

rewater

farming with recycled water



Using Reclaimed Water in the Goulburn Valley

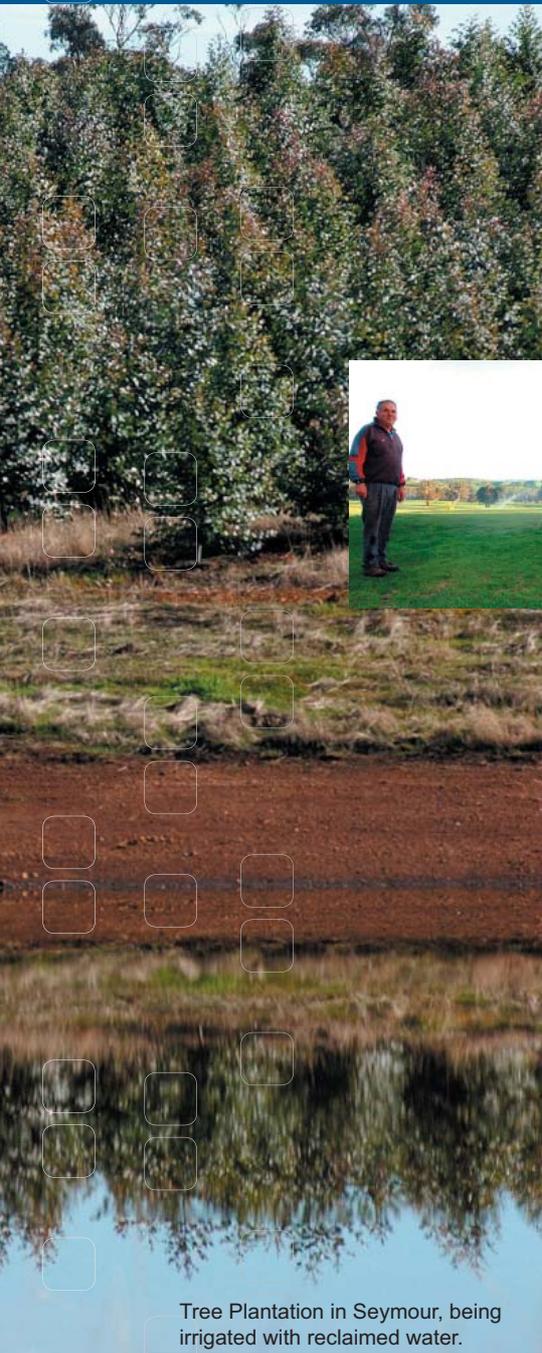
Goulburn Valley Water operates 27 Wastewater Management Facilities (WMF) in northern Victoria treating wastewater from a mixture of domestic and industrial sources. For a number of years reclaimed water has been supplied for irrigation use to a range of agricultural pursuits.

The Goulburn Valley region is widely recognised as the “foodbowl” of Australia and is renowned for its fruit, dairy and fat lamb production industries, all of which are reliant on irrigation water.

The value of reclaimed water and the nutrients it contains, was recognised by Goulburn Valley Water more than 15 years ago. The development of a number of trial irrigation areas at the Shepparton WMF was a catalyst for the expansion of reclaimed water irrigation at other WMFs in the region.

Reclaimed water is used to grow pasture which is grazed by sheep, beef and dairy cattle. Maize and lucerne is also grown and harvested to provide alternative feed for farm stock. At Shepparton, Broadford, Seymour, Tatura and Marysville reclaimed water is used to irrigate woodlots, some of which will end up as highly valuable timber products. Reclaimed water is also used to keep golf courses lush and green in Seymour, Yea and Mansfield.

continued page 3



Yea Golf Club using reclaimed water for irrigation of fairways, greens.

Tree Plantation in Seymour, being irrigated with reclaimed water.



Minister helps Stanthorpe reuse more wastewater

Media release (17 November 2004) The Hon. Desley Boyle MP, Minister for Local Government Environment, Local Government, Planning & Women, Qld

Farmers will have irrigation water on tap and Stanthorpe's waterways will be healthier now the shire's wastewater treatment plant has been upgraded.

Local Government Minister Desley Boyle officially opened the upgraded plant today, which will allow Stanthorpe to reuse more than three times the amount of wastewater it reuses now.

Ms Boyle, who also is the Environment Minister said: "This project has great benefits for both farmers and the environment."

"The upgrade increases the capacity of the wastewater treatment plant, allowing it to reuse 431 megalitres of wastewater each year - up from 95 megalitres in 2002."

"Farmers in the Border River catchment now have access to a constant water supply and, by re-using the wastewater, less is flowing into local creeks, which is a great win for the environment."

"The Beattie Government contributed \$1.38 million to the cost of the \$3.46million project."

"Work involved installing pumps, pipelines and control equipment to supply treated wastewater from the wastewater treatment plant to farm boundaries for irrigation on crops.

"I congratulate Stanthorpe Shire Council for developing smart ways to reuse wastewater."

Ms Boyle said the council already reused treated wastewater to water sports grounds, golf courses, the lawn cemetery and the high school agricultural area.

State Government funding for the project came from the Local Governing Bodies Capital Works Subsidy Scheme.

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features

Using Reclaimed Water in the Goulburn Valley.

Page 1

Minister helps Stanthorpe re-use more wastewater.

Page 2

Agriculture Minister celebrates farm of the future.

Page 4

press round up Australia
Water and Wastewater Prices in South Australia.

Page 5

press round up Overseas
Affordable Desalination Project Launched.

Page 6

events

Membranes & Desalination

Page 7

20th Annual WaterReuse Symposium

Page 8

special events

On-site '05 Conference.

Page 9

From the editor

ReWater has been developed in recognition of the growing interest in the use of reclaimed water in agriculture.

We would like ReWater to become a forum for you to communicate your thoughts about the beneficial use of reclaimed water.

If you would like to receive a copy of ReWater electronically, email us at rewater@reclaimedwater.com.au

If you have articles, ideas or would like to raise issues in the letters to the editor, submit them to the Coordinator for Reclaimed Water Development, Horticulture.

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from page 1

Using Reclaimed Water in the Goulburn Valley

Approximately 70% of Goulburn Valley Water's reclaimed water from the 27 WMFs is reused. Reuse in this context is the percentage of all treated wastewater available for irrigation that is not returned to a waterway. This formula, as opposed to the use of just inflow and irrigation data, reflects the significant impact that evaporation has on the large winter storage lagoons.

In 2003/2004 more than 7,100 megalitres of reclaimed water was reused for irrigation. Around 30% of this reclaimed water volume was used by third party users who have an agreement with the Authority to receive a certain amount of reclaimed water each year. Goulburn Valley Water currently has 14 Third Party Agreements which have been approved by EPA meeting the requirements of their Use of Reclaimed Water guidelines.

The balance of the reclaimed water use has been undertaken on sites owned by Goulburn Valley Water. At some WMF's, Goulburn Valley Water has leased out irrigation land to farmers under second party lease agreements and the farmer is responsible for the management and irrigation of the site. At the other WMF's, Goulburn Valley Water owns and operates the farms using their own staff to manage the properties and the irrigation.



Goulburn Valley Water employee reviewing crop grown by a Third Party User using reclaimed water.

The reclaimed water quality varies at each WMF as do the soils under irrigation. Table 1 provides an indication of mean reclaimed water quality at a number of the WMF's for the period 2002-2004. These results, along with soil and groundwater level and quality are reviewed annually to ensure the long term sustainability of the reclaimed water irrigation sites is maintained. Any sites where issues are identified are further investigated and remediation plans developed and implemented.

A number of research trials investigating issues relating to the use of reclaimed water in agriculture and forestry have been undertaken at the Shepparton WMF.

These trials have been undertaken in conjunction with staff from various Victorian government departments including Department of Sustainability and Environment, Department of Primary Industries and Environment Protection Authority. Numerous scientific reports and publications have been produced as a result of work at the Shepparton site.

All up, the reclaimed water is a significant resource and the increase in net value of agricultural production as a result of the use of Goulburn

Valley Water's reclaimed water is estimated to be more than \$1.5M per year.

Table 1. Mean Reclaimed Water Quality at Selected Goulburn Valley Water STP Sites. (2002-2004)

Parameter	Units	Cobram	Euroa	Kyabram	Nathalia	Nagambie	Numurkah	Shepparton	Tatura ^a	Tongala ^b
pH		8.3	8.5	9.1	8.7	8.4	8.8	8.5	9.0	8.0
Electrical Conductivity (EC)	uS/cm	855	766	832	1,904	417	1,233	1,454	2,937	1,850
Total Dissolved Solids (Gravimetric)	mg/L	506	524	460	1,084	370	848	848	1,690	1,080
Sodium Adsorption Ratio (SAR)		4.9	6.7	9.0	7.2	3.6	11.0	5.1	18.3	9.1
Biochemical Oxygen Demand (BOD) (5 day)	mg/L	18	68	53	64	28	54	70	99	300
Filtered BOD ₅	mg/L	8	21	20	16	10	13	16	26	87
Suspended Solids	mg/L	23	60	115	95	51	65	94	169	190
Total Kjeldahl Nitrogen	mg/L	6.9	9.0	12.9	23.1	4.9	14.7	15.2	25.8	54.8
Ammonia	mg/L	3.2	2.9	8.4	10.4	-	3.6	2.6	3.6	26.2
Nitrate	mg/L	0.8	1.6	0.2	0.4	3.1	1.6	1.5	1.2	6.8
Total Phosphorus	mg/L	7.1	11.9	4.7	5.8	3.1	3.5	3.5	5.9	26.0

Tatura reclaimed water is shandied 2.5 to 3:1 with freshwater (200uS/cm EC)

Tongala reclaimed water is shandied 1:1 with freshwater (200uS/cm EC)

Agriculture Minister celebrates farm of the future

Media release from Western Water, Victoria, 23 November 2004.

The Hon. Bob Cameron MP, Minister for Agriculture (Victoria), today unveiled a new era of sustainable farming for the region, with the commissioning of the Romsey/Lancefield Recycled Water Project.

One hundred percent of the water recycled at the Romsey Wastewater Purification Plant will be used to irrigate the adjacent Romsey Farm, which has been leased by Sunbury's Salesian College as an education facility since January 2003. Western Water Chairman Terry Larkins said today was an important milestone for Victoria's recycled water industry.

"Western Water has been at the forefront of wastewater recycling in Victoria from the outset, and it is great to be raising the benchmark once again with this new partnership between industry and education," he said.

The Romsey Purification Plant and Farm received a \$3.2 million upgrade in response to the addition of sewage flows from the recently commissioned Lancefield Sewerage Scheme.

Mr Larkins said a lot of time and effort had gone into upgrading the wastewater infrastructure to cater for the increased flows to the plant and deliver a state of the art water recycling system.

"The upgrade has provided extra lagoon capacity for storing recycled water during the wet season and allowed the productivity of the farm to be expanded. "On the farm itself, a 500-metre central pivot spray irrigation system has been put in place, which has its own in-built weather station to monitor wind speed and rainfall and prevent watering during high winds or when it is raining. "The pivot has a kilometre wide irrigation span and can irrigate 75 hectares of crop or pasture," he said.

The 20-year old farm has also kept a small growing area as an example of crop performance using flood irrigation.

Salesian College Principal, Fr Greg Chambers, said the Romsey Farm lease has enabled Salesian College agricultural students to learn about recycled water.

"Students are learning about the use of recycled water for irrigating pasture and fodder production, to support the school's cattle herd, as well as producing animal feed for sale to the wider farming community," Fr Chambers said.

"The upgraded farm property will provide students with hands-on experience in best practice use of recycled water and its application to sustainable farming.

"Government and industry are increasingly looking to invest in recycled water initiatives and there will be many future opportunities for graduates with experience in recycled water management," he said.

Students are also participating in a wider community Landcare project to revegetate the Deep Creek escarpment, which runs through the Romsey Farm property.

"This will help students understand and appreciate the relationship between good farm management and environmental protection and conservation," Fr Chambers said.

Western Water Chairman Terry Larkins said it would be exciting to watch progress on the Romsey Farm over the coming years as it develops into a showcase for different irrigation methods using recycled water.

"Our partners, Salesian College, will ensure young minds find even better ways of recycling and conserving water and developing new growing practices using the world's most precious resource", he said.

Media inquiries

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Australia

Water and Wastewater Prices in South Australia

From LAWLEX Water Newsfeed 5/1/05

The SA Department of Treasury and Finance has released its report on Water and Wastewater Prices in Metropolitan and Regional South Australia 2005 - 06 (December 2004)

www.treasury.sa.gov.au/water/pdf/TStatement_2005_06.pdf

Queensland (AU) Timber Plantations Irrigated with Recycled Water

www.watereuse.org/news/wrnews_110504.htm

Forestry researchers in Australia from the Department of Primary Industries and Fisheries (DPI&F) recorded impressive results after using wastewater effluent in timber plantations, with trees in some areas growing up to 9 m in less than two years, a 30 percent increase in growth compared with rain-fed plots at the demonstration sites which were providing local authorities with a practical and sustainable solution to recycling treated sewage effluent. Research and procedures for the trials have been guided by information in the EPA's Environmental Protection (Water) Policy 1997 and Queensland Guidelines for the Safe Use of Recycled Water. Tree harvesting is being looked at in Queensland as an environmentally friendly energy source. Additional information is located in the DPI&F publication "Using recycled water to irrigate hardwood plantations in Queensland." For further information, call Mark Podberscek: (07) 5482 0866, or e-mail mark.podberscek@dpi.qld.gov.au.

Expert Urges Promotion of Water Recycling and Conservation

ABC News: *Expert urges better national use of water* (10 November 2004)

ABC News reports that Canberra based water policy expert Paul Perkins has said in a water industry seminar, that Australia should take the lead in the promotion of water recycling and conservation. According to ABC News, the seminar was aimed at finalising a package of ideas to be put before Government policy advisers next month and adoption of water-saving technologies needs to be expanded and fast-tracked.

State Guidelines to assist irrigators and inland water users in preparing land and water management plans

From AWA News 14 November

Dept of Natural Resources & Mines (Qld) has released for public comment, the new draft State Guidelines to assist irrigators and inland water users in preparing land and Water Management Plans as required before water allocations can be actioned.

www.nrm.qld.gov.au/resourcenet/

See 'Topical Issues' or pH 0427 607 704

\$2Billion Australian Water Fund.

From AWA News week ending 19th December, 2004.

The 2004 parliamentary year ended with by passage of the National Water Commission Bill. The Commission which will be an independent statutory body that will assess the implementation and promote the objectives of the National Water Initiative. It will also provide advice on projects to fund under the \$2 billion Australian Water Fund.

www.ministers.dotars.gov.au/ja/releases/2004/December/a176_2004.htm

"Water Proofing" Strategy Focuses on Reuse

From Water Reuse News Nov 30, 2004.

www.watereuse.org/news/wrnews_113004.htm

The South Australian Government initiated the "Water Proofing Adelaide" project to explore water issues facing Adelaide and the surrounding semi-rural areas and to develop a blueprint for the management, conservation, and development of Adelaide's water resources to 2025. The aim of the project is to gather information necessary to make "sound decisions that are effective, affordable, and socially and environmentally responsible." A recently released draft blueprint, titled, "A Thirst for Change" is based on a year of focused research and community consultations.

The draft blueprint focuses on three strategies:

- 1) double the reuse of treated wastewater
- 2) increase the reuse of stormwater
- 3) reduce demand through conservation

The blueprint also identifies a number of initiatives to meet these targets. Comments on the Water Proofing Adelaide draft strategy will be accepted until January 31, 2005. The strategy can be downloaded from the Internet at:

www.waterproofingadelaide.sa.gov.au/main/publications.htm.

A final strategy will be released in March 2005.



continued page 6

from page 5

2004 Australian Drinking Water Guidelines released

From LAWLEX Water Newsfeed 15/12/04

The National Health and Medical Research Council (NHMRC) has released the 2004 Australian Drinking Water Guidelines (10 December 2004) to provide the Australian community and the water supply industry with guidance on "what constitutes good quality drinking water".

Source: NHMRC

www.nhmrc.gov.au/publications/synopses/eh19syn.htm

Drinking Plan using Treated Wastewater

From LAWLEX Water Newsfeed 15/12/04

ABC News reports that the WA Water Corporation is considering a plan to "divert up to 50 gigalitres of treated wastewater, that is normally pumped into the ocean, back into the Gnangara and Jandakot mounds" to boost Perth's drinking water supplies, they have asked "the Health Department and the Environmental Protection Authority for advice". According to ABC News, the State Government said that the plan would only proceed if there were no health risks involved. *ABC News: WA considers using treated waste water for drinking (11 December 2004).*

Overseas

Affordable Desalination Project Launched

From Water Reuse News Nov 30, 2004

www.watereuse.org/news/wrnews_113004.htm

The Affordable Desalination Collaboration (ADC) Project held a summit on November 4, 2004 to launch efforts to promote affordable, low-energy desalination. ADC includes a diverse group of desalination interests from both the public and private sectors including the U.S. Naval Facilities Engineering Service Center Seawater Desalination Test Facility, West Basin Municipal Water District, California Department of Water Resources, California Energy Commission, Office of Naval Research, and the U.S. Bureau of Reclamation. ADC is planning to build and operate a full-scale demonstration plant that uses a unique combination of technologies to show that seawater reverse osmosis can be energy and cost competitive with traditional sources of fresh water. For more information on the ADC, contact John MacHarg, Energy Recovery, Inc. at 510-483-7370 or jmacharg@affordabledesalination.com

DHS Releases Draft Recycled Water Regulations

From WaterReuse News.

www.watereuse.org/news/wrnews_122904.htm

California's Department of Health Services (DHS) recently posted on its website updated draft regulations addressing groundwater recharge of recycled water. The updated draft regulations are on DHS website: www.dhs.ca.gov/ps/ddwem/publications/waterrecycling

Recharge of groundwater with recycled water

From WaterReuse News December 29, 2004

www.watereuse.org/news/wrnews_122904.htm

California has released a draft that reflects the Department of Health Services' current thinking on the regulation of recharge of groundwater with recycled water.

www.dhs.ca.gov/ps/ddwem/publications/waterrecycling/rechargeregulationsdraft-12-01-04.pdf

EPA Expands Its Chemical Pollutants Website

From WaterReuse News December 29, 2004

<http://epa.gov/nerlesd1/chemistry/pharma>.

The U.S. Environmental Protection Agency (EPA) recently updated a webpage devoted to pharmaceuticals and personal care products (PPCPs) as environmental pollutants. EPA established this website to define the full scope of the scientific issues involved with PPCPs in the environment, to further the scientific dialog and debate in determining the importance of the topic with respect to environmental pollution and is also intended to enhance the public's overall awareness and understanding of the origins of chemical pollution and their individual roles in its causes and prevention.

European Desalination Newsletter Available

From WaterReuse News December 29, 2004

www.edsoc.com/news.htm.

The European Desalination Society's October 2004 Newsletter is available online at: www.edsoc.com/news.htm. The newsletter addresses current desalination topics and features articles on reducing energy costs, reducing energy consumption, and new reverse osmosis technologies.



Water for a Sustainable Future - the Role of Recycling

February 8-9, 2005. Melbourne

<http://prodmams.rmit.edu.au/d2g835wk2azm.pdf>

RMIT University and the University of California and Los Angeles are holding a Water Workshop: Water for a Sustainable Future - the Role of Recycling on 8-9 February, 2005. Practitioners, policy makers, and researchers involved in the use and promotion of water recycling in industrial, rural and/or urban environments are invited.

Membranes & Desalination

February 23-25, 2005. Adelaide

www.awa.asn.au/events/desal/

Registrations are now being received for AWA Specialty Conference Membranes & Desalination, Adelaide, February 23-25, 2005. Three very full days of presentations on "hot topics" membranes, reverse osmosis, seawater desalination, MBR and wastewater reuse application's latest program and Registration brochure at available from: desal@awa.asn.au



Determining low level nutrients in water

February 10-11, 2005. Melbourne

From AWA News week ending 19th Dec.

A Workshop/Conference on the determination of Low Level Nutrients in Water will be held at Hilton Melbourne Airport Conference & Events Facility on 10-11 February 2005 will be presented by NLLNCT established in 1993 to meet the need for proficiency testing programs for nutrient analyses at environmental levels. The workshop is supported by the CRC for Water Quality and Treatment.

Enquiries: Dan_Wruck@health.qld.gov.au

Ozwater Conference

May 5-12, 2005. Townsville and Brisbane

From AWA News week ending 19th Dec.

www.awaozwater.net

Online registration for Ozwater (Townsville 5-7 May 2005 & Brisbane 8-12 May 2005) NOW OPEN. Printed registration brochure by mid-January. Note: the closing date for the supersaver rate is 15 February 2005. To qualify, your registration and payment must be received by this date, so why not start today.

Some definitions

To clarify the use of recycled and reclaimed in our articles.

Reclaimed water: Water taken from a waste (effluent) stream and purified to a level suitable for further use.

Water reuse: Beneficial and planned use of a water source for a second, different purpose (especially on-site). For example, reuse of household greywater for garden irrigation.

Water recycling: A generic term for water reclamation and reuse. This term can also be used to describe a specific type of "reuse" where water is recycled and reused again for the same purpose (e.g. recirculation systems for washing and cooling, with or without treatment in between).

continued page 8

from page 7

20th Annual WaterReuse Symposium September 18-21, 2005. Denver, USA www.WateReuse.org

The WaterReuse Association released a "Call for Papers" for the 2005 WaterReuse Symposium, which marks the 20th anniversary of the conference. The WaterReuse Symposium, the world's preeminent conference devoted to water reuse and now expanded to include desalination, is also sponsored by the American Water Works Association and the Water Environment Federation.

The theme for the 2005 Symposium, which will held at the Hyatt Regency in Denver on September 18-21, 2005, is "Water Reuse & Desalination: Mile-High Opportunities." The Symposium includes technical sessions on water reuse and desalination, workshops, networking receptions, and technical tours of innovative water reuse projects.

Abstract instructions, including submittal form and water reuse and desalination subject areas, can be downloaded from the WaterReuse Association's website at www.WateReuse.org. To be considered, abstracts must be received by February 9, 2005.

To obtain the Call for Abstracts, please visit www.watereuse.org/pdf/05wrasym-cfp.pdf

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On-site '05 Conference
September 26 to 30, 2005. Armidale, NSW.
www.lanfaxlabs.com.au/onsite05

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Theme "Performance Assessment for On-site Systems: regulation, operation and monitoring" to be held at the University of New England, Armidale NSW.

International keynote speaker Dr Richard Otis, from Ayres Associates, Wisconsin USA, will lead three other keynote speakers: Ted Gardner, -Department Natural Resources and Mines, Queensland; John Lawrey, EWS Environmental in Melbourne, ex VicEPA; and Andrew Dakers, ecoEng Limited, Christchurch NZ.

A total of 50 oral presentations, two workshops and trade displays will occupy three full and exciting days, with more than 220 delegates expected to attend from all parts of Australia, New Zealand and several from USA. Each of the three previous conferences were attended by over 200 delegates. An optional technical tour is held on the Friday.

A Gold Sponsor of the event is the National On-site Systems Interest Group (NOSSIG) and Lanfax Laboratories is coordinating the event as for the previous three events.

This conference marks the biennial meeting of professionals in the field of domestic wastewater treatment with manufacturers, regulators, technicians, academics and private researchers. The 50 papers are expected to cover diverse fields such as greywater treatment, soil based systems, water chemistry, septic systems, aerated wastewater systems, compost toilets, wetlands, monitoring and annual assessments, regulation and current guidelines, education and training.

A call for papers is presently open to persons wishing to disseminate their research across the profession and to a captured audience of like minded people. Details of the conference and a printable brochure are available at: www.lanfaxlabs.com.au/onsite05 or by contacting the coordinator, Dr Robert Patterson: rob@lanfaxlabs.com.au



The delivery of research and development outcomes from this project to the horticultural industry is made possible by the Commonwealth Government's 50 % investment in all Horticulture Australia's research and development initiatives.

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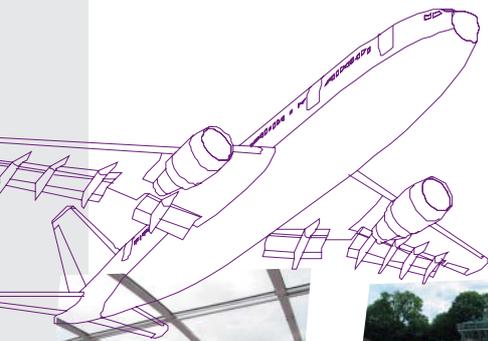
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special events

recycled water tour 05

singapore usa mexico



enjoy



learn



see



travel



culture

Experience a range of water recycling technologies, regulatory frameworks, communication programs, innovative water and wastewater management options. This tour will give you access to several of the leading recycled water facilities in the "world" and the people that develop, operate and maintain them.

Departs Australia – 28th May 2005

Singapore – 1 day

Singapore is a small island with a relative small catchment area. It imports half of its water from Malaysia. They see desalination as a future resource, but have also commissioned a NEWater factory that consistently and reliably produces water that is safe for potable uses. A small portion of the NEWater is currently supplied reservoirs used for potable water.

On Tour you will see NEWater being made, the technology behind it and learn more about the world leading and innovative communication program that has accompanied NEWater's introduction to Singapore.

Florida – 5 days

Florida, with a population of 16 million, is the fourth most populous state in the US, and the second-largest user of recycled water after California. Recycled water use has increased rapidly since 1986.

On Tour you will meet a range of people who will share their years of recycled water experience related irrigation (citrus orchards, open spaces, commercial nursery) and wetlands, and rapid infiltration basins for ground water recharge of recycled water.

Dinner Speakers: Regulatory framework from local EPA and DHS.

Mexico – 2 days

Water has emerged as a major issue between the United States and Mexico. One solution could be to use the clean water from rivers or aquifers for the city only (where possible) and then use the water reclaimed from the city's wastewater for farmland irrigation. Mexico is currently developing and running a range of recycled water schemes throughout the country.

On Tour you will meet the people who will share their years of recycled water experience related to industrial reuse and agricultural irrigation.

California – 4 days

California has a long history of water recycling, beginning in 1912. In 2000, with a population of 35 million, approximately 600 GL of recycled water is being used across over 4800 locations from 234 wastewater treatment plants. Recycled water, will be a crucial component of any future develop.

On Tour you will see the schemes and meet the people who have years of recycled water experience related to irrigation of vegetable and landscapes with recycled water, industrial reuse, stormwater bypass and use, and recreational reuse.

Dinner Speakers: Regulatory framework from the EPA and DHS

** At selected sites the tour will also visit Water Authorities to examine wastewater treatment and management*

Cost

Economy/Single \$11, 722 ex. GST
Economy/Twin Share \$10, 900 ex. GST

Includes:

Flights, buses, accomodation and food.

Official tour ends Saturday 11th June 2005 arriving Australia 13th June 2005

Or Participants can choose to stay on at their own cost for:

Worlds Water Event. AWWA Annual Conference and Exposition, San Francisco, California, June 12-16.
www.awwa.org/ace2005/

Enquires Brochure and registration forms can be emailed on request or downloaded at www.recycledwater.com.au
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