Development of CBW Extractive and Landfill Layers

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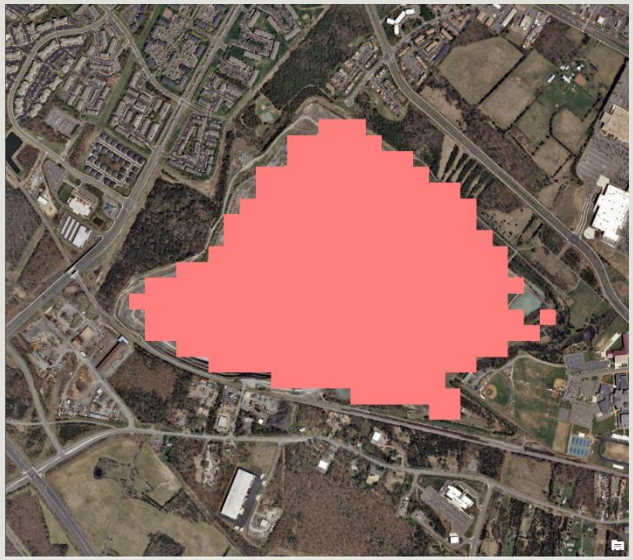
Base dataset: 1974 – 2012 NWALT

- Provides wall-to-wall coverage of land use trends in United States at 60-meter resolution

- Mining and extraction class based on
  - 2011 NLCD barren class
  - 1974 GIRAS
  - 1992 NLCD
  - In-house digitized mining/extraction polygons
  - State-permitted mining location data
  - 2014 EPA point locations of mining/extraction
  - 2005 USGS polygon areas of oil/gas extraction

- *Class 41: Mining/Extraction* was isolated and serves as base dataset for CBW Extractive Layer, finer resolution data are used in addition to NWALT where available

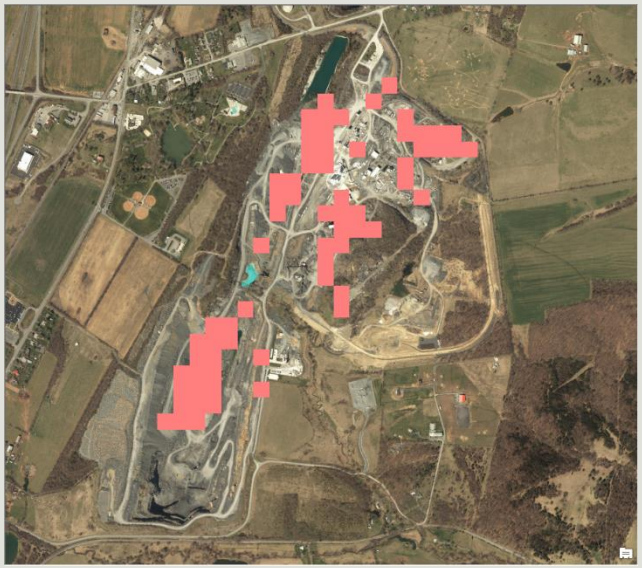
Base dataset: 1974 – 2012 NWALT



Mine near Manassas, VA. Scale 1:10,000

In some areas NWALT extractive layer provides relatively good accuracy

Base dataset: 1974 – 2012 NWALT



Mine near Winchester, VA.
Scale 1:10,000

In other areas NWALT extractive layer provides relatively poor accuracy

New York and Virginia

- Currently, the NWALT extractive layer serves as the only coverage of extraction in the CBW for NY and VA
- Permitted coal surface mining operations in southwest VA (outside CBW) incorporated from VA Dept. of Mines Minerals and Energy
- Point data of mining locations have been located for the states of New York and Virginia, however, they have not yet been incorporated into the CBW Extractive Layer – the point data could potentially be used to digitize polygons of mining locations in these states

New York and Virginia Point Data

Scale 1:10,000

Scale 1:10,000

New York: Mine type and count in CBW

Consolidated materials surface mine: 68
Reclaimed consolidated materials surface mine: 30
Unconsolidated materials surface mine: 357
Reclaimed unconsolidated materials surface mine: 362

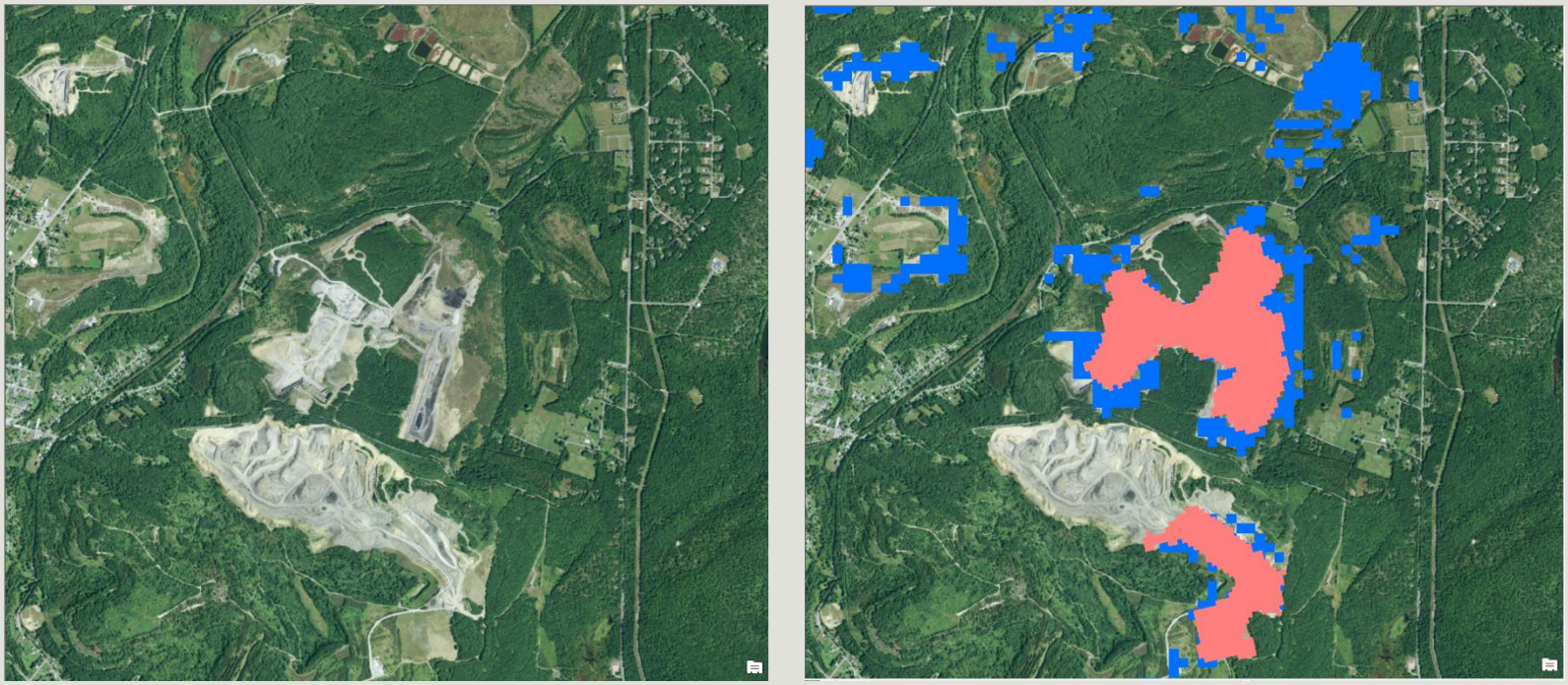
Virginia: Mine type and count in CBW

Active mineral mine: 338
Released mineral mine: 164
Orphaned mineral mine: 2438

Pennsylvania: 2005 PAMAP

- Statewide land cover dataset visually interpreted from 2003 – 2007 NAIP imagery
- 30-meter resolution, minimum mapping unit of 2.0 hectares
- *Class 750: Active Mines/Significantly Disturbed Mined Areas* was isolated for use in the CBW Extractive Layer, in conjunction with NWALT data
- Oil and natural gas disturbance sites from the Marcellus Shale Interior Assessment Unit 2004-2010 were also incorporated into the CBW Extractive Layer

Pennsylvania: 2005 PAMAP and NWALT



NWALT (blue) provides supplemental coverage to PAMAP (pink). Both datasets still fail to cover all active and abandoned mining areas. Scale 1:20,000

Pennsylvania: Oil and Natural Gas Disturbance Sites

Generally good accuracy state-wide. Scale 1:15,000

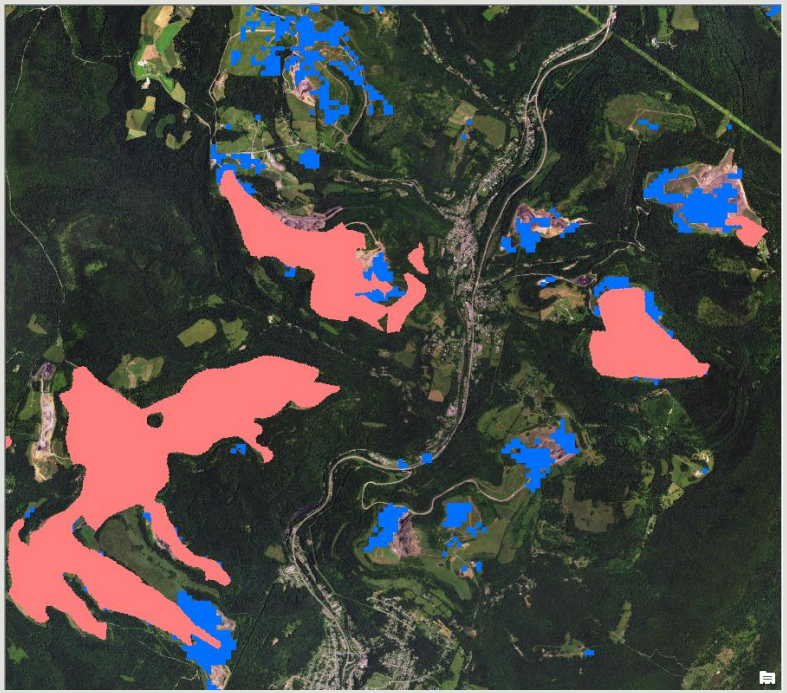
Maryland: MDP and MDE

- 2010 MDP Land Use Land Cover Dataset created from
  - 2002 LULC data
  - 2007 NAIP imagery
  - 2008 parcel points and tax maps

- *Class 17: Extractive* was isolated from dataset and converted to 10-meter resolution raster for use in CBW Extractive Layer

- Two more polygon mining area datasets acquired from MDE and supplied by Peter Claggett were rasterized to 10-meter resolution and included in CBW Extractive Layer

Maryland: MDP, MDE, and NWALT



Accuracy generally good where coverage exists, NWALT (blue) provides supplemental coverage to MDP and MDE data (pink). Scale 1:40,000

Delaware: 2012 LULC

- State of Deleware 2012 Land Use Land Cover polygon dataset created from
  - 2012 CIR orthophotos
  - 2007 Delaware LULC data
- Minimum mapping unit of 2 acres
- *Class 750: Extraction* was isolated from dataset and converted to 10-meter resolution raster for use in CBW Extraction Layer

Delaware: 2012 LULC

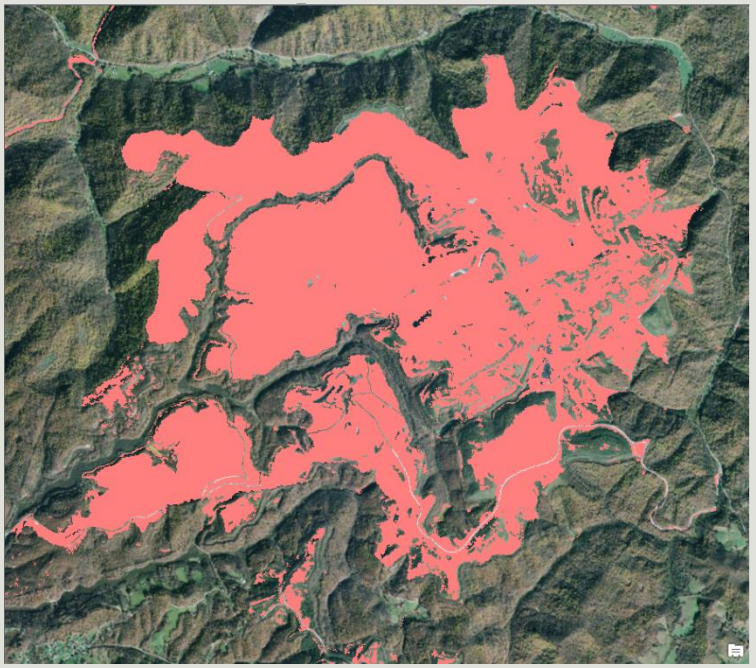
Very good accuracy and coverage state-wide. Scale 1:20,000

West Virginia: 2011 NRAC

- WVU's Natural Resources Analysis Center (NRAC) developed 9-meter resolution raster of state wide LULC from 2011 NAIP orothophotos

- *Class 5: Mine Grass* and *Class 6: Mine Barren* were both isolated from dataset for use in CBW Extractive Layer

West Virginia: 2011 NRAC



Very detailed coverage state-wide. Scale 1:30,000

Final CBW Extractive Layer

- CBW Extractive Layer is a combination of NWALT extractive layer and extractive layers from PA, MD, DE, and WV
- Mosaicked together to create 10-meter resolution raster
- NWALT extractive layer was used in addition to state-wide extractive layers in an effort to be as inclusive as possible of all extractive land use

CBW Landfill layer

- Landfill layer created for the CBW using landfill location point data from :
  - 2014 EPA open landfill locations (ArcGIS Online)
  - NY Dept. of Environmental Conservation
  - PA Dept. of Environmental Protection
  - MD Dept. of the Environment
  - DE Solid Waste Authority

- Points were zoomed to a scale of 1:10,000 and any obvious landfill features visible in ESRI aerial photography were digitized to polygons and converted to a 10-meter raster