
	Maximum	946	1873	1040	623	754	1368	952	1215	612	664	853	618	4682
Salisbury Court (Period 71 years)	Minimum	55	14	0	0	4	18	0	2	16	5	30	16	1873
	10%	97	80	38	22	23	61	69	49	44	92	66	73	2126
	30%	221	169	118	74	79	115	127	115	106	169	166	215	2592
	50%	319	264	171	132	128	204	184	170	190	221	251	294	2911
	70%	463	409	332	206	199	292	236	256	245	326	345	428	3225
	90%	674	674	490	324	344	430	372	379	373	515	572	622	3830
	Maximum	993	1121	830	507	647	917	788	918	771	750	886	799	4805

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Walcha (Period 84 years)	Minimum	0	7	10	0	6	15	19	6	10	16	33	11	2027
	10%	121	71	40	36	46	56	72	35	56	90	75	99	2265
	30%	255	189	99	105	86	138	124	150	117	179	188	263	2842
	50%	360	328	210	152	134	223	184	209	201	238	282	311	3184
	70%	460	446	379	248	210	320	253	269	261	358	400	431	3614
	90%	729	656	590	372	361	442	420	408	449	512	647	665	4188
	Maximum	1130	1203	800	536	698	878	765	607	747	665	965	1023	4565
Wollomombi (Period 64 years)	Minimum	30	0	53	0	3	0	2	4	7	31	41	86	1784
	10%	167	104	85	35	20	24	29	26	30	79	73	182	2161
	30%	292	232	172	108	77	75	69	75	83	164	162	250	2640
	50%	399	332	284	203	130	146	110	123	142	213	278	332	3013
	70%	473	474	381	251	181	214	228	177	207	262	393	439	3453
	90%	756	806	649	420	360	541	420	379	279	506	618	633	4179
	Maximum	912	1228	802	748	938	1640	926	1009	591	723	853	814	5571
Wongwibinda (Period 52 years)	Minimum	52	92	57	0	0	8	8	6	10	31	34	74	1955
	10%	178	128	80	32	29	52	39	34	48	78	76	184	2483
	30%	307	204	187	117	87	104	90	73	105	171	208	290	3091
	50%	446	295	292	207	171	173	146	121	154	238	332	404	3416
	70%	570	426	483	320	250	273	239	180	251	327	420	581	3638
	90%	828	815	721	463	382	517	454	327	361	438	576	807	4720
	Maximum	1331	1343	1169	835	865	922	897	506	646	821	1235	1117	5470

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Armidale	1	30	11	8	0	4	17	3	4	8	33	16	39
	2	79	101	54	16	59	73	56	41	107	60	168	124
	3	291	204	135	167	115	127	89	234	177	383	336	398
	4	412	300	210	212	171	218	270	288	450	512	632	517
	5	508	461	336	254	262	324	390	677	733	757	842	642
	6	770	580	378	415	445	444	811	895	793	1002	1007	838
	7	821	688	539	601	622	893	937	1040	1071	1207	1024	947
	8	994	820	849	778	920	1153	1160	1318	1243	1386	1133	985
	9	1124	1076	906	1120	1180	1213	1438	1490	1475	1495	1171	1211
	10	1285	1242	1244	1344	1240	1491	1610	1748	1584	1533	1397	1339
	11	1452	1499	1468	1425	1518	1663	1815	1818	1621	1649	1588	1460
	12	1860	1620	1549	1672	1690	1869	1952	1821	1680	1713	1694	1580
Bellbrook	1	48	0	8	3	0	0	0	0	0	9	5	35
	2	258	169	82	12	0	6	0	10	49	36	289	111
	3	475	276	196	12	33	6	45	91	54	348	422	359
	4	582	297	234	205	33	142	126	139	402	517	753	633
	5	603	335	273	280	210	255	375	478	524	946	952	740
	6	641	374	348	396	341	468	581	538	1131	1258	1059	761
	7	680	449	464	569	523	681	641	1286	1334	1528	1080	799
	8	755	565	936	866	844	752	1376	1443	1584	1549	1118	838
	9	871	1037	1307	1042	932	1444	1533	1666	1605	1587	1157	913
	10	1343	1408	1425	1102	1676	1626	1769	1709	1643	1626	1232	1029
	11	1714	1747	1485	1921	2007	1880	1812	1887	1682	1701	1348	1501
	12	2053	1883	2213	2177	2060	1923	1955	1926	1757	1817	1820	1872

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Guyra (1)	1	0	34	6	13	14	22	17	0	20	37	35	15
	2	67	68	52	37	92	97	89	81	132	107	270	203
	3	284	205	177	225	158	169	162	249	259	353	476	430
	4	562	349	285	320	230	232	385	419	448	656	694	755
	5	620	416	515	392	341	465	482	737	751	850	949	818
	6	875	638	642	572	526	536	837	986	901	1197	1012	899
	7	936	773	859	688	720	908	1133	1254	1248	1353	1093	1040
	8	1202	1069	975	882	1079	1168	1350	1601	1384	1434	1234	1101
	9	1367	1254	1169	1239	1321	1372	1678	1674	1465	1575	1295	1367
	10	1650	1448	1450	1386	1442	1719	1774	1799	1606	1636	1561	1532
	11	1809	1715	1597	1609	1789	1828	1928	1978	1667	1902	1726	1842
	12	2181	1868	1805	1956	2012	1963	2107	2197	1933	2067	2036	1965
Kempsey West	1	30	0	34	15	2	0	0	0	0	17	5	37
	2	183	188	132	100	5	2	6	14	73	39	152	222
	3	336	322	274	125	7	6	29	100	103	281	277	319
	4	465	374	284	127	11	99	196	200	313	406	491	576
	5	540	458	286	131	216	243	319	456	438	807	748	670
	6	585	502	290	341	353	363	456	581	883	1164	842	676
	7	629	600	500	473	712	672	581	885	1241	1313	848	721
	8	727	716	632	969	976	895	1063	1361	1430	1364	893	765
	9	843	1125	1148	1302	1242	1099	1516	1508	1436	1409	937	863
	10	1265	1512	1581	1344	1446	1560	1795	1692	1481	1453	1035	979
	11	1639	1830	1848	1938	2076	1974	1801	1737	1525	1551	1151	1401
	12	1957	2052	2190	2265	2212	1980	1846	1781	1623	1667	1573	1775

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Salisbury Court	1	55	14	0	0	4	18	0	2	16	5	30	16
	2	129	50	40	22	53	37	33	34	90	71	181	105
	3	296	90	173	166	53	70	73	263	136	371	303	197
	4	368	236	239	223	86	176	301	397	445	511	355	441
	5	388	385	358	256	195	403	537	720	658	563	639	497
	6	533	460	484	402	419	598	769	809	710	847	698	517
	7	573	683	724	589	704	916	858	1149	957	912	718	662
	8	816	750	896	836	932	1210	1220	1330	1013	995	863	702
	9	1007	978	926	1102	1286	1311	1449	1423	1033	1153	903	945
	10	1199	1242	1286	1336	1338	1595	1569	1443	1178	1193	1146	1136
	11	1463	1497	1566	1683	1622	1660	1627	1588	1218	1436	1337	1328
	12	1873	1783	1782	1857	1687	1743	1772	1628	1461	1627	1529	1592
Walcha	1	0	7	10	0	6	15	19	6	10	16	33	11
	2	7	54	36	58	62	45	73	16	92	83	192	118
	3	376	157	141	140	81	106	115	255	147	251	307	382
	4	439	202	250	220	142	259	373	438	315	439	556	447
	5	459	276	357	248	279	440	494	633	503	722	636	580
	6	688	440	385	495	566	561	802	821	928	769	772	686
	7	776	585	643	733	759	869	1007	1096	975	1053	830	834
	8	929	801	920	897	1121	1185	1179	1143	1099	1111	978	922
	9	1163	1030	1078	1210	1269	1422	1226	1513	1157	1259	1066	1075
	10	1624	1182	1238	1320	1533	1469	1650	1571	1305	1347	1219	1309
	11	1745	1490	1377	1559	1598	1717	1713	1719	1393	1500	1454	1764
	12	2027	1716	1587	1606	1915	1864	1861	1807	1546	1734	1968	1885

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

Station	Number of Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Wollomombi	1	30	0	5	0	3	0	2	4	7	31	41	86
	2	216	159	82	19	49	55	18	31	38	90	252	195
	3	403	257	151	94	80	68	62	157	130	313	472	431
	4	464	297	206	139	108	112	213	230	320	513	655	680
	5	607	327	251	274	122	298	305	465	520	737	795	704
	6	637	372	386	372	384	381	495	665	818	1044	819	744
	7	682	507	498	562	661	734	695	944	1135	1068	859	774
	8	817	619	753	843	859	937	1014	1407	1159	1108	889	819
	9	929	874	1038	989	1032	1077	1477	1501	1199	1138	934	954
	10	1184	1162	1236	1233	1092	1540	1607	1541	1229	1183	1069	1066
	11	1509	1360	1409	1307	1555	1795	1647	1571	1274	1318	1181	1321
	12	1784	1533	1469	1770	1897	1835	1677	1616	1409	1430	1436	1646
Wongwibinda	1	52	92	10	0	0	8	8	6	10	31	34	74
	2	281	192	122	23	54	16	24	63	126	96	208	238
	3	346	222	167	166	62	57	129	162	212	349	456	658
	4	691	277	227	175	103	175	235	312	522	710	725	840
	5	766	409	235	216	242	265	434	694	770	824	907	1046
	6	949	417	276	457	520	464	840	942	1115	1006	1164	1099
	7	1059	458	514	710	716	988	1088	1287	1320	1263	1247	1183
	8	1195	778	770	993	1157	1376	1415	1501	1577	1346	1393	1249
	9	1311	952	1050	1486	1464	1662	1597	1758	1660	1492	1662	1429
	10	1359	1295	1589	1747	1910	1844	1854	1841	1806	1849	1813	1539
	11	1407	1807	1957	2005	2217	2101	1937	1987	1980	2081	1952	1814
	12	1955	2169	2219	2255	2474	2184	2083	2344	2160	2191	2227	1967

WOLLOMOMBI CREEK AT CONINSIDE

LOCATION:	Latitude 30°29' Longitude 152°02'
PERIOD OF ESTABLISHMENT:	November 1923 to October 1929; April 1948 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	21
ZERO OF GAUGE:	R.L. 84.58 Assumed Datum.
CATCHMENT AREA:	145 square miles.
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Float type) installed 23rd June 1954. Staff gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 139 (b) Maximum observation in cusecs : 11,240 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	28,200 cusecs.
MEAN DAILY DISCHARGE FOR 20 YEARS:	57 cusecs.
MEAN ANNUAL DISCHARGE FOR 20 YEARS:	41,300 acre feet.
REMARKS:	Records for the period December 1923 to May 1929 were obtained from the station at Wollomombi. This station which had a catchment area 157 square miles was discontinued on 30th October, 1929.

WOLLOMOMBI CREEK AT CONINSIDE

Year 1923

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	..	..	..	..
Dec.	21	0	2.1	127
Total	..	..	..	..

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1.4	0	0.3	17
Feb.	970	0	59	3,427
Mar.	2	0	0.8	49
Apr.	2	0	0.3	19
May	2	0.5	0.8	50
June	71	0.1	19	1,136
July	4880	2	327	20,260
Aug.	650	4	45	2,794
Sept.	179	4	20	1,192
Oct.	20	3	10	616
Nov.	265	10	117	7,040
Dec.	1880	14	101	6,248
Total	..	..	..	42,848

Year 1925

Jan.	790	21	143	8,842
Feb.	92	1.1	25.7	1,441
Mar.	10	0.8	3.6	225
Apr.	3	0.8	1.7	108
May	87	0.8	13	821
June	69	3	14	850
July	13	4	5	332
Aug.	650	4	78	4,812
Sept.	13	3	6	332
Oct.	2.5	0	1.2	74
Nov.	730	2	98	5,907
Dec.	630	3	41	2,570
Total	..	..	..	26,314

Year 1926

Jan.	1880	2.1	156	9,690
Feb.	10	0	3	176
Mar.	4	0.8	2.3	140
Apr.	8	1.4	2.8	167
May	6	0.8	1.5	93
June	46	0.8	11	679
July	206	4	33	2,068
Aug.	4	4	4	248
Sept.	2	0.9	1.5	93
Oct.	0.9	0	0.4	24
Nov.	0	0	0	0
Dec.	13950	0	378	23,412
Total	..	..	..	36,790

Year 1927

Jan.	3080	16	264	16,344
Feb.	53	4	14	784
Mar.	8	2	3.5	215
Apr.	20	3	7	424
May	4	1.4	2.5	152
June	1.4	1.4	1.4	84
July	1.8	1.1	1.4	85
Aug.	0.4	0.2	0.2	15
Sept.	0.2	0	0.1	5
Oct.	835	0	24	1,496
Nov.	680	0.3	20	1,198
Dec.	2750	2	107	6,620
Total	..	..	..	27,422

Year 1928

Jan.	880	2	48	2,989
Feb.	28200	6	1685	97,730
Mar.	71	31	45	2,764
Apr.	82	27	38	2,268
May	25	23	24	1,474
June	4460	23	450	27,002
July	510	31	122	7,580
Aug.	31	10	20	1,266
Sept.	10	6	8	476
Oct.	7	4	6	384
Nov.	2960	4	118	7,060
Dec.	94	6	14	854
Total	..	..	..	151,847

WOLLOMOMBI CREEK AT CONINSIDE

Year 1929

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	143	2.7	12	766
Feb.	3490	5	497	27,828
Mar.	600	10	53	3,254
Apr.	295	10	37	2,240
May	10	10	10	620
June	No Records			
July	No Records			
Aug.	No Records			
Sept.	No Records			
Oct.	Station discontinued			
Nov.	..	..	..	..
Dec.	..	..	..	..
Total	..	..	..	..

Year 1948

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	No Records			
May	130	4.5	16	1,012
June	2020	4.5	163	9,768
July	217	11.5	41	2,540
Aug.	157	9.5	30	1,882
Sept.	130	7.5	20	1,173
Oct.	11.5	2.6	6	376
Nov.	30	3.5	7.7	461
Dec.	14	1.5	4.3	266
Total	..	..	..	..

Year 1949

Jan.	2140	1.3	45	2,798
Feb.	190	1.3	20	1,130
Mar.	81	6.8	16	966
Apr.	81	3.5	11	658
May	24	4	9	574
June	208	6	22	1,328
July	4900	7.5	455	28,204
Aug.	13900	10.5	654	40,532
Sept.	No Records			
Oct.	No Records			
Nov.	3200	12.7	274	16,444
Dec.	111	7.5	43	2,672
Total	..	..	..	..

Year 1950

Jan.	800	5.2	37	2,280
Feb.	7880	7.5	525	29,400
Mar.	1100	9.5	102	6,348
Apr.	226	18.5	90	5,404
May	52	11.5	17	1,084
June	17700	11.5	1200	72,016
July	No Records			
Aug.	1000	37	125	7,776
Sept.	950	19	80	4,784
Oct.	1825	44	373	23,120
Nov.	7350	30	736	44,134
Dec.	87	9.5	28	1,710
Total	..	..	..	..

Year 1951

Jan.	325	9.5	67	4,144
Feb.	850	18.5	78	4,366
Mar.	360	11.5	87	5,404
Apr.	18.5	7.5	10.7	640
May	24	7.5	9.6	596
June	2700	7.5	302	18,110
July	325	14	32	1,956
Aug.	325	14	57	3,526
Sept.	14	7.5	10	587
Oct.	7.5	2.6	4.7	294
Nov.	4.5	0.7	1.8	108
Dec.	4.5	0.9	1.8	111
Total	..	..	..	39,842

Year 1952

Jan.	700	0.4	17	1,080
Feb.	540	0	79	4,596
Mar.	264	4.5	42	2,588
Apr.	81	4.5	14	850
May	18.5	4.5	7.5	464
June	264	4.5	38	2,310
July	325	7.5	32	1,986
Aug.	14100	33	579	35,912
Sept.	52	10.5	21	1,250
Oct.	8420	18.5	303	18,802
Nov.	52	3.1	10	589
Dec.	244	0.8	14	873
Total	..	..	..	71,300

WOLLOMOMBI CREEK AT CONINSIDE

Year 1953

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	104	1.7	17	1,061
Feb.	10750	0.1	5191	29,067
Mar.	169	11	30	1,876
Apr.	14	5	7.6	454
May	5.8	4.2	5.2	569
June	20	5	9.2	305
July	11	3.5	5.9	363
Aug.	11	3.5	5.7	356
Sept.	8.5	2.2	4.9	296
Oct.	2.8	1.7	2.1	133
Nov.	2.5	0.3	1.3	74
Dec.	5	0	1.1	66
Total	..	..	..	34,620

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	11	0.5	2.5	153
Feb.	2240	1.2	119	6,662
Mar.	48	0.7	6.9	427
Apr.	1	0.7	0.8	50
May	4	0.9	2.5	151
June	12.5	2.2	3.8	225
July	5.8	2.2	3.8	239
Aug.	34	2.8	7.4	458
Sept.	14	1.3	4.3	255
Oct.	2400	2.5	100	6,202
Nov.	1050	6.5	79	4,759
Dec.	215	1.6	12.7	786
Total	..	..	..	20,367

Year 1955

Jan.	1000	2.2	15.9	986
Feb.	11560	1.9	379	21,235
Mar.	298	9.7	34	2,081
Apr.	410	5	22	1,341
May	634	7.5	35	2,190
June	100	20	35	2,125
July	29	11	17	1,047
Aug.	14	6.5	9	577
Sept.	21	3.5	7.5	448
Oct.	2090	2.6	69	4,263
Nov.	32	2	8	486
Dec.	2410	0.9	20	1,216
Total	..	..	..	37,995

Year 1956

Jan.	4900	0	138	8,536
Feb.	2401	41	628	36,426
Mar.	3455	26	153	9,504
Apr.	1820	10	60	3,614
May	3180	21	90	5,576
June	3630	11.5	104	6,234
July	82	17	38	2,348
Aug.	21	9	13	820
Sept.	26	7	11	669
Oct.	26	4	9	571
Nov.	11	0.9	4	242
Dec.	3	0.6	1.7	106
Total	..	..	..	74,646

Year 1957

Jan.	1140	0.3	41	2,548
Feb.	656	1.3	33	1,866
Mar.	69	4.4	11	692
Apr.	13	2.6	3.8	226
May	2.6	1.5	1.8	111
June	3.5	1.5	2.2	133
July	5.3	2.6	3.2	195
Aug.	82	2.6	8.2	511
Sept.	10	0.7	3	179
Oct.	7.3	0	5	32
Nov.	8.7	0	1.9	118
Dec.	0	0	0	0
Total	..	..	..	6,611

Year 1958

Jan.	114	0	3.6	222
Feb.	559	2.6	21	1,177
Mar.	114	0.9	12	746
Apr.	2	0.4	0.8	51
May	3.5	0.1	0.9	57
June	2.6	0.5	1.4	86
July	3.5	0.9	1.7	106
Aug.	26	0.7	4.5	280
Sept.	210	2	17	1,002
Oct.	32	2.3	9.3	575
Nov.	157	0.6	4.8	285
Dec.	2960	0.4	52	3,200
Total	..	..	..	7,787

WOLLOMOMBI CREEK AT CONINSIDE

Year 1959

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	21500	8.7	495	30,670
Feb.	No Records			4,700*
Mar.	No Records			22,000*
Apr.	No Records			1,300*
May	23	8.5	11.6	718
June	53	5.5	9.6	575
July	386	7	45	2,774
Aug.	26	8.5	12	775
Sept.	32	5.5	13	812
Oct.	42	4.9	11	689
Nov.	6240	8.5	339	20,320
Dec.	6960	11	254	15,750
Total	..	..	..	101,000*

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	765	4.7	33	2,017
Feb.	2860	5.5	96	5,546
Mar.	170	7	37	2,312
Apr.	59	5.5	11	676
May	11	4.9	6.7	412
June	39	5.5	11	632
July	72	8.5	23	1,421
Aug.	82	7	19	1,174
Sept.	21	4	6.5	388
Oct.	18	1.1	3.5	219
Nov.	82	0.4	6.1	364
Dec.	3	0.4	1.1	68
Total	..	..	..	15,229

Year 1961

Jan.	2.5	0	0.6	38
Feb.	241	0	15	823
Mar.	8.5	1.1	2.4	150
Apr.	2.5	0.6	1.1	65
May	2.5	0.7	1.1	71
June	13	1.5	4	238
July	21	1.3	3.7	230
Aug.	42	4	12	720
Sept.	13	1.7	4.7	280
Oct.	291	1.3	19	1,203
Nov.	513	0.5	54	3,232
Dec.	918	7	47	2,908
Total	..	..	..	9,958

Year 1962

Jan.	7770	16	319	19,780
Feb.	448	6	37	2,088
Mar.	196	4	25	1,544
Apr.	6774	7	226	13,548
May	1175	8	65	4,034
June	36	8.5	16	978
July	13850	7	373	23,122
Aug.	241	16	34	2,080
Sept.	58	10	18	1,055
Oct.	19	4.2	7.5	465
Nov.	24	2.3	5.9	355
Dec.	16	1.1	5.0	313
Total	..	..	..	69,362

Year 1963

Jan.	1280	1.1	53	3,296
Feb.	104	1.7	13	724
Mar.	3070	2.7	119	7,388
Apr.	134	7	27	1,611
May	20000	12	655	40,640
June	82	13	34	2,011
July	49	21	29	1,825
Aug.	241	13	30	1,852
Sept.	56	5.5	16	978
Oct.	196	3.5	16	1,004
Nov.	72	1.7	14	812
Dec.	4370	3.5	62	3,840
Total	..	..	..	65,981

Year 1964

Jan.	1500	0.8	30	1,848
Feb.	10.7	0.8	2.3	135
Mar.	4435	3	133	8,254
Apr.	29	3	6.3	376
May	13	3.5	6.3	393
June	11	4	6	362
July	210	4	23	1,430
Aug.	63	3	8.4	518
Sept.	35	2.5	3.8	226
Oct.	42	1.7	8.4	522
Nov.	2560	2	24	1,450
Dec.	15	0.2	1.7	107
Total	..	..	..	15,621

* Estimated.

WOLLOMOMBI CREEK AT CONINSIDE

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	328	0	4.7	290
Feb.	5.5	0.2	1.3	71
Mar.	0.2	0	0.03	2
Apr.	0	0	0	0
May	0	0	0	0
June	1.7	0	0.9	51
July	210	0.7	12	730
Aug.	3	0.8	1.4	89
Sept.	18	0.4	3.5	213
Oct.	737	0.1	5.3	326
Nov.	1.1	0	0.3	20
Dec.	3235	0	77	4,780
Total	..	..	..	6,572

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0.5	0	0.05	3
Feb.	196	0	3.6	200
Mar.	1210	0.4	10	606
Apr.	63	0.1	2	118
May	3.5	0.6	1.7	104
June	3	0.8	1.6	97
July	1.1	0.6	0.8	51
Aug.	38	0.5	4	282
Sept.	38	1.8	6	352
Oct.	123	2.2	12	716
Nov.	1210	1.6	32	1,910
Dec.	42	0.1	1.7	103
Total	..	..	..	4,542

Year 1967

Jan.	765	0.3	38	2,330
Feb.	104	0.4	10	582
Mar.	196	0.9	20	1,260
Apr.	30	1.1	8.2	489
May	9	1.1	1.7	108
June	10750	1.1	451	27,100
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

CHANDLER RIVER AT EURINGILLY (FASSIFERN)

LOCATION:	Latitude 30°28' Longitude 152°03'
PERIOD OF ESTABLISHMENT:	May 1948 to date
COMPLETE YEARS OF COMPUTED RECORDS:	18
ZERO OF GAUGE:	R.L. 79.94 Assumed Datum
CATCHMENT AREA:	79 square miles
CONTROL:	Low concrete weir
EQUIPMENT:	Automatic recorder (Pressure type) installed 7th May 1948 Staff gauge, range 0-20 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 113
	(b) Maximum observation in cusecs : 8,600
	(c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	21,000 cusecs
MEAN DAILY DISCHARGE FOR 17 YEARS:	51 cusecs
MEAN ANNUAL DISCHARGE FOR 17 YEARS:	37,100 acre feet

CHANDLER RIVER AT EURINGILLY

Year 1948

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	4490	0.9	359	21,563
July	670	5	30	1,881
Aug.	7	3	6	363
Sept.	5240	2	166	9,983
Oct.	12	0.9	4	250
Nov.	12	0.5	2	140
Dec.	4	0.3	1	76
Total	..	..	..	..

Year 1949

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2110	0.5	74	4,562
Feb.	5810	0.5	306	17,131
Mar.	7350	2	223	13,856
Apr.	78	0.7	4	246
May	11	1	3	204
June	1010	1	48	2,899
July	7550	2	267	16,532
Aug.	16600	5	802	49,719
Sept.	160	23	65	3,880
Oct.	1940	10	206	12,788
Nov.	3430	10	259	15,556
Dec.	440	3	29	1,768
Total	..	..	..	139,141

Year 1950

Jan.	2110	1	52	3,196
Feb.	6190	5	402	22,522
Mar.	485	5	20	1,213
Apr.	3600	6	72	4,337
May	9	3	5	342
June	21000	3	909	54,537
July	7550	8	533	33,023
Aug.	5240	15	121	7,528
Sept.	670	10	56	3,346
Oct.	6380	18	229	14,224
Nov.	5240	12	248	14,894
Dec.	29	3	10	592
Total	..	..	..	159,754

Year 1951

Jan.	485	2	46	2,881
Feb.	1010	3	26	1,471
Mar.	4860	3	100	6,182
Apr.	4	2	2	144
May	6	2	3	184
June	2640	2	97	5,816
July	23	5	9	540
Aug.	49	3	11	680
Sept.	4	1	2	116
Oct.	2	0.1	0.8	50
Nov.	15	0	0.5	32
Dec.	13	0	0.7	41
Total	..	..	..	18,137

Year 1952

Jan.	20	0	2	132
Feb.	2640	0	79	4,589
Mar.	1220	1	32	1,975
Apr.	540	2	21	1,238
May	4	1	3	164
June	600	6	24	1,455
July	137	2	11	692
Aug.	11300	10	328	20,348
Sept.	29	4	8	504
Oct.	6380	5	105	6,511
Nov.	9	1	3	166
Dec.	62	0.2	4	246
Total	..	..	..	38,020

Year 1953

Jan.	114	0.5	8	502
Feb.	7550	0.4	193	10,830
Mar.	1110	3	19	1,163
Apr.	7	2	4	227
May	29	2	6	272
June	2	1	2	94
July	2	0.9	1	85
Aug.	7	0.9	2	117
Sept.	7	0.4	1	79
Oct.	5	0	0.6	38
Nov.	0.3	0	0.1	8
Dec.	0	0	0	0
Total	..	..	..	13,415

CHANDLER RIVER AT EURINGILLY

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0.9	0	0.3	18
Feb.	4130	0.2	78	4,346
Mar.	296	0	6	357
Apr.	1440	0	18	1,074
May	1	0.4	0.7	44
June	8	0.9	2	117
July	4	0.9	2	105
Aug.	18	0.9	3	210
Sept.	15	0.4	2	149
Oct.	7550	1	127	7,870
Nov.	1680	1	35	2,142
Dec.	62	0.5	6	381
Total	..	..	..	16,813

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1110	1	20	1,267
Feb.	7150	0.3	351	19,662
Mar.	78	2	12	741
Apr.	1940	2	20	1,187
May	1560	3	55	3,398
June	23	3	9	558
July	29	1	4	265
Aug.	3	0.5	1	89
Sept.	3	0.5	1	81
Oct.	1680	1	23	1,456
Nov.	9	0	2	129
Dec.	440	0	10	628
Total	..	..	..	29,461

Year 1956

Jan.	7550	0	182	11,260
Feb.	10400	29	397	23,030
Mar.	160	6	28	1,726
Apr.	1680	5	57	3,426
May	3770	6	75	4,653
June	5430	3	96	5,747
July	62	6	17	1,038
Aug.	9	2	4	270
Sept.	7	1	3	159
Oct.	5	1	3	178
Nov.	3	0	1	82
Dec.	114	0	2	105
Total	..	..	..	51,674

Year 1957

Jan.	440	0	13	822
Feb.	600	0.5	42	2,374
Mar.	11	1	5	284
Apr.	1	0.5	0.9	54
May	0.5	0.2	0.3	20
June	1	0.4	0.6	39
July	1	0.5	1	64
Aug.	160	0.9	5	292
Sept.	4	0.2	1	68
Oct.	0.5	0	0.1	4
Nov.	0.9	0	0.2	12
Dec.	440	0	5	332
Total	..	..	..	4,365

Year 1958

Jan.	5810	0	64	3,949
Feb.	670	2	52	2,897
Mar.	236	0.5	11	684
Apr.	4	0.2	0.7	40
May	1	0.2	0.7	44
June	1	0.2	1	63
July	1	0.2	0.6	40
Aug.	15	0	2	136
Sept.	540	0.5	12	694
Oct.	15	0.2	2	116
Nov.	0.2	0	0	1
Dec.	5	0	0.7	46
Total	..	..	..	8,710

Year 1959

Jan.	10900	0	200	12,405
Feb.	1680	2	60	3,380
Mar.	5620	12	256	15,890
Apr.	114	3	16	948
May	7	2	3	184
June	62	2	4	262
July	364	3	27	1,658
Aug.	11	2	5	290
Sept.	13	2	5	276
Oct.	160	1	7	458
Nov.	4310	2	209	12,532
Dec.	3100	1	111	6,892
Total	..	..	..	55,176

CHANDLER RIVER AT EURINGILLY

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	96	1	7	416
Feb.	160	2	12	700
Mar.	18	1	7	408
Apr.	5	0.5	2	132
May	2	0.9	1	86
June	4	0.5	2	114
July	5	1	3	160
Aug.	5	0.9	2	118
Sept.	1	0.5	0.9	52
Oct.	0.5	0	0.3	18
Nov.	7	0	1	62
Dec.	0.5	0	0.3	15
Total	..	..	..	2,281

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	38	0	2	128
Feb.	364	0	10	580
Mar.	0.5	0	0.2	10
Apr.	0	0	0	0
May	1	0	0.1	5
June	15	0.5	2	126
July	5	0.2	1	64
Aug.	18	0.9	5	282
Sept.	4	0.5	1	84
Oct.	78	0.5	7	426
Nov.	78	0.5	7	418
Dec.	485	1	21	1,328
Total	..	..	..	3,451

Year 1962

Jan.	8750	3	250	15,500
Feb.	750	3	49	2,720
Mar.	440	3	35	2,160
Apr.	11300	6	338	20,300
May	1440	3	51	3,140
June	15	3	6	346
July	10400	3	309	19,100
Aug.	296	6	16	1,010
Sept.	265	3	12	724
Oct.	6	0.5	2	148
Nov.	62	0.2	5	328
Dec.	114	0.5	3	162
Total	..	..	..	65,638

Year 1963

Jan.	2790	0.5	41	2,540
Feb.	23	0.2	1	82
Mar.	670	0.2	34	2,100
Apr.	49	0.5	7	416
May	3260	5	450	27,900
June	137	7	25	1,500
July	40	5	13	836
Aug.	265	4	17	1,050
Sept.	21	2	6	358
Oct.	114	1	7	418
Nov.	21	0.9	6	338
Dec.	2210	2	60	3,710
Total	..	..	..	41,248

Year 1964

Jan.	1680	0.5	23	1,430
Feb.	10	0.5	1	82
Mar.	6720	2	114	7,040
Apr.	18	1	3	186
May	4	1	2	132
June	4	1	2	136
July	49	1	8	470
Aug.	33	0.5	3	172
Sept.	3	0.2	0.8	50
Oct.	4	0.2	2	100
Nov.	329	0.5	16	948
Dec.	8	0	0.6	34
Total	..	..	..	10,780

Year 1965

Jan.	62	0	6	364
Feb.	440	0.1	9	478
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	670	0	12	756
Aug.	2	0.3	1	60
Sept.	3	0.1	0.6	38
Oct.	4	0	0.8	48
Nov.	0.5	0	0.1	3
Dec.	1330	0	66	4,120
Total	..	..	..	5,867

CHANDLER RIVER AT EURINGILLY

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.	87	0	3	176	Jan.	2790	1.3	130	5,820
Feb.	236	0.2	7	370	Feb.	184	0.4	13	740
Mar.	62	0.2	4	270	Mar.	114	1.0	7	456
Apr.	0.5	0	0.1	8	Apr.	4.5	0.4	1.4	85
May	3	0	0.5	32	May	1.0	0.2	0.4	23
June	0.5	0.2	0.4	23	June	10400	0.2	355	21,300
July	0.5	0	0.2	13	July				
Aug.	10	0	2	111	Aug.				
Sept.	78	0.2	4	216	Sept.				
Oct.	1010	0.2	23	1,370	Oct.				
Nov.	2070	0.2	26	1,560	Nov.				
Dec.	540	0	8	510	Dec.				
Total	..	..	..	4,659	Total				

STYX RIVER AT JEOGLA

LOCATION:	Latitude 30°36' Longitude 152°10'
PERIOD OF ESTABLISHMENT:	April 1918 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	48
ZERO OF GAUGE:	R.L. 27.20 Assumed Datum.
CATCHMENT AREA:	65 square miles (No. 2 station)
CONTROL:	Rock.
EQUIPMENT:	Automatic Recorder (Pressure type) installed 2nd September, 1938. Staff gauge, range 0 to 30 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 169 (b) Maximum observation in cusecs : 9,880 (c) Minimum observation in cusecs : 1.3
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	31,000 cusecs.
MEAN DAILY DISCHARGE FOR 47 YEARS:	129 cusecs.
MEAN ANNUAL DISCHARGE FOR 47 YEARS:	94,400 acre feet.

REMARKS:

1. Records prior to September 1938 were obtained at Jeogla No. 1 which had a catchment area of 64 square miles. Jeogla No. 1 was discontinued in favour of Jeogla No. 2 which had been established on 2nd September 1938.

2. On 24th June 1964, the New England County Council commenced diversions from Bullock Creek, a tributary of the Serpentine River, into the Oaky River catchment. The licensed capacity of the diversion is 3,500 gallons per minute (9.3 cusecs) and it is understood that the New England County Council proposes to divert about 2,400 acre feet in a normal year.

STYX RIVER AT JEOGLA.

Year 1918

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	337	80	149	9,266
June	89	35	55	3,314
July	88	25	33	2,034
Aug.	57	16	36	2,220
Sept.	38	9	17	1,026
Oct.	32	7	11	672
Nov.	16	5	8	498
Dec.	11	2	6	341
Total	..	..	..	..

Year 1919

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	9	3	5	338
Feb.	23	0.5	7	386
Mar.	2450	18	207	12,856
Apr.	380	72	176	10,578
May	315	99	193	11,980
June	605	132	250	14,972
July	138	38	83	5,146
Aug.	64	57	62	3,832
Sept.	57	9	26	1,548
Oct.	16	7	10	640
Nov.	10	2	5	325
Dec.	187	2	52	3,198
Total	..	..	..	65,799

Year 1920

Jan.	655	16	213	13,194
Feb.	535	89	202	11,328
Mar.	158	44	79	4,888
Apr.	120	51	77	4,598
May	132	57	91	5,636
June	158	51	82	4,936
July	315	64	158	9,798
Aug.	220	44	103	6,380
Sept.	120	38	68	4,066
Oct.	515	38	133	8,244
Nov.	255	72	110	6,572
Dec.	158	32	67	4,184
Total	..	..	..	83,824

Year 1921

Jan.	515	51	164	10,184
Feb.	465	99	243	13,594
Mar.	835	172	422	26,156
Apr.	515	99	245	14,710
May	5080	64	581	36,006
June	860	145	291	17,436
July	15590	187	1053	65,294
Aug.	755	72	239	14,808
Sept.	275	89	144	8,620
Oct.	535	51	130	8,066
Nov.	203	38	88	5,292
Dec.	1150	32	225	13,968
Total	..	..	..	234,134

Year 1922

Jan.	1330	57	233	14,458
Feb.	1210	44	464	25,956
Mar.	490	64	199	12,350
Apr.	64	38	54	3,226
May	380	27	99	6,112
June	172	44	109	6,512
July	187	72	111	6,888
Aug.	810	64	250	15,470
Sept.	1490	57	349	20,940
Oct.	132	44	77	4,760
Nov.	72	27	45	2,676
Dec.	72	16	33	2,080
Total	..	..	..	121,428

Year 1923

Jan.	89	7	39	2,394
Feb.	11	7	8	456
Mar.	44	9	22	1,354
Apr.	1090	11	430	25,796
May	605	64	187	11,614
June	89	32	51	3,070
July	203	27	54	3,374
Aug.	420	64	211	13,104
Sept.	220	32	109	6,526
Oct.	57	32	43	2,698
Nov.	32	11	20	1,218
Dec.	44	4	14	872
Total	..	..	..	72,476

STYX RIVER AT JEOGLA

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	89	7	33	2,020
Feb.	145	19	48	2,774
Mar.	44	11	24	1,524
Apr.	89	11	40	2,383
May	44	16	27	1,646
June	585	11	122	7,300
July	1360	89	304	18,818
Aug.	220	57	109	6,764
Sept.	89	32	47	2,828
Oct.	109	9	22	1,380
Nov.	315	18	87	5,228
Dec.	655	13	104	6,432
Total	..	..	..	59,097

Year 1925

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	99	16	53	3,292
Feb.	158	57	94	5,276
Mar.	1150	51	330	20,486
Apr.	585	120	293	17,578
May	2320	120	502	31,154
June	2450	80	510	30,570
July	380	64	154	9,568
Aug.	255	44	78	4,848
Sept.	72	23	40	2,422
Oct.	44	11	17	1,070
Nov.	255	11	67	4,004
Dec.	585	23	82	5,092
Total	..	..	..	135,360

Year 1926

Jan.	605	64	185	11,496
Feb.	109	27	41	2,312
Mar.	255	19	60	3,718
Apr.	255	44	96	5,754
May	1000	32	172	10,654
June	515	120	201	12,072
July	1060	89	279	17,268
Aug.	89	32	56	3,476
Sept.	38	16	24	1,466
Oct.	23	7	12	754
Nov.	13	3	5	318
Dec.	465	3	73	4,516
Total	..	..	..	73,804

Year 1927

Jan.	810	64	311	19,266
Feb.	585	38	195	10,936
Mar.	89	23	55	3,406
Apr.	1000	120	384	23,060
May	120	51	76	4,704
June	89	32	45	2,682
July	32	19	25	1,556
Aug.	23	13	16	990
Sept.	16	9	12	692
Oct.	220	9	36	2,218
Nov.	515	13	61	3,750
Dec.	810	89	206	12,792
Total	..	..	..	86,052

Year 1928

Jan.	810	80	287	17,824
Feb.	5080	145	788	45,714
Mar.	345	91	166	10,296
Apr.	1960	91	444	26,662
May	460	110	178	11,032
June	2200	74	340	20,372
July	850	122	298	18,504
Aug.	122	60	93	5,740
Sept.	67	29	47	2,810
Oct.	43	4	14	860
Nov.	48	3	8	504
Dec.	21	4	9	552
Total	..	..	..	160,870

Year 1929

Jan.	21	4	7	462
Feb.	1960	4	404	22,610
Mar.	850	48	235	14,596
Apr.	210	29	56	3,350
May	100	18	62	3,828
June	610	12	65	3,880
July	390	91	175	10,872
Aug.	265	91	161	10,004
Sept.	770	110	260	15,574
Oct.	1320	100	779	48,300
Nov.	147	29	66	3,934
Dec.	43	10	18	1,134
Total	..	..	..	138,544

STYX RIVER AT JEOGLA

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	122	6	23	1,432
Feb.	91	12	30	1,676
Mar.	265	18	78	4,850
Apr.	1030	43	193	11,602
May	390	54	124	7,680
June	2160	48	380	22,788
July	485	74	204	12,638
Aug.	192	43	64	3,972
Sept.	60	18	33	2,002
Oct.	82	12	22	1,392
Nov.	67	8	13	764
Dec.	21	4	7	426
Total	..	..	..	71,222

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	67	2	9	550
Feb.	940	4	188	10,508
Mar.	210	38	63	3,922
Apr.	460	43	188	11,288
May	325	67	159	9,840
June	91	48	66	3,974
July	110	21	57	3,524
Aug.	67	21	42	2,614
Sept.	33	12	26	1,556
Oct.	21	2	10	614
Nov.	21	3	12	738
Dec.	67	8	37	2,300
Total	..	..	..	51,428

Year 1932

Jan.	33	6	15	954
Feb.	21	3	10	568
Mar.	18	6	11	680
Apr.	38	3	14	826
May	110	4	35	2,186
June	161	33	62	3,728
July	176	29	61	3,772
Aug.	43	18	26	1,638
Sept.	2450	10	231	13,840
Oct.	176	43	86	5,360
Nov.	535	25	79	4,766
Dec.	100	25	51	3,184
Total	..	..	..	41,502

Year 1933

Jan.	535	12	62	3,824
Feb.	192	21	75	4,186
Mar.	48	18	25	1,532
Apr.	122	25	45	2,698
May	29	15	19	1,172
June	2450	15	447	26,810
July	3610	74	513	31,820
Aug.	460	91	168	10,412
Sept.	460	33	91	5,476
Oct.	1030	91	245	15,182
Nov.	1120	161	287	17,218
Dec.	435	134	240	14,862
Total	..	..	..	135,192

Year 1934

Jan.	410	91	215	13,322
Feb.	850	161	350	19,604
Mar.	365	91	164	10,184
Apr.	910	161	458	27,506
May	1520	161	327	20,302
June	192	43	88	5,308
July	265	38	86	5,304
Aug.	535	74	204	12,646
Sept.	1030	91	340	20,408
Oct.	91	33	62	3,868
Nov.	100	25	38	2,286
Dec.	610	21	133	8,230
Total	..	..	..	148,968

Year 1935

Jan.	690	54	197	12,224
Feb.	390	60	142	7,976
Mar.	585	82	267	16,572
Apr.	91	38	60	3,636
May	38	25	29	1,768
June	33	6	16	960
July	161	6	39	2,394
Aug.	21	8	13	800
Sept.	110	6	30	1,818
Oct.	60	6	19	1,180
Nov.	4	2	3	160
Dec.	161	2	21	1,301
Total	..	..	..	50,789

STYX RIVER AT JEOGLA

Year 1936

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	54	2	17	1,061
Feb.	325	12	96	5,554
Mar.	850	67	249	15,444
Apr.	460	38	126	7,826
May	210	43	82	5,090
June	176	54	97	5,842
July	161	25	45	2,822
Aug.	43	15	23	1,442
Sept.	60	18	27	1,594
Oct.	25	3	14	844
Nov.	3	1	2	131
Dec.	460	1	56	3,488
Total	..	..	..	51,138

Year 1937

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	265	33	103	6,390
Feb.	3950	25	865	48,428
Mar.	1630	147	412	25,540
Apr.	460	110	185	11,094
May	105	43	64	3,946
June	610	43	170	10,198
July	161	67	104	6,422
Aug.	305	54	102	6,350
Sept.	410	43	102	6,148
Oct.	122	38	52	3,254
Nov.	1120	74	277	16,616
Dec.	245	48	121	7,532
Total	..	..	..	151,918

Year 1938

Jan.	1550	29	499	30,946
Feb.	820	67	280	15,674
Mar.	225	54	101	6,232
Apr.	1740	48	460	27,612
May	345	91	140	8,660
June	122	60	76	4,536
July	210	60	74	4,590
Aug.	176	48	70	4,366
Sept.	100	12	33	1,980
Oct.	43	8	18	1,094
Nov.	190	10	21	1,284
Dec.	43	8	16	1,004
Total	..	..	..	107,978

Year 1939

Jan.	26	2	10	608
Feb.	24	5	10	584
Mar.	2050	5	325	20,150
Apr.	490	88	164	9,842
May	113	37	58	3,566
June	43	18	29	1,758
July	88	18	27	1,670
Aug.	157	20	39	2,392
Sept.	325	10	18	1,088
Oct.	226	39	82	5,102
Nov.	107	37	61	3,660
Dec.	226	15	35	2,152
Total	..	..	..	52,572

Year 1940

Jan.	77	15	32	2,004
Feb.	43	5	15	890
Mar.	459	5	28	1,744
Apr.	43	12	23	1,374
May	37	9	13	814
June	100	5	11	672
July	26	7	14	838
Aug.	50	7	15	948
Sept.	18	6	10	605
Oct.	31	3	7	402
Nov.	5	1	3	191
Dec.	31	5	12	730
Total	..	..	..	11,212

Year 1941

Jan.	245	4	74	4,580
Feb.	780	43	143	7,980
Mar.	345	31	86	5,350
Apr.	127	37	51	3,058
May	165	26	40	2,510
June	142	40	65	3,924
July	113	24	36	2,256
Aug.	24	8	14	860
Sept.	12	7	10	598
Oct.	18	5	8	484
Nov.	15	4	8	453
Dec.	6	1	3	162
Total	..	..	..	32,215

STYX RIVER AT JEOGLA

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	5	1	2	122
Feb.	265	2	97	5,418
Mar.	100	31	65	4,006
Apr.	50	14	24	1,413
May	14	5	8	504
June	37	6	17	1,014
July	58	15	29	1,794
Aug.	22	8	14	856
Sept.	9	6	7	414
Oct.	920	4	130	8,032
Nov.	820	58	130	7,804
Dec.	190	40	64	3,934
Total	..	..	..	35,311

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	349	46	127	7,904
Feb.	43	13	29	1,606
Mar.	18	7	11	693
Apr.	190	9	43	2,560
May	459	9	65	4,044
June	190	22	60	3,586
July	26	11	16	1,014
Aug.	77	10	40	2,462
Sept.	349	40	103	6,188
Oct.	590	40	58	3,616
Nov.	540	26	89	5,330
Dec.	2820	22	139	8,620
Total	..	..	..	47,623

Year 1944

Jan.	4570	77	267	16,526
Feb.	173	50	82	4,772
Mar.	50	31	38	2,356
Apr.	58	18	34	2,022
May	26	15	17	1,042
June	26	12	17	1,036
July	459	15	106	6,570
Aug.	5800	26	446	27,624
Sept.	285	54	103	6,174
Oct.	50	22	32	2,034
Nov.	43	8	23	1,398
Dec.	26	6	13	824
Total	..	..	..	72,378

Year 1945

Jan.	50	6	16	1,010
Feb.	67	5	20	1,125
Mar.	37	11	16	1,020
Apr.	26	15	22	1,292
May	58	15	26	1,636
June	10400	34	765	45,922
July	2050	82	279	17,324
Aug.	157	43	81	4,998
Sept.	190	26	48	2,906
Oct.	31	18	26	1,612
Nov.	430	15	67	3,994
Dec.	305	37	91	5,664
Total	..	..	..	88,503

Year 1946

Jan.	265	15	42	2,576
Feb.	556	15	100	5,624
Mar.	14300	88	710	43,994
Apr.	430	94	213	12,792
May	87	31	43	2,654
June	31	22	25	1,546
July	18	12	16	972
Aug.	12	8	10	600
Sept.	16	7	10	598
Oct.	22	6	10	646
Nov.	14	4	8	472
Dec.	265	4	9	554
Total	..	..	..	73,028

Year 1947

Jan.	920	6	61	3,779
Feb.	2130	94	407	22,780
Mar.	740	94	204	12,630
Apr.	970	123	299	17,932
May	123	43	77	4,786
June	50	18	35	2,118
July	26	18	22	1,392
Aug.	26	16	19	1,204
Sept.	29	12	20	1,200
Oct.	37	8	13	828
Nov.	94	6	28	1,658
Dec.	417	37	172	10,656
Total	..	..	..	80,963

STYX RIVER AT JEOGLA

Year 1948

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	156	37	73	4,502
Feb.	43	22	33	1,926
Mar.	430	26	120	7,458
Apr.	156	40	65	3,908
May	1550	50	171	10,628
June	6250	43	869	52,152
July	173	43	88	5,438
Aug.	47	31	38	2,350
Sept.	50	18	33	2,002
Oct.	48	18	29	1,804
Nov.	16	12	15	882
Dec.	18	8	12	714
Total	..	..	..	93,764

Year 1949

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	305	8	41	2,516
Feb.	108	14	34	1,890
Mar.	1610	139	448	27,778
Apr.	459	74	199	11,946
May	101	59	69	4,292
June	190	50	69	4,114
July	1810	28	159	9,852
Aug.	7820	59	827	51,294
Sept.	459	115	203	12,196
Oct.	305	69	120	7,450
Nov.	305	50	134	8,062
Dec.	139	31	60	3,708
Total	..	..	..	145,098

Year 1950

Jan.	236	31	90	5,564
Feb.	1020	43	275	15,420
Mar.	226	94	151	9,380
Apr.	305	74	152	9,140
May	226	55	128	7,962
June	19100	54	1470	88,192
July	660	349	432	26,776
Aug.	2540	173	382	23,702
Sept.	431	94	178	10,676
Oct.	315	94	225	13,980
Nov.	459	94	253	15,190
Dec.	349	123	234	14,492
Total	..	..	..	240,474

Year 1951

Jan.	1490	156	494	30,622
Feb.	565	123	221	12,402
Mar.	2130	90	344	21,360
Apr.	163	70	109	6,560
May	65	26	47	2,884
June	3130	26	269	16,168
July	123	50	77	4,798
Aug.	60	22	33	2,060
Sept.	129	17	46	2,748
Oct.	31	11	18	1,096
Nov.	22	7	110	6,600
Dec.	16	1	7	417
Total	..	..	..	107,715

Year 1952

Jan.	149	3	9	580
Feb.	335	2	44	2,534
Mar.	425	52	110	6,804
Apr.	149	31	56	3,384
May	52	22	36	2,210
June	52	17	26	1,576
July	395	18	49	3,054
Aug.	10900	117	639	39,586
Sept.	1610	37	78	4,660
Oct.	256	31	70	4,342
Nov.	31	15	24	1,424
Dec.	31	10	18	1,126
Total	..	..	..	71,280

Year 1953

Jan.	149	11	39	2,388
Feb.	2540	31	586	32,796
Mar.	1740	111	344	21,328
Apr.	256	70	112	6,742
May	100	31	52	3,216
June	31	20	25	1,528
July	31	15	19	1,202
Aug.	44	13	15	910
Sept.	31	10	14	824
Oct.	12	7	10	594
Nov.	10	4	6	352
Dec.	37	2	8	474
Total	..	..	..	72,354

STYX RIVER AT JEOGLA

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	123	6	28	1,738
Feb.	31000	16	752	42,096
Mar.	335	46	127	7,850
Apr.	280	31	49	2,934
May	178	22	75	4,630
June	307	48	101	6,080
July	4570	22	492	30,400
Aug.	645	60	118	7,290
Sept.	1060	22	153	9,178
Oct.	1000	89	187	11,600
Nov.	555	89	175	10,492
Dec.	702	31	108	6,696
Total	..	..	..	140,984

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	356	65	117	7,250
Feb.	434	100	189	10,584
Mar.	1380	177	486	30,148
Apr.	1380	135	407	24,406
May	1310	117	253	15,706
June	177	100	131	7,832
July	135	40	79	4,926
Aug.	41	15	33	2,068
Sept.	123	15	35	2,100
Oct.	289	19	54	3,354
Nov.	89	19	44	2,650
Dec.	555	11	138	8,573
Total	..	..	..	119,597

Year 1956

Jan.	891	34	162	10,034
Feb.	9000	268	1071	62,136
Mar.	3130	310	642	39,834
Apr.	944	89	212	12,722
May	746	64	122	7,586
June	310	38	62	3,704
July	69	35	51	3,154
Aug.	48	25	34	2,090
Sept.	31	19	25	1,495
Oct.	21	12	16	1,005
Nov.	21	5	9	541
Dec.	38	4	11	703
Total	..	..	..	145,004

Year 1957

Jan.	148	4	15	906
Feb.	792	15	172	9,654
Mar.	661	65	200	12,392
Apr.	74	28	47	2,826
May	28	12	19	1,198
June	19	11	14	846
July	30	10	15	935
Aug.	555	6	41	2,530
Sept.	86	15	32	1,940
Oct.	135	6	14	895
Nov.	35	4	11	643
Dec.	30	2	6	353
Total	..	..	..	35,118

Year 1958

Jan.	75	10	25	1,571
Feb.	30	10	21	1,149
Mar.	66	10	30	1,846
Apr.	229	18	95	5,728
May	86	21	44	2,746
June	944	21	177	10,646
July	148	32	69	4,286
Aug.	268	31	75	4,642
Sept.	148	25	39	2,370
Oct.	35	12	25	1,582
Nov.	23	6	11	673
Dec.	135	10	36	2,214
Total	..	..	..	39,453

Year 1959

Jan.	18400	49	825	51,168
Feb.	1590	122	290	16,254
Mar.	1730	110	322	19,964
Apr.	356	72	163	9,800
May	69	38	53	3,308
June	381	30	51	3,040
July	492	57	128	7,958
Aug.	110	49	73	4,508
Sept.	332	75	135	8,098
Oct.	148	41	61	3,784
Nov.	9000	66	573	34,356
Dec.	381	80	132	8,212
Total	..	..	..	170,450

STYX RIVER AT JEOGLA

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	356	35	99	6,122
Feb.	792	57	134	7,800
Mar.	2210	110	417	25,884
Apr.	162	59	102	6,122
May	268	30	73	4,554
June	162	66	88	5,278
July	162	41	60	3,694
Aug.	41	30	36	2,220
Sept.	35	19	24	1,430
Oct.	25	13	16	1,004
Nov.	75	6	13	772
Dec.	57	4	13	784
Total	..	..	..	65,664

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	194	5	34	2,104
Feb.	1590	21	131	7,364
Mar.	135	35	65	4,026
Apr.	75	35	53	3,200
May	86	21	33	2,056
June	462	57	137	8,232
July	75	30	40	2,474
Aug.	211	30	46	2,880
Sept.	162	25	61	3,680
Oct.	462	35	93	5,750
Nov.	492	35	63	3,798
Dec.	3800	57	206	12,746
Total	..	..	..	58,310

Year 1962

Jan.	1000	194	371	23,000
Feb.	434	75	122	6,830
Mar.	1120	75	238	14,800
Apr.	14500	110	994	59,600
May	1590	86	242	15,000
June	122	53	75	4,480
July	10000	53	595	36,900
Aug.	148	66	96	5,940
Sept.	86	35	48	2,890
Oct.	49	21	28	1,750
Nov.	35	18	20	1,230
Dec.	1450	10	149	9,270
Total	..	..	..	181,690

Year 1963

Jan.	4180	86	399	24,700
Feb.	135	57	80	4,500
Mar.	588	49	214	13,200
Apr.	1380	75	270	16,200
May	18100	177	1159	71,900
June	1180	98	174	10,400
July	268	41	114	7,040
Aug.	57	49	53	3,260
Sept.	49	25	33	1,960
Oct.	381	35	82	5,100
Nov.	462	35	91	5,470
Dec.	434	98	209	13,000
Total	..	..	..	176,730

Year 1964

Jan.	462	57	82	5,090
Feb.	310	49	110	6,370
Mar.	6720	98	518	32,100
Apr.	588	148	265	15,900
May	135	41	78	4,840
June	75	35	48	2,910
July	75	30	41	2,560
Aug.	41	18	26	1,590
Sept.	21	15	18	1,070
Oct.	21	8	14	882
Nov.	34	8	13	800
Dec.	71	6	14	847
Total	..	..	..	74,959

Year 1965

Jan.	50	8	17	1,060
Feb.	148	18	33	1,860
Mar.	71	6	14	880
Apr.	26	6	10	584
May	39	6	12	715
June	44	4	12	709
July	6560	11	285	17,700
Aug.	135	39	63	3,900
Sept.	79	26	41	2,440
Oct.	44	18	27	1,650
Nov.	177	6	14	865
Dec.	381	64	119	7,360
Total	..	..	..	39,723

STYX RIVER AT JEOGLA

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.	57	26	37	2,280	Jan.	3460	22	172	10,700
Feb.	162	18	44	2,470	Feb.	381	50	121	6,770
Mar.	39	14	24	1,500	Mar.	1310	87	347	21,500
Apr.	110	8	19	1,170	Apr.	1890	98	471	28,300
May	32	14	19	1,200	May	122	50	72	4,480
June	110	11	25	1,490	June	15400	44	1782	107,000
July	18	11	14	898	July				
Aug.	64	11	18	1,110	Aug.				
Sept.	57	14	21	1,230	Sept.				
Oct.	211	8	25	1,570	Oct.				
Nov.	289	14	38	2,300	Nov.				
Dec.	71	6	17	1,050	Dec.				
Total	..	..	..	18,268	Total				

COMMISSIONER'S WATER AT TIVERTON (EATHORPE)

LOCATION:	Latitude 30°24' Longitude 151°44'
PERIOD OF ESTABLISHMENT:	January 1927 to August 1931 June 1948 to January 1963.
COMPLETE YEARS OF COMPUTED RECORDS:	17
ZERO OF GAUGE:	R.L. 87.96 Assumed Datum from 9.6.48.
CATCHMENT AREA:	148 square miles.
CONTROL:	Improved rock and concrete.
EQUIPMENT:	Automatic Recorder (Pressure type) installed 19th November, 1948. Staff gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 91 (b) Maximum observation in cusecs : 11,250 (c) Minimum observation in cusecs : 0.05
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	30,000 cusecs
MEAN DAILY DISCHARGE FOR 17 YEARS:	49 cusecs.
MEAN ANNUAL DISCHARGE FOR 17 YEARS:	35,600 acre feet.
REMARKS:	The station was established on 9th June, 1948 and discontinued on 5th February, 1963. Records for the period January 1927 to August 1931 were obtained at the station Eathorpe No.1 which had a catchment area of 140 square miles. Eathorpe No.1 was discontinued on 31st August, 1931. No records were obtained in the period June to November 1948.

COMMISSIONER'S WATER AT TIVERTON (EATHORPE)

Year 1927

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	No Records			5,600*
Feb.	121	1.5	51	2,846
Mar.	1.5	0	0.2	10
Apr.	16	0	4	252
May	2.5	0.5	1.0	81
June	0.5	0.3	0.3	21
July	0.3	0.1	0.2	12
Aug.	0.1	0	0	0.2
Sept.	0	0	0	0
Oct.	82	0	10	600
Nov.	98	2	15	879
Dec.	166	2.5	19	1,187
Total	..	..	..	11,488*

Year 1928

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	550	2	48	2,992
Feb.	11600	10	529	30,666
Mar.	No Records			
Apr.	No Records			
May	No Records			
June	No Records			
July	295	4	32	1,966
Aug.	10	1	4	233
Sept.	6	0.7	1.7	100
Oct.	6	0.3	1.3	83
Nov.	30	0.1	1.6	96
Dec.	16	0.3	2	119
Total	..	..	..	..

Year 1929

Jan.	19	0.3	1.7	99
Feb.	1390	0.2	31	1,732
Mar.	8	1.5	0.3	160
Apr.	232	2	14	821
May	2.5	0.8	1.7	106
June	16	0.8	2	132
July	10	3	4	248
Aug.	93	3	9	544
Sept.	1570	2	3.6	2,146
Oct.	181	2.5	17	1,044
Nov.	77	2.5	6	340
Dec.	2.5	0.1	1.0	79
Total	..	..	..	7,451

Year 1930

Jan.	205	0	5	324
Feb.	31	0.1	1.6	90
Mar.	13	0	1.6	100
Apr.	7.5	0.2	1.2	71
May	10	0.2	2.3	145
June	295	0.8	46	2,784
July	139	16	54	3,334
Aug.	98	6	20	1,238
Sept.	72	6	23	1,372
Oct.	52	6	18	1,122
Nov.	10	2.5	6	338
Dec.	3	0.1	0.9	56
Total	..	..	..	10,974

Year 1931

Jan.	43	0	4.6	282
Feb.	420	0.8	19	1,065
Mar.	1330	0.8	60	3,690
Apr.	3430	23	121	7,286
May	223	16	52	3,214
June	2970	27	135	8,096
July	460	23	95	5,864
Aug.	23	7.5	14	884
Sept.	No Records			
Oct.	No Records			
Nov.	No Records			
Dec.	No Records			
Total	..	..	..	..

Year 1948

Jan.	No Records			
Feb.	No Records			
Mar.	No Records			
Apr.	No Records			
May	No Records			
June	No Records			
July	No Records			
Aug.	No Records			
Sept.	No Records			
Oct.	No Records			
Nov.	No Records			
Dec.	1.5	0	0.6	40
Total	..	..	..	..

* Estimated

COMMISSIONER'S WATER AT TIVERTON (EATHORPE)

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.	72	0	3	164	Jan.	29	2	5	292
Feb.	370	0	17	972	Feb.	1890	0.8	69	3,840
Mar.	780	1.5	25	1,522	Mar.	370	2	18	1,130
Apr.	5.5	0.3	1	64	Apr.	24	2.7	8	494
May	10	0.6	2.5	154	May	7.5	2.0	3	184
June	313	0.6	16	952	June	30000	2.7	579	34,710
July	220	2	25	1,480	July	14200	40	657	40,748
Aug.	29500	2	718	44,540	Aug.	930	29	87	5,392
Sept.	No Records			2,000*	Sept.	1080	5.5	40	2,402
Oct.	No Records			23,000*	Oct.	7800	24	495	31,728
Nov.	4010	4	127	7,592	Nov.	11820	19	758	45,472
Dec.	246	1	28	1,758	Dec.	52	3	13	803
Total	..	..	..	84,198*	Total	..	..	..	167,195

Year 1951					Year 1952				
Jan.	470	1.8	33	2,038	Jan.	57	0	2.3	144
Feb.	880	5	26	1,434	Feb.	95	0	6.1	356
Mar.	1340	2	19	1,156	Mar.	140	1	15	928
Apr.	6.6	2	4	218	Apr.	11	0.5	2.2	130
May	12	2	6	342	May	15	1	3.3	204
June	980	3	79	4,716	June	390	1	29	1,750
July	530	11	34	2,086	July	205	3	22	1,390
Aug.	4370	15	178	11,038	Aug.	17600	27	526	32,642
Sept.	15	4	8	478	Sept.	530	13	30	1,790
Oct.	5	1	2.9	178	Oct.	15800	15	325	20,166
Nov.	8	0.1	1.1	68	Nov.	37	2	7.4	444
Dec.	3.3	0.1	0.7	44	Dec.	121	0.2	5.7	352
Total	..	..	..	23,796	Total	..	..	..	60,296

Year 1953					Year 1954				
Jan.	77	1.2	3.7	230	Jan.	82	0	1.2	72
Feb.	13400	0.2	387	21,667	Feb.	322	0	24	1,311
Mar.	47	5	13.7	849	Mar.	14	0.2	3.2	198
Apr.	10	1.8	3.8	226	Apr.	0.3	0.1	0.2	15
May	27	3.7	9.6	595	May	1.8	0	0.7	41
June	3.8	2.6	2.9	173	June	7	0.3	1.4	86
July	21	2.1	4.5	278	July	3.8	0.3	2.4	148
Aug.	140	1.8	13	816	Aug.	16	0.9	3.7	227
Sept.	52	3	7.4	445	Sept.	10	0.3	2.3	137
Oct.	8	0.7	2.5	157	Oct.	112	1.2	17.5	1,083
Nov.	32	0	2.8	168	Nov.	1280	1.2	95	5,673
Dec.	1.8	0.05	0.17	11	Dec.	18	1.2	6.0	371
Total	..	..	..	25,615	Total	..	..	..	9,362

* Estimated

COMMISSIONER'S WATER AT TIVERTON (EATHORPE)

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	18	0.2	2.4	149
Feb.	11340	0	314	17,574
Mar.	152	4.5	15.9	988
Apr.	10	0.7	2.6	157
May	26	0.3	4.5	270
June	1080	4.5	41	2,471
July	129	10	23	1,430
Aug.	179	7	17	1,076
Sept.	129	4.5	12.4	746
Oct.	11340	2.4	271	16,798
Nov.	82	3.7	13.5	812
Dec.	112	1.2	4.9	303
Total	..	..	..	42,774

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	254	0.1	10	619
Feb.	20930	10	581	33,672
Mar.	250	7.2	35	2,183
Apr.	1180	2.6	19	1,160
May	440	14	45	2,806
June	9460	10	223	13,364
July	227	18	57	3,524
Aug.	26	4.6	9	569
Sept.	95	4.6	9	570
Oct.	282	4.6	17	1,036
Nov.	51	1.4	10	609
Dec.	3.6	0	1.0	62
Total	..	..	..	60,174

Year 1957

Jan.	63	0.6	7.5	466
Feb.	93	0.4	5.2	290
Mar.	26	0.4	2.2	134
Apr.	5.9	0.2	0.8	48
May	1.4	0	0.6	38
June	2.6	0.9	1.3	88
July	7.2	1.4	2.5	155
Aug.	51	1.4	7.7	478
Sept.	4.6	0.4	1.7	105
Oct.	0.4	0.4	0.4	25
Nov.	4.6	0	1.1	68
Dec.	14.0	0	2.4	151
Total	..	..	..	2,046

Year 1958

Jan.	2.6	0	0.3	22
Feb.	99	0.4	6.9	386
Mar.	120	0.2	4.2	260
Apr.	0.4	0	0.3	17
May	1.4	0.3	0.9	54
June	0.9	0.4	0.6	33
July	2.6	0.9	1.5	96
Aug.	26	1.1	4.6	287
Sept.	140	1.4	9.9	597
Oct.	210	3.6	13.2	816
Nov.	152	0.4	8.2	490
Dec.	1030	0.4	43	2,664
Total	..	..	..	5,722

Year 1959

Jan.	8600	0.4	219	13,600
Feb.	5680	7.2	213	11,924
Mar.	880	7.2	52	3,200
Apr.	22	2.6	7.3	438
May	4.6	1.4	3.2	198
June	14	1.4	2.5	148
July	179	1.4	16.1	996
Aug.	16.3	2.6	5.1	314
Sept.	56	2.6	11.8	708
Oct.	35	1.4	6	374
Nov.	1486	6	112	6,720
Dec.	5860	7	149	9,268
Total	..	..	..	47,900

Year 1960

Jan.	31	1.4	8	494
Feb.	258	2.6	31	1,782
Mar.	76	1.4	8	496
Apr.	66	1.4	4.7	284
May	10	1.4	3.5	214
June	30	0.4	6.6	394
July	440	4.6	42	2,624
Aug.	930	4.1	37	2,298
Sept.	14	2.6	5.6	332
Oct.	18	1.4	3.6	226
Nov.	1400	0.4	22	1,310
Dec.	18	0.4	2.2	138
Total	..	..	..	10,592

COMMISSIONER'S WATER AT TIVERTON (EATHORPE)

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1.4	0.1	0.4	25
Feb.	66	0	4.5	254
Mar.	2.6	0.4	1	60
Apr.	1.4	0.2	0.7	42
May	1.4	0.2	0.8	48
June	2.0	0.4	1.4	84
July	7.2	0.9	2.4	148
Aug.	10	1.4	3.8	236
Sept.	7.2	0.4	3.5	210
Oct.	22	0.4	4.0	250
Nov.	930	0.4	68	4,054
Dec.	120	4.6	22	1,382
Total	..	..	..	6,793

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	8200	7.2	213	13,212
Feb.	72	2.6	11.5	646
Mar.	18	1.4	4.1	256
Apr.	41	1.4	5.5	330
May	302	0.9	17	1,050
June	53	2.6	9.4	562
July	5150	2.6	132	8,212
Aug.	640	10	41	2,524
Sept.	236	8.6	21	1,274
Oct.	77	2.6	12	736
Nov.	7.2	2.6	3.9	234
Dec.	18	1.4	3.6	222
Total	..	..	..	29,258

Year 1963

Jan.	1180	1.4	44	2,702
Feb.	Station Discontinued			
Mar.				
Apr.				
May				
June				
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total	..	..	..	..

GARA RIVER AT GARA

LOCATION:	Latitude 30°35' Longitude 151°49'
PERIOD OF ESTABLISHMENT:	January 1924 to August 1931; May 1949 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	24
ZERO OF GAUGE:	R.L. 88.41 Assumed Datum.
CATCHMENT AREA:	157 square miles.
CONTROL:	Concrete causeway.
EQUIPMENT:	Automatic Recorder (Pressure type) installed 11th May 1949. Staff gauge, range 0 to 15 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 128
	(b) Maximum observation in cusecs : 3,029
	(c) Minimum observation in cusecs : 0.02
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	30,000 cusecs
MEAN DAILY DISCHARGE FOR 23 YEARS:	63 cusecs
MEAN ANNUAL DISCHARGE FOR 23 YEARS:	45,800 acre feet

REMARKS: This station was discontinued on 31st August 1931 and re-established on 11th May 1949 at a site about a quarter mile upstream from the original station. The catchment area at both sites was 157 square miles.

GARA RIVER AT GARA

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	No Records			60*
Feb.	117	0	26	1,507
Mar.	4	0	0.7	41
Apr.	46	0	2	148
May	2	0	0.3	17
June	89	0.5	12	691
July	1300	2	113	7,028
Aug.	1150	3	46	2,848
Sept.	89	10	25	1,524
Oct.	425	8	37	2,298
Nov.	1610	22	142	8,514
Dec.	425	4	47	2,944
Total	..	..	..	27,620*

Year 1925

Month	Discharge in Cusecs			Discharge for Month Acre Feet.
	Max.	Min.	Mean	
Jan.	46	2	13	786
Feb.	12	0	4	203
Mar.	12	1	6	347
Apr.	4	1	2	98
May	35	1	12	715
June	94	2	13	816
July	89	8	20	1,262
Aug.	172	5	33	2,022
Sept.	52	4	12	696
Oct.	7	1	2	154
Nov.	810	1	89	5,366
Dec.	1860	1	42	2,620
Total	..	..	..	15,085

Year 1926

Jan.	2190	0	76	4,721
Feb.	0	0	0	0
Mar.	8	0	0.5	29
Apr.	0	0	0	0
May	0.5	0	0	2
June	45	0	3	167
July	64	0	8	505
Aug.	0.5	0	0	1
Sept.	0	0	0	0
Oct.	0	0	0	0
Nov.	0	0	0	0
Dec.	450	0	12	728
Total	..	..	..	6,153

Year 1927

Jan.	1050	0	75	4,678
Feb.	9	0	0.8	44
Mar.	4	0	0.2	10
Apr.	4	0	1	80
May	0.5	0	0	1
June	8	0	3	171
July	6	0.5	3	186
Aug.	3	0	0.8	50
Sept.	0	0	0	0
Oct.	108	0	5	287
Nov.	134	0	8	491
Dec.	425	0	27	1,649
Total	..	..	..	7,647

Year 1928

Jan.	333	0	12	714
Feb.	13200	0	681	39,508
Mar.	12	0	3	163
Apr.	178	0	19	1,161
May	9	3	7	431
June	2490	4	238	14,268
July	1370	29	171	10,602
Aug.	80	17	39	2,422
Sept.	45	7	17	1,009
Oct.	84	3	16	983
Nov.	80	0.5	7	436
Dec.	14	0	2	140
Total	..	..	..	71,837

Year 1929

Jan.	21	0	2	115
Feb.	3520	0	141	7,924
Mar.	34	1	7	453
Apr.	1300	7	75	4,474
May	17	4	6	376
June	20	5	8	486
July	48	3	11	664
Aug.	340	6	40	2,502
Sept.	1450	7	60	3,577
Oct.	1120	6	88	5,450
Nov.	197	0	13	784
Dec.	0	0	0	0
Total	..	..	..	26,805

* Estimated.

GARA RIVER AT GARA

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	238	0	13	783
Feb.	1530	0	37	2,057
Mar.	98	0	16	1,012
Apr.	46	1	8	507
May	12	1	3	215
June	1780	8	166	9,986
July	450	19	71	4,420
Aug.	164	10	38	2,182
Sept.	80	9	25	1,492
Oct.	153	8	24	1,470
Nov.	45	1	7	434
Dec.	4	0	0.4	26
Total	..	..	..	24,584

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	2	0	3	158
Feb.	198	0	14	802
Mar.	1190	0	90	5,592
Apr.	810	21	135	8,098
May	930	25	106	6,588
June	810	34	153	9,194
July	810	42	163	10,130
Aug.	51	16	28	1,755
Sept.	Station discontinued			
Oct.	..	..	..	..
Nov.	..	..	..	..
Dec.	..	..	..	..
Total	..	..	..	..

Year 1949

Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	Station re-established			
June	294	12	57	3,395
July	3110	7	130	8,076
Aug.	19000	16	961	59,584
Sept.	1950	92	224	13,456
Oct.	6210	74	448	27,746
Nov.	3780	7	176	10,538
Dec.	256	16	48	2,984
Total	..	..	..	..

Year 1950

Jan.	58	5	14	898
Feb.	2350	16	208	11,632
Mar.	145	7	24	1,510
Apr.	145	12	41	2,466
May	16	7	11	714
June	30000	16	1622	97,302
July	10000	110	779	48,298
Aug.	952	28	109	6,728
Sept.	703	28	61	3,656
Oct.	8650	50	534	33,112
Nov.	8840	28	999	59,934
Dec.	427	7	32	1,980
Total	..	..	..	268,230

Year 1951

Jan.	458	7	55	3,388
Feb.	110	16	58	3,228
Mar.	145	16	49	3,062
Apr.	28	7	14	870
May	16	7	10	626
June	1620	7	156	9,332
July	782	7	108	6,680
Aug.	1130	28	115	7,124
Sept.	28	16	19	1,128
Oct.	28	0.2	7	450
Nov.	2	2	2	138
Dec.	2	1	2	110
Total	..	..	..	36,136

Year 1952

Jan.	7	0.2	3	178
Feb.	237	0.1	10	596
Mar.	50	5	16	1,020
Apr.	12	5	7	434
May	200	5	38	2,368
June	1260	7	101	6,085
July	294	16	52	3,194
Aug.	18500	42	622	38,536
Sept.	782	16	57	3,410
Oct.	12800	42	445	27,560
Nov.	127	16	25	1,502
Dec.	368	2	29	1,790
Total	..	..	..	86,673

GARA RIVER AT GARA

Year 1953

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	74	7	16	998
Feb.	17500	2	646	36,152
Mar.	110	12	30	1,857
Apr.	12	5	7	412
May	42	5	12	747
June	7	5	6	353
July	28	5	10	607
Aug.	127	5	22	1,361
Sept.	163	5	14	841
Oct.	16	2	5	308
Nov.	5	2	3	188
Dec.	2	0.1	0.4	22
Total	..	..	..	43,846

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	145	0.2	9	550
Feb.	2070	0.2	92	5,165
Mar.	58	0.2	6	362
Apr.	1	0.2	0.4	26
May	2	1	2	139
June	7	2	4	247
July	7	2	5	303
Aug.	22	2	7	420
Sept.	110	0.2	13	796
Oct.	997	1	60	3,723
Nov.	490	7	72	4,324
Dec.	83	2	12	756
Total	..	..	..	16,811

Year 1955

Jan.	427	0.2	12	750
Feb.	11800	2	492	27,538
Mar.	368	4	31	1,935
Apr.	50	2	15	886
May	474	5	37	2,286
June	1040	28	80	4,784
July	237	28	68	4,192
Aug.	172	22	43	2,684
Sept.	54	7	20	1,225
Oct.	4630	5	246	15,270
Nov.	361	7	26	1,558
Dec.	3	2	2	155
Total	..	..	..	63,263

Year 1956

Jan.	1090	0.5	56	3,516
Feb.	19200	28	956	55,472
Mar.	3500	7	118	7,324
Apr.	233	7	34	2,018
May	1180	28	139	8,644
June	5730	42	219	13,154
July	516	28	122	7,586
Aug.	57	16	23	1,430
Sept.	156	16	34	2,052
Oct.	257	7	30	1,862
Nov.	73	2	15	910
Dec.	7	1	3	188
Total	..	..	..	104,156

Year 1957

Jan.	105	1	12	733
Feb.	1540	1	107	5,972
Mar.	16	1	5	312
Apr.	138	0	4	222
May	3	2	2	124
June	3	2	2	150
July	5	2	4	260
Aug.	No Records			850*
Sept.	7	1	2	143
Oct.	1	0	0.5	31
Nov.	28	0	2	101
Dec.	20	0	1	62
Total	..	..	..	8,960*

Year 1958

Jan.	0.5	0	0.3	16
Feb.	13	0.2	4	211
Mar.	482	1	20	1,262
Apr.	1	0	0.3	18
May	2	0.5	0.9	57
June	3	1	2	95
July	16	2	6	357
Aug.	65	2	14	841
Sept.	1220	5	59	3,546
Oct.	516	2	37	2,275
Nov.	73	1	6	366
Dec.	2350	1	53	3,310
Total	..	..	..	12,354

* Estimated.

GARA RIVER AT GARA

Year 1959

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	22500	7	495	30,698
Feb.	2430	24	173	9,666
Mar.	1890	5	157	9,758
Apr.	104	16	36	2,172
May	16	9	10	618
June	35	9	11	678
July	997	9	54	3,350
Aug.	35	9	15	942
Sept.	310	8	34	2,018
Oct.	65	12	25	1,554
Nov.	7030	9	257	15,430
Dec.	3240	16	234	14,500
Total	..	..	..	91,384

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	84	9	24	1,512
Feb.	1540	9	117	6,764
Mar.	166	5	29	1,818
Apr.	9	5	8	476
May	65	5	17	1,046
June	65	9	17	1,042
July	450	16	87	5,422
Aug.	997	16	77	4,796
Sept.	65	9	17	1,008
Oct.	24	2	7	450
Nov.	360	0.5	13	807
Dec.	9	1	4	225
Total	..	..	..	25,366

Year 1961

Jan.	1	0	0.3	17
Feb.	124	0	9	527
Mar.	5	0	2	106
Apr.	0.5	0.5	0.5	30
May	1	0.9	1	59
June	9	1	3	158
July	16	2	5	308
Aug.	57	3	17	1,067
Sept.	21	3	8	472
Oct.	49	2	11	700
Nov.	870	1	55	3,314
Dec.	295	2	42	2,574
Total	..	..	..	9,332

Year 1962

Jan.	9220	16	237	14,700
Feb.	345	9	51	2,844
Mar.	49	3	17	1,058
Apr.	294	3	31	1,888
May	395	3	37	2,292
June	139	9	29	1,758
July	10600	3	295	18,300
Aug.	787	25	97	6,044
Sept.	49	16	26	1,560
Oct.	246	9	25	1,546
Nov.	35	3	11	636
Dec.	65	3	15	945
Total	..	..	..	53,571

Year 1963

Jan.	1540	2	78	4,863
Feb.	200	3	21	1,158
Mar.	1360	3	80	4,972
Apr.	159	9	31	1,856
May	No Records			29,600*
June	629	32	82	4,934
July	82	13	31	1,932
Aug.	828	4	75	4,658
Sept.	179	13	34	2,030
Oct.	200	4	18	1,135
Nov.	159	4	24	1,444
Dec.	295	4	41	2,514
Total	..	..	..	61,096*

Year 1964

Jan.	1640	2	50	3,100
Feb.	4	1	2	124
Mar.	1220	4	66	4,062
Apr.	32	2	8	510
May	32	4	10	610
June	32	4	12	710
July	747	13	71	4,428
Aug.	119	4	24	1,462
Sept.	1090	4	38	2,272
Oct.	552	13	65	4,026
Nov.	159	13	30	1,800
Dec.	32	1	6	377
Total	..	..	..	23,481

* Estimated.

GARA RIVER AT GARA

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0.3	0	0	2
Feb.	0.3	0	0	1
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0.1	0	0	1
June	0.1	0	0	1
July	53	0	4	233
Aug.	22	2	2	139
Sept.	32	1	8	498
Oct.	4	0	0.1	42
Nov.	0.2	0	0.1	5
Dec.	1220	0	74	4,600
Total	..	..	..	5,522

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	668	0.1	11	706
Feb.	2	0	0.6	33
Mar.	0.1	0	0	0
Apr.	0	0	0	0
May	0.01	0	0	0
June	0.01	0	0	1
July	0.01	0	0	0
Aug.	67	0	7	425
Sept.	139	2	17	995
Oct.	179	2	24	1,470
Nov.	2620	2	96	5,760
Dec.	67	0.1	2	99
Total	..	..	..	9,489

Year 1967

Jan.	223	0.01	7	426
Feb.	1690	0	13	752
Mar.	395	0.5	22	1,390
Apr.	0.5	0	0.07	4
May	0.01	0	0	0
June	4060	0.01	227	13,600
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

APSLEY RIVER AT APSLEY FALLS

LOCATION:	Latitude 31°03' Longitude 151°46'
PERIOD OF ESTABLISHMENT:	October 1924 to August 1931; December 1952 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	18
ZERO OF GAUGE:	R.L. 3266.03 Standard Datum.
CATCHMENT AREA:	340 square miles.
CONTROL:	Improved rock with Vee notch weir.
EQUIPMENT:	Automatic Recorder (Float type) installed 10th December 1952. Staff gauge, range 0 to 20 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 135 (b) Maximum observation in cusecs : 10,000 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	42,100 cusecs.
MEAN DAILY DISCHARGE FOR 17 YEARS:	90 cusecs.
MEAN ANNUAL DISCHARGE FOR 17 YEARS:	65,700 acre feet.
REMARKS:	Records for the period November 1924 to August 1931 were obtained from a station at Waterloo which had a catchment area of 320 square miles. The station at Waterloo was discontinued on 31st August, 1931.

APSLEY RIVER AT APSLEY FALLS

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	18310	7	859	51,514
Dec.	6	0.5	3	181
Total	..	..	..	..

Year 1925

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	11	0.5	2	136
Feb.	2	0.2	0.7	37
Mar.	0.2	0	0.1	7
Apr.	1	0	0.3	16
May	4	0	1	82
June	13	1	4	230
July	11	3	6	342
Aug.	151	4	25	1,568
Sept.	3	1	2	118
Oct.	2	0.5	1	76
Nov.	25510	1	437	26,208
Dec.	7	2	6	362
Total	..	..	..	29,182

Year 1926

Jan.	48	1	8	493
Feb.	2	1	2	97
Mar.	5	0	2	114
Apr.	98	4	37	2,210
May	118	4	21	1,330
June	990	24	265	15,872
July	2470	49	269	16,704
Aug.	1280	49	735	45,586
Sept.	62	5	14	850
Oct.	172	0	51	3,170
Nov.	0	0	0	0
Dec.	1030	0	47	2,916
Total	..	..	..	89,342

Year 1927

Jan.	6790	2	378	23,422
Feb.	37	0.5	5	287
Mar.	172	0	18	1,118
Apr.	18	0.5	5	297
May	3	1	2	132
June	2	1	1	86
July	2	1	2	110
Aug.	2	0	0.8	48
Sept.	0	0	0	0
Oct.	4	0	2	123
Nov.	1570	1	78	4,677
Dec.	3750	10	197	12,214
Total	..	..	..	42,514

Year 1928

Jan.	200	1	28	1,751
Feb.	No Records			
Mar.	22220	3	445	27,606
Apr.	3460	20	185	11,108
May	24	7	11	692
June	1020	5	124	7,422
July	4680	38	325	20,178
Aug.	163	13	49	3,014
Sept.	28	2	10	614
Oct.	76	1	11	661
Nov.	16	1	4	221
Dec.	20	0.5	3	176
Total	..	..	..	..

Year 1929

Jan.	450	0.5	14	856
Feb.	42100	0	2071	115,976
Mar.	24	2	7	452
Apr.	1830	3	56	3,376
May	7	3	4	246
June	13	5	7	424
July	28	3	9	538
Aug.	12700	5	219	13,608
Sept.	16080	7	352	21,104
Oct.	54	5	14	888
Nov.	157	2	21	1,240
Dec.	3	0	0.6	39
Total	..	..	..	158,747

APSLEY RIVER AT APSLEY FALLS

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0	0	0	0
Feb.	600	0	19	1,052
Mar.	335	0	14	897
Apr.	24	0.5	6	359
May	5	1	3	156
June	42100	2	946	56,778
July	2150	20	285	17,686
Aug.	175	13	33	2,020
Sept.	16	2	7	436
Oct.	690	2	59	3,670
Nov.	20	2	6	378
Dec.	20	1	3	185
Total	..	..	...	83,617

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	2	0	0.2	14
Feb.	43	0	5	301
Mar.	33	0.5	10	599
Apr.	410	1	65	3,895
May	22220	7	746	46,272
June	9800	38	588	35,284
July	4320	28	382	23,686
Aug.	450	13	45	2,814
Sept.	Station discontinued			
Oct.	..	..	..	..
Nov.	..	..	..	..
Dec.	..	..	..	..
Total	..	..	..	..

Year 1952

Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	..	..	..	..
Dec.	125	0.5	6	343
Total	..	..	..	..

Year 1953

Jan.	16	2	5	333
Feb.	4160	0.3	149	8,334
Mar.	315	7	39	2,398
Apr.	29	4	9	547
May	415	8	45	2,783
June	13	8	10	582
July	231	7	26	1,581
Aug.	1420	7	117	7,261
Sept.	375	9	31	1,846
Oct.	145	6	17	1,072
Nov.	14	1	4	251
Dec.	0.8	0	0.2	9
Total	..	..	..	26,997

Year 1954

Jan.	0	0	0	0
Feb.	4680	0	118	6,600
Mar.	93	0	6	352
Apr.	0.3	0	0	1
May	3	0	0.9	55
June	12	2	5	306
July	27	2	8	519
Aug.	10	3	5	303
Sept.	17	1	6	335
Oct.	3456	2	136	8,452
Nov.	3456	12	170	10,206
Dec.	735	3	42	2,601
Total	..	..	..	29,730

Year 1955

Jan.	49	1	10	592
Feb.	28500	0.8	1230	68,869
Mar.	1670	17	91	5,613
Apr.	960	10	48	2,895
May	710	14	54	3,379
June	1960	25	116	6,974
July	530	20	75	4,670
Aug.	860	27	87	5,366
Sept.	1130	14	67	4,010
Oct.	15600	12	580	35,956
Nov.	327	11	48	2,862
Dec.	441	9	34	2,105
Total	..	..	..	143,290

APSLEY RIVER AT APSLEY FALLS

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	421	1	20	1,256
Feb.	22040	14	1288	74,684
Mar.	10000	47	319	19,784
Apr.	1190	12	74	4,444
May	6400	68	412	25,534
June	17280	47	602	36,150
July	1300	51	308	19,080
Aug.	707	26	84	5,206
Sept.	133	15	28	1,704
Oct.	2070	12	93	5,782
Nov.	215	4	26	1,547
Dec.	14	3	8	493
Total	..	..	..	195,664

Year 1957

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	545	2	22	1,345
Feb.	707	2	42	2,358
Mar.	250	2	18	1,097
Apr.	4	2	3	167
May	6	2	3	191
June	15	3	5	311
July	38	6	9	586
Aug.	652	5	39	2,424
Sept.	72	2	14	826
Oct.	2	0.7	1	74
Nov.	2	0	0.6	35
Dec.	51	0	0.6	40
Total	..	..	..	9,454

Year 1958

Jan.	10	0	0.7	42
Feb.	133	1	10	562
Mar.	72	0.3	7	407
Apr.	0.2	0.1	0.2	11
May	12	0.1	2	97
June	6	0.7	3	152
July	17	3	7	433
Aug.	570	2	23	1,430
Sept.	290	6	26	1,544
Oct.	3150	5	67	4,168
Nov.	4	0.1	1	58
Dec.	7300	0.1	188	11,676
Total	..	..	..	20,580

Year 1959

Jan.	1225	4	106	6,600
Feb.	2070	6	119	6,684
Mar.	1970	9	90	5,590
Apr.	23	3	9	534
May	10	2	4	222
June	8	3	3	206
July	215	4	30	1,892
Aug.	22	4	9	577
Sept.	350	4	27	1,600
Oct.	1120	9	94	5,824
Nov.	11680	17	478	28,656
Dec.	200	4	33	2,067
Total	..	..	..	60,452

Year 1960

Jan.	495	0.7	13	836
Feb.	185	6	25	1,430
Mar.	19	0.9	5	306
Apr.	5	0.8	2	130
May	7	3	4	274
June	8	4	5	304
July	93	6	39	2,424
Aug.	855	8	68	4,223
Sept.	270	5	26	1,548
Oct.	62	3	22	1,387
Nov.	520	3	29	1,766
Dec.	350	3	23	1,442
Total	..	..	..	16,070

Year 1961

Jan.	6	0.1	2	126
Feb.	135	0.1	12	663
Mar.	20	1	4	255
Apr.	4	0.5	1	61
May	No Records			
June	16	2	5	298
July	28	3	7	444
Aug.	120	5	22	1,360
Sept.	24	3	11	670
Oct.	950	3	89	5,503
Nov.	8440	6	546	32,760
Dec.	2070	13	149	9,234
Total	..	..	..	..

APSLEY RIVER AT APSLEY FALLS

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	22880	16	611	37,872
Feb.	2475	12	98	5,524
Mar.	57	7	21	1,306
Apr.	520	7	39	2,350
May	495	7	41	2,540
June	24	3	7	391
July	2120	3	119	7,366
Aug.	985	20	164	10,144
Sept.	97	16	30	1,792
Oct.	6000	7	192	11,894
Nov.	175	7	26	1,586
Dec.	97	7	22	1,352
Total	..	..	..	84,117

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	6000	12	226	14,012
Feb.	230	3	20	1,116
Mar.	310	1	20	1,248
Apr.	570	3	40	2,396
May	18960	52	959	59,448
June	1970	44	230	13,786
July	545	36	69	4,296
Aug.	3900	24	209	13,000
Sept.	520	16	60	3,704
Oct.	210	9	45	2,788
Nov.	61	7	24	1,450
Dec.	330	7	35	2,180
Total	..	..	..	119,424

Year 1964

Jan.	18820	1	393	24,348
Feb.	16	3	5	316
Mar.	1580	4	117	7,272
Apr.	70	7	15	895
May	12	7	10	606
June	44	9	17	994
July	2400	12	168	10,404
Aug.	855	9	46	2,868
Sept.	735	9	32	1,936
Oct.	3375	20	106	6,560
Nov.	61	7	16	961
Dec.	9	0.2	2	136
Total	..	..	..	57,296

Year 1965

Jan.	3	0.1	0.9	54
Feb.	0.3	0.1	0.2	9
Mar.	0.5	0	0.1	5
Apr.	0	0	0	0
May	0.2	0	0.1	6
June	3	0.2	2	93
July	22	2	5	303
Aug.	4	2	3	196
Sept.	20	0.2	4	230
Oct.	0.7	0.2	0.3	20
Nov.	0.5	0	0.2	14
Dec.	2400	0	66	4,080
Total	..	..	..	5,010

Year 1966

Jan.	0.5	0	0.1	3
Feb.	0.5	0	0.1	7
Mar.	0.1	0	0	1
Apr.	0.1	0	0	0
May	0	0	0	0
June	2	0	1	73
July	4	0.2	1	72
Aug.	7	0.2	3	198
Sept.	12	2	4	248
Oct.	1970	1	47	2,910
Nov.	5100	2	140	8,420
Dec.	12	0.1	2	109
Total	..	..	..	12,041

Year 1967

Jan.	61	1	13	792
Feb.	1740	0.05	28	1,590
Mar.	7000	3	146	9,060
Apr.	52	1	8	480
May	7	0.8	2	114
June	2400	3	186	11,200
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

TIA RIVER AT TIA

LOCATION:	Latitude 31°12' Longitude 151°50'
PERIOD OF ESTABLISHMENT:	May 1918 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	48
ZERO OF GAUGE:	R.L. 84.54 Assumed Datum.
CATCHMENT AREA:	97 square miles.
CONTROL:	Improved rock and concrete
EQUIPMENT:	Automatic Recorder (Float type) installed 21st January 1954. Staff gauge, range 0 to 15 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 220 (b) Maximum observation in cusecs : 3,313 (c) Minimum observation in cusecs : 0.4
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	14,600 cusecs.
MEAN DAILY DISCHARGE FOR 47 YEARS:	77 cusecs.
MEAN ANNUAL DISCHARGE FOR 47 YEARS:	55,900 acre feet.
REMARKS:	Records prior to November 1927 were obtained from a station at Riverglade which had a catchment area of 100 square miles and was operated from May 1918 to October 1927. Riverglade was discontinued in favour of the current station.

TIA RIVER AT TIA

Year 1918

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	45	28	32	2,004
June	44	17	25	1,494
July	103	16	27	1,670
Aug.	218	34	66	4,068
Sept.	80	23	38	2,266
Oct.	33	14	20	1,254
Nov.	105	9	16	930
Dec.	8	4	6	352
Total	..	..	..	..

Year 1919

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	66	3	19	1,044
Feb.	18	6	7	424
Mar.	66	9	18	1,088
Apr.	85	12	27	1,596
May	349	15	85	5,270
June	237	45	78	4,660
July	43	32	35	2,154
Aug.	42	20	28	1,696
Sept.	25	7	17	1,000
Oct.	107	6	22	1,354
Nov.	37	1	6	372
Dec.	27	1	7	464
Total	..	..	..	21,122

Year 1920

Jan.	56	5	21	1,304
Feb.	42	12	19	1,098
Mar.	15	11	12	770
Apr.	33	10	16	968
May	22	9	15	950
June	85	16	28	1,706
July	168	30	62	3,828
Aug.	360	29	75	4,622
Sept.	153	39	73	4,400
Oct.	37	17	32	1,954
Nov.	26	8	12	700
Dec.	74	7	70	1,254
Total	..	..	..	23,554

Year 1921

Jan.	33	6	17	1,044
Feb.	51	18	25	1,392
Mar.	192	27	72	4,478
Apr.	287	42	73	4,386
May	316	40	104	6,474
June	783	64	185	11,130
July	1174	76	290	18,006
Aug.	363	68	121	7,518
Sept.	166	52	81	4,860
Oct.	557	64	153	9,486
Nov.	203	44	87	5,246
Dec.	528	34	108	6,682
Total	..	..	..	80,702

Year 1922

Jan.	574	47	155	9,596
Feb.	341	38	75	4,210
Mar.	136	42	72	4,480
Apr.	47	35	38	2,268
May	66	33	40	2,474
June	72	31	45	2,728
July	469	41	112	6,970
Aug.	539	38	163	10,134
Sept.	302	21	95	5,694
Oct.	75	28	37	2,266
Nov.	48	18	22	1,336
Dec.	143	17	30	1,876
Total	..	..	..	54,032

Year 1923

Jan.	29	11	15	938
Feb.	13	6	9	498
Mar.	12	8	8	520
Apr.	77	7	19	1,146
May	38	14	18	1,084
June	116	12	22	1,308
July	112	12	22	1,384
Aug.	276	21	63	3,894
Sept.	205	23	72	4,296
Oct.	44	10	17	1,054
Nov.	18	5	7	450
Dec.	184	3	16	976
Total	..	..	..	17,548

TIA RIVER AT TIA

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	184	3	37	2,302
Feb.	270	14	77	4,768
Mar.	79	23	39	2,440
Apr.	258	23	64	3,860
May	36	29	34	2,106
June	258	29	75	4,492
July	563	61	135	8,348
Aug.	116	52	71	4,430
Sept.	79	29	49	2,958
Oct.	52	23	35	2,142
Nov.	302	89	151	9,050
Dec.	143	36	73	4,500
Total	..	..	..	51,396

Year 1925

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	70	29	46	2,870
Feb.	107	29	61	3,432
Mar.	143	44	76	4,740
Apr.	89	44	56	3,454
May	226	44	104	6,470
June	292	70	79	7,660
July	163	79	117	7,268
Aug.	281	44	102	6,306
Sept.	173	70	92	5,512
Oct.	70	36	54	3,270
Nov.	335	36	94	5,610
Dec.	116	44	55	3,428
Total	..	..	..	60,020

Year 1926

Jan.	435	14	79	4,894
Feb.	14	5	8	466
Mar.	116	5	39	2,446
Apr.	163	23	55	3,280
May	1174	14	185	11,474
June	237	52	116	6,990
July	1174	44	199	12,358
Aug.	143	52	76	4,738
Sept.	116	29	40	2,402
Oct.	36	5	16	996
Nov.	5	4	4	264
Dec.	281	4	38	2,370
Total	..	..	..	52,678

Year 1927

Jan.	281	7	88	5,482
Feb.	79	18	28	1,570
Mar.	29	18	19	1,168
Apr.	184	29	84	5,070
May	44	23	29	1,816
June	23	18	20	1,220
July	18	10	12	748
Aug.	10	7	9	548
Sept.	7	7	7	420
Oct.	44	5	9	558
Nov.	170	3	19	1,162
Dec.	225	20	59	3,668
Total	..	..	..	23,430

Year 1928

Jan.	448	20	160	9,922
Feb.	4680	27	342	19,832
Mar.	685	43	146	9,070
Apr.	448	91	188	11,278
May	100	54	71	4,408
June	12300	46	903	54,190
July	504	128	243	15,096
Aug.	182	54	104	6,454
Sept.	63	15	36	2,156
Oct.	45	12	19	1,172
Nov.	100	6	20	1,206
Dec.	15	6	9	584
Total	..	..	..	135,368

Year 1929

Jan.	54	4	12	740
Feb.	8760	4	773	43,288
Mar.	448	36	111	6,868
Apr.	1140	40	119	7,112
May	65	36	39	2,388
June	62	43	49	2,960
July	118	23	37	2,268
Aug.	3250	58	253	15,198
Sept.	11300	50	394	23,636
Oct.	138	44	72	4,438
Nov.	148	18	44	2,660
Dec.	22	15	17	1,092
Total	..	..	..	112,648

TIA RIVER AT TIA

Year 1930

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	15	9	11	688
Feb.	10	4	7	370
Mar.	30	4	10	602
Apr.	44	7	17	1,026
May	44	9	21	1,240
June	9760	30	531	31,866
July	663	72	183	11,322
Aug.	182	39	78	4,816
Sept.	44	18	28	1,682
Oct.	72	15	28	1,764
Nov.	44	9	13	766
Dec.	26	5	8	510
Total	..	..	..	56,652

Year 1931

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	18	3	4	272
Feb.	81	3	17	964
Mar.	890	4	73	4,552
Apr.	980	5	146	8,762
May	708	19	154	9,530
June	600	34	111	6,658
July	448	70	143	8,858
Aug.	66	34	47	2,896
Sept.	60	19	27	1,646
Oct.	60	11	18	1,128
Nov.	169	8	33	1,952
Dec.	169	11	35	2,174
Total	..	..	..	49,392

Year 1932

Jan.	860	11	41	2,522
Feb.	54	10	20	1,186
Mar.	485	7	38	2,380
Apr.	15	7	10	582
May	22	10	15	901
June	15	7	10	609
July	357	12	52	3,240
Aug.	72	12	22	1,386
Sept.	1750	12	269	16,134
Oct.	158	18	71	4,386
Nov.	91	35	53	3,164
Dec.	72	18	31	1,914
Total	..	..	..	38,404

Year 1933

Jan.	504	7	95	5,878
Feb.	158	12	35	1,974
Mar.	12	7	8	489
Apr.	72	7	19	1,154
May	10	7	7	444
June	261	7	73	4,380
July	860	35	222	13,772
Aug.	210	18	70	4,348
Sept.	780	18	104	6,212
Oct.	1300	44	274	17,014
Nov.	1140	128	267	16,034
Dec.	195	72	102	6,314
Total	..	..	..	78,013

Year 1934

Jan.	158	18	63	3,944
Feb.	522	35	139	7,774
Mar.	100	44	51	3,178
Apr.	340	35	91	5,450
May	170	35	65	4,010
June	91	26	49	2,932
July	8140	35	388	24,038
Aug.	2800	100	244	15,144
Sept.	1950	91	370	22,222
Oct.	830	54	140	8,678
Nov.	158	35	64	3,864
Dec.	1140	35	298	18,492
Total	..	..	..	119,726

Year 1935

Jan.	1550	60	251	15,538
Feb.	210	19	61	3,410
Mar.	109	28	51	3,184
Apr.	45	28	29	1,746
May	36	15	20	1,248
June	109	15	18	1,088
July	138	21	52	3,242
Aug.	21	15	19	1,158
Sept.	411	15	73	4,360
Oct.	170	15	54	3,370
Nov.	21	10	15	890
Dec.	81	4	14	862
Total	..	..	..	40,096

TIA RIVER AT TIA

Year 1936

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	138	4	26	1,588
Feb.	182	6	39	2,266
Mar.	830	36	132	8,154
Apr.	448	36	111	6,630
May	148	28	59	3,674
June	72	21	38	2,264
July	182	36	79	4,814
Aug.	860	21	96	5,962
Sept.	375	28	73	4,368
Oct.	21	15	16	1,014
Nov.	15	6	9	520
Dec.	600	6	72	4,470
Total	..	..	..	45,724

Year 1937

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	63	6	20	1,236
Feb.	182	15	58	3,220
Mar.	1750	21	187	11,600
Apr.	72	36	48	2,862
May	54	21	36	2,210
June	375	21	151	9,040
July	708	45	111	6,896
Aug.	411	45	99	6,154
Sept.	429	21	64	3,814
Oct.	158	21	46	2,828
Nov.	72	21	37	2,202
Dec.	91	10	27	1,656
Total	..	..	..	53,718

Year 1938

Jan.	522	6	71	4,378
Feb.	685	15	87	4,880
Mar.	15	10	13	800
Apr.	1060	10	79	4,766
May	600	13	80	4,984
June	195	19	65	3,878
July	60	19	28	1,706
Aug.	580	34	76	4,736
Sept.	51	13	26	1,568
Oct.	60	13	20	1,254
Nov.	70	5	22	1,306
Dec.	3	1	2	116
Total	..	..	..	34,372

Year 1939

Jan.	80	0.3	8	527
Feb.	101	1	6	346
Mar.	273	1	57	3,526
Apr.	91	36	54	3,224
May	36	6	15	900
June	45	10	18	1,066
July	148	15	40	2,482
Aug.	256	21	51	3,166
Sept.	393	10	39	2,318
Oct.	128	21	53	3,274
Nov.	357	15	51	3,054
Dec.	411	10	40	2,450
Total	..	..	..	26,333

Year 1940

Jan.	21	2	10	630
Feb.	10	1	3	177
Mar.	375	1	16	1019
Apr.	15	2	5	327
May	6	4	5	304
June	6	4	5	276
July	4	2	3	197
Aug.	10	2	5	306
Sept.	15	2	5	307
Oct.	10	2	6	376
Nov.	4	0.5	2	128
Dec.	6	1	2	114
Total	..	..	..	4,161

Year 1941

Jan.	256	1	64	3,944
Feb.	210	10	46	2,576
Mar.	429	10	56	3,500
Apr.	21	10	14	858
May	21	6	11	656
June	148	21	36	2,176
July	72	10	23	1,408
Aug.	45	10	14	874
Sept.	15	6	8	492
Oct.	91	4	17	1,070
Nov.	138	2	20	1,204
Dec.	3	0.5	1	71
Total	..	..	..	18,829

TIA RIVER AT TIA

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0	0	0	0
Feb.	50	0	16	912
Mar.	182	2	43	2,636
Apr.	58	6	17	1,010
May	6	6	6	372
June	43	6	15	872
July	980	15	111	6,880
Aug.	35	20	26	1,640
Sept.	50	10	20	1,178
Oct.	3900	10	381	23,632
Nov.	448	26	69	4,296
Dec.	663	13	56	3,468
Total	..	..	..	46,896

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	448	26	80	4,950
Feb.	82	10	40	2,244
Mar.	10	6	8	524
Apr.	13	10	11	638
May	100	10	39	2,412
June	109	20	36	2,136
July	40	20	22	1,364
Aug.	210	26	84	5,208
Sept.	375	40	96	5,740
Oct.	225	26	70	4,352
Nov.	128	40	68	4,098
Dec.	1400	15	140	8,688
Total	..	..	..	42,354

Year 1944

Jan.	580	40	134	8,290
Feb.	118	26	47	2,722
Mar.	118	10	17	1,082
Apr.	20	10	17	1,040
May	64	10	18	1,126
June	15	10	14	854
July	323	26	70	4,326
Aug.	2800	20	203	12,590
Sept.	91	40	49	2,920
Oct.	40	10	25	1,524
Nov.	15	3	7	398
Dec.	15	3	3	216
Total	..	..	..	37,088

Year 1945

Jan.	10	1	4	227
Feb.	56	1	13	749
Mar.	26	3	7	452
Apr.	6	3	5	288
May	109	3	26	1,582
June	1550	40	211	12,688
July	6730	40	357	22,138
Aug.	128	40	55	3,418
Sept.	56	20	30	1,808
Oct.	128	15	32	1,992
Nov.	708	10	42	2,502
Dec.	100	3	12	760
Total	..	..	..	48,604

Year 1946

Jan.	73	1	8	483
Feb.	15	6	8	448
Mar.	4000	3	170	10,550
Apr.	340	19	71	4,246
May	48	19	30	1,830
June	64	19	26	1,552
July	100	7	23	1,418
Aug.	7	4	5	302
Sept.	56	4	14	860
Oct.	7	4	5	320
Nov.	73	2	8	482
Dec.	40	2	7	456
Total	..	..	..	22,947

Year 1947

Jan.	195	1	17	1,036
Feb.	504	12	75	4,212
Mar.	620	24	72	4,472
Apr.	448	19	110	6,624
May	78	19	39	2,426
June	98	19	42	2,522
July	39	19	21	1,312
Aug.	126	19	30	1,838
Sept.	393	19	95	5,670
Oct.	68	19	35	2,154
Nov.	88	24	35	2,116
Dec.	1400	68	284	17,602
Total	..	..	..	51,984

TIA RIVER AT TIA

Year 1948

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1180	31	137	8,248
Feb.	68	19	31	1,800
Mar.	88	19	28	1,754
Apr.	31	19	22	1,298
May	88	19	43	2,640
June	7000	19	780	46,828
July	128	28	68	4,196
Aug.	685	21	71	4,374
Sept.	860	36	282	16,940
Oct.	128	21	48	2,994
Nov.	21	6	15	902
Dec.	28	6	13	778
Total	..	..	..	92,752

Year 1949

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	100	6	18	1,094
Feb.	109	4	36	2,016
Mar.	128	36	59	3,634
Apr.	210	21	52	3,108
May	36	21	32	1,970
June	560	21	67	4,026
July	8760	21	275	17,050
Aug.	13400	63	491	30,462
Sept.	920	128	317	18,994
Oct.	755	128	216	13,416
Nov.	620	58	118	7,066
Dec.	128	39	66	4,078
Total	..	..	..	106,914

Year 1950

Jan.	196	19	47	2,902
Feb.	1140	19	115	6,452
Mar.	68	24	37	2,324
Apr.	830	24	228	13,664
May	128	50	82	5,084
June	7690	58	1077	64,644
July	2400	176	577	35,784
Aug.	1800	142	297	18,404
Sept.	176	81	119	7,138
Oct.	664	81	219	13,592
Nov.	1140	72	308	18,464
Dec.	253	81	115	7,102
Total	..	..	..	195,554

Year 1951

Jan.	1220	56	277	17,146
Feb.	376	81	140	7,814
Mar.	253	27	80	4,962
Apr.	91	27	47	2,802
May	72	27	37	2,304
June	2400	27	322	19,320
July	176	91	124	7,716
Aug.	528	81	145	9,000
Sept.	81	34	46	2,786
Oct.	34	16	19	1,196
Nov.	16	7	12	692
Dec.	11	2	4	244
Total	..	..	..	75,982

Year 1952

Jan.	3	3	3	186
Feb.	56	3	11	654
Mar.	81	11	25	1,536
Apr.	56	11	22	1,344
May	164	16	34	2,082
June	212	27	74	4,414
July	176	7	34	2,123
Aug.	13250	56	456	28,278
Sept.	111	16	43	2,568
Oct.	316	16	51	3,152
Nov.	16	5	11	652
Dec.	34	3	8	510
Total	..	..	..	47,499

Year 1953

Jan.	81	7	15	916
Feb.	594	7	61	3,408
Mar.	2	16	47	2,910
Apr.	41	16	26	1,552
May	34	16	21	1,326
June	16	7	12	749
July	30	7	13	807
Aug.	212	7	37	2,275
Sept.	142	16	33	1,970
Oct.	48	7	18	1,145
Nov.	27	7	11	650
Dec.	7	5	6	400
Total	..	..	..	18,108

TIA RIVER AT TIA

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	21	5	6	394
Feb.	2060	3	80	4,464
Mar.	46	11	20	1,260
Apr.	28	11	14	852
May	28	9	16	1,020
June	131	12	21	1,276
July	142	11	35	2,166
Aug.	142	18	44	2,738
Sept.	1350	18	122	7,338
Oct.	2460	42	235	14,562
Nov.	882	46	136	8,158
Dec.	218	28	43	2,684
Total	..	..	..	46,912

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	219	18	40	2,508
Feb.	9760	21	439	24,584
Mar.	617	101	215	13,354
Apr.	838	81	170	10,198
May	594	63	113	7,030
June	268	81	107	6,428
July	153	59	73	4,542
Aug.	131	50	63	3,916
Sept.	179	30	43	2,584
Oct.	2080	30	144	8,928
Nov.	250	30	63	3,770
Dec.	213	27	53	3,300
Total	..	..	..	91,142

Year 1956

Jan.	454	20	64	3,946
Feb.	6000	101	680	39,478
Mar.	1790	162	336	20,808
Apr.	953	61	120	7,224
May	1820	87	164	10,192
June	2160	56	162	9,700
July	567	71	141	8,764
Aug.	515	56	130	8,058
Sept.	76	36	49	2,944
Oct.	236	27	52	3,194
Nov.	99	16	25	1,504
Dec.	56	9	19	1,197
Total	..	..	..	117,009

Year 1957

Jan.	636	7	21	1,306
Feb.	1520	11	102	5,716
Mar.	112	21	41	2,564
Apr.	45	15	91	1,256
May	18	15	15	936
June	50	13	17	1,012
July	106	15	23	1,430
Aug.	441	15	63	3,920
Sept.	76	15	31	1,888
Oct.	45	8	13	806
Nov.	55	3	9	516
Dec.	65	3	7	451
Total	..	..	..	21,801

Year 1958

Jan.	45	3	8	467
Feb.	15	2	6	326
Mar.	772	2	14	850
Apr.	21	3	10	585
May	60	6	9	542
June	112	6	25	1,512
July	36	10	16	1,018
Aug.	490	10	33	2,044
Sept.	65	13	21	1,294
Oct.	272	10	25	1,557
Nov.	13	6	9	554
Dec.	119	6	16	978
Total	..	..	..	11,727

Year 1959

Jan.	724	13	89	5,544
Feb.	528	28	66	3,678
Mar.	772	32	80	4,940
Apr.	112	32	52	3,094
May	65	25	30	1,858
June	541	25	48	2,868
July	263	32	82	5,072
Aug.	554	32	90	5,556
Sept.	490	50	83	4,976
Oct.	622	40	154	9,522
Nov.	7330	60	346	20,744
Dec.	650	35	74	4,580
Total	..	..	..	72,432

TIA RIVER AT TIA

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	995	22	55	3,384
Feb.	146	25	48	2,776
Mar.	350	44	100	6,208
Apr.	106	31	41	2,478
May	100	28	35	2,192
June	181	31	54	3,238
July	515	49	111	6,906
Aug.	263	31	65	4,018
Sept.	229	28	42	2,532
Oct.	281	22	37	2,320
Nov.	139	16	27	1,610
Dec.	822	16	69	4,250
Total	..	..	..	41,912

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	205	25	45	2,800
Feb.	567	25	70	3,910
Mar.	126	28	37	2,310
Apr.	44	22	27	1,600
May	28	16	19	1,200
June	636	22	92	5,490
July	150	26	39	2,400
Aug.	237	26	62	3,820
Sept.	372	36	71	4,290
Oct.	340	26	59	3,650
Nov.	608	23	93	5,560
Dec.	581	32	107	6,640
Total	..	..	..	43,670

Year 1962

Jan.	14600	106	403	25,000
Feb.	250	50	95	5,330
Mar.	137	44	61	3,800
Apr.	6210	44	416	24,900
May	1018	74	168	10,400
June	100	50	66	3,950
July	3620	44	245	15,200
Aug.	310	67	103	6,370
Sept.	168	44	59	3,520
Oct.	595	25	65	4,000
Nov.	93	16	30	1,770
Dec.	200	13	39	2,400
Total	..	..	..	106,640

Year 1963

Jan.	1165	32	121	7,520
Feb.	104	21	31	1,730
Mar.	415	21	60	3,700
Apr.	595	32	81	4,860
May	4290	111	509	31,500
June	595	89	137	8,240
July	167	66	104	6,450
Aug.	465	51	94	5,840
Sept.	974	38	116	6,940
Oct.	307	59	105	6,500
Nov.	192	45	64	3,830
Dec.	453	32	92	5,720
Total	..	..	..	92,830

Year 1964

Jan.	1550	25	86	5,320
Feb.	96	21	33	1,890
Mar.	995	25	121	7,510
Apr.	428	38	66	3,940
May	74	32	44	2,720
June	297	32	64	3,820
July	675	45	103	6,360
Aug.	151	25	42	2,590
Sept.	51	21	28	1,690
Oct.	353	16	48	2,980
Nov.	119	9	17	1,030
Dec.	13	6	9	549
Total	..	..	..	40,399

Year 1965

Jan.	21	4	7	460
Feb.	390	4	14	790
Mar.	14	2	5	308
Apr.	14	2	5	272
May	7	5	5	322
June	19	5	8	460
July	390	6	32	1,960
Aug.	19	8	11	686
Sept.	19	5	10	603
Oct.	11	4	6	348
Nov.	8	1	3	163
Dec.	183	4	19	1,180
Total	..	..	..	7,552

TIA RIVER AT TIA

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.	5	1	2	135	Jan.	82	5	18	1,080
Feb.	208	1	6	358	Feb.	82	8	16	914
Mar.	8	1	4	222	Mar.	823	11	93	5,750
Apr.	5	1	3	161	Apr.	167	24	62	3,690
May	6	3	4	254	May	75	19	26	1,600
June	14	4	6	346	June	1430	19	257	15,400
July	8	4	4	275	July				
Aug.	41	4	8	466	Aug.				
Sept.	29	4	7	444	Sept.				
Oct.	24	4	9	547	Oct.				
Nov.	378	5	30	1,800	Nov.				
Dec.	68	4	10	643	Dec.				
Total	..	..	..	5,651	Total				

YARROWITCH RIVER AT YARROWITCH

LOCATION:	Latitude 31°15' Longitude 151°57'
PERIOD OF ESTABLISHMENT:	July 1928 to August 1931 June 1936 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	31
ZERO OF GAUGE:	R.L. 40.81 Local Datum.
CATCHMENT AREA:	33 square miles.
CONTROL:	Gravel, subject to alteration.
EQUIPMENT:	Automatic Recorder (Pressure type) installed 24th May, 1950. Staff gauge, range 0 to 10 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 171 (b) Maximum observation in cusecs : 895 (c) Minimum observation in cusecs : 0.2
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	4,600 cusecs.
MEAN DAILY DISCHARGE FOR 30 YEARS:	23 cusecs.
MEAN ANNUAL DISCHARGE FOR 30 YEARS:	16,800 acre feet.
REMARKS:	The station was discontinued on 31st August, 1931 and re-established on 20th June, 1936.

YARROWITCH RIVER AT YARROWITCH

Year 1928

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	156	54	85	5,254
Aug.	59	24	37	2,328
Sept.	24	7	17	995
Oct.	14	5	9	569
Nov.	6	4	5	276
Dec.	9	4	5	312
Total	..	..	..	..

Year 1929

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	11	3	4	259
Feb.	1670	2	332	18,618
Mar.	440	24	71	4,418
Apr.	570	19	70	4,196
May	54	10	14	871
June	206	5	18	1,074
July	156	7	28	1,728
Aug.	279	14	66	4,094
Sept.	1670	24	125	7,490
Oct.	103	22	38	2,346
Nov.	22	8	15	924
Dec.	8	4	6	388
Total	..	..	..	46,406

Year 1930

Jan.	8	4	5	336
Feb.	4	2	3	152
Mar.	22	2	4	276
Apr.	72	2	15	924
May	14	8	9	556
June	4300	8	194	11,622
July	101	33	50	3,110
Aug.	33	13	22	1,356
Sept.	13	5	8	500
Oct.	19	2	11	680
Nov.	9	2	6	372
Dec.	9	2	4	274
Total	..	..	..	20,158

Year 1931

Jan.	3	1	2	129
Feb.	9	2	5	308
Mar.	9	1	5	309
Apr.	312	2	51	3,052
May	77	13	41	2,556
June	13	5	9	524
July	40	5	11	668
Aug.	13	5	10	614
Station discontinued 31.8.1931				
	..	..	..	..
	..	..	..	..
	..	..	..	..
Total	..	..	..	..

Year 1936

Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	Station re-established			
July	26	11	13	822
Aug.	39	8	13	810
Sept.	112	5	13	786
Oct.	5	1	3	171
Nov.	2	0.3	0.8	51
Dec.	32	0.3	5	313
Total	..	..	..	..

Year 1937

Jan.	39	0.6	5	336
Feb.	88	0.8	20	1,132
Mar.	663	8	60	3,750
Apr.	32	11	21	1,260
May	11	8	9	538
June	112	8	43	2,572
July	56	32	35	2,146
Aug.	56	15	21	1,316
Sept.	20	5	11	680
Oct.	15	5	8	488
Nov.	39	5	14	872
Dec.	20	5	8	486
Total	..	..	..	15,576

YARROWITCH RIVER AT YARROWITCH

Year 1938

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	201	3	16	1,021
Feb.	66	8	21	1,185
Mar.	10	6	7	439
Apr.	125	6	30	1,795
May	152	15	23	1,454
June	26	15	18	1,092
July	15	11	13	778
Aug.	32	8	12	770
Sept.	15	5	7	410
Oct.	26	3	7	434
Nov.	20	4	6	350
Dec.	14	0.2	2	107
Total	..	..	..	9,835

Year 1939

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	20	0	3	191
Feb.	5	0.7	1	75
Mar.	86	1	31	1,951
Apr.	41	14	25	1,482
May	15	8	11	712
June	15	5	9	512
July	26	8	11	662
Aug.	15	5	8	472
Sept.	88	3	8	464
Oct.	32	5	10	622
Nov.	11	3	5	320
Dec.	108	1	8	514
Total	..	..	..	7,977

Year 1940

Jan.	4	0	1	77
Feb.	2	0	0.2	11
Mar.	49	0	3	195
Apr.	5	0.5	1	89
May	4	0.5	1	79
June	5	0.5	2	94
July	5	2	2	139
Aug.	8	3	4	245
Sept.	6	1	6	381
Oct.	8	0.8	3	160
Nov.	4	0.2	1	70
Dec.	20	1	4	274
Total	..	..	..	1,814

Year 1941

Jan.	39	2	11	672
Feb.	32	2	9	414
Mar.	39	2	7	448
Apr.	8	2	3	202
May	8	1	2	129
June	32	3	11	674
July	20	5	7	434
Aug.	8	2	4	236
Sept.	3	1	4	217
Oct.	5	1	3	168
Nov.	3	0.3	1	78
Dec.	0.8	0	0.2	14
Total	..	..	..	3,686

Year 1942

Jan.	0.8	0	0.1	5
Feb.	11	0	2	138
Mar.	32	0	9	532
Apr.	12	2	5	279
May	2	0.5	1	91
June	12	2	5	296
July	298	4	33	2,020
Aug.	14	3	6	373
Sept.	6	0.5	3	177
Oct.	245	0.5	52	3,190
Nov.	181	12	38	2,254
Dec.	56	4	12	751
Total	..	..	..	10,106

Year 1943

Jan.	435	5	26	1,637
Feb.	12	3	6	321
Mar.	5	2	2	142
Apr.	10	2	4	266
May	32	2	9	573
June	21	3	8	465
July	8	3	5	305
Aug.	66	3	21	1,328
Sept.	34	13	19	1,134
Oct.	34	9	16	982
Nov.	28	9	14	854
Dec.	66	9	17	1,074
Total	..	..	..	9,081

YARROWITCH RIVER AT YARROWITCH

Year 1944

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	133	17	35	2,200
Feb.	49	9	20	1,180
Mar.	13	9	10	632
Apr.	13	6	8	506
May	17	9	11	670
June	13	7	10	574
July	22	9	16	1,010
Aug.	475	9	55	3,404
Sept.	34	22	28	1,662
Oct.	22	9	13	788
Nov.	9	3	8	496
Dec.	9	0	3	150
Total	..	..	..	13,272

Year 1945

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	9	0	3	160
Feb.	13	0	3	168
Mar.	9	0	1	92
Apr.	3	0	0.2	12
May	17	0	4	274
June	356	3	64	3,848
July	319	22	52	3,210
Aug.	34	17	25	1,530
Sept.	22	9	12	706
Oct.	13	3	8	478
Nov.	22	3	11	652
Dec.	34	3	10	598
Total	..	..	..	11,728

Year 1946

Jan.	3	0	2	108
Feb.	3	0	1	60
Mar.	3600	0	24	10,094
Apr.	212	3	27	1,606
May	8	1	3	198
June	8	0.5	4	212
July	5	3	3	210
Aug.	3	2	2	146
Sept.	3	2	2	141
Oct.	3	2	2	116
Nov.	3	2	2	112
Dec.	2	2	2	108
Total	..	..	..	13,111

Year 1947

Jan.	3	2	2	132
Feb.	100	3	13	728
Mar.	545	13	55	3,380
Apr.	56	8	22	1,304
May	25	13	14	854
June	39	19	32	1,940
July	39	13	32	1,994
Aug.	19	3	11	690
Sept.	3	2	2	141
Oct.	5	2	4	224
Nov.	14	2	3	185
Dec.	262	5	54	3,320
Total	..	..	..	14,892

Year 1948

Jan.	125	13	32	2,002
Feb.	13	5	11	624
Mar.	8	3	6	400
Apr.	13	5	8	476
May	13	8	10	636
June	545	8	85	5,102
July	56	20	40	2,504
Aug.	56	15	20	1,228
Sept.	56	26	40	2,370
Oct.	15	10	12	756
Nov.	15	5	8	492
Dec.	8	8	8	496
Total	..	..	..	17,086

Year 1949

Jan.	5	5	5	310
Feb.	5	3	3	182
Mar.	5	3	4	224
Apr.	32	3	4	254
May	8	3	5	326
June	56	3	9	540
July	280	3	16	994
Aug.	No Records			6,000*
Sept.	166	56	79	4,724
Oct.	88	26	51	3,166
Nov.	56	11	23	1,364
Dec.	26	20	20	1,264
Total	..	..	..	19,348*

* Estimated.

YARROWITCH RIVER AT YARROWITCH

Year 1950

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	15	8	9	576
Feb.	317	8	55	3,096
Mar.	39	11	18	1,090
Apr.	88	26	50	3,026
May	51	20	27	1,672
June	No Records			
July	No Records			
Aug.	No Records			
Sept	No Records			
Oct.	No Records			
Nov.	No Records			
Dec.	No Records			
Total	..	..	..	..

Year 1951

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	694	16	165	10,248
Feb.	203	33	84	4,694
Mar.	65	16	33	2,046
Apr.	26	16	21	1,270
May	16	12	13	816
June	1085	10	69	4,120
July	52	21	32	1,972
Aug.	203	16	24	1,468
Sept.	14	8	10	628
Oct.	8	5	6	396
Nov.	4	3	4	229
Dec.	4	2	3	184
Total	..	..	..	28,071

Year 1952

Jan.	6	1	2	118
Feb.	143	0.7	8	458
Mar.	52	4	10	626
Apr.	16	5	7	415
May	12	2	5	330
June	79	2	8	497
July	33	4	7	411
Aug.	2400	12	131	8,130
Sept.	33	8	18	1,066
Oct.	79	2	15	915
Nov.	6	2	5	318
Dec.	65	2	5	321
Total	..	..	..	13,605

Year 1953

Jan.	33	4	7	420
Feb.	469	4	39	2,174
Mar.	251	16	35	2,194
Apr.	166	16	24	1,440
May	88	16	33	2,070
June	16	12	13	776
July	16	7	11	686
Aug.	26	5	8	490
Sept.	21	5	6	352
Oct.	5	3	3	208
Nov.	3	0.5	2	103
Dec.	0.5	0	0.5	30
Total	..	..	..	10,943

Year 1954

Jan.	5	0	1	68
Feb.	1245	0	35	1,940
Mar.	28	8	16	954
Apr.	8	4	8	460
May	19	6	10	626
June	42	8	11	656
July	42	8	17	1,030
Aug.	54	15	18	1,146
Sept.	1120	6	56	3,330
Oct.	1160	28	73	4,510
Nov.	523	23	47	2,834
Dec.	273	3	18	1,134
Total	..	..	..	18,688

Year 1955

Jan.	49	6	14	892
Feb.	4600	6	237	13,278
Mar.	182	61	102	6,348
Apr.	469	50	102	6,122
May	143	19	48	2,958
June	125	19	31	1,880
July	24	19	20	1,258
Aug.	19	12	15	900
Sept.	38	10	14	838
Oct.	554	3	18	1,103
Nov.	31	3	9	557
Dec.	428	6	16	981
Total	..	..	..	37,115

YARROWITCH RIVER AT YARROWITCH

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	182	3	22	1,395
Feb.	2000	49	268	15,548
Mar.	663	61	123	7,654
Apr.	125	31	46	2,774
May	818	23	46	2,836
June	153	23	29	1,756
July	90	17	23	1,414
Aug.	75	14	23	1,451
Sept.	15	8	11	672
Oct.	15	3	9	544
Nov.	8	3	5	319
Dec.	8	2	3	197
Total	..	..	..	36,560

Year 1957

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	14	2	5	281
Feb.	787	3	48	2,686
Mar.	35	10	15	936
Apr.	10	4	7	433
May	6	4	4	253
June	10	3	4	254
July	24	2	5	303
Aug.	125	2	15	930
Sept.	19	4	8	482
Oct.	4	2	3	176
Nov.	24	1	3	151
Dec.	38	1	2	102
Total	..	..	..	6,987

Year 1958

Jan.	24	1	2	136
Feb.	10	1	3	146
Mar.	75	1	4	244
Apr.	6	1	2	149
May	4	2	3	206
June	31	3	9	552
July	14	3	7	439
Aug.	75	3	6	396
Sept.	24	2	7	422
Oct.	12	2	4	242
Nov.	5	2	3	192
Dec.	663	2	10	612
Total	..	..	..	3,736

Year 1959

Jan.	515	5	44	2,734
Feb.	143	14	26	1,458
Mar.	296	16	49	3,026
Apr.	78	16	38	2,284
May	22	16	19	1,172
June	203	12	20	1,204
July	55	16	31	1,900
Aug.	36	22	30	1,848
Sept.	143	28	39	2,360
Oct.	296	22	47	2,896
Nov.	2820	36	148	8,866
Dec.	603	22	39	2,442
Total	..	..	..	32,190

Year 1960

Jan.	55	12	21	1,318
Feb.	80	15	25	1,434
Mar.	125	32	52	3,196
Apr.	36	18	24	1,464
May	32	12	18	1,112
June	28	8	14	862
July	24	15	20	1,254
Aug.	24	4	11	700
Sept.	15	5	8	466
Oct.	64	5	8	514
Nov.	32	2	5	309
Dec.	49	2	8	525
Total	..	..	..	13,154

Year 1961

Jan.	59	2	13	794
Feb.	125	0.3	17	934
Mar.	32	8	12	752
Apr.	18	8	11	644
May	12	5	7	464
June	193	8	33	1,960
July	69	8	14	858
Aug.	40	8	15	908
Sept.	64	8	14	860
Oct.	107	8	17	1,080
Nov.	248	8	26	1,540
Dec.	162	18	36	2,240
Total	..	..	..	13,034

YARROWITCH RIVER AT YARROWITCH

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	2130	63	143	8,850
Feb.	346	22	50	2,800
Mar.	40	15	24	1,500
Apr.	2680	15	203	12,200
May	248	30	64	3,940
June	51	11	24	1,430
July	1051	7	107	6,610
Aug.	40	18	30	1,850
Sept.	40	8	15	896
Oct.	91	8	15	904
Nov.	17	4	11	676
Dec.	56	4	12	749
Total	..	..	..	42,405

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	787	12	50	3,080
Feb.	23	8	14	800
Mar.	160	8	27	1,670
Apr.	216	23	39	2,340
May	1335	37	130	8,040
June	178	30	41	2,490
July	68	23	35	2,190
Aug.	94	17	25	1,540
Sept.	236	12	34	2,050
Oct.	322	23	44	2,720
Nov.	37	17	25	1,490
Dec.	347	17	37	2,300
Total	..	..	..	30,710

Year 1964

Jan.	544	8	29	1,780
Feb.	42	10	21	1,210
Mar.	372	15	61	3,810
Apr.	298	21	41	2,470
May	34	10	21	1,290
June	164	15	26	1,560
July	142	4	18	1,090
Aug.	23	8	9	556
Sept.	8	4	5	322
Oct.	37	2	5	338
Nov.	27	4	5	280
Dec.	4	2	3	172
Total	..	..	..	14,878

Year 1965

Jan.	15	1	3	170
Feb.	52	2	4	224
Mar.	4	0.7	2	104
Apr.	10	0.7	2	127
May	3	2	2	138
June	6	2	3	200
July	200	2	13	834
Aug.	6	4	4	274
Sept.	4	2	3	178
Oct.	2	1	2	122
Nov.	2	0.7	1	69
Dec.	No	Records		1,800*
Total	..	..	..	4,240*

Year 1966

Jan.	6	3	3	216
Feb.	3	2	2	138
Mar.	6	2	3	204
Apr.	6	3	3	202
May	5	1	3	168
June	17	1	3	154
July	2	2	2	93
Aug.	21	0.5	4	222
Sept.	6	2	4	216
Oct.	10	0.5	2	113
Nov.	196	0.4	9	556
Dec.	15	2	3	212
Total	..	..	..	2,494

Year 1967

Jan.	34	3	8	527
Feb.	21	3	6	334
Mar.	573	3	42	2,570
Apr.	57	12	30	1,800
May	47	8	13	824
June	633	8	152	9,110
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

* Estimated.

MACLEAY RIVER AT LOWER CREEK

LOCATION:	Latitude 30°45' Longitude 152°17'
PERIOD OF ESTABLISHMENT:	September 1950 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	16
ZERO OF GAUGE:	R.L. 51.33 Assumed Datum.
CATCHMENT AREA:	3,100 square miles.
CONTROL:	Gravel, subject to alteration.
EQUIPMENT:	Staff gauge, range 0 to 55 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 84
	(b) Maximum observation in cusecs : 4,585
	(c) Minimum observation in cusecs : 9
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	273,300 cusecs.
MEAN DAILY DISCHARGE FOR 15 YEARS:	1,470 cusecs.
MEAN ANNUAL DISCHARGE FOR 15 YEARS:	1,070,000 acre feet.

MACLEAY RIVER AT LOWER CREEK

Year 1950

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	77000	767	10500	650,000
Nov.	87900	552	12048	722,882
Dec.	4270	495	1322	81,966
Total	..	..	..	..

Year 1951

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	19200	675	4121	255,494
Feb.	6180	990	2231	124,930
Mar.	11870	700	3110	192,848
Apr.	1680	445	810	48,598
May	700	309	397	24,710
June	21600	276	3928	235,682
July	5340	526	1179	73,106
Aug.	28300	452	2365	146,706
Sept.	434	196	265	15,906
Oct.	210	80	146	9,042
Nov.	149	40	64	3,866
Dec.	102	31	56	3,462
Total	..	..	..	1,134,350

Year 1952

Jan.	149	35	75	4,652
Feb.	8200	8	538	31,206
Mar.	5770	351	1422	88,200
Apr.	2180	225	542	32,510
May	853	197	269	16,706
June	7700	160	1282	76,910
July	5770	210	666	41,308
Aug.	220000	990	13238	820,780
Sept.	1250	399	689	41,326
Oct.	71000	313	3589	222,498
Nov.	692	143	245	14,696
Dec.	427	87	169	10,480
Total	..	..	..	1,401,272

Year 1953

Jan.	909	125	294	18,212
Feb.	93700	125	7705	431,456
Mar.	11400	508	2276	141,084
Apr.	1300	361	699	41,964
May	1910	318	718	44,522
June	331	181	233	13,998
July	467	141	227	14,092
Aug.	2520	124	357	22,158
Sept.	1690	96	278	16,682
Oct.	181	74	101	6,248
Nov.	85	23	48	2,866
Dec.	44	8	20	1,264
Total	..	..	..	754,546

Year 1954

Jan.	250	16	75	4,664
Feb.	160700	35	6496	363,750
Mar.	4990	360	1017	63,028
Apr.	No	Records		10,200*
May	No	Records		20,300*
June	1625	258	473	28,408
July	19400	239	2282	141,460
Aug.	2780	344	655	40,582
Sept.	9200	248	1264	75,824
Oct.	17800	446	2671	165,612
Nov.	13600	474	2737	164,194
Dec.	3220	360	744	46,170
Total	..	..	..	1,124,192*

Year 1955

Jan.	3070	300	816	50,580
Feb.	150000	360	10335	578,780
Mar.	17400	2360	4866	301,690
Apr.	22120	1090	4178	250,660
May	23040	840	2712	168,156
June	4820	794	1405	84,322
July	1560	446	684	42,402
Aug.	1560	327	543	33,638
Sept.	1755	258	425	25,498
Oct.	71000	212	3365	208,656
Nov.	711	98	214	12,816
Dec.	3220	75	536	33,252
Total	..	..	..	1,790,450

* Estimated.

MACLEAY RIVER AT LOWER CREEK

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	12480	64	1233	76,432
Feb.	154000	2220	19031	1,103,820
Mar.	26110	2780	6913	428,580
Apr.	7440	949	2793	167,568
May	34300	949	3202	198,580
June	68000	660	3465	207,910
July	4240	540	1464	90,780
Aug.	1170	340	556	34,458
Sept.	660	280	354	21,214
Oct.	1690	186	401	24,844
Nov.	1170	69	230	13,788
Dec.	222	69	114	7,082
Total	..	..	..	2,375,056

Year 1957

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1240	63	247	15,326
Feb.	8840	123	1396	78,150
Mar.	2210	300	790	48,986
Apr.	300	153	208	12,468
May	186	83	117	7,234
June	123	76	87	5,192
July	153	83	97	6,008
Aug.	1440	83	270	16,760
Sept.	710	92	230	13,792
Oct.	83	40	59	3,664
Nov.	123	17	54	3,254
Dec.	101	17	35	2,162
Total	..	..	..	212,996

Year 1958

Jan.	710	27	149	9,248
Feb.	612	112	310	17,360
Mar.	1170	57	323	20,054
Apr.	680	57	386	23,160
May	273	84	145	8,992
June	2850	84	656	39,380
July	650	148	311	19,270
Aug.	1080	123	423	26,198
Sept.	1250	148	301	18,076
Oct.	3370	84	379	23,472
Nov.	148	31	65	3,886
Dec.	13600	69	1137	70,478
Total	..	..	..	279,574

Year 1959

Jan.	124000	250	7183	445,322
Feb.	41800	1080	3420	191,520
Mar.	13600	960	3252	201,652
Apr.	4200	490	1197	71,850
May	440	273	322	19,962
June	1160	178	231	13,886
July	1920	250	714	44,264
Aug.	1200	212	431	26,736
Sept.	1340	296	643	38,602
Oct.	3630	296	768	47,608
Nov.	132500	490	8152	489,150
Dec.	13600	680	2179	135,070
Total	..	..	..	1,725,622

Year 1960

Jan.	3240	205	969	60,096
Feb.	5580	370	1463	84,882
Mar.	10280	580	2392	148,328
Apr.	720	370	568	34,100
May	1120	245	439	27,202
June	580	285	416	24,978
July	1810	420	791	49,070
Aug.	3630	190	602	37,346
Sept.	420	138	199	11,910
Oct.	445	90	170	10,544
Nov.	1450	63	225	13,524
Dec.	445	80	182	11,306
Total	..	..	..	513,286

Year 1961

Jan.	495	72	170	10,560
Feb.	6420	100	923	51,708
Mar.	495	90	288	17,856
Apr.	285	138	189	11,364
May	190	125	138	8,586
June	2420	265	624	37,444
July	325	175	226	14,040
Aug.	520	163	305	18,882
Sept.	445	190	291	17,460
Oct.	3500	150	802	49,696
Nov.	17200	162	1966	117,936
Dec.	8480	615	2179	135,114
Total	..	..	..	490,646

MACLEAY RIVER AT LOWER CREEK

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	106000	920	6219	385,566
Feb.	2240	525	1055	59,110
Mar.	2720	400	1032	64,030
Apr.	78000	575	6637	398,250
May	13600	420	1766	109,474
June	1300	285	518	31,092
July	122700	205	7508	465,556
Aug.	4200	520	1149	71,250
Sept.	850	319	491	29,506
Oct.	9740	163	763	47,348
Nov.	840	175	330	19,830
Dec.	9740	125	1200	74,352
Total	..	..	..	1,755,364

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	67500	500	4432	274,840
Feb.	790	340	523	29,330
Mar.	14200	380	1743	108,066
Apr.	11940	450	2005	120,300
May	273300	1420	18360	1,138,530
June	7980	765	1985	119,130
July	3040	600	1062	65,890
Aug.	13500	480	1166	72,310
Sept.	4600	410	1072	64,372
Oct.	4420	560	1054	65,380
Nov.	2550	480	870	52,230
Dec.	6700	600	2252	139,680
Total	..	..	..	2,250,058

Year 1964

Jan.	92000	480	3749	232,460
Feb.	2105	550	969	56,210
Mar.	61000	870	4358	270,230
Apr.	3770	630	1461	87,690
May	960	300	546	33,900
June	710	300	432	25,900
July	7100	280	1438	89,200
Aug.	1450	180	333	20,600
Sept.	2950	140	251	15,100
Oct.	4640	147	840	52,100
Nov.	960	112	220	13,200
Dec.	395	42	98	6,090
Total	..	..	..	902,680

Year 1965

Jan.	187	37	71	4,430
Feb.	218	48	104	5,840
Mar.	112	27	52	3,220
Apr.	296	11	35	2,090
May	27	14	20	1,210
June	38	14	22	1,300
July	15400	27	1020	63,200
Aug.	332	118	189	11,700
Sept.	182	83	139	8,330
Oct.	309	54	88	5,440
Nov.	66	12	29	1,760
Dec.	18400	90	2856	177,000
Total	..	..	..	285,520

Year 1966

Jan.	250	48	107	6,600
Feb.	495	66	155	8,660
Mar.	250	54	108	6,670
Apr.	110	26	47	2,830
May	100	42	56	3,490
June	110	42	60	3,600
July	48	31	40	2,500
Aug.	110	26	55	3,390
Sept.	180	42	81	4,870
Oct.	1050	36	255	15,800
Nov.	17200	110	1007	60,400
Dec.	250	18	67	4,150
Total	..	..	..	122,960

Year 1967

Jan.	5910	167	1160	72,000
Feb.	3370	210	832	46,600
Mar.	22810	620	3300	205,000
Apr.	6080	475	2080	125,000
May	450	215	321	19,900
June	134500	185	15500	931,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

MACLEAY RIVER AT BELLBROOK

LOCATION:	Latitude 30°49' Longitude 152°30'
PERIOD OF ESTABLISHMENT:	April 1953 to date.
COMPLETE YEARS OF COMPUTED RECORDS:	13
ZERO OF GAUGE:	R.L. 19.73 Assumed Datum.
CATCHMENT AREA:	3,450 square miles.
CONTROL:	Gravel, subject to alteration.
EQUIPMENT:	Staff gauge, range 0 to 60 feet.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 68
	(b) Maximum observation in cusecs : 5,422
	(c) Minimum observation in cusecs : 10
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	368,000 cusecs.
MEAN DAILY DISCHARGE FOR 12 YEARS:	1,890 cusecs.
MEAN ANNUAL DISCHARGE FOR 12 YEARS:	1,380,000 acre feet.
REMARKS:	Prior to its establishment as a gauging station in 1953 this station was operated for flood warning purposes. The available records prior to 1953 indicate that a peak discharge of about 460,000 cusecs occurred in August 1949.

MACLEAY RIVER AT BELLBROOK.

Year 1953

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	2150	410	791	49,058
June	378	223	282	16,910
July	495	177	256	15,900
Aug.	2530	150	626	38,838
Sept.	1650	133	337	20,208
Oct.	248	108	126	7,826
Nov.	116	24	59	3,514
Dec.	51	5	19	1,202
Total	..	..	..	..

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	223	24	102	6,298
Feb.	166300	78	7854	439,810
Mar.	6425	237	1234	76,516
Apr.	300	120	212	12,700
May	1320	120	410	25,406
June	1867	263	575	34,500
July	28000	177	3200	198,486
Aug.	1260	300	698	43,270
Sept.	9930	155	1323	79,352
Oct.	20835	1030	3180	197,228
Nov.	15670	560	3199	191,960
Dec.	1835	420	836	51,820
Total	..	..	..	1,357,346

Year 1955

Jan.	5050	315	1260	77,960
Feb.	127000	580	9897	554,250
Mar.	26330	2280	6720	416,464
Apr.	31330	1615	5795	347,690
May	30500	1090	3060	189,740
June	5230	980	1480	88,832
July	1070	635	763	47,336
Aug.	1160	450	647	40,120
Sept.	1340	255	447	26,840
Oct.	54100	165	4948	306,762
Nov.	1540	255	457	27,442
Dec.	2060	199	732	45,368
Total	..	..	..	2,168,804

Year 1956

Jan.	7080	90	1254	77,758
Feb.	136000	2747	26613	1,543,554
Mar.	44100	4075	9784	606,620
Apr.	15000	1120	3895	233,702
May	30000	1070	4394	272,428
June	57500	822	4468	268,080
July	4390	720	1575	97,640
Aug.	935	364	607	37,640
Sept.	700	283	351	21,058
Oct.	2170	224	416	25,774
Nov.	No Records			14,200*
Dec.	268	18	109	6,764
Total	..	..	..	3,205,218*

Year 1957

Jan.	1345	49	360	22,336
Feb.	No Records			97,700*
Mar.	3430	381	1300	80,598
Apr.	354	204	280	16,816
May	191	78	124	7,674
June	130	78	109	6,518
July	166	69	104	6,476
Aug.	1820	78	303	18,788
Sept.	No Records			17,200*
Oct.	130	6	15	914
Nov.	130	4	60	3,612
Dec.	160	0	56	3,446
Total	..	..	..	282,078*

Year 1958

Jan.	500	95	219	13,566
Feb.	980	298	552	30,922
Mar.	2050	104	649	40,238
Apr.	1235	104	648	38,898
May	510	104	201	12,474
June	4180	89	912	54,708
July	920	168	401	24,858
Aug.	2060	168	678	42,054
Sept.	860	246	381	22,836
Oct.	2310	55	402	24,918
Nov.	195	30	77	4,618
Dec.	14000	96	1410	87,418
Total	..	..	..	397,508

* Estimated

MACLEAY RIVER AT BELLBROOK

Year 1959

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	129000	480	9765	605,450
Feb.	44330	1500	5380	301,124
Mar.	No Records			252,000*
Apr.	7700	655	1849	110,964
May	655	348	450	27,922
June	500	240	308	18,464
July	2400	292	872	54,092
Aug.	720	292	399	24,708
Sept.	2550	384	872	52,332
Oct.	3100	408	786	48,724
Nov.	No Records			611,000*
Dec.	18250	920	3141	194,714
Total	..	..	..	2,301,494*

Year 1960

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			64,800*
Feb.	8500	460	1728	100,250
Mar.	No Records			185,000*
Apr.	1040	520	774	46,420
May	1460	348	516	31,976
June	710	348	503	30,160
July	1580	520	750	46,520
Aug.	4800	262	731	45,326
Sept.	460	182	235	14,112
Oct.	374	116	199	12,322
Nov.	1160	80	220	13,216
Dec.	520	96	184	11,432
Total	..	..	..	601,534*

Year 1961

Jan.	520	116	193	11,946
Feb.	11800	128	1333	74,658
Mar.	600	235	388	24,044
Apr.	510	218	317	19,020
May	292	145	194	12,054
June	2590	218	740	44,426
July	355	186	257	15,948
Aug.	454	202	309	19,162
Sept.	480	202	307	18,440
Oct.	5100	158	932	57,790
Nov.	No Records			147,000*
Dec.	No Records			169,000*
Total	..	..	..	613,488*

Year 1962

Jan.	No Records			482,000*
Feb.	4500	640	1550	86,700
Mar.	6450	460	1790	111,180
Apr.	No Records			498,000*
May	19400	815	2793	173,190
June	1460	460	723	43,350
July	121250	400	7942	492,380
Aug.	3900	850	1386	85,920
Sept.	920	460	636	38,170
Oct.	14200	262	1094	67,858
Nov.	920	212	383	22,990
Dec.	22900	140	2760	171,254
Total	..	..	..	2,272,992*

Year 1963

Jan.	64100	720	6990	433,310
Feb.	1640	655	930	52,100
Mar.	20900	655	3096	191,970
Apr.	30200	470	4839	290,360
May	368000	1930	24537	1,521,320
June	9050	960	2279	136,740
July	3500	710	1220	75,620
Aug.	17750	590	1280	79,440
Sept.	5580	440	1165	69,920
Oct.	3500	680	1120	69,600
Nov.	1630	540	928	55,680
Dec.	10100	710	3120	193,630
Total	..	..	..	3,169,690

Year 1964

Jan.	73300	540	3930	243,880
Feb.	2340	490	872	50,560
Mar.	65000	800	6550	406,145
Apr.	8800	800	2290	137,360
May	1170	490	698	43,290
June	720	445	521	31,284
July	10000	370	1477	91,600
Aug.	1000	195	319	19,754
Sept.	370	165	202	12,134
Oct.	3100	165	847	52,500
Nov.	650	108	201	12,064
Dec.	1845	40	161	9,952
Total	..	..	..	1,110,523

*Estimated

MACLEAY RIVER AT BELLBROOK

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	195	40	83	5,134
Feb.	370	59	141	7,916
Mar.	192	4	56	3,458
Apr.	88	10	42	2,512
May	60	20	35	2,172
June	37	30	23	1,404
July	23800	37	1482	91,902
Aug.	2820	156	321	19,910
Sept.	211	88	161	9,640
Oct.	180	70	93	5,764
Nov.	90	10	40	2,398
Dec.	24600	180	3189	197,720
Total	..	..	..	349,930

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	230	60	118	7,298
Feb.	880	70	232	13,000
Mar.	370	90	170	10,558
Apr.	101	22	51	3,048
May	135	27	64	3,996
June	135	59	82	4,942
July	59	40	49	3,068
Aug.	135	25	56	3,456
Sept.	150	40	88	5,296
Oct.	1000	32	202	12,500
Nov.	9750	59	643	38,600
Dec.	135	16	57	3,520
Total	..	..	..	109,282

Year 1967

Jan.	6450	165	819	50,800
Feb.	3800	230	718	40,200
Mar.	17700	590	4730	293,000
Apr.	10850	480	3470	208,000
May	480	340	372	23,100
June	139600	264	19900	1,200,000
July				
Aug.				
Sept.				
Oct.				
Nov.				
Dec.				
Total				

MACLEAY RIVER AT TURNER'S FLAT

LOCATION:	Latitude 31°00' Longitude 152°41'
PERIOD OF ESTABLISHMENT:	October 1945 to December 1949 April 1953 to date
COMPLETE YEARS OF COMPUTED RECORDS:	16
ZERO OF GAUGE:	R.L. 50.80 Assumed Datum
CATCHMENT AREA:	3,800 square miles
CONTROL:	Gravel, subject to alteration
EQUIPMENT:	Staff gauge, range 0 to 60 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 85
	(b) Maximum observation in cusecs : 33,900
	(c) Minimum observation in cusecs : 0.1
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	505,000 cusecs
MEAN DAILY DISCHARGE FOR 15 YEARS:	2,060 cusecs
MEAN ANNUAL DISCHARGE FOR 15 YEARS:	1,501,000 acre feet

REMARKS:

The station was discontinued from 1st January 1950 until its re-establishment on 16th April 1953.

MACLEAY RIVER AT TURNERS FLAT.

Year 1945

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	2080	51	507	30,412
Dec.	2290	187	650	40,298
Total	..	..	..	..

Year 1946

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	9540	78	881	54,612
Feb.	4800	139	992	55,566
Mar.	248000	440	9695	601,108
Apr.	14200	730	3334	200,060
May	860	250	489	30,346
June	293	175	200	12,016
July	175	90	131	8,122
Aug.	90	44	55	3,380
Sept.	293	35	72	4,298
Oct.	395	30	97	5,990
Nov.	141	21	48	2,854
Dec.	209	44	94	5,834
Total	..	..	..	984,186

Year 1947

Jan.	1160	44	296	18,360
Feb.	18300	485	4945	276,920
Mar.	29700	890	4767	295,540
Apr.	8000	890	2118	127,060
May	890	396	593	36,760
June	396	206	308	18,502
July	189	110	142	8,780
Aug.	261	92	134	8,292
Sept.	3045	110	620	37,226
Oct.	832	101	215	13,322
Nov.	1250	77	281	16,852
Dec.	15800	1070	5119	317,398
Total	..	..	..	1,175,012

Year 1948

Jan.	16500	662	2838	175,948
Feb.	718	223	355	20,578
Mar.	13200	500	2478	153,614
Apr.	1660	261	656	39,380
May	24600	396	3305	204,916
June	61700	261	8363	501,760
July	3720	607	1384	85,788
Aug.	5300	303	892	55,302
Sept.	6800	261	1000	59,994
Oct.	1130	77	321	19,876
Nov.	553	64	178	10,692
Dec.	133	53	99	6,114
Total	..	..	..	1,333,962

Year 1949

Jan.	3540	53	499	30,958
Feb.	2430	77	864	48,390
Mar.	22200	1190	5373	333,120
Apr.	4100	718	1617	97,040
May	1590	396	854	52,952
June	8110	553	1335	80,104
July	48200	159	3507	217,412
Aug.	505000	718	25675	1,591,852
Sept.	No Records			
Oct.	No Records			
Nov.	No Records			
Dec.	No Records			
Total	..	..	..	..

Year 1953

Station re-established 16.4.1953				
May	2860	510	1019	63,160
June	580	242	322	19,330
July	510	242	284	17,618
Aug.	No Records			44,700*
Sept.	2440	126	440	26,382
Oct.	200	94	125	7,774
Nov.	126	24	52	3,118
Dec.	17	5	12	758
Total	..	..	..	..

* Estimated.

MACLEAY RIVER AT TURNERS FLAT

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			6,720*
Feb.	185000	80	10114	566,388
Mar.	9990	356	1787	110,774
Apr.	440	242	332	19,916
May	1380	242	459	28,436
June	1820	333	759	45,544
July	25100	333	3313	205,414
Aug.	2060	475	852	52,830
Sept.	10095	287	1477	88,592
Oct.	No Records			227,000*
Nov.	12000	660	3465	207,880
Dec.	3000	333	1164	72,156
Total	..	..	..	1,631,650*

Year 1955

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	9280	440	1592	98,688
Feb.	115000	660	9458	529,668
Mar.	30900	2440	8098	502,080
Apr.	26100	1820	6429	385,732
May	35600	1700	4545	281,816
June	No Records			102,000*
July	No Records			54,400*
Aug.	No Records			46,100*
Sept.	No Records			30,900*
Oct.	No Records			353,000*
Nov.	1430	67	527	31,590
Dec.	3300	287	1178	73,050
Total	..	..	..	2,489,024*

Year 1956

Jan.	No Records			110,000*
Feb.	No Records			1,590,000*
Mar.	No Records			617,000*
Apr.	16000	1035	4652	279,120
May	No Records			286,000*
June	No Records			299,000*
July	3730	740	1760	109,140
Aug.	1110	478	694	43,032
Sept.	670	304	427	25,594
Oct.	1340	254	445	27,592
Nov.	1035	80	272	16,330
Dec.	168	61	126	7,836
Total	..	..	..	3,410,644*

Year 1957

Jan.	No Records			25,700*
Feb.	11400	208	1843	103,220
Mar.	6130	478	1573	97,556
Apr.	478	254	359	21,544
May	254	80	167	10,370
June	134	105	110	6,588
July	168	119	132	8,204
Aug.	1465	119	299	18,542
Sept.	1035	134	321	19,238
Oct.	105	20	50	3,098
Nov.	168	6	67	4,032
Dec.	70	0	16	974
Total	..	..	..	319,066*

Year 1958

Jan.	560	45	221	13,688
Feb.	885	258	534	29,892
Mar.	2450	162	655	40,602
Apr.	1580	162	904	54,232
May	620	196	322	19,944
June	5480	162	1159	69,516
July	1050	273	482	29,882
Aug.	7340	273	1017	63,050
Sept.	900	234	400	24,018
Oct.	1130	162	369	22,894
Nov.	162	45	81	4,878
Dec.	12000	45	1483	91,972
Total	..	..	..	464,568

Year 1959

Jan.	No Records			641,000*
Feb.	No Records			346,000*
Mar.	16500	1615	5524	342,490
Apr.	7340	760	1968	118,060
May	760	365	500	31,028
June	585	278	337	20,198
July	2200	365	946	58,676
Aug.	805	365	532	32,980
Sept.	3040	365	1196	71,748
Oct.	2470	430	858	53,190
Nov.	139334	1030	13830	829,824
Dec.	No Records			195,000*
Total	..	..	..	2,740,194*

* Estimated.

MACLEAY RIVER AT TURNER'S FLAT

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	4150	300	1201	74,450
Feb.	No Records			115,000*
Mar.	16700	990	3643	225,880
Apr.	1350	590	1042	62,520
May	1470	360	563	34,910
June	910	430	601	36,040
July	1710	510	861	53,380
Aug.	No Records			53,800*
Sept.	510	180	245	14,680
Oct.	430	120	214	13,260
Nov.	1230	80	267	15,990
Dec.	590	135	231	14,340
Total	..	..	..	714,250*

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	590	110	243	15,050
Feb.	8930	150	1310	73,380
Mar.	970	325	541	33,560
Apr.	740	300	430	25,790
May	350	175	224	13,874
June	2650	250	1061	63,690
July	410	210	304	18,840
Aug.	470	210	343	21,280
Sept.	470	210	321	19,260
Oct.	3370	175	1010	62,680
Nov.	No Records			170,000*
Dec.	No Records			195,000*
Total	..	..	..	712,404*

Year 1962

Jan.	No Records			555,000*
Feb.	2650	740	1485	83,180
Mar.	5180	530	1935	120,000
Apr.	112500	1300	10873	652,410
May	12500	1210	2873	175,900
June	1850	690	1061	63,670
July	118200	620	8018	497,140
Aug.	3230	970	1526	94,660
Sept.	1130	440	707	42,400
Oct.	No Records			68,200*
Nov.	830	195	366	22,000
Dec.	25500	140	2842	176,208
Total	..	..	..	2,550,768*

Year 1963

Jan.	51900	830	6859	425,270
Feb.	2150	690	1139	63,810
Mar.	14500	690	3306	204,950
Apr.	62800	760	7018	421,070
May	No Records			1,750,000*
June	No Records			157,000*
July	4200	825	1541	95,540
Aug.	9000	605	1344	83,330
Sept.	18000	380	1905	114,284
Oct.	4350	605	1500	92,996
Nov.	2140	535	1118	67,090
Dec.	10640	825	3655	226,630
Total	..	..	..	3,701,970*

Year 1964

Jan.	55000	570	3970	246,000
Feb.	3900	1210	1821	106,000
Mar.	61000	1690	6687	415,000
Apr.	18000	1690	3704	222,000
May	1470	470	793	49,200
June	750	470	524	31,400
July	10000	410	1504	93,250
Aug.	1300	253	418	25,900
Sept.	670	175	260	15,600
Oct.	2940	245	886	54,900
Nov.	300	160	211	12,700
Dec.	910	40	154	9,562
Total	..	..	..	1,281,512

Year 1965

Jan.	200	40	78	4,832
Feb.	222	73	133	7,468
Mar.	430	20	84	5,218
Apr.	92	13	46	2,748
May	55	30	43	2,650
June	40	25	29	1,760
July	24000	40	1785	111,000
Aug.	750	130	295	18,300
Sept.	220	90	148	8,890
Oct.	250	55	94	5,810
Nov.	70	10	37	2,250
Dec.	14500	360	3353	208,000
Total	..	..	..	378,926

* Estimated.

MACLEAY RIVER AT TURNER'S FLAT

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.	430	70	163	10,100	Jan.	5330	35	1463	90,700
Feb.	1150	55	329	18,400	Feb.	5180	365	1273	71,300
Mar.	510	90	187	11,600	Mar.	19250	967	5159	320,000
Apr.	140	40	76	4,540	Apr.	12000	805	3778	227,000
May	87	57	71	4,430	May	740	315	476	29,500
June	80	57	69	4,150	June	171000	215	20993	1,260,000
July	65	40	51	3,150	July				
Aug.	105	40	55	3,420	Aug.				
Sept.	190	45	83	5,000	Sept.				
Oct.	910	35	217	13,500	Oct.				
Nov.	6130	85	756	45,300	Nov.				
Dec.	76	15	36	2,200	Dec.				
Total	..	..	..	125,790	Total				

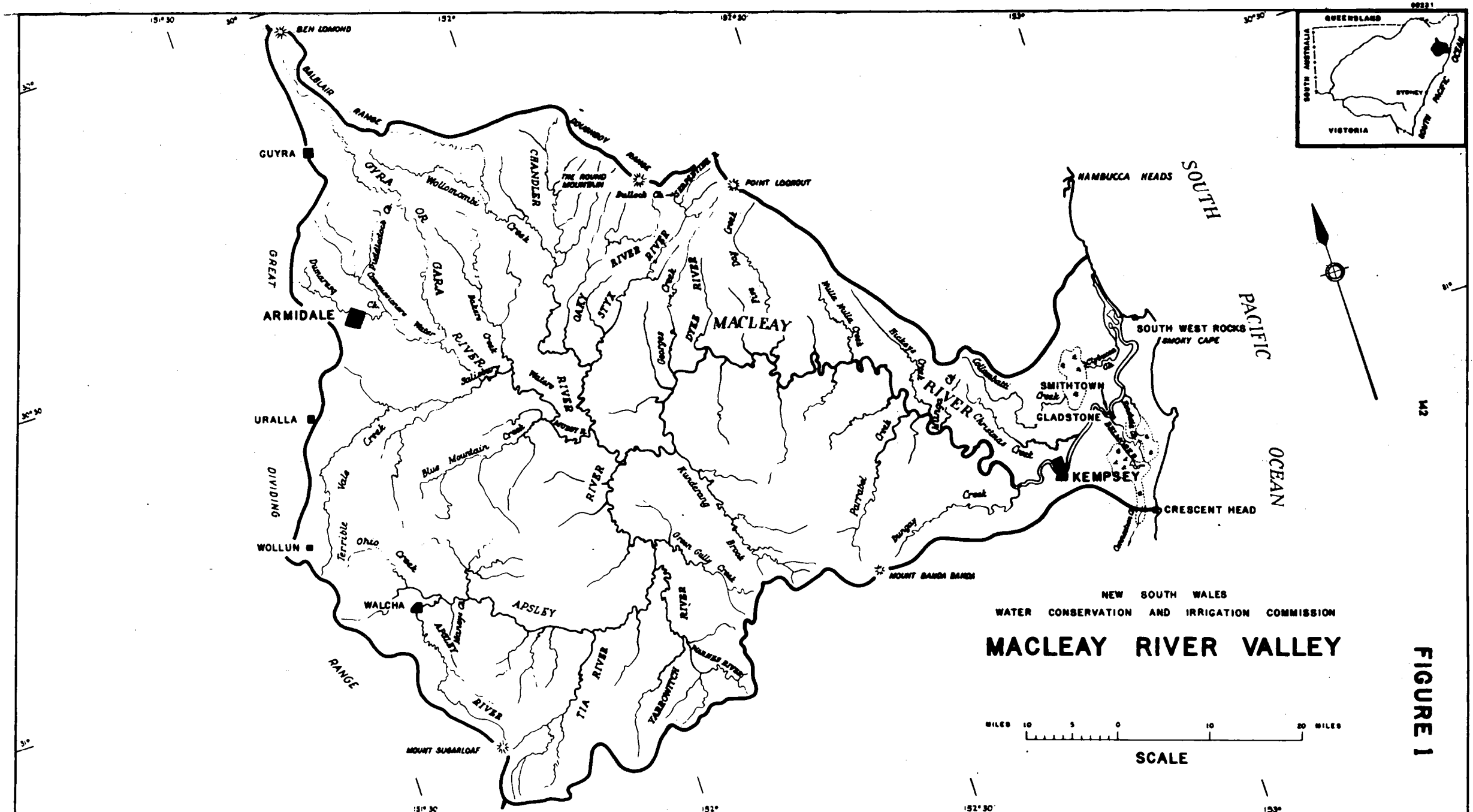

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
SCALE
MILES 10 5 0 10 20 MILES
BEN LOMOND
BALBLAIR RANGE
GUYRA
ARMIDALE
URALLA
WOLLUN
WALCHA
GREAT DIVIDING RANGE
GUYRA
OR GARA RIVER
Wollomombi Creek
CHANDLER
THE ROUND MOUNTAIN
POINT LOOKOUT
MACLEAY
OAKY
STYX
DYLE
Pole Pole Creek
Ridgeyard Creek
Gillenbatin
Christmas Creek
Kundarong Brook
Orara Gully Creek
Parrabel Creek
Bungay Creek
Blue Mountain Creek
Terrible Vale Creek
Ohio Creek
APSLEY
TIA RIVER
TABBOWITCH
MOUNT SUBARLOAF
MOUNT BANDA BANDA
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
SMITHTOWN
GLADSTONE
KEMPSEY
CRESCENT HEAD
SOUTH PACIFIC OCEAN
QUEENSLAND
SOUTH AUSTRALIA
VICTORIA
SYDNEY
SOUTH PACIFIC OCEAN
151° 30'
152°
152° 30'
153°
30°
30° 30'
31°
31° 30'

FIGURE 1

142

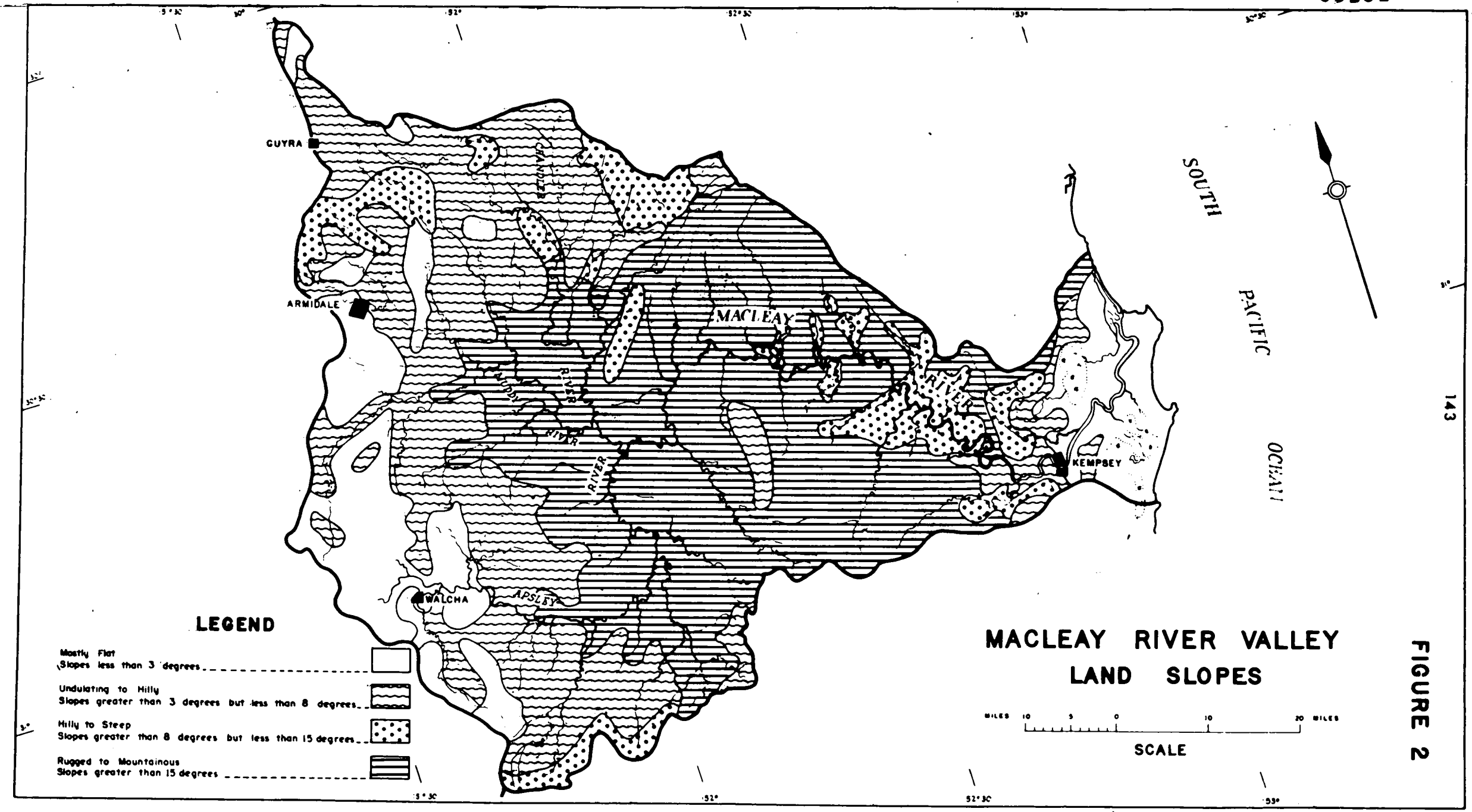

GUYRA
ARMIDALE
MACLEAY
RIVER
KEMPSEY
WALCHA
APSLEY
SOUTH
PACIFIC
OCEAN
LEGEND
Mostly Flat
Slopes less than 3 degrees
Undulating to Hilly
Slopes greater than 3 degrees but less than 8 degrees
Hilly to Steep
Slopes greater than 8 degrees but less than 15 degrees
Rugged to Mountainous
Slopes greater than 15 degrees
MACLEAY RIVER VALLEY
LAND SLOPES
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 2

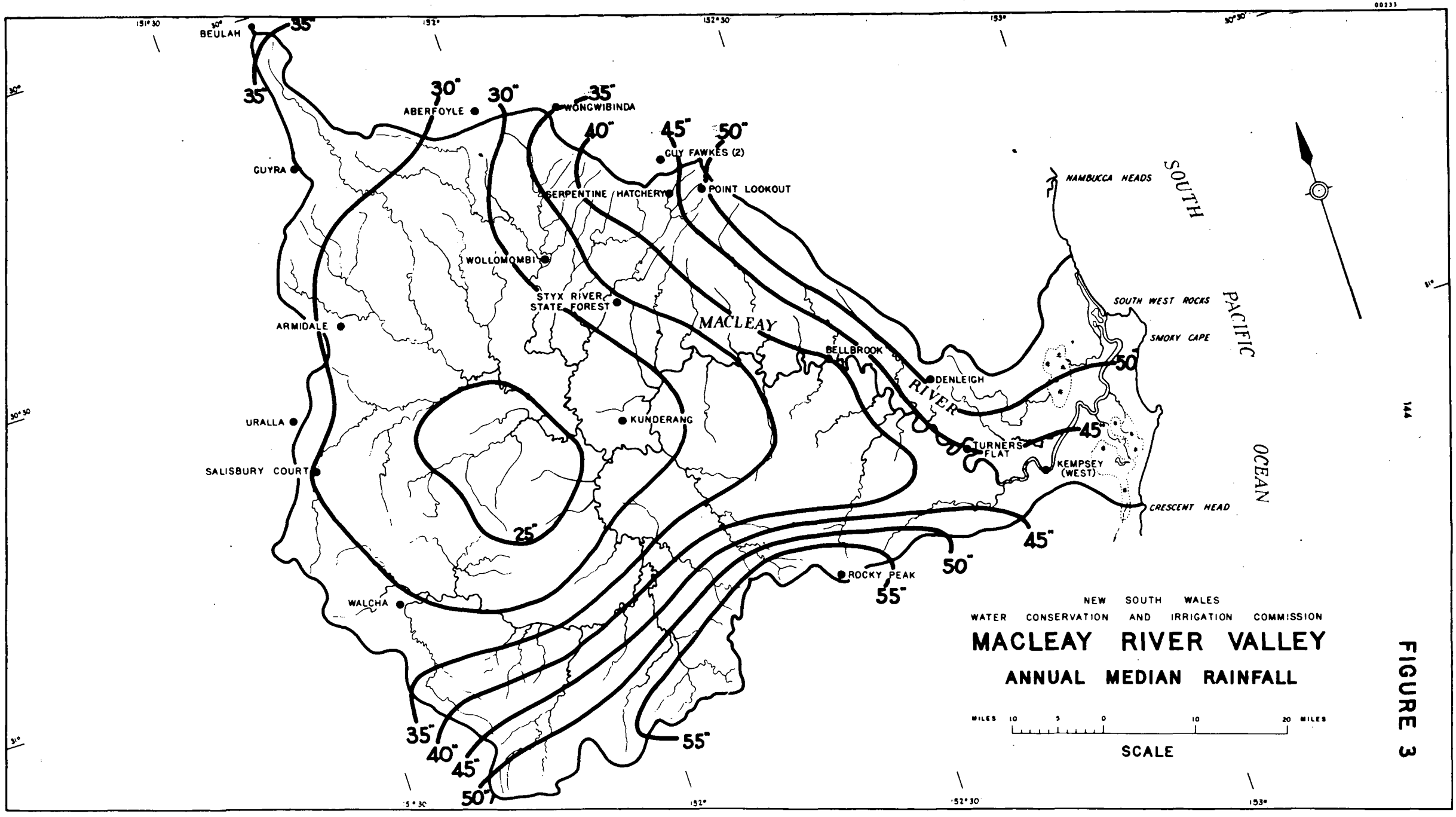

BEULAH
ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
POINT LOOKOUT
GUYRA
SERPENTINE HATCHERY
WOLLOMOMBI
STYX RIVER STATE FOREST
MACLEAY
RIVER
ARMIDALE
BELLBROOK
DENLEIGH
URALLA
KUNDERANG
TURNERS FLAT
KEMPSEY (WEST)
SALISBURY COURT
ROCKY PEAK
WALCHA
NAMBUCKA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
SOUTH PACIFIC OCEAN
35"
30"
40"
45"
50"
55"
25"
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
ANNUAL MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 3

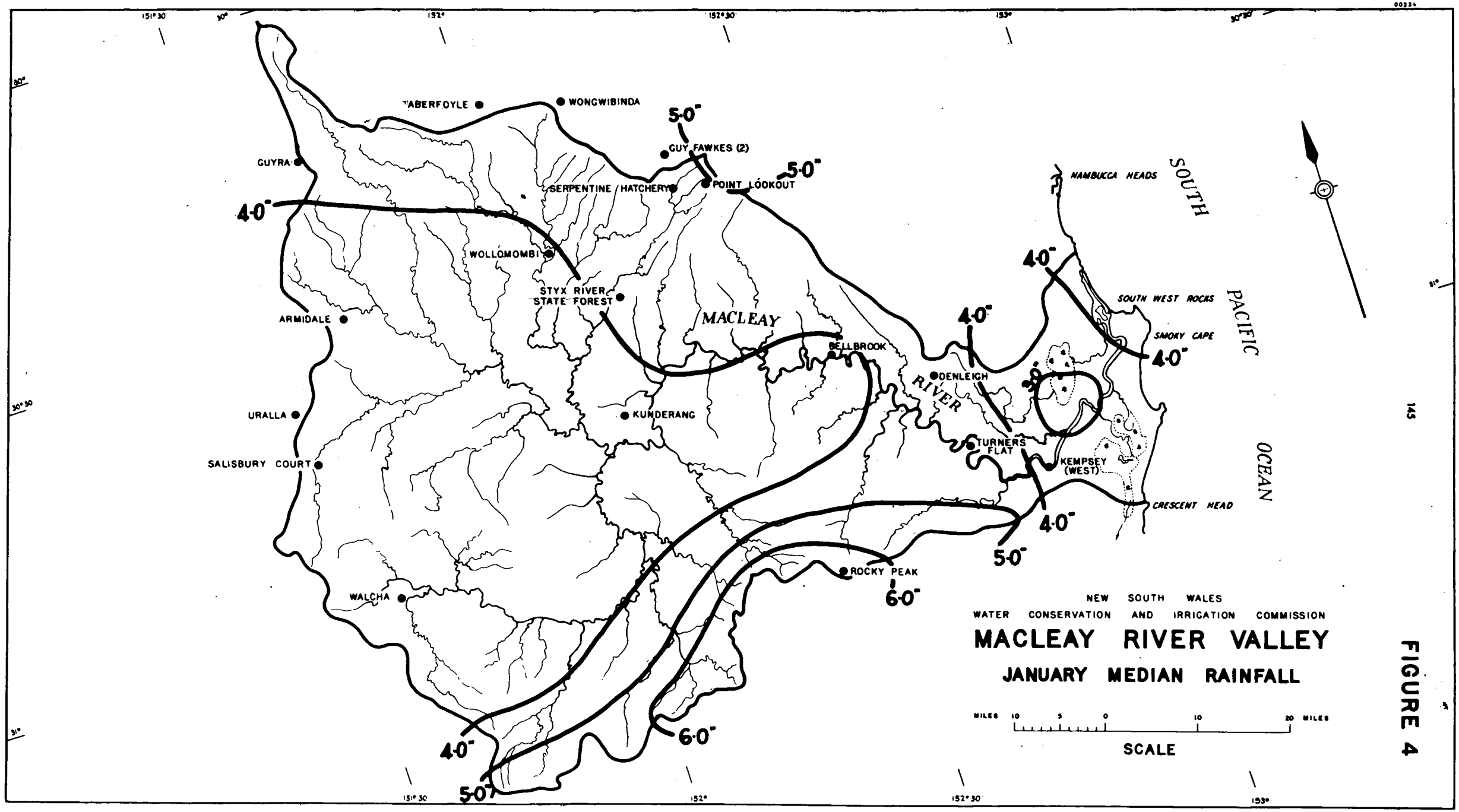

ABERFOYLE
WONGWIBINDA
GUYRA
GUY FAWKES (2)
SERPENTINE HATCHERY
POINT LOOKOUT
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
MACLEAY
BELLBROOK
DENLEIGH
RIVER
URALLA
KUNDERANG
SALISBURY COURT
TURNERS FLAT
KEMPSEY (WEST)
WALCHA
ROCKY PEAK
NAMBUCCA HEADS
SOUTH
SOUTH WEST ROCKS
SMOKY CAPE
PACIFIC
OCEAN
CRESCENT HEAD
4·0"
5·0"
5·0"
4·0"
4·0"
4·0"
4·0"
5·0"
6·0"
6·0"
4·0"
5·0"
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
JANUARY MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE
151° 30
152°
152° 30'
153°
30°
30° 30'
31°

FIGURE 4

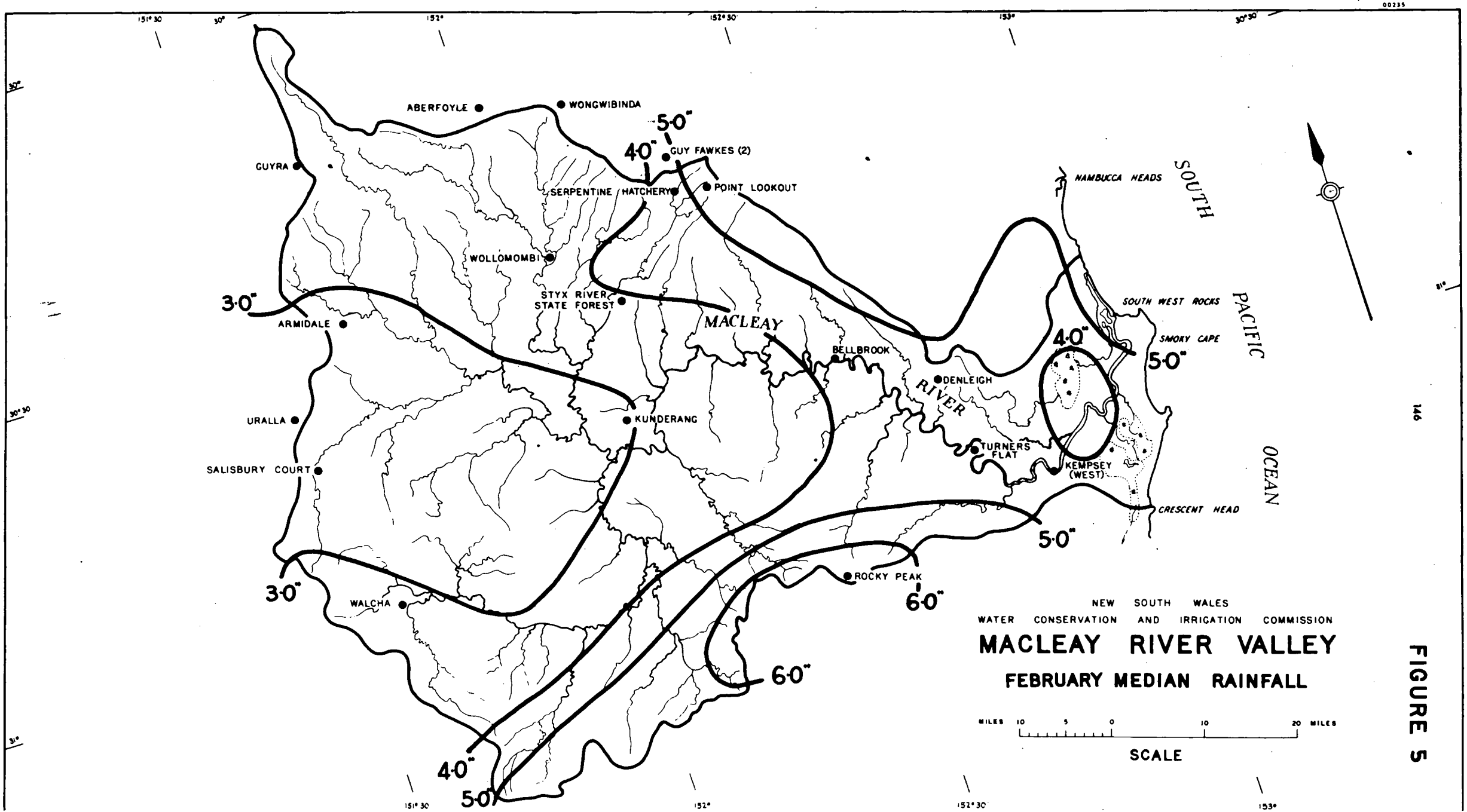

ABERFOYLE
WONGWIBINDA
GUYRA
GUY FAWKES (2)
POINT LOOKOUT
SERPENTINE HATCHERY
WOLLOMOMBI
STYX RIVER STATE FOREST
MACLEAY
ARMIDALE
BELLBROOK
DENLEIGH
RIVER
URALLA
KUNDERANG
TURNERS FLAT
KEMPSEY (WEST)
SALISBURY COURT
ROCKY PEAK
WALCHA
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
SOUTH PACIFIC OCEAN
3·0"
4·0"
5·0"
6·0"
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
FEBRUARY MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 5

146

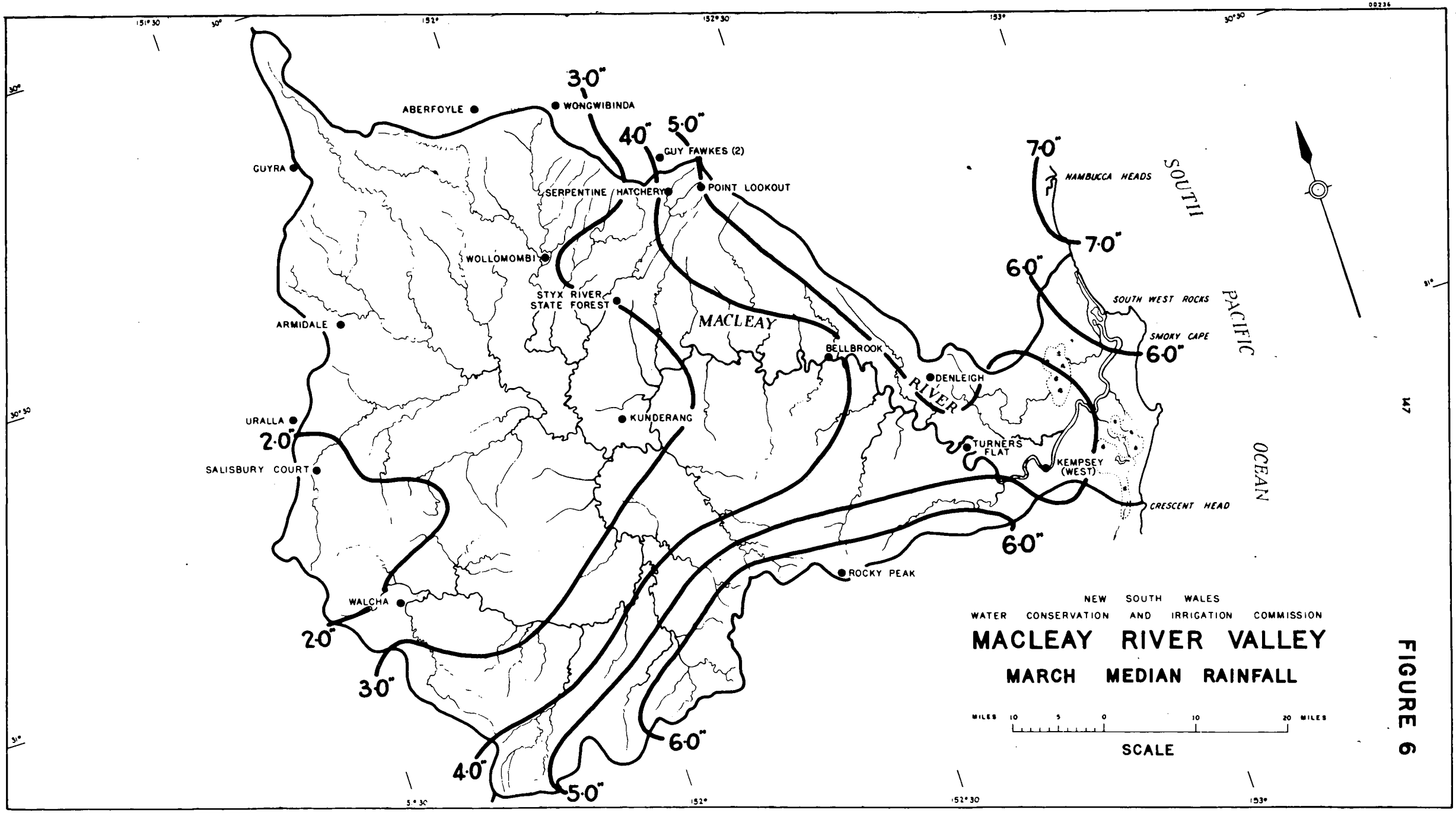

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
MARCH MEDIAN RAINFALL
SCALE
MILES 10 5 0 10 20 MILES
MACLEAY RIVER
SOUTH PACIFIC OCEAN
ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
POINT LOOKOUT
SERPENTINE HATCHERY
GUYRA
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
URALLA
SALISBURY COURT
KUNDERANG
BELLBROOK
DENLEIGH
TURNERS FLAT
KEMPSEY (WEST)
ROCKY PEAK
WALCHA
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
3·0"
4·0"
5·0"
7·0"
7·0"
6·0"
6·0"
2·0"
2·0"
3·0"
4·0"
5·0"
6·0"
6·0"
151° 30
30°
152°
152° 30
153°
30° 30
31°
30° 50
5° 30

FIGURE 6

147

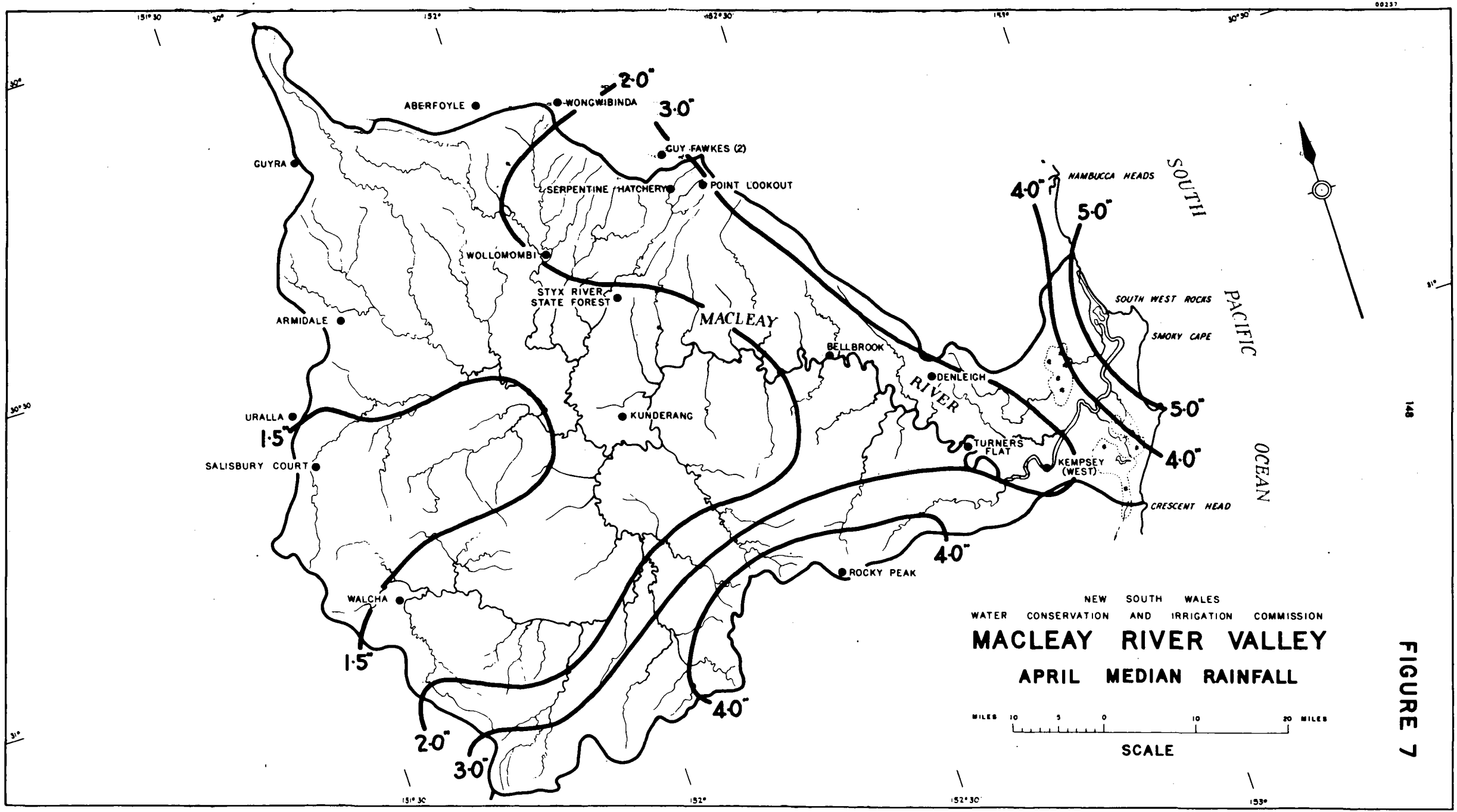
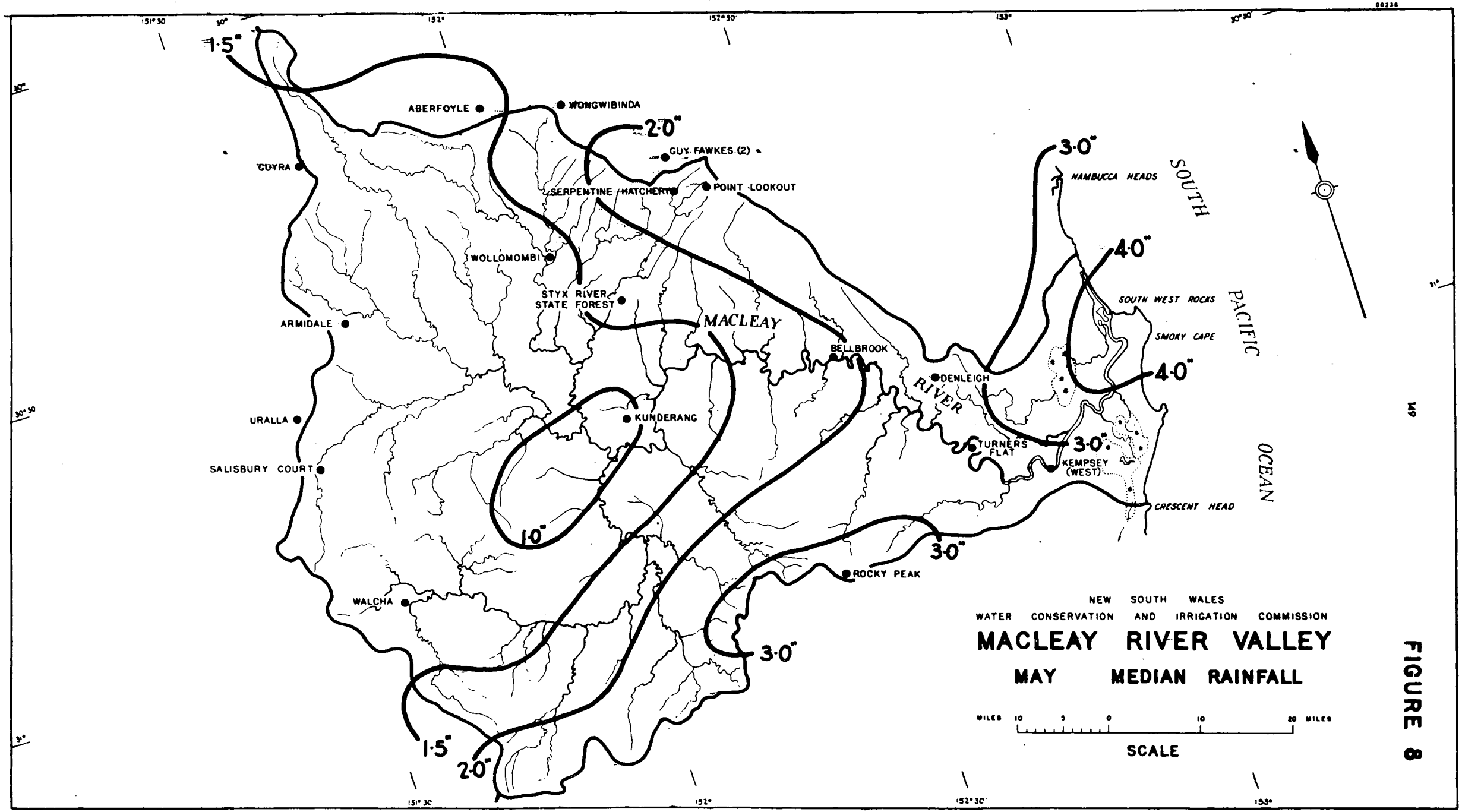

ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
POINT LOOKOUT
SERPENTINE HATCHERY
GUYRA
WOLLOMOMBI
STYX RIVER STATE FOREST
MACLEAY
ARMIDALE
BELLBROOK
DENLEIGH
RIVER
URALLA
KUNDERANG
SALISBURY COURT
TURNERS FLAT
KEMPSEY (WEST)
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
SOUTH PACIFIC OCEAN
ROCKY PEAK
WALCHA
2·0"
3·0"
4·0"
5·0"
1·5"
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
APRIL MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 7



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

MACLEAY RIVER VALLEY

MAY MEDIAN RAINFALL

FIGURE 8

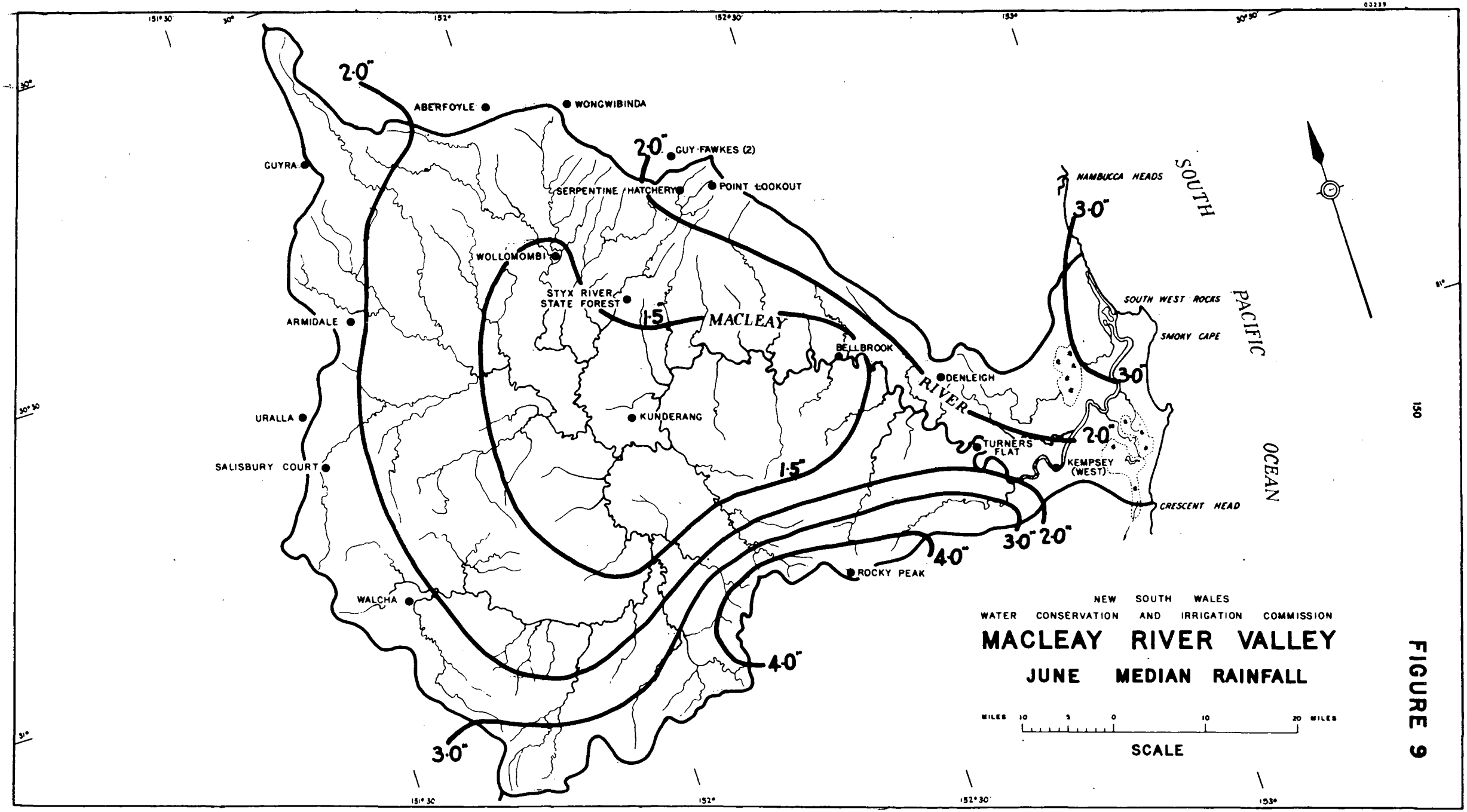

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
JUNE MEDIAN RAINFALL
SCALE
MILES 10 5 0 10 20 MILES
MACLEAY
RIVER
SOUTH PACIFIC OCEAN
ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
POINT LOOKOUT
SERPENTINE HATCHERY
GUYRA
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
URALLA
SALISBURY COURT
KUNDERANG
BELLBROOK
DENLEIGH
TURNERS FLAT
KEMPSEY (WEST)
ROCKY PEAK
WALCHA
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
2·0"
1·5"
3·0"
4·0"
151° 30'
152°
152° 30'
153°
30°
30° 30'
31°

FIGURE 9

150

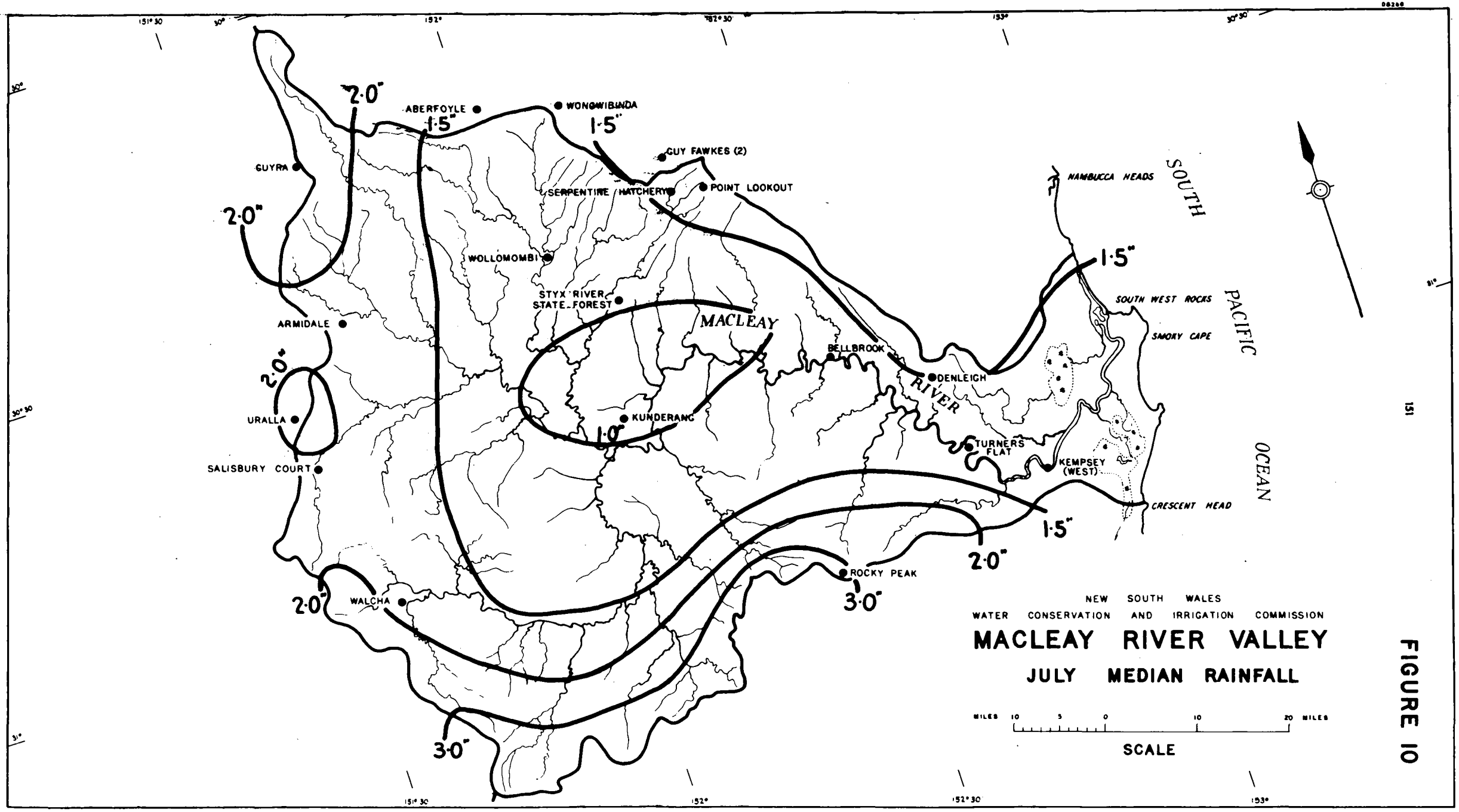

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
JULY MEDIAN RAINFALL
SCALE
MILES 10 5 0 10 20 MILES
MACLEAY
RIVER
SOUTH PACIFIC OCEAN
ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
SERPENTINE HATCHERY
POINT LOOKOUT
GUYRA
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
URALLA
SALISBURY COURT
KUNDERANG
BELLBROOK
DENLEIGH
TURNERS FLAT
KEMPSEY (WEST)
ROCKY PEAK
WALCHA
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
1·5"
2·0"
1·0"
3·0"
151° 30
152°
152° 30
153°
30°
30° 30
31°

FIGURE 10

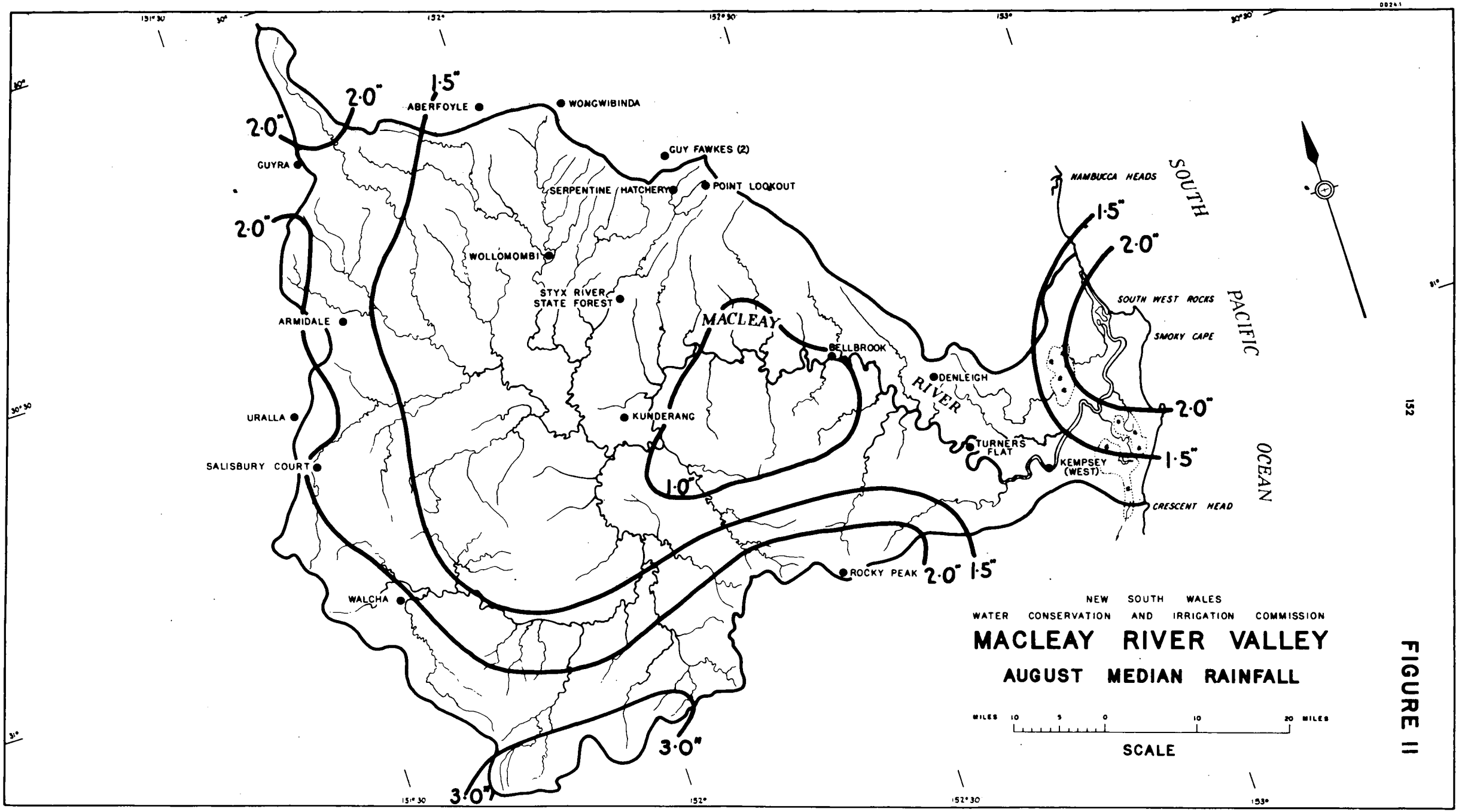
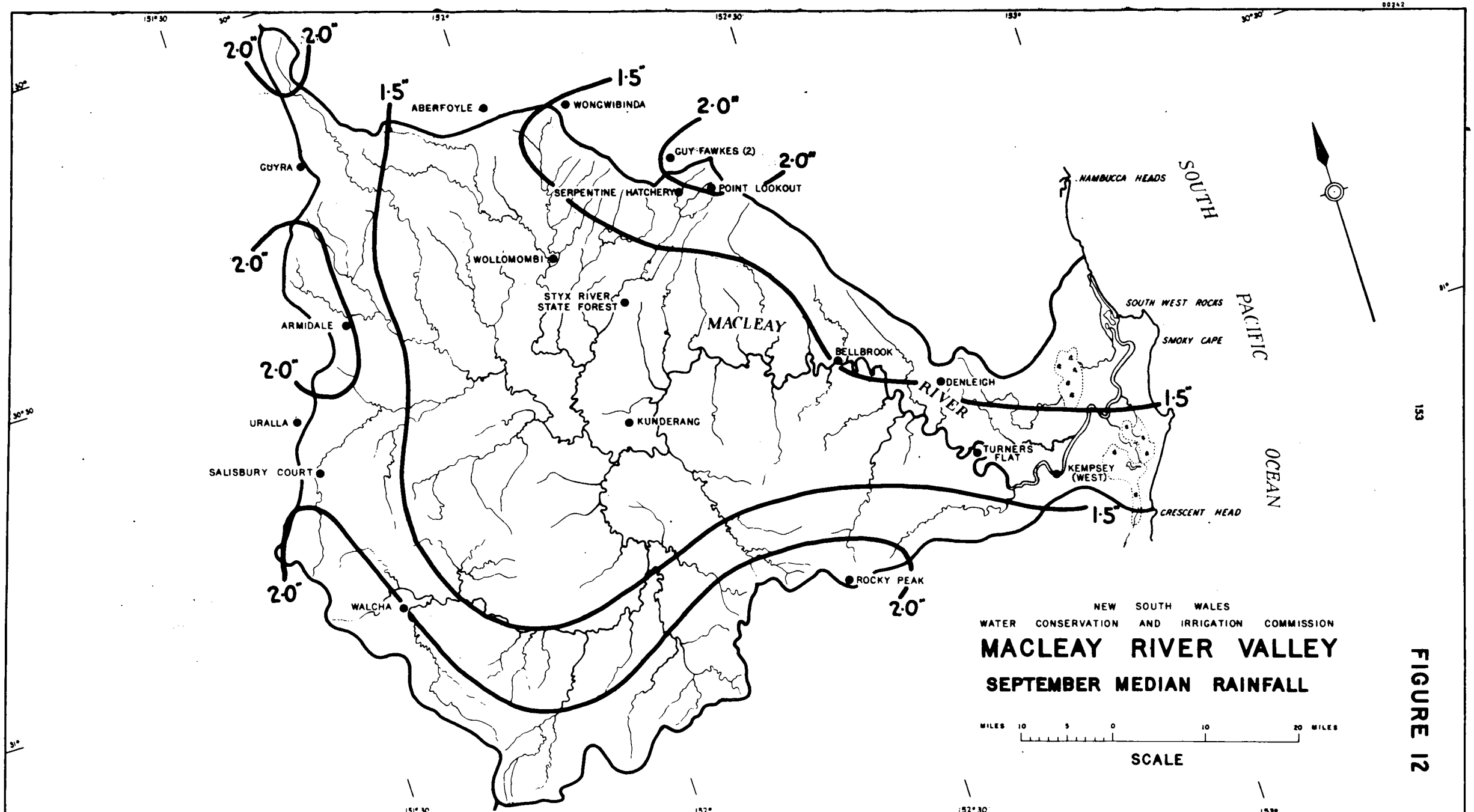


FIGURE 11

152



NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

MACLEAY RIVER VALLEY

SEPTEMBER MEDIAN RAINFALL

FIGURE 12

153

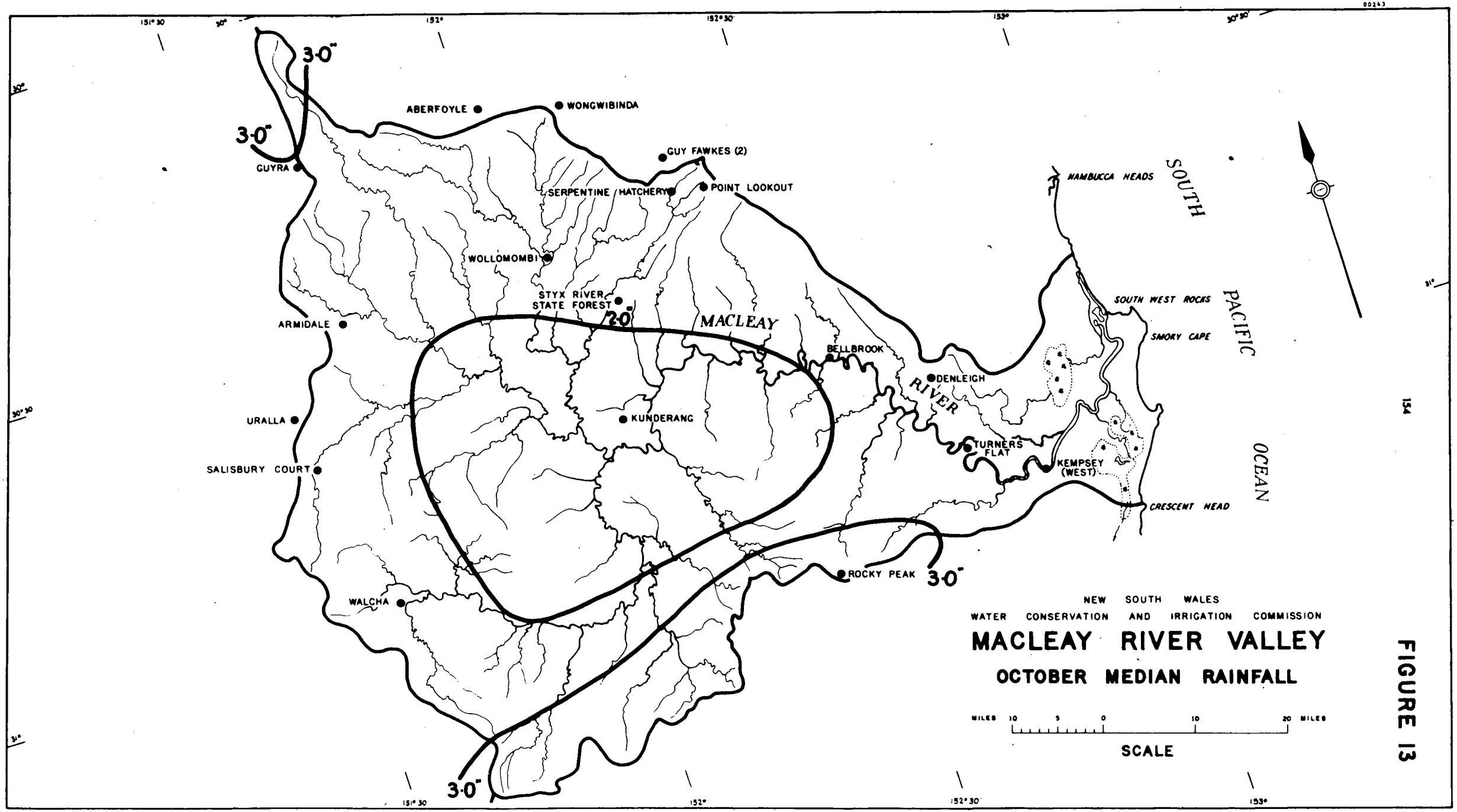


FIGURE 13

154

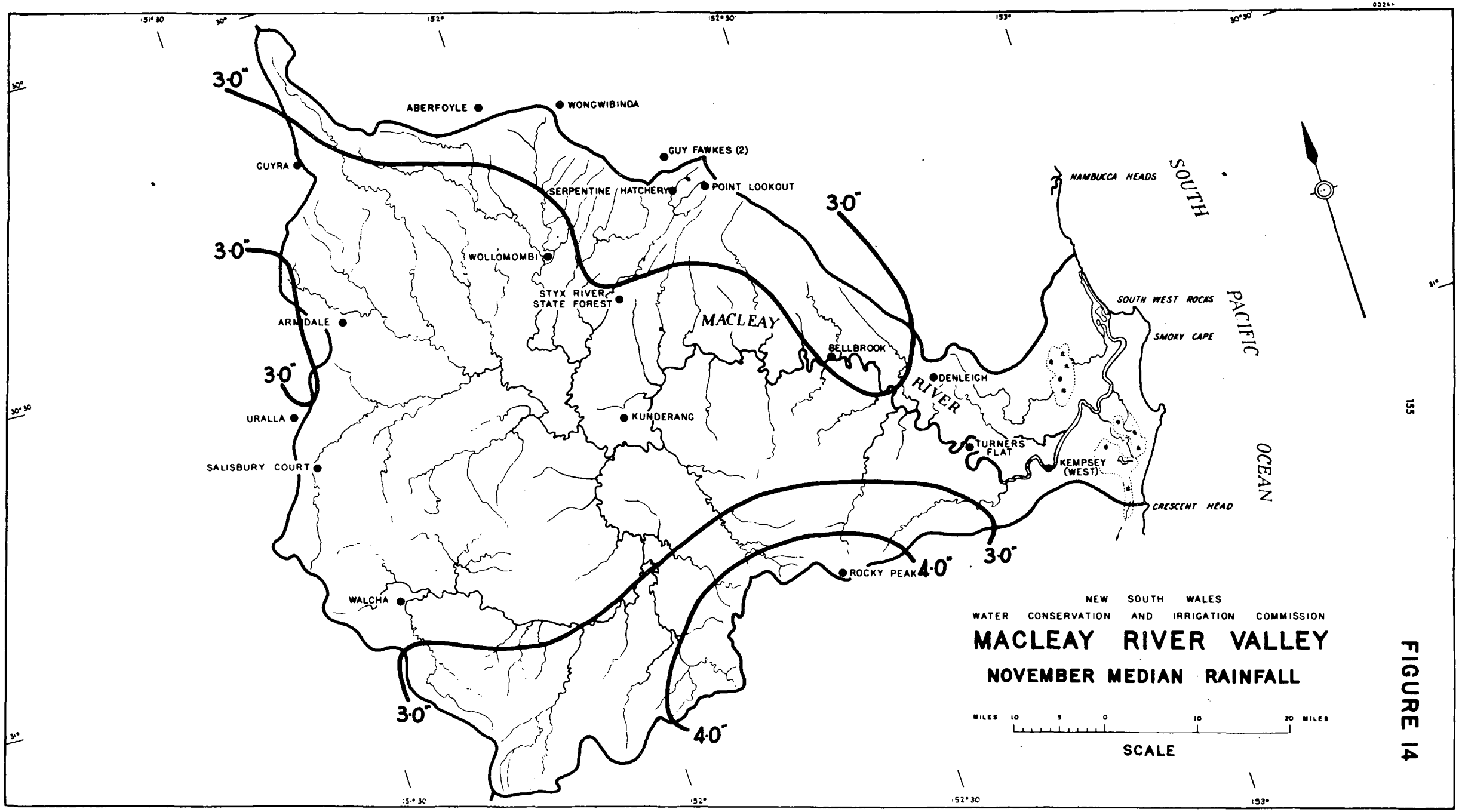

3·0"
3·0"
3·0"
3·0"
3·0"
3·0"
4·0"
4·0"
ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
GUYRA
SERPENTINE HATCHERY
POINT LOOKOUT
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
MACLEAY
BELLBROOK
DENLEIGH
RIVER
URALLA
KUNDERANG
TURNERS FLAT
KEMPSEY (WEST)
SALISBURY COURT
ROCKY PEAK
WALCHA
NAMBUCCA HEADS
SOUTH
SOUTH WEST ROCKS
SMOKY CAPE
PACIFIC
OCEAN
CRESCENT HEAD
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
NOVEMBER MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 14

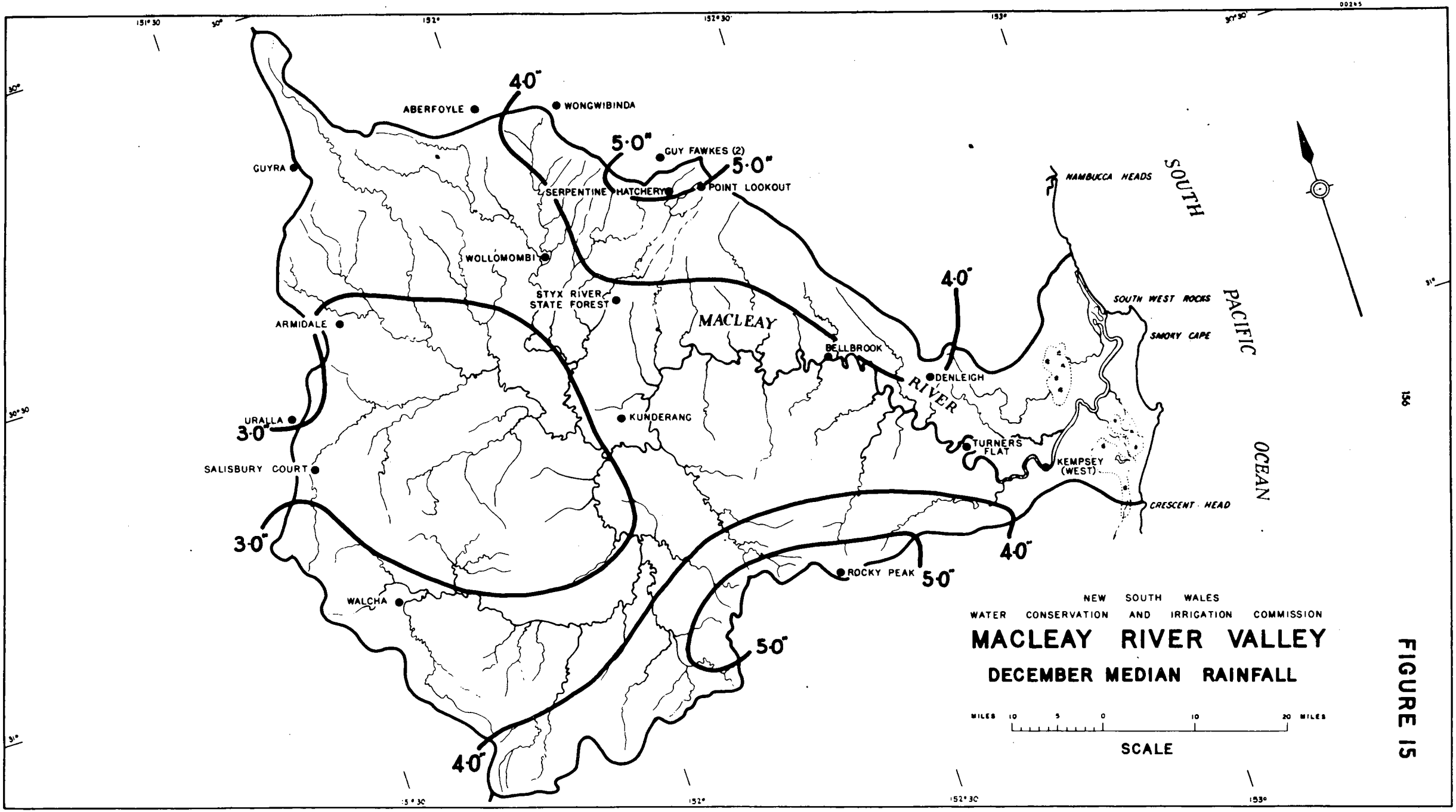
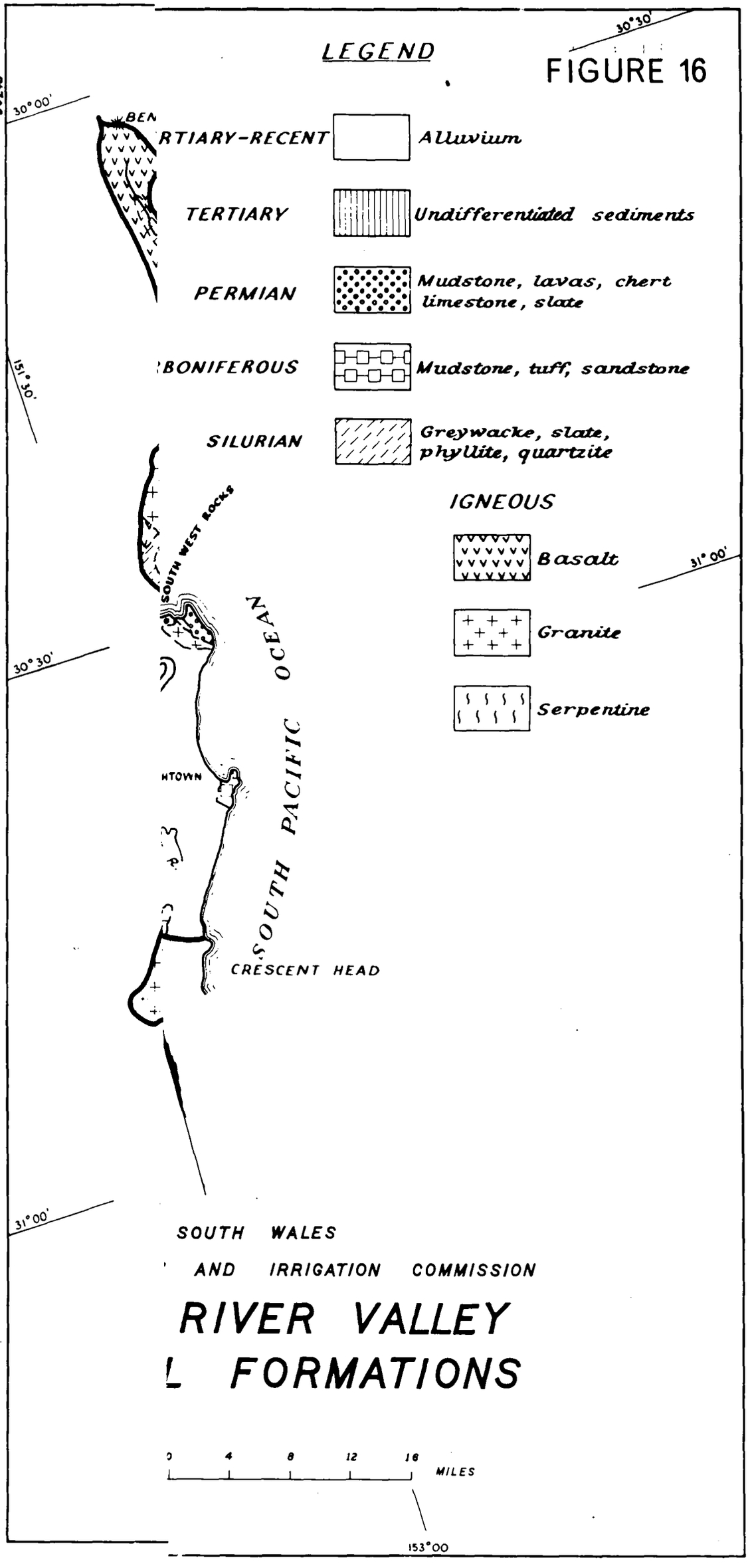

ABERFOYLE
WONGWIBINDA
GUY FAWKES (2)
POINT LOOKOUT
SERPENTINE HATCHERY
GUYRA
WOLLOMOMBI
STYX RIVER STATE FOREST
ARMIDALE
MACLEAY
RIVER
BELLBROOK
DENLEIGH
URALLA
KUNDERANG
SALISBURY COURT
TURNERS FLAT
KEMPSEY (WEST)
WALCHA
ROCKY PEAK
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
SOUTH PACIFIC OCEAN
4·0"
5·0"
5·0"
4·0"
3·0"
3·0"
4·0"
5·0"
5·0"
4·0"
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
DECEMBER MEDIAN RAINFALL
MILES 10 5 0 10 20 MILES
SCALE

FIGURE 15


LEGEND
FIGURE 16
30°30'
30°00'
151°30'
30°30'
31°00'
31°00'
153°00
RTIARY-RECENT
Alluvium
TERTIARY
Undifferentiated sediments
PERMIAN
Mudstone, lavas, chert limestone, slate
BONIFEROUS
Mudstone, tuff, sandstone
SILURIAN
Greywacke, slate, phyllite, quartzite
IGNEOUS
Basalt
Granite
Serpentine
SOUTH WEST ROCKS
SOUTH PACIFIC OCEAN
HTOWN
CRESCENT HEAD
SOUTH WALES
AND IRRIGATION COMMISSION
RIVER VALLEY
L FORMATIONS
0 4 8 12 16
MILES

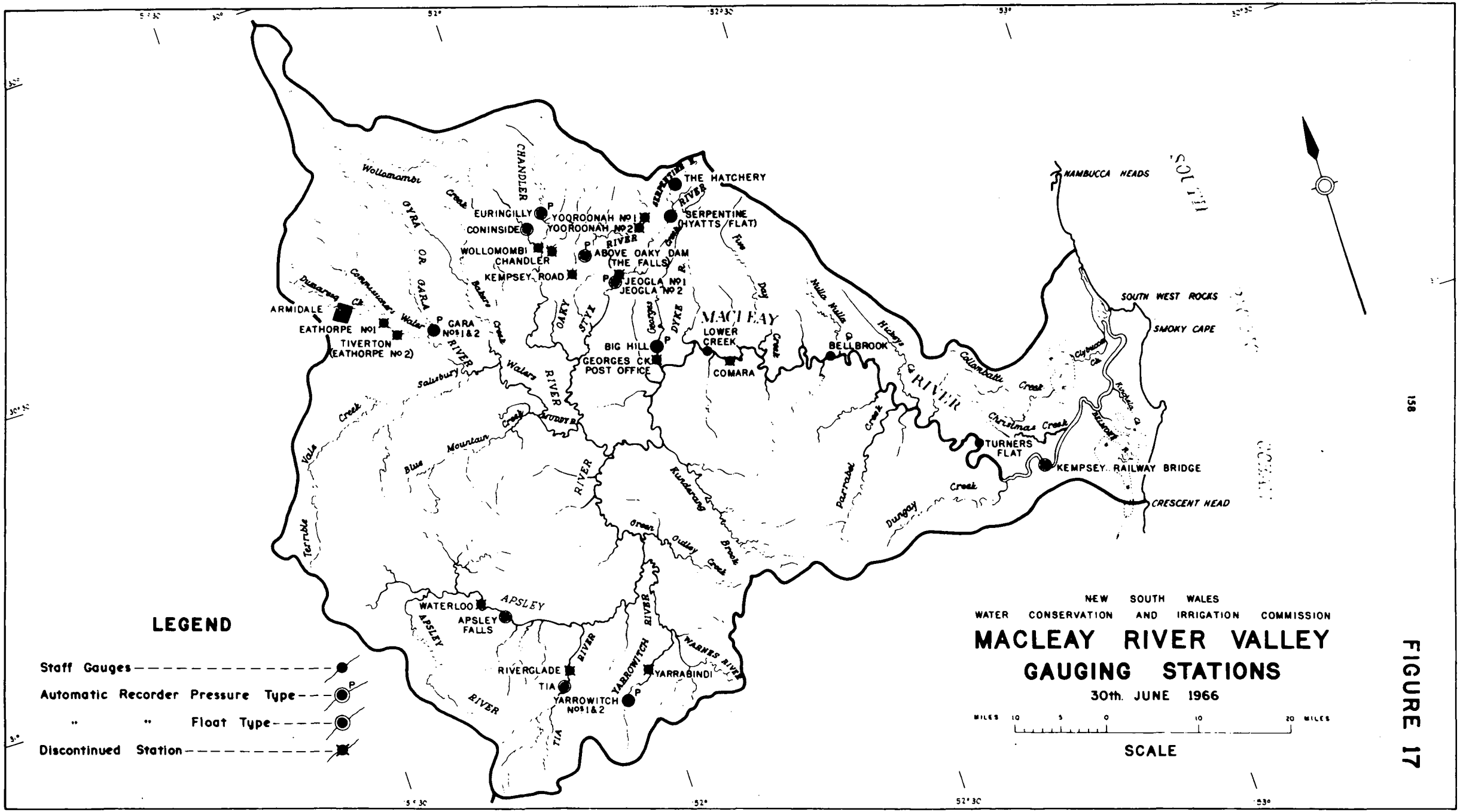
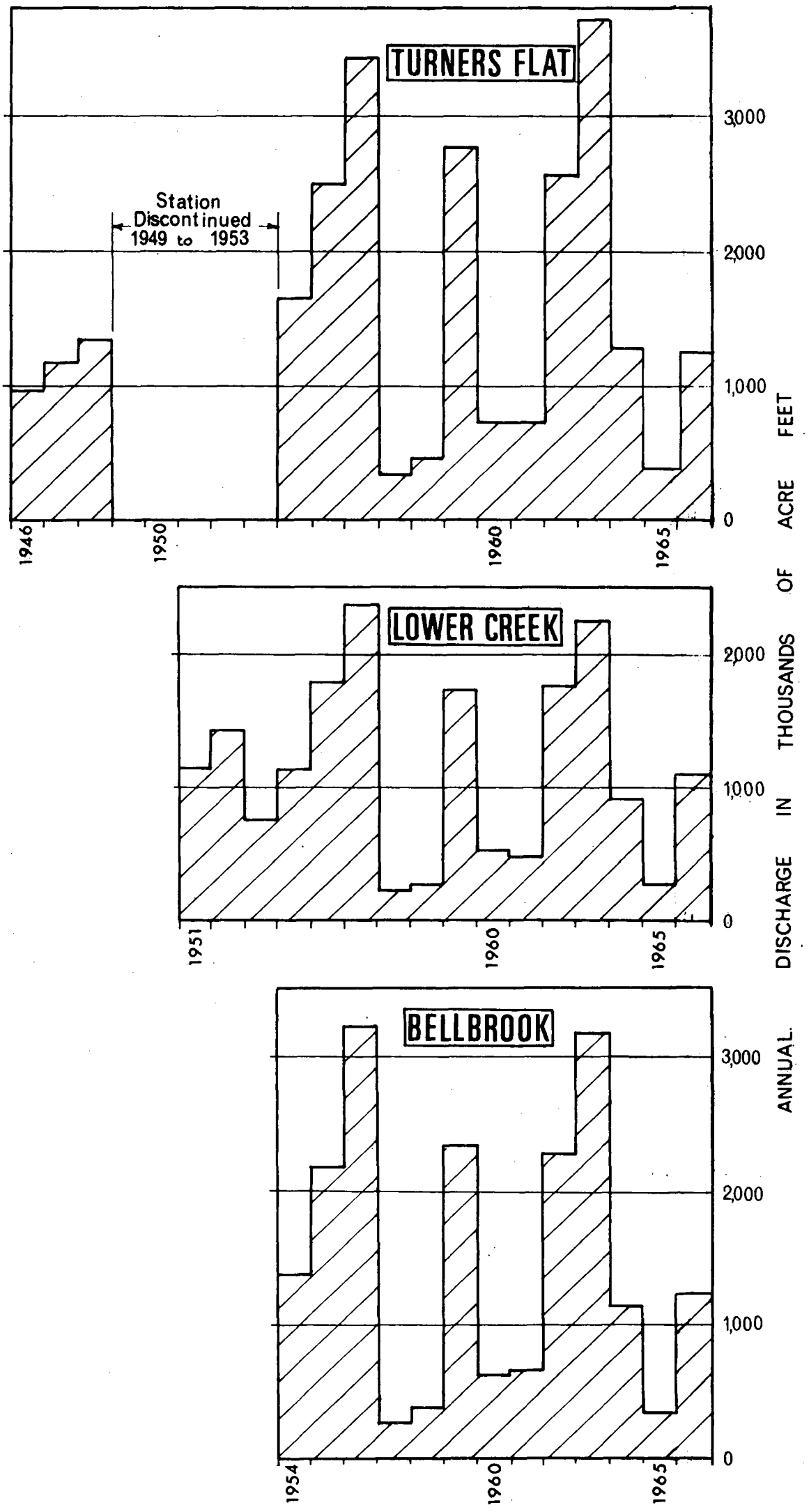

MACLEAY RIVER VALLEY
GAUGING STATIONS
30th. JUNE 1966
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
SCALE
MILES 10 5 0 10 20 MILES
LEGEND
Staff Gauges
Automatic Recorder Pressure Type
" " Float Type
Discontinued Station
THE HATCHERY
SERPENTINE (HYATTS FLAT)
EURINGILLY
CONINSIDE
YOOROONAH No 1
YOOROONAH No 2
WOLLOMOMBI CHANDLER
ABOVE OAKY DAM (THE FALLS)
KEMPSEY ROAD
JEOGLA No 1
JEOGLA No 2
ARMIDALE
EATHORPE No 1
TIVERTON (EATHORPE No 2)
GARA Nos 1 & 2
BIG HILL
GEORGES CK POST OFFICE
LOWER CREEK
COMARA
BELLBROOK
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
TURNERS FLAT
KEMPSEY RAILWAY BRIDGE
CRESCENT HEAD
WATERLOO
APSLEY FALLS
RIVERGLADE
TIA
YARROWITCH Nos 1 & 2
YARRABINDI
MACLEAY RIVER
APSLEY RIVER
TIA RIVER
YARROWITCH RIVER
NARAN RIVER
OYRA OR GARA RIVER
CHANDLER RIVER
OAKY RIVER
DYKE RIVER
Wollomombi Creek
Dumaresq Ck
Commissioners Water
Salisbury Creek
Bakers Creek
Waters Creek
Yale Creek
Blue Mountain Creek
Terrible Creek
Kundarang Brook
Oudley Creek
Parrabel Creek
Dungay Creek
Christmas Creek
Collombatti Creek
Hickeys Creek
Nulla Nulla Creek
Fine Day Creek
Clybucca Ck
Kochia Creek
Kinchela Creek

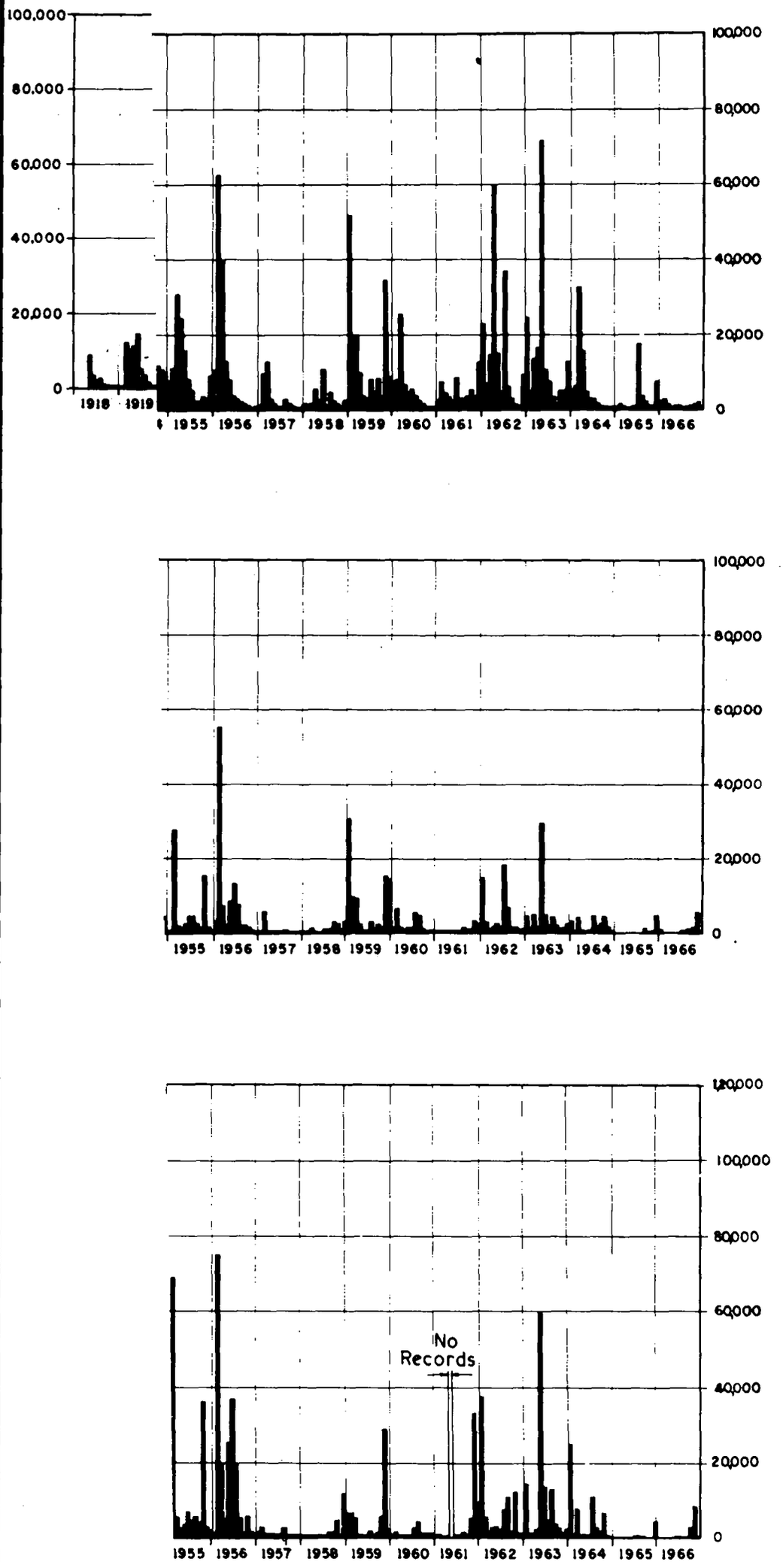
FIGURE 17

FIGURE 18



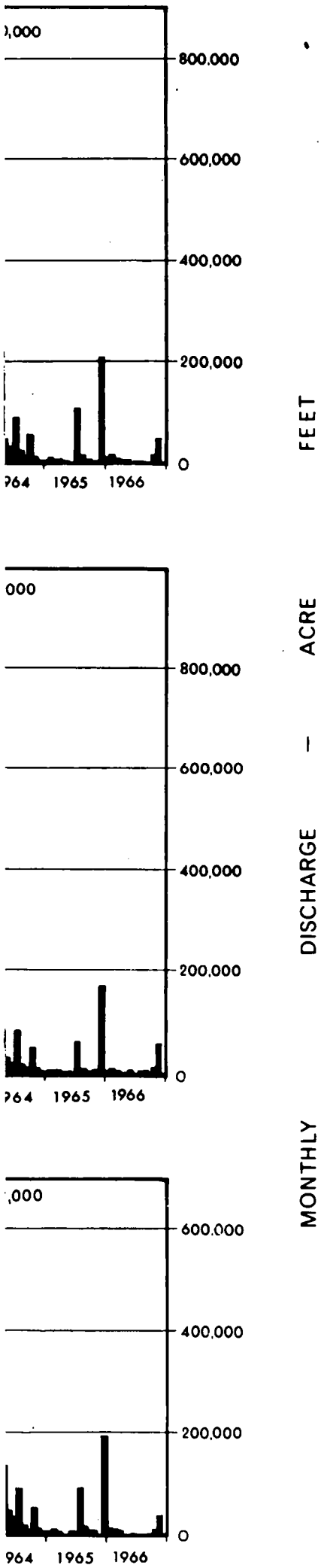
ANNUAL DISCHARGES - MACLEAY RIVER
AT TURNERS FLAT, LOWER CREEK & BELLBROOK

FIGURE 19



STYX FOR
RIVER AT APSLEY FALLS

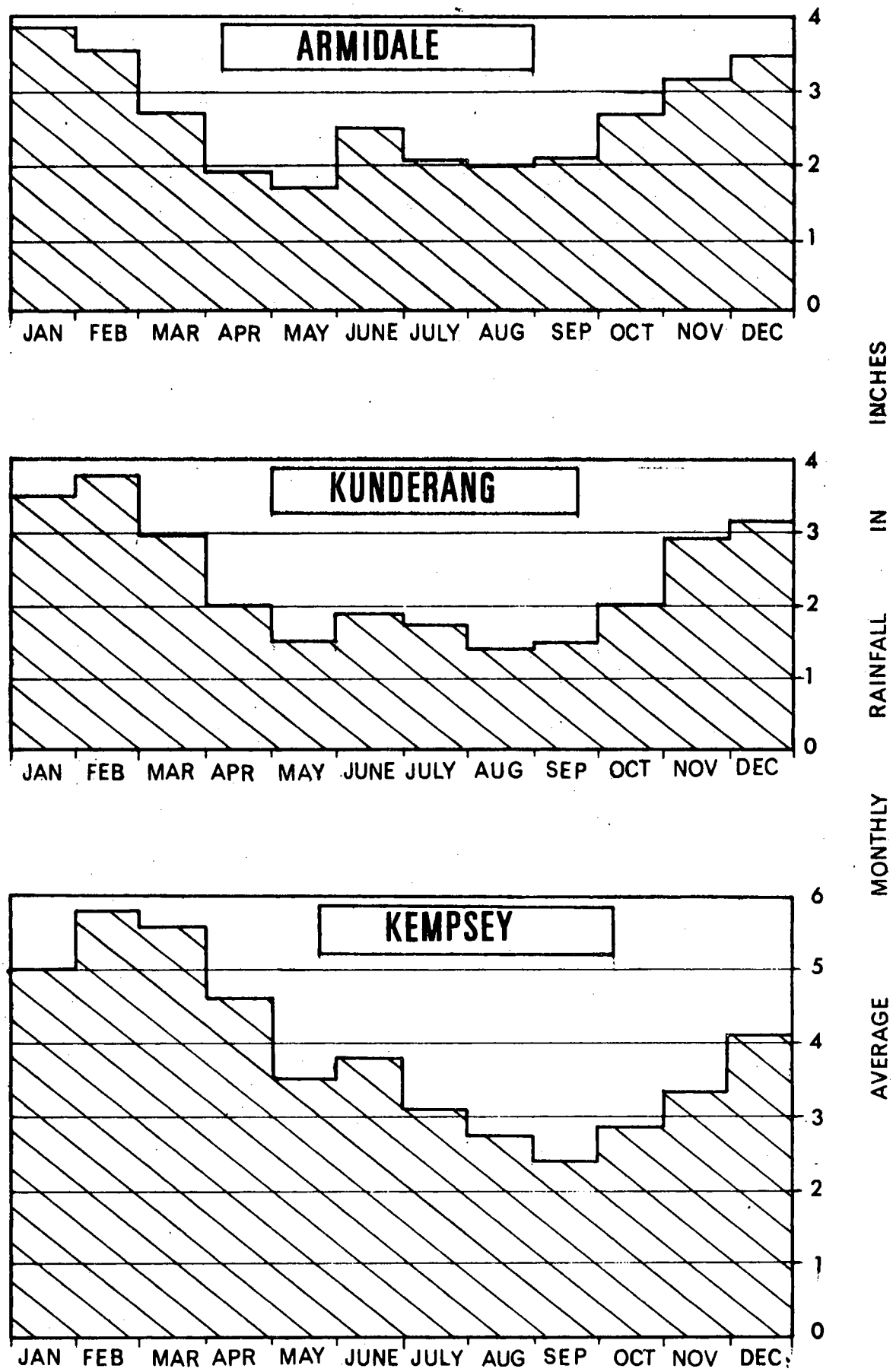
FIGURE 20



MONTHLY DISCHARGE — ACRE FEET

GES

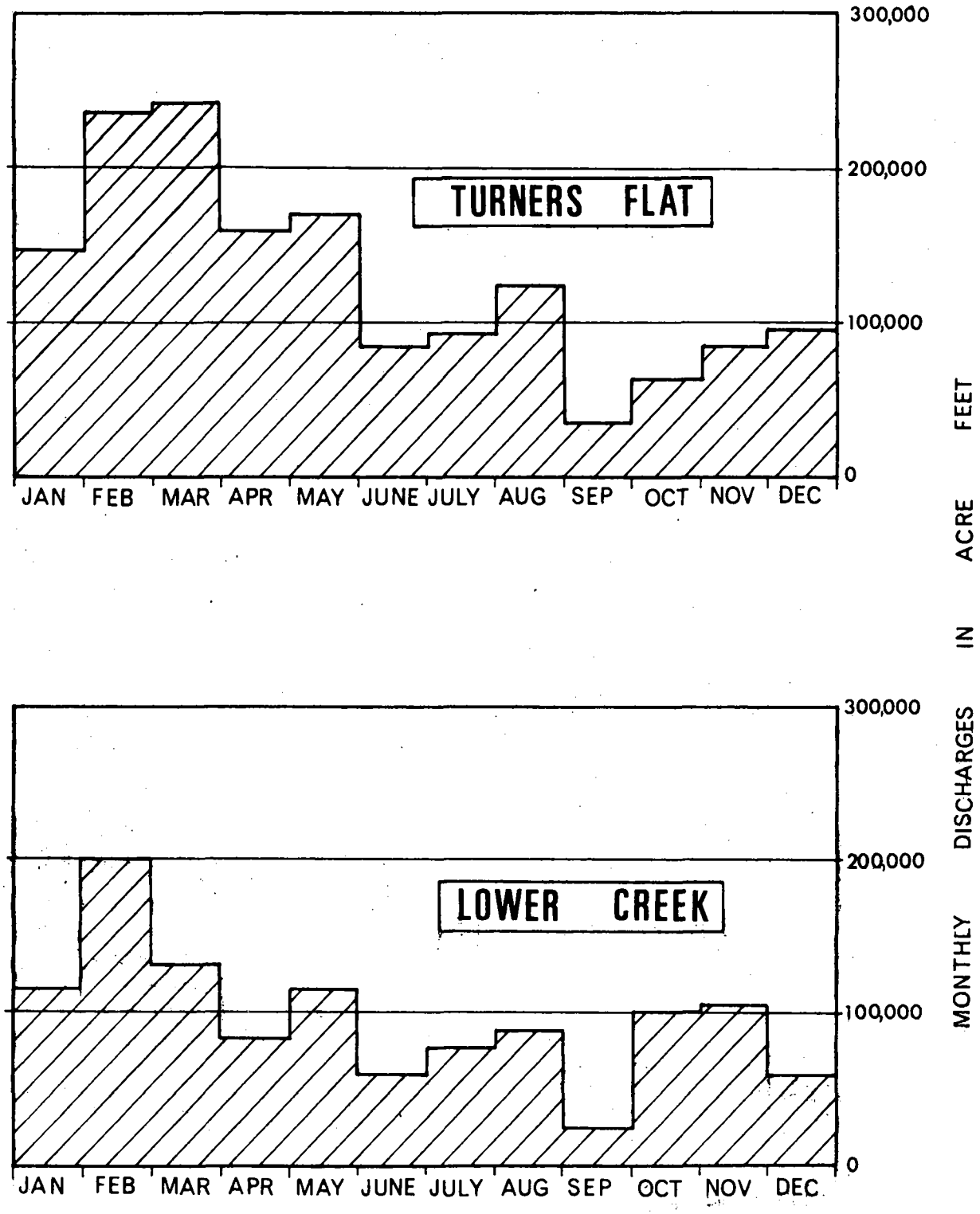
FIGURE 21



AVERAGE MONTHLY RAINFALLS
ARMIDALE, KUNDERANG & KEMPSEY.

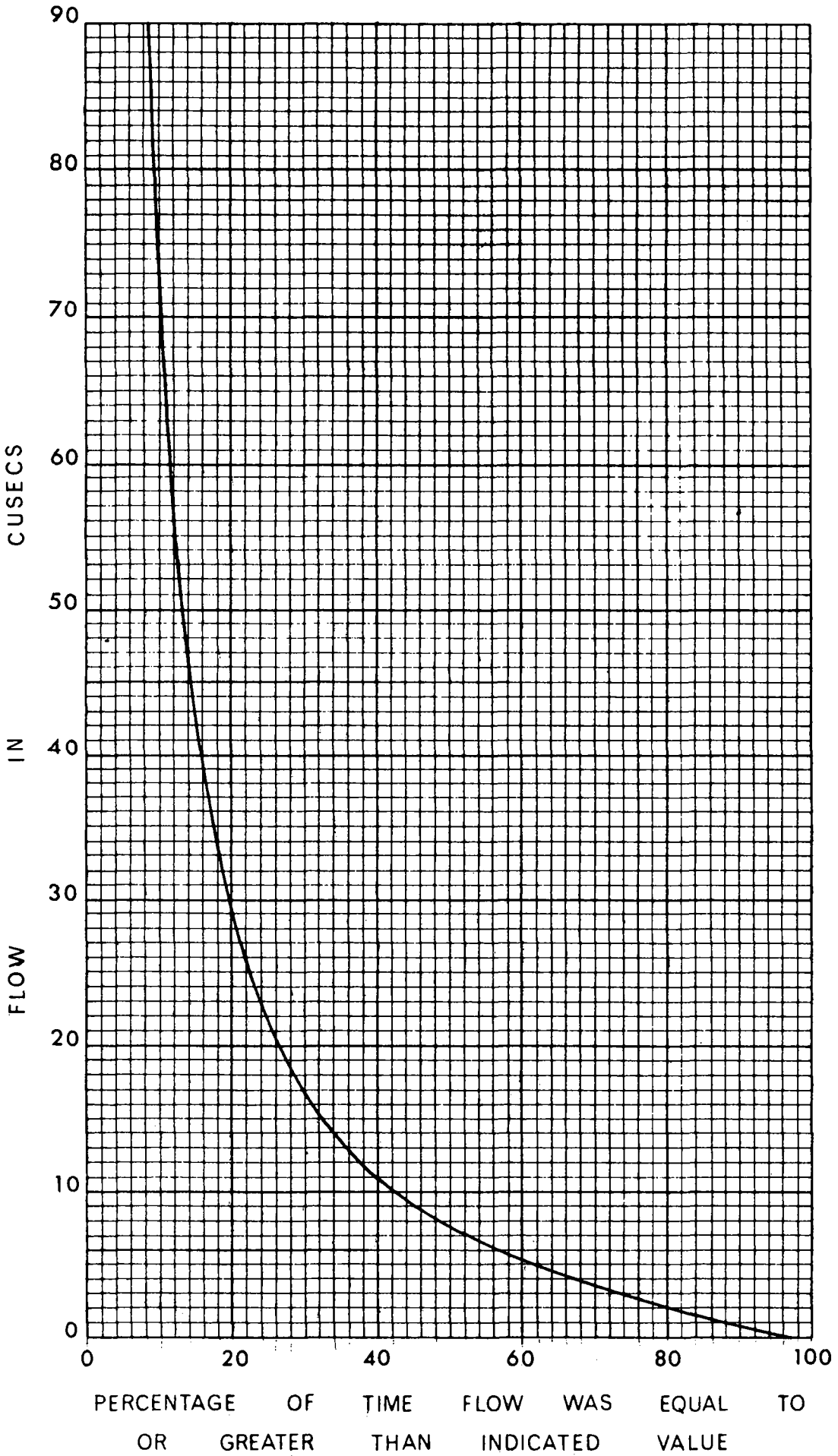
FIGURE 22

00252



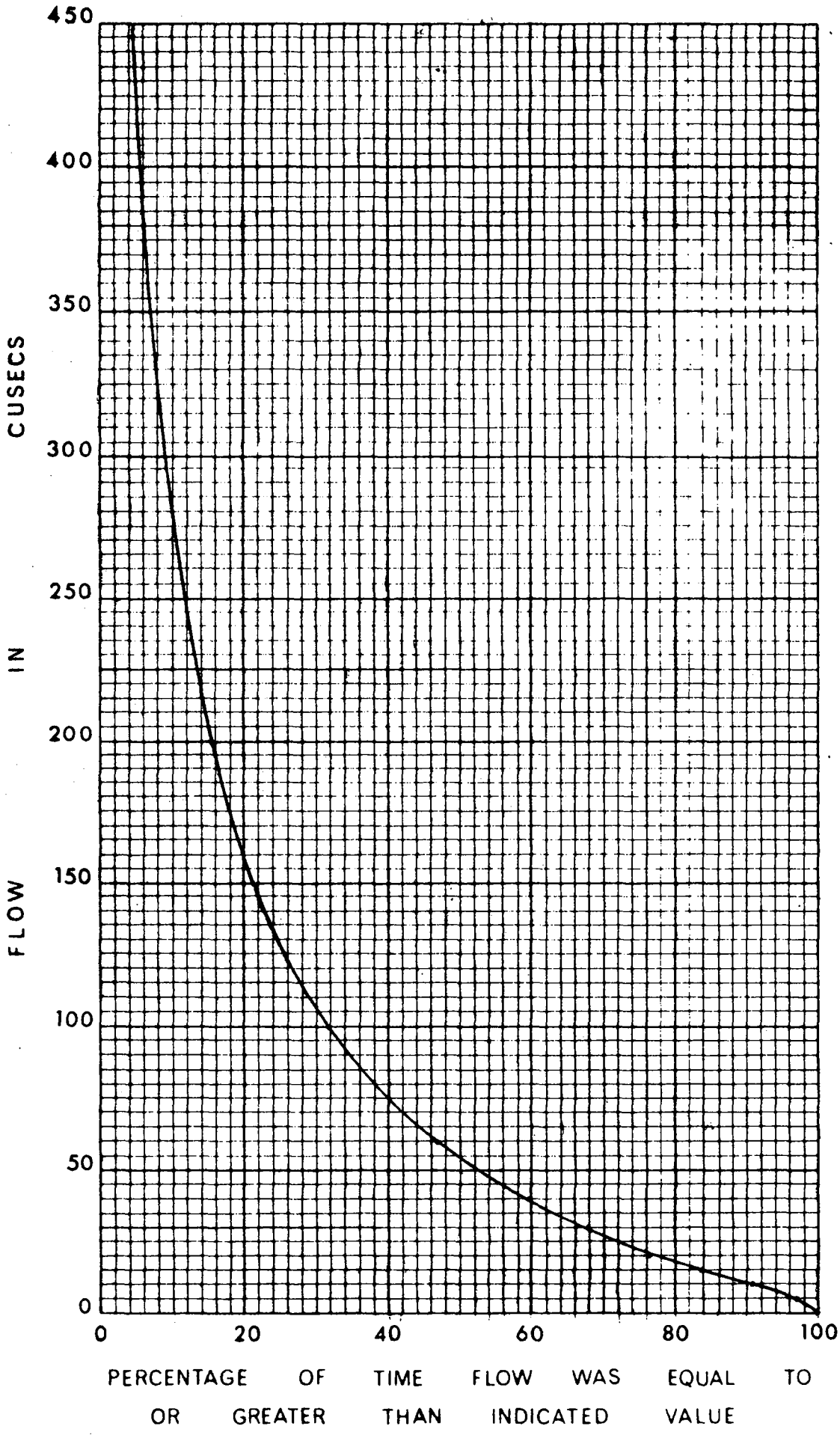
AVERAGE MONTHLY DISCHARGES
MACLEAY RIVER

FIGURE 23



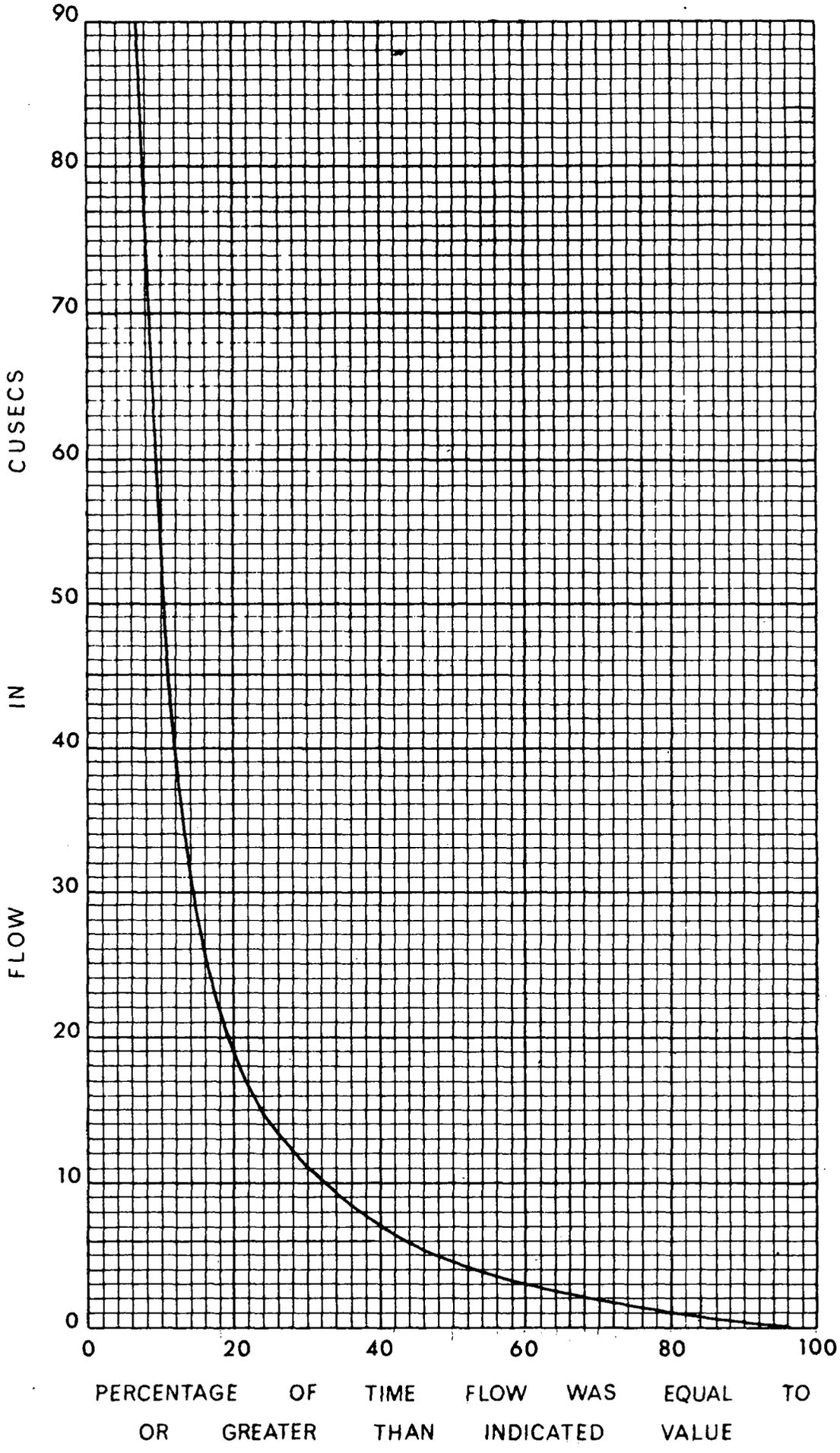
FLOW DURATION CURVE FOR WOLLOMOMBI CREEK AT CONINSIDE

FIGURE 24



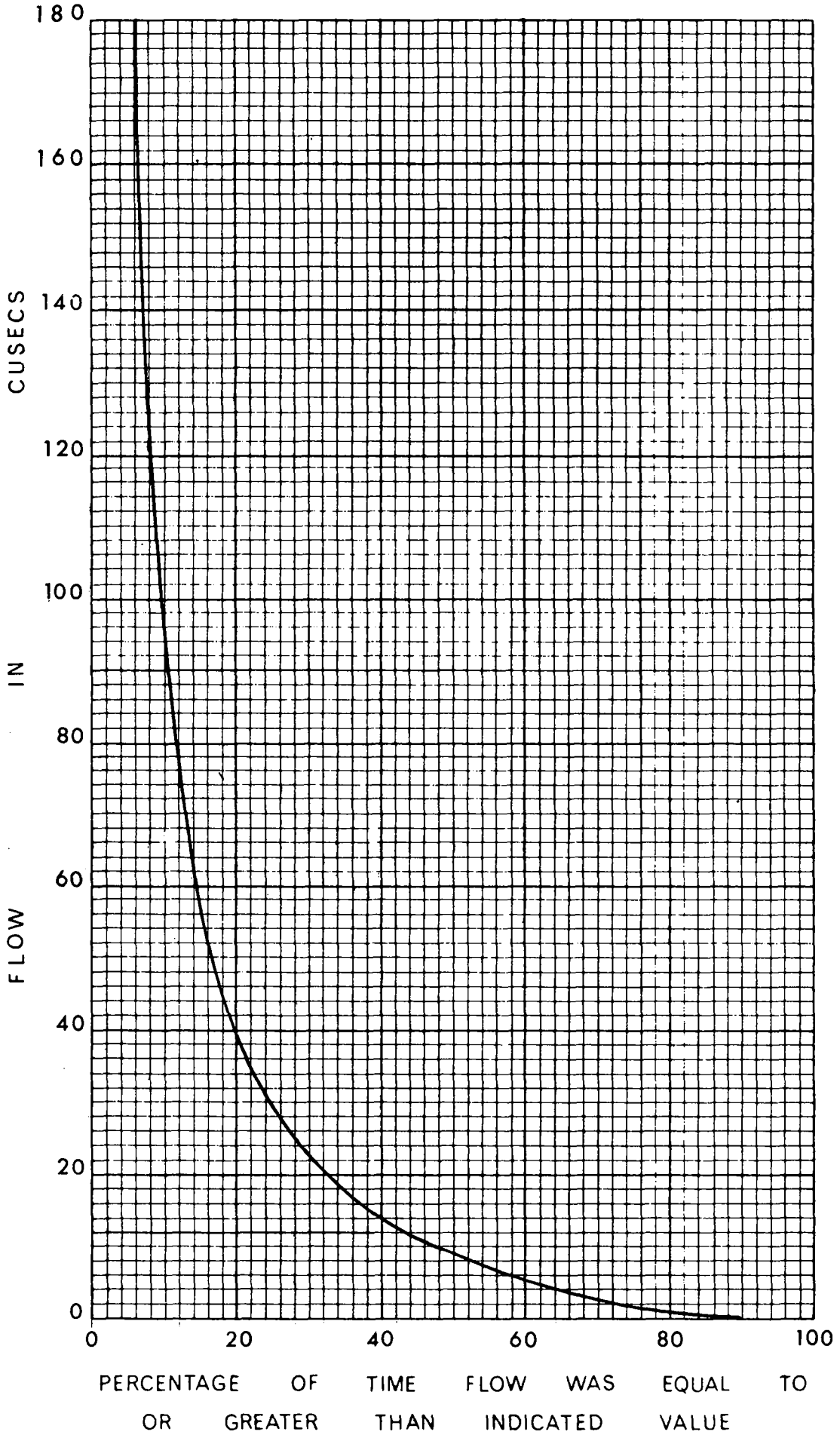
FLOW DURATION CURVE FOR STYX RIVER AT JEOGLA

FIGURE 25



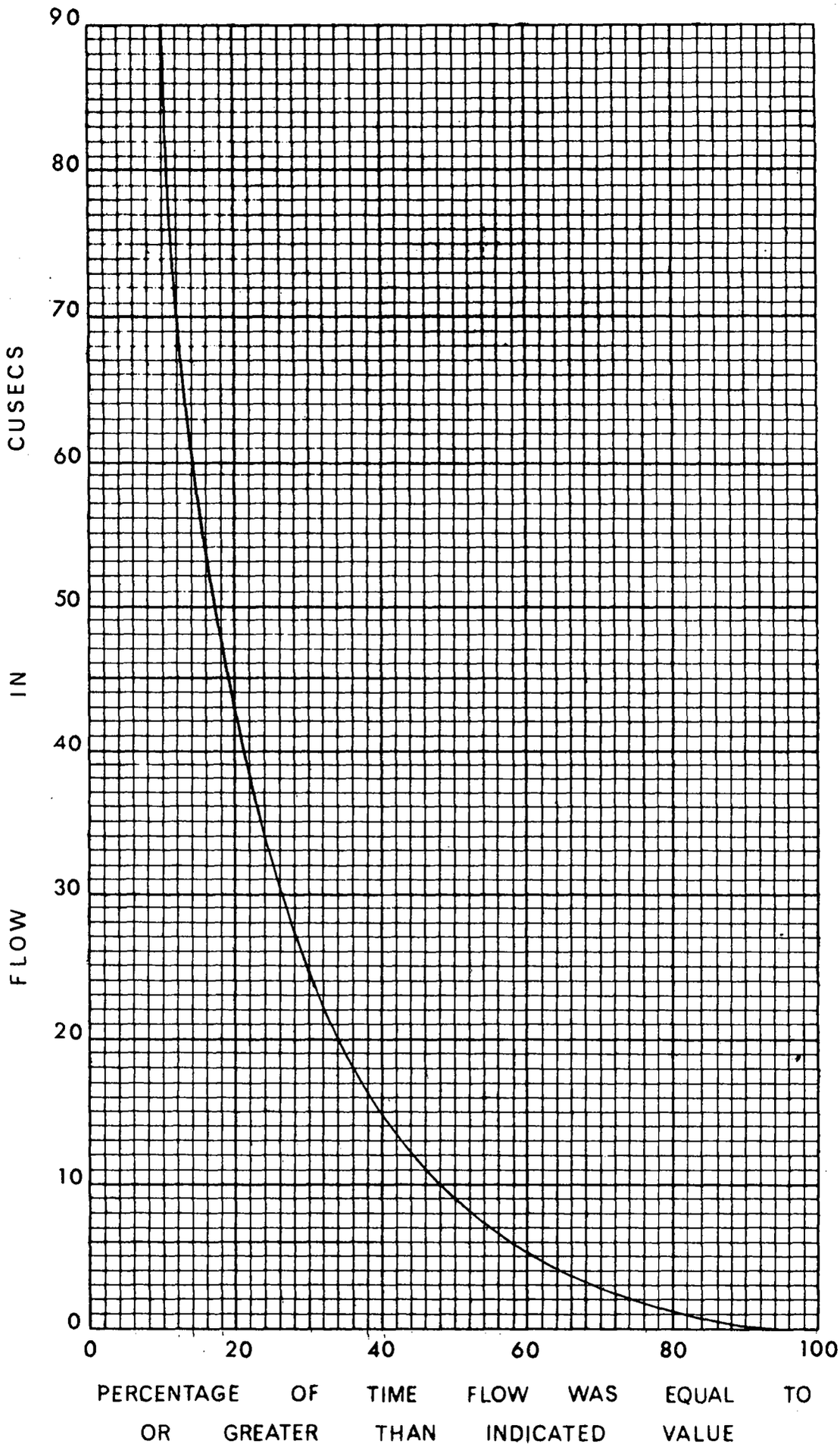
FLOW DURATION CURVE FOR COMMISSIONERS WATER AT TIVERTON

FIGURE 26



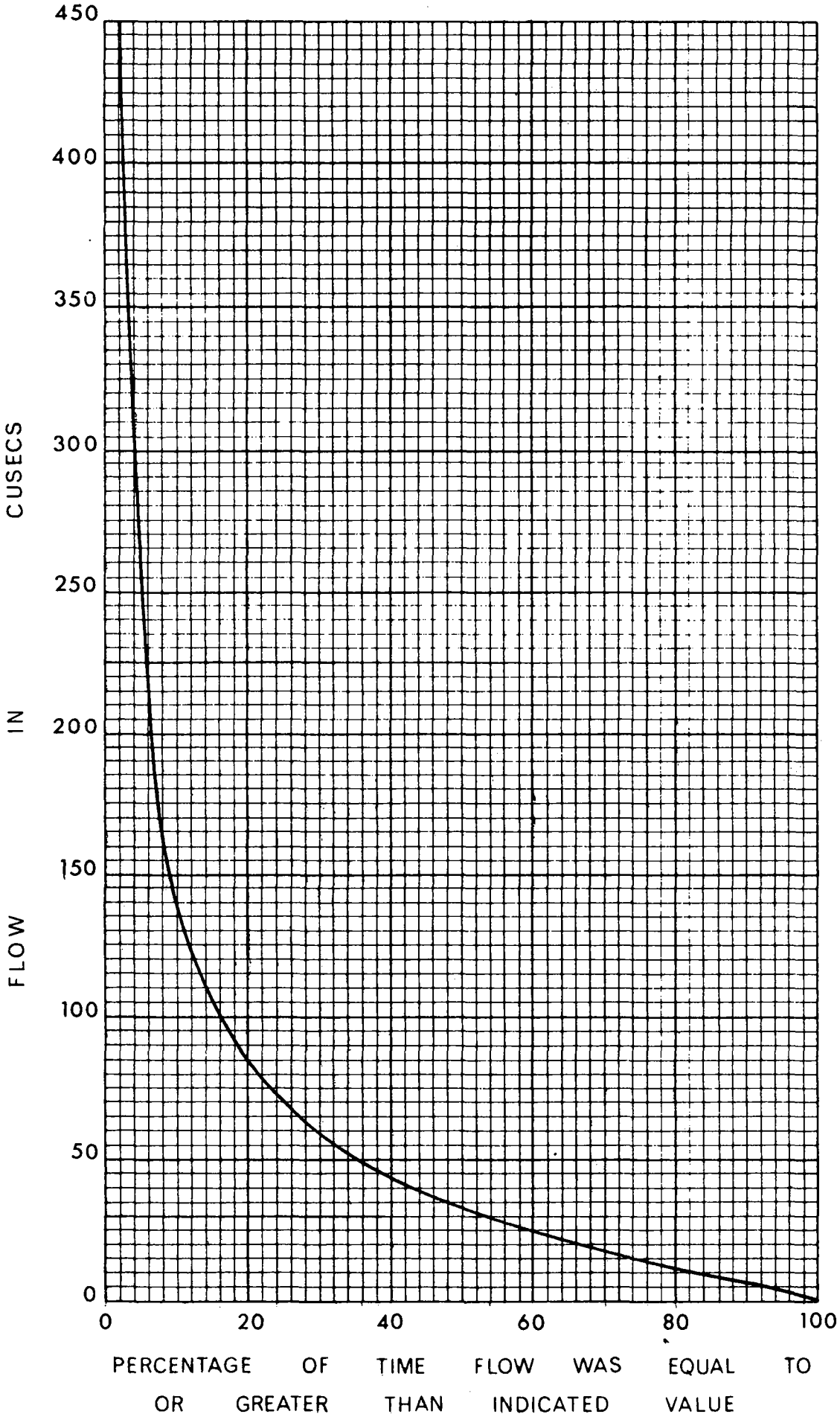
FLOW DURATION CURVE FOR GARA RIVER AT GARA

FIGURE 27



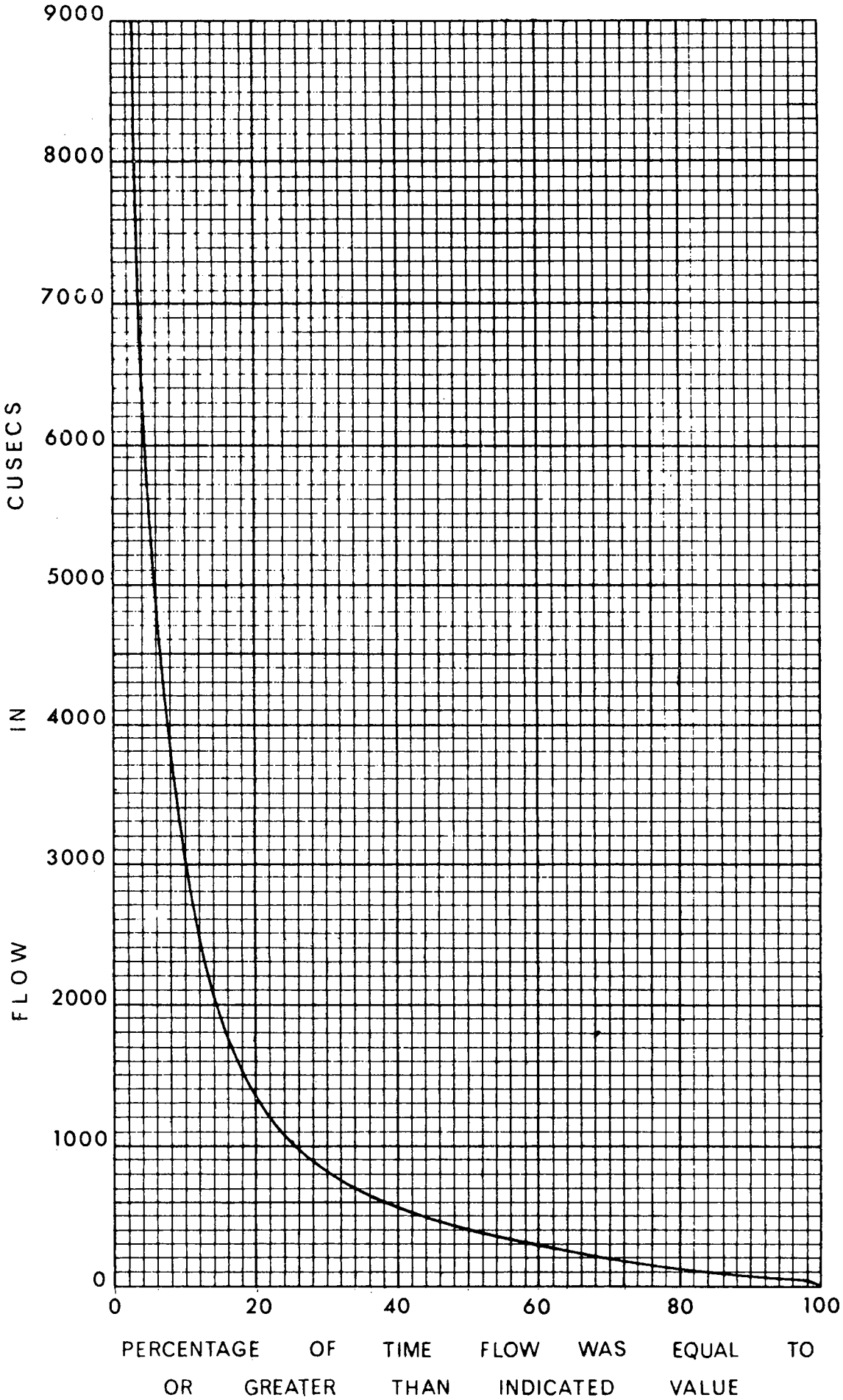
FLOW DURATION CURVE FOR APSLEY RIVER AT APSLEY FALLS

FIGURE 28



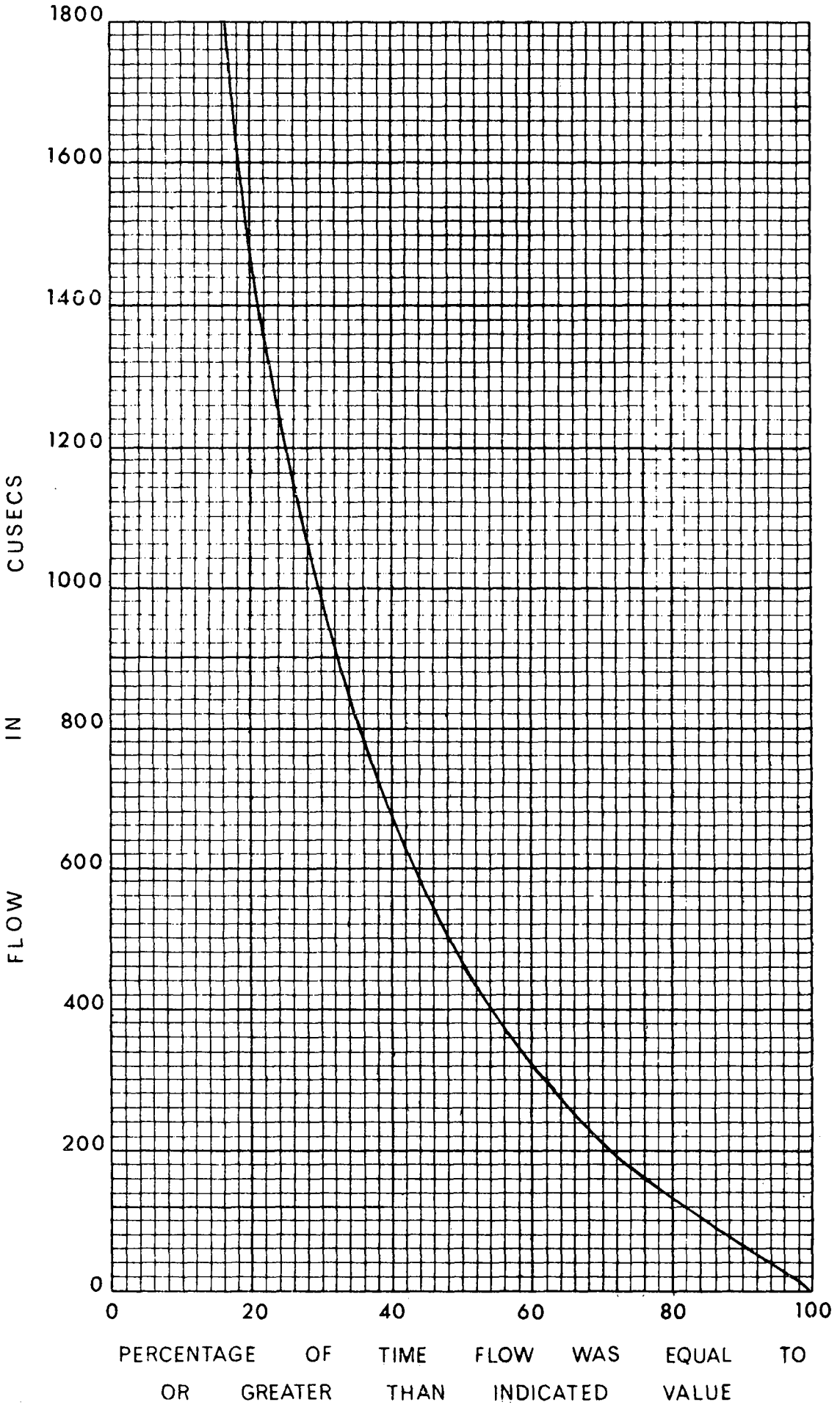
FLOW DURATION CURVE FOR TIA RIVER AT TIA

FIGURE 29



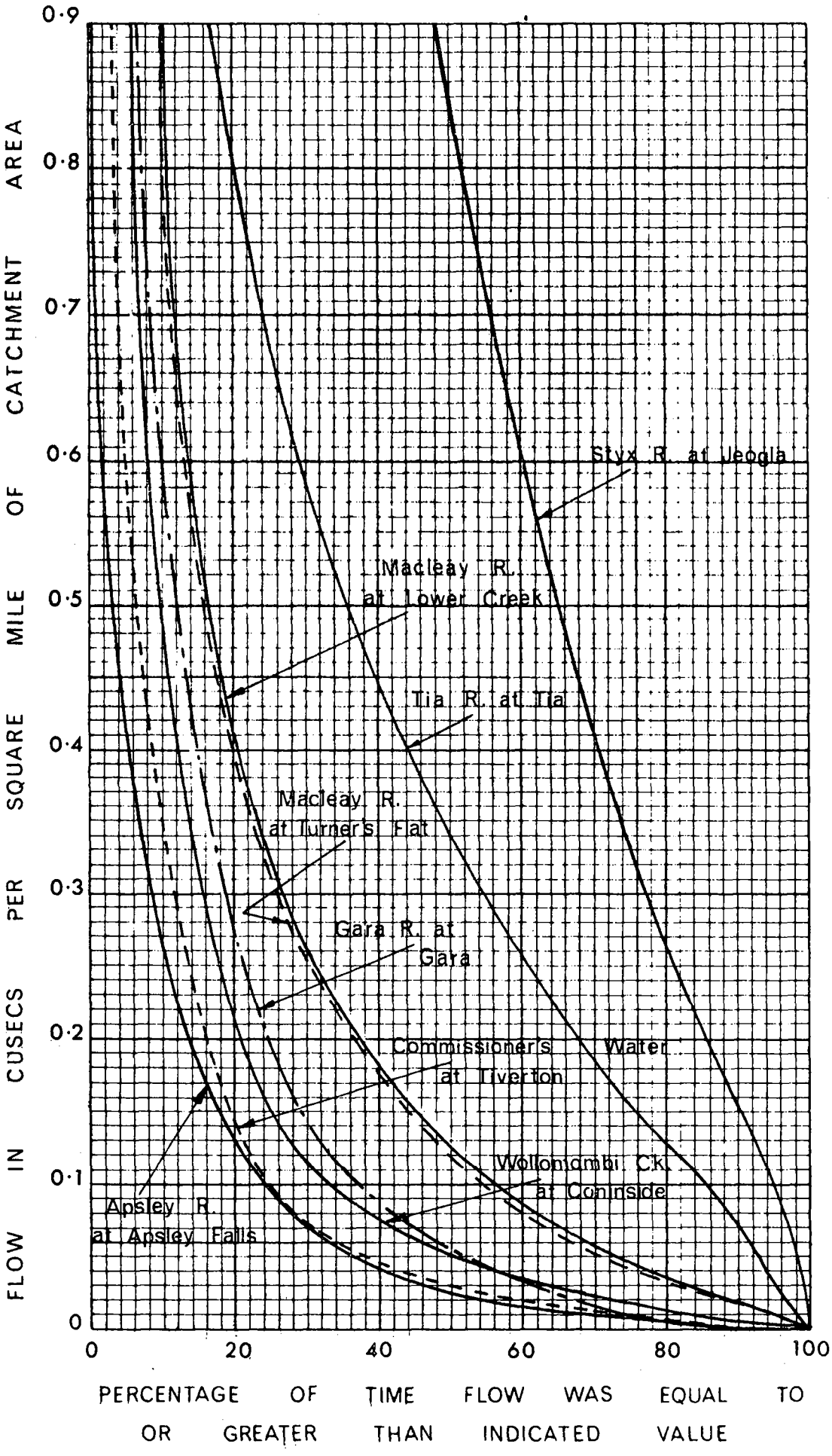
FLOW DURATION CURVE FOR MACLEAY RIVER AT LOWER CREEK

FIGURE 30



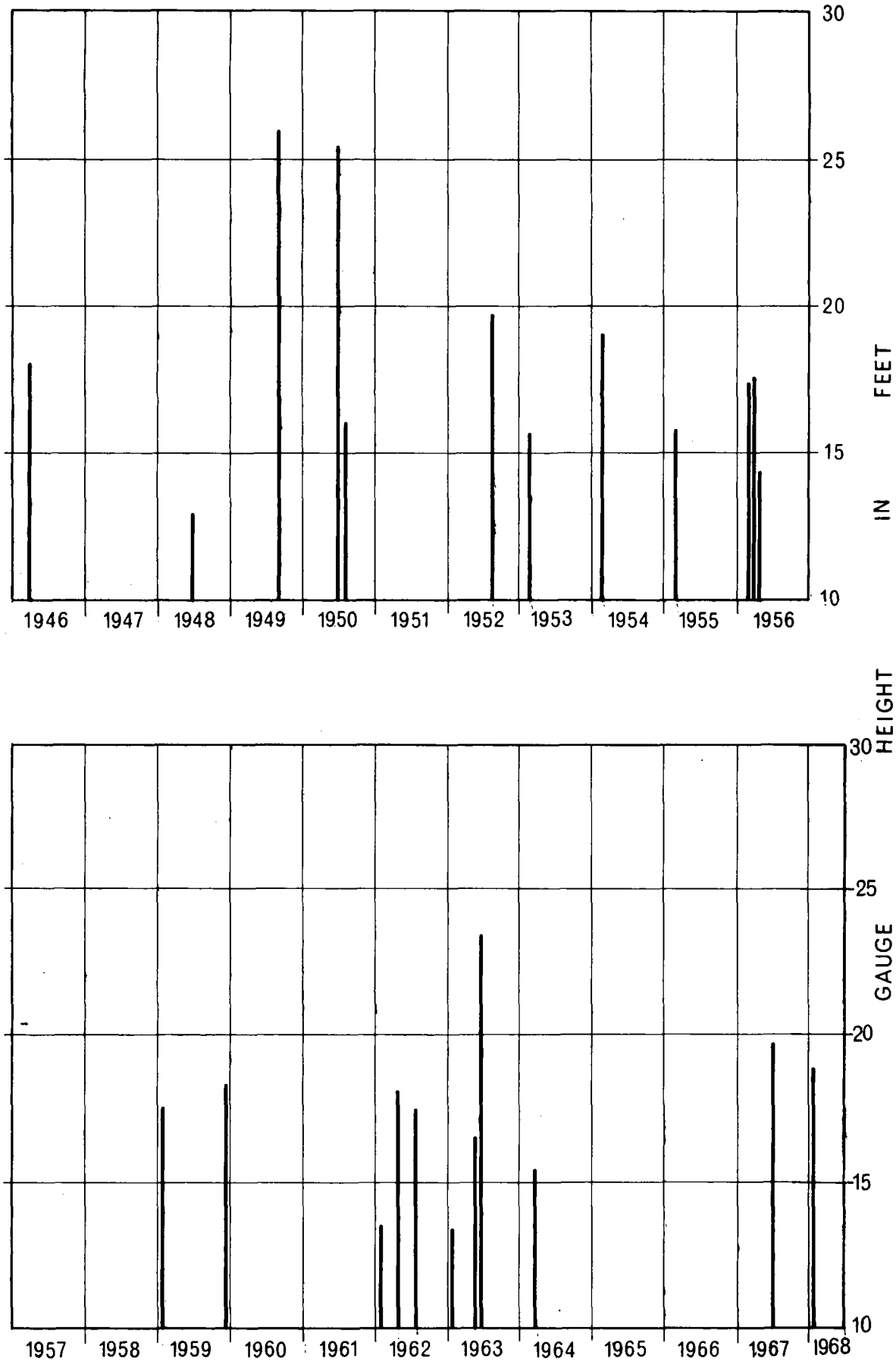
FLOW DURATION CURVE FOR MACLEAY RIVER AT TURNERS FLAT

FIGURE 31



FLOW DURATION CURVES FOR THE MACLEAY VALLEY

FIGURE 32



MACLEAY RIVER FLOODS SINCE 1945.
PEAK LEVELS EXCEEDING 12 FEET
AT KEMPSEY ROAD BRIDGE GAUGE.

FIGURE 33

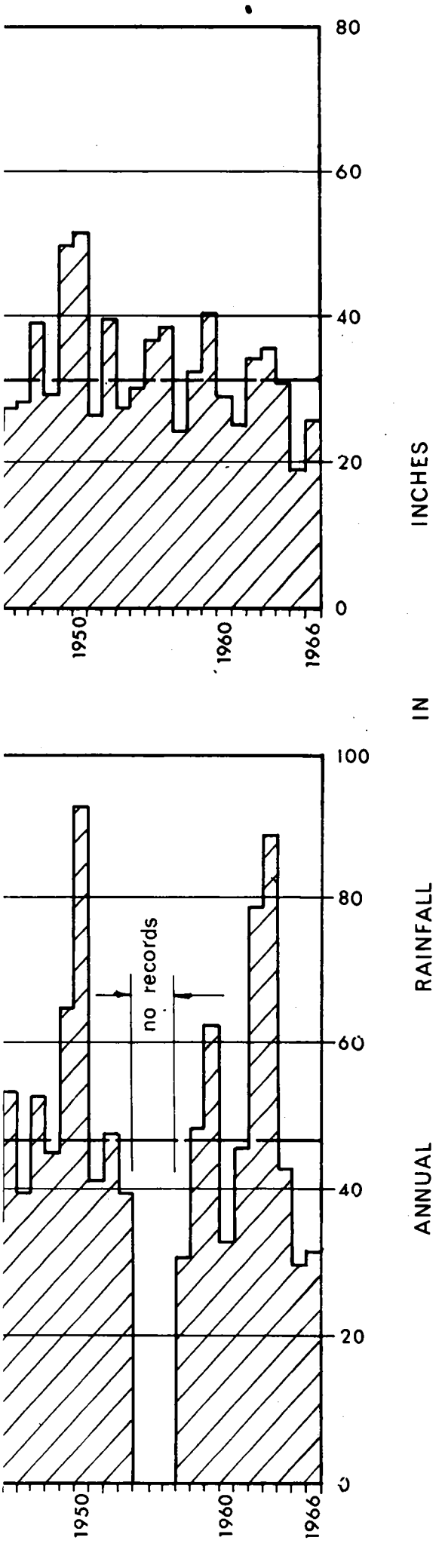
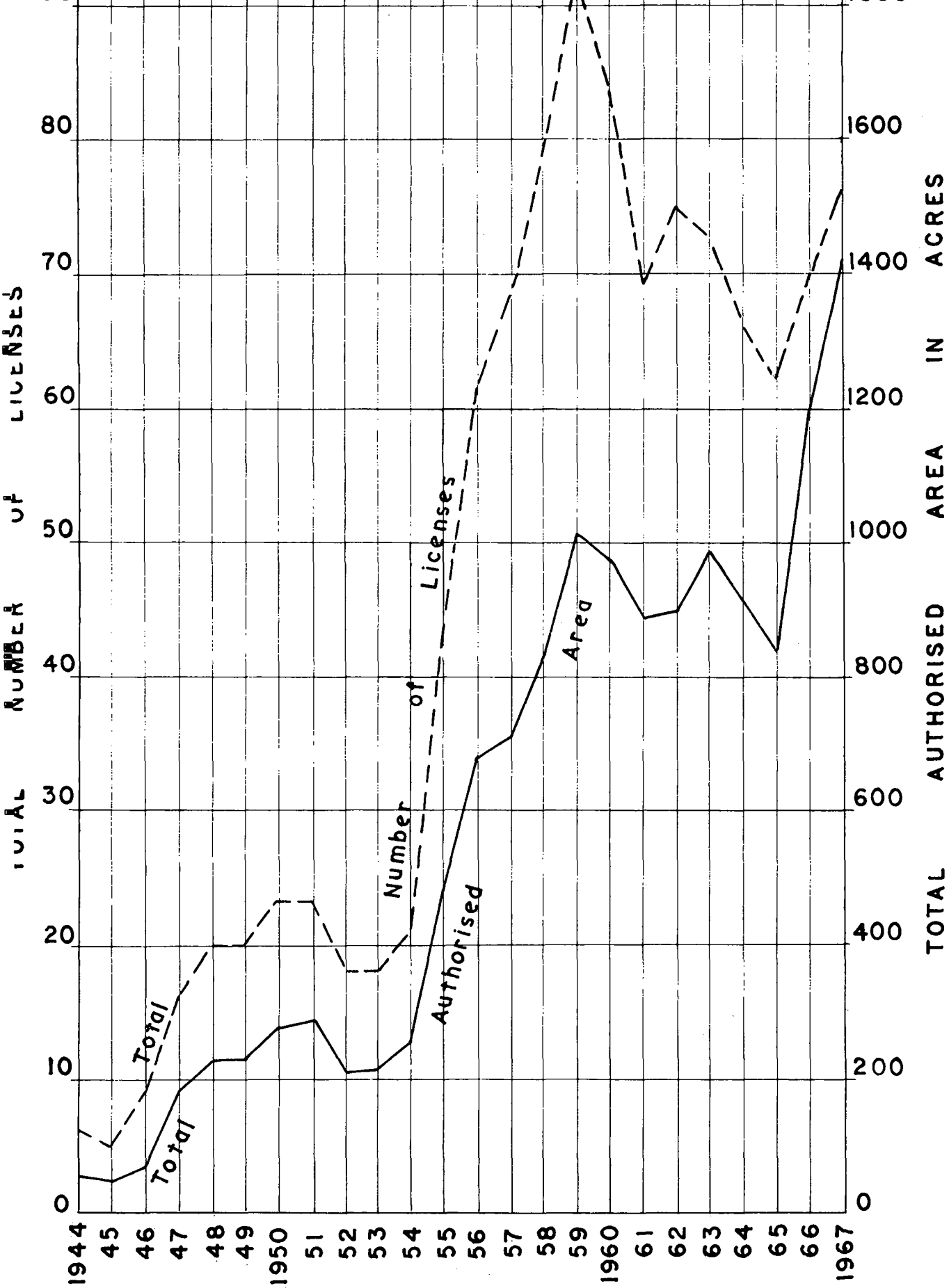

ANNUAL RAINFALL IN INCHES
100
80
60
40
20
0
no records
1950
1960
1966
80
60
40
20
0
1950
1960
1966

FIGURE 34



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

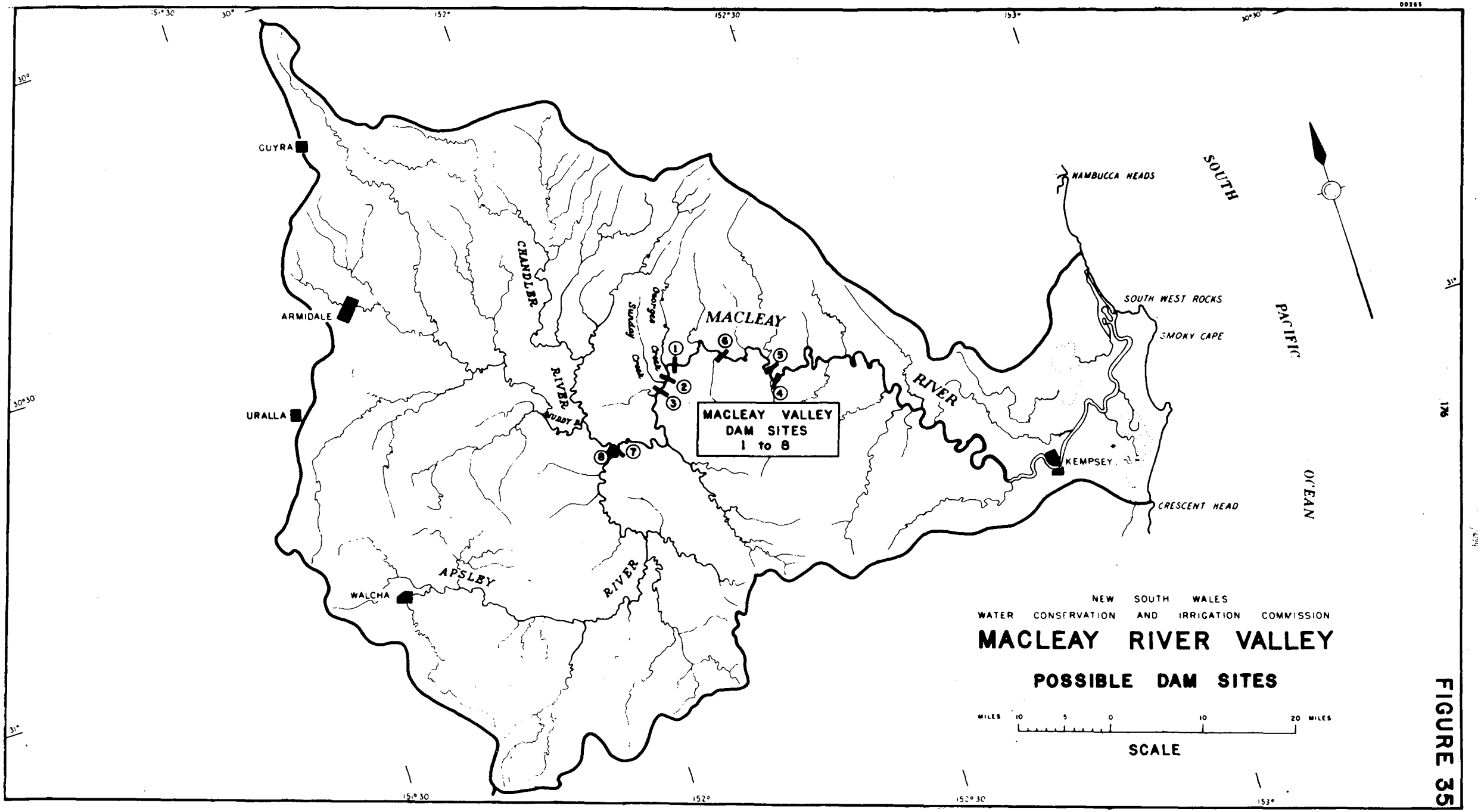

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
MACLEAY RIVER VALLEY
POSSIBLE DAM SITES
SCALE
MILES 10 5 0 10 20 MILES
MACLEAY VALLEY
DAM SITES
1 to 8
GUYRA
ARMIDALE
URALLA
WALCHA
KEMPSEY
NAMBUCCA HEADS
SOUTH WEST ROCKS
SMOKY CAPE
CRESCENT HEAD
SOUTH PACIFIC OCEAN
MACLEAY RIVER
CHANDLER RIVER
APSLEY RIVER
Georges Creek
Swamp Creek
Kubby R.
152°30
152°
153°
30°
30°30'
31°

FIGURE 35