SOUTHERN BASINS PWA

ULEY SOUTH LENS

Groundwater Level and Salinity Status Report

2012

Government of South Australia
Department of Environment, Water and Natural Resources

Department of Environment, Water and Natural Resources
25 Grenfell Street, Adelaide
GPO Box 1047, Adelaide SA 5001

Telephone	National	(08) 8463 6946
	International	+61 8 8463 6946
Fax	National	(08) 8463 6999
	International	+61 8 8463 6999
Website	www.environment.sa.gov.au	

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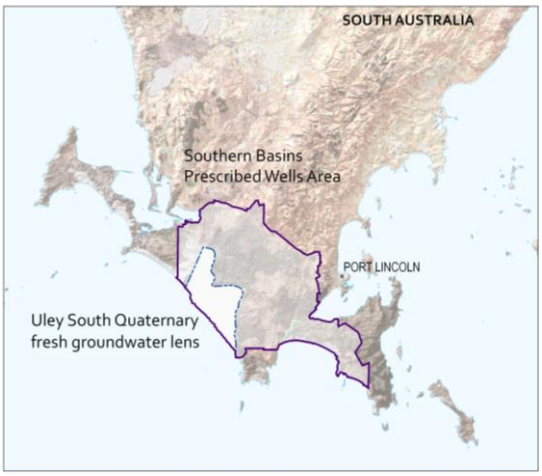
2012 SUMMARY



The Southern Basins Prescribed Wells Area (PWA) is located at the southern most part of the Eyre Peninsula, approximately 270 km west of Adelaide. It is prescribed under South Australia's *Natural Resources Management Act 2004* and a Water Allocation Plan provides for the sustainable use of the groundwater resources. The Uley South lens is located in the south-west of the Southern Basins PWA.

Within the Southern Basins PWA there are two main sedimentary sequences containing groundwater that overlie basement rocks: the Quaternary limestone aquifer and the underlying Tertiary sands aquifer. The Quaternary limestone aquifer comprises a generally thin veneer of aeolianite sediments of the Bridgewater Formation and is continuous across the PWA. These sediments are known to be over 130 m thick in parts of the Uley South lens. Areas within the Quaternary limestone aquifer defined by salinity of less than 1000 mg/L, such as the Uley South lens, are described as a fresh groundwater lens in the current Water Allocation Plan. The main source of recharge to the Quaternary limestone aquifer is the direct infiltration of rainfall and groundwater flow is predominantly toward the nearest coastline in the Southern Basins PWA.

Licensed groundwater extractions occur predominantly from the fresh groundwater lenses within the Quaternary limestone aquifer. Metered extractions from the Uley South lens totalled 5008 ML in 2011–12, a 1.4% increase from the previous water-use year (Fig. 1). This volume of extraction equates to 69% of the total allocation limit of 7250 ML for the Uley South lens and is 91% of the total licensed extractions from the Southern Basins PWA.

The sustainability of the groundwater resources in the Southern Basins PWA is highly dependent on recharge from rainfall. The historical data has indicated that trends of above or below-average rainfall can last for up to 25 years and greater recharge responses have been observed when rainfall occurs in high-intensity events. The Westmere rainfall station (number 18137) is located in the south of the Southern Basins PWA, about 10 km east of Uley South, and recorded 466 mm of rain in 2012. This is more than 100 mm less than the long-term average annual rainfall for that station. The month of June received rainfall significantly above its long-term monthly average, but January, April, July, and September through to December recorded significantly below-average rainfall (Fig. 2).

Monitoring records reveal a long-term decline of nearly two metres in groundwater levels of the Uley South lens since 1992, which coincides with a trend of below-average rainfall recorded at the Westmere rainfall station. Above-average rainfall since 2009 has led to a rise in groundwater levels throughout the lens, although current groundwater levels remain lower than those recorded before 1992. In 2012, 27 wells recorded an increase in the maximum recovered groundwater level of up to 0.21 m and seven wells recorded a decline of up to 0.04 m when compared to 2011 water level data (Fig. 3).

Within the Uley South lens, groundwater salinity has been reasonably stable over the last ten years. Fluctuations in salinity are typically between 20 and 70 mg/L, with several wells recording larger fluctuations of between 100 and 150 mg/L, but fluctuations have stabilised in recent years. Salinities recorded in January 2012 are between 400 and 600 mg/L (Fig. 4) and are virtually identical to those recorded in January 2011.

The Uley South lens of the Southern Basins PWA has been assigned a green status for 2012:

2012 STATUS  "No adverse trends, indicating negligible risk to the resource"

This means that the groundwater status was observed to be stable (i.e. no significant change) or improving over the reporting period. Continuation of these trends favours a very low likelihood of negative impacts on beneficial uses such as drinking water, irrigation or stock watering. The 2012 status for the Uley South lens is supported by:

- an overall increase in the maximum recovered groundwater level when compared to 2011 water level data
- no significant change in salinity when compared to 2011 salinity data.

To view the *Southern Basins PWA groundwater level and salinity status report 2011*, which includes background information on hydrogeology, rainfall stations and relevant groundwater-dependent ecosystems, visit WaterConnect.

To view descriptions of all status symbols, click here.

For further details about the Uley South lens, please see the Water Allocation Plan for the Southern Basins Prescribed Wells Area.

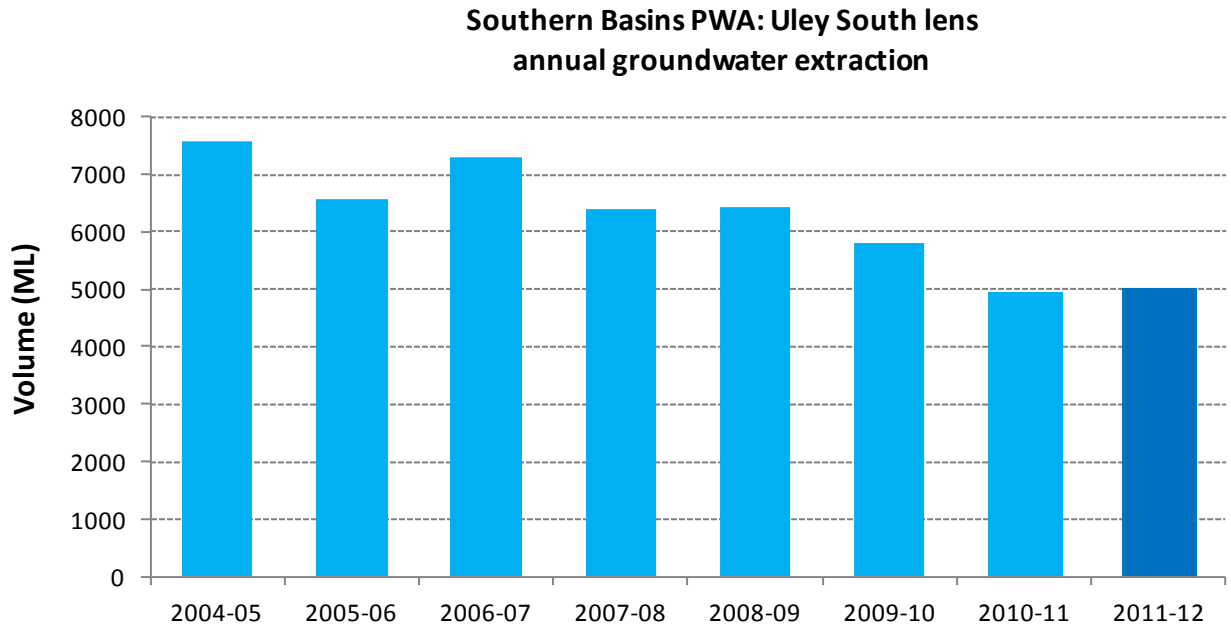


Figure 1. Historical licensed groundwater use for the Uley South lens of the Southern Basins Prescribed Wells Area

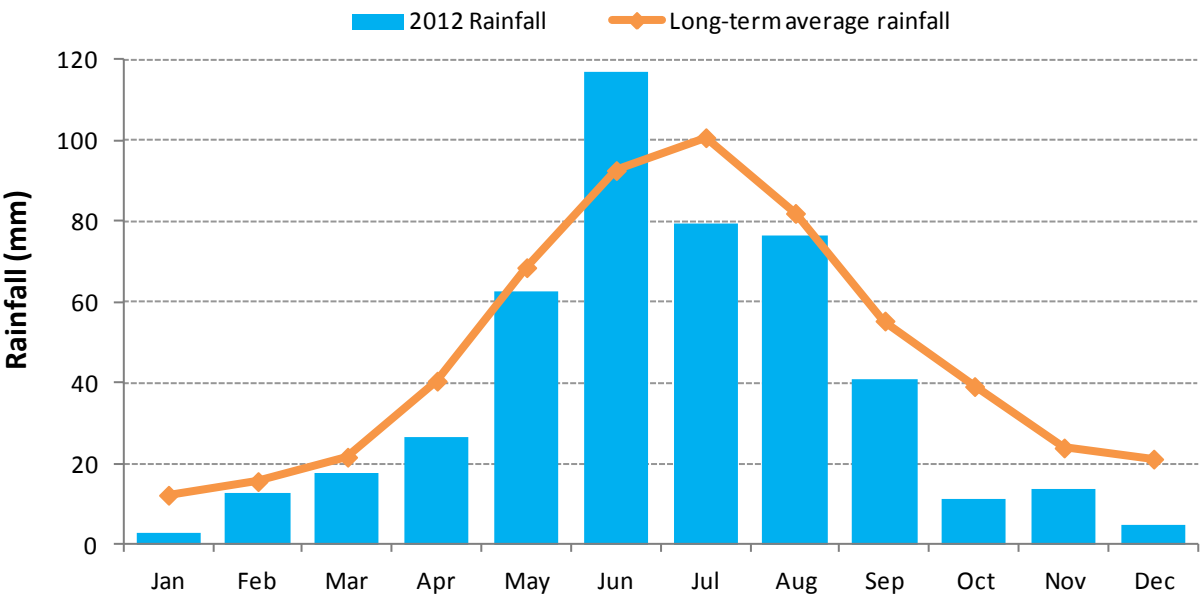


Figure 2. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Westmere rainfall station (number 18137) in the Southern Basins Prescribed Wells Area

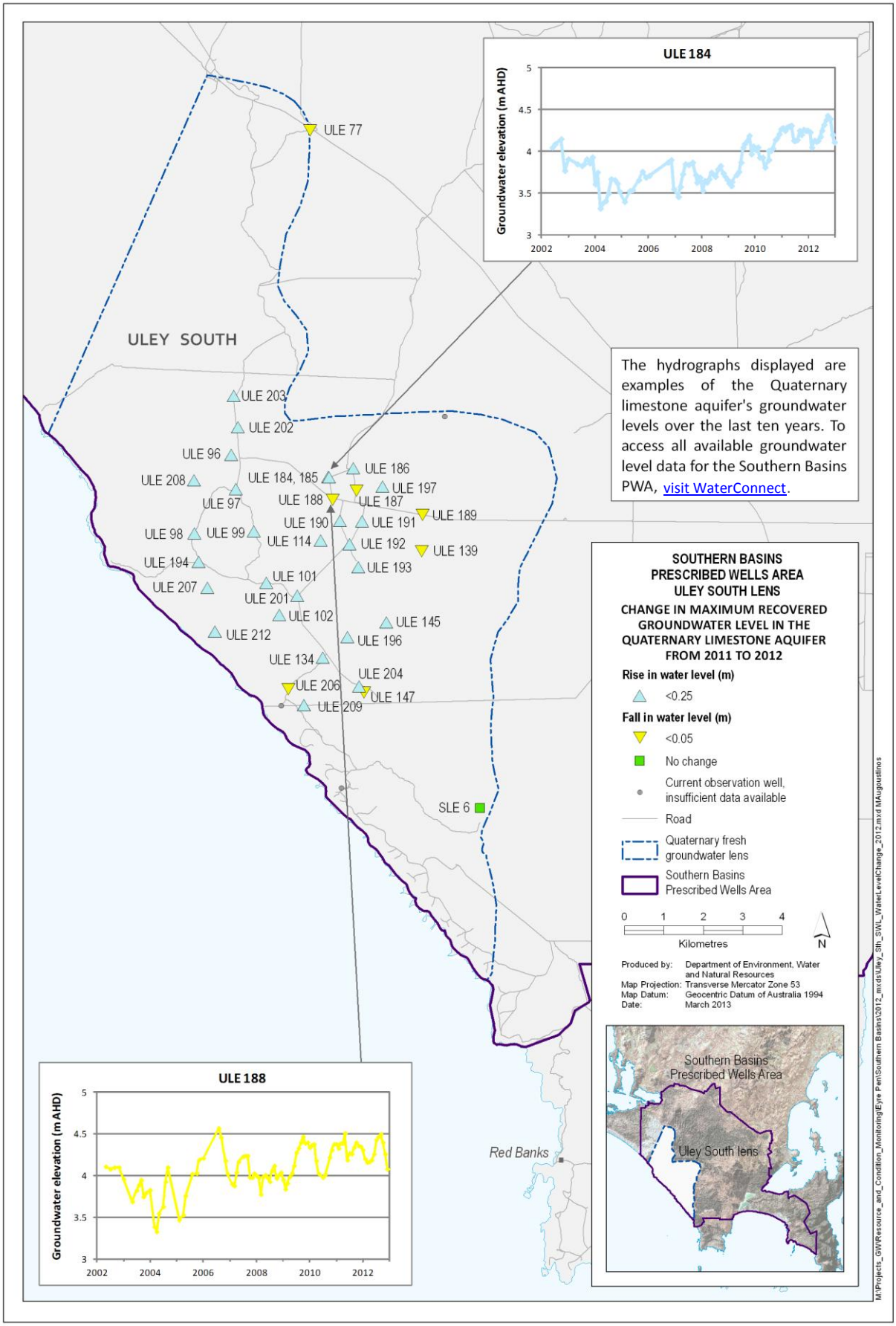


Figure 3. Overall changes in maximum recovered groundwater levels in the Uley South lens of the Southern Basins Prescribed Wells Area from 2011 to 2012

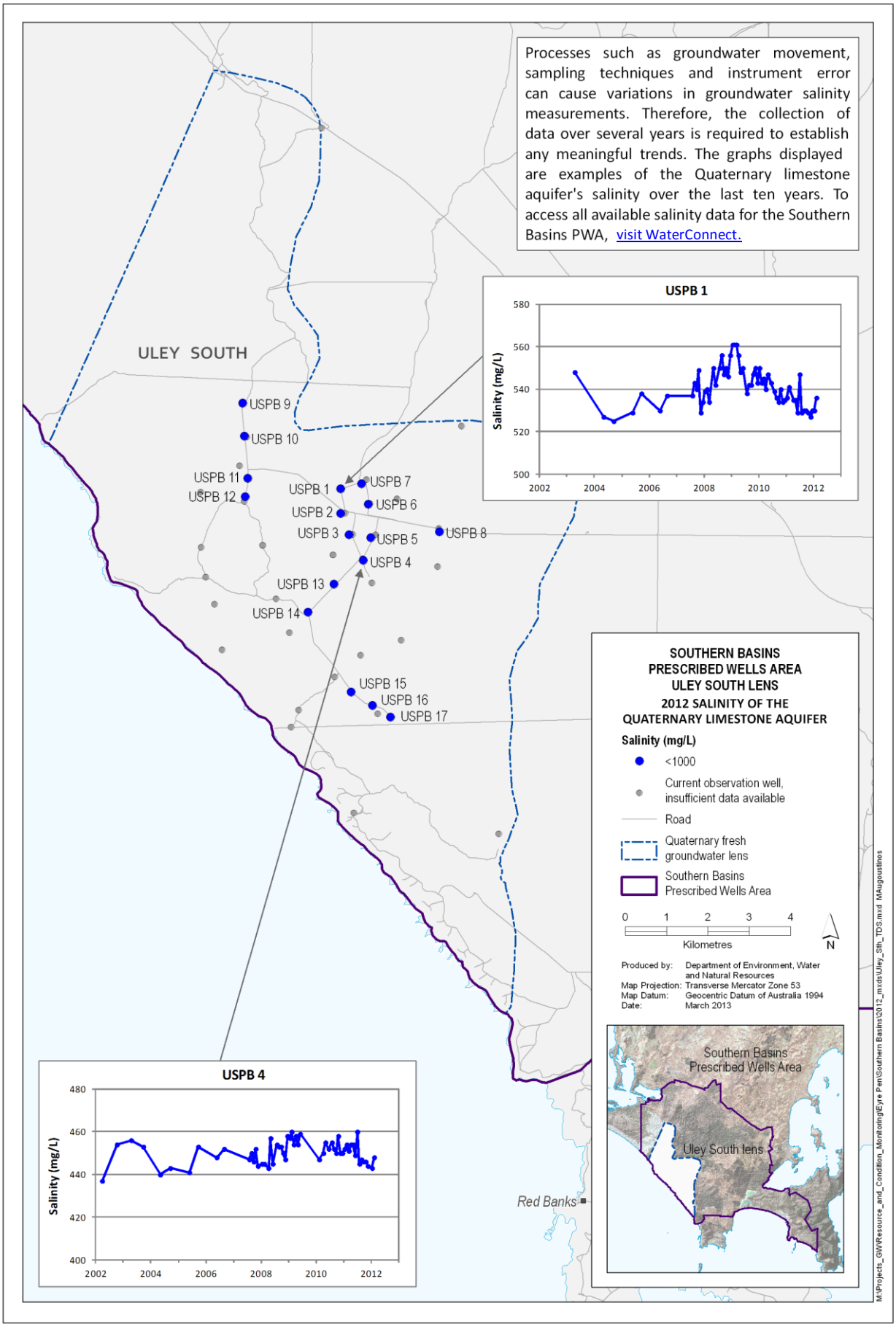


Figure 4. Groundwater salinity of the Uley South lens in the Southern Basins Prescribed Wells Area for 2012