

Developing Biological Objectives for California Streams and Rivers



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Overview

- Define Biological Objectives
- Describe Need for Biological Objectives
- Describe Process for Developing Biological Objectives
 - Technical Studies
 - Regulatory Process
 - Timeline
- Outline Next Steps



What are biological objectives?

Bioassessment: measuring and analyzing the numbers and kinds of resident fish, insects, algae, plants, or other biota to evaluate the condition of a waterbody.

What do we do with the information?



What are biological objectives?

Water Quality Standards

Beneficial Uses
Aquatic Life

Water Quality Objectives
Biological Objectives

Antidegradation

Implementation
305(b), 303(d), Permitting



Example Narrative Objective - Oregon

Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.



Example: Numeric Objectives (Ohio)

Adopted May 1990
(OAC 3745-1-07; Table 7-14)

Huron Erie Lake Plain (HELP)

Use	Size	IBI	MIwb	ICI
WWH	H	28	NA	34
	W	32	7.3	34
	B	34	8.6	34
MWH-C	H	20	NA	22
	W	22	5.6	22
	B	20	5.7	22
MWH-I	B	30	5.7	NA

Erie Ontario Lake Plain (EOLP)

Use	Size	IBI	MIwb	ICI
WWH	H	40	NA	34
	W	38	7.9	34
	B	40	8.7	34
MWH-C	H	24	NA	22
	W	24	6.2	22
	B	24	5.8	22
MWH-I	B	30	6.6	NA

Eastern Corn Belt Plains (ECBP)

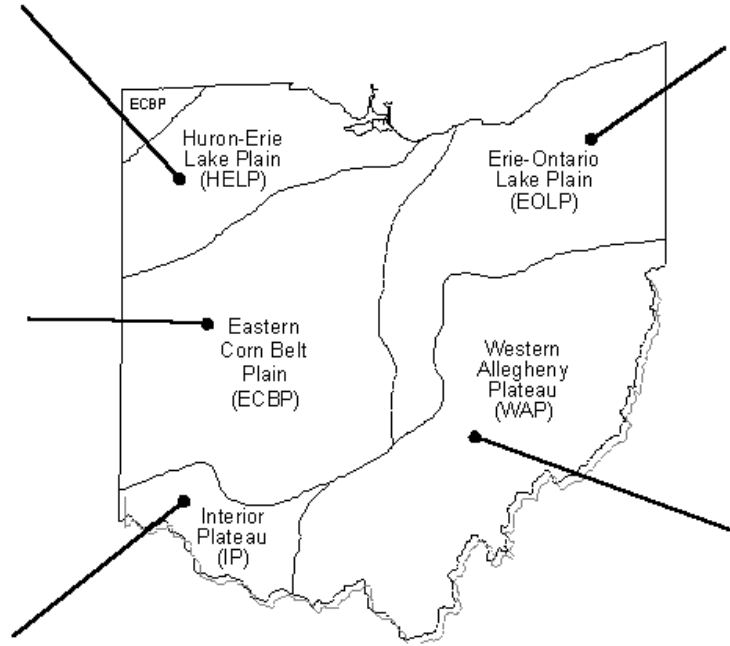
Use	Size	IBI	MIwb	ICI
WWH	H	40	NA	36
	W	40	8.3	36
	B	42	8.5	36
MWH-C	H	24	NA	22
	W	24	6.2	22
	B	24	5.8	22
MWH-I	B	30	6.6	NA

Western Allegheny Plateau (WAP)

Use	Size	IBI	MIwb	ICI
WWH	H	44	NA	34
	W	44	8.4	34
	B	40	8.6	34
MWH-C	H	24	NA	22
	W	24	6.2	22
	B	24	5.8	22
MWH-A	H	24	NA	30
	W	24	5.5	30
	B	24	5.5	30
MWH-I	B	30	6.6	NA

Interior Plateau (IP)

Use	Size	IBI	MIwb	ICI
WWH	H	40	NA	30
	W	40	8.1	30
	B	38	8.7	30
MWH-C	H	24	NA	22
	W	24	6.2	22
	B	24	5.8	22
MWH-I	B	30	6.6	NA



Statewide Exceptional Criteria

Use	Size	IBI	MIwb	ICI
EWH	H	50	NA	46
	W	50	9.4	46
	B	48	9.6	46

Terminology

Biological criteria (“biocriteria”)

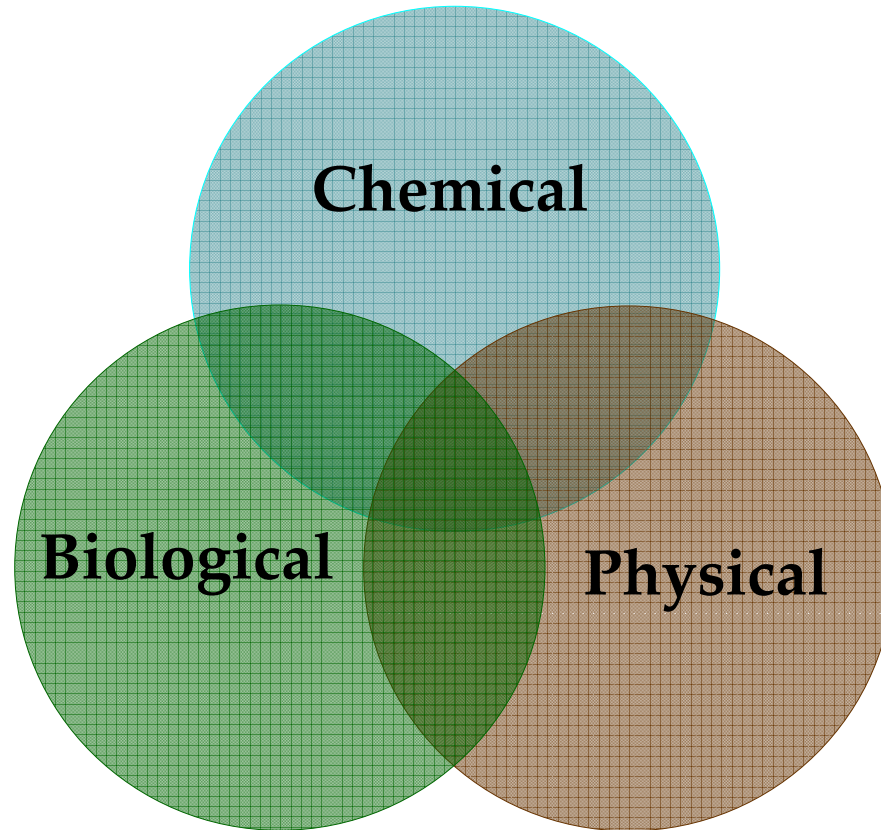
- federal (generic)

Biological objectives (“bio-objectives”)

- state

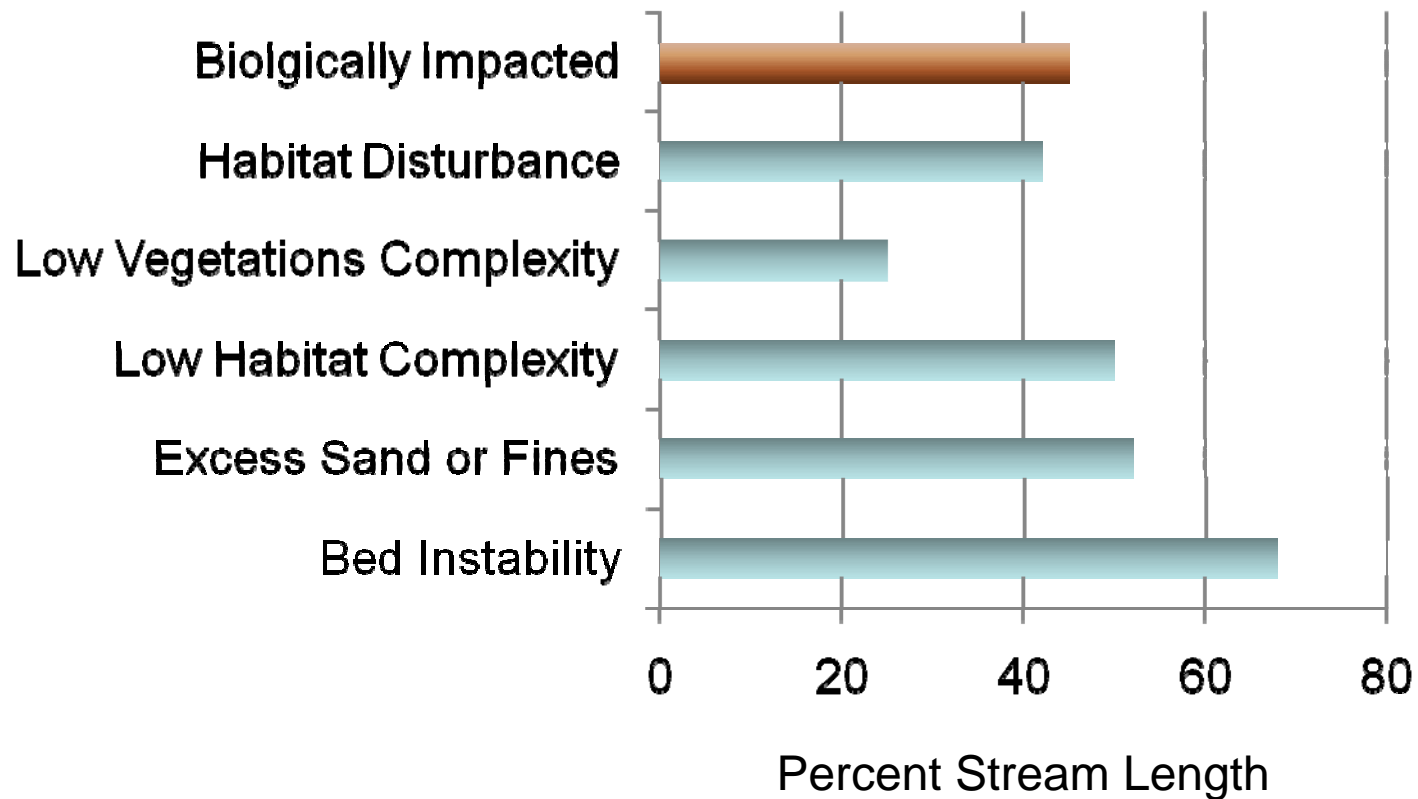


Why biological objectives?



Why biological objectives?

Stressor Extent from Perennial Stream Survey



Why biological objectives?

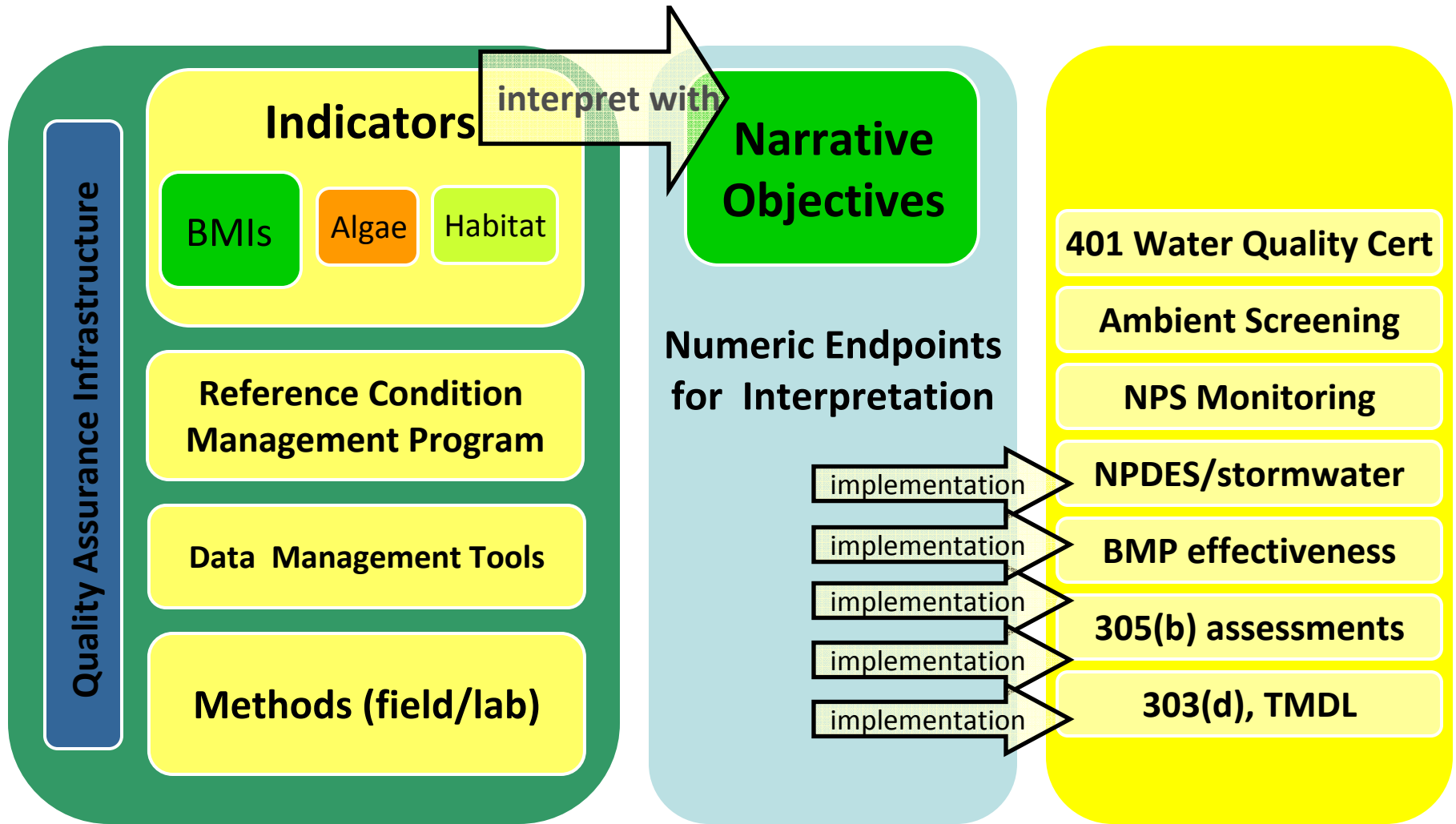
- **Without biological objectives:**
 - We cannot assess whether aquatic life beneficial uses are supported.
 - We cannot determine whether chemical criteria are sufficient to protect aquatic life.
 - Our methods for identifying impaired waterbodies is inconsistent.
 - Developing biological targets on a project-by-project basis is expensive.



Guiding Principles

- The state should have biological objectives for all waterbody types.
- The state should use multiple indicators for biological objectives.
- The state should develop biological objectives with numeric endpoints.
- There should be statewide consistency with regional flexibility.





Technical Infrastructure

SWAMP

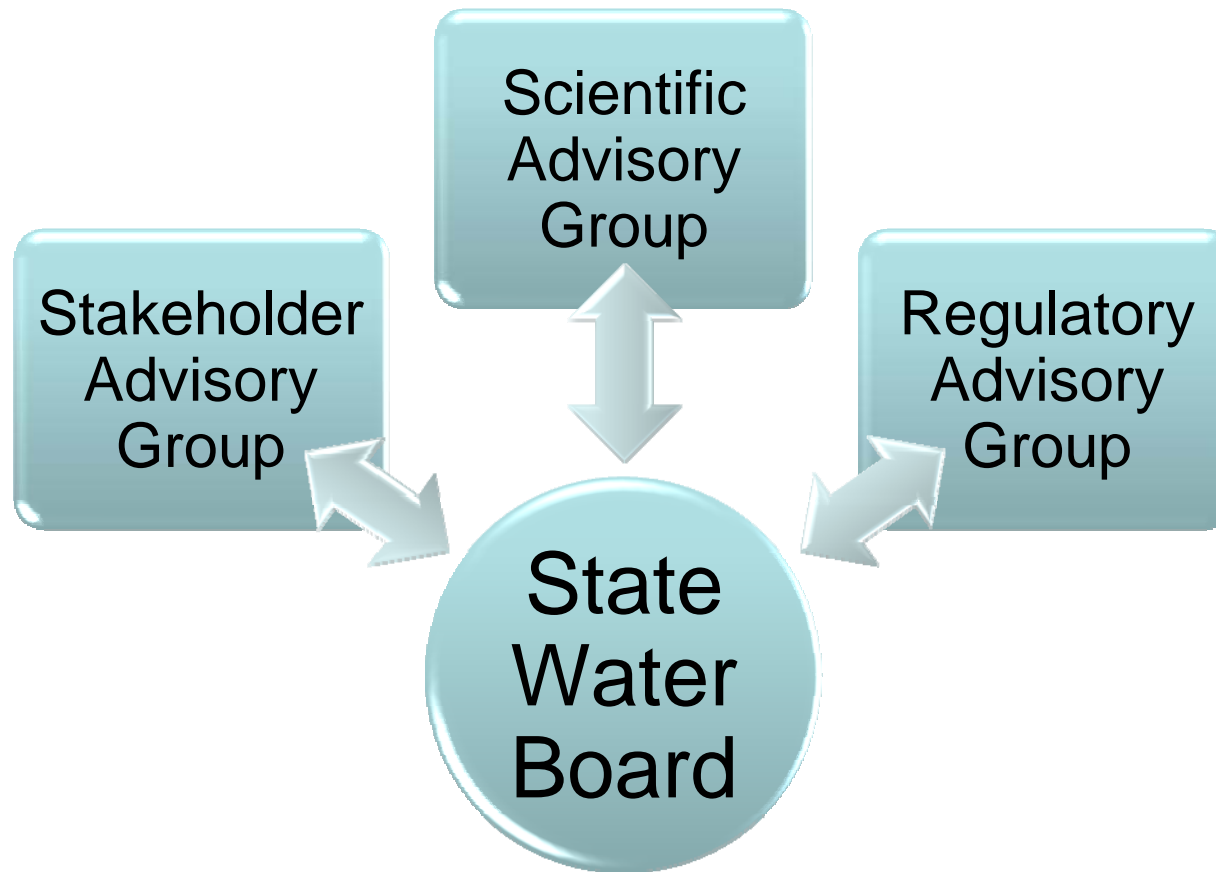
Regulatory Framework
(Objective +
Implementation Plan)

Standards

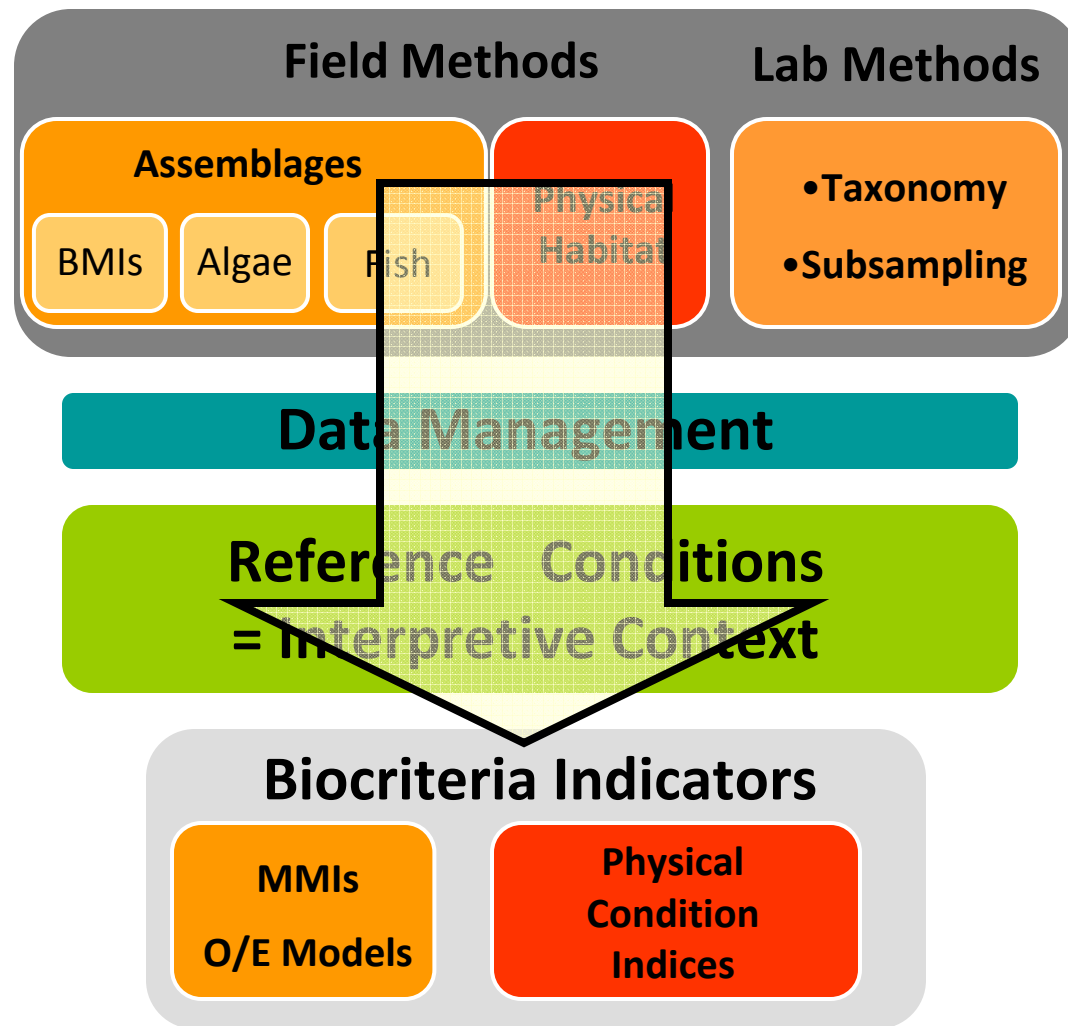
Regulatory
Applications

**Regulatory
Programs**

Collaboration and Participation

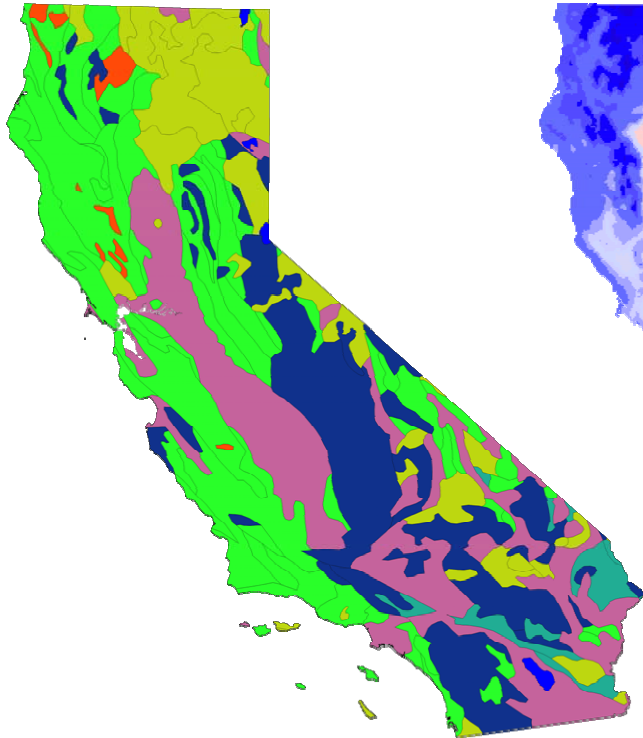


Reference Condition

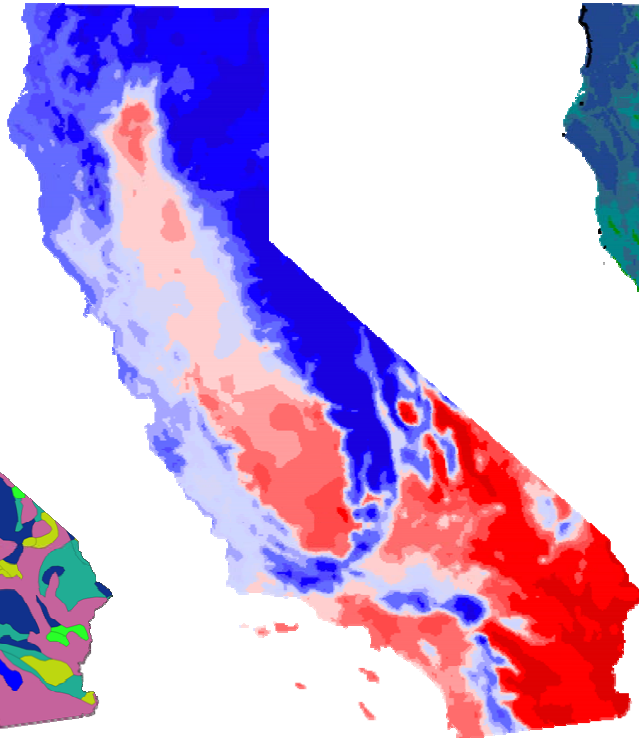


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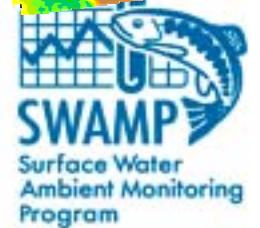
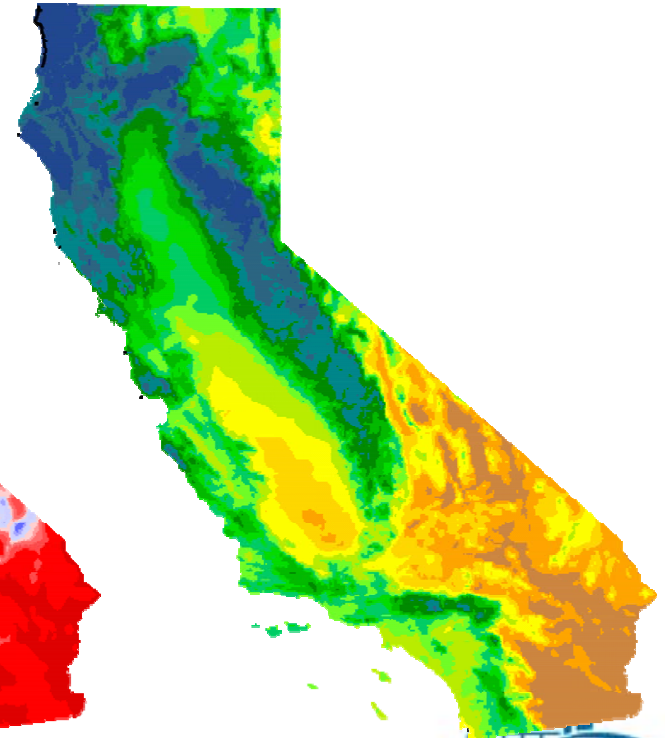
Geology



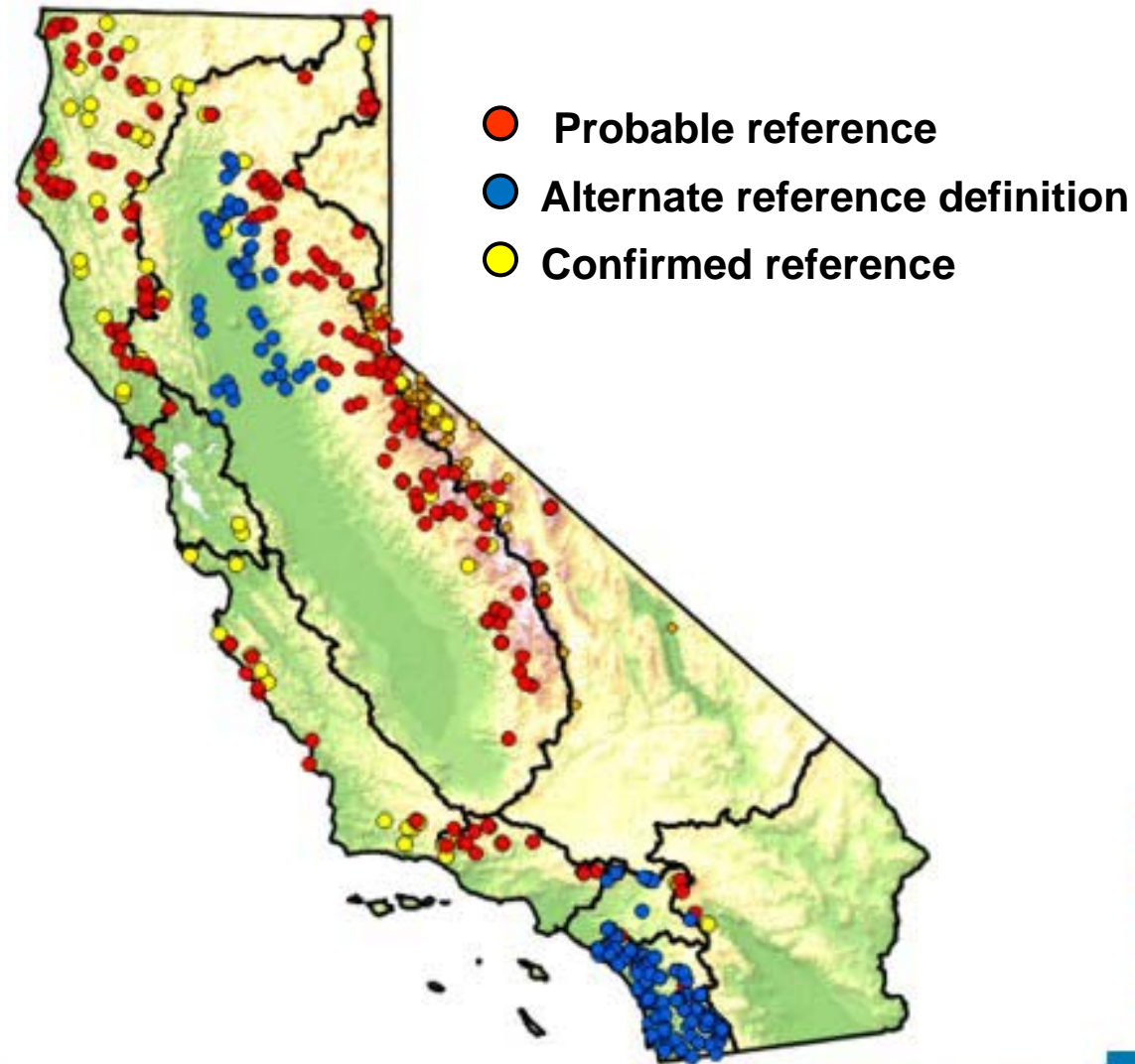
Temperature



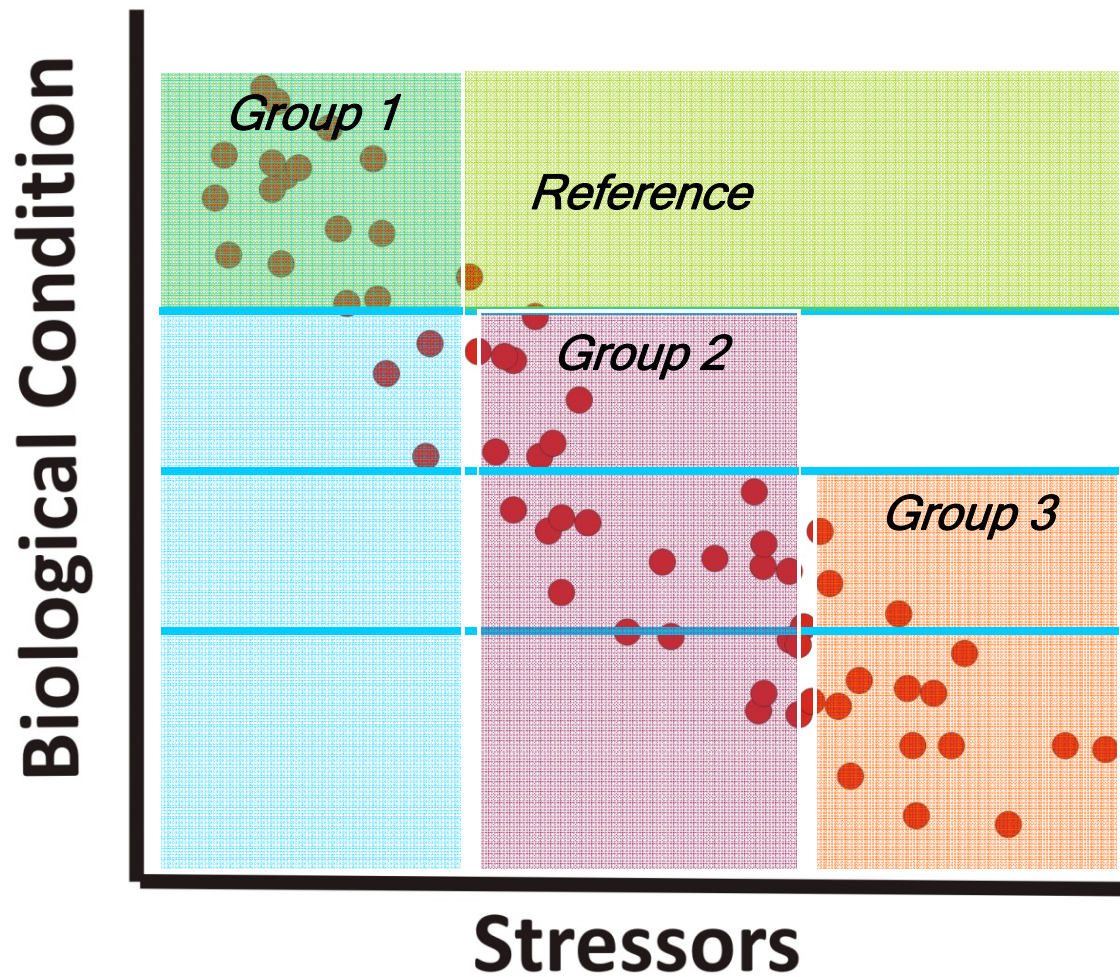
Precipitation



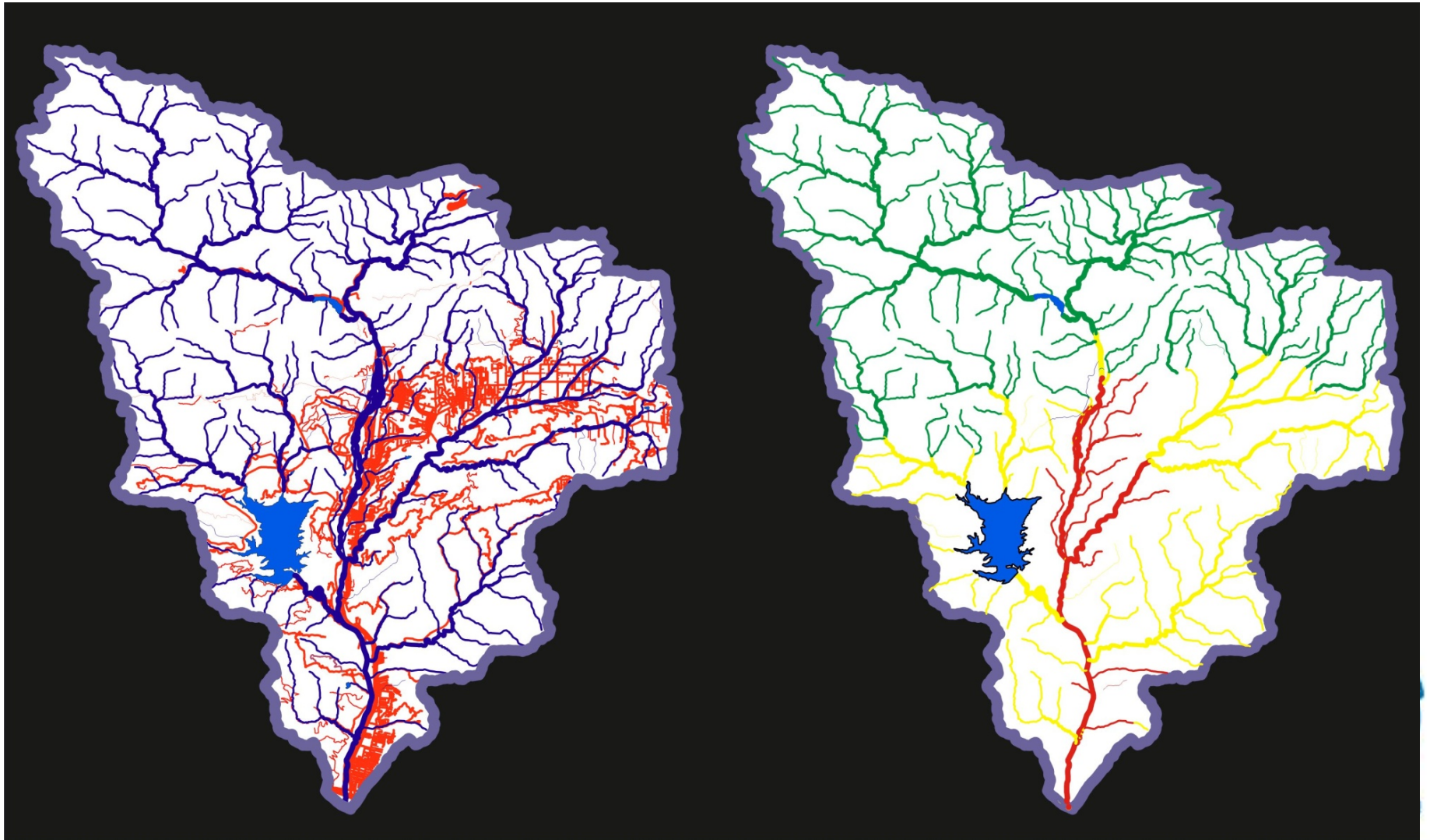
Reference Condition



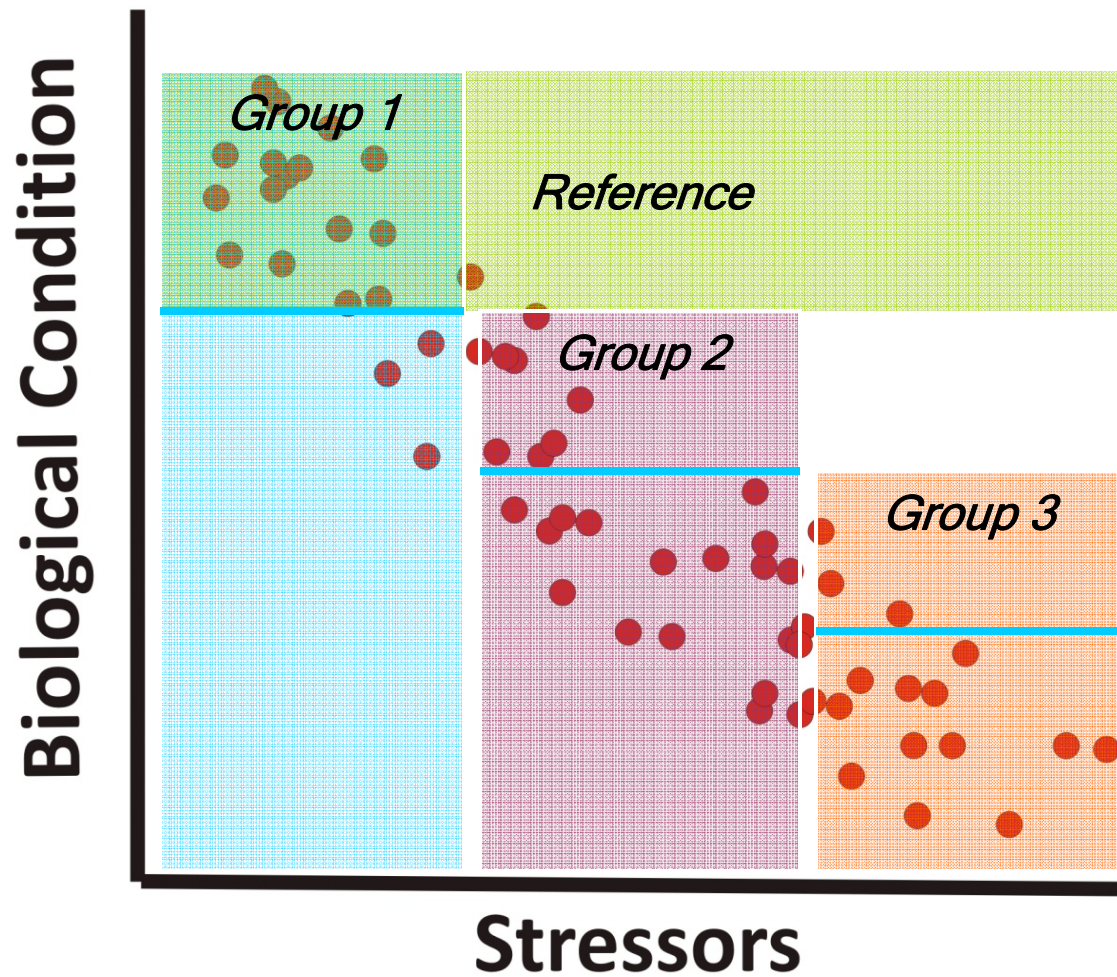
Identify Waterbody Expectations



Example Watershed Classification



Identify Waterbody Expectations

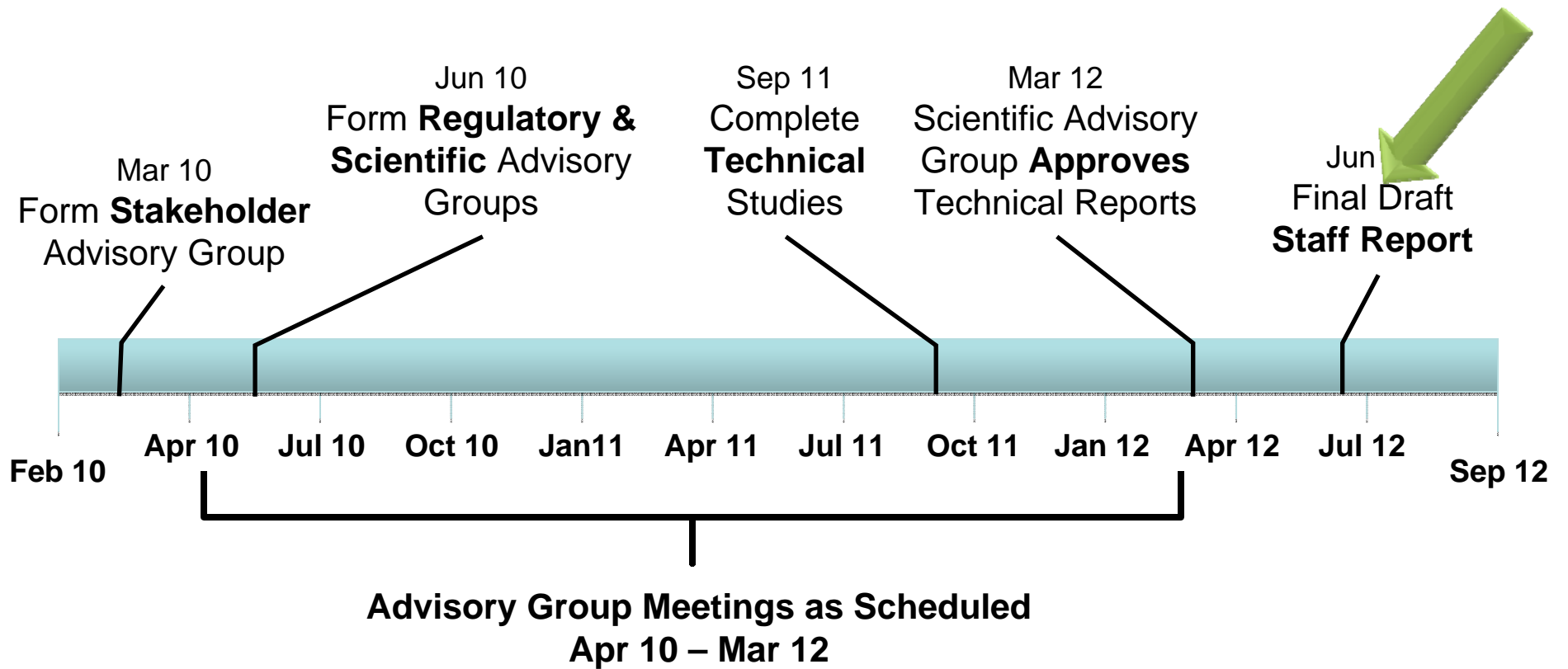


Stressor Identification

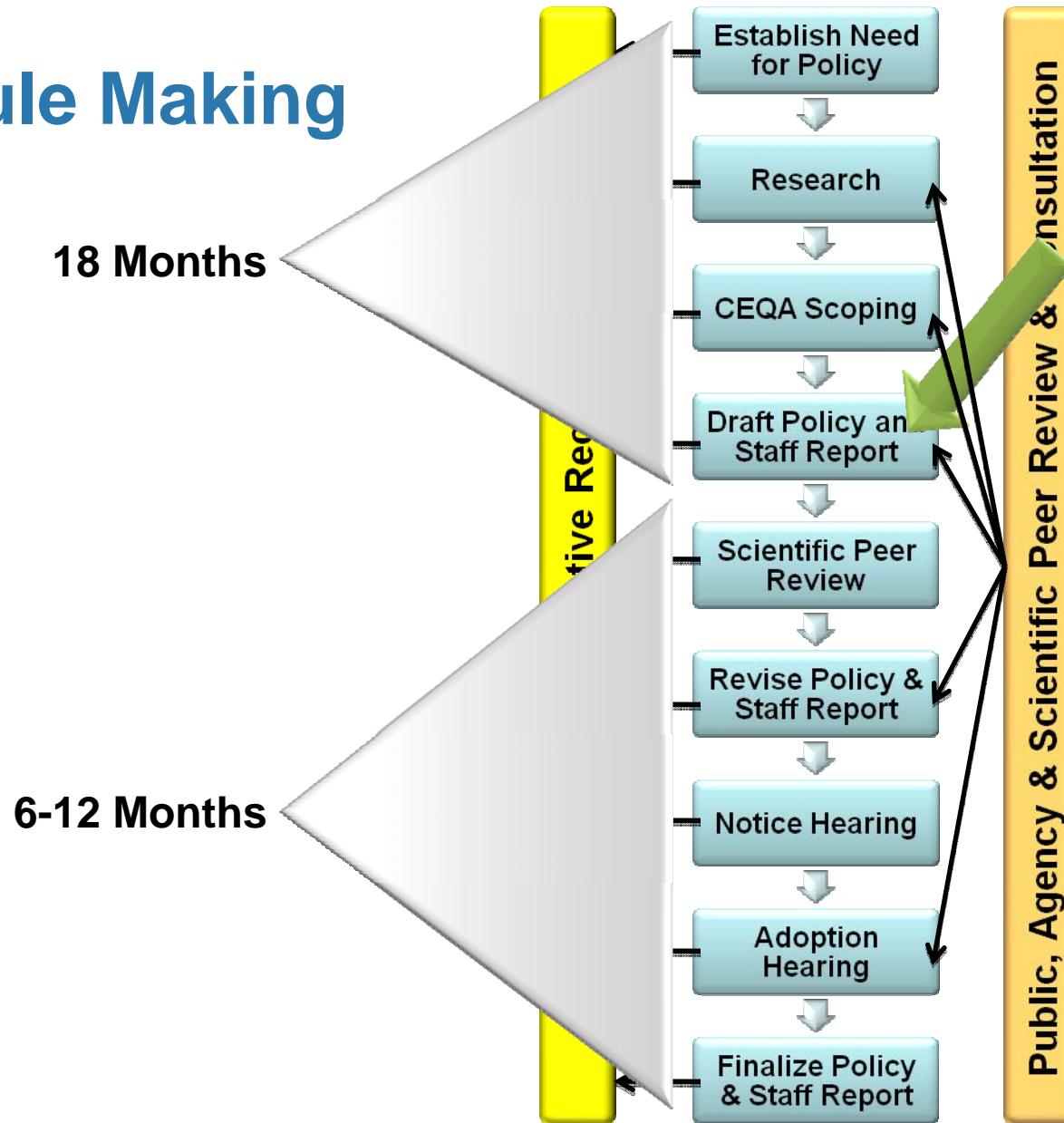
- Multiple approaches
 - Correlation
 - Relative risk
 - Tolerance values
 - Mechanistic
- Test applicability using California data
- Recommend for future stressor identification development



Time Line



Rule Making



Training

- Series of Workshops
 - Regulatory
 - Regulated
 - Non-governmental Organizations
- Curriculum
 - How to collect data
 - Data interpretation
 - How to use data in regulation
- Needed to ensure implementation success



Next Steps (9-12 Months)

- Assemble Stakeholder Advisory Group
- Hold 1st Stakeholder Advisory Group Meeting
- Hold Scientific and Regulatory Advisory Group Meetings
- Complete Reference Condition Assessment
- Initiate Work on Stressor Response Models



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