

# Missouri Stream Team

## Middle School

## Activity Guide

A thematic unit on streams and their watersheds



**Sponsors:**



**BOEING**  
**Employees Fund**

## Dedication and Acknowledgments

This curriculum and activity guide is dedicated to all the STREAM TEAM volunteers in Missouri who protect and preserve Missouri's rivers and streams through education, stewardship and advocacy for all the inhabitants of their watersheds.

The Missouri Department of Conservation (MDC) would like to acknowledge the sponsors, writers, editors and revisionists whose efforts made this project possible.

**Sponsors 1<sup>st</sup> edition:** Boeing Company  
(1997 Edition) Missouri Department of Conservation

**Sponsors 2<sup>nd</sup> edition:** Boeing Company  
(2005 Edition) Missouri Department of Conservation

**Project Coordinator:** Mark Van Patten, Fisheries Management Biologist (MDC)

### 2<sup>nd</sup> Edition Revision Team:

Jessie Cargas, Stream Team 2513, The College School, Middle School Teacher  
Valerie Hentges, Stream Team 1385, MDC  
Marianne Jones, Stream Team 1758, House Springs Elementary  
Mark Van Patten, Stream Team 1, MDC  
Regina Van Patten, Stream Team, 579, South Callaway Middle School  
Ron Scott, Stream Team 332, Center Middle School  
Elizabeth Peterson, Stream Team 76, Ladue Middle School

**1<sup>st</sup> Edition Writers:** Dennis Carmen, Excelsior Springs School  
Monte Holder, Stream Team 443, Marshall High School  
Justin Mutrux, Stream Team 329, Raymondville Elementary School  
Mary Ann Mutrux, Stream Team 454, Willow Springs Middle School  
Gail Seibel, Retired Teacher, Ballwin  
Herb Turner, Stream Team 218, Waynesville Middle School  
Dr. Edward Williamson, Summerville School

**Web Technician:** Cassandra Lentz

**Artist:** Mark S. Raitzel

**Typist:** Diane Munsterman

**Technical Advisor:** John Fantz, Stream Technical Unit MDC

**Technical Support:** Missouri Department of Conservation, Missouri Department of Natural Resources

**Special Thanks To:** Paul Calvert, Streams Program Supervisor (MDC), Alicia Whitson (MDC) Editing

**Reference Used For Spelling:** *Webster's Encyclopedic Unabridged Dictionary of the English Language*, Deluxe Edition, 1996.

**Contact:** Missouri Department of Conservation Stream Unit  
2901 W. Truman Blvd, Jefferson City, MO 65102-0180  
Phone: 573-751-4115 Monday through Friday 8:00 a.m. – 5:00 p.m.

**Web Site:** <http://www.mostreamteam.org>

## Table of Contents

<b>Curriculum and Activity Guide Overview</b> .....	<b>5</b>
<b>Curriculum and Activity Guide Modules</b> .....	<b>6</b>
<b>Watershed and Geology Module</b> .....	<b>7</b>
Introduction .....	8
Lesson: Missouri Regions – Shaped by Land Forms and Geology.....	10
Lesson: Missouri River Basins and Watersheds .....	20
Lesson: Land Use and Watershed Pollution .....	32
<b>Flood Plains and Wetlands Module</b> .....	<b>42</b>
Introduction .....	43
Lesson: Flood Plain Functions .....	44
Lesson: Wetland Madness .....	61
Lesson: Wetland Migrations .....	71
<b>Riparian Corridor and Stream Banks Module</b> .....	<b>75</b>
Introduction .....	76
Lesson: Riparian Corridor – What is it.....	78
Lesson: Inventory/Field Study.....	82
<b>Stream Channel Module</b> .....	<b>88</b>
Introduction .....	89
Lesson: Water, Sediment, Energy, and Vegetation.....	90
Lesson: Short Float.....	102
Lesson: Stream Discharge .....	111

<b>Aquatic Habitat Module</b> .....	<b>116</b>
Introduction .....	117
Lesson: Aquatic Stream Habitats .....	119
Lesson: Stream Substrate Habitat .....	129
<b>Water Quality Module</b> .....	<b>135</b>
Introduction .....	136
Lesson: Captured Critters .....	138
Lesson: Inspector Bright .....	144
<b>Aesthetics Module</b> .....	<b>149</b>
Introduction .....	150
Lesson: Sensory Development .....	151
Lesson: Voices from the Wilderness .....	157
Lesson: Personal Commitment to Stewardship .....	161
<b>Streams and Society Module</b> .....	<b>169</b>
Introduction .....	170
Lesson: Governor's Solution .....	171
Lesson: Catch That Rainfall .....	176
Lesson: Point of View.....	180
<b>Glossary</b> .....	<b>185</b>
<b>Resource Reference</b> .....	<b>191</b>