



# AGL's Gloucester Gas Project Gloucester Community Forum

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16 May 2013 | External

# Water matters

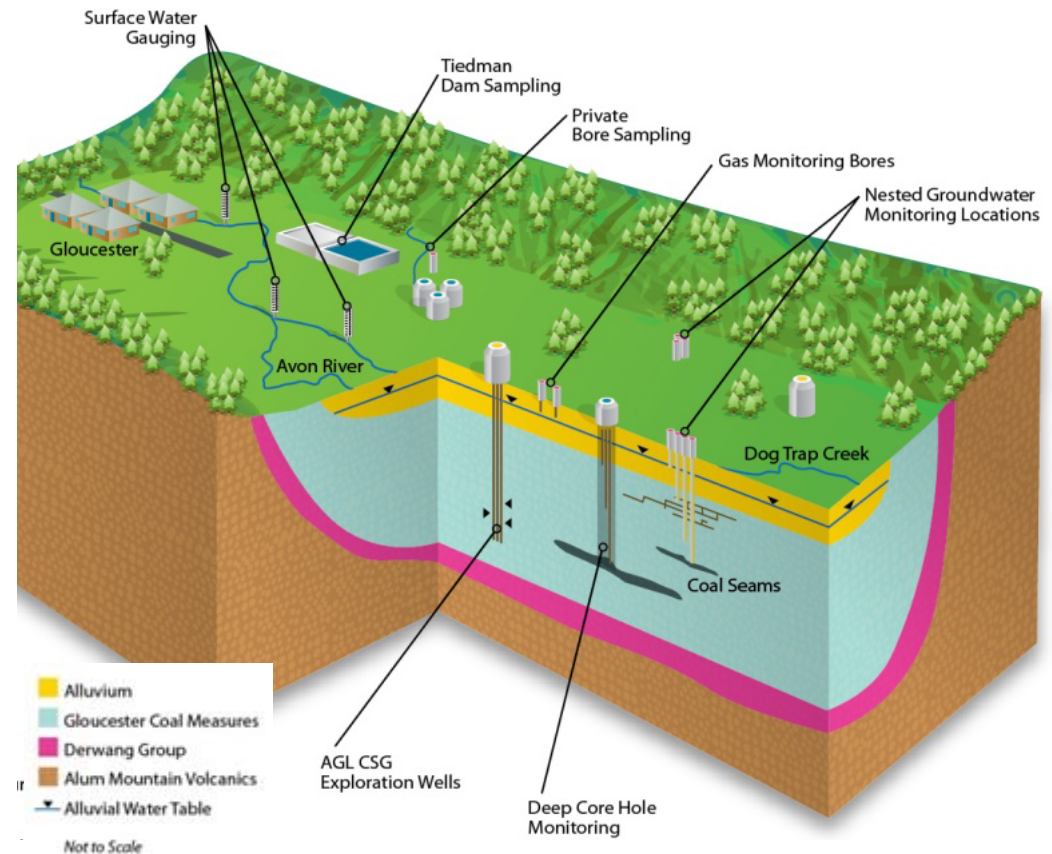
- Water resources
- Produced water management



# Primary water issues at Gloucester

## Protecting water resources and produced water management

- › Basin wide water studies:
  - » Geology and geological structure
  - » Hydrogeology and hydrology
  - » Data and monitoring networks
- › Connectivity of surface water and groundwater:
  - » Beneficial aquifer leakage
  - » Beneficial aquifer contamination
- › Impact on downstream water resources:
  - » Local catchments and farm uses (volumes and water quality)
  - » Manning River and Mid Coast Water supply sources (volumes and water quality)



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# What have we done?

Activities prior to project approval (February 2011)

Stage 1  
area wide

	✓
	✓
✓	
✓	

✓	✓
✓	✓

✓	
✓	

- > Geological assessment (2005)
- > Seismic investigations (2009 & ongoing)
- > Pilot testing program (Stratford)
  - » 9 gas production wells (2006-2009)
- > Phase 1 hydrogeological studies
  - » Published URS study (2007)
  - » Published SRK study (2010)
- > Phase 2 hydrogeological studies
  - » Design of field studies (2010)
  - » Installation of first dedicated monitoring bores (2010)



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# What have we done?

Activities post project approval (February 2011 to May 2013)

## > Phase 2 hydrogeological studies

- » Published PB Phase 2 Study (2012)
- » >40 monitoring bores and gauging stations
- » Ongoing water monitoring
- » Released annual monitoring report (2012)
- » Drilled Waukivory monitoring bores (2012)
- » Completed initial fault investigations (2012/13)
- » Commenced irrigation trial (2013)

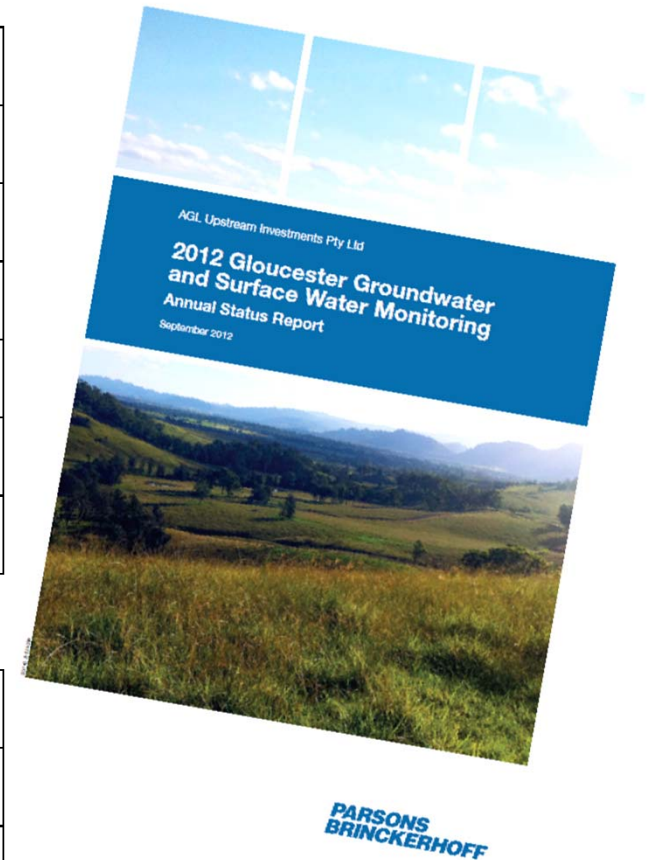
Stage Basin  
1 area wide

✓	
✓	
✓	
✓	
✓	
✓	
✓	

## > Phase 3 hydrogeological studies

- » Water balance report (2012)
- » Water balance update (2013)
- » Updated conceptual model report (2013)

✓	✓
	✓
	✓



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# What is underway?

Activities will be completed pre-construction

## > Phase 2 hydrogeological studies

- » Ongoing water monitoring
- » Annual monitoring reports (Sept/Oct each year)
- » Waukivory pilot program
- » Property surveys
- » Hydrological studies
- » Irrigation trial
  - Surface and groundwater monitoring
  - Soils monitoring program

Stage Basin  
1 area wide

✓	
✓	✓
✓	
✓	✓
✓	
✓	

## > Phase 3 hydrogeological studies

- » Numerical model

	✓
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## > Other broader basin studies:

- » Phase 1 study of the remaining basin
- » Remote monitoring bores

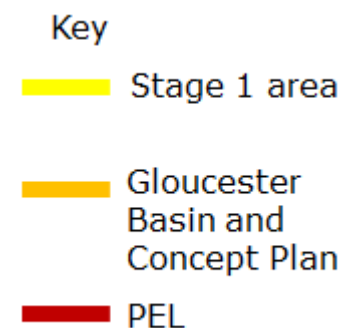
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# The Gloucester Basin is the most-studied geological basin in Australia

- › By end of 2013, AGL will have –
  - » Extensive seismic and aeromagnetic surveys
  - » >55 monitoring locations across the basin
  - » Comprehensive conceptual model, water balance and numerical model of whole basin
- › AGL studies will continue to expand in areas outside of the Stage 1 area
- › In parallel, the independent bioregional assessment project is commencing for the Gloucester Basin
- › Sponsored by SEWPaC and OWS/IESC, and due for completion within 12-18 months



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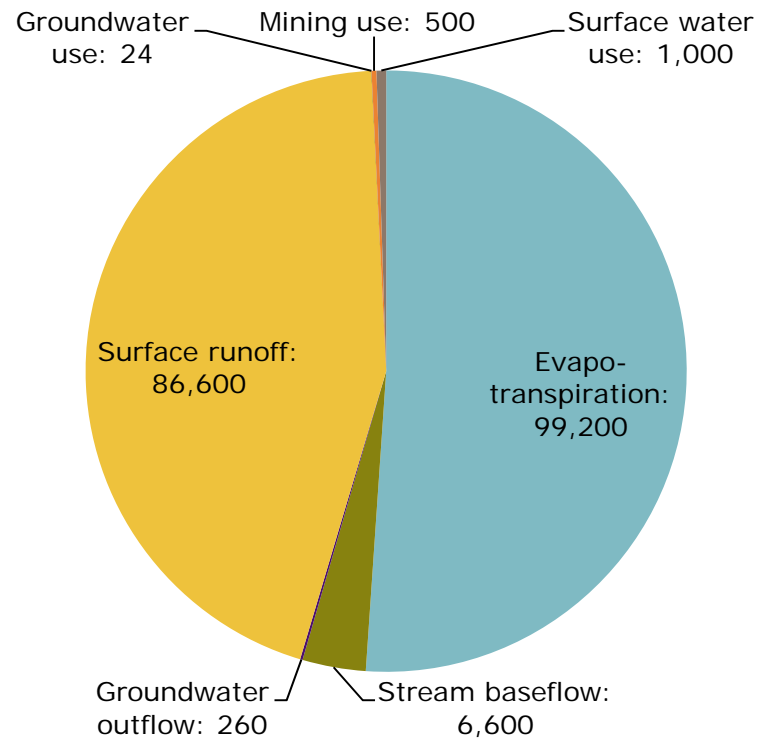
# Water resources with & without CSG

## Without any AGL activities:

- › Lateral flow, negligible vertical flow at depth
- › Natural water balance (prelim) for northern basin:

Outflows in ML/year:

Inflow - rainfall : ~194,000 ML/year



without CSG

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# Water resources with & without CSG

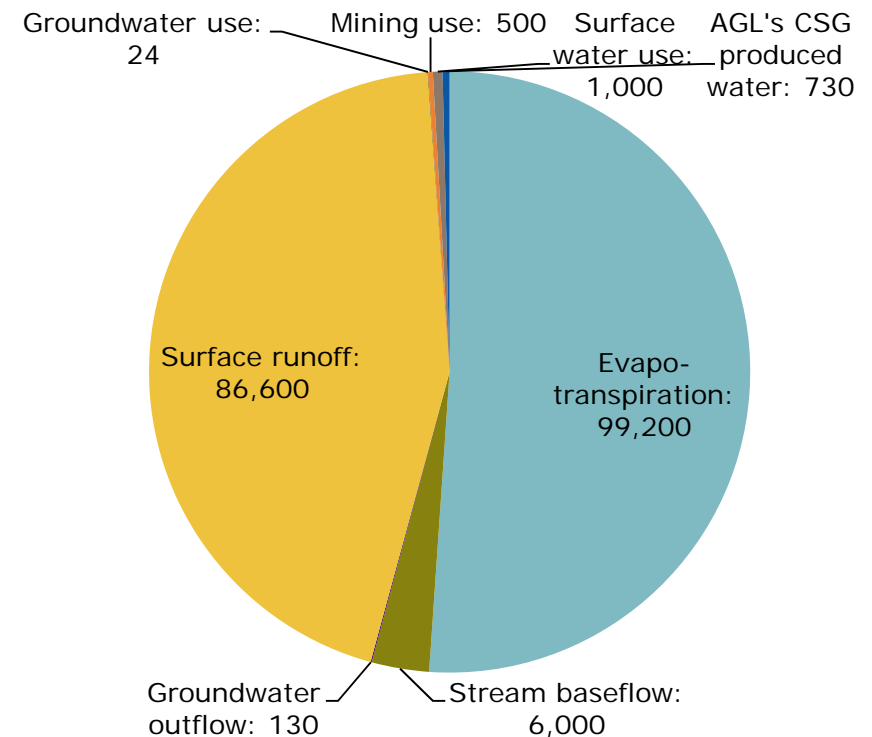
## With AGL Stage 1 CSG activities:

- > Increased lateral flow in coal seams, some increase in vertical flow
- > With CSG water balance (very prelim) for northern basin:

Outflows in ML/year:

Inflow - rainfall : ~194,000 ML/year

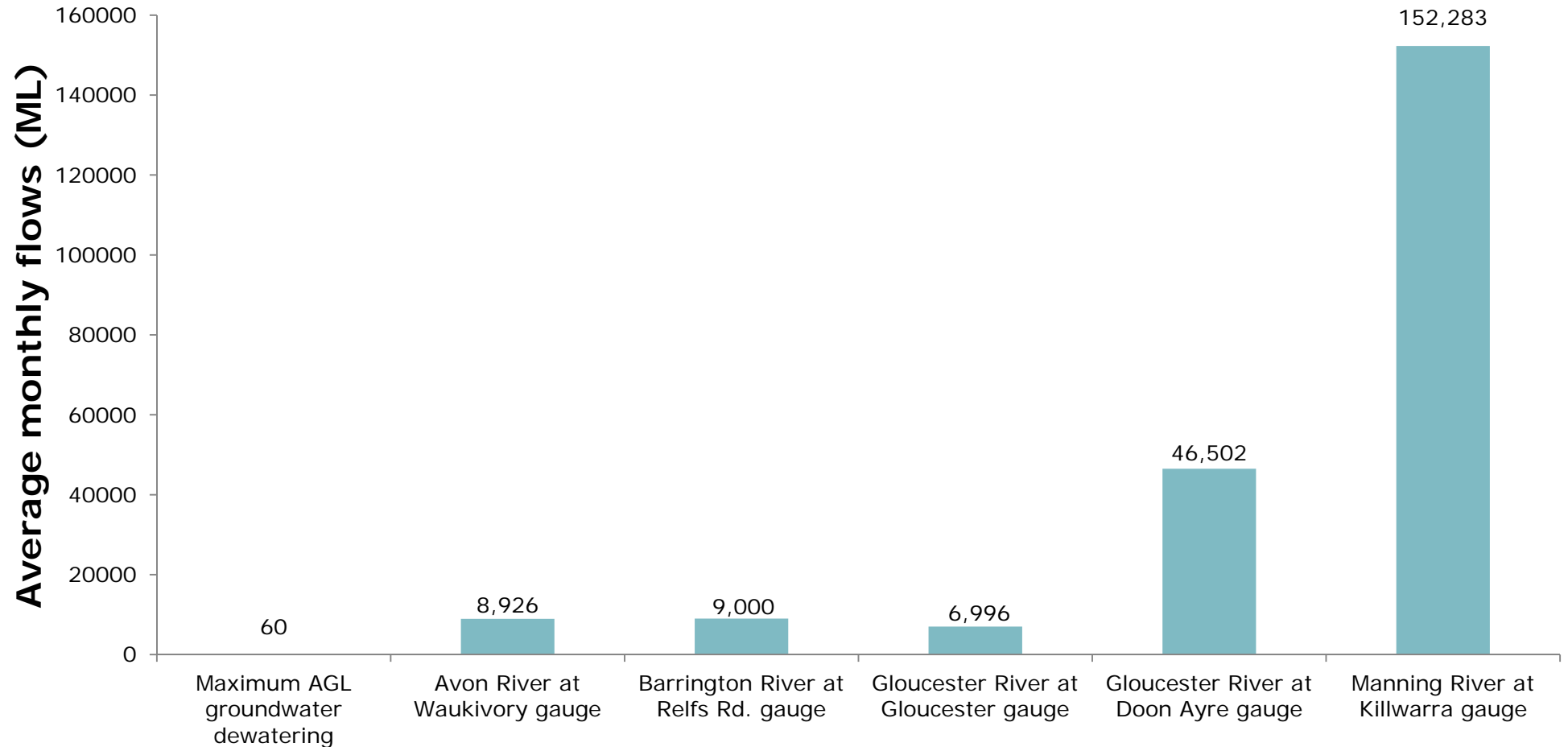
with CSG



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# No impact on surface water flows

Catchment flow comparisons



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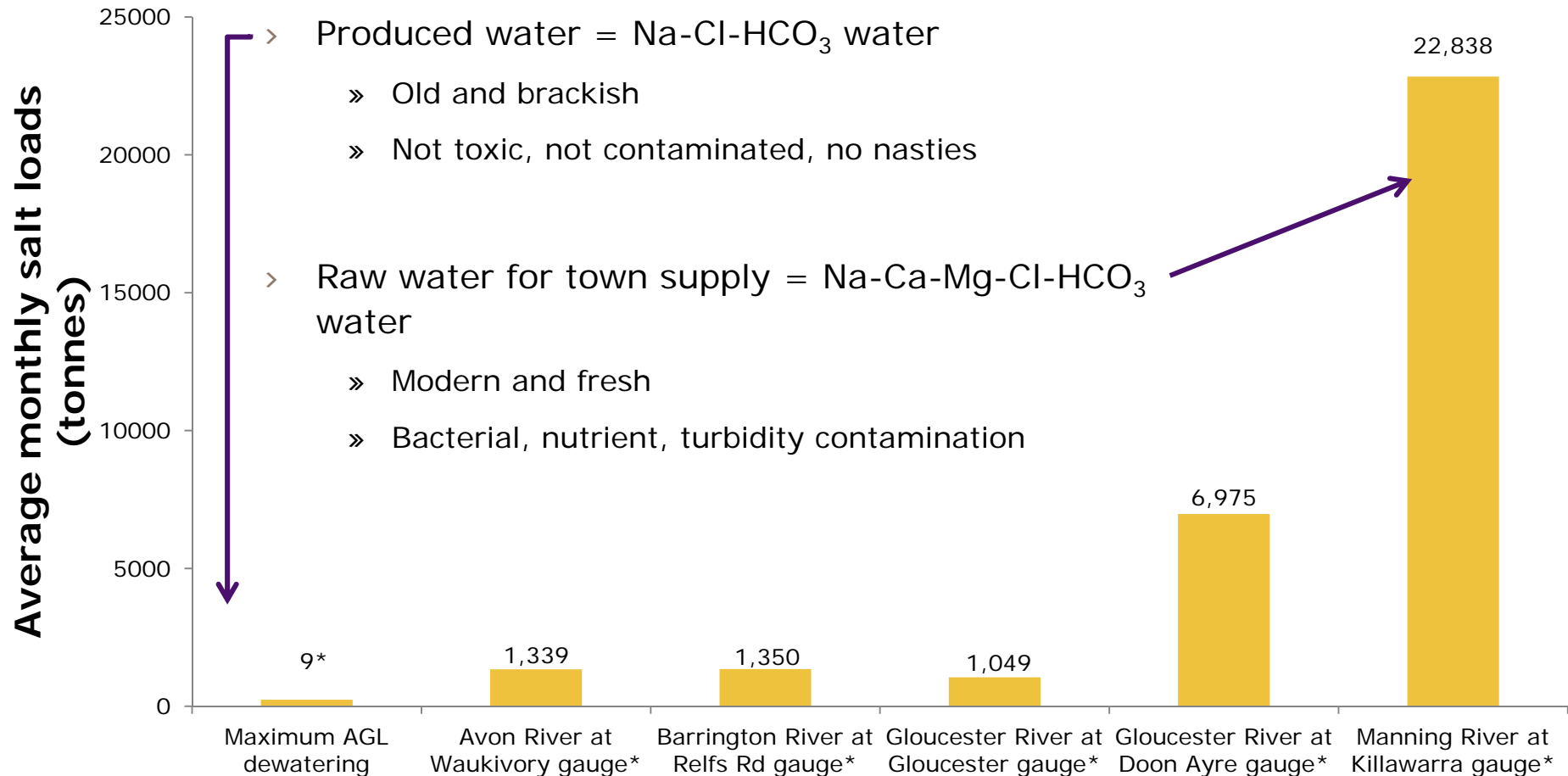
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# No impact on surface water flows

## Catchment salt load comparisons



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\* Assumes all surface / treated waters are 150 mg/L TDS



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