Sent: Tuesday, June 19, 2012 6:11 PM

Terry,

After a careful review of the Pace Analytical report, it is my opinion that the fireworks displays at Warner Park represent no long term environmental hazard to the lagoon waters or its sediments.

I am still working on a more detailed assessment of the the Pace report, to include discussions of the "metals" and "polycylic aromatic hydrocarbons (PAH)" detected. This assessment will serve to provide you with background information to use when addressing environmental concerns which may be raised.

Note: In analytical chemistry parlance, the word "determine" means to conduct qualitative (what it is) and quantitative (how much) analyses. Pace Analytical thus determined the metals, non-metals and the PAH in the sediment samples.

Attached is a table which lists the elements which Pace determined and for comparison the concentration of several elements in common which are present in a vitamin tablet. More about this in my forthcoming assessment.

KR, Roger

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The table lists the elements which are reported by Pace Analytical (Pace) to be present in their sediment samples, SED-1, -2, -3, and -4, and for comparison, the elements present in a women's Centrum brand, Silver Ultra vitamin tablet (label listing). The Pace data are provided as dry weight in milligrams (mg) of the element per kilogram (kg) of sediment (mg/kg). The elements in the vitamin tablet are present in either milligram or microgram (mcg) quantities in each tablet of average mass of 2.25 grams. All the concentrations of the elements shown in the table have been converted to mg/kg which is equivalent to parts per million (ppm). The elements which may be present in the pyrotechnic compositions used in display fireworks are shown in **boldface.**

Element	SED-1	SED-2	SED-3	SED-4	"Centrum Silver" vitamin tablet
aluminum (Al)	12,600	10,700	10,700		
antimony (Sb)	3.5	2.0	3.1		
arsenic (As)	5.8	10.6	7.0	8.1	
barium (Ba)	142	108	125	124	
cadmium (Cd)	0.51	0.59	0.58	0.46	
chromium (Cr)	24.8	25.6	41.0	30.1	22
copper (Cu)	38.4	38.4	65.1	45.7	222
iron (Fe)	16,300	15,600	15,700	17,200	3,560
lead (Pb)	47.9	77.7	72.7	72.3	
manganese (Mn)	300	319	369	327	1,022
nickel (Ni)	18.0	18.4	20.5	19.8	2.2
potassium (K)	1,730	1,540	1,540	1,650	35,555
selenium (Se)	3.4	2.4	2.4	3.9	24,450
strontium (Sr)	27.2	29.2	39.6	28.9	
zinc (Zn)	167	231	372	235	6,670
phosphorus (P)	1,250	1,170	1,320	1,230	8,890
sulfur (S)	74.0	309	174	88.7	
calcium (Ca)					222,000
iodine (I)					67
magnesium (Mg)					22,222
chlorine (Cl)					32,000
boron (B)					67
silicon (Si)					889
vanadium (V)					4.4