SWAMP
Surface Water
Ambient Monitoring
Program

SWAMP'S REFERENCE CONDITION MONITORING PROGRAM (RCMP)

What is it?

The Surface Water Ambient Monitoring Program (SWAMP) has implemented a strategy to target and sample the healthiest, highest quality streams in California as a foundation for developing statewide bio-objectives and for establishing a framework to identify and protect healthy watersheds. This pool of reference sites serves as a benchmark for establishing expectations of biological, chemical and physical conditions in healthy streams and rivers across the state. Reference sites define the standard against which results from compliance and ambient monitoring programs are evaluated, and reflect the desired condition of streams and watersheds when human disturbance in the environment is absent or minimal. Data sets from many programs that randomly sampled hundreds of sites were compiled and screened for inclusion in the statewide reference pool. In addition, approximately 50 high quality streams per year were sampled in 2008-2011 to fill in data gaps. This effort, known as SWAMP's Reference Condition Management Program (RCMP), has identified a pool of more than 600 sites that represents reference conditions across a broad range of stream types and environmental gradients in California. The RCMP is a key element in the protection of vital aquatic resources and is a critical link between the State Board's water quality mission and that of other state and federal resource agencies.

Why is it important?

Reference sites are fundamental to bioassessment programs because they define empirically the biological, chemical and physical conditions to be expected in healthy streams. The large number of sites in the RCMP (more than 600) and the broad range of natural environmental settings in which they occur is critical in explaining variation among healthy ecosystems in California. Not all healthy streams look alike, and for assessments to be fair and accurate, "test" sites (sites that have not been previously evaluated) must be compared to appropriate groups of reference sites. This is best achieved when reference sites have many environmental features in common with test sites

of interest. Deviation of a test site away from reference condition (usually in a negative direction) is interpreted as a measure of the effect of stressors on the stream ecosystem. The RCMP also is important for identification and subsequent protection of high quality sites.

How will this information be used?

The RCMP will serve as a foundation for developing a new statewide biological indicator based on benthic macroinvertebrates (BMIs) to support bio-objectives and to establish a framework for identifying and protecting healthy watersheds. Reference sites are essential for establishing objective standards for biology, but can also play a key role in setting standards for pollutants and other stressors.

For more information on the RCMP click here.