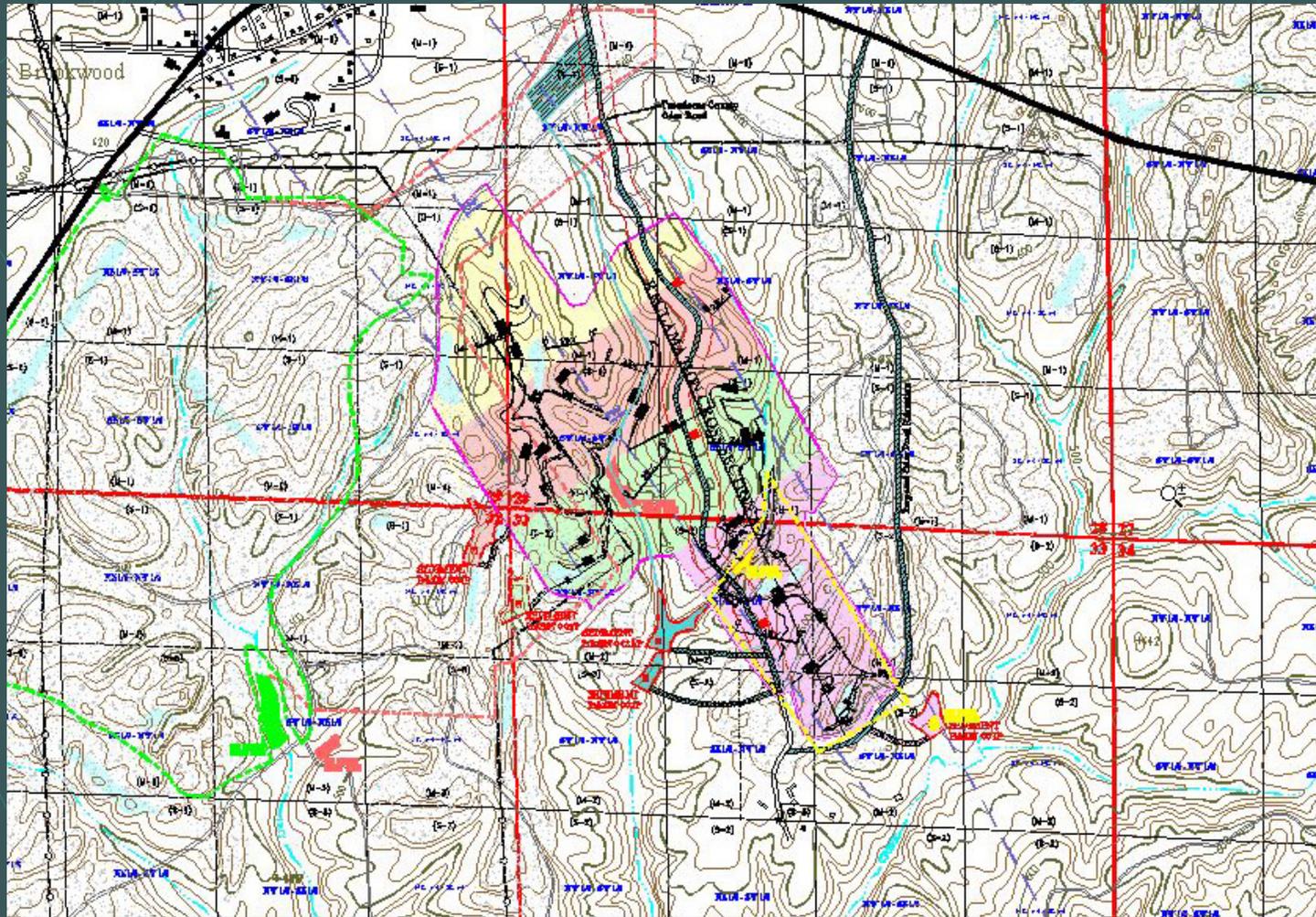


Alabama Coal Mining Geographic Information System





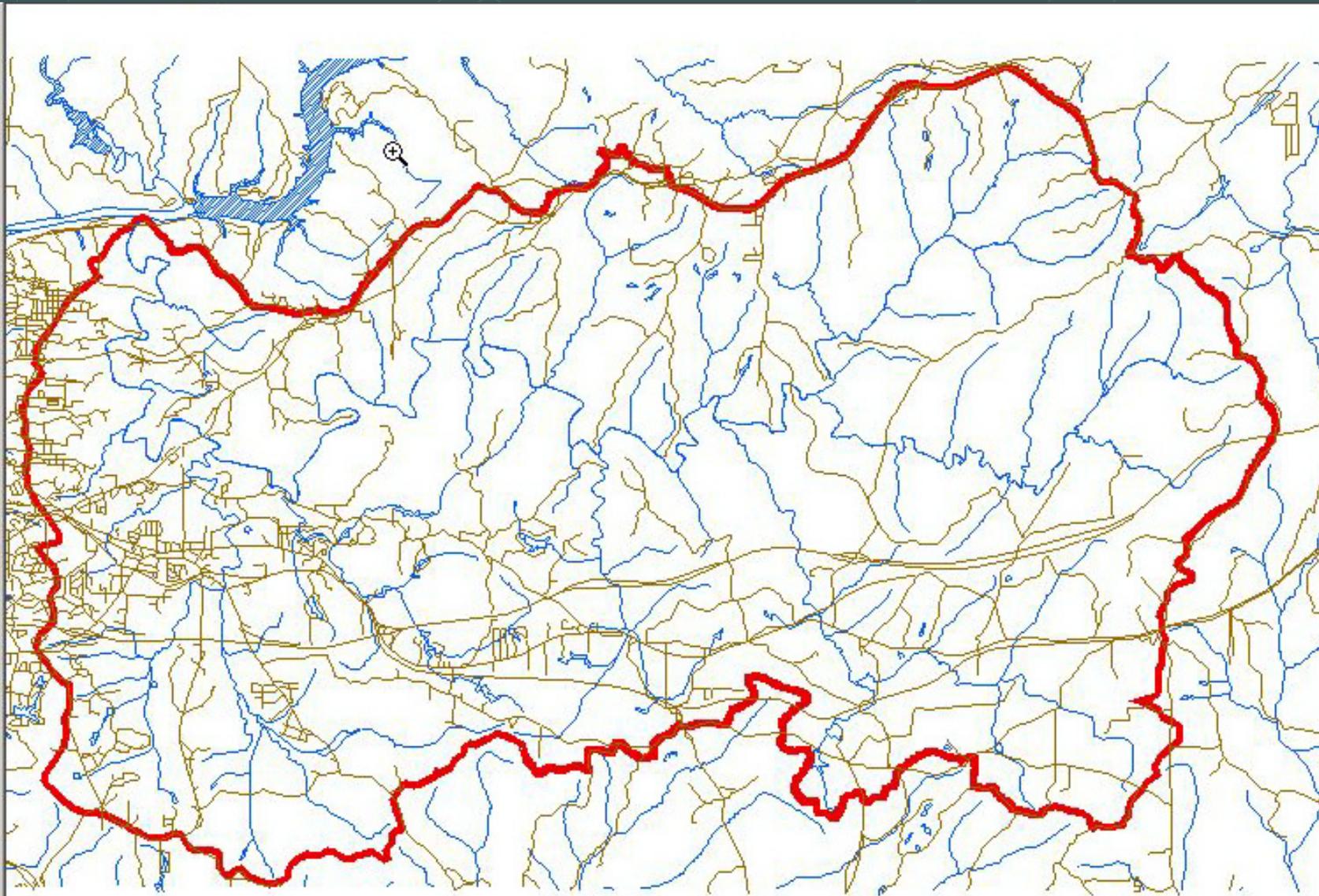
Alabama GIS Origins

Grew out of a necessity to document mining in a watershed under petition with EPA to set TMDL

Prior to that no mine maps had been converted to digital format

ASMC took active role in the TMDL process to make sure effects of mining were completely understood.

Hurricane Creek





The Process

All paper maps from mines in the watershed were digitized manually using AutoCad.

The watershed was manually delineated then digitized

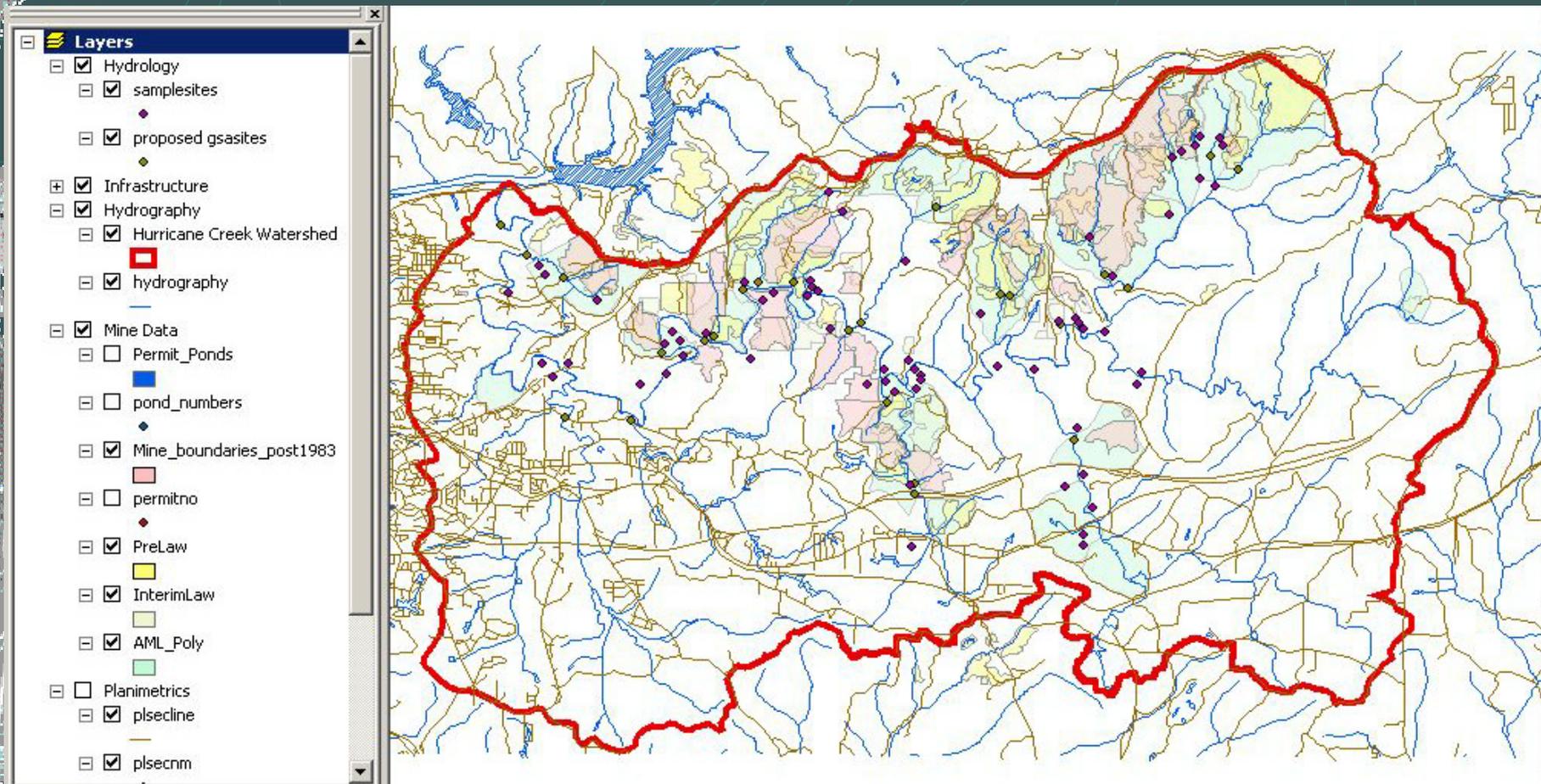
Abandoned mine lands were acquired through AMLIS

Hydrography, Planimetrics, Hydrology, and other relevant layers were acquired and added to the database

All NPDES and in stream monitoring sites with data were added

The Result

The resulting maps and data formed the basis for EPA assessment
And determination of what impacts should be considered in
Establishing TMDL's for Hurricane Creek





Practical experience led to GIS for Mining

The experience and success showed us the importance of having a GIS for mining in Alabama

The exercise demonstrated the inadequacies of our data, equipment, software, and expertise.

A plan was developed to completely modernize our systems in conjunction with developing a GIS database



Purposes

Storage and retrieval of data in a digital format

Integration of primary mine database system with geographic data

Facilitate electronic permit applications

Analysis and review of coal mine permit applications

Integrated assessment of Mining impacts

Facilitation of Mobile Computing in Inspection of Mines

Steps in the process

Step one- Digitize all permit maps for the 600+ underground and surface mine permits issued since primacy

Step two- Upgrade computer network, hardware and software with assistance from TIPS

Step three- Assemble a database of baseline GIS data for the state

Step four- Document the Data (metadata)

Step five- Electronic or Digital Permit Applications

Step six- Integrate GIS with mine information Database

Step seven- Get the system out in the field

System Upgrade

Data storage was a limiting factor

Acquisition of a new server with an 80gb hard drive through
TIPS

Old network was slow token ring using Netware

With help from TIPS installed a 100base ethernet system
using Microsoft NT

Over three year period replace all workstations

Upgraded mine information database system from dBase to
Microsoft Access

Upgraded AutoCad and Switched from ArcView 3.0 to
ArcGIS Desktop 8.3



ASMC Primary Mine Database System

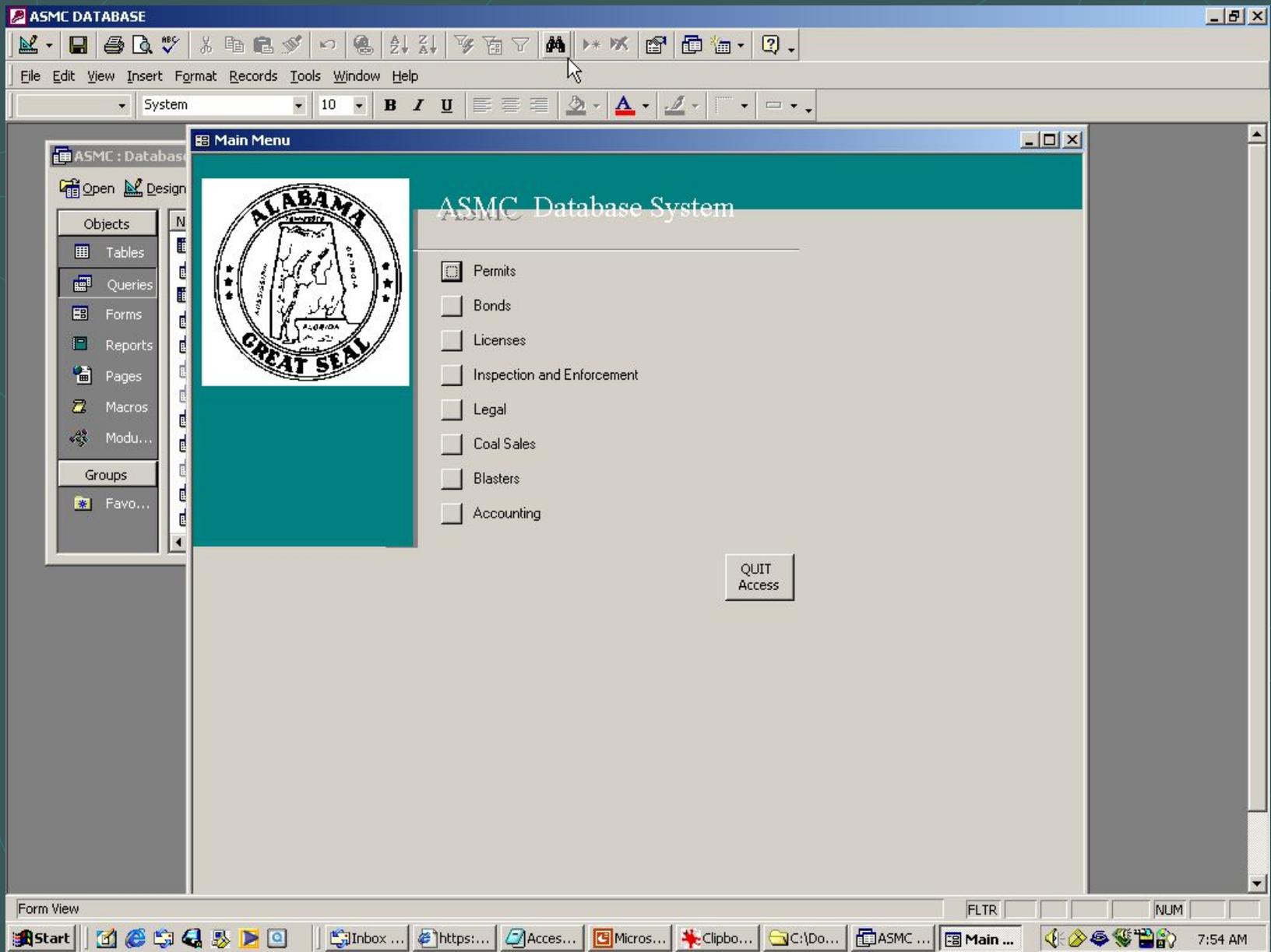
Initiated in the early 1980's after primacy with a dBase system

Primary purpose was storage and retrieval of non-spatial permit and bonding data

Migrated to Microsoft Access in 2000 and expanded to other data storage and retrieval

Menu driven forms for data entry, retrieval, and reporting

Access Database System



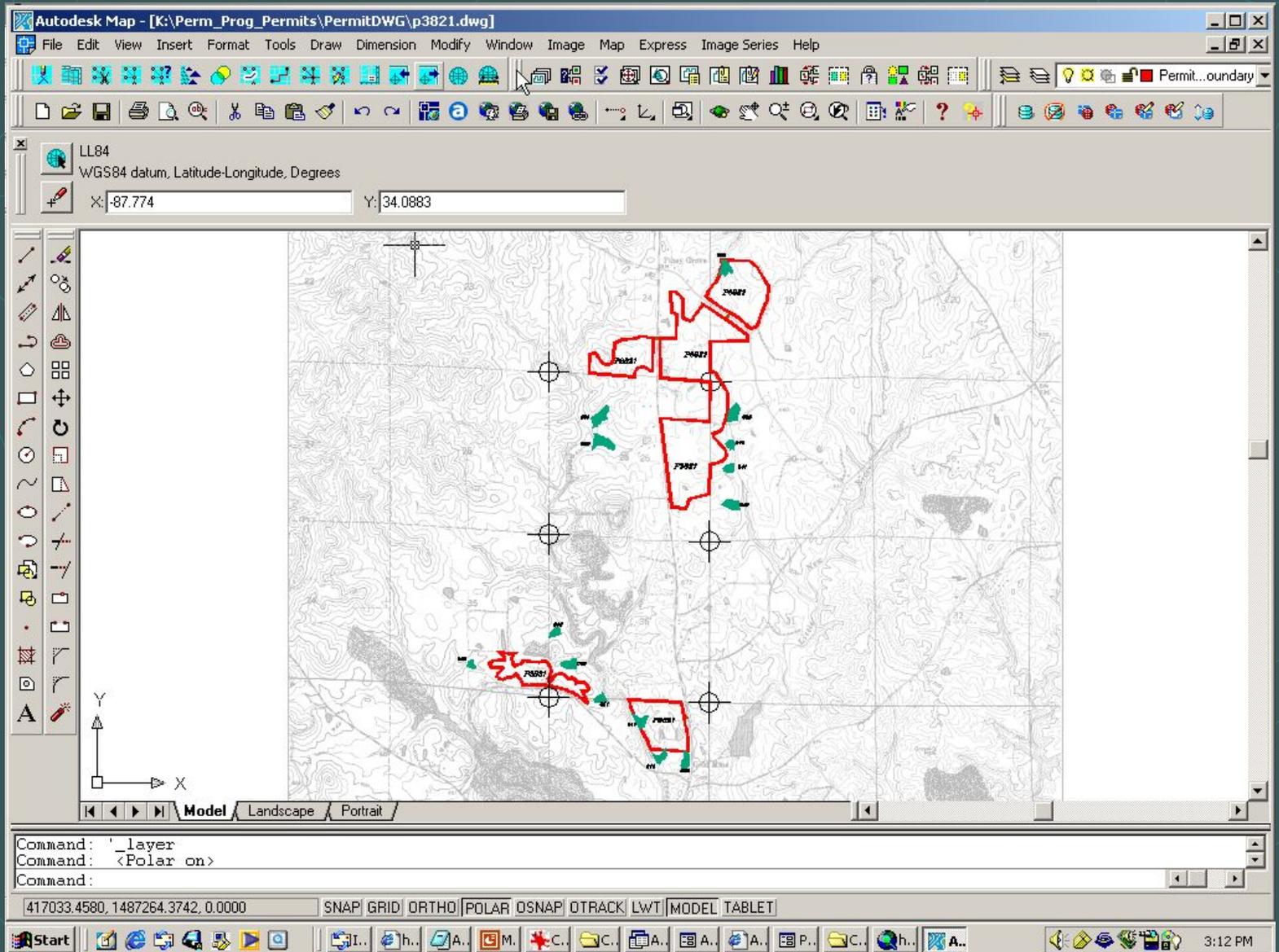
Menu System

The screenshot displays the ASMC Database System menu system. The main window, titled "Permit Reports", features a teal header with the text "ASMC Database System". On the left side of the menu area is the Great Seal of the State of Alabama, which includes the text "ALABAMA", "1819", "GREAT SEAL", and "FLORIDA". To the right of the seal is a list of menu items, each with a checkbox:

- Permit Information Report
- Permitting Actions Reports
- Expirations
- Reviewers and Inspectors for Active Permits
- Permits for Consultants
- Legal Descriptions for Permits by County
- Return to Permits Menu

At the bottom center of the menu area is a button labeled "QUIT Access". The interface also includes a left-hand "Objects" pane with categories like Tables, Queries, Forms, Reports, Pages, Macros, and Modu...; a top menu bar with File, Edit, View, Insert, Format, Records, Tools, Window, and Help; and a Windows taskbar at the bottom showing the Start button, various application icons, and the system clock (9:48 AM).

Digitizing Maps



Acquisition of Statewide Data

Began systematically collecting GIS base-line data from a variety of sources

Purchased data

- Hydrography
- Hydrology
- ERPs
- Geography
- Orthoquads
- Method topographs
- Digital Quads
- Satellite imagery
- Tiger files
- Landuse Landcover
- Sensitive species
- Impaired waters
- Toxic sites
- Abandoned mines

Metadata

The screenshot shows the ArcCatalog interface. The left pane displays a tree view of folders, with 'Perm_Prog_Permits' expanded to show subfolders like 'ArcView', 'drg', 'Gary', 'JMichael', 'New Permits', and 'PermitDWG'. The 'PermitDWG' folder is selected. The right pane shows the metadata for this folder, with tabs for 'Contents', 'Preview', and 'Metadata'. The 'Metadata' tab is active, displaying the following information:

Permanent Program Permits

Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Metadata Reference Information](#)

Identification Information:
Citation:
Citation Information:
Publication_Date: Unpublished Material
Title:
Permanent Program Permits
Geospatial_Data_Presentation_Form: vector digital data

Description:
Abstract:
Alabama Coal Mine Permit Maps
Purpose:
Provide a digital database of mine permit maps

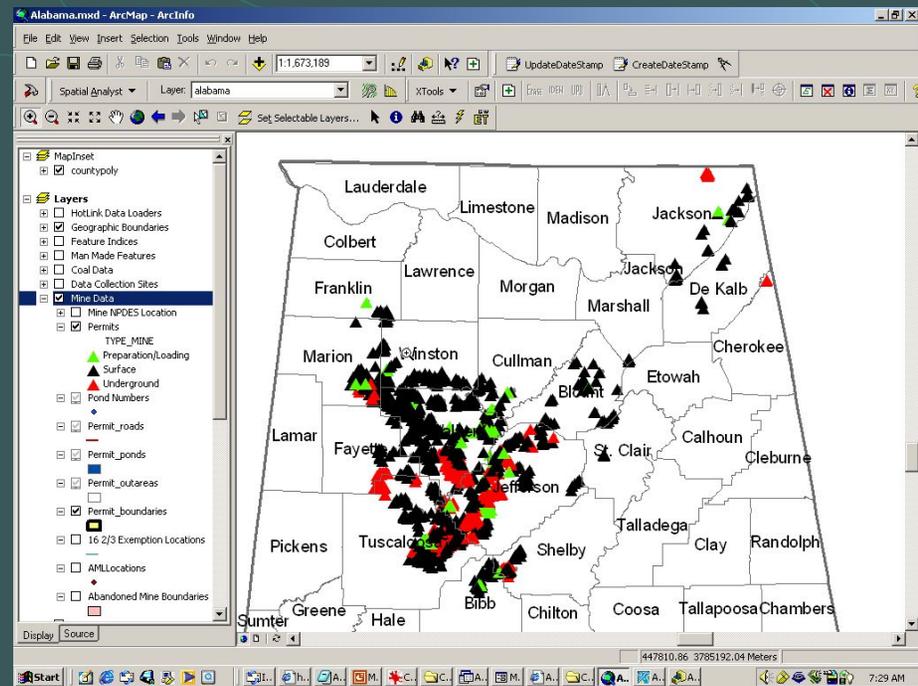
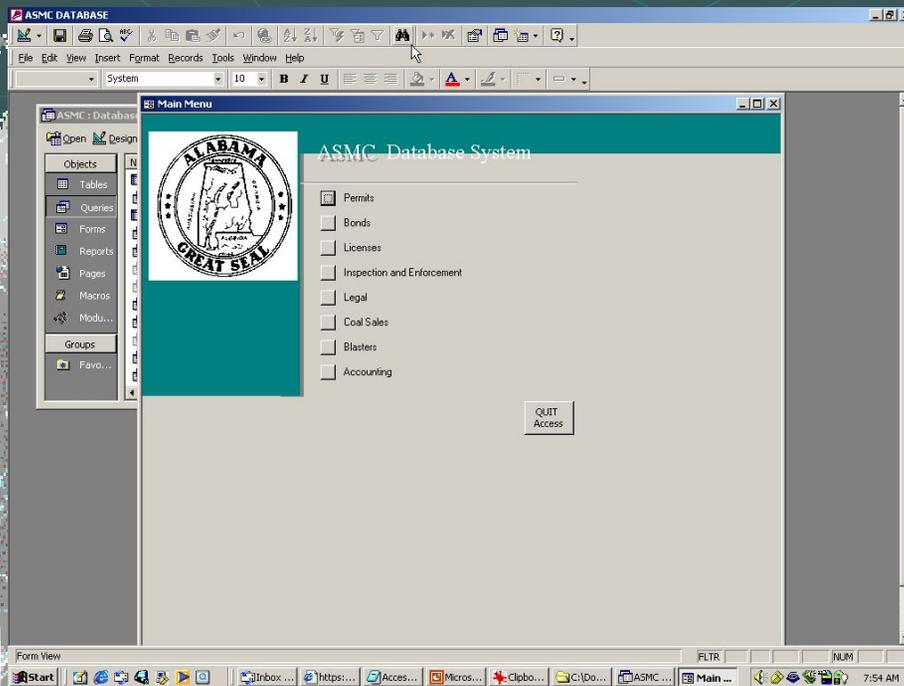
Time_Period_of_Content:
Currentness_Reference:
ground condition

Status:

At the bottom of the window, a text box says "Type in a location and press Return to go to it" and a "Go to Location" button is visible. The Windows taskbar at the bottom shows the Start button, several application icons, and the system clock displaying 3:48 PM.

Integration with Mine Information Data

Linking spatial with non-spatial data maximizes utility of the the two systems



Friday, February 20, 2004



Bond Transaction History Report

CEDRUM MINE #8750

DRUMMOND COAL COMPANY

L-0018

P3194 INCREMENT-01

<i>Bond Number</i>	<i>Trans.Date</i>	<i>Transaction</i>	<i>Trans. Amount</i>	<i>Trans. Acres</i>
76S25975BCA				
	6/1/1983	INITIAL BOND (+)	\$913,230.00	438
	5/7/1984	BOND ADJUSTMENT DECREASE RID	(\$678,425.00)	-287
	10/22/1984	BOND ADJUSTMENT DECREASE RID	\$0.00	-10
	11/19/1985	PHASE I RELEASE (-)	(\$140,883.00)	0
	7/29/1987	PHASE II RELEASE (-)	(\$51,622.00)	0
	12/14/1990	PHASE III RELEASE (-)	(\$42,300.00)	-141
		Bond Balance	\$0.00	0
		Increment Balance	\$0.00	0

P3194 INCREMENT-02

<i>Bond Number</i>	<i>Trans.Date</i>	<i>Transaction</i>	<i>Trans. Amount</i>	<i>Trans. Acres</i>
76S76025989				

Clicking this hyperlink launches Access, runs a query for bond transactions, and displays a report for the permit selected

Microsoft Access Help



ALABAMA SURFACE MINING COMMISSION

P.O. Box 2390
 Jasper, AL 35502-2390
 205.221.4130

GENERAL FIELD INSPECTION REPORT

General Field Inspection Report Number:

04RTW035

Permit _____ :	P3194	License :	L-0018	Date of Inspection:	1/26/2004
Company _____ :	DRUMMOND COAL COMPANY	County _____ :	WALKER	Law _____ :	1981
Mine Name _____ :	CEDRUM MINE #8750	Type Operation :	SURFACE		
Type Inspection:	PARTIAL				

Permit Status ____ : ACTIVE GRADING & SEEDING ONLY

NOV Number : _____ **CO Number:** _____
Violations ____ : 1. _____ 2. _____ 3. _____ 4. _____ 5. _____

Supervisor Present: No **OSM Present:** No

Comments:

pc/cool

12:38 - 2:41

Inc. 02 and 08:

Inc. 02 and 08: All graded and well vegetated with no releases granted. There is erosion work to be completed on the graded out slopes of these increments that is being completed when weather permits.

Inc. 05 and 06: All graded and vegetated with a phase 1 release granted.

Inc. 09 and 10: Incidentals only with no releases granted.

Basins: 01- 7.0 ph
 05- 7.0 ph
 09- 7.0 ph

- Favorites
- Miscellaneous
 - Autodesk
 - Links
 - Media
 - ENVIRONMENTAL
 - Bookmarks for Randall J...
 - Alabama Legislative Inf...
 - Login to Sonet WebMail
 - My eBay
 - https--member.newsgu...
 - MSN.com
 - Radio Station Guide
 - Web Events
 - WindowsMedia.com
 - Customize Links
 - Free Hotmail
 - Windows Media
 - Windows
 - RealPlayer
 - Replacement Parts for ...
 - 1A Automotive Camaro ...
 - 267th Quartermaster C...
 - 267th Quartermaster C...
 - Alagis on 'Tips-al-ra' (K)
 - Alternator Starter Expr...
 - Articles that Discuss In...
 - Articles
 - C&P Parts Lookup - CARS
 - Camaro Central - For Al...

Water Quality Samples for the Nation

USGS 02453950 LOST CREEK NEAR JASPER AL

Available data for this site

Walker County, Alabama
 Hydrologic Unit Code 03160109
 Latitude 33°48'56", Longitude 87°23'02" NAD27
 Drainage area 115.00 square miles

- Output formats
- [Parameter Group data summary](#)
 - [Inventory of available water-quality data](#)
 - [Inventory of water-quality data with retrieval](#)
 - [Tab-separated ASCII file, serial order](#)
 - [Tab-separated ASCII file, wide order](#)
 - [Reselect output format](#)

SAMPLE DATETIME	MEDIUM CODE	Temperature, water, deg C (00010)	Agency analyzing sample, code (00028)	Stream-flow (ft ³ /s) (00060)	Instantaneous discharge, cfs (00061)	Color, water, ftrd, Pt-Co units (00080)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Carbor dioxide water, unfltrd mg/L (00405)
1963-11-08 00:00	9	12.0									
1964-01-22 00:00	9	4.0									
1964-01-23 00:00	9	7.0									
1964-11-18 00:00	9	16.0									

- Add... Organize...
- Miscellaneous
- Autodesk
- Links
- Media
- ENVIRONMENTAL
- Bookmarks for Randall J...
- Alabama Legislative Inf...
- Login to Sonet WebMail
- My eBay
- https--member.newsgu...
- MSN.com
- Radio Station Guide
- Web Events
- WindowsMedia.com
- Customize Links
- Free Hotmail
- Windows Media
- Windows
- RealPlayer
- Replacement Parts for ...
- 1A Automotive Camaro ...
- 267th Quartermaster C...
- 267th Quartermaster C...
- Alagis on 'Tips-al-ra' (K)
- Alternator Starter Expr...
- Articles that Discuss In...
- Articles
- C&P Parts Lookup - CARS
- Camaro Central - For Al...

Available Parameters

All 2 parameters available at this site
 00065 Gage height (DD 02)
 00045 Precipitation (DD 04)

Output format

Table

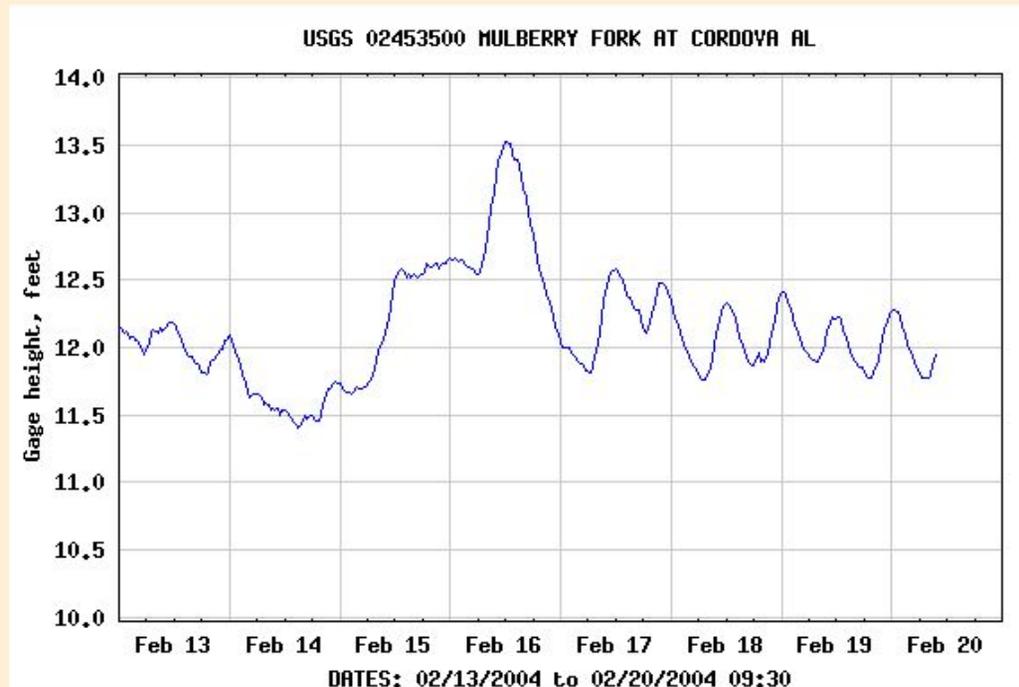
Days

7
(1-31)

get data

Gage height, feet

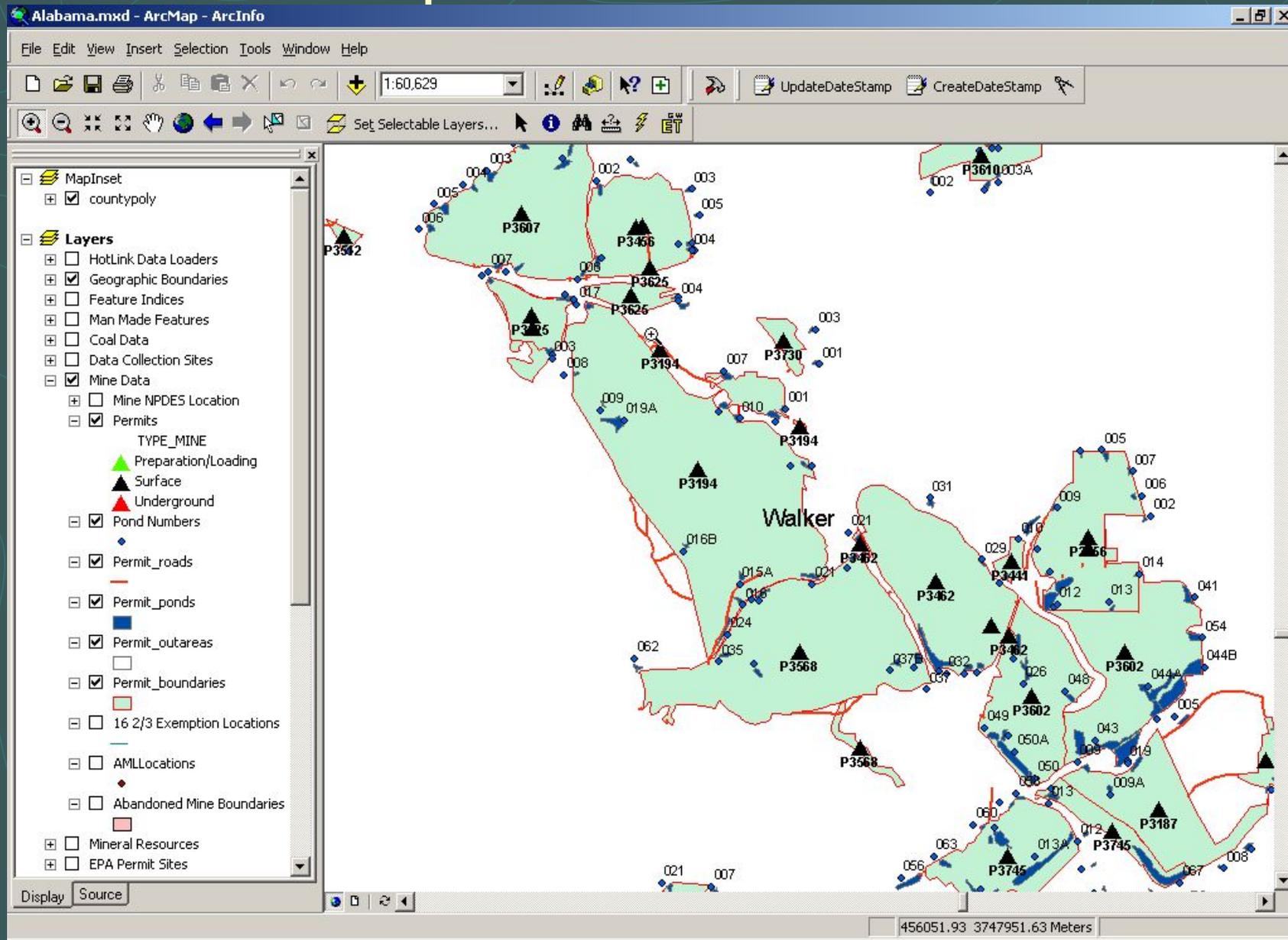
Most recent value: 11.95 02-20-2004 09:30



Download a [presentation-quality graph](#)

Parameter Code 00065; DD 02

Some Examples of Data on Our GIS





Electronic Permits

In March 2000 ASMC received its first electronic permit application

Since that time 20 electronic applications have been received

All of these permits were prepared by one consulting firm based on Microsoft Word version of our application form and AutoCad drawings of plans and maps

No other consultants or mining companies who permit in house are using electronic applications



Electronic Permit Example

Permit P-3825

Migration to the Field

The GIS is now used for a multitude of purposes in our office

The next step is to put this tool into the hands of our inspectors

This has been hampered by cost and limitations in technology to date

Other limitations include:

- Keeping data current on mobile computers

- Durability of mobile units