February 10, 2003

Dr. Mark W. Stotler
West Virginia Higher Education Policy Commission
1018 Kanawha Boulevard East, Suite 700
Charleston, WV 25301

Dear Dr. Stotler,

The West Virginia Geological and Economic Survey, Fairmont State College, and West Virginia University have a sustained history of working with K-12 teachers. Our previous successes are, in part, the result of a staff which includes science educators and professional earth scientists from the RockCamp Project. Since 1992, RockCamp has provided introductory and advanced classroom and field experiences to West Virginia science teachers. GEOCATS 4C is very much based on our collective RockCamp experiences.

As we enter our second decade of cooperative endeavors attention to feedback from participants encourages us to pilot a non-residential program focused on the geology of single counties, relevant classroom activities, and integration of geology content within the CATS curriculum.

Thus, GEOCATS 4C objectives are twofold. First, focus on those concepts which enhances a teacher's ability to incorporate and teach earth science components mandated by the West Virginia Coordinated and Thematic Science (CATS) curriculum. Second, engage individuals in sound inquiry-based instruction where they come to understand content by constantly comparing, contrasting, and connecting classroom and field observations, measurements, and conclusions.

We believe GEOCATS 4C will strengthen each participant's ability to provide their students with relevant earth science instruction. With this proposal, we ask for funding to offer this program to 26 Marion County K-12 teachers.

Sincerely,

Dr. Thomas E. Repine, Jr.
Education Specialist

GEOCATS 4C

Submitted by

The West Virginia Geological and Economic Survey
Mont Chateau Research Center
I Mont Chateau Road, Morgantown, WV 26508
(304) 594-2331

School of Science and Mathematics
Fairmont State College
1201 Locust Avenue
Fairmont WV 26554

Department of Geology and Geography
West Virginia University
425 White Hall, P.O. Box 6300
Morgantown, WV 26506

Marion County Schools
200 Gaston Avenue
Fairmont, WV 26554

February 10, 2003

II. Teachers Served

GEOCATS 4C will address all of the six overarching science educational standards as set forth in the West Virginia Department of Education Content Standards and Objectives (Policy 2520, effective March 2003, http://wvde.state.wv.us/igos/). These include: (1) History and Nature of Science, (2) Science as Inquiry, (3) Unifying Themes, (4) Science Subject Matter/Concepts, (5) Scientific Design and Application, and (6) Science in Personal and Social Perspectives. Specific grade level Content Standards and Objectives which GEOCATS 4C participants will be able to address as a result of their newly acquired knowledge are provided in Table 1.

GEOCATS will do this by working with 26 K-12 science teachers in Marion County. These teachers will be engaged in situations requiring them to compare, contrast, connect, and construct prior and newly-acquired knowledge. This process will allow participants to see how pertinent Content Standards and Objectives can be implemented in their classrooms. Their experience will mirror the model of an effective and meaningful professional development experience outlined by Loucks-Horsley, Hewson, Love, and Stiles (1998, p. 13):

> [T]he teachers are students again, but this is different from anything else they experienced when they were in college. The way in which they are learning is different: The teachers are investigating an open question that seems simple and clear but requires a complex, involved answer. They interact with one another and the instructors with interest and frustrations; there is nothing repetitive in what they are doing. The science these teachers are doing is different: They are gathering information, making hypotheses, and arguing about the interplay of various factors. There is no book with the correct answers in the back, but there is an opportunity to learn science content from experts on the spot, when it is appropriate. The teaching they are experiencing is different: Their instructors ask as many questions as they answer; many of those questions seem to have many possible answers; and the instructors have set the content for their activity and provided extensive resources for the teachers to use, but they have not shown them [explicitly] what to do [or how to do it.].

Week one will consist of five daily sessions (Table 1) from 8:00AM to 6:00PM. Two hours of West Virginia University graduate credit in geology will be available to participants completing these 50 instructional hours. An additional graduate credit may be earned by participating in all three Capstone Event Field Sessions (30 hours). Thus, participants will be eligible to earn a total of three graduate geology credits. GEOCATS will use facilities classroom and laboratory space at Fairmont State College.

GEOCATS will serve 26 educators in need, as identified by Marion County officials, of earth science instruction, classroom activities, and/or pedagogical improvement. Eligible professionals will be K-12 educators of science with an emphasis on those in high need schools, low performing areas, or high poverty schools. After the classroom portion of their GEOCATS experience, all participants will be encouraged to engage in three single-day Capstone Events.

These field events will emphasize the citizen-relevant geology of Marion County and contiguous areas. Visits to various mining operations, outcrops, fossil collecting localities, building sites, and existing companies employing technology will demonstrate practical reasons for understanding and using the classroom content and activities received the week before.

Each participant will submit, on or before December 1, 2003, a GEOCATS unit. This grade-appropriate plan will illustrate ways in which newly acquired skills and knowledge have been compared, contrasted, connected, and constructed into a single unifying topic which can be used to enhance student's understanding of Marion County. Part of this effort will require participants to adapt existing GEOCATS materials for their own classroom environments. All units will be compiled into a single volume disseminated in hard copy and CD to program participants. Further direct influence will be obtained by making enough copies so that every Marion County science teacher receives a CD of GEOCATS material free of charge. Indirect distribution of GEOCATS material, by electronic posting on WVGES, WVU, and FSC web sites will extend the number of teachers who may benefit from GEOCATS. Finally, participants will be encouraged to participate in a GEOCATS shar-a-thon to be proposed for the 2003 meeting of the West Virginia Science Teachers Association.

III. Statement of Need

GEOCATS strives to promote a different way of teaching earth science at the K-12 level. We will correlate the program's content and pedagogy to established standards. For example, Part D of the Content Standards of the National Science Education Standards (National Research Council, 1996) outlines required earth science skills. These include, at the K-4 level, the properties of earth materials (rocks, soils, and fossils). At the middle school level (grades 5 - 8) understandings of the structure of the earth system (rock cycle, plate tectonics, and land forms) are mandated. Finally, at the grade 9 - 12 level, the standards call for an improved understanding of geochemical cycles such as movements of matter through the system that is the earth. These, and other ideas, will provide scaffolds from which we may effectively work with the participants.

Earth Science/Geology is also one of the four pillars of the West Virginia Coordinated and Thematic Science Curriculum (WVDE, 2001). Ironically, no West Virginia institution of higher education offers certification in earth science/geology. At best, pre-service teachers may have had access to two descriptive, survey-styled, geology courses. More critically, elementary pre-service educators are not required to take any earth science courses. This situation cannot produce proficient teachers of geology. Thus, all current West Virginia in-service science educators teaching earth science/geology are practicing "out of field." As a result, they have not been adequately prepared to provide students with either the content nor activities required to meet the earth science standards.

What little earth science/geology knowledge and training these teachers have is most likely based on the traditional lecture-based higher education methodology. If teachers most often teach as they have learned, they are predestined to perpetuate the myth that science is nothing more than an acquired mass of unconnected facts. Through no fault of theirs, many teachers do not posses the skills required to engage students in inquiry-based earth science learning. As a result, their students do not develop the life-long habits of learning required to make an understanding of the earth sciences personally relevant (Rutherford & Ahlgren 1990). By modeling proper pedagogies, while teaching the science content, we will enhance the use of such constructivist teaching techniques within a CATS environment.

The traditional approach to earth science professional development consists of a broad ranging workshop offering a multitude of facts crammed into a short amount of time. They are essentially content driven. As a result, the teacher's understanding of the nature of science or how science "works" remains overlooked (Foley, 1997). GEOCATS deviates from this pattern. By making participants compare, contrast, and connect we will help them construct personally relevant, yet technically sound, understanding. And, we wish to aide them in identifying and reconstructing misconceptions.

GEOCATS will accomplish this through content and methodologically-focused sessions. We propose in-depth targeting of fewer basic concepts. Specifically, the program will enhance the teacher's skills in using and bringing geology manipulatives to his/her students. Instead of teaching by telling, we will engage participants in numerous inquiry experiences. Gilmer (1997) found that in-service participants learn, and retain what they have learned, best when immersed in challenging communal events because shared discoveries often blossom into collectively useful and shared ideas, activities, and innovations. Thus, while each event provides participants with new ideas for classroom activities, the overall effect is the promotion of a modified understanding of how science can be taught. This idea has been verified by studies investigating RockCamp participants (Meehan, 1995 and 1997; Repine, 2002) and final reports filed for previous Higher Education Policy Funded Programs of 2000, 2001, and 2002 .

Finally, inquiry-learning occurring within a situated learning atmosphere is not conducive to meaningful professional development if the instructor is required to cope with a large number of learners. Transporting and discussing geologic features in field locations such as outcrops and road cuts is best done in very small groups. Thus, a low ratio of scientists to project participants is required and explains the project policy of four primary instructors and two assistants.

IV. Plan of Implementation

March:	Applications distributed to Marion County teachers. (Instructor time = 10 hours)
April:	Review of applications and selection and notification of participants. (Instructor time = 20 hours)
May:	Orientation meeting at Fairmont State College with Program Staff. Outlines for expected work. Guidelines for safety. Evaluation protocol established. Pre-test procedure devised. Materials purchased. (Instructor time = 20 hours)
June:	Staff and RockCamp Implementation Teachers meet to organize physical space, field trips, materials, and procedures. (Instructor time = 60 hours)
July:	Five days (50 hours) of classroom instruction and three days (30 hours) of field instruction. (Instructor time = 100 hours, Participant time = 80 hours). Post-testing.
August:	Evaluation of pre- and post-test data. (Instructor time = 10 hours)
September:	Follow-up session to review unit plans, offer assistance, and plan for WVSTA session. (Instructor time = 10 hours, Participant time = 6 hours)
October:	Conduct WVSTA session, final participant preparation of unit plans. (Instructor time = 8 hours. Participant time = 10 hours)
November:	Review assessment data and prepare final report. (Instructors time = 40 hours)

V. Intra-Institutional Cooperation

This program is proposed as a joint venture of the West Virginia Geological Survey (WVGES), Fairmont State College (FSC), West Virginia University (WVU), and Marion County Schools. The WVGES is a not-for-profit State government agency with a full-time Educational Specialist devoted to K-12 earth science education. This individual will serve as Project Director and Primary Instructional Consultant. The Coordinator of Science Education at Fairmont State College will serve as Primary Instructional Consultant/Project Evaluator. She will provide pedagogical direction for both staff and participants by modeling lessons which effectively demonstrate constructivist techniques in accordance with state and national standards. Professors of Geology from the Geology and Geography Department of West Virginia University School of Arts and Sciences will serve as Primary Instructional Consultants responsible for content and field experiences. Letters of commitment may be found at the end of this proposal.

VI. Local School Involvement

The LEA for this project will be Marion County Schools of north-central West Virginia. As a result, the instructional efforts of GEOCATS will be their home county. However, we feel that a successful completion of this project will provide the experience and knowledge needed to offer the GEOCATS to other counties in the future. Thus, a long term vision foresees the possibility of a large audience for GEOCATS.

VII. Evaluation

Formative evaluation of participant progress and reaction to the experience will be maintained by Dr. Deb Hemler, Science Education Coordinator at Fairmont State College. Dr. Hemler's doctoral work evaluated summer research workshops for teachers conducted as part of an NSF-funded project by the National Radio Astronomy Observatory (Hemler, 1997). She will conduct pre and post institute assessments. Quantitative instruments, such as Lickert scale tools, will evaluate GEOCATS' effectiveness in enhancing content knowledge and the impact of the program's pedagogical methods. Qualitative techniques will assess the participant's awareness of a new method of teaching earth science and how they envision using it in their classrooms. Dr. Thomas Repine, who has experience in such evaluation (Repine, 2002), will conduct this work. In addition, instruments will be designed and administered to gauge how well GEOCATS has met participant needs, explore expectations versus experiences, and derive constructive comments for improvements. This data will be compiled into a summative evaluation to accompany the GEOCATS final report. Finally, post-GEOCATS data not available for the final report will be collected for publication/presentation purposes. Initially obtained by district curriculum staff and teachers, this data will be used to investigate the role GEOCATS professional development plays in student achievement.

VIII. Program Personnel

Project Director/Primary Instructional Consultant/Evaluator: Dr. Thomas E. Repine, West Virginia Geological and Economic Survey, Morgantown. A former middle school science teacher with a bachelor's degree in earth science education and a masters degree in geology from Indiana University of Pennsylvania, he holds an Ed.D. in Earth Science Education from West Virginia University. Before assuming the position of RockCamp Director and WVGES Education Specialist he served the WVGES as a coal geologist for 17 years. He served on the Advisory Councils of Project CATS and Chairs the West Virginia North Central Mathematics, Science and Technology Consortium (MSTC). From 1990 – 1994 he was an adjunct instructor at Fairmont State College. He is an adjunct instructor in the WVU Geology Department. In addition to GEOCATS teaching duties, Dr. Repine will be responsible for the fiscal budget, and acquisition and logistics of clerical personnel, specialized classroom materials, maps, publications, samples, paper and electronic reproduction/distribution services.

Primary Instructional Consultant/Primary Project Evaluator: Dr. Deb Hemler, Assistant Professor and Science Education Coordinator at Fairmon State College. She received her bachelors degree in biology from Northland College and holds masters degree and an Ed.D. in Earth Science Education from West Virginia University. For three years she was a Visiting Assistant Professor of Science Education at WVU. She was a CATS Component Coordinator and serves as Higher Education Liaison for the West Virginia Science Teachers Association. She has seven years of experience teaching earth science in West Virginia public schools during which she was awarded the IC White Earth Science Education Award for the State of West Virginia.

Primary Instructional Consultant: Dr. John J. Renton, Professor of Geology, Eberly College of Arts and Sciences, Department of Geology and Geography, West Virginia University. Dr. Renton holds undergraduate degrees in chemistry and a PhD in geology. He has been a professor of geology at West Virginia University for 38 years. During this time he has conducted extensive research in coal geology, coal geochemistry, and coal formation. He is author of the introductory geology textbook called *Plant Earth.* His long and distinguished teaching and research career has been recently recognized when he was awarded the 2002 Eberly Family Chair for Distinguished Teaching. Dr. Renton is also an accomplished artist who uses his skills to help students visualize geologic concepts.

Primary Instructional Consultant: Dr. Robert E. Behling, Professor of Geology, Eberly College of Arts and Sciences, Department of Geology and Geography, West Virginia University. Dr. Behling has been helping West Virginia teachers learn geology for more than 30 years. He has extensive experience in conducting field excursions and is known for his inquiry-based methods which "make participants think." He is the primary field trip leader for RockCamp. He is also the lead instructor for the CATS Distance Education Geology Connections Courses. Dr. Behling served as Co-PI for Earth Science in West Virginia for the 21st Century and now serves as a Co-Director of RockCamp. He will also be the professor of record for the program, responsible for evaluating work performed and awarding graduate science credits to participants.

Instructional Assistants: Two RockCamp graduates with extensive training and proven professional outreach expertise in 4C pedagogical methods and classroom applications will serve as Instructional Assistants. Their role will be to demonstrate ways in which they use the 4C pedagogy to teach students, share activities which prompt inquiry-learning, and maintain clear and unambiguous lines of communication between staff and participants. They will also assist participants in the development of required unit plans.

IX. Fiscal Resources and Budget

To implement GEOCATS 4C for 26 Marion County educators of science, our coalition requests we request $35,000 from the Improving Teacher Quality State Grants Program. The proposed budget may be found in Table 2. Contributions by the involved agencies in the form of travel expenses for project staff and peer instructors, projection and other audio visual equipment, and photocopying and required supplies will total $9,000.

Literature Cited

Foley, K.R. 1997. A teacher immersed in scientific research: It's impact on her teaching practice. Paper presented at the National Association for Research in Science Teaching, Oak Brook, Il.

Gilmer, P.J. 1997. Teacher learning science by doing science. Paper presented at the National association for Research in Science Teaching, Oak Brook, Il.

Loucks-Horsley, S., Hewson, P.W., Love, N., & Stiles, K.E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press Incorporated.

Meehan, M. (1997). Comprehensive evaluation of a statewide three-year teacher enhancement project in earth science education. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Meehan, M., Hambrick, K., & Crowely, K. 1995. Final evaluation report: Earth Science in West Virginia for the twenty-first century (RockCamp). Appalachian Educational Laboratory, Charleston, WV.

National Research Council. 1996. *National Science Education Standards*. Washington DC: National Academy Press.

Repine, T. 2002. Recurrent participation in RockCamp: Perceptions of a K-12 professional development program in geology. Unpublished doctoral dissertation. West Virginia University.

Rutherford, F.J. and Ahlgren, A. 1990. *Science for All Americans*. New York: Oxford University Press.

West Virginia Department of Education, 2001. Barnhart, P., personal communication on Project CATS investigations into the discipline needs and wants of West Virginia science teachers.

Day	Pedagogical Focus	Activity/Content	Science Grade-level Content Standards and Objectives Participants Will Be Able To Address In Their Classrooms
1	Skills Exploration Using 4C Pedagogy	Pre-Evaluation; Modeling Geologic Time; Topographic Maps; Geologic Maps; Field Use of Maps Exercise	SC1.2.2, SC2.2.2, SC3.2.4, SC3.4.22, SC4.1.1, SC4.2.4, SC52.4, SC5.2.7, SC5.4.19, SC5.4.22, SC6.2.1, SC7.4.28, SC8.2.1, SC8.3.3, SC9.3.2, SC9.3.33, SC9.4.39, SC10.3.2, AB4.21, AC4.1, AC4.7, CTC3.2, AES3.2, AES4.13
2		Identification of Minerals; Identification of Rocks; Identification of Fossils; Local Field Trip Connecting Discoveries with Field Observations.	SCK2.2, SCK2.3, SCK4.1, SC1.2.4, SC2.2.1, SC2.4.19, SC2.4.20, SC3.4.15, SC3.4.20, SC3.4.21, SC4,4,33, SC4,4,34, SC5.4.25, SC6.2.2, SC6.2.4, SC7.2.2, SC7.2.3, SC7.4.15, SC8.2.2, SC8.2.3, SC9.1.1, SC9.2.1, SC9.4.29, SC9.4.30, CTC3.1, AES4.4, AES4.7, AES4.8
3		Recognizing and Interpreting a Changing Earth: Plate Tectonics Volcanoes, Earthquakes; Erosion and Weathering; the real Rock Cycle.	SC1.3.2, SC1.4.7, SC3.3.1, SC3.4.23, SC4.3.4, SC5.4.12, SC5.4.18, SC5.4.25, SC6.1.2, SC6.3.1, SC6.3.2, SC6.4.26, SC7.3.2, SC8.3.1,SC8.3.2, SC4.25, SC8.4.26, SC9.4.18, SC9.4.26, SC9.4.36, SC9.4.37, SC10.1.3, SC10.1.4, SC10.4.32, SC10.4.32, SC10.4.34, AES1.5, AES1.6, AES4.2, AES4.3, AES4.8, AES4.10, AES4.11
4		Geologic and Depositional Structures, Mineral Economics, Reserve Calculation and Subsidence Issues.	SCK 3.1, SCK3.2,SC1.1.2, SC3.2.6, SC3.4.6, SC4.1.3, SC4.3.3, SC4.6.1, SC5.2.8, SC5.4.23, SC5.6.1., SC5.6.2, SC6.4.27, SC7.1.2, SC7.2.6, SC8.2.6, SC8.2.7, SC8.4.18, SC8.4.28, SC8.4.29, SC8.4.30, SC9.1.4, SC9.3.4, SC9.4.13, SC9.4.35, SC9.6.1, SC9.6.2, SC10.2.6, SC10.2.7, SC10.3.3, SC10.3.4, AES2.3, AES2.7, AES4.29, AES4.30, AES4.33, AES4.34
5	Emphasizing connections and relevancy	Explore West Virginia's Geologic Past (CD-ROM); Review with Questions/Answers; Post-Evaluation; Assignment of Reflective Exercise.	SCK4.4, SC1.6.1, SC4.2.2, SC5.1.1, SC5.1.3, SC5.3.1, SC7.4.29, SC8.1.1, SC8.1.2, SC8.1.3, SC10.3.1, SC10.4.36, SC10.4.37, SC10.4.39, AES4.4, AES4.5
6,7,8	Three day-long trips to compare, contrast, connect, and construct final content and educational applications.	Modeling in Field Locations Useful to Teachers and Students. Include Geology, Technology, Engineering, Social Issues, and Careers.	SCK1.1, SCK4.12, SC1.4.17, SC1.4.19, SC3.4.16, SC4.2.6, SC4.4.11, SC4.6.1, SC5.3.2, SC5.4.21, SC5.51, SC5.5.2, SC5.6.4, SC6.1.1, SC6.2.7, SC6.2.8, SC6.3.3, SC6.5.2, SC6.6.2, SC6.6.4, SC7.1.1, SC7.1.3, SC7.6.1, SC7.6.2, SC7.6.4, SC8.2.8, SC8.5.2, SC8.5.3, SC8.6.1, SC8.6.2, SC8.6.4, SC9.2.5, SC9.2.7, SC9.5.1, SC9.6.4, SC9.6.5, SC10.1.1, SC10.1.2, AES4.35, AES4.36, AES4.37, AES4.38 SC10.2.1, SC10.2.2, SC10.2.2, SC10.2.5, SC10.5.1, SC10.5.2, SC10.6.2, SC10.6.3, SC10.6.5, AES1.1, AES1.2, AES1.3, AES1.4, AES2.1, AES2.2, AES2.5, AES6.3

Table 1. Proposed GEOCATS 4C schedule, pedagogy, events, and science content standards.

March 11, 2003

Dr. Mark W. Stotler
West Virginia Higher Education Policy Commission
1018 Kanawha Boulevard East, Suite 700
Charleston, WV 25301

Dear Dr. Stotler,

On March 6, 2003 I received an e-mail stating the ITQ proposal,"GEOCATS 4C," had been conditionally approved for funding in the amount of $35,000. In that e-mail you listed two items requiring further documentation.

The first was a revised budget. You suggested this reduction be accomplished by trimming personnel costs. Upon doing this, I forwarded to you, via e-mail, a budget labeled "Table 2. Revised GEOCATS 4C Budget, March 6, 2003." A copy of that budget accompanies this letter.

The second item was that: "...the committee further requested that you develop a plan that will ensure that teachers from high need schools are given priority." To address this concern I used information obtained from various government agencies and the Marion County Board of Education. This data allowed me to construct Table 3. Eleven schools in Marion County have more than 50% of their student body enrolled in free lunch programs. To address the issue of selecting teachers from high needs school, GEOCATS 4C will give priority to selecting teachers representing the first eleven schools in Table 3. This will ensure teachers working with the greatest number of at-need students will have the opportunity to return to their classrooms with new materials, ideas, and activities.

I hope these two actions address your stated concerns and allow us to officially proceed. If you require more information, or these actions are not suitable, please let me know. I would encourage you to place this letter, as an attachment, to our grant proposal. Our most immediate step is to, as rapidly as possible, get information and application forms into the hands of these teachers. I look forward to obtaining official notification of our grant.

Sincerely,

Dr. Thomas E. Repine, Jr.
Education Specialist

MARION COUNTY BOARD OF EDUCATION

200 GASTON AVENUE
FAIRMONT, WEST VIRGINIA 26554

Thomas E. Long
Superintendent

(304)-367-2100

January 28, 2003

Dr. Thomas Repine
WV Geological and Economic Survey
1 Mont Chateau Road
Morgantown, WV 26508

Dear Dr. Repine:

On behalf of the Marion County Board of Education, I wish to congratulate you on your efforts to secure a Title II Teacher Quality grant (GEOCATS 4C) for Marion County teachers to receive professional development in geology. As you know, West Virginia teachers can not receive a certification in Earth Science – yet, one-fourth of the K-10 science curriculum is devoted to Earth Science topics. This project will provide the content knowledge needed by our teachers as well as greatly enhance our current efforts to improve student achievement in science.

Toward meeting the goals of the GEOCATS grant, the Marion County Board of Education will:

- Distribute materials relevant to the GEOCATS program to our teachers
- Assist with the selection of teacher participants
- Provide county entitlement (Title II) funds at the rate of $50 per teacher for classroom resources and instructional materials relevant to the topics taught during the GEOCATS program
- Provide curriculum and instructional assistance to teachers as they develop GEOCATS units
- Provide substitutes and travel costs for teachers attending the WVSTA conference
- Provide student assessment data to verify impact of GEOCATS on student achievement

Once again, thank you for your efforts to bring quality educational programs to our students and staff. If I can be of further assistance, please do not hesitate to call.

With warmest regards,

Thomas E. Long
Superintendent

West Virginia University
Eberly College of Arts and Sciences

MEMORANDUM

To: Review Committee; No Child Left Behind Grant Proposal
From: Dr. Trevor Harris, Department Chair
Date: January 31, 2003
Re: Grant Proposal: GEOCATS 4C

It is with great pleasure that I report the support that will be forthcoming for the GEOCATS 4C Grant under the auspices of the No Child Left Behind Act of 2001. Our Department of Geology and Geography has a long, strong documented history of working with K-12 teachers in West Virginia with respect to Geology and Earth Science Education. This proposal, if funded, will open a new chapter in the delivery of fundamental concepts of earth science and teaching technologies. For over 30 years, teachers in Marion County have participated in a variety of ways in graduate level offerings in Geology. From telecourses to field-based trips, K-12 teachers in a variety of disciplines in Marion County have demonstrated their desire to enhance their personal skills as they teach science. Further, they have shown a holistic approach in that teachers of mathematics, art, history, English, social studies and such can incorporate skills and content based on the natural world in which we work and learn.

Dr. Jack Renton, Eberly Professor of Geology for Distinguished Teaching, and CASE Teacher of the year for 2001, and Dr. Robert E. Behling will be engaged in the entirety of this proposal should it be funded. They both have won multiple awards for the demonstrated teaching skills. Those teachers who participate will not only have the opportunity to work one-on-one with two of our very best educators in the department, but we will also offer graduate credit to those who participants who seek to gain permanent recognition of their efforts.

We have a long, strong tradition in working with K-12 teachers throughout the state. This proposal, if funded, will continue to enhance that record. Please do not hesitate to call upon me for further comments of support if they are needed. I stand ready to lend my complete concurrence with the proposed project.

Department of Geology and Geography

425 White Hall
PO Box 6300
Morgantown, WV 26506-6300

Phone: 304-293-5603
Fax: 304-293-6522

Office of the
School of Science
and Mathematics

FAIRMONT STATE COLLEGE

1201 Locust Avenue
Fairmont, West Virginia 26554-2470

304 367.4642
FAX: 304 367.4304

February 7, 2003

Letter of Support

From: Dr. Phillip Mason, Chair Science and Mathematics
Fairmont State College
1201 Locust Avenue
Fairmont, WV 26554

To: Dr. Tom Repine, GEOCATS 4C Project Director
Re: GEOCATS 4C Project

As the Chair of the School of Science and Mathematics, I recognize the importance of endorsing teacher enhancement for science educators in West Virginia. I am pleased to have Fairmont State College's science educator serve as the GEOCATS 4C primary instructor of science pedagogy and project evaluator. In addition, Fairmont State College, under the supervision of Dr. Hemler, pledges to provide the lab space and necessary equipment to conduct the workshops.

Fairmont State College's School of Science and Mathematics fully endorses the funding of this No Child Left Behind Proposal.

Respectfully,

Phillip Mason

Phillip Mason