WVOMHS&T

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WVOMHST
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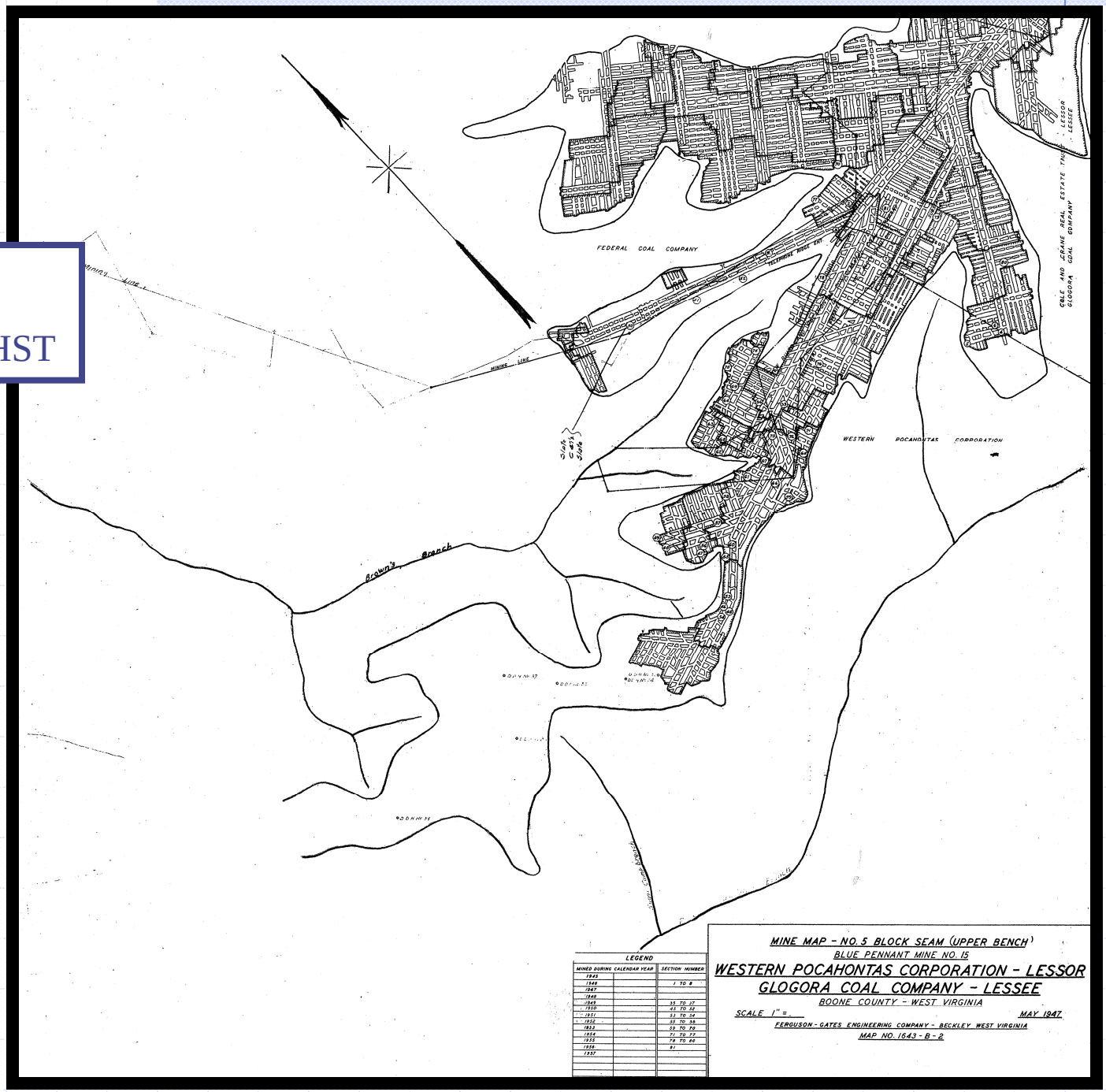
How to Georeference Mine Maps with Poorly Referenced Coordinate Systems

A description of the procedures and sources used by WVOMHS&T to identify and geolocate mineworks found on abandoned mine maps.

- Search OSM
- Search WVOMHST



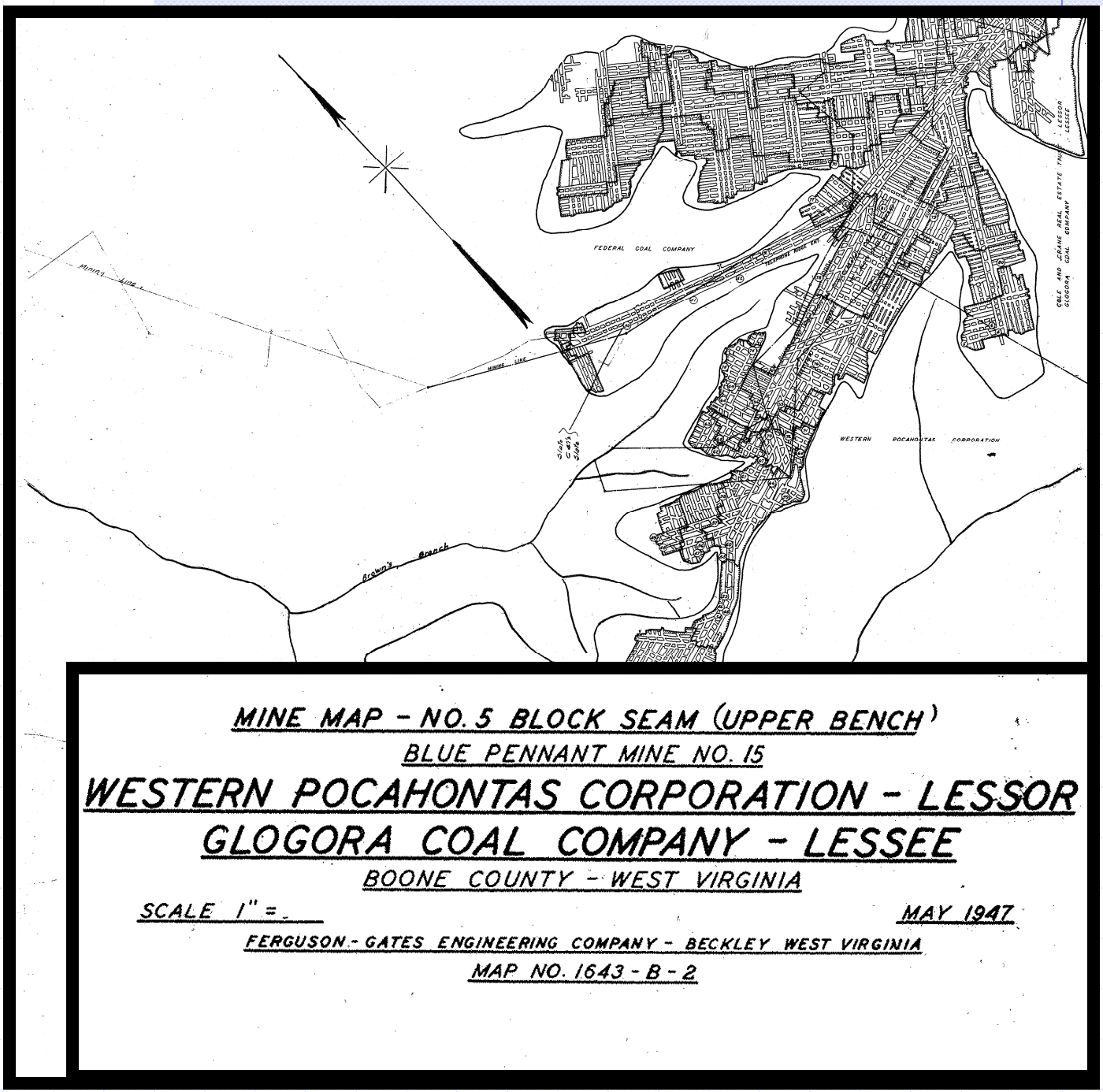
OSM Database of Abandoned Mine Maps

- U.T.M.
- Latitude
- Longitude
- State
- County
- Quadrangle
- Document Number
- Company Name
- Mine Name
- Mine Type
- Bed Name
- Commodity
- Year
- Notes

WVOMHS&T Database of Abandoned Mine Maps

- Latitude
- Longitude
- State
- County
- Quadrangle
- Tracking Number
- Document Number
- Company Name
- Mine Name
- Mine Type
- Reported Seam
- Commodity
- Scale
- Text Fields
- State ID
- Federal ID

- Search OSM


FEDERAL COAL COMPANY
MINING LINE
MINING LINE
WESTERN POCAHONTAS CORPORATION
Brown's Branch
MINE MAP - NO. 5 BLOCK SEAM (UPPER BENCH)
BLUE PENNANT MINE NO. 15
WESTERN POCAHONTAS CORPORATION - LESSOR
GLOGORA COAL COMPANY - LESSEE
BOONE COUNTY - WEST VIRGINIA
SCALE 1" =
MAY 1947
FERGUSON - GATES ENGINEERING COMPANY - BECKLEY WEST VIRGINIA
MAP NO. 1643 - B - 2

- Search OSM
- Query “Blue Pennant”
- Record Document Numbers
- View Tiff’s

Microsoft Excel - WVAscii

File Edit View Insert Format Tools Data Window Help

C5162 = 54

Find

Find what: blue pennant

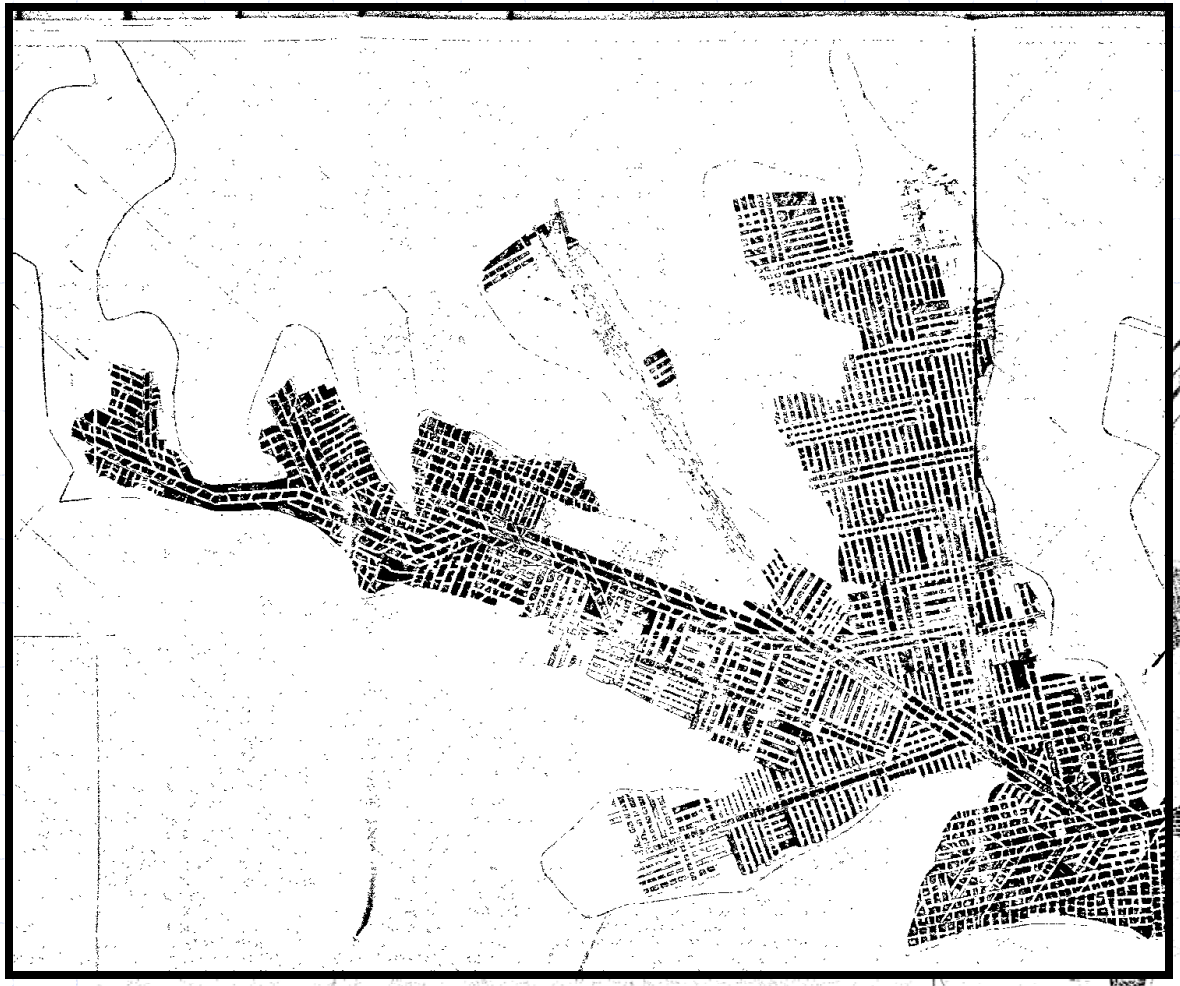
Find Next | Close | Replace...

Search: By Rows | Match case | Find entire cells only

Look in: Formulas

	C	D	E	F	G	H	I	J
				DAVY	306136	BLUE FLAME NO 1	UNDERGROUND	BLUE FLAME COAL CO
				DAVY	328787	BLUE FLAME NO 1	UNDERGROUND	BLUE FLAME COAL CO
				UNKNOWN QUADRANGLE	349911	BLUE FLAME NO 1	UNDERGROUND	BLUE FLAME COAL CO
				SUMMERSVILLE DAM	368710	BLUE FLAME NO 1	UNDERGROUND	BLUE FLAME COAL CO
				SUMMERSVILLE DAM	374905	BLUE FLAME NO 1	UNDERGROUND	BLUE FLAME COAL CO
				MAN	374893	BLUE HAT NO 15-A	UNDERGROUND	BLUE HAT COALS INC
				MAN	366693	BLUE HAT NO. 15-A	UNDERGROUND	BLUE HAT COALS INC
				MAN	367030	BLUE HAT NO. 15-A	UNDERGROUND	BLUE HAT COALS INC.
				WELCH	385301	BLUE HAVEN ENERGY MINE NO. 3	UNDERGROUND	BLUE HAVEN ENERGY, INC.
				DAVY	330349	BLUE JAY	UNDERGROUND	BLUE JAY COAL CO
				UNKNOWN QUADRANGLE	331236	BLUE JAY	UNKNOWN	BLUE JAY LUMBE
				DAVY			UNDERGROUND	BLUE JAY COAL COMPANY
				UNKNOWN			UNDERGROUND	BLUE JAY LUMBER CO
				LITTLE BIR			UNDERGROUND	BLUE LICK COAL CO
				ANAWALT			COMBINATION	BLUE MOUNTAIN MINING CO INC
				ANAWALT			COMBINATION	BLUE MOUNTAIN MINING COMPANY INC
				ANAWALT			COMBINATION	BLUE MOUNTAIN MINING CO INC
				ANAWALT			COMBINATION	BLUE MOUNTAIN MINING COMPANY INC
5156	54	47	MCDOWELL	ANAWALT			COMBINATION	BLUE MTN MNG CO INC
5157	54	47	MCDOWELL	ANAWALT			COMBINATION	BLUE MTN COAL CO INC
5158	54	19	FAYETTE	UNKNOWN QUADRANGLE	333726	BLUE OAK NO 2 PROPOSED	COMBINATION	BLUE OAK COAL
5159	54	19	FAYETTE	UNKNOWN QUADRANGLE	333726	BLUE OAK NO 2 PROPOSED	COMBINATION	PITSENBARGER D H
5160	54	5	BOONE	UNKNOWN QUADRANGLE	307206	BLUE PENNANT #12	UNDERGROUND	GLOGORA COAL CO
5161	54	5	BOONE	WHITESVILLE	339516	BLUE PENNANT NO 13	UNDERGROUND	GLOGORA COAL CO INC
5162	54	5	BOONE	UNKNOWN QUADRANGLE	336291	BLUE PENNANT NO 15	UNDERGROUND	GLOGORA COAL CO
5163	54	5	BOONE	UNKNOWN QUADRANGLE	339516	BLUE PENNANT NO 15	UNKNOWN	UNKNOWN
5164	54	5	BOONE	WHITESVILLE	339519	BLUE PENNANT NO 15 & 16	COMBINATION	GLOGORA COAL CO
5165	54	5	BOONE	UNKNOWN QUADRANGLE	321958	BLUE PENNANT NO 16	UNDERGROUND	GLOGORA COAL CO
5166	54	5	BOONE	UNKNOWN QUADRANGLE	341332	BLUE PENNANT NO 16	COMBINATION	GLOGORA COAL CO
5167	54	39	KANAWHA	UNKNOWN QUADRANGLE	338426	BLUE RIBBON	UNKNOWN	UNKNOWN
5168	54	39	KANAWHA	UNKNOWN QUADRANGLE	338426	BLUE RIBBON NO 1	UNKNOWN	UNKNOWN
5169	54	25	GREENBRIER	UNKNOWN QUADRANGLE	328965	BLUE RIDGE	UNDERGROUND	BLUE RIDGE COAL CO
5170	54	33	HARRISON	CLARKSBURG	343659	BLUE RIDGE	UNDERGROUND	BLUE RIDGE COAL CO
5171	54	1	BARBOUR	AUDRA	347993	BLUE RIDGE	UNDERGROUND	DAVIS RICHARD R COAL CO
5172	54	33	HARRISON	SHINNSTON	304626	BLUE RIDGE	UNDERGROUND	V & H COAL CO
5173	54	91	TAYLOR	GRAFTON	306126	BLUE RIDGE #2	UNDERGROUND	BLUE RIDGE COAL CO
5174	54	25	GREENBRIER	DUO	321807	BLUE RIDGE NO 1	UNDERGROUND	BLUE RIDGE COAL CO
5175	54	19	FAYETTE	UNKNOWN QUADRANGLE	336805	BLUE RIDGE NO 1	UNKNOWN	UNKNOWN
5176	54	25	GREENBRIER	UNKNOWN QUADRANGLE	315761	BLUE RIDGE NO 2	UNDERGROUND	BLUE RIDGE COAL CO
5177	54	91	TAYLOR	ROSEMONT	319091	BLUE RIDGE NO 4	UNDERGROUND	BLUE RIDGE COAL CO
5178	54	47	MCDOWELL	DAVY	347897	BLUE RIDGE NO 76-2	UNDERGROUND	BLUE RIDGE COAL CO
5179	54	47	MCDOWELL	DAVY	349972	BLUE RIDGE NO 76-2	UNDERGROUND	BLUE RIDGE COAL CO
5180	54	47	MCDOWELL	DAVY	374890	BLUE RIDGE NO 76-2 PLAN	UNDERGROUND	BLUE RIDGE COAL CO
5181	54	19	FAYETTE	MEADOW CREEK	315888	BLUE RIDGE NO 8	UNDERGROUND	BLUE RIDGE COAL CO
5182	54	19	FAYETTE	THURMOND	315763	BLUE RIDGE NOS 1 AND 2	UNDERGROUND	BLUE RIDGE COAL CO

Sheet1 / Sheet2 / Sheet3



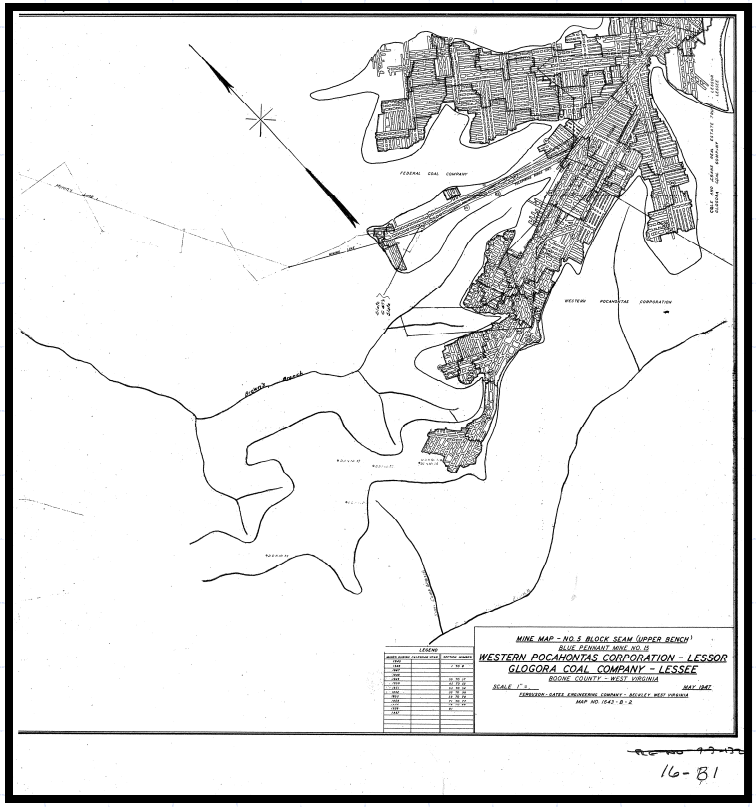
GLOGORA COAL COMPANY
BLUE PENNANT NO. 15 MINE
Posted To July 1, 1960
SCALE 1" = 500'
PROPOSED ROOM Mining
IN THE
5 Block Seam
Approx 105,000 Linear ft

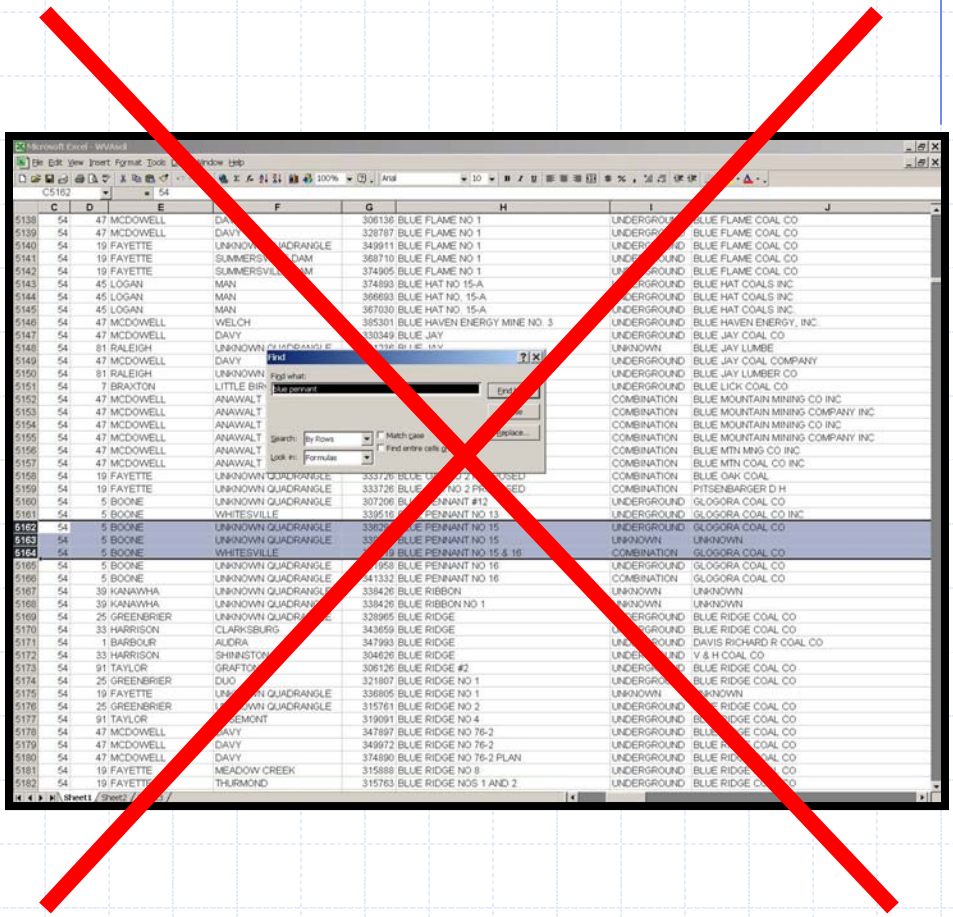
WVDM 03104 416 30X 339519

Recap

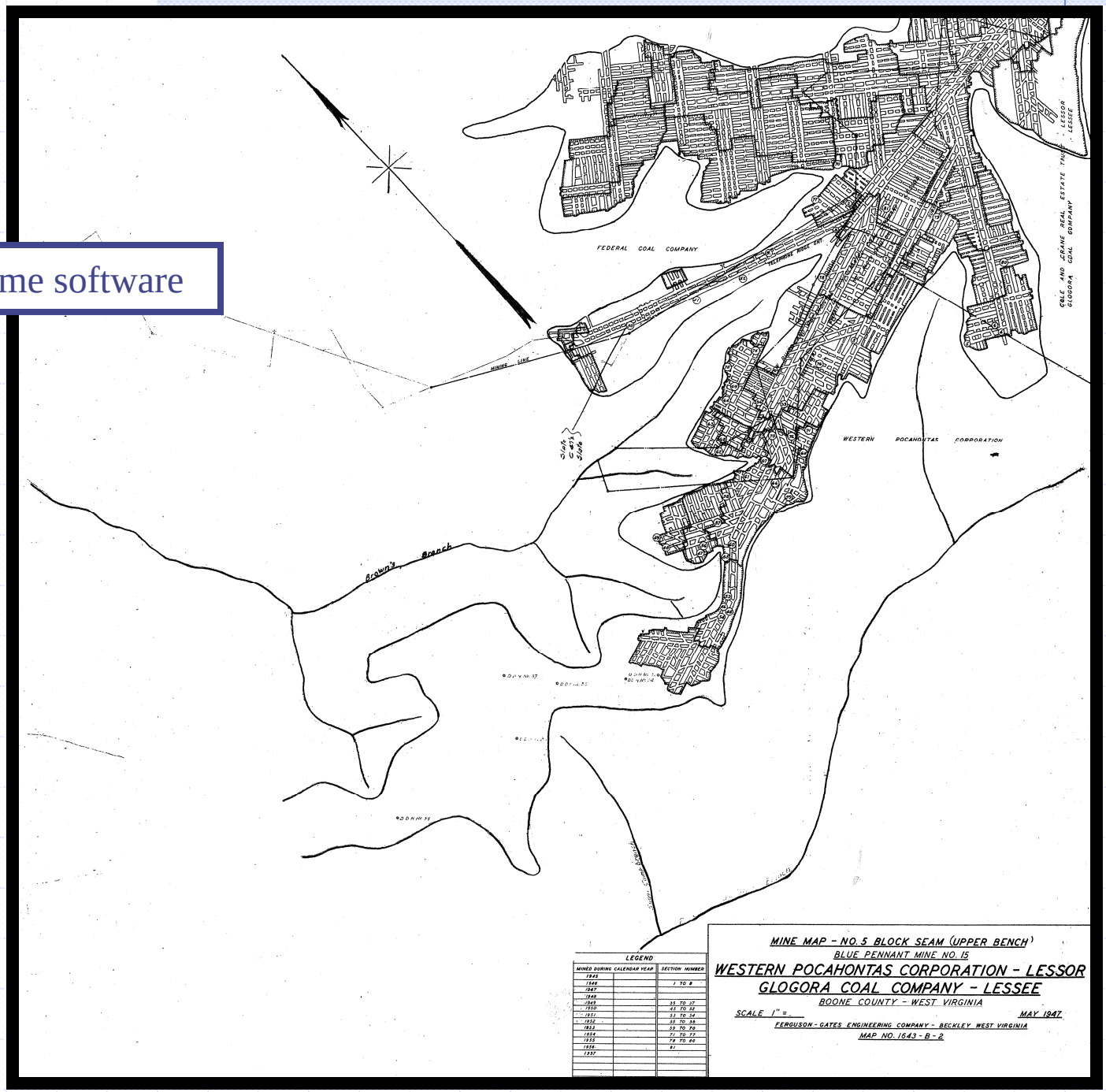
- Search OSM
- Search WVOMHST
- Record document numbers
- View images
- Determine value of map

What if there are no results from a database query?





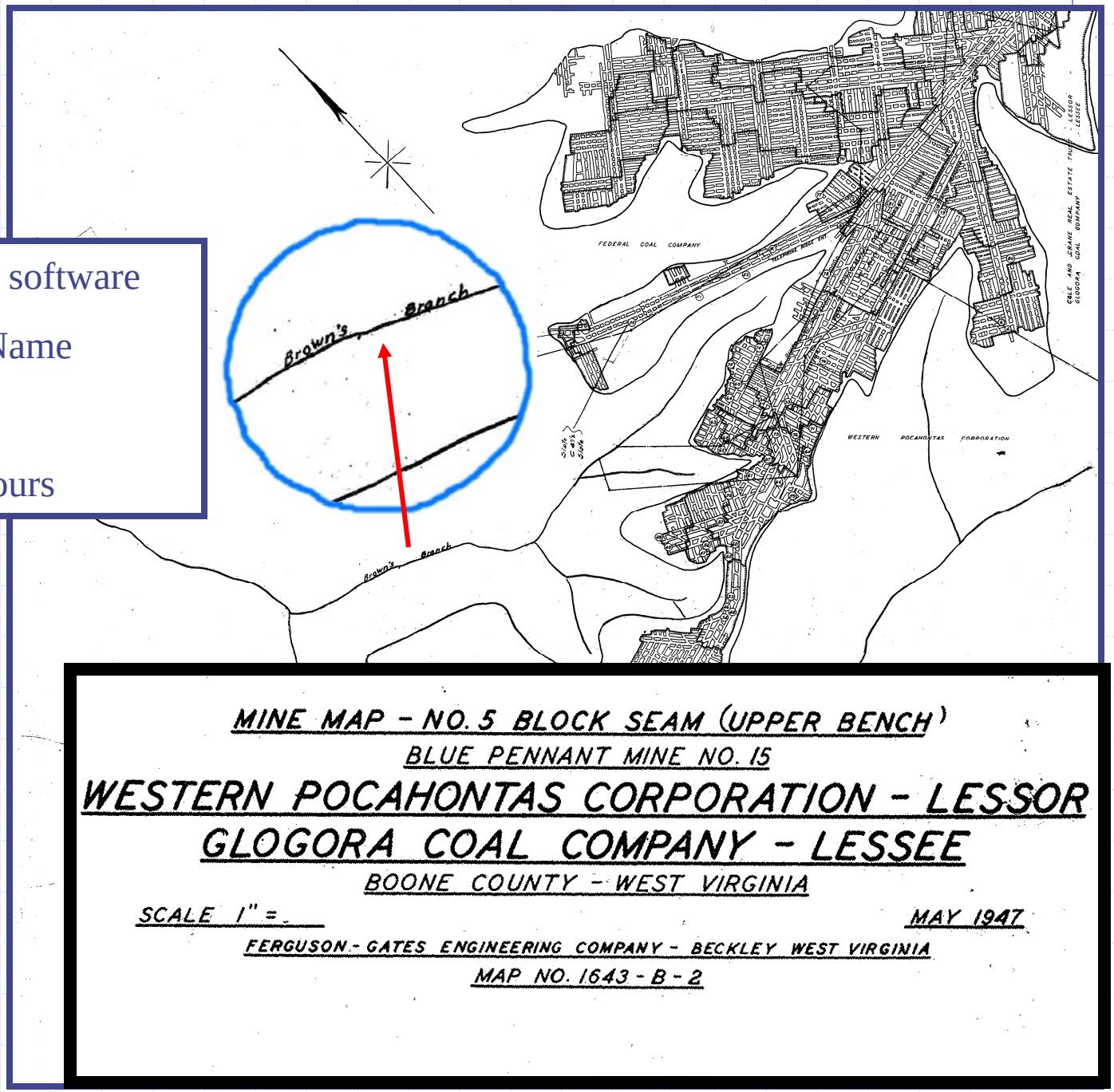
- Search in DeLorme software



DeLorme Xmap 4.5, 3-D Topoquad Data Set, and Street Atlas 2005

- Add Datasets
- QuickSearch Find
- Measure
- Split Screen
- Create Routes
- 2-D and 3-D terrain with shaded relief
- Land Cover/Use and Elevation Contours
- GPS Reciever
- Image Registration

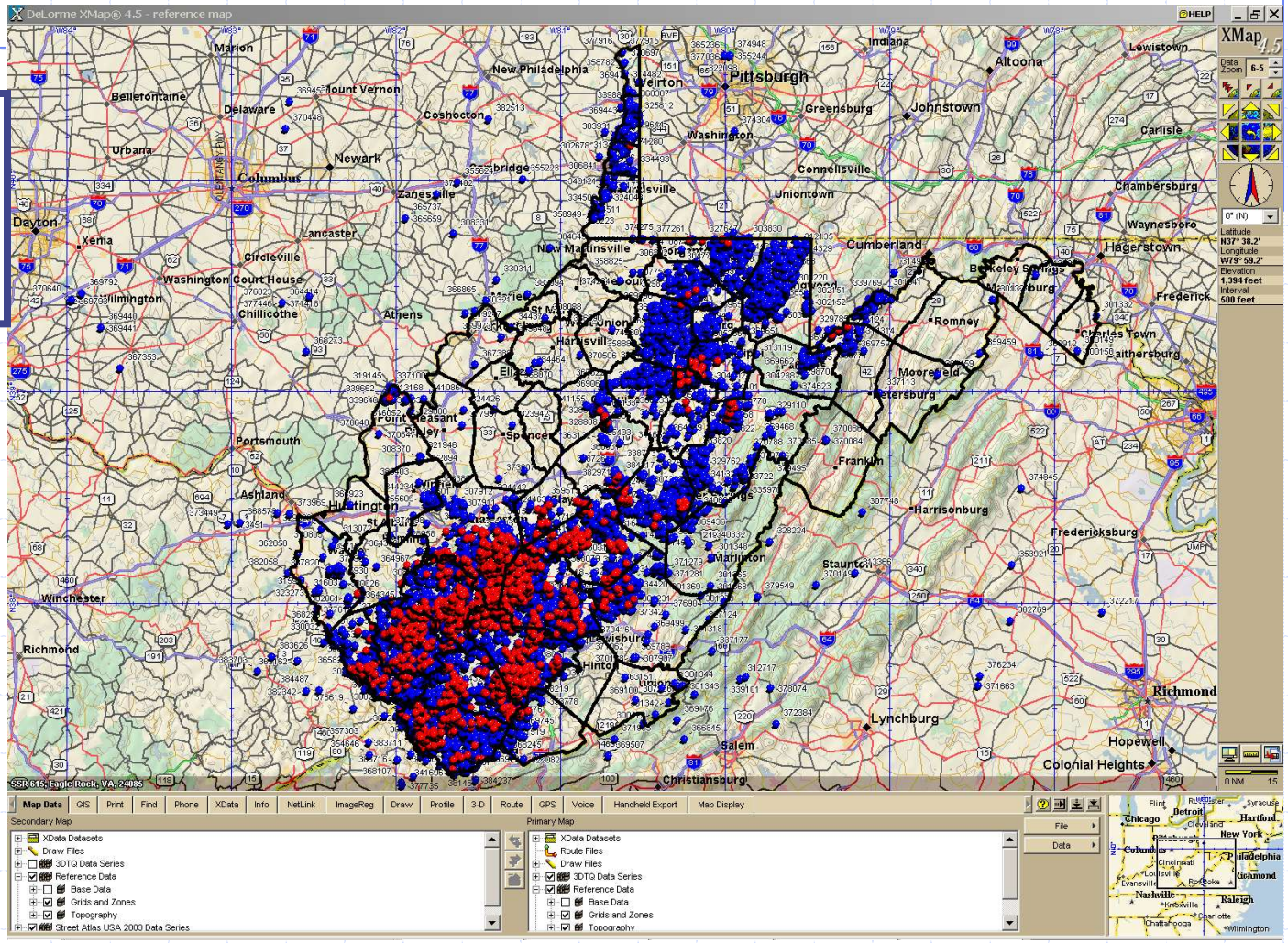
- Search DeLorme software
- Record County Name
- Look at streams
- Notice coal contours



Point Data Representing Abandoned Mine Locations

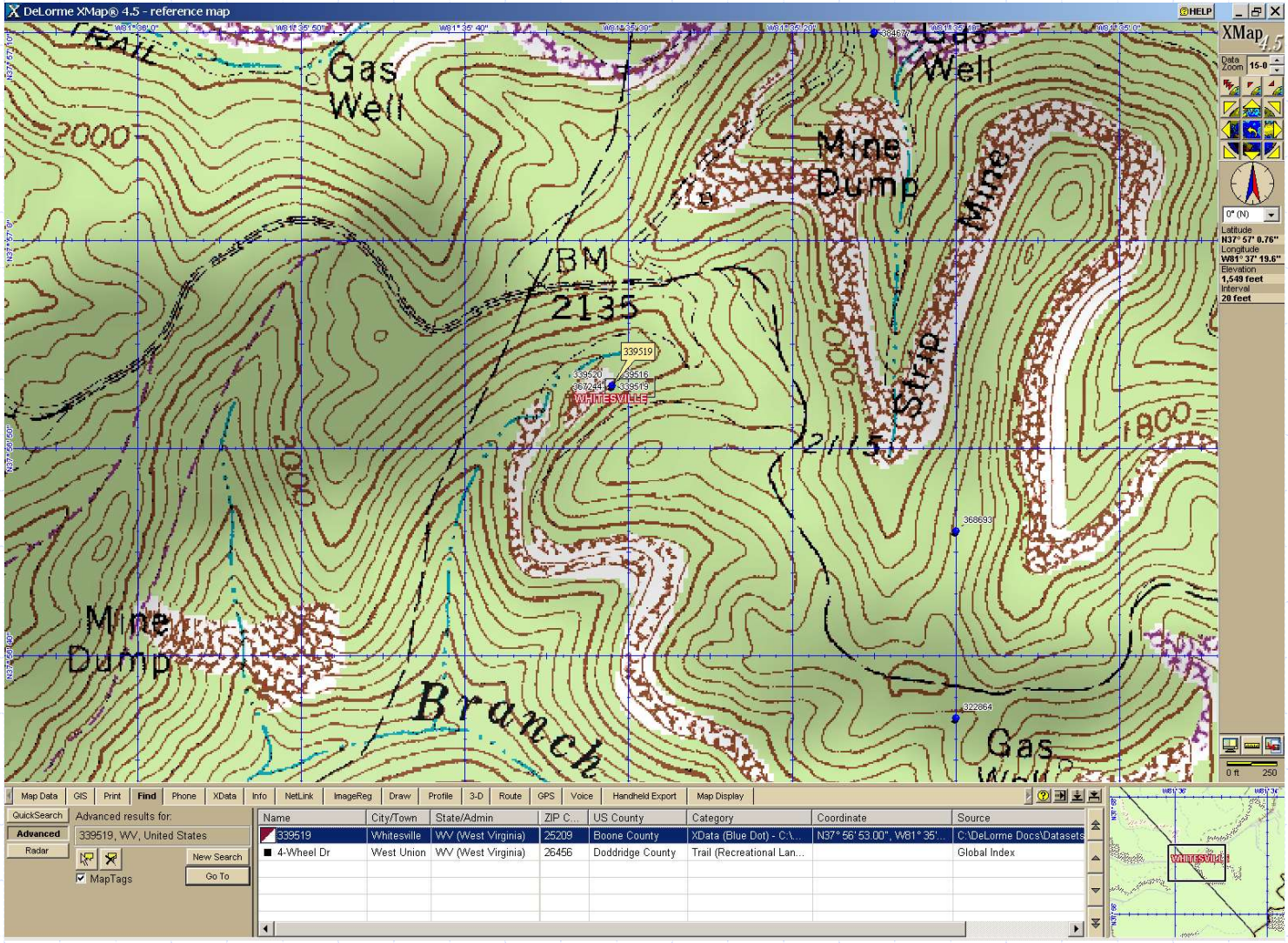
OSM points

WVOMHST points

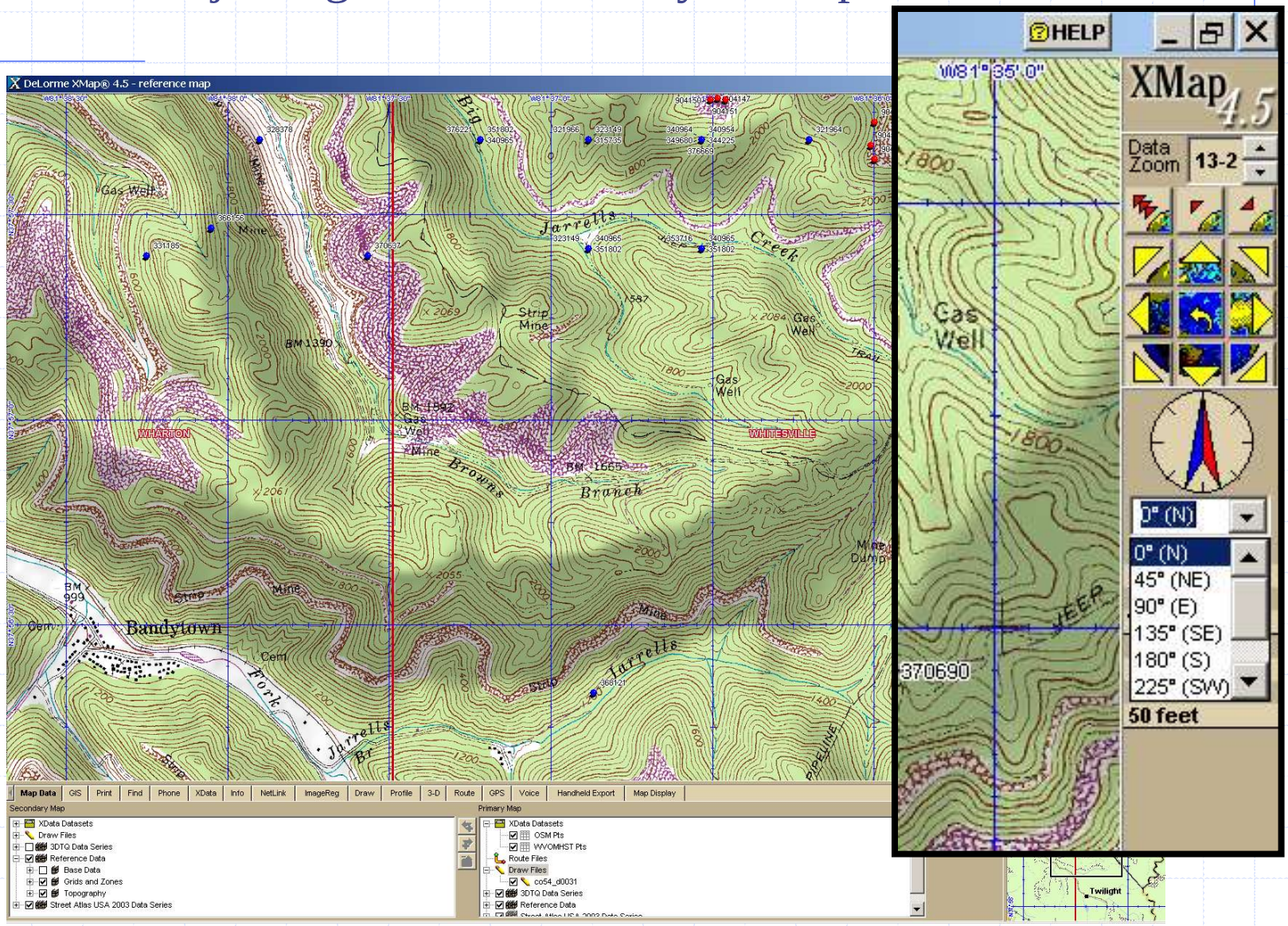


- Points can be queried by document numbers.
- Place Names can be queried.
- Streams and Landmarks can be queried.

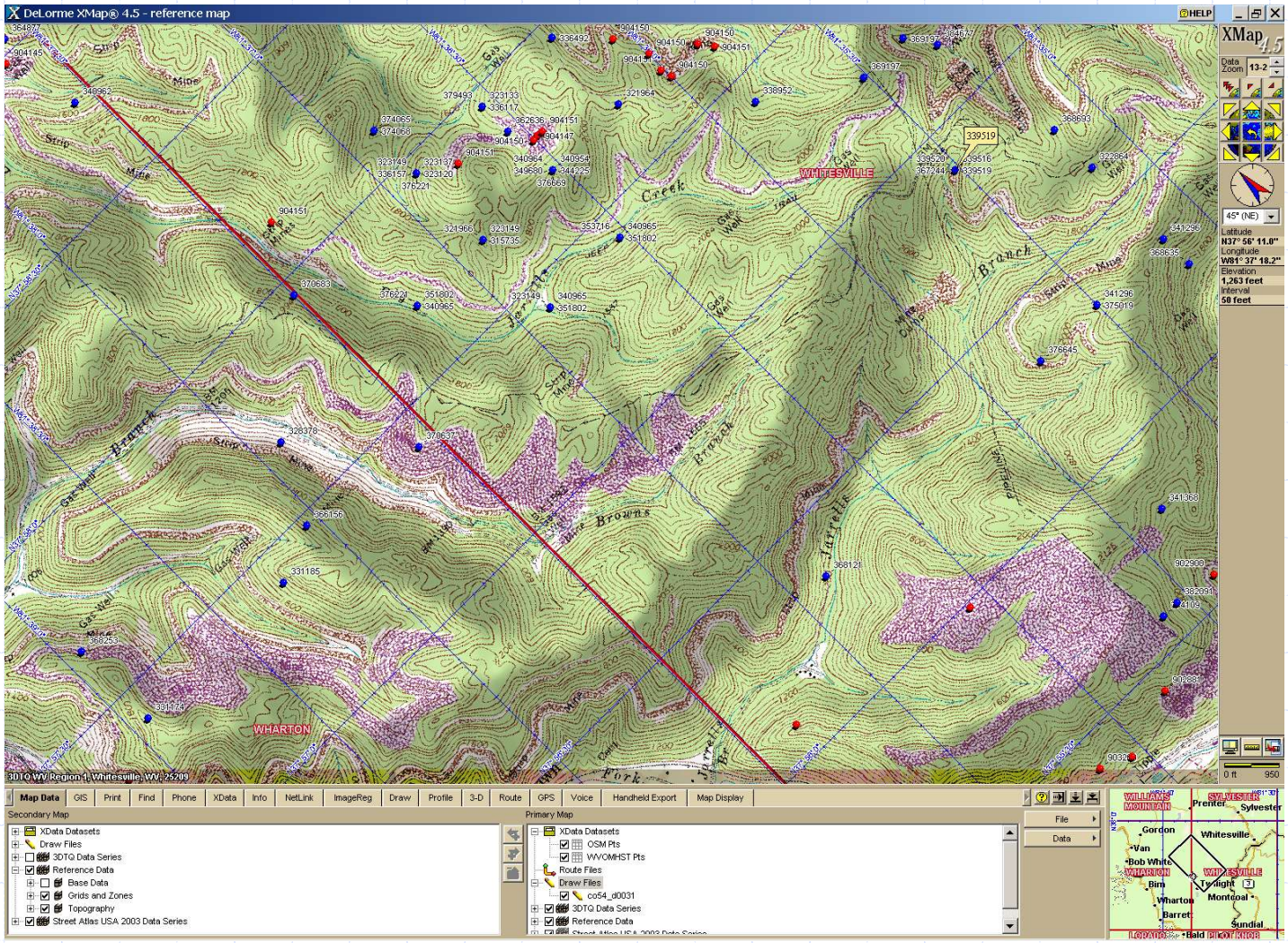
DeLorme zooms to point of interest.



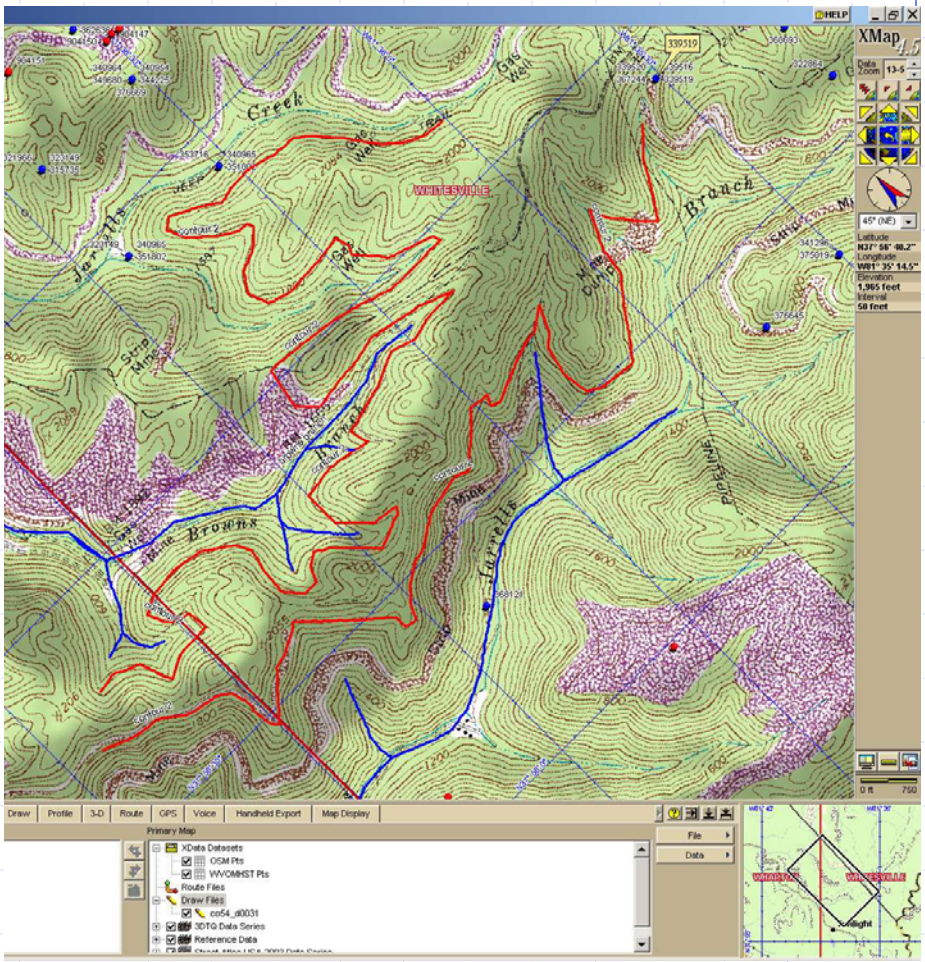
Adjusting the azimuth may be helpful.



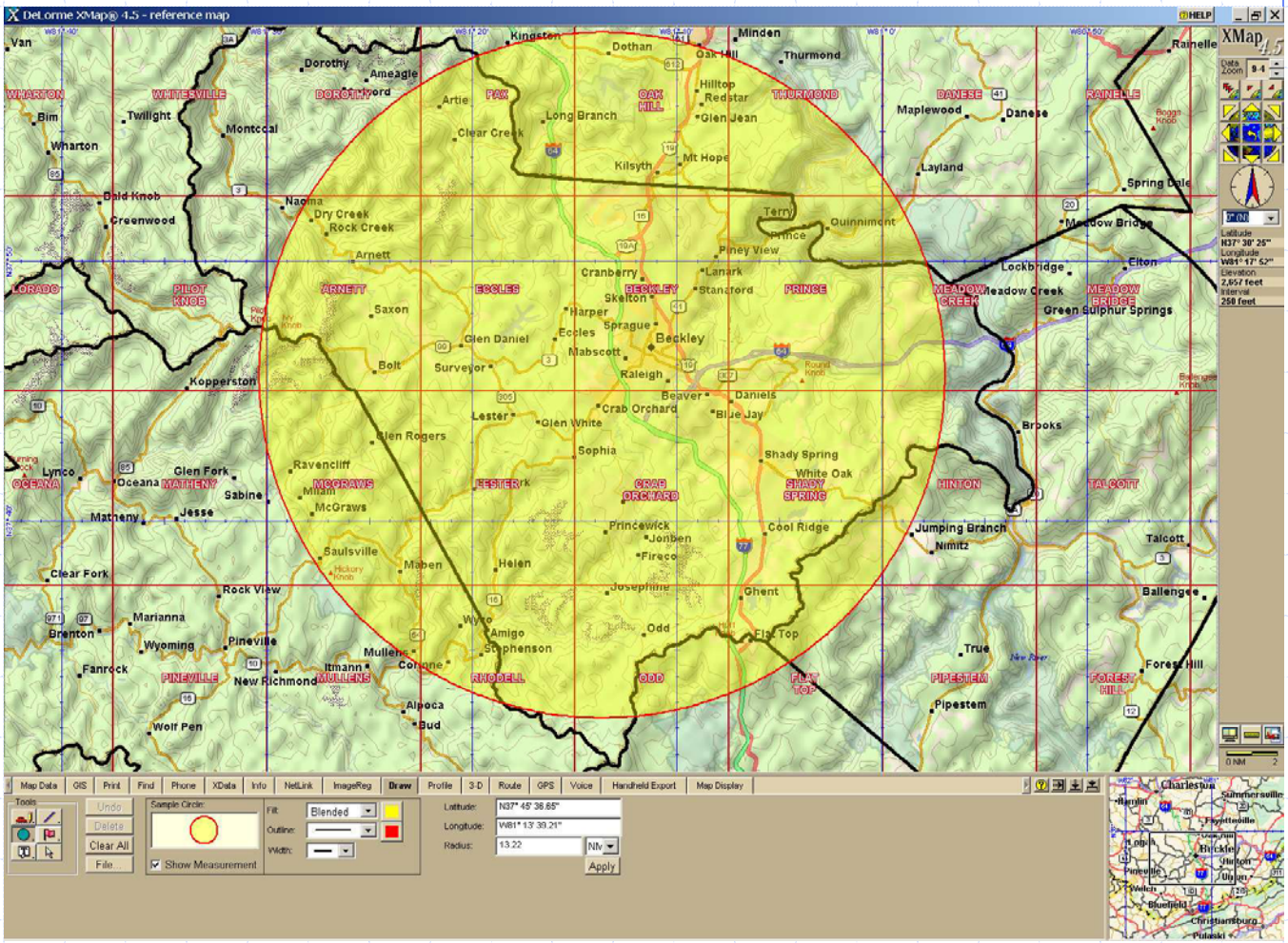
Verify location using ground control points and planemetrics.



FEDERAL COAL COMPANY
WESTERN POCAHONTAS CORPORATION
Fanny Branch
LEGEND
MINE MAP - NO. 5 BLOCK SEAM (UPPER BENCH)
BLUE PENNANT MINE NO. 15
WESTERN POCAHONTAS CORPORATION - LESSOR
GLOGORA COAL COMPANY - LESSEE
BOONE COUNTY - WEST VIRGINIA
SCALE 1" =
MAY 1947
FERGUSON-GATES ENGINEERING COMPANY - BECKLEY WEST VIRGINIA
MAP NO. 1643 - B - 2


XMap
HELP
Creek
WHITESVILLE
Branch
Mine Branch
Jarrelle
PIPELINE
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
Primary Map
XData Datasets
OSM Pts
WVOMHST Pts
Route Files
Draw Files
co54_d0031
3DTG Data Series
Reference Data
File
Data
Latitude
Longitude
Elevation
1,965 feet
Interval
50 feet

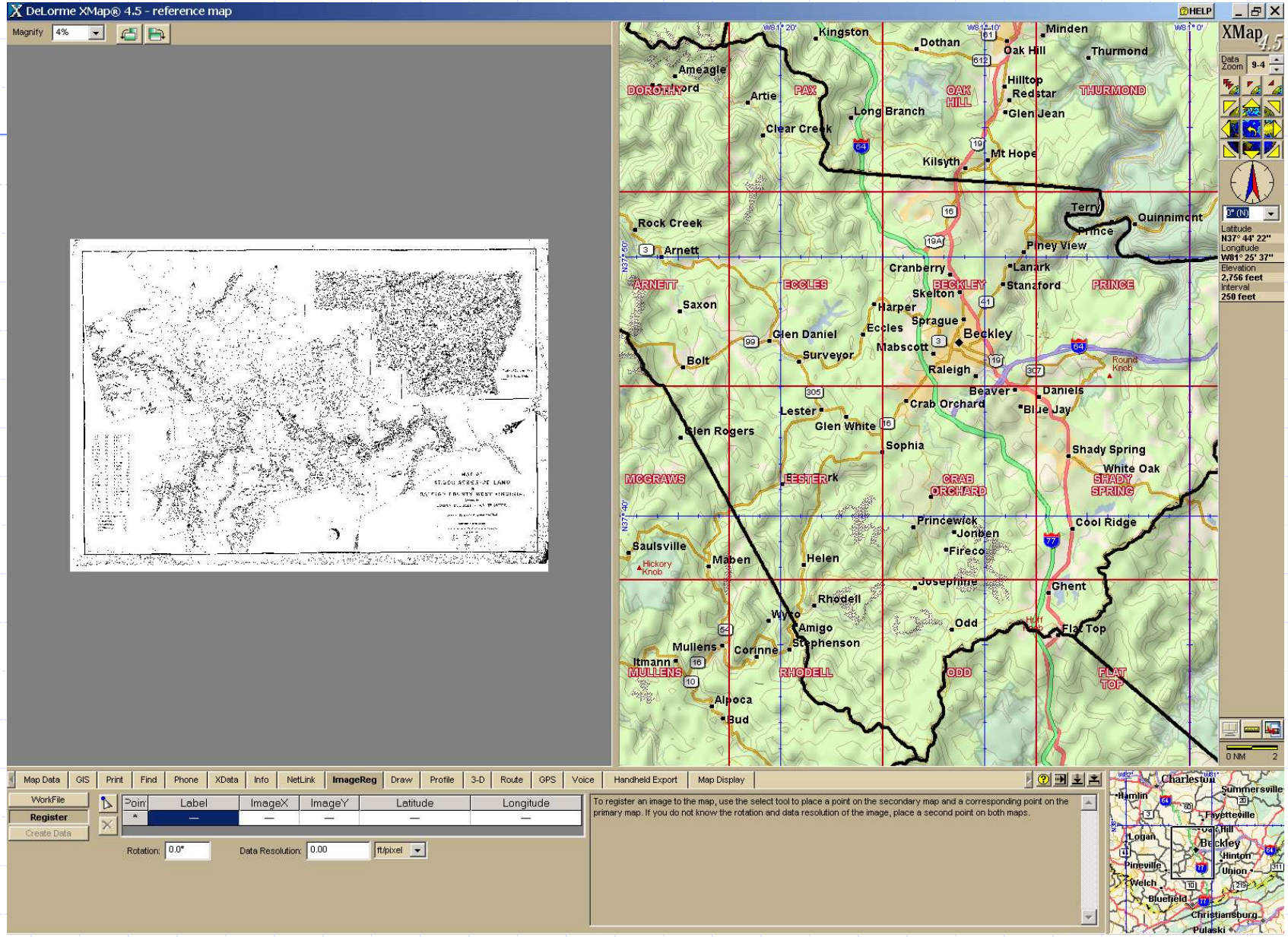
Using Image Registration in DeLorme

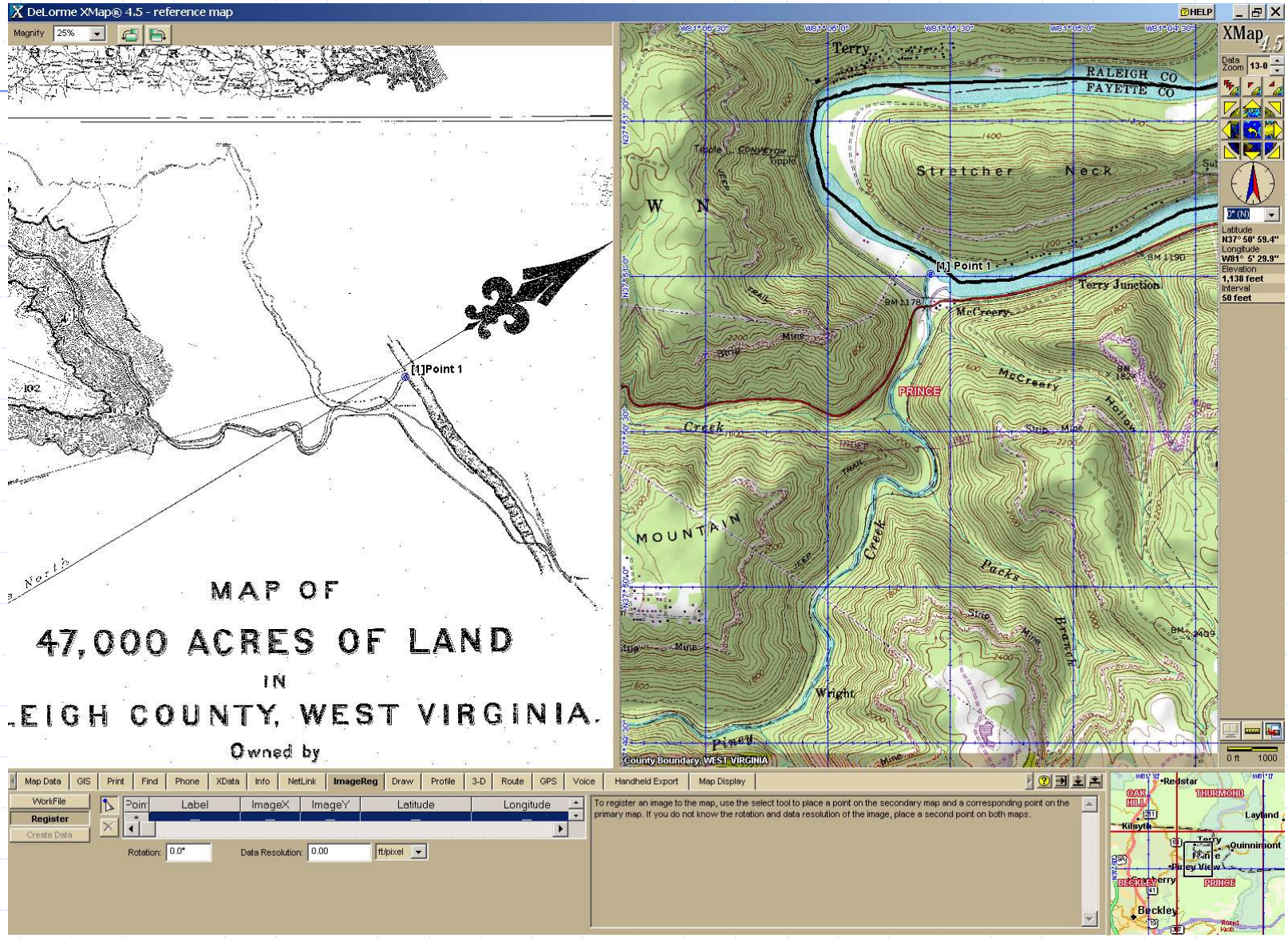


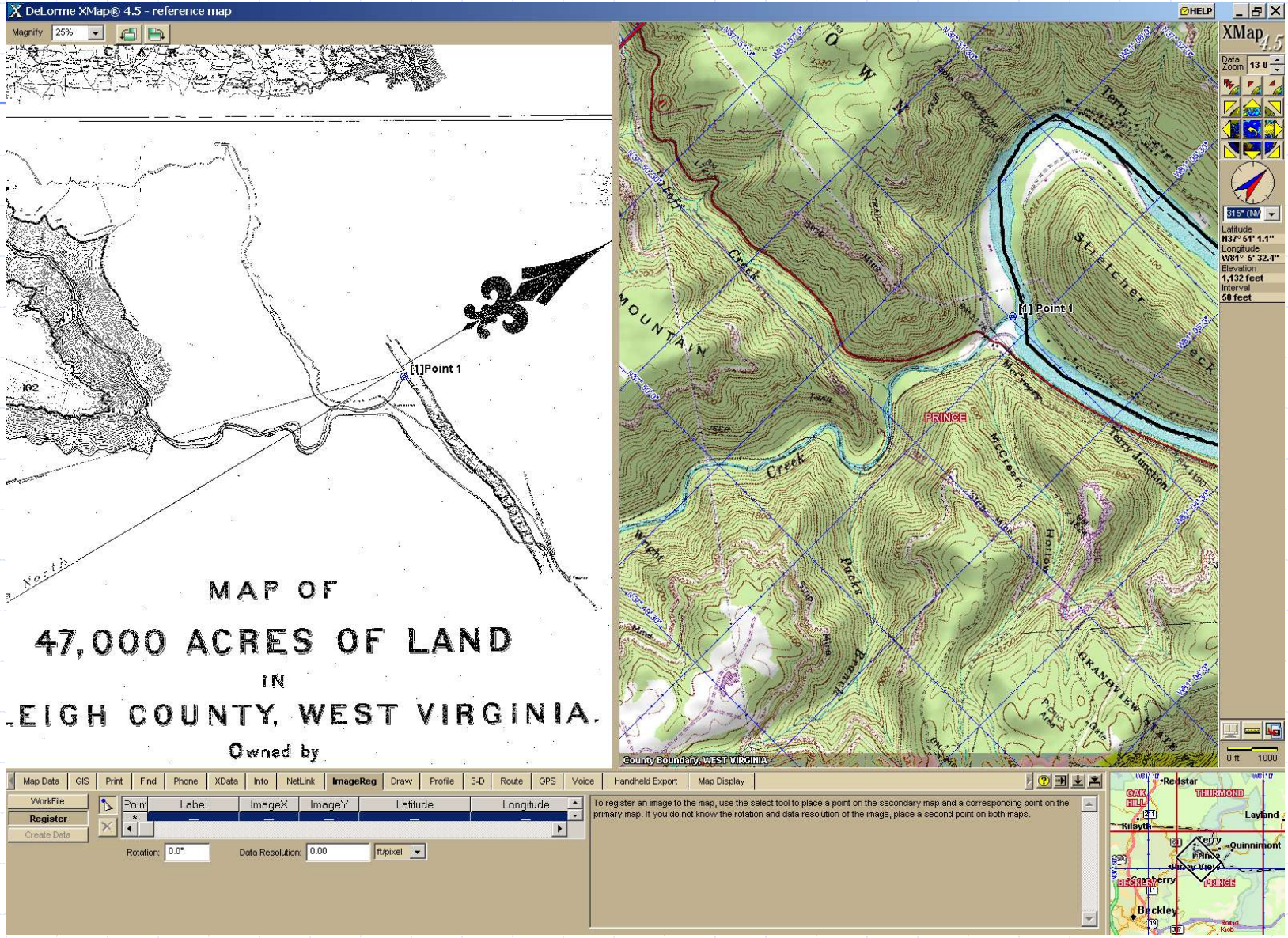
When researching any one archive, mineworks may be clustered within a given area.

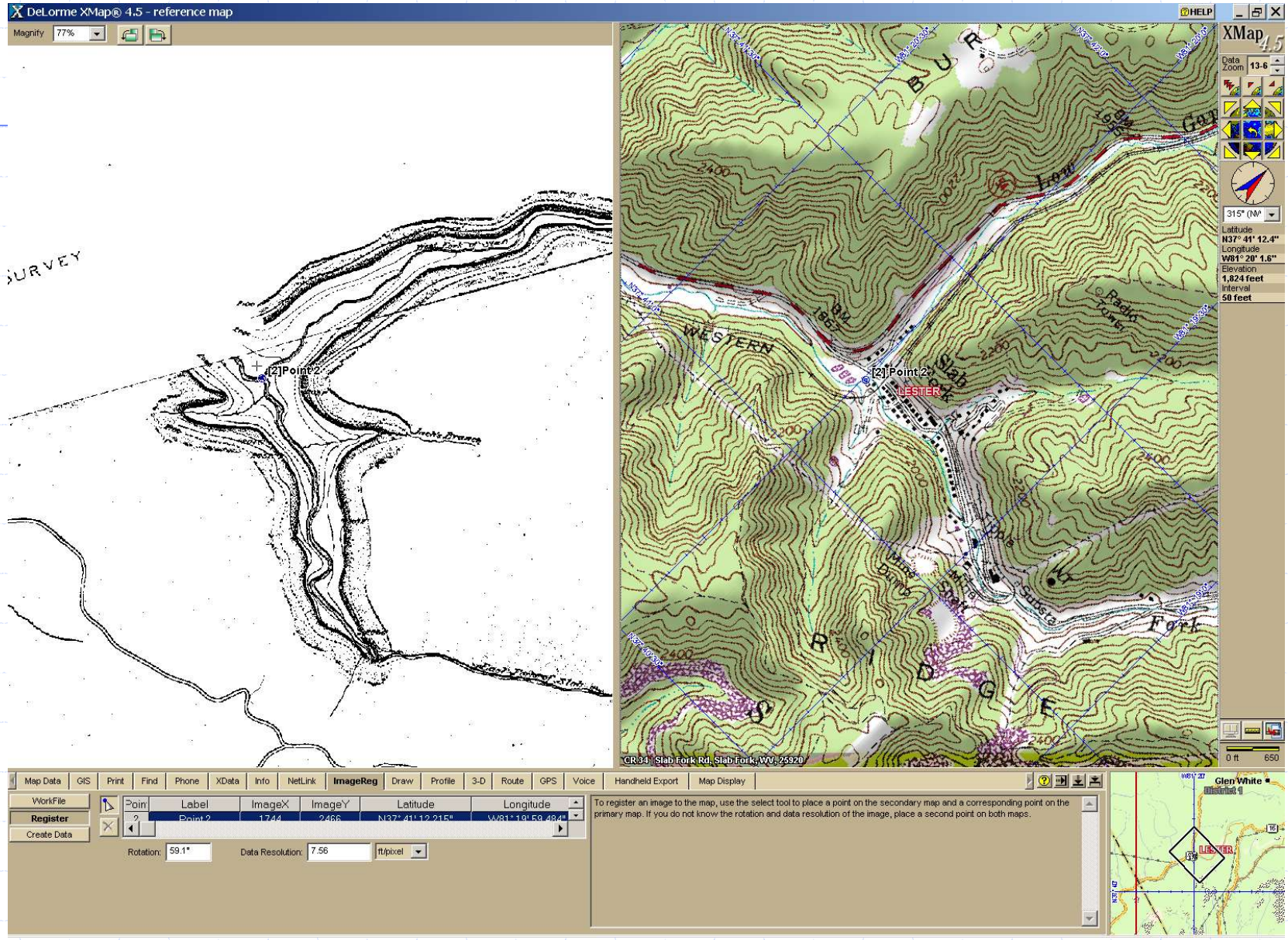
Occasionally a small scale “Rosetta Stone” map may be useful to help locate mineworks.

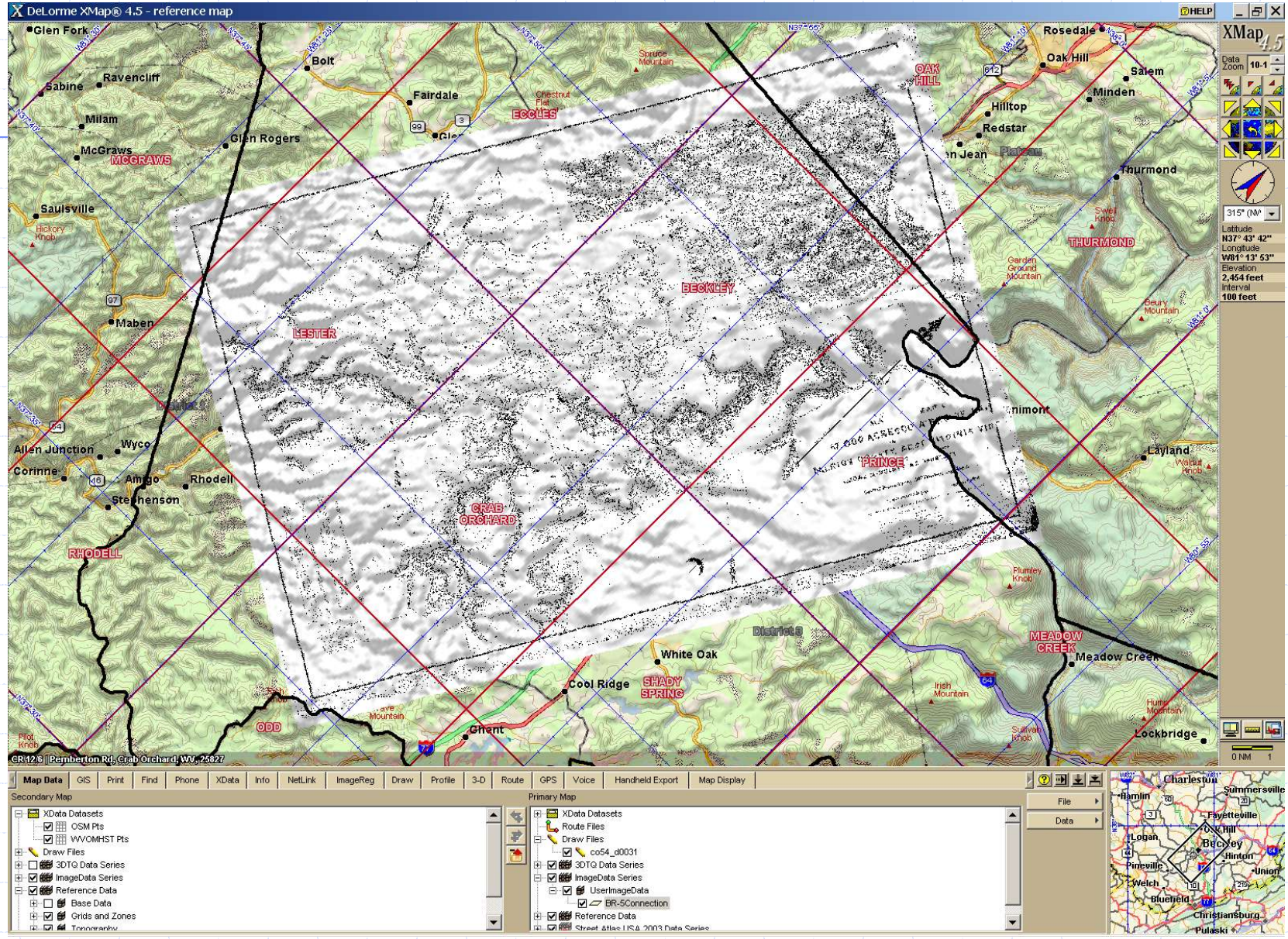
Small Scale “Rosetta Stone” Tract Map

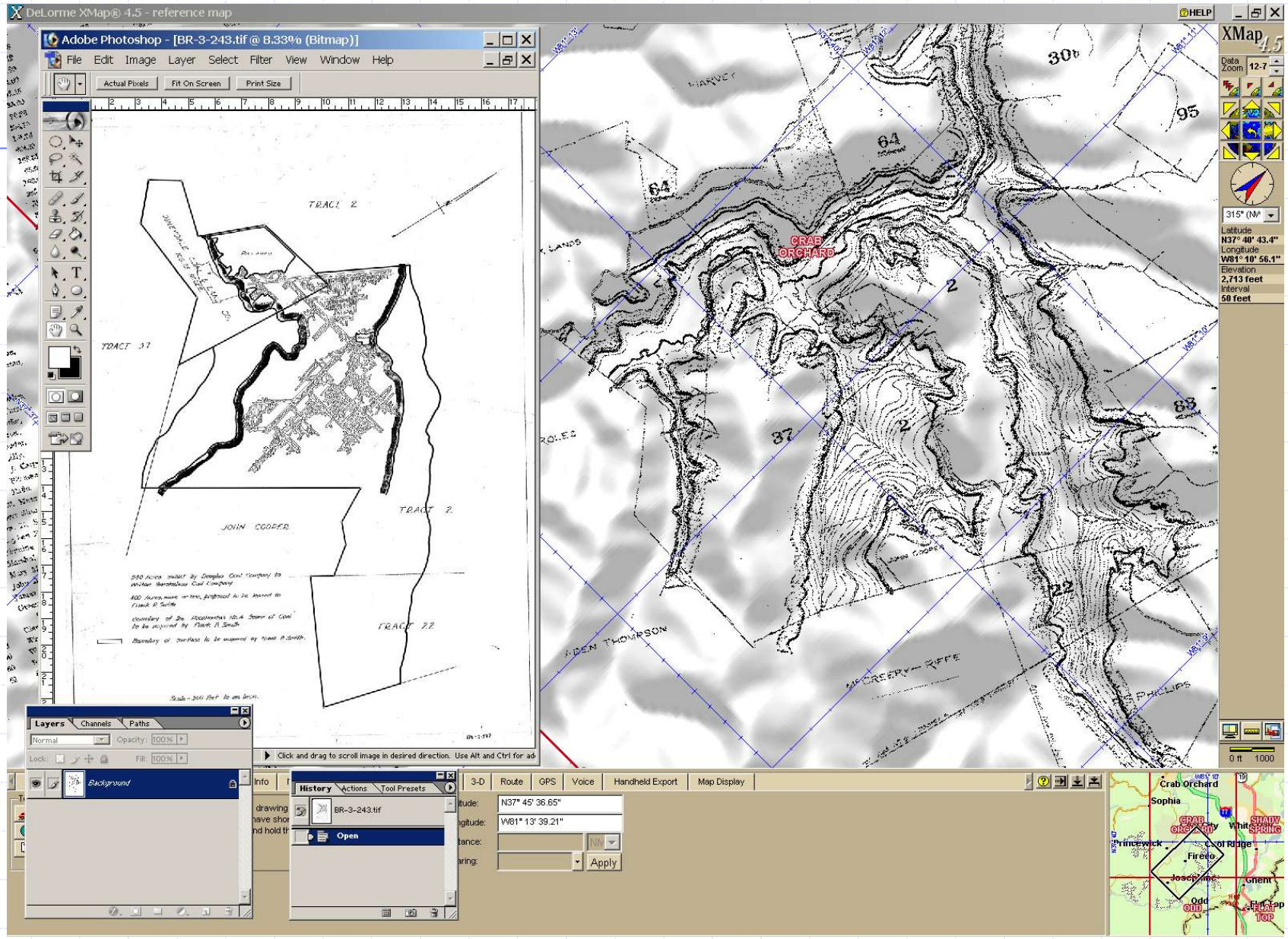

DeLorme XMap® 4.5 - reference map
Magnify 4%
HELP
XMap 4.5
Data Zoom 9-4
Latitude N37° 44' 22"
Longitude W81° 25' 37"
Elevation 2,756 feet
Interval 250 feet
Kingston
Dothan
Minden
Oak Hill
Thurmond
Ameagle
DOROTHY
Artie
FAX
OAK HILL
THURMOND
Hilltop
Redstar
Glen Jean
Long Branch
Clear Creek
Kilsyth
Mt Hope
Terry
Quinnimont
Prince
Rock Creek
Arnett
Piney View
Cranberry
Lanark
ARNETT
ECCLES
BECKLEY
Stanford
PRINCE
Skelton
Saxon
Harper
Sprague
Eccles
Glen Daniel
Beckley
Mabscott
Bolt
Surveyor
Raleigh
Round Knob
Beaver
Daniels
Crab Orchard
Blue Jay
Lester
Glen White
Glen Rogers
Sophia
Shady Spring
White Oak
MCGRAWS
LESTER
CRAB ORCHARD
SHADY SPRING
Princewick
Cool Ridge
Jonben
Saulsville
Fireco
Hickory Knob
Maben
Helen
Josephine
Ghent
Rhodell
Wyco
Amigo
Odd
Flat Top
Mullens
Corinne
Stephenson
Itmann
MULLENS
RHODELL
ODD
FLAT TOP
Alpoca
Bud
0 NM 2
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
WorkFile
Register
Create Data
Point
Label
ImageX
ImageY
Latitude
Longitude
Rotation: 0.0°
Data Resolution: 0.00
ft/pixel
To register an image to the map, use the select tool to place a point on the secondary map and a corresponding point on the primary map. If you do not know the rotation and data resolution of the image, place a second point on both maps.
Charleston
Hamlin
Summersville
Fayetteville
Logan
Beckley
Hinton
Pineville
Union
Welch
Bluefield
Christiansburg
Pulaski

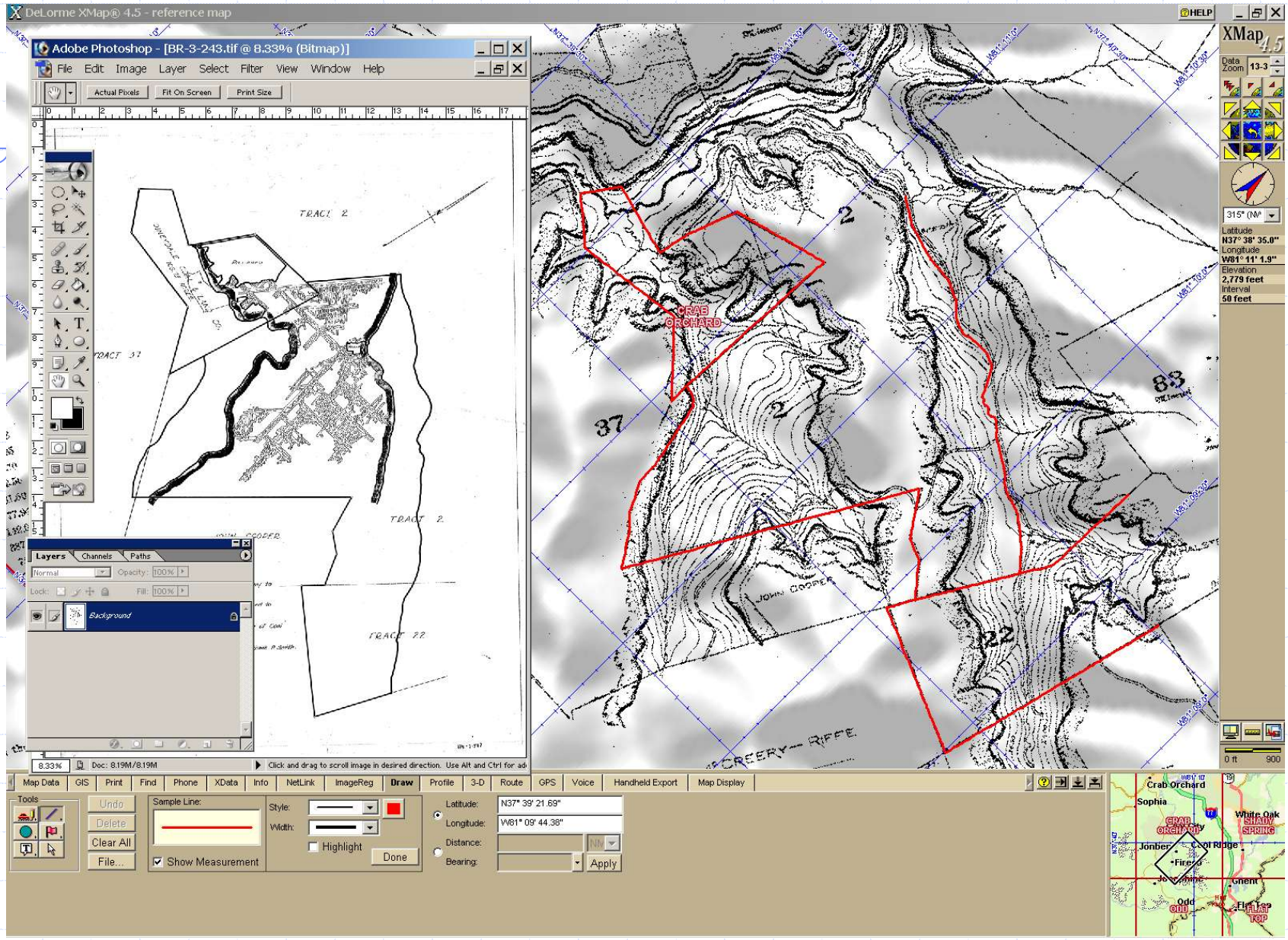

DeLorme XMap® 4.5 - reference map
Magnify 25%
[1]Point 1
MAP OF
47,000 ACRES OF LAND
IN
EIGH COUNTY, WEST VIRGINIA.
Owned by
Terry
RALEIGH CO
FAYETTE CO
Stretcher Neck
[1] Point 1
Terry Junction
McCreery
PRINCE
Creek
MOUNTAIN
Packs
Wright
Piney
County Boundary, WEST VIRGINIA
XMap 4.5
Latitude
N37° 50' 59.4"
Longitude
W81° 5' 29.9"
Elevation
1,138 feet
Interval
50 feet
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
WorkFile
Register
Create Data
Point
Label
ImageX
ImageY
Latitude
Longitude
Rotation: 0.0°
Data Resolution: 0.00
ft/pixel
To register an image to the map, use the select tool to place a point on the secondary map and a corresponding point on the primary map. If you do not know the rotation and data resolution of the image, place a second point on both maps.
Redstar
THURMOND
Layland
Kilsyth
Quinnimont
BECKLEY
PRINCE
Beckley

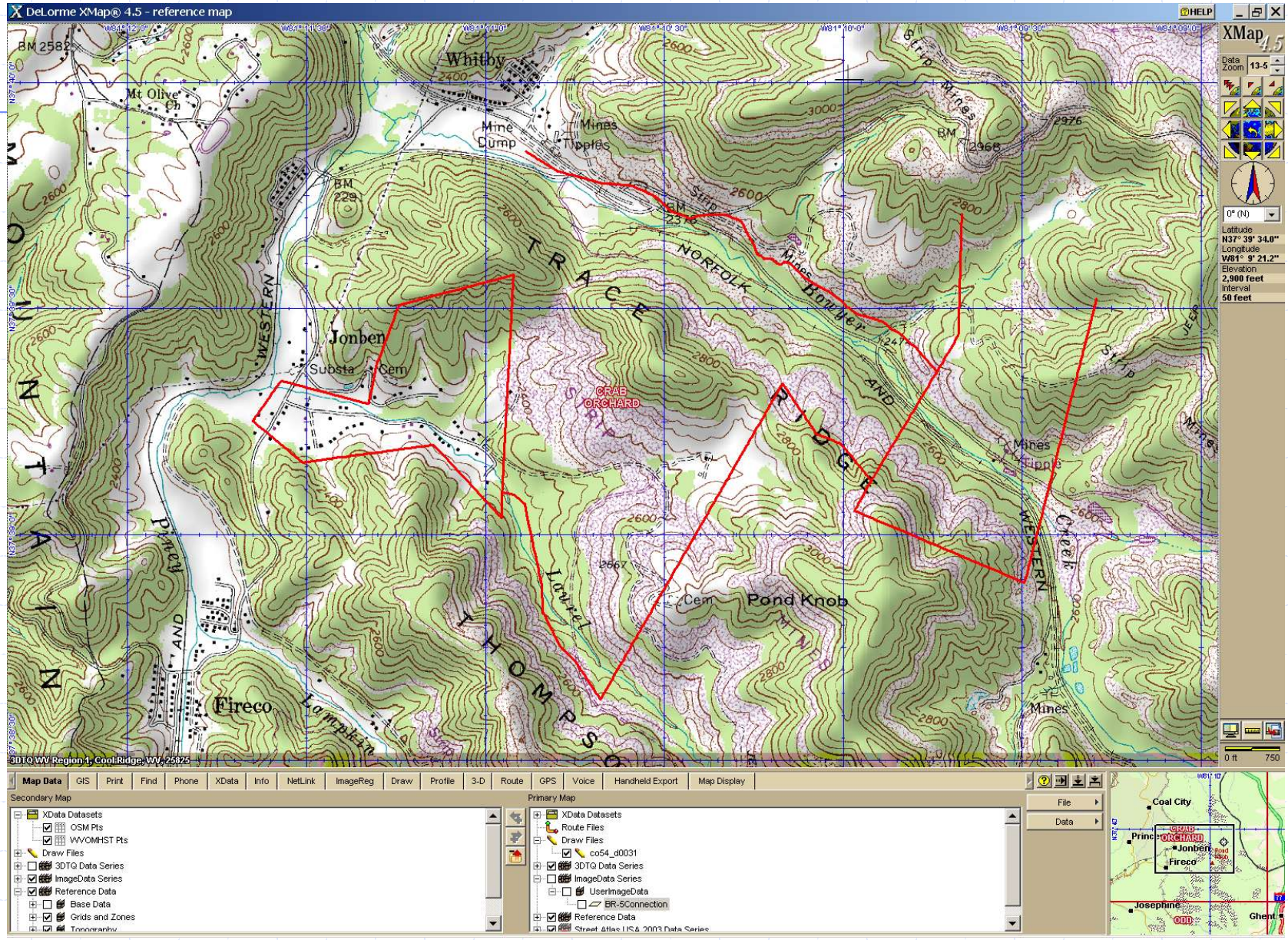

DeLorme XMap® 4.5 - reference map
Magnify 25%
[1]Point 1
MAP OF
47,000 ACRES OF LAND
IN
EIGH COUNTY, WEST VIRGINIA.
Owned by
[1] Point 1
PRINCE
County Boundary, WEST VIRGINIA
XMap 4.5
Data Zoom 13-0
Latitude
N37° 51' 1.1"
Longitude
W81° 5' 32.4"
Elevation
1,132 feet
Interval
50 feet
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
WorkFile
Register
Create Data
Point
Label
ImageX
ImageY
Latitude
Longitude
Rotation: 0.0°
Data Resolution: 0.00
ft/pixel
To register an image to the map, use the select tool to place a point on the secondary map and a corresponding point on the primary map. If you do not know the rotation and data resolution of the image, place a second point on both maps.
Redstar
THURMOND
Layland
Kilsyth
Quinnimont
Prince
Beckley
PRINCE


DeLorme XMap® 4.5 - reference map
Magnify 77%
HELP
XMap 4.5
Data Zoom 13-6
315° (NW
Latitude
N37° 41' 12.4"
Longitude
W81° 20' 1.6"
Elevation
1,824 feet
Interval
50 feet
[2] Point 2
LESTER
WESTERN
Slab Fork
Radio Tower
Mine Shaft
Dump
Sausta
Fork
CR 34 | Slab Fork Rd, Slab Fork, WV, 25920
0 ft 650
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
WorkFile
Register
Create Data
Point
Label
ImageX
ImageY
Latitude
Longitude
Point 2
1744
2466
N37° 41' 12.215"
W81° 19' 59.484"
Rotation: 59.1°
Data Resolution: 7.56
ft/pixel
To register an image to the map, use the select tool to place a point on the secondary map and a corresponding point on the primary map. If you do not know the rotation and data resolution of the image, place a second point on both maps.
Glen White
District 1
LESTER


DeLorme XMap® 4.5 - reference map
HELP
XMap 4.5
Glen Fork
Sabine
Ravencliff
Milam
McGraws
MCGRAWS
Glen Rogers
Bolt
Fairdale
ECOLES
Spruce Mountain
Chestnut Flat
OAK HILL
Rosedale
Oak Hill
Salem
Minden
Hilltop
Redstar
Thurmond
THURMOND
Swell Knob
Garden Ground Mountain
Beury Mountain
Saulsville
Hickory Knob
Maben
LESTER
BECKLEY
District 6
Allen Junction
Wyco
Corinne
Amigo
Rhodell
Stephenson
RHODELL
CRAB ORCHARD
PRINCE
Layland
Walnut Knob
Plumley Knob
District 8
MEADOW CREEK
Meadow Creek
White Oak
Cool Ridge
SHADY SPRING
Irish Mountain
Sullivan Knob
Hump Mountain
Lockbridge
ODD
Glent
Pilot Knob
CR 12.6 Pemberton Rd, Crab Orchard, WV, 25827
Data Zoom 10-1
315° (NW
Latitude N37° 43' 42"
Longitude W81° 13' 53"
Elevation 2,464 feet
Interval 100 feet
0 NM 1
Map Data | GIS | Print | Find | Phone | XData | Info | NetLink | ImageReg | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export | Map Display
Secondary Map
XData Datasets
OSM Pts
WVOMHST Pts
Draw Files
3DTQ Data Series
ImageData Series
Reference Data
Base Data
Grids and Zones
Primary Map
XData Datasets
Route Files
Draw Files
co54_d0031
3DTQ Data Series
ImageData Series
UserImageData
BR-5Connection
Reference Data
Street Atlas USA 2003 Data Series
File
Data
Charleston
Summersville
Hamlin
Fayetteville
Oak Hill
Logan
Beckley
Hinton
Pineville
Union
Welch
Bluefield
Christiansburg
Pulaski


DeLorme XMap® 4.5 - reference map
Adobe Photoshop - [BR-3-243.tif @ 8.33% (Bitmap)]
File Edit Image Layer Select Filter View Window Help
Actual Pixels
Fit On Screen
Print Size
TRACT 2
TRACT 37
JOHN COOPER
TRACT 2
TRACT 22
Layers
Channels
Paths
Background
History
Actions
Tool Presets
BR-3-243.tif
Open
Click and drag to scroll image in desired direction. Use Alt and Ctrl for ad
CRAB ORCHARD
XMap 4.5
Latitude
N37° 40' 43.4"
Longitude
W81° 10' 56.1"
Elevation
2,713 feet
Interval
50 feet
3-D
Route
GPS
Voice
Handheld Export
Map Display
N37° 45' 36.65"
W81° 13' 39.21"
Apply
Crab Orchard
Sophia
Princewick
Fireco
Josephine
Odd
Gnent
SHADY SPRING
FLAT TOP


DeLorme XMap® 4.5 - reference map
Adobe Photoshop - [BR-3-243.tif @ 8.33% (Bitmap)]
File Edit Image Layer Select Filter View Window Help
Actual Pixels
Fit On Screen
Print Size
TRACT 2
TRACT 37
TRACT 2
TRACT 22
Layers
Channels
Paths
Background
8.33%
Doc: 8.19M/8.19M
Click and drag to scroll image in desired direction. Use Alt and Ctrl for ad
CRAB ORCHARD
JOHN COOPER
CREERY-RIFFE
37
2
83
22
XMap 4.5
Data Zoom
13-3
Latitude
N37° 38' 35.0"
Longitude
W81° 11' 1.9"
Elevation
2,779 feet
Interval
50 feet
0 ft
900
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
Tools
Undo
Delete
Clear All
File...
Sample Line:
Show Measurement
Style:
Width:
Highlight
Done
Latitude:
N37° 39' 21.69"
Longitude:
W81° 09' 44.38"
Distance:
Bearing:
Apply
Crab Orchard
Sophia
White Oak
SHADY SPRING
Jonben
Cool Ridge
Ghent
Odd
ODD
FLAT TOP


DeLorme XMap® 4.5 - reference map
HELP
XMap 4.5
Data Zoom 13-5
0° (N)
Latitude
N37° 39' 34.0"
Longitude
W81° 9' 21.2"
Elevation
2,900 feet
Interval
50 feet
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Tipples
BM 2582
BM 229
BM 2376
BM 2968
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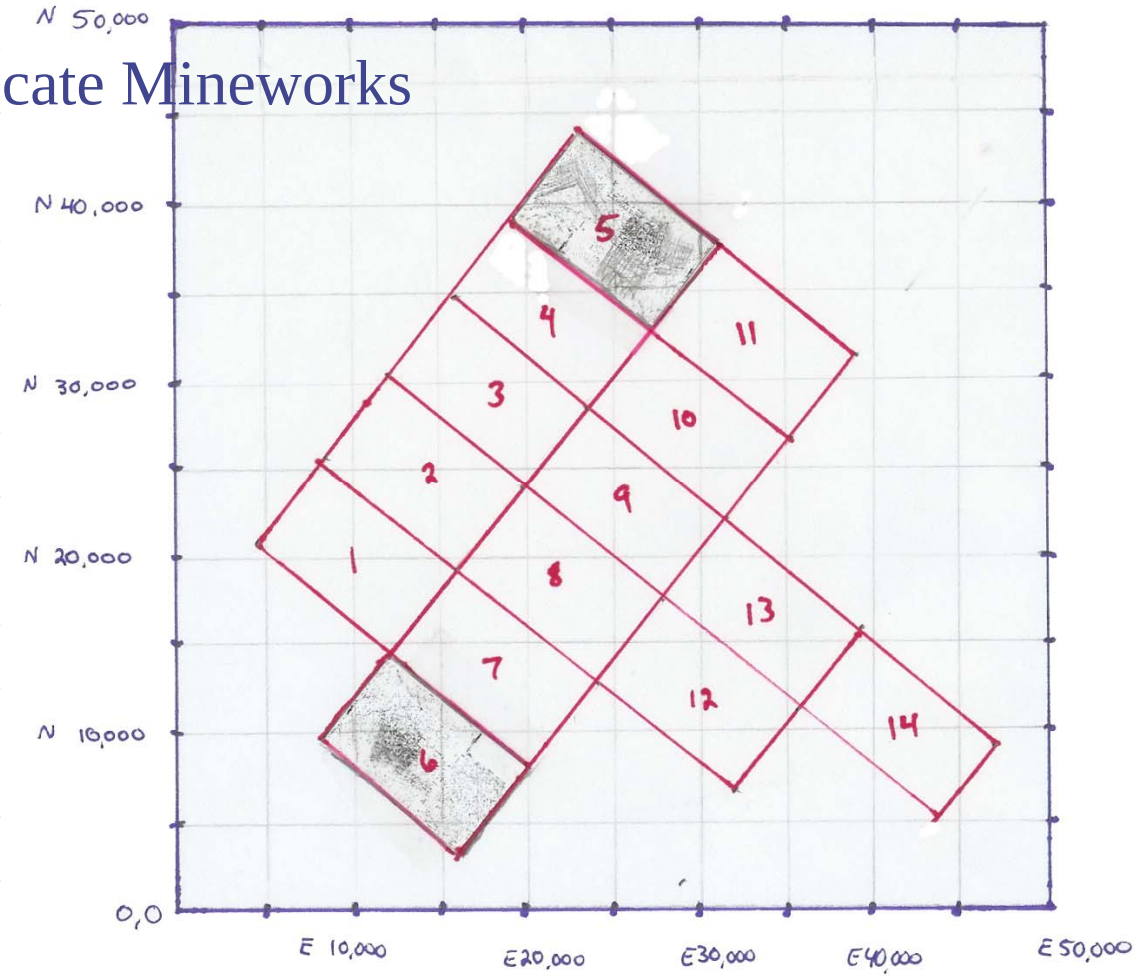
CRAB ORCHARD
TRACE RIDGE
NORFOLK AND WESTERN
Mines
Tipples
Pond Knob
Cem
Laurel
Fireco
Lawrence
THOMPSON
MOUNTAIN
Creek
Mines
3DTQ WV Region 1, Cool Ridge, WV, 25825
0 ft
750
Map Data
GIS
Print
Find
Phone
XData
Info
NetLink
ImageReg
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
Secondary Map
XData Datasets
OSM Pts
WVOMHST Pts
Draw Files
3DTQ Data Series
ImageData Series
Reference Data
Base Data
Grids and Zones
Primary Map
XData Datasets
Route Files
Draw Files
co54_d0031
3DTQ Data Series
ImageData Series
UserImageData
BR-5Connection
Reference Data
File
Data
Coal City
Princ
Jonben
Fireco
Josephine
Ghent

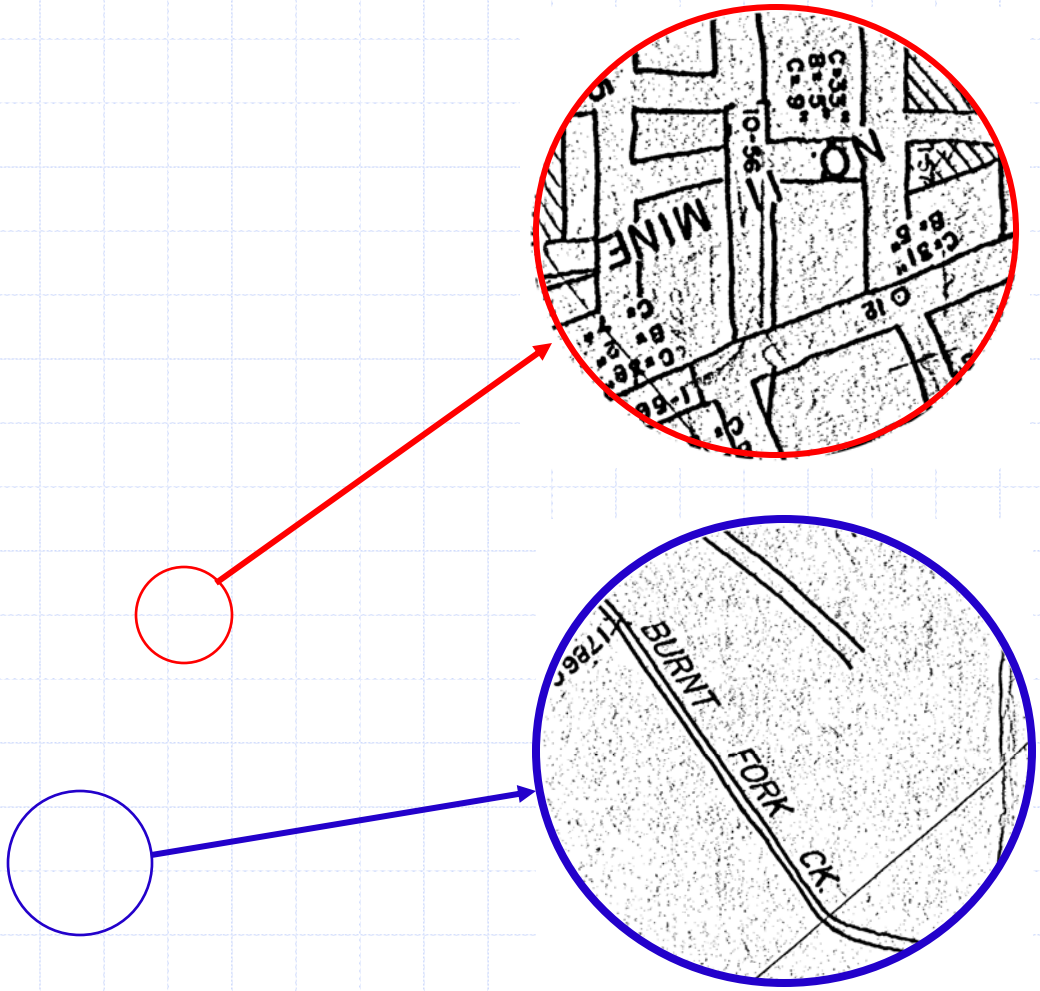
Using A Local Coordinate System for Multi-Sheet Maps

- Determine placement of sheets

Using A Local Coordinate System for Multi-Sheet Maps

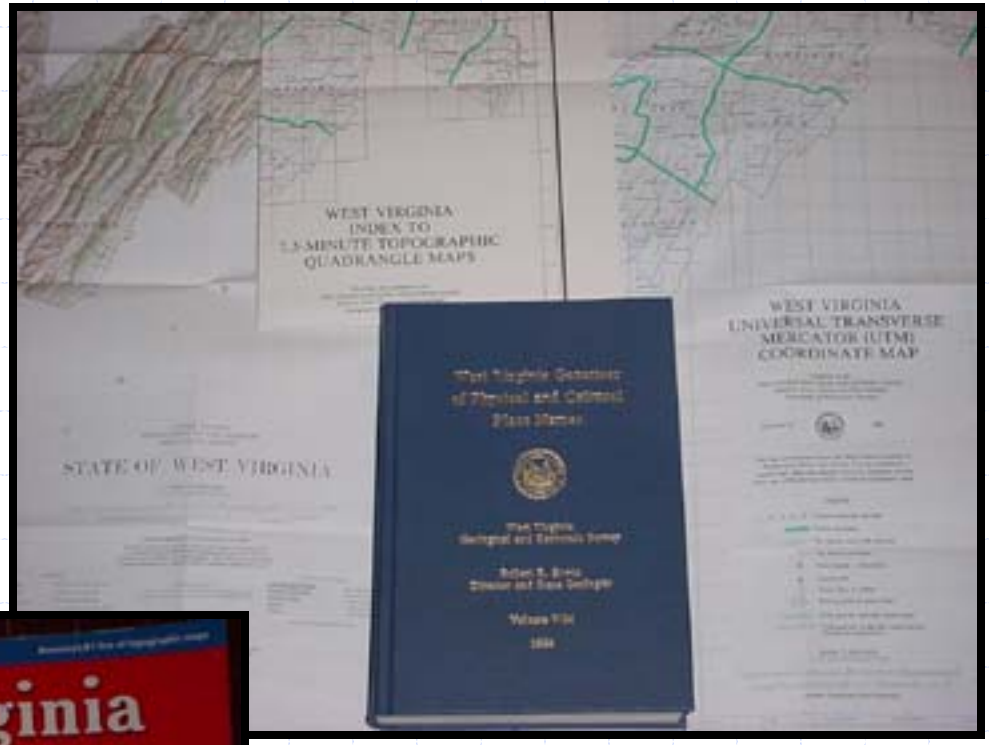
- Determine placement of sheets
- Locate Mineworks

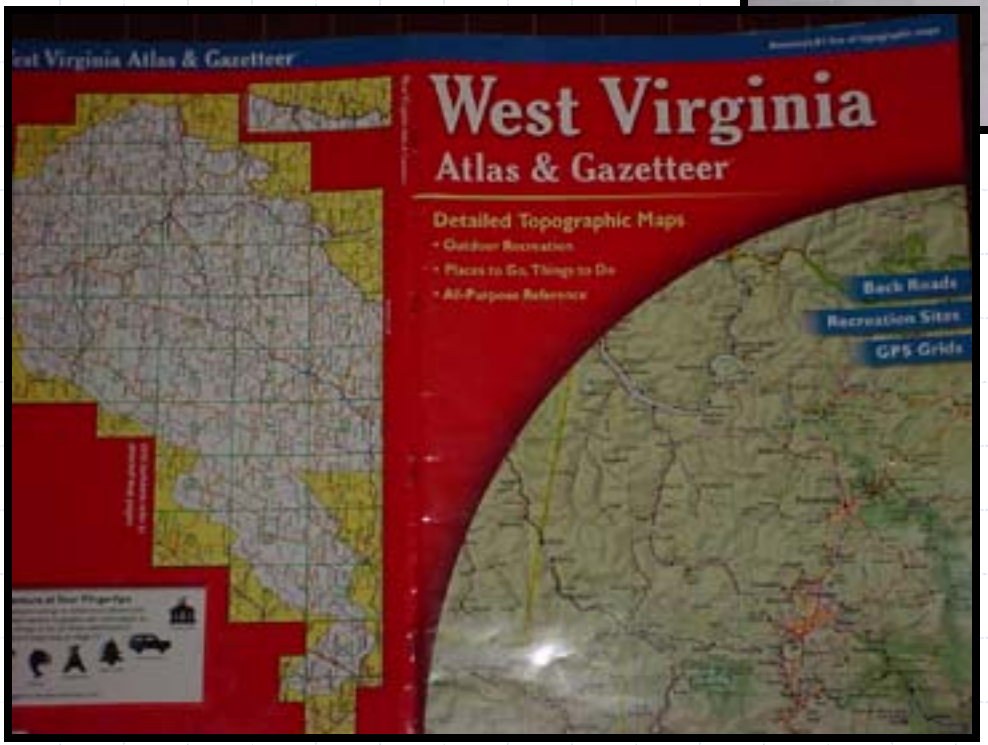



MINE
NO
BURNT
FORK
CK.

WV Gazetteer

WVGES 1986





DeLorme Atlas & Gazetteer

WVGES Gazetteer yields two results.

Burnt Fork of Slab Fork of Guyandotte River of Ohio River

Raleigh County

Lester Quad

UTM's 469140 E

4170300 N

Burnt Creek of Smokey Branch of Shades of Death Creek of Glade Creek of Manns Creek of New River

Fayette County

Danese Quad

UTM's 506800 E

4198720 N

A QuickSearch Find using the UTM's in DeLorme places the mineworks on Burnt Fork of Slab Fork.

DeLorme XMap® 4.5 - Abandoned Deep Mines

HELP

XMap 4.5

Data Zoom 13-6

0° (N)

UTM/UPS
17S
0467140
4166390

Elevation
1,903 feet

Interval
50 feet

0 ft 650

Map Data | GIS | Print | Find | Phone | XData | Info | NetLink | ImageReg | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export | Map Display

QuickSearch
Advanced
Radar

One Advanced result for:
17s, 469140, 4170300

New Search
Go To
MapTags

Category	*Coordinate	City/Town	State/Admin	ZIP C...	US County	Nearest Street Address	Source
Referen...	17S 0469140 4170300	Slab Fork	WV (West Virginia)	25920	Raleigh County		US ZIP Code Polygons (DeLorme) (Vo

Lester
District 1
Glen Rogers
54

WVOMHS&T

Jay Holden Deal
GIS Technician
WVOMHST
jdeal@mines.state.wv.us

OVERVIEW OF WEST VIRGINIA'S ABANDONED MINE MAP PROJECT

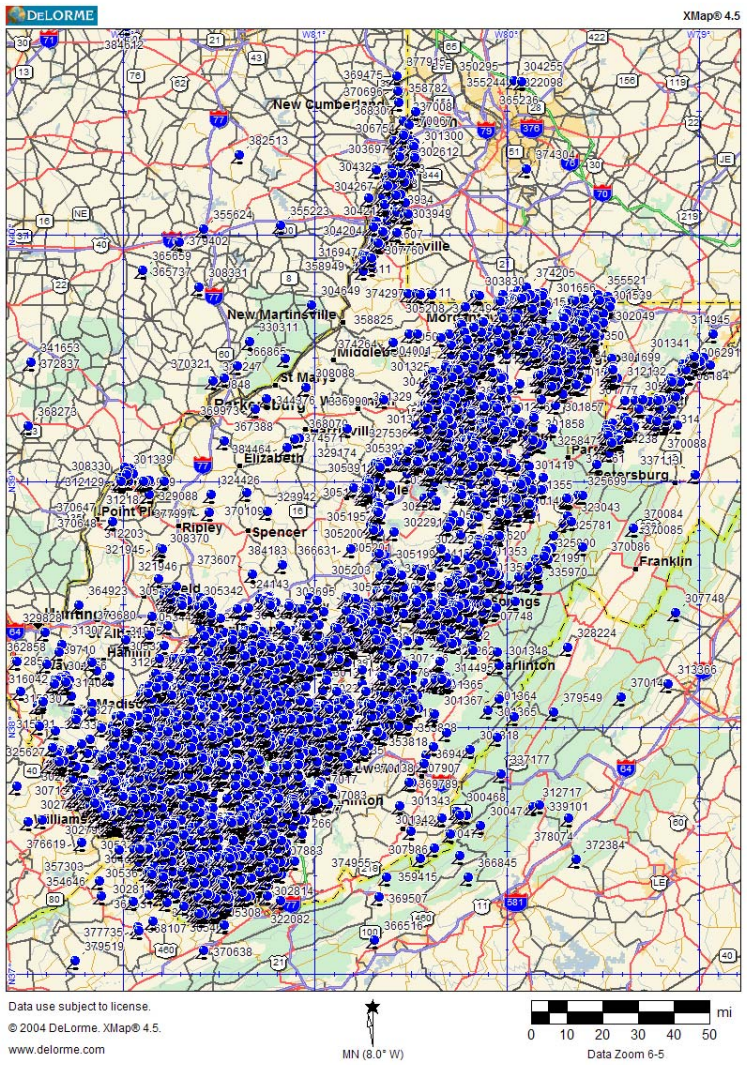
West Virginia Office of
Miners' Health, Safety and Training

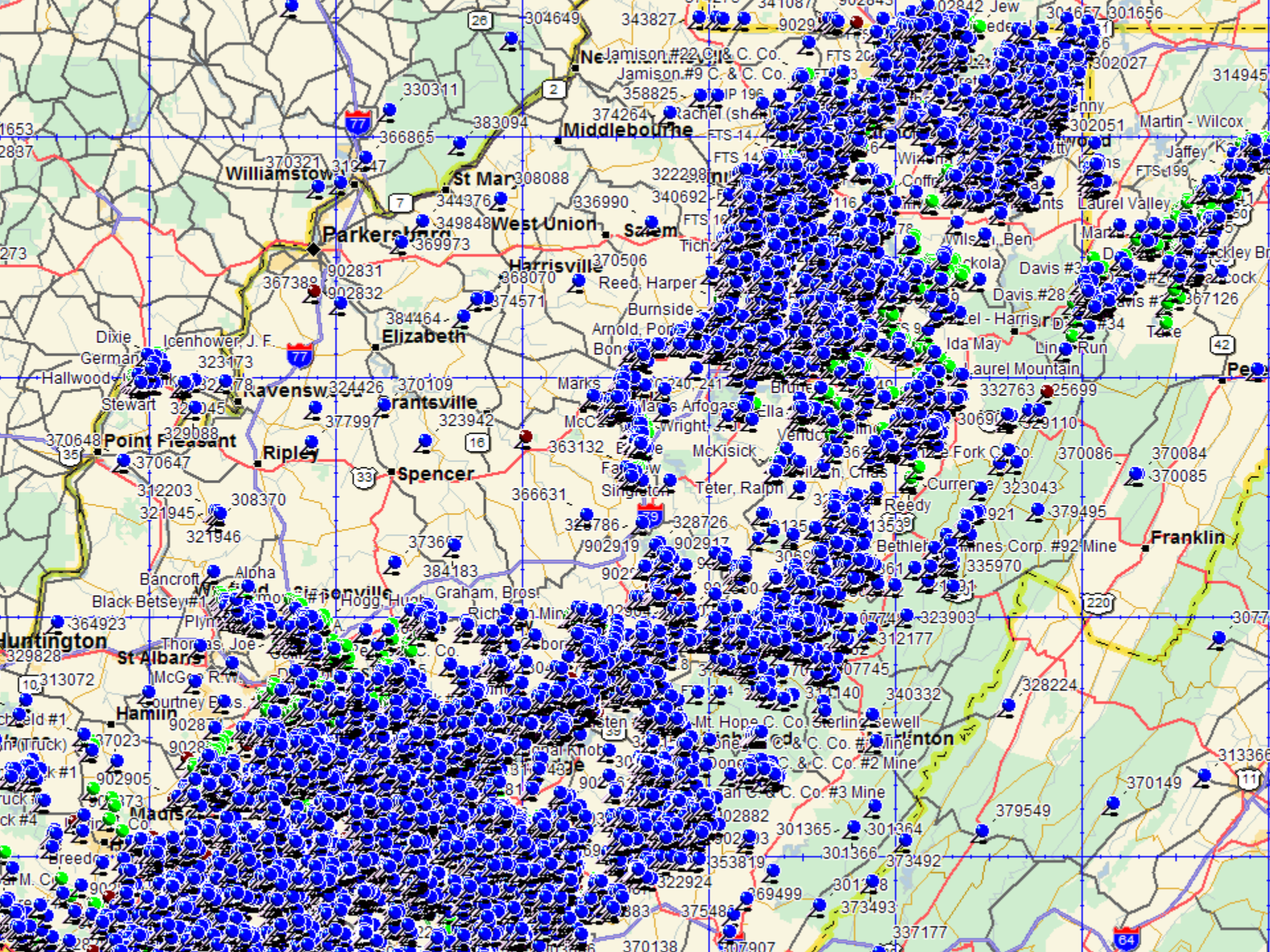
Abandoned Mine Map Project

- Acquiring Maps
- Identifying Maps
- Geo-referencing Maps
- Data Processing of Maps
- Scanning of Maps
- Archiving of Maps and Data
- Public Access to Archives

EXISTING MINE MAP ARCHIVE

- 1969 WV Law
- Bureau of Mines
- OSM
- Archived Map and Data
- Pre-1970 UG Mining
- All UG Mining to Present (Final Maps)
- 47,000+ Maps and Data Archived




Middlebourne
Williamstown
St Marys
West Union
Parkersburg
Salem
Harrisville
Elizabeth
Ravenswood
Grantsville
Point Pleasant
Ripley
Spencer
Franklin
Huntington
St Albans
Hamlin
Madison
Clintonville
Jamison #22 C. & C. Co.
Jamison #9 C. & C. Co.
Rachel (shaft)
Reed, Harper
Burnside
Arnold, Pop
Marks
McKisick
Teter, Ralph
Graham, Bros.
Thomas, Joe
Mt. Hope C. Co.
Sterling
Sewell
Laurel Valley
Laurel Mountain
Ida May
Davis #28
Davis #34
Martin - Wilcox
Jaffey
Dixie
Icenhower, J. F.
Hallwood
Stewart
Bancroft
Alpha
Black Betsey #1
Hogg, Hugh
Courtney Bros.
Bethlehem Mines Corp. #92 Mine
Reedy
Currence
Fork Creek Co.
Wilson, Ben
Wilson, Chas
Singleton
Fairview
Arfogas
Wright
Venduc
Ella
Brunetto
Mt. Hope C. Co. #1 Mine
Mt. Hope C. Co. #2 Mine
Mt. Hope C. Co. #3 Mine
Dorothy
Breeden
Rachel
Knob
Ridge
Hog
Run
Tate
Pe

Acquiring Maps

- State-wide
- Mineral Owners
- Coal Companies
- Engineers and Surveyors

Tracking List Spreadsheet

Date Removed from Archive	Company Name	Mine Name	Location/ Notes	Location I.D.	Map Tracking No.

Identifying Maps

- **Compare map to existing archive**

1. Needed and can be geo-referenced
2. Not Needed
3. Indeterminate (needed but can not be geo-referenced)
4. Supplemental or new addition to the archives

Needed=Y, NotNeeded=N, Indeterminate=I	Initials	Date Processed	Date Scanned	Date Returned to Archive	Onsite "Y"	Onsite "N"	Onsite "I"

Identifying Maps

- Tools Used in identifying maps

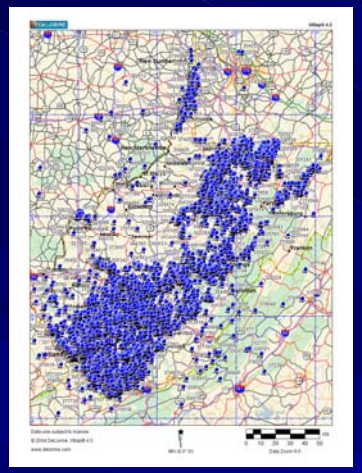
1. Computer
2. Existing & Working map archive “tiff images”
3. Existing & Working map information data base
4. Software
   - Excel
   - Photoshop
   - DeLorme X-Map

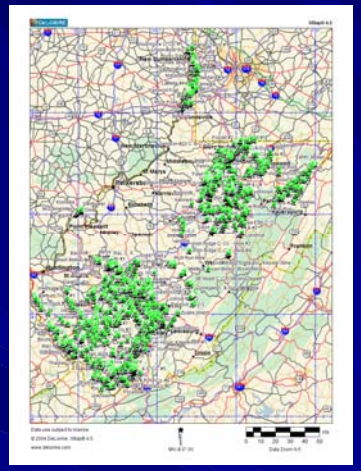
Microsoft Excel - Fayette [Read-Only]
Adobe Photoshop
Verdunvill
Holden
DELL

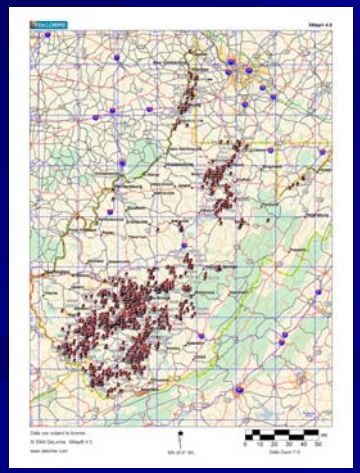
Geo-reference Maps

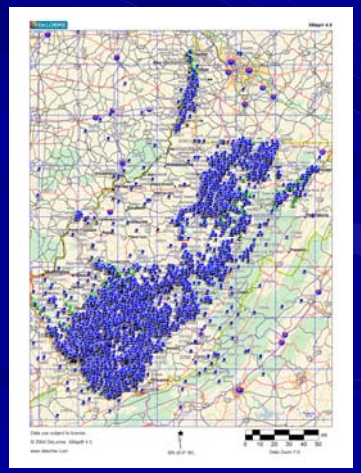
- Panel III---How To Geo-reference Mine Maps with Poorly Referenced Coordinate Systems (Jay Deal, WVOMHST)
- Visually locate mining on X-Map
- Record Lat and Long for one of the following:
  - Portal
  - Mine center
  - Mine cluster
  - Map center

EXISTING MINE POINT LOCATIONS

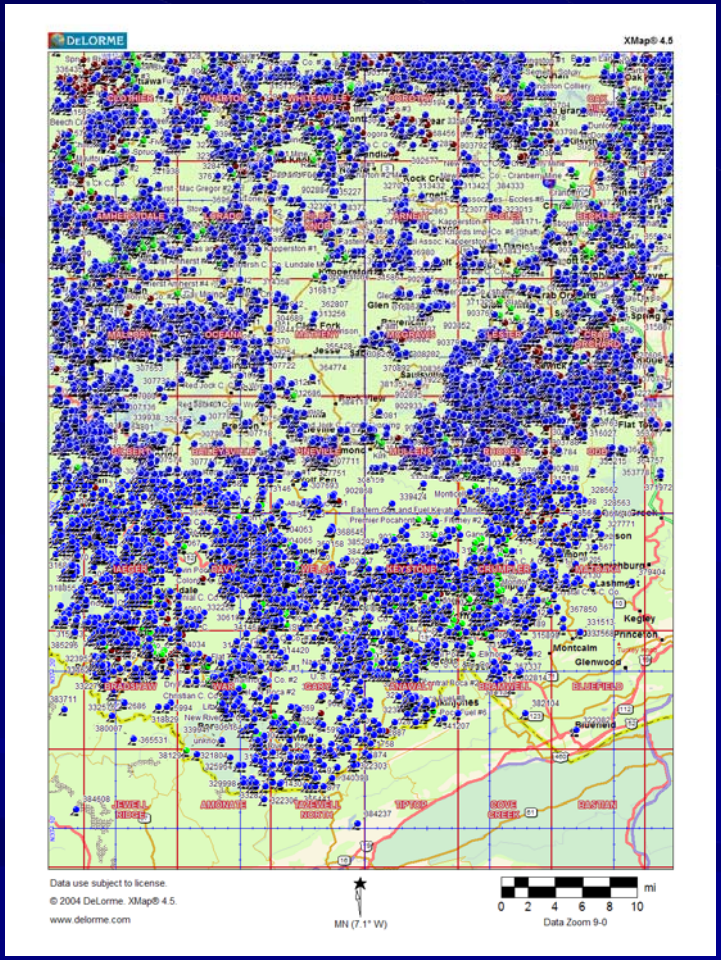


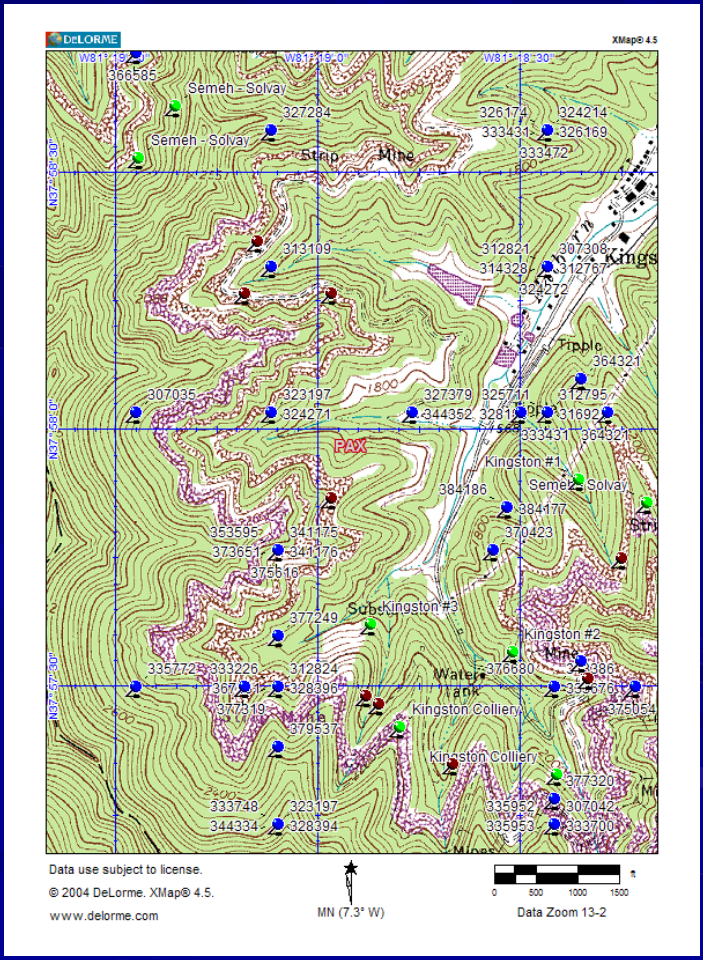






EXISTING POINT LOCATIONS





West Charleston
Twomile
Rutledge
Bownemont P.O.
CHARLESTON
BM 601
KANAWHA
RIVER
Oak Hill School
Green Bottom School
Arbutus
South Ruffner
Snow Hill
Kanawha
Pleasant Oak School
Coal Hollow
Garnet P.O.
Malden Sta.
Malden
Carnes
Hesson
Elk
Coal
Cloverlick
Hollow
Branch
Fork
Creek
Park
Valley Grove
Spring
Carkin
1 K
2 K
3 K
4 K
E
I
U
D
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N
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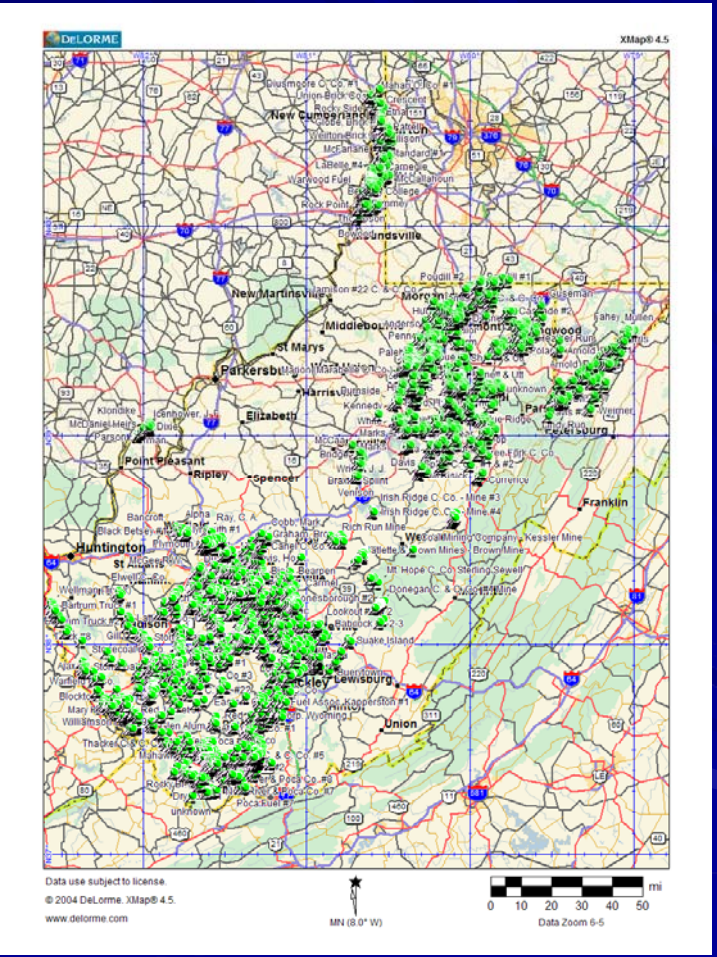
A
L
Z
H

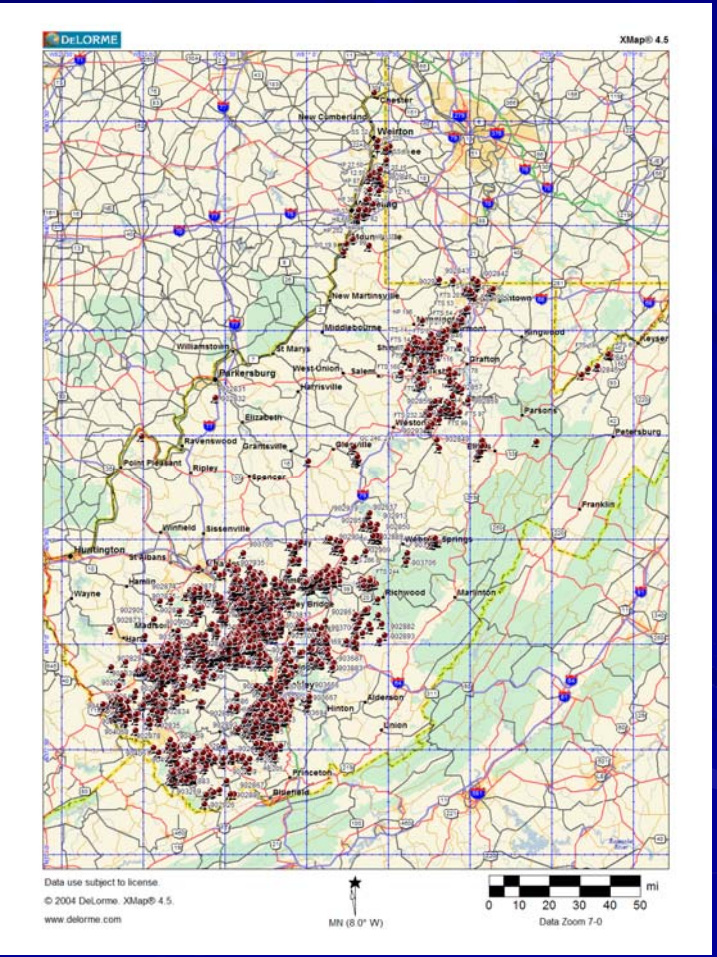
WPA MINE MAPS

- WPA Maps (1941)
- AMD Federal Project
- 15 Minute Quads
- Mining up to 1930's
- 3600+ Mine Portals



Current Working Archives

- 2003 (1 person)
- 2004 (interns)
- 2005 (full time + interns)



Data Processing of Maps

- 5 Main categories of Information

1) Location
2) Mine Information
3) Seam Information
4) Map Data
5) Notes or comments

Mine Map Repository Data Entry Form

Date:_____ Preparer:_____ Archive Name:_____

Root Information

Document No:_____ Tracking No: _____

Certified: Yes No Number of Scenes:_____(02 digits) State: WV

Map Date: _____(04 Digits) Map Scale:_____ Document Source: WVOMHST

Map Type: Abandoned Map Final Closure Final Name Change Final Administrative Closure Other_____

Commodity Name: Bituminous Coal or Other:_____ (12 characters)

Mine Type: Surface Underground Augered/Highwall Combination Other_____

Mine Information

Company Name:_____(42 characters) Document Suffix.:_____

Mine Name:_____(32 characters) Reported Bed:_____

County:_____ Quad:_____ * Status: N or S ** Coordinate Selection:_____

Latitude: N ____ ____ - ____ ____ -____ ____ Longitude: W____ ____ - ____ ____ -____ ____

Location:_____

Notes:_____

Company Name:_____(42 characters) Document Suffix.:_____

Mine Name:_____(32 characters) Reported Bed:_____

County:_____ Quad:_____ * Status: N or S ** Coordinate Selection:_____

Latitude: N ____ ____ - ____ ____ -____ ____ Longitude: W____ ____ - ____ ____ -____ ____

Location:_____

Notes:_____

Company Name:_____(42 characters) Document Suffix.:_____

Mine Name:_____(32 characters) Reported Bed:_____

County:_____ Quad:_____ * Status: N or S ** Coordinate Selection:_____

Latitude: N ____ ____ - ____ ____ -____ ____ Longitude: W____ ____ - ____ ____ -____ ____

Location:_____

Notes:_____

Company Name:_____(42 characters) Document Suffix.:_____

Mine Name:_____(32 characters) Reported Bed:_____

County:_____ Quad:_____ * Status: N or S ** Coordinate Selection:_____

Latitude: N ____ ____ - ____ ____ -____ ____ Longitude: W____ ____ - ____ ____ -____ ____

Location:_____

Notes:_____

* Status: (N) New Addition to Archive (S) Supplemental mine works for a previously archived map

** Coordinate Selection: (1) Prominent Portal (2) Cluster of Mines (3) Mine Center (4) Map Center (5) See Notes

Revised: 04/27/05

Data Processing of Maps

- 1) Location
  - Latitude and Longitude
  - State and Code (drop down & lookup table)
  - County and Code (drop down & lookup table)
  - USGS Quadrangle (drop down)

Data Processing of Maps

- 2) Mine Information
  - Mine Name
  - Company Name
  - Mine Type (drop down)
  - Commodity (drop down)

Data Processing of Maps

- 3) Seam Information
  - Bed name as it appears on map (drop down)
  - Bed code (lookup table)

Data Processing of Maps

- 4) Map Data
  - Tracking Number
  - Document Number
  - Number of Map Scenes
  - Date on Map if available
  - Source of Map
  - Type of Map (abandoned, final and etc)

Data Processing of Maps

- 5) Notes or Comments
  - Reference back to existing archive
  - Information specific to map

Data Processing of Maps

- Excel Spreadsheet
- Lookup tables and Drop down menus
- Quad Check (Lat/Long and Quad)

Scanning of Maps

- 54” Wide Roll Scanner
  - Black and White
  - Color
  - .6 inch media thickness
  - 30,000 pixels
  - Black and White at 400 dpi
  - Color at 200 dpi
  - Limited to 150 inches length at 200 dpi for file size to open in Photoshop

Archiving

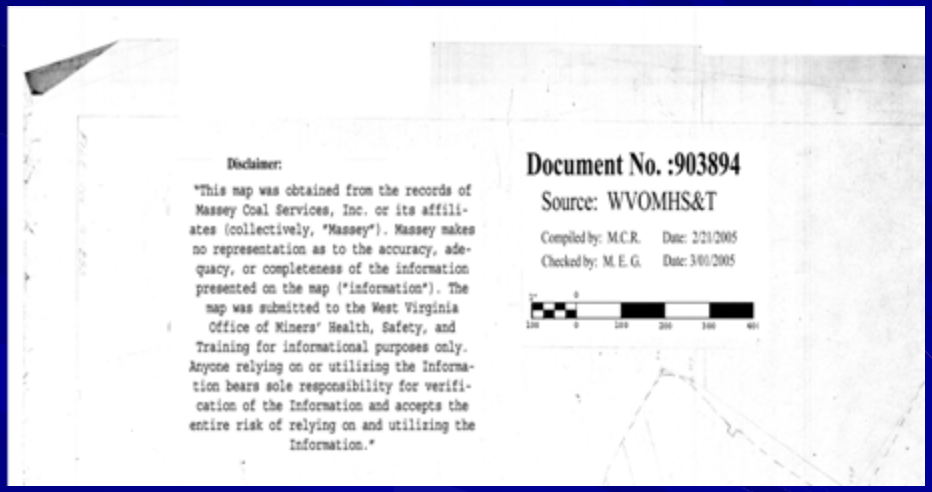
- Data and Map Verification
- Assign Document Number
- Edit Maps
- Check the Edit
- Place Spreadsheet and map images into individual archive file
- Place archive file into “Master Archive”

Editing a Map Scan for Archiving

- Photoshop
- Document Number
- Map Source
- Map Date
- Map Scale
- Initials of Editor
- Disclaimer
- Remove Proprietary Information
- Initials of Checker

Typical Edited Map Scan

EDITING A MAP SCAN



Disclaimer:

"This map was obtained from the records of Massey Coal Services, Inc. or its affiliates (collectively, "Massey"). Massey makes no representation as to the accuracy, adequacy, or completeness of the information presented on the map ("information"). The map was submitted to the West Virginia Office of Miners' Health, Safety, and Training for informational purposes only. Anyone relying on or utilizing the Information bears sole responsibility for verification of the Information and accepts the entire risk of relying on and utilizing the Information."

Document No. :903894

Source: WVOMHS&T

Compiled by: M.C.R. Date: 2/21/2005

Checked by: M. E. G. Date: 3/01/2005

Public Archive Components

- Computer Based Archive Components
- Data Base (existing and on going)
- Map “tiff” Images (existing and on going)
- Point Locations (DeLorme X-Map)
- WPA Data Base
- WPA Mine Locations (DeLorme X-Map)
- Production Records (1883-2004)

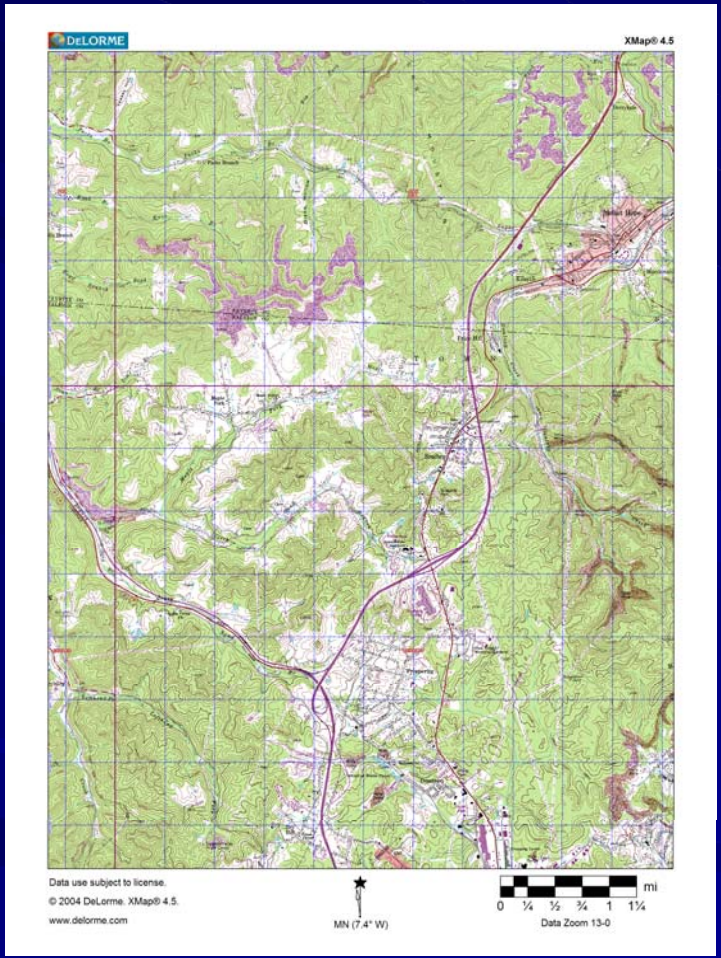
Public Archive Locations

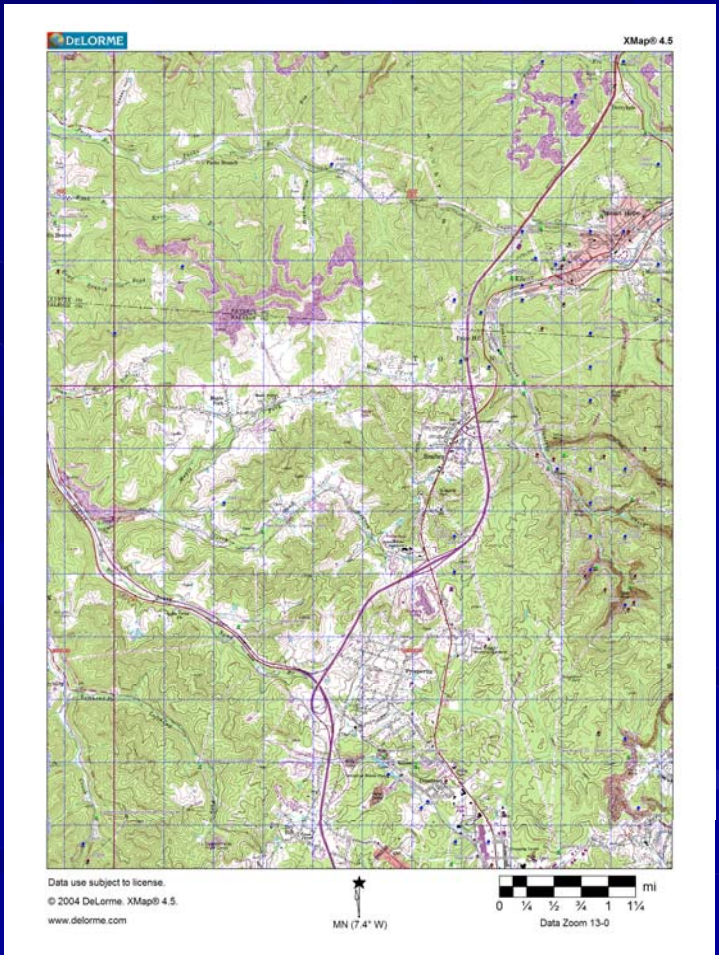
- Charleston (WVOMHST)
- Oak Hill (WVOMHST)
- Fairmont (WVOMHST)
- Morgantown (WVGES)
- Pittsburgh (OSM)

Public Archives

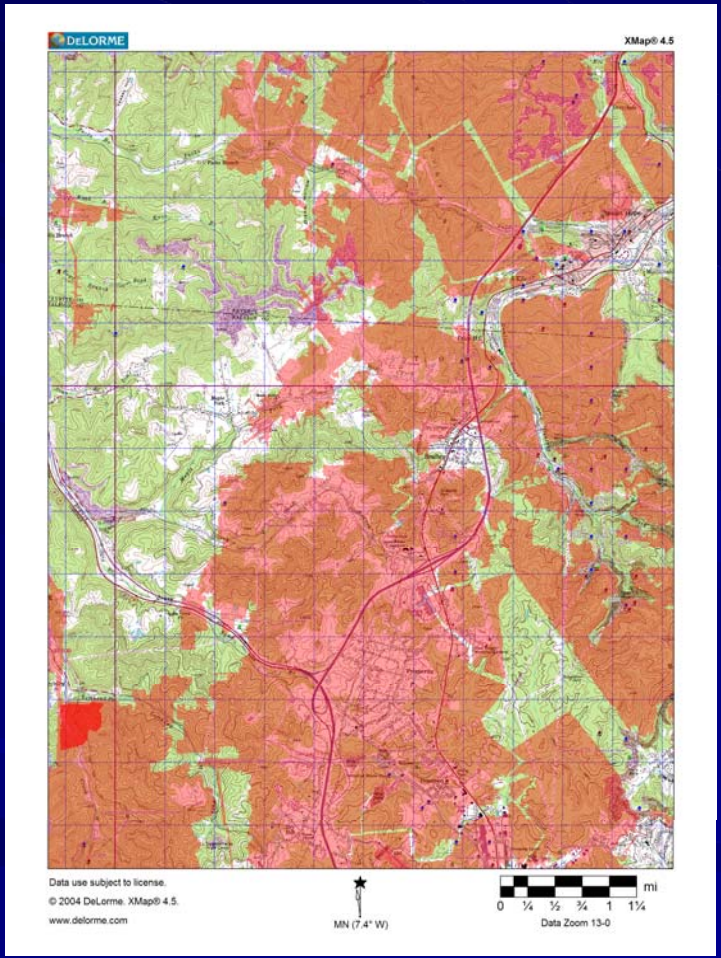
- Future combining of WVOMHST and WVGES databases into one common database
- Will be the “future public” archive
- Web-based Resources (Panel IV—Nick Fedorko, WVGES)

Past and Present Digital Archives





Future Digital Archives



- Mine Maps to Geo-Referenced Mining Footprints
- CBMP
- WVGES

Thank you!!

An Update on OSM's Underground Mine Map Initiative

John R. Craynon, P.E.
Chief, Division of Regulatory Support
Office of Surface Mining
Washington, DC

Issues of concern

- Getting maps into digital format
- Managing data and data standards
- Georeferencing and GIS issues
- Availability of maps and liability for use

Summary of OSM Initiative

- GOAL: Making as many accurate UG mine maps available to as many customers as possible
- Includes and builds on ongoing State and Federal efforts
- Builds on TIPS and other OSM/State partnerships
- Focused on delivering the needed product and capacity building
- Serves AML, regulatory and health and safety goals

Details of the Initiative

- Identification of best practices and creation of voluntary standards (this workshop)
- Establishment of underground mine mapping centers of expertise (including NMMR)
- Acquisition of underground mine maps
- Development of distributed “structure” to provide maps over the internet

Current Status

- 2005 Benchmarking workshop related to best practices/standards (this meeting)
- Working with lessors/States on liability issues
- Development of geo-referencing class (TIPS)
- Integration with NMMR 5-year plan
- FY ’06 Budget proposal
  - Funding building of State capability and additional resources for NMMR
  - Approximately $500,000 in FY ’06 budget

Key Points to Consider

- Cooperation and coordination is necessary
- Understanding the current status and best practices are keys to identifying future needs
- Funding to improve map availability and quality is necessary
- Benefits outweigh costs…working to quantify

Potential potholes

- Available funding and resources may limit scope
  - Current resource request a “drop in the bucket” compared to total need of perhaps $30-40 million
  - Bad timing for new initiatives
- Other priorities within OSM (e.g., AML reauthorization)
- Window of opinion may be closing (long time since Quecreek)

Future efforts

- Continued cooperation with the States and others to use/develop the best available tools
- Rallying continued support and new funding resources
- Capability building among States and NMMR
- Addressing existing mine maps and availability of those maps
- Development of a coordinated plan

Graphical Data Exchange Formats for Underground Mine Maps

Manucherh Bako-Zade
and John Craynon
Office of Surface Mining
Washington, DC

Project

- Review of existing graphical data file exchange formats
- Identification of separate needs of technical users and homeowners

Parameters for Review

- File size and compression
- Image resolution
- Color depth
- Ease of use
- Support in common software

Web Based Image Sharing

- Common formats
  - TIFF
  - JPG
  - GIF
  - PNG
  - BMP
  - PDF

Recommendation – Portable Network Graphics (PNG)

- Supports color depth
- Supports transparency
- Supports interlacing
- No loss of resolution in compression
- Supported by image software
- Supported by web browsers
- Utilities can allow annotation
- No licensing issues

Disadvantages of PNG

- Not as well known as JPG
- Larger files than JPG
- Does not support multi-page documents
- Transparency feature not supported under some browsers

Scientific “Presentation” Software

- Deneba Canvas X
  - Can allow for presentation of GIS data
  - Allows for image editing
  - Allows for DTP illustration and layout functionality
  - Supports over 80 graphical file formats for import and export

Conclusions

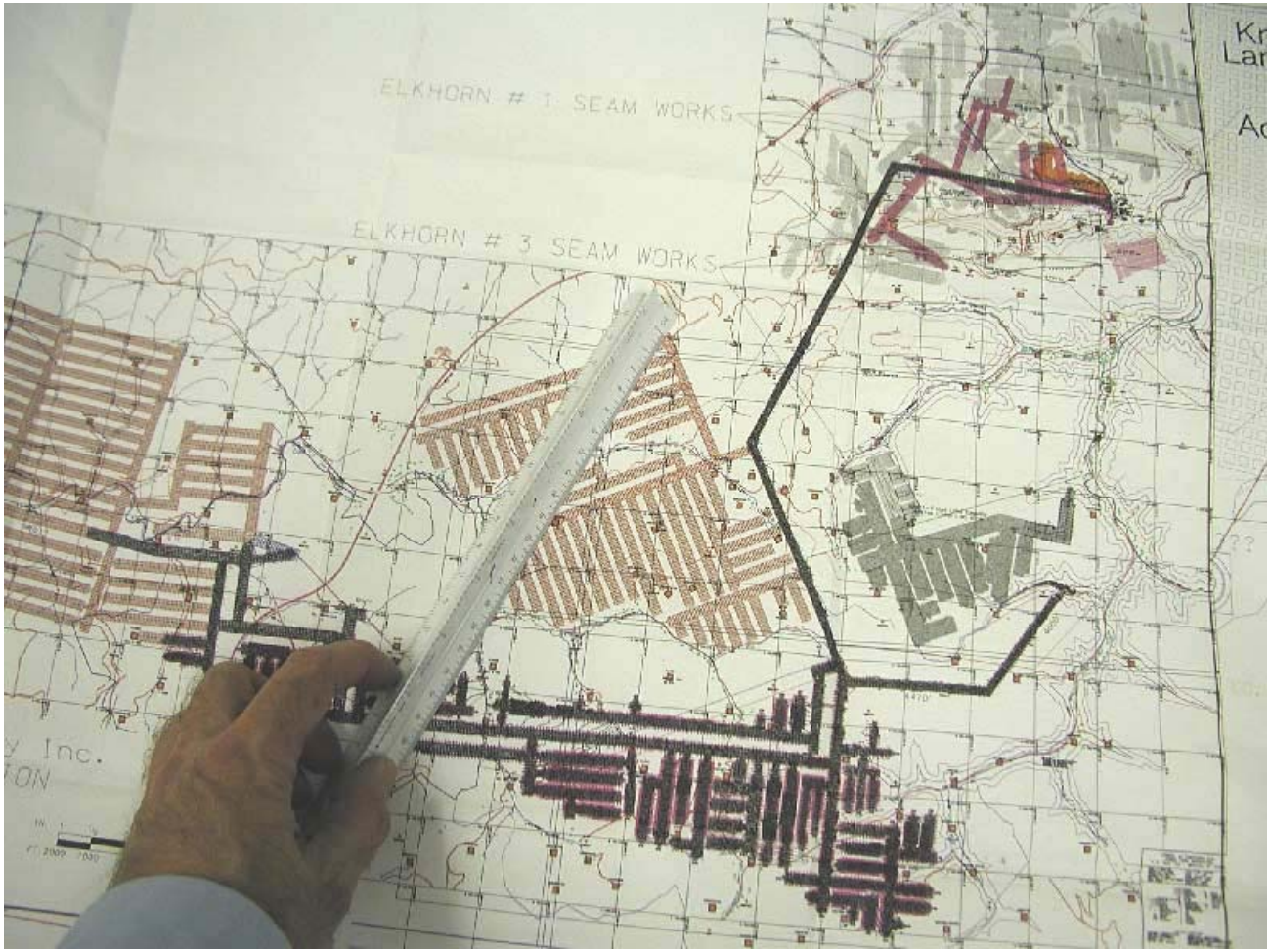
- Map data can be presented as a graphical file for use by the public
- Selection of file format will be important to retain resolution and minimize file size
- A widely-usable format is necessary
- PNG provides optimal flexibility
- Deneba Canvas X may be useful software for higher end users

Kentucky’s Mine Map Repository

Kentucky Office of Mine Safety & Licensing
John K. Hiett, P.G. , Manager ; UK CAER

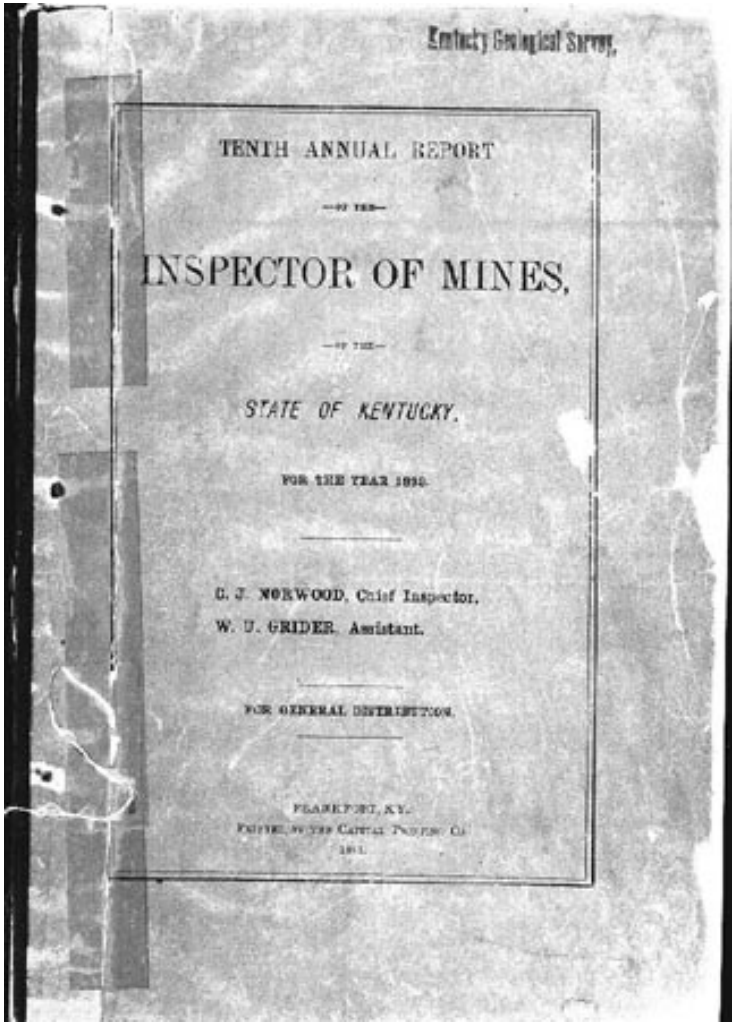
Coal Mine Map Acquisition, Storage and Archiving

2005



Mine License Maps

The Kentucky Department of Mines & Minerals (KDMM) (now OMSL) has received coal mine license maps since it began in 1884.


Kentucky Geological Survey.

TENTH ANNUAL REPORT

—OF THE—

INSPECTOR OF MINES,

—OF THE—

STATE OF KENTUCKY,

FOR THE YEAR 1890.

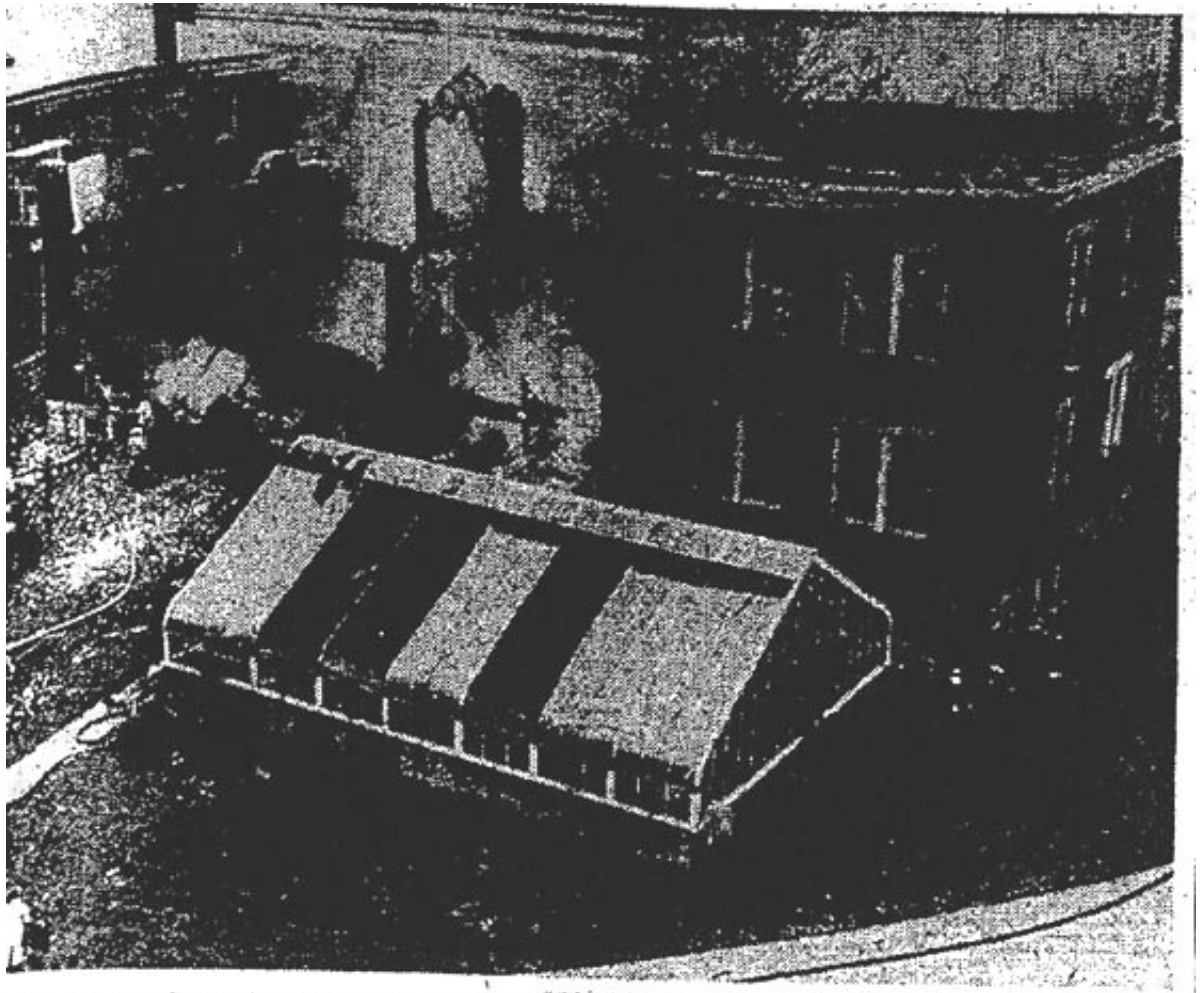
C. J. NORWOOD, Chief Inspector.
W. U. GRIDER, Assistant.

FOR GENERAL DISTRIBUTION.

FRANKFORT, KY.
PRINTED BY THE CAPITAL PRINTING CO.
1891.

In Kentucky each calendar year a coal mine is licensed / relicensed and a mine plan (map) is submitted. Final maps are submitted when a company closes a mine. Other incoming maps include 6 month Oil & Gas well (proximity) maps, ventilation changes, underlays and overlays.

Fire destroys KDMM in 1948.



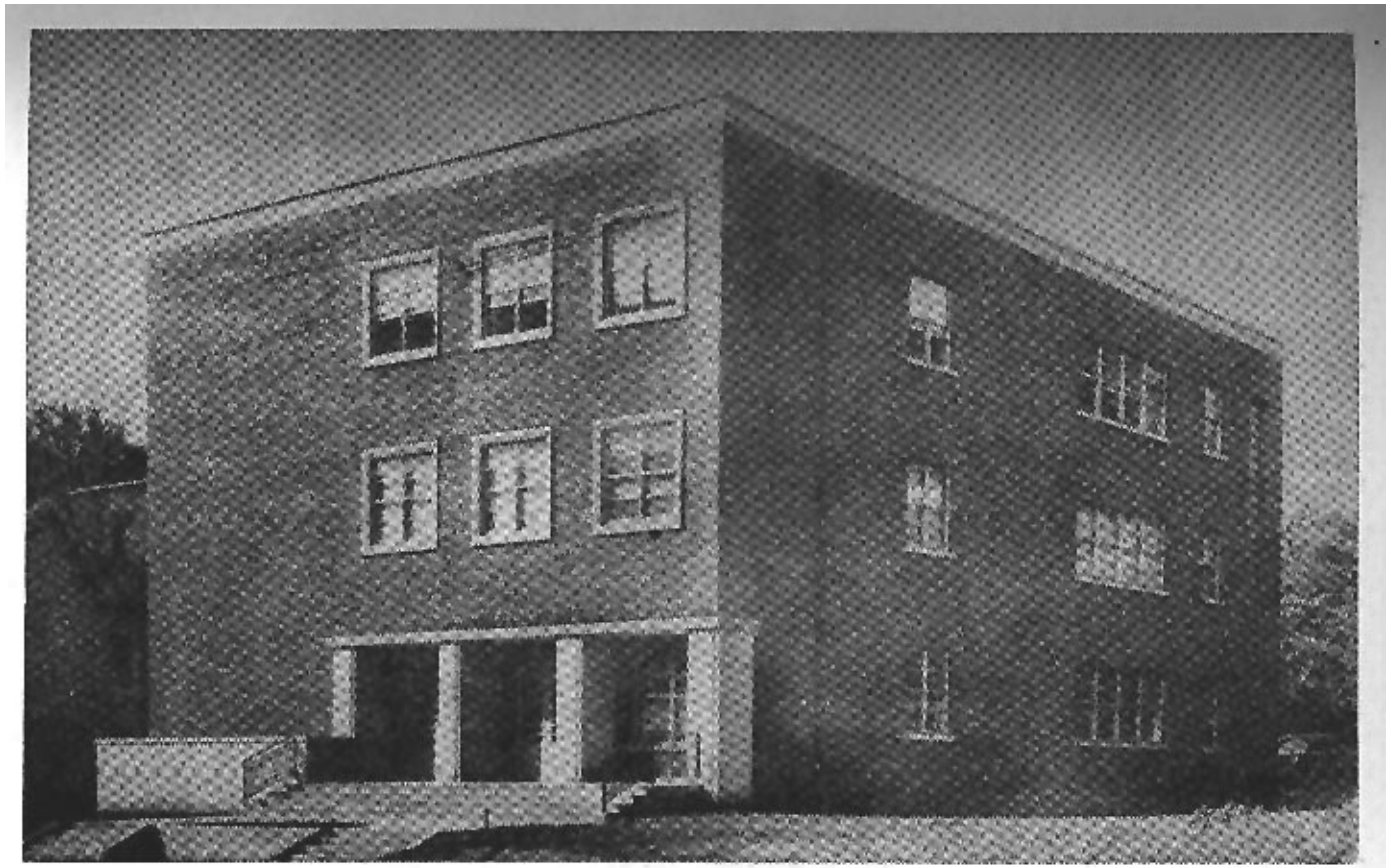
FIRE DESTROYS UNIVERSITY BUILDING—An early-morning fire yesterday destroyed Norwood Hall, University of Kentucky building housing the Botany Department, the State Department of Mines and Minerals and the Kentucky Geological Survey. Loss was officially estimated at $200,000. Many valuable materials, records and equipment in the building were lost and are considered irreplaceable by UK officials. Cause of the fire was not known.

30,000 coal mine maps destroyed!

Sisk said the mines department lost its reports including safety records, inspection reports and recommendations and some 30,000 maps, many of them of abandoned mines which could not be replaced. He emphasized the value of the maps

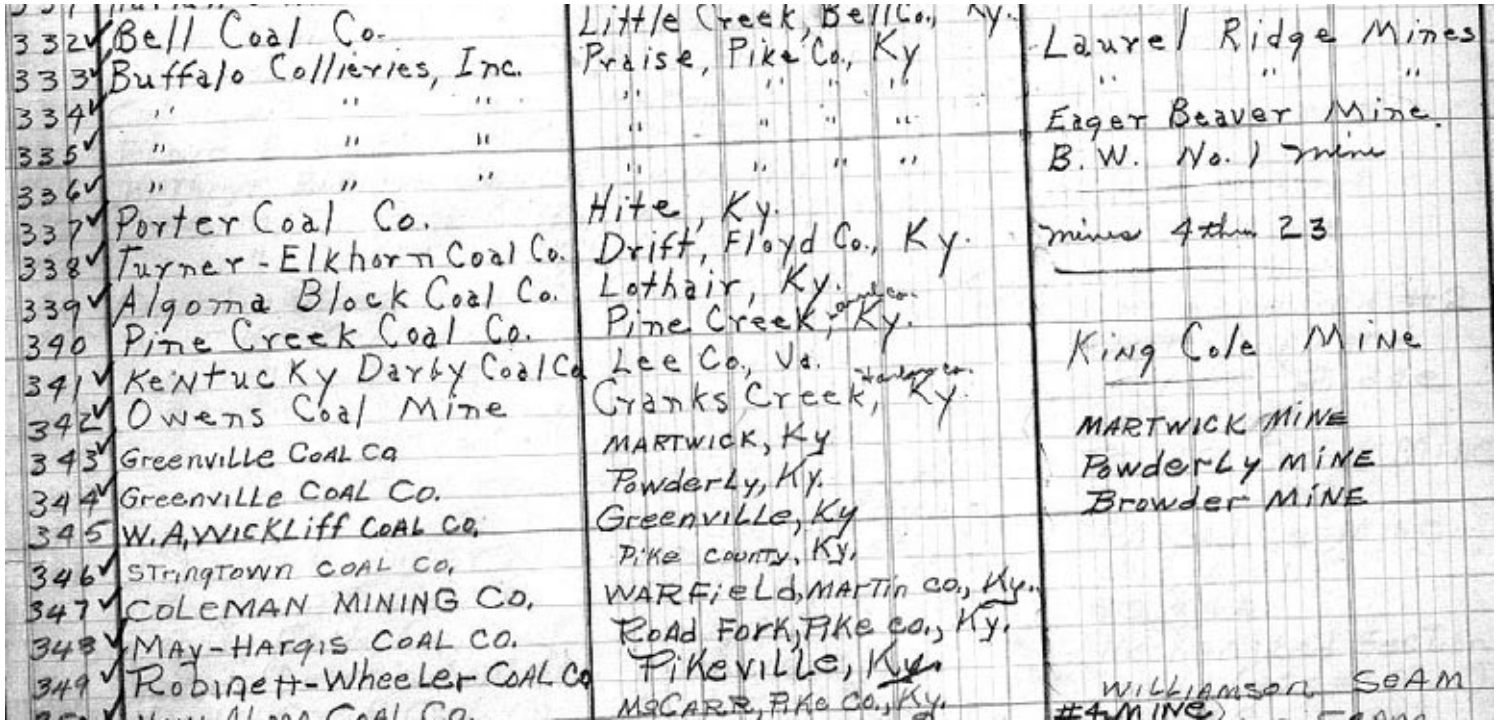
(See Column 5, Back Page, This Section)

Hundreds of “final” maps were recovered from outside sources and operations resumed. By 1951 KDMM was in a new building receiving License Maps.



The New Home of the Department of Mines and Minerals
Located at 120 Graham Avenue on the University Campus, Lexington, Kentucky

For approximately twenty years the maps were stored in clasp folders and the indexing went through four file numbering systems.



332	Bell Coal Co.	Little Creek, Bell Co., Ky.	Laurel Ridge Mines
333	Buffalo Collieries, Inc.	Praise, Pike Co., Ky	" " "
334	" " "	" " " "	Eager Beaver Mine.
335	" " "	" " " "	B. W. No. 1 mine
336	" " "	Hite, Ky.	
337	Porter Coal Co.	Drift, Floyd Co., Ky.	mines 4 thru 23
338	Turner-Elkhorn Coal Co.	Lothair, Ky.	
339	Algoma Block Coal Co.	Pine Creek, Ky.	
340	Pine Creek Coal Co.	Lee Co., Va.	King Cole Mine
341	Kentucky Darby Coal Co	Granks Creek, Ky.	
342	Owens Coal Mine	MARTWICK, Ky	MARTWICK MINE
343	Greenville Coal Co	Powderly, Ky.	Powderly MINE
344	Greenville Coal Co.	Greenville, Ky	Browder MINE
345	W. A. Wickliff Coal Co.	Pike County, Ky.	
346	Stringtown Coal Co.	WARFIELD, Martin Co., Ky.	
347	COLEMAN MINING CO.	Road Fork, Pike Co., Ky.	
348	May-Hargis Coal Co.	Pikeville, Ky.	
349	Robinett-Wheeler Coal Co	McCARR, Pike Co., Ky.	WILLIAMSON SEAM
	[illegible] Coal Co.		#4 MINE

In the 1950's the current State File Number system was created.

format = 99999.999A

Each "mine" would retain it's number forever.

File	Company	Address	County	Mine	Index	Seam	Certified	Date Posted	Da- Rece
✓A5001	Bartley Fuel Co.	Pikeville	Pike	1-A auger	4094.1	#2 Elk.	yes	3-11-58	5-1
✓A5002	Knox County Coal Co.	Barbourville	Knox	3	5054	Jellico	"	3-3-58	5-13
✓A5003	Green Mountain Coal Co.	Middlesboro	Bell	1	4152	Lignite	"	4-17-58	5-2
✓A5004	Jackson Coal Co.	Artemus	Knox			Blue Gem	"	3-14-58	"
✓A5005	Joy Coal Co.	Harold	Floyd	5	3968.4	Elk #3	"	3-1-58	3-1
✓ "	Tiny Coal Co.	Honaker	"	7	791.5	" #2	"	6-1-57	3-1
✓A5006	Nichols Coal Co., Inc.	Prestonsburg	Pike	1 auger	4785	" #3	"	2-25-58	4-
✓A5007	Elkfort Coal Co.	Biggs	Pike	4	3738	Pond Crk.	"	12-11-57	4-
✓A5008	Big Branch Coal Co.	Harold	Floyd	7B	727.10	Elk #2	"	3-17-58	4-
✓ "	"	"	"	9	4498	"	"	"	"
✓A5009	Blue Grass Coal Co.	Allen	"	9	3430.7	Elk #3	"	2-26-58	"
✓ "	"	"	"	10	3430.8	"	"	"	"
✓A5010	Big Branch Coal Co.	Harold	Floyd	Hole 20	727.14	Elk #2	"	3-19-58	"
✓A5011	Long Fork Coal Co.	Ricerville	Johnson	1	4205	Millers Crk.	"	4-7-58	"
✓ "	"	"	"	2	4205.1	"	"	"	"

Mine maps were licensed and filed by these State File Numbers (aka Index Nos.)

In 1972 all of the files were reorganized and filed by State File Number. Each of the 100,000 maps were catalogued by hand, stamped and “re-enveloped”. This was the first comprehensive catalog by county and cross-index.

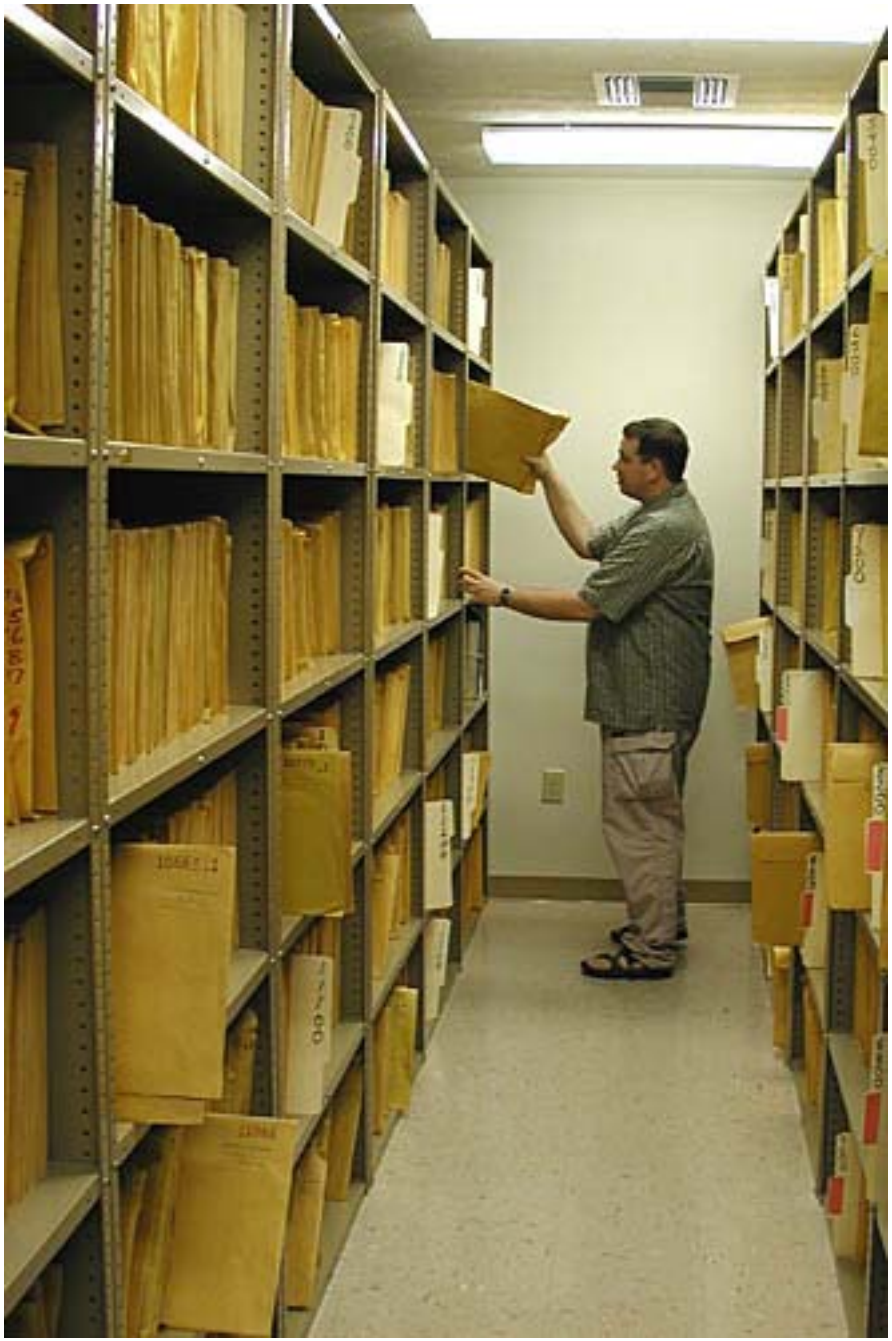
Floyd County, 46

File No.	Index No.	Company Name	Mine Name	Dates	Location	Seam	Type
	727	Clark & Stratton	# 5-B	1959	Little mud Cr	#1 elkhorn	TC
981	727	Big Branch Coal Co.	#7-B & 9	1956	Harold	#2 elkhorn	TC
093	727.2	"	#9 & 10 & 11	1954	"	"	TC
041	727.2	"		1952	"	"	TC
701	727.2	"	#4	1953	"	"	TC
	727.3	Big Branch Coal Co.	# 6-A	1957	Harold	"	TC
669	727.7	"	#5-A	1953	"	#1 elkhorn	TC
364	727.9	"	#5-D	1955	"	"	TC
	727.9	"	#7-C	1953	"	"	TC
	727.10	"	#7	1961	Harold	#2 elkhorn	TC
363	727.11	"	#7-C	1953	Harold	"	TC
762	727.12	"	#5-D	1956	"	#3 elkhorn	TC
763	727.13	"	6-D	1956	"	"	TC
036	791	Dean Coal Co.	# 3	1951	Harold	#2 elkhorn	TC

165,000+
coal mine maps,
1948-2005
1 million sq. ft.

183,000+
Database
records from
1884-2005.

Paper maps (mostly bluelines) are stored in custom top-loading folders on metal shelves. Currently they are stored in a newly constructed fire resistant file room.



1975 Microfilming Project with USBM

- In 1975 KDMM began collaborating with USBM in an effort to microfilm the mine maps onto 35 mm film and record key data for the database. 8000+ documents were filmed over the span of the project.
- KDMM did all of the work in-house including processing and duplication.

Utilizing the Microfilm

- 35 mm microfilm blowback to hardcopy proved to be the weak link in this system over time.
- In the 1980’s early efforts in digitizing polygon outlines of the maps was undertaken in collaboration with the Kentucky Geologic Survey.

Creating the first Digital Mine Outlines

- This project with KGS in 1984 utilized positive 35 mm duplicates in glass slide mounts projected “flat field” onto a custom rear screen Calcomp digitizing board. A VAX 11/750 computer was used to process the vector data.
- The first digital “mined out area” maps for Kentucky were made in this manner.

Linking the database to the maps.

- In 1984 Vax Datatrieve software was used to index all of the mine map data. Data sheets had been prepared since 1976.
- These data were used to generate computerized mapping products and link to the microfilm and paper documents.

Microfilm Shows It’s Age

- By the late 1980’s microfilm was only used as a method to copy old maps that had to be returned to their owners. Microfilm was increasingly a one way process.
- The efforts of the mapping program concentrated on map location and data entry.

The push to locate all the mines.

- From 1988 to 1992 a project was undertaken along with the Kentucky Revenue Cabinet to locate all of the mines and manually plot them by seam at topo scale (1:24,000). This was to front-end their in-house Arc GIS project. This effort aided in refining the organization of the files and better link the maps to the Mine Map Information System (MMIS) database. The MMIS resided on the UK Center for Applied Energy Research VAX 11/780. CAER is a sponsor of the Mine Mapping Program since 1976.

Technology Catching Up

- By the mid-1990's the advent of more powerful computers and scanners allowed for pilot projects in mine map scanning. The weak link was the massive amount of storage needed, even for black/white scans.

Finally, convergence !

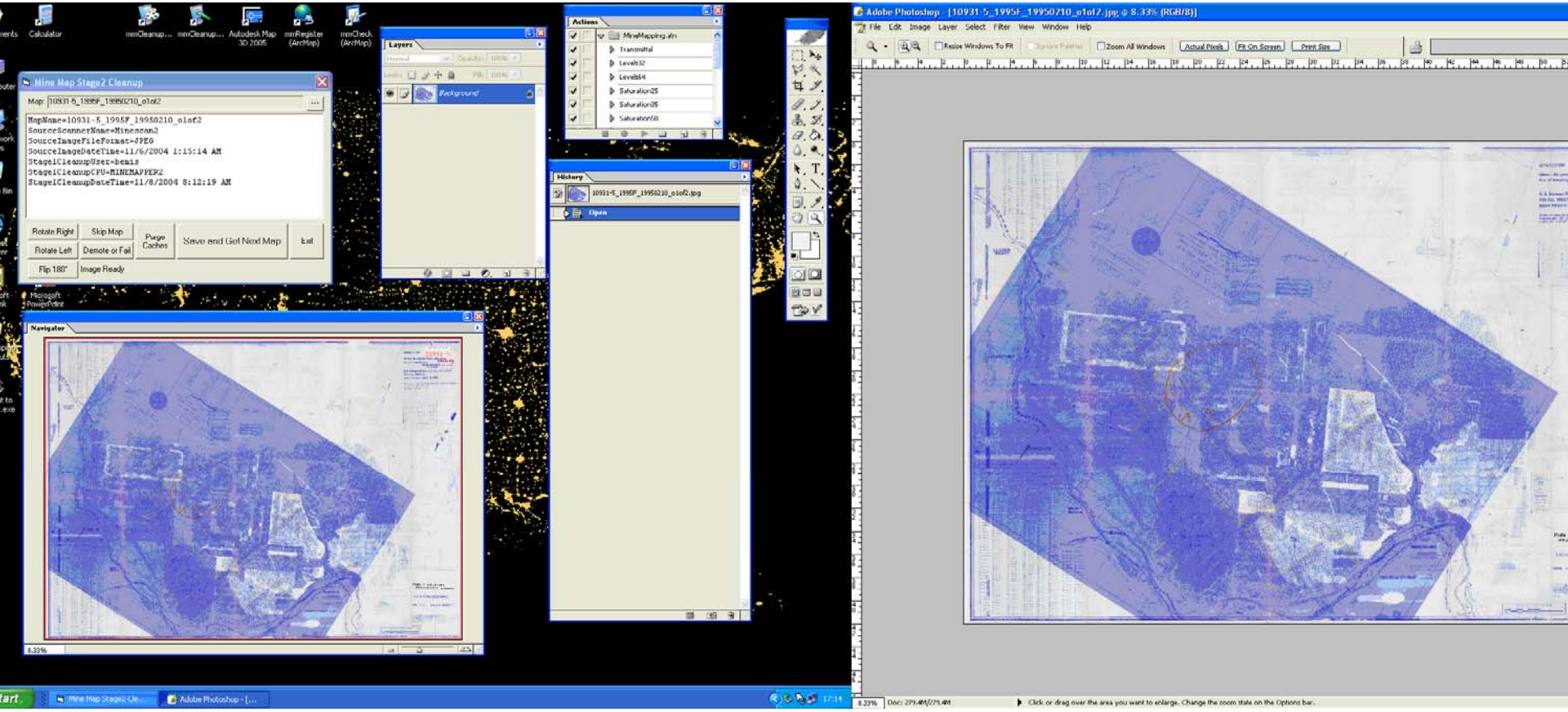
- Since 2001 the capacity of networks, storage arrays and workstations has increased enough to finally meet the archival needs of our map repository.
- Testing and process development proceeded.
- In 2004 the MSHA funded multi-agency scanning project was in full swing. The Kentucky Mine Mapping Initiative becomes a project.

Mine map preparation

Mine map error correction

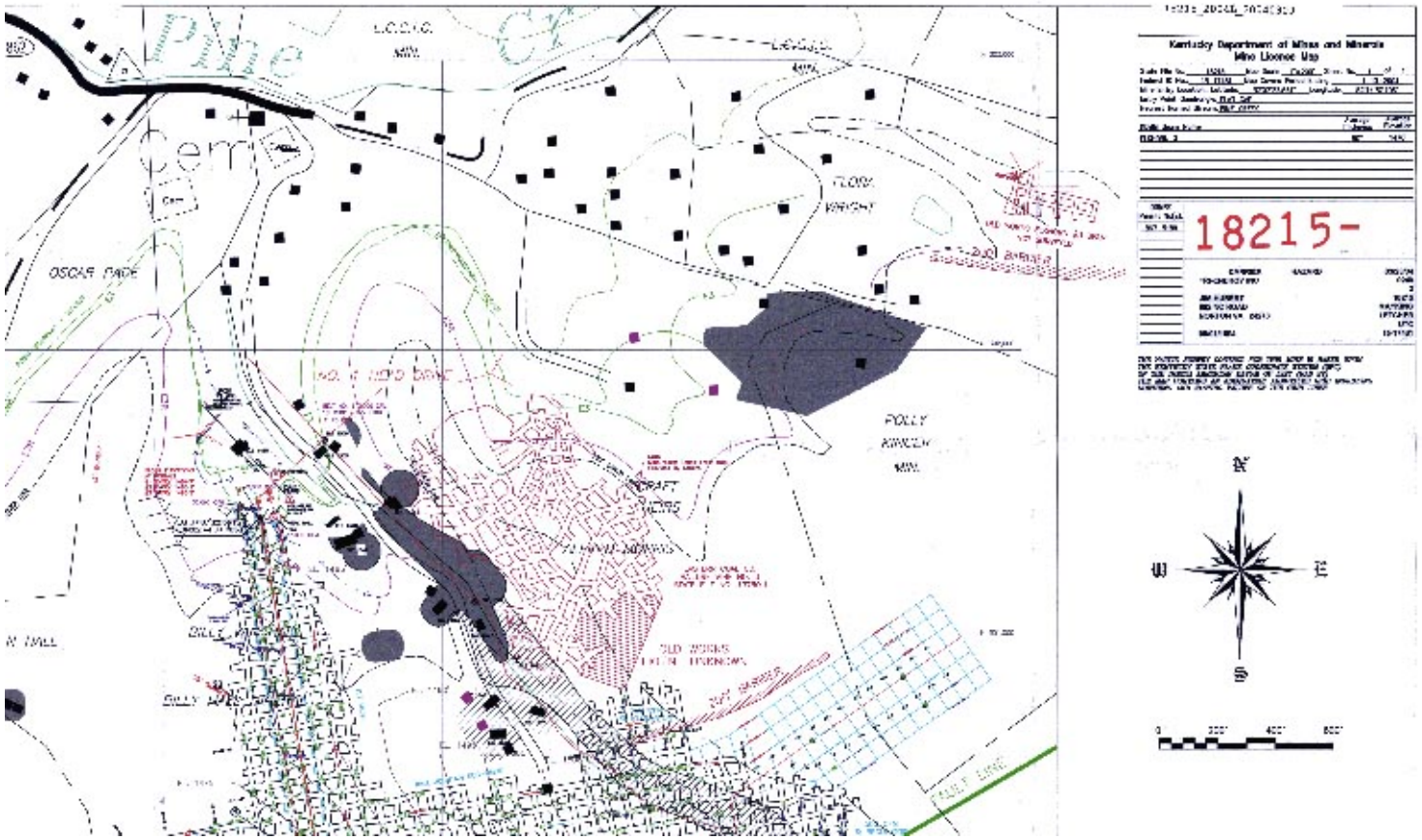
Mine map location

Clean up in Photoshop CS using automated tool set.



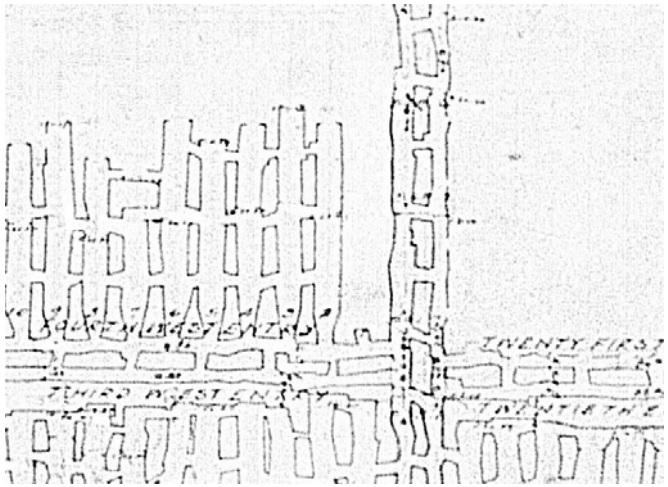
Color Archiving

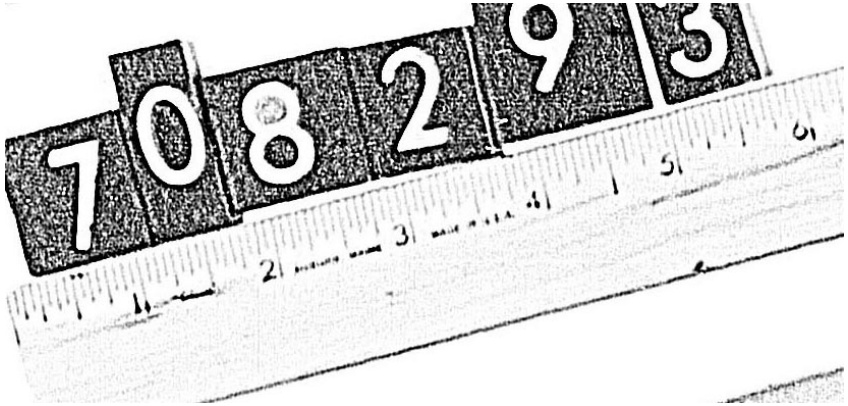
- High resolution (200/300 dpi or higher), high color (24 bit) scans are now made of mine maps on file for archiving and distribution.
- Other derivative products (color mapped indexed) are made for usage in the ARC GIS.



Salvaging the Microfilm

- Recent advances in microfilm scanners have made maps that only existed on film more accessible. Further efforts to increase the quality of these scans shall be pursued. The partial image below is 300 dpi grayscale from a Sunrise film scanner at Kentucky Department for Library and Archives.





The Future

- In the near future OMSL will advance to electronic submittal of mine license maps.
- The existing hardcopy maps on file shall be retained in a stable environment after they are scanned. Maps are sometimes re-scanned when Quality Control dictates.

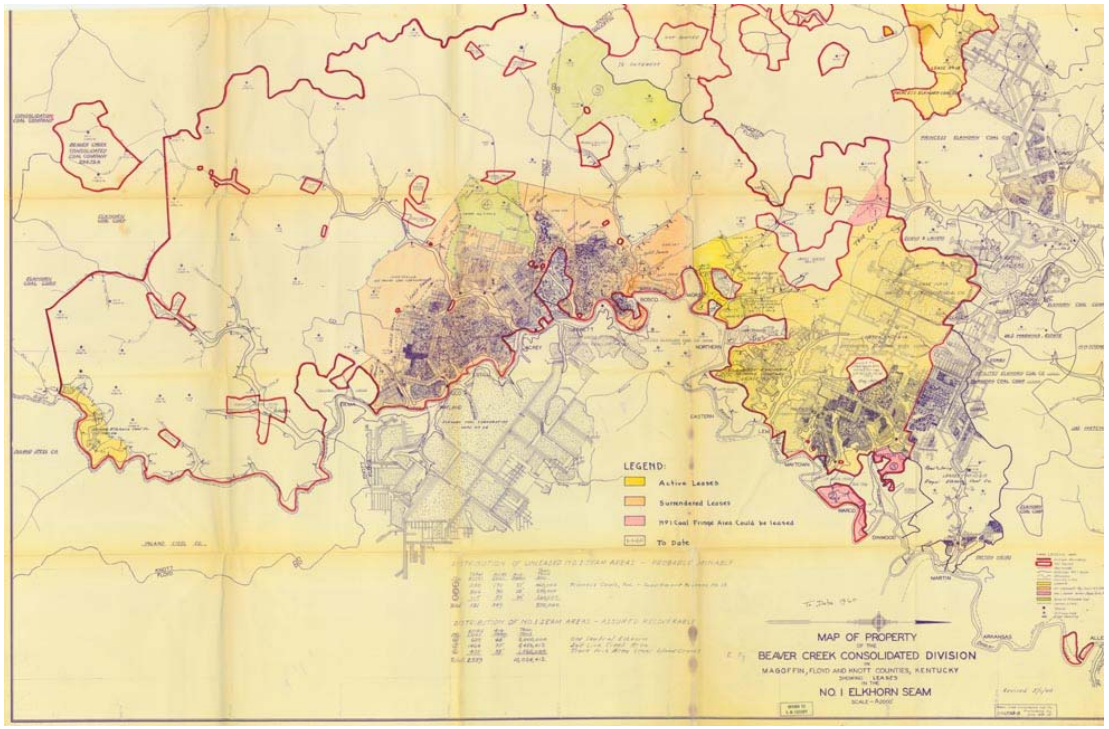
Final proofing for errors and quality control.

Technological Development

- The Mapping Program shall develop further techniques to digitally capture very old hardbacks, fragile maps and oversize maps using a flat field camera process. The existing Itek Planetary microfilm camera may be modified for his purpose.
- Similar work is being done by David Rumsey. See www.davidrumsey.com

Recovering the Maps lost by Fire

- Old mine maps in many forms are recovered from outside sources. Some are hardcopy, some originals and some are scans.



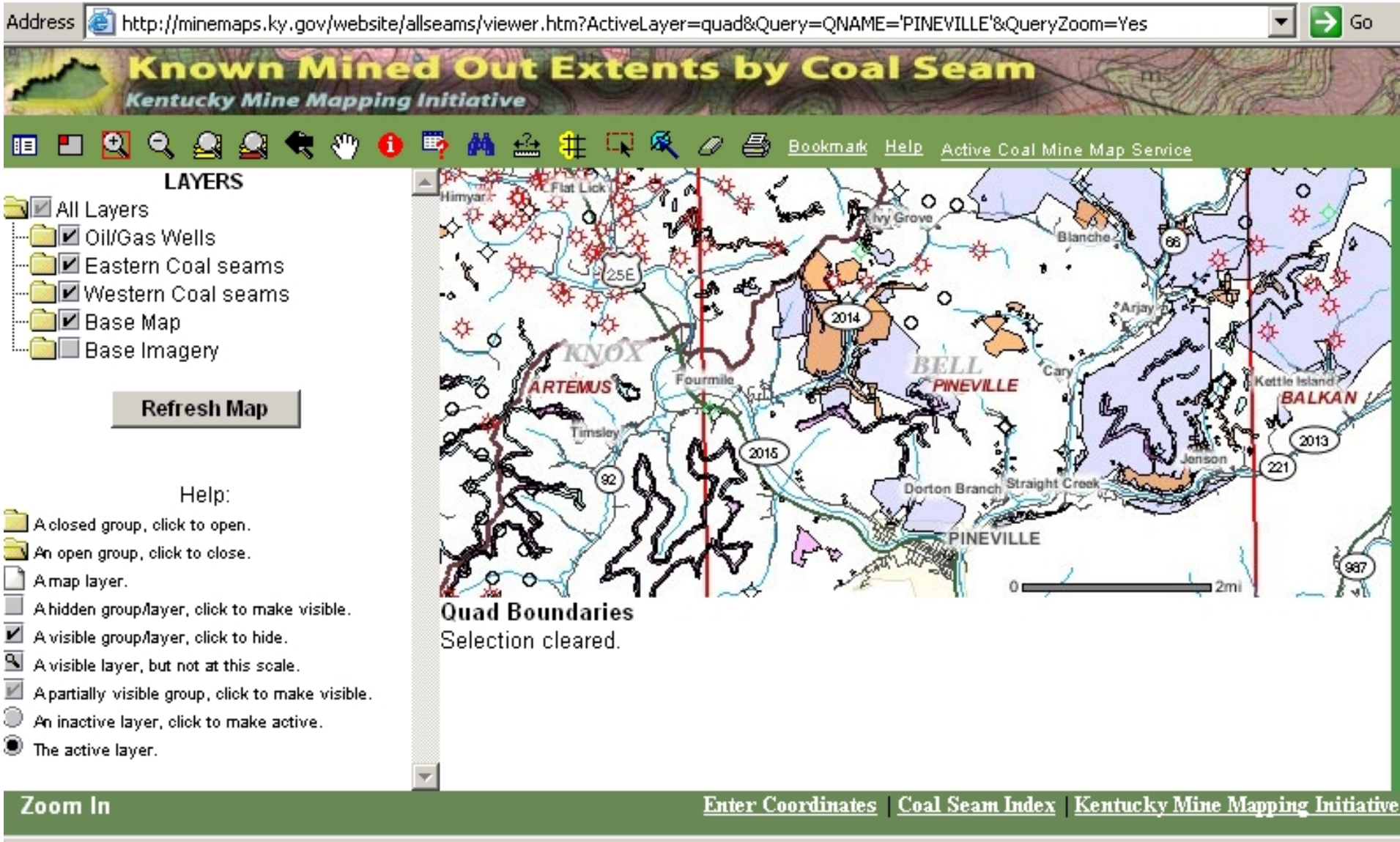
A Call for Old Maps

- When the hardware is ready any mine maps that remain missing from the collection may be copied, from outside sources, in this manner.

What is the status ?

- As of June, 2005 17,233 + “final” or “most comprehensive” maps are scanned.
- Approximately 5900 newer maps and 3186 older maps (total 9086) remain to be scanned in the coming months.
- Approximately 30,000 database records shall be created at some point to reflect all mine records since 1884.
- Incoming license maps are scanned as they arrive.

ARC IMS website of mined out areas. http://minemaps.ky.gov



GeoCommunicator
www.geocommunicator.gov

Accessing Land Records with NILS and the GeoCommunicator

John Reitsma – BLM Land & Resources Project Office

Underground Mine Mapping Workshop

Sheraton Station Square

Pittsburgh, PA

June 1, 2005

What is NILS?

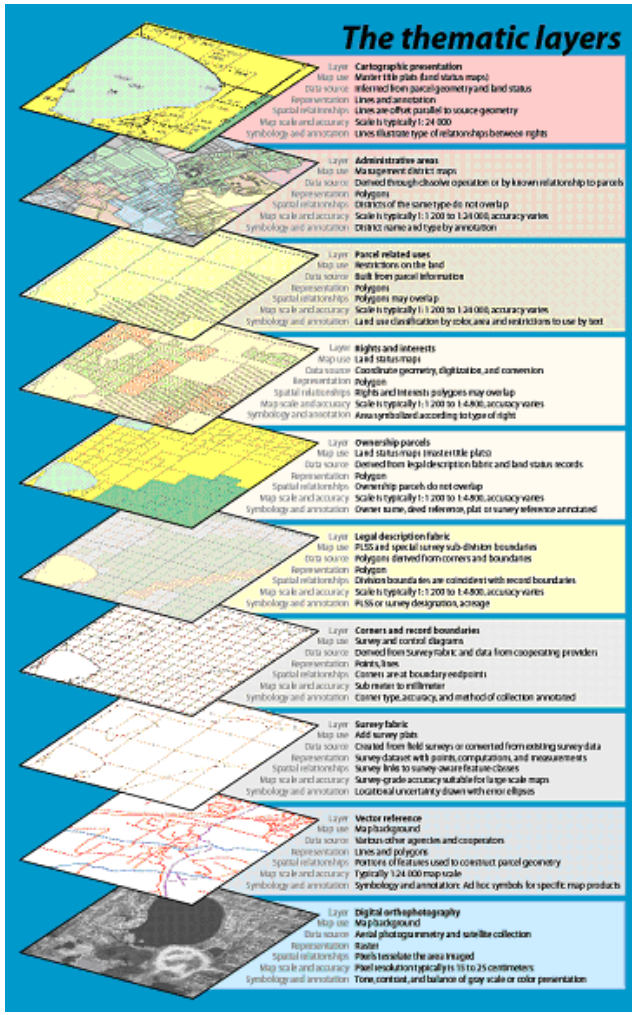
- The National Integrated Land System (NILS) is a joint project between the BLM and the USDA Forest Service in partnership with the states, counties, and private industry to provide business solutions for the management and integration of ***cadastral records*** and ***land parcel information*** in a Geographic Information System (***GIS***) environment.

What is the GeoCommunicator?

- The GeoCommunicator is an interactive ***web based system*** designed to facilitate the ***integration of geographic data*** among federal, state, local, and private individuals and organizations interested in ***land-related information***.

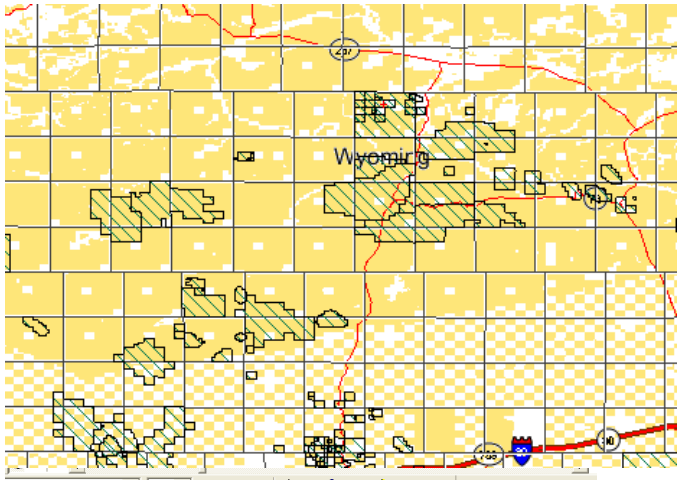
OMB Circular A-16 Describes Specific GIS Framework Data Layers and Assigns Agency Responsibility

- Geodetic Control
- Cadastral & Land Records
- Governmental Units
- Transportation
- Elevation and Bathymetry
- Hydrography
- Orthoimagery
  - Plus 27 others…



NILS Spatial Data Layers

- Land Survey Information
- Federal Land Stewardship
- Land & Mineral Use Records



Serving National Spatial Data Layers for the BLM as directed by OMB Circular A-16

http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html

GeoCommunicator
www.geocommunicator.gov

Land Survey Information

GeoCommunicator - Microsoft Internet Explorer

File Edit View Favorites Tools Help

GeoCommunicator
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Federal Land Stewardship
Land Survey Information
Reference
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Contact Us

GeoCommunicator is a land management and land records community based web site for the distribution of information and data from the National Integrated Land System.

GeoCommunicator provides:

- ***Land & Mineral Use Records*** providing spatial display of the BLM's land and mineral use authorizations and mining claims.
- ***Federal Land Stewardship*** for locating, viewing, and contacting federal surface management agencies.
- ***Land Survey Information*** providing the Public Land Survey System (PLSS) and other survey-based data for downloading or image streaming.
- ***Reference*** documents and information for the cadastral, land records, and parcel management communities.
- ***Link to Geodata.gov*** portal for searching, locating, and accessing U.S. maps and data.

FIRSTGOV

GeoCommunicator is an official United States Government web site. GeoCommunicator is provided by the Bureau of Land Management & the U.S. Forest Service. This is a U.S. Government Computer System. Before continuing, please read GeoCommunicator's Privacy/Security Policy. Please use the Contact Form with any questions relating to accessibility of documents.

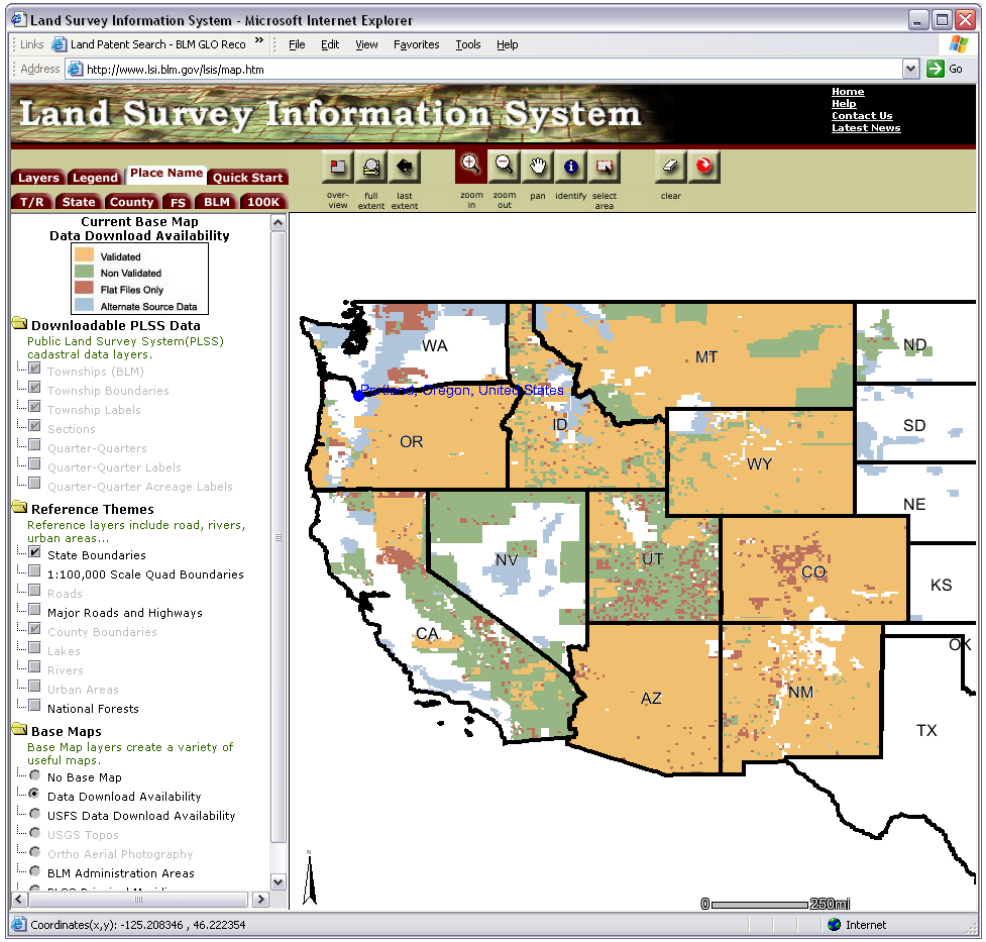
This site uses cookies .

Local intranet

GeoCommunicator
www.geocommunicator.gov

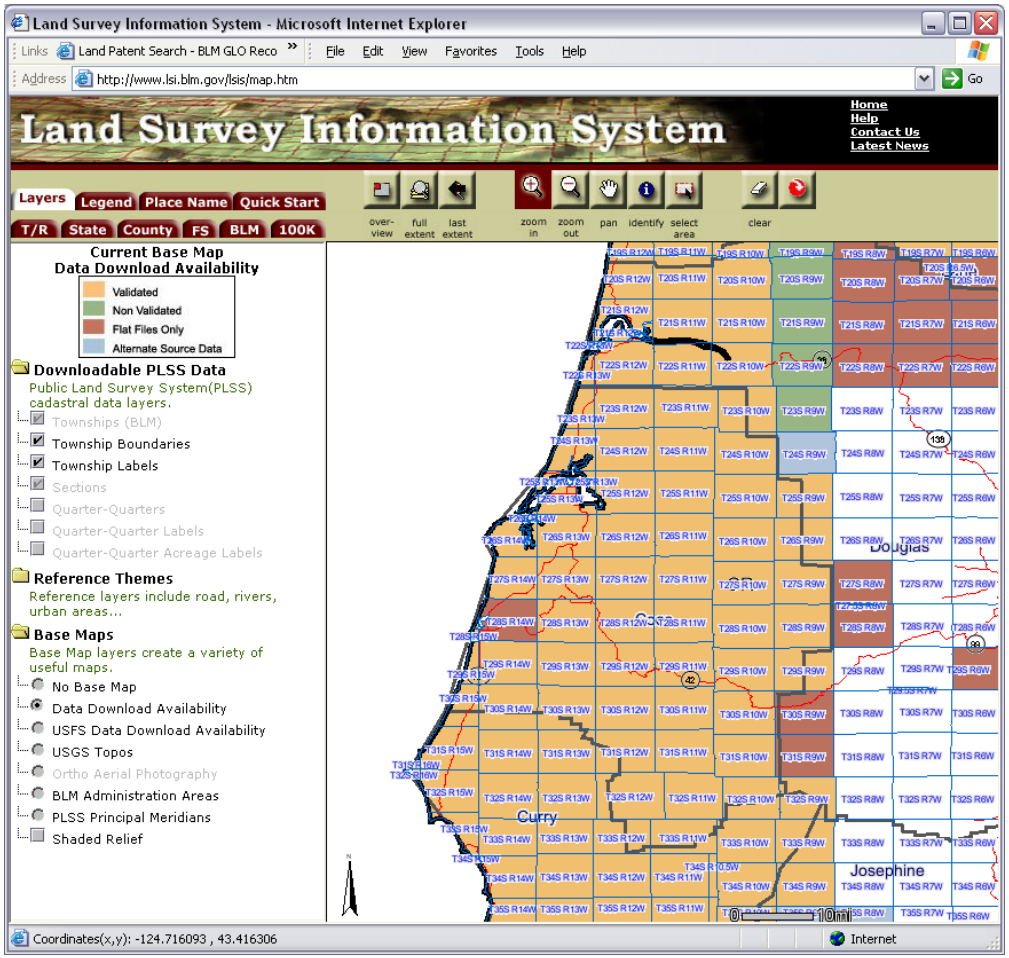
Land Survey Information

A Seamless Multi-Purpose Cadastre



Land Survey Information

Survey data delivered in several ways:



Public Land Survey System:

- Township
- Range
- Section
- Aliquot

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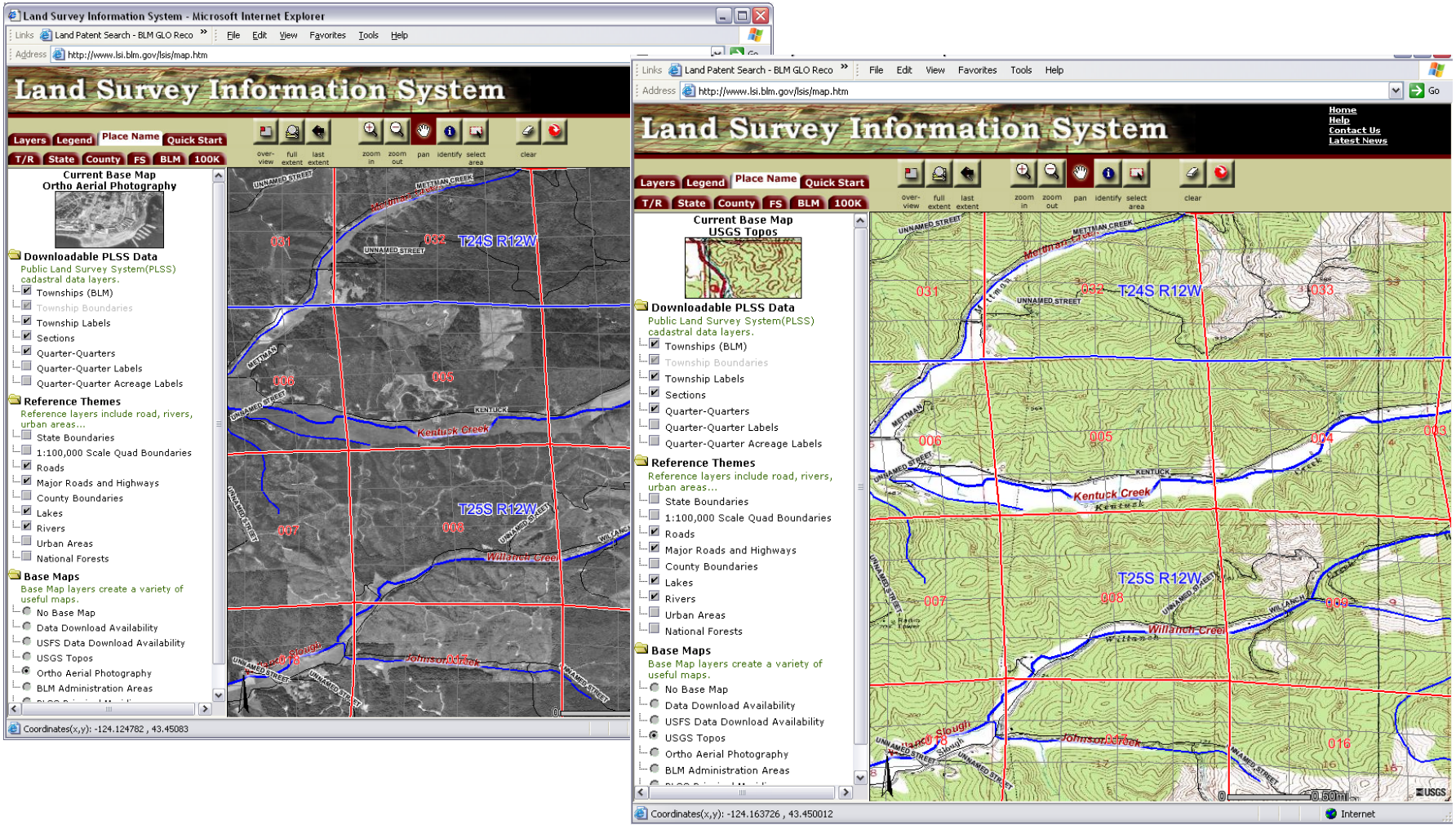
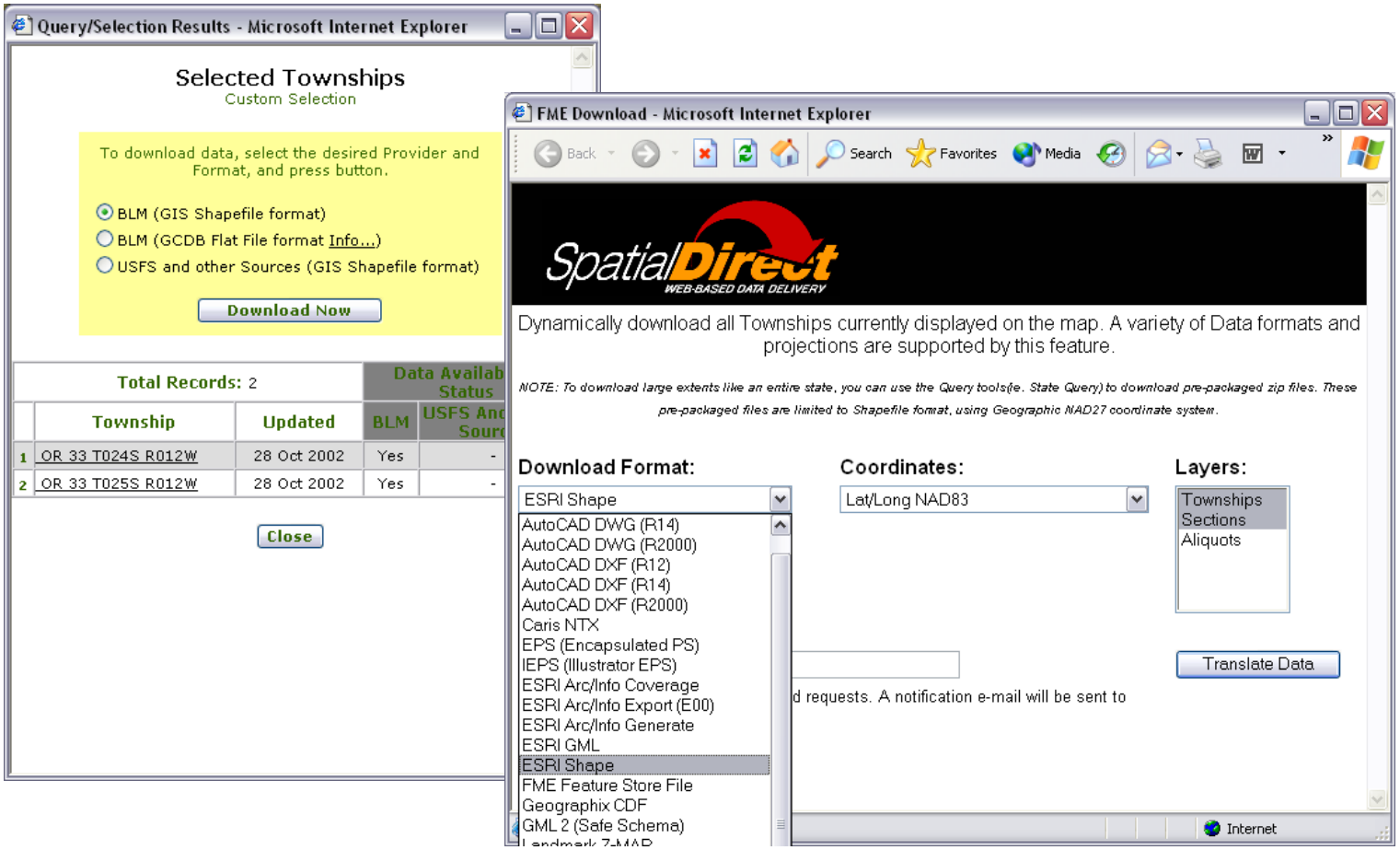
Land Survey Information

Data viewable from the web interface



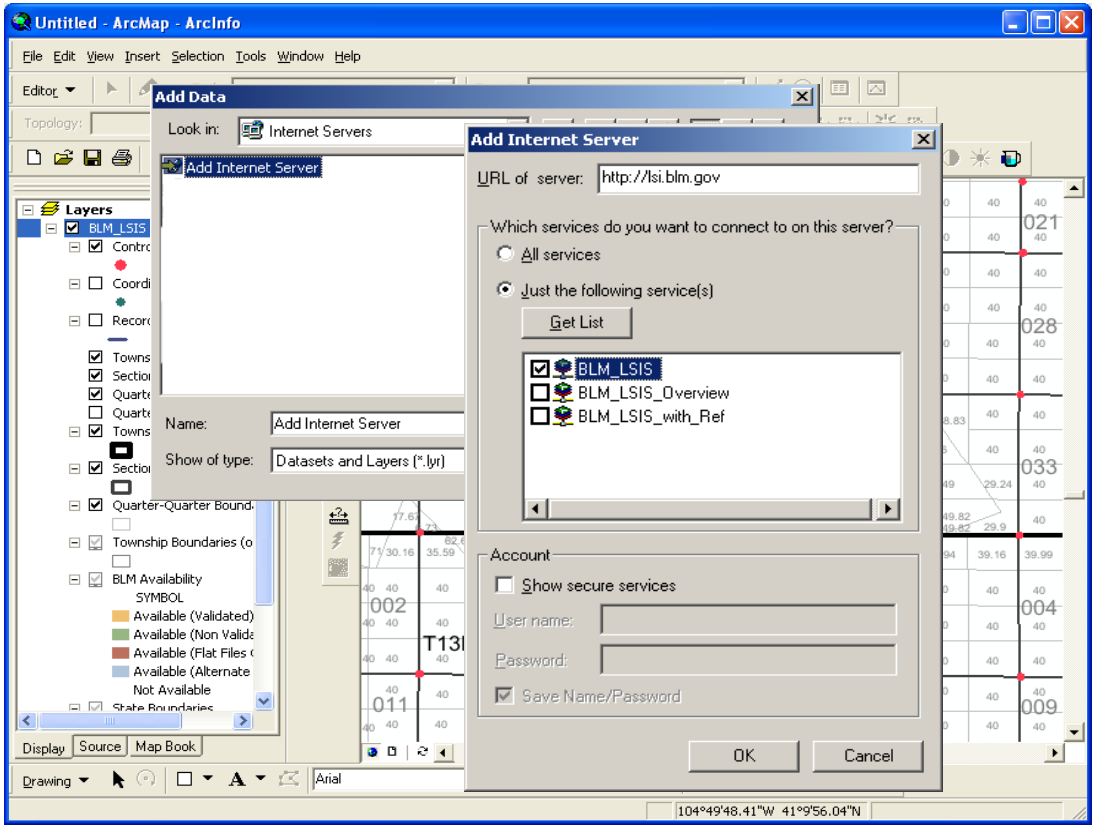
Land Survey Information

Data delivered as downloadable shape files



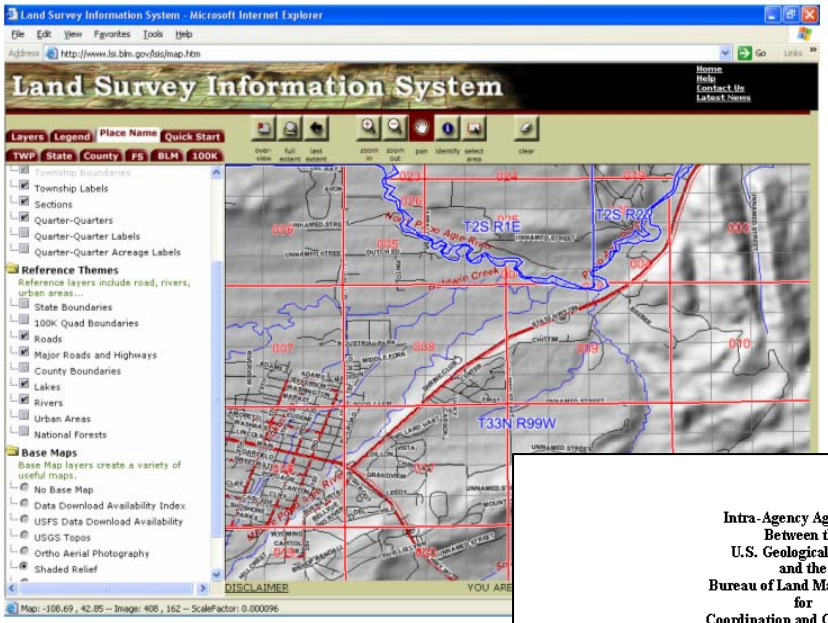
Land Survey Information

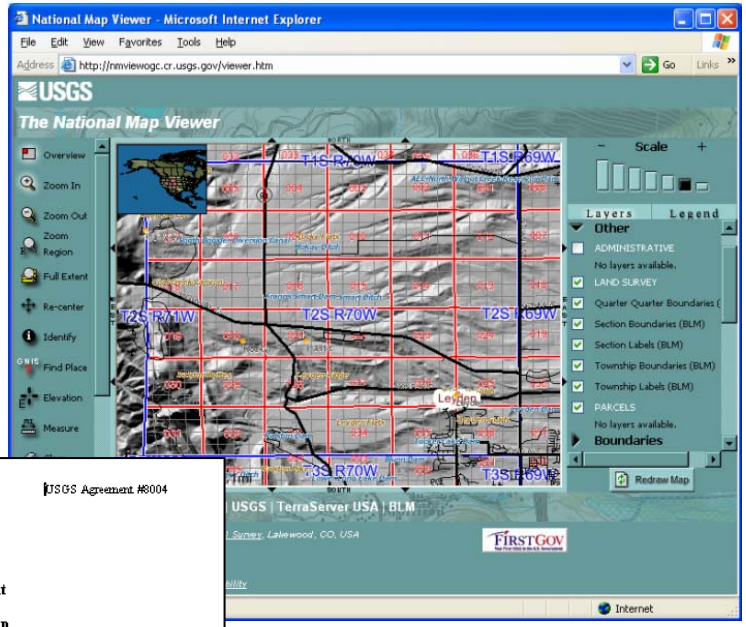
Data integrated as map streaming ArcIMS layer



Part of the National Map

BLM & USGS sharing data resources





USGS Agreement #8004

Intra-Agency Agreement
Between the
U.S. Geological Survey
and the
Bureau of Land Management
for
Coordination and Cooperation
Pertaining to *The National Map*
and the
National Integrated Land System

I. Purpose

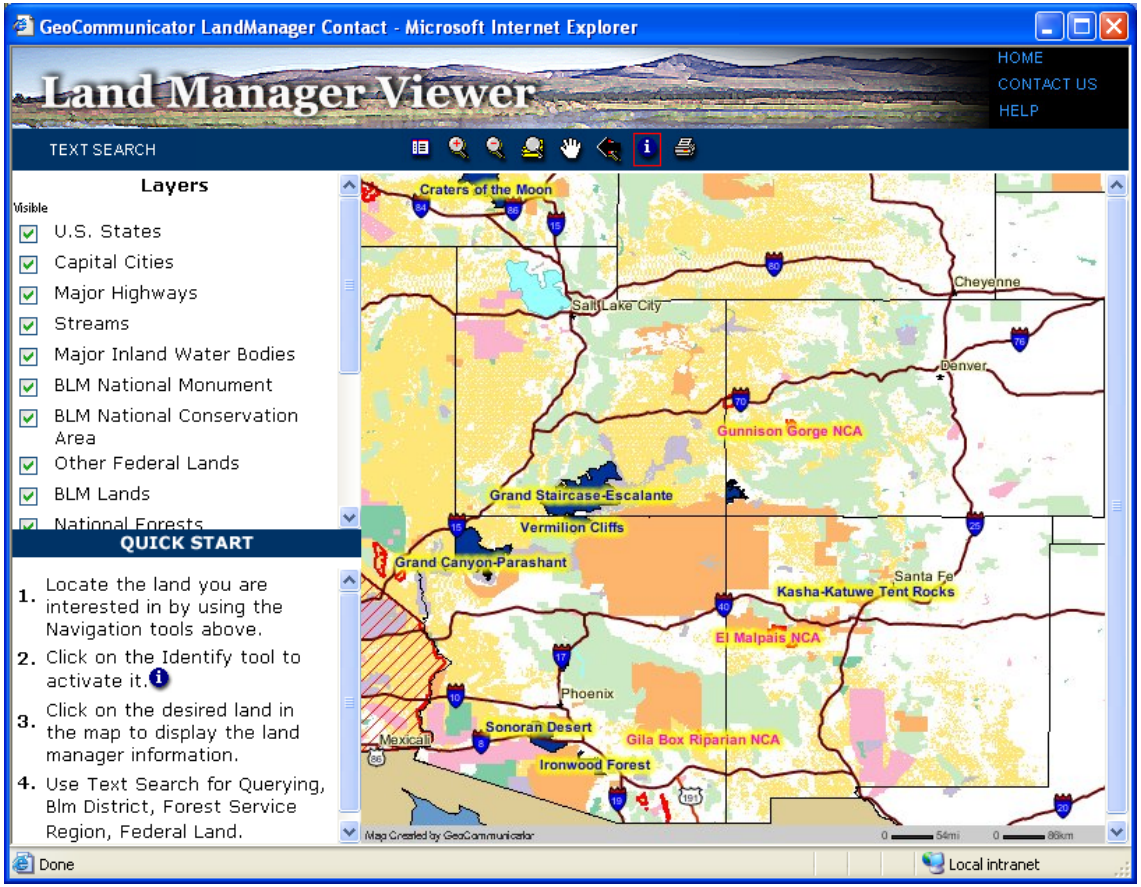
The purpose of this agreement is to leverage the U.S. Geological Survey (USGS) and Bureau of Land Management (BLM) investments in geospatial data that are contained in *The National Map* and the National Integrated Land System (NILS). This agreement describes key technical considerations that need to be coordinated in order to maintain a mutually beneficial relationship.

GeoCommunicator
www.geocommunicator.gov

Federal Land Stewardship

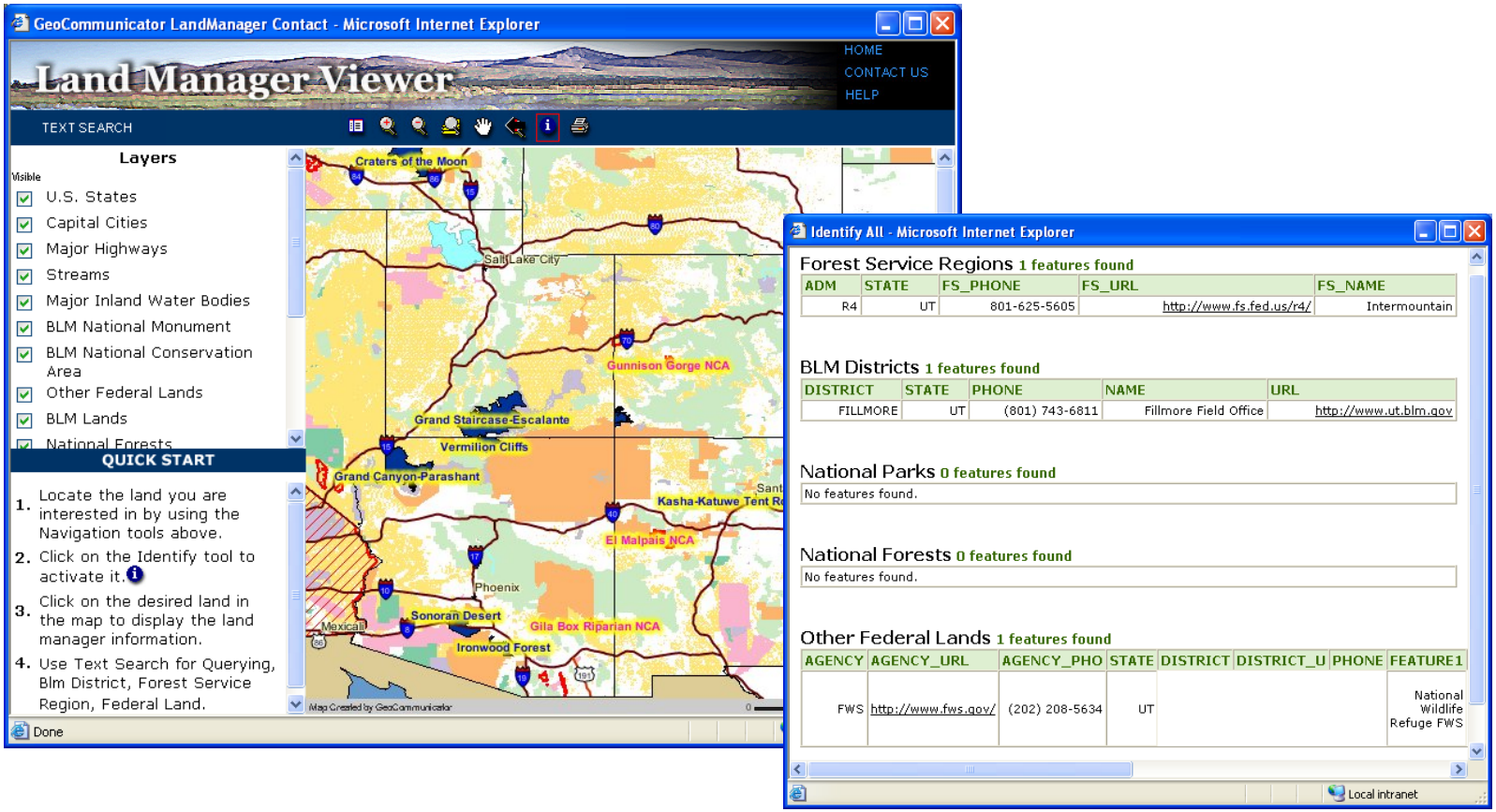
Land Manager Viewer

Displays Federal Surface Management Agency



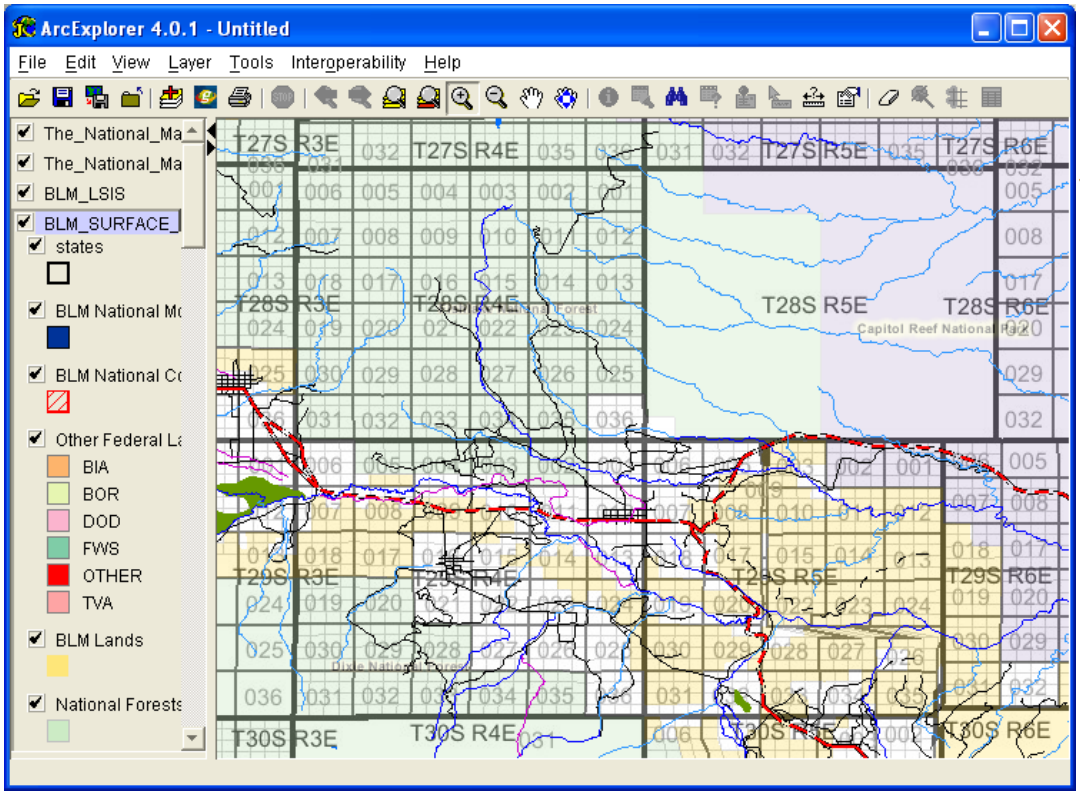
Land Browser Interface

Zoom, Pan, Search, and Identify



Integrate with other data layers through Desktop or Mobile GIS

Add data from the internet with the URL: http://lsi.blm.gov



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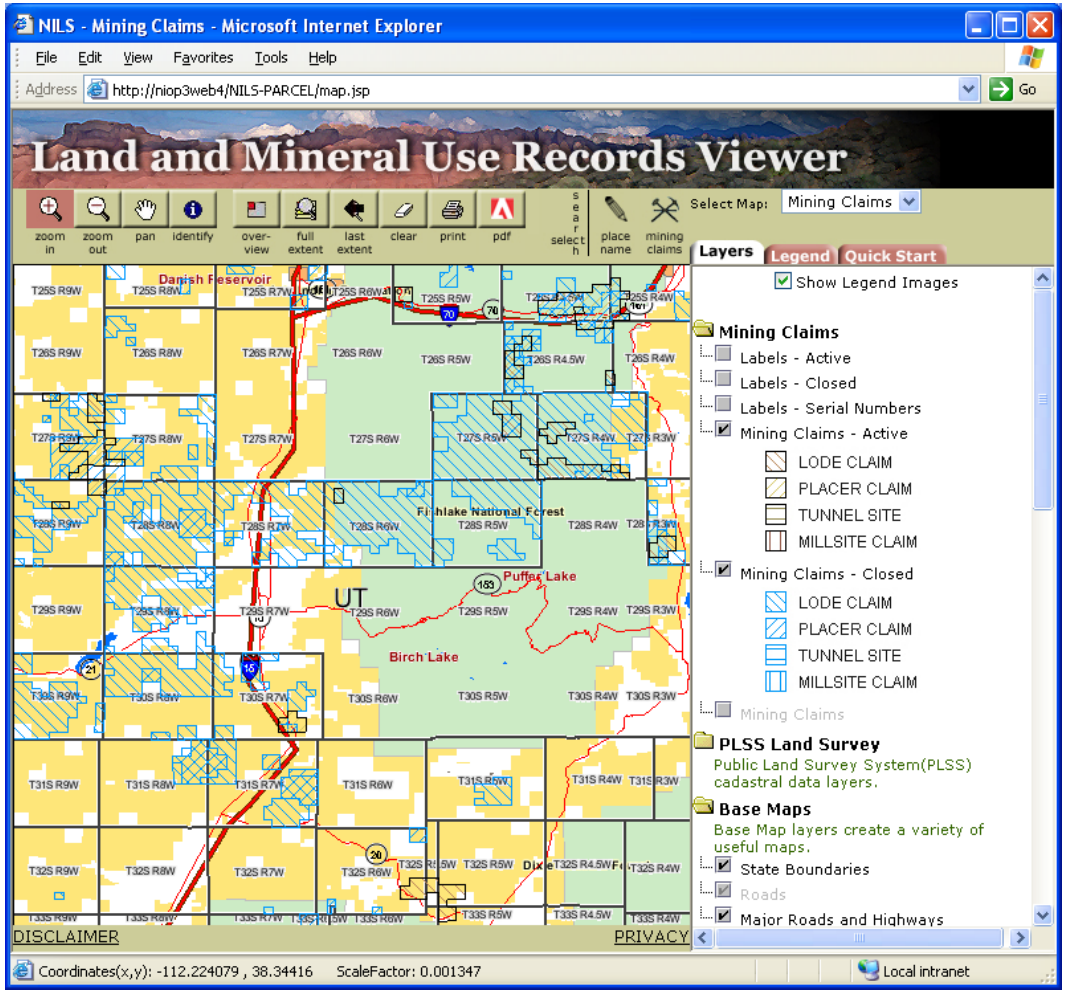
Land & Mineral Use Records

Land & Mineral Use Records Viewer

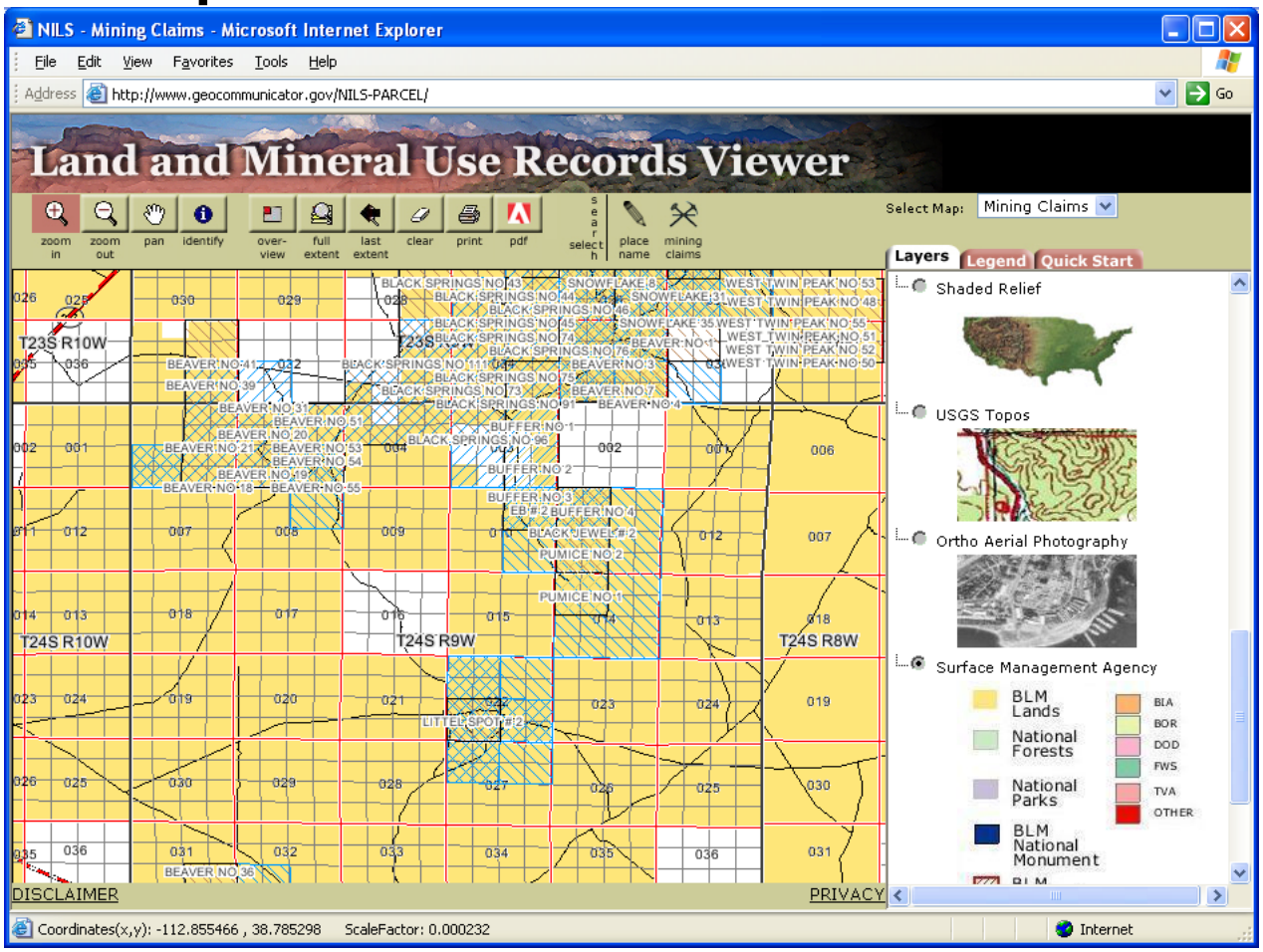


Display of

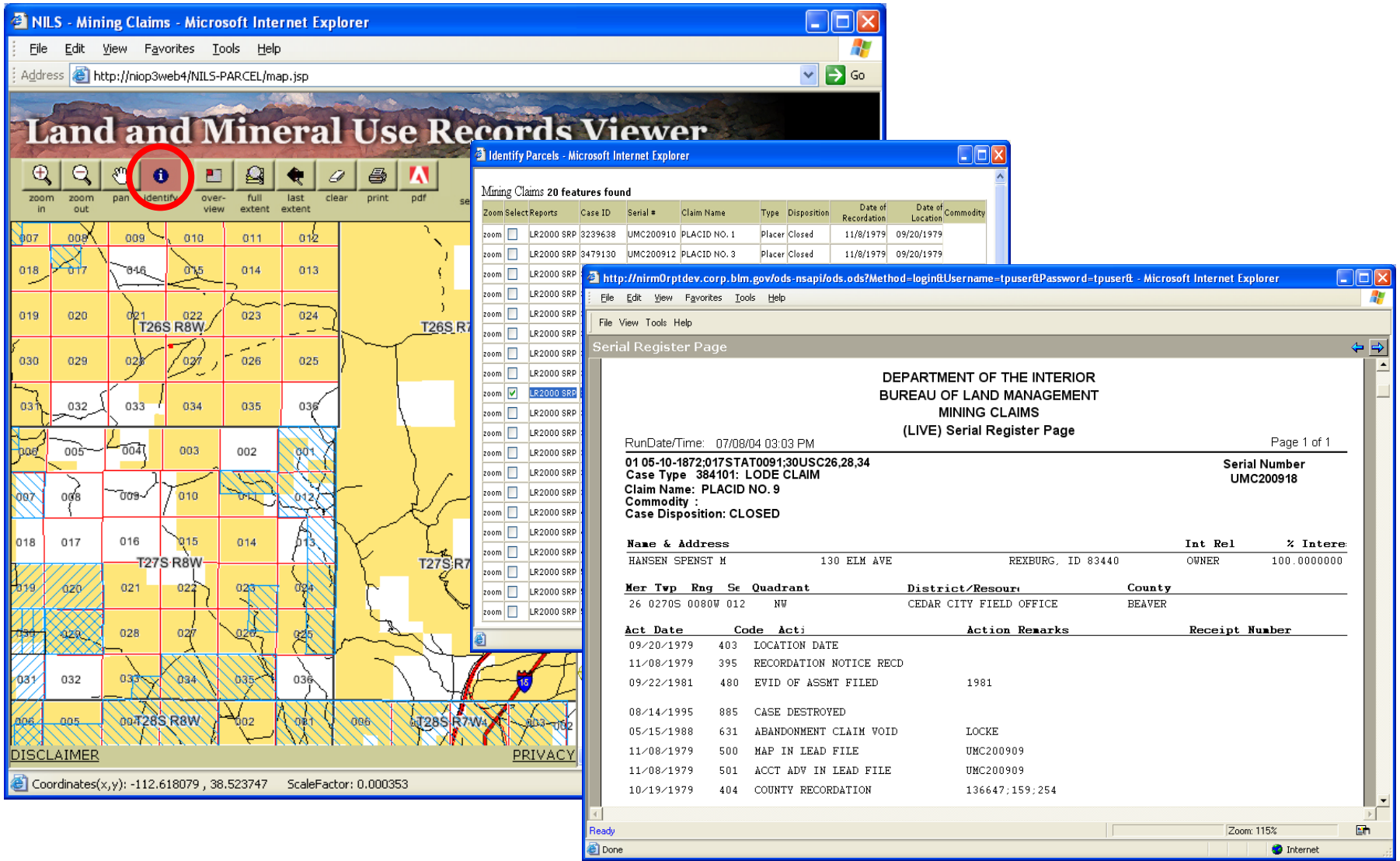
Mining Claims

Oil & Gas Leases

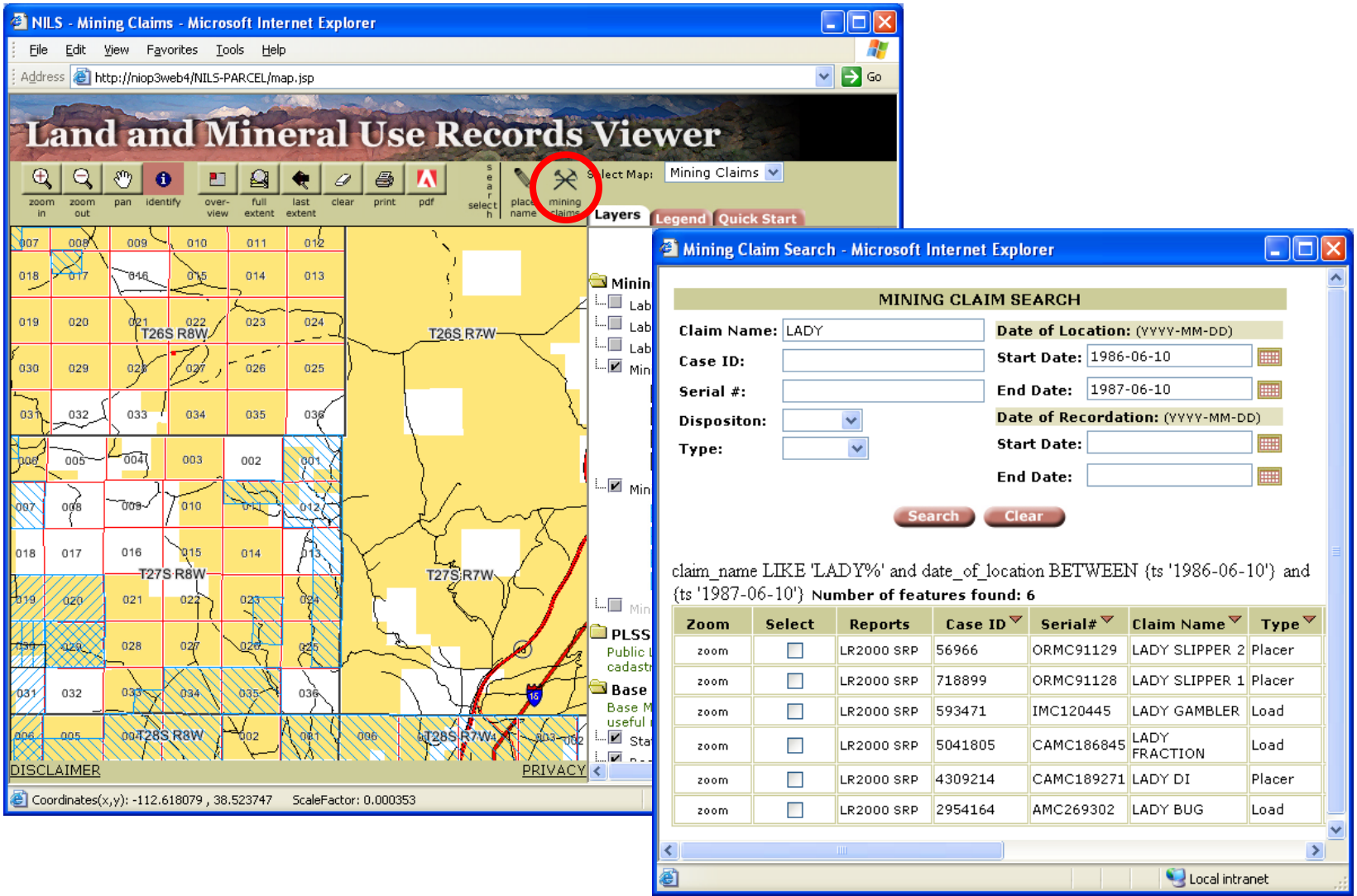
View Land Records in Context with Other Spatial Reference Themes



Links with Land & Mineral Use Records

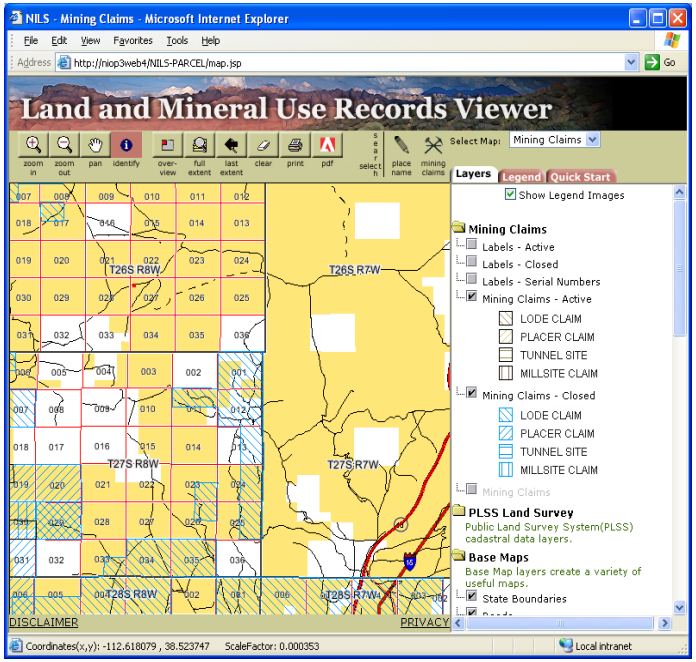


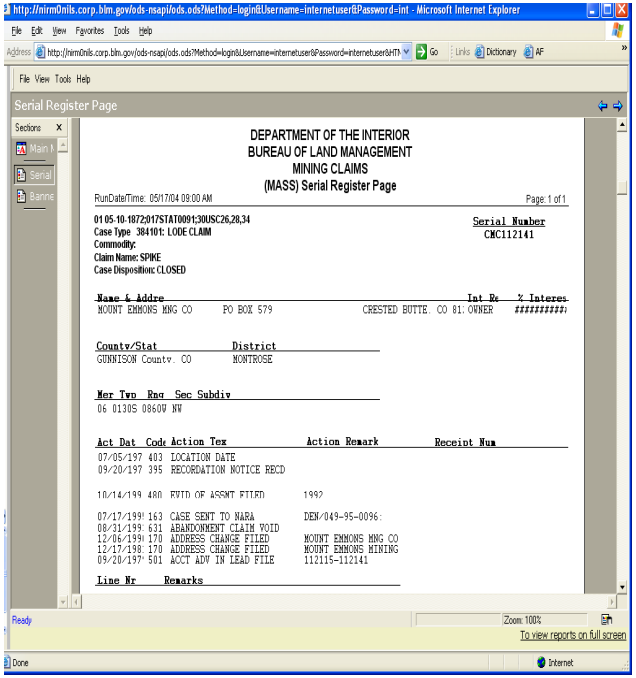
Allows Searching by Record Info



Bi-directional Link with Land & Mineral Use Record System

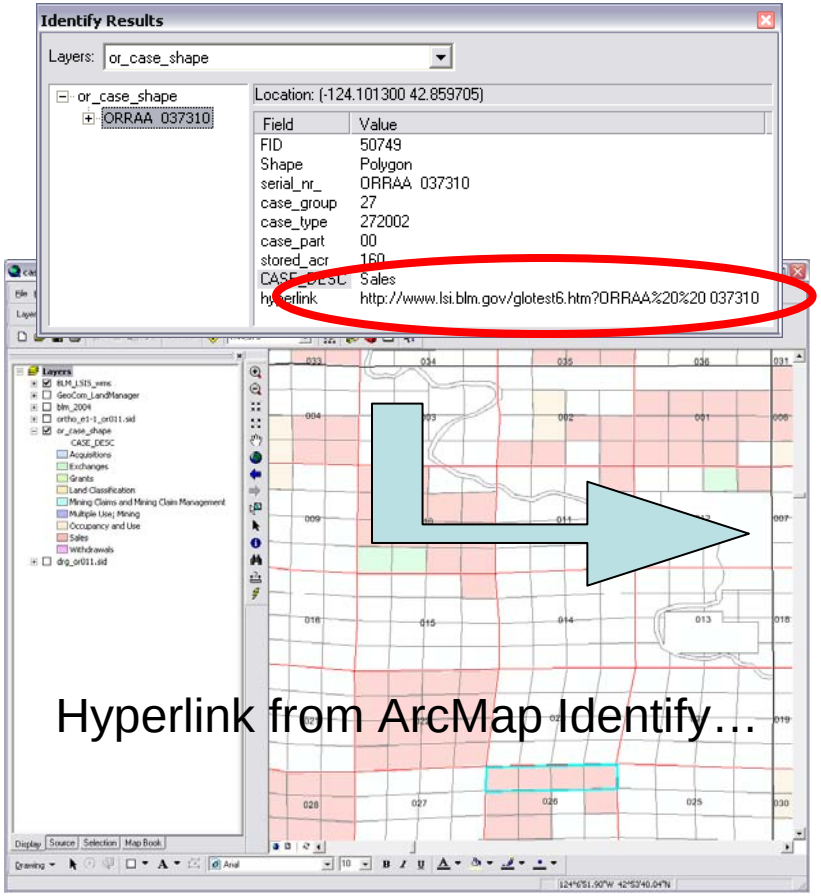
Spatial System

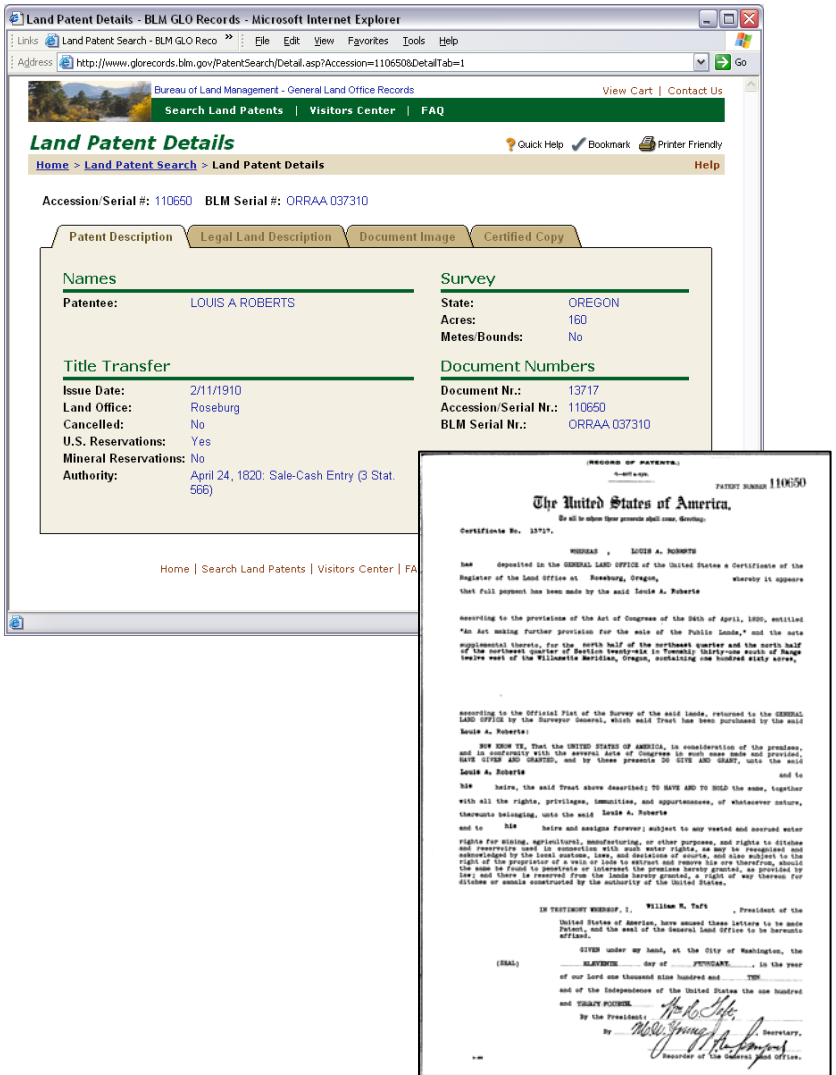




Text-based System

Integration with other Land Record Systems





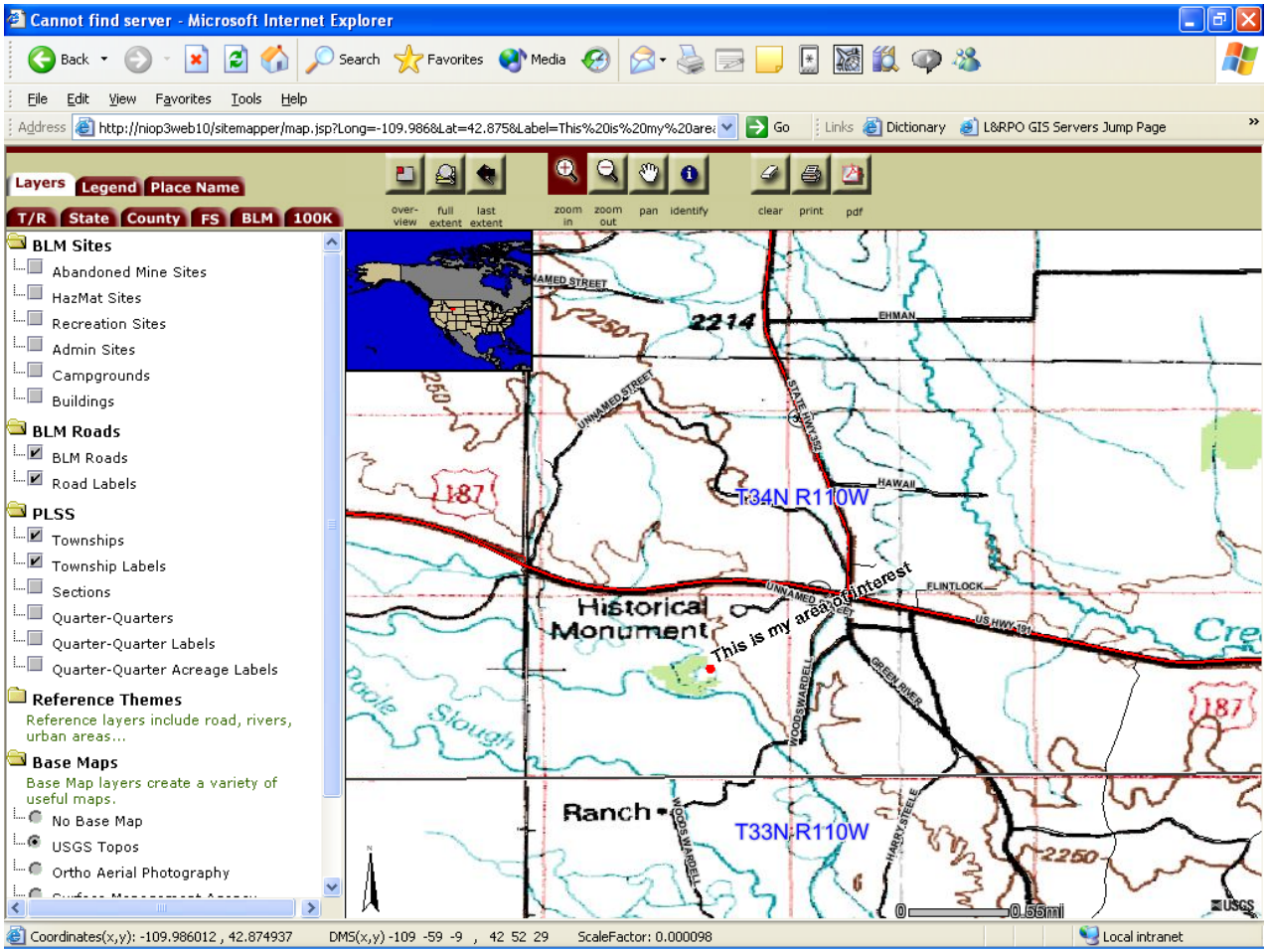
Sitemapper

- Allows you to pass a geographic coordinate and display the location with BLM standard spatial data themes.

http://www.geocommunicator.gov/NILS-PARCEL/map.jsp?Long=-109.986&Lat=42.875&Label=This%20is%20my%20area%20of%20interest

www.geocommunicator.gov/NILS-PARCEL/map.jsp?Long=-105.11565&Lat=39.71767&Lab

Direct Spatial Query for 42.875N 109.986W



To Find More Map Streaming Services…

Search:

http://www.geodata.gov

geodata.gov
U.S. Maps & Data

your one stop for federal, state & local geographic data

E-government Portal for Geospatial Data

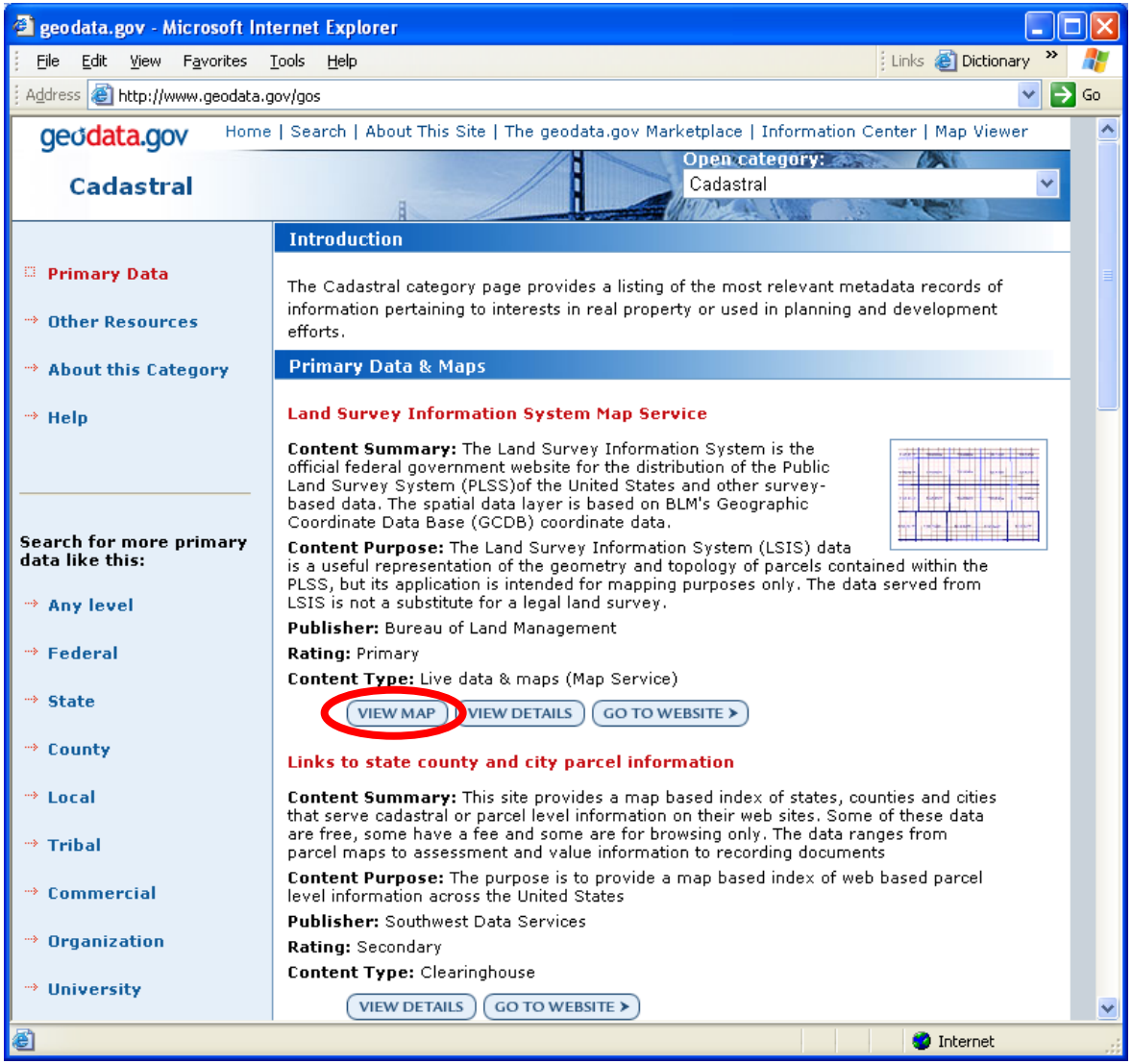
geodata.gov
U.S. Maps & Data

your one stop for federal, state & local geographic data

Point browser to http://www.geodata.gov and select the “Cadastral” data category.

Find BLM’s Map Streaming Services

From the Cadastral data listing, locate the “Land Survey Information System Map Service” and click on the “VIEW MAP” button.



geodata.gov
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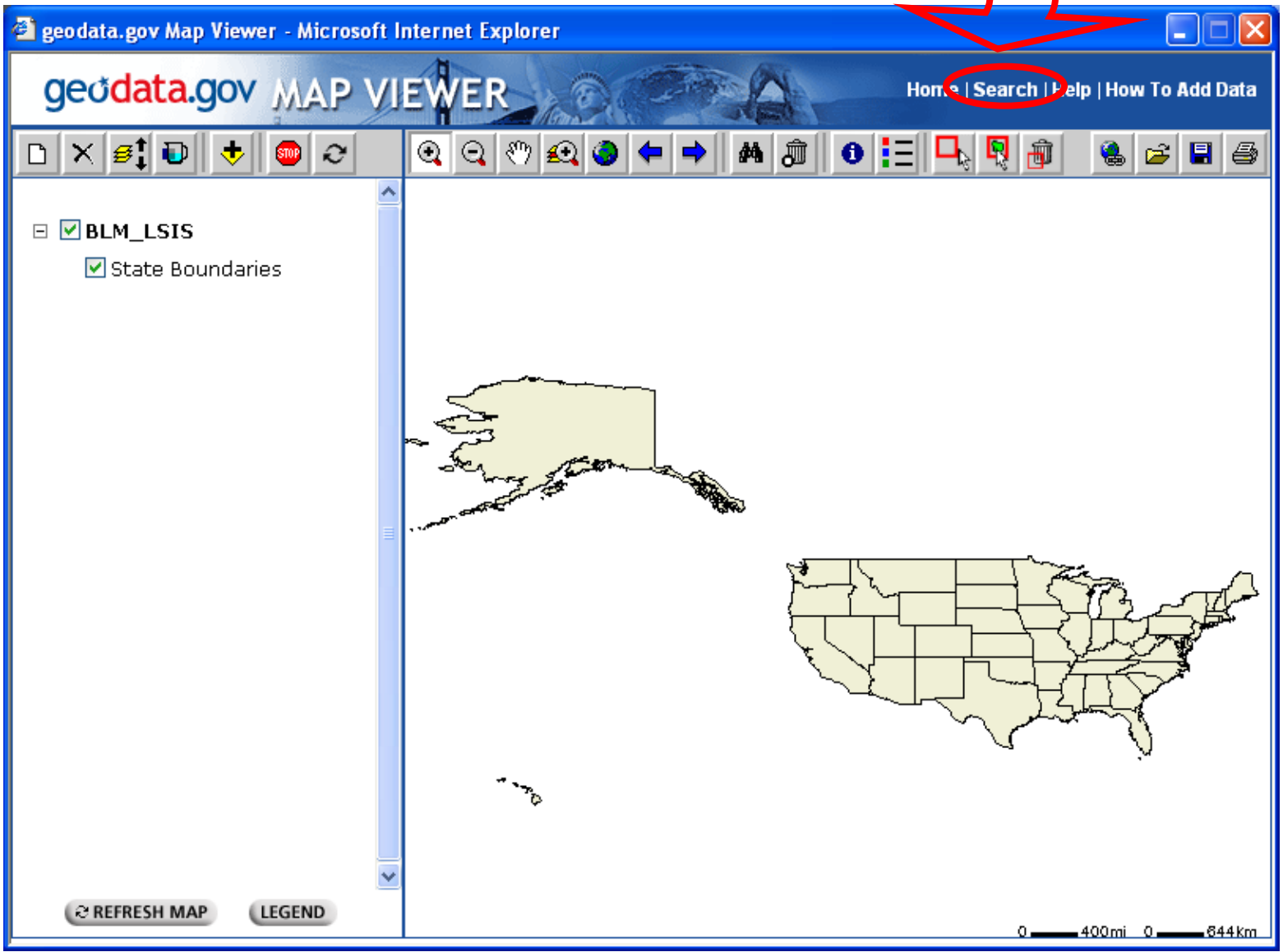
Search for additional layers to add…



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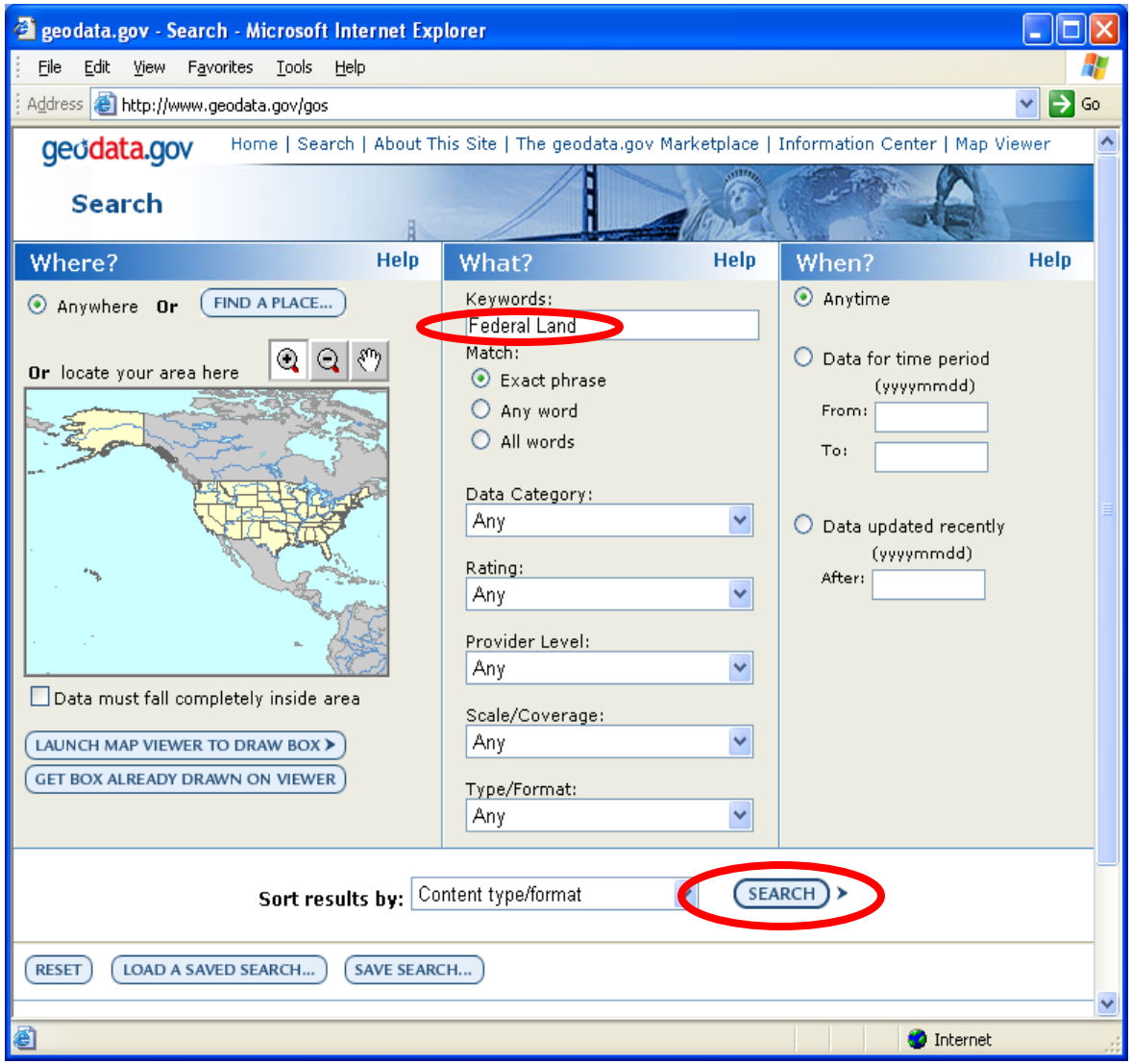
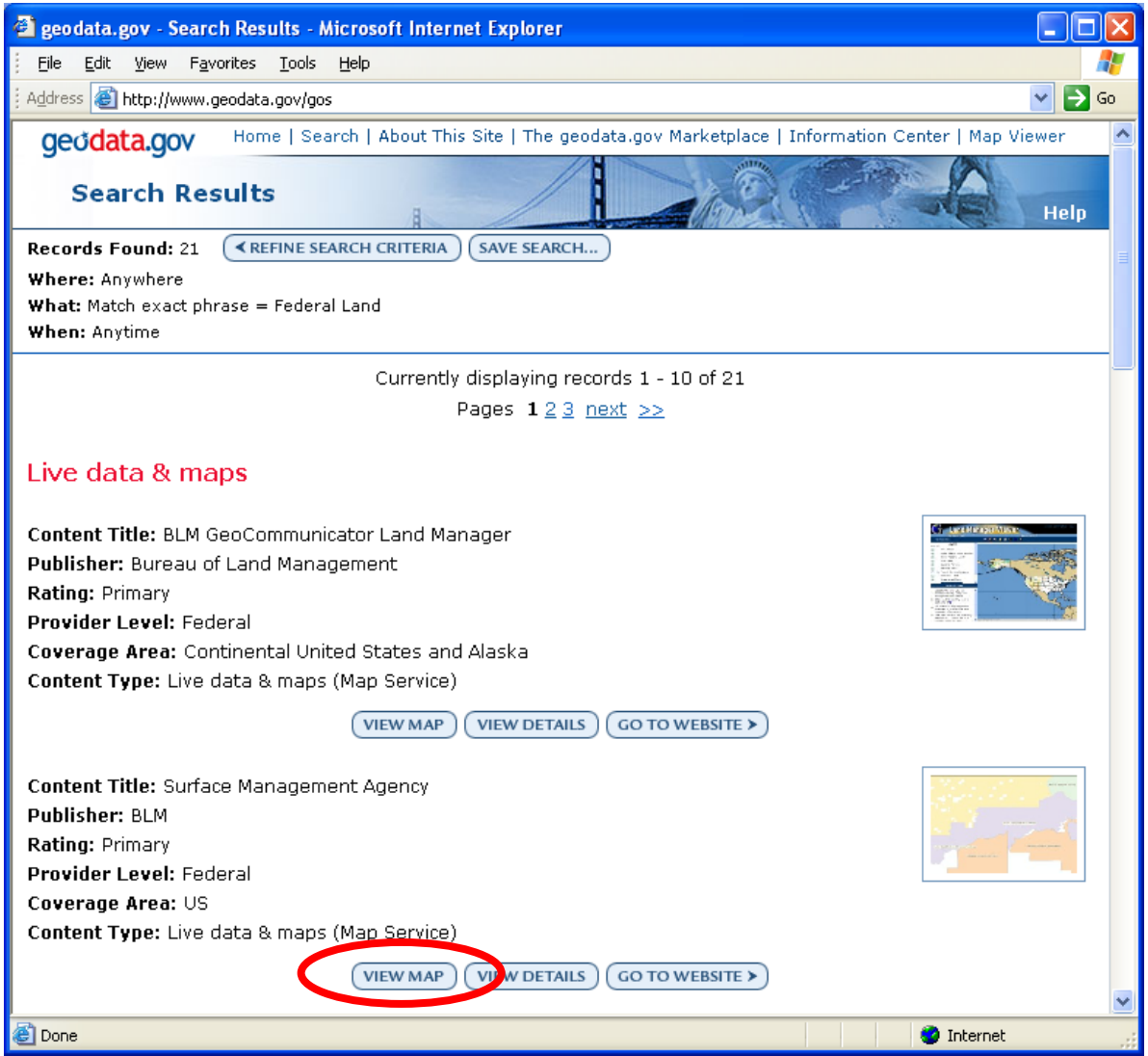
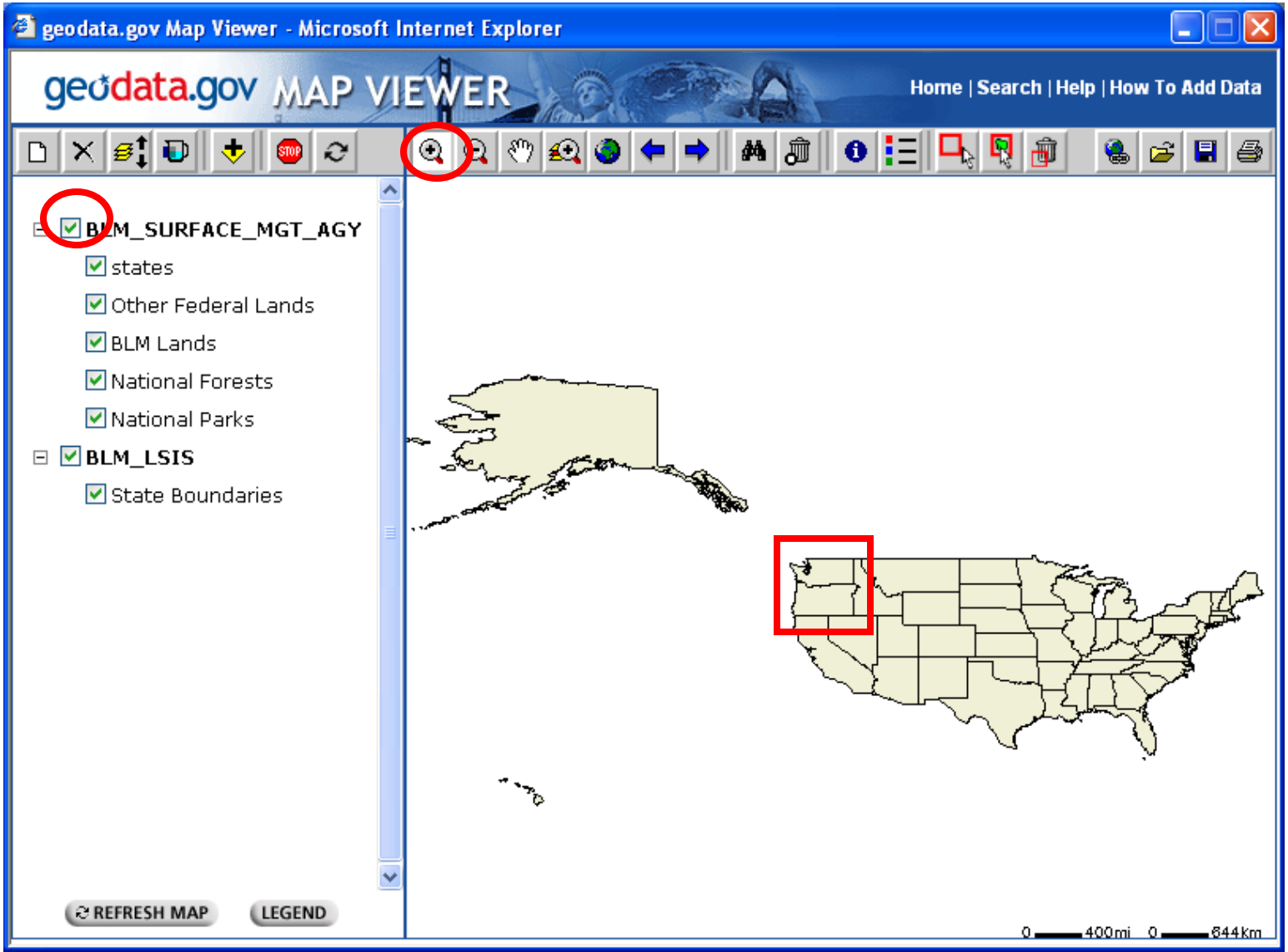
Search for “Federal Land”…



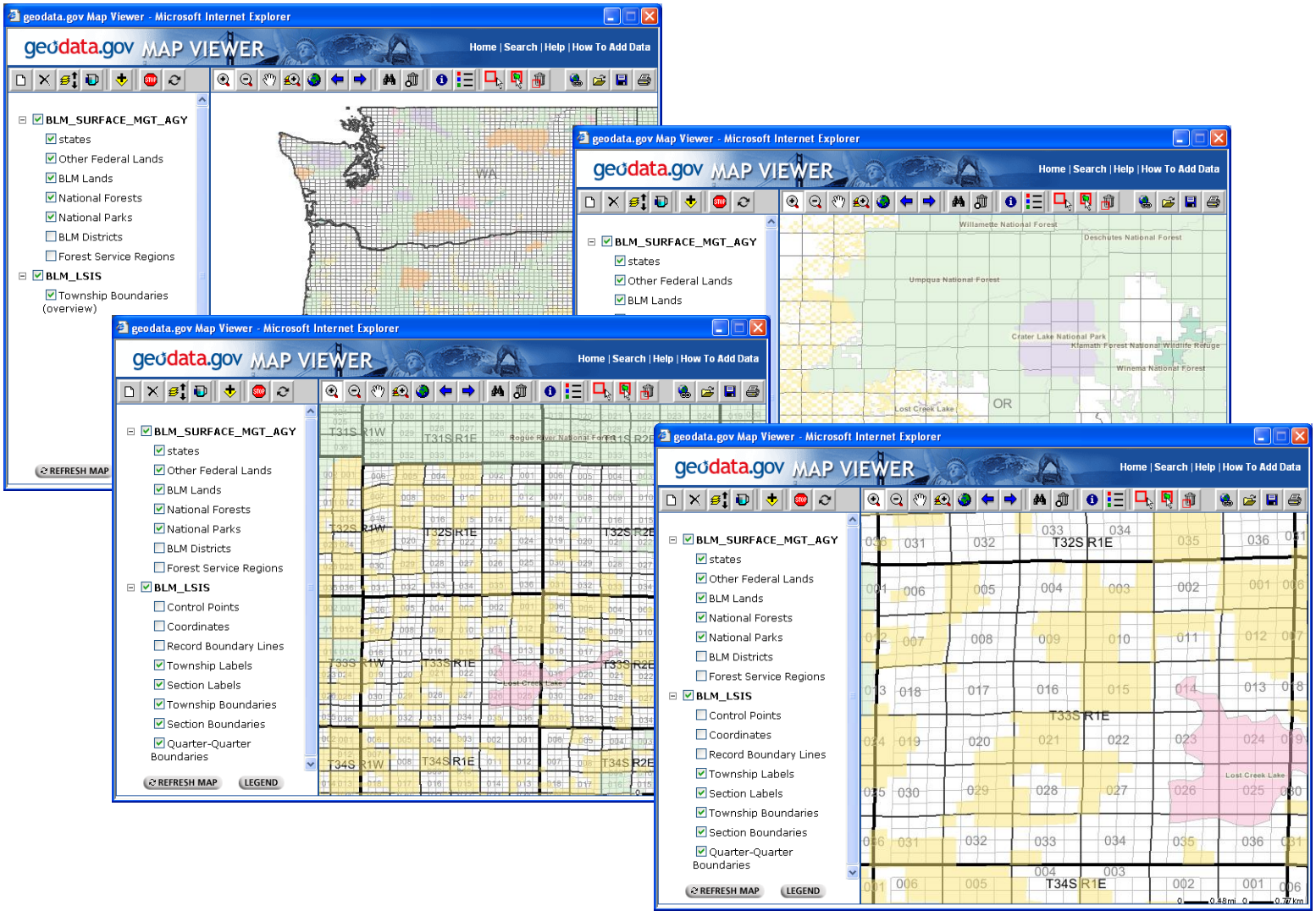
Locate “Surface management Agency” and click on “VIEW MAP”



Make the new layer visible then zoom in for a closer look using the Zoom In tool.



As you zoom further in, increasing levels of detail emerge.



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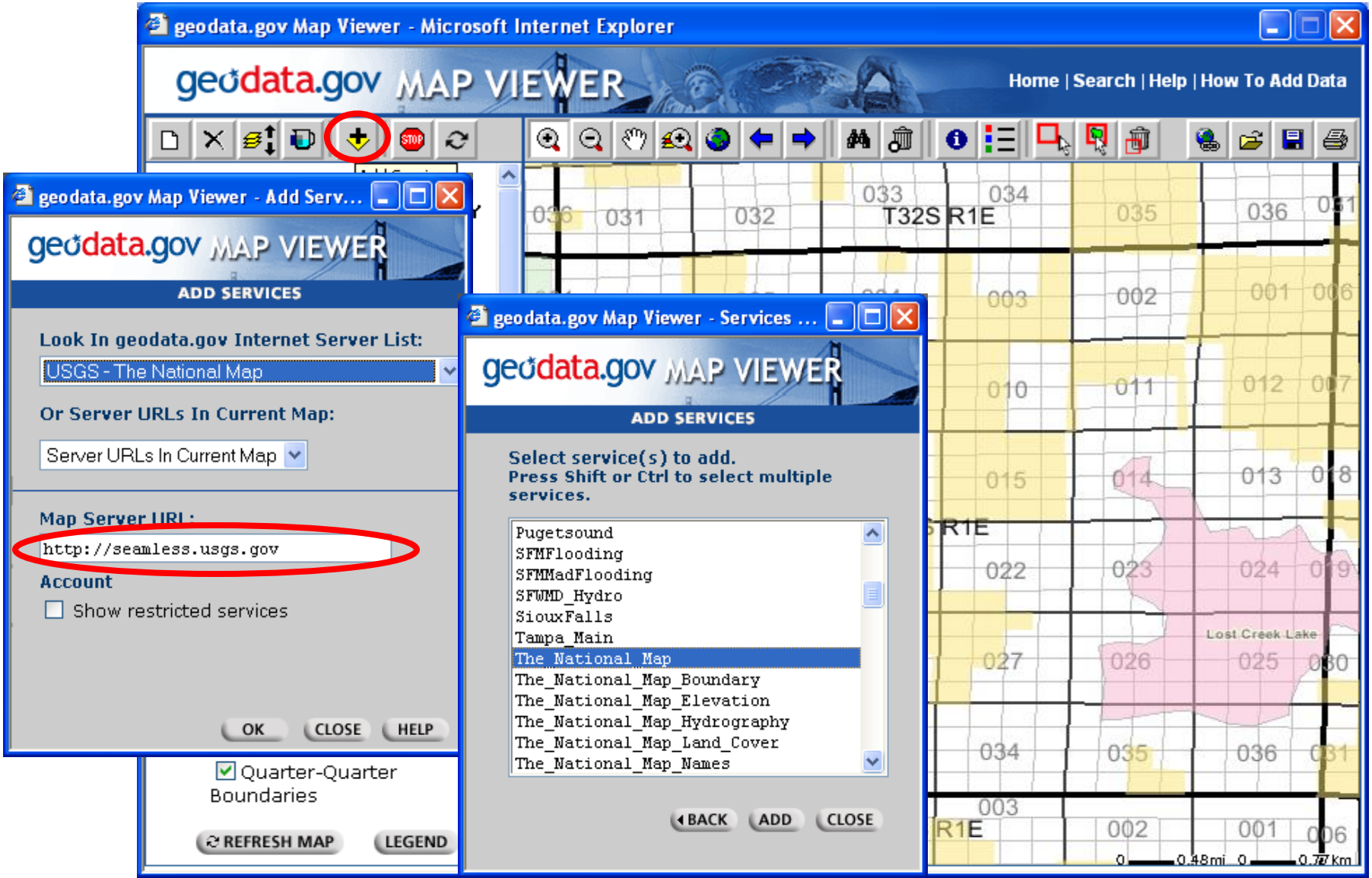
Additional layers can be added through the “Add Services” button.



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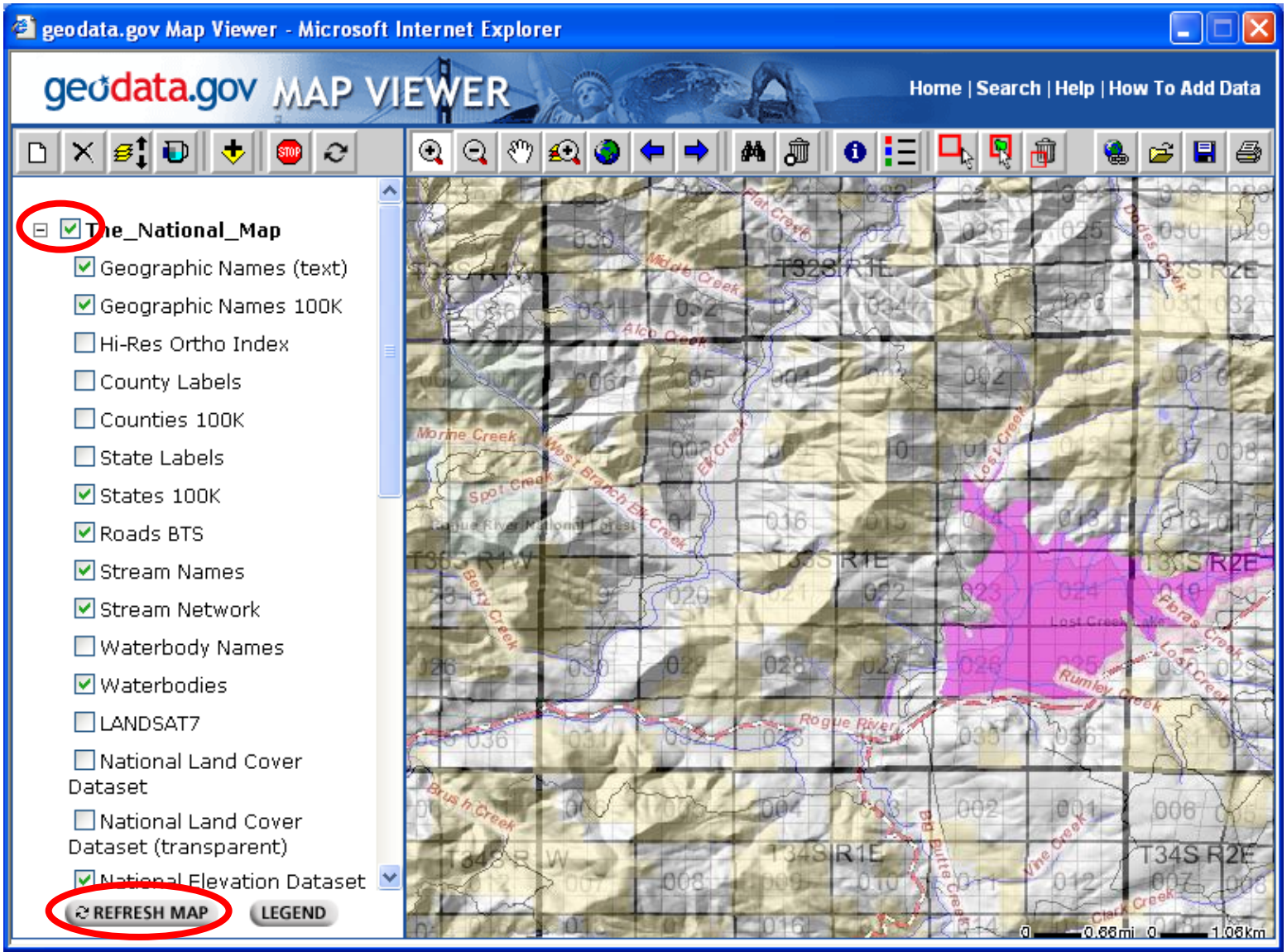
Check the visibility boxes of added layers and click the “REFRESH MAP” button.



GeoCommunicator

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Questions?

- Contact:

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