# USDA - NRCS STREAM RESTORATION DESIGN HANDBOOK

**Kerry M. Robinson, Hydraulic Engineer, USDA-NRCS East National Technical Support Center, Greensboro, NC; kerry.robinson@gnb.usda.gov; Jerry Bernard, National Geologist, USDA-NRCS Conservation Engineering Division, Washington, D.C.; jerry.bernard@wdc.usda.gov; Jon Fripp, Stream Mechanics Engineer, USDA-NRCS National Design, Construction, and Soil Mechanics Center, Ft. Worth, TX; jon.fripp@ftw.usda.gov**

**Abstract:** The USDA Natural Resources Conservation Service (NRCS) has worked with landowners to provide design solutions for eroding streambanks for over 70 years. The goals and objectives of these stream projects typically encompass restoring or rehabilitating a stream to address bed and bank stability and/or habitat enhancement. There is and has been a continued interest in improving and expanding the skill set in bank stabilization and stream restoration, as well as incorporating ecological needs into NRCS projects.

A previous NRCS-led effort resulted in 15 Federal agencies producing the document, "Stream Corridor Restoration: Principles, Processes, and Practices" in 1998 (FISRWG, 1998). This interagency document presents numerous approaches in planning stream restoration projects. The NRCS, other agencies, and local groups are using this document to plan stream corridor restoration projects. However, this planning document provides only an awareness level of understanding of the topic. It is not a design document. This presentation describes a new companion document that does address design issues. This new document, titled "NRCS Stream Restoration Design Handbook" will be part of the NRCS National Engineering Handbook series and is currently under final review.

This design document is currently divided into the following chapters:

| Chapter | Title | Chapter | Title |
|---|---|---|---|
| 1. | Introduction: Ecological and Physical Considerations for Stream Projects | 10. | Two-Stage Channel Design |
| 2. | Goals, Objectives and Risk | 11. | The Rosgen Geomorphic Approach to Natural Channel Design |
| 3. | Site Assessment and Investigation | 12. | Channel Alignment |
| 4. | Design Procedure | 13. | Sediment Impact Assessments |
| 5. | Stream Hydrology | 14. | Techniques and Approaches |
| 6. | Stream Hydraulics | 15. | Project Implementation |
| 7. | Channel Design: Basic Principles | 16. | Maintenance and Monitoring |
| 8. | Threshold Channels | 17. | Permitting Overview |
| 9. | Alluvial Channels | | |

This effort has involved the time and talents of over 100 authors and reviewers. These authors represent other Federal, State, and local agencies, universities, and private engineering firms, as well as many NRCS employees.