

# STARR Oil and Gas Program Overview

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## Outline

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- **Mission and Financial Model**
- **Results: 2008-2010 Biennium**
- **Research Projects**
  - Woodbine: East Texas Field*
  - Frio Formation: Lavaca Bay Field*
  - Cleveland/Marmaton: Texas Panhandle*
  - Eagle Ford, Barnett Shale: Shale Gas*
- **STARR Publications**

# **STARR**

## **State of Texas Advanced Oil and Gas Resource Recovery**

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**Funding from Texas Legislature, and logistical support from the General Land Office and the Railroad Commission**

**Mission: Increase income to the State through working with operators to...**

- Define, characterize, assess, and expand new hydrocarbon plays
- Recommend drilling deeper untested reservoirs
- Recommend secondary or tertiary recovery programs
- Recommend recompletions
- Help locate new wells (infill, step-outs, wildcats)

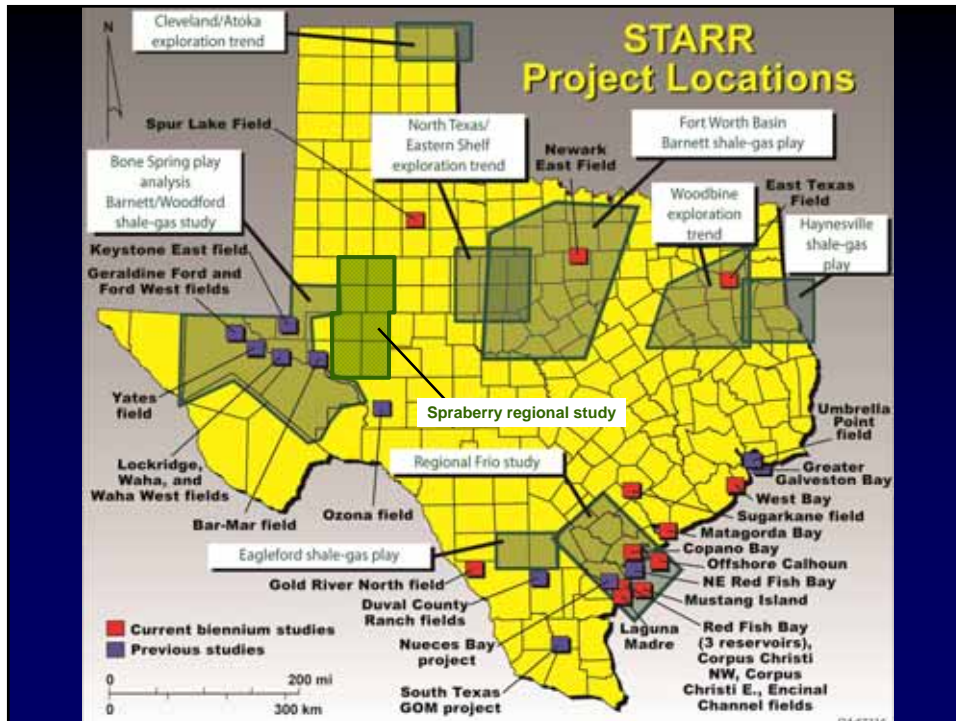
## **STARR Financial Model**

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- **STARR Oil and Gas Program must be revenue neutral to be re-funded by the Legislature each biennium**
- **Recently funded at \$1.5 million annually**
- **Funding increased to \$2.2 million annually**
- **STARR return on State's investment is >5.5: 1 for 2008-2010 biennium**

# STARR Revenue Credit

- **Severance Taxes from O & G Production**
  - Field Studies (Reservoir Characterization)
  - Regional (New Venture) Studies
  - Unconventional Resource Studies
  - EOR Projects



# STARR Program Structure

## Reservoir Characterization

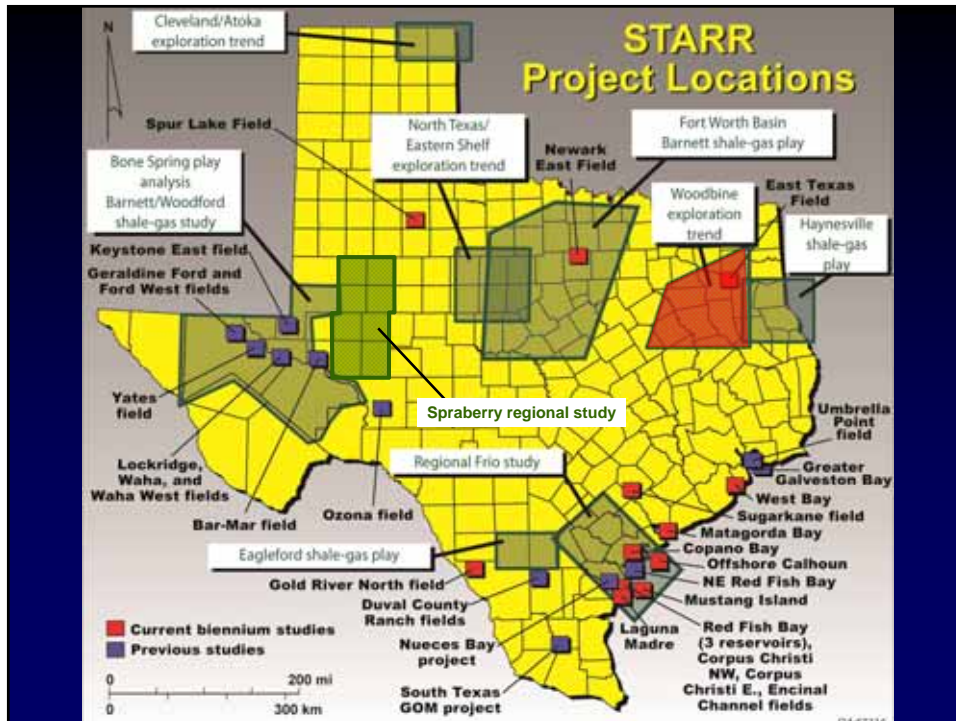
- Ala. Ferry Glen Rose
- Eliasville Caddo
- **Lavaca Bay Frio**
- Copano Bay Frio
- Spur Lake Penn.
- Broken Bone Penn.
- La Sara Field Frio
- Woodbine AA Wells
- Cisco Ls. Tom Green Co.
- Marble Falls Jack Co
- Austin Chalk Polk-Tyler Co.
- Ranger Ls. Eastland Co.
- **Woodbine East Texas Field**

## Regional Studies

- Regional Frio Studies
- N. TX/Eastern Shelf exploration trend
- Bone Spring play analysis
- Woodbine exploration trend
- Bend Conglomerate
- **Cleveland/Marmaton Panhandle**
- Spraberry/Dean Permian Basin

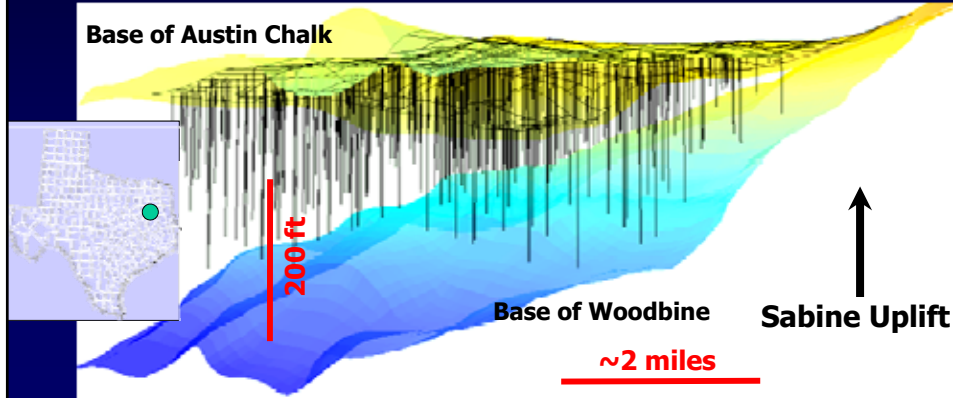
## Unconventional Resources

- **Barnett/Haynesville/ Eagle Ford**
- Pearsall
- Smithwick
- Shale-Gas Plays



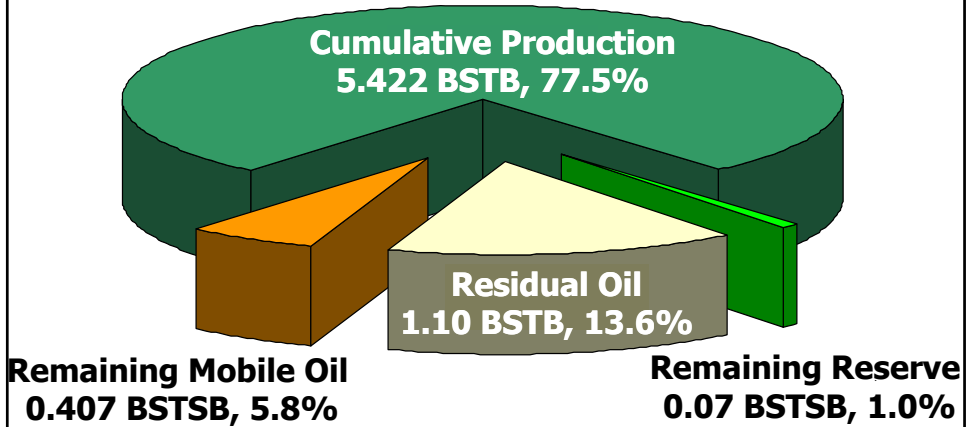
# East Texas Field: Summary

- Discovered in 1930
- Combination trap
- Strong water drive
- Depth ~3,500 ft
- ~31,000 wells
- 4.3-acre spacing
- 7.03 Bbbl oil in place
- 5.42 Bbbl produced
- 77% recovery efficiency



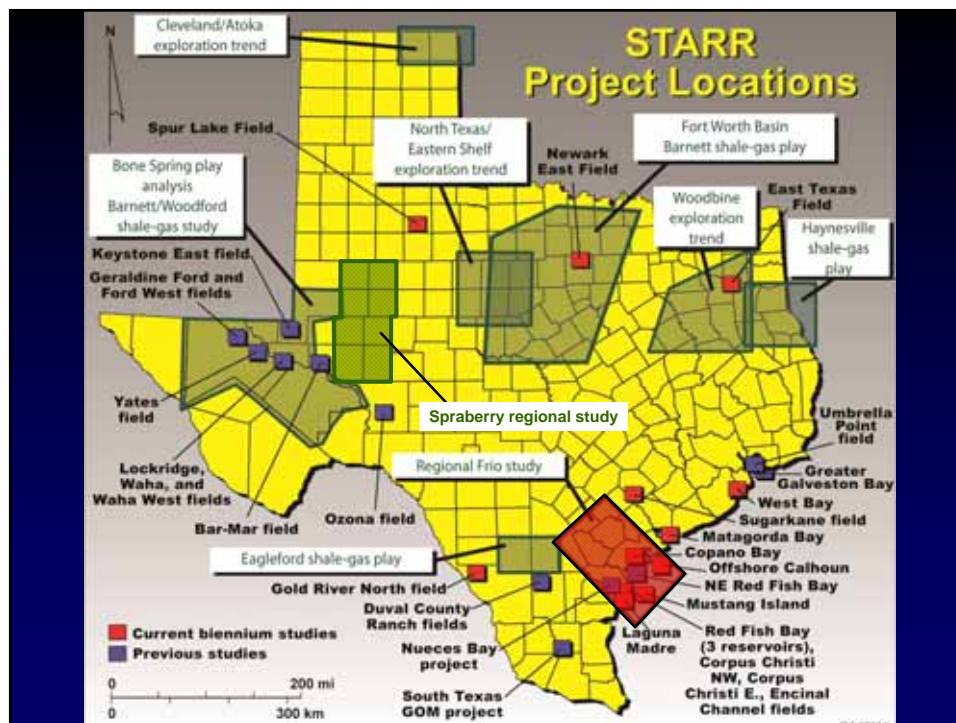
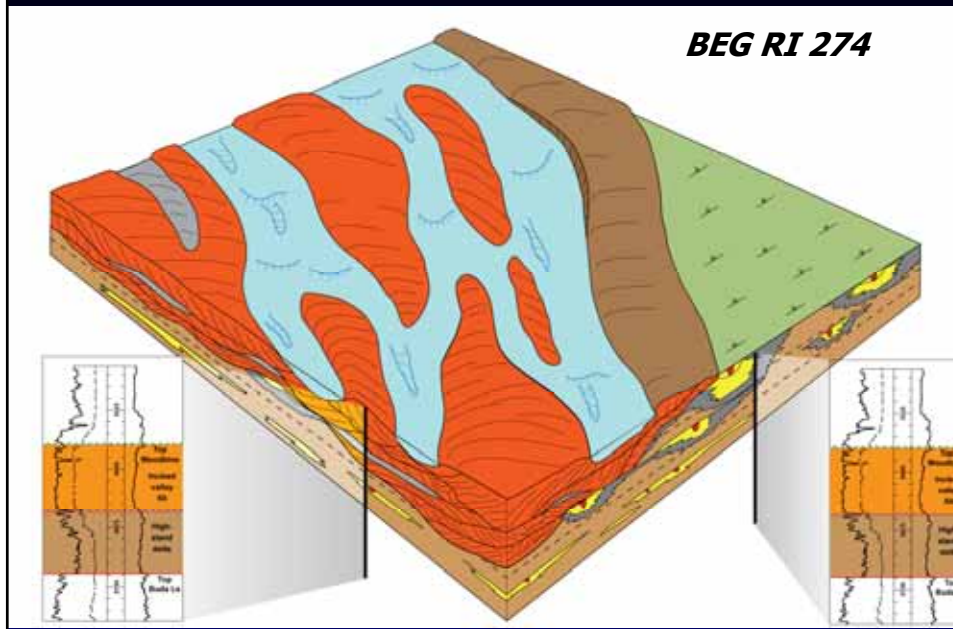
# OOIP, EUR, and Implied Recovery Factor

OOIP = 7.0 BSTSB



# Woodbine Depositional Model

BEG RI 274



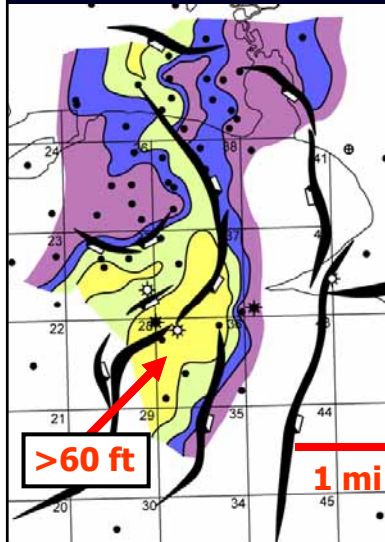


# Lavaca Bay

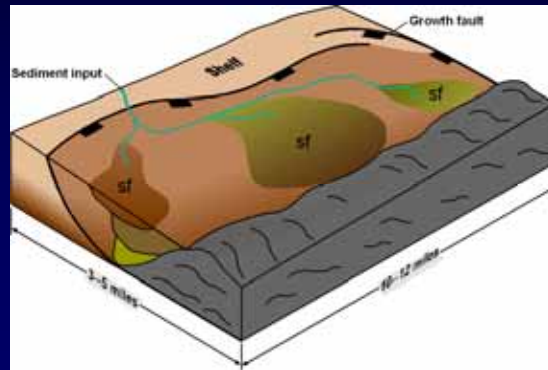
Field production >125 Bcf

Individual well production up to 9.8 Bcf

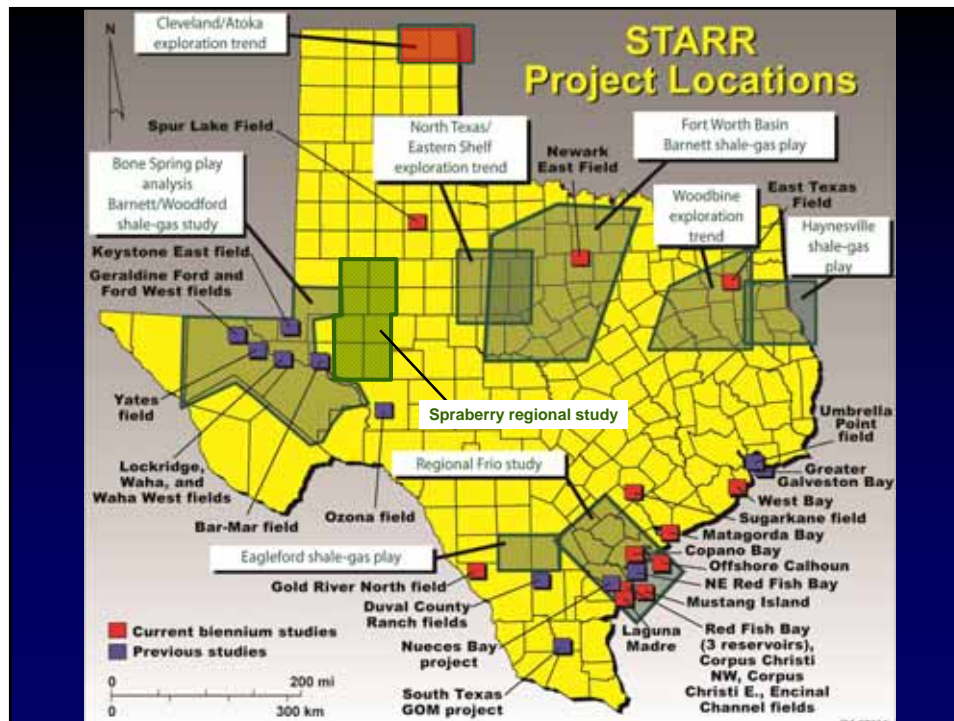
## Gross Sandstone



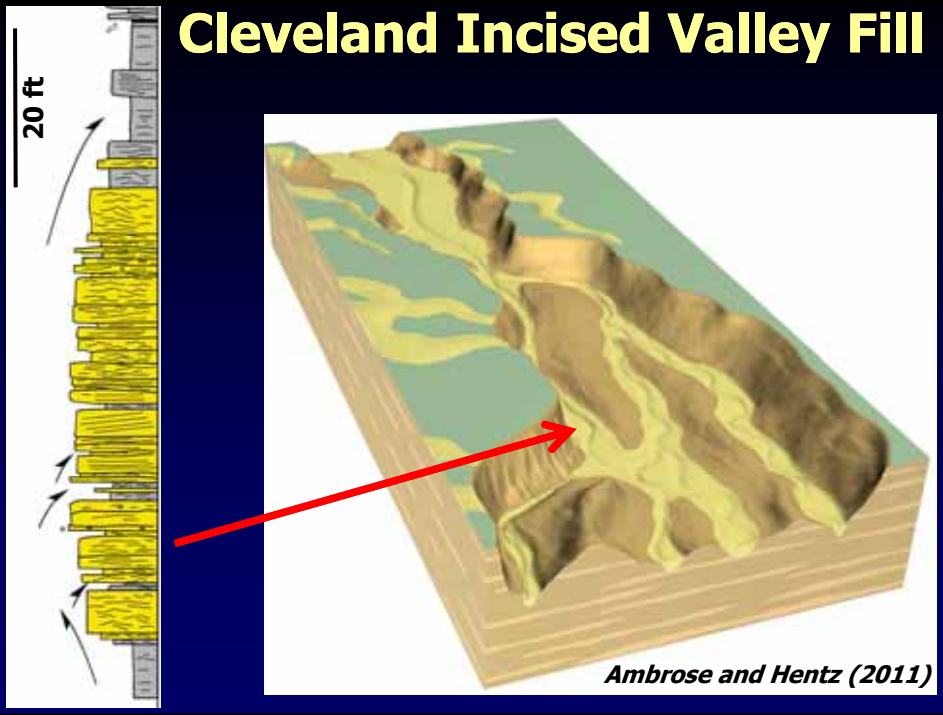
## Model



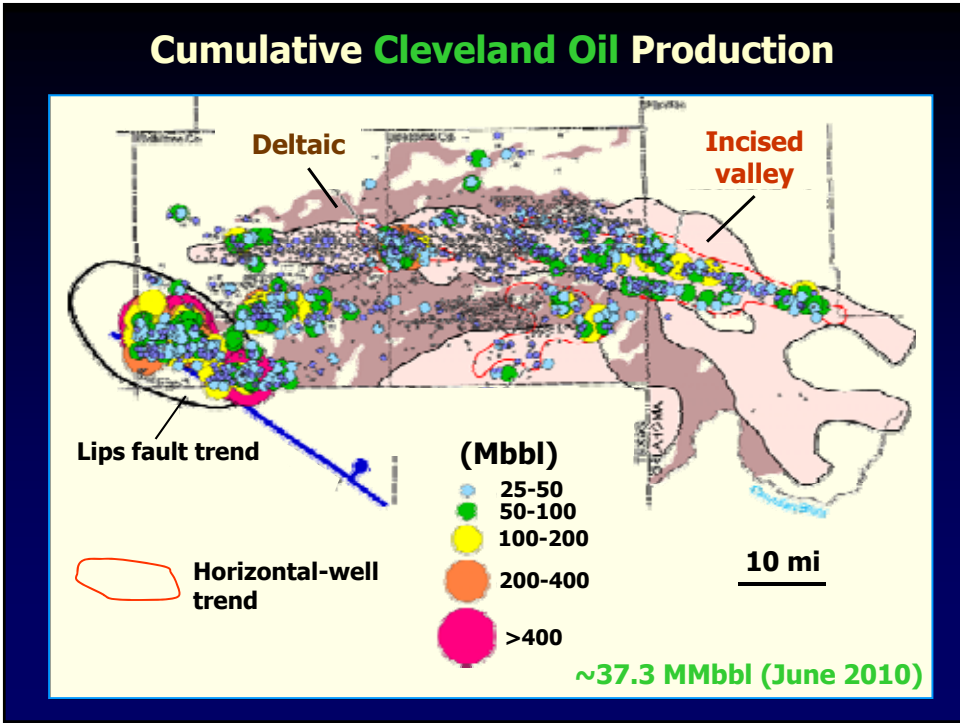
Modified from Hammes et al. (2007)



# Cleveland Incised Valley Fill

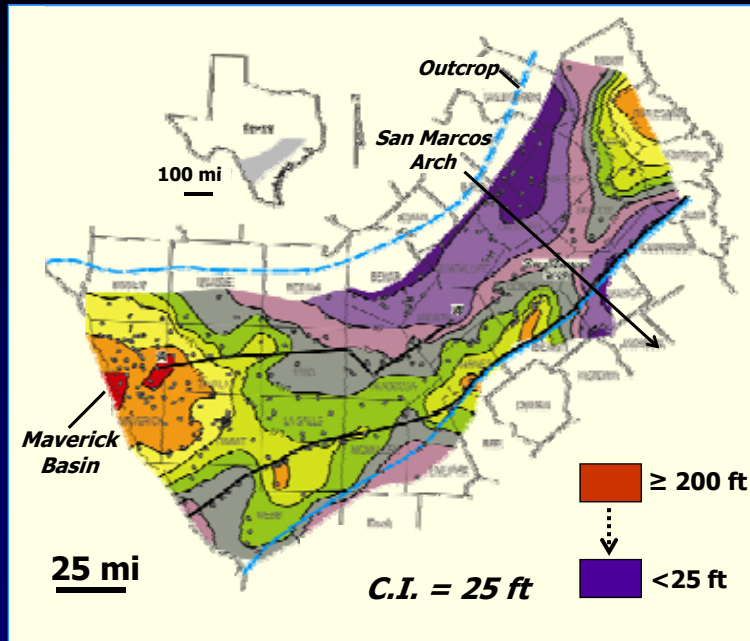


# Cumulative Cleveland Oil Production





## Lower Eagle Ford Shale: Thickness



### Austin Chalk



## Eagle Ford and Austin Chalk

### Upper Eagle Ford

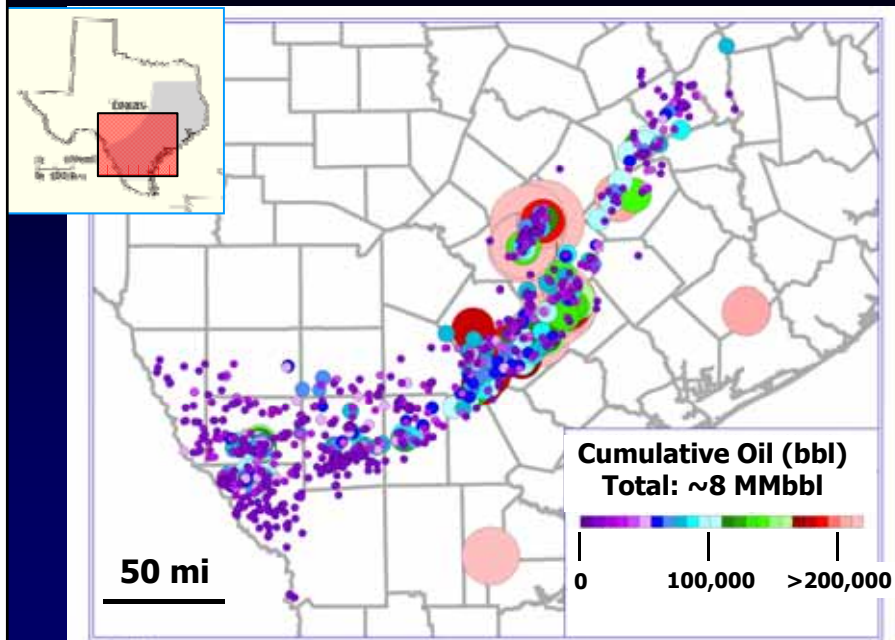


### Lower Eagle Ford

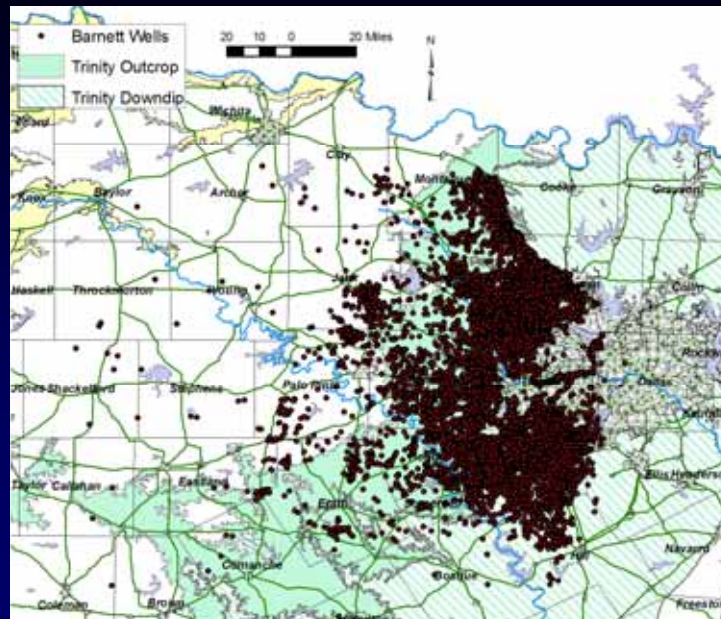


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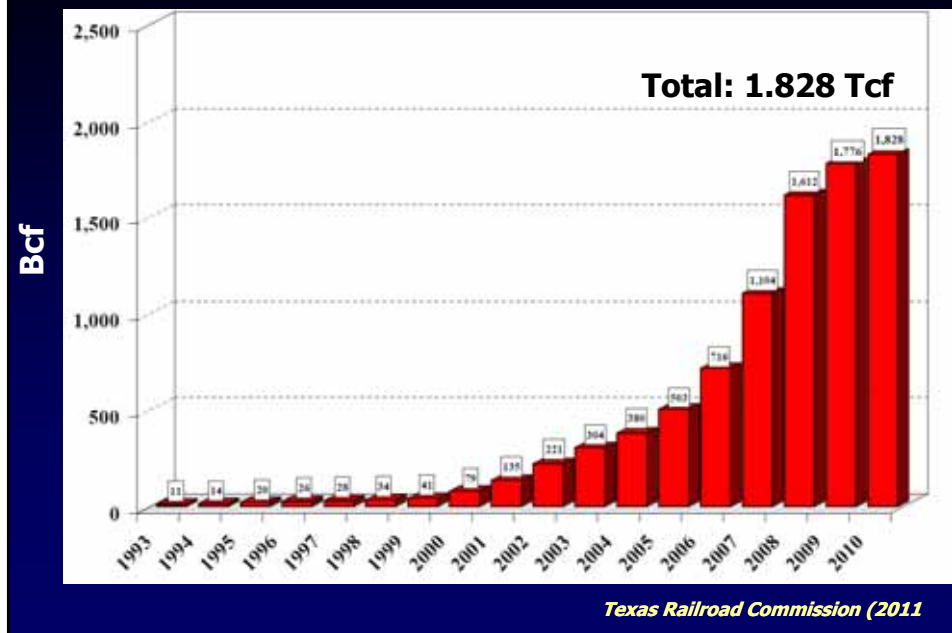
# Eagle Ford Oil Production



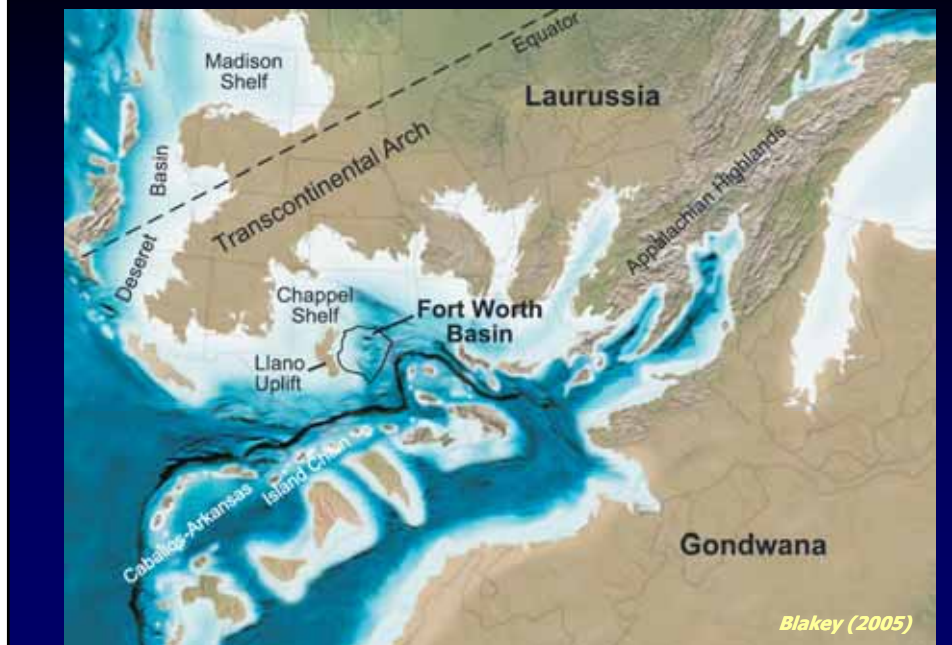
# Barnett Shale Activity



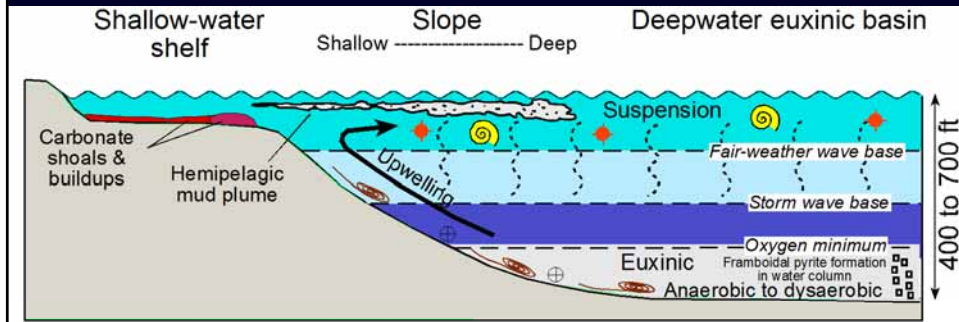
## Barnett Shale: Gas Well Gas Production



## Barnett Shale: Paleogeography 325 Ma



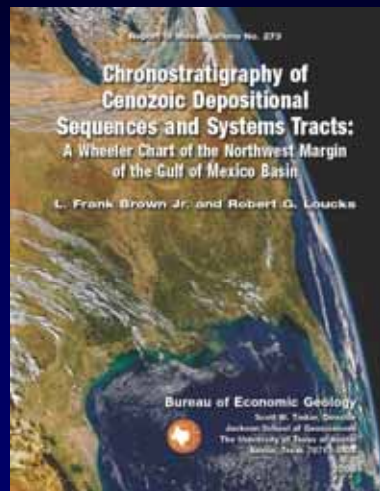
# Barnett Shale Depositional Model



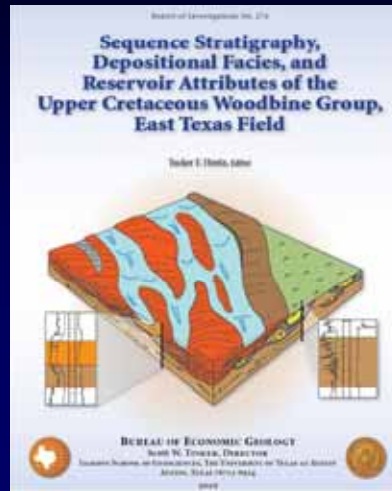
*Loucks and Ruppel (2007)*

# STARR BEG Publications

RI 273



RI 274



**New STARR BEG  
Publication**

**RI 275**

