International Association of Hydrogeologists
AUSTRALIAN NATIONAL CHAPTER

NEWSLETTER

Vol. 8 No. 2 NOVEMBER 1991

STATE NEWS AND GENERAL

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IAH NEWSLETTER Vol 8 No 2 NOVEMBER 1991

FROM THE PRESIDENT

The IAH National Executive has been giving attention to the matter of groundwater research publications. Most of us are very busy and find it difficult to allocate time to put some of our best ideas and data down on paper. However, if we are prepared to make the effort, the result will benefit others now, as well as the information being accessible for future generations. There is also a great deal of personal satisfaction derived from producing a paper not to mention the obvious advantages to our careers. Those IAH members who presented papers at the recent International Hydrology and Water Resources Symposium (Perth) are to be highly commended for their efforts as are the organizers. The avenues for publication are many and varied ranging from conference presentations and proceedings to international journals such as "Groundwater". Members may not be aware that IAH (International) has a new international journal "Applied Hydrogeology" that is actively seeking articles for publication.

I recently had a very useful time with its Editor; Professor Eugene S. Simpson who is also the current president of the U.S.A. Committee for IAH. Articles should be sent to:

Professor Eugene S. Simpson
Editor
Applied Hydrogeology
3872E Lizard Rock Place
Tucson
Arizona 85718, U.S.A.
Ph: (602) 577 7015 Fax: (602) 577 1615

Note: Instructions to authors are listed at he end at this article.

New Annual Publication Prize

As an incentive the National Executive agreed to offer a prize of $250 for the best full paper (not abstract) by an IAH member published in Australia or overseas. The paper may be in a journal or conference proceedings. Papers for the inaugural prize should be sent to the Secretary, IAH:

Dr. R. Carr
Lawson and Treloar Pty Ltd
PO Box 799, North Sydney 2010

by June 30, 1992.

Three copies should be submitted (photocopies satisfactory). The papers must have been published between June 30, 1990 and June 30, 1992. Subsequent prizes will be on an annual basis and draw on papers published over a 12 month period.

The 11th AWRC Groundwater School and the associated short course on Organic Chemical Contaminants in Groundwater were very successful with about 100 people attending. There was a good sense of team work amongst the lecturers who were drawn from practicioners in Government and consultancy as well as University of N.S.W. staff including Centre for Groundwater Management and Hydrogeology. Our special guest lecturers from U.S.A.; Dr. John Wilson (USEPA), Professor Douglas Mackay (University of Waterloo) and Dr. Chin Fu Tsang (Lawrence Berkeley Laboratory) made a very useful and stimulating contribution. Ongoing joint research discussions and programs are ensuring that there is a continuation of these valuable knowledge and technique transfers. There are spare volumes of the Proceedings for both courses ($55 each including postage) if anyone wishes to obtain a copy.

Order from the: Administrative Assistant
Centre for Groundwater Management and Hydrogeology
University of N.S.W.
Po Box 1, Kensington 2033, N.S.W.

Finally, best wishes to Peter Dalhouse, the other organizers and participants in the Australian Geological Convention at Ballarat in January 1992. It is most encouraging to see the very active hydrogeology program and associated short course, I urge as many IAH members who are able to attend to support this meeting.

NATIONAL COMMITTEE NEWS

TREASURER'S REPORT

1991 Subscriptions

Thankyou to those members who paid their subscriptions as a result of the reminder in the April Newsletter.

Invoices were sent in September to all remaining members who had not paid their fees for 1991, or were in arrears for 1989 or 1990. If you have not paid your $60 membership fees for 1991, could you please send them to the Treasurer by the end of December. Subscriptions have to be sent overseas early in the new year.

New Members

The number of new members continues to increase. Thanks to all those actively signing up new members and promoting IAH. The following new members are welcomed :

Mr P Mulvey (NSW)	Mr YK Foong (QLD)
Mr D Holmes (WA)	Mr C McAuley (VIC)
Ms S Bish (NSW)	Mr R Cox (QLD)
Mr J Throssell (NSW)	Mr G Plaisted (WA)
Dr M Cox (QLD)	Dr J Davies (WA)
Mr P Bolger (VIC)	Mr J Purtill (QLD)
Mr C Olsen (SA)	Mr R Anderson (VIC)
Mr J Rayner (NSW)	Mr P Hitchcock (NSW)

(NOTE. Those who joined after 1 July 1991 are financial members for 1992 as this is the first year they will receive publications from overseas).

Address Changes

Some members have reported that they haven't received publications that were delivered to members in August-September-October. These publications included :

A. Water Resources in Mountainous Regions (Memoirs of XIInd Congress) ---- 2 Volumes from Lingen, Germany - Delivered late August - early September.

B. Proceedings of the International Conference on Groundwater in Large Sedimentary Basins ---- 1 Volume from DPIE, Canberra - Delivered late September.

C. Hydrogeology of Salt Water Intrusion (Vol 11) and Hydrogeology and Management of Hazardous Waste by Deep Well Disposal (Vol 12) ---- 2 Volumes from Lingen, Germany - Delivered late September - early October.

NOTES. A and C : For 1990 members and new members who joined between July 1990 and June 1991.

B : Only 1990 members who didn't attend the Conference in Perth were eligible to receive this volume. The address labels used by DPIE were as at July 1990. If you have changed your address since that time and haven't received the volume, please check your last address or your local post office.

There have been some minor problems with transferring new members address and other address changes to the International Executive of IAH over the last 12 months. This has now been fixed but the mailing lists may take a short while to be updated.

If you were eligible for the "A" and "C" publications, and you haven't received them, please notify me (write or fax) by the end of December and I'll forward your name onto the International Executive. My address is :

JB ROSS
IAH Treasurer Fax (02) 8915884
c/- Hydrogeology Unit
Dept. of Water Resources
PO Box 3720
PARRAMATTA. NSW. 2124

THE AUSTRALIAN NATIONAL UNIVERSITY

Centre for Continuing Education
G.P.O. Box 4 Canberra ACT 2601
Eggleston Road, Acton
Telephone: (06) 2494580 or 2492892
Fax: (06) 2573421 or 2495938

ARID ZONE WATER: A FINITE RESOURCE

Issues in Water Management No.6

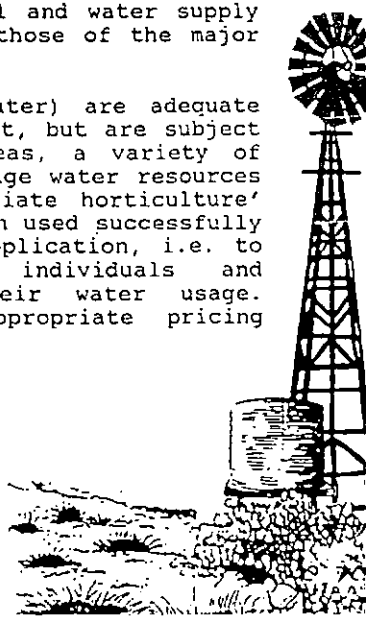
CONFERENCE SUMMARY

This conference, held in Alice Springs, 11 - 14 April 1991, was attended by 125 people representing a wide range of community organisations, government agencies, researchers and mining companies. It was organised by the Australian National University's Centre for Continuing Education, as the sixth in the series Issues in Water Management.

The conference was opened by the Hon. Fred Finch, N.T. Minister for Transport and Works and the keynote address was given by the Hon. Ernie Bridge., W.A. Minister for Water Resources.

The conference drew attention to the special needs of arid-zone communities, which result from low population, remoteness, high climatic extremes and variability of resources available. This results in high costs of assessment, development and operation of water supply systems. On a national scale, arid-zone hydrological and water supply problems have been neglected, relative to those of the major cities and agricultural regions.

Arid-zone water resources (mainly groundwater) are adequate overall for the present stage of development, but are subject to local depletion. In water-scarce areas, a variety of strategies can be used to conserve and manage water resources more effectively. These include 'appropriate horticulture' and 'water care' strategies, which have been used successfully in certain planned mining towns. Wider application, i.e. to 'normal' communities, requires that individuals and communities take responsibility for their water usage. Education, community involvement and appropriate pricing structure are necessary to achieve this.



Water supplies in remote small communities are commonly inadequate in quantity or quality. People living in remote communities have a right to basic safe water supplies. Special considerations apply to remote Aboriginal communities, where community involvement and 'ownership' of water supplies are necessary to ensure that cultural values are taken into account in developing appropriate technical decisions.

Arid-zone water features, such as rock pools, mound springs and salt lakes, are ecologically fragile and are increasingly at risk from tourism and other development. These water features need appropriate protection.

Further development and management of arid-zone water resources will require improved, publically accessible, information systems such as water-bore data bases and groundwater resources maps. The conference also identified research and development needs, including techniques for improving water use efficiency and for widening the scope for beneficial uses of saline water. Specific priority research needs are: better definition of arid-zone groundwater recharge with regard to the sustainable development of local aquifers; and the development of desalination technology appropriate for small settlements.

G. Jacobson,
for the Organising Committee.
29 April 1991

This conference was presented by the Centre for Continuing Education at The Australian National University, in co-operation with the NT Power and Water Authority and the Bureau of Mineral Resources, Canberra. Selected conference papers will be printed in the Bureau of Mineral Resources journal.

FURTHER INFORMATION: Shirley Kral,
Centre for Continuing Education,
The Australian National University,
GPO Box 4,
Canberra, ACT 2601.

Telephone: 06 2494580
Fax: 06 2573421

NOTES FROM VICTORIA

A number of organisational changes have occurred in Victoria during recent months. The former Environment Protection Authority (EPA) and Department of Water Resources (DWR), have both been amalgamated with the Department of Conservation and Environment (DCE). DCE has established a centre for Land Protection Research (based in Bendigo) which will provide a strong focus for salinity and other land degradation studies across the State.

Hydrogeologists have an important and challenging role within the multidisciplined Department of Conservation & Environment particularly in relation to salinity, and other environmental hydrology programs, which range from the protection of groundwater recharge areas and natural springs, to the management of the State's many wetland systems and the development of Statewide policy for allocation, protection and management of groundwater.

Amongst other developments, widespread community rejection of the introduction of current cost depreciation for the ageing irrigation infrastructure, increases in the cost of surface water for irrigation and the introduction of charges for groundwater extraction, has resulted in the State Government instigating a formal, external review of the Rural Water Commission. Proposals are currently being sought from suitable consultants.

A number of significant publications have recently been released including:

- Water Victoria; A Resource Handbook. This extensive work prepared by the DWR provides a comprehensive overview of the State's surface water and groundwater resources including their historical development and financial and economic framework.

- Water Victoria; An Environmental Handbook. This impressive handbook compiled by DWR, brings together for the first time an accurate statement of the land and water resources of Victorian River Catchments and documents their environmental status and the changes that have occurred since European Settlement.

- Interaction Between Groundwater and Surface Water Systems in Northern Victoria, by Dr. P.G. Macumber (DCE). This is a stand alone publication of significant scientific merit which examines the hydrological and environmental instability in the landscape and provides considerable insight into the hydrodynamic, hydrochemical and geomorphological processes controlling salinity.

All of these publications are available from the DCE bookshop at approximately $35.00 each.

In the consulting arena, the focus is mainly on contaminated land assessment and the interaction between soil contamination and groundwater contamination processes. The role of groundwater as a medium for offsite transport of contaminants is a major issue. A number of large industrial sites are currently being investigated. An assessment is now required as part of the EPA licence renewal procedure.

On a social note, Charles Lawrence recently returned from a wine tasting sojourn in Chile and is now comparing the produce from Sunraysia in northern Victoria where he is "sampling" a few of the wetland systems.

(Received from R. Lakey 6/5/91)

NSW STATE NEWS

Drought conditions has increased the level of work in NSW. As towns, companies and individuals realise that they have insufficient water to meet their needs and increasingly the groundwater that they have access to is now polluted. The first step in this latter case is often an education exercise as the first response when remedial action is suggested is 'we'll move the septic system' or 'replace the old tank with a new one'.

The Department of Water Resources is continuing to increase its role in water quality matters in general but now liaising closely with the State Pollution Control Commission (the EPA perhaps if there's not another election in the next few months or no one else resigns from the government).

These increasing functions coincide with a 'downsizing' or 'right sizing' of the public service. It has seen 144 DWR staff assist. David Woolderidge accepted voluntary redundancy. After leaving he immediately joined Mackie, Martin and Associate to continue a fruitful and now expanded career in hydrogeology.

Trev Mount has joined the Head Office from Dubbo replacing Sundararamayya who retired in late 1990 after a long and productive career with the Department. Don Scott (recently of mining companies, NT geol. survey and UNSW) and Sarah Bish (UTS) have also joined the happy group this year. In addition John Verhoeven is now Manager, Environmental Services with John Ross taking over as Manager, Hydrogeology. With all these changes the rest of the staff are just managing the managers.

ANSTO and the University of NSW are expanding there role in groundwater research in NSW particularly in dryland salinisation and groundwater pollution processes and remediation.

Mike Knight's Centre for Groundwater Management again held the very successful and well attended 11th AWRC Groundwater School. These days the School is attracting an even wider range of student than in the past which provides a real challenge in organisation. He was ably assisted by Centre staff in particular Ian Ackworth and Bill Milne-Home (who were everywhere) and a suite of guest lectures.

Following the School, the Centre held an equally successful and extremely well attended short course on Organic Chemical Contaminants in Groundwater. Professor Doug McKay (University of Waterloo), John Wilson (US EPA) and Chin-Fu Tsang (UCLA) provided state of the art and operational overseas perspective on pollution detection and remediation to supplement the excellent array of local speakers.

The private sector is currently holding a steady work load even in the current economic climate with the environmental work area continuing to expand. Many companies are continuing to gain work and expand their off-shore operations.

The NSW Chapter of IAH has been holding very successful and well attended bimonthly meetings. Don Woolley has worked hard throughout the year to ensure their success, and wishes to thank speakers and attendees. He reminds all members (both NSW and interstate) of the Tuesday 10th December 6.30 for 7pm dinner meeting to be held at the Rugby Club, Crane Place near Circular Quay. On the menu will be our speaker Ray Evans from the Bureau of Mineral Resources. Diners will be able to see how tough Ray really is.

NEWS FROM SA

SA Dept of Mines & Energy

Among the many and varied projects being tackled, the following are worthy of mention.

- Dryland salinity is becoming a major issue with an estimated loss in agricultural production of almost $30 million annually. DME is establishing observation networks in affected areas and is assisting detailed catchment studies by the Dept of Agriculture through the drilling of piezometers in hard rock aquifers. These studies are being carried out on Eyre Peninsula, Kangaroo Island and the Adelaide Hills.

  In particular, land degradation due to dryland salinity is becoming a major problem in many parts of the upper South East. Over 100 000 hectares of land are presently affected and the loss in agricultural production is currently estimated to be in the order of $5 million per year. This loss is predicted to rise to about $11 million per year if action is not taken. Groundwater levels are rising at a rate of between 0.5 and 1.0 meres every ten years in many of the more topographically elevated areas in the upper South East. This rise is due largely to the clearance of native vegetation in the past 20 to 50 years and also to the devastation of higher water use lucerne pastures in the 1970's due to aphid infestation. The maintenance of artificial wetlands in the last few years has also contributed to the rise in groundwater levels in local areas.

  The Department has been involved in the assessment of the longer term impacts of the rise in groundwater levels and investigating various strategies to lower groundwater levels. Using detailed topographic information in the form of a digital terrain model and the known elevation of the regional water table, areas with a high risk of becoming salinised have been identified by raising the water table and observing where it intersects the terrain model.

The removal of groundwater using artificially constructed drains is one strategy to lower groundwater levels. A computer groundwater model was used to examine such impacts and the results have indicated that groundwater levels will be lowered over a distance of a few kilometres from a main trunk drain. Such major drains would also service a network of minor drains which would assist in reducing the recharge to the aquifer and thereby further controlling groundwater levels.

It has been recommended that drainage schemes are the only management options that can lead to short term and immediate control over groundwater level rise and surface flooding.

- Urban stormwater from Adelaide is currently disposed of as quickly and cheaply as possible to the marine environment with complete disregard for its resource potential. This amounts to about 180 000 ML annually which equals the total annual water use for Adelaide. Benefits from stormwater harvesting include: flood mitigation, reduced marine pollution, aesthetic enhancement and better water resource utilization.

  A critical factor is the displacement in time between maximum stormwater yield (winter) and maximum water demand (summer). Because of very limited surface storage, the potential of redirecting runoff to temporary storage in the shallow Quaternary aquifers beneath Adelaide is the subject of a joint study between DME and the Centre for Groundwater Studies. Such factors as soil permeability, aquifer storage and permeability and groundwater quality will be investigated. Preliminary results suggest that about 2000 ML could be stored underground using drainage bores. This quantity could be increased if groundwater withdrawals from the Quaternary aquifer also increased (for non-potable purposes).

Centre for Groundwater Studies/CSIRO Division of Water Resources

The centre is involved in a number of projects in the South-east of SA - an area where groundwater resources are vital to the community.

- Non-point source contamination of groundwater by nitrate is a significant problem in the Lower South East. Current pollution is among the severest in the settled parts of Australia and the source of nitrate is grazed leguminous pastures. Therefore, a study which looks at key processes of the nitrogen cycle in the pasture, soil-plant system has been undertaken in an intensively grazed dairy farm near Mt Gambier.

  Twenty six lysimeters have been installed to estimate the amount and concentration of nitrate leached from the soil profile during winter. The lysimeters also refine previous estimates of recharge and evapotranspiration adjacent to irrigated and non-irrigated paddocks. Most of the leached nitrate originates from mineralisation of soil organic mater, and nitrogen fixed by leguminous pasture crops. Animal wastes are expected to play a significant role in cycling of nitrogen in the pasture system. This project will also focus on the effect of animal wastes on the quality of water recharge beneath pastures.

- The increased use of groundwater from the unconfined limestone aquifers of the Naracoorte Ranges region led the South Australian Government to proclaim the groundwater resources of the area in 1986. While the groundwater system was not displaying signs of stress, experience in nearby areas suggested that, at the current rate of development, problems such as these may not be far away.

  Two AWRAC/E&WS funded studies involving CSIRO and DM&E staff and equipment were undertaken to provide a better estimate of recharge for this area. Recharge is one of the hardest hydrological parameters to estimate under the best conditions. The diverse nature of soil and aquifer material in the South-East makes the potential multiple recharge mechanisms in this area even more difficult to study.

The initial study indicated that, for three cleared sites, diffuse recharge rates are low (less than 10 mm/yr), which can be attributed to the high amount of storage in the top few metres of soil and poor drainage of the soil.

The present investigation seeks to determine the importance of several point recharge sites to the regional water balance. Several swamps, runaway holes and a drainage bore were targeted for investigation and instrumented with nests of bores and water level recorders, water samples were taken at least every two months and analysed for stable isotopes, chlorine 36 and radon in additional to conventional major anion and cation chemistry.

The results to date show clear differences in the hydrological and hydrochemical response for the different point source features to rainfall. Water within the vicinity of these features displays a different chemical and isotopic signature from the regional groundwater. This suggests that recharge from these features is not the dominant recharge process on a regional basis. We now plan to place limitations on the range of relative contributions from point source and diffuse recharge compared with that of lateral inflow to this area.

- Environmental isotopes have been used in conjunction with hydrochemical and hydrogeological data to evaluate recharge, water movement and palaeohydrology of the two major groundwater systems of the Otway Basin in the lower Southeast. Hydraulic head data provides information on the present day groundwater flow system while environmental isotopes and chemistry reflect different time scales and are a window into past hydraulic and climatic conditions in the Basin.

  Groundwater samples were collected and analysed for major ions, stable isotopes and radiocarbon along two transects following flowlines for the northern and southern sections of the Basin for both confined and unconfined systems. The deuterium and oxygen-18 composition of groundwaters from both aquifers suggest that recharge takes place via two mechanisms:

  - directly via rapid infiltration without isotopic fractionation
  - water delayed and subjected to evaporation in the unsaturated zone or swamps that are scattered throughout the region.

Stable isotope ratios for deuterium and oxygen-18 for the confined aquifer show a clear trend of depletion either along the transect or with referent to Percent Modern Carbon. Confined grounwaters with a carbon-14 age over 10 000 years are isotopically lighter with respect to younger groundwaters suggesting that these groundwaters were recharge either under a colder climate or different atmospheric circulation pattern than today.

The corrected ^{14}C "velocity" in the confined aquifer is higher than the hydraulic velocity calculated from Darcy's Law by a factor of 2 to 4. This is possibly because groundwater levels were lower in the past as they responded to a eustatic sea level lowering of about 150 m during the last glacial 18 000 years BP.

An analytical hydraulic model was developed that predicts the change in water level response to an instantaneous change in sea level at the downstream boundary of the system throughout the last 27 000 BP. The model predicts that a lower sea level stand would result in partial dewatering of the unconfined aquifer and lowering of the confined potentiometric surface. This would result in increased gradients and drainage and as a consequence higher velocities than those calculated from the present day head distribution. The ^{14}C "velocity" is considered to integrate the hydraulic heads of the system during lower sea levels in the past. The model also indicated changes in both the location and magnitude of recharge and discharge zones to confined aquifer throughout the last 27 000 BP.

AGC Woodward-Clyde

AGC Woodward-Clyde Pty Ltd is a specialist environmental consultancy with expertise in a wide range of areas including waste and contaminant management, water resources, impact assessment and environmental planning and engineering.

The company is the result of a merger between Australian Groundwater Consultants Pty Ltd and Woodward-Clyde Group, Inc., a North American environmental consultancy.

AGC Woodward-Clyde has recently completed the extension to the Olympic Dam Wellfield A. Three additional artesian production bores each yielding 2 ML/day were installed and tested. Three artesian monitoring bores were also constructed to monitor the influence of pumping on aquifer pressures within the Great Artesian Basin. The borefield extension is located near Lake Eyre South.

Scientific Services, Engineering and Water Supply Department

Salinity in the River Murray has been an increasing problem for many decades. The viability of the Murray as a reliable water resource for South Australia is threatened as the mean salinity levels continue to rise. These rises are due to a number of factors: natural saline groundwater inflows in the lower reaches, extraction of a large proportion of the water for irrigation leaving less for dilution, saline inflows induced by irrigation groundwater mounds, discharge of irrigation drainage waters directly to the Murray, impacts of dryland salinisation in the upper catchments, anticipated saline inflows from increased infiltration due to land clearing in the Mallee.

In recent years the understanding of the processes has advanced dramatically. The Murray-Darling Basin Commission has moved to coordinate the efforts of the State agencies involved in the Murray Basin.

Salinity and Drainage Strategy

The threat of rising salinity levels and the desire to reclaim land upstream by additional draiange works has lead to the development of the Salinity and Drainage Strategy. This is an agreement between the States whereby a $60 m package of salinity mitigation works achieving a net reduction in mean river salinity of -80 EC units is funded jointly by the three States and Commonwealth Governments. The upstream States the obtain salinity credits (or rights to pollute) which can facilitate the reclamation of up to 500 000 ha of waterlogged irrigated land. These rights would increase mean salinity by + 30 EC units leaving a net reduction of -50 EC units, and a limit on further drainage works.

Salinity Mitigation Projects

The concept of the Strategy identified an initial program of salinity mitigation projects. This program has been pursued since the mid '80s and will take 10 years to complete. projects have to undergo a detailed technical investigation and then be subjected to economic and environmental assessment.

Woolpunda Salt Interception Scheme

This $25 m project is the keystone of the Strategy which involves 49 interceptor bores either side of the River Murray along a 30 km reach between Overland Corner and Waikerie in SA. The scheme will pump 16 ML/day of groundwater, having a salinity of 20-25 000 mg/L. This will prevent 170 tonnes of salt per day reaching the river, resulting in a reduction of mean river salinity of 40 EC units. This groundwater inflow is entirely natural and has not been exacerbated by irrigation or land clearing (yet!). The groundwater originates in the underlying Renmark Group aquifer which is pressurised across the whole Murray Basin by recharge around the basin edge. The groundwater will be intercepted over the full depth of the Murray Group limestone aquifer adjacent to the river. The construction of the project is substantially complete and 36 bores are currently operational. Control of groundwater flows will be progressively achieved over 5 years.

Waikerie Salt Interception Scheme

This $12 m project has recently been approved for construction and work started in September '91. The project targets a salt load of 150 tonnes per day which is substantially caused by the impacts of irrigation on the saline groundwater in the Waikerie area of SA. Alternative proposals to address the problem through changed irrigation practices or alternative disposal of drainage water were found to be less economic.

The scheme involves 17 production bores along the southern side of the Murray River only. The groundwater will be intercepted in the lower Murray Group limestone aquifer, some 20 to 70 m below river level. Shallow water in the river alluvium is less saline and will not be collected because the higher volumes involved would have made the project uneconomic.

Some additional flow capacity has been provided to accommodate flows from additional works to protect the riverine environment from the impacts of irrigation induced soil salinisation. Investigations are continuing to define the high priority areas. The intercepted groundwater will be pumped to the Stockyard Plain Disposal Basin together with water from Woolpunda. The project is anticiapted to be completed by 1993.

Mallee Cliffs Salt Interception Scheme

This $9.4 m project is in NSW, about 30 km southeast of Mildura. A short length of the river adjacent to Lambert Island collects about 150 tonnes per day of salt from natural inflow. The inflow is concentrated by the pinching out of the Pliocene Sands aquifer against the Neckarboo Ridge (a basement high). Seven production bores are being constructed with a disposal basin 14 km away in the Mallee which is underlain by Blanchetown Clay. The scheme is due for completion in 1993.

The groundwater is being extracted from the Pliocene Sands aquifer which is in direct contact with the alluvial sands in this locality. The scheme will be operated intermittently depending on the current groundwater levels.

Mildura/Merbein and Buronga Interception Schemes

Enhancements are being made to these existing schemes in NSW and Victoria. The schemes target irrigation induced groundwater flows into the shallow alluvium. The schemes were originally commissioned in the late '70s. Opportunities for enhancement of both their interception capacity and their operational performance were recognised and incorporated into the Salinity and Drainage Strategy.

Ongoing Investigations

Several other salinity mitigation opportunities are being investigated. Proposals for the Chowilla floodplain area, Loxton irrigation area, Pike-Mundic and Bookpurnong irrigation districts are under investigation in South Australia. Several other proposals are being studied in both NSW and Victoria. These studies are funded by the Murray-Darling Basin Commission.

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