**Forest to Faucets – A Hands-On STEM Kit Examining Hillslope Hydrology and Transmountain Diversions**

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**Abstract.** Colorado relies heavily on its freshwater resources. From drinking water supply and agriculture to recreation and ecologic function, every drop of water is important for in- and out-of-state users. While 90% of Colorado’s residents live east of the Continental Divide, 80% of the state’s streamflow is on the West Slope. Residents of Colorado should be aware of this discrepancy, in addition to understanding where their water comes from and the basic hydrologic processes that govern its movement. We have designed the Forest to Faucets STEM Kit to expose middle and high school students, and even community stakeholders, to hillslope hydrology and transmountain diversions. The goal of the kit is to guide students through an engaging, one-hour-long experiment through the lens of a hydrologist. They will work in pairs and follow a twenty-page illustrated booklet.

In the first half of the kit, students will explore the effects of disturbances in headwater areas on streamflow generation and rainfall partitioning. Using a laser-cut hillslope cross-section model, they will apply water to simulated old-growth, clear-cut, and burned forests and examine the separation of rainfall into a groundwater well and an overland flow well. They will practice measuring water depth, recording information, and graphing hydrologic data.

In the second half, students will zoom out and investigate precipitation patterns across the state of Colorado, including the concepts of orographic lift and the Continental Divide. They will apply rainfall to a 3-D printed topographic model of Grand Lake, Estes Park, and the Alva B. Adams tunnel, a critical piece of the Colorado-Big Thompson Project. Furthermore, students will quantify the relative amount of water on Colorado’s West and East slopes when the transmountain tunnel is closed and open. Ultimately, the kit will help students better understand Colorado’s water disparities and solutions.

Once the kit is completed, it will become part of the Education and Outreach Center’s STEM Kit Lending Library. Teachers around the state of Colorado will be able to check out a set of fifteen kits, enough for thirty students, at no cost.