



An aerial photo shows the Red River Valley during normal spring flooding in 2004. The EERC’s Waffle plan would make use of existing elevations, such as roads, and depressions, such as ditches and low-lying fields, to hold back water during spring melting to augment dikes and provide real security from flooding along the Red River and its tributaries.

Waffle® final report puts benefits near \$800 million

As flooding fears rise again, report shows Waffle plan is effective and economical.

The Energy & Environmental Research Center (EERC) recently announced the release of the final results and conclusions for the Waffle Flood Mitigation Project. According to the 523-page report, the Waffle concept is both a viable and economical means of preventing damage from large springtime floods, and the estimated flood mitigation benefits of the plan for large communities in the Red River Valley are on the order of hundreds of millions of dollars.

The Waffle study was born in the wake of the most devastating flood the Red River Basin has seen in over a century. The 1997 flood caused \$2 billion in damage in the region, prompting Valley residents to search for ways to prevent another catastrophic flood in the future. One approach Grand Forks/East Grand Forks took was to buttress its dike systems.

EERC Director Gerald Groenewold had another idea: much like ridges on a waffle hold syrup, roads surrounding

existing low-lying fields, ditches, and wetlands could temporarily hold spring snowmelt in those natural depressions until the threat of flooding from the

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Dr. F. Larry Leistriz, Professor of Agribusiness and Applied Economics, and Dean Bangsrud, Research Scientist in Agricultural Economics (far left and far right, respectively), from North Dakota State University (NDSU) in Fargo joined the Waffle Team to study the economic feasibility of the Waffle concept. Waffle Team members shown here are Beth Kurz (sitting) and Sheila Hanson (standing). Not shown is the third NDSU researcher, Dr. Eric DeVuyst, Assistant Professor of Agricultural Economics.

Continued from page 1

Red River passed. Control structures such as existing culverts could be modified with standpipes and slide gates to hold the water on the land and slowly release it later at a controlled rate, allowing the dikes along the Red River to better funnel that water through population centers without overflowing and causing property damage and loss of life.

“Unfortunately, the Red River Valley Basin is too efficiently drained,” said EERC Senior Research Manager Bethany Kurz. “We lost about 80% of the basin wetlands to agriculture in the 19th and 20th centuries. Without the flood mitigation benefits provided by natural storage in small depressions and wetlands, water flows quite readily across the landscape and accumulates rapidly in ditches, streams, and rivers, flooding the basin.”

The Waffle project is the largest, most comprehensive study to evaluate the technical, economic, and social feasibility of an innovative flood control strategy ever conducted in the

Red River Basin. The 4-year study of the Waffle project’s basinwide distributed water storage strategy, funded by the U.S. Department of Agriculture, began in 2002 and involved four field trial sites studied for 2 years. The study showed that holding water on the land not only slowed the rate of water reaching the river but reduced its volume as well. Field trials showed an average water loss of about 38% of the total storage volume because of evaporation and infiltration into the soil.

Using hydrologic and hydraulic modeling under various scenarios, the study showed that, if implemented, the Waffle plan would reduce peak flooding by as much as 6.2 feet along the Red River during a 1997-type flood event.

“If the Waffle concept had been in place in 1997, we would not have had such a devastating flood,” said Groenewold.

Dikes alone are not enough. Even though the Grand Forks/East Grand

Forks area has built up its dike system to 60 feet, the Waffle report indicates that implementation of the Waffle plan is still critical to augment traditional flood control measures. The Red River Valley has seen much larger floods than the flood of 1997. For example, historical records indicate that the flood of 1826 was approximately 30% larger in volume than the 1997 flood. In 1826, however, the Red River Basin had not yet been cleared for agriculture and had natural wetlands to hold much of the water on the land for a longer period of time. That same size flood today could overtop even the new dike system, the height of which cannot be raised because of soil conditions.

“There are two types of dikes: those that have been breached and those that will be. The only way to provide real, economically viable security against flooding in this region is by augmenting the current dike systems,” said Groenewold.

The Waffle plan could save the region

millions of dollars in future flood damage. The economic analysis for the study was conducted by agronomists at NDSU in Fargo. Some economic modeling scenarios showed that Waffle implementation would save more than \$800 million in flood damage over the next 50 years for larger communities (this is a net benefit, meaning the costs of implementing the Waffle have already been subtracted). Much of the flood mitigation benefit would be for Fargo/Moorhead, which escaped the 1997 flood but has not yet built up its dike system in the wake of that flood.

Other benefits of the Waffle plan not measured in this study include flood mitigation benefits to agricultural land, farmsteads, smaller communities, and rural infrastructure in the Red River Basin. County government costs to repair damaged roads from erosion after spring floods often run upwards of \$1 million, for example—a cost that could be significantly reduced with the Waffle plan. The Waffle plan would also result in better water management in the Red River Basin. Because the water stands on the land, it has a chance to infiltrate the soil, which reduces soil erosion, increases soil moisture, and recharges groundwater aquifers to allay the effects of periodic droughts, the benefits of which could be quite significant.

Costs for physical implementation of the plan are low. Estimated cost for the structural modifications to implement the Waffle plan are \$50 million. That is for the entire Red River Basin and not a particularly large sum compared to the \$417 million the Grand Forks Herald reports was spent just in Grand Forks/East Grand Forks to raise the dikes. Temporarily raising the dikes by 3 feet this year and cleaning up afterward would cost an estimated \$7 million plus, an action and cost that would not be necessary if the Waffle plan were to be implemented. Most of the costs of the Waffle plan would be in the sign-up bonuses and lease payments to landowners as an incentive to keep the water on their land for a short period in the spring. These payments, estimated conservatively high in the study, could be a means of helping to support the rural economy.

“I like to call it a preseason crop,” said Groenewold.

Less than 5% of the total Red River Basin land area would have to be used for temporary water storage during the spring under the Waffle plan. There were no adverse impacts to crop yields of sunflowers or corn during the 2-year field trial period, even though planting was delayed by an average of 5 days.

“These results are absolutely tremendous,” said Groenewold. “Given the history of severe and very frequent flooding in the region, a basinwide flood mitigation approach like this must be implemented to provide long-term security from floods to safeguard the economic vitality of the region. The results show that coordinated, basinwide water management is viable, and the Waffle is an excellent example of an option available right now for implementation,” he said.

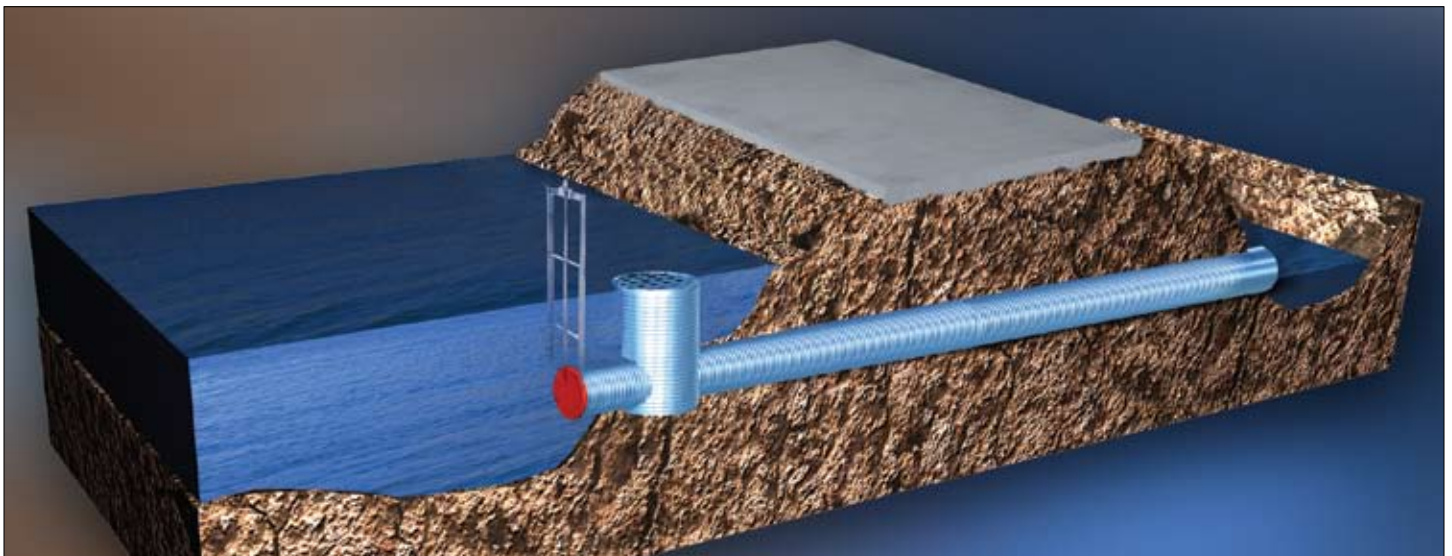
Now what?

“The goal of the Waffle study was to evaluate the feasibility of temporary springtime water storage to mitigate floods like the one in 1997 and to present those findings to the public and those responsible for implementing flood mitigation measures,” said Kurz. “The EERC would be available to act in an advisory capacity for those groups.”

Now the ball is in their court.

—Sandy Van Eck

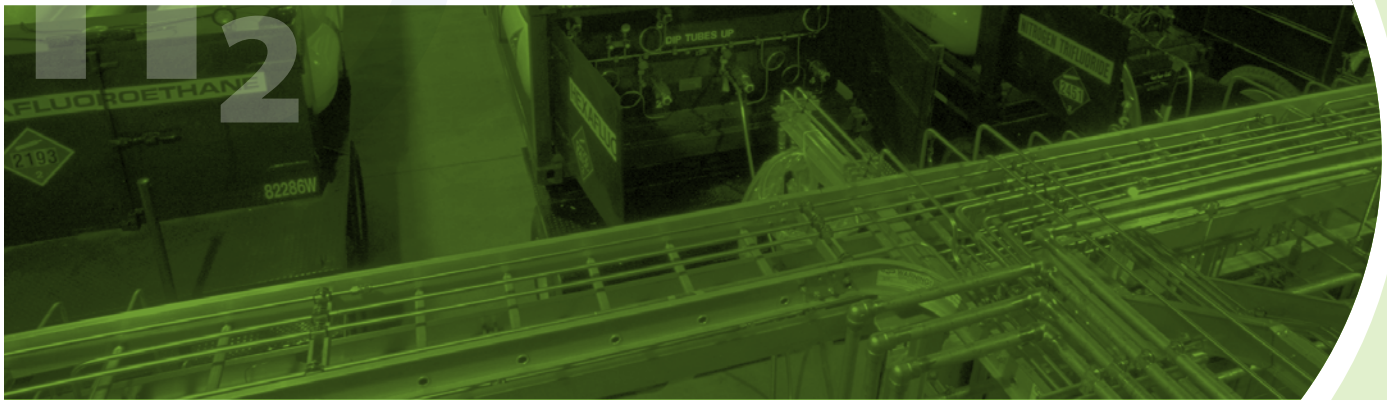
Editor’s Note: A PDF of the Waffle overview is available by visiting www.undeerc.org/waffle.



This cross-section design shows an existing culvert outfitted with an adjustable canal gate and an overflow standpipe to illustrate how water might be retained in Waffle storage areas. The top of the standpipe would be set at the desired water storage elevation, keeping the water lower than the adjacent road. Once the low area was filled to the desired level, excess water would flow into the standpipe and through the existing culvert into the drainage system. Typically, the gate would be fully open in the summer months to allow for immediate drainage unless the landowner wanted to store the water.

HYDROGENWORKS

Training Course



Hydrogen Works

The EERC's first-ever Hydrogen Works: The Premier Professionals Training Course was held at the San Diego Marriott Hotel & Marina in sunny San Diego, California, on February 17-19, 2009.

Many of the hydrogen industry's brightest and most respected representatives presented a comprehensive overview of the hydrogen economy, including production, storage, distribution infrastructure, fuel cells, alternative vehicles and fuels, and environmental impacts.

"The Hydrogen Works course gave attendees a chance to meet with and hear from leading experts from all aspects of hydrogen technology," said Michael Holmes, EERC Deputy Associate Director for Research and Program Manager of the EERC's National Center for Hydrogen Technology (NCHT). "Comments from the attendees and the reviewers were overwhelmingly positive."

The Hydrogen Works course attracted a diverse audience, with international participation from five foreign countries (Canada, Germany, Malaysia, Mexico, and United Kingdom). Course attendees represented research and academia, government and regulatory, trade and environmental organizations, consulting, and industry.

The training course was an excellent opportunity for attendees to gain insight on the emerging hydrogen economy. Attendees commented "This was one of the most efficient uses of participant time of any training course I have been to" and another appreciated the "overviews and explanations of why hydrogen makes sense for global economies and the environment, even in a lower-cost energy environment."

Hydrogen Works was organized and sponsored by the EERC's NCHT with additional sponsorship from the U.S.

Department of Energy (DOE) and DOE's National Energy Technology Laboratory.

-Trish McGuire



Hydrogen Works course.



*A
Truly Great
Man*

THOMAS J. CLIFFORD

1921 † 2009



Gayle Kielty-Clifford (center) is surrounded by her daughter (to her right) and granddaughter (to her left) and representatives of the Indians into Medicine Program and the American Indian Center, who presented her with a Star Quilt in honor of President Clifford.



Gayle Kielty-Clifford with John Gray, longtime friend of the Cliffords.

The eighth president of the University of North Dakota (UND), Thomas J. Clifford, 87, passed away on Wednesday, February 4, 2009. President Clifford's presidency ran from 1971 to 1992, yet his history with UND spanned over 50 years as a student, faculty member, and administrator. President Clifford was regarded with high esteem for his

entrepreneurial spirit; leadership in economic development; and service to his community, state, and nation.

EERC Director Gerald Groenewold said, "Tom Clifford understood the vision for the EERC. He understood what we wanted to accomplish and gave us the freedom to do so. He was a truly great man."

The EERC administration and staff were honored that President Clifford requested his body lie in repose at the EERC.

-Trish McGuire

Target shooting at 10 football fields



The view from the rifle stand demonstrates the challenge of hitting the mark.



Last fall, Kyle Martin, EERC Research Engineer, drove 740 miles to compete in a Fifty Caliber Shooters Association, Inc. (FCSA), sanctioned match in Alliance, Nebraska. Martin said it was an experience of a lifetime for him.

“I shoot literally thousands of rounds a summer in various competitions for fun,” said Martin. “But I learned more in 2 days at the FCSA match than I have learned in 5 years of shooting on my own. Wonderful people from around the country coached me and, in many cases, lent me gear to improve my shooting.”

FCSA was established in 1985 by a small group who set as their mission to advance the sporting uses of the .50 BMG (Browning Machine Gun) cartridge. FCSA’s primary sport is the 1000-yard shooting competition.

“While I have competed locally in other types of shooting, including Sporting Clays and International Defensive Pistol Association matches, this was my first true long-range competition,” said Martin.

The course at Alliance is one of the toughest in the nation and included several sharp gullies between the firing line and the targets, which were a set of circles about 5 feet wide. The gullies channel the wind and create eddies

that the bullet must pass through. The wind flags, which were made of heavy nylon and about 10–15 feet long, gave a good indication of the challenges facing each shooter.

“At one point during the match, I saw the flags simultaneously read three separate directions,” said Martin. “At 500 yards, the wind was from the west; at 800 yards, it was from the east; and at 1000 yards, it was blowing from the south! Reading this and determining the magnitude of the wind made the whole thing quite challenging and really separated the good shooters from the rest of us.”

Growing up on a farm in northern Saskatchewan, Canada, Martin’s dad taught him how to shoot with a .22 rifle when he was 9 years old. That time together nurtured their relationship as well as Martin’s interest in the outdoors. Shooting was something the whole family did, especially at family reunions.

“We’d shoot clay pigeons, then put the empty shells on top of wheat heads, and shoot them off with .22’s,” said Martin. “My mom was one of the best shots.”

Martin has been shooting at targets as well as hunting ever since that time and said, “It’s a great socialization activity. It’s also a very personal way to challenge yourself to be better at something.”

And that challenging aspect as well as his interest (and degrees) in chemistry and chemical engineering are why Martin decided to test himself at long-range shooting competitions.

“On the long range, understanding the science of shooting becomes a factor,” said Martin. “The .50 BMG caliber is one of the largest commercially available calibers at 5.45 inches long and fires a 750-grain (48.6-gram) projectile at 2800 ft/sec. It is primarily

utilized for long-range shooting because of the inherently high ballistic coefficient of its projectile that allows the bullet to cut through the air more efficiently and lowers the impact of wind on the bullet. That said, to maximize your accuracy, you have to start considering variables such as air temperature, density, wind speed, direction, and even mirage in order to hit your mark.”

Martin had several hurdles during the match at Alliance that increased the excitement and stress of the event for him.

“At one point during my first relay, I pulled the trigger and nothing happened!” said Martin. “This is scary with any rifle, but on these large calibers, it is downright dangerous. The relay finished, and to make a long story short, it turned out a tiny connector pin had worked loose and fallen out. Lucky for me, three guys wielding tiny pliers and screwdrivers were able to replace it and get me going again.”

The shooters at the Alliance were very experienced, friendly, and generous, giving out wisdom, gear, and supplies, including sandbags (used for positioning the shooter). Other tools of the trade besides the rifle and sandbags include a bipod (short stand for the rifle), binoculars, wrenches and screwdrivers, safety glasses, and hearing protection.

“Of everything I learned, the most important factor was the importance of a good sandbag that allows smooth and straight recoil,” said Martin. “Without that, you will never maintain a consistent group.”

A group refers to the spread of all shots on the target; it is measured edge to edge, e.g., 20 inches, although not all competition is based on this measurement. Depending on your class, one shoots for group size or for score. There are four classes to shoot in, and these classes group shooters with similar equipment. The classes are primarily separated by weight and include Light Gun (maximum of 32 lb 8 oz), Hunter (less than 50 pounds and shot from a bipod on the ground),

Heavy Gun (50 lb), and Unlimited (any size, any weight, etc.). Martin competed in the Light Gun and Hunter classes.

“While I never broke any records, I did achieve several personal bests,” said Martin. “During one relay of the match, I obtained the smallest group at 11 and 7/8 inches, which is my best group to date. Over the course of the event, my average group was in the mid-20-inch range. This was in the middle of the pack, so I was very happy with my performance.”

As for the future, Martin wants to compete in Alliance this summer, making it a family vacation with his wife, who prefers a .22, and their 1-year-old son. Martin’s goal is to continually improve his performance and find out what his true potential is.

“The perfect group is when all the bullets go through the same hole,” said Martin. “That would be quite an achievement at 1000 yards.”

–Trish McGuire



Participants at the FCSA-sanctioned match.

New employees



Jenny Eilerman is a Document Production Specialist/Research Information Associate at the EERC, where she assists in the development of

contract-funded research programs and provides administrative support in the successful production and completion of research projects, including preparing proposals, reports, technical papers, presentation materials, and other documents.

“I think the areas of research here at the EERC are very interesting. I have always been interested in the sciences and just enjoy a challenge in general,” says Eilerman. “People are extremely nice and helpful. It’s a great work environment. I look forward to getting to know everyone better.”

Prior to her position at the EERC, Eilerman served as a commercial real estate appraiser for the international firm Cushman & Wakefield, Inc., in Columbus, Ohio. She appraised high-rise office buildings, retail space, and large-scale residential developments, specializing in industrial properties across the state of Ohio. She holds a Bachelor of Science degree in Biology from the University of Dayton.

Eilerman and her husband moved to Grand Forks just 4 months ago. They both come from the same small town in Ohio and, in their 10 years together, have already lived in Washington, D.C.; the southern Oregon coast; Ohio; and now North Dakota.

“The people and their lifestyles in all of these locations are VERY different,” says Eilerman. “My family being in Ohio does not make living far away easy! I really do not like moving but have gained lots of interesting experiences.”

Eilerman and her husband like to travel and enjoy outdoor activities such as snow and water sports, distance running, and biking. Eilerman confesses to being a college football fan and “a diehard Ohio State fan.” She reports that she’s also a loyal Cleveland Browns fan as well, adding that “You have to be loyal if you are a Browns fan, because they don’t make it easy.”



Technology Development Machinist **John Lee** likes his job at the EERC, where his work involves operating conventional machinery and

tools and developing alternative methods of machining as well as designing and making specialized parts and equipment for EERC projects.

“Every day brings new, different, and exciting challenges to the job,” says Lee. “Research and development have always been a passion of mine. I enjoy the challenge of coming up with a new design for someone’s (or my own) ideas using conventional machining.”

Originally from Joplin, Missouri, Lee attended Franklin Technical School for welding while in high school. He joined the Air Force in 1967. After serving in Vietnam, Lee was assigned to the Minot and Grand

Forks Air Force Bases. When he left the Air Force, Lee worked at Grand Forks Welding & Machine Company for 20 years, starting out there as a welder. A close friend who worked there as a machinist became his mentor and instilled in him a passion for machine work, and he’s been a machinist ever since. During a 5-year break from Grand Forks Welding & Machine, Lee worked as a machinist at BEAMCO Engineering, Inc., in Oslo, Minnesota, assigned to the design engineer group, where he assisted in the research and development of the Polaris Ranger 6X6.

Lee’s wife works at UND Career Services as a career services/career events assistant. The two are celebrating 27 years together, a union which has produced five children and nine “terrific” grandkids living in Grand Forks, Fargo, Missouri, and Georgia. Not surprisingly, the Lees like to travel, spending as much time with family as possible. What might be surprising is that they also like to travel by way of their motorcycles when they can. Lee also enjoys working in the yard, gardening, and making “things.”

“I would just like to say thank you to everyone who has been so welcoming and helpful,” says Lee. “I’m happy to be a part of the EERC family, and I know that I will grow and learn even more while working here.”



EERC Administrative Assistant **Alexis Slade** provides direct assistance to two Senior Research Managers and associated technical staff in

the Renewable Fuels Group, including scheduling, communications, document production, and other related activities.

“I like that I get to do various jobs and tasks and that every day could be different,” says Slade. “There is definitely variety in this job.”

Prior to the EERC, Slade worked from home as a data creation assistant for a company called Frontlineselling and before that in the UND Continuing Education Department as a program assistant, helping faculty establish online courses and assisting students with registration and class needs.

There’s more to Slade than meets the eye, though. Just 4 years ago, this mother of two was a gun-toting criminal investigator with the U.S. Postal Service’s Office of the Inspector General in Irvine, California, where she investigated internal crimes and contract, health care, and procurement fraud, among other things.

But then, Slade is all about shaking up expectations. She was one of the first women to attend and graduate from the Virginia Military Institute (VMI) in Lexington, Virginia, which was an all-male military school until women were admitted in 1997. Slade was admitted that fall and earned her Bachelor’s Degree in Psychology there in 2001.

“Being one of the first females to attend VMI was one of the hardest challenges of my life. I had to endure a lot of sexism and hatred,” Slade says. “After making it through the first year, it was brought to my attention how many little girls out there looked up to us and saw us as pioneers. That gave me the strength and determination to continue and eventually graduate from VMI. I’d say by my third year of school, we began to gain acceptance from some of the Corps. It was definitely a great experience for me and taught me a lot of life lessons that I use to this very day.”

Life is much quieter these days for Slade. She moved to this area 4 years ago with her husband, who works at the Pembina port of entry. They’ve settled in Oslo, Minnesota, and have two small children. Since the kids love to swim, family time usually involves going swimming. Often that is combined with weekend camping trips when the weather is nice. Slade relaxes by competing in triathlons, mountain biking, camping, and reading.



Kris Jorgenson is a Research Engineer at the EERC, where he works with the Renewable Fuels Group in the development of biomass power systems and

processes, e.g., gasification, for the potential production of heat, electricity, fuels, and chemicals. His computer-aided design experience and equipment-operating skills have already proven to be an asset to the EERC.

Jorgenson’s professional areas of interest are in harnessing energy

available from sources such as biomass, wind, hydro, and solar and determining its suitability and cost-effectiveness.

“I like the freedom we have to do business here,” Jorgenson says of the EERC. “We can market ourselves internally and/or externally without many strings attached to the alternative energy idea we may have or want to work with.”

Jorgenson graduated from UND in 1999 with a Bachelor of Science degree in Mechanical Engineering. He took part in UND’s Society for Energy Alternatives Solar Car Team, competing with the Subzero2 car in Sunrayce 1999 under Scott Tolbert, who is now at the EERC as a Research Manager. The 1300-mile solar vehicle race was sponsored in part by DOE and began in Washington, D.C., and ended in Orlando, Florida.

Jorgenson was previously an engineer at Erskine Attachments, where he designed new attachments for skid steer loaders. Before that, he worked as a design engineer for the Snowmobile 4-Stroke Engine Group at Arctic Cat in Thief River Falls, Minnesota, and as a design engineer for the butterfly valve manufacturer Posi-Flate in White Bear Lake, Minnesota.

“[Working at Posi-Flate] was when I first realized that a farm kid from the sticks of northwestern Minnesota could have a real impact on the health and well-being of a company,” says Jorgenson, who is originally from rural Argyle, Minnesota, and currently lives in Red Lake Falls.

Jorgenson took up snowmobiling while at Arctic Cat and still enjoys it. His snow machine of choice is, of course, Arctic Cat. Summer

New employees cont.

hobbies include riding motorcycles and ATVs and working in his garden and food plot at his rural home. He is also active in his church and has

volunteered for his district's youth teen camp and retreats through the years.

–Sandy Van Eck

Transitions



John Haugen



Randy Lillibridge

John Haugen and Randy Lillibridge have been promoted to Lead Technology Development Operators under Butch Riske at the EERC, where they lead project teams in operating, maintaining, and repairing pilot plant equipment in support of related EERC projects; in modifying standard equipment and fabricating new equipment for nonstandard applications; and in assisting project managers and principal investigators in obtaining project data and results. Haugen and Lillibridge are responsible for enforcing safety policies and performing various administrative duties associated with supervising their teams. Previously, they were both Technology Development Operators at the Center.

“Working at the EERC has not only provided me with a lot of great experiences but also the chance to work alongside many talented people,” said Haugen.

Chad Wocken has been promoted to the position of Senior Research Manager at the EERC, where he leads projects in several program areas focusing on renewable energy development, technology development for renewable liquid fuels, and hydrogen production from both renewable and fossil-based feedstock. Wocken has served as a Research Manager at the EERC since 2005. He holds a B.S. degree in Chemical Engineering from the University of North Dakota.

“I feel very fortunate to be working at the EERC,” says Wocken. “Every day there are new challenges to address, and every day I learn something new. It is an exciting time to be working in the energy industry, and I really enjoy working to address the challenges of producing sustainable and environmentally responsible energy alternatives.”

–Sandy Van Eck



NCHT update



EERC staff recently installed the new equipment for the NCHT that was designed by the EERC and built to EERC specifications, with testing of the equipment following the installation.

With the new equipment in the NCHT, EERC Research Scientist Jim Tibbetts said, “With all the projects that we have, we already need more room.”

SNAPSHOTS:

2009 UND Distinguished Dissertation honor



Dr. Alexander Azenkeng, EERC Research Scientist, recently received word that his Ph.D. dissertation entitled “Theoretical Studies of Low-Lying Electronic States of Lithium, Titanium, and Mercury Compounds” was selected as the 2009 UND Distinguished Dissertation.

Azenkeng received a Ph.D. degree in Physical Chemistry with a concentration in Theoretical and Computational Physical Chemistry from UND in 2007. Azenkeng previously worked as a temporary employee at the EERC and, before that, as a Graduate Research Assistant in the Chemistry Department and at the EERC.

Each year, the Graduate School seeks nominations from departments for outstanding dissertations.

“I am obviously very excited and feel much honored by this award. I will remain indebted to UND for hosting me during the Ph.D. program,” said Azenkeng, “especially the Department of Chemistry and the EERC, which were my anchor departments for the projects I completed. Everything was made possible through the guidance of an extraordinary advisor, Prof. Mark R. Hoffmann.”

EERC’s research partner, SaskPower, receives award



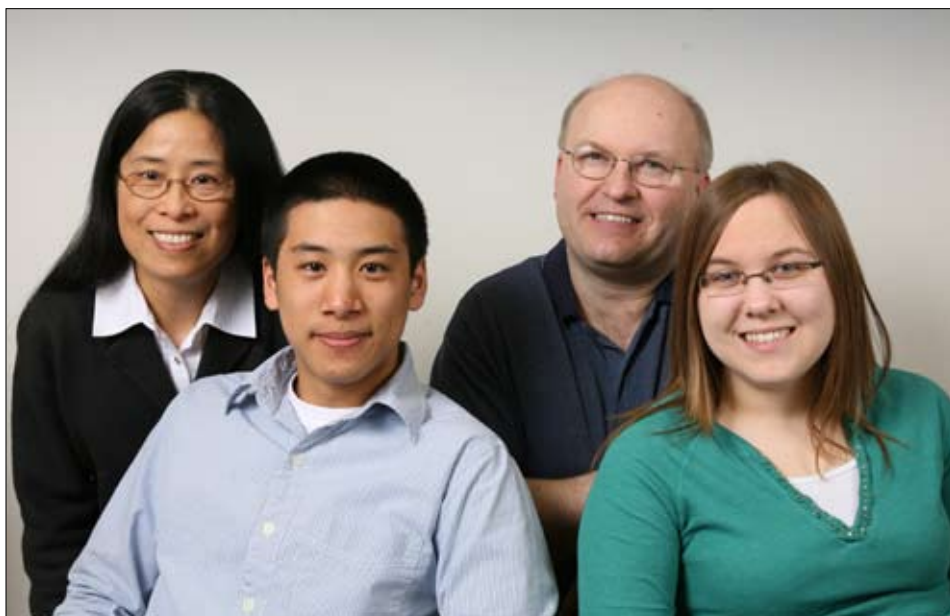
John Pavlish (left), EERC Senior Research Advisor, and Dr. David Smith, SaskPower Project Leader of Environmental Initiatives, at an award ceremony in Regina, Saskatchewan, Canada.

Senior Research Advisor John Pavlish recently attended an award ceremony in Regina, Saskatchewan, Canada, where SaskPower, a research partner, received a national environmental stewardship award for its environmental efforts in emission reduction research. The award was part of the Canadian Electricity Association’s Environmental Commitment and Responsibility Program and was awarded to SaskPower for its significant mercury research, including that obtained from SaskPower’s Emissions Control Research Facility (ECRF), which is located at the Poplar River Power Station near Coronach, Saskatchewan.

Recognized as one of the key partners in the success of the ECRF, the EERC was also instrumental in and provided guidance on the design of the ECRF. Since 2003, Pavlish and his team have collaborated with SaskPower, DOE, and others to meet Canada’s pending mercury control targets.

“It has been a pleasure to work with SaskPower and DOE over the last several years,” said Pavlish. “Our joint efforts are key to advancing mercury and trace metal research and reducing these emissions from coal-fired power plants.”

–Trish McGuire



Proud parents and their children (from left to right): Jenny and Benjamin Sun and Harry and Katie Duchscherer.

All-star students

Katie Duchscherer, daughter of EERC Server Administrator/Programmer Harry Duchscherer, and Benjamin Sun, son of EERC Research Chemist Jenny Sun, recently received the 2008–2009 Siemens Awards in the Advanced Placement Program® (AP®) for the state of North Dakota. The \$2000 college scholarship awards are given to the top high school students (one female and one male) in each state in AP math and science courses.

Katie, who is a senior at Red River, has taken advanced calculus and biology in preparation for college.

“My wife and I are very proud of Katie and would like to congratulate Ben on his scholarship award,” said Harry Duchscherer. “I think scholarships such as the Siemens Awards bring well-deserved recognition to our students and local schools.”

Katie was recently accepted by the California Institute of Technology and the Massachusetts Institute of Technology but is waiting to hear from several other universities before making a final decision for this fall.

Katie’s academic interests are primarily scientific, leaning toward astrophysics.

Ben, who is a junior at Red River, took AP biology and chemistry classes.

“The Siemens Award is the frosting on the cake. Ben studied hard; biology and chemistry are two of his favorite classes,” said Jenny Sun. “And the good thing about these courses and the test is that you can compare yourself to others nationwide.”

While Ben has a year to decide where he would like to go to college, he’s leaning toward Harvard or Yale to study science, engineering, and computer science.

Congratulations, Katie and Ben!

–Trish McGuire

Upcoming Events

See www.undeerc.org for more information.



BIOMASS '09

Power, Fuels, and Chemical Workshop

July 14–15, 2009
Grand Forks, North Dakota



INTERNATIONAL CONFERENCE ON
AIR QUALITY
Mercury, Trace Elements, SO₂, Particulate Matter, and Greenhouse Gases

October 25–29, 2009, Arlington, VA

EERC EDGE

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