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WATER RESOURCES

OF THE

DUMARESQ VALLEY

WITHIN NEW SOUTH WALES

SURVEY OF THIRTY TWO N.S.W. RIVER VALLEYS

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WATER RESOURCES OF THE DUMARESQ VALLEY

PREFACE

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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 is the largest and most comprehensive study of its type ever undertaken, involved the preparation of twenty-eight reports covering thirty-two major river valleys of the State.

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

Reports have been prepared progressively and those issued to date have covered twenty-six major valleys and a number of minor valleys. This report on the water resources of the Dumaresq Valley is the twenty-second to be issued.

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March 1971.

WATER RESOURCES OF THE DUMARESQ RIVER VALLEY

(WITHIN NEW SOUTH WALES)

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WATER RESOURCES OF THE DUMARESQ RIVER VALLEY

1. INTRODUCTION

With the exception of the air he breathes, water is the most essential natural resource available to mankind. Without water, neither man himself nor the animals, fish and plants upon which he depends for food, could survive.

The absolute minimum water needs of man are comparatively small, being only about three-quarters of a gallon per day. However this is the minimum amount required to prolong life and would be obviously unacceptable on a continuing basis.

A modern community makes heavy demands on water for domestic, industrial and agricultural purposes. While man's absolute minimum daily requirement is less than one gallon per day, the average per capita consumption in a large modern city may be of the order of 300 gallons per day. However, it should be noted that the per capita consumption figures may be somewhat misleading in that demands due to industry, home gardens, public parks and community services such as hospitals are included in computing the overall average.

Nevertheless certain industrial and other demands can be comparatively high. It requires about 300 tons of water to make a ton of steel, 2½ tons of water to grow the grain and produce a loaf of bread and over thirty tons of water to produce a normal daily diet for an adult.

Irrigation requirements are even higher than industrial demands. The overall annual water requirement of a crop is usually of the order of two to three feet and during a drought it may be necessary to provide a major proportion of this demand by irrigation. The relative magnitude of this requirement can be assessed when it is realised that a depth of three feet over an area of only one acre is equivalent to over 800,000 gallons (more than 3,500 tons).

The major part of water on Earth is contained in oceans, polar icecaps and underground resources and it has been estimated that only 0.004 percent of the total volume is contained as fresh water in lakes and streams. Furthermore the available fresh water resources are remarkably variable; river flows may vary from zero in drought periods to extremely high discharges

during floods. In addition water resources are not evenly distributed over land areas, a significant proportion of this resource being located in remote, undeveloped areas.

The water resources of a continent therefore vary substantially with time and are usually unevenly located over the land areas. The aim of water conservation works is to reduce these variations by providing storage during flood periods for release during droughts and by constructing distribution works to supply flows to areas remote from river systems.

The gross water resources of any country are normally considered to be the total amounts of precipitation, in the forms of rain, hail or snow, which fall on the land. The surface water resources are usually regarded as the amounts of water in rivers and lakes.

In comparison with all the other continents Australia has the least average annual precipitation, the average rainfall being only 1½ feet whereas Africa, Asia, Europe and North America all receive about 2 feet and South America receives an average of almost 4½ feet.

However the natural processes of evaporation, transpiration and seepage deplete the gross water resources of all countries. When these losses are subtracted from continental precipitations, the residuals (or surface water resources), show that Australia has a comparative runoff much less than indicated by the average rainfalls.

The average annual surface water resources of the Australian mainland have been assessed at about 240 million acre feet which is equivalent to a depth of less than 2 inches over the continental area. In comparison, surface runoffs for the other continents are about 7 inches in Africa, 9 inches in Asia and Europe, 11 inches in North America and 19 inches in South America.

Flow records obtained for streams in New South Wales show that there are few perennial streams in the State; the majority of streams have either ceased to flow or have been reduced to an insignificant discharge during the periods of records. In addition historical data indicates that more severe droughts occurred prior to the implementation of the present extensive system of measurement of the flows of streams in this State.

The prolonged duration of severe droughts in Australia makes it imperative that water conservation dams be constructed if assured water supplies are to be maintained over the full period of each drought.

Proper use of water resources is obviously of major importance to the national prosperity, the welfare of the community depending to a large extent on water resources development. Water conservation in Australia is therefore a service of prime national importance, increasing living standards and the overall national wealth.

The average annual surface water resources of the Dumaresq River Valley within New South Wales have been assessed as averaging about 220,000 acre feet which is equivalent to a runoff of about 7 percent of the average rainfall of 28 inches.

On a square mile of catchment area basis, the surface water resources of the Dumaresq River Valley from the contributing New South Wales streams are about 3½ times the average for inland basins in New South Wales and are slightly above the average for the total runoff from all of New South Wales.

2. PHYSIOGRAPHIC FEATURES

This report on the Dumaresq Valley is confined to the catchment within New South Wales above the confluence of the Dumaresq and Macintyre Rivers. The area encompassed in this section of the valley is about 2,120 square miles and represents about 40 percent of the entire basin in both States above the Dumaresq and Macintyre Rivers confluence.

The adopted boundary of the Dumaresq River together with the location of major streams and principal towns within the valley are shown at Figure 1.

The Dumaresq Valley in New South Wales is bounded on the east by the Clarence Valley, on the south by the Severn Valley and on the west by the Macintyre Valley. The State Boundary forms the northern boundary of the valley for the purposes of this report.

The Dumaresq River, for its entire length forms part of the State Boundary between Queensland and New South Wales. Several of the major tributaries of the Dumaresq River rise in Queensland but as this report is restricted to the catchment within New South Wales, no precise details of Queensland streams are included.

The valley is bordered on the east by the rugged Great Dividing Range and on the south by a spur of the Range to near Strathbogie where the divide becomes less elevated and in its lower sections near the Macintyre River is ill-defined.

The main tributaries of the Dumaresq River within New South Wales rise in the Great Dividing Range and flow generally in a north westerly direction. In the headwaters of these tributaries the topography is characterised by rugged plateau areas from which older peaks and ridges rise, with elevations up to about 5,000 feet.

The plateau areas are deeply dissected in the upper regions and from these narrow steep gorges the major tributaries emerge. The rugged terrain prevails until the streams approach the Dumaresq River where the topography becomes less rugged. The slopes of the stream beds, which in the headwaters were steep, tend to flatten as the streams approach the Dumaresq River.

The Dumaresq River proper is formed by the junction of the Severn River which rises in Queensland, and Tenterfield Creek at a point about 30 miles west of Tenterfield. This Severn River should not be confused with the stream of exactly the same name which rises in New South Wales near Glen Innes, and the valley of which adjoins the southern section of the Dumaresq Valley.

The uppermost tributary of the Dumaresq River in New South Wales is Tenterfield Creek which rises in the Great Dividing Range near Tenterfield, at elevations higher than 4,000 feet. The notable peak in the northern section of the Range is Bald Rock with an elevation of about 4,400 feet.

The State Boundary in this area, which is also the northern catchment boundary of Tenterfield Creek, commences near Bald Rock, reduces to about 2,800 feet near Wallangarra and rises again to about 3,500 feet near Mount Sailor Jack before descending through rugged country to the Severn River (Queensland)-Tenterfield Creek junction.

The main tributary of The Mole River, the Deepwater River rises in the extreme south east of the valley at elevations of up to 4,300 feet and flows westerly through undulating to flat country to Deepwater before turning to the north and entering more rugged terrain. A notable peak in the southern boundary of the catchment near Deepwater is Mount Manbundi at an elevation of about 4,000 feet.

Some 5 miles north of Bolivia the Deepwater River and the Bluff River join to form The Mole River. The Bluff River rises in the Great Dividing Range at elevations of 4,900 feet to 5,000 feet, the major peaks in this section being Mounts Jondol, Coolamangeera, Capoompeta and Bajimba.

The Mole River flows generally north westerly through mountainous country to join the Dumaresq River some four miles downstream of the Tenterfield Creek junction.

The major Queensland tributary of Pike Creek joins the Dumaresq River almost opposite to The Mole River junction.

Reedy Creek is a significant tributary of the Dumaresq River and joins the main river about four miles below The Mole River junction.

The Beardy River rises in undulating plateau country west of Deepwater but quickly enters rugged country which continues almost to its junction with the Dumaresq River.

The remainder of the New South Wales tributaries below the Beardy River consist of comparatively small creeks such as Log Creek which joins the main river near Bonshaw, Myall Creek, Camp Creek and finally Campbells Creek which joins the Dumaresq River about 25 miles east of the Dumaresq-Macintyre Junction.

In this lower section of the valley the catchment boundary is not more than about ten miles from the main river at any point.

Land slopes in the Dumaresq Valley are shown at Figure 2. The flat areas of the valley above Bonshaw with slopes less than about 3 degrees are confined to the alluvial flats immediately adjacent to the Dumaresq River and a number of areas in the upper plateau regions. Downstream of Bonshaw the topography is extremely flat and almost all the valley in this section has land slopes of less than about 3 degrees. The total area within this slope category is about 24 percent of the overall area in the Dumaresq Valley.

Rugged to mountainous areas, with slopes greater than 15 degrees predominate in the eastern section of the valley and this category comprises 32 percent of the total area.

Undulating to hilly (slopes between 3 and 8 degrees) and hilly to steep (slopes between 8 and 15 degrees) terrain make up the remaining areas of the

valley and comprise 31 percent and 13 percent respectively of the total valley area of 2,120 square miles.

The main agricultural activities currently pursued within the Dumaresq River Valley can be grouped into two main categories, divided mainly by location. In the central and more elevated regions in the east of the valley, the major rural pursuit is beef cattle raising in association with sheep for wool production. Lucerne and oats are grown in this region but primarily only for grazing purposes.

Cropping is mainly confined to the alluvial areas adjacent to streams. Because of the suitable climate, tobacco production is one of the more important activities in the area. In the upper reaches, pig raising is also of some lesser importance.

In the lower sections of the valley large areas of wheat are grown whilst the main pastoral activity is sheep for wool. Beef cattle are also raised in this area but not to the extent of the eastern areas of the valley. In recent years, the trend in these areas has been away from grazing to grain cropping.

Forested areas in the valley are mainly confined to the eastern areas near the Great Dividing Range and in the rugged intermediate valleys. These areas are generally unsuitable for agricultural pursuits and timber getting provides the main commercial interest. To the west of these areas where the terrain moderates, savannah woodland predominates. The original timber cover has been cleared in areas of suitable topography to provide agricultural and grazing lands.

Small areas dedicated as State Forests are located along the eastern highland boundary and contain stands of hardwoods and brushwoods. In the west of the valley near the town of Texas small stands of hardwoods and cypress pine are located.

3. CLIMATIC FEATURES

Rainfall

Annual median rainfall over the Dumaresq River Valley varies from over 40 inches in the higher parts of the south-east corner to less than 25 inches over the north-western boundary of the catchment. (The median is that rainfall value equalled or exceeded on fifty percent of occasions). Over most of the catchment, however, median annual rainfalls are between 26 and 30 inches.

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

On the average, the valley receives more than 65 percent of the annual rainfall in the six months October to March; December and January being the wettest months in this period. Median rainfalls in these two months range from 2½ inches over the north-western boundary to more than 4 inches over the south-eastern corner of the catchment. A weak secondary maximum in the distribution of monthly rainfall throughout the year occurs in the months of June and July when a further 15 percent of the annual rainfall is received.

The two relatively dry periods of the year, April to May and August to September each receive about 10 percent of the annual rainfall. In these months the median varies from less than 1 inch to about 2 inches over the catchment.

Monthly and annual rainfalls recorded at Boggabilla, Bonshaw, Deepwater, Glenelg, Inglewood, Stanthorpe, Strathbogie, Tenterfield, Tenterfield (Trenayr), Texas and Wallangarra are given in Appendices 1 to 11 inclusive.

Intense storm rainfalls may occur over the valley when an active depression forms over southern inland Queensland. This type of depression usually forms in a trough extending in a southerly direction from the north of the continent and under such conditions a moist northerly airstream is established west of the Divide.

The estimated extreme 24 hour fall at a point in the catchment is of the order of 11 inches. The heaviest 24 hour fall on record for any official station in the entire Dumaresq Valley is 10.57 inches at the Inglewood Forestry rainfall station in Queensland on 29th January 1956.

Highest monthly totals on record for stations in the valley are between about 11 and 16 inches and generally occur at most stations in one of the months of December, January, February or March. The highest monthly total for a station in the entire Dumaresq Valley is 15.77 inches which was recorded at Inglewood in Queensland in January 1951. Extreme annual totals range between 37 and 72 inches. For most stations, however, this figure is between the limits 40 and 55 inches. The tables at Appendix 12 show on a monthly and

annual basis for Boggabilla, Deepwater, Glenelg, Inglewood, Stanthorpe, Strathbogie, Tenterfield and Texas the following data:-

1. the highest and lowest rainfalls on record;
2. the 10th, 30th, 50th, 70th and 90th percentiles.

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

The minimum recorded rainfalls at Boggabilla, Deepwater, Glenelg, Inglewood, Stanthorpe, Strathbogie, Tenterfield and Texas are shown in the tables at Appendix 13. These tables indicate the minimum cumulative rainfalls, commencing in any month of the year, and continuing for up to twelve months which have occurred at the selected stations.

Dry spells occur from time to time over the river valley, annual rainfall being very much below average on approximately 20 percent of occasions. In general, over the eastern parts of the catchment, in any consecutive six-month period at least 6 inches are received on 90 percent of occasions and more than 10 inches are received on 50 percent of occasions. Over the western parts of the catchment, however, the corresponding figures are only 4 inches and 8 inches respectively. Lowest rainfalls on record for any consecutive 12-month period are of the order of 9 to 13 inches.

Temperature

The temperature regime of the valley is represented by averages for Stanthorpe, Tenterfield, and Goondiwindi presented in Tables 1, 2 and 3. Stanthorpe and Tenterfield are representative of the higher eastern parts of the valley while Goondiwindi is representative of the western parts of the catchment.

TABLE 1

STANTHORPE (Elevation 2,660 feet)

Average Temperature (^{o}F) Based on 28 Years of Record

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	82.6	80.8	77.2	71.8	65.1	59.5	58.0	61.4	67.6	73.7	78.5	81.2	71.5
Average Minimum	59.3	58.5	55.5	47.9	40.5	35.7	33.9	34.9	40.4	47.8	53.5	56.7	47.0
Average Daily	70.9	69.7	66.4	59.9	52.8	47.6	46.0	48.2	54.0	60.7	66.0	68.9	59.3
Highest on Record: 103.60^{o}F.							Lowest on Record: 13.6^{o}F						

TABLE 2

TENTERFIELD (Elevation 2,830 feet)

Average Temperature (^{o}F) Based on 28 Years of Record

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	81.8	80.1	76.6	70.7	63.4	57.9	56.9	60.1	66.5	77 .0	77.7	80.3	70.4
Average Minimum	57.6	57.0	54.0	47.3	40.6	36.1	34.2	35.6	40.4	46.9	51.9	55.4	46.4
Average Daily	69.7	68.6	65.3	59.0	52.1	47.0	45.6	47.9	53.5	59.9	64.8	67.9	58.4
Highest on Record: 101.5^{o}F.							Lowest on Record: 18.0^{o}F.						

TABLE 3

GOONDIWINDI (Elevation 720 feet)

Average Temperature (^{o}F) Based on 28 Years of Record

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average Maximum	93.9	92.3	88.0	80.8	72.6	65.9	64.7	68.9	76.0	83.3	89.0	92.0	80.6
Average Minimum	67.8	66.6	62.9	54.9	47.7	42.8	41.4	42.7	48.6	56.1	62.1	65.7	54.9
Average Daily	80.8	79.5	75.5	67.8	60.2	54.3	53.0	55.8	62.3	69.7	75.6	78.9	67.8
Highest on Record: 113.4^{o}F.							Lowest on Record: 23.2^{o}F.						

Tables 1, 2 and 3 indicate that the western parts of the valley experience hot daytime conditions during the summer months with mean maxima in the nineties or high eighties during the period November to March. Day temperatures decrease with increasing elevation and are about 10°F lower at elevations of about 3,000 feet than at Goondiwindi. Extreme temperatures in the lower sections of the valley in the summer months often exceed 100°F and occasionally 110°F. Even the highest parts of the catchment have experienced temperatures of 100°F or more on rare occasions. During the summer months, nights are generally mild.

In winter months, average daytime temperatures range from the mid-fifties to the mid-sixties. Average minimum temperatures are below approximately 40°F for the entire valley and fall as low as 32°F in mid-winter at higher elevations. Under conditions of clear skies and light winds during winter, extremely low temperatures can occur in all parts of the valley. All stations have recorded temperatures below 25°F and in sheltered highland valleys temperatures on occasions fall below 15°F.

Frosts

Frosts can occur over the entire valley in the season extending from April to October. Over the higher parts of the catchment the season extends from March to November. The average number of occurrences per season ranges from about 20 per year over the western border districts to more than 80 per year over the higher parts of the catchment in the east. Severe frosts however are usually confined to the months June through August and May through September over the foregoing respective areas.

Sunshine

Estimates of the average number of hours of bright sunshine per day in each month for the valley are shown in Table 4. These estimates are based on observations of cloud amount.

TABLE 4

Estimated Average Daily Hours of Bright Sunshine
(Hours)

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
9.3	8.3	7.8	7.6	7.3	6.7	7.1	8.1	8.4	9.0	9.5	9.5	8.2

Evaporation

Estimates of the average monthly and annual evaporation from an Australian Standard Tank are shown in Table 5 together with estimates of the standard deviations. These estimates are based on radiation, air temperature and humidity considerations.

TABLE 5

Estimated Average Monthly and Annual Evaporation
(Inches)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Evaporation	7.6	5.5	5.4	3.5	3.0	1.9	1.7	2.8	3.7	4.9	6.6	8.0	54.6
Standard Deviation	1.2	1.0	0.7	0.5	0.4	0.3	0.3	0.4	0.5	0.8	1.2	1.3	5.2

Wind

Winds over the valley would be mostly light to moderate, however strong winds can occur on occasions. During winter, south-easterlies will frequently reach 30 m.p.h. or more. In summer, north-east to south-east winds can be expected at times.

The strongest wind gusts experienced in the area are associated with severe local storms such as thunderstorms. Table 6 gives estimates of the extreme wind gust likely to be experienced at a point in the region for various return periods.

TABLE 6

Estimated Extreme Wind Gusts to be Expected for
Given Return Periods

Return Period (Years	10	20	50	100
Extreme Wind Gust Equalled or Exceeded (Miles per Hour)	70	75	85	90

4. GROUNDWATER POTENTIAL

The geological formations in the Dumaresq River Valley within New South Wales are shown on the map at Figure 16.

The alluvium along the main course of the Dumaresq River has been investigated in relative detail by the Queensland Irrigation and Water Supply Commission, on a project jointly sponsored by the Water Conservation and

Irrigation Commission of New South Wales. The investigation revealed that the potential for large scale groundwater development is not great. Prospects in the rock units are variable but generally poor, except in the Jurassic sandstones which have good prospects.

The oldest rocks in the area are of Carboniferous age and crop out mainly near Bonshaw, and in another small area a little further west (as shown on Figure 16). These rocks are sandstone and quartzite with chert, slate and some tuffaceous beds. Although they have been subjected to severe folding and faulting and are fairly well jointed and broken, many of them are very hard and the joints mostly tight.

Of the six bores in these rocks for which records are held, two failed to produce a supply and the remainder yielded only 100 to 300 gallons per hour. In one case the water was brackish. Depths ranged from 80 feet to 300 feet. These results indicate that prospects in the Carboniferous rocks are variable. By careful selection of individual sites, it usually should be possible to locate small but useful stock supplies which may sometimes be suitable for domestic use as well.

Sedimentary rocks of Permian age occupy a large area in the eastern part of the catchment. They are mainly sandstone and siltstone which have been moderately folded. In some places the sandstones are quite hard and could be referred to as quartzite. The marine origin of these rocks has a major influence on their groundwater potential, because connate salt remains in them. When groundwater passes through, the salt is dissolved, and therefore groundwater produced by bores or wells is often highly saline. Exceptions do occur, for example where all the salt has been flushed out by continued movement of groundwater.

Records are available for only six wells as no bores have been sunk into these rocks. The depths of the wells varied from 25 to 50 feet, and yields are of the order of 100 to 200 gallons per hour. In two of them the water was described as "very salty" or "corrosive". No analyses of these waters are available.

The prospects of obtaining useful supplies from the Permian strata are very poor, since only in rare cases is the water salinity likely to be low

enough for it to be used for stock watering. Water suitable for domestic use is not likely to be found in these strata.

Granite, of probable Permian age, crops out extensively in the eastern part of the catchment, but records are not available for any bores sunk into these rocks. The availability of groundwater from granite depends on the climate of the area, the degree of weathering and the nature of the jointing of the rock. The groundwater potential of bores in granite varies quite substantially throughout New South Wales. Boring in the granite in this area should be regarded as exploratory, in the absence of any bore data. The high rainfall and strongly dissected nature of much of the country indicate, however, that prospects may be reasonable at carefully selected sites.

The sedimentary sequence of Jurassic age which underlies a small area in the extreme west of the catchment is formed mainly of sandstone. This sandstone is one of the main aquifers of the Great Artesian Basin, and the outcrops in this area are part of the intake area through which recharge water enters the Basin. Records are held for seven bores penetrating this sequence, and their depths range from 300 feet to 650 feet. Water quality is generally described as "good" but no analyses are available.

The yields from these bores range between 500 and 1,000 gallons per hour, but in some of them the associated drawdowns are quite small. There are indications that supplies of up to 10,000 gallons per hour could be available from suitably constructed bores.

There are two geological units of Tertiary age. Basalt, which crops out in some small elevated areas in the eastern part of the catchment, is relatively unimportant because of its small extent and topographic position. The lacustrine (lake) deposits north-west of Texas may be more important but bore data is not available. The deposits consist of sand, gravel and clay, lateritised in part, and some of the sand and gravel beds are probably sufficiently permeable to transmit water. The area involved is quite small, about 20 square miles.

The alluvium along the Dumaresq River is the most important source of groundwater in the area, and as previously indicated, has been investigated in detail in a project jointly sponsored by the respective State water

authorities. During the investigation, 49 test bores were sunk along seven traverse lines at fairly regular intervals between Mt. Bowman and the confluence of Macintyre Brook and the Dumaresq River.

The depth of the alluvium increases as it extends upstream. From the confluence of Macintyre Brook to about Texas, the maximum depth increases from 70 to about 100 feet, then increases rapidly to 200 feet just upstream from Bonshaw. At Mt. Bowman the maximum depth is 220 feet.

In general the alluvium is not particularly permeable. Aquifers are generally thin and not capable of producing large supplies. Along most of the length of river covered by the investigation, the major supplies were obtained from the upper sand and gravel beds, at depths less than 60 feet. Tested yields ranged from a few hundred to 20,000 gallons per hour along this section.

On the Riverstone traverse line, between Bonshaw and the confluence of the Beardy River, one aquifer yielding 1,500 gallons per hour was located at 103-115 feet, and at the Mt. Bowman traverse line aquifers yielding up to 3,000 gallons per hour were recorded from depths to 200 feet. In the latter case, total yield available by utilising all available aquifers is probably around 20,000 gallons per hour, but large drawdowns would be necessary. The downstream extent of the deeper aquifers of the Mt. Bowman line is not known but they do not persist to the Riverstone line.

From the evidence available it appears that yields of up to 20,000 gallons per hour may be obtained along much of the length of river studied, but because of the variable nature of the alluvium and relatively low permeability of the aquifers, it will usually be necessary to sink several test bores to locate the best site for any production bore.

The salinity of the water stored in the alluvium ranges from 12 to 170 parts per hundred thousand total solids, but is mostly suitable for stock, domestic and irrigation use. However, the high chloride content of the water prevents its use for the irrigation of tobacco.

Summary of Groundwater Potential

Alluvium along the main valley increases in thickness from 70 feet at Macintyre Brook to 220 feet at Mt. Bowman. Yields of up to 20,000 gallons per hour can be obtained, mostly from the upper aquifers, at depths less than 60 feet. The only other large yielding source of groundwater is the Jurassic sandstone. Stock supplies of up to 1,000 gallons per hour are generally available in these strata and it may be possible to construct bores yielding up to 10,000 gallons per hour.

The other geological units are much less promising. Carboniferous rocks usually yield small stock quality supplies, but supplies from Permian strata are consistently saline. Prospects in the granite are largely unknown but may be reasonable at carefully selected sites.

5. STREAM GAUGING STATIONS

The most important basic data in water resources investigations are long term accurate streamflow records. They govern the economic and engineering aspects of schemes for irrigation development, town and country water supply and hydro-electric power generation.

In view of the importance of this data in water resources investigations it is essential that adequate records of streamflows be collected to enable proper appraisal of water development schemes to be made.

Records of streamflow are obtained from gauging stations, where stream heights are recorded either by visual readings on a graduated scale or staff gauge, or by means of a continuous record produced by a float or pressure actuated recorder. Each gauging station is calibrated by obtaining a number of measurements of stream discharge, each measurement corresponding to a particular gauge height. Individual measurements of stream discharge are obtained by the use of a current meter to measure flow velocities in conjunction with survey methods to determine the area of effective flow. The combination of flow velocities, in feet per second, and effective discharge areas, in square feet, gives the discharge of the stream in cubic feet per second or cusecs.

Discharge at a stream gauging station is usually given in terms of cusecs; one cusec flowing for one day being approximately equal to two acre

feet or the volume of water which would cover an area of one acre to a depth of two feet. In catchment yield studies the total volume of runoff, usually during one year, is frequently expressed in inches depth over the total area of the catchment.

Although not in the Dumaresq River Valley, as defined in this report, a stream gauging station was installed on the Macintyre River at Boggabilla in 1894 and these records have proved invaluable in assessing the behaviour of streams in the valley in the earlier years.

In the Dumaresq Valley, above the Macintyre-Dumaresq Rivers confluence the first station established in New South Wales was on Tenterfield Creek at Clifton in 1921 and this station is located to measure runoff from about 70 percent of the Tenterfield Creek catchment. Additional gauging stations were established in 1924 on The Mole River at Trenayr, and in 1934 on both the Beardy River at Haystack and on the Dumaresq River at Bonshaw Weir.

The New South Wales stream gauging network within the Dumaresq Valley was further expanded after 1934 with the establishment of gauging stations on the Dumaresq River at Roseneath in 1937, and at Mingoola in 1954. Stations were also installed at three sites on The Mole River, at Bondonga in 1940 and at both Mole Post Office and the Causeway in 1952. The two stream gauging stations on the Dumaresq River are still operative but the three early stations on The Mole River have since been discontinued. In 1963 a gauging station was established 1½ miles above Trenayr at Bellanboe on The Mole River and in addition a further station on this river was installed at Donaldson in 1969.

At present the Water Conservation and Irrigation Commission of New South Wales operates ten stream gauging stations in the Dumaresq Valley above the Macintyre and Dumaresq Rivers confluence. The density of stations for the New South Wales section of the catchment is about 4.7 stations per 1,000 square miles which is more than three times the density for inland New South Wales and about ten times the density for the Australian mainland.

It is proposed to establish four additional stream gauging stations, equipped with automatic recorders, in the Dumaresq River Valley within New South Wales and thus improve the gauging density of New South Wales stations in the valley to about 6.6 stations per 1,000 square miles which would be about four times the density of inland New South Wales.

In addition, although not in the Dumaresq Valley, it is also proposed to install a long term recorder on the Macintyre River near the Dumaresq River junction and a pressure recorder on the upper end of the Boomi River.

As well as the stream gauging stations operated by the Water Conservation and Irrigation Commission of New South Wales, the Irrigation and Water Supply Commission of Queensland also operates stations on the streams within its State's boundaries and also on the Dumaresq River at Riverton, Cunningham Weir and Goondiwindi.

The locations of existing and discontinued streamflow stations in the Dumaresq Valley operated by the Water Conservation and Irrigation Commission are shown on Figure 17 and relevant operational details of each station are given in Table 7.

TABLE 7

Stream	Station	Catchment Area (Square Miles)	Type of Gauge	Period of Operation
Tenterfield Creek	Clifton	220	Pressure Recorder	1921 to date
Deepwater Creek	Bolivia	195	Pressure Recorder	1967 to date
The Mole River	Mole River Post Office*	550	Pressure Recorder	1952 to 1953
The Mole River	Causeway*	580	Float Recorder	1952 to 1956
The Mole River	Bondonga*	590	Staff Gauge	1940 to 1947
The Mole River	Bellanboe*	613	Pressure Recorder	1963 to 1969
The Mole River	Trenayr	620	Staff Gauge	1924 to date
The Mole River	Donaldson	623	Servo Manometer Pressure Recorder	1969 to date
Dumaresq River	Mingoola	2,000	Float Recorder	1954 to date
Reedy Creek	Dumaresq	116	Pressure Recorder	1968 to date
Dumaresq River	Roseneath	2,140	Float Recorder	1937 to date
Beardy River	Dakabin	128	Pressure Recorder	1968 to date
Beardy River	Haystack	350	Servo Manometer Pressure Recorder	1934 to date
Dumaresq River	Bonshaw Weir	2,810	Float Recorder	1934 to date
Macintyre River	Boggabilla	8,700	Staff Gauge	1894 to date

* Discontinued Stations.

6. CATCHMENT YIELDS

The water yield of natural catchments varies considerably, being dependent on factors such as rainfall, topography, geology and vegetation in addition to the main catchment factor of catchment area. The relationship between these factors and the long term water yield of a catchment is extremely complex and therefore the continuous measurement of streamflow over a period of many years is an essential pre-requisite for the estimation of accurate catchment yields.

Streamflow discharges are usually expressed in terms of cusecs; one cusec being equivalent to a volume of one cubic foot of water per second. Volumes of flow for given periods of time are usually expressed in acre feet; one acre foot of water being equal to the volume of water required to cover an area of one acre to a depth of one foot.

For purposes of comparing the yield of different catchments it is convenient to express the rate of volume of runoff in terms of catchment area or drainage area. These measurements are therefore expressed as cusecs per square mile, acre feet per square mile, or as inches of runoff. An inch of runoff is equivalent to the volume of water required to uniformly cover the catchment area to a depth of one inch. This unit is particularly appropriate when comparing runoff and rainfall.

Relatively long and continuous records of streamflow are available for a number of gauging stations in the Dumaresq Valley. More than 40 years of complete records have been obtained for The Mole River at Trenayr and Tenterfield Creek at Clifton, whilst more than 30 years of records are available for the Dumaresq River at Roseneath and Bonshaw Weir.

The stream gauging station on the Macintyre River at Boggabilla located about 10 river miles below the junction of Macintyre and Dumaresq Rivers is not within the Dumaresq Valley, but data for this station has been included in this report because of its relatively long period of operation.

The average annual discharge in the Macintyre River at Boggabilla over the 69 complete years of records since 1894, has been estimated to be about

690,000 acre feet per annum which is equivalent to an average rate of flow of 945 cusecs (353,000 gallons per minute). Expressed in terms of depth of water over the catchment, this annual flow is equivalent to about 1½ inches of runoff.

For comparative purposes the average annual yields of selected gauging stations in the Dumaresq Valley and the Macintyre River at Boggabilla, based on available computed records, are given in Table 8. Details of the maximum, minimum and mean monthly flows for the gauging stations located on Tenterfield Creek at Clifton, The Mole River at Bellanboe and Trenayr, Beardy River at Haystack, Dumaresq River at Roseneath and Bonshaw Weir and Macintyre River at Boggabilla are tabulated in Appendices 14 to 20 inclusive.

TABLE 8

Stream	Station	Complete Years of Records	Average Annual Yield over Period of Complete Years of Records		
			Acre Feet Per Annum	Cusecs	Gallons Per Minute
Tenterfield Creek	Clifton	46	50,200	69	26,000
The Mole River	Bellanboe	5	95,500	131	49,000
The Mole River	Trenayr	45	106,000	145	54,000
Dumaresq River	Roseneath	32	337,000	462	173,000
Beardy River	Haystack	24	37,000	51	19,000
Dumaresq River	Bonshaw Weir	34	402,000	551	206,000
Macintyre River	Boggabilla	69	690,000	945	353,000

7. AVERAGE ANNUAL RUNOFF

Although the streamflow records in the Dumaresq River Valley in New South Wales extend for periods up to 46 years, the best indicator of the runoff from the valley is the station located on the Dumaresq River at Boggabilla for which records are available for 69 complete years of record. The current estimate of the long term annual runoff from the Dumaresq River Valley has therefore been based on streamflow correlations with records for this gauging station.

The long term yield from the New South Wales portion of the Dumaresq Valley has been estimated to be about 220,000 acre feet per annum or about 300 cusecs which represents about 112,000 gallons per minute. In terms of catchment this is equivalent to about 104 acre feet per annum per square mile.

In Table 9, details are given of the estimated long term average annual runoff from the Dumaresq River Valley (New South Wales) and from its major tributaries in New South Wales. For comparison, the average annual runoffs from the nearby basins of the Macintyre and Gwydir Valleys are also tabulated.

TABLE 9

Valley	Catchment Area in Square Miles	Estimated Long Term Average Annual Runoff		
		Acre Feet Per Annum	Acre Feet Per Annum Per Square Mile	Percentage Runoff
Dumaresq River (N.S.W. Catchment)	2,120	220,000	104	7%
Tenterfield Creek	300	62,000	203	12%
The Mole River	630	103,000	162	10%
Beardy River	360	51,000	142	9%
Macintyre River (above Dumaresq River)	3,250	320,000	98	6%
Gwydir River	10,010	670,000	67	6%

In Report No. 3 on the Water Resources of the Macintyre and Severn Valleys, the estimated long term average annual runoff quoted for the Macintyre and Severn River Valleys above the Dumaresq River junction was given as 370,000 acre feet per annum. A further assessment of the yields from this catchment, based on additional streamflow information now available has indicated the original figures as being slightly too high and the revised data has been included in Table 9.

The estimates of annual runoffs given in Table 9 indicate that a higher percentage runoff can be expected from The Mole River and Tenterfield Creek than from other streams in the valley. This result is due to the more elevated topography and higher average annual rainfalls which prevail over the headwater areas of these two catchments.

When compared to the Macintyre and Gwydir River Valleys, the New South Wales catchment within the Dumaresq River Valley shows similar runoff properties to the adjacent Macintyre Valley. However, compared to the Gwydir Valley, the runoff per square mile for the New South Wales catchment within the Dumaresq River Valley is about one and a half that estimated for the Gwydir Valley.

The main reason is that the runoff per square mile for the Gwydir River is considerably affected by the stream system downstream of Moree. In this section the Gwydir is a slow moving stream with a complex development of effluents, creeks and branches, and little contribution to flow can be expected in normal seasons from the catchment downstream of Moree. The low runoff rate of these areas considerably reduces the overall average runoff rate for the Gwydir Valley in comparison with other nearby valleys and therefore the Gwydir Valley is not a good indicator of the yields to be expected from more elevated western valleys in the State.

However, the Dumaresq River Valley covers a wide range of topography, from mountainous terrain to plains, and therefore is reasonably representative of the upper sections of western valleys in the State.

On a square mile of catchment area basis the estimated runoff for the Dumaresq River Valley is about three times the average for inland New South Wales and about 10 percent above the average for the State.

8. VARIABILITY OF STREAMFLOWS

Although average annual flow serves as a convenient term to compare the surface water resources which could be available in a particular year, it does not indicate the variability of flows for periods within the year or the extent to which the valley's surface water resources could be utilised by the construction of conservation works.

The variability of river flow is a very important aspect in planning and designing water resources projects. It is necessary to know the sequence of monthly discharges over a fairly long period to enable reliable estimates to be made of the probable controlled yield available from a storage.

Available streamflow records indicate that all the streams within the Dumaresq Valley exhibit a high degree of variability in their annual surface water resources. Based on a period of record of 69 years the annual flow for the Macintyre River at Boggabilla has varied from about 1 percent to about 530 percent of the annual average flow. At the upstream stations on the Dumaresq River at Bonshaw Weir and Roseneath the variations in annual flow over periods of 34 and 32 years respectively have ranged from about 12 percent to 500 percent at Bonshaw Weir and 11 percent to 430 percent at Roseneath. The tributary streams of the Dumaresq River, The Mole River at Trenayr and Tenterfield Creek at Clifton have shown similar variations in annual flow. Over periods of 45 and 46 years respectively the annual flow has varied from about 7 percent to 450 percent at Trenayr and from 5 percent to 540 percent at Clifton.

As expected the degree of variability of monthly flows is much more marked than the annual flows. At Boggabilla, the total monthly flow has varied from a minimum of zero to a maximum of almost twenty five times the average monthly flow. All the streamflow stations in the Dumaresq Valley have recorded minimum monthly flows of zero and all stations, with more than 20 years records, have recorded a maximum of more than twenty times the average monthly flow.

To illustrate the extreme variability of runoff in the valley, Figure 18 gives a comparison of monthly streamflow variations at the gauging station on the Macintyre River at Boggabilla and Figure 19 shows the monthly streamflows recorded on The Mole River at Trenayr and on Tenterfield Creek at Clifton.

The Dumaresq Valley generally experiences its lowest rainfalls during April to September inclusive. Within this period the rainfalls recorded in June and July are usually higher than in the other months.

The distribution of average monthly rainfalls at Boggabilla, Deepwater, Strathbogie and Tenterfield are shown at Figure 28. The variations in monthly rainfalls for Boggabilla can be considered to be representative of the lower western sections of the valley, whilst those for Deepwater, Strathbogie and Tenterfield represent the expected variations of monthly rainfalls in the eastern sections of the valley.

The distribution of average monthly streamflows has a similar pattern to the average monthly rainfalls. The lowest streamflows generally occur in the months of April and May with a secondary period of low flow in the months of August and September. The average monthly streamflows at Boggabilla, Trenayr and Clifton are shown at Figure 29.

During the 69 year period for which streamflow records are available for the Macintyre River at Boggabilla, peak flows in excess of 50,000 cusecs have occurred on ten occasions. The highest recorded flood peak of 74,300 cusecs was recorded in January 1956. As a result of this flood the total discharge which passed Boggabilla during February 1956 was about 1,456,000 acre feet or more than twice the long term average annual discharge of about 690,000 acre feet. The monthly discharge at Boggabilla has been greater than the long term average annual discharge on five occasions since the commencement of records in 1894.

The highest recorded floods in the Dumaresq River at Roseneath and The Mole River at Trenayr occurred in February 1956 when peak flows of 115,000 and 64,000 cusecs were recorded at the respective stations. Tenterfield Creek at Clifton recorded a peak flow of 63,000 cusecs in June 1948. In February 1956 the monthly discharges at Roseneath and Trenayr were about 611,300 and 192,000 acre feet respectively, both these discharges being about double the respective long term average annual discharges. The recorded monthly discharge has been greater than the long term average annual discharge on six occasions at Roseneath and four occasions at Trenayr.

The highest monthly discharge recorded at Clifton on Tenterfield Creek was 125,000 acre feet in June 1950 and this flow was more than 2½ times the long term average annual discharge. During the period of available streamflow records the monthly discharges at Clifton have been greater than the long term average annual discharge of about 50,000 acre feet on seven occasions.

Streamflow records in the Dumaresq Valley indicate that the streams on which gauging stations are in operation have ceased to flow for extended periods. One of the most severe sequences of low flow occurred during 1965 when most stations ceased to flow during the entire 4 month period from March to June. The longest period of zero flow recorded in the Macintyre River at Boggabilla occurred from 2nd March, 1902 to the 2nd December, 1902, a period of 276 consecutive days.

A quantitative indication of the variation of streamflows at gauging stations in the valley is given in Table 10. This table shows the maximum, minimum and mean discharges for these stations over the respective periods of computed records.

TABLE 10

Stream	Station	Period of Computed Records	Recorded Discharges		
			Maximum	Minimum	Mean
Tenterfield Creek	Clifton	1921 to date	63,000 cusecs (23,560,000 g.p.m.)	0	69 cusecs (26,000 g.p.m.)
The Mole River	Bellanboe	1963 to date	21,600 cusecs (8,000,000 g.p.m.)	0	131 cusecs (49,000 g.p.m.)
The Mole River	Trenayr	1924 to date	64,000 cusecs (23,940,000 g.p.m.)	0	145 cusecs (54,000 g.p.m.)
Dumaresq River	Roseneath	1937 to date	115,000 cusecs (43,010,000 g.p.m.)	0	462 cusecs (173,000 g.p.m.)
Beardy River	Haystack	1934 to date	53,000 cusecs (19,820,000 g.p.m.)	0	51 cusecs (19,000 g.p.m.)
Dumaresq River	Bonshaw Weir	1934 to date	48,200 cusecs (18,030,000 g.p.m.)	0	551 cusecs (206,000 g.p.m.)
Macintyre	Boggabilla	1894 to date	74,300 cusecs (27,790,000 g.p.m.)	0	945 cusecs (353,000 g.p.m.)

9. PERSISTENCE OF STREAMFLOWS

An indication of the persistence of flows in any stream can be obtained from examination of flow duration curves. A flow duration curve of daily discharge shows the percentage of time that the average daily flow in a stream at a particular location is greater or less than the indicated flows. In this report all flow duration curves and flow duration statistics indicate the percentage of time that flows were equal to or greater than any selected flow.

In drainage basins subject to similar meteorological conditions, the average slope of a flow duration curve gives an indication of the magnitude of the natural storage in each basin, whilst the shape of the lower end of the curve is an indication of the basin's average groundwater conditions. A flat sloped duration curve suggests that the drainage basin upstream of the gauging station has a relatively large natural storage, whilst a steep sloped duration curve indicates that there is little natural storage in the upstream drainage basin and that floods will recede quite rapidly. If the lower sections of the curve are relatively flat this indicates that the stream is supplemented by groundwater and that the yield from this source is relatively high and persists for substantial periods.

Flow duration curves have been derived for the stations on Tenterfield Creek at Clifton, The Mole River at Trenayr and the Dumaresq River at Roseneath and Boggabilla. Details of the flow frequency statistics for these stations are given in Tables 11 to 14 whilst the flow duration curves for each station are appended at Figures 20 to 23 respectively.

For comparative purposes, flow duration curves for these stations have been replotted in the form of duration curves per square mile of catchment and are shown at Figure 24.

Reference to Figure 24 shows that based on available records the station located on The Mole River at Trenayr exhibits the best persistence of low flow of the selected stations in the Dumaresq River Valley.

The flow duration curves for each of the stations in the Dumaresq River Valley show that streamflows in each catchment continue for extended periods of time after the cessation of rainfall and this indicates that, over significant periods, groundwater discharge into stream channels is relatively high.

TABLE 11

TENTERFIELD CREEK AT CLIFTON

Percentage of Time Flow Equalled or Exceeded	Flow	
	Cusecs	Gallons Per Minute
10%	90	33,800
30%	22	8,300
50%	8	3,000
70%	2.3	860
90%	0	0
100%	0	0

TABLE 12

THE MOLE RIVER AT TRENAYR

Percentage of Time Flow Equalled or Exceeded	Flow	
	Cusecs	Gallons Per Minute
10%	240	90,000
30%	72	27,000
50%	30	11,300
70%	12	4,500
90%	2	750
100%	0	0

TABLE 13

DUMARESQ RIVER AT ROSENEATH

Percentage of Time Flow Equalled or Exceeded	Flow	
	Cusecs	Gallons Per Minute
10%	860	323,000
30%	192	72,000
50%	73	27,400
70%	30	11,300
90%	8	3,000
100%	0	0

TABLE 14

DUMARESQ RIVER AT BOGGABILLA

Percentage of Time Flow Equalled or Exceeded	Flow	
	Cusecs	Gallons per Minute
10%	1,900	713,000
30%	430	161,000
50%	155	58,100
70%	50	18,800
90%	3	1,130
100%	0	0

10. OCCURRENCE OF FLOODING

An indication of the frequency and magnitude of flooding in the Dumaresq River Valley may be obtained from examination of recorded flood data at Boggabilla since 1894. A diagram showing the occurrence of recorded flood flows exceeding 25 feet at Boggabilla is given at Figure 25.

Since the commencement of streamflow measurements at Boggabilla in 1894 the critical gauge height of 35 feet has been exceeded 18 times or on an average of about once every four years. The highest gauge height was recorded in January 1956 when a gauge height of 40 feet 9½ inches was reached. This height represents a peak flow of about 75,000 cusecs. However, records indicate that a flood higher than the January 1956 flood occurred prior to the establishment of the gauging station at Boggabilla. In March 1890, a peak height equivalent to 41 feet 1½ inches on the existing gauge was reported to have occurred at Boggabilla, this height being 4 inches above the 1956 maximum height.

At other gauging stations in the valley it is apparent that the February 1956 flood was the most severe on record. During this flood the highest recorded discharges were experienced at Trenayr, Roseneath and Haystack since the commencement of records at each station. No records were available for this month for The Mole River at Bellanboe and Dumaresq River at Bonshaw Weir. Boggabilla recorded its second, and Clifton its third highest flood in February 1956 of 70,000 and 47,000 cusecs respectively.

Details of the recorded maximum discharges at gauging stations with more than 20 years of complete streamflow records are given in Table 15.

TABLE 15

Stream	Station	Catchment Area (Sq.Miles)	Maximum Recorded Peak Discharge During Period of Operation		
			Date	(Cusecs)	(Cusecs per Sq.Mile)
Tenterfield Creek	Clifton	220	June 1948	63,000	286
The Mole River	Trenayr	620	February 1956	64,000	103
Dumaresq River	Roseneath	2,140	February 1956	115,000	54
Beardy River	Haystack	350	February 1956	53,000	151
Macintyre River	Boggabilla	8,700	January 1956	74,300	8.5

In a particular valley it is usual to expect that the runoff rates per square mile will decrease as catchment area increases during a certain flood. The validity of this assumption depends on the degree to which rainfalls and catchment conditions vary over the particular valley.

In addition unless the maximum flood is so severe that all stations in the valley record their maximum flood levels during the one flood it is unusual to find that all gauging stations follow the general pattern of increased flood flows per square mile with reduced catchment area.

As indicated in Table 15 the hypothesis holds for Trenayr, Roseneath and Haystack for the February 1956 flood.

Apart from The Mole River at Trenayr and the Dumaresq River at Roseneath the maximum recorded monthly discharge for the gauging stations given in Table 15 did not occur during the same flood which produced the maximum peak flow.

On Tenterfield Creek at Clifton, the maximum monthly discharge was recorded in June 1950 when 125,640 acre feet or 250 percent of the average annual discharge passed the gauging station. During that month the peak flow at Clifton was 47,000 cusecs or about 75 percent of the maximum recorded discharge in 1948.

At Boggabilla the maximum monthly discharge occurred in February 1956 when about 1,456,000 acre feet were recorded. This monthly flow is more than twice the average annual flow for Boggabilla and is about sixteen times the average for February.

11. DROUGHT PERIODS

Although there does not appear to be a universally accepted definition of the term "drought" it is generally considered that a water shortage arising from below average precipitation is a general indication of drought conditions.

When considering rural conditions, if soil moisture is insufficient to meet the requirements of most crops during the growing season, it is generally accepted that a drought is occuring. Normally a prime indicator of drought conditions is a diminished or exhausted rate of streamflow.

Diagrams showing the variations in annual rainfalls recorded at Boggabilla, Deepwater, Stanthorpe and Tenterfield since 1893, 1890, 1873 and 1871 respectively are appended at Figures 26 and 27. These diagrams indicate that the Dumaresq Valley generally experienced low rainfalls in 1877, 1902, 1915, 1919, 1923, 1940, 1957 and 1965.

At Boggabilla the lowest calendar year rainfall occurred in 1902 when only about 6.8 inches were registered. Minimum calender year rainfalls at other stations within the Dumaresq Valley were about 14.8 inches at Deepwater in 1909, 14.5 inches at Stanthorpe in 1957 and 16.9 inches at Tenterfield in 1915.

The minimum rainfalls recorded in a consecutive period of twelve months were generally less than the minimum annual values. At Boggabilla, the minimum recorded twelve monthly rainfall was 5.1 inches and this occurred during the period from November 1901 to October 1902. At other locations within the valley the minimum twelve monthly rainfalls were 14.8 inches at Deepwater from January to December 1909, 13.1 inches at Stanthorpe from February 1902 to January 1903, and 14.5 inches at Tenterfield from June 1919 to May 1920.

As Boggabilla is situated further inland than the other stations indicated and is not usually affected by orographic rainfalls, it is to be expected that the average rainfalls recorded at Boggabilla should be lower than the stations located closer to the coast and at more elevated sites. Figure 28 shows the average monthly rainfalls at Boggabilla, Deepwater, Strathbogie and Tenterfield and it is evident from this diagram that the Dumaresq Valley is subjected to heaviest rainfalls in the spring and summer months from October to March inclusive when more than 65 percent of the annual rainfall is recorded on the average.

Since the commencement of streamflow measurement at Boggabilla in 1894, the lowest recorded streamflows at this location over a period of twelve consecutive months occurred from February 1915 to January 1916 when a total flow of only about 3,300 acre feet occurred. In addition to this period there have been six occasions when the total flow at Boggabilla for a period of twelve months has been less than one twentieth of the average annual flow, all these occasions occurring prior to 1927. Since 1927 the lowest twelve monthly flow at Boggabilla occurred from December 1964 to November 1965 when about 38,300 acre feet was recorded.

Since the installation of stream gauging stations in the valley in 1921, the available streamflow records indicate that significant periods of below average streamflows were recorded in 1939 to 1940, 1957 to 1958 and December 1964 to November 1965. The minimum twelve monthly flows and their percentages of the mean annual flow for gauging stations at Clifton, Bellanboe, Trenayr, Roseneath, Haystack, Bonshaw Weir and Boggabilla since the commencement of records at the respective stations are shown in Table 16.

TABLE 16

Stream	Station	Minimum Twelve Monthly Flow		
		Period	Acre Feet	Percentage of Mean Annual Flow
Tenterfield Creek	Clifton	February 1957 to January 1958	2,184	4.3%
The Mole River	Bellanboe	December 1964 to November 1965	9,491	9.3%
The Mole River	Trenayr	December 1939 to November 1940	4,653	4.3%
Dumaresq River	Roseneath	February 1957 to January 1958	26,308	7.8%
Beardy River	Haystack	December 1964 to November 1965	353	0.9%
Dumaresq River	Bonshaw Weir	December 1964 to November 1965	31,375	7.7%
Macintyre River	Boggabilla	February 1915 to January 1916	3,338	0.5%

Available streamflow records indicate that all streams in the valley for which records are available have ceased to flow for extended periods of time.

Since the commencement of streamflow records in 1894 the streamflow records at Boggabilla indicate that the Macintyre River has ceased to flow on 50 occasions and the total period of no flow has been about 1,800 days. The longest consecutive period of no flow at Boggabilla was recorded in 1902 when the river ceased to flow for 276 consecutive days.

The periods of no flow in the major tributaries have ranged from 143 consecutive days for The Mole River at Bellanboe to 238 consecutive days for Tenterfield Creek at Clifton.

Details of the maximum number of consecutive days and the periods of their occurrence for selected stations in the valley are shown in Table 17. Also indicated in Table 17 is a comparison of the minimum total flow for three and six month periods. As indicated in Table 17, all stations have recorded zero flow for a period of at least three months whilst only Tenterfield Creek at Clifton, The Mole River at Trenayr and the Macintyre River at Boggabilla have ceased to flow for at least six months.

TABLE 17

Stream	Station	Maximum Consecutive Period of Zero Flow		Minimum Total Flow During Period of Records (Acre Feet)	
		Days	Period	3 Months	6 Months
Tenterfield Creek	Clifton	238	April to December 1940	0	0
The Mole River	Bellanboe	143	February to July 1965	0	412
The Mole River	Trenayr	236	April to December 1940	0	0
Dumaresq River	Roseneath	159	February to July 1965	0	914
Beardy River	Haystack	179	January to July 1936	0	4.8
Dumaresq River	Bonshaw Weir	131	March to July 1965	0	158
Macintyre River	Boggabilla	276	March to December 1902	0	0

12. THE 1964-1967 DROUGHT AND SUBSEQUENT CONDITIONS

From January to October, 1964, the majority of the Dumaresq River Valley experienced good conditions with either average or above average rainfalls occurring over most of the valley. However, in November and December, 1964 the conditions began to deteriorate especially in the eastern sections of the valley and by the end of 1964 rainfall was required in most areas to maintain pasture growth in the valley.

The deficiency of adequate rainfalls continued throughout January and February 1965 and as a result the Pasture Protection Districts of Tenterfield, Warialda and Moree, which encompass most of the Dumaresq River Valley, were proclaimed as official drought areas at the beginning of March, 1965.

During March, 1965, the dry conditions continued and the rainfalls received at many locations throughout the valley were the lowest recorded for 50 years and at many stations no rainfall was registered during that month. The dry conditions were further aggravated by extremely high temperatures and the occurrence of hot dry winds during March, so that the serious position of agricultural activities within the valley was considerably worsened.

The rainfalls recorded in the period from April to June 1965 were below average and the continual lack of adequate rainfall during the first half of 1965 had made the drought situation critical within the valley as in many other valleys in the State. Rainfalls received in August and September 1965 were still generally less than average but did provide some measure of relief from the drought, although this was nullified to a large extent by exceptionally hot and windy conditions which prevailed during late August.

In October and November 1965 patchy rain occurred over parts of the north west plains region but this rainfall did little to improve the dry conditions which had prevailed since November 1964.

In December 1965 the Dumaresq River Valley received substantial falls and drought conditions were relieved in many areas of the valley. The Tenterfield Pasture Protection District was removed from the drought declared areas in January 1966 but the Districts of Warialda and Moree remained as declared drought areas.

After the good rainfalls registered in December 1965 the conditions within the Dumaresq Valley gradually deteriorated during the first half of 1966. By the end of autumn, 1966, drought conditions were again present over much of the valley, especially on the north west slopes where widespread rain was needed to ease the serious drought situation. In June, 1966, useful falls occurred on the north west plains region and this afforded some relief to the dry conditions in that area.

Widespread rainfall was received over most of the valley during August 1966 and these good falls, relieved the drought in much of the valley, which had prevailed for 22 months since November 1964. As a result of this beneficial rainfall Warialda and Moree Districts were removed from the official drought declared areas. Useful follow-up rains during September and October 1966 assured further improvement and the outlook in the valley at the end of Spring was good in the eastern regions and considerably improved in the western areas.

However, below average falls from December 1966 to March 1967 caused a renewal of the dry conditions and the situation in parts of the north west plains and slopes rapidly deteriorated.

Except during October 1967, low rainfalls continued for the remainder of 1967. In October and December 1967 respectively, the western Pasture Protection Districts of Moree and Warialda were again declared drought areas. Conditions in the western regions of the valley remained critical in the early months of 1968 and both the Moree and Warialda districts were not removed from drought declared areas until March 1968.

The eastern region of the valley received more substantial rainfall in January 1968, and combined with rainfalls in May 1968 provided some benefit for these areas.

Rainfalls for the remaining months of 1968, maintained conditions at reasonable levels with above average falls occurring generally in four of the seven remaining months of 1968. Areas in the west of the valley did not receive as much rain in this period and conditions remained only fair.

During 1969, above average rainfalls were generally recorded in January and May with the intermediate months receiving low rainfalls. Whilst conditions deteriorated in the early months of 1969, good rainfalls since June have substantially improved conditions and the outlook for the summer of 1969/1970 for most landholders was good.

Details of the recorded monthly rainfalls to December 1968, at four selected locations within the valley, during the dry period commencing in November 1964 are given in Table 18.

TABLE 18

Month		Rainfall (Points)			
		Boggabilla	Deepwater	Stanthorpe	Tenterfield
November	1964	209	178	283	255
December	1964	191	105	196	120
January	1965	113	177	202	96
February	1965	27	278	82	184
March	1965	15	7	7	0
April	1965	38	66	58	50
May	1965	33	101	34	18
June	1965	44	105	223	124
July	1965	186	288	470	675
August	1965	110	88	144	54
September	1965	251	245	235	155
October	1965	130	167	126	99
November	1965	40	218	139	288
December	1965	356	948	682	1116
January	1966	116	170	102	67
February	1966	60	405	446	584
March	1966	360	372	193	156
April	1966	55	132	110	184
May	1966	81	70	14	107
June	1966	272	99	168	162
July	1966	6	44	23	25
August	1966	577	552	500	456
September	1966	95	186	199	292
October	1966	99	314	125	365
November	1966	455	493	222	407
December	1966	130	272	184	414
January	1967	148	356	369	758
February	1967	18	83	129	229
March	1967	481	637	528	866
April	1967	5	109	68	156
May	1967	194	151	198	211
June	1967	285	436	408	731
July	1967	140	146	140	253
August	1967	79	83	130	141
September	1967	5	83	52	60
October	1967	85	436	404	878
November	1967	4	225	308	206
December	1967	172	347	183	364
January	1968	445	524	701	1108
February	1968	157	138	367	332
March	1968	148	237	373	659
April	1968	157	102	281	159
May	1968	182	205	203	275
June	1968	28	75	92	52
July	1968	129	242	362	396
August	1968	187	454	462	597
September	1968	57	110	73	93
October	1968	20	209	173	295
November	1968	3	99	85	97
December	1968	369	270	334	500
Annual Rainfall	1964	2318	3084	2998	3324
	1965	1343	2688	2402	2859
	1966	2306	3109	2286	3219
	1967	1616	3092	2917	4853
	1968	1882	2715	3506	4563
Minimum Twelve Monthly Rainfall since November 1964		1178 (Dec.1964 to Nov.1965)	1805 (Nov.1964 to Oct.1965)	1916 (Dec.1964 to Nov.1965)	1830 (Nov.1964 to Oct.1965)
Minimum Twelve Monthly Rainfall since Commencement of Records		505 (Nov.1901 to Oct.1902)	1477 (Jan.1909 to Dec.1909)	1311 (Feb.1902 to Jan.1903)	1459 (June 1919 to May 1920)
Average Annual Rainfall Over Period of Records		2342	3023	2992	3277

During the extended periods of below average rainfalls since 1964 the drought conditions were indicated by the runoff records obtained at gauging stations within the valley. The flow at all gauging stations ceased during this drought and details of the maximum number of consecutive days of no flow for selected stations within the valley are given at Table 19.

TABLE 19

Stream	Station	Maximum Consecutive Period of Zero Flows (1964–1967 Drought)	
		Number of Days	Period
Tenterfield Creek	Clifton	146	February to July 1965
The Mole River	Bellanboe	143	February to July 1965
The Mole River	Trenayr	146	February to July 1965
Dumaresq River	Roseneath	159	February to July 1965
Beardy River	Haystack	126	August to December 1965
Dumaresq River	Bonshaw Weir	131	March to July 1965
Macintyre River	Boggabilla	130	March to July 1965

To indicate the severity of the runoff deficiency within the Dumaresq River Valley during the drought period, Table 20 shows the minimum total flow volume recorded at selected stream gauging stations for periods of three and six months.

TABLE 20

Stream	Station	Minimum Total Flow During 1964–1967 (Acre Feet)	
		3 Months	6 Months
Tenterfield Creek	Clifton	0	179
The Mole River	Bellanboe	0	412
The Mole River	Trenayr	0	421
Dumaresq River	Roseneath	0	914
Beardy River	Haystack	0	57
Dumaresq River	Bonshaw Weir	0	158
Macintyre River	Boggabilla	0	914

Several of the streamflow stations in the valley recorded the lowest twelve monthly flow since their establishment during the period from December 1964 to November 1965 inclusive. However, as none of the stations within the valley were operative prior to 1921, records of periods of low flow before that date are unavailable.

The gauging station at Boggabilla was installed in 1894 and records at this station indicate that there have been three occasions prior to 1921 when the total flow over a twelve month period was less than that recorded during the 1964/67 drought period. From February 1915 to January 1916 the total flow at Boggabilla was only 3,338 acre feet compared to the 38,341 acre feet recorded from December 1964 to November 1965. The other periods were from March 1918 to February 1919 when 7,540 acre feet was recorded, and from December 1901 to November 1902 when 16,811 acre feet passed Boggabilla.

Details of the minimum twelve monthly flows recorded at selected stations in the Dumaresq Valley during the recent drought are given in Table 21.

TABLE 21

Stream	Station	Minimum Twelve Monthly Flow (1964–1967 Drought)		
		Period	Acre Feet	Percentage of Mean Annual Flow
Tenterfield Creek	Clifton	December 1964 to November 1965	3,778	7.5%
The Mole River	Bellanboe	December 1964 to November 1965	9,491	9.3%
The Mole River	Trenayr	December 1964 to November 1965	11,623	10.9%
Dumaresq River	Roseneath	December 1964 to November 1965	33,368	9.8%
Beardy River	Haystack	December 1964 to November 1965	353	0.9%
Dumaresq River	Bonshaw Weir	December 1964 to November 1965	31,375	7.7%
Macintyre River	Boggabilla	December 1964 to November 1965	38,341	5.4%

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT

Wool, beef, oats, lucerne, wheat and tobacco comprise the traditional primary industries of the Dumaresq Valley in New South Wales. Of these, tobacco is one of the more important and it gives the valley a large proportion of its annual agricultural income. The main tobacco region in New South Wales is a three mile wide strip on the southern bank of the Dumaresq River commencing about 25 miles upstream from Boggabilla and continuing for a further 25 miles upstream.

The present use of streamflow for irrigation is mainly confined to the growing of tobacco, however irrigation is also applied to improved pastures and fodder crops on lands fronting the Dumaresq River and its tributaries. Only relatively small quantities of water are required for town, commercial and mining water supplies.

The area in New South Wales authorised for irrigation by license under the Water Act has increased from about 730 acres in 1944 to about 6,930 acres at June 1969. Over the same period, the number of licenses for irrigation has increased from 32 to 173 whilst the average authorised area per license has varied from 19 acres in both 1950 and 1951 to 40 acres in 1969. The minimum area authorised for irrigation was 628 acres in 1953 within a period of above average rainfalls and corresponding periods of high flow. A graph showing the variation in licensed area and number of licenses from 1944 to 1969 is shown at Figure 30.

In addition to licenses for irrigation purposes, a total of 6 licenses were current at 30th June 1969 for commercial and mining water supply. These licenses permit a total maximum diversion of up to 1,785 gallons per minute (4.8 cusecs) and are located on Glen Lyon Creek and Breakfast Creek which are tributaries of Tenterfield Creek, Deepwater River and Catarrh Creek, both tributaries of The Mole River, and Graveyard Creek and Ten Mile Swamp, the last two being tributaries of the Beardy River.

Two further water supply works are located near the towns of Tenterfield and Deepwater, however as these works were commissioned before 1930, they are not required to be licensed under the Water Act.

The Tenterfield Municipal Council operates a storage on Tenterfield Creek near Tenterfield as one of these unlicensed works. This dam which is a concrete structure completed in 1930, has a storage capacity of about 700 acre feet (180 million gallons) and is capable of diverting a continuous flow of 11,400 gallons per hour (0.5 cusecs). At present an investigation is being conducted into the feasibility of increasing the dam storage.

The Deepwater Municipal Council operates a pump with a capacity of 7,000 gallons per hour (0.3 cusecs) on the Deepwater River for the water supply to the town of Deepwater. These works comprise the only other unlicensed works in the valley.

The estimated maximum total requirements in the valley under present conditions for irrigation under license, town, commercial and mining, water supplies and riparian usage are given in Table 22.

TABLE 22

Requirements	Estimated Maximum Demand	
	Cusecs	Gallons per Minute
Irrigation under license (6930 acres at 2.5 feet per 8 month season)	36	13,450
Town, Commercial and Mining Water Supplies	4.8	1,790
Riparian Usage	27.2	10,160
Totals	68	25,400

The estimated total maximum New South Wales demand under present conditions is about 68 cusecs, which represents about one eighth of the average flow at Bonshaw Weir, the most downstream streamflow station within the valley on the Dumaresq River operated by the Water Conservation and Irrigation Commission. It should be realised however, that the Queensland demands would increase the total demand along the Dumaresq River. As the natural streamflows in the valley often cease to flow or approach zero flow there are numerous periods when streamflows are inadequate to meet even present requirements.

There is a significant demand for streamflows for irrigation purposes in the tributary streams in the New South Wales section of the valley. A schedule of the authorised areas for irrigation and the estimated total water demand including water supply and riparian usage but excluding evaporation and transmission losses, for the New South Wales section of the Dumaresq River and its principal tributaries is given in Table 23.

TABLE 23

Section of Valley	Area Authorised for Irrigation at 30th June 1969	Estimated Total Demand	
		Cusecs	Gallons per Minute
Tenterfield Creek and tributaries	908	9.7	3,620
Dumaresq River above The Mole River	40	0.4	140
The Mole River and tributaries	1,054	17.5	6,540
Dumaresq River between The Mole River and Beardy River	890	5.5	2,050
Reedy Creek	46	2.2	820
Beardy River and tributaries	177	8.2	3,070
Dumaresq River between Beardy River and Macintyre Brook	3,447	20.6	7,700
Dumaresq River below Macintyre Brook	275	2.4	900
Miscellaneous tributaries	93	1.5	560
Totals	6,930	68	25,400

14. POSSIBLE IRRIGATION DEVELOPMENT

Areas of irrigable land in the upper section of the Dumaresq River Valley occur interspersed with undulating country. Here the valley of the main river varies between one quarter and one half mile in width with spurs running almost to the water's edge. In many places the flood plain is restricted to the area bounded by meanders in the river and to points of confluence of tributary streams. The soils are alluvial, of light sandy loam texture, and are deep and well drained.

The lower section of the valley, from below Texas to the Dumaresq-Macintyre confluence is wider but still confined between hills which become lower to the west. The alluvial plain is clearly terraced, the lower terrace of recent alluvium being narrow and readily flooded. It is composed of deep alluvial soils of sandy or silty loam texture and is well drained The higher terrace varies in width from one to two miles and rises gently away from the river. Soils of the higher terrace are more markedly differentiated in profile and are loam to clay loam in consistency becoming heavier and more compacted with depth.

In addition to areas along the Dumaresq River there are extensive areas of irrigable land along New South Wales' tributaries notably Tenterfield Creek, The Mole River, Beardy River and their tributaries.

A dissection of irrigable areas in New South Wales along sections of the river and along major tributaries is given in Table 24.

TABLE 24

Section of Valley (New South Wales)	Estimated Area in the Dumaresq Valley within New South Wales Suitable for Irrigation from Streamflow (Acres)
Dumaresq River upstream from The Mole River Junction	400
Dumaresq River and tributaries between The Mole River Junction and Beardy River Junction	5,300
Dumaresq River and tributaries between Beardy River Junction and Macintyre Brook Junction	26,000
Dumaresq River between Macintyre Brook Junction and Macintyre River Junction	5,900
Tenterfield Creek and tributaries	6,700
The Mole River and tributaries upstream from Boundary Creek Junction (Dam Site)	8,200
The Mole River downstream from Boundary Creek Junction	2,000
Beardy River and tributaries	3,500
Total Area	58,000

Soils in the Dumaresq Valley are fertile and suitable for a wide range of crops. In addition to the present agricultural practices of growing tobacco, lucerne and fodder, irrigation of crops such as wheat, grain sorghum and maize could become a possibility. Further extension of the integration of irrigated fodder crops (mainly lucerne and oats) for sheep and beef cattle production, at present carried out to a limited extent in most areas, will no doubt take place. Some extension of the beef industry at the expense of sheep can be anticipated after the introduction of a more secure supply of feed due to irrigation.

Considerable extension of existing tobacco growing areas is to be expected as a result of improvement to the quality of the water as well as better regulation of supply following the construction of head storages.

Due to the relatively steep topography of much of the valley, as yet there has been little development of farm dams as a source of supply for irrigation purposes.

However, the temporal pattern of rainfall is such as to permit the economic construction of farm dams, and it could be expected that such storages will be constructed at suitable sites in the future and provide water for supplemental irrigation for these areas.

15. INVESTIGATION OF STORAGE PROPOSALS

The question of water conservation on the Dumaresq River which forms part of the border between New South Wales and Queensland has been under consideration by the irrigation authorities in both States since about 1920.

Following a number of conferences between the two State authorities, an Agreement covering the utilisation of the waters of the Dumaresq, Macintyre and Barwon Rivers, referred to collectively as the Border Rivers, was drawn up. In 1947 the New South Wales-Queensland Border Rivers Act was proclaimed ratifying the Agreement between the States and providing for the construction of works on the Border Rivers and the extension of water conservation, water supply and irrigation in the adjoining areas of the two States.

This Act provided, inter alia, for the construction of a storage dam on the Dumaresq River at Mingoola below the confluence of Pike Creek and The Mole River with the Dumaresq, and a number of low level weirs which would offer a measure of additional security for irrigators. Four such weirs have since been constructed namely Bonshaw, Cunningham and Glenarbon Weirs on the Dumaresq River and Boomi Weir on the Barwon River.

Investigations of dam sites on the Dumaresq River and tributaries have been carried out over a number of years. Foundation investigations were initially undertaken on the Dumaresq River over a two mile length of the valley where a number of dam sites existed in the vicinity of Mingoola and at a site lower down the river below the Beardy River confluence.

A dam at Mingoola would regulate the flow from all upstream tributaries and a storage at the lower site would also regulate the flow of the Beardy River. These investigations revealed that bedrock was covered by alluvium up to 250 feet in depth thus making construction of a dam on the main river difficult and costly.

All four tributaries of the Dumaresq River upstream of Mingoola were then examined for suitable storage sites as alternatives to a site on the Dumaresq.

Sites on two of the tributaries, the Severn River in Queensland and Tenterfield Creek in New South Wales, where sound rock exposures indicated good foundations for dams, were found to be deficient in storage capacity and were not further considered.

More attractive storages were located on the remaining tributaries, Pike Creek in Queensland and The Mole River in New South Wales. These sites appeared suitable for the construction of large dams with adequate storage capacities and were accordingly selected for more detailed investigation.

Locations of dam sites inspected on the Dumaresq River and tributaries are shown in Figure 31. Preliminary investigations, including surveys, drilling and geophysical exploration have been undertaken at Mingoola and The Mole River sites, and more comprehensive investigations have been completed at Pike Creek Dam Site.

In addition to the dam site investigations, consideration was given to the practicability of diverting portion of the flow in Tenterfield Creek to the proposed Mole River Storage by construction of a diversion weir and short tunnel through the divide between the two catchments. Two possible sites for a diversion weir on Tenterfield Creek are shown in Figure 32.

The investigations at Pike Creek Dam Site provided data for alternative dam designs in concrete or earth and rock fill, and facilitated the selection of the most economical type of construction. The investigations comprised surveys, foundation exploration by drilling and trenching, geological surveys and the sampling and testing of construction materials. Both regional and dam site geological surveys were carried out by the Department of Mines on behalf of the Commission.

While the investigations indicated the feasibility of construction of either a concrete or an earth and rockfill dam, cost appraisals of the two forms of dam for a storage capacity of 200,000 acre feet demonstrated significant economy in the adoption of the earth and rockfill dam. The design of the latter, on which estimates were based, incorporated a central vertical core rockfill embankment of 190 feet structural height, containing 2.4 million cubic yards of fill with a side channel spillway on the right abutment. The maximum depth of stored water will be 150 feet.

Independent studies of the possible use of the water were undertaken by New South Wales and Queensland and each State concluded that there would be a substantial excess of benefits accruing over and above costs involved in the work.

Hydrologic investigations have shown that it would be possible to provide a regulated flow in the Dumaresq River by the construction of dams on Pike Creek and The Mole River approaching that which would have been provided by the Mingoola Storage. A storage on Pike Creek alone of 200,000 acre feet capacity, would provide a regulated flow of 79,000 acre feet per annum at Mingoola. If restrictions on irrigation were imposed in dry periods when the volume of water held in storage falls below a pre-determined amount; then the regulated flow available in normal years could be increased to a figure in excess of 79,000 acre feet per annum.

This supply would be shared equally between Queensland and New South Wales. After providing for riparian requirements, including town, domestic and stock supplies and river losses, the remaining water will permit a substantial increase in the irrigated area serviceable from the storage, amounting in New South Wales alone to some 15,000 acres, equivalent to an increase in gross annual value of production of about $1¾ M.

The construction of Pike Creek Dam at an estimated cost of $14 M. will, by providing an adequate quantity of water of satisfactory quality, stabilise and allow for considerable expansion of livestock industries, ensure greatly increased production of grain and fodder crops under irrigation free of major fluctuations due to drought, facilitate production of existing tobacco quotas, improve the quality and yield per acre within these quotas and enable the industry in this area to share in any future increase in quotas.

Since the Border Rivers Agreement provided specifically for a dam on the Dumaresq River, an amendment to the Agreement was necessary to permit the construction of dams on tributary streams such as Pike Creek as an alternative to the Mingoola Dam. The amending legislation was ratified by both the New South Wales and Queensland Parliaments in December, 1968.

An approach has been made to the Commonwealth Government to assist in financing the construction of the Pike Creek Dam, either in the context of its National Water Resources Development Programme, or else by sharing the cost equally with New South Wales and Queensland in a special arrangement. The date of commencement of construction of the dam will be largely dependent on the outcome of this approach.

16. ACKNOWLEDGMENTS

The Water Conservation and Irrigation Commission gratefully acknowledges the assistance provided by the Director, Bureau of Meteorology, in supplying the section on Climatic Features, the Rainfall Statistical Data and the Median Rainfall Maps for inclusion in this report; and by the New South Wales Department of Public Works in providing details of existing town water supplies.

Appendix 1
Sheet 1

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1893	354	531	92	762	146	420	218	179	16	172	400	33	3323
1894	380	128	535	341	245	175	22	42	189	438	163	162	2820
1895	503	58	0	0	78	16	70	54	119	64	321	718	2001
1896	58	336	104	127	110	95	224	78	48	26	461	189	1856
1897	161	236	501	0	2	364	372	71	279	169	6	701	2862
1898	337	132	3	0	143	189	67	43	188	182	57	25	1366
1899	443	274	105	127	70	183	171	158	211	73	105	171	2091
1900	107	337	454	293	206	186	220	47	212	48	58	196	2364
1901	18	7	375	167	213	184	222	156	64	274	21	20	1721
1902	105	46	38	0	3	40	3	111	11	107	25	194	683
1903	257	32	314	206	284	218	448	232	365	136	448	261	3201
1904	390	285	839	13	324	46	233	67	162	123	90	172	2744
1905	330	21	243	521	157	55	42	52	1	245	60	169	1897
1906	310	263	208	58	235	86	36	503	245	212	244	233	2633
1907	739	100	657	44	123	104	161	103	5	177	368	355	2936
1908	72	533	534	311	0	128	123	269	134	202	148	123	2577
1909	57	325	87	232	243	274	116	360	60	352	192	248	2546
1910	689	92	537	83	77	384	212	36	17	245	235	405	3012
1911	744	312	410	110	132	2	142	94	165	44	49	289	2493

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1912	293	253	315	0	0	583	200	86	155	240	223	40	2388
1913	342	473	360	139	715	290	69	0	68	149	123	173	2901
1914	236	222	530	165	677	61	387	37	0	29	579	333	3256
1915	122	37	14	48	166	111	88	265	49	12	5	188	1105
1916	70	360	141	293	14	347	316	218	87	118	686	548	3198
1917	725	677	189	0	0	99	100	74	446	250	845	534	3939
1918	620	0	0	170	11	18	108	276	22	52	143	29	1449
1919	99	199	74	243	244	1	10	40	3	47	93	268	1321
1920	290	166	107	71	91	450	427	141	140	252	102	616	2853
1921	2	136	153	107	417	745	546	34	275	202	180	663	3460
1922	196	46	131	4	0	139	190	27	149	85	59	611	1637
1923	98	270	34	27	40	153	89	18	149	54	118	493	1543
1924	383	325	111	254	31	82	232	249	197	117	844	20	2845
1925	462	174	76	0	178	35	99	234	0	24	445	349	2076
1926	320	306	41	63	237	141	119	25	119	49	0	898	2318
1927	154	69	257	165	33	142	0	101	11	157	236	235	1560
1928	208	431	288	234	18	372	81	35	0	205	59	146	2077
1929	60	514	218	423	3	103	49	117	58	172	57	260	2034
1930	171	168	276	148	138	380	315	320	208	249	111	94	2488

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1931	122	50	310	101	207	151	102	90	146	115	326	570	2290
1932	98	154	91	320	122	100	182	23	350	254	380	165	2239
1933	405	158	17	69	146	251	303	138	125	412	335	154	2513
1934	143	487	2	100	149	129	216	172	87	355	360	306	2506
1935	766	110	18	3	102	17	102	50	329	57	83	124	1761
1936	178	105	218	42	150	84	284	102	121	85	24	389	1782
1937	237	100	795	18	18	45	100	36	53	132	512	342	2388
1938	191	242	0	66	702	43	82	155	138	232	388	0	2239
1939	226	6	397	396	0	185	182	214	50	37	86	227	2006
1940	29	367	313	57	47	0	0	14	76	40	66	403	1462
1941	552	114	311	0	12	166	36	13	10	151	313	14	1692
1942	99	332	40	0	162	80	291	25	77	229	281	790	2406
1943	288	9	9	221	75	90	99	192	72	182	513	327	2077
1944	299	94	0	24	34	31	161	373	127	210	65	70	1488
1945	244	529	0	71	154	469	205	193	29	12	384	286	2567
1946	393	71	58	247	50	12	3	0	523	41	276	231	1905
1947	471	411	639	127	174	66	50	172	210	184	460	469	3433
1948	197	175	167	121	164	542	219	51	146	42	145	246	2215
1949	442	650	139	49	33	194	64	27	184	475	261	15	2533

BOGGABILLA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1950	244	494	121	91	122	522	658	55	206	635	788	157	4093
1951	648	105	86	14	90	279	38	104	167	169	185	127	2012
1952	32	378	378	95	269	195	95	294	136	623	42	75	2612
1953	96	1550	295	62	134	0	37	341	5	101	195	67	2883
1954	316	808	0	0	25	99	219	149	72	824	346	209	3067
1955	127	647	35	381	177	38	217	111	62	235	135	302	2467
1956	548	611	196	272	343	489	219	0	99	208	147	185	3317
1957	361	294	205	88	65	107	75	110	13	187	58	92	1655
1958	352	243	358	218	28	497	29	77	243	145	187	240	2617
1959	356	584	54	129	183	16	308	13	49	224	446	79	2441
1960	257	316	102	81	188	103	138	141	125	92	134	113	1790
1961	264	276	263	64	116	87	233	143	61	360	687	195	2749
1962	924	190	657	186	133	24	71	231	170	50	44	574	3254
1963	216	154	656	67	225	46	12	148	21	137	351	511	2544
1964	229	287	101	288	170	62	197	50	203	331	209	191	2318
1965	113	27	15	38	33[illegible]	44	186	110	251	130	40	356	1343
1966	116	60	360	55	81	272	6	577	95	99	455	130	2306
1967	148	18	481	5	194	285	140	79	5	85	4	172	1616
1968	445	157	148	157	182	28	129	187	57	20	3	369	1882

Appendix 2
Sheet 1

BONSHAW RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1884				NO RECORDS							486	114	
1885	368	322	294	12	87	409	89	24	57	66	269	615	2612
1886	302	49	149	155	657	421	277	574	214	545	455	98	3896
1887	773	428	265	70	44	98	389	328	31	63	268	317	3074
1888							NO RECORDS						
1889	493	107	19	286	334	342	153	164	163	86	230	198	2575
1890	508	427	1220	40	197	185	72	26	206	407	332	307	3927
1891	952	222	89	41	87	357	164	271	292	136	349	486	3446
1892	195	392	255	380	247	283	252	70	548	682	269	541	4114
1893	389	772	84	543	333	414	230	129	16	260	369	171	3710
1894	578	219	388	147	257	247	50	99	158	502	107	50	2802
1895	590	21	18	0	116	9	117	108	136	106	364	426	2011
1896	260	690	210	251	116	109	255	106	159	59	539	557	3311
1897	367	308	395	0	0	427	511	159	428	152	69	783	3599
1898	471	182	29	12	167	303	119	95	145	138	63	176	1900
1899	915	447	15	266	46	398	316	162	181	107	97	286	3236
1900	153	369	158	208	331	168	217	193	290	41	248	254	2630
1901	79	77	457	134	120	224	88	354	192	243	47	79	2094
1902	149	55	59	0	28	69	0	130	79	213	159	178	1119

Appendix 2
Sheet 2

BONSHAW RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1903	8	80	106	236	274	222	509	311	478	319	568	332	3443
1904	258	311	597	66	298	103	218	64	112	207	162	375	2771
1905	253	24	250	377	280	87	62	79	34	399	152	435	2432
1906	599	151	187	172	131	80	62	359	300	344	242	178	2805
1907	227	337	526	49	63	189	118	85	0	151	213	198	2156
1908	307	844	235	320	25	163	165	271	206	154	189	192	3071
1909	92	519	52	283	164	284	151	454	108	146	197	341	2791
1910	346	217	482	47	52	284	244	87	34	267	312	395	2767
1911	763	291	287	100	253	0	215	214	233	91	17	117	2581
1912	177	90	226	2	10	509	190	103	143	249	324	81	2104
1913	264	171	191	74	517	305	NO RECORDS						
1914	381	77	481	214	293	240	207	26	42	228	197	363	2749
1915	114	81	54	76	245	102	NO RECORDS						
1916	157	759	71	269	60	348	334	241	147	235	449	363	3433
1917-1924	NO RECORDS												
1925	535	233	185	73	157	42	127	349	6	74	462	316	2559
1926	125	37	12	112	136	270	155	52	69	85	53	681	1787
1927	378	176	365	216	19	163	16	149	74	291	261	271	2379
1928	427	274	326	167	155	274	235	20	120	169	238	111	2396

Appendix 2
Sheet 3

BONSHAW RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1929	88	476	138	394	4	116	90	147	97	309	236	266	2361
1930	252	269	325	117	152	406	196	253	104	441	182	170	2867
1931	89	129	509	231	371	235	179	112	144	255	294	781	3329
1932	85	185	165	483	130	94	143	60	351	247	192	201	2336
1933	622	103	11	66	197	247	374	224	198	439	232	403	3116
1934	515	321	12	127	63	195	291	220	221	390	171	478	3004
1935	402	189	32	33	110	52	156	96	285	271	91	104	1821
1936	301	34	420	68	145	119	284	105	217	124	49	579	2445
1937	514	37	397	13	36	100	115	119	40	173	563	141	2248
1938	256	502	0	45	317	35	118	290	111	472	416	20	2582
1939	258	80	406	135	0	282	130	163	99	180	57	132	1922
1940	201	495	144	55	45	64	8	13	90	133	130	616	1994
1941	663	148	469	12	21	213	92	14	17	110	202	0	1961
1942	243	421	201	0	127	185	411	29	77	525	386	477	3082
1943	326	54	35	185	82	169	113	300	161	303	743	635	3106
1944	319	338	131	42	86	53	244	358	123	111	103	364	2272
1945	499	552	15	154	212	395	193	212	77	30	225	370	2934
1946	350	199	172	161	64	26	10	3	400	63	263	205	1916
1947	317	429	575	162	126	78	67	131	243	194	294	712	3328

BONSHAW RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1948	384	217	161	35	200	465	148	101	205	56	266	297	2535
1949	301	516	64	23	94	171	101	85	203	788	656	199	3201
1950	104	411	167	242	227	504	685	49	268	729	675	58	4119
1951	705	246	439	87	129	394	80	106	105	140	108	197	2736
1952	76	479	338	209	324	158	118	312	132	853	70	106	3175
1953	80	865	212	39	250	0	54	215	23	122	242	22	2124
1954	416	692	12	22	31	87	67	200	112	915	371	256	3181
1955	371	585	55	215	165	56	145	109	92	438	91	194	2516
1956	940	1312	395	197	291	326	224	91	146	226	208	284	4640
1957	385	185	263	157	4	150	99	182	15	43	4	69	1556
1958	150	962	296	22	47	89	47	160	246	157	52	764	2992
1959	457	370	422	42	133	0	238	0	73	245	442	557	2979
1960	98	170	42	30	294	82	169	140	161	147	105	306	1744
1961	147	394	200	30	111	102	228	193	72	130	411	199	2217
1962	877	241	312	0	101	10	205	163	148	246	174	451	2928
1963	44	228	405	14	325	60	61	191	8	23	501	405	2265
1964	410	144	424	225	183	157	213	61	207	378	75	130	2617
1965	211	246	0	20	44	23	144	66	123	70	112	765	1824
1966	51	127	184	115	78	154	21	518	135	404	551	226	2564
1967	173	84	416	3	143	262	113	60	18	559	126	250	2207
1968	161	133	328	120	191	57	184	202	64	83	113	527	2163

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	200	663	187	250	0	110	35	210	153	201	402	384	2795
1909	28	110	149	75	150	326	97	261	107	133	32	9	1477
1910	390	226	375	155	16	171	459	98	81	398	142	369	2880
1911	599	345	259	66	116	75	186	192	268	185	440	86	2817
1912	198	599	95	0	0	491	262	145	146	176	186	37	2335
1913	462	30	241	87	472	446	84	100	246	32	0	372	2572
1914	507	179	381	135	144	436	230	0	52	314	495	391	3264
1915	83	347	66	97	137	109	261	190	110	76	5	500	1981
1916	220	334	77	367	220	391	247	227	113	272	291	662	3421
1917	528	481	177	17	60	152	129	120	658	273	704	411	3710
1918	519	55	148	230	19	13	92	296	103	99	132	236	1942
1919	108	363	404	121	168	27	50	78	30	90	77	261	1777
1920	649	155	125	145	170	464	466	256	324	310	240	291	3595
1921	99	182	332	180	575	633	808	62	444	437	264	707	4723
1922	207	48	191	32	0	204	266	29	256	112	330	463	2138
1923	395	0	194	10	23	353	204	37	253	140	84	308	2001
1924	210	574	134	194	53	258	542	225	252	430	428	362	3662
1925	680	216	188	23	272	52	142	500	19	141	370	393	2996

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	268	65	318	137	120	254	273	79	91	61	36	765	2467
1927	469	47	285	96	0	256	55	90	23	329	428	303	2381
1928	632	758	460	182	158	372	374	44	52	353	258	214	3857
1929	147	389	218	345	38	98	149	222	75	529	175	221	2606
1930	294	230	234	105	157	396	186	261	104	281	237	169	2654
1931	348	361	580	167	362	269	264	74	257	209	226	627	3744
1932	233	66	296	408	87	191	102	47	462	354	359	235	2840
1933	544	172	19	125	310	195	303	159	250	666	452	220	3415
1934	527	196	30	191	48	131	333	238	207	289	225	659	3074
1935	257	340	92	64	69	45	212	63	371	313	49	390	2265
1936	257	95	200	38	90	123	255	146	214	146	115	463	2142
1937	296	133	456	70	64	122	100	219	72	285	222	416	2455
1938	331	209	0	151	304	37	276	243	227	245	399	56	2478
1939	327	0	440	148	3	298	111	187	36	201	186	248	2185
1940	164	462	157	64	4	45	28	13	103	153	235	306	1734
1941	439	92	416	40	104	423	74	17	11	190	473	17	2296
1942	313	315	324	0	119	117	414	33	89	692	623	591	3630
1943	313	146	67	78	69	165	148	217	249	196	707	465	2820

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1944	417	125	78	16	127	28	220	324	112	183	209	332	2171
1945	373	838	0	217	137	650	289	239	252	45	373	370	3783
1946	485	77	435	118	79	43	78	0	364	108	386	285	2458
1947	263	267	717	311	47	46	135	195	281	255	391	523	3431
1948	395	267	212	41	137	500	116	224	169	94	565	366	3086
1949	231	628	72	75	99	252	167	99	220	693	515	466	3517
1950	339	516	53	261	235	727	560	82	266	618	445	21	4123
1951	1137	183	303	79	164	491	115	261	113	118	146	185	3295
1952	194	554	288	238	369	249	157	356	139	829	122	245	3740
1953	251	841	299	62	216	0	96	280	70	205	169	43	2532
1954	72	757	159	12	55	188	202	130	84	827	305	498	3289
1955	259	572	106	252	320	149	151	112	90	417	69	388	2885
1956	1314	943	36	176	381	413	163	139	128	429	146	303	4571
1957	570	677	337	100	0	90	186	170	38	225	26	231	2650
1958	515	543	277	48	199	112	142	160	540	299	109	703	3647
1959	633	158	582	173	97	78	312	1	212	320	396	963	3925
1960	78	396	86	103	222	89	183	154	184	144	126	374	2139
1961	192	458	140	81	68	88	271	166	104	322	829	458	3177

DEEPWATER T.O. RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1962	784	298	340	237	143	3	385	260	307	380	214	405	3756
1963	210	177	266	66	653	164	47	209	47	152	478	297	2766
1964	488	214	646	153	206	83	247	72	218	474	178	105	3084
1965	177	278	7	66	101	105	288	88	245	167	218	948	2688
1966	170	405	372	132	70	99	44	552	186	314	493	272	3109
1967	356	83	637	109	151	436	146	83	83	436	225	347	3092
1968	524	138	237	102	205	75	242	454	110	209	99	270	2715

GLENELG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	NO	RECORDS	884	226	206	165	67	12	170	194	279	442	
1891	776	127	90	61	120	290	194	205	388	232	461	266	3210
1892	331	171	350	274	234	190	309	93	228	476	329	266	3251
1893	N.R.	768	153	404	404	N.R.	150	N.R.	72	300	NO	RECORDS	
1894							NO RECORDS						
1895							NO RECORDS						
1896			NO	RECORDS			407	62	118	76	454	520	
1897	213	100	438	0	12	296	467	216	320	190	222	426	2900
1898	663	146	82	0	110	197	100	64	228	121	64	242	2017
1899	482	379	22	227	137	70	234	158	0	112	173	383	2377
1900	0	431	100	179	304	127	250	139	243	12	256	212	2253
1901	165	17	363	197	102	347	151	258	114	250	6	55	2025
1902	N.R.	35	90	0				NO	RECORDS				
1903	32	244	148	140	460	63	377	254	607	281	288	115	3009
1904	149	130	549	71	317	43	233	54	215	328	179	367	2635
1905	311	34	255	302	232	108	75	206	67	277	162	345	2374
1906	249	159	325	0	61	65	113	367	242	391	245	382	2599
1907	536	183	506	36	184	244	127	78	10	108	435	93	2540

GLENELG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	116	572	345	122	6	145	98	230	157	58	544	151	2544
1909	49	551	110	232	124	202	156	276	137	308	234	271	2650
1910	519	255	276	60	31	316	120	62	119	215	243	345	2561
1911	512	155	204	51	191	10	139	90	101	355	86	70	1964
1912	150	262	343	7	30	536	287	162	90	573	236	102	2778
1913	476	40	273	31	288	320	126	0	206	125	63	54	2002
1914	564	266	488	224	412	280	204	16	18	148	108	172	2900
1915	124	30	38	82	218	87	188	144	133	43	27	527	1641
1916	326	690	162	498	10	336	252	210	125	171	402	274	3456
1917	514	394	153	0	20	77	117	89	723	357	464	624	3532
1918	424	31	30	142	28	67	42	248	39	71	100	184	1406
1919	80	289	425	20	134	35	15	69	11	88	99	175	1440
1920	484	95	187	57	218	428	405	184	222	253	162	235	2930
1921	97	99	310	37	236	547	347	101	248	229	199	720	3170
1922	135	51	52	13	0	228	289	62	128	173	323	516	1970
1923	269	0	70	41	31	348	145	43	270	100	73	291	1681
1924	614	606	164	273	73	210	192	182	283	382	459	145	3583
1925	482	300	266	0	189	12	156	520	44	55	534	323	2881

GLENELG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	291	135	129	87	125	132	160	106	79	63	60	861	2228
1927	646	275	340	246	20	250	25	51	40	299	354	238	2784
1928	155	474	140	220	85	289	212	50	0	194	267	160	2246
1929	159	491	247	300	25	155	95	35	30	313	112	208	2170
1930	220	10	236	123	340	117	318	286	141	335	201	173	2510
1931	113	235	220	201	340	249	261	58	317	162	443	465	3004
1932	30	201	50	699	77	61	127	0	214	400	308	378	2545
1933	768	115	0	215	58	265	268	135	224	496	424	378	3346
1934	427	246	80	240	60	89	301	143	302	370	210	855	3323
1935	569	163	124	35	79	125	27	81	448	278	57	168	2154
1936	117	108	31	28	105	127	297	97	80	74	35	600	1699
1937	477	114	531	31	12	96	122	210	42	225	491	148	2499
1938	373	161	64	14	327	46	183	265	82	518	245	53	2431
1939	259	104	473	336	29	158	83	193	92	132	142	512	2513
1940	294	471	112	58	108	118	0	8	109	166	155	564	2163
1941	407	98	187	44	70	275	74	20	24	168	230	45	1705
1942	160	780	106	0	275	168	421	60	100	442	363	584	3459
1943	441	22	11	323	233	14	134	532	160	271	632	595	3368

GLENELG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1944	629	258	0	78	78	27	227	320	199	125	335	390	2666
1945	304	585	20	201	258	459	195	244	51	147	294	305	3063
1946	679	20	217	195	52	11	13	10	437	129	205	370	2338
1947	688	265	647	145	137	72	54	89	248	362	514	603	3824
1948	145	252	261	17	145	439	160	83	174	168	123	287	2254
1949	60	462	166	25	179	179	209	62	171	528	188	49	2278
1950	65	521	131	212	104	699	338	114	395	101	373	136	3189
1951	1226	109	225	100	94	285	53	106	127	105	320	247	2997
1952	36	231	403	231	429	248	102	210	139	880	85	113	3107
1953	163	538	125	76	84	0	42	242	0	139	208	47	1664
1954	224	850	62	52	42	126	107	251	221	767	567	100	3369
1955	276	537	64	375	310	84	159	164	101	449	74	180	2773
1956	1372	724	52	556	156	348	193	10	149	139	308	579	4586
1957	355	197	160	59	12	221	187	32	69	148	53	94	1577
1958	241	210	295	160	54	196	25	155	314	212	151	442	2445
1959	313	347	271	131	243	38	209	0	94	342	504	452	2944
1960	105	154	159	68	185	264	212	127	86	130	114	204	1808
1961	147	468	271	63	75	201	279	196	62	168	384	404	2718

GLENELG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1962	584	80	745	205	63	43	138	145	217	175	165	300	2860
1963	50	199	507	62	293	104	15	183	14	111	633	346	2517
1964	147	335	222	286	189	103	138	32	175	291	147	339	2404
1965	155	51	0	165	20	166	399	94	190	110	137	987	2474
1966	170	290	208	162	11	203	11	542	126	191	129	217	2260
1967	169	153	341	48	170	363	115	110	38	179	97	151	1934
1968	254	252	294	390	189	107	420	332	97	196	170	386	3087

INGLEWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1883	511	769	117	44	158	30	110	84	8	443	120	71	2465
1884	101	310	115	126	315	237	360	30	100	230	441	230	2595
1885	415	375	190	28	95	424	100	0	55	120	458	388	2648
1886	226	107	529	274	897	550	395	474	317	338	288	160	4553
1887	573	333	380	127	109	100	313	305	127	91	303	464	3225
1888	145	610	185	0	33	3	0	14	146	75	112	587	1910
1889	169	106	58	331	348	291	330	130	240	89	304	151	2547
1890	518	674	1546	35	182	108	71	10	210	191	255	240	4041
1891	896	294	78	85	154	272	145	242	295	124	382	447	3414
1892	502	224	273	273	206	194	187	90	366	827	337	447	3926
1893	68	768	82	353	413	519	200	115	49	280	264	37	3148
1894	630	82	370	284	293	164	34	82	279	462	104	66	2850
1895	692	10	11	11	88	3	132	89	145	91	238	409	1919
1896	227	642	84	121	131	113	292	41	137	39	345	719	2891
1897	168	321	465	0	67	277	471	136	318	170	11	588	2992
1898	508	191	14	0	119	181	45	102	235	65	80	114	1654
1899	537	217	39	291	50	148	279	131	263	172	93	227	2446
1900	125	285	181	198	276	153	222	107	318	8	215	204	2292

INGLEWOOD RAINFALL STATISTICS

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1901	210	84	515	164	110	263	160	390	91	283	3	8	2281
1902	297	4	96	10	6	100	0	159	15	166	277	191	1321
1903	134	118	113	159	565	24	368	217	518	345	527	269	3357
1904	270	290	816	81	398	45	210	36	263	161	248	250	3068
1905	280	28	447	410	263	80	45	126	43	300	222	660	2904
1906	291	315	165	15	200	54	89	361	285	455	356	193	2779
1907	549	229	677	18	200	251	177	79	5	301	325	108	2919
1908	3	710	513	134	60	146	143	214	247	116	387	80	2753
1909	75	526	67	290	130	192	113	233	113	238	187	185	2349
1910	805	290	318	98	49	404	191	28	72	144	397	540	3336
1911	854	228	307	71	131	12	157	151	136	234	33	227	2541
1912	166	238	293	5	14	628	220	76	157	321	254	121	2493
1913	256	239	161	56	477	321	124	2	127	99	49	181	2092
1914	554	135	423	144	383	225	205	19	12	65	446	329	2940
1915	88	56	10	35	198	81	173	128	96	20	16	331	1232
1916	139	398	172	318	43	340	284	253	120	197	460	423	3147
1917	343	517	266	45	0	40	95	60	659	374	764	603	3766
1918	383	45	42	180	10	40	63	205	22	40	123	53	1206

INGLEWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1919	110	156	418	63	191	22	10	52	20	41	49	158	1290
1920	217	90	198	82	96	327	425	142	262	229	331	206	2605
1921	156	152	405	35	300	498	569	43	218	283	183	690	3532
1922	316	42	58	0	1	151	164	37	74	62	182	381	1468
1923	240	79	58	32	28	216	71	36	190	93	94	274	1411
1924	337	620	120	171	60	78	127	240	258	262	679	180	3132
1925	473	208	115	0	196	22	65	325	9	33	496	531	2473
1926	155	79	50	38	102	193	101	118	74	69	47	535	1561
1927	552	225	391	243	21	193	21	47	71	229	376	214	2583
1928	200	459	443	227	63	298	131	0	8	145	211	273	2458
1929	60	689	187	360	22	147	84	68	40	205	147	153	2162
1930	110	87	264	129	227	251	303	333	164	469	132	197	2666
1931	258	219	392	172	342	141	212	92	132	225	540	604	3329
1932	44	35	94	327	81	49	137	3	214	278	313	178	1753
1933	497	115	0	36	107	231	258	104	146	602	504	368	2968
1934	266	433	33	246	7	68	274	180	145	356	174	880	3062
1935	463	202	34	63	110	21	132	57	300	170	48	252	1852
1936	179	58	396	8	127	94	234	67	105	121	52	489	1930

INGLEWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1937	302	229	393	22	11	52	106	181	17	208	585	280	2386
1938	240	298	31	35	294	73	132	150	126	379	293	17	2068
1939	418	65	508	262	11	169	196	131	55	131	64	320	2330
1940	108	375	156	35	72	61	7	0	72	81	314	443	1724
1941	531	124	236	16	44	178	70	2	7	157	386	44	1795
1942	162	483	77	0	133	106	300	23	93	240	319	620	2556
1943	339	32	23	233	30	126	80	222	204	159	458	723	2629
1944	627	157	2	75	61	49	234	280	142	94	135	322	2178
1945	290	496	42	141	152	484	154	257	67	55	91	499	2728
1946	632	72	100	256	38	14	6	3	520	61	260	303	2265
1947	505	393	652	101	143	48	46	117	230	187	350	721	3493
1948	141	244	299	142	503	526	145	85	164	47	225	259	2780
1949	136	430	157	27	93	175	116	53	172	550	258	83	2250
1950	188	423	246	107	145	793	526	98	365	432	427	63	3813
1951	1577	103	162	35	102	248	53	75	123	139	121	209	2947
1952	2	234	285	191	490	98	78	318	139	719	39	46	2639
1953	134	736	216	77	153	0	30	201	0	79	456	57	2139
1954	106	770	126	4	42	101	135	204	159	710	322	337	3016

INGLEWOOD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1955	225	289	28	296	205	47	149	92	88	238	200	428	2285
1956	1496	923	87	318	341	337	167	12	158	170	235	392	4636
1957	468	229	191	192	5	130	135	102	23	175	20	22	1692
1958	215	96	525	160	45	312	38	129	244	187	496	395	2842
1959	370	543	223	52	172	11	236	0	73	288	293	527	2788
1960	100	169	118	33	105	171	221	114	62	216	182	143	1634
1961	170	252	163	39	278	72	300	220	41	273	544	272	2624
1962	915	189	722	208	54	29	136	173	263	112	37	445	3283
1963	102	47	597	14	178	61	8	191	0	121	270	293	1882
1964	199	344	87	371	212	127	194	77	251	273	149	247	2531
1965	204	12	19	26	0	133	243	60	208	107	153	651	1816
1966	82	168	294	92	56	164	22	466	155	203	145	303	2150
1967	145	106	393	100	155	393	129	107	15	223	71	154	1991
1968	194	377	171	311	135	47	313	233	119	95	66	288	2349

Appendix 6
Sheet 1

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1873	290	117	0	0	0	15	107	221	68	169	331	1156	2474
1874	350	100	76	278	8	45	420	20	480	142	308	27	2254
1875	50	916	306	366	266	60	286	53	21	359	143	111	2937
1876	59	385	194	222	358	273	125	0	117	167	51	70	2021
1877	509	0	127	60	213	90	98	93	155	254	231	155	1985
1878	97	1125	115	63	209	75	160	154	533	223	652	615	4021
1879	151	102	724	572	625	242	641	1436	929	347	533	918	7220
1880	51	502	479	361	474	65	57	5	912	410	513	204	4033
1881	480	58	171	42	139	56	0	485	451	446	106	22	2456
1882	367	545	33	245	150	496	294	281	0	816	132	502	3861
1883	779	1188	15	123	199	0	42	210	66	406	223	168	3419
1884	63	198	52	15	204	243	143	25	178	135	407	178	1841
1885	381	319	211	71	28	309	20	10	194	142	259	637	2581
1886	518	211	253	352	565	257	363	539	227	429	272	162	4148
1887	1020	444	188	109	98	214	281	367	138	131	275	370	3635
1888	292	383	363	8	20	7	1	171	106	141	147	653	2292
1889	344	251	61	501	336	308	587	220	197	59	199	141	3204
1890	454	927	1226	133	152	156	91	36	280	360	296	419	4530

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1891	811	395	115	92	152	447	190	244	363	189	314	310	3622
1892	154	153	510	695	236	216	220	112	443	716	444	455	4354
1893	570	835	220	364	325	594	110	116	26	219	484	7	3870
1894	612	133	691	191	126	290	92	63	254	427	179	233	3291
1895	869	165	2	23	90	8	153	87	127	242	558	531	2855
1896	495	706	131	149	83	90	365	59	157	155	409	549	3348
1897	322	197	665	0	14	122	228	242	427	244	50	1270	3781
1898	471	276	139	27	84	175	134	164	265	139	100	139	2113
1899	609	288	43	253	120	136	311	108	163	136	86	322	2575
1900	262	481	187	170	317	122	226	150	398	23	217	216	2769
1901	194	80	395	213	77	274	152	422	142	293	222	167	2631
1902	317	51	56	10	87	78	15	94	95	229	398	175	1605
1903	23	159	95	118	687	74	471	198	607	345	445	259	3481
1904	229	133	657	71	411	66	264	34	185	398	192	500	3140
1905	304	37	529	264	163	101	63	177	28	348	194	443	2651
1906	621	282	318	200	77	45	144	337	429	290	249	489	3481
1907	433	330	598	168	179	244	106	165	13	130	503	346	3215
1908	60	625	346	83	25	119	137	379	239	101	442	111	2667

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1909	72	385	175	235	184	162	175	331	202	336	435	280	2972
1910	438	350	239	40	112	246	348	51	129	216	220	504	2893
1911	596	369	271	70	205	34	240	155	163	264	160	26	2553
1912	306	157	385	0	30	467	274	165	183	269	140	219	2595
1913	344	28	388	84	331	393	127	0	247	303	61	157	2463
1914	206	180	608	288	381	203	102	31	104	246	213	300	2862
1915	336	43	36	209	263	91	112	160	181	33	14	313	1791
1916	339	498	128	397	94	313	240	226	180	336	321	269	3341
1917	380	430	104	37	15	70	157	83	728	287	484	599	3374
1918	372	86	51	131	54	67	59	253	33	124	157	327	1714
1919	18	258	654	0	346	30	28	73	18	69	48	93	1635
1920	253	157	203	138	230	469	311	202	299	208	219	290	2979
1921	107	199	177	148	305	587	807	18	280	426	224	661	3939
1922	120	141	120	49	8	149	325	54	162	155	332	587	2202
1923	280	20	213	78	25	295	157	25	154	114	14	291	1666
1924	691	468	188	139	44	157	275	186	385	439	595	232	3799
1925	670	312	242	29	286	234	192	498	49	60	423	238	3233
1926	390	140	47	56	85	149	165	145	73	96	0	657	2003

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1927	512	138	324	132	14	271	10	33	51	262	403	271	2421
1928	395	836	186	312	138	260	254	37	36	183	173	494	3304
1929	173	585	382	380	23	165	111	113	60	361	265	336	2954
1930	208	136	230	387	284	470	193	249	102	231	149	208	2847
1931	165	332	187	174	361	205	195	72	234	216	406	374	2921
1932	59	105	65	440	112	80	100	50	228	248	310	310	2107
1933	752	140	85	157	117	249	241	115	220	318	541	514	3449
1934	406	253	103	469	28	94	344	246	293	398	252	647	3533
1935	400	315	19	106	103	44	214	74	416	189	70	334	2284
1936	288	48	447	64	82	127	287	67	150	73	124	559	2316
1937	758	236	452	144	34	133	90	343	17	172	511	310	3200
1938	306	186	71	24	253	47	174	227	218	215	309	148	2178
1939	423	28	500	287	55	233	150	218	117	129	174	285	2599
1940	307	672	257	20	55	103	13	17	109	117	220	312	2202
1941	688	211	179	37	166	307	82	48	11	132	497	43	2401
1942	397	716	142	6	167	132	322	67	123	500	267	699	3538
1943	226	140	103	179	130	81	127	376	408	311	453	402	2936
1944	520	279	41	64	113	95	304	195	112	110	204	326	2363

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1945	223	524	27	208	149	602	248	285	178	118	137	360	3059
1946	693	141	258	79	97	20	35	30	447	211	324	400	2735
1947	661	365	608	335	99	67	116	90	305	400	335	600	3981
1948	220	369	389	65	223	753	133	135	242	105	366	359	3359
1949	217	737	399	33	117	366	175	121	227	797	206	210	3605
1950	212	829	318	94	128	967	375	88	408	594	310	87	4410
1951	954	225	226	197	98	294	44	167	93	158	337	239	3032
1952	121	500	316	233	424	193	82	209	110	841	119	220	3368
1953	188	367	207	105	161	3	37	187	11	138	277	63	1744
1954	138	1200	77	79	94	175	291	214	221	735	425	313	3962
1955	120	246	283	264	331	81	159	125	220	315	60	395	2599
1956	704	919	141	204	367	381	215	23	104	303	200	630	4191
1957	228	159	130	150	28	129	203	137	19	126	44	96	1449
1958	413	208	303	70	68	257	78	136	280	238	122	798	2971
1959	887	417	772	94	136	16	230	19	176	319	505	1045	4616
1960	169	375	112	84	206	150	193	152	95	128	141	351	2156
1961	183	683	182	68	132	160	367	228	126	235	392	350	3106
1962	975	236	550	287	92	11	385	164	236	191	154	450	3731

STANTHORPE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1963	142	175	595	122	420	111	28	227	22	107	416	517	2882
1964	397	200	323	358	256	116	183	55	220	411	283	196	2998
1965	202	82	7	58	34	223	470	144	235	126	139	682	2402
1966	102	446	193	110	14	168	23	500	199	125	222	184	2286
1967	369	129	528	68	198	408	140	130	52	404	308	183	2917
1968	701	367	373	281	203	92	362	462	73	173	85	334	3506

Appendix 7
Sheet 1

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1872					NO RECORDS						648	830	
1873	371	350	160	0	0	775	55	282	75	102	711	1014	3895
1874	369	337	0	100	100	203	828	145	368	300	158	200	3108
1875	100	34	355	394	244	147	307	204	109	155	445	120	2914
1876	161	148	140	435	294	403	592	107	270	400	248	320	3518
1877	622	120	601	0	171	117	174	20	246	234	126	208	2639
1878	39	650	259	73	217	81	325	113	787	242	116	354	3256
1879	123	464	744	851	653	139	341	572	413	350	252	942	5844
1880	35	358	455	237	218	139	30	21	471	215	305	312	2796
1881	456	261	103	33	93	91	26	180	463	195	284	67	2252
1882	386	389	317	312	217	250	165	259	20	585	440	465	3805
1883	531	628	86	186	218	23	61	106	184	450	182	328	2983
1884	199	212	65	265	186	353	436	63	368	131	399	101	2778
1885	478	382	292	54	98	282	126	45	468	243	283	507	3258
1886	599	25	266	312	693	508	237	627	126	740	481	47	4661
1887	965	440	262	166	85	263	347	356	224	157	495	568	4328
1888	147	734	231	0	94	30	18	5	144	114	96	935	2548
1889	468	217	206	367	540	350	131	134	170	292	550	470	3895

Appendix 7
Sheet 2

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1890	512	757	841	212	322	307	189	94	240	412	276	260	4422
1891	732	185	106	100	133	439	231	352	368	151	325	491	3613
1892	310	115	503	298	200	410	237	114	569	809	354	468	4387
1893	266	755	459	389	278	382	236	137	38	438	485	135	3998
1894	634	56	627	253	302	285	103	114	154	604	136	129	3397
1895	598	86	115	30	118	37	128	88	185	212	435	471	2503
1896	570	460	265	225	222	65	277	221	246	72	256	525	3404
1897	269	190	170	0	3	293	485	150	267	278	140	709	2954
1898	390	447	17	0	112	275	108	78	295	158	69	141	2090
1899	963	171	60	296	147	379	248	171	205	239	106	405	3390
1900	544	438	421	200	457	227	328	53	212	47	286	393	3606
1901	139	180	216	283	130	211	108	459	111	217	72	211	2337
1902	206	42	64	8	0	140	2	364	122	260	199	643	2050
1903	23	180	282	224	269	207	475	308	584	206	591	296	3645
1904	73	220	595	200	301	108	345	68	208	353	192	233	2896
1905	290	68	379	411	269	82	118	139	16	225	149	269	2415
1906	520	92	411	120	60	75	110	473	282	514	356	247	3260
1907	438	343	605	38	94	342	109	184	14	238	357	248	3010

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1908	286	594	127	187	28	166	238	258	202	216	158	196	2656
1909	96	416	23	345	134	281	180	534	92	58	646	157	2962
1910	690	246	755	175	12	240	250	112	35	259	259	237	3270
1911	1007	242	215	47	178	30	171	149	352	97	160	24	2672
1912	224	158	261	0	18	437	351	208	134	241	367	134	2533
1913	293	83	385	77	444	210	39	49	232	260	125	316	2513
1914	537	129	722	104	189	174	155	11	39	545	513	480	3598
1915	201	8	122	98	144	148	190	154	163	89	37	505	1859
1916	276	394	35	295	100	287	344	296	200	162	415	630	3434
1917	1120	209	214	0	50	131	150	127	607	233	696	318	3855
1918	627	90	60	102	33	10	97	339	80	133	331	97	1999
1919	316	183	268	56	215	29	48	83	8	69	30	264	1569
1920	386	122	103	70	163	430	425	251	370	161	158	368	3007
1921	84	108	398	130	496	620	692	51	439	365	314	885	4582
1922	217	48	288	16	0	247	269	59	250	163	139	548	2244
1923	177	39	87	0	21	351	155	41	232	221	42	450	1816
1924	219	733	76	339	35	232	297	322	227	315	541	314	3650
1925	426	186	202	42	209	0	202	349	42	102	529	192	2481

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1926	65	142	63	167	218	267	184	71	118	110	0	681	2086
1927	522	51	249	455	10	175	56	117	54	200	628	206	2723
1928	476	426	204	199	131	458	217	0	26	341	250	166	2894
1929	99	566	231	459	0	158	80	205	82	475	107	281	2743
1930	305	188	343	127	95	453	185	292	58	239	335	177	2797
1931	173	573	564	343	515	347	307	38	232	315	386	757	4550
1932	165	113	190	427	81	126	128	25	500	297	148	167	2367
1933	792	73	28	53	285	234	333	177	269	659	248	246	3397
1934	371	302	90	258	4	70	278	276	293	329	258	478	3007
1935	770	362	67	2	86	201	53	111	333	339	134	366	2824
1936	205	59	241	69	174	156	352	174	211	81	30	429	2181
1937	257	139	330	44	70	124	106	161	36	171	456	463	2357
1938	431	281	27	8	354	97	285	367	88	403	403	135	2879
1939	519	14	386	359	41	442	167	193	66	267	235	389	3078
1940	182	547	279	123	34	38	6	38	111	126	143	442	2069
1941	715	156	449	35	60	318	106	24	15	265	269	0	2412
1942	279	353	342	0	150	194	415	38	201	646	492	482	3592
1943	220	102	20	147	80	216	156	158	228	363	854	392	2936

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1944	432	197	61	40	219	47	289	444	128	145	78	316	2396
1945	394	753	81	72	199	229	254	292	141	59	191	397	3062
1946	463	176	330	127	55	58	64	0	416	92	236	294	2311
1947	186	385	404	210	80	68	125	191	400	248	483	384	3164
1948	372	422	274	88	145	410	150	135	207	128	544	244	3119
1949	439	601	44	109	110	292	155	98	257	811	504	363	3783
1950	243	440	138	300	234	515	567	42	372	708	442	33	4034
1951	955	239	396	75	120	364	55	221	142	113	149	157	2986
1952	148	514	427	193	357	252	190	522	118	845	122	152	3840
1953	66	943	184	157	187	0	64	290	89	182	147	25	2334
1954	269	560	58	0	70	197	113	175	134	1052	435	297	3360
1955	365	593	72	153	248	155	215	134	108	352	96	445	2936
1956	631	1106	117	315	361	340	235	82	209	370	138	175	4079
1957	476	364	585	184	0	219			NO RECORDS				
1958			NO RECORDS				156	153	489	235	136	664	
1959	503	353	597	10	127	71	339	0	211	386	409	1079	4085
1960	347	175	51	149	325	118	294	209	206	129	180	413	2596
1961	236	444	122	87	72	182	237	212	84	233	492	440	2841

STRATHBOGIE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1962	880	297	275	88	129	10	264	269	263	306	168	397	3346
1963	196	100	274	142	556	171	63	341	108	177	496	281	2905
1964	503	102	403	181	203	119	226	113	282	450	91	194	2867
1965	168	54	0	74	120	86	118	130	91	108	142	956	2047
1966	91	238	313	115	162	125	69	500	125	418	677	241	3074
1967	116	145	570	192	196	339	95	70	80	625	No Records		
1968	463	193	488	88	322	62	225	313	137	239	172	474	3176

TENTERFIELD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1870			NO	RECORDS					193	386	389	310	
1871	455	268	583	509	153	59	122	55	37	383	343	293	3260
1872	602	215	291	85	63	137	473	31	365	190	878	384	3714
1873	270	111	95	22	0	920	66	309	92	198	244	1231	3558
1874	590	220	213	112	32	33	392	224	325	146	239	65	2591
1875	112	237	225	405	172	64	349	102	185	178	205	44	2278
1876	390	247	307	191	477	207	1015	32	258	313	100	277	3814
1877	473	116	78	8	200	72	251	47	147	304	191	140	2027
1878	159	478	283	0	277	5	150	123	574	109	171	579	2908
1879	332	15	785	413	509	512	299	761	468	120	464	413	5091
1880	45	441	329	68	149	0	148	8	282	160	371	236	2237
1881	529	42	92	46	111	82	22	274	458	146	195	0	1997
1882	410	450	15	314	84	313	156	137	44	625	430	394	3372
1883	676	666	242	235	231	11	56	69	92	194	161	231	2864
1884	424	109	143	75	336	292	349	112	210	168	411	105	2734
1885	325	236	343	130	44	303	35	25	110	103	265	658	2577
1886	414	193	208	239	593	367	334	663	277	482	604	209	4583
1887	1389	509	586	58	58	209	302	252	149	125	432	481	4550

TENTERFIELD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1888	112	430	94	7	34	17	2	53	129	293	76	597	1844
1889	387	440	74	317	290	302	570	197	308	192	254	220	3551
1890	515	926	1382	99	178	197	75	36	353	378	335	336	4820
1891	651	554	103	130	133	555	196	224	381	158	355	626	4066
1892	399	184	762	873	281	375	173	259	394	833	324	773	5630
1893	407	1187	414	313	178	735	221	174	109	261	539	122	4660
1894	638	263	473	275	180	357	97	148	197	529	178	218	3553
1895	951	180	28	37	130	16	142	86	267	331	495	433	3096
1896	279	1016	292	137	101	34	312	129	153	39	522	493	3507
1897	343	144	712	0	27	121	361	237	476	195	153	1011	3780
1898	620	291	179	69	128	237	144	149	133	152	111	141	2354
1899	701	288	53	233	107	169	300	89	153	177	257	474	3001
1900	580	394	153	138	298	142	228	201	211	10	152	272	2779
1901	353	105	465	158	77	284	148	287	144	297	205	162	2685
1902	795	19	210	13	28	18	25	136	173	245	436	536	2634
1903	181	75	129	196	292	572	530	234	635	332	479	458	4113
1904	284	101	665	394	442	60	247	20	158	358	395	262	3386
1905	456	30	656	262	187	83	51	156	117	402	149	432	2981

Appendix 8
Sheet 3

TENTERFIELD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1906	677	140	397	51	155	54	80	335	364	236	299	418	3206
1907	624	426	464	85	69	282	100	177	3	302	444	295	3271
1908	111	530	180	131	40	117	183	381	185	121	745	227	2961
1909	93	247	275	261	153	180	200	403	226	255	555	353	3201
1910	430	602	355	70	15	232	329	113	43	272	337	557	3355
1911	578	358	229	48	152	33	210	184	172	253	150	76	2444
1912	252	336	305	11	22	556	314	139	194	271	142	199	2741
1913	351	99	122	144	286	284	106	34	246	200	132	305	2609
1914	164	163	393	153	200	284	113	28	111	482	340	640	3071
1915	222	59	67	200	163	142	145	144	105	16	83	346	1692
1916	327	320	80	393	211	251	227	184	149	320	311	344	3122
1917	680	444	304	21	69	128	132	51	783	392	910	455	4369
1918	536	227	98	330	95	19	120	213	46	101	150	565	2500
1919	188	272	735	60	232	78	35	92	56	119	76	250	2190
1920	170	129	179	117	161	363	444	222	282	341	202	270	2880
1921	113	544	285	174	556	532	649	36	361	472	209	571	4502
1922	156	192	309	60	42	111	302	551	174	290	183	523	2893
1923	510	17	150	191	44	288	141	76	115	102	35	218	1888

TENTERFIELD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1924	415	393	207	124	57	190	235	160	221	496	560	331	3389
1925	920	284	473	81	283	260	141	448	126	128	618	318	3980
1926	420	103	36	348	137	147	262	123	53	74	26	787	2516
1927	855	290	592	169	12	274	46	60	38	286	648	297	3567
1928	382	1079	438	292	134	322	285	41	26	253	172	226	3650
1929	243	782	218	401	37	97	247	120	31	744	220	235	3375
1930	370	286	159	221	306	459	182	304	90	275	143	211	3006
1931	347	300	238	193	364	187	231	69	142	109	365	590	3135
1932	162	150	111	473	124	73	100	55	268	354	430	211	2511
1933	546	190	82	332	227	249	416	238	277	401	687	464	4109
1934	384	414	123	262	115	136	405	242	206	326	251	784	3648
1935	306	376	74	93	90	11	268	42	449	289	86	565	2649
1936	369	83	450	232	88	89	270	77	175	258	91	688	2870
1937	590	257	494	114	67	133	86	259	33	291	358	370	3052
1938	477	243	52	35	315	22	230	290	185	191	478	66	2584
1939	590	21	603	180	13	261	162	206	130	136	303	731	3336
1940	383	353	266	49	60	69	27	36	101	162	198	556	2260
1941	855	308	555	43	243	278	63	4	8	141	316	54	2968

TENTERFIELD RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1942	289	765	202	18	163	128	388	36	49	460	453	537	3488
1943	379	54	73	97	129	89	122	281	223	311	637	527	2922
1944	801	386	42	28	110	28	318	362	79	76	166	274	2670
1945	371	789	49	214	128	889	274	243	177	107	277	417	3935
1946	716	139	481	156	112	21	18	14	426	181	314	422	3000
1947	696	637	699	258	151	54	107	188	250	303	441	684	4468
1948	397	284	390	40	297	590	87	191	238	68	364	246	3192
1949	172	707	294	31	198	305	158	150	192	802	393	168	3570
1950	306	613	249	195	109	1146	531	157	359	592	632	153	5042
1951	852	83	566	131	71	242	80	231	121	227	256	189	3049
1952	127	537	355	210	426	218	109	309	90	912	101	163	3557
1953	367	528	182	112	177	0	55	250	84	174	305	96	2330
1954	196	999	41	116	89	160	487	179	161	680	399	535	4042
1955	201	200	447	302	478	76	138	85	175	381	62	272	2817
1956	769	983	203	267	354	413	198	40	193	217	223	478	4338
1957	294	235	246	239	0	85	170	215	23	192	171	78	1948
1958	298	435	553	152	62	198	96	169	429	232	174	742	3540
1959	1149	314	455	146	155	34	378	24	294	276	514	1116	4855

TENTERFIELD RAINFALL STATISTICS.
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1960	248	397	143	106	232	122	171	164	129	163	246	334	2455
1961	251	656	188	118	132	214	332	206	176	296	486	658	3713
1962	975	537	789	874	85	0	614	224	209	292	259	584	5442
1963	355	301	493	223	617	149	44	356	55	161	521	497	3772
1964	444	178	554	265	269	146	311	77	179	526	255	120	3324
1965	96	184	0	50	18	124	675	54	155	99	288	1116	2859
1966	67	584	156	184	107	162	25	456	292	365	407	414	3219
1967	758	229	866	156	211	731	253	141	60	878	206	364	4853
1968	1108	332	659	159	275	52	396	597	93	295	97	500	4563

Appendix 9
Sheet 1

TENTERFIELD "TRENAYR" RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1911	366	167	108	45	196	25	209	197	191	170	100	67	1841
1912	247	194	251	8	53	455	281	104	168	184	145	92	2182
1913	355	75	249	30	379	308	77	23	202	200	104	244	2246
1914	201	53	786	137	182	277	176	0	0	212	322	315	2661
1915	116	67	20	113	151	105	135	106	77	28	0	494	1412
1916	343	359	95	319	112	285	264	225	139	256	342	413	3152
1917	582	319	112	5	29	108	78	55	730	271	699	430	3418
1918	428	89	19	163	28	66	98	248	85	69	131	167	1591
1919	69	310	443	7	159	58	29	88	42	81	34	379	1699
1920	202	137	105	116	173	323	386	178	239	383	194	176	2612
1921	73	200	246	58	395	523	577	51	310	465	226	681	3805
1922	249	0	209	34	0	150	197	74	158	210	216	248	1745
1923	127	27	132	19	26	288	97	27	203	65	12	380	1403
1924	420	490	96	130	82	155	336	258	208	284	622	327	3408
1925	571	222	177	4	180	10	138	457	12	57	414	178	2420
1926	180	33	167	118	142	228	204	77	76	32	17	490	1764
1927	511	189	225	134	15	211	70	94	28	234	322	229	2262
1928	116	238	332	118	165	296	246	2	27	162	234	330	2266

Appendix 9
Sheet 2

TENTERFIELD "TRENAYR" RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1929	106	362	144	276	6	77	158	149	65	423	185	253	2204
1930	213	160	159	152	99	281	213	295	73	197	108	210	2160
1931	171	210	226	100	381	208	265	96	182	193	336	614	2982
1932	35	146	69	350	103	42	94	39	203	269	238	184	1772
1933	515	110	23	125	173	181	230	229	166	423	393	237	2805
1934	164	328	38	235	106	163	298	225	269	361	183	464	2834
1935	403	244	17	30	100	22	203	78	343	238	10	194	1882
1936	214	27	280	51	93	114	268	91	134	162	24	428	1886
1937	531	70	333	36	41	62	87	182	11	151	554	352	2410
1938	304	255	0	36	192	0	152	323	90	281	287	49	1969
1939	310	0	442	118	11	241	122	175	102	160	37	351	2069
1940	163	375	119	51	30	66	7	4	104	140	167	372	1598
1941	432	91	420	43	72	307	68	15	0	194	314	8	1964
1942	283	321	162	0	112	118	374	40	69	601	468	503	3051
1943	367	110	85	120	73	86	135	227	115	182	508	495	2503
1944	456	373	35	27	133	27	203	333	135	77	131	351	2336
1945	260	810	40	196	161	259	188	253	125	25	151	461	2929
1946	390	94	201	180	84	20	20	0	345	138	231	350	2053
1947	348	275	777	108	37	67	84	111	232	289	370	722	3420

TENTERFIELD "TRENAYR" RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1948	289	257	174	23	86	526	124	109	152	36	283	297	2356
1949	296	570	225	29	22	209	144	72	202	824	513	137	3243
1950	106	238	17	116	111	578	405	60	401	410	247	137	2826
1951	816	274	326	135	108	326	120	89	92	117	162	128	2693
1952	66	301	280	182	431	220	116	303	75	870	89	95	3028
1953	114	510	259	38	178	0	68	163	10	103	235	102	1780
1954	269	523	12	38	30	92	63	139	116	792	348	260	2682
1955	197	339	74	155	239	101	103	89	154	504	52	126	2133
1956	1019	748	12	206	300	362	165	46	211	173	169	527	3938
1957	572	221	185	126	17	113	152	141	10	73	32	64	1706
1958	332	427	565	33	98	75	77	108	343	216	65	730	3069
1959	532	144	407	94	148	16	222	0	111	183	366	934	3157
1960	135	418	66	62	308	84	180	139	119	143	139	287	2081
1961	205	434	111	37	88	57	262	150	109	166	351	474	2444
1962	603	421	334	197	71	14	359	154	182	196	232	269	3032
1963	81	179	353	47	396	91	33	282	15	50	391	298	2216
1964	478	154	495	207	168	83	189	62	192	477	83	89	2677
1965	146	16	0	19	30	75	204	48	150	56	124	679	1547
1966	88	175	166	250	83	145	27	488	224	415	612	286	2959
1967	758	229	866	156	211	731	253	141	60	878	206	364	4853
1968	482	143	177	157	216	43	270	305	66	176	116	433	2584

TEXAS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1881	504	120	71	41	57	43	16	193	309	147	344	32	1877
1882	212	402	124	182	93	190	136	192	7	304	375	525	2742
1883	720	817	58	82	192	27	60	73	67	406	168	86	2756
1884	159	133	48	119	138	250	532	0	211	165	281	148	2184
1885	434	453	229	0	86	485	57	12	110	66	269	615	2816
1886	NO RECORDS												
1887	320	646	323	157	58	125	318	144	110	14	143	379	2737
1888	185	422	105	NO RECORDS									
1889	425	101	202	266	333	361	178	152	158	95	102	190	2563
1890	463	429	1373	40	197	185	116	30	235	392	343	260	4063
1891	924	190	136	44	98	358	182	257	259	92	321	364	3225
1892	258	257	269	373	198	185	240	81	518	782	695	425	4281
1893	315	697	59	545	337	405	259	129	27	428	370	110	3681
1894	685	114	387	162	346	207	42	104	145	411	179	57	2839
1895	685	38	41	2	107	14	99	98	134	147	280	501	2146
1896	190	486	125	243	134	114	227	89	130	55	602	422	2817
1897	400	242	322	0	40	366	478	123	359	125	114	766	3335
1898	456	187	17	36	149	240	84	71	151	125	109	90	1715

TEXAS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1899	823	352	13	237	50	326	295	138	172	97	74	267	2844
1900	156	339	163	161	335	186	272	66	268	35	267	333	2581
1901	129	135	458	146	110	187	100	306	147	220	26	43	2007
1902	195	162	42	0	0	88	0	157	13	242	167	148	1214
1903	47	94	48	184	434	36	453	321	455	247	493	444	3256
1904	170	367	572	3	299	70	212	48	81	163	76	297	2358
1905	377	9	247	387	307	80	53	109	16	354	119	454	2512
1906	341	217	194	189	157	75	90	322	277	342	223	183	2610
1907	469	455	616	65	93	162	131	87	7	183	278	215	2761
1908	79	608	35	288	137	243	130	424	114	127	239	564	2988
1909	157	689	251	318	37	172	201	255	189	107	411	130	2917
1910	598	262	425	69	41	365	226	80	12	202	335	439	3054
1911	782	247	325	106	193	9	206	190	205	57	31	72	2423
1912	271	127	182	0	10	521	199	115	119	279	158	232	2213
1913	261	203	185	73	478	291	48	7	139	250	234	283	2452
1914	394	137	648	353	313	220	251	30	86	113	130	265	2940
1915	113	150	23	91	144	77	112	204	141	11	13	391	1470
1916	133	588	156	298	75	382	286	272	142	250	420	466	3468

TEXAS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1917	527	323	93	28	7	103	70	58	520	160	709	533	3131
1918	582	16	23	161	30	44	93	175	79	53	20	51	1327
1919	215	108	270	72	112	32	17	68	22	43	120	294	1373
1920	333	151	58	98	128	374	475	123	284	413	116	405	2958
1921	145	68	266	43	546	615	561	32	326	191	144	634	3571
1922	197	34	71	0	0	83	184	26	134	171	147	388	1435
1923	159	42	34	0	38	217	79	60	220	139	4	280	1272
1924	400	738	96	170	78	51	267	237	193	219	559	120	3128
1925	579	248	185	0	180	10	120	325	13	27	454	357	2498
1926	127	0	28	99	137	262	186	23	66	52	0	617	1597
1927	285	119	391	285	10	147	16	89	30	301	288	191	2152
1928	256	483	379	136	114	244	220	0	0	189	120	81	2222
1929	25	344	170	292	4	56	75	108	101	270	110	246	1801
1930	122	65	140	121	172	336	230	267	120	419	128	161	2281
1931	168	84	305	230	395	183	180	100	139	294	366	625	3069
1932	130	131	122	432	137	80	122	64	252	359	242	205	2276
1933	566	210	70	124	141	197	280	211	158	404	246	299	2906
1934	266	285	60	158	35	142	263	237	100	506	273	769	3094

TEXAS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1935	467	164	36	23	71	17	164	68	330	129	51	56	1576
1936	296	11	327	63	122	91	275	84	161	145	88	449	2112
1937	747	44	333	35	37	59	100	132	18	115	533	167	2320
1938	186	160	0	0	297	36	126	206	60	193	365	20	1649
1939	158	8	282	116	0	251	147	187	43	145	28	238	1603
1940	220	428	162	45	6	69	0	9	73	156	173	389	1730
1941	656	42	381	14	16	232	49	0	2	118	278	0	1788
1942	159	375	317	0	110	183	445	20	56	402	299	540	2906
1943	208	7	21	153	116	144	88	212	110	152	485	364	2060
1944	484	302	56	45	51	34	156	308	112	85	17	148	1798
1945	341	731	42	109	232	335	163	149	55	7	118	435	2717
1946	329	165	128	138	88	8	5	0	355	108	250	372	1946
1947	366	335	625	125	282	60	70	96	185	210	393	501	3248
1948	218	115	145	95	211	415	131	43	216	88	98	215	1990
1949	303	426	69	13	71	122	41	68	159	783	328	65	2448
1950	116	437	157	93	126	545	609	20	311	622	630	80	3746
1951	1203	215	431	115	85	439	129	108	125	127	173	116	3266
1952	24	339	260	176	357	100	130	252	110	779	56	61	2644

TEXAS RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1953	43	797	187	40	191	0	66	223	28	145	222	100	2042
1954	283	706	35	15	35	126	72	195	139	778	455	339	3178
1955	146	550	48	323	163	50	169	102	105	556	63	258	2533
1956	903	1178	323	182	332	398	165	36	135	130	140	212	4134
1957	362	392	160	114	0	114	118	147	28	89	84	100	1708
1958	267	580	718	113	78	158	47	80	373	171	168	708	3461
1959	563	454	307	18	137	29	284	0	72	190	461	562	3077
1960	173	295	78	51	197	88	148	134	157	156	109	260	1846
1961	292	375	166	36	167	123	237	163	52	112	456	123	2302
1962	1032	561	483	153	76	17	254	158	181	206	144	525	3790
1963	93	246	652	79	225	51	28	208	12	183	327	458	2562
1964	237	117	243	360	183	104	213	57	173	464	71	146	2368
1965	90	38	5	21	20	19	168	68	149	128	189	639	1534
1966	64	173	232	118	46	215	41	514	191	313	473	130	2510
1967	147	131	347	200	186	262	107	100	10	300	34	120	1971
1968	258	213	225	155	144	50	204	217	85	136	156	510	2353

Appendix 11
Sheet 1

WALLANGARRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1888			NO	RECORDS				35	135	190	165	591	
1889	133	256	63	376	274	342	434	130	289	45	233	172	2747
1890	645	288	1226	52	116	156	73	36	169	246	300	221	3528
1891	453	58	57	78	123	422	156	167	276	167	403	412	2772
1892	220	111	307	631	273	340	162	217	187	506	392	562	3908
1893	395	913	411	275	172	566	203	85	100	224	452	46	3842
1894	646	75	314	139	235	234	55	110	95	203	279	87	2472
1895	928	50	0	12	141	0	119	116	47	233	221	409	2276
1896	308	1172	185	107	92	51	403	78	179	83	670	460	3788
1897	283	179	546	12	8	41	349	277	467	107	0	1083	3352
1898	459	334	102	0	89	291	118	64	20	96	48	86	1707
1899	509	379	26	229	96	174	326	87	164	126	152	619	2887
1900	311	777	139	128	296	111	182	40	230	27	384	96	2721
1901	173	16	284	166	21	206	153	343	91	246	91	182	1972
1902	251	0	64	2	3	53	4	98	219	255	44	66	1059
1903	233	140	224	0	630	2	448	183	677	236	413	96	3282
1904	345	93	615	97	335	44	177	20	151	245	296	370	2788
1905	237	115	397	266	164	147	10	145	31	366	214	433	2525

Appendix 11
Sheet 2

WALLANGARRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1906	524	138	384	136	78	58	117	228	409	278	170	359	2879
1907	491	120	366	98	8	272	104	178	0	147	505	306	2595
1908	81	443	188	166	38	107	173	317	172	114	618	87	2504
1909	66	388	115	254	140	177	203	377	162	229	411	346	2868
1910	387	612	179	70	30	209	317	111	52	318	348	547	3180
1911	511	261	256	23	171	27	223	226	151	377	144	60	2430
1912	156	341	475	10	26	486	324	124	215	391	92	150	2790
1913	881	17	228	63	415	359	92	32	290	178	117	179	2851
1914	294	330	334	146	186	246	106	29	66	537	254	435	2963
1915	214	88	90	205	235	111	157	197	171	31	76	353	1928
1916	205	406	108	317	167	313	265	236	148	296	498	454	3413
1917	522	502	125	60	43	130	148	86	880	296	703	501	3996
1918	573	110	41	196	46	84	96	242	62	84	101	348	1983
1919	225	331	433	63	252	32	34	135	53	117	115	201	1991
1920	216	111	190	128	219	373	442	206	241	277	153	224	2780
1921	153	188	231	142	494	535	754	37	385	531	155	567	4172
1922	151	125	153	85	25	178	284	78	175	280	307	528	2369
1923	259	45	128	55	28	312	181	45	122	198	29	313	1715

WALLANGARRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1924	482	493	152	169	85	162	206	224	246	500	977	362	4058
1925	768	326	393	39	263	137	162	330	28	77	470	280	3273
1926	464	109	36	159	118	165	297	119	53	98	67	741	2426
1927	763	86	532	179	21	270	44	99	26	307	609	433	3369
1928	449	973	555	261	106	254	388	44	70	316	261	377	4054
1929	291	908	278	293	64	232	189	192	93	630	306	324	3800
1930	413	110	119	218	201	427	235	325	94	391	170	315	3018
1931	396	323	220	154	397	258	235	101	188	207	456	678	3613
1932	187	128	86	412	179	88	128	83	301	429	487	301	2809
1933	806	275	35	154	234	267	361	263	278	352	565	447	4037
1934	642	527	61	260	67	170	340	271	205	419	233	691	3886
1935	320	406	12	63	142	69	233	56	460	337	83	695	2876
1936	328	74	431	183	141	119	387	70	177	350	118	755	3133
1937	843	194	419	44	81	124	131	280	38	246	594	232	3226
1938	323	499	66	14	279	36	248	267	107	352	454	75	2720
1939	351	16	568	189	10	359	198	220	145	177	120	500	2853
1940	312	459	226	51	52	80	0	14	141	160	162	552	2209
1941	888	182	774	11	223	357	100	40	24	140	291	66	3096

WALLANGARRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1942	324	619	166	7	181	131	430	25	154	501	407	760	3705
1943	537	30	97	144	98	82	144	298	264	312	744	657	3407
1944	544	452	25	40	120	59	257	251	127	77	175	240	2367
1945	403	734	96	230	156	685	220	240	106	50	217	436	3573
1946	766	88	406	121	93	39	25	23	355	199	407	427	2949
1947	638	402	625	276	83	68	118	141	208	293	490	526	3686
1948	397	225	366	28	191	878	156	181	187	83	424	435	3551
1949	226	556	239	20	96	324	172	95	288	968	357	168	3509
1950	353	598	153	136	136	976	430	135	479	688	308	136	4528
1951	1047	187	400	155	85	284	110	180	135	179	192	333	3287
1952	137	457	383	150	519	179	131	317	123	894	155	170	3615
1953	395	424	261	31	192	0	55	210	4	161	341	89	2163
1954	169	1133	150	121	58	158	363	150	235	795	406	507	4245
1955	130	213	326	314	395	61	169	109	185	434	73	551	2960
1956	832	846	123	191	431	422	222	32	178	293	253	373	4196
1957	394	157	210	142	10	119	196	178	37	178	63	162	1846
1958	342	481	360	116	51	174	87	163	304	217	188	809	3292
1959	838	200	383	97	128	29	315	31	216	328	483	1039	4087

WALLANGARRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1960	195	371	84	176	233	154	178	149	122	177	240	306	2385
1961	230	679	226	73	106	75	293	186	92	230	739	390	3319
1962	891	171	459	533	98	4	577	184	227	199	285	353	3981
1963	287	265	712	151	559	133	39	379	45	96	589	440	3695
1964	266	174	579	229	215	136	210	50	205	579	283	171	3097
1965	118	84	6	85	78	138	498	68	200	138	255	747	2415
1966	86	361	138	221	48	191	27	509	343	601	280	324	3129
1967	269	163	748	101	201	485	152	92	28	471	195	176	3081
1968	332	278	404	203	267	96	449	451	69	244	78	391	3262

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Glenelg (Period 62 years)	Minimum	30	0	0	0	0	0	0	0	0	43	27	45	1406
	10%	61	32	33	13	20	29	26	12	20	78	66	77	1686
	30%	149	128	123	50	61	87	112	62	82	139	151	172	2276
	50%	283	233	187	84	106	150	156	110	130	203	232	289	2553
	70%	476	336	271	206	194	249	209	193	214	314	346	383	2931
	90%	641	581	501	317	324	404	313	273	313	482	511	598	3430
	Maximum	1372	850	745	699	460	699	421	532	723	880	633	861	4586
Inglewood (Period 82 years)	Minimum	2	4	0	0	0	0	0	0	0	8	3	8	1206
	10%	100	50	32	6	12	22	31	5	13	57	47	59	1640
	30%	166	123	93	35	61	72	99	60	73	120	146	185	2263
	50%	257	229	176	91	123	143	144	103	136	181	256	270	2589
	70%	463	347	308	181	198	226	210	160	214	273	338	410	2921
	90%	631	664	522	311	372	418	325	273	312	451	496	604	3469
	Maximum	1577	923	1547	410	897	793	569	474	659	827	764	880	4636
Stanthorpe (Period 92 years)	Minimum	18	0	0	0	0	0	0	0	0	23	0	7	1449
	10%	79	65	44	21	25	31	36	24	23	106	64	94	1990
	30%	216	159	126	70	90	89	111	71	110	142	174	219	2545
	50%	337	255	205	131	134	149	169	141	178	230	255	313	2945
	70%	456	386	323	209	214	246	242	209	239	318	340	450	3369
	90%	738	801	605	365	365	461	364	341	439	436	501	651	4009
	Maximum	1020	1200	1226	695	687	967	807	1436	929	841	652	1270	7220

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Texas (Period 76 years)	Minimum	24	0	0	0	0	0	0	0	0	7	0	0	1214
	10%	115	37	32	0	9	25	42	20	15	54	30	64	1591
	30%	174	131	72	44	75	77	99	68	79	125	116	162	2115
	50%	277	244	168	107	127	143	152	108	134	171	176	266	2522
	70%	400	374	303	161	190	231	219	174	173	250	319	404	2956
	90%	704	632	510	319	336	387	289	268	327	477	487	563	3499
	Maximum	1203	1178	1373	545	546	615	609	424	520	783	709	769	4281
Boggabilla (Period 72 years)	Minimum	2	0	0	0	0	0	0	0	0	12	0	0	683
	10%	71	40	2	0	3	16	24	19	6	40	43	30	1504
	30%	160	127	85	56	50	66	80	50	57	91	93	157	2011
	50%	257	242	160	97	132	109	130	101	120	169	186	218	2397
	70%	356	332	311	172	174	189	218	156	165	224	336	328	2644
	90%	640	569	536	317	279	463	316	268	266	358	513	600	3255
	Maximum	924	1550	839	762	715	745	658	503	523	824	845	898	4093
Deepwater (Period 75 years)	Minimum	28	0	0	0	0	0	25	0	10	32	0	9	1477
	10%	104	52	50	17	11	41	76	35	37	97	46	83	2139
	30%	256	157	146	66	69	109	128	99	102	185	174	247	2476
	50%	362	230	234	103	127	171	183	159	169	267	264	369	2996
	70%	514	399	333	180	203	288	261	224	252	330	384	451	3503
	90%	661	669	564	271	373	491	403	303	361	634	507	660	3947
	Maximum	1314	943	1057	461	698	727	808	608	658	829	829	963	4723

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Strathbogie (Period 84 years)	Minimum	23	8	0	0	0	0	2	0	8	47	0	0	1569
	10%	98	58	51	0	15	38	54	32	37	95	87	111	2136
	30%	218	152	111	63	86	139	122	91	118	163	149	207	2648
	50%	367	241	231	129	145	214	185	147	204	240	259	315	2985
	70%	477	419	336	231	218	293	273	221	262	340	401	444	3401
	90%	724	639	580	378	359	438	420	366	451	625	543	637	4057
	Maximum	1120	1106	841	851	693	775	828	627	787	1052	854	1014	5844
Tenterfield (Period 93 years)	Minimum	45	15	0	0	0	0	2	4	3	10	26	0	1692
	10%	160	78	69	24	33	18	48	33	40	105	100	112	2267
	30%	300	192	154	85	88	82	120	85	115	169	192	235	2787
	50%	387	288	249	144	137	160	182	157	175	255	299	346	3135
	70%	544	434	411	230	200	280	283	224	244	310	409	518	3565
	90%	799	742	635	376	377	524	433	325	413	490	586	686	4531
	Maximum	1389	1187	1382	874	617	1146	1015	761	783	912	910	1231	5630

MINIMUM RAINFALL RECORDED IN CONSECUTIVE 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.
Glenelg	1	30	0	0	0	0	0	0	0	0	43	27	45
	2	154	33	59	13	63	24	8	34	99	70	117	114
	3	192	111	65	97	76	34	95	168	189	242	302	326
	4	251	116	183	202	86	130	183	267	364	435	434	364
	5	251	298	309	273	264	218	282	396	474	582	472	446
	6	479	340	404	284	352	317	457	586	600	620	509	557
	7	764	518	513	372	451	492	721	616	638	702	614	684
	8	830	627	667	471	626	831	820	654	720	892	741	939
	9	958	698	767	646	859	1071	858	736	938	1007	1038	1078
	10	1064	798	951	1001	1148	1138	940	954	1025	1195	1135	1158
	11	1099	982	1031	1225	1392	1220	1158	1041	1213	1339	1215	1232
	12	1406	1062	1320	1412	1449	1438	1245	1229	1357	1433	1289	1267
Inglewood	1	2	4	0	0	0	0	0	0	0	8	3	8
	2	79	21	14	1	36	3	7	8	42	36	11	111
	3	154	32	45	36	36	17	79	96	110	216	219	309
	4	189	57	113	36	50	104	123	162	238	326	312	405
	5	261	123	212	50	196	145	172	320	348	482	408	415
	6	394	216	235	196	271	194	330	537	504	691	418	421
	7	513	344	381	271	383	352	547	627	773	701	424	521
	8	672	390	456	383	543	569	637	825	792	707	524	521
	9	687	556	568	606	666	659	835	907	798	807	524	680
	10	853	770	778	823	822	857	917	1003	898	807	683	695
	11	901	823	888	913	1048	939	1013	1288	898	966	698	861
	12	1206	933	1044	1111	1130	1035	1340	1288	1057	981	864	1138

MINIMUM RAINFALL RECORDED IN CONSECUTIVE 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.
Stanthorpe	1	18	0	0	0	0	0	0	0	0	23	0	7
	2	164	79	0	0	15	8	30	59	87	47	121	77
	3	229	117	0	15	28	85	94	160	135	210	313	357
	4	328	117	15	36	182	149	188	208	228	463	551	452
	5	383	132	122	207	297	218	236	301	481	620	704	496
	6	422	239	340	313	414	266	329	554	638	823	719	688
	7	529	391	411	434	593	359	582	711	841	961	910	766
	8	708	486	580	601	705	612	739	914	979	1191	988	781
	9	803	697	816	705	958	769	942	1052	1209	1281	1003	875
	10	987	956	1062	958	1115	972	1080	1282	1404	1296	1097	970
	11	1318	1221	1260	1115	1318	1110	1310	1404	1438	1390	1192	1199
	12	1449	1311	1419	1318	1456	1340	1529	1502	1532	1485	1421	1584
Texas	1	24	0	0	0	0	0	0	0	0	7	0	0
	2	127	28	0	0	60	13	5	0	40	24	69	104
	3	133	43	42	60	75	13	51	120	118	124	160	186
	4	154	64	65	88	84	139	150	141	203	330	345	279
	5	174	84	130	129	157	182	270	378	415	447	350	300
	6	193	103	287	202	294	302	447	415	526	688	371	320
	7	361	271	300	358	414	515	606	701	759	688	391	339
	8	429	339	520	486	545	730	794	910	835	688	410	507
	9	578	488	678	706	760	838	916	1001	835	776	556	575
	10	706	616	729	862	868	1004	1100	1139	923	776	646	700
	11	895	805	904	956	1004	1180	1241	1187	923	933	726	852
	12	1214	960	998	1004	1188	1292	1280	1204	1080	946	923	1041

MINIMUM RAINFALL RECORDED IN CONSECUTIVE 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.
Boggabilla	1	2	0	0	0	0	0	0	0	0	12	0	0
	2	25	0	0	0	29	0	3	23	24	17	41	113
	3	155	58	25	43	46	14	53	66	66	205	146	171
	4	189	87	81	46	61	54	100	183	246	275	192	209
	5	192	127	84	118	137	101	193	445	324	327	230	209
	6	232	130	195	168	177	194	451	505	530	504	230	252
	7	235	241	206	234	243	462	586	586	568	504	233	252
	8	346	252	313	300	494	747	740	724	568	507	273	255
	9	357	359	338	494	751	780	946	724	571	547	276	366
	10	464	384	532	751	783	1020	946	727	611	550	387	377
	11	489	578	789	783	1031	1096	949	767	614	661	398	484
	12	683	835	821	1097	1186	1133	989	770	725	672	505	509
Deepwater	1	28	0	0	0	0	0	25	0	10	32	0	9
	2	127	78	26	0	32	73	41	28	120	32	41	115
	3	287	104	95	113	77	86	102	198	188	174	284	383
	4	362	180	136	141	90	185	248	267	281	489	657	671
	5	478	214	259	154	193	275	325	536	559	790	899	746
	6	682	337	299	257	346	352	586	839	897	1132	911	808
	7	864	377	414	410	520	613	935	1158	1244	1158	946	917
	8	937	535	567	641	781	935	1255	1423	1256	1193	1055	942
	9	1040	772	802	902	1098	1414	1515	1510	1291	1302	1080	1185
	10	1193	1098	1108	1213	1418	1542	1660	1704	1400	1327	1371	1288
	11	1428	1423	1476	1482	1710	1687	1801	1754	1425	1572	1470	1441
	12	1477	1531	1639	1831	1855	1857	1865	1782	1608	1675	1627	1676

TENTERFIELD CREEK AT CLIFTON

LOCATION:	Latitude 29°02' Longitude 151°43'
PERIOD OF ESTABLISHMENT:	September 1921 to date
COMPLETE YEARS OF COMPUTED RECORDS:	46 years
ZERO OF GAUGE:	R.L. 14.17 Assumed datum, approximately 2,100 feet above sea level
CATCHMENT AREA:	220 Square miles
CONTROL:	Natural rock bar
EQUIPMENT:	Staff gauge, range 0 to 20 feet Automatic Recorder(Pressure Type) installed January 1937.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 262 (b) Maximum observation in cusecs : 2,170 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	63,000 cusecs
MEAN DAILY DISCHARGE FOR 46 YEARS:	69 cusecs
MEAN ANNUAL DISCHARGE FOR 46 YEARS:	50,200 acre feet
REMARKS:	(a) No. 1 Station was established in September 1921 and discontinued in March 1930. (b) No. 2 Station was established in January 1928 and discontinued in February 1952. (c) No. 3 Station was established in February 1952 and is currently operative.

TENTERFIELD CREEK AT CLIFTON

Year 1923

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	No Records			6,800*
Feb.	1.0	0	0.4	25
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
Aug.	0	0	0	0
Sept.	2.5	0	1	61
Oct.	No Records			30*
Nov.	0	0	0	0
Dec.	0	0	0	0
Total	..	..	..	6,916*

Year 1924

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	No Records			8,300*
Feb.	511	2	51	2,967
Mar.	4.5	1	1.9	118
Apr.	0.8	0.2	0.6	36
May	0.3	0	0.1	5
June	No Records			90*
July	15	0	2.4	146
Aug.	54	1	3.6	226
Sept.	54	1	10	628
Oct.	2210	1	77	4,798
Nov.	4010	35	389	23,336
Dec.	277	10	40	2,509
Total	..	..	..	43,161*

Year 1925

Jan.	1750	8.5	241	14,940
Feb.	185	27	45	2,535
Mar.	1700	31	127	7,854
Apr.	31	4.5	17	1,112
May	90	2.5	18	1,087
June	570	6	71	4,232
July	118	11	45	2,799
Aug.	2950	11	243	15,070
Sept.	84	15	32	1,923
Oct.	90	1.5	28	1,747
Nov.	2600	8.5	148	8,856
Dec.	18	0.5	11	674
Total	..	..	..	62,829

Year 1926

Jan.	2950	3.5	149	9,266
Feb.	51	0	7.7	429
Mar.	0	0	0	0
Apr.	8	0	1.2	72
May	5	0.3	1.3	78
June	5	0.3	1.7	104
July	58	0.2	8.8	545
Aug.	3.5	0.5	1.3	82
Sept.	2	0	0.6	35
Oct.	0	0	0	0
Nov.	0	0	0	0
Dec.	980	0	188	4,096
Total	..	..	..	14,707

Year 1927

Jan.	9530	1	983	60,962
Feb.	1550	3.5	318	17,810
Mar.	730	5	95	5,884
Apr.	160	5	32	1,972
May	5	0.5	1.9	120
June	5	0.5	1.8	108
July	10	0.5	3.6	206
Aug.	3.5	0.8	2.1	128
Sept.	0.7	0.2	0.4	25
Oct.	64	0.2	11	729
Nov.	995	1	49	2,961
Dec.	77	8	29	1,788
Total	..	..	..	92,693

Year 1928

Jan.	70	3.5	20	1,257
Feb.	3500	3.5	287	16,648
Mar.	3500	15	158	9,812
Apr.	493	20	75	4,502
May	46	20	28	1,722
June	890	17	91	5,448
July	3500	29	244	15,132
Aug.	77	20	44	2,726
Sept.	20	5	12	724
Oct.	70	1	20	1,246
Nov.	3.5	0.2	1.2	71
Dec.	0.7	0	0.2	11
Total	..	..	..	59,299

Year 1929

Jan.	290	0	32	2,013
Feb.	780	0.2	157	8,804
Mar.	24	5	11	692
Apr.	4010	15	269	16,118
May	20	5	11	708
June	26	5	7.8	467
July	64	6	24	1,468
Aug.	34	5	16	1,018
Sept.	10	2	5.3	321
Oct.	5150	1.5	415	25,718
Nov.	141	20	48	2,994
Dec.	20	0.2	4.5	282
Total	..	..	..	60,603

Year 1930

Jan.	170	0	11	725
Feb.	268	3.5	24	1,362
Mar.	3.5	1	1.8	52
Apr.	22	0.5	5	311
May	165	0.3	26	1,629
June	282	7	65	4,052
July	760	27	120	7,432
Aug.	3180	15	257	15,930
Sept.	221	11	44	2,628
Oct.	357	10	42	2,600
Nov.	11	3	6	374
Dec.	32	0.2	4	262
Total	..	..	..	37,357

* Estimated

TENTERFIELD CREEK AT CLIFTON

Year 1931					Year 1932				
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.	52	0.2	6	393	Jan.	No Records			
Feb.	10	0.1	2.7	153	Feb.	No Records			
Mar.	2	0.2	0.4	25	Mar.	No Records			
Apr.	2	0.2	0.6	38	Apr.	No Records			
May	285	0.5	17	1,066	May	No Records			
June	285	1	25	1,480	June	No Records			
July	840	13	115	7,144	July	No Records			
Aug.	19	8	14	878	Aug.	No Records			
Sept.	No Records			700*	Sept.	No Records			
Oct.	No Records			1,500*	Oct.	No Records			
Nov.	No Records			200*	Nov.	No Records			
Dec.	No Records			22,000*	Dec.	No Records			
Total	..	..	..	35,577*	Total	..	..	..	17,000*

Year 1933					Year 1934				
Jan.	No Records				Jan.	No Records			5,000*
Feb.	No Records				Feb.	No Records			4,000*
Mar.	No Records				Mar.	No Records			300*
Apr.	No Records				Apr.	No Records			1,000*
May	No Records				May	No Records			700*
June	No Records				June	No Records			400*
July	No Records				July	No Records			3,000*
Aug.	No Records				Aug.	No Records			8,000*
Sept.	No Records				Sept.	635	24	102	5,114
Oct.	No Records				Oct.	70	20	38	2,346
Nov.	No Records				Nov.	34	12	21	1,260
Dec.	No Records				Dec.	4010	12	277	17,200
Total	..	..	..	80,000*	Total	..	..	..	48,320*

Year 1935					Year 1936				
Jan.	225	3	50	3,076	Jan.	7	2	3	166
Feb.	21	1.5	6.7	376	Feb.	7	0.1	1	76
Mar.	51	2	16	976	Mar.	221	0.3	28	1,708
Apr.	12	2	4.1	247	Apr.	118	0.2	19	1,148
May	5	2	3.6	226	May	7	0.4	1.7	102
June	8	0.5	2.7	165	June	5	0.5	1.5	90
July	27	5	16	1,008	July	221	1	21	1,296
Aug.	5	2	3	170	Aug.	80	3	14	896
Sept.	221	2	17	1,034	Sept.	45	2	9	558
Oct.	725	5	149	9,216	Oct.	3280	2	132	8,204
Nov.	17	0.3	4.4	267	Nov.	2	0	0.4	22
Dec.	880	3	76	4,740	Dec.	524	0	51	3,158
Total	..	..	..	21,501	Total	..	..	..	17,424

Year 1937					Year 1938				
Jan.	19100	5	845	52,368	Jan.	410	0.1	11	676
Feb.	45	2	11	622	Feb.	182	0.5	13	732
Mar.	357	2	45	2,768	Mar.	2	0	0.2	12
Apr.	27	5	12	746	Apr.	0	0	0	0
May	5	1	3	182	May	0	0	0	0
June	5	2	2	132	June	0	0	0	0
July	10	1	3	186	July	7	0	1.1	67
Aug.	32	2	6	379	Aug.	1280	3	80	4,984
Sept.	17	0.3	4.4	263	Sept.	32	4	13	804
Oct.	52	0.1	5.5	343	Oct.	1430	2	50	3,114
Nov.	242	0.3	24	1,437	Nov.	725	2	52	3,086
Dec.	61	1	9	532	Dec.	133	0.2	14	858
Total	..	..	..	59,958	Total	..	..	..	14,333

* Estimated

TENTERFIELD CREEK AT CLIFTON

Year 1939

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	332	0	22	1,380
Feb.	22	0	3	188
Mar.	494	0	34	2,127
Apr.	13	0.5	3	171
May	2	0.2	0.7	44
June	70	0.5	7	432
July	221	5	22	1,354
Aug.	410	5	64	3,946
Sept.	10	2	5	316
Oct.	5	1	2	146
Nov.	10	0.2	2	119
Dec.	2940	0	48	2,966
Total	..	..	..	13,189

Year 1940

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	104	0.1	10	618
Feb.	118	0.2	15	849
Mar.	2.5	0	0.3	19
Apr.	0.2	0	0.1	5
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
Aug.	0	0	0	0
Sept.	0	0	0	0
Oct.	0	0	0	0
Nov.	0	0	0	0
Dec.	308	0	21	853
Total	..	..	..	2,344

Year 1941

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	2860	1	137	8,530
Feb.	437	5	31	1,742
Mar.	1540	5	83	5,116
Apr.	32	5	18	1,062
May	32	2	4	268
June	2630	7	176	10,570
July	27	11	18	1,130
Aug.	10	4	6	398
Sept.	4	0.2	1.4	83
Oct.	0.2	0	0.08	5
Nov.	91	0	1.6	95
Dec.	7	0	0.3	20
Total	..	..	..	29,025

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	118	0	4	278
Feb.	2710	5	151	8,466
Mar.	17	1	5	308
Apr.	5	0.2	0.8	45
May	0.1	0	0.02	1
June	0	0	0	0
July	2860	7	92	5,679
Aug.	27	3	10	650
Sept.	7	0.5	2.3	136
Oct.	1090	0.3	87	5,422
Nov.	1230	15	102	6,112
Dec.	1380	2	44	2,722
Total	..	..	..	29,819

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	800	12	142	8,787
Feb.	10	0.3	4	252
Mar.	0.4	0	0	5
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
Aug.	0	0	0	0
Sept.	52	0.3	5	284
Oct.	118	0.3	12	735
Nov.	4630	3	214	12,842
Dec.	725	5	66	4,080
Total	..	..	..	26,985

Year 1944

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	437	10	75	4,662
Feb.	80	29	41	2,404
Mar.	29	0.3	7	462
Apr.	3	0.4	1	80
May	52	0.2	3	214
June	3	0.5	1	58
July	118	0.8	12	766
Aug.	1090	2	68	4,186
Sept.	26	7	13	804
Oct.	7	0.6	2	148
Nov.	0.6	0	0.1	8
Dec.	960	0	29	1,824
Total	..	..	..	15,616

Year 1945

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	23	0.3	2	118
Feb.	7000	0	211	11,834
Mar.	87	0.5	16	979
Apr.	61	0.4	5	320
May	20	0.5	3.1	191
June	11000	0.5	564	33,836
July	875	22	198	12,282
Aug.	165	25	48	2,949
Sept.	149	15	40	2,418
Oct.	22	2.5	8	481
Nov.	11	0.5	2	140
Dec.	69	0.7	15	944
Total	..	..	..	66,492

Year 1946

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	22500	0.1	412	25,516
Feb.	34	1.5	13	720
Mar.	4760	0.4	67	4,124
Apr.	20	2.5	8	469
May	11	6	7	444
June	4	2	3	152
July	2	1	2	108
Aug.	1	0.3	0.5	33
Sept.	13	0.1	3.9	236
Oct.	78	0.5	12	768
Nov.	5	3	5	280
Dec.	15	5	9	558
Total	..	..	..	33,408

TENTERFIELD CREEK AT CLIFTON

Month	Year 1947 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1948 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			400*	Jan.	835	10	60	3,758
Feb.	No Records			6,000*	Feb.	8.5	1.3	4.2	233
Mar.	No Records			20,000*	Mar.	437	8.5	37	2,294
Apr.	No Records			17,500*	Apr.	8.5	1.7	3	202
May	No Records			1,800*	May	60	2	15	928
June	27	7	16	955	June	63000	4.5	1255	75,332
July	15	6	8	485	July	367	42	119	7,408
Aug.	70	3.5	11	683	Aug.	426	21	63	3,918
Sept.	1080	7.8	100	6,012	Sept.	229	16	43	2,608
Oct.	87	7	24	1,494	Oct.	26	4.5	11	697
Nov.	44	1.3	9.5	568	Nov.	74	3.5	13	792
Dec.	13600	16	449	27,820	Dec.	42	1	7	436
Total	..	..	..	83,717*	Total	..	..	..	98,606

Month	Year 1949 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1950 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	50	0.1	7.7	479	Jan.	46	1	6	353
Feb.	2040	0	118	6,604	Feb.	520	2.5	52	2,910
Mar.	553	12	85	5,290	Mar.	586	13	81	5,042
Apr.	22	2	7	413	Apr.	249	13	56	3,348
May	24	2	5	316	May	38	8	14	856
June	159	2.5	28	1,700	June	47400	8	2094	125,640
July	315	6.5	30	1,861	July	12300	120	683	42,330
Aug.	54	6.5	16	987	Aug.	1080	66	186	11,528
Sept.	426	7	53	3,184	Sept.	1170	34	161	9,682
Oct.	4760	19	649	40,264	Oct.	6200	126	863	53,518
Nov.	1220	21	106	6,350	Nov.	3500	42	276	16,540
Dec.	78	5	22	1,343	Dec.	131	11	48	2,948
Total	..	..	..	68,791	Total	..	..	..	274,695

Month	Year 1951 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1952 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	4230	19	319	19,802	Jan.	1.2	0	0.2	10
Feb.	835	27	158	8,850	Feb.	950	0	19	1,082
Mar.	488	25	116	7,202	Mar.	1020	0.9	29	1,794
Apr.	184	16	39	2,360	Apr.	18	3.6	8.1	487
May	30	11	15	928	May	2890	1.8	156	9,649
June	520	10	85	5,076	June	1500	21	157	9,440
July	340	14	38	2,330	July	210	28	44	2,742
Aug.	396	11	43	2,646	Aug.	2100	28	149	9,230
Sept.	27	8	13	784	Sept.	51	12	28	1,694
Oct.	133	4	20	1,212	Oct.	7170	12	497	30,826
Nov.	16	0.5	4.5	274	Nov.	336	14	58	3,502
Dec.	2	0.2	0.9	57	Dec.	26	1.8	8	498
Total	..	..	..	51,521	Total	..	..	..	70,954

Month	Year 1953 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1954 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	101	1.8	9.5	591	Jan.	0	0	0	0
Feb.	3050	1.2	105	5,809	Feb.	9660	0	299	16,774
Mar.	525	12	42	2,622	Mar.	292	5.2	34	2,132
Apr.	31	6	14	871	Apr.	14	3.6	6.4	382
May	141	4.3	19	1,220	May	4.3	2.1	2.8	174
June	6	3.6	4.5	269	June	21	2.7	5.5	330
July	6	2.9	4.1	251	July	2030	2.9	128	7,966
Aug.	51	2.9	5	313	Aug.	1000	23	55	3,418
Sept.	31	0.7	6.6	394	Sept.	26	6	17	1,046
Oct.	31	0.5	3.4	212	Oct.	6540	9	362	22,460
Nov.	2100	0.5	59	3,514	Nov.	1820	16	159	9,538
Dec.	0.7	0	0.1	6	Dec.	950	12	59	3,638
Total	..	..	..	16,072	Total	..	..	..	67,858

*Estimated

TENTERFIELD CREEK AT CLIFTON

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	26	4.3	8.2	508
Feb.	66	0.9	5.1	288
Mar.	1500	2.9	44	2,704
Apr.	1820	16	34	2,046
May	3500	31	228	14,128
June	165	44	79	4,764
July	153	16	39	2,396
Aug.	51	16	28	1,734
Sept.	74	8.5	19	1,123
Oct.	2570	7.2	55	3,422
Nov.	37	2.9	12	712
Dec.	74	0.3	10	670
Total	..	..	..	34,495

Year 1956

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	18800	0	477	29,594
Feb.	47000	58	1300	75,388
Mar.	1680	67	149	9,256
Apr.	187	16	38	2,266
May	1890	35	137	8,468
June	6900	20	232	13,918
July	2810	71	241	14,970
Aug.	63	24	39	2,400
Sept.	27	10	22	1,290
Oct.	29	10	18	1,098
Nov.	35	5.1	12	740
Dec.	48	6.8	18	1,138
Total	..	..	..	160,526

Year 1957

Jan.	88	2.9	13	818
Feb.	8.6	1.5	3.2	180
Mar.	8.6	2.9	5.3	330
Apr.	6.8	1.8	3.4	202
May	2.9	1.5	1.9	118
June	5.5	2	3	180
July	6.8	3.9	4.9	304
Aug.	35	3.2	5.4	336
Sept.	10	0.9	3.8	230
Oct.	0.9	0	0.2	12
Nov.	80	0	4.9	292
Dec.	0	0	0	0
Total	..	..	..	3,002

Year 1958

Jan.	0	0	0	0
Feb.	315	0	9.3	524
Mar.	954	1.8	76	4,700
Apr.	5.1	1.7	2.5	152
May	1.5	0.6	1.2	76
June	7.7	0.3	3.1	184
July	5.9	2.2	3.8	234
Aug.	10	2.2	3.7	230
Sept.	253	2.2	15	926
Oct.	48	2.6	11	678
Nov.	9.6	0	1.4	84
Dec.	569	0	27	1,688
Total	..	..	..	9,476

Year 1959

Jan.	7170	8.6	276	17,142
Feb.	2970	32	131	7,360
Mar.	1075	16	87	5,418
Apr.	235	13	36	2,182
May	3050	6.8	86	5,304
June	10	3.9	6.5	390
July	3050	5.9	176	10,942
Aug.	48	8.6	13	818
Sept.	24	6.8	12	714
Oct.	16	2.9	7.4	460
Nov.	459	5.1	81	4,870
Dec.	8700	13	548	33,950
Total	..	..	..	89,550

Year 1960

Jan.	71	12	36	2,262
Feb.	253	8	22	1,288
Mar.	18	3.4	7.6	474
Apr.	4.2	2.7	2.9	172
May	25	4.5	8	496
June	10	1.7	6	362
July	30	8	13	852
Aug.	459	7.3	28	1,764
Sept.	8	4	5.5	332
Oct.	12	1.2	3.4	212
Nov.	1.7	0	0.4	22
Dec.	6	0	1.3	78
Total	..	..	..	8,314

Year 1961

Jan.	6	0	1.5	90
Feb.	1200	0	48	2,664
Mar.	174	1.7	12	742
Apr.	4.5	1.2	2	122
May	2.3	0.5	1.1	68
June	41	0.8	5.8	348
July	16	1.6	4.8	300
Aug.	485	11	34	2,114
Sept.	41	4.5	10	620
Oct.	35	1.7	6.7	414
Nov.	1560	0.2	53	3,206
Dec.	1100	12	104	6,426
Total	..	..	..	17,114

Year 1962

Jan.	7320	30	640	39,676
Feb.	2170	10	71	3,986
Mar.	828	10	64	3,982
Apr.	21200	35	556	33,400
May	50	16	30	1,850
June	23	11	13	822
July	5280	7.5	181	11,200
Aug.	910	30	106	6,560
Sept.	140	21	38	2,310
Oct.	120	9.5	22	1,370
Nov.	15	2.8	6.6	418
Dec.	180	1.8	14	876
Total	..	..	..	106,450

TENTERFIELD CREEK AT CLIFTON

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3320	12	144	8,940
Feb.	65	2.8	15	868
Mar.	4510	2.8	132	8,180
Apr.	120	20	41	2,490
May	8700	30	426	26,400
June	1750	35	153	9,200
July	40	21	26	1,640
Aug.	1560	12	95	5,930
Sept.	152	5.5	29	1,770
Oct.	29	5.5	12	742
Nov.	2170	2.8	68	4,110
Dec.	869	15	107	6,650
Total	..	..	..	76,920

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	30	1.8	9	567
Feb.	12	2.8	5.2	302
Mar.	1440	5.5	132	8,160
Apr.	125	6	15	920
May	25	6	12	752
June	240	10	33	1,980
July	2030	13	132	8,200
Aug.	50	8	17	1,070
Sept.	20	6	9	548
Oct.	2250	13	103	6,410
Nov.	340	2.2	19	1,150
Dec.	43	4.5	10	664
Total	..	..	..	30,723

Year 1965

Jan.	11	0	2.4	149
Feb.	3.2	0	0.5	30
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	540	0	27	1,700
Aug.	14	4	6.2	384
Sept.	105	2.7	13	790
Oct.	2.2	0.1	1.0	61
Nov.	0	0	0	0
Dec.	13000	0	967	60,000
Total	..	..	..	63,114

Year 1966

Jan.	14	0.3	4.1	253
Feb.	40	0.3	8.0	446
Mar.	1.8	0.1	0.7	44
Apr.	1	0	0.2	12
May	1.8	0	0.8	49
June	6.5	0.6	2.5	148
July	1	0.3	0.9	58
Aug.	2570	0.1	54	3,320
Sept.	2030	14	88	5,300
Oct.	2250	10	68	4,220
Nov.	2810	10	113	6,800
Dec.	152	0.2	5.4	335
Total	..	..	..	20,986

Year 1967

Jan.	512	2.2	40	2,470
Feb.	57	2.2	8.1	451
Mar.	13000	6.5	267	16,600
Apr.	61	14	34	2,050
May	105	6.5	21	1,340
June	6600	4.5	318	19,100
July	320	50	105	6,490
Aug.	435	19	52	3,220
Sept.	16	4.4	9.6	574
Oct.	4300	3.2	140	8,700
Nov.	59	2.5	15	904
Dec.	2.5	0	1.1	67
Total	..	..	..	61,966

Year 1968

Jan.	2030	0	95	5,880
Feb.	100	6	23	1,330
Mar.	280	9	25	1,540
Apr.	10	1	4	224
May	35	5	13	814
June	14	3	5	313
July	3230	6	106	6,570
Aug.	6660	14	273	16,900
Sept.	150	25	47	2,820
Oct.	165	6	22	1,370
Nov.	11	0	3	179
Dec.	17	0	2	131
Total	..	..	..	38,071

THE MOLE RIVER AT BELLANBOE

LOCATION:	Latitude 29°02' Longitude 151°38'
PERIOD OF ESTABLISHMENT:	March 1963 to date
COMPLETE YEARS OF COMPUTED RECORDS:	5 years
ZERO OF GAUGE:	R.L. 1240.43 Queensland State Datum
CATCHMENT AREA:	613 Square miles
CONTROL:	Natural gravel bar
EQUIPMENT:	Staff gauge, range 0 to 30 feet Automatic Recorders (2 Pressure Types) installed March 1963
CURRENT METER OBSERVATIONS:	(a) Number obtained : 65 (b) Maximum observation in cusecs : 1,980 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	21,600 cusecs
MEAN DAILY DISCHARGE FOR 5 YEARS:	131 cusecs
MEAN ANNUAL DISCHARGE FOR 5 YEARS:	95,500 acre feet

MOLE RIVER AT BELLANBOE

Year 1963

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	207	38	64	3,810
May	8950	38	631	39,100
June	1500	119	316	19,000
July	119	38	70	4,370
Aug.	980	38	107	6,650
Sept.	365	49	90	5,380
Oct.	49	21	34	2,080
Nov.	1080	14	96	5,750
Dec.	1550	38	219	13,600
Total	..	..	..	..

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	690	21	80	4,950
Feb.	158	21	36	2,090
Mar.	6910	82	435	26,960
Apr.	182	29	63	3,810
May	100	38	55	3,390
June	182	21	52	3,120
July	1180	29	164	10,200
Aug.	64	29	38	2,350
Sept.	400	14	31	1,850
Oct.	1880	73	282	17,500
Nov.	108	44	55	3,270
Dec.	44	6.5	23	1,400
Total	..	..	..	80,840

Year 1965

Jan.	32	0.1	6.3	390
Feb.	0.5	0	0.3	22
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	2260	0	75	4,680
Aug.	25	15	20	1,230
Sept.	55	12	23	1,390
Oct.	12	2.5	5.5	343
Nov.	2.5	0	0.6	36
Dec.	5310	0	719	44,600
Total	..	..	..	52,691

Year 1966

Jan.	55	5	22	1,370
Feb.	207	12	53	2,980
Mar.	207	2.5	22	1,340
Apr.	33	1.5	8.4	503
May	18	5	9	568
June	9	5	6.9	426
July	5	2.5	4.8	300
Aug.	2200	0.5	137	8,500
Sept.	4040	55	363	21,800
Oct.	2320	69	379	23,500
Nov.	21600	98	1046	62,800
Dec.	83	8	31	1,910
Total	..	..	..	125,999

Year 1967

Jan.	83	4.5	27	1,680
Feb.	170	6	22	1,250
Mar.	15700	8	897	55,600
Apr.	120	46	98	5,870
May	120	35	44	2,750
June	8800	35	695	41,700
July	405	130	218	13,500
Aug.	375	52	111	6,900
Sept.	52	19	33	2,010
Oct.	3000	19	210	13,000
Nov.	74	19	41	2,480
Dec.	74	4	17	1,070
Total	..	..	..	147,810

Year 1968

Jan.	2200	12	230	14,300
Feb.	140	40	64	3,690
Mar.	61	23	42	2,610
Apr.	23	4	10	612
May	40	7	19	1,160
June	17	12	13	800
July	1860	17	115	7,120
Aug.	5440	40	446	27,700
Sept.	315	40	130	7,830
Oct.	140	12	42	2,580
Nov.	17	1	8	474
Dec.	87	0	13	812
Total	..	..	..	69,688

THE MOLE RIVER AT TRENAYR

LOCATION:	Latitude 29°01' Longitude 151°37'
PERIOD OF ESTABLISHMENT:	February 1924 to date
COMPLETE YEARS OF COMPUTED RECORDS:	45 years
ZERO OF GAUGE:	R.L. 1231.7 Queensland State Datum
CATCHMENT AREA:	620 Square miles
CONTROL:	Natural gravel bar
EQUIPMENT:	Staff gauge, range 0 to 20 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 220 (b) Maximum observation in cusecs : 2,300 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	64,000 cusecs
MEAN DAILY DISCHARGE FOR 45 YEARS:	145 cusecs
MEAN ANNUAL DISCHARGE FOR 45 YEARS:	106,000 acre feet
REMARKS:	Station was discontinued in January 1954 but re-established in March 1956. Monthly streamflows indicated for period January 1954 to March 1956 are for The Mole River at Causeway.

THE MOLE RIVER AT TRENAYR

Year 1924					Year 1925				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	No Records			17,000*	Jan.	3110	85	382	23,686
Feb.	1180	28	210	12,198	Feb.	954	56	202	11,308
Mar.	102	42	69	4,274	Mar.	670	56	111	6,862
Apr.	56	28	37	2,212	Apr.	56	17	43	2,556
May	28	28	28	1,736	May	137	18	62	3,860
June	85	28	46	2,774	June	1000	28	153	9,170
July	1020	42	211	13,078	July	185	70	89	5,486
Aug.	455	85	134	8,292	Aug.	1850	42	249	15,434
Sept.	334	118	164	9,854	Sept.	270	42	88	5,252
Oct.	1430	85	201	12,436	Oct.	42	18	27	1,696
Nov.	4310	240	970	58,214	Nov.	509	42	86	5,134
Dec.	1170	70	201	12,440	Dec.	89	10	21	1,314
Total	..	..	..	154,508*	Total	..	..	..	91,758

Year 1926					Year 1927				
Jan.	185	10	32	1,972	Jan.	10100	10	462	28,654
Feb.	85	0.5	10	546	Feb.	2400	43	251	14,030
Mar.	118	0.2	13	782	Mar.	360	27	58	3,568
Apr.	2	0.5	1	60	Apr.	84	14	35	2,090
May	10	0.5	6	234	May	14	6	9	540
June	18	5	10	626	June	62	6	25	1,494
July	531	10	51	3,162	July	14	10	11	668
Aug.	10	5	8	480	Aug.	14	6	9	540
Sept.	5	2	4	240	Sept.	14	4	7	424
Oct.	2	0.2	0.9	55	Oct.	43	4	9	580
Nov.	0.2	0	0	2	Nov.	246	4	36	2,134
Dec.	2810	0	123	7,652	Dec.	225	20	77	4,748
Total	..	..	..	15,811	Total	..	..	..	59,470

Year 1928					Year 1929				
Jan.	1330	27	141	8,784	Jan.	180	0	14	842
Feb.	7670	98	1200	69,490	Feb.	288	0	73	4,100
Mar.	2930	65	253	15,676	Mar.	45	4	15	942
Apr.	1730	87	292	17,538	Apr.	3830	27	298	17,914
May	150	45	80	4,956	May	36	12	25	1,546
June	2330	54	235	14,136	June	27	12	20	1,186
July	2750	136	488	30,274	July	87	12	30	1,842
Aug.	232	54	126	7,818	Aug.	288	36	79	4,914
Sept.	54	19	41	2,434	Sept.	45	19	22	1,376
Oct.	136	12	38	2,346	Oct.	4370	12	494	30,662
Nov.	19	7	11	666	Nov.	62	14	33	1,702
Dec.	164	4	19	1,202	Dec.	27	6	10	646
Total	..	..	..	175,320	Total	..	..	..	67,672

Year 1930					Year 1931				
Jan.	225	0	20	1,258	Jan.	1330	4	38	2,328
Feb.	225	4	27	1,520	Feb.	139	4	29	1,614
Mar.	14	0	5	304	Mar.	105	2	36	2,246
Apr.	6	0	3	172	Apr.	414	11	36	2,182
May	212	0	32	1,984	May	1000	11	95	5,866
June	1220	14	264	15,866	June	3230	27	235	14,118
July	571	72	195	12,064	July	2390	51	424	26,260
Aug.	1970	27	257	15,940	Aug.	51	8	28	1,740
Sept.	188	34	78	4,686	Sept.	271	2	24	1,466
Oct.	1160	27	163	10,116	Oct.	860	2	81	5,016
Nov.	656	20	82	4,924	Nov.	51	13	22	1,314
Dec.	225	10	21	1,322	Dec.	4970	13	973	60,362
Total	..	..	..	70,156	Total	..	..	..	124,512

* Estimate

THE MOLE RIVER AT TRENAYR

Year 1932

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	389	13	63	3,926
Feb.	29	2	11	626
Mar.	2	1	1	88
Apr.	389	1	66	3,978
May	20	8	12	756
June	20	8	12	752
July	20	8	12	770
Aug.	20	4	9	574
Sept.	1000	2	135	8,070
Oct.	725	51	118	7,324
Nov.	725	39	117	7,044
Dec.	1210	20	132	8,188
Total	..	..	..	42,096

Year 1933

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3170	20	392	24,330
Feb.	290	23	68	3,790
Mar.	23	1	10	632
Apr.	16	1	5	302
May	127	3	24	1,492
June	71	10	25	1,512
July	7400	16	342	21,192
Aug.	1720	105	249	15,424
Sept.	210	55	93	5,562
Oct.	9400	101	606	37,618
Nov.	3940	137	794	47,656
Dec.	1070	71	230	14,286
Total	..	..	..	173,796

Year 1934

Jan.	1840	32	183	11,360
Feb.	1070	39	162	9,054
Mar.	46	5	17	1,044
Apr.	670	5	59	3,398
May	151	21	43	2,660
June	44	13	23	1,426
July	1500	21	135	8,354
Aug.	1590	100	289	17,910
Sept.	1930	78	345	20,700
Oct.	295	30	101	6,286
Nov.	206	30	55	3,282
Dec.	2080	21	266	16,482
Total	..	..	..	101,956

Year 1935

Jan.	2140	78	315	19,518
Feb.	395	30	81	4,528
Mar.	330	13	37	2,326
Apr.	13	7	12	744
May	21	7	12	766
June	13	7	8	468
July	60	13	22	1,366
Aug.	13	7	7	458
Sept.	460	7	41	2,442
Oct.	1640	7	169	10,480
Nov.	30	2	10	580
Dec.	78	2	19	1,152
Total	..	..	..	44,828

Year 1936

Jan.	7	0.5	3	177
Feb.	2	0	0.7	42
Mar.	4	0	2	118
Apr.	4	0	1	83
May	0.5	0	0	3
June	4	0	2	108
July	60	2	11	712
Aug.	178	7	24	1,466
Sept.	21	2	10	614
Oct.	785	1	48	2,952
Nov.	1	0	0.1	6
Dec.	121	0	12	740
Total	..	..	..	7,021

Year 1937

Jan.	900	6	81	5,010
Feb.	18	3	9	518
Mar.	2320	3	132	8,208
Apr.	26	11	14	864
May	11	3	5	290
June	11	3	6	348
July	11	3	5	298
Aug.	35	6	11	712
Sept.	35	1	11	656
Oct.	35	0	12	756
Nov.	171	3	23	1,390
Dec.	1590	3	106	6,578
Total	..	..	..	25,628

Year 1938

Jan.	79	1	25	1,526
Feb.	345	18	63	3,548
Mar.	18	0	4	218
Apr.	0	0	0	0
May	198	0	16	994
June	47	3	12	694
July	26	3	6	380
Aug.	540	26	129	8,008
Sept.	79	11	30	1,778
Oct.	1100	11	82	5,078
Nov.	460	11	60	3,608
Dec.	315	3	30	1,884
Total	..	..	..	27,716

Year 1939

Jan.	1500	0	61	3,794
Feb.	47	0	9	482
Mar.	785	0	109	6,752
Apr.	26	3	13	798
May	11	3	5	326
June	62	3	15	892
July	99	11	33	2,018
Aug.	505	6	77	4,798
Sept.	6	1	2	146
Oct.	4	0.5	2	96
Nov.	1	0	0.3	19
Dec.	434	0	21	1,284
Total	..	..	..	21,405

THE MOLE RIVER AT TRENAYR

Year 1940

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1	0	0.4	28
Feb.	542	0.5	56	3,236
Mar.	10	0	1	92
Apr.	2	0	0.2	13
May	0	0	0	0
June	0	0	0	0
July	0	0	0	0
Aug.	0	0	0	0
Sept.	0	0	0	0
Oct.	0	0	0	0
Nov.	0	0	0	0
Dec.	1320	0	61	3,813
Total	..	..	..	7,182

Year 1941

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1410	0.5	138	8,534
Feb.	146	1	19	1,084
Mar.	1500	0	153	9,457
Apr.	43	5	18	1,060
May	5	1	3	158
June	1635	5	216	12,956
July	125	28	44	2,698
Aug.	26	5	12	739
Sept.	5	0.5	3	168
Oct.	0.5	0	0	13
Nov.	265	0.2	28	1,684
Dec.	102	0	9	534
Total	..	..	..	39,085

Year 1942

Jan.	34	0	2	124
Feb.	235	5	56	3,159
Mar.	83	1	10	624
Apr.	19	0.2	3	204
May	0.2	0	0	2
June	0.2	0	0	1
July	1410	0	133	8,274
Aug.	43	5	19	1,150
Sept.	19	1	5	274
Oct.	3180	1	394	24,433
Nov.	4030	54	452	27,128
Dec.	235	19	63	3,890
Total	..	..	..	69,263

Year 1943

Jan.	2980	34	387	33,986
Feb.	67	2	23	1,266
Mar.	2	0.5	0.7	46
Apr.	0.5	0.5	0.5	30
May	0.5	0.2	0.2	14
June	0.2	0.2	0.2	12
July	2	0.2	0.5	33
Aug.	8	2	5	303
Sept.	67	2	18	1,047
Oct.	125	5	25	1,558
Nov.	4470	5	425	25,475
Dec.	694	6	109	6,786
Total	..	..	..	70,556

Year 1944

Jan.	812	6	152	9,430
Feb.	2920	47	281	16,276
Mar.	47	3	15	932
Apr.	3	0	0.3	20
May	0	0	0	0
June	0	0	0	0
July	35	0	10	604
Aug.	1370	3	162	10,018
Sept.	125	19	43	2,546
Oct.	13	2	6	368
Nov.	102	0.5	9	549
Dec.	785	0.5	26	1,524
Total	..	..	..	42,267

Year 1945

Jan.	178	2	21	1,284
Feb.	5000	0.2	368	20,580
Mar.	334	10	63	3,928
Apr.	14	6	9	568
May	10	6	8	484
June	30000	6	804	48,264
July	6600	75	512	31,754
Aug.	306	75	144	8,898
Sept.	2510	65	202	12,110
Oct.	75	17	40	2,470
Nov.	12	6	9	534
Dec.	166	6	48	2,990
Total	..	..	..	133,864

Year 1946

Jan.	4400	2	225	12,956
Feb.	86	12	29	1.650
Mar.	7400	6	177	10,992
Apr.	180	31	76	4,566
May	31	12	18	1,100
June	12	6	8	498
July	9	4	7	404
Aug.	4	1	3	176
Sept.	280	0.5	29	1,732
Oct.	23	2	9	528
Nov.	108	0.5	11	646
Dec.	180	3	31	1,932
Total	..	..	..	38,180

Year 1947

Jan.	153	0.5	13	778
Feb.	2760	17	286	16,004
Mar.	12400	65	690	42,758
Apr.	12800	141	689	41,342
May	153	65	89	5,514
June	119	23	46	2,750
July	65	17	21	1,318
Aug.	75	12	32	1,976
Sept.	3350	31	469	28,142
Oct.	820	31	95	5,892
Nov.	214	3	59	3,536
Dec.	4400	108	629	38,986
Total	..	..	..	188,996

THE MOLE RIVER AT TRENAYR

Month	Year 1948 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1949 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	6400	56	554	34,358	Jan.	102	34	55	3,432
Feb.	86	9	28	1,610	Feb.	2900	26	173	9,690
Mar.	396	23	105	6,528	Mar.	260	26	60	3,710
Apr.	39	9	17	1,042	Apr.	34	19	23	1,356
May	153	9	37	2,292	May	19	19	19	1,178
June	19700	9	944	56,666	June	102	19	28	1,660
July	750	117	201	12,436	July	102	19	28	1,754
Aug.	610	75	151	9,388	Aug.	34	21	24	1,458
Sept.	229	75	100	5,992	Sept.	174	21	47	2,798
Oct.	88	45	58	3,606	Oct.	6200	23	1144	70,942
Nov.	430	45	65	3,902	Nov.	5600	70	464	27,812
Dec.	117	34	48	2,984	Dec.	514	49	160	9,938
Total	..	..	..	140,804	Total	..	..	..	135,728

	Year 1950					Year 1951			
Jan.	274	31	71	4,410	Jan.	5000	85	715	44,310
Feb.	2210	31	175	9,818	Feb.	3050	111	444	24,884
Mar.	426	58	134	8,318	Mar.	439	73	150	9,300
Apr.	160	42	74	4,464	Apr.	111	41	64	3,858
May	561	36	70	4,348	May	50	33	39	2,442
June	27000	42	1862	111,702	June	400	33	118	7,066
July	10000	159	1849	114,640	July	924	50	129	8,022
Aug.	2370	205	628	38,930	Aug.	480	48	110	6,830
Sept.	4250	139	403	24,160	Sept.	74	25	38	2,284
Oct.	4700	259	1622	100,542	Oct.	74	11	32	1,982
Nov.	3650	91	575	34,516	Nov.	11	3	7	400
Dec.	362	85	172	10,642	Dec.	11	0.3	4	220
Total	..	..	..	466,490	Total	..	..	..	111,598

	Year 1952					Year 1953			
Jan.	8	0	1	78	Jan.	81	10	24	1,494
Feb.	118	0	13	729	Feb.	11400	5	474	26,544
Mar.	526	3	57	3,527	Mar.	2500	59	200	12,398
Apr.	118	11	36	2,150	Apr.	143	25	57	3,422
May	1060	11	181	11,196	May	230	32	75	4,646
June	2370	48	476	28,550	June	32	15	24	1,442
July	860	74	170	10,534	July	25	15	19	1,150
Aug.	2250	103	558	34,574	Aug.	84	15	20	1,258
Sept.	233	48	118	7,076	Sept.	112	7	28	1,676
Oct.	7400	48	1220	75,654	Oct.	40	4	11	674
Nov.	2250	60	294	17,628	Nov.	84	0.5	12	707
Dec.	81	13	34	2,086	Dec.	0.5	0	0	1
Total	..	..	..	193,782	Total	..	..	..	55,412

	Year 1954					Year 1955			
Jan.	0	0	0	0	Jan.	723	39	94	5,820
Feb.	10500	0	575	32,200	Feb.	746	16	63	3,520
Mar.	457	27	86	5,320	Mar.	2250	39	140	8,670
Apr.	45	5	17	1,050	Apr.	2050	52	137	8,240
May	16	5	9	542	May	2470	95	476	29,500
June	80	10	22	1,320	June	1250	110	330	19,800
July	3160	16	269	16,700	July	336	66	120	7,450
Aug.	632	45	87	5,420	Aug.	146	52	78	4,850
Sept.	110	16	33	2,000	Sept.	110	33	47	2,840
Oct.	11900	21	775	48,100	Oct.	2080	16	108	6,710
Nov.	1750	80	331	19,900	Nov.	95	5	27	1,640
Dec.	770	59	187	11,600	Dec.	110	1.5	19	1,180
Total	..	..	..	144,152	Total	..	..	..	100,220

THE MOLE RIVER AT TRENAYR

Year 1956					Year 1957				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	27900	1	1269	78,700	Jan.	371	27	97	6,002
Feb.	64000	300	3430	192,000	Feb.	1730	27	183	10,252
Mar.	No Records			20,000*	Mar.	724	33	80	4,984
Apr.	410	141	288	12,205	Apr.	27	15	22	1,320
May	4400	168	509	31,574	May	15	7	10	634
June	14200	182	1090	65,388	June	15	7	9	556
July	4700	210	821	50,906	July	33	11	20	1,234
Aug.	210	102	145	8,966	Aug.	102	11	22	1,340
Sept.	210	89	108	6,466	Sept.	63	3	17	1,044
Oct.	244	76	116	7,192	Oct.	63	0	2	107
Nov.	128	27	63	3,752	Nov.	41	0	10	598
Dec.	724	27	65	4,008	Dec.	0	0	0	0
Total	..	..	..	481,157*	Total	..	..	..	28,071

Year 1958					Year 1959				
Jan.	0	0	0	0	Jan.	5750	51	634	39,282
Feb.	2350	0	134	7,494	Feb.	2350	126	332	18,578
Mar.	790	21	107	6,626	Mar.	1010	50	226	14,022
Apr.	21	3	12	696	Apr.	324	63	130	7,824
May	11	3	6	394	May	77	30	44	2,746
June	21	3	8	480	June	39	24	27	1,626
July	27	11	15	926	July	1170	24	120	7,454
Aug.	63	7	21	1,294	Aug.	77	24	37	2,316
Sept.	2350	11	174	10,448	Sept.	50	20	29	1,762
Oct.	664	33	111	6,864	Oct.	77	24	30	1,858
Nov.	27	3	14	832	Nov.	2240	24	239	14,356
Dec.	210	7	83	5,152	Dec.	10000	50	1523	94,416
Total	..	..	..	41,206	Total	..	..	..	206,240

Year 1960					Year 1961				
Jan.	348	30	117	7,264	Jan.	39	7	15	940
Feb.	224	24	56	3,276	Feb.	390	0	46	2,594
Mar.	63	16	27	1,662	Mar.	31	3	12	754
Apr.	20	13	16	934	Apr.	6	1	2	138
May	164	13	30	1,854	May	3	1	1	74
June	24	16	18	1,088	June	31	3	12	692
July	144	20	55	3,382	July	174	3	22	1,350
Aug.	670	24	104	6,468	Aug.	191	23	60	3,714
Sept.	39	20	24	1,416	Sept.	145	11	30	1,818
Oct.	32	12	19	1,158	Oct.	390	11	50	3,128
Nov.	16	6	9	528	Nov.	880	11	156	9,332
Dec.	86	6	23	1,438	Dec.	580	67	215	13,332
Total	..	..	..	30,468	Total	..	..	..	37,866

Year 1962					Year 1963				
Jan.	7690	126	1302	80,742	Jan.	3550	35	394	24,426
Feb.	1060	82	241	13,488	Feb.	210	22	63	3,532
Mar.	460	56	120	7,470	Mar.	500	22	69	4,278
Apr.	9280	82	605	36,278	Apr.	174	35	60	3,576
May	111	56	71	4,418	May	8200	35	613	38,028
June	69	27	40	2,386	June	1480	111	258	15,488
July	9460	27	436	27,010	July	111	45	68	4,232
Aug.	940	82	204	12,668	Aug.	880	35	97	6,010
Sept.	300	69	112	6,710	Sept.	360	35	80	4,830
Oct.	770	35	110	6,820	Oct.	69	17	35	2,160
Nov.	158	27	49	2,968	Nov.	940	13	89	5,340
Dec.	420	22	58	3,610	Dec.	1480	56	223	13,800
Total	..	..	..	204,568	Total	..	..	..	125,700

* Estimated

THE MOLE RIVER AT TRENAYR

Year 1964

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	270	22	72	4,470
Feb.	69	22	36	2,100
Mar.	6200	69	504	31,200
Apr.	210	35	70	4,210
May	81	32	50	3,130
June	111	32	48	2,860
July	1120	32	158	9,810
Aug.	67	32	41	2,560
Sept.	360	20	36	2,180
Oct.	2340	81	325	20,200
Nov.	126	25	55	3,320
Dec.	53	3	19	1,180
Total	..	..	..	87,220

Year 1965

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	32	1.0	6.3	392
Feb.	2.0	0	0.5	29
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	2560	0	117	7,270
Aug.	32	13	18	1,130
Sept.	53	13	22	1,290
Oct.	13	1.0	5.2	322
Nov.	1.0	0	0.2	10
Dec.	5300	0	744	46,100
Total	..	..	..	56,543

Year 1966

Jan.	41	2	14	880
Feb.	126	4	42	2,360
Mar.	142	2	18	1,140
Apr.	25	2	7	438
May	13	2	7	416
June	8	2	5	284
July	4	2	2	128
Aug.	4030	1	148	9,190
Sept.	2130	67	397	23,800
Oct.	3670	41	372	23,100
Nov.	20800	68	969	58,100
Dec.	53	13	32	1,960
Total	..	..	..	121,796

Year 1967

Jan.	120	5	28	1,760
Feb.	180	8	23	1,310
Mar.	15800	5	892	55,300
Apr.	140	40	91	5,460
May	100	30	45	2,800
June	8740	30	743	44,600
July	360	100	203	12,600
Aug.	290	52	105	6,530
Sept.	52	21	33	1,960
Oct.	3110	21	232	14,400
Nov.	74	19	41	2,480
Dec.	74	4	17	1,070
Total	..	..	..	150,270

Year 1968

Jan.	790	9	195	12,100
Feb.	120	40	71	4,130
Mar.	66	30	42	2,590
Apr.	21	5	11	622
May	52	9	25	1,570
June	21	14	15	910
July	1470	14	125	7,720
Aug.	5150	40	493	30,600
Sept.	580	52	155	9,300
Oct.	163	21	45	2,820
Nov.	21	0	8	476
Dec.	82	0	15	920
Total	...	..	..	73,758

DUMARESQ RIVER AT ROSENEATH

LOCATION:	Latitude 29°08' Longitude 151°26'
PERIOD OF ESTABLISHMENT:	January 1937 to date
COMPLETE YEARS OF COMPUTED RECORDS:	32 years
ZERO OF GAUGE:	R.L. 22.93 Assumed datum, approximately 1,100 feet above sea level
CATCHMENT AREA:	2,140 Square miles
CONTROL:	Natural rock and gravel bar
EQUIPMENT:	Staff gauge, range 0 to 30 feet Automatic Recorder (Float Type) installed March 1950.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 234 (b) Maximum observation in cusecs : 14,100 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	115,000 cusecs
MEAN DAILY DISCHARGE FOR 32 YEARS:	462 cusecs
MEAN ANNUAL DISCHARGE FOR 32 YEARS:	337,000 acre feet
REMARKS:	(a) No. 1 Station was established in January 1937 and discontinued in August 1952. (b) No. 2 Station was established in March 1950 and is currently operative.

DUMARESQ RIVER AT ROSENEATH

Year 1937

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	No Records			116,000*
Feb.	No Records			2,800*
Mar.	5400	15	327	20,258
Apr.	78	25	38	2,266
May	26	12	18	1,116
June	16	13	14	854
July	14	7	10	594
Aug.	34	9	14	890
Sept.	56	9	29	1,746
Oct.	34	5	18	1,134
Nov.	1200	14	254	15,246
Dec.	477	26	116	7,190
Total	..	..	..	170,094*

Year 1938

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	136	19	41	2,516
Feb.	772	44	147	8,204
Mar.	41	9	19	1,160
Apr.	9	5	6	390
May	98	3	11	660
June	98	9	25	1,474
July	34	7	10	658
Aug.	3100	56	379	23,496
Sept.	328	65	132	7,908
Oct.	1440	56	242	15,008
Nov.	1070	62	222	13,334
Dec.	749	34	125	7,770
Total	..	..	..	82,578

Year 1939

Jan.	1140	16	56	3,482
Feb.	81	7	22	1,246
Mar.	1560	6	207	12,836
Apr.	50	23	34	2,044
May	35	14	22	1,338
June	91	14	33	2,002
July	234	32	96	5,944
Aug.	1700	3	350	21,714
Sept.	42	17	26	1,566
Oct.	50	14	20	1,228
Nov.	21	5	10	640
Dec.	549	3	82	5,108
Total	..	..	..	59,148

Year 1940

Jan.	99	10	38	2,390
Feb.	5300	26	433	25,110
Mar.	234	6	36	2,250
Apr.	28	11	17	1,036
May	11	4	8	500
June	11	4	5	318
July	3	1	2	107
Aug.	1.2	0.4	0.7	43
Sept.	0.4	0.1	0.2	12
Oct.	2	0	0.2	11
Nov.	0	0	0	0
Dec.	549	0	66	4,088
Total	..	..	..	35,865

Year 1941

Jan.	6250	11	556	34,434
Feb.	297	26	134	7,522
Mar.	4650	20	418	25,912
Apr.	154	11	53	3,182
May	15	8	11	674
June	3100	15	476	28,532
July	270	74	132	8,202
Aug.	74	20	38	2,374
Sept.	20	8	12	756
Oct.	7	2	5	314
Nov.	244	2	26	1,540
Dec.	154	2	15	924
Total	..	..	..	114,366

Year 1942

Jan.	8	0	2	155
Feb.	9200	2	1014	56,764
Mar.	219	15	67	4,184
Apr.	51	8	16	976
May	8	5	7	418
June	6	3	5	268
July	4800	3	476	29,534
Aug.	135	26	76	4,682
Sept.	51	17	29	1,722
Oct.	7580	11	1300	80,602
Nov.	9250	174	930	55,780
Dec.	8450	26	323	20,032
Total	..	..	..	255,117

Year 1943

Jan.	11700	118	1329	82,418
Feb.	110	20	58	3,256
Mar.	18	8	12	752
Apr.	8	6	7	430
May	6	6	6	372
June	6	4	5	300
July	6	4	5	312
Aug.	11	4	10	634
Sept.	3650	23	207	12,442
Oct.	593	26	100	6,170
Nov.	18000	87	1356	82,356
Dec.	3950	87	560	34,714
Total	..	..	..	223,156

Year 1944

Jan.	14400	102	1219	75,588
Feb.	14200	244	1230	71,362
Mar.	325	41	107	6,612
Apr.	39	15	25	1,517
May	20	15	16	988
June	16	15	15	906
July	23	11	16	994
Aug.	3800	23	481	29,814
Sept.	350	63	147	8,820
Oct.	63	11	27	1,674
Nov.	11	3	8	458
Dec.	235	2	20	1,224
Total	..	..	..	199,957

* Estimated

DUMARESQ RIVER AT ROSENEATH

Year 1945

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	625	23	101	6,264
Feb.	11400	11	1022	57,206
Mar.	1580	34	282	17,490
Apr.	34	23	29	1,750
May	30	34	29	1,808
June	41600	29	2071	124,260
July	10500	182	1201	74,486
Aug.	593	159	356	22,094
Sept.	4300	138	618	37,096
Oct.	128	24	5	3,426
Nov.	31	24	25	1,474
Dec.	230	24	87	5,390
Total	..	..	..	352,744

Year 1946

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	28300	13	1528	94,740
Feb.	755	33	149	8,352
Mar.	5250	30	349	21,584
Apr.	276	60	122	7,316
May	55	26	39	2,394
June	20	20	20	1,200
July	20	14	17	1,048
Aug.	10	5	7	424
Sept.	1282	5	168	10,086
Oct.	938	20	192	11,882
Nov.	84	14	29	1,732
Dec.	247	0.3	114	7,054
Total	..	..	..	167,812

Year 1947

Jan.	755	23	224	13,922
Feb.	3740	72	781	43,732
Mar.	53300	158	2137	132,510
Apr.	53500	440	2830	179,808
May	549	148	228	14,032
June	247	60	140	8,372
July	72	50	56	3,468
Aug.	50	45	49	3,064
Sept.	4630	50	1057	63,410
Oct.	1890	84	544	33,720
Nov.	1890	66	235	14,076
Dec.	30800	596	2476	153,518
Total	..	..	..	663,632

Year 1948

Jan.	10700	112	1051	65,168
Feb.	261	50	131	7,574
Mar.	755	78	263	16,328
Apr.	105	90	95	5,718
May	90	33	70	4,352
June	76500	33	3164	189,894
July	2050	340	987	61,148
Aug.	1730	220	493	30,598
Sept.	938	97	277	16,606
Oct.	340	50	118	7,352
Nov.	785	60	147	8,814
Dec.	180	23	42	2,590
Total	..	..	..	416,142

Year 1949

Jan.	460	29	198	12,256
Feb.	4690	60	588	32,934
Mar.	1040	50	337	20,274
Apr.	206	50	98	5,906
May	50	50	50	3,100
June	504	50	157	9,452
July	1580	66	220	13,618
Aug.	327	77	127	7,858
Sept.	1890	99	510	30,762
Oct.	24400	156	4743	294,088
Nov.	No Records			85,000*
Dec.	No Records			18,000*
Total	..	..	..	513,248*

Year 1950

Jan.	No Records			8,000*
Feb.	No Records			20,000*
Mar.	815	126	407	25,224
Apr.	643	106	280	16,776
May	445	61	106	6,568
June	67300	67	5241	314,456
July	36800	830	4721	292,684
Aug.	6100	470	1464	90,796
Sept.	24600	221	1765	105,916
Oct.	22300	990	4464	276,782
Nov.	4665	393	1232	73,932
Dec.	950	133	381	23,624
Total	..	..	..	1,254,758*

Year 1951

Jan.	16800	144	2138	132,574
Feb.	12100	231	1730	96,876
Mar.	1610	173	456	28,244
Apr.	397	92	148	8,872
May	92	62	73	4,642
June	1880	57	509	30,532
July	410	123	217	13,480
Aug.	487	113	231	14,294
Sept.	192	62	104	6,242
Oct.	159	30	97	5,988
Nov.	13200	11	322	19,338
Dec.	28	6	13	834
Total	..	..	..	361,916

Year 1952

Jan.	11	2.5	4	270
Feb.	1070	2.3	70	4,072
Mar.	3030	24	258	16,026
Apr.	221	56	115	6,888
May	10000	42	1175	72,866
June	9130	207	1598	95,902
July	1610	240	470	29,136
Aug.	3805	283	1161	71,976
Sept.	540	123	260	15,618
Oct.	27300	104	3639	225,622
Nov.	7620	151	784	47,058
Dec.	204	34	82	5,108
Total	..	..	..	590,542

* Estimated.

DUMARESQ RIVER AT ROSENEATH

Year 1953

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	139	21	47	2,918
Feb.	10400	14	718	40,204
Mar.	2700	119	369	22,908
Apr.	305	48	107	6,414
May	410	67	127	7,880
June	67	27	38	2,294
July	39	24	29	1,782
Aug.	53	18	25	1,572
Sept.	143	12	42	2,502
Oct.	65	8	16	990
Nov.	2190	6	87	5,200
Dec.	6	2	4	246
Total	..	..	..	94,910

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	375	2	13	788
Feb.	19900	2	1754	98,218
Mar.	3190	56	395	24,466
Apr.	62	22	35	2,122
May	24	13	18	1,118
June	68	14	31	1,876
July	4020	22	496	30,732
Aug.	1030	108	209	12,972
Sept.	125	44	78	4,666
Oct.	50900	59	3419	211,948
Nov.	11300	317	2117	127,018
Dec.	2140	198	457	28,360
Total	..	..	..	544,284

Year 1955

Jan.	890	88	177	10,950
Feb.	1220	32	125	7,012
Mar.	1990	68	223	13,846
Apr.	730	88	222	13,298
May	6400	181	891	55,218
June	970	224	381	22,836
July	810	144	262	16,254
Aug.	695	144	236	14,606
Sept.	181	68	103	6,180
Oct.	4860	58	477	29,588
Nov.	450	15	103	6,186
Dec.	110	9	30	1,860
Total	..	..	..	197,834

Year 1956

Jan.	109000	8	5104	316,424
Feb.	115000	1700	10540	611,320
Mar.	1640	372	866	53,700
Apr.	466	114	255	15,318
May	6100	203	1023	63,404
June	37000	372	2923	175,402
July	11300	770	2560	158,700
Aug.	810	219	400	24,802
Sept.	254	186	217	13,028
Oct.	331	133	204	12,656
Nov.	291	63	133	7,998
Dec.	1990	58	251	15,572
Total	..	..	..	1,468,324

Year 1957

Jan.	2190	82	375	23,252
Feb.	1490	53	152	8,520
Mar.	850	58	104	6,450
Apr.	63	37	43	2,578
May	33	19	22	1,394
June	29	14	18	1,056
July	41	22	30	1,890
Aug.	105	22	30	1,846
Sept.	82	10	28	1,662
Oct.	10	4	6	360
Nov.	41	0	9	552
Dec.	0	0	0	0
Total	..	..	..	49,560

Year 1958

Jan.	0	0	0	0
Feb.	3090	0	328	18,352
Mar.	19900	53	1017	63,066
Apr.	95	24	52	3,140
May	24	21	23	1,404
June	28	13	20	1,172
July	42	22	29	1,808
Aug.	71	23	37	2,268
Sept.	2110	30	272	16,296
Oct.	810	65	254	15,766
Nov.	65	15	37	2,214
Dec.	1430	15	403	24,982
Total	..	..	..	150,468

Year 1959

Jan.	14000	212	2230	138,254
Feb.	6175	306	894	50,046
Mar.	4600	147	662	41,050
Apr.	1150	159	368	22,084
May	227	68	130	8,042
June	135	52	72	4,340
July	2805	46	303	18,762
Aug.	257	50	114	7,088
Sept.	86	46	63	3,794
Oct.	114	46	59	3,652
Nov.	3445	59	692	41,542
Dec.	13900	159	3280	203,468
Total	..	..	..	542,122

Year 1960

Jan.	1030	104	310	19,250
Feb.	1268	71	193	11,196
Mar.	104	34	58	3,588
Apr.	30	19	26	1,568
May	198	28	53	3,294
June	46	32	38	2,260
July	594	42	201	12,474
Aug.	2720	74	383	23,748
Sept.	99	44	56	3,338
Oct.	59	24	36	2,228
Nov.	30	5	13	760
Dec.	95	3	27	1,682
Total	..	..	..	85,386

DUMARESQ RIVER AT ROSENEATH

Year 1961

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	30	0.2	12	710
Feb.	1890	0	149	8,358
Mar.	289	21	88	5,440
Apr.	24	13	15	918
May	13	3	8	523
June	34	5	18	1,098
July	651	9	67	4,180
Aug.	2265	114	401	24,842
Sept.	242	54	88	5,254
Oct.	465	34	80	4,958
Nov.	2320	18	302	18,146
Dec.	5465	184	697	43,230
Total	..	..	..	117,657

Year 1962

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	23900	341	5000	310,000
Feb.	2110	212	411	23,000
Mar.	3670	114	435	27,000
Apr.	29100	242	1700	102,000
May	273	114	166	10,300
June	184	54	94	5,640
July	11400	50	727	45,100
Aug.	2430	184	473	29,300
Sept.	567	159	253	15,200
Oct.	743	65	184	11,400
Nov.	273	46	76	4,560
Dec.	273	38	92	5,760
Total	..	..	..	589,200

Year 1963

Jan.	4140	54	512	31,700
Feb.	465	38	101	5,670
Mar.	11300	24	712	44,200
Apr.	1380	95	268	16,100
May	14700	135	1513	93,800
June	3500	306	788	47,300
July	273	114	182	11,300
Aug.	3180	78	288	17,900
Sept.	1680	78	253	15,200
Oct.	135	46	73	4,560
Nov.	2210	40	224	13,400
Dec.	3165	121	545	33,800
Total	..	..	..	334,930

Year 1964

Jan.	840	48	174	10,800
Feb.	188	48	80	4,640
Mar.	9745	54	966	59,900
Apr.	725	60	152	9,120
May	216	76	135	8,340
June	885	94	230	13,800
July	3780	132	625	38,700
Aug.	197	76	115	7,130
Sept.	415	48	69	4,110
Oct.	5160	256	759	47,100
Nov.	319	85	160	9,570
Dec.	319	42	67	4,130
Total	..	..	..	217,340

Year 1965

Jan.	28	3	14	898
Feb.	2	0	0.3	16
Mar.	0	0	0	0
Apr.	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	4840	0	237	14,700
Aug.	132	34	67	4,140
Sept.	500	34	124	7,430
Oct.	174	8	29	1,780
Nov.	11	1.5	4.6	274
Dec.	12400	1.5	2480	154,000
Total	..	..	..	183,238

Year 1966

Jan.	220	16	67	4,170
Feb.	341	13	101	5,640
Mar.	204	10	36	2,200
Apr.	48	6	17	1,046
May	26	8	16	1,002
June	19	10	13	810
July	10	4.5	7.9	489
Aug.	5720	1.5	369	22,900
Sept.	12600	204	1069	64,100
Oct.	8220	132	787	48,800
Nov.	31300	162	1890	113,000
Dec.	256	42	87	54,000
Total	..	..	..	269,557

Year 1967

Jan.	366	20	73	4,540
Feb.	140	13	30	1,680
Mar.	21400	13	784	68,600
Apr.	255	84	166	10,000
May	275	59	83	4,160
June	9220	46	1060	63,700
July	725	235	417	25,900
Aug.	560	110	224	13,900
Sept.	97	25	54	3,270
Oct.	4920	25	280	17,400
Nov.	195	5	31	1,870
Dec.	11	4	6	344
Total	..	..	..	216,364

Year 1968

Jan.	3710	16	466	28,900
Feb.	725	75	228	13,200
Mar.	390	66	162	10,000
Apr.	75	13	31	1,890
May	295	30	126	7,840
June	125	36	58	3,500
July	21700	41	1160	72,100
Aug.	15500	195	1620	100,000
Sept.	1395	162	419	25,100
Oct.	236	42	110	6,830
Nov.	197	6	39	2,330
Dec.	591	8	24	1,480
Total	..	..	..	273,170

BEARDY RIVER AT HAYSTACK

LOCATION:	Latitude 29°12' Longitude 151°23'
PERIOD OF ESTABLISHMENT:	August 1934 to date
COMPLETE YEARS OF COMPUTED RECORDS:	24 years
ZERO OF GAUGE:	R.L. 78.73 Assumed datum, approximately 1,200 feet above sea level.
CATCHMENT AREA:	350 Square miles
CONTROL:	Natural gravel bar
EQUIPMENT:	Staff gauge, range 0 to 25 feet Automatic Recorder (Pressure Type) installed January 1937.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 196 (b) Maximum observation in cusecs : 1,430 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	53,000 cusecs
MEAN DAILY DISCHARGE FOR 24 YEARS:	51 cusecs
MEAN ANNUAL DISCHARGE FOR 24 YEARS:	37,000 acre feet
REMARKS:	(a) No. 1 Station was established in August 1934 and was discontinued in September 1939. (b) No. 2 Station was established in January 1937 and was discontinued in December 1956. No records were obtained from September 1947 to December 1952 at No. 2 Station. (c) No. 3 Station was established in October 1960 and is currently operative. (d) Maximum flood height in period of record occurred in February 1956 equivalent to a discharge of 53,000 cusecs.

BEARDY RIVER AT HAYSTACK

Year 1934					Year 1935				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	913	11	169	10,488
Feb.	..	..	..	..	Feb.	806	5	86	4,796
Mar.	..	..	..	..	Mar.	163	2	12	757
Apr.	..	..	..	..	Apr.	2	1	1	69
May	..	..	..	..	May	2	1	1	64
June	..	..	..	..	June	0.5	0	0.5	21
July	..	..	..	..	July	11	1	2	157
Aug.	..	..	..	..	Aug.	163	1	8	486
Sept.		No Records			Sept.	132	1	11	744
Oct.	88	2	24	1,502	Oct.	1150	1	125	7,764
Nov.	19	3	6	360	Nov.	11	2	3	197
Dec.	417	1	72	4,488	Dec.	32	0	2	158
Total	..	..	..	..	Total	..	..	..	25,701

Year 1936					Year 1937				
Jan.	0.4	0	0.1	5	Jan.	120	0.4	3	824
Feb.	0	0	0	0	Feb.	0.7	0.4	0.4	26
Mar.	0	0	0	0	Mar.	630	0.4	43	2,657
Apr.	0	0	0	0	Apr.	3	0.7	1	73
May	0	0	0	0	May	0.7	0.5	0.6	37
June	0	0	0	0	June	0.7	0.2	0.5	28
July	180	0	0	624	July	0.2	0	0	1
Aug.	1330	0	110	6,820	Aug.	0	0	0	0
Sept.	93	1	11	678	Sept.	0	0	0	0
Oct.	41	0.4	2	158	Oct.	0	0	0	0
Nov.	0.4	0	0.1	7	Nov.	405	0.4	18	1,069
Dec.	50	0	3	199	Dec.	1140	0	52	3,214
Total	..	..	..	8,491	Total	..	..	..	7,929

Year 1938					Year 1939				
Jan.	440	0	17	1,056	Jan.	120	0.5	10	607
Feb.	70	1	15	861	Feb.	7	0.2	1	78
Mar.	118	0.4	7	429	Mar.	725	0	61	3,796
Apr.	0.4	0	0.2	12	Apr.	61	0.4	4.8	292
May	0.2	0	0.1	4	May	1	0.1	0.6	36
June	0.2	0.1	0.1	8	June	375	0.1	14	822
July	73	0.1	8	466	July	615	4	40	2,450
Aug.	1470	2	131	8,108	Aug.	650	4	91	5,683
Sept.	70	3	18	1,090	Sept.	7	1	3	159
Oct.	2100	4	125	7,738	Oct.	61	0.4	7	443
Nov.	670	2	66	3,980	Nov.	0.4	0	0.1	8
Dec.	50	0	7	452	Dec.	50	0	3	176
Total	..	..	..	24,204	Total	..	..	..	14,550

Year 1940					Year 1941				
Jan.	2	0	0.2	13	Jan.	1870	2	68	4,238
Feb.	1480	0.4	108	6,044	Feb.	100	1	16	864
Mar.	136	0.1	8	488	Mar.	1210	0.1	71	4,380
Apr.	0.7	0.1	0.3	16	Apr.	12	0.1	4	222
May	0.4	0.1	0.1	9	May	4	0.4	0.5	59
June	0.1	0.1	0.1	6	June	1250	0.1	91	5,438
July	0.1	0	0.04	2	July	155	0.1	28	1,733
Aug.	0	0	0	0	Aug.	8	2	4	250
Sept.	0	0	0	0	Sept.	2	0.1	0.7	45
Oct.	0	0	0	0	Oct.	8	0	0.4	26
Nov.	41	0	0.9	58	Nov.	475	0.1	24	1,418
Dec.	1000	0	23	1,420	Dec.	2	0	0.5	32
Total	..	..	..	8,056	Total	..	..	..	18,705

BEARDY RIVER AT HAYSTACK

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	12	0	0.5	28
Feb.	86	1	12	650
Mar.	20	0.1	3	166
Apr.	6	0.1	1	74
May	0.2	0.1	0.1	7
June	0.3	0.1	0.2	12
July	3920	0.2	167	10,350
Aug.	20	2	10	638
Sept.	6	0.1	2	148
Oct.	10100	0.1	439	27,246
Nov.	4820	20	419	25,170
Dec.	1300	10	63	3,883
Total	..	..	..	68,372

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	375	5	51	3,152
Feb.	23	1	7	389
Mar.	1	0.4	0.7	44
Apr.	0.4	0.3	0.3	21
May	2	0.1	0.2	14
June	0.6	0.1	0.1	8
July	0.6	0.2	0.3	18
Aug.	32	0.1	4	234
Sept.	1575	1	38	2,252
Oct.	73	6	21	1,326
Nov.	18800	14	729	43,744
Dec.	255	6	39	2,428
Total	..	..	..	53,630

Year 1944

Jan.	1000	5	80	4,990
Feb.	840	9	50	2,904
Mar.	7	2	3	206
Apr.	5	2	2	128
May	23	2	3	193
June	2	1	1	82
July	43	1	8	518
Aug.	3440	2	202	12,524
Sept.	32	5	14	844
Oct.	5	3	5	282
Nov.	5	3	3	196
Dec.	84	2	11	660
Total	..	..	..	23,527

Year 1945

Jan.	2160	3	46	2,836
Feb.	40000	5	1410	78,960
Mar.	790	4	178	11,066
Apr.	4	2	3	170
May	185	2	9	574
June	4450	2	92	5,514
July	4270	3	133	8,224
Aug.	385	7	47	2,908
Sept.	2600	4	103	6,206
Oct.	4	0	0.5	32
Nov.	38	0	6	376
Dec.	185	2	16	960
Total	..	..	..	117,826

Year 1946

Jan.	1230	2	48	2,966
Feb.	95	0	6	340
Mar.	4	0	2	97
Apr.	7	0.5	4	221
May	0.5	0	0	2
June	0.5	0	0.4	22
July	0.5	0	0.4	26
Aug.	0	0	0	0
Sept.	275	0	16	932
Oct.	4	0.5	2	110
Nov.	4	0	0.5	38
Dec.	0.5	0	0.2	12
Total	..	..	..	4,766

Year 1947

Jan.	95	0	2	140
Feb.	1540	2	44	2,452
Mar.	3290	0.5	92	5,697
Apr.	980	7	73	4,404
May	38	11	17	1,060
June	23	3	8	480
July	4	2	3	202
Aug.	95	0.5	17	1,033
Sept.	1920	16	401	24,086
Oct.	No Records			6,000*
Nov.	No Records			3,000*
Dec.	No Records			30,000*
Total	..	..	..	78,554*

Year 1952

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.	18	0.5	5	296
Total	..	..	..	..

Year 1953

Jan.	1	0.5	0.6	40
Feb.	17600	0.3	868	48,631
Mar.	701	22	59	3,628
Apr.	28	3	8	492
May	28	8	17	1,030
June	5	3	4	229
July	8	2	4	256
Aug.	57	2	8	488
Sept.	59	2	10	610
Oct.	40	1	5	306
Nov.	12	0.5	2	139
Dec.	1	0.5	0.6	35
Total	..	..	..	55,875

No Records available from October 1947 to December 1952

* Estimated

BEARDY RIVER AT HAYSTACK

Year 1954

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	0.5	0.5	0.5	31
Feb.	1210	0.5	44	2,495
Mar.	17	0.8	7	399
Apr.	0.1	0.1	0.1	6
May	0.1	0.08	0.08	5
June	0.1	0.1	0.1	6
July	0.1	0.1	0.1	6
Aug.	2	0.5	0.7	44
Sept.	1	0.5	0.7	40
Oct.	12500	0.5	617	38,271
Nov.	2860	15	540	32,428
Dec.	130	0.8	73	4,532
Total	..	..	..	78,263

Year 1955

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	77	2	24	1,517
Feb.	3180	0.8	122	6,851
Mar.	355	2	22	1,390
Apr.	2	0.5	0.8	47
May	103	0.5	7	448
June	103	4	12	749
July	335	4	28	1,726
Aug.	335	13	31	1,898
Sept.	13	3	6	385
Oct.	130	0.8	20	1,246
Nov.	23	0.8	6	359
Dec.	23	0.3	9	570
Total	..	..	..	17,186

Year 1960

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.	25	4	10	636
Dec.	290	8	36	2,240
Total	..	..	..	..

Year 1961

Jan.	8	0.5	2	144
Feb.	660	0.5	84	4,680
Mar.	8	0.7	2	141
Apr.	0.7	0.1	0.2	14
May	0.1	0.07	0.09	6
June	0.1	0.07	0.09	5
July	39	0.07	3	208
Aug.	178	4	34	2,100
Sept.	No Records			1,000*
Oct.	No Records			1,000*
Nov.	No Records			3,500*
Dec.	No Records			8,000*
Total	..	..	..	20,798*

Year 1962

Jan.	No Records			60,000*
Feb.	No Records			4,000*
Mar.	290	4	54	3,330
Apr.	128	4	29	1,750
May	4	0.7	0.9	57
June	4	0.7	2	130
July	860	0.7	42	2,600
Aug.	1040	4	94	5,800
Sept.	230	3	32	1,900
Oct.	565	2	42	2,600
Nov.	19	2	4	241
Dec.	19	1	5	324
Total	..	..	..	82,752*

Year 1963

Jan.	1550	0.1	35	2,190
Feb.	0.1	0.1	0.1	6
Mar.	0.2	0.1	0.1	6
Apr.	0.1	0.1	0.1	7
May	4000	0.03	143	8,890
June	1680	18	129	7,730
July	23	4	10	593
Aug.	290	3	26	1,580
Sept.	128	3	15	944
Oct.	3	0.8	2	98
Nov.	No Records			2,000*
Dec.	No Records			6,000*
Total	..	..	..	30,044*

Year 1964

Jan.	320	0.2	16	987
Feb.	10	0.2	2	95
Mar.	1710	0.2	89	5,510
Apr.	35	0.2	5	284
May	20	2	13	803
June	15	8	9	550
July	1240	8	88	5,480
Aug.	30	8	13	849
Sept.	2000	2	53	3,160
Oct.	2520	35	201	12,500
Nov.	128	5	22	1,300
Dec.	4	0.09	2	96
Total	..	..	..	31,614

Year 1965

Jan.	8	0.07	0.7	44
Feb.	0.1	0.05	0.07	4
Mar.	0.05	0.05	0.05	3
Apr.	0.05	0.01	0.04	2
May	0.05	0.05	0.05	3
June	0	0	0	0
July	No Records			200*
Aug.	No Records			0*
Sept.	No Records			0*
Oct.	No Records			0*
Nov.	No Records			0*
Dec.	5900	0	379	23,500*
Total	..	..	..	23,757*

No Records available from December 1955 to November 1960
* Estimated

BEARDY RIVER AT HAYSTACK

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	7	0.3	2.1	132
Feb.	20	0.2	2.3	127
Mar.	220	0.01	3.4	212
Apr.	0.7	0.07	0.2	13
May	0.3	0.03	0.1	6
June	0.2	0.03	0.06	3.6
July	0.1	0	0.01	0.6
Aug.	2140	0	72	4,450
Sept.	1680	15	165	9,920
Oct.	3280	8	189	11,700
Nov.	17700	5	662	39,700
Dec.	18	0.5	8.9	552
Total	..	..	..	66,818

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	18	0.08	3.2	198
Feb.	0.08	0	0.03	1.6
Mar.	1420	0.03	94	5,840
Apr.	6.5	1	2	122
May	6.5	0.3	2.5	154
June	230	1	22	1,320
July	128	6.5	18	1,120
Aug.	13	1.5	7.2	444
Sept.	2	0.9	1.5	90
Oct.	1455	0.3	84	5,190
Nov.	34	0.9	3.7	224
Dec.	0.9	0.1	0.4	23
Total	..	..	..	14,727

Year 1968

Jan.	No	Records		200*
Feb.	"	"		100*
Mar.	10	0	1.6	97
Apr.	0.1	0	0	2
May	0.1	0.1	0.1	5
June	0.1	0	0	2
July	355	0	17	1,040
Aug.	2420	5	145	8,970
Sept.	150	5	32	1,920
Oct.	36	0.8	6.3	390
Nov.	10	0.2	2.2	134
Dec.	36	0.1	5.6	348
Total	..	..	..	13,208

* Estimated

DUMARESQ RIVER AT BONSHAW WEIR

LOCATION: Latitude 29°00' Longitude 151°17'

PERIOD OF ESTABLISHMENT: August 1934 to date

COMPLETE YEARS OF COMPUTED RECORDS: 34 years

ZERO OF GAUGE: R.L. 955.98 Queensland State Datum

CATCHMENT AREA: 2,810 Square miles

CONTROL: Timber crib-rock filled weir

EQUIPMENT: Staff gauge, range 10 to 25 feet upstream of weir
0 to 25 feet downstream of weir
Automatic Recorder (Pressure Type) installed No. 2 Station January 1937 removed July 1953.
Automatic Recorder (Float Type) installed March 1953.

CURRENT METER OBSERVATIONS:

(a)	Number obtained	: 260
(b)	Maximum observation in cusecs	: 18,300
(c)	Minimum observation in cusecs	: 0

MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS: 48,200 cusecs

MEAN DAILY DISCHARGE FOR 34 YEARS: 551 cusecs

MEAN ANNUAL DISCHARGE FOR 34 YEARS: 402,000 acre feet

REMARKS:

(a) No. 1 Station was established in August 1934 and was discontinued in June 1939. This gauge was located about 1 mile upstream of the weir.

(b) No. 2 Station was established in January 1937 and was discontinued in June 1953. This gauge was located about 1 mile downstream of the weir.

(c) The Weir gauge was established in March 1953 and is currently operative. No records were obtained at this station from February 1955 to August 1958 and monthly flows for this period have been estimated by correlation with flow records at the station at Roseneath operated by the Water Conservation and Irrigation Commission of N.S.W. and the station at Cunningham Weir operated by Queensland Irrigation and Water Supply Commission.

DUMARESQ RIVER AT BONSHAW WEIR

Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
	Year 1934					Year 1935			
Jan.	..	..	..	..	Jan.	3400	136	1175	72,862
Feb.	..	..	..	..	Feb.	500	70	166	9,324
Mar.	..	..	..	..	Mar.	134	37	69	4,274
Apr.	..	..	..	..	Apr.	37	15	22	1,342
May	..	..	..	..	May	20	15	15	950
June	..	..	..	..	June	17	15	15	904
July	..	..	..	..	July	90	15	30	1,874
Aug.	..	..	..	..	Aug.	15	15	15	930
Sept.	No Records				Sept.	460	15	41	2,474
Oct.	860	134	467	28,984	Oct.	2980	37	403	25,016
Nov.	346	111	180	10,812	Nov.	90	7	34	2,022
Dec.	8330	90	778	48,226	Dec.	364	7	101	6,288
Total	..	..	..	..	Total	..	..	..	128,260
	Year 1936					Year 1937			
Jan.	52	20	36	2,204	Jan.	27400	134	1420	88,118
Feb.	20	0.5	4.5	260	Feb.	159	70	101	5,676
Mar.	111	0.5	29	1,773	Mar.	4470	15	423	26,232
Apr.	52	15	23	1,386	Apr.	134	37	67	4,014
May	25	3	9	534	May	37	7	19	1,194
June	15	7	9	532	June	15	7	10	596
July	215	15	55	3,398	July	15	3	6	378
Aug.	1710	52	239	14,832	Aug.	25	3	6	362
Sept.	159	52	84	5,066	Sept.	90	3	43	2,586
Oct.	2130	52	225	13,928	Oct.	70	2	16	986
Nov.	134	1	30	1,808	Nov.	1110	7	326	19,584
Dec.	2840	0	247	15,338	Dec.	1430	37	257	15,906
Total	..	..	..	61,059	Total	..	..	..	165,632
	Year 1938					Year 1939			
Jan.	No Records			3,900*	Jan.	No Records			4,400*
Feb.	No Records			10,000*	Feb.	No Records			1,500*
Mar.	No Records			1,700*	Mar.	No Records			18,000*
Apr.	No Records			400*	Apr.	No Records			2,600*
May	No Records			700*	May	No Records			1,500*
June	No Records			1,600*	June	No Records			3,100*
July	No Records			1,200*	July	No Records			9,000*
Aug.	No Records			35,000*	Aug.	No Records			30,000*
Sept.	No Records			9,900*	Sept.	No Records			1,900*
Oct.	No Records			25,000*	Oct.	No Records			1,800*
Nov.	No Records			19,000*	Nov.	No Records			700*
Dec.	No Records			9,000*	Dec.	No Records			5,800*
Total	..	..	..	117,400*	Total	..	..	..	80,300*
	Year 1940					Year 1941			
Jan.	No Records			2,600*	Jan.	No Records			43,000*
Feb.	No Records			34,000*	Feb.	No Records			9,000*
Mar.	No Records			3,000*	Mar.	No Records			33,000*
Apr.	No Records			1,200*	Apr.	No Records			3,700*
May	No Records			600*	May	No Records			800*
June	No Records			400*	June	No Records			37,000*
July	No Records			100*	July	No Records			11,000*
Aug.	No Records			50*	Aug.	No Records			2,900*
Sept.	No Records			10*	Sept.	No Records			900*
Oct.	No Records			10*	Oct.	No Records			400*
Nov.	No Records			60*	Nov.	No Records			3,300*
Dec.	No Records			6,100*	Dec.	No Records			1,100*
Total	..	..	..	48,130*	Total	..	..	..	146,100*

* Estimated

DUMARESQ RIVER AT BONSHAW WEIR

Year 1942

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			200*
Feb.	No Records			63,000*
Mar.	No Records			4,800*
Apr.	No Records			1,200*
May	No Records			500*
June	No Records			300*
July	No Records			44,000*
Aug.	No Records			5,900*
Sept.	No Records			2,100*
Oct.	No Records			119,000*
Nov.	No Records			89,000*
Dec.	No Records			26,000*
Total	..	..	..	356,000*

Year 1943

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			94,000*
Feb.	No Records			4,000*
Mar.	No Records			900*
Apr.	No Records			500*
May	No Records			400*
June	No Records			340*
July	No Records			360*
Aug.	No Records			1,000*
Sept.	No Records			16,000*
Oct.	No Records			8,000*
Nov.	No Records			138,000*
Dec.	No Records			41,000*
Total	..	..	..	304,500*

Year 1944

Jan.	No Records			89,000*
Feb.	No Records			82,000*
Mar.	No Records			7,500*
Apr.	No Records			1,800*
May	No Records			1,300*
June	No Records			1,100*
July	No Records			1,700*
Aug.	No Records			47,000*
Sept.	No Records			11,000*
Oct.	No Records			2,200*
Nov.	No Records			700*
Dec.	No Records			2,100*
Total	..	..	..	247,400*

Year 1945

Jan.	No Records			10,000*
Feb.	No Records			150,000*
Mar.	No Records			31,000*
Apr.	No Records			2,100*
May	No Records			2,600*
June	No Records			143,000*
July	No Records			91,000*
Aug.	No Records			28,000*
Sept.	No Records			48,000*
Oct.	No Records			3,800*
Nov.	No Records			2,000*
Dec.	No Records			7,000*
Total	..	..	..	518,500*

Year 1946

Jan.	No Records			107,000*
Feb.	No Records			9,600*
Mar.	No Records			24,000*
Apr.	No Records			8,300*
May	No Records			2,600*
June	No Records			1,300*
July	No Records			1,200*
Aug.	No Records			500*
Sept.	No Records			12,000*
Oct.	No Records			13,000*
Nov.	No Records			1,900*
Dec.	No Records			7,800*
Total	..	..	..	189,200*

Year 1947

Jan.	No Records			18,000*
Feb.	No Records			57,000*
Mar.	No Records			172,000*
Apr.	No Records			234,000*
May	No Records			18,000*
June	No Records			11,000*
July	No Records			4,500*
Aug.	No Records			4,000*
Sept.	No Records			82,000*
Oct.	No Records			44,000*
Nov.	No Records			18,000*
Dec.	No Records			200,000*
Total	..	..	..	862,500*

Year 1948

Jan.	No Records			85,000*
Feb.	No Records			9,800*
Mar.	No Records			21,000*
Apr.	No Records			7,000*
May	No Records			5,700*
June	No Records			247,000*
July	No Records			79,000*
Aug.	No Records			40,000*
Sept.	No Records			22,000*
Oct.	No Records			10,000*
Nov.	No Records			11,000*
Dec.	No Records			3,400*
Total	..	..	..	540,900*

Year 1949

Jan.	No Records			16,000*
Feb.	No Records			43,000*
Mar.	No Records			26,000*
Apr.	No Records			7,700*
May	No Records			4,000*
June	No Records			12,000*
July	No Records			18,000*
Aug.	No Records			10,000*
Sept.	No Records			40,000*
Oct.	No Records			382,000*
Nov.	2050	278	1022	61,312
Dec.	1395	97	480	29,736
Total	..	..	..	649,748*

* Estimated

DUMARESQ RIVER AT BONSHAW WEIR

Month	Year 1950 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1951 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	97	38	67	4,124	Jan.	No Records			143,000*
Feb.	2050	58	666	37,300	Feb.	13400	560	2558	143,248
Mar.	No Records			33,000*	Mar.	No Records			30,000*
Apr.	No Records			22,000*	Apr.	2290	256	651	39,034
May	No Records			8,500*	May	No Records			5,000*
June	No Records			409,000*	June	No Records			32,500*
July	No Records			380,000*	July	No Records			14,400*
Aug.	No Records			118,000*	Aug.	690	320	470	29,160
Sept.	No Records			138,000*	Sept.	320	196	218	13,056
Oct.	No Records			360,000*	Oct.	320	47	198	12,290
Nov.	No Records			96,000*	Nov.	11700	47	483	28,990
Dec.	No Records			31,000*	Dec.	102	19	31	1,952
Total	..	..	..	1,636,924*	Total	..	..	..	492,630*

Month	Year 1952 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1953 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	19	8	15	896	Jan.	1220	29	82	5,096
Feb.	No Records			5,000*	Feb.	20800	29	1962	109,850
Mar.	No Records			17,000*	Mar.	730	163	309	19,170
Apr.	No Records			7,200*	Apr.	313	81	136	8,170
May	No Records			78,000*	May	446	70	152	9,440
June	13000	280	2633	158,006	June	70	42	55	3,306
July	2300	240	710	44,000	July	64	32	46	2,836
Aug.	9170	240	1986	123,140	Aug.	182	30	45	2,762
Sept.	970	200	345	20,730	Sept.	150	18	56	3,372
Oct.	26400	100	4948	306,794	Oct.	49	15	25	1,546
Nov.	9630	187	1867	112,024	Nov.	1710	12	108	6,484
Dec.	2460	39	158	9,778	Dec.	12	0	2.5	154
Total	..	..	..	882,568*	Total	..	..	..	172,186

Month	Year 1954 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1955 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	137	0	13	774	Jan.	874	107	272	16,844
Feb.	21700	0	2110	118,172	Feb.	No Records			9,000*
Mar.	3800	71	563	34,882	Mar.	No Records			18,000*
Apr.	66	28	46	2,762	Apr.	No Records			17,000*
May	28	21	23	1,456	May	No Records			72,000*
June	57	20	40	2,412	June	No Records			30,000*
July	3750	29	465	28,852	July	No Records			21,000*
Aug.	831	115	215	13,306	Aug.	No Records			19,000*
Sept.	126	58	86	5,170	Sept.	No Records			8,000*
Oct.	48200	64	3920	243,034	Oct.	No Records			39,000*
Nov.	12700	418	2680	160,768	Nov.	No Records			8,000*
Dec.	2000	262	551	34,180	Dec.	No Records			2,400*
Total	..	..	..	645,768	Total	..	..	..	260,244*

Month	Year 1956	Discharge for Month Acre Feet	Month	Year 1957	Discharge for Month Acre Feet
Jan.	No Records	415,000*	Jan.	No Records	31,000*
Feb.	No Records	800,000*	Feb.	No Records	11,000*
Mar.	No Records	70,000*	Mar.	No Records	8,000*
Apr.	No Records	20,000*	Apr.	No Records	3,400*
May	No Records	83,000*	May	No Records	1,800*
June	No Records	230,000*	June	No Records	1,400*
July	No Records	320,000*	July	No Records	2,500*
Aug.	No Records	33,000*	Aug.	No Records	2,400*
Sept.	No Records	17,000*	Sept.	No Records	2,200*
Oct.	No Records	17,000*	Oct.	No Records	500*
Nov.	No Records	11,000*	Nov.	No Records	700*
Dec.	No Records	20,000*	Dec.	No Records	0*
Total	..	2,036,000*	Total	..	64,900*

* Estimated

Bonshaw Weir records commenced in May 1953.

DUMARESQ RIVER AT BONSHAW WEIR

Year 1958					Year 1959				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	No Records			0*	Jan.	No Records			150,000*
Feb.	No Records			24,000*	Feb.	No Records			60,000*
Mar.	No Records			83,000*	Mar.	No Records			48,000*
Apr.	No Records			4,000*	Apr.	No Records			28,000*
May	No Records			1,800*	May	No Records			12,000*
June	No Records			1,500*	June	140	69	90	5,388
July	No Records			2,400*	July	2900	45	395	24,466
Aug.	No Records			3,000*	Aug.	350	89	170	10,566
Sept.	2520	28	302	18,104	Sept.	103	58	83	4,978
Oct.	1462	69	307	19,038	Oct.	148	54	89	5,528
Nov.	No Records			3,000*	Nov.	3492	118	906	54,370
Dec.	No Records			29,000*	Dec.	14500	260	3632	225,164
Total	..	..	..	188,842*	Total	..	..	..	628,460*

Year 1960					Year 1961				
Jan.	1377	140	368	22,834	Jan.	No Records			900*
Feb.	1420	103	245	14,224	Feb.	No Records			14,000*
Mar.	156	69	105	6,514	Mar.	430	41	93	5,776
Apr.	69	41	52	3,100	Apr.	54	5	9	532
May	400	58	101	6,232	May	10	2	4.1	252
June	69	41	58	3,476	June	28	8	16	986
July	1050	45	304	18,900	July	690	4	62	3,852
Aug.	3435	103	561	34,758	Aug.	2140	148	440	27,282
Sept.	89	69	71	4,270	Sept.	212	49	92	5,534
Oct.	96	54	70	4,326	Oct.	390	28	80	4,954
Nov.	45	12	23	1,358	Nov.	2045	22	329	19,748
Dec.	532	8	103	6,366	Dec.	4030	220	770	47,736
Total	..	..	..	126,358	Total	..	..	..	131,552*

Year 1962					Year 1963				
Jan.	19200	532	4574	283,598	Jan.	3320	140	536	33,240
Feb.	1950	278	668	37,416	Feb.	400	19	98	5,472
Mar.	3320	148	494	30,654	Mar.	8100	14	584	36,214
Apr.	19200	260	1414	84,860	Apr.	1680	103	303	18,170
May	278	125	177	10,964	May	13500	133	1640	101,920
June	196	54	106	6,334	June	4150	341	948	56,864
July	10000	45	726	45,000	July	323	180	231	14,316
Aug.	2520	204	610	37,824	Aug.	3100	103	302	18,730
Sept.	610	164	260	15,606	Sept.	2425	63	289	17,324
Oct.	970	63	204	12,654	Oct.	125	28	56	3,468
Nov.	260	45	90	5,420	Nov.	2425	16	268	16,066
Dec.	156	0	54	3,340	Dec.	2900	103	544	33,714
Total	..	..	..	573,670	Total	..	..	..	355,498

Year 1964					Year 1965				
Jan.	1090	28	143	8,868	Jan.	2	1	1.9	117
Feb.	204	28	53	3,052	Feb.	1	0.3	0.7	39
Mar.	8700	31	931	57,702	Mar.	0.3	0	0	2
Apr.	532	69	154	9,266	Apr.	0	0	0	0
May	220	103	155	9,620	May	0	0	0	0
June	850	133	237	14,200	June	0	0	0	0
July	3210	133	664	41,200	July	3694	0	232	14,400
Aug.	212	82	127	7,860	Aug.	180	25	110	6,840
Sept.	1997	28	106	6,330	Sept.	455	25	111	6,660
Oct.	5000	278	891	55,300	Oct.	49	1	16	993
Nov.	370	69	171	10,300	Nov.	2	0	1.1	64
Dec.	180	3	36	2,260	Dec.	No Records			180,000*
Total	..	..	..	225,958	Total	..	..	..	209,115*

* Estimated.

DUMARESQ RIVER AT BONSHAW WEIR

Year 1966

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	228	14	76	4,698
Feb.	244	2	62	3,450
Mar.	305	7	33	2,050
Apr.	38	5	11	664
May	25	7	13	822
June	14	7	11	640
July	10	7	8.5	526
Aug.	4270	3.4	414	25,600
Sept.	11300	58	1256	75,400
Oct.	6600	28	824	51,100
Nov.	33900	236	2616	157,000
Dec.	260	54	129	7,970
Total	..	..	..	329,912

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	1010	16	95	5,890
Feb.	89	9	25	1,390
Mar.	15800	12	794	49,200
Apr.	269	69	167	10,000
May	133	58	78	4,820
June	7200	45	1039	62,300
July	930	260	464	28,790
Aug.	532	141	248	15,400
Sept.	103	29	62	3,720
Oct.	3670	14	479	29,700
Nov.	220	14	103	6,170
Dec.	45	2.6	14	892
Total	..	..	..	218,272

Year 1968

Jan.	3100	7	465	28,800
Feb.	600	82	225	13,100
Mar.	600	110	171	10,600
Apr.	110	6	35	2,090
May	185	14	90	5,560
June	110	20	59	3,540
July	16800	45	1020	63,300
Aug.	13400	227	1660	103,000
Sept.	2000	185	531	31,800
Oct.	227	37	122	7,550
Nov.	185	4	59	3,560
Dec.	370	4	32	2,010
Total	..	..	..	274,910

MACINTYRE RIVER AT BOGGABILLA

LOCATION:	Latitude 28°36' Longitude 150°22'
PERIOD OF ESTABLISHMENT:	October 1894 to date
COMPLETE YEARS OF COMPUTED RECORDS:	69 years
ZERO OF GAUGE:	R.L. 687.97 North West Water Conservation Datum
CATCHMENT AREA:	8,700 Square miles
CONTROL:	Natural gravel bar
EQUIPMENT:	Staff gauge, range 0 to 40 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 262 (b) Maximum observation in cusecs : 47,500 (c) Minimum observation in cusecs : 0
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	74,300 cusecs
MEAN DAILY DISCHARGE FOR 69 YEARS:	945 cusecs
MEAN ANNUAL DISCHARGE FOR 69 YEARS:	690,000 acre feet
REMARKS:	(a) No records were obtained from July, 1921 to August 1924 inclusive. (b) No. 1 Station was established in October 1894 and was discontinued in September 1939. (c) No. 2 Station was established in February 1937 and is currently operative.

MACINTYRE RIVER AT BOGGABILLA

Month	Year 1895 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1896 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records				Jan.	2260	20	496	30,766
Feb.	No Records				Feb.	22200	580	6057	351,300
Mar.	No Records				Mar.	8110	240	1295	80,260
Apr.	58	36	51	3,036	Apr.	1370	240	572	34,310
May	44	33	30	1,842	May	550	180	272	16,840
June	40	33	36	2,144	June	450	110	231	13,872
July	58	26	38	2,355	July	2780	70	957	59,334
Aug.	58	33	44	2,714	Aug.	2660	180	674	41,810
Sept.	29	15	21	1,228	Sept.	1370	300	639	38,330
Oct.	1050	15	331	20,542	Oct.	610	70	299	18,516
Nov.	110	20	53	3,158	Nov.	450	70	214	12,838
Dec.	1480	23	818	50,686	Dec.	5750	83	2461	152,558
Total	..	..	..	..	Total	..	..	..	850,734

Month	Year 1897 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1898 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	2900	510	958	59,320	Jan.	20500	670	4447	275,740
Feb.	480	58	209	11,706	Feb.	7280	510	2321	129,980
Mar.	28300	70	3007	186,428	Mar.	1050	0	436	27,030
Apr.	126	0	13	752	Apr.	160	110	134	8,044
May	0	0	0	0	May	110	110	110	6,820
June	280	0	40	2,408	June	240	110	144	8,646
July	30700	0	2742	170,000	July	450	152	241	14,922
Aug.	4140	0	838	51,940	Aug.	110	110	110	6,820
Sept.	11400	0	757	45,406	Sept.	900	110	273	16,392
Oct.	27300	900	4412	273,520	Oct.	640	70	196	12,150
Nov.	1050	0	310	18,620	Nov.	260	0	140	8,400
Dec.	18400	0	2621	162,520	Dec.	0	0	0	0
Total	..	..	..	982,620	Total	..	..	..	514,944

Month	Year 1899 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1900 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	34200	0	1103	68,400	Jan.	4100	20	580	35,960
Feb.	49200	940	5615	314,440	Feb.	8530	40	1143	64,032
Mar.	840	126	377	23,394	Mar.	770	220	428	26,540
Apr.	740	96	259	15,566	Apr.	5920	200	971	58,240
May	160	70	100	6,192	May	5130	48	631	39,104
June	1260	70	337	20,224	June	2220	280	785	47,100
July	5280	360	1582	98,100	July	8640	330	2684	166,440
Aug.	2420	240	607	37,660	Aug.	8960	450	2251	139,580
Sept.	1590	280	587	35,200	Sept.	4100	180	921	55,240
Oct.	2180	110	491	29,476	Oct.	1010	420	548	34,000
Nov.	360	83	191	11,492	Nov.	1050	70	318	19,090
Dec.	70	26	38	2,346	Dec.	480	70	162	10,030
Total	..	..	..	662,490	Total	..	..	..	695,356

Month	Year 1901 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1902 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	126	0	19	1,190	Jan.	1480	8	220	13,648
Feb.	20	0	0.7	40	Feb.	70	5	18	1,033
Mar.	390	0	124	7,708	Mar.	5	0	0.2	10
Apr.	280	8	39	2,324	Apr.	0	0	0	0
May	40	0	2	120	May	0	0	0	0
June	740	0	270	16,198	June	0	0	0	0
July	770	143	438	27,146	July	0	0	0	0
Aug.	41400	0	3780	234,268	Aug.	0	0	0	0
Sept.	5430	280	1096	65,780	Sept.	0	0	0	0
Oct.	670	260	351	21,750	Oct.	0	0	0	0
Nov.	300	70	167	10,034	Nov.	0	0	0	0
Dec.	70	17	34	2,120	Dec.	16400	0	1648	102,192
Total	..	..	..	388,678	Total	..	..	..	116,883

MACINTYRE RIVER AT BOGGABILLA

Year 1903					Year 1904				
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.	260	8	61	3,794	Jan.	700	110	270	16,764
Feb.	6	0	1	63	Feb.	280	40	119	7,112
Mar.	20	0	2	128	Mar.	1510	33	274	16,991
Apr.	280	0	86	5,170	Apr.	45200	240	5319	319,140
May	280	6	64	3,992	May	6380	110	859	53,232
June	30200	20	2305	138,304	June	6230	390	1490	89,400
July	37500	70	5449	337,812	July	15000	300	2380	147,560
Aug.	32200	700	4772	245,900	Aug.	4100	280	3278	203,220
Sept.	47700	790	9321	559,280	Sept.	420	143	224	13,424
Oct.	12800	1400	3382	209,700	Oct.	20500	450	2370	146,960
Nov.	30500	1260	7939	476,320	Nov.	640	110	240	14,410
Dec.	1200	300	713	44,180	Dec.	280	83	152	9,436
Total	..	..	..	2,704,649	Total	..	..	..	1,037,649

Year 1905					Year 1906				
Jan.	300	48	127	7,870	Jan.	20500	280	3554	220,340
Feb.	160	15	63	3,498	Feb.	300	40	129	7,214
Mar.	11	5	7	416	Mar.	330	40	150	9,328
Apr.	8740	5	1366	81,938	Apr.	390	33	138	8,274
May	2420	96	537	33,226	May	110	8	24	1,516
June	1860	110	574	34,466	June	40	9.5	20	1,198
July	1050	143	382	23,686	July	20	8	10	622
Aug.	126	70	94	5,798	Aug.	240	15	77	4,822
Sept.	110	33	75	4,518	Sept.	6560	770	2238	134,280
Oct.	940	11	257	15,932	Oct.	26500	770	4342	269,200
Nov.	143	6	43	2,592	Nov.	3380	260	778	46,680
Dec.	8110	6	360	22,332	Dec.	1370	48	206	12,802
Total	..	..	..	236,272	Total	..	..	..	716,276

Year 1907					Year 1908				
Jan.	2940	260	879	54,510	Jan.	48	11	30	1,872
Feb.	2980	280	813	45,500	Feb.	2500	8	735	42 638
Mar.	22200	83	3974	246,386	Mar.	3140	200	693	42,960
Apr.	1330	160	434	26,040	Apr.	240	48	121	7,266
May	160	70	99	5,948	May	160	48	87	5,426
June	2540	58	539	32,316	June	160	23	50	2,988
July	240	83	140	8,660	July	96	48	52	3,260
Aug.	5180	126	813	51,422	Aug.	4060	70	1121	69,500
Sept.	180	40	78	4,710	Sept.	7690	200	1294	77,640
Oct.	390	33	95	5,900	Oct.	240	96	129	7,976
Nov.	3020	20	449	26,932	Nov.	1370	96	376	22,586
Dec.	480	33	164	10,172	Dec.	640	33	152	9,426
Total	..	..	..	518,496	Total	..	..	..	293,538

Year 1909					Year 1910				
Jan.	70	5.5	22	1,398	Jan.	24700	70	3226	199,990
Feb.	5920	0	628	35,174	Feb.	8810	220	1391	77,900
Mar.	2060	26	251	15,548	Mar.	38000	96	4576	283,688
Apr.	70	11	28	1,700	Apr.	670	83	220	13,214
May	180	33	72	4,492	May	143	48	90	5,560
June	1080	58	311	18,654	June	510	70	142	8,540
July	2620	280	738	45,740	July	6330	160	1549	96,020
Aug.	16500	200	4076	252,740	Aug.	700	110	264	16,384
Sept.	19700	670	3467	208,040	Sept.	110	33	62	3,748
Oct.	640	160	308	19,080	Oct.	33	11	21	1,284
Nov.	450	96	191	11,454	Nov.	740	11	191	11,492
Dec.	4260	126	1174	70,458	Dec.	1400	33	245	15,200
Total	..	..	..	684,478	Total	..	..	..	733,020

MACINTYRE RIVER AT BOGGABILLA

Month	Year 1911 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1912 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	11600	83	2025	125,578	Jan.	11	8	9	532
Feb.	11900	480	2234	125,120	Feb.	8	0	3	146
Mar.	640	126	308	19,132	Mar.	70	0	28	1,728
Apr.	126	20	55	3,336	Apr.	15	5	7	428
May	33	8	18	1,106	May	5	5	5	310
June	15	6	9	522	June	4220	0	499	29,958
July	640	5	58	3,618	July	6740	640	2232	138,400
Aug.	48	11	22	1,372	Aug.	3380	240	1227	76,080
Sept.	1260	11	203	12,168	Sept.	610	110	282	16,922
Oct.	700	33	192	11,924	Oct.	200	20	73	4,566
Nov.	70	6	16	944	Nov.	220	26	101	6,076
Dec.	58	6	20	1,266	Dec.	70	8	29	1,772
Total	..	..	..	306,086	Total	..	..	..	276,918
	Year 1913					Year 1914			
Jan.	450	8	147	9,112	Jan.	280	8	64	3,962
Feb.	280	6	85	4,742	Feb.	280	5	41	2,302
Mar.	110	0	10	642	Mar.	3620	5	374	23,190
Apr.	126	0	21	1,236	Apr.	1940	20	624	37,456
May	3740	0	590	36,562	May	3500	8	739	44,314
June	18000	160	3544	212,620	June	3500	33	702	42,112
July	14700	280	2470	153,120	July	3140	48	620	38,428
Aug.	580	70	190	11,790	Aug.	450	5	82	5,112
Sept.	70	33	50	2,980	Sept.	40	8	21	1,260
Oct.	280	6	34	2,076	Oct.	840	5	107	6,648
Nov.	1700	11	465	27,882	Nov.	3260	70	674	40,468
Dec.	1050	0	134	8,322	Dec.	58	4	14	874
Total	..	..	..	471,084	Total	..	..	..	246,126
	Year 1915					Year 1916			
Jan.	640	4	112	6,942	Jan.	280	0	24	1,460
Feb.	4	0	4	172	Feb.	23000	4	1672	96,994
Mar.	4	0	0.3	16	Mar.	6230	8	662	41,058
Apr.	0	0	0	0	Apr.	2900	160	848	50,880
May	0	0	0	0	May	280	8	61	3,802
June	0	0	0	0	June	110	4	13	786
July	0	0	0	0	July	11400	70	1950	120,910
Aug.	70	0	5	308	Aug.	6740	640	1933	119,830
Sept.	4	4	4	240	Sept.	3620	20	605	36,310
Oct.	110	4	19	1,142	Oct.	600	58	253	15,696
Nov.	0	0	0	0	Nov.	3380	110	1069	64,160
Dec.	0	0	0	0	Dec.	56500	280	5708	353,880
Total	..	..	..	8,820	Total	..	..	..	905,766
	Year 1917					Year 1918			
Jan.	32700	20	3129	194,010	Jan.	7690	220	1994	123,620
Feb.	36400	280	5881	329,360	Feb.	5800	15	1117	62,560
Mar.	640	20	379	22,732	Mar.	58	4	11	664
Apr.	20	4	7	424	Apr.	160	4	22	1,330
May	4	4	4	248	May	40	6	11	652
June	4	4	4	240	June	4	4	4	240
July	4	4	4	248	July	4	4	4	248
Aug.	280	4	53	2,262	Aug.	360	4	49	3,038
Sept.	23900	4	4893	293,606	Sept.	20	4	10	568
Oct.	18000	280	2987	185,180	Oct.	4	4	4	248
Nov.	47000	640	11258	675,140	Nov.	4	0	2	118
Dec.	41700	280	4645	287,960	Dec.	6	0	0.5	38
Total	..	..	..	1,992,410	Total	..	..	..	193,324

MACINTYRE RIVER AT BOGGABILLA

Month	Year 1919 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1920 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	15	0	5	332	Jan.	1480	0	328	20,314
Feb.	4	0	1	64	Feb.	70	0	21	1,198
Mar.	23000	4	1812	112,324	Mar.	1	1	1	62
Apr.	450	11	122	7,318	Apr.	1	1	1	60
May	220	4	37	2,236	May	1	1	1	62
June	4	4	4	240	June	280	0	33	2,032
July	1	1	1	62	July	24700	1	3320	205,842
Aug.	0	0	0	0	Aug.	17200	450	2629	163,020
Sept.	0	0	0	0	Sept.	16400	1050	3379	202,720
Oct.	0	0	0	0	Oct.	3380	940	1392	83,520
Nov.	0	0	0	0	Nov.	2380	220	625	37,520
Dec.	2	0	0.4	24	Dec.	640	220	488	30,280
Total	..	..	..	122,600	Total	..	..	..	746,630

	Year 1924					Year 1925			
Jan.	No Records				Jan.	1960	284	757	46,942
Feb.	No Records				Feb.	3560	234	827	46,314
Mar.	No Records				Mar.	1190	107	411	25,496
Apr.	No Records				Apr.	122	65	81	4,892
May	No Records				May	65	7	14	872
June	No Records				June	980	7	143	8,554
July	No Records				July	750	92	274	16,976
Aug.	No Records				Aug.	5920	122	966	59,910
Sept.	3830	171	1016	60,994	Sept.	3500	193	852	51,124
Oct.	2930	78	725	44,924	Oct.	193	46	114	7,054
Nov.	35300	368	7308	438,484	Nov.	2900	46	646	38,770
Dec.	2890	368	1123	69,644	Dec.	312	107	151	9,380
Total	..	..	..	..	Total	..	..	..	316,284

	Year 1926					Year 1927			
Jan.	234	10	110	6,798	Jan.	29200	137	3736	231,614
Feb.	7	2	4	218	Feb.	13100	142	2824	158,154
Mar.	20	1	4	256	Mar.	1160	78	381	23,592
Apr.	13	0	4	256	Apr.	367	86	171	10,234
May	25	0	4	274	May	86	55	69	4,278
June	65	2	23	1,396	June	145	35	60	3,612
July	1240	40	183	11,362	July	40	20	25	1,540
Aug.	92	25	52	3,206	Aug.	20	13	17	1,034
Sept.	25	13	18	1,090	Sept.	13	10	12	720
Oct.	13	2	6	346	Oct.	10	2	7	458
Nov.	0	0	0	0	Nov.	44	9	20	1,228
Dec.	18800	0	1141	60,730	Dec.	2060	305	929	57,584
Total	..	..	..	85,932	Total	..	..	..	494,048

	Year 1928					Year 1929			
Jan.	10400	12	744	46,116	Jan.	103	12	18	1,120
Feb.	23000	399	3889	225,564	Feb.	6920	8	1422	79,614
Mar.	8040	275	998	61,852	Mar.	354	8	103	6,186
Apr.	2970	431	965	57,898	Apr.	23500	8	2346	140,722
May	630	219	335	20,750	May	158	60	98	6,084
June	11800	193	1289	77,326	June	49	39	41	2,440
July	22400	700	3541	219,554	July	103	30	65	4,050
Aug.	1290	336	782	48,462	Aug.	464	73	191	11,854
Sept.	336	219	244	14,672	Sept.	193	44	92	5,500
Oct.	464	145	218	13,494	Oct.	20300	27	2537	157,316
Nov.	273	2	115	6,924	Nov.	224	60	114	6,846
Dec.	224	17	54	3,318	Dec.	120	12	53	3,298
Total	..	..	..	795,930	Total	..	..	..	425,030

MACINTYRE RIVER AT BOGGABILLA

Month	Year 1930 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet	Month	Year 1931 Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	10400	1	833	51,674	Jan.	500	25	103	6,392
Feb.	1360	97	623	34,870	Feb.	311	38	103	5,770
Mar.	500	82	153	9,498	Mar.	760	68	390	24,208
Apr.	97	31	49	2,916	Apr.	9920	172	1435	86,122
May	97	25	51	3,158	May	4750	56	652	40,412
June	5280	15	1033	62,004	June	28900	72	3125	187,500
July	6500	311	1253	77,676	July	23900	560	5049	313,026
Aug.	9920	238	1450	89,880	Aug.	1070	248	498	30,890
Sept.	4020	214	860	51,630	Sept.	1370	103	379	22,718
Oct.	16400	193	2561	158,762	Oct.	6440	138	954	59,122
Nov.	214	113	179	10,734	Nov.	299	87	147	8,824
Dec.	630	46	218	13,532	Dec.	31700	382	6573	407,504
Total	..	..	..	566,334	Total	..	..	..	1,192,488

	Year 1932					Year 1933			
Jan.	930	87	271	16,278	Jan.	14900	27	2492	154,302
Feb.	87	11	35	2,008	Feb.	14300	305	1671	93,588
Mar.	40	11	16	1,012	Mar.	275	21	175	10,836
Apr.	2450	8	692	41,516	Apr.	9	2	3	218
May	122	13	32	2,006	May	2	2	2	124
June	92	13	39	2,336	June	2	2	2	120
July	65	10	34	2,120	July	15400	2	1416	87,774
Aug.	31	25	27	1,646	Aug.	11000	336	1829	113,388
Sept.	4490	16	1057	63,440	Sept.	3500	55	451	27,044
Oct.	1160	399	708	43,898	Oct.	42800	431	5125	317,758
Nov.	1750	560	690	41,400	Nov.	19700	830	3427	205,600
Dec.	1260	246	538	33,372	Dec.	2010	428	867	53,776
Total	..	..	..	251,032	Total	..	..	..	1,064,528

	Year 1934					Year 1935			
Jan.	3910	2	1563	96,922	Jan.	28300	900	5403	334,360
Feb.	3220	25	967	54,160	Feb.	1300	441	693	38,826
Mar.	46	46	46	2,852	Mar.	560	73	272	16,858
Apr.	254	46	63	3,772	Apr.	73	49	63	3,760
May	124	46	54	3,352	May	73	49	62	3,856
June	124	46	68	4,094	June	60	49	57	3,444
July	162	107	124	7,674	July	66	49	59	3,652
Aug.	4010	428	1711	106,074	Aug.	60	28	50	3,108
Sept.	17200	485	2780	166,802	Sept.	248	28	86	5,186
Oct.	3600	248	1070	66,316	Oct.	6120	73	698	43,262
Nov.	1200	179	411	24,688	Nov.	456	40	133	7,974
Dec.	16400	224	2528	156,708	Dec.	190	26	72	4,490
Total	..	..	..	693,414	Total	..	..	..	468,776

	Year 1936					Year 1937			
Jan.	273	8	34	2,104	Jan.	27300	162	3034	188,132
Feb.	7	0	3	168	Feb.	500	69	168	9,398
Mar.	354	0	33	2,040	Mar.	6640	27	1121	69,528
Apr.	6	0	2	120	Apr.	230	55	109	6,512
May	4	0	1	66	May	55	27	44	2,742
June	3	0.5	1	86	June	35	24	28	1,700
July	1100	0.5	82	5,118	July	81	31	42	2,582
Aug.	5600	92	756	48,088	Aug.	74	44	54	3,376
Sept.	1450	65	256	15,340	Sept.	2580	35	282	16,942
Oct.	750	23	134	8,314	Oct.	44	24	28	1,758
Nov.	20	0.5	5	338	Nov.	2580	24	725	43,504
Dec.	1820	0	337	20,902	Dec.	730	115	313	19,376
Total	..	..	..	102,684	Total	..	..	..	365,550

MACINTYRE RIVER AT BOGGABILLA

Year 1938					Year 1939				
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.	860	81	312	19,356	Jan.	490	2	69	4,296
Feb.	3880	144	701	39,248	Feb.	300	8	82	4,576
Mar.	125	15	46	2,826	Mar.	2610	4	494	30,650
Apr.	15	4	10	574	Apr.	122	15	50	2,980
May	1550	2	144	8,898	May	95	11	44	2,718
June	270	67	98	5,872	June	525	11	87	5,248
July	167	51	69	4,286	July	1310	143	418	25,916
Aug.	6900	370	1370	84,924	Aug.	3250	103	895	55,516
Sept.	1510	178	454	27,226	Sept.	166	46	80	4,934
Oct.	3550	86	824	51,092	Oct.	87	15	40	2,454
Nov.	1260	335	584	35,060	Nov.	21	4	12	748
Dec.	1160	73	281	17,428	Dec.	480	0	30	1,851
Total	..	..	..	296,790	Total	..	..	..	141,887

Year 1940					Year 1941				
Jan.	480	2	69	4,306	Jan.	9020	150	2019	125,154
Feb.	4200	4	876	50,790	Feb.	1760	172	593	33,214
Mar.	1160	15	139	8,602	Mar.	8870	56	1048	64,994
Apr.	79	11	38	2,270	Apr.	640	56	184	11,040
May	11	1	4	240	May	56	22	34	2,084
June	0.7	0	0	7	June	2710	19	677	40,644
July	0	0	0	0	July	425	150	258	16,022
Aug.	0	0	0	0	Aug.	222	46	103	6,388
Sept.	0	0	0	0	Sept.	41	16	29	1,742
Oct.	0	0	0	0	Oct.	16	0	5	291
Nov.	0	0	0	0	Nov.	1020	0	166	9,974
Dec.	1010	0	227	14,074	Dec.	74	1.5	25	1,523
Total	..	..	..	80,289	Total	..	..	..	313,070

Year 1942					Year 1943				
Jan.	1	0	0.1	4	Jan.	14700	550	3564	220,990
Feb.	10500	0	1017	56,936	Feb.	595	85	269	15,044
Mar.	196	16	69	4,274	Mar.	71	12	29	1,798
Apr.	81	9	29	1,768	Apr.	85	8	28	1,700
May	9	1	3	190	May	22	3	9	556
June	11	0	3	156	June	58	3	20	1,180
July	13400	0	1656	102,646	July	22	12	17	1,056
Aug.	680	96	316	19,602	Aug.	154	14	54	3,376
Sept.	81	16	44	2,668	Sept.	2130	47	375	22,470
Oct.	22000	9	2869	177,858	Oct.	595	47	243	14,560
Nov.	15600	680	2493	149,560	Nov.	38100	238	4431	265,832
Dec.	1480	150	534	33,082	Dec.	1860	216	893	55,392
Total	..	..	..	548,744	Total	..	..	..	603,954

Year 1944					Year 1945				
Jan.	12800	476	2554	158,340	Jan.	1340	5	266	16,488
Feb.	6530	410	1679	97,410	Feb.	28200	25	2647	148,236
Mar.	378	71	196	12,134	Mar.	21000	316	1571	97,390
Apr.	71	17	34	1,970	Apr.	288	71	161	9,642
May	36	12	17	1,076	May	117	58	69	4,276
June	36	25	29	1,734	June	30100	58	3286	197,136
July	316	22	90	5,600	July	17400	443	2688	166,670
Aug.	18700	71	1726	107,010	Aug.	1660	476	907	56,262
Sept.	1570	154	496	29,782	Sept.	3450	443	1314	78,858
Oct.	262	36	138	8,530	Oct.	595	101	231	14,344
Nov.	36	14	24	1,414	Nov.	117	36	70	4,186
Dec.	22	5	13	776	Dec.	930	58	338	20,964
Total	..	..	..	425,776	Total	..	..	..	814,452

MACINTYRE RIVER AT BOGGABILLA

Year 1946					Year 1947				
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.	25300	22	2242	139,024	Jan.	1710	3	113	6,980
Feb.	1430	195	493	27,590	Feb.	2660	154	815	45,612
Mar.	3850	47	341	21,170	Mar.	7500	378	1460	90,528
Apr.	1160	117	372	22,322	Apr.	30800	1200	4487	269,238
May	117	71	85	5,254	May	1610	288	541	33,522
June	71	36	49	2,970	June	378	135	250	14,980
July	36	36	36	2,232	July	135	85	112	6,940
Aug.	36	12	28	1,752	Aug.	890	85	237	14,722
Sept.	3250	8	524	31,430	Sept.	13400	378	2636	158,130
Oct.	970	71	337	20,898	Oct.	1610	288	651	40,386
Nov.	174	36	62	3,748	Nov.	890	154	355	21,300
Dec.	680	36	196	12,120	Dec.	34700	930	5731	355,320
Total	..	..	..	290,510	Total	..	..	..	1,057,658

Year 1948					Year 1949				
Jan.	22200	378	2652	164,428	Jan.	2270	71	374	23,208
Feb.	316	85	169	9,448	Feb.	21000	71	1795	100,544
Mar.	2900	117	910	56,402	Mar.	1390	154	603	37,402
Apr.	262	71	131	7,840	Apr.	195	71	135	8,076
May	1250	101	271	16,810	May	101	58	74	4,588
June	2900	85	3916	234,988	June	970	58	223	13,390
July	4700	1020	1805	111,930	July	2420	117	392	24,280
Aug.	1860	378	812	50,316	Aug.	1300	135	391	24,238
Sept.	930	262	496	29,762	Sept.	4500	262	1353	81,174
Oct.	720	101	268	16,590	Oct.	36400	316	8992	557,502
Nov.	640	85	260	15,572	Nov.	12900	550	2208	132,470
Dec.	680	85	272	16,882	Dec.	4970	410	1090	67,590
Total	..	..	..	730,968	Total	..	..	..	1,074,462

Year 1950					Year 1951				
Jan.	349	101	171	10,618	Jan.	49500	158	5591	346,650
Feb.	8570	101	1557	87,214	Feb.	23200	1150	5110	286,160
Mar.	1480	195	571	35,378	Mar.	5810	693	1685	104,500
Apr.	1710	250	801	48,078	Apr.	904	325	491	29,464
May	510	135	222	13,774	May	348	225	253	15,662
June	52800	288	8830	529,810	June	3450	243	1536	92,136
July	58900	1900	14090	893,580	July	2560	423	1050	65,072
Aug.	26700	1600	4414	273,694	Aug.	2000	348	785	48,662
Sept.	37200	655	3918	235,050	Sept.	655	225	323	19,356
Oct.	44800	2800	14302	886,702	Oct.	372	143	253	15,670
Nov.	31300	1800	8044	482,616	Nov.	4550	104	477	28,644
Dec.	4450	129	984	61,016	Dec.	174	37	68	4,222
Total	..	..	..	3,537,530	Total	..	..	..	1,056,198

Year 1952					Year 1953				
Jan.	41	5	17	1,040	Jan.	234	77	129	8,002
Feb.	900	2	34	1,972	Feb.	58000	66	7329	454,422
Mar.	8650	129	1403	86,958	Mar.	6510	404	1340	83,176
Apr.	1350	214	502	30,128	Apr.	1150	176	390	23,412
May	8360	142	2198	136,284	May	657	176	330	20,464
June	20200	462	3873	232,382	June	234	142	166	9,934
July	7300	494	1406	87,202	July	167	127	131	8,152
Aug.	21200	677	6125	379,770	Aug.	377	127	164	10,186
Sept.	1800	677	1115	66,900	Sept.	717	77	233	13,966
Oct.	32100	528	8477	525,562	Oct.	127	55	81	5,040
Nov.	26400	433	3146	188,734	Nov.	404	30	109	6,568
Dec.	404	127	261	16,188	Dec.	30	9	16	984
Total	..	..	..	1,753,120	Total	..	..	..	644,306

MACINTYRE RIVER AT BOGGABILLA

Year 1954					Year 1955				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	214	9	42	2,596	Jan.	940	234	549	34,024
Feb.	24500	9	3204	179,442	Feb.	56300	127	4879	273,212
Mar.	3940	142	910	56,394	Mar.	24000	278	1742	108,010
Apr.	127	55	76	4,598	Apr.	1250	255	544	32,650
May	55	30	40	2,452	May	5020	325	985	61,094
June	66	37	44	2,642	June	4000	432	1038	62,278
July	2670	55	963	29,856	July	1250	377	643	39,876
Aug.	638	195	299	18,520	Aug.	2000	404	770	47,730
Sept.	176	66	113	6,800	Sept.	528	195	309	18,516
Oct.	53200	55	8320	515,842	Oct.	3770	158	880	54,544
Nov.	36300	1870	8617	517,018	Nov.	1250	120	429	25,742
Dec.	1590	638	1015	62,934	Dec.	404	55	153	9,470
Total	..	..	..	1,399,094	Total	..	..	..	767,146

Year 1956					Year 1957				
Jan.	74300	37	8606	533,572	Jan.	4300	299	847	52,520
Feb.	70000	3500	25105	1,456,080	Feb.	1590	277	532	29,814
Mar.	12800	1350	4465	278,860	Mar.	2290	234	535	33,184
Apr.	3120	605	1123	67,376	Apr.	277	142	186	11,158
May	15000	1250	3265	202,440	May	127	77	111	6,876
June	59800	1100	7903	474,160	June	113	66	80	4,818
July	28500	2290	7892	489,280	July	176	113	142	8,792
Aug.	2370	727	1376	85,298	Aug.	195	88	110	6,840
Sept.	1500	727	845	50,704	Sept.	322	66	158	9,484
Oct.	3220	565	1113	68,984	Oct.	77	13	37	2,274
Nov.	990	322	563	33,792	Nov.	45	4	18	1,054
Dec.	1910	255	466	28,906	Dec.	4	3	3	192
Total	..	..	..	3,769,452	Total	..	..	..	167,006

Year 1958					Year 1959				
Jan.	8	3	3	206	Jan.	10900	880	4531	280,900
Feb.	2650	4	615	34,448	Feb.	18600	605	3247	181,848
Mar.	26000	113	2471	153,174	Mar.	6060	420	1623	100,656
Apr.	299	88	160	9,620	Apr.	7680	345	1212	72,746
May	88	55	62	3,816	May	345	176	247	15,302
June	195	45	82	4,930	June	345	127	200	1,210
July	158	55	96	5,936	July	7050	127	815	50,558
Aug.	176	88	114	7,072	Aug.	990	150	355	22,010
Sept.	5860	113	745	44,690	Sept.	645	106	186	11,188
Oct.	3380	299	1099	68,128	Oct.	2290	127	284	17,592
Nov.	395	71	170	10,204	Nov.	14200	530	2849	170,950
Dec.	4780	45	856	53,056	Dec.	29000	345	8033	498,056
Total	..	..	..	395,280	Total	..	..	..	1,423,016

Year 1960					Year 1961				
Jan.	4120	370	911	56,468	Jan.	52	20	31	1,936
Feb.	1200	299	475	27,526	Feb.	500	10	74	4,168
Mar.	295	110	187	11,584	Mar.	1200	53	185	11,490
Apr.	110	43	68	4,056	Apr.	53	6	17	1,030
May	370	62	155	9,580	May	400	2	18	1,102
June	110	83	91	5,454	June	255	24	73	4,350
July	1640	83	620	38,440	July	380	13	63	3,898
Aug.	9150	245	1323	82,052	Aug.	2560	262	794	49,216
Sept.	245	110	159	9,560	Sept.	300	125	175	10,494
Oct.	295	62	135	8,358	Oct.	280	88	138	8,540
Nov.	160	20	53	3,204	Nov.	6540	66	1090	65,400
Dec.	420	20	149	9,232	Dec.	6610	280	1754	108,770
Total	..	..	..	265,514	Total	..	..	..	270,394

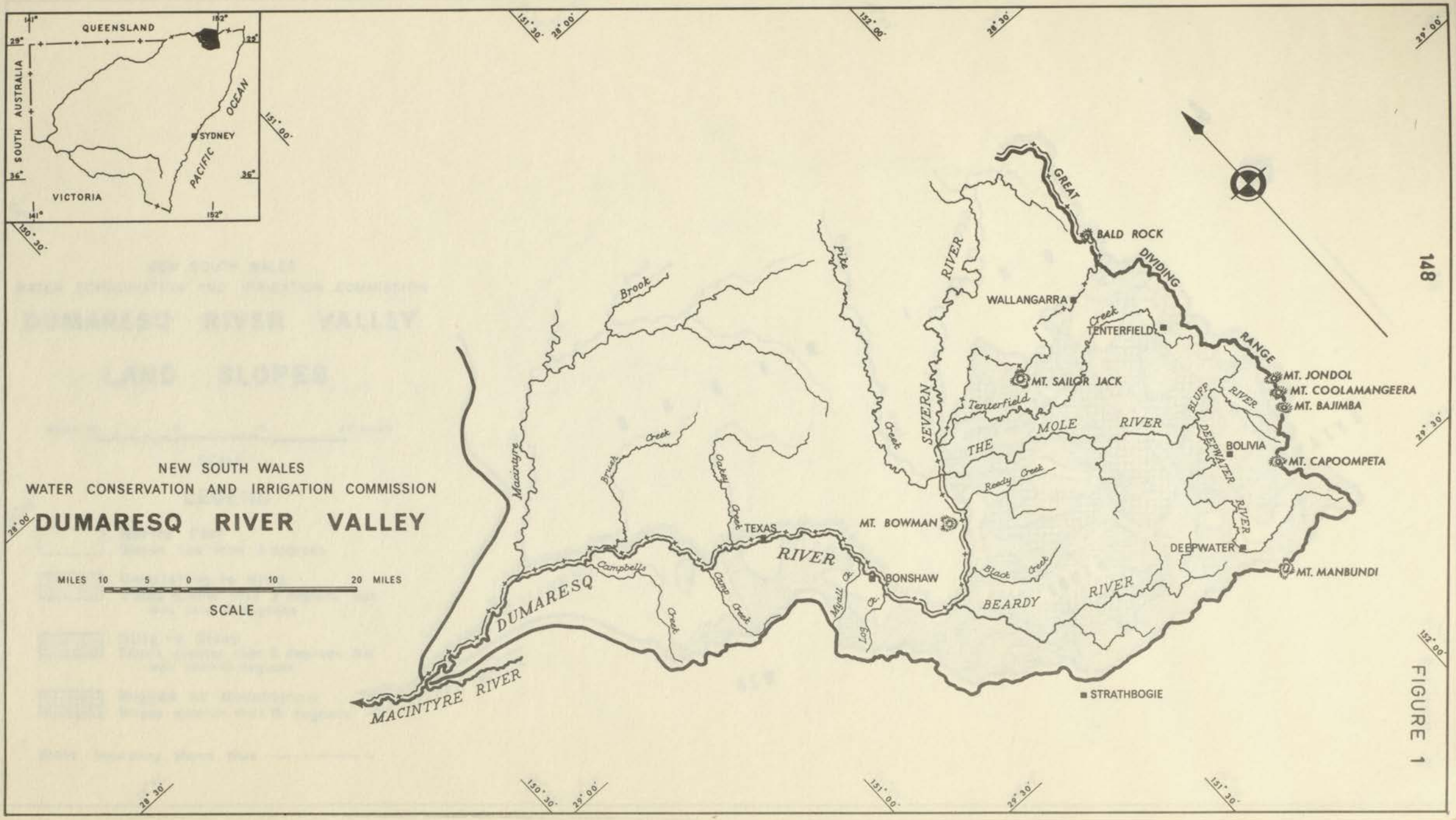
MACINTYRE RIVER AT BOGGABILLA

Year 1962					Year 1963				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	43400	407	12080	748,930	Jan.	8550	146	1139	70,608
Feb.	4530	605	1442	80,744	Feb.	259	55	132	7,388
Mar.	17700	400	2518	156,136	Mar.	6060	25	604	37,472
Apr.	17700	400	2584	155,038	Apr.	5270	146	738	44,282
May	500	213	312	19,328	May	28800	146	3772	233,856
June	305	168	254	15,220	June	11400	640	2078	124,702
July	9470	125	1341	83,118	July	675	282	399	24,708
Aug.	4840	375	1222	75,738	Aug.	1390	213	320	19,832
Sept.	1200	259	502	30,102	Sept.	4470	213	904	54,248
Oct.	1220	179	437	27,122	Oct.	351	107	182	11,266
Nov.	351	76	168	10,080	Nov.	5920	65	644	38,614
Dec.	500	55	166	10,310	Dec.	6610	328	1589	98,488
Total	..	..	..	1,411,866	Total	..	..	..	765,464

Year 1964					Year 1965				
Jan.	930	107	328	20,400	Jan.	67	4	23	1,440
Feb.	605	65	196	11,400	Feb.	10	0.3	3	148
Mar.	16000	76	1835	114,000	Mar.	0.3	0	0.1	5
Apr.	1330	82	281	16,800	Apr.	0	0	0	0
May	590	163	277	17,200	May	0	0	0	0
June	890	125	382	22,900	June	0	0	0	0
July	7050	400	1703	106,000	July	1470	0	180	11,200
Aug.	580	128	270	16,700	Aug.	328	40	112	6,930
Sept.	415	112	189	11,300	Sept.	430	32	132	7,220
Oct.	15300	500	2736	170,000	Oct.	80	12	52	3,210
Nov.	1200	157	428	25,700	Nov.	12	0	3	148
Dec.	270	67	130	8,040	Dec.	30000	0	6370	398,000
Total	..	..	..	540,440	Total	..	..	..	428,301

Year 1966					Year 1967				
Jan.	700	62	180	11,100	Jan.	900	50	257	15,900
Feb.	860	37	171	9,590	Feb.	38	12	24	1,324
Mar.	900	4	94	5,850	Mar.	8550	12	974	60,400
Apr.	165	10	51	3,070	Apr.	415	140	258	15,500
May	45	8	22	1,340	May	240	100	142	8,770
June	75	8	25	1,500	June	9870	100	2090	126,000
July	12	5	8	504	July	1800	320	665	41,200
Aug.	4660	3	696	43,200	Aug.	545	195	363	22,500
Sept.	12700	505	2300	138,000	Sept.	195	68	130	7,780
Oct.	8920	315	1935	120,000	Oct.	5480	18	937	58,100
Nov.	52800	475	5600	336,000	Nov.	580	92	250	15,000
Dec.	505	92	248	15,400	Dec.	70	4	22	1,380
Total	..	..	..	685,554	Total	..	..	..	373,854

Year 1968					Year 1969				
Jan.	3300	1	803	49,800	Jan.	5990	47	1630	101,000
Feb.	660	175	368	21,400	Feb.	215	15	81	4,510
Mar.	500	62	228	14,100	Mar.	700	0	48	2,960
Apr.	81	12	44	2,630	Apr.	165	0	23	1,390
May	93	17	60	3,700	May	1750	2	282	17,500
June	140	47	81	4,870	June	230	107	152	9,120
July	15900	47	1256	77,900	July	445	73	163	10,100
Aug.	13000	190	2203	137,000	Aug.	295	73	122	7,580
Sept.	2350	190	829	49,700	Sept.	7680	73	1001	60,100
Oct.	190	54	103	6,390	Oct.	1750	135	442	27,400
Nov.	122	17	57	3,440	Nov.	17800	372	3510	211,000
Dec.	165	17	49	3,020	Dec.	2800	93	608	37,700
Total	..	..	..	373,950	Total	..	..	..	490,360


QUEENSLAND
SOUTH AUSTRALIA
VICTORIA
SYDNEY
PACIFIC OCEAN
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION
DUMARESQ RIVER VALLEY
MILES 10 5 0 10 20 MILES
SCALE
GREAT DIVIDING RANGE
BALD ROCK
WALLANGARRA
TENTERFIELD
MT. SAILOR JACK
MT. JONDOL
MT. COOLAMANGEERA
MT. BAJIMBA
MT. CAPOOMPETA
MT. MANBUNDI
BOLIVIA
DEEPWATER
STRATHBOGIE
MT. BOWMAN
BONSHAW
TEXAS
SEVERN RIVER
Pike Brook
Pike Creek
Tenterfield Creek
THE MOLE RIVER
BLUFF RIVER
DEEPWATER RIVER
Ready Creek
Oakey Creek
Brush Creek
Macintyre
Campbells Creek
Camp Creek
Myall Ck
Log Ck
Black Creek
BEARDY RIVER
DUMARESQ RIVER
MACINTYRE RIVER
148
FIGURE 1

006459

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

LAND SLOPES

MILES 10 5 0 10 20 MILES

SCALE

LEGEND

Mostly Flat
Slopes less than 3 degrees

Undulating to Hilly
Slopes greater than 3 degrees but less than 8 degrees

Hilly to Steep
Slopes greater than 8 degrees but less than 15 degrees

Rugged or Mountainous
Slopes greater than 15 degrees

State boundary shown thus ——+——+

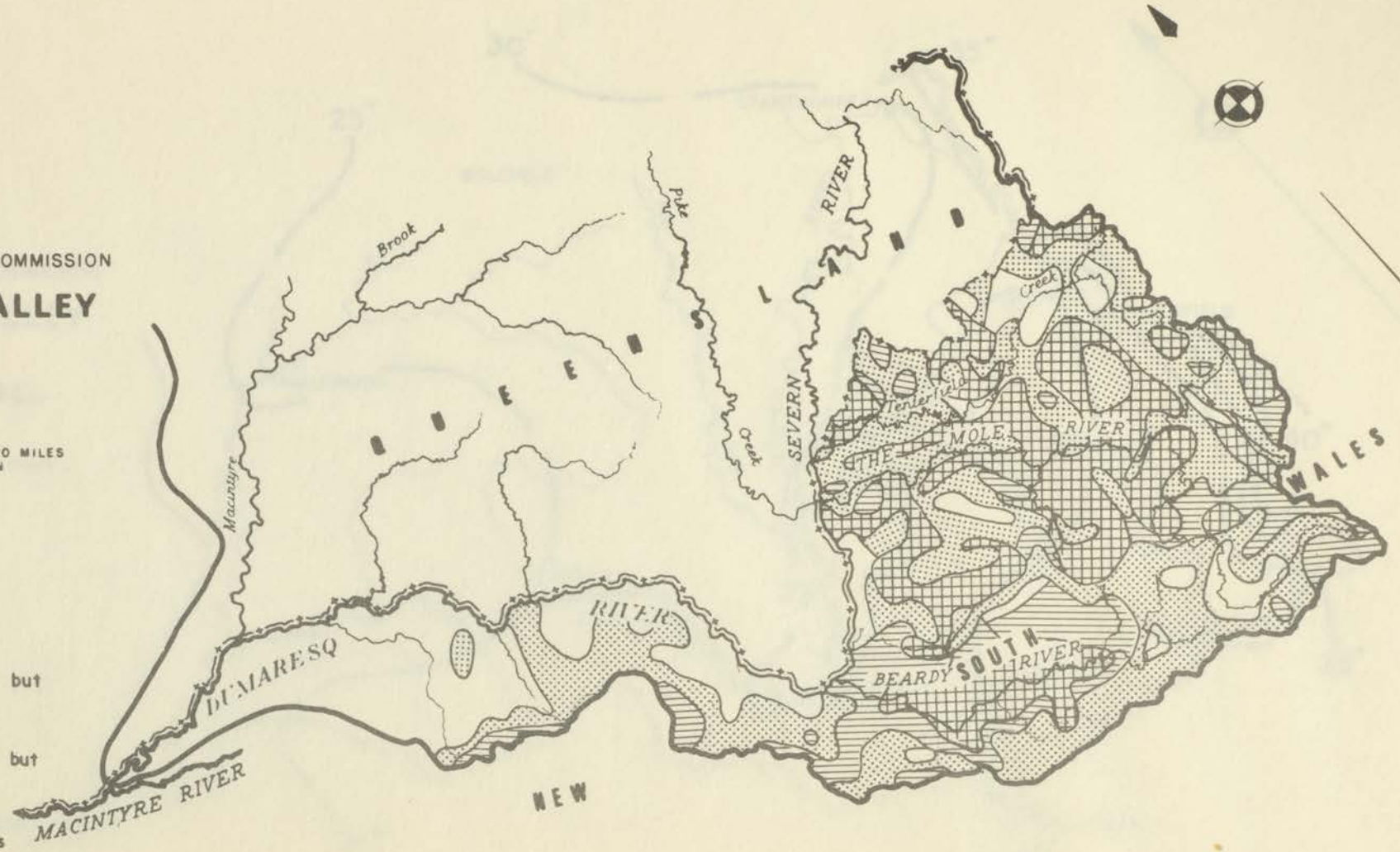


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FIGURE 2

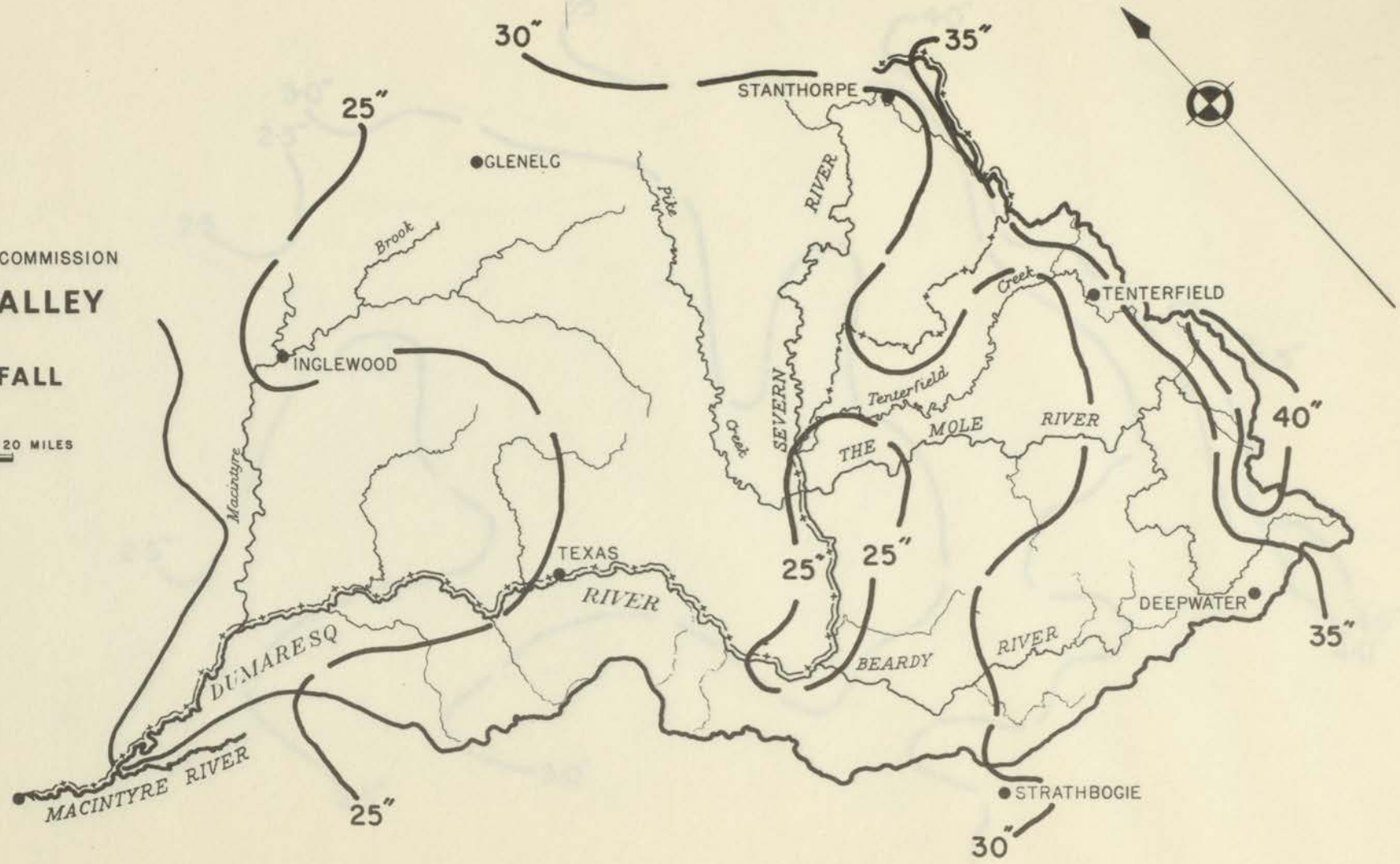
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

ANNUAL MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE



150°30' 151°30' 28°00' 152°00' 28°30' 29°00' 29°30' 28°00' 28°30' 150°30' 29°00' 151°00' 29°30' 151°30' 152°00'

FIGURE 3

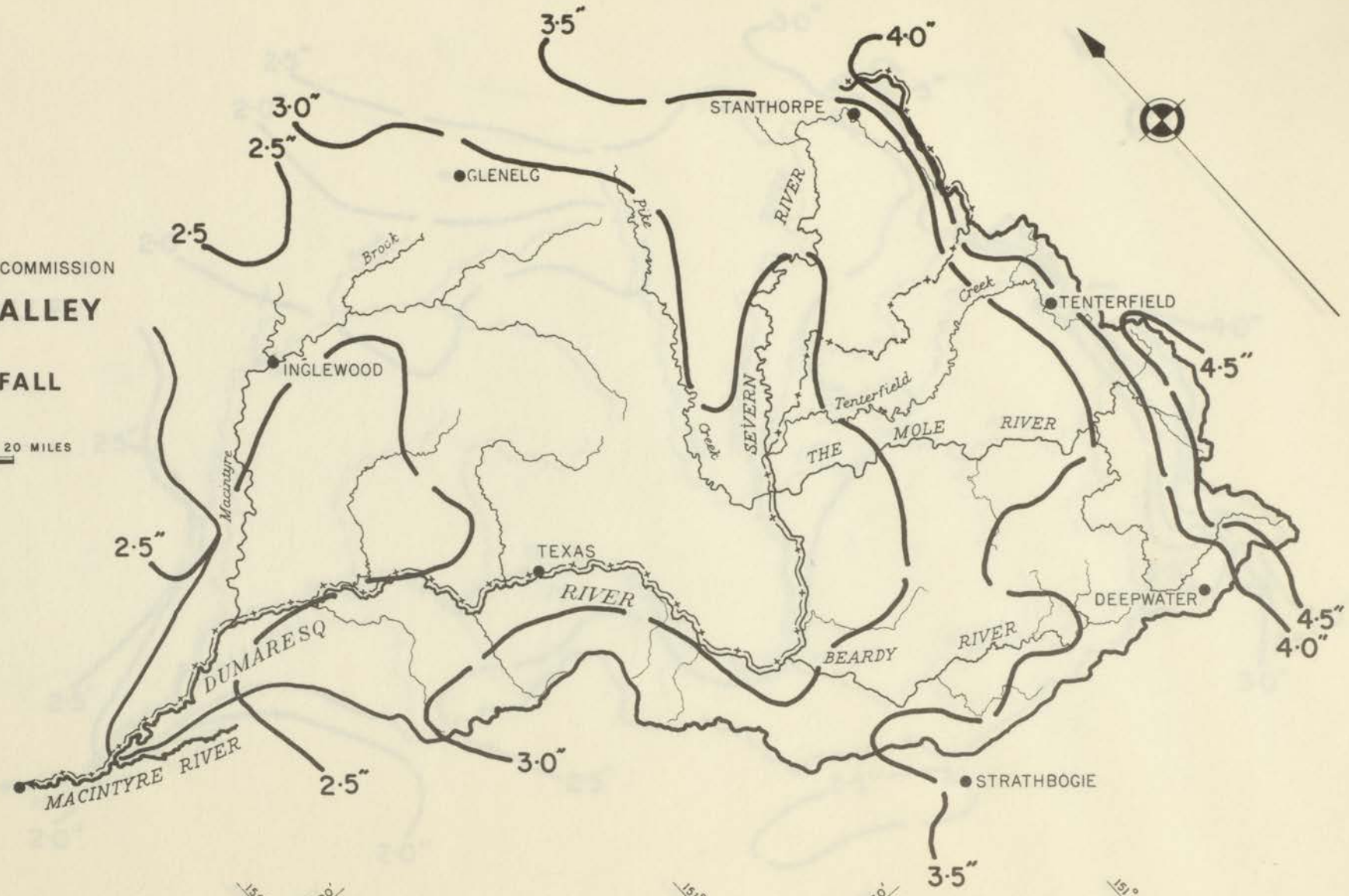
NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

JANUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE



151°30' 28°00' 152°00' 28°30' 29°00'
150°30' 29°30'
28°00' 152°00'
28°30' 150°30' 29°00' 151°00' 29°30' 151°30'

FIGURE 4

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

FEBRUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES
SCALE

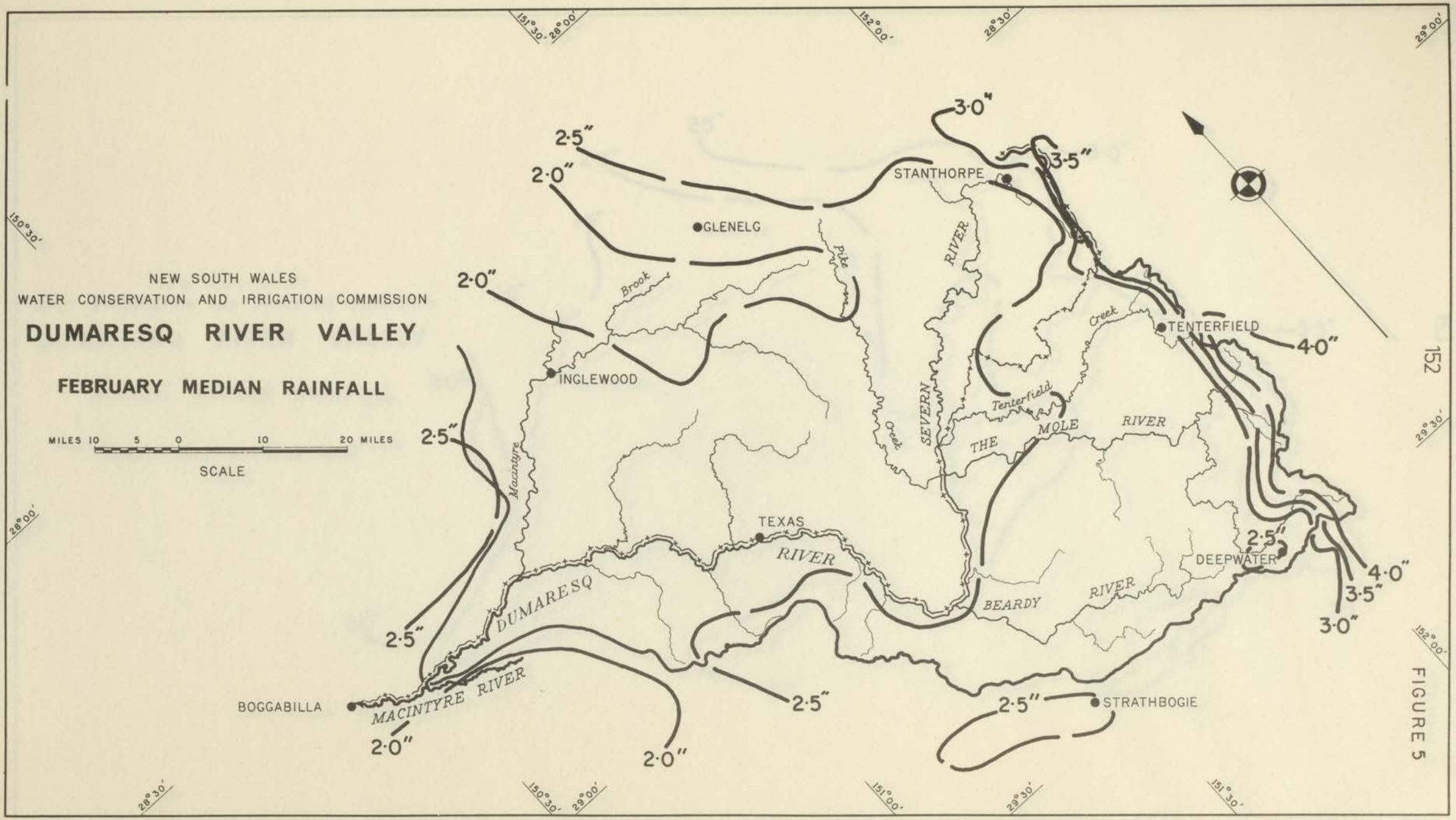


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FIGURE 5

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

MARCH MEDIAN RAINFALL

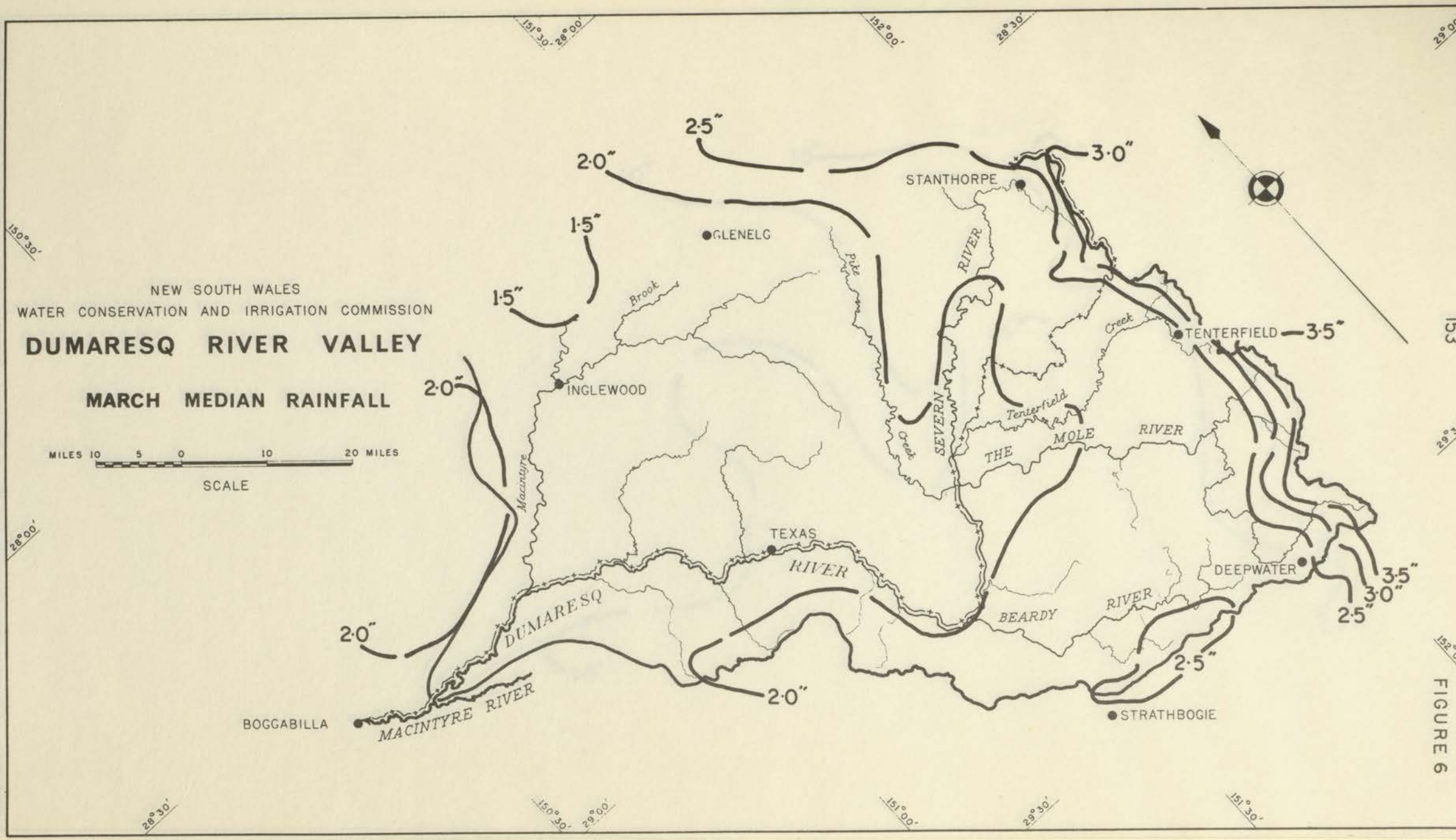

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FIGURE 6

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

APRIL MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

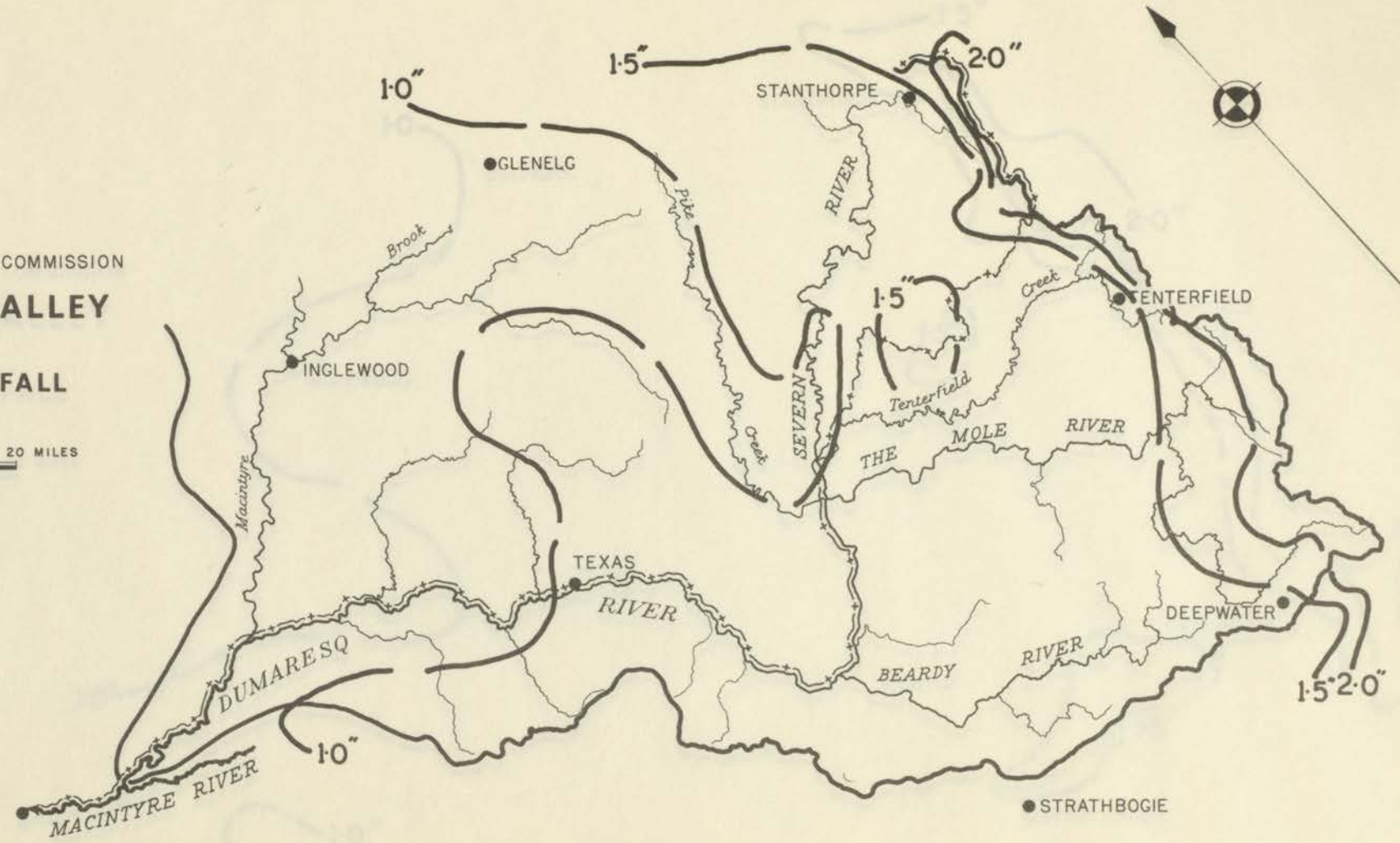

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FIGURE 7

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

MAY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES
SCALE

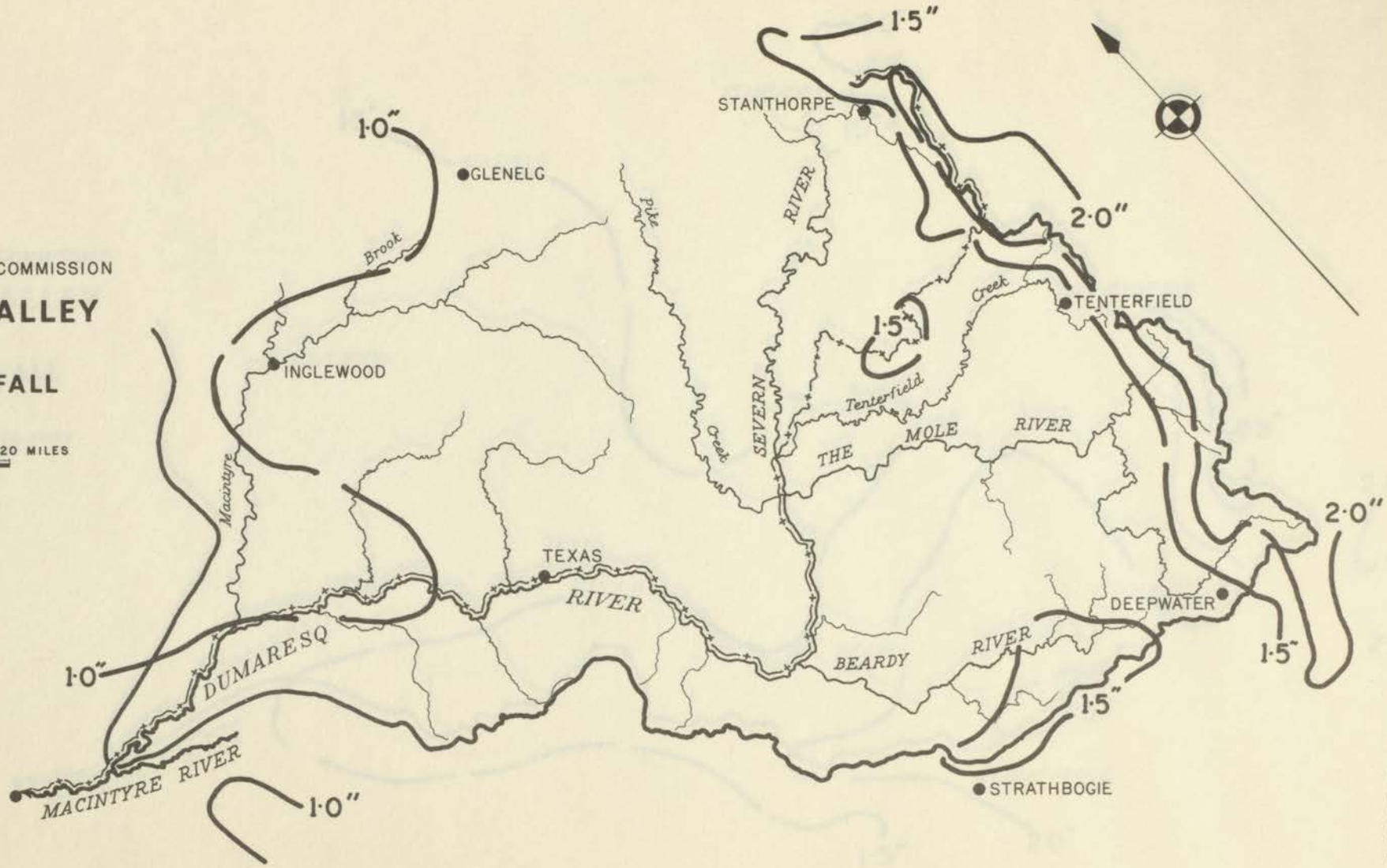

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FIGURE 8

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

JUNE MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

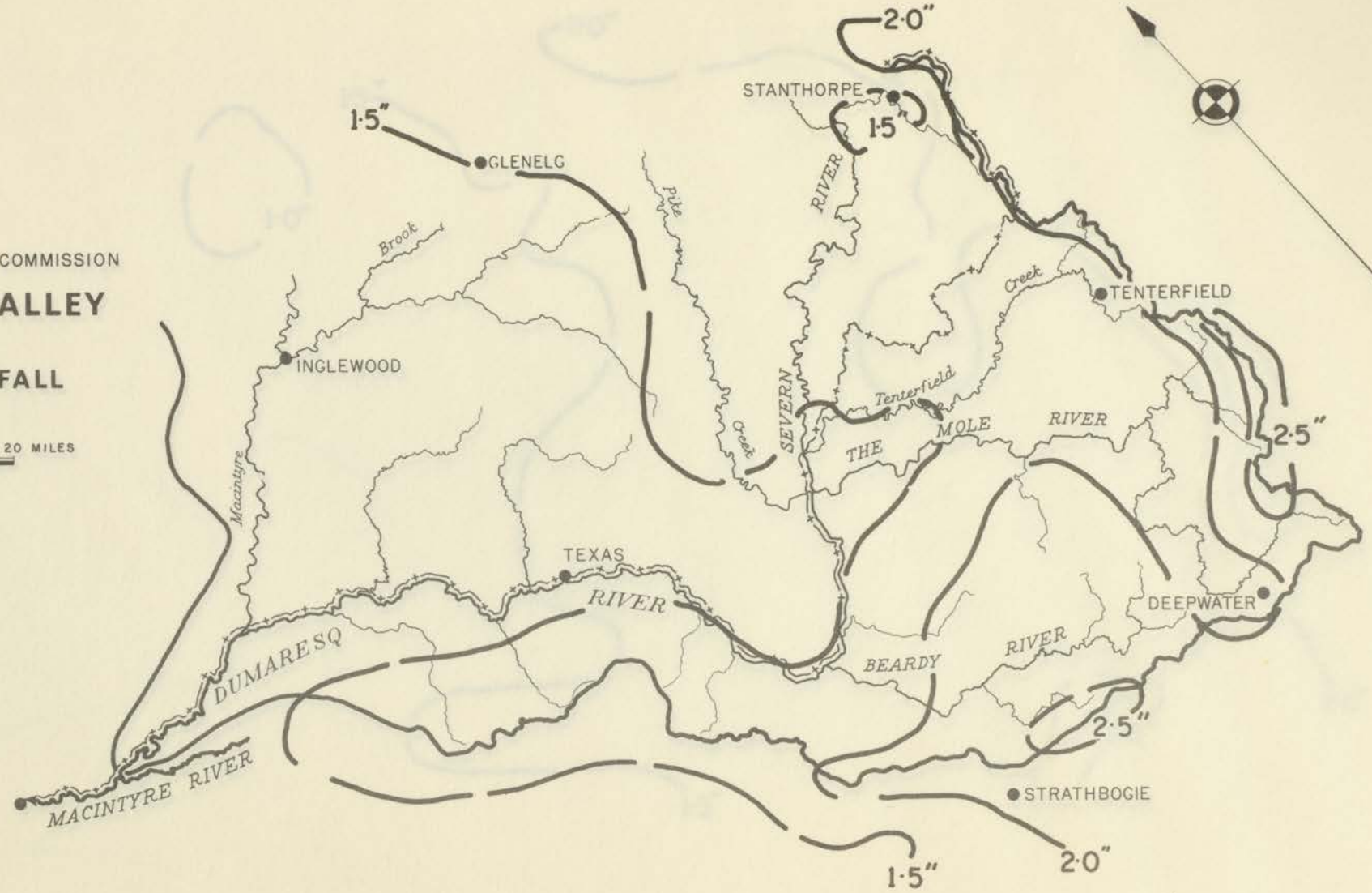

FIGURE 9

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

JULY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES
SCALE

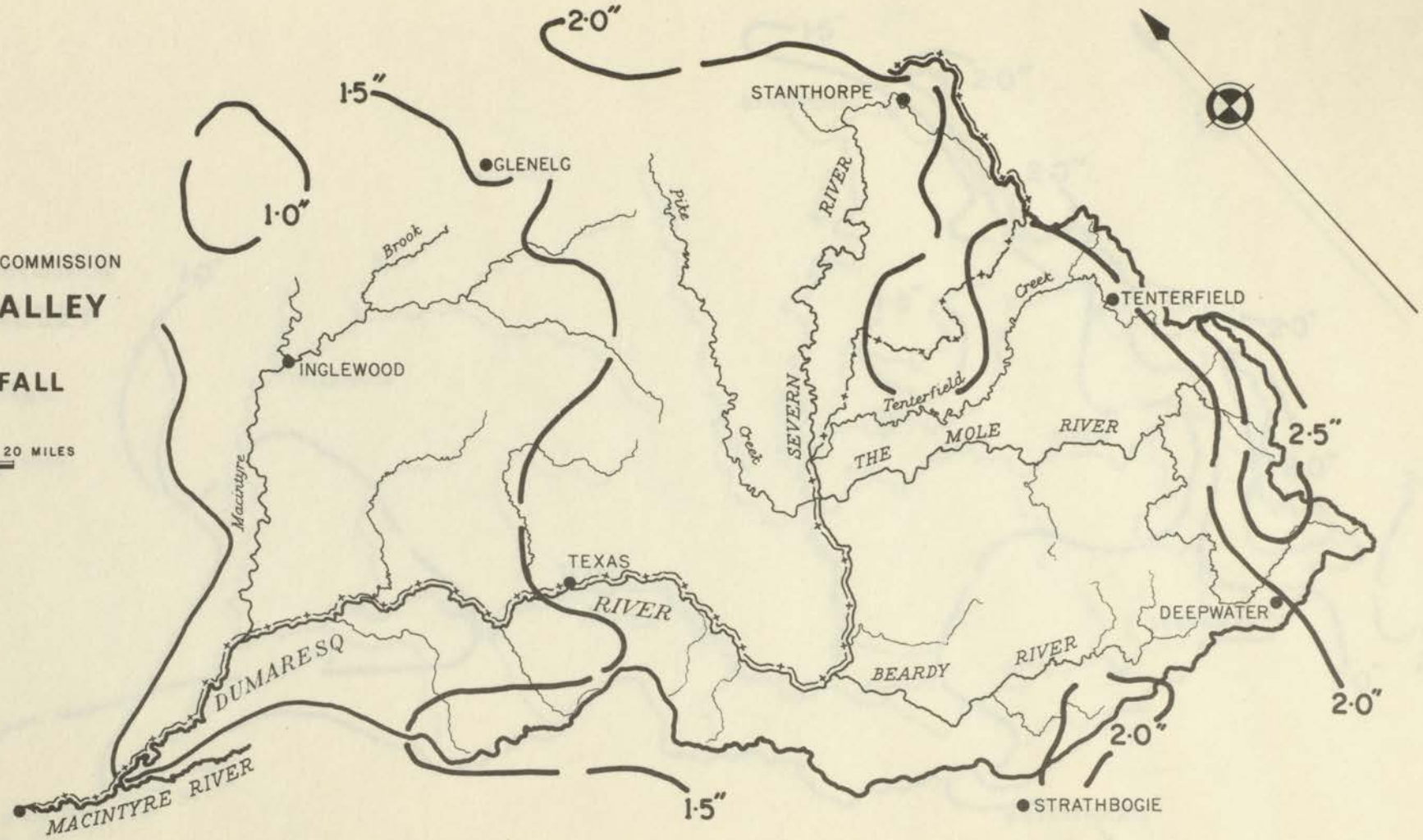

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FIGURE 10

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

AUGUST MEDIAN RAINFALL

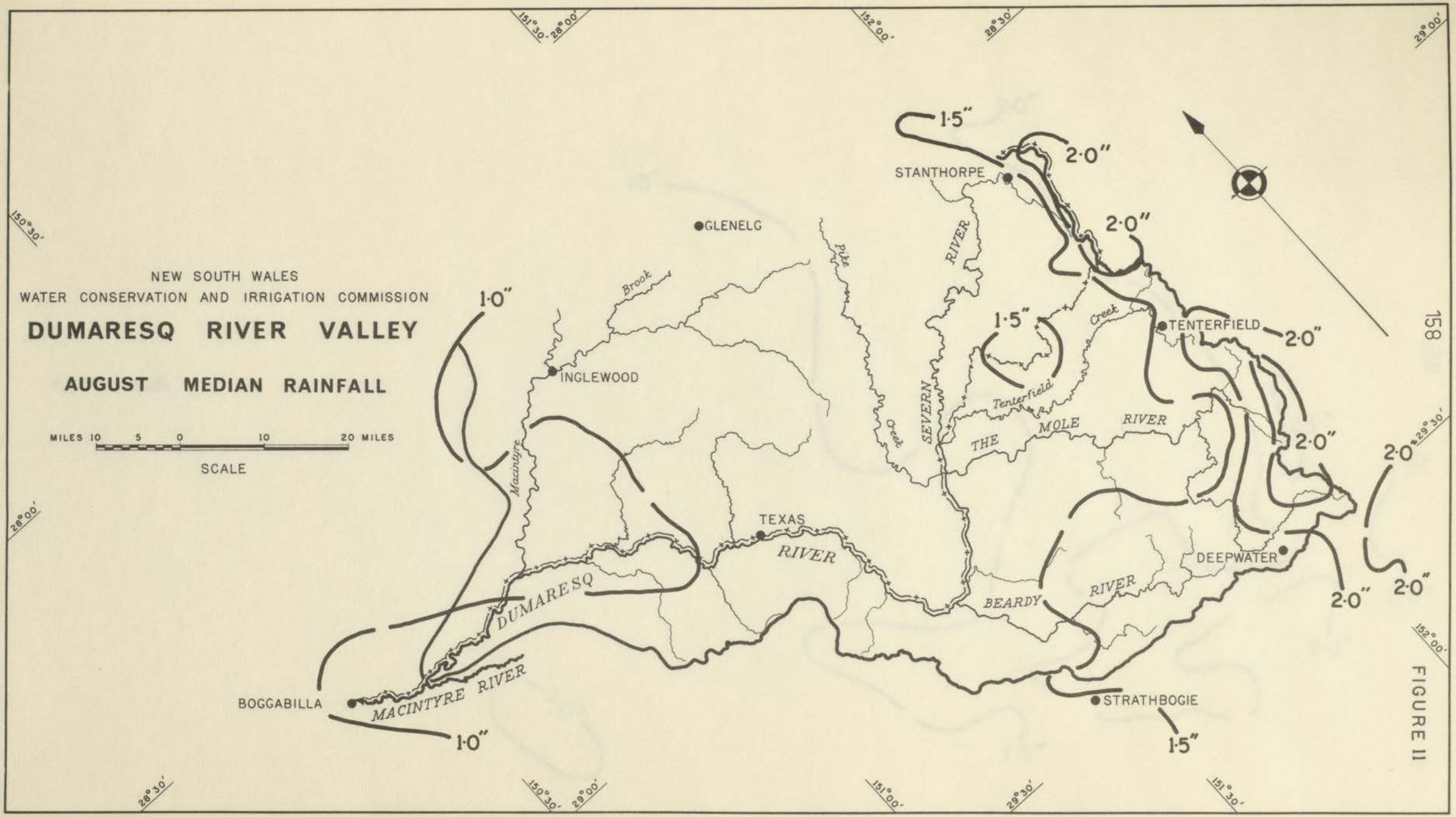

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FIGURE 11

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

SEPTEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

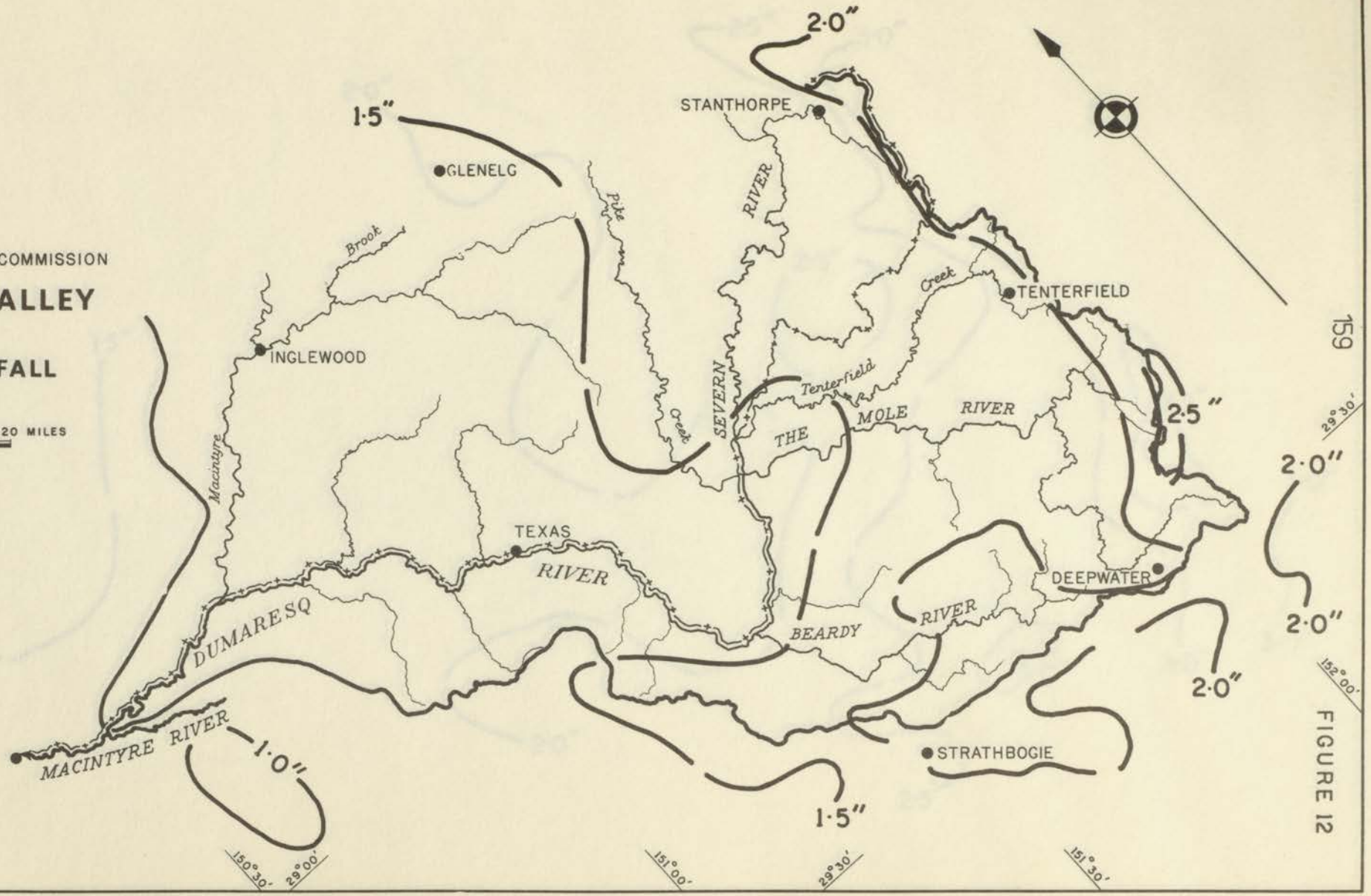

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FIGURE 12

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

OCTOBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

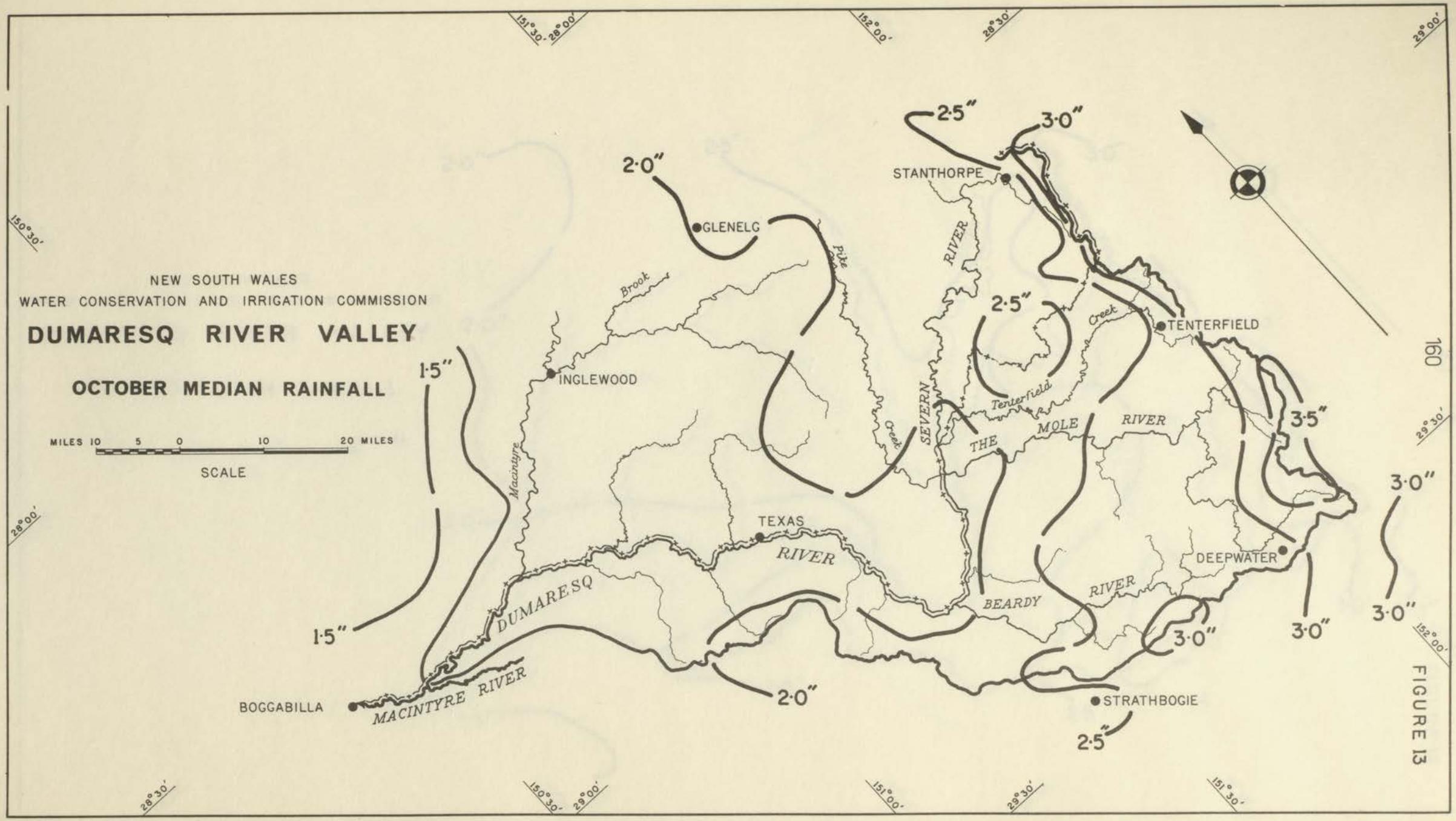

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FIGURE 13

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

NOVEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES
SCALE

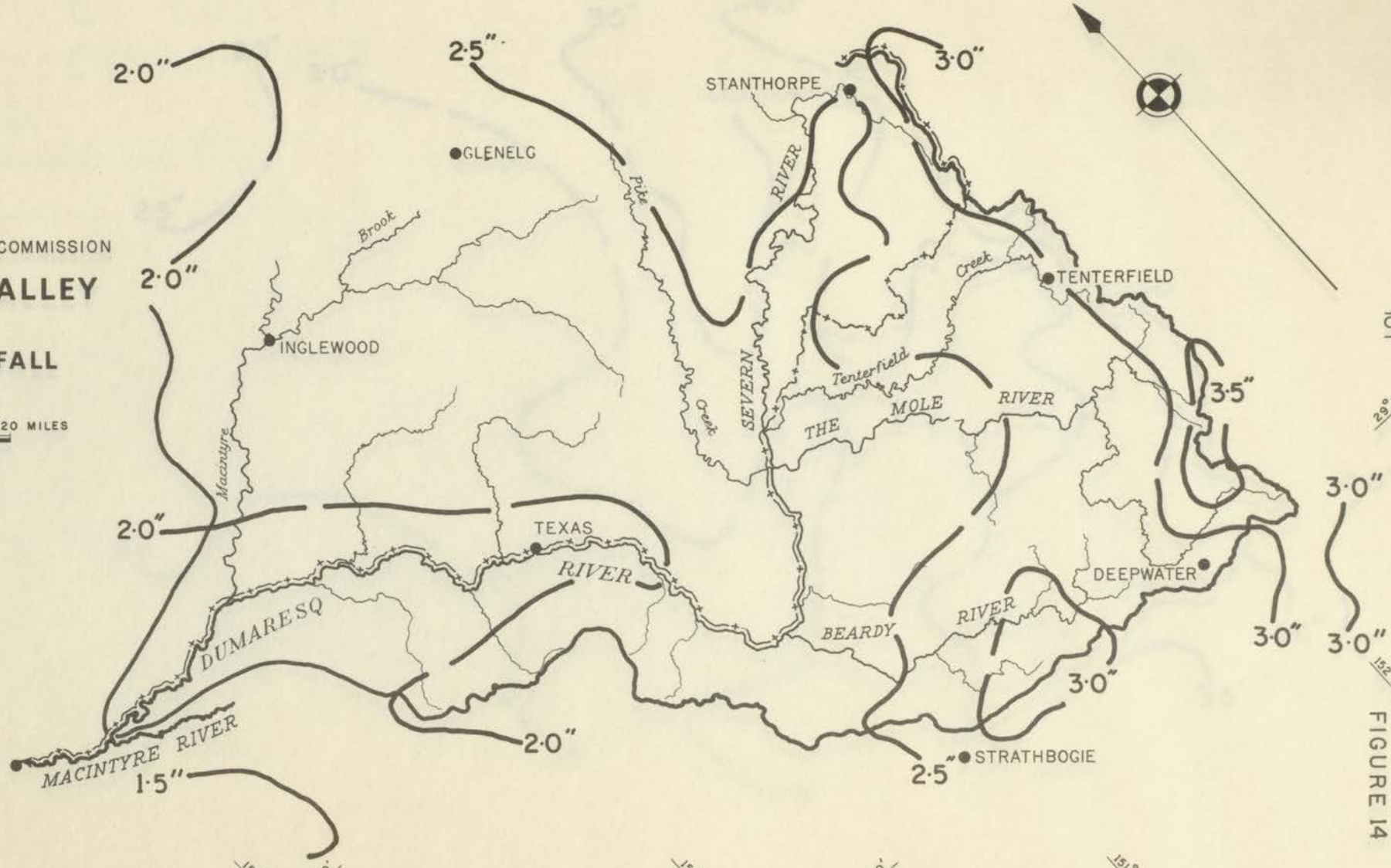

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FIGURE 14

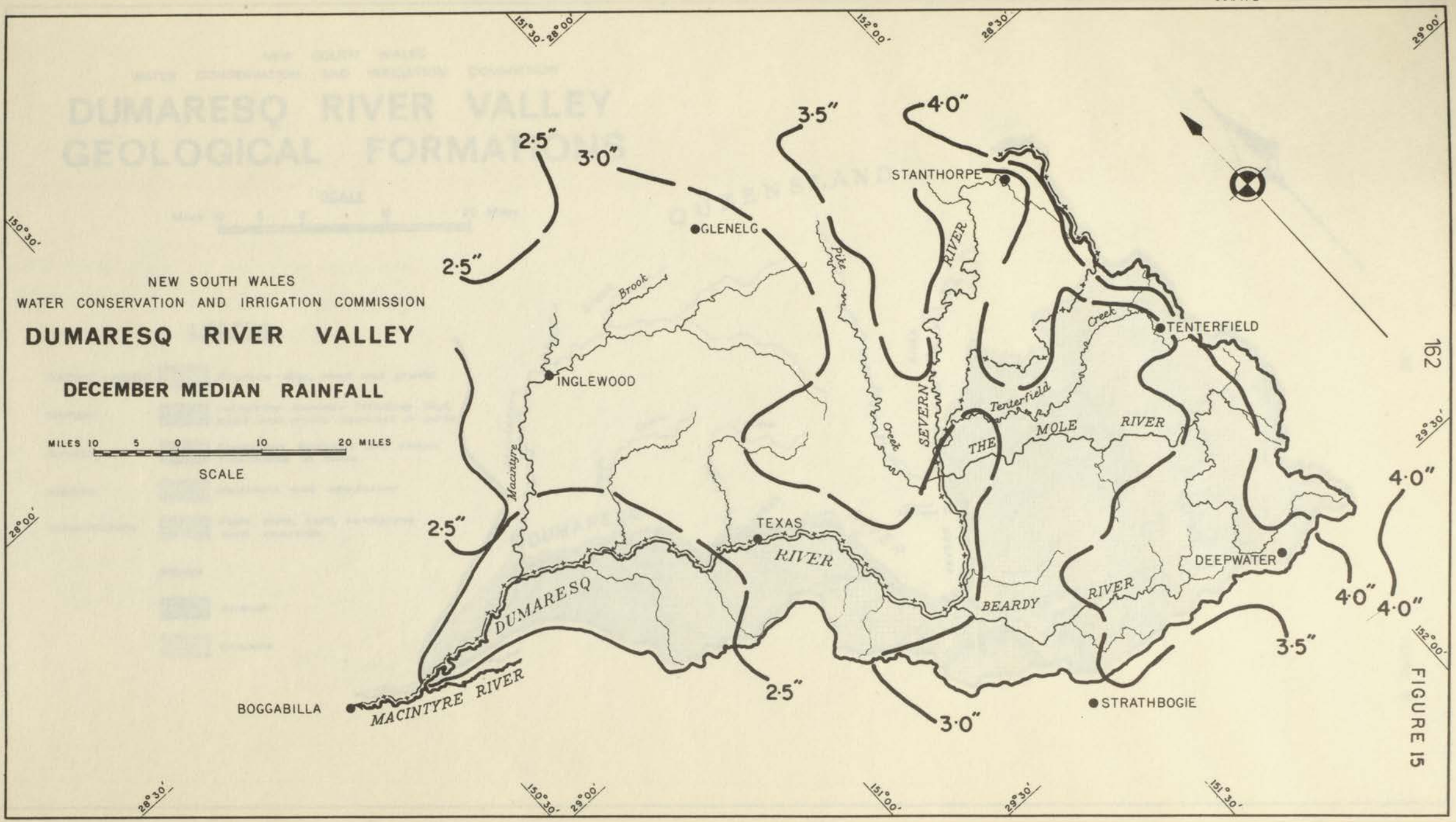

FIGURE 15

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY
GEOLOGICAL FORMATIONS

SCALE
Miles 10 5 0 10 20 Miles

LEGEND

TERTIARY – RECENT		Alluvium - clay, sand and gravel
TERTIARY		lacustrine deposits including clay, sand and gravel lateritised in parts
JURASSIC		Sandstone, mudstone and shales lateritised in parts
PERMIAN		Mudstone and sandstone
CARBONIFEROUS		Chert, slate, tuff, sandstone and quartzite
IGNEOUS		
		Basalt
		Granite

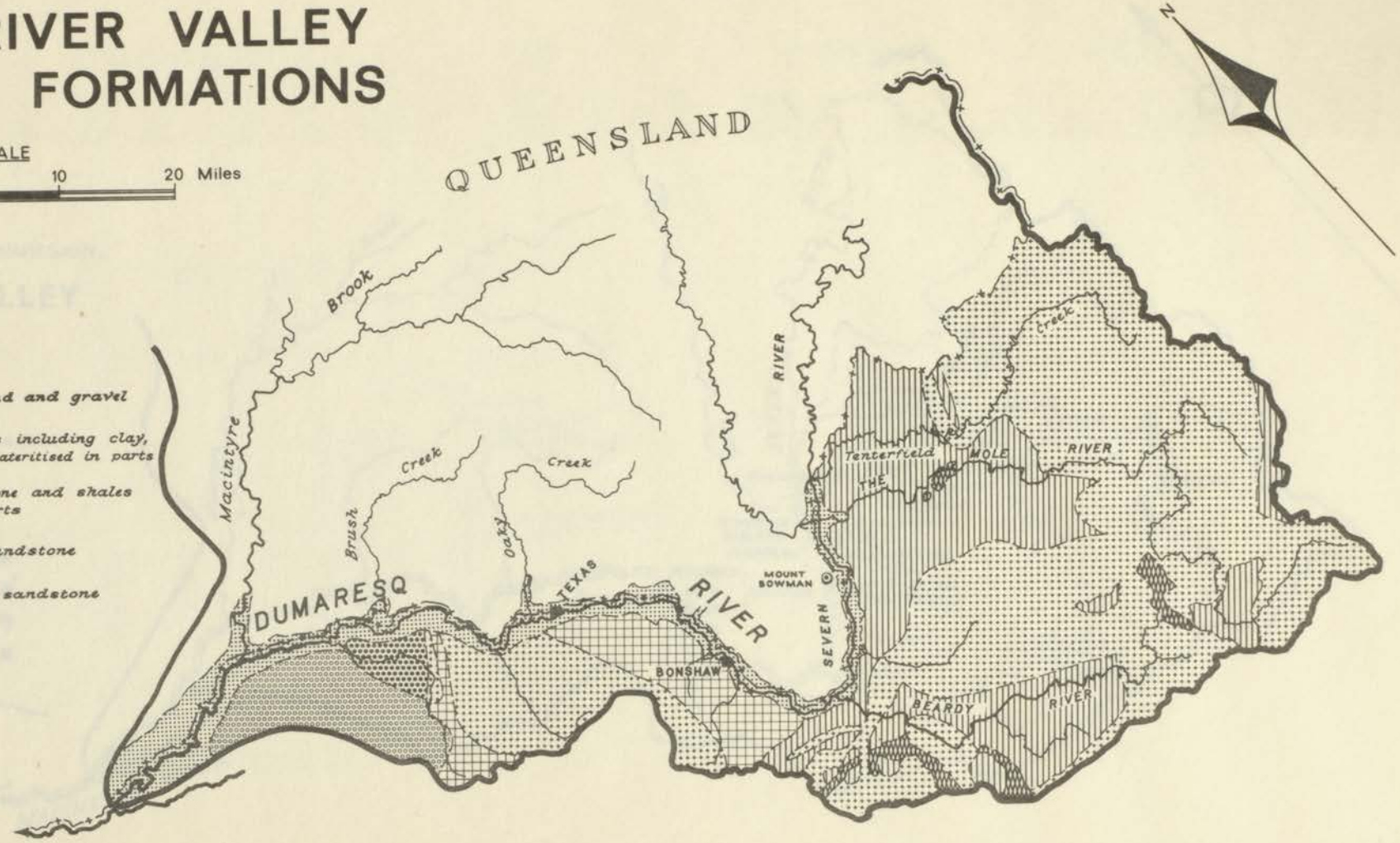

FIGURE 16

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

GAUGING STATIONS

31st. DECEMBER 1969

MILES 10 5 0 10 20 MILES

SCALE

LEGEND

Staff Gauge

Automatic Recorder (Pressure Type)

" " (Float Type)

Discontinued Station

New South Wales & Queensland State Boundary

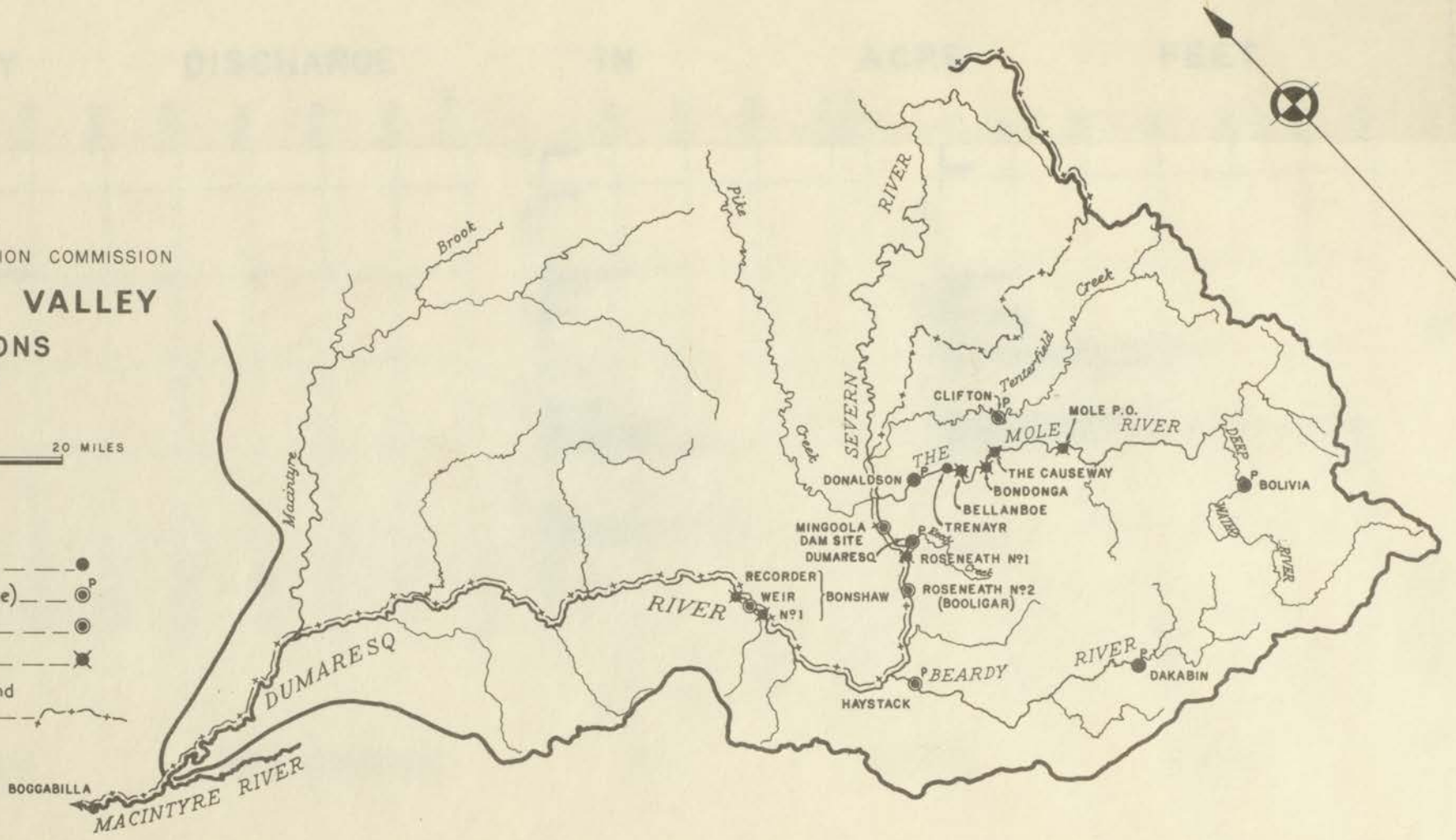

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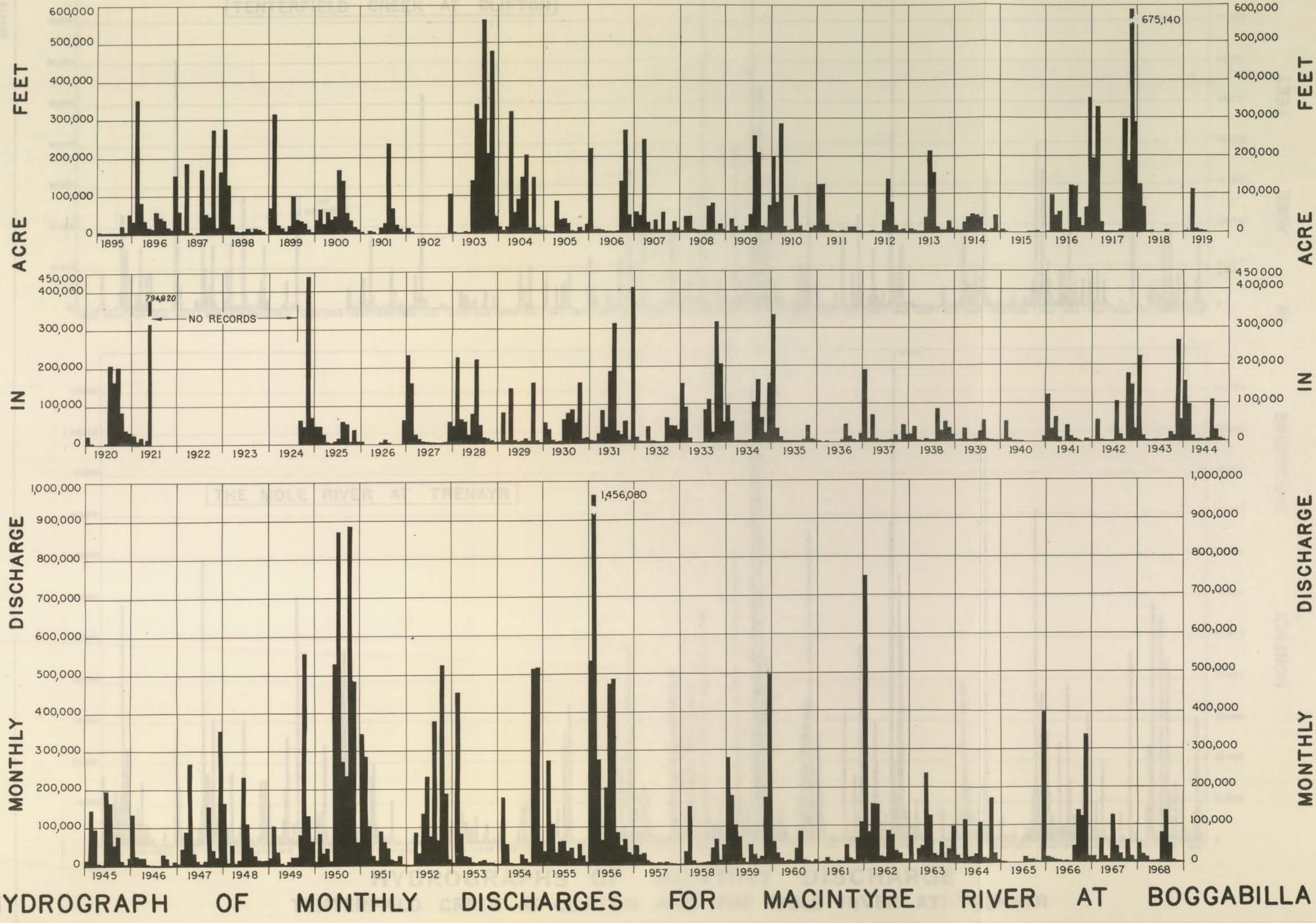
FIGURE 17

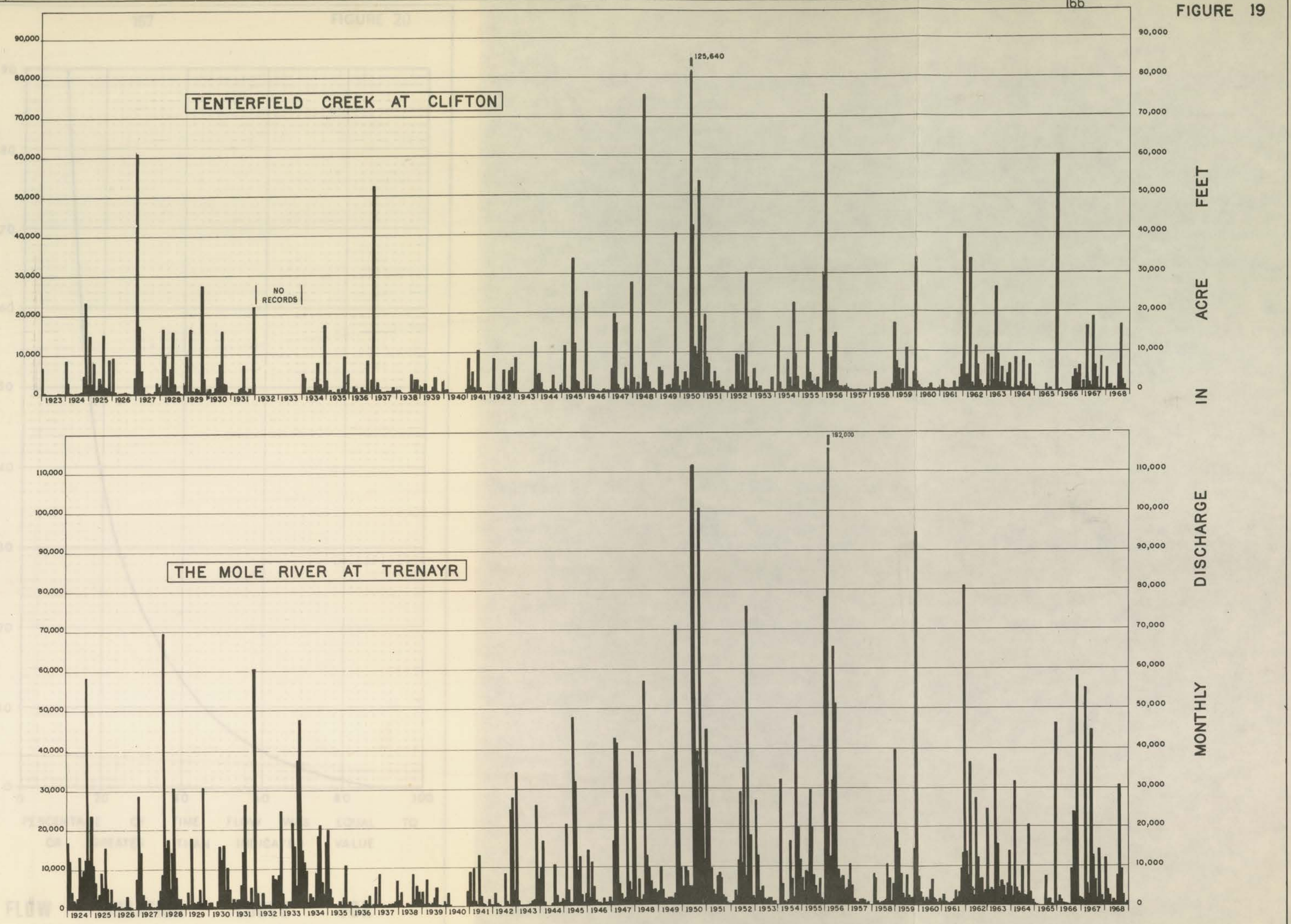
FIGURE 18



HYDROGRAPH OF MONTHLY DISCHARGES FOR MACINTYRE RIVER AT BOGGABILLA

FIGURE 19

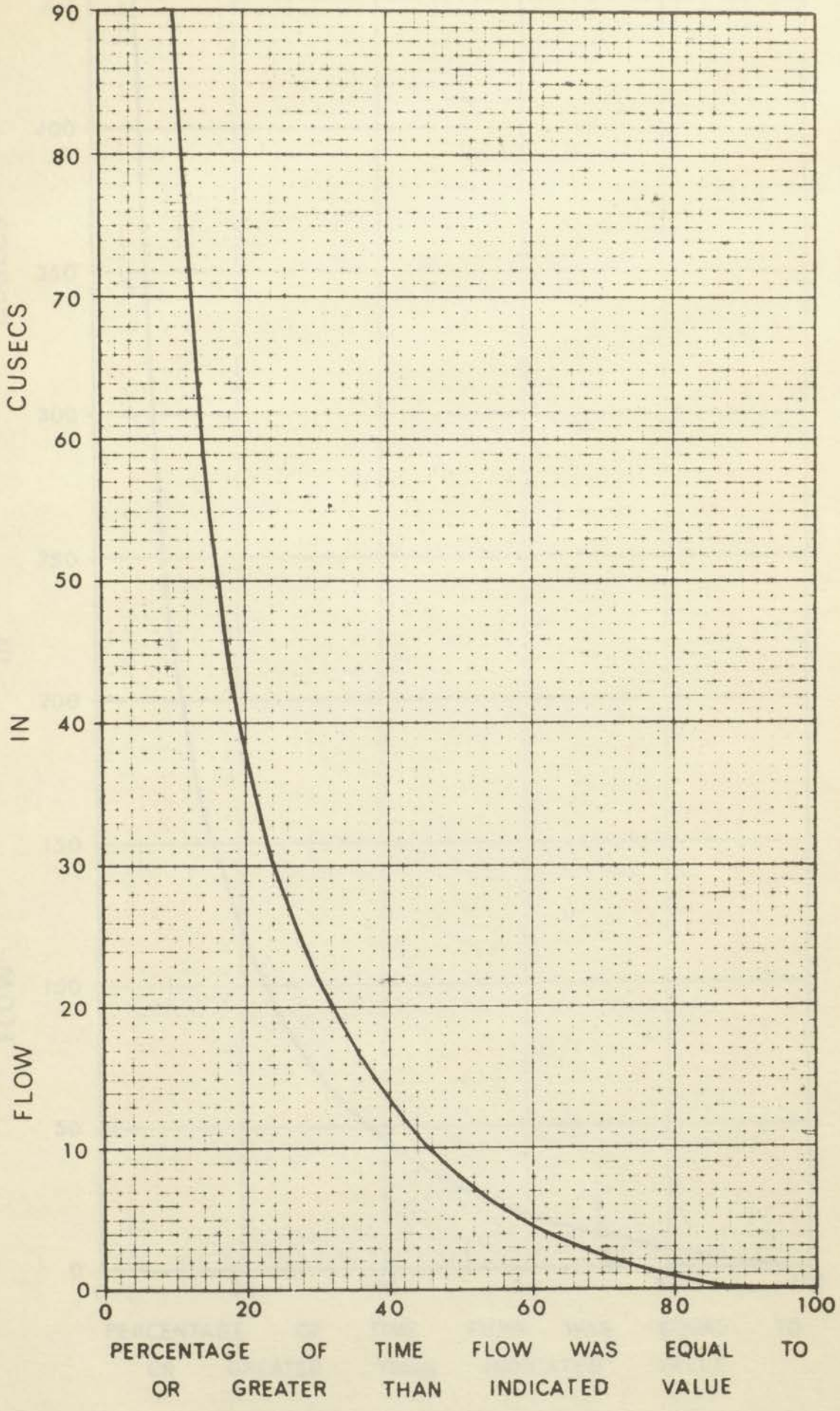
006476



HYDROGRAPHS OF MONTHLY DISCHARGE

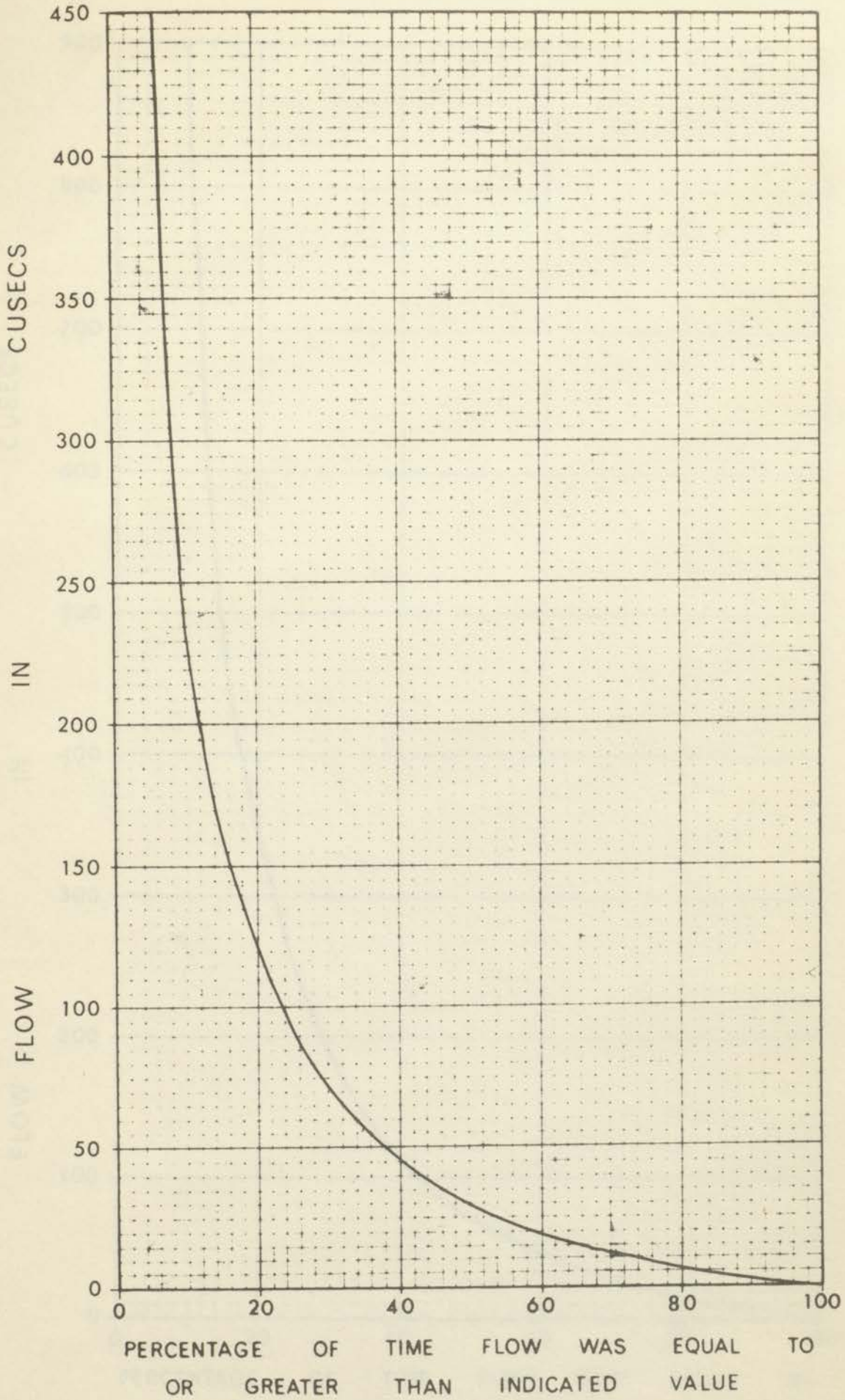
TENTERFIELD CREEK AT CLIFTON AND THE MOLE RIVER AT TRENAYR

FIGURE 20



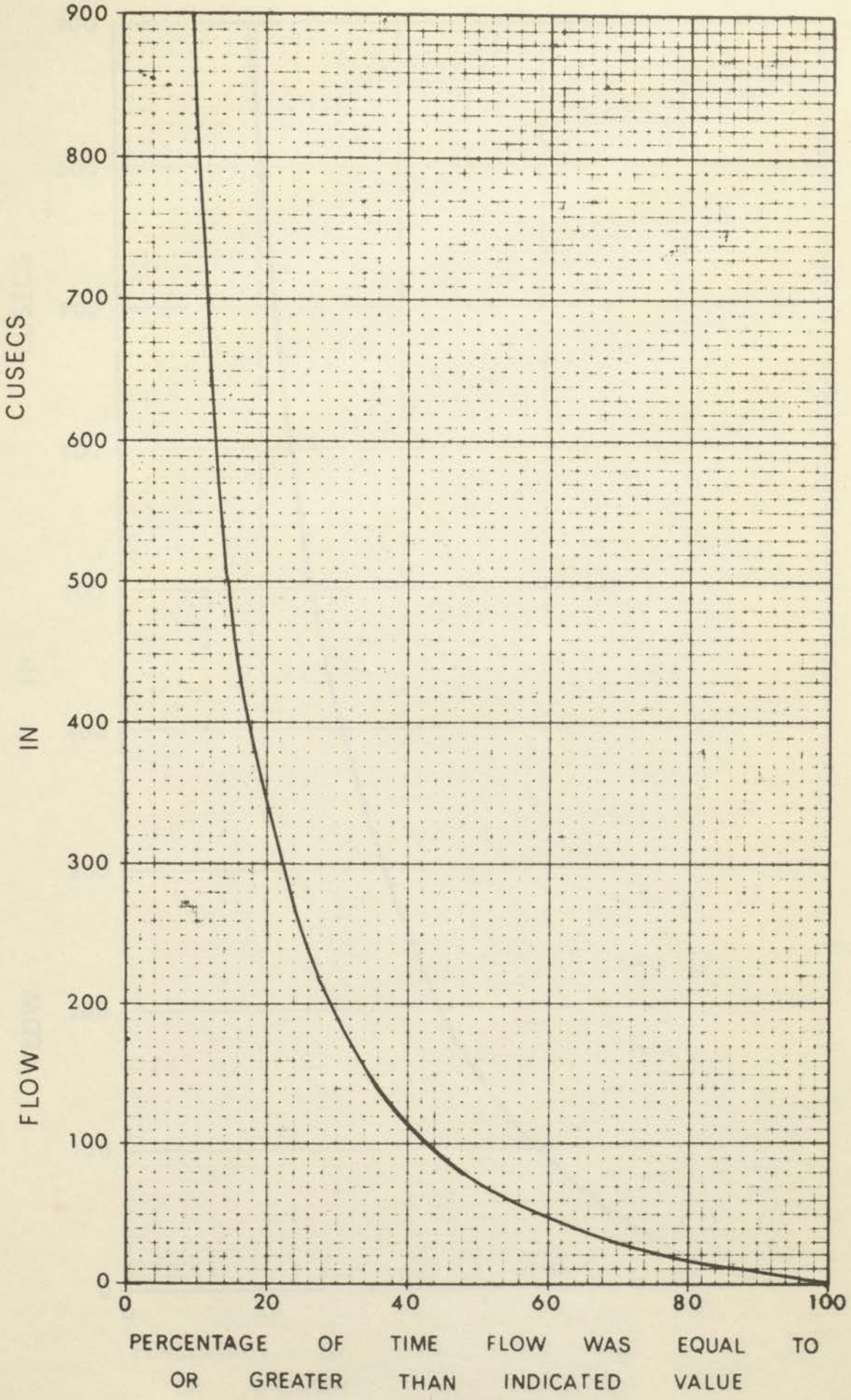
FLOW DURATION CURVE FOR TENTERFIELD CREEK AT CLIFTON

FIGURE 21



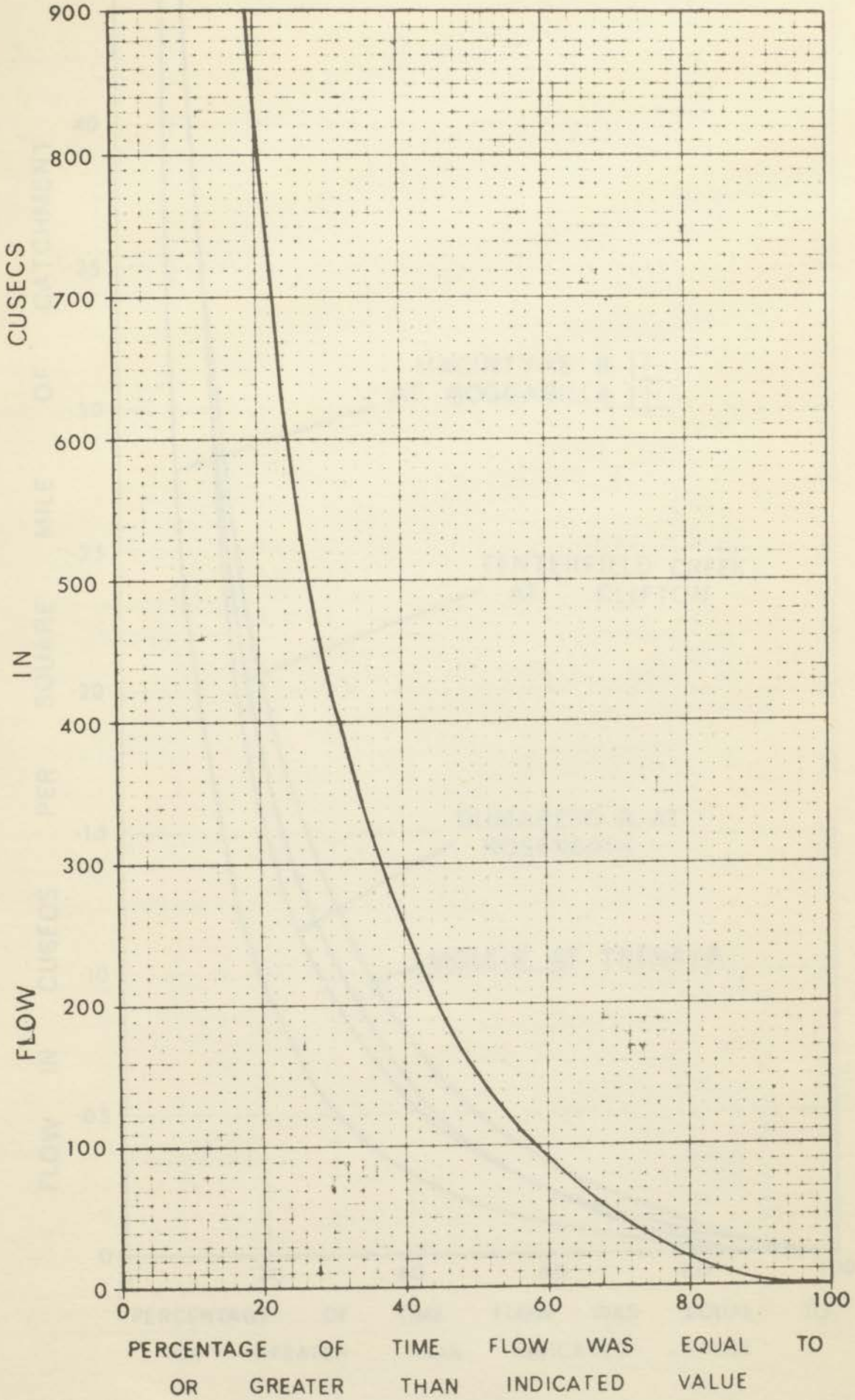
FLOW DURATION CURVE FOR MOLE RIVER AT TRENAYR

FIGURE 22



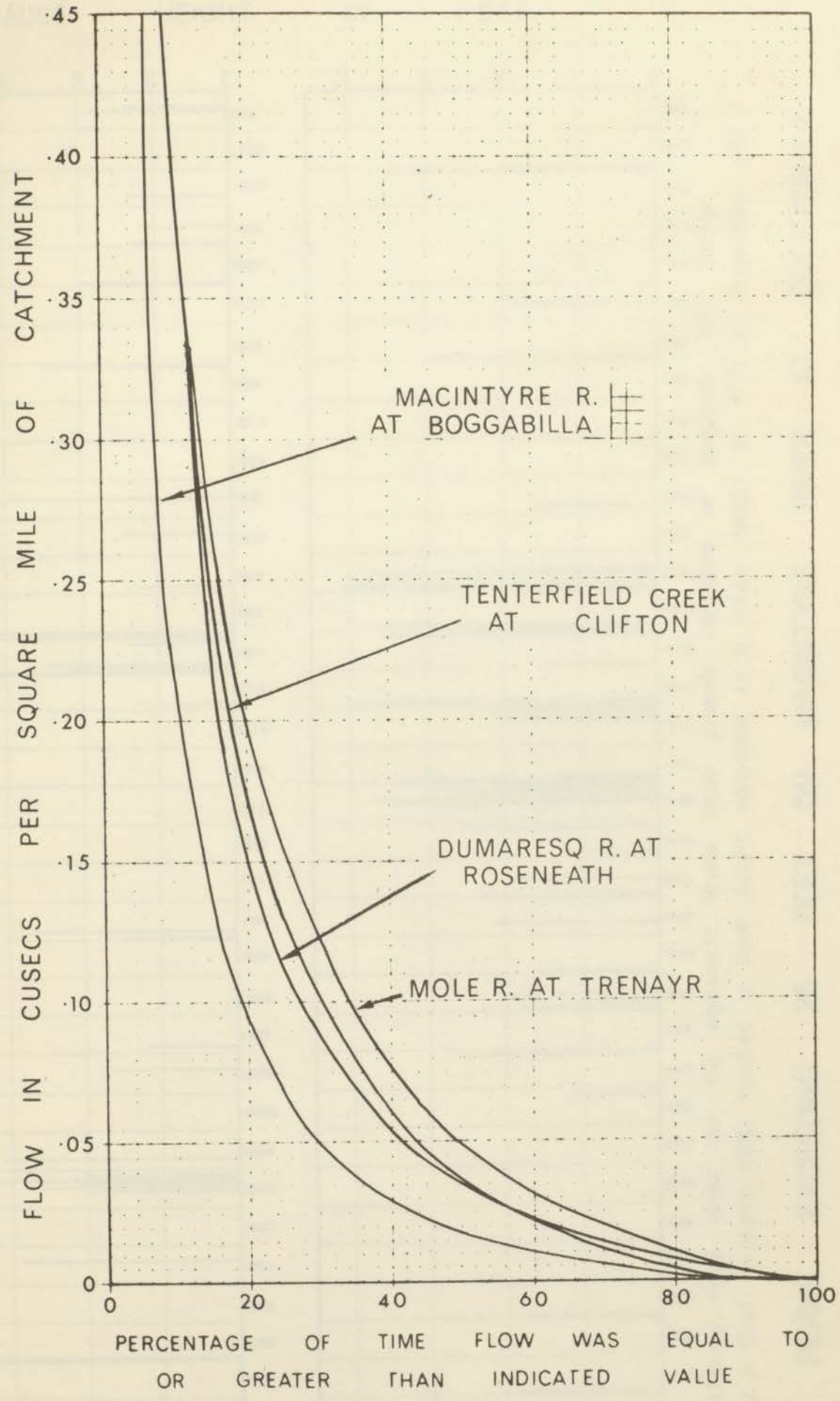
FLOW DURATION CURVE FOR DUMARESQ RIVER AT ROSENEATH

FIGURE 23



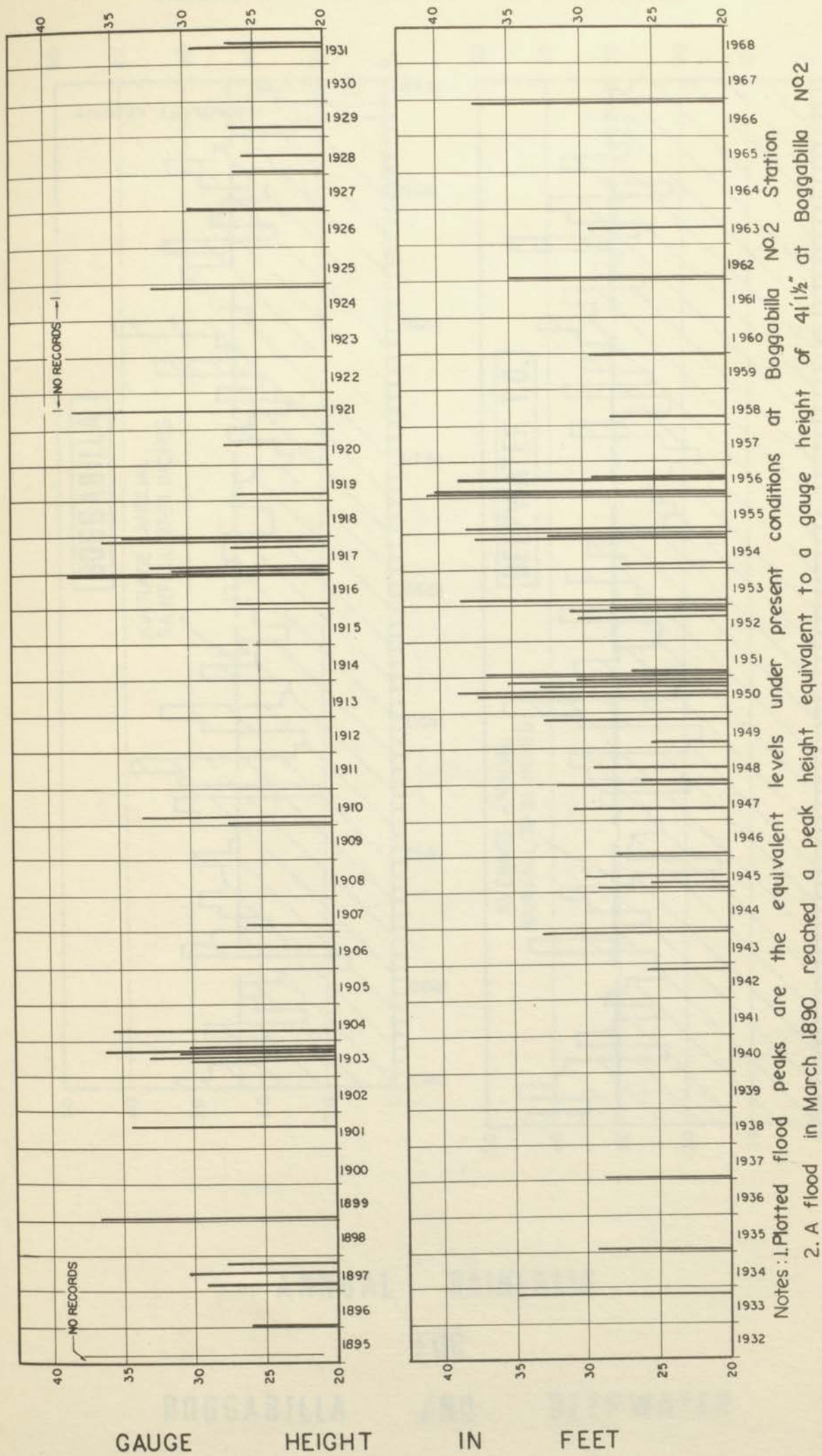
FLOW DURATION CURVE FOR MACINTYRE RIVER AT BOGGABILLA

FIGURE 24



FLOW DURATION CURVES FOR SELECTED DUMARESQ VALLEY STREAMS

FIGURE 25



FLOOD PEAKS EXCEEDING 25 FEET ON MACINTYRE RIVER AT BOGGABILLA

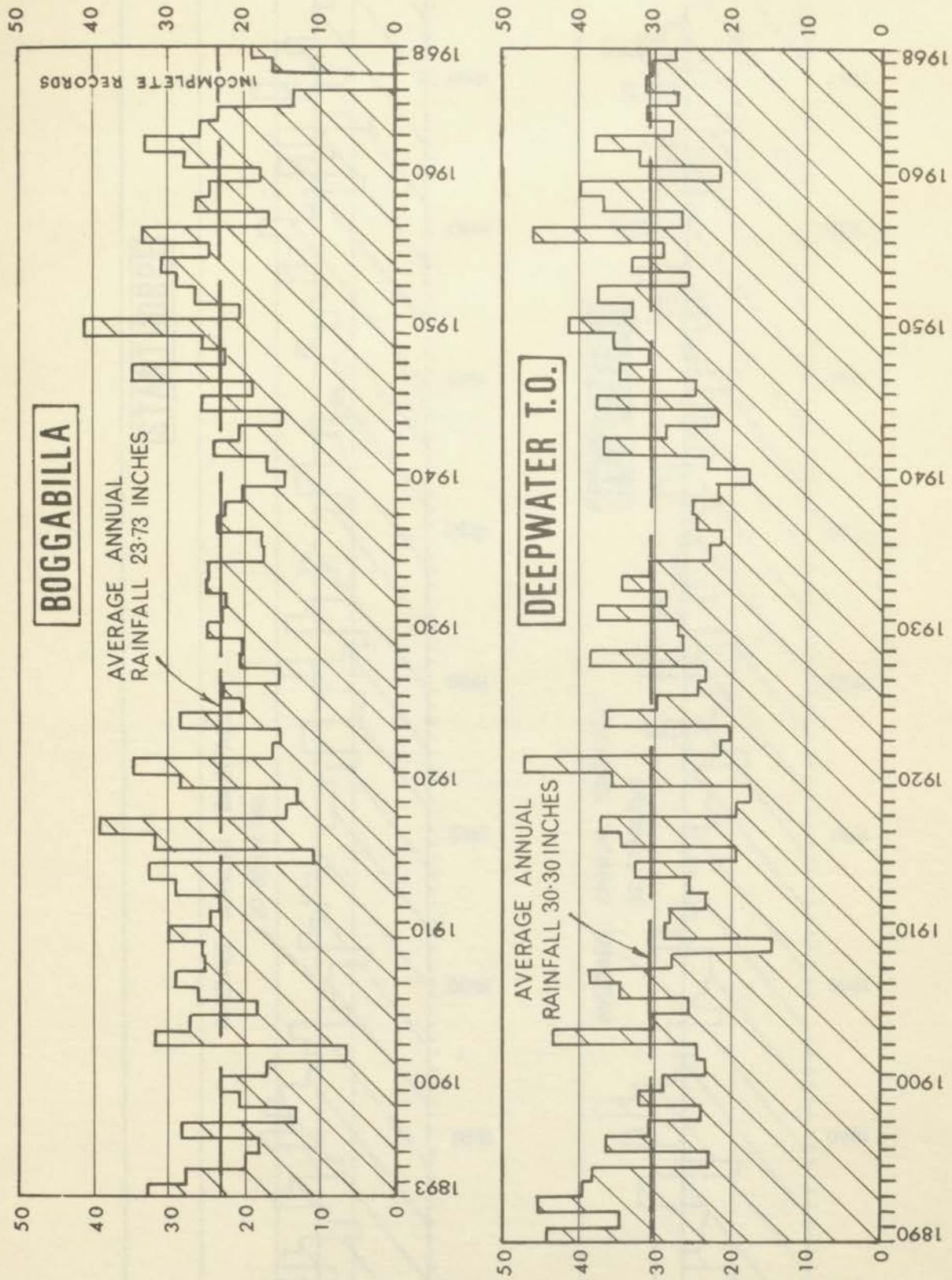
Notes: 1. Plotted flood peaks are the equivalent levels under present conditions at Boggabilla No. 2 Station

2. A flood in March 1890 reached a peak height equivalent to a gauge height of 41'1½" at Boggabilla No 2

FIGURE 26

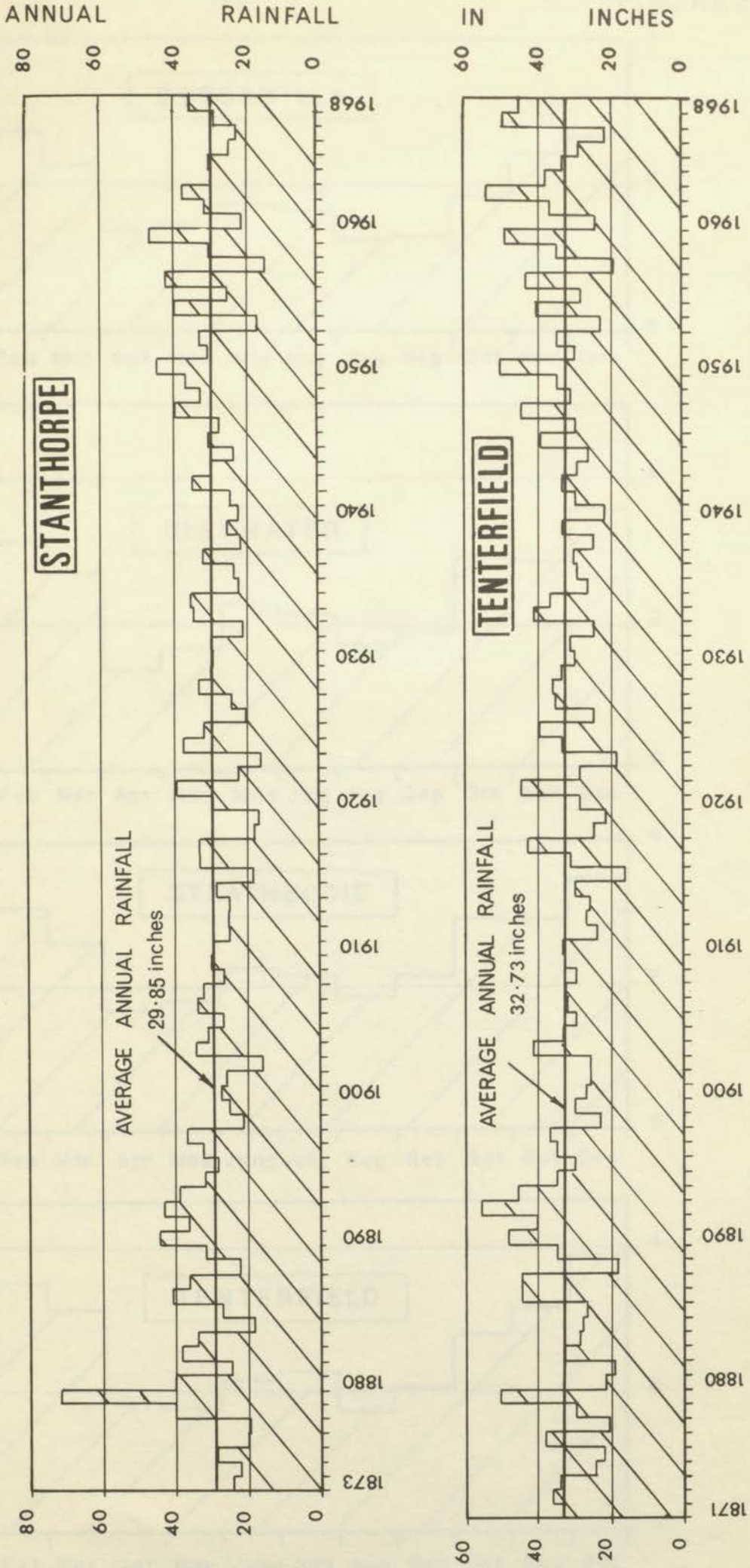
006483

ANNUAL RAINFALL IN INCHES



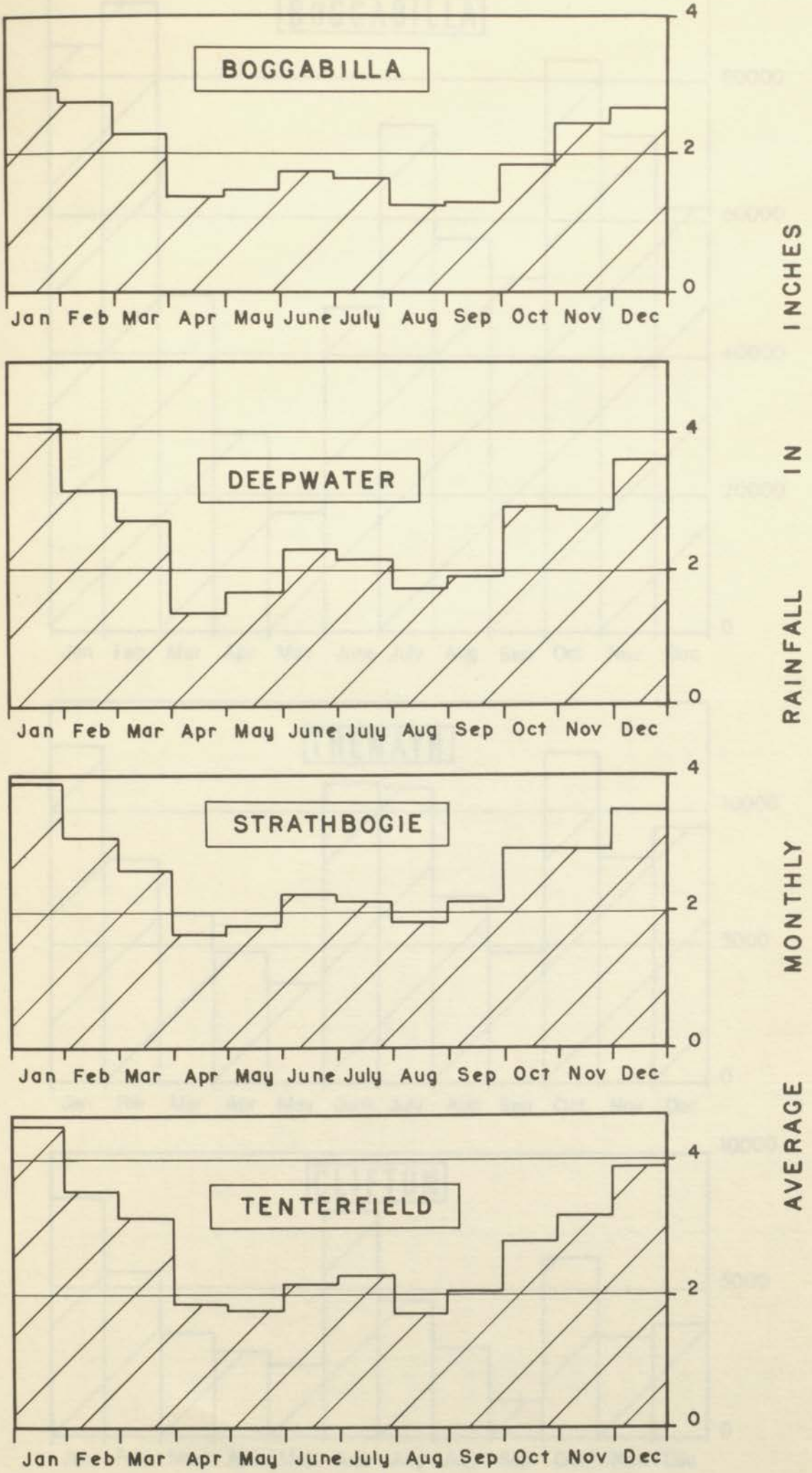
ANNUAL RAINFALLS FOR BOGGABILLA AND DEEPWATER

FIGURE 27



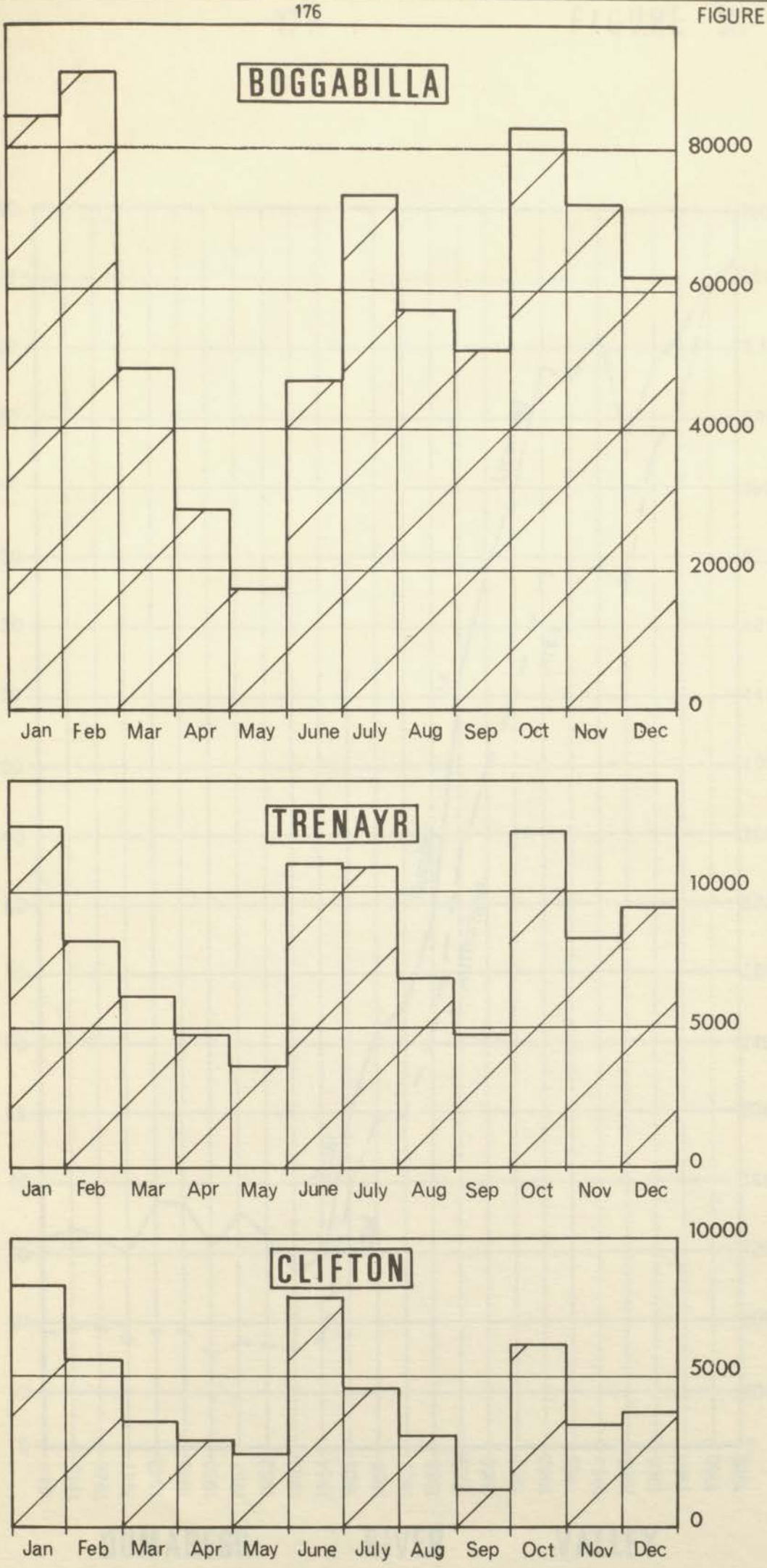
ANNUAL RAINFALLS FOR STANTHORPE AND TENTERFIELD

FIGURE 28



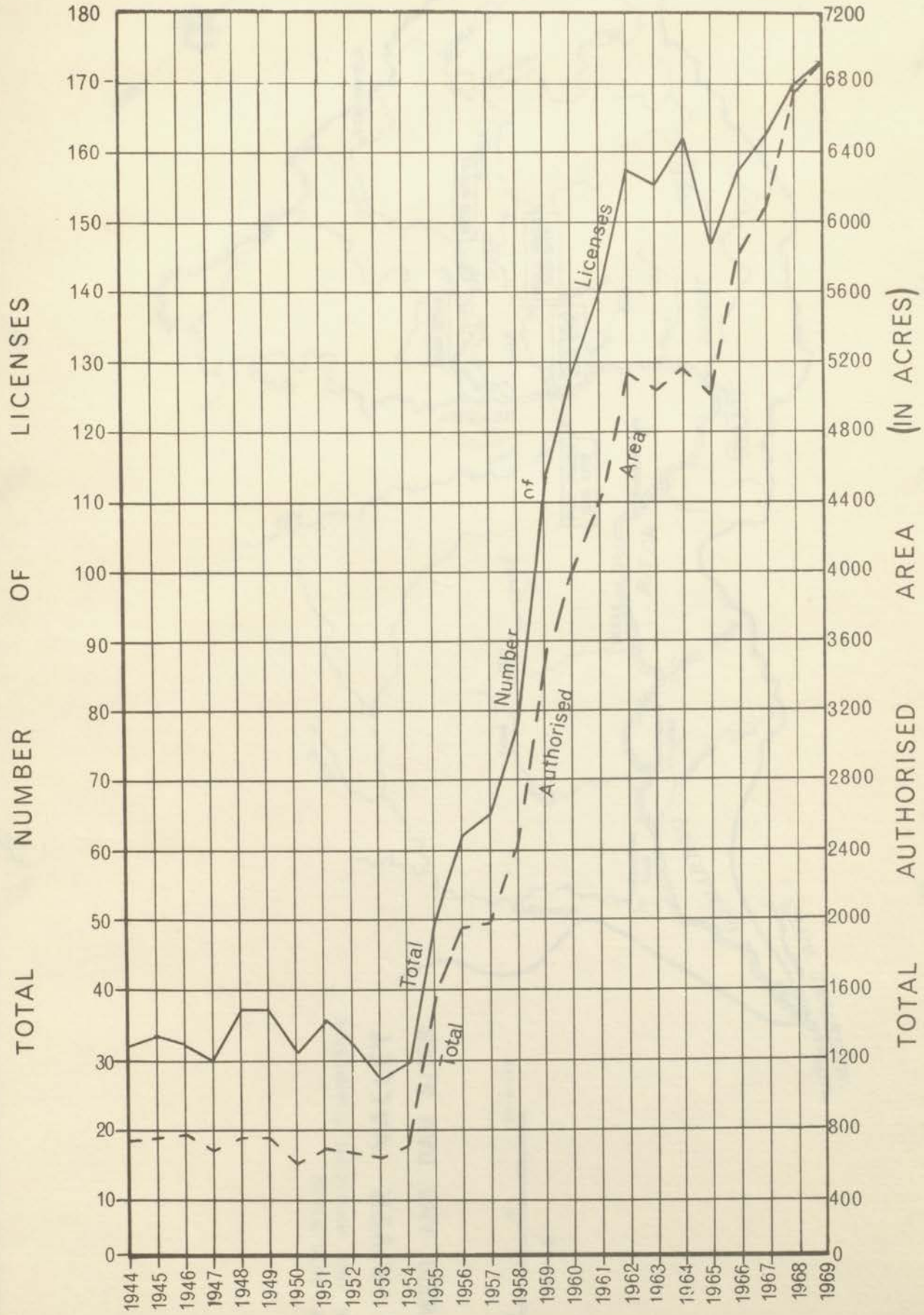
AVERAGE MONTHLY RAINFALLS

FIGURE 29



AVERAGE MONTHLY DISCHARGE
MACINTYRE RIVER AT BOGGABILLA; THE MOLE RIVER AT TRENAYR; TENTERFIELD CREEK AT CLIFTON

FIGURE 30



DUMARESQ RIVER VALLEY

AREA AUTHORISED FOR IRRIGATION & TOTAL NUMBER OF LICENSES AT 30TH JUNE FOR EACH YEAR INDICATED IN NEW SOUTH WALES

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

DUMARESQ RIVER VALLEY

LOCATION OF WEIR AND DAM SITES

MILES 10 5 0 10 20 MILES

SCALE

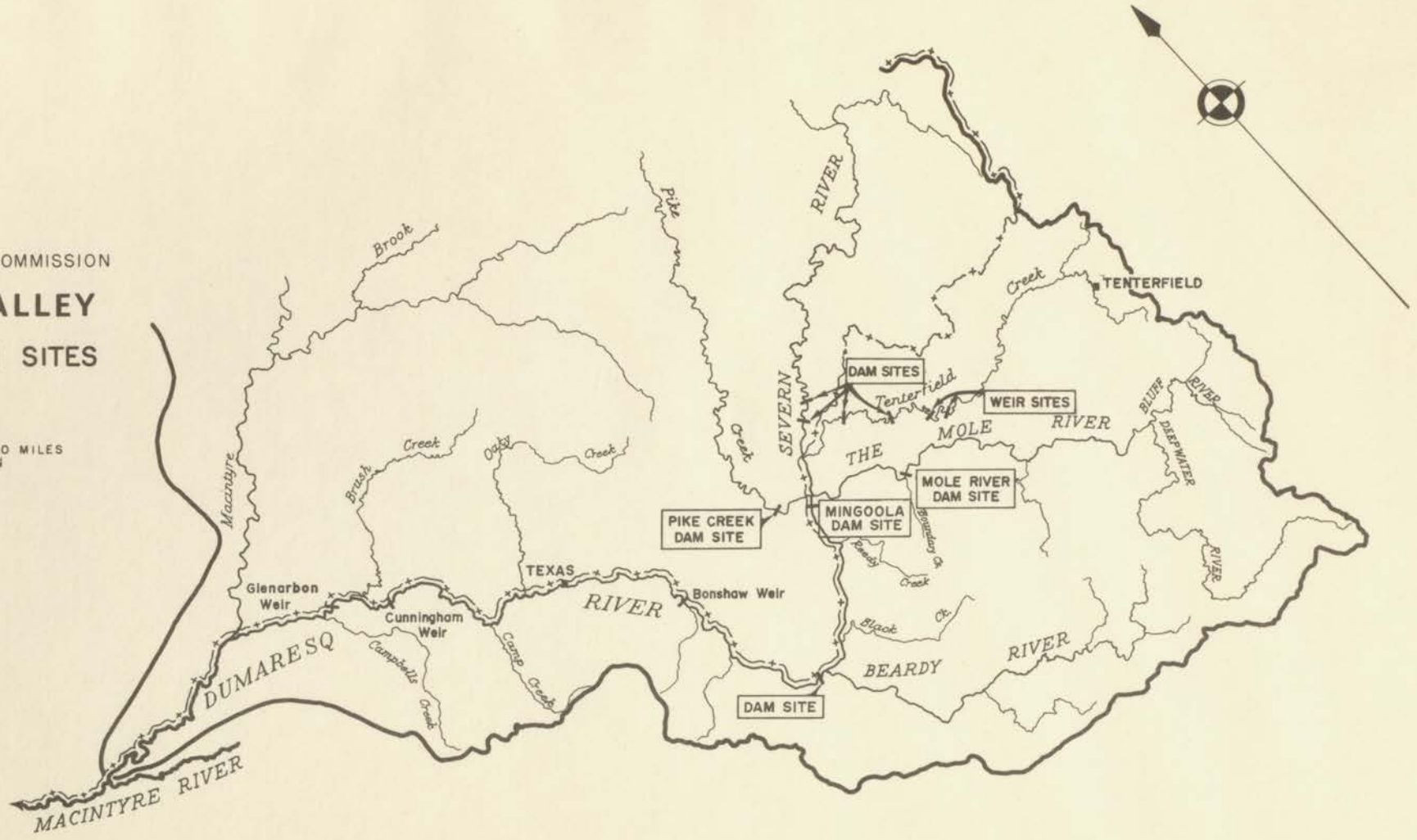


FIGURE 31