

Tiffany A. Gatesman
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PROFESSIONAL PREPARATION

MASTER OF SCIENCE– University of Alaska Fairbanks (UAF) 2014 - 2017
Environmental Chemistry
Emphasis: Hydrology and Glacial Science

BACHELOR OF SCIENCE - University of Wisconsin-Sevens Point (UWSP) 2003 - 2009
Major: Water Resource Management
Minor: Soil Science
Emphasis: Wetland Science

PROFESSIONAL APPOINTMENTS

POSTGRADUATE RESEARCH ASSISTANT PROGRAM June 2014-December 2016
Cold Regions Research & Engineering Laboratory, Army Corps of Engineers, Fort Wainwright, AK
Independently analyzed water samples for stable water isotopes (Wavelength-Scanned Cavity Ringdown Spectroscopy on a Picarro L2120i (Sunnyvale, CA)) and major ions (Dionex ICS-3000 ion chromatograph (Dionex Corp. Sunnyvale, CA)). Assisted in permafrost degradation surveys in local and remote locations to study effects of climate change and series of wildland fire disturbance on permafrost dynamics. Assisted in soil and water (stream, lake and groundwater) chemical sampling programs on Fort Greeley Army Base, AK.

RESEARCH ASSISTANT June 2014-December 2016
Water and Environmental Analysis Lab, UAF, Fairbanks, AK
Lead field researcher for watershed hydrologic and glacial mass balance surveys in local and remote locations. Responsible for 1-2 employees, manage, maintain and purchase field equipment. Train undergraduate and Post-Doctoral researchers/employees in field, safety protocols, and techniques to record field data. Organize field logistics and campaigns for two seasons. Travel consisted of SUV/trailer, foot, ski, ATV and helicopter. Data collected: stream discharge, end-of-winter snow pack cores, meteorology, surface water, glacier surface water melt, glacier terminus runoff, winter baseflow and groundwater for 3 seasons. Use of Acoustic Doppler Current Profiler (stream discharge), Onset HOBO data loggers and DIVER pressure transducers. Organize, manage, calculate and analyze stream discharge, glacier mass balance and geochemical data using Microsoft Excel, Igor and MatLab.

EARTH SCIENCE & BIOLOGY HIGH SCHOOL TEACHER Aug. 2012 – May 2014
East Grand School District-Middle Park High, Granby, CO
Provide instructional support of Earth Sciences and Biology to High School Freshmen and Sophomore students. Responsible for daily lesson plans, curriculum guidelines and supervision and evaluation of student academic achievement and understanding. Tasks include collaborating with departmental staff, other professional staff and administration addressing class and school-wide issues and communication with student's guardians regarding student progress and understanding of material.

STABLES HEAD WRANGLER Sep. 2010 – May 2014
Cabin Creek Stables, Devils Thumb Ranch, Tabernash, CO
Managed a staff of 4-6 and horse herd of 50 for guest trail rides. Administrative tasks consisted of management of staff logistics including scheduling, organizing guest reservations and horse allocations, assurance of quality control and efficiency of facility and money management. Daily tasks included guest services and safety, veterinary care of horses, cattle, chickens, goats and rabbits, and assistance with hay production, cattle herd relocation and health checks and ranch maintenance. Provided training and guidance to staff in successfully guiding safe and educational horseback rides, horsemanship, basic horse care, horse and tack allocation, hay production, facility protocols, guest services and safety. Evaluate staff and stock work productivity.

PROFESSIONAL APPOINTMENTS (cont.)

WATER CHEMIST TECHNICIAN

Jan. 2006 – May 2009

Water and Environmental Analysis Lab, Stevens Point, WI

Experience in a Wisconsin DNR/USGS/DATCP certified lab. Work with citizen and agency staff. Specialized in operating auto-analyzer with Omnion software to analyze ammonium, total kjeldahl nitrogen, total phosphorous, reactive phosphorous and color. Inoculate bacteria samples for private wells and DNR/DATCP mandated samples. Experience in metals digestions. Performed atrazine test, total solids, total dissolved solids, suspended solids and pH. Perform quality control measures, follow QA/QC guidelines, and logging in samples. Experience in soils digestion and analysis for nutrient load. Train new employees on chemical sample analysis and preparation, lab safety and protocols.

EROSION CONTROL SPECIALIST

June 2008 – Oct. 2008

Dane County Land Conservation Division, Madison, WI

Independently inspected municipal and county construction sites to determine compliance with erosion control and storm water permits. Read and reviewed erosion control plans and issued permits per county, state and federal regulations. Communicated with landowners, engineers, construction supervisors and municipal government concerning erosion control plans, compliance issues and environmental issues. Produced conservation planning maps with CPS map in ArcMap for best management practices of agricultural land, use of TR55 model and ArcMap to create a water diversion plan, and assist in designing a water control basin profile for rural and agricultural stormwater facilities.

FISHERIES BIOLOGIST INTERN: AMERICROPS

June 2006 – Sept. 2006

U.S. Forest Service, Humbolt-Toiyabe National Forest, Elko, NV

With a team conducted limnological investigation and field data collection of streams for quality trout habitat in remote locations. Measured stream flow, cross section, bank vegetation and pebble substrate count. PIT tagged and sampled threatened amphibians by weight, sex, and length. Navigation via topographic map and GPS to locate remote field sampling locations, extended hiking and overnight back-country camping in high desert mountain conditions. Maintain field equipment.

VEGETATION MANAGEMENT CONTRACTED TECHNICIAN

June 2004 – Sept. 2004

U.S. Fish and Wildlife Service, Leopold WMD, Portage, WI

Investigated population dynamics of threatened Eastern Prairie Fringed Orchid. Independently traveled to field plot to identify, tag and record vegetation data. Compiled and entered data. Created GIS map of sampled plants. Assisted Private Land Specialists monitoring new growth of newly implemented private land conservation by identifying growth of native vegetation species.

RESEARCH

HYDROGRAPH SEPARATION OF A SUB-ARCTIC GLACIAL WATERSHED, INTERIOR ALASKA.

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2017). Master of Science Thesis.

Department of Chemistry, UAF, Fairbanks, AK.

Collaboratively designed study to quantify contribution of glacier melt, snow melt and rainfall to lowland streamflow using geochemical mixing model. Data collected: stream discharge, glacier mass-balance, end-of-winter snowpack cores, rain, surface water, glacier surface water melt, glacier terminus runoff, winter baseflow and groundwater for 3 seasons. Organize, manage, calculate and analyze stream discharge, glacier mass balance and geochemical data using Microsoft Excel, Igor and MatLab.

IMPACTS OF URBAN RUNOFF ON BIORETENTION BASINS: A COMPARISON OF VEGETATION EFFECTS ON SURPLUS WATER IN SOIL PROFILE

Short (Gatesman), T., Werner, L., and Clancy, K. (2009). Undergraduate research.

College of Natural Resources, UWSP, Stevens Point, WI.

Independently designed and constructed native vegetation rain garden and sod collection basin on the UWSP campus to compare vegetation effects on surplus water at different depths in soil profile. Data collected and analyzed: soil bulk density, soil field capacity, soil moisture, soil texture, soil moisture. Used WinSLAMM stormwater model, ECH2O Utility moisture probes, and soil pressure extractor.

RESEARCH (cont.)

RIVER BANK LAND USE MAPPING SURVEY, GUATEMALA

Short (Gatesman), T., and Kermath, B. (2006). Student Ambassador Watershed Management Report. Global Environmental Management, UWSP, Stevens Point, WI.

Independently evaluated land use and water quality of local river to support decision making on future watershed management project. Mapped 4 km of riparian zones of watershed via GPS unit for land use and basic vegetation cover. Collected water samples and analyzed for river water quality. Wrote grant proposal in English and Spanish for potable drinking water tanks.

VOLUNTEER APPOINTMENTS

CONFERENCE TECHNICAL PROGRAM COMMITTEE

April 2016

National American Water Resource Association

Assisted planning and writing field trip guide for American Water Resource Association, National 2016 Spring Specialty Conference. Anchorage, AK. April 25-27, 2016.

PERIPHYTON SAMPLING VOLUNTEER

September 2010

US Geological Survey, Grand County, CO

Assisted in sampling of periphyton on Upper Colorado River. Determined surface area of periphyton off of randomly selected rocks in stream ripples. Measured temperature, DO and turbidity of water.

FIRE CREW VOLUNTEER

2008 & 2009

UWSP Fire Crew and Wisconsin Department of Natural Resources, Stevens Point, Portage County, WI

Assisted in two prescribed burns organized by DNR and completed by UWSP Fire Crew by constructing fire lines. Assisted DNR Prevention Fire Ranger in wildland fire daily routines and suppressed small wildland fire. Assisted in wildland firefighting class-field training portion (NWCG).

FISHERIES BIOLOGIST VOLUNTEER

August 2008

US Forest Service, Tongass National Forest, Sitka, AK

Identified and recorded four species of salmon and sampled for weight, length, sex and scale samples before migration into freshwater lake in remote location. Fertilized lake using granular phosphorous and ammonium. Obtained current weather readings and water temperature.

CERTIFICATIONS & LICENSES

Wilderness First Aid Training, 16 hrs. 2015

Remote Worker Water Safety Training, 16 hrs. 2015

Bear Safety Course (4 hr.) with Handgun Training, 2014

Science Education (Grades 7-12) Colorado Teaching License, 2012

Wildland Firefighting (S-190 Intro to Wildland Fire Behavior, S-130 Basic Wildland Firefighter, L-180 Human Factors on the Fireline), National Wildfire Coordinating Group, 2004 & 2008

Incident Command System, FEMA, 2004 & 2008

INSTRUMENTAL SKILLS, TECHNIQUES AND SOFTWARE

Acoustic Doppler Current Profiler, Teledyne TD Instruments (Poway, CA)

Agilent 7500ce inductively coupled plasma mass spectrometry (Agilent Technologies, Santa Clara, CA).

ArcGIS/ArcMap (ESRI, Redlands, CA)

Asymmetric Flow Field-Flow Fractionation instrument (FFF - Postnova Analytics, Salt Lake City, Utah).

Dionex ICS-3000 ion chromatograph (Dionex Corporation Sunnyvale, CA).

ECH2O Utility Moisture Probes and Soil Pressure Extractor (Decagon Devices, Pullman, WA)

HOBO Data Loggers. Onset Computer Corporation. (Bourne, MA)

Lachat Instruments with Omnion software (Loveland, CO)

Picarro L2120-i Analyzer Wavelength-Scanned Cavity Ringdown Spectroscopy (Sunnyvale, CA).

Synchrotron-based x-ray absorption and fluorescence spectroscopy (EXAFS and XANES, San Francisco, CA)

Teledyne ISCO 3700 portable automatic water sampler (Teledyne ISCO, Lincoln, NE)

TR55 Urban Hydrology Model for Small Watersheds (HydroCAD Stormwater Modeling, Choccorua, NA)

WinRiver II, Teledyne TD (Poway, CA)

WinSLAMM Stormwater Model (PV & Associates, LLC)

PUBLICATIONS

Knicely, J., A. Fedotova, T. Gatesman, P. Wilson, T. Rowley, and R. Granados-Aguilar, M. R. Lilly, AWRA Spring 2016 Specialty Conference “Water – Energy – Environment”. PreConference Field Trip: Anchorage to Chena Hot Springs Field Guide. Texas A&M University. College Station, Texas.

PROFESSIONAL PRESENTATIONS

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2016). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska. Oral presentation at American Water Resource Association National Spring Specialty Conference. 27 April 2016, Anchorage, AK.

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2016). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska. Oral presentation at UAF Environmental Chemistry Symposium. 122 April 2016, Fairbanks, AK.

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2015). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska. Poster presentation at American Geophysical Union Annual Fall Meeting. 15 December 2015, San Francisco, CA.

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2015). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska. Oral presentation at the American Water Resource Association Annual Water Resource Conference. 17 November 2015, Denver, CO.

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A. (2015). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska. Oral presentation at the Water and Environmental Research Center Symposium. 16 October 2015, Fairbanks, AK

Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T. (2015). Hydrograph partitioning of a sub-arctic glacial watershed, Interior Alaska: A geochemical analysis. Poster presentation at the American Water Resources Association Alaska Chapter Spring Conference. 13 May 2015, Fairbanks, AK.

Gatesman, T.A., Liljedahl, A., Douglas, T., Trainor, T. (2015). Hydrograph separation of a sub-arctic glacial watershed using stable water isotope variation. Oral presentation at the Midnight Sun Science Symposium. 27 March 2015, Fairbanks, AK.

Gatesman, T.A., Liljedahl, A., Douglas, T., Trainor, T. (2015). Hydrograph separation of a sub-arctic glacial watershed using stable water isotope variation. Oral presentation at the Department of Chemistry and Biochemistry, UAF Seminar. 17 February 2015, Fairbanks, AK.

Gatesman, T.A., Liljedahl, A., Douglas, T., Trainor, T. (2014). Hydrograph separation of a sub-arctic glacial watershed using stable water isotope variation. Oral presentation at the Northwest Glaciologists’ Meeting. 17 October 2014, Fairbanks, AK.

OCCURENCES OF APPLIED RESEARCH BENEFITING LOCAL COMMUNITIES

Gatesman, T.A., Gatesman, T.A., Douglas, T., Liljedahl, A., Trainor, T., Gaedeke, A, Orr, A.. (2016). Hydrograph separation of a sub-arctic glacial watershed, Interior Alaska & Jarvis Creek Watershed Project. Poster presentation at the Delta Farm Forum. 20 February 2016. Delta Junction, AK.

Gatesman, T.A., Jacobs, N., Debolskiy, M., Bailey, J., Barnard, C., Douglas, T., Gusmeroli, A., Hock, R., Liljedahl, A., Wagner, A., (2015). What role do glaciers play in terrestrial subarctic hydrology? Poster presentation at the Delta Farm Forum. 21 February 2015. Delta Junction, AK.

Boor, Z, Gatesman, T.A., Morris, K., Hershfelt, S. Bug Week: Indoor and Outdoor Water Resource and Invertebrate Education. Educational Session. East Grand High School. 2012 & 2013. Granby, CO.

Short (Gatesman), T. (2007), Bioretention basins: What are they and how do they benefit the environment. Oral presentation at Midwest Renewable Energy Fair. July 2007. Stevens Point, WI.