WATER QUALITY MEASUREMENT AT THE SWIMMING POOL (PISCINA ALUMNI) AT THE MAYAGUEZ CAMPUS OF THE UNIVERSITY OF PUERTO RICO

PERFORMED BY

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At the request of Mr. Félix H. Prieto, Director of Water Resources Research Institute, a series of measurements of dissolved oxygen (DO), biochemical oxygen demand (BOD_5), and total coliform levels were carried out at five sampling stations within the swimming pool at the Mayaguez Campus of the University of Puerto Rico. Measurements were made daily from 25 July to 2 August 1972, using samples taken from the surface of the pool. DO determinations were made by means of the modified Winkler Method, and BOD and coliform determinations were made by standard methods described in "Standard Methods of Water and Waste Water" by American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1971.

The swimming pool contains 5 million gallons of chlorinated water which is continnously pumped through a closed filtration system at the rate of 1900 gal/min. Input/output ducts are distributed throughout the pool, and the water is assumed to be thoroughly mixed. Figure 1 illustrates the orientation of the pool, and the location of the five sampling stations within the pool. The pool is 50 meters long, 25 meters wide, and 4–6 feet deep throughout.

No unusually high concentrations of any of the measured parameters were found to exist at any one sampling station, verifying the assumption that the water is well mixed. BOD, DO and coliform levels were all considered to be good. Coliform levels were well below the limit of 1000/100 ml set by Environmental Protection Agency, United States for public swimming areas. The only unusual

variation occured on 1 August when the average coliform concentration at the five stations jumped from 4/100 ml on the previous day to 72/100 ml. By the following day (2 August) the average coliform level had dropped to a value too low to be measured. The high coliform concentration on 1 August apparently was caused by a malfunction of the pumping system. Values of DO, BOD, and coliform concentration measured at the five stations during the seven days when observations were made are given in Tables 1, 2, and 3, respectively.

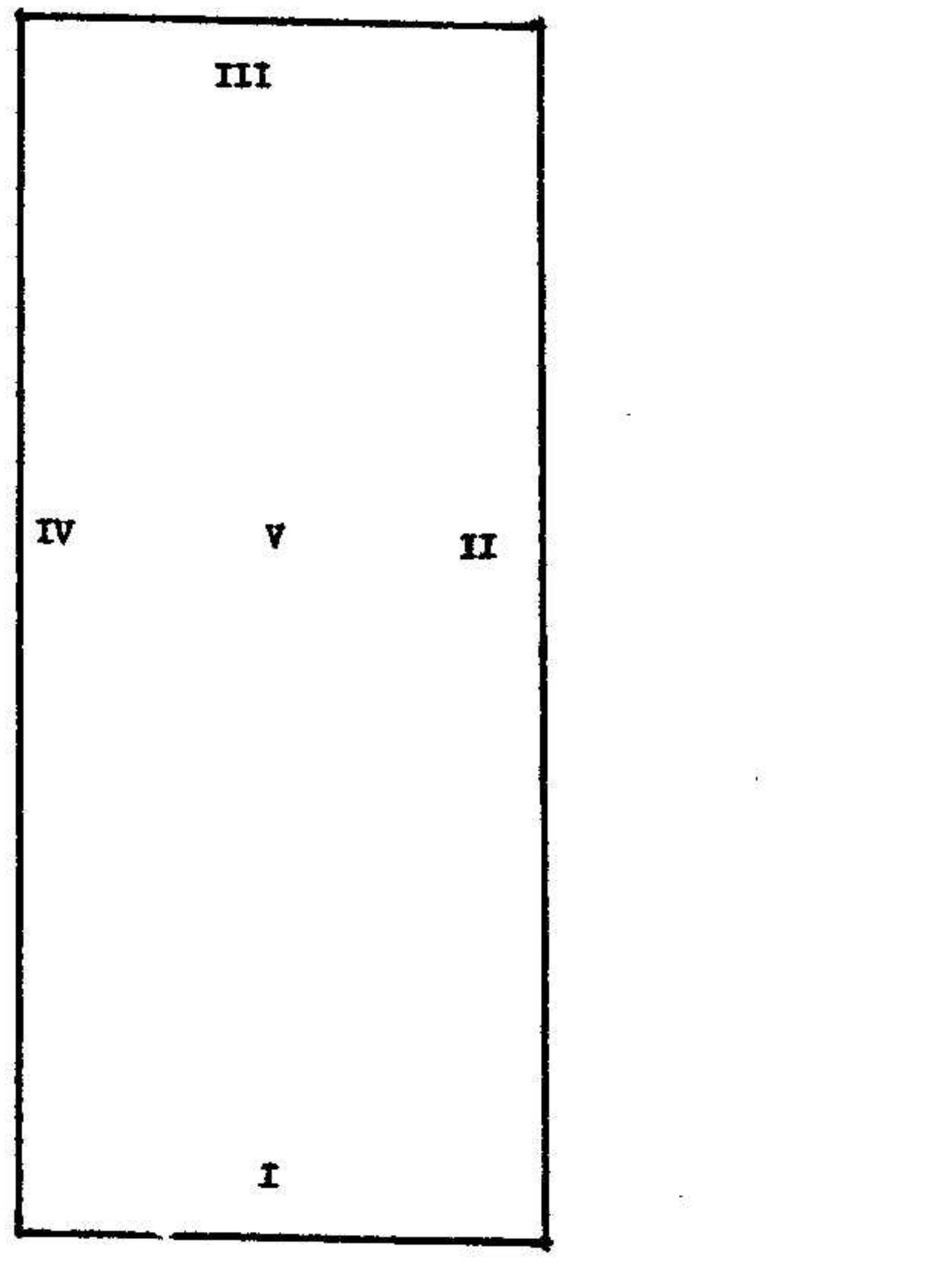

Figure 1 Location of Stations in Swimming Pool.

TABLE I DISSOLVED OXYGEN (MG/L)

	I	II	III	IV	V	Average
July 25, 1972	7.89	7.81	7.85	7.87	7.85	7.85
July 26, 1972	7.90	7.85	7.92	7.92	7.84	7.89
July 27, 1972	6.82	6.87	7.11	7.10	6.96	6.97
July 28, 1972	7.39	7.21	7.36	7.21	7.21	7.28
July 31, 1972	7.62	7.49	7.48	7.57	7.65	7.56
August 1, 1972	7.03	6.90	7.67	6.54	7.10	7.05
August 2, 1972	9.18	8.88	8.91	8.71	8.93	8.92
Average	7.69	7.57	7.76	7.56	7.65	

TABLE 2 BIOCHEMICAL OXYGEN DEMAND (MG/L)

	I	II	III	IV	V	Average
July 25, 1972	0.48	0.65	0.76	0.64	0.88	0.68
July 26, 1972	1.48	1.15	0.97	0.87	0.67	1.03
July 28, 1972	0.03	0	0	0	0	0.01 (min)
July 31, 1972	0.98	-	0.56	-	-	0.31
August 1, 1972	0.34	0.14	0.44	0.42	0.35	0.34
August 2, 1972	1.24	0.88	1.06	0.70	0.64	0.90
Average	0.76	0.47	0.63	0.44	0.42	

TABLE 3 TOTAL COLIFORM (MF/100 ml)

	I	II	III	IV	V	Average (mean)
July 25, 1972	10	0	0	0	0	2.0
July 27, 1972	0	0	0	10	10	4.0
July 28, 1972	10	10	10	0	0	6.0
July 29, 1972	0	0	0	0	0	0
July 31, 1972	0	10	10	0	0	4.0
August 1, 1972	50	80	40	140	50	72.0
August 2, 1972	0	0	0	0	0	0.0
Median	10	10	10	10	10	