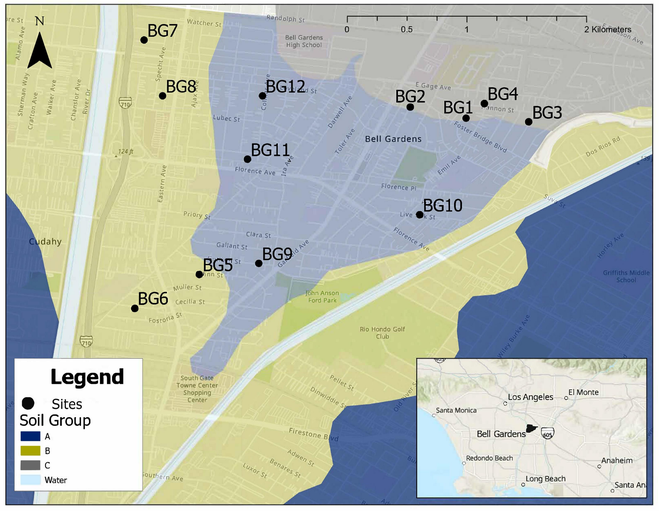
Ground Truth: Guiding a Soils-Based Strategy for Impactful Nature-Based Solutions in the Lower Los Angeles River Watershed

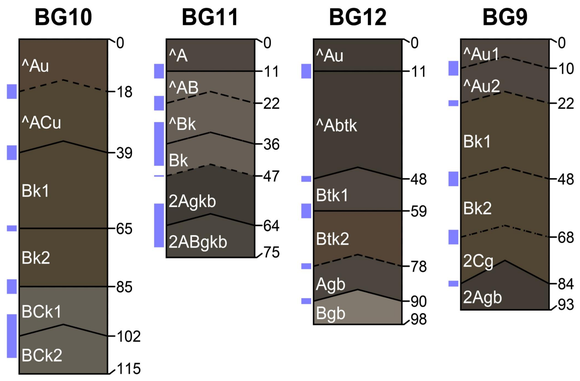
TreePeople

UCR

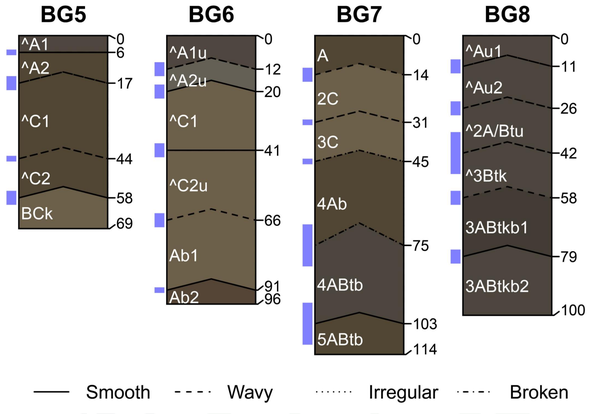
The objective of this project is to improve stormwater management by using nature-based solutions to slow, detain, infiltrate, or filter stormwater and/or urban runoff as opposed to traditional, engineered grey infrastructure. These natural solutions may include relying on soils and vegetation; increasing permeability of impermeable areas; and enhancing soils through compost, mulch and planting trees or vegetation with a preference for native species. **A major gap in our ability to apply these nature-based solutions is our knowledge of urban soil properties and how they can be optimized to improve stormwater management.** To improve our understanding of urban soil properties, we began the field data collection of our Ground Truth study in December 2024. Over the last few months, we visited 12 sites in Bell Gardens, CA where we dug soil pits to describe and sample the profiles and measure soil hydrological properties. Diagrams of the profiles are shown below and profile photos of sites BG2, BG4, BG7, and BG11 are on neighboring posters.



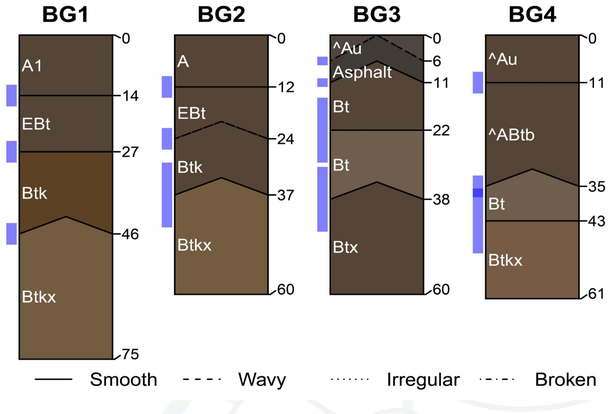
Group A Soil Profiles



Group B Soil Profiles



Group C Soil Profiles



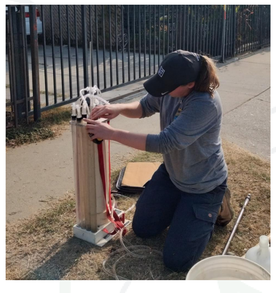
Field Work

Monolith sampling. Monoliths are intact soil trays collected to analyze the structure and natural pores of the soil

Collecting Bulk Density & Water Retention Cores: A known volume of soil is collected to measure the density and the water content at different saturation points

Digging pits in group C was very difficult! This likely severely affects water flow.

Mini-Disk Infiltrometers adapted with pressure transducers were used to measure unsaturated hydraulic conductivity at the surface and top of the second horizon.



We measured saturated hydraulic conductivity at 2 depths: around 50 cm and 100 cm using an Amoozemeter.

Fieldwork Crew: (from left to right) Hector Espinoza, Igor Bronz, Taylor McDowell, Maria Bronnikova, Swagata Mukhopadhyay, and Dustin Herrmann (not pictured)

SAFE CLEAN WATER PROGRAM

Study Leads: Dustin Herrmann (TreePeople), Daniel Hirmas (Texas Tech University) & Hoori Ajami (University of California-Riverside).

Essential Support: Maria Bronnikova, Igor Bronz & Taylor McDowell