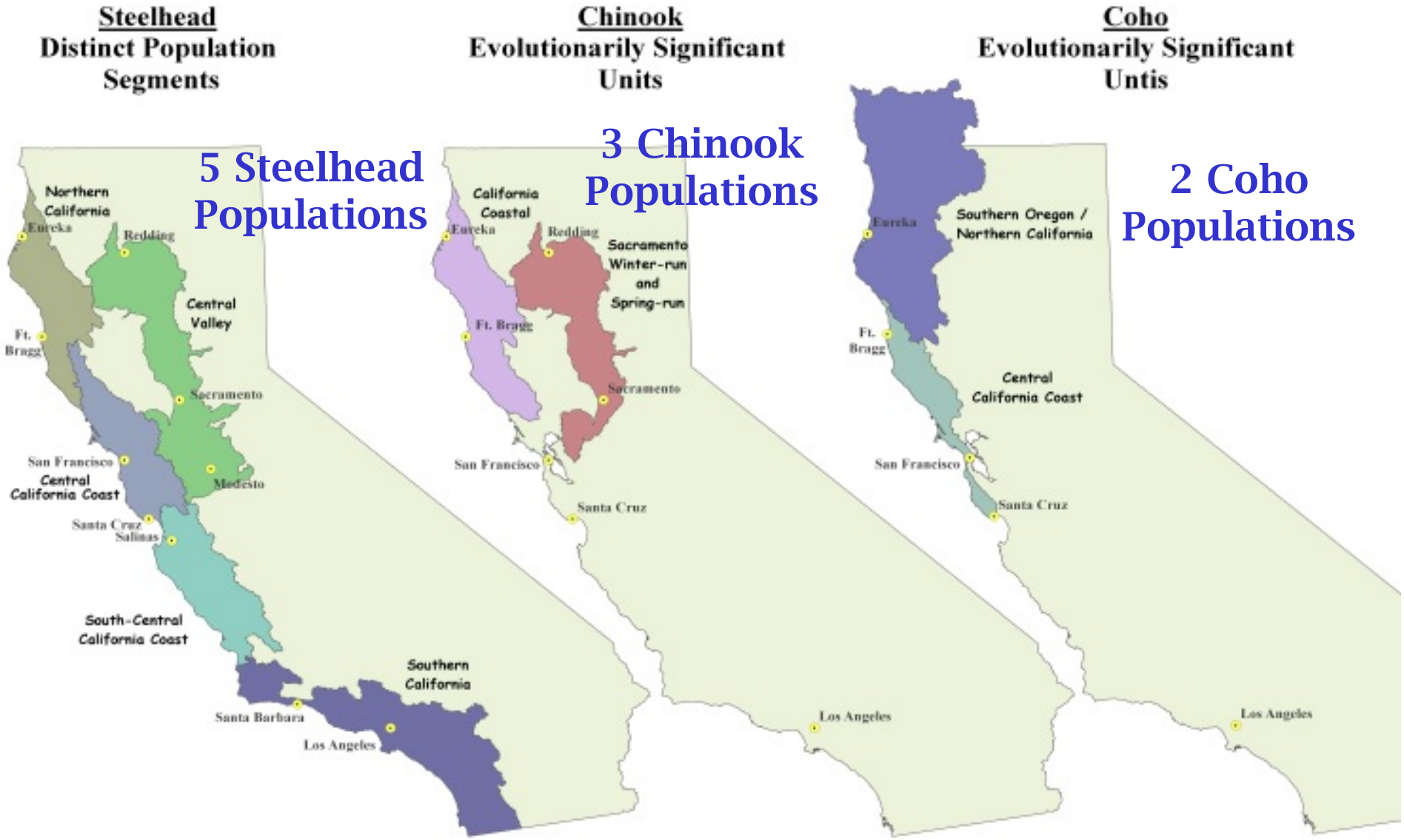
Sound Watershed Consulting

Creating Functional Water Environments

Site-Specific Riparian Management Using the Section V Guidance Document

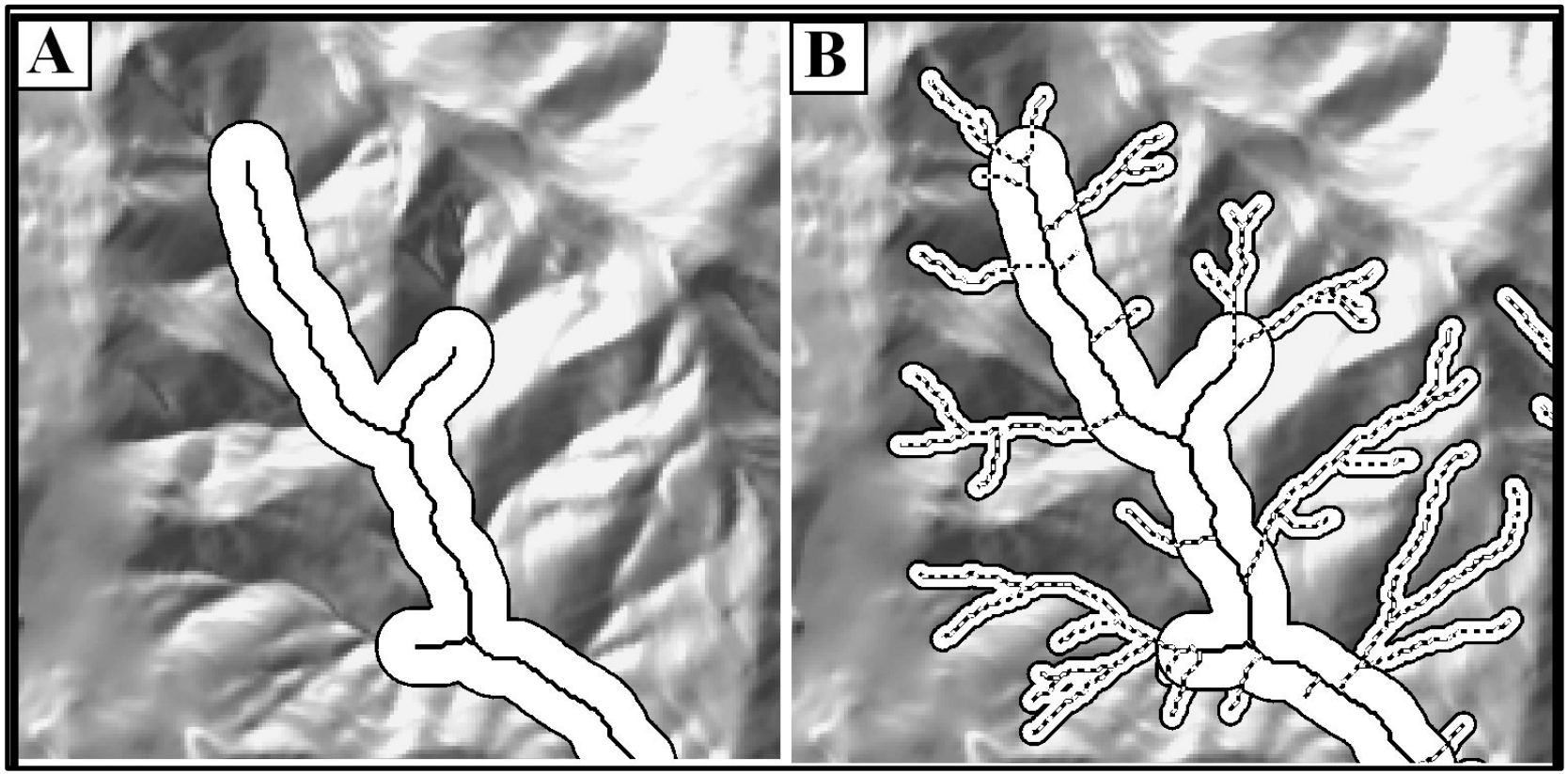
Michael Liquori

(and others)



In California there are 10 Populations of Salmon and Steelhead Listed as Federally Threatened or Endangered with Extinction

Introduction



Technical Basis for ASP Rules

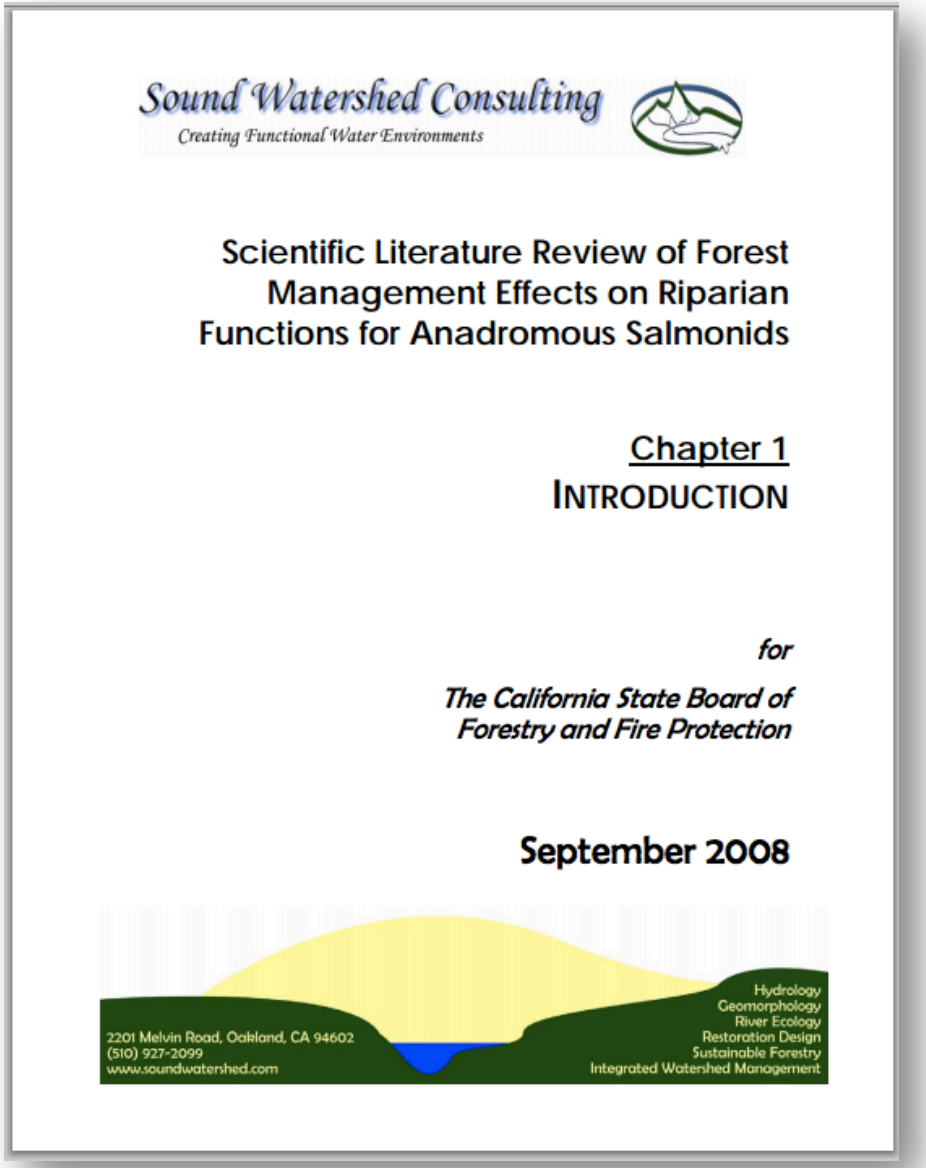
Mike Liquori

Doug Martin

Robert Coats

Lee Benda

David Ganz



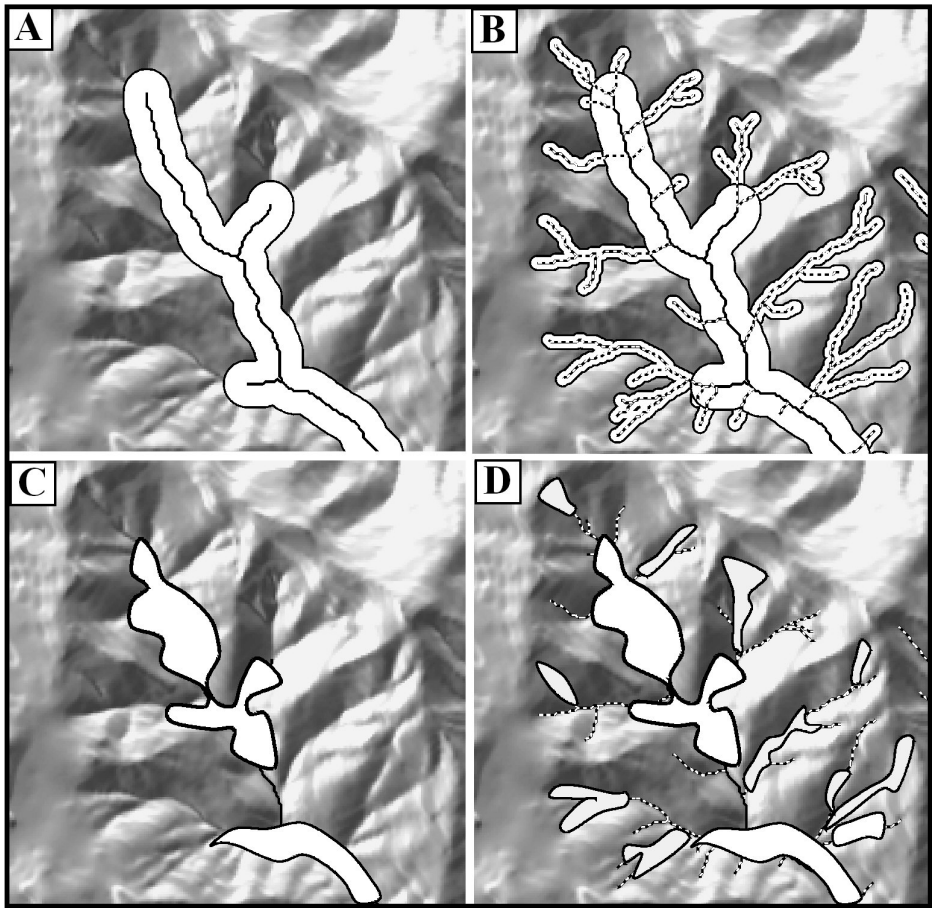
BOF TAC Members

- Gary Nakamura (chair, UCCE)
- Dr. Ken Cummins (HSU)
- Dr. Kate Sullivan (PALCO)
- Dr. Sari Sommarstrom (consultant)
- Dr. Brian Dietterick (Cal Poly-SLO)
- Dr. Cajun James (SPI)
- Dr. Bill Trush (McBain and Trush)
- Dr. Michael Wopat (CGS)
- Charlotte Ambrose (NOAA Fisheries)
- Gaylon Lee (SWRCB)
- Dr. Marty Berbach (DFG)
- Pete Cafferata (CAL FIRE)
- Chris Zimny [lead staff] (BOF/CAL FIRE)

Incentives to Use 14 CCR § 916.9(v)

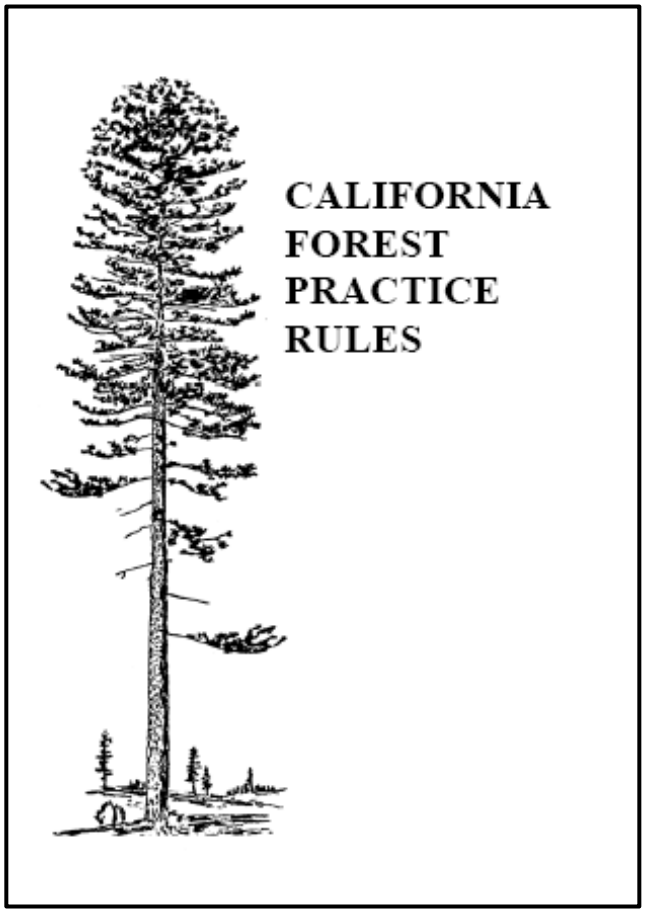
- Landowners now have increased flexibility to manage riparian zones based on site-based needs

(vs. a fixed, prescriptive standard)



ASP Rule Section V

- The 2009 Anadromous Salmonid Protection (ASP) Rules
- Section V allows for <u>site-specific</u> riparian design
- This approach is voluntary



Principle

Rules lack **SPATIALLY-RELEVANT**

GUIDANCE for where factors are limiting

thus,

ALL FACTORS are Limiting EVERYWHERE

Principle

Section V Rules achieve riparian goals through **spatially-explicit, context-specific objectives**

Established by actual site conditions, not rule assumptions

VTAC Guidance Document

Site-Specific Riparian Zone Management:

Section V Guidance

Anadromous Salmonid Protection Rule Section V

Technical Advisory Committee (VTAC)

December 2012

Sacramento, California

Thanks to:

VTAC

- Dr. Kevin Boston
- Dr. Kate Sullivan
- Mark Lancaster
- Dr. Matt O'Connor
- Pete Ribar
- Richard Gienger
- Dave Hope

AGENCY REPRESENTATIVES

- Bill Short, CGS
- Drew Coe, CRWQCB
- Bryan McFadin, NCRWQCB
- Bill Stephens, NOAA
- Pete Cafferata, CALFIRE

VTAC Objectives

- To establish principles, guidelines and procedures
- Broaden Incentives
- Establish permitting efficiencies & reduce regulatory uncertainty

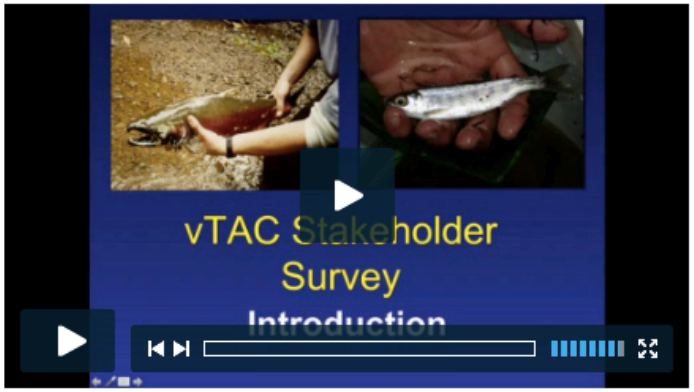
Stakeholder Survey

Anadromous Salmonid Protection Rule 916.9 Section V Technical Advisory Survey

Home

Thank You!!!

...for taking the time to help us implement the Anadromous Salmonid Protection Rule 916.9 Section V Pilot Project. Your thoughts and comments will help us set priorities in the months ahead and will help us frame the issues and approach we take as we develop guidance for this innovative new approach to riparian forest management. We've provided a brief introduction video (optional) as well as some Background Information and additional links (see below).



Online Version (preferred)

click on the graphic above to start an online version of the survey

Hard Copy Version

You may print out a hard copy of the survey by clicking the download link below:

vtac_survey_march_2011.pdf
Download File

Hardcopies of the survey can be mailed to:

Mike Liquori
VTAC Chair
c/o Sound Watershed
2201 Melvin Rd
Oakland, CA 94602

VTAC Outreach Survey

1. About You

Thank You for taking the time to help us design CAL FIRE's Aquatic Salmonid Protection (ASP) Rule 916.9 Section V Pilot Program. Your answers will help us meet the needs and desires of a broad array of interests and concerns. We intend that the results of the program will help to promote a faster path to salmonid recovery in the forested lands of California.

There are 4 pages of questions, and this survey should take about 10-15 minutes.

* An asterisk indicates that an answer is required.

*** 1. Are you (or do you represent) a:**

- ○ Large landowner (>50,000 acres)
- ○ Mid-sized landowner (2,500 acres to 50,000 acres)
- ○ Small landowner (<2,500 acres)
- ○ Land manager
- ○ Consultant
- ○ Advocate
- ○ General public
- ○ Agency staff

Other (please specify)

2. Are you a Registered Professional Forester?

- ○ Yes
- ○ No

3. What was your awareness of the ASP Section V rule before this survey?

○ Detailed Knowledge ○ Moderate Awareness ○ Slight Awareness ○ Never Heard of It

*** 4. Prior to watching the video, how was your knowledge of the Section V rule obtained? (Check all that apply)**

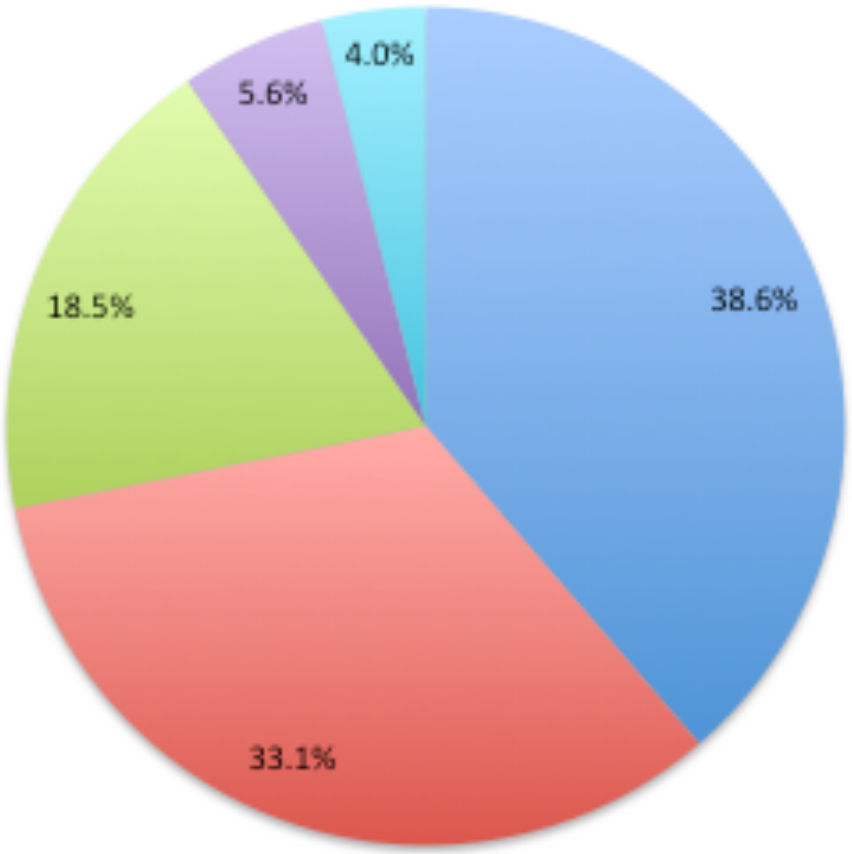
- ☐ Reading the Forest Practice Rules
- ☐ Professional organization information (CLFA, etc.)
- ☐ Internal training/discussions
- ☐ Agency training sessions and/or documents
- ☐ I had no prior knowledge

Other (please specify)

2. Which of the following objectives related to site-based riparian (streamside) management do you support?

	Strong Support	Moderate Support	Low Support	No Support	Neutral
Protecting/enhancing environmental conditions	○	○	○	○	○
Developing the science/technology for responsible, site-specific riparian treatments	○	○	○	○	○
Reducing fire risks	○	○	○	○	○
Demonstrating the ECOLOGICAL benefits of more active forestry within WLPZs	○	○	○	○	○
Demonstrating the ECONOMIC benefits of more active forestry within WLPZs	○	○	○	○	○
Preventing misuse of the rules by RPFs/landowners	○	○	○	○	○
Preventing application of Section V rules by ALL landowners	○	○	○	○	○
Promoting better land stewardship thru active management	○	○	○	○	○
Improving the LONG-TERM ecological function of WLPZs/watercourses	○	○	○	○	○
Improving the SHORT-TERM ecological function of WLPZs/watercourses	○	○	○	○	○
I want to promote the concept that more intensive management can yield more value both economically and environmentally	○	○	○	○	○
Creating the flexibility to address long-term stand management issues	○	○	○	○	○

VTAC Survey Responses

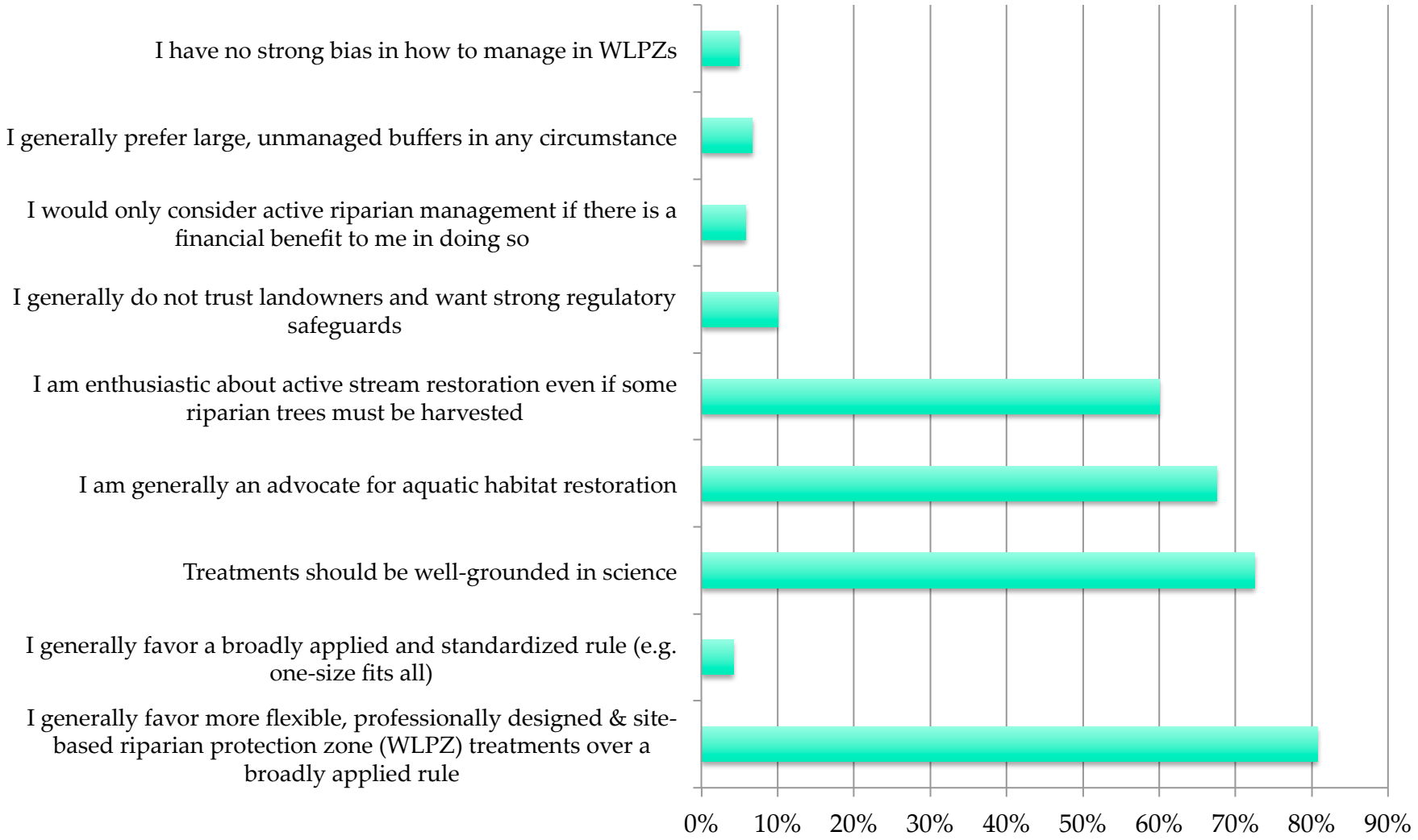


- Landowners/Managers
- Agency Staff
- Consultants
- General Public
- Advocacy Groups

n=123 responses

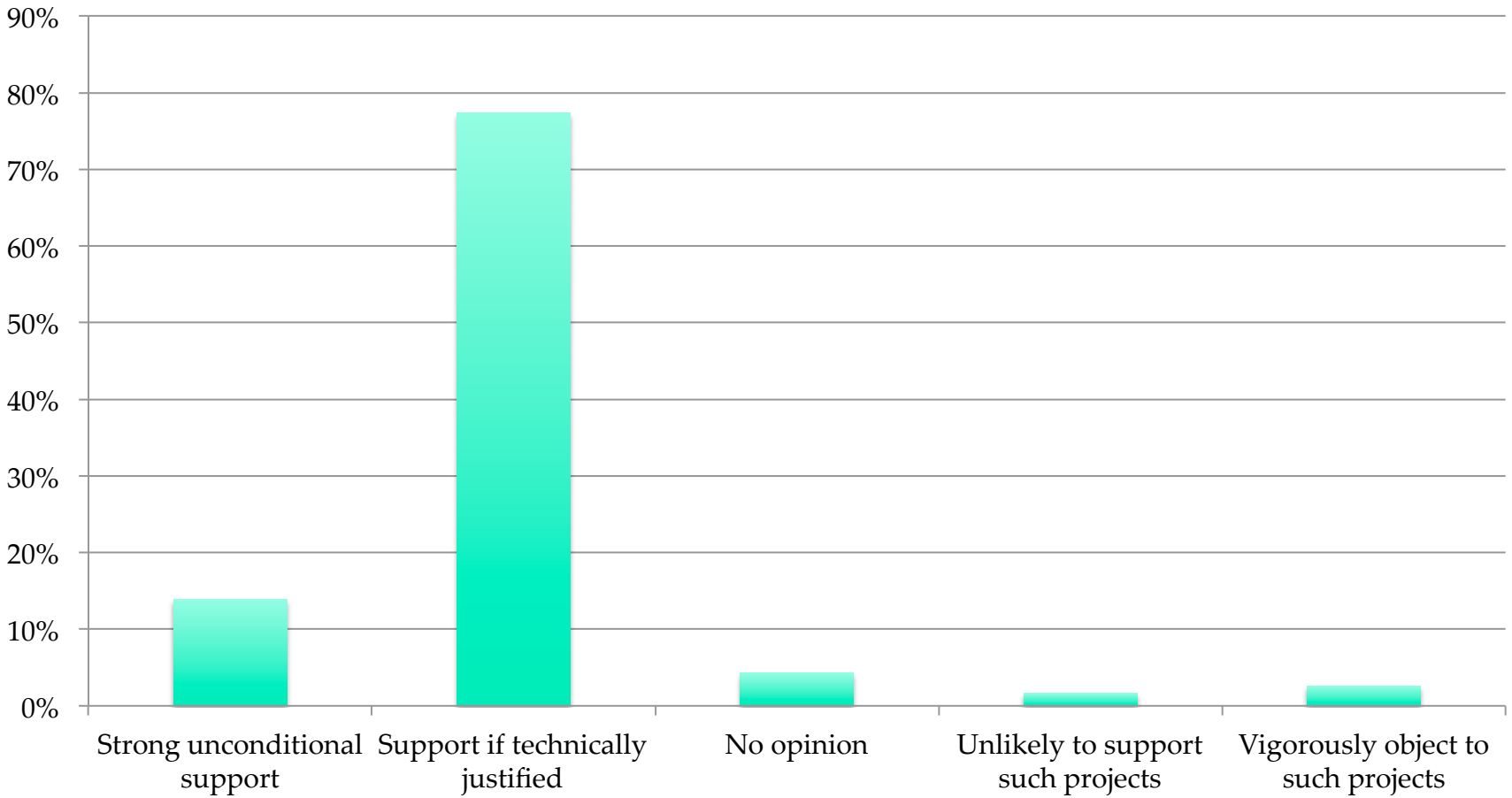
VTAC Survey Summary

Riparian harvest management philosophies



VTAC Survey Summary

Likely to support landowner's ability to apply treatment through Section V rules



Survey: Take-Home Messages

1. Widespread agreement that site-based riparian management can be used where it is justified

2. Need increase level of certainty for extensive use of Section V process

3. Need successful pilot projects & guidance to demonstrate to landowners that approach can work

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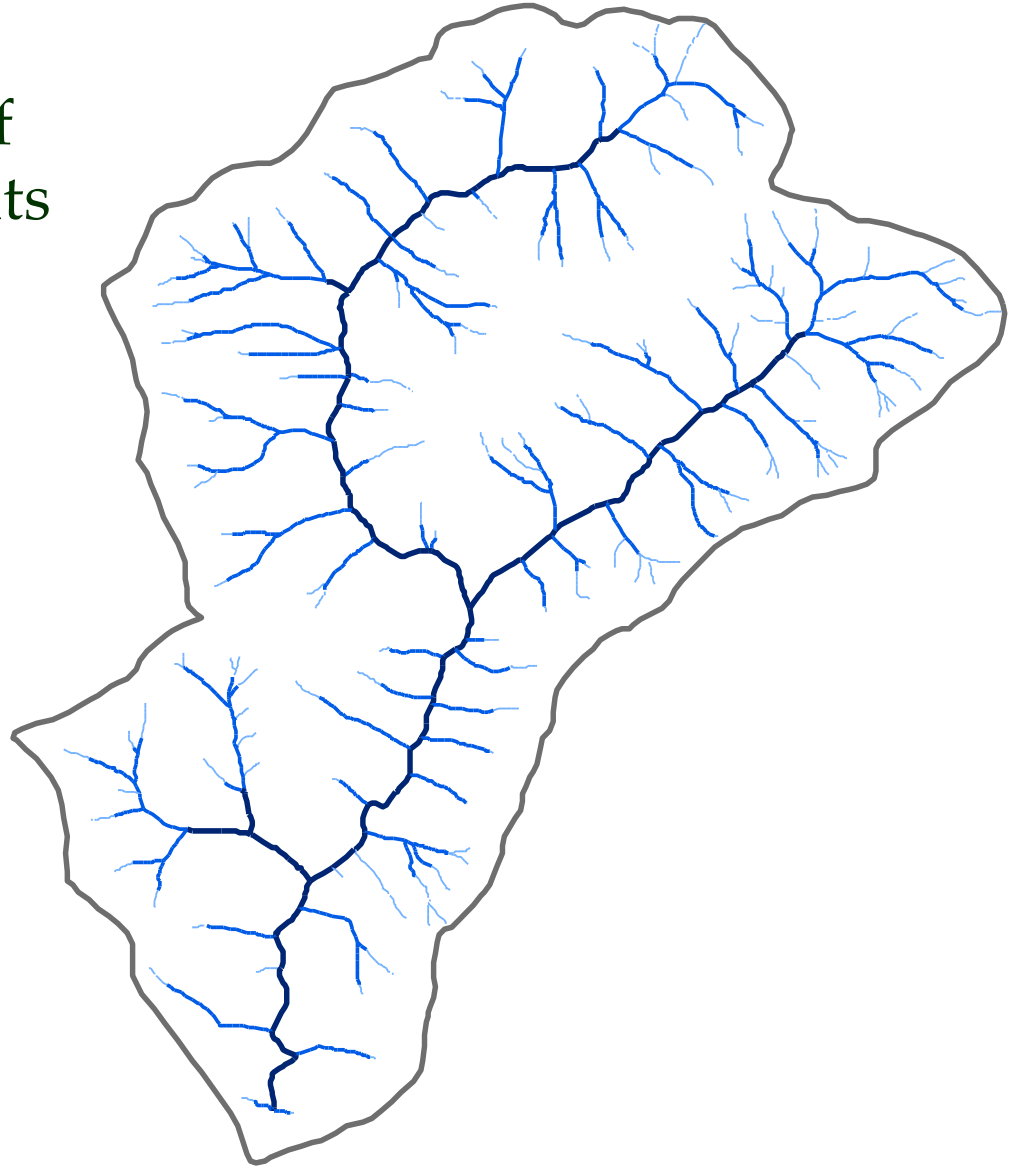
Creating Functional Water Environments

Framework for Riparian Design

Framework for Riparian Design

1. Relative importance of riparian function inputs for forming aquatic habitat & improving water quality

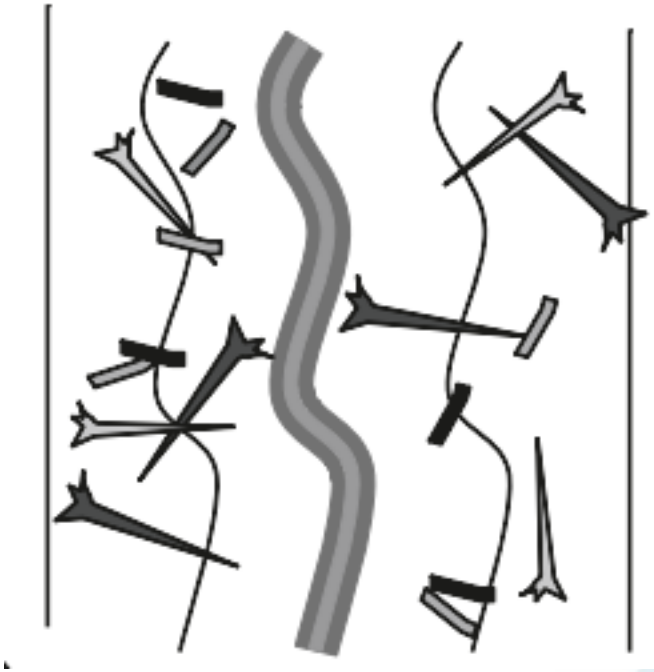
2. Transport of riparian inputs to downstream channels

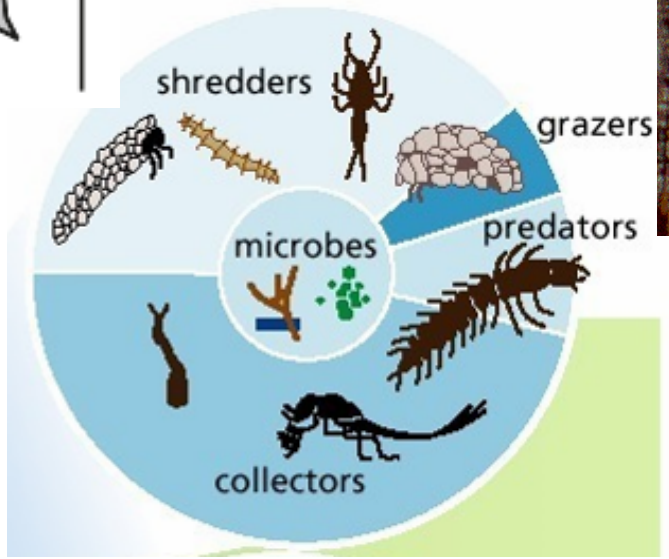


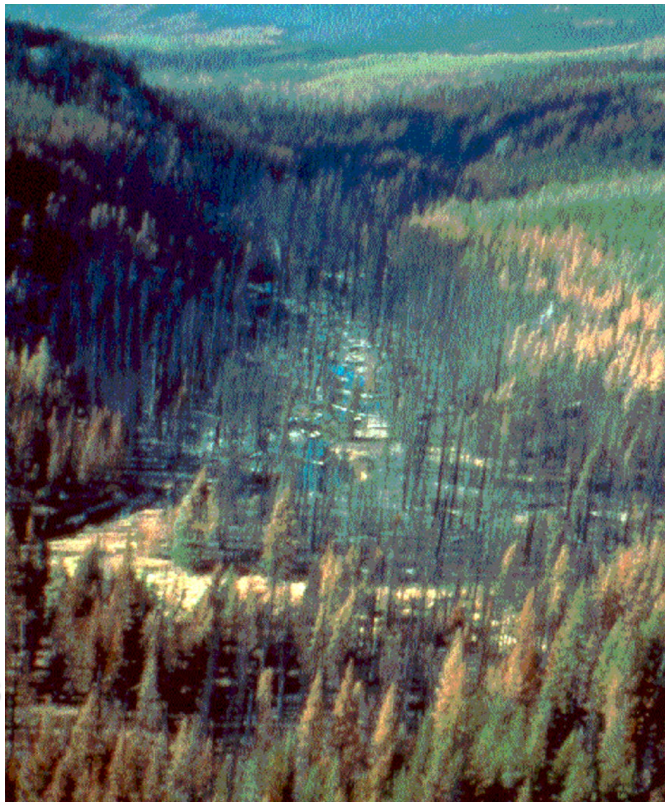
Geomorphic Influences

		Function input (channel response metric)			
Channel type	**Stream size**	**Large wood** (pool formation)	**Shade** (temperature)	**Sediment** (grain size)	**Litter** (retention)
colluvial	small	M	H	M	H
bedrock	all	L	H	L	L
cascade	all	L	M	M	L
step pool	all	M	H	M	M
plane bed	all	H	H	H	L
pool riffle	small	H	H	H	H
pool riffle	medium	H	M	H	H
pool riffle	large	H	L	H	M
dune ripple	small	M	H	L	M
dune ripple	medium	M	M	L	L
dune ripple	large	L	L	L	L
alluvial fan	all	H	M	H	H

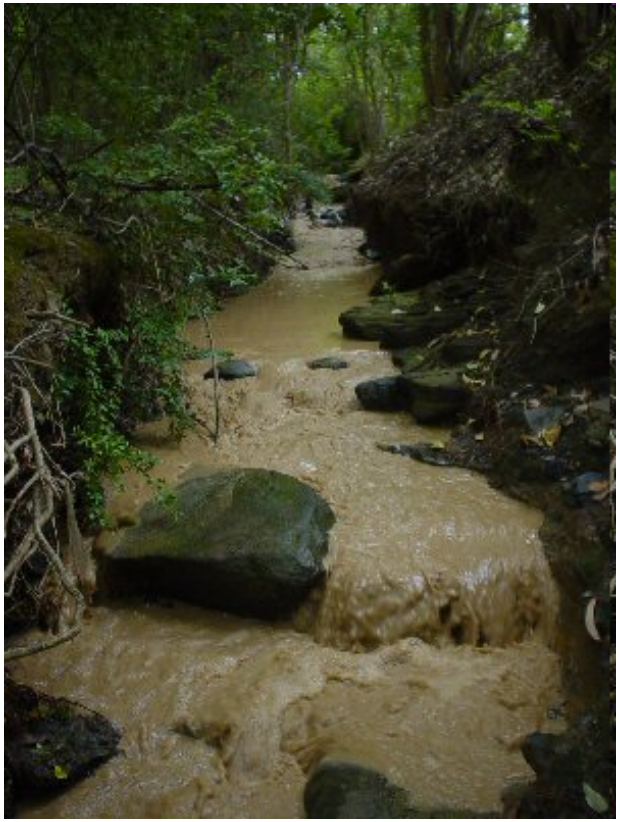
Types of Section V Projects

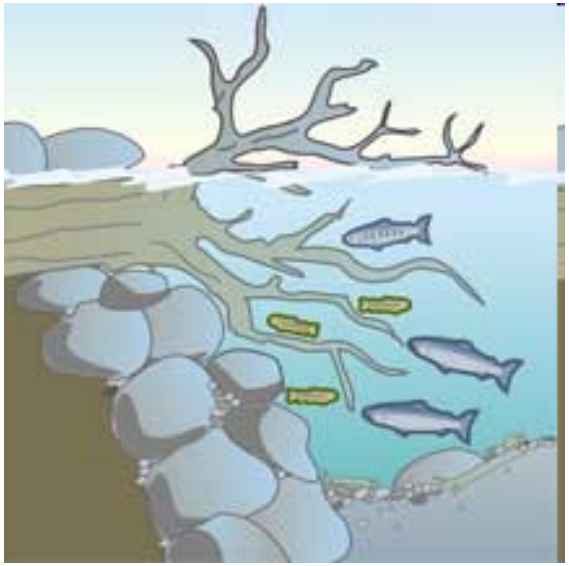


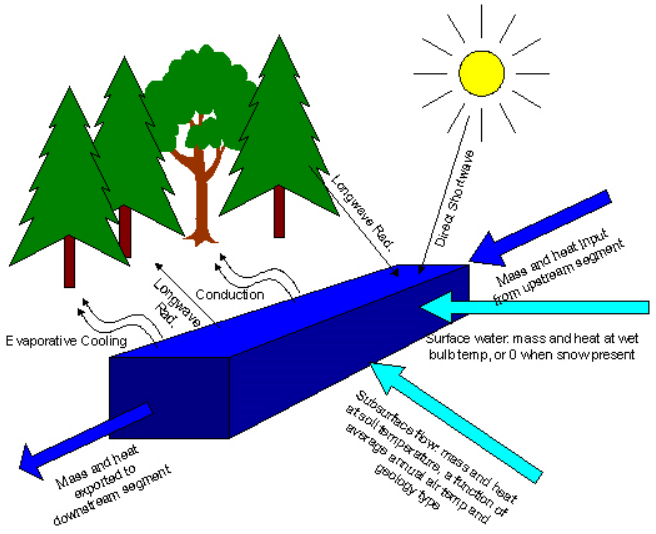




Additional Key Factors







Riparian Functions

Beneficial Functions of the Riparian Zone	
Biotic-Nutrients	Food Supply Nutrient Cycling
Heat	Thermal Controls on Water Temperature Microclimate
Water	Hydromodification
Wood	Streambed Modification (pools & spawning gravels) Cover
Sediment	Surface Runoff Stream-Adjacent Landsliding Bank and Channel Stabilization

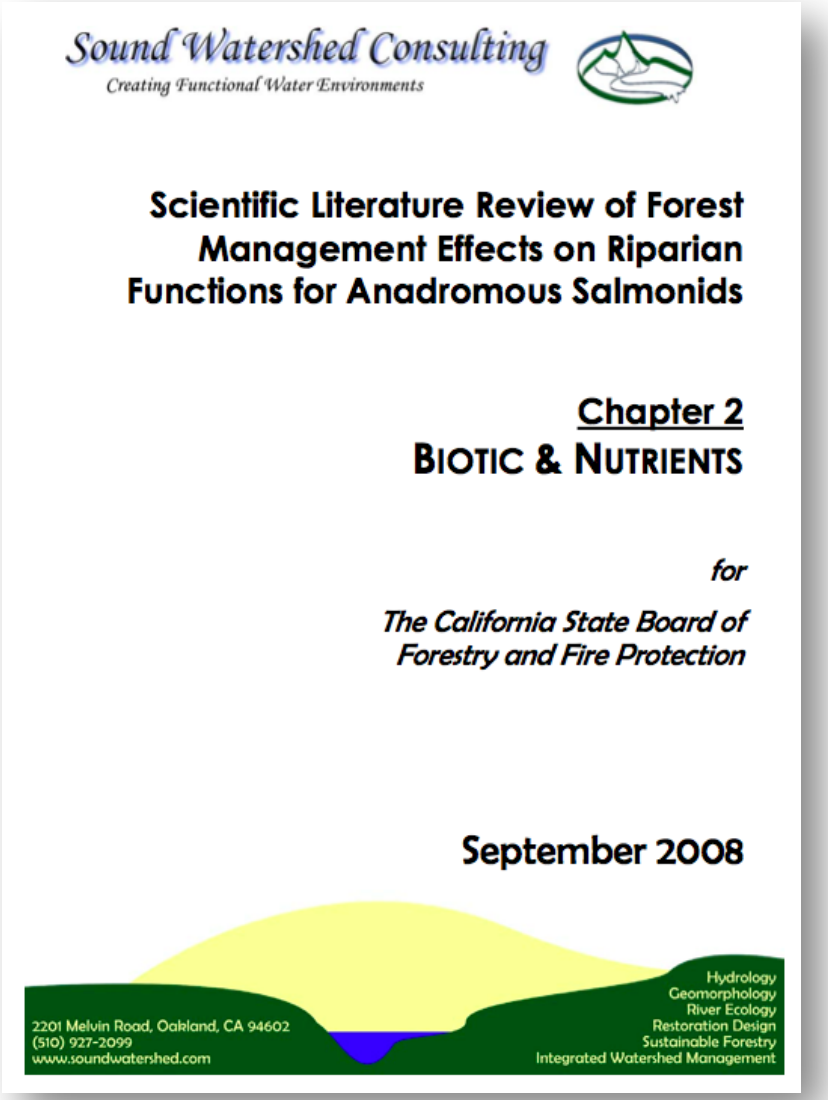
Large Wood Placement

Thinning to Affect Recruitment

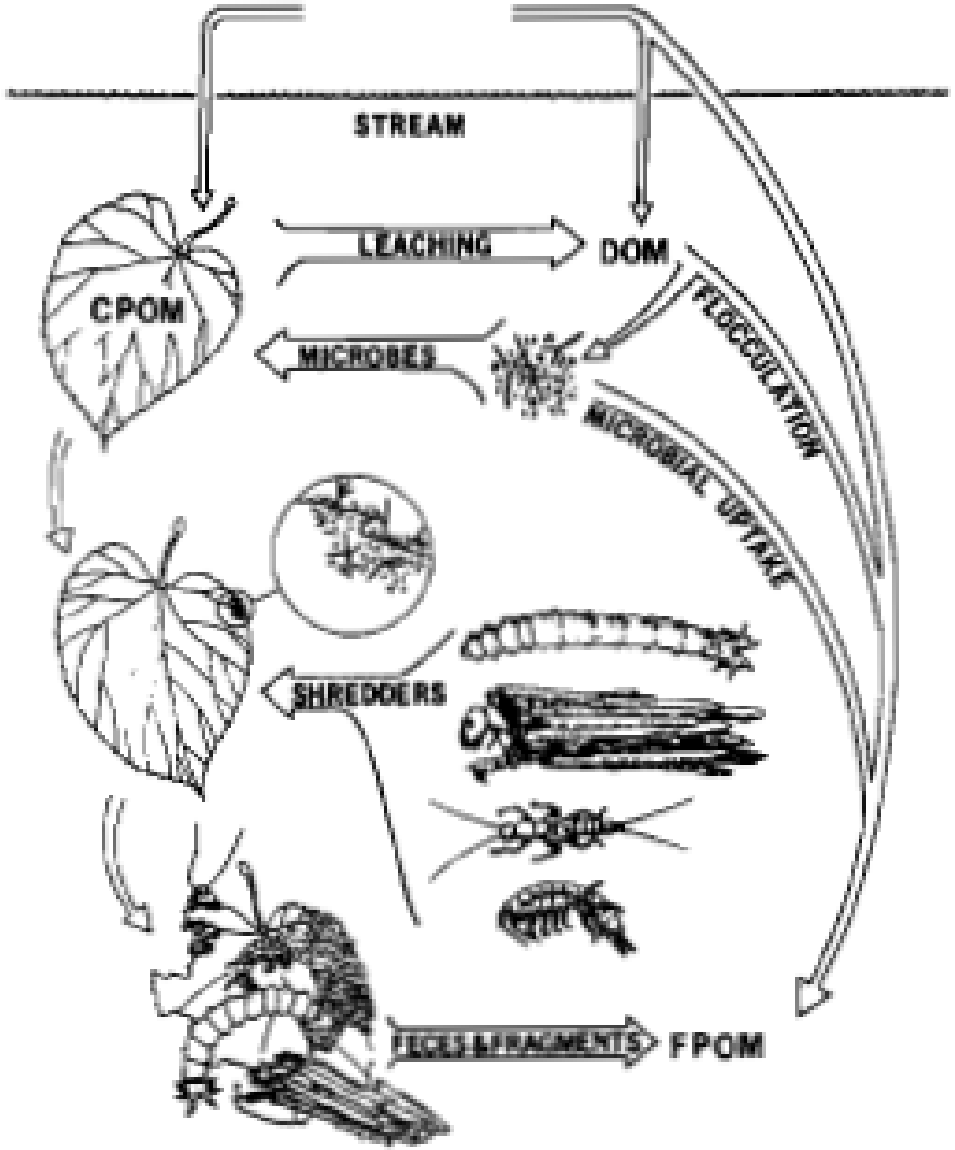
Biotic Diversity & Nutrients

- a sufficient number of nitrogen-fixing deciduous trees *distributed at key locations within the stream network*;
- a sufficient number of riparian canopy gaps that support primary and aquatic macroinvertebrate production while balancing effects on other riparian functions.

(Wilzbach et al. 2005; Kiffney and Roni 2007; Modenke and Ver Linden 2007; Poor and McDonnell, 2007; others)



Litter Inputs



Fuel Hazard Reduction

"Dense stands of trees in the Angora SEZ likely contributed to the rapid [fire] spread upslope to Angora Ridge…"

-Murphy et al. 2007

VTAC Guideline Document

1. Criteria for site suitability
2. Site-based objectives
3. Treatment option alternatives
4. Data necessary to justify proposed actions
5. Administrative procedures for agency approvals

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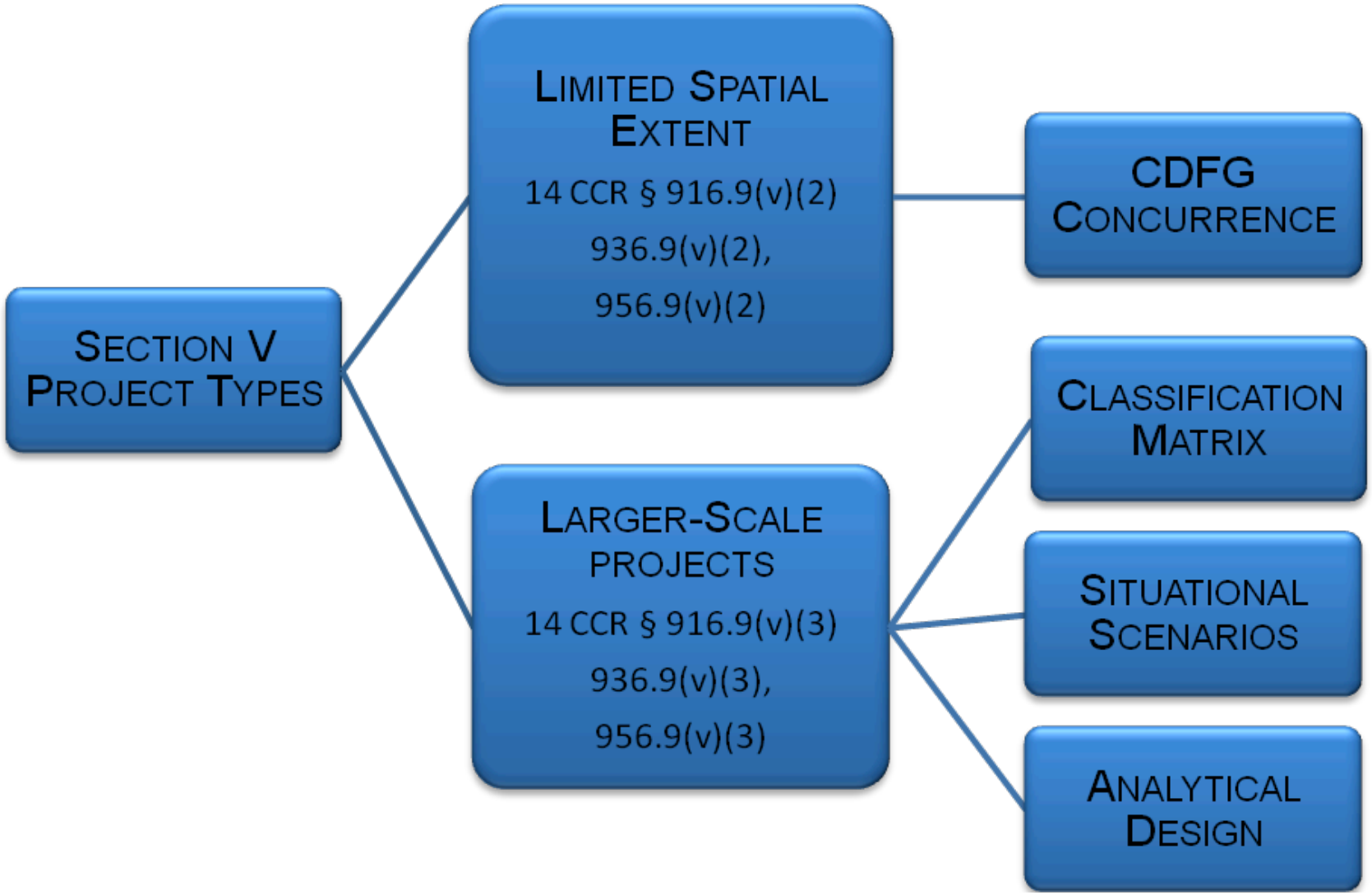
Creating Functional Water Environments

Draft Guidance Document Elements

Process


Section V Project Types
Limited Spatial Extent
14 CCR § 916.9(v)(2)
936.9(v)(2),
956.9(v)(2)
CDFG Concurrence
Larger-Scale Projects
14 CCR § 916.9(v)(3)
936.9(v)(3),
956.9(v)(3)
Classification Matrix
Situational Scenarios
Analytical Design

Objectives & Suitability Criteria

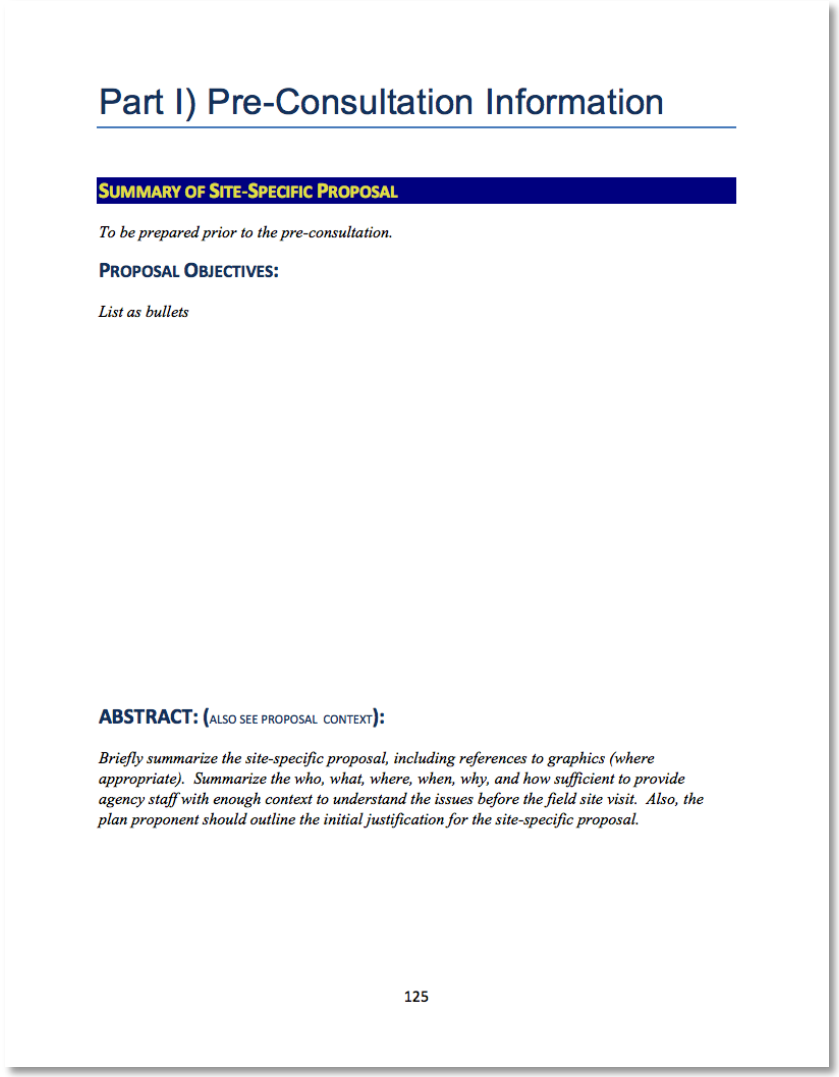
Management	Objective	Suitability Criteria
Protect	Minimize disturbance to allow natural recovery	Sites on the trajectory toward recovery
Maintain	Maintain riparian-dependent exchange functions	Sites where function status is rated good.
Improve	Improve performance or response timing for one or more key riparian-dependent functions.	Sites where there is potential to promote/enhance aquatic ecological services
Restore	Restore riparian-dependent functions to levels necessary for sustaining aquatic ecological services.	Sites where function status is rated fair to poor, and where delivery potential is rated medium to high.
Generally Available	Provide flexibility in addressing other higher-priority issues	Existing conditions and trends that indicate low sensitivity to a particular variable.

VTAC Pre-Consultation Guidelines

- **Voluntary.**
- **Will not receive formal agency approval.**
- **Quickly identify issues of potential controversy.**
- **Give the landowner and/or RPF the ability to determine the potential success of a proposed Section V project.**

Pre-Consultation Guidance

- Pre-Field Form
- Field Meeting
- Documentation of Results
- Process-Focus
  - No Agency Decisions



Part I) Pre-Consultation Information

SUMMARY OF SITE-SPECIFIC PROPOSAL

To be prepared prior to the pre-consultation.

PROPOSAL OBJECTIVES:

List as bullets

ABSTRACT: (ALSO SEE PROPOSAL CONTEXT):

Briefly summarize the site-specific proposal, including references to graphics (where appropriate). Summarize the who, what, where, when, why, and how sufficient to provide agency staff with enough context to understand the issues before the field site visit. Also, the plan proponent should outline the initial justification for the site-specific proposal.

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Creating Functional Water Environments

Classification Matrix Approach

Rule Matrix

Riparian Classification

Geomorphic Classification

Functional Priority	Site Condition: Good	Site Condition: Fair	Site Condition: Poor
High	Protect	Maintain	Improve
Mod.	Maintain	Improve	Improve
Low	Generally Available	Generally Available	Maintain

Rule Matrix

Segment Objectives

Segment Objectives	Wood	Temperature	Nutrients	Erosion
Protect	Maximize retention of recruitable wood	Maximize retention of vegetation that blocks incoming solar radiation	Maximize retention of existing high nutrient vegetation	Prevent and avoid ground disturbances that may disturb banks and/or concentrate runoff
Maintain	Minimize removal of recruitable wood	Minimize reduction in shade	Minimize reduction in nutrient supply	Minimize ground disturbances that may disturb banks and/or concentrate runoff
Improve	Carefully identify individual tree selection that encourage desired silvicultural responses	Carefully identify individual tree selection that minimizes reduction in shade	Encourage treatments that promote balanced primary production and establishment of high nutrient species	Consider treatments that support recovery of eroding lands (e.g. planting, biotechnical stabilization, etc)
Generally Available	Treatment constraints for this function are minimized	Treatment constraints for this function are minimized	Treatment constraints for this function are minimized	Treatment constraints for this function are minimized

Geomorphic Classification

			Functional Priority Rating			
Class	**Size**	**Type***	**Wood**	**Temperature**	**Nutrients**	**Erosion**
I	Large	Regime	Moderate	Low	Low	High
		Braided	Moderate	Low	Low	High
		Pool Riffle	High	Low	Low	High
	Medium	Regime	Moderate	Moderate	High	High
		Braided	Moderate	Moderate	High	High
		Pool Riffle	Moderate	Moderate	High	High
		Forced Pool Riffle	High	Moderate	High	High
		Plane Bed	High	High	High	Moderate
		Step-Pool	Moderate	High	Moderate	Low
		Cascade	Low	High	Moderate	Low
	Small	Pool Riffle	High	High	High	High
		Forced Pool Riffle	High	High	High	High
		Plane Bed	High	High	High	Moderate
		Step-Pool	Moderate	High	Moderate	Low
		Cascade	Low	High	Moderate	Low
II	All	Pool Riffle	Moderate	Moderate	Moderate	High
		Forced Pool Riffle	High	Moderate	Moderate	High
		Plane Bed	Low	Moderate	Low	Moderate
		Step-Pool	Low	Moderate	Low	Low
		Cascade	Low	Moderate	Low	Low
III	All	Colluvial	Varied	Moderate	Low	Varied
Hotspots	All	Debris Flow Sources	High	Moderate	Low	High
		Debris/alluvial Fans	High	Moderate	Low	High
		Tributary Junctions	Moderate	Moderate	High	Moderate
		Class II Transition	Low	High	High	Moderate
		Sensitivity Zone	**75% SPTH**	**33 feet**	**66 feet**	**Variable** *(min 33 feet)*

Inherent Riparian Function

Composition of Vegetation

C = Conifer [≥70% conifer]
H = Hardwood [≥ 70% hardwood]
M = Mixed [all other cases]

Relative Tree Size

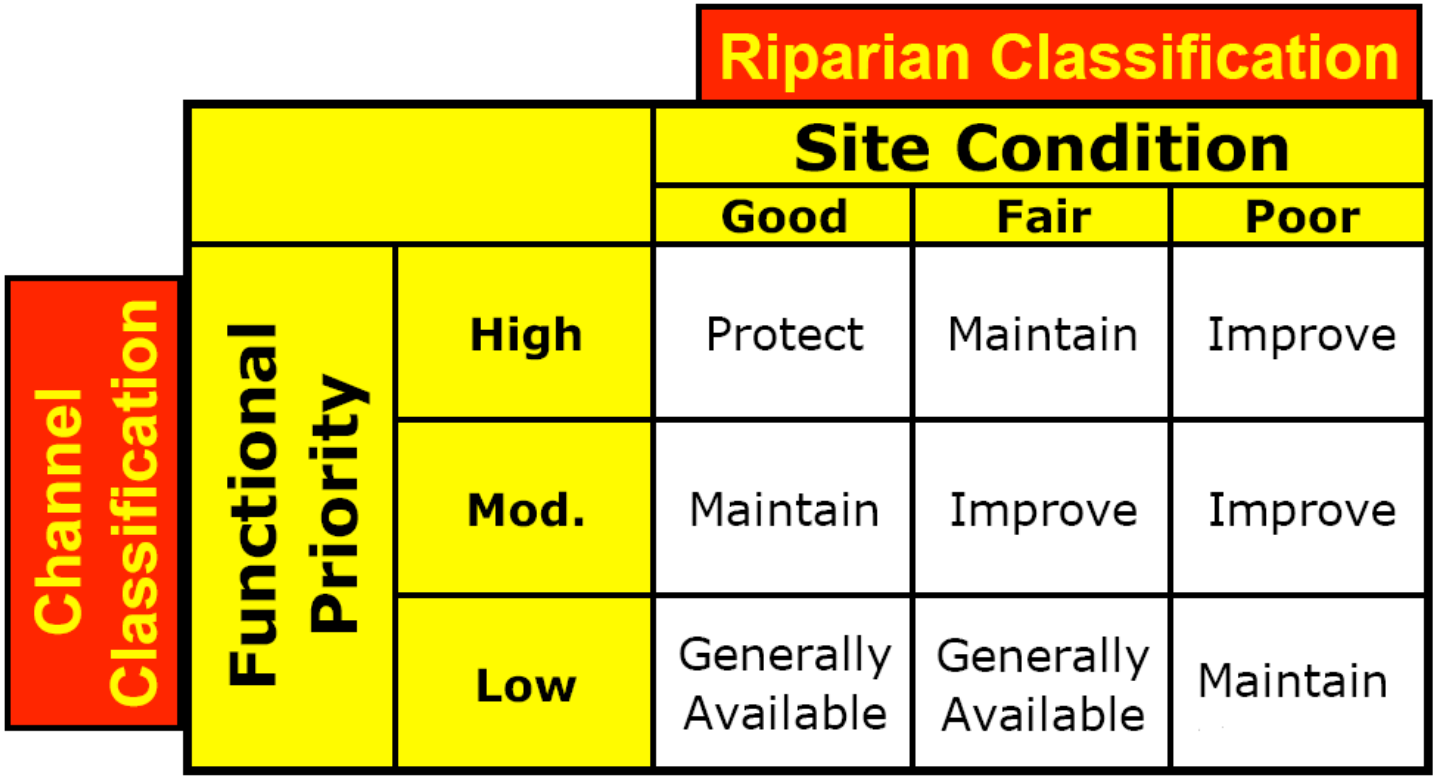
S = Smaller than functional
L = Larger than functional
M = Mixed

Relative Stand Density

D = Differentiating (active mortality)
F = Fully Stocked (mortality eminent)
U = Under stocked (open, active growth)

Riparian Class			Inherent Functional Levels		
			Wood Supply	Nutrient Supply	Thermal Loading
C	S	D	Moderate	Poor	Good
C	S	F	Poor	Poor	Good
C	S	U	Poor	Moderate	Moderate
C	L	D	Good	Moderate	Good
C	L	F	Good	Moderate	Good
C	L	U	Moderate	Moderate	Moderate
C	M	D	Good	Moderate	Good
C	M	F	Good	Moderate	Good
C	M	U	Moderate	Moderate	Moderate
H	S	D	Moderate	Good	Good
H	S	F	Poor	Good	Good
H	S	U	Poor	Good	Moderate
H	L	D	Moderate	Good	Good
H	L	F	Poor	Good	Good
H	L	U	Poor	Good	Moderate
H	M	D	Moderate	Good	Good
H	M	F	Poor	Good	Good
H	M	U	Poor	Good	Moderate
M	S	D	Moderate	Moderate	Good
M	S	F	Moderate	Moderate	Good
M	S	U	Poor	Good	Moderate
M	L	D	Good	Moderate	Good
M	L	F	Good	Good	Good
M	L	U	Moderate	Good	Moderate
M	M	D	Good	Good	Good
M	M	F	Good	Good	Good
M	M	U	Moderate	Good	Moderate

Rule Matrix



Wood	Temperature	Nutrients	Erosion

Priorities

Segment Objectives				
	Wood	**Temperature**	**Nutrients**	**Erosion**
Protect	Maximize retention of recruitable wood	Maximize retention of vegetation that blocks incoming solar radiation	Maximize retention of existing high nutrient vegetation	Prevent and avoid ground disturbances that may disturb banks and/or concentrate runoff
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Priorities

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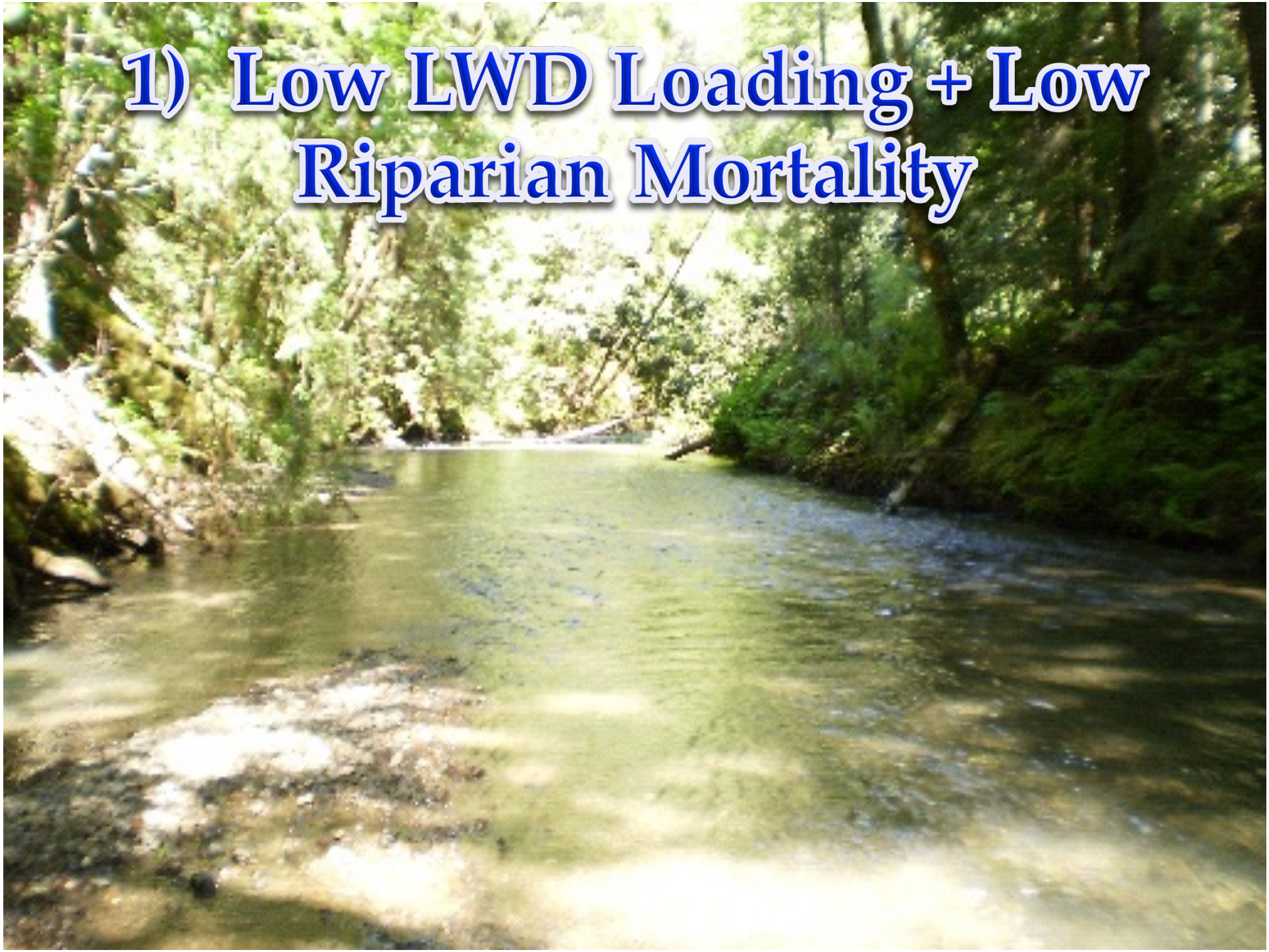
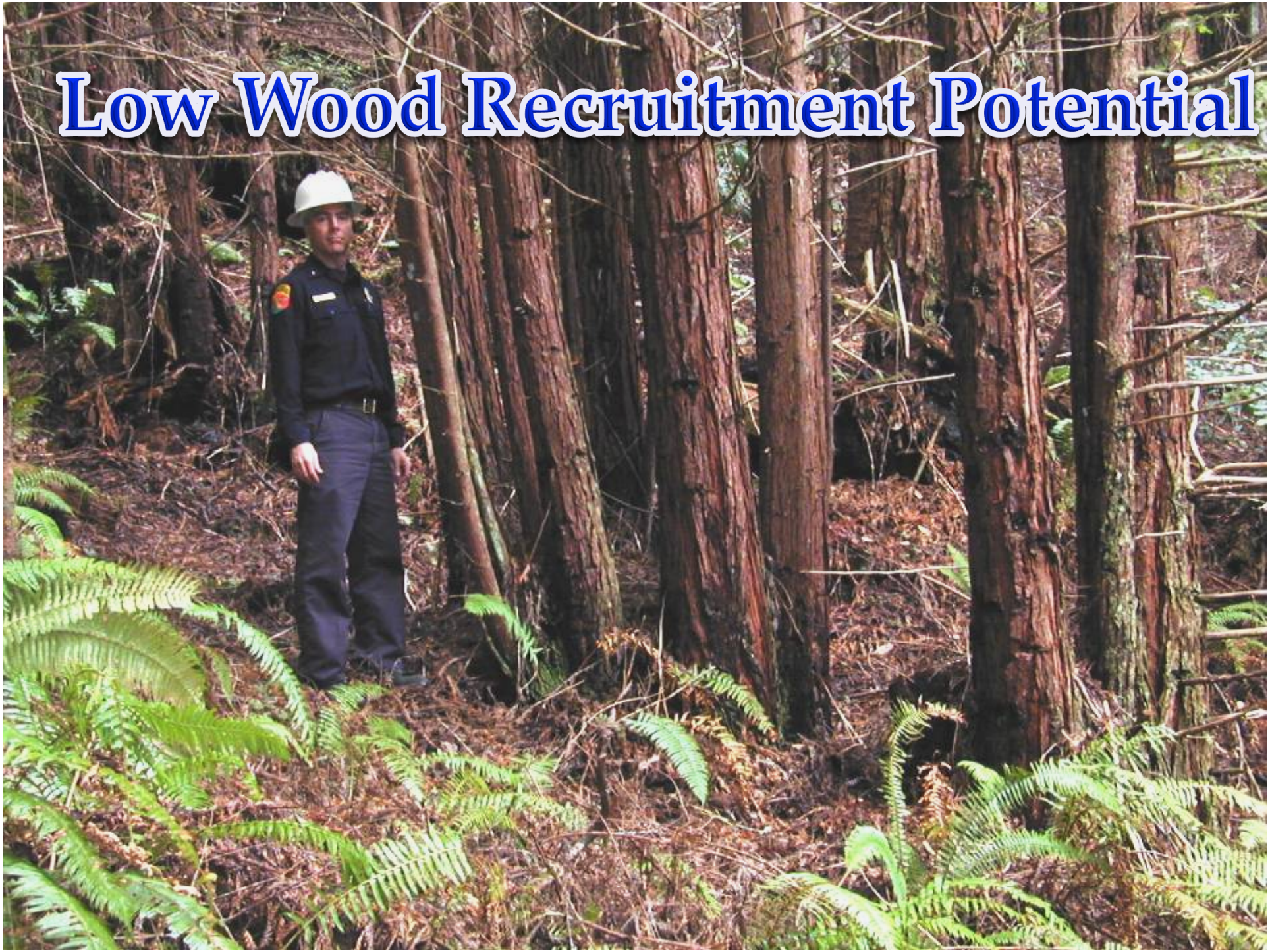
Creating Functional Water Environments

Situational Scenarios


1) Low LWD Loading + Low
Riparian Mortality

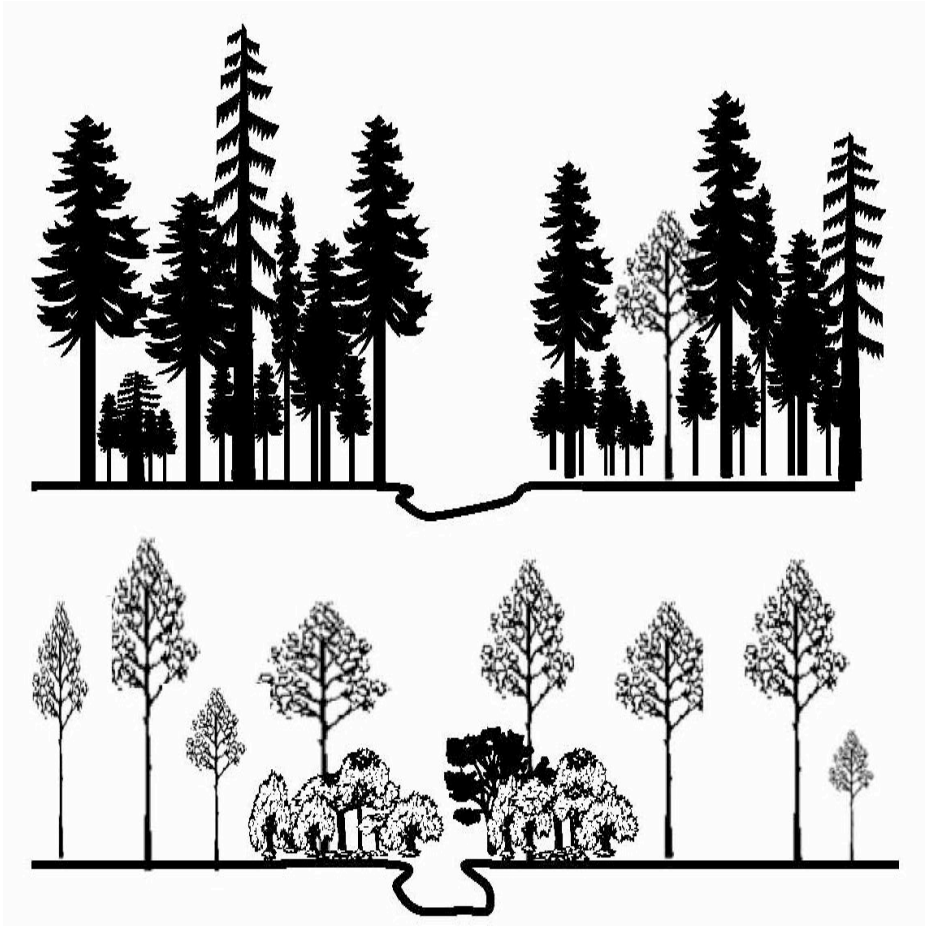
2. Headcutting and/or Incised Channels


Low Wood Recruitment Potential

High Catastrophic Wildfire Risk

6. Sediment Reduction within Riparian Zones

Relatively Closed Canopy Riparian Corridors lacking Nitrogen-Fixing Species or with Low Primary Productivity



Situational Scenarios

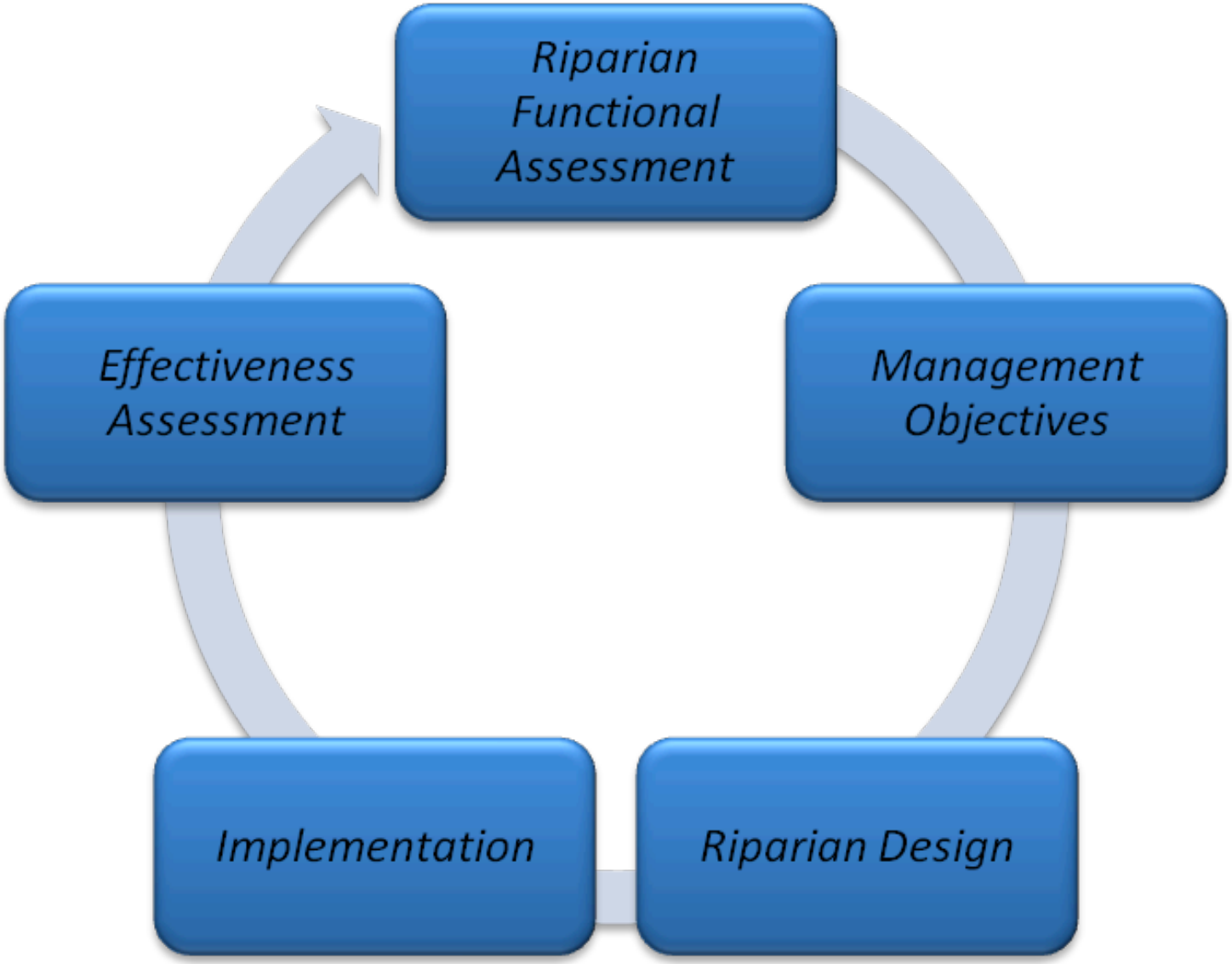
- Suitability Criteria
- Design Factors to Consider
- Treatment Options
- Cautionary Hazards

Sound Watershed Consulting

Creating Functional Water Environments

Analytical Design

Analytical Design



Document Appendices

- Section V Rule Language
- Pre-Consultation Guidelines
- Map of the ASP Rule Geographic Scope
- Watershed Context Information
- Channel Type Definitions and Diagrams
- Example Using the Classification Matrix Pathway

Sound Watershed Consulting

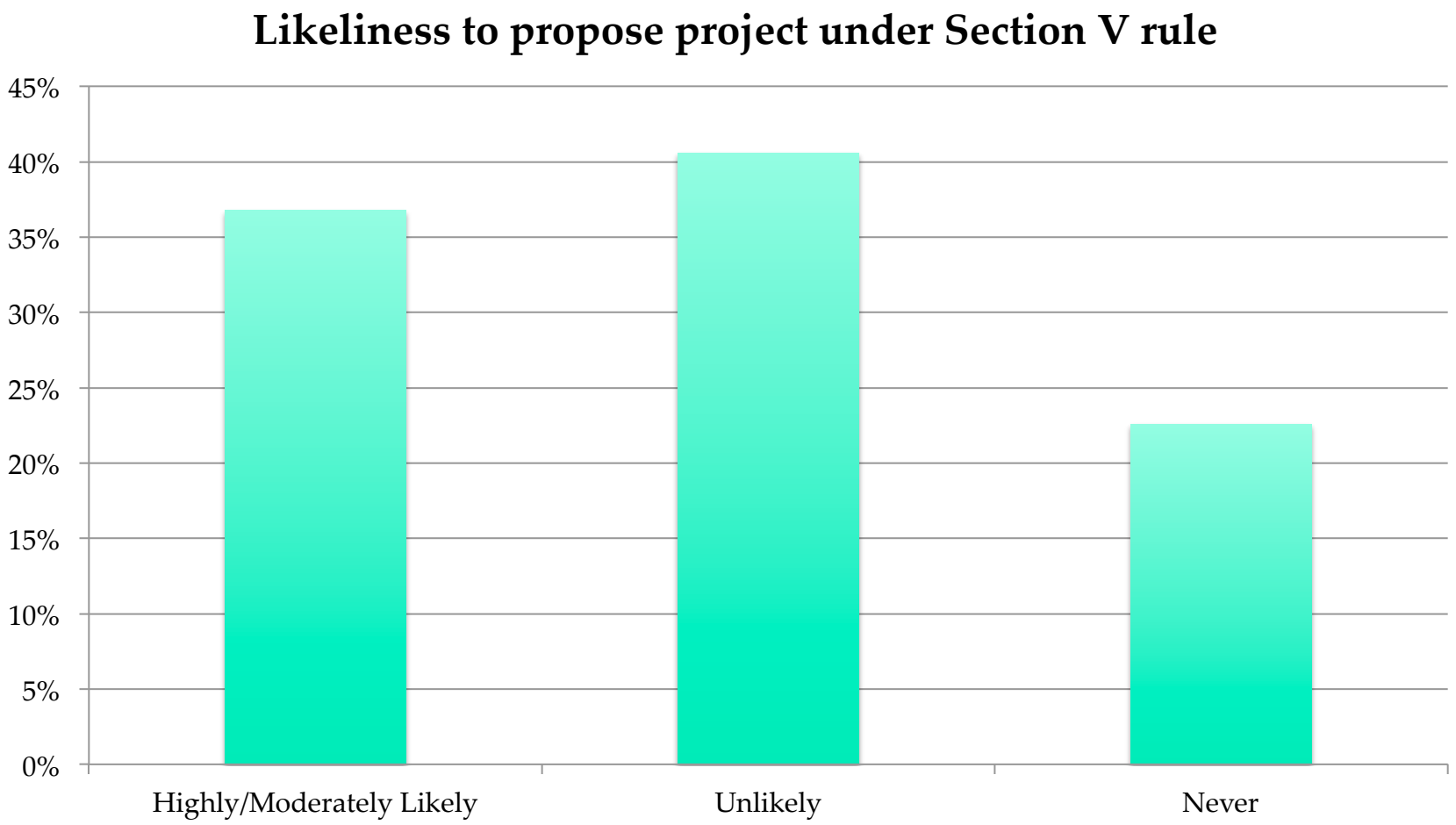
Creating Functional Water Environments

Next Steps

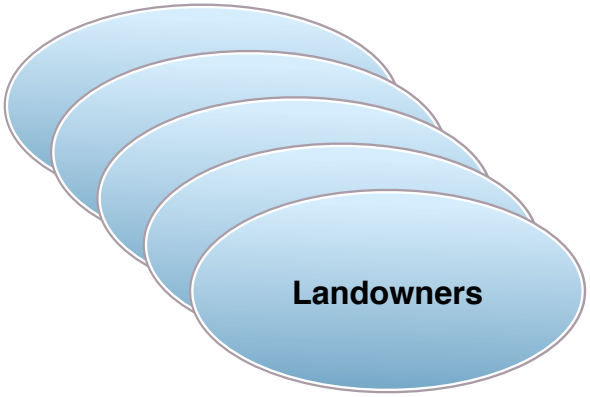
VTAC Pilot Projects in 2013

- **The VTAC will stay together informally through the pilot process.**
- **The VTAC will continue to manage and have input on the pilot projects in 2013, primarily through email and conference calls.**
- **One or two VTAC agency representatives to document pilot lessons learned for possible modification to the VTAC guidance document.**

VTAC Survey Summary

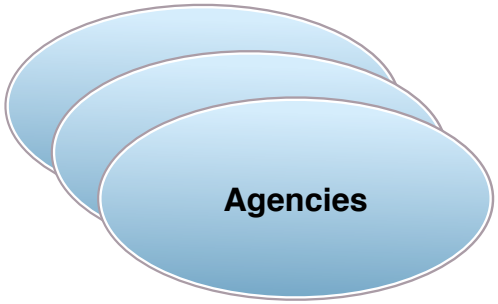


How do we generate alternative revenue sources to promote riparian stewardship?



Permitting Pathways

(Phase I)



Stewardship Actions

- Carbon Sequestration
- Water Quality
- T&E Habitat
- Pollutant Trading
- Channel Restoration

Potential Services (Commercialization)

Assessment & Design Process

Site Analysis
Ecosystem Service Objectives
Treatment Guidelines

Ecosystem Service Valuation

Market Analysis
Revenue Modeling

Transaction Services

Facilitation
Administration
Certification
Monitoring

Ecosystem Service Markets

Existing Markets

Carbon Market
Conservation Easements
Timber & Pulp

New Markets

TMDL Watersheds
Mitigation Banks

Thank You!

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