



CMIS

Indiana Coal Mine
Information System



MINE MAP HANDLING, PREPARATION, & SCANNING TECHNOLOGIES

used in Indiana's mapping program



*Presented by Licia Weber
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Mine Map Acquisition

Sources of Underground Coal Mine Maps

- Approximately 3,300 underground mine maps from the late 1800's to present
- 90% of the maps are "blueline" maps

-Indiana Bureau of Mines and Mining

- Historic and current underground mine maps (represents main source of maps)

-Indiana Geological Survey Files

- Misc. Coal Company Maps
- Coal Related Publications showing mine maps

Before Map Scanning Can Begin...

Condition of individual maps has to be accessed.

Steps taken in the handling of maps:

- **Humidify**
- **Flatten**
- **Repair** (if necessary)
- **Protect paper maps:**

Encapsulate to preserve integrity (if necessary)
UV filters for lights

Humidifying & Unfolding Maps



-- **Two plastic tubs** (large, w/ lid & small, no lid)

Deionized water

Weights for small tub (bricks)



Flattening Maps...

(Do not iron!)

- **3/8" to 1/2" Plexiglas to weight map**
- **Acid-free blotter paper to control moisture (not shown)**



Repairs to map prior to scanning

- Pure Wheat Starch: *Museum Quality*
- Methyl Cellulose: *Acid Free Archival Quality*
- Art Brushes
- Repair Tissue – Japanese kozo fiber papers



Protection of maps:

Encapsulation in film envelope

UV covers for lights

- encapsulate in polyester film envelope (when necessary)
- Acid-free tissue paper between maps when storing
- store flat
- Protect from UV light when maps are out of storage



Scanning...

54" Colortrac Scanner

- 400 dpi
- Grayscale (except when map has colors)
- Saved as TIF & JPG images – unedited & edited for legibility



Storage of Historic Maps

Temporary storage at IGS



5) Archiving/Storage of paper documents

Indiana University archives facility



Considerations...

Final products – Indiana’s objective has been to map the locations of abandoned mines as accurately as possible and serve the map information to the public. Computer mapping technology (GIS) advancements have made this task easier.

Starting with high resolution, legible map data is critical to this process.

Scanning is usually a one time option due to map availability, condition, and funding limitations (Anyway, why would you want to do it again?)

- Resolution of digital image should be as high as possible to preserve map details for future reference
- archive unedited, full scale digital image as a future resource
- Take the time now to “do it right” – the maps are a diminishing resource
- Digital images edited for legibility are easier to georeference and serve to the public