

September 2013 in Our Catchment

It rained. It was wonderful. The timing was perfect. The planting Day with the American Embassy staff was Friday 13th. The ground on the slope up to the footpath at East O'Malley Wetland was dry and hard and cold. We all worked hard to chip in and plant the grass tussocks. I drove home and waited. It rained Friday night. The rest of the weekend was mild, and when I got back on Sunday evening, the flower pots showed they had had a few drinks. And then came Monday night! Yes, it rained!

Your Results

Parameter	Where it comes from	How it affects things	Local events
pH	The country rock is largely responsible for water pH; acid over granite or sandstone, alkaline over basalt or limestone	pH helps keep the main minerals dissolved in the stream or pond; too acid, too much sulfur; too alkaline too much phosphorous	The pH for the water in the higher reaches of the Queanbeyan has dropped significantly, possibly because of outwash from the bogs and chains of ponds that ran over following the downpour.
Electrical Conductivity	The ground water and soil determine the EC	Limey soils are naturally more conductive, more dissolved CO ₂ ; waterlogging also increases mineral content.	While there were still some elevated readings for EC (East O'Malley above the pond had 400 $\mu\text{S}\cdot\text{cm}^{-1}$) many sites were down very significantly on dry period levels. It is all a matter of dilution.
Turbidity	This is how much light can penetrate the water.	Silt and dissolved humus change turbidity	Everywhere had elevated turbidity. While most were in the 30–40 NTU range, the ones on building sites, like Googong Creek, were around 175 NTU. See below.
Oxygen Saturation	Oxygen gets into water through flow, wave action and plants growing.	More than 120% saturation causes embolisms in animals, big or small; below 60% and it is hard for things to breathe.	Only one really low Oxygen saturation, at Toad Hall!
Phosphorus	Phosphorus is found in small amounts in disturbed soil; the other source is fertilizer.	Every cell needs P to carry its Oxygen: excess leads to rapid growth of planktonic algae.	The lawns at ANU are fine, I'm sure, but they are losing Phosphorous, as the creek at the Union has none, while Toad Hall and near the lake are both well above standard.
Ferals	Introduced fish	Gambusia and European Carp outcompete the locals	No mention of ferals this month, but reports of frogspawn are common.

Giving Turbidity a Fair Go!

There are three kinds of flow following rain events.

Overground flow is the short term, high energy sheet runoff of water that lasts for a few minutes after a downpour or builds up gradually as soil becomes waterlogged by light, persistent rain. This is the thing people usually mean by runoff.

Subsurface flow is the water that runs slowly from wet soil into hollow areas and through the soil after rain. It travels very slowly, and may persist up to several hours (or even days) after a rain event. While much keeps close to the surface, most percolates down to the water table and joins/refreshes the groundwater.

Groundwater is a combination of the water trapped in the soil by percolation of rain and any water from springs or aquifers that occur in a landscape. Groundwater flows very, very slowly through a system, but is also depleted by evaporation, and by plant transpiration (both trees and understorey).

The soils of the Canberra Region are derived from shales and trachytes and have high percentages of very quickly soluble clays. Any rain event will wet up the clays, and so the runoff will be coloured.

Elevations in **Turbidity** through overground flows and waterways are to be expected after rain events. If there has been a long period without rain, it is usual for the first flush of new rain to all run off, and carry anything loose with it...elevated turbidity. If there has been high evaporation and the soil crust is disturbed, then the short term turbidity level will be high. Where the surface has been broken...construction, agriculture or stocking...the short term post-storm turbidity will be even more elevated. If there has been a drought or a bush fire, this elevation may be even greater. When associated with good flow rates in the collecting waterways, such 'stormwater' turbidities have little consequence on the long term health of a catchment. Silting from storm events may only last a very short while, especially if subsoil and groundwater flows are enhanced by the storm event.

Some elevation in turbidity in rain water is to be expected. The level of suspended solids and the duration of the elevation in turbidity are both important in judging if the observed turbidity is more or less natural. If the muddy water has gone in minutes, then there is no real problem. Where the water leaves a large build-up of silt, there is something to investigate. When the gutter is still running muddy days later that too indicates something upstream needs investigating.



I don't have any suitable Turbidity shots so I thought you'd prefer a couple of animals! The butterfly is an Australian Painted Lady (*Vanessa kershawi*) and the native bee may be a Common Wasp-Mimic Bee (*Hyleoides concinna*). Does anyone have a better idea for the bee? They were both out enjoying the sun on Sunday morning.

Calendar

Friday 11 th October	Frogwatch Field Trip	6:30 pm Doerbels Reserve, Barracks Flat. Meet in the car park off Barracks Flat Drive.
Sunday, 13 th October	Platypus Walk	5:00 pm starting from the suspension bridge at the bottom of Isabella St, Queanbeyan
Tuesday 15 th October	Frogwatch Introductory Seminar	Australian National Botanic Gardens Contact ACT Frogwatch for details.
Wednesday 16 th October	Frogwatch Introductory Seminar	Australian National Botanic Gardens Contact ACT Frogwatch for details.
Sunday 20 th October to Sunday 27 th October	ACT and Region Frogwatch Census Week	At your site!
19th/20 th October	Waterwatch Monitoring	Your sites

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The operation of the Molonglo Catchment Group is assisted by the Australian Government's Caring for our Country and the ACT Government. Some administrative assistance is provided by the Australian Government's GVESHO program.