

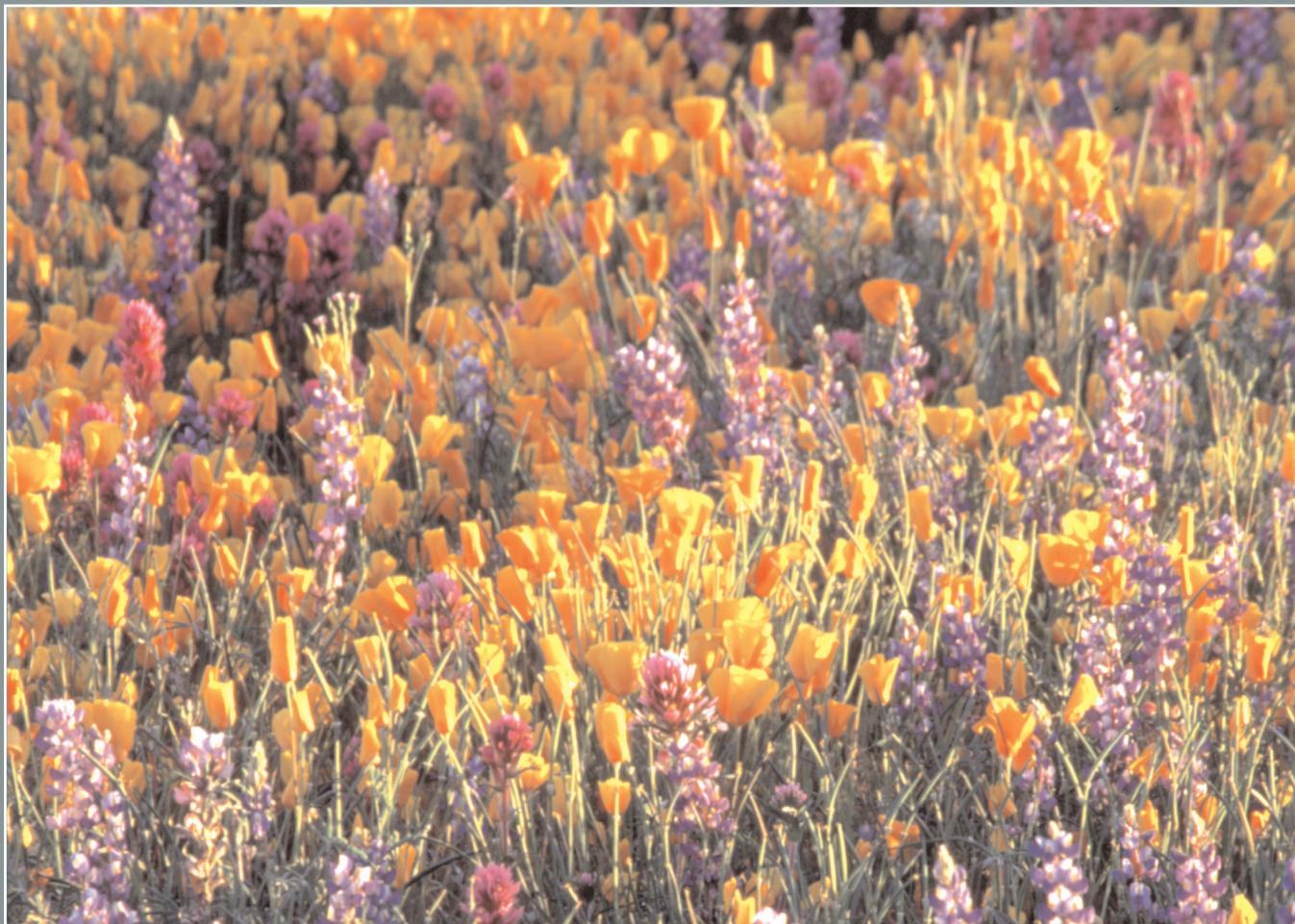
VOLUME 11, NUMBER 1 • MARCH 2009

ISSN 1466 - 0466

ENVIRONMENTAL PRACTICE

Journal of the National Association of Environmental Professionals

In This Issue: *Cost and Benefits of Biofuels*



NATIONAL ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS

CAMBRIDGE
UNIVERSITY PRESS

DEPAUL UNIVERSITY

ENVIRONMENTAL PRACTICE

Journal of the National Association of Environmental Professionals

Editors-in-Chief

Kelly Tzoumis, PhD (Lead)
James A. Montgomery, PhD
DePaul University

Managing Editor

Debora R. Holmes, MES
DePaul University

Editorial Office

Dept. of Public Policy Studies
DePaul University
2352 N. Clifton Ave.
Clifton 150.23
Chicago, IL 60614
(phone) 773-325-4642
(fax) 630-359-5641
(email) kellytzoumis@ameritech.net

ADVISORY BOARD

D. K. Banerjee, PhD
Jawaharlal Nehru University, retired

Michael S. Baram, Prof.
Boston University School of Law

Robert V. Bartlett, PhD
The University of Vermont

Audrey G. Binder, CEP
US Environmental Protection Agency

Susan Power Bratton, PhD
Baylor University

Donald A. Brown, Esq.
Pennsylvania Department of
Environmental Protection

Marc C. Bruner, PhD
Solid Waste Authority of Palm
Beach County

W. B. (Pete) Clapham, Jr., PhD
Cleveland State University

Thomas R. Cuba, PhD, CEP, CLM
Delta Seven, Inc.

John R. Daugherty, PhD
NOAA-NSSL, retired

Craig B. Davis, PhD
The Ohio State University

Ron Deverman
Environmental Consultant

Charles H. Eccleston, PhD, CEP
Independent Consultant

John J. Fittipaldi, CEP
Army Environmental Policy Institute

Cynthia Fridgen, PhD
Michigan State University, retired

Robert H. Harris, PhD
Environ Corporation

Carolyn T. Hunsaker, D.Env., QEP
USDA Forest Service, Pacific
Southwest Research Station

James L. Jaffe, JD
The University of Findlay

Burton C. Kross, PhD, PE
Management Resources Network,
Inc.

Jim Mayfield
Washington State Institute of
Public Policy

Richard B. McLean, PhD
PTRL Environmental Services

Helene K. Merkel
Michael Baker Jr., Inc.

Robert A. Michaels, PhD, CEP
RAM TRAC Corporation

John Opie, PhD
The University of Chicago

Bruce Piasecki, PhD
The AHC Group, Inc.

Edwin P. Pister, MA
Desert Fishes Council

Thomas B. Rainey, PhD
The Evergreen State College

Russell Rogers, MES
Washington Department of Fish
and Wildlife

Arthur B. Sacks, PhD
Colorado School of Mines

Susan L. Seneca, PhD
SUNY College of Environmental
Science & Forestry

Gary S. Silverman, PhD
Bowling Green State University

Linda Moon Stumpff, DPA
The Evergreen State College

Michael R. Thomas, PhD
Decision Support Professionals, LLC

Chris G. Whipple, PhD
Environ International Corporation

Environmental Practice (ISSN 1466-0466) is a quarterly journal published by Cambridge University Press for the National Association of Environmental Professionals in cooperation with the Department of Public Policy Studies, DePaul University, Chicago, IL 60614. Information for contributors appears in March issues and on the journal's Web site at www.journals.cambridge.org/jid_enp.

Environmental Practice is the successor to *The Environmental Professional*, which appeared from 1979 to 1997. *Environmental Practice* honors the fine traditions established by *The Environmental Professional* while simultaneously opening new avenues of discussion on environmental issues. For more information about the NAEP, please visit www.naep.org.

Subscription Information: *Environmental Practice* is published quarterly in March, June, September, and December. Annual subscription rates for Volume 11 (2009): Annual institutional subscription rates (print and electronic): US \$307.00 in the US, Canada, and Mexico; UK £165.00 + VAT elsewhere. Institutional electronic only: \$250.00 in the US, Canada, and Mexico; UK £132.00 + VAT elsewhere. Institutional print only: \$280.00 in the US, Canada, and Mexico; UK £148.00 + VAT elsewhere. Individuals print only: \$190.00 in the US, Canada, and Mexico; UK £100.00 + VAT elsewhere.

Publishing and Advertising Offices: Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013-2473, USA; and (outside the US, Canada, and Mexico) Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, England.

Copyright © 2009 National Association of Environmental Professionals

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying or otherwise, without permission in writing from the National Association of Environmental Professionals. This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. Organizations in the USA registered with CCC may copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to CCC of the per copy fee of US \$20.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 1466-0466/09 \$20.00. ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only.

Printed in the United States of America.

Application to mail at periodical rate is pending in New York, NY, and additional mailing offices. Postmaster: send address changes in the USA, Canada, and Mexico to *Environmental Practice*, Subscription Department, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133.

CONTENTS

J. Melton	From the President of NAEF	1
-----------	----------------------------	---

FEATURES

A.L. Booth & N.W. Skelton	RESEARCH ARTICLE: The Use of Domestic Goats and Vinegar as Municipal Weed Control Alternatives	3
M.S. Carolan	ENVIRONMENTAL REVIEW: The Cost and Benefits of Biofuels: A Review of Recent Peer-Reviewed Research and a Sociological Look Ahead	17
M. Fehr, K. Alves de Sousa, M. Queiroz Santos, & M. Maciel de Oliveira e Domingues	COMMENTARY: Using Test Communities to Demonstrate Household Waste Separation Procedures in Brazil	25
A. Menezes, R. Smardon, & T. de Almeida	RESEARCH ARTICLE: The Changing Dynamics of Local Institutions in Fishing Communities in Mozambique: Responses to Policy—Public Participation and Decision Making	32

NEWS & INFORMATION

R.A. Michaels	Three Decades of the CEP Credential and Environmental Professional Certification	52
---------------	--	----

BOOK REVIEWS

C.J. Branton	BOOK REVIEW: M. Swedish, <i>Living Beyond the “End of the World”: A Spirituality of Hope</i>	57
J.J. Fittipaldi	BOOK REVIEW: R.F. Durant, <i>The Greening of the US Military: Environmental Policy, National Security, and Organizational Change (Public Management and Change)</i>	58
R.J. Klancko	BOOK REVIEW: L. Stander and L. Theodore, <i>Environmental Regulatory Calculations Handbook</i>	59
D. Sayre	BOOK REVIEW: T.B. Fischer, <i>Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach</i>	61

CONTRIBUTORS

63

INFORMATION FOR CONTRIBUTORS

64

On the Cover: Owl's cover and poppies bloom on a vibrant spring day south of Tucson, Arizona. Cover photography by Brenda R. Jones.

Mission Statement for *Environmental Practice*

Aims and Scope

Environmental Practice is the official journal of the National Association of Environmental Professionals (NAEP). The central purpose of *Environmental Practice* is to provide an open forum to NAEP members and other concerned individuals for the discussion and analysis of significant environmental issues. Research Articles, Environmental Reviews, and Commentaries appearing in *Environmental Practice* are peer reviewed and aim for the highest standards of professional quality.

Environmental Practice is a source for continuing professional renewal and development. It aims to serve men and women at all stages of their careers, from initial training through mid- and senior-levels. Environmental work is an exciting, dynamic field, and *Environmental Practice* strives to match that pace with lively and timely commentary on the critical issues of the day. *Environmental Practice* aims to provide authoritative discussion on issues of wide interest to the international community of environmental professionals.

Professionals from many different disciplinary backgrounds, working in many different arenas, are faced with

developing imaginative approaches for the practical resolution of a wide variety of environmental problems. *Environmental Practice* provides a comprehensive outlet for the publication of such interdisciplinary findings. This publication actively seeks breadth of viewpoint and method because it holds that solutions to environmental problems are often to be found in understanding the linkages among issues previously considered separate. Periodically, *Environmental Practice* will devote its pages to selected topics of special concern to a significant segment of the readership.

Priority for publication is given to articles that offer insightful views on the importance and interpretation of results from an interdisciplinary perspective. Reports of findings should go beyond a laboratory analysis, a field experiment, a philosophical discussion, or a theoretical modeling, for example, and discuss the implications of the findings for public policy or professional practice. *Environmental Practice* seeks especially to publish studies that link data and findings in science and technology with issues of public policy, health, environmental quality, law, political economy, management, and the appropriate standards for expertise. Many publications achieve excellence through tightly focused specialization, but in contrast *Environmental Practice* seeks its accomplishments through the promotion of excellent research and writing on the common interests among different kinds of specialists.

Join the Dialog

The central purpose of *Environmental Practice* is to provide a forum for the discussion and analysis of significant environmental topics. An important part of this discussion is the "Letters to the Editor" section that appears in occasional issues of *Environmental Practice*.

The editors welcome your comments and insights on articles appearing in this or other issues of the journal.

Preliminary Conference-at-a-Glance

Saturday, May 2									
7:00 am – 9:00 pm	Tour #1 Grand Canyon Tour								
Sunday, May 3									
8:00 am – noon	Full Day Training – Defining Sustainability in Practice, Policy & Law Wassaja 110	Half Day Training - Introduction to Managing Environmental Conflict Wassaja 109		Half Day (AM) Tour #2 Gilbert Riparian Preserve					
12:30 pm – 5:00 pm		Half Day Tour #3 AZ Public Service STAR Center		Half Day Tour #4 Rio Salado Restoration Project					
3:00 pm – 5:00 pm	Beginning Environmental Careers Seminar – Wassaja 109								
5:00 pm – 7:00 pm	Job Fair and Networking Mixer – with exhibits								
Monday, May 4									
8:00 am – 9:15 am	Welcome and Dr. Jonathan Fink, Keynote – Wassaja 107/108/115								
9:45 am – 11:15 am	Session 1 Public Participation Room 103-105	Session 2 Air/Climate Change Wassaja 109	Session 3 NEPA Wassaja 111	Session 4 Sustainable Systems Wassaja 110	ABCEP Room 106				
11:45 am – 1:15 pm	Dr. David Yetman, Keynote Luncheon & Environmental Excellence Awards - Wassaja 107/108/115								
1:45 pm – 3:15 pm	Session 5 Transportation Room 103-105	Session 6 Public Participation Wassaja 109	Session 7 NEPA Wassaja 111	Session 8 Sustainable Systems Wassaja 110	ABCEP Room 106				
3:30 pm – 5:00 pm	Session 9 Transportation Room 103-105	Session 10 Air/Climate Change Wassaja 109	Session 11 NEPA Wassaja 111	Session 12 Land/Watershed Mgmt Wassaja 110	ABCEP Room 106				
6:00 pm – 9:00 pm	President's Dinner, Fort McDowell Adventures BBQ								
Tuesday, May 5									
7:00 am – 8:00 am	PCC Committee Room 103/104								
8:00 am – 9:15 am	Ms. Jane Poynter, Keynote and Environmental Excellence Awards - Wassaja 107/108/115								
9:45 am – 11:15 am	Session 13 Transportation Wassaja 109	Session 14 Air/Climate Change Room 105/106	Session 15 NEPA Wassaja 111	Session 16 Environmental Education/Stewardship Room 103/104	Session 17 Land/Watershed Mgmt Wassaja 110				
11:45 am – 1:15 pm	Dr. Jack Grove, Keynote Luncheon & Environmental Excellence Awards - Wassaja 107/108/115								
1:45 pm – 3:15 pm	Session 18 Environmental Education/Stewardship Room 103/104	Session 19 Air/Climate Change Wassaja 111	Session 20 Water Resources Room 105/106	Session 21 Sustainable Systems Wassaja 109	Session 22 Land/Watershed Mgmt Wassaja 110				
3:30 pm – 5:00 pm	Session 23 Public Participation Room 103/104	Session 24 Air/Climate Change Wassaja 111	Session 25 Water Resources Room 105/106	Session 26 Sustainable Systems Wassaja 109	Session 27 Land/Watershed Mgmt Wassaja 110				
5:00 pm – 6:00 pm	Chapters Committee Room 103/104	2010 Conference Committee Room 105/106	Committee/Working Group meeting	Committee/Working Group meeting	Committee/Working Group meeting				
7:00 pm - ??	Natural Step (Movie w/snacks) - Wassaja 107/108/115								
Wednesday, May 6									
8:00 am – 8:45 am	Owen Schmidt, JD, Keynote - Wassaja 107/108/115								
8:45 am – 9:30 am	NAEP Membership Meeting (open to everyone) & Service Awards - Wassaja 107/108/115								
9:45 am – 11:15 am	Session 28 Transportation Wassaja 109	Session 29 Energy Room 103/104	Session 30 NEPA Wassaja 111	Session 31 Water Resources Room 105/106	Session 32 Land/Watershed Mgmt Wassaja 110				
11:45 pm – 12:45 pm	HTL # 1 Transportation Wassaja 109	HTL # 2 Career Development Room 105/106	HTL # 3 NEPA Wassaja 111	HTL # 4 Environmental Education/Stewardship Room 103/104	HTL # 5 Land/Watershed Mgmt Wassaja 110				
1:00 pm – 2:30	Session 33 Energy Room 103/104	Session 34 Air/Climate Change Wassaja 109	Session 35 NEPA Wassaja 111	Session 36 Sustainable Systems Wassaja 110					
1:00 pm – 6:00 pm	Half Day Tour #5 Ponderosa Pine Forest Wildlife Crossings		Half Day Tour #6 Architecture of Sustainability						
Thursday, May 7									
8:00am – 4:00 pm	NAEP Board of Directors Meeting – Room 102/103								

 Air/Climate Change

 Energy

 Env. Education/Stewardship

 Land & Watershed Mgmt

 Water Resources

 NEPA

 Public Participation

 Sustainable Systems

 Transportation



Registration Form - NAEP 2009 Annual Conference
May 2-6, 2009 – Radisson Fort McDowell, AZ

You may register online at www.naep.org or fill out the form and fax or mail with your payment.

First Name: _____ Last Name: _____
 Certification _____ Firm / Agency / University: _____
 Job Title: _____
 Address 1: _____
 Address 2: _____
 City: _____ State: _____ Zip: _____
 Country (other than USA): _____ Phone: _____
 Email: _____
 Are you an NAEP member? _____ Yes _____ No Are you a CEP?? _____ Yes _____ No

Registration Fees (Full conference registrations include all scheduled meals and evening events, but not training nor tours.)
 One-day registration includes only breakfast and lunch on that day, evening events are not included .

	NAEP Member			Non Member		
	Early - Register prior to 3/1	Regular - Register from 3/1 to 4/10	Late - Register after 4/10	Early - Register prior to 3/1	Regular - Register from 3/1 to 4/10	Late - Register after 4/10
Full Conference	\$495	\$545	\$595	\$595	\$645	\$695
One day registration	\$245	\$295	\$295	\$295	\$345	\$345
Student registration	\$125	\$150	\$150	\$125	\$150	\$150
Tours	See below	See below	See below	See below	See below	See below
Full day training	\$250	\$275	\$300	\$350	\$375	\$400
Half day training	\$150	\$175	\$200	\$250	\$275	\$300
Speakers attending their session only and none of the rest of the conference (meals must be purchased below)						\$0
Government employees will receive a \$100 discount on full conference registration (see below)						-\$100

Cancellation Policy: Cancellations received in writing before March 1st will be refunded in total less a \$100 processing fee. Cancellations received after March 1st and before April 10th will be refunded at 50% of the total paid. Cancellations received on or after April 10th will receive no refund. With prior notification, you may substitute a different name for your registration.

Please select your registration type (full conference registrations include all scheduled meals)			\$ Amount (from table above)
Full Conference NAEP member			
Full Conference non-member			
Government employees (federal, state, county and local) subtract \$100 when registering for the full conference .			
Student (full conference)			
One Day NAEP Member (please indicate which day you will attend)	Mon.	Tue.	Wed
One Day non-member (please indicate which day you will attend))	Mon.	Tue.	Wed
Tours (indicate your choice(s) below)			
Sunday training class (indicate your choice below)			
Extra lunch tickets \$40 each (please indicate how many and which day)	Mon	Tue	
Extra tickets for the Job Fair and Networking reception \$45 each (please indicate how many)		Sunday	
Extra tickets for the President's offsite dinner \$85 each (please indicate how many)	Monday		

Total Submitted \$ _____

Tours (go to www.naep.org for tour descriptions and any additional costs)

- #1 \$90 Grand Canyon (Saturday May 2, 7 am – 9 pm) #2 \$45 Gilbert Riparian Preserve (Sunday May 3, 8am – 12:30pm)
 #3 \$45 AZ Public Svce STAR Center (Sunday May 3, 12:30 pm – 5 pm) #4 \$45 Rio Salado Restoration Project (Sunday May 3, 12:30pm – 5 pm)
 #5 \$45 Wildlife Crossings (Wednesday May 6, 1pm – 6pm) #6 \$45 Architecture of Sustainability (Wednesday May 6, 1pm – 6pm)

Training classes (Sunday May 3):

- Full Day: Defining Sustainability in Practice, Policy & Law (8 am – 5pm)
 Half Day: Introduction to Managing Environmental Conflict (8 am – noon)

Optional (Sunday 3 PM – 5:00 PM)

- Beginning Environmental Careers (**Note:** there is no charge for this class, just indicate you wish to attend by checking the box)

Payment:

_____ Check (US Bank only)
 Payable to NAEP

Mail to: NAEF
 1049 Sunset Dr.
 Lake Wales FL 33853-4226

Visa _____ MasterCard _____ American Express _____

Card number: _____ Exp. Date _____

Verification code _____

Name on card _____

Card billing address: _____

Fax 501-423-1701



**NAEP 2009 ANNUAL CONFERENCE
RADISSON FORT McDOWELL
SCOTTSDALE, AZ May 2 – 6, 2009**

SPONSORSHIP OPPORTUNITIES

All exhibitors and sponsors will receive:

- Recognition as a sponsor in the final program
- Poster recognition in registration area

Title Sponsor - \$20,000 (1 available) <ul style="list-style-type: none">• Conference Title presented by your company/agency on all printed materials and throughout the conference• Your logo on our web site with a link to your website• Exclusive Recognition as a major sponsor: Your choice of President's Reception, Opening Session or Keynote Luncheon• Exhibit booth in prime location	Platinum Sponsor - \$10,000 (2 available) <ul style="list-style-type: none">• Exclusive Recognition as a major sponsor at your choice of Welcome Reception, Opening Session or Keynote Luncheon• Exhibit Booth• Your logo on our web site with a link to your website• Two full conference registrations• Full page advertisement on the back cover or inside front cover of the final program• Company logo on the conference bags• A pre-conference attendees list	Quantum Sponsor - \$7,500 (6 available) <ul style="list-style-type: none">• Recognition as a major sponsor at Welcome Reception or Keynote Luncheon• Exhibit Booth• Your logo on our web site with a link to your website• One Full Conference registrations• Full page advertisement in the final program• Company logo on the conference lanyards or promotional item• A pre-conference attendees list
Gold Sponsor - \$5,000 (8 available) <ul style="list-style-type: none">• Exclusive 1 day sponsorship of a breakout room with poster recognition in the room and literature distributed on a table• Exhibit booth• Your logo on our web site with a link to your website• One full conference registration• ½ page advertisement in the final program• A pre-conference attendees list	Copper Sponsor - \$1,500 <ul style="list-style-type: none">• Recognition as a sponsor• Your company name on our website linked to your website• Two meal tickets for a lunch	Silver Sponsor - \$2,500 <ul style="list-style-type: none">• Recognition as a sponsor• One day conference registration• ¼ page advertisement in the final program• Table Top Display• Your company name on our website with a link to yours• A pre-conference attendees list
Pewter Sponsor - \$500 <ul style="list-style-type: none">• Recognition as a sponsor• Your company name on our website linked to yours		Bronze Sponsor - \$1,000 <ul style="list-style-type: none">• Recognition as a sponsor• Your company name on our website linked to your website• Business card advertisement in the final program
		Other Sponsor - \$ _____ Such as: AV, Transportation, Internet Room, Breakfast, Breaks Call with questions or other ideas you may have.

EXHIBITING OPPORTUNITIES

<p>Exhibit booth 8ft deep x 10 ft wide - \$2,500</p> <ul style="list-style-type: none">• One Full Conference Registration• Two booth attendees badges (does not include meals/receptions)• Your company name on our website linked to your website	<p>Table Top Display 6 ft x 30 in table - \$1,500</p> <ul style="list-style-type: none">• One Day Conference Registration• Two booth attendees badges (does not include meals/receptions)• Your company name on our website linked to your website
--	--

Questions?

Donna Carter, NAEP Conference Planner
PH: 863-679-3852 Fax: 501-423-1701
Email: naepfl@verizon.net

Cancellation Policy: If written cancellation is received by February 1, 2009, a full refund will be made less \$100 administrative fee. If cancellation is received after Feb 1, 2009 and before March 15, 2009, an 80% refund less \$100 administrative fee will be given. After March 15, 2009, no refund will be made.

Call for papers on brownfields redevelopment issues
and policies for publication in scholarly journal.

Environmental Practice

The Journal of the National Association of Environmental Professionals

Editor Dr. Kelly Tzoumis, with guest co-editors James Van der Kloot, and Joe Dufficy, invite manuscripts to be published in the journal Environmental Practice. The journal is published by Cambridge University Press for the National Association of Environmental Professionals.

Manuscripts are sought with an emphasis on practice in response to **brownfield redevelopment issues**, including case studies on showcase communities, community revitalization, and urban renewal. Perspectives are welcome from nonprofits, scholars, practitioners, the affected communities and students.

**Deadline for submittals is May 1, 2009 to
KellyTzoumis@Ameritech.net**

(only Word files can be accepted)

**Sample issues of the journal
can be found at:**

[http://journals.cambridge.org/
action/displayJournal?jid=ENP](http://journals.cambridge.org/action/displayJournal?jid=ENP)

For questions, please contact Dr. Tzoumis at
773-325-4642 or by email at
KellyTzoumis@Ameritech.net

Guidelines for publication can be found at:
<http://journals.cambridge.org/action/>