



**Melbourne
Water**

Environmental Compliance

Quarterly Report

January-March 2000

1.0 Water

1.1 Major Incidents & Issues

Nil

1.2 Statutory Compliance

State Environment Protection Policy Requirement for Passing Flow in the Yarra River at Warrandyte

Melbourne Water is required by Schedule F7 (Waters of the Yarra Catchment) of the Waters of Victoria State environment protection policy to provide for, to the extent practicable, a flow of no less than 245 ML/day in the Yarra River downstream of the Yering Gorge diversion. The gauge at Warrandyte is used to measure performance against this requirement.

In accordance with the Yarra Drought Response Plan, when flows at Warrandyte fall below this level, Melbourne Water ceases filling Sugarloaf Reservoir from Yering Gorge Pumping Station. During the quarter, Melbourne Water complied with the State Environment Protection Policy requirement and did not operate the Yering pumps when this would have resulted in less than 245 ML/d at Warrandyte. However, despite not operating the Yering pumps, the minimum flow at Warrandyte was 201 ML/d on 13 March 2000 due to the low rainfall and streamflows in the Yarra basin.

The Yarra Drought Response Plan also requires Melbourne Water to manage diversions from the Yarra by applying progressively tighter restrictions. Level One requires diverters to implement their drought contingency plans and this was enforced on 8 March 2000. Level Two restricts diverters pumping time and rosters diverters to specific days and this was applied on 26 March 2000.

The flow of the Yarra has been managed “to the extent practicable” (as specified by EPA) according to Melbourne Water operating procedures and the Drought Response Plan and is not considered a breach of either the State environment protection policy or Melbourne Water operating procedures. The fall in the Yarra River’s flow at Millgrove and Warrandyte was due to the extended period of dry weather. Section 1.3.1 has more detail on this issue.

1.3 Corporate Compliance

The table below outlines compliance with passing flow requirements at various sites. Some of these passing flows may vary due to the Yarra bulk entitlement conversion process.

Melbourne Water Passing Flow Compliance
Quarter Three 1999/2000

Site	Passing Flow (ML/d)	Actual Min. Flow (ML/d)	Compliance	Comments
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RESERVOIRS:

Cardinia Res. to Cardinia Ck	5	5	√	MWC agreement with former SR&WSC
Maroondah Res. to Watts R.	1	1	√	MWC operating rule - 1 ML/d released via ungauged outlet pipe
O'Shannassy Res. To O'Shannassy R.	4	4	√	MWC operating rule - 4 ML/d released via ungauged outlet pipe
Silvan Res. to Olinda Ck	2	2	√	MWC operating rule - 2 ML/d released via ungauged outlet pipe
Tarago Res to Tarago R At Scalp Ck	5	45	√	MWC agreement with former SR&WSC
Thomson Res. To Thomson R: • Below Dam • At Narrows • At Coopers Ck	25 120 200	102 188 192	√ √ x*	MWC agreement with DNRE and Southern Rural Water.
Toorourrong Res. to Plenty R.	0.2	0.2	√	MWC operating rule - 0.2 ML/d released for stock
Upper Yarra Res. to Yarra R: • Upper Yarra Dam ¹ • At Millgrove ² • At Warrandyte ³	10 98 245	10 93 201	√ √*** √****	¹ MWC operating rule since 1993. ² Based on past agreement with the SR&WSC ³ 1999 SEPP requirement

WEIRS[†]:

* ** *** See Section 1.3.1 for details

Armstrong Ck Weir	5	5	√	MWC operating rule
Coranderrk Ck Weir	3	3	√	MWC operating rule – via ungauged outlet pipe
Donnelly Ck Weir	1	1	√	MWC operating rule– via ungauged outlet pipe
Graceburn Ck Weir	3	3	√	MWC operating rule. Reduced to 1ML/d in times of low flow and high demand from Healesville
McMahons Ck Weir	2	2	√	MWC operating rule
Silver Ck Weir	1	1	√	Bulk Entitlement provision - 1 ML/d is released when streamflow is 4 ML/d or greater
Starvation Ck Weir	2	2	√	MWC operating rule
Wallaby Ck Weir	1	1	√	Bulk Entitlement provision - 1 ML/d is released when streamflow is 2 ML/d or greater

[†] Flows from weirs are either the table's passing flow or natural inflows if less than this.

1.3.1 Notes on Quarter 3 Passing Flow Compliance Table

**Coopers Creek*

Under the Thomson Memorandum of Understanding, Melbourne Water is required to release water from Thomson Reservoir to satisfy minimum passing flow requirements in the Thomson River at the dam, the Narrows and Coopers Creek sites. The specified minimum flows vary for different months and a flow of 200 ML/d is specified for the Coopers Creek site in January. Coopers Creek is approximately 25 kilometres downstream of the dam and the travel time for these releases is approximately 12 hours. Thomson dam releases are adjusted daily to account for the distance of the gauge downstream, the travel time and downstream river inflow and losses. As a result of operational difficulties in estimating the required dam release and limitations in the gauging equipment at Coopers Creek, there were two days (12 & 14 January 2000) when the flow was below the required minimum. The minimum flow was 192 ML/d and the average daily flow at Coopers Creek for January 2000 was 224 ML/d.

***Millgrove*

The Melbourne Water operating rule for Millgrove is to attempt to maintain a minimum passing flow of 98 ML/d in the Yarra River at Millgrove by progressively ceasing harvesting from Armstrong, McMahons and Starvation weirs. On the 2 days in which Millgrove flows were 93 ML/d, McMahons and Starvation weirs were not being harvested. The required minimum of 5 ML/d was being released from Armstrong and additional releases from Armstrong would have resulted in silt-laden water going into the river. To compensate, an additional 10 ML/d was released from the Upper Yarra Aqueduct to supplement the regular 5 ML/d release from Armstrong Weir. Transmission losses and difficulty in estimating the travel time taken by the additional releases contributed to the Millgrove flows being below 98 ML/d for two days during the quarter.

****Warrandyte*

As discussed in Section 1.2 of this report, Melbourne Water complied with the State Environment Protection Policy requirement for Yarra River flows at Warrandyte by not operating the Yering pumps during a period in which this would have resulted in flows below 245 ML/d. However, despite this, the minimum flow was 201 ML/d due to the low rainfall and streamflows in the Yarra basin. The flow in the Yarra River was below the minimum for a period of 25 days, 5 days in February 2000 and 20 days in March 2000. The Yarra Drought Response plan for diverters was implemented during March with Level 1 coming into effect on 8 March 2000 and Level 2 coming into effect on 26 March 2000. This plan restricts the amount of water diverters can abstract from the river. Restrictions are triggered by consistently low flows in the Yarra at Warrandyte, Level 1 at 300 ML/d and Level 2 at 245 ML/d.

2.0 Sewerage

2.1 Major Incidents/Issues

Nil

2.2 Statutory Compliance Summary

Summary of Compliance by Facility
Quarter Three 1999/2000

Facility	Compliance * of Samples	Sewage Spills	Odour Complaints
Eastern Treatment Plant		2	8
Western Treatment Plant		5	0
Wastewater Transfer	N/A	0	17
Total	N/A	7**	25

	Compliance * achieved for all parameters
	Compliance * not achieved for one or more parameters.

* This chart will now show details of non-compliances for maximum/minimum/range parameters or annual parameters if indicated by the quarter's results. Details appear in following sections.

** These spills were all contained on site

2.3 Statutory Compliance Detail

2.3.1 Compliance of Samples – 3rd Quarter 1999/2000

The following table shows compliance of Melbourne Water's wastewater treatment plants with parameters in EPA licences where limits are expressed as a maximum, minimum or a range.

Treatment Plant Compliance with EPA Licences by Parameter *
Quarter Three 1999/2000

SITE	Amm	Surf	Metals	PH	D.O.	Flow	TRC	Other#
	Max	Max	Max	Range	Min.	Max	Max	
WTP 15E	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green
WTP 145W	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green
WTP L Borrie	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green
WTP Murtcaim	Green	Green	Green	Green	Yellow	Yellow	Yellow	Green
All outlets combined	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow
Air Emissions	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
ETP	Green	Green	Green	Green	Green	Green	Green	Green

	Compliance achieved
	Compliance not achieved** - See 2.3.2/2.3.3 for details
	Not applicable

Parameters that are less significant and rarely fail to meet the required standard.

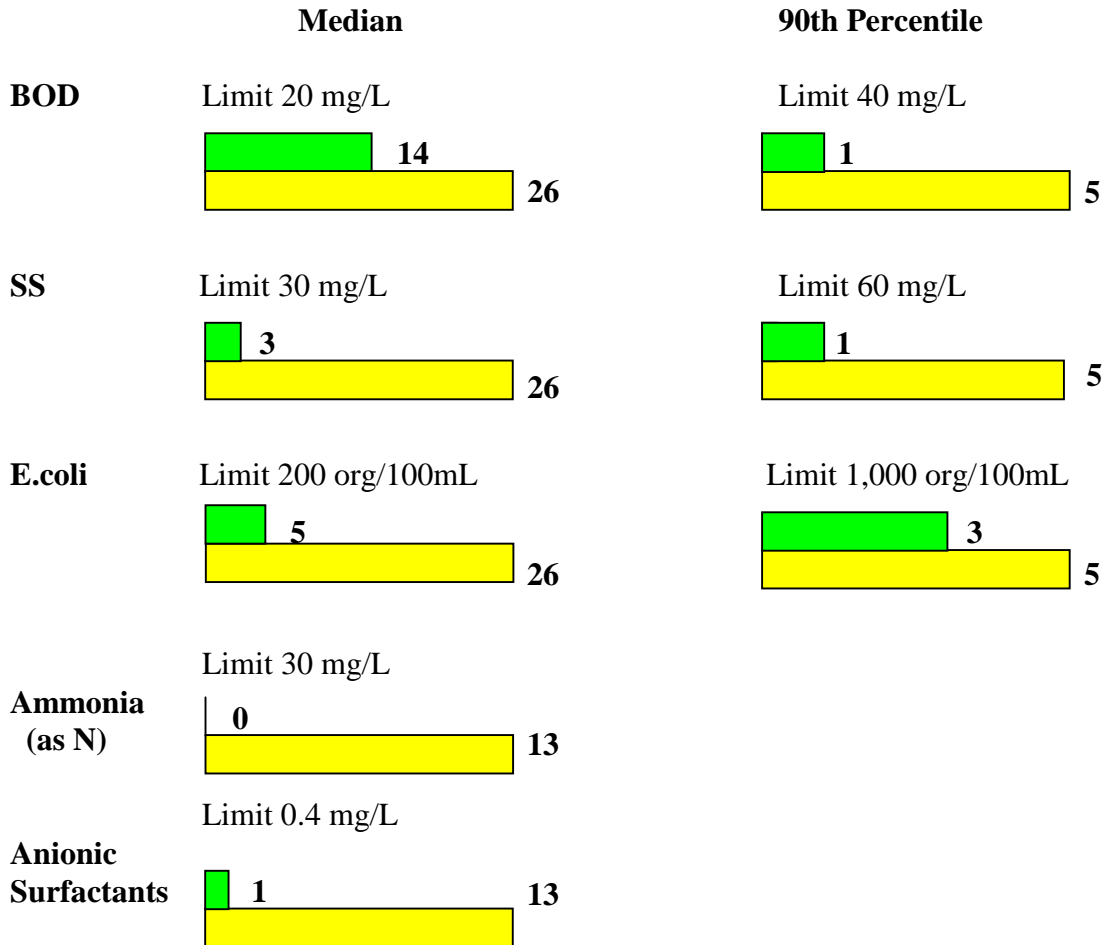
* See Appendix One for a guide to the above parameters and Appendix Five for the location map of Western Treatment Plant Outlets.

** The EPA is given an explanation for each non-compliance

2.3.2 Eastern Treatment Plant

(i) Annual Parameters

The following details eastern Treatment Plant's performance for critical parameters. Performance with respect to other parameters is reported here only if the results exceed licence limits, in which case explanatory information is contained in the following section (iii).



	Number of sample results to date greater than the Licence Limit - exceeds the total allowance for the year (licence breach).
	Number of sample results to date greater than the Licence Limit - exceeds the allowance for the year to date.
	Number of sample results to date greater than the Licence Limit - within the allowance for the year to date.
	Number of sample results during the year allowed to exceed the Licence Limit.

(ii) General Licence Requirements

The EPA discharge licence requires general monitoring and investigation activity to manage Eastern Treatment Plant's environmental impacts. The following activities occurred during the quarter.

Receiving Water Monitoring Program at Boags Rocks

CSIRO was engaged on 1 February 2000 to design a receiving water monitoring program for Eastern Treatment Plant to assess the impacts of effluent discharged at Boags Rocks. A key requirement of the program is to provide a basis for assessing compliance with the State Environmental Protection Policy (Waters of Victoria). The program will examine physical and chemical properties of effluent to detect changes in the physical, chemical and biological properties of the receiving environment. The regular monitoring will also provide a management tool to evaluate potential benefits from improvements implemented at the plant over time. The CSIRO project is due for completion in July 2000.

Licence Amendment (Clauses 2.8 & 2.9)

Eastern Treatment Plant's EPA licence was amended on the 17 March 2000 to reflect achievable deadlines for submitting the receiving water monitoring program outlined above. The program is required by 31 July 2000.

Groundwater Monitoring

A consultant from Woodward-Clyde Pty Ltd was commissioned to review the quarterly groundwater monitoring data collected since 1996. The consultant's report recommended streamlining the existing monitoring program based on:

- aquifers beneath the plant having low capacity to transmit groundwater,
- heavy metal concentrations being below beneficial use guidelines, and
- very little or no adverse impact on the receiving water environment expected based on estimated groundwater velocities and detected low contaminant loads migrating off-site.

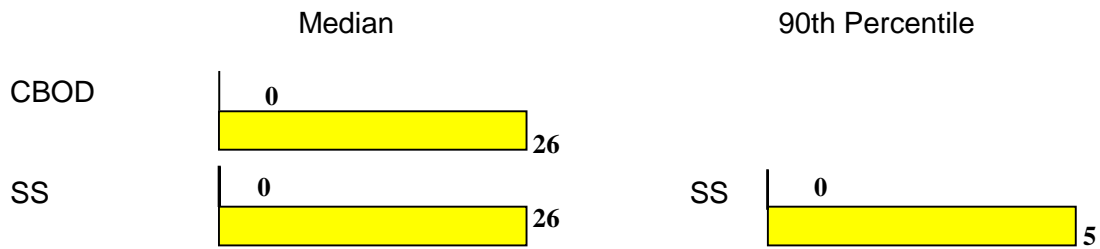
The consultant's report was forwarded to the EPA on 4 January 2000 and the EPA has accepted the findings of the report and agreed to a revised groundwater monitoring program to be undertaken on a half yearly basis. The number and type of contaminants to be assessed has been reduced. The next groundwater monitoring sampling run is scheduled for May 2000.

(iii) Details of Licence Non-Compliance/Parameter Exceedances

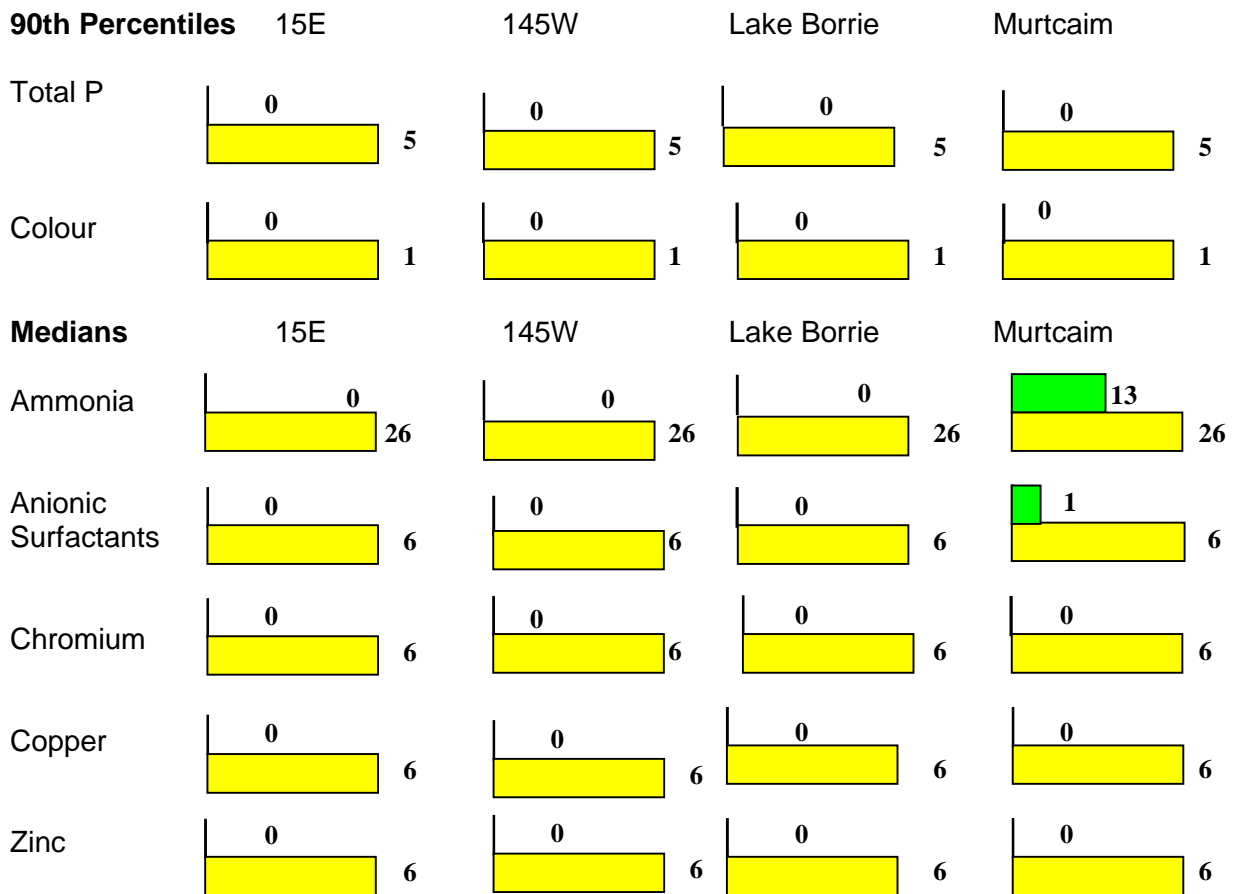
Compliance with licence was achieved for all parameters during this quarter.

2.3.3 Western Treatment Plant

(i) Annual Parameters - flow weighted average of all four licensed outlets



(ii) Outlet Specific Parameters



	Number of sample results to date greater than the Licence Limit - exceeds the total allowance for the year (licence breach).
	Number of sample results to date greater than the Licence Limit - exceeds the allowance for the year to date.
	Number of sample results to date greater than the Licence Limit - within the allowance for the year to date.
	Number of sample results during the year allowed to exceed the Licence Limit.

(iii) General Licence Requirements

Licence Revisions

Discussions between Melbourne Water and the EPA have occurred in relation to amendments to the Western Treatment Plant discharge licence. The outcome is likely to be an amended licence containing some beneficial changes including:

- the removal of Carbon Monoxide limits from Power Station performance limits
- total phosphorus limits now based on flow weighted averages over all four outlets
- corrected location details for the Lake Borrie outlet
- a new TDS limit of 1250mg/L for untreated raw sewage received into the plant

Groundwater Monitoring

Monitoring is required to minimise the impact of operations have on groundwater quality at Western Treatment Plant. Australian Water Technologies conducted the first stage of a groundwater-sampling program at the plant in January 2000 with a second stage to be conducted in July 2000. The program involves initial baseline monitoring of 86 bores for a wide range of parameters. The results of the study will be used to determine an ongoing groundwater-monitoring program for Western Treatment Plant.

Effluent Toxicity Monitoring

Monitoring is required to minimise the impact of Western Treatment Plant's discharges on marine biota around each discharge points. Australian Water Technologies was awarded the contract to investigate alternate bioassays for use in toxicology testing of Western Treatment Plant effluent. Whole of Effluent Testing was performed on six different bioassays in a number of different laboratories in order to determine the most suitable bioassay for ongoing toxicity monitoring. The final report has been received and will be reviewed by the EPA for appropriate changes to the licence.

Odour Monitoring

The Western Treatment Plant licence requires that no odours offensive to the senses of human beings are discharged beyond the plant's boundaries after 1 January 2005. To ensure that Melbourne Water has an effective way of determining compliance with this requirement an investigation of odours produced at the plant is being carried out using three monitoring techniques. The surrounding community is being surveyed by asking residents to keep a diary of all odours noticed over a one-month period. This will be conducted in April 2000 and compared with results obtained in September and October 1999. The other two techniques involve taking odour samples from specific areas of the plant and analysing them using Dynamic Olfactometry (using a trained human panel to assess odours) and using an "Electronic Nose" (instrumentation that objectively imitates human odour assessment using specialised gas-sensor systems).

The Electronic Nose was trialed during the quarter sampling four distinct odour-generating sites at the plant. Information collected from the trials will assist in monitoring odours.

Biological Monitoring

The EPA discharge licence requires a monitoring program to assess impacts on biological assemblages in Port Phillip. The Marine and Freshwater Research Institute was awarded a contract to investigate the impacts of Western Treatment Plant effluent on benthic macrofauna surrounding the 15E drain and the Murtcaim drain outlets. 15E sampling was conducted in

February 1999 and Murtcaim sampling was conducted in February 2000. A final report is due in February 2001.

(iv) Details of Licence Non-Compliance/Parameter Exceedances

Compliance with licence was achieved for all parameters during this quarter.

The median limit for ammonia has been exceeded 13 times in the Murtcaim outlet. Twelve of these exceedances occurred while the winter treatment system was shut down during the first quarter. These exceedances are due to seasonal conditions and it is expected that the annual result will comply with the licence. The existing winter treatment system will not be used once the plant upgrade is implemented by 2004.

2.3.4 Sewage Spills

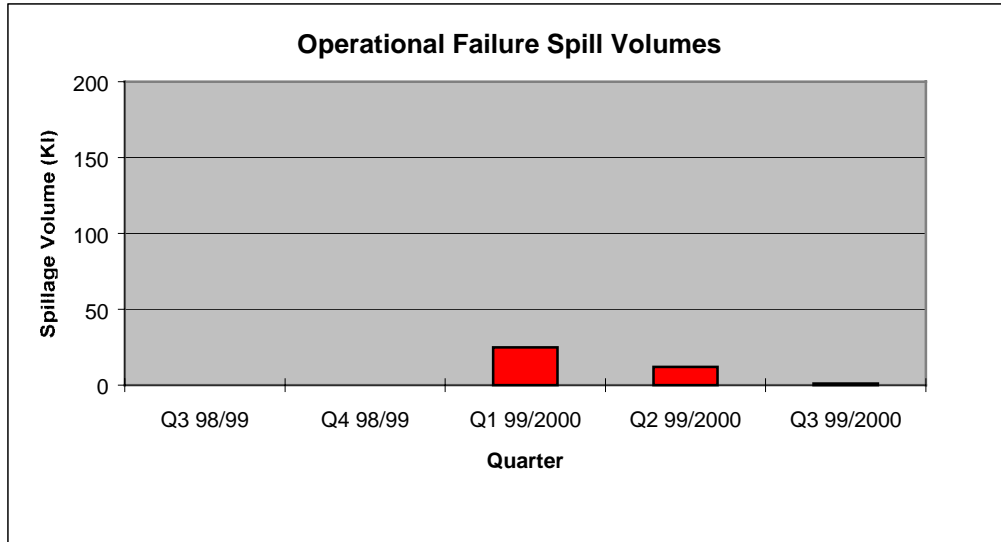
Spillage Summary

Significance*	Q3 98/99	Q4 98/99	Q1 99/2000	Q2 99/2000	Q3 99/2000
Number of Spills	1	0	1	8	7
Minor (Rating 1 - 3)	1	0	0	0	0
Significant (Rating 4 - 5)	0	0	0	2	0
Not Rated	0	0	1	6	7
EPA Reporting Protocol Met	Yes	Yes	Yes	Yes	Yes

* Melbourne Water reports spills according to the Melbourne Water-EPA spill reporting protocol that is contained in Appendix Three. The rating assigned to a spill is determined by applying the potential impact rating to the incident (refer to Appendix Two). Spills with a rating of 1 - 3 are considered minor and spills with a rating of 4 -5 are considered significant. If a spill is contained on site with no damage to the environment it will be reported in this report but not included in spills publicly reported.

Circumstances surrounding the seven non-rated spills are outlined below.

Spills Due to Operational Failures



The above graph indicates the volume of sewage spilt due to equipment breakdown or human error

Eastern Treatment Plant

There were two contained spills at Eastern Treatment Plant during this quarter.

On 10 January 2000 the Centrifuge Waste Activated Sludge Hoppers overflowed as a result of a feed valve failing to close in response to a hopper high level alarm. The spill was contained within a dedicated bund and was estimated to be approximately 1 kL. Subsequent testing did not identify any fault with the valve.

On 15 February 2000, following installation of new Process Control System software to control levels in the Primary Treatment Area, a higher than normal level occurred in Primary Sedimentation Tank 8, causing Tank 8 to overflow into Tank 7. Tank 7 had been previously drained for maintenance. Process Control System procedures were reviewed to ensure that project staff monitor alarms during software installation and locally observe operations.

Western Treatment Plant

There were five contained spills attributed to Western Treatment Plant during this quarter.

On 11 January 2000 sewage was detected coming from a subsoil drainage pipe beneath an irrigated paddock. The disused concealed pipe should have been decommissioned during previous upgrades of the area. The sewage was flowing into the 15E drain. The spill was contained to the drain and pumped out for further treatment. The subsoil pipe has been modified to prevent future occurrences.

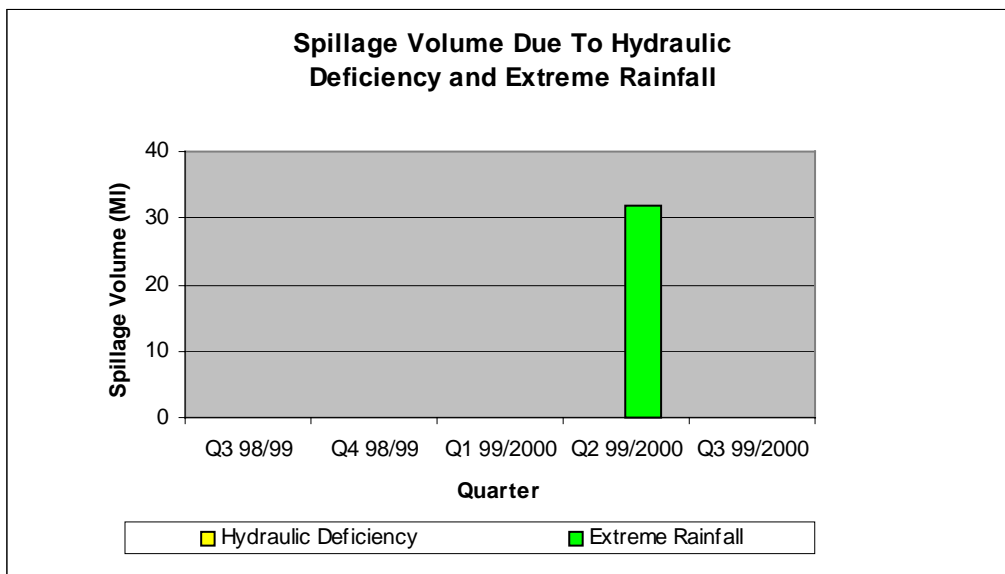
On 17 January 2000 the 165W drain was found to contain raw sewage. An inspection revealed that a paddock had been over irrigated. The spill was contained in the drain and pumped to an adjacent lagoon for treatment. On 18 January an inspection detected that a paddock on 105W had been over irrigated. The spill was contained and pumped to a lagoon for further treatment. The contract with the operator involved in these two spills has been terminated due to ongoing poor performance.

On 8 February 2000 an irrigation channel was blocked when a branch wedged in the channel resulting in spill to a dry land depression. The minor ponding that occurred soaked away within a day. This spill was considered to be contained.

On 20 February 2000 a pipe blocked with weeds caused a sewage overflow from a carrier into a roadside drain. The weeds had been blown into the carrier during high winds. The spill was detected soon after it began enabling the volume to be kept low. The spill was contained and pumped back into the adjacent main inlet carrier for treatment.

Spills Due to Rainfall Events Greater than 1:5 Year Return Frequency (Extreme Rainfall) and Hydraulic Deficiency

There were no spills due to extreme rainfall or hydraulic deficiency recorded this quarter.

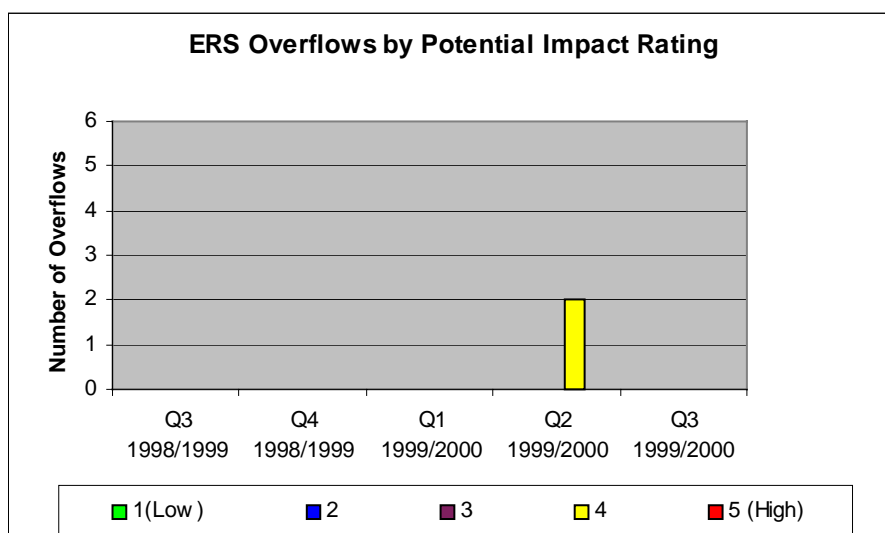


Hydraulic Deficiency - Spills due to insufficient pipe/pump capacity

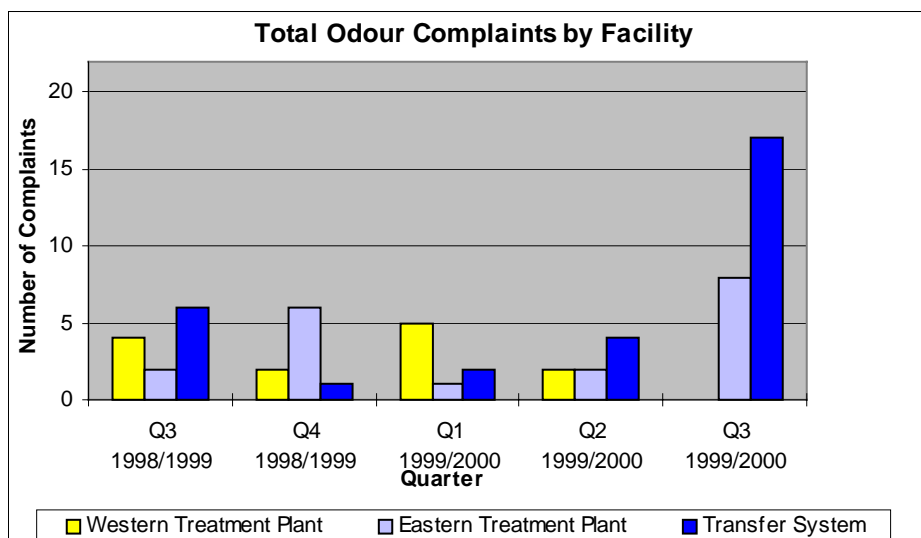
Extreme Rainfall - Spills due to rainfall events greater than 1: 5 year return frequency

ERS Overflows

There were no spills from ERSs recorded during this quarter.



2.3.5 Odour Complaints



Eastern Treatment Plant

There were 8 complaints received during the quarter about odour from Eastern Treatment Plant. February and March typically have a higher risk of odour from the sludge holding basins due to lower flows through the basins. Flow reduction has been exacerbated this year due to basin de-sludging activities and the use of sludge drying pans south of Thompson Road. Measures taken to avoid odour emission include the running of all available aerators, the opening of hydrants to induce flow through the basins and the aeration of Basin 5 using re-circulating pumped flow.

The still dry conditions also contributed to the higher than usual odour complaints.

Details of complaints received during the quarter are:

EPA received an odour complaint on 19 January 2000 and forwarded the complaint onto Eastern Treatment Plant on 21 January 2000. No description of the odour was given. Weather station monitoring indicated that the wind direction was not in the direction of the odour complaint. Details of the odour complaint and actions undertaken were reported to the EPA.

An odour complaint was received on 12 February 2000 by Eastern Treatment Plant from a resident north west of the Plant boundary. A subsequent investigation of the Plant perimeter identified an earthy type smell in the north and an ammonia smell in the south-west corner.

An odour complaint was received on 18 February 2000 by Eastern Treatment Plant from a resident west of the Plant boundary. A Melbourne Water officer inspected all Plant areas and could not detect any odour.

An odour complaint was received on 23 February 2000 by Eastern Treatment Plant from a resident north west of the Plant boundary. Wind direction indicated the likely source of odour to be from the Sludge Holding Basin area. A Melbourne Water officer inspected the site and confirmed odour coming from this area. Inspection also identified odour coming from the Secondary Treatment Area. In accordance with standard operating procedures, all available aerators installed in the Sludge Holding Basins were turned on and allowed to run continuously. Fire hoses were also installed to re-establish flow through the basins that had been limited as a result of the dredging activity undertaken in Sludge Holding Basin No. 1. A Secondary Sedimentation Tank was also drained to reduce any further odour emissions from the Plant.

An odour complaint was received on 11 March 2000 by Eastern Treatment Plant via South-East Water from a resident south west of the Plant boundary. The routine daily odour patrol was unable to detect any unusual odours within the Plant boundary. A very light wind was present at the time.

An odour complaint was received on 16 March 2000 by Eastern Treatment Plant at 1715 hrs via the EPA. The EPA received the complaint at 0900 hrs from a driver travelling on the Frankston Freeway. The routine odour patrol could only detect an earthy type odour at 1800 hrs consistent with the sludge drying pans. An invitation was made to the EPA to visit the plant and identify any likely odour source. A Melbourne Water officer arrived at 1845 hrs and was unable to identify any likely odour source.

An odour complaint was received on 30 March 2000 by Eastern Treatment Plant from a resident south west of the Plant boundary. The complainant stated that the odour was also present on the previous night. A Melbourne Water officer contacted the complainant by phone and requested that the Eastern Control Centre be notified when an odour is present to enable an immediate investigation. The same complainant phoned the plant again on 30 March 2000 and complained of an odour. A Melbourne Water officer visited the complainant's site and detected an earthy, sour type odour. The complainant visited the plant the following day for a tour. Odour consistent with the sludge drying pan/sludge holding basin area could be detected.

Western Treatment Plant

There were no odour complaints received by Western Treatment Plant during the quarter.

Transfer System

There were 17 odour complaints received as a result of the operation of the Sewerage Transfer System. Melbourne Water officers attended all complaints received during the quarter. In response to the high number of complaints for the quarter, Melbourne Water is:

- investigating South Eastern Trunk Sewer fans and ensuring that all fans not running are isolated and blanked off;
- confirming that operating fans are effective; and
- reviewing planned maintenance activities and frequencies.

The effectiveness of these actions will be monitored weekly.

Two odour complaints were received regarding the Hoppers Crossing Pumping Station on 11 January and 2 February 2000. The complainant was advised that the odour was due to maintenance activities at the Odour Control Plant.

Two odour complaints were received regarding the Spotswood Pumping Station on 24 January and 16 February 2000. The complainant was contacted and was advised that scheduled maintenance work to replenish the media in the odour plant was about to start.

An odour complaint was received on 22 February from a resident near the Hobson Bay Main vent at Manhole 25. The site was inspected and the resident contacted. No visible sign of damage to the vent structure or odour was noticed. A contact name and phone number was left with the resident if further odours occurred.

An odour complaint was received on 4 February 2000 from the EPA. The EPA reported the complaint two days after the original complaint in the vicinity of Dowling Road Manhole 14 on the South Eastern Trunk Sewer, South Oakleigh. A Melbourne Water officer attended the site and could not detect any odour. Eastern Treatment Plant requested the EPA advise complainants to contact Melbourne Water.

An odour complaint was received on 15 February 2000 from a resident in the vicinity of Ardgour Street Manhole 17 on the South Eastern Trunk Sewer in Oakleigh. A Melbourne Water officer attended the complainant's site and could not detect any odour. The complainant was advised to contact Melbourne Water if further odours were detected.

An odour complaint was received on 21 February 2000 from a resident in the vicinity of Barnesbury Road Manhole 24 on the South Eastern Trunk Sewer in Balwyn. A Melbourne Water officer contacted the complainant by phone and advised that the shaft vent and fans would be checked as soon as possible. A work order was issued to blank the suction side of induct and air curtain fans respectively.

An odour complaint was received on 23 February 2000 from a resident in the vicinity of Dowling Road Manhole 14 on the South Eastern Trunk Sewer in South Oakleigh. A

Melbourne Water officer attended the complainant's site on the same day and could not detect any odour. The complainant believed that odour was still present but faint. The Melbourne Water officer visited the fan house and confirmed the fans were not in operation. It was also later confirmed that a blank was already present on the suction side of the induct fan.

An odour complaint was received on 7 March 2000 from a resident in the vicinity of Dowling Road Shaft Manhole 14 on the South Eastern Trunk Sewer in South Oakleigh. The resident has previously complained during February 2000. A Melbourne Water officer visited the shaft and inspected the fan house building and no odour was detected. The officer then visited the complainant's site and detected an intermittent sewage type odour. After reviewing the vent pipe configuration, a blanking flange was installed on the educt fun ductwork and the complainant was notified of the action undertaken.

An odour complaint was received on 8 March 2000 from a resident in the vicinity of Barnesbury Road Shaft Manhole 24 on the South Eastern Trunk Sewer in Balwyn. The likely source of odour was determined to be the educt vent pipe extending from the shaft fan house. A Melbourne Water officer contacted the complainant by phone and advised that a blanking flange would be installed on the educt vent pipe. This was done and the complainant notified.

An odour complaint was received on 8 March 2000 from a resident in the vicinity of Cathies Lane Shaft Manhole 14 on the Dandenong Valley Trunk Sewer in Wantirna. The likely source of odour was determined to be the shaft vent pipe. A Melbourne Water officer contacted the complainant by phone and advised that a blanking flange would be installed on the shaft vent pipe. This was done and the complainant notified.

An odour complaint was received on 15 March 2000 via South-East Water from a resident in the vicinity of the Bondi Road Pumping Station in Chelsea. A Melbourne Water officer contacted the complainant by phone and left a message on an answering machine. The complainant was again phoned without an answer. The likely source of the odour could not be determined.

The above complainant phoned Eastern Treatment Plant on 16 March 2000 and complained of an odour in the vicinity of Bondi Road Pumping Station. A Melbourne Water officer attended the complainant's site and detected a slight odour. The officer visited the Bondi Road Pumping Station and could not detect any odour. The officer contacted South-East Water and requested that the local sewer reticulation system be checked. The complainant was notified of action undertaken.

The above complainant again phoned Eastern Treatment Plant on 17 March 2000 and complained of a sewage type odour in the vicinity of Bondi Road Pumping Station. A Melbourne Water officer attended the complainant site and again could not detect any odour. The officer visited the Bondi Road Pumping Station and inspected the carbon bed filter. No odour was present and no odour could be detected within a 200 m radius of the Pumping Station. As a precautionary measure, a work order was raised to replace the filter medium in the carbon bed and this work was carried out on the 21 March 2000.

The above complainant again contacted the plant twice on 26 March 2000 and complained of a sewage type odour in the vicinity of Bondi Road Pumping Station. A Melbourne Water

officer attended the complainant's site and Pumping Station. No odour could be detected. The officer contacted the complainant and requested that they contact South-East Water to ascertain if possible leaks from the sewer reticulation manhole covers were a likely source of odour.

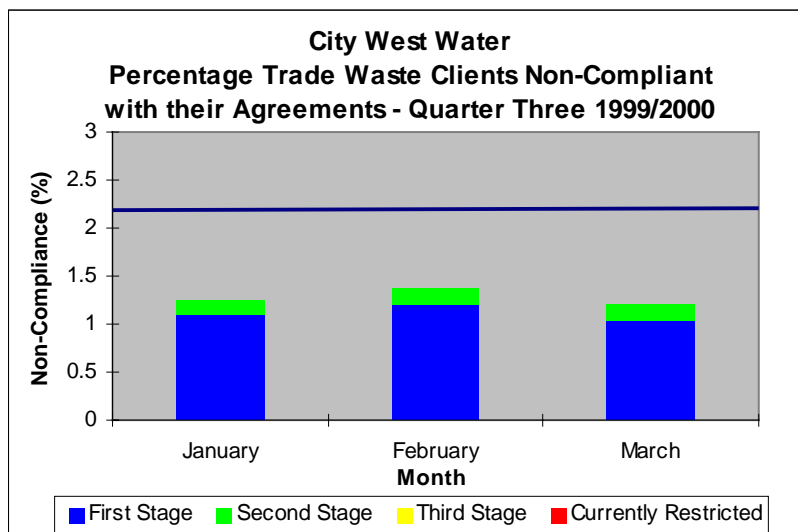
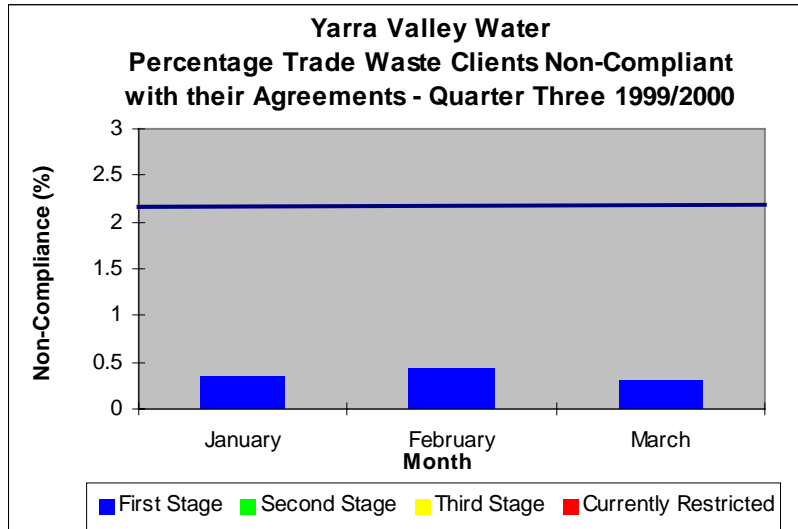
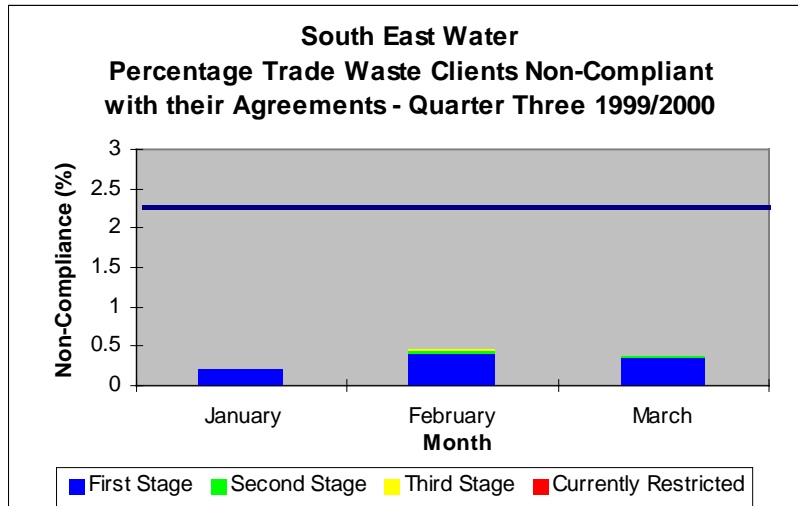
2.4 Corporate Compliance

(i) Trade Waste Agreements

The trade waste compliance requirement in retail water company licences requires quality assured systems for detecting and managing non-compliance with trade waste agreements. The three retail companies are all certified to ISO 9001 to meet this requirement. However, this report will continue to use the 2.5% non-compliance target set in the original licences as a means of monitoring the quality of wastewater entering the sewerage system. An explanation of the stages of restriction for trade waste discharges to sewer is given in Appendix Four.

Changes to the Water Industry Regulations 1995 were made in 1998 to enable EPA officers to become “prescribed persons” which means they will be able to prosecute trade waste breaches. This new power will help Melbourne Water and the retail water companies to improve the management of trade wastes. This will reduce the risk of adverse impacts on Melbourne Water’s treatment processes and discharge licence compliance and improve the potential for re-use opportunities.

South-East Water and Yarra Valley Water include all trade waste customers including greasy waste customers in their report to Melbourne Water. City West Water does not include their low risk greasy waste customers in their reporting.



ii) Effluent Re-use at Western and Eastern Treatment Plants

Waste minimisation, through effluent and biosolids reuse and by other means, is a licence objective for both Eastern and Western Treatment Plants. Effluent re-use targets of 40% at Western and 10% at Eastern were set for the year 2009.

Eastern Treatment Plant

Eastern Treatment Plant's Effluent Management Study outcomes have been discussed with the EPA. An improvement plan has been developed as a result of these discussions and this plan includes reducing the volume of effluent discharged through recycling programs.

Melbourne Water is reviewing all effluent reuse customer contracts to bring them up to date with current EPA requirements. To date 25 out of 32 customers have executed new Sale of Effluent Agreements including one more during the quarter. Ten reuse customers using more than one ML/d are required to obtain EPA endorsement of environment management plans. All of these customers have submitted plans and three have received endorsement from the EPA. The process of endorsement has been delayed due to a review of the EPA's wastewater reuse guidelines. It is expected that the final version will be published shortly and all customers will have entered into Sale of Effluent Agreements by June 2000 subject to publication of the guidelines. Three potential reuse customers have approached Melbourne Water this quarter:

The recently commissioned Bunurong Memorial Park reuse scheme will reuse approximately 112,500 kL per annum of effluent based on meter readings undertaken this quarter.

Western Treatment Plant

The upgrade of the Western Treatment Plant will result in a high volume of effluent being available for reuse on and offsite.

iii) Biosolids Reuse at Western and Eastern Treatment Plant

Melbourne Water is currently developing a Biosolids Management Strategy to cover Eastern and Western Treatment Plants. The strategy will assess available biosolids management technologies and options for implementation at both plants. Biosolids reuse at Eastern and Western Treatment Plants will be revised to take the Strategy into account.

Eastern Treatment Plant

KT Soils Pty Ltd continues to operate as the sole biosolids re-user at Eastern Treatment Plant and has used more sludge than planned due to the dry weather. KT Soils had used 9 975 m³ to the end of the quarter. The plant produces approximately 40 000 m³ of biosolids each year.

Recovery Recycling Pty Ltd is continuing to collect quarterly biosolid samples from Eastern Treatment Plant in accordance with a 12 month research agreement with Melbourne Water. The research is aimed at assessing the potential of extracting heavy metals from solids handling processes at the plant. If the research outcomes are positive the company will extract metals from the sludge and the residual material will be more suited to reuse due to the lower metal levels.

Quarter	Existence of Biosolids Re-use Program		Compliance with Biosolids Management Policy/Program	
	WTP	ETP	WTP	ETP
Q3 98/99	Yes	Yes	Yes*	Yes
Q4 98/99	Yes	Yes	Yes*	Yes
Q1 99/2000	Yes	Yes	Yes*	Yes
Q2 99/2000	Yes	Yes	Yes*	Yes
Q3 99/2000	Yes	Yes	Yes*	Yes

* A biosolids re-use program has been developed and submitted to the EPA as required by the discharge licence.

3.0 Waterways and Drainage

3.1 Major Incidents & Issues

Nil

Other Incidents and Issues

Caustic discharge – Arcadia Street Drain, Glenroy

Operational staff attended an incident on the Arcadia Street Drain, a tributary of Merri Creek, on 20 January 2000 which involved removal of an estimated 5,000 litres of caustic pollutant. The source was tracked to a bakery in Glenroy and Melbourne Water will recover costs.

Blue Dye - Darebin Creek

A spill of blue dye on 31 January 2000 caused visual pollution and attracted extensive media coverage. The dye was a biodegradable product used to colour toilet paper. An investigation into the source for cost recovery was held and costs are being recovered.

Animal by-product spill - Cherry's Main Drain, Laverton North

On 8 February 2000 Melbourne Water officers attended a spill of animal by-products into Cherry's Main Drain. Extensive education and flushing was carried out until the early morning and at least 95% of the by-product spill was removed from the drain. Melbourne Water is awaiting confirmation of the source of the spill from EPA for cost recovery purposes.

Oil Spill - Wandin Yallock Creek, Seville

Melbourne Water officers attended a minor oil spill near Wandin Yallock Creek on 13 February 2000. Local residents found a small amount of oil in a council spoon drain leading into the creek. The situation was controlled with absorbent booms and no oil entered Wandin Yallock Creek. The source of the spill was unable to be determined and clean up costs were not recovered.

Petrol Spill - Fairfield Main Drain, Alphington

On 15 February 2000, Melbourne Water officers attended a suspected petrol discharge from the Fairfield Main Drain outlet into the Yarra River at Alphington. Booms were placed although the substance appeared to be predominantly water-soluble and could not be completely contained. The main concern of residents was the strong smell emanating from the substance. Melbourne Water and the EPA were unable to determine the source of the pollution.

Orange dye - Bushy Creek, Box Hill North

This incident on 10 February 2000 involved an unidentified orange dye material. No clean-up was undertaken in line with EPA instructions.

Foam material - Mullum Mullum Creek, Ringwood

Large amounts of white foamy material were found in Mullum Mullum Creek on 11 February 2000. EPA instructed that no clean-up was necessary.

Oil Spill, Brushy Creek – Mooroolbark

On 31 January 2000, operational staff attended a small oil spill into Brushy Creek. The material was boomed and educted from the creek. The source of the spill was unable to be determined and clean up costs were not recovered.

Pollution Incident – Green Lane Drain, South Dandenong

A pollution incident occurred in the Green Lane Drain in Dandenong South on 18 February 2000. Initial advice from the EPA was in relation to a red dye. While attending a white substance was found entering the drain at another location and a large volume of diesel was trapped in the catch drain beside Eumemmerring Creek. EPA has identified sources of the two separate pigment discharges and clean-up costs will be recovered. The oil-contaminated water was educted from the drain and 8,400 litres of oil was recovered. A further 24,400 litres of contaminated water was educted from the site and processed as liquid waste. The waste treatment costs will be in the order of \$36,000. EPA is trying to identify the source of the diesel oil to facilitate cost recovery.

Waterway Management Activities***VicRoads Liaison***

Melbourne Water officers met with design and management staff from VicRoads, as part of an on-going liaison program designed to assist VicRoads in improving its stormwater and waterways management. The meeting dealt with the incorporation of Water Sensitive Urban Design principles and water quality treatment facilities in current major projects, including the Eastern Freeway Extension, Princes Highway West (Geelong Road), Hallam Bypass and Dingley Freeway.

Sword-grass Brown Butterflies

18 Sword-grass Brown Butterflies were observed this month at Old Joe's Creek Retarding Basin by Melbourne Water officers and a member of the public. Normally two or three butterflies are seen at a time. This demonstrates the effectiveness of the butterfly habitat management program carried out jointly by Melbourne Water and the public.

Water Quality and Stream Health***Caroline Springs***

Engineering consultants Fisher Stewart have had discussions with Melbourne Water officers on requirements for development of the first two stages of the Caroline Springs development on the northern side of Kororoit Creek. Drainage works include construction of various water quality assets, drainage channels and a retarding basin. The developer is finalising the overall development plan to ensure that all objectives of the drainage scheme are met.

Community Participation

Fox-Management Program

Melbourne Water officers are involved in ongoing fox-management programs with Parks Victoria, VicRoads, Boral Industries, and the cities of Knox, Monash and Whitehorse. Fumigation of fox-den sites as a control method has been found to have limited success in reducing fox densities. During 2000 the study will focus on controlling foxes through habitat manipulation by removing weed species that provide foxes with shelter and food.

3.2 Milestones

Brooklyn Stormwater Treatment Facilitation

Melbourne Water officers guided the design of an innovative treatment facility at a site in Brooklyn. The design is based on water sensitive urban design principles and incorporates standard litter and oil traps, grass and sedge swales, bioremediation trenches and ephemeral wetlands. These elements are being combined to achieve reductions in critical contaminants, such as litter, oils, coarse solids, fine solids and associated heavy metals and some nutrients.

VCAT Decision - Allied Containers Services, Brooklyn

Allied Container Services had stockpiled soil fill along Stony Creek's banks without a permit, intending to remodel the creek within a very narrow reserve without adequate consideration of environmental impacts. After almost two years a VCAT decision supporting Melbourne Water was received during the quarter. The decision provides a framework through which rectification works must be implemented. The form of remodelling requested by the developer was a concrete-lined channel similar to those constructed around 20 to 30 years ago and more environmentally sensitive solutions will now be pursued by Melbourne Water.

3.3 Statutory Compliance

Nil

3.4 Corporate Compliance

Nil

3.5 Status Report - Meeting SEPP Targets

The following information describes the physico-chemical and bacteriological condition of Melbourne's waterways during the reporting period. Objectives set out in the four appropriate State environment protection policies (SEPPs) are the aspirational targets.

During the quarter, waterways within Greater Melbourne generally had good levels of pH, suspended solids and heavy metals. Dissolved oxygen was lower than the previous quarter in some catchments probably due to warmer water temperatures and lower flows. The median water temperature during Quarter 2 was 16.4 °C, while in Quarter 3 it was 19.7 °C. Average stream flows in the Yarra at Warrandyte, the Maribyrnong at Keilor and the Bunyip at Iona in during Quarter 2 were 544, 164 and 207 megalitres per day, respectively. At the same sites during Quarter 3, average stream flows were 346, 26 and 112 megalitres per day, respectively; all lower than the long-term average for this time of year.

E. coli levels were similar to the previous quarter. Elevated nutrients are typical for waterways within Greater Melbourne and are due to urban and agricultural pressures such as sewage treatment plant discharges, use of fertilisers, unsewered areas with septic tanks and stock waste.

Waterway Water Quality

Quarter Three, 1999/2000

The table below shows the environmental quality of Greater Melbourne's waterways during the reporting period, sorted by catchment. Results indicate the percentage of samples taken in each catchment that comply with State water quality guidelines.

Map to go here

Compliance Performance (Note: Melbourne Water has no statutory obligations)

Catchment	No. Samples*	Dissolved Oxygen	PH	Turbidity	SS	Total P	Total N†	E.coli #	Metals!
Dandenong Valley	118	83	94	67	86	44	47	73	94
Maribyrnong	45	50	100	75	83	50	33	62	83
Werribee	19	33	100	44	33	22	22	42	87
Western Port	58	45	91	47	76	66	45	52	97
Yarra Rural	76	80	80	28	89	65	30	49	98
Yarra Urban	119	61	94	55	92	29	18	59	85

- * No. of samples is the maximum for catchment. Not all indicators are measured in every sample.
- # The compliance level is <200 org/100 mL if swimming occurs, otherwise it is <1000 org/100 mL.
- † Total nitrogen objectives are based on the SEPP draft schedule *Waters of the Yarra Catchment*.
- ! Percentage of all metals measurements below or equal to the SEPP objective
- Ns Not sampled

NOTE: The compliance levels for each indicator vary from river to river.

Key to compliance performance

<60% Red 60-74% Yellow 75-89% Green 90-100% Blue

Reporting Alert Levels

Water quality alert levels were agreed between EPA and Melbourne Water in 1994. Alert levels are generally well above water quality objectives specified in relevant State environment protection policies, representing instances of particularly undesirable water quality. Melbourne Water is required to report all alert level exceedances that occur within our jurisdiction to provide a means of identifying sites that often experience poor water quality and a mechanism for locating and mitigating chronic pollution problems.

During the quarter, a total of 115 alert level exceedances were reported to the EPA, or about 2.5% of the total number of water quality measurements. Five sites recorded six or more alerts, with seventeen in Watsons Creek at Somerville (nutrients, dissolved oxygen, conductivity, water clarity, copper), ten in Stony Creek at Yarraville (nutrients, dissolved oxygen, water clarity, *E. coli*, zinc, copper), seven in Merricks Creek at Somers (nutrients, dissolved oxygen), and six at both Brushy Creek at Wonga Park (nutrients) and Skeleton Creek at Point Cook (dissolved oxygen, conductivity).

Dissolved oxygen exceedances were likely to be associated with low flows and warm water temperatures. In some cases, they could also be associated with bacterial breakdown of algae following algal blooms. Nutrient exceedances in Brushy Creek are probably due to Yarra Valley Water's sewage treatment plant discharges upstream, while in Watsons Creek, nutrient contamination is believed to be coming from adjacent market gardens. The EPA is currently conducting an investigation in Stony Creek to assist in determining the reason for the high levels of nutrients. Nutrients in Merricks Creek are possibly originating from local septic systems. Elevated conductivity at some sites may be associated with groundwater inputs contributing a greater proportion of base flows during drought conditions.



3.6 Catchment Profile

Western Port, Mornington Peninsula Streams

The Western Port catchment is approximately 40 kilometres south-east of Melbourne and drains an area of more than 3,200 square kilometres. The Mornington Peninsula streams flowing into Western Port include Watsons, Warringine, Merricks, Coolart, Waterholes and Stony Creeks.

A variety of land uses occur within the catchments with farming the primary land use. Farming activities include grazing, chickens, market gardens, orchards, nurseries and vineyards. Although land use is dominated by farming, the region is becoming increasingly urbanised.

The Mornington Peninsula, Western Port streams, are in various states of environmental health. Key factors influencing the condition of these waterways include:

- erosion leading to sedimentation;
- pollutants from agricultural and urban sources (particularly nutrients);
- water diversions and construction of large on-stream dams;
- clearing of vegetation; and
- stock access to streams.

The extent that each of the above processes affects individual waterways varies.

Nutrients are elevated in all streams, at times exceeding EPA nutrient guidelines. Nutrients are most elevated in Watsons Creek and Merricks Creek (see graphs on next page). The primary source of nutrients in Watsons Creek is believed to be associated with agricultural activities, while in lower Merricks Creek nutrients are likely to be mainly from septic. Pesticides in Watson Creek catchment are also a concern.

Clearing of riparian vegetation, damage due to stock access and weed infestations has degraded the environmental value of the streams. Existing remnant vegetation, especially bank-side vegetation, is important in maintaining water quality and in-stream habitat. Revegetating with indigenous flora can assist in maintaining and improving current riparian values and assisting in erosion control.

Freshwater fish communities seem to be generally good, with most species being native including a wide distribution of the rare Spotted Galaxias. Continued healthy fish populations will depend upon maintenance of waterway values in the region. Potential barriers to native fish migration exist in Merricks Creek, Waterholes Creek and Stony Creek.

Priorities for improving and maintaining stream health within the Western Port, Mornington Peninsula streams are as follows:

Nutrients: Identification of the primary nutrient sources particularly in Watsons and Merricks Creeks.

Erosion: Protecting existing riparian cover and in-stream habitat is important, especially native remnants such as *Melaleuca* swamps. Re-establishing indigenous vegetation adjacent to streams, along with activities to prevent excessive erosion, is recommended in order to maintain current environmental values. Erosion problems have been identified in Waterholes Creek, Coolart Creek, Merricks Creek, Watsons Creek and Warringine Creek.

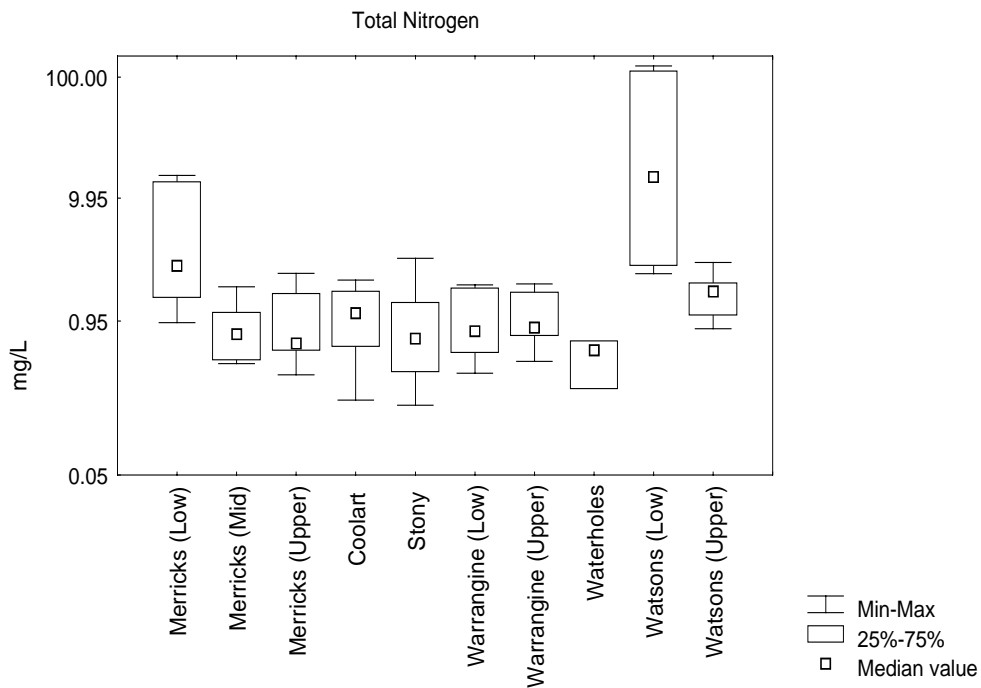
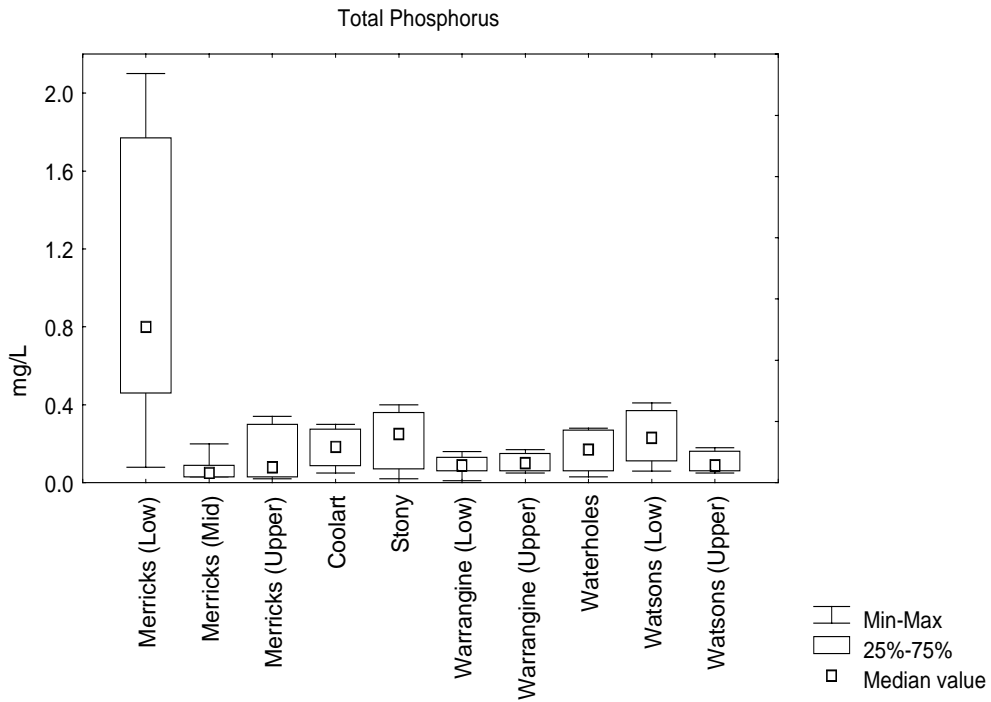
Stream flows: The construction of large on-stream dams in waterways and water extraction reduce flows and may create barriers to fish migration. A review of the extent and impact of these processes within the catchment will aid the development of effective stream management programs.

Residential Development: Rapidly developing urban areas need to be carefully planned and managed to reduce catchment run-off and associated pollutants. Where suitable opportunities exist, wetlands should be constructed to treat urban run-off.

Stock Access: Stock access to Stony Creek, Warringine Creek and Watsons Creek should be controlled. Stock can cause damage to streamside vegetation, accelerate stream erosion and degrade water quality in streams. Fencing of waterway and providing designated stock access points reduces stream damage.

Fish Barriers: Removing in-stream barriers to fish migration is a priority in Merricks Creek, Waterholes Creek and Stony Creek.

The following graphs show the levels of Total Phosphorus and Total Nitrogen in Mornington Peninsula streams flowing into Westernport. The graphs were compiled by Australian Water Technologies using Melbourne Water’s historical data and data collected by sampling programs.



4.0 Corporate Services

4.1 Major Incidents & Issues

Nil