NSMB Stream Ecological Stressors Assessment

Scientific Studies Program

Fiscal Year 2025-2026

North Santa Monica Bay

Craig Doberstein; Jeff Parsons, PhD

Herrera Environmental Consultants

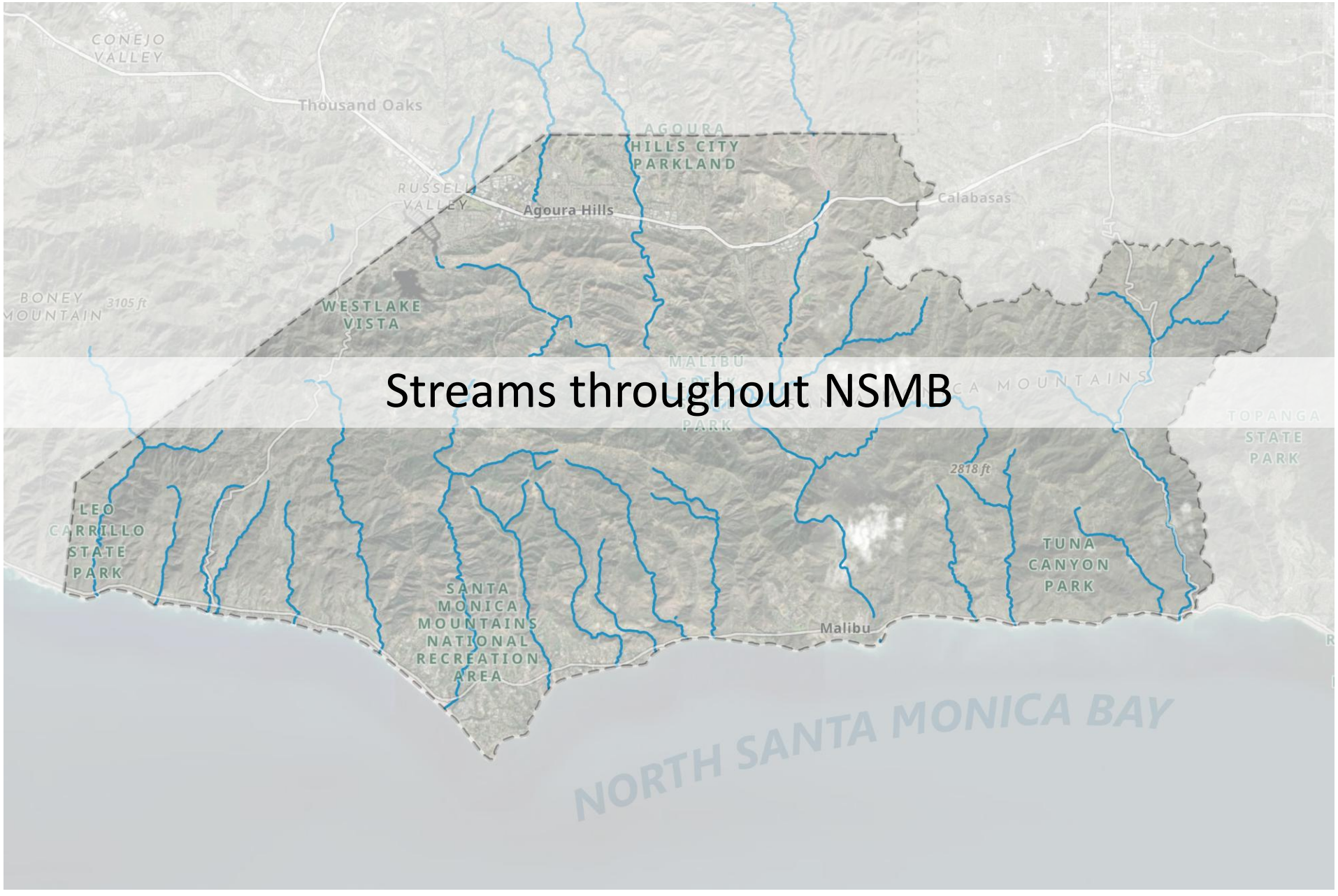
Study Overview

Collect and analyze historic, recent, and projected future flow conditions to improve understanding of creek hydrologic regimes in NSMB

Examine the historical interrelations of stormwater runoff, land development, and water use and supply on stream hydrologic regimes

Understand how human-induced changes to hydrologic regime – as well as current and future climate change – may impact stream health

Study Location



Streams throughout NSMB

Study Team

HERRERA
Science + Planning + Design

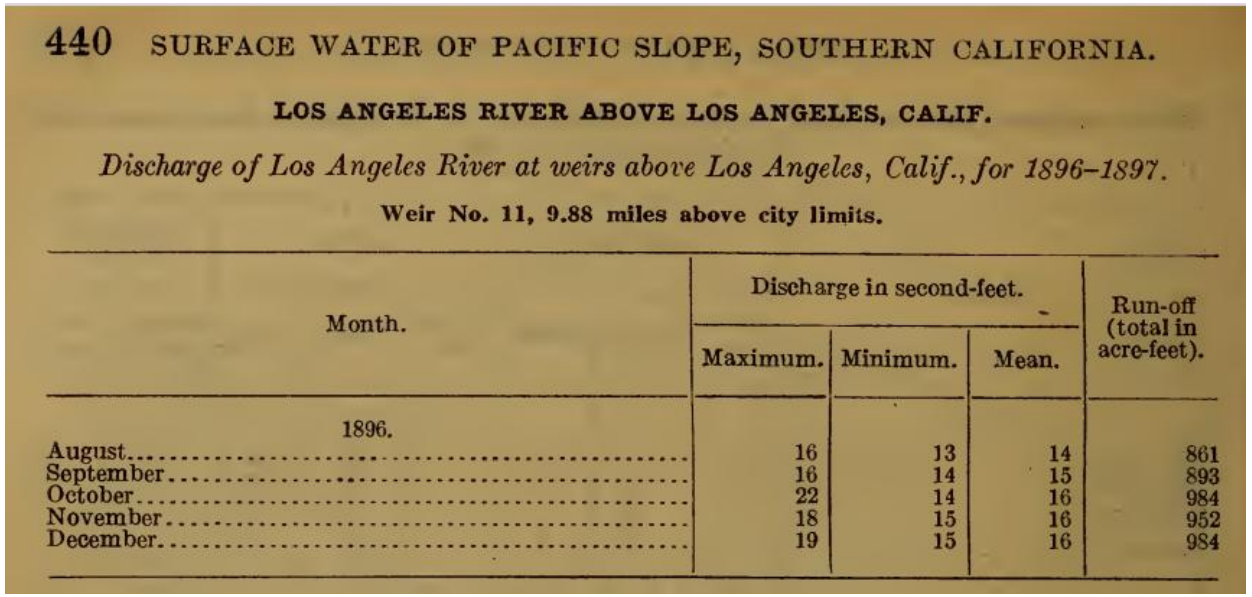
Over 40 years of expertise in habitat restoration planning and ESA compliance. Extensive experience with hydrologic modeling and climate projections, including sea level rise predictions and flood analysis, and developing resilient solutions that safeguard critical infrastructure and preserve sensitive ecosystems.

Craig Doberstein
CA Regional Director

Jeff Parsons, PhD
Principal Geomorphologist

Problem Statement

1. Human activity and natural variability has shifted NSMB creek hydrologic regimes over time.
2. The extent of past hydrologic changes, future climate-based changes, and the potential impacts on creek health, have not been documented.
3. Water management decisions in NSMB would benefit from additional context regarding creek hydrology, history, and ecological stressors.



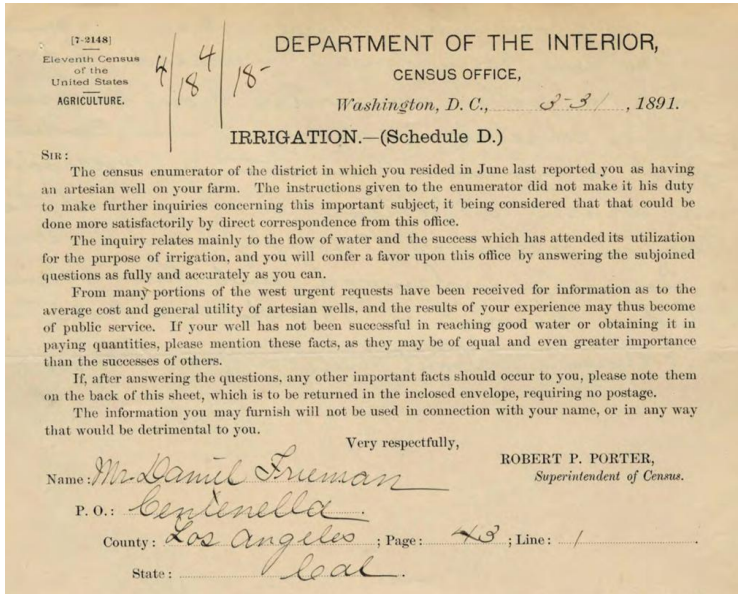
440 SURFACE WATER OF PACIFIC SLOPE, SOUTHERN CALIFORNIA.

LOS ANGELES RIVER ABOVE LOS ANGELES, CALIF.

Discharge of Los Angeles River at weirs above Los Angeles, Calif., for 1896–1897.

Weir No. 11, 9.88 miles above city limits.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
1896.				
August	16	13	14	861
September	16	14	15	893
October	22	14	16	984
November	18	15	16	952
December	19	15	16	984



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Eleventh Census of the United States
AGRICULTURE.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
Washington, D. C., 4/3/18-, *1891.*

IRRIGATION.—(Schedule D.)

SIR:

The census enumerator of the district in which you resided in June last reported you as having an artesian well on your farm. The instructions given to the enumerator did not make it his duty to make further inquiries concerning this important subject, it being considered that that could be done more satisfactorily by direct correspondence from this office.

The inquiry relates mainly to the flow of water and the success which has attended its utilization for the purpose of irrigation, and you will confer a favor upon this office by answering the subjoined questions as fully and accurately as you can.

From many portions of the west urgent requests have been received for information as to the average cost and general utility of artesian wells, and the results of your experience may thus become of public service. If your well has not been successful in reaching good water or obtaining it in paying quantities, please mention these facts, as they may be of equal and even greater importance than the successes of others.

If, after answering the questions, any other important facts should occur to you, please note them on the back of this sheet, which is to be returned in the inclosed envelope, requiring no postage.

The information you may furnish will not be used in connection with your name, or in any way that would be detrimental to you.

Very respectfully,

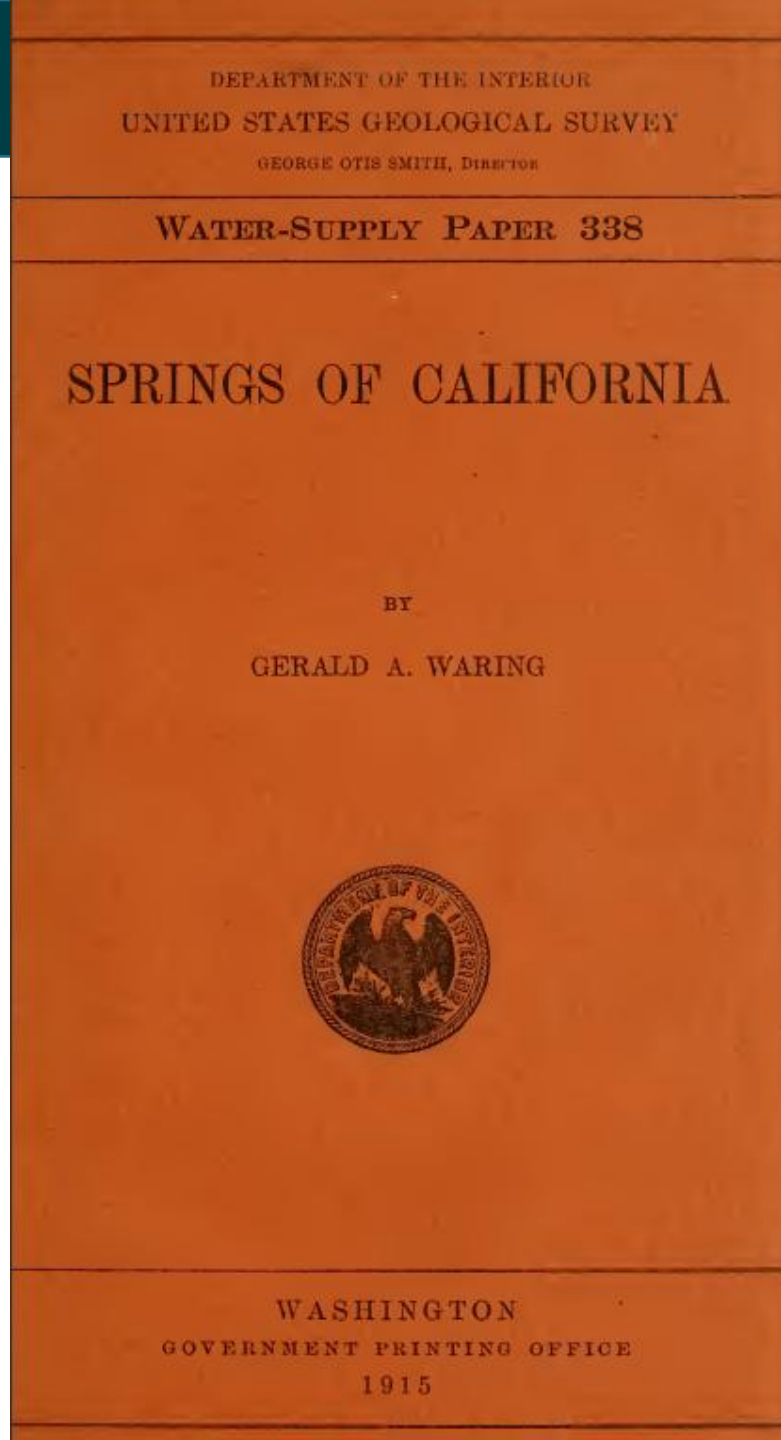
ROBERT P. PORTER,
Superintendent of Census.

Name: Mr Daniel Freeman
P. O.: Centinella.
County: Los angeles ; Page: 20 ; Line: 1
State: Cal.

Study Objectives

Objectives:

1. Compile and analyze historic flow data from NSMB streams
2. Perform planning-level, basin-scale climate change assessments to project future stream flow conditions
3. Examine how flow conditions have changed over time, potential causes, and the potential impacts on ecologic health/stress now and into the future
4. Document trends in NSMB watershed hydrologic regimes to help inform water management and stream health decisions



Study Details

- Outcomes:
  1. Evaluation and understanding of historical data
  2. Improved scientific basis for water/creek management recommendations in consideration of creek ecological health in the NSMB region
  3. Improved understanding of how to design and plan to help species thrive in changing conditions

- Similar Studies:
  - None known that focus on hydrology
  - Many exist related to steelhead health and protection, WQ assessment, and creek restoration. To be further reviewed as park of Task 1.
    - E.g., NOAA Fisheries, CalTrout, UC Davis Center for Watershed Sciences, SCWP Fire Effects Study, Herrera prior work

Study Methodology

Task 1 – Coordination and Data Collection

- Collect and review historical data
- Work with WASC and other regional experts to identify best data sources

Task 2 – Data Review and Analysis

- Review and compare historical data with modern observations
- Perform ecological stressors assessment
- Compare observations with projected future changes

Task 3 – Documentation and Reporting

- Present findings to NSMB WASC and final study report

Escondido Canyon Creek
https://maps.roadtrippers.com/us/malibu-ca/nature/escondido-canyon-park

Cost & Schedule

Phase	Description	Cost	Completion Date
Task 1	Coordination and Data Collection	$10,000	2 months after start*
Task 2	Data Review and Analysis	$22,000	+ 3 months
Task 3	Documentation and Reporting	$20,000	+ 3 months
TOTAL		**$52,000**	

** Estimated, pending availability and responsiveness of primary data sources (including local and federal agencies)*

Summary of Benefits

Water Quality:

- Inform future decisions about water resources in NSMB

Water Supply:

- Inform decisions about alternative water supply and water use scenarios within NSMB that support aquatic life
  - E.g., irrigation, dry weather diversions, greywater use

Community Investment:

- Help prepare for changes in creek flooding and flow conditions
- Inform decisions about valuable ecological resources

Questions?

Craig Doberstein
(Herrera)

Jeff Parsons, PhD
(Herrera)