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156-02162-810-30

HYDROLOGIC STUDIES, WALLER CREEK WATERSHED

- (b) Cooperative with U.S. Geological Survey.
- (d) Field investigation; applied research.
- (e) Measurements of rainfall and runoff for a 4-square mile and a 2-square mile portion of the Waller Creek watershed are being made to provide basic information for estimating runoff from small urban watersheds in the Southwest area. Two stream flow stations and a rain gage net are in operation. Studies of the correlation between runoff, rainfall, and the characteristics of the drainage basin are being made by various proposed methods to serve as a base comparison with the data as it is collected.
- (g) Data has been collected since 1956 by the U.S.G.S. and for later years is available in special reports listed below. Data has been used in a number of hydrologic studies and its use will continue.
- (h) **Compilation of Hydrologic Data, Waller and Wilbarger Creeks, Colorado River Basin, Texas 1966**, Geological Survey, Water Resources Division, Austin, Tex.

156-05456-810-15

MATHEMATICAL MODELS FOR RELATING RUNOFF TO RAINFALL

- (d) Master's and Doctoral research based on computer analysis and field data.
- (e) Starting with the Stanford Watershed Model a revised procedure for numerical simulation of watershed hydrology was developed with emphasis on providing a more realistic simulation of infiltration and soil moisture movement. Most recently the simulation program is being used to investigate the effect of lawn watering on runoff on the Waller Creek Watershed in Austin, Texas, where both rainfall and artificial watering support lawn growth. The program is being used to see if the higher level of soil moisture maintained by lawn watering affects the amount of runoff from natural rainfall and thereby compensates to some extent for water used for lawn irrigation. Also some comparisons are made between a few measured soil moisture measurements and simulated values of the soil moisture.
- (g) Current results show some increase in simulated runoff when lawn irrigation is included, indicating a compensating effect.
- (h) **Evaluation of Urban Runoff by Watershed Simulation**, W. E. Skipwith, University of Texas at Austin, Austin, Tex., May 1976.

156-08314-430-00

FLOATING BREAKWATER DESIGN

- (c) Dr. Walter L. Moore.
- (d) Experimental; applied research; Master's or Doctoral thesis.
- (e) Active investigation was started in 1970 of a new concept for a floating breakwater. The breakwater minimizes the required anchoring forces and the amplitude of the transmitted wave by causing the wave forces on different parts of the structure to balance one another. Two sets of reflecting surfaces are arranged so the offset between them is approximately one-half the wave length of the largest waves anticipated at the site. Tests in wind generated waves indicated effective wave attenuation for the full range of waves from 1.2 times the design wave down to the smallest wave lengths. A patent on the invention was granted in 1974.
- (h) **The WAVEGUARD™ Offset Surface Floating Barge**, R. J. Taylor, D. B. Jones, *TM M-42-76-16*, Civil Engrg. Lab., Naval Construction Battalion Center, Port Hueneme, Calif. 93043, Sept. 1976.

Corps of Engineers Technical Letter, Engrg. & Design-Floating Breakwater, *Engrg. Tech. Letter 1110-2-202*, Dept. of the Army, Office of the Chief of Engineers, Mar. 1975.

A Stable Offshore Work Barge Using the Offset Reflecting Surfaces Principle, W. L. Moore, J. E. Dailey, J. M. Nash, D. P. Tuterea, *Proc. 3rd Intl. Ocean Development Conf.*, Tokyo, Japan, Aug. 1975.

156-09065-870-00

PREDICTION OF COOLING POND RESPONSE TO WASTE-WATER INFLOWS

- (b) Bureau of Engineering Research.
- (c) James E. Daily, Asst. Professor of Ocean Engrg., Dept. of Civil Engineering.
- (e) In water-short areas such as South Texas, an attractive possibility for improving stream quality and/or supplying anticipated cooling water requirements of electric power plants is direct flow of wastewater effluents to cooling ponds. Feasibility of direct inflows depends on algae buildup with subsequent condenser fouling and the quality of water discharged from ponds to natural streams. Objective of the research is to develop a predictive ecological model of cooling pond response to wastewater inflows. Quantitative prediction of algae buildup and discharge water quality by this model will enable accurate assessment of wastewater inflow feasibility.

156-09066-470-60

LOW COST BUOY BARRIERS FOR BOAT RAMP PROTECTION

- (b) State of Texas, Parks and Wildlife Department.
- (c) James E. Dailey, Asst. Professor of Ocean Engrg., Dept. of Civil Engineering.
- (e) At state boat ramp facilities, waves created by passing ships or sudden storms occasionally create uncontrollable situations for boatmen launching or recovering their boats. To reduce the risk of personal injury and property damage, the feasibility of using commercially available plastic shapes to erect a barrier which will dissipate the energy of wave action is being studied. A comparatively low-cost barrier is sought which can be installed easily in the field, using minimum manpower and equipment.

156-09067-410-54

ESTABLISHMENT OF OPERATIONAL GUIDELINES FOR TEXAS COASTAL ZONE MANAGEMENT

- (b) National Science Foundation, Research Applied to National Needs Program, Office of the Governor, State of Texas, Division of Planning Coordination.
- (c) James E. Dailey, Asst. Professor of Ocean Engrg., Dept. of Civil Engineering, or E. G. Fruh.
- (g) See WRRC 9, 6.0941.

UTAH STATE UNIVERSITY, Utah Water Research Laboratory and Utah Center for Water Resources Research, Logan, Utah 84322. Dr. L. Douglas James, Director.

157-0418W-810-00

SORPTIVITY: A FEASIBLE CONCEPT FOR INFILTRATION ESTIMATION ON SMALL RANGE AND WATERSHEDS?

For summary, see Water Resources Research Catalog 11, 2.0294.

157-0419W-840-00

IMPACT OF WATER AND SOILS WITH HIGH SOURCE-SINK POTENTIALS ON IRRIGATION MANAGEMENT IN THE UPPER COLORADO RIVER BASIN

For summary, see Water Resources Research Catalog 11, 2.0418.