

Healthy Landscapes and the Soils they Rest Upon Promote Healthy Streams and Clean Water



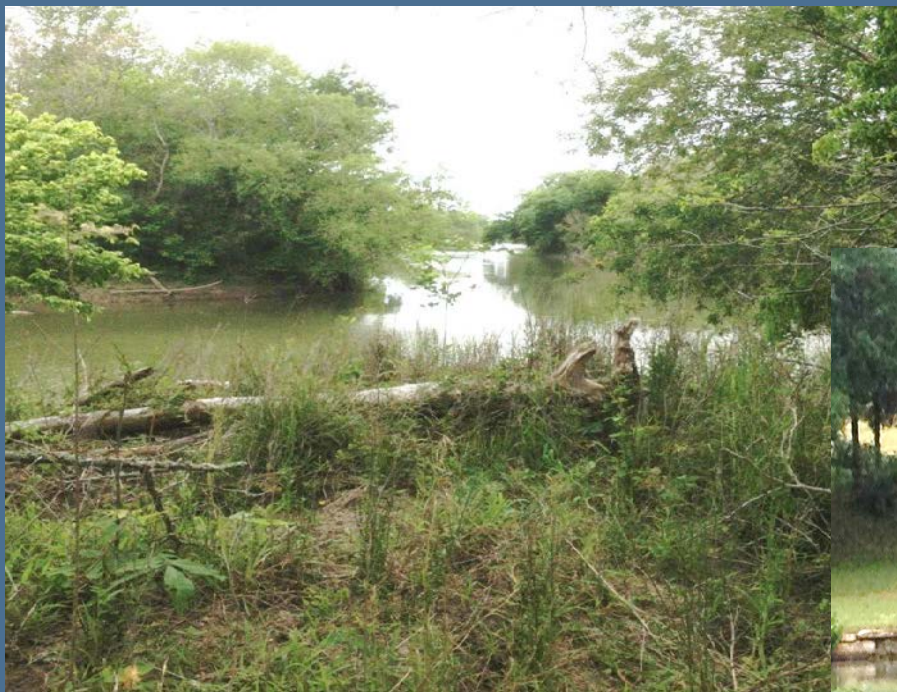
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- What is Healthy?
- Treating Problems or Symptoms.
- Treating Symptoms Sometimes Causes More Problems.
- Dynamics of a Stable Stream
- Healthy Soils are the Foundation
 - It's Complicated

What is Healthy?



WHAT SHOULD A HEALTHY STREAM LOOK LIKE?

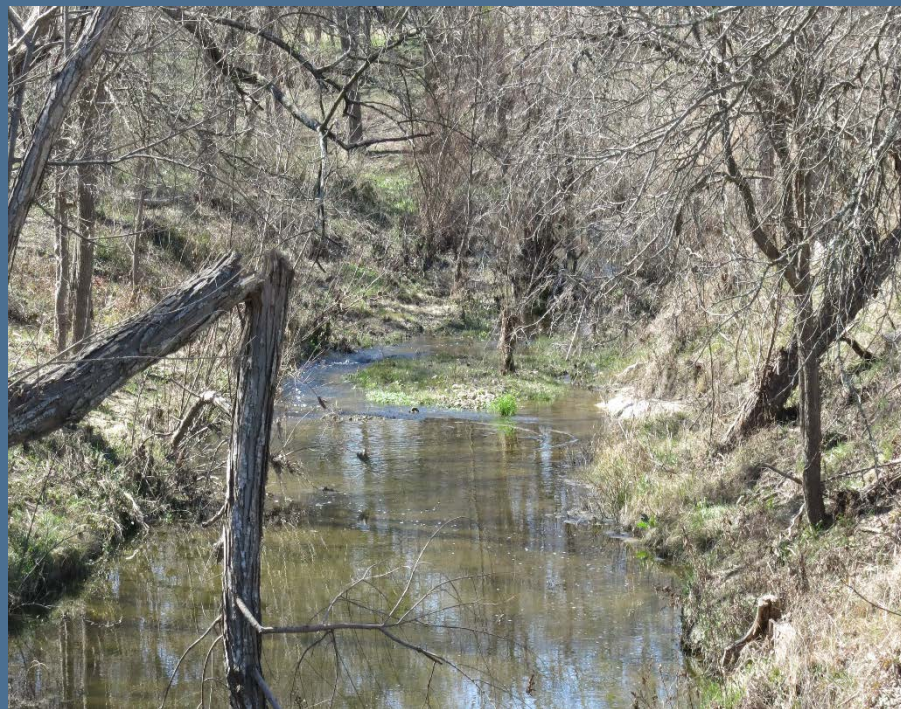


WHAT DO WE VALUE ABOUT HEALTHY STREAMS?



- Clean Water
- Fish and Aquatic Habitat
- Natural Scenic Beauty
- Recreation
- Wildlife Habitat
- Abundant Forage for Livestock
- Reliable Water Source

WHAT SHOULD A HEALTHY STREAM LOOK LIKE?



Are We Treating Problems or Symptoms of a Problem



Many times the riparian “problems” we are challenged to fix, are only the symptoms of an issue that is occurring somewhere else.



Example: Heavy bank erosion in a bend in the river.

- One choice would be to armor the bank and stabilize it to prevent further erosion.
- However the real problem may be increased flow due to poor infiltration and excessive runoff on the uplands.
- If we armor the bank and stabilize it odds are that it will just start erosion somewhere else.

Key: In order to fix the problem you must treat the problem rather than the symptoms.

If we are only treating the symptom, our fix may actually cause more problems.



Anything that we do in the riparian and/or stream will cause a change in the dynamics of the stream.



Example: Changing the path a stream follows.

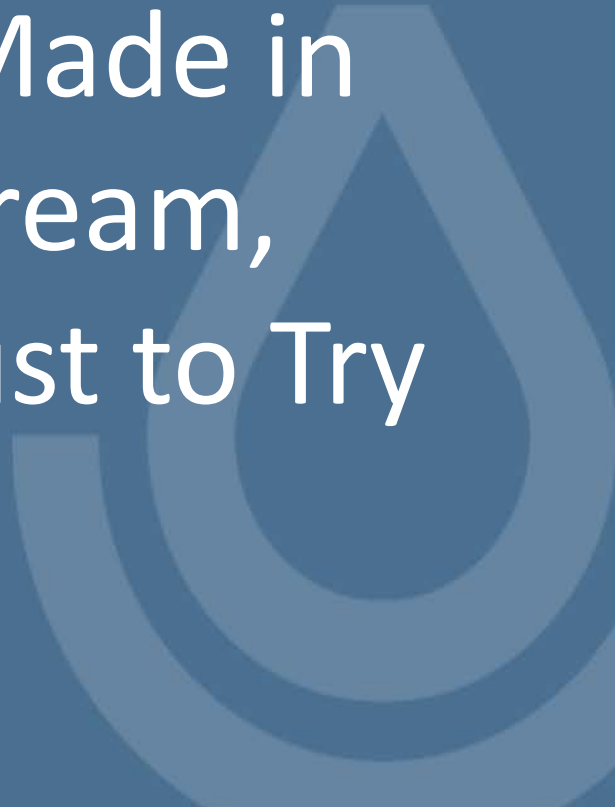
If we do something to straighten out a stream, more than likely, we will see increased erosion caused by faster moving water.

If we do something to increase the meandering of a stream, we will probably cause increased sediment deposits in the stream.



DYNAMICS OF A STABLE STREAM

When Changes Are Made in
the Watershed or Stream,
the Stream Will Adjust to Try
and Fix Itself.

A large, faint, light blue graphic of a water drop with concentric circles inside, positioned on the right side of the slide.

DYNAMICS OF A STABLE STREAM (CONTINUED)

- Lateral Migration and Erosion do not Necessarily Indicate Instability.
- Streams are Dynamic Systems.
- A Change in One Variable Will Cause an Adjustment in Another.
- The Stream, Floodplain, Riparian Area and upland are Interconnected.



HEALTHY SOILS ARE THE FOUNDATION OF HEALTHY ECOSYSTEMS

Healthy soil gives us clean air and water, bountiful crops and forests, productive grazing lands, diverse wildlife, and beautiful landscapes. Soil does all this by performing five essential functions:

- Regulating water - Soil helps control where rain, snowmelt, and irrigation water goes. Water and dissolved solutes flow over the land or into and through the soil.
- Sustaining plant and animal life - The diversity and productivity of living things depends on soil.



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- Filtering and buffering potential pollutants - The minerals and microbes in soil are responsible for filtering, buffering, degrading, immobilizing, and detoxifying organic and inorganic materials, including industrial and municipal by-products and atmospheric deposits.
- Cycling nutrients - Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled in the soil.
- Physical stability and support - Soil structure provides a medium for plant roots. Soils also provide support for human structures and protection for archeological treasures.

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Healthy soils hold more available water.

- The soil's water-holding capacity reduces runoff that can cause flooding, and increases the availability of water to plants during droughts.
- Good infiltration and less need for fertilizers and pesticides keep nutrients and sediment from loading into lakes, rivers, and streams.
- Groundwater is also protected because there is less leaching from healthy soils.
- Additionally, fewer trips across fields with farm machinery mean fewer emissions and better air quality.

It's Complicated

- The environment is basically one large complex system. It is all interconnected.
- Problems Should be Addressed at the Watershed Scale.
- We can try to “localize” the problem to reduce complexity, however the variables at play are probably still innumerable.
- All projects that we undertake in a stream or riparian area must be carefully studied.



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QUESTIONS?



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