

The Five Pillars

of Construction Stormwater Management

Barry Fagan

PE/PLS, ENV SP, CPMSM, CPESC, CESSWI





Which group of BMPs is your favorite?



Which group of BMPs is implemented most often on your sites?

Professional Challenge:

Narrow the gap
between what we know
and what we do.



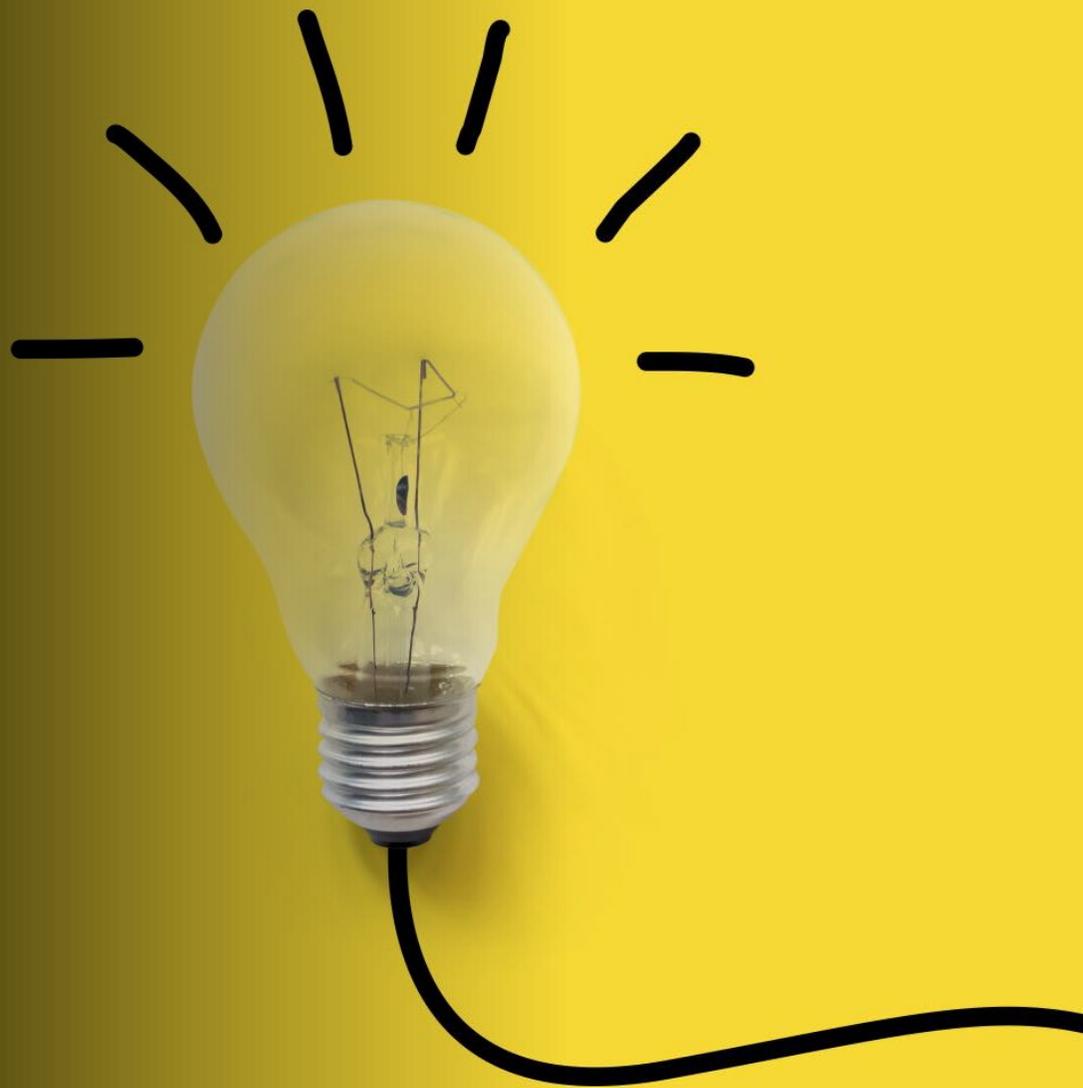
Organizational
Challenges:

- Think.
- Do things in order of importance.

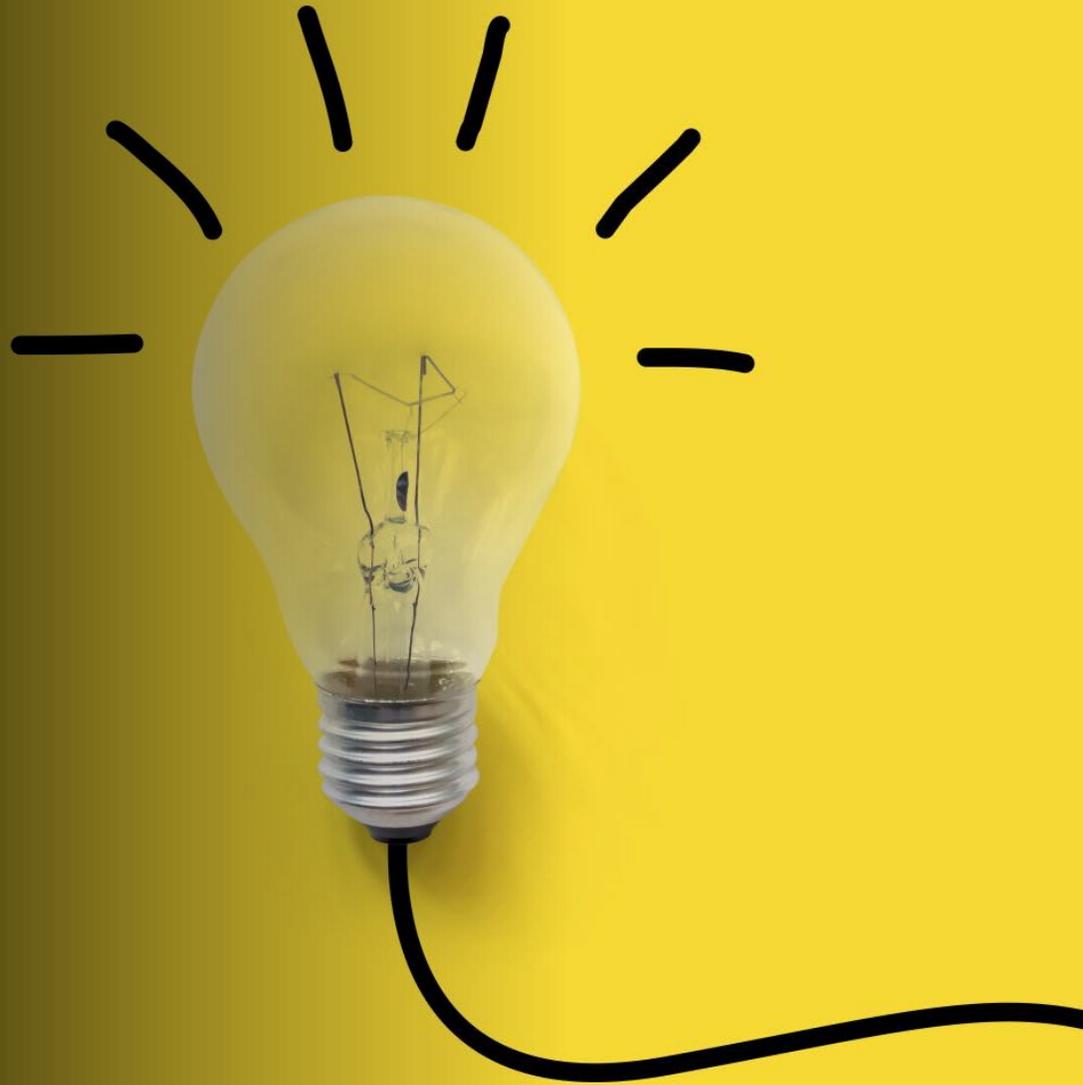
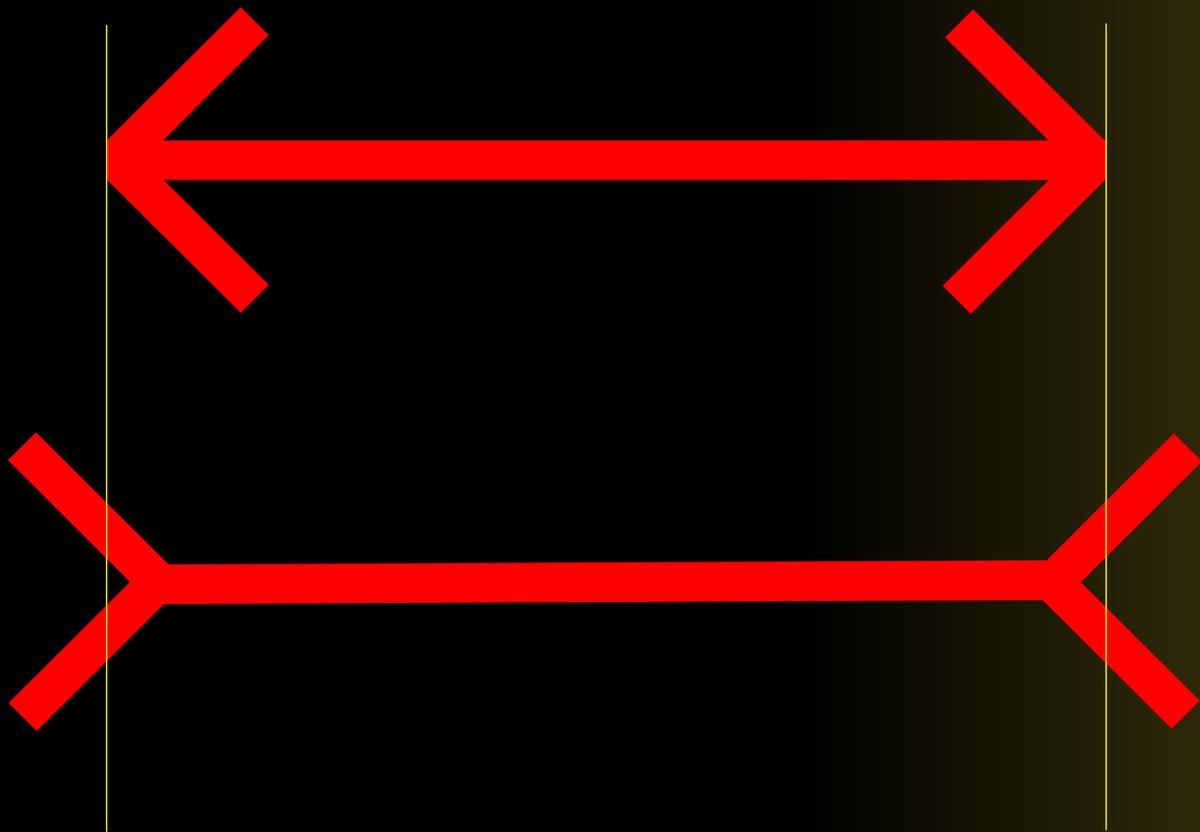
- John Maxwell



think.



We often respond rationally to a
world we understand and recognize,
but no longer exists.





ALDOT
ENVIRONMENTAL

An evolution of thinking,
focus, and application
(philosophy)

“If we put off doing right things...”



ALDOT
ENVIRONMENTAL

An integrated culture of
environmental
consideration,
stewardship, and
advancement



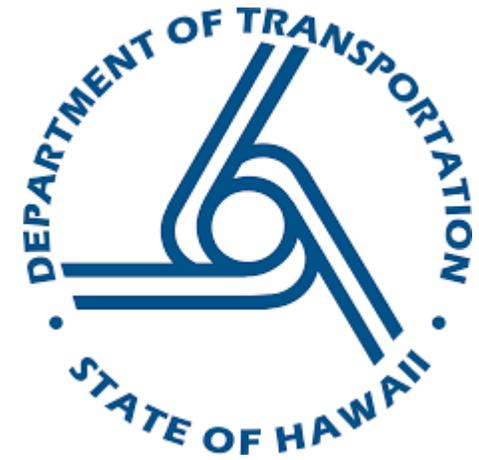
ALDOT'S MISSION

To provide a
transportation system...



A DOT'S MISSION

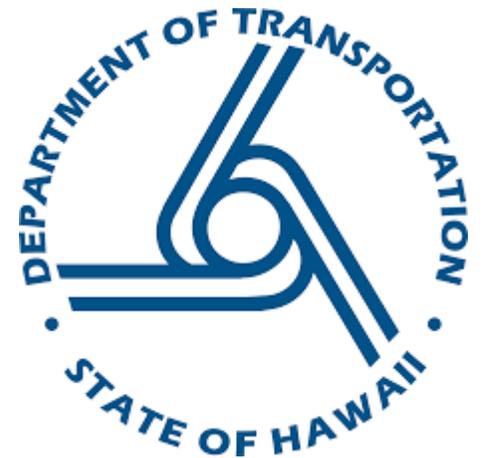
To provide a
safe, efficient, accessible, and
sustainable inter-modal
transportation system...

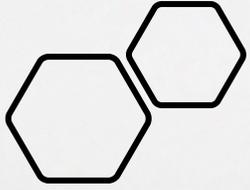


mission

potential

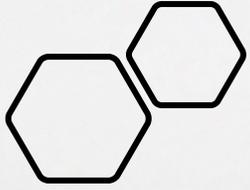
environmental
responsibilities





Under Control or at Risk?

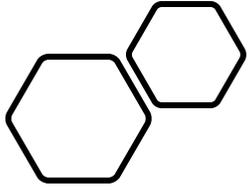




Under Control or at Risk?

- ▼ Regulatory
- ▼ Environmental
- ▼ Community Expectations
- ▼ Legal Expectations
- ▼ Operation and Maintenance
- ▼ Contractual





Risk

- ▼ Regulatory
- ▼ Environmental
- ▼ Community Expectations
- ▼ Legal Expectations
- ▼ Operation and Maintenance
- ▼ Contractual





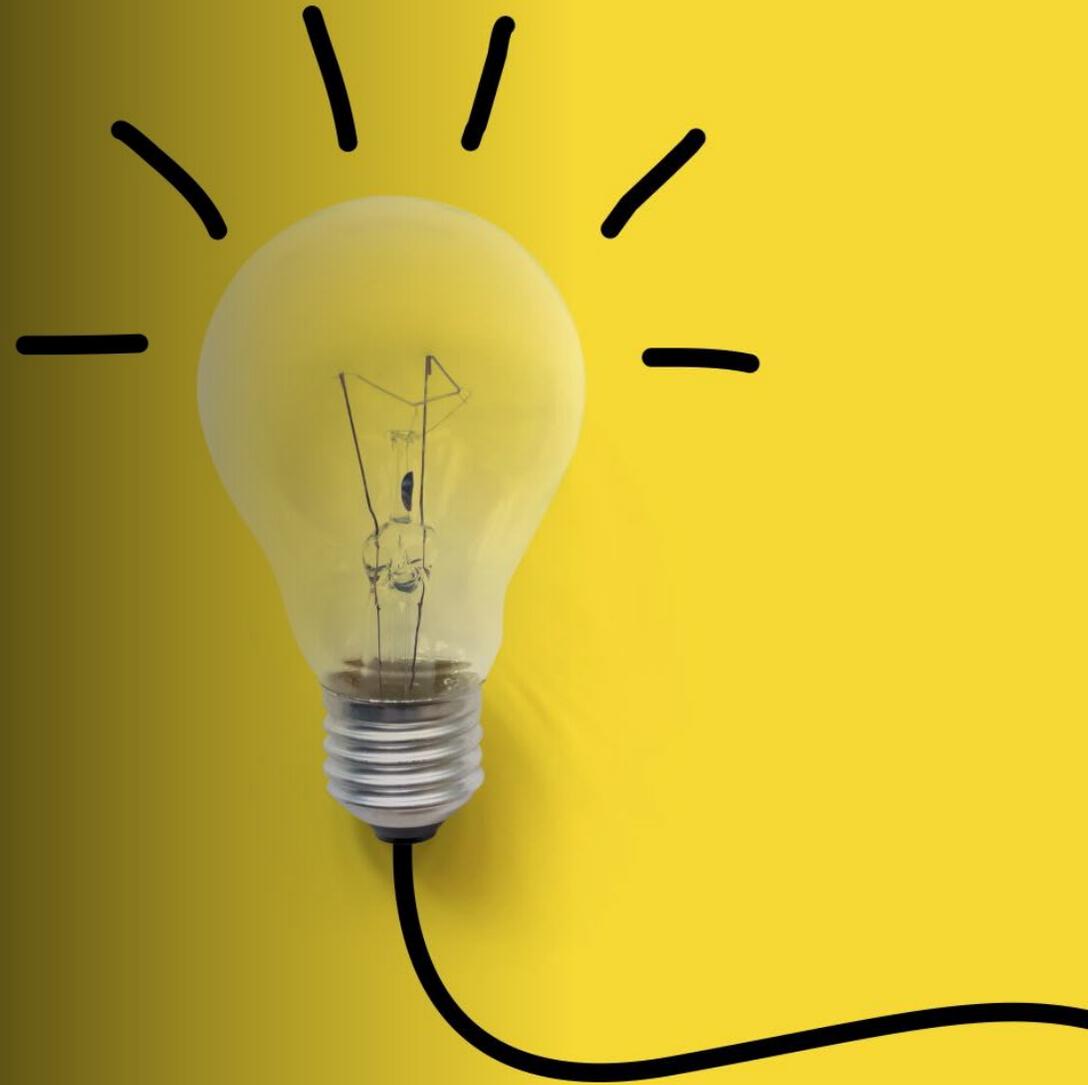
ALDOT
ENVIRONMENTAL

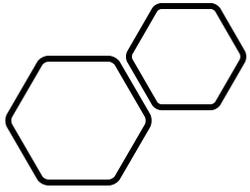
An evolution of thinking,
focus, and application
(technical)

—

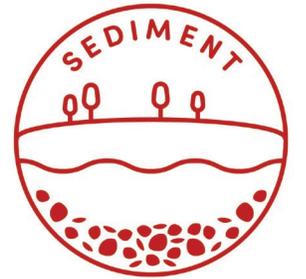
$$A = R \cancel{KLS} C P$$

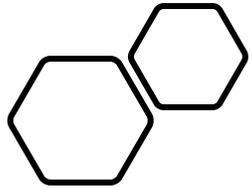
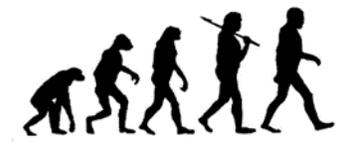
A = average annual soil loss
(tons/acre/year)





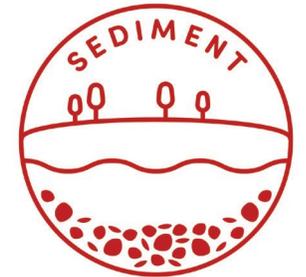
The **Five Pillars** of Construction Stormwater Management

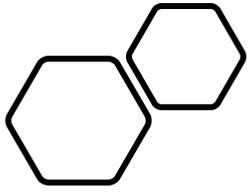




The **Five Pillars** of Construction Stormwater Management

1. **Manage Communication**
2. **Manage Work**
3. **Manage Water**
4. **Manage Erosion**
5. **Manage Sediment**

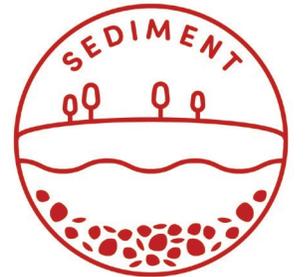


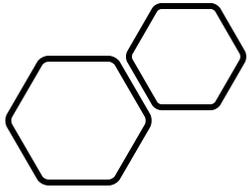


The **Five Pillars** of Construction Stormwater Management

1. **Managing Communication**

includes all efforts to convey information among project stakeholders to increase effectiveness in project planning, design, and implementation.

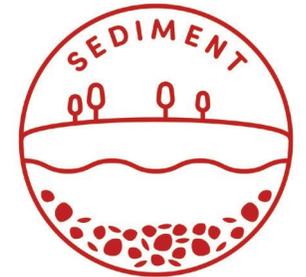


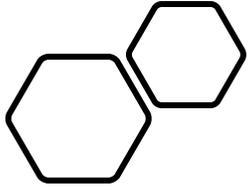


The **Five Pillars** of Construction Stormwater Management

2. Managing Work

includes all operational efforts to ensure that work proceeds in a manner that is protective of the owner's interests and environmental responsibilities.





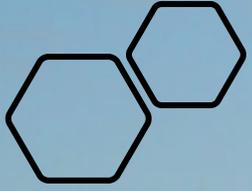
Staging and Sequencing





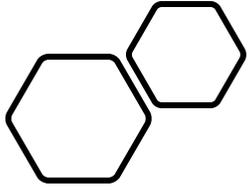
Disturbance Limitation





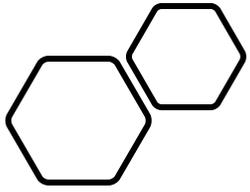
Early Installation of Cross-Drainage





Early Installation of Cross-Drainage

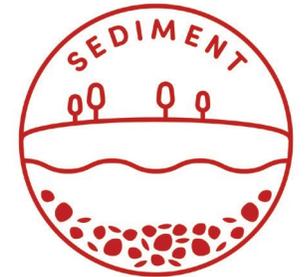
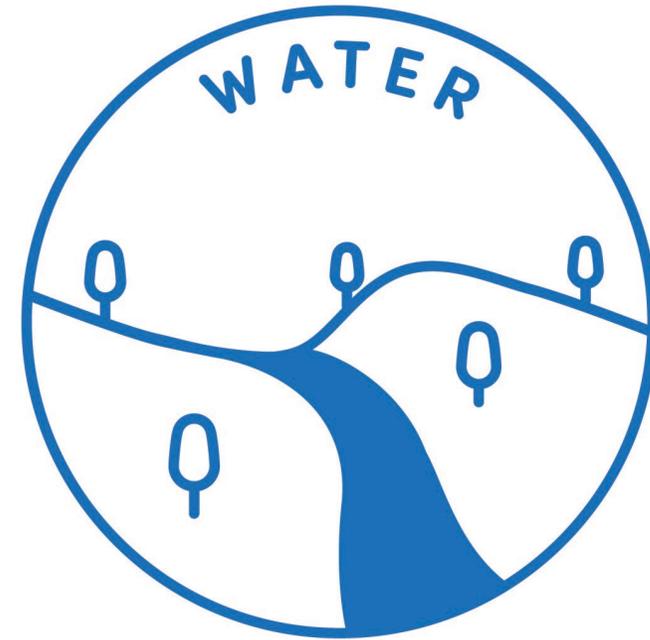




The **Five Pillars** of Construction Stormwater Management

3. **Managing Water**

includes all efforts that address the flow of waters through the project to protect the work area and minimize the work of managing erosion and sediment.



Water is Dumb...





Clean Water In, Clean Water out.

Run-on
Flow-Through
Dewatering
Run-off

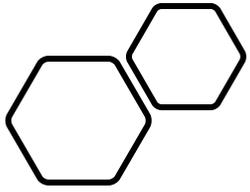


The Basics

- Fast water carries more sediment than slow water.
- Fast water is more erosive than slow water.

To reduce erosive energy and sediment-carrying capacity of runoff, slow it down.

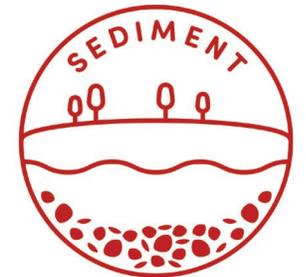




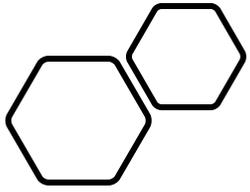
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4. Managing Erosion

includes all efforts to minimize the displacement of soil particles by splash, sheet, rill, and channel erosion to minimize negative project impacts and reduce the work of managing sediment.



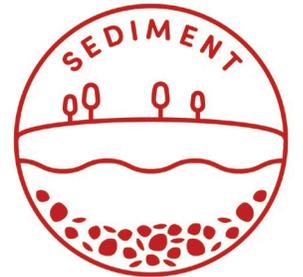
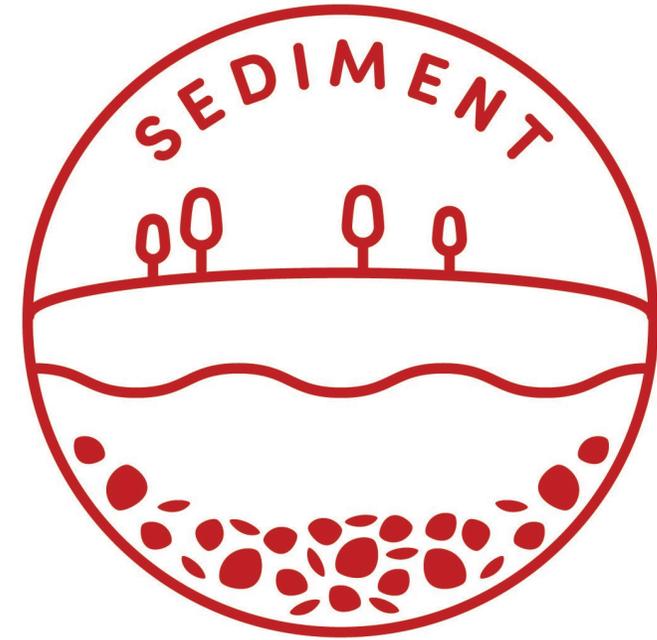


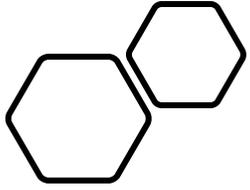


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5. **Managing Sediment**

includes all efforts to influence the transport and deposition of suspended soil particles displaced by erosion.





“Filtering” is a Myth

Google erosion control sediment filter

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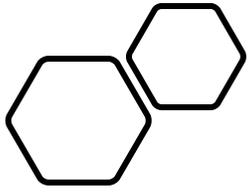
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SEDIMENT

Gravel Filter Wire Mesh Filter Fabric

Runoff Water Filtered Water

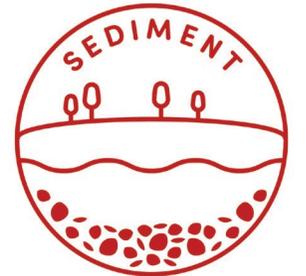




The **Five Pillars** of Construction Stormwater Management

Decreasing effectiveness

Increasing cost of implementation



...think, and put things in order of importance...

- John Maxwell

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