WATER RESOURCES

OF THE

SNOWY VALLEY

WITHIN NEW SOUTH WALES

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

REPORT No. 26 — JUNE 1973

WATER RESOURCES OF THE SNOWY VALLEY
(WITHIN NEW SOUTH WALES)

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, the Government 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-nine major valleys and a number of minor valleys. This report on the water resources of the Snowy Valley within New South Wales is the twenty-sixth to be issued.

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WATER RESOURCES OF THE SNOWY RIVER VALLEY (WITHIN NEW SOUTH WALES)

1. INTRODUCTION

Reliable and adequate water supplies are required by mankind, not only for continued agricultural and industrial development, but for its very existence. In the international sphere the water resources of a nation are of prime importance to national prosperity and the welfare of a community is dependent to a large extent on the proper development and use of available water resources.

Water conservation in Australia, as in other major nations, is therefore a service of prime national importance, as it increases living standards and overall national wealth.

There is an obvious abundance of water on Earth as over 74 percent of the total area of the globe is covered by oceans and the remaining 26 percent, comprising the land masses, is frequently covered by surface water in lakes or streams or by water vapour in clouds.

It has been estimated that the total volume of water on Earth, in all its forms, is of the order of 320 million cubic miles. As one cubic mile is equivalent to about a million million gallons, the magnitude of this resource is difficult to visualise in terms of gallons.

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

The continuous minimum water requirement for an adult has been estimated at about three quarters of a gallon a day. This is the minimum amount required to make up water losses from the human body. In contrast the average daily water usage in a modern city may rise to the order of 300 gallons per capita per day. Of course the per capita consumption figure is somewhat misleading in that demands due to industry, home gardens, parks and community services are included in determining the overall average.

Modern communities, particularly in large cities, make huge demands on water supplies for domestic, industrial and agricultural purposes. In the production of a ton of steel about 300 tons of water are used; about 2½ tons of water are required to grow the grain for and produce a loaf of bread, and a ton of paper requires about 60 tons of water. Furthermore it has been estimated that over thirty tons of water are required to produce the normal daily food requirement of an adult.

Water demands for irrigation purposes are much greater than for domestic or industrial uses. Annual requirements of crops are usually of the order of two to three feet depth, and during droughts it is necessary to supply the majority of this requirement by irrigation. The relative magnitude of this demand can be assessed when it is realised that a depth of three feet over only one acre is equivalent to over 800,000 gallons (more than 3,500 tons).

The gross water resources of any country are usually considered to be the combined total amount of precipitation, consisting of rain, hail or snow. Of all the continents, Australia has the least annual rainfall, the average being only 1½ feet whereas Africa, Asia, Europe and North America each receive about 2 feet whilst South America receives an average of almost 4½ feet.

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

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

In view of the increasing demand for water for irrigation, industrial and domestic purposes, the continued development of Australia as a nation will require the construction of many more large water conservation storages in the future. Furthermore it will be necessary to ensure that the flows secured by these and existing storages are used effectively.

This report deals with that portion of the Snowy Valley lying within New South Wales. The average annual flow from that portion of the valley is assessed to be of the order of 1,500,000 acre feet, which is equivalent to a runoff of 25 percent of the annual rainfall over the catchment.

2. PHYSIOGRAPHIC FEATURES

The valley of the Snowy River is situated partly in the south-eastern highlands of New South Wales, and partly in north-eastern Victoria where, at lower elevations, it extends to the Tasman Sea. The entire valley covers an area of about 6,100 square miles, but this report deals only with the 3,500 square miles which lie within New South Wales.

The valley as so defined is bounded on the south by the State border and is adjoined on the west by the Murray Valley and on the east by the Bega, Towamba and East Gippsland Valleys. The map at Figure 1 shows the adopted valley boundary, principal centres of population and main physiographic features.

The Snowy River rises in the Australian Alps, which form the western boundary of the valley. It originates on the slopes of Mount Kosciusko which is the highest point on the Australian Continent, having an elevation of about 7,300 feet. A nearby peak, the Ramshead, rises to 7,190 feet about 4 miles to the south of Mount Kosciusko while Mount Townsend, about 2 miles north of Mount Kosciusko, reaches an elevation of 7,250 feet.

The Snowy River initially flows to the north-east for nearly 20 miles before turning to the south-east at its confluence with the Gungarlin River about five miles upstream of the Jindabyne Storage. Mount Gungartan (nearly 6,800 feet) is an important peak to the west of this section of the Snowy River. The Gungarlin River rises in the Munyang Range of which Bald Hill (5,800 feet) is a prominent landmark.

The extreme northern section of the valley is drained by the Eucumbene River which rises about ten miles north of Kiandra at a point where the Great Dividing Range turns from a north-easterly to a south-easterly alignment. Notable peaks in this section of the valley are Tabletop Mountain (5,860 feet) and Reeds Hill (5,160 feet) on the western boundary and Tantangara Mountain (5,700 feet) on the eastern boundary.

The Eucumbene River enters the waters of Lake Eucumbene about 10 miles west of Adaminaby. Runoff from the catchment of the Eucumbene River below Eucumbene Dam drains into Jindabyne Reservoir.

The Crackenback River runs along the foot of the Ramshead Range, generally parallel to the headwaters of the Snowy River on the opposite side of the range, and discharges directly into Jindabyne Reservoir.

Below Jindabyne the Snowy River is joined on the right bank by the Mowamba River which rises in slightly lower elevations below Ramshead. This is the last major right bank tributary for a distance of about 45 miles.

The catchment boundary along the north-western section of the valley is the Monaro Range which forms part of the Great Dividing Range.

Wullwye Creek rises in this range immediately south of Lake Eucumbene and passes Berridale before joining the Snowy River at Dalgety. Another significant Snowy River tributary, Bobundara Creek, also rises in the Monaro Range, south of Hudsons Peak, and joins the main river about five miles downstream of Dalgety.

Near Brown Mountain, some four miles east of Nimmitabel, the Great Dividing Range turns to the north, and the south-eastern catchment boundary traverses generally lower elevations.

The Maclaughlin River rises near Brown Mountain and flows south-west to join the Snowy River in mountainous country south of Mount Rix.

The Delegate River and its tributary, the Little Plains River, rise in Victoria and flow generally northwards across the State border to join the Snowy River a short distance downstream from its confluence with the Maclaughlin River. The town of Delegate is located only about 2 miles from the border north of Mount Delegate.

The main tributary of the Delegate River is the Bombala River which rises near Big Jack Mountain and passes the town of Bombala. Maharatta Creek and Cambalong Creek are, in turn, the main tributaries of the Bombala River.

Downstream of the Delegate River junction, the Snowy River is joined on the right bank by Matong Creek, Back Creek and Tin Mine Creek, which all rise in undulating country but quickly enter mountainous terrain as they approach the main river. The only significant left bank tributary in this reach is the Little River which drains mountainous country near Black Jack (3,900 feet) and Mount Byadbo (4,060 feet). The notable peak in this southern area of the valley is Mount Tingaringy (4,800 feet) which is located virtually on the State border.

The Jacobs, Moyangul and Ingeegoodbee Rivers drain the extremely steep terrain on the remainder of the western side of the valley above the State border. The Pilot (6,000 feet) is the outstanding peak in this area. The Jacobs and Moyangul Rivers join the Snowy upstream from the border, but the Ingeegoodbee River crosses the border and in Victoria joins the Suggan Buggan River which in turn flows into the Snowy River downstream from the border.

A relatively small area just north of the border and east of the Snowy River is drained by the headwaters of Tingaringy Creek which flows south across the border and joins the Deddick River in Victoria. The Deddick River joins the Snowy a few miles south of the Suggan Buggan River confluence.

Although the Snowy Valley contains some of the most mountainous country in Australia, the predominant land terrain is that of undulating to hilly with slopes between 3 degrees and 8 degrees. This type of landform occupies much of the central and eastern areas of the valley and comprises about 47 percent of the total valley area within New South Wales.

Mountainous areas, with slopes over 15 degrees, total some 41 percent of the valley while hilly to steep terrain covers 10 percent. Flat land in the valley with slopes less than 3 degrees is confined to small pockets of alluvial areas and covers only 2 percent of the catchment area. Generalised land slopes for the valley are given at Figure 2.

Timbered land covers most of the elevated areas of the valley. The undulating areas have mostly been cleared for grazing purposes and are located generally in the central sections of the valley between Adaminaby and Dalgety and in the south-east around Bombala.

Large portions of the upland areas are covered by timber reserves located mainly along the north-western boundary of the valley, forming part of the Kosciusko State Park. These areas contain standings of Eucalyptus species of the wet hardwood variety, and are best developed in high rainfall areas at elevations between 3,000 and 5,000 feet.

In the south-east near Bombala, standings of the dry hardwood varieties are located and mainly comprise types of the Eucalyptus species. The dry hardwoods are most common on the mountain ranges in the east of the valley at elevations below 3,000 feet and in lower rainfall areas.

There are a number of State Forests in the valley, the largest being Tolbar State Forest which is located in elevated country in the north-west of the valley and comprises an area of about 35 square miles. The predominant timber species of the elevated forests in the west of the catchment are Snow and Mountain Gums and Alpine Ash, whilst in the lower regions in the east of the catchment, the Narrow Leaf Peppermint and the White Stringy Bark are most common species.

3. CLIMATIC FEATURES

Rainfall

The general distribution of rainfall over the valley of the Snowy River is controlled to a large extent by orographic effects. Along the valley of the main river, a marked rain shadow exists, median annual rainfalls being less than 25 inches and in places lower than 20 inches. (The median is that rainfall value equalled or exceeded on fifty percent of occasions).

Over the high ground forming the western boundary of the catchment, median annual rainfalls increase from about 40 inches over the areas about 3,000 feet above sea level to more than 60 inches over the areas above 5,000 feet in the north-western corner of the catchment. Another relatively high rainfall area exists over the headwaters of the Bombala and Delegate Rivers where median annual rainfalls in general exceed 30 inches.

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

Along the western boundary of the catchment, the rainfall distribution throughout the year is divided into a wet season from May to September and a relatively dry season from October to April. About 60 percent of the annual rainfall is received in the wet season. February is the driest month receiving on the average about 4½ percent of the annual rainfall.

Areas eastward of the main range of the Australian Alps are sheltered from the moist south to west airstreams which are the major rain producing airstreams over southern New South Wales in winter and spring. In these areas, January is the wettest month and July the driest month, and they receive an average of about 11 percent and 6 percent respectively of the annual rainfall.

Monthly and annual rainfalls recorded at Adaminaby, Bombala, Bukalong, Dalgety, Delegate Post Office, Jindabyne West, Kiandra, Oak Vale and Tombong are given in Appendices 1 to 9 respectively.

The estimated extreme 24-hour rainfall within the catchment is of the order of 10 inches and all stations in the catchment have experienced falls of approximately 3 inches in 24 hours. The greatest fall on record for a 24-hour period ending 9 a.m. for a station in the catchment is 9.89 inches at Cathcart on 11th May, 1925.

Highest monthly totals on record for stations in the catchment are generally between 9½ and 12 inches but values of the order of 26 and 20 inches have been recorded over the higher parts of the western and eastern catchment boundaries respectively.

The highest monthly total on record generally occurred in a summer month, the most frequent being January, over the sheltered valley of the river and in a winter month over the more exposed parts of the catchment. The highest monthly total on record for a station in the catchment is 26.27 inches at Kiandra in May 1960, whilst extreme annual totals range between 96 and 37 inches. For most stations, however, the highest annual total lies between the limits 60 and 40 inches.

The tables at Appendix 10 show on a monthly and annual basis for Adaminaby, Bombala, Bukalong, Dalgety, Delegate Post Office, Jindabyne West, Kiandra, Oak Vale and Tombong 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.

Although dry spells can occur occasionally, the basin generally receives adequate rainfalls throughout the year. Minimum cumulative rainfalls, commencing in any month of the year and continuing for up to 12 months, are given for Bombala, Bukalong, Delegate Post Office, Kiandra, Oak Vale and Tombong in the Tables at Appendix 11.

On 90 percent of occasions at least 4½ inches are received in any consecutive five monthly period and over the higher rainfall areas of the valley the figure is greater than 7 inches. Corresponding median values for the lower and higher rainfall areas of the valley are 7 inches and 11½ inches respectively.

Temperature

The average monthly and yearly temperatures for stations in and near the valley are listed in Tables 1 to 4. Although the averages for these stations are generally indicative of the temperature regimes at the particular elevations, differences in topography and aspect may cause variations from these figures, particularly in minimum temperature averages. For example, winter minima at Kosciusko Hotel, a sheltered site, are warmer than at Kiandra, approximately 500 feet lower in elevation but of a more exposed aspect.

TABLE 1

BOMBALA (Elevation 2,313 feet)

Average temperature (°C) based on 29 years of record

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Average Maximum	24.8	25.0	22.6	18.2	14.4	11.2	10.8	12.5	15.7	19.0	21.5	24.0	18.3
Average Minimum	9.6	10.3	8.4	5.2	1.7	-0.3	-1.1	-0.2	2.3	4.7	6.6	8.8	4.7
Average Daily	17.2	17.6	15.4	11.8	8.1	5.4	4.8	6.2	8.9	11.8	14.1	16.4	11.5
Highest on record: 40.3°C						Lowest on record: -10.0°C							

TABLE 2

NIMMITABEL (Elevation 3,503 feet)

Average temperature (°C) based on 29 years of record

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Average Maximum	22.6	22.8	19.9	15.2	11.4	8.1	7.6	9.4	12.6	16.0	18.9	21.3	15.5
Average Minimum	8.5	8.9	6.6	3.6	0.7	-1.4	-1.9	-1.4	0.7	3.2	5.3	7.4	3.3
Average Daily	15.6	15.9	13.2	9.4	6.0	3.3	2.8	4.0	6.7	9.6	12.1	14.4	9.4
Highest on record: 37.8°C						Lowest on record: -11.1°C							

TABLE 3

KIANDRA (Elevation 4,572 feet)

Average temperature (°C) based on 30 years of record

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Average Maximum	20.3	20.8	18.1	12.8	8.8	5.3	4.2	5.9	9.2	12.9	16.1	18.9	12.8
Average Minimum	5.9	6.3	4.1	1.1	-1.3	-3.3	-4.4	-3.9	-1.1	0.8	3.2	5.0	1.1
Average Daily	13.2	13.5	11.1	6.9	3.7	1.0	-0.1	1.0	3.9	6.8	9.6	11.9	6.9
Highest on record: 34.7°C						Lowest on record: -20.6°C							

TABLE 4

KOSCIUSKO HOTEL (Elevation 5,018 feet)

Average temperature (°C) based on 27 years of record

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Average Maximum	18.4	18.8	15.9	11.2	7.8	4.7	3.8	4.6	7.8	11.5	14.7	17.1	11.4
Average Minimum	5.8	6.1	4.4	1.3	-1.2	-3.0	-3.9	-3.3	-1.0	1.2	3.0	4.9	1.2
Average Daily	12.1	12.5	10.2	6.2	3.3	0.8	-0.1	0.6	3.4	6.4	8.8	11.1	6.3
Highest on record: 32.2°C						Lowest on record: -14.4°C							

The valley experiences mild to cool days with cold nights on the average during summer, and cold days with very cold nights particularly over the more exposed parts of the Australian Alps during winter. In summer an occasional hot day may occur. On the average, temperatures greater than 32°C occur on about 10 days per year over the lower parts of the basin but this temperature is rarely reached over the more elevated parts of the region.

In winter very low overnight temperatures may be recorded and the lowest temperature on record in Australia (-22.2°C) occurred at Charlotte Pass, a station in the catchment, on 14th July, 1945.

Frost and Snow

Severe frosts occur over the entire catchment and range from an average of about 90 days per year over the lower parts of the catchment to more than 160 days per year over the higher peaks. Frosts can occur at any time of the year but are usually confined to the months March to November over the lower parts of the catchment.

Snowfalls are common throughout the valley, and in the low parts of the basin would average 10 to 15 occasions per year rising to a frequency generally in excess of 25 occasions per year in the higher parts of the catchment, with the more exposed peaks liable to experience falls on over 50 occasions per year.

Although snow has fallen in every month of the year over the highest parts of the catchment, the event is rather unusual in January and February. Snowfalls occur most frequently in the months June to August when over half the total annual fall is recorded.

Sunshine

Estimates of the average period of bright sunshine per day in each month for the valley are shown in Table 5.

These estimates are based on observations of cloud amounts.

TABLE 5

Estimated Duration of Bright Sunshine in Hours per Day

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
10.0	9.2	8.1	6.7	5.5	5.0	4.9	5.6	6.7	7.9	9.3	9.4	7.6

Evaporation

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

TABLE 6

Estimated Average Monthly and Annual Evaporation in Inches

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Evaporation	5.6	4.2	3.6	2.4	1.8	0.9	1.0	1.9	2.0	2.9	4.1	4.9	35.3
Standard Deviation	0.8	0.8	0.7	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.8	2.7

Wind

The effects of topography and aspect exert a marked control over wind speeds experienced over the valley, stations exposed to the west experiencing stronger winds than more sheltered locations during winter. In general, average wind speeds of the order of 60 m.p.h. (97 kilometres per hour) may be experienced at exposed areas from the north-west to south-west quarter in the winter months when the northern extremity of an intense southern depression passes over the area.

The most intense wind gusts experienced in the area are associated with severe local storms such as thunderstorms usually in the warmer months of the year. Table 7 gives the extreme wind gust likely to be experienced in the catchment for various return periods.

TABLE 7

Estimated Extreme Wind Gust to be Expected with Given Return Periods

Return Period (years)	10	20	50	100
Extreme Wind Gust Equalled or Exceeded (miles per hour)	85	90	100	105
(kilometres per hour)	(136)	(144)	(161)	(170)

4. GROUNDWATER POTENTIAL

Very little use has been made of the groundwater resources of the area, and records are available for only thirteen water bores and wells. All of these produced sufficient water for their intended purpose, and only one is more than 100 feet deep. Availability of groundwater is closely related to the geology and topography of an area, and the groundwater potential of the valley is based on a summary of the geology, amplified where possible by available groundwater usage information. The geological units are discussed in order of decreasing age and are shown in the geological map of the area at Figure 16.

The area is elevated and strongly dissected, with a high precipitation rate. When such an area is underlain by jointed rocks which are impermeable in themselves but which can transmit water through the open joints, as is the case in the Snowy River catchment, groundwater if present, generally occurs at quite shallow depths.

The type and distribution of joints and fractures are of great importance in these circumstances. Many of the streams in the Snowy Valley have their courses controlled for large distances by joints, and the occurrence of groundwater is also controlled by them to a large degree. The joint and fracture pattern is too detailed to warrant further discussion here, but must be examined in any specific area before selecting individual bore sites.

The oldest rocks in the area belong to the Ordovician system. Sandstone, siltstone, shale and quartzite are represented, and have been subject to various degrees of regional and contact metamorphism. The metamorphism has resulted in alteration to slate and schist in some areas. During the metamorphism, which occurred during periods of major earth movements, the strata were also folded into anticlines and synclines and now have steep dips, mostly over 50 degrees. Jointing and fracturing occurred during the folding, and the resulting openings are responsible for any ability to transmit water that the rock now has.

The Ordovician rocks outcrop over nearly one third of the area, mainly in the southern half, but there is a prominent central meridional belt extending to the northern margin. It is considered that useful stock supplies would generally be available at carefully selected sites from bores 50 to 200 feet deep in these rocks.

The salinity is expected to be low enough to allow domestic use in many cases but the yields are unlikely to exceed 1,000 gallons per hour and are more likely to be 500 gallons per hour or less. Records are held of three bores which have been sunk in Ordovician rocks in this catchment. They vary from 50 to 90 feet in depth and yielded supplies between 300 gallons per hour and 1,000 gallons per hour but no water analyses are available. Prospects are poorer in areas where the original strata have been altered to schist, mainly in the extreme west.

Rocks of Silurian age outcrop in two small areas. In the extreme west there is an area underlain by a sedimentary sequence containing strongly folded and fractured quartzite, slate, schist, conglomerate, sandstone and shale. Silurian limestone is present in a small area about 12 miles west of Bombala. No bores are known to have been sunk in either of these areas, and it is difficult to assess their prospects. It is probable that all are capable of yielding useful stock and domestic supplies, but the remote location of most of them and the very small total area occupied means that they are unimportant from an overall groundwater viewpoint.

Small outcrops of Devonian sedimentary rock are similarly relatively unimportant as a source of groundwater, although the areas, 15 miles west-south-west of Bombala and immediately south-east of Bombala, are of local importance. In these two areas, a sedimentary sequence containing sandstone, conglomerate, quartzite, siltstone and arkose is exposed. The rocks are much younger than those described previously and have suffered less deformation. Dips are generally less steep and jointing less severe. No bores are known from these areas, but small stock and domestic supplies should be available from bores at suitable sites.

The most important Devonian rock type is granite, which underlies nearly half of the catchment area, mainly in the north but with smaller areas of outcrop in the south and east. The granite is variable in both grain size and mineralogical composition, but its groundwater prospects depend more on the depth of weathering and type and distribution of joints and fractures in the bore site area. These can only be assessed for individual cases. Only one bore is known to have been sunk in the granite, and it produced a very small supply, about 30 gallons per hour, from a depth of 50 feet. Prospects in this unit are variable and depend on local conditions.

Commencing with the close of the Devonian Period, there was a long time interval during which there were periods of significant earth movements, and erosion of the resulting high land masses continued. However, no rocks formed during this interval have been preserved.

Then, during the Tertiary Period, there were further major earth movements and extensive volcanic activity. Basalt resulting from this activity covers a large area in the eastern part of the catchment. In certain areas, up to six separate flows have been mapped, and individual flows in some cases are separated by sand, clay and sandstone.

This situation is one in which considerable groundwater resources are frequently found, and it is presumed that in the present case the same applies. The basalt is mostly in elevated country, however, and it is unlikely that there will be much need for direct development of groundwater in these areas. Its most important function is probably in maintenance of summer flows in the streams draining the area. Because of the basalt's elevated topographic position, the groundwater will drain out through springs around the margins.

Five bores are known to have been sunk in basalt. They vary in depth from 30 to 60 feet, and in yield from 100 to over 1,000 gallons per hour. A further bore suspected to be in basalt reached 170 feet, and had an artesian flow of 30 gallons per hour. An analysis of water from one of these bores showed 114 parts per hundred thousand of total salts, with a high hardness, which is normal for groundwater from basalt.

Apart from the sedimentary deposits interbedded with the basalt, there are a number of other occurrences of sediments of Tertiary age. There are some small deposits of clay near Dalgety but their areal extent is too small to show on the geologic map. The major area is near Bombala, where up to 100 feet of sand, gravel and clay crop out. Most of the deposits are elevated relative to present stream levels, some being 250 feet higher than stream level. The deposits predate the basalt and a hard resistant cap of "grey billy" has resulted from the heating which was caused by the basalt flowing over them. The groundwater potential of these deposits is not well known but is probably small due to their elevated topographic situation.

Unconsolidated fluviatile alluvium of Recent age is of very limited importance in this catchment. Because of the highly dissected nature of the topography, and the early stage of development of the stream profiles, alluvium is mainly confined to stream beds and generally occurs in shallow discontinuous bodies.

Development of groundwater supplies from these bodies is usually unnecessary because they coincide with the position of perennial streams. There are a few exceptions, where small alluvial flats have been formed. The main occurrences are along some of the tributaries of the Bombala River south of Nimmitabel. These flats are not large however, and it is unlikely that anything more than domestic or stock supplies is available.

Summary

There has been very little development of groundwater resources in this catchment to date, and no great potential for development is available. Most of the area is underlain by either folded metamorphic rocks which can usually be expected to provide stock and domestic supplies, or granite in which prospects are variable but generally poor.

There is a large area underlain by basalt, from which larger supplies are probably available, but much of this water is likely to be of marginal quality for irrigation use. Unconsolidated alluvium is restricted to small pockets along some of the rivers, and only small yields are likely from this source.

5. STREAM GAUGING STATIONS

Reliable records of streamflows are extremely important in water resources investigations as 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 streamflow data in the investigation of surface water resources, it is necessary to collect adequate records of streamflow in a valley.

In most areas of New South Wales, rainfall records have been obtained for relatively long periods of time; however, as yet, no reliable or simple method has been formulated for calculating runoff volumes from rainfall records. It is therefore apparent that actual streamflow records are the most reliable source of information for the evaluation of water resources projects, and it is essential to have these records over as long a period as possible.

Records of streamflow are obtained from gauging stations, where stream heights and measurements of discharge are obtained. Although various methods of measuring discharge have been used, the most reliable and most universally adopted method is the area-velocity technique in which the area of effective flow is measured by survey, and the velocity of flow is measured by means of a current meter.

River heights may be obtained by visual observation of the level of the water surface on a graduated scale, or staff gauge, which is located on the river bank. However, these measurements indicate the water levels only at the times of observation and it is desirable to record the continuous variation of river levels between the times of actual readings. These continuous readings are obtained by means of automatic graphical or digital recorders which produce, by a float or pressure actuated system, a continuous trace on a chart or a punched tape.

Each gauging station is calibrated by making a number of actual measurements of flow over a range of gauge heights. The measurements are plotted graphically and the resulting correlation curve is called a stage-discharge relation, which in stable channels, tends to remain relatively constant.

Stream discharges are normally given in terms of cusecs (abbreviated from cubic feet per second), one cusec flowing for twelve hours being

approximately equal to one acre foot or the volume of water which would cover an area of one acre to a depth of one foot. In terms of metric units, the product of flow velocities in kilometres per day and cross-sectional area in square metres, yields stream discharge in megalitres per day.

The installation of stream gauging stations in the Snowy River Valley within New South Wales commenced with the establishment of a station on the Snowy River at Jindabyne in 1902. No further stations were established until 1941 when gauging stations were installed on the Little Plains River at Wellesley and the Delegate River at Delegate.

After 1941 a large number of gauging stations were installed in the Snowy Valley by both the Water Conservation and Irrigation Commission and the Snowy Mountains Hydro-Electric Authority, mainly to assist in the planning and operation of the Snowy Mountains Scheme. A number of these stations were discontinued when the required data was obtained and at present there are twelve stations in operation in the valley of which nine are currently operated exclusively by the Water Conservation and Irrigation Commission. The Snowy Mountains Hydro-Electric Authority no longer operates any gauging stations, having handed over this work to the Snowy Mountains Council, which is responsible for operating the Scheme.

The current density of gauging stations in the Snowy River Valley of about 3.5 stations per thousand square miles is slightly less than the density for Coastal New South Wales and is substantially greater than the New South Wales and Australian averages of 2.2 stations and 0.5 stations respectively.

The locations of existing and discontinued gauging stations in the Snowy River Valley are shown in Figure 17 while Table 8 gives operational details of both existing and discontinued stream gauging stations in the valley and the respective operating authority. Where a station was installed by one authority and later taken over by another, both authorities are shown in the Table.

The following abbreviations have been utilised in Table 8:-

W.C. & I.C. - Water Conservation and Irrigation Commission of New South Wales

S.M.H.E.A. - Snowy Mountains Hydro-Electric Authority.

S.M.C. - Snowy Mountains Council.

S.E.C.V. - State Electricity Commission of Victoria.

TABLE 8

Stream	Station	Catchment Area (square miles)	Type of Gauge	Period of Operation	Operating Authority
Club Lake Creek	Clarke	1.8	Float Recorder	1952 to 1966	SMHEA
Snowy River	Guthrie	14.5	Float Recorder	1948 to 1962	WC&IC/ SMHEA
Spencers Creek	Chalet Road	4.2	Pressure Recorder	1947 to 1948	WCIC
Betts Creek	Chalet Road	3.5	Pressure Recorder	1947 to 1948	WCIC
Spencers Creek	Paralyzer	8.2	Float Recorder	1948 to 1967	WCIC/ SMHEA
Snowy River	Above Guthega Dam	30	Float Recorder	1955 to date	SMHEA/ SMC
Snowy River	Guthega	36	Pressure Recorder	1952 to 1955	SMHEA
Perisher Creek	Blue Cow	4.8	Float Recorder	1951 to 1967	WCIC/ SMHEA
Farm Creek	Guthega Dam	2.5	Staff Gauge	1956 to 1958	SMHEA
Guthega River	Guthega Dam	2.2	Staff Gauge	1956 to 1958	SMHEA
Pipers Creek	Kosciusko Road	4.7	Float Recorder	1952 to 1957	SMHEA
Snowy River	Magazine	68	Float Recorder	1951 to 1959	SMHEA
Finns River	Magazine	10.9	Float Recorder	1953 to 1960	SMHEA
Snowy River	Above Island Bend Pondage	80	Float Recorder	1961 to date	SMHEA/ SMC
Snowy River	Island Bend	85	Float Recorder	1948 to 1964	WCIC/ SMHEA
Tolbar Creek	Green Nob	2.9	Float Recorder	1954 to 1966	SMHEA
Gungarlin River	Snowy Plains	39	Pressure Recorder	1946 to 1959	WCIC/ SMHEA
Gungarlin River	No.1 Dam Site	66	Float Recorder	1952 to 1966	SMHEA
Dead Horse Creek	Kidmans Hut	8	Float Recorder	1954 to 1959	SMHEA

TABLE 8

Stream	Station	Catchment Area (square miles)	Type of Gauge	Period of Operation	Operating Authority
Burrungubugge River	Constances Hut	16	Float Recorder	1948 to 1965	WCIC/ SMHEA
Boogong Creek	Dead Horse Hut	2.2	Float Recorder	1953 to 1960	SMHEA
Little Thredbo River	Bundilla	16	Staff Gauge	1948 to 1958	WCIC/ SMHEA
Crackenback River	Bundilla	47	Float Recorder	1948 to 1961	WCIC/ SMHEA
Crackenback River	The Creel	97	Pressure Recorder	1944 to 1967	WCIC/ SMHEA
Eucumbene River	Kiandra	31	Float Recorder	1947 to 1959	WCIC/ SMHEA
Eucumbene River	Providence No. 2	64	Float Recorder	1953 to date	WCIC/SMHEA /SMC
Bald Mt. Creek	Eucumbene Portal	4.3	Staff Gauge	1957 to 1959	SMHEA
Eucumbene River	Providence No. 1	73	Pressure Recorder	1947 to 1955	WCIC
Eucumbene River	Eastbourne	287	Pressure Recorder	1944 to 1957	WCIC/ SMHEA
Eucumbene River	Kalkite	89	Staff Gauge	1957 to 1967	SMHEA
Snowy River	Jindabyne	714	Pressure Recorder	1902 to 1957	WCIC/ SMHEA
	(see note)	456	Float Recorder	1957 to 1965	SMHEA
	(see note)	274	Float Recorder	1965 to 1967	SMHEA
Mowamba River	Glenrock	108	Pressure Recorder	1947 to 1966	WCIC/ SMHEA
Wullwye Creek	Woolway	215	Pressure Recorder	1949 to date	WCIC
Snowy River	Dalgety	1220	Float Recorder	1949 to 1957	WCIC
	(see note)	780	Float Recorder	1957 to date	WCIC
Bobundara Creek	Dalgety Road	127	Pressure Recorder	1965 to date	WCIC

TABLE 8

Stream	Station	Catchment Area (square miles)	Type of Gauge	Period of Operation	Operating Authority
Maclaughlin River	Dalgety Road	107	Pressure Recorder	1954 to date	WCIC
Coolumbooka River	Bombala	59	Pressure Recorder	1966 to date	WCIC
Bombala River	The Falls	210	Servo Manometer Pressure Recorder	1951 to date	WCIC
Cambalong Creek	Gunning Grach	90	Pressure Recorder	1965 to date	WCIC
Delegate River	Delegate	55	Staff Gauge	1941 to 1961	WCIC
Little Plains River	Wellesley	240	Pressure Recorder	1941 to date	WCIC
Delegate River	Quidong	420	Servo Manometer Pressure Recorder	1951 to date	WCIC
Jacobs River	Tin Mine Track	29	Float Recorder	1953 to 1960	SMHEA
Moyangul River	Lookout	11	Float Recorder	1955 to 1963	SECV
Ingeegoodbee River	Below Tin Mine	8	Float Recorder	1955 to 1963	SECV

NOTE: The catchment of the Jindabyne gauging station was successively reduced following completion of Eucumbene storage in 1957 and Island Bend storage in 1965. The station was discontinued in 1967 following completion of Jindabyne Reservoir. Also the catchment area of the Snowy River at Dalgety was reduced as a result of the completion of the above storages.

6. CATCHMENT YIELDS

The yield of a catchment is related to many factors, the main ones being precipitation, catchment topography and geology. However, for a particular storm other factors such as rainfall intensity, vegetal cover and soil moisture conditions will affect the runoff from a catchment. The relationship between these factors and the water yield is extremely complex and consequently it is necessary to obtain continuous measurements of streamflow to provide basic information for the determination of the water yield of a valley.

The water yields at a number of stream gauging stations in the Snowy Valley, in terms of average flows over the period of records, are shown in Table 9 together with the numbers of complete years of computed records on which the averages are based. Stations which are not shown in Table 9 include those where the periods of records are too short for averages to have hydrologic significance and those where flow records are substantially incomplete.

TABLE 9

Stream	Station	Complete Years of Records	Average Annual Yield over Period of Complete Years of Records		
			Acre Feet per Annum	Cusecs	Gallons per Minute
Snowy River	Island Bend (pre SMHEA operation)	6	373,000	511	191,000
	(post SMHEA operation)	17	338,000	463	173,000
Crackenback River	The Creel	22	182,000	249	93,000
Eucumbene River	Providence No. 2	18	140,000	192	71,800
Snowy River	Jindabyne (pre SMHEA operation)	54	961,000	1,320	494,000
	(post SMHEA operation)	10	624,000	850	318,000
Wullwye Creek	Woolway	22	34,100	47	17,500
Snowy River	Dalgety (pre SMHEA operation)	7	1,405,000	1,925	720,000
	(post SMHEA operation)	14	492,000	675	252,000
Maclaughlin River	Dalgety Road	13	33,700	46	17,200
Bombala River	The Falls	20	127,000	174	65,100
Little Plains River	Wellesley	30	94,000	129	48,200
Delegate River	Quidong	18	154,000	211	78,900

The stream gauging station on the Snowy River at Jindabyne has the longest period of streamflow records in the valley, extending continuously from 1902 to 1967 which comprises a total of 64 complete years. However, as indicated previously the catchment area and the pattern of flow at this station, and at other gauging stations on the Snowy River below Jindabyne, have been significantly affected with the commencement of operation of various storages of the Snowy Scheme.

Over the 54 years of streamflow records prior to the storage of water in Eucumbene Dam the annual average discharge at Jindabyne was about 961,000 acre feet, while the annual average discharge during the 10 year period of records following storage in Eucumbene Dam has been about 624,000 acre feet. This does not mean to say that the difference between these two figures is the annual amount of Snowy River water diverted westwards, since the two periods are quite separate. A similar comment applies to the records pre and post Snowy works from the stream gauging station on the Snowy River at Dalgety, located downstream of Jindabyne. Some discussion on Snowy diversions appears in Section 16 of this report.

Details of maximum, minimum and mean discharges for each month of record for the stations indicated in Table 9, are given in Appendices 12 to 21 inclusive.

7. AVERAGE ANNUAL RUNOFF

As a large volume of water is presently diverted from the Snowy Valley to the inland valleys of the Murray and Murrumbidgee Rivers, any estimate of the long term average annual runoff from the Snowy Valley must be based on either streamflow records obtained prior to the commencement of diversion works operated by the Snowy Mountains Authority or alternatively on current streamflow records with allowances for the various diversions from the valley.

A total of 54 years of streamflow records are available for the gauging station on the Snowy River at Jindabyne prior to the commencement of operation of the Snowy Works. This is a reasonable period of streamflow records for the derivation of a reliable assessment of the long term average annual runoff of the Snowy Valley, and therefore streamflow records, influenced by the operation of the Snowy Works, have not been included in this long term runoff assessment.

Based on these records and on shorter term records at other locations, it has been estimated that the long term average annual runoff for the Snowy River Valley, generated by precipitation falling within New South Wales, is of the order of 1,500,000 acre feet which is equivalent to a continuous rate of flow of about 2000 cusecs or about 770,000 gallons per minute.

On a square mile of catchment basis, these resources are equivalent to 430 acre feet per annum per square mile and are slightly greater than the average for coastal basins in New South Wales but are equivalent to about five times the average for the Australian mainland.

A large number of streams in the upper Snowy and Eucumbene River catchments receive significant contributions to runoff from snowmelt during the spring and summer months and as a result, have high percentage runoff figures. The percentage runoff of the Snowy River at Jindabyne is about 67 percent and the runoff per square mile is approximately 1320 acre feet per annum, which is only slightly below the average runoff per square mile for snow-fed streams in Tasmania.

This high percentage runoff at Jindabyne is not considered to be of a high degree of accuracy, due to the difficulties of measuring the total amount of precipitation in the valley, particularly snowfalls.

Table 10 shows the estimated long term average annual runoff for the Snowy Valley within New South Wales and the Snowy River at Jindabyne. These are compared with the average annual runoff figures for the adjoining catchment of the Bega River.

TABLE 10

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
Snowy Valley - within N.S.W.	3,500	1,500,000	430	25%
Snowy River at Jindabyne	714	961,000	1,320	67%
Bega River	740	400,000	540	27%

8. VARIABILITY OF FLOWS

Whilst average annual flows are suitable for comparison of long term yields from catchments, they do not indicate the surface water resources which could be available in a particular year or the probable extent to which the valley's surface resources could be utilised without the construction of conservation works.

Consideration of the variability of flows is also essential in regard to the planning and design of water resources projects, as it is of prime importance to know the distribution of monthly and daily discharges over a fairly long period to enable proper assessment to be made of the effects of drought and flood flows on a project.

In common with most other streams in New South Wales, flows in the Snowy River and its tributaries exhibit a reasonably high degree of variability.

As expected, records for the gauging stations on the central and lower regions of the valley have indicated greater variability than for stations located in the higher areas above Jindabyne which are usually snow-fed for part of the year.

The station on Wullwye Creek at Woolway shows the greatest variability of annual discharges in the valley, variations ranging from 480 percent to about 1 percent of the mean annual flow of 34,100 acre feet.

At the Maclaughlin River at Dalgety Road, wide variations in annual discharges also occur, ranging from 390 percent to 9 percent of the average annual discharge.

In contrast, the annual flows of the Snowy River at Jindabyne have varied only from about twice the annual average flow to about 40 percent of the average, over the period of records prior to the operation of the Snowy Works.

As must be expected the degree of variability on a monthly basis is even more marked. At Wullwye Creek at Woolway the monthly flow has varied from zero to about twenty-three times the average monthly flow whilst the monthly flow of the Maclaughlin River at Dalgety Road has varied from about one eightieth to eighteen times the average.

An indication of the variation of monthly discharges for the gauging station at Jindabyne is shown by the histograms of flow at Figure 18. Monthly discharges are also plotted at Figure 19, for the gauging stations at the Creel, Providence No. 2, and Quidong.

Instantaneous flows record the greatest variability in the valley. At Woolway on Wullwye Creek the maximum and minimum flows at the station have been 13,400 cusecs and zero flow respectively and therefore show wide variations from the mean flow of 47 cusecs over the period of available records.

An indication of the variation in recorded maximum, minimum and mean instantaneous flows for selected gauging stations in the valley is given in Table 11. A comparison is also given, where applicable, of the figures for pre- and post-Snowy Works.

TABLE 11

Stream	Station	Period of Computed Records	Recorded Discharges		
			Maximum	Minimum	Mean
Snowy River	Island Bend	March 1948 to December 1954	19,600 cusecs (7,300,000 gpm)	27 cusecs (10,000 gpm)	511 cusecs (191,000 gpm)
		January 1955 to December 1971*	16,000 cusecs (6,000,000 gpm)	5 cusecs (2,000 gpm)	463 cusecs (173,000 gpm)
Cracken-back River	The Creel	May 1944 to June 1967	5,400 cusecs (2,000,000 gpm)	10 cusecs (3,700 gpm)	249 cusecs (93,000 gpm)
Eucumbene River	Providence No. 2.	September 1953 to December 1971	8,000 cusecs (3,000,000 gpm)	4 cusecs (1,500 gpm)	192 cusecs (71,800 gpm)
Snowy River	Jindabyne	May 1902 to December 1956	40,200 cusecs (15,000,000 gpm)	32 cusecs (12,000 gpm)	1320 cusecs (494,000 gpm)
		January 1957 to April 1967 *	21,700 cusecs (8,116,000 gpm)	26 cusecs (9,700 gpm)	850 cusecs (318,000 gpm)
Wullwye Creek	Woolway	March 1949 to December 1971	13,400 cusecs (5,000,000 gpm)	0	47 cusecs (17,500 gpm)
Snowy River	Dalgety	March 1949 to December 1956	40,800 cusecs (15,300,000 gpm)	99 cusecs (37,000 gpm)	1925 cusecs (720,000 gpm)
		January 1957 to December 1971 *	18,700 cusecs (7,000,000 gpm)	0.2 cusecs (75 gpm)	675 cusecs (252,000 gpm)

TABLE 11 (Continued)

Stream	Station	Period of Computed Records	Recorded Discharges		
			Maximum	Minimum	Mean
Maclaughlin River	Dalgety Road	October 1954 to December 1971	16,600 cusecs (6,200,000 gpm)	0	46 cusecs (17,200 gpm)
Bombala River	The Falls	May 1951 to December 1971	51,600 cusecs (19,300,000 gpm)	0	174 cusecs (65,100 gpm)
Little Plains River	Wellesley	March 1941 to December 1971	22,600 cusecs (8,450,000 gpm)	6 cusecs (2,200 gpm)	129 cusecs (48,200 gpm)
Delegate River	Quidong	February 1951 to December 1971	70,000 cusecs (26,200,000 gpm)	9 cusecs (3,400 gpm)	211 cusecs (78,900 gpm)

* Indicates statistics after station affected by Snowy Scheme.

The variations in average monthly rainfalls at Adaminaby and Bombala are shown at Figure 20. These locations can be considered as being representative of the undulating northern and south-eastern areas of the valley. The upland areas in the north-west of the valley exhibit much higher rainfalls and the rainfall patterns are also vastly different due to the marked orographic effects of the Australian Alps.

At Adaminaby, the average rainfalls are relatively even throughout the year with the highest average falls occurring in October. At Bombala, the total annual rainfalls received are less than in other areas of the valley and the maximum values occur in the summer months of December and January with a second peak occurring in June. The lowest monthly totals usually occur in May and August.

Average monthly discharges for the gauging stations on the Snowy River at Jindabyne, Crackenback River at The Creel and Bombala River at The Falls are indicated at Figure 21. The graphs for Jindabyne and The Creel indicate that the highest monthly discharges occur in the spring month of October, and correspond to the month of highest average rainfalls for the area as indicated by the Adaminaby rainfall statistics.

Significant snow melt during the spring season also contributes to the highest average discharge occurring in October. The lowest average monthly discharges also follow the lowest average monthly rainfalls at Adaminaby and occur in the early months of the year.

At the station on the Bombala River at The Falls, the highest average monthly discharge occurs in July and may be compared with the second peak of high average rainfall that occurs at Bombala in June. The lowest average monthly discharges occur in January, March and April.

9. PERSISTENCE OF STREAMFLOWS

An indication of the persistence of flows in any stream can be obtained by examination of flow duration curves. A flow duration curve shows the percentage of time that the flow in a stream at a particular location has been greater or less than given amounts. 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.

If the meteorological conditions over drainage basins are similar, the average slope of a flow duration curve will give an indication of the magnitude of the natural storage in each basin, whilst the shape of the lower end of the curve will give a measure of the basin's average groundwater conditions.

A flat slope duration curve suggests that the drainage basin upstream of the location under consideration 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 which do occur recede quite rapidly. If the lower section of the curve is relatively flat this indicates that the stream is supplemented by groundwater and the yield from this source is relatively high and persists for substantial periods.

In the Snowy Valley the construction of storage and diversion works associated with the Snowy Mountains Scheme has influenced the natural flow conditions of a number of streams in the valley to a great degree.

For the selected gauging stations for which flow duration statistics have been prepared, only two stations, the Snowy River at Jindabyne and at Dalgety, are affected by Snowy Works. To enable a comparison of flows at these two stations with flows at the other stations unaffected by upstream storages, it is necessary to evaluate the flow duration statistics for Jindabyne and Dalgety for periods prior to the construction of any Snowy Works.

Storage commenced in Guthega Dam on the Snowy River in January, 1955 and thus all flow duration statistics stated as pre-Snowy Scheme works relate to periods prior to this date.

Details of the flow frequency statistics for selected gauging stations in the Snowy Valley are given in Tables 12 to 18, whilst the flow duration curves for the respective stations are appended as Figures 22 to 28.

TABLE 12

SNOWY RIVER AT JINDABYNE - PRE-SNOWY

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	2850	1,066,000
30%	1480	554,000
50%	760	284,000
70%	380	142,000
90%	170	64,000
95%	130	49,000
100%	32	12,000

TABLE 13

SNOWY RIVER AT DALGETY - PRE-SNOWY

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	4500	1,680,000
30%	2000	748,000
50%	950	355,000
70%	400	150,000
90%	180	67,000
95%	160	60,000
100%	99	37,000

TABLE 14

WULLWYE CREEK AT WOOLWAY

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	60	24,000
30%	18	6,700
50%	7	2,600
70%	3	1,100
90%	1	370
95%	0.5	180
98%	0	0

TABLE 15

MACLAUGHLIN RIVER AT DALGETY ROAD

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	83	31,000
30%	29	11,000
50%	13	4,900
70%	6	2,200
90%	4	1,500
95%	3	1,100
100%	0	0

TABLE 16

BOMBALA RIVER AT THE FALLS

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	285	107,000
30%	85	32,000
50%	37	14,000
70%	16	6,000
90%	6	2,200
95%	4	1,500
99%	0	0

TABLE 17

LITTLE PLAINS RIVER AT WELLESLEY

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	262	98,000
30%	110	41,000
50%	58	22,000
70%	35	13,000
90%	22	8,200
95%	15	5,600
100%	6	2,200

TABLE 18

DELEGATE RIVER AT QUIDONG

Percentage of Time Flow Equalled or Exceeded	Corresponding Flow	
	Cusecs	Gallons per Minute
10%	480	180,000
30%	207	77,000
50%	110	41,000
70%	70	26,000
90%	45	17,000
95%	38	14,000
100%	9	3,400

The periods of record on which the flow duration statistics have been based for a number of the foregoing gauging stations are relatively short when compared to the period of record available for the Snowy River at Jindabyne.

In order to provide an indication of the long term runoff characteristics of each stream, the flow duration statistics have been extended to cover the period 1901 to 1954 using the short term records as a basis. The resulting curves which have been prepared indicating the runoff per square mile of catchment area are shown at Figure 29.

Examination of Figure 29 indicates that of the seven selected stations, the Snowy River at Jindabyne exhibits by far the highest persistence of flow. The higher runoff at this station over that recorded at Woolway, Dalgety Road, The Falls, Wellesley and Quidong is attributed to the higher average annual rainfall over the Jindabyne catchment and also to the contribution to runoff of snowmelt from the alpine regions in the headwaters of the Snowy River.

The duration curve for the Snowy River at Dalgety is substantially below that for Jindabyne. As the catchment area at Jindabyne is only about sixty percent of the catchment for Dalgety and as yields per unit area normally increase as catchment areas decrease, this result is to be expected, particularly in view of the lower level of the catchment between Jindabyne and Dalgety.

Of the other stations represented at Figure 29, flow frequencies for Wullwye Creek at Woolway are substantially below those of the other six adjoining catchments. This difference in flow characteristics is attributable to the existence of a rain shadow over the Wullwye Creek catchment. The annual median rainfall within this area is about 20 inches compared to between 30 and 40 inches over the catchments of the Bombala, Maclaughlin, Delegate and Little Plains Rivers, and a greater persistence of flow is therefore to be expected at these latter stations.

10. OCCURRENCE OF FLOODING

Since the commencement of operation of major water conservation storages in the Snowy River Valley in 1955, high flows at and below the gauging station on the Snowy River at Jindabyne have been significantly reduced as a result of the impounding of floodwaters in the comparatively large upstream storages. Flooding in the lower valley is mainly confined to tributaries affected by local runoff and as a result, the valley, as a whole, does not suffer as severe flooding as other river valleys in New South Wales.

Prior to 1955, flood height information on the Snowy River at Jindabyne indicated that the occurrence of major floods was not frequent. The first reports of significant flooding were based on information from local residents and indicated that floods in June 1891 and December 1897 caused considerable damage to low lying pastures and destroyed extensive lengths of fencing.

Since reliable flood height information became available with the installation of the gauging station at Jindabyne in 1902, ten floods have occurred in excess of 15 feet on the gauge. Major flood damage at Jindabyne did not occur until the water level rose in excess of 20 feet, and, over the periods of records, only three such occasions have occurred. The highest flood at Jindabyne occurred in July 1922 and reached a peak height on the gauge of 24 feet 7 inches corresponding to a discharge of about 40,200 cusecs.

A feature of the Snowy River which has an important bearing on the flood problem of the lower plains near and downstream of Dalgety, is the existence of breaks or gaps in the river banks, that permit floodwaters to escape onto surrounding low-lying country at levels well below bank levels. Flooding of these areas is more frequent as a result of this occurrence and river improvement works have been undertaken to prevent minor floodwaters inundating fertile river flats.

Prior to the establishment of stream gauging stations on the tributaries of the Snowy River local records of flood data indicate that, at some locations in the valley, severe flooding has occurred. At Bombala in January 1934, floodwaters surrounded farmlands and entered the town, destroying a number of buildings.

Since the installation of a gauging station on the Bombala River at The Falls, located upstream of Bombala, four floods have been recorded in excess of the danger height of 20 feet. This height represents the gauge height at which landholders in the vicinity would have to be warned of the impending flood danger. The maximum recorded flood height at The Falls occurred during the recent flood of February 1971 when a height of 34.80 feet (51,600 cusecs) was reached. This was only the second flood that exceeded the critical height of 25 feet since commencement of records in 1951, the other reaching 29 feet 6 inches in June 1952.

At the gauging station on the Maclaughlin River at Dalgety Road, nine floods have been recorded since the commencement of records in 1954, that have exceeded the danger height of 7 feet. Of these floods, only four have been of sufficient magnitude to exceed the critical height of 10 feet, which is the height at which overbank flow commences to inundate low-lying areas in the vicinity. The highest recorded flood at the Dalgety Road gauging station reached a height of about 15

feet and this was equivalent to a maximum discharge of 16,600 cusecs. The February 1971 flood, which reached record heights in streams in the south-east of the valley, was not as severe in the more northerly streams and only reached 11.60 feet at Dalgety Road.

11. DROUGHT PERIODS

While there is no generally adopted definition of the term "drought" it is usually accepted as being a period of low rainfall over a particular catchment. However the criteria used in assessing if an area is under drought conditions vary widely with geographical location, average rainfall and normal crop requirements. For example, a continuous period of twelve months with very low rainfalls, may well be considered as a drought on a well-watered coastal catchment but as a normal condition on an inland catchment.

Therefore the concept of drought cannot be separated from the area involved or the use to which the water is directed. In most regions, an area is considered to be under the effects of drought when the soil moisture is insufficient for the requirements of the majority of crops during the growing season and when available water supplies are insufficient for domestic, stock and industrial purposes. A diminished or exhausted rate of streamflow is a prime indicator of drought conditions.

The annual rainfalls recorded at Kiandra, Adaminaby, Bombala and Dalgety from the commencement of records to 1971 are shown at Figures 30 and 31. These figures indicate that as well as experiencing very low rainfalls in individual years, the valley has generally experienced extended periods of below average rainfall over a number of consecutive years.

At the rainfall station at Adaminaby, seven consecutive years from 1962 to 1968 recorded below average rainfalls. As well, the minimum calendar year total over the period of records occurred during this period and was 13.46 inches in 1967, representing less than 50 percent of the annual average of 27.66 inches over the complete period of records.

The lowest annual rainfall in the elevated regions at Kiandra also occurred in 1967 and was 25.77 inches or about 41 percent of the mean annual value. The longest consecutive period of below average rainfalls at Kiandra occurred in the seven year period between 1924 and 1930.

At Bombala during the seventeen year period from 1894 to 1910, only the 1902 annual rainfall was above average. The rainfall during this year was only about 26.30 inches, or less than 1 percent above the annual average rainfall.

This seventeen year period constituted the most prolonged period of low rainfalls experienced at Bombala. The lowest annual rainfall on record of 11.88 inches at Bombala occurred in 1885 and was less than 50 percent of the annual average rainfall. The rainfalls at Bombala can be considered as being representative of the undulating country in the south-east of the valley.

The minimum rainfall recorded over a consecutive twelve monthly period is usually less than the minimum calendar year total and provides a more reliable indication of rainfall deficiency during drought periods.

A comparison of the minimum twelve monthly rainfall, the minimum calendar year rainfall and the average annual rainfall recorded over the period of records at Kiandra, Adaminaby and Bombala is given in the following Table 19.

TABLE 19

Location	Minimum Twelve Monthly Rainfall (inches)	Minimum Calendar Year Rainfalls (inches)	Average Annual Rainfall (inches)
Kiandra	25.73 (Mar. 1967 to Feb. 1968)	25.77 (1967)	62.12
Adaminaby	12.66 (Nov. 1964 to Oct. 1965)	13.46 (1967)	27.66
Bombala	11.88 (Jan. to Dec. 1885)	11.88 (1885)	25.09

Since the commencement of regular recording of streamflows at the long term gauging station on the Snowy River at Jindabyne, the minimum twelve monthly flow occurred from October 1965 to September 1966 and was 124,960 acre feet. However, discharges at this station have been influenced by the completion of Eucumbene Dam in 1957 and discharges since that date are not indicative of the natural behaviour of the catchment above the Jindabyne gauging station.

Prior to 1957 the lowest twelve monthly discharge at Jindabyne was about 379,000 acre feet and occurred from February 1938 to January 1939.

On the Little Plains River at Wellesley the minimum recorded twelve monthly discharge since the commencement of records in 1941 occurred between November, 1941 and October, 1942 and was about 20,000 acre feet. This represents about 21 percent of the average annual flow over the period of records.

The minimum twelve monthly flows at selected gauging stations in the Snowy Valley and their percentages of the respective average annual flows at the stations are given in the following Table 20.

TABLE 20

Stream	Station	Minimum Twelve Monthly Flow		
		Period	Acre Feet	Percentage of Mean Annual Flow
Snowy River	Jindabyne (pre-Snowy works)	February 1938 to January 1939	379,000	39%
Wullwye Creek	Woolway	December 1967 to November 1968	481	1%
Maclaughlin River	Dalgety Road	December 1967 to November 1968	2,895	9%
Bombala River	The Falls	December 1967 to November 1968	6,510	5%
Delegate River	Quidong	January 1955 to December 1955	46,170	30%
Little Plains River	Wellesley	November 1941 to October 1942	20,100	21%

Available streamflow records indicate that all streams reach relatively low discharges during low rainfall periods. At the long term station on the Snowy River at Jindabyne, the river has not ceased to flow. Prior to the regulation of flows at this station by Eucumbene Dam, the lowest recorded discharge occurred in May 1912 and was 32 cusecs. Since the completion of Eucumbene Dam in 1957, flows released from the dam have been relatively small, being of such magnitude only to satisfy the downstream riparian, town and licensed works requirements and therefore low flows over short durations in this period cannot be properly compared with low flows obtained during earlier periods.

Tributaries of the Snowy River that drain the lower rainfall areas in the east of the valley have been reduced to very low discharges during drought periods. Wullwye Creek at Woolway ceased to flow for 37 days during December 1954 and January 1955 whilst at the Bombala River at The Falls, the river flow ceased for 23 days in March 1968 and for 17 days in December 1968.

Table 21 indicates the minimum recorded discharges for periods of 30 days and 60 days recorded at selected stream gauging stations in the valley over the period of computed records, except at Jindabyne, where the period of records applies to years prior to the operation of Snowy Works commencing in 1955.

TABLE 21

Stream	Station	Minimum Recorded Flow (Acre Feet)	
		30 days	60 days
Snowy River	Jindabyne Pre-Snowy Works	3240 (February to March 1915)	10138 (February to April 1915)
Wullwye Creek	Woolway	0 (December 1954 to January 1955)	11 (January 1968 to February 1968)
Maclaughlin River	Dalgety Road	5 (November 1968 to December 1968)	70 (October 1968 to December 1968)
Bombala River	The Falls	2 (February to March 1968)	98 (January 1968 to March 1968)
Delegate River	Quidong	842 (February to March 1968)	1937 (February to April 1968)
Little Plains River	Wellesley	520 (March 1968)	1110 (March to April 1968)

12. THE 1964 - 1968 DROUGHT

From November 1964 to 1968, the Snowy Valley, in common with many other valleys in New South Wales, experienced a number of periods of extremely low rainfall. Details of the recorded monthly rainfalls at Adaminaby, Bombala, Delegate and Kiandra for the period from November 1964 to December 1968 are given in Table 22.

TABLE 22

Month		Rainfall in Points			
		Adaminaby	Bombala	Delegate	Kiandra
November,	1964	85	221	176	105
December,	1964	194	182	263	518
January,	1965	0	10	44	2
February,	1965	21	54	82	15
March,	1965	0	24	79	79
April,	1965	44	98	106	281
May,	1965	24	26	38	392
June,	1965	69	67	90	178
July,	1965	56	62	81	378
August,	1965	302	404	430	859
September,	1965	178	103	86	444
October,	1965	293	169	162	478
November,	1965	211	301	402	518
December,	1965	165	85	113	153
January,	1966	206	194	165	238
February,	1966	214	109	183	233
March,	1966	276	299	213	590
April,	1966	46	63	81	204
May,	1966	215	57	94	521
June,	1966	149	320	244	430
July,	1966	227	186	240	941
August,	1966	124	80	149	497
September,	1966	275	121	193	609
October,	1966	236	303	352	421
November,	1966	487	431	420	701
December,	1966	283	628	666	628
January,	1967	197	276	182	207
February,	1967	24	19	30	144
March,	1967	79	71	172	57
April,	1967	24	3	14	15
May,	1967	104	139	150	188
June,	1967	44	92	64	86
July,	1967	77	59	59	461
August,	1967	281	330	199	672
September,	1967	168	277	206	265
October,	1967	203	145	136	245
November,	1967	108	80	115	146
December,	1967	33	54	45	91
January,	1968	176	130	245	343
February,	1968	26	1	0	4
March,	1968	131	155	156	310
April,	1968	69	115	129	457
May,	1968	406	272	237	1461
June,	1968	114	135	202	535
July,	1968	150	140	237	365
August,	1968	313	138	174	1373
September,	1968	67	9	38	313
October,	1968	245	117	96	904
November,	1968	239	163	243	630
December,	1968	359	472	358	574
	1965	1363	1403	1723	3777
Annual	1966	2738	2791	3000	6013
Rainfalls	1967	1344	1545	1372	2577
	1968	2295	1847	2115	7269
Minimum Twelve Monthly Rainfall During 1964 - 68		1266 (November 1964 to October 1965)	1381 (March 1967 to February 1968)	1372 (January 1967 to December 1967)	2573 (March 1967 to February 1968)
Minimum Twelve Monthly Rainfall over Period of records prior to November 1964		1300 (December 1901 to November 1902	1188 (January 1885 to December 1885)	1323 (August 1914 to July 1915)	2778 (May 1914 to to April 1915)

During the early part of 1964, average rainfalls generally occurred throughout the valley and rural conditions were considered to be good. However, conditions began to deteriorate from November 1964 and by the end of the year, good rainfalls were needed to maintain agricultural and water supply conditions at reasonable levels.

From November 1964, however, nine consecutive months of below average rainfalls were recorded at most locations in the Snowy River Valley. Rural conditions rapidly deteriorated in the early months of 1965 and with drying winds and high temperatures which prevailed during the latter part of February 1965, pasture conditions and water supplies became critical. As a result the Snowy Valley was declared a drought area at the beginning of March 1965.

Conditions were improved in August, 1965 with above average rainfalls occurring throughout the valley. At Adaminaby about 3 inches were recorded, whilst in the elevated terrain around Kiandra, rainfalls in excess of 8 inches were registered.

Follow-up rain in October and November 1965, was only of average proportions but ensured a continuation of the general improvement throughout the valley and resulted in the removal of the Snowy Valley from the declared drought areas.

Rainfalls from December 1965 again became sporadic and by May 1966 many areas had received worthwhile rainfalls in only one month during this six month period. Conditions deteriorated within the eastern areas of the valley and the Bombala Pastures Protection District was proclaimed a drought area in May 1966. The remainder of the valley was similarly proclaimed in June, 1966.

Average rainfalls in July 1966 resulted in some improvement in conditions and together with reasonable follow-up rainfalls in August, resulted in the drought proclamation being removed from the valley in September, 1966.

Good rainfalls occurred generally for the remaining months of 1966, but below average falls during the first seven months of 1967 deteriorated conditions to such an extent that a drought proclamation was reintroduced for the Snowy Valley in July 1967.

Although this proclamation was removed in late August, 1967, conditions did not greatly improve during the remaining months of 1967 and by February 1968, the Snowy Valley was again declared a drought area.

Above average rainfalls in May, August and December, 1968 were sufficient to greatly improve conditions throughout the valley, however due to poor preceding and intervening monthly rainfalls, substantial benefit did not result, and pasture and general agricultural conditions remained only fair.

While above average or average rainfalls occurred generally throughout the valley for the first six months of 1969, excepting January, rural conditions were slow to improve and only areas around Cooma had been removed from drought declared areas by May 1969.

Further useful rainfalls occurred in subsequent months and the drought proclamation was removed from the remaining areas in October 1969; this date constituting the first occasion since February 1968 that the Snowy Valley was removed as a proclaimed drought area.

An indication of the severity of the drought can be gained by comparing the rainfalls recorded in the valley since November 1964 with rainfalls recorded during other drought periods.

At Adaminaby, Bombala, Delegate Post Office and Kiandra the annual rainfalls recorded in 1965 or 1967 either approached or were the lowest since the commencement of records at each station.

The 1965 annual rainfall at Adaminaby of 13.63 inches was the lowest on record up to that date, but in 1967 a lesser total of 13.46 inches was recorded.

At Bombala the annual rainfall in 1965 of about 14 inches was only about 2 inches greater than the previous minimum recorded in 1885, whilst the 1967 annual rainfall was the fourth lowest on record.

Delegate Post Office also recorded the lowest annual rainfall on record in 1967 of 13.72 inches. The total of 17.23 inches recorded in 1965 was also the fourth lowest total on record.

In the higher regions at Kiandra the 1967 annual rainfall of 25.77 inches was about 10 inches less than the previous minimum whilst the 1965 rainfall was the fourth lowest on record.

The drought conditions which prevailed during the extended periods of below average rainfalls from 1964 to 1968 are also indicated by the runoff records obtained at gauging stations within the valley.

During the periods of almost negligible rainfall, the flow in all streams reached extremely low proportions. Details of the minimum flow recorded from November 1964 to December 1968 and the duration of this flow for selected stations are given in Table 23, together with a comparison of these minimum flows with minimum flows recorded during earlier dry periods.

TABLE 23

Stream	Station	Minimum Recorded Flow					
		Prior to November 1964			Drought Period 1964 to 1968		
		Minimum Flow Cusecs	Period		Minimum Flow Cusecs	Period	
			Month	Number of Days		Month	Number of Days
Bombala River	The Falls	0.9	January 1955	4	0	March 1968	23
Wullwye Creek	Woolway	0	December 1954 to January 1955	37	0	December 1968	2
Maclaughlin River	Dalgety Road	0.8	November 1955	9	0.1	December 1968	24
Delegate River	Quidong	9	April 1951	3	14	January and February 1968	29
Little Plains River	Wellesley	6	March 1945	5	8	December 1968	1

The statistics for stations on the Snowy River at Jindabyne and Dalgety during the 1964-1968 dry periods have not been included in Table 23 and subsequent tables in this section. Flows since June 1957 have been affected by Eucumbene Dam, and the recorded low discharges during the 1964-1968 period are not representative of the runoff from the natural catchments above these gauging stations.

To indicate the runoff deficiency within the Snowy Valley during the 1964-1968 drought period, the minimum flow volumes recorded at selected stream gauging stations for periods of thirty and sixty days are given in Table 24.

TABLE 24

Stream	Station	Minimum Flow During 1964-1968 (Acre Feet)	
		30 Days	60 Days
Bombala River	The Falls	2	98
Wullwye Creek	Woolway	2	11
Maclaughlin River	Dalgety Road	5	70
Delegate River	Quidong	842	1937
Little Plains River	Wellesley	520	1110

The flow volumes recorded at the gauging stations in Table 24 during the 1964-1968 drought, were the lowest on record, excepting the station on Wullwye Creek at Woolway. At Woolway, the 60 day flow volume was the lowest on record but a 30 day period recorded in 1954-1955 was lower than the value recorded in 1964 to 1968.

Low flows were also recorded over significantly longer periods during the recent drought and at Table 25 the minimum twelve monthly flows recorded at the gauging stations at The Falls, Woolway, Dalgety Road, Quidong and Wellesley, are shown, together with a comparison with the mean annual flows over the periods of records.

TABLE 25

Stream	Station	Minimum Twelve Monthly Flow During 1964-1968		
		Acre Feet	Period	Percentage of Mean Annual Flow
Bombala River	The Falls	6,510	December 1967 to November 1968	5%
Wullwye Creek	Woolway	481	December 1967 to November 1968	1%
Maclaughlin River	Dalgety Road	2,895	December 1967 to November 1968	9%
Delegate River	Quidong	46,670	January 1968 to December 1968	30%
Little Plains River	Wellesley	22,242	January 1968 to December 1968	24%

The minimum twelve monthly flows during the 1964-1968 drought shown in Table 25 were also the absolute minima recorded for the stations on Wullwye Creek at Woolway, Maclaughlin River at Dalgety Road and on the Bombala River at The Falls. At the stations on the Delegate River at Quidong and the Little Plains River at Wellesley the 1964-1968 minima were only marginally above the lowest recorded twelve monthly flows.

13. WATER REQUIREMENTS FOR CURRENT DEVELOPMENT

The agricultural pursuits of the Snowy River Valley are severely governed by the topography of the valley, which is located within the elevated eastern Australian plateau region and contains the only extensive alpine area of the continent. Large areas are normally subject to snow cover for a considerable period during the year and apart from grazing, other rural activities are of very limited extent within the valley.

Sheep grazing for wool is the main activity supported on the tableland regions of the valley, with some small areas near Nimmitabel and Bombala undertaking fat lamb raising as well as grazing for wool.

Since June 1944 the area authorised for irrigation by license under the New South Wales Water Act has increased from 30 acres to 1631 acres in June 1972, whilst the corresponding number of licenses increased from 3 to 37. The variation in total area and corresponding number of licenses for authorised irrigation within the New South Wales segment of the Snowy River Valley is given at Figure 32.

As shown at Figure 32 the area authorised for irrigation has varied rather erratically since 1944, reaching a minor peak of about 340 acres in 1949, reducing to about 174 acres in 1951, rising again to 800 acres in 1959-60 and reaching its highest level of 1,703 acres in 1970. Nevertheless, having regard to the size of the valley, minor areas are authorised for irrigation in the Snowy Valley in comparison with other valleys in the State.

A number of major storages have been constructed in the valley as part of the Snowy Mountains Hydro-Electric Scheme. Details of these works are given in Section 16 of this report.

A total of seven minor water diversion installations are currently in operation in the Snowy Valley. Five of the works provide town water supplies to the towns of Delegate, Jindabyne, Bombala, Berridale and Dalgety and the remaining two installations supply water for a gravel works on Bobundara Creek and a hotel on Rush's Creek near Jindabyne.

The installations serving the towns of Bombala, Berridale and Dalgety provide an estimated annual diversion of about 62 million gallons which is equivalent to a continuous rate of 0.3 cusec. The works supplying Bombala comprise a concrete arch dam on Coolumbooka River with a storage capacity of about 25 million gallons (92 acre feet).

In addition to the above installations, a further licensed work is located on Crackenback Creek, diverting water for recreational purposes. While the maximum diversion for this license is 1,500 gallons per minute the pumps are only used to initially fill two ponds and therefore the annual diversion is almost negligible.

The estimated maximum requirements under present conditions on the Snowy River and its tributaries for irrigation under license, water supply and riparian usage (excluding transmission losses) are given in Table 26.

TABLE 26

Requirement	Estimated Maximum Demand	
	Cusecs	Gallons per Minute
Irrigation under License (1631 acres at 2.0 feet per 8 month season)	6.7	2510
Town, stock and domestic water supplies	2.7	1000
Riparian Usage	26.0	9680
Totals	35.4	13190

As indicated in Table 26 there is only a limited demand for irrigation in the Snowy Valley, comprising only about 20 percent of the estimated total requirements.

The majority of irrigation in the valley is located in the south-eastern sector. More than 50 percent of the total area authorised for irrigation in the Snowy Valley is situated on the Delegate River and its tributaries, where the topography is less rugged than the alpine areas in the northern sector. However, most of the irrigated areas are comprised of small acreages, the maximum area authorised in the Delegate catchment being only about 80 acres.

Details of the areas authorised for irrigation on the Snowy River and its tributaries at 30th June, 1972, and the estimated total maximum requirements (including irrigation demands, water supply and riparian usage but excluding transmission losses) are given at Table 27.

TABLE 27

Stream	Area Authorised for Irrigation at 30th June 1972	Estimated Total Maximum Requirement	
		Cusecs	Gallons per Minute
Snowy River above Jindabyne	-	0.7	260
Eucumbene River and tributaries	10	2.7	1,010
Snowy River below Jindabyne to New South Wales Border	177	3.4	1,270
Bobundara Creek	219	4.2	1,570
Maclaughlin River and tributaries	145	3.6	1,330
Delegate River and tributaries	1,025	12.8	4,790
Miscellaneous tributaries	55	8.0	2,960
Totals	1,631	35.4	13,190

The foregoing requirements given in Tables 26 and 27 do not include any allowance for transmission losses due to evaporation from the stream surface and seepage into the bed and banks of each channel. These losses, which can be of substantial magnitude particularly during drought periods, are related to flow levels in the stream channels and groundwater conditions and therefore can be expected to vary widely depending on antecedent meteorological conditions.

14. POSSIBLE IRRIGATION DEVELOPMENT

Owing to the high altitude and unsuitable topography, it is unlikely that there would be any substantial increase in irrigation development in the New South Wales segment of the Snowy River Valley, even if additional storages were constructed on the Snowy River or its tributaries to provide regulated flows.

Most of the areas which would be suitable for irrigation occur in isolated pockets along the streams, since the New South Wales segment of the Snowy River Valley is confined to the central and upper reaches and does not include the downstream alluvial flats. The density of irrigable areas is therefore considerably less than for any of the other south coastal river valleys in the State. The density in the Snowy Valley is only 2 acres per square mile of total catchment compared with 5 acres per square mile in the Towamba-Genoa Valley, 8½ acres per square mile in the Tuross Valley and 14 acres per square mile in the Shoalhaven Valley.

An assessment of areas which appear suitable for irrigation in the valley has been made with the assistance of aerial photographs. The estimated extent of suitable areas on the various streams inthe valley is summarised in Table 28.

TABLE 28

Stream	Assessed Area Suitable for Irrigation (Acres)
Snowy River above Jindabyne	-
Eucumbene River and tributaries	200
Gungarlin River	100
Snowy River - Jindabyne to State Border	1,000
Mowamba River	100
Beloka Creek	280
Wullwye Creek and tributaries	920
Bobundara Creek	1,100
Maclaughlin River	320
Numbla Creek	500
Delegate River and tributaries	4,280
Miscellaneous tributaries	200
Total	9,000

In the eastern and northern sectors of the valley the topography is usually too steep to permit economical construction of farm dams, but the undulating terrain in the south-east of the valley, on the plateau areas near Bombala, Nimmitabel and Berridale, is quite suitable for farm dam construction. However, to date little development of these works has been undertaken for irrigation purposes.

The temporal rainfall pattern over the valley is such that economic construction of farm dams is feasible in areas of suitable soils and topography. It is expected that in the future such works will provide significant amounts of water for supplemental irrigation purposes.

15. INVESTIGATIONS OF STORAGE PROPOSALS

Apart from some preliminary surveys by the Commission, all investigations of storage proposals in the Snowy River Valley have been undertaken by the Snowy Mountains Hydro-Electric Authority as detailed in Section 16.

The Commission has, however, made a preliminary examination of a number of proposals submitted by local organisations for utilisation of the water resources of the Lower Snowy catchment below Jindabyne Dam, which is the southern extremity of the area whose waters are controlled by the Snowy Mountains Scheme.

One proposal is for the diversion of the water of the Lower Snowy River to the Upper Indi (Murray River) involving construction of the following works indicated in Figure 33:-

1. a dam on the Ingeegoodbee River near the New South Wales - Victorian border (where the river bed is about 3,400 feet above sea level and the catchment area is in the order of 40 square miles);
2. a dam on the Snowy River about two miles below the junction of the Moyangul River (where the river bed is about 400 feet above sea level and the catchment area is about 2,600 square miles);
3. a dam on the Freestone River in Victoria near its confluence with the Berrima River (where the river bed is about 2,200 feet above sea level and the catchment area is about 10 square miles);
4. a tunnel about five miles in length between the dams on the Ingeegoodbee and Snowy Rivers;

5. a tunnel about six miles in length between dams on the Ingeegoodbee and Freestone Rivers;

6. a tunnel about ten miles in length between the dam on the Ingeegoodbee and the Upper Indi (Murray) Rivers;

7. power stations and transmission lines and the use of offpeak energy to pump water from the dams on the Freestone and Snowy Rivers to the dam on the Ingeegoodbee River for subsequent diversion to the Murray Valley where it could be used for irrigation purposes.

Implementation of the foregoing proposal involving the storage and/or diversion of Snowy Valley water resources would be contingent on reaching an agreement with the State of Victoria. In addition investigation of the proposals for the diversion of waters of the Snowy River to the Upper Murray catchment would involve the River Murray Commission, which controls the development of the River Murray water resources. Also the Snowy Mountains Authority and Council would need to be consulted if works of the Snowy Scheme were involved in any proposal.

Furthermore, the diversion proposals would be extremely costly to implement and based on the Commission's own preliminary examination, it is apparent that they could not be economically justified for irrigation purposes at the present time. Consequently it would seem that within the foreseeable future at least, additional regulated flow requirements in the Murray and Murrumbidgee Rivers will continue to be provided by means of additional storage developments within those two valleys themselves.

16. THE SNOWY MOUNTAINS SCHEME

Under the terms of the Snowy Mountains Hydro-Electric Power Act the water resources of the Snowy River and its tributaries upstream of a point about 5 miles above Dalgety, New South Wales, have been developed, together with the other rivers of the Snowy Mountains Area, by the Snowy Mountains Scheme.

The Scheme embraces an area of nearly 3,000 square miles, ranking among the largest engineering undertakings ever attempted. It has involved the construction of 16 large dams and many smaller ones, almost 100 miles of tunnels, 7 power stations and more than 80 miles of aqueducts high in the ranges to collect the mountain streams which would otherwise miss the reservoirs and tunnels.

Although the compass of the Snowy Mountains Scheme embraces an area much larger than that of the Snowy Valley, it is essential for the purpose of clarity, to describe the Scheme in its entirety.

Despite the complexities involved in the control and diversion of six rivers, the underlying principle on which it is based is simple, to collect the waters of the Snowy River where they leave the eastern side of the mountains and to turn them inland through long transmountain tunnels to the Murray and Murrumbidgee Rivers. In passing through the tunnel systems the collected waters of the Snowy and its tributary the Eucumbene, the Upper Murrumbidgee, the Tooma, the Tumut and the Geehi Rivers, fall over 2,500 feet generating large quantities of hydro-electric power.

The scheme can best be described under two geographical groupings, both of which originate in the Snowy River Catchment;

(a) The Snowy-Tumut Development (Figures 34 and 35). This enables the diversion of the Eucumbene River (a tributary of the Snowy River) through a transmountain tunnel to the Tumut River (a tributary of the Murrumbidgee); and also the diversion of the Upper Murrumbidgee River to the Eucumbene River, and the Tooma River in the Murray Catchment to the Tumut River.

(b) The Snowy-Murray Development (Figures 34 and 35). This allows diversion of the Snowy River through a second transmountain tunnel system, to the Murray River.

The Snowy-Tumut Development

The Snowy-Tumut Development centres on the diversion of the Eucumbene River, a tributary of the Snowy River, from Lake Eucumbene through the 13.9 mile Eucumbene-Tumut transmountain tunnel to Tumut Pond Reservoir on the Tumut River, a tributary of the Murrumbidgee. Storages are also located on the Upper Murrumbidgee and Tooma Rivers, and diversion tunnels 10.3 miles and 9 miles long bring the waters of these rivers to Lake Eucumbene and Tumut Pond Reservoir respectively. The combined flow of all four rivers falls 2,700 feet as it leaves Tumut Pond and passes in succession through three power stations spaced along the Tumut Gorge, to be caught finally in Blowering Reservoir. A means of regulating the waters discharged from the power stations has been provided by the building of Blowering Dam. This provision was necessary to make fuller use of the waters, since the power station discharges are normally greatest in the winter months, when the downstream requirement for water is low. At Blowering the waters are stored, provided that storage is available, and are later released downriver to meet irrigation and other requirements. Water released from Blowering passes through a fourth power station at the foot of the Dam before emerging into the lower Tumut River and thence flowing on to join the Murrumbidgee River.

Blowering Dam was constructed by the Snowy Mountains Authority as agent for the State of New South Wales, with the Water Conservation and Irrigation Commission being the constructing authority. With its completion, the total gain of water to the Murrumbidgee River allows expansion of irrigation to be based on an annual addition of approximately 1,100,000 acre feet. The total capacity of the four power stations, after completion of the Tumut 3 project, will be 2,180,000 kilowatts.

The Snowy-Murray Development

The Snowy-Murray Development involves the diversion of the Snowy River by a dam at Island Bend and a transmountain tunnel system 20 miles long stretching to the Murray River Catchment on the western side of the mountains. Another dam collects the waters of the Geehi and turns them into the same tunnel system. Travelling through the tunnels, shafts and pipelines the diverted water falls 2,600 feet and passes through the two large power stations, Murray 1 and Murray 2, which have a combined capacity of 1,500,000 kilowatts.

An additional project constructed at Guthega, generating power from the rapidly falling waters of the Upper Snowy before they reach the main tunnel system, has been in operation since 1955.

Between Island Bend Reservoir on the Snowy River and Lake Eucumbene on its tributary, runs the 15.2 mile two-way flow Eucumbene-Snowy tunnel. This tunnel connects the Snowy-Murray Development to Lake Eucumbene, which thus becomes the common storage for both developments.

The runoff from a portion of the Snowy River catchment downstream of Eucumbene and Island Bend Dams, together with any spill from Island Bend Dam, is impounded in Jindabyne Reservoir at a point where the Snowy leaves the mountains. A pumping station using off-peak energy lifts the waters so stored through a pipeline to a tunnel which connects with the Snowy-Geehi tunnel beneath Island Bend reservoir. The amount of off-peak energy required for pumping against a head of 800 feet to the level of Geehi Reservoir is about two-fifths of the more valuable peak load which is generated by the subsequent fall of 2,600 feet through the turbines of Murray 1 and Murray 2 power stations.

Development of the Water Resources of the Snowy River Basin

Within the upper basin of the Snowy River the waters are being caught and stored by 5 major projects before being diverted to the catchments of the Murray and Murrumbidgee on the western side of the mountains. These 5 projects are described below.

Eucumbene Dam

Upstream of its confluence with the Snowy River, the Eucumbene River for part of its course flows along the base of the escarpment which marks the boundary between the eastern edge of the Snowy Mountains and the Adaminaby Tableland. The large active storage capacity of Lake Eucumbene (3,540,000 acre feet) was created by blocking the river in a narrow gorge which widens upstream into a basin of 56 square miles.

Eucumbene Dam, an earth and rockfill embankment containing 8,800,000 cubic yards of material, rises to a height of 381 feet from a base almost half a mile in thickness.

Lake Eucumbene acts as the central storage reservoir for the whole Snowy Mountains Scheme. It collects the natural flow of a section of the Eucumbene River and the waters of the upper Murrumbidgee catchment diverted by tunnel from Tantangara Reservoir. From Lake Eucumbene the waters are released to the Eucumbene-Tumut tunnel as required for hydro-electric generation in the Tumut Power Stations on the west of the Snowy Mountains. In times of high flow in the westerly-flowing Tumut and Tooma Rivers, it is possible under certain circumstances for the water not immediately required in the Tumut River to be sent through the same Eucumbene-Tumut tunnel for storage in Lake Eucumbene.

Eucumbene-Snowy Tunnel

The Eucumbene-Snowy Tunnel establishes a link between the Snowy River and Lake Eucumbene. It carries the waters of the Snowy River from Island Bend to Lake Eucumbene for storage during periods of high river-flow. When the stored waters are required for hydro-electric generation in the Murray Power Stations they are returned towards Island Bend through the same Eucumbene-Snowy Tunnel to join the flows passing westwards through the Snowy-Geehi Tunnel.

The tunnel is of horseshoe section 15.2 miles long with one fifth of its length fully lined with concrete to a diameter of 20 feet - the remainder has a concrete invert.

Additional water is conveyed to the Eucumbene-Snowy Tunnel by pipe aqueducts carrying water from the head streams of the Burrungubugge and Gungarlin. The aqueducts enter an intermediate shaft some 3 miles from Island Bend where the tunnel passes under the Burrungubugge River.

Island Bend Dam

Island Bend Dam, a concrete gravity structure containing 77,000 cubic yards of concrete is 150 feet high and has a crest 470 feet long. With a reservoir capacity of 2,450 acre feet, Island Bend Dam serves as the main diversion structure on the Snowy River. The waters are diverted either to Lake Eucumbene for storage or directly through the Snowy-Geehi Tunnel which provides water to the Geehi Reservoir serving the Murray Power Stations.

Jindabyne Project

Downstream of the Snowy-Geehi Control Gate, the Jindabyne-Island Bend Tunnel enters the main east-west tunnel system. This 6.1 miles long tunnel allows water to be conveyed from Lake Jindabyne to Geehi Reservoir, the head pondage for the Murray Power Stations.

Lake Jindabyne, which provides an active storage of 314,000 acre feet on the Snowy River, is formed by Jindabyne Dam, a sloping core rockfill dam 225 feet high with a crest length of 1,100 feet and a volume of 1,150,000 cubic yards.

The purpose of the Jindabyne Project is to collect the flows of the Snowy catchment downstream of Eucumbene and Island Bend dams, together with any spills from those dams, and to pump the waters so stored 6.1 miles through an elevation of 760 feet to the main east-west tunnel system.

The project operates during off-peak periods to pump the waters to Geehi Reservoir from where during peak-load periods they fall through 2,600 feet to supply the turbo-generators of Murray 1 and Murray 2 Power Stations.

Additional water is brought to Lake Jindabyne by the 19,000 feet long Mowamba River Aqueduct which collects the flows of the Mowamba River and a smaller intermediate tributary, Cobbin Creek.

Guthega Project

On the headwaters of the Snowy River some ten miles upstream of Island Bend stands Guthega Dam, a 110 feet high concrete gravity structure providing the head pondage for the 60,000 kilowatt hydro-electric project which operates on run-of-the-river basis.

Guthega Pondage has a storage capacity of 1,260 acre feet which may be increased by 220 acre feet by means of timber flash-boards. Additional water is brought to Guthega Project by four aqueducts totalling 17½ miles of tunnel, earth channel and concrete pipe.

Quantity of Water Diverted

The diversion of the water from the Snowy River catchment to the Murray and Murrumbidgee Valleys, and the regulation of this water and that of other rivers of the area will provide an additional regulated water supply to the inland of the order of 1,800,000 acre feet in a normal year.

Figure 36 shows the volume of water diverted through the various tunnels and power stations in an average year whilst Figure 37 shows the diversions and change in storage during a typical dry year.

It will be seen that, although the inflows during a dry year may be as low as 30 percent of average, the water released from the power stations and available for irrigation is about 90 percent of average. This high degree of regulation of the Snowy Scheme is achieved by the large capacity of Lake Eucumbene from which almost 800,000 acre feet of water might be drawn during a dry year.

17. 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; by the Snowy Mountains Hydro-Electric Authority in providing information for the section on that scheme; by the Forestry Commission in providing details of timber resources; and by the New South Wales Department of Public Works in providing details of the various town water supply schemes and the flood mitigation proposals in the Snowy River Valley.

Appendix 1
Sheet 1

ADAMINABY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1886					NO	RECORDS					170	369	
1887	685	244	360	174	120	261	421	325	413	368	259	666	4296
1888	205	248	134	65	139	290	186	80	419	88	48	596	2498
1889	268	284	31	180	457	407	74	251	497	310	458	20	3237
1890	40	477	442	136	205	464	209	206	245	556	283	229	3492
1891	630	72	140	191	71	913	414	345	239	413	287	79	3794
1892	205	82	253	176	288	209	91	141	492	406	298	256	2897
1893	249	45	337	298	195	193	251	128	72	373	456	541	3138
1894	380	225	530	379	52	484	261	258	272	133	78	362	3414
1895	156	111	206	114	139	259	178	262	324	55	13	268	2085
1896	126	278	146	176	283	373	103	71	103	126	280	56	2121
1897	527	348	183	59	91	166	163	453	478	206	42	218	2934
1898	37	610	128	133	175	227	459	246	226	646	287	36	3210
1899	161	95	92	438	262	408	239	176	180	446	318	46	2861
1900	143	13	444	360	382	544	255	268	131	34	248	19	2841
1901	115	10	267	214	64	244	55	276	266	569	179	111	2370
1902	227	57	80	44	0	232	159	50	124	139	77	357	1546
1903	55	133	226	188	158	147	255	152	466	327	144	344	2595
1904	396	190	82	106	145	240	18	19	93	14	285	93	1681

Appendix 1
Sheet 2

ADIMINABY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1905	143	130	204	165	113	384	333	50	218	200	52	142	2134
1906	12	242	579	373	158	448	289	261	157	362	399	140	3420
1907						NO	RECORDS						
1908	306	176	123	236	221	N.R.	65	N.R.	372	31	158	25	
1909	179	323	55	58	53	249	179	329	17	130	34	74	1680
1910	831	115	131	30	87	88	116	170	303	302	135	310	2618
1911	521	385	437	0	56	224	358	55	165	17	155	384	2757
1912	1	122	240	19	41	165	441	119	703	40	183	276	2350
1913	80	62	364	108	697	353	124	318	189	210	108	125	2738
1914	113	0	611	113	109	107	147	0	135	64	153	692	2244
1915	148	28	19	64	214	532	172	256	747	315	139	313	2947
1916	334	299	81	216	85	330	248	341	361	363	415	232	3305
1917	415	148	240	42	269	323	482	332	388	510	360	246	3755
1918	339	237	199	130	139	226	422	201	135	155	2	146	2331
1919	15	239	188	131	352	204	93	238	155	301	99	485	2500
1920	347	111	228	74	97	243	227	334	116	114	183	554	2628
1921	328	273	172	355	159	187	105	198	359	304	261	385	3086
1922	207	365	74	187	87	117	809	140	179	123	7	200	2495
1923	119	20	40	48	355	425	436	140	432	354	181	396	2946

Appendix 1
Sheet 3

ADAMINABY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1924	237	268	53	52	63	139	66	417	320	208	397	450	2670
1925	322	204	93	37	490	293	265	350	181	226	265	11	2737
1926	189	2	176	335	312	120	341	241	114	234	104	186	2354
1927	250	23	63	126	436	89	260	351	135	405	210	48	2396
1928	152	545	385	221	103	160	213	145	153	513	107	140	2837
1929	11	658	140	169	151	275	145	316	192	137	264	165	2623
1930	50	144	86	121	250	265	210	239	267	280	203	320	2435
1931	148	82	458	124	504	482	176	292	285	150	148	113	2962
1932	41	226	653	337	81	157	274	584	189	194	262	122	3120
1933	191	0	64	252	245	256	222	115	381	224	323	484	2757
1934	561	289	74	286	13	306	482	452	239	512	462	243	3919
1935	282	332	166	671	60	131	148	231	253	449	129	269	3121
1936	216	274	313	170	80	369	219	496	115	85	70	569	2976
1937	348	18	340	47	72	137	121	181	507	410	180	201	2562
1938	204	128	24	242	28	139	45	293	152	184	169	32	1640
1939	134	251	544	362	133	282	107	678	62	327	236	28	3144
1940	186	80	1	637	200	107	65	184	341	33	179	411	2424
1941	573	195	117	82	156	106	88	161	398	224	116	77	2293
1942	41	194	215	48	535	250	371	251	292	226	606	109	3138

ADAMINABY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1943	233	58	66	448	265	95	157	248	162	471	246	225	2674
1944	37	13	135	110	602	9	173	48	55	311	73	173	1739
1945	203	113	119	640	74	349	120	375	144	377	164	85	2763
1946	150	311	177	197	271	329	688	565	72	91	587	184	3622
1947	4	448	386	101	24	273	341	231	245	201	307	503	3064
1948	463	255	73	222	536	129	74	80	90	563	298	235	3018
1949	180	211	412	47	241	262	99	109	216	422	294	94	2587
1950	226	649	1138	488	215	106	216	136	272	443	449	195	4533
1951	154	279	26	155	354	235	227	276	382	348	97	70	2603
1952	24	80	289	368	365	817	206	250	330	487	199	301	3716
1953	106	144	90	73	582	126	272	223	299	241	170	226	2552
1954	735	240	14	176	35	202	89	207	134	335	324	110	2601
1955	242	329	158	58	230	201	175	458	110	591	193	322	3067
1956	303	127	765	571	428	669	215	260	188	282	132	120	4060
1957	45	131	129	104	111	181	295	200	138	NO	RECORDS		
1958	350	95	152	34	172	285	327	162	215	230	108	145	2275
1959	138	306	401	256	28	316	79	206	209	492	320	119	2870

ADAMINABY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1960	435	93	344	131	415	85	553	67	317	141	245	533	3359
1961	225	162	662	224	25	197	251	77	270	145	457	442	3117
1962	350	85	48	68	170	114	96	186	373	324	102	571	2487
1963	142	87	24	237	333	96	182	192	259	230	187	348	2507
1964	57	108	154	274	75	99	641	250	281	394	85	194	2599
1965	0	21	0	44	24	69	56	302	178	293	211	165	1363
1966	206	214	276	46	215	149	227	124	275	236	487	283	2738
1967	197	24	79	24	104	48	77	281	168	203	108	33	1346
1968	176	26	131	69	406	114	150	313	67	245	239	359	2295
1969	118	441	242	376	227	213	149	91	183	278	434	181	2933
1970	342	98	293	292	178	99	71	414	301	161	411	316	2976
1971	357	604	229	77	180	18	25	217	223	268	191	319	2708

Appendix 2
Sheet 1

BOMBALA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1885	188	165	104	76	14	66	57	19	126	74	215	84	1188
1886	302	198	44	151	33	11	91	161	178	238	159	313	1879
1887	445	173	182	75	101	315	151	218	198	359	549	457	3223
1888	108	251	109	3	93	20	39	208	274	76	106	723	2010
1889	412	245	15	81	314	269	84	74	163	210	401	37	2305
1890	265	339	207	101	277	677	248	116	96	213	124	103	2766
1891	267	131	83	174	32	1483	489	308	178	221	282	170	3818
1892	140	70	212	328	95	13	244	93	397	635	332	217	2776
1893	450	40	532	387	121	157	408	52	202	225	382	813	3769
1894	182	184	401	190	34	399	52	81	136	111	25	211	2006
1895	173	182	188	164	78	286	48	197	189	10	1	131	1647
1896	159	130	104	24	344	665	45	213	150	29	266	180	2309
1897	428	475	154	123	182	139	94	179	156	145	18	224	2317
1898	3	703	34	17	199	108	57	240	50	304	35	140	1890
1899	270	13	200	589	110	382	308	341	83	17	89	33	2435
1900	139	13	294	362	748	155	329	67	144	22	128	100	2501
1901	79	25	236	193	8	220	199	381	99	296	118	48	1902
1902	281	37	374	118	14	279	593	50	123	228	126	407	2630

Appendix 2
Sheet 2

BOMBALA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1903	45	107	94	84	138	20	151	44	277	154	114	298	1526
1904	378	143	105	44	115	86	208	148	125	119	64	55	1590
1905	355	91	236	139	141	36	141	288	96	620	1	158	2302
1906	25	44	804	12	40	27	4	188	162	276	393	224	2199
1907	199	40	123	134	141	227	17	46	30	73	220	469	1719
1908	474	139	38	132	33	147	26	358	322	131	270	132	2202
1909	240	332	60	23	20	505	306	32	106	107	14	196	1941
1910	363	25	190	13	23	215	179	7	265	155	204	297	1936
1911	537	254	446	49	123	220	200	61	226	123	34	240	2513
1912	37	99	209	100	51	135	478	41	69	60	258	327	1864
1913	44	117	644	71	777	768	98	94	182	179	225	63	3262
1914	161	18	720	238	121	52	357	18	206	54	170	353	2468
1915	301	22	69	43	50	88	73	146	357	279	37	197	1662
1916	202	310	198	72	58	84	149	137	370	341	258	348	2527
1917	384	218	80	107	89	93	38	130	191	194	286	210	2020
1918	370	168	202	187	30	85	286	129	89	220	145	86	1997
1919	3	1127	131	218	299	99	79	427	136	128	125	601	3373
1920	739	88	273	89	39	60	115	153	203	341	140	602	2842

Appendix 2
Sheet 3

BOMBALA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1921	237	389	210	355	117	78	63	68	97	226	324	443	2607
1922	264	305	66	46	110	142	972	288	421	155	62	383	3214
1923	249	5	78	8	38	181	199	48	559	280	295	312	2252
1924	336	229	127	199	59	115	96	79	101	86	368	568	2363
1925	270	171	144	224	1116	135	363	78	46	210	83	89	2929
1926	510	0	283	124	138	209	123	121	141	133	91	151	2024
1927	373	69	84	191	316	24	244	66	220	440	161	179	2367
1928	181	517	785	207	101	407	55	45	139	107	42	352	2938
1929	90	686	79	135	204	113	41	480	135	188	700	260	3111
1930	41	203	90	57	204	544	72	99	134	329	132	398	2303
1931	224	81	274	170	320	287	155	92	180	241	370	68	2462
1932	20	309	280	210	241	77	576	388	229	192	185	282	2989
1933	216	19	71	88	159	384	240	163	230	266	318	520	2674
1934	1317	307	134	473	47	455	453	444	96	339	416	198	4679
1935	419	543	92	586	64	59	56	111	140	190	194	374	2828
1936	269	373	139	266	49	462	132	130	78	75	106	622	2701
1937	224	153	325	51	77	310	110	146	222	396	148	307	2469
1938	499	181	381	81	62	90	192	348	213	131	207	10	2395

Appendix 2
Sheet 4

BOMBALA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1939	298	179	517	417	115	120	102	617	95	186	261	39	2946
1940	180	100	2	556	151	122	28	88	375	39	258	317	2216
1941	538	57	177	207	55	170	82	131	128	86	188	148	1967
1942	25	258	402	44	167	199	138	59	184	295	518	101	2390
1943	527	98	49	158	241	119	25	399	188	401	168	307	2680
1944	57	2	149	443	699	44	61	102	29	292	76	109	2063
1945	401	264	134	379	170	257	105	70	91	223	170	122	2386
1946	128	418	227	128	268	590	26	111	101	180	289	146	2612
1947	44	261	367	347	6	72	118	126	75	117	215	383	2131
1948	305	332	60	359	238	94	28	10	90	321	138	525	2500
1949	302	154	391	20	277	555	201	44	129	251	352	98	2774
1950	391	632	585	272	265	135	156	106	88	644	312	182	3768
1951	185	788	3	161	42	530	163	391	411	255	337	53	3319
1952	33	181	303	559	155	932	170	214	108	483	586	584	4308
1953	137	194	46	54	704	121	71	260	85	188	117	146	2123
1954	213	370	3	68	28	215	83	29	93	211	632	232	2177
1955	141	259	284	15	197	148	33	35	133	321	65	489	2120
1956	742	538	460	145	468	691	326	93	160	253	206	88	4170

BOMBALA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1957	1	250	126	31	100	246	592	400	80	135	110	233	2304
1958	203	281	83	80	51	246	140	78	262	132	196	311	2063
1959	99	263	233	194	35	376	431	137	392	599	286	365	3410
1960	507	52	330	71	288	167	541	54	333	204	201	564	3312
1961	298	192	700	120	101	165	420	224	382	169	488	367	3626
1962	506	238	151	105	117	24	49	60	211	149	93	436	2139
1963	545	338	156	206	377	174	290	110	153	88	220	240	2897
1964	18	164	85	546	126	147	107	461	72	217	221	182	2346
1965	10	54	24	98	26	67	62	404	103	169	301	85	1403
1966	194	109	299	63	57	320	186	80	121	303	431	628	2791
1967	276	19	71	3	139	92	59	330	277	145	80	54	1545
1968	130	1	155	115	272	135	140	138	9	117	163	472	1847
1969	85	247	120	324	346	368	70	151	70	236	742	138	2897
1970	230	343	518	128	314	201	0	285	181	142	542	500	3384
1971	361	1537	440	50	74	28	65	76	86	33	368	204	3322

Appendix 3
Sheet 1

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1858	38	363	163	113	300	125	200	175	275	275	550	350	2927
1859	350	88	50	50	75	238	25	63	413	63	250	400	2065
1860	400	575	225	175	25	175	950	75	100	225	600	250	3775
1861	275	500	13	138	150	25	138	150	63	113	263	125	1953
1862	100	200	88	350	163	125	63	175	63	88	75	175	1665
1863	275	375	225	75	25	450	63	75	175	250	325	275	2588
1864	88	125	388	288	50	325	450	188	213	300	50	300	2765
1865	250	25	75	25	163	25	200	150	63	63	100	88	1227
1866	400	138	100	88	263	213	113	75	125	200	238	550	2503
1867	238	275	413	550	988	600	88	75	213	188	38	63	3729
1868	300	325	25	13	75	50	175	50	25	138	313	100	1589
1869	338	363	125	400	513	163	13	63	225	350	200	213	2966
1870	288	25	1013	838	788	175	275	113	175	500	475	413	5078
1871	400	425	288	538	1013	775	25	25	350	375	250	375	4839
1872	263	163	213	175	88	100	163	113	263	188	450	250	2429
1873	638	1263	100	613	75	675	175	100	188	175	750	75	4827
1874	338	725	538	75	225	563	400	113	213	150	213	150	3703
1875	100	313	238	313	238	363	250	175	213	250	150	163	2766
1876	250	138	138	63	188	75	325	75	238	600	438	50	2578

Appendix 3
Sheet 2

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1877	25	113	88	163	250	113	88	63	388	288	50	188	1817
1878	38	713	200	38	13	138	88	63	213	175	150	175	2004
1879	258	303	214	233	750	75	150	275	525	375	225	163	3546
1880	125	463	425	438	338	163	338	125	188	188	250	199	3240
1881	99	306	332	106	160	302	20	60	193	393	475	243	2689
1882	103	60	182	178	145	175	148	108	72	404	221	174	1970
1883	241	294	98	261	175	54	77	39	157	234	265	77	1972
1884	176	88	161	593	47	106	60	118	87	313	133	66	1948
1885	188	165	104	76	14	66	57	27	136	71	342	77	1323
1886	440	242	29	159	37	12	47	162	178	270	168	385	2129
1887	446	208	261	115	120	270	152	146	253	248	421	460	3100
1888	205	231	105	0	111	17	35	332	190	57	115	770	2168
1889	527	253	5	78	338	263	63	59	130	285	393	71	2465
1890	113	403	330	129	316	625	237	113	143	231	174	202	3016
1891	363	128	74	205	47	1579	617	415	323	230	338	219	4538
1892	196	74	311	342	94	30	127	161	588	619	333	143	3018
1893	414	67	294	427	133	185	304	23	296	313	403	734	3593
1894	140	244	443	220	39	437	13	125	152	164	14	223	2214
1895	231	183	249	74	57	231	84	153	121	18	0	141	1542

Appendix 3
Sheet 3

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1896	177	251	79	44	373	655	34	219	252	69	381	221	2755
1897	400	781	136	153	210	168	83	163	218	128	51	240	2731
1898	7	588	104	25	142	141	164	219	80	376	36	155	2037
1899	227	48	174	661	123	315	281	322	93	126	140	26	2536
1900	185	45	276	441	687	146	291	104	204	35	160	129	2703
1901	170	38	136	235	6	179	201	479	92	220	188	25	1969
1902	321	26	273	87	24	203	561	37	161	186	97	489	2465
1903	11	99	157	90	153	158	162	54	272	284	107	229	1776
1904	386	239	47	92	105	68	147	201	115	123	81	114	1718
1905	236	144	380	182	122	125	108	232	20	537	7	143	2236
1906	6	105	660	23	35	44	34	183	159	224	311	184	1968
1907	394	107	156	138	87	278	0	68	28	58	210	412	1936
1908	320	133	64	146	41	103	29	366	346	110	352	152	2162
1909	301	294	72	13	16	419	251	50	77	132	25	160	1810
1910	572	0	180	13	142	29	158	7	250	146	176	247	1920
1911	785	286	433	44	142	220	175	100	203	172	61	310	2931
1912	32	80	214	66	47	96	426	25	43	62	207	352	1650
1913	74	79	554	95	686	679	108	82	147	239	206	96	3045

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1914	127	16	582	135	90	63	364	27	180	59	135	373	2151
1915	228	0	103	56	57	172	53	130	306	169	60	292	1626
1916	250	312	185	94	48	100	138	92	313	244	295	304	2375
1917	475	128	55	103	73	87	43	15	167	174	252	225	1797
1918	378	232	235	134	33	91	276	110	121	127	96	69	1902
1919	0	994	111	210	266	84	15	352	82	126	151	547	2938
1920	717	150	321	149	29	52	127	141	136	315	91	670	2898
1921	170	726	310	329	139	60	55	50	95	265	157	443	2799
1922	278	356	82	30	72	148	838	200	323	180	13	177	2697
1923	95	0	105	2	42	147	167	50	440	188	211	318	1765
1924	366	290	143	161	102	106	81	92	101	109	351	630	2532
1925	218	102	127	250	1122	134	344	137	60	239	275	55	3063
1926	426	0	204	167	118	226	93	60	171	96	119	91	1771
1927	352	35	73	193	287	0	233	56	215	418	149	60	2071
1928	137	519	735	179	129	407	43	36	140	84	46	191	2646
1929	29	742	83	96	170	88	28	486	102	133	544	273	2774
1930	33	239	46	46	135	449	69	100	102	263	96	413	1991
1931	115	69	238	141	258	257	114	78	129	237	185	76	1897

Appendix 3
Sheet 5

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1932	9	249	295	174	252	16	589	224	183	185	232	232	2640
1933	207	28	73	57	130	401	193	83	166	264	263	413	2278
1934	1100	212	262	363	40	310	416	396	130	308	416	122	4075
1935	300	643	65	458	39	50	55	74	141	251	139	353	2568
1936	293	243	144	251	26	440	115	112	67	117	158	446	2412
1937	230	86	218	50	108	291	64	131	160	400	105	320	2163
1938	423	128	217	53	38	87	142	348	202	160	198	16	2012
1939	180	178	408	311	55	50	45	449	50	153	257	27	2163
1940	245	80	0	516	130	70	0	41	292	16	210	321	1921
1941	419	51	88	115	40	150	25	62	120	35	183	87	1375
1942	12	300	355	71	128	132	100	10	142	287	425	25	1987
1943	505	45	28	91	190	116	36	380	125	361	147	227	2251
1944	30	0	158	490	740	29	15	65	22	209	95	141	1994
1945	424	131	161	383	166	290	59	68	45	285	232	124	2368
1946	149	327	344	138	293	593	38	103	104	132	299	256	2776
1947	65	432	312	248	12	89	91	124	89	148	240	514	2364
1948	467	225	123	296	214	35	42	0	227	280	181	432	2522
1949	339	176	370	25	309	637	179	89	166	276	505	149	3220

Appendix 3
Sheet 6

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1950	257	697	685	406	258	183	191	131	110	688	362	244	4212
1951	129	520	11	166	24	497	98	312	468	316	261	168	2970
1952	47	180	335	606	165	907	169	200	61	437	607	608	4322
1953	141	223	117	50	810	129	69	282	106	168	167	158	2420
1954	345	276	0	84	51	334	84	50	95	197	545	62	2123
1955	165	348	264	36	238	180	50	38	108	285	97	653	2462
1956	760	472	458	355	516	563	297	121	202	215	109	66	4134
1957	23	181	192	30	80	277	618	444	97	154	149	253	2498
1958	276	310	100	111	101	263	139	80	266	212	181	174	2213
1959	116	216	237	173	39	472	392	143	356	717	364	174	3399
1960	442	57	241	219	183	195	510	78	346	192	183	395	3041
1961	171	112	846	124	102	175	373	197	392	154	387	259	3292
1962	590	212	66	106	185	20	66	70	242	129	118	429	2233
1963	385	180	156	226	407	214	346	110	133	146	250	323	2876
1964	12	148	114	524	135	156	104	319	113	254	192	235	2306
1965	62	99	25	109	44	53	77	429	112	145	237	111	1503
1966	195	78	377	51	64	271	166	66	121	329	394	417	2529

BUKALONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1967		NO	RECORDS			95	79	324	305	145	118	126	
1968	116	0	247	102	283	118	123	81	12	83	141	476	1782
1969	138	279	249	267	289	300	73	100	74	190	807	165	2931
1970	232	404	468	160	271	175	5	191	159	134	453	545	3197
1971	322	942	142	N.R.	61	18	N.R.	64	83	48	322	144	

Appendix 4
Sheet 1

DALGETY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1896	NO	RECORDS	84	63	288	233	16	92	97	43	199	51	
1897	398	437	254	36	59	96	96	184	225	86	15	421	2307
1898	0	587	49	27	79	35	134	56	52	217	57	98	1391
1899	146	31	158	389	123	167	101	143	130	191	250	37	1866
1900	223	72	320	325	608	135	105	79	120	21	243	69	2320
1901	131	11	183	179	33	74	151	395	150	307	145	84	1843
1902	260	29	176	14	0	125	246	40	136	193	64	442	1725
1903	5	128	126	83	138	73	145	25	298	361	151	399	1932
1904	475	107	76	152	84	59	111	102	34	102	186	45	1533
1905	200	228	174	101	105	120	100	144	72	249	30	87	1610
1906	2	24	468	53	35	97	64	112	91	146	206	55	1353
1907	187	56	305	105	28	213	49	53	21	95	240	365	1717
1908	146	254	0	155	39	21	15	134	296	91	376	17	1544
1909	274	226	218	31	35	230	74	37	25	71	16	75	1312
1910	800	0	246	0	21	48	97	24	200	165	184	222	2007
1911	687	277	191	2	43	105	117	114	162	41	12	76	1827
1912	30	142	199	34	30	148	307	26	158	70	276	234	1654
1913	76	94	307	75	654	384	74	109	65	190	19	111	2158

DALGETY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1914	97	0	468	103	91	60	132	35	176	43	145	410	1760
1915	82	21	14	25	12	324	78	92	271	173	31	89	1212
1916	338	209	105	25	0	140	70	46	401	278	350	232	2194
1917	353	120	153	76	150	130	110	103	207	187	373	268	2230
1918	777	184	252	76	23	3	229	84	67	40	4	38	1777
1919	0	339	52	80	214	48	32	144	97	147	256	377	1786
1920	505	86	280	20	4	58	60	76	85	161	160	479	1974
1921	341	538	155	375	160	80	25	53	154	184	79	412	2556
1922	95	268	36	0	44	168	634	67	243	75	52	67	1749
1923	91	0	41	20	127	148			NO	RECORDS			
1924	N.R.	438					NO	RECORDS					
1925	273	134	100	53	450	116	225	75	53	97	184	60	1820
1926	337	0	134	41	49	19	13	130	90	77	7	65	962
1927	293	0	44	118	223	0	184	14	106	257	136	130	1505
1928	41	689	442	15	17	188	90	39	62	53	17	147	1800
1929	5	368	90	104	46	0	14	149	50	58	721	155	1760
1930	15	229	0	0	151	209	52	43	53	144	51	143	1090
1931	90	232	174	55	229	121	0	15	69	126	91	27	1229

DALGETY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1932	0	191	409	73	0	0	88	141	168	363	184	16	1633
1933	80	0	59	92	40	355	178	29	197	211	433	607	2281
1934	1031	239	177	343	3	290	191	226	14	237	561	231	3543
1935	170	454	55	345	7	5	15	25	42	296	102	283	1799
1936	322	136	454	80	78	359	114	157	31	24	76	443	2274
1937	165	38	161	24	39	162	0	145	199	363	75	279	1650
1938	393	122	67	113	60	29	94	268	112	111	132	11	1512
1939	176	195	481	391	50	59	40	288	3	179	171	5	2038
1940	297	62	0	482	140	24	14	73	156	23	155	261	1687
1941	594	112	149	82	92	24	37	75	140	110	139	97	1651
1942	8	283	317	25	199	193	92	79	158	151	372	299	2176
1943	265	44	12	84	116	50	26	186	86	406	137	150	1562
1944	18	3	62	128	468	3	69	34	0	236	29	133	1183
1945	376	149	114	252	50	158	46	83	58	246	110	105	1747
1946	299	200	237	109	180	481	67	48	49	52	288	184	2194
1947	45	298	251	102	0	65	72	109	36	0	235	389	1602
1948	508	256	27	172	233	60	13	19	66	272	257	277	2160
1949	130	140	223	34	191	287	163	26	113	100	219	203	1829

Appendix 4
Sheet 4

DALGETY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1950	225	489	792	365	122	76	138	78	88	424	477	169	3443
1951	473	379	13	91	37	195	37	203	336	256	131	176	2327
1952	83	123	308	513	136	330	54	144	44	346	242	276	2599
1953	62	220	69	13	391	38	41	187	62	138	79	83	1383
1954	324	280	0	35	18	104	15	53	88	263	378	0	1558
1955	120	275	122	38	161	31	28	57	75	202	52	281	1442
1956	277	163	689	196	395	324	128	45	38	149	8	85	2497
1957	0	73	108	11	25	130	412	224	56	120	138	166	1463
1958	219	163	36	125	119	188	62	59	138	53	165	139	1466
1959	82	228	289	194	10	302	120	93	135	668	228	N.R.	
1960	389	32	354	20	88	33	202	0	222	107	94	394	1935
1961	333	59	529	92	40	153	177	78	238	139	378	194	2410
1962	277	122	19	78	132	3	33	123	219	162	120	443	1731
1963	303	144	106	160	367	74	103	101	131	145	N.R.	265	
1964	0	76	165	575	25	42	109	140	130	191	82	122	1657
1965	12	26	0	40	7	80	15	308	95	200	128	194	1105

DALGETY RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1966	100	68	322	21	87	116	72	48	168	219	393	360	1974
1967	340	12	51	17	63	35	45	171	178	112	140	11	1175
1968	173	3	179	27	206	48	134	86	15	78	108	244	1301
1969	47	425	151	201	184	270	23	54	100	191	797	174	2617
1970	300	360	173	214	170	91	12	166	180	80	433	388	2567
1971	482	598	191	24	59	7	39	111	180	87	229	336	2343

Appendix 5
Sheet 1

DELEGATE POST OFFICE RAINFALL STATISTICS

(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1897	N.R.	429	283	266	187	86	58	213	230	157	44	150	
1898	24	510	30	35	204	46	131	168	85	318	73	75	1699
1899	186	42	111	675	127	247	228	215	84	186	139	48	2288
1900	198	76	281	509	733	116	208	173	126	42	137	71	2670
1901	219	32	114	271	52	216	209	294	106	399	200	55	2167
1902	258	37	471	80	0	301	384	59	210	174	110	455	2539
1903	92	180	170	176	354	93	66	37	387	182	285	304	2326
1904	436	315	186	25	85	184	173	135	256	176	91	45	2107
1905	220	153	153	67	309	75	226	207	54	740	33	227	2464
1906	59	91	779	21	70	65	69	174	177	308	237	235	2285
1907	188	72	204	176	151	141	25	95	67	102	190	487	1898
1908	91	277	55	153	56	232	52	261	362	221	206	47	2013
1909	198	359	55	82	47	405	331	71	148	193	59	121	2069
1910	366	14	226	24	32	85	155	40	256	206	241	272	1917
1911	553	347	396	28	162	424	161	169	174	141	65	274	2894
1912	51	75	193	133	47	186	471	60	114	139	301	244	2014
1913	158	155	611	58	462	516	50	255	90	320	240	82	2997
1914	146	9	446	177	225	68	248	32	187	41	190	187	1956
1915	275	36	54	65	101	110	45	216	244	254	101	382	1883

Appendix 5
Sheet 2

DELEGATE POST OFFICE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1916	264	346	124	114	57	106	196	120	350	142	375	274	2468
1917	207	315	78	149	73	129	113	155	164	232	270	240	2125
1918	491	191	348	159	97	118	276	171	148	155	66	173	2393
1919	12	887	558	170	353	145	38	495	166	215	189	624	3852
1920	534	70	190	145	111	113	129	194	119	306	185	463	2559
1921	386	598	144	323	162	108	71	112	202	325	255	396	3082
1922	200	164	63	20	146	127	516	144	283	178	76	283	2200
1923	163	14	23	16	101	236	199	104	387	325	283	365	2216
1924	286	578	183	139	89	112	96	151	118	137	492	444	2825
1925	224	175	91	338	570	79	678	96	79	182	150	26	2688
1926	450	0	256	289	114	112	122	236	133	151	112	171	2146
1927	352	49	82	89	363	46	269	126	258	505	197	233	2569
1928	211	437	601	206	160	234	55	69	173	238	102	74	2560
1929	107	552	79	236	198	149	74	275	130	200	553	392	2945
1930	86	322	138	78	197	425	62	198	171	228	155	401	2461
1931	111	118	291	237	158	346	143	120	123	283	242	80	2252
1932	29	266	282	210	105	87	619	271	233	184	133	126	2545
1933	221	14	111	92	113	344	312	160	201	264	249	480	2561

Appendix 5
Sheet 3

DELEGATE POST OFFICE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1934	1029	320	100	382	36	422	303	433	101	492	527	229	4374
1935	446	510	88	334	82	83	81	159	111	308	270	423	2895
1936	246	245	197	316	59	413	199	170	74	83	190	492	2684
1937	211	104	183	41	93	181	93	159	292	357	170	347	2231
1938	388	187	519	112	69	75	167	305	158	174	171	22	2347
1939	271	251	456	174	84	148	102	540	78	221	240	210	2775
1940	184	62	2	492	136	151	63	98	314	29	237	317	2085
1941	621	81	190	124	72	157	111	192	113	63	146	156	2026
1942	16	261	269	24	132	143	78	50	121	188	427	148	1857
1943	366	109	39	144	82	157	31	309	147	273	149	239	2045
1944	53	9	187	394	448	51	82	73	42	225	75	106	1745
1945	257	284	137	75	99	163	127	239	78	259	209	130	2057
1946	122	587	261	234	311	541	63	165	149	198	225	309	3165
1947	46	212	492	310	63	105	187	149	130	151	302	337	2484
1948	278	313	34	718	201	100	68	42	102	378	175	387	2796
1949	183	202	254	44	247	479	246	61	134	250	381	174	2655
1950	224	584	542	329	162	84	123	173	151	567	340	167	3446
1951	143	639	20	284	83	393	240	411	292	312	393	269	3479

DELEGATE POST OFFICE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1952	62	202	237	531	227	666	136	172	215	611	334	673	4066
1953	180	155	50	92	423	161	153	285	87	270	167	158	2181
1954	268	240	6	94	61	168	161	56	71	127	549	123	1924
1955	143	196	191	8	194	141	34	119	116	294	90	424	1950
1956	597	557	535	278	477	470	188	182	132	201	242	108	3967
1957	17	74	217	36	152	145	634	350	131	272	190	266	2484
1958	192	289	266	103	36	198	136	170	264	179	73	490	2396
1959	96	282	350	249	72	355	223	155	566	449	405	437	3639
1960	220	75	195	133	316	233	309	60	302	224	231	532	2830
1961	352	140	589	143	146	189	437	180	333	219	402	276	3406
1962	504	124	177	79	189	45	90	140	189	151	118	219	2025
1963	433	386	87	69	468	103	309	109	180	286	196	234	2860
1964	24	212	103	601	147	84	147	296	172	259	176	263	2484
1965	44	92	79	106	38	90	81	430	86	162	402	113	1723
1966	165	183	213	81	94	244	240	149	193	352	420	666	3000
1967	182	30	172	14	150	64	59	199	206	136	115	45	1372

DELEGATE POST OFFICE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1968	245	0	156	129	237	202	237	174	38	96	243	358	2115
1969	265	221	150	282	334	270	68	102	121	161	706	147	2827
1970	165	273	433	171	272	238	16	240	221	162	455	382	3028
1971	544	992	206	80	146	55	85	123	122	155	400	313	3221

Appendix 6
Sheet 1

JINDABYNE WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1882	79	6	154	221	79	170	238	120	162	303	252	104	1888
1883	109	235	100	173	62	175	80	148	211	203	183	158	1837
1884	90	87	74	452	43	174	50	181	199	324	95	36	1805
1885	399	104	159	104	33	119	39	153	74	59	334	109	1686
1886	417	152	16	291	46	31	37	289	158	348	173	209	2167
1887	496	224	252	146	79	261	177	239	416	257	375	588	3510
1888	367	242	141	38	105	150	113	112	272	59	54	472	2125
1889	302	287	13	60	427	181	4	97	267	350	625	54	2667
1890	148	710	340	148	203	506	90	48	219	444	127	83	3066
1891	444	95	54	176	119	1085	411	297	232	357	268	168	3706
1892	375	30	294	218	146	98	33	87	493	562	265	279	2880
1893	220	0	325	245	145	168	280	92	128	351	395	626	2975
1894	620	269	528	325	62	421	150	128	319	101	49	432	3404
1895	136	188	191	100	64	180	40	226	169	46	9	342	1691
1896	122	753	95	143	423	233	26	68	174	82	168	99	2386
1897	465	273	100	28	39	28	59	369	235	206	35	247	2084
1898	10	632	45	80	112	125	229	296	123	410	202	30	2294
1899	141	21	169	405	153	308	178	222	183	309	203	17	2309

JINDABYNE WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1900-1908						NO	RECORDS						
1909	217	202	96	105	35	484	141	126	78	189	21	56	1750
1910	650	33	237	20	50	53	141	165	207	351	171	335	2413
1911	899	304	352	10	83	119	213	133	196	32	36	369	2746
1912	35	79	95	60	33	131	416	71	555	125	275	203	2078
1913	87	77	479	113	752	412	92	240	120	245	82	165	2864
1914	113	19	511	120	117	19	176	18	129	80	106	442	1850
1915						NO	RECORDS						
1916	256	245	116	126	46	141	157	131	452	502	499	207	2878
1917	460	83	112	43	132	157	207	109	334	307	378	259	2581
1918	475	198	280	65	71	104	322	125	156	115	3	42	1956
1919	3	280	59	100	248	123	51	125	90	191	21	N.R.	
1920	365					NO	RECORDS						
1921			NO	RECORDS			118	126	312	162	189	588	
1922	62	379	10	56	78	168	783	65	259	74	10	152	2096
1923	131	0	19	56	195	177	193	96	547	196	146	390	2146
1924	277	238	43	110	30	11	64			NO	RECORDS		
1925	249	167	142	121	627	282	164	190	115	186	207	17	2467
1926	292	0	141	128	229				NO	RECORDS			

Appendix 6
Sheet 3

JINDABYNE WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1927	167	11	116	163	315	33	155	146	71	300	144	35	1656
1928	136	486	523	123	45	303	147	102	129	199	115	80	2388
1929	7	503	102	158	81	87	50	208	101	119	370	116	1902
1930	21	196	60	63	154	310	80	124	100	238	78	380	1804
1931	65	82	334	112	390	253	86	94	257	137	156	10	1976
1932	1	224	531	185	134	67	247	349	220	176	263	59	2456
1933	95	3	41	169	135	369	176	60	299	344	428	296	2415
1934	692	380	127	431	41	286	890	382	147	308	433	208	4325
1935	247	330	38	190	31	50	60	97	96	475	130	214	1958
1936	138	348	381	117	60	337	47	367	34	42	48	325	2244
1937	174	13	316	23	40	189	95	40	346	364	133	153	1886
1938	424	102	70	121	57	72	44	102	145	169	95	6	1407
1939	206	152	526	195	41	145	69	458	62	221	188	0	2263
1940	16	0	0	381	134	55	46	65	272	12	168	393	1542
1941	601	109	325	73	92	24	45	82	212	220	168	37	1988
1942	7	266	243	26	304	260	128	149	176	191	397	87	2234
1943	178	58	33	232	330	63	48	218	143	506	196	203	2208
1944	22	17	72	106	619	0	110	0	14	243	48	143	1394
1945	366	29	113	584	75	311	111	104	78	365	137	91	2364

JINDABYNE WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1946	158	200	120	172	230	252	297	197	94	102	281	144	2247
1947	0	251	364	221	49	132	172	135	177	73	379	613	2566
1948	522	345	22	235	446	116	52	48	124	460	294	247	2911
1949	94	176	388	46	231	363	110	86	82	280	105	93	2054
1950	0	821	1017		NO	RECORDS		313	348		NO	RECORDS	
1951						NO	RECORDS						
1952	0	102	316	589	270	895	78	134	195	389	281	259	3508
1953	67	252	22	13	530	46	86	176	129	165	179	151	1816
1954	638	308	2	87	11	144	55	152	98	257	286	32	2070
1955	133	432	254	69	298	152	77	282	71	504	114	274	2660
1956	223	150	569	456	309	465	250	191	102	230	111	77	3133
1957	0	161	81	45	77	187	561	240	106	147	181	270	2056
1958	254	141	108	159	188	301	228	97	159	203	77	143	2058
1959	100	175	289	108	4	306	146	139	206	867	300	205	2845
1960	342	71	216	79	313	99	499	64	305	146	160	681	2975
1961	239	85	690	162	43	228	262	138	344	138	654	265	3248
1962	242	113	40	50	243	71	55	169	339	266	128	726	2442
1963	269	159	169	373	386	85	99	115	222	331	137	629	2974
1964	32	188	274	410	202	129	403	333	408	264	149	245	3037

JINDABYNE WEST RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1965	11	12	300	82	28	110	55	290	155	227	193	111	1574
1966	33	83	287	9	44			NO	RECORDS			362	
1967	332	11	93	11	55	60	109	247	208	210	94	34	1464
1968	137	37	151	37	242	125	134	224	98	240	184	295	1904
1969	66	380	213	353	168	330	45	90	191	314	672	242	3064
1970	350	265	228	238	200	74	55	363	292	119	305	352	2841
1971	529	515	84	36	116	12	52	198	208	284	248	251	2533

N.B. Jindabyne West Rainfall Station was discontinued in December 1966

Jindabyne (New) Rainfall Station commenced operation in January 1967

Appendix 7
Sheet 1

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1866	N.R.	0	210	200	650	600	560	740	430	470	360	440	
1867	78	274	288	526	706	823	962	439	1134	1613	202	219	7264
1868	705	454	225	387	438	763	194	215	818	501	620	241	5561
1869	439	443	584	523	920	810	431	169	360	1042	777	253	6751
1870	480	0	975	985	695	835	30	80	498	955	430	185	6148
1871	870	1120	179	347	670	919	616	217	701	379	798	594	7410
1872	427	315	400	181	1053	1030	35	125	504	342	612	574	5598
1873	440	618	55	496	427	579	10	714	504	327	1140	280	5590
1874	512	195	360			NO	RECORDS			20	209	130	
1875	130	140	N.R.	560	155				NO	RECORDS			
1876-1879						NO	RECORDS						
1880		NO	RECORDS			114	933	825	245	261	0	170	
1881	285	865	377	335	700	620	90	315	420	530	935	20	5492
1882	145	200	390	1055	NO	RECORDS	6	492	483	614	719	324	
1883	245	284	300	282	697	900	560	682	578	994	708	104	6334
1884	312	176	193	333	454	667	497	854	791	835	551	607	6270
1885	815	515	267	339	249	554	488	540	913	200	392	484	5756
1886	398	304	158	294	503	176	479	1161	1046	815	408	592	6334

Appendix 7
Sheet 2

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1887	687	408	1038	276	395	288	1268	657	1031	894	458	789	8189
1888	260	309	365	121	410	851	983	152	862	176	109	906	5504
1889	391	413	26	714	820	1898	1033	1029	840	636	1028	178	9006
1890	0	284	456	281	343	1204	246	179	706	927	735	548	5909
1891	1087	73	307	432	248	1102	1045	349	349	845	442	210	6489
1892	321	139	328	478	679	647	327	658	697	586	562	277	5699
1893	111	32	354	417	596	616	555	539	586	624	759	753	5942
1894	491	230	653	419	428	1079	917	868	792	634	187	608	7306
1895	356	164	247	279	348	1153	243	616	927	477	30	521	5361
1896	385	509	349	673	597	1106	476	414	520	364	425	86	5904
1897	997	466	404	193	300	597	988	1108	814	500	151	314	6832
1898	170	641	312	262	830	811	822	1002	601	996	548	119	7114
1899	477	223	268	823	674	988	199	473	236	677	573	87	5698
1900	344	25	1481	899	475	1170	616	1042	477	211	349	84	7173
1901	246	36	385	742	389	1015	366	643	888	1364	202	112	6388
1902	429	129	416	16	44	1149	448	235	538	509	170	658	4741
1903	245	220	662	754	479	1320	952	214	1024	559	489	309	7227
1904	1001	561	90	273	638	800	1137	1064	410	851	547	227	7599

Appendix 7
Sheet 3

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1905	420	153	173	415	635	1266	1634	510	639	858	132	316	7151
1906	10	126	1371	765	665	1496	841	703	590	952	651	369	8539
1907	245	92	243	702	291	343	776	603	333	442	609	668	5347
1908	448	297	31	113	532	660	367	244	845	409	239	33	4218
1909	340	377	387	621	531	1174	511	763	536	628	160	269	6297
1910	494	54	286	49	640	628	1019	514	848	853	613	659	6657
1911	740	880	722	115	794	1219	1213	540	562	194	378	773	8130
1912	30	179	269	357	130	835	864	746	1373	393	493	837	6506
1913	380	272	782	106	292	72	145	494	848	591	394	310	4686
1914	214	36	738	505	443	219	270	32	218	41	267	764	3747
1915	183	42	54	245	844	1015	447	792	1019	1007	140	512	6300
1916	377	268	185	437	308	1500	550	877	579	961	1165	642	7849
1917	502	422	415	367	1095	755	1375	915	1019	1374	715	621	9575
1918	735	309	596	539	1257	941	682	1108	259	375	131	264	7196
1919	12	268	120	375	489	930	492	580	415	503	117	816	5117
1920	440	63	389	245	317	1327	940	958	605	292	302	904	6782
1921	287	225	305	376	539	568	745	853	961	727	306	313	6205
1922	331	462	54	426	448	460	1480	569	520	417	41	353	5561

Appendix 7
Sheet 4

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1923	225	4	15	15	1332	1520	1222	844	713	784	529	534	7737
1924	542	483	241	288	359	483	237	730	757	676	861	480	6137
1925	665	468	121	149	675	552	438	453	352	384	325	55	4637
1926	136	21	410	885	903	723	540	781	373	784	231	372	6159
1927	363	90	153	107	757	348	685	739	249	774	299	94	4658
1928	195	518	762	400	555	441	602	301	371	1026	141	94	5406
1929	41	223	344	548	352	576	185	480	391	275	504	599	4518
1930	80	132	116	397	445	267	797	649	468	1064	499	711	5625
1931	298	267	969	399	1058	1872	510	885	484	308	318	119	7487
1932	102	300	1057	943	75	687	378	942	463	706	352	320	6325
1933	198	0	264	371	707	285	786	395	1096	390	472	752	5716
1934	654	337	133	673	13	360	1093	688	548	1390	1064	446	7399
1935	376	503	275	1042	278	452	387	746	515	647	442	306	5969
1936	356	370	422	715	255	465	866	1257	238	482	324	648	6398
1937	905	122	367	196	475	288	322	404	1151	508	328	427	5493
1938	392	396	99	500	124	574	226	470	227	336	247	63	3654
1939	91	430	706	659	206	1113	247	1461	486	734	647	124	6904
1940	349	121	19	1024	399	260	263	256	523	23	236	669	4142

Appendix 7
Sheet 5

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1941	799	271	386	75	337	529	633	319	653	375	286	258	4921
1942	114	167	141	175	1387	804	768	1052	917	555	733	262	7075
1943	575	187	157	1085	317	603	761	863	744	637	384	90	6403
1944	71	24	268	526	1276	236	400	108	139	557	213	321	4139
1945	405	372	146	569	378	1270	325	1118	416	777	423	200	6399
1946	498	937	653	319	380	674	1585	886	129	423	588	427	7499
1947	28	404	646	235	374	681	973	491	561	691	564	1006	6654
1948	434	386	113	624	864	314	178	302	230	1033	643	359	5480
1949	95	236	409	143	554	324	527	222	390	1245	742	96	4983
1950	280	629	1248	399	376	508	449	342	655	1071	595	575	7127
1951	399	295	60	765	1010	431	805	1027	572	951	466	434	7215
1952	55	128	578	910	959	1617	537	478	773	1270	738	919	8962
1953	378	353	145	166	770	752	761	704	834	629	497	409	6398
1954	664	246	76	660	265	434	376	469	316	666	797	228	5197
1955	286	381	257	220	586	826	495	1544	440	1132	354	337	6858
1956	493	202	1249	1303	845	1178	630	414	283	914	540	206	8257
1957	57	238	270	231	371	635	371	470	473	494	362	544	4516
1958	240	180	259	119	1007	467	1200	1028	539	818	458	151	6466

KIANDRA RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1959	50	386	369	274	77	561	393	686	652	525	448	214	4635
1960	363	279	192	595	2627	438	1623	591	817	334	549	329	8737
1961	354	106	519	798	150	681	780	394	279	280	487	512	5340
1962	632	119	222	131	693	847	482	613	686	711	210	359	5705
1963	324	105	197	309	655	310	861	769	540	322	581	362	5335
1964	165	172	211	313	313	839	1670	837	959	998	105	518	7100
1965	2	15	79	281	392	178	378	859	444	478	518	153	3777
1966	238	233	590	204	521	430	941	497	609	421	701	628	6013
1967	207	144	57	15	188	86	461	672	265	245	146	91	2577
1968	343	4	310	457	1461	535	365	1373	313	904	630	574	7269
1969	192	458	543	439	858	320	720	329	766	NO RECORDS			
1970	NO RECORDS												
1971	NO RECORDS										714	460	

Appendix 8
Sheet 1

OAK VALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1910	732	130	309	7	14	58	125	9	183	180	153	223	2123
1911	635	387	233	0	88	102	151	83	190	43	100	230	2242
1912	47	79	302	32	28	123	309	28	149	112	130	100	1439
1913	100	55	292	153	600	399	61	98	88	234	120	97	2297
1914	141	21	496	77	69	37	193	17	143	64	102	423	1783
1915	126	0	14	34	0	269	99	81	274	139	33	188	1257
1916	249	320	104	107	14	97	106	80	348	332	378	313	2448
1917	358	98	200	46	92	120	90	32	227	179	437	358	2237
1918	336	207	212	48	47	29	359	106	122	36	5	56	1563
1919	0	278	106	105	238	38	0	166	92	143	215	671	2052
1920	494	84	189	112	18	85	30	105	81	145	141	535	2019
1921	359	432	216	426	164	69	29	43	199	238	142	537	2854
1922	175	397	37	57	65	165	593	90	234	144	8	100	2065
1923	103	0	15	64	96	132	132	31	385	194	178	433	1763
1924	239	307	61	95	86	74	24	148	131	124	449	483	2221
1925	283	177	126	59	539	155	288	131	47	201	248	176	2430
1926	293	0	213	87	128	84	57	96	114	139	21	135	1367
1927	378	11	57	159	217	16	173	78	138	258	150	99	1734
1928	90	625	478	130	32	239	110	30	113	101	44	96	2088

Appendix 8
Sheet 2

OAK VALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1929	25	469	114	146	66	23	24	178	64	79	659	170	2017
1930	8	167	79	31	184	268	48	65	81	180	82	211	1404
1931	97	192	300	25	281	227	42	31	100	111	194	19	1619
1932	0	196	605	150	137	39	196	197	171	195	252	54	2192
1933	132	9	68	96	101	292	190	38	192	248	466	596	2428
1934	993	277	83	434	43	271	257	263	71	260	508	414	3874
1935	198	409	45	493	19	46	41	37	111	354	128	285	2166
1936	280	320	388	149	57	309	93	166	50	71	18	452	2353
1937	153	21	154	65	46	188	65	51	245	335	133	360	1816
1938	249	166	112	134	27	31	69	235	78	112	154	19	1386
1939	222	257	507	394	35	59	42	300	43	135	186	5	2185
1940	190	69	2	443	126	15	8	61	144	22	164	239	1483
1941	364	151	179	89	95	29	13	73	189	126	121	101	1530
1942	5	196	278	5	225	212	139	50	139	95	381	349	2074
1943	250	49	12	76	162	45	26	240	117	411	174	166	1728
1944	37	26	91	92	523	8	73	17	48	239	60	147	1361
1945	366	159	103	347	69	170	56	39	44	233	110	112	1808
1946	164	216	215	141	190	243	99	42	43	70	326	107	1856
1947	42	401	244	110	0	58	64	122	43	69	264	512	1929

Appendix 8
Sheet 3

OAK VALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1948	601	327	30	157	274	58	27	37	44	323	291	294	2463
1949	138	201	335	23	187	280	73	29	196	172	160	141	1935
1950	287	569	970	502	163	67	163	98	106	538	286	252	4001
1951	136	491	88	78	40	261	35	242	436	245	101	132	2285
1952	19	216	250	590	179	406	72	172	62	358	397	233	2954
1953	61	377	32	40	436	32	46	182	84	185	85	137	1697
1954	379	199	8	44	13	93	45	49	96	268	281	92	1567
1955	84	325	143	60	194	93	49	76	68	244	70	284	1690
1956	340	356	734	219	409	410	124	76	87	175	123	79	3132
1957	15	150	104	26	33	151	553	244	71	93	191	206	1837
1958	303	134	55	58	112	192	73	104	181	91	283	203	1789
1959	77	303	361	175	18	317	115	96	140	727	268	198	2795
1960	249	56	310	32	161	42	266	54	268	186	118	367	2109
1961	315	84	589	102	58	169	229	89	259	156	477	286	2813
1962	268	105	55	71	104	14	28	139	249	222	94	406	1755
1963	260	143	131	229	357	64	128	55	178	180	175	642	2542
1964	43	232	174	396	101	76	147	145	89	253	102	169	1927
1965	30	26	0	55	21	65	37	316	109	228	134	271	1292
1966	103	74	348	11	115	139	96	96	149	200	334	495	2160

OAK VALE RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1967	266	26	151	4	75	67	53	181	214	125	213	5	1380
1968	153	0	181	21	236	29	134	111	17	90	137	316	1425
1969	63	426	239	206	217	243	22	68	96	274	817	151	2822
1970	285	518	237	200	163	97	22	177	227	115	462	376	2879
1971	516	456	N.R.	39	68	9	38	122	138	N.R.	N.R.	N.R.	

Appendix 9
Sheet 1

TOMBONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1908	62	203	113	123	19	116	28	181	222	101	112	49	1329
1909	248	211	59	16	31	439	133	31	40	116	25	192	1541
1910	312	0	74	5	20	244	102	15	240	116	311	138	1577
1911	508	467	404	25	145	264	129	116	185	65	117	158	2583
1912	11	82	146	67	17	88	352	37	49	73	221	161	1304
1913	146	124	677	51	569	419	50	158	76	327	152	120	2869
1914	88	0	427	129	117	28	179	15	151	25	159	207	1525
1915	270	14	58	141	64	130	94	163	225	247	59	421	1886
1916	313	603	106	118	51	121	102	116	452	198	355	316	2851
1917	216	294	154	206	78	109	65	129	195	229	330	207	2212
1918	304	312	367	169	61	106	254	180	131	158	121	66	2229
1919	10	637	160	237	242	95	60	417	79	221	170	560	2888
1920	576	119	243	130	30	142	77	142	181	274	180	550	2644
1921	402	500	162	372	210	146	67	91	194	215	347	372	3078
1922	186	185	25	28	113	142	413	128	240	171	50	61	1742
1923	107	7	46	5	68	156	151	75	263	156	270	239	1543
1924	246	446	93	128	78	127	114	131	146	135	364	516	2524
1925	347	180	93	282	636	82	663	90	38	234	101	29	2775

Appendix 9
Sheet 2

TOMBONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1926	340	0	246	136	191	124	87	149	113	155	88	131	1760
1927	196	45	176	90	286	33	264	84	125	338	149	173	1959
1928	101	664	598	171	112	202	44	39	105	125	64	133	2358
1929	60	431	76	338	102	99	38	277	111	116	556	296	2500
1930	47	289	124	67	204	310	20	109	107	209	83	249	1818
1931	118	83	171	194	159	266	109	73	81	143	279	39	1715
1932	33	195	336	149	124	39	476	200	175	185	124	133	2169
1933	132	6	55	87	67	333	238	78	179	231	311	558	2275
1934	1142	178	104	343	5	308	315	428	104	348	550	184	4009
1935	420	448	44	420	71	105	61	114	138	272	199	291	2583
1936	359	207	226	232	54	345	177	144	84	58	148	556	2590
1937	241	60	155	32	62	225	71	123	318	294	176	266	2023
1938	490	252	253	126	70	66	158	224	195	161	139	12	2146
1939	298	232	447	225	64	131	59	388	73	224	189	51	2381
1940	366	97	0	411	110	96	51	69	287	26	245	332	2090
1941	457	54	165	100	51	80	64	149	99	54	140	125	1538
1942	23	1003	199	42	242	131	90	29	173	217	401	174	2724
1943	433	146	40	114	104	131	21	320	145	317	152	212	2135

TOMBONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1944	43	1	167	372	485	32	40	62	40	239	61	118	1660
1945	239	119	116	118	101	185	107	166	90	254	206	131	1832
1946	136	433	153	168	246	464	46	131	150	165	257	157	2506
1947	50	289	500	160	24	54	153	161	72	85	234	372	2154
1948	277	269	40	359	173	77	35	13	80	374	294	428	2419
1949	283	204	271	51	189	572	227	36	103	204	375	147	2662
1950	219	642	596	328	143	111	107	165	97	540	263	174	3385
1951	162	548	6	190	65	327	158	292	294	320	316	132	2810
1952	22	228	268	529	129	703	114	212	134	455	377	425	3596
1953	177	145	61	147	380	134	111	274	97	199	143	131	1999
1954	712	224	8	79	87	152	115	41	83	226	580	91	2398
1955	184	204	197	21	226	170	21	116	150	309	115	440	2153
1956	612	202	495	239	469	476	233	167	143	227	161	126	3550
1957	11	112	141	18	103	186	600	345	99	193	152	257	2217
1958	271	225	81	96	102	224	146	96	316	158	95	257	2067
1959	88	303	268	198	51	355	264	134	439	452	320	479	3351
1960	299	42	238	124	238	143	267	56	288	130	180	342	2347
1961	292	90	737	123	106	232	334	152	291	151	286	216	3010

TOMBONG RAINFALL STATISTICS
(Points)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1962	488	147	68	100	156	31	66	122	245	148	121	343	2035
1963	428	141	96	113	400	90	230	128	143	216	214	204	2403
1964	16	210	92	569	116	73	107	201	118	218	195	206	2121
1965	33	56	33	58	24	36	50	388	79	150	283	113	1303
1966	156	94	253	75	57	189	221	69	N.R.	271	360	765	
1967	255	41	163	1	99	72	58	226	282	130	70	54	1451
1968	155	3	163	81	266	165	228	118	44	104	147	365	1839
1969	101	228	198	257	304	255	79	92	133	201	789	169	2806
1970	244	321	431	225	240	215	23	215	274	147	408	387	3130
1971	671	739	105	90	105	37	72	99	114	83	400	327	2842

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Adaminaby (Period 58 years)	Minimum	0	0	0	0	0	9	18	0	17	14	2	11	1363
	10%	35	13	39	44	51	105	66	55	102	54	47	36	1733
	30%	132	81	90	99	86	164	139	167	154	154	133	119	2432
	50%	197	146	169	151	142	244	198	247	222	257	182	210	2738
	70%	272	249	244	218	247	311	260	306	321	362	264	315	2966
	90%	530	367	465	385	460	466	437	420	479	510	401	542	3427
	Maximum	831	658	653	671	697	913	809	678	747	646	606	692	4296
Bombala (Period 81 years)	Minimum	1	0	2	3	6	11	4	7	29	10	1	10	1188
	10%	27	23	44	23	28	38	34	42	78	73	38	64	1867
	30%	152	100	93	78	57	97	73	76	102	133	125	146	2136
	50%	240	181	156	132	115	155	132	121	144	194	196	224	2390
	70%	358	262	273	202	188	262	204	201	202	254	275	350	2769
	90%	509	509	506	411	339	553	449	397	367	389	399	556	3403
	Maximum	1317	1127	804	589	1116	1483	972	617	559	644	700	813	4679
Buckalong (Period 108 years)	Minimum	0	0	0	0	6	0	0	0	20	16	0	16	1227
	10%	30	34	47	30	29	34	28	37	63	68	51	66	1760
	30%	139	111	104	88	68	99	64	69	111	147	145	143	2030
	50%	240	204	169	140	130	163	115	110	160	199	203	216	2425
	70%	341	296	263	228	189	265	192	161	213	266	264	306	2775
	90%	468	576	434	461	513	566	402	348	346	394	439	463	3706
	Maximum	1100	1263	1013	838	1122	1579	950	486	588	717	750	770	5078

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Dalgety (Period 65 years)	Minimum	0	0	0	0	0	0	0	0	0	0	4	0	962
	10%	4	8	13	14	6	4	15	25	33	42	17	33	1279
	30%	83	73	69	36	35	50	45	52	62	99	79	87	1594
	50%	200	140	158	80	60	97	78	79	95	151	139	155	1760
	70%	322	230	247	114	136	159	115	135	156	204	222	270	1981
	90%	506	402	460	369	296	324	211	211	240	323	377	416	2360
	Maximum	1031	689	792	575	654	481	634	395	401	424	721	607	3543
Delegate Post Office (Period 68 years)	Minimum	12	0	2	8	0	45	25	32	42	29	33	22	1699
	10%	43	30	39	25	47	74	52	59	78	125	75	69	1915
	30%	143	92	102	81	83	107	88	120	117	179	150	157	2140
	50%	209	194	187	144	130	147	145	167	149	221	197	240	2463
	70%	272	296	263	236	195	221	213	201	201	276	251	340	2685
	90%	492	559	536	404	425	424	389	313	316	404	402	481	3449
	Maximum	1029	887	779	718	733	666	678	540	566	740	553	673	4374
Jindabyne West (Period 67 years)	Minimum	0	0	0	10	4	0	4	0	14	12	3	0	1394
	10%	9	12	21	36	35	43	43	63	77	70	46	32	1690
	30%	94	84	95	79	61	112	72	99	126	167	120	95	2014
	50%	167	161	142	121	112	168	113	134	174	230	168	168	2247
	70%	289	244	292	181	203	257	178	191	228	318	264	268	2628
	90%	538	390	513	406	424	414	405	304	358	463	395	495	3156
	Maximum	899	753	690	589	752	1085	890	458	555	867	654	726	4325

STATISTICAL RAINFALL DATA
(Points)

Station	Rainfall Statistic	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Kiandra (Period 83 years)	Minimum	0	0	15	15	13	72	145	32	129	23	30	33	3654
	10%	52	36	77	117	223	286	246	249	253	285	140	94	4565
	30%	228	142	192	274	361	488	447	478	464	479	308	259	5515
	50%	349	246	286	376	475	674	560	657	572	636	442	359	6300
	70%	427	367	408	565	672	939	837	851	770	832	549	547	6895
	90%	716	507	774	860	1009	1300	1218	1059	996	1052	737	769	8018
	Maximum	1087	937	1481	1303	2627	1898	1670	1544	1373	1390	1165	1006	9575
Oak Vale (Period 56 years)	Minimum	0	0	0	0	0	8	0	9	43	22	5	5	1257
	10%	18	18	15	26	17	27	25	30	46	70	41	72	1399
	30%	97	99	84	58	46	58	46	50	84	127	118	135	1756
	50%	194	194	149	94	96	93	73	82	116	180	154	209	2018
	70%	287	300	249	149	164	186	132	130	181	238	252	311	2235
	90%	413	416	499	428	373	297	273	241	262	341	441	519	2825
	Maximum	993	625	970	590	600	410	593	316	436	727	659	671	4001
Tombong (Period 58 years)	Minimum	10	0	0	5	5	28	20	13	38	25	25	12	1303
	10%	23	7	39	25	24	39	38	36	73	72	81	60	1541
	30%	115	117	89	94	66	103	66	91	99	151	142	133	2016
	50%	240	203	154	129	105	133	108	130	141	202	185	198	2223
	70%	312	275	240	195	163	224	164	165	188	232	280	293	2583
	90%	492	553	496	372	382	421	336	322	291	339	375	483	3105
	Maximum	1142	1003	737	569	636	703	663	428	452	540	580	560	4009

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.
Bombala (1885 - 1968)	1	1	0	2	3	6	11	4	7	9	10	1	10
	2	59	78	51	36	44	31	38	76	100	11	119	86
	3	88	91	99	79	71	132	93	149	189	139	184	185
	4	186	129	215	83	156	222	166	259	222	278	228	270
	5	212	269	264	232	282	342	386	455	361	291	491	368
	6	279	331	336	358	356	557	575	540	374	535	549	394
	7	341	491	462	432	571	641	735	565	668	559	615	461
	8	683	627	536	647	655	943	865	801	748	791	682	523
	9	815	701	751	731	957	1049	969	945	904	899	744	927
	10	889	916	835	1033	1155	1185	993	1002	971	961	1148	1030
	11	1104	1000	1137	1231	1199	1279	1303	1222	1033	1332	1251	1199
	12	1188	1302	1335	1275	1350	1369	1314	1348	1437	1468	1420	1474
Bukalong (1858 - 1968)	1	0	0	0	0	6	0	0	0	12	16	0	16
	2	30	73	38	29	49	44	41	68	86	18	101	69
	3	186	107	101	102	96	77	96	130	139	159	156	188
	4	202	149	163	136	164	131	154	284	280	292	261	276
	5	244	296	268	240	300	340	349	433	413	465	390	379
	6	391	407	344	376	371	435	512	499	615	570	392	421
	7	469	504	413	447	615	576	524	799	787	572	434	568
	8	608	645	551	730	702	674	824	940	831	614	581	704
	9	833	686	818	817	714	974	1024	984	937	761	748	763
	10	904	869	905	829	1014	1255	1068	1137	1084	928	798	899
	11	1139	956	917	1129	1312	1299	1324	1284	1251	978	1032	970
	12	1227	968	1217	1386	1356	1430	1390	1387	1296	1327	1103	1312

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.
Delegate Post Office (1952 - 1968)	1	12	0	2	8	0	45	25	32	38	29	33	22
	2	62	37	39	56	117	133	103	115	134	179	136	109
	3	200	53	140	141	204	196	187	254	305	250	251	199
	4	216	154	313	225	312	248	289	415	376	381	376	414
	5	317	366	375	336	479	430	479	521	494	501	487	452
	6	449	411	546	548	581	548	603	686	627	615	575	600
	7	530	576	617	736	771	654	797	800	741	753	676	712
	8	856	832	744	947	1010	911	1008	914	1012	854	888	793
	9	1046	984	1090	1134	1026	1124	1122	1067	1064	1059	969	1063
	10	1208	1223	1165	1150	1287	1235	1315	1168	1246	1104	1122	1250
	11	1327	1405	1340	1363	1439	1383	1416	1278	1291	1315	1378	1410
	12	1372	1421	1393	1474	1580	1484	1526	1323	1451	1459	1577	1646
Kiandra (1866 - 1968)	1	0	0	15	15	13	72	145	32	129	23	30	33
	2	17	19	30	60	364	217	302	247	259	259	235	135
	3	96	34	260	289	509	521	520	291	526	644	276	185
	4	259	404	346	615	964	739	561	558	873	737	499	453
	5	611	490	807	1109	1182	780	828	1322	964	921	638	612
	6	697	951	1479	1687	1223	1047	1569	1434	1273	1055	653	1146
	7	1158	1623	1744	1728	1490	1811	1660	1547	1429	1070	1348	1325
	8	1830	1888	1989	1995	2254	1994	1817	1601	1590	2034	1570	1786
	9	2095	2133	2135	2169	2358	2036	1871	1846	2293	2447	1948	2458
	10	2340	2279	2226	2512	2479	2090	2116	2690	3056	2908	2807	2723
	11	2486	2370	2569	2516	2533	2335	2960	3553	3517	3580	3251	2968
	12	2577	2713	2573	2826	2778	3179	3871	4014	4189	3845	3420	3114

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.
Oak Vale (1910 - 1968)	1	0	0	0	0	0	8	0	9	17	22	5	5
	2	56	14	48	21	58	23	64	65	107	41	61	19
	3	56	48	48	79	106	84	108	155	139	97	61	153
	4	111	48	141	178	143	146	235	269	219	97	211	218
	5	132	167	178	213	254	250	398	325	219	355	226	280
	6	197	204	252	340	356	414	494	325	497	370	290	301
	7	234	451	348	466	540	592	497	603	603	434	386	366
	8	550	547	616	702	725	657	693	694	668	530	468	403
	9	659	815	897	808	752	853	933	758	745	662	505	673
	10	887	939	971	808	948	1031	959	854	810	758	681	828
	11	1021	1074	1020	1037	1066	1092	992	955	847	825	930	1056
	12	1257	1171	1216	1192	1193	1113	1102	992	1059	1120	1158	1190
Tombong (1908 - 1968)	1	10	0	0	1	5	28	20	13	38	25	25	12
	2	44	53	51	25	60	72	48	71	122	141	111	72
	3	122	58	99	118	110	125	128	159	181	262	197	175
	4	165	99	151	168	298	174	313	212	373	342	225	221
	5	204	207	201	386	378	398	345	404	441	396	271	226
	6	240	257	460	543	497	474	510	526	618	442	276	294
	7	290	460	565	597	637	592	570	716	682	447	344	446
	8	615	700	762	737	762	734	849	790	687	515	500	496
	9	757	816	890	862	785	950	923	795	755	671	651	676
	10	907	956	1027	885	1165	1066	928	815	911	822	726	939
	11	1143	1081	1050	1294	1223	1184	948	1039	1027	897	989	1080
	12	1303	1104	1394	1352	1362	1285	1181	1161	1137	1160	1145	1301

SNOWY RIVER AT ISLAND BEND

LOCATION:	Latitude 36°19' Longitude 148°28'	
PERIOD OF ESTABLISHMENT:	March 1948 to Date	
COMPLETE YEARS OF COMPUTED RECORDS:	23 years	
ZERO OF GAUGE:	R.L. 3874.60 Water Conservation Datum	
CATCHMENT AREA:	85 square miles	
CONTROL:	Rock	
EQUIPMENT:	Automatic Recorder (Float Type) installed March 1948 Staff gauge range 0 - 15 feet	
CURRENT METER OBSERVATIONS:	(a) Number obtained : 216	
	(b) Maximum observation in cusecs : 12,364	
	(c) Minimum observation in cusecs : 11.1	
	Pre S.M.H.E.A. Operation (6 years)	Post S.M.H.E.A. Operation (17 years)
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	19,600 cusecs	16,000 cusecs
MEAN DAILY DISCHARGE DURING PERIOD OF RECORDS:	511 cusecs	463 cusecs
MEAN ANNUAL DISCHARGE DURING PERIOD OF RECORDS:	373,000 acre feet	338,000 acre feet

REMARKS:

(a) From 1955 records for this station have been affected by impounding and diversion operations of the Snowy Mountains Hydro-Electric Authority, which although significant in the daily pattern of flows, had no appreciable affect on the monthly flows.

(b) Records since July 1964 relate to the relocated station Snowy River above Island Bend Pondage which has a catchment area of 80 square miles.

(c) Snowy Mountains Council took over operation of station on 1st July 1969.

SNOWY RIVER AT ISLAND BEND

Year 1948					Year 1949				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	631	78	183	11,334
Feb.	..	..	..	..	Feb.	836	36	104	5,824
Mar.	..	..	..	..	Mar.	1327	46	227	14,082
Apr.	1567	39	205	12,300	Apr.	3370	64	145	8,694
May	6950	189	753	46,712	May	1490	74	242	15,020
June	1070	177	321	19,282	June	876	93	200	11,972
July	227	84	128	7,950	July	690	74	192	11,928
Aug.	151	74	101	6,268	Aug.	2026	109	222	13,772
Sept.	2058	85	460	27,588	Sept.	5025	134	747	44,824
Oct.	No Records			69,318*	Oct.	7062	585	1430	88,650
Nov.	No Records			72,510*	Nov.	3480	352	875	52,474
Dec.	No Records			25,782*	Dec.	535	60	152	9,438
Total	..	..	..	..	Total	..	..	..	288,012

Year 1950					Year 1951				
Jan.	No Records			4,444*	Jan.	960	54	139	8,600
Feb.	No Records			25,966*	Feb.	5477	33	287	16,064
Mar.	6275	88	626	38,788	Mar.	246	41	83	5,160
Apr.	3343	140	531	31,890	Apr.	3966	42	488	26,858
May	1732	91	190	11,780	May	6460	297	643	39,896
June	1070	151	271	16,266	June	5038	257	835	50,092
July	1525	118	290	18,002	July	3966	133	363	22,530
Aug.	610	88	247	15,336	Aug.	1930	187	326	20,198
Sept.	2555	212	766	45,938	Sept.	6558	185	1099	65,934
Oct.	5900	585	1468	90,988	Oct.	3200	692	1149	71,222
Nov.	2555	248	611	36,630	Nov.	1490	510	830	49,770
Dec.	2645	97	342	21,200	Dec.	1406	250	509	31,550
Total	..	..	..	357,228*	Total	..	..	..	407,874

Year 1952					Year 1953				
Jan.	257	40	117	7,240	Jan.	4014	121	325	20,154
Feb.	71	27	35	2,006	Feb.	2154	52	148	8,296
Mar.	1574	27	101	6,252	Mar.	64	33	44	2,736
Apr.	2074	35	428	25,670	Apr.	299	34	46	2,752
May	8000	280	644	39,900	May	2500	38	373	23,120
June	No Records			83,976*	June	402	80	173	10,378
July	640	223	322	19,942	July	226	84	127	7,874
Aug.	1196	255	378	23,446	Aug.	375	110	154	9,530
Sept.	4625	236	1150	68,994	Sept.	5365	168	742	44,516
Oct.	6600	790	1947	120,734	Oct.	13390	600	1861	115,400
Nov.	6600	827	1423	85,396	Nov.	No Records			94,572*
Dec.	2106	484	948	58,756	Dec.	13450	307	755	46,836
Total	..	..	..	542,312*	Total	..	..	..	386,164*

Year 1954					Year 1955				
Jan.	1297	143	323	20,054	Jan.	No Records			7,300*
Feb.	2258	88	247	13,852	Feb.	No Records			10,400*
Mar.	154	43	64	3,966	Mar.	No Records			13,720*
Apr.	3160	34	182	10,940	Apr.	No Records			7,504*
May	1193	103	203	12,608	May	No Records			23,600*
June	1428	83	270	16,180	June	No Records			34,866*
July	461	81	152	9,396	July	No Records			11,284*
Aug.	19600	70	719	44,558	Aug.	No Records			30,892*
Sept.	1103	251	424	25,428	Sept.	No Records			73,334*
Oct.	3680	253	693	42,962	Oct.	No Records			123,140*
Nov.	3500	232	680	40,816	Nov.	No Records			51,812*
Dec.	1365	61	244	15,150	Dec.	No Records			29,604*
Total	..	..	..	255,910	Total				417,456*

* Estimated

SNOWY RIVER AT ISLAND BEND

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.	No Records			17,786*	Jan.	No Records			21,712*
Feb.	No Records			7,384*	Feb.	No Records			8,630*
Mar.	No Records			28,618*	Mar.	No Records			6,560*
Apr.	No Records			73,590*	Apr.	No Records			5,382*
May	No Records			48,922*	May	No Records			11,350*
June	No Records			22,878*	June	No Records			33,292*
July	No Records			21,032*	July	1144	37	253	15,672
Aug.	No Records			10,978*	Aug.	1150	46	179	11,080
Sept.	No Records			30,434*	Sept.	3062	81	487	29,240
Oct.	No Records			92,048*	Oct.	9800	134	1201	74,486
Nov.	No Records			108,820*	Nov.	1598	68	669	40,166
Dec.	No Records			73,140*	Dec.	14040	35	500	31,014
Total				535,630*	Total	..	..	..	288,584*

Year 1958					Year 1959				
Jan.	1351	33	189	11,738	Jan.	No Records			8,484*
Feb.	830	23	143	7,986	Feb.	No Records			3,966*
Mar.	No Records			4,528*	Mar.	1960	16	146	9,038
Apr.	1470	16	112	6,710	Apr.	1024	21	113	6,772
May	12050	20	747	46,302	May	537	15	60	3,748
June	15984	54	643	38,602	June	2660	15	239	14,352
July	4030	34	327	20,258	July	1414	22	219	13,590
Aug.	4163	66	671	41,578	Aug.	No Records			10,196*
Sept.	2750	119	488	29,288	Sept.	11250	87	852	51,110
Oct.	8964	331	1725	106,926	Oct.	7830	127	1270	78,748
Nov.	11000	174	1390	83,402	Nov.	7578	115	770	46,188
Dec.	1168	56	456	28,254	Dec.	1078	32	194	12,032
Total	..	..	..	425,572*	Total	..	..	..	258,224*

Year 1960					Year 1961				
Jan.	663	24	149	9,240	Jan.	1096	28	327	20,246
Feb.	1222	17	108	6,266	Feb.	609	16	83	4,626
Mar.	810	16	68	4,232	Mar.	1228	18	175	10,824
Apr.	1337	16	199	11,940	Apr.	5010	24	437	26,208
May	2449	84	492	30,514	May	1036	27	193	11,940
June	761	47	243	14,608	June	1048	26	164	9,842
July	6076	40	774	47,912	July	596	26	131	8,112
Aug.	No Records			28,810*	Aug.	770	27	144	8,912
Sept.	2680	85	526	31,564	Sept.	1456	68	413	24,790
Oct.	5220	250	1440	89,250	Oct.	5080	109	1357	84,146
Nov.	9600	176	1551	93,062	Nov.	6076	57	734	44,016
Dec.	4748	78	1045	64,778	Dec.	2224	41	312	19,314
Total	..	..	..	432,176*	Total	..	..	..	272,976

Year 1962					Year 1963				
Jan.	2267	25	190	11,780	Jan.	1138	24	218	13,522
Feb.	982	20	115	6,462	Feb.	1393	15	106	5,912
Mar.	482	15	60	3,734	Mar.	1000	16	83	5,140
Apr.	504	13	47	2,796	Apr.	2276	15	119	7,150
May	698	14	89	5,534	May	1992	27	449	27,818
June	1860	56	474	28,422	June	1400	37	311	18,684
July	1324	18	209	12,968	July	920	26	125	7,738
Aug.	1150	37	181	11,246	Aug.	1718	27	215	13,338
Sept.	2905	89	672	40,302	Sept.	1968	78	436	26,178
Oct.	2926	174	1005	62,360	Oct.	3527	548	1361	84,360
Nov.	6140	296	1121	67,252	Nov.	8550	67	813	48,808
Dec.	1688	54	536	33,220	Dec.	1748	53	416	25,780
Total	..	..	..	286,076	Total	..	..	..	284,428

* Estimated

SNOWY RIVER AT ISLAND BEND

Year 1964					Year 1965				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	739	22	91	5,632	Jan.	1038	28	292	18,086
Feb.	905	16	66	3,810	Feb.	876	15	129	7,196
Mar.	1344	12	75	4,674	Mar.	1160	10	41	2,562
Apr.	1598	14	178	10,662	Apr.	1016	12	58	3,496
May	1306	26	199	12,322	May	943	17	115	7,106
June	1204	28	243	14,576	June	1016	9	72	4,322
July	1030	59	193	11,964	July	1023	10	63	3,920
Aug.	1728	52	263	16,320	Aug.	3510	15	322	19,974
Sept.	3468	157	1092	65,492	Sept.	5565	80	1056	63,350
Oct.	5680	379	1641	101,754	Oct.	7194	103	849	52,700
Nov.	5203	742	1935	116,126	Nov.	2230	69	505	33,900
Dec.	8675	73	920	57,056	Dec.	1290	24	227	14,100
Total	..	..	..	420,388	Total	..	..	..	230,712

Year 1966					Year 1967				
Jan.	977	14	74	4,580	Jan.	1150	21	97	5,990
Feb.	1910	12	117	6,530	Feb.	938	14	48	2,720
Mar.	5800	13	193	12,000	Mar.	1030	11	39	2,400
Apr.	1020	16	81	4,880	Apr.	1080	10	25	1,470
May	2600	15	237	14,700	May	1010	8	33	2,010
June	1250	30	226	13,600	June	1000	7	43	2,560
July	3890	34	279	17,300	July	1020	8	41	2,520
Aug.	1090	32	150	9,280	Aug.	1420	12	146	9,040
Sept.	1910	64	477	28,600	Sept.	2000	36	317	19,000
Oct.	8470	144	1282	79,500	Oct.	5520	61	1392	86,300
Nov.	3810	95	1103	66,200	Nov.	1134	24	229	13,800
Dec.	2580	52	638	39,500	Dec.	1080	12	72	4,470
Total	..	..	..	296,670	Total	..	..	..	152,280

Year 1968					Year 1969				
Jan.	1380	11	72	4,450	Jan.	772	27	354	21,900
Feb.	984	5	15	870	Feb.	1440	18	218	12,200
Mar.	1060	6	23	1,440	Mar.	3360	15	226	14,000
Apr.	1300	6	148	8,870	Apr.	9480	30	475	28,500
May	3950	17	507	31,400	May	1530	46	329	20,400
June	1810	28	237	14,200	June	1420	24	259	15,600
July	1100	21	113	6,370	July	4800	49	449	27,800*
Aug.	1607	23	233	14,400	Aug.	1260	54	345	21,400
Sept.	1603	62	442	26,500	Sept.	12900	91	682	40,900
Oct.	4893	122	1762	109,000	Oct.	1910	96	684	53,600
Nov.	7251	168	2095	126,000	Nov.	3800	80	864	42,300
Dec.	1715	89	902	55,900	Dec.	1570	50	705	19,500
Total	..	..	..	399,400	Total	..	..	..	318,100*

Year 1970					Year 1971				
Jan.	2420	34	353	21,900	Jan.	1680	43	287	17,800
Feb.	1040	26	92	5,130	Feb.	3510	60	448	25,100
Mar.	1130	21	88	5,460	Mar.	618	40	105	6,520
Apr.	3900	20	344	20,600	Apr.	1770	29	218	13,100
May	3370	49	396	24,500	May	3510	87	586	36,300
June	1360	55	269	16,100	June	1080	55	215	12,900
July	996	48	163	10,100	July	996	43	125	7,770
Aug.	1100	55	176	10,900	Aug.	958	33	112	6,920
Sept.	1390	87	345	20,700	Sept.	5130	53	531	31,900
Oct.	14400	202	2142	133,000	Oct.	7310	237	1353	83,900
Nov.	3710	121	1236	74,200	Nov.	5990	144	1302	78,100
Dec.	1790	58	600	37,200	Dec.	1700	71	530	32,900
Total	..	..	..	379,790	Total	..	..	..	353,210

* Estimated

Appendix 13
Sheet 1

CRACKENBACK RIVER AT THE CREEL

LOCATION:	Latitude 36°21' Longitude 148°36'
PERIOD OF ESTABLISHMENT:	May 1944 to June 1967
COMPLETE YEARS OF COMPUTED RECORDS:	22 years
ZERO OF GAUGE:	R.L. 2922.22 Water Conservation Datum
CATCHMENT AREA:	97 square miles
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Pressure Type) installed April 1951 Staff gauge range 0 - 15 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 211 (b) Maximum observation in cusecs : 4,082 (c) Minimum observation in cusecs : 24
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	5,400 cusecs
MEAN DAILY DISCHARGE FOR 22 YEARS:	249 cusecs
MEAN ANNUAL DISCHARGE FOR 22 YEARS:	182,000 acre feet
REMARKS:	Station operated by the Snowy Mountains Hydro-Electric Authority from 1956 and was discontinued on 6th June 1967.

CRACKENBACK RIVER AT THE CREEL

Year 1944					Year 1945				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	730	37	138	8,560
Feb.	..	..	..	..	Feb.	190	37	64	3,602
Mar.	..	..	..	..	Mar.	37	14	22	1,338
Apr.	..	..	..	..	Apr.	2175	25	138	8,264
May	..	..	..	..	May	166	30	71	4,426
June	267	84	154	9,250	June	2120	52	317	18,994
July	274	84	114	7,048	July	234	84	145	9,004
Aug.	240	76	111	6,852	Aug.	960	121	263	16,314
Sept.	394	102	159	9,544	Sept.	785	247	357	21,438
Oct.	430	178	273	16,950	Oct.	4520	281	583	36,148
Nov.	420	76	183	10,996	Nov.	630	196	335	20,078
Dec.	214	37	90	5,586	Dec.	281	52	106	6,554
Total	..	..	..	..	Total	..	..	..	154,720

Year 1946					Year 1947				
Jan.	102	22	47	2,882	Jan.	190	46	96	5,964
Feb.	2680	20	303	16,984	Feb.	290	41	98	5,472
Mar.	456	84	157	9,754	Mar.	2790	44	133	8,252
Apr.	254	80	121	7,242	Apr.	405	66	131	7,880
May	2010	60	167	10,342	May	370	62	105	6,514
June	295	111	158	9,472	June	385	104	176	10,578
July	1505	126	277	17,144	July	350	130	183	11,344
Aug.	2560	190	403	24,960	Aug.	450	121	202	12,514
Sept.	765	190	277	19,116	Sept.	2544	169	495	29,726
Oct.	2680	219	681	42,194	Oct.	2680	370	650	40,318
Nov.	1253	350	609	36,566	Nov.	1282	263	476	28,540
Dec.	815	190	281	17,404	Dec.	592	225	333	20,650
Total	..	..	..	214,060	Total	..	..	..	187,752

Year 1948					Year 1949				
Jan.	461	148	286	17,620	Jan.	320	62	116	7,166
Feb.	560	78	157	9,110	Feb.	320	28	67	3,774
Mar.	158	49	78	4,854	Mar.	770	49	120	7,416
Apr.	350	38	112	6,700	Apr.	169	49	71	4,234
May	1345	130	283	17,574	May	815	62	148	9,190
June	385	130	184	11,026	June	236	62	147	8,842
July	130	87	112	6,954	July	263	112	156	9,704
Aug.	130	95	109	6,758	Aug.	1230	130	199	12,346
Sept.	320	112	192	11,546	Sept.	2080	130	322	19,332
Oct.	1340	263	538	33,334	Oct.	1340	236	608	37,708
Nov.	2280	236	576	34,568	Nov.	725	190	344	20,648
Dec.	263	95	172	10,662	Dec.	213	78	127	7,884
Total	..	..	..	170,706	Total	..	..	..	148,244

Year 1950					Year 1951				
Jan.	380	38	68	4,232	Jan.	199	58	108	6,716
Feb.	2280	49	373	20,888	Feb.	1888	38	217	12,144
Mar.	2280	86	418	25,920	Mar.	175	44	87	5,400
Apr.	2747	169	523	31,354	Apr.	175	51	121	7,248
May	725	130	187	11,610	May	1010	110	264	16,364
June	1175	148	264	15,844	June	1200	150	374	22,424
July	No Records			14,038*	July	2216	110	285	17,642
Aug.	290	175	200	12,406	Aug.	1564	175	303	18,788
Sept.	650	201	304	18,262	Sept.	1948	175	485	29,116
Oct.	1700	270	543	33,650	Oct.	1948	366	558	34,608
Nov.	640	187	330	19,822	Nov.	480	175	298	17,896
Dec.	910	92	214	13,274	Dec.	408	88	174	10,774
Total	..	..	..	221,300*	Total	..	..	..	199,120

*Estimated

Appendix 13
Sheet 3

CRACKENBACK RIVER AT THE CREEL

Year 1952					Year 1953				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	104	30	63	3,910	Jan.	982	68	154	9,530
Feb.	60	35	42	2,416	Feb.	530	50	91	5,120
Mar.	730	10	71	4,406	Mar.	59	35	46	2,850
Apr.	865	40	178	10,702	Apr.	141	15	37	2,232
May	1827	141	293	18,170	May	1015	40	195	12,096
June	5000	282	1027	61,638	June	207	74	102	6,132
July	470	230	296	18,328	July	470	50	103	6,368
Aug.	730	229	320	19,832	Aug.	550	121	158	9,816
Sept.	2080	229	641	38,458	Sept.	2480	184	413	24,808
Oct.	1948	404	771	47,814	Oct.	3350	325	697	43,188
Nov.	2080	461	709	42,542	Nov.	2080	282	579	34,756
Dec.	1700	231	410	25,414	Dec.	3053	115	266	16,492
Total	..	..	..	293,630	Total	..	..	..	173,388

Year 1954					Year 1955				
Jan.	800	70	128	7,936	Jan.	1015	38	69	4,272
Feb.	294	61	107	5,968	Feb.	453	44	95	5,328
Mar.	80	38	51	3,186	Mar.	453	50	88	5,444
Apr.	1080	38	87	5,210	Apr.	400	38	57	3,412
May	231	61	80	4,966	May	1015	85	176	10,926
June	510	61	115	6,880	June	2277	101	280	16,794
July	231	61	93	5,736	July	339	97	139	8,636
Aug.	4496	61	281	17,400	Aug.	2230	110	425	16,340
Sept.	618	145	213	12,760	Sept.	2016	320	616	36,964
Oct.	880	123	231	14,340	Oct.	5400	416	860	53,346
Nov.	1230	180	323	19,356	Nov.	1940	240	400	23,988
Dec.	577	45	126	7,806	Dec.	758	169	236	14,624
Total	..	..	..	111,544	Total	..	..	..	200,074

Year 1956					Year 1957				
Jan.	1204	81	174	10,766	Jan.	260	64	111	6,874
Feb.	444	58	108	6,252	Feb.	249	46	77	4,304
Mar.	1340	61	258	16,018	Mar.	725	42	60	3,720
Apr.	3278	224	716	42,972	Apr.	228	29	48	2,910
May	1790	234	508	31,512	May	286	46	75	4,682
June	1095	215	394	23,624	June	2208	31	199	11,968
July	1505	206	341	21,172	July	605	102	182	11,286
Aug.	635	156	236	14,636	Aug.	245	87	125	7,780
Sept.	1070	160	443	26,604	Sept.	1449	140	281	16,886
Oct.	2216	462	796	49,378	Oct.	3856	241	485	30,072
Nov.	1813	480	694	41,640	Nov.	632	135	255	15,284
Dec.	1449	144	351	21,742	Dec.	3656	64	189	11,704
Total	..	..	..	306,316	Total	..	..	..	127,470

Year 1958					Year 1959				
Jan.	588	52	112	6,924	Jan.	295	46	74	4,572
Feb.	681	58	100	5,594	Feb.	736	29	54	3,024
Mar.	249	43	71	4,388	Mar.	876	31	71	4,376
Apr.	1062	42	80	4,782	Apr.	170	43	59	3,512
May	2893	56	279	17,324	May	48	35	41	2,546
June	5238	148	393	23,552	June	840	29	121	7,282
July	2914	100	318	19,738	July	388	51	111	6,864
Aug.	2460	282	542	33,634	Aug.	588	83	144	8,936
Sept.	1293	166	297	17,802	Sept.	No Records			27,386*
Oct.	2966	401	827	51,298	Oct.	4350	252	732	45,372
Nov.	3155	240	442	26,530	Nov.	3337	152	444	26,626
Dec.	480	92	167	10,378	Dec.	319	64	125	7,742
Total	..	..	..	221,944	Total	..	..	..	148,238*

* Estimated

Appendix 13
Sheet 4

CRACKENBACK RIVER AT THE CREEL

Year 1960					Year 1961				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	347	47	86	5,354	Jan.	505	61	126	7,812
Feb.	654	44	59	3,392	Feb.	209	32	51	2,870
Mar.	420	29	49	3,054	Mar.	615	43	111	6,864
Apr.	840	29	91	5,472	Apr.	1510	59	180	10,808
May	562	103	283	17,528	May	182	75	104	6,434
June	309	124	163	9,774	June	505	71	108	6,462
July	3197	109	545	33,780	July	326	89	132	8,190
Aug.	1223	168	348	21,594	Aug.	230	86	123	7,600
Sept.	1831	163	346	20,780	Sept.	840	133	276	16,554
Oct.	1950	401	630	39,038	Oct.	1678	209	507	31,032
Nov.	2662	302	506	30,334	Nov.	No Records			23,050*
Dec.	1950	170	394	24,426	Dec.	926	103	214	13,262
Total	..	..	..	214,526	Total	..	..	..	140,938*

Year 1962					Year 1963				
Jan.	908	66	122	7,596	Jan.	340	64	115	7,144
Feb.	255	57	95	5,294	Feb.	358	36	72	4,040
Mar.	206	43	53	3,306	Mar.	312	34	53	3,310
Apr.	248	41	52	3,134	Apr.	679	35	61	3,628
May	No Records			3,856*	May	No Records			15,644*
June	508	75	173	10,372	June	396	84	150	9,008
July	480	64	115	7,148	July	No Records			6,760*
Aug.	258	87	127	7,876	Aug.	820	72	171	10,576
Sept.	1108	139	332	19,898	Sept.	1207	174	338	20,292
Oct.	878	315	435	26,960	Oct.	1326	346	517	32,040
Nov.	2080	198	358	21,468	Nov.	2170	171	370	22,208
Dec.	695	128	235	14,548	Dec.	1075	128	302	18,754
Total	..	..	..	131,456*	Total	..	..	..	153,404*

Year 1964					Year 1965				
Jan.	235	44	79	4,864	Jan.	175	69	105	6,524
Feb.	203	40	62	3,612	Feb.	73	32	49	2,718
Mar.	502	23	52	3,208	Mar.	129	23	29	1,788
Apr.	660	26	109	6,534	Apr.	216	26	48	2,904
May	346	55	91	5,650	May	148	36	57	3,510
June	392	63	150	9,012	June	No Records			2,460*
July	1175	133	259	16,070	July	No Records			2,860*
Aug.	1376	136	290	17,964	Aug.	1620	30	189	11,700
Sept.	2396	346	743	44,586	Sept.	2030	118	402	24,100
Oct.	2333	575	845	52,390	Oct.	2650	205	361	22,400
Nov.	1748	317	620	37,220	Nov.	1620	136	285	17,100
Dec.	1904	153	290	17,960	Dec.	540	47	163	10,000
Total	..	..	..	219,070	Total	..	..	..	108,064*

Year 1966					Year 1967				
Jan.	585	28	55	3,430	Jan.	468	46	95	5,910
Feb.	476	31	61	3,390	Feb.	222	28	47	2,650
Mar.	1520	30	93	5,760	Mar.	75	27	34	2,100
Apr.	176	35	49	2,940	Apr.	75	24	30	1,820
May	997	46	89	5,510	May	33	22	26	1,590
June	321	67	127	7,620	June	..	..	..	..
July	1300	69	139	8,630	July	..	..	..	..
Aug.	397	72	126	7,830	Aug.	..	..	..	..
Sept.	1040	138	295	17,700	Sept.	..	..	..	..
Oct.	2350	276	517	32,000	Oct.	..	..	..	..
Nov.	2330	237	599	35,900	Nov.	..	..	..	..
Dec.	1230	133	344	21,300	Dec.	..	..	..	..
Total	..	..	..	152,010	Total	..	..	..	..

* Estimated

EUCUMBENE RIVER AT PROVIDENCE NO. 2

LOCATION:	Latitude 35°56' Longitude 148°34'
PERIOD OF ESTABLISHMENT:	September 1953 to date
COMPLETE YEARS OF COMPUTED RECORDS:	18 years
ZERO OF GAUGE:	R.L. 88.82 Assumed Datum Approximately 3,800 feet above sea level
CATCHMENT AREA:	64 square miles
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Float Type) Staff gauge range 0 - 20 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 203 (b) Maximum observation in cusecs : 5,070 (c) Minimum observation in cusecs : 7.2
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	8,000 cusecs
MEAN DAILY DISCHARGE FOR 18 YEARS:	192 cusecs
MEAN ANNUAL DISCHARGE FOR 18 YEARS:	140,000 acre feet
REMARKS:	(a) Station operated by the Snowy Mountains Hydro-Electric Authority from 1956 replacing Eucumbene at Providence No. 1 (Catchment Area 73 square miles) which was operated by the Water Conservation and Irrigation Commission for the period 1947 to 1955. (b) Snowy Mountains Council took over operation of station on 1st July 1969.

Appendix 14
Sheet 2

EUCUMBENE RIVER AT PROVIDENCE NO. 2

Year 1953					Year 1954				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	215	32	61	3,784
Feb.	..	..	..	..	Feb.	142	41	64	3,570
Mar.	..	..	..	..	Mar.	40	13	24	1,464
Apr.	..	..	..	..	Apr.	269	13	35	2,082
May	..	..	..	..	May	151	42	65	4,036
June	..	..	..	..	June	630	50	96	5,744
July	..	..	..	..	July	531	117	189	11,724
Aug.	..	..	..	..	Aug.	2481	125	268	16,632
Sept.	..	..	..	..	Sept.	498	90	180	10,774
Oct.	2003	214	613	37,974	Oct.	1765	57	157	9,726
Nov.	1509	80	335	20,120	Nov.	1040	125	272	16,312
Dec.	591	34	74	4,572	Dec.	No Records			5,254*
Total	..	..	..	..	Total	..	..	..	91,102*

Year 1955					Year 1956				
Jan.	259	13	30	1,852	Jan.	465	34	77	4,776
Feb.	146	19	42	2,330	Feb.	74	19	37	2,152
Mar.	175	25	45	2,806	Mar.	2830	19	337	20,918
Apr.	70	20	30	1,768	Apr.	2252	227	643	38,554
May	142	51	101	6,268	May	1650	191	434	26,898
June	1694	82	280	16,778	June	1428	243	602	36,108
July	480	121	193	11,950	July	1551	224	411	25,458
Aug.	3203	112	677	41,948	Aug.	539	143	255	15,820
Sept.	2018	320	650	39,010	Sept.	2900	216	725	43,508
Oct.	8000	263	562	34,840	Oct.	1813	316	852	52,804
Nov.	407	101	206	12,368	Nov.	928	109	260	15,600
Dec.	227	56	96	5,960	Dec.	404	41	76	4,732
Total	..	..	..	177,878	Total	..	..	..	287,328

Year 1957					Year 1958				
Jan.	46	12	25	1,576	Jan.	218	22	59	3,632
Feb.	84	14	21	1,178	Feb.	No Records			2,164*
Mar.	121	14	20	1,224	Mar.	76	19	28	1,712
Apr.	44	13	17	1,028	Apr.	45	19	23	1,392
May	92	25	35	2,170	May	1120	18	172	10,636
June	960	24	99	5,918	June	1850	95	241	14,454
July	447	105	192	11,930	July	2697	105	342	21,174
Aug.	537	106	209	12,984	Aug.	2650	383	904	56,048
Sept.	1087	189	332	19,928	Sept.	1410	150	349	20,936
Oct.	393	130	233	14,420	Oct.	960	194	455	28,232
Nov.	238	56	97	5,796	Nov.	563	82	137	8,216
Dec.	337	27	59	3,632	Dec.	165	38	69	4,264
Total	..	..	..	81,784	Total	..	..	..	172,860

Year 1959					Year 1960				
Jan.	421	14	25	1,526	Jan.	112	17	33	2,056
Feb.	120	12	23	1,302	Feb.	124	17	28	1,602
Mar.	165	23	40	2,454	Mar.	113	11	19	1,174
Apr.	112	30	48	2,880	Apr.	243	14	43	2,592
May	60	25	30	1,846	May	1688	113	626	38,816
June	466	22	77	4,606	June	879	117	267	15,990
July	208	60	111	6,860	July	5880	110	760	47,108
Aug.	508	120	257	15,942	Aug.	1642	172	414	25,694
Sept.	1010	222	377	22,612	Sept.	1357	245	587	35,230
Oct.	838	122	285	17,700	Oct.	888	106	362	22,428
Nov.	570	76	163	9,750	Nov.	682	78	162	9,742
Dec.	157	31	60	3,720	Dec.	457	44	126	7,834
Total	..	..	..	91,198	Total	..	..	..	210,266

* Estimated

Appendix 14
Sheet 3

EUCUMBENE RIVER AT PROVIDENCE NO. 2

Year 1961					Year 1962				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	241	24	50	3,096	Jan.	394	37	77	4,790
Feb.	31	17	23	1,276	Feb.	325	32	72	4,006
Mar.	232	22	45	2,774	Mar.	86	22	29	1,816
Apr.	1379	24	177	10,600	Apr.	81	18	25	1,476
May	175	57	101	6,266	May	430	21	54	3,374
June	658	55	135	8,096	June	1190	172	398	23,888
July	549	131	240	14,890	July	484	82	175	10,874
Aug.	496	162	290	18,010	Aug.	570	186	279	17,278
Sept.	622	186	334	20,044	Sept.	1131	168	386	23,182
Oct.	199	64	106	6,588	Oct.	1060	234	370	22,948
Nov.	674	37	119	7,158	Nov.	360	47	113	6,788
Dec.	602	56	132	8,208	Dec.	191	43	64	3,938
Total	..	..	..	107,006	Total	..	..	..	124,358

Year 1963					Year 1964				
Jan.	110	29	44	2,744	Jan.	132	20	37	2,304
Feb.	57	16	25	1,394	Feb.	33	16	21	1,218
Mar.	47	15	20	1,224	Mar.	76	14	20	1,250
Apr.	375	14	24	1,436	Apr.	77	13	24	1,442
May	448	23	118	7,324	May	156	18	26	1,596
June	267	100	136	8,186	June	No Records			12,318*
July	333	128	194	12,010	July	716	158	345	21,398
Aug.	No Records			23,202*	Aug.	1374	182	445	27,566
Sept.	965	319	466	27,966	Sept.	5039	598	1214	72,858
Oct.	915	76	216	13,414	Oct.	2432	248	821	50,874
Nov.	1130	67	215	12,902	Nov.	463	54	159	9,560
Dec.	254	55	114	7,070	Dec.	345	39	77	4,800
Total	..	..	..	118,872*	Total	..	..	..	207,184*

Year 1965					Year 1966				
Jan.	45	16	26	1,622	Jan.	125	15	27	1,640
Feb.	17	10	12	691	Feb.	225	12	26	1,430
Mar.	23	6	9	554	Mar.	905	11	59	3,680
Apr.	48	8	15	901	Apr.	96	22	30	1,800
May	55	12	22	1,358	May	376	27	73	4,530
June	83	9	33	1,994	June	779	92	198	11,900
July	96	12	41	2,510	July	466	71	161	9,990
Aug.	2453	38	380	23,578	Aug.	945	94	266	16,500
Sept.	935	134	335	20,082	Sept.	1660	357	645	38,700
Oct.	1016	78	154	9,520	Oct.	705	118	257	15,900
Nov.	505	93	200	11,978	Nov.	775	94	287	17,200
Dec.	265	33	96	5,922	Dec.	478	65	179	11,100
Total	..	..	..	80,710	Total	..	..	..	134,370

Year 1967					Year 1968				
Jan.	137	22	43	2,650	Jan.	65	7	14	863
Feb.	44	13	20	1,110	Feb.	9	4	6	318
Mar.	21	9	13	784	Mar.	39	4	7	450
Apr.	13	9	10	580	Apr.	71	6	14	817
May	62	8	12	727	May	894	36	185	11,500
June	19	5	12	693	June	1820	117	305	18,300
July	89	7	25	1,520	July	No Records			7,440*
Aug.	405	33	129	8,020	Aug.	2001	66	401	24,900
Sept.	448	139	234	14,000	Sept.	1099	333	536	32,200
Oct.	249	51	111	6,890	Oct.	4305	251	713	44,200
Nov.	58	20	34	2,050	Nov.	1086	96	328	19,700
Dec.	22	10	16	966	Dec.	348	38	88	5,440
Total	..	..	..	39,990	Total	..	..	..	166,128*

* Estimated

EUCUMBENE RIVER AT PROVIDENCE NO. 2

Year 1969

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	114	23	49	3,050
Feb.	168	16	36	2,000
Mar.	220	17	46	2,840
Apr.	1050	55	136	8,150
May	670	60	168	10,400
June	1100	133	266	15,900
July	1470	137	322	20,000
Aug.	401	150	227	14,100
Sept.	1330	147	357	21,400
Oct.	327	75	149	9,260
Nov.	2390	86	243	14,600
Dec.	202	37	75	4,640
Total	..	..	..	126,340

Year 1970

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	345	37	103	6,400
Feb.	57	22	33	1,840
Mar.	95	16	27	1,680
Apr.	577	18	95	5,700
May	397	100	190	11,800
June	728	112	262	15,700
July	917	156	328	20,300
Aug.	3170	157	471	29,200
Sept.	1790	325	639	38,300
Oct.	1540	131	376	23,300
Nov.	912	93	247	14,800
Dec.	301	38	84	5,190
Total	..	..	..	174,210

Year 1971

Jan.	120	24	40	2,470
Feb.	380	40	83	4,670
Mar.	49	23	33	2,060
Apr.	207	17	37	2,240
May	1460	69	294	18,300
June	619	103	189	11,300
July	206	74	116	7,160
Aug.	723	104	181	11,200
Sept.	799	279	471	28,300
Oct.	1000	136	364	22,600
Nov.	1080	125	264	15,800
Dec.	257	48	86	5,350
Total	..	..	..	131,450

SNOWY RIVER AT JINDABYNE

LOCATION:	Latitude 36°25' Longitude 148°38'	
PERIOD OF ESTABLISHMENT:	May 1902 to April 1967	
COMPLETE YEARS OF COMPUTED RECORDS:	64 years	
ZERO OF GAUGE:	R.L. 2816.67 Water Conservation Datum	
CATCHMENT AREA:	714 square miles	
CONTROL:	Gravel	
EQUIPMENT:	Automatic Recorder (Pressure Type) installed February 1940 Automatic Recorder (Float Type) installed April 1952. Staff gauge, range 0 - 30 feet	
CURRENT METER OBSERVATIONS:	(a) Number obtained : 231	
	(b) Maximum observation in cusecs : 15,900	
	(c) Minimum observation in cusecs : 44	
	Pre S.M.H.E.A. Operation (54 Years)	Post S.M.H.E.A. Operation (10 Years)
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	40,200 cusecs	27,300 cusecs
MEAN DAILY DISCHARGE DURING PERIOD OF RECORDS:	1,320 cusecs	850 cusecs
MEAN ANNUAL DISCHARGE DURING PERIOD OF RECORDS:	961,000 acre feet	624,000 acre feet
REMARKS:	From 1957 records at this station have been affected by impounding and diversion operations of the Snowy Mountains Hydro-Electric Authority and with the storage of water in Eucumbene Dam, the effective catchment area has been reduced to 456 square miles. The station was taken over by the Authority in 1956 and discontinued in April 1967.	

SNOWY RIVER AT JINDABYNE

Year 1902

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	1480	110	295	17,690
July	1370	177	498	30,882
Aug.	260	260	260	16,120
Sept.	2100	310	852	51,122
Oct.	5550	1080	2080	129,000
Nov.	910	205	483	28,994
Dec.	2100	177	600	37,250
Total	..	..	..	..

Year 1903

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	910	110	253	15,706
Feb.	390	65	146	8,210
Mar.	610	150	273	16,958
Apr.	1480	177	534	32,024
May	910	260	437	27,124
June	742	390	447	26,844
July	10840	910	1864	115,580
Aug.	1270	742	1072	66,472
Sept.	14500	910	2877	172,614
Oct.	11550	2310	3637	225,500
Nov.	2720	910	1558	93,480
Dec.	3340	310	599	37,172
Total	..	..	..	837,684

Year 1904

Jan.	6840	482	1602	99,352
Feb.	1890	285	490	28,442
Mar.	482	205	279	17,344
Apr.	390	177	203	12,172
May	2720	260	735	45,604
June	2100	826	1176	70,586
July	3340	910	1590	98,580
Aug.	2720	482	998	61,884
Sept.	2310	742	1383	83,016
Oct.	6840	1270	3262	202,280
Nov.	7980	1080	2416	144,940
Dec.	1480	310	719	44,600
Total	..	..	..	908,800

Year 1905

Jan.	742	260	312	19,362
Feb.	390	110	179	10,050
Mar.	150	45	85	5,310
Apr.	390	150	169	10,130
May	1270	150	286	17,752
June	1480	310	758	45,500
July	7980	390	1390	86,204
Aug.	3550	742	1112	68,960
Sept.	1480	390	953	57,192
Oct.	6190	1080	2436	151,020
Nov.	4590	1890	2804	168,240
Dec.	2720	1080	1567	97,180
Total	..	..	..	736,900

Year 1906

Jan.	742	205	383	23,770
Feb.	260	110	200	11,220
Mar.	3970	150	546	33,856
Apr.	9140	205	1219	73,150
May	5210	610	1649	102,236
June	2510	742	1328	79,704
July	1890	1080	1435	89,000
Aug.	5210	1080	1975	122,480
Sept.	13700	1480	4078	244,700
Oct.	15900	2510	4046	250,820
Nov.	6190	1480	2415	144,880
Dec.	1270	436	827	51,300
Total	..	..	..	1,227,116

Year 1907

Jan.	390	260	343	21,290
Feb.	310	130	224	12,546
Mar.	826	130	316	19,642
Apr.	1270	150	353	21,172
May	3970	285	741	45,944
June	1480	390	712	42,724
July	1480	310	455	28,206
Aug.	1480	482	907	56,236
Sept.	18800	742	2049	122,922
Oct.	5210	1680	2265	140,440
Nov.	12270	1080	2305	138,300
Dec.	8600	436	1228	76,160
Total	..	..	..	725,582

Year 1908

Jan.	1175	205	372	23,086
Feb.	2720	482	851	49,370
Mar.	676	482	593	36,812
Apr.	482	310	381	22,844
May	8600	390	1651	102,360
June	610	350	424	25,448
July	4070	350	864	53,604
Aug.	2100	610	921	57,078
Sept.	7310	1480	2621	157,280
Oct.	12000	1890	2994	185,640
Nov.	2720	995	1675	100,520
Dec.	910	260	415	25,760
Total	..	..	..	839,802

Year 1909

Jan.	260	110	182	11,296
Feb.	205	110	145	8,118
Mar.	482	110	306	18,998
Apr.	2310	205	555	33,330
May	1480	482	692	42,886
June	26400	482	2760	165,550
July	1890	482	885	54,884
Aug.	8600	482	2167	134,326
Sept.	2510	1480	1750	108,528
Oct.	8600	1410	2719	168,598
Nov.	1480	676	1044	62,674
Dec.	910	285	465	28,852
Total	..	..	..	838,040

Appendix 15
Sheet 3

SNOWY RIVER AT JINDABYNE

Year 1910					Year 1911				
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.	3140	232	862	53,428	Jan.	15400	310	2841	176,152
Feb.	436	150	244	13,664	Feb.	4170	610	1774	99,364
Mar.	742	110	254	15,744	Mar.	4380	610	1402	86,940
Apr.	150	110	115	6,880	Apr.	742	312	426	25,568
May	2720	110	360	22,322	May	1890	310	482	29,882
June	1480	260	482	28,906	June	2410	482	960	57,584
July	742	390	484	29,988	July	5660	482	1380	85,544
Aug.	7700	390	1080	66,942	Aug.	2100	826	1105	68,516
Sept.	10300	1480	2980	178,842	Sept.	2720	995	1828	109,696
Oct.	7840	910	2371	146,980	Oct.	3340	742	1581	98,040
Nov.	3340	910	1753	105,190	Nov.	4380	482	1234	74,050
Dec.	5210	610	1274	78,976	Dec.	3970	350	1158	71,792
Total	..	..	..	747,862	Total	..	..	..	983,128

Year 1912					Year 1913				
Jan.	285	110	159	9,856	Jan.	3970	205	879	54,522
Feb.	205	65	106	6,294	Feb.	260	130	163	9,124
Mar.	260	65	130	8,068	Mar.	5440	130	2142	132,798
Apr.	482	110	238	14,278	Apr.	1480	482	820	49,204
May	205	32	132	8,162	May	9400	482	4095	253,868
June	742	177	278	16,540	June	8600	1480	2932	175,940
July	2720	482	1432	88,798	July	3970	2100	2782	172,530
Aug.	4790	610	1115	69,118	Aug.	3860	2100	2910	180,440
Sept.	22400	1270	4225	253,518	Sept.	5920	2100	3290	197,412
Oct.	14950	1890	3192	197,916	Oct.	22400	1680	3494	216,636
Nov.	7700	910	1971	118,282	Nov.	2510	1270	1767	106,030
Dec.	10300	482	2198	136,278	Dec.	2720	390	853	52,870
Total	..	..	..	927,108	Total	..	..	..	1,601,374

Year 1914					Year 1915				
Jan.	1480	205	342	21,182	Jan.	3340	310	1048	65,024
Feb.	205	85	137	7,982	Feb.	310	75	175	9,818
Mar.	3550	85	651	40,374	Mar.	85	45	55	3,430
Apr.	1480	350	1004	60,234	Apr.	390	65	203	12,196
May	3970	390	1412	87,532	May	310	110	226	14,064
June	1480	482	814	48,832	June	3970	310	1603	96,204
July	1480	482	700	43,404	July	3760	742	2392	148,304
Aug.	1270	742	936	58,022	Aug.	2310	910	1493	92,540
Sept.	2510	1080	1439	86,360	Sept.	12000	910	5397	323,820
Oct.	910	390	561	34,788	Oct.	21400	3550	9207	570,860
Nov.	1270	150	388	23,284	Nov.	3340	2310	2741	164,480
Dec.	8600	150	2238	138,734	Dec.	No Records			65,000*
Total	..	..	..	650,728	Total	..	..	..	1,565,740*

Year 1916					Year 1917				
Jan.	No Records			29,000*	Jan.	2510	260	707	43,860
Feb.	742	130	301	17,454	Feb.	742	232	366	20,510
Mar.	1480	130	288	17,866	Mar.	4590	150	537	33,314
Apr.	482	130	239	14,356	Apr.	1480	150	585	35,090
May	2310	205	344	21,298	May	3970	390	1238	76,776
June	4590	260	955	57,304	June	5660	610	2191	131,484
July	3970	205	1044	64,756	July	3760	910	1615	100,144
Aug.	9690	610	1524	94,512	Aug.	5210	1080	1820	112,860
Sept.	14500	482	3337	200,204	Sept.	9690	1680	4360	261,600
Oct.	22400	1370	5306	328,986	Oct.	33200	2720	10768	666,180
Nov.	6500	742	3142	188,524	Nov.	3650	1480	2485	149,120
Dec.	7700	610	2427	150,464	Dec.	2930	742	1956	121,260
Total	..	..	..	1,184,724*	Total	..	..	..	1,752,198

* Estimated

Appendix 15
Sheet 4

SNOWY RIVER AT JINDABYNE

Year 1918					Year 1919				
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.	3340	436	969	60,040	Jan.	No Records			7,304*
Feb.	2620	205	912	51,100	Feb.	No Records			11,744*
Mar.	1270	205	436	27,020	Mar.	467	130	214	13,256
Apr.	610	150	267	16,000	Apr.	913	120	214	12,842
May	3140	232	1124	69,700	May	3875	205	643	39,854
June	2100	990	1023	61,400	June	1512	232	700	42,018
July	1370	580	825	51,140	July	882	285	412	25,580
Aug.	4480	675	1937	120,088	Aug.	2100	390	745	46,202
Sept.	3898	995	1774	106,468	Sept.	5195	709	1562	93,746
Oct.	7980	910	1950	120,930	Oct.	4020	1480	2528	156,776
Nov.	1925	436	1061	63,638	Nov.	2200	724	1079	64,746
Dec.	1306	205	456	28,280	Dec.	12800	310	1461	90,560
Total	..	..	..	775,804	Total	..	..	..	604,628*

Year 1920					Year 1921				
Jan.	2858	482	1074	66,576	Jan.	4280	205	675	41,848
Feb.	826	150	246	14,242	Feb.	2100	177	440	24,654
Mar.	1270	130	393	24,418	Mar.	1195	150	412	25,516
Apr.	610	150	227	13,616	Apr.	8740	177	1141	68,436
May	910	150	262	16,250	May	5476	232	626	38,806
June	4790	285	1356	81,356	June	2926	395	1055	63,276
July	15400	482	1483	91,976	July	7980	310	1141	70,756
Aug.	6060	610	1405	87,102	Aug.	9140	610	2067	128,148
Sept.	9140	1270	2729	163,734	Sept.	26900	910	3854	238,950
Oct.	3750	910	1728	107,130	Oct.	4176	1480	2305	142,930
Nov.	1480	482	890	53,388	Nov.	3207	742	1393	83,578
Dec.	4790	436	1482	91,876	Dec.	5361	150	759	47,086
Total	..	..	..	811,664	Total	..	..	..	973,984

Year 1922					Year 1923				
Jan.	1797	285	592	36,700	Jan.	650	310	373	23,148
Feb.	1406	232	401	22,444	Feb.	310	150	217	12,150
Mar.	390	205	247	15,304	Mar.	205	150	152	9,464
Apr.	1013	205	301	18,066	Apr.	205	150	153	9,210
May	2858	285	543	33,708	May	3393	150	1390	86,200
June	460	310	369	22,150	June	10300	910	2524	151,450
July	40200	310	3456	214,296	July	3138	910	1403	86,996
Aug.	6840	547	1725	106,920	Aug.	3970	610	1060	65,730
Sept.	4858	910	2007	120,434	Sept.	13840	1660	3374	202,436
Oct.	5508	1680	2249	139,424	Oct.	7121	2751	4199	260,392
Nov.	1735	687	1170	70,206	Nov.	8870	2060	3443	206,586
Dec.	1635	350	621	38,512	Dec.	7700	1340	2406	149,186
Total	..	..	..	838,164	Total	..	..	..	1,262,948

Year 1924					Year 1925				
Jan.	3800	864	1631	101,172	Jan.	4645	366	1180	73,186
Feb.	2900	413	1020	59,194	Feb.	10300	366	1169	65,466
Mar.	1048	227	394	24,446	Mar.	1242	190	350	21,718
Apr.	692	227	331	19,874	Apr.	320	190	228	13,664
May	864	190	357	22,170	May	12800	190	1690	104,790
June	778	366	478	28,666	June	4375	778	1586	95,146
July	547	227	329	20,428	July	2273	778	1029	63,830
Aug.	11550	310	1463	90,686	Aug.	15400	685	2088	129,486
Sept.	11100	1240	2697	161,796	Sept.	3149	1140	1827	109,658
Oct.	13250	1760	2623	162,626	Oct.	12000	1760	3096	191,962
Nov.	4275	1048	2040	122,416	Nov.	5250	1140	2028	121,662
Dec.	3299	606	1091	67,654	Dec.	864	227	479	29,748
Total	..	..	..	881,128	Total	..	..	..	1,020,316

* Estimated

Appendix 15
Sheet 5

SNOWY RIVER AT JINDABYNE

Year 1926					Year 1927				
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.	956	145	238	14,760	Jan.	1966	175	448	27,772
Feb.	145	120	124	6,950	Feb.	366	145	170	9,550
Mar.	1447	112	221	13,736	Mar.	1048	130	164	10,190
Apr.	4475	160	764	45,866	Apr.	956	130	195	11,682
May	3232	956	1709	105,970	May	1966	145	418	25,946
June	3398	692	1386	83,176	June	1550	190	388	23,308
July	6693	864	1593	98,778	July	3232	274	810	50,220
Aug.	3232	1048	1739	107,786	Aug.	864	366	574	35,620
Sept.	4837	1140	2041	122,460	Sept.	3315	778	1528	91,710
Oct.	3398	1447	2539	157,406	Oct.	16200	2270	4289	265,892
Nov.	2169	1048	1456	87,364	Nov.	4400	810	2042	122,520
Dec.	2377	366	952	59,022	Dec.	810	200	444	27,520
Total	..	..	..	903,274	Total	..	..	..	701,930

Year 1928					Year 1929				
Jan.	200	120	150	9,300	Jan.	200	88	123	7,648
Feb.	3500	120	695	40,310	Feb.	810	88	243	13,582
Mar.	3600	140	902	55,960	Mar.	355	103	169	10,452
Apr.	1960	295	776	46,550	Apr.	6130	120	612	36,730
May	1550	570	951	58,990	May	1340	200	611	37,920
June	1960	725	1256	75,360	June	1340	495	719	43,140
July	2880	355	856	53,080	July	570	295	384	23,820
Aug.	2580	355	987	61,210	Aug.	7160	245	1456	90,260
Sept.	5250	980	1901	115,900	Sept.	8410	1340	2540	152,420
Oct.	5250	1660	3184	197,400	Oct.	5250	980	2281	141,430
Nov.	4300	895	1799	107,930	Nov.	2880	810	1302	78,130
Dec.	810	295	488	30,220	Dec.	1760	200	608	37,660
Total	..	..	..	852,210	Total	..	..	..	673,192

Year 1930					Year 1931				
Jan.	570	103	220	13,606	Jan.	1760	170	562	34,820
Feb.	200	103	117	6,556	Feb.	410	140	206	11,540
Mar.	200	103	125	7,754	Mar.	2360	170	777	48,180
Apr.	1065	103	181	10,900	Apr.	1260	340	584	35,060
May	2580	140	593	36,780	May	8720	270	1414	87,700
June	1660	245	596	35,800	June	10300	970	3208	192,480
July	1340	200	521	32,300	July	3550	880	1675	103,860
Aug.	2580	495	932	57,800	Aug.	5350	1060	1970	122,160
Sept.	4000	895	1506	90,380	Sept.	4700	1460	2370	142,220
Oct.	16200	895	3869	239,890	Oct.	4600	1760	2505	155,280
Nov.	3150	725	1623	97,420	Nov.	3550	970	1749	104,980
Dec.	13100	355	1611	99,910	Dec.	1060	220	610	37,820
Total	..	..	..	729,096	Total	..	..	..	1,076,100

Year 1932					Year 1933				
Jan.	270	88	137	8,496	Jan.	610	120	204	12,680
Feb.	570	75	150	8,710	Feb.	175	85	104	5,820
Mar.	2360	88	553	34,324	Mar.	210	85	108	6,730
Apr.	2360	220	1153	69,180	Apr.	690	105	199	11,930
May	720	220	428	26,520	May	1150	85	367	22,780
June	1060	270	555	33,320	June	1460	380	546	32,780
July	2260	490	931	57,720	July	12200	450	2188	135,662
Aug.	20600	490	2852	176,840	Aug.	2450	610	756	46,880
Sept.	6180	1860	2996	179,780	Sept.	8730	1570	2950	176,980
Oct.	5580	1460	2201	136,440	Oct.	9410	960	2924	181,320
Nov.	3650	880	1757	105,440	Nov.	3440	610	1053	63,160
Dec.	1260	220	574	35,600	Dec.	3990	530	1362	84,480
Total	..	..	..	872,370	Total	..	..	..	781,202

Appendix 15
Sheet 6

SNOWY RIVER AT JINDABYNE

Year 1934

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	21300	380	2271	140,830
Feb.	5870	210	643	36,050
Mar.	610	210	299	18,560
Apr.	3770	255	931	55,840
May	780	380	520	32,240
June	610	310	448	26,900
July	5870	530	1900	117,860
Aug.	9000	1150	2960	183,500
Sept.	13000	1680	3026	181,560
Oct.	25100	2450	4978	308,630
Nov.	8330	1150	2654	159,240
Dec.	4430	450	1478	91,640
Total	..	..	..	1,352,850

Year 1935

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	2780	210	529	32,790
Feb.	2780	175	551	30,870
Mar.	3770	175	415	25,720
Apr.	8220	175	1657	99,440
May	2340	610	992	61,500
June	610	450	583	35,000
July	1150	450	583	36,140
Aug.	3110	610	1365	84,640
Sept.	3440	1150	2012	120,700
Oct.	7390	1790	3413	211,600
Nov.	3220	1150	1979	118,740
Dec.	2450	380	848	52,600
Total	..	..	..	909,740

Year 1936

Jan.	1460	175	467	28,950
Feb.	530	175	249	14,460
Mar.	3880	175	604	37,480
Apr.	1460	175	474	28,420
May	530	210	332	20,580
June	5150	310	621	37,292
July	2340	450	1081	67,060
Aug.	12200	870	3252	201,604
Sept.	3440	1150	1902	114,120
Oct.	4430	1680	2741	169,940
Nov.	2450	1150	1792	107,540
Dec.	4100	610	1733	107,420
Total	..	..	..	934,866

Year 1937

Jan.	4910	380	999	61,960
Feb.	640	170	330	18,500
Mar.	2560	170	443	27,460
Apr.	800	170	251	15,080
May	880	220	397	24,600
June	640	340	407	24,440
July	570	270	345	21,400
Aug.	1150	270	482	29,900
Sept.	13000	970	3190	191,400
Oct.	3330	1150	2018	125,100
Nov.	6600	410	1133	67,976
Dec.	1460	170	419	25,960
Total	..	..	..	633,776

Year 1938

Jan.	1150	140	253	15,690
Feb.	410	103	171	9,578
Mar.	270	103	126	7,832
Apr.	880	88	192	11,504
May	800	140	309	19,180
June	490	170	284	17,040
July	570	170	274	16,980
Aug.	4320	220	987	61,186
Sept.	4220	960	1617	97,020
Oct.	3850	740	1496	92,746
Nov.	1490	150	505	30,306
Dec.	218	92	142	8,792
Total	..	..	..	387,854

Year 1939

Jan.	484	56	103	6,432
Feb.	1800	52	196	10,962
Mar.	10600	150	961	59,576
Apr.	4090	348	1000	60,014
May	1200	300	548	33,982
June	2440	348	777	46,638
July	2890	378	780	48,380
Aug.	6120	408	2298	142,498
Sept.	5160	2010	2865	171,882
Oct.	17100	2670	4955	307,200
Nov.	11600	1590	3326	199,560
Dec.	1800	650	1207	74,852
Total	..	..	..	1,161,976

Year 1940

Jan.	1440	218	525	32,530
Feb.	408	107	161	9,348
Mar.	200	76	94	5,832
Apr.	3450	76	605	36,278
May	1960	280	518	32,100
June	3150	425	610	36,582
July	440	383	402	24,950
Aug.	5640	348	737	45,686
Sept.	15400	565	1713	102,758
Oct.	1800	348	975	60,466
Nov.	1300	278	591	35,486
Dec.	5220	218	606	37,552
Total	..	..	..	459,568

Year 1941

Jan.	8100	440	1078	66,884
Feb.	1180	184	391	21,916
Mar.	928	182	471	29,228
Apr.	650	200	291	17,468
May	1300	166	302	18,718
June	1020	256	431	26,492
July	3850	348	910	56,440
Aug.	740	382	403	30,610
Sept.	12600	635	1665	99,924
Oct.	11060	1220	2046	126,850
Nov.	3730	660	1136	68,170
Dec.	835	222	453	28,066
Total	..	..	..	590,766

Appendix 15
Sheet 7

SNOWY RIVER AT JINDABYNE

Year 1942

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	280	52	110	6,792
Feb.	980	52	124	6,938
Mar.	860	68	174	10,730
Apr.	1690	84	138	8,318
May	17800	740	2296	142,332
June	4600	660	1318	79,078
July	13800	740	2584	160,194
Aug.	5760	660	1647	102,096
Sept.	6990	1800	2746	164,760
Oct.	13800	2110	4506	279,380
Nov.	7500	1800	3364	201,830
Dec.	3540	553	1292	80,108
Total	..	..	..	1,242,556

Year 1943

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	3850	268	688	42,650
Feb.	6240	150	404	22,610
Mar.	382	92	167	10,368
Apr.	5760	122	1367	82,016
May	3360	740	1212	75,140
June	1020	518	713	42,750
July	1690	518	784	48,580
Aug.	928	518	726	45,026
Sept.	4600	740	2135	128,108
Oct.	11400	2330	4448	275,780
Nov.	7070	1340	2500	150,008
Dec.	2550	500	1002	62,138
Total	..	..	..	985,174

Year 1944

Jan.	500	170	279	17,184
Feb.	170	76	108	6,260
Mar.	440	76	135	8,250
Apr.	1650	84	257	15,402
May	10600	340	1553	96,270
June	1140	464	735	44,088
July	1225	344	552	35,224
Aug.	618	318	500	31,128
Sept.	2360	470	800	48,026
Oct.	5390	760	1270	78,718
Nov.	1720	268	681	40,882
Dec.	1080	182	340	21,098
Total	..	..	..	442,530

Year 1945

Jan.	1920	135	367	22,734
Feb.	685	135	221	12,358
Mar.	1430	80	128	7,952
Apr.	6300	101	668	40,074
May	410	200	260	16,186
June	6990	200	1386	83,148
July	1080	440	705	43,718
Aug.	4485	685	1644	101,940
Sept.	4600	1250	1849	110,960
Oct.	7740	1430	2453	152,080
Nov.	2770	760	1484	89,040
Dec.	1160	222	422	26,136
Total	..	..	..	706,326

Year 1946

Jan.	440	92	175	10,836
Feb.	9340	87	740	41,440
Mar.	3210	268	818	50,702
Apr.	1000	222	445	26,676
May	5800	182	493	30,602
June	1080	440	588	35,284
July	8540	620	1899	117,744
Aug.	13400	1000	2389	148,116
Sept.	5000	920	2081	124,840
Oct.	17100	1720	3849	238,646
Nov.	5800	1720	3277	196,600
Dec.	4250	760	1364	84,540
Total	..	..	..	1,106,026

Year 1947

Jan.	685	136	315	19,562
Feb.	3550	136	449	25,126
Mar.	8660	218	672	40,998
Apr.	3780	280	537	32,200
May	1620	182	365	22,652
June	1430	411	738	44,310
July	3330	564	1124	69,670
Aug.	3100	564	1227	76,046
Sept.	18800	1000	3356	201,336
Oct.	13000	2055	3592	222,680
Nov.	7120	1190	2857	171,410
Dec.	4210	1460	1995	123,700
Total	..	..	..	1,049,690

Year 1948

Jan.	2850	631	1366	84,702
Feb.	2970	320	645	37,404
Mar.	631	215	292	18,108
Apr.	1550	180	498	29,858
May	18800	565	1932	119,782
June	2970	780	1207	72,450
July	780	471	577	35,790
Aug.	780	500	591	36,684
Sept.	2490	710	1506	90,350
Oct.	13000	1740	3059	189,660
Nov.	10600	1100	3073	184,360
Dec.	1645	416	794	49,162
Total	..	..	..	948,310

Year 1949

Jan.	1460	255	453	28,080
Feb.	1490	120	272	15,232
Mar.	3260	225	588	36,452
Apr.	3800	225	395	23,708
May	2300	260	679	42,078
June	2055	500	833	49,960
July	1340	305	804	49,828
Aug.	5300	890	1210	74,988
Sept.	10700	830	2123	127,388
Oct.	12250	1730	3234	200,532
Nov.	5000	1060	2007	120,458
Dec.	1060	380	579	35,890
Total	..	..	..	804,594

Appendix 15
Sheet 8

SNOWY RIVER AT JINDABYNE

Year 1950					Year 1951				
Month	Discharge in Cusecs			Discharge for Month	Month	Discharge in Cusecs			Discharge for Month
	Max.	Min.	Mean	Acre Feet		Max.	Min.	Mean	Acre Feet
Jan.	860	148	256	15,850	Jan.	1490	190	367	22,786
Feb.	9000	180	1613	90,328	Feb.	8400	160	741	41,498
Mar.	22500	343	3160	195,890	Mar.	563	197	297	18,436
Apr.	16900	782	3602	216,154	Apr.	4200	110	714	42,828
May	5750	532	908	56,310	May	6700	590	1434	88,916
June	2540	782	1126	67,518	June	7950	1060	2348	140,908
July	2530	940	1424	88,324	July	9350	830	1725	106,922
Aug.	1740	940	1172	73,060	Aug.	6560	1340	2054	127,358
Sept.	5450	1020	1945	116,708	Sept.	12250	1200	3215	192,910
Oct.	14650	1375	3515	217,938	Oct.	10760	2030	3398	210,690
Nov.	5150	890	1927	115,670	Nov.	2760	1060	1700	102,000
Dec.	4460	266	713	44,254	Dec.	3130	460	947	58,756
Total	..	..	..	1,298,004	Total	..	..	..	1,154,008

Year 1952					Year 1953				
Jan.	590	160	310	19,214	Jan.	4460	400	810	50,220
Feb.	225	110	147	8,530	Feb.	2850	205	446	25,014
Mar.	2100	110	268	16,628	Mar.	242	146	173	10,772
Apr.	3660	125	1003	58,160	Apr.	515	127	153	9,186
May	10850	780	1755	108,828	May	4795	133	1029	63,822
June	32050	2430	7566	453,964	June	1140	400	662	39,726
July	4260	1380	1958	121,404	July	2880	440	919	56,956
Aug.	4570	1360	2225	137,952	Aug.	3630	845	1377	85,382
Sept.	12100	1325	3696	221,740	Sept.	12200	915	2612	156,748
Oct.	15700	1780	4588	284,484	Oct.	16450	1950	4155	257,626
Nov.	10750	1910	3538	212,300	Nov.	11000	1165	3038	182,272
Dec.	4930	1160	2382	147,660	Dec.	13562	630	1333	82,632
Total	..	..	..	1,790,864	Total	..	..	..	1,020,356

Year 1954					Year 1955				
Jan.	3330	350	733	45,450	Jan.	4390	95	257	15,928
Feb.	3075	330	640	35,820	Feb.	2145	200	453	25,364
Mar.	400	140	218	13,554	Mar.	2750	180	485	30,048
Apr.	4165	122	369	22,116	Apr.	1777	129	254	15,256
May	1392	310	472	29,258	May	4120	269	848	52,552
June	2410	370	610	36,614	June	13348	415	1534	92,046
July	1730	390	643	39,888	July	1669	492	761	47,162
Aug.	25125	460	1773	109,962	Aug.	11192	611	2841	176,146
Sept.	2590	680	1091	65,480	Sept.	11926	1633	3464	207,848
Oct.	6230	560	1315	81,540	Oct.	27300	1693	4484	277,994
Nov.	5700	700	1776	106,540	Nov.	10154	822	2048	122,882
Dec.	2380	200	577	35,790	Dec.	2768	521	1042	64,624
Total	..	..	..	622,012	Total	..	..	..	1,127,850

Year 1956					Year 1957				
Jan.	4010	303	660	40,934	Jan.	1546	180	586	36,350
Feb.	1585	190	404	23,450	Feb.	1295	123	322	18,016
Mar.	8594	228	1769	109,662	Mar.	1925	101	229	14,190
Apr.	16900	1171	4075	244,486	Apr.	No Records			11,580*
May	11791	1480	3137	194,486	May	1568	167	378	23,438
June	8866	1152	3251	195,046	June	11961	140	952	57,098
July	No Records			151,546*	July	2110	312	717	44,464
Aug.	3020	1152	1696	105,182	Aug.	2465	312	652	40,434
Sept.	No Records			167,708*	Sept.	No Records			69,230*
Oct.	12488	2690	4734	293,482	Oct.	14304	722	2199	136,368
Nov.	10635	2150	3675	220,494	Nov.	2840	330	1159	69,540
Dec.	7812	631	1964	121,748	Dec.	14048	150	775	48,044
Total	..	..	..	1,868,224*	Total	..	..	..	568,752*

* Estimated

Appendix 15
Sheet 9

SNOWY RIVER AT JINDABYNE

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.	3080	116	413	25,624	Jan.	953	106	257	15,936
Feb.	1739	140	311	17,430	Feb.	2305	80	169	9,480
Mar.	1168	98	200	12,382	Mar.	No Records			17,268*
Apr.	3005	98	196	11,754	Apr.	1354	102	242	14,516
May	14096	118	1200	74,410	May	335	94	136	8,406
June	21680	322	1313	78,804	June	4780	94	497	29,846
July	12112	260	1176	72,926	July	2612	167	491	30,454
Aug.	8832	849	1993	123,586	Aug.	1782	225	516	31,970
Sept.	5350	549	1181	70,876	Sept.	17700	411	1827	109,636
Oct.	13936	1508	3403	211,006	Oct.	16680	650	3241	200,956
Nov.	14288	1111	2241	134,444	Nov.	11968	492	1770	106,170
Dec.	2136	250	778	48,206	Dec.	1640	178	445	27,612
Total	..	..	..	881,448	Total	..	..	..	602,250*

Year 1960					Year 1961				
Jan.	1530	122	301	18,642	Jan.	2435	170	586	36,326
Feb.	2045	96	211	12,224	Feb.	567	93	183	10,262
Mar.	1168	79	157	9,760	Mar.	2422	127	483	29,956
Apr.	2370	80	343	20,564	Apr.	6640	175	877	52,612
May	3553	275	1181	73,198	May	1321	195	428	26,554
June	1530	330	634	38,050	June	1968	183	453	27,152
July	16476	290	2380	147,574	July	2132	280	571	35,392
Aug.	5445	567	1394	86,456	Aug.	1205	311	550	34,124
Sept.	6072	498	1534	92,020	Sept.	4582	554	1366	81,958
Oct.	8224	1332	2816	174,606	Oct.	7490	578	2316	143,566
Nov.	14272	857	2600	156,002	Nov.	13760	284	1651	99,078
Dec.	10480	420	1984	123,024	Dec.	4636	311	888	55,076
Total	..	..	..	952,120	Total	..	..	..	632,056

Year 1962					Year 1963				
Jan.	3160	177	439	27,214	Jan.	1530	172	457	28,336
Feb.	1940	149	323	18,082	Feb.	1796	102	274	15,354
Mar.	469	95	156	9,692	Mar.	1079	97	220	13,620
Apr.	429	99	155	9,308	Apr.	4386	93	273	16,386
May	732	88	219	13,598	May	6402	174	1009	62,576
June	2900	295	895	53,720	June	2266	303	724	43,458
July	2240	183	475	29,464	July	844	272	415	25,758
Aug.	1856	328	537	33,314	Aug.	3320	272	666	41,286
Sept.	5198	464	1648	98,890	Sept.	6640	536	1376	82,532
Oct.	4250	1088	2151	133,372	Oct.	6453	1320	2521	156,274
Nov.	8928	641	1823	109,358	Nov.	12608	386	1627	97,608
Dec.	3320	354	1080	66,982	Dec.	No Records			72,844*
Total	..	..	..	602,994	Total	..	..	..	656,032*

Year 1964					Year 1965				
Jan.	795	127	242	14,974	Jan.	1241	146	448	27,802
Feb.	788	88	170	9,840	Feb.	512	90	185	10,334
Mar.	2766	74	208	12,918	Mar.	900	45	86	5,346
Apr.	2780	78	405	24,328	Apr.	858	56	136	8,176
May	1844	159	387	23,990	May	844	97	205	12,722
June	2012	177	598	35,896	June	560	60	150	9,016
July	3434	359	1059	65,644	July	377	63	135	8,354
Aug.	6300	518	1281	79,442	Aug.	7031	80	540	33,486
Sept.	9984	1330	3156	189,354	Sept.	5673	156	487	29,202
Oct.	10688	2461	3802	235,708	Oct.	2542	204	380	23,582
Nov.	7966	1808	3128	187,674	Nov.	1550	156	306	18,382
Dec.	10752	386	1417	87,862	Dec.	524	50	174	10,776
Total	..	..	..	967,630	Total	..	..	..	197,178

* Estimated

Appendix 15
Sheet 10

SNOWY RIVER AT JINDABYNE

Year 1966					Year 1967				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	474	37	64	3,950	Jan.	484	53	107	6,660
Feb.	410	34	69	3,870	Feb.	180	43	57	3,190
Mar.	No Records			7,290*	Mar.	80	29	40	2,470
Apr.	167	26	60	3,580	Apr.	..	..	..	..
May	964	58	104	6,420	May	..	..	..	..
June	341	79	154	9,210	June	..	..	..	..
July	1300	95	165	10,300	July	..	..	..	..
Aug.	363	105	150	9,300	Aug.	..	..	..	..
Sept.	1040	156	305	18,300	Sept.	..	..	..	..
Oct.	3400	288	523	32,500	Oct.	..	..	..	..
Nov.	4710	235	787	47,200	Nov.	..	..	..	..
Dec.	1900	156	398	24,700	Dec.	..	..	..	..
Total	..	..	..	176,620*	Total	..	..	..	..

* Estimated

WULLWYE CREEK AT WOOLWAY

LOCATION:	Latitude 36°26' Longitude 148°55'
PERIOD OF ESTABLISHMENT:	March 1949 to date
COMPLETE YEARS OF COMPUTED RECORDS:	22 years
ZERO OF GAUGE:	R.L. 83.82 Assumed Datum Approximately 2,500 feet above sea level
CATCHMENT AREA:	215 square miles
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Pressure Type) installed March 1965 Staff gauge range 0 - 20 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 150 (b) Maximum observation in cusecs : 561 (c) Minimum observation in cusecs : 0.015
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	13,400 cusecs
MEAN DAILY DISCHARGE FOR 22 YEARS:	47 cusecs
MEAN ANNUAL DISCHARGE FOR 22 YEARS:	34,100 acre feet

Appendix 16
Sheet 2

WULLWYE CREEK AT WOOLWAY

Year 1949

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	3	3	3	164
May	26	2	9	564
June	210	7	51	3,040
July	279	19	64	3,956
Aug.	279	19	94	5,812
Sept.	380	26	68	4,096
Oct.	45	26	37	2,278
Nov.	26	6	13	805
Dec.	4	2	2	145
Total	..	..	..	..

Year 1950

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	49	1	10	615
Feb.	3700	3	195	10,900
Mar.	8600	14	1185	73,468
Apr.	No Records			52,000*
May	No Records			8,000*
June	No Records			9,700*
July	No Records			17,000*
Aug.	No Records			11,000*
Sept.	No Records			16,000*
Oct.	3540	17	505	31,308
Nov.	620	21	89	5,336
Dec.	42	8	22	1,375
Total	..	..	..	236,702*

Year 1951

Jan.	1330	9	78	4,843
Feb.	21	9	13	740
Mar.	26	9	17	1,033
Apr.	15	9	12	728
May	17	9	11	701
June	21	9	14	865
July	19	15	16	972
Aug.	898	17	158	9,800
Sept.	3700	17	504	30,236
Oct.	5600	52	241	14,988
Nov.	48	19	32	1,954
Dec.	37	19	29	1,772
Total	..	..	..	68,632

Year 1952

Jan.	19	2	9	570
Feb.	155	0	8	494
Mar.	155	2	51	3,190
Apr.	2305	1	145	8,692
May	64	30	44	2,750
June	12800	40	950	57,000
July	218	64	101	6,292
Aug.	1800	60	221	13,672
Sept.	60	26	43	2,554
Oct.	390	16	92	5,722
Nov.	218	26	49	2,924
Dec.	225	3	20	1,252
Total	..	..	..	105,112

Year 1953

Jan.	3	2	3	175
Feb.	1256	2	26	1,437
Mar.	5	3	4	242
Apr.	5	3	4	226
May	1000	5	81	5,011
June	13	10	11	684
July	17	8	12	735
Aug.	135	10	22	1,335
Sept.	13	8	10	618
Oct.	38	8	13	780
Nov.	68	3	12	734
Dec.	3	0.5	1	87
Total	..	..	..	12,064

Year 1954

Jan.	68	0	11	670
Feb.	200	0.5	24	1,354
Mar.	17	1	11	700
Apr.	1	0.8	0.9	55
May	4	1	3	152
June	8	4	5	284
July	4	4	4	269
Aug.	4	2	4	237
Sept.	4	2	2	141
Oct.	26	1	6	362
Nov.	135	2	18	1,082
Dec.	2	0	0.7	41
Total	..	..	..	5,347

Year 1955

Jan.	4	0	0.4	22
Feb.	No Records			53*
Mar.	3	0.5	1	83
Apr.	2	0.5	1	61
May	No Records			680*
June	19	2	8	471
July	32	4	12	750
Aug.	76	4	26	1,579
Sept.	13	4	7	400
Oct.	5	2	4	247
Nov.	13	0	3	197
Dec.	35	0	1	82
Total	..	..	..	4,625*

Year 1956

Jan.	440	0	19	1,176
Feb.	46	0.3	12	683
Mar.	620	10	49	3,036
Apr.	560	13	83	4,976
May	13400	21	685	42,460
June	4700	60	621	37,260
July	1400	70	216	13,392
Aug.	No Records			4,000*
Sept.	50	16	33	1,985
Oct.	28	14	21	1,289
Nov.	55	8	13	793
Dec.	8	2	3	216
Total	..	..	..	111,266*

* Estimated

Appendix 16
Sheet 3

WULLWYE CREEK AT WOOLWAY

Year 1957					Year 1958				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	2	1	1	77	Jan.	60	0.8	8	497
Feb.	81	1	6	335	Feb.	20	2	7	403
Mar.	12	1	3	163	Mar.	2	0.9	1	76
Apr.	2	1	2	95	Apr.	1	0.7	0.9	52
May	3	2	2	136	May	2	1	1	73
June	12	3	5	304	June	117	1	9	565
July	307	3	100	6,227	July	3	1	2	109
Aug.	1000	18	117	7,262	Aug.	4	2	3	173
Sept.	65	12	29	1,748	Sept.	30	2	5	299
Oct.	10	3	6	390	Oct.	13	1	3	190
Nov.	50	1	10	615	Nov.	218	0.7	11	632
Dec.	60	0.8	8	503	Dec.	5	0.8	1	90
Total	..	..	..	17,855	Total	..	..	..	3,159

Year 1959					Year 1960				
Jan.	32	0.5	2	121	Jan.	12	4	9	554
Feb.	1265	0.5	11	607	Feb.	4	2	3	153
Mar.	94	2	9	559	Mar.	13	2	5	293
Apr.	4	2	3	174	Apr.	6	4	5	278
May	3	2	2	156	May	28	3	8	504
June	83	2	13	806	June	15	6	8	468
July	218	7	30	1,858	July	273	39	74	4,562
Aug.	33	10	17	1,024	Aug.	78	9	45	2,776
Sept.	307	8	32	1,905	Sept.	500	7	40	2,384
Oct.	3105	9	286	17,758	Oct.	33	6	14	834
Nov.	1000	54	112	6,734	Nov.	7	4	5	308
Dec.	117	12	28	1,734	Dec.	78	5	20	1,207
Total	..	..	..	33,436	Total	..	..	..	14,321

Year 1961					Year 1962				
Jan.	68	2	10	597	Jan.	19	6	8	539
Feb.	307	2	8	449	Feb.	26	4	10	543
Mar.	1000	7	38	2,352	Mar.	15	3	5	318
Apr.	19	10	12	714	Apr.	6	2	3	188
May	No Records			537*	May	12	2	4	257
June	33	10	16	944	June	7	4	5	314
July	307	19	107	6,640	July	6	4	4	271
Aug.	117	13	44	2,722	Aug.	17	5	7	436
Sept.	2900	26	228	13,686	Sept.	81	5	20	1,191
Oct.	50	11	19	1,196	Oct.	37	5	12	733
Nov.	33	8	20	1,180	Nov.	12	0.2	2	142
Dec.	105	8	19	1,181	Dec.	81	0.4	25	1,577
Total	..	..	..	32,198*	Total	..	..	..	6,509

Year 1963					Year 1964				
Jan.	19	2	9	529	Jan.	No Records			100*
Feb.	4	1	3	154	Feb.	4	1	3	150
Mar.	2	0.4	0.9	58	Mar.	92	1	18	1,100
Apr.	3930	0.7	55	3,297	Apr.	45	2	10	608
May	231	7	29	1,788	May	8	6	6	392
June	45	14	21	1,250	June	10	6	7	438
July	48	13	22	1,360	July	640	8	91	5,630
Aug.	42	10	15	946	Aug.	No Records			6,100*
Sept.	315	8	34	2,040	Sept.	No Records			2,800*
Oct.	1600	10	62	3,820	Oct.	No Records			1,200*
Nov.	48	3	11	647	Nov.	No Records			660*
Dec.	540	3	64	3,990	Dec.	No Records			200*
Total	..	..	..	19,879	Total	..	..	..	19,378*

* Estimated

WULLWYE CREEK AT WOOLWAY

Year 1965

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			100*
Feb.	No Records			50*
Mar.	No Records			10*
Apr.	No Records			45*
May	2	1	2	103
June	3	2	2	140
July	6	3	4	251
Aug.	47	3	8	523
Sept.	No Records			200*
Oct.	No Records			400*
Nov.	No Records			100*
Dec.	No Records			50*
Total	..	..	..	1,972*

Year 1966

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	No Records			6*
Feb.	No Records			50*
Mar.	No Records			49*
Apr.	No Records			96*
May	3	2	2	119
June	5	2	3	189
July	4	2	3	169
Aug.	5	2	3	181
Sept.	35	2	5	273
Oct.	55	0.6	6	360
Nov.	No Records			2,920*
Dec.	No Records			900*
Total	..	..	..	5,312*

Year 1967

Jan.	16	0.1	3	168
Feb.	6	0.1	0.7	36
Mar.	2	0.1	1	59
Apr.	0.5	0.2	0.4	21
May	1	0.5	1	64
June	2	2	2	103
July	2	2	2	110
Aug.	6	2	5	303
Sept.	10	2	3	190
Oct.	16	1	4	280
Nov.	3	1	2	130
Dec.	1	0.1	0.3	17
Total	..	..	..	1,481

Year 1968

Jan.	No Records			6*
Feb.	No Records			5*
Mar.	No Records			14*
Apr.	No Records			5*
May	No Records			44*
June	No Records			60*
July	No Records			70*
Aug.	No Records			110*
Sept.	No Records			97*
Oct.	No Records			42*
Nov.	No Records			11*
Dec.	No Records			25*
Total	..	..	..	489*

Year 1969

Jan.	1	0	0.1	7
Feb.	24	0.2	5	252
Mar.	55	0	0.3	20
Apr.	465	0.2	10	627
May	27	0.7	2	138
June	150	6	25	1,510
July	11	4	6	399
Aug.	8	2	5	280
Sept.	11	2	4	229
Oct.	14	2	4	228
Nov.	3130	18	249	15,000
Dec.	550	3	18	1,130
Total	..	..	..	19,820

Year 1970

Jan.	28	1	6	352
Feb.	54	0.6	4	209
Mar.	15	0.3	2	110
Apr.	8	0.8	3	161
May	10	1	4	220
June	32	4	9	511
July	8	2	4	269
Aug.	160	2	9	550
Sept.	185	3	24	1,500
Oct.	49	3	10	614
Nov.	173	3	18	1,110
Dec.	1320	3	46	2,820
Total	..	..	..	8,426

Year 1971

Jan.	121	2	9	555
Feb.	5670	18	307	17,200
Mar.	43	11	24	1,460
Apr.	17	7	11	657
May	27	7	10	648
June	11	7	8	478
July	15	5	7	429
Aug.	32	5	9	576
Sept.	24	4	9	528
Oct.	24	2	7	410
Nov.	19	1	4	252
Dec.	11	0.3	2	104
Total	..	..	..	23,297

* Estimated

SNOWY RIVER AT DALGETY

LOCATION:	Latitude 36°30' Longitude 148°50'		
PERIOD OF ESTABLISHMENT:	March 1949 to date		
COMPLETE YEARS OF COMPUTED RECORDS:	21 years		
ZERO OF GAUGE:	R.L. 71.04 Assumed Datum Approximately 2,300 feet above sea level		
CATCHMENT AREA:	1,220 square miles (Pre S.M.H.E.A. Operation) 780 square miles (Post S.M.H.E.A. Operation)		
CONTROL:	Rock and Gravel		
EQUIPMENT:	Automatic Recorder (Float Type) installed December 1968 Staff gauge range 0 - 34 feet		
CURRENT METER OBSERVATIONS:	(a) Number obtained	:	95
	(b) Maximum observation in cusecs	:	9,670
	(c) Minimum observation in cusecs	:	6.0
	Pre S.M.H.E.A. Operation (7 years)		Post S.M.H.E.A. Operation (14 years)
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	40,800 cusecs		18,700 cusecs
MEAN DAILY DISCHARGE DURING PERIOD OF RECORDS:	1,925 cusecs		675 cusecs
MEAN ANNUAL DISCHARGE DURING PERIOD OF RECORDS:	1,405,000 acre feet		492,000 acre feet
REMARKS:	From 1957 records at this station have been affected by impounding and diversion operations of the Snowy Mountains Hydro-Electric Authority which in effect reduced the catchment area of this station to 780 square miles.		

Appendix 17
Sheet 2

SNOWY RIVER AT DALGETY

Year 1949					Year 1950				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	930	115	228	14,156
Feb.	..	..	..	..	Feb.	11280	174	1835	102,788
Mar.	..	..	..	..	Mar.	37725	338	4063	251,928
Apr.	400	132	232	13,910	Apr.	26650	1230	5686	341,136
May	2060	174	501	31,060	May	4650	710	1216	75,372
June	2060	326	772	46,304	June	3160	930	1511	90,680
July	1640	448	849	52,634	July	3780	1330	2072	128,462
Aug.	5780	710	1380	85,534	Aug.	2530	1230	1624	100,680
Sept.	8400	772	2171	130,266	Sept.	5400	1330	2576	154,570
Oct.	No Records			240,260*	Oct.	No Records			246,880*
Nov.	No Records			136,890*	Nov.	6400	1230	2500	149,998
Dec.	No Records			37,680*	Dec.	3280	400	861	53,384
Total	..	..	..	..	Total	..	..	..	1,710,034*

Year 1951					Year 1952				
Jan.	1640	222	473	29,312	Jan.	448	150	278	17,264
Feb.	8530	150	979	54,814	Feb.	546	99	139	8,086
Mar.	850	174	341	21,170	Mar.	2480	115	300	18,594
Apr.	4900	150	786	47,168	Apr.	5000	132	1128	67,694
May	6530	710	1648	102,146	May	9110	803	1818	112,734
June	7900	930	2443	146,588	June	40800	2480	8134	488,044
July	8650	710	1836	113,816	July	4280	1690	2284	141,610
Aug.	7650	1430	2501	155,046	Aug.	6200	1495	2696	167,178
Sept.	14400	1430	3548	212,880	Sept.	10790	1495	4090	245,402
Oct.	16840	2530	4199	260,360	Oct.	14100	2015	4740	293,850
Nov.	3160	1030	1854	111,238	Nov.	8980	2015	3940	236,426
Dec.	3030	400	999	61,932	Dec.	6080	995	2565	159,058
Total	..	..	..	1,316,470	Total	..	..	..	1,955,940

Year 1953					Year 1954				
Jan.	4160	418	773	47,940	Jan.	3180	326	682	42,282
Feb.	2360	246	447	25,028	Feb.	2910	296	593	33,180
Mar.	246	192	224	13,908	Mar.	326	132	213	13,228
Apr.	352	150	215	12,894	Apr.	3650	115	333	19,968
May	6080	222	1157	71,716	May	1030	270	414	25,650
June	1070	382	629	37,746	June	2530	296	535	32,090
July	2840	296	816	50,588	July	2170	362	594	36,810
Aug.	1905	775	1231	76,344	Aug.	21190	362	1621	100,508
Sept.	10650	845	2708	162,496	Sept.	2530	772	1212	72,690
Oct.	13800	2530	4884	302,834	Oct.	5900	546	1769	109,668
Nov.	9780	1230	3396	203,760	Nov.	5530	654	1867	112,024
Dec.	11030	596	1346	83,482	Dec.	1955	222	542	33,628
Total	..	..	..	1,088,736	Total	..	..	..	631,726

Year 1955					Year 1956				
Jan.	3900	99	247	15,304	Jan.	3560	296	722	44,750
Feb.	2290	246	445	24,910	Feb.	1428	246	446	25,856
Mar.	No Records			28,924*	Mar.	7680	270	1750	108,478
Apr.	No Records			18,883*	Apr.	13200	835	3854	231,262
May	No Records			57,439*	May	18540	1495	3335	206,766
June	10370	362	1494	89,668	June	14400	1250	3719	223,154
July	1250	496	758	46,994	July	5960	1905	3043	188,638
Aug.	9670	496	2822	174,958	Aug.	3800	1495	2128	131,952
Sept.	10230	1405	3426	205,568	Sept.	6440	1325	3061	183,636
Oct.	24200	2015	4639	287,634	Oct.	11070	3200	4959	307,486
Nov.	3560	1035	1930	115,820	Nov.	8980	2360	3660	219,624
Dec.	2960	496	1172	72,650	Dec.	6560	770	1998	123,900
Total	..	..	..	1,138,752*	Total	..	..	..	1,995,502

* Estimated

Appendix 17
Sheet 3

SNOWY RIVER AT DALGETY

Year 1957					Year 1958				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	1325	222	629	39,008	Jan.	3560	132	516	32,008
Feb.	1035	132	338	18,942	Feb.	1325	174	361	20,192
Mar.	1905	99	240	14,888	Mar.	965	115	234	14,536
Apr.	1175	84	195	11,702	Apr.	2360	115	254	15,268
May	1325	246	439	27,212	May	10790	150	1192	73,916
June	9110	222	932	55,926	June	18700	400	1389	83,334
July	3560	448	947	58,716	July	10230	326	1273	78,932
Aug.	3400	326	891	55,242	Aug.	7420	1105	1981	122,800
Sept.	5480	835	1327	79,622	Sept.	4880	654	1201	72,066
Oct.	11910	835	2152	133,430	Oct.	11210	2720	3227	200,066
Nov.	2600	546	1244	74,628	Nov.	11910	1035	2150	129,028
Dec.	10930	198	838	51,946	Dec.	1850	326	797	49,416
Total	..	..	..	621,262	Total	..	..	..	891,562

Year 1959					Year 1960				
Jan.	900	107	283	17,556	Jan.	1605	174	427	26,458
Feb.	1542	84	181	10,114	Feb.	1340	132	244	14,164
Mar.	2130	107	324	20,058	Mar.	1085	115	198	12,294
Apr.	1250	115	263	15,794	Apr.	2200	115	406	24,374
May	296	99	145	9,002	May	2860	327	1250	77,492
June	4520	99	545	32,714	June	1605	435	724	43,462
July	2360	174	586	36,316	July	14400	395	2419	149,966
Aug.	1543	283	630	39,054	Aug.	5840	705	1689	104,726
Sept.	14550	424	1875	112,472	Sept.	5240	640	1807	108,404
Oct.	17690	868	3802	235,694	Oct.	6680	1700	2975	184,476
Nov.	10580	673	2050	122,980	Nov.	11490	1170	2678	160,660
Dec.	4400	270	625	38,776	Dec.	8850	475	2021	125,286
Total	..	..	..	690,530	Total	..	..	..	1,031,762

Year 1961					Year 1962				
Jan.	1890	222	642	39,830	Jan.	2970	245	513	31,804
Feb	395	99	204	11,424	Feb.	2420	140	443	24,826
Mar.	3680	150	591	36,636	Mar.	450	120	185	11,458
Apr.	5120	198	947	56,810	Apr.	450	95	165	9,870
May	1340	210	534	33,082	May	795	105	237	15,030
June	1795	270	521	31,254	June	2585	300	883	52,958
July	2860	450	777	48,176	July	1990	255	495	30,698
Aug.	1571	410	751	46,556	Aug.	1795	255	569	35,248
Sept.	8200	795	1875	112,480	Sept.	4760	585	1776	106,538
Oct.	6320	795	2340	145,074	Oct.	3800	1255	2183	135,336
Nov.	12190	430	1996	119,732	Nov.	6920	775	1822	109,298
Dec.	5120	450	1159	71,876	Dec.	3320	395	1167	72,368
Total	..	..	..	752,930	Total	..	..	..	635,432

Year 1963					Year 1964				
Jan.	1700	180	491	30,444	Jan.	1050	180	274	17,008
Feb	1890	130	281	15,736	Feb.	680	135	225	13,040
Mar	850	130	197	12,184	Mar.	2720	125	261	16,178
Apr.	3800	120	263	15,756	Apr.	1940	135	463	27,798
May	8330	130	1140	70,656	May	1590	180	410	25,424
June	2200	310	824	49,446	June	1940	230	835	38,186
July	770	310	426	26,410	July	3830	440	1301	80,700
Aug.	2720	280	674	41,798	Aug.	7050	540	1491	92,500
Sept.	6490	600	1337	80,232	Sept.	8430	1590	3140	188,000
Oct.	6910	1260	2400	148,812	Oct.	8590	2720	3692	229,000
Nov.	10060	440	1622	97,306	Nov	6490	1820	3036	182,000
Dec.	6070	350	1430	88,644	Dec.	8270	495	1409	87,400
Total	..	..	..	677,424	Total	..	..	..	997,234

SNOWY RIVER AT DALGETY

Year 1965					Year 1966				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge For Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	1110	165	471	29,200	Jan.	247	40	665	4,030
Feb.	550	85	195	10,900	Feb.	310	41	83	4,660
Mar.	580	75	102	6,320	Mar.	1590	51	144	8,950
Apr.	580	75	154	9,250	Apr.	100	60	77	4,610
May	800	120	212	13,200	May	550	73	106	6,550
June	310	80	156	9,360	June	370	100	190	11,400
July	310	100	164	10,200	July	1160	130	195	12,100
Aug.	5930	110	584	36,200	Aug.	370	110	175	10,900
Sept.	4530	177	517	31,000	Sept.	685	177	350	21,000
Oct.	2070	235	449	27,800	Oct.	2850	370	568	35,200
Nov.	1480	190	363	21,800	Nov.	5300	350	987	59,200
Dec.	650	55	199	12,300	Dec.	2330	205	533	33,100
Total	..	..	..	217,530	Total	..	..	..	211,700

Year 1967					Year 1968				
Jan.	445	70	144	8,910	Jan.	20	6	10	614
Feb.	177	50	79	4,400	Feb.	11	6	9	492
Mar.	80	41	57	3,550	Mar.	22	10	13	828
Apr.	99	6	34	2,030	Apr.	14	8	11	630
May	16	6	11	670	May	19	7	12	742
June	32	13	17	992	June	15	7	11	636
July	22	8	16	962	July	12	9	10	620
Aug.	61	8	19	1,200	Aug.	125	6	22	1,390
Sept.	725	9	20	1,210	Sept.	41	9	17	1,010
Oct.	25	8	13	788	Oct.	205	6	15	896
Nov.	26	6	14	830	Nov.	9	4	6	362
Dec.	12	6	8	523	Dec.	97	2	10	646
Total	..	..	..	26,065	Total	..	..	..	8,866

Year 1969					Year 1970				
Jan.	26	8	10	634	Jan.	183	0.2	23	1,430
Feb.	520	9	23	1,280	Feb.	520	0.2	30	1,660
Mar.	157	9	14	836	Mar.	Records Incomplete			
Apr.	1350	10	58	3,470	Apr.	Records Incomplete			
May	57	12	17	1,030	May	Records Incomplete			
June	1210	22	123	7,390	June	235	12	31	1,860
July	30	11	17	1,060	July	49	2	22	1,370
Aug.	15	10	13	824	Aug.	731	13	38	2,350
Sept.	15	8	11	685	Sept.	567	13	70	4,230
Oct.	39	7	10	645	Oct.	180	9	28	1,710
Nov.	7200	49	582	34,900	Nov.	282	14	50	3,040
Dec.	435	8	35	2,170	Dec.	182	8	83	5,170
Total	..	..	..	54,924	Total	..	..	..	..

Year 1971				
Jan.	3270	6	166	10,300
Feb.	13200	108	900	50,400
Mar.	258	33	69	4,300
Apr.	33	17	22	1,310
May	79	17	25	1,530
June	26	14	19	1,120
July	35	12	16	992
Aug.	57	11	18	1,090
Sept.	86	8	23	1,380
Oct.	144	5	21	1,310
Nov.	220	5	23	1,390
Dec.	109	7	17	1,050
Total	..	..	..	76,172

MACLAUGHLIN RIVER AT DALGETY ROAD

LOCATION:	Latitude 36°38' Longitude 149°07'
PERIOD OF ESTABLISHMENT:	October 1954 to date
COMPLETE YEARS OF COMPUTED RECORDS:	13 years
ZERO OF GAUGE:	R.L. 42.46 Assumed Datum Approximately 2,500 feet above sea level
CATCHMENT AREA:	107 square miles
CONTROL:	Gravel and Rock
EQUIPMENT:	Staff gauge range 0 - 15 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 122
	(b) Maximum observation in cusecs : 217
	(c) Minimum observation in cusecs : 0.1
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	16,600 cusecs
MEAN DAILY DISCHARGE FOR 13 YEARS:	46 cusecs
MEAN ANNUAL DISCHARGE FOR 13 YEARS:	33,700 acre feet
REMARKS:	Station inoperative period October 1958 to February 1961

Appendix 18
Sheet 2

MACLAUGHLIN RIVER AT DALGETY ROAD

Year 1954

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	..	..	..	..
Feb.	..	..	..	..
Mar.	..	..	..	..
Apr.	..	..	..	..
May	..	..	..	..
June	..	..	..	..
July	..	..	..	..
Aug.	..	..	..	..
Sept.	..	..	..	..
Oct.	..	..	..	..
Nov.	670	7	55	3,374
Dec.	6	3	3	216
Total	..	..	..	..

Year 1955

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	22	2	3	170
Feb.	78	3	12	694
Mar.	22	3	10	596
Apr.	7	4	6	344
May	620	5	62	3,834
June	22	5	11	674
July	14	11	11	690
Aug.	9	7	7	438
Sept.	7	5	6	376
Oct.	22	3	8	516
Nov.	3	0.8	2	94
Dec.	2	1	1	68
Total	..	..	..	8,494

Year 1956

Jan.	3900	1	133	8,230
Feb.	885	3	82	4,946
Mar.	830	22	120	7,440
Apr.	230	14	37	2,250
May	16600	14	713	44,234
June	8900	106	933	55,978
July	1119	106	234	14,510
Aug.	132	46	77	4,780
Sept.	62	34	41	2,472
Oct.	192	24	47	2,898
Nov.	29	17	20	1,186
Dec.	24	7	16	996
Total	..	..	..	149,920

Year 1957

Jan.	8	4	5	308
Feb.	24	5	7	393
Mar.	34	5	6	378
Apr.	5	5	5	300
May	5	5	5	310
June	34	5	7	424
July	920	10	137	8,470
Aug.	2283	36	213	13,182
Sept.	36	22	23	1,404
Oct.	22	9	14	880
Nov.	9	6	7	394
Dec.	6	5	5	320
Total	..	..	..	26,763

Year 1958

Jan.	55	5	8	472
Feb.	140	5	20	1,120
Mar.	5	5	5	310
Apr.	6	5	5	321
May	6	5	6	358
June	22	6	6	392
July	300	6	26	1,608
Aug.	6	5	6	364
Sept.	36	5	7	434
Oct.	No Records			
Nov.	No Records			
Dec.	No Records			
Total	..	..	..	..

Year 1961

Jan.	No Records			
Feb.	No Records			
Mar.	3450	18	117	7,240
Apr.	68	23	31	1,860
May	54	26	31	1,930
June	250	26	43	2,560
July	No Records			14,200*
Aug.	927	39	96	5,960
Sept.	4980	54	255	15,300
Oct.	No Records			3,590*
Nov.	No Records			6,400*
Dec.	400	28	81	5,020
Total	..	..	..	..

Year 1962

Jan.	No Records			3,910*
Feb.	2260	24	86	4,810
Mar.	34	20	23	1,440
Apr.	30	14	17	1,040
May	57	13	23	1,460
June	25	11	13	766
July	226	11	22	1,390
Aug.	36	5	15	920
Sept.	2550	8	118	7,090
Oct.	47	13	21	1,300
Nov.	40	8	16	962
Dec.	2220	10	89	5,520
Total	..	..	..	30,608*

Year 1963

Jan.	261	10	22	1,390
Feb.	1380	8	27	1,530
Mar.	90	8	18	1,110
Apr.	5590	10	84	5,060
May	8525	37	176	10,900
June	1236	32	116	6,950
July	845	55	204	12,700
Aug.	360	48	68	4,180
Sept.	522	24	62	3,750
Oct.	755	27	60	3,740
Nov.	185	21	30	1,790
Dec.	420	11	49	3,040
Total	..	..	..	56,140

* Estimated

Appendix 18
Sheet 3

MACLAUGHLIN RIVER AT DALGETY ROAD

Year 1964					Year 1965				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	11	7	8	514	Jan.	8	4	6	362
Feb.	14	7	9	524	Feb.	4	3	3	188
Mar.	28	5	11	662	Mar.	5	3	5	288
Apr.	500	6	46	2,760	Apr.	10	5	7	396
May	28	14	19	1,150	May	6	4	5	312
June	76	26	46	2,760	June	8	5	6	344
July	30	26	27	1,650	July	10	5	7	436
Aug.	4500	19	125	7,750	Aug.	235	6	20	1,220
Sept.	76	22	40	2,390	Sept.	86	5	13	771
Oct.	75	22	37	2,300	Oct.	75	4	14	867
Nov.	178	13	25	1,470	Nov.	20	4	8	505
Dec.	26	9	11	680	Dec.	52	1	8	492
Total	..	..	..	24,610	Total	..	..	..	6,181

Year 1966					Year 1967				
Jan.	1	1	1	62	Jan.	109	7	13	794
Feb.	13	1	3	160	Feb.	17	5	7	404
Mar.	14	0.9	4	268	Mar.	20	5	6	404
Apr.	4	2	3	156	Apr.	5	5	4	270
May	7	2	3	199	May	8	5	6	390
June	265	3	29	1,760	June	8	7	8	466
July	36	6	13	820	July	12	6	7	442
Aug.	23	8	12	739	Aug.	3600	7	110	6,810
Sept.	136	10	21	1,260	Sept.	2775	17	159	9,550
Oct.	449	8	70	4,320	Oct.	39	9	16	1,000
Nov.	1460	12	83	4,970	Nov.	9	5	7	436
Dec.	440	12	48	3,000	Dec.	5	0.6	3	159
Total	..	..	..	17,714	Total	..	..	..	21,125

Year 1968					Year 1969				
Jan.	24	1	3	212	Jan.	20	0.1	2	152
Feb.	No Records			35*	Feb.	83	0	3	167
Mar.	No Records			512*	Mar.	3	0.1	0.7	47
Apr.	4	1	2	118	Apr.	380	1	9	557
May	83	2	7	420	May	107	3	7	449
June	6	5	5	300	June	340	14	45	2,690
July	13	6	7	440	July	17	6	10	611
Aug.	11	4	6	358	Aug.	24	3	9	567
Sept.	5	2	3	183	Sept.	12	3	6	383
Oct.	No Records			104*	Oct.	14	3	7	417
Nov.	No Records			54*	Nov.	2260	20	226	13,600
Dec.	28	0.1	3	173	Dec.	135	14	29	1,800
Total	..	..	..	2,909*	Total	..	..	..	21,440

Year 1970					Year 1971				
Jan.	46	9	15	909	Jan.	190	15	34	2,110
Feb.	129	6	22	1,250	Feb.	10100	28	668	37,400
Mar.	42	5	14	838	Mar.	502	15	50	3,100
Apr.	17	11	12	719	Apr.	75	18	31	1,860
May	208	9	22	1,370	May	75	12	23	1,440
June	400	23	55	3,320	June	18	12	17	1,020
July	19	12	17	1,040	July	148	12	18	1,130
Aug.	120	12	38	2,350	Aug.	52	10	14	857
Sept.	222	24	38	2,310	Sept.	16	7	9	557
Oct.	54	12	21	1,290	Oct.	7	5	6	390
Nov.	94	12	29	1,750	Nov.	52	6	9	535
Dec.	4260	9	79	4,870	Dec.	7	7	7	415
Total	..	..	..	22,016	Total	..	..	..	50,814

* Estimated

BOMBALA RIVER AT THE FALLS

LOCATION:	Latitude 36°55' Longitude 149°12'
PERIOD OF ESTABLISHMENT:	May 1951 to date
COMPLETE YEARS OF COMPUTED RECORDS:	20 years
ZERO OF GAUGE:	R.L. 71.75 Assumed Datum Approximately 2,300 feet above sea level
CATCHMENT AREA:	210 square miles
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Pressure Type) installed February 1966 Staff gauge range 0 - 40 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 142
	(b) Maximum observation in cusecs : 1,374
	(c) Minimum observation in cusecs : 2.2
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	51,600 cusecs
MEAN DAILY DISCHARGE FOR 20 YEARS:	174 cusecs
MEAN ANNUAL DISCHARGE FOR 20 YEARS:	127,000 acre feet

BOMBALA RIVER AT THE FALLS

Year 1951					Year 1952				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	36	8	18	1,140
Feb.	..	..	..	..	Feb.	42	7	17	982
Mar.	..	..	..	..	Mar.	325	8	47	2,940
Apr.	..	..	..	..	Apr.	8100	12	825	49,478
May	..	..	..	..	May	580	83	137	8,480
June	4160	33	572	34,308	June	37000	66	2296	137,758
July	1070	96	237	14,688	July	1470	124	278	17,210
Aug.	5620	74	544	33,706	Aug.	1490	114	391	24,238
Sept.	7110	83	579	34,784	Sept.	124	77	97	5,838
Oct.	4790	66	339	21,000	Oct.	10720	43	556	34,478
Nov.	250	36	70	4,228	Nov.	9800	129	789	47,336
Dec.	62	24	38	2,304	Dec.	11180	145	615	38,144
Total	..	..	..	..	Total	..	..	..	368,022

Year 1953					Year 1954				
Jan.	145	81	113	7,032	Jan.	66	3	10	614
Feb.	223	52	84	4,676	Feb.	1755	9	124	6,948
Mar.	52	37	45	2,786	Mar.	89	7	20	1,250
Apr.	52	30	36	2,176	Apr.	11	7	9	532
May	13400	30	1150	71,314	May	16	11	12	734
June	223	59	81	4,868	June	156	9	41	2,446
July	66	46	59	3,646	July	40	14	22	1,384
Aug.	1310	40	190	11,768	Aug.	18	10	13	814
Sept.	73	35	47	2,798	Sept.	18	10	13	764
Oct.	66	26	37	2,314	Oct.	46	3	9	567
Nov.	66	9	27	1,610	Nov.	223	9	54	3,338
Dec.	10	4	8	499	Dec.	70	3	11	670
Total	..	..	..	115,487	Total	..	..	..	20,061

Year 1955					Year 1956				
Jan.	3	0.9	2	106	Jan.	1755	11	192	11,876
Feb.	66	3	22	1,222	Feb.	11000	12	1072	62,164
Mar.	22	9	16	976	Mar.	3320	124	546	33,844
Apr.	13	3	6	335	Apr.	615	59	140	8,414
May	3060	6	213	13,234	May	15840	66	718	44,518
June	114	24	59	3,546	June	20920	145	1232	73,940
July	59	26	33	2,034	July	7290	168	643	39,848
Aug.	26	12	20	1,212	Aug.	250	105	145	8,982
Sept.	18	9	13	770	Sept.	285	66	120	7,220
Oct.	194	14	55	3,398	Oct.	720	59	169	10,464
Nov.	14	3	6	338	Nov.	97	30	57	3,392
Dec.	180	2	42	2,586	Dec.	52	14	30	1,856
Total	..	..	..	29,757	Total	..	..	..	306,518

Year 1957					Year 1958				
Jan.	14	7	10	590	Jan.	89	2	14	870
Feb.	26	7	14	770	Feb.	208	11	55	3,080
Mar.	20	9	13	792	Mar.	52	11	20	1,262
Apr.	11	9	9	552	Apr.	18	7	11	676
May	20	9	12	744	May	33	7	17	1,028
June	315	11	44	2,620	June	285	8	24	1,428
July	10500	14	561	34,768	July	285	28	62	3,826
Aug.	11420	37	620	38,452	Aug.	52	21	29	1,788
Sept.	285	45	121	7,264	Sept.	114	18	37	2,242
Oct.	66	23	39	2,400	Oct.	28	5	15	954
Nov.	59	8	22	1,318	Nov.	39	3	8	499
Dec.	14	4	7	458	Dec.	89	7	20	1,220
Total	..	..	..	90,728	Total	..	..	..	18,873

Appendix 19
Sheet 3

BOMBALA RIVER AT THE FALLS

Year 1959					Year 1960				
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.	11	2	6	397	Jan.	223	29	92	5,724
Feb.	14	2	8	446	Feb.	29	11	20	1,174
Mar.	285	7	60	3,725	Mar.	189	20	62	3,816
Apr.	168	18	46	2,756	Apr.	24	16	20	1,192
May	18	11	13	782	May	51	20	29	1,784
June	2400	11	208	12,480	June	167	20	43	2,584
July	10100	29	644	39,920	July	18500	39	1174	72,770
Aug.	No Records			9,900*	Aug.	174	45	104	6,442
Sept.	No Records			46,000*	Sept.	1270	39	326	19,562
Oct.	9400	72	1559	96,636	Oct.	285	51	108	6,724
Nov.	3250	147	856	51,384	Nov.	73	29	41	2,464
Dec.	223	73	126	7,814	Dec.	1030	51	336	20,826
Total	..	..	..	272,240*	Total	..	..	..	145,062

Year 1961					Year 1962				
Jan.	315	16	82	5,090	Jan.	1425	96	388	24,000
Feb.	315	11	58	3,240	Feb.	3390	64	565	31,600
Mar.	4300	16	351	21,800	Mar.	148	48	88	5,440
Apr.	315	45	95	5,720	Apr.	54	28	42	2,540
May	45	34	39	2,400	May	188	37	65	4,040
June	1105	34	184	11,100	June	61	28	37	2,200
July	3190	124	853	52,900	July	48	28	37	2,290
Aug.	2025	64	457	28,300	Aug.	130	32	54	3,330
Sept.	5000	148	475	28,500	Sept.	6300	21	392	23,500
Oct.	136	51	89	5,510	Oct.	164	28	97	5,990
Nov.	15000	37	1106	66,400	Nov.	54	15	26	1,560
Dec.	400	102	225	14,000	Dec.	1925	14	434	26,900
Total	..	..	..	244,960	Total	..	..	..	133,390

Year 1963					Year 1964				
Jan.	305	21	91	5,620	Jan.	32	14	20	1,230
Feb.	245	32	96	5,370	Feb.	28	10	15	842
Mar.	48	15	27	1,660	Mar.	28	8	13	800
Apr.	245	21	47	2,840	Apr.	2590	8	234	14,100
May	No Records			83,900*	May	92	28	59	3,640
June	No Records			33,900*	June	555	55	264	15,800
July	No Records			78,000*	July	203	37	72	4,440
Aug.	1334	48	219	13,600	Aug.	12880	32	707	43,800
Sept.	1334	82	461	27,700	Sept.	271	42	103	6,190
Oct.	375	42	100	6,200	Oct.	102	37	67	4,120
Nov.	310	28	59	3,550	Nov.	203	32	60	3,630
Dec.	1875	37	198	12,300	Dec.	64	13	24	1,470
Total	..	..	..	274,640*	Total	..	..	..	100,062

Year 1965					Year 1966				
Jan.	16	5	7	466	Jan.	1	0.2	0.7	43
Feb.	5	3	4	211	Feb.	8	1	2	106
Mar.	3	2	2	150	Mar.	8	1	5	328
Apr.	10	2	6	384	Apr.	8	3	4	244
May	8	8	8	496	May	8	5	7	406
June	16	8	10	576	June	450	7	48	2,890
July	20	8	13	774	July	136	9	26	1,600
Aug.	375	10	44	2,750	Aug.	33	10	14	890
Sept.	No Records			1,000*	Sept.	188	15	32	1,950
Oct.	80	5	17	1,054	Oct.	789	12	79	4,910
Nov.	16	8	10	600	Nov.	11420	16	533	32,000
Dec.	37	1	14	872	Dec.	1815	47	446	27,700
Total	..	..	..	9,333*	Total	..	..	..	73,067

* Estimated

BOMBALA RIVER AT THE FALLS

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	450	10	70	4,360
Feb.	103	5	17	941
Mar.	10	4	7	468
Apr.	8	6	7	450
May	44	6	11	680
June	75	12	24	1,410
July	54	12	19	1,160
Aug.	5800	12	252	15,600
Sept.	7470	52	414	24,900
Oct.	136	20	54	3,370
Nov.	19	10	14	862
Dec.	17	2	6	351
Total	..	..	..	54,552

Year 1968

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	74	3	14	848
Feb.	No Records			41*
Mar.	33	0	3	186
Apr.	7	1	3	177
May	162	2	18	1,120
June	No Records			757*
July	49	13	21	1,320
Aug.	45	7	18	1,100
Sept.	15	3	7	390
Oct.	4	1	3	153
Nov.	3	0.1	1	67
Dec.	No Records			649*
Total	..	..	..	6,808*

Year 1969

Jan.	40	0.2	7	442
Feb.	188	0	19	1,070
Mar.	8	0.5	1.3	80
Apr.	6630	2	144	8,670
May	826	13	41	2,540
June	1780	46	218	13,100
July	55	19	36	2,250
Aug.	110	8	36	2,200
Sept.	37	14	20	1,200
Oct.	52	12	24	1,490
Nov.	9500	23	549	32,900
Dec.	Records Incomplete			6,420*
Total	..	..	..	72,362*

Year 1970

Jan.	Records Incomplete			2,010*
Feb.	207	13	37	2,060
Mar.	243	16	52	3,230
Apr.	64	14	27	1,620
May	784	25	60	3,710
June	1250	55	158	9,490
July	53	23	34	2,100
Aug.	1200	21	108	6,690
Sept.	620	20	77	4,600
Oct.	186	21	46	2,880
Nov.	620	15	86	5,180
Dec.	12600	15	427	26,500
Total	..	..	..	70,070*

Year 1971

Jan.	1200	23	101	6,280
Feb.	51600	136	1585	88,700
Mar.	1540	100	223	13,900
Apr.	93	47	62	3,750
May	80	47	52	3,200
June	47	35	38	2,260
July	160	32	49	3,060
Aug.	199	26	39	2,390
Sept.	35	21	26	1,580
Oct.	23	10	15	920
Nov.	375	9	50	2,980
Dec.	20	7	11	700
Total	..	..	..	129,720

* Estimated

LITTLE PLAINS RIVER AT WELLESLEY

LOCATION:	Latitude 37°00' Longitude 149°06'
PERIOD OF ESTABLISHMENT:	March 1941 to date
COMPLETE YEARS OF COMPUTED RECORDS:	30 years
ZERO OF GAUGE:	R.L. 39.74 Assumed Datum Approximately 2,700 feet above sea level
CATCHMENT AREA:	240 square miles
CONTROL:	Rock
EQUIPMENT:	Automatic Recorder (Pressure Type) installed February 1968.
CURRENT METER OBSERVATIONS:	(a) Number obtained : 146 (b) Maximum observation in cusecs : 1,592 (c) Minimum observation in cusecs : 8
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	22,600 cusecs
MEAN DAILY DISCHARGE FOR 30 YEARS:	129 cusecs
MEAN ANNUAL DISCHARGE FOR 30 YEARS:	94,000 acre feet

Appendix 20
Sheet 2

LITTLE PLAINS RIVER AT WELLESLEY

Year 1941					Year 1942				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	19	13	16	992
Feb.	..	..	..	..	Feb.	676	13	56	3,122
Mar.	..	..	..	..	Mar.	46	13	24	1,490
Apr.	62	22	26	1,544	Apr.	26	19	21	1,270
May	96	26	36	2,242	May	26	22	23	1,428
June	144	32	57	3,448	June	32	22	27	1,620
July	128	62	77	4,786	July	62	19	26	1,610
Aug.	244	46	118	7,306	Aug.	32	22	25	1,516
Sept.	117	79	127	7,620	Sept.	32	22	24	1,452
Oct.	128	46	68	4,230	Oct.	62	22	32	1,984
Nov.	46	26	36	2,140	Nov.	646	32	144	8,640
Dec.	32	19	24	1,486	Dec.	344	62	160	9,816
Total	..	..	..	..	Total	..	..	..	34,940

Year 1943					Year 1944				
Jan.	438	31	85	5,288	Jan.	63	31	46	2,842
Feb.	37	22	28	1,560	Feb.	31	22	26	1,480
Mar.	22	19	21	1,316	Mar.	77	19	24	1,512
Apr.	37	19	24	1,418	Apr.	234	19	60	3,574
May	44	22	29	1,770	May	986	26	250	15,500
June	37	26	29	1,716	June	234	63	123	7,376
July	31	26	30	1,842	July	128	53	74	4,564
Aug.	94	26	45	2,806	Aug.	110	63	74	4,606
Sept.	128	44	58	3,464	Sept.	63	44	55	3,292
Oct.	128	44	66	4,112	Oct.	77	37	47	2,912
Nov.	63	44	49	2,916	Nov.	44	19	31	1,830
Dec.	523	44	161	9,980	Dec.	25	14	19	1,152
Total	..	..	..	38,188	Total	..	..	..	50,640

Year 1945					Year 1946				
Jan.	37	10	18	1,086	Jan.	19	9	12	736
Feb.	19	9	13	705	Feb.	168	6	26	1,428
Mar.	19	6	11	694	Mar.	25	10	19	1,150
Apr.	128	25	41	2,436	Apr.	30	14	21	1,252
May	44	25	31	1,890	May	466	19	79	4,920
June	148	25	51	3,052	June	2315	44	532	31,926
July	94	30	48	2,976	July	343	120	183	11,376
Aug.	156	44	91	5,624	Aug.	120	76	97	6,006
Sept.	53	37	41	2,466	Sept.	137	76	93	5,606
Oct.	63	25	34	2,134	Oct.	137	76	101	6,286
Nov.	53	25	36	2,188	Nov.	90	50	65	3,928
Dec.	30	14	21	1,286	Dec.	105	31	47	2,948
Total	..	..	..	26,537	Total	..	..	..	77,562

Year 1947					Year 1948				
Jan.	50	17	24	1,464	Jan.	1170	31	126	7,798
Feb.	63	14	31	1,730	Feb.	458	40	110	6,376
Mar.	137	19	46	2,856	Mar.	35	17	24	1,520
Apr.	576	19	99	5,962	Apr.	636	17	221	13,264
May	40	24	32	1,980	May	371	120	224	13,890
June	31	21	26	1,578	June	137	76	99	5,954
July	76	19	40	2,490	July	90	56	70	4,370
Aug.	154	31	60	3,734	Aug.	70	35	50	3,090
Sept.	83	31	52	3,136	Sept.	105	35	55	3,280
Oct.	50	24	34	2,134	Oct.	105	35	65	4,032
Nov.	63	21	33	1,992	Nov.	137	31	56	3,374
Dec.	154	24	50	3,116	Dec.	105	14	24	1,720
Total	..	..	..	32,172	Total	..	..	..	68,668

Appendix 20
Sheet 3

LITTLE PLAINS RIVER AT WELLESLEY

Year 1949					Year 1950				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	400	40	122	7,498	Jan.	69	31	46	2,872
Feb.	97	24	48	2,554	Feb.	260	40	132	7,370
Mar.	112	35	61	3,812	Mar.	1085	40	170	10,526
Apr.	76	31	45	2,688	Apr.	2950	145	627	37,614
May	172	24	92	5,672	May	722	105	372	23,086
June	858	50	519	31,170	June	414	154	203	12,178
July	1565	212	516	31,992	July	260	97	153	9,480
Aug.	301	172	220	13,626	Aug.	212	137	168	10,444
Sept.	172	90	134	8,042	Sept.	163	105	127	7,644
Oct.	145	76	103	6,382	Oct.	1445	90	339	20,992
Nov.	172	76	112	6,750	Nov.	576	172	300	18,000
Dec.	90	40	60	3,734	Dec.	191	76	121	7,508
Total	..	..	..	123,920	Total	..	..	..	167,714

Year 1951					Year 1952				
Jan.	105	45	81	5,022	Jan.	105	40	74	4,618
Feb.	487	31	155	8,656	Feb.	1205	11	307	17,794
Mar.	137	24	55	3,390	Mar.	191	24	79	4,882
Apr.	137	24	53	3,196	Apr.	606	36	163	9,772
May	63	36	44	2,708	May	212	90	141	8,728
June	315	31	123	7,400	June	7935	137	1502	90,132
July	1125	191	443	27,464	July	487	212	327	20,282
Aug.	2190	172	671	41,624	Aug.	666	224	346	21,480
Sept.	1085	181	400	24,028	Sept.	522	191	277	16,612
Oct.	1046	172	351	21,800	Oct.	1920	137	377	23,352
Nov.	666	105	189	11,386	Nov.	1605	172	398	23,862
Dec.	636	90	198	12,056	Dec.	8500	194	954	59,144
Total	..	..	..	168,730	Total	..	..	..	300,658

Year 1953					Year 1954				
Jan.	305	172	225	13,946	Jan.	93	44	57	3,508
Feb.	No Records			4,000*	Feb.	1840	44	135	7,548
Mar.	113	55	77	4,758	Mar.	61	30	39	2,404
Apr.	80	34	59	3,534	Apr.	55	34	39	2,312
May	1712	44	374	23,160	May	44	28	35	2,168
June	336	80	157	9,392	June	152	44	94	5,664
July	207	93	135	8,394	July	128	55	95	5,892
Aug.	692	120	231	14,320	Aug.	80	44	57	3,540
Sept.	172	120	139	8,330	Sept.	61	34	49	2,912
Oct.	398	120	186	11,508	Oct.	34	26	32	1,988
Nov.	183	106	138	8,260	Nov.	894	39	284	17,028
Dec.	106	61	80	4,972	Dec.	67	34	47	2,886
Total	..	..	..	114,574*	Total	..	..	..	57,850

Year 1955					Year 1956				
Jan.	34	19	23	1,406	Jan.	2020	26	167	10,326
Feb.	39	19	28	1,544	Feb.	1080	30	152	8,820
Mar.	220	19	49	3,046	Mar.	615	55	196	12,142
Apr.	44	14	25	1,496	Apr.	120	44	75	4,508
May	44	26	35	2,190	May	3840	100	887	54,988
June	34	22	28	1,690	June	2300	275	667	40,032
July	50	26	33	2,072	July	1456	305	503	31,190
Aug.	93	26	51	3,190	Aug.	460	34	253	15,662
Sept.	50	22	32	1,900	Sept.	336	142	204	12,230
Oct.	120	26	50	3,074	Oct.	247	152	191	11,868
Nov.	44	19	28	1,660	Nov.	247	120	181	10,862
Dec.	172	14	41	2,564	Dec.	127	80	101	6,272
Total	..	..	..	25,832	Total	..	..	..	218,900

* Estimated

LITTLE PLAINS RIVER AT WELLESLEY

Year 1957					Year 1958				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	74	39	52	3,218	Jan.	80	19	40	2,484
Feb.	44	26	36	2,000	Feb.	55	30	41	2,308
Mar.	44	24	33	2,016	Mar.	305	19	45	2,798
Apr.	26	22	26	1,546	Apr.	44	14	25	1,474
May	44	19	26	1,636	May	26	19	20	1,266
June	162	22	49	2,962	June	55	19	28	1,708
July	1297	34	319	19,772	July	93	26	47	2,916
Aug.	1520	93	300	18,590	Aug.	55	26	40	2,450
Sept.	234	113	148	8,866	Sept.	460	26	145	8,716
Oct.	172	93	125	7,748	Oct.	120	44	71	4,384
Nov.	120	55	80	4,802	Nov.	74	34	44	2,636
Dec.	80	44	56	3,472	Dec.	194	34	74	4,590
Total	..	..	..	76,628	Total	..	..	..	37,730

Year 1959					Year 1960				
Jan.	34	14	21	1,310	Jan.	1266	49	170	10,554
Feb.	4100	14	161	9,022	Feb.	55	34	45	2,606
Mar.	74	14	27	1,706	Mar.	44	30	35	2,150
Apr.	44	16	25	1,510	Apr.	44	26	33	2,002
May	19	16	17	1,072	May	135	26	55	3,384
June	801	19	108	6,508	June	1488	34	219	13,146
July	1173	49	305	18,896	July	2180	172	462	28,624
Aug.	615	80	197	12,200	Aug.	275	120	178	11,048
Sept.	4723	120	569	34,160	Sept.	832	106	275	16,510
Oct.	1266	172	384	23,780	Oct.	275	135	183	11,340
Nov.	852	120	250	15,002	Nov.	162	93	123	7,362
Dec.	247	106	141	8,756	Dec.	275	80	164	10,140
Total	..	..	..	133,922	Total	..	..	..	118,866

Year 1961					Year 1962				
Jan.	106	55	83	5,160	Jan.	280	58	103	6,382
Feb.	61	34	51	2,856	Feb.	226	58	93	5,188
Mar.	760	55	168	10,402	Mar.	68	45	54	3,356
Apr.	106	53	64	3,812	Apr.	63	31	47	2,826
May	68	45	55	3,414	May	179	45	80	4,930
June	149	49	84	5,046	June	68	37	46	2,750
July	1486	179	379	23,528	July	49	41	46	2,846
Aug.	1462	202	434	26,920	Aug.	92	49	64	3,950
Sept.	3450	411	1201	72,068	Sept.	252	45	102	6,092
Oct.	411	175	251	15,568	Oct.	79	51	63	3,886
Nov.	280	54	142	8,528	Nov.	67	29	46	2,758
Dec.	92	58	73	4,502	Dec.	377	29	208	12,868
Total	..	..	..	181,804	Total	..	..	..	57,832

Year 1963					Year 1964				
Jan.	179	46	73	4,512	Jan.	84	40	56	3,480
Feb.	168	30	58	3,260	Feb.	84	32	53	3,070
Mar.	29	20	25	1,558	Mar.	40	25	32	1,990
Apr.	106	20	25	1,480	Apr.	377	28	115	6,920
May	1270	46	318	19,708	May	55	28	39	2,440
June	113	61	82	4,910	June	96	28	68	4,100
July	909	61	359	22,300	July	124	40	73	4,510
Aug.	202	110	151	9,330	Aug.	844	84	266	16,500
Sept.	226	117	160	9,590	Sept.	411	96	181	10,800
Oct.	411	96	187	11,600	Oct.	158	80	108	6,670
Nov.	311	96	138	8,300	Nov.	96	50	70	4,200
Dec.	158	78	108	6,720	Dec.	103	40	64	3,950
Total	..	..	..	103,268	Total	..	..	..	68,630

LITTLE PLAINS RIVER AT WELLESLEY

Year 1965

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	55	25	36	2,210
Feb.	25	16	21	1,170
Mar.	17	15	16	968
Apr.	32	15	20	1,180
May	22	20	20	1,230
June	40	17	23	1,390
July	32	20	24	1,500
Aug.	140	20	70	4,360
Sept.	50	25	35	2,080
Oct.	40	22	29	1,790
Nov.	96	25	44	2,610
Dec.	239	25	62	3,860
Total	..	..	..	24,348

Year 1966

Month	Discharge in Cusecs Max.	Min.	Mean	Discharge for Month Acre Feet
Jan.	25	11	18	1,090
Feb.	83	11	28	1,590
Mar.	189	24	57	3,560
Apr.	30	18	23	1,360
May	43	16	26	1,600
June	379	26	107	6,440
July	363	56	124	7,660
Aug.	150	56	95	5,900
Sept.	189	89	135	8,090
Oct.	1600	89	502	31,200
Nov.	413	150	255	15,300
Dec.	4400	223	796	49,400
Total	..	..	..	133,190

Year 1967

Jan.	286	77	125	7,720
Feb.	77	38	56	3,140
Mar.	47	18	34	2,100
Apr.	30	18	25	1,470
May	2660	21	116	7,190
June	38	24	30	1,810
July	38	27	34	2,080
Aug.	259	31	112	6,960
Sept.	234	42	148	8,880
Oct.	141	47	81	5,000
Nov.	42	30	34	2,030
Dec.	34	24	29	1,800
Total	..	..	..	50,180

Year 1968

Jan.	117	17	33	2,090
Feb.	No Records			700*
Mar.	No Records			520*
Apr.	No Records			592*
May	No Records			1,150*
June	73	17	27	1,630
July	No Records			3,910*
Aug.	No Records			4,500*
Sept.	66	33	48	2,880
Oct.	33	24	30	1,840
Nov.	No Records			1,250*
Dec.	60	8	19	1,180
Total	..	..	..	22,242*

Year 1969

Jan.	54	12	20	1,250
Feb.	1080	8	24	1,340
Mar.	105	6	12	743
Apr.	99	8	31	1,830
May	248	23	66	4,090
June	2380	112	375	22,500
July	112	66	84	5,220
Aug.	155	31	69	4,260
Sept.	92	23	53	3,180
Oct.	66	43	49	3,050
Nov.	1020	15	200	12,000
Dec.	Records Incomplete			13,900*
Total	..	..	..	73,363*

Year 1970

Jan.	105	49	73	4,550
Feb.	550	29	54	3,010
Mar.	98	21	50	3,110
Apr.	92	43	58	3,510
May	650	54	148	9,180
June	1100	220	527	31,600
July	208	92	133	8,280
Aug.	475	92	158	9,790
Sept.	196	43	118	7,340
Oct.	142	79	109	6,730
Nov.	186	66	112	6,720
Dec.	1500	60	220	13,700
Total	..	..	..	107,520

Year 1971

Jan.	1220	92	147	9,100
Feb.	22600	256	1260	70,600
Mar.	302	75	154	9,520
Apr.	103	66	84	5,030
May	187	62	89	5,530
June	66	43	53	3,180
July	94	33	55	3,430
Aug.	73	33	50	3,090
Sept.	79	38	49	2,930
Oct.	120	29	54	3,380
Nov.	218	14	74	4,470
Dec.	Records Incomplete			2,860*
Total	..	..	..	123,120*

* Estimated

DELEGATE RIVER AT QUIDONG

LOCATION:	Latitude 36°54' Longitude 149°02'
PERIOD OF ESTABLISHMENT:	February 1951 to date
COMPLETE YEARS OF COMPUTED RECORDS:	18 years
ZERO OF GAUGE:	R.L. 79.15 Assumed Datum Approximately 1,800 feet above sea level
CATCHMENT AREA:	420 square miles
CONTROL:	Rock
EQUIPMENT:	Servo Manometer was installed November 1971 Staff gauge range 0 - 33 feet
CURRENT METER OBSERVATIONS:	(a) Number obtained : 146
	(b) Maximum abservation in cusecs : 5,108
	(c) Minimum observation in cusecs : 15
MAXIMUM ESTIMATED DISCHARGE DURING PERIOD OF RECORDS:	70,000 cusecs
MEAN DAILY DISCHARGE FOR 18 YEARS:	211 cusecs
MEAN ANNUAL DISCHARGE FOR 18 YEARS:	154,000 acre feet

DELEGATE RIVER AT QUIDONG

Year 1951					Year 1952				
Month	Discharge in Cusecs			Discharge for Month Acre Feet	Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean			Max.	Min.	Mean	
Jan.	..	..	..	..	Jan.	151	90	123	7,380
Feb.	..	..	..	..	Feb.	712	72	115	6,694
Mar.	345	9	57	3,536	Mar.	201	55	87	5,424
Apr.	175	9	43	2,592	Apr.	815	55	252	15,144
May	256	9	72	4,494	May	346	129	203	12,604
June	625	9	171	10,276	June	23300	151	1958	117,476
July	1810	256	700	43,380	July	925	379	558	34,568
Aug.	4540	175	996	59,912	Aug.	1600	346	545	33,770
Sept.	2490	285	722	43,310	Sept.	1320	285	469	28,136
Oct.	3660	151	670	41,520	Oct.	4665	256	625	38,740
Nov.	580	90	171	10,240	Nov.	2980	315	663	39,806
Dec.	496	151	270	16,756	Dec.	22040	379	1874	116,210
Total	..	..	..	..	Total	..	..	..	455,952

Year 1953					Year 1954				
Jan.	580	256	363	22,494	Jan.	151	55	86	5,310
Feb.	379	109	193	10,798	Feb.	346	58	114	6,406
Mar.	109	90	100	6,188	Mar.	72	48	55	3,396
Apr.	90	72	83	4,968	Apr.	72	48	50	3,028
May	2040	72	351	21,756	May	92	48	55	3,436
June	538	151	213	12,788	June	260	58	131	7,850
July	379	175	224	13,864	July	316	92	178	11,054
Aug.	1530	175	479	29,696	Aug.	161	112	127	7,862
Sept.	285	201	222	13,322	Sept.	112	72	86	5,160
Oct.	315	201	239	14,796	Oct.	112	58	68	4,244
Nov.	256	129	201	12,076	Nov.	1960	92	334	20,000
Dec.	129	90	109	6,780	Dec.	161	72	92	5,698
Total	..	..	..	169,526	Total	..	..	..	83,444

Year 1955					Year 1956				
Jan.	72	41	47	2,922	Jan.	3030	65	280	17,346
Feb.	72	41	49	2,758	Feb.	2400	58	229	13,280
Mar.	210	41	67	4,160	Mar.	1480	72	289	17,938
Apr.	41	31	36	2,130	Apr.	260	92	127	7,616
May	58	41	50	3,098	May	9560	72	1025	63,564
June	72	48	56	3,356	June	9390	480	1229	73,758
July	112	48	69	4,308	July	2760	480	780	48,370
Aug.	136	58	82	5,108	Aug.	730	288	391	24,230
Sept.	92	48	63	3,780	Sept.	409	288	316	18,966
Oct.	210	58	91	5,616	Oct.	480	288	352	21,830
Nov.	92	48	64	3,828	Nov.	409	288	316	18,966
Dec.	598	41	82	5,106	Dec.	260	112	191	11,850
Total	..	..	..	46,170	Total	..	..	..	337,714

Year 1957					Year 1958				
Jan.	92	72	82	5,104	Jan.	173	52	66	4,078
Feb.	92	58	76	4,244	Feb.	82	52	57	3,206
Mar.	72	48	59	3,632	Mar.	686	52	68	4,198
Apr.	45	41	41	2,476	Apr.	66	32	39	2,366
May	136	41	52	3,202	May	37	32	33	2,012
June	210	48	72	4,346	June	82	32	45	2,672
July	2940	58	591	36,646	July	145	52	73	4,506
Aug.	6490	145	553	34,270	Aug.	159	52	73	4,546
Sept.	409	170	245	14,714	Sept.	642	82	200	11,980
Oct.	206	137	167	10,360	Oct.	260	110	136	8,444
Nov.	164	94	123	7,372	Nov.	201	82	102	6,138
Dec.	123	66	84	5,222	Dec.	480	52	93	5,746
Total	..	..	..	131,588	Total	..	..	..	59,892

Appendix 21
Sheet 3

DELEGATE RIVER AT QUIDONG

Year 1959

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	52	32	39	2,412
Feb.	7050	29	160	8,982
Mar.	260	25	51	3,156
Apr.	121	32	42	2,512
May	41	29	32	1,992
June	1065	41	127	7,598
July	2130	82	384	23,824
Aug.	686	173	333	20,600
Sept.	7950	121	782	46,900
Oct.	2780	260	680	42,100
Nov.	1195	180	372	22,300
Dec.	444	132	230	14,300
Total	..	..	..	196,676

Year 1960

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	4355	75	191	11,900
Feb.	75	54	66	3,810
Mar.	83	37	57	3,524
Apr.	75	43	50	3,020
May	205	48	95	5,876
June	2380	75	274	16,400
July	3260	288	762	47,246
Aug.	518	162	296	18,400
Sept.	1130	138	470	28,200
Oct.	480	217	310	19,210
Nov.	246	117	185	11,100
Dec.	556	117	242	15,000
Total	..	..	..	183,686

Year 1961

Jan.	1005	98	163	10,200
Feb.	117	66	83	4,650
Mar.	1195	90	275	17,100
Apr.	162	98	106	6,410
May	188	98	134	8,320
June	217	107	140	8,400
July	4270	246	742	46,000
Aug.	2075	410	618	38,300
Sept.	6380	518	1621	97,300
Oct.	518	203	342	21,200
Nov.	556	138	219	13,150
Dec.	162	117	127	7,860
Total	..	..	..	278,890

Year 1962

Jan.	1005	82	177	11,000
Feb.	277	82	120	6,710
Mar.	162	66	77	4,790
Apr.	74	59	65	3,920
May	246	82	124	7,680
June	82	66	76	4,570
July	66	66	66	4,090
Aug.	138	66	102	6,290
Sept.	376	98	157	9,390
Oct.	162	107	137	8,470
Nov.	117	59	87	5,250
Dec.	518	59	198	12,300
Total	..	..	..	84,460

Year 1963

Jan.	518	66	111	6,860
Feb.	2000	52	134	7,530
Mar.	52	42	44	2,740
Apr.	98	38	48	2,920
May	2075	66	203	12,600
June	277	117	149	8,920
July	1860	117	595	36,900
Aug.	410	161	255	15,800
Sept.	376	114	214	12,800
Oct.	1130	188	353	21,900
Nov.	410	135	199	11,900
Dec.	309	94	132	8,170
Total	..	..	..	149,040

Year 1964

Jan.	94	52	70	4,340
Feb.	598	49	70	4,060
Mar.	62	40	50	3,080
Apr.	1650	40	128	7,670
May	77	62	73	4,530
June	161	94	111	6,650
July	217	94	116	7,220
Aug.	1650	94	370	23,000
Sept.	480	147	237	14,200
Oct.	259	91	172	10,600
Nov.	161	74	113	6,770
Dec.	161	74	108	6,710
Total	..	..	..	98,830

Year 1965

Jan.	82	58	71	4,400
Feb.	58	37	48	2,700
Mar.	51	27	33	2,020
Apr.	66	27	35	2,110
May	51	37	39	2,410
June	59	37	40	2,420
July	59	43	51	3,150
Aug.	354	53	185	11,500
Sept.	163	78	101	6,060
Oct.	99	52	63	3,900
Nov.	294	52	106	6,380
Dec.	675	52	118	7,350
Total	..	..	..	54,400

Year 1966

Jan.	60	27	40	2,480
Feb.	135	22	43	2,400
Mar.	135	56	87	5,370
Apr.	56	46	47	2,800
May	99	37	65	4,030
June	548	56	204	12,250
July	730	122	219	13,600
Aug.	525	178	234	14,500
Sept.	501	259	344	20,600
Oct.	2570	242	662	41,000
Nov.	1250	312	548	32,900
Dec.	5200	331	667	41,300
Total	..	..	..	193,230

DELEGATE RIVER AT QUIDONG

Year 1967

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	620	123	225	13,900
Feb.	157	78	112	6,250
Mar.	406	62	76	4,720
Apr.	78	49	56	3,350
May	122	49	64	3,960
June	104	60	75	4,520
July	100	51	71	4,380
Aug.	354	66	130	8,040
Sept.	354	122	215	12,900
Oct.	241	88	145	9,000
Nov.	111	58	81	4,880
Dec.	76	63	65	4,050
Total	..	..	..	79,950

Year 1968

Month	Discharge in Cusecs			Discharge for Month Acre Feet
	Max.	Min.	Mean	
Jan.	245	32	56	3,480
Feb.	32	14	22	1,280
Mar.	29	14	17	1,030
Apr.	20	14	18	1,050
May	62	20	36	2,220
June	132	38	54	3,260
July	424	48	128	7,880
Aug.	467	81	157	9,720
Sept.	159	87	117	7,040
Oct.	97	49	70	4,320
Nov.	72	38	47	2,830
Dec.	104	29	41	2,560
Total	..	..	..	46,670

Year 1969

Jan.	120	32	49	3,040
Feb.	515	20	39	2,160
Mar.	51	16	23	1,440
Apr.	205	20	44	2,650
May	405	31	92	5,690
June	3550	181	689	41,300
July	208	126	155	9,630
Aug.	214	100	126	7,820
Sept.	208	96	116	6,950
Oct.	Records Incomplete			6,450*
Nov.	1410	77	319	19,200
Dec.	1250	150	347	21,300
Total	..	..	..	127,630*

Year 1970

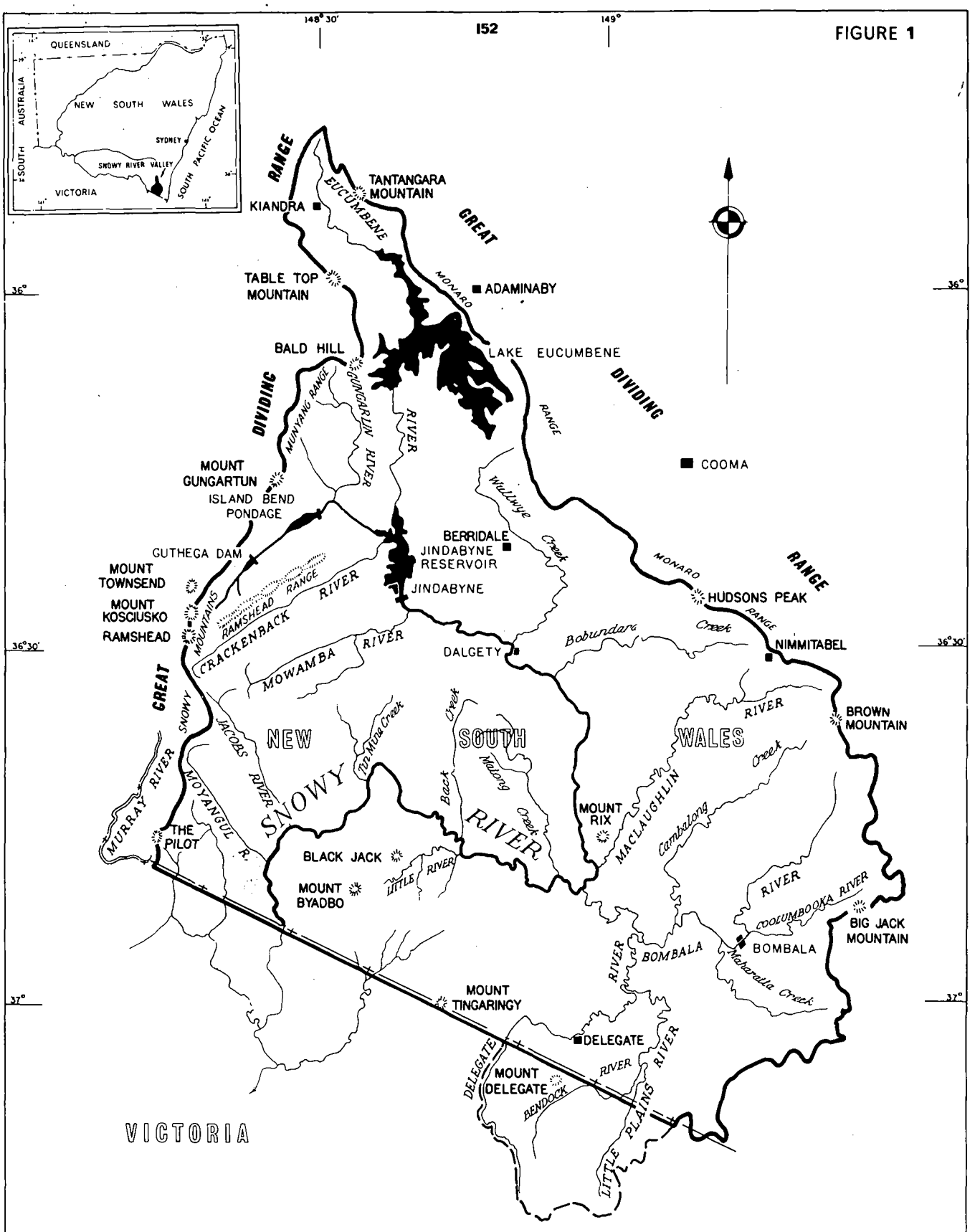
Jan.	Records Incomplete			
Feb.	450	55	85	4,760
Mar.	175	55	101	6,270
Apr.	190	80	108	6,500
May	550	148	236	14,600
June	1330	410	710	42,600
July	390	175	243	15,000
Aug.	Records Incomplete			16,900*
Sept.	Records Incomplete			15,700*
Oct.	330	123	185	11,500
Nov.	310	123	183	11,000
Dec.	Records Incomplete			18,700*
Total	..	..	..	..

Year 1971

Jan.	Records Incomplete			14,300*
Feb.	Records Incomplete			
Mar.	Records Incomplete			
Apr.	Records Incomplete			
May	146	100	128	7,940
June	172	91	122	7,330
July	146	100	118	7,290
Aug.	Records Incomplete			6,420*
Sept.	122	53	87	5,240
Oct.	Records Incomplete			
Nov.	Records Incomplete			
Dec.	2640	78	111	6,860
Total	..	..	..	..

* Estimated

FIGURE 1



WATER CONSERVATION AND IRRIGATION COMMISSION

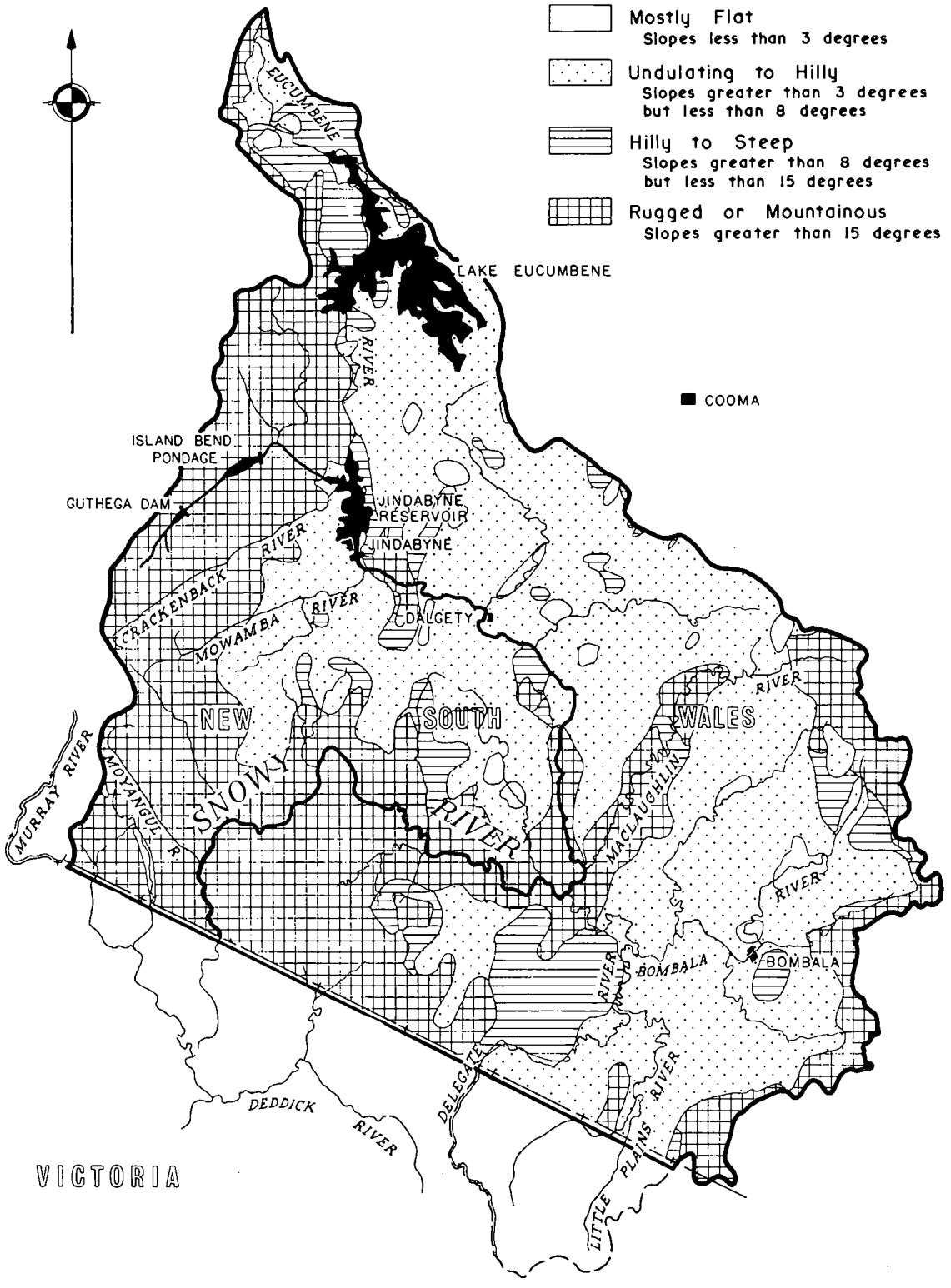
SNOWY RIVER VALLEY

MILES 10 5 0 10 20 MILES

SCALE

006744

FIGURE 2



WATER CONSERVATION AND IRRIGATION COMMISSION

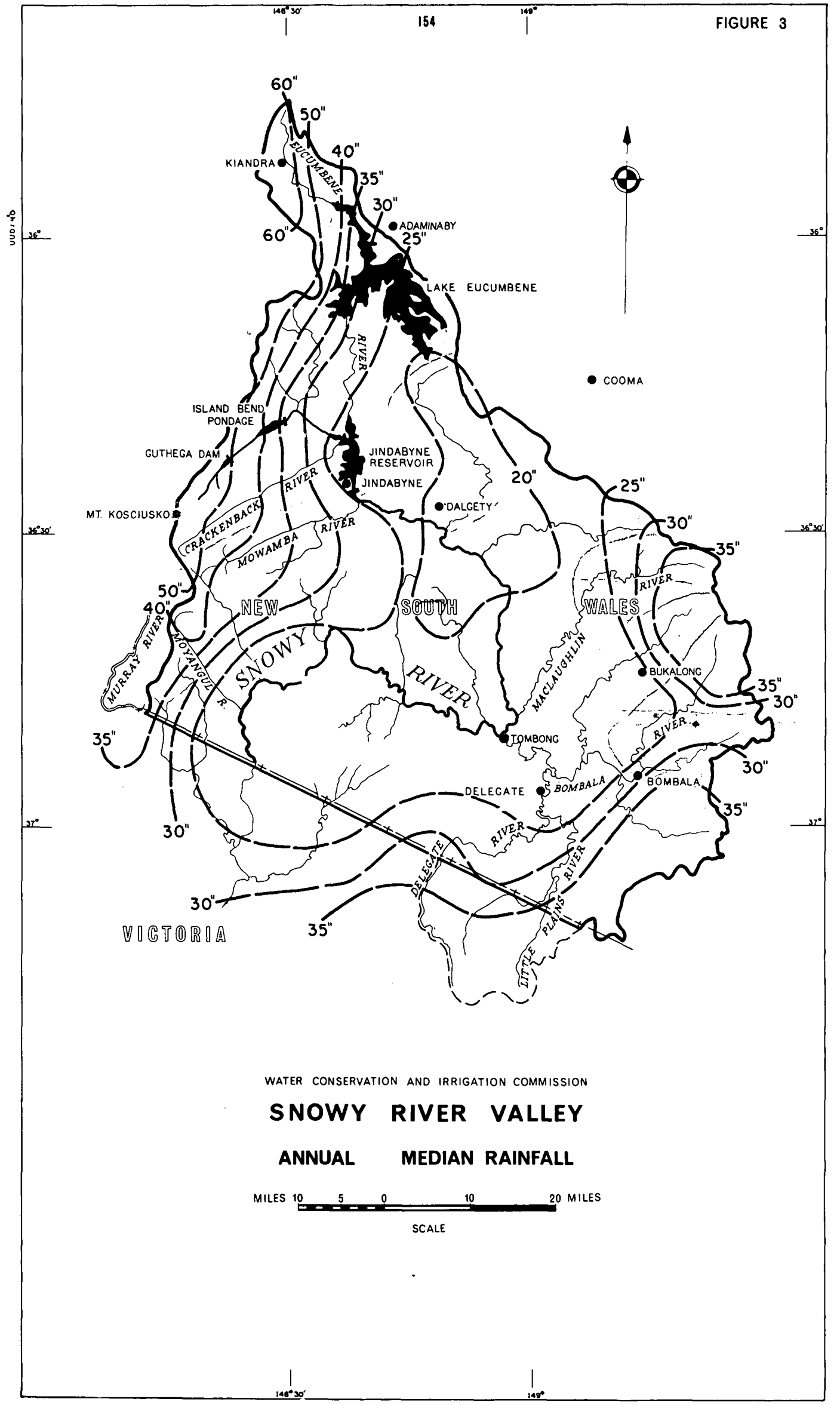
SNOWY RIVER VALLEY

LAND SLOPES

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 3



WATER CONSERVATION AND IRRIGATION COMMISSION

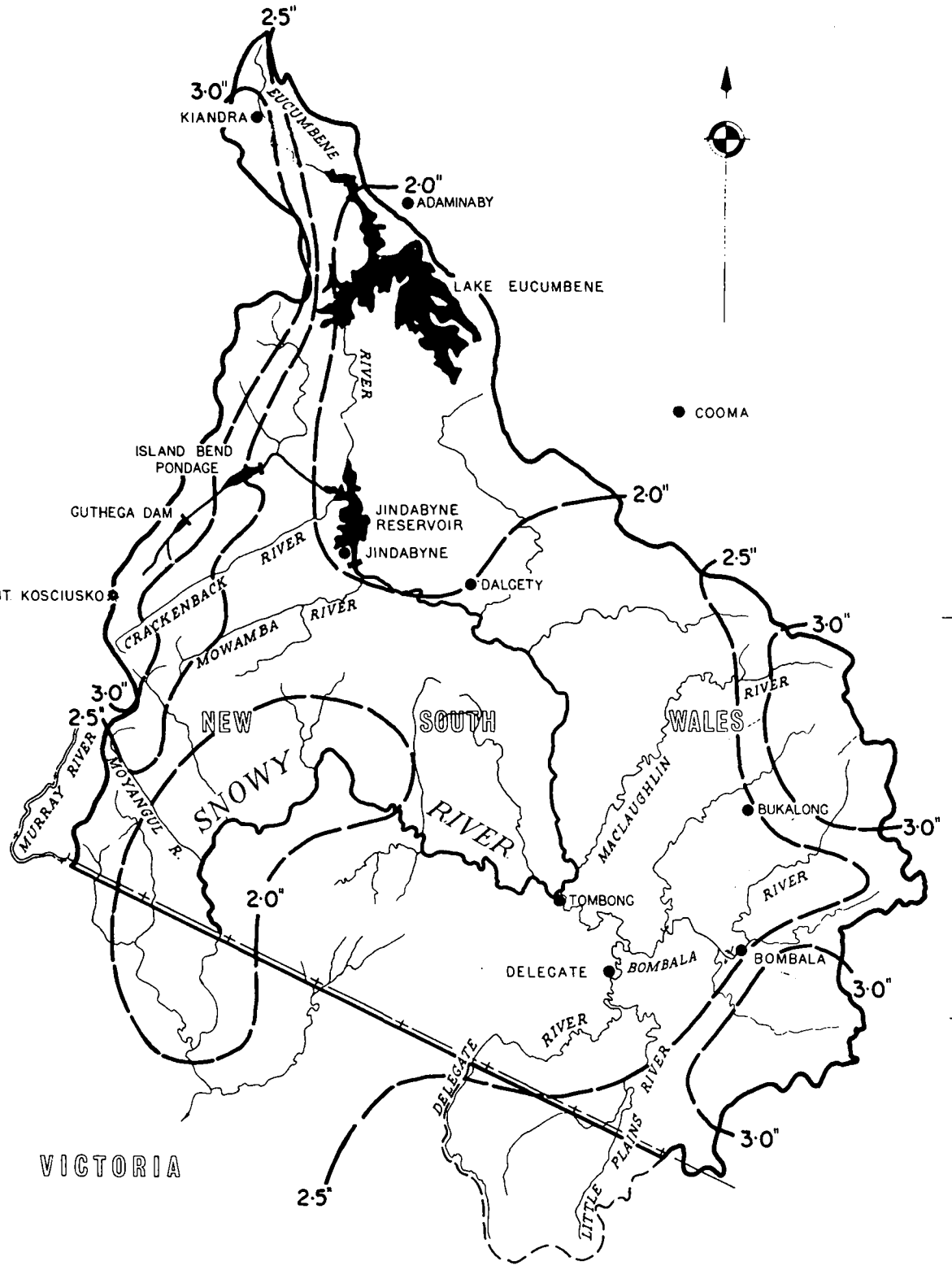
SNOWY RIVER VALLEY

ANNUAL MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 4



WATER CONSERVATION AND IRRIGATION COMMISSION

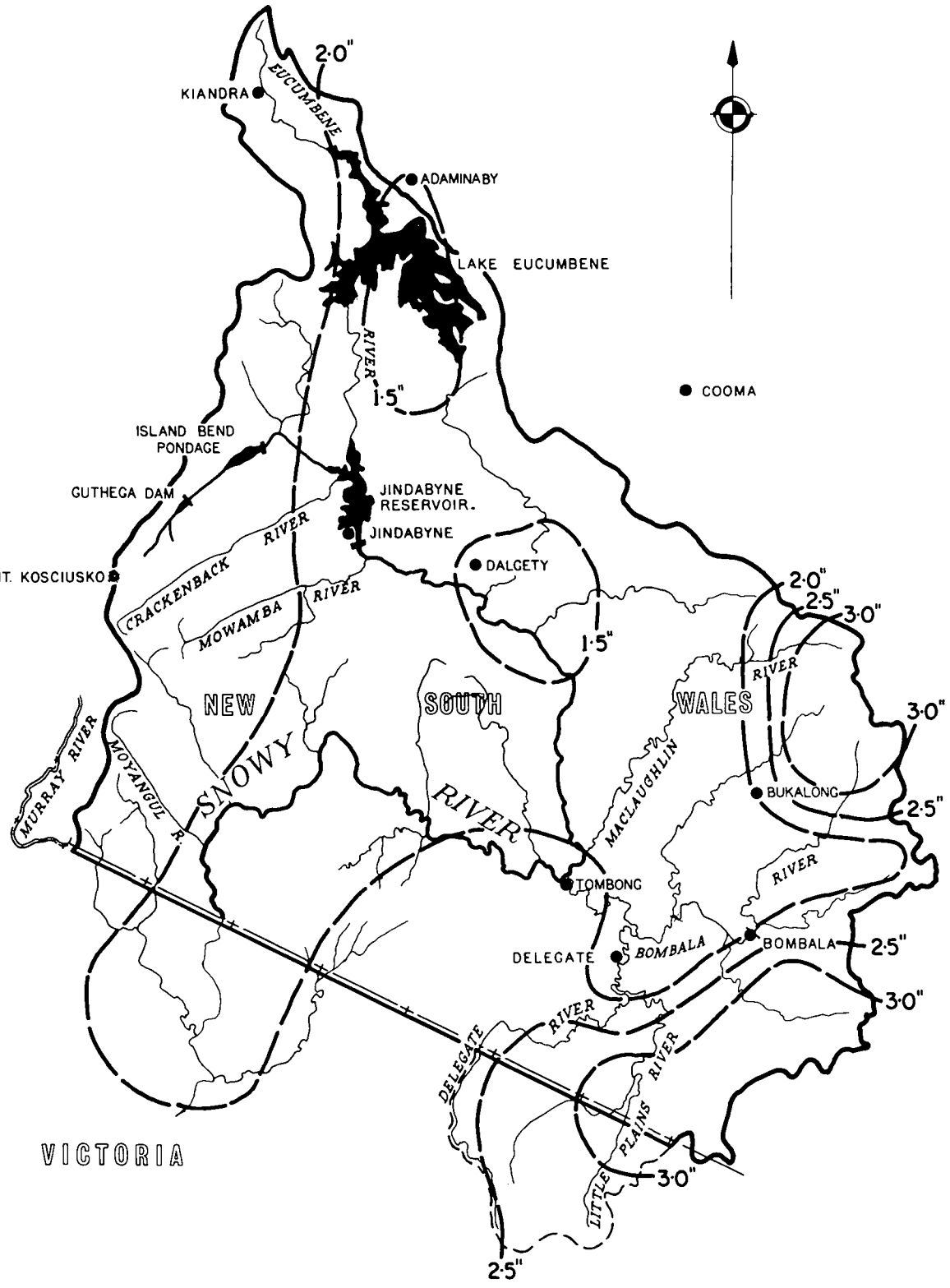
SNOWY RIVER VALLEY

JANUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 5



WATER CONSERVATION AND IRRIGATION COMMISSION

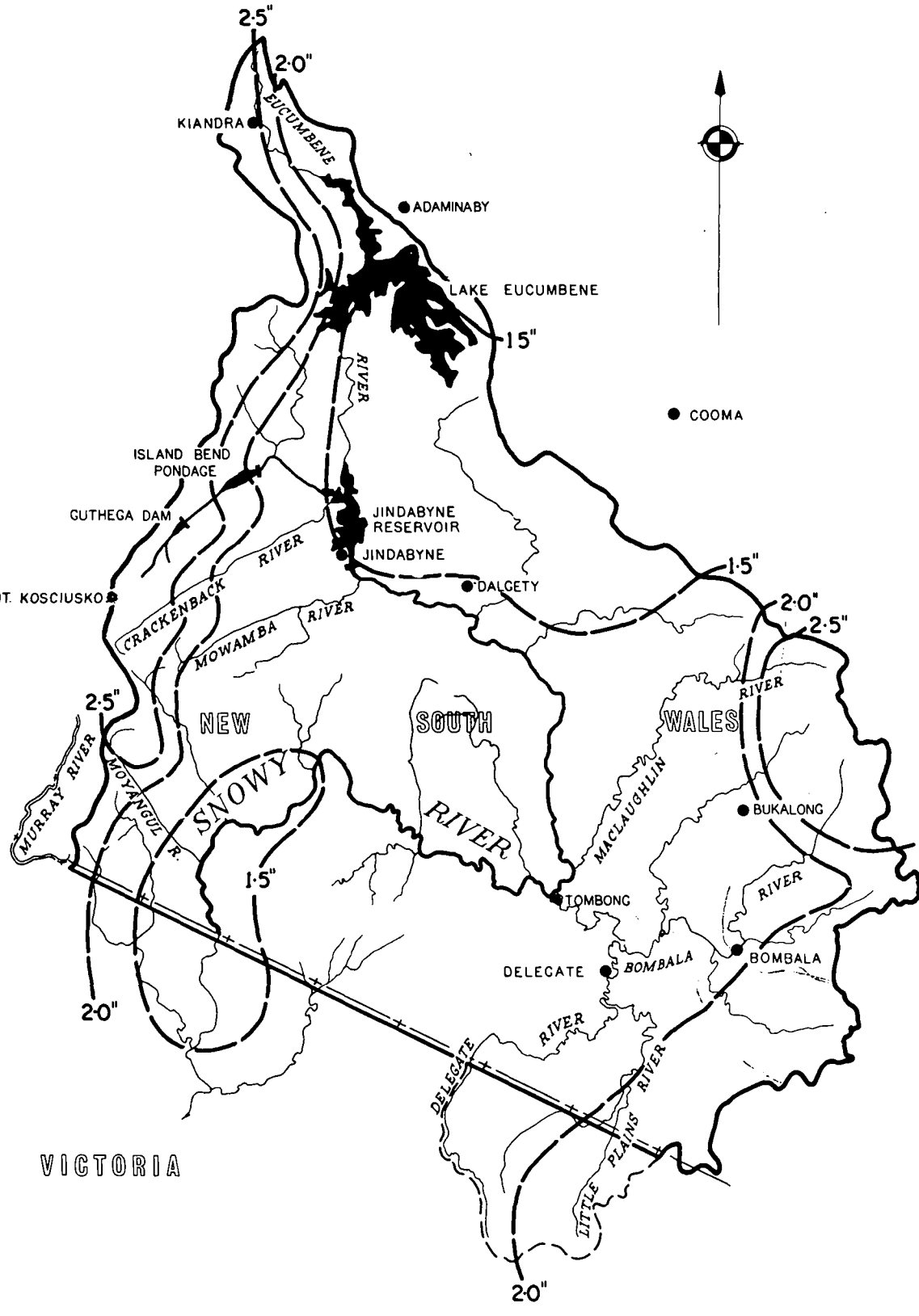
SNOWY RIVER VALLEY

FEBRUARY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 6



WATER CONSERVATION AND IRRIGATION COMMISSION

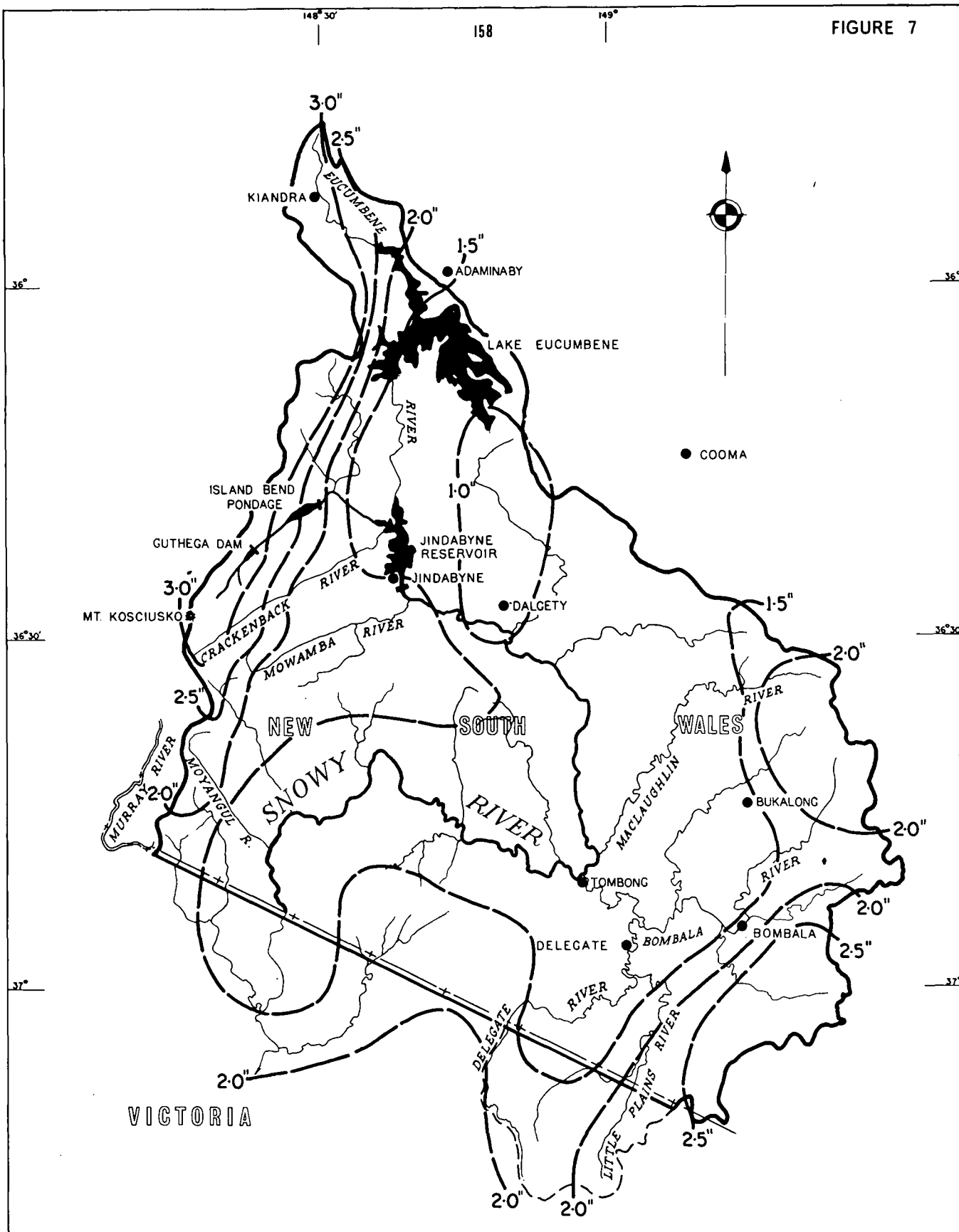
SNOWY RIVER VALLEY

MARCH MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 7



WATER CONSERVATION AND IRRIGATION COMMISSION

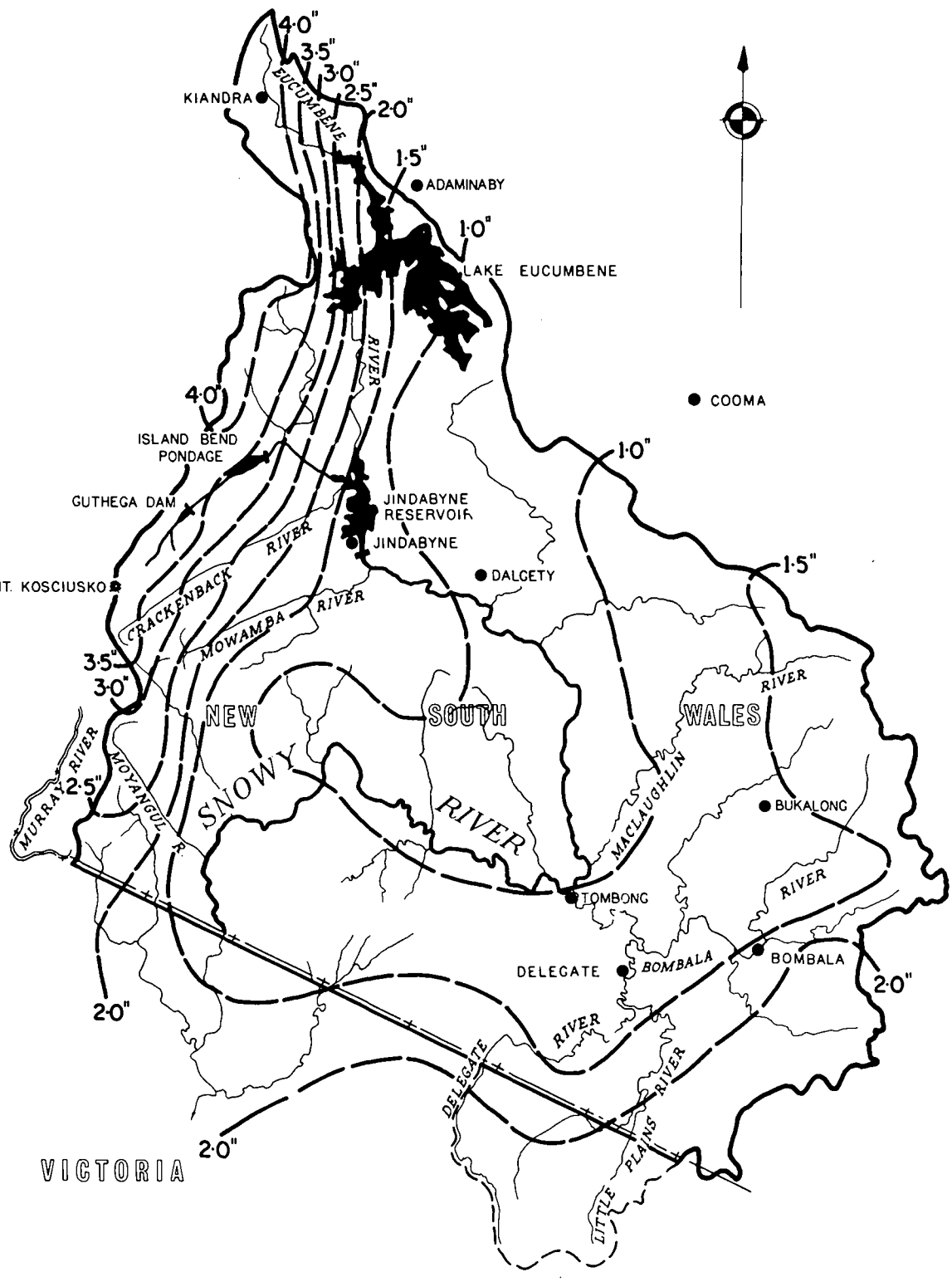
SNOWY RIVER VALLEY

APRIL MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 8



WATER CONSERVATION AND IRRIGATION COMMISSION

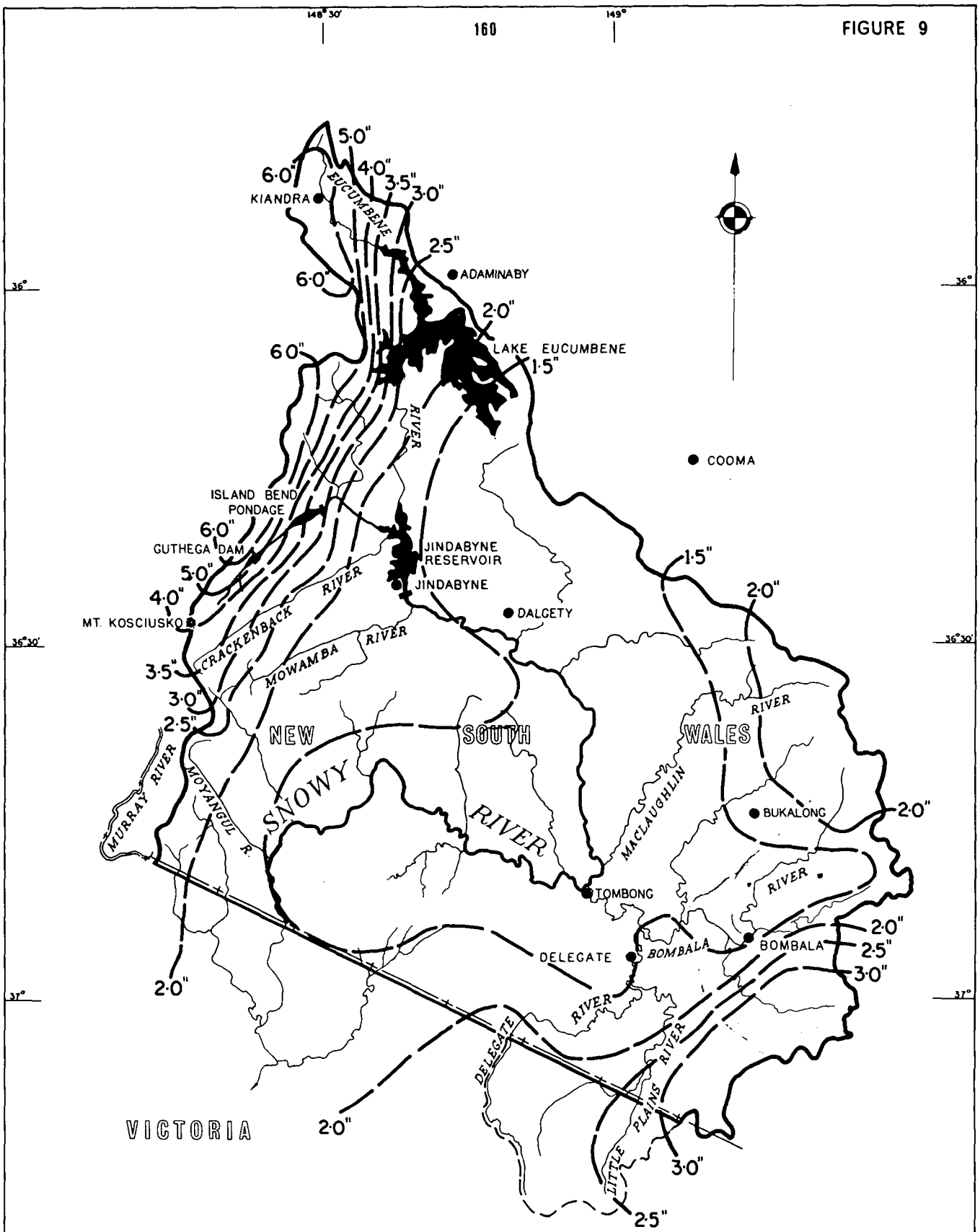
SNOWY RIVER VALLEY

MAY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 9



WATER CONSERVATION AND IRRIGATION COMMISSION

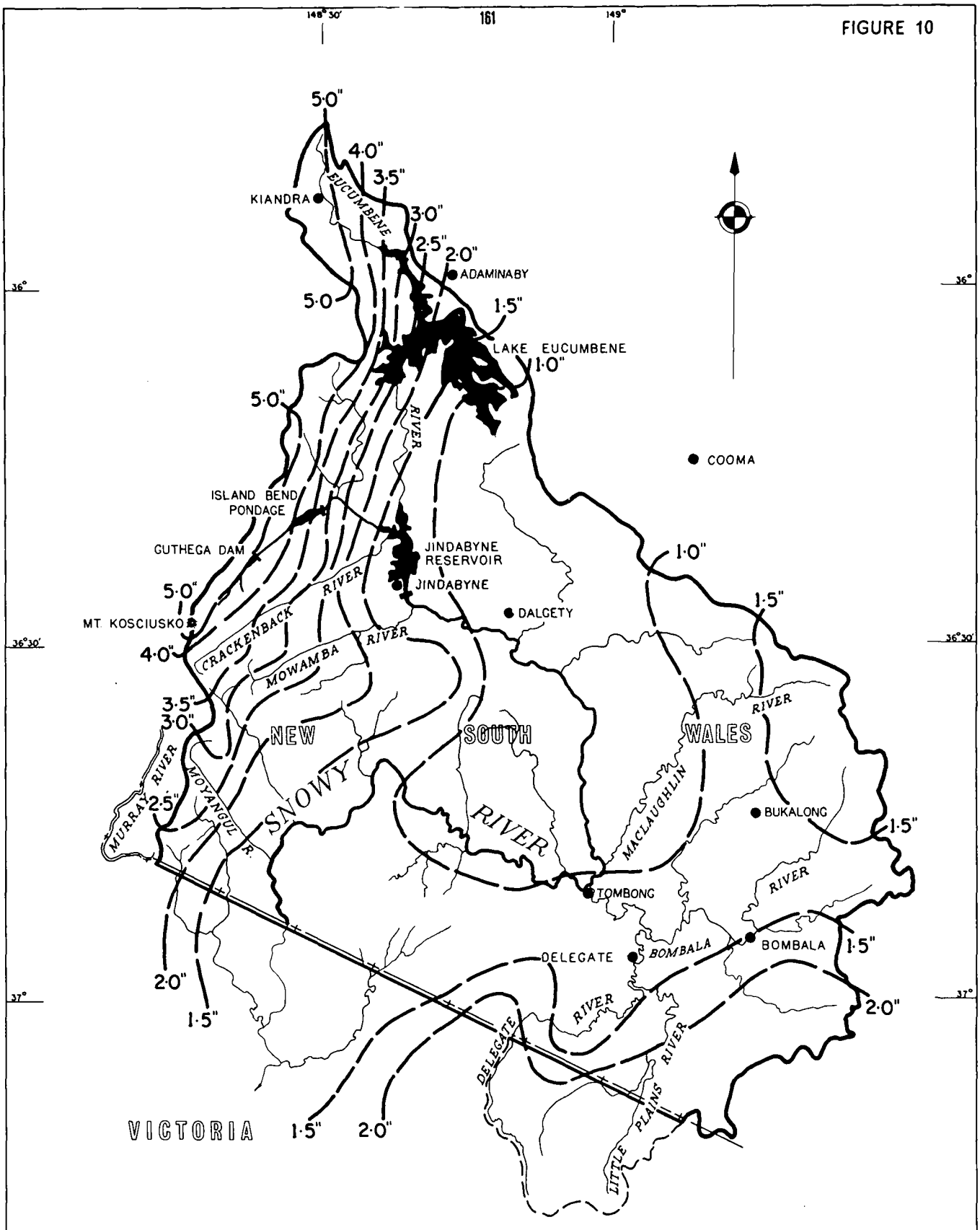
SNOWY RIVER VALLEY

JUNE MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 10



WATER CONSERVATION AND IRRIGATION COMMISSION

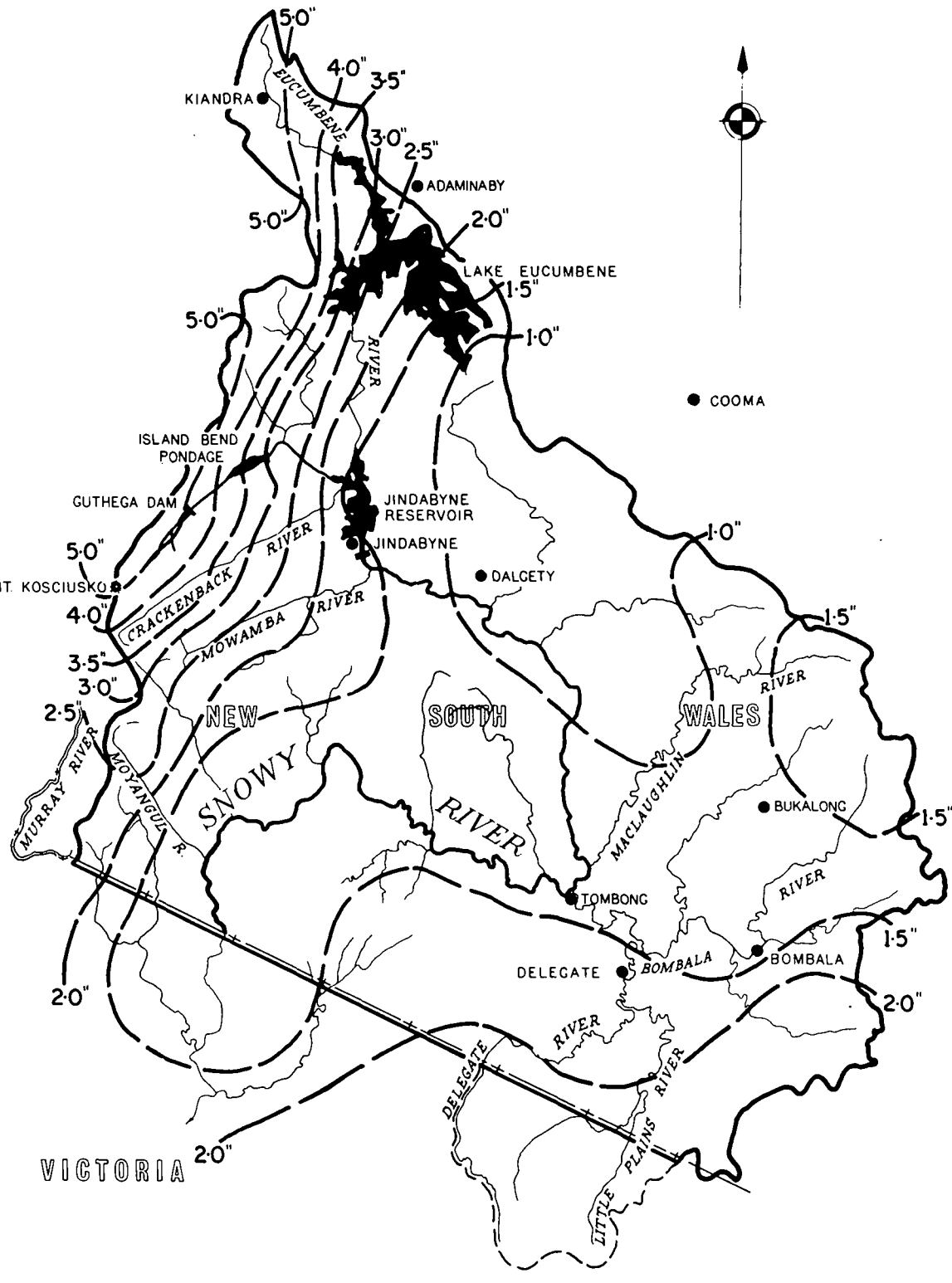
SNOWY RIVER VALLEY

JULY MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 11



WATER CONSERVATION AND IRRIGATION COMMISSION

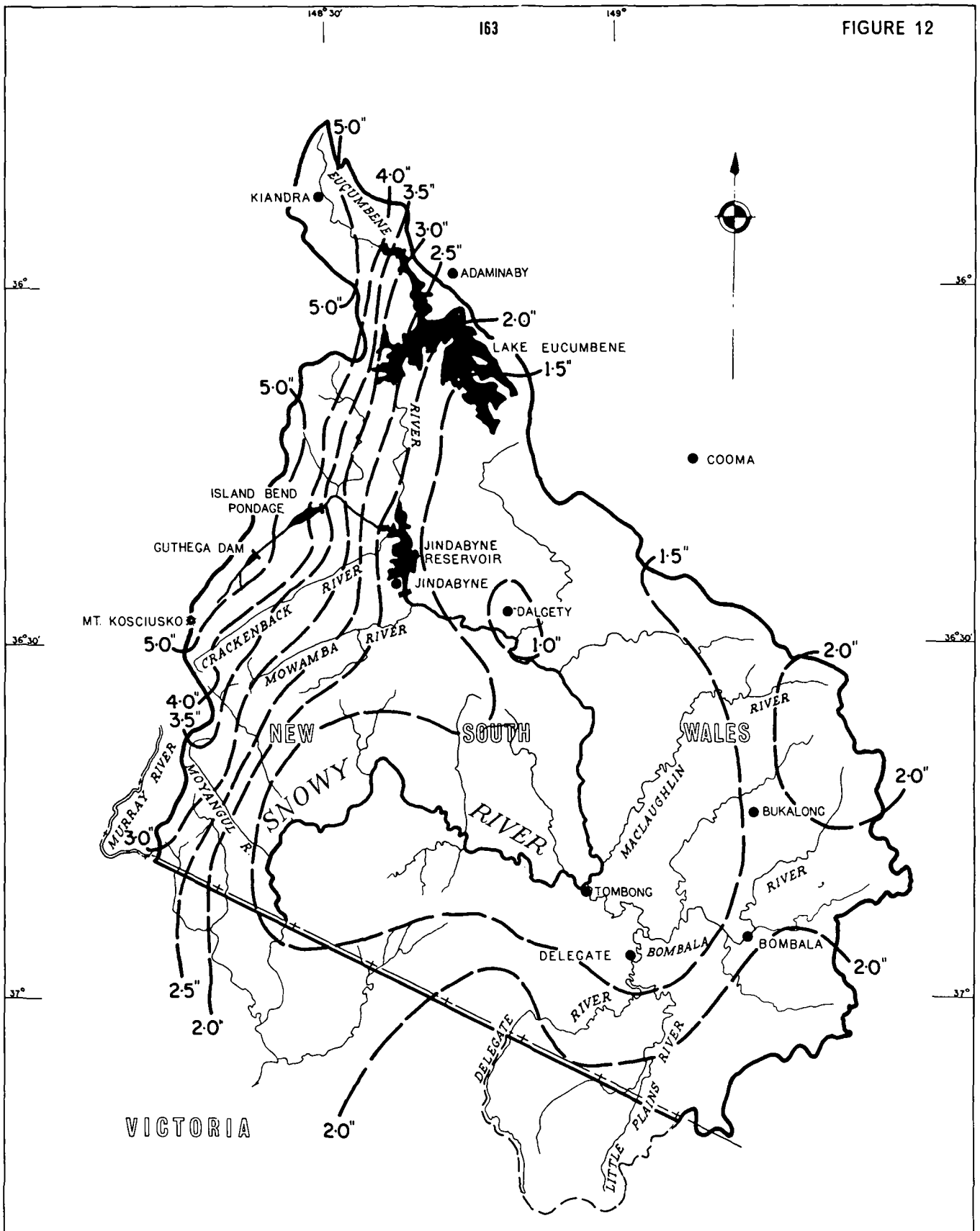
SNOWY RIVER VALLEY

AUGUST MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 12



WATER CONSERVATION AND IRRIGATION COMMISSION

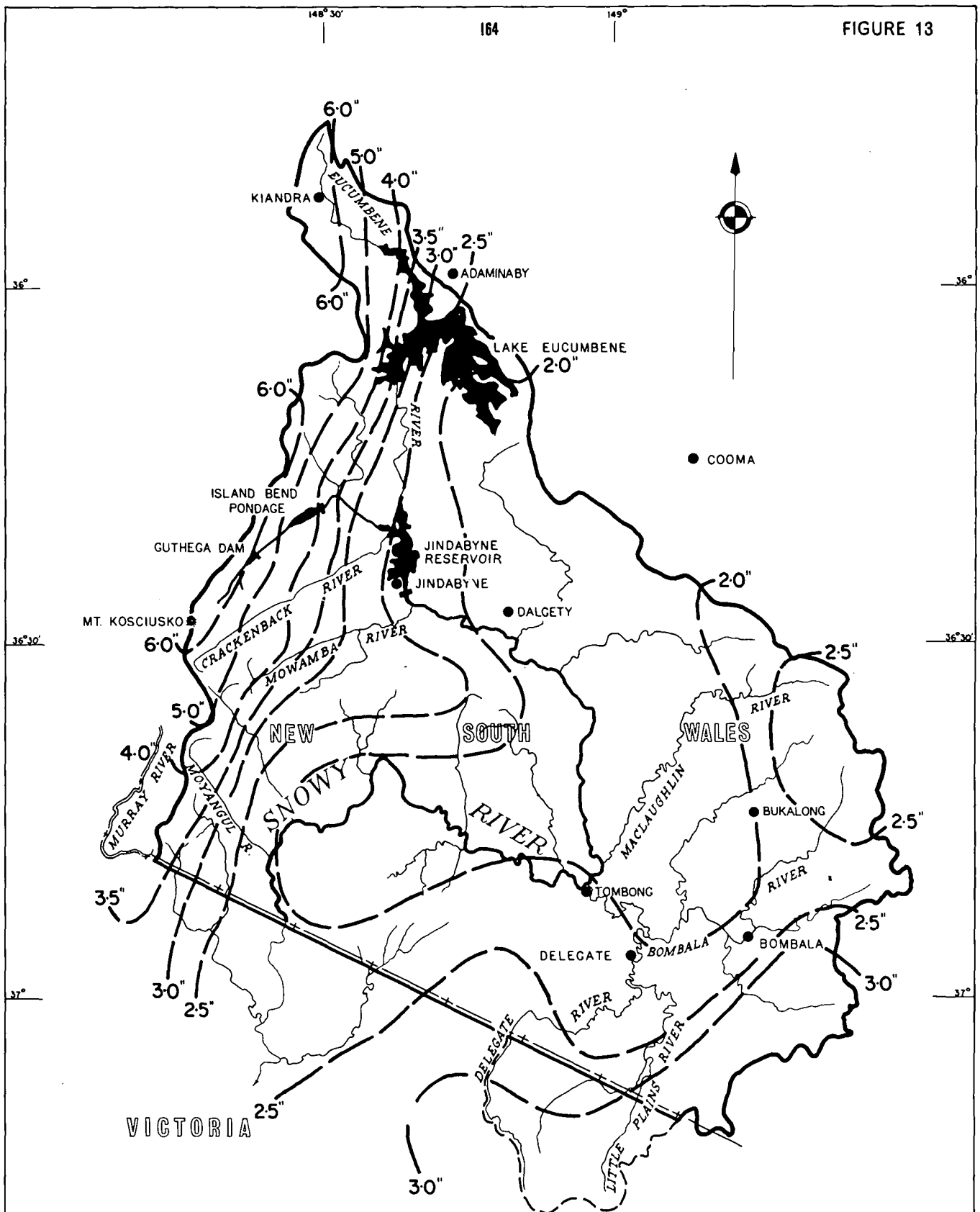
SNOWY RIVER VALLEY

SEPTEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 13



WATER CONSERVATION AND IRRIGATION COMMISSION

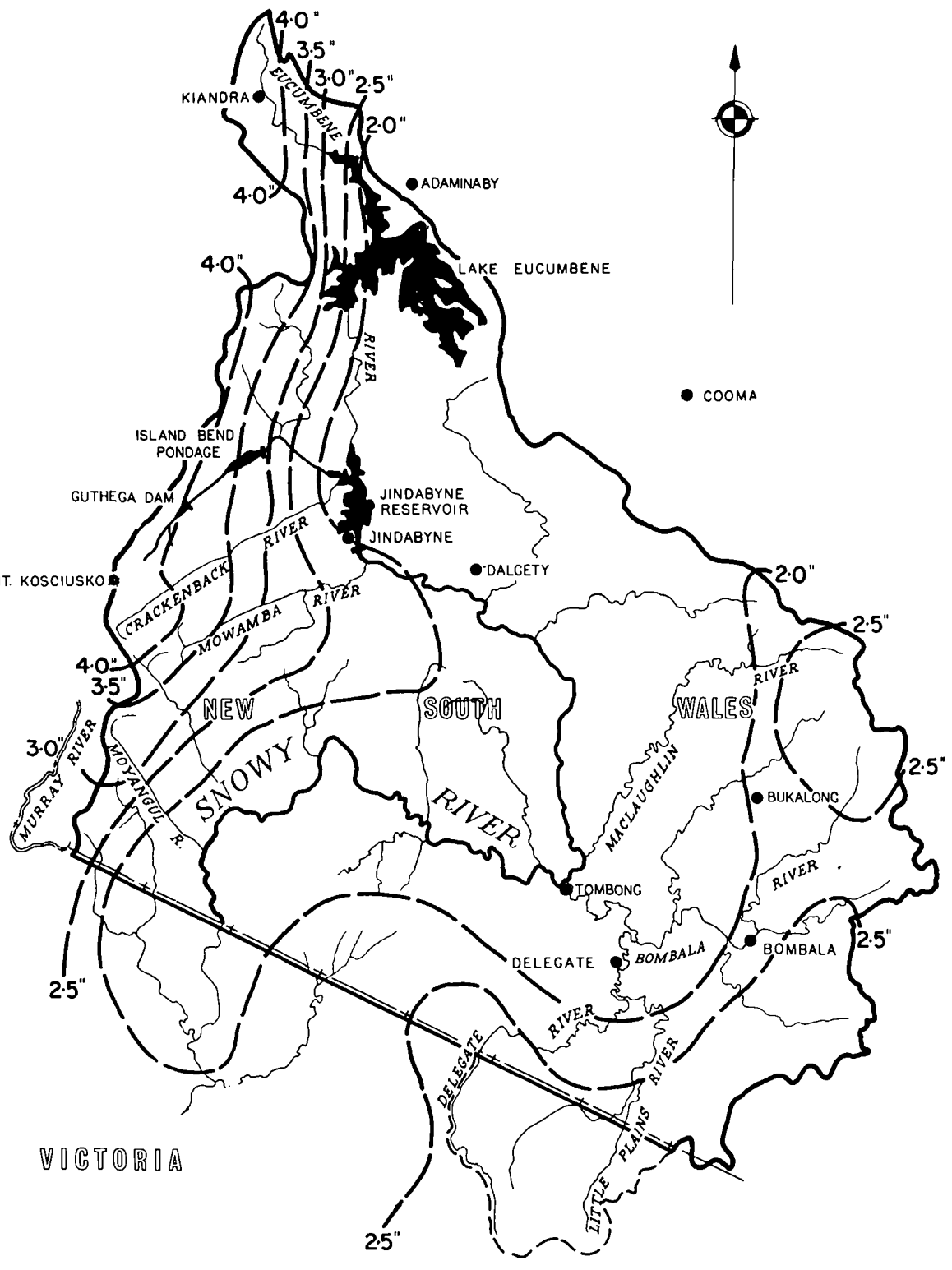
SNOWY RIVER VALLEY

OCTOBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 14



WATER CONSERVATION AND IRRIGATION COMMISSION

SNOWY RIVER VALLEY

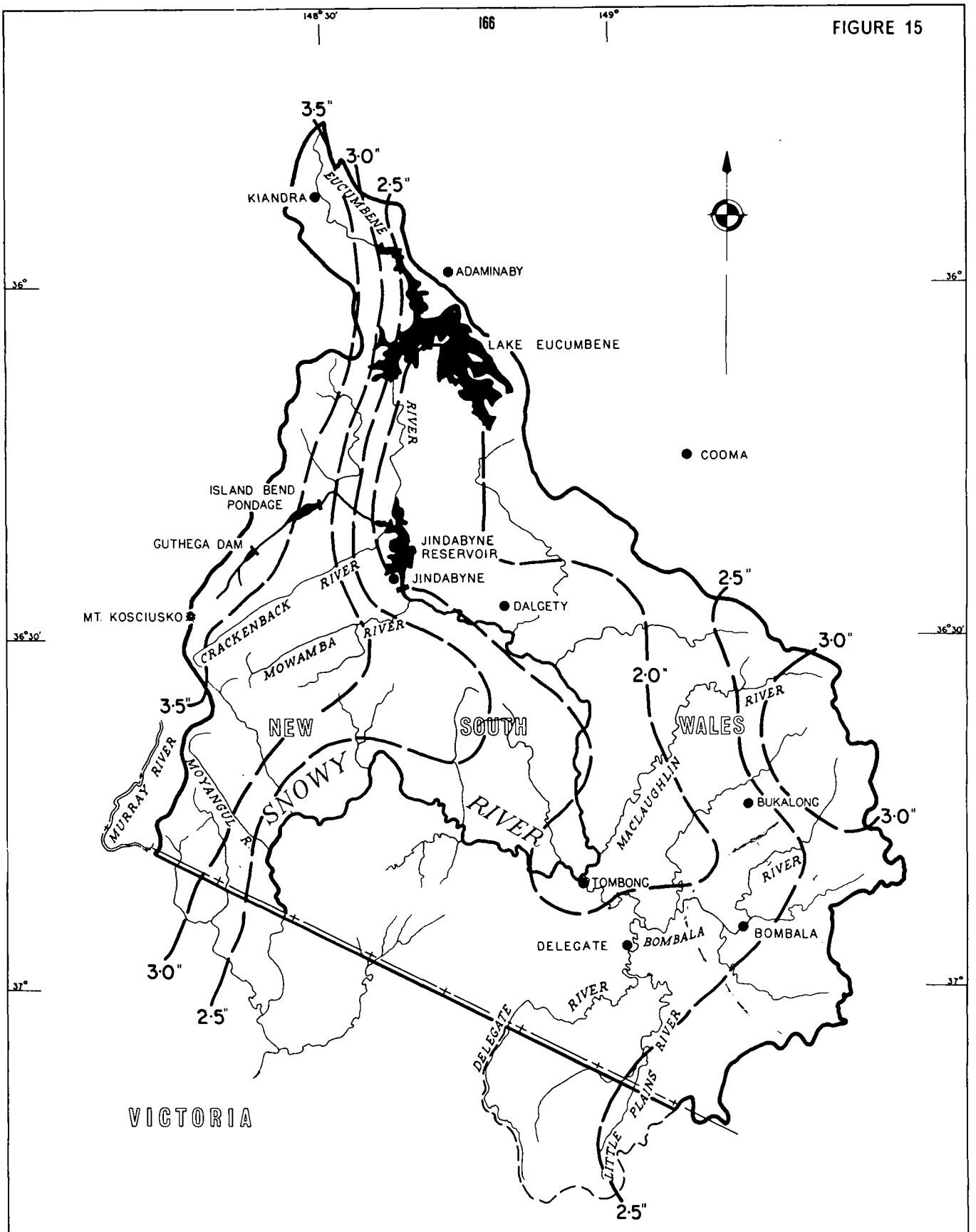
NOVEMBER MEDIAN RAINFALL

MILES 10 5 0 10 20 MILES

SCALE

006757

FIGURE 15



WATER CONSERVATION AND IRRIGATION COMMISSION

SNOWY RIVER VALLEY

DECEMBER MEDIAN RAINFALL

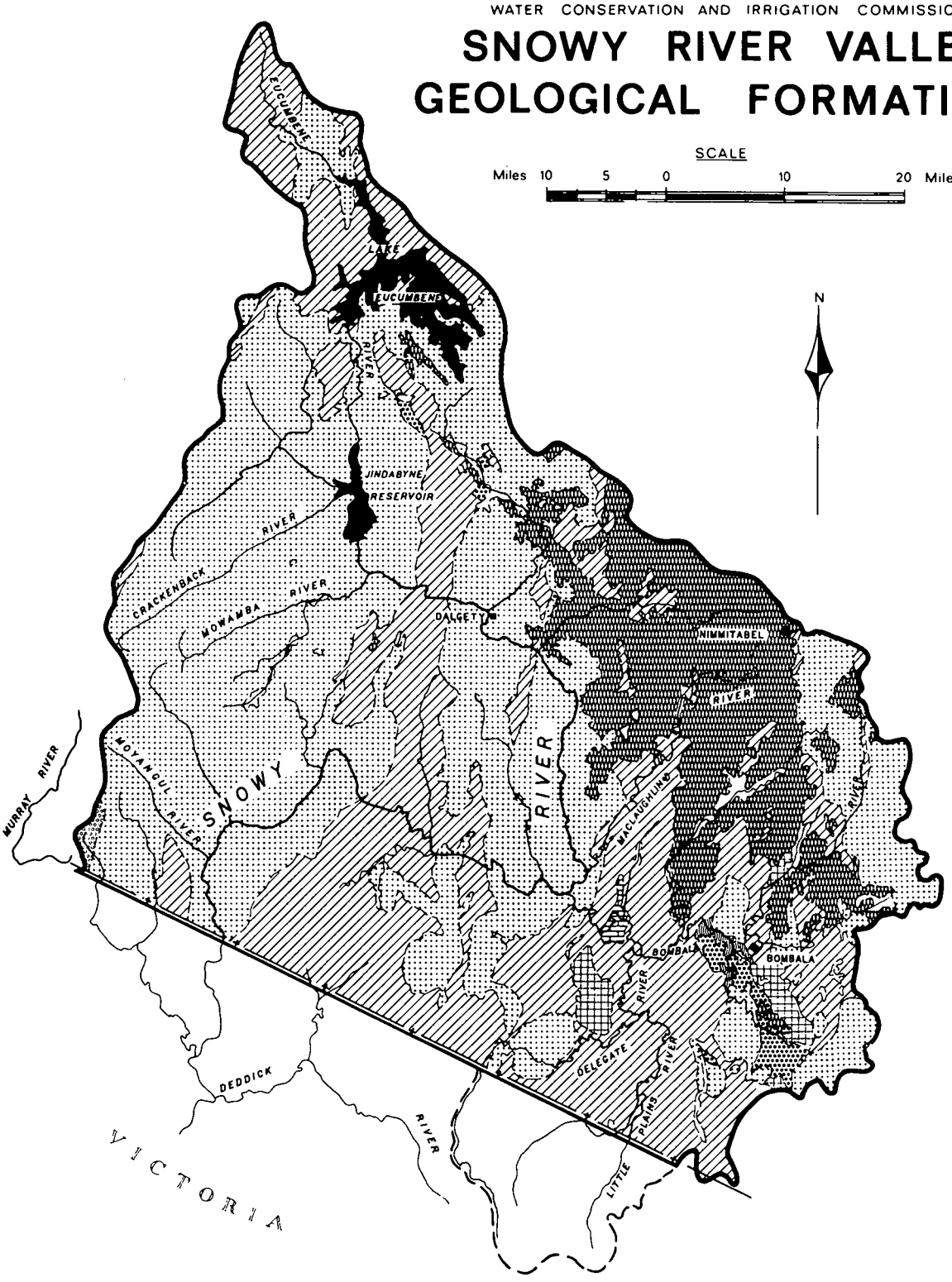
MILES 10 5 0 10 20 MILES

SCALE

FIGURE 16

NEW SOUTH WALES
WATER CONSERVATION AND IRRIGATION COMMISSION

SNOWY RIVER VALLEY GEOLOGICAL FORMATIONS



LEGEND

TERTIARY — RECENT
- Alluvium - clay, sand and gravel

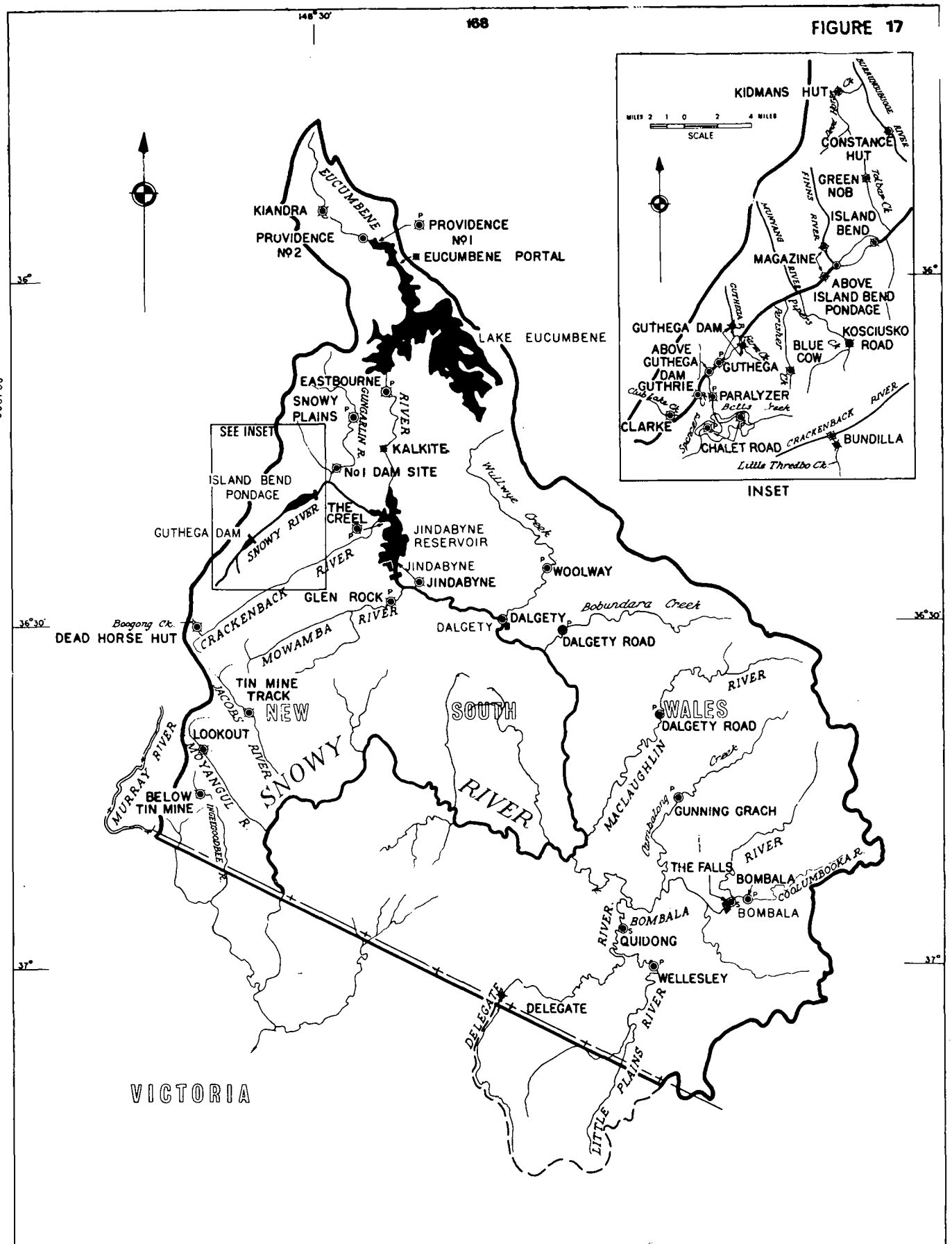
TERTIARY
- Basalt
- Clay, sand, gravel and sandstone

DEVONIAN
- Granite
- Conglomerate, sandstone, quartzite, arkose, siltstone and claystone

SILURIAN
- Monzonite
- Quartzite, conglomerate, and sandstone
- Limestone

ORDOVICIAN
- Slate, phyllite, siltstone sandstone, quartzite and schist

FIGURE 17



WATER CONSERVATION AND IRRIGATION COMMISSION

SNOWY RIVER VALLEY
GAUGING STATIONS

AS AT 31st. DECEMBER 1971

MILES 10 5 0 10 20 MILES

SCALE

LEGEND

STAFF GAUGE

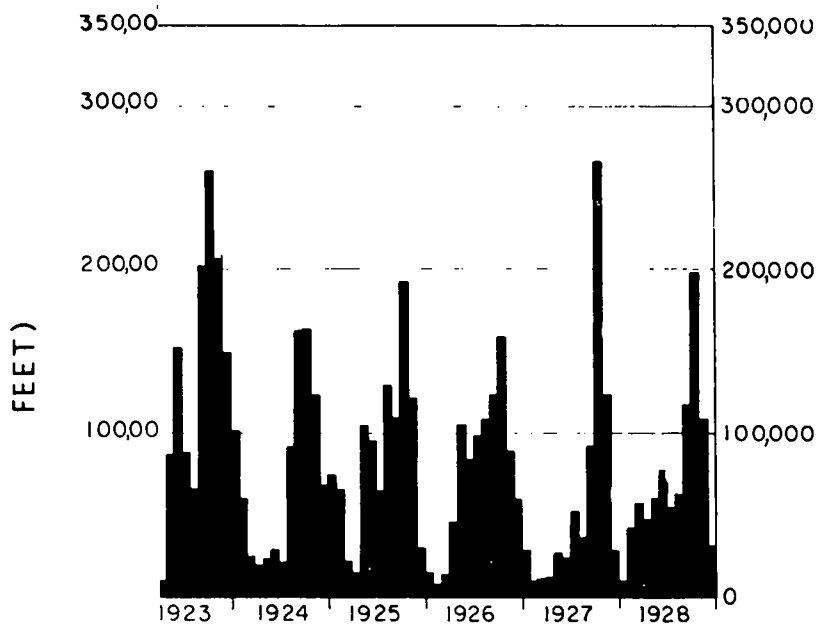
AUTOMATIC RECORDER PRESSURE TYPE

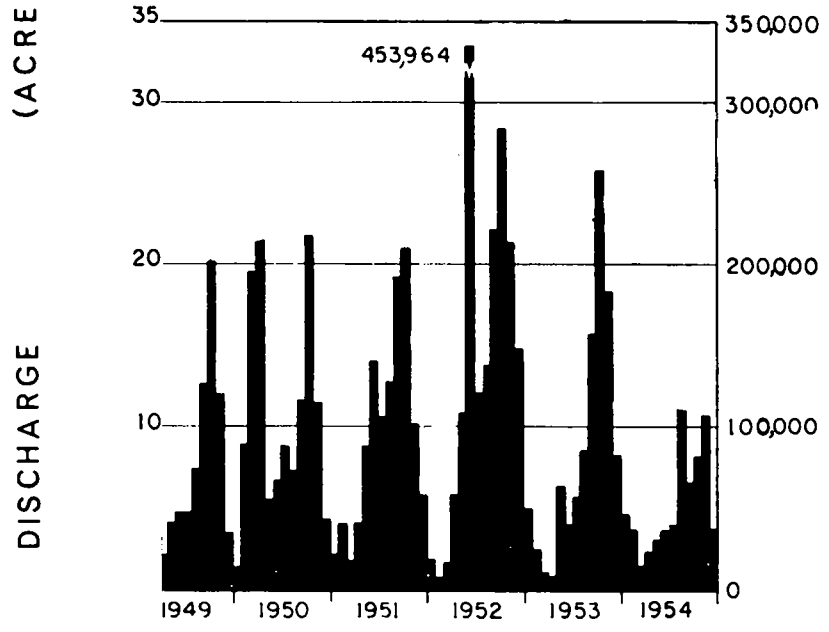
AUTOMATIC RECORDER FLOAT TYPE

AUTOMATIC RECORDER SERVO PRESSURE TYPE

DISCONTINUED STATION

FIGURE 18





35

30

20

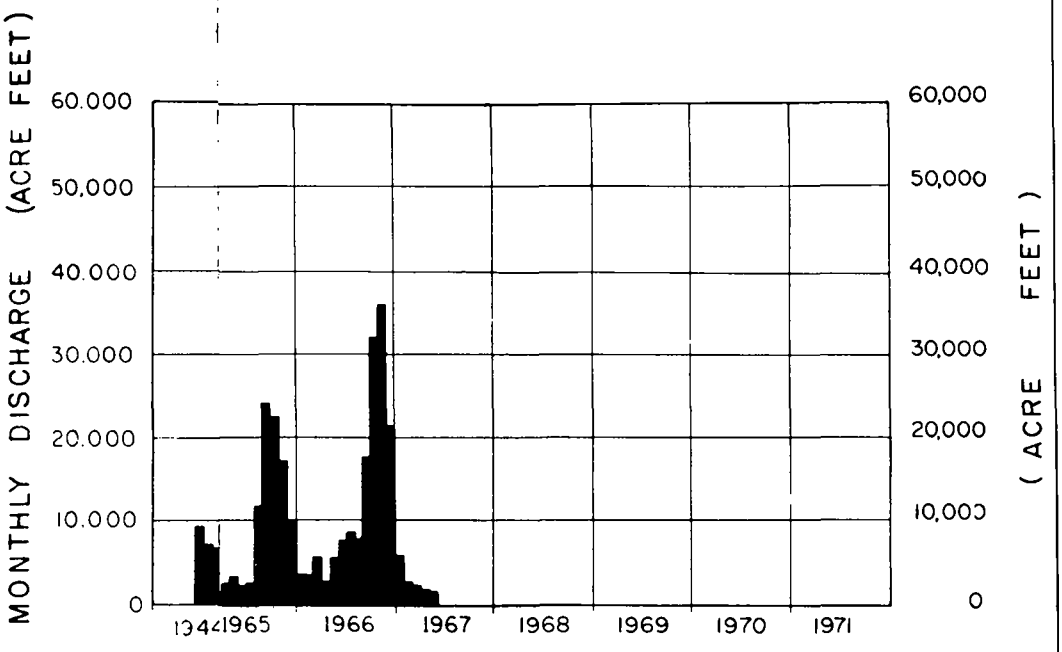
10

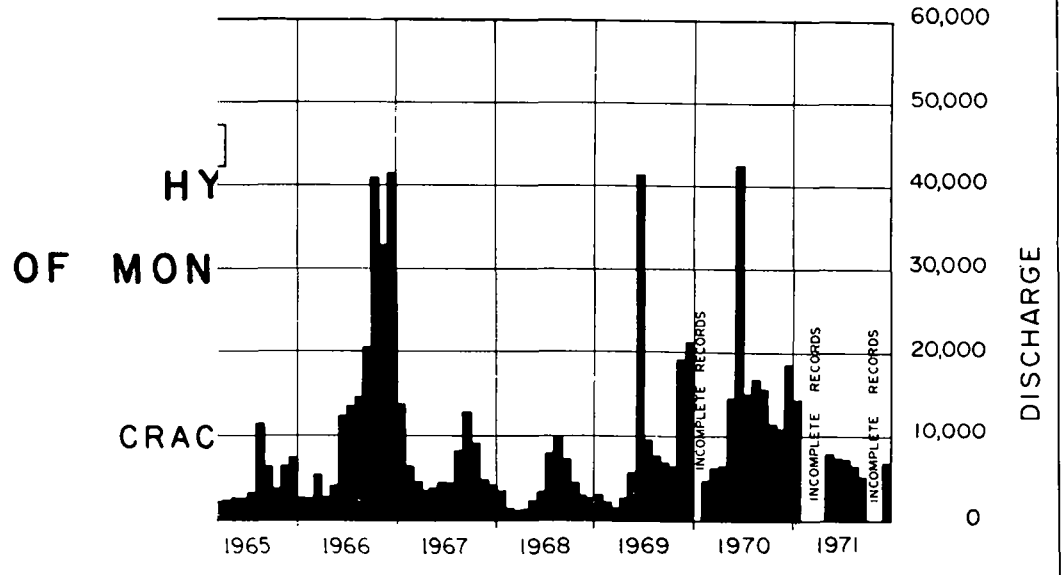
MONTHLY

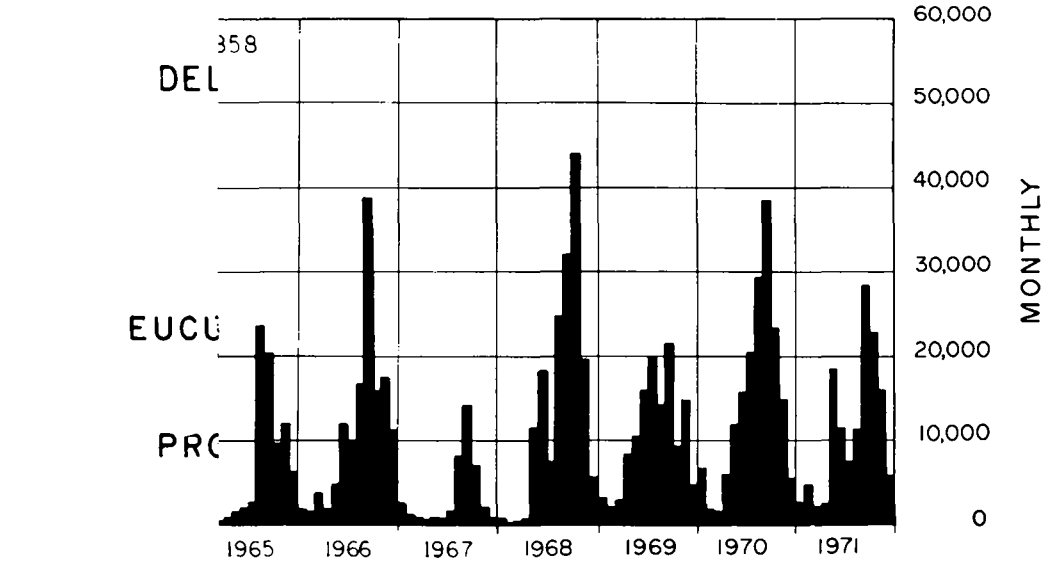
ONTHLY DISCHARGE

T JINDABYNE

FIGURE 19

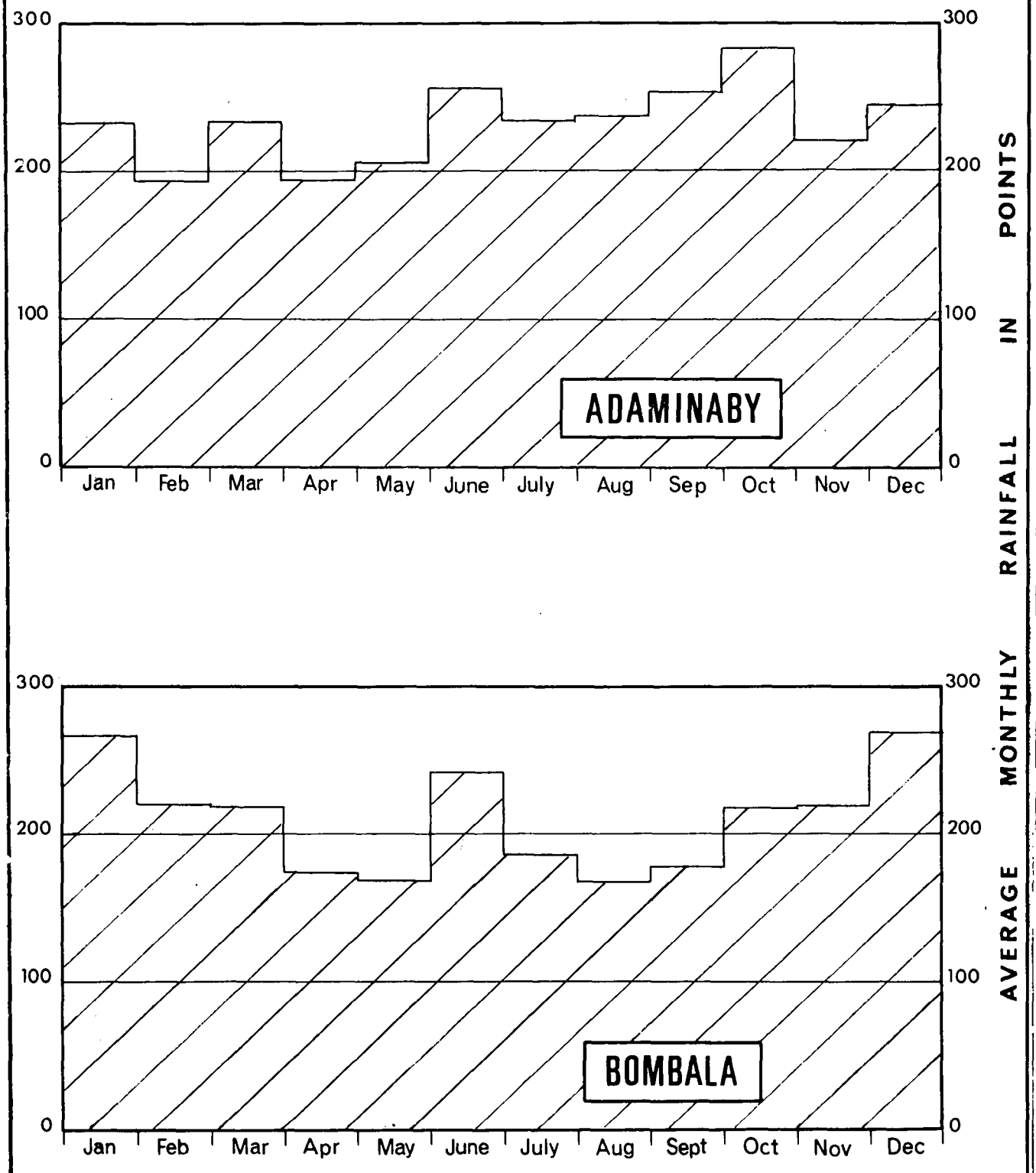






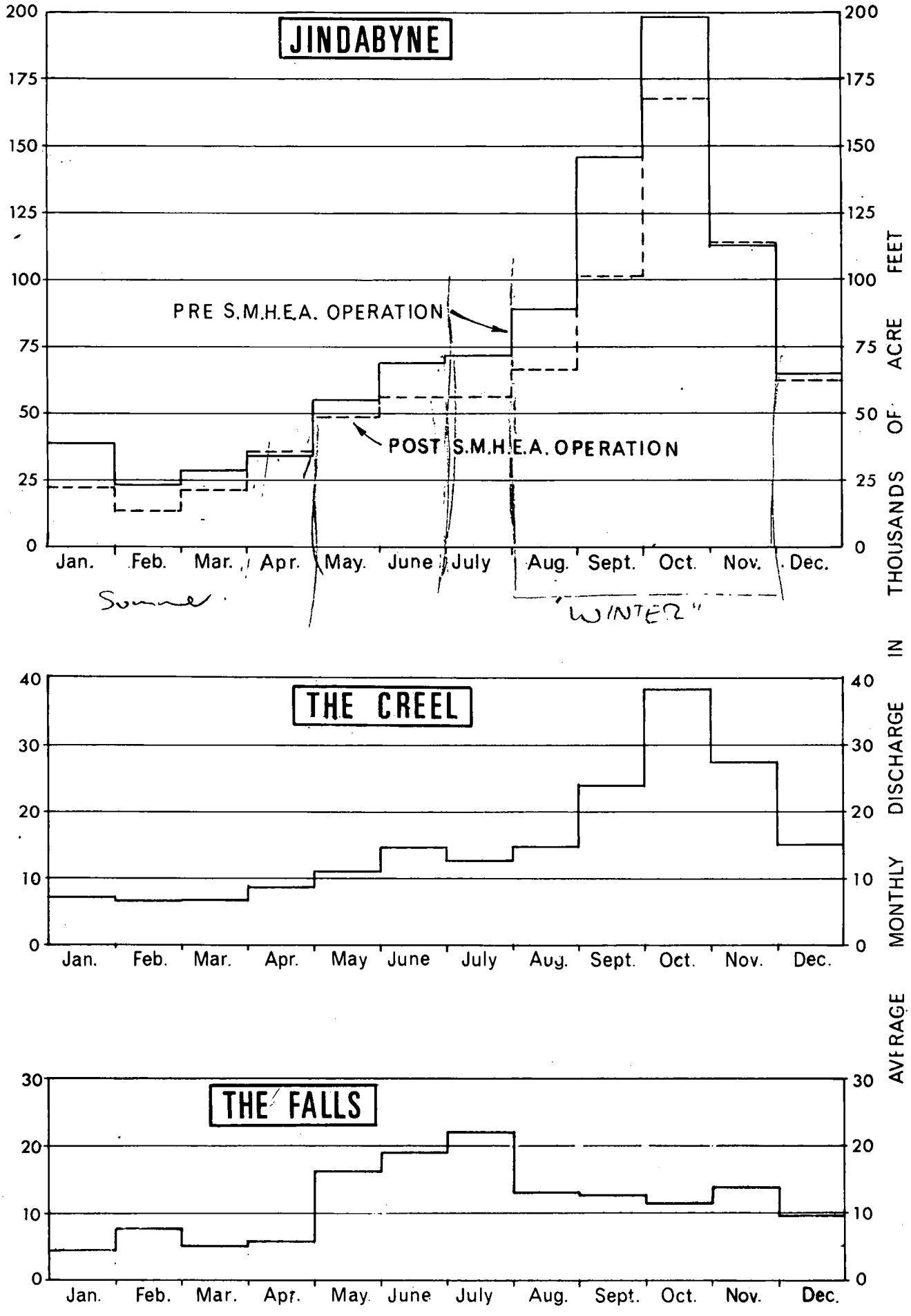
206762

FIGURE 20



DISTRIBUTION OF AVERAGE MONTHLY RAINFALLS
AT
ADAMINABY AND BOMBALA

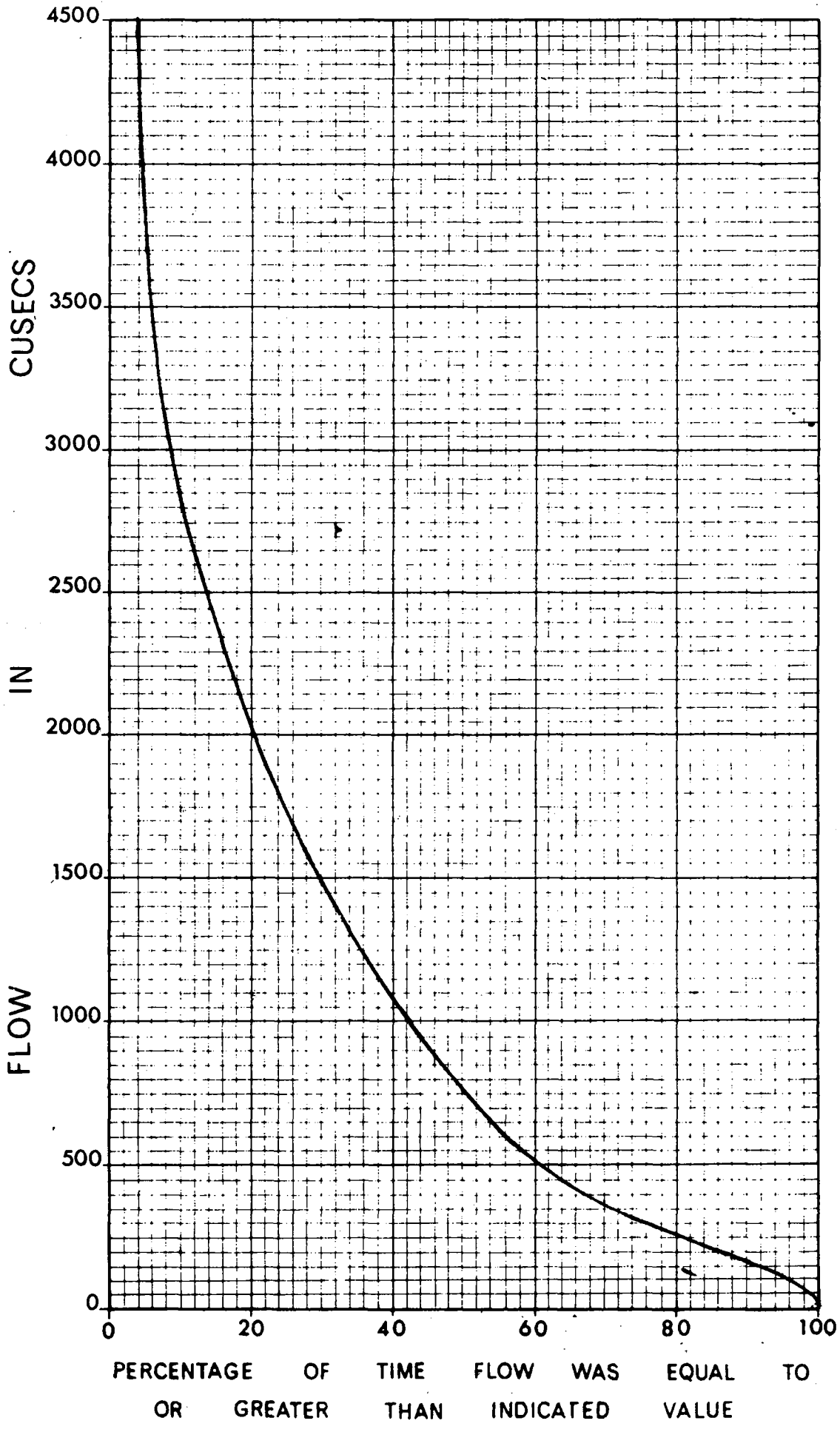
FIGURE 21



AVERAGE MONTHLY DISCHARGE

SNOWY RIVER AT JINDABYNE
CRACKENBACK RIVER AT THE CREEL
BOMBALA RIVER AT THE FALLS

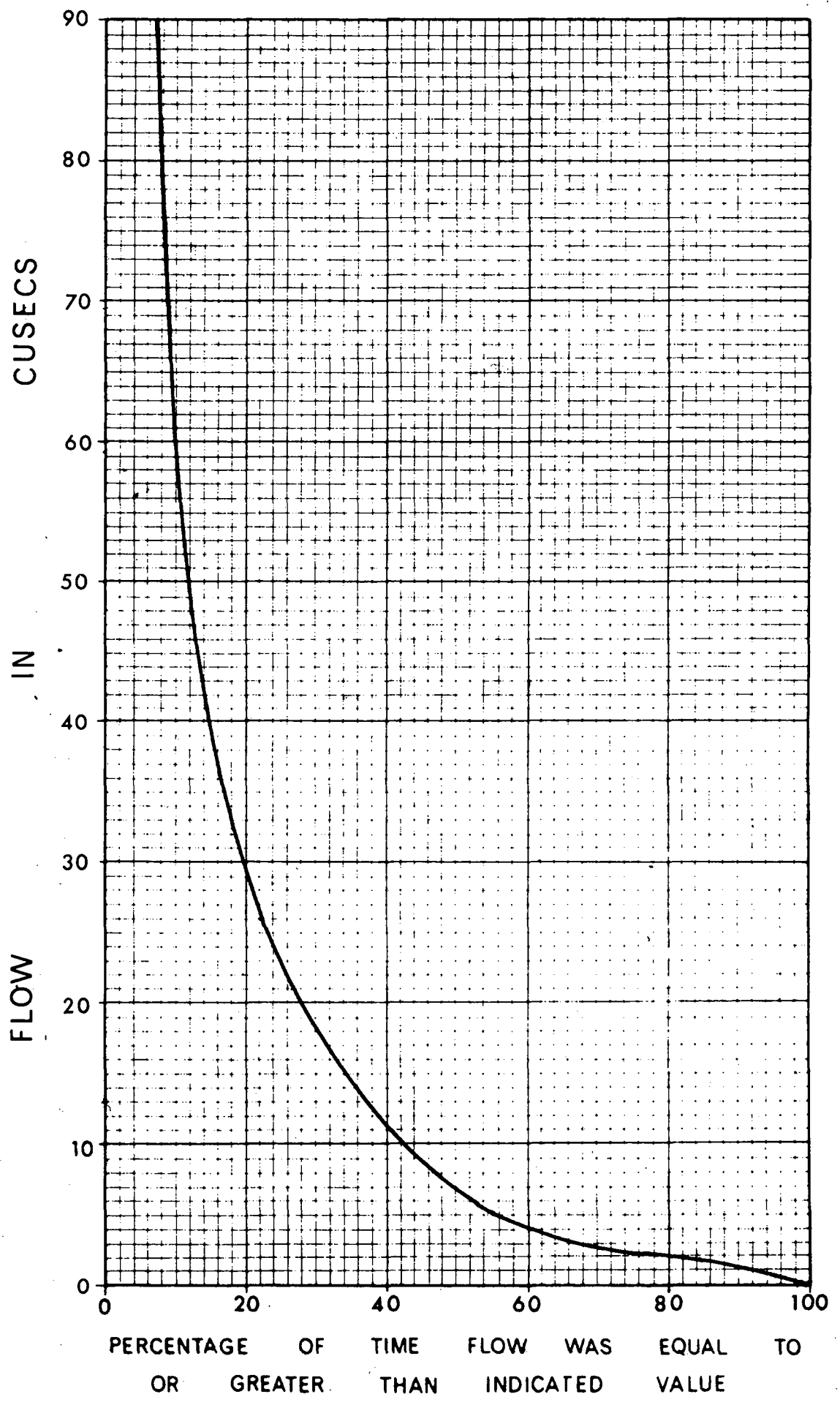
FIGURE 22



FLOW DURATION CURVE FOR SNOWY RIVER AT JINDABYNE

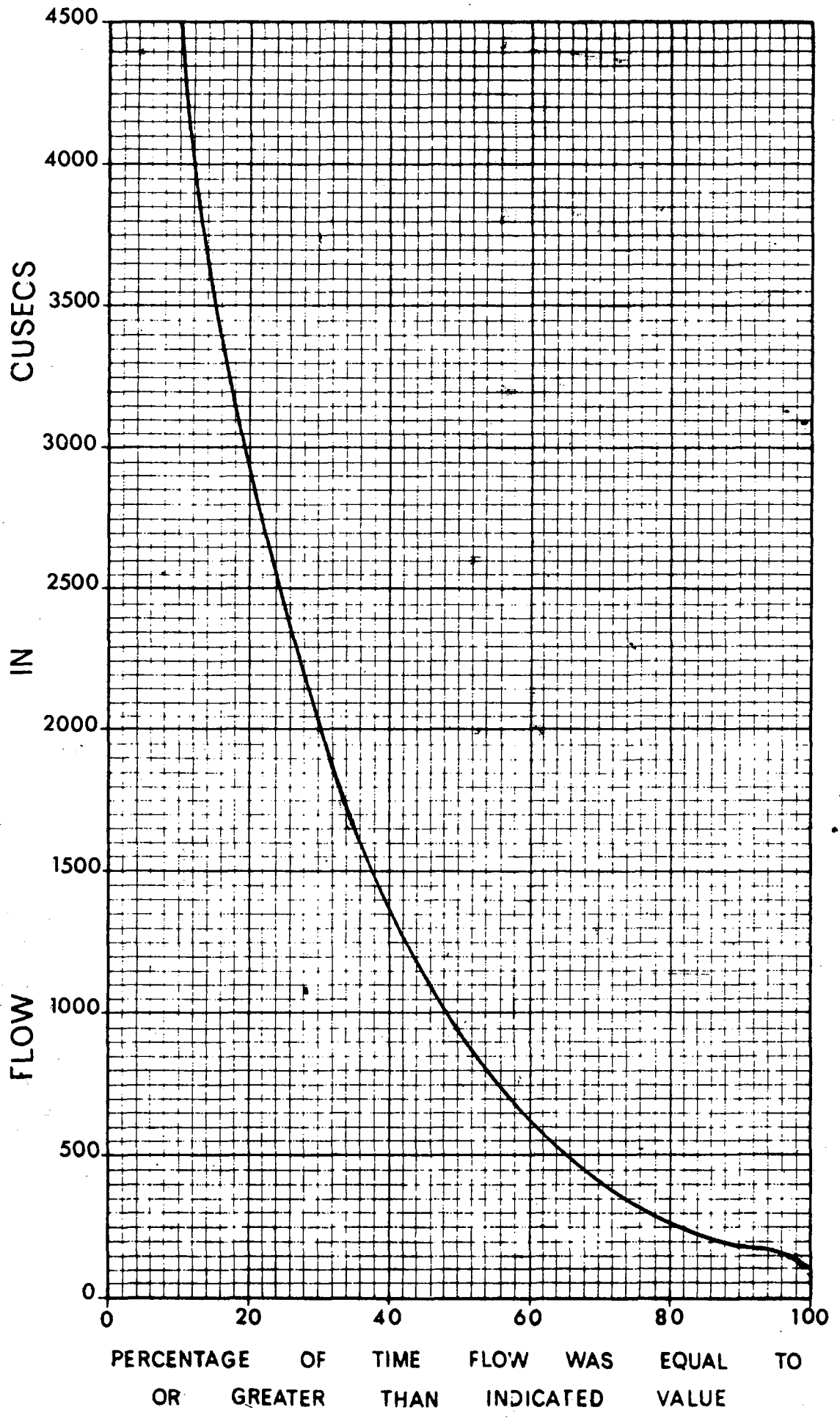
(PRE-SMHEA OPERATION)

FIGURE 23



FLOW DURATION CURVE FOR WULLWYE CREEK AT WOOLWAY

FIGURE 24

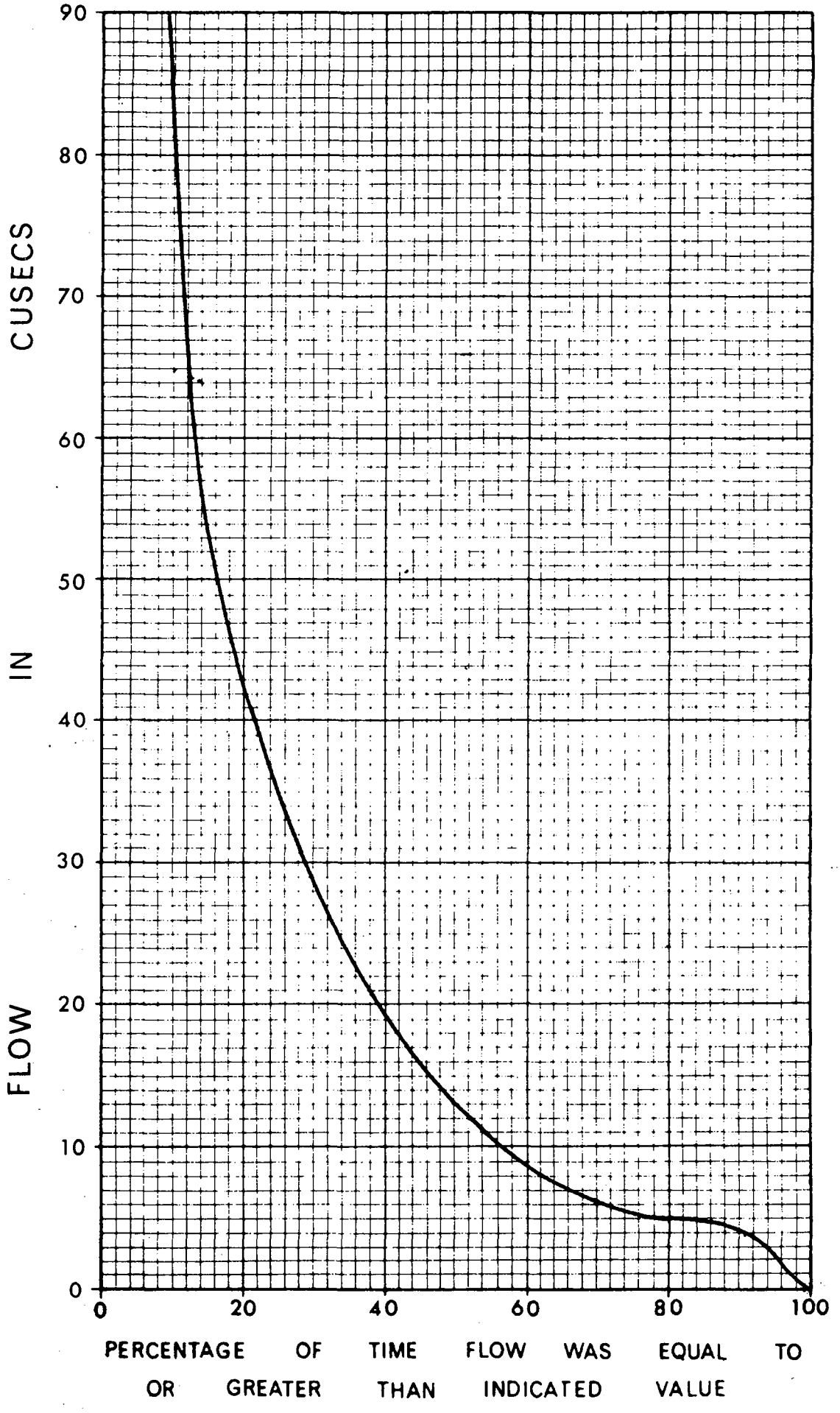


FLOW DURATION CURVE FOR

SNOWY RIVER AT DALGETY

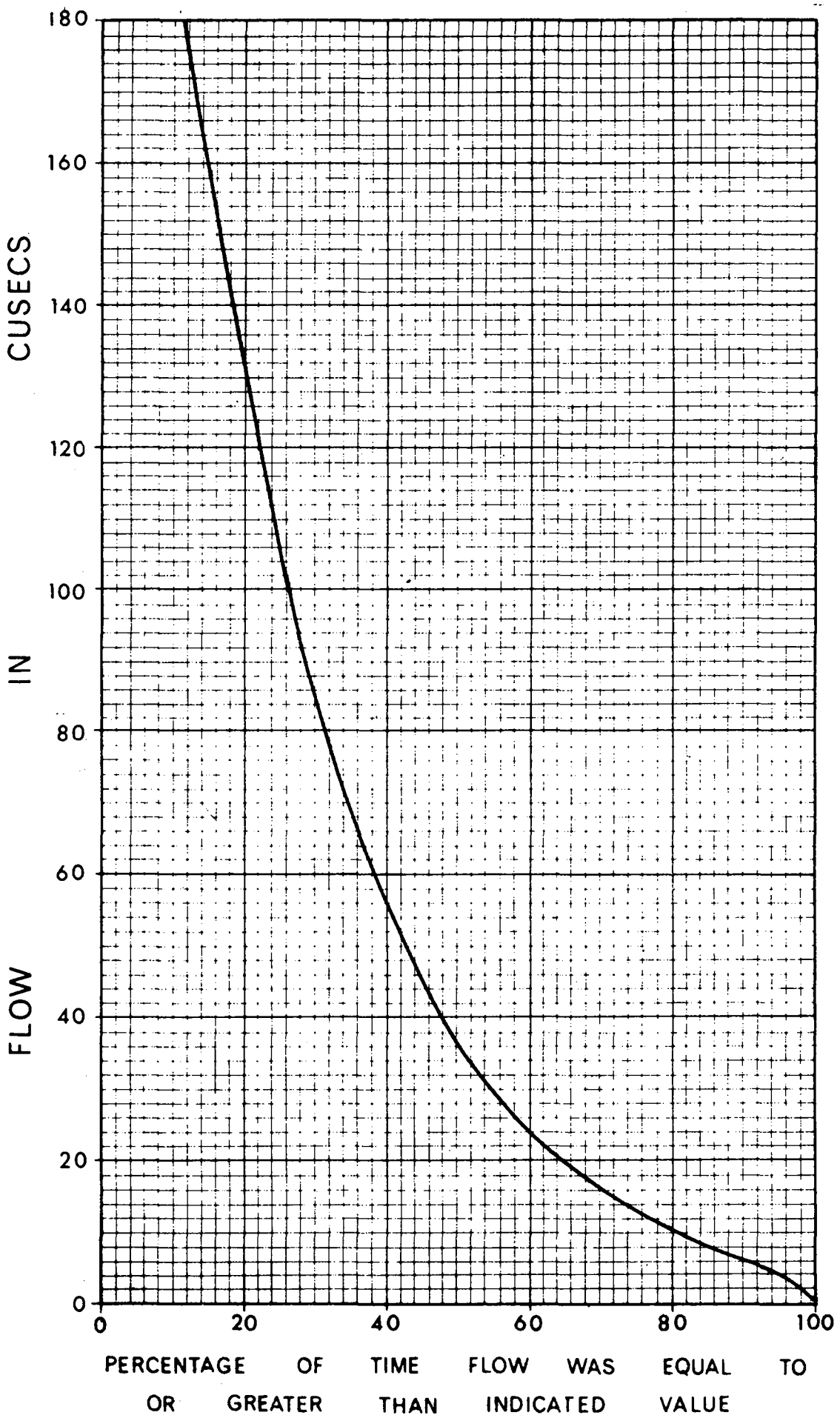
(PRE-SMHEA OPERATION)

FIGURE 25



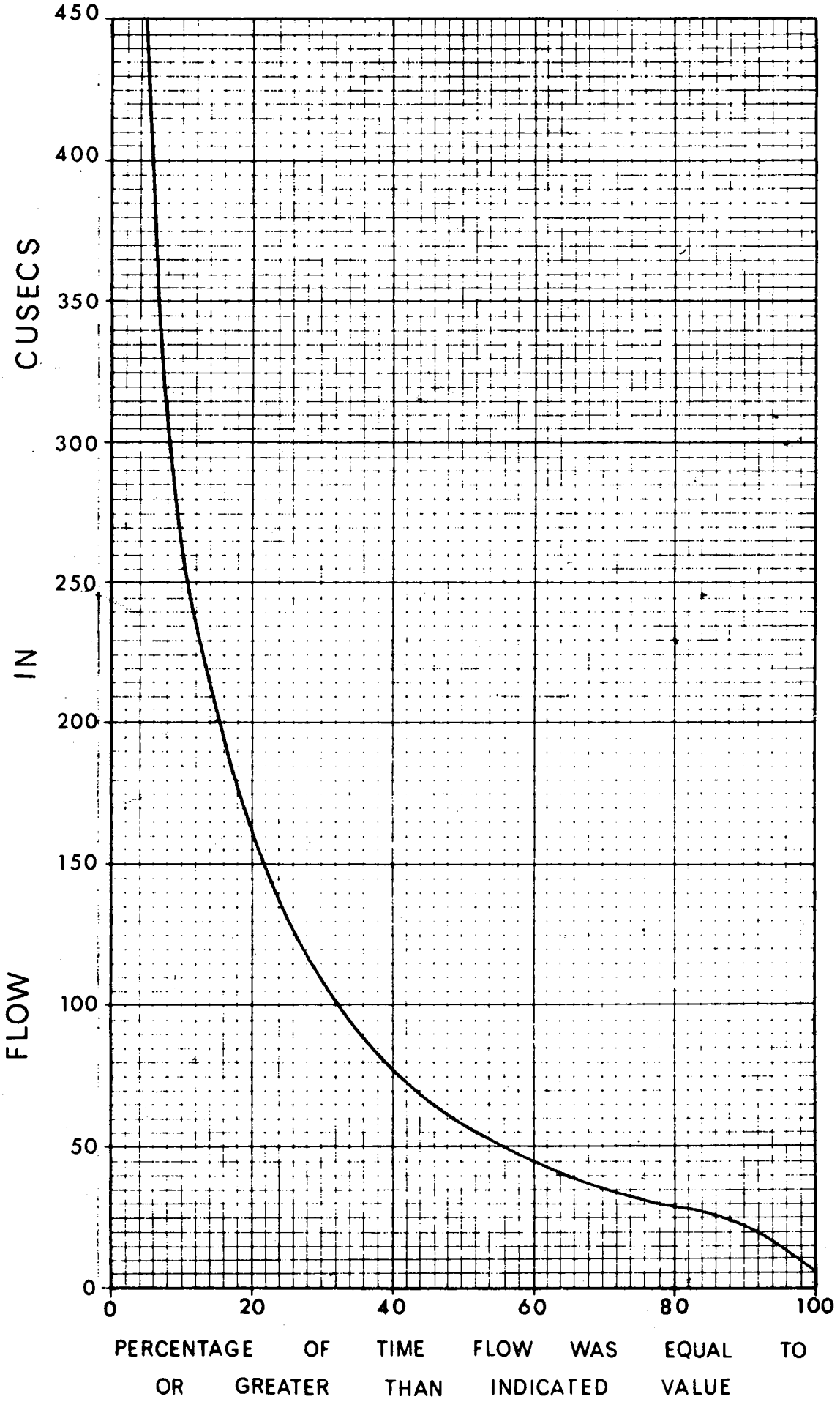
FLOW DURATION CURVE FOR MACLAUGHLIN RIVER AT DALGETY ROAD

FIGURE 26



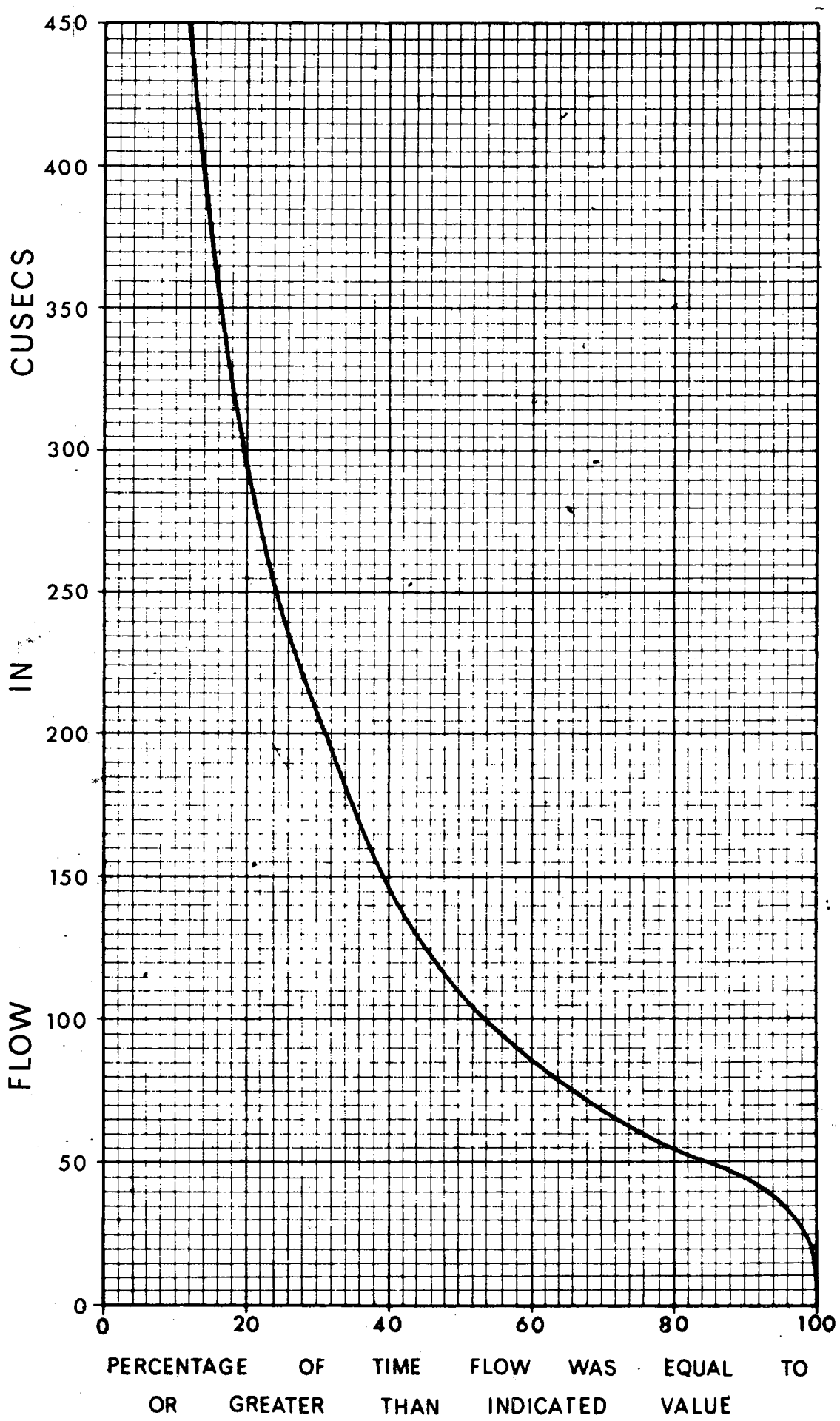
FLOW DURATION CURVE FOR BOMBALA RIVER AT THE FALLS

FIGURE 27



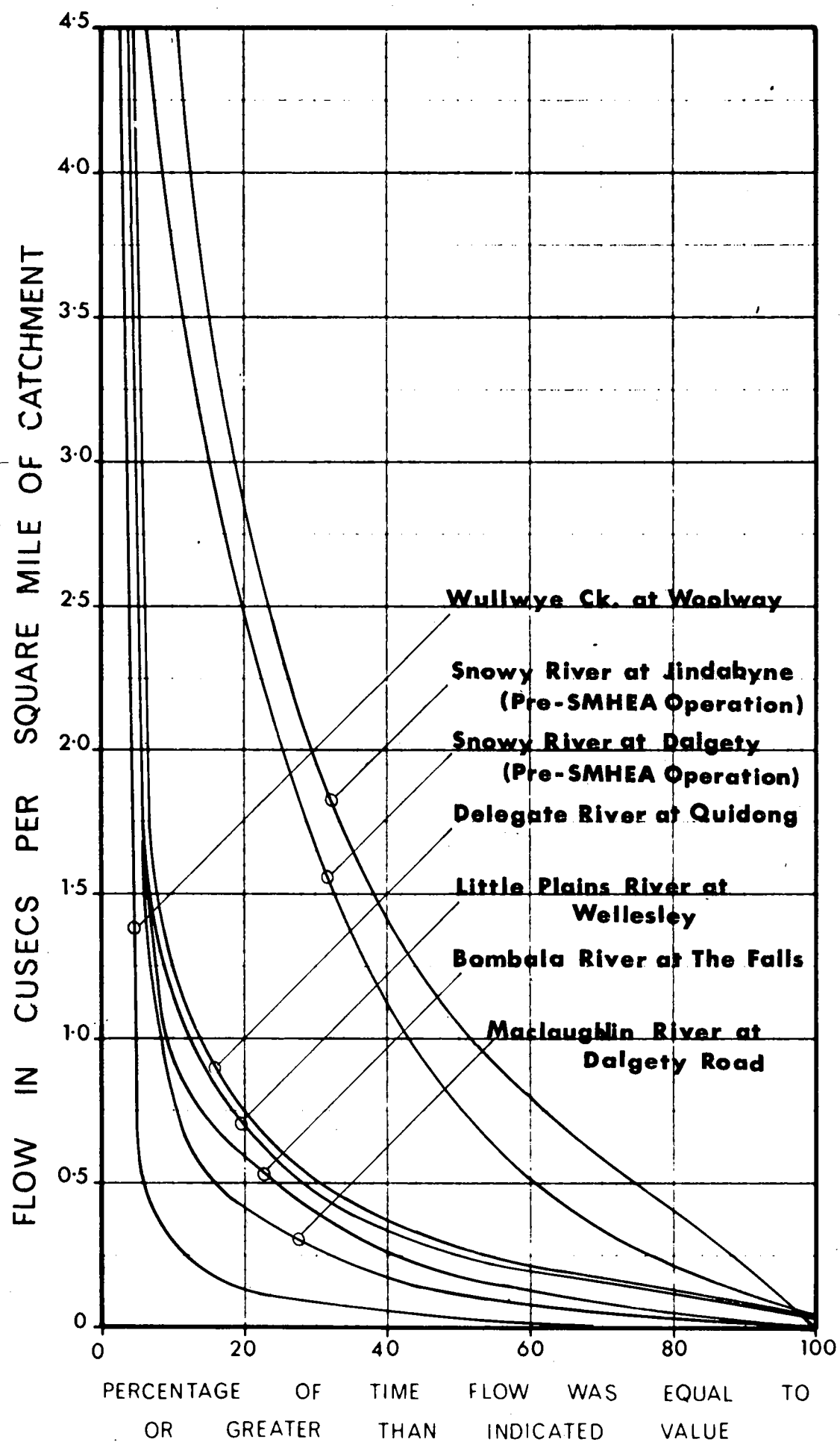
FLOW DURATION CURVE FOR LITTLE PLAINS RIVER AT WELLESLEY

FIGURE 28

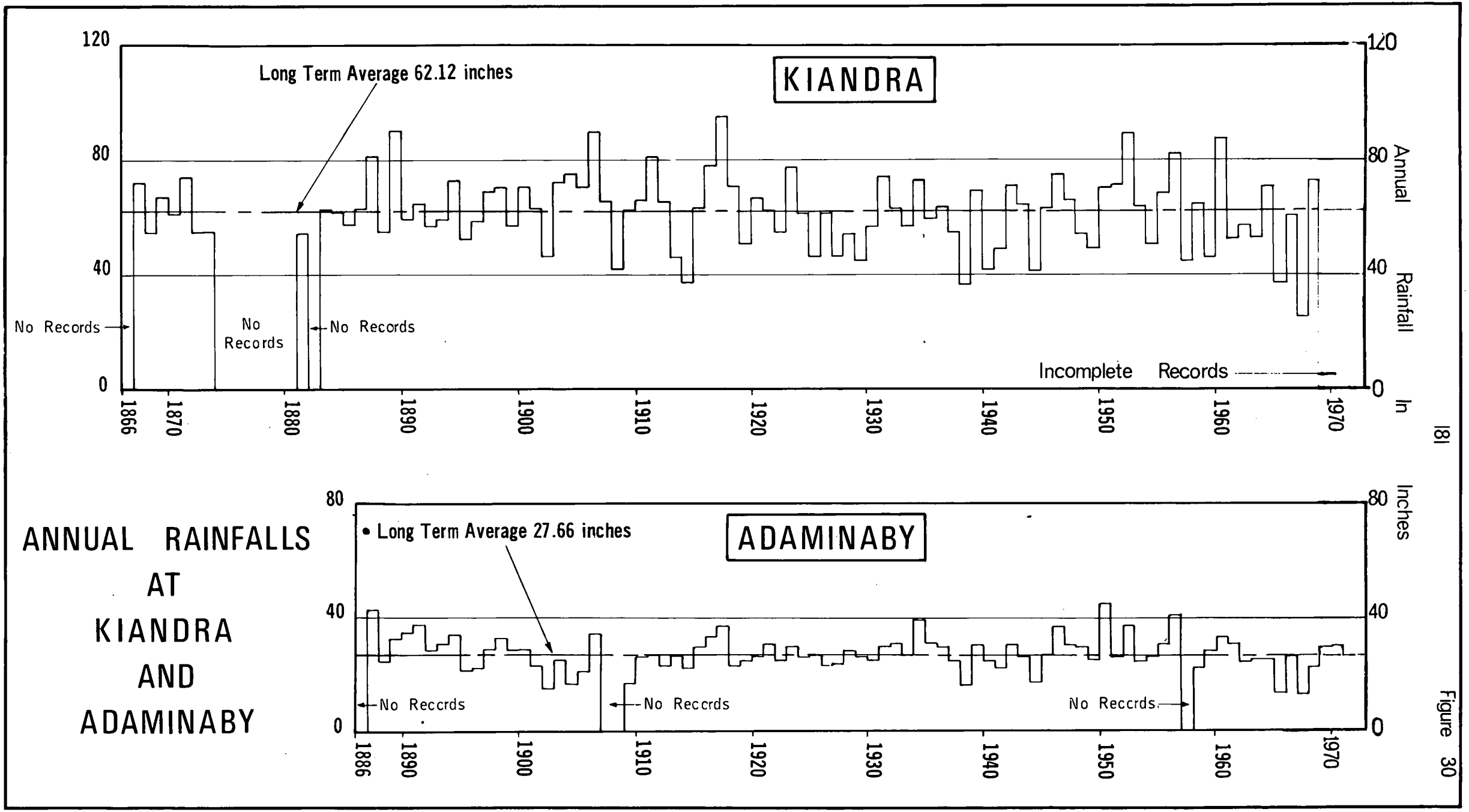


FLOW DURATION CURVE FOR DELEGATE RIVER AT QUIDONG

FIGURE 29

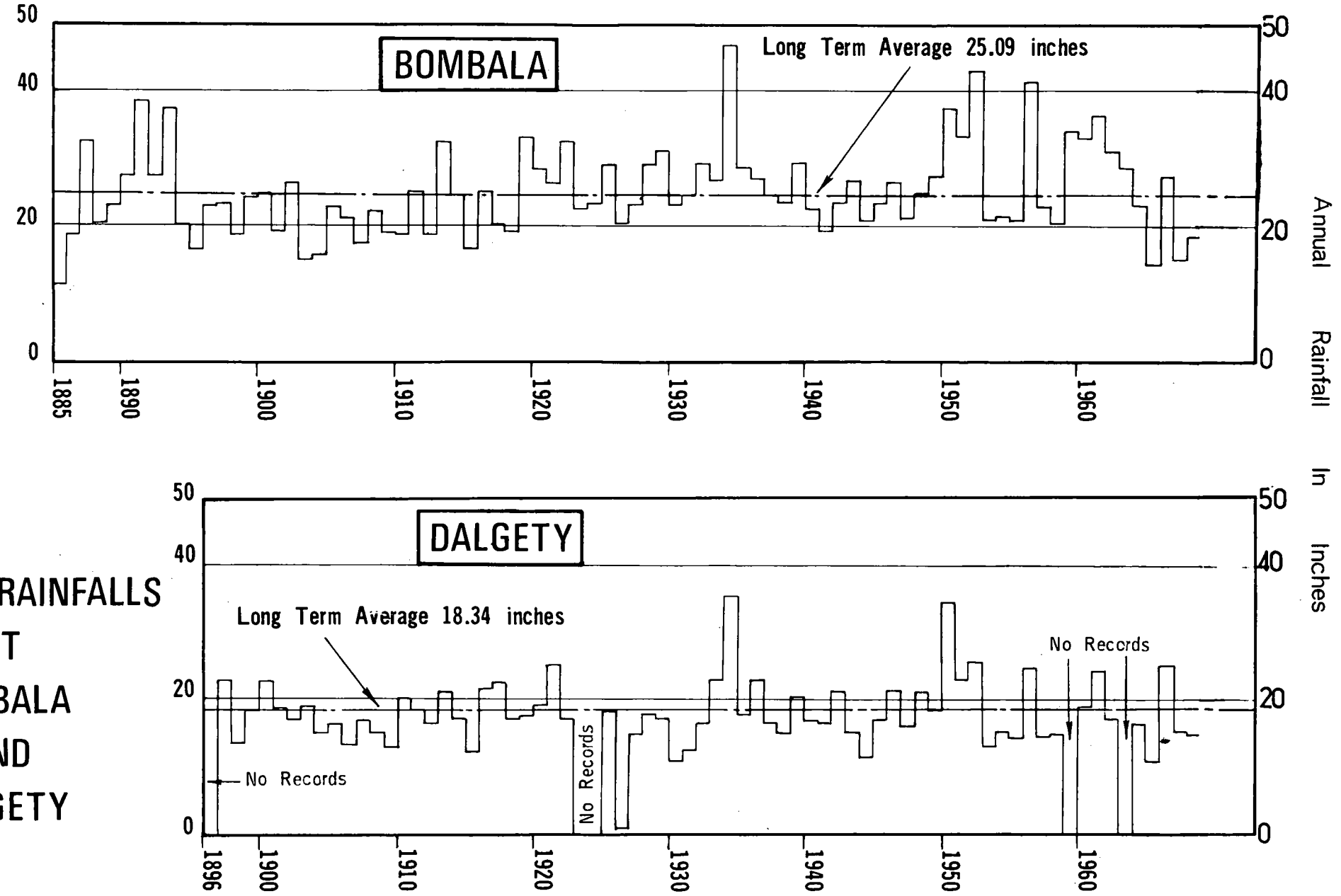


FLOW DURATION CURVES FOR THE SNOWY VALLEY



ANNUAL RAINFALLS AT KIANDRA AND ADAMINABY

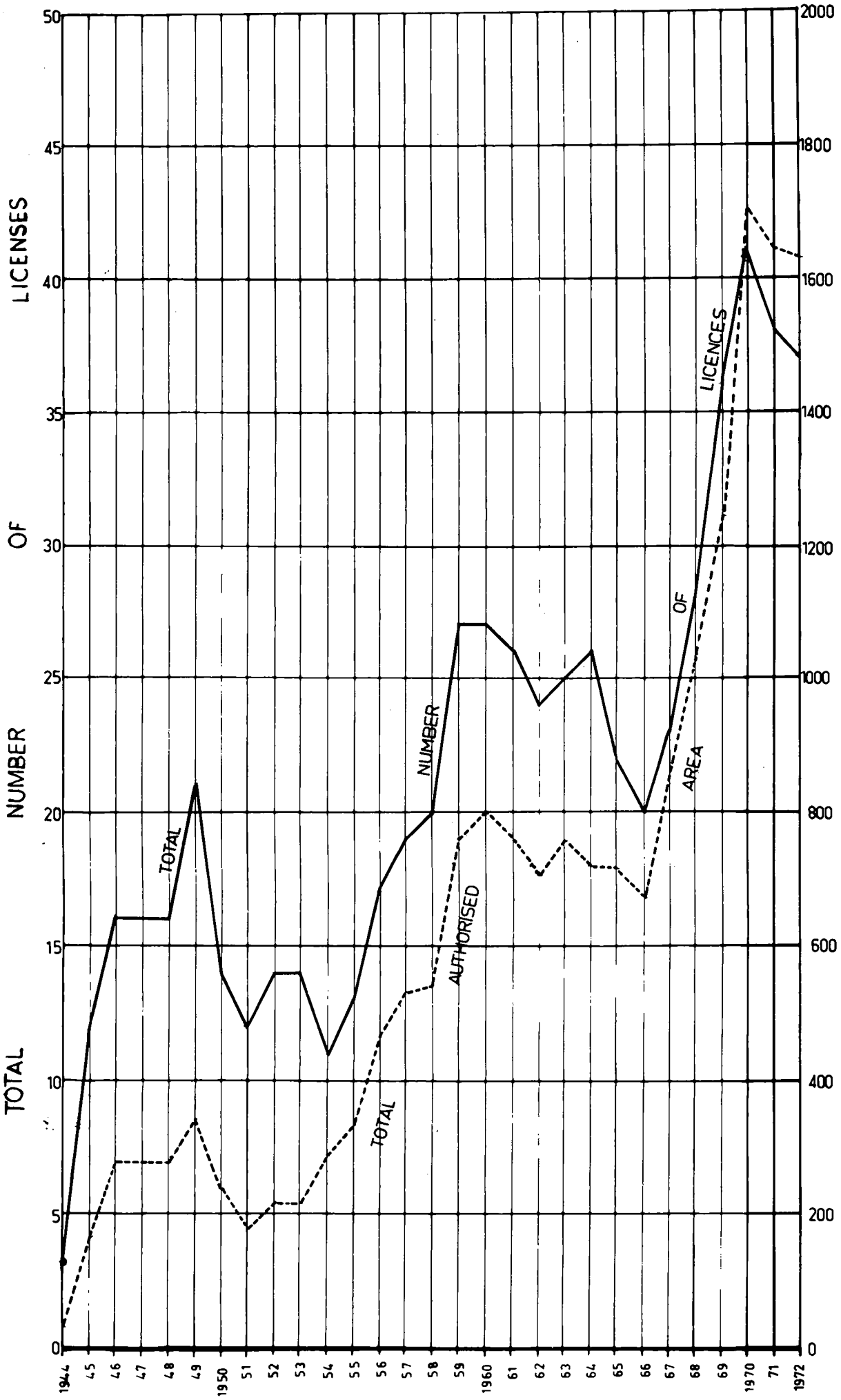
Figure 30



ANNUAL RAINFALLS AT BOMBALA AND DALGETY

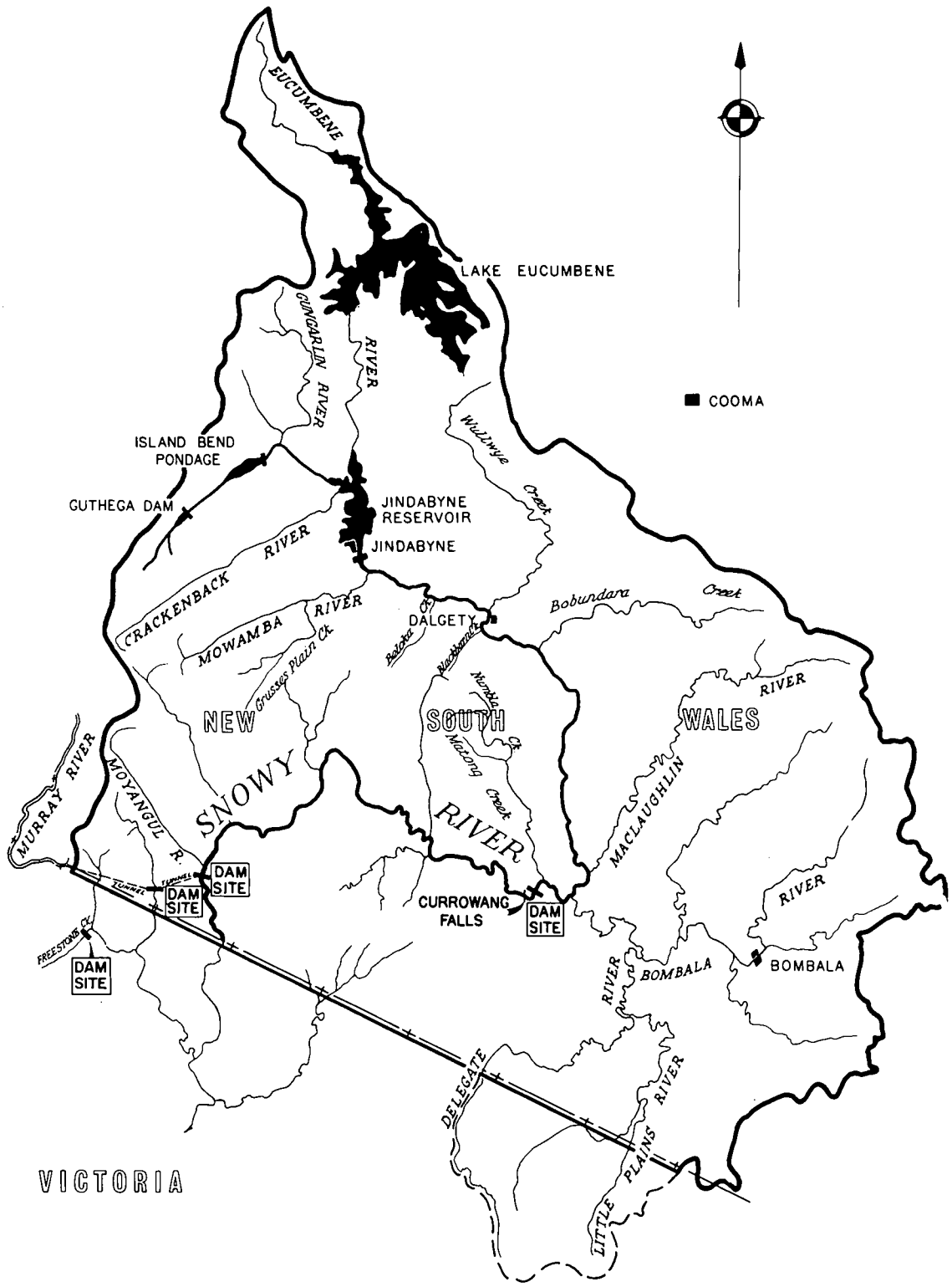
FIGURE 31

FIGURE 32



AREA AUTHORISED FOR IRRIGATION AND TOTAL NUMBER OF LICENSES AT 30th JUNE FOR EACH YEAR INDICATED

FIGURE 33



WATER CONSERVATION AND IRRIGATION COMMISSION

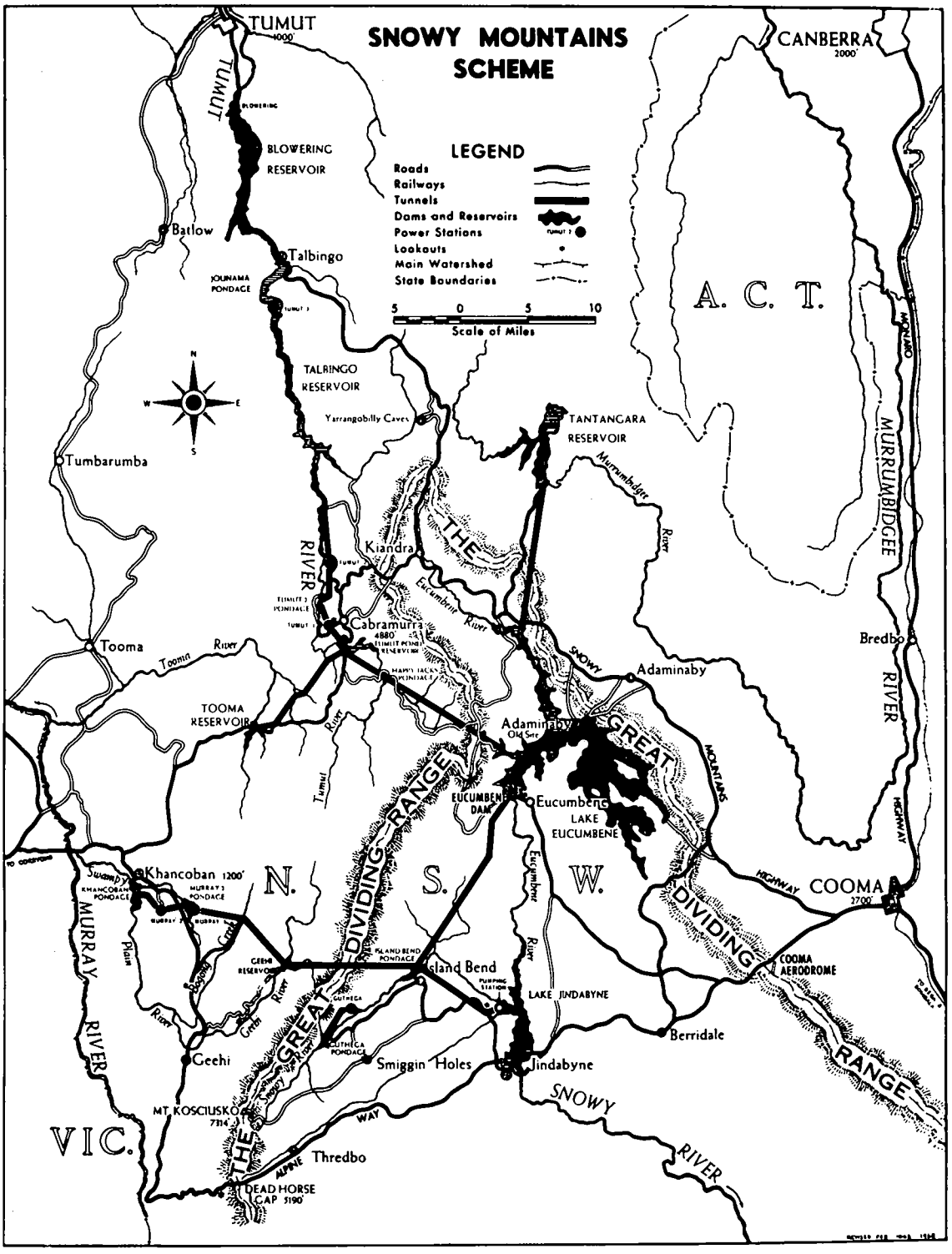
SNOWY RIVER VALLEY

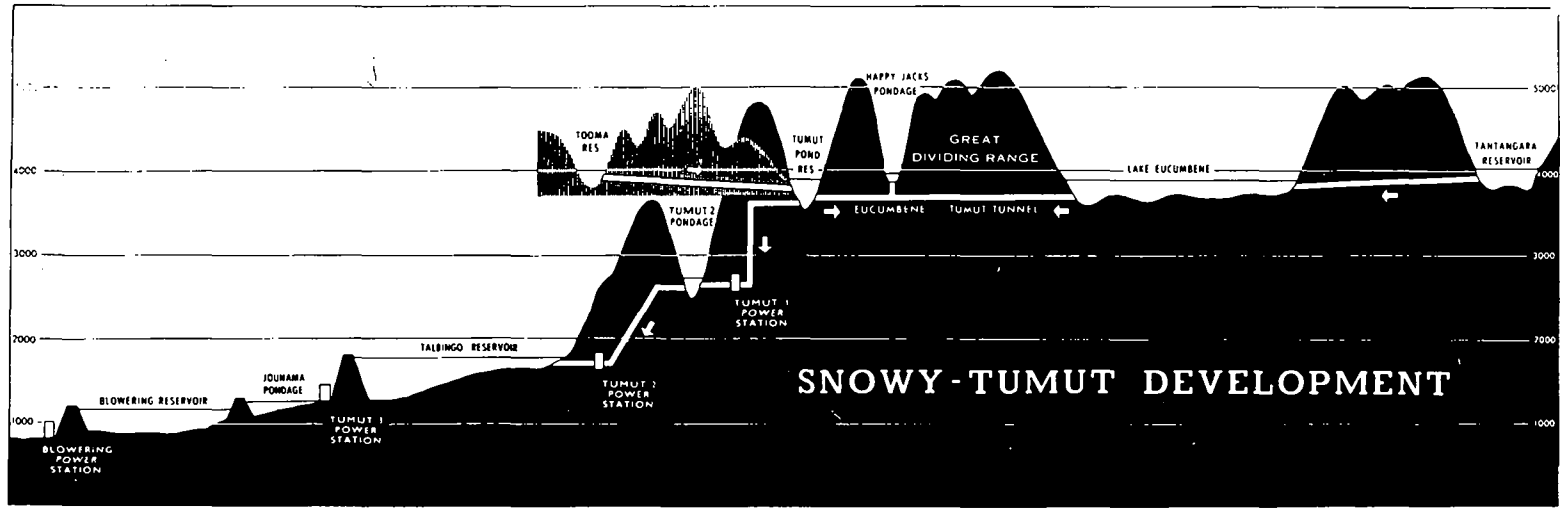
DAM SITES

MILES 10 5 0 10 20 MILES

SCALE

FIGURE 34


SNOWY MOUNTAINS SCHEME
LEGEND
Roads
Railways
Tunnels
Dams and Reservoirs
Power Stations
Lookouts
Main Watershed
State Boundaries
5 0 5 10
Scale of Miles
TUMUT
CANBERRA
BLOWERING RESERVOIR
Batlow
Talbingo
JOUNAMA PONDAGE
TALBINGO RESERVOIR
Yarrangobilly Caves
TANTANGARA RESERVOIR
A. C. T.
Tumbarumba
Kiandra
Cabramurra
Tooma
TOOMA RESERVOIR
Adaminaby
Bredbo
Eucumbene
LAKE EUCUMBENE
EUCUMBENE DAM
Khancoban
COOMA
COOMA AERODROME
Island Bend
LAKE JINDABYNE
Berridale
Geehi
Smiggin Holes
Jindabyne
MT. KOSCIUSKO
Thredbo
DEAD HORSE CAP
VIC.
N. S. W.
THE GREAT DIVIDING RANGE
MURRUMBIDGEE RIVER
MURRAY RIVER
SNOWY RIVER
Tumut River
Tooma River
Murrumbidgee River
Eucumbene River
Snowy River
Murray River
Geehi River
ALPINE WAY
HIGHWAY


SNOWY-TUMUT DEVELOPMENT
HAPPY JACKS PONDAGE
TOOMA RES
TUMUT POND RES
GREAT DIVIDING RANGE
LAKE EUCUMBENE
TANTANGARA RESERVOIR
TUMUT 2 PONDAGE
EUCUMBENE TUMUT TUNNEL
TUMUT 1 POWER STATION
TALBINGO RESERVOIR
TUMUT 3 POWER STATION
JOUNAMA PONDAGE
BLOWERING RESERVOIR
TUMUT 1 POWER STATION
BLOWERING POWER STATION
5000
4000
3000
2000
1000
7000

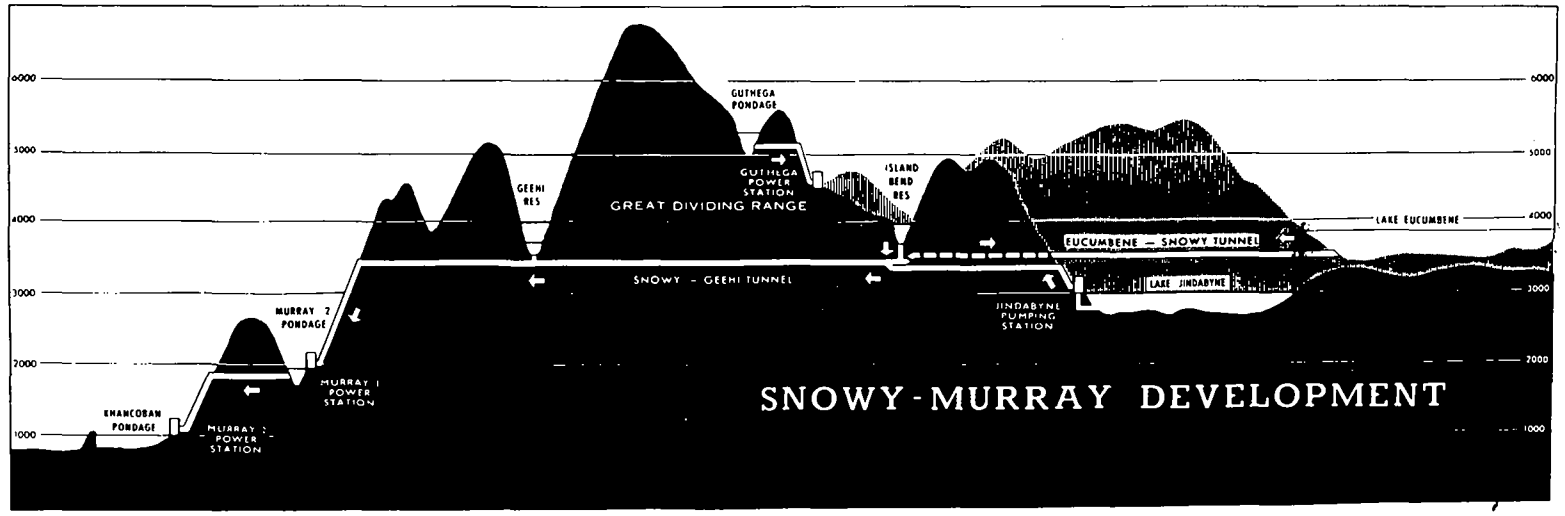
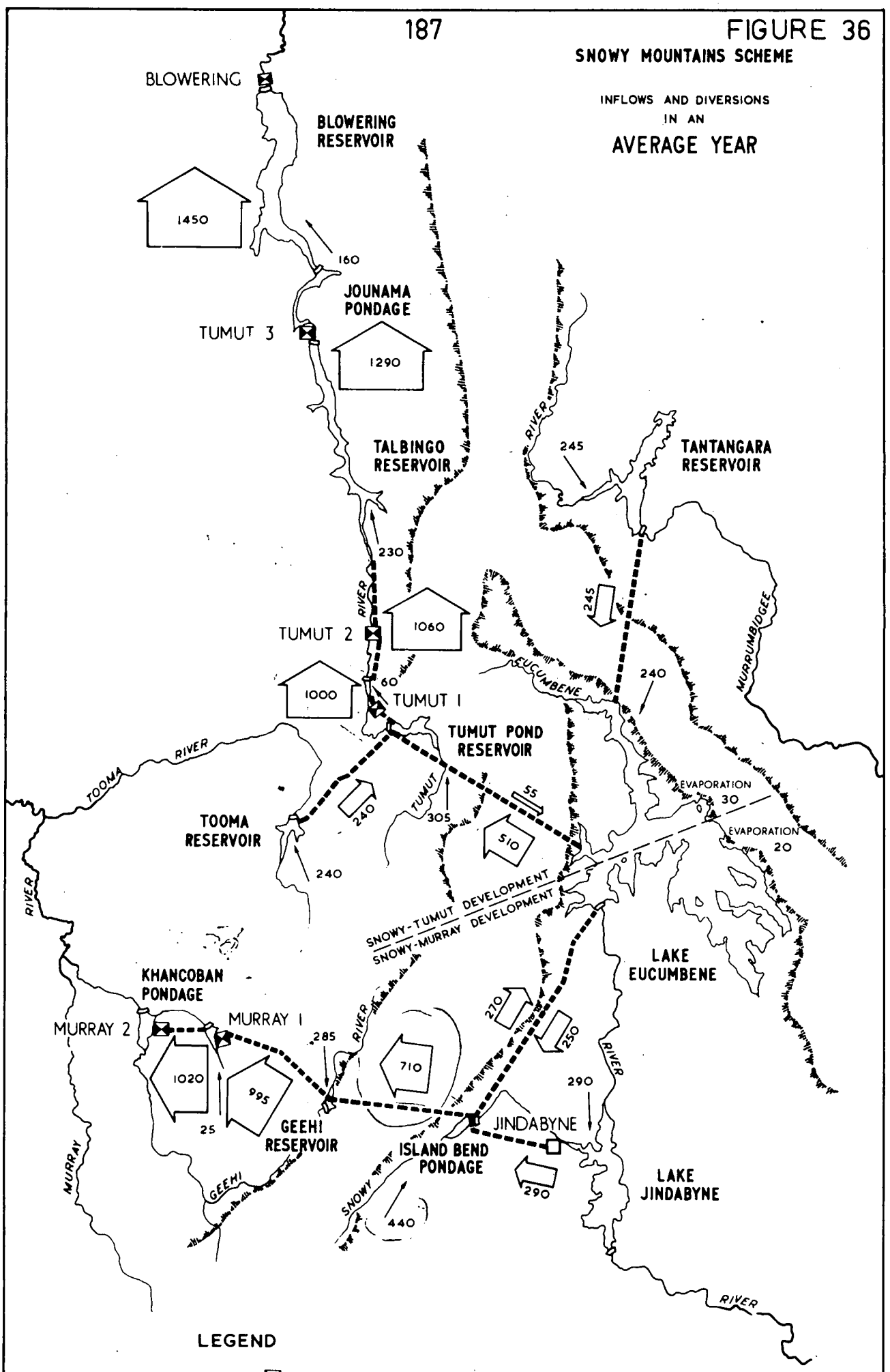

SNOWY-MURRAY DEVELOPMENT
GUTHEGA PONDAGE
GUTHEGA POWER STATION
ISLAND BEND RES
GEEHI RES
GREAT DIVIDING RANGE
LAKE EUCUMBENE
EUCUMBENE – SNOWY TUNNEL
SNOWY – GEEHI TUNNEL
LAKE JINDABYNE
JINDABYNE PUMPING STATION
MURRAY 2 PONDAGE
MURRAY 1 POWER STATION
KHANCOBAN PONDAGE
MURRAY 3 POWER STATION
6000
5000
4000
3000
2000
1000
7000

FIGURE 35

FIGURE 36

SNOWY MOUNTAINS SCHEME

INFLOWS AND DIVERSIONS IN AN AVERAGE YEAR



LEGEND

POWER STATION

PUMPING STATION

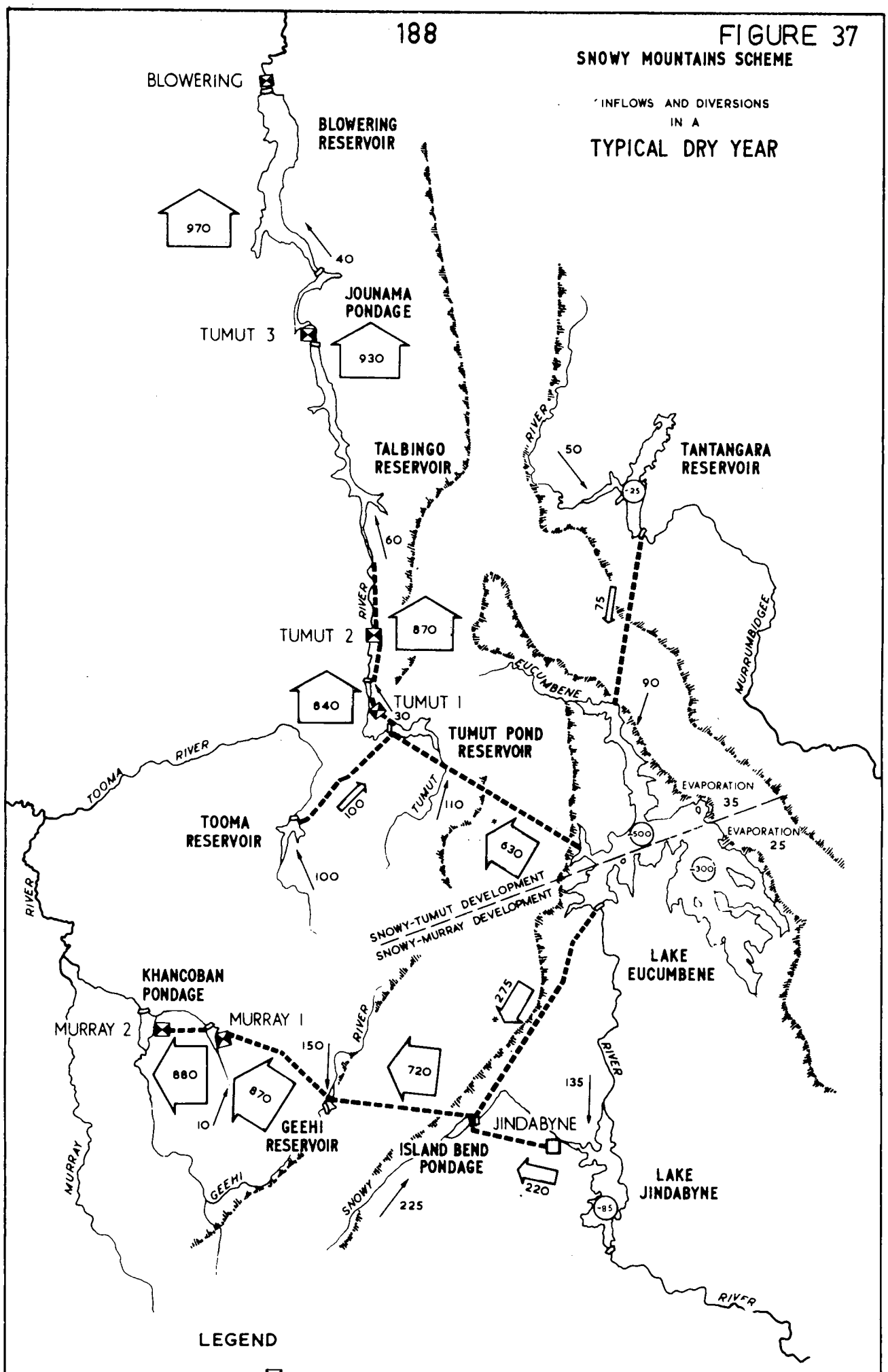
- LARGE ARROWS SHOW VOLUMES OF WATER DIVERTED THROUGH TUNNELS AND POWER STATIONS
- SMALL ARROWS SHOW NET FLOWS FROM LOCAL CATCHMENTS ADJUSTED FOR EVAPORATION AND OTHER LOSSES EXCEPT AS INDICATED

NOTE - ALL FIGURES ARE IN THOUSAND ACRE FEET.

FIGURE 37

SNOWY MOUNTAINS SCHEME

INFLOWS AND DIVERSIONS IN A TYPICAL DRY YEAR



LEGEND

- POWER STATION
- PUMPING STATION
- LARGE ARROWS SHOW VOLUMES OF WATER DIVERTED THROUGH TUNNELS AND POWER STATIONS
- SMALL ARROWS SHOW NET FLOWS FROM LOCAL CATCHMENTS ADJUSTED FOR EVAPORATION AND OTHER LOSSES EXCEPT AS INDICATED
- (-85) INDICATES CHANGE IN STORAGE
- * NET DIVERSION

NOTE - ALL FIGURES ARE IN THOUSAND ACRE FEET