Proposal to the United States National Aeronautics and Space Administration (NASA) from Mid-Atlantic Regional Space Grant Consortium in the 2003 Aerospace Workforce Development Competition National Space Grant College and Fellowship Program for supplementary funding in the amount of $250,000 for the current fiscal year

Principal Investigator: Professor Richard Conn Henry
Department of Physics and Astronomy
The Johns Hopkins University, Baltimore, MD, USA
410-516-7350 (vox), 410-516-4109 (fax), henry@jhu.edu

Consortium Concurrence Sheet: The participating Directors agree with the content of the proposal.

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CERTIFICATION

Certification of Compliance with Applicable Executive Orders and U.S. Code
By signing and submitting the proposal identified in this Cover Sheet/Proposal Summary in response to the NASA request for a proposal under the National Space Grant College and Fellowship Program, the Authorizing Official of the proposing institution, as identified below:
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Institutional Authorization:
The Johns Hopkins University: Jennifer Barron, Senior Sponsored Projects Officer Date

The Proposal Call was issued by NASA’s Education Division, Office of Human Resources and Education, 2003
I. Introduction

This Proposal is from the Mid-Atlantic Regional Space Grant Consortium in response to the 2003 Announcement of the **Aerospace Workforce Development Competition** by the Education Division of the National Aeronautics and Space Administration, NASA. We request an augmentation to our ongoing Space Grant Training Grants by a total of $250,000 to be divided equally among the 12 participating Space Grant Consortia (with the one exception being that MDSGC, because of its extra expenses connected with its leadership role, should receive $30,000). We will provide a brief final report at the conclusion of the proposed new work.

The Mid-Atlantic Regional Space Grant Consortium was formed some years ago by Mary Sandy of VASGC, and is currently led by Dick Henry of MDSGC. **For the purposes of the present proposal, the Mid-Atlantic Region is expanded to include five states in the northeast** (see the map on this page, to be compared with the map on the proposal cover: the latter shows the formal “Mid-Atlantic” states). The reason for choice of states for participation in the present proposal is that every one of the proposing states has already participated successfully in the activity proposed (see Table, page 8, documenting participation levels).

Our proposal centers on providing advanced training to teachers, college students and college faculty in the area of impervious surface mapping and water quality monitoring, the latter with special emphasis on the Chesapeake Bay which (see map) is a dominating geographic feature of the Mid-Atlantic states.

We emphasize **teacher** training because this is Higher Education (the teachers in question almost all have undergraduate degrees), and because of the powerful leveraging this training and research experience gives to our workforce investment: the teachers (later) teach the students in the techniques (GIS, water quality kits, GPS use, computer registration of data over the internet, etc., etc.) that produce the research but that also introduce their students to techniques that are of fundamental importance in their future employment and which direct their attention toward areas that are of prime concern to NASA’s own workforce development. Inclusion of college professors and students, as well as K-12 teachers, in this proposal to receive advanced training will result in “synergetic” collaboration among K-12 and higher education participants in this extensive multi-year project. We are confident that the present higher education proposal can result in the attraction of a substantial numbers of students across the Mid-Atlantic and North East areas in career directions from which NASA will subsequently benefit.

**Figure 1. NASA Administrator Sean O’Keefe:** “the Hart-Rudman Commission has this to say: The harsh fact is that the US need for the highest quality human capital in science, mathematics, and engineering is not being met.” (Syracuse University, 2002 April 12)

**The NASA Mission:** ...To inspire the next generation of explorers ... as only NASA can.
II. Program

The outline of the program proposed by the Mid-Atlantic Regional Space Grant Consortium is as follows:

1. In each participating state, the local Space Grant Consortium will select five K-12 teachers for higher education training, ten undergraduate university students in science, math, and engineering, and five college professors (including Community Colleges) to participate in this program of Synergy and Water Quality monitoring.

2. All twenty participants will undergo a training workshop on GPS, fundamentals of GIS, water quality monitoring, and ground-truthing.

3. Five teams of four members will be formed. Each team will consist of one degree teacher, two college students, and one college professor.

4. The team will be trained in the science and in ground-truthing (as specified by the CBWI and Synergy projects). College students will interact with the K-12 teachers to increase each other’s enthusiasm in science and math. The college professor will serve as the technical advisor for each team, and as a mentor, deepening the science training.

Our plan is focused on fulfilling several goals simultaneously. By training teachers, college students, and faculty members from colleges affiliated with our various Consortia, we will:

1. Bring state of the art training to teachers that will ultimately benefit K-12 students,

2. Get college students involved in a NASA sponsored project that will undoubtedly encourage them to stay in science and engineering fields and remain a participant in the workforce development pipeline, and

3. Get faculty involved in a mentoring relationship with college students and teachers. These faculty will serve as role models as well as science advisors for the project.

Manifestly, this model is a win for NASA; for college faculty and students; and for K-12 teachers.

Mid-Atlantic Synergy. In 2001 October a hugely successful Mid-Atlantic Regional Meeting was held in Baltimore that resulted in nine states sending teachers to Hagerstown Community College, Hagerstown, MD, to be trained in a NASA Raytheon Impervious Surface mapping activity. This program was created within MD for the first phase; the Regional Meeting resulted in the second phase; the last national Workforce proposal round produced the third phase; this proposal is toward the fourth phase. The addition of non-Chesapeake-bay-watershed states in the present proposal demonstrates that this valuable activity is exportable to watersheds beyond the Chesapeake Bay.

In particular, the Center for Geographic Information Sciences (CGIS) at MDSGC Affiliate Towson University is involved in the third year of a NASA/Raytheon Synergy project (http://www.earth-outlook.com). The purpose of this project is to characterize the landscape of the Chesapeake Bay watershed and Mid-Atlantic region using Landsat 7 imagery. To date, emphasis has been placed on the mapping of impervious surfaces, urban sprawl, and forest fragmentation. Efforts this year involve mapping forest and agricultural land cover. To provide ground truth data in support of this project, GPS receivers have been distributed to nearly 150 K-12 teachers throughout the Mid-Atlantic region. Using a “Globe-like” protocol, teachers (and their students) have collected nearly 10,000 ground control points for various land covers to date.

NASA Goddard Space Flight Center’s (GSFC) Education Programs Office supports this program as one of the more effective ways to expose the educational community to the applications and benefits of remote sensing and other forms of NASA-led space technology. Of value to NASA is the fact that teachers (and, later, their students) are participating in an authentic space science research program with visible and tangible outcomes benefiting their local and regional communities. The heavy emphasis on Landsat and other space-based imaging systems applications, combined with Global Positioning Systems use, provides a stimulus for teachers to expose, later, their students to exploration of career opportunities in the aerospace science industry. The GSFC Education Programs Office has helped MDSGC, Towson’s educational outreach partner in the Synergy Project, identify teachers wanting to participate in this program, as well as supported the training of teachers in remote sensing and GIS. The response has been positive with a measurable outcome. Expansion of the Synergy Project now includes many states (see below). These states
also are part of Goddard’s Education Programs’ Northeast customer region. In this way, the present proposal is very supportive of the mission of NASA’s Goddard Space Flight Center and of the new Education Enterprise.

Funding under this component of the present Mid-Atlantic workforce development proposal will be used: 1) to involve additional K-12 teachers plus college faculty and students in the ground truth data collection project; 2) to provide training in all proposing Mid-Atlantic (extended!) states; and 3) to develop undergraduate remote sensing/digital image processing instructional materials. In addition to involving more trainees in this project, CGIS staff will provide “on-site” training for teachers in other Mid-Atlantic and North-Eastern states. The development of instructional materials will include preparation of lessons to train undergraduate students, and teachers, in the use of digital image processing techniques using MultiSpec and Landsat data readily available at “Chesapeake and Mid-Atlantic from Space” (http://chesapeake.towson.edu).

Evaluation will include: 1) increase of Mid-Atlantic state involvement in program; 2) increased teacher focus on student interest in higher level math and science classes; 3) increase in teachers’ ability to supervise science fair projects; 4) increase in teacher professional development; 5) Faculty development, and 6) implementation of exportable national model.

**Mid-Atlantic CBWI (Chesapeake Bay Watershed Initiative) and Water Quality Monitoring Training.** The CBWI is a joint effort by multiple Space Grant institutions in the mid-Atlantic region and neighboring states, with the Education Programs and University Programs Offices at GSFC as collaborators, to train teachers to introduce students to aerospace science and technology while engaging them in an authentic environmental research activity benefiting their immediate and surrounding communities. It involves studies of water quality in tributaries of the major bays along the U.S. East Coast, and connects ground-based observations with meteorology and space-based remote sensing. Teachers are trained so that subsequently, at two-week intervals, and at a given site, they make in situ measurements of water quality (especially nutrient levels), and water temperature and turbidity, and record weather data, forwarding this information to an electronic database accessible to all, and maintained by MDSGC. Over the course of several months, teachers (and their students) use all in situ water and weather observations and satellite imagery to investigate sources, causes and effects of changes in nutrient levels as well as bank erosion and stream sedimentation.

NASA is a signatory to the Chesapeake Bay Agreement which, among other things, engages NASA in supporting research into the causes and effects of nutrient pollution of tributaries and bays. Teachers (and their students) comprise a workforce that are helping in this research while simultaneously learning how space-age technology can directly impact environmental decision-making at both the community and regional level. NASA/Goddard’s Office of Education Programs collaborates with MDSGC by making teachers aware of this project and interested teachers from Goddard’s Watershed Teams Project have participated in both the CBWI and the Synergy Project and will continue to be involved with these projects.

Key measures of project success will be evaluated by: 1) increased teacher focus on student learning and performance; 2) quantity of observations taken by the teachers; 3) reports written and/or published by teachers; 4) teachers’ influencing school systems to utilize CBWI as a community service requirement; and 5) other spin-off projects 6) faculty development.

**III. History**

We are proposing these activities for the Mid-Atlantic Region just as we previously proposed the same two activities in many of our individual Workforce Proposals of last year, despite the fact that the proposals last year received a very mixed reception from NASA. We are confident that NASA has subsequently become more fully acquainted with the value of the proposed activity, and will perhaps more broadly receive the present proposal.

Specifically, the result of last year’s proposal was:
The CBWI and Synergy were not actually part of the VA Workforce Proposal, but instead represented VA regular-budget contributions to the proposed efforts. Note that every one of these Consortia, regardless of funding, have in fact supported CBWI/Synergy workshops (table, next page).

More important than the erratic funding has been the successful history of the activity itself, which includes participation by EVERY state that is party to the present proposal (see the table on the next page for the detailed past history of every proposing state’s activity, thus far).

### IV. Proposal Justification

We are submitting this proposal simply because our proposed project is one that has been “asked for by the customers,” the education community, who have been extremely responsive to our previous offerings in both proposed areas. We work closely with NASA (in particular, with GSFC and with Bob Gabrys) on our projects. Please notice how directed this proposal is to the pipeline issue, not just directly via the teachers trained, but indirectly through subsequent effect of the teachers on their diverse student body: pipeline multiplied! In recruitment of teachers and faculty, every state participating in this proposal is committed to strong attention to diversity: recruitment of underrepresented minorities and women. Also, our water quality and Synergy efforts in the past have always undergone careful evaluation, and the proposers commit to stringent evaluation and quantitative metric reporting. This will be reflected in our Final Report.

### V. Conclusion and Schedule

Examination of the proposed program, we feel, allows the conclusion that funding of this Augmentation of the current Training Grants of the participating states will strongly enhance the “bang for the buck” that NASA will be receiving in the Mid-Atlantic Region and the North East, for enhancement of the quality of the future NASA Workforce.

The program will begin immediately upon the award of the supplementary funding by NASA. A milestone will be a Mid-Atlantic Regional meeting focused on “implementation,” to be attended not (usually) by Directors, but by the actual people in the states who will be (or presently are) implementing the program; this will be an important program milestone, and is to be accomplished within one month of award. The program metrics will be developed at that workshop, giving them realism and feasibility. Critical milestones will be created similarly.
VI. BUDGET

Workforce Development is, of course, not a “one shot” project, and NASA funding that did not represent part of a larger whole would be inefficient, if not wasteful. We recognize that the present budget enhancement is for one year, but we also recognize that the elements that we are proposing in many cases have both past and future histories, and the number that we have put in this budget represents a “best effort” for that level of funding, which we in our experienced judgment have in each case decided makes excellent sense for a one-year period, given the complexity of each specific activity.

Please note, also, that neither the Lead Institution, nor most of the Affiliates, will be charging any overhead on any of the funding that is requested.

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Budget Breakdown Elements …. 

…. are provided in the Individual State Budgets which follow.

Individual Participating-State Workforce Budgets and Certifications:
Maryland Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

MARYLAND PROGRAM COSTS:
1. Cost of GPS units and software (27 @ $250 each) $7,750
2. Cost of Trainers (includes travel and subsistence) $2,000
   2 days @ $400/day x 3
3. Stipend for participants
   College professors (5 @ $500 each) $2,500
   College Students (10 @ $150 each) $1,500
   Teachers (10 @ $200 each) $2,000
4. Meals and refreshments (during the two-day workshop) 25 x 35 $1,250
5. Lodging for those traveling long distance (15 room-nights) $1,250
6. Supplies (including 15 water quality test kits, materials, & publications) $1,400
   TOTAL $20,000

SYNERGY AND C3WI ADMINISTRATION BY MDSGC:
1. Stipend - Synergy and C3WI Project Manager (Dot Fojutski) $5,000
2. Local and Out-of-State Travel to meetings and to perform state workshops $4,200
   TOTAL $10,200

Grand Total for Maryland: $30,000.00

Maryland Space Grant Consortium is strongly committed to the proposed program, and will augment the second item in the budget above from our regular Space Grant program as needed to assure the success of this program in the other eleven states. MDSGC has reduced its own Workforce Proposal by $10,000 (to $90,000) in support of the present proposed program.

Space Grant Director: Richard Conn Henry, Director

Certification of Compliance with Applicable Executive Orders and U.S. Code

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Institutional Authorization: Jennifer Barron Senior Sponsored Projects Officer

Date 11/24/03
Virginia Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

The Virginia Space Grant Consortium has recruited 29 precollege teachers to participate in the Mid-Atlantic Synergy and Water Quality Monitoring projects over the past five years. The Consortium has built upon the teacher training provided to enhance VSGC programs in related GPS and GIS workforce training areas. The VSGC would use the funding provided through the Mid-Atlantic Workforce Proposal to hold a two-day workshop for faculty, preservice teachers, and inservice teachers. The training site for this activity will be at one of the VSGC’s member institutions, possibly Virginia Tech or at another member university or Community College location. The VSGC’s Educational Programs Manager, Chris Carter, who holds an M.Ed. in Instructional Technology will be our Project Manager for this initiative. The proposed budget for this activity is:

1. Cost of GPS units and software (25 at $250 each) $6,250
2. Cost of Trainers (includes travel and subsistence) 2 days @ $400 day X 3 $2,400
3. Stipend for participants
   College professors (5 at $500 each) $2,500
   College Students (10 at $150 each) $1,500
   Teachers (10 at $200 each) $2,000
   Coordinator (Chris Carter) (includes travel costs) $2,850
4. Meals and refreshments (during the two day workshop) – 25 X 35 $875
5. Lodging for those who travel long distance (15 room-nights) $1,125
6. Supplies, materials, copying $500

Total: $20,000

Space Grant Director: ____________________________ 10/28/03
Virginia Space Grant Consortium

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Institutional Authorization: ____________________________ 10/28/03
Mary Sandy, Director, Virginia Space Grant Consortium, an affiliate of the Old Dominion University Research Foundation
Pennsylvania Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

The Pennsylvania Space Grant Consortium has helped to recruit 22 precollege teachers to participate in the Mid-Atlantic Synergy and Water Quality Monitoring projects over the past five years. We are also contributing funds from our regular space grant award to support training for additional participants in December 2003. The December training will include participants from other states in the Mid-Atlantic and north east region.

For the next year we will include college faculty, college students, as well as K-12 teachers in our training activities. Participants will be drawn from our Consortium institutions and their local precollege schools. The proposed budget for this activity is:

1. Stipend for participants
   College faculty (5 at $1,000 each) $5,000
   College Students (10 at $500 each) $5,000
   Teachers (5 at $500 each) $2,500
   Coordinator (Mr. Todd Toth) $1,000
3. Meals and refreshments (during the two day workshop) $800
4. Lodging for those who travel long distance (10 room-nights) $700
5. Training Materials & Supplies $5,000

Total: $20,000

Space Grant Director: 
Pennsylvania Space Grant Consortium: Dr. Lisa L. Brown 10/21/03

Certification of Compliance with Applicable Executive Orders and U.S. Code
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Institutional Authorization:
Assistant Vice President for Research and Director of Sponsored Programs: Robert Killoren 10/20/03
Vermont Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitory for Teachers in support of NASA goals.

$20K is requested to fund Vermont's participation in this effort. Of this amount, $18,519 is required for teacher training in our state. The additional $1,481 in the request is indirect costs (8%) charged by the University of Vermont.

Funding awarded the Vermont Space Grant Consortium in the 2002 Workforce Development Competition allowed Vermont to participate in this program during the current year. A Synergy Workshop, taught by Michael Bentivegna of Towson University, was held in Burlington on September 12-13, 2003. Fifteen Vermont teachers were trained at this workshop, and two teachers from New Hampshire also attended. Feedback from attendees has been extremely positive, and we are anxious to continue our participation. We fully support the proposed structure that involves training teams of college professors, K-12 teachers, and undergraduate students.

Total request: $20,000.

Space Grant Director:

Vermont Space Grant Consortium: William Lakin, Director

Certification of Compliance with Applicable Executive Orders and U.S. Code

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Institutional Authorization:

The University of Vermont: Ruth Farrell, Director, Sponsored Programs

Date 10/20/03
Connecticut Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA Goals

The Connecticut Space Grant Consortium has worked successfully with the Mid-Atlantic Space Grant in the past. We are proposing to support the Mid-Atlantic Synergy and Water Quality Monitoring for Teachers, project. The Connecticut Space Grant Consortium will bring its expertise in both Water Quality Monitoring and GIS/GPS to the teacher training section of the grant. The University of Connecticut has been recognized as a leader in the GIS through its selection for a NASA Regional Earth Science Applications Center. The University of Hartford has faculty members actively working within the water quality arena and fluent in the GIS/GPS. In addition, all of the member institutions will provide expertise to the Synergy and Water Quality Monitoring project.

For the next year we will combine college faculty, undergraduate and graduate students, along with K-12 teachers in the Synergy training activities. Participants will be drawn from our consortium schools as well K-12 schools from throughout the state of Connecticut. The proposed budget for this activity is listed below:

1. Stipend for participants
   College Faculty (5 at $1,000 each) $5,000
   College students (10 at $500 each) $5,000
   K-12 Teachers (5 at $500 each) $2,500
   Coordinator (1 at $1,000) $1,000
2. Per Diem (during multi-day workshop) $750
3. Lodging (during workshop) $750
4. Training materials $5,000

Space Grant Director: [Signature]
Connecticut Space Grant Consortium: Dr. Chittaranjan Sihay

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Institutional Authorization: [Signature]
Provost
Donna Randall

Date

11/03/03
District of Columbia Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitory for Teachers in support of NASA goals.

In 1998, one K-12 teacher from the District of Columbia attended a CBWI workshop in Baltimore, MD. In 2000, four K-12 teachers attended a Synergy workshop in Hagerstown, MD. In 2001, S.M.A.R.T., Inc. representative George Carruthers attended a Space Grant regional workshop on CBWI and Synergy. Both Dr. Carruthers and the teachers expressed enthusiasm about the program, but because of limited funding, the District of Columbia Space Grant Consortium was unable to devote adequate funding to support additional teacher training in CBWI and Synergy activities. This Workforce Development supplement award will enable the District of Columbia Space Grant Consortium to conduct a training workshop, which will be taught by Jay Morgan and Bob Popham through the Maryland Space Grant Consortium for approximately twenty participants, in the use of GPS, ground truthing, and some basics of GIS. Several speakers will be invited to address the participants. We will follow up with data collection afterwards.

With this proposal, we hope to include university professors, university students, and K-12 teachers in the workshop and subsequent activities. American University will manage the supplemental award and help recruit university professors and students to participate, and S.M.A.R.T., Inc. will take the lead in recruiting K-12 teachers in the District of Columbia Public Schools. We are confident that our budgeted amount will accomplish the proposed objectives, having the benefit of the experience from other states that have hosted such workshops. Our proposed budget for this activity is:

1. Cost of GPS units (20 at $250 each) $5,000
2. Honorarium for participants
   University professors (5 at $900 each) $4,500
   University students (10 at $500 each) $5,000
   K-12 Teachers (5 at $400 each) $2,000
   Project Coordinators (2 at $750 each) $1,500
3. Meals and refreshments (20 participants during the workshop) $800
4. Lodging for those who travel long distance (app.10 room-nights) $700
5. Supplies $500

Total: $20,000

Space Grant Director: [Signature] 3 Nov. 03
District of Columbia Space Grant Consortium: Dr. Richard Berendzen

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Institutional Authorization: [Signature] 1/23/03
American University: Catherine Kirby, Director, Office of Sponsored Programs 1/23/03
Delaware Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

The Delaware Space Grant Consortium plans to recruit college faculty, college students, and K-12 teachers in our training activities and participate in the Mid-Atlantic Synergy and Water Quality Monitoring projects. DESGC has supported four Delaware middle-school teachers at CBWI and Synergy Workshops over the past 2 years.

The proposed budget for this activity is:

1. Expenses for participants:
   - College Faculty (TBD)  4 @ $1250   $ 5,000
   - College Students (TBD) 10 @ $ 600   $ 6,000
   - Teachers (TBD) 5 @ $ 800   $ 4,000
   - Supplies & Expense  $ 94
   - Overhead @ 32.5%  $ 4,905

Total: $20,000

Space Grant Director
Delaware Space Grant Consortium: Dr. Norman F. Ness

10/30/03 Date

Certification of Compliance with Applicable Executive Orders and U.S. Code

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Institutional Authorization: University of Delaware

Senior Sponsored Projects Officer
Mary Jane Wilkins, Project Manager

Date
New Hampshire Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

$20K – This is the funding required for teacher training in our state.

New Hampshire Space Grant Consortium sent two K-12 teachers to a Synergy Workshop, held in Vermont, and we were very pleased to support their participation in the workshop. Based on their enthusiastic report, we look forward to hosting such workshops in our state, as described in the proposal; and in consultation with Bob Popham. Our proposed budget will support the following: 1.) Training additional NH Synergy Teachers on ground truth protocols, 2.) the use of ALTA-II units and student-produced data for their study sites, and 3.) coordination of measurements within the expanded Synergy network of schools.

Total: $20 K.

Space Grant Director:  
New Hampshire Space Grant Consortium:  
David Bartlett, Director  
Date: 10/25/03

Certification of Compliance with Applicable Executive Orders and U.S. Code  
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Institutional Authorization:  
The University of New Hampshire  
Victor Spa, Senior Grant and Contract Officer  
Office of Sponsored Research  
Date: 11/17/03
New Jersey Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in Support of NASA Goals

The New Jersey Space Grant Consortium (NJSGC) has been involved in the Mid-Atlantic Regional Synergy and Water-Quality Monitoring projects during the past five years and is eager to continue its collaboration as part of the NASA Workforce development activities that are being proposed. Specifically, under the current proposal, NJSGC plans to select K-12 teachers, undergraduate university students in science, math, and engineering, and college professors to participate in this program of Synergy and Water Quality monitoring. The proposed budget for this activity is:

1. Stipend for participants
   - College Faculty (5 at $1,000 each) $5,000
   - College Students (10 @ $500 each) 5,000
   - Teachers (5 at $500 each) 2,500
   - Coordinator 1,000

2. Meals and Refreshments (for the 2 day workshop @ $20/day per participant) 800

3. Lodging for those who have to travel long distances (10 room nights @ $70/night) 700

4. GPS Units (20 @ $250 each) and supplies 5,000

TOTAL: $20,000

Space Grant Director:
New Jersey Space Grant Consortium

Siva Thangam
Professor

Date 10/31/03

Certification of Compliance with Applicable Executive Orders and U.S. Code

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Institutional Authorization:
Stevens Institute of Technology:

Aline Caberger
Grants & Contract Manager

Date 10/31/03
New York Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitoring for Teachers in support of NASA goals.

The New York Space Grant is excited by the prospect of continuing participation in such a dynamic program. We have had an outstanding response from teachers and students who are interested in learning about GIS and its applications. In our organizational meetings with the other participating consortia, we felt that one of the strongest points of the program is the development of a support group – from the workshop leaders, to fellow participants. The group of participants will be able to continue ground-truthing with peers to answer questions, and will, ultimately be able to pass on their instruction on to others. We feel that the workshops described in this proposal would be of great value in our state, and look forward to hosting them. We are confident that the budgeted amount can accomplish the proposed objectives, based on input from states who have hosted these sorts of workshops previously.

1. Cost of GPS units (20 at $250 each) $5,000
2. IC on Units $2,900
3. Participant Costs
   - College Professors Stipend (4 at $1,000 each) $4,000
   - College Students Stipend (8 at $500 each) $4,000
   - Teachers Stipend (5 at $400 each) $2,000
   - Meals and Refreshments (during the two day workshop) $668
   - Participant Lodging $800
4. Supplies $400
5. IC on Supplies $232
Total: $20,000

Space Grant Director: Yervant Terzian
N.Y. Space Grant Consortium: Yervant Terzian, Director
Date: Oct 26, 03

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Institutional Authorization: Elizabeth Biston, Senior Sponsored Projects Officer
Date: Oct 21, 03
Rhode Island Space Grant Consortium

Mid-Atlantic Synergy and Water Quality Monitor for Teachers in support of NASA goals.

$20K – This is the funding required for teacher training in our state.

Total: $ 20 K.

Space Grant Director: ____________________________ 10/29/03
Rhode Island Space Grant Consortium: Peter Schultz, Director

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Institutional Authority: ____________________________ 11-3-03
Brown University: Norman J. Hebert, Director, Office of Research Administration

Date
Aerospace Workforce Development Competition

3/1/04-
2/28/2005

<table>
<thead>
<tr>
<th>Stipends for participants</th>
<th>Total Stipends</th>
</tr>
</thead>
<tbody>
<tr>
<td>College professors 5 @ $1,000/each</td>
<td>5,000</td>
</tr>
<tr>
<td>College students 10 @ $500/each</td>
<td>5,000</td>
</tr>
<tr>
<td>Teachers 5 @ $400/each</td>
<td>2,000</td>
</tr>
<tr>
<td>Undergraduate instructor assistant</td>
<td>1,000</td>
</tr>
<tr>
<td><strong>Total Stipends</strong></td>
<td><strong>13,000</strong></td>
</tr>
</tbody>
</table>

| Research Supplies | 1,200 |
| Cost of GPS units 20 @ $250/each | 5,000 |
| Meals and refreshments (during the two day workshop) | 800 |
| **Total Direct Costs:** | **20,000** |