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*John R. Reid, Editor*

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CHAIR'S REPORT
Fall 1997

The event which overshadows all others during the past year was the Flood of '97 and the cleanup afterward. A description of the flood and the experiences of individual faculty are recounted in this newsletter. Leonard Hall had about 2 feet of water in the basement, which flooded labs and storage rooms, student lounges, and all of the graduate student offices, although we were fortunate to avoid structural damage to the building. A great deal of what had been stored in the basement was damaged or destroyed. Basement cleanup lasted until the end of August (about the time classes started); repairs are still ongoing, and will probably continue into winter.

One bright spot for the Department was the response of our alumni, who were extremely generous in their contributions to aid us in replacing and repairing flood-damaged items. We intend to use at least half of the funds to replace items which were lost by students from their offices and lounges. Many thanks from all of us.

Patricia Kelley resigned as Chair in May to take a similar position at North Carolina-Wilmington (see article). We are seeking authorization to hire a paleontologist to replace her. John Reid has announced his retirement at the end of the current academic year. John has been a mainstay of the Department for more than 36 years, and his contributions to the Department and the University are well known to all of you. He will be missed.

During this past year, after considerable internal debate about the content of our undergraduate curricula, we have made some changes in our Environmental Geology & Technology degree in order to streamline the curriculum and better serve student needs. This fall, we had expected to undergo an accreditation visit from ABET for our geological engineering program. However, with the flood and recovery, the visit has been postponed for a year, and we will be preparing for it during this year.

Last year, as reported in the 1996 newsletter, the Leonard Award for outstanding achievement in the geosciences was awarded to Lee Clayton and Sam Tuthill. This year, we are delighted to present the award to Alan Cvantara for his teaching, scholarship, and creativity (see article). Our alumni loyalty is probably the best in the University. We are proud of the accomplishments of each of you and our goal is to continue the record of excellence. While we recognize the need to change as the profession and employment directions change, we will continue to provide a broad foundation in geology at the undergraduate level.

Richard LeFever, Chair
Greetings to the Alumni and Friends of the Department of Geology and Geological Engineering

It is my pleasure to once again communicate with you and send greetings from the School of Engineering and Mines. My first year at UND has been very busy and truly exciting. The flood had a significant impact on the Department of Geology and Geological Engineering by doing considerable damage to the basement level of Leonard Hall.

Clean-up activities are still going on in Leonard Hall and we are hoping to have all repairs made before cold weather. Your concern and continued support to the department has encouraged the faculty and staff through the recovery period. I am sure you will read more about the flood event elsewhere in this alumni news.

The flood further affected the School in washing out our chance to be a pilot school for Criteria 2000 ABET Accreditation in the Fall of 1997. We have been given a one year extension of our existing accreditation and are now planning for a visit in 1998.

We were disappointed to have Dr. Patricia Kelley resign and take a position at the University of North Carolina at Wilmington as Chair of the Department of Earth Sciences. However, Dr. Richard LeFever has assumed the position of chair and is doing a great job. He is being very ably assisted by Dr. John Reid as Associate Chair.

The 1997 Arthur Gray Leonard Award Banquet was well attended and Dr. Alan Cveancara was honored for his many years of distinguished service to the Department, School and the University of North Dakota.

So it continues to be very busy at SEM and we look forward to an exciting 1997-1998 school year. We are all hoping, however, that next spring will be somewhat less eventful!

Your continued support of all our programs is always welcome. Please feel free to visit and check out our progress if you have a chance.

Sincerely,

Don Richard, P. E.
Dean
ALAN M. CVANCARA
Arthur Gray Leonard Medal Awardee

On October 3, 1997 Alan Cvancara was honored as the recipient of the Arthur Gray Leonard Medal. Alan received his BS in 1955 and his MS in 1957. After a tour with the Air Force (1957-60) he was selected as a Fulbright Fellow to The University of New England, Australia. He completed his PhD at the University of Michigan in 1963, joining the Department of Geology at UND that fall.

Alan was recognized for his teaching effectiveness, his scholarly contributions, and for his achievements in creative arts. Alan, to all who know him, was a disciplined, demanding instructor who was, above all, fair. He is considered to be a Renaissance Man, knowledgeable in numerous fields, including “wild” foods, canoeing, kayaking, scuba diving, cold-weather survival, photography, and writing. The recognition banquet was attended by 60 of his friends, former students and colleagues. Among the citationists were Joni Lerud, Tim Kroeger, and John Hoganson (who also presented the noon seminar in Alan’s honor, speaking on “Sea lilies, dinosaurs, and wolly mammoths: Fossil evidence of prehistoric life in North Dakota”). In conjunction with the banquet in his honor, he and Ella provided an exhibit of some of their recent photography, displayed in the Leonard Hall Museum through October.
TRICIA MOVES ON

Patricia Kelley, our Chair and Department Paleontologist for the past four years, resigned at the close of the Spring semester to accept a similar position at the University of North Carolina at Wilmington. There, she will chair a growing Department of Earth Sciences in a newly renovated building. Currently, there are 16 full-time faculty, representing marine and non-marine specialties, and offering through the M.S. degree in Geology and a B.A. degree in Geography.

While at UND Tricia successfully fought to defend the Department in several restructuring scenarios posed by the Administration and still managed to be involved in various committees and service activities locally and nationally. She continued to be very productive in her research on mollusks and she earned high praise for her teaching effectiveness. She had received numerous offers over the past and it came as little surprise when she accepted this offer at North Carolina. Tricia will be missed, but we wish her, Jonathan, Tim, and Katherine continued success and best wishes.
THE FLOOD

The flood of '97 greatly affected each of us and I thought you might like to hear some of the details. As most of you know, our winter was unusually severe, with eight blizzards temporarily slowing or shutting us down. I-29 was closed more times than ever before and grade school children had to be sent home early or told to stay home on six of those occasions. The University also lost four days of classes because of those storms (not all instructors were pleased with the first decision to close; they wanted the University to stay open to permit those who could attend to fulfill their obligation to students). The eighth blizzard was the most costly; it began in the evening of April 4, with a light drizzle that froze, coating the streets with a layer thick enough to cause the city bus service to be canceled Saturday morning. As the day progressed the rain increased, turning to sleet and then snow. By that time the ice layer was coating everything. Then came the blizzard with its intense winds knocking down thousands of poles and dozens of power towers. That night, as the storm continued, most inhabitants of the "Valley" were without electricity. Most in Grand Forks had power restored late Sunday afternoon, but rural areas, including Climax (where Phil Gerla lives) still had no power even ten days later! The economic loss was serious. UND remained closed until Tuesday, but all unnecessary electric use was banned until full power could be restored. Gas generators were in great demand.

Anyway, we managed to get back to normal by mid-week only to begin to plan for the inevitable flood from melting snow. Between then and April 19 the city worked with increasing fervor to fill and stockpile sandbags. The predicted flood was 49 feet (28 feet is flood stage in Grand Forks)...no real problem! But, by Monday, April 14 it became obvious that the new prediction of 50 feet might cause more problems. Raising the dike levels and blocking Belmont Street with a "clay" dike along the Lincoln Park golf course took on more significance. Pres. Baker urged faculty, staff, and students to volunteer to fill sandbags and by Wednesday, when the crest prediction was raised again to perhaps 52 feet, he cancelled all classes so maximum effort could be directed to helping protect the city and private homes. Our students quickly volunteered to help protect Gloria's home in East Grand Forks. So, much effort was expended filling sandbags, moving them along human chains, and stacking them...all to no avail! (And that was among the greatest disappointments for the volunteers). By Friday the pace was frantic. Sirens began to sound, first along Lincoln Park, to order people to evacuate as leaks appeared in the dikes. Volunteer workers and residents were told to move...fast! By Friday afternoon, April 18, much of Grand Forks was evacuating. Early Saturday morning, before the sun came up, sirens were sounding all over the city; radio and TV stations were on 24-hour alert to keep everyone informed of the flood progress. By late morning, the water was flooding the streets rapidly. Residents who had evacuated to Red River High School were being ordered to head for the Air Base. All roads heading out of Grand Forks (except across the river...all bridges were under water) became clogged with evacuees. Evacuation centers were being opened by the hour in surrounding towns. Fargo suddenly increased in population by 12,000!

On Sunday, the center of Grand Forks caught fire, resulting in the loss of 11 buildings before being brought under control by planes, helicopters, and fire trucks mounted on larger, higher trucks. We were numb! The crest of 54.11 feet was reached Sunday night, more than five feet higher than predicted by the National Weather Service. As a result, very few citizens had taken
out flood insurance. Access to the city was prohibited to assure safety and prevent looting. The National Guard was in charge! Little by little, parts of the city were opened to residents with passes. They were allowed to visit their homes to retrieve needed items (including pets). It was then that the extent of damage became apparent. It was devastating!

The process of recovery was slow, often sad, sometimes humorous, always stressful. A common ailment was an inability to concentrate on any one thing for very long. Recovery came in stages (1) pump out the flood water, (2) begin the long task of removing everything that had been submerged (including paneling, wallboard, tiles, furnaces, water heaters, etc. (3) wait for water, (4), wait for potable water, (5) wait for temporary power panels, (6) wait for full power, (7) begin to dry out the house, etc., etc.

The following is a summary of the effects of the flood on our faculty and staff:

<table>
<thead>
<tr>
<th>Evacuated to</th>
<th>Loss (including the ice storm of April 2-4*)</th>
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<tbody>
<tr>
<td>Frank Beaver</td>
<td>Declined to evacuate</td>
</tr>
<tr>
<td>(Those in GF had no power for 12 hours during the ice storm)</td>
<td>No damage</td>
</tr>
<tr>
<td>Nels Forsman</td>
<td>Fargo</td>
</tr>
<tr>
<td></td>
<td>No damage</td>
</tr>
<tr>
<td>Phil Gerla</td>
<td>Stayed home in Climax</td>
</tr>
<tr>
<td></td>
<td>*9 days without power</td>
</tr>
<tr>
<td>Ahmad Ghassemi</td>
<td>Norman, OK</td>
</tr>
<tr>
<td></td>
<td>No damage</td>
</tr>
<tr>
<td>Will Gosnold</td>
<td>Stayed home; hosted 11</td>
</tr>
<tr>
<td></td>
<td>*loss of power for 72 hrs; sump pump out;</td>
</tr>
<tr>
<td></td>
<td>basement flooded</td>
</tr>
<tr>
<td>Frank Karner</td>
<td>Minneapolis/Chicago</td>
</tr>
<tr>
<td></td>
<td>ca. $52,000 water damage</td>
</tr>
<tr>
<td>Patricia Kelley</td>
<td>Stayed home in Gilby</td>
</tr>
<tr>
<td></td>
<td>*loss of power for several days</td>
</tr>
<tr>
<td>Scott Korom</td>
<td>Akron, OH</td>
</tr>
<tr>
<td></td>
<td>*12 hours no power.</td>
</tr>
<tr>
<td>Rich LeFever</td>
<td>Bismarck</td>
</tr>
<tr>
<td></td>
<td>ca. $12,000 damage to basement flooding</td>
</tr>
<tr>
<td>Ron Matheney</td>
<td>Fargo/Connecticut</td>
</tr>
<tr>
<td></td>
<td>ca. $14,000 basement damage</td>
</tr>
<tr>
<td>Gloria Pederson</td>
<td>Thief River Falls, MN</td>
</tr>
<tr>
<td></td>
<td>ca. $36,000 basement and first floor</td>
</tr>
<tr>
<td>Dexter Perkins</td>
<td>Gilby/Maine</td>
</tr>
<tr>
<td></td>
<td>Ca. $14,000 basement damage</td>
</tr>
<tr>
<td>John Reid</td>
<td>Fargo</td>
</tr>
<tr>
<td></td>
<td>Ca. $26,000 basement damage</td>
</tr>
</tbody>
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On Wednesday, April 16, President Ken Baker cancelled classes at UND, starting at 2 p.m., for students to help with flood-related activities. By 3 p.m. that day there were between 30 and 35 geology and geological engineering students assisting Gloria (Dept. secretary) and Bill Pederson and their neighbors with sandbagging in their backyards which border the Red Lake River in East Grand Forks. There is no way a three-foot wall of sandbags could have been constructed without their help and both Gloria and Bill sincerely appreciated their efforts. A partial list (we apologize for missing anyone) is: Sherry Aarnes, Deann Allen, Kristjan Bekker, Carmen Best, Bethany Bolles, Jeff Brownson, Jennifer Olwyn-Bruce, Cristy Carter, Jason & Trish Coyle, Stacy Delzer, Jon Ellingson, Brady Espe, Jason Gelling, Lori Gunderson, Jason Haugen, Chris Hindman, Trent Hubbard, Jon Jones, Glenn Kays, StephanieMealman, Lynn Overend, Mike Rhode, Allen Schlag, Bill Schmidt, John Schumer, Paul Sorensen, Chad Tomforde, Alisa Wenker, Ivana Witt, and Chris Wolfe. John Reid was intercepted by a work team at a neighbor’s home, and later stopped over to view the goings-on and stack a few more sandbags; he brought his sister who was visiting from Seattle. Scott Korom also lent a hand. Although we lost the battle, with the students help we put up a good fight!

Gloria and Bill had their basement full of floodwater and 8" on the main floor. At this point the house is once again ready for winter so the inside finishing work, recarpeting, etc. can be completed over the winter months.
FLOOD AID

Many students called to volunteer to assist in the flood cleanup but were discouraged from coming because of lack of a place to stay. Several others may have come anyway, but all we know of was Rob Sickler. His help was sincerely appreciated, as were all the offers from those who could not come. Special thanks to the following who donated to the Dept. flood recovery (thru September 30, 1997):

Dr. & Mrs. Tom Hamilton
Sam & Connie Tuthill
Julie Klosterman
Dr. & Mrs. Rod Feldmann
Fred & Beth Wosick
Lt. Col. William Kalberer
Dr. & Mrs. Bob Aaker
Mr. & Mrs. Stephen Thompson
Dean Mikkelsen
Dr. & Mrs. F.D. Holland, Jr.
John Merrell
Ed Murphy
Mr. & Mrs. K. Bruce Switzer
Bob & Linda Johnson
Jesse E. Bednar
Albert Opp
Larry Thrasher

"Calamity is the perfect glass wherein we truely see and know ourselves" (William Davenport)
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.

Life Patron ($10,000):
Dr. & Mrs. Thomas Hamilton
Bernold M. Hanson
Dr. & Mrs. F. D. Holland, Jr.
Dr. Wilson M. Laird
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   Exxon Education Foundation
   Phillips Petroleum Company

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Mr. & Mrs. Emil Stoltz
Dr. & Mrs. Sam Tuthill
Dr. James B. Van Alstine
Barrett J. Williams
Fred & Beth Wosick

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Chevron Corporation
Conoco Inc.
Duke Power Company
Exxon Education Foundation
IBM Matching Grants Program
Minnesota Mining & Mfg.
Newmont Mining Corp.
Olin Corporation
Texaco Inc.

The following people and organizations contributed to either the Reba A. Laird Scholarship Fund or the department general fund in memory of Dr. Wilson M. Laird.

Mr. & Mrs. Robert K. Aaker
Sid Anderson
Sylvia Anderson
Thanh Chau-Luong
Steve Harris
Mr. & Mrs. Edward Heichelbeck
Gary & Joanne Hendricks
Dr. & Mrs. F.D. Holland, Jr.
Cindy Jacobs
David Laird
Joseph & Clara Laughlin
James Offutt
Steve & Lisa Pottenger
Dr. John Reid
Brien & Linda Waage
City of Columbia, MO
Columbia, MO Chamber of Commerce
Dept. of Geology & Geological Eng.
Minnesota Mining & Manufacturing
U.S. Army Reserve Hospital
A departmental fall fieldtrip to western North Dakota was once again held, early in the semester, with the aim of fostering a good spirit among the nine students for the courses they were about to take. The trip included a variety of subjects of relevance to all three of our undergraduate degree programs. Glacial features were pointed out along U.S. Highway 200, as we headed directly for the North Unit of Theodore Roosevelt National Park. After some preparatory remarks about the sedimentology, stratigraphy, petrology, and palaeontology of the Sentinel Butte Formation, students engaged in group hikes to get acquainted with the rocks. Later, a specific stop was made to examine the world-class deposit of parent ash and daughter bentonite that occurs in the park. Later, the two-van caravan traveled outside the park, along Beicegal Creek Road (now paved!*)!, and along the East River Road, to view the Golden Valley Formation and the contact of the Sentinel Butte and Bullion Creek Formations. Next visited were Miocene rocks of the Arikaree Formation exposed in the Killdeer Mountains. Students examined closely the Burrowed Marker Unit there, and viewed first-hand some evidence for its origin. They engaged in hypothesis testing, and discussed additional laboratory methods that would be of use in studying this unit.

Next, the caravan stopped at a Knife River Flint quarry site to examine the occurrence and nature of mining of this plants-turned-flint-turned-human-tool-and commodity material. Our final stop was at Garrison Dam, where we studied the fundamentals of earthen dam construction, and examined some of the costs and benefits of dam construction.

The weather cooperated beautifully to make this a very productive and enjoyable start for the semester.
FALL FIELD TRIP
YELLOWSTONE REGION
September 4-7, 1997
Dexter Perkins

Every fall we try to do a “long weekend” trip to some place of spectacular geology. Last year we went to several places including the Campbell Red Lake gold mine and the Steep Rock iron mine in western Ontario, and the North Shore of Lake Superior. This year we went a bit farther afield—to the Yellowstone region of Montana and Wyoming.

After driving all day Thursday, we camped at the beautiful Columbine Campground near Columbus, Montana. The following morning we passed through the Absarokee Platinum Mine and drove up the many switchbacks to the Mountain View Property of the Chrome Corp. of America. Here we saw an abandoned mine townsite and mill, and looked at the chrome deposits that were developed during World War II. The platinum and chrome mines are in the Stillwater Complex—one of the world’s few (and best exposed) layered ultramafic complexes. The development of the Mountain View Property was a consequence of submarines sinking ore carriers on their way from Africa to the United States in 1941. The geology is great, but the most impressive thing about the Mountain View property is that a town of several thousand people was abandoned and left to decay on the side of a precipitous mountain.

Later on Friday, we drove through Red Lodge and made several geology stops along the Beartooth Highway. The Archean rocks are well exposed and show diverse petrology. We looked at some garnet and cordierite bearing metasediments, as well as at a whole suite of tonalitic gneisses. We also collected several hundred perfect orthoclase crystals. Additionally, we enjoyed the scenery which we decided was the best in the U.S. We camped just below Beartooth pass, next to a beautiful alpine lake.

Saturday morning we drove to Cooke City and were taken on a tour of the Crown Butte mining district adjacent to Yellowstone Park. This area has been the focus of a “greenies vs. gold” political battle. The environmentalists apparently won, as President Clinton struck a deal last year with the mining companies—essentially buying them out so they would not mine so close to the Park. We saw many scars left over from old mining operations, looked at mine waters with pH values of 2-3 that were flowing into a wild and scenic river, and at abandoned mine ruins. Our tour guide, a former mine geologist, argued that all the mess was left over from previous mining efforts and that the proposed development would have been good for the country and not harmful to the Park or river. The real issue seems to be one of values: are the potential negatives associated with a mining operation greater than the positives gained by opening up a new, very rich, gold district? Most of the students seemed to conclude that there were too many negatives and that the area should be left alone.

Saturday afternoon and Sunday morning we toured the northern part of Yellowstone Park. We camped at Madison, where intense rain failed to dampen our spirits. Wildlife was plentiful, including sheep, moose, elk, coyotes and buffalo. The fire scars are largely healed, but one neat legacy are the zillions of perfect spider webs in all the blackened trees. In the early morning mist and sunlight they sparkle and give the park a beautiful gossamer texture. When we got to Mammoth Hot Springs we found that the springs were barely flowing—a big change from a decade ago. The rangers could not tell us why, but said that some people link it to the development of hydrothermal energy by a religious group just a few miles outside of the park. After a few buffalo burgers, and driving the buffalo burger lady nuts, we hopped in the vans and made a quick (12 hour) return to Grand Forks.
SASKATCHEWAN GLACIER RESEARCH

Research on the origin of glacial flutes downglacier from the Saskatchewan Glacier in Banff National Park was begun this summer by Trent Hubbard, with the assistance of two undergraduate majors, Jeff Brownson and Jason Haugen. Camp was established far up the valley from the nearest access along the Icefields Highway. Everything had to be backpacked in. Important to this phase of the doctoral dissertation research was the precise mapping of the flutes using our new Global Positioning System, which has cm-accuracy. Selected flutes were excavated to determine any clast fabric preferred orientation and to collect samples for subsequent engineering properties testing. Two willow “trees” were also collected, one in an older flute area and the other in the more recently exposed site. They will provide us with a minimum age of the flutes, relating to known positions of the ice front, determined from the slopes of lateral moraines. Data collected during the field season will help to understand the former subglacial conditions at the time the flutes were formed. The work was hard, the data collection at times tedious, the camping primitive, but the scenery spectacular! The expenses were mostly covered through a scholarship to Trent from the Alan M. Cvancara Graduate Field Research fund, and Research Experience for Undergraduates, NSF-EPSCoR, to Jeff and Jason, and special awards to all three from the NSF-ASEND program to help cover food and travel. The project is being supervised by John Reid, who visited and redirected the data collection/interpretation in early August. The results of the study will be applied to the origin of the Velva, ND, flutes.
The Department of Geology and Geological Engineering's on-going distinguished lecture series, the Leading Edge of Earth and Planetary Sciences (LEEPS) brought some exciting professionals to campus this past academic year. In addition, a newly-created lecture series was initiated in memory of Mary Jo Klosterman (BS Geology '78) and integrated into the LEEPS series. The Mary Jo Klosterman Lecture Series was funded through one of our illustrious alumni, with generous matching funds from Exxon. As most of you know, contact with outside experts is difficult here in Grand Forks. Bringing them to campus permits everyone to interact with such people. Students and faculty, alike, benefit.

The following is a listing of speakers this past year.

Oct. 18  David Mogk, Montana State Univ., “Shaping the future: new expectations for science, mathematics, engineering, and technology education”, “Successful proposal writing for educational funding”, and “Archean geology of southwestern Montana: crustal genesis or crustal evolution?”

Nov. 6  Rosalind Helz, USGS, Reston, “How do we see into magma chambers?” and “Glass geothermometry: using glass composition to quantify volcanic processes?”

Nov. 8  Michael Abrams, Exxon Ventures (CIS), inc. (Mary Jo Klosterman Lecturer), “Mary Jo Klosterman” and “Hydrocarbon system: Evlakh-Agzhabedi Depression, Azerbaijan”


Nov. 26  Mark W. Longman, consulting geologist, Lakewood, CO., “Cyclic deposition and development of porous dolomites in the Upper Ordovician Red River Formation, Williston Basin”


Jan 17  Martin Lockley, Dept. Geol., Univ. Co-Denver, “Tracking dinosaurs around the world”, and “Dinosaurs of Colorado”

Feb. 28  Dean Mcmanus, Oceanography, Univ. Washington, “Oceanographic studies at U of W”, and “Changing a lecture course to cooperative learning”

Apr. 4  Jimmie Richardson, Soils Science, NDSU, “Soils and ground water on the Lake Agassiz plain” and “Soils: a workshop”

Apr 11  Richard Grieve, Geol Survey Canada, “Extraterrestrial impact: the record and consequences for Earth evolution”, and “Understanding the origin and evolution of the Sudbury structure: then and now”
SCHOLARSHIPS
Awarded

Alan M. Cvancara Graduate Field Research Scholarship
Trent Hubbard

C.B. Burt Folsom Memorial Scholarship
Patti Kleven
Lisa Pottenger

Henry Hinds Scholarship
Jeff Brownson
Patti Kleven
Lisa Pottenger

Nicholas Kohanowski Scholarship
Jeff Brownson
Taylor Joyal
Patti Kleven

Reba A. Laird Scholarship
Lori Gunderson
Patti Kleven
Margaret Nelson
Lynn Overend
Melanie Parvey
Lisa Pottenger

Hugh and Ruth Palmer Scholarship
Lynn Overend
Melanie Parvey
Brian Thiele

Harold J. Polta Scholarship
Jeff Brownson
Taylor Joyal
Patti Kleven
Lisa Pottenger

Rocky Mountain Coal Mining Institute
Brian Arman

Emil and Audrey Stoltz Scholarship
Jamie Grover
Lori Gunderson

Ernest Tisdale Scholarship
Jamie Grover
Patti Kleven

Charles Henry Waldren Memorial Scholarship
Jeff Brownson
RECENT GRADUATES

December, 1996 Geology Graduates

Dodak, Eron (MS)
Freije, Tim (BS Geol)
Melland, Vicky (MS)
Pence, Stan (MS)
Waltz, Greg (MS)

December, 1996 Geological Engineering Graduates

Freije, Tim (BSGE)
Hillesheim, David (BSGE)
Munson, Carissa (BSGE)
Rousseau, Christopher (BSGE)

December, 1996 Environmental Geology & Technology Graduates

Carter, Marc (BS EGT)
Hines, Renae (BS EGT)
Neubarth, Steve (BS EGT)
Odenbach, Ryan (BS EGT)
Sauber, Lawrence (BS EGT)
Vetter, Abigail (BS EGT)
Williams, Damon (BS EGT)

May, 1997 Geology Graduate

Jeffrey Person (BS Geol)

May, 1997 Environmental Geology & Technology Graduates

Best, Carmen (BS EGT)  Regan, Michael (BS EGT)
Carter, Cristy (BS EGT)  Rhode, Michael (BS EGT)
Coyle, Jason (BS EGT)  Sakry, Penny (BS EGT)
Espe, Brady (BS EGT)  Schweiss, Christopher (BS EGT)
Gelling, Jason (BS EGT)  Thomas, Brian (BS EGT)
Hochhalter, Daryl (BS EGT)  Tiffany, Clara (BS EGT)
Knoop, Zachary (BS EGT)  Ulseth, Nicole (BS EGT)

August, 1997 Geology Graduates

Hubbard, Trent (MS)
Mealman, Stephanie (BS Geol)

August, 1997 Geological Engineering Graduate
Wolfe, Christopher

August, 1997 Environmental Geology and Technology Graduates
Hungness, Darren
Kwasiborski, David
Livingood, Jamie
Sorensen, Paul
Swiatko, Gary
Recent Theses/Dissertations


1996 Waltz, Gregory D., (M.S.) The depositional environment of the Kisbey Sandstone from the Madison Group (Mississippian), North-Central North Dakota. Chairman: Richard D. LeFever.


Dexter Perkins was one of the authors of Teaching Mineralogy, published by the Mineralogical Society of America in September.

The 405 page volume is a collection of original and edited laboratory exercises to be used in introductory mineralogy and petrology courses. It is, in part, the product of a National Science Foundation-sponsored Teaching Mineralogy Workshop, held at Smith College in June, 1996, organized by Perkins and several others. What sets this book apart from other lab books, says Perkins, is that “the exercises are not cook book or rocks-in-a-box.” We have emphasized discovery-based exercises, cooperative education, and other approaches that facilitate learning.

The other authors of Teaching Mineralogy are Dr. John B. Brady (Smith College) and Dr. David W. Mogk (Montana State University).
FACULTY NEWS

Frank Beaver: I was one of the fortunate few in Grand Forks whose home and yard remained dry. I had anticipated something like this and purchased the home specifically because it is on the highest point in Grand Forks as the NDGS flood plain map clearly shows. I stayed there and kept watch in the neighborhood and helped some friends. After plugging the drains there was little to do but keep a vigil. The basement sump did not even require pumping, but it was comforting to have a generator and tractor on hand just in case. I was essentially camped out at home, while my daughters moved in with relatives in Devils Lake until the power, water, and sewer came back on line, at which point they moved back into my house while I went to teach field camp in the Black Hills. Personally, the flood was an inconvenience rather than the disaster most experienced. At UND several of the lower level laboratories in Leonard Hall that I use were flooded and equipment was submerged. Some is salvageable and some will have to be replaced. It will not significantly impact my teaching or research efforts. The major effect the whole flood experience has had on me is that I have become totally convinced that I never want to live within a municipality again if I can avoid it.

I thoroughly enjoyed my second year of teaching. For the first time, I offered a topics in mining course, and we revised the mining engineering sequence so that we have a distinct mining engineering course and a distinct reclamation engineering course which should prove to be attractive to a broader range of interests. Several of our senior engineering design projects were severely interrupted during the flood, but I expect them to recover nicely. I took advantage of an opportunity to teach the engineering portion of field course in the Black Hills, which I enjoyed thoroughly. If the students learned half as much as I did they should be satisfied. We were making good progress on our ABET reaccreditation preparation when interrupted by the flood, and will be continuing on with that effort.

GeoDynamics Inc., the research and consulting effort that John Rindt and I formed to access SBIR research funds remains viable. Our first SBIR research effort focused on desulfurizing crude oil was successful. Even though DOE lost interest in the topic, there appears to be enthusiasm on the part of sour oil and gas producers. Our second effort is focused on the decontamination of agricultural chemical containers.

Nels Forsman: The ’96-’97 school year was a bit odd for me. We had 4 days of classes canceled “due to storms”. Well, I grew up in Grand Forks, and those closings were very unusual. Then the big closing came; the canceling of the final 3 weeks of the spring term, very problematic for both faculty and students to deal with, but also a necessary step by the administration. How did the flood affect me? Well, I didn’t leave town until my apartment was being surrounded by water, and then headed to Fargo to stay with some of my skydiving club friends. After nearly a week, I returned to find my garden-level apartment dry, odd because the matching 12-plex to the south had 2 feet of water in its lower apartment units, all from stormsewer backup rather than overland flow. Of course my parents’ properties weren’t as lucky, so I was busy for quite a while during the summer with cleanup work. Personally, all I lost was a pair of downhill skis that had been left in the downtown Ski and Bike Shop for sharpening.

Back at work, I’ve been busy teaching my regular courses, conducting quite a few “Instructional Diagnosis” sessions for other faculty on campus, and working on draft after draft of a paper intended for the Harvard Educational Review. That paper concerns a new approach to course and program
assessment, but we're now faced with finding another journal for it. We probably aimed at bit too high. I enjoyed working with Todd Holweger on his senior thesis "Characterization of Sentinel Butte Petrified Wood and Host Lithology Associations". I still give occasional guest presentations to the Integrated Studies Program, and lead the geology portion of their fall fieldtrip to the badlands. I co-led (with Richard LeFever) the department's fall fieldtrip to western North Dakota over Labor Day weekend this fall. I'm now serving on the University Senate General Education Requirements Committee and also the Bush Planning Grant Committee. That latter committee is charged with developing an education-improving program similar in scope to UND's Writing Across the Curriculum program. I've also identified another H-group chondrite brought to the department, so the list of North Dakota meteorites continues to slowly grow.

I should also mention that it was good to see R. Al Larsen (BS Geol 83, MS 88) during his 1-day visit to campus over the summer. Al is still working for Nicolet Instrument Corp. Also worthy of mention is mail received from David Kleesatel (MA 85), which included reports of investigations concerning photic sneezing ("sun sneezes"), which he and I had talked about many years ago. Also, Fred and Paulette Lobdell (MS 84, PhD 88) visited Grand Forks in August, but I missed them because of my annual journey to the World Freefall Convention in Quincy, Illinois. Yes, I still do that, over 450 times since my accident 3 ½ years ago. Well, more news next year.

Phil Gerla: Although our home near Climax, Minnesota is only about a quarter mile from the Red River, we were left unscathed by the flood this past spring. Fortunately, in our backyard an old channel of the Red diverted a large amount of floodwater away from our homestead. We complained about not having electricity for 9 days due to the blizzard in early April, but the inconvenience was nothing compared to the tremendous flood damage suffered by others. So, we stayed home and mowed the grass and tended the vegetable garden.

We are continuing to enhance the pump test demonstration site at the biology field station near Emerado for use by the hydrogeological field methods class. Unfortunately, the flood delayed the progress of the University electricians. We hope to install a 220 volt outlet to run the 1 1/2 hp submersible pump for use this fall. The aquifer, at a depth of about 60 feet, is confined and closely bounded on the west. Installation of the production well and nearby observation wells was completed by the ND Water Commission several years ago. I recently received an EPSCoR-NSF research grant to instrument a wetland south of Grand Forks, to continuously monitor subsurface water flow and budget. This year I will be finishing a three-year term as an associate editor of Ground Water.

On June 28 Janet and I became the parents of Mary Michelle, our second daughter who, with their four brothers, keep us busy.

Ahmad Ghassemi: survived the flood because his apartment is on the third floor. The required evacuation, however, was an excuse for him to return to Oklahoma.

During his first year with us, Ahmad kept busy developing courses in Petroleum Rock Mechanics, Petroleum Development Engineering, Drilling and Blasting, and Geomechanics. He and Frank Karner are co-teaching Petrology this semester, too. In the research area, Ahmad has been working on shale and borehole stability modeling. A proposal has been submitted to NSF for purchase of testing equipment for his Rock Mechanics lab. Two papers are also being submitted for publication this semester. In addition, he continues to work closely with Frank Beaver and Scott Korom preparing for the ABET (accreditation) team. He keeps busy!
For fun, Ahmad spent a few days in the Badlands hiking and enjoying the scenery and his coed soccer team, the Grand Forks Fighting Dikers, won first place in the Prairie Rose State Games!

F. D. Holland, Jr.: I would say that there is nothing like a major flood filling the basement to fill up one’s spare time (except perhaps avalanche, earthquake, or tornado, none of which I wish to try out). Anyway, our basement is cleaner than it has been any time since we moved in 42 years ago; and I’m starting to refinish it. Mardi’s mother (93) had died 2 April so she didn’t have to be evacuated or see her home, three blocks from us, destroyed by 10 inches of water on the first floor. In my office in Leonard Hall basement I only lost two shelves of books and four filing cabinets of records. (Oh well, no one was going to use this stuff to write a definitive history of anything, anyway.) We have appreciated the many calls, letters, and cards from former students inquiring about us. On 4 September Mardi had a right hemicolectomy but has recovered nicely. In October she begins mild chemotherapy one week out of four for six months. With all of these things going on I have fallen behind with my database of fossils on postage stamps of the world, but I still have the stamps. The most dreaded thing to contemplate is that grandson, Jess, Iowa High-school Player of the Year last fall with over 2000 yards from his running back position, is red-shirted this year at UNO and UND will have to play against him next year. Oh woe! Who’ll we root for? But it was fun to root for the women’s national champion BB team (won right here on campus) and the national champion hockey team this past year.

Frank Karner: Joan and I were hit hard by the flood but we used it as an opportunity to travel and visit relatives, to bond with all who helped us recover, and lastly, what we do best, to spend money both logically and illogically!

This Fall, as we search for normality, I am teaching Geology 101 and 320. Amazingly, Earth and its study still has significance and appeal, of course for our current majors, but also for those who will be our future majors. Ahmad Ghassemi and I are currently co-teaching Geology 320, now titled Petrology: Physical and Chemical Characterization of Geomaterials. We are redesigning 320 as an integrated study of geological materials - minerals, sediments, rocks, fluids - incorporating both scientific and engineering perspectives. Our content-centered undergraduate curriculum continues to develop primarily along classical lines yielding more and more opportunities to work with students at all levels on field trips and a variety of investigative projects.

Chad Tomforde and I, working with John Hurley at EERC, are completing a geochemical and transmission electron microscope study of the transformation of coal inorganic and organic components during the char stage of combustion. Our NSF-funded multidisciplinary Water Quality Laboratory is at a crucial stage as we explore future funding for a laboratory analyst/environmental scientist and development of the lab’s potential in environmental education.

Rich LeFever: During the flood evacuation, we went to Bismarck, and stayed there for about 5 weeks until we could get back into our house (many thanks to Tom Heck for his hospitality). Julie worked out of the NDGS offices there, and I was able to get some research done at the Survey and Oil & Gas Division offices. We put the kids into school in Bismarck, which proved to be a positive and enjoyable experience for them.

Our house had 55” of water in the basement, thanks to a previously unknown drain connecting to the storm sewers; our estimated losses were about $12,000. Fortunately, we had moved nearly everything upstairs, and we didn’t lose anything of real value, nor did we have any
structural damage to the house. We are still in the reconstruction process, which is about 75% complete, and we hope to be done with it in the next month or so.

In May, Tricia Kelley resigned as Chair, and I was asked to assume the responsibilities, so I am doing administrative stuff in addition to carrying a teaching overload, and trying to squeeze in a little research activity occasionally. I am still responsible for most of the “soft-rock” courses, at the undergraduate and graduate levels; my research interests and activities remain centered on the subsurface stratigraphy and sedimentology of the Williston Basin.

Ronald K. Matheney is working with M.S. student Kristjan Bekker on culturing diatoms to answer some questions about their suitability for oxygen-isotope paleoclimate studies. Ron is also Director of the UND Water Quality Lab and is preparing to offer the Environmental Sampling and Analysis class in the spring. Students in the course will conduct investigations using a suite of the lab’s instruments, which includes a GC/MS, ICP/AES, IC, TOC analyzer, and ion-selective electrodes.

Dexter Perkins: Overall I would have to say that the flood treated me kindly. Like all in my neighborhood, I had a basement full of water. But, we had removed all the furniture and most of our important things before we abandoned the house. So, we lost some boxes of old junk--some which we now realize had sentimental value. And we lost the furnace, water heater, and laundry appliances. After our FEMA check, and the $2000 from the “Angel” we will probably only have to spend $5000 of our own to get everything in order again. It seems rather ironic that we are happy to spend $5000 this way, but many others in town are much worse off. The good news is that, rather than sit around here, we went to New England while the flood waters were raging. So, we got to eat lobster and do college tours with our teenage sons. We also went hiking on Mt. Desert Island and did some sailing near Cape Cod.

During the last five years or so I have turned my attention from fundamental science more towards undergraduate education. In the last two years, I have been the organizer of two workshops on teaching, and I have attended lots of teaching meetings. Because of this new interest, I decided to write a Mineralogy text book, and it is practically done. Look for it around January. The title is simply "Mineralogy" and it is published by Prentice Hall/MacMillan. I also was one of three authors of a Mineralogy lab manual published by the Mineralogical Society of America in August of this year. And, I received a major NSF grant to introduce new equipment and teaching techniques in our mineralogy and petrology courses.

Kevin Henke is my only grad student right now. He continues his work on the chemical and crystallographic properties of some organo-metallic compounds of interest to environmental scientists. The first draft of his dissertation is nearly done but, more importantly, he has four papers published or in press. I have had several undergraduates involved in research projects that have resulted in publications. Most recently, Paul Sorensen and I collaborated on some projects to improve undergraduate mineralogy teaching. The results are presented in Teaching Mineralogy by Brady et al. (1997).

Other new things going on: I am becoming more and more a fan of the Web. This semester I am teaching a gems course that uses the Web as its only textbook. I also have homepages for most of my courses. Check it all out at http://www.und.nodak.edu/instruct/mineral/. I am planning a new multi-year project dealing with the geology of national parks--I plan to design about 60 Web modules that will be learning centers that can be used by secondary as well as post-secondary
teachers. The idea is to display the national parks in all their splendor, and to relate what is seen to fundamental geology. I envisage these modules, when completed, to be replacements for an introductory physical geology text—if an instructor is willing to experiment with a new approach to undergraduate education.

My kids are growing up. George is in the process of applying to colleges but he is not sure where he wants to go. We were all set to hit the road for campus tours, but he suffered a setback when he broke his leg playing soccer this fall. Betsy continues to manage Amazing Grains, the natural food store. And I continue to referee soccer. I am now an NCAA referee—one of three in Grand Forks. I can get as much work as I want at UM-Crookston, Bemidji, and at UND.

John R. Reid: The academic accomplishments of this past year were eclipsed by the 8 blizzards, followed by the “500-year” flood. Too much time had to be spent surviving and recovering! And, the recovery won’t be complete for some time. I had organized a symposium for the April North Dakota Academy of Science on the Devils Lake Basin (which also is undergoing serious flooding), but it had to be rescheduled because of the flood. In light of the excellent response, I was asked to organize another symposium on the Red River Flood. Joe Hartman (EERC and occasional Instructor for Paleontology) agreed to accept that responsibility and so two outstanding symposia were convened back-to-back Sept. 15 and 16.

Due to a serious decrease in my hearing I am planning to retire after this year; I am no longer able to interact with my students in my classes the way I want. It is a distinct handicap (punch lines are hard to hear!) Despite this, I still keep active, pedalling to and from work each day (or walking in winter), and I can still make my students work to keep up with me in the field. I visited Trent Hubbard (doctoral student), Jeff Brownson and Jason Haugen (undergrads) as they studied glacial flutes in front of the Saskatchewan Glacier in Banff National Park in August, and Jon Ellingson (doctoral student) in his mapping of his second ND quadrangle under the USGS EDBMap contract. I continue to work with Debi Beck (masters student) in her exciting research on the 15-paleosol site along Lake Sakakawea. Debi, Trent, and Jon presented papers at the NDAS and Debi and Trent are co-authors with me on papers presented at the GSA (Salt Lake City). Eric Brevik (BS 92, MS 94) and I have completed and submitted for publication a paper on glacial rebound and (with Will Gastold) are finishing another exciting paper on dating of Lake Agassiz strandlines, using mantle viscosity and rebound rates. In Sept. I was Instructor in a Corps workshop on Shoreline Erosion and Revegetation (eighth time), this time outside of Eugene. Always a good experience.

Barbara and I look forward to next year when I will finally have time to repair our basement, take time to travel, and to do some long-delayed writing. The most rewarding times these past 36 years have been interacting with students. I thank each of you who has challenged me. I remain proud of your accomplishments!
RECENT PUBLICATIONS BY DEPARTMENT FACULTY AND STUDENTS


Perkins, D., 1997, A fun and effective exercise for understanding lattices and space groups, in Brady et al., editors, Teaching Mineralogy, Mineralogical Society of America, p. 245-250.


"Humbled by Nature, strengthened by Faith"

26
Seen at Denver GSA Meeting
October, 1996

Bob Aaker
Orin Anderson
Allan Ashworth (NDSU)
Rae Ann (Brown) Baldwin
Deborah Beck
Bethany Bolles
Erling Brostuen
John Bluemle
Randy Burke
Steve Chipera
Odin Christenson
Dwight Deal
Bill Eastwood
David Eastwood
J. Mark Erickson
David Ferderer
Rod Feldman
Joel and Angie Galloway
Lee and Darcy Gerhard
Phil Gerla
Gary Hall
Dan Hansen (retired USGS)
Joseph Hartman
Erik Harvey
Jean Hoff
Bud and Mardi Holland
Trent Hubbard
Amber Huntoon

Kyle Johnson
Alan Kehew
Patricia Kelley
Hans Kishel
Tim Kroeger
Joanne Lerud
Steve Lund
Gary Meyer
Carissa Munson
Darryll and Theresa Pederson
Dexter Perkins
Wayne Pound
Lowell Rasmussen
Randy Reichert
John Reid
Mark and Symma Rich
Sherry Samson
Barb Sahl
Merle Savage
Mary Scott
Kori (Smith) Norberg
William Stone
Mike Strobel
Chad Tomforde
Gary Thompson
John Utgaard
Pat Videtich

Alumni and Friends Seen at AAPG Annual Meeting in Dallas, April, 1997

Wally Dow
Harlan Friestad
Lee and Darcy Gerhard
Bruno Hanson
Richard LeFever

Kori (Smith) Norberg
Larry Quandt
Steve Sturm
Rick Webster
Stan White

Alumni Seen at AAPG Rocky Mountain Section Meeting in Denver, August, 1997

Sid Bjorlie
Dave Fischer
Tom Heck
Bob Johnson
Kyle Johnson
Richard and Julie LeFever
Kori Norberg
Steve Sturm
ALUMNI NEWS

1950's

William T. Arnesen (BS Geol 53) (HJAO@aol.com) writes that he is now retired, but neglects to tell us from what! He left UND to complete a second BS and a MS in mechanical engineering from U.C. Berkeley and was awarded a PhD from University Washington in 1975. Tell us more, Bill. It was fun to see Ben Cherski (BSMIE 55) back on the ice at the 50 Years of UND Hockey celebration this summer but we missed Bob Harris (BS 60) here for the same event. Ben has backed off from work but is involved "in a few wells" whereas Bob's engineering firm, Harris Group, Inc., with 400 employees, is expanding all the time and recently opened an office in St. Petersburg, Russia.

James W. McKee (PhB 53) spent 16 years in England before moving to Warrenton, VA where is a consultant with Energy Consultants International. He and Jeannine speak highly of their new home, where there are more cattle than people!

1960's

Clarence (Kelly) Carlson (MS 60) was cited by the Grand Forks Herald on June 3 for his volunteer work cleaning out the basement of his former home church, Augustana Lutheran, which suffered an estimated $1,000,000 damage by the flood. "He's very, very modest and one hard worker. He's kind of our angel," a spokesperson for the church said. It certainly sounds typical of you, Kelly!

Rod Feldmann (BS 61, MS 63, PhD 67) is co-editor of an enormous, attractive book, "Fossils of Ohio" published as Bulletin 70 of the Ohio Geological Survey that has been nominated for the Paleontological Society's Golden Trilobite Award for outstanding presentation of geology to the layperson. After a stint of research at the British Natural History Museum, Rod was joined by his wife and daughter for a vacation in Scotland.

Charlie Klotzkin (ex 62) has retired from New York City Board of Education after 31 years of teaching. He is listed in Marquis' Who's Who.

Hussein Marafi (MS 69) writes (e-mail:fawziya@ncc.moc.kw) to indicate that his (and his family's) idea of a vacation is to find snow!
Mark Rich (faculty 59-63), although retired from the University of Georgia, continues to offer evening classes in geology and serve on the Board of Education. His last PhD student graduated in June of 1996! Symma still teaches first grade and keeps Mark hopping. All but two of their five children have left the "nest" and are busy in their own careers.

K. Bruce Switzer (BS 66) wrote to recall his efforts in dike-walking while a student here. He also finally admitted that he was almost responsible for "smelling out" Wilson Laird! Many of you recall that Bruce was also a pilot and one time he was piloting Dr. Laird and two others around the State. The plane was overloaded and temperature on the hot side as they took off from Devils Lake. All of the runway was used and a few miles later they were still only about 10 ft. above the ground! "I was sweating bullets trying to build up speed and altitude." Glad you succeeded, Bruce! (Bruce retired from the Canadian federal government two years ago and is enjoying retirement.)

Barrett Williams (BS 58, MS 60) is manager of Geotechnical Services for Norfolk Southern Corp., Atlanta, GA.

1970's

Dave Brekke (MA 79) has been envied by many people this past year because of his wife, Alice, who not only is the Director of the Office of Grants and Contracts at UND, but also is an award-winning cook! Ataway, Dave!

Gail Bergan (BS Geol 79) (http://bergan.com) (gbrgan@ix.netcom.com) operates a consulting and technical services business in Houston. She received an award recently from the Society for Technical Communication for her worldwide web page. Check it out!

Frank Caramanica (PhD 73) and his wife, Judy, rode their new Goldwing bike from their home in Texas to their summer place near Island Lake, Lengby, Minn. Still doing petrophysics with ResTech in Houston, Frank just refuses to grow up.

Vic Cherven (MS 73), was awarded his Ph.D. from Stanford in 1982 and is now President of Upgradient Environmental in Stockton, CA. He recalls the time Bill Hickey and Bill Fenner removed his clothes while he was taking a shower in the Leonard Hall basement. He was forced to head for his office, wearing only a smile, while some 20 students greeted him and recorded the vent with photos! Have you gotten even, Vic? Vic is recently married, too! Congratulations, Vic, and keep in touch.

J. Mark Erickson (MS 68, PhD 71), Chapin Professor of Geology at St. Lawrence University, received the J. Calvin Keene Faculty Award at this year's first convocation at SLU for "high standards of personal scholarship, effective teaching, and moral concerns." Mark was out to the N. D. Academy of Science meeting in September (postponed from April because of the flood) to present a paper co-authored with one of his students on N. D. Cretaceous snails. This is down from last year's production when five of Mark's students presented papers at the NDAS meeting. Congratulations, Mark.
Thomas M. Hamilton (MS 67, PhD 70, Hon. Doctor of Letters 93). Resigned as President at Pennzoil to accept position as Chairman, President, and CEO of Enserch Exploration, Ltd., in Dallas. Tom is also Chairman of the Board of Trustees of the American Geological Institute. Congratulations to you, Tom, on your continued success. We hope the restructuring is positive.

Joanne Van Ornum Lerud (BS 71, MS 79), Director, Arthur Lake Library, Colorado School of Mines, last fall, hosted an elegant reception at the Library in Golden for GIS (Geological Information Society) members who attended GSA meetings in Denver. This year Joni has given so many papers and been abroad to Russia and so many other places that we can’t keep them all straight. Joni writes that Rod Perkins (MA 77) and his wife Debra and two boys have moved to Dallas. Rod will be working for an environmental company there. He has turned over his environmental company in Denver to a colleague.

Richard B. Moore (MS 70) has been with USGS since 1968, during which time he has been involved in many interesting projects, including detailed geologic mapping of the south flank of Mt. Rainier, volcanic islands in the Northern Mariana Islands, Ed Malpais Nat. Monument, NM, Cenozoic basalts in western, CO and several Alaskan volcanoes. He adds that he continues to serve on various committees and attend too many useless meetings! We all sympathize with you, Richard!

Frank Schulte (BS 65, MS 71, PhD 72) keeps in touch regularly. With both daughters now graduated from their respective universities, he and Cindy have been able to concentrate on other things. Frank continues to travel for Exxon, but seems to spend more and more time in Houston. He has dropped in unexpectedly to visit UND from time to time, but we look forward to an announced visit sometime!

Mark Steiner (MA 78) was in Grand Forks to document flood recovery. Mark is an independent consultant, under contract these past 7 years with the U.S. Geological Survey, running chemical analyses and using TEM and mass spectrometer, largely.

John R. Tinker, Jr. (MS 68, PhD 70) (tinkerjr@uwec.edu) has enjoyed motorcycling with Christine all over central and western U.S. (Honda 1500 Gold Wing). He continues as Professor of Geology at University of Wisconsin-Eau Claire and is a Certified Ground Water Professional. It’s great to set new priorities, John! Good for you!

Mary (Woods) Scott (MS 72) has been appointed Head, Science and Engineering Library at the Ohio State University and continues as Mathematical Sciences Librarian, as well! You continue to be recognized for your significant abilities, Mary. Congratulations!

Fred Wosiek (BS 74, MS 77) is vice president of operations and acquisitions at Fidelity Oil Group, Bismarck.
1980's

**Arne Bakke** (BS Geol 82), with Fairbanks Gold Mining, Inc. in Alaska, has been serving on the advisory committee of the 1998 flight to duplicate the trans-Arctic flight of Carl Ben Eielson from Barrow, Alaska, to Spitzbergen in 1928. Photo shows him holding a 607 troy ounce gold bar from the Fort Knox Mine, Fairbanks, AK.

**Jeffrey W. Bulger** (BS 81) continued on and was awarded a Ph.D. (Philosophy?) from University Tennessee-Knoxville in 1994. He is presently an Assistant Professor of Philosophy at Utah Valley State College. He and Leah have one son, Alexander. It would be interesting to hear how a degree in geology prepared you for your present career, Jeff.

**Steve Chipera** (MS 85) writes: “The graduate with a science degree asks, "Why does it work?”, The graduate with an engineering degree asks, “How does it work?”, the graduate with an accounting degree asks, “How much will it cost?”, and the graduate with a liberal arts degree asks, “Do you want fries with that?”

**Bret Fossum** (BSGE '82) is leading a regional petroleum system evaluation of the Timan-Pechora Basin in Russia for Conoco. His experiences have been mostly positive, especially after learning the basics of the language. He has learned much about the cultures of the people there.

**Lee Gerhard** (former Chairman) has compiled a theme issue of *Environmental Geosciences* (v.4:1) highlighting “Federal prespectives on resources and the environment.” Lee, State Geologist of Kansas, is past president of the Division of Environmental Geosciences of the AAPG and is managing editor of the Journal, *Environmental Geosciences*, founded by Bruno Hanson when he was Division President.

**Eric T. Giltner** (BSGE 82) is Assistant to the Dean as MBS Program Administrator here at UND. We see him only rarely. He and Mary Carol have a son, Thomas (b. 1980), and a daughter, Cassandra (b. 1982).

**Don Halvorson** (MST 71, PhD 80) retired from teaching at Northland Pioneer College and
Northern Arizona Univ. in May 1996. Continued problems with his diabetes resulted in amputation of his right lower leg last July. His progress is slow but good. Our best wishes to both you and Dawn for better health and enjoyment in retirement.

John Harju (BS 86) now is with the Gas Research Institute in Chicago where he continues leading pilot projects involving desalinization by freeze-thaw in New Mexico (and soon in Wyoming). He has also been involved in development of a software program for risk assessment (if I heard correctly). Another exciting project uses methanotrophic bacteria, a by-product of which is an enzyme that effectively degrades TCE. John says he is fortunate to have moved before the flood.

Fred Lobdell (MS 84, PhD 88) was pulled over July 25 near Thompson, ND, while on his way to visit Nels Forsman. A bank robber fitting Fred's description was being sought... "in his 40's, with a full grayish-brown beard and grayish-brown hair, about 5' 10" tall and a pot belly, and was driving a small gray car." Except for the age, Fred, we can see why they stopped you!

Mark Lord (MS 84, PhD 88) is busy involving high school students in water testing of French Creek, in Meadville, PA; a worthwhile project, Mark. He continues to teach at Allegheny College where Sam Harrison was chairman for so many years.

Mark Luther (MA 88) is now GIS coordinator and geologist for Kadrmas Lee & Jackson, a consulting engineering firm in Bismarck.

Wayne Pound (BS Geol 70, MS 85) teaches science at a Denver area high school and is involved in conducting Earth Tours (see http://henge.com/~wpound/main.html). Good work, Wayne. (wpound@k12.colostate.edu)

Jacqueline (Schmidt) Vander Veen (BSGE 84) writes of her recent marriage to Jerry. Jackie continues as an Environmental Engineer for Fluor Daniel Hanford, Inc., in Hanford, WA. She has returned several times to promote her company at UND Job Fairs. (dr_moo@cio.net)

Rick Webster (BS 80, MS 82) is an advanced geologist for the southern region of Marathon Oil Co. out of Tyler, Texas. It was good to have Rick visit the Department in April but he was smart enough to get out just before the flood hit.

Kent Wiken (BS GE 84, BS 86), after ten years in Texas, has moved to the Seattle area. He and Lisa (and their two children) stopped by, in Buxton for Kent's grandfather's funeral. He is working for Emcon, an environmental company, in the Solid Waste Division, Bothell, WA. Living in nearby Monroe allows them to spend weekends hiking in the hills and mountains. They are pleased with the move.

1990's

Carmen Best (BS EGT 97) is leaving for Niger to work with the Peace Corps. She will do her training in Niamey at first. She will be there for 27 months. Her job description is "environmental educator" but specific duties are not yet known. She will have to learn to speak French, Hausa
Barry Botnen (BS EGT 94) has been employed as a geologist by Oasis Environmental, Anchorage, AK since April '96. He has enjoyed the variety of assignments, including several related to the TransAlaska Pipeline, and others in bush communities. Hunting and fishing are great, he says.

Rob Burrows (BS EGT 95) completed a one-year position at the Hanford, Washington, then back as an Instructor on the Juneau, Alaska, Icefields before entering graduate school at Western Washington University. While on the Icefields he became lost in a blizzard and had to spend overnight in a crevasse field. He took time to visit the Valley of the 10,000 Smokes and Katmai National Park, too. Hope you enjoyed all that, Rob; now, work begins for you!

John (Jay) Crashell (MS 91) and Diana Maurer shared that daughter, Nichole Maurer Crashell, was born premature on March 16, weighing only 1 lb. 15 oz. On 9/3/97 Nichole was at 11 lb. 3 oz! Congratulations to all three of you! We wish you all the best.

Tim Freije (BS Geol BSGE 96) has enrolled in a master's program at The University of Oklahoma.

Jason Gelling (BS EGT 97) is employed with Great Plains Environmental out of Fargo. He was married this past summer.

Erik Harvey (BS Geol 91) completed his Ph.D. in paleontology at Ohio State University and is presently teaching in a temporary position at Oberlin College, Ohio.

Cindy Kuta Johnson (BSGE 93) is an Environmental Engineer for Holan, a cement company in Mason City, IA.

Andy Kuchera (BS 94) stopped by to report that because of insufficient activity working as a petroleum geologist for Sunburst Consulting in Wyoming he changed jobs. He now pilots helicopters for the U.S. Border Patrol out of Alpine, TX (mostly drug interdiction).

Grant Larson (BS EGT 93) is employed as an Environmental Health Practitioner for the City of Fargo, but is completing projects begun with Great Plains Environmental part-time. Grant writes of his vivid memory of Patrick Skibicki showing up late for the Lake Winnipeg geomorphology trip with only one or two cans of beans, a sleeping bag and money for "pop." Grant recently married Cheri, who is completing a graduate degree in Marriage and Family Therapy at NDSU. Glad things are going so well for you, Grant.

Steve Neuharth (BS EGT 96) is employed as a Natural Resources Planner for NW Regional Development Commission.

Chris Rousseau (BSGE 96) and Heidi Swenson were married August 2 in Watford City, ND. Chris works for Northstar Engineering and Surveying, Inc. in Pueblo, Colorado, where they recently purchased a Victorian-style home. Congratulations and best wishes, Chris and Heidi.
Barb Sahl (MS 94) has accepted a position with the Department of Environmental Quality (Wyoming). She will be working with storm water discharge permitting under the Federal Clean Water Act. Barb was involved with similar activities for Polk County, Minnesota. Congratulations, Barb!

Sherry D. Samson (BS Geol 95) is advancing directly into the PhD program at the University of Wyoming. She presented the results of her initial experiments at the Goldschmidt Conference in Tucson this past June. Keep us informed of your progress, Sherry.

Brent Stafford (BS EGT 96) reports that he has been hired as a secondary education science teacher in Houston. He plans to continue on for a graduate degree at the University of Houston. Congratulations, Brent. We need good science teachers with adequate geology background and we are glad you want to teach!

Brian Thomas (BS EGT 97) transferred from Notre Dame to the University of Nebraska with full tuition plus a nice stipend to begin his graduate work in Civil Engineering. He is intending to be an environmental engineer. Go Cornhuskers!

Larry R. Quandt (MS 90) continues as Hydrogeologist for the Minnesota Pollution Control Agency in St. Paul (larry.quandt@pca.state.mn.us).

Grant A. Wenker (BS Geol 93) is a Staff Engineer with Consolidated Engineers and Materials Testing in Gillette, Wy.
As with much of the UND campus, the Energy & Environmental Research Center (EERC) was hit hard by the April 1997 flood. Damage to laboratory facilities, equipment and lost contract revenue amounted to approximately $7 million. The greatest amount of damage occurred in the Natural Materials Analytical Research Laboratory which is currently being rebuilt and should be back in operation within a few months.

Despite the problems caused by the flood, the EERC had a number of notable successes during the past year and is well on the road to recovery, exploring a number of promising new opportunities. In addition, the Center is actively involved in flood control planning efforts and research that will improve the scientific understanding of the role climate cycles play in flooding.

In its second year, the EERC’s Red River Water Management Consortium continues its mission of bringing together government and industry to cooperatively address and solve regional water issues, regardless of state or political boundaries. Following the 1997 Red River flood, the consortium shifted its focus to assist members in addressing flood-related issues. The EERC also works with consortium members to scientifically assess and analyze water resources, using this knowledge to match appropriate technologies for water cleanup and pollution prevention.

In a project funded by the U.S. Department of Energy (DOE) and the Electric Power Research Institute, the EERC is studying evidence found in soils and flood sediments in western North Dakota’s badlands and prairies. These provide a paleontogical and geological record of climate change during the past 5000 years and represent a key part in the scientific effort to understand changes in the earth’s climate. The results of this study will also assist in interpreting the role climate cycles play in recent flood events. (Involved in this are Joseph Hartman, Deborah Beck, and John Reid).

Cold weather this past winter was a boon to researchers testing an innovative desalinization technology that relies on below-freezing temperatures to make salty water clean enough for cattle to drink. Working in concert with Mother Nature, engineers and scientists from B.C. Technologies, Laramie, Wyo., and the EERC combined modern technology with a naturally occurring process in a field test of freeze-thaw/evaporation (FTESM). The test was conducted at an Amoco Production Company facility in the San Juan Basin, 40 miles north of Farmington, N.M.

Through its Center for Air Toxic Metals (CATM), the EERC is developing innovative technologies and analytical techniques to assist the U.S. Environmental Protection Agency (EPA) and industrial partners in the program. CATM develops technologies to measure and control mercury and other potentially hazardous air pollutants. Working in partnership with government and industry, the EERC has taken the lead in developing more accurate and reliable methods to measure trace amounts of mercury in power plant emissions. The EERC is also working with the oil and gas industry to help solve mercury contamination problems in soil and water.

The EERC’s Environmental Management program with DOE continued to assist small
businesses in field testing, demonstrating and commercializing new technologies to clean up the 50-year legacy of nuclear weapons production at federal sites around the country. The EERC has been involved in the deployment of EM technologies at the Los Alamos National Laboratory, Oak Ridge National Laboratory and is part of teams working at several other EM sites.

During the summer, the EERC began operating a new pilot-scale demonstration unit as part of Combustion 2000, a national development program aimed at commercializing a new generation of cleaner, more efficient coal-fired power plants. A DOE high-performance power system project, Combustion 2000’s goal is to develop and demonstrate a commercially feasible power plant technology that’s one-third more efficient and reduces air pollution by 90 percent compared to current coal-fired power systems. The EERC is a key partner on the United Technologies Research Center (UTRC) Combustion 2000 project team and will be developing and testing components of UTRC’s high-temperature advanced furnace.

Under the EERC’s leadership, DOE designated the Red River Valley one of the first international Clean Cities regions. The Red River Valley Clean Cities Coalition, coordinated by the EERC, works to maintain the region’s air quality by encouraging the use of clean, alternative fuels such as ethanol, natural gas, propane and electricity.

Geology Alumni at the EERC

David Brekke, Quality Assurance Manager
David recently accepted a new position at the EERC as the Quality Assurance Manager. He will be designing and implementing a center-wide quality assurance/quality control program that will ultimately lead to ISO 9000 registration. He brings to the position many years experience in analytical techniques applied to geological and coal-derived materials.

Daniel Daly, Research Manager
During the past year, Dan worked on the EERC’s Department of Energy (DOE) Environmental Management contract to facilitate the development of innovative technologies to address cleanup needs for the nuclear defense complex.

Kurt Eylands, Research Associate
Kurt’s research activities have focused on mineralogy in high-temperature ash formation during coal combustion and hydration reactions. He presented a four-part workshop at various sites around the country on coal combustion byproduct utilization. He’s also studying the beneficial reuse of brines produced during the freeze/thaw-evaporation process, as well as mineralogy and potential uses of industrial byproducts.

John Foster, Geologist II
Despite the setback from flood repairs, John made many trips to the southwest where he was involved in the ongoing development of a new water purification process and a new environmental evaporation pond design, as well as other oil and gas produced water activities. Other projects in which he’s involved focus on the development of field instrumentation based on laser induced breakdown spectroscopy (LIBS).
Timothy Gerlach, Research Associate
Tim's current duties include acting as project manager of the National Alternative Fuels Laboratory and as North Dakota's technical representative to the Governors' Ethanol Coalition. His areas of interest include clean fuel and environmental issues that affect gasoline blending, use of alternative fuel vehicles, biomass- and refuse-derived fuels, lignite mining and electricity generation, and environmental legislation. In 1995, Tim started the Red River Valley Clean Cities (RRVCC) Coalition. Under his lead, the RRVCC has grown to twenty-four Manitoba, Minnesota, and North Dakota business and government stakeholders, working together to promote alternative motors fuels (electricity, ethanol, propane, natural gas) to fleet operators.

Dean Goebel, Research Manager
Dean Goebel, a research hydrogeologist, continues his ongoing research investigating agricultural impacts on groundwater in the Northern Great Plains. Under this U.S. Department of Agriculture project, two additional sites were added this spring. He is managing a riparian demonstration project targeting nonpoint source pollution and Best Management Practices (BMPs) to improve ground and surface water quality in the Red River basin. Riparian restoration is another component of this project, which was recently awarded Phase II funding through 2003. He is also involved in the Red River Water Management Consortium, a partnership between key industry, government, and research organizations addressing water management issues in the Red River basin.

Gerald Groenewold, Director
In addition to managing the task of rebuilding the EERC following the spring flood, Gerry has been an active participant in the effort to develop a long-term flood control strategy for the city of Grand Forks. Expanding initiatives at the EERC spearheaded by Gerry include the Center for Air Toxic Metals, environmental management, the Red River Water Management Consortium, global climate change studies, and a sustainable development program covering energy efficiency and alternative fuels. Gerry manages a multidisciplinary science and engineering research, development, demonstration, and commercialization team of approximately 220, focused on a wide range of integrated energy and environmental technologies, developing joint venture projects between government, industry, and the research community to solve complex energy and environmental problems and develop commercially viable technologies for national and international clientele ranging from private industry to government agencies. He also develops and manages fundamental and applied research and training programs for highly motivated students at all levels.

Joseph H. Hartman, Paleontologist/Geologist
During the last year Joe has had the opportunity to continue his paleontologic and geologic research in Madagascar concerning the paleobiogeographic and plate tectonic implications of an extraordinary record of Late Cretaceous vertebrates (e.g., dinosaurs, crocs, birds, mammals) and biochronologically important record of invertebrates. This research will continue to be funded by the National Science Foundation (where Joe is a collaborative PI) through the year 2000. With others, papers on Madagascar were published by Smithsonian Press and in a Geological Society of India Memoir. Invited presentations of a North Dakotan nature were given on Cretaceous and Paleocene mollusks at DinoFest International in Albuquerque, at a K/T boundary symposium at
the Société Géologique de France in Paris, and at a Geological Society of America Penrose Conference on the Paleocene–Eocene boundary, also in Albuquerque. Presentations and posters were also given with others at the Sixth North American Paleontological Convention and at the annual meeting of the Geological Society of America in Denver. The spring found Joe and many others in harm's way. Most of the summer was spent restoring fossils that were flooded and coordinating and editing a symposium on the Red River Flood of 1997, which was held at the rescheduled annual meeting of the North Dakota Academy of Science. For 1997–1998, Joe is president-elect of the Academy. In addition, Joe has coordinated a project with Electric Power Research Institute and the U.S. Department of Energy concerning Holocene climate change using paleosols. This project includes Professor John Reid and grad student Debi Beck (UND Geology) and UND alumnus Jon Reiten from the Montana Bureau of Mines and Geology, as well as others. Debi contributed a paper to the Academy meeting and won runner-up in the Dennison competition. Joe will also be teaching Historical Geology and Invertebrate Paleontology during the spring semester.

Gale Mayer, Research Manager
During the past year, Gale’s high-technology company was awarded a $75,000 grant from the National Science Foundation’s (NSF) Small Business Innovation Research (SBIR) program. The EERC spin-off company, Western Environmental Services & Technology (WEST), is developing an innovative soil contamination cleanup process that can remove agricultural pesticides and other contaminants from soil. Gale works in the areas of the impacts of agricultural chemicals on groundwater, the role of biological processes in the degradation of these chemicals, and waste management and wastewater treatment.

Wesley Peck, Research Associate
Wes works in the areas of data assimilation on lignite observations in western North Dakota and eastern Montana, integrating these data into database and geographic information system (GIS) formats; database design and programming, and the use of computer graphics techniques to create geologically oriented diagrams such as geologic maps, cross sections, contour maps, profile diagrams, stratigraphic columns, pollen diagrams, and species distribution charts. He is assisting in the development of a GIS program at the EERC.

Craig Schmit, Part Time Employee
During past year, Craig focused on completing the final reports for the Rocky Mountain 1 underground coal gasification project. He is currently attending UND full-time to earn his teaching degrees. He plans to teach science and language arts at the middle school level.

James Sorensen, Project Manager
Jim is currently a Senior Research Associate at the EERC and has been involved in a variety of projects, most of which have been focused on groundwater and soil contamination issues that are related to the natural gas industry. From 1993 to 1995 his primary responsibility was to conduct field-based research activities at several sites in Louisiana, New Mexico, and Pennsylvania that had been contaminated with elemental mercury. In 1996, Jim became the principal investigator of a project to determine the subsurface transport and fate of selected gas processing wastes, particularly a group of compounds known as alkanolamines. In 1997, Jim became the program
manager of the Gas Industry Groundwater Research Program sponsored by the Gas Research Institute and the US Department of Energy. Recent publications upon which he has been the primary author include a 106 page topical report published by the Gas Research Institute entitled "Field Studies of the Occurrence, Transport, and Fate of Mercury at Natural Gas Industry Sites," and a paper presented at the 4th International Petroleum Environmental Conference entitled "Assessment of Subsurface Environmental Impacts of Natural Gas Sweetening Wastes."

**Edward Steadman, Associate Director/Research**

In his position as an EERC associate director, Ed oversees a wide range of projects, including the EERC's expanding initiatives of environmental management and water management. He plays an active role in the Red River Water Management Consortium and has been a key participant in the EERC's efforts to demonstrate and commercialize its freeze-thaw/evaporation technology. He specializes in the areas of scanning electron microscopy, coal ash, coal ash utilization and disposal, and materials science.

**Rodney Stoa, Research Specialist II**

Rod works in the areas of oil and gas industry waste management and regulations, geographic information systems, and subsurface geology of the Williston Basin.

**Chris Zygarlicke, Research Manager**

Chris Zygarlicke is currently enjoying his 10th year at the Energy & Environmental Research Center as a research manager. He manages a group of 10 professionals who have a particular emphasis on increasing power efficiency by mitigating ash deposition and controlling air toxic emissions. Chris is very grateful to work on something that is at least remotely close to geology since he and an associate have recently developed a follow-on project to characterize nickel species in oil combustion emissions and have seven industry sponsors for the project one of which is the American Petroleum Institute. Chris and his wife Eileen have two wonderful boys.
NECROLOGY

Wilson Morrow Laird, Chairman and State Geologist, 1940-1969, passed away May 14, 1997, in Kerrville, Texas, at the age of 82 years. Among the many contributions Dr. Laird made to the Department and the State of North Dakota a few stand out more than others. He was largely responsible for the establishment of an oil and gas conservation statute several years before oil was first discovered in North Dakota. The prohibition of closely-spaced wells reduced costs and assured a longer life and greater total yield from new fields. The North Dakota Geological Survey became a highly respected State agency under his management. At the same time he was responsible for the expansion and development of the Department of Geology, from a faculty of six in 1940 to 12 by the time he left to become Director of Oil and Gas, U.S. Department of the Interior, in 1969. Leonard Hall, completed in 1964 to house jointly the Geological Survey and the Department of Geology, is another testimony to his efforts to make both leaders in the fields of geology and geological engineering.

Dr. Laird was a firm advocate of field experience, leading many trips with students to understand the geology of North Dakota as well as other more western states. He was the leader of the Martin River Glacier (AK) research expedition in 1962 and 1963, where he clearly demonstrated his love for the outdoors. He encouraged other faculty-led trips in many parts of the world. Dr. Laird has been recognized by many for his contributions, including the awarding of Honorary Doctor of Science degrees from his alma mater, Muskingum University, and the University of North Dakota.

Wilson Laird was preceded in death by his first wife, Reba (in whose memory he established a UND scholarship fund especially for female geology majors) and his second wife, Margaret. He is survived by sons, Douglas of Urbandale, Iowa, David of North Potomac, Maryland, and Donald of Columbus, Missouri, and daughter, Dorothy Kaatz of Wadena, Minnesota. His is also survived by five grandchildren.

A memorial service was held in the UND Alumni Center on July 3 and he was buried beside Reba in Grand Forks that afternoon; excerpts from that service have been published in the Fall 1997 North Dakota Geological Survey Newsletter (v.24:3) and will also appear in the 1998 issue of the Journal of the Association of American State Geologists (v.50).

Wilson M. Laird will be missed.

Only lately did we learn that Charles Issac Frye (PhD 67) passed away from cancer June 6, 1996. Charlie came to UND from New Hampshire and Massachusetts, bringing with him his eastern outlook on life. He quickly adapted to North Dakota. He is probably best known locally for his discovery of the Marmarth Triceratops skull that is displayed in Leonard Hall and his work on the Hell Creek Formation in North Dakota. Charlie graduated and joined the faculty at Muskingum College and then Northwest Missouri State University, where he served as Chairman. He leaves behind his wife, Linda Rakow Frye, two sons, Charles and Robert, a daughter, Katherine, and four grandchildren. Charlie was 60 years old.

Lorraine Rose, a kind and patient typist of many geology theses and dissertations at UND, passed away this past December in Charlotte, NC.
ADDRESSES OF ALUMNI AND FRIENDS

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<td>Bergan, Gail R.</td>
<td>Box 162 Bowbells ND</td>
<td>58721</td>
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<td>Berglund, Almit D.</td>
<td>1607 Park Haven</td>
<td>Houston TX 77077</td>
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<td>Bertram, Ronald E.</td>
<td>RR 1 Box 200-G</td>
<td>Buffalo WY 82834</td>
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<td>Best, Carmen (BS EG&amp;T 1997)</td>
<td>Box 305 Ashby MN</td>
<td>56309</td>
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<tr>
<td>Betcher, John T.</td>
<td>Rt 1 Box 88</td>
<td>Rollette ND 58366</td>
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<td>Beyers, Ron H.</td>
<td>3040 Minnehaha Pkwy E</td>
<td>Minneapolis MN 55406</td>
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<td>Bickley, William B. Jr.</td>
<td>6689 Bruce Rd</td>
<td>Celina OH 45822-9143</td>
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<td>Birge, Scott (BSGE 1984)</td>
<td>19 Turtle Rock Ct</td>
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<td>Binegar, Randall D. (BSGE 1983)</td>
<td>136 12th St SE</td>
<td>Washington DC 20003</td>
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<td>Bique, Stephen F.</td>
<td>1964 N 20th St</td>
<td>Bismarck ND 58501-2368</td>
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<td>Birg, A. (BA 1937)</td>
<td>26404 W Ingelside Shore</td>
<td>Ingelside IL 60041</td>
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<tr>
<td>Bjorlie, Peter F.</td>
<td>5346 S Magnolia Terrace</td>
<td>Whittier CA 90601-2332</td>
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<td>Bjorlie, Sidney C.</td>
<td>7401 NW 107th St</td>
<td>Oklahoma City OK 73162</td>
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<tr>
<td>Black, John N.</td>
<td>2810 Shanks Drive</td>
<td>Midland TX 79705</td>
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<td>Blain, William S.</td>
<td>5510 Beaver Lodge Dr</td>
<td>Kingwood TX 77345</td>
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<td>Bleau, Dale J.</td>
<td>HC 3 Box 74</td>
<td>Watford City ND 58854-9528</td>
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<td>Bleet, Craig J.</td>
<td>HCR 5 Box 7B</td>
<td>Roseau MN 56751</td>
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<td>Block, Douglas A.</td>
<td>603 Brunswick Circle</td>
<td>Bismarck ND 58501</td>
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<td>2301 Harlem Crest Road</td>
<td>Rockford IL 61111</td>
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<td>Bluemle, Mary E.</td>
<td>2714 Mercury Lane</td>
<td>Bismarck ND 58501</td>
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<td>2714 Mercury Lane</td>
<td>Bismarck ND 58501</td>
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<td>Bohan, Timothy W.</td>
<td>RR 3 Box 200</td>
<td>Winthrop ME 04364</td>
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<td>Bohn, James D.</td>
<td>188 Riverwood St</td>
<td>Richland WA 99352</td>
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<td>Bohn, Paul D.</td>
<td>6311 Avery Island</td>
<td>Austin TX 78727</td>
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<td>Bohrer, Mark F.</td>
<td>1025 Crystal Lake Rd</td>
<td>Burnsville MN 55337</td>
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<td>Bolinske, Jean M.</td>
<td>523 Sudbury Ave</td>
<td>Bismarck ND 58501</td>
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<td>Bolstad, Erling M. (BS Geol</td>
<td>SEE LILILCH</td>
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<td>Bonnieville, John W. (BS Geol 1956 MS 1961)</td>
<td>7910 W Becher West Allis WI 53219</td>
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<td>Boiten, Barry (BS EG&amp;T 1994)</td>
<td>18115 27th Ave N</td>
<td>Plymouth MN 55447</td>
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<td>Braaten, Dennis A. (BSGE 1979)</td>
<td>9540 Morningside Loop #205</td>
<td>Anchorage AK 99515</td>
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<td>Brandjord, Irwin M. (PhB 1956)</td>
<td>421 W Gold Ave</td>
<td>Hobbs NM 88240</td>
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<td>Braun, Stephen M. (BSGE 1983 MS 1991)</td>
<td>1043 S Oakcrest Ave Casper WY 82601</td>
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<td>Breitling, Barbara</td>
<td>Rt 1 Box 42</td>
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</tr>
<tr>
<td>Brekke, David W. (MA 1979)</td>
<td>409 SW Red Hills Drive</td>
<td>Dundee OR 97115</td>
</tr>
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<td>Grand Forks ND 58201</td>
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Brekke, Jay (BSGE 1991)  
Brekke, Karla (BSGE 1982)  
Brevik, Eric (BS 1992 MS 1994)  
Breza, Michael (BSMIE 1954)  
Brinster, Kenneth F. (MS 1970)  
Brooks, Ryan (BS EG&T 1995)  
Brostuen, Erling A. (PhD 1965)  
Brouillard, Lee A. (BS 1977)  
Brown, David J. (MS 1983)  
Brown, Michael W. (BS 1992)  
Brown, Paul (BS Geol 1993)  
Brown, Rae Ann (BS 1984)  
Brown, Ronald G. (BS 1968)  
Brown, Todd (BS 1990)  
Brown, William M.  
Budzak, Gail R. (BS 1979)  
Buechler, Barbara J. (BA 1965)  
Bulger, Jeffrey W. (BS 1981)  
Bulger, Paul (MS 1987)  
Burke, Randolph B. (PhD 1989)  
Burkhardt, Barry W. (BS 1972)  
Burkholder, Brad Lee (BS 1987)  
Burrows, Robert (BS EG&T 1995)  
Bushaw, Dewey J. (BS 1957)  
Butler, Raymond (BSGE 1970 MS 1973 PhD)  
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Camara, Michael (MS 1977)  
Cameron, David A. (BS 1975)  
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Caramanica, Frank P. (PhD 1973)  
Carlson, Clarence G. (Kelly) (MS 1960)  
Carlson, Susan T. (BA 1996)  
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Carter, Crissy (BS EG&T 1997)  
Carter, John L. (BS 1959)  
Carter, Kristine (MA 1985)  
Carter, Marc (BS EG&T 1996)  
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Chasney, William J. (BS Geol 1955)  
Cherlet, Ronald C. (BS 1971)  
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3043 Sandy Hook Dr St Paul MN 55113  
117 Hutchins St Woodstock IL 60098  
814 NE 16 1/2 St Jamestown ND 58401  
SEE BALDWIN  
9012 E Amherst Drive #A Denver CO 80231  
8371 Robina Ct Orangeville CA 95662  
4725 Calle Alto Camarillo CA 93012  
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147 N 1120 E Spanish Fork UT 84660  
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10446 Sherman Eden Prairie MN 55347  
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10912 123rd St Edmonton AB T5M 0C9 CANADA  
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Clayton, Lee (BS Geol 1960, MS 1962)
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Collier, James C. (MS 1988)
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Conner, Donald C. (BS Geol 1953)
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Connors, Rolland (Ex 1971)
Cook, Charles W. (BS Geol 1968 MS 1974)
Coyle, Jason (BS EGT 1997)
Crackel, Alan J. (PhB 1957 BA 1959)
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209 Piney Ridge Road Waveland MS 39576
4996 Bear Mountain Drive Evergreen CO 80439
2652 Osborn Rd Topeka KS 66614
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4920 South Oak St Casper WY 82601
3177 W St Patrick St Rapid City SD 57702
805 Little Turtle Rd NW Bemidji MN 56601
1207 W 5th St Chanhoe KS 66720
114 Chestnut St Grand Forks ND 58201
440 N Airport Rd Hastings MI 49058
1720 S Garrison St Lakewood CO 80226
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Ferdeker, David A. (BS 1982)
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Forsman, Nels F. (BS Geol 1974 PhD 1985)
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Fox, Jon (MA 1993)
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1016 Cherry St Grand Forks ND 58201
1838 Folkstone Rd Tallahassee FL 32312-4001
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4000 15th St NE Willmar MN 56201
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1646 28th Ave South #2 Grand Forks ND 58201
405 N 17th St Coeur d'Alene ID 83814
545 N Grotto St St Paul MN 55104
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2549 E Caramillo Colorado Springs CO 80909
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5702 S Havana Court Englewood CO 80111
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SEE SCHWENN
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448 Brook Rd PO Box 3876 Evergreen CO 80439
1080 Hortons Pond Rd Apex NC 27502
4105 South 3340 East Salt Lake City UT 84124
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Gelling, Jason (BS EG&T 1997)
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Gerlach, Tim (MS 1994)
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Gibbens, Joseph F. (BS Geol 1959)
Gibbs, James F. (PhB 1956)
Gibbs, Mackintosh J. (BSMIE 1958)

Giddings, Steven D. (MS 1986)
Gilbert, Holly Ewers
Giles, Timothy F. (BS 1972)
Gillett, Lawrence B.
Gillin, Donald S. (BS Geol 1958)
 Gillis, David (BSGE 1984)
Giltnier, Eric (BSGE 1982)
Gjestvang, Rory D. (BSGE 1984)
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Goehring, Arllo J. (BS 1960)
Goerger, Loren A. (BS 1987)
Gordon, Keith A. (BSMIE 1961)
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Gram, Bridget
Graney, Eric T. (BS Geol 1987)
Gray, Lockhart R. (BS Geol 1959)
Gregoire, Loel J. (BSGE 1982)
Grenda, James C. (PhD 1977)
Griffin, Barbara J.
Griffin, John A. (BSGE 1977)
Griffin, Leonerd F. (BS 1942)
Grilley, Nena L.
Grinolds, Donald (BA 1983)
Groenewold, Gerald H. (MS 1971 PhD 1972)
Grossman, I.G.
Grunstel, Arland C. (PhB 1954)
Grygo, Roland (BS 1957)
Guenther, Kenneth M. (BS 1971)
Gullikson, David M. (BA 1955 BSMIE 1956)
Gustavson, Thomas C. (MS 1964)
Haahr, Jerry D. (BA 1975)
Haake, Ellis V. (BS 1969)
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Haerter, James P. (BS 1981)
Hagen, Gregory D. (BA 1979)
Hagmaier, J. Ladd (MS 1967 PhD 1971)
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2108 S 90th St Apt 0381 Tacoma WA 98444
1807 Willow Drive Grand Forks ND 55301
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5201 E 2nd St Apt D14 Tucson AZ 85711-1344
RR 2 Box 62 Oslo MN 56744
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1313 14 1/2 Ave N Wahpeton ND 58075
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106 S 20th St La Grande OR 97850
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6213 Alderpointe St Bakersfield CA 93313
#9 Fairway Drive Minot ND 58701
1401 Oxford St Houston TX 77008
2906 South Fenton Denver CO 80227
620 W Davenport St Eldridge IA 52748
126 Shadow Wood Dr Sugar Land TX 77478-2665
13320 Old Jamestown Rd BlackJack MO 63033

47
Hoffman, Patrick R. (BSGE 1984)
Hoganson, John W. (PhD 1985)
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Holland, Jr., F.D.
Hollarn, James W. (BS Geol 1964)
Holth, Constance (BS EG&T 1995)
Holweger, Todd (BS Geol 1995)
Honeyman, Leslie R. (PhB 1969 MS 1973)
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Hopman, Donna L. (BSGE 1978)
Hossein Ali, Faroukh (BSGE 1987)
Houkom, Duane A. (BSMIE 1949)
Howard, Steven J. (BA 1985 BS 1985)
Howatt, Tracy M. (BS 1981)
Hruby, Thomas H. (BA 1974)
Huang, Yue-Chain (MS 1988)
Hubbard, Trent (MS 1997)
Huber, Timothy P. (MS 1986)
Huberty, Robert L. (MST 1973)
Huffman, Robert L. (PhB 1957)
Humphreys, John T. (BSMIE 1939)
Hungrness, Darren (BS EG&T 1997)
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Hunt, Gerald L. (BSGE 1982)
Huot, Raymond E. (BS Geol 1955)
Hvinden, David C. (BA 1982)
Hyde, Donald E. (BSMIE 1947)
Iljana, Floyd (MS 1965)
Iverson, Cary W. (BSGE 1978)
Iverson, Walter D. (PhB 1953)
Iverson, Wayne C. (BS 1972)
Jacob, Arthur F.
Jacobson, Scott A. (BSGE 1982)
James, Martin A. (BSMIE 1949)
Jeffcoat-Sacco, Paul C. (MS 1979)
Jefferies, Robert L. (BSMIE 1949)
Jelleberg, Scott H. (BSGE 1981)
Jenner, Gordon A. (MS 1984)
Joersz, Richard W. (BS Geol 1973)
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Johnson, Bruce (BSGE 1990)
Johnson, Cindy
Johnson, David B.
Johnson, Hume T. (PhB 1950)
Johnson, Irwin S. (BS Geol 1957)
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9502 Saville Ct Houston TX 77083-6123
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146 White Pine Circle Circle Pines MN 55014
S-94th W23165 Meadowview Lane Big Bend WI 53103
14219 Clear Creek San Antonio TX 78232
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611A S 20th St Grand Forks ND 58201-4125
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2595 239 Ave NW St Francis MN 55070
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Stadium, Mark A. (BSGE 1983)
Stafford, Brent (BS EG&T 1996)
Staiger, LeRoy A. (BA 1970)
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2304 Woodland Park Dr Houston TX 77077-6444
429 Summit Ave Grafton ND 58237
1201 Buttonwood Drive Ft Collins CO 80525-1911
728 Center Lane Santa Paula CA 93060
724 Santa Ana Lane Concord CA 94518
1017 South 23rd St Chesterton IN 46304
3008 S Sherman St Englewood CO 80110
12447 Wedgehill Lane Houston TX 77077
10 Crestone Woodlands TX 77381
3759 Mutton Hill Rd Cazenovia NY 13035
11009 Central Park Dr NE Albuquerque NM 87123-5428
1214 Lorraine Drive Grand Rapids MN 55744
2020 Washington Avenue Golden CO 80401
815 N Walnut St Medicine Lodge KS 67104
5124 Avondale St Duluth MN 55804
309 Olympic Dr Layfayette LA 70506
312 Saturn Dr Bismarck ND 58501
SEE MAIXNER
2202 Parkdale Kingwood TX 77339
SEE PENDER
19 Twyford Rd Etobicoke ON M9A 1W2 CANADA
5868 Cty Rd 45 S Brainerd MN 56401
SEE NORBERG
900 Lanier Blvd #9 Brunswick GA 31520
5051 Kiva Dr Copperopolis CA 95228
1410 3rd Ave SW Minot ND 58701
184 Park Estate Place Calgary AB T2J 3W1 CANADA
2041 Ridgeview Dr Longmont CO 80501
300 E 2nd Ave DuBois PA 15801-3144
4205 Malus Drive St Louis MO 63125
115 Grassy Hills Ln Grand Forks ND 58203-1617
804 S Shore Dr Detroit Lakes MN 56501-4814
1941 Island View Dr NE Bemidji MN 56601-7142
1825 Burnt Boat Dr A-302 Bismarck ND 58501
3409 S 112th St Omaha NE 68144
1723 9th Ave N Grand Forks ND 58203
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588 Sudan Pl Billings MT 59105
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58
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Tokach, Kenneth C. (PhB 1965)
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12 Mona Ln Oak Ridge TN 37830-4610
2650 Bering Dr Houston TX 77057
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1501 Woodbridge Rd #3-D Joliet IL 60433
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Albuquerque NM 87109
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7800 West Friend Place Littleton CO 80123
4553 Greene Ave NW Albuquerque NM 87114
1111 8th Street Portland ND 58274
762 Ridge Dr Heber Springs AR 72543
12323 Ella Lee Ln Houston TX 77077
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RR 2 Box 123C Mandan ND 58554-9566
316J E 89th St Tulsa OK 74137
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316 Opera Ct Silver Spring MD 20901
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724 N 6th St Petersburg IL 62675
1998 30th Ave S #107 Grand Forks ND 58201
504 Huntington Drive Irving TX 75061
1062 3rd St Hermos Beach CA 90254
123 Kendall Ave N Thief River Falls MN 56701
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1814 14th Street W Williston ND 58801
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2225 Orchard Street Lake Charles LA 70601
6049 NE Cavis Portland OR 97213
10671 Cutter Cir Anchorage AK 99515
1001 N Randolph St Apt 1022 Arlington VA 22201-5610
512 Pearl Circle Elkhorn NE 68022
PO Box 114 Reynolds ND 58275-0114
1707 Picadilly Pl Tyler TX 75703-2421
PO Box 430 Meeetse WY 82433-0430
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919 East Mount Faith Fergus Falls MN 56537
18414 N High Rock Rd Monroe WA 98272
3429 W Desert Bend Loop Tucson AZ 85741
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Woolsey, Earl (BSGE 1989)
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Young, Daniel R. (MA 1980)
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Zich, Terrance J. (BSGE 1977)
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1839 61st Ave North St Cloud MN 56303
407 Kansas Goodland KS 67735
1614 Rickey Road Charlottesville VA 22901
15935 Wingdale Drive Houston TX 77082
7724 Sandlewood Dr Oklahoma City OK 73132
8101 E Dartmouth No 49 Denver CO 80231
3612 Golden Oaks Dr Salt Lake City UT 84121
18008 Clermont Cir Seneca SC 29678
2184 Green St San Francisco CA 94123
3104 Hamilton Way Casper WY 82609
1061 E Sandpiper Drive Temple AZ 85283
320 Northwestern Dr Grand Forks ND 58203
4415 Crown Point Road Mandan ND 58554
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901 S 11th St Grand Forks ND 58201-4449
220 E Brandon Drive Bismarck ND 58501
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401 Three Havens Dr NE Alexandria MN 56308
1112 South Main Minot ND 58701
1335 S 20th St Grand Forks ND 58201
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November 1997

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Surname First M.I. Area Number

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Business/ Employer ___________________________ Position ______________________
Address ________________________________________________________________
Street Address City State Zip

Business Telephone __________________________ E-mail address: ______________________

Permanent Address (or name and address of parents, nearest relative, or someone who will be able to reach you):

Name ___________________________ Relationship ___________________________
Telephone Number __________________________ Area Number ______________________

Street Address City State Zip

Degree _______ College or University __________________________ Year _______
Degree _______ College or University __________________________ Year _______
Degree _______ College or University __________________________ Year _______

Spouse ___________________________ Year of Wedding ______________________

Children
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!