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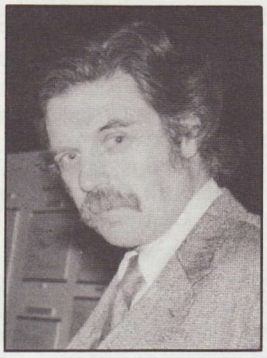
Water Current, Volume 24, April 1992

Water Current

Water Center | University of Nebraska | April 1992

Kusler Opens, Closes Water Conference: Sets Tone for 'Living With Wetland Policies, Politics'

"We must come to grips with wetlands issues with state-level policy, and not federal policy," Jon Kusler, executive director of the Association of State Wetland Managers, Inc., of Berne, N.Y., said in his opening remarks at the 21st annual Nebraska Water Conference March 16.



Jon Kusler

Kusler opened and summarized the 2-day conference at the Cornhusker Convention Center.

His opening challenges were:

—"How do we deal with problematic scientific features of wetlands such as long-term and short-term fluctuations in water levels?

—What are the appropriate state, local, and federal partnership roles?

—How can integrated wetland, water supply, flood plain management, stormwater management, pollution and sediment control, and other water-related management be achieved? and

—What approaches are available to meet specific landowner needs while protecting resources?"

What is a Wetland?

Keynoter Charles L. Elliott, regional wetlands coordinator, US Fish and Wildlife Service, Denver, responded to: "What is a Wetland?"

"Nebraska is blessed with tremendous waterfowl and wetland basins, but the wetland is always changing and the changes can be dramatic.

"More than half the nation's wetlands have been destroyed," Elliott said, "from the mid-1950s to the mid-1970s." He said the loss is a concern because wetlands are the Earth's most productive habitats. "Identification of wetlands is crucial."

Ann Mathern, hydrologist, with the Conservation and Survey Division, UNL,

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Governor's Speech Calls for Balance for Wetlands Policy

E. Benjamin Nelson, Governor of Nebraska, called for "lasting solutions that require better understanding from all points of view" at the Tuesday morning breakfast at the Nebraska Water Conference. Introduced by University of Nebraska-Lincoln Chancellor Graham Spanier, Governor Nelson said:

"I need not remind any of you here this morning about the importance of water to Nebraska. As I prepared for the many celebrations marking our state's Quasquicentennial, I came across dozens of references to water in Nebraska's history.

Some of our earliest state laws concern the right to water. Even today, many of the water issues we deal with have their roots in 19th Century law.

As the debate over the relicensing of

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Water Celebrated

National Drinking Water Week will be celebrated May 3 through 8, 1992 throughout the U.S. The theme is "Give Drinking Water A Hand." The National Drinking Water Week Coalition includes the Extension Service, USDA; American Water Works Association, American Ground Water Trust, Environmental Protection Agency, and American Water Works Association Research Foundation. Packets of information have been developed and have been distributed to Nebraska Extension Units.

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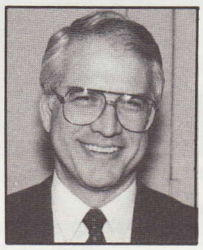
President Bush has proclaimed 1992 the Year of Clean Water and October, 1992 as "Clean Water Month." For more information on this year-long focus, contact America's Clean Water Foundation, Hall of the States, 444 N. Capital Street NW, Washington, D.C. 2001.

The 20th anniversary of the Clean Water Act is a milestone in America's environmental protection and the Year of Clean Water celebrates the Act and promotes "wise stewardship of water" in the future.

Report from the Director

Consortium Formed to Promote Informed 'Decision-Making'

Thanks to the many of you who attended the annual Nebraska Water Conference. There was some trepidation on our part when the theme of the conference is as controversial an issue as wetlands.



Bob G. Volk

However, the very large attendance indicated that many are interested in this valuable resource and wish to understand it better and discuss it more fully. Next year's conference theme is already set—Irrigation. In conjunction with the conference, a book on the history of Nebraska from a water perspective will be published. Authors have been selected and writing has begun.

To effect mandated budget reductions, the planned integration of the Water Center with Environmental Programs is well underway. Most of you will see little change in our program activity and we will realize some economy of scale by this cost-cutting measure. We believe that the new unit will serve the needs of the public in a more efficient and timely manner.

To attempt to understand the Platte River better, a number of scientists from the University of Wyoming, Colorado State University, and with the University of Nebraska as the lead, formed a Consortium with that goal in mind. Two major challenges exist when developing, managing, or maintaining water resources in multistate basins.

The first problem is self evident: satisfying demands across political and geographical boundaries. The second problem is combining information from different sources in a way that allows for meaningful comparison and informed decision-making.

For example, both socioeconomic and ecological factors must be included in the analysis of basin projects. How can the value of factor such as crop production and stream biodiversity be compared?

A research proposal dealing with these issues has been prepared by Dr. Rollin Hotchkiss in the Civil Engineering Department at UNL and submitted to various federal agencies for potential funding. We believe our idea to be creative and would give us the opportunity to assist decision makers in issues dealing with the Platte. No funding so far, but there is great potential and we have high hopes.

One final item of interest is that a

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USGS Funds Awarded

The Water Center Technical Review Committee has chosen the following projects to be funded for 1991-1993. U. S. Geological Survey (USGS) 104 funds are granted annually on a competitive basis for water research at the 54 Water Research/Institute Centers in the U. S.

***Slug Test Techniques for Hydraulic Conductivity Measurements in Highly Permeable Shallow Sand and Gravel Conditions,* Vitaly Zlotnik, Geology**

The slug test technique in highly permeable formations has potential for characterizing shallow sand and gravel aquifers impacted by point and non-point sources of agricultural contamination which are widespread in Nebraska. In conjunction with hydraulic conductivity data obtained from observations of the groundwater regimes in the vicinity of irrigation wells during the irrigation season, it can be a powerful tool.

Results of slug tests in the highly permeable shallow sand and gravel aquifer at Fremont, Nebraska will be used immediately for analysis of field studies of conservative tracers and agricultural herbicides. Data on local hydraulic conductivity are necessary for the interpretation of atrazine and alachlor mobility and persistence, and plume simulation.

The objectives of this project are: (1) develop measurement systems for slug tests with high resolution pressure transducers, (2) assess potential of vibrocoring technique for testing well installation and undisturbed core recovery, (3) obtain data on horizontal hydraulic conductivity at the Fremont, Nebraska research site, and assess opportunities for more informative slug test data interpretation, and (4) compare the slug test technique with conservative tracer test data available for specific sites.

***Biochemical Determinants of Pyrethroid Toxicity to Selected Aquatic Insects,* Blair Siegfried, Entomology**

This project is designed to document differences in susceptibility to Pyrethroid insecticides between a variety of aquatic and terrestrial insect species and examine the mechanisms responsible for the apparent increased sensitivity of aquatic insects to these compounds. Such information should provide a foundation for the development of guidelines to determine the potential effects of Pyrethroid contamination on non-target aquatic insects. Utilization surface waters for the presence of agrichemicals will allow an assessment of the impact insecticide contamination could have on aquatic insect populations. In addition, comparisons of various aquatic species for insecticide toxicity and their ability to tolerate exposure to insecticides will allow an informed choice of indicator species to assist in the biological monitoring of lakes and streams for chemical contamination. Results of this work will provide information relevant to governmental agencies which function in the development of regulations regarding allowable levels of insecticide contaminants in surface waters.

***Blocked End Furrow Irrigation Management Techniques,* Joel Cahoon, Biological Systems, Engineering, South Central Research and Extension Center**

The potential impact of blocked end furrow irrigation management practices on groundwater quality is being assessed by studying the infiltration patterns associated with these systems. The development of management guidelines

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Water Center

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This newsletter is published with partial financial support from the Department of the Interior, U. S. Geological Survey. The contents do not necessarily reflect the views and policies of the Department of the Interior, nor does mention of trade names or commercial products constitute endorsement by the U. S. Government.

Progress Award Goes to Nebraska Groundwater Foundation

The 1992 Progress Award was presented to the Nebraska Groundwater Foundation by the Nebraska Water Conference Council (NWCC) at its annual awards banquet Monday night (March 16).

"From its beginning in 1985, the principal objective of the Nebraska Groundwater Foundation has been to maintain an educational focus," Frank Dragoun, Holdrege, chairman of the NWCC Awards Committee, said.

Dragoun said Susan Seacrest and volunteers agreed it was important to reach the younger generation to educate them about the vital role of groundwater. To accomplish this, the first "Children's Groundwater Festival" was held in Grand Island in March, 1989, for fourth, fifth, and sixth graders throughout Nebraska.

The March 10, 1992 Festival attracted 3,200 children from 95 schools across the state and a teacher and students from Mexico. Seven thousand students are on the 1993 waiting list for the Festival, Dragoun said.

Other programs of the Foundation include an annual fall Groundwater Symposium in Lincoln. These symposiums, held since 1986, provide an opportunity for diverse interests of the public and private sectors to learn more about groundwater management.

In 1991 Seacrest, president and founder of the Foundation, was invited to join the Environmental Protection Agency's advisory group on water issues. And the W.K. Kellogg Foundation of Battle Creek, Mich., has invited the Foundation to chair the newly-formed National Groundwater Education Consortium.

Among the many awards Seacrest has received are:

—The Educator Award of the Central Platte Natural Resources District for development of the Children's Groundwater Festival, 1991;

—Outstanding Environmental Achievement honor award from the Soil and Water Conservation Society of America, 1991;

—Cited by Renew America in Washington, D.C., and the Friends of the United Nations Environmental Program for her volunteer leadership of the Nebraska Groundwater Foundation, 1990; and

—J.L. Higgins Award from the Nebraska Department of Environmental Control for outstanding environmental protection effort in 1989.

Seacrest was a staff curator and personnel director for the Lincoln Children's Zoo from 1970 to 1975; English teacher at Utica Centennial High School, 1975-1976; and counselor at Pound Junior High School in Lincoln, 1978-81.

(Left) The Varners, "Woody" and Paula, look-on at the annual Nebraska Water Conference Council awards banquet as Frank Dragoun, awards chairman, presents the Progress Award to Susan Seacrest, president and founder of the Nebraska Groundwater Foundation (above). Varner established the Nebraska Water Conference Council in 1971 and was a special guest of honor.

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directory of Water-Related Agencies, Personnel, and Scientists in Nebraska will be printed in the next several weeks. Initial distribution will be made by May 15, 1992. If you have not received a copy by then and would like to, please contact the Water Center. The directory will be updated on a routine basis.

Heimlich Presents National Economic Perspective on Wetlands

Why do we as a society perceive value in Wetlands? Ralph E. Heimlich, from the Office of Planning and Policy Evaluation, U. S. Environmental Protection Agency, Washington, D. C., asked. Heimlich was Monday afternoon keynoter at the Water Conference.

He answered the question this way:

"Wetlands are the site of processes that produce socially valued outcomes in several categories: fish and wildlife values, like spawning areas for fish and duck breeding habitat, ecological services, like water quality improvement and flood peak storage, and economic values, including marketable commodities, like furs or wild rice, and nonmarket goods, like recreation."

He said for most of our history, we did not appreciate the benefits produced by wetlands because we did not understand enough ecology, biology, and hydrology.

"Our grandfathers perceived only disease, foul odors, and wild animals in swamps and marshes and sought to 'reclaim' them. Scientists today, recognizing how many different species and functions depend on wetlands, strive to increase our awareness of their importance in the natural order," Heimlich said.

Heimlich sought to debunk some of the wetlands myths:

**Wetter is better: The ecological value of wetlands, or the wetter a site is, the more valuable the natural functions it performs.

**Drier is higher: The economic value of wetlands, or the drier a wetland site is over the season, the more economic value it has. This may be confirmed in some geographic areas, he said, such as bottomland cropland areas with a smaller frequency of flooding successfully producing a crop in more years and thus supporting higher land values than

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Pioneer Irrigation Award to Hastings Irrigation Pipe Co.

Paul Hohnstein, Hastings, president of the Hastings Irrigation Pipe Co., received the 1992 Pioneer Irrigation Award at the Nebraska Water Conference Council (NWCC) Awards banquet.

Frank Dragoun, Holdrege, chairman of the NWCC awards committee, said, "Paul's goal since the 1940s was to 'continually strive to be the leader in irrigation equipment design, manufacturing and distribution'."

Dragoun said during the late 1940s, Hohnstein, a machinist in his alley garage between Third and Fourth Streets in Hastings, had an idea for an irrigation gate in metal pipe that would be more effective to deliver accurate amounts of water to row-crops, such as gravity-irrigated corn.

After his idea was perfected, patent applications were filed and the Hastings Speciality Manufacturing Co., entered the irrigation business, Dragoun said. Hohnstein's manufacturing experiences were with Hastings Air conditioning Co., and the U.S. Naval Ammunition depot where he had worked with a relatively new metal—aluminum.

He saw advantages in replacing the heavier galvanized steel pipe then used for irrigation pipe with aluminum pipe. "It would be easier for farmers to handle in fields as it was lighter and could be produced in longer lengths," he said.

A major drought in the Great Plains in the mid-1950s promoted a rapid irrigation expansion with most of the growth from drilling of irrigation wells in the Ogallala aquifer.

Dragoun said, "This provided a challenge and opportunity for substantial growth for the Hastings Irrigation Pipe Co."

Nebraska was one of the national leaders with farmers developing land for irrigation. They bought gated pipe for gravity irrigation and in 1957 employment in Hohnstein's company rose from 29 to 55 people with a second work shift added to produce the gated pipe that was in demand for irrigation.

Dragoun said the success of the management and employees of Hastings Irrigation Pipe Co., derives from the flexibility of the company to develop new markets for aluminum products. During the years when demand for gated-pipe and aluminum pipe were less, the company developed new products.

Non-irrigation products:

—Designed and built Sportsman boats in 1957;

—Designed and built aluminum boat trailers;

—Designed and built fiberglass boats in 1959;

—Designed and built floating aluminum boat docks; and

—Designed and built collapsible bread racks for Debus Baking Co., at Hastings.

"While his business has expanded in over 50 years, this firm is still at the same location at the east edge of Hastings," Dragoun said.

Frank Dragoun, left, presents the Pioneer Irrigation Award to Paul Hohnstein and Mrs. Hohnstein for services to irrigated agriculture.

Tom Knutson, left, receives a plaque from Frank Dragoun for his services as chairman of the Nebraska Water Conference Council.

Seen, below, center, are Les Sheffield, secretary of the Nebraska Water Conference Council, and Dick Wiese, long-time nitrogen specialist in the Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, now assigned to the Kansas City office of the Environmental Protection Agency, as non-point source specialist, an Extension/EPA liaison. (Photos by Mark Hansen, IANR)

Sheffield (left) and Wiese

(Kusler Opens page 1)

defined wetlands as "an area where the soils are saturated with water at least part of the time. She said there are four basic kinds of wetlands:

—Riparian meadows with seasonal levels, higher in the spring;

—Wet meadows as seen in the Nebraska Sandhills at the top of the Ogallala Aquifer, also seasonal with levels;

—Lakes: both fresh water as in the western Sandhills and saline as seen in the Lincoln area.

—Rainwater basins which are clay-sealed basins with no groundwater, just filled with precipitation.

"All of these wetlands interact with landforms," Matherne said.

"Wetlands aren't always wet," according to Mike Gilbert, an environmental resources specialist with the Omaha District, U.S. Army Corps of Engineers.

Feeding Areas

And, Gilbert said, the wetlands are the Pump and Pantry area for five to seven million birds in their migratory season. The wetlands complex are feeding, nesting, courtship and loafing areas for these birds.

Ron Case, wildlife briology professor with the Department of Forestry, Fisheries and Wildlife, UNL, said, "Birds can leave an area if it is stressed, but mammals may not have that ability when threatened by ecological problems."

Case explained furs harvested since 1975. He said the greatest high quality fur harvested was in 1986 and 1987 when there was an "abundance of animals" that included beaver, mink, muskrats and racoon. Permits in 1987 totaled 10,062 while in 1990 2,719 permits were sold.

Economic Costs

Steve Nelson, Axtell, a member of the Natural Resource and Environment Committee of the Nebraska Farm Bureau, asked, "What are the economic costs of decreasing wetlands numbers?"

—Loss of land values,

—Added costs of development to preserve wetlands,

—Nuisance of rows and machinery,

—Time to discover policies enforced,

—Loss of productive revenues from land,

—Taxation methods,

—Food supply,

—Compensation for land.

And, where does the solution to the problems lie? Nelson asked. "By everyone working together to understand the issues involved."

Tom Taylor, biologist with the Environmental Protection Agency, Kansas City, Kansas, said, "Individuals are affected directly by wetlands policies that provides wetlands emotions and confusion and creates a challenge for education."

Wetlands are not waste lands as once thought, he said, wetlands have value. Today's challenges are: understanding old values, education, incomplete sciences, the many publics affected by regulations, and politics.

Kusler's summary of the nearly 30 presentations included:

"Gov. Nelson's remarks reinforced others' statements, that you can't expect others or the federal government to solve the wetlands problems. Gov. Nelson emphasized balance and communications."

Kusler said a common thread through the conference was "continual dialogue." There is a need for management and advance planning with a coordination of agencies with landowners who need help and guidance.

"Wetland managment policies must be based on a common dialogue between all of the actors and with mutual respect for positions," Kusler concluded.

Wetlands Workshop

A closing-day "Workshop on Wetlands Management" with Terry Kubicek, deputy director of the Nebraska Natural Resources Commission, chair, was "a success with 35 pre-registrations and 50 present," Kubicek reported.

He said workshop participants' response was "positive."

"The workshop took the group step-by-step through the '404' process," Kubicek said. Landowners' questions, such as 'what do we do about wetlands?' were answered by the experts from the Soil Conservation Service, U.S. Corps of Engineers, Department of Environmental Control, Fish and Wildlife Service, and the Game and Parks Commission, through a substantial workbook available to the workshop registrants.

Each of the 23 Nebraska Natural Resources Districts received the workbook for area landowners' use.

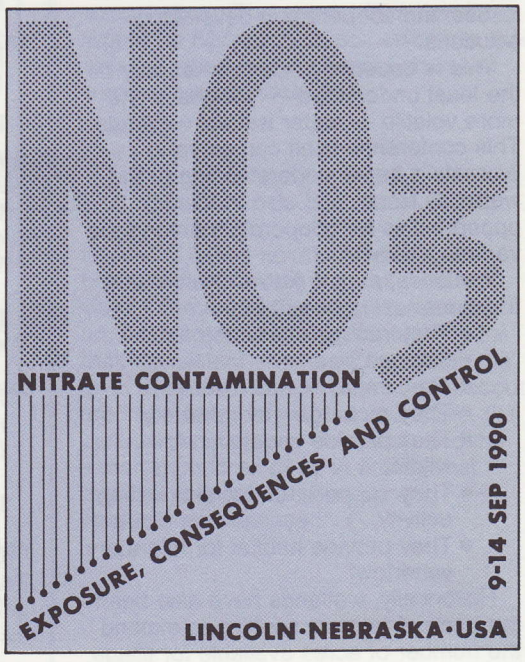
Proceedings Available

Edited proceedings from the 1990 NATO Advanced Research Workshop on Nitrate Contamination are now available in a 520-page hard cover volume with 125 figures. Included are papers by the major participants at the workshop. Addressed are three main types of expertise needed to select proper control alternatives for nitrate contamination—hydrologic engineering, biomedical engineering and environmental engineering. The book concludes with a section on integration of skills and risk assessment.

Title: **Nitrate Contamination: Exposure, Consequence and Control**
Editors: I. Bogardi and R. D. Kuzelka
ISBN: 3-540-53088-6
Cost: US $198 or DM 298

The book may be obtained through book stores or the publisher—Springer-Verlag at 44 Hartz Way, Secaucus, NJ 07096, USA or Heidelberger Platz 3, W-1000 Berlin 33, F.R.Germany.

Workshop participants and observers and educators are eligible for reduced rates on quantities of five or more. For information on this rate contact Bob Kuzelka at the University of Nebraska Water Center (402) 472-3305.



(Governor's Speech page 1)

Kingsley Dam clearly shows, there are a growing number of interests — both inside and outside the state — with a stake in Nebraska's water.

I'm pleased that we have made progress over the past year toward striking a balance between the use of water for economic benefit and the legitimate needs of our environment.

Irrigators in central Nebraska, whose source of livelihood was threatened through no fault of their own, will continue to receive benefits from Platte River water. At the same time, substantial investments in conservation will be made to protect river flows.

We have also made progress toward resolution of the FERC relicensing issue. I'm convinced that the Nebraska parties to relicensing are as interested as I am in seeing that the solution comes from Nebraska, not from Washington.

I recently met with those parties, and asked for their cooperation in developing a response to the draft environmental impact statement. Their willingness to do so — recognizing there will be differences of opinion — is a positive sign.

Municipalities are also asserting their right to a share of Nebraska's water. As a result, the Nebraska legislature is seriously considering statutory recognition of the relationship between surface and underground water. This relationship has been understood for some time, but placing that fact in state law has been a long time coming.

With all these interests competing for Nebraska water: agriculture, municipalities, the power industry, and the environment — not to mention other states — it becomes increasingly important for all of us to understand the issues and cooperate in developing solutions.

This is especially true in what may be the least understood — yet one of the more volatile — water issues: wetlands. This conference itself can serve to promote a better understanding of the wetlands issue, and also to identify opportunities for cooperation among the various interests.

Wetlands, as you know, serve many functions:

- They reduce storm and flood damage;
- They improve water quality;
- They recharge groundwater;
- They provide vegetation for wildlife;
- They support hunting and fishing activity;
- They provide habitat for migratory waterfowl.

Historically, wetlands have also been the bane of farmers seeking to expand the number of acres available for tillage, and for road builders trying to connect two places in the most direct way possible.

It is estimated that 35 percent of Nebraska's wetlands no longer exist for one reason or another. It is clear that wetlands policy — as other water policy — must strike a balance between legitimate economic needs and protection of the environment and wildlife habitat.

Current federal policy on wetlands is at best confusing; currently, four federal agencies (EPA, USDA, Army Corps of Engineers, and Fish and Wildlife) have responsibilities for certain aspects of wetlands policy, which sometimes are in direct conflict.

For example, it is possible to obtain a 404 permit from the Corps of Engineers and yet violate provisions of the 1990 Farm Bill that could result in the loss of federal support if a wetland is converted.

The potential also exists at the federal level for political expediency with wetlands policy. Last October, I provided comments to EPA on their proposed revisions to the *federal manual for delineating wetlands.* I expressed strong concerns that the manual *not* be allowed to serve as a vehicle to expand or restrict the scope of federal wetlands policy solely for political purposes.

The National Academy of Science is currently evaluating the manual. As a result, resolution in the current session of Congress is not likely, and action on renewal of the Clean Water Act may be delayed.

One element of federal wetlands policy that has been less than adequate is in the area of education. The Feds have done a poor job of explaining to

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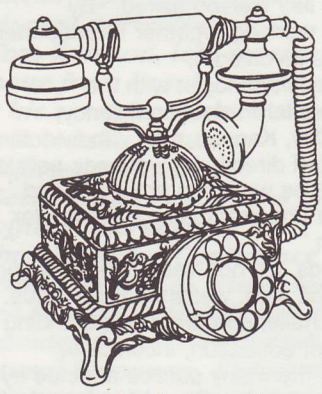

Call for Papers

Abstracts will be accepted until June 1, 1992 and authors will be notified of acceptance July 1, 1992, for the 37th annual Midwest Ground Water Conference.

The conference will be October 14, registration, 15, and 16 at the Howard Johnson Lodge and Convention Center, Sioux Falls, South Dakota.

General topics are:

- Hydrogeology of low-permeability sediments (till and shale)
- Impacts of agricultural activities on groundwater
- Impacts of waste disposal on groundwater
- Wellhead protection and monitoring
- Groundwater monitoring and sampling techniques
- Investigation and remediation of groundwater contamination.

Program Format: Presentations will be limited to 20 minutes, including discussion. Abstracts will follow the format in the Journal of Association of Ground Water Scientists; abstract should be no longer than 250 words.

Send abstract to; Patricia Hammond, Midwest Ground Water Conference, South Dakota Geological Survey, USD Science Center, Vermillion, SD 57069, or phone (605) 677-5227; FAX (605) 677-5895.

IAWPRC September Conference to be in Chicago

Abstracts are due by June 15, 1992 for the September 20 to 24, 1993 first International Association for Water Pollution Research and Control conference cosponsored by the U.S. Environmental Protection Agency, Region V, the U.S. Department of Agriculture, Marquette University, of Milwaukee, Wisconsin, and the Terrene Institute of Washington, D.C.

The conference is organized by the newly established specialist group of the IAWRPC to provide a forum for idea exchange and to promote international cooperation in research and problem-solving.

The program committee includes representatives from Austria, Canada, Italy, the Netherlands, and the United States. A broader scientific advisory committee has representatives from Czechoslovakia, Germany, Hungary, Japan, Russia, and Sweden.

Topics include: sources of diffuse pollution and their impact, policies and institutions, and prevention and abatement.

Send four copies of an abstract to: IAWPRC Conference % Dr. Vladimir Novotny, Conference Chair, Department of Civil and Environmental Engineering, Marquette University, 1515 West Wisconsin Avenue, Milwaukee, WI 53233, FAX (414) 288-7082.

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for conventional and surge irrigation under blocked end conditions is the ultimate goal of the project. Benefits of these management guidelines will be realized in terms of decreased potential for agrichemical leaching in blocked end systems resulting from increased application efficiencies and uniformities. Locations with groundwater quality concerns could also benefit from the outcome of this project. Advanced management guidelines that encourage more efficient and uniform irrigation will ultimately lead to decreased fuel consumption for irrigation pumping and reduced potential for leaching agricultural chemicals into the groundwater.

This research is designed to encourage accelerated adoption of advanced management systems. Realizing that goal will promote more profitable and environmentally sound irrigation management techniques for irrigators restricted to blocked end furrow irrigation systems.

***Chromatographic Automation of Immunoassays for Environmental Analysis,* David Hage, Chemistry**

The ability to analyze environmental contaminants at trace levels is an important component of modern water quality assessment. One group of analytical techniques of current interest for environmental testing are the immunoassays. These are methods based on the use of antibodies as reagents for the selective determination of a given compound. The specificity of these methods, their low cost, their small sample size requirements, and their ability to work with complex samples with little or no pre-treatment make immunoassays attractive for use in environmental testing. One current application of immunoassays is their use for the screening of atrazine and other triazine herbicides. The widespread use and occurrence of these herbicides in Nebraska and other Midwestern states has made immunoassays valuable for large scale studies examining the distribution and occurrence of these compounds in groundwater and soil samples.

The goal of this study will be to develop a fast, automated immunoassay system for the routine analysis of environmental samples. Automated immunoassays for the determination of atrazine and its degradation products will be developed using the technique of high-performance immunoaffinity chromatography (HPIAC). The first section of this study will examine the use of HPIAC with other separation methods, such as reversed-phase liquid chromatography, for the simultaneous determination of atrazine and its degradation products or other triazine herbicides.

The expected results of these studies is the development of automated immunoassay systems which can be used for the fast, selective quantitation of atrazine and related herbicides in water or other samples. The development of such systems will be an important advance in providing more widespread testing of triazine herbicides. By using different antibodies, it should also be possible to easily modify these systems for determining other compounds of environmental interest.

***Synergistic and Chronic Effects of Agricultural Pesticides on Benthic Algal Communities in Nebraska Streams,* Kyle Hoagland, Forestry, Fisheries and Wildlife**

The primary goal of the proposed project will be to determine the chronic and synergistic effects of six of the most frequently occurring pesticides in Nebraska on benthic algal communities from several representative streams in the state. The study approach will incorporate a combination of laboratory culture and whole-community microcosm experiments to determine the ecologically realistic impacts of these important pesticides on the base of the food web in streams draining agricultural lands in the Midwest.

The specific objectives of the proposed research are to: (1) determine the acute effects of atrazine, cyanazine, alachlor, propachlor, chlorpyrifos, and terbufoss on epipelic algal communities from three streams in Nebraska, using artificial laboratory stream channels, (2) ascertain the synergistic effects of combinations of these pesticides on the same epipelic communities, and (3) evaluate the chronic toxicity of ecologically realistic concentrations of these pesticides for the dominant algal taxa isolated from each stream.

The principal benefit of this project will be to provide critical information on the ecologically realistic effects of agricultural pesticides on aquatic systems in Nebraska and throughout the region. The experiments will provide important information for establishing future agricultural practices in the State and developing realistic models to predict some of the important impacts of pesticide contamination of surface waters. These data will be of particular value to state and federal agencies as they establish long-term water quality monitoring programs and as they develop new water quality criteria for surface waters.

***Effect of Local Anisotrapy of Hydraulic Conductivities on Nonlocal Dispersion in Aquifers,* You-Kuan Zhang, Conservation and Survey Division**

This is a theoretical study of contaminant transport in groundwater systems. It addresses a regional and national need for a model which can correctly simulate a three-dimensional plume of contaminants in groundwater and will demonstrate the effect of local anisotrapy of hydraulic conductivities on chemical transport in the subsurface environment.

The objective of the research is to develop a three-dimensional model of subsurface transport which is consistent with field observations by considering the effect of local anisotropy of hydraulic conductivities and to validate this model using data from field experiments. The new model will not only improve our ability to simulate and predict the chemical evolution in groundwater, but will also fill the gap between theories and experiments. The users of the results would be hydrologists, soil scientists, and anyone who needs to model chemical transport in aquifers.

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landowners why wetlands protection is important. This problem *must* be addressed if we are to have an acceptable and successful approach to wetlands policy.

Landowners' rights should be restricted *only* when the value of a particular wetland is sufficient to offset legitimate private interest. Clear criteria for balancing public and private interests must guide the determination of public value. In some instances, this may mean protection of public values will require adequate compensation to landowners.

The complexity of the wetlands issue resides. Lasting solutions will require better understanding from all points of view. I commend the organizers of this annual Nebraska Water Conference for their consistent emphasis on raising the level of awareness for Nebraskans about the importance of water to our state, the various perspectives that exist, and the importance to all of us in finding that ellusive point at which competing interests are balanced."

(Call for Papers page 6)

This call for papers is an invitation to participate in the National Irrigation-Induced Erosion and Water Quality Conference to be held August 31 to September 2, 1992, at the Red Lion Riverside in Boise, Idaho.

You are invited to submit a paper or poster paper on any aspect of irrigation-induced erosion and related water quality which is pertinent to current and future problems, solutions, and management. Suggested topics include, but are not limited to, workshop session topics listed below.

- Water rights issues as related to irrigation-induced erosion;
- Needs related to legislation, policy, technical assistance, financial assistance, research technology transfer;
- Sociological barriers to the adoption of irrigation- induced erosion control technologies and practices;
- Cost benefit of irrigation-induced erosion control;
- Impact of irrigation-induced erosion on soil productivity;
- Impacts of irrigation-induced erosion on fisheries, recreation, hydropower, and barge traffic;
- Irrigation-induced erosion control technologies and practices;
- Watershed approach to irrigation-induced erosion control;
- Inventory and monitoring irrigation-induced erosion and related water quality problems;
- Informing and educating farmers about affordable, practical ways to control irrigation-induced erosion;
- Impact of irrigation water management on irrigation- induced erosion;
- Direction of future research on irrigation-induced erosion control ar treatment of return flows; and
- Other topics related to any aspect of irrigation-induced erosion and water quality that are pertinent to current and future problems, solutions, and management.

Format paper or poster paper title in 3 to 10 words. List your name, full title, employer, address and phone number; body of abstract in no more than 250 words.

Abstract Deadline: Deadline for submission is May 15, 1992. Notification of final acceptance will be made by June 15, 1992. Send abstracts to: State Conservationist, USDA Soil Conservation Service, 3244 Elder Street, Room 124, Boise, ID 83705.

Abstracts of presentations and poster papers will be published and distributed to Conference participants.

(Heimlich Presents page 3)

similar areas with higher flood frequency.

Nebraska's wetland loss trends, he explained, from the Great Plains Office of Policy Studies, summarized findings for the Rainwater basin and Sandhills areas. And in 10 Rainwater basin counties, 10,500 acres were estimated lost between 1960 and 1981, or an average annual loss of 526 acres per year.

He said that almost all of the wetland losses were associated with expansion of center-pivot irrigated cropland and ditch drainage for expansion of hayland acreage.

"The President's 'No Net Loss' initiative, while blunted by the controversy over wetland definitions, is starting to introduce a whole new element in wetland economics," he said.

"A great deal of interest and activity has been generated regarding not wetland conservation, but wetland restoration. Conserving existing wetlands is one way to achieve 'no net loss,' but allowing development to occur while requiring restoration of formerly converted wetlands can provide a degree of regulatory relief," he said.

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