

# California Healthy Watersheds Assessment

Status Update  
March 7, 2013



# CWQMC and Healthy Stream Partnership Goals



The Healthy Watershed Assessment supports:  
**CWQMC goals**

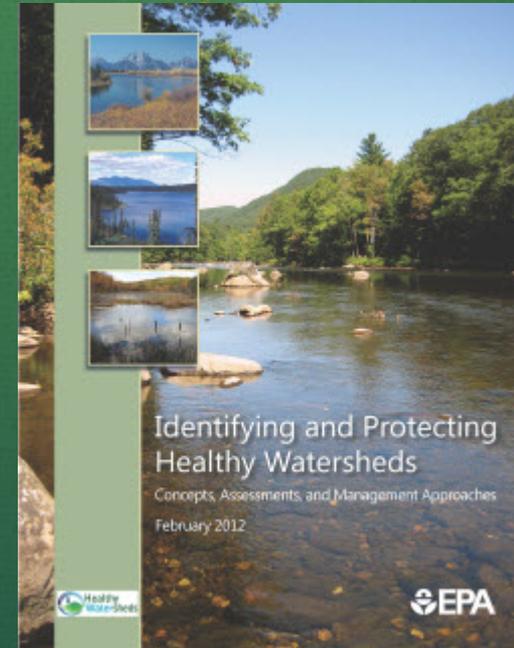
- Conducting assessments at a statewide level
- Aggregating data from disparate sources to conduct broader assessments
- Accessible to public

**Healthy Stream Partnership goals**

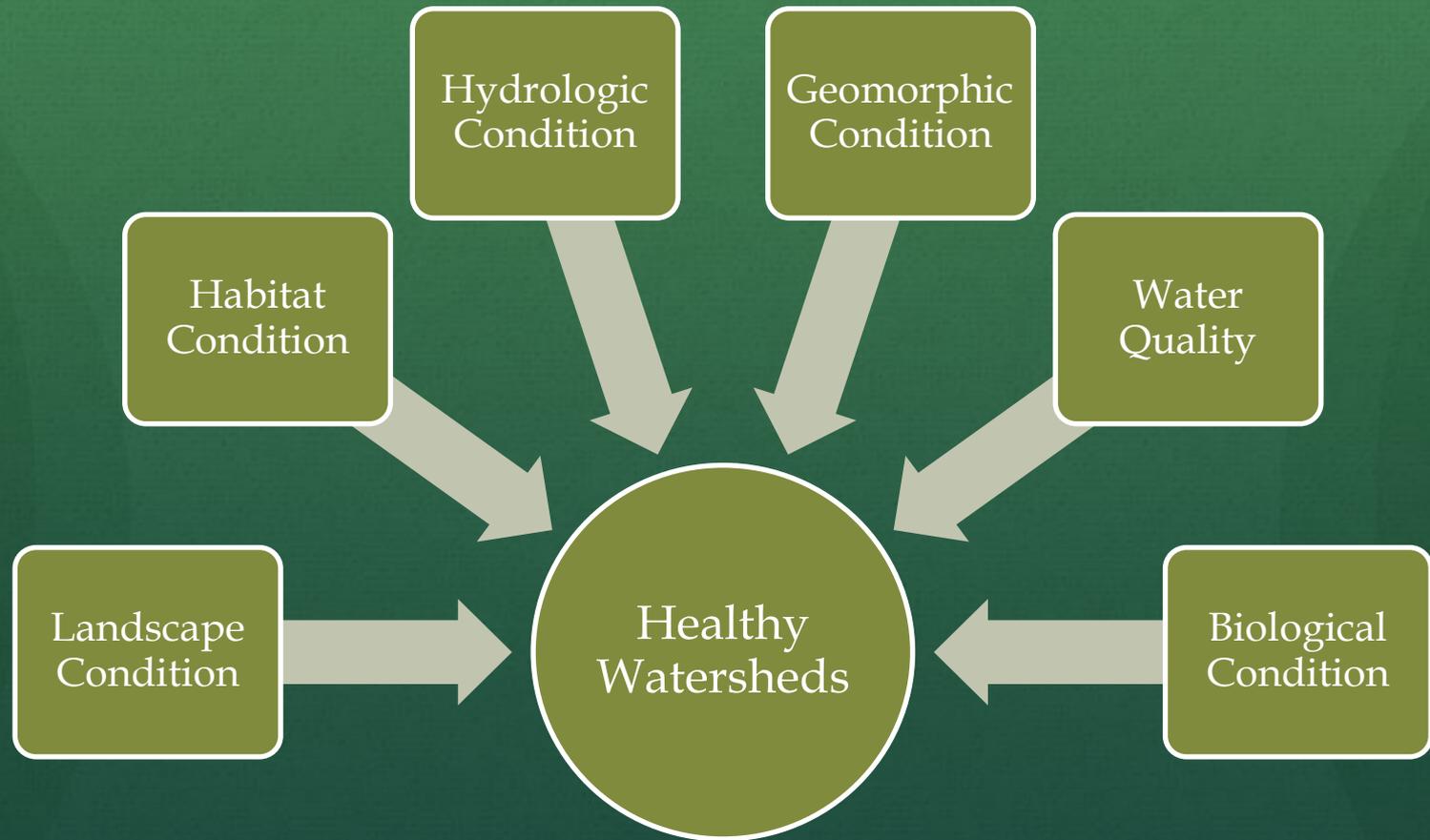
- Identifying and protecting healthy waters
- Provide context for other monitoring programs

# U.S. EPA Healthy Watersheds Initiative

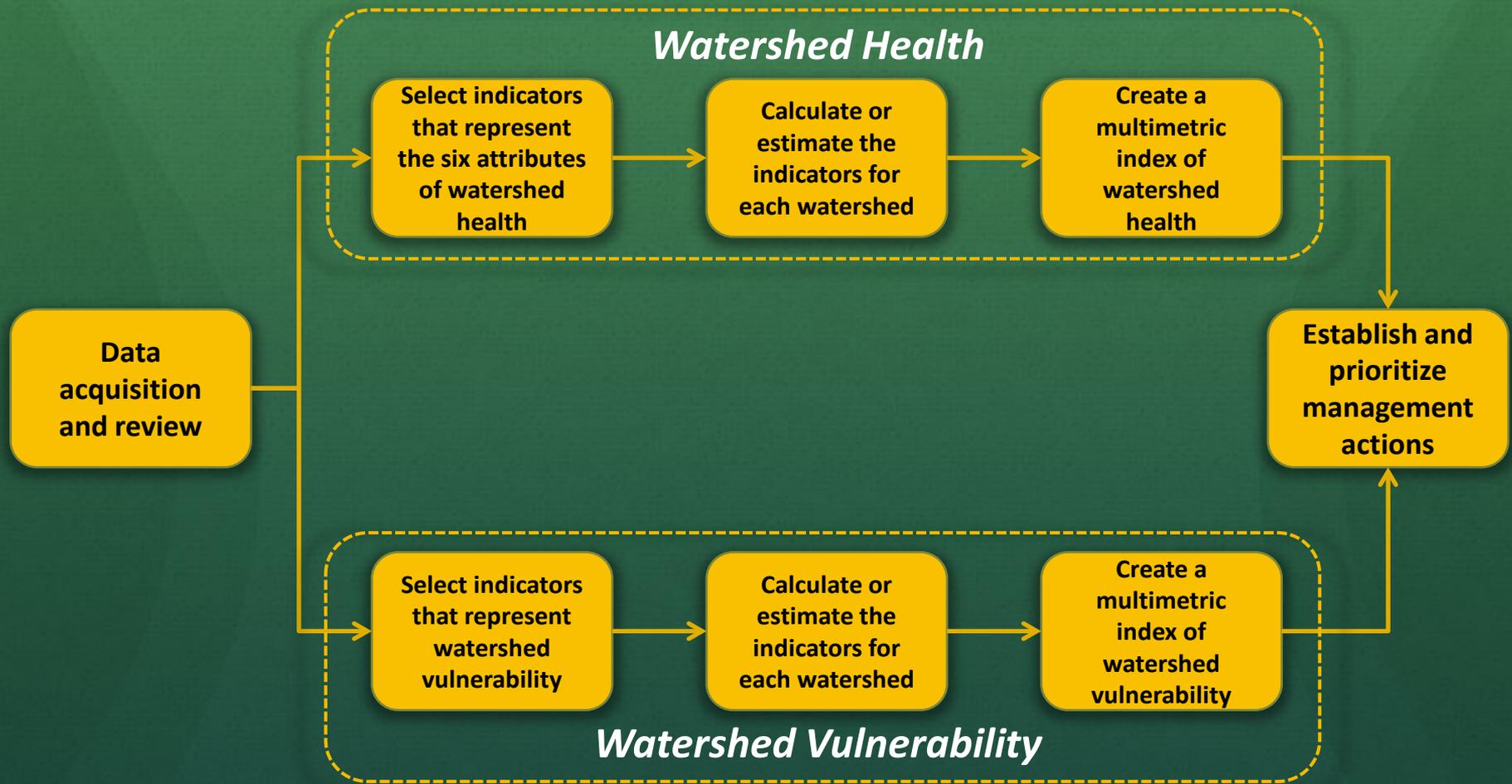
- EPA HWI website:  
[www.epa.gov/healthywatersheds](http://www.epa.gov/healthywatersheds)
- Overarching goals of the Initiative:
  - Protect and maintain healthy watersheds, and increase their numbers over time.
  - Raise the visibility and importance of protecting high quality waters.
- Emphasis is on the protection of:
  - Landscape connections
  - Watershed processes and functions



# Healthy Watershed Attributes



# Healthy Watersheds Assessments Methodology



# Project Goals & Objectives

- Screening-level assessment to rank watersheds on a statewide basis according to their relative condition as defined by indicators of:
  - Landscape Condition
  - Hydrologic Condition
  - Habitat Condition
  - Geomorphic Condition
  - Water Quality
  - Biological Condition
- Combine with a vulnerability assessment to help set management priorities

# Timeline

- November 2011 – Draft Technical Approach
- February 2012 – Initial Selection of Indicators
- August 2012 – In-person Project Meeting to Finalize Technical Approach and Selection of Indicators
- February 2013 – Preliminary Results
- April 2013 – Draft Report
- May 2013 – Final Report and Data Delivery

# Outcome from August Meeting

- Partnership selected:
  - Watershed Condition Indicators:
    - Watershed structural attributes that drive aquatic ecosystem processes and for which spatially continuous landscape-level data are available.
  - Stream Health Indicators:
    - Aquatic ecosystem attributes for which high quality data representative of the various ecoregions in California are available at discrete sampling locations.

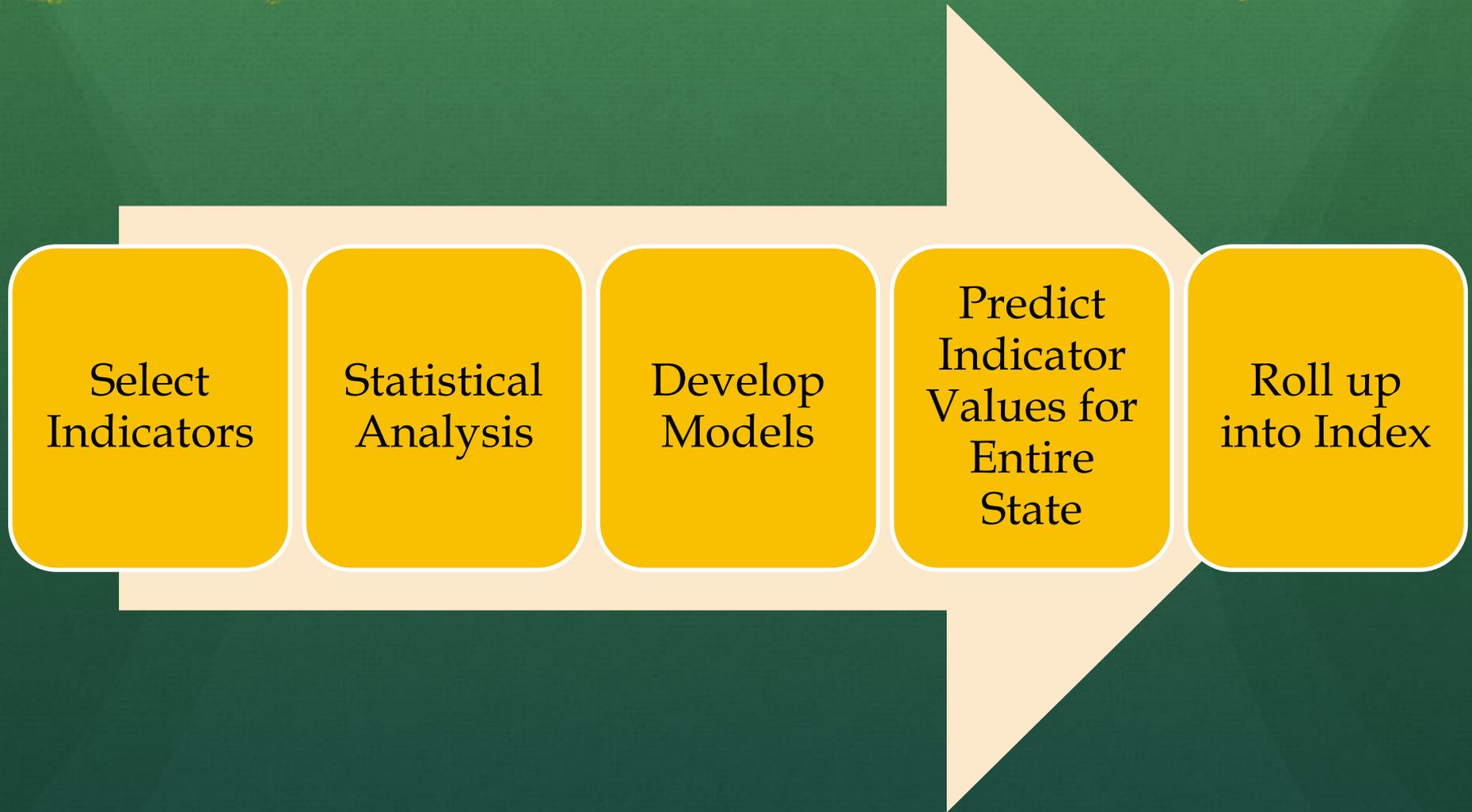
# Watershed Condition Indicators

- Percent Natural Land Cover in the Riparian Area
- Percent Natural Land Cover in the Watershed
- Percent Natural Land Cover in Headwater Areas
- Soil Infiltration Capacity
- Relative Risk of Excess Sediment Production
- Number of Road/Stream Crossings
- Dam Storage Ratio
- Artificial Drainage

# Stream Health Indicators

<b>Attribute</b>	<b>Indicator</b>	<b>Number of Locations with Data</b>
<b>Hydrologic Condition</b>	Large Flood Flow Alteration	947
	Small Flood Duration Alteration	947
	Small Flood Date Alteration	947
	Small Flood Frequency Alteration	947
	Alteration in Rate of Fall After High Flow Events	947
<b>Geomorphic Condition</b>	Physical Habitat Multimetric Index	632
<b>Water Quality</b>	Nitrate	927
	Turbidity	1,001
	Conductivity	1,539
	pH	1,422
	Temperature	1,606
<b>Habitat Condition</b>	California Rapid Assessment Method	848
<b>Biological Condition</b>	California Stream Condition Index	1,698

# Analysis of Stream Health Indicators

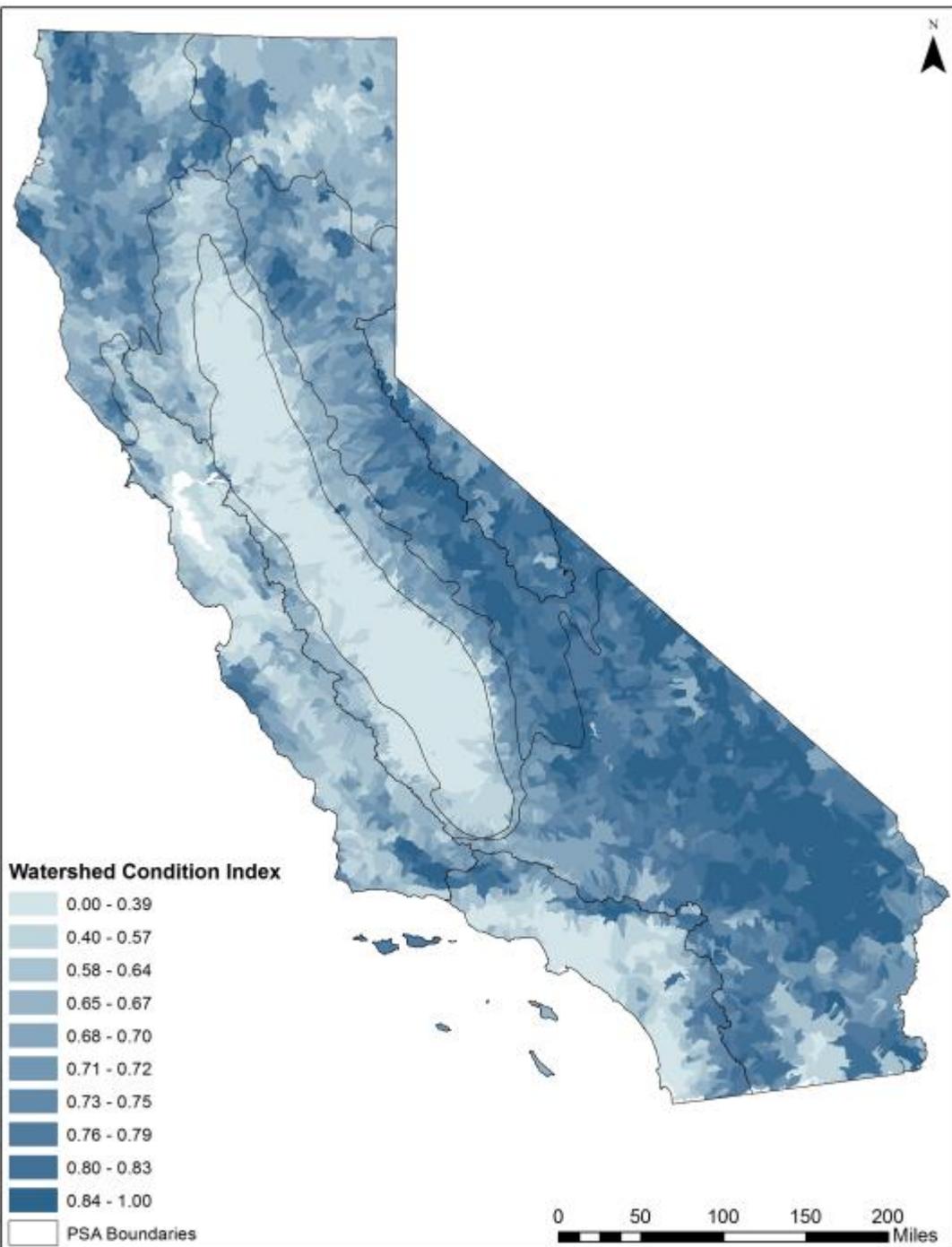


# Multimetric Index

- Predicted values of each Stream Health Indicator were normalized to a scale of 0-1 and averaged together for each of:
  - Hydrologic Condition
  - Geomorphic Condition
  - Water Quality
  - Habitat Condition
  - Biological Condition
- Similarly, the Watershed Condition Indicators were normalized to a scale of 0-1 and averaged together to obtain a Watershed Condition Index.

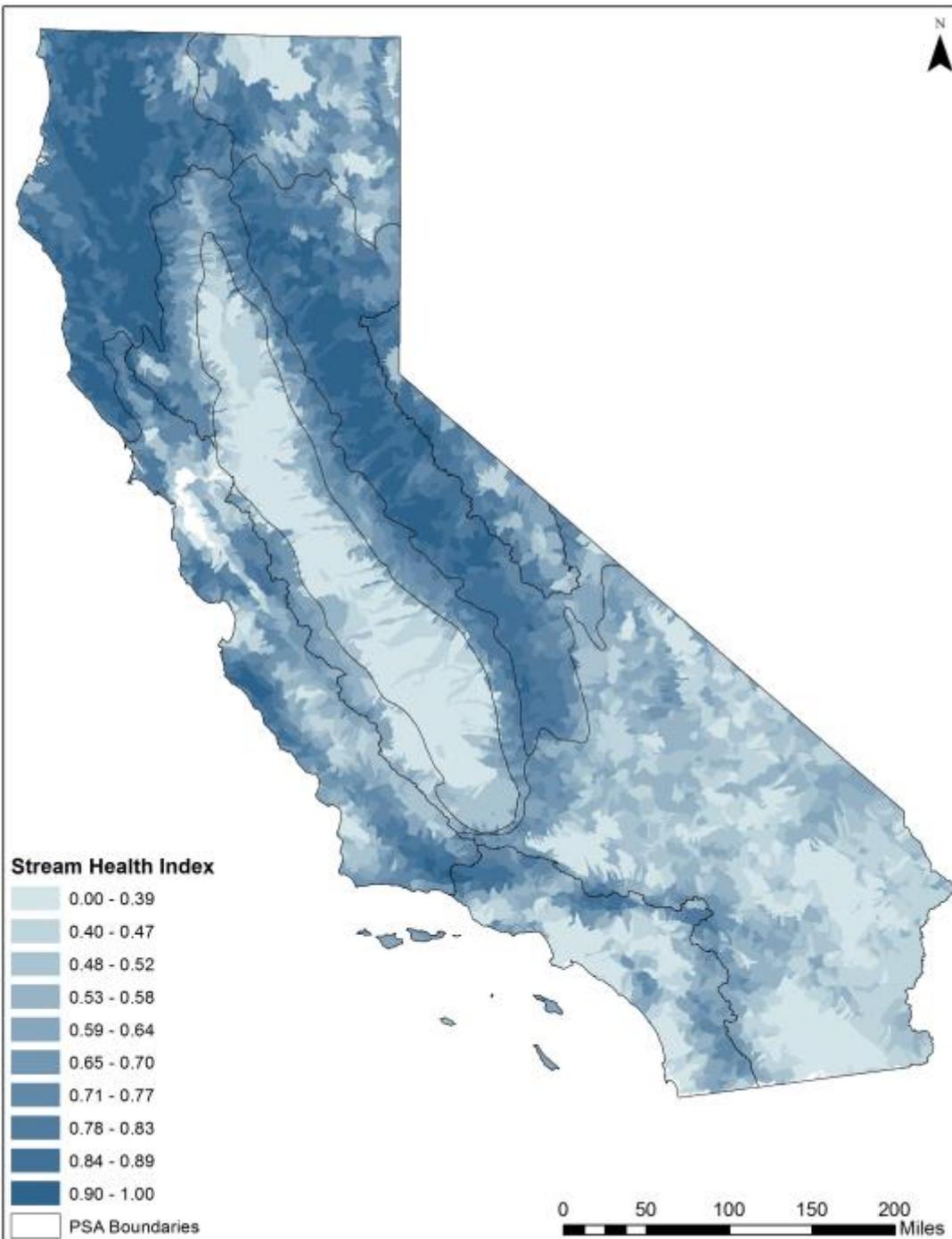
# Watershed Condition

- Percent Natural Land Cover in the Active River Area
- Percent Natural Land Cover in the Watershed
- Percent Natural Land Cover in Headwater Areas
- Soil Infiltration Capacity
- Relative Risk of Excess Sediment Production
- Number of Road/Stream Crossings
- Dam Storage Ratio
- Artificial Drainage Area



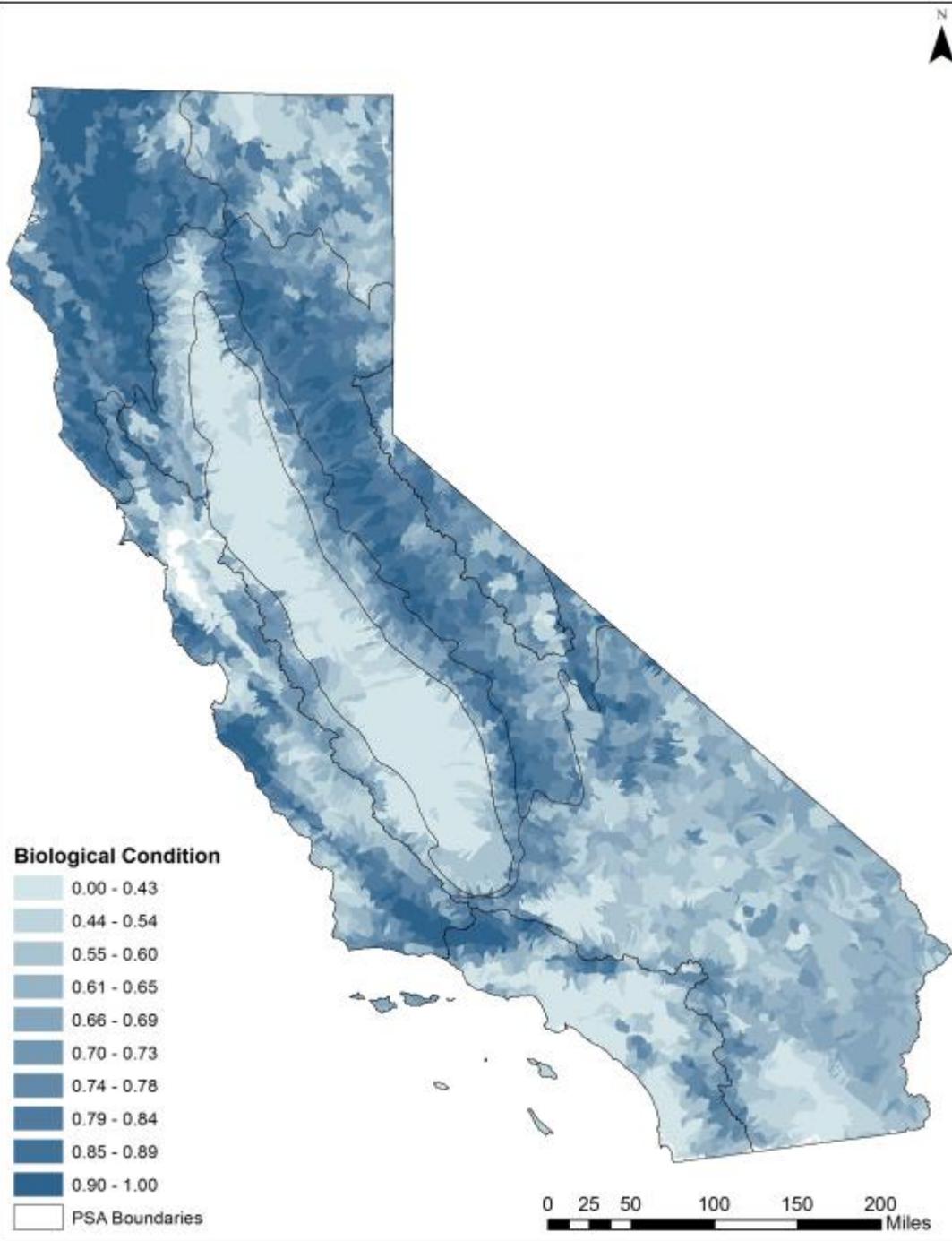
# Stream Health

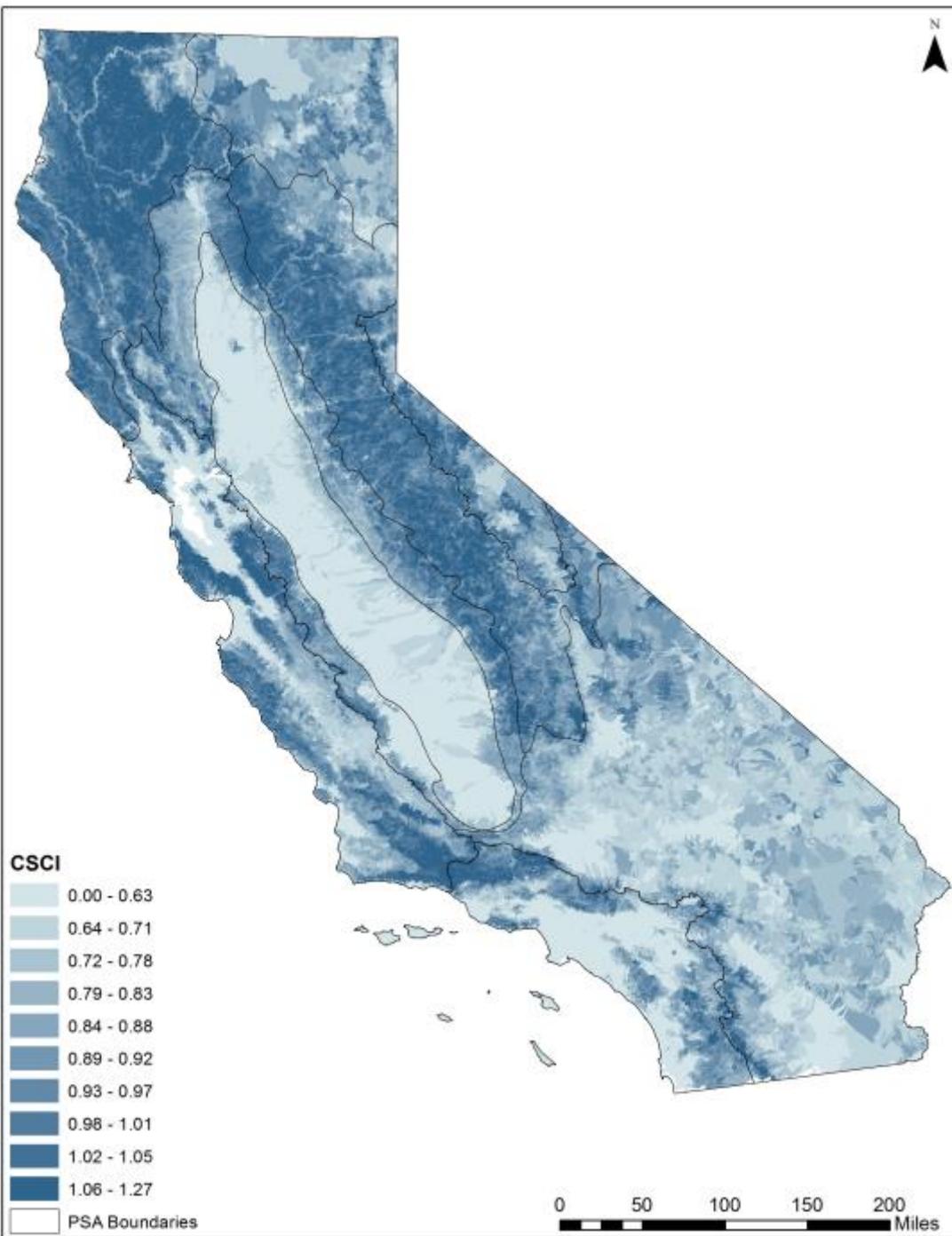
- Hydrologic Condition
- Geomorphic Condition
- Water Quality
- Habitat Condition
- Biological Condition



# Biological Condition

- California Stream Condition Index





# CSCI

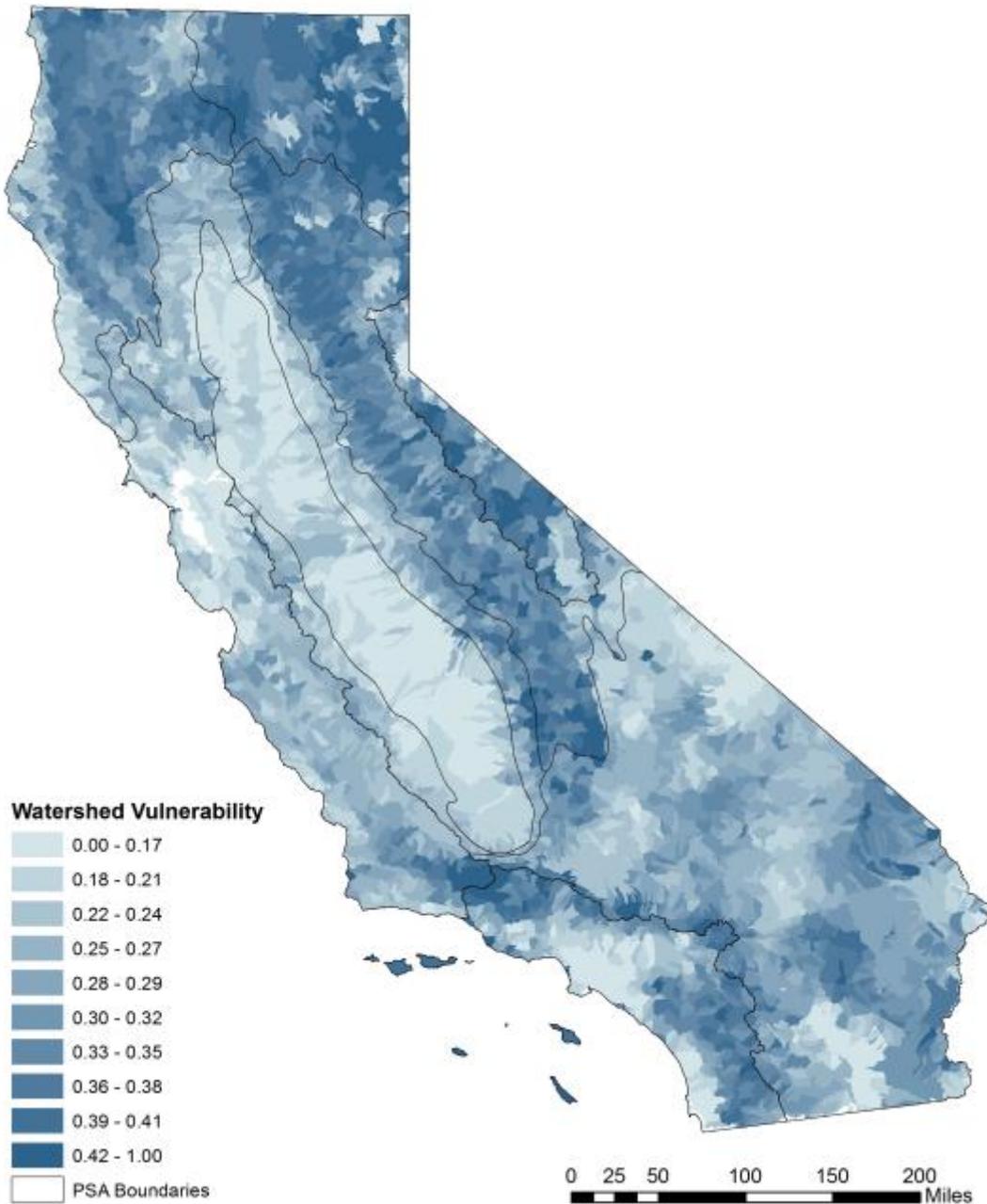
- Represents biological condition attribute
- Based on new California Stream Condition Index (CSCI)

# Watershed Vulnerability

- Climate Change Vulnerability
  - Projected change in precipitation
  - Projected change in temperature
  - Projected change in baseflow
  - Projected change in monthly snowpack
  - Projected change in wildfire severity
  - Projected change in monthly surface runoff
- Land Use Vulnerability
  - Projected Fire Risk
  - Projected Land Cover Change
- Water Use Vulnerability
  - Current Water Demand

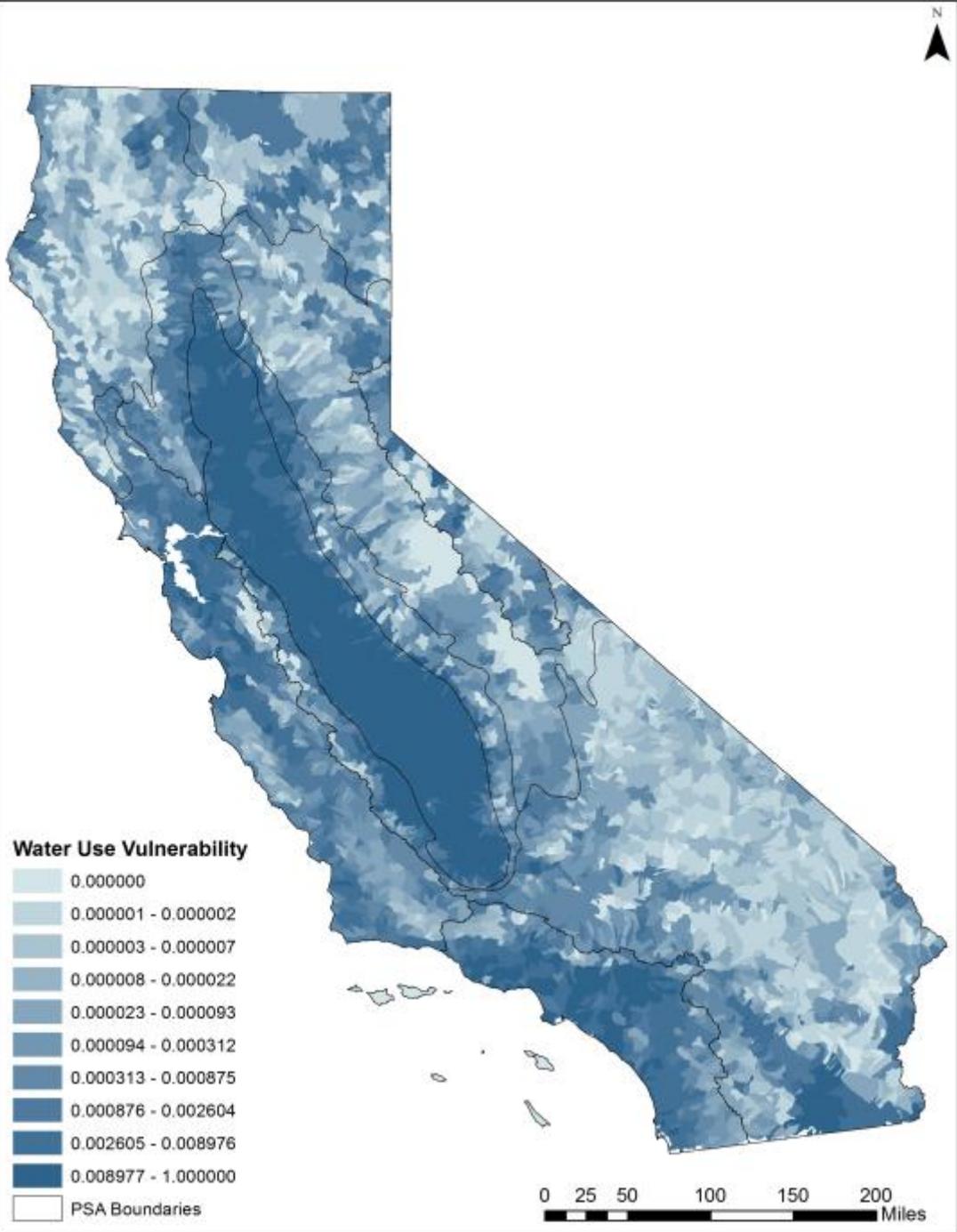
# Watershed Vulnerability

- Climate Change Vulnerability
- Land Use Vulnerability
- Water Use Vulnerability



# Water Use Vulnerability

- Current Water Demand



# Next Steps

- Refine and finalize modeling.
- Produce a draft final report for review by HSP (4/8/2013).
- Produce revised final report and deliver data (5/13/2013):
  - Results will be presented to public on HSP portal.
  - Data will be available for others to use in their programs and research projects.
  - Includes documentation, metadata, and code so that HSP can update/modify analysis in the future.

# How can this information be used?

- Source of information for sustainability indicators framework in water plan.
- Inform 303(d)/305(b), NPS, stormwater, and wetlands programs and policies.
- Help to identify areas for targeting future monitoring.
- Provides a statewide framework for local partners to *augment with their own data*.

# Discussion

- What are the Council recommendations for presenting the results in the final report and the Healthy Streams Portal?