

Developing Environmental Flow Recommendations:
Understanding the Ecological Consequences of Hydrologic Change
Utilizing the Indicators of Hydrologic Alteration (IHA) Software Tool
and Collaborative Processes

December 18-20, 2007
National Conservation Training Center
Shepherdstown, WV

DRAFT Agenda

Tuesday- December 18, 2007

6:30am – 8:15am: Breakfast

8:30am – 9:00am: Welcome

*Review of workshop purpose, expectations, schedule, and logistics;
introduction of speakers and attendees.*

*10 minute presentation, 20 minute discussion (TBD, The Nature
Conservancy)*

9:00am –10:00am: Environmental Flows 101

*This session will introduce the concept of environmental flows as an
emerging field that integrates ecological health into traditional water
management. It will trace its historical development both within the
US and internationally and list its key components.*

*50 minute presentation, 10 minute discussion (Brian Richter, The
Nature Conservancy)*

10:00am – 10:30am: Break

**10:30am - 11:30am: The Hydrologic Regime: A Master Variable for
Freshwater Ecosystem Health**

*Each river has a unique flow pattern that its resident biodiversity has
evolved with and to expect. Maintaining the health of any freshwater
ecosystem must begin with a detailed analysis of its hydrologic
regime and ascertaining what aspects of this unique flow pattern are
essential to specific species, communities and functions. This
session will cover these topics and explain approaches to defining*

critical aspects of these patterns necessary for developing environmental flow recommendations.

50 minute presentation, 10 minute discussion (Brian Richter, The Nature Conservancy)

11:30am – 12:30pm: Lunch

12:30pm – 2:00pm: Small Group Exercise

This small group exercise will provide workshop participants with an opportunity to identify the key aspect of the hydrologic regime necessary to support individual aspects of the ecosystem. Participants will work on teams and, through facilitation, will arrive at a flow recommendation to support their assigned part of the ecosystem.

15 minute presentation, 45 minute activity, 30 minute discussion (Andrew Warner, The Nature Conservancy)

2:00pm – 2:30pm: Break

2:30pm – 3:30pm: Tools for Developing Environmental Flow Recommendations

Numerous tools exist that are helpful to the development of environmental flow recommendations. These include but are not limited to the IHA software explained in detail during this workshop. This session will review these tools and identify in what situations they are particularly appropriate. Also included here will be consideration of additional sources of data for considering precipitation patterns and climate change.

45 minute presentation, 15 minute discussion (Jeff Opperman, The Nature Conservancy and Chris Konrad, USGS)

3:30pm- 5:00pm: Introduction to the Indicators of Hydrologic Alteration

This session will explain the history and background of the Indicators of Hydrologic Alteration (IHA) software program developed by The Nature Conservancy, the mechanics of the IHA software, and the output generated by analysis using this software.

60 minute presentation, 30 minute discussion (Tom FitzHugh, The Nature Conservancy)

5:00pm – 8:30pm: Social Time and Dinner

Wednesday – December 19, 2007

7:00am – 8:30am: Breakfast

8:00am – 8:15am: Overview

Review of progress through workshop content and identification of goals for the second day of the workshop.

15 minute presentation (TBD, The Nature Conservancy)

8:15am – 9:30am: IHA Tutorial

This tutorial will help workshop attendees become familiar with the IHA software, including commands and output options. Workshop attendees will also be guided through process of downloading data.

60 minute presentation and facilitated software application, 15 minute discussion (Tom FitzHugh, The Nature Conservancy)

9:30am – 10:15am: Introduction to Using IHA to Assess Change

This session will describe how the IHA can be used to assess change in a rivers hydrologic regime. The cause of this change might be the construction of a dam, the use of a diversion structure, groundwater pumping, land use changes in the watershed of a particular freshwater ecosystem, or even climate change. These hydrologic changes can also be linked to ecological responses.

30 minute presentation, 15 minute discussion (Tom Fitzhugh, The Nature Conservancy)

10:15am – 10:30am: Break

10:30am – 11:45am: Using the IHA to Assess Change

During this session, workshop participants will work in groups of two to process data downloaded earlier in the day using the IHA and analyze results obtained to explain the hydrologic change that has occurred during a specific period of time. Work products will be shared to the larger group at the end of this session.

15 minute presentation, 60 minute facilitated application (Andy Warner, Tom Fitzhugh and Jeff Opperman, The Nature Conservancy)

11:45am – 1:00pm: Lunch

1:00pm – 3:15pm: Assessing Change Where You Work

Application of the IHA tool to rivers selected for analysis by each participant is the focus of this session. Data sources will include

those found online and downloaded at the workshop and digital files containing data sets (daily flow data) brought in by workshop participants. Individual facilitation will be provided by workshop conveners.

15 minute presentation, 75 minute facilitated application, 45 minute discussion (Andy Warner, Tom Fitzhugh and Jeff Opperman, The Nature Conservancy)

3:15pm – 3:30pm: Break

3:30pm – 5:00pm: Overview of Additional Uses of IHA

This session will include a facilitated discussion of additional uses of the IHA software (e.g., for investigating natural patterns – such as groundwater, lake levels, precipitation patterns, etc. - and linking them to ecological functions, to help frame research questions, etc.) found within the IHA user community as well as from workshop participants. This session will also introduce the national analysis of hydrologic alteration conducted by The Nature Conservancy.

50 minute presentation, 40 minute discussion (Tom FitzHugh, The Nature Conservancy)

Thursday – December 20, 2007

7:00am – 8:30am: Breakfast

8:30am – 8:45am: Overview

Review of progress through workshop content and identification of goals for the third day of the workshop.

15 minute presentation (TBD, The Nature Conservancy)

8:45am – 12:30pm: Case Study Applications

This session will present three geographically diverse case studies where The Nature Conservancy has facilitated collaborative processes involving various partners (e.g., USFWS, U.S. Army Corps of Engineers, scientific experts, etc.) to develop environmental flow recommendations for utilization by various entities in dam and reservoir operations. Each case study will include information about how the IHA tool was used to develop these recommendations, how the reaction of the ecosystem has been monitored and how this information has been used to adaptively manage each river, and insights gained through each project. Likely case studies include: The Savannah River (GA), the Bill Williams River (AZ), and the Roanoke River (NC).

*Three 45 minute presentations and three 30 minute discussions
(Brian Richter and Andy Warner, The Nature Conservancy and
Andrew Hautzinger, USFWS)*

12:30pm – 1:30pm: Lunch

1:30pm – 3:00pm: Challenges In Your Work

During this session, workshop participants will be able to explain the challenges they face and receive feedback from the group to help them address these challenges deliberately and strategically. This session will also be of value to workshop organizers as it will provide an opportunity to more intimately understand the unique challenges faced by workshop participants.

(15 minute presentation, 75 minute facilitated discussion (TBD, The Nature Conservancy)

3:00pm – 3:30pm: Closing Remarks and Evaluations