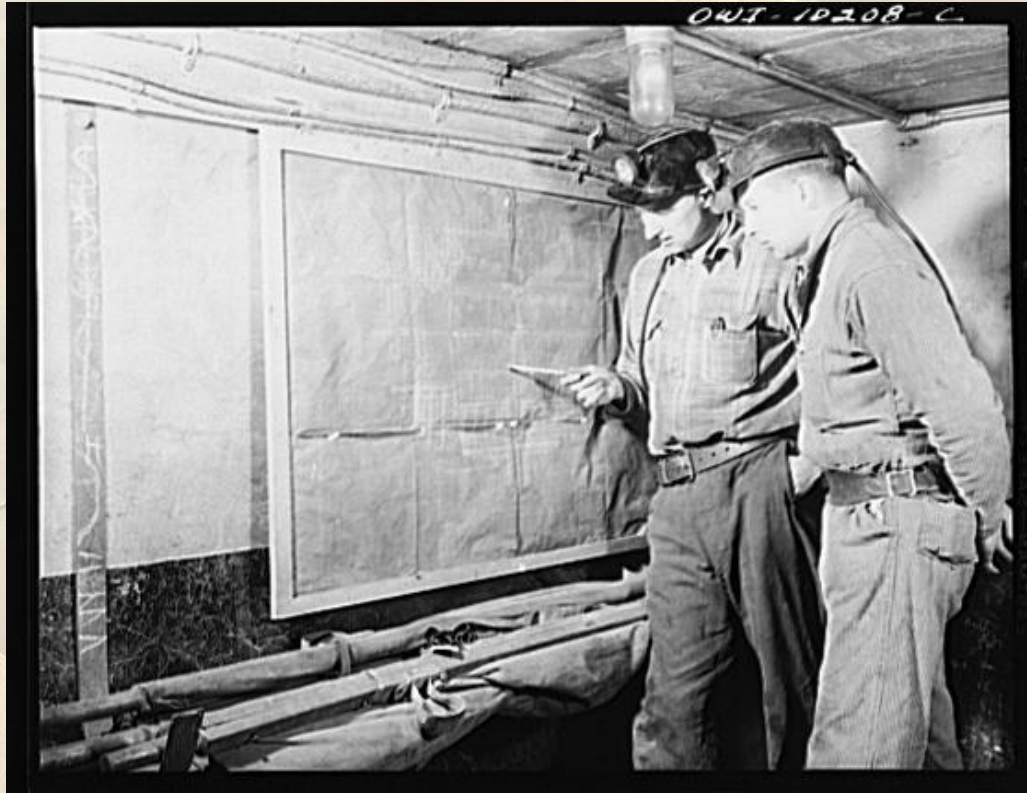


# Preservation of Archival Mining Maps: Increasing Access and Safety



## **CONSOL Energy Mine Map Preservation Project**

US Dept. of the Interior, Office of Surface Mining, Reclamation & Enforcement (OSM)

Pennsylvania Dept. of Environmental Protection (DEP)

University Library System, University of Pittsburgh

CONSOL Energy Inc.

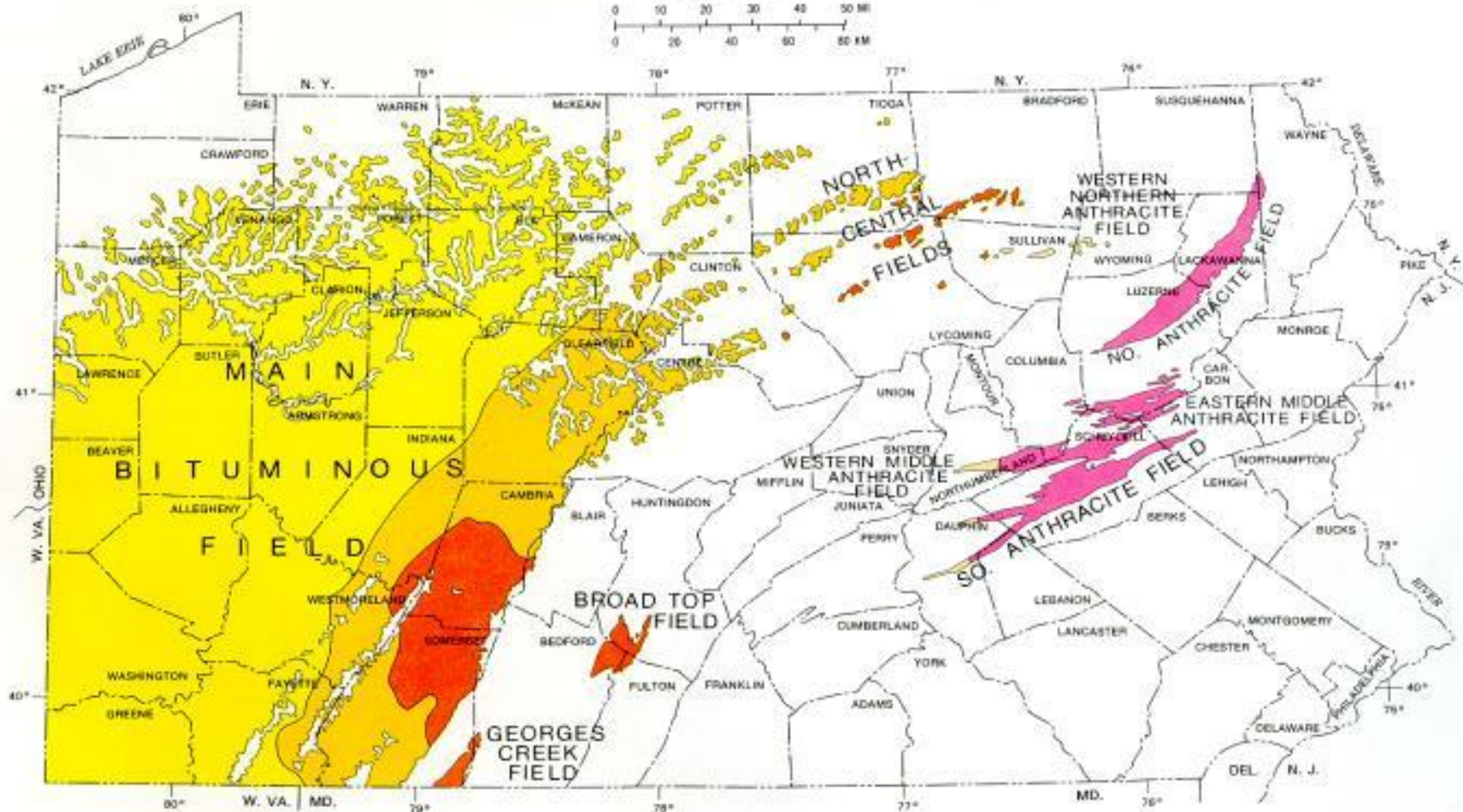
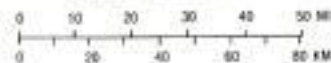


- 
- Background
  - Workflow
  - Collection
  - Conservation
  - Transportation & Scanning
  - Use of digital files



# DISTRIBUTION OF PENNSYLVANIA COALS

SCALE 1:2,000,000



## EXPLANATION

### BITUMINOUS FIELDS



### ANTHRACITE FIELDS



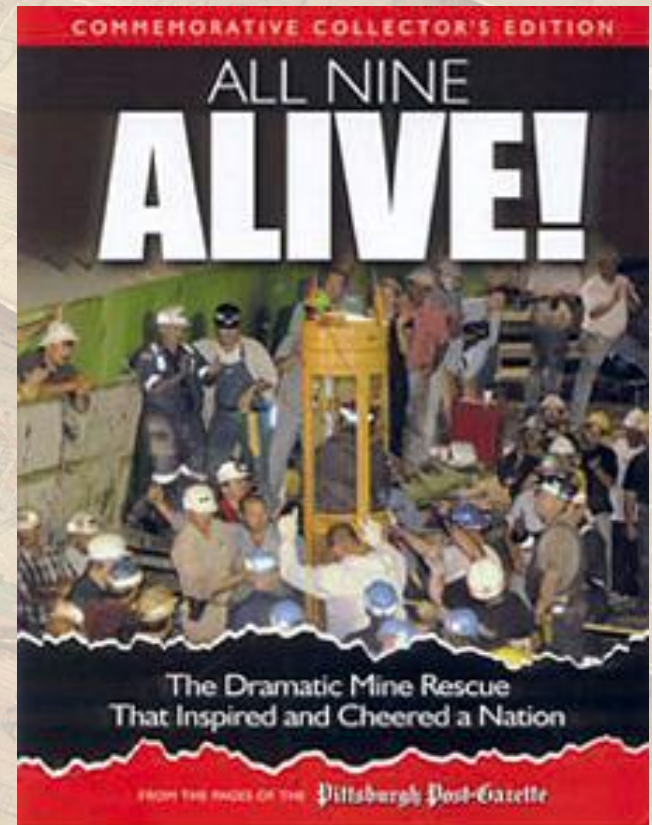


# Primary Initiative

About a year after the Quecreek accident, the federal Office of Surface Mining gave Pennsylvania \$1 million for equipment to scan existing maps into digital format for Internet usage.

"In the future, any municipal engineer, planner or zoner, developer -- anyone who plans to do any earth disturbance -- can go online and bring these maps up," Rathbun said.

**"They can say, 'Hey, there's a mine here,' rather than having it be a surprise."**



# Mine subsidence damage





Preservation of physical maps  
at the  
University of Pittsburgh Preservation Dept.



Digitization on overhead scanner



Use of digital files



Dirt is removed by dry or wet cleaning methods.



Tears are mended with muslin cloth and EVA adhesive.



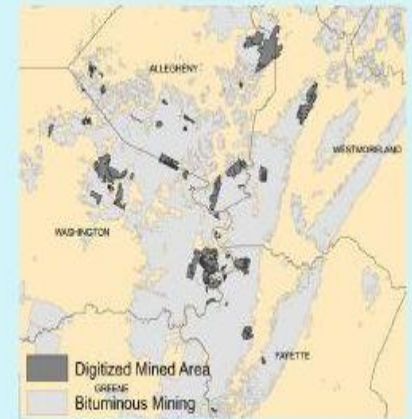
Stiff maps that crack when opened are humidified, unrolled slowly and dried flat between wool felts and polyester webbing.



Maps are scanned on a  
Cruse Table Scanner CS 285/1100 ST/FA  
equipped with a 58" x 90" vacuum table  
at the  
National Mine Map Repository (NMMR)  
located in Greentree, PA.



Maps are scanned at:  
-24 Bit True Color  
-220 to 630 DPI  
-Approx. 1.1 GB file size



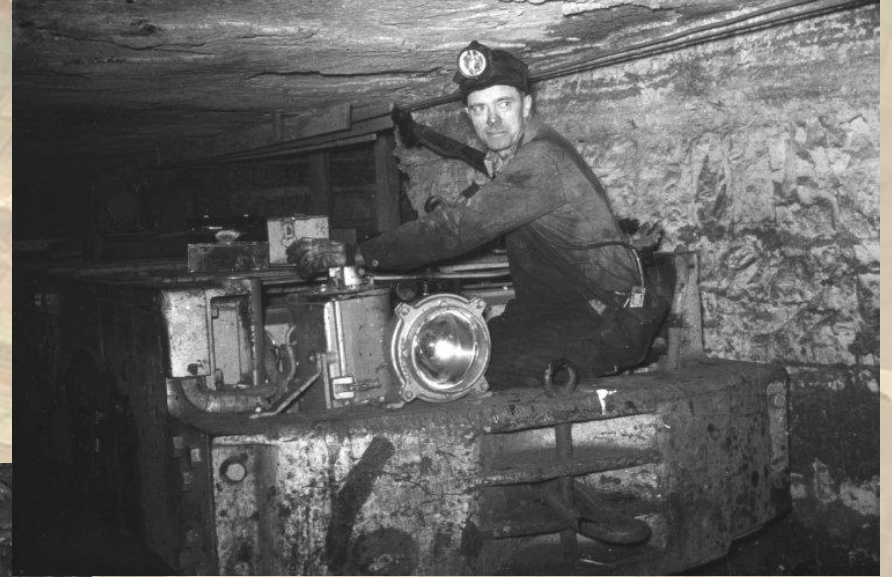
The digital images are used in various applications supporting:

- Homeowners determining if their house is undermined; requiring Mine Subsidence Insurance (MSI) offered by the PA-DEP
- Land Reclamation projects
- Mine Safety; where it is critical to preserve the most accurate and up-to-date map of abandoned mining
- Engineers involved in gas exploration and new underground mining operations
- The protection of miners, the public and the environment



# CONSOL Energy Collection

- Over 8,000 total items
- 1854-2002
- Bulk 1880-1940



..and about 500  
hardback maps



# Maps rolled inside of maps





# Hardback mine maps

- Paper backed with canvas
- Oversized
- Master copy
- Drafted by hand
- Created  
1860s -1950s





# In-house database

## Geography tab

**Mine Map Sheet Input Form : Form**

Local\_Sheet\_ID:  Sheet\_Name:  xsl #  Sheet\_Date:

Map\_Type:  Shelf Location:  Current Location:  Status:

General Scanning **Geography** Geology Physical Mine Condition Treatment H K Sheet

Input\_Municipality\_Tab/Table\_form

Local\_Sheet\_ID

County

Municipality

Record:  of 1

Input\_Quad\_Tab/Table\_form

Local\_Sheet\_ID

Quad

Record:  of 1

All treatments complete date:

Record:  of 159



# In-house Database

## Condition Tab

**Mine Map Sheet Input Form : Form**

Local\_Sheet\_ID:  Sheet\_Name:  xsl #  Sheet\_Date:

Map\_Type:  Shelf Location:  Current Location:  Status:

General Scanning Geography Geology Physical Mine **Condition** Treatment H K Sheet

Local\_Sheet\_ID  Survey\_date:

Able to unroll without damage? ☐ Losses  Condition comments

Surface Dirt  Tears  Stains

Brittle  Creases  Tape

Treatment proposed

Record:  of 1

Record:  of 159

All treatments complete date:

Condition comments: dirt L edge











# Humidification & Flattening

- 5' x 8' Museum Services Humidity Dome
- One map takes an average of 5 hours to humidify

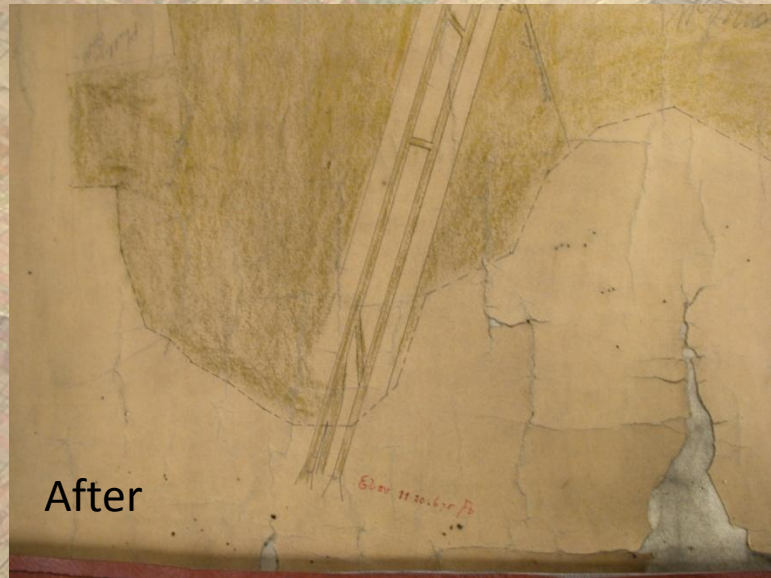


# Drying





## Surface dirt



## Stains and mold

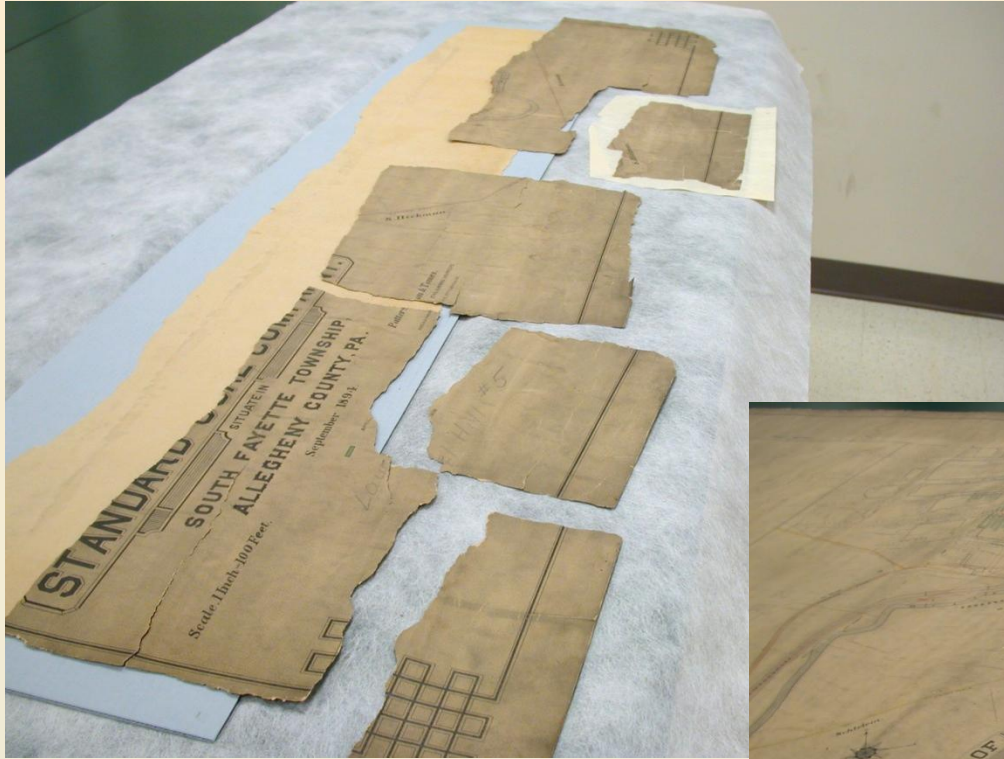








# Mending Maps with Tissue and Paste

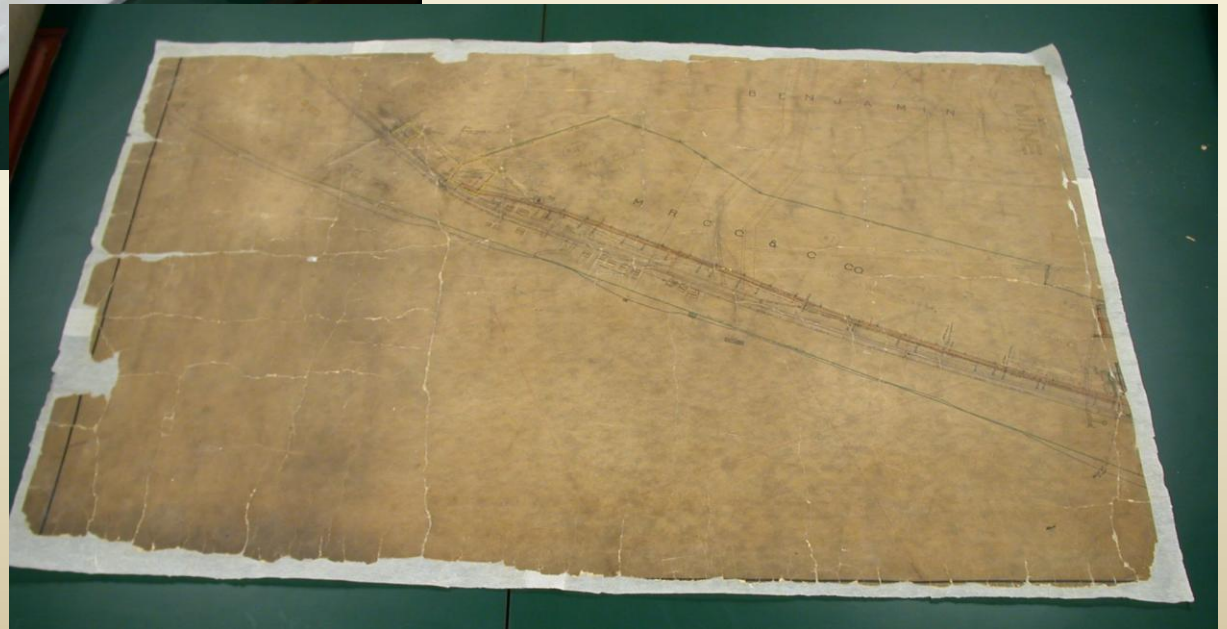


# Re-lining





# Re-lining



# Transport





# Cruse Table Scanner CD 285/1100 ST/FA



Area: 58 x 90"

DPI: 240-300

Suction  
or plexiglas



# Archival Storage & Use

- Archival storage
- Use in reading room

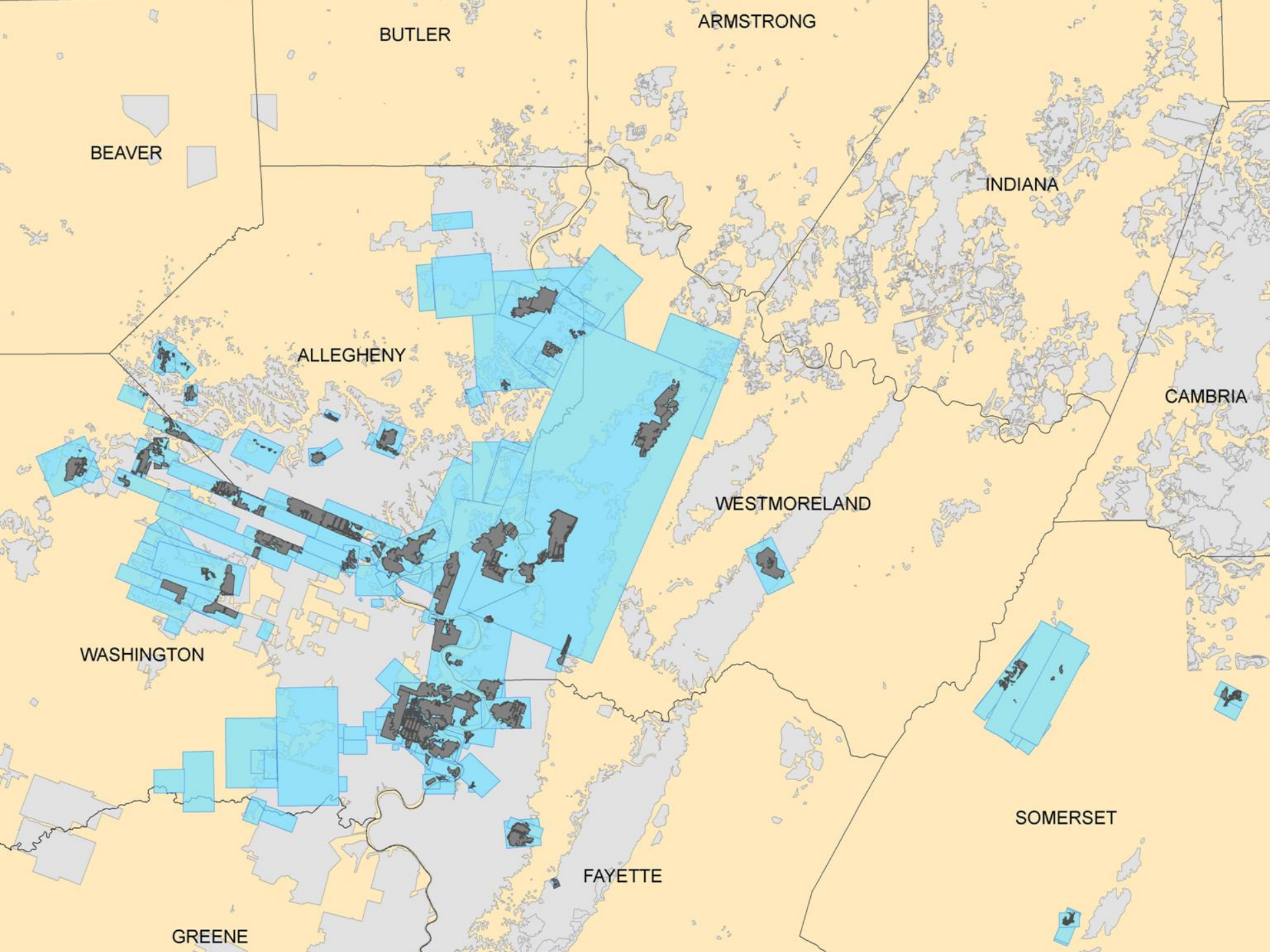




# Project Statistics

700	Surveyed
415	Dry Cleaned
131	Humidified & Flattened
144	Mended
76	Tape Removed
31	Re-lined
413	Scanned







# Increased Access





# Use of Digital Files

- Homeowners determining mining conditions in their area
- In response to abandoned mining incidents
- Municipal projects
- Mine reclamation projects
- Mine safety
- Gas exploration

**Ultimately the protection of  
miners, the public and the environment**

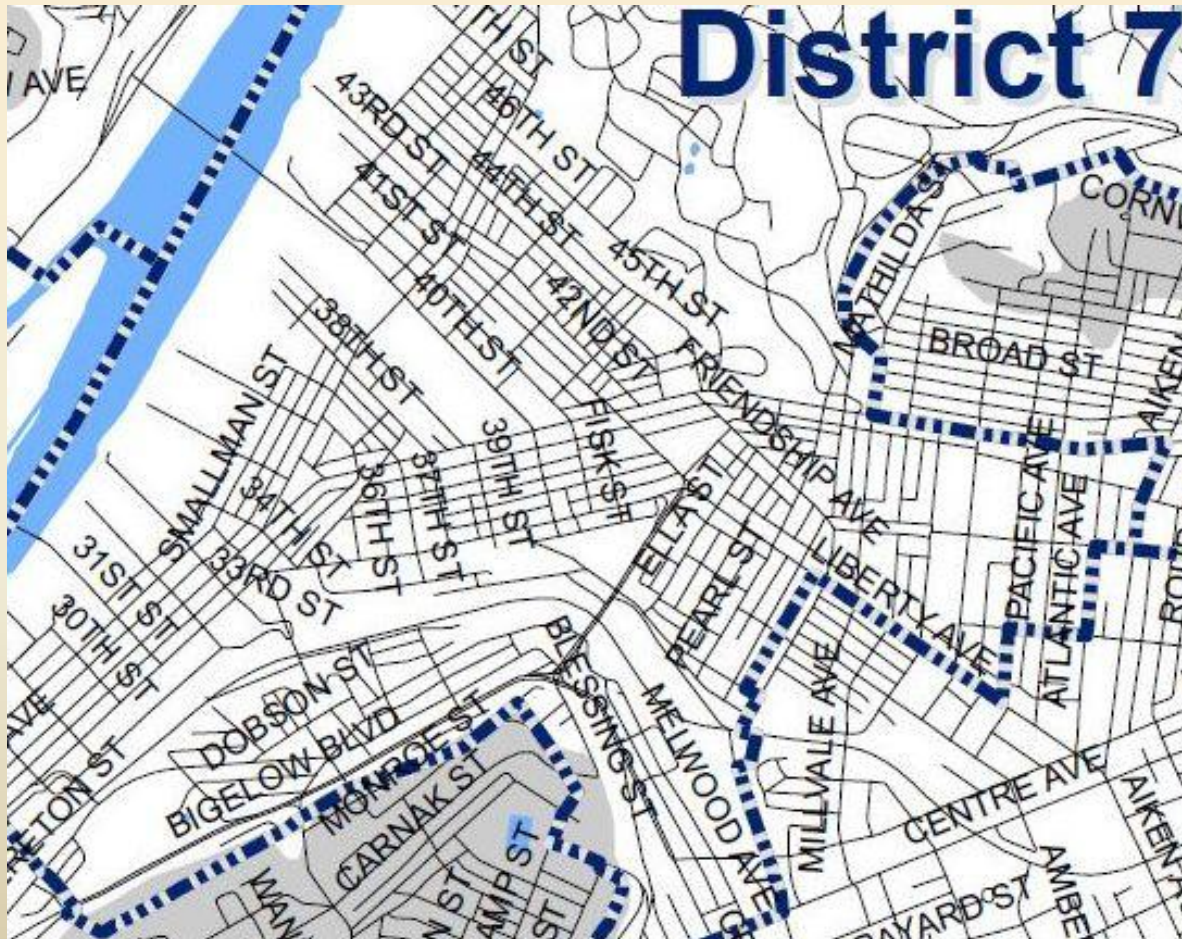


# Mine subsidence damage



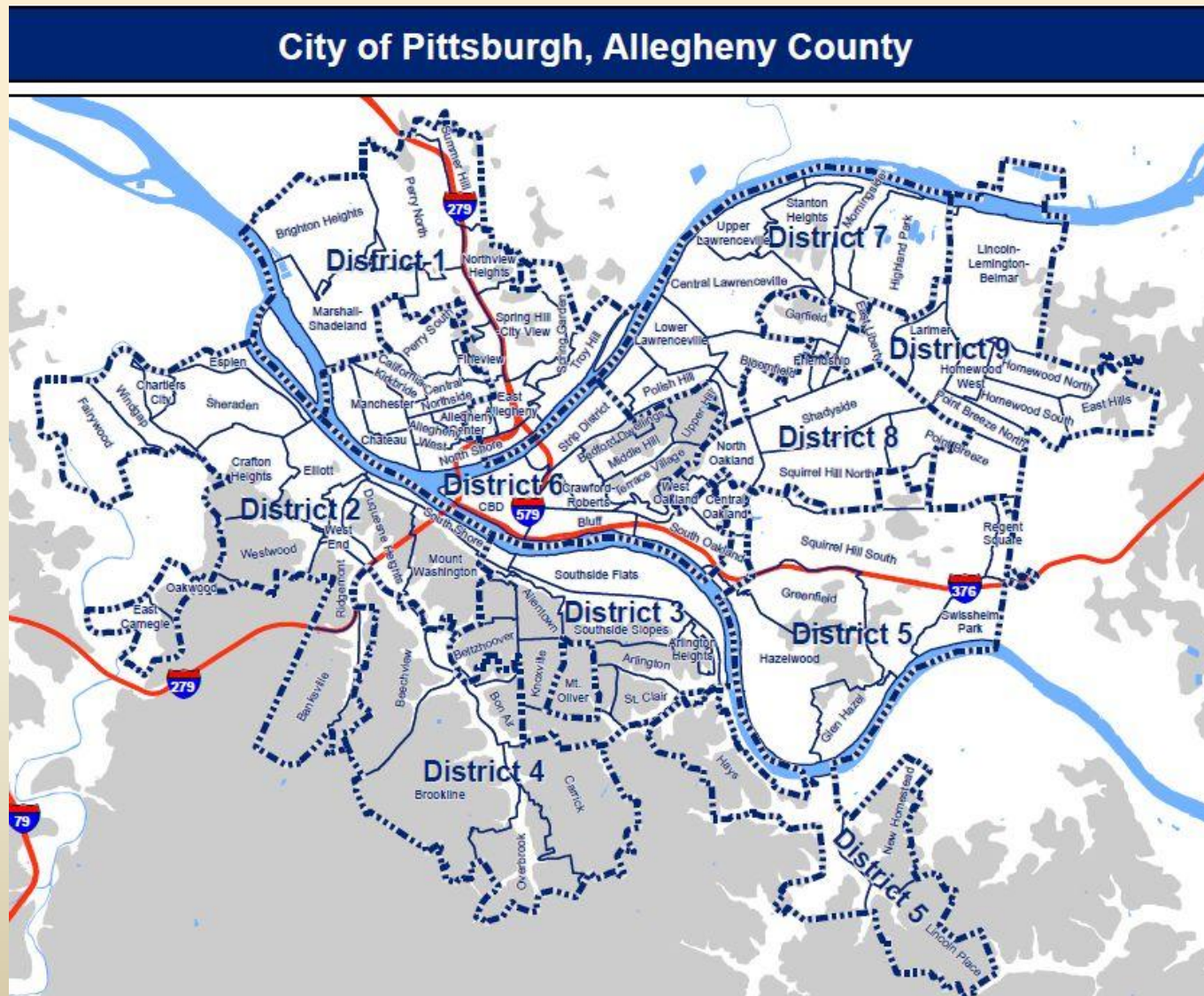
# How to check if your house is undermined?

<http://www.dep.state.pa.us/MSIHomeowners/municipalitymappinglist.html#AlleghenyCounty>



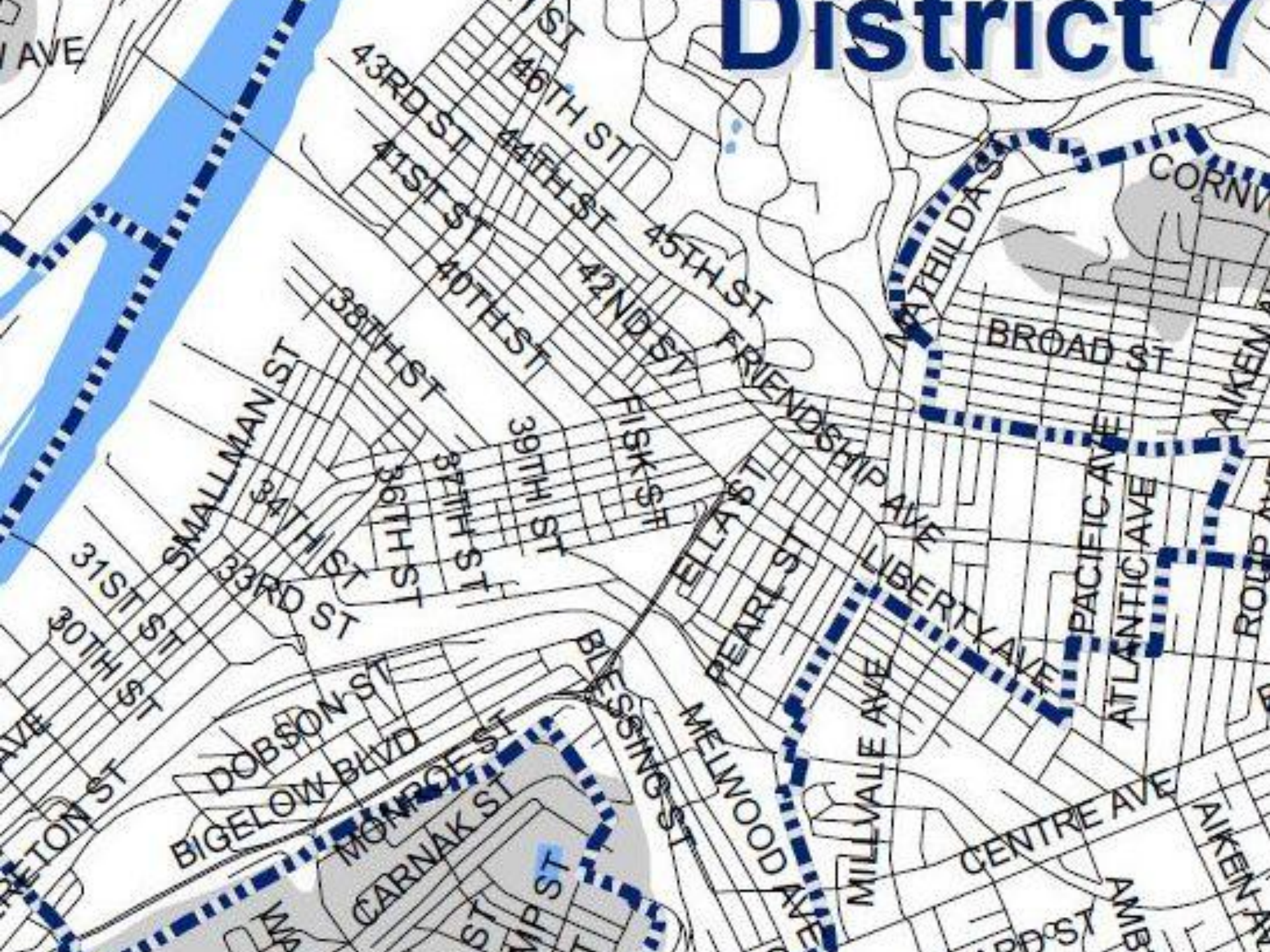


# Check Mining Conditions in Your Area

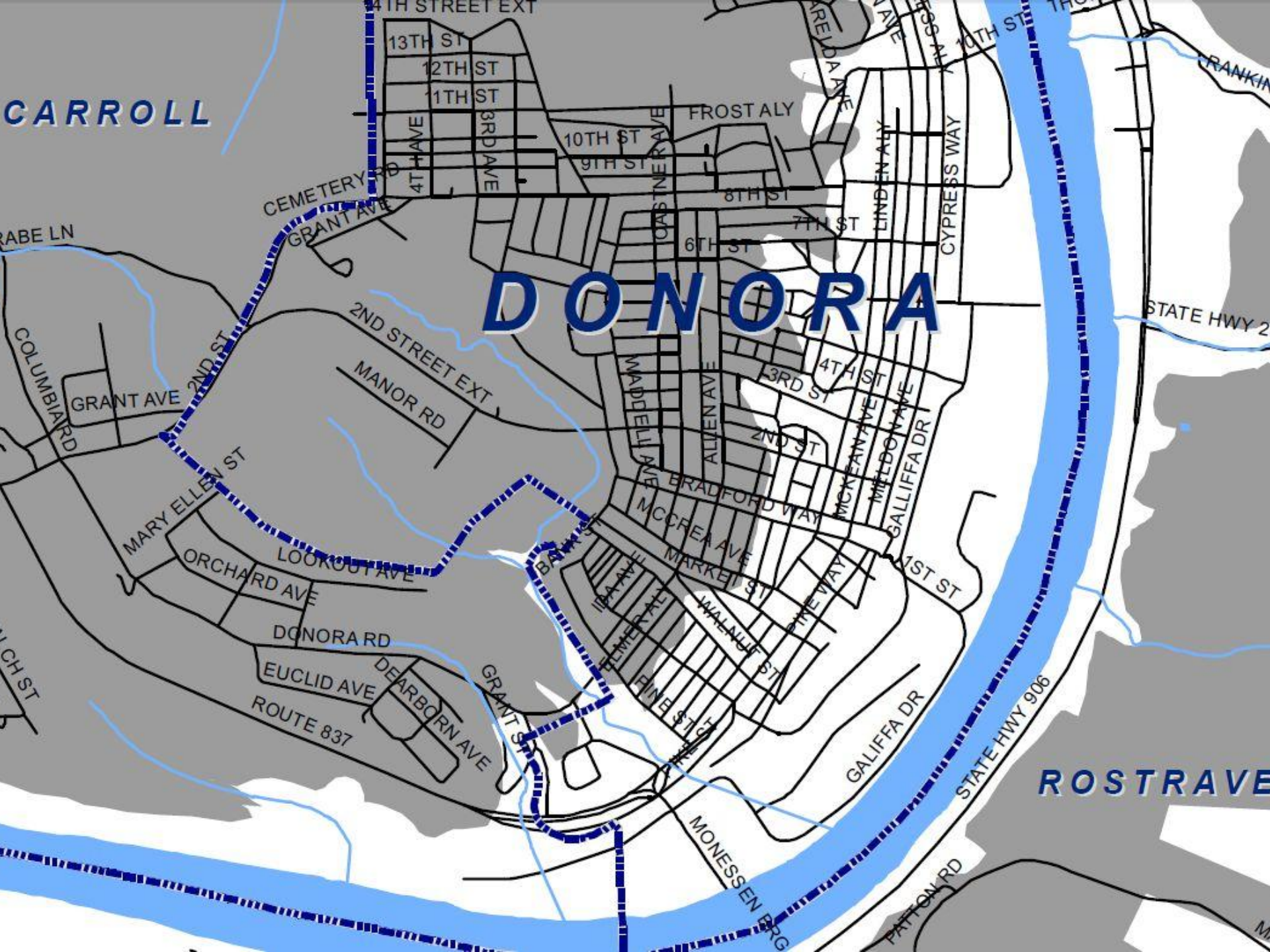




# District 7







CARROLL

DONORA

ROSTREVE



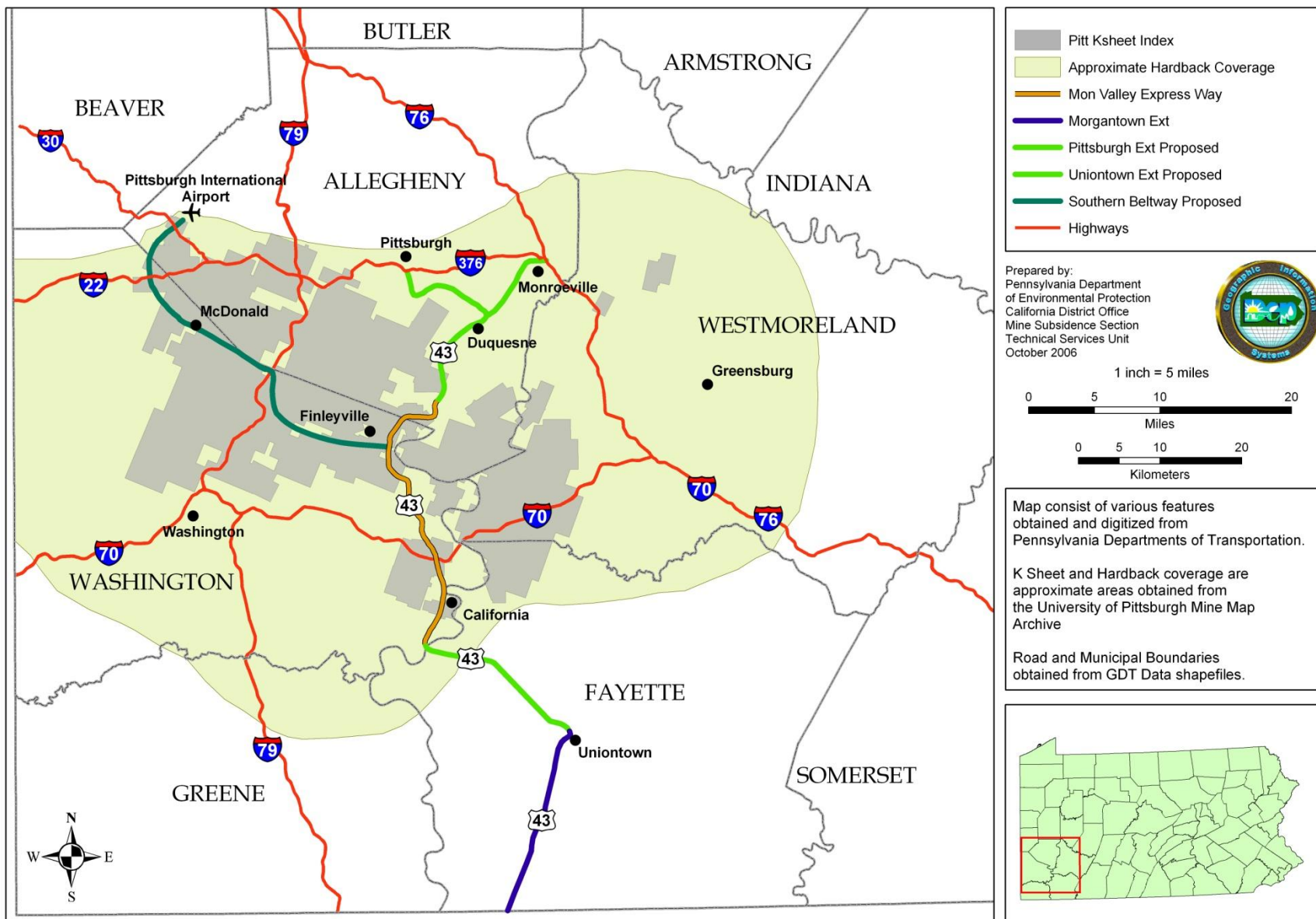
# Mine Water Breakout



JAN 25 2005

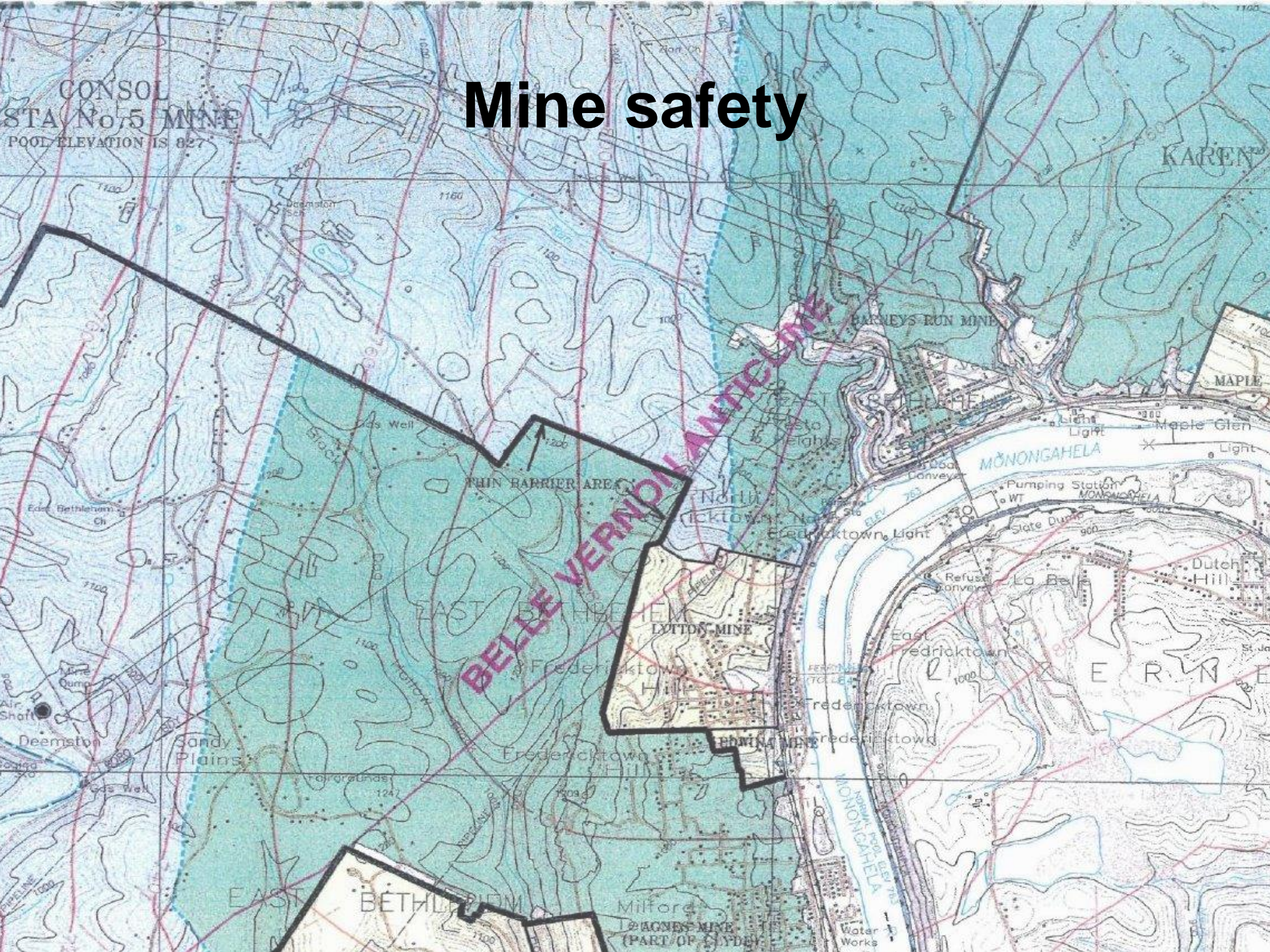


# University of Pittsburgh Archive: Consol Collection

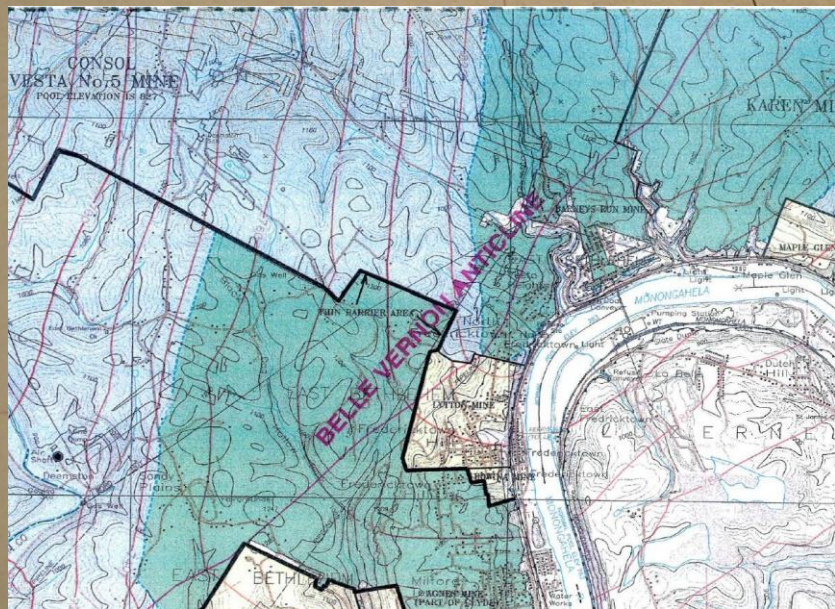




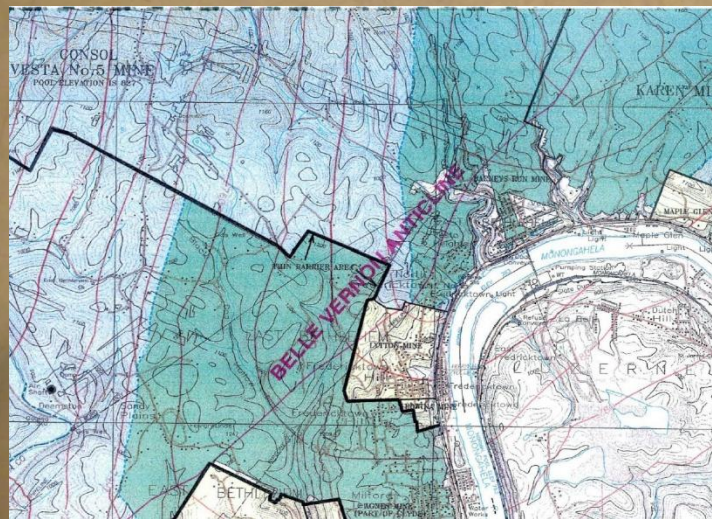
# Mine safety














# Reclamation





# Pittsburgh Botanical Gardens





# **For the protection of miners, the public and the environment**

- Homeowners determining mining conditions in their area
- In response to abandoned mining incidents
- Municipal projects
- Mine reclamation projects
- Mine safety
- Gas exploration



# THANK YOU



<http://www.pitt.edu/~aeb59/index.html>  
or search “*mine map preservation*”