The Current

NEWS FROM WATERBORNE ENVIRONMENTAL, INC. SPRING 2013

WATERBORNE CELEBRATES 20 YEARS OF EXCELLENCE

It was 20 years ago this May that Waterborne was launched with five employees sitting at folding tables with folding chairs. Within a year, we were coordinating a national groundwater monitoring study, managing several field-level groundwater and surface water runoff monitoring studies, and having our enhancements to the Pesticide Root Zone Model (PRZM) accepted by the U.S. Environmental Protection Agency's Office of Research and Development (ORD) in Athens, Georgia.

Today, we have more than 60 employees and have expanded our services to include personal care products, veterinary medicines, pharmaceuticals, and full environmental risk assessments for pesticides. We have been working with agricultural analytics, life cycle assessment, and sustainability. In addition, we have expanded our geographic extent beyond North America, and have conducted studies in Europe, Latin America, Asia, Africa, and Australia. So, that leaves only Antarctica to add to our list in our third decade!

We had hoped to include a group photo in this edition of The Current, but collecting everyone from Virginia, Illinois, Missouri, Pennsylvania, Michigan, Kansas, North Carolina, Connecticut, West Virginia, and Massachusetts proved to be more difficult than herding cats with driver's licenses.

Even though our staff are now physically located across the country, we maintain the unified vision that has allowed us to achieve so much over the last 20 years. That vision, which centers on our collective commitments to environmental stewardship, advancing technology, ethical behavior, and team support, has attracted and helped to retain quality people in the company.

We are going to work together for how long? (Congratulations to Mike Hirschi for providing the winning caption to this picture of Pat and Marty from 1993)

We would like to thank our staff, clients, and business partners for contributing to our success. We look forward to working together and providing outstanding services for the next 20 years!

Marty Williams, President, and Patrick Holden, CEO

Scan here for Waterborne's Vision Statement.

MARK CAFARELLA JOINS WATERBORNE'S ECOTOXICOLOGY GROUP

We are pleased to announce that Mark Cafarella has joined the Waterborne team in the Ecotoxicology group.

Mark joins us after 21 years at Smithers Viscient (formerly Springborn Laboratories) where he held various roles of increasing responsibility within their ecotoxicology group. Mark began his tenure there as a staff scientist doing aquatic toxicity tests and assumed additional leadership roles over time, most recently serving as their Director of Ecotoxicology. He has a diverse range of experience in ecotox testing, from designing and conducting studies to managing operations and staff in a facility that performed aquatic organism and non-target plant tests designed to meet client needs for global regulatory submission. Mark has been deeply involved in the USEPA Endocrine Disruptor Screening Program (EDSP) and OECD expert groups, and he brings a well-deserved reputation for excellence in the industry. In addition, Mark has extensive experience working with clients and regulatory agencies from a wide range of industries including pharmaceuticals, consumer care, specialty chemicals, and crop protection.

Waterborne provides expertise in ecotoxicology, exposure modeling, geospatial information assessment, and monitoring studies. Adding Mark to our team enhances our continuing strategy to provide expert, value-added ecotoxicology and risk assessment capabilities for our clients. Mark's responsibilities will include study management and consultation, regulatory ecotoxicology consultation and risk assessment support. Please don't hesitate to contact him (cafarellam@waterborne-env.com), or any of our ecotoxicology team members, for additional information.

EVOLUTION OF WATERBORNE'S FIELD PROGRAMS

Over the past 20 years Waterborne's field studies program has grown, diversified, and contributed to the growth of our technical expertise. What hasn't changed is our commitment to performing the highest quality science for our clients. When Waterborne first opened its doors we conducted prospective and retrospective groundwater, runoff, and surface water monitoring studies. While we continue to perform these types of studies, we have expanded our capabilities to aquatic and terrestrial field dissipation studies, volatility studies, ecological and human exposure watershed monitoring studies, urban runoff and storm water monitoring, sustainability programs, controlled small-scale runoff studies, and pollen and nectar monitoring programs. During these past 20 years, we have completed hundreds of studies throughout the United States. Looking forward, we are expanding our international exposure by providing our expertise with field programs to colleagues and clients in private sector companies and governmental agencies in Latin America, Australia, Europe, and Asia.

With Waterborne's broadening field study experience, its staff has grown in expertise and breadth of academic disciplines. We have expanded from a mix of scientists and engineers to an integrated group of physical and biological scientists, agricultural, water resource, and computer engineers, computer programmers, and GIS specialists. As a result, the field studies program has been able to integrate complex spatial and statistical analyses into our study designs and develop effective solutions to meet unique and challenging environmental monitoring requirements.

In concert with its growing diversity, Waterborne prides itself on its creativity as we adapt and apply new technologies to enhance the efficiency of field studies. A good example is the development of integrated systems to record field observations on handheld devices by field scientists and automated systems to record and transfer electronic data from remotely deployed environmental monitoring instruments. These systems utilize cellular and internet communication protocols to transfer data to on-site servers for storage, real-time management, and analysis. We have demonstrated that these systems have increased the data collection efficiency and overall data quality by reducing the potential for human error via data handling. Our automated system minimizes the need for paper documentation and at the same time decreases the response time for corrective actions (if needed) to the electronic environmental monitoring instruments. Additionally, our systems provide e-mail updates on environmental condi-

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Brian Jacobson makes an application at a runoff study

Les Carver and Nathan Snyder conducting a field test in Waterborne's early days

BLUEBIRD MONITORING SERVICE PROJECT

Bluebird nest with eggs photographed during service project

The Loudoun Wildlife Conservancy has a network of 22 public bluebird trails which are monitored from April to August on a weekly basis. A group of 10 Waterborne employees in the Leesburg office have partnered with the Loudoun Wildlife Conservancy and the Virginia Bluebird Society to monitor bluebird boxes at Tuscarora High School in Leesburg, VA. Teams of two take turns going out to the ten bluebird boxes located just a short drive from the office once a week to check on the boxes. A monitoring log for each box keeps track of the presence of a nest, the bird species, the number of eggs, the number of young, and how many birds have fledged.After less than a month of monitoring we have two boxes with bluebird eggs!

UPCOMING PRESENTATIONS

PESTICIDE BEHAVIOUR IN SOILS, WATER AND AIR
SEPTEMBER 24, 2013 • YORK, UK

- Factors affecting the movement of pesticides applied in residential settings. Russell Jones*, Paul Hendley, Christopher Harbourt, Paul Davidson, Jennifer Trask, T. Xu. Platform presentation.
- Development of EuroPEARL 2012 to support large-scale exposure assessments and monitoring programs. Gerco Hoogeweg, Paul Sweeney, Shelby Zelonis, Lucy Fish, Sue Hayes, Paul Hendley. Poster presentation.
- Integration of Local Conditions in Risk Assessment. Amy Ritter*, Christopher Holmes. Poster presentation.

246TH ACS NATIONAL MEETING & EXPOSITION
SEPTEMBER 8–12, 2013 • INDIANAPOLIS, INDIANA

- Overview of a national aquatic risk assessment of pyrethroid use in agriculture. Jeffrey Giddings*, Michael Dobbs, Paul Hendley, Christopher Holmes, Amy Ritter. Platform presentation. Monday, September 9, 11:10 am, Section C.
- Higher tier aquatic exposure estimation for agricultural pyrethroid use patterns and associated model sensitivities. Dean Desmarteau*, Amy Ritter, Paul Hendley, Scott Jackson, Michael Dobbs, Jeffrey Giddings. Platform presentation. Monday, September 9, 1:15 pm, Section C.
- PRZM-Hybrid modeling system utilizing an agronomic approach to define watershed-scale chemical applications. Paul Miller*, William Northcott, Christopher Harbourt, Mark Cheplick, Clint Truman, Platform Presentation. Monday, September 9, 1:35 pm, Section C.
- Properties and uses of chlorpyrifos in the United States. Keith Solomon*, W. Martin Williams, Donald Mackay, John Purdy, Jeffrey Giddings, John Giesy. Platform presentation. Tuesday, September 10, 1:05 pm, Section D.
- Exposures to aquatic organisms from the use of chlorpyrifos in North America. W. Martin Williams*, Jeffrey Giddings, John Purdy, Keith Solomon, John Giesy. Platform presentation. Tuesday, September 10, 2:25 pm, Section D.
- Risks to aquatic organisms from the use of chlorpyrifos in North America. Jeffrey Giddings*, W. Martin Williams, Keith Solomon, John Giesy. Platform presentation. Tuesday, September 10, 2:45 pm, Section D.
- Ecological risk assessment for chlorpyrifos in terrestrial and aquatic systems in North America – overview and conclusions. John Giesy*, Keith Solomon, Donald Mackay, Jeffery Giddings, W. Martin Williams, Dwayne Moore, John Purdy, Chris Cutler. Platform presentation. Tuesday, September 10, 4:00 pm, Section D.
- Inverse modeling for the derivation of degradation parameters in European and North American terrestrial field dissipation studies. Megan White*, Gabriel Olchin, Nathan Snyder, Aldos Barefoot. Platform presentation. Wednesday, September 11, 10:40 am, Section C.
- Application of OECD ENASGIPS—User perspectives. Gerco Hoogeweg* and Shelby Zelonis. Platform presentation. Wednesday, September 11, 3:25 pm, Section C.
- Relevance of environmental fate and terrestrial field dissipation studies conducted in Europe and Canada to use environments in the United States. Shelby Zelonis*, Cecilia Mucha Hirata, Gerco Hoogeweg, Nathan Snyder. Platform presentation. Wednesday, September 11, 3:45 pm, Section C.
- Factors affecting residential runoff transport of pyrethroids. Russell Jones*, Paul Davidson, Christopher Harbourt, Paul Hendley. Platform presentation. Thursday, September 12, 9:10 am, Section A.
- Determining critical factors controlling off-site transport of pyrethroids in the urban environment. Paul Miller, Paul Davidson*, Christopher Harbourt, Xinyu Zhang, Charles Boast, Russell Jones, Gregory Goodwin, Bradley Sliz. Platform presentation. Thursday, September 12, 9:35 am, Section A.
- Pyrethroid monitoring of the Lower American River, CA, USA. Christopher Harbourt*, Stephen Clark, Gregory Goodwin, Todd Albertson, Michael Dobbs, Kevin Henry, Gary Mitchell. Platform presentation. Thursday, September 12, 3:25 pm, Section A.

RECENT PRESENTATIONS

22ND ANNUAL MEETING OF THE INTERNATIONAL SOCIETY OF EXPOSURE SCIENCE
SEATTLE, WA • OCTOBER 28–NOVEMBER 1, 2012

- Use of bias factors and site year specific modeling to enhance existing monitoring data as part of a tiered approach to estimating drinking water exposure. Paul Hendley, W. Chen, Christopher Harbourt, Paul Miller, and P. Mosquin.

SETAC EUROPE 23RD ANNUAL MEETING • MAY 12–16, 2013
SCOTTISH EXHIBITION + CONFERENCE CENTRE
GLASGOW, SCOTLAND

- Understanding the significance of soil surface photolysis under field conditions: A new laboratory test design. L. Hand*, C. Nichols, S. Kuet, R. Oliver, and Christopher Harbourt. Platform presentation.
- Development of archetype exposure scenarios for use in risk assessment in Asia. O. Price*, A. Franco, Christopher Holmes, and O. J. P. van den Brink. Poster Presentation.
- A spatial eco-epidemiological approach for identifying and ranking potential stressors in aquatic ecosystems of England and Wales. Katherine Kapo, M. Whelan, Christopher Holmes*, R. Williams, V. Keller, A. Young, D. de Zwart, Leo Posthuma, S. Marshall, G. Burton, Murray Bligh. Poster presentation.
- Eco-epidemology works! Leo Posthuma*, D. de Zwart, Katherine Kapo, Christopher Holmes, Scott Dyer. Poster presentation.
- Modelling in support of an extended groundwater monitoring study in the EU. Paul Sweeney*, Gerco Hoogeweg, Shelby Zelonis, Paul Hendley, T. Negley, S. Hayes. Platform Presentation.

IUPAC ECOLOGICAL RISK ASSESSMENT SHORT COURSE
BOGOTA, COLOMBIA • MAY 25–26, 2013

- Ecological risk assessment in the US, including ECOFRAM. Presented by Amy Ritter.
- Integration of Local Conditions in Risk Assessment. Presented by Amy Ritter.

*Presenter

CHRIS HARBOURT WINS MANAGEMENT AWARD

Chris Harbourt, Ph.D., was honored with the 2013 Entrepreneurial Excellence in Management award given by the Champaign County Economic Development Corporation at the Innovation Celebration Awards ceremony on February 28, 2013. Chris was one of three finalists for the award, which seeks to highlight managerial ability and skill in assembling resources, creating an organization, decision making, being forward-looking, implementing action plans, and creatively solving problems. The award ceremony was held at the headquarters of the National Center for Supercomputing Applications (NCSA).

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Scan here to watch interview with Chris Harbourt

WATERBORNE GRADUATES FROM VALET PROGRAM

Waterborne was one of 15 companies graduating from the Virginia Leaders in Export Trade (VALET) program, a two-year program designed to help businesses expand into foreign markets. The VALET program was established in 2002 to help Virginia businesses expand into international markets by providing them with experience from a team of international service providers and expertise from private sector service providers with international experience in law, web design, banking, translation, and freight. Additionally, Waterborne participated in VALET's group trip to Brazil and used VALET's resources in Brazil, China, and Australia to set up meetings with potential partners and clients in those countries.

Chris Holmes (seated 3rd from left) and Amy Ritter (seated 4th from left) with International Trade Managers at graduation from VALET's 2-year global program

EVOLUTION OF WATERBORNE'S FIELD PROGRAMS

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tions and instrument operation to our clients. These automation initiatives provide for the collection of high-quality data for lower overall cost thereby maximizing our client's investment.

As we move into our third decade, we eagerly look forward to continued growth and diversification of our field programs as we identify new opportunities to serve clients, many of which we have been collaborating with since day one.

WATERBORNE SPONSORING UPCOMING CONFERENCE

Waterborne is a donor for the Second International Conference on Agro-Geoinformatics to be held at George Mason University in Fairfax, VA, from August 12–16, 2013. Agro-geoinformation is key information in the agricultural decision making and policy formulation process. Recent advances in geoinformatics have created new opportunities and challenges in applying agro-geoinformation to agriculture monitoring and assessment. This conference will bring together academic, regulatory, industry, and research agencies focused on using geoinformation in the agricultural decision making process. More information can be found at http://agro-geoinformatics2013.org/.

NEW HIRES

Julie Honegger joined Waterborne in April 2013 as a seasonal Technician in the Illinois office. She will receive her B.S. in Agricultural and Biological Engineering with a concentration in Soil and Water Resource Engineering in May 2013 at the University of Illinois, and in the fall of 2013 will be pursuing a Master's degree in Agricultural and Biological Engineering.

Anthony Cohen started in April 2013 in the Illinois office as a seasonal Technician. He is working towards a Bachelor's at the University of Illinois in Geography/GIS and Earth, Society, and Environment/Science concentration with a minor in Computer Science.

Greg Van Patten joined Waterborne in April 2013 as a seasonal Technician in the Missouri office. He is working towards a B.S. in Civil and Environmental Engineering at the University of Missouri, Columbia.

PROMOTIONS

Andy Jacobson
promoted to Project Engineer
Andy is an engineer, accomplished programmer, and field equipment guru. Andy was an intern for six summers with Waterborne, before starting full time in 2011. Andy has shown his ability at the staff level to organize teams, complete team-based work products, and communicate results to clients. He has demonstrated independent judgment and professionalism in the office on analysis projects and in the field installing complex equipment in challenging situations.

J. Malia Andrus, Ph.D.
promoted to Senior Engineer
Malia earned her Ph.D. under the National Needs Fellowship. She has been with Waterborne for three years, most recently designing and managing the Algae Biomonitoring study (field, laboratory methods, reporting, publication). Her expertise was essential to acquiring and completing this project. She presented on behalf of Syngenta at a FIFRA Science Advisory Panel on atrazine. She has also become a top expert in statistics and R programming at Waterborne helping and teaching others.

Luke Zwilling
promoted to Senior Engineer
Luke is an engineer and accomplished programmer. In eight years with Waterborne, Luke has been involved with and instrumental in almost every significant innovation we have made in field studies, data handling, and parallel processing. He is great at working with clients and successfully managed project components since 2010.

Megan White
promoted to Project Agricultural Engineer
Megan is an engineer, EU Kinetics expert, and regulatory modeler who has been with Waterborne since 2009. Megan works directly with clients registering their products in the EU. She has been developing global fate and transport scenarios. She is fluent in Spanish and is learning Brazilian Portuguese. Her language skills are helping Waterborne with translation of data needed to setup modeling scenarios for South America.

Paul Davidson, Ph.D.
promoted to Manager, Engineering
Paul earned his Ph.D. on the National Needs Fellowship. For the last six years, Paul has managed projects, managed people, and has gone above and beyond to manage multiple remote field studies in CA. He is an excellent communicator, is well-organized, and is an innovative thinker. Clients think highly of Paul and his efforts in project work and follow-up opportunities.

ANNOUNCEMENT

Rebecca Snyder, daughter of Nathan Snyder, took first place in the Earth Science category for 6th graders at the George Washington Carver Science fair in Philadelphia. Since 1979, the Carver science fair has been open to all students in grades four through twelve who attend Philadelphia County public, charter, parochial, and private schools, as well as to home schooled students residing in the county. Rebecca's project, titled "How does changing the size of a faucet affect its flow rate?" also won her the Vince Russo Award for Excellence in Data Presentation. Rebecca is a student at Independence Charter School.

TWENTY YEARS OF GIS—A PERSONAL PERSPECTIVE

When Waterborne was founded in May 1993, I was finishing my internship at the Soil and Water Science Department at the University of Florida. My work focused on non-equilibrium sorption in continuously stirred reactors. The words "GIS" or "Geographic Information Systems" were alien to me. However, that changed once I started my Ph.D.

Before my Ph.D., I had never worked with UNIX systems or GIS. I was intimidated by the meter-thick stack of binders that made up the ArcINFO manual. At that time, the sleek what-you-see-is-what-you-get user interface did not exist. Instead, you entered one of the 1000+ commands into a DOS-like window. Eventually, I learned to program and integrate models with GIS using the AML language.

A few years later, Environmental Systems Research Institute (ERSI) released ArcView 2. This was a new lightweight GIS program, and it came with a new easy-to-use interface that was able to integrate with state-wide databases for the first time, but the real innovation came in 2000 with the release of ArcGIS Desktop. Desktop was loaded with tools and menus in a user-friendly interface. Waterborne was already offering GIS analysis as a service to clients by that time, and Waterborne quickly learned the value of Desktop to GIS. When I started at Waterborne in 2006, one of my first projects was using Desktop to characterize agricultural landscapes it order to estimate drift loadings to surface water bodies in Europe.

Thirteen years later, we still use the ArcGIS Desktop. Although the look and feel has changed, the basic principles of Desktop remain the same. In those years we have refined the landscape characterization process, developed various methods to accurately calculate the percent crop area, delineated watersheds for use with riverine models, conducted GIS crosswalks, selected sites and watersheds for monitoring programs, used it to determine groundwater concentrations across Europe, and more. Recent endeavors include the application of GIS to the occurrence and fate of contaminants of emerging concern in water such as veterinary medicines, home and personal care products, and human pharmaceuticals. Even after using GIS for nearly 20 years, new challenges continue to arise. I am looking forward to the next 20 years of GIS.

Gerco Hoogeweg

CORPORATE HEADQUARTERS: 897-B Harrison Street, S.E., Leesburg, Virginia 20175 • 703.777.0005 • Fax 703.777.0767 • www.waterborne-env.com

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