Swales

Swales are trenches dug on perfect contour. Definitely **not** to be confused with a diversion drain. They can be dug with a spade, and possibly mattock by hand and be as wide as 300mm or by a dozer, grader or 30 tonne excavator and you can drive a truck in them and anywhere in between.

The purpose for a swale is to slow down water in our landscape, spread water across our landscape to the point where we can rehydrate ridges, infiltrate water into the ground for the purposes of directing a tree system to the area, reducing erosion, capturing silt and nutrient and direct the flow of surplus runoff water to specific points for redirection.

Swales can be constructed to suit orchard systems where the swale may be relatively deep and be quite profound or, put into lawn situations where there is a slight slope and be constructed to be very subtle and quite unnoticeable.

This photo shows a site being developed specifically for an orchard. The swales have been constructed in a way that the top swale, when full of water, drops excess to the left, into the swale below it. The second swale spills to the right into the third and so on. The water finally leaves this situation into a dam at the bottom of the site.

Swale being constructed on a steep slope in high rainfall area. Good batters allow for ease of access over site and better blend into natural landscape. You can comfortably use this swale for tractor access over site. Annual ripping is promoted for vehicle access situations.

Note laser level on the right. Machine has laser pickup on boom for precise work. It is fundamentally important that the swale is constructed precisely level.

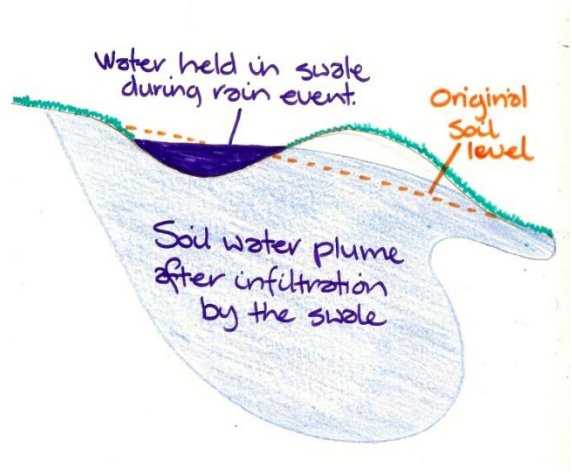
The operator here, is cleaning up the inside bund batter. This is very important as there will be approx 400mm of free board on this batter when the swale is full of water.

Operator cleaning bund batter for even soil profile. Makes for easier follow up management of site and good seed strike for cover crop to establish as soon as possible.

Operator is setting level for the top of the bund using laser pickup on his boom.

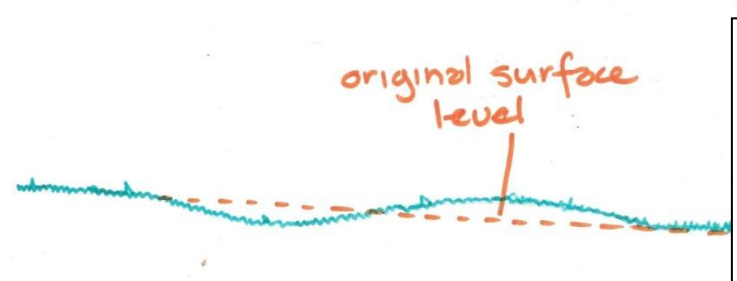
When level is set, operator then puts on the final finish, to the precise set level on the top of the bund.

Approx 5 days after construction. Note that just to the right of the person is where very specific height excavations have been made for the spill way. This swale has an average freeboard of approx 400mm then spills at that level into a spoon drain which is directed to the next swale down.



As the water runoff sits in the swale, it drops sediments and nutrients as the water is sitting relatively still. Surplus water can leave the swale over its spill way leaving behind most of what it is carrying.

The plume underground grows as more rain events occur, ending up with water springing up below the swaled system. Water will always want to travel 90degrees to contour whether in the ground or on the surface.



Construction of swale can be put into lawn areas to move water through the landscape whilst still being able to mow and this method also reduces water depth as water is spread further over the bottom across the diameter of the trench.

For further information, check this site out.

http://permaculture.org.au/2009/11/30/keyline-swales-a-geoff-lawtondarren-doherty-hybrid/