

PRELIMINARY PROGRAM

**EFFECTS OF
WATERSHED DEVELOPMENT & MANAGEMENT
ON AQUATIC ECOSYSTEMS**

**4-9 August 1996
Snowbird Resort and Conference Center
Snowbird, Utah**

Conference Chairs
Earl Shaver

**Delaware Department of Natural Resources and Environmental Control
Richard Horner, PhD.**

Conference Co-Chairs
**Michael E. Cook, Director
U.S. Environmental Protection Agency
and
Christine Anderson
Director of Public Works, Eugene, Oregon.**

Conference Co-Sponsors
**Urban Water Resources Research Council of the American Society of Civil
Engineers, American Public Works Association
U.S. Environmental Protection Agency**

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Conference Focus

Historically, evaluation of urban land uses and stormwater management facilities has relied, almost totally, on chemical analysis of stormwater runoff entering receiving systems. There is a greater recognition that water quality is only one component of an evaluative process. Receiving systems must also be considered for impacts to the aquatic community in terms of habitat, diversity, and abundance of stream dwelling organisms.

The focus of this conference is to recognize that comprehensively understanding aquatic ecosystems is a necessary component of any overall effort to evaluate watershed health related to our use of watersheds. An ecological survey can function as a preliminary screening tool to determine whether adverse impacts are occurring within a watershed, and whether those impacts are related to hydrologic, morphological and riparian, or water quality factors, or a combination.

The results of the ecological evaluation would determine whether more detailed monitoring or analysis is necessary. In addition, ecological evaluations can be a valuable tool in assessment of stormwater management program effectiveness, and can serve as an alternative monitoring approach to traditional chemical monitoring to evaluate the relative health of receiving systems. Ecological considerations represent another tool that needs to be considered when evaluating the impact of watershed activities or gauging the effectiveness of protection strategies.

This conference will assist in establishing and defining relationships that may exist between traditional, emerging, and possible future approaches to conducting watershed analyses.

Organizing Committee

Roger Bannerman

Wisconsin Department of Natural Resources

Edwin Herricks

University of Illinois

Jonathan Jones

Wright Water Engineers

Eric Livingston

Florida Department of Environmental Resources

John Maxted

Delaware Department of Natural Resources and Environmental Control

Robert Pitt

University of Alabama at Birmingham

Tom Schueler

Center for Watershed Protection

Ben Urbonas
Urban Drainage and Flood Control District, Denver

Eric Strecker
Woodward-Clyde Consultants

Sunday, August 4, 1996

3:00 pm - 9:00 pm
Registration

6:30 pm - 8:00 pm
Dinner

8:00 pm - 10:00 pm
Social Hour

Monday, August 5, 1996

7:00 am - 8:30 am
Breakfast Buffet

8:30 am - 9:30 am
Conference Introduction

Welcome and Overview
Earl Shaver and Rich Horner

APWA Perspective
Christine Andersen

EPA Perspective
Alfred Lindsey

9:30 am - 12:15 pm
FOCUS I: MONITORING ISSUES

Session 1A: Approaches to Expanding Monitoring Beyond Water Quality
Chair: Eric Livingston

*Measuring the Health of Aquatic Ecosystems Using Biological Assessment
Techniques: A National Perspective*

Michael T. Barbour
Tetra Tech, Owings Mills, MD

Coffee Break

Florida's Nonpoint Source Bioassessment Program
Ellen McCarron, Eric Livingston, and Russell Frydenborg
Florida Department of Environmental Protection

*Evaluation of Biological Assessment Techniques in Two Intermittent Streams with
Karst Aquifer Recharge Features Near Austin, Texas*
Robert Hansen
City of Austin, Drainage Utility Department

12:30 pm - 2:00 pm
Lunch

2:00 pm - 5:00 pm
Ad hoc discussions/free time

6:00 pm - 7:30 pm
Dinner

7:30 pm - 10:00 pm
Session 1B: Advances in Using Toxicity Bioindicators in Urban Aquatic Ecosystem
Assessment
Chair: Edward Herricks

*Assessment of the Acute and Chronic Effects of Urban Runoff
on Stream Biota Using Conventional and in situ Toxicity Testing Procedures*
Ron Crunkilton, Jon Kleist, Joe Ramcheck, Bill DeVita and Dan Villeneuve
University of Wisconsin-Stevens Point

*Recent Developments in Stress Protein Research for Assessment of Urban Stormwater
Impacts*
Kenneth D. Jenkins
Jenkins, Sanders and Associates

*Assessing the Response of Aquatic Organisms to Short-Term Exposures to Urban
Runoff*
Edwin E. Herricks, Robert Brent, Ian Milne, and Ian Johnson
University of Illinois, Department of Civil Engineering

10:00 pm - 11:00 pm
Social Hour

Tuesday, August 6, 1996

7:00 am - 8:30 am
Breakfast Buffet

8:30 am - 12:00 noon

**FOCUS 2: WATERSHED DEVELOPMENT EFFECTS IN WATER SURPLUS
REGIONS**

Session 2A: Effects of Watershed Development on Hydrology and Aquatic Habitat
Structure

Chair: Eric Strecker

The Alluvial Progress of Piedmont Watersheds Undergoing Urbanization

Bruce K. Fergusson

University of Georgia, School of Environmental Design

*Experience from Morphological Research on Canadian Streams: Is Control of the
Two-Year Frequency Runoff Event the "Best" Basis for Stream Channel Protection?*

Craig Macrae

Aquafor Beech, Ltd.

*Hydrologic and Hydraulic Impacts of Urban Runoff in Pipers Creek, Seattle,
Washington*

Douglas T. Sovern and Percy M. Washington

Gaia Northwest Consultants

*Large Woody Debris in Lowland Streams of the Pacific Northwest: Function,
Urbanization Effects, and Implications for Stream Restoration*

Derek B. Booth and David R. Montgomery

Center for Urban Water Resources Management

12:30 pm - 2:00 pm
Lunch

2:00 pm - 5:00 pm
Ad hoc discussions/free time

6:00 pm - 7:30 pm
Dinner

7:30 pm - 10:00 pm
Session 2B: Impacts of Watershed Development on Aquatic Biota, Round I
Chair: Roger Bannerman

Assessing the Condition and Status of Aquatic Life Designated Uses in Urban and Suburban Watersheds

Chris O. Yoder

Ohio Environmental Protection Agency, Division of Surface Water, Monitoring and Assessment Section

Biological Effects of the Build-Up of Contaminants in Sediments of Urban Estuaries

D.J. Morrissey, D.S. Roper, and R.B. Williamson

NIWA, National Institute of Water and Atmospheric Research

Watershed Determinants of Freshwater Ecosystem Character and Functioning: Results of 10 Years of Research in the Puget Sound Region

Richard R. Horner, Derek B. Booth, Amanda Azous, and Christopher W. May

10:00 pm - 11:00 pm
Social Hour

Wednesday, August 7, 1996

7:00 am - 8:30 am
Breakfast Buffet

8:30 am - 12:00 noon
Session 2C: Consequences of Watershed Development for Stream Morphology; Riparian Zones and Habitat

Chair: Robert Pitt

Riparian Buffer Widths at Rocky Mountain Resorts

Edward Brown, Jane Clary, Jonathan Jones, and Jonathan Kelly
Wright Water Engineers

Development and Application of the Rapid Stream Assessment Technique (RSAT) in the Maryland Piedmont

John Galli

Metropolitan Washington Council of Governments

Cumulative Impacts of Watershed-Scale Development on Stream Morphology
Michelle A. Girts, William E. Blosser, and Thomas T. Ogee
CH2M-Hill

*The Watershed-Based Problems and Solutions Associated with Habitat Enhancement,
A Case Study: Fanno Creek, Portland Oregon*
Kendra Smith
Kurahashi and Associates

12:30 pm - 2:00 pm
Lunch

2:00 pm - 5:00 pm
Ad hoc discussions/free time

6:00 pm - 7:30 pm
Dinner

7:30 pm - 10:00 pm
Session 2D: Impacts of Watershed Development on Aquatic Biota, Round II
Chair: John Maxted

*The Impact of Urban Stormwater Runoff on Nontidal Wetlands, and the role of Aquatic
Invertebrate Bioassessment.*
Anna L. Hicks
The Environmental Institute, University of Massachusetts

Effects of Urbanization on Aquatic Ecosystems
James R. Karr
University of Washington

*Bioassessment of the Effectiveness of Best Management Practices in Mitigating
Impacts on Aquatic Biota in a Suburban Watershed in Northern Virginia*
R. Christian Jones, Allyson Via-Norton, and Donald Morgan
Department of Biology, George Mason University

11:00 pm - 11:00 pm
Social Hour

Thursday, August 8, 1996

7:00 am - 8:30 am
Breakfast

9:00 am - 12:00 noon

FOCUS 3: WATERSHED DEVELOPMENT EFFECTS IN ARID AND SEMI-ARID REGIONS

Chair: Ben Urbonas

Western Rivers in Urban Areas--Unique Ecosystems

Todd L. Harris, James F. Saunders III, and William M. Lewis, Jr.
Metro Wastewater Reclamation District

South Platte River in Metropolitan Denver -- A River in Transition

Michael A. Stevens
M.A. Stevens Consultants

BREAK (15 minutes)

The Lower Truckee River. A System in Transition

J.J. Warwick, A. McKay, J. Miller, P. Stacey, M. Wright, Jr., and C. Gourley
Graduate Program of Hydrologic Sciences, University of Nevada- Reno

12:30 pm - 2:00 pm
Lunch

2:00 pm - 5:00 pm
Ad hoc discussions/free time

6:00 pm - 7:30 pm
Dinner

7:30 pm - 10:00 pm

FOCUS 4: MANAGEMENT AND INSTITUTIONAL ISSUES

Session 4A: Watershed Management Strategies to Mitigate Development Effects

Chair: Tom Schueler

The Use of Retention Basins to Mitigate Stormwater Impacts on Aquatic Life

John R. Maxted and H. Earl Shaver

Delaware Department of Natural Resources and Environmental Control

Managing Critical Source Areas of Toxics at the Watershed Level

Robert Pitt

Department of Civil Engineering and Environmental Engineering, University of Alabama at Birmingham

Use of Impervious Cover Management to Protect Streams in Urban Watersheds

Tom Schueler and Rich Claytor

Center for Watershed Protection

Friday, August 9, 1996

10:00 pm - 11:00 pm

Social Hour

7:00 am - 8:30 am

Breakfast

8:30 am - 11:00 am

Session 4B: Institutional Arrangements for Watershed Management

Chair: Jonathan Jones

Riparian Stewardship in the Post-Regulatory Era (The Carrot, the stick, and the light Bulb)

Robert Searns

Urban Edges, Inc.

Protecting Fulbright Spring: Can We Beat the Odds?

Timothy Smith

Greene County Planning and Zoning

Florida's Watershed and Ecosystem Management Program

Eric H. Livingston

Florida Department of Environmental Protection Stormwater/NPS Management Section

11:00 am - 12:00 noon

CONFERENCE WRAP UP