

Anthracite Strategy June 2012

### Mine Pool Mapping Initiative



Robert Hughes, Executive Director Michael Hewitt, Program Manager

### The Beginning: RAMLIS GIS Mapping Tool





### **Technical Innovation and Professional Services**

U.S. Dept of the Interior, Office of Surface Mining Reclamation & Enforcement

### Old Forge Borehole (Northern Coal Field)





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Sburce: Luzerne County GIS Department

### Jeddo Mine Drainage Tunnel (Eastern Middle Coal Field)

### Jeddo Underground Drainage Network (4 Separate Basins = 26 Sq. Mi.)

#### RAMLIS\_V\_8CD.MXD - ArcMap - ArcInfo





Layers in Eastern Middle Coal Field adapted from Ballaron et. al.

### US Bureau of Mines Mine Pool Maps (S.H. Ash 1950's)



## **Operation SCARLIFT Maps 1970s**





### Western Middle Anthracite Field Mine Pools



### **Coal Investigation Maps**

### Faults & Structural Contours of the Lowest Coal Seam



### USGS Coal Investigation and Miscellaneous Investigation Map Coverage for the:



INDEX MAP SHOWING LOCATION OF THIS MAP AND NEARBY PUBLISHED U.S. GEOL. SURVEY COAL MAPS (C) AND MISCELLANEOUS INVESTIGATIONS SERIES (I)

# 3D Structural Contours in Earth Vision (Above)



### 3D Structural Contours in Earth Vision (Looking East)



### 3D Structural Contour Grid & Topo Overlay (Looking East)



## 3D Grid with Topo & Collieries



### 3D Grid in Earth Vision





## Multiple Veins of Coal



- Coal Vein Thickness
- Calculate Volume
  - Coal (original and amount remaining)
  - Void Space (mine pool and storage capacity)

# earthVision Video

### Borehole Monitoring (Northern Field)

- Find the current elevation of the mine pools
- Create new mine pool boundaries based on new elevations







## Anthracite Region ARIPPA Plants and Available Mine Pool Volumes



### Applied Uses for Mine Pool GIS Data

- New <u>visualization</u> tool for public & private interests
- Ability to <u>estimate volume</u> of mine water or storage potential for re-use of the mine pool and water
- Potential for <u>economic redevelopment</u> of mine lands
- <u>Sustainable yield analysis of mine pools (using ModFlow)</u>
- Prediction of mine subsidence probability, causes and relationships
- Elimination of mine drainage & resource recovery of metals
- <u>Digitization</u> of historic mine maps and structural contours
- <u>Citizen Science</u> participation & community outreach

# Any Questions?

### www.OrangeWaterNetwork.org

GOT AMD?

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