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# STRAWBERRY CREEK MANAGEMENT PLAN

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prepared by

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for the

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STRAWBERRY CREEK MANAGEMENT PLAN

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## 1.0 EXECUTIVE SUMMARY

Strawberry Creek represents an irreplaceable natural resource that is highly valued by both the University and community at large. The riparian corridors along the creek are the focus of central campus open space. These areas offer natural contrast to the urban hardscape, acting as a buffer zone which provides visual amenity and variety. The creek corridors also provide essential places for educational, recreational, social and individual activities. Strawberry Creek's value as an educational resource is enhanced by its accessibility and proximity to classroom facilities.

The upper Strawberry Creek watershed located above Oxford Street in Berkeley, CA is composed of two major branches, the North and South Forks. The total watershed area is 1163 acres or 1.8 mi<sup>2</sup>. Stormwater routing as well as stream culverting and channel confinement have significantly altered the natural drainage courses of both forks. The two forks converge at the Eucalyptus Grove on the central campus to form the Main Branch.

The watershed is approximately 40% urbanized, primarily by institutional land uses in the western portion of the watershed. Urbanization has had a profound impact on the hydrologic regime of Strawberry Creek. A significant amount of impervious surface area in the watershed in addition to culverting and confinement of the natural creek channels and stormwater routing have combined to create a very flashy hydrologic regime. The resulting high peak storm flows have accelerated streambank erosion and led to the destruction of aquatic habitat.

Low flow water quality of Strawberry Creek is fairly good in the canyon areas but has been degraded in the urbanized downstream reaches by eutrophic nutrient levels and fecal bacterial contamination. Sewage contamination on the central campus is a major problem. Point source effluent also significantly alters the water chemistry of the North Fork on the central campus. This is due to extensive dilution of natural streamflow levels with point source effluent, predominantly cooling water. Streamflows are doubled by the addition of point source effluent on the central campus during low flow periods.

Stormwater runoff from the entire watershed is routed directly into Strawberry Creek causing significant degradation of water quality. Runoff from streets, parking lots and other urban land surfaces concentrates debris and pollutants deposited by a myriad of sources in the urban environment. This results in substantial increases in chemical oxygen demand, suspended solids, turbidity, organic nitrogen, phosphorus, total and fecal coliform bacteria, as well as trace metals in Strawberry Creek during wet weather. Non-point sources of pollution have a significant short-term "shock loading" effect on the water quality of the creek.

Creek management strategies consist of point source pollution controls, grade control and streambank stabilization measures, as well as riparian and aquatic habitat restoration techniques. The sources of direct discharges into Strawberry Creek need to be further investigated. All wastewaters should be routed to the sanitary sewer system. Rehabilitation of existing grade control structures is essential to prevent further downcutting of the streambed which leads to streambank undercutting and scouring of the streambed. Biotechnical streambank stabilization techniques should be applied in applicable areas to deal with existing bank erosion problems. Management guidelines need to be evaluated and implemented for the designated central campus nature areas which coincide with the riparian corridors of Strawberry Creek.

Best management practices need to be instituted for non-point source pollution control. Priority should initially be given to implementing non-structural stormwater management techniques. An annual monitoring program would enable the continuing evaluation and redefinition of water quality problems.

Environmental management of Strawberry Creek must be far-sighted and comprehensive in scope in order to adequately protect and enhance the creek and its associated riparian areas. The recently formed Creek Environmental Quality Committee should form the basis for long-term management. A multitude of approaches including the updated Long Range Development Plan, environmental impact reports, RFP conditions, and Department of Facilities Management policies and directives can be utilized to ensure consideration of the environmental concerns identified in this report in the campus planning process and operations.