



# **A Soil Bioengineering Guide**

**for Streambank and  
Lakeshore Stabilization**





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# PREFACE

A resource officer suggested that the San Dimas Technology and Development Center (SDTDC) publish a guide illustrating the many soil bioengineering techniques being used by various agencies and private industry to stabilize streambanks. That suggestion inspired the creation of this guide. In the 2+ years that it has taken to compile this document, we have learned several valuable lessons from many practicing professionals. Although often thought of as a new technology, soil bioengineering has been practiced for hundreds of years and in the Forest Service as early as the 1930's.

The application of soil bioengineering techniques to stabilize streambanks and shorelines is as effective, and sometimes more effective, than traditional engineering treatments. That is not to say it is the solution for all stabilization problems. As with any problem resolution, the problem must be clearly identified in order to design an appropriate strategy. The first few chapters of this guide are designed to assist with what to look for in assessing what is causing the streambank, riverbank, or shoreline to erode. It encourages one to analyze not only the local ecology of the water body, but also to look at the surrounding influences, natural and manmade, to determine what impacts they are having on the problem area. It is essential that one have a firm grasp of the functions of the watershed and its riparian ecosystem before executing any of the soil bioengineering techniques presented in this guide. Look at the big picture and find the cause. Treat the cause; not the symptom.

The more successful projects involve a team of specialists who understand the dynamics of the water body and the influences of the surrounding ecology. Without this interdisciplinary team of experts, it is quite possible to end up with a costly solution that has little or no impact on the problem and sometimes causes greater harm.

Finally, the management of an area may need to be changed. Sometimes this is all that is required before nature itself will reclaim its rightful ecological functions. Redirect the pedestrian traffic and give the riparian areas a rest. Selectively harvest timber rather than clearcutting it. Decommission old roads and restore old mining areas to their proper functioning condition. The overriding objective is to assure that the integrity of the ecology is protected and remains intact.

This guide was written by two landscape architects and illustrated by another. It was their desire that this guide be used as a resource for ideas and that the emphasis on discovering the bigger picture does not prevent you from taking action. It is our intent to provide enough information so that you can fix much of what is wrong with your streambanks and shorelines. Sometimes, the scope of the problem can be overwhelming. For additional assistance, contact the authors at SDTDC or other practitioners listed in the Additional Information section on page 140.



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