

# THE HYDROLOGICAL SOCIETY OF S.A.

Water Resources Branch

Box 1751, Adelaide, S.A. 5001

NEWSLETTER NO. 42

February 1982

## 1. Programme of meetings for 1982

25th February: (Thursday); "RAINWATER TANKS" by Messrs P.J. Hoey and S.F. West, E. & W.S. Dept.

22nd April: (Thursday); "RAINFALL - HIGH TIDE COINCIDENCE, FACT OR FICTION?" by Mr P.K. Read, B.C. Tonkin & Associates.

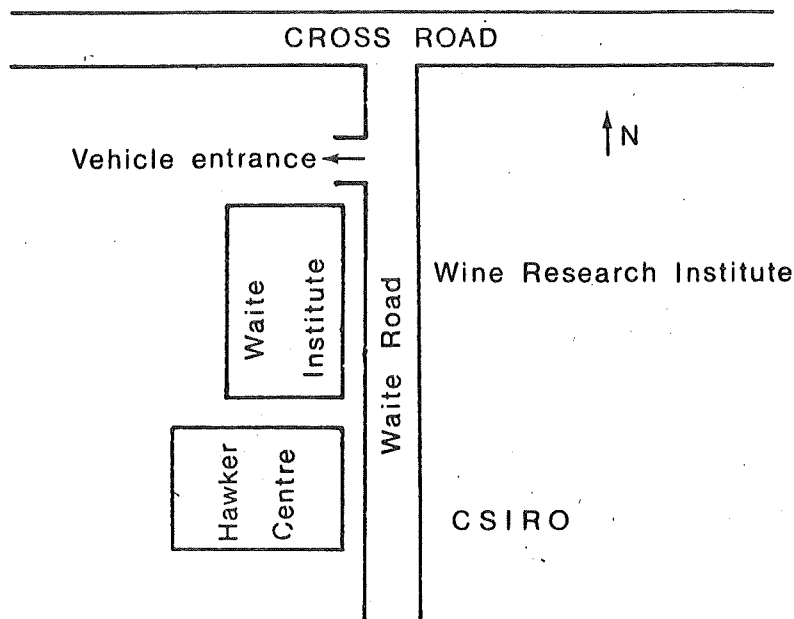
24th June: (Thursday); "WATER WELL CONSTRUCTION" by Mr R. Hancock, Dept of Mines & Energy.

26th August: (Thursday); Annual General Meeting, Speaker and Topic to be arranged.

28th October: (Thursday); "WHEY DISPOSAL & WASTE TREATMENT PROPOSALS IN THE SOUTH EAST" by a panel of speakers.

All of these meetings will commence at 8.00 pm and will be held at the CHARLES HAWKER CONFERENCE CENTRE, WAITE INSTITUTE, as located on the accompanying map.

The Executive Committee commends this programme to members and calls for enthusiastic attendance.



## 2. The Annual Subscription

The subscription for 1981/82 is \$5.00. Members who have not yet paid will find a reminder notice enclosed in this mailing from the Hon. Treasurer, Mr S.R. Barnett, C/- Dept of Mines & Energy, Box 151, Eastwood PO, 5063.

## 3. The Annual General Meeting August 1981

It has been some time since the distribution of the last Newsletter (No. 41, July 81). This has been due in part to the regular editor, Prof. J.W. Holmes' study leave during 1981/82. For those unable to attend the Annual General Meeting in August the Executive Committee elected for 1981/82 were;

Chairman:	Mr K.J. Shepherd
Vice Chairman:	Mr D. Armstrong
Hon. Secretary:	Mr Ockenden
Hon. Treasurer:	Mr S.R. Barnett
Committee:	Mr J.E. Botting, Mr P.J. Dillon, Mr G.F. McIntosh, Dr G. Schrale, Mr J.D. Waterhouse, Mr C. Wright, Prof. J.W. Holmes (Newsletter Editor)

The A.G.M. address was given by Mr I.E. Laing, E. & W.S. Dept, whose subject was the "River Torrens Flood Mitigation Study".

## 4. News from the Engineering and Water Supply Department

### 4.1 Video Package Course - Management of Water Resources - A Systems Approach

A video tape course on the systems approach to water resources management is being jointly purchased by the Adelaide University (Civil Eng. Dept.) and the Engineering and Water Supply Department. The course, which consist of 30 half hour video tapes and several computer programmes, has been developed by the Colardo State University.

Topics covered by the course include time series analysis, reservoir management, groundwater and conjunctive use, pollution control, urban storm-water management, optimization under uncertainty and trade-off analysis. The course also provides case studies to illustrate the lecture material. The included computer programmes are on linear and dynamic programming, mass curve analysis, streamflow generation and groundwater finite difference modelling.

#### 4.2 Computer Model for the River Murray

Consulting engineers Maunsell and Partners in association with Binnie and Partners and Dwyer Leslie have been awarded the contract to develop a River Murray simulation model by the River Murray Commission.

The model will be a mathematical computer model which will simulate water quantity and quality (principally salinity). Stage 1 involves model development which will utilize the E. & W.S. Department's existing water quality model of the River Murray from Lock 9 to the Murray Mouth. This is expected to take 10 months.

Model testing using prepared water quality criteria, management alternatives and salinity mitigation works is expected to take a further 6 months. Results from the study should be available within 18 months.

At the present time it is understood that the model will be capable of day to day management and prediction of water quantity and quality for selected stations as well as being able to carry out evaluation of alternative management proposals on a long term basis.

#### 5. A report on the 7th Groundwater School August 1981

The Australian Mineral Foundation attracted 60 participants to a successful 7th Groundwater School 10th - 12th August at the Colonial Restaurant, Glen Osmond. Speakers covered subjects ranging from geophysical logging to groundwater management. As well as dealing with the principles of hydrology and hydrogeology the course included the more practical parts of geophysics, drilling practices, well construction, and pump test analysis. These subjects were particularly well covered, thanks to lecturers and tutors from the Dept of Mines and Energy.

Water quality was the subject of a large part of the course with lectures given on isotopes, hydrochemistry, groundwater pollution and salinisation. This innovation was most worthwhile. After lectures on groundwater evaluation and mine dewatering attention was given to two subjects previously not discussed at groundwater schools, mathematical modelling and groundwater management.

The AMF also introduced participants to their library and information services. AESIS (Aust. Earth Sciences Information Services) a computerised bibliographic file was described and literature searches demonstrated. The organisers of the school are commended for the excellent programme. The 1981 school must have been the best fed course ever run. Memories of the course will consist firstly of friendships and then of the filet mignon.

## 6. News from the Department of Mines and Energy

### 6.1 Waikerie Irrigation Mound

A groundwater mound beneath the Waikerie Irrigation Area has been monitored by several observation wells since late 1966. The hydrographs show a gradual rise in groundwater levels until 1977/78 when the mound began to dissipate.

This has been attributed to a decrease in irrigation drainage water as a result of more efficient irrigation practices - the main factor being the introduction of a closed-pipe water-on-order system to replace the intermittent delivery system in open furrows.

However, studies by the Department of Agriculture have shown that the reduction in water usage may have been too great to ensure sufficient leaching of salts from the soil.

### 6.2 Angas/Bremer Recharge Experiment

An artificial recharge experiment using water from Lake Alexandrina was performed recently in the Angas/Bremer irrigation area. This is a groundwater irrigation area where long term water quality problems manifest themselves. The experiment consisted of 3 pump-out and two injection phases with the injected water being left in the aquifer for different time spans over the two cycles. Most of the injected water was recorded but the data suggested some modification of the well's hydraulic efficiency. However such a well recharge programme on an expanded basis would probably not be a cost-effective management option for the area.

### 6.3 Barossa Valley

A report has been prepared on the physical framework for the groundwater resources of this important vine and vegetable growing area. The Barossa Valley is an arcuate, wedge-shaped depression infilled with up to 140 m of unconsolidated sands, gravels and clays. The groundwater quality and well yields vary over more than an order of magnitude with an estimated  $1.5 \times 10^6 \text{ m}^3$  withdrawn for irrigation. The area under irrigation is increasing annually but spray and furrow irrigation is slowly being replaced by the more efficient dripper watering system. At present there is no evidence for

quality deterioration or long term water level declines but monitoring of water and salinity levels is continuing.

7. Forthcoming Events

Hydrology & Water Resources Conference, Melbourne, 11-13 May, 1982.

This years conference will incorporate a National Symposium on Forest Hydrology, more information can be sought from the Institution of Engineers, National Headquarters, 11 National Circuit, Barton, Canberra 2600.

Rainwater cistern systems, Honolulu, Hawaii, 15 - 18 June, 1982.

International conference and workshop for the application of rainwater cisterns to drinking-water in urban and rural areas throughout the world. (Contact - Prof. Yu-Si Fok University of Hawaii at Nanao, 2540 Dole Street, Honolulu, Hawaii 96822 U.S.A.).



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