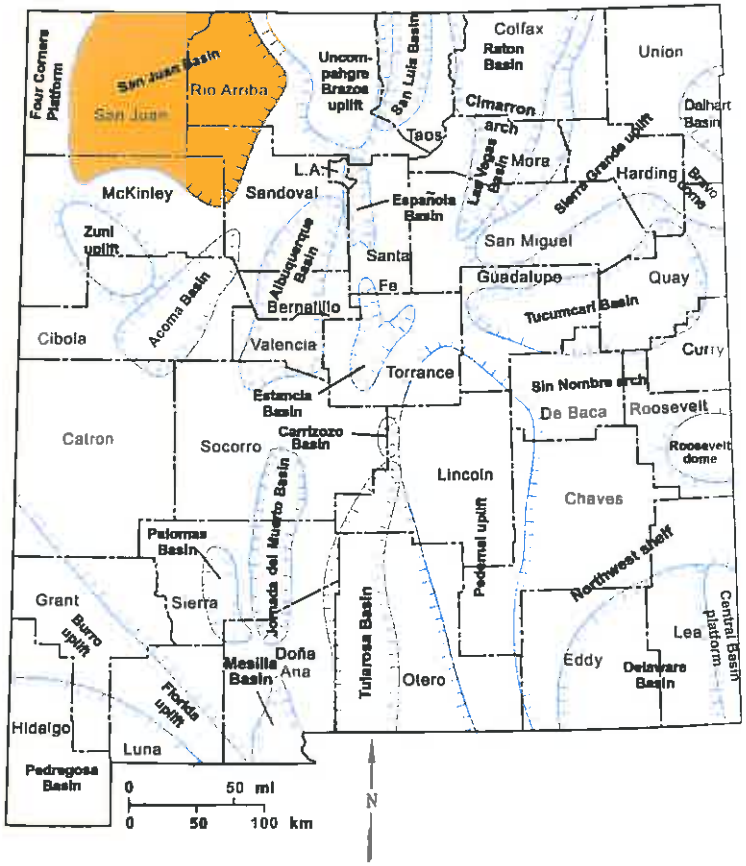
Geology of Oil & Gas in Mancos Shale, San Juan Basin



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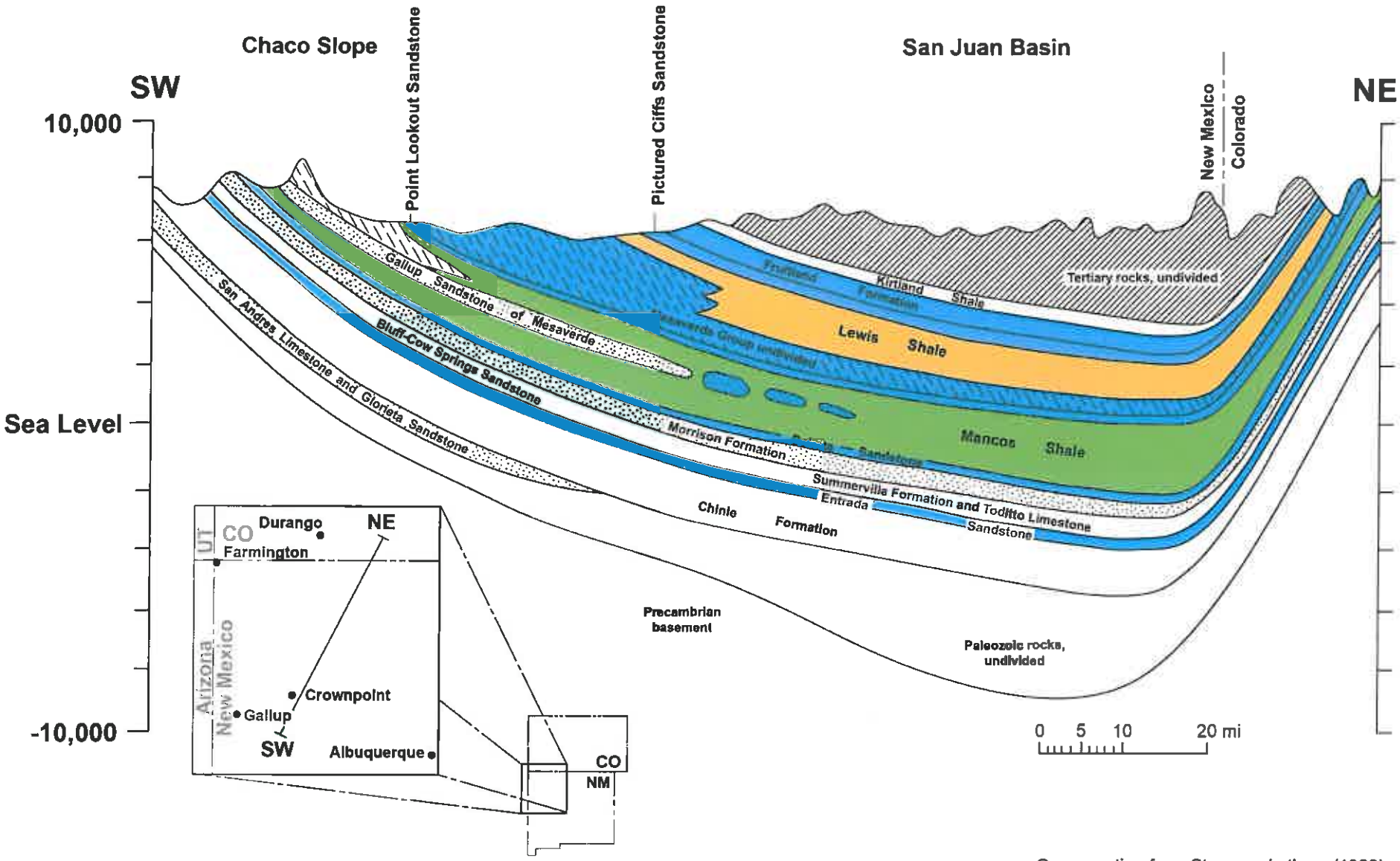
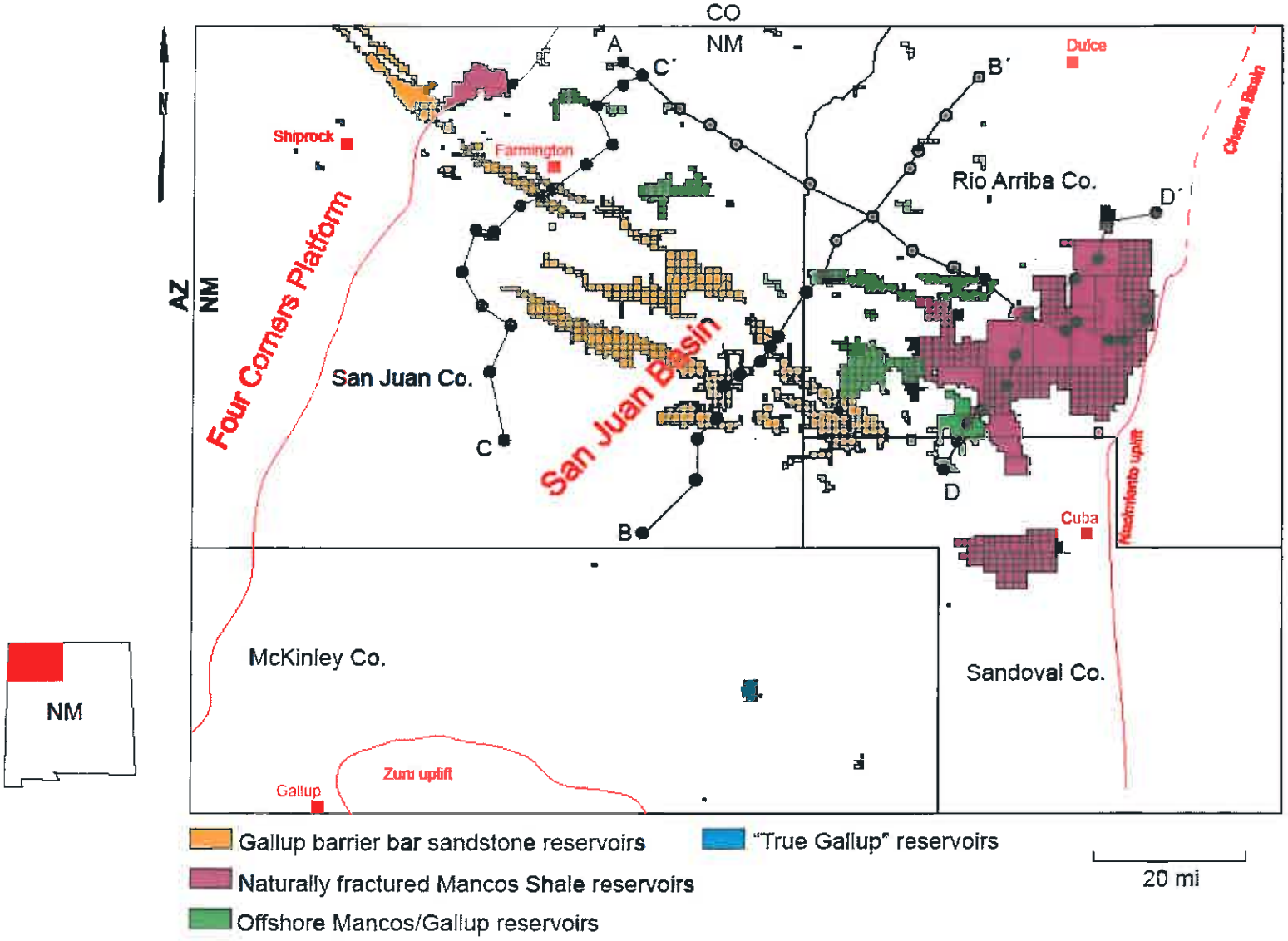
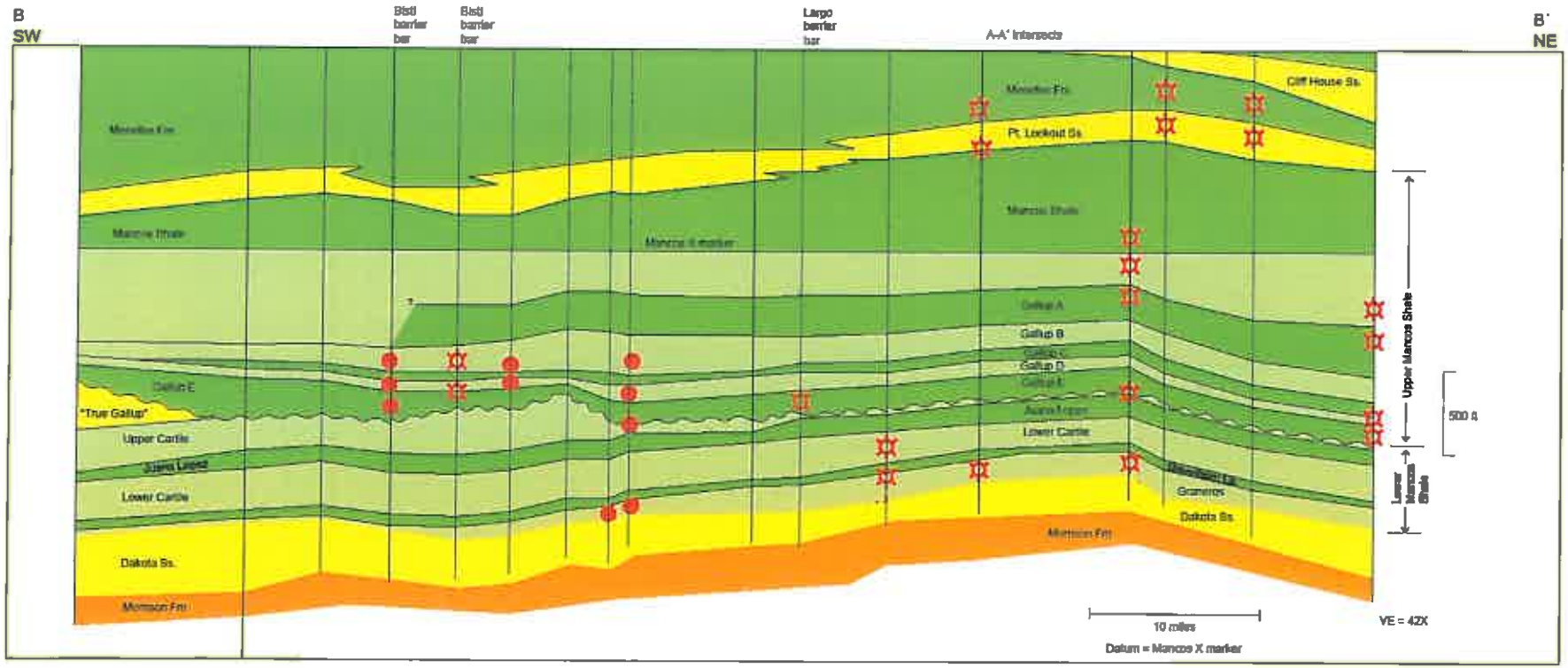
Earth Science for the 21st Century



Cross section from Stone and others (1983)


CO
NM
AZ
NM
N
A
A'
B
B'
C
C'
D
D'
Shiprock
Farmington
Dulce
Cuba
Gallup
Four Corners Platform
San Juan Basin
Chama Basin
Nacimiento uplift
Zuni uplift
San Juan Co.
Rio Arriba Co.
McKinley Co.
Sandoval Co.
NM
Gallup barrier bar sandstone reservoirs
Naturally fractured Mancos Shale reservoirs
Offshore Mancos/Gallup reservoirs
"True Gallup" reservoirs
20 mi

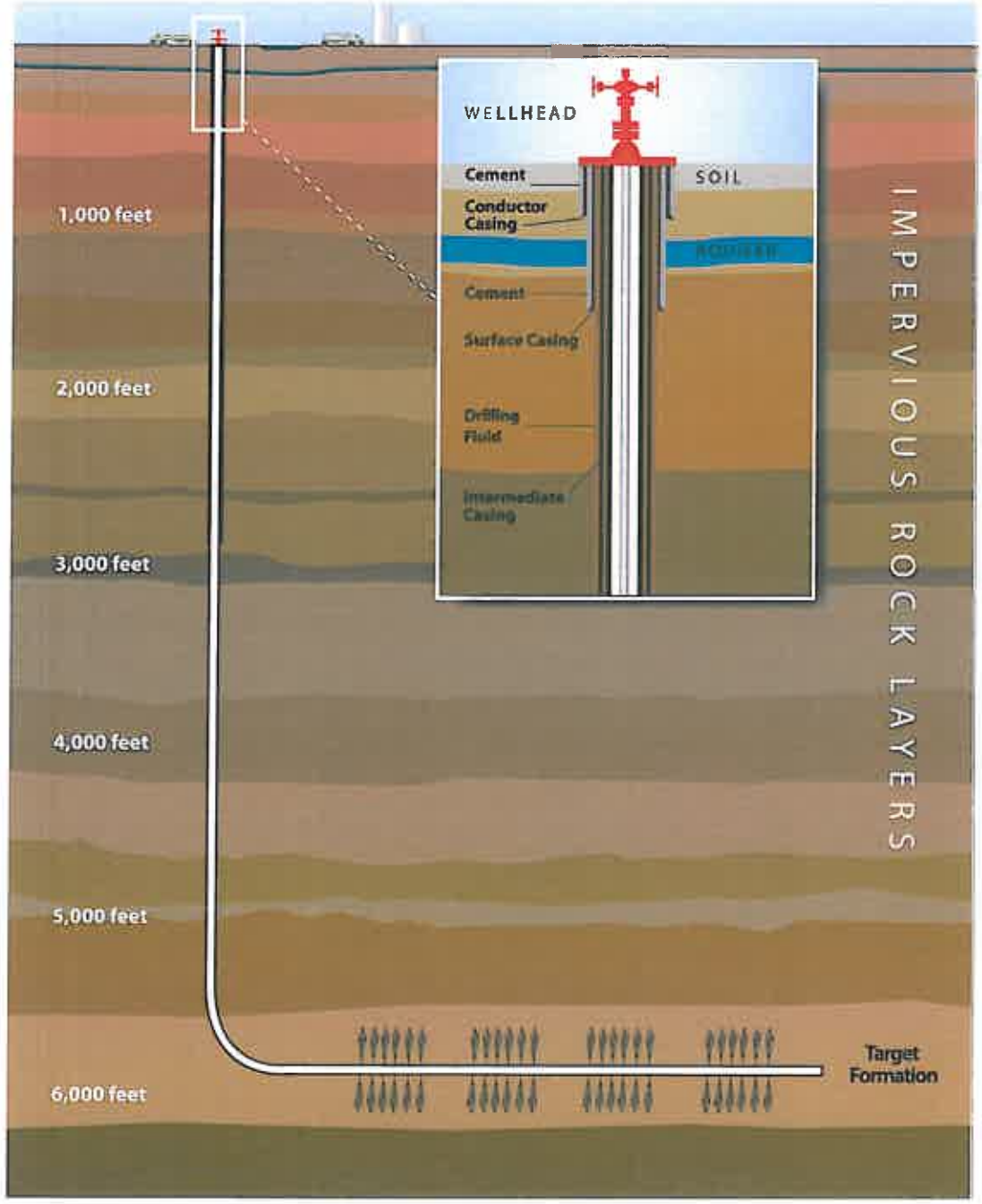


oil production

gas production

1 ft

Hydraulic fracturing in a horizontal well



From API

Artificial fracturing of recent horizontal Mancos exploration wells

- 9 wells drilled by 3 operators
- All utilized large volumes of liquid nitrogen to reduce water use
- Used about 2 parts water to 1 part nitrogen
- Averaged about 1.7 acre-ft water per well, ranging from 1.2 to 2.3 acre-ft water per well