

The Lake Merritt Institute

LAKE TRASH REMOVAL, FOUNTAINS, EDUCATION, LAKE MANAGEMENT EXPERTISE

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POSSIBLE SOLUTION TO THE DUCKWEED PROBLEM? As reported in previous newsletters, duckweed washed down from the quarry pond below the Claremont Country Club is a real problem in Lake Merritt. Carried through Glen Echo Creek with every moderate rain event, the tiny plants choke the Glen Echo arm of the Lake, making trash removal all but impossible. They also bring large amounts of nutrients and organic matter to our already eutrophic lagoon, thus contributing to plankton blooms, nuisance seaweed growth and low oxygen problems.

Enter the Grass Carp? Students from "Engineers for a Sustainable World" at UC Berkeley are working with the Institute to gather more information on this problem and consider potential solutions. They have contacted the Club's manager and discovered that grass carp are being considered as a way to resolve the issue. Grass carp are large, non-native fish that eat large quantities of aquatic plants. Because they are considered invasive (prone to escape and multiply out of control) their use is strictly regulated by state departments of fish and game. Typically, only sterile carp are allowed to be stocked. Such grass carp are triploid, meaning that they have three sets of chromosomes, not the usual two. It is impossible to reproduce when you are triploid.



Are grass carp in the future for the Claremont Country Club's duckweed lake?

If their release is approved by the California Department of Fish & Game, these fish might eat enough duckweed to solve the problem. Strictly vegetarian, these Asian monsters often grow to 50 pounds or more.

At that size, the Club's biggest problem might be keeping kids with fishing poles out of the lake!

There is little chance of survival if they escaped from the pond. Glen Echo creek is not a suitable habitat, nor could they live in Lake Merritt's salty waters. This potential solution is certainly better than the continual use of herbicides, and less costly than mechanical harvesting.

STORM DRAIN FILTER STATUS: Lake Merritt is the entry point for 62 storm drains, each of which can carry a load of urban runoff to pollute the water. But before the nasty stuff from two of the drains can reach the Lake, it is filtered through a fine mesh metal screen. Drain outfalls 4 and 5, entering along the shoreline between the Nature Center and El Embarcadero, have such mechanical devices just upstream of the Lake.

This fall, two more filters are scheduled to be installed. Originally, seven sites were considered and four were chosen. But then the City decided that only two were possible. Bids are being accepted and depending on the winners, the resulting filters may be of a different type than those that we have now. If all goes well, construction could be finished by winter. As of now, except for the 12th Street area, there are currently no plans to filter trash from other storm drains, but read on.

Other Sites? Of our 62 storm drain outfalls, 39 are small, only 12-24 inches in diameter. These drain limited areas, typically adjacent to Lakeside Park. Installation of filters on these pipes would be less expensive and could be done within the park (as are the two existing units) thus avoiding most underground utilities. But...tidal flows would carry salty water up into the flat drains, corroding the filters and preventing them from working.

Tide Valves? A potential solution may be the new generation of tidal valves. Each valve is custom made by hand, seals 100% to prevent backflows and has low head loss for low lying areas. They can open with as little as 1 inch of water pressure. San Francisco has installed one below a storm drain filter. After the Institute explained our problem to a manufacturer, an offer was made to the City to provide such a unit free of charge as a demonstration program (a several thousand dollar value). If accepted and if it works, these valves could allow filter installation at 63% of Lake Merritt's storm drain outfalls, thus significantly reducing trash in the Lake.



WHAT'S IN YOUR STORM(LAKE)WATER? “Stormwater” the online Journal of Surface Water Quality Management, recently published an article on bacteria, protozoans and viruses. Not just anywhere, but in stormwater. And of course if these things are in stormwater, they are in Lake Merritt. Last year, stations in the Glen Echo arm consistently had higher (often 8x higher) levels of fecal coliform bacteria than the safe body contact standard. Sadly, the county stopped monitoring for bacteria a year ago. We don't know what's out there now. But, back to the article - a few quotes are in order:

“According to the EPA, of the 54,363 top ... impairments reported through 2002 under the Clean Water Act Section 303(d) list, pathogens made up the largest number, accounting for 7,742 reports.” Lake Merritt is on this list, but not for pathogens.

“Of the designated uses listed in section 303(c) of the Clean Water Act, protection from pathogenic contamination is most important for waters designated for recreation (as is Lake Merritt) ... and protection and propagation of fish, shellfish, and wildlife (as is Lake Merritt).”

In Rhode Island, the Hunt River is listed as impaired due to fecal coliform bacteria. To solve the problem, the Department of Environmental Management developed 14 best management practices (BMP's) including eight structural stormwater BMP's and two that discouraged the presence of resident waterfowl. “A public outreach program was recommended to educate the public about the impacts that resident waterfowl can have, and about the potential health risks associated with encouraging these waterfowl... .” Additional education included pet waste cleanup.



In Lake Merritt, significant sources of fecal coliform bacteria include: Feces from the summer population of 2,000 geese, as shown accumulated here (see photo to left); manure runoff from Fairyland animals (currently being addressed with DD funds) and urban runoff from 4,650 acres, including fecal material from pets and wild animals.

In Long Beach, CA the Public Works Department has approved a one million dollar pilot project to install and monitor an Ultra-Urban Filter series with Smart Sponge Plus anti-microbial technology. According to an article in “Stormwater” the filters capture sediment and debris while allowing a large amount of water to flow through. They also have a patented, anti-microbial agent chemically bound to the polymer which destroys the cell wall of a bacterial cell. This deactivates micro-organisms without using poisons, and maintains long-term effectiveness according to the manufacturer. Go to www.abtechindustries.com/pressreleases.asp for more information.

RUNOFF / FLOOD CONTROL EDUCATION; VICTORIA STYLE: This storm drain outlet at Cecelia creek in Victoria, Vancouver has its 2 year and 25 year storm levels etched in concrete. What a great idea! Permanent public education. This standard flood control terminology refers to the level of water that would occur during a storm event that would happen every 2 or 25 years based on previous data for the watershed. It is a statistical estimate. Actual events could include several 5 year storms in one year, or none for 10 years. But statistically, based on the data, we can calculate the probability of storm events and the height of their floods, and plan accordingly. For example, the National Flood Insurance Program is based on the 100 year storm for local watersheds.

Someday, perhaps at the proposed Glen Echo Creek project as proposed by Joe Trapp and the neighborhood group, we can mark the flood levels in concrete. How about it Joe? As shown below, another etching along the walkway provides a thoughtful, philosophical comment.



Note marked flood plain levels



“Water is the Blood of the Earth”

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