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CHANGES PROPOSED IN FEDERAL WETLANDS PROTECTION PROVISIONS

EPA and the Army Corps of Engineers have proposed changes in Clean Water Act provisions affecting wetlands. One issue on which opinions differ pertains to guidelines used by the Corps of Engineers in granting dredge-and-fill permits.

During revisions to the guidelines, EPA and the Corps have disagreed on changes to be made. A major point of disagreement is whether the guidelines should be simply advisory, as proposed by the Corps, or binding and regulatory in nature, as EPA says they are meant to be.

These environmental guidelines are prescribed by Section 404 of the Clean Water Act. The Section 404 program is the major federal mechanism for protecting wetlands. It requires that a permit be obtained from the Corps of Engineers for activities involving the discharge of dredged or fill material into U.S. waters. Virtually any development in wetlands involves dredge and fill thus making it subject to the process.

Before acting on a permit application (either approving, denying or approving with modification), the Corps must follow a number of procedures. Key among these is consideration of the EPA environmental guidelines which contain provisions for evaluating a site.

The guidelines are being revised in accordance with instructions from the President's Task Force on Regulatory

Proposed changes in federal provisions for wetlands protection have claimed their share of attention and controversy in recent months. Both

Relief to make them simpler, shorter and consistent with other reform measures. The revision process has been delayed because of the difference of opinion as to whether the guidelines should be advisory or mandatory. Both William Gianelli, Assistant Secretary of the Army for Civil Works, and John W. Hernandez, Jr., then-acting EPA Administrator, wrote letters to Vice President Bush, Chairman of the Task Force, requesting his attention in the matter.

Gianelli's letter said that "as long as the guidelines remain as regulatory criteria, the Army will be unable to implement fully the task force decisions and will be unable to obtain maximum efficiency." Hernandez's letter to Bush said that making the guidelines nonbinding would, among other things, "undercut the level of environmental protection traditionally provided by the Section 404 program." If this change is made, he said, "we can anticipate severe public and Congressional reaction. As EPA, not the Army, is ultimately responsible for the environmental guidelines, this outcry will most certainly be focused on EPA."

Proponents of nonbinding guidelines say that if Congress had intended the guidelines to be regulatory, it would have used the word "regulations" instead of "guidelines." Hernandez, however, said in his letter to Bush, "The use of the term 'guidelines' has little significance, as the Clean Water Act uses that term to refer to both advisory guidance and binding regulations, not to distinguish between them."

Action on this and other proposed changes in wetlands-protection provisions of the Clean Water Act will await

the installation of William D. Ruckelshaus as EPA administrator.

CORNELL/EPA REPORT
ON RURAL WATER CON-
DITIONS RELEASED

The December 1982 issue of Water Technology contained an overview of a 10-year study performed for the EPA by the Department of Rural Sociology at

Cornell University. The study was entitled National Statistical Assessment of Rural Water Conditions. Critical comments, which cast doubt on the validity of the report, were presented along with some of the results.

Comments from members of a review panel indicated dissatisfaction over the way the tests were conducted. Measured levels of various components of water quality were compared to the maximum contaminant levels (MCLs) set by the EPA, but there was no resampling of households. There were also said to be problems with techniques. For instance, the samples taken to test for lead and cadmium levels were contaminated by paint in the collection containers. Another complaint was that since most of the problems covered by this study could be solved by good filtration, such extensive study was unwarranted.

These problems aside, this 1900-page work includes much information. The emphasis in this study was the quality of point-of-use water, the water coming into the house. In general, households in the northeast had the best quality water, and those in the north central region had the poorest. The water used by 63 percent of rural homes was found to exceed the MCLs of at least one constituent of water quality.

The most common violation, found in 28.9 percent of the households, was coliform bacteria. Several constituents exceeded MCLs in more than 10 percent of the households. These included iron (18.7%), manganese (14.2%), sodium (14.2%), and selenium (13.7%). Some of the other constituents measured were turbidity, total dissolved solids, nitrates, sulfates, arsenic, fluoride, various agricultural chemicals, and radiation.

Water of impaired quality was most common in intermediate-size water systems (2 to 14 connections). The reason for the poor quality was that individual systems, not designed for multiple connections, were being used to serve several households. These improperly modified systems provided inferior service.

The aforementioned violations of MCLs notwithstanding, the overall conclusion of this study was that most of the rural households in America have an acceptable water supply. The quality of the water source largely determined the quality of the water in each home. The study pointed out that to insure water quality, groundwater must be protected and wells must be properly constructed.

Persons interested in receiving a copy of the report, National Statistical Assessment of Rural Water Conditions (\$50.00) or an executive summary (\$4.00) should send check payable to Cornell University to Joe D. Francis, Rural Water Study, 333 Warren Hall, Cornell University, Ithaca, NY 14853.

WORKSHOP HELD: MAKING
POLLUTION PREVENTION PAY
IN THE ELECTROPLATING AND
METAL-FINISHING INDUSTRIES

April workshops conducted in Charlotte and Raleigh introduced members of one industry to the Pollution Prevention Pays concept.

That concept, being promoted for North Carolina industries by the Hunt administration, calls for industries to reduce the amount of waste they produce by changing the manufacturing process or by reducing or recycling wastes rather than relying on end-of-pipe treatment.

Electroplaters and metal finishers, whose operations traditionally have been considered to be among the worst polluters because of their wastestreams containing cyanide and heavy metals, were told by workshop speakers how they could reduce or eliminate the discharge of toxic pollutants and at the same time lower operating costs.

With conventional waste treatment, over half of the costly chemicals in some plating operations now go "down the drain with the rinse water," according to one of the speakers, Fred Craig of EPA's Industrial Environmental Research Laboratory in Cincinnati. Not only must platers buy these chemicals, Craig said, they must buy other chemicals to treat the wastes, then pay someone to haul them off and someone else to put them in a landfill, "where they're like a time bomb." He talked about several alternative treatment technologies to minimize waste. EPA has a research and development program dealing specifically with the metal-finishing industry where new technologies are evaluated.

Speakers described ways that platers can reduce chemical use and waste production. One electroplater, Harry DeSoi of Pioneer Metal Finishing in Franklinville, NJ, said his company reduced chemical treatment costs from \$1600/mo to \$250/mo by switching to a zero-discharge system where all water is captured, treated, and reused. Sludge production was cut by 50 percent. One reason for this is that fewer chemicals are used with zero discharge. Platers who discharge their wastewater often use more chemicals than are needed in order to avoid violations, DeSoi said. Pioneer also cut sludge production by process substitution--using trivalent instead of hexavalent chromium in the plating baths. Other techniques such as good rack design for proper drainage of the workpieces sharply reduced consumption of nickel, copper, and chrome.

State officials at the workshop discussed regulatory requirements affecting metal-plating wastes. Local government was also represented. Speakers from different municipal wastewater treatment plants told how their plants monitor and regulate industrial discharges.

Attendance at the workshops totaled about 150 platers, chemical engineers, environmental managers, and others who must deal with metal-containing wastestreams. Sponsors were the Water Resources Research Institute, the N.C. Department of Natural Resources and Community Development, the American Electroplaters' Society (Blue Ridge and Charlotte/Mecklenburg branches), the UNC-Charlotte Urban Institute's Waste Information Research and Education Program, and the N.C. State University Industrial Extension Service.

Similar workshops are planned for other industries.

WASTE EXCHANGES: ONE INDUSTRY'S WASTE IS ANOTHER INDUSTRY'S RAW MATERIAL

One industry's waste may be another industry's raw material. That is the idea behind waste exchanges, services that help link generators of byproduct material

with potential users, allowing wastes to be reused rather than discarded into the environment.

Emphasis in North Carolina on the Pollution Prevention Pays concept, which advocates minimizing, reusing, and recycling wastes, has fostered interest in these services. They were described recently by speakers at two separate conferences.

The United States has about 34 waste exchanges; 2 are in operation in North Carolina. The Piedmont Waste Exchange, a nonprofit clearinghouse serving North and South Carolina, is operated by the Urban Institute of the University of North Carolina at Charlotte. The Atlantic Coast Exchange (ACE) is owned and operated by an engineering consulting firm, Pacific Environmental Services, Inc., (PES) of Durham. ACE primarily serves the Carolinas and Virginia but has clients in other states as well.

M. Timothy McAdams of PES described how waste exchanges work at the 1983 Triangle Conference on Environmental Technology.

As much as 6 million metric tons per year of materials discarded could be reused or recycled, with an estimated value of \$300 million, McAdams said. This represents cost of disposal, lost value of the material discarded and cost of new material.

Through waste exchanges, industries list materials they have available or want to obtain. These listings are published, usually by code number, on a regular basis in a catalog or newsletter. Inquiries about listed items are sent to the exchange, which then forwards the inquiry to the lister.

Some exchanges are "passive" clearinghouses, which provide a medium for exchange, McAdams said. Others actually buy or accept wastes, identify potential uses, reprocess as needed, and sell at a profit. These are called waste materials exchanges and, since they operate for a profit, they seek wastes likely to have high value. At ACE, McAdams said, a company may list, confidentially or nonconfidentially, an unlimited number of items at no charge in a quarterly publication. ACE helps locate a buyer or seller for the listed material, and PES, the exchange's parent company, will obtain a sample for analysis by interested parties. A small fee is charged if an exchange is negotiated.

Betsy Dorn, Director of the Piedmont Waste Exchange, spoke on waste exchanges and gave several tips on selling wastes at the April workshop, Making Pollution Prevention Pay in the Electroplating and Metal-Finishing Industries. This exchange is subsidized by University funds and state grants. Like ACE, the Piedmont Waste Exchange (PWE) publishes a quarterly catalog listing generators and users by code number, either confidentially or nonconfidentially. The listing fee at PWE is \$30 for any number of listings in the four quarterly issues, which are circulated to about 2500 firms in the Carolinas. The catalog also contains news and correspondence sections as well as listings of services in the field of waste management.

Of waste exchanges in general, McAdams said, "The costs of participating in a waste exchange program are low

and the potential benefits are many: reduce your disposal costs, find a cheaper source for your input products, and feel good about helping to protect the environment and conserving valuable resources while improving your production efficiency."

EPA PROJECT INDICATES LAKE WATER QUALITY CAN BE IMPROVED BY STORMWATER MANAGEMENT

Martin P. Wanielista, Yousef A. Yousef and James S. Taylor conducted a project for EPA entitled, "Stormwater Management to Improve Lake Water Quality." According to an EPA summary, stormwater from a 146-acre urban watershed in Orlando, Florida had a detrimental impact on the 27-acre lake into which it was discharged.

The lake was a focal point of the city, but its water quality was characterized by frequent algal blooms, odor, and in general, reduced recreational activities. There were no point sources of industrial or domestic wastewaters; stormwater was the major pollution source. Stormwater runoff entering the lake after prolonged periods of drought produced severe toxic effects on aquatic life. Contaminants had been allowed to accumulate within the watershed, and when a storm event occurred, the mass loading to the lake was many times larger than experienced during periods of frequent rainfall. This influx of toxic and oxygen demanding wastes was lethal to many forms of aquatic life.

Numerous stormwater management practices were evaluated for estimated cost and yearly pollutant removal efficiencies. Based on the runoff quality and quantity data, along with lake limnological data, an implementation plan for stormwater management was developed. Reduction of stormwater mass will be accomplished by diversion/percolation of parking lot runoff and limited street runoff. In addition, most of the areas not managed with this method will be diverted for filtration before discharge to the lake. This diversion will remove stormwater pollutants such as phosphorus, which is of particular concern because of its known role in algal blooms. The two major sources of phosphorus in this lake are stormwater and lake bottom mud recycling. Lake water quality will be managed by the reduction of stormwater mass, bottom mud inactivation using alum or alum sludge, and littoral zone plantings. With these practices, it is predicted that the effects of stratified conditions (anaerobic) will be minimized and algal blooms will be reduced.

"Stormwater Management to Improve Lake Water Quality," (Order No. PB 82-227711; Cost: \$21.00, subject to change) will be available only from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650

ENVIRONMENTAL AUDITING GAINING MOMENTUM

Some industries and local governments in North Carolina are taking the initiative to protect the environment without

waiting on regulations and coercion. The practice of assessing and meeting environmental standards without depending on others is termed environmental auditing and is being encouraged by the Department of Natural Resources and Community Development. According to Joe Grimsley, Secretary of the Department, this involves securing a commitment from top management to achieve environmental excellence and a promise to be

truly concerned with being a good corporate citizen and meeting discharge standards. It is a process of systematic and objective examination by a firm of its activities to verify whether those activities meet environmental standards. According to William G. Ross, Jr. with the Department of Natural Resources and Community Development the "environmental standards may be existing or emerging and may be set by law, rule, permit or firm policy. The self audit gives a firm information it must have to assume compliance."

In a talk at the recent Triangle Conference on Environmental Technology Ross said, "fortunately, most of those people either comply voluntarily with the environmental standards applicable to their activities or are making a careful, good faith effort to do so. However, a small percentage of people intentionally or negligently violate environmental standards from time to time."

The conservation and protection of the state's natural resources will be achieved only if the large majority of the people the department regulates comply voluntarily with environmental standards. To reach high levels of voluntary compliance, the department uses a balance of deterrence and encouragement."

The Department of Natural Resources and Community Development has been supplying information for environmental auditing since 1982.

According to Ross, two of the first groups to decide to develop auditing programs were Texasgulf Chemicals Company and the City of Raleigh.

The Texasgulf program involved (1) a full written commitment communicated throughout the organization and is reinforced through company publications and meetings. (2) establishment of a separate department in the company to insure compliance with environmental regulations. (3) self-evaluation of company performance on a continuing basis. Environmental problem assessment meetings are used to evaluate environmental incidents or potential problems. (4) emphasis on education. It provides for education of employees about environmental matters through a variety of approaches. (5) the Environmental Excellence Program which stresses the need for effective communication internally and with regulatory agencies. (6) externally calls for monthly meetings with the regional office staff of the Department of Natural Resources and Community Development. The meetings are designed to make agency-company communication more effective.

The City of Raleigh is currently developing a auditing program which includes:

1. a management policy on events that may impact waters of the State;
2. a detailed standard procedure for lakes management;
3. an on-going program to review regulatory requirements affecting the city, with an annual briefing session on all permit requirements;
4. a chemical spill control policy and procedure; and
5. staff inspection teams separate from the operational activity being evaluated.

Ross says he sees "no good reason why environmental auditing cannot be an effective tool for units of government as well as the private sector. Nothing about the structure of government precludes the establishment of an auditing program.

REPORT SURVEYS WATER CONSERVATION PROGRAMS IN FIFTY STATES

The Environmental Policy Institute (EPI) has produced a report for the United States Department of Interior entitled, Survey of Water Conservation

Programs in the Fifty States. The authors, Brent Blackwelder and Peter Carlson, evaluated state programs on the basis of thirteen areas--public education, plumbing codes, retrofitting with low-water-use fixtures, metering, leak detection, rate structure, drought contingency planning, reuse and recycling, outdoor use, groundwater management, industrial use, agricultural use, and government buildings and grants. Their report indicates there is considerable room for improvement in most state water conservation efforts.

California, Maryland, Massachusetts, and Minnesota were appraised as having the most comprehensive programs. Various deficiencies were found in the water conservation programs in other states. For example, most states do not have rate structures which encourage conservation, in fact, the rate structure is often such that the largest users pay the lowest rate. Also, about half of the states have no public education program dealing with the wise use of water.

After surveying the programs of the states, EPI developed a list of recommendations to increase efficiency of water use. These measures are said to produce savings up to 70 percent. Recommendations include public education, metering, rate structure revision, leak detection and repair, industrial water audits, use of more water efficient equipment, and use of more efficient irrigation methods. Conservation and improved efficiency of water use is especially crucial in agriculture, because agriculture is the largest user of water in America.

This report attests to the efficacy of various conservation measures, and to the necessity of federal involvement (through its agencies and grants) in water conservation efforts.

Survey of Water Conservation Programs in the Fifty States is available through NTIS, or Environmental Policy Institute, 317 Pennsylvania Ave., S.E., Washington D.C. 20003. The price is \$5.00. A loan copy is also available from WRII.

OFFICE OF WATER RESOURCES DISTRIBUTES UPPER NEUSE RIVER BASIN STUDY

The Upper Neuse River Basin provides water for more than 400,000 people in the north central part of North Carolina. It

encompasses all or part of seven counties: Person, Orange, Durham, Wake, Johnson, Franklin, and Granville. This basin is one of the fastest growing areas in the State, and its water use is expected to double in the next 30 years. Clearly, planning is needed now to provide sufficient water for future needs.

The North Carolina Department of Natural Resources and Community Development Office of Water Resources has described the resources of this basin in its report of the first phase of the Upper Neuse River Basin Study. Topics covered in thereport include: 1) existing and future water supply needs, 2) instream flow needs, 3) surface water and groundwater availability, and 4) water supply alternatives. Such information is crucial as a basis for long-range planning.

According to water use projections in this report, "unless improvements are made, many towns in the study area may experience water shortages within the next 20 to 40 years. Although the fundamental concern of a regional water management scheme would probably be water supply, other facets of water resources, such as fisheries, recreation, aesthetics, and flood control should also be considered.

As for water availability, this study appraised surface water and groundwater. Groundwater in this area is generally abundant and of good quality; however, obtaining a dependable, high yield well requires scientific well location techniques. Most municipalities depend on surface water--usually impoundments. This report also contains estimates of "Safe Yield 20" of the reservoirs in the area. This is a measure of the maximum withdrawal rate which can be sustained, 19 out of 20 years, without exhausting the supply.

Also assessed in the report are instream flow needs at various sites in the basin. Instream flow needs refer to the quantity of water needed to sustain the many uses of water in the stream, such as fish habitat, recreation, and generation of hydroelectricity, as well as provide for offstream uses such as withdrawals for municipalities or agriculture.

The goal of long-range, basin-wide planning is to make possible the development of water resources in an "economical and environmentally sound manner."

Copies of the report are available from the Office of Water Resources, North Carolina Department of Natural Resources and Community Development, P.O. Box 27687, Raleigh, NC 27611.

**GROUNDWATER HEARINGS
SEEK INPUT ON PROPOSED
REGULATIONS**

The NCRD Division of Environmental Management proposes to amend Title 15, Subchapter 2L of the North Carolina Administrative Code, entitled

Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina; to be effective August 1, 1983.

The amendments would:

1. Modify the groundwater classifications and standards; and
2. Promulgate new rules classifying the groundwaters of the State.

Persons interested in these rules may present written or oral comments relevant to the action proposed at the public rulemaking hearings held in late May. Comments will be received for thirty (30) days following the public hearings.

Written statements not presented at the public hearing should be received before June 28, 1983, by the Department. Notice of intent to speak and written statements may be sent to: Groundwater Hearings, Division of Environmental Management, P.O. Box 27687, Raleigh, NC 27611.

The proposed rules are available for public inspection at NCDNRCD's central office and its seven regional offices.

**USGS STUDIES EFFECTS
OF CHANNELIZATION OF
THE BLACK RIVER**

The United States Department of Interior has published a U.S. Geological Survey report entitled, "The Effects of Channel Excavation on Water-Quality Character-

istics of the Black River and Ground-Water Levels Near Dunn, North Carolina," by Clyde Simmons and Sharon Watkins. According to the report, significant changes occurred in shallow groundwater levels, streamflow velocity water temperature, dissolved oxygen, and suspended sediment. Little or no change occurred in pH, dissolved solids, nitrogen, phosphorus, or bacteria.

In the study, three sites on the river were selected to investigate the hydrologic changes in the area which result from the Army Corps of Engineers' excavation of a channel to control flooding. The new channel was about 35 feet wide and about two to four feet deeper than the original. It was also straighter because meanders in the natural channel were bypassed. Another change accompanying channel excavation was the removal of trees and brush growing along the river banks.

Channelization was found to have a local effect on groundwater levels. At site 3, the channel was deepened by more than two feet and water levels in observation wells within 100 feet of the river declined a corresponding amount. The water level in a well 500 feet from the river did not change.

Because the new channel was straighter, flow velocity was 100 percent higher after channelization. The increased flow velocity resulted in an increase in suspended sediment. The concentration of dissolved oxygen also increased after channelization, and this was thought to be due to greater turbulence associated with increased velocity.

Another change the study detected was the increase in temperature. The water temperature was about one degree Celsius higher after channel excavation due to the removal of vegetation which had shaded the water.

Copies of this report can be purchased from : Open-File Services Section, Western Distribution Branch, U.S. Geological Survey, Box 25425, Federal Center, Lakewood, CO 80225. Telephone 303-234-5888. A limited number of free copies are available from the USGS office at P.O. Box 2857, Raleigh, NC 27602.

**COL. HUGHES LEAVES
CORPS OF ENGINEERS**

The Wilmington District Corps of Engineers has announced that District Engineer Col. Robert K. Hughes will leave May 28. He will

be replaced by Col. Wayne A. Hanson in a change of command ceremony May 27.

At that time, Col. Hughes will retire from the Army after 25 years of service. He has accepted a position as professor and head of the School of Civil Engineering at Oklahoma State University in Stillwater, Oklahoma.

His successor, Col. Hanson, comes to Wilmington from Hanover, New Hampshire where he has served as Commander and Director of the Corps' U.S. Army Cold Regions Research and Engineering Laboratory since July 1981.

AWRA SEEKS TO ESTABLISH NORTH CAROLINA CHAPTER

A North Carolina Section of the American Water Resources Association (AWRA) is being organized for exchanging ideas on current water issues and problems. An organizational meeting is scheduled for 7:30 pm, Thursday, June 16, at the Triangle J Council of Governments office, 100 Park Drive, Research Triangle Park. All interested persons are invited to attend.



AMERICAN WATER RESOURCES ASSOCIATION

The American Water Resources Association is a multi-disciplinary organization dedicated to the advancement of research, planning, management, development, and education in water resources. AWRA provides a focal point for the collection, organization, and dissemination of ideas and information in the physical, biological, economic, social, political, legal, and engineering aspects of water-related problems. Its publications and meetings and symposia provide an essential forum for communication among disciplines with a common interest in water supply, quality, use, development, and conservation. The national organization publishes the bimonthly journal, Water Resources Bulletin; publishes proceedings of an annual symposium on a specific nationally important topic; publishes a bimonthly newsletter, Hydata--News and Views; and holds an annual conference which provides a forum for the presentation of technical reports, reviews, and state-of-the-art papers, and for the exchange of ideas dealing with all aspects of water resources.

Activities of the North Carolina Section of AWRA will be determined by the membership but could include symposia, luncheons, student paper competitions, structured debates, public forums or other pursuits. It is not necessary to be a member of the national organization to join the local chapter. For more information, contact Kent Crawford or Jim Turner, (919) 755-4510.

LANDMARK DECISION ON FLOODPLAIN REGULATION

The North Carolina Supreme Court recently upheld the constitutionality of Asheville's floodplain ordinance. The ordinance requires new structures, as well as improvements to existing structures, to be constructed in such a way that flood damage is minimized. The court decided that restrictive building standards are a valid exercise of a community's powers. This ordinance was a response to the requirement of the National Flood Insurance Program that communities must adopt building standards to be eligible for insurance.

The ordinance had been challenged by owners of commercial property in Asheville's floodplain who contended that the ordinance deprived them of their right to a reasonable use of their property. The court rejected this contention since existing structures are unaffected and the property continues to have value.

Fred Baggett, attorney for the North Carolina League of Municipalities, believes that "it's good that the

court recognized the utility of these ordinances and the importance of them--even if they [adversely] affect individual landowners to some degree."

A related project funded by WRI is addressing the issue of floodplain management by looking at options for non-structural flood risk management. This study explores two approaches to flood loss reduction--"technological adjustments to flooding (the use of flood control structures and building standards)" and "social adjustments (the regulation of floodplain use and the acquisition of floodplains)." These can be thought of in terms of mechanisms for protecting floodplain development versus preventing floodplain development. Nonstructural strategies fall into the latter category and are those that minimize development. Structural alternatives, such as construction regulations, attempt to protect development. The Supreme Court ruling upholds Asheville's right to use building standards to minimize flood damage by regulating the type of construction permitted in floodplains.

UNUSUAL FLOODPROOFING SYSTEM TRIED IN LOUISIANA

An unusual method of flood-proofing homes is being tested in Louisiana, where homeowners in low-lying areas around New Orleans, weary of flooding, would welcome virtually any solution to their problem.

The new method of keeping floodwater out of homes involves enclosing the lower portion of the house in vinyl, which can be rolled back when not in use. Flood Shield, Inc., of Mercer, Wisconsin, developed the system, which is described in the March 17, 1983, issue of Engineering News Record.

The heavy vinyl sheet is attached to the house below the slab with waterproof adhesive and stored in an aluminum casing at ground level. When flooding is expected, the vinyl is unrolled to a level of about three feet off the ground and fastened with hooks to the side of the house. A one-way sewage block allows sewage to pass through to the sewer system but prevents it from backing up into the house in case of flood, the article said.

Cost for the installed system is \$3,000 to \$4,000. The owner of the Louisiana home where the device is being tested says that flood damages over the nine years he has lived in the house have exceeded \$10,000.

WORKSHOP ON FLOODPLAIN REGULATIONS, JUNE 23, IN RALEIGH

The Department of Natural Resources and Community Development will sponsor a workshop June 23 at the Hillsborough Street Hilton Inn dealing with the legal issues involved in floodplain development. NRCDC Secretary Joseph W. Grimsley has emphasized the importance of floodplain management, and of use of the National Flood Insurance Plan. It should be remembered that less than six years ago, flooding in western North Carolina was responsible for 13 deaths and 50 million dollars in damage. The workshop is intended for attorneys, business people, government officials and citizens concerned with floodplain regulation and development.

Interested persons should contact Bob Hinshaw in the Division of Community Assistance, P.O. Box 27687, Raleigh, NC 27611 (919)733-2850.

PILOT SEMINAR ON WATER LOSS AND LEAK DETECTION SET FOR JUNE 2 IN SANFORD

Water loss reduction efforts can significantly reduce waste and help to preserve and protect our natural resources for all water users. The State of North Carolina is actively encouraging the

conservation and efficient use of water in order to lessen potential conflicts and shortages.

As one step toward this goal, a pilot seminar has been planned for June 2, 1983, from 9 am to 4 pm at the new Municipal Center in Sanford, North Carolina. Co-sponsoring the seminar with the Office of Water Resources will be the N.C. Chapter of the AWWA, the Triangle J COG, the Department of Human Resources Division of Health Services, the N.C. Rural Water Association, and the Water Resources Research Institute. The seminar will bring together recognized experts in water loss and leak detection, and provide you with an informal forum for questions and hands-on equipment demonstrations. The speakers will emphasize the economic benefits of water loss reductions, provide specific information on starting a local program, and discuss where additional assistance and equipment can be obtained.

Due to facility constraints, the attendance at this pilot seminar is limited to the first 100 registrations. The targeted audience is managers of water systems in counties surrounding Sanford.

For details on the seminar, call Preston Maynard with the Office of Water Resources at 733-4064 in Raleigh.

GROUNDWATER COURSE SCHEDULED FOR FALL SEMESTER

A Groundwater Hydrology course being taught by Ralph C. Heath in the Civil Engineering Department at N. C. State University will be offered in the fall

semester of 1983. The course is CE 598V, Section 20 and will begin at 7:50 a.m. The course is directed to the solution of practical problems related to groundwater development and waste disposal and should be of special interest to state employees and consultants.

POSITIONS AVAILABLE

The California Irrigation Management Information System (CIMIS), Department of Water Resources funded grant, in the Department of Land, Air and Water Resources

has a Project Manager position available. The position will be headquartered at the University of California-Davis, but will entail statewide responsibilities.

Applicant will be responsible for coordinating research activities of the CIMIS. Applicant will assist the principal investigators in the timely completion of the projects' objectives and will supervise the CIMIS staff which are located throughout the state. Part of these duties will be to insure that the field data are being collected properly and the field evaluations are completed on schedule. Part of the applicant's duties will be to oversee the project personnel and be responsible to the principal investigators for the project direction. Applicant will work closely with

Cooperative Extension and Agricultural Experiment Station personnel.

Qualifications are a M.S. or Ph.D. in soil or water science or a comparable field with educational training in soil physics, irrigation, plant-water requirements, or drainage and water quality. Experience or training in project administration and demonstrated ability in the leadership of research and education programs is desirable. Applicant should be able to relate well with project personnel and should be familiar with project management. Candidate must be skilled in written and oral communication and have the ability to relate well with persons at varying levels of knowledge in the irrigation management area.

Applicants should submit resume, transcripts, copies of publications if available, and names, addresses and telephone numbers of at least three referees to: Richard L. Snyder, Extension Biometeorologist; Department of Land, Air and Water Resources; University of California; Davis, CA 95616; Phone: (916) 752-1130.

WATER RESOURCES CONDITIONS IN NORTH CAROLINA

For the third consecutive month this year, streamflow was above normal throughout the State. According to data from the National Weather Service, precipitation in most areas was also above normal, and total amounts since March 1 ranged from about 3/4 inch above normal at Charlotte to almost 8 inches above normal at New Bern.

Significant flooding occurred along the upper Yadkin River and its major tributaries on the 9th and 10th. A record stage of 24.6 ft was recorded at the gaging station on the Yadkin River at Elkin, in operation since 1964. Although several businesses and residential properties were slightly damaged, most flood damages were limited to bridge and roadways. Minor lowland flooding also occurred at various times throughout the month on most Coastal Plain streams including the lower Roanoke, Neuse, Cape Fear, and Lumber Rivers.

Compared to long-term records for the month, mean flows at index stations ranged from 75 percent above normal in the French Board River at Asheville to 137 percent above normal in the Contentnea Creek at Hookerton.

Ground-water levels in water-table wells rose in the Piedmont and Mountain provinces and fell slightly in the Coastal Plain province. Levels were generally 2 to 6 ft above long-term averages for April and were 1 to 6 ft higher than this time last year. Monthend levels in the observation well at Blantyre (Transylvania County) were the highest ever recorded (records began in 1932).

---U.S. Geological Survey

WATER RESOURCES LEGISLATION IN NORTH CAROLINA

Bills Introduced

Senate

S 398 Shellfish waters funds

"To provide additional funding for temporary openings of shellfish growing waters." Appropriates from General Fund to Division of Health Services in the Dep't of Human Resources, \$88,181 for fiscal 1983-84 and \$73,181 for fiscal 1984-85 to (1) provide monitoring of polluted shellfish waters and open such areas on temporary basis when the waters and shellfish meats conform to bacteriological standards, (2) increase shoreline survey activities and eliminate sources of pollution, (3) improve income of small commercial fishermen, and (4) utilize shellfish as food when safe for human consumption, reducing the potential for poaching when areas are closed.

House

H 518 Raleigh water line assessments

"To amend the average costs basis formula the City of Raleigh may use to assess the cost of extending water and sewer lines." Amends Ch. 315, SL 1963 to change Raleigh formula for determining average cost per front foot to be used for water and sewer line extension assessments from average cost for preceding calendar year to average cost over preceding five years increased by one-half of average rate of increase in cost over preceding five years.

H 649 Metropolitan sewerage districts

"To revise the parts of Chapter 162A of the General Statutes relating to metropolitan sewerage districts." Amends Art 5, GS 162A as follows: (1) amends GS 162A-65(a)(11) to include electricity generation and transmission facilities in definition of sewage disposal system; (2) amends GS 162A-67(d) to limit compensation of metropolitan sewerage district board members for attending meetings to amount set in GS 93B-5(a) for members of occupational licensing boards; (3) amends GS 162A-69 to give each district power to adopt ordinances to regulate discharge of sewage into system owned or operated by district 60 days after district notifies local governing body of intent to adopt ordinance and after considering any comments by governing body; (4) amends GS 162A-81 to authorize each district to enforce its ordinances through injunctive relief or through maximum civil penalty of \$1,000. (See amendment below.)

H 787 Commercial wastewater firms use

"To authorize the use of commercial wastewater treatment operation firms." Adds new GS 90A-45 to allow anyone operating a wastewater treatment works to have the option of contracting with a responsible commercial wastewater treatment operation firm and designating that firm as the operator in responsible charge for purposes of Ch. 90A (Sanitarians and Wastewater Treatment Facility Operators). Requires employee of firm assigned to inspect and supervise works to be certified and licensed.

H 943 Contaminating water system felony

"To prohibit the contamination or adulteration or other intentional tampering with the public water system." Adds new GS 14-150 to make it a Class I felony (up to 5 years imprisonment or fine, or both) to willfully or wantonly (1) contaminate, adulterate, or impurify any reservoir or other public water system with any toxic, chemical, or biological substance that is harmful to human health in its undiluted form or (2) damage or tamper with the property or equipment of a reservoir or water treatment facility supplying public water with the intent to impair its services or to contaminate, adulterate, or impurify the water treated there.

Amendments and Committee Substitutes

H 649 Metropolitan sewerage districts (digested above in this Newsletter).

Amendments adopted in House 4/15/83 (1) provide that district has same power as cities to assess civil fine and penalties; (2) require district to notify person assessed a civil penalty by registered or certified mail and, if person does not pay in period set by district of from 30 to 180 days, district may file lawsuit to recover assessment; lawsuit to be filed in county in which violation occurred or in which person has principal business; (3) delete provisions providing for enforcement of unlawful condition by injunction.

...Daily Bulletin--The General Assembly of
North Carolina Institute of Government,
University of North Carolina at Chapel Hill

NEW PUBLICATIONS RECEIVED BY THE INSTITUTE

(Residents of North Carolina may borrow these from the Institute for a two-week period. Where individual copies are desired, readers are encouraged to request copies from the organization issuing the publication. The addresses are provided by the News for this purpose.)

Water Resources Planning

- "Final Environmental Impact Statement," (OCS Sale No. 78), 3/83, prepared by the Atlantic OCS Region, NY Office, for further info. contact - Minerals Mgmt. Service, USDI, 18th & C St., NW, Washington, DC 20240. (W&E)
- "A Spatial Model for the Prediction of Losses on Small Rural Catchments," (#75), 1982, by R. Rajendran, et al., avail. from Australian Government Publishing Service, Canberra, Australia. (05B)
- "Problems, Issues, Constraints, and Barriers to Water Quality Planning and Management in Urban and Urbanizing Areas (SMSA's) in Tennessee," (#90), 3/83, by G. E. Bowen, et al., WRRRC, U. of TN, Knoxville, TN 37996. (05B)
- "A Guide for the Planning, Design and Implementation of a Water Reclamation Scheme," 1982, by PGJ Meiring & Partners, Pretoria, avail. from Water Research Commission, 710 Van Der Stel Bldg., 179 Pretorius St., Pretoria 0002. (03C)

Water Quality Management

- "Australian Water Quality Criteria for Heavy Metals," (#77), 1982, by B. T. Hart, avail. from Australian Government Publishing Service, Canberra, Australia. (05B)
- "Techniques of Water-Resources Investigations of the United States Geological Survey - Quality Assurance Practices for the Chemical and Biological Analyses of Water and Fluvial Sediments," (Book 5, Ch. A6) by L. C. Fredman, et al., for sale by the Distribution Br., USGS, 604 S. Pickett St., Alexandria, VA 22304. (USGS)
- "The Effects of PH and Redox Potential on the Release of Heavy Metals from Arkansas River Sediments," 3/83, by M. H. Bates, OK WRRRI, OK St. U., Stillwater, OK 74078. (05B)
- "Recording Fathometer Techniques for Hydrilla Distribution and Biomass Studies," 1/83, by J. V. Shireman, et al., avail. from U.S. Army Engineer Dist., Jacksonville, FL 32201 and Office, Chief of Engineers, U.S. Army, Washington, DC 20314. (02I)
- "Draft Environmental and Occupational Health Monitoring Plan Outline," 11/82, rev. 1/83, for further info. contact Peat Methanol Assoc., Methanol Plant, Creswell, NC 27928. (W&E)
- "Assessment of the Treatability of Toxic Organics by Overland Flow," (83-3), 1/83, by T. J. Jenkins, et al., avail. from USEPA, R. S. Kerr Env. Research Lab., Ada, OK 74820. (05D)
- "Seasonal Patterns and Molecular Weight Variations of Trihalomethane Precursors and Trihalomethane Forming Potential in the Kaw Reservoir," 3/83, by J. N. Veenstra, WRRRI, OK St. U., Stillwater, OK 74078. (05F)
- "NPDES Permit Application Wastewater Discharge Assessment - Appendix A Physical, Chemical and Ecological Data," 1982, prepared by Env. Science & Engr., Inc., Gainesville, FL, for further info. contact Peat Methanol Assoc., Methanol Plant, Creswell, NC 27928. (W&E)

Water Quantity Management

- "Survey of Water Conservation Programs in Fifty States - Model Water Conservation Program for the Nation," 8/82, by Brent Blackwelder, et al., avail. from Environmental Policy Institute, 317 Pennsylvania Ave., Washington, DC 20003. (03D)
- "Institutional Issues Affecting Water Supply Development: Illustrations from Southeastern Virginia," (Bul. 138), 3/83, by W. E. Cox, et al., WRRRC, VPI&SU, Blacksburg, VA 24060-3397. (06E).

Miscellaneous

- "Techniques of Water-Resources Investigations of the United States Geological Survey - Installation and Service Manual for U. S. Geological Survey Manometers," (Book 8, Ch. A2) 1983, by J. D. Craig, for sale by the Distribution Br., USGS, 604 S. Pickett St., Alexandria, VA 22304. (USGS)

ITEMS OF INTEREST:

- Changes Proposed in Federal Wetland Protection Provisions,
page 1
- Cornell/EPA Report on Rural Water Conditions Released,
page 2
- Workshop Held: Making Pollution Prevention Pay in the
Electroplating and Metal-Finishing Industries, page 2
- Waste Exchanges: One Industry's Waste Is Another Industry's
Raw Material, page 3
- Report Surveys Water Conservation Programs in Fifty States,
page 4
- Office of Water Resources Distributes Upper Neuse River
Basin Study, page 4
- Groundwater Hearings Seek Input on Proposed Regulations,
page 5
- USGS Studies Effects of Channelization of the Black River,
page 5

AND MORE

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