

Australasian Chapter

Newsletter

IECA (Australasia) Presidents Report.

Michael Frankcombe



Grant Witheridge has been part of the erosion and sediment control industry in Queensland for as long as I can remember. I first became aware of Grant when early copies of the IE Aust Erosion and Sediment Control Guidelines were released for comment in the early 90's. It wasn't until Townsville City Council pulled its erosion and sediment control policy together and started developing training packages that I had the opportunity to work closely with Grant.

I've known Grant for more than twelve years now. Over this time I've been amazed by the selfless contribution that Grant has made to our industry for little reward or recognition. When Bill Gardyne our Vice President proposed that we nominate Grant for the international sustained contributors award I couldn't have agreed more. Not surprisingly Grant was successful in receiving the award. I hope in receiving this award Grant gets an appreciation of just how highly regarded he is by his peers nationally and internationally. Please join me in congratulating Grant on this significant achievement.

On other matters, a working party consisting of John Wood, Bill Leggatt, Doug Wimble, Rick Morse and I

have been developing a proposal with the International Development Committee in North America, and IECA's Executive Director, Russ Adsit on what IECA needs to do to become a truly international organisation. Currently the international head quarters of IECA are in Denver in North America and Chapters are formed in states and regions around the world that 'report' to the parent body.

The option being considered at the moment is having two regions – Region 1 being North America, South America and Europe and Region 2 being India, Malaysia, China, South Africa, Australia and New Zealand. In addition there would be a small parent body with a board made up of directors from region 1 and region 2.

IECA Australasia would become region 2 headquarters. The logic behind this is that we are geographically better positioned to help start and develop IECA chapters in our region and may have a better appreciation of the issues that these developing chapters may have based on our past experiences.

It is only a proposal at this stage but it will be presented to the international board for consideration at their next board meeting in June. It potentially represents one of the most significant changes in IECA's history. Watch this space

Michael Frankcombe
President.
IECA (Australasia)

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- ~ Our team are authorities in their fields and hold internationally recognised accreditation of CPESC.
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Chapter AGM and Field Walk

In March 2010 the Australasian Chapter held the 2008-2009 AGM at the Mulloon Creek Institute. The day was a typical Southern Highlands day, cool and threatening rain. After a sumptuous morning tea we headed off for a tour of the 5km of creek that has been rehabilitated using the natural sequence farming techniques. The major portion of this Newsletter details the work being undertaken along the creek and the fantastic results achieved so far.

Everyone who attended the day went away rethinking how they generally carry out their erosion and sediment control works.

After the tour we returned to the barn for a warming lunch of home made soup and special egg pies. The formalities of the day were then held with the AGM.

On behalf of IECA Australasia I would like to thank the Mulloon Institute for an excellent day stimulating not only our taste buds but also our thinking in relation to erosion and sediment control methods.




The Mulloon Institute

The Mulloon Institute provides education through experiential learning as well as research and development focused on regenerative agriculture.

Its mission is to develop those who will lead future generations in the skills of surviving and thriving - physically, mentally, emotionally and spiritually - using primarily the resources of nature that are available to them. Mi campus is the MCNF which is a grazing, cropping and carbon building enterprise, covering two farms in close proximity to each other on the Mulloon Creek, near Canberra.

The total area is approximately 2300 hectares or 5700 acres, which includes approximately 1800 acres of native forest. Both properties are organic, using the biodynamic system of agriculture which has A. grade certification. We have staff certified in the practice of Permaculture and the Keyline system of PA Yeomans.

We also practice Natural Sequence Farming (NSF) and have rehabilitated 5km of our creek as a national demonstration of the work of natural scientist and water ecologist, Peter Andrews.



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Mulloon Creek Regeneration Project Objectives

The objective for this project is to reinstate the natural landscape function by:

- Significantly reducing or reversing bed lowering of the Mulloon Creek.*
- Increasing the biodiversity and productivity of the riparian zone and the surrounding landscape.*
- Raising the ground water level in the flood plain to within 1 to 2m of the soil surface*
- Gathering data that will assist with gathering more knowledge and skills about management of these systems.*

The strategies being used in this regeneration project are based on The Natural Sequence Farming System developed by Peter Andrews.

Further information about Natural Sequence Farming is available at www.naturalsequenceassociation.org.au.



Mulloon Creek Natural Farms

Mulloon Creek Natural Farms with the Mulloon Creek flowing through them are located in the

Southern Tablelands of NSW.

Mulloon Creek is a tributary of Reedy Creek which flows into the Shoalhaven River near Braidwood.

Over the last several decades, the Mulloon Creek has become deeply incised through the management practices common to Australia. As the creek has incised, the water in the flood plain has drained out into the

creek. In some places along the creek, the water table level is as much as 10m below the floodplain surface meaning that many of the herbaceous plants that provide food for farm and wild animals are totally reliant on rainfall for nutrition and hydration.

Our strategy to restore the height of the streambed to where it would have been had the catchment and particularly the riparian zone not been damaged is to reduce or eliminate erosion from high water flow and encourage deposition of sediments (soils and organic matter) that would otherwise flow through and out of the farm.

Peter Andrews has designed the placement of leaky structures of rocks, logs and plants into the creek.

These structures are carefully matched to the surrounding landscape to have a tranquilizing affect that significantly reduces the destructive force of rain events and large water volumes in the channel.

Touring the creek provides you with an opportunity to see the structures that have been created and the effect they appear to have on the creek and surrounding plants and animals.

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Swales

A swale is a Permaculture technique built on the contour and maintained as close to level as possible.

Unlike contour banks, it is cut cleanly into the lower side soils and not compacted. This allows the collected water to soak in.

During a large rain event, the swale intercepts runoff and holds it in the trench, giving the water time to soak into the soil below.

Trees are an integral part of a swale system as their transpiration of the infiltrated water minimizes water-logging and salting below, and makes productive use of the captured water.

At points along the swale, spill ways have been created so that in the event we receive more rain and runoff than the swale can hold, the excess will spill gently from a perfectly level and wide surface, down the slope with hardly any energy.

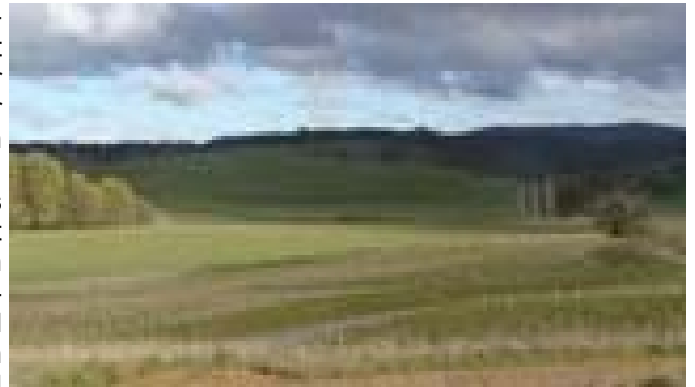
You'll barely see the grass move and there is no chance of erosion.

We often have rain events that only occur over one end of the valley so the swale also acts to distribute water to parts of the valley where it is not raining, thus hydrating more of the valley.

Swales are designed as a short term repair mechanism for the re-hydration of the landscape. If the slopes above this point remained as an intact forest system, the top soil would be much deeper and would readily infiltrate the majority of rainfall.

However, through clearing and overgrazing, much of the rainfall runs straight off and takes the shortest path it can to the ocean.

By capturing and infiltrating water in the swale, we are mimicking the effect of the original forest system and utilizing some of this water to grow tree crops and timber, and the rest will move slowly through the soil profile, and help to once again restore perennial flow in the creek.



BTL AUSTRALIA offers the complete Erosion and Sediment control service based on knowledge from over **20 years experience** in the construction industry. We have achieved extraordinary outcomes using environmentally sensitive practices for implementation of erosion and sediment control measures on construction and building sites.



Why choose BTL AUSTRALIA for Erosion & Sediment Control?

- Integrated approach to prevent controllable erosion and to minimise the adverse effects of sediment transport
- Detailed site assessment and development of effective ESCP
- Supply & installation of sediment fences, silt socks, coir logs, biodegradable blankets and permanent turf reinforcement mats.
- Bush Fire Restoration Strategies to minimise erosion
- Use of available resources, maximum utilisation of existing terrain with minimal soil disturbance.
- Realistic, practical, and easily executed erosion control & maintenance measures
- Cost-effective solutions to avoid penalties for non-compliance

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Peter's Pond and Weir

You can see from the before photo that there used to be a high, vertical mud wall that was being undercut and eroded by each large flow event as the fast-flowing water undermined the wall at the bend, carrying the soil down the channel. This eroding bank has been repaired by sculpting the vertical wall to the sloping form you see now on which vegetation can be much more effectively established. We also created the still pool of water you see now which removes much of the speed and energy of the water and prevents erosion from starting again.



Triple Ponds before Natural Sequence Farm-

“These ponds have now regenerated into a chain of ponds with the assistance initially of the ‘leaky weirs’ that have allowed sediment to form, reeds and other vegetation to grow for habitat for animals. Macroinvertebrates and frogs are now plentiful as are many species



Triple Ponds after Natural Sequence Farm-





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Incision to the bedrock

By confining water into a narrow channel, the only available outlet in high rain events, the water is forced to flow faster, and with increased erosive power.

This was never the case in the drainage lines in their natural state before Europeans came to Australia. At that time the valley floors most likely existed as broad flat swampy meadows and chains of ponds with the water level in the floodplain and in any ponds closely aligned.

When a flood came it spread out over the flood plain, shallow and moving slowly, held back by the vegetation.

In an incised creek we have the situation where all the water flows down the narrow channel, past everyone's farm and out to sea, taking more soil each time. What is also happening now that makes it worse, is that many stream channels have eroded to bedrock, so they are widening and in their incised state they are taking out more and more of the floodplain soils, pasture and cropland.



Much of the mid section of the Mulloon Creek on this property has been eroded to bedrock about 6m below the banks (and further up the creek, to 10m). This means all future excess water energy must be exerted laterally and will erode more of the banks and the floodplain.

When we have leaky weirs and vegetation that raises the level of water up where it once was, close to the top of the banks the water will fall gently from one structure onto the banked back water from the structure below and if this capacity is exceeded the water will spill gently out over the plain with little or no erosion, (and much less erosion on neighbours' country downstream). So this system is not only a hydrating system but a flood control system as well.

Advertorial

THE "CATCH-IT".....

A BEST PRACTICE SOLUTION THAT KNOCKS THE SAND SOCKS & AG PIPE DRAIN PROTECTORS OFF YOUR BUILDING SITE!

The "Catch-It" is a solid recycled plastic and rubber device that is designed to fit securely in stormwater drains of all sizes, from 2.4m to 4.8m.

Used in conjunction with geo-fabric grate covering, the "Catch-It" prevents silt and larger litter objects from entering the drain in storm / heavy rain events.

The "Catch-It" equipment is virtually unbreakable and can be driven over by most heavy vehicles without damage. The standard "Catch-It" is 2.4m long and made in two parts which can be quickly separated to allow 1.2m extensions to be added, to provide full coverage for standard size drains of 3.6m and 4.8m.



The "Catch-It" is easy to install in no more than a few minutes and at less than 20kg, can be handled by one man, within the Health and Safety rules.

SAVE EXPENSIVE LABOUR COSTS

This contrasts with the usual practice of using Sand filled fabric / hessian "Socks" or gravel filled AG Pipes, which have to be first manually filled and then taken to the stormwater drain by at least two construction workers, as they weigh around 55kgs.

Sand socks / sandbags and AG Pipes are easily damaged by trucks and other passing vehicles, often spilling their contents into the drain they were supposed to protect.

At the end of a project the sand socks and AG Pipe protectors have to be picked up and disposed of as few are capable of being used again at a new site.

The "Catch-It" by contrast can be simply picked up and taken to the new site and installed, and has been shown to have a virtually unlimited operational life.

The "Catch-It" comes with a 2 year warranty and will pay for itself many times over in labour and time saving.

ENVIRONMENTAL RESPONSIBILITY

Use of the "Catch-It" demonstrates a construction company's commitment to environmental protection. Many construction company users have their names embossed on the top of the "Catch-It" in fluoro paint to demonstrate their commitment to the local community.

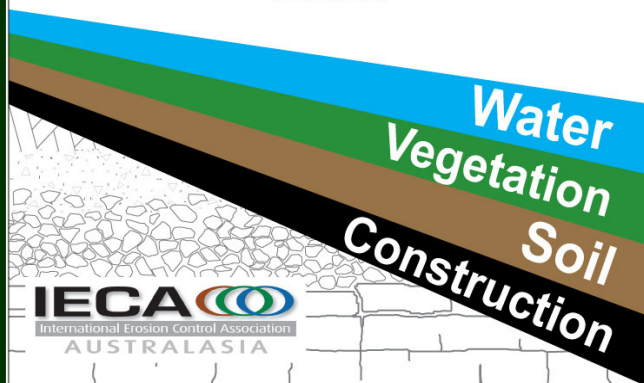
The Catch-It is being used on sites by environmentally and socially responsible construction companies including Laing O'Rourke, Engineering Construction, Westfield Design Construction and Mirvac as well as the Townsville City Council.

The "Catch-It" and extensions can only be bought directly from the manufacturer on (07) 3863 2328 and cost less than \$300 each when purchased in reasonable quantities. Further information is available on www.catch-it.com.au.

Best Practice Erosion & Sediment Control

Book 1 – Chapters

November 2008



If you wish to order a copy of the *Best Practice Erosion and Sediment Control* document please go to www.austieca.com.au and download the order form or contact the office on:
admin@austieca.com.au ,
 +61 2 4677 0901.

Contributions to the Chapter Newsletter.

If you have or know of a case study you feel others in the industry would be interested in, and feel it would be an appropriate item for the Chapter Newsletter. Please forward it to admin@austieca.com.au.

Grant Witheridge recognized for his contribution to the industry.

On Wednesday, February 17, 2010, at the 41st conference and expo of the International Erosion Control Association (IECA), the Awards of Environmental Excellence presentation ceremony was held.



Grant Witheridge recognized for his contribution to the e&sc industry.

For the past 19 years, IECA has recognized the industry's best by awarding persons and projects epitomizing the principles of environmental excellence. Awards are only given to the highest quality projects and innovations. Annually, IECA members submit nominations of worthy individuals and projects. After careful review and consideration, the IECA Awards Committee selects each year's winners.

Grant Witheridge and Mark Hunter, PE, MPA, were both recognized with the *Sustained Contributor Award*. This award recognizes those who have demonstrated a long-term commitment to the erosion and sediment control industry.

Witheridge has been a member of IECA for 15 years and has 27 years of experience in investigation, modeling and design of hydraulic structures, including 7 years at the University of New South Wales' Water Research Laboratory operating physical models. Grant wrote the *Soil and Sediment Control-Engineering Guidelines* for Queensland Construction Sites in 1996 and also *Best Practices of Erosion and Sediment Control* in 2008 published by the IECA Australasian Chapter.

IECA Australasia would like to congratulate Grant on this award.

FOUNDATION MEMBERS:

MACCAFERRI





“Expert Chat” is one of the many benefits IECA Members receive. This member benefit provides you with direct access to the industry's experts in an informal, online chat setting. In February this year John Wood, IECA Aust. Director was the “Expert” of the month. The topic discussed was **“Silt Curtains, Booms and Baffles”**.

Following is an excerpt of the chat transcript. The full transcript can be found on the IECA website (www.ieca.org) as can more information on each months expert chat.

Question:

Can you give some examples of booms in the erosion and sediment control industry?

Answer from John Wood:

Booms for example, are often used for controlling weeds, like water hyacinth, in waterways. So not a lot of raw application in pure sediment and erosion control.

Question:

What type of material is best used as a baffle in a sediment basin and why?

Answer from John Wood:

Depending on the volume and velocity of likely stormwater inflows, we've seen silt fence material attached to steel star posts, timber slats, conveyor belt rubber and non-woven geotextiles used in this application. Do the calculations and determine the design life expectancy of the device. For short term low volume and velocity, perhaps silt fence. Longer term, big catchment, high rainfall events, then a durable product such as conveyer belt maybe required. We've also used gabion baskets for two to three year life sediment basins on a highway construction project. Baffles in this application are generally not floating baffles, but fixed baffles.

Question:

Is a silt curtain and a turbidity curtain synonymous?

Answer from John Wood:

In general terms, yes. They are also sometimes called flotation curtains, floating sediment fences, sea curtains and other names such as marine turbidity control systems. Just make certain that your supplier knows exactly what you are trying to achieve with the device. I'm sure that they are called different names in different parts of the world.

Question:

How do you remove a silt curtain without re-distributing bed load accumulated on the curtain bundled on the bottom of the water course?

Answer from John Wood:

The reality is you can never be guaranteed that all of the caught sediment will be trapped in or by the fabric on the curtain. A lot of the sediment is going to flocculate out and stay on the bed of the water body, where it may be subject to the vagaries of tide, flood and other influences. It can be removed by dredging, an expensive operation, mechanical operation (i.e. excavator bucket), but as you say the likelihood of redistribution is high. Carefully furling the curtain in the water and removing will result in the collection of the trapped sediment in the geotextile. Non-woven polyesters and polypropylene curtains will collect more load than will woven PP type geotextiles.

Question:

In the simplest terms, can you explain the differences between a silt curtain, boom and baffle?

Answer from John Wood:

In the simplest terms, a silt curtain is a piece of geotextile or other fabric suspended in a water body to trap sediment and other suspended debris. A boom is a floating device usually used to control debris and pollutants floating on the surface or near the surface. As such booms sometimes do not have a skirt and are perhaps only 300-400mm deep. A baffle is usually a device that can be impervious and is placed in a water body to control the direction of flow. Such as in sediment ponds, sewerage ponds etc. Baffles can be made from geotextile, silt fence material, timber, gabion baskets, HDPE liner or conveyor belting.

Presidents Technical Tip - Cellular Confinement Systems, Michael Frankcombe CPESC.

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Description:

A permanent or biodegradable containment system that's primary purpose is to contain soil and other materials to provide geotechnical strength with low strength materials and/or environments. The permanent cellular confinement systems are constructed from HDPE and the biodegradable ones from coconut fibre.

Application:

The primary purpose is to contain sand, gravels and other materials for the construction of temporary access tracks and low cost permanent access tracks over soft or unstable ground such as sand dunes, river beds and water logged areas.

Additionally the matrix confines in-fill material to resist flows, minimise erosion and prevent the downward migration of embankment materials and is therefore recommended by manufactures for the containment of soil on embankments and as a channel liner in low velocity situations.

Design/Construction Aspects:

Refer to manufactures guidelines for design and installation requirements.

Problems:

The permanent cellular confinement systems can lift in concentrated flows due to the memory action of the HDPE and insufficient anchoring has occurred.

Topsoil contained in unperforated cellular confinement systems on embankments can become waterlogged.



President's Technical Tips.

Over the last 7 years Michael Frankcombe has written a Technical Tip for each Newsletter.

These are a great reference source.

The accompanying table lists the topics covered and the Newsletter in which they were printed.

Past Newsletters can be found on the Chapter website.

www.austieca.com.au

Vol	Issue	Topic
8	#2 - Dec 2002	Bonded Fibre Matrix
9	#1 - April 2003	Update on Bonded Fibre Matrix
9	#2 - July 2003	Sediment Fences
9	#3 - December 2003	Erosion Control Blankets & Mats
10	#1 - April 2004	Sediment Basin
10	#2 - August 2004	Turf & Reinforced Turf
10	#3 - Dec 2004	Rock Filled Wire Baskets
11	#1 - April 2005	Hydro Mulch Tackifiers
11	#2 - Aug 2005	Composted Mulches
12	#1 - April 2006	Dispersive Soils.
12	#2 - Aug 2006	Compost filled filter tubes
12	#3 - Dec 2006	Erosion Mats
13	#1 - April 2007	Check Dams
13	#2 - August 2007	Concrete Lined Channels
14	#2 - July 2008	Construction Exits
14	#3 - December 2008	Clean Water Diversion Drains
15	#1 - May 2009	Amelioration of problem soils
15	#2 - August 2009	Gully Pit and Curb Inlet Traps
15	#3 - December 2009	Soil testing for re-vegetation

As IECA Australasia is an Association with the environment as its focus the Board have decided that the Newsletter will now be circulated to members in electronic format only. If you require a hard copy please contact the Chapter office.

TIME AND COST EFFECTIVE REGENERATION

Valley Hydramulch and Revegetation have been Revegetation Contractors since 1981 and over that time have developed machinery and processes to provide cost effective solutions to site specific problems. We developed our hydramulch units to handle heavier mixes than currently available American machines, because results obtained are enhanced by soil amelioration. Each unit can achieve production of up to 50,000sqm per day for single applications with up to 12,000kg/ha of powdered ameliorants.

All our operators have full OH & S inductions, ARTC track awareness certification and are quality conscious to ensure best results are achieved. All works are supervised by full time supervisors with many years of experience in revegetation works.

We carry out site soil testing and applications are designed to be site specific, with a detailed recommendation being submitted for consideration prior to commencement of works.

We carried out tractor seeding, hydroseeding and hydromulching with wood fibre and sugar cane mulch on the Coolac Bypass Project on a total to date of 1,300,000 sqm and achieved results which satisfied the strict erosion and sediment control requirements, even in an extended period of extreme drought.

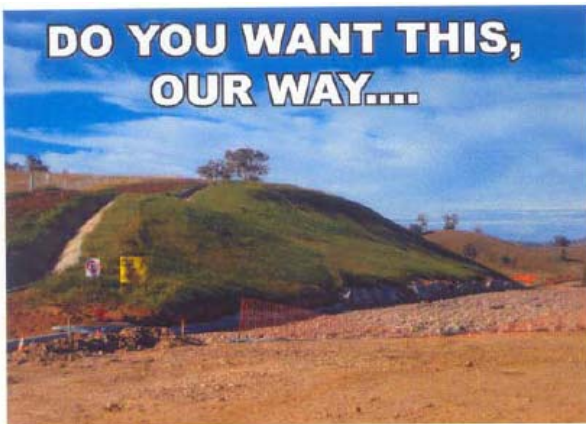
To enable timely completion of traffic switches are frequently completed up to 100,000 sqm per day to comply with the Abigroup Construction Programme.

Full quality assurance documentation is provided to track applications and locations.

We are currently working for the Northern Hume Alliance where we have completed approx 3,300,000 sqm of light compost blanket over the last two years, and are also working on the Ballina Bypass Alliance.

Contact our office for obligation free quotations for your works, and professional advice, especially in regard to our hydraulically applied compost blankets, which are a viable alternative to erosion control fabric at a fraction of the cost.

In our thirty years we have trialed most applications and methods. If you have a special requirement, give us a call and we can advise you on what works and what doesn't.



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