

Understanding River Processes for Civil Works

September 17-18, 2024
SF Bay Model, Sausalito, CA



The San Francisco District organized and hosted a two-day workshop at the Bay Model on 17-18 September 2024. Through a combination of coursework and site visits to local flood risk management and ecosystem restoration projects, the workshop taught participants about the fundamentals of river processes, fluvial geomorphology, and how to apply those fundamentals to the District's portfolio of Civil Works projects. The workshop was attended by more than 30 staff from the District, with representation from nearly every Section. As the vast majority of the District's projects are located in or near a river, understanding how rivers behave, evolve, and influence their surroundings is critical to our District's success. The purpose of the workshop was to raise the level of appreciation and understanding of these foundational river processes across the District, in order to improve future project outcomes and avoid costly failures.



Corte Madera Creek
Concrete Channel

This River Processes Workshop was taught by Dr. G. Mathias (Matt) Kondolf, a fluvial geomorphologist and Professor of Environmental Planning in UC Berkeley's College of Environmental Design, and Matthew Smeltzer, a consulting fluvial geomorphologist and civil engineer who specializes in applied fluvial geomorphology for water resources engineering design. Their combination of fundamental scientific research, decades of designing and leading college coursework and professional trainings, and many years of experience applying the fundamental theories to real-world restoration projects ensured that the participants received a comprehensive perspective over the course of the two days.

Water & Sediment | Slope & Roughness

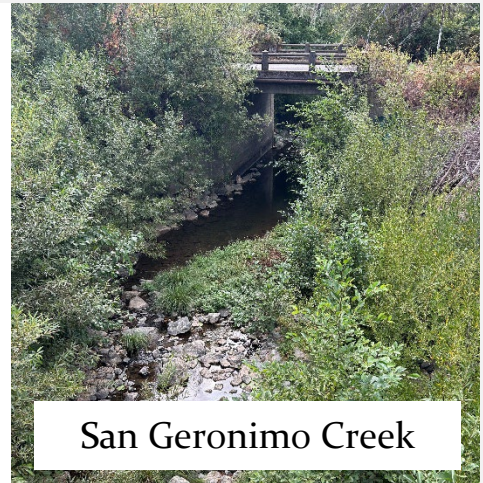
The two-day workshop covered a range of topics, including:

- Fundamentals of fluvial geomorphology
- Erosion, deposition, transport, and management of sediment
- Channel classification systems
- The (misguided) quest for the ideal channel
- Restoring process as a means of restoring rivers sustainably
- Typical challenges faced when implementing nature-based solutions in USACE projects

“I've been doing this type of work for my entire career and I learned a lot from the professor and from our site visits.”

Workshop Set Up:

1. Morning lectures in the Bay Model, which included real-world case studies and considerations of the diverse SPN AOR watershed.
2. Afternoon site visits to Corte Madera Creek, Lagunitas Creek, Tocaloma Side Cannel Project, and San Geronimo Creek.



San Geronimo Creek

Feedback

Participants had an overall positive experience with the two-day workshop. Individuals expressed how it was educational to see restoration projects that other organizations are executing outside USACE and how SPN can employ lessons learned.

This was the first iteration of this workshop and SPN is excited to apply the constructive feedback received from the post workshop survey to future versions of this course.

Special Thanks

Course logistics coordinated by Joel Achenbach, Tami Church, and Alev Bilginsoy (USACE SF District). Field visits hosted by Joanna Dixon (Marin County Public Works), Jonathan Koehler (Marin Municipal Water District), and Ayano Haynes (Turtle Island Restoration Network).



Lagunitas Creek



Lagunitas Creek Large Wood Structures