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Regional GSA features more than 365 presentations, presenters from as far away as Alaska and Russia

After more than two years of intense planning and preparation, the joint regional meeting of the Geological Society of America (GSA), to be held in Lincoln April 27-28, promises to be well-attended and have presentations on everything from groundwater quality to paleontology and sedimentary processes to landfill siting.

Based on the usual multiple of at least 2 people attending for every abstract submitted, Bob Diffendal, research geologist with the UNL Conservation and Survey Division (CSD) and general chair of the GSA North-central section, estimated that up to 700 people might be in attendance. Preregistration is currently at about 500 participants. The meeting will feature presenters coming from as far away as Russia and Alaska, he added.

The North-central and South-central sections of GSA will convene at the Nebraska Center for Continuing Education and the East Campus Union on the University of Nebraska-Lincoln East Campus.

"We have more than 365 abstracts submitted at this point," Diffendal said. Each abstract outlines a particular presentation, and abstracts are organized into symposia focused on different topics.

Symposia slated for the meeting are (alphabetically by senior moderator): "Sedimentary Rhythmites: Origins and Implications," by Allen W. Archer; "Interpreting Animal Behavior from the Fossil Record," by Loren Babcock; "Quaternary Eolian Deposits of the Midcontinent: Loess, Sand
(See **Regional GSA** on page 3.)

EPA revises regulatory approach, water official says; Endangered Species and Clean Water acts may be held up

Water-quality regulations with flexibility and prevention built into them need to be drafted, either with or without the help of Congress because the issue cannot wait any longer, said Robert Perciasepe of the U.S. Environmental Protection Agency (EPA). He spoke about the impending reauthorization of the Federal Clean Water and Safe Drinking Water acts at the annual Nebraska Water Conference, held March 14-15 at the Cornhusker Hotel in Lincoln.

Perciasepe, the EPA's assistant administrator for water, said environmental policy reforms dealing with water quality are so important that the EPA will no longer add 25 contaminants to its "hit list" every three years under the Safe Drinking Water Act, even though the court has ordered the agency to do so.

The agency has already set maximum contaminant levels for 83 contaminants and doesn't have the information or resources to go after more contaminants, Perciasepe said. The EPA is not going to wait for Congress to remove the requirement from the law, he said.

Environmental regulatory reforms are also needed because of changes in the sources of water pollution, Perciasepe said.

"We're seeing far more diverse sources of contamination, so the problems we will experience in the future will be more difficult to deal with than the problems we've had in the past," he said. "Because of this, the regulatory programs of the past aren't going to work in the future."

Perciasepe, who has worked with Congress as
(See **EPA** on page 3.)

EPA monitoring calls for pesticide-specific plans; pesticide contamination in state's groundwater rare

Recent U.S. Environmental Protection Agency (EPA) pesticide-monitoring strategies call for state management plans that are specifically designed for each pesticide that may pose a threat to groundwater quality, two University of Nebraska-Lincoln researchers said at the 1995 Nebraska Water Conference.

Roy Spalding, director of the UNL Water Sciences Lab, Water Center/Environmental Programs, and Mary Exner Spalding, research water

chemist with the UNL Conservation and Survey Division (CSD), presented "Assessment of Pesticide Occurrence in Nebraska Groundwater and Pesticide Monitoring Strategy for the State Management Plan" on the first day of the conference, held March 14-15 at the Cornhusker Hotel in Lincoln.

The U.S. Environmental Protection Agency (EPA) has recommended that each state prepare a
(See **Pesticide-specific plans** on page 3.)

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Federal GIS compiles known data on '93 Midwest floods; USGS to produce digital map data on compact disks

One hundred and seventy-five gigabytes of data were compiled in a geographic information system (GIS) for a federal flooding study on the effectiveness of levees.

Triggered by the 1993 floods in the Midwest, the study determined that 80 percent of levee breaks occur at the same place repeatedly and that levees are no deterrent to flood damage, said Tim Peterson, chief of the GIS unit for the Omaha district of the U.S. Army Corps of Engineers. Future management of floodplains will likely involve fewer levees, letting the flooded river take its natural path and relocating people and structures in floodplains, he said.

This analysis of the floods that hit the Midwest and eastern Great Plains in 1993, primarily in the upper Mississippi and lower Missouri watersheds, was the result of the Presidential Committee on Flood Plains. It was to gather all available data on floodplains in those areas, he said. The best way to do this was to create a GIS that could compile much data from many agencies. The Corps was central to this process because of its historic duties in floodplain management. A dozen or more federal agencies besides the Corps were involved, including the U.S. Geological Survey, the lead agency, the U.S. Environmental Protection Agency and Natural Resources Conservation Service, the Federal Emergency Management Agency and others.

Peterson spoke at the GIS Forum in March with Darryl Williams, a cartographer with the USGS Mid-Continent Mapping Center and mapping liaison to five of fifteen Midcontinent states, including Nebraska. The forum is held monthly during the school year, except for December and January, in the East Campus Union of the University of Nebraska-Lincoln. It is cosponsored by the Nebraska GIS Steering Committee and the UNL Conservation and Survey Division. Geographic information systems are powerful, computerized tools for managing spatial data.

The Corps' Omaha district includes seven states in the upper Midwest, Peterson said, and the Corps has now deployed GIS in all of the state offices in this district. Because the GIS unit supports the Operations Division, the main GIS applications relate to the operations unit's major responsibilities. One is determination and regulation of wetlands. Another is in natural resources, which involves maintaining the six dams on the main stem of the Missouri,

maintenance and restoration of the Missouri River ecosystem, particularly habitat for threatened and endangered species, and cooperation with the Bureau of Indian Affairs and the tribes on the Missouri. The others are emergency management, which involves analysis and prediction of floods, and special studies, which includes habitat for threatened and endangered species, in particular the least tern, piping plover and pallid sturgeon, and support for the master manual of operations for the Missouri, which includes the past and present functioning of the river.

Any examination of GIS has been accompanied by a discussion of global positioning systems (GPS), Peterson said. GPS involves precisely locating field data with geographic information from satellites. One of the Corps' important GIS applications is "real-time kinetic" (RTK) analysis of the nesting habits of the least tern and piping plover, he said. The plover tends to nest near the water line, and if the Corps releases water from its dams during nesting season, the nests are destroyed. RTK systems provide measurements of nests at the time they are taken by field staff. Flows are regulated by RTK data.

In the second part of the forum, Williams said the USGS will begin this year to mass produce, mostly through contractors, its new digital raster graphics (DRG) products. A DRG is a scanned image of a USGS topographic map. The color raster image includes all information on the map. The image is georeferenced to the Earth's surface and can be used as base data for other spatial data, such as digital elevation models (DEMs), digital line graphs (DLGs) and digital orthophotoquads (DOQs). A DEM supplies surface elevation data, a DLG is digitized map data in a line-drawing format and a DOQ is a digital image of a georeferenced aerial photograph with other map data.

The USGS will provide DRGs on compact disks with read-only memory (CD-ROMs) to state and local agencies or individuals who supply cost-share dollars. No attempt is being made to provide systematic coverage. DRGs at a 1:24,000 scale will be distributed in 1-by-1 degree blocks totaling 64 7.5-minute quads. DRGs at a 1:100,000 scale will be packaged in 4-by-4 degree blocks of 32 30-by-60-minute quads. They will cost \$50 per quad. The USGS
(See **Federal GIS on page 4.**)

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and Ash," by E. Arthur Bettis III, James Swinehart and Brian Carter; "Cyclic Sedimentation in Carboniferous and Permian Strata of North America: Sequence Stratigraphy, Biostratigraphy and Paleoecology," by Darwin Boardman II and Arthur Cleaves; "Ogallala Group and Younger Neogene Geology, Great Plains," by R.F. Diffendal, Jr.; "Problems in Continental Scientific Drilling," by M. Charles Gilbert; "K-12 Earth Science Education Forum: Opportunities, Challenges, and Benefits for the Geoscience Community," by David Gosselin (forum); "Modern and Ancient Lake Environments of the Northern Great Plains," by David Gosselin and William Last (theme session); "Antarctic Paleoclimates and Paleoenvironments," by David Harwood; "Geology of the Garbage Heap: Waste Sites and Waste Siting," by Sanford Kaplan and Page C. Twiss; "Genesis and Morphology of Paleosols," by Mark Kuzila; "Depositional Environments, Lithostratigraphy, and Biostratigraphy of the White River and Arikaree Groups," by Hannan LaGarry, Dennis Terry and Robert Hunt; "Geoarchaeological Research in Fluvial and Eolian Depositional Environments," by Rolfe Mandel;

EPA *continued from page 1*

a federal official for the past 16 months, isn't sure that this message is apparent to the federal government, he said. These issues of reform have been the subject of a great deal of discussion, debate and consensus building in Congress, but no final results have been achieved, he said.

"I'm not convinced that the next 16 months are going to be any different than the last 16 months," he said. But the EPA is not turning their backs on the problem, Perciasepe added.

"We are really stretching the edges of our legal and legislative authorities to find new, flexible ways to accomplish our mission, which is to adhere to strong standards of public health and environmental protection," he said.

The federal government can no longer use the "one-size-fits-all" regulations of the past, Perciasepe said.

"Every public survey will tell you that 70 to 80 percent of Americans want cleaner water and better government standards, but feelings start to vary when you get right down to asking what people are willing to do to achieve these goals," Perciasepe said.

In another important address on the first day of the conference, David Bowman, Platte River coordinator for the U.S. Fish and Wildlife Service, said six major components will dictate whether the Endangered Species and Clean Water acts are reauthorized anytime soon. They are private property rights; definition of a wetland; peer review processes--like the private-sector reviews being developed by Bruce Babbitt, the Secretary of the Interior; review of regulatory processes, particularly on the federal level; regulatory

Pesticide-specific plans *continued from page 1*

plan addressing the distribution of pesticides in groundwater and the strategies for monitoring specific pesticides of concern, Roy Spalding said.

There is a great deal of psychology involved in public interpretation of health problems, or lack thereof, resulting

"College- and University-related Earth Science Educational Activities," by Bob Pinker; "Remote Sensing and GIS for Water-quality Assessment," by Donald Rundquist; "Great Plains Neogene Tectonism," by George Shurr; "Occurrence, Transport and Transformation of Pesticides and Nutrients in Surface and Ground Waters," by Mary E. Spalding; "Cretaceous Rocks of the Midcontinent," by David Watkins and Richard Hammond; and "Perspectives on Urban Geology: Principles, Educational Needs and Case Studies," by Perry Wigley and Priscilla Grew.

The meeting will be hosted by the UNL Conservation and Survey Division (Nebraska Geological Survey); the UNL Department of Geology; the University of Nebraska State Museum, the Department of Geography and Geology at the University of Nebraska at Omaha; the Nebraska Geological Society; the Omaha office of Woodward-Clyde Consultants; the Department of Geology at Kansas State University, and the Texas section of the National Association of Geology Teachers.

mandates; and risk-assessment/cost-benefit analysis.

"Because these concerns take time to resolve, and other issues come forward in Congress and take more time, I do not believe either act will be reauthorized until after the '96 elections," Bowman said.

Bowman stressed the importance of the Farm Bill, which will be the first test in determining how the Republican Congress will govern environmental issues, he said.

Legitimate criticisms have been raised by the Republican Congress, the most pivotal of which are the issues of wetland regulation and private-property rights, Bowman said. These criticisms have delayed the reauthorization process, but have also created more time for policy negotiations and improvements dealing with specific parts of the two acts.

Bowman is confident that these improvements will allow the acts to pass successfully when they are dealt with in the future.

"When (the Endangered Species and Clean Water acts) do come up for reauthorization after the '96 elections, I think we will all be somewhat surprised by how easily they are reauthorized," Bowman said.

The conference was co-sponsored by the Nebraska Water Conference Council, the University of Nebraska-Lincoln, the UNL Institute of Agriculture and Natural Resources, the UNL Water Center/Environmental Programs, the UNL College of Law, the UNL Conservation and Survey Division, the Nebraska Research Initiative, Lindsay Manufacturing Co. and Valmont Irrigation.

from pesticides, Roy Spalding said. EPA regulations have targeted certain "focus pesticides" that receive a considerable amount of public attention, such as atrazine and cyanazine.

(See Pesticide-specific plans on page 4.)

Pesticide-specific plans *continued from page 3*

This attention and exposure often creates a false sense of immediacy with regard to problems caused by pesticide contamination, Roy Spalding said.

When you try to detect pesticides at the parts per billion and parts per trillion levels, it is debatable whether real health risks exist, Roy Spalding said.

"There's a lot of argument about 'chasing ghosts'," he added.

Results from a 1994 pesticides study were presented by Mary Spalding. They provided an update to a study published in 1990 and showed that serious pesticide contamination in Nebraska's groundwater is rare.

Groundwater contamination was most frequently

observed in the Central Platte region, an area where the groundwater is highly vulnerable to contamination. It is characterized by shallow groundwater and irrigated continuous corn on relatively porous soils that receive annual applications of herbicides. Alachlor, metalochlor and cyanazine, three commonly used pesticides in Nebraska had very low concentrations at the majority of testing sites. Only 14 percent of the more than 3,000 sites tested in Nebraska have shown detectable levels of atrazine--the state's most commonly used herbicide, Mary Spalding said. Concentrations in less than 1 percent of the samples had atrazine levels higher than the maximum contaminant level of 3 parts per billion set by the EPA.

Federal GIS *continued from page 2*

wants users of DRG data to develop new applications and relay comments about the usefulness of the product. Comments can be sent to the USGS through e-mail to

esic@mcdgs01.cr.usgs.gov; further information can be acquired at <http://mcmweb.cr.usgs.gov/> through MOSAIC on the World Wide Web.

Coming up: local, state and national meetings and workshops

--**Kremer Lecture, Water Seminar Series--**"Radioactive Waste Disposal and Storage," April 5, Gene Crump, director, Central Interstate Low-Level Radioactive Waste Commission, 3 p.m., L.W. Chase Hall, East Campus, UNL.

--**GIS Forum**, April 19, Scott Richert, Nebraska Game and Parks Commission, and Michael Bishop, UNO; 11:30 a.m., East Campus Union, UNL.

--**American Water Resources Association annual spring symposium--**"Water in the 21st Century: Conservation, Demand, and Supply", April 23-24, 1995, Red Lion Salt Lake, Salt Lake City, Utah.

--**Annual Meeting of the Nebraska Academy of Sciences**, April 28-29, Nebraska Wesleyan University.

--**Annual Meeting of the North-central and South-central sections of the Geological Society of America**, April 27-28, Lincoln, Nebraska Center for Continuing Education and UNL East Campus.

--**Nebraska State Envirothon**, May 6, Mahoney State Park, Ashland, Neb.

--**"Planning for a Sustainable Future--The Case of the North American Great Plains"**, May 8-10, 1995, Cornhusker Hotel, Lincoln, Neb.

--**1995 Annual Meeting of the American Institute of Hydrology and the International Mine Water Association--**"Water Resources at Risk," May 14-15, 1995, Denver, Colo., Red Lion Hotel.

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