

Assessing the Economic Benefits and Costs of Nutrient Criteria Implementation

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Nutrient Core Team Meeting
September 21, 2011



Study Objectives

- 1) Conduct comprehensive analysis of the aggregate benefits and costs of implementing nutrient criteria
- 2) Estimate the economic benefits of reducing excess nutrients on recreational demand and quality of life
- 3) Compile site-specific information on benefits and costs of reducing nutrients



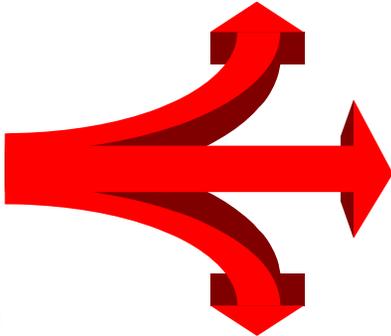
Benefits Are Derived from Services



Ecosystem Services
Aquatic Wildlife Habitat
Water Quality Enhancement

Indirect Human Uses

Water &
Water
Resources



Direct Human Uses



Recreation, Aesthetics
Drinking Water
Cooling & Processing
Irrigation
Wastewater Discharge

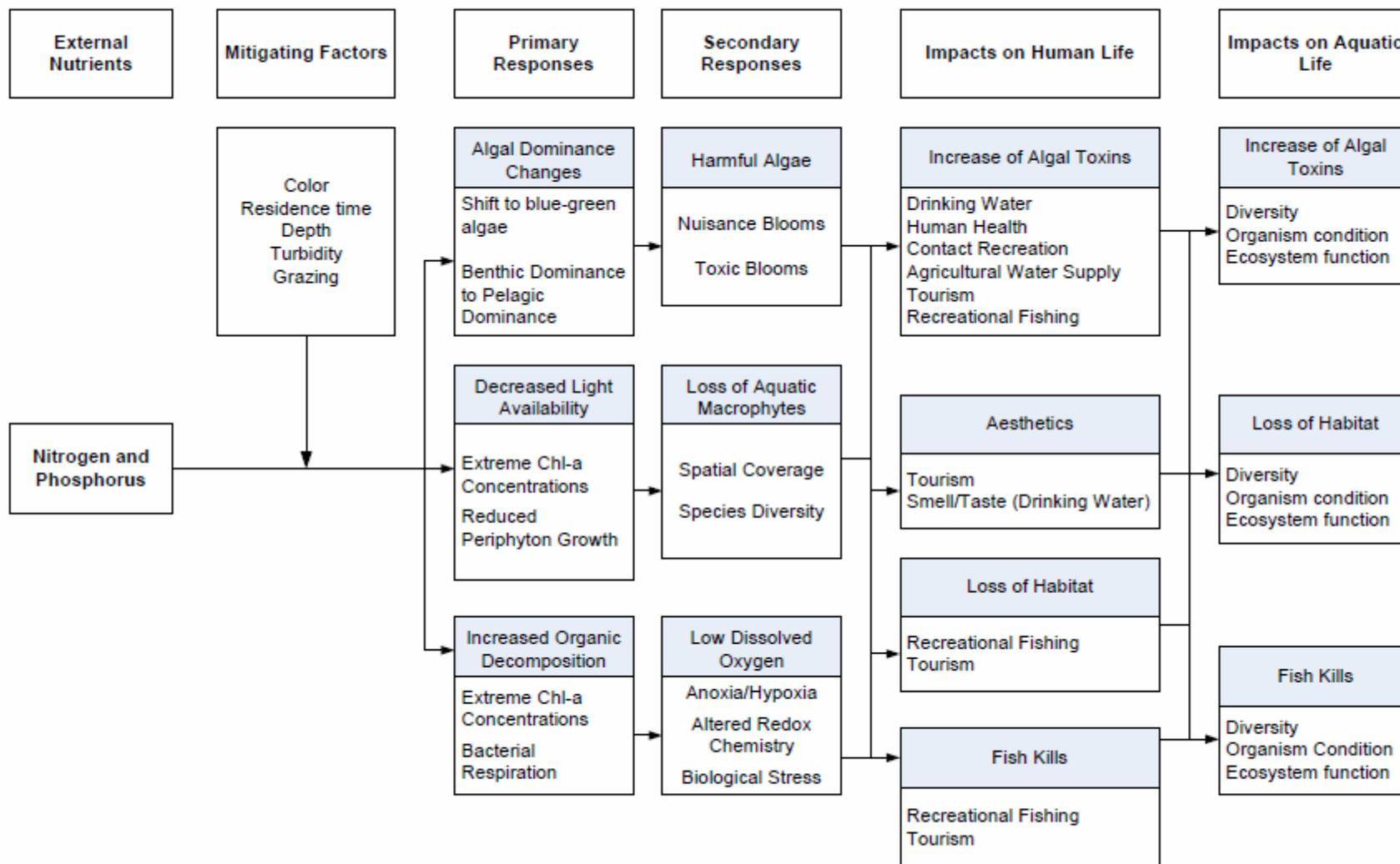
Passive Use



Quality of Life
Existence Value
Diversity Preservation



Eutrophication Impacts and Responses



Source: EPA (2010); adapted from Dodds (2009)



Benefit Cost Analysis (BCA)

Benefit Categories

Defined as amount society is willing to pay for the action rather than forego the good or service

- 1) Recreational Demand
- 2) Quality of Life
- 3) Property Value
- 4) Water Treatment Costs
 - a) Drinking Water
 - b) Industrial/Agricultural Users

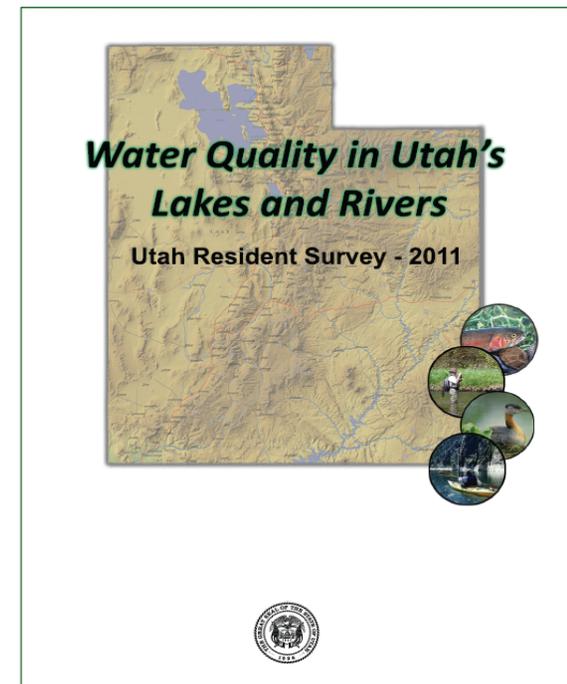
Cost Categories

- 1) Wastewater Treatment Upgrades
 - a) POTW complete
 - b) Industrial/Agricultural Dischargers
- 2) Stormwater
- 3) Nonpoint Source Pollution
- 4) TMDL Administration



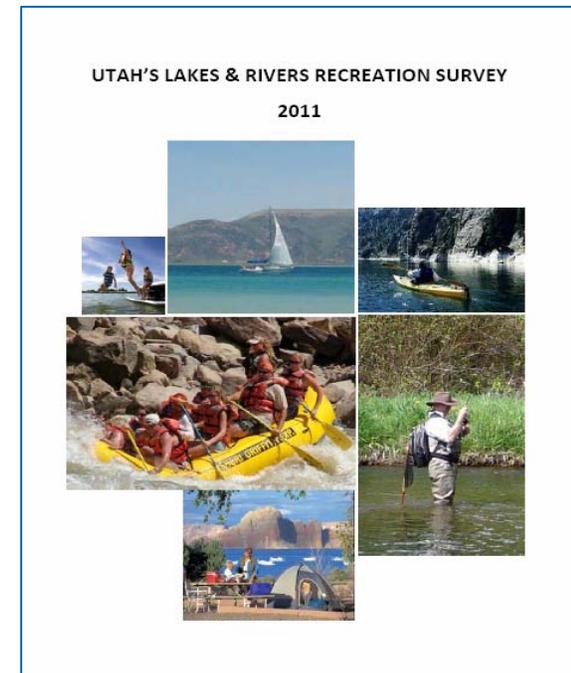
Total Economic Valuation Survey

- Sample taken from all Utah households
- 2,700 surveys
- Intended to gauge the general population perception of excess nutrients and total willingness to pay to protect rivers and reservoirs



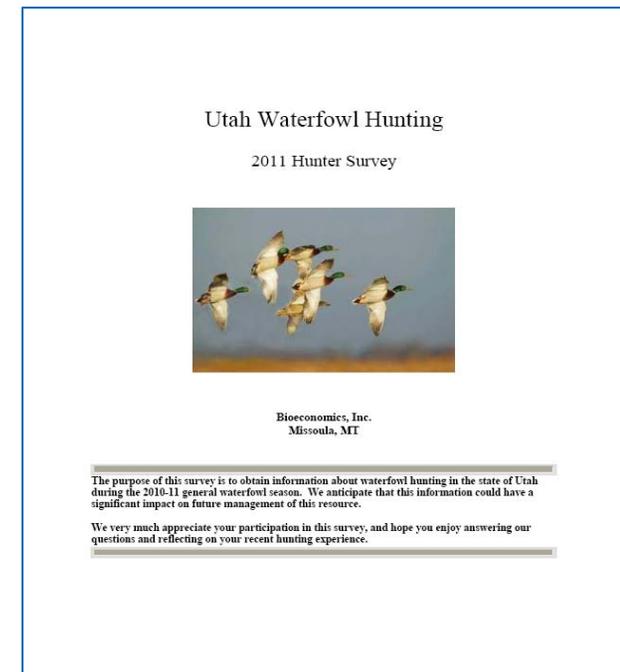
Recreational Demand Survey

- Sample taken from list of Utah water recreationists (anglers, boaters, swimmers, passive users)
- 3,600 mailings
- Intended to gauge recreationists current activities and expenditures and behavioral responses to excess nutrients in rivers and reservoirs



Waterfowl Hunters Survey

- Sample taken from list of Utah waterfowl hunters
- Intended to gauge waterfowl hunters behavioral responses to excess nutrients in lakes and wetlands
- Focus of survey was Great Salt Lake and associated impoundments and wetlands
- Completed spring 2011



Econometric Modeling

- An econometric model specifies the statistical relationship that is believed to hold between the various economic quantities pertaining to a particular economic phenomenon under study
- Econometric modeling of survey results will be used to estimate economic benefit of preventing pollution from excess nutrients



Site Specific Tool

- Anticipate implementation of nutrient criteria will often require site specific evaluation
- Develop tool to assist with site specific economic considerations



Aknowledgements

- Mary Jo Kealy, CH2MHill
- Cody Stanger, CH2MHill
- Nanette Nelson, Wyoming Survey and Analysis Center
- Paul Jakus, Utah State University
- John Loomis, Colorado State University
- John Duffield, Bioeconomics/University of Montana



Comments/Questions

<http://www.waterquality.utah.gov/nutrient/economic.htm>

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