RIVERVIEW

We're moving! See back page for details.

No.4 SWAN RIVER TRUST Nov/Dec 1995

Does your group need training or speakers?

THE Swan River Trust – through the Swan/Canning Clean-up Programme – will assist community groups and volunteers to access training to help them take part in catchment planning and river restoration activities.

A community consultation project carried out by the Trust earlier this year indicates people are looking for extra skills and information in many areas, including better meeting skills, water quality monitoring, how to access funding, and bush regeneration.

There are a variety of relevant courses on offer around Perth and the south-west and the Trust would like to support groups to access these courses by assisting with registration, and where relevant, travel costs. To apply for assistance to attend a course, simply write to us before 31 December, telling us details of the training course including:

* course name, location and cost
* who wishes to attend
* how your group and its projects would benefit.

The budget is limited so we won't be able to provide assistance in every case. The main criterion for selection will be identified benefits, down the track, to the river water quality and environment.

If you need training that is not currently available, please let us know – your feedback will help us to plan events that are directly targetted to your group's needs.

continued page two ▷

Clean-up Task Force launched

Environment Minister Peter Foss recently launched the Swan/Canning Clean-up Programme Task Force – a multi-agency group set up to turn river research into action to tackle algae blooms in the Swan and Canning River system.

Task Force chairman, environmental consultant Des Lord, heads a team which includes senior officers from the Waterways Commission, Water Authority, WA Municipal Association, WA Estuarine Research Foundation, CSIRO, Ministry for Planning, Department of Environmental Protection, Agriculture Western Australia, and the Swan River Trust.

The Task Force will be the catalyst for the coordination of a variety of catchment and in-river research projects. The Task Force is supported by a coordinating group made up of the Clean-up Programme's project leaders. Members of the Task Force are pictured with Mr Foss (sixth from the left) at the launch on August 8.

Focus on Ellen Brook

The Ellen Brook catchment has been identified by the Swan River Trust since 1987 as the major source of nutrients, particularly phosphorus, entering the Swan River system. An excess of nutrients encourages weed growth and, increasingly over recent years, large blooms of microscopic algae.

Ellen Brook's unfortunate claim to fame has meant a great deal of activity is underway to tackle the nutrient problems at their source as well as to remove nutrient build-up in the sediments downstream. The Swan River Trust is working with other government agencies, local councils, farmers, community groups and the CSIRO to improve nutrient management in the catchment.

Soil and nutrient loss

The Ellen Brook area has predominantly sandy soils which do not retain phosphorus well. The Avon River region, on the other hand, has heavier soils full of iron and aluminium to which phosphorus readily clings.

According to Swan River Trust research[1], Ellen Brook contributes an average 26 tonnes of phosphorus each year, or 36% of the total of all phosphorus contributions from the catchments feeding the Swan-Canning River system.

The large nutrient input to the river from Ellen Brook is out of proportion to its streamload (6% of total) and its land area (715 square kilometres). In comparison, the Avon River catchment of some 120,000 sq km contributes 28% of total phosphorus to the river system from a streamload representing 62% of the total.

The remaining phosphorus enters the river from other catchments of the Swan and Canning Rivers, such as the Canning and Southern-Wungong River catchments and large urban drains such as Bayswater. Officers from the Swan River Trust have been monitoring 15 streams of the Swan-Canning catchment since 1987.

continued page two ▷

Focus on Ellen Brook

◁ *from page one*

What's being done?

There are many projects already underway in Ellen Brook to combat nutrient loss.

The **Swan River Trust** and **Agriculture Western Australia** recently commenced the development of a catchment management plan for Ellen Brook in cooperation with other departments, local government and the community. The catchment plan will provide guidelines for activities such as:

* amending sandy soils to improve nutrient holding
* managing fertiliser use and irrigation to reduce loss of excess water and nutrients
* managing grazing rates
* revegetation to control erosion and rehabilitate degraded streams and wetlands
* fencing remnant vegetation and streams from stock
* ensuring appropriate effluent treatment and reuse.

Trust catchment officer in Ellen Brook, Wes Horwood, has begun briefing local shires and community groups in the area about the project, and reports strong local support for the development of a management plan.

There is also a multi-departmental project being undertaken by **CSIRO, Swan River Trust, Agriculture Western Australia,** and the **Water Authority** into land use effects on the quality of water entering Ellen Brook. The four research areas are:

1. Monitoring water quality in Ellen Brook;
2. Rural land use/soil type effects on water quality;
3. Water quality of urban runoff;
4. Sediments and hydrochemistry.

Results from these projects will provide the base information upon which to select the specific landuse/soil types that should be targeted for management.

Agriculture Western Australia has a number of projects operating in the Ellen Brook area aimed at improving land use practices. These include:

* working with the Chittering Land Conservation District Committee (LCDC) to develop catchment plans and demonstrate alley farming (rows of trees interplanted with pasture or crops);
* developing a Land Management Plan for Ellen Brook and Twin Swamps to help landholders improve their farms and provide for the breeding grounds of the Western Swamp Tortoise;
* a network of shallow groundwater bores to monitor movements and concentrations of nutrients;
* an awareness campaign among landholders to manage fertiliser use more effectively;
* examining soil amendment using bauxite mining residue to help remove and hold nutrients in the soil;
* monitoring of turf farms and working with growers to develop appropriate management options.

The **Department of Environmental Protection** is working with the Swan River Trust and other agencies to prepare the Swan Environmental Protection Policy to set targets for the health of the Swan and Canning Rivers and their catchments. Other DEP activity in the Ellen Brook catchment includes:

* licensing and monitoring of large point sources of nutrient pollution, such as piggeries and sewerage treatment plants;
* assessment of development proposals to meet drainage and nutrient requirements;
* surveying remnant vegetation for further reserve/protection recommendations (System 6 Review);

Some of the **Water Authority** activities currently underway in Ellen Brook include:

* East Gnangara Mound Water Resources Allocation and Management Plan to determine environmentally sound groundwater allocation for private and public use;
* investigating ways to design/build nutrient removal ponds and drainage systems for new urban areas and to refit existing systems.

At 715.42 square kilometres, the catchment feeding Ellen Brook is the largest subcatchment of the Swan-Canning catchment. Ellen Brook discharges an average 37 million cubic metres of water into the Swan River every year representing 6% of the total water input to the river. Ellen Brook contributes an average 26 tonnes of total phosphorus to the river – or 36% of the total input across the 122,000 sq km Swan-Avon catchment. Because of its predominantly sandy soils, Ellen Brook contributes mainly dissolved phosphorus (water soluable as opposed to attached to sediment as is typical of the Avon's phosphorus contributions). That's 73% of the total dissolved phosphorus entering the Swan-Canning River system. [1]

Nutrients in the river sediment

Even if we could stop the nutrient load from Ellen Brook today, our problems with algal blooms downstream would not be solved. There now exists a large bank of nutrients in the river sediment which must be reduced if the risk of serious algal blooms is to be controlled. Various methods are being identified through the Swan/Canning Clean-up Programme Task Force to tackle the problem.

Further reading

[1] *Estimates of Nutrient Streamload in the Swan-Canning Catchment,* Swan River Trust Report No. 20, December 1994.

Action for the Future: The Swan and Canning Rivers Cleanup Program, Swan River Trust, July 1995.

For more information contact Wes Horwood, the Trust's catchment officer for Ellen Brook, on 327 9766. ■

Community training

◁ *from page one*

If you would like assistance to organise a speaker for your group's meeting or workshop, give us a ring and we will try to put you in touch with a suitable person or group with experience in the area of interest. Some funding is available to pay speaker's fees.

The Trust recognises the efforts of community group members who give of their own time – and often at their own expense. By offering some financial support to community volunteer speakers, we hope to encourage exchange between groups and recognition for those people dedicated to the health of our waterways.

To request a speakers fee, please write in with information on:

* the purpose of the meeting
* who is expected to attend
* and why you would like to pay a speaker.

There is no deadline on these requests. They will be assessed as they arise (subject to available funds).

For more information please phone our Community Relations Officer Tim Larcombe on (09) 327 9730.

THE list of disgarded rubbish regularly picked up by the Trust's hardworking field crew reads like a damage report from a tropical cyclone.

1994-95 – a big year on the ground

Field staff removed the following estimated amounts of rubbish and debris from our rivers and foreshores during 1994-95 financial year:

- 207 tonnes of domestic rubbish
- 46 tyres
- 23 tonnes of dead fish
- 120 syringes
- 469 tonnes of weed
- 3 dead animals (cattle and sheep
- 163 tonnes of tree branches from lopping and floating debris
- 12 shopping trolleys
- 5 derelict and abandoned boats
- 30 assorted metal containers
- 3 white goods (washing machine, refrigerator, microwave oven)
- 8 tonnes of *Cyperus vorstri* (similar to pampas grass)

The on-the-ground staff are stretched to the limit trying to protect and maintain around 300 kilometres of foreshore in the Swan and Canning River system. In 1994-95, Trust officers also reconstructed 100 metres of river wall, sealed 620 metres of river wall, planted 500 trees, and replenished 971 tonnes of sand to eroded beaches.

Pollution control is also an important activity carried out by the Trust and last year we responded to 151 pollution complaints – down 12% on the previous year. The complaints included oil spills (23), offensive odour (15), industrial discharge (16), chemical spills (3), and sewage discharge (12).

There are many activities happening daily that contribute to the health of our river system. The Swan River Trust has hardworking staff on the ground carrying out foreshore restoration, rubbish removal and revegetation. Sometimes they work alone and sometimes in partnership with other groups in the community. But not all the work is done by the Trust. In many areas of the Swan-Canning Catchment, community groups are working to make their backyard a more environmentally friendly place to live.

ABOVE Officers from the Waterways Protection and Enhancement division of the Swan River Trust removing an abandoned boat from the Canning River. Next stop? The local tip ... an ignominious end to a once proud vessel.

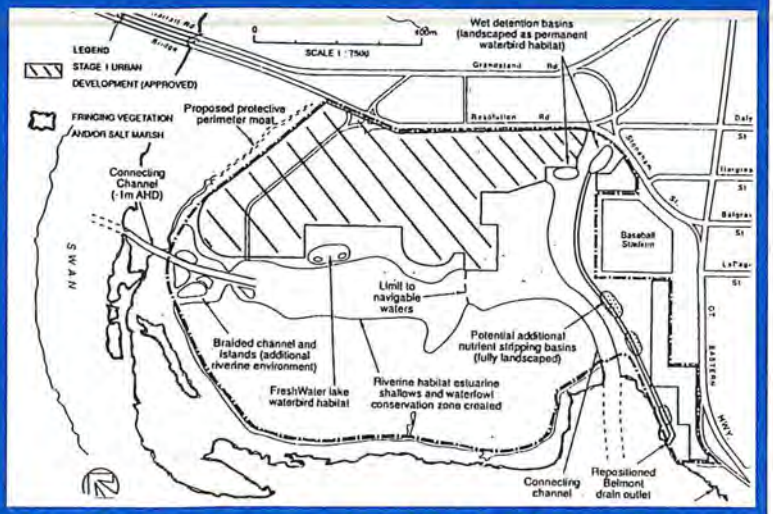
BELOW John Forrest Senior High School students getting their hands into the steep banks of Morley's Russell Street artificial wetland filter project during a planting day in August. The project is part of the Bayswater Integrated Catchment Management (BICM) strategy to improve water quality in the urban catchment.

Cleaning up our waterways

ABOVE In September members of the Kalamunda Nature Reserves Preservation Group joined with friends from the Australian Trust for Conservation Volunteers to tackle watsonia weed at Gooseberry Hill's Quenda Creek. The occassion also provided the backdrop for the launch of a new poster on controlling weeds in our waterways and wetlands.

The poster has been developed by the Trust in partnership with the Department of Environmental Protection. It features pictures and information on control methods for the worst introduced plants currently devastating our rivers and streams – including problem vines like morning glory and bridal creeper and trees such as the poplar and castor oil bush. The colouful poster is available free by calling the Trust on 327 9728.

From rubbish tip to Ascot Waters



Until its closure in 1982, the Belmont tip was a dumping ground for household and building waste. Now the old tip is being transformed to become the focal point of a $20 million housing development. The Swan River Trust is involved in monitoring the site to keep an eye on any leachates that might find their way into the river system.

FROM the beginnings of European settlement along the Swan, the river foreshore was used as a dumping ground for the refuse of modern civilisation.

But it wasn't until the 1950s that local authorities began reclaiming the flood plain and wetlands along the foreshore in any strategic way. From 1952 to the middle of the 1980s, 12 tip sites along the foreshore were dumping grounds for household, industrial and building waste. The Swan River Trust worked to close the tip sites to clean up river pollution.

Like many other old sites, the Belmont tip will become recreational parkland, accessed from a major housing development by bridge. A canal will separate the parkland from the Ascot Waters housing estate.

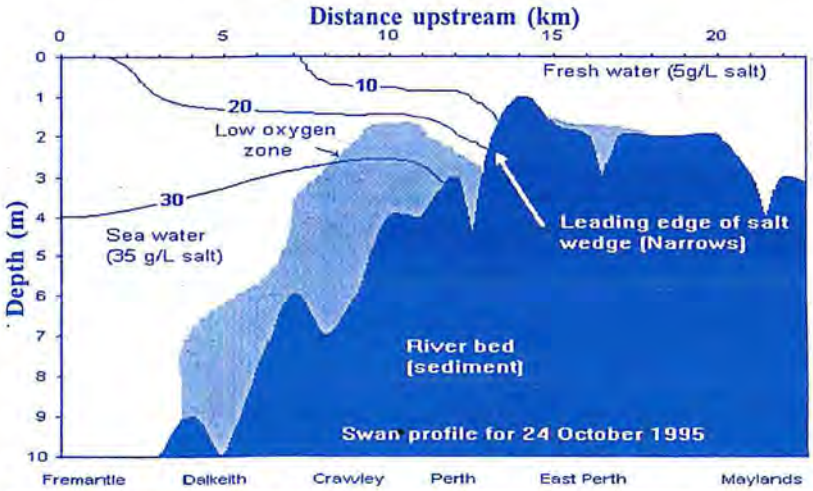
While there have been concerns raised through the media about the possibility of hazardous chemicals leaching into the river and threatening nearby wetlands, Trust monitoring of the site has shown little cause for worry at this stage. A clay cap will be laid across the top of the tip site before landscaping begins to limit any possible disturbance.

As part of the Ascot Waters construction phase, dewatering is necessary to allow site excavation for the artificial waterway. Under existing approval conditions, all dewatering activities should comply with the Trust's Dewatering Guideline No. 7 which requires the developer to meet acceptable discharge criteria. Monitoring parameters include: pH, conductivity, dissolved oxygen, suspended solids, nutrients, organochlorine pesticides, petroleum hydrocarbons, and selected heavy metals.

Swan River Trust Pollution Control Officer Stephen Wong said the approved discharge location is the Central Belmont Main Drain which flows into the Swan River.

"Monitoring results have not shown significant levels of toxic metals, nutrients or other organic compounds that may affect water quality in the river," Mr Wong said. "This is checked by weekly water quality monitoring in the river to detect any potential offsite impact from the current activities."

Seasonal salt 'wedge' shifting upstream



AS WINTER rain eases, a front of ocean water begins its seasonal movement upstream like a wedge sliding under the lighter fresh water coming downstream from the catchment.

At the leading edge of the salt wedge, the lack of mixing between salt water and fresh water characteristically leads to a deficiency in oxygen levels, or anoxia. Severe anoxia may result in the release of nutrients previously bound to sediments, as well as causing stress to underwater plants and animals.

As the nutrients rise through the water column, they reach areas of higher oxygen and light in the fresh water layer, often leading to growth in microscopic algae. During spring, as the salt wedge made its way through Perth Water, a low-density bloom of non-toxic dinoflagellates covered the river between the Causeway and the Narrows Bridge. This is a common seasonal event.

As *RiverView* went to print, the tip of the salt wedge was located near the Narrows (see diagram) – pushed back from further upstream by a late season rain event on 17 October.

Trust officers regularly monitor water quality in the river. Water samples are taken and checked for oxygen levels, salinity, algae and a variety of nutrients, metals and chemicals. ■