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# EPCAMR



## EPCAMR Staff Complete 3-Day Certification to become the First Two

## National Non-Profit Modelers of the 2D & 3D Premiere Software Program in PA to assist in Underground Mine Mapping

**(Ashley, PA)**-The week of the 14-16<sup>th</sup> of September, EPCAMR's very own Executive Director and Program Manger who are highly skilled Geographic Information Systems analysts and self-taught computer modelers of Dynamic Graphics, Incorporated's earthVision 8 2D and 3D premiere modeling software, became the first two non-profit community members across the country to complete, assist with teaching, and receive certification from the Office of Surface Mining and Reclamation and Enforcement (OSMRE) Technical Innovation & Professional Services (TIPS) Training Class, held in Pittsburgh, PA, instructed by Mr. Mike Dunn, Professional Geologist, with the Office of Surface Mining. earthVision 8 is a true 2D and 3D modeling application that, in its various incarnations, has been a part of OSMRE's TIPS core software packages for Federal and State regulators for many years. There are tools that allow for header building, importing/exporting well known computer animated design data (CADD), geographic information system (GIS), and other formats, and editing and other utilities. Additional modules exist for more complex tasks like building 2D or 3D grids and models, analyzing and extracting model information, performing sophisticated volume calculations, and more.

While the training course was an introduction to earthVision 8, even the instructor, Mr. Dunn acknowledged that the work and progress that the EPCAMR Staff have completed and modeled for the Anthracite Region of Northeastern PA's underground mines and abandoned mine pool complexes is clearly advanced. EPCAMR's utilization of the many tools in earthVision 8, that they had to learn on their own over the last two years since receiving the donated software license from the OSMRE due to their selection and membership on the National TIPS Team and the National Geospatial Data Standards Development Team for Coal Mining has allowed them to further understand the complex nature of the geology and hydrogeology of the Anthracite Region of Northeastern PA, compared to the typical layer-cake geology of the Bituminous Coal Regions across the rest of the Country.

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The 3-day course and class consisted of lectures, demonstrations, and hands-on exercises. The training was built around a dataset from an abandoned mine land and abandoned mine drainage impacted site in the headwaters of Dents Run, Elk County, the PA Wilds area. The data sets reviewed and utilized were typical of that required by most Regulatory Programs and State Environmental Protection Agencies. The course materials were developed for the OSMRE by Mr. Robert McFaul of Dynamic Graphics, Inc. using data provided to Mr. Dunn by Mr. Rich Beam of the PA Department of Environmental Protection.

The data were also familiar to the EPCAMR Staff and therefore was ideal to introduce the earthVision 8 modeling of stratigraphy, structure, overburden analyses, water quality, aerial photography, and 2D, as well as 3D imagery. EPCAMR Staff achieved the goal of successfully building and viewing a 3D model of the Dent's Run AML Site using the earthVision 8 software.



EPCAMR Staff were also able to build the 3D model in such a way that they created properties that enabled them to calculate volumetrics in the underground mine as it related to determining whether or not a regulatory agency should be hypothetically approved or denied a mining permit.

The aim of the modeling was to build structure and property models, and then calculates volumes based on the Net Neutralization Potential (NNP) property throughout the zones of the underground mine to determine the balance of acid versus neutralizing volumes of rock, typically found in limestone formations. Another method commonly used by States to determine this is called Acid Base Accounting (ABA) or Overburden Analyses (OA).

The EPCAMR Staff were able to attend the class with nearly a dozen other Federal and State employees from across the United States and receive the actual training 24 Professional Development Hours of class thanks to the funding, technical assistance, and training provided to both Mike and Robert through TIPS.

EPCAMR is one of the only non-profit organizations nationally to have entered into a Memorandum of Agreement with the OSMRE, under the US Department of the Interior, for more than a decade, and have been contributing free technical assistance to community groups across PA and throughout Northern Appalachia, through the Appalachian Coal Country Watershed Team working on poverty and environmental issues related to watersheds impacted by abandoned mine drainage and abandoned mine lands.

Robert went on to emphatically state that, “It was a very unique opportunity indeed and cutting edge training course that we went through. Mind boggling at times, however, Mike and I have been working on the forefront of mapping the underground mine pool complexes for the Anthracite Region for the last three years and have completed some innovative work in the Western and Southern Anthracite Coal Fields utilizing the earthVision 8 software provided to us by OSM, before we even had an official training on the use of the software. We needed this software to get as far as we have and we would like to continue mapping the remaining two Coal Fields in the Eastern Middle Anthracite and Northern Anthracite Regions. We’ve learned even more intricacies in the software update that will now allow us to more efficiently continue our work, as long as the future funding for our efforts continue to be supported by the State of PA, the PA Department of Environmental Protection, Bureau of District Mining Operations, and the Bureau of Abandoned Mine Reclamation.”

Mike, who is definitely the day to day user of the software tool goes on to say “Robert and I were kind of smiling like two kids in a candy store when we got to page 66 of the training course, where we got half way down the page and found a special note highlighted in blue, that told us directly, that the earthVision 8 does not accurately calculate True Stratigraphic Thickness (TST) in synclinal folds more acute than about 45 degrees. Blushing as we were in the back of the class, we knew all too well that in the Anthracite Region, we had already begun mapping synclinal and anticlinal folds that were not only in excess of 45 degrees, but were actually overturned beds, nearly vertical cropfalls, and numerous other angles because of the nature of the Anthracite geology. It was an honor to be called out in the training manual.” EPCAMR Staff continue to work with Mr. Dunn and Skip Pack from Dynamic Graphics, Inc. to work on the further development of scripts for these extreme cases within the software, but all too common cases for the Anthracite Region.

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Useful weblinks:

[www.osmre.gov](http://www.osmre.gov)

[www.tips.osmre.gov](http://www.tips.osmre.gov)

[www.dgi.com](http://www.dgi.com)

[www.epcamr.org](http://www.epcamr.org)