

Statement of
Rebecca L. Dodge, PhD
Outreach Director for AmericaView
Before the
Natural Resources Committee Energy and Minerals Subcommittee
Hearing on HR 2489
AmericaView Geospatial Imagery Mapping Program Act
U.S. House of Representatives
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I would like to thank Chairman Costa and the committee members for giving me the opportunity to testify with respect to the AmericaView Geospatial Imagery Mapping Program Act. My name is Rebecca L. Dodge and I teach Geology and Environmental Science at Midwestern State University in Wichita Falls, Texas. I have been actively involved in the development and leadership of AmericaView for the past seven years.

Today I would like to add a few remarks to Acting Director Kimball's comments about AmericaView's history, from the AmericaView members' perspective, and then to explain how the activities to be supported by HR 2489 will sustain and expand the benefits provided by AmericaView.

As described earlier, OhioView was the pilot for a planned nationwide program, designed to prove the concept that a statewide network of universities and their partners involved in applied research could develop new scientific, educational, and practical applications for geospatial data to improve the lives of citizens of their state. OhioView, comprised of 10 Ohio Universities in partnership with the U.S. Geological Survey, provided very solid proof of this concept.

This pilot focused on education and on applied research emphasizing solutions to state needs. To date, OhioView partners have educated thousands of students at both the university and K-12 levels, while also providing training for hundreds of K-12 teachers and university faculty. OhioView's applied research concerning natural resource management has set the standard for new StateView efforts across the nation, providing new ways to solve problems in forestry, agriculture, city planning, and water quality. Within two years OhioView's successes led to planning for the national AmericaView Program; recruitment was (and still is) facilitated by the focus on addressing individual state needs.

The AmericaView consortium has been in development since 2000, incorporating as a 501c3 non-profit educational organization in 2003 with 10 founding members (OH, SD, AK, KS, TX, AR, MS, GA, WV, and WY). Since officially "going national" in 2003, steady growth of new StateViews each year has brought membership to the current level of 36 StateViews.

With this organic growth across the country, the time has come for HR 2489. Thanks to the leadership of Representatives Regula and Herseth Sandlin in the previous Congress as well

as Representatives Herseth Sandlin and LaTourette in this Congress, HR 2489 was introduced in the House in May; a companion bill, S 1078 was introduced in the Senate by Senators Johnson and Voinovich. The bill is designed to authorize a comprehensive national program and set of activities that will promote the application of geospatial imagery for a broad range of mapping purposes, through education, workforce training and development, and applied research. AmericaView is already engaged in activities prescribed in HR 2489 in 36 states, and this Act will ensure the program's activities and impact will spread within each member state and to all 50 states and the Territories.

As you read the legislation you saw this set of activities listed. These *activities* are the heart of this legislation and they are keyed to the existing strengths and contributions of AmericaView; at least several of these activities are going on in each state now. HR 2489 activities that are designed to promote imagery mapping applications begin with 1) *the development of geospatial mapping applications, education and training infrastructure* in each state. Applications and education and training infrastructure development have gone hand in hand, as new applications technologies and tools that are developed for applied research are transformed into classroom and laboratory teaching instruments and then become available for training the existing workforce to apply the new tools and technologies.

CaliforniaView's applications-oriented Remote Sensing Certificate Program, under development with support from **GeorgiaView, VirginiaView, IowaView, and TexasView**, will serve not only undergraduates at the University and College level, but also returning students and others already in the workforce. **AlaskaView** makes its training infrastructure available to private companies that train the Alaskan workforce. Peter Hickman, CEO and Principal GIS/GPS Consultant for **GeoApps, Inc.** stated that

Providing training has been fundamental to the success of GeoApps as a startup small business. In the past year alone, 83 students from across the academic, government, and private sectors in and around Fairbanks have successfully completed our ESRI Authorized training in the GINA RS Lab. The continued use of the GINA RS Lab for instruction is an integral part of accomplishing our goals. (2007)

The addition of geospatial student internships as part of the educational infrastructure in many states has created positive effects, as indicated by Dawn Liverman, undergraduate Geosciences major at the University of West Georgia. She participated in a **GeorgiaView** internship for rural **Carroll County, Georgia** and studied the impact of historical tree canopy changes to establish baseline maps prior to extensive proposed residential development.

This internship has given me a new way of looking at the environment, invaluable experience with geospatial software, self-confidence in speaking publicly about the findings of my research, and professional skills that will be a definite help in my future professional life. This experience will be very important to me when looking for employment after graduation when so many companies want an employee with previous experience in the geospatial field. (2006)

Existing educational infrastructure has benefitted from **South DakotaView**'s efforts according to MaryJo Benton Lee, Diversity Coordinator for **South Dakota State University** College of Engineering, who complements them for reaching 200 American Indian high school students participating in a college preparatory program in a 2007 SDSU-Flandreau Indian School Success Academy students.

Your presentations were hands-on, interactive, and highly successful in interesting and exciting freshman high school students in your discipline. I especially appreciate the many ways you made your workshop culturally relevant, starting with the title "Technology and Tradition: New and Old Ways of Viewing Mother Earth". Also I commend you for employing two of our Native SDSU engineering students to assist you.... these Native American college students were strong positive role models of American Indian professionals. Your excellent workshops are truly models for all of us who try through our work to attract minority students to science, math, engineering and technology disciplines. (2007)

K-12 teacher training infrastructure is broadly enhanced and supported by StateViews. Todd Ensign from the **NASA IV&V Facility Educator Resource Center** (ERC) complements **West VirginiaView** for its support, saying that

the ERC has received assistance in downloading and using geo-referenced imagery, developing and delivering teacher workshops, producing educational podcasts, and in the successful bid for educational grants to expand the program. The ERC greatly appreciates the services of West VirginiaView and hopes to continue our strong partnership into the future. (2006)

West VirginiaView also received kudos for its support of K-12 pre-service education. According to Dr. James A. Rye, **West Virginia University** Interim Associate Dean for Research and Technology:

We have begun to integrate global positioning (GPS), geographic information systems (GIS), and remote sensing into our undergraduate and graduate science methods course for pre-service and in-service teachers. West VirginiaView has provided an invaluable expert resource..... they have also developed and provided an extended RS/GPS/GIS experience that integrated a project GLOBE hydrology application in our undergraduate science methods course. Geospatial science and technology are integral with such 21st Century content as "global awareness" and the skill area of "information and communication technology" literacy. Dr. Landenberger's assistance and associated West VirginiaView projects are critical to integrating into our methods courses experiences that prepare teachers to facilitate 21st Century learning in their future and current classrooms.

Dave Varner, an Extension Educator with the University of Nebraska - Lincoln Extension Service, reported that 4-H youth and leaders at the 2006 **National 4-H** Science and Technology Conference presentation were impressed with **NebraskaView**'s presentation

regarding capabilities and exploration into future applications of remote sensing technologies that took this session to a whole new level. Participants were impressed with both the technology and applications discussed. Your Google Earth demonstration provided participants more hands-on experience using imagery collected via remote sensing technologies. The group connected well with this topic and will certainly share their experiences with their communities which represent approximately 20 states. We appreciated NebraskaView helping enhance the knowledge and skills of the outstanding 4-H audience that UNL had the opportunity to host in July. (2007)

AmericaView members have all benefitted as new applications as well as training programs for K-12 teachers, University faculty, youth groups, state and local government employees, and private industry are developed, refined, and shared among our membership. We are also *expanding geospatial imagery mapping courses* and provide training, remote sensing data, and teaching tools to educators. Expanding courses and curriculum has been the goal of John C. Kostelnick, GIS Instructor in the Department of Natural and Social Sciences at **Haskell Indian Nations University** who states that

This letter comes in support of the **KansasView** Program. Haskell Indian Nations University (HINU), a four year university that serves students from federally recognized Indian Tribes in the United States, is among the many institutions that have benefited greatly from the services and data sources provided by KansasView. In recent years, HINU has worked to develop a program in Geographic Information Systems (GIS) and related remote sensing applications to support the environmental science curriculum as well as in response to the growing need for geospatial technology in tribal lands. The KansasView Program has provided numerous benefits to this endeavor by providing HINU students with internship opportunities and allowing HINU faculty to collaborate with faculty and staff at the Kansas Applied Remote Sensing (KARS) Program at the University of Kansas. The continued involvement of HINU in programs such as KansasView is key to ensuring that HINU is successful in its efforts to sustain and to expand the existing GIS program. (2006)

StateViews are all working to *expand geospatial imagery mapping research at research educational institutions*. Dr. Sylvio Mannel, GIS/Remote Sensing Manager at **Oglala Lakota College**, recognized **South DakotaView**'s provision of Landsat imagery that

enabled us to map possible Mountain Lion habitat on the Pine Ridge Reservation. In addition, the Landsat imagery archive is a very user friendly source of data. Before it became available we had to contact other researchers and other institutions to ask for any data they might have available. This was not very efficient and often

unsuccessful. I hope the Landsat depository will be available in the future to conduct Remote Sensing education and research at Oglala Lakota in an efficient way. (2006)

Russ Brinsfield, Executive Director of the Harry R. Hughes Center for Agro-Ecology at the **University of Maryland**, praises **MarylandView**'s assistance

in developing geospatial approaches to a more accurate understanding of agriculture and its environmental implications and for providing a more precise agricultural cropland data layer for our area and for assisting us in researching innovative geospatial methods for cropping practices, nutrient applications, pesticide usages and other significant agricultural characteristics of interest to our program. (2009)

Gregory S. Vandenberg, Assistant Professor of Geography at **University of North Dakota** reports that he is

currently overseeing a grant from the **North DakotaView** program: Geographic Variables Affecting Bald Eagle Nest Locations in the Red River Valley of ND and MN. This grant has provided the funding for Josh Johnston, MS Candidate in geography, to investigate the distribution of bald eagle nests. The grant covers both his graduate research assistantship as well as costs for an aerial survey of the northern part of the Red River Valley. The information gathered in his study will be very useful to federal, state and local conservation officials, as well as for the completion of his thesis. This project would have been severely limited without the North DakotaView grant. I strongly urge the managers of the AmericaView Program to continue funding to state programs such as North DakotaView. (2006)

AmericaView is also *expanding the knowledge and use of geospatial imagery map products through outreach programs* to diverse groups ranging from USDA extension agents to the National Forest and National Park Services, and including emergency management and natural resource management personnel as well as State and National Guard troops.

MinnesotaView's outreach to natural resource managers has provided new data and tools for lake clarity analysis, as reported by Bruce Wilson, the program manager at the **Minnesota Pollution Control Agency**:

We have used every trick of the trade, with a large body of volunteers and lab tests, but the truth is we can only monitor about 1,200 lakes a year. And now, out of the sky - literally - has come this opportunity to help provide the information we are asked for thousands of times a year by citizens, business owners, and local units of government. (2009)

AlabamaView has been coordinating statewide conferences as part of its outreach effort. H. Craig Seaver, **U.S. Geological Survey** Liaison to Alabama, thanks them for their

efforts in organizing training and presentations at the 3rd annual GIS meetings at Auburn this year..... Based on my observations, the participation level was

significant, with representation from federal, state/local and private sector entities..... The wide scope of geospatial topics presented allowed one to choose both professionally related training and presentations and intriguing new ones as well. I look forward to getting involved with AlabamaView and promoting it within the state with USGS partners. (2006).

WyomingView's outreach presentations at workshops for farmers and ranchers have expanded applications across the state. Chuck Duncan, an Agriculturist for **Wyoming Sugar Company** who counsils growers about how to raise a better crop, attended a workshop put on by WyomingView in cooperation with the University of Wyoming County Agent and with farmers and scientists from North Dakota. There he was introduced to the remote sensing technology and its applications for agriculture. He indicates that

I was pleased that they brought to this workshop some sugar beet farmers from ND who have used this technology. They actually did most of the training and were able to answer questions from their own experiences. I believe that this technology could be useful in managing farm land through out my district. I believe that the activities of WyomingView (workshops and image distribution) are the wave of the future in farming and therefore should be used the best we can. They can assist growers to do a better job on their own farms and increase production, therefore keeping their viability in coming years. (2006)

Another private sector client impacted by **WyomingView's** outreach effort, Chris Jesson, P.G., Geologist/GIS Analyst with **States West Water Resources Corporation**, states that

I would like to express my support for the services provided by WyomingView. It has been extremely beneficial to our efforts to serve our clients (with oftentimes much needed efficiency) with readily available satellite imagery. We have used WyomingView Services to assist a number of irrigation districts in Wyoming, the State of Wyoming, and many individual land owners with documentation of historical irrigation. Access to this information serves to dispel much doubt from proceedings that may otherwise lead to burdensome, expensive legal ventures for Wyoming and its citizens. It is my belief that this provision of taxpayer-funded information enables simple evenhandedness in the face of litigious issues. Moreover, it speaks to responsible and efficient utilization of taxpayer resources to serve information that provides for a basis of truth (that has already been funded by taxpayers) for the equal benefit of all citizens. States West endorses continued funding for Wyoming View Services.

StateViews are *building partnerships with governments* to carry out pilot mapping projects concerning coastal erosion, invasive species, wildfire prevention, volcanic hazards, drought extent and impact, to name a few. John F. Fry, the **National Park Service's** Chief of Resources Management the Cumberland Island National Seashore in Georgia, reported on a pilot project supported by **GeorgiaView** and performed by University of Georgia graduate student C.J. Jackson:

Back-barrier shoreline erosion is a highly critical issue on Cumberland Island, as it threatens significant natural and cultural resources. C.J.'s final report, maps, and graphics provide exactly the sort of information the park staff needs in addressing the erosion problem. His research indicates the scope of the problem over the entire expanse of the Cumberland Island back-barrier, where critical hot spots are, how the issue has developed over an extensive (145 year) period, and what potential agents are for the erosion. C.J. went well above and beyond what was anticipated. He has provided us with an extremely valuable tool that is remarkably thorough and technically sound. The Park Service is most fortunate to have had C.J. working on this project.... In my twelve years of NPS Science and Resource Management experience I cannot recall being more impressed with the quality and thoroughness of a research project than what C.J. has completed for the park. (2006)

C.J. Jackson won the Georgia URISA Thomas Mettill Student Achievement Award, for this work on the "Assessment of Back-Barrier Shoreline Erosion for Resource Management: Cumberland Island National Seashore, Georgia". This technique has wide applications for barrier islands managed by both Federal and State agencies. While mapping applications development has focused on addressing each state's unique needs, applied researchers have found solutions that cross borders to meet regional and national needs.

The national AmericaView leadership, in concert with working groups composed of StateView members, is *promoting cooperation and sharing of data, expertise, techniques, and tools regarding geospatial imagery among and within participating States*. Individual StateViews are sharing data among diverse users. Sandy M. Ebersole, a geologist with the Mapping and Hazards Section of the **Geological Survey of Alabama**, informed the **AlabamaView** Director that

We currently have a number of Landsat scenes and will likely be acquiring MODIS and other satellite data in the near future for some of our research here at the survey. AlabamaView is a very impressive website, and a wonderful tool for researchers. I was wondering if you would accept other satellite imagery to be posted to your site as well so that it can also be shared with others. The data we have was not purchased through the AlabamaView project, but we would like to make it available for download for public use. (2009)

Dr. A. Kim Ludeke, **Texas Parks and Wildlife Department** GIS Lab Manager expressed strong support for **TexasView** as a

valuable source of statewide datasets at no cost to the Texas Parks and Wildlife Department (TPWD) and the Texas Natural Resources Information System (TNRIS). Moreover, this updated imagery has allowed TPWD scientists and planners to document change in the natural and cultural environment of Texas. In addition, the TPWD game wardens have found these products to be invaluable, whether in investigations of environmental crimes, in prosecuting game and fish law violations,

or in planning and executing Homeland Security exercises along the border with Mexico. This includes both training and real-life situations. Finally, the TexasView scientists have always been available for technical assistance and advice. It would be a major loss to Texas to lose the services of TexasView. This imagery provides a very important base for work on TPWD properties as well as with private landowners with whom TPWD field biologists are developing Wildlife Management Plans. These plans benefit private land owners as well as the natural resources of Texas for all Texans.

Consortium members in each StateView are active in state-level geospatial planning activities to promote cooperation and sharing, establishing strong contacts with State agency personnel. John Ellison, Agency Technology Officer for the **California Resources Agency**, commented in 2007 that the CRA

looks to projects such as **CaliforniaView** to provide outreach and educational materials to ensure that geospatial data are utilized to their fullest extent. We also look to CaliforniaView to provide expertise and support in incorporating these data into a working environment. (2007)

Steve Bauserman, Chair of the **Northern Shenandoah Valley Regional Commission** whose responsibilities span the Virginia/West Virginia border, reports the approval of a cross-border cooperative study in which **VirginiaView** and **West VirginiaView** will

prepare a pilot project for the Shenandoah Valley, VA- WV which is an historical land cover/land use view of the Shenandoah Valley footprint. A compilation of 1930 USDA aerials, more recent photography or Landsat imagery, would give a base from which to analyze land cover and land use change over the last 75 years for the region, counties and municipalities. This would serve as a base for future monitoring for drought onset, water quality, movement of pollutants in the air, comparison of small watersheds for runoff after rain, and other analysis. (2006)

James P. Verdin, Manager of the **U.S. Geological Survey** Early Warning and Environmental Monitoring team, wrote that

As the lead of the Early Warning and Environmental Monitoring team at the U.S. Geological Survey's Center for Earth Resources and Science, I would like to express our appreciation to the Kansas Applied Remote Sensing (KARS) Program and **KansasView** in this letter.... During the last six months, KARS provided a valuable remote sensing data set to us and to our collaborators at the National Drought Mitigation Center. This data consisted of preprocessed (mosaicked and projected) MODIS Vegetation Index data covering the entire North American Continent. The work performed by KARSprobably saved our organization approximately 120 person hours of labor..... we look forward to investigating the future potential to partner further in remote sensing research and applications with KARS. (2007)

HR 2489, the AmericaView Geospatial Imagery Mapping Program Act, would enable AmericaView to expand activities such as these to all 50 states and the U.S. Territories, addressing each state's unique needs by educating and training educators and professionals who will perform applied Earth observations. StateViews will also be instrumental in developing key applications that serve educators and transferring the technologies and tools developed to a wide range of state and federal agencies, private industry, and the general public.

As Acting Director Kimball has pointed out, the USGS is continually increasing the breadth and volume of geospatial imagery available to the public for education, research, assessment and monitoring at the State level. HR 2489 will ensure that the workforce is provided with the ability to apply remote sensing data and technology towards effective decision making in each state. In fact, the AmericaView Program is built on the precept that there are remote sensing needs that are best understood and addressed at the state level, while other aspects are best addressed at the national level. Operating satellites and maintaining centralized global data archives are critical national priorities well handled by USGS. Education, emergency response, and support of local natural resource managers are local issues that are well handled by a workforce that has acquired local knowledge and the skills to select and apply the appropriate data and technology.

The National Research Council's Strategy for Earth Science Applications from Space (2007) recognized that *a robust program to train users on the use of these observations will result in a wide range of societal benefits ranging from improved weather forecasts to more effective emergency management to better land-use planning*. The report recommended that the *USGS should pursue innovative approaches to educate and train scientists and users of Earth observations and applications*. At the time of these recommendations, the USGS had already been involved in developing and expanding the AmericaView program for over 10 years. I would like to echo Acting Director Kimball's sentiments that ours is a great partnership. The cooperation within each state has benefitted the American public, as has the cooperation among states and between both the government and non-profit sides of the AmericaView Program. We look forward to welcoming the remaining states and territories into the family.

Thank you again for your consideration and attention, Mr. Chairman and Committee members. My Outreach Committee members and I will be happy to answer any questions you and other members may have.