

The Importance of Stormwater Management and Role of Geotechnical Consultants

CalGeo recognizes that effective stormwater management is essential to protect communities, infrastructure, and ecosystems from the impacts of urban runoff. As cities expand and impervious surfaces increase, natural infiltration decreases, causing runoff that carries pollutants—such as oil, chemicals, trash, and sediment—into nearby water bodies. Uncontrolled stormwater also raises the risks of flooding, erosion, and infrastructure damage, threatening public safety and increasing repair costs.

Geotechnical consultants play a critical role in designing stormwater infiltration systems—including swales, retention basins, infiltration basins, and dry wells—by assessing soil and groundwater conditions. Accurate evaluations ensure that these systems function efficiently to reduce runoff, prevent flooding, and protect water resources. Given the variety of test methods, site conditions, and regulatory requirements, thoughtful geotechnical guidance is essential for effective design.

Various Best Management Practices (BMPs) that are commonly used to meet MS4 permit requirements include:

- Retention and Detention Basins: Capture stormwater to slow its release and remove pollutants.
- Permeable Pavement: Allows water to infiltrate, minimizing runoff.
- Green Infrastructure: Includes bioswales, rain gardens, and green roofs to naturally absorb and filter stormwater.
- Stormwater Filters and Separators: Remove debris, oil, and sediment before discharge.

CalGeo has developed a matrix of guidance criteria to support geotechnical consultants in selecting appropriate infiltration test methods for systems such as retention and detention basins, green infrastructure, and stormwater filters. By integrating geotechnical expertise with sustainable stormwater solutions, we collaborate with civil engineering partners to promote resilient development.