

# NOGA Online: A USGS Resource for Energy GIS Data and Services

<http://energy.cr.usgs.gov/oilgas/noga/>

Laura R.H. Biewick  
and  
Gregory L. Gunther

# Outline

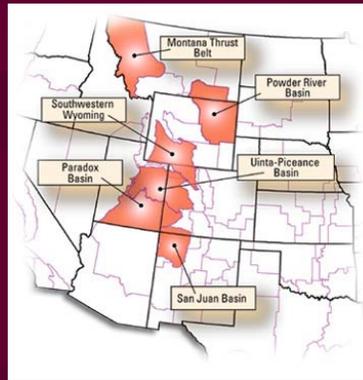
- Overview of Energy Program
- National Assessment Background Information
- National Assessment of Oil and Gas Website
  - The NOGA Home Page
  - Basin Results Page
  - Assessment Units Page
  - GIS Download Page
  - Interactive Map Application
  - 1995 Assessment Results
- Summary
  - Usage Statistics
  - Map Service Technology for Product Development
  - Technologic Details

# USGS Energy Program :

- USGS Geologic Discipline (Dept. of the Interior)
- Reliable scientific information that aids in management of energy resources
- Assess energy resources of U.S. and world
- Central Energy Resources Team (CERT) - Evaluate and develop science-based assessment methodologies
- Produce assessments of domestic oil, gas, and coal resources

# National Assessment Background Information:

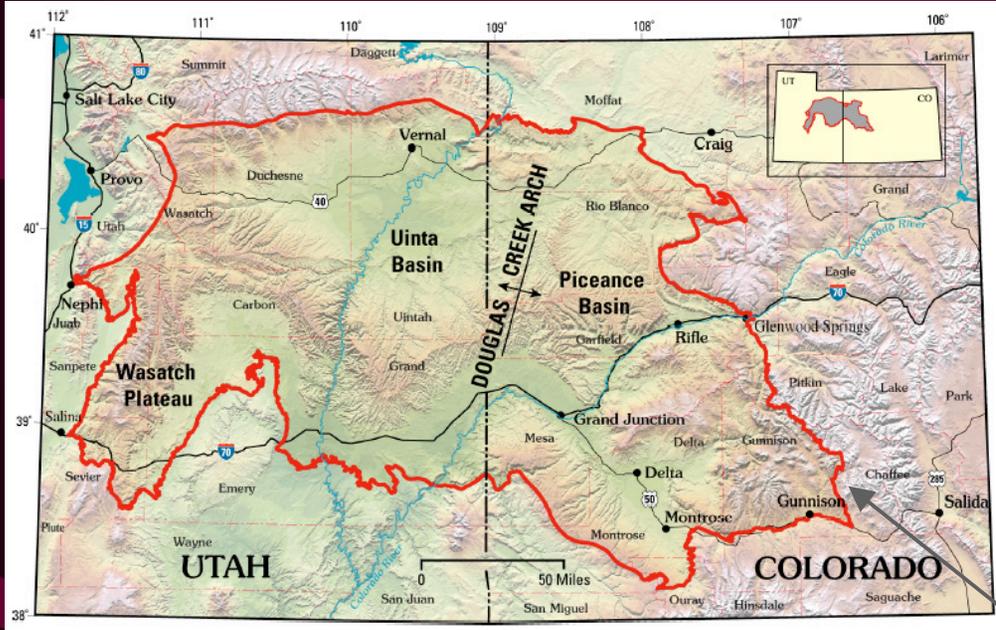
- First entirely digital comprehensive domestic oil and gas assessment completed in 1995
- The U.S. Geological Survey (USGS) recently completed an assessment of undiscovered oil and gas resources of five of six priority provinces to meet the requirements of the Energy Policy and Conservation Act of 2000 (EPCA 2000).



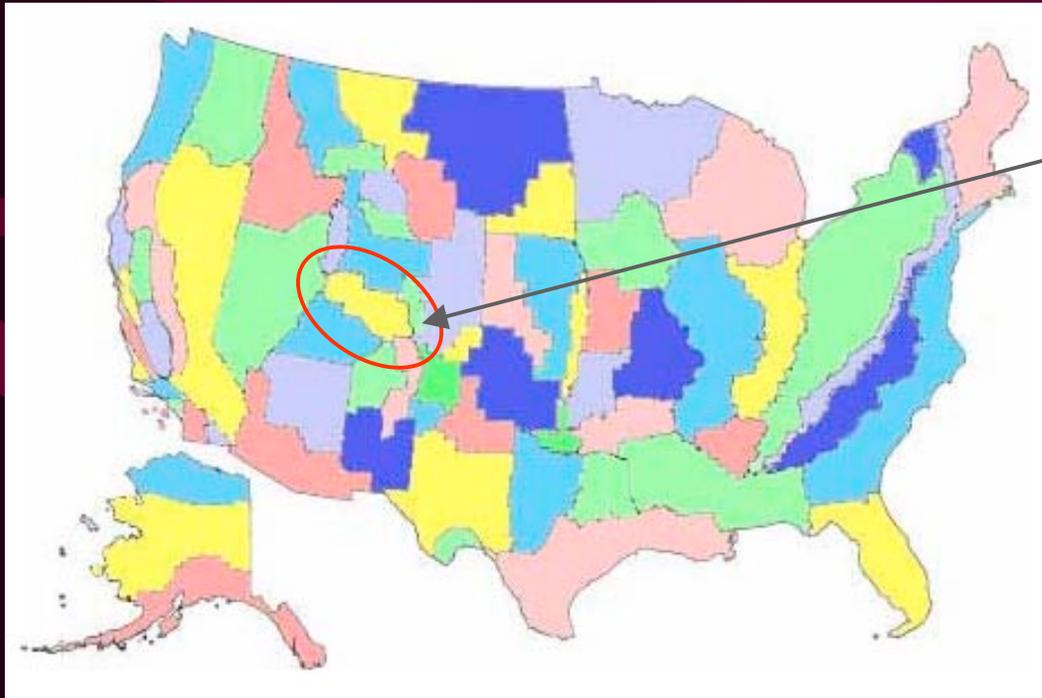
- Purpose:

To scientifically estimate oil and gas resources and potential reserve additions for onshore areas and beneath State waters

- Standard definitions are essential to understanding assessments and data at NOGA Online



- 71 provinces in the United States
- Hydrocarbon assessment units or plays are generally defined and assessed within provinces
- Province drawn on county lines that closely follow natural geologic boundaries



Uinta-Piceance Province

- Areas that are assessed include geologic structures generally considered to be in or to bound basins

Assessment Unit or Play -- a set of known or postulated oil and (or) gas accumulations sharing similar:

- Geologic
- Geographic
- Temporal properties

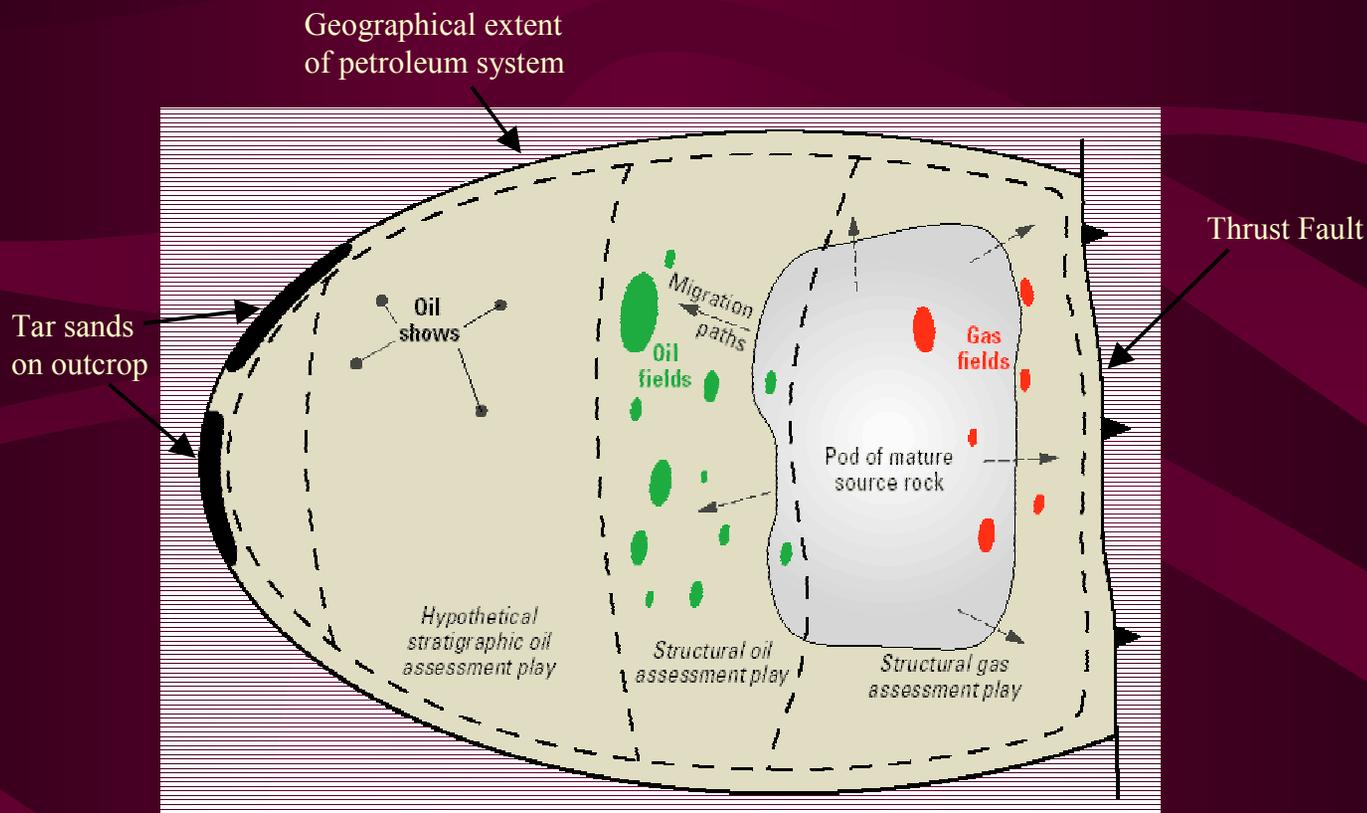


- ✓ Source rock
- ✓ Migration pathway
- ✓ Timing
- ✓ Trapping mechanism
- ✓ Hydrocarbon type

Limits of the geologic elements that define the assessment unit or play:

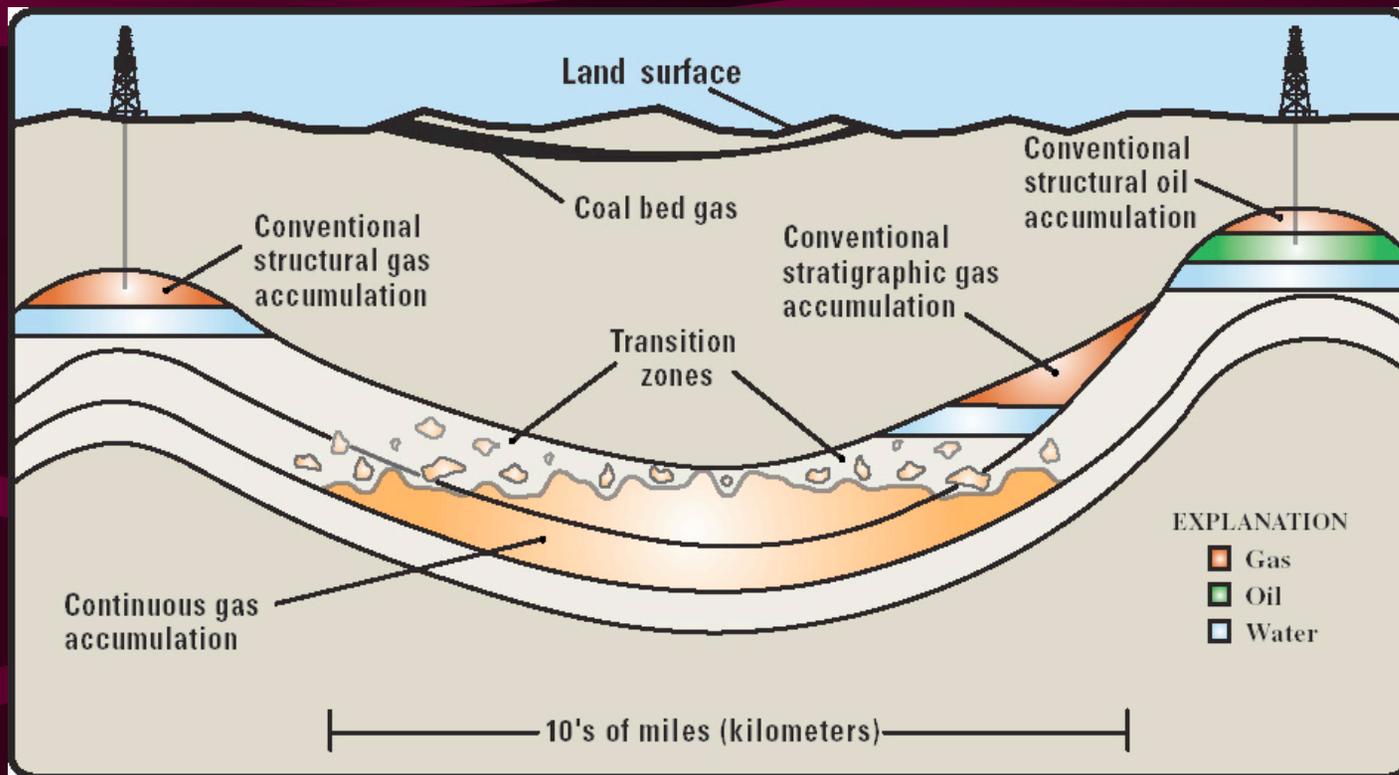
- Reservoir rock
- Geologic structures
- Source rock
- Seal lithologies

Total Petroleum System -- a mappable entity encompassing genetically related petroleum that occurs in seeps, shows, and accumulations (discovered or undiscovered) that have been generated by a pod or by closely related pods of mature source rock.



Schematic plan view of a total petroleum system, showing a pod of mature source rock, the distribution of known petroleum occurrences, and the boundaries of the assessment units (modified from USGS Uinta-Piceance Assessment Team, 2003).

# Resources postulated to exist beyond known fields



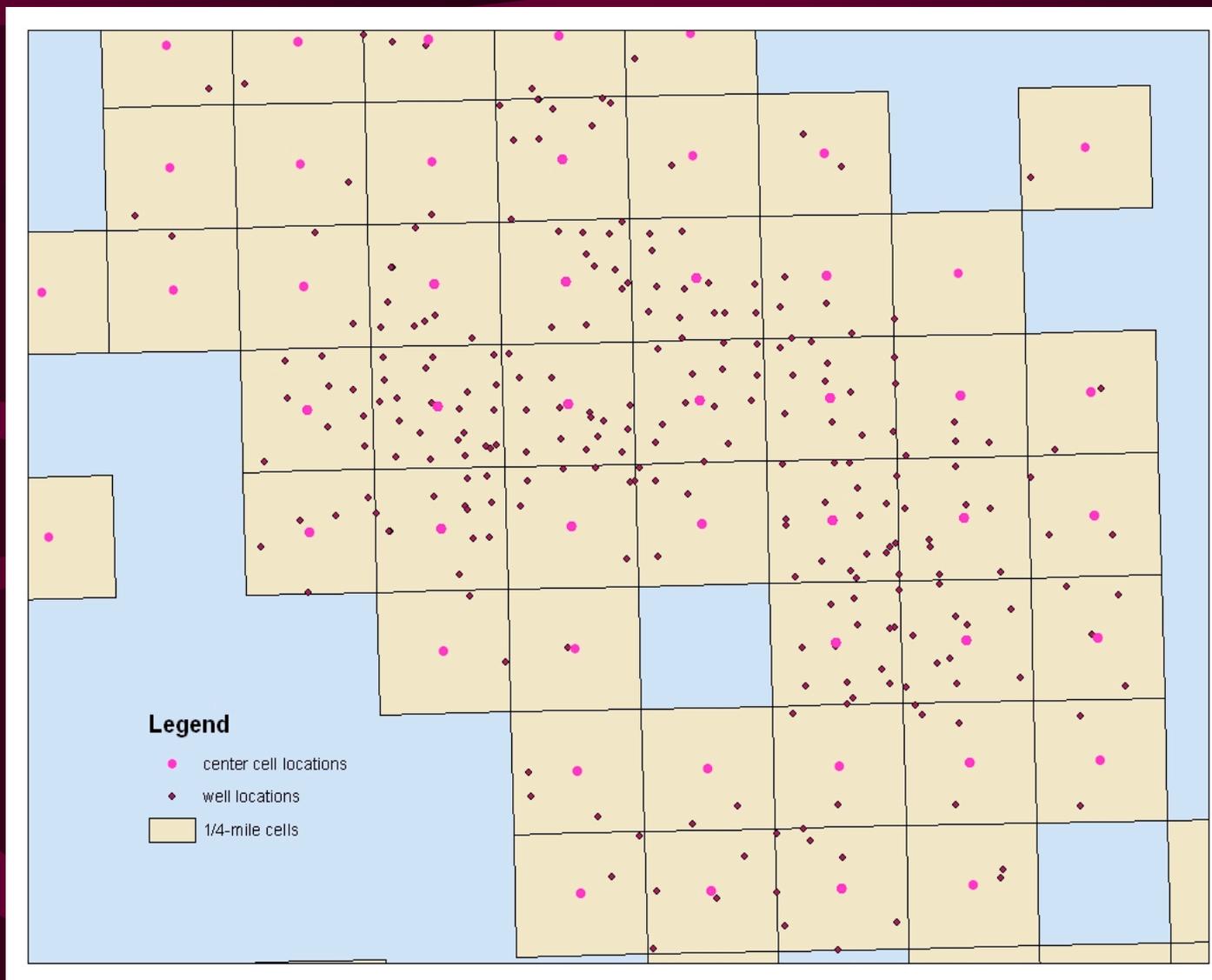
Schematic diagram of the types of oil and gas resources assessed in the priority provinces of the U. S. Both conventional and continuous accumulations are assessed. Coal-bed gas is considered to be a continuous-type accumulation.

# Probability Distributions

Estimates of undiscovered resources:

- Probabilities of occurrence
- Uncertainty of unknown quantities
- Fractiles include
  - Low (F95)
  - High (F05)
  - Mean

# Graphic Description of the Concept of Cells Representing Proprietary Wells



**USGS**  
science for a changing world

Central Energy Team

Links Feedback Contact Search

**Oil & Gas**

Coal

Other Topics

Products

The Central Energy Team, in the USGS Energy Resources Program, provides the best-available assessments of Energy Resources (coal, oil, natural gas). These assessments are critical to the Nation's welfare and are based on:

- A comprehensive understanding of the Geologic Framework in which energy resources occur and
- A thorough understanding of the Geologic Processes that produce accumulations of energy resources and consider the economic, technical, and environmental factors affecting the availability and recoverability of those energy resources.

**New Features**

Latest EPCA Results

**NOGA Online**

Coalbed Methane Field Conference

Illinois Basin Coal

World Oil & Natural Gas Resources

More..

**For further information please contact:**  
Vito Nuccio  
Chief Scientist, Energy Resources Team

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
(303) 236-1647  
[vnuccio@usgs.gov](mailto:vnuccio@usgs.gov)

[View Site Map](#)  
[Energy Resources Program](#)  
[Energy Resources, Eastern Region](#)  
[Energy Resources, Western Region](#)

U.S. Department of the Interior  
U.S. Geological Survey  
This page is: <http://energy.cr.usgs.gov/>  
Maintained by: [Central Energy Data Management](#)  
Last modified: 12:07:04 Thu 26 Dec 2002  
[Privacy Statement](#) || [Disclaimer](#) || [FOIA](#) || [Accessibility](#)

**FIRST GOV**  
Your First Click to the U.S. Government

National Oil & Gas Home

Project Overview

Staff

National Products

Products By Basin

The USGS Central Energy Team provides periodic assessments of the oil and natural gas endowment of the United States. New "prioritized" assessment results, as part of the Energy Policy and Conservation Act (EPCA) and the current National Assessment are shown below. Additional EPCA and priority basin assessment results will be posted as they become available.

**Highlights:**

[EPCA 2000 Factsheet \(FS149-02\)](#)

[1998 \(Most Current\) 1002 Area of ANWR estimates](#)

[EPCA Basin Factsheets](#)

[Interactive Maps \(1995\)](#)

[2003 Uinta Piceance Interactive Map](#)

**Recently Featured In:**

[Science Magazine](#)

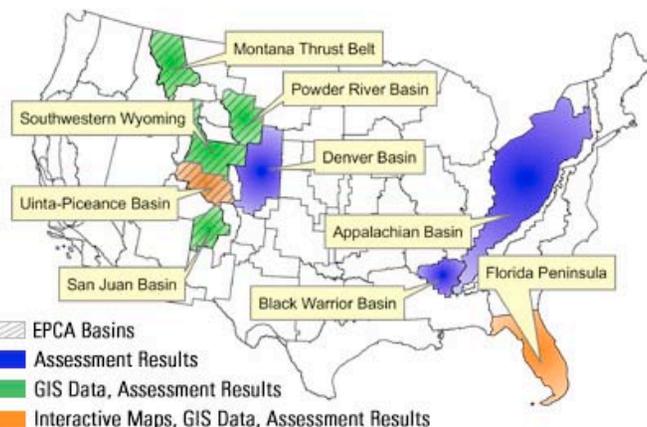
[ArcUser Magazine](#)



1995 Assessment Results

**Updated Assessment and EPCA Information:**

-Choose a Basin-



-1995 Assessment Results-

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
303-236-5796  
schenk@usgs.gov

- Assessment results available by province

- Map interface

- Pull-down menu

- NOGA Online provides nearly 6000 datasets for viewing, downloading and interactive analysis

- Updated assessments and EPCA basins

National Oil & Gas Home

Project Overview

Staff

National Products

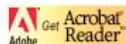
Products By Basin

Most Current Assessment Results



Uinta-Piceance Basin,  
Province 5020  
(Province 20)

The information provided requires Acrobat Reader. [Download Acrobat Reader Here.](#)



- [Uinta-Piceance Basin, Province 5020 Factsheet](#)
- [1995 Assessment Results](#)

[Basin Results](#) [Assessment Units](#) [GIS Download](#) [Interactive Map](#)

[Get Document Descriptions Here](#)  
[View Download and File Format Information Here](#)

General Assessment Results

2003 Geologic Report

[View Report \(pdf\)](#)

2003 Conventional Assessment Input Data

[Download](#)

2003 Continuous Assessment Input Data

[Download](#)

2003 Estimation of Potential Additions to Reserves

[Download](#)

2003 Discovered Volumes

[Download](#)

2003 Allocations

General Land Ownership

[Download](#)

Federal Land Ownership

[Download](#)

State Ownership

[Download](#)

Ecosystems

[Download](#)

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
303-236-5796  
[schenk@usgs.gov](mailto:schenk@usgs.gov)

National Assessment of Oil and Gas Project:

Petroleum Systems and Geologic Assessment of Oil and Gas in the Uinta-Piceance Province, Utah and Colorado

Main Contents

Viewing PDF files require Adobe Acrobat or similar software, that can be downloaded [here](#) if needed.

[ReadMe File](#)

[View PDF file, 109KB](#)

[Executive Summary](#)

[View PDF file, 2.4MB](#)

[Assessment Reports](#)

[View PDF file, 243 KB](#)

[GIS Data/Metadata](#)

[National Oil & Gas Assessment Data Web Site \(NOGAD\)](#)

U.S. Department of the Interior  
U.S. Geological Survey  
This page is: <http://data.usgs.gov/central-energy/oil-gas/assessment/5020/index.html>  
Maintained by: [Central Energy Data Management](#)  
Last modified: 17:42:04 Fri 28 Mar 2003  
[Privacy Statement](#) | [Sitemap](#) | [FOIA](#) | [Accessibility](#)



US Geological Survey Digital Data Series DDS 49B

File Download



Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.

File name: ins5020.tab

File type: TAB File

From: certmapper.cr.usgs.gov

Would you like to open the file or save it to your computer?

Open

Save

Cancel

More Info

Always ask before opening this type of file

**USGS**  
science for a changing world

National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

Links Feedback Contact Search

**National Oil & Gas Home**  
Project Overview  
Staff  
National Products  
Products By Basin

**Most Current Assessment Unit Results**

**Uinta-Piceance Basin, Province 5020**  
(Province 20)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

Get Acrobat Reader

- Uinta-Piceance Basin, Province 5020 Factsheet
- 1995 Assessment Results Also Available

Basin Results Assessment Units GIS Download Interactive Map

Get Document Descriptions Here

**For further information please contact:**  
Chris Schenk  
Project Chief

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-236-5796  
schenk@usgs.gov

**Green River Total Petroleum System:**

Uinta Green River Conventional Oil and Gas Assessment Unit  
\*\*\*Choose a Report\*\*

Deep Uinta Overpressured Continuous Oil Assessment Unit  
\*\*\*Choose a Report\*\*

Piceance Green River Conventional Oil Assessment Unit  
\*\*\*Choose a Report\*\*

**Phosphoria Total Petroleum System:**

Hanging Wall Assessment Unit  
\*\*\*Choose a Report\*\*

Paleozoic/Mesozoic Assessment Unit  
\*\*\*Choose a Report\*\*

**Mancos/Mowry Total Petroleum System:**

Piceance Basin Continuous Gas Assessment Unit  
\*\*\*Choose a Report\*\*

Uinta Basin Continuous Gas Assessment Unit  
\*\*\*Choose a Report\*\*

Uinta-Piceance Transitional and Migrated Gas Assessment Unit  
\*\*\*Choose a Report\*\*

1. Assessment Results
2. Discovery Table
3. Undiscovered Conventional Resources, Detailed Output
4. Continuous Resources, Detailed Output
5. Exploration / Discovery History Graphs, Known Volumes
6. Exploration / Discovery History Graphs, Grown Volumes
7. Data Input Forms for Conventional Accumulations (Seventh Approximation Data)

### Phosphoria Total Petroleum System:

Hanging Wall Assessment Unit

\*\*\*Choose a Report\*\*

\*\*\*Choose a Report\*\*

Assessment Results

Discovery Table

Undiscovered Conventional Resources, Detailed Output

Exploration/Discovery History Graphs, Known Volumes

Exploration/Discovery History Graphs, Grown Volumes

Data Input Forms for Conventional Accumulations (7th Approximation)

8. Data Input Forms for Continuous Accumulations (FORSPAN)

- National Oil & Gas Home
- Project Overview
- Staff
- National Products
- Products By Basin

**Most Current Assessment Results**



**Uinta-Piceance Basin, Province 5020**  
(Province 20)

The information provided requires an Acrobat Reader. Download Acrobat Reader Here.



- Uinta-Piceance Basin, Province 5020 Factsheet
- 1995 Assessment Results

Basin Results    Assessment Units    GIS Download    Interactive Map

**Basinwide Data:**  
[Download GIS Here](#)

**Green River Total Petroleum System:**  
[Download GIS Here](#)

**Phosphoria Total Petroleum System:**  
[Download GIS Here](#)

**Mancos/Mowry Total Petroleum System:**  
[Download GIS Here](#)

**Mesaverde Total Petroleum System:**  
[Download GIS Here](#)

**Ferron Coal/Wasatch Plateau Total Petroleum System:**  
[Download GIS Here](#)

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
303-236-5796  
schenk@usgs.gov

This page can be found at:  
<http://energy.cr.usgs.gov/oilgas/noga/index.htm>  
Maintained by: **Central Energy Data Management**  
Last modified: January 2003  
[USGS Privacy Policy and Disclaimers](#)  
[Accessibility](#)



Updated Assessment Data Download - Microsoft Internet Explorer

Uinta-Piceance Basin Province Boundary	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Surface Ownership in Uinta-Piceance Basin Province	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>



**National Assessment of Oil and Gas Project - Uinta-Piceance Province (020) Assessment Units**

Metadata also available as

**Metadata:**

- Identification Information
- Data Quality Information
- Spatial Data Organization Information
- Spatial Reference Information
- Entry and Attribute Information
- Distribution Information
- Update Information
- Metadata Reference Information

**Identification Information:**

**Citation:**

**Citation Information:**  
Originator: United States Geological Survey (USGS)  
Publication\_Date: 2002  
Title: National Assessment of Oil and Gas Project - Uinta-Piceance Province (020) Assessment Units  
Geospatial\_Data\_Presentation\_Form: vector digital data  
Publication\_Information:  
Publication\_Places: Denver, Colorado  
Publisher: U. S. Geological Survey, Central Energy Resources Team  
Online\_Linkage:  
<http://energy.cr.usgs.gov/oilgas/noga/5020GIS.html?pubdate=2002&server=020&server=2002>

**Larger Work Citation:**

**Citation Information:**  
Originator: Karchowian, M. A.  
Publication\_Date: 2002  
Title: Petroleum Systems and Geologic Assessment of Oil and Gas in the Uinta-Piceance Province, Utah and Colorado

Updated Assessment Data Download - Microsoft Internet Explorer

Mesaverde Total Petroleum System	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Estimated Depth to the Base of the Mesaverde Total Petroleum System	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Mesaverde Total Petroleum System Maturation Contours	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Mesaverde Total Petroleum System Pod(s) of Mature Source Rock	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Piceance Basin Transitional Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Uinta Basin Blackhawk Coalbed Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Uinta Basin Transitional Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Mesaverde Group Coalbed Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Uinta-Piceance Basin Conventional Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Uinta Basin Continuous Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>
Piceance Basin Continuous Gas Assessment Unit	<a href="#">Shape File</a>	<a href="#">Export File</a>	<a href="#">Metadata</a>

# ArcIMS Application

- Interactive Mapping
- A light-weight HTML Viewer
- Limited GIS Functionality (toggle layers, visibility, zoom, identify, etc.)
- Download GIS Data/Metadata
- View Assessment Results
- Share Geographic Data and Services Through a Global Network

National Oil & Gas Home

Project Overview

Staff

National Products

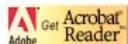
Products By Basin

Most Current Assessment Results



Uinta-Piceance Basin, Province 5020  
(Province 20)

The information provided requires Acrobat Reader. [Download Acrobat Reader.](#)



- [Uinta-Piceance Basin, Province 5020 Factsheet](#)
- [1995 Assessment Results](#)

Basin Results | Assessment Units | GIS Download | **Interactive Map**

[Get Document Descriptions Here](#)  
[View Download and File Format Information Here](#)

General Assessment Results

2003 Geologic Report	<a href="#">View Report (pdf)</a>
2003 Conventional Assessment Input Data	<a href="#">Download</a>
2003 Continuous Assessment Input Data	<a href="#">Download</a>
2003 Estimation of Potential Additions to Reserves	<a href="#">Download</a>
2003 Discovered Volumes	<a href="#">Download</a>

2003 Allocations

For further information please contact:

Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
303-236-5796  
[schenk@usgs.gov](mailto:schenk@usgs.gov)

Zoom In

Data Management Project 303.236.5611 | Last modified: October 2002 | [Policy and Disclaimers](#) | [FirstGov.gov](#) | [Accessibility](#) | [Unlodge Burden](#)

NOGA Online - Microsoft Internet Explorer

Downloads Additional Maps

USGS science for a changing world

Uinta-Piceance Province

ASSESSPROB OIL\_F0

1.00	2.74
------	------

General Tools

- Overview
- Zoom Full
- Set Units
- Make Map
- Zoom In
- Zoom Out
- Pan

Layer Specific Tools

- Identify
- Zoom Active

Layer Legend

- Download Instructions
- Ferron Total Petroleum System
- Mesaverde Total Petroleum System
- Mancos Total Petroleum System
- Phosphoria Total Petroleum System
- Green River Total Petroleum System
  - 50200501 Label
  - 50200501 Cells
  - 50200501
  - 50200502 Label
  - 50200502 Cells
  - 50200502
  - 50200581 Label
  - 50200581 Cells
  - 50200581
  - Green River Pod of Mature

UTAH

Vernal

Duchesne

Price

>1.35

1.1 - 1.35

0.75 - 1.1

0.6 - 0.75

<0.6

31 Miles

50200501 is now the Active Layer

Data Management Project 303.236.3611 | Last modified: October 2002 | Policy and Disclaimers | FirstGov.gov | Accessibility | Undue Burden

USGS science for a changing world

ASSESSMENT FEATURES

- Utah Piceance Province Boundary
- Total Petroleum System
- Oil Assessment Unit
- Gas Assessment Unit
- Oil and Gas Assessment Unit
- Oil Cell
- Gas Cell
- Oil and Gas Cell
- Oil or Petroleum Cell
- Pod of Mature Source Rock
- Turbidites
- Known Tar Sand
- Possible Tar Sand
- Possible Tar Sand

SURFACE OWNERSHIP

- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- U.S. Forest Service
- U.S. Fish and Wildlife Service
- National Park Service
- National Wildlife Refuge
- National Wilderness Area
- National Wildlife Refuge
- National Wildlife Refuge
- Private
- State of Utah
- Unknown
- Water

BASE CARTOGRAPHIC FEATURES

- State Boundary
- County
- Physical Stream
- Lake
- Linear Access Highway
- Proposed Highway
- City and Town
- Public Land Survey System

http://certmapper.cr.usgs.gov/data/noga00/prov...

44%

Thumbnails

Comments

Signatures

Bookmarks

1 of 1

8.08 x 11.03 in

2:46 PM

NOGA Online - Microsoft Internet Explorer

USGS science for a changing world

Uinta-Piceance Province

Downloads

- Downloads
- GIS Data Download
- Results By Province
- Results By Assessment Unit

Additional Maps

Layer Legend

- Download Instructions
- Mesaverde USPTN Layers
- Mesaverde Depth
- Mesaverde TPS Label
- Mesaverde Total Petroleum System
- Mancos Total Petroleum System
- Phosphoria Total Petroleum System
- Green River Total Petroleum System
- Base Cartographic
- Uinta-Piceance Basin Boundary
- Counties
- County Names
- Colorado and Green Rivers
- Lakes
- Major Rivers and Streams
- Roads
- Road Labels
- Lat/Long Tics
- Lat/Long Labels
- Cities and Towns
- City and Town Names
- Public Land Survey System
- State Boundary
- State Labels
- Uinta-Piceance Ownership
- Color Relief
- Background

Help:

- A closed group, click to open.
- An open group, click to close.
- A layer contained within a group.
- A layer not contained within a group.
- A hidden group/layer, click to make visible.

Refresh Map

58 Miles

um System is now the Active Layer

ners | FirstGov.gov | Accessibility | Undue Burden

Documents... Microsoft PowerPoi... National Oil & Natu... NOGA Online - Mi... 2:51 PM

USGS science for a changing world

National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

Most Current Assessment Results

Uinta-Piceance Basin, Province 5020 (Province 20)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

• Uinta-Piceance Basin, Province 5020 Factsheet

• 1995 Assessment Results

Basin Results Assessment Units Download Interactive Map

Get Document Descriptions Here

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-236-5796  
schenk@usgs.gov

This page can be found at:  
<http://energy.usgs.gov/oilgas/assessment/>

Maintained by: Central Energy Data Management  
Last modified: January 2009  
USGS Privacy Policy and Data Access  
Accessibility

FIRSTGOV

USGS science for a changing world

National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

Most Current Assessment Unit

Uinta-Piceance Basin, Province 5020 (Province 20)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

• Uinta-Piceance Basin, Province 5020 Factsheet

• 1995 Assessment Results Also Available

Basin Results Assessment Units Download Interactive Map

Get Document Descriptions Here

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-236-5796  
schenk@usgs.gov

Green River Total Petroleum System:

Uinta Green River Conventional Oil and Gas Assessment Unit

Choose a Report

Deep Uinta Overpressured Continuous Oil Assessment Unit

Choose a Report

Piceance Green River Conventional Oil Assessment Unit

Choose a Report

Phosphoria Total Petroleum System:

Hanging Wall Assessment Unit

# Access Related Information

National Oil and Gas Assessment Online (NOGA Online) - Microsoft Internet Explorer

**USGS** South Florida Basin  
*science for a changing world*

Downloads

Additional Maps

- Additional Maps
- 2003 Uinta-Piceance (Province 20)
- 2001 South Florida Basin (Province 50)
- 1995 South Florida Basin (Province 50)
- 1995 Interactive Maps (Entire List)

General Tools

- Overview
- Zoom Full
- Set Units
- Print
- Zoom In
- Zoom Out
- Pan

Layer Specific Tools

- Identify
- Zoom Active

South Florida Basin Pre-Punta

- Gorda Total Petroleum System (505002)
- Base Cartographic
  - Study Area
  - Power Plants
  - Pipeline
  - Fault
  - Structural Uplift
  - Province 50 Cells
  - Province 50 Label
  - Province 50
  - State Names
  - States
  - County Names
  - Counties
  - Urban Area Names
  - Urban Areas
  - State Capital or County Seat Names
  - State Capitals or County Seats
  - Populated Place Names
  - Populated Places
  - Highways
  - Streams
  - Waterbodies
  - Bedrock Geology
  - Surface Ownership
  - Land Use
  - Shaded Relief

Help:

- A closed group, click to open.
- An open group, click to close.
- A layer contained within a group.
- A layer not contained within a group.
- A hidden group/layer, click to make visible.
- A visible group/layer, click to hide.
- A visible layer, but not at this scale.

Refresh Map

Zoom In

Data Management Project 303.236.3611 | Last modified: October 2002 | Policy and Disclaimers | FirstGov.Gov | Accessibility | Undue Burden

Start | G:\noga0... | Microsoft ... | Adobe Ph... | ArcCatalo... | Resource ... | National ... | P:\nat\sp... | 12:39 PM



Downloads

Additional Maps

General Tools

- Overview
- Zoom Full
- Set Units
- Print
- Zoom In
- Zoom Out
- Pan

Layer Specific Tools

- Identify
- Zoom Active



Layer Legend

- Download Instructions
- South Florida Basin
  - Sunniland/Dollar Bay Total Petroleum System (505001)
  - South Florida Basin Pre-Punta Gorda Total Petroleum System (505002)
    - 50500201 Assessment Unit
    - 505002 Pod(s) of Mature Source Rock
    - 505002 Total Petroleum System
  - Base Cartographic
    - Study Area
    - Power Plants
    - Pipeline
    - Fault
    - Structural Uplift
    - Province 50 Cells
    - Province 50 Label
    - Province 50
    - State Names
    - States
    - County Names
    - Counties
    - Urban Area Names
    - Urban Areas
    - State Capital or County Seat Names
    - State Capitals or County Seats
    - Populated Place Names
    - Populated Places
    - Highways
    - Streams
    - Waterbodies
    - Beach Geology
    - Surface Ownership
    - Land Use
    - Shaded Relief

Layer Info Dialogue For 505002 Pod(s) ...

Download Spatial Data

Shape Export File Metadata

Layer Info Dialogue For Waterbodies - ...

Data used in this application can be obtained from:

National Atlas

Zoom In



National Oil & Gas Home

Project Overview

Staff

National Products

Products By Basin

The USGS Central Energy Team provides periodic assessments of the oil and natural gas endowment of the United States. New "prioritized" assessment results, as part of the Energy Policy and Conservation Act (EPCA) and the current National Assessment are shown below. Additional EPCA and priority basin assessment results will be posted as they become available.

**Recently Featured In:**

Science Magazine  
ArcUser Magazine



1995 Assessment Results

**Highlights:**

EPCA 2000 Factsheet (FS149-02)

1998 (Most Current) 1002 Area of ANWR estimates

EPCA Basin Factsheets

Interactive Maps (1995)

2003 Uinta Piceance Interactive Map

**Updated Assessment and EPCA Information:**

-Choose a Basin-



**1995 Assessment Homepage**

- Northern Alaska (Province 1)
- Central Alaska (Province 2)
- Southern Alaska (Province 3)
- Western Oregon-Washington (Province 4)
- Eastern Oregon-Washington (Province 5)
- Klamath-Sierra Nevada Basin (Province 6)
- Northern Coastal (Province 7)
- Sonoma-Livermore Basin (Province 8)
- Sacramento Basin (Province 9)
- 1995 Assessment Homepage

**For further information please contact:**  
Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-236-5796  
schenk@usgs.gov

National Oil & Gas Home

Project Overview

Staff

National Products

Products By Basin

**1995 National Oil and Gas Assessment**

The USGS Central Energy Team provides periodic assessments of the oil and natural gas endowment of the United States. The most recent, completely digital assessment of the **entire** United States was completed in **1995** and has been archived for your use. For the **latest assessment results**, please visit the NOGA Online Homepage.

**Most Requested**

[1995 Assessment Results](#)

[1995 Economic Results](#)

[1995 Onshore Federal Lands Assessment](#)

[Interactive Maps](#)

[1995 Inferred Reserves](#)

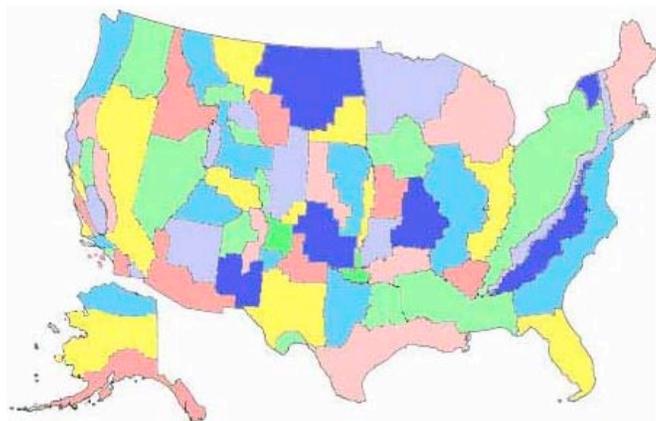
**Choose A Basin or Select From Below:**

-Choose One-

**For further information please contact:**  
Chris Schenk  
Project Chief

U.S. Geological Survey

Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-236-5796  
schenk@usgs.gov



This page can be found at

- [National Oil & Gas Home](#)
- [Project Overview](#)
- [Staff](#)
- [National Products](#)
- [Products By Basin](#)



## Paradox Basin

(Province 21)

The information provided requires Acrobat Reader. [Download Acrobat Reader Here.](#)



Basin Results | **Play Results** | GIS Download | Interactive Map

["Download Instructions & Details"](#)

Tables | PDF Format | Text Format | Tab Delimited

### 1995 Geologic Report

[View \(391 KB\)](#)

### 1995 Play Assessment Results

[View](#)

### \* 1995 Assessment Fractile Estimates

[View Description](#)

[View \(3 KB\)](#)

[Download \(3 KB\)](#)

### \* 1995 Assessment Output Data

[View Description](#)

[View \(2 KB\)](#)

[Download \(2 KB\)](#)

### \* 1995 Assessment Input Data

[View Description](#)

[View \(7 KB\)](#)

[Download \(7 KB\)](#)

\* Data Applies To All Assessed Conventional Plays

This page can be found at:

<http://energy.cr.usgs.gov/oilgas/noga/index.htm>

Maintained by: Central Energy Data Management

Last modified: January 2002

[USGS Privacy Policy and Disclaimers](#)

[Accessibility](#)



## PARADOX BASIN PROVINCE (021)

By A. Curtis Huffman, Jr.

### INTRODUCTION

The Paradox Basin Province is in southeastern and south-central Utah and southwestern Colorado and encompasses much of the area from latitude 37° to 40° N. and from longitude 108° to 114° W. It includes almost all of the Paradox Basin, the Uncompahgre and San Juan uplifts, the San Rafael, Circle Cliffs, and Monument uplifts, the Kaiparowits and Henry Mountains basins, and the Wasatch and Panguagunt Plateaus. Maximum dimensions of the province area are approximately 280 mi long and 200 mi wide. It covers an area of about 33,000 sq mi. The maximum thickness of Phanerozoic sedimentary rocks ranges from 5,000-8,000 ft in the central part of the province to more than 15,000 ft in the Paradox Basin, Kaiparowits basin, and Wasatch Plateau.

Most of the production in the province has been from porous carbonate buildings (mainly algal mounds) around the southwestern shelf margin of the Paradox evaporite basin. The giant Aneth field, with more than 1 BBO in place accounts for as much as two-thirds of the proven resources in the province, and other fields in this primarily stratigraphic play (Porous Carbonate Buildup Play, 2102) account for much of the rest. Most of the other plays have a strong structural component, particularly the Buried Fault Blocks, Older Paleozoic (2101), Fractured Interbed (2103), and Salt Anticline Flank (2105) Plays. The Permian-Pennsylvanian Marginal Clastics Play (2104), Permian-Triassic Unconformity Play (2106), and Cretaceous Sandstone Play (2107), as well as the hypothetical Lower Paleozoic/Protorezoic Play (2103) which is described in Northern Arizona Province (024), are combinations of both structure and stratigraphy. The Fractured Interbed Play (2103) is an unconventional, continuous-type play.

### ACKNOWLEDGMENTS

Scientists affiliated with the American Association of Petroleum Geologists and from various State geological surveys contributed significantly to play concepts and definitions. Their contributions are gratefully acknowledged.

includes only conventional accumulations >= 1MMBO or 6BCFG

play	commodity	F99	F95	F90	F75	F50	F25	F10	F5	F1	mean	standard_deviation
2101	oil	1.4	3.3	5.7	12.8	29.8	59.2	89.8	109.5	151.9	40.1	34.9
2101	gas	8	18	29.5	61.1	125	224.8	326.8	389	511.4	155.2	117.9
2102	oil	2.8	10	18.5	38.6	75.7	142.5	204.7	235.7	290.6	152	74.4
2102	gas	6.7	12.5	19.5	37.6	66.3	109.2	147.2	187.3	236.1	102.4	50.1
2104	oil	0	0	0	1	2.2	3.5	4.7	5.5	7.8	2.3	1.9
2104	gas	0	0	0	12.8	42.7	78	109.7	126.5	158.8	49.2	42.2
2105	oil	1.1	1.7	2.4	5.7	13.3	26.3	41	50.7	70.9	18.1	16.1
2105	gas	9.7	27.1	46.3	90.7	111	400	580.2	699	901.2	351.1	223.5
2106	oil	1.2	2.4	4.1	8.5	16.3	27.8	44.5	57.1	82	20.8	17.4
2106	gas	0	0	0	0	0	0	0	0	0	0	0
2107	oil	0	0	0	0	0	0	0	0	0	0	0
2107	gas	6.1	7	12.6	20.8	38.2	72.8	104	119.6	153.4	58.3	36.7

### Fractile Estimates

includes only conventional accumulations >= 1MMBO or 6BCFG

play	num_oil_accume	oil_mean_size	oil	assoc_gas	assoc_gas_liquids	num_gas_accume	gas_mean_size	non-assoc_gas	non-assoc_gas_liquids
2101	5.5	7.3	40.1	136.5	17.7	5.1	70.7	155.2	4.3
2102	24.2	6.3	152	380	39.9	7.8	13.1	102.4	0.2
2104	1.8	1.3	2.3	7	0.2	5.5	9	49.2	0.5
2105	2.9	6.3	18.1	45.2	1.6	8.9	39.5	351.1	0.2
2106	5.2	4	20.8	2.1	0.1	0	0	0	0
2107	0	0	0	0	0	6.5	9	58.3	0.1

### Output Data

includes only conventional accumulations >= 1MMBO or 6BCFG

region	province_num	province_name	play_num	play_name
3	21	Paradox Basin	2101	Buried Fault Blocks, Older Paleozoic
3	21	Paradox Basin	2102	Porous Carbonate Buildup
3	21	Paradox Basin	2104	Permian-Pennsylvanian Marginal Clastics
3	21	Paradox Basin	2105	Salt Anticline Flank
3	21	Paradox Basin	2106	Permian-Triassic Unconformity
3	21	Paradox Basin	2107	Cretaceous Sandstone

### Input Data

- National Oil & Gas Home
- Project Overview
- Staff
- National Products
- Products By Basin

**Paradox Basin**  
 (Province 21)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

Basin Results | Play Results | GIS Download | Interactive Map

"Download Instructions & Details"

Tables | PDF Format | Text Format

**1995 Geologic Report** [View \(391 KB\)](#)

**1995 Play Assessment Results**

- 1995 Assessment Fracture Estimates** [View \(3 KB\)](#)  
[View Description](#)
- 1995 Assessment Output Data** [View \(2 KB\)](#)  
[View Description](#)
- 1995 Assessment Input Data** [View \(7 KB\)](#)  
[View Description](#)

\* Data Applies To All Assessed Conventional Plays

This page can be found at:  
<http://energy.cr.usgs.gov/oilgas/hoga/index.htm>  
 Maintained by: Central Energy Data Management  
 Last modified: January 2002  
 USGS Privacy Policy and Disclaimers  
 Accessibility

**USGS**  
 science for a changing world  
 National Oil & Gas Assessment  
 Central Energy Team >> Oil & Gas >> National Oil & Gas

**Paradox Basin**  
 (Province 21)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

Basin Results | Play Results | GIS Download | Interactive Map

"Download Instructions & Details"

Play Number	Play Name	PDF Format
2101	Buried Fault Blocks, Older Paleozoic	<a href="#">View (69 KB)</a>
2102	Poros Carbonate Buildup	<a href="#">View (68 KB)</a>
2103	Fractured Interbed	<a href="#">View (11 KB)</a>
2104	Permian-Pennsylvanian Marginal Clastics	<a href="#">View (69 KB)</a>
2105	Salt Anticline Flank	<a href="#">View (68 KB)</a>
2106	Permo-Triassic Unconformity	<a href="#">View (69 KB)</a>
2107	Cretaceous Sandstone	<a href="#">View (68 KB)</a>

**For further information please contact:**  
 Chris Schenk  
 Project Chief  
 U.S. Geological Survey  
 Box 25046, MS 939,  
 Denver Federal Center, Denver, CO 80225  
 303-236-5796  
[schenk@usgs.gov](mailto:schenk@usgs.gov)

This page can be found at:  
<http://energy.cr.usgs.gov/oilgas/hoga/index.htm>  
 Maintained by: Central Energy Data Management  
 Last modified: January 2002  
 USGS Privacy Policy and Disclaimers  
 Accessibility

**FIRSTGOV**  
 Your First Click to the U.S. Government

<b>Play:</b> 2101	Buried Fault Blocks, Older Paleozoic	<b>Status:</b> confirmed
<b>Province:</b> 21	Paradox Basin	
<b>Geologist:</b> Huffman, A.C.		

Play Attributes:	Probability of Occurrence	
Charge	1.00	
Reservoir rock	1.00	
Traps	1.00	
<b>Play Probability</b>	<b>1.00</b>	

Size of Undiscovered Accumulations (>1 MMBOE) (Conditional):			
	Oil Accumulations	Gas Accumulations	
Median	4 MMBO	20 BCFG	
F5 of Largest Accumulation	40 MMBO	100 BCFG	
TSP Shape Factor	5	4	
Mean (calculated)	7.3 MMBO	30.7 BCFG	

Number of Undiscovered Accumulations (>1 MMBOE) (Conditional):			
	Oil Accumulations	Gas Accumulations	
Minimum	1	1	
Median	4	4	
Maximum	14	12	
Mean (calculated)	5.5	5.1	

<b>Play:</b> 2101	Buried Fault Blocks, Older Paleozoic	<b>Status:</b> confirmed
<b>Province:</b> 21	Paradox Basin	
<b>Geologist:</b> Huffman, A.C.		

<b>Ratio of Associated-Dissolved Gas to Oil:</b>	3,400 CFB/bbl
<b>Ratio of NGL to Non-Associated Gas:</b>	28 bbl/MMCF
<b>Ratio of NGL to Associated-Dissolved Gas:</b>	130 bbl/MMCF

<b>API Gravity (degrees):</b>	<u>minimum</u>	<u>mean</u>	<u>maximum</u>
	43.0	48.0	54.0

<b>Depth of Oil Accumulations (ft):</b>	<u>minimum</u>	<u>median</u>	<u>maximum</u>
	6,000	9,000	15,000

<b>Depth of N-A Gas Accumulations (ft):</b>	<u>minimum</u>	<u>median</u>	<u>maximum</u>
	6,000	9,000	15,000

<b>Play:</b> 2101	Buried Fault Blocks, Older Paleozoic	<b>Status:</b> confirmed
<b>Province:</b> 21	Paradox Basin	
<b>Geologist:</b> Huffman, A.C.		

Estimated Resources:									
Oil (MMBO)									
F99	F95	F75	F50	F25	F5	F1	mean	s.d.	
1.40	3.30	12.80	29.80	59.20	109.50	151.90	40.10	34.90	

NGL (MMBNGL)									
F99	F95	F75	F50	F25	F5	F1	mean	s.d.	
0.84	1.96	7.37	16.67	32.46	59.29	81.46	22.00	18.73	

Associated-Dissolved Gas (BCFG)									
F99	F95	F75	F50	F25	F5	F1	mean	s.d.	
4.76	11.22	43.52	101.32	201.28	372.30	516.46	136.50	118.66	

Non-Associated Gas (BCFG)									
F99	F95	F75	F50	F25	F5	F1	mean	s.d.	
8.00	18.00	61.10	125.00	224.80	389.00	511.40	155.20	117.90	

**USGS**  
science for a changing world

National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

Links Feedback Contact Search

**National Oil & Gas Home**  
Project Overview  
Staff  
National Products  
Products By Basin

**Paradox Basin**  
(Province 21)

The information provided requires Acrobat Reader. Download Acrobat Reader Here.

Basin Results Play Results GIS Download Interactive Map

"Download instructions & Details"

Dataset	Shapefile	Arc Export	Metadata
1/4-Mile Cells within the Paradox Basin Province	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Province Boundary -- Paradox Basin	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Buried Fault Blocks, Older Paleozoic Play 1/4-Mile Cells	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Buried Fault Blocks, Older Paleozoic Play	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Porous Carbonate Buildup Play 1/4-Mile Cells	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Porous Carbonate Buildup Play	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Fractured Interbed Play 1/4-Mile Cells	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Fractured Interbed Play	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Permian-Pennsylvanian Marginal Clastics Play 1/4-Mile Cells	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Permian-Pennsylvanian Marginal Clastics Play	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>
Salt Anticline Flank Play 1/4-Mile Cells	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">View</a>

For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal Center, Denver, CO 80225  
303-236-5796  
schenk@usgs.gov

CERT Navigation Banner Oil & Gas Coal Other Topics Products

File Download

Getting File Information:  
pr2100g.zip from certmapper.cr.usgs.gov

Estimated time left:  
Download to:  
Transfer rate:

Close this dialog box when download completes

Open Open Folder Cancel

File Download

You are downloading the file:  
pr2101cg.e00 from certmapper.cr.usgs.gov

Would you like to open the file or save it to your computer?

Open Save Cancel More Info

Always ask before opening this type of file

**USGS**  
science for a changing world

Additional USGS Geoscience data can be found by [geographic location](#) or by [publication series](#).

### 1995 National Oil and Gas Assessment Conventional Plays within the Paradox Basin Province

Metadata also available as - [\[Questions & Answers\]](#) - [\[Parseable text\]](#) - [\[XML\]](#) - [\[DIF\]](#)

**Metadata:**

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entry and Attribute Information](#)
- [Distributions Information](#)
- [Metadata Reference Information](#)

**Identification Information:**

*Citation:*

*Citation Information:*  
Originator: United States Geological Survey (USGS)  
Publication Date: 1996  
Title:  
1995 National Oil and Gas Assessment Conventional Plays within the Paradox Basin Province  
Geospatial Data Presentation Form: vector digital data  
Publication Information:  
Publication Place: Denver, Colorado  
Publisher: USGS Central Energy Team  
Online Linkage: <http://energy.cr.usgs.gov/olga/olga/>

*Description:*

**Abstract:**  
The fundamental geologic unit used in the 1995 National Oil and Gas Assessment was the play, which is defined as a set of known or postulated oil and/or gas accumulations sharing similar geologic, geographic, and temporal properties, such as source rock, migration pathways, timing, trapping mechanism, and hydrocarbon type. The geographic limit of each play was defined and mapped by the geologist responsible for each province. The play boundaries were defined geologically as the limits of the geologic elements that define the play, such as the limits of the reservoir rock, geologic structures, source rock, and seal lithologies. The only exceptions to this are plays that border the Federal-State water boundary. In these cases, the Federal-State water boundary forms part of the play boundary. The play boundaries were defined in the period 1993-1994.

**Purpose:**  
The purpose of these files is to illustrate the geologic boundary of the play as defined for the 1995 U.S. National Assessment. The play was used as the fundamental assessment unit.

**Supplemental Information:**  
Conventional oil and gas plays within province 21 (Paradox Basin) are listed here by play number and name:

Number	Name
2101	Buried Fault Blocks, Older Paleozoic
2102	Porous Carbonate Buildup
2104	Permian-Pennsylvanian Marginal Clastics
2105	Salt Anticline Flank

CERT Navigation Banner Oil & Gas Coal Other Topics Products

National Oil & Natural Gas Assessment - Microsoft Internet Explorer

Address: http://energy.cr.usgs.gov/oilgas/noga/index.htm

Salt Anticline Flank Play	Download	Download	View
Permo-Triassic Unconformity Play 1/4-Mile Cells	Download	Download	View
Permo-Triassic Unconformity Play	Download	Download	View
Cretaceous Sandstone Play 1/4-Mile Cells	Download	Download	View
Cretaceous Sandstone Play	Download	Download	View
<b>Surface Ownership of Arizona portion of the Paradox Basin Province</b>	Download	Download	View
Arizona ALRIS			

Base Cartographic Layers

Counties	National Atlas
Hydrology	National Atlas
Transportation	National Atlas
Cities	National Atlas

This page can be found at:  
<http://energy.cr.usgs.gov/oilgas/noga/index.htm>  
 Maintained by: Central Energy Data Management  
 Last modified: January 2002  
 USGS Privacy Policy and Disclaimers  
 Accessibility

FIRSTGOV  
Your First Choice for the U.S. Government

CERT Navigation Banner   Oil & Gas   Coal   Other Topics   Products

County Boundaries of the United States - Microsoft Internet Explorer

Address: http://www.nationalatlas.gov/countiesm.html

nationalatlas.gov™  
where we are

USGS  
science for a changing world

### County Boundaries: Map Layer Description

File

This map layer portrays the county boundaries of the United States. County names and Federal Information Processing Standard (FIPS) codes are two significant pieces of information associated with every county polygon in this map layer. The County Boundaries map layer was compiled by the [U.S. Geological Survey](#) from a variety of sources.

[Download this map layer in Shapefile format.](#)

[Download this map layer in SDTS format.](#)

### Metadata

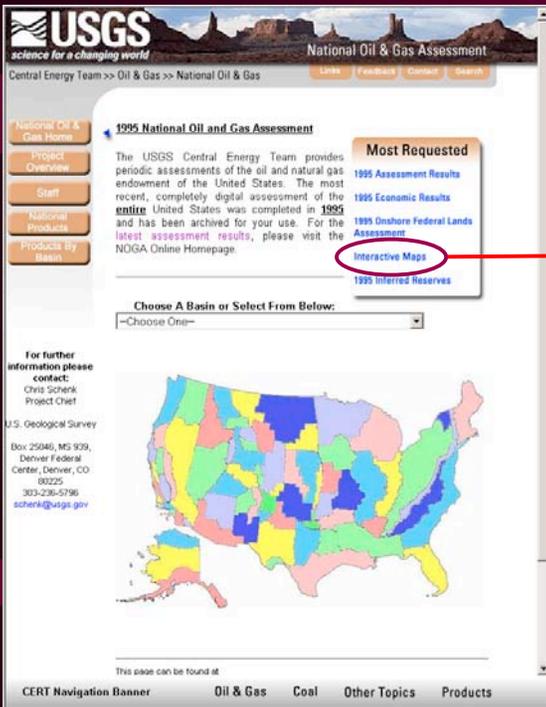
What follows is very detailed technical information about this map layer. This is often called metadata. Metadata (or "data about data") describe the content, quality, condition, and other characteristics of data. Metadata are used to organize and maintain investments in data, to provide information to data catalogs and clearinghouses, and to aid data transfers. The [Federal Geographic Data Committee](#) (FGDC) publishes the [Content Standard for Digital Geospatial Metadata](#). Many organizations within and outside of the federal government have adopted the FGDC metadata standard and are using automated indexing and serving mechanisms to provide access to their holdings through the Internet. Visit the [FGDC Clearinghouse](#) to learn more about how metadata is used in clearinghouses and to search for other data sets.

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)



Surface Ownership of Arizona portion of the Paradox Basin Province





**USGS**  
science for a changing world  
National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

**1995 National Oil and Gas Assessment**

The USGS Central Energy Team provides periodic assessments of the oil and natural gas endowment of the United States. The most recent, completely digital assessment of the entire United States was completed in 1995 and has been archived for your use. For the latest assessment results, please visit the NOGA Online Homepage.

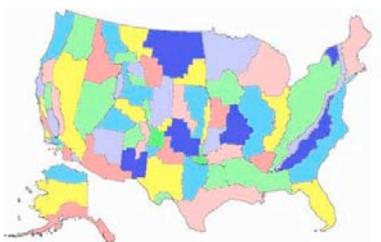
**Most Requested**

- 1995 Assessment Results
- 1995 Economic Results
- 1995 Onshore Federal Lands Assessment
- Interactive Maps**
- 1995 Inferred Reserves

Choose A Basin or Select From Below:  
-Choose One-

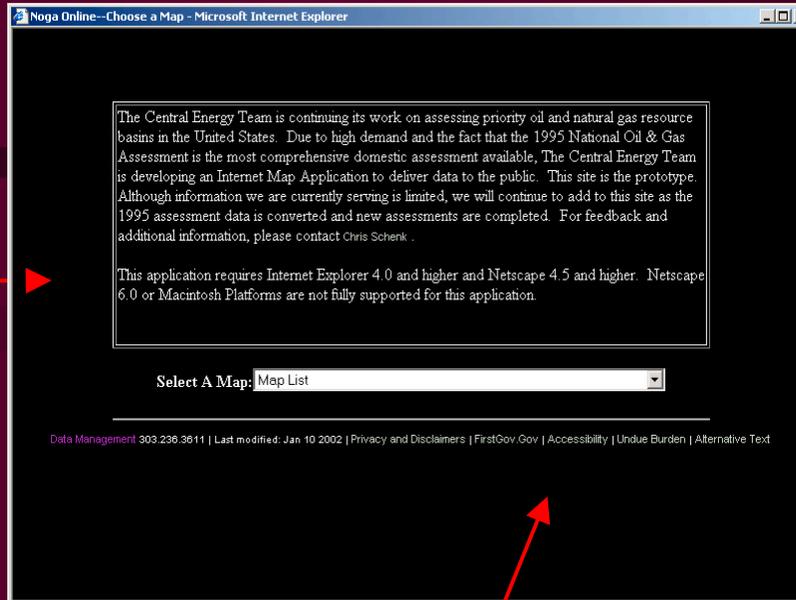
For further information please contact:  
Chris Schenk  
Project Chief

U.S. Geological Survey  
Box 25046, MS 939,  
Denver Federal  
Center, Denver, CO  
80225  
303-226-5796  
schenk@usgs.gov



This page can be found at

CERT Navigation Banner   Oil & Gas   Coal   Other Topics   Products



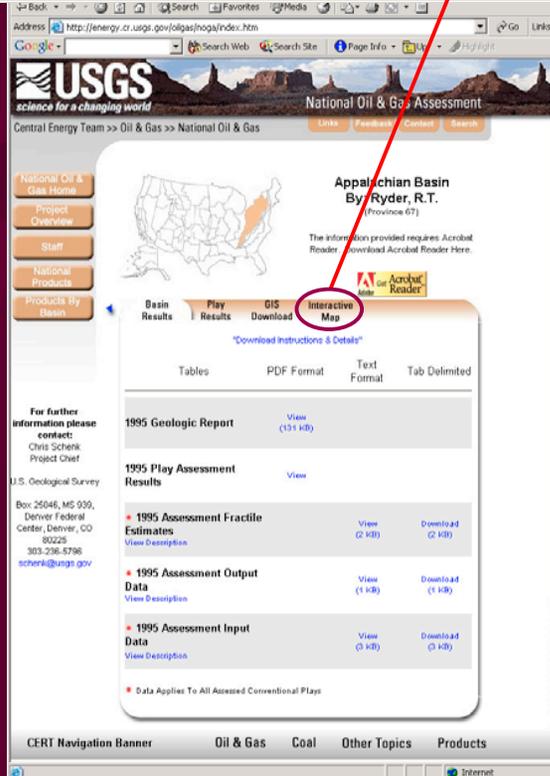
Noga Online--Choose a Map - Microsoft Internet Explorer

The Central Energy Team is continuing its work on assessing priority oil and natural gas resource basins in the United States. Due to high demand and the fact that the 1995 National Oil & Gas Assessment is the most comprehensive domestic assessment available, The Central Energy Team is developing an Internet Map Application to deliver data to the public. This site is the prototype. Although information we are currently serving is limited, we will continue to add to this site as the 1995 assessment data is converted and new assessments are completed. For feedback and additional information, please contact Chris Schenk.

This application requires Internet Explorer 4.0 and higher and Netscape 4.5 and higher. Netscape 6.0 or Macintosh Platforms are not fully supported for this application.

Select A Map: Map List

Data Management 303.236.3611 | Last modified: Jan. 10 2002 | Privacy and Disclaimers | FirstGov.Gov | Accessibility | Undue Burden | Alternative Text



Address: http://energy.cr.usgs.gov/noga/index.htm

**USGS**  
science for a changing world  
National Oil & Gas Assessment

Central Energy Team >> Oil & Gas >> National Oil & Gas

**Appalachian Basin**  
By Ryder, R.T.  
(Province 67)

The information provided requires Acrobat Reader. [Download Acrobat Reader Here.](#)

**Interactive Map**

Basin Results   Play Results   GIS Download

Download Instructions & Details

	Tables	PDF Format	Text Format	Tab Delimited
1995 Geologic Report		<a href="#">View (131 kB)</a>		
1995 Play Assessment Results		<a href="#">View</a>		
1995 Assessment Fractile Estimates	<a href="#">View Description</a>	<a href="#">View (2 kB)</a>	<a href="#">Download (2 kB)</a>	
1995 Assessment Output Data	<a href="#">View Description</a>	<a href="#">View (1 kB)</a>	<a href="#">Download (1 kB)</a>	
1995 Assessment Input Data	<a href="#">View Description</a>	<a href="#">View (3 kB)</a>	<a href="#">Download (3 kB)</a>	

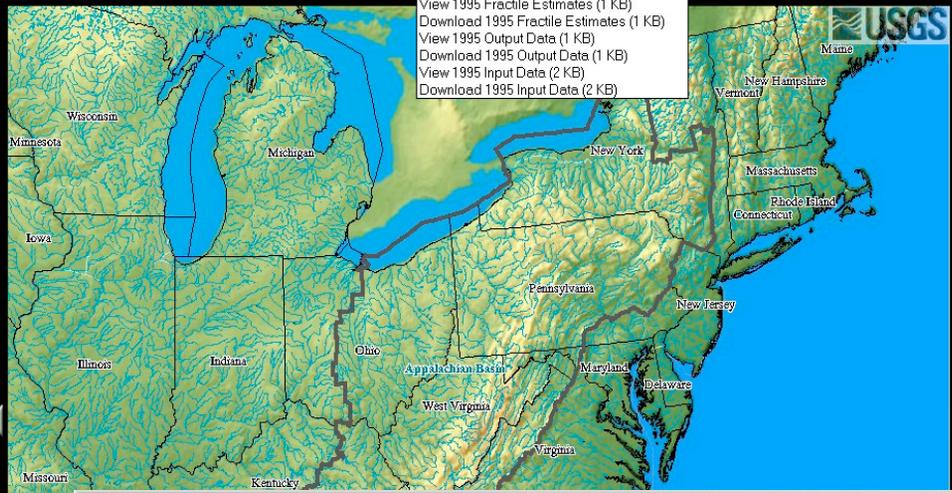
\* Data Applies To All Assessed Conventional Plays

CERT Navigation Banner   Oil & Gas   Coal   Other Topics   Products



- Get Assessment Results
- Get Assessment Results
- View Geologic Report (79 KB)
- View 1995 Fracture Estimates (1 KB)
- Download 1995 Fracture Estimates (1 KB)
- View 1995 Output Data (1 KB)
- Download 1995 Output Data (1 KB)
- View 1995 Input Data (2 KB)
- Download 1995 Input Data (2 KB)

- General Tools
- Overview
  - Zoom Full
  - Set Units
  - Print
- Active Tools
- Zoom In
  - Zoom Out
  - Pan
- Layer Specific Tools
- Identify
  - Zoom Active



- Visible Active
- Play 6701
  - Play 6701 Cells
  - Play 6702
  - Play 6702 Cells
  - Play 6703
  - Play 6703 Cells
  - Play 6704
  - Play 6704 Cells
  - Play 6706
  - Play 6706 Cells
  - Play 6708
  - Play 6708 Cells
  - Play 6714
  - Play 6714 Cells
  - Play 6715
  - Play 6715 Cells
  - Play 6716
  - Play 6716 Cells
  - Play 6717
  - Play 6717 Cells
  - Play 6718
  - Play 6718 Cells
  - Play 6719
  - Play 6719 Cells
  - Play 6720
  - Play 6720 Cells
  - Play 6721
  - Play 6721 Cells
  - Play 6725
  - Play 6725 Cells
  - Play 6727
  - Play 6727 Cells
  - Play 6728
  - Play 6728 Cells
  - Play 6729
  - Play 6729 Cells
  - Play 6729 Cells
- Refresh Map

File Edit View Favorites Tools Help

Google Search Web Search Site Page Info Up

39%

Bookmarks

Thumbnails

Comments

Signatures

1 of 86 8.5 x 11 in

**APPALACHIAN BASIN PROVINCE (067)**

by R. T. Hapler

**INTRODUCTION**

The Appalachian Basin is a broad basin covering Paleozoic sedimentary rocks of Early Cambrian through Early Permian age. From north to south, the Appalachian Basin Province covers New York, Pennsylvania, northern Ohio, West Virginia, western Maryland, eastern Kentucky, western Virginia, eastern Tennessee, northeastern Georgia, and northeastern Alabama.

In a previous description, starting in northern New York, the Appalachian Basin is bounded by the following geologic subdivisions: Upper Devonian, West Virginia through West Virginia, Louisiana through West Virginia, Black Shale Basin (MS), and Cambrian and Devonian. The northern and the Appalachian Basin extends offshore into Lake St. Clair and continues as far as the United States-Canada border. The southwestern flank of the basin is a broad basin that lies gently southward into the Cambrian rocks. It is bounded by the Middle Cambrian and the Devonian and the West Virginia Basin (Devonian and Silurian) and the West Virginia Basin (Devonian and Silurian) and the West Virginia Basin (Devonian and Silurian).

The Appalachian Basin province covers an area of about 80,000 sq mi. The province is 1,000 mi long from northeast to southwest and is between 25 to 350 mi wide from northeast to southwest.

The Appalachian Basin has had a long history of oil and gas production, and much of it has not been systematically recorded. There is no commercial production for both oil and gas production history, and the field has consisted of about 1,000 fields, one used in this summary. It is now complete from published production records from the Bureau of Geology, West Virginia, New York, and Tennessee and has been kept from the early 1930's, proprietary oil and gas, large information Administration (BEG) (U.S. Department of Energy) and the U.S. Geological Survey (USGS) published reports and the oil and gas and published industry reports and records.

Discovery of oil in 1837 in the Drake well, Young County, northern Pennsylvania, marked the beginning of the oil and gas industry in the Appalachian Basin. Oil in the Drake well was produced from an Upper Devonian shaly sandstone at a depth of about 35 ft. The discovery well opened up the need for oil and gas fields producing from Upper Devonian, Mississippian and Permian shaly sandstone reservoirs that extend from northern New York, across western Pennsylvania, east of West Virginia, and across Ohio, to eastern Kentucky. From 1837 through 1980, approximately 2.8 billion and 51 billion

NOGA Online - Microsoft Internet Explorer

NOGA Basin	NOGA Basin								
01	Appalachian Basin	02	Appalachian Basin	03	Appalachian Basin	04	Appalachian Basin	05	Appalachian Basin
06	Appalachian Basin	07	Appalachian Basin	08	Appalachian Basin	09	Appalachian Basin	10	Appalachian Basin
11	Appalachian Basin	12	Appalachian Basin	13	Appalachian Basin	14	Appalachian Basin	15	Appalachian Basin
16	Appalachian Basin	17	Appalachian Basin	18	Appalachian Basin	19	Appalachian Basin	20	Appalachian Basin
21	Appalachian Basin	22	Appalachian Basin	23	Appalachian Basin	24	Appalachian Basin	25	Appalachian Basin
26	Appalachian Basin	27	Appalachian Basin	28	Appalachian Basin	29	Appalachian Basin	30	Appalachian Basin
31	Appalachian Basin	32	Appalachian Basin	33	Appalachian Basin	34	Appalachian Basin	35	Appalachian Basin
36	Appalachian Basin	37	Appalachian Basin	38	Appalachian Basin	39	Appalachian Basin	40	Appalachian Basin
41	Appalachian Basin	42	Appalachian Basin	43	Appalachian Basin	44	Appalachian Basin	45	Appalachian Basin
46	Appalachian Basin	47	Appalachian Basin	48	Appalachian Basin	49	Appalachian Basin	50	Appalachian Basin
51	Appalachian Basin	52	Appalachian Basin	53	Appalachian Basin	54	Appalachian Basin	55	Appalachian Basin
56	Appalachian Basin	57	Appalachian Basin	58	Appalachian Basin	59	Appalachian Basin	60	Appalachian Basin
61	Appalachian Basin	62	Appalachian Basin	63	Appalachian Basin	64	Appalachian Basin	65	Appalachian Basin
66	Appalachian Basin	67	Appalachian Basin	68	Appalachian Basin	69	Appalachian Basin	70	Appalachian Basin
71	Appalachian Basin	72	Appalachian Basin	73	Appalachian Basin	74	Appalachian Basin	75	Appalachian Basin
76	Appalachian Basin	77	Appalachian Basin	78	Appalachian Basin	79	Appalachian Basin	80	Appalachian Basin
81	Appalachian Basin	82	Appalachian Basin	83	Appalachian Basin	84	Appalachian Basin	85	Appalachian Basin
86	Appalachian Basin	87	Appalachian Basin	88	Appalachian Basin	89	Appalachian Basin	90	Appalachian Basin
91	Appalachian Basin	92	Appalachian Basin	93	Appalachian Basin	94	Appalachian Basin	95	Appalachian Basin
96	Appalachian Basin	97	Appalachian Basin	98	Appalachian Basin	99	Appalachian Basin	100	Appalachian Basin

NOGA Online - Microsoft Internet Explorer

NOGA Basin	NOGA Basin								
01	Appalachian Basin	02	Appalachian Basin	03	Appalachian Basin	04	Appalachian Basin	05	Appalachian Basin
06	Appalachian Basin	07	Appalachian Basin	08	Appalachian Basin	09	Appalachian Basin	10	Appalachian Basin
11	Appalachian Basin	12	Appalachian Basin	13	Appalachian Basin	14	Appalachian Basin	15	Appalachian Basin
16	Appalachian Basin	17	Appalachian Basin	18	Appalachian Basin	19	Appalachian Basin	20	Appalachian Basin
21	Appalachian Basin	22	Appalachian Basin	23	Appalachian Basin	24	Appalachian Basin	25	Appalachian Basin
26	Appalachian Basin	27	Appalachian Basin	28	Appalachian Basin	29	Appalachian Basin	30	Appalachian Basin
31	Appalachian Basin	32	Appalachian Basin	33	Appalachian Basin	34	Appalachian Basin	35	Appalachian Basin
36	Appalachian Basin	37	Appalachian Basin	38	Appalachian Basin	39	Appalachian Basin	40	Appalachian Basin
41	Appalachian Basin	42	Appalachian Basin	43	Appalachian Basin	44	Appalachian Basin	45	Appalachian Basin
46	Appalachian Basin	47	Appalachian Basin	48	Appalachian Basin	49	Appalachian Basin	50	Appalachian Basin
51	Appalachian Basin	52	Appalachian Basin	53	Appalachian Basin	54	Appalachian Basin	55	Appalachian Basin
56	Appalachian Basin	57	Appalachian Basin	58	Appalachian Basin	59	Appalachian Basin	60	Appalachian Basin
61	Appalachian Basin	62	Appalachian Basin	63	Appalachian Basin	64	Appalachian Basin	65	Appalachian Basin
66	Appalachian Basin	67	Appalachian Basin	68	Appalachian Basin	69	Appalachian Basin	70	Appalachian Basin
71	Appalachian Basin	72	Appalachian Basin	73	Appalachian Basin	74	Appalachian Basin	75	Appalachian Basin
76	Appalachian Basin	77	Appalachian Basin	78	Appalachian Basin	79	Appalachian Basin	80	Appalachian Basin
81	Appalachian Basin	82	Appalachian Basin	83	Appalachian Basin	84	Appalachian Basin	85	Appalachian Basin
86	Appalachian Basin	87	Appalachian Basin	88	Appalachian Basin	89	Appalachian Basin	90	Appalachian Basin
91	Appalachian Basin	92	Appalachian Basin	93	Appalachian Basin	94	Appalachian Basin	95	Appalachian Basin
96	Appalachian Basin	97	Appalachian Basin	98	Appalachian Basin	99	Appalachian Basin	100	Appalachian Basin

NOGA Online - Microsoft Internet Explorer

NOGA Basin	NOGA Basin								
01	Appalachian Basin	02	Appalachian Basin	03	Appalachian Basin	04	Appalachian Basin	05	Appalachian Basin
06	Appalachian Basin	07	Appalachian Basin	08	Appalachian Basin	09	Appalachian Basin	10	Appalachian Basin
11	Appalachian Basin	12	Appalachian Basin	13	Appalachian Basin	14	Appalachian Basin	15	Appalachian Basin
16	Appalachian Basin	17	Appalachian Basin	18	Appalachian Basin	19	Appalachian Basin	20	Appalachian Basin
21	Appalachian Basin	22	Appalachian Basin	23	Appalachian Basin	24	Appalachian Basin	25	Appalachian Basin
26	Appalachian Basin	27	Appalachian Basin	28	Appalachian Basin	29	Appalachian Basin	30	Appalachian Basin
31	Appalachian Basin	32	Appalachian Basin	33	Appalachian Basin	34	Appalachian Basin	35	Appalachian Basin
36	Appalachian Basin	37	Appalachian Basin	38	Appalachian Basin	39	Appalachian Basin	40	Appalachian Basin
41	Appalachian Basin	42	Appalachian Basin	43	Appalachian Basin	44	Appalachian Basin	45	Appalachian Basin
46	Appalachian Basin	47	Appalachian Basin	48	Appalachian Basin	49	Appalachian Basin	50	Appalachian Basin
51	Appalachian Basin	52	Appalachian Basin	53	Appalachian Basin	54	Appalachian Basin	55	Appalachian Basin
56	Appalachian Basin	57	Appalachian Basin	58	Appalachian Basin	59	Appalachian Basin	60	Appalachian Basin
61	Appalachian Basin	62	Appalachian Basin	63	Appalachian Basin	64	Appalachian Basin	65	Appalachian Basin
66	Appalachian Basin	67	Appalachian Basin	68	Appalachian Basin	69	Appalachian Basin	70	Appalachian Basin
71	Appalachian Basin	72	Appalachian Basin	73	Appalachian Basin	74	Appalachian Basin	75	Appalachian Basin
76	Appalachian Basin	77	Appalachian Basin	78	Appalachian Basin	79	Appalachian Basin	80	Appalachian Basin
81	Appalachian Basin	82	Appalachian Basin	83	Appalachian Basin	84	Appalachian Basin	85	Appalachian Basin
86	Appalachian Basin	87	Appalachian Basin	88	Appalachian Basin	89	Appalachian Basin	90	Appalachian Basin
91	Appalachian Basin	92	Appalachian Basin	93	Appalachian Basin	94	Appalachian Basin	95	Appalachian Basin
96	Appalachian Basin	97	Appalachian Basin	98	Appalachian Basin	99	Appalachian Basin	100	Appalachian Basin

General Tools

- Overview
- Zoom Full
- Set Units
- Print

Active Tools

- Zoom In
- Zoom Out
- Pan

Layer Specific Tools

- Identify
- Zoom Active



- Additional Maps
- Northern Alaska (Province 1)
- Central Alaska (Province 2)
- Southern Alaska (Province 3)
- Western Oregon - Washington (Province 4)
- Eastern Oregon - Washington (Province 5)
- Northern Coastal (Province 7)
- Sonoma - Livermore Basin (Province 8)
- Sacramento Basin (Province 9)
- San Joaquin Basin (Province 10)
- Central Coastal (Province 11)

- States
- State Names
- Counties
- County Names
- State Capitals or County Seats
- State Capital or County Seat Names
- Urban Areas
- Urban Area Names
- Populated Places
- Populated Place Names
- Highways
- Rivers and Shorelines
- Waterbodies
- Surface Ownership
- Offshore State Waters
- US Shaded Relief

Help:

- A closed group, click to open.
- An open group, click to close.
- A layer contained within a group.
- A layer not contained within a group.
- A hidden group/layer, click to make visible.
- A visible group/layer, click to hide.
- A visible layer, but not at this scale.
- A partially visible group, click to make visible.
- An inactive layer, click to make active.
- The active layer.

By Central Energy Team, Data Management Project

0 245mi

Refresh Map

Zoom In

Data Management Project 303.236.3811 | Last modified: October 2002 | Policy and Disclaimers | FirstGov.gov | Accessibility | Undue Burden

NOGA Online - Microsoft Internet Explorer

Appalachian Basin

Get Assessment Results

Additional Maps

Layer Info Dialogue For Play 6701 - Mic...

Play Assessment Results  
View (65 KB)

Download Spatial Data  
Shape 45.8KB    Export File 45.8KB    Metadata

Layer Info Dialogue For Waterbodies - ...

Data used in this application can be obtained from:  
National Atlas

Layer Legend

Download Instructions

- Plays
  - Play 6701
  - Play 6702
  - Play 6703
  - Play 6704
  - Play 6706
  - Play 6708
  - Play 6714
  - Play 6715
  - Play 6716
  - Play 6717
  - Play 6718
  - Play 6719
  - Play 6720
  - Play 6721
  - Play 6725
  - Play 6727
  - Play 6728
  - Play 6729
  - Play 6730
  - Play 6731
  - Play 6732
  - Play 6733
  - Play 6734
  - Play 6735
  - Play 6736
  - Play 6737
  - Play 6740
  - Play 6742
  - Play 6743
  - Play 6750
  - Play 6751
  - Play 6752
  - Play 6753
- Cells
  - Base Cartographic
    - Province 67
    - Province Label
    - States
    - State Names
    - Countries
    - County Names
    - State Capitals or County Seats

Refresh Map

By Central Energy Team, Data Management Project

0 245mi

Zoom In

Data Management Project 303.236.3811 | Last modified: October 2002 | Policy and Disclaimers | FirstGov.gov | Accessibility | Undue Burden

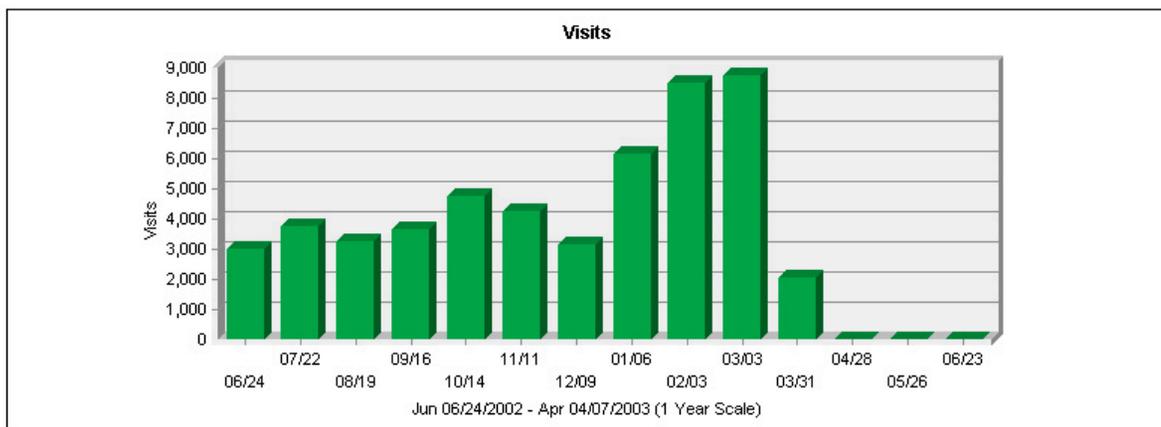
Start | Adobe Phot... | Resource M... | Default Rep... | blm2003.ppt | esri2002b.ppt | National Oil ... | NOGA Onlin... | Layer Info ...

2:58 PM

# Usage Statistics June thru March

## Top Geographic Regions: North America, Western Europe

The Visits graph displays the overall number of visits to your Web site. The General Statistics table provides an overview of the activity for your Web site during the specified time frame.



General Statistics		
<b>Hits</b>	Entire Site (Successful)	1,516,077
	Average per Day	5,264
	Home Page	N/A
<b>Page Views</b>	Page Views	565,387
	Average per Day	1,963
	Average per Unique Visitor	27
	Document Views	156,775
<b>Visits</b>	Visits	51,475
	Average per Day	178
	Average Visit Length	00:12:53
	Median Visit Length	00:00:15
	International Visits	17.24%
	Visits of Unknown Origin	0.60%
	Visits from United States	82.15%
	Visits Referred by Search Engines	0
	Visits from Spiders	0
	<b>Visitors</b>	Unique Visitors
Visitors Who Visited Once		16,581
Visitors Who Visited More Than Once		4,028

### Basic stats since June

- 1.5 Million hits
- 51,000 visits
- 21,000 unique visitors
- 63% of the visits and hits are for map services
- Most downloaded files (43%) of total are the geologic reports associated with the assessments

### Top Visitors

- US Navy (3700 Visits)
- Georgia Tech University (1800 Visits)
- Anadarko.Com (300 Visits)
- ESRI (300 Visits)
- Denver BLM (220 Visits)
- Cal State Hayward Library (220 Visits)
- Conoco (170 Visits)

# Mapservice Description

- Not Just Internet Mapping
- “Map On Demand”
- Distributed
- Standards Based (OGC)
- Vendor Neutral



# Mapservices

## How They Influence Project Workflow

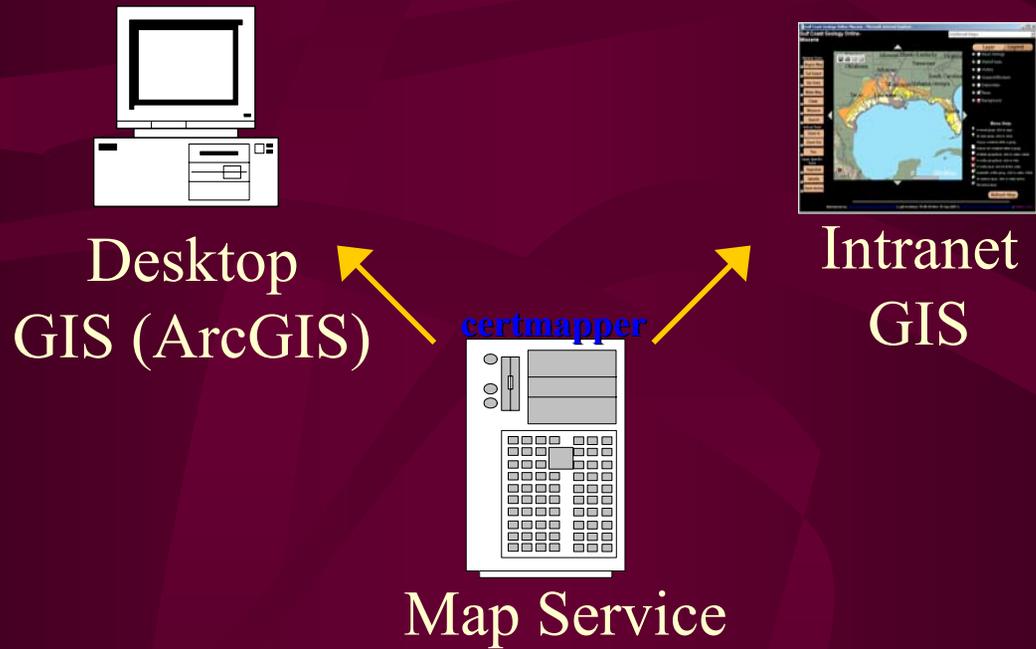
- “GIS Enabled” Projects
  - Promotes Use of GIS
    - Used By Novices and Experts
    - Variety of Applications
  - Separates GIS Use from GIS Management
- Streamline Product Development
  - Research Tool Becomes GIS Product

# Mapservice Product Benefits

- Control Presentation, Access, Interpretation
- “Web-ready” GIS Products
  - ArcGIS MXD = MapService
- Scalable—Determined By Project
  - 10 Minutes “Out of The Box”  
or
  - Custom Functionality
- Interoperable (Application and Platform)

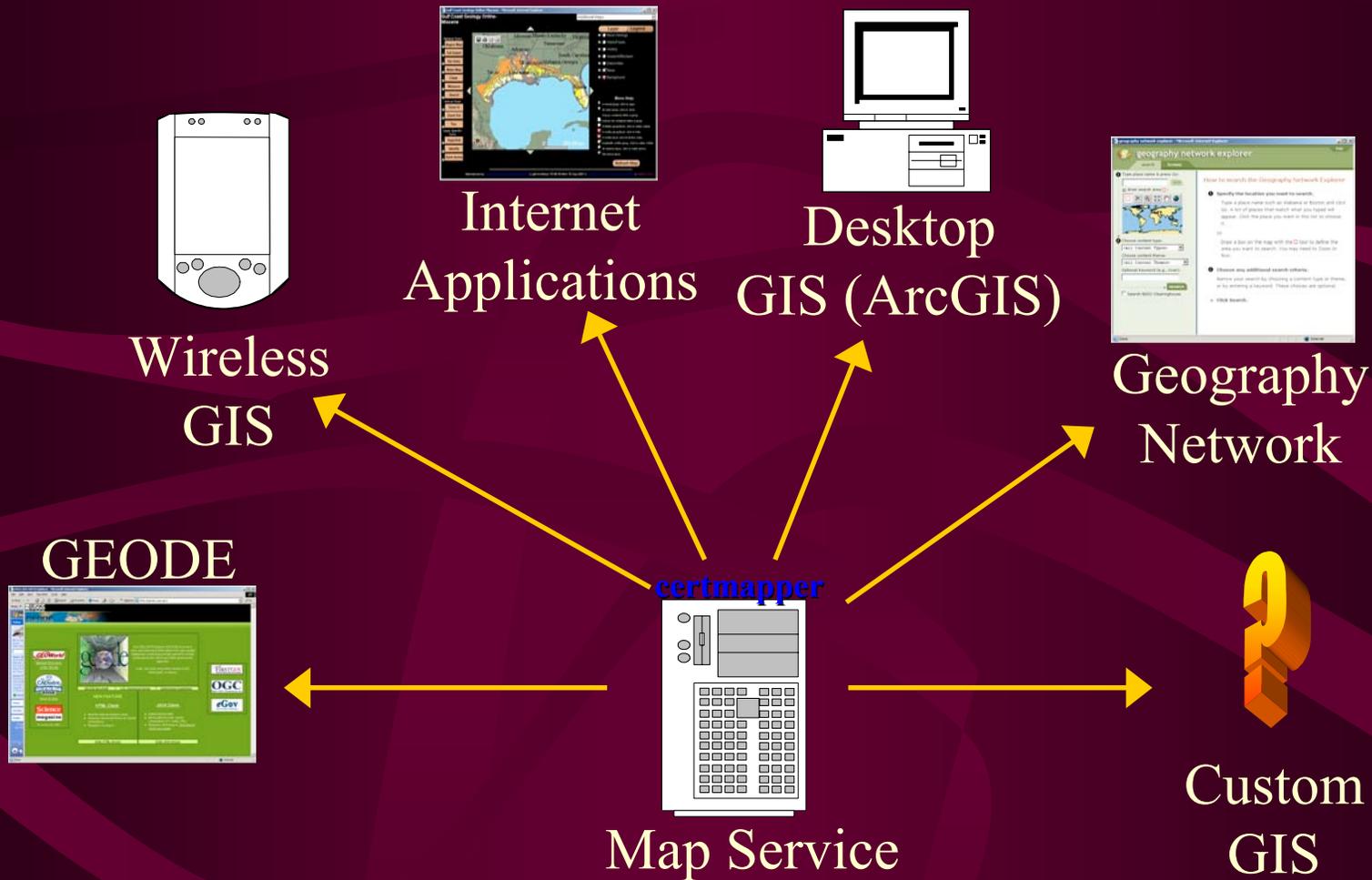
# Interoperability

## Research Tool (Internal)



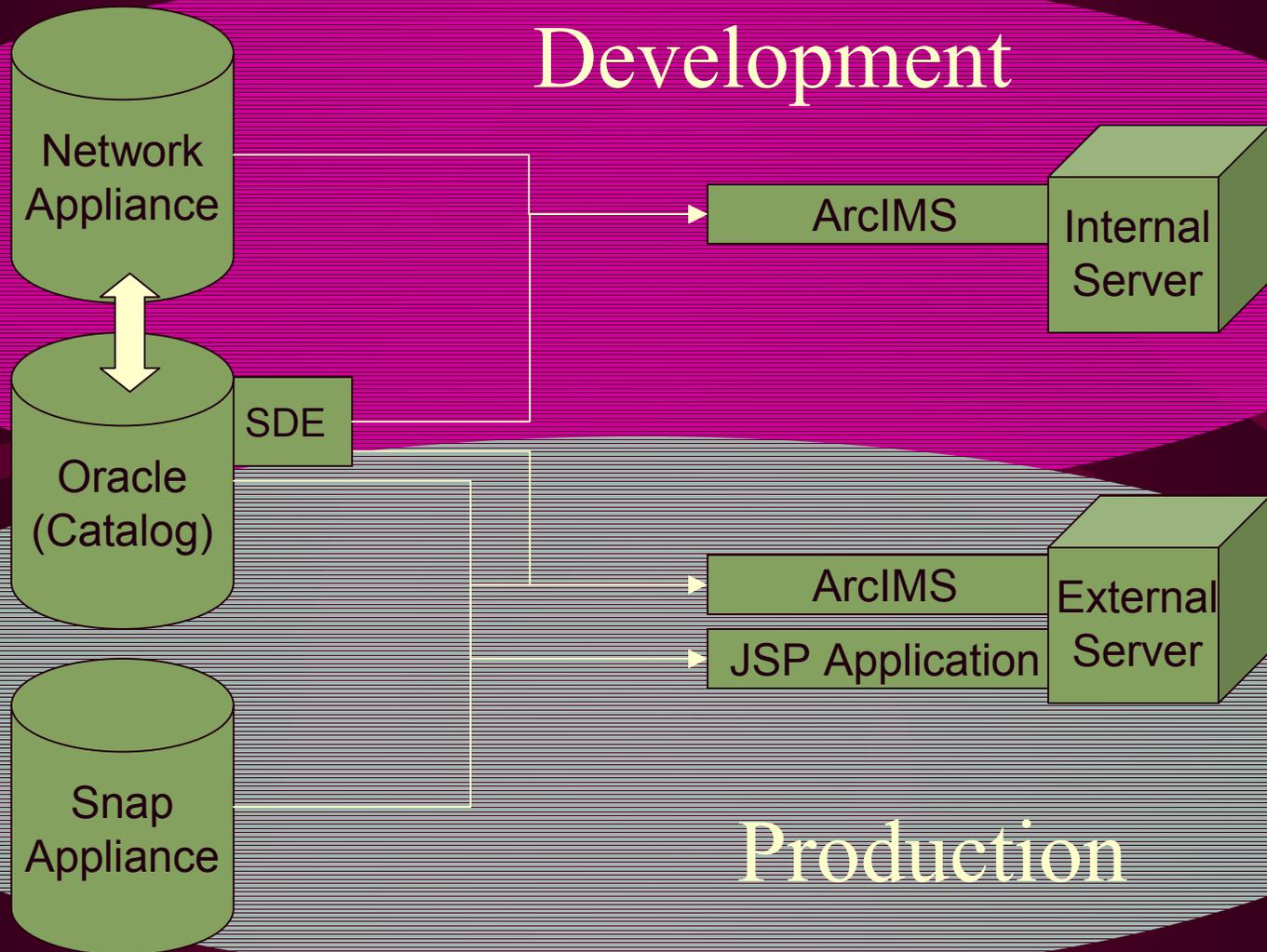
# Interoperability

## Product (External Clients)





# System Architecture

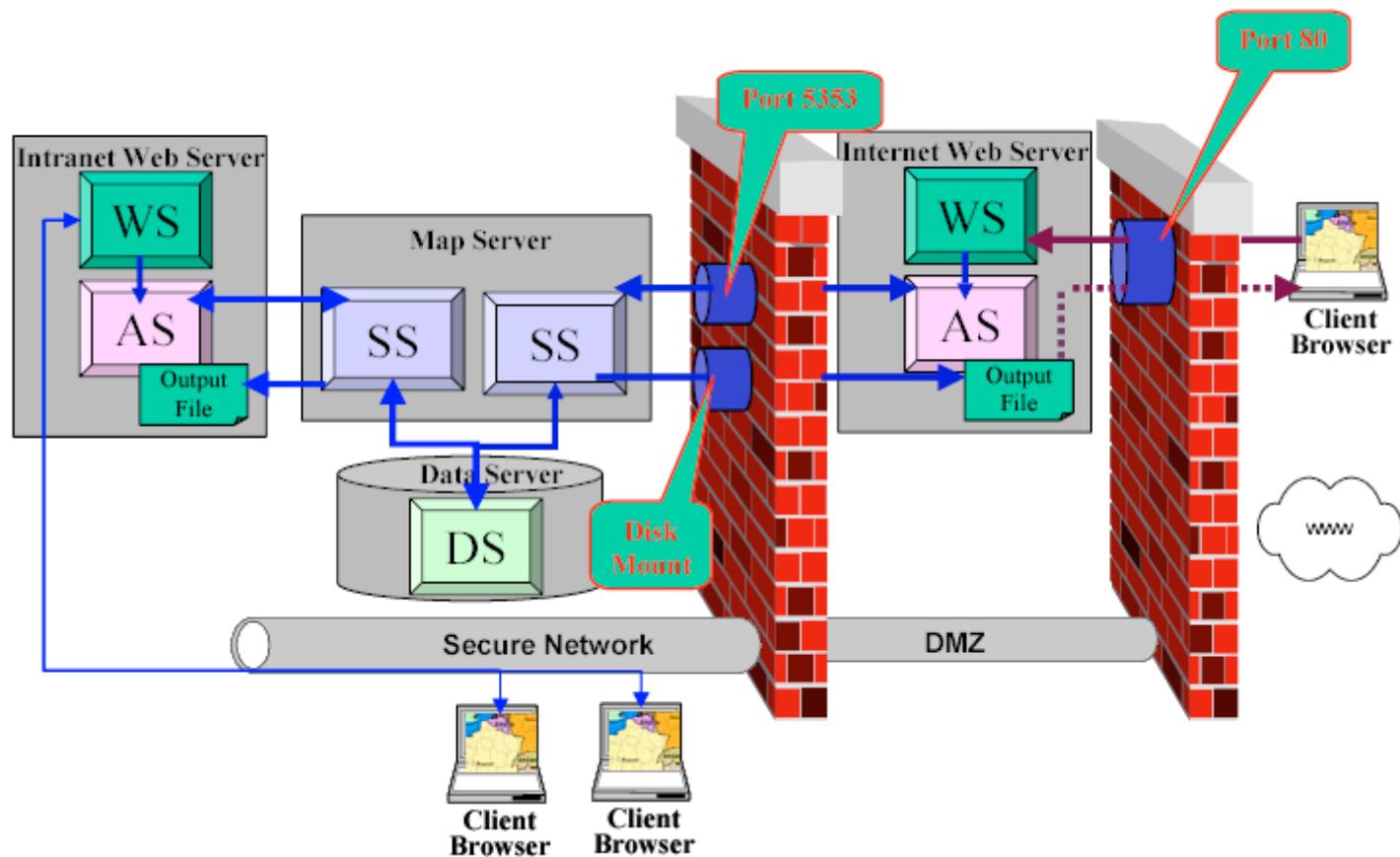


# System Architecture

- Software
  - ArcSDE 8.2, Oracle 8i
  - ArcIMS 4.01
    - Tomcat 4.0
      - Same App and Spatial Server
    - JSP and Servlet Server Side Technology
- Hardware/Networking
  - Network Appliance File Server (Internal)
  - Snap Drive File Server (External)
  - Sun 3500 (3 CPU, 400 MHz, 2 GB RAM)
  - 1.4 GHz 1 GiG of RAM (External)
  - 10/100 Fast Ethernet

# Internet Mapping Architecture

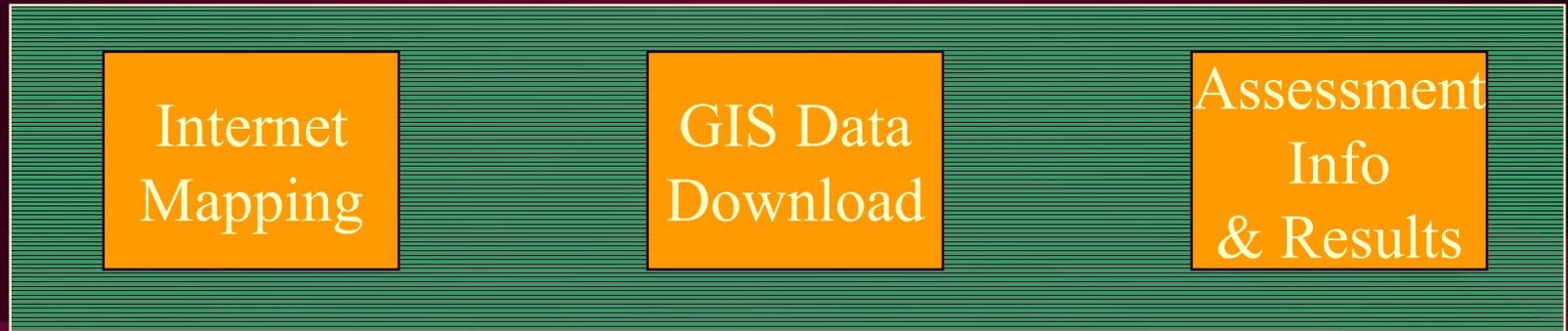
## Multiple Web Server Configuration



\*Source: ESRI System Design Paper

# NOGA Online Components

Presentation Tier



Java Servlets, Beans, ArcXML



Data and Metadata Tier



# Interactive Map Viewer

- Java Servlet Connector/Java Connector
- Java Servlets/JSP Dynamic Functionality
- ArcMap Server
- Easy Navigation

# System Security

- Various Compartments
- Parallel System
- Internal/External Server and File Servers
- XML ArcIMS Based Authentication (Internally)
- Separate Subnet
- Oracle Roles

# Future

- PDF Print Capability
- ArcIMS Metadata Server
  - Thematic “Geography Network” For Team
  - Include Other Projects
    - World Energy
    - National Coal Assessment
- OGC Map Services, OGC Compliant Viewer

# Credits:

- The National Oil and Gas Resource Assessment Teams
- Christopher J. Schenk – National Assessment of Oil and Gas Project Chief
- David A. Ferderer – IS Group Leader

# Contributors:

- Energy Team IS Group
- Cheryl W. Adkisson
- Larry Backe
- James D. Brewton
- Christa Lopez
- Raymond C. Obuch
- Christopher C. Skinner
- Sean Strickland
- Nick Zihlman
- Chris Anderson
- Ronald R. Charpentier
- Denise R. Dundon
- Steve M. Dunn
- Chris French
- Timothy R. Klett
- Sargent McDonald
- Peter N. Schweitzer
- Susan Weiler

# NOGA Online: A USGS Resource for Energy GIS Data and Services

<http://energy.cr.usgs.gov/oilgas/noga/>

Laura R.H. Biewick

lbiewick@usgs.gov

303-236-7773

and

Gregory L. Gunther

ggunther@usgs.gov

303-236-5884