THE ECOCENTER AT HERON'S HEAD PARK
DESIGN FEATURES

The EcoCenter at Heron's Head Park provides a hands-on example of green solutions to negative environmental impact. In its design and intent, the EcoCenter emphasizes *environmental justice* to reflect its location in one of the most historically polluted communities in the region. The EcoCenter is a community-designed initiative, having integrated the voices of hundreds of community members over the course of a decade of planning.

Low-impact landscape solutions, on-site energy generation, and water collection and treatment systems will reduce input from, and output to, the City's electrical and water treatment grid. The Center has no connection to the City's stormwater drainage system. All water that falls on the site is managed through an array of low impact solutions, including rainwater catchment, vegetative roof, bioretentive landscape, permeable pavement, and the use of native plants and high quality soil—establishing the EcoCenter as a regenerative "living building" of the future.

Rainwater Harvesting System
Rainwater harvesting is the practice of collecting and using rainwater from impervious surfaces. The EcoCenter will capture all stormwater that falls on the roofline for reuse in three 4800-gallon tanks located in front of the building. The tanks will provide all primary water to the toilets, vegetative roof irrigation, and on-site irrigation—saving an estimated 224,000 gallons per year of potable water from the Hetch Hetchy Reservoir.

Living Roof
Entirely covered with soil and vegetation, the EcoCenter vegetative roof functions to: Absorb rainwater, preventing water from running off the site and creating channels and gulleys • Provide insulation for the building, which helps to modulate interior temperature • Create a habitat for wildlife, encouraging additional habitat variety and biodiversity • Help lower the "heat island" effect around the building, combating global warming.

Tech Specs: the Living Roof is comprised of monolithic urethane membrane (1.5" foam, 100 mm polyurea coat, 50 mm elastomeric UV coating); capillary mat; 2" pumice rock drain layer; irrigation duct and pipes including a PVC perimeter line with polyethalene netafim laterals; lava stone drain rock base; mulch composed of 50% scoria, 25% coarse sand, 25% organic matter; and plants grown from seed at LEJ's youth-operated Native Plants Nursery.

On-Site Wastewater System with Constructed Wetlands Eco-Machine
Primary Treatment: In the primary sedimentation stage, wastewater flows through large tanks, commonly called "primary clarifiers" or "primary sedimentation tanks." The tanks are large enough that sludge can settle and floating material such as grease and oils can rise to the surface and be skimmed off. The main purpose of the primary sedimentation stage is to produce both a generally homogeneous liquid capable of being treated biologically and a sludge that can be separately treated or processed.

Secondary Treatment: The EcoCenter uses anaerobic digestion as the primary treatment methodology. Anaerobic digestion is a bacterial process that is carried out in the absence of oxygen, and is designed to substantially degrade the biological content of the sewage derived from human waste, food waste, soaps and detergent. Almost any organic material can be processed with anaerobic digestion.

Tertiary Treatment: Water is then run through a ultraviolet radiation light which irradiates all pathogens from the treated water prior to entry into the constructed wetlands. Because no chemicals are used, the treated water has no adverse effect on organisms that later consume it.

Constructed Wetlands: Constructed wetlands are human-made wetlands designed to collect and purify stormwater through microbial transformation, root uptake, absorption, and settling out of solids. Living Machines such as the one at the EcoCenter are engineered systems using plants, various media, and aquaculture to mimic the natural processes involving wetland vegetation, soils, and associated microbial assemblage to assist in treating, and in the case of the EcoCenter polishing, all treated water. The EcoCenter's constructed wetlands provide additional treatment for wastewater prior to disposal through a subsurface irrigation dripfield.

Subsurface Dispersal to Dripfield with Native Vegetation: All treated water will be delivered via a subsurface irrigation dripline to a 2000-square foot area called a "biomat." The field provides an absorption zone for uptake of all recycled water. More than 1000 California Native plants have been used to create an uptake system coupled with high quality soil and sandy loam.

Permeable Pavement

All pathway and hardscaping will be permeable, featuring materials and techniques that allow the movement of water and air around the paving material. This is especially critical at the EcoCenter because there is no tie-in to the City's sewer system, so all water that falls on the site has to be either captured or infiltrate the site.

Native-Only Landscaping

Only Bay Area Native plants will be used on the EcoCenter site. Because native plants have evolved in a particular region over many thousands of years, they have adapted to the climate, geography and animal populations of the region; require less water input; provide more root retention; and are more adept at handling local soils. All plants covering the EcoCenter's dripfield will be irrigated with a subsurface dripline, reducing loss of water due to evapotranspiration and providing a direct feed-in to the roots, the most efficient and water-smart irrigation method.

Literacy for Environmental Justice

The EcoCenter at Heron's Head Park is a project of
Literacy for Environmental Justice
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