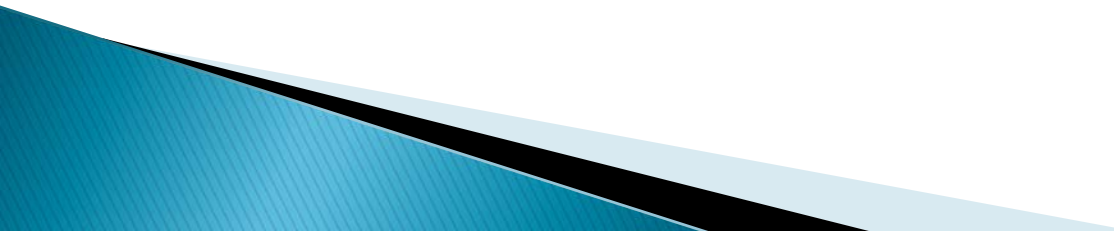


Phosphorus in Vancouver Island Streams To P or not to P?

Environmental Quality Section
Ministry of Environment
February 23, 2010

Outline

- ▶ Background/Baseline conditions
 - ▶ Traditional Approaches
 - ▶ Today's challenges for tomorrow
 - ▶ Draft P objective
- 

Baseline: Hydrology and our climate

Daily Discharge for COWICHAN RIVER NEAR DUNCAN (08HA011)



Baseline: Summer Low Flow

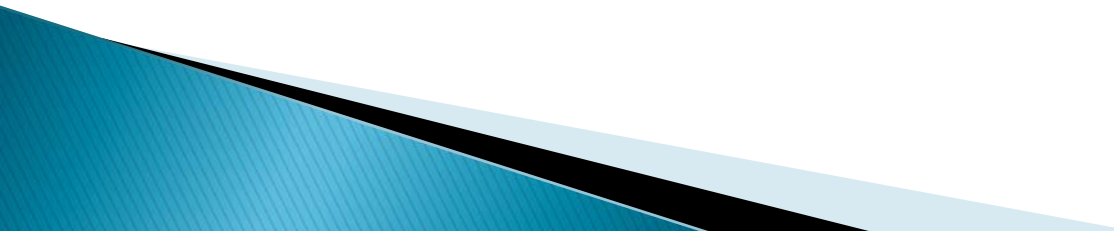


- ▶ Summer low flow conditions
 - Warm, clear
 - Relatively shallow
 - Slow moving, stable substrate

Baseline: phosphorus

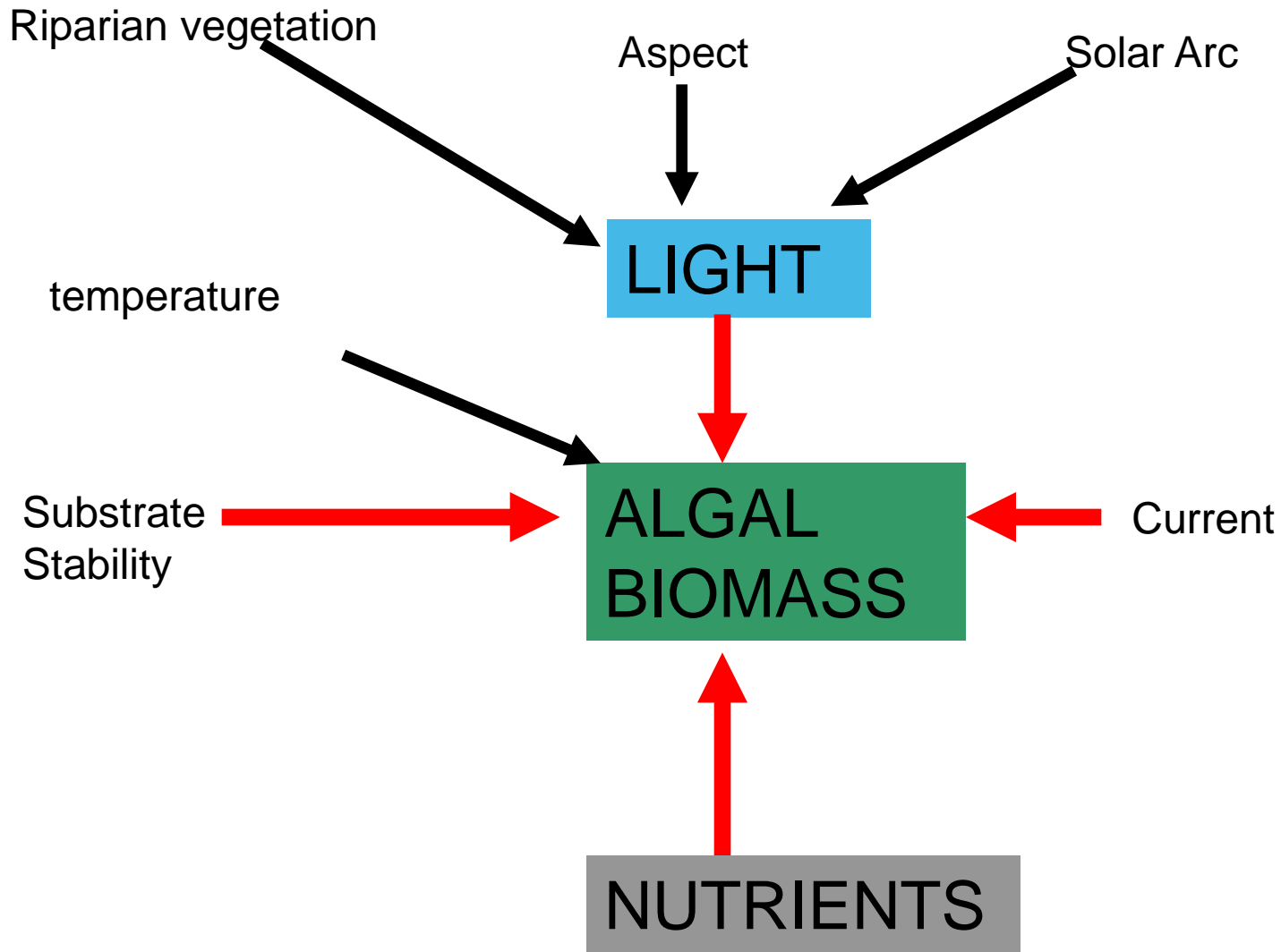
- ▶ Virtually undetectable throughout summer
- ▶ At or less than 1 ug/L – ortho
 - Extreme P limitation
- ▶ Ongoing program of low level stream fertilization in many streams as a fisheries restoration tool

Traditional/Historical

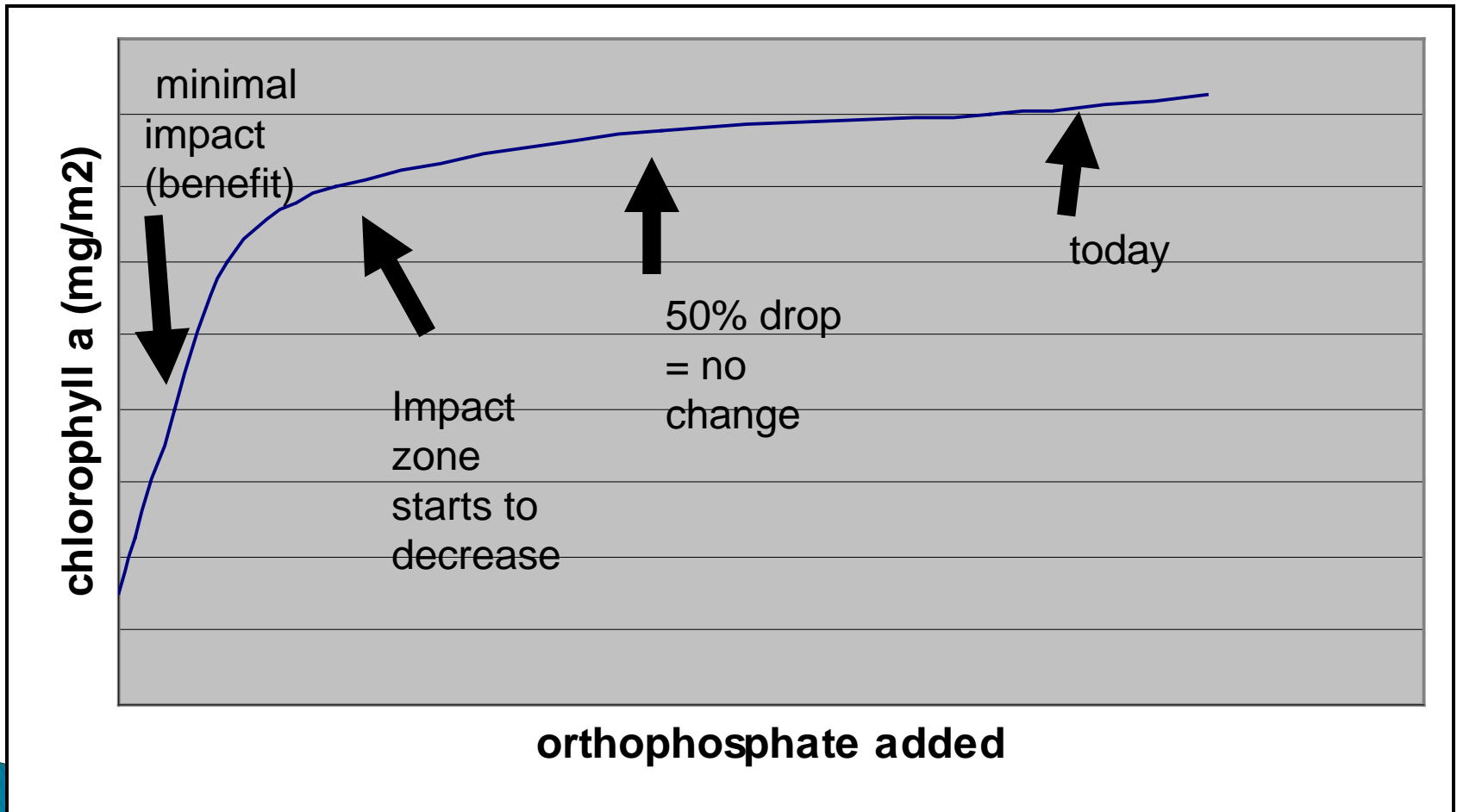
- ▶ Focused on older municipal Sewage Treatment Plant discharges – “the big pipes”
 - ▶ Secondary treatment, no nutrient removal
 - ▶ Population growth, larger volumes
 - ▶ Phosphorus became a significant issue
- 

Chlorophyll *a* and Phosphorus Relationship

- ▶ Currently no P guideline for streams in BC
- ▶ Chlorophyll *a* (aka algae) – surrogate for P
- ▶ Measure the symptom/response rather than the cause
- ▶ Chloro 'a' – two guidelines
 - recreational and aesthetics 50 mg/m²
 - aquatic life 100 mg/m²
- ▶ Difficult to establish preventative approach
 - biological uptake



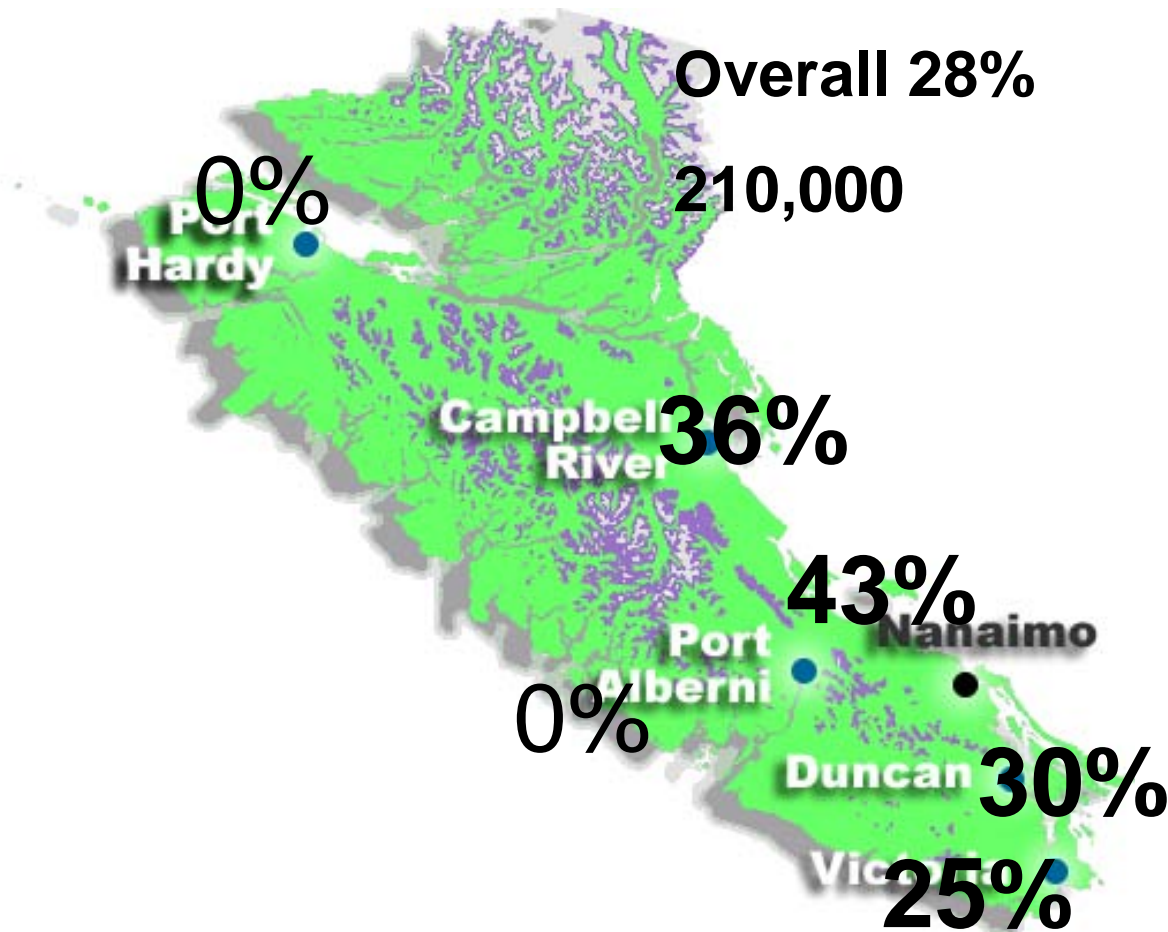
What Happens as we decrease P loading ?



Where Are We Headed?



Growing, Growing, Gone – 2006 – 2036



- ▶ People are moving here
- ▶ And then there's tourism
 - Summer population significantly higher in some areas

We Want it All and We Want it Now

- ▶ Everybody wants a piece of the action
 - play in it – fish, swim, boating, skiing
 - Live along it, near it, have a view of it
 - Water the lawn, wash the car
 - Drink it

Today's challenges

- ▶ Population growth and urban development
 - The “boomers” are retiring and out to capture their retirement dream property
 - often a semi-rural development
 - preferably something “green”
 - Outside traditional municipal boundaries
 - Much of south and east coast of VI

Today's Challenges cont.

- ▶ Huge development proposals
 - Many of them >5000 people
 - Wastewater treatment and disposal
- ▶ N.P.S. – storm water, land disturbance, riparian removal/change, access to the stream
- ▶ Water consumption demand, storage for summer use (irrigation)
- ▶ Lack of dilution

Today's challenges cont.

- ▶ Green Developments
- ▶ Stream Augmentation/beneficial use – our streams need more water in the summer but not just any water
- ▶ Difficult fit for existing regulations
 - Municipal Sewage Regulation

The need for P objective?

- ▶ Increasing pressures on water resources
- ▶ Cumulative effects – wastewater discharges, NPS, changes in hydrology...
- ▶ Preventative/proactive rather than reactive
 - Deal with the cause rather than measure the response/symptom
- ▶ Need for a more efficient/effective approach
- ▶ Aid in planning process – local gov't

Vancouver Island P Objective

- ▶ General Verdict – 5 ug/L TP appropriate guideline to protect water quality in VI streams
- ▶ Seasonal
- ▶ Average vs maximum value
- ▶ Complimented with biomonitoring to assess ecosystem health

QUESTIONS?

