Buffalo State College
Individual *Faculty* Information Sheet

Time Frame for Review: July 1, 2005 – June 30, 2006
(Due to Department Chair or Director by June 9, 2006)

Request for information to be used in preparing departmental annual report and as request for discretionary salary increase. *(Discretionary process is dependent on contract.)*
Please limit response to no more than three pages.

Name:	Elisa Bergslien
Department:	Earth Sciences and Science Education
Date:	May 30th, 2006 revised September 15th, 2006

Section I - Summarize your professional activities and accomplishments for the past year.

A. Teaching Effectiveness (include summary of student, peer, and other evaluations; changes in courses that strengthen the classroom experience and student learning)

This past year I taught Introductory Geology (GES101), Hydrogeology (GES 452), Environmental Geochemistry (GES 350), Forensic Geoscience (GES 360/513), and Environmental Field Methods (GES 460). In addition, I mentored independent research projects. I taught Historical Geology (GES 102)/Restless Earth (GES502) last summer and will be doing so again this summer.

I continue to develop materials for my introductory level classes, adding class outlines to the website. The course evaluations for my GES 101 sections averaged 3.4 (out of 4) for the instructor section of the questionare (13-21). Written feedback for the class is still very favorable, with comments including "Thanks! You were very enthusiastic about your work which made things interesting to learn", "I liked everything - the broad scope of the subject gave me a great grasp on the subject" and "I was able to understand the simple aspects of geology better b/c of the instructors ability to explain in detail." The major complaint about the class continues to be that we cover "so much in so little time." Surprisingly, there was much less complaint about the difficulty of the tests this year.

I focused this year on adding field and laboratory experiences to each of my upper-level classes. The Environmental Geochemistry and Hydrogeology classes were rocky this year (course evaluations with instructor averages of 2.62 for GES 350 and 2.39 for GES 452). The major stumbling block was again mathematics - I actually got back comments such as "I though some of the material could have been eliminated i.e. math/derivations." I also kept walking in on students trying to complete homework assignments that they had been hanging on to for a week in the 15 minutes before class. In fact, I had laboratory exercises that we never got to because we spent so much time going backwards over material that they should have already learned - how to covert between units, how to re-arrange an expression and solve for x; all basic math skills that seniors majoring in a science should already have.

The Forensic Geoscience course continues to do very well. Course evaluation scores for GES 360 averaged 3.7 for the instructor section, and 3.04 for GES 513 (one graduate student was unhappy with their project grade I am sure). Feedback tends to be very positive such as, "I enjoyed practical ways to use geology and geological information in my Regents Earth Science classes. I loved this course. I learned a lot." and "I loved the content ! I learned so much, and feel so much more confident in my scientific abilities … I might even switch majors." The biggest complaint about this class was the lack

of good microscopes ("I didn't like the broken microscopes") and limited amounts of materials. I am working on this, and will be applying for another grant (NSF - CCLI probably).

The Environmental Field Methods class went very well this year. The students were very enthusiastic and we accomplished a great deal. The average instructor evaluation score for this course was 3.38. Everyone enjoyed the field work we did this year and I plan to expand on that next year.

I also hosted Dr. DeMarco's PHY 518 Waves AND Optics class one night, giving them an introduction to XRD. I gave a guest lecture to the 1st year Art Conservation Students on XRD and ran some samples for some of their research projects.

B. Scholarship, Research, and Creative Activity (cite works published, professional presentations, performances and exhibitions, grants awarded; describe professional development activities):

I had a commentary published in the May, 2006, issue of Journal of Chemical Education entitled "Avoiding the CSI effect: Keeping the science in forensic science." This article was peer reviewed.

I have an article in press with Journal of Contaminant Hydrology (JCH) entitled "The effect of changes in wettability on two-phase flow in saturated, horizontal, single, natural fractures." The article was submitted in July, 2005. JCH is the number two ranked hydrogeology journal. I have a second article under consideration by the Journal of Hydrology entitled "Measurement of aperture distribution in fractured dolomite via direct and indirect methods – preliminary findings." Some major revisions have been requested, including re-running some measurements. I plan to spend part of the upcoming fall semester work working on this. Plus, I have several articles under development, including ones on heavy metals in human bones, and an assessment of toxic metal distribution in western New York both of which are collaborative project with colleagues at the University at Buffalo.

In June, I submitted a proposal to the Department of Energy's Environmental Remediation Science Program. The proposed course of work follows up the work described in the paper published by JCH. The proposal is entitled "Surface Thermodynamic Analysis of Geologic Surfaces and Implications for Colloid and Solute Transport in Saturated, Single Natural Fractures of Varying Wettability" and is for a total of $ 842,656 over three years.

I presented two papers at the Geological Society of America (GSA) Annual meeting held in Salt Lake City during October, 2005. The first was an oral presentation on the "Farmersville Landfill Saga: Geoscience and the Law." The second was a poster presentation based on the work that I have been doing on my NSF-CCLI grant entitled "Forensic geology: an uncommon approach to rocks, minerals and maps." These led to an *invitation* to speak at the GSA Northeastern Section meeting this past March, 2006. My presentation there was entitled "X-ray diffraction identification of geologic trace evidence: in the classroom and for the courtroom." Based on all of this activity, I was asked to chair a session on forensic geology for the GSA Annual meeting this upcoming October, 2006. Also as a result of my presentations at the 2005 GSA Annual meeting, I was approached to write a textbook, thus I have signed a book contract with Blackwell Publishing to write an introductory Forensic Geoscience text. This project should be completed for publication in about two years.

I was *invited* by the Western New York American Chemical Society Section to give a presentation on "Forensic use of x-ray diffraction for the identification of geologic trace evidence." November 29th, 2005. I also presented a well attended talk entitled "The Arctic National Wildlife Refuge (ANWR): Answer to our oil woes or invaluable wildlife preserve ?" for the BSC Geology Club in December.

I was the mentor for six posters at the Seventh Annual Student Research and Creativity Celebration:

Amherst's Wetlands Have a Negative Effect on Building Foundations by Amy Thorne, Christine Brodlowicz and Talisha Howard (GES 460 - Environmental Field Methods). *Crystallographic Comparison of Dentine in Teeth: Pre- and Post- Cremation* by Marc Bristow (Independent Research). *Do You Know What You're Breathing ?* by Adam Weimer, Chris Gulino, and Matt Bogumil (GES 460 - Environmental Field Methods). *Determining the Presence and Distribution of Selected Heavy Metals in a Playground* by Adam Oleksy and Steven Campagna (GES 460 - Environmental Field Methods). *Sand Analysis* by Laina Gamble and Justin Lyford (GES 513 - Forensic Geology). *Sediment Composition of Selected Geothermally Active Locations in Yellowstone National Park* by Adam Oleksy (Independent Study Project).

As part of my continued growth: I attended an 8-hour refresher course to maintain my OSHA Hazwoper certification and I attended a Hazardous Waste Management Training course. I also attended a UUP sponsored scholarly writing workshop.

Finally, I have received a Nuala McGann Drescher Affirmative Action/Diversity Leave for Fall 2006 and I will be using that time to continue working on the Experimental Thermodynamic Analysis of Clay Mineral – Organic Compound Interactions project. This is a long term study of the structural changes in the fabric of clay minerals due to their contact with non-polar organic contaminants. Plus to work on paper revisions and a requested review article.

C. **Service to the College, Community, Profession (describe extent of involvement and outcomes; cite contribution to the department's advisement efforts; describe any activities beyond normal classroom efforts that supports students)**

College Service:

- I serve on the Research Council and am on the Strategic Planning Sub-committee. I am on the college Radiation Safety Committee.
- I am one of the School of Natural and Social Sciences representatives on the College Senate and am on the College Academic Plan Committee.
- I am a member of the Undergraduate Committee in the Earth Science & Science Education Department, plus I am the departmental Safety Officer (currently compiling a departmental chemical inventory), Instructional Review Board Representative and Library Liaison.
- I am an active member of the Women in Science and Mathematics committee which hosted several speakers this past semester, including a planetary geologist that I invited.

Work with Students:

- I am an active student advisor, with an official list of several advisees, plus several other students who visit for suggestions regarding their course selection. I also advised several students this year at the Transfer and First-Year Student Orientations, and will do so again this summer.

Community Service:

- I am performing local analysis of the Delaware Park area to assist in a larger effort to track pollutants in the Buffalo area.
- I am still serving as a consultant to Gary A. Abraham, Esq., of the Concerned Citizens of Cattaraugus County, Inc. on the Farmersville Landfill issue. I have preformed some analysis of the geological and hydrogeologic issues associated with the proposed sitting of the landfill.

Professional Service:

- Member in good standing of the Geological Society of America, the American Geophysical Union, the National Ground Water Association and the Clay Minerals Society.
- I was invited to become a reviewer for the Journal of South American Earth Sciences and have reviewed an article entitled "Surface and groundwater quality in the northeastern region of Buenos Aires Province, Argentina" by G. Galindo, C. Sainato, C. Dapena, J.L. Fernandez-Turiel, D. Gimeno, M.C. Pomposiello & H.O. Panarello