



Evaluation of Rolled Erosion Control Product Fibers

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North Central Texas
Council of Governments



Regional Stormwater Management Coordinating Council at NCTCOG

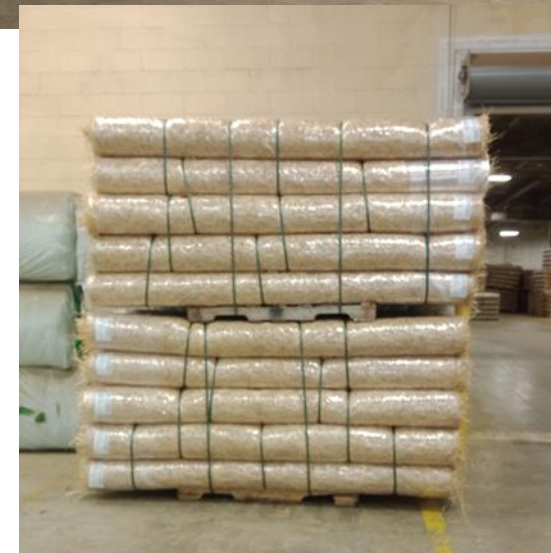
- Locally funded program to support municipal stormwater quality permit management
- Subcommittee topics:
 - Public Education and Involvement
 - Pollution Prevention and Source Tracking/Eliminating
 - **Construction and Post-Construction Stormwater Controls**
 - integrated Stormwater Management (iSWM) standards and manual



What is an RECP

Rolled Erosion Control Product

RECP involve the use of natural or synthetic materials to control soil erosion and to enhance the establishment and growth of vegetation. RECP material are temporarily or permanently designed products installed in areas that are vulnerable to erosion. These products include **erosion control blanket (ECB)** and **turf reinforcement mats (TRM)**



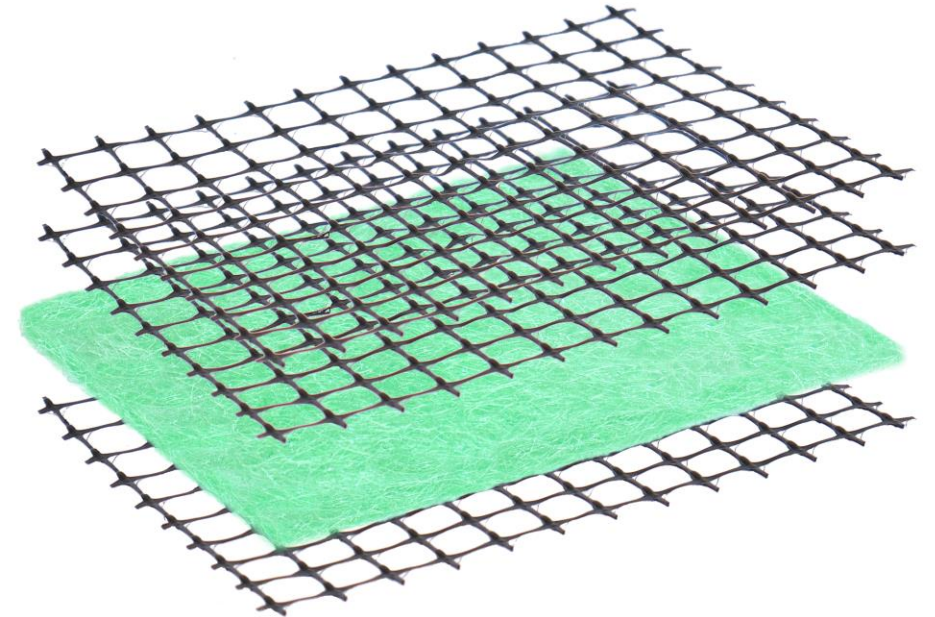
(ECB) Erosion Control Blankets

- **Degradable or Bio-Degradable net Options**
- **One or Two Layers of Netting**
- **Natural Fiber Layer**
 - **Wood Fiber**
 - **Straw**
 - **Coconut**
- **Functional Longevities of 6-36+ Months**



(TRM) Turf Reinforcement Mats

- Most Use 2-3 Layers of Netting
- Long Term Protection
- Fiber Layer
 - Natural Fiber
 - Synthetic Fiber
- Long Term Shear Stress Protection
- Long Term Vegetation Support



Fiber Types Utilized In RECP and TRMs

All Fibers Aren't the Same



Straw Fiber



Coconut
Fiber



Straw/Coconut
Blend



Wood Fiber

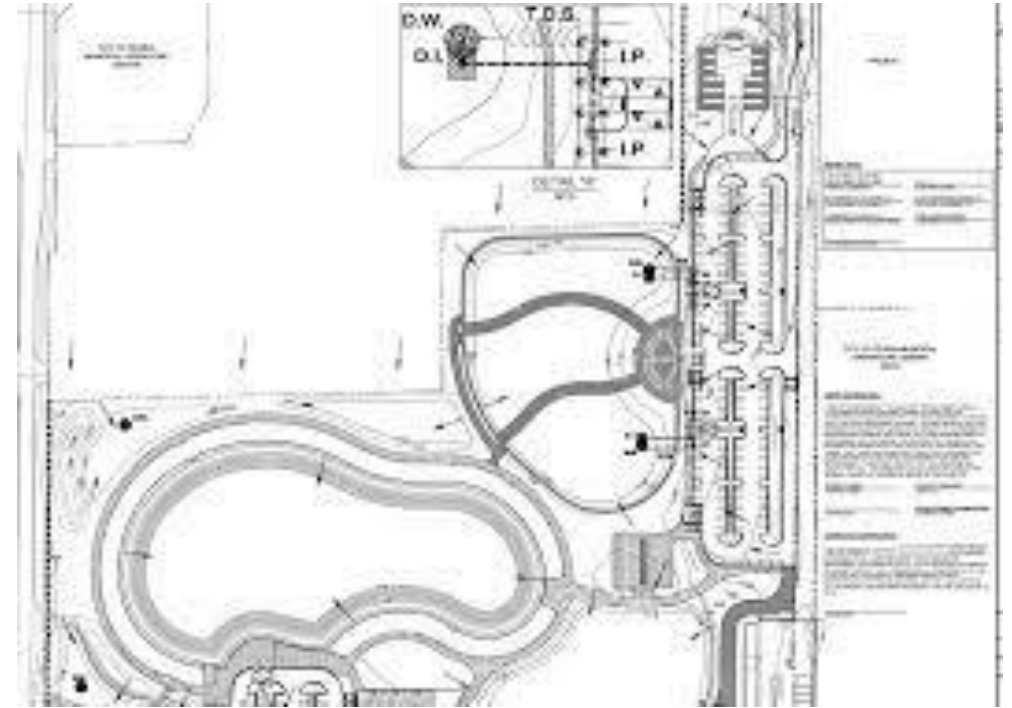


Synthetic Fibers

NATURAL FIBERS

Things to Consider When Choosing a Fiber Type

- **Site Conditions**
 - Shear Stress
 - Slope
 - Length
 - Steepness
 - Channel Application
 - Vegetation support needs
 - Long term - TRMs
 - Short term – Temporary Erosion Blankets
- **Soil Type**
- **Specific Gravity of Fibers**
- **Does the Blanket Float**



Fiber Types are Important

Fiber Characteristics to be Considered

Specific Gravity

What is Specific Gravity

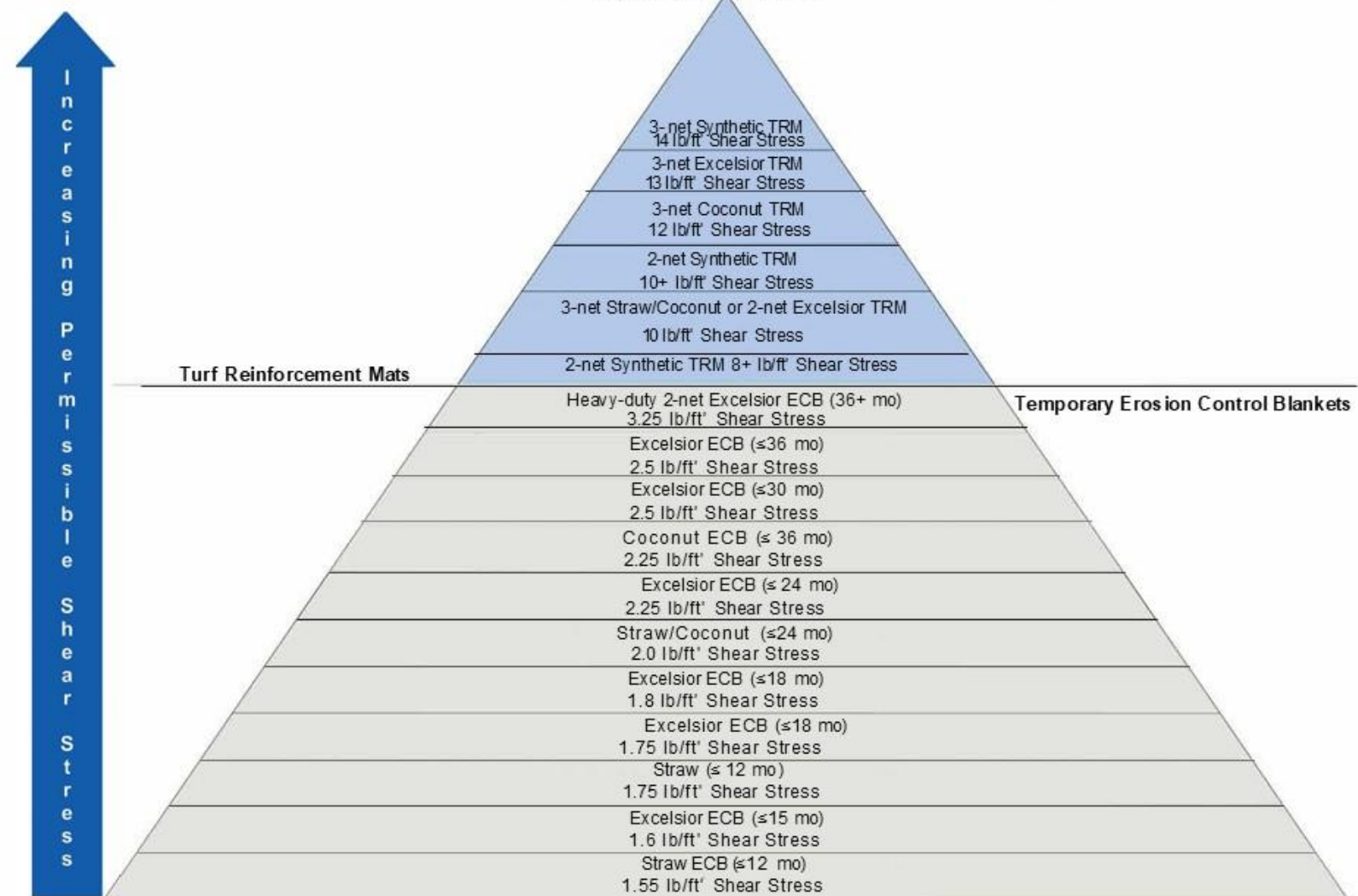
The ratio of the density of a substance to the density of a standard, usually water for a liquid or solid, and air for a gas.

Water has a specific gravity **equal to 1**. Materials with a specific gravity less than 1 are less dense than water and will float on the liquid; substances with a specific gravity more than 1 are denser than water and will sink.

Channel Application Guide

Example

Functional Longevity in parentheses after each product type*



*Functional Longevity varies from region to region because of differences in climatic conditions.

Channel Flow Examples



Slope Application Guide Example

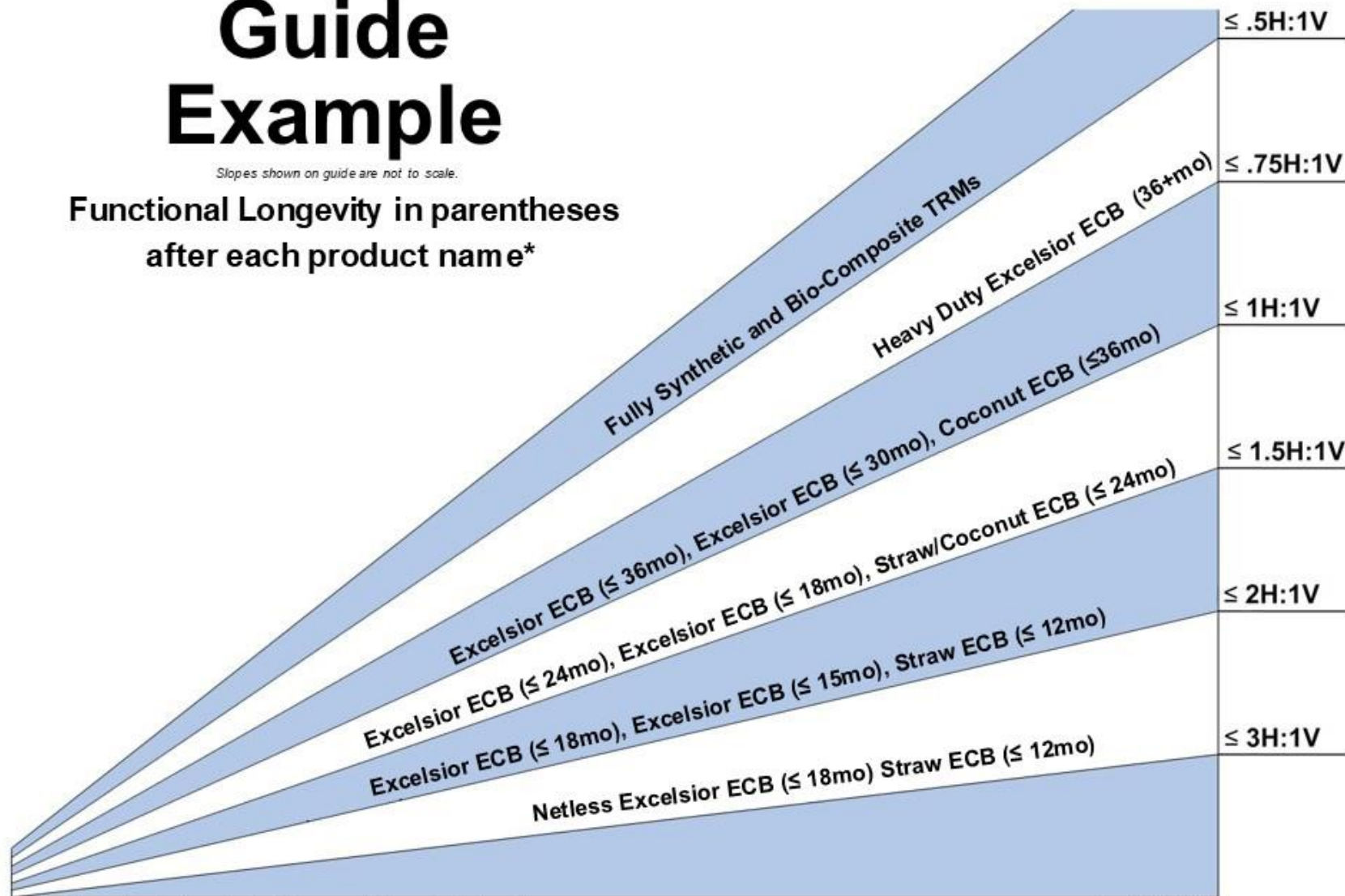
Slopes shown on guide are not to scale.

Functional Longevity in parentheses
after each product name*

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*Functional Longevity varies from region to region because of differences in climatic conditions.

Straw Fiber

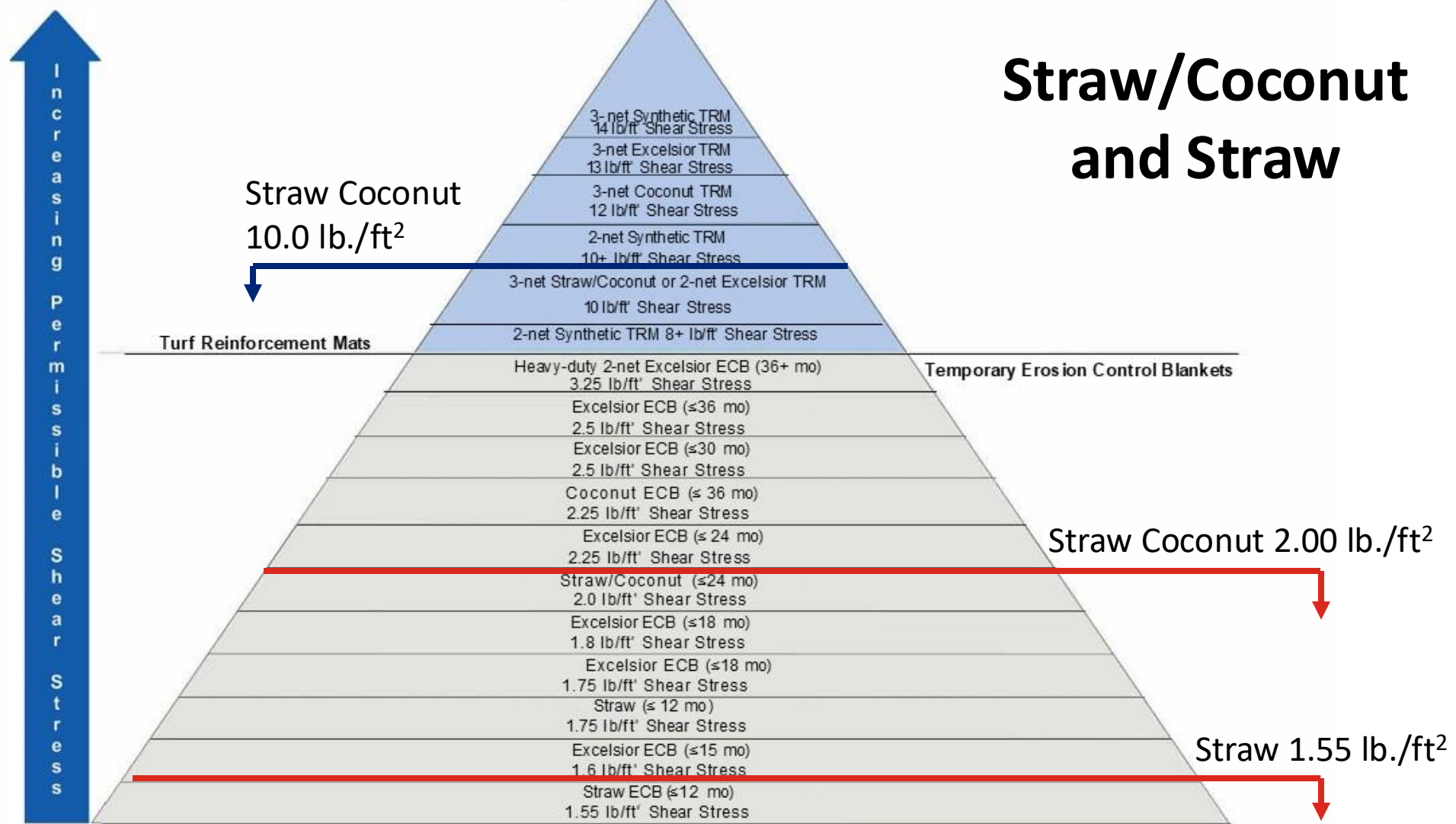
- **Agricultural Byproduct**
 - **Least Expensive Natural Fiber**
 - **Can Contain Weed Seed**
- **Hollow**
- **Floats**
- **Short term longevity**
 - **6 – 9 months**



Channel Application Guide

Example

Functional Longevity in parentheses after each product type*



*Functional Longevity varies from region to region because of differences in climatic conditions.

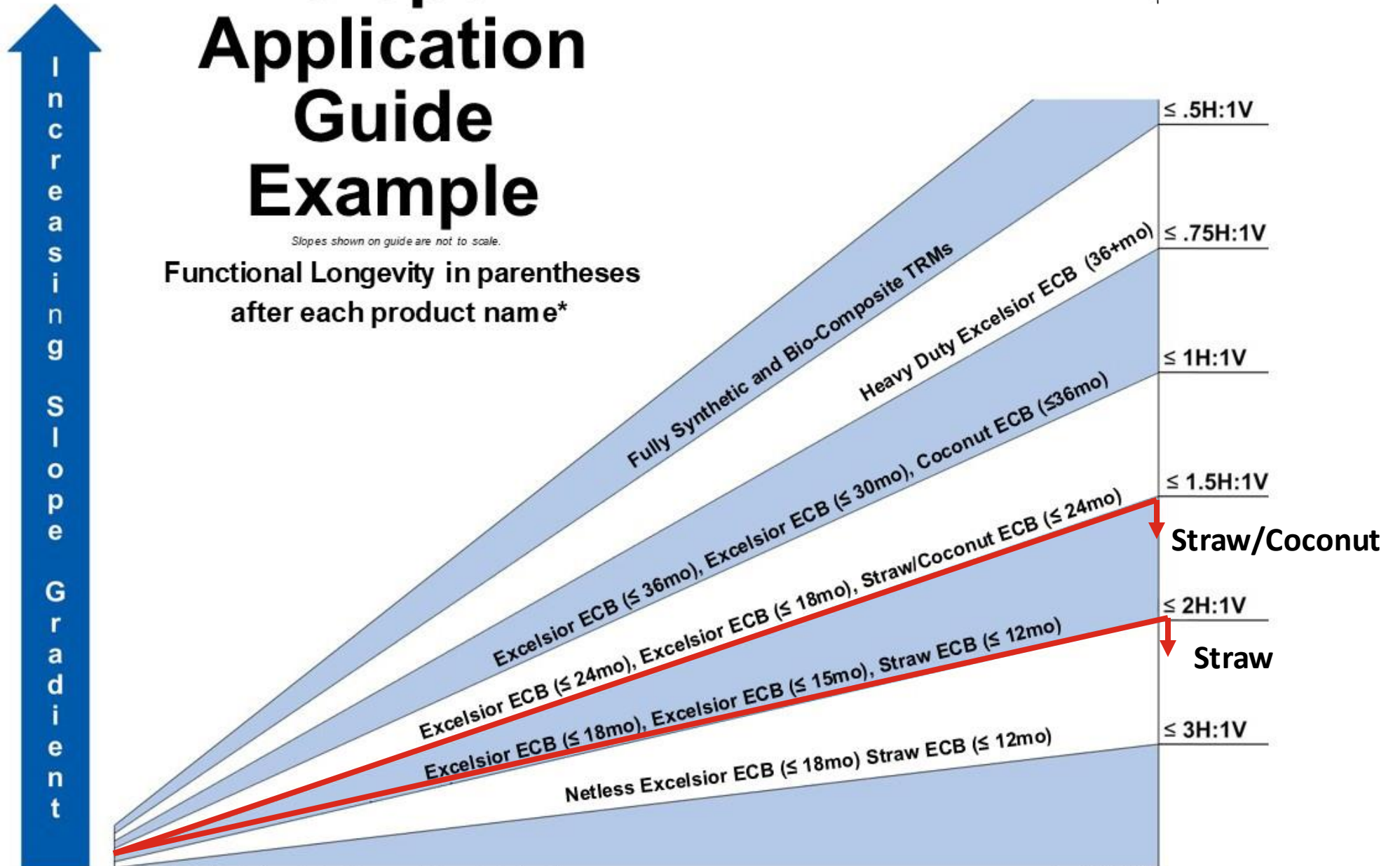
Straw in Swales



Slope Application Guide Example

Slopes shown on guide are not to scale.

Functional Longevity in parentheses
after each product name*



*Functional Longevity varies from region to region because of differences in climatic conditions.

Straw Fiber on Slopes



Coconut Fibers

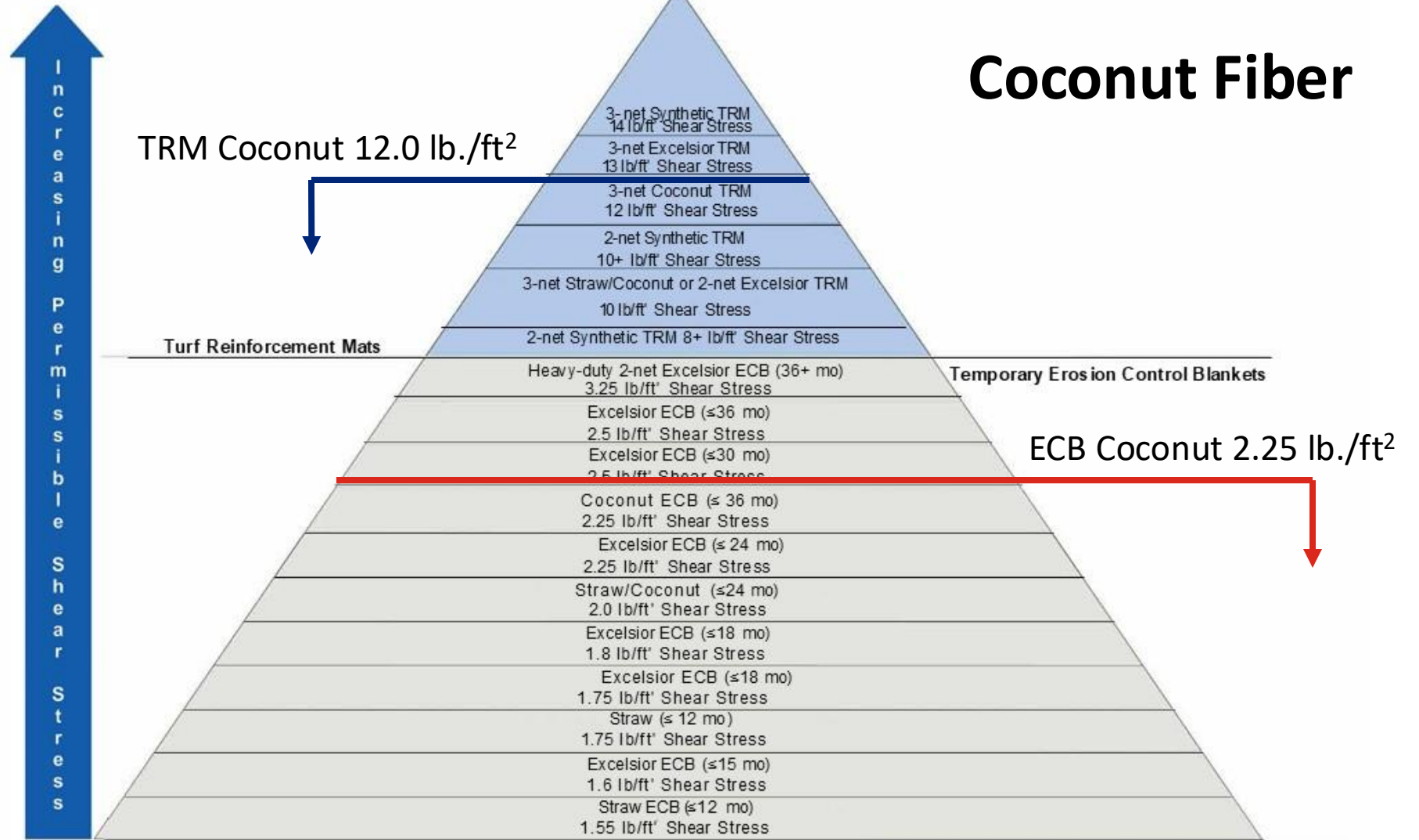
- **Up to 36 Month Longevity**
- **Imported from Southern Asia**
 - **Poor carbon footprint**
 - **Non-native matrix**
- **Dark color**
 - **Can cause seed burn out before germination**



Channel Application Guide

Example

Functional Longevity in parentheses after each product type*



*Functional Longevity varies from region to region because of differences in climatic conditions.

Coconut Swale



Slope Application Guide Example

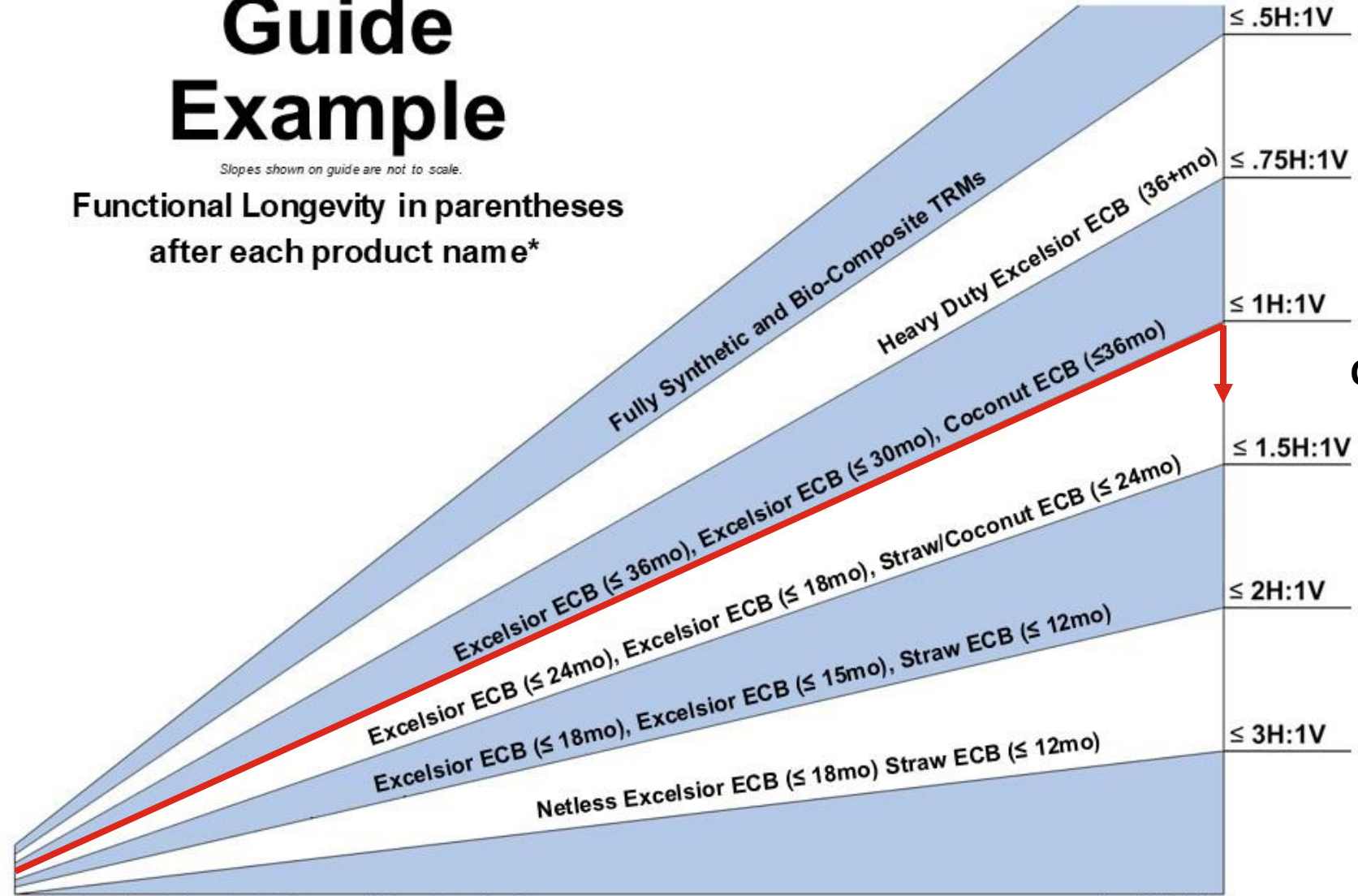
Slopes shown on guide are not to scale.

Functional Longevity in parentheses
after each product name*

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Coconut

*Functional Longevity varies from region to region because of differences in climatic conditions.

Aspen Wood Fiber

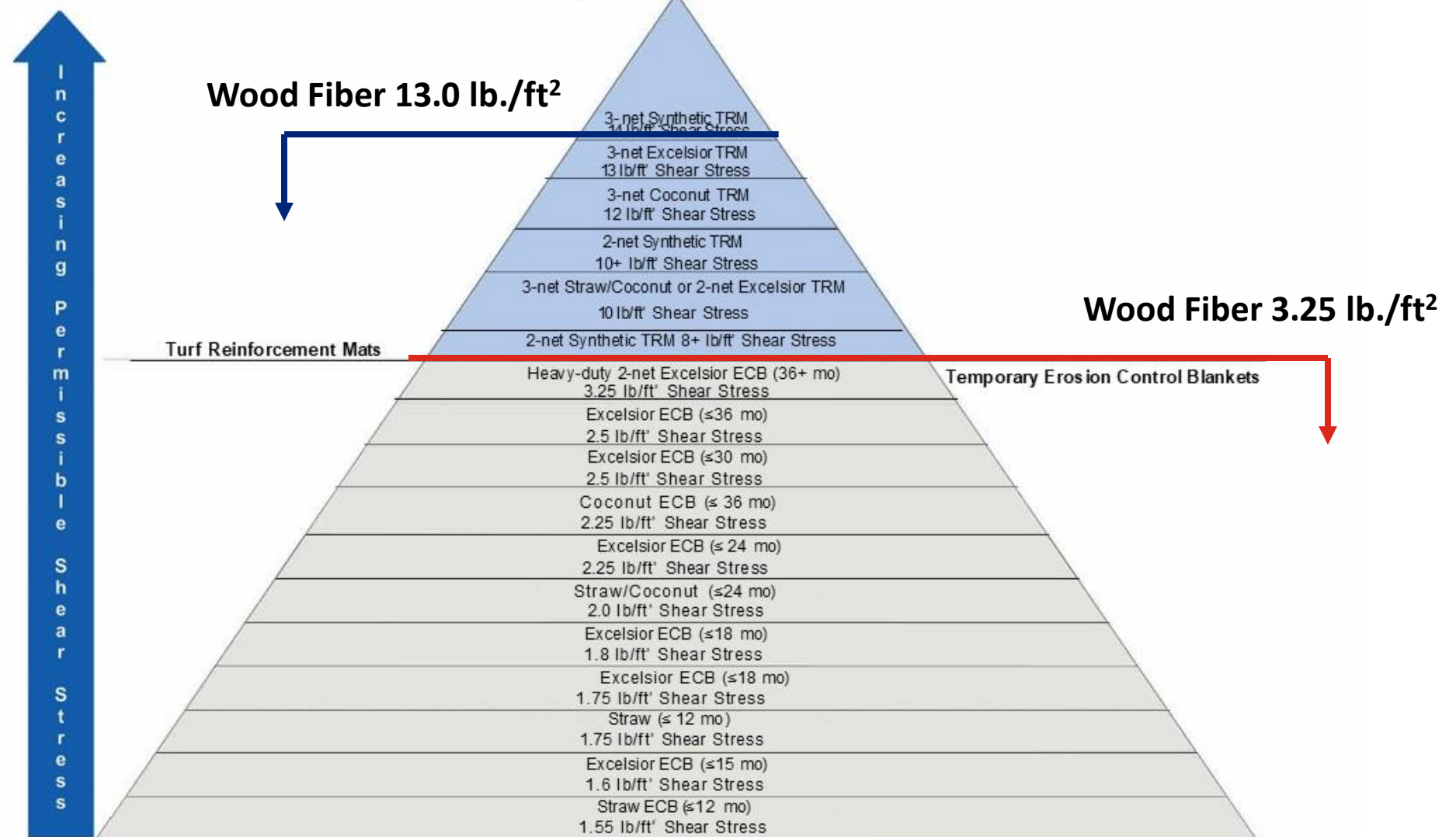
- Naturally Seed Free
- Native Fibers
- Engineered Curls and Barbs
- Hastens Revegetation
- Some Wood Fiber Blanket System do not Float



Channel Application Guide

Example

Functional Longevity in parentheses after each product type*



*Functional Longevity varies from region to region because of differences in climatic conditions.

Wood Fiber Swale

BEFORE



AFTER



Slope Application Guide Example

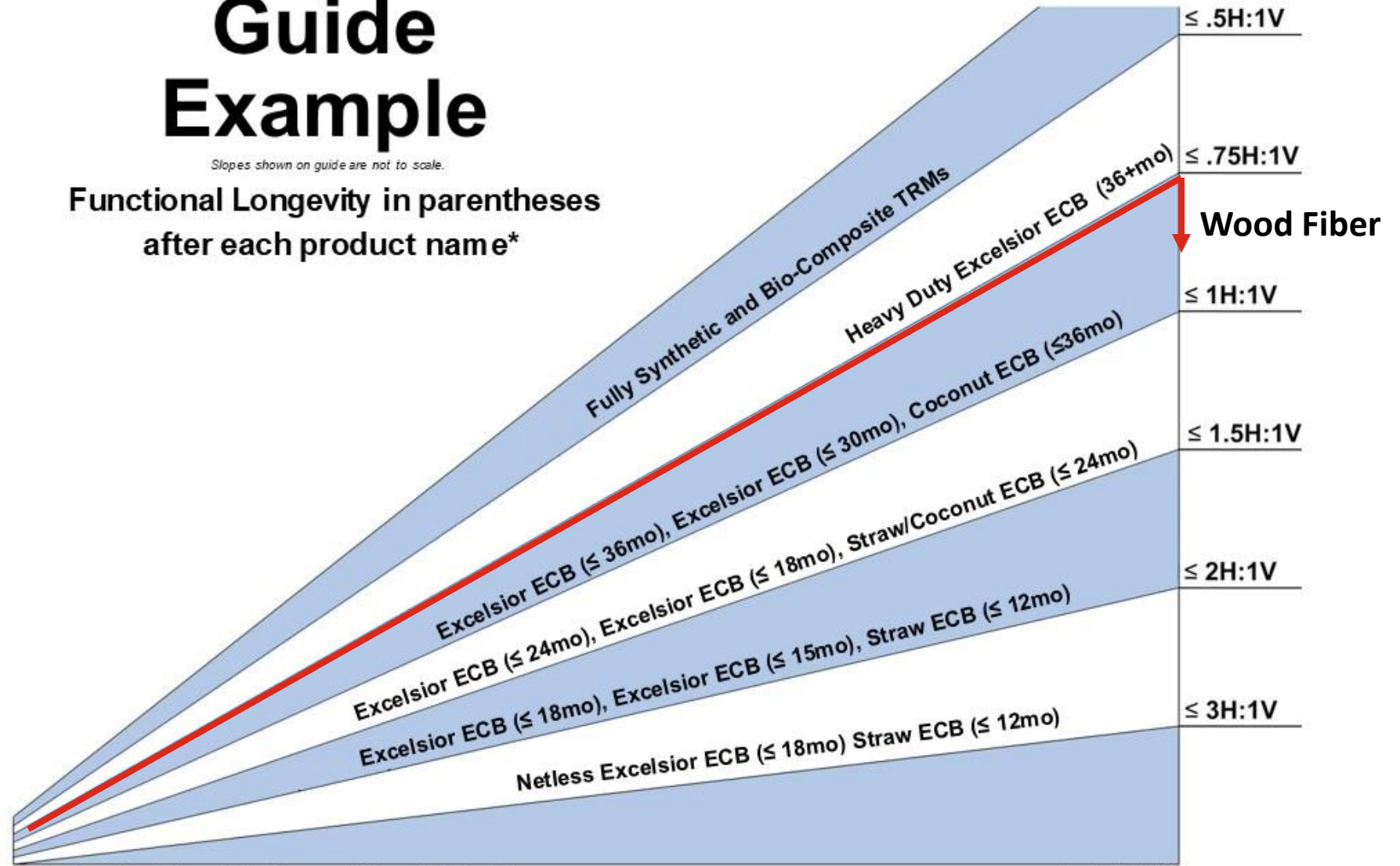
Slopes shown on guide are not to scale.

Functional Longevity in parentheses
after each product name*

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*Functional Longevity varies from region to region because of differences in climatic conditions.

Wood Fiber Slope

BEFORE

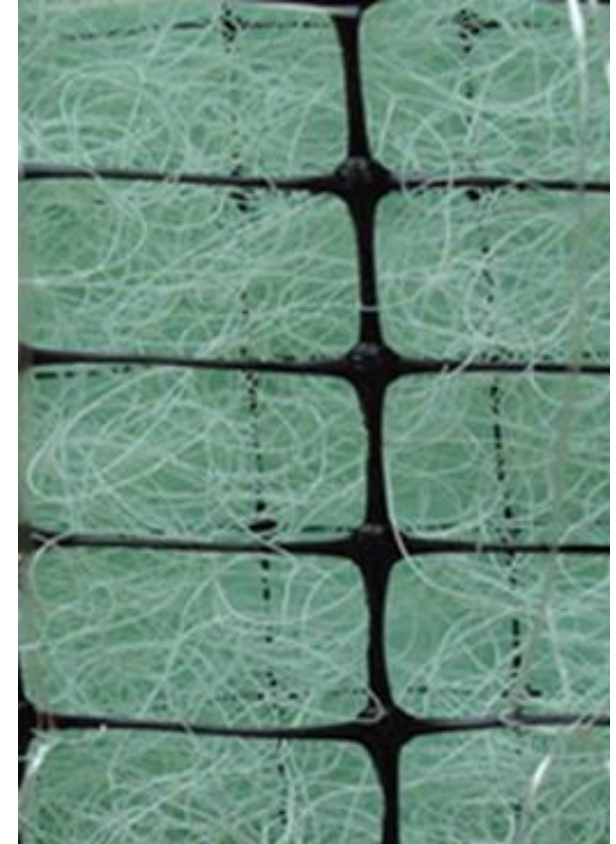


AFTER



Synthetic Fiber

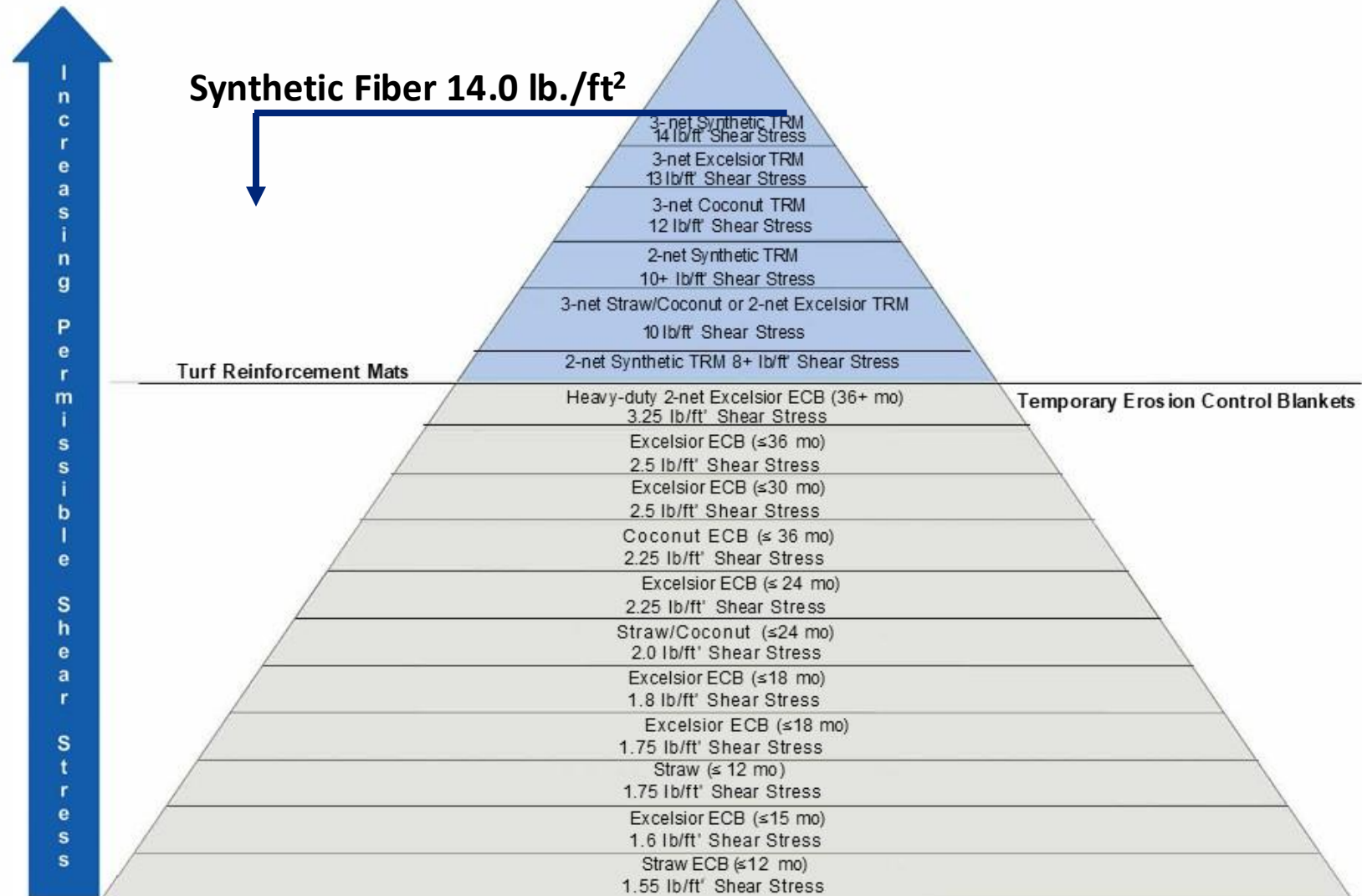
- Used When Long Term Vegetation Support
- High Shear Stress Applications
- Some have Specific Gravity Less than 1
 - Those Float
- Some Have Specific gravity Greater than 1
 - Those do NOT Float



Channel Application Guide

Example

Functional Longevity in parentheses after each product type*



*Functional Longevity varies from region to region because of differences in climatic conditions.

Synthetic Fiber Swales

BEFORE



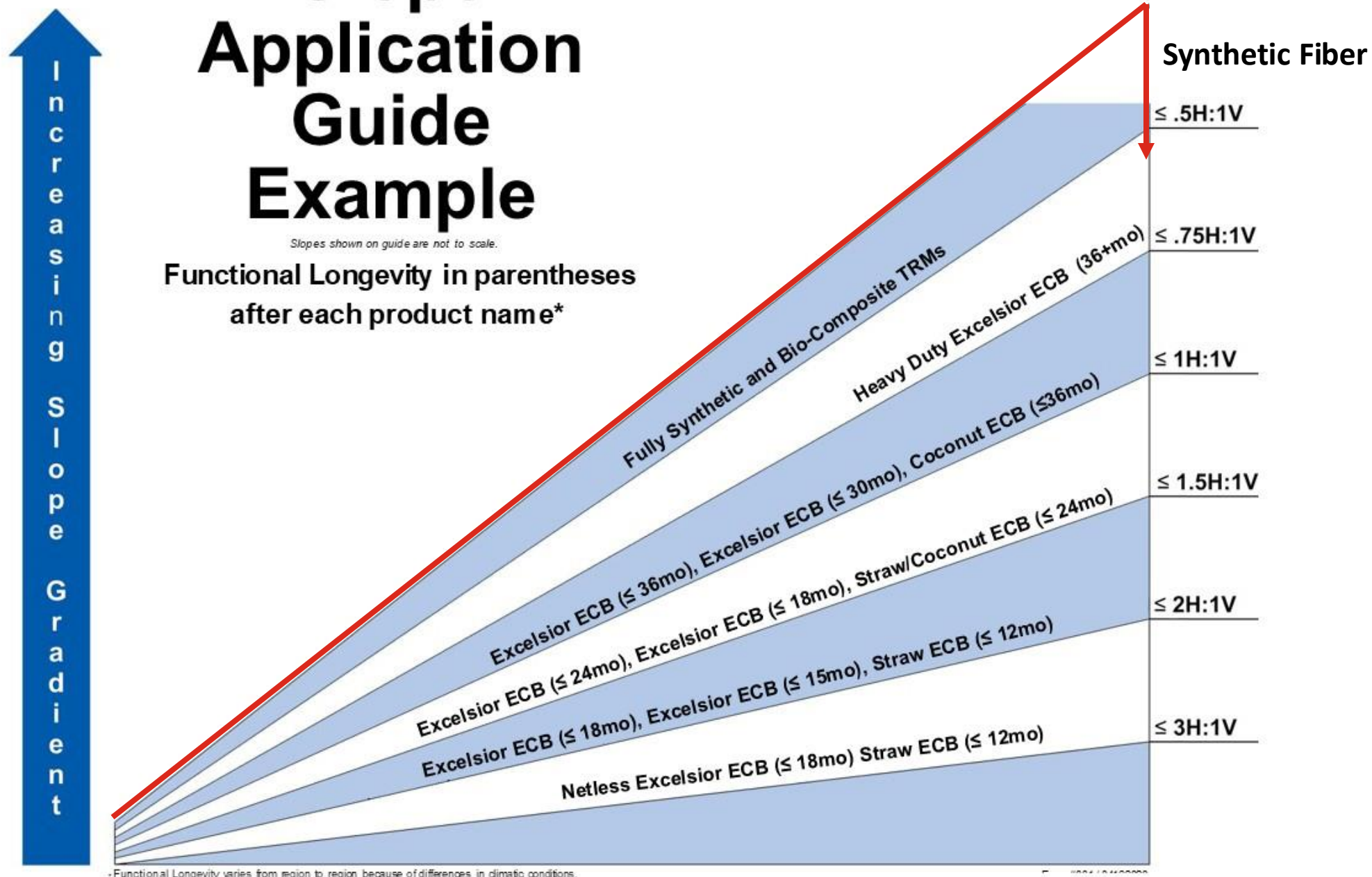
AFTER



Slope Application Guide Example

Slopes shown on guide are not to scale.

Functional Longevity in parentheses after each product name*



What Happens When Fiber Floats



Fibers Type Impacts TRM Performance



Fiber Types are Important

Which Ones Float?

**Specific
Gravity < 1**



Straw Fiber

**Will
Float**



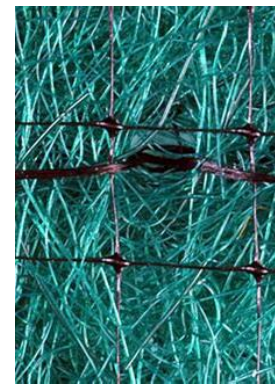
Coconut
Fiber

**Will
Float**



Straw -
Coconut
Blend

**Will
Float**



Synthetic Fiber
with Specific
Gravity ≤

**Will
Float**



Aspen Wood
Fiber Blanket
System

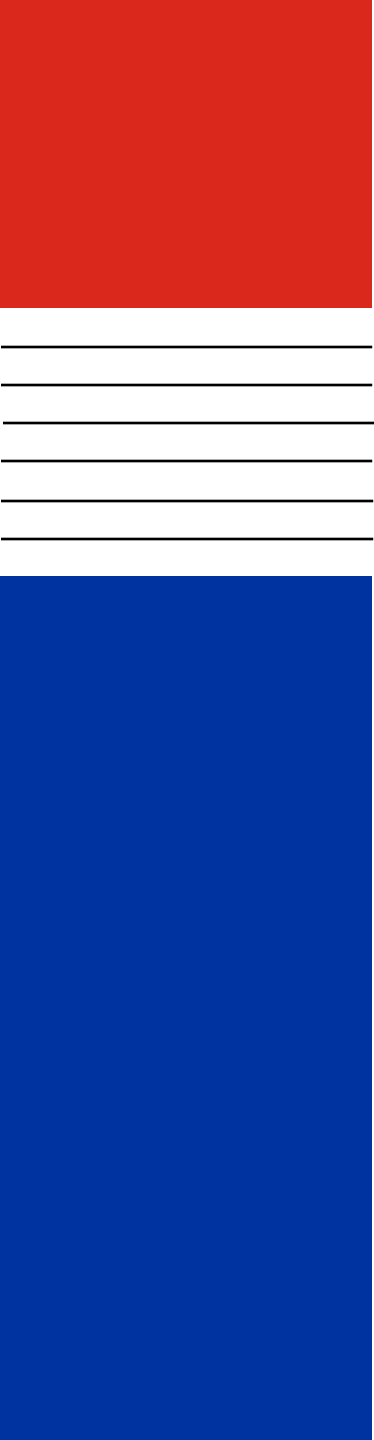
**Doesn't
Float**

**Specific
Gravity > 1**



Synthetic Fiber
with Specific
Gravity ≥ 1

**Doesn't
Float**



Summary

- **Fiber type selection is critical to a successful RECP/TRM installation**
- **Specific gravity is key in swale and slope solutions**
- **Several design tools available to assist in a successful installation**



Thank You

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