

An aerial photograph of Capitol Lake in Eugene, Oregon. The lake is a large, dark blue body of water with a curved shoreline. In the background, a dense cityscape is visible under a clear sky. The text is overlaid on the image in white and blue colors.

# Deschutes Estuary Feasibility Study Independent Technical Review

Steve Crooks Ph.D.  
Philip Williams and Associates, Ltd

Capitol Lake Adaptive Management Plan  
Steering Committee Meeting

November 13 2007

# Introduction

The goal set of the ITR is to provide a credible evaluation of the scientific objectivity and technical merits of each of the four technical reports, and to assess confidence limits on their results and the level of uncertainty inherent in their predictions of change under various management approaches.

# ITR Team

## PWA

- Philip Williams Ph.D P.E. Project Director
- Steve Crooks Ph.D. Project Manager
- Matt Brennan Ph.D. Hydrodynamic Modeling
- Bob Battalio P.E. Engineering Design  
& Cost Estimating

## Steward and Associates

- Cleve Steward Estuarine Ecology
- Prof. Kirk Steinhorst Environmental Statistics

## ECONorthwest

- Ernie Niemi Socio-economics

# Methodology

1. Establish with WDFW a set of questions / criteria against which the reports will be evaluated
2. Individual study technical review by experts with parallel experience
3. Response to technical review by study contractors
4. Conference of ITR team to provide a consensus review that cuts across disciplines
5. Presentation to the CLAMP Steering Committee.

# Questions to Ask

1. Were the right questions asked of the Contractor?
2. Did the contractor answer those questions?
3. Were the approaches used by the contractor appropriate to answer those questions?
4. Have “Standard of Practice” analytical tools been used effectively?
5. Is the quality and completeness of documentation and reporting satisfactory?
6. How significant are uncertainties in data and analysis in supporting report conclusions?
7. Can significant uncertainties or errors in the reports be rectified easily?
8. Do the data and/or literature used support the conclusions reached by the contractors?

# Conclusions

1. Can estuarine processes be restored to Capitol Lake?
  - Did not identify any factors that would preclude restoration
2. Do the technical studies clarify whether estuarine restoration is feasible?
  - Need to prescribe feasibility metrics
3. Have any fatal flaws be identified?
  - No
4. Do the technical studies support subsequent analysis?
  - yes
5. Do information gaps exist?
  - yes

# Sediment Transport and Hydraulic Modeling

1. Tidal circulation and exchange can be restored
2. Intertidal range and salinity can be restored
3. Fluvial flows will be conveyed
4. Sediments will be mobilized
5. Sediments will be deposited in downstream dredged channels but absolute amount unclear
6. Rate of change will diminish with time

# Ref. Estuary Study & Biological Conditions

1. With re-establishment of tidal circulation tidal habitat will be restored
2. Majority of habitat will consist of intertidal mudflat and tidal channels
3. Ecology likely to fall in the range of nearby reference estuaries

# Engineering Design and Cost Estimating

1. No significant technological impediments to prevent restoration of estuarine conditions
2. Provides cost estimates for one possible design approach
3. Not until the planning opportunities and constraints have been fully assessed will the selection of the most appropriate design be possible

# Net Social & Economics Benefit Analysis

1. Study met with considerable information gaps
2. Socio-economic outcome uncertain
3. Data gaps identified

# Outcome of Technical Studies

1. Did not identify any significant impediments to restoring estuarine conditions in the lower Deschutes estuary
2. The technical studies do not cover the full range of analysis required to provide for a full feasibility assessment.

# Level of Certainty

	<b>Confidence in general outcome</b>	<b>Confidence in accuracy of predictions</b>	<b>Potential for surprises</b>
<b>Tidal exchange</b>	High	High	Low
<b>Sediment transport</b>	High	Medium	Medium
<b>Estuarine ecology</b>	High	Medium	Low
<b>Engineers estimates</b>	High	Medium	Medium
<b>Socio-economic net benefit</b>	Low	Low	High

# Planning process

1. Scoping studies
2. Independent technical review (this stage)
3. Identify project *opportunities and constraints*
4. Refine restoration alternatives (including lake management)
5. Alternative assessment
6. Preliminary design and permitting
7. Final design and construction

# Opportunities

*(incomplete list)*

1. Re-establish full tidal circulation
2. Improve water quality
3. Restore estuarine habitat and ecology
4. Use “soft-engineering” approaches to accelerate restoration, or establish preferred mix, of tidal habitats
5. Reduce flood risk due to river flow
6. Minimize need to dredge lake
7. Gain of estuary recreational amenity

# Constraints

*(incomplete list)*

1. Increased sedimentation in downstream dredged channels
2. Increased risk of flooding due to sea level rise (to be determined)
3. Mobilization of contaminated sediments (to be determined)
4. Configuration of existing infrastructure
5. Loss of lake recreational amenity
6. Temporary odors?
7. Available budget

# Information Gaps

1. Definition of lake management alternative (baseline condition)
2. Definition of restoration opportunities and constraints
3. Economic consequences of altered patterns of sedimentation particularly related to marinas and dredge maintained channels
4. Sediment quality within Capitol Lake
5. Projected change in water quality under revised alternatives
6. Flood assessment incorporating sea level rise
7. A geomorphic perspective to guide restoration alternatives

# Recommendation 1

## Develop a common project understanding

1. *Estuarine restoration*: action in a converted or degraded natural estuary that will result in the re-establishment of hydrologic, geomorphic and ecological processes, functions and biotic linkages and lead to a persistent, resilient system integrated within the landscape (based on SWS, 2000).
2. *Feasibility*: proposed action will achieve desired benefits within the limits of acceptable costs.

# Recommendation 2

## Planning and study expectations

1. Careful use of terminology. Terms such as ‘feasibility study’ and ‘net benefits analysis’ are technical terms which set expectations of a particular product or process.
2. Technical studies should document the scope of their analysis and describe the expectations of their report.

# Recommendation 3

## Place technical information within a planning context

1. Set goals and objectives
2. Identify opportunities and constraints
3. Define evaluation criteria
4. Develop conceptual models of ecosystem restoration
5. Fill information gaps
6. Refine alternatives, include baseline scenario
7. Forecast future conditions
8. Document preferred alternative and decision process

# Recommendation 4

## Integrate information transfer throughout technical studies

1. Information supply and needs agreed in early project stage
2. Confirm comparable spatial and temporal scales across studies
3. Include provision for information feedback

# Recommendation 5

## Define baseline conditions

1. Establish lake management alternative

# Recommendation 6

## Refine alternatives

1. Alternatives developed are appropriate for a scoping level assessment of restoration potential. Moving forward, these alternatives could be refine further to balance project opportunities and constraints to meet restoration objectives

# Recommendation 7

Establish a vision



An aerial photograph of Capitol Lake in Deschutes, Oregon. The lake is a large, dark blue body of water with a curved shoreline. In the background, a city with various buildings and streets is visible under a clear sky. The text is overlaid on the top half of the image.

# Deschutes Estuary Feasibility Study Independent Technical Review

**END**

Capitol Lake Adaptive Management Plan  
Steering Committee Meeting

November 13 2007