

WRPI: Water Resources and Policy Initiatives



Final Report



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Table of Contents

Acknowledgments	3
Executive Summary	3
Project Objective	3
Project Approach	4
Project Outcomes	4
Conclusions	5
Appendix	6

Acknowledgements

This project was made possible by the collaboration of Dr. Amalie Orme (Professor of Geography and Environmental Studies, California State University Northridge), Kelsha Anderson (Forest Hydrologist, Angeles National Forest Region 9), and Julie “Jamie” Uyehara (Angeles National Forest Staff Resource Officer, Angeles National Forest Region 9).

I would also like to acknowledge my teammates Jonathan Tejada, Omar Pena, Christopher Notto, Jamie Suguerra, Kevin Ankerberg, and Suzette Mera who were also members of the internship. It is because of our teamwork and our desire to accomplish our goals that made this internship an unforgettable experience.

Executive Summary

The duration of my internship included many projects that were assessed by a team of other water resource interns to collect data and assess multiple study sites in the Angeles Forest. Within the first few weeks of the internship the team drove to multiple water right locations in the Angeles Forest to observe the quality of the infrastructures of wells, tanks, etc., and the healthiness of the water. This was an important task to the U.S. Forest Service considering at the time of the survey, all water rights had to be updated in the database.

Two Stream Condition Inventories (SCI) were assigned throughout the internship at two different sites. One site at Cottonwood Campground in Lake Hughes and another site at St. Francisquito Dam in Warm Springs. Each site had their own unique background which according to Kelsha is essential to collecting data and assessing the study site. The stream condition inventories that were assessed were significant data considering that are no prior data for of both these study sites.

Project Objectives

Cottonwood Campground

A Stream Condition Inventory (SCI) (Fraizer et. al, 2005) survey was conducted on July 9, 2018 through July 16, 2018. A fire known as the Powerhouse Fire burned about 30,275 acres of mountainous terrain in northern Los Angeles County near Lancaster, California. Cottonwood Campground including other surrounding recreational areas were affected by the fire. Volumetric predications suggest that debris flow that occurred may entrain significant volume of material within the water basins. Evidence of debris flow were evident in the campground as sediment enveloped dumpsters, roads, and picnic tables. Since Cottonwood Campground have experienced landscape changes, a SCI survey was implemented to obtain data. The stream survey included areas of landslide/mass wasting to accommodate areas that has been impacted by debris flow or sediment transport.

San Francisquito Creek

A second Stream Condition Inventory (Fraizer et. al, 2005) survey was conducted downstream of the St. Francis historic site in San Francisquito Creek located in San Francisquito Canyon in the Sierra Pelona Mountains. The survey was performed between July 24, 2018 through July 31, 2018. The surveyed reach includes an area with an aquatic organism passage (AOP) barrier inhibiting passage for aquatic species; located underneath the bridge and is the bridge’s concrete footing. Los Angeles County Department of Public Works is anticipated to deconstruct the old road and bridge in the future. Additionally, there are

signs of deterioration and road collapse near the bridge. The reach downstream of the St. Francis dam has not been surveyed or assessed in the past and there is no pre-existing data up until this point. The SCI data will provide a baseline for monitoring temporal change in channel morphology, provide a comparison between streams and assess the health and stability of the reach.

Project Approach

Cottonwood Campground

A Stream Condition Inventory is a compilation of different methods and applications to collect data and assess the study site. A variety of methods include: longitudinal profile of the stream, monumented cross sections, sediment particle size distribution, stream cover shading, bank stability, large woody debris, and pool tail fine sediment. Basic water chemistry data were also collected which includes dissolved oxygen, pH, conductivity, and water temperature. In addition, a Benthic Macroinvertebrate (BMI) assessment was conducted to observe the quality/healthiness of the water.

According to the SCI protocol, three cross sections is appropriate for a survey however since there are important geomorphic features within the study reach we added an additional fourth cross section. The fourth cross section was established to reinforce the data that was collected to observe the morphology of the landscape.

San Francisquito Creek

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One of our main concern was to obtain a water depth measurement in a pool below the bridge for the longitudinal profile. This was a measurement that needed to be collected for valuable data. Another concern was to accommodate several side channels within cross section 1.

Project Outcomes

Cottonwood Campground

This is the first time that a Stream Condition Inventory was conducted in Cottonwood Campground, therefore our results will provide useful information in the future. All data collected from Cottonwood Campground has become valuable data to the U.S. Forest Service. The U.S. Forest Service can collaborate with other agencies or organizations for studies or assessments in the future.

San Francisquito Creek

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Francisquito Creek has become valuable to the U.S. Forest Service. There are currently surveys being assessed on the California red-legged frog and unarmored threespine stickleback habitat in this area of San Francisquito Canyon. The SCI data will accommodate other surveys for future studies.

Conclusions

Collaborating with the U.S. Forest Service has been a wonderful experience. Overall, my team and I were very successful in completing our tasks and delivering reports. As a person who is passionate about environmental science, this internship has reinforced me that this the type of work is what I see myself doing for the rest of my life. To be involved in projects that can help our environment and sustain our community is joyful feeling.

Appendix

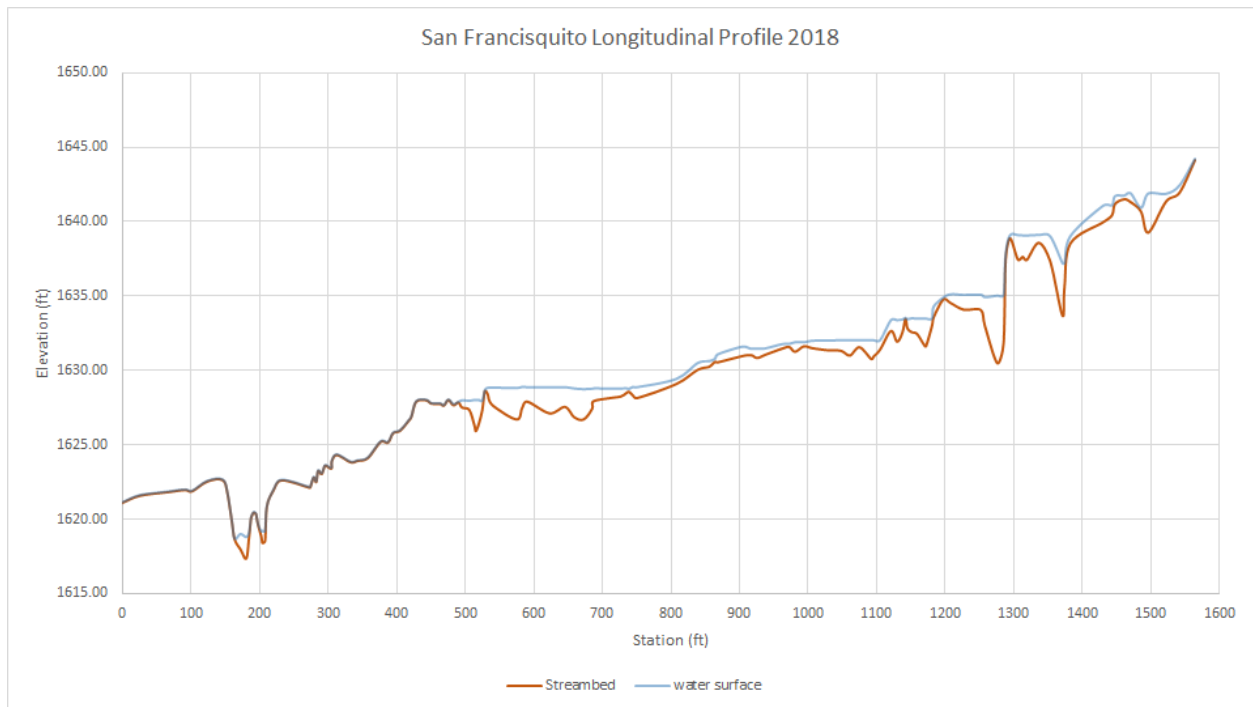


Figure 1. Example of a Longitudinal Profile.

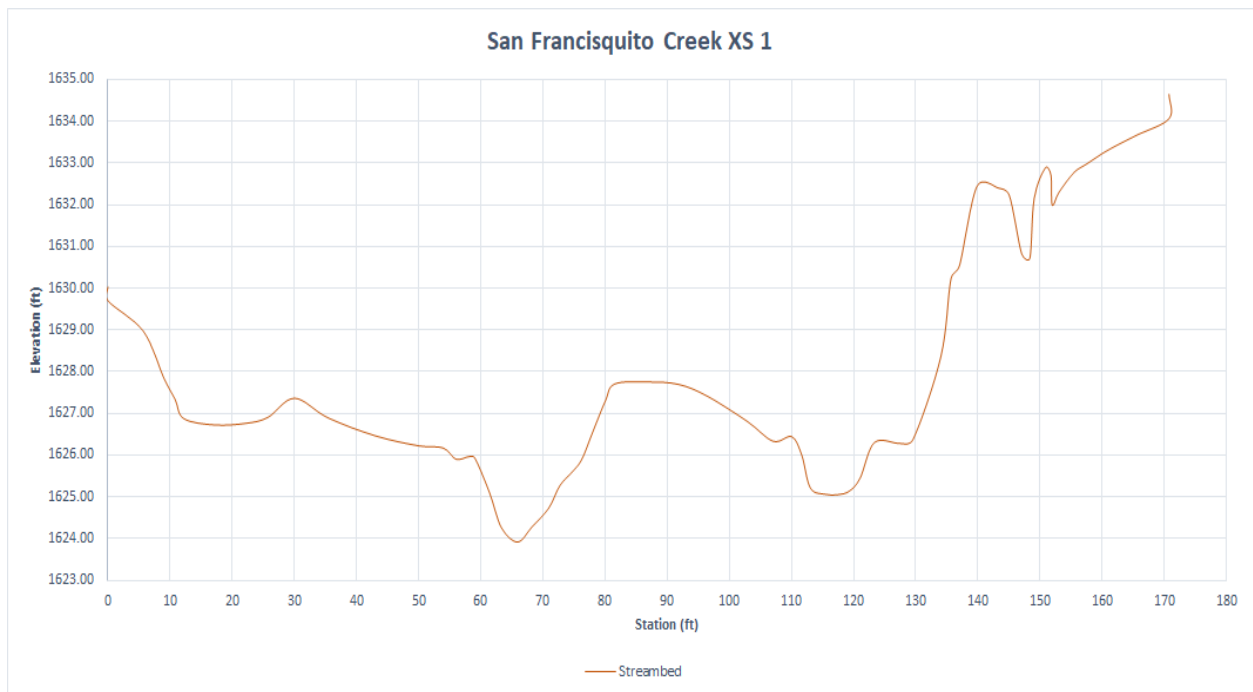


Figure 2. Example of a cross section.

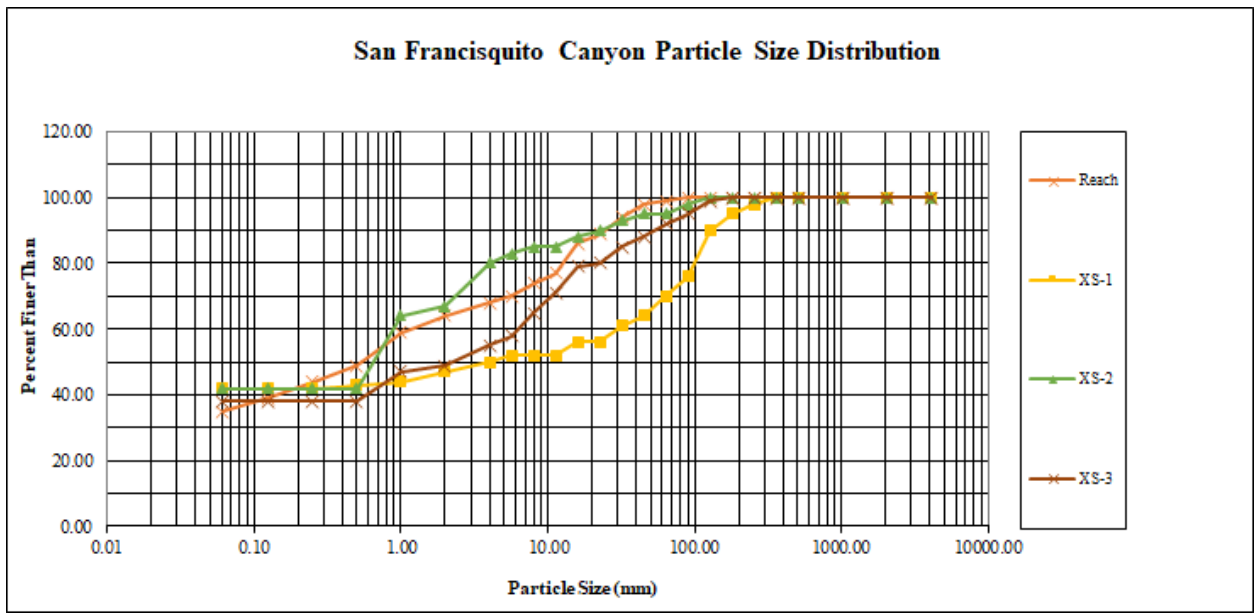


Figure 3. Example of particle size distribution.

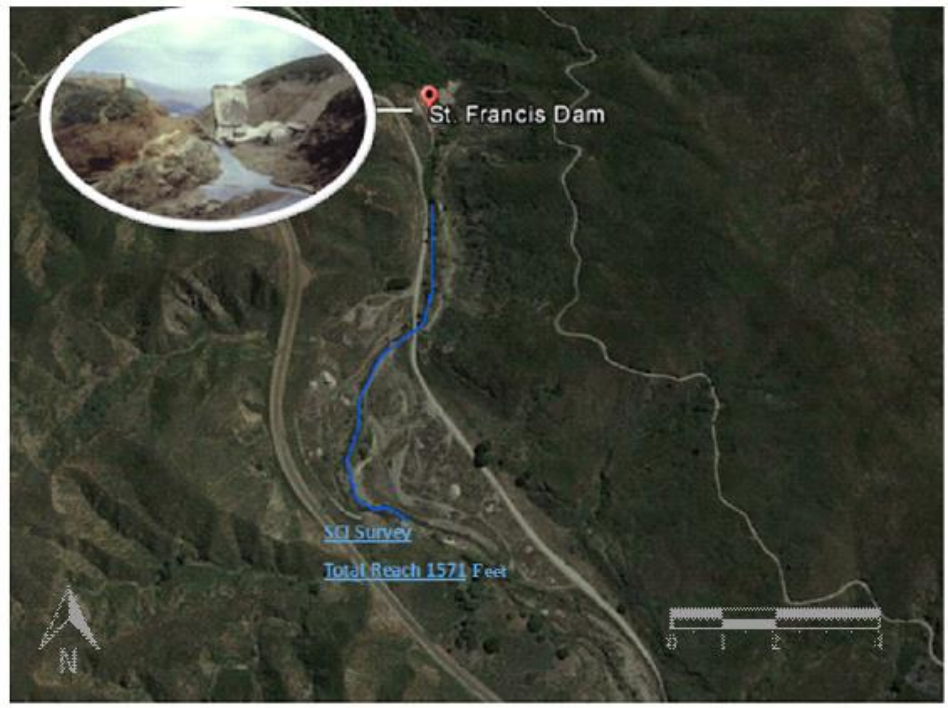


Figure 4. Study area.

