Turbidity Control

Passive Treatment using Polyacrylamide (PAM)

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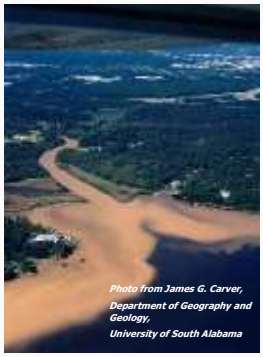
What is Turbidity?



- Turbidity is the measure of relative water clarity
- Caused by clays/silts
- Measured in NTU's – Nephelometric Turbidity Units

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Basin Design for 99% Capture

- Surface Outlet
- Porous Baffles - Coir.
- Stable Slopes & Inlet
- 25 year sizing

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Maximizing Your BMPs Efficiencies

- May increase sediment capture from 60% to 90+%.
- This will increase maintenance needs.
- Turbidity will still be an issue
- Values far exceeding regulation standards

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What To Do?

- Filter: often impractical because effective filters require maintenance (e.g. backflushing).
- Infiltrate: ideal solution (no runoff!) but often soil properties or high groundwater prevent it.
- Chemically Assisted Settling: effective, may not require much change, inexpensive.

Polyacrylamide (PAM)

- Water soluble synthetic polymer
- Forms: dry powder, effervescent tablets, solution, emulsion, logs/blocks

Flocculation

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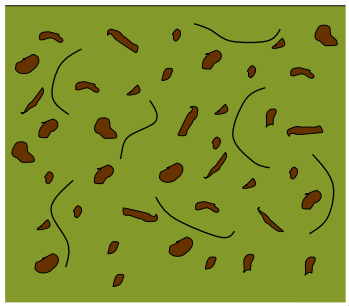
- Flocculants bind suspended sediment by attaching to several soil particles forming a larger aggregate or floc.



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Flocculation

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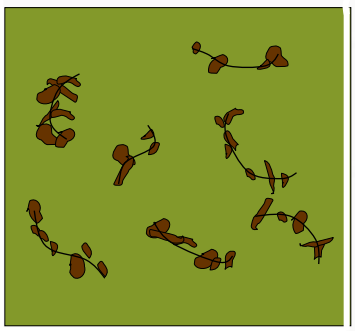
- The larger (and now heavier) flocs then settle out of suspension.



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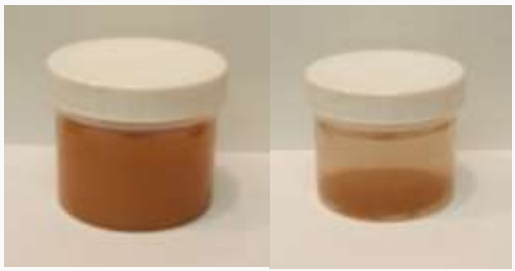
Polymer Testing

- Jar test with sediment or muddy water
- Usually want to test a variety of products or chemistries.
- Looking for rapid flocculation and settling.



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Approach

Passive dosing is any system that relies on gravity flow in a conveyance to achieve flocculation.

- Check dams with dry granular polymer
- Other granular polymer uses
- Polymer logs or socks (in pipes and other structures)

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Fiber Check Dams with granular PAM

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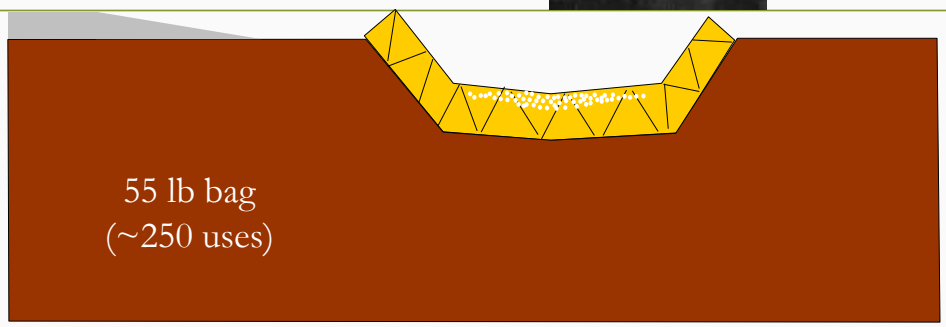
Sprinkle 100 grams of PAM (½ cup) over the lower center portion of the wattle and on the blanket above and below.



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Check Dam pooling

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Drop Inlets – Another Good Option for flocculants

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Flocculant Treatment in Pipes

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Polyacrylamide Effervescent Tablets

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Runoff Has to Pass Through System

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Capture Treated Water and Collect Flocs

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Passive Treatment of Pumped Water

- Water is passed over solid flocculants in the pipe

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Passive Dosing with PAM in Pipes

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Current Methods for Treating Pumped Construction Site Water

- Pumped into a sediment bag made of geotextile fabric

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Sediment Bags and PAM?

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Rain-Driven Liquid Doser

- Created in New Zealand
- Doses runoff with solution of coagulant or flocculant based using rainfall

Figure 4. Rainfall Activated Flocculation Housing

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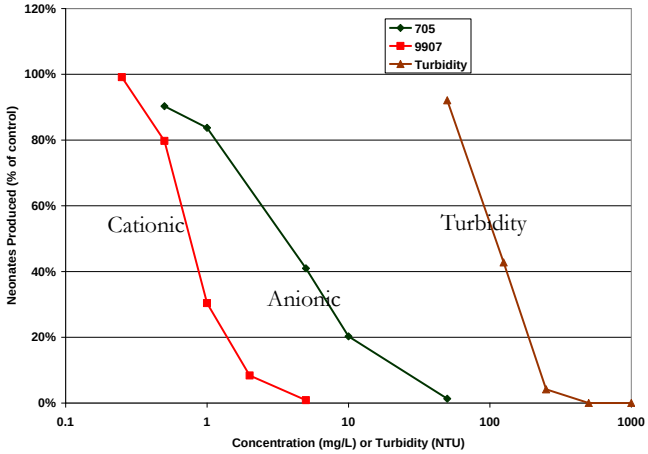
Cationic, Anionic, Turbidity: Reproduction Effects



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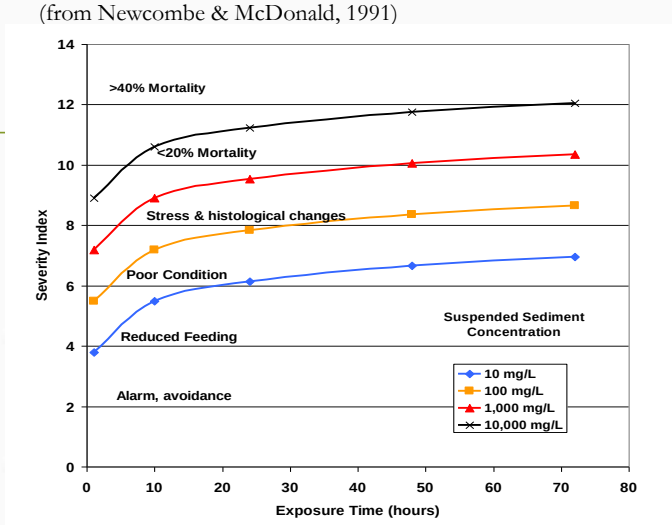
Suspended Sediment Effectson Aquatic Organisms

(from Newcombe & McDonald, 1991)



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Questions?

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