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*Frank W. Beaver, Editor*
CHAIR'S REPORT
Patricia Kelley

Greetings from the Department of Geology and Geological Engineering!

As you can tell from this newsletter, the Department continues to be an exciting, dynamic place to teach and learn! We have an active group of faculty who are dedicated to their teaching and the creation of new knowledge. We have continued our tradition of excellence in teaching; last year the Department developed a new system of teaching evaluation to promote high quality instruction. At the same time, we have successfully pursued funding to support faculty and student research and have presented our scholarship at professional meetings and in peer-reviewed journals.

Joining us in our efforts is new faculty member Ahmad Ghassemi, Assistant Professor of Geological Engineering (see accompanying article). Ahmad's interests in petroleum engineering and rock mechanics fill an important departmental need. Ahmad replaces retiring professor Sundar Saluja. In addition, we welcome a new Dean this year, Don Richard, formerly of NDSU.

Our students are eager, bright, and hardworking. Our enrollments at the undergraduate level remain strong compared to other geoscience departments nationwide. Seven new graduate students joined the Department this fall, and we have received a significant grant from the graduate school for student recruitment.

Ongoing efforts in the Department include the development of the Water Quality Laboratory initiated with National Science Foundation support. We continue to provide a high-quality LEEPS (Leading Edge of Earth and Planetary Sciences) Lecture Series and this year we inaugurated the Mary Jo Klosterman - Exxon Lecture Series. Homecoming continues to be an exciting time; last year lectures by Tina Langtry and Odin Christensen helped honor Leonard Medalists Bob Aaker and Walt Moore. Congratulations go this year to awardees Lee Clayton and Sam Tuthill.

New challenges await us this year. We will be preparing for another accreditation visit for Geological Engineering. We expect to undertake some curriculum modifications to better serve student needs. In addition, our Department was one of two selected to participate in a pilot project on Flexible Faculty Roles and Rewards. Our goal will be to work cooperatively to strengthen all aspects of the department's mission by emphasizing the unique talents and interests of each faculty member.

Finally, our alumni continue to provide loyal and faithful support. Thank you for your advice, encouragement, and financial contributions! We are truly proud of your accomplishments and grateful for your generosity.
**NEW ENGINEERING DEAN**

![Image of Don Richard]

**Don Richard** assumed the deanship of the School of Engineering and Mines on July 1, 1996. Dr. Richard holds the doctorate of science in Water Resources and Sanitary Engineering from New Mexico State University. Don most recently served as interim dean of the College of Engineering and Architecture at North Dakota State University (NDSU). He also served as chair and professor of Civil Engineering and Construction at NDSU, and has held faculty appointments at the Universities of Denver, Toledo, and Valparaiso. Welcome Dean Richard!

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**A Letter From Our New Dean**

*Greetings to the alumni and friends of the Department of Geology and Geological Engineering.*

*It is my pleasure as the new dean to send you greetings from the School of Engineering and Mines (SEM). We are in the middle of a very busy year in the school and especially the Department of Geology and Geological Engineering. I am sure you will read more about the activities of the department throughout this newsletter but let me highlight a few activities.*

The school has been selected as a pilot program to work with the engineering accreditation commission in evaluating the new accreditation criteria, *“Vision 2000”, during our next accreditation review in the fall of 1997*. Four schools have been selected nationwide and we are in good company. This is going to require a lot of work by all involved, but is a real opportunity for SEM at UND.

*It was my good fortune to have the opportunity to introduce Dr. Kelley as the guest speaker for the 6th Annual Elwyn B. Robinson Lecture where she presented an outstanding lecture entitled, “In Recognition of Scholarship.” Her ideas were very thoughtful and well received by the campus community.*

The 1996 Arthur Gray Leonard Award banquet at homecoming was well attended and two alumni, Dr. Sam Tuthill and Dr. Lee Clayton, were honored for their outstanding contributions in the geosciences.

Dr. John Reid was selected by the Carnegie Foundation for the Advancement of Teaching as the 1996 *North Dakota Professor of the Year*. Dr. Reid continues his outstanding work in the department and remains dedicated to teaching excellence.

Dr. Ahmad Ghassemi is the most recent addition to the faculty of the department, having recently completed his Ph.D. in geological engineering at the University of Oklahoma. Dr. Ghassemi is an excellent addition and adds strength to the geological engineering program.
The department continues as a leader within the university, having been selected as one of only two departments to take part in a three-year pilot program to evaluate new "Roles and Rewards" for faculty members. This program could have long term impact on faculty activities, tenure policies and other duties of university faculty members.

So it continues to be very busy here at SEM and your department of Geology and Geological Engineering stands as a leader within the school and also across the entire university.

I am proud to have the opportunity to represent the School of Engineering and Mines and am proud of the success of all our alumni. We ask your continued support of our work toward the next century and are always happy to have a chance to welcome you back on campus.

Best wishes to you all for a prosperous 1997. 

Don Richard

NEW FACULTY MEMBER

Ahmad Ghassemi has joined UND’s geology and geological engineering faculty team and is teaching a course in petroleum geomechanics. He recently completed his Ph.D. in geological engineering at the University of Oklahoma, where he specialized in the application of geomechanics to petroleum engineering. The University of Oklahoma also granted his bachelors degree in geological engineering. Dr. Ghassemi holds a masters degree from the South Dakota School of Mines and Technology focused on rock slope stability, as well as a masters degree from the University of Minnesota concentrated on boundary element modeling of fractures in poroelastic media. His research interests include reservoir geomechanics, modeling of hydraulic fracturing in poroelastic media, borehole stability in chemically active poroelastic media, and cuttings reinjection. Ahmad’s teaching interests include rock mechanics, slope stability, underground design, petroleum geomechanics, numerical modeling, computer methods in geological engineering, petroleum reservoir engineering, reservoir stimulation, drilling and blasting technology, engineering geology, geological engineering design, subsurface disposal of liquid wastes, and coal technology.

Ahmad brings practical experience from his work with the Rock Mechanics Institute, a group cosponsored by a consortium of petroleum companies looking for solutions to real problems. His experimental work in measuring rock properties and modeling hydraulic fracturing promises to be beneficial to our regional energy, mineral, petroleum, and construction industries.

Dr. Ghassemi says he welcomes the opportunity to work with students on a diversity of challenging, interesting, and practical problems including energy exploration and production. His initial goals include working as part of the ABET reaccreditation team and building on the energy and mining tradition at UND. Ahmad’s avocational interests include fishing, hunting, and soccer. Welcome Ahmad!
FACULTY ACTIVITIES

Frank Beaver (Faculty '95 - present): I am now into my third semester and I have to say that working with students again has been a very refreshing, challenging, and satisfying experience in all respects. Our two semester engineering design capstone course continues to evolve. Every student project has been different and we have been successful in our efforts to have students work on real-world problems. Several students have actually been on the payroll of their sponsoring organization while meeting their design course requirements. This is a win-win situation. Students gain practical job experience. Companies have smart, energetic, and highly motivated people working on their problems.

In anticipating the need for practical student design experiences in the private sector and to provide access to SBIR funding for student and faculty research, my partner, John Rindt, and I started GeoDynamics Inc. (GDI), an engineering, technology and development company. We have submitted a number of proposals. Several have been funded, several are pending, and more are in the works. We have begun to explore a crude oil desulfurization technology with SBIR support. As a "subcontractor" in cooperation with the High Plains Consortium Inc., in Bismarck, ND, GDI was successful in being selected as one of the site characterization and remediation contractors for the ND State Department of Health and Consolidated Laboratories. Our goal with these projects is to provide ideal opportunities for student engineering design efforts and perhaps graduate theses in groundwater and remediation. This has been an extremely educational adventure and we appreciate the encouragement we have received from UND, state agencies, and others.

My daughters Diane-15, Karen - 13, and Lisa - 10 are all busy with everything and excelling in school. We won a place on the honorary crew of the USS Constitution (Old Ironsides) berthed in Boston harbor as the culmination of an extensive restoration effort focused on actually sailing her by 1998. We participated in a cruise around Boston harbor in July. It was an inspiring experience to be out on the water on the oldest commissioned warship in the US Navy and see the technology in action. We got to shoot off the cannons and get our hands on everything from the keel to the rigging. Old Ironsides also served as a research and exploration vessel and has been around the world almost two centuries ago. You could feel the history alive! After Boston we chartered an offshore boat and went out in the Atlantic to cavort with the whales and whatever else we might encounter. The kids quit counting whales after 20; several crossed right under the boat! From there we explored the coast of Maine, and the mountains and hills in New Hampshire and Vermont. All things considered it has been the best year ever and looking up.

Nels Forsman (Faculty '89 - present): Nels published a paper with Tim Gerlach in the May '96 AAPG Bulletin entitled, "Impact Origin of the Newport Structure, Williston Basin, North Dakota." He both shakes his head and smiles when he learns of some continued non-acceptance of an impact origin for that feature. But that provides good fodder for our "History and Philosophy of Geology" course. He continues to evaluate possible meteorite specimens brought to campus and has in the past year identified a new specimen found near Euclid, MN. Nels is co-author with John Hoganson and Ed Murphy of a GSA manuscript entitled "Lithostratigraphy, Paleontology, and Biochronology of the Chadron, Brule and Arikaree Formations in North Dakota." Nels continues to support the geological engineering program with his course offerings and service on the GE Curriculum committee. He continues as the faculty advisor to the Association of Undergraduate
Geologists. He is an SGID (small group instructional diagnosis) consultant for the Office of Instructional Development, and performs several consultations for faculty each semester. Nels is busy this semester as a member of a UND planning committee for a proposal to the Bush Foundation for a program to improve undergraduate student learning through faculty development and improvement of teaching. He is completing a manuscript with several other UND faculty for submission to the Harvard Educational Review concerning teaching assessment. He is still peripherally involved with the Integrated Studies Program here, recently having returned from their annual field trip to North Dakota’s badlands, Garrison Dam, a lignite mine, and Knife River Indian Village. He’s also occasionally called upon to provide guest lectures in that program. As Cooperative Education Director for our department, Nels reports that current students Damon Williams, Tim Freije, David Hillesheim, J. Lyall Marshall, and Brian Thomas, have had successful and rewarding positions this year.

Phil Gerla (Faculty ‘88 - present): In the past year I have profited greatly from shared knowledge and close work with colleagues and students! Last fall semester, Scott Korom and I offered a new course in groundwater modeling that covers both programming basics and the application of the popular U.S. Geological Survey MODFLOW code. During the last year I also presented new courses in environmental and wetland hydrology. I completed the second year as an associate editor for the journal Ground Water.

Last spring, JoAnn Harrer and Constance Holth completed their characterization of a recently formed wetland in the upper reaches of Renville Reservoir near Cavalier. The findings of their work were presented at the North Dakota Water Quality Symposium in Bismarck. Joel Galloway, now with the U.S. Geological Survey in Iowa City, and I presented some of the results of his senior thesis at the 1996 Geological Society of America Annual Meeting. His work focused on the effects of the 1988 Yellowstone forest fires on surface water quality. As their graduate advisor, I was very pleased to see the great effort put forth by Stan Pence, Jane Geiger, and Mike Strobel come to fruition this summer. After a long period of time “in press,” papers reporting the work that Ron Matheney and I completed on the Lunby-Stewart wetland have finally appeared in the journals Wetlands and Hydrological Processes.

A new field trip in conjunction with hydrogeological field methods (GGE 418) takes the class on a Saturday excursion to the large 1979 petroleum spill near Pinewood, Minnesota. Other stops include an examination of gasoline spills near Bemidji (guided by John Dahl) and a visit to the Little Shingobee Fen (a wetland associated with a large groundwater spring) near Akeley.

Managing our farmstead and large gardens takes up some of my time during the summer months. My wife Janet and our five children (Tim, 15; Andy, 12; Paul, 9; Becky, 6; and David, 3) have been busy developing a home-based dried flower and garden produce business. By September we almost look forward to snow!

Will Gosnold (Faculty ‘82 - present): Often, when I begin this yearly newsletter contribution, I reflect on what has happened and phrases such as, “a lot has happened,” or “this has been a ... year,” etc., come to mind. Amazingly, this one may take a prize for activity. During the academic year, I taught twice as many courses as normal. In addition to the normal classes in Geophysics, Structural Geology, and The Evolving Earth, I added Advanced Structure, Advanced Geophysics
and a rare spring session in Geophysics. I also attended and presented papers at the usual meetings, AGU in San Francisco and GSA in New Orleans.

During this busy time I formed a consortium to purchase a pair of Global Positioning Receivers for use in research and teaching. The University is a member of the University Navstar Consortium (UNAVCO) and UNAVCO had arranged a substantial discount for purchase of equipment from any of four GPS equipment manufacturers. The consortium includes: Geology and Geological Engineering, Biology, Civil Engineering, Space Studies and EERC. Each member contributed an equal amount of money and the School of Engineering and Mines, the Office of Research and Program Development, and the Provost contributed enough to purchase the best system available. We now have two Leica System 300 GPS receivers, plus ancillary equipment and software, that give us the capability of surveying multiple points with sub-cm accuracy in as little as two seconds per point. The system has been used for Chris David’s investigation of the Lake St. Martin Impact Structure, Dr. Bob Newman’s biological research on frogs, Joe Hartman’s research in Madagascar, and in course work in Geophysics and Civil Engineering.

This was busy enough, but when the summer arrived things really heated up. “Ouch.” From June 9-15, 1996 I attended the 4th International Workshop on Heat Flow and the Structure of the Lithosphere. It was held at the Trest Castle in the Czech Republic and was attended by approximately 80 heat flow scientists from around the world. I gave three papers at the conference and submitted two of them to journals before the end of the summer. I am working on the third in collaboration with Ilmo Kukkonen, Geol. Survey of Finland, and Jan Safanda, Czech Geophysical Institute.

After the Workshop in Trest ended, I flew from Prague to Amsterdam to Boston to Minneapolis/St. Paul to Rapid City and began a three-week stint teaching field camp with the consortium. The second session was incredibly good. The consortium had hired a new cook who really knows his stuff. The food was fantastic, and there was always plenty for everyone. Along with great food and wonderful weather, I was especially impressed with the students at field camp. They had great attitudes and they really put themselves into the long days in the field and the long evenings of analysis and interpretation.

In mid-August, I began a collaborative project with D. Blackwell of Southern Methodist University to conduct a gravity survey of a 400 km² area in Dixie Valley and the Stillwater range, Nevada. Since our GPS receivers were in Madagascar with Joe Hartman, I arranged to borrow two receivers from UNAVCO and spent two full weeks surveying, both position and gravity, in the Nevada desert.

The family, Deb and Annie, are doing great. Annie is a straight A student at Central, 10th grade, and is in her third year of competing for Central’s gymnastics team. Deb has begun swimming with me in the Masters swim program, and is a really good swimmer. I’m still trying to convince her to get on a pair of cross country skis. Two of our cats, Peaches and Angus, have gone on to the great sandbox in the sky.
Will Gosnold and Ken Wisian (Ph.D. student at SMU) during field work near an 1860 nickel mine in the Stillwater Range, Nevada.

Frank Karner (Faculty '62 - present): 1996 has turned into a crucial year for UND-- major change and controversy everywhere. We are challenged by the combined effects of declining academic resources, a national turn reaffirming teaching as the primary academic activity (even though increases in external funding are still critical), and widespread uncertainty regarding changes in university roles in the next century. It's no consolation that business and government are probably in the same deep water. So it's back to basics. We'd appreciate your ideas!

For me, this means proportionally more work on teaching with a greater emphasis on technical basics, investigative problem solving, and development of student skills for continued learning. It means more applied research and general service with both integrated with teaching. It means starting some programs that will bridge to the 2000's. My involvement in the NSF-funded Water Quality Laboratory and the UND DREAMS Project (which assists disabled North Dakota Native American grade school students in science and mathematics) has helped me visualize some new directions.

This year I'm also working with Bob Dvorak (an undergraduate funded by the NSF Science Bound Program) on an Internet science education project, Earthscape. Chad Tomforde and I continue to work with John Hurley at EERC on a geochemical and electron microscope study of mineral and maceral transformations during the combustion of bituminous and low rank coals.

Working on the Leonard Award, departmental recruiting, advising and curricula, as well as the UND Curriculum and other committees has kept me involved in university activities. I still play handball and Joan and I regularly travel to visit our daughters and their families and Jim, who is still in graduate school in geology at the University of New Mexico where he's using transmission electron microscopy to evaluate materials and processes of vapor phase condensation in the early solar system.
Patricia Kelley (Faculty ‘92 - present): In addition to my administrative duties and teaching two courses each semester, I have continued my NSF-sponsored research on predator-prey evolution and mass extinctions. Students involved in this project during the past year are M.S. students Vicky Andrews, Amber Huntoon, and Glenn Kays, and undergraduate Karri Bradbury. My coauthor Thor Hansen (Western Washington University) and I published two papers; several more are in press, in revision, or in preparation. We also presented papers at GSA in New Orleans, North-Central GSA in Ames, Iowa, and the North American Paleontological Convention.

I’ve finished my stint as a Paleontological Society Distinguished Lecturer, which took me to ten universities during the past two years. I’m still a technical editor for the Journal of Paleontology, an officer of the American Association for the Advancement of Science, and an NSF panelist for Earth Sciences.

Scott Korom (Faculty ‘94 - present): It’s good to have Ahmad Ghassemi aboard to complete our complement of Geological Engineering faculty. Now if we don’t have to spend our energies searching for new faculty members and fighting threatened program cuts, we can focus on invigorating the Geological Engineering program. We’re already planning for our next ABET visit, which is next fall. The School of Engineering and Mines was selected as one of four schools across the nation to participate in the new ABET accreditation criteria. The other three schools are Georgia Tech, Harvey Mudd, and Union College. I agreed with Ron Apanian, Chair of Civil Engineering, when he said that our presence was probably a bit intimidating to the other schools.

Last year I worked with three students on their senior engineering design projects. Lee Evans and Mark Osborn’s project was on sulfate contamination in the Elk Valley Aquifer. Bryan Zinda worked on capture zone determinations for single pumping wells in heterogeneous aquifers. I’m pleased that each of these guys found a job with a consulting company upon graduation. Carissa Munson, another engineering student, Gale Mayer, (Ph.D.), and I presented a poster titled Denitrification by pyrite: Comparison of the Elk Valley Aquifer to northern European aquifers at the ND Water Quality Symposium.

I’m also pleased to be collaborating with three graduate students. Eron Dodak is nearing completion on a thesis concerning how non-linear adsorption affects the spreading of a contaminant plume in heterogeneous aquifers. He and I gave a poster on this topic at the spring meeting of the American Geophysical Union. Bethany Bolles is working with Phil Gerla and me on our denitrification research project with the USDA. Allen Schlag plans to look at nitrate concentrations in the Elk Valley Aquifer.

I continue to explore my new home state. I’ve found Logging Camp Ranch in the badlands; I love that area. I also spent a night in the Wakopa State Wildlife Management Area in the Turtle Mountains. Other than a couple of families that fished for a few minutes that evening, I had the lakeside campground to myself, except for a raft of canivasbacks, a few muskrats, an owl, and a pack of rowdy coyotes.

Ron Matheney (Faculty ‘89 - present): Ron is working with M.S. student Kristján Bekker on culturing diatoms and on extracting an oxygen-isotope climate record from diatoms deposited in lake sediments over the last 1000 years. Ron is Director of the Water Quality Laboratory, and is
working with WQL analyst Sally Eckert-Tilotta to teach a new course, Environmental Sampling and Analysis (ESA). Students in the ESA class learn proper techniques for sampling waters, learn the theory of the WQL instruments (gas chromatograph/mass spectrometer, inductively coupled argon plasma/atomic emission spectrometer, ion chromatograph, carbon analyzer, ion-selective electrodes) in the lecture, and then operate the instruments in the lab. Students perform an independent research project towards the end of the semester. Satisfactory performance entitles the students to use WQL for their future senior and graduate theses and design projects. Ron and Sally are currently supervising the ESA research projects of Bethany Bolles, Renae Hines, Steven Neuharth, Ryan Odenbach, Allen Schlag and Brian Thomas. Projects range from detection of pesticide residues and farm chemicals to sampling for dissolved iron. Next fall, Ron plans to organize the second GGE alumni panel discussion on careers. The panel is designed to give current GGE students an opportunity to meet departmental graduates and to get an idea of the ranges of jobs you hold. Last year’s panel was well attended and a big success, thanks to the participation of Dean Goebel, Grant Larson, Barbara Sahl, and Patrick Skibicki. If you would be willing to sit on a jobs panel next fall, please contact Ron.

John Reid (Faculty ’61 - Present): This past summer was the busiest ever! It began May 31-June 2, working with Ken Harris and Mark Luther, leading the Midwest Cell of the Friends of the Pleistocene on the annual field conference. That conference required much planning, but it went very well, with more than 75 participants from as far away as Sweden. That conference was followed by a reconnaissance trip and then a subsequent sampling and mapping trip to central and western ND under a grant from EPRI through EERC. Joseph Hartman is the project manager of this research endeavor to determine paleoclimate cyclicity in alluvial fill sequences. A new graduate student, Debi Beck, from Case Western University spent much of the remainder of the summer mapping and collecting detailed samples from a section containing 16 buried A-horizons. Tim Kroeger, is searching for pollen in the same (and other) samples collected for this project. A quick trip to assist PhD student, Jon Ellingson, in his field mapping of a quadrangle SSW of Mandan as part of a USGS mapping contract. On the way I stopped at a mosasaur excavation site SE of Cooperstown, where John Hoganson was busily supervising the removal of the remaining bones. J. Mark Erickson was there with a crew of his students from St. Lawrence University, doing much of the excavation. That discovery received much publicity throughout the state and visitors, including many children, spent many hours watching and asking questions.

A 5-day trip to Colorado Springs to visit son, Bill, and a weekend trip to Selkirk, Manitoba, with daughter, Val, and two grandsons, to watch the Highland Games, brought me to the middle of August when I led seven students onto the glaciers of western Alberta and eastern B.C. As on previous trips, this one was full of hard climbing, magnificent scenery, and changing weather, including a cold snowy rainstorm. We climbed farther and higher than any previous trip. All participants returned changed forever!

Dexter Perkins (Faculty ‘81 - present): Professionally, this year has been a real busy one for me. I continue to work on my textbook—perhaps it will even be done by the end of fall. I have been slowly continuing with my Saskatchewan research, but just haven’t devoted the time I should to finishing up what was started several years ago. I have initiated a number of new exciting projects-mostly in the area of geoscience education. Perhaps the most fun and rewarding was the “How to Teach Mineralogy” workshop that I helped organize this summer. The workshop, paid for by NSF,
included 75 mineralogists from around the country. We had big name researchers, and instructors from junior colleges. Our goal was to look at ways to “redo” mineralogy, in order to make it more interesting, a better learning experience, and more fun for students.

On the home front, things are pretty much the same. My two teenagers do the usual teenage things, which can be trying at times. Betsy continues her job as the manager of Amazing Grains (formerly the food co-op). And I continue to dabble at a number of sports, getting the most exercise from refereeing and coaching soccer.

PROFESSOR OF MINING ENGINEERING SUNDAR SALUJA RETIRES

The Department honored Dr. Sundar Saluja at a retirement reception in the Edna Twamley Room of Twamley Hall. Professor Saluja came to the School of Engineering and Mines in August 1982 with the mission of revitalizing the mining engineering program. During his tenure at UND he was involved with teaching as well as conferences on energy. We wish you the best in your retirement!

DEPARTMENTAL ACTIVITIES

Flexible Faculty Roles and Rewards Pilot Project
The Department of Geology and Geological Engineering, along with the Mathematics Department, has been selected by UND Provost and VP for Academic Affairs, Marlene Strathe, to participate in a three year pilot project focused on redefining roles of individual faculty members to meet overall teaching, research, and service goals of the department as a whole. We believe UND’s initiation of this pilot project is very timely in view of new tenure guidelines issued by the ND State Board of Higher Education, and an apparent nationwide “uneasiness” about how higher education conducts its business. This consensus is manifested in many ways. For example, tenure, one of the more tangible aspects of higher education, and long a topic for heated debate, has been focused on as something that needs to be “fixed”. Truly objective evaluation of teaching remains an elusive goal. Professors have traditionally been contracted to carry out, in general terms, teaching, research, and service activities, but are typically evaluated and promoted primarily on the basis of research activity. These issues have seemingly been addressed in the newly adopted criteria. We have the opportunity to creatively implement these criteria through the pilot project. The Department remains committed to providing the best possible educational experience and we have begun the process of redefining flexible faculty roles by drafting a new mission statement that will be considered for adoption by the department next semester.
Draft Departmental Mission Statement
The UND Department of Geology and Geological Engineering strives to provide a high quality and practical educational experience that will enable students to thrive in a wide variety of careers in a dynamic and competitive world environment. The department, working as a team, seeks to accomplish this mission by:

* Retaining a diverse, highly qualified, and dedicated faculty committed to teaching excellence and advancing our understanding of the earth and our interactions with it;

* Providing a rigorous and comprehensive foundation in the principles of geology and geological engineering for those pursuing professional careers in industry, research, government, and education, as well as those preparing for graduate study;

* Energizing nonmajors to consider our relationship with the earth and to be responsible citizens by offering introductory geology courses with broad perspective to support the liberal arts mission of the University;

* Engaging in the discovery and application of knowledge through a variety of creative activities including basic and applied research, education, commerce, and public service;

* Instilling a desire for lifelong learning by challenging students to think and act creatively, independently, critically, and decisively so that they can effectively interpret complex geological phenomena;

* Recognizing the symbiotic relationship between science and engineering and promoting the application of their complementary skills and talents in an ever-changing social, economic, and political climate;

* Developing written and verbal skills critical for effectively communicating science and engineering issues to society; and

* Responding to the needs of our students, society, industry, and government in a practical, businesslike, and timely manner.

UND Restructuring
As UND wrestles with restructuring to best serve its constituency, we in the department continue to work closely with the restructuring committee so that they will have accurate and timely information that reflects the critical need for earth science and engineering expertise. We have called upon many of you for testimonial support and insights and appreciate your overwhelming response! Thank you!

Reaccreditation Visit Pilot Program
The department is preparing for our 1997 visit by the accreditation board for engineering and technology (ABET). We were very pleased to learn that UND is one of four schools nationwide to participate in an ABET pilot program, Vision 2000, focused on what engineering should be in the 21st century, and how we can best provide it to students. The other pilot program institutions are
Library Serials Redesign Pilot Project
In the spring of 1996 the Department of Geology and Geological Engineering was asked by the Chester Fritz Library to participate in a Serials Redesign Pilot Project. This project was part of the campus-wide initiative by the Chester Fritz Library to reduce the periodical budget as a result of the inflationary costs of journal subscriptions. The department was given a choice to either follow the traditional journal reduction procedure or to participate in this new pilot project. The traditional method required a 28% reduction in the total periodical budget for geology. This would have amounted to approximately $12,783 being cut from the $45,655 budget. The non-traditional method, referred to as the Serials Redesign Pilot Project, allowed each faculty member to list 20 journal titles most essential for their teaching and research. No targeted percentage of subscription costs to be eliminated was given. Faculty also were asked to indicate which of these titles listed could be obtained through a document delivery service rather than an in-house subscription. We were told by the project coordinator and the director of the library that faculty and graduate students would be given free document delivery services. Our department chose to participate in the pilot project.

As faculty created their lists it was found that they preferred an in-house subscription for most of their research needs. There was concern that students, particularly undergraduates, would not have access to the material if it was not found in the library. Currently, students, as well as faculty, are required to pay a small fee for Interlibrary Loan requests. Few journals were listed by faculty as appropriate for document delivery. After all lists were compiled and collated by the staff of the Chester Fritz Library, the results were presented at a faculty meeting. Discussion took place regarding those journals identified as possible cancellations. As a result, 28 titles were canceled, totaling less than $8,000, and eight new journal titles were added totaling approximately $2,500. We felt good about our participation in this project as it allowed us to keep nearly all of our critical journals and the reduction in journal expenditures was not as severe as first predicted.
Homecoming ‘96

As usual, homecoming was intense. We were honored to have Dr. Tom Hamilton as the department’s keynote speaker. His address focused on changes in the petroleum industry and where the industry is headed. During the Departmental Advisory Committee meeting, Barb Sahl and David Brekke were “inducted” to replace outgoing members Bruno Hanson and John Utgaard. The homecoming banquet was the forum for bestowing the Leonard Medal on Lee Clayton and Sam Tuthill (see the awards section of this newsletter for details). We were honored to have a large crowd of alumni, faculty, students, and friends.
Spring Banquet '96
Spring semester '96 was celebrated with a visit from Skip Simmons, Department of Geology & Geophysics, University of New Orleans, who entertained and enlightened the audience with his presentation entitled "Suffering in Siberia: Mineral Collecting Adventures in Russia". This was also the occasion to present numerous scholarships and awards to students (see the awards section of this newsletter for details).

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Won't You Help?

If it were not for the generous support of our alumni and friends, we just couldn't do all the necessary things we do. You've been wonderful, but we need your support even more as our programs grow and state support decreases.

Are there some things you are willing to contribute money for, and others you are not? That's fine, just let us know, your contributions will go to the right place! You can choose from one of our "special accounts," or just tell us what you want done with your contribution. In other words, your contributions are sincerely appreciated and we abide by your specific wishes on use of contributed funds.

Some of the special accounts we keep are:
- N.N. Kohanowski Memorial Fund (for student/faculty support in mining, economic geology, geochemistry, petrology, or mineralogy)
- Carbonate Geology Studies Fund
- Sedimentology Lab Fund
- Stable Isotope Geochemistry Fund
- Alan M. Cvancara Graduate Research Award Fund
- F.D. Holland Jr. Geology Library Endowment Fund
- Water Quality Lab Fund
LEEPS LECTURE SERIES

As described inside the front cover, the LEEPS lecture series brings professionals on the cutting edge of their fields to UND. A sampling of some of the recent lectures includes:

Alistair Brown, AAPG Distinguished Lecturer, Dallas, TX; “Stratigraphy from 3-D Seismic Data”
Paul Morgan, Univ. of N. Arizona; “Archean Heat Flow, or Why is Archean Crust So Old?”
John Sepkoski, Univ. of Chicago; “The Periodicity of Mass Extinctions”
John Ferry, Johns Hopkins Univ.; “A Petrologists View of Fluid Flow in the Crust”
Gary Strathearn, Univ. of California Los Angeles; “Stromatolite Ecology”; “Pollution of Los Angeles Drinking Water”
Paul Silver, Carnegie Institute of Washington, DC; “Seismic Anisotropy and the Structure of the Subcontinental Mantle”
David Blackwell, Southern Methodist Univ.; “Thermal Tectonics of the Western United States”
Jay Lehr, National Water Well Association; “Ground Water Remediation”; “Ground Water Management Policies in China and Russia”
Bob Diffendal, Univ. of Nebraska Lincoln; “External and Regional Events Affecting the Geologic History of the Great Plains During the Period from 37 to 1.6 Million Years Ago”
Carlos Aiken, Univ. of Texas at Dallas; “Geological and Geophysical Applications of the Global Positioning System”
Jack Hess, Desert Research Institute; “Transient Response of the Hydrologic System to Global Climate Change”
Tom Winter, United States Geological Survey; “Hydrology of Lakes and Wetlands with Emphasis on Ground-Surface Water Interaction”
Jerry Sweeney, Lawrence Livermore Laboratories; “Thermal Maturation of Petroleum Source Rocks”
James Ingle, Stanford Univ.; “Birth and Death of the Japan Sea”
Don Anderson, California Institute of Technology; “Probing the Interior of the Earth”
Desmond Collins, Royal Ontario Museum; “The Challenge of the Burgess Shale”; “Burgess Shale: Contingency of Classification?”
Sara Poland, AAPG Lecturer, Amoco; “Tectonics of Northern Offshore California”; “Uses of Innovative Techniques in Mature Basin Exploration, Arkoma Basin, Oklahoma”
Bruce Jakosky, Univ. of Colorado; “The Exploration of Mars”; “History of the Climate of Mars”
George Stanley, Paleontological Society Distinguished Lecturer, Univ. of Montana; “The Evolution of Reef Ecosystems”; “Exotic Terranes”
Robert Slaughter, Southern Methodist Univ.; “Creativity in Science and Art”; “Ice Age Climate, Faunal Extinction and the First Americans”
Paul Knauth, Arizona State Univ., Tempe AZ; “Climatic Temperature History of the Earth”

For more information about the 1996-97 LEEPS Lecture Series contact Dex Perkins, (701) 777-2991; or DPERKINS@PRAIRIE.NODAK.EDU
Recruiting
Education is our business. With very few exceptions, businesses must market themselves if they wish to thrive. We rely on several marketing “tools” and agents. Our alumni constitute one of our most effective and widespread marketing efforts. The department has received a grant from the UND graduate school focused on recruiting graduate students. We have completed a new recruiting brochure for the geological engineering program, and are planning wide distribution to high schools during spring semester 1997. Other efforts are being discussed.

Enrollment Trends

![Bar chart showing enrollment trends from 1984-1985 to 1994-1995.]

Career Opportunities
As you can see from the Alumni News Notes, our graduates pursue a tremendous variety of careers, some in the employ of others, some pursuing their dreams and ambitions independently. Students find their way to geology and geological engineering even though many have had little previous exposure to earth science/engineering. It seems that after their first course or experience, it becomes a “blinding flash of the obvious” that they have found where they need to be and nothing distracts them from that point on, true to the admonition that “If you are doing what you love you will never ‘work’ a day the rest of you life”. We try to instill basic principles of science and engineering with respect to how the earth works and how we interact with it, principles that apply unequivocally worldwide. Understanding basic principles and their application provides an inherent flexibility in what geologists and/or geological engineers are capable of as long as they can express themselves adequately. They can “sell” what they love to do to a wide variety of “clients”. In fact, we have an awesome responsibility to recognize the symbiotic relationship between science and engineering and promote the application of their complementary skills and
talents in an ever-changing social, economic, and political climate. Geologists and geological engineers are uniquely prepared to deal with critical issues facing us today because the quality of life we seek—human health and environmental quality—has its foundation in the earth. Some of the options include:

Energy and mineral resources are among our oldest commodities, the discovery and extraction of which are clearly the domain of geoscientists/engineers. World population and demand for resources continue to grow and there appears to be a steady if not growing demand for a new breed of petroleum and mineral scientists and engineers who will use 21st century tools and technology in places ranging from developing countries to abandoned landfills.

Water resource management continues to be a unifying and underlying geopolitical factor of the American west and many other relatively dry places in the world. No one is better qualified to provide regional understanding and propose sustainable management solutions than hydrologists, hydrogeologists, and geological engineers.

Reclamation of disturbed and/or contaminated landscapes is a challenge that will be faced in earnest by the next generation of geoscientists/engineers. A few examples include abandoned mines of all types, industrial sites, military training grounds, defense facilities, deforestation, and agriculturally stressed land. Movement of water and contaminants through the landscape is best managed by people who understand the intimate relationship between earth and water.

Geoscience/engineering provides a strong foundation for a wide variety of careers including law, business, finance, education, and technology.

Recent graduates who are aggressive, competitive, and are able to express themselves clearly are finding places in business, government, and education, as well as graduate school.

FIELD TRIPS
Field trips continue to be high points that punctuate each year. For an excellent history of our field trips see the '95 Alumni News. Some trips have course-specific objectives such as John Reid's fall semester geomorphology challenge near Winnipeg, Manitoba. The spring break trip is a recreational as well as educational adventure to a warm destination. Others are focused on providing students with a chance to observe industry at work so that they can make informed career decisions. In spite of growing logistical challenges the department remains committed to providing meaningful field experiences.
Association of Engineering Geologists (AEG) Spring Field Trip
By Chris Rousseau

The Association of Engineering Geologists planned their first annual spring semester field trip to the Atomic Energy Commission of Canada laboratory and underground test facility. The trip was also related to the Engineering Geology course. The objective of the work currently being done on site is to determine the feasibility of utilizing the Canadian shield as a possible storage location for nuclear and other hazardous waste. The group was able to go underground, and examine the works of the test mine and observe research which is currently in progress at the test mine. This was an excellent opportunity for the students to observe hard rock geomechanics, and its applications to mining engineering. The field trip took place in late March and went very well except that winter made an unscheduled visit in the form of a late spring blizzard. Due to the weather the trip home progressed slowly, but spirits remained high and everyone had a great experience.

AEG field trip participants at their lowest point - the bottom of the AECL underground test facility northeast of Winnipeg, Manitoba, Canada
Columbia Icefields
By Melanie Hinzpeter

August of 1996 had John Reid leading his fifth group to the Columbia Icefields to study glaciers. Intrepid leader John Reid, Melanie Hinzpeter, Debi Beck, Trent Hubbard, Amber Huntoon, Penny Sakry, Paul Sorensen, and Ivana Witt left Grand Forks in a UND minivan on August 15, and with one overnight camping stop, drove to Jasper National Park on the western edge of Alberta.

The group visited the Athabaskan Falls, Takakkaw Falls, and Peyto Lake, climbed the Athabaskan, Dome and Saskatchewan glaciers, and hiked up to the Plain of Seven Glaciers from Lake Louise. The high point of the trip was a hiking trip to Bow Glacier. The group stayed at Bow Hut and explored the mountains and glacier from there.

The stay at Bow Hut was the only indoor night of the trip. Other than a couple of days of rain, the weather cooperated wonderfully. The trip wound down with an afternoon in the town of Banff. After a brief detour to Drumheller, the group drove straight through to Grand Forks. With no serious accidents or incidents, and more learning experiences than a classroom could ever offer, the trip was a wonderful success. None of the participants will ever forget the experience.
Friends of the Pleistocene
By John Reid

The 43rd annual North Central Friends of the Pleistocene field conference was organized and led by three UND-related geologists: Ken Harris, Minnesota Geological Survey, John Reid, and Mark Luther, ND Geological Survey. A pre-conference field trip included Salt Lake, Edinburg Morrain, Dahlen Esker, Fertile dunes, and outcrops on the Park and Red Lake rivers. At the banquet, Lee Clayton was presented a chrome plated Moore pick in recognition of his numerous contributions to the understanding of Lake Agassiz. A post-conference field trip was held in the southern Red River valley. Other UND-related participants included Frank Beaver, Jon Ellingson, Howard Hobbs, Trent Hubbard, Frank Karner, Scott Korom, Gary Meyer, Jon Reiten, Mike Strobel, Ron Matheney, and Steve Moran.

Red Lake, Ontario and Northern Minnesota
By Penny Sakry

Our adventure began at noon on Thursday, September 5, 1996. After a drive that seemed endless, and many stops to check out interesting geology, we finally arrived at Pakwash Provincial Park for the evening. The campground was empty, which was a good thing not only for us, but also for everyone else, because we were away from school and loving it (maybe a little too much for some)! Everyone had a great night, including those who decided to sleep!! In spite of this fact, Dexter still woke us all up bright and early the next morning so that we could get to the Campbell Gold Mine. We successfully got past security at the mine and were allowed to go underground. Everyone looked so good in their new miners hats and uniforms, we truly felt like real miners. We
got dirty, climbed ladders, collected rocks (maybe a few too many—Ivana!), and yes, even learned a little geology. After a fun yet exhausting two hours in the mine, everyone was ready for a little lunch. We stopped at a small café, stressed out the waitress (I don’t think she has ever seen that many people in her place before), and without causing too much trouble, were on our way back to the mine for the last half of our tour. Although not as exciting as actually going underground, we all enjoyed touring the noisy/smelly processing facility at Campbell Mine. After this tour, we left the Campbell mine once again sneaking past security (some of us were grateful to not have our rocks inspected because some claimed to have “found gold”). Everyone was exhausted at the end of this excursion, but most everyone seemed (for some odd reason!) to wake up once we reached our campground for the evening. The next morning, after nice warm showers, we met with Ray Bernache, a geologist/prospector, who gave us a tour of the old Steep Rock Mine in Atikokan. We, being geologists, once again acquired many rocks. We also were able to see some of the oldest known stromatolites, which was exciting even in the pouring rain. After the tour of the Steep Rock Mine, Ray showed us his amazing rock collection. After this long day, we were on our way to Cascade River State Park. We stopped at the Gunflint formation on the way there. We reached our campsite at about 10:00 at night. We set up camp in the dark and the rain, started a small fire, ate a delicious dinner (cooked by Dexter) of chicken curry, and went to sleep. The next day we went to the Soudan Mine. Although this wasn’t very exciting after having been to the Campbell Mine, we still managed to have fun by harassing our tour guide. We arrived back in Grand Forks at approximately 8:00 P.M. on Sunday. Although the trip was very enjoyable, we were all glad to be back in good old Grand Forks, where we could sleep in our warm beds and inspect all of our new found treasures.
A Large, Ugly Hole in the Ground?
By Lynn Overend

In September of this year, I enrolled in a geology course that was taking a field trip to Northern Minnesota. I was eager to go because I had once lived along the shore of Lake Superior and had enjoyed hiking throughout the area. When I lived in Minnesota I had little knowledge of geology. Since leaving the North Shore I have enrolled at the University of North Dakota as an environmental geology and technology major for 1 year. So I was excited about returning to Minnesota to have the opportunity to use my knowledge of geology. I was going to have the opportunity to again see the features I had come across so many times while hiking. Now, however, I would see these familiar features in a whole new perspective.

Imagine my disappointment when I read the itinerary that stated there was to be a visit to a taconite mine. Why on earth would I want to visit such a place? Why would I want to go see a large, ugly hole in the ground where once stood rolling hills and a lush forest? Mining pollutes our environment and creates a wasteland. What does this mining operation have to offer me? I wanted to go back and look at the outcrops and formations of the scenic north shore of Lake Superior. What does the torn landscape of a mining operation have to show me?

The LTV mine in Hoyt, Minnesota, is extracting iron ore in the form of taconite. I arrived there expecting to see nothing more than barren piles of rock and soil. As foreseen, the mine had no rolling hills and no lush forests, but to my surprise it was not a wasteland either. For a student of geology, it was a perfect place to study and learn. I was able to see the principles taught to me in the classroom for real, not from a textbook illustration. I saw the principles of original horizontally, lateral continuity, and superposition. I also saw inclusions, unconformities, and cross cutting. To learn about faults and folding of strata and then to be able to identify the remnants of these events in an outcrop is very exciting. I was like the proverbial kid in the candy store as I picked up rocks and minerals that I had previously only studied in the classroom. I left the mine that day, weighted with rocks and a new outlook. Maybe a mine is not such a bad place after all.

Upon returning from the field trip, I enthusiastically told my husband about my discovery. I showed him my samples I had brought back, pointing out what it was, where I found it and in what formation. We talked about the mining and the equipment being used. While talking with him and then for several days after, I started to think about how my perception of a mine has changed. I went there ready to hate it, but I enjoyed it. It was not a desolate place I had expected to see. It had become a place of learning, not of devastation. The mine had opened a part of the earth that would have otherwise been covered with rock and soil. The LTV mine had exposed part of the geologic history of the Iron Range for me to see. Previously, I had thought that the splendor of a landscape came from trees, hills, and meadows. I was wrong, it can also come from “a large, ugly hole in the ground”.

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FIELD CAMP

The field camp experience continues to be a critical component of our science and engineering programs. However, the number of quality field camps still operational are decreasing, and there are very few with a geological engineering component. Several years ago UND entered a field camp consortium including the SD School of Mines, Minot State University, University of Minnesota at Morris, University of Mississippi, and the University of Wisconsin at Milwaukee so that we could have more control over content. The Black Hills area offers excellent opportunities for both geology and geological engineering exercises. The camp has been held at Ranch A, on the west flank of the Black Hills, just inside Wyoming. Perry Rahn, SD School of Mines, has been the logistical leader. The log lodge is both impressive and historically significant, and has a complex ownership history. However, ownership has changed and the facility is destined to become an educational center with the lodge as a museum so the lodge will no longer be available for use. We are currently in the process of defining the location and content of this year’s field camp program.

NORTH DAKOTA PROFESSOR OF THE YEAR - JOHN REID

Professor of Geology John R. Reid, known affectionately by his students as "JR," was successfully surprised on October 9 by UND president Ken Baker, provost Marlene Strathe, engineering dean Don Richard, associate engineering dean Tom Owens, and geology and geological engineering chairperson Patricia Kelley. Vice president Strathe presented the Professor of the Year citation "for extraordinary dedication to undergraduate teaching," which was granted by the Carnegie Foundation For The Advancement Of Teaching and Council For Advancement And Support Of Education. At a spur-of-the-moment reception of students and faculty in Leonard Hall, he modestly professed total surprise at this award. Since arriving at UND in 1961, Dr. Reid has taught, guided, mentored, challenged, and befriended countless students at all levels, some in spite of themselves he would say, and they are all better individuals because he helped them develop their thinking and writing skills. He is a professor in the classic sense, who has been there for his students as the University has evolved with society. He expects excellence from his students, balanced with humanity, a combination that leaves students satisfied that they have received true value and that they have a friend at UND.

Congratulations, Dr. Reid!
1996 ARTHUR GRAY LEONARD MEDAL Awardees:

"Established in 1992 in honor of Arthur Gray Leonard (1865-1932), scholar, leader, and pioneering geologist of North Dakota. Award of the medal recognizes outstanding achievement in the geosciences in research, technical studies and projects applied to societal needs, teaching, educational development, or leadership in conservation of Earth's resources and environment. Conferred by faculty and alumni of the Department of Geology and Geological Engineering, University of North Dakota." We honor:

Lee Clayton
Imagination, Research, & Guidance

and

Sam Tuthill
Public Servant, Leader, & Educator
Leonard Award Nominations Invited!

Alumni and friends of the Department of Geology and Geological Engineering: We seek your help in choosing deserving candidates for the Arthur Gray Leonard Award! An award committee, consisting of faculty and alumni, will review all nominations. Please submit nominations, including your summary of nominee achievements which meet award criteria to the committee at any time. For consideration for the proposed fall, 1997, awards, please submit by March 31, 1997. Nominations will be retained for later consideration if not chosen for this coming year. Past awardees were:

1992: Wilson M. Laird
1994: Sidney B. Anderson and Bernold M. Hanson
1996: Lee Clayton and Sam Tuthill

Thank You! (Frank Karner, for the A.G. Leonard Award Committee)

Tarr Award - Robert Burrows

Sigma Gamma Epsilon F. D. Holland, Jr. Service Award - David Rush

Estwing Pick Award - Joel Galloway

SCHOLARSHIPS

Terrance Anstett Scholarship
Brian Thomas

Henry Hinds Scholarship
Brian Thomas

Nicholas Kohanowski Scholarship
Damon Williams

Reba A. Laird Scholarship
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Carissa Munson

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Daryl Hochhalter
Patricia Kleven
Mike Miller
Penny Sakry  
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Damon Williams  
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Rocky Mountain Coal Mining Institute  
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Charles Henry Waldren Memorial Scholarship  
Carissa Munson  
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Summer 1996

Alan M. Cvancara Graduate Field Research Endowment  
Amber Huntoon  
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DEPARTMENT CONTRIBUTORS

HONOR ROLL OF PATRONS

In order to recognize and honor contributors to the Department of Geology and Geological Engineering, the Geology Alumni Advisory Committee has designated the following categories: Life Patron--$10,000; Honor Patron--$5,000; Sustaining Patron--$1,000; Patron--$500. All contributions to the Department are accumulative and applicable toward the next larger category. Many companies match, or double or triple match your contribution. Gifts may be sent directly to the Department or channeled through the UND Alumni Office to any Department fund, or the Geology Development Fund and may be designated for a specific purpose, if the donor so chooses. You may be assured that your donation will be used for the purpose you designate. To express our continued appreciation and gratitude for their generous gifts to the Department, the names of our Patrons will be listed in each issue of the Alumni News.
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December, 1995 Geology Graduates
Holweger, Todd (BS Geol)
Sickler, Rob (MA)

December, 1995 Geological Engineering Graduates
Evans, Lee (BSGE)

December, 1995 Environmental Geology & Technology Graduates
Burrows, Robert (BS EGT)
Harrer, Jo Ann (BS EGT)
Holth, Constance (BS EGT)

May, 1996 Geology Graduates
Holder Jr., Bobby Joe (BS Geol)
Varvel, Andrew (BS Geol)
Geiger, Jane (MS)
Strobel, Mike (PhD)

May, 1996 Geological Engineering Graduates
Ernst, Taunya (BSGE)
Osborn, Mark (BSGE)
Zinda, Bryan (BSGE)

May, 1996 Environmental Geology & Technology Graduates
Belik, Shannon (BS EGT)
Johnson, Brett (BS EGT)
Klaus, Christopher (BS EGT)
Miller, Darren (BS EGT)
Smith, Kori (BS EGT)
Stafford, Brent (BS EGT)

August, 1996 Geology Graduates
Galloway, Angela (BS Geol)
Galloway, Joel (BS Geol)
Goven, Gerard (BS)

August, 1996 Environmental Geology & Technology Graduates
Schlag, Allen (BS EGT)
The F.D. Holland, Jr. Geology Library remains an integral part of the Department of Geology and Geological Engineering. We continue to be open during business hours five days a week with additional evening hours four nights a week. Using the library for research has become easier with computer technology. We now have several electronic databases for searching research topics including GEO-REF, Applied Science and Technology, and GPO/CATPAC (for USGS publications). GEO-REF, particularly, has been a real aid to our students and other researchers in accessing information quickly and accurately. Our on-line card catalog, ODIN, allows us access to library holdings across the state, as well as academic libraries in Minnesota. We have the capability to print out the full text of many general geology titles. Computers in the library may be used to order or download maps from USGS in paper or electronic formats and also order aerial photographs from the EROS Data Center.

Library holdings are becoming less traditional. USGS is sending us new products that are published as CD-ROM's, such as the Digital Line Graphs or DLG's. The most popular in our library are the DLG's at a scale of 1:100,000. Coverage is complete for the continental United States and the Hawaiian Islands. Data layers include boundary, transportation, hydrography, and hypsography information. Departments and others who utilize various GIS software are frequent borrowers of DLG's. Digital Raster Graphics or DRG's are the latest CD-ROM products to come to the Geology Library. These are scanned images of 1:24,000 scale topographic maps. Each CD-ROM contains blocks of sixty-four topographic maps. It is projected that 900 CD's will comprise this series. Compare that to the 60,000 paper topographic maps of the same scale.

The U.S. Federal Depository Program has alerted participating libraries that we will be seeing more and more information published in electronic formats. However, we still continue to receive books, journals, and government documents in the traditional format through University funds, and alumni funds, as well as the Federal Government. At last count we had 57,000 volumes, 18,000 microfiche, and more than 100,000 maps. We circulated 5,349 items last year including 1,174 maps. We have added a few more tables and chairs to accommodate map work and poster design. Students and others still like to use the Geology Library for individual study, cooperative research efforts and lively debate. Alumni may pick up an alumni library card free of charge at the Chester Fritz Library, which can be used in our library. So please come visit us the next time you are in town.

WATER QUALITY LABORATORY
By Frank Karner and Ron Matheney

Students and faculty in geology and geological engineering as well as biology, chemistry, engineering, geography and industrial technology have begun or have planned use of the new WQL facilities in Leonard Hall. The 1994-97 National Science Foundation award of $192,000 for
analytical instrumentation has been combined with UND commitments to provide equipment, space, and support services. The WQL enables students and faculty to investigate surface water/groundwater resources and use in the Northern Great Plains region. Practical experience in water resource issues is of great significance for students preparing for future employment not only in science and engineering but in all careers in which the environment is a concern. The WQL’s mission integrates basic research, advanced environmental education, and effective public service. Following are highlights of activities over the past year.

- The Water Quality Lab was fully inaugurated, with the purchase and installation of the remaining pieces of major equipment identified in the proposal. The WQL now includes an ICP, GC/MS, IC, Carbon Analyzer, a variety of ion-selective electrodes, and ancillary equipment. These instruments are maintained and operated by WQL’s analytical chemist, Research Associate Dr. Sally Eckert-Tilotta, who was hired using NSF and UND matching funds.

- A hydride generator has been purchased for the ICP using EPSCoR grant funds awarded to WQL-participating faculty member Scott Korom (Geological Engineering). Scott also provided new-faculty start-up funds for the purchase of a water deionizer.

- Faculty research in WQL was initiated by Dr. David Tilotta (Chemistry) and Scott Korom. Groundwater and wastewater samples were analyzed for bromide, arsenic and hydrocarbon content.

- Student research was initiated in three projects involving monitoring of groundwater nitrate, bromide and ammonia.

- Sally Eckert-Tilotta and Phil Gerla (Geology) were awarded an EPA grant to develop environmental testing workshops for junior and senior high school science teachers.

- Formal course work incorporating the WQL was initiated. Ron Matheney and Sally Eckert-Tilotta are currently teaching the course “Environmental Sampling and Analysis,” which includes substantial independent student research. Dr. David Pierce (Chemistry) is currently teaching portions of an upper level instrumental analysis course.

- The WQL staff performed routine analysis of drinking water for the Pembelier Nursing Center.

- WQL participants are developing proposals and seeking funds to support research, community education, and special programs for disabled American Indians. Scott Korom is leading several collaborators in the preparation of a grant proposal to study mechanisms of denitrification in aquifer systems. Ron Matheney and Frank Karner are preparing to offer teacher-education course work on environmental education issues related to landfill management and leachate chemistry. Frank Karner is heading an effort to participate in a summer Institute offered by the NSF-funded Disability Research Encompassing American Indians in Math and Science (DREAMS) Program.

**NEWS FROM FRIENDS:**

U.S. Geological Survey  
By Mike Strobel

The USGS Grand Forks Field Office has had another busy year of data collection and analysis. For those people not familiar with the USGS activities, the office in Grand Forks employs five Hydrologic Technicians who collect surface-water, groundwater, and water-quality data in eastern
North Dakota and northwestern Minnesota. In addition, the office has one Hydrologist, one Administrative Clerk, and two students from UND. Data collection continues year-around, and is published annually in a Water Data Report. Information collected by our Data Section is used by many agencies, including the National Weather Service and the Corps of Engineers, in assessing the hydrologic conditions in the region. The information collected by the Grand Forks office was especially important this last spring, when the Red River Basin experienced major flooding.

Hydrologic studies carried out from the Grand Forks office focus mainly on ground water. Over the last year, projects were completed on the Sheyenne Delta aquifer, the Shell Valley aquifer, the Mystic Lake area in southeastern Minnesota, the Bemidji toxics spill site, and the Upper and Lower Sioux Communities in southwestern Minnesota. In addition, the office participated in a number of statewide and national research programs. The Ground Water Specialist for the North Dakota District of the USGS works in the Grand Forks office.

The Grand Forks office employs a number of students from UND for co-op, part-time and summer positions. Scott Zainhofskey, a Civil Engineering student, is completing a co-op with the USGS. Randy Gunderson, a Geology student, has worked with the USGS for about two years on a number of projects. Carissa Munson, a Geological Engineering student, worked for the Minnesota District last summer and was stationed in Grand Forks. She worked on the Bemidji Toxics Hydrology program. Lisa Pottieger, a Geology student, presently works for the Minnesota District and is stationed in Grand Forks. She works on the Upper and Lower Sioux Water Resources project.

Many students from UND have completed research with the USGS over the past few years. Most recently, Jo Ann Harrer and Constance Holth used USGS equipment and instruction in completing their research project in northeastern North Dakota, and Joel Galloway completed a thesis using data collected by the USGS in Wyoming (and was both an employee and a volunteer of the USGS-North Dakota District). Approximately 10-14 students have worked as Volunteers for Science with the USGS in Grand Forks over the past five years, many using this experience for completing thesis or seminar research.

The USGS has been active in community activities. Last year, the Grand Forks office provided an information booth at Earth Day activities at UND. The office contributed many hours in helping plan and put on the 1st Annual Children’s Water Festival last spring, including contributing informational and educational materials.

**Energy and Environmental Research Center (EERC)**

*By Pat Miller*

Recognized internationally for its expertise in scientifically advanced energy systems and environmental technologies, the University of North Dakota Energy & Environmental Research Center (EERC) is continuing to pursue its mission of improving global quality of life by converting energy resources cleanly and efficiently, cleaning up environmental contamination, and preventing air, soil, and water pollution. During the past year, there were a number of significant developments at the EERC.

The EERC’s Environmental Management Program is assisting small businesses in the development, demonstration, and commercialization of technologies to assist in the cleanup of environmental contamination at U.S. Department of Energy (DOE) nuclear weapons facilities and other sites across the nation. The Center has a cooperative agreement with the DOE’s Federal Energy Technology Center.
In January, the EERC Foundation and AGSCO Inc, Grand Forks, announced an agreement that grants AGSCO a license to market the new soil decontamination system developed by the EERC. The technology uses a low-temperature plasma to remove organic contaminants such as pesticides, petroleum products and chemical wastes from soil without producing hazardous byproducts. AGSCO plans to manufacture the system in Grand Forks and market the cleanup technology worldwide.

The first meeting of stakeholders of the Red River Water Management Consortium was held at the EERC in March. The EERC and AGVISE Laboratories Inc., Northwood, N.D., teamed to develop a water management program for the Red River Basin. The program established a consortium of industry, municipalities, and other entities in partnership with state and federal governments to develop a long-term water management strategy for the basin. The program is expected to become a model for watershed management in other areas of the United States and the world.

With assistance from the EERC, two North Dakota American Indian tribes are now producing electricity from wind turbines to help power reservation facilities. On Aug. 9, a 100-kilowatt wind turbine began generating electricity for the Spirit Lake Casino, which is owned and operated by the Spirit Lake Nation and located south of Devils Lake, N.D. An identical wind turbine west of Belcourt, N.D., began generating electricity Sept. 10 for a water treatment plant that serves the Turtle Mountain Chippewa Reservation and neighboring communities.

Robert Huggett, U.S. Environmental Protection Agency (EPA) assistant administrator for research and development, visited the EERC in August. He said that the Center's evaluation of methods to accurately measure mercury emissions from coal-fired power plants could play a key role in the regulation of those emissions. Much of Huggett's visit was focused on the EERC's Center for Air Toxic Metals (CATM), a program funded by EPA in partnership with private industry, research organizations and other federal agencies. This program develops analytical techniques to measure hazardous air pollutants, such as mercury and selenium, and the technologies to capture these pollutants.

The EERC is demonstrating its freeze–thaw evaporation (FTE) process this winter in New Mexico. This process can economically transform saline water into high-quality water that's usable for drinking, irrigation or agricultural processing. The process relies on evaporation in warm weather and ice crystallization in below-freezing temperatures to separate salts, organic material and other contaminants from brackish water to make it a source of potable water. The EERC is continuing to pursue opportunities to demonstrate this technology in the Red River Basin.

The EERC is involved in two projects exploring the use of Thailand's lignite coal resources to provide cleaner, more efficient energy to fuel the country's growing economy. The Electricity Generating Authority of Thailand (EGAT) is studying the potential of underground coal gasification (UCG) and the Thai Department of Mineral Resources (DMR) is evaluating coal–water fuels, briquetting and gasification.

The EERC and the DOE Morgantown Energy Technology Center are working in partnership with Alaska native and state officials to introduce small, economical, environmentally friendly, easy-to-operate-and-maintain technologies that use indigenous fuels and waste materials to produce electricity and heat. The lessons learned in Alaska are transferable to Native Hawaiian and American Indian communities throughout the United States and the world.

In November, the EERC presented its seventh Energy Champion Award to Tom Bechtel, the former director of the U.S. Department of Energy (DOE) Morgantown Energy Technology Center (METC). As director of the Morgantown, W. Va., facility from 1990 until his retirement earlier this year, Bechtel was responsible for implementing DOE's fossil energy research, development and demonstration programs.
Under the EERC's leadership, the Red River Valley region this fall received the U.S. Department of Energy's (DOE) Clean Cities designation. Extending south from Winnipeg, Manitoba, Canada, southward along Interstate 29 through Grand Forks to the cities of Fargo, N.D., and Moorhead, Minn., the Red River Valley Clean Cities region will be one of the first to span international borders. There are currently 48 official Clean Cities areas in the United States. A formal dedication ceremony was held Dec. 18 at the EERC.

North Dakota Geological Survey
By John Bluemle

The North Dakota Geological Survey has been situated in Bismarck since 1989 when it moved from UND, although the Wilson M. Laird Core and Sample Library remains on the campus. Survey geologists continue to work closely with several UND faculty and students.

The North Dakota Geological Survey (NDGS) serves as the primary source of geologic and map-related information in the state. The Survey's mission is three-fold: 1) to investigate and report the geology of North Dakota with emphasis placed on applied research leading to economic benefits or quality-of-life improvements for residents of the state; 2) to provide public service, and to collect, create, and disseminate geologic and map-related information to the people of North Dakota; and 3) to administer regulatory programs and act in an advisory capacity to other state agencies.

We have continued our geologic mapping of the state, concentrating during the past year on the Dickinson, Bismarck-Mandan, and Grafton areas. Part of this effort was supported by funds from the National Mapping Program (Statemap and Edmap). Edmap funds were used to partially support UND graduate student Jon Ellingson, who mapped the geology of a quadrangle in the Mandan area. If other students are interested in participating in the Edmap program, they should contact us.

Bob Biek finished mapping the geology of both units of Theodore Roosevelt National Park last fall and we plan to publish his map and report in our Report of Investigation Series. The geologic map will also be published separately by the Theodore Roosevelt Nature and History Association. Survey geologists are currently working closely with people in the park to develop educational exhibits.

Ann Fritz, a recent graduate of the University of Wisconsin, replaces Bob Biek, who left for a job with the Utah Geological Survey. Ann will be involved in mapping, particularly in the glaciated parts of the state.

Our paleontology programs, directed by John Hoganson, have recently included collection and restoration of a mosasaur near Cooperstown, and a thorough inventory of fossil resources in Theodore Roosevelt National Park. John also worked closely with the Heritage Center to develop displays for the new Pembina State Museum, which opened in May.

Gloria Pederson (GGE Secretary) and John Hoganson at Homecoming '96
As part of our efforts to encourage oil and gas exploration in North Dakota, we co-sponsored (with Saskatchewan Energy and Mines) our fourth workshop on horizontal drilling, this past May in Bismarck. Over 500 oilmen and women attended the meeting; we will be holding a fifth workshop in Regina next April.

Paul Diehl and Randy Burke prepared several maps on the Lodgepole Formation and these received wide distribution when they were published. Paul is continuing his work on the Lodgepole and Red River Formations. Tom Heck has been involved with evaluations of state leases for the Land Department and with completing the Survey’s new bibliography of North Dakota geology. Julie Lefever, Director of the Wilson M. Laird Core and Sample Library, has been working on the geology of the Lodgepole Formation and also on the Land Department evaluations.

Since the last issue of the Alumni News, the NDGS has published several new reports. They include a Report of Investigation on sodium sulphate deposits in northwestern North Dakota by Ed Murphy and several Miscellaneous Series, including a report on the history of the Survey (John Bluemle), a field guide on the Quaternary geology of the southern Lake Agassiz Basin to accompany last summer’s Friends of the Pleistocene meeting (Ken Harris, Mark Luther, and John Reid); a bibliography of the geology of North Dakota: 1980-1993 (Tom Heck), and a report on oil exploration and development during 1994-1995 (Tom Heck).

We also published a shaded relief map of the state, two postcards, four issues of the NDGS Newsletter and a new list of publications. The shaded relief map of North Dakota has been very popular and is available from the Survey as a 1:1,000,000 scale map as well as in a postcard version.

**Seen at 1995 New Orleans GSA Meeting**

Sherry Aarnes  
Orin Anderson  
John & Mary Bluemle  
Christina Davids  
Dwight Deal  
Stacy Delzer  
J. Mark Erickson  
Rod & Barb Feldmann  
Nels Forsman  
Lee Gerhard  
Will Gossnold  
Erik Harvey  
Bud & Mardi Holland  
Karen Katrinak  
Alan Kehew  
Patricia Kelley  

Joanne Lerud  
Fred Lohdell  
Ron Matheney  
Darryll & Theresa Pederson  
Dexter Perkins  
Art Reesman  
Mark & Symma Rich  
Curtis Rockwell  
Mitch Schulte  
Mary Scott  
John Tinker  
John Utgaard  
Andrew Varvel  
Pat Videtich  
Brian Wallick

**1950's**

Bernold M. “Bruno” Hanson received the Sidney Powers Memorial Medal, AAPG’s highest award, presented to those who have made distinguished and outstanding contributions to, or achievements in, petroleum geology.
Sid Anderson

Sid Anderson enjoying retirement

1960's

Ted Callender, USGS, will be reviewing progress in reducing lead concentrations in water and air over the past 20 years, as part of a larger effort to assess the effectiveness of environmental policy.

Wallace G. Dow received AAPG's Robert H. Dott Sr. Memorial Award for best special publication in 1994 - The Petroleum System - from source to trap: AAPG Memoir 60

Rod Feldman continues his travels to Mexico, Argentina, and Cambridge, England this year.

Charles Frye is on medical leave from Northwest Missouri State University where an endowed scholarship has been set up in his name. He and Linda continue to make Hopkins, MO, their home.

Jack Kume has retired from USGS after 29 years of service, 12 in South Dakota, 6 in Kansas, and 11 in Colorado and the Nevada Test Site. The family plans to return to Kansas where Jack will get serious about his hobbies.

Hussein M. S. Marafi has completed 32 years in the oil business and is currently with the Kuwait Santa Fe Drilling section of the Kuwait Oil Company where he is an administration manager. He reports that he and his family survived in his basement during the invasion. Last spring his older daughter was graduated from Michigan U. While he was in the States for the graduation ceremonies he bought a computer and modem. His e-mail address is: fawziya@ncc.moc.kw.

Steve E. O’Neill retired from the US Army as a Colonel in 1990, and has since worked as a consultant. Steve moved to Edenton, NC, for fishing and golfing.

Rick Salisbury has retired from the Bureau of Mines and says he is enjoying his new lifestyle as a homemaker while Peggy teaches Spanish at the Colorado Academy in Denver.
1970's

Gail R. Bergan received the president's Award from the Houston Geological Society.

Mark Erickson has brought a group of students from St. Lawrence University each of the last two summers to excavate a bed of Paleocene turtles north of Belfield, ND. At the ND Academy of Science meeting last spring he and his students presented five papers.

Mark Erickson making a point at Homecoming 96

Gerry Groenewold continues to lead UND's Energy and Environmental Research Center to new levels of achievement and into new adventures on a regular basis. He continues to pursue his passion for western American history and the restoration of early classic American cars and horse drawn vehicles.

Tom Hamilton, executive vice president and CEO of Pennzoil Exploration and Production Co. has accepted the Chairmanship of the Board of Trustees of the American Geophysical Institute Foundation. Tom is also serving on the board of directors of the UND Alumni Association and Foundation.

Kurt Hillman, his wife Diane, and family visited Leonard Hall in July. Kurt is a project manager for all upstream development for Saudi Arabian Texaco in Kuwait's Partitioned Neutral Zone. This billion dollar project will increase production from 90,000 to 400,000 bpd by 2000.

Kent Johnson and Charlie Cooke are working with Kodiak oil.

Charles Kerans received the AAPG Wallace E. Pratt Memorial Award for best paper in the AAPG Bulletin.

Roger Reede reports that because of numerous retirements at Southwest Minnesota State University and conversion to the semester system, he will have more time to devote to his responsibilities at the Planetarium.

Craig Schmit is working on his middle school certification at UND - the beginning of a new career. Best wishes Craig!

Frank Schulte writes that John Delimata spent Thanksgiving with him and Cindy. They spent an afternoon together with Walt Moore. Frank has been traveling much less this year, working as Exxon continues to reorganize. Meantime, Cindy is very busy working with new/potential personnel in the offshore drilling business. The petroleum activity in the Gulf appears to be increasing.
1980's

Arne A. Bakke received an M.S. in geology in 1986 from the University of Alaska, Fairbanks. He worked in all regions of Alaska as a geologist for the U.S. Bureau of Mines, the Alaska State Geological Survey and several exploration companies. He also traveled extensively in southeast Asia researching gemstone deposits. He joined Fairbanks Gold Ltd. in 1990 as an exploration geologist and in 1991 became senior geologist for Fairbanks Gold Mining, Inc. managing the exploration of the Fort Knox Gold deposit.

Palmer Bailey has retired from a remarkable career in the Army as a Colonel, and moved with his family to the Kenai Peninsula in mid-1995 and built a house. The difficulties of the first year were numerous, and at times discouraging. But, he, Bonnie, and their daughters, Laura and Sara, are now settled in. The nearest settlement is of Russian origin and that language is still taught where the girls attend school. The neighbors come from a wide range of backgrounds and make for a multi-cultural experience for the Bailey family. On clear days the volcanoes of the Aleutians draw their attention. Palmer has been certified as a professional engineer in Alaska and expects to participate in new opportunities this year. He also hopes to get involved in the continued study of the Bering Glacier. Best of success to you, Palmer and Bonnie, in this venture!

Randy Binegar is the environmental manager for the Amoco refinery in Mandan, ND.

Ray Butler is a groundwater specialist with the High Plains Consortium, Inc.

Kristine Carter is working for the Louisiana Department of Environmental Quality, Inactive and Abandoned Sites Division, developing technical statements of work and solicitations for clean-up proposals, and searching for the culprits to pay the costs. Brian finished his Ph.D. and is Senior Hydrogeologist at G&E Engineering, Inc. The potential for conflict of interest between Kris and Brian exists, but so far they have managed to stay clear of that possibility. Their son, Nicholas (8 yrs) and daughter, Caitlin (6 yrs) are in gifted and talented programs (like so many of our alumni's children!), but in the wisdom of Louisiana politics, a 40-yr old desegregation suit negotiation, future such programs may be eliminated except for inner city schools. Communicate with Kris to share your own stories and ways to overcome this situation.

Dan Daly is involved in a wide range of duties at the EERC.

Linda Johnson Gay is a programmer with IBM.

John Harju has accepted a position with the Gas Research Institute in Chicago where he will have the opportunity to work with a number of environmental projects including the very promising freeze-thaw technology pioneered by John Boysen, BC Technologies, Laramie, WY for Amoco.

John Hoganson continues with the ND Geological Survey, where he has been consumed with a number of digs around the region and publishing on Cretaceous shark teeth from North Dakota with Mark Erickson and Bud Holland.

Tina Langtry has returned to the states as Assistant to the Executive VP for upstream operations at Conoco. Walt Moore reports that Tina seems to thrive on new challenges.

Mark and Katie Luther are enjoying life at their lazy L micro ranch west of Mandan, ND, where they operate an extensive menagerie. Their children, Megan and Jed, love it and so do all their friends. Mark has recently joined the Kadmax, Lee, and Jackson consulting firm where he will lead a GIS program.
Jeff Maletzke spent time this past year testing aquifers in New Jersey for Conestoga Rovers out of Minnesota. Heidi works part time doing planning for Dakota County. Son Peter particularly enjoyed the first family trip to Disney World in February.

Sharon Falcone Miller completed her Ph.D. at Penn State in 1992. They have one son, Konrad, 4. Sharon is in a nontenure track faculty position at Penn State, working on several energy projects.

Randy Rickford is spending quite a bit of time in western China, working under Amoco International to develop oil fields. He goes there about 5 times/year, but just getting there consumes much time. He enjoys working with the polite Chinese people. Meantime, Sue stays home in Houston with Emily (8 yrs) and Jennifer (3 yrs).

Art Schnacke and Barb adopted a newborn baby this year. Their other son, Jonathan, is 9 years old and excited to be a brother. Congratulations!

Ed Steadman and his family live at their ranch along the Turtle River. Ed is building his collection of unused deer tags even though he tries to go hunting occasionally when he can pry himself away from his challenges as deputy associate director at the EERC.

Randy Stephens has moved with Exxon from New Orleans to Houston to Melbourne, Australia, where he is a Senior Exploration Geologist for offshore activities on the northwest Australian coast. He and wife Robin, 9 year old Amanda, and a new baby boy are exploring Australia. Congratulations!

Steve Sturm has changed company’s in Denver. He has left Intera Information Technologies to be senior geologist at GeoQuest Reservoir Technologies.

Laramie Winczewski, founder of the Fourth Wave Group three years ago, reports that business is slowly picking up as the client base increases. He monitors computer content standards for petroleum companies, and publishes a set of technical newsletters, reports, evaluations, and tutorials. Donna continues to provide the stable support as the new business gets established. She is an accountant for Lyondell Petrochemical. TJ is a junior at the University of Texas in the liberal arts honors program. Rachel is 12 years old now and busy in musical activities and computer games.

1990’s

Harry Abercrombie is dealing with all the water related issues for American Colloid Company, CETCO, CHEMDAL, and all the other subsidiaries of AMCOL International. Harry is also designing web sites. Log onto deadwood@blackhills.com.

Steve Braun is now a civilian environmental engineer with the Grand Forks Air Force Base.

Eric Brevik and Lisa had a special Christmas this past year as their son, David, celebrated his first birthday. Eric has been working for Chart Services out of Des Moines before moving to Ames where he is enrolled as a graduate student in the Soil Science Department. Lisa is in the pre-veterinarian program at Iowa State. This has been a year of change for the Breviks, especially with the arrival of their second child this past spring! Busy family!

Rob Burrows is spending some of his time doing bird surveys along the Columbia River on the Hanford Site and spreadsheet analysis the rest of the time. Guess which he likes better. Rob has also spent a considerable amount of time in Alaska and is exploring graduate school opportunities.

Bryan Cayler and Tammy Szczepanski were married on June 15, 1996 in Grand Forks, where Bryan is employed with a local finance company.

Mark Elliott was married July 3, 1996 and is living in St. Louis Park, MN.
Lee Evans is a project engineer with Gaston Engineering and Surveying/Soils Testing.

Dean Goebel is involved with a variety of groundwater projects at the EERC.

Todd Holweger is now working out of Dickinson, ND for Tooke Rockier, Inc. as a geologist and mud-logger. He and Bethani have purchased a ranch house in anticipation of their first child due in December.

Marc Kurz is working on a variety of groundwater and geology projects at the EERC.

Gale Mayer is a senior program manager at the EERC, and has begun his own consulting firm, Western Environmental Services & Technology, which has received an SBIR award for Instrumentation and Control of Conditioning and Rehabilitation Equipment.

Paul H. Myerchin and Lori L. Thurn were married on June 1, 1996 in Grand Forks, where Paul will be completing his third year of law school and working for Winter's Law firm in Crookston, MN.

Rob Sickler is a staff hydrogeologist with Handex of Illinois, Inc. in Naperville, Illinois.

Jim Sorensen has been involved in EERC groundwater projects.

Brent Stafford is an operations superintendent with Con Robinson Contracting Co. in Lexington, Kentucky. Brent says there are jobs for Environmental Geology and Technology majors but you should think creatively!

Mike Strobel, having finished his Ph.D., will be moving from the Grand Forks USGS office to the Black Hills office. Congratulations and best wishes! Look for Mike at Sturgis, probably with a new Harley and..............?
FORMER GGE FACULTY

Wilson Laird continues to live in Kerrville, Texas, with fair health even if he says he has slowed down a bit. We extend our sympathy upon the passing of his wife Margaret.

Lee Clayton returned to Grand Forks several times in 1996. During the Friends of the Pleistocene field trip he was awarded a chrome-plated Moore pick to commemorate his countless contributions. Lee also received the Leonard Medal during the Homecoming banquet.

Walt Moore was on hand for homecoming ceremonies including presentation of the Leonard Medal to Lee Clayton.

Ken Harris, Minnesota Geological Survey, was one of the organizers of the Friends of the Pleistocene field trip and conference. Ken was at homecoming and has been working with Mark Luther on several mapping projects.

Bud and Mardi Holland continue to serve as department mentors, historians, and all-round great people to have on our team. Bud writes “I was in the field with John Hoganson and Mark Erickson and in July Mardi and I drove to Drumheller, Alberta, where we lucked into a Chinese-prepared exhibit of the dinosaurs (including embryos in the egg shell) resulting from the Sino-Canadian Dinosaur Project as well as viewing the regular spectacular exhibits of the Royal Tyrrell Museum. Much of the fall has been spent yo-yoing back and forth to Iowa to watch second grandson in a spectacular senior season in football: 13-0 and State Champions. Having gained more than 2000 yards rushing, Jess made All-Conference and All-State teams and was selected team and conference MVP and Iowa player of the year.”

Richard B. McCammon is with the USGS in Reston, VA, and is the editor in chief for Nonrenewable Resources, an official journal of the International Association for Mathematical Geology.

Gerald M. Friedman, Laurence L. Sloss, and Robert J. Weimer, lecturers at UND, have received the AAPG Distinguished Educator Award.

Lee Gerhard received AAPG’s Journalism Award for his role in the production of “Rafting Through the Grand Canyon” for the television program “NOVA”. He is to receive Honorary Membership in the AAPG in 1997.

Alan Kehew served as interim department chairman at Western Michigan University this past year and is now involved in applying some of John Reid’s results to the study of shoreline erosion on Lake Michigan through the Army Research Office.


Alan Cvancara and Ella are still in Casper, Wyoming, where they are busy planning trips, playing with the Casper Fiddle Club, writing, painting, and photography.

Sundar Saluja has retired and relocated to California where he will be closer to his sons.
MEMORIA

We extend our sympathy to family members of these alumni and friends.

Margaret Rey Laird passed away in Kerrville, Texas, this fall.

Bruce Listoe (PhD '58) died on August 8, 1996 in Ashby, MN. Bruce held doctorates in both law and geology from UND and served as the director of the Finance Management Branch of Social Security.

Charles H. Juni (BS Geol '51), age 70, died on Jan 2, 1996 in Millsap, Texas.

Hugh Palmer, department benefactor passed away in early September, 1995, in California.

Gilman Strand (BA '39), age 78, passed away on June 8, 1996 in Mayville, ND. Gilman worked for the USGS until the end of World War II, and as an expeditor for Lockheed Aircraft in Burbank, CA.

RECENT PUBLICATIONS BY DEPARTMENT FACULTY AND STUDENTS


Hoganson, J.W., Erickson, J.M., and Holland, F.D., Jr., 1995, Cartilaginous fishes from the Fox Hills Formation (Cretaceous, Maastrichtian), North Dakota: North Dakota Academy of Science, Proceedings v. 49, p. 60:


Hoganson, J.W., Erickson, J.M., and Holland, F.D., Jr., 1996, Vertebrate Paleontology of the Timber Lake Member, Fox Hills Formation (Maastrichtian), North Dakota: Journal of Vertebrate Paleontology, v. 16 (no. 3), p. 41A.


Kelley, P., 1995, The benefits of mentoring. On Teaching (OID Newsletter) 5(1):1, [received a request from Metropolitan State University, St. Paul, to reprint the article in the Metro State Faculty Newsletter].


Korom, S.F., M.J. McFarland, R. Sims, 1996, Reducing sediments: A factor in the design of subsurface oxidant delivery, Ground Water Monitoring and Remediation, 16(1) 100-105.

Gerla, P.J. and S.F. Korom, 1995, EM conductivity survey: Selected areas of the Fossa Farm, Mountrail County, ND, phase II report.


Theses/Dissertations


E-Mail Addresses for Geology and Geological Engineering Faculty

Be sure to include the underscore ("_") in addresses that have one!

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank Beaver</td>
<td><a href="mailto:Frank_Beaver@MAIL.UND.NODAK.EDU">Frank_Beaver@MAIL.UND.NODAK.EDU</a></td>
</tr>
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THE ONLY WAY WE WILL KNOW IS IF YOU TELL US!

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Gessner, Charles J. B. (BS Geol 1959)
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Gibbs, James F. (PhB 1956)
Gibbs, Mackintosh J. (BSMIE 1958)

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Giblet, Holly Ewers
Gilles, Timothy F. (BS 1972)
Gillet, Lawrence B.
Gill, Donald S. (BS Geol 1958)
Gilliss, David (BSGSE 1984)
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Goerner, Lorena (BS 1987)
Gordon, John P. (PhB 1955)
Gordon, Keith A. (BSMIE 1961)
Owen, Gerard (BS Geol 1996)
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Graney, Eric T. (BS Geol 1987)
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TX Bur of Economic Geol Austin TX 78712  
605 4th Ave E Williston ND 58801  
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9272 Scrub Oak Dr Littleton CO 80124  
6066 Lamar St #107 Arvada CO 80003-5640  
1368-D Aspen Ave Grand Forks AFB 58204  
2361 Rockne Dr Concord CA 94518-2522  
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Mohs, David P. (Ex 1978)
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Moore, Richard B. (MS 1970)
Moore, Walter L.
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Neis, Richard J. (BSGE 1984)
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Nelson, Wesley D. (BSGE 1976)
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Noble, E. A. (Ned)
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Nordness, Harold J. (BSMIE 1954)
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Young, Daniel R. (MA 1980)
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Zich, Terrance J. (BSGE 1977)
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Degree __________________ University __________ College or ______________________ Year ______

Degree __________________ University __________ College or ______________________ Year ______

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Name __________________________ Birth Date __________ Name __________________________ Birth Date __________

Name __________________________ Birth Date __________ Name __________________________ Birth Date __________

On the back of this sheet please send us any news of your "doings" to be included in the next issue. Tell us about some incident or recollection you remember from your days in the Department, e.g., the time Bud Holland shot a hole in his car. Or, in any event, return this sheet so our records will be more complete and current. We want to hear from you!
FROM: ____________________________

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