Newsletter Proposal
Issue Prepared

This newsletter is a proposal issue. It has come about at the suggestion of a number of individuals, both of the Utah Water Research Laboratory and the Utah Center for Water Resources Research, who have felt the need for such a medium.

The proposal newsletter contains types of information that could be included in such a publication and suggests a format.

The newsletter was economically reproduced merely to give readers a feel for the format. If the newsletter were a reality, it is expected that production would be of sufficient quality for pictures.

A proposal for the newsletter appears on page 2 as an editorial.

Water Quality Program Expands at Laboratory

A rapidly growing area of active research at the Utah Water Research Laboratory is in water quality. Five projects are currently in progress and three new ones are scheduled to begin in July. The current projects have brought some $500,000 to the University, and the new projects will add another $175,000.

In the study, "Sequential Use within a Hydrologic Complex," a computer modeling procedure is being developed to simulate the quantity-quality flow system in a river basin. Project leader is Dr. David W. Hendricks, Associate Professor, UWRL, and sponsors are the FWPCA and the UWRL.

The applicability of an electronic analog computer as a means to better understand the various parameters involved in describing water quality is being demonstrated in another FWPCA sponsored project, "Electronic Analog Simulation of the Salinity Flow System within the Upper Colorado River Basin." Dr. J. Paul Riley, Associate Professor, UWRL, is project leader.

The objective of a "Water Quality Telemetry" study is to show the technical and economic feasibility of radio telemetry water quality data from remote sites to a central station. Two remote stations have been installed, and have demonstrated both technical and economic feasibility. The project is FWPCA sponsored, and Duward Woffinden, Research Engineer, UWRL, is project leader.

Two theoretical laboratory studies are "Bacterial Adsorption of Soil" (sponsored by FWPCA) and "Sorption Kinetics in Flow through Granular Particles" (sponsored by the U.S. Public Health Service). Project leader for both is Dr. Hendricks.

The new projects scheduled to begin in July are "Thermodynamics of Waste Stabilization Ponds," Dr. Hendricks, project leader; "Optimum Design of Waste Stabilization Ponds," Gary Z. Watters, Associate Professor, Civil Engineering, project leader; and "System Economic Response to Water Quantity and Quality," Dr. Hendricks, project leader.

The new projects are all sponsored by the Office of Water Resources Research.
'Cascade' For News Is Proposed Outlet

It is proposed that a monthly newsletter be established at the Utah Water Research Laboratory to keep laboratory personnel, colleagues, and decision makers throughout the state and region informed of laboratory activities and of pertinent items such as legislative and legal action.

The newsletter would be both internal and external. Although local activities would be the main concern, features, guest editorials, and notes and quotes of other sources would be utilized.

Sponsor and Audience

It is proposed that the Utah Center for Water Resources Research be invited to co-sponsor the newsletter with the Utah Water Research Laboratory. This would give the Center an outlet for its activities, and would put it in contact with other Water Resources Center through a regular newsletter.

The newsletter would be directed to staff of both the Center and the UWRL. It would also be somewhat directed to those decision makers in the state and region whose decisions concern water (such as Utah Water Users Assn.)

Newsletter

It is proposed that an editorial board be established to form the editorial policy of the newsletter. The policy would provide that the editorial board (or one appointed by it) make final selection of material to be included in each newsletter, and to establish the guidelines for the publication.

It is proposed that the newsletter contain news items, features, coming events, editorials, outstanding research, new publications, legal and legislative items pertinent to water research, and brief notes and quotes. The format would be standard (standard mast head, use of pictures, dimensions). The number of pages could be flexible, news and budget permitting.

The newsletter would be sent to Center and laboratory personnel, and other university colleagues interested. It would be sent to all Water Resources Research Centers throughout the country, and to state and regional organizations concerned with water. It is proposed that the distribution and mailing be handled through the Distribution Center on campus.

Estimated cost per issue (1000 copies)

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J. Paul Riley, Duane G. Chadwick, and Keith O. Eggleston, presented a paper "Snowmelt Simulation" at the 37th Annual Meeting of the Western Snow Conference in Salt Lake City April 15-17.

Degrees Earned By UWRL Staff

Five professional staff members of the UWRL have received or will receive academic degrees this year.

Earl Israelson, Research Engineer, received the Ph.D. degree in Hydrology from the University of Arizona at Tucson in September. Dissertation: "The Effects of Suspended Sediment Temperature Frequency and Dissolved Salts on the Dielectric Properties of Water."

James H. Milligan, Research Engineer, will receive the Ph.D. degree in Civil Engineering from USU in June. Dissertation: "Optimizing Conjunctive Use of Groundwater and Surface Water."

V.V. Dhrulu Narayana, Assistant Research Engineer, will receive the Ph.D. degree in Civil Engineering from USU in June. Dissertation: "Analog Computer Simulation of the Runoff Characteristics of an Urban Watershed."

Don L. Griffin, Research Engineer, will receive the M.S. degree in Electrical Engineering from USU in June. Thesis: "A Phase-Lock Tracking Filter for Use in the Recovery of Low-Level Telemetry Data from Noise."

Lynn McKee, Assistant Research Engineer, will receive the M.S. degree in Civil Engineering from USU in June. Thesis: "Design Principles for the Surveillance of Salinity in River Systems."

Cascade A Monthly Newsletter

Utah Water Research Laboratory
Utah Center for Water Resources Research
Utah State University

President, USU
Director, UWRL
Chairman, UCWRR
Editor

Editorial Board
Pollution Expert Joins Staff

A. A. Kalinske, internationally known in the field of fluid dynamics and sanitary engineering, has joined the staff of the Utah Water Research Laboratory at Utah State University.

"Professor Kalinske is expected to add considerable strength and stature to a steadily growing research program in water pollution," according to Dr. Jay M. Bagley, Director, UWRL.

Professor Kalinske will be working in the areas of thermal pollution and municipal and industrial water and wastes treatment processes, Dr. Bagley said. He will also teach and direct graduate students in the Civil Engineering Department.

At Eimco

Prior to his USU appointment, Prof. Kalinske had been with the Eimco Corporation in Salt Lake City since 1965. At Eimco he was director of sanitary research and development where he directed biologists and chemical and sanitary engineers in developing processes and equipment to purify water, treat industrial wastes and sewage, and reclaim water from waste effluents.

Prof. Kalinske has degrees in hydraulic and sanitary engineering from the University of Wisconsin at Madison. He was a faculty member in the College of Engineering at the University of Iowa, Iowa City, where he did teaching and research in fluid dynamics. Some of his early research in fluid turbulence and aeration and diffusion processes is still recognized as a major contribution which has found wide application in water and waste treatment.

During World War II he was part-time consultant on fluid mechanics problems to the U.S. Navy, Bureau of Ships, and Bureau of Ordnance. He also carried on special research studies on atmospheric diffusion for the Chemical Warfare Service.

With Infilco

In 1946 he left the University of Iowa to join Infilco, Inc., at Tucson, Arizona, as Chief Hydraulic Engineer. Infilco, Inc., which is now a part of Fuller Company owned by General American Transportation Corporation, manufactures water and waste treatment equipment. He became vice president and technical director at Infilco, and was there until 1965.

Prof. Kalinske is a fellow of the American Society of Civil Engineers, a member of the American Water Works Association, the Water Pollution Control Federation, and the American Chemical Society. He is the author of some 50 technical papers in the fields of fluid mechanics and water and waste treatment processes.

A.A. KALINSKE...j oins UWRL staff.

Notes & Quotes

J. E. Christiansen, UWRL, recently presented a paper with G. H. Hargreaves at the International Commission on Irrigation and Drainage in Mexico City. The paper was entitled "Irrigation Requirements from Evaporation." Hargreaves is Agricultural Advisor, USAID, at Colombia.

Allan Karchner, Assistant Professor, Neal Dixon, Assistant Research Engineer, and David Hendricks, Associate Professor, attended the 24th Annual Industrial Wastes Conference at Purdue University May 6, 7, and 8. They presented the paper "Modeling Diurnal Fluctuations in Temperature and Dissolved Oxygen."

Six Projects Funded For UCWRR

Six new projects of the Utah Center for Water Resources Research have been tentatively approved to begin in July, according to Dr. C. Earl Israelson, UCWRR Secretary.

Allotment grants include: "Thermodynamics of Waste Stabilization Ponds," project leader—David W. Hendricks, Associate Professor, UWRL; "Contributions of Vegetation and Substrate to Water Quality in Wildland Watersheds," project leaders—George E. Hart, Jr., Assistant Professor, Forest Science, and Alvin R. Southard, Associate Professor, Soils and Meteorology; "Optimum Design of Waste Stabilization Ponds," project leader—Gary Z. Watters, Associate Professor, Civil Engineering.

Matching fund grants include: "Detection of Magnetic Fields Caused by Groundwater," project leader—Duane G. Chadwick, Associate Professor, UWRL; "Study of Water Institutions and Their Effect on Planning and Management Functions," project leader—Frank W. Haws, Research Engineer, UWRL; "Hybrid Computer Simulation as Applied to Management of Water Salinity within a Hydrologic System," project leader, J. Paul Riley, Associate Professor, UWRL.

The grants are made by the Office of Water Resources Research in Washington, D.C., and are subject to appropriation and availability of the fiscal year 1970 funds.

Coming Events

Graduate Seminar — Dr. Reuben M. Olsen, Professor of Civil Engineering at Ohio University and author of Essentials of Engineering Fluid Mechanics will present a talk of "Teaching Careers in Fluid Mechanics." The seminar will be May 8, at 11:30 a.m. in Engineering C-103.
Hydraulics Confab
Planned at USU

The Hydraulics Division of the American Society of Civil Engineers will hold its annual "Specialty Conference" at Utah State University August 20-22.

The technical program will include presentation of some 50 papers in 12 sessions on various aspects of hydraulics, according to Dr. Calvin G. Clyde, assistant director, Utah Water Research Laboratory, conference chairman.

Special activities are being planned for those who attend the conference and their wives and children.

Hosts of the conference are the Utah Water Research Laboratory, the Civil Engineering Department, and the Agricultural and Irrigation Department of Utah State University, and the Utah Section of ASCE.

Serving with Dr. Clyde, general chairman, are, technical program chairman, Varne Scott, University of California at Davis, and assistant general chairman, Gary Z. Wetters, Utah State University; and Jay M. Bagley, Director and Professor, UWRL.

The publication is available at the laboratory for $10 a copy.

Other Publications
Other recent publications include:
PRWG64-1 "Electronic Analog Computer Simulation of the Paez-Pedraza Region of Venezuela," by J. Paul Riley, V. V. Dhruba Narayana, and Kousoum S. Sakhan.
PRWG30-7 "USU Telemetering Precipitation Gage Network," by C. Earl Israelson and Don Griffin.

These publications are available from the Utah Water Research Laboratory, Utah State University, Logan.

Hydrologic Atlas Completed

A report "Hydrologic Atlas of Utah" has been prepared by the Water Research Laboratory and Utah Agricultural Experiment Station in cooperation with the Division of Water Resources, Utah Department of Natural Resources.

The Atlas was prepared to provide information about hydrologic and climatologic occurrences for a variety of design and planning needs.

Information on a statewide basis is given for precipitation, temperature, surface water, groundwater, and water quality. For each of these a section of the Atlas gives sources and tables of basic data; a subsequent section analyzes the data; and finally, maps and charts have been prepared.

Authors of the Atlas are: Roland W. Jeppson, Assistant Professor, UWRL; Gaylen L. Ashcroft, Associate Professor, Soils and Meteorology; A. Leon Huber, Research Engineer, UWRL; Gaylord V. Skogerboe, former Research Engineer, UWRL, and now at Colorado State University; and Jay M. Bagley, Director and Professor, UWRL.

Mailing Address Label
Aquarius to Carry News

This is the first issue of Aquarius, a newsletter of the Utah Center for Water Resources Research and the Utah Water Research Laboratory.

The newsletter has been initiated to keep laboratory personnel and center associates, colleagues, and decision makers throughout the state informed of Center and Laboratory activities, and of pertinent legislative and legal actions related to water.

Included in the newsletter will be news items, research notes, and announcements such as new staff, recent publications, and scheduled seminars and conferences.

Weather Modification Test Site Installed on Mount Pisgah

An instrumentation test site is being installed on top of Mount Pisgah in the south end of Cache Valley as part of the Wasatch Weather Modification project at the Utah Water Research Laboratory.

This particular test site is part of a large network of telemetering precipitation gages and cloud-seeding generators located throughout northern Utah, southern Idaho, and western Wyoming. Precipitation catch data are sent by radio from each station in the network to the UWRL where they are automatically recorded and are used in evaluating weather modification techniques that are being tested under sponsorship of the Bureau of Reclamation's atmospheric water resources program.

Dr. C. Earl Israelsen, a project co-leader for the experimental study, said that instrumentation at the Mount Pisgah site will include a silver iodide generator and wind and temperature sensors, all of which will be controlled and monitored remotely from the laboratory at Logan.

"As winter storms move into Cache Valley from the west," he explained, "the generator will be ignited and will supply large quantities of tiny silver iodide particles to clouds moving overhead. The particles act as nuclei around which ice crystals form. They, in turn, fall to the ground as snow flakes further downwind."

"The ultimate goal of the program is to be able to increase the amount of snow that falls in the mountains in wintertime so that water supplies during the summer will be adequate."

An important part of the test-site installation was burying an electrical power cable from the highway at Wellsville summit to the top of the mountain.

Bell Telephone Company cooperated by lending one of their heavy-duty cable layers which made the job possible in the extremely rocky terrain.

Mr. Thad A. Carlson, Manager of the Bell Telephone Company in Logan, arranged for the UWRL to use the cable layer, and Dr. Israelsen said this resulted not only in substantial savings to the project of time and money, but rendered the installation possible.
H. Garland Hershey Named Director
Office of Water Resources Research

Newly appointed Director of the Office of Water Resources Research (OWRR) is Dr. H. Garland Hershey, former State Geologist for Iowa.

In his new post, Dr. Hershey will supervise the work of OWRR in sponsoring and financially aiding water research projects carried out under the direction of state universities and other research groups.

The projects cover a wide range of water problems and are designed to meet the nation's growing demands for water resources, clean streams, and new water supplies. They also provide extensive on-the-job training in water resources for many college graduate students.

Dr. Hershey, of Iowa City, has over 30 years experience with water problems. He was State Geologist for 22 years and represented Iowa in its relations with the U.S. Geological Survey.

The new Director of OWRR has served as Chairman of the Midwestern States Flood Control Conference and of the Interstate Conference on Water Problems. He was also Vice President of the National Water Conservation Conference and of the Rivers and Harbors Congress.

CUSUSWASH Holds
Research Conference

On October 24 and 25, the Council of Universities for Soil and Water Development in Arid and Sub-humid Regions (CUSUSWASH) held its second research conference in Logan, according to Executive Secretary, Dr. A. Alvin Bishop, Head of the Agricultural and Irrigation Engineering Department at USU.

The university consortium consisting of the University of California, University of Arizona, Colorado State University, and Utah State University was formed primarily to assist the Agency for International Development (AID) in its research program overseas in soil and water fields. Top officials of AID also attended the meeting.

USU has received two grants from AID for this purpose, according to Dr. Bishop.

UCWRR Chairman
Returns to USU

Dean D. F. Peterson recently returned from his assignment as Director of the Water for Peace program in Washington, D.C., and has officially resumed his position as Chairman of the Utah Center for Water Resources Research. Jay M. Bagley has been acting chairman in Dean Peterson's absence, and he will remain on the UCWRR Council. Other Council members are J. Whitney Floyd, Kenneth W. Hill, Ralph Johnson, Yvear R. Smith and D. Wyrne Thorne.

Top Priority to be Given
For Improving
Urban Water Management

"Metropolitan water problems affect the livelihood and well-being of three-fourths of the American people and involve billions of dollars of investment," Secretary of the Interior Walter J. Hickel said in announcing that he has ordered the Office of Water Resources Research to give top priority to improving water resources management in the metropolitan areas of the country.

"With water quality and water quantity requirements rising as the population grows," he added, "these problems can have profound effects on water resources management and on the enhancement of the environment.

"The major purposes of water resources research," he said, "are the improvement of knowledge and understanding, and relating these meaningfully to decision-making and to technological improvements. In working toward these goals, OWRR will prepare a program to provide greater cooperation and coordination between federal agencies, state and local governments, and academic and other research organizations."

Secretary Hickel said Carl L. Klein, Assistant Secretary for Water Quality and Research, would supervise the OWRR in developing a new national program of research in this field.

Work on organizing the new program will involve consultation with technical experts in urban water research and practice. The planned program will then be reviewed and discussed at a national conference of experts to assure its technical and practical soundness.

AQUARIUS
A newsletter of the
Utah Center for Water Resources Research
Utah Water Research Laboratory
Utah State University

Glen L. Taggart...President, USU
D. F. Peterson..Chairman, UCWRR
Jay M. Bagley...Director, UWR L
C. Earl Israelson..Secretary, UCWRR
Donna Falkenberg...Editor

The newsletter will be sent free of charge to those requesting it.
News Notes

V. V. Dhruba Narayana and J. Paul Riley, UWRL, are authors of a paper "Simulation of Runoff from Urban Watersheds" presented at the Environmental Engineering meeting of the Irrigation and Drainage Division of ASCE October 14 and 15 in Chicago. Their paper was presented by Eugene K. Israelsen, UWRL.

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A paper "Low Cost Water Quality Monitoring by Radio Telemetry" by Duard S. Woffinden and Allen D. Kartchner, UWRL, was presented by Dr. Kartchner at the 42nd Annual Conference of the Water Pollution Control Federation at Dallas, Texas, October 5 through 10.

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Duard S. Woffinden presented the paper "Low Cost Water Quality Monitoring by Radio Telemetry" at the International Telemetering Conference in Washington, D.C., September 15-17. The paper was written by Woffinden and Allen D. Kartchner.

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New president for the Utah Section of the American Society of Civil Engineers is Dr. Calvin G. Clyde, Assistant Director, UWRL.

Dr. Clyde was president-elect last year, and his new term of office will be until next October.

Serving with him are Paul Wilmore, Salt Lake City, as president-elect, and Lew A. Wanggard, Ogden, as secretary-treasurer, both are USU graduates.

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Richard E. Griffin, Extension Water Resources Specialist, and Dean F. Peterson, Director of the Utah Center for Water Resources Research, were guests of the Board of Directors of the Central Utah Water Conservancy District on an inspection and business trip to Lake Powell, September 30.

Directors attending included Clyde Ritchey, Chairman, Heber City; Wallace Jeffery, Delta; Leo Hauer, Myton; and Robert Hilbert, Salt Lake City.

The group discussed a number of problems of water resource development and management throughout the State.

Research Note

Water Quality Monitoring System Features Low Cost, Small Size

Low cost and small size are prime features of a radio telemetry water quality monitoring system designed and constructed at the UWRL through a water quality telemetry project sponsored by the Federal Water Pollution Control Administration.

Duard S. Woffinden and Allen D. Kartchner were project leaders for the research study.

The system, as explained by Woffinden, consists of a central base station at the laboratory and remote field stations located in the river to be studied. The remote field stations remain on standby until interrogated from the central base station.

Each station is capable of measuring dissolved oxygen, hydrogen ion concentration, electrical conductivity, and temperature. Other variables could be monitored by using appropriate sensors, he added.

Both low cost and relatively small size, which characterize the UWRL system, are realized through the use of printed circuit boards and integrated circuit amplifiers. The remote station is small enough to be portable and can be installed either permanently or temporarily at almost any river location with a minimum of effort, Woffinden explained.

Such a system, costing about $3,000 per field site, will make feasible the monitoring of water quality at points which previously were uneconomical to investigate.

Details on the system are given in the final report, "Water Quality Telemetry," by Woffinden and Kartchner, which is available at the UWRL.

Hydraulics Specialist Joins UWRL Staff

Research areas of hydraulics, fluid mechanics, and hydrology have been strengthened at the UWRL with the addition of Dr. Chien-jung Chen to the staff.

For the past three years Dr. Chen has been an Associate Professor of Civil Engineering at the University of Illinois at Urbana. Before going to Urbana, Dr. Chen was an Associate Professor at the UWRL. He taught courses and did research in hydraulics, fluid mechanics, and hydrology.

Dr. Chen received the Ph.D. degree from Michigan State University in 1962, and was involved in teaching and research there until he joined the UWRL staff in 1964. He received the B.S. degree from the National Taiwan University in 1954, and the M.S. degree from Michigan State University in 1960.

Visiting Professor at UWRL

Dr. W. J. Morris, a professor from The City University, London, England, is spending a year at the UWRL as a visiting professor.

He is working on research in simulation of hydrologic events using a new hybrid computer recently obtained by the laboratory.

Dr. Morris lectured in hydrologics and hydrology for the Civil Engineering Department at The City University and will return there next fall to continue his research and teaching.
Report Characterizes Large Bed Streams

Theoretical means of characterizing size, size distribution, spacing, and shape of bed elements in hydraulically significant terms for large bed element streams are discussed in a recent report, "$H_{ydraulics of Large Bed Element Channels}," by Hali E. Judd and Dean F. Peterson.

The 115-page report, PRWG17-6, is available from the UWRL for $2.50 a copy.

Other recent publications include:

Utah Center for Water Resources Research
Utah Water Research Laboratory
Utah State University
Logan, Utah 84321

New Project Funded

"Development of Inverse Numerical Methods for Solving General Three-dimensional Free Surface Potential Flows," is the purpose of a new project at the UWRL funded by the National Science Foundation.

Principal investigator is Roland W. Jeppson, Associate Professor, UWRL.

The general objectives are to develop transformations, methods, and techniques necessary to formulate and obtain solutions, by finite differences, to general three-dimensional potential free surface fluid flows and three-dimensional free surface Darcian flows through porous media, and to verify the validity of one numerical solution by collecting the necessary experimental data to do this. This mathematical development is useful in hydraulic engineering design according to Dr. Jeppson.

The $24,000 project is for an 18-month period.


These publications are available from the Utah Water Research Laboratory, Utah State University, Logan, Utah 84321.