

# Mine Map Acquisition, Preservation, and Digitization, the Pennsylvania Story

- James Welsh
- PA Dept of Environmental Protection
- California District Office

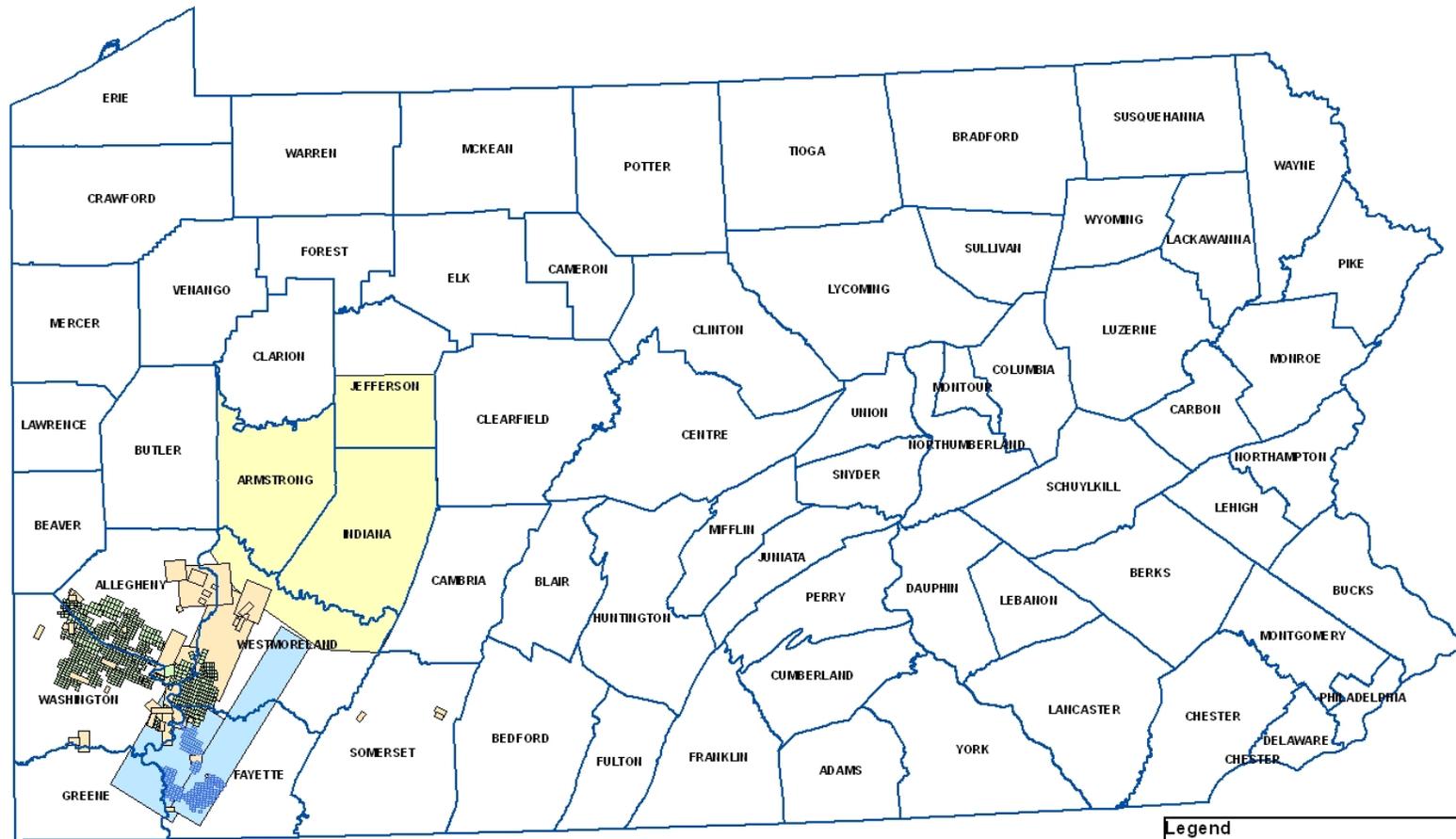
# Introduction

- The purpose of this presentation is to show the Pennsylvania Department of Environmental Protection's efforts working with various outside mine map collections

# Introduction

- CONSOL Energy Mining Map Collection / University of Pittsburgh Archive Service Center
- The Rochester and Pittsburgh Coal Company Collection / Indiana University of Pennsylvania
- H. C. Frick Coke Company Collection / RGGGS Land and Minerals, Inc.

# CDO Outside Collections



| Legend                                    |  |
|---|--|
| <span style="color: blue;">■</span>       | H.C. Frick Coal & Coke Company 1"= 100' map collection |
| <span style="color: lightblue;">■</span>  | Extent of RGGGS Collection                             |
| <span style="color: orange;">■</span>     | Consol Energy Hardback Collection                      |
| <span style="color: lightgreen;">■</span> | Pitt H and K Sheet Collection                          |
| <span style="color: yellow;">■</span>     | Rochester & Pittsburgh Coal Company Collection         |
| <span style="color: blue;">■</span>       | Pennsylvania County Boundaries                         |

# University of Pittsburgh

- CONSOL Energy Mining Map Collection
  - Maps date from 1854 to 2002, the majority dating from 1880 to 1940
  - Covers mines in six counties in Pennsylvania owned and/or operated by Consolidation Coal Company and its constituents
  - Consist of more than 8000 mine map sheets

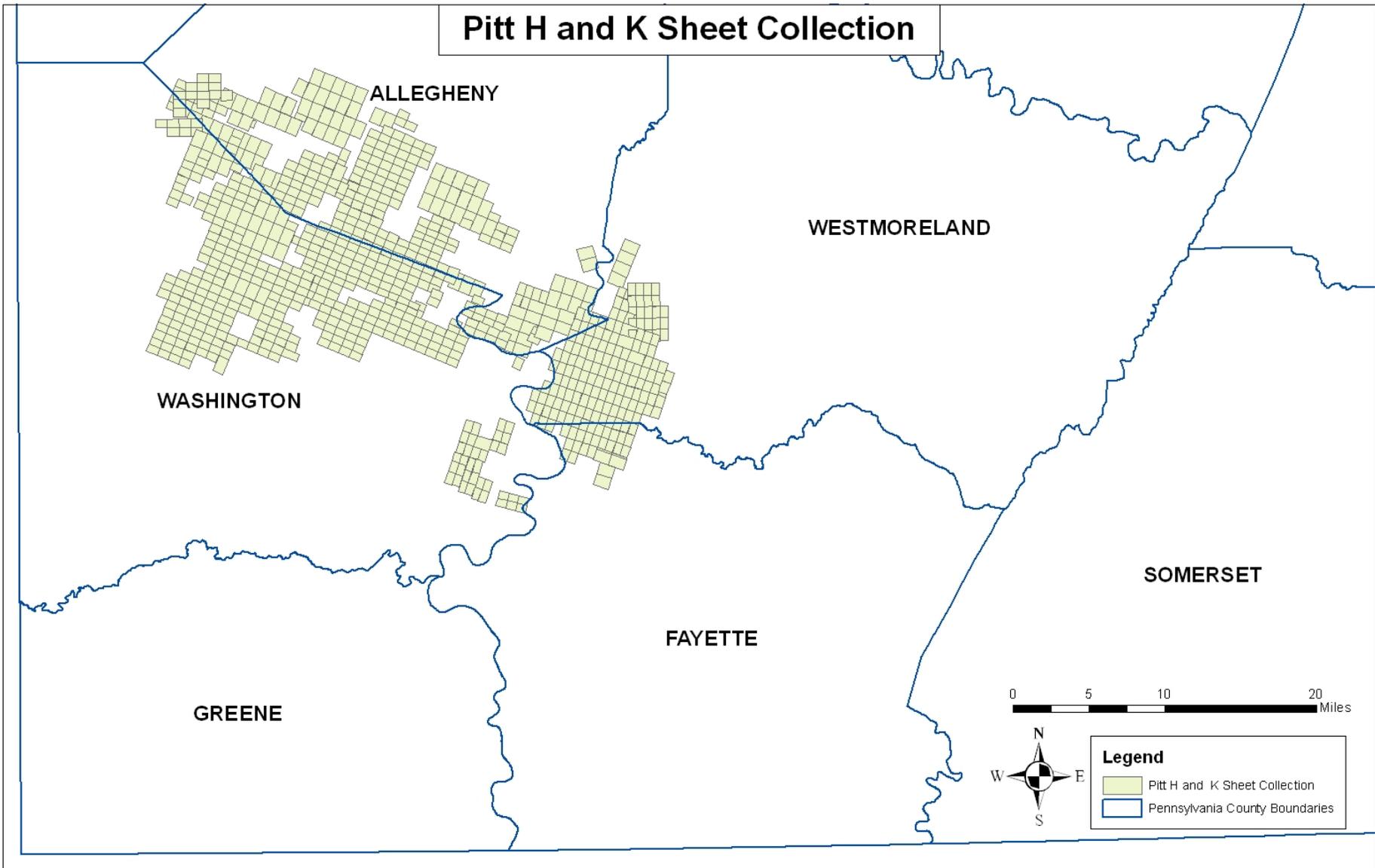
# University of Pittsburgh

- We are presently working on three portions of the collection
  - K-Sheet series, approx 820 map sheets
  - H-Sheet series, approx 450 map sheets
  - Hardback maps, 600+ mine maps

# University of Pittsburgh

- H and K Sheets
  - Covers large portion of four counties in Pennsylvania
  - Vary in condition from good to very poor

# Pitt H and K Sheet Collection



# University of Pittsburgh

- K-Sheets
  - 30" x 42" mine map sheets, mostly linens
  - All K-Sheets have been scanned
  - 147 have been georeferenced and digitized



# University of Pittsburgh

- H-Sheets

- 42" x 60" mine map sheets, mostly linens

- Only ten of these maps have been scanned by Pennsylvania DEP

- Due to the condition of the H-Sheets, the OSM National Mine Map Repository has taken the lead on scanning the H-Sheets

# University of Pittsburgh

- Hardback Maps
  - Were the working maps of the mines
  - Very large (some as large as 6' x 30')
  - Heavy paper with canvas backing

# University of Pittsburgh

- Hardback Maps
  - Vary in condition from good to very poor
  - Dirty, brittle, tightly rolled
  - Estimate of number of hardbacks low due to nesting





# University of Pittsburgh

- Hardback Maps
  - Pitt and PA DEP were awarded an OSM Underground Mine Mapping Grant in 2006
    - Purchased equipment and reconfigure the conservation laboratory
    - Hired preservation and conservation personnel
    - Complete treatment of 100 hardbacks in preparation for scanning and digitization

# University of Pittsburgh

- Treatment
  - Humidification and flattening
  - Dry cleaning
  - Repair





FEB 29 2008





W. KELNED & CO.  
LONDON, ENGLAND.  
PRINTED BY W. KELNED & CO.  
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**Before  
Humidification  
&  
Flattening**

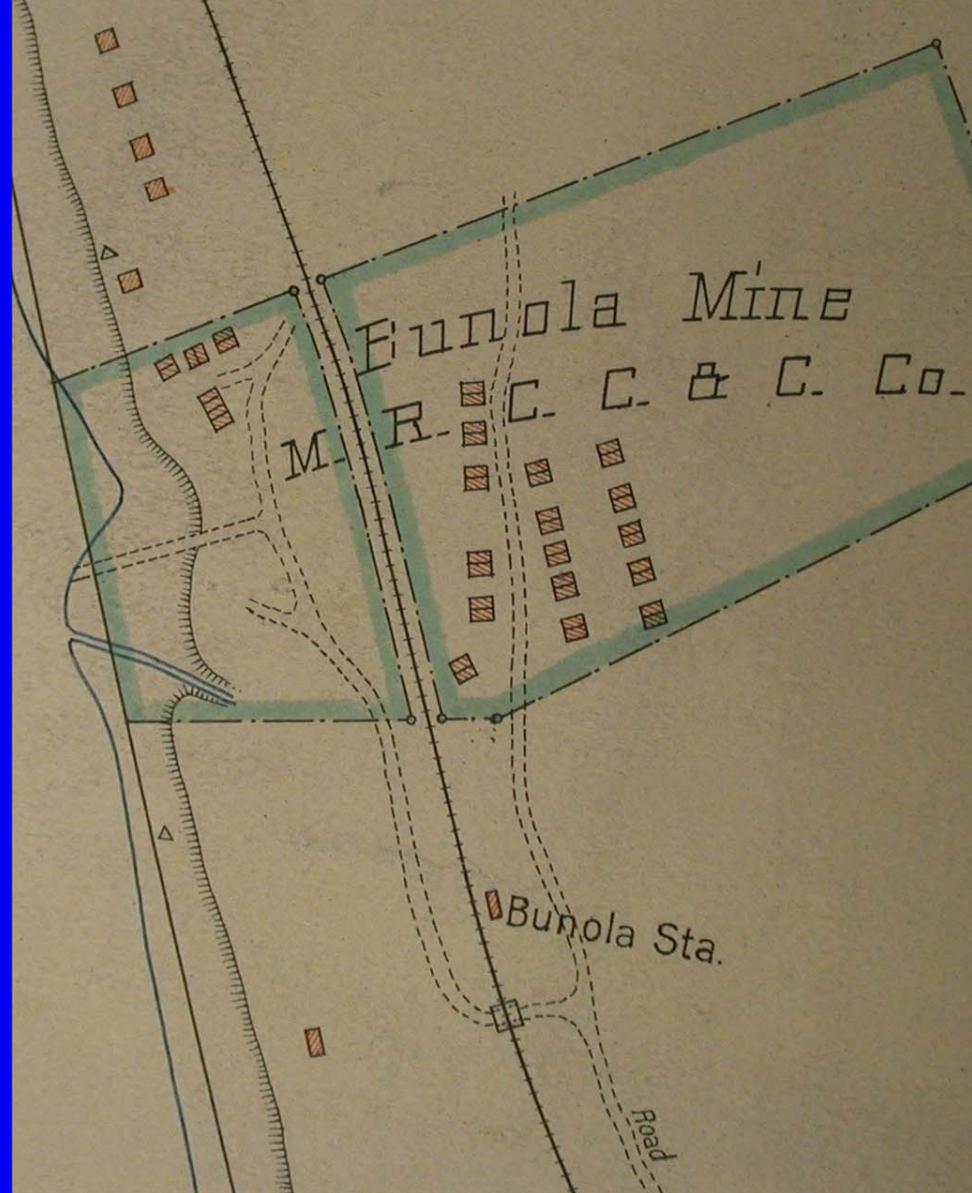


**After  
Humidification  
&  
Flattening**

Before Cleaning



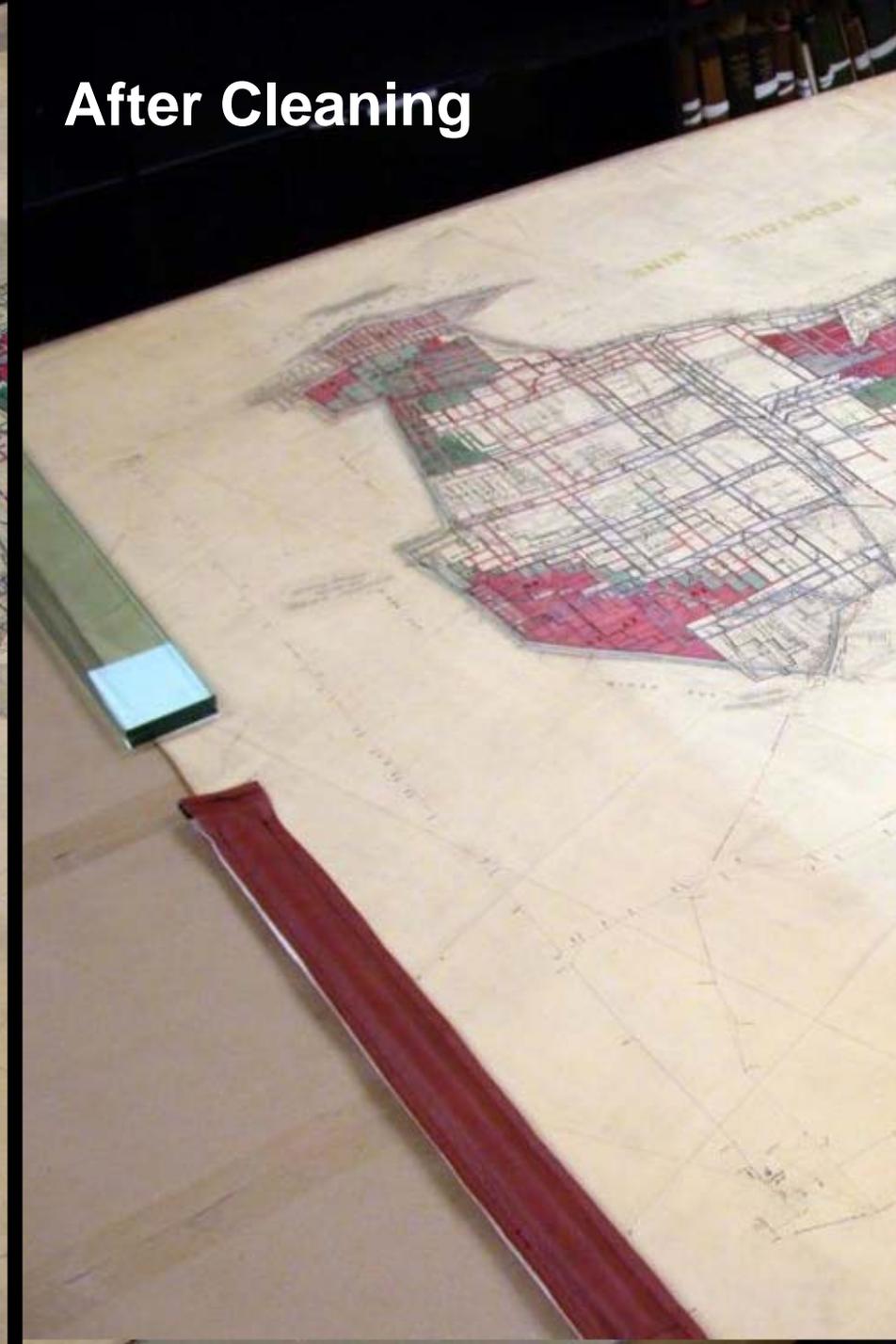
After Cleaning



**During Cleaning**



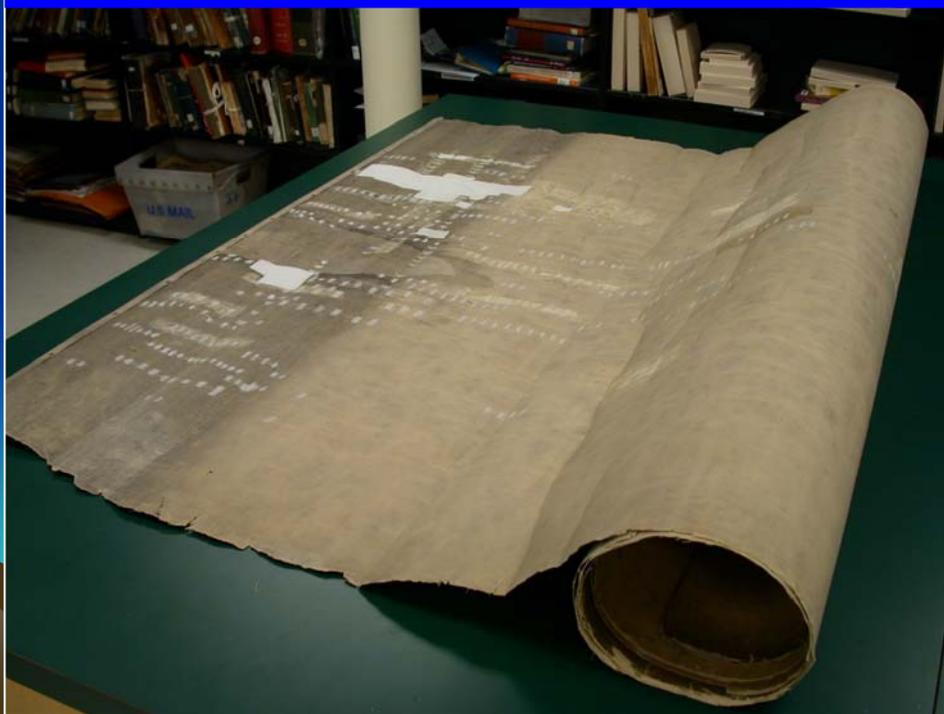
**After Cleaning**



**Before  
Repair**



**After  
Repair**



**Before  
Repair**



**After  
Repair**



# University of Pittsburgh

- PA DEP's role in the process
  - Provide database for cataloging
  - After treatment, facilitate the transportation of the maps to the OSM National Mine Map Repository or IUP for scanning
  - Georeference and digitize the scans of the hardbacks for integration into PA DEP's GIS



CRUISE

DEC 11 2007

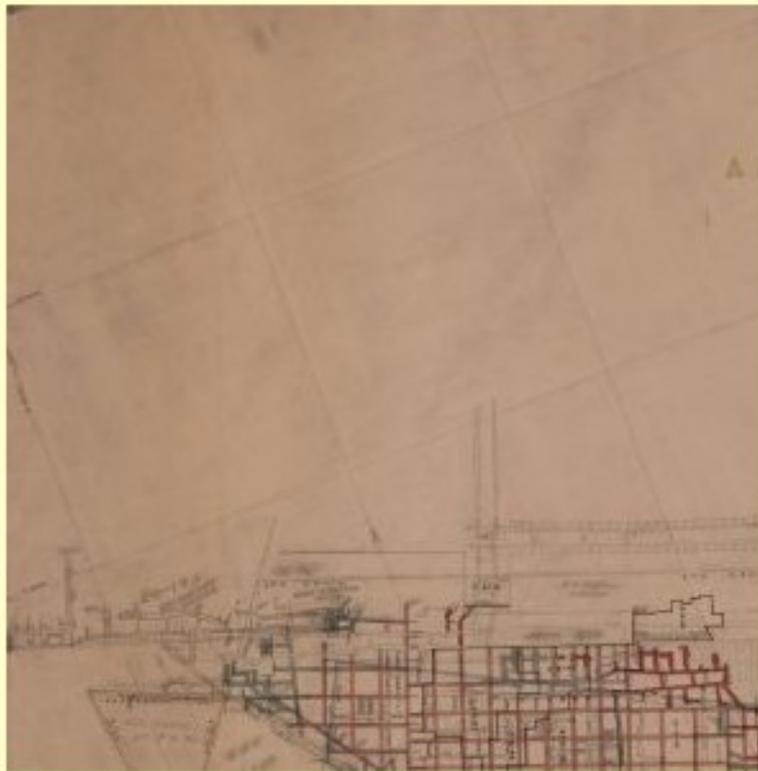


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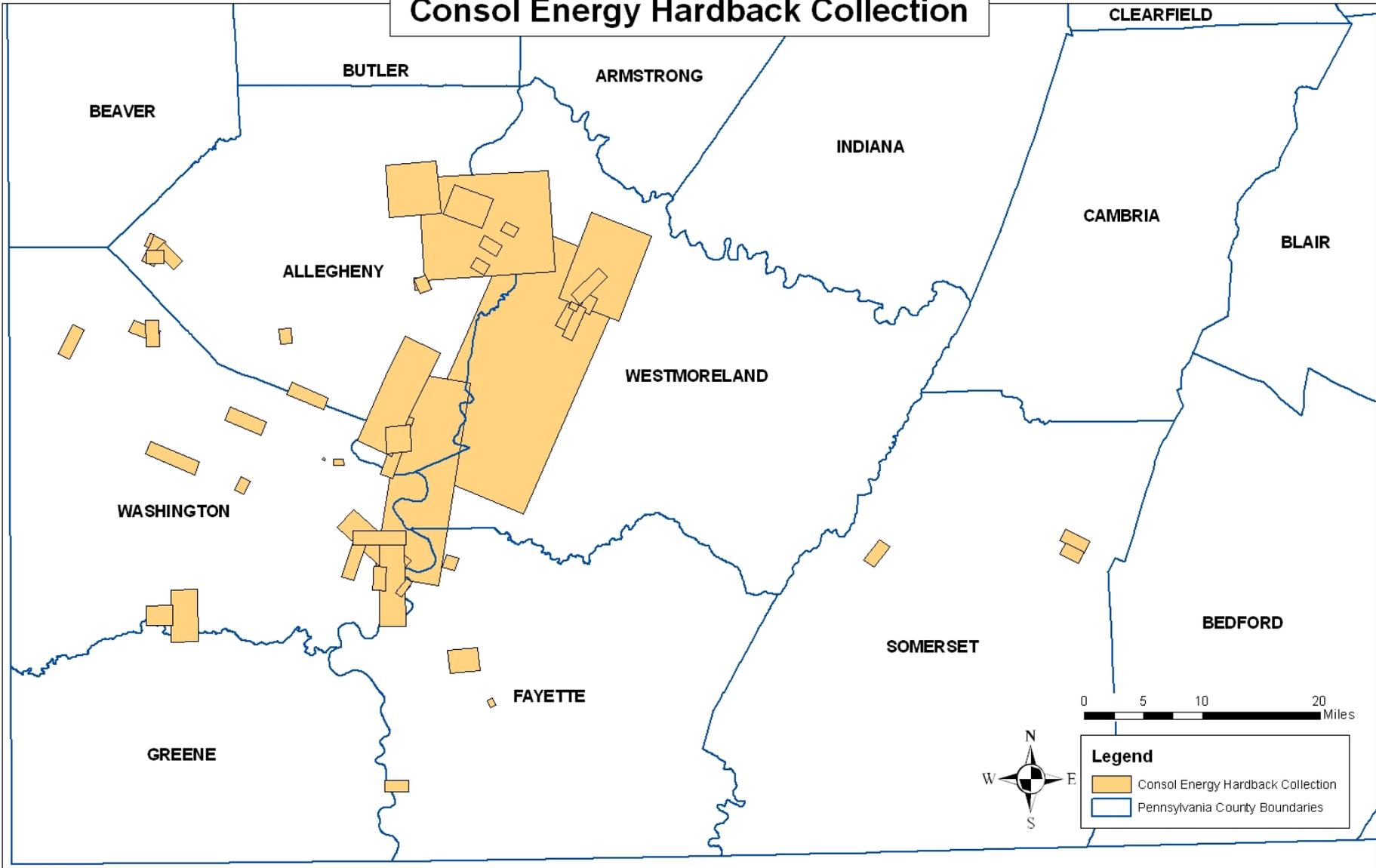
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# Consol Energy Hardback Collection



# University of Pittsburgh

- Progress to date
  - 83 hardbacks have been treated
  - 73 hardbacks have been scanned resulting in 190 image files
  - 46 image files have been georeferenced and digitized

# Indiana University of PA

- Rochester and Pittsburgh Mine Map Collection
  - Covers mines in four counties in Pennsylvania owned and/or operated by Rochester and Pittsburgh and its constituents
  - Consists of more than 5000 mine map sheets

# Indiana University of PA

- 2003 MSHA Grant awarded to Pennsylvania
  - Purchase a Cruse Scanner placed at IUP
- 2007 OSM Underground Mine Mapping Grant awarded to DEP and IUP
  - Purchase infrastructure to support the Cruse Scanner and redundant storage of the image files

# Indiana University of PA

- Objectives
  - Scan PA DEP's large format mine maps
  - Scan and catalog the R & P collection



FEB 28 2008



D. ANDERSON

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THOMAS SHARP



STATE ROUTE 32129

WATER WELL

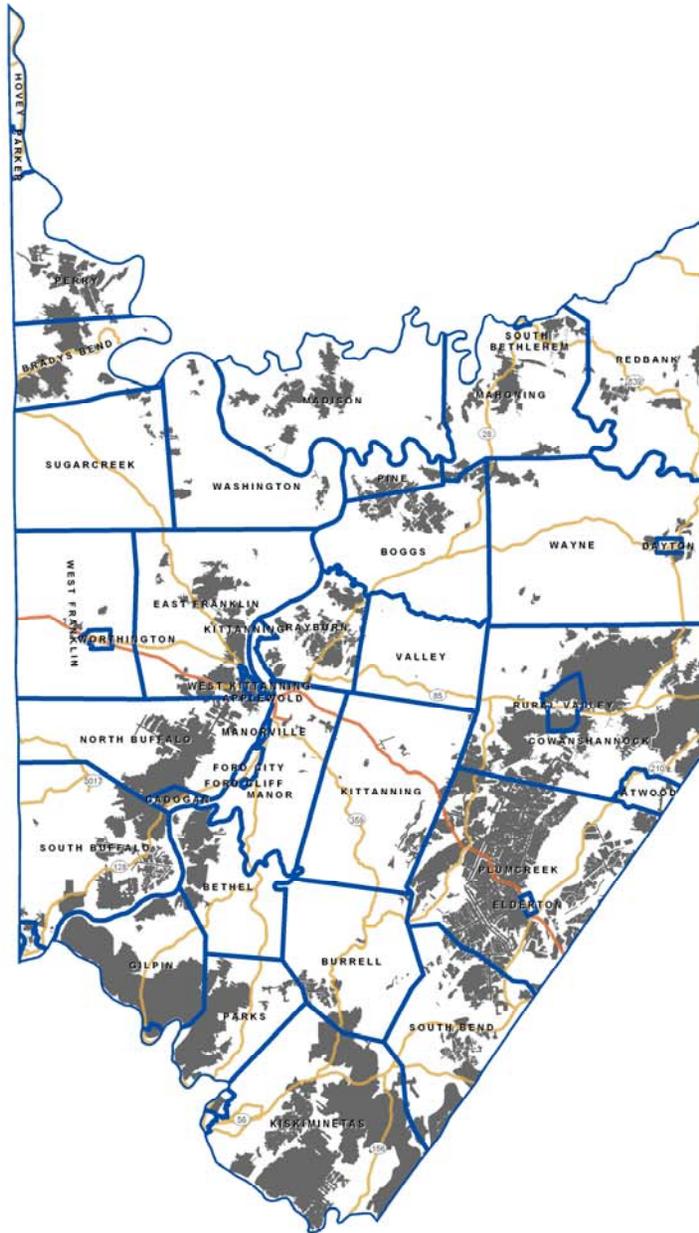
S - 74° 47' E  
→

N - 18° 02' E

# Indiana University of PA

- Progress to date
  - Approx 250 image files have been provided to the PA DEP
  - These image files have been geo-referenced and digitized

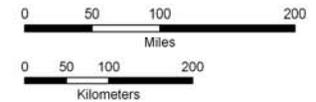
# Undermined Areas of Armstrong County



## Legend

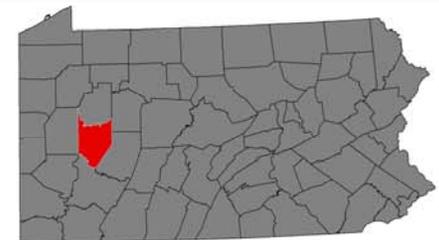
- Highway
- Major Road
- Municipality Boundary
- Undermined Areas

Prepared by:  
Pennsylvania Department  
of Environmental Protection  
California District Office  
Mine Subsidence Section  
Technical Services Unit  
January 2008



This map was prepared using information considered to be the best historic data available.

The Department cannot verify the accuracy or completeness of this information.



Armstrong County, PA

# RGGS Land and Minerals

- H.C. Frick Coke Company and U. S. Steel Company mine map collections
  - The collections contains of approximately 10,000 mine maps
  - The maps consist of linens, mylars, blueprints, and hardbacks

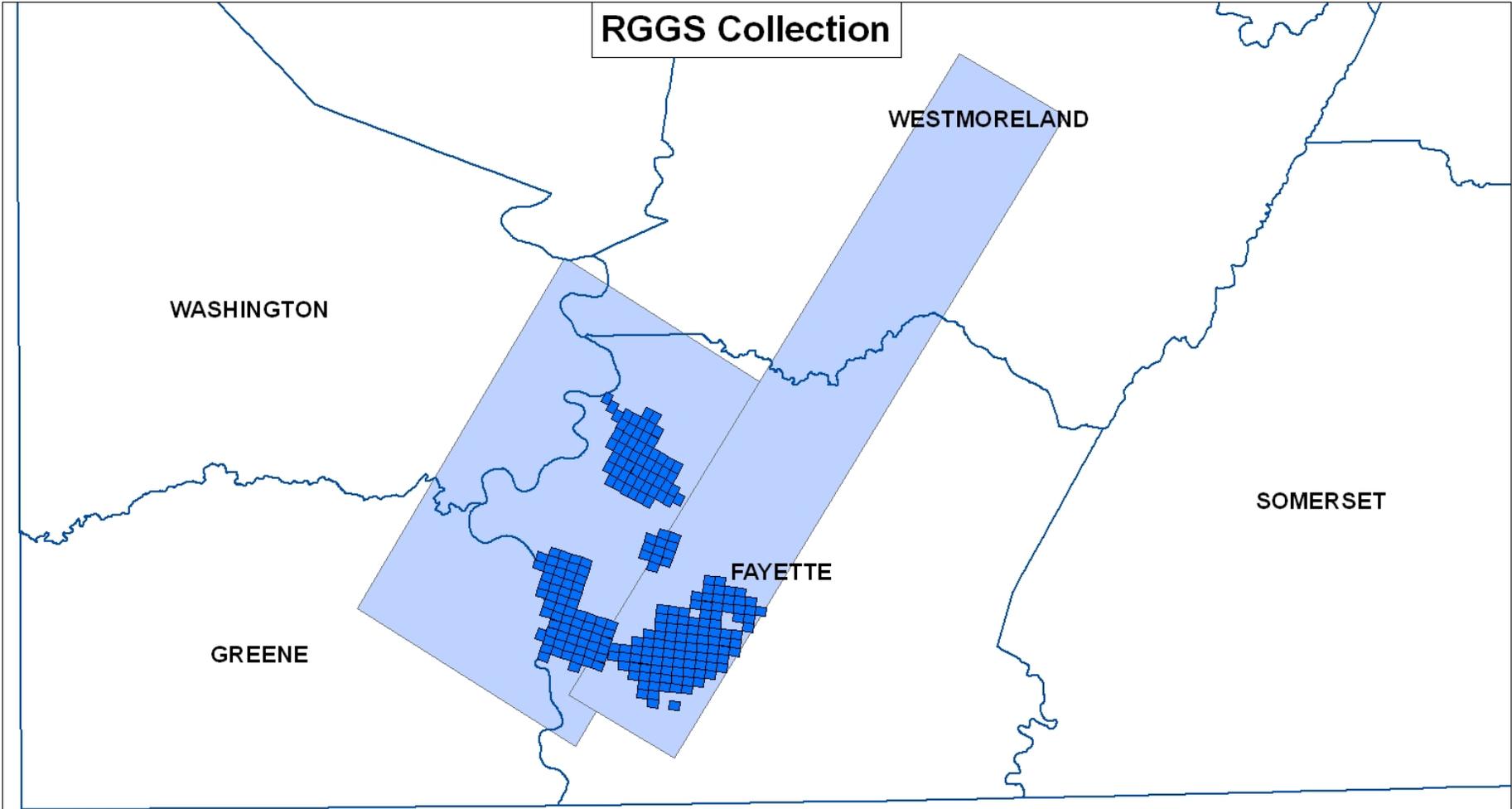
# RGGS Land and Minerals

- PA DEP has been given access to the RGGS mine map collections
  - Transport the maps for scanning
    - PA DEP's California District Office
    - Large format maps to OSM National Mine Map repository or Indiana University of Pennsylvania

# RGGS Land and Minerals

- Currently we are working with the 1" = 100' linens of the H. C. Frick Coke Company collection
  - Covers portion of three counties in Pennsylvania
  - Providing detailed mining information not available elsewhere

# RGGS Collection



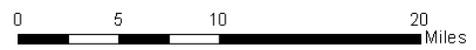
WASHINGTON

WESTMORELAND

SOMERSET

FAYETTE

GREENE



**Legend**

- Extent of RGGS Collection
- H.C. Frick Coal & Coke Company 1"= 100' map collection
- Pennsylvania County Boundaries

# RGGS Land and Minerals

- PA DEP is providing the following in consideration for access to the collections
  - Copies of the mine map image files
  - Index of mine map sheets with USGS Topographic Base Map

# Dearth Mine H.C. Frick Coke Co. Map Sheet Index

## Legend

-  Mine Map Sheet Index
-  Mined Out Area of Dearth Mine
-  Abandoned\_Mine\_Entries

1,500 750 0 1,500 Feet

510 255 0 510 Meters

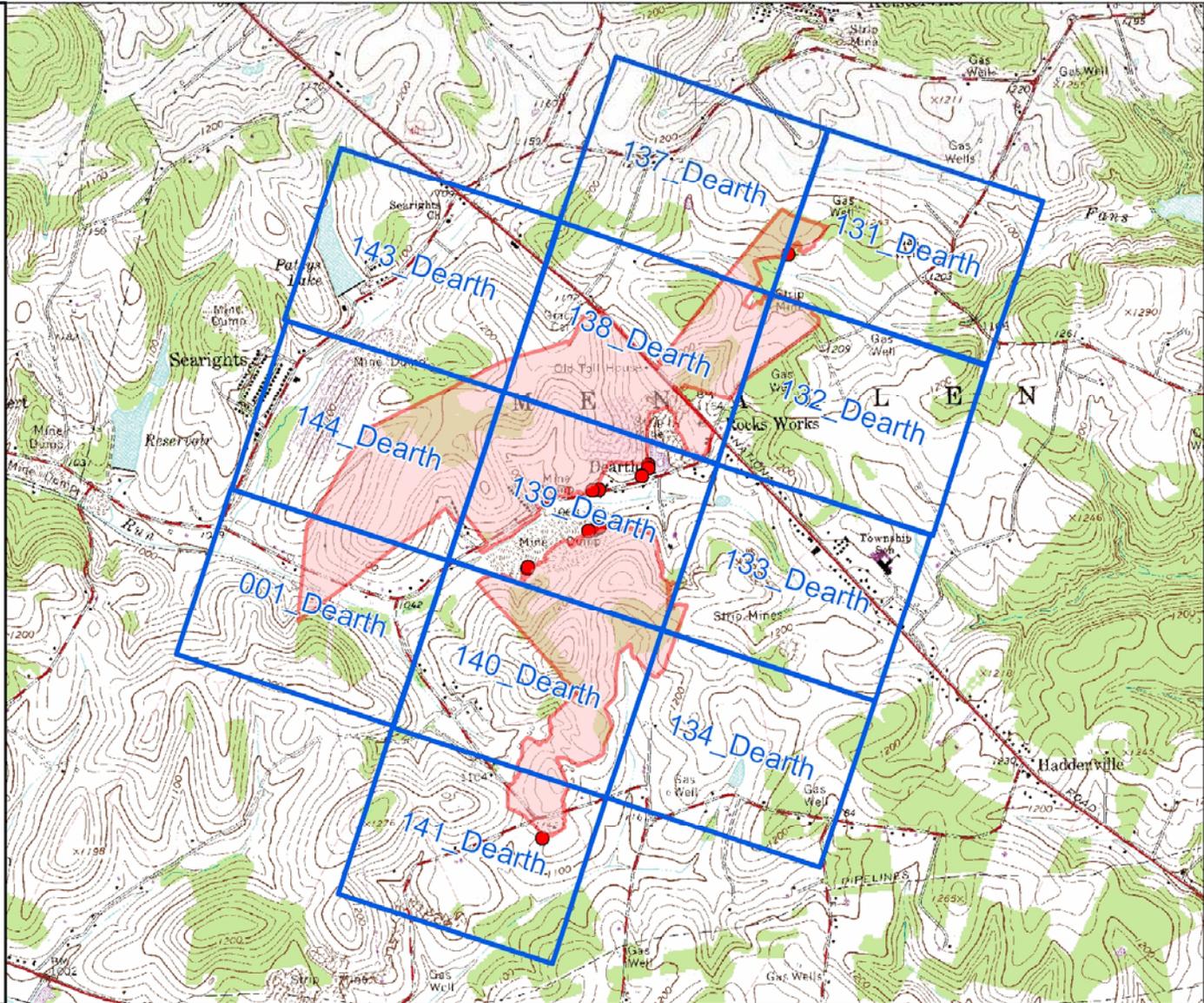


This map shows the location where Mine Map Sheets from the H.C. Frick Coke Co. collection correspond to on USGS Topographic maps.

The Department assumes no responsibility for the accuracy or completeness of this information.



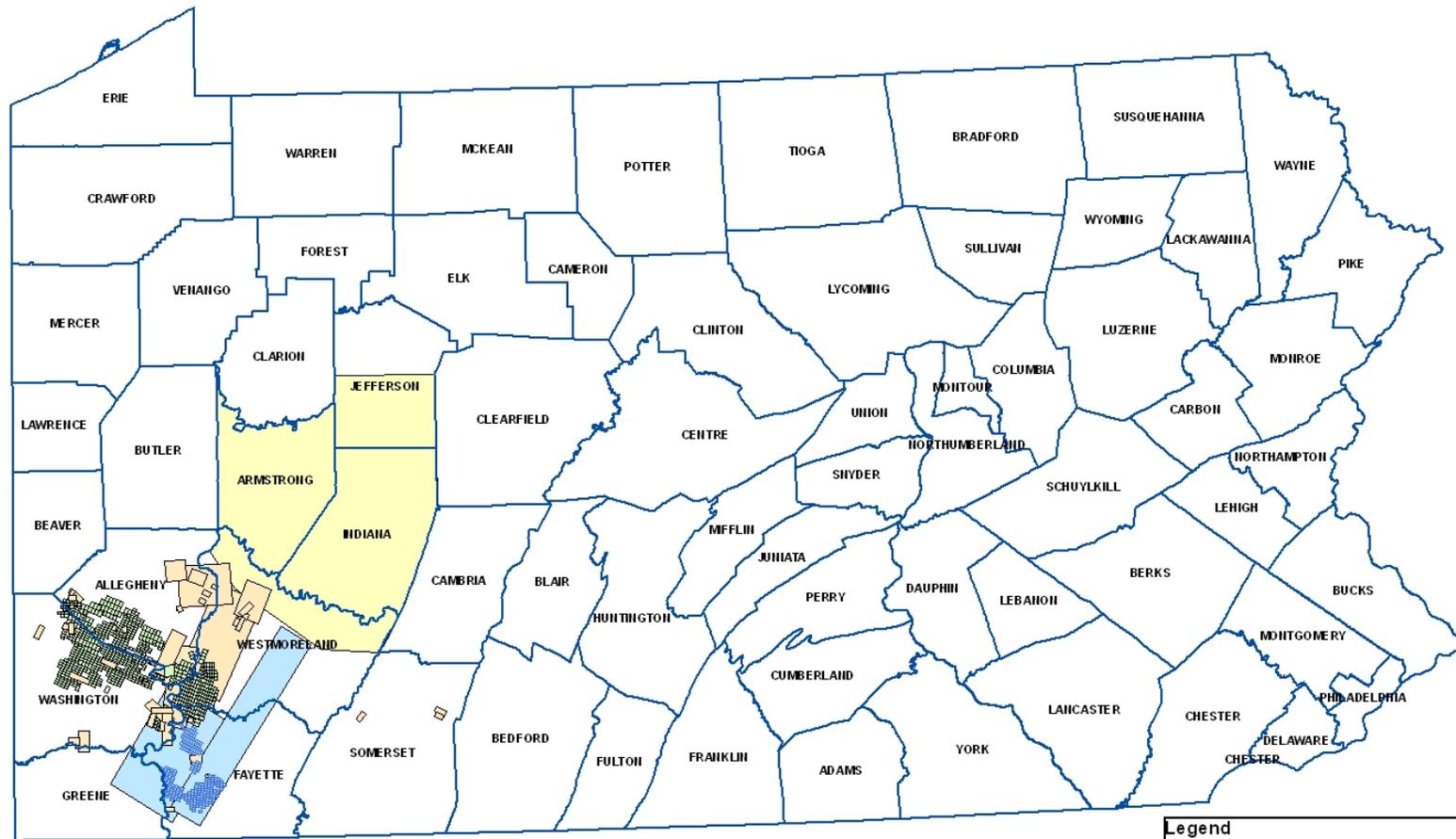
Prepared by:  
PA Dept. of Environmental Protection  
California District Office  
Mine Subsidence Section  
Technical Services Unit  
March 2008



# RGGS Land and Minerals

- To date we have scanned Approx 430 mine maps sheets from the H. C. Frick Coke Company Collection
  - Approx 250 map image files have been georeferenced
  - Approx 100 have been digitized

# CDO Outside Collections



| Legend |  |
|--------|--|
|        | H.C. Frick Coal & Coke Company 1"= 100' map collection |
|        | Extent of RGGGS Collection                             |
|        | Consol Energy Hardback Collection                      |
|        | Pitt H and K Sheet Collection                          |
|        | Rochester & Pittsburgh Coal Company Collection         |
|        | Pennsylvania County Boundaries                         |

# Conclusion

- PA DEP efforts with outside collections
  - Has given PA DEP access to over 23,000 additional mine maps
  - Ability to preserve Underground Mine Maps of PA

# Conclusion

- These efforts will ensure that Underground Mining Information is available for
  - Regulating the mining industry
    - Mine safety
    - Permitting
  - Determining the need for Mine Subsidence Insurance
  - Infrastructure and development
  - Environmental emergencies and reclamation projects

# Thank you

- James Welsh
- PA Department of Environmental Protection
- California District Office
- Technical Services Unit Supervisor
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