STREAM IMPACT ASSESSMENT MANUAL FOR THE NORTHERN VIRGINIA STREAM BANK

Stream Assessments

Stream Impacts

Stream Compensation

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Prepared for:

Use by Regulatory Agencies and the regulated public in the Commonwealth of Virginia utilizing Clean Water Act permits issued by the Norfolk District Corps of Engineers and Virginia Water Protection Permits issued by the Department of Environmental Quality that utilize compensation in the Northern Virginia Stream Bank.

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This Manual is intended to be a "living document," with revisions issued periodically to reflect advances in the science and regulatory policy. Provide comments for improvements in future versions to:

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PREFACE

The purpose of this Manual is to describe a system whereby the User can rapidly assess the condition (or "value") of a stream, in *a repeatable manner*, without specialized equipment or significant training. The currency by which the "value" will be defined is called a Stream Condition Unit (SCU). This common currency will form the basis for all projects involved with either impacting or restoring streams utilizing Clean Water Act permits issued by the Norfolk District of the U.S. Army Corps of Engineers and Virginia Water Protection Program permits issued by the Department of Environmental Quality. The fundamental premises of this methodology are:

1. natural or naturalized man-made streams can be "valued" on a scale of 0 to 6 (expressed to one-tenth of a unit), based on observation of certain physical parameters, and man-made channels can be "valued" at 0, 0.25 or 0.50, based on their lining;
2. various activities may remove some, or all, of a stream's functions; and,
3. compensation proposals should be valued upon the magnitude and location (e.g. drainage area and rural vs. urban/ suburban) of the stream function improvements, the value of the impacted stream, and the type of impact proposed.

This Manual is divided into five (5) sections. The first three (3) sections represent the basic types of analyses that will be performed - assessment of existing conditions, assessment of proposed impacts, and assessment of the value of proposed compensation projects. The next two (2) sections provide restoration practice as well as monitoring/ success guidelines and an example assessment, respectively. Three (3) appendices are provided that include blank forms, a benthic macroinvertabrate identification guide, and a riparian buffer seed mix.

Section 1 - "Stream Assessments" has been designed as a reference field guide that will enable a User to rapidly assess and assign a value to a stream reach. Several examples are provided (including photographs) to be used as a reference to guide the User during the assessment process. Results of the assessment for each individual study reach are recorded on an assessment field form, and the total results for all study reaches within the project are compiled on the included summary sheet.

Section 2 - "Stream Impacts" presents a procedure for quantifying proposed impacts to a stream and determining the resulting compensation requirements. The basis of comparison for this impact assessment will be the stream "value" as determined in the assessment procedure outlined in Section 1. The result from this impact assessment is the total compensation requirements in the same units determined in Section 1 (SCUs).

Section 3 - "Stream Compensation" introduces a method for calculating the amount of compensation that may be credited through either stream preservation and/or through the implementation of various stream restoration practices. The compensation credits that can be achieved are also presented in terms of SCUs.

Section 4 - "Restoration Practice Guidelines, Monitoring Criteria, and Success Criteria" gives a more detailed description of the practices introduced in Section 3.2 of this Manual. While not intended to be a restoration design manual, specifics on the restoration practices are included, as well as references to more detailed design manuals. Guidelines for monitoring as well as success criteria for restoration projects are also detailed in this section.

Section 5 - "Project Example" applies the Stream Impact Assessment Methodology described in this manual to a proposed residential development with multiple stream impacts. This example illustrates the steps required for (1) assessing multiple stream reaches, (2) calculating the value of the impacts and (3) determining if the compensation is sufficient to mitigate for the proposed impacts.

Appendix A - "Blank Forms" is a compilation of reproducible blank forms and any accompanying tables used in Sections 1 through 5 for completing stream impact assessments.

Appendix B - "Identification Guide to Common Stream Benthic Macroinvertabrates of Virginia" is a key to the identification of the most common benthic macroinvertabrates found in Virginia. This key is provided to help the User identify benthic organisms for the evaluation of a stream reaches' benthic condition.

Appendix C - "Riparian Buffer Seed Mix" provides a seed mix for use in riparian buffer areas. Information provided on the list includes species, wetland indicator status, seeding rate, and wildlife value.

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