THE DEPARTMENT OF GEOLOGY experienced a major transition this year as it moved from the Sid Richardson Science Building to the recently completed Baylor Sciences Building. The Department began the move on June 21, and thanks to the hard work of faculty, staff, and students, completed the move two weeks later. There is still much work to be done as the new school year approaches, but everyone has started settling in and will hopefully begin thinking of the new building as home very soon. Please come by and visit us in our new facilities!

Baylor Sciences Building Quick Facts
The four-story, 500,000-square-foot facility is the largest academic center on campus, four times the size of the new Sheila and Walter Umphrey Law Center (128,000 square feet) and almost eight times the size of the 64,000-square-foot George W. Truett Theological Seminary.

Construction cost is $103 million. The architect is HarleyEllis of Detroit. General contractor is the BECK Group of Dallas.

The new facility's three research wings house:
• the life sciences (biology and neuroscience);
• the physical sciences (physics, chemistry and geology);
• and five multidisciplinary research/education centers on prehealth education, molecular biosciences, drug discovery, reservoir and water studies, and scientific analysis and computing.

The design approved by the Baylor Board of Regents in February 2002 includes:
• Three wings that span out toward University Parks Drive. The front of the building faces the McLane Student Life Center.
• Modular design to maximize flexibility. All utilities come from a 3-foot space above the ceiling and are not built into the walls so that classrooms and labs can be enlarged or reduced as needed.
• A 300-seat auditorium and a variety of classroom sizes, from 150 seats to numerous smaller, 12-person classrooms.
• Four-story atrium designed to promote student interaction.
• Combination of Georgian and Victorian architecture to complement existing campus buildings.
• Two towers, reminiscent of the towers of Old Main and Burleson, at each corner of the building’s front, featuring student lounges and small conference rooms.
• Four usable stories and a fifth floor under a sloped roof that will house mechanical equipment and other research support space.
Dear Baylor Geology friends and alums:

I’d like to take this opportunity to introduce myself. I am Steve Driese, the new chair of the Department (as of August 2004), and I will be attempting to “fill the shoes” of Tom Goforth, who has served the Department very ably over the past nine years. I am particularly grateful to his having agreed to supervise the move of the Department into the new Baylor Sciences Building over the summer of 2004, and for permitting me early access to a wonderful 4th floor chair office overlooking Bagby Avenue and several beautiful Greek/Roman colonnades. What a fabulous facility!

I am originally from the Chicago area and attended Southern Illinois University in Carbondale, which to a boy from Chicago seemed way down south. I then attended the University of Wisconsin at Madison for both my M.S. and Ph.D. degrees, which were completed under the direction of Drs. Charles W. Byers and Robert H. Dott, Jr., respectively (note: I was a classmate of Dr. Joe Yelderman’s at Wisconsin, and we played intramural softball together). I was trained as a traditional facies-analysis terrigenous clastic sedimentologist, with emphasis on field measurement and description of stratigraphic sections and basic thin-section petrography. My M.S. research involved a paleoenvironment study of the Mt. Simon Sandstone, the basal Cambrian sandstone that crops out in western Wisconsin. My Ph.D. research involved a study of Middle Pennsylvanian sandstone-carbonate “cyclothems” in the Morgan Formation using rubber rafts to navigate the Green and Yampa River canyons within Dinosaur National Monument in Utah and Colorado, which was pretty exciting. I interviewed with both universities and petroleum companies upon completion of my dissertation, but elected to go into academia and accepted a position as an Assistant Professor of Geology at the University of Tennessee at Knoxville (the other “UT,” also with orange and white school colors).

Over the years my research interests have “morphed” to emphasize the use of paleosols (fossil soils) for climate and landscape reconstructions, and I also began working on modern soil systems as analogs for paleosols preserved in the rock record. My research at the same time began to rely more heavily on sophisticated instrumentation for geochemical and stable isotope analysis, but I want to assure all of you that my research and teaching approaches are still based upon my original sedimentology and stratigraphy “underpinnings.” For example, while at Tennessee, I taught courses most recently in Honors Historical Geology, Stratigraphy and Sedimentation, Sandstone Petrology and Physical Sedimentology, Paleopedology, and Tectonics and Sedimentation. It was through my newfound paleosol interests that I first became acquainted with Baylor University, when in 1998, I began collaborative research with Dr. Lee Nordt on Texas Vertisols in the Coastal and Blackland Prairies, and I anticipate possible future collaborations with Drs. Atchley and Dworkin in their research on paleosols. My other “hook” for connection with Baylor Geology came about in February 2003 when I agreed to serve as an external consultant (with Dr. John Suppe from Princeton University) for an evaluation of the Geology program for expansion under Vision 2012, and the rest, as they say, is history.

On March 31st of this year, I formally submitted my resignation of my tenured faculty position as Professor of Geology in the Department of Earth and Planetary Sciences (DEPS) at the University of Tennessee, and accepted the new position as Chair of the Department of Geology, which begins August 23, 2004. I certainly enjoyed my 22-year tenure at the University of Tennessee, and the Department there was very good to me. I left with many fond memories of students taught and mentored, friendships, and research collaborations with faculty colleagues. I wish DEPS and the University of Tennessee success in their future search for a replacement for my position. The Baylor Geology Chair position offers a challenge to build a research-oriented graduate (especially Ph.D.) program in an academic environment that previously...
stressed primarily high-quality undergraduate instruction. The brand-new Sciences Building provides the necessary classroom, laboratory and office space for achieving this transformation, but such a transformation will not be at the expense of sacrificing traditional quality instruction at both the undergraduate and graduate levels. The Baylor Geology faculty is now at a size of 13 with my addition, and I will be overseeing the hiring of 5 additional new faculty members within the next several years, although currently there is a freeze on new hires. It will be different for me being in a private rather than a state-funded university, and one with a religious affiliation and Christian environment. And I will miss being close enough for frequent visits to see my brother and mother, who live in Atlanta, and my father, who lives in Chattanooga. But change can be good, and I look forward to the stimulation provided by my new colleagues and surroundings.

My wife, Marylaine, actually has Texas roots, as she was born and raised in Dallas, with her father hailing from Grand Prairie (he’s a Longhorn graduate) and her mother from Sinton (near Corpus Christi). When she was in the second grade, her father transferred to Brockton, Mass., where they made fun of her accent, and then in the seventh grade, she and her family moved to Knoxville. She has a brother, Bruce Hight, who lives in Austin and writes on state and national politics for the Austin American-Statesman, and a number of cousins in Dallas. Marylaine has both B.A. and M.A. degrees in Art History, and an M.S. in Education. She was teaching 8th grade U.S. history at Holston Middle School in Knoxville (middle school kids are a tough bunch), and after a one-year break, hopes to teach history in one of the Waco area high schools. But right now she is concentrating on “nesting” at our new home in Harris Creek Estates in McGregor. Our home was built in 1973 by a Mr. Bob Sloan (apparently no relation to the current Baylor University president) who worked for the Gideons organization and sits on a spacious one-acre lot with lots of trees, which seem to be rare in Waco in newer subdivisions. Dr. Nordt checked out the soil and house foundation for shrink-swell, and gave it the thumbs-up.

My daughter, Mary Catherine, is 12 and is going to be a 7th grade student at Midway Middle School this fall. She is an avid swimmer and hopes to connect with a competitive swimming organization that is trying to (re)form in Waco. Mary Catherine also plays the violin and hopes to play in the Midway orchestra this fall. At the present time we are seeking a violin teacher for private lessons. Mary Catherine also enjoys frequent visits to Harris Creek in our neighborhood, which, because of the frequent heavy rains this June, has behaved more like a small river! Catching fish, crayfish, frogs, toads and the occasional leech has kept her amused, and she and Dad have collected Cretaceous fossils (Gryphaea-like oysters and Pecten-like bivalves) from the bottom of the creek, which we will have to bring in for verification by Dr. Bonem.

We left our two grown sons in Knoxville. Trevor, 22, has just completed his B.A. requirements at the University of Tennessee, and will work full-time for the Home Depot in Knoxville for the next year. He plans to apply for a program sponsored by the Japanese government that uses Americans to teach English to Japanese students. Trevor actually took a year of Japanese, so he has at least a little knowledge of the language. He is an avid Frisbee golfer and is looking forward to trying out the world-famous Frisbee golf course in Cameron Park here in Waco. Our other son, Nathan, 25, has a B.A. in Philosophy from the University of Tennessee. He has been working for the last year as an ornamental horticulturalist, but plans to attend the University of Kansas in Lawrence this fall for his M.A. in Philosophy. He eventually wants to get a Ph.D. and teach at a university (any other ideas for what people with Ph.D.s in Philosophy can do)?

My family was very active in Westminster Presbyterian church in Knoxville, where I was an elder, and Mary Catherine was in the Girls Choir. I was also active at the University of Tennessee Presbyterian Student Center, where I served as chair of the Board of Directors. We have visited several area Presbyterian churches and have decided to join First Presbyterian in downtown Waco. We look forward to making new friends and acquaintances in the coming years. And as each day passes, Waco should begin to feel more like “home.”

Steve Driese, Fall 2004
Well, this certainly has been an interesting year. This summer we have moved from the hallowed halls of Sid Richardson in which I have rested certain body parts on and off for 30 some years (beginning with grad school). Needless to say, the body parts as well as the building have shown the effects of time. All and all the new facilities are indeed quite breathtaking (four flights of stairs to our offices) and will be an excellent place for the department to continue to flourish.

On the home front, the students and I (someone has to do the hard work) continue to work with engineers all over the state on various water issues. We have been on projects on the Trinity River (pump station), Hutton’s Branch, Carrollton (river restoration with a price tag of $2.5 million), Kirby Creek in Grand Prairie (innovative erosion assessment and setbacks), and Austin (stream channel erosion setback guidelines). Thanks to Gary Henry (M.S. student) and Bruce Martin (recently returned B.S. student). John Dunbar, his students, and I are working on a lot of smaller floodwater (NRCS) dams all over the state and up into Oklahoma. John and I are on the final year of a three year grant to develop a state of the art system for surveying sediment volumes in reservoirs, lakes, dams, etc. We are working with SDI of Plano, Texas, to develop a sub-bottom profiler that will be capable of delineating sediment thickness, and sediment volumes in these water bodies.

We continue to keep close ties with Jeff Arnold of the ARS (Agricultural Research Service, USDA) in Temple, Texas, on new developments in SWAT (Soil Water Assessment Tool). The latest efforts are to tie the landscape more into the model using a GIS program developed by Martin Volk (from Germany). Subdivisions, namely the divide, hillslope, and valley bottom, would be incorporated into the model to better assess processes such as water movement, soil erosion, and pollutant movement. We are also working on new ways to assess water movement and storage in the floodplain for similar goals. In addition, Joe Yelderman and I are working with Janelle Henry (Ph.D. student) in surface groundwater interaction at the ARS research site in Riesel. She is working on her dissertation in the area of modeling shallow groundwater processes using MODFLOW and other pertinent models. Joe, Jeff and his colleagues and I, and former student Bart Plant have just had a lot of our previous work in Riesel accepted for publication in Hydrological Processes.

We are working with Joseph White and his Ph.D. student Jackie Duke in Biology on the use of isotopic data captured in tree rings to predict the time rate of downcutting on streams. It seems that as the stream downcuts, it loses its normal groundwater reservoir and isotopes and is left only with the near surface water. This should be evident in the tree ring data ... we hope.

Craig Crawford (M.S. candidate) is in his final draft of some excellent work assessing the erodibility of rock. He used an annular flume (he built) and a slake durability apparatus (he built) along with a Schmidt hammer (we bought) to test the erosion resistance of rock. This data can be used to model the time rate of rock loss in such areas as stream channels, spillways, and other areas of concentrated water flow.

On the home front, Sarah, my oldest daughter is expecting her second child in Dallas in November. Maggie is a backpacking instructor at Camp Cheley in Colorado for the summer. She is a senior Biology major at Colby College in Maine. Annabel was an assistant counselor in Camp Cheley this summer and will be a senior at Ursaline Academy in Dallas this fall. Peggy is very busy this year as we are remodeling (tore the you know what up) a house in Dallas. It should be ready, thanks to her efforts, for us to move into by September. She deserves extra credit as she recently broke her arm due to a certain little furball Corgi dog of hers which launched her into the sidewalk. Needless to say, after the experience, I am still partial to more slow moving dogs such as Claude my Basset hound. Claude’s idea of a quick move is to make it to the food bowl before dark.

Please keep in touch, it is a great day when we hear from you all.
For anyone who has ever read my newsletters in the past, you may see a recurring theme – school year at Baylor, summer in Calgary, in some ways similar to the movie Groundhog Day with Bill Murray. I again compose this newsletter while in my workroom office at Sun Life Plaza in downtown Calgary. I am working this summer with two students (Julia Kahmann and Jon Koenig) on an infield development project sponsored by Chariot Energy and involving the Devonian Leduc Formation at Sturgeon Lake field, Alberta. Julia and Jon have been a HUGE help, and will be turning aspects of this project into their M.S. theses. I can’t overemphasize what a pleasure it is to work with Jon and Julia ... they take all I can dish out and come back for more (with a smile, no less). Perhaps they need psychological counseling.

The past school year seems to blur together at the moment, but I’ll see what I can do to hit the highlights. Steve Dworkin, Lee Nordt, and I continue to make progress with our integrated paleosol-stratigraphic research. We presented several papers at GSA in Seattle that summarized our work in reconstructing the atmospheric conditions and depositional history during the latest Cretaceous and earliest Tertiary. This work was subsequently published in the December 2003 issue of GSA Today, and May 2004 issue of the Journal of Sedimentary Research. We have at least two additional papers in preparation as well. Shane Prochnow is making significant progress on his dissertation research. Hopefully, Shane will submit a couple of papers to journals for review this fall. Shane’s research is on the Triassic Chinle Formation in Castle Valley, Utah (SE Utah near Moab), and involves the use of paleosols to reconstruct the Triassic paleoclimate and drift of a salt-withdrawal minibasin during Chinle deposition. It will be the first attempt (that I know of) at using paleosols to solve a salt tectonic problem. Shane’s progress has benefited significantly from the work of Tom Boucher. Tom’s M.S. thesis involved the construction of a sequence stratigraphic framework for the Chinle in Castle Valley. Tom will be a co-author on at least one of Shane’s papers. Congratulations are also in order for Tom. He was recently offered two positions: one with a consulting firm in Calgary, the other with Chesapeake Exploration in Oklahoma City. Tom accepted the position with Chesapeake.

On the personal front, the family is doing well and continues to travel with me to Calgary each summer. This is becoming increasingly difficult as the girls grow older and have more social interests in Waco. Dallas is now 10 and is just a few inches shorter than Janelle. By this time next year I suspect that she will be as tall as Janelle. Audra is 6 and a “live-wire.” She is our humorist and practical joker. At this stage, Audra particularly enjoys “bathroom” humor. It seems that whatever affliction Joe Yelderman suffers from is contagious. Hopefully, we will be successful at curing Audra. Janelle still works part-time as a tax accountant for my dad and brother’s banking software company.
It is hard to believe that it is time for another newsletter. This is the first summer without the Jamaica course, but it has been a very busy year with the move to the new building! When I came to Baylor in 1981, I said that I was not moving again. Obviously, someone did not listen to me! Fossils and books are not that easy to pack and move, not to mention the salt water aquarium (complete with the snail we got in fall 1981), the SEM, and the wave tank! All I can say is that I have 120 boxes of fossils that have to be unpacked, so if anyone has extra time on their hands...

Most of the fossils seem to have survived the move and the salt water aquarium is set up in its new home. The SEM should be running soon, now that it has water and air. The wave tank will require a major engineering feat to make it to the 4th floor of the new building, but I am confident that the movers are up to the task. The new building is really a wonderful facility and you should all come back to visit.

We had to reduce the duplicate runs of journals and reprints because of reduced shelf space in the new building, so after selling some materials to help supplement our library budget, we have three pallets of journals ready to be sent through the USGS and the AAPG pipeline to Afghanistan universities. The Taliban burned their books and shelves for fuel, and the USGS is helping to replace books and journals. In this way, our duplicate materials can be used to help others.

When classes start this fall in the new building, we will see an increase in undergraduate geology majors for the first time in a few years. Our combined geography, geology, geophysics, and earth science majors should number about 75. Our freshman classes continue to fill, but with more space, we are limited by the number of qualified teaching assistants that assist with labs.

On a personal note, I have several research projects in various stages and look forward to getting some publications out this year. Current research projects include work on publication of the Pennsylvanian edrioasteroid project (with Colin Sumrall and James Sprinkle), a newly discovered mosasaur near Axtell (with Vince Cronin, Anita Benedict, and Rachel Bruner), and work on compiling dinosaur trackways in Texas (with Mike Hawthorne, James Farlow and Rachel Bruner). In spite of better judgment, I am serving on another GSA Committee (Professional Development) and the Nominating Committee of the Paleontological Society. I am still active in dachshund rescue as Vice President of Central Texas Dachshund Rescue. My senior dachshund (Stinker) passed away in November, so a rescuer in Mississippi gave me Prince Wilhelm (Will’em) who will be a year old in late July. I can truthfully say that there is never a dull minute around here!

Dr. and Mrs. Alton Hassell and Dr. Rena Bonem, honorary team captains at the 2003 Baylor-SMU game (Baylor's first win of the season!).
A brief field season with my son Connor in the Santa Monica Mountains above Malibu, the 2003-2004 school year began with my teaching a crowd of two students in Introductory Structural Geology, along with a healthy batch of new and continuing graduate students in 5050 (Geoscience Colloquium). Two papers that had been written about different aspects of work that I had done with Keith Sverdrup in relocating earthquakes along the Blanco Transform Fault were published (Cronin and Sverdrup, 2003a and 2003b), and a related poster was delivered at the Oceans 2003 meeting in San Diego, California, in September.

As October gave way to November, I joined a contingent of Baylor faculty and students at the GSA Annual Meeting in Seattle, where I was presented as a new Fellow of the Society. I presented a poster describing a set of physical geology labs that I had developed while teaching at the University of Wisconsin, and (along with Bruce Byars and graduate student Tina Gammill) presented a second poster describing some preliminary work we had done to locate previously unmapped faults in the Santa Monica Mountains.

During the break between semesters, I went back out to southern California for a bit more field work and to record some oral history related by Dr. Jim Slosson, who is a former State Geologist of California. Jim and I have worked together for a quarter century, and have a strong common interest in the active geology of the Santa Monica Mountains, particularly along the Malibu coastline.

The spring semester brought with it the challenge of adapting the introductory physical geology labs that I had developed at UW for use at Baylor. This involved re-writing the existing lab book, purchasing resources that we did not already own, replacing some other worn-out resources, and building a number of demonstration gizmos. Keeping up with the lab schedule involved many long nights and weekends, but in the end the students did well in the lab and seemed to appreciate the effort. I am told by Dr. Bonem that we signed-up a bumper crop of majors, and have a sizable enrollment in Historical Geology for the fall of 2004. The revised Baylor edition of my lab book is being published by Primis/McGraw-Hill for the 2004-2005 school year, and is substantially less expensive than the generalized lab books that had been used for that course in the past.

During spring break, my daughter Kelly and I returned to southern California to visit my mom and (surprise, surprise!) to do some more field work in Malibu. We also snuck away for an overnight trip to Yosemite, where we scrambled over to the area below Glacier Point that was desolated by a large, deadly rockfall in 1996. A 27,000-ton granite slab with an estimated volume of 78,000 cubic yards fell more than 1,800 feet, causing an airburst that blew down an estimated 200 mature pine trees near the Happy Isles Nature Center. I thought the resulting talus fan and blown-down forest was very cool. Kelly thought we should go back to Camp Curry and get ice cream cones.

Somewhere in the midst of trying to get the new physical geology labs running, I foolishly said “yes” during a telephone conversation with Keith Sverdrup when the rational part of my brain was screaming “NO!” Consequently, I ended up driving to St. Louis to deliver a paper at the GSA North-Central Section meeting, which described an interesting forensic case we were involved in. The paper, “Can long duration vibrations damage structures at sub-critical particle
velocities?” apparently stirred up quite a bit of interest on both sides of several court cases involving claims of damage due to construction/industrial vibrations, judging from the number of phone calls we received about the abstract.

In May, McGraw-Hill brought me up to its Higher Education offices to consult with the authors of its current physical geology textbook. A week or so after returning from that trip, graduate student Tina Gammill and I drove to the Crestone Science Center on the west side of the Sangre de Cristo Mountains in southern Colorado to attend a graduate course in Neotectonics and Paleoseismology given by Dr. Jim McCauplin. This was a wonderful experience that included 3D mapping of active fault scarps, aerial image interpretation, and trench logging. Four days after returning from Colorado, I was off to participate as a working group leader at the week-long NAGT/NSF workshop on “Teaching structural geology in the 21st century” at Smith College in Northampton, Massachusetts. The conference included 75 teachers of structural geology courses who have all committed to helping develop on-line pedagogical resources that can be used in the structural geology curriculum, and that will be universally accessible at no cost through the Digital Library for Earth Science Education (DLESE). I gave two 90-minute short courses on the use of earthquake focal mechanism solutions in structural geology courses and in research, and have subsequently been invited to give a related presentation at the 2004 GSA Annual Meeting in Denver. For these presentations, I wrote “A Draft Primer on Focal Mechanism Solutions for Geologists” that is available online at http://serc.carleton.edu/files/NAGTWorkshops/structure04/Focal_mechanism_primer.pdf. And soon after I finish writing this newsletter article, I will be getting on a plane to contribute to another NAGT/NSF workshop on building quantitative skills among geoscientists. As my grandmother would say, there is no rest for the wicked.

And did I mention that we spent much of the year packing boxes for the move to the new science building, and will likely spend much of the coming year unpacking and organizing? But I am not complaining, because our new home is going to make life much easier for me as a teacher and as a researcher.

Finally for now, my son and I are co-authoring a picture book tentatively called Pee-Wee Pitching, all about how to throw proper fastballs for Pee-Wee little-leaguers. This stems from a frustrating (but rewarding) stint as the unofficial pitching coach of the Lorena Little League’s Chicken Express team, on which my son played in the spring of 2004. (It turns out that children naturally throw sliders, and have to be taught how to throw fastballs.) Until this season, I had never met a 7-year-old pitcher whose dad had taken him to a professional pitching coach, but now I have. I don’t know what the pro told him, but whatever it was did not result in strikes being thrown over the plate. But we will leave those stories for another time...

References
Cronin, V.S., 2003, Introductory geoscience labs that develop quantitative scientific skills: Geological Society of America, Abstracts with Programs, v. 34, no. 7, p. 117
In the past year John Dunbar, working with Pete Allen and graduate students Heidi Hensen, Paul Reavis, Robyn Marchand, and Sikiru Amidu, and undergraduate Stephen Jagdeo surveyed 15 small flood control reservoirs and two large water supply reservoirs. The group is using the data to constrain erosion and sedimentation rates in the Texas Blackland and Grand Prairies. However, their real pride and joy is a new miniature pontoon boat for acoustic surveying and coring small lakes. Because of the labor it will save over setting up and breaking down their old Jon Boat system, it will allow them to survey two to three lakes per day without killing themselves.

On the home front, John’s daughter Tamura (age 11) is enjoying the sixth grade and continues to play basketball and volleyball. She’s an avid reader. Her current favorites are “Harry Potter and the Prisoner of Azkaban” (she’s read it 3 times), the “Wizard of Oz” and “My Friend Flicka”. John’s wife, Anna, continues her professional role as the Regional Manager at the Waco office of the Texas Commission on Environmental Quality. Despite the state’s budget woes, the office continues to tackle the area’s environmental problems! The furry member of the family is Jessie, a yellow Lab. Jessie is addicted to Frisbee and like all labs, loves to play in the water.

Tamura and John went on a two-week “father and daughter tour of the west” in June. Sites visited included the Petrified Forest, Meteor Crater, Sunset Crater, the Grand Canyon, Arches National Park, Dinosaur National Monument, and Yellowstone National Park - basically, “geology 24/7”. Tamura describes it as days spent hiking with her dad who routinely had a “freak-out” because he thought she was walking too close to the edge. Most nights were spent tent camping. One highlight for Tamura was getting to see the various mammals at the parks - especially the young buffalo at Yellowstone. Her least favorite part of the adventure was the rain and hail at Dinosaur. Mom stayed home with the dog - which meant that she missed out on all the fun!
The new geochemistry laboratory is filled with boxes but it will soon provide a wonderful new home to continue investigations of sedimentary geochemistry. My new student, Melana Zou has already unpacked quite a bit of glassware and she will be using the laboratory to study the chemistry of surface waters in the North Bosque River. Terry Dudley will never get to use the new facilities because she just defended her thesis on the diagenesis of Woodbine sandstones (and she did a great job, incidentally). Tina Gammill will defend her fascinating thesis on thrust fault fluids some time this fall.

I have been consumed with work on a transfer function that hopefully will yield paleotemperatures from the oxygen isotopic composition of pedogenic carbonates. This work has been carried out in collaboration with Lee Nordt and Stacy Atchley. The three of us went to Big Bend this past spring where we examined Cretaceous paleosols that are filled with calcite nodules.

This year at field camp we had eight students who traveled with Sandy and me to Glacier National Park, Yellowstone, northern Utah, and southern Colorado. The van only broke down once for my part of the trip so I guess we’ll call our adventure a success. The low part of the trip was cooking dinner in freezing rain and the high part of the trip was secretly measuring pH, DO, conductivity, and temperature in the hydrothermal features of Yellowstone National Park.

Sandy and I are doing great. We are in the midst of a big remodeling job out at our house in China Spring. We are adding a bedroom, bathroom, closets, laundry room, and a new front door. I’m pouring a slab for the porch in a few days so needless to say, my muscles are sore! I hope some of you will stop by in the coming year!
SUMMER FIELD CAMP

Micheal Kacher winds up to hit Lynae Pahmiyer with a snow ball on a high pass in Wyoming.

Rob Kerspel, Micheal Kacher, and Sandy Dworkin survey the snow and heavy fog in Wyoming.

A cold wet day for Field Camp. Yellowstone National Monument. Sandy Dworkin, Jenny Duncan, and Lynae Pahmiyer enjoy some rare sunshine at Yellowstone. Notice that the forests are recovering from the huge fires.

Field camp students returning from a mapping project in Glacier National Park.

Field camp students sitting on a moraine in Glacier National Park.
David Prado and Stephen Jagdeo measure strikes and dips on PreCambrian sedimentary rocks in Glacier National Park.

Group photo of entire field camp. Glacier National Park.

Throwing a football around the campground - Glacier National Park. Notice the evil van that broke down appears road worthy.

Lynae Pahmiyer, Michael Kacher, Bill Walker, and Stephen Jagdeo on a hike in Glacier National Park. After hiking for several hours, a snow bridge prevented us from getting to the map area!

Field camp views. Thirteen thousand feet high in the southern rockies. Near Silverton, Colorado.
completed my last year as chairman of the Department on May 31, 2004, but stayed on as acting chairman to preside over the move of the Department to the new sciences building. The move began on June 21, and we were still moving some items as late as July 9. We had been preparing for months by packing anything that we didn’t anticipate needing before summer, but the actual move was nevertheless frantic. We expect to be still unpacking well into the fall. Our new location represents an increase in space of about 50 percent, as well as providing several new research labs that didn’t exist in Sid Richardson.

I am looking forward to leaving administration behind, a job on which I spent about 80 percent of my time for almost a decade, and to getting back to teaching and research. During the 2005 spring semester, I will be on a sabbatical in which I plan to conduct full-time research on some explosion seismology issues in connection with the Comprehensive (nuclear) Test Ban Treaty. I will be spending a lot of time in Dallas working with my former colleagues at SMU in characterizing the seismological aspects of mining explosions. Although current models include many physical and geometrical variables involved in the mine explosion process, they are not successful in predicting the seismic effects that are actually observed. Critical to this problem is a better understanding of the effects introduced into the seismograms by the unique manner of explosion detonation used by the mining industry. Mining explosions usually utilize dozens of charges arranged in specific spatial patterns. These individual charges are detonated sequentially with each detonation separated from the following one by a few milliseconds. This unquestionably affects the characteristics of the outward propagating seismic energy, but the effect has not been quantified and is little understood.

The specific objectives of my proposed study are (1) to provide an empirical basis for upgrading theoretical models of mining explosions and (2) to identify and explain differences observed on seismograms between large mining explosions (which can involve several millions of pounds of explosive) and small nuclear blasts. The study will utilize hundreds of seismograms recorded by state-of-the-art seismographs located at various distances and directions from several working mines. The characteristics of the seismograms produced by both single explosions and by the multiple explosions of standard mining practice will be related to firing parameters such as the total amount of explosive used, the depth of burial of the charge(s), the volume of material removed by the explosion(s), and the spatial pattern of multiple charges and the time delays between their detonation.
2004 ADVISORY BOARD MEETING

Hayride up the canyon

Breakfast at Lost Maples Café (Royce and Dr. Tom Goforth with students Jeremy Andrews, Tara Cooper, and Bill Walker)

An attentive Advisory Board (Don Edwards, Royce and Dr. Goforth, Hank Jamison, Bill Hardie, Art and Sue Lynn Bishop)

Tara Cooper and Bill Walker discussing the rain gauge in the juniper canopy

Tara Cooper showing Dr. Goforth and Don Edwards her data logger downloading device
This spring the Baylor in Dominica International Program was made official. It was formerly Rena Bonem’s Jamaica trip, now revised and on a different Caribbean island. Dominica (pronounced Dom-in-ee-ka and not to be confused with the Dominican Republic) is located between the two French islands of Guadalupe and Martinique. It is 29 miles long and 16 miles wide. Dominica is the youngest and most mountainous island in the Caribbean (26 million years old) and the geologic substrate of the island consists mainly of basaltic lavas, andesitic tuffs, ashes and agglomerates. It lies almost at the center of the Lesser Antilles island arc. Millions of years ago the west coast of Dominica was tiled sideways beneath the surface of the sea and was then uplifted to its present position. Areas of coral, sea shells, gravel and limestone can be seen on various cliff faces around the island. Because of the volcanic nature of the island a majority of the beaches have black sand, while a few of the beaches in the northeast have white sand due to quartz crystals found in the agglomerates, and coral reefs located offshore.
The Baylor in Dominica two-week overseas field course can be taken by students as either GEO4900 Geology and Biology of Coral Reefs or GEOG 4900 Geography Field Methods. The course includes SCUBA diving, beach profile and ocean process data collection, and various day trips around the island. This inaugural year we had six students enrolled in the course.

Dominica has over 200 rivers and waterfalls

Fishing practices on the island
GEOLOGY LABORATORIES

Bonem in Paleo Lab

Cartography Lab

Geochemistry Lab

Geophysics Lab

Strat-Quaty Lab

Structure Lab
This has been a hectic year with administrative duties, research, a little teaching, and two moves: my office to the new science building and a family move to a new house. The latter turned out to be much more work than the former. By the end of the summer life should be good (at least, it better be!). In April, I gave a lecture at the University of Oregon at Eugene, but more importantly, I went on a wild two day field trip observing paleosols spanning the last 45 million years. Also in April, I worked on the south Texas sandsheet with colleague Steve Forman (University of Illinois-Chicago), an expert in thermoluminescence dating. I just returned from a conference in Kansas on grassland dynamics of the Great Plains (late June). Eastern Kansas is actually rather nice.

I taught Global Soil Systems in the fall of 2003. Because of being interim chair of Communication Sciences and Disorders, Associate Dean of Sciences for the College, serving on numerous College and University committees, and serving as Director for the High School Summer Science Program, I did not teach in the spring. Hopefully, by the end of next year my departmental life will return to normal. Shane Prochnow continues working on his Ph.D. dissertation studying Permo-Triassic-Jurassic paleosols in southeastern Utah. Maria Orosz is beginning her thesis on the application of the SWAT model to quantifying soil genesis. I gave the citation address for the Kirk Bryan award (Division of Quaternary Geology and Geomorphology) at the GSA meetings in Seattle this past year. Stacy Atchley, Steve Dworkin, and I gave a paper at a technical session at GSA on our work studying the K-T boundary at Big Bend National Park. We recently received a University Research Grant to perform elemental and petrographic analyses to estimate rainfall and temperature from the paleosols dating to the same K-T interval. I reviewed numerous journal articles and grant proposals and continue to serve on the editorial board of the journal Geoarchaeology. As with many others in the department, I finally became a Licensed Professional Geoscientist in Texas.

Except for the stress of a move, my family is doing fine (sleep is NOT overrated). Kaylee (age 11) is still active in piano, dance, golf, basketball, volleyball and several summer camps. She played two 18 hole rounds of golf for the first time ever as part of the Starburst Golf Tournament in June. I was the caddy, but had to rent a cart for the second day. In May, Kaylee successfully performed at a dance recital in front of a couple of hundred people. Garrison (age 16) is most active in golf, having qualified to play three rounds at the Midway High School District and Regional tournaments. He is now working at Bear Ridge Country Club. He still likes to deer hunt and fish, and listen to the glass packs on his F150. I don't know exactly, but I think he killed four or five deer last year. Kathy is now working at Providence Hospital, a job that she likes very much. She is now busy trying to bring our new household to some sort of stability, while keeping the rest of us sane.

Publications:
Section Editor (in progress): Glossary of Geologic Terms, soils and paleopedology
Nordt, L. (accepted). Late Quaternary alluvial stratigraphy of a low order tributary in central Texas: A response to changing climate and sediment supply. Quaternary Research.

Presentations:
By now our dedicated readers understand that the year 2004 will always be remembered as the year of the “big move” to the new science building. Don has carried the added title of “Departmental Move Coordinator”, which basically means that he had to attend a lot of meetings, and convey this information to the remaining faculty in the department. As it turns out, however, Don literally did a lot of the heavy lifting of furniture and equipment.

The new science building has wonderful teaching facilities that have compelled our faculty to change the old way of classroom instruction. For example, the large lecture halls for freshman classes are no longer equipped with 35 mm slide projectors. Instead, everything is operated by digital projection. This includes VHS video tapes, an electronic overhead viewer, and most importantly, computerized PowerPoint lectures. For the past several years most of our faculty have anticipated the digital revolution and have diligently worked all the harder to prepare for a world without color slides. We have discovered that such a conversion is a process that will require “tweaking” for many more years to come. Fortunately (and providentially) Don was the recipient of a 2004 summer sabbatical which enabled him to substantially complete the conversion of his teaching materials.

Our new faculty offices are about 30 percent smaller than the old offices, and have forced many of us to rethink the way we go about our business. Most have conceded that the office can only be used for matters related to teaching, correspondence, and student interaction. Research activities are conducted in our advanced laboratory facilities. Our research faculty is becoming somewhat harder to locate. These dedicated scientists are like orbiting electrons; you know they are whirling around in the building, but their exact location is uncertain.

Similar to past years, Don and Alison enjoyed a camping vacation in the American west. Unlike the past 25 years, however, this was a vacation without any of our children. This is a life passage to be enjoyed! We traveled north by northwest, traveling parts of the Oregon Trail and the Lewis and Clark expedition. We formed our own Corps of Discovery on this bicentennial year and had a wonderful time! The accompanying photograph is our homage to close encounters.
Don's year was highlighted by attending two conferences: the first at Timberline Lodge at Mount Hood, Oregon, in August and the second at the Rocky Mountain-Cordilleran combined regional meeting of GSA in Boise, Idaho, in May. The first was SOTA conference ("State of the Arc") that dealt with Arc Volcanism. The GSA meeting included a special session on voluminous rhyolite volcanism, a favorite topic of Don's. Besides the technical sessions, Don got to attend field trips to Mt. St. Helens and Mt. Hood, both led by USGS researchers at the SOTA meeting, and a trip led by Portland State geologists to examine the 7 Ma Rattlesnake Tuff and associated volcanic units in Eastern Oregon before the Boise meeting. Don presented poster sessions at both meetings.

Research wise, graduate student David Adams and Don continued study of volcanic units in Big Bend National Park. David finished his M.S. in Summer and is going on for Ph.D. graduate study in Oregon. Don is still nursing the Conejos paper through the review process and is writing up some older work concerning West Texas units. He is also continuing to work with Ph.D. graduates Minghua Ren and John White as follow-up papers to their dissertation work get through the writing and publication mill.

The Department was occupied for much of the year preparing for the move to the new science building: for Don, this meant moving analytical labs and packing up the rock and mineral collections. Triaging the collections was difficult, but it was accomplished. The move was made in June. Now we have to unpack! The real challenge will be to live up to the opportunities that the new building will offer us.
This is my third year at Baylor and many exciting events have transpired. Our new offices and labs in the Science Building are wonderful. I was assigned to move the Cartography Lab and for months students sorted and rolled thousands of maps in preparation for the move (everlasting thanks Melanie for all your hard work!). We are still unpacking and organizing the maps and the department really has a wonderful collection. This next year Geography students will be cataloging most of the maps and creating a digital database so that we can more effectively use this vast resource.

The new Geographic Information System (GIS) lab is more spacious and attractive than the previous one and has an upgraded server and six new computers (Thanks for all your hard work getting it running Lisa Zygo and Shane Prochnow of CAGSR!). Five Advanced GIS students graduated this May; four of them have great GIS jobs (ESRI Redlands, Calif., Houston Council of Governments, Texas Parks and Wildlife, and the United Nations), and one Geography major is enrolled in a masters program at the premier national geography department at the University of Wisconsin. Most of these students are Geography, Environmental Studies and Computer Science majors, and they really enjoy applying GIS to their passion.

Five Geography students gave papers at GSA and at the national Association of American Geographers (AAG) regional and national meetings. At the
Southwest Regional AAG meeting in Stillwater, Oklahoma our students were very impressive and accomplished. Riju Stephen won the graduate student paper presentation award and Melanie McCalmont won the undergraduate award. This was really exciting and put our nascent Geography program “on the map”.

We also now have a chapter of the National Geography Honors Society - Gamma Theta Upsilon (GTU), and we were officially inaugurated this spring. Baylor hasn’t had a new honors society on campus for many years so it was a special event. Our chapter’s name is Sigma XI and Lisa Zygo and I are the faculty advisors. Congratulations to the 10 new student members!

This year Rena Bonem took a break from the Jamaica course and I took over and decided to try out a different island. After all the paperwork and red tape, Baylor in Dominica is a new overseas course sanctioned by the International Program - see the centerfold for more information.

My research continues on anthropogenic beach change in Florida (Rahn, 2004a), GIS and Cartography (Rahn & Zygo, 2004: Rahn, 2004b). With Lisa Zygo and colleagues in the Education department we submitted a National Geographic Grant. On Texas coastal issues Riju Stephen will finish his masters thesis this fall on Texas Coastal Population and Vulnerability to Storm Surge and Phillip Schmutz is working on a GIS project for the Padre Island National Seashore (part of a National Park Service Geoscientists in the Parks grant). All the beach profiles students collected on 15 beaches in Dominica will be analyzed and used for presentation at this year’s GSA and for publication. And at the National AAG meeting I was elected for a second two-year term to the Coastal and Marine Geography Advisory Board.

Wow, another year like this and I will be exhausted! But I am really proud of what the Geography program has accomplished and I look forward to another great year.
Dr. Yelderman continues to advise incoming freshmen in the summer but the highlight of this past summer was a course taught in Costa Rica. Dr. Yelderman and graduate student Brian Scheffe took ten students from Baylor to Costa Rica and studied sustainable development in tropical ecosystems. Dr. Yelderman was able to combine his hydrogeology and wastewater research as part of the course and a possible research project at the Monteverde Cloud Forest Institute (Figure 1). Costa Rica is not a bad place for an avid caffeine-addicted amateur ornithologist either!

Carrie Wallestad is continuing as an M.S. candidate and will be using SWAT and MODFLOW to assess recharge rates in the Sparta Sand in Wood County (Figure 2). This research project is made possible by support from Nestle Waters North America.

M.S. candidate Jeremy Andrews is studying alluvial and colluvial springs in the Texas Hill Country near Utopia and has been assisted by undergraduate Bill Walker, who mapped the geology of the basin. Tara Cooper is using GIS and SWAT to calculate evapotranspiration and its effect on stream flow in the Utopia area. These three students led a field trip for the advisory board this past spring and shared their progress (see article in this newsletter). All the Utopia work has been made available by Nestle Waters North America.

Dr. Yelderman is serving as the new Director for the Baylor Wastewater Research Program. This program has a new site, located at the Brazos River Authority Regional Sewage Treatment Plant, and has implemented two research contracts for over $50,000 this past year. Megan Loudermilk, (B.A., Earth Science and Environmental Studies, 2002 and M.S., Environmental Studies, 2004) completed her study of new on-site sewage disposal technologies and their effects in various soils and landscapes in Texas. M.S. candidate Ron Suchecki is studying the effects of nutrient reduction by aerated treatment systems. His work is sponsored by Murphy-Cormier. M.S. candidate Brian Scheffe is monitoring a new treatment technology with subsurface reedbeds and recycled plastic bottles. And finally, Fulbright scholar Ali Al-Nahari from Yemen is studying the effects of subsurface dams on sewage effluent for his M.S. thesis.

Dr. Yelderman is also serving on the board of directors for Partnership For The Environment (PFE). The mission of PFE is to provide expertise and services that improve water resources for health and agriculture in environmentally disadvantaged communities.

Dr. Yelderman continues to teach Sunday School at Columbus Avenue Baptist Church. His wife Diane is teaching Kindergarten at North Waco Elementary. His daughter Abigail graduated from Baylor this May and is working in Dallas for Bella Flora. She is engaged and plans to be married next June. Cal (son #1) is 21 and an English major at Baylor. Logan (son #2) is 16 and in the 11th grade at Midway High School. Logan plays soccer and runs track for his high school and plays the drums for his youth group at church. Dr. Yelderman's mother, Ada Frances, still resides at Alterra Sterling House on Lake Shore Drive. The Yeldermans live at 706 Woodland West, Woodway, Texas. Visitors are always welcome.
If you are interested in becoming a member of the Baylor Geology Advisory Board, please contact any of the members listed or come visit us at our next meeting on Friday, October 22, 2004 (Homecoming Friday) at 3 p.m. in the Baylor Sciences Building, Room D409.

The Elan Allen Field Safety Scholarship

The Elan A. Allen Field Safety Endowed Memorial Scholarship Fund was established in 2003 by Marlow Anderson in honor of fellow geology alumnus Elan A. Allen. Elan and Marlow were part of a strong circle of friends during their graduate studies. The Baylor geology bond continued beyond their school years through visits, vacations, weddings, and many other activities. When Elan was tragically killed in an industrial accident in February 2002, Marlow began planning a memorial scholarship in Elan's name devoted to field safety. After a great deal of organizational work on her part involving both the Geology Department and the Baylor administration, the endowment was established in July 2003. Marlow initially funded the endowment, but it is open-ended and we encourage not only Elan's many friends but all alumni to contribute to it. Funds derived from the endowment will be awarded as scholarships with preference given to graduate students who have indicated an interest in hydrogeology or hydrology. Secondary preference will be given to undergraduates with interests in those fields.
Faculty
Dr. Lee Nordt, Dr. Stacy Atchley, and Dr. Steve Dworkin
“Terrestrial Evidence for Two Greenhouse Events in the Late Cretaceous” featured on the cover of the December 2003 issue of GSA Today

Graduate Students
Congratulations to our graduate students who completed their Master of Science degrees in Geology this year!

May 2004
Tom Boucher
“Influence of Halokinesis on Fluvial Architecture and Paleosol Development: The Late Triassic Chinle Formation at Castle Valley (Paradox Basin), Southeastern Utah”

Jim Geary
“Controls on Hydrocarbon Entrapment and Reservoir Distribution: The Pennsylvanian Oswego Limestone and Big Lime Limestone in the Putnam Field Are, Anadarko Basin, Oklahoma”

August 2004
Dave Adams
“Field Relations of Pealkalic Rhyolite Domes and Flows and Associate Mafic Lava in the Southwestern Portion of the Cerro Castellan 7 ½ Minute Quadrangle: Big Bend National Park, West Texas”

Terry Dudley
“Surficial Woodbine Sandstones in North Texas: The Influence of Shallow Burial Diagenesis and Subsequent Exposure-Related Cementation”

Undergraduate Students
Melanie McCalmont
2003 recipient of Robert T. Hill Award for Academic Excellence in Geology

Rachel Bruner and Meera Bunsee
chosen to represent the Geology department at the annual Honors College Colloquium
PERSONAL INFORMATION NEEDED

Please complete the blanks below and return along with any other information you feel would be useful to us. This information will be used to update Departmental files. Use the enclosed postage paid envelope to return the form.

Name: ____________________________________________ Class: ____________________________

Mailing Address: __________________________________ Degree(s): __________________________

Position, Type of Work, Location of Work, Company Name:

____________________________________________________________________________________

____________________________________________________________________________________

Family Information:

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Hobbies, Interest, Spare time activities:

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Would you like to share information in the Homecoming Newsletter Section, “Where are they now”?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Are you willing to speak at the Department? __________________________
Topic: ______________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Suggestions:

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Mailing Address: ____________________________________________
Degree(s): ____________________________

Name: ____________________________________________ Class: ____________________________

Use the enclosed postage paid envelope to return the form.

This information will be used to update Departmental files.

Please complete the blanks below and return along with any other information you feel would be useful to us.

PERSONAL INFORMATION NEEDED
Faculty and Staff

Dr. Steve Driese
Department Chair, Paleopedology and Sedimentology
steven_driese@baylor.edu

Dr. Peter Allen
Hydrology
peter_allen@baylor.edu

Dr. Stacy Atchley
Petroleum and Stratigraphy
stacy_atchley@baylor.edu

Dr. Rena Bonem
Paleoecology and Coral Reef Studies
rena_bonem@baylor.edu

Dr. Vince Cronin
Structure
vince_cronin@baylor.edu

Dr. John Dunbar
Geophysics
john_dunbar@baylor.edu

Dr. Steve Dworkin
Geochemistry and Sedimentary Petrology
steve_dworkin@baylor.edu

Dr. Tom Goforth
Geophysics
tom_goforth@baylor.edu

Dr. Don Greene
Meteorology and Geography
don_greene@baylor.edu

Dr. Lee Nordt
Pedology and Geoarchaeology
lee_nordt@baylor.edu

Dr. Don Parker
Volcanology
don_parker@baylor.edu

Dr. Jennifer Rahn
GIS and Coastal Management
jennifer_rahn@baylor.edu

Dr. Joe Yelderman
Hydrogeology
joe_yelderman@baylor.edu

Paulette Penney
Office Manager
paulette_penney@baylor.edu

Research Areas and Contacts

Water Resources and Applied Environmental Studies
Dr. Joe Yelderman
(254) 710-2185
joe_yelderman@baylor.edu

Dr. Peter Allen
(254) 710-2189
peter_allen@baylor.edu

Sequence Stratigraphy, Sedimentology, Pedology
Dr. Steve Driese
(254) 710-2177
steven_driese@baylor.edu

Dr. Stacy Atchley
(254) 710-2196
stacy_atchley@baylor.edu

Dr. Lee Nordt
(254) 710-2195
lee_nordt@baylor.edu

Tectonics, Volcanology, Structural Geology
Dr. Don Parker
(254) 710-2192
don_parker@baylor.edu

Dr. Vince Cronin
(254) 710-2188
vince_cronin@baylor.edu

Applied Petroleum Studies
Dr. Stacy Atchley
(254) 710-2196
stacy_atchley@baylor.edu
You are cordially invited to join the faculty and staff of Baylor University Department of Geology for 2004 Homecoming Open House Friday, October 22, 2004 7:30 p.m.–9:30 p.m. • Baylor Sciences Building • Room E 401