



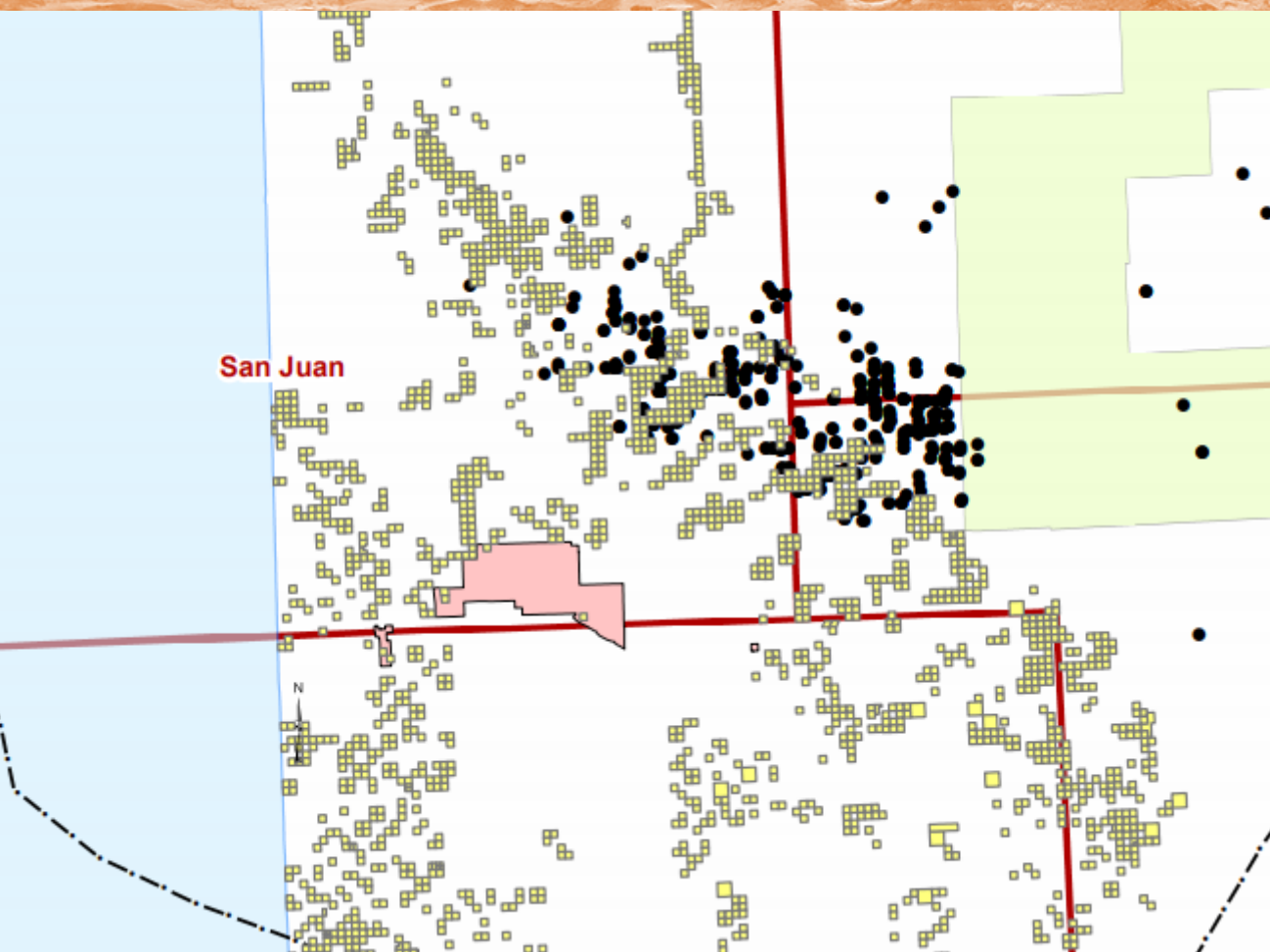
NAVAJO ALLOTTEES

Navajo Nation Tribal Lands

Arizona, New Mexico, and Utah

SUMMER NAPE 2020

Oil and Gas Leasing Potential in the San Juan Basin





United States Department of the Interior

FEDERAL INDIAN MINERALS OFFICE
6251 College Boulevard, Suite B
Farmington, New Mexico 87402

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Yá'át'ééh.

On behalf of the Federal Indian Minerals Office, I am pleased to introduce you to the community of Navajo Eastern Agency located in the San Juan Basin where the land is known for its cross jurisdictional status of Federal, Fee, State, Navajo Tribal Trust and Navajo Indian Allotted. The following pages will tell you a little more of the Navajo Indian Allotted lands, the individual mineral owners, the community, the history and the mineral resources. Our office looks forward to sharing with you potential oil and gas opportunities on the Navajo Allotted lands, and assist in facilitating development. Should you feel the resources on Navajo allotted lands align with your plans, we welcome the opportunity to assist in exploring and developing in the San Juan Basin while keeping the best interest of the individual mineral owners in mind.

Sincerely,

Maureen Joe
FIMO Director

NAVAJO NATION

Culture and History

The Navajo Nation extends into the states of Utah, Arizona and New Mexico, covering over 27,000 sq. mi. (see Figure 1).

The Navajo language was used to create a secret code to battle the Japanese during World War II. Navajo men were selected to create codes and serve on the front line and utilized their native language to overcome and deceive their enemy. Today, these men are recognized as the Navajo Code Talkers, individuals who displayed true bravery and patriotism on behalf of the Navajo people and the United States of America.

Today, the Navajo Nation is looking at ways to develop a sustainable and viable economy for an ever increasing population that now surpasses 300,000. The Navajo Business Council was established in 1922 by the U.S. Secretary of Interior in order to certify mineral leases on the Navajo Reservation. A structured government was needed for the Nation to further develop their mineral resources.

In 2008, the Navajo Nation Council was reduced from 88 to 24 council members. The 24 council delegates (representing 110 Navajo Nation chapters, or communities) discuss critical issues and enact

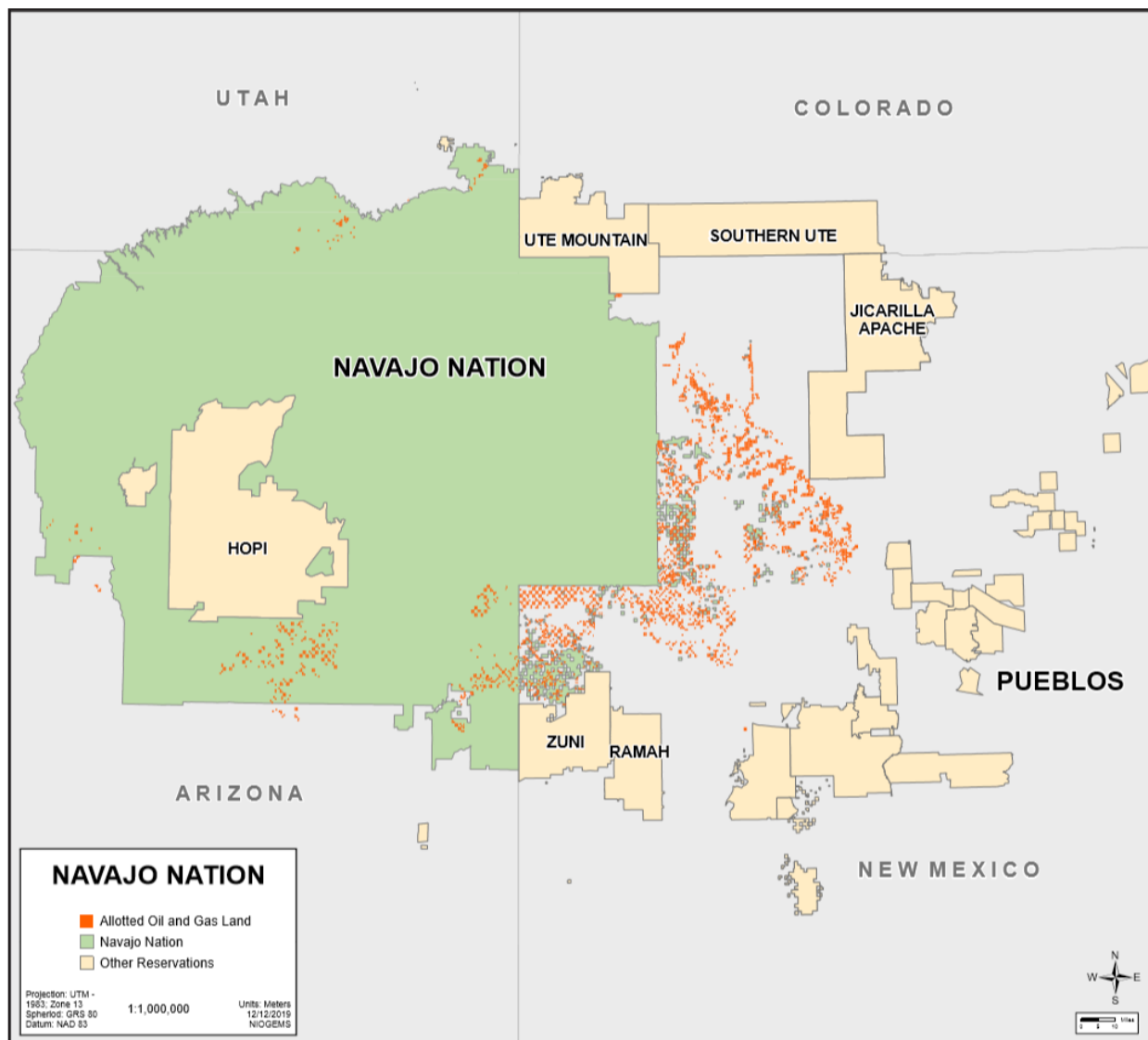


Figure 1. Location of the Navajo Nation.

legislation to determine the future of the Navajo people. Reorganized in 1991 to form a three-branch system (executive, legislative and judicial), the Navajos utilize this form of government to continue to build the Navajo Nation economy. The Navajo Nation retains its unique cultural heritage while continuing to move ahead with modern progress. More information on the Navajo Nation can be found at <https://www.navajo-nsn.gov/>.

Allotted Land History

The eastern border was shaped primarily as a result of allotments of land to individual Navajo households under the Dawes Act of 1887. The federal government proposed to divide communal lands into plots assignable to heads of household and tribal members for their subsistence farming, in the pattern of small family farms. The land allocated to Navajos was initially not considered as part of the reservation. Further, the government determined that land “left over” after all members had received allotments was to be considered “surplus” and available for sale to non-Native Americans. The allotment program continued until 1934. Today, this patchwork of reservation and non-reservation land is called “the checkerboard” area (see Figure 2). The land is held in Trust by the United States Government for the benefit of the original Indian

Allottee or heirs. More information can be found at https://en.wikipedia.org/w/index.php?title=Navajo_Nation&oldid=931441822.

Federal Indian Mineral Office (FIMO)

The Department of the Interior established the Federal Indian Minerals Office (FIMO) to provide and improve Indian Trust services to individual Indian beneficiaries in the management of their oil and gas mineral resources. FIMO has been structured to consolidate and integrate Indian allotted oil and gas management functions under one line of authority. Personnel from the Bureau of Indian Affairs (BIA) and the Office of Natural Resources Revenue (ONRR), work in conjunction with personnel from the Bureau of Land Management (BLM) and the Office of Special Trustee for American Indians (OST) to provide one-stop customer service for individual Allottees regarding all aspects of their mineral interests.

FIMO manages all issues pertaining to Navajo Allottee oil and gas activities. These include ownership changes, obtaining proper bonding, collecting bonuses, overseeing lease sales, assessing values, monitoring rentals, and canceling leases.

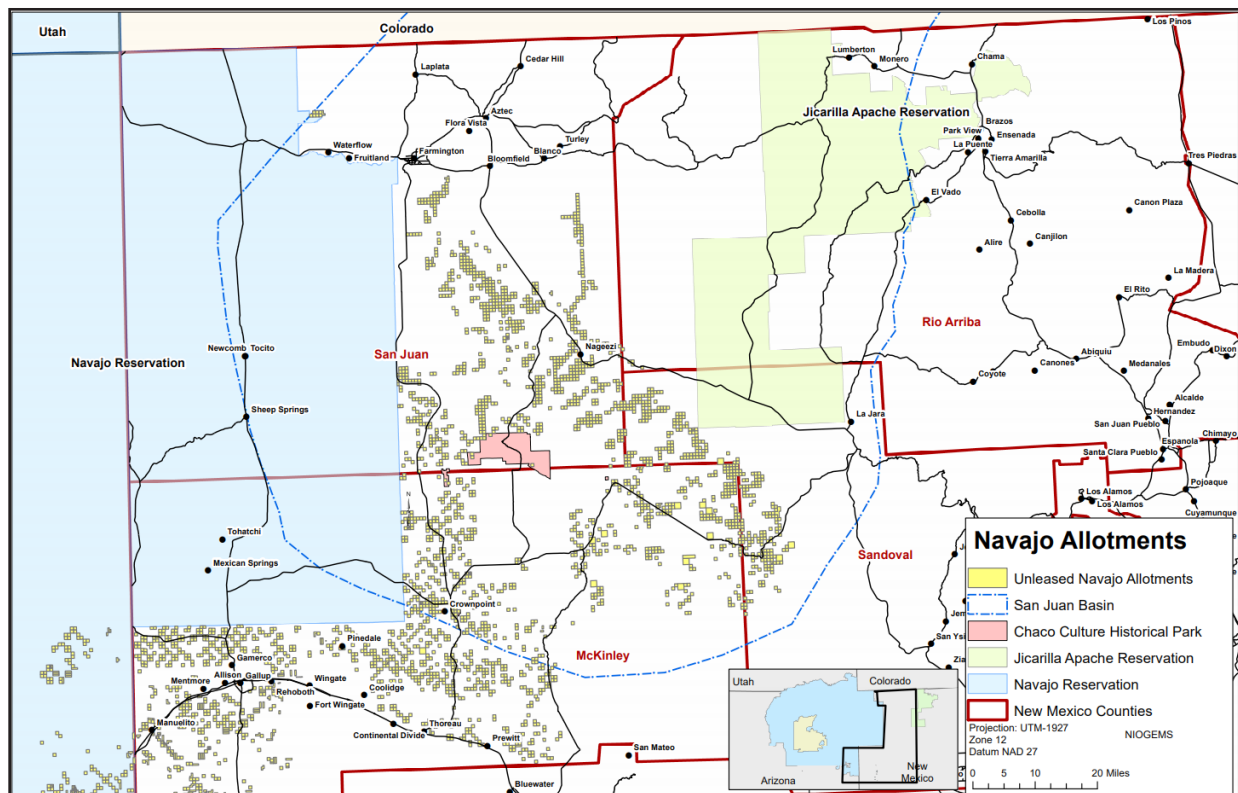


Figure 2: This map shows the northwest corner of New Mexico showing the location of the Navajo Allotted Lands and Tribal Lands within the San Juan Basin. The Navajo Allotted Lands are administered by the FIMO office in Farmington, NM.

Summary

The eastern Navajo Nation lands and Navajo Nation allotted lands are situated within the San Juan Basin and have existing legacy vertical well production from the Mancos and Gallup. Advances in horizontal drilling and hydraulic-fracturing technology have established the Mancos Shale and associated Gallup Sandstones as successful unconventional plays. Present and future development of these plays will benefit the Navajo Tribe and Navajo Allottees. There are currently unleased Navajo allotments tracts available for leasing on the eastern part of the reservation known as the checkerboard area of San Juan, Sandoval, Rio Arriba Counties within the southern San Juan Basin (see Figure 3). The Federal Indian Minerals Office keep records of these allotments and schedule on-line lease sales periodically.

Geologic Overview and Oil and Gas Plays

San Juan Basin

The San Juan Basin covers over 20,000 sq. mi. in northwest New Mexico and southwestern Colorado and is known for its prolific oil and natural gas production,

with over 326.8 MMBO and 50 TCFG produced since January 1923. Much of this production is from the Late Cretaceous (80-95 my old) Mancos Shale having produced 36.9 MMBO and 176.4 MMCFG, and associated Gallup Sandstones having produced 108.8 MM BO and 748.7 BCFG. The Mancos Shale was deposited over a large portion of the Western Interior Cretaceous Seaway including within the San Juan Basin, a structural depression that was formed during Laramide time which also contains sediments ranging from Devonian through Tertiary time (Craig, 2001). The basin is bounded on the east side by the Nacimiento Uplift, on the north side by San Juan Mountains and on the west side by Hogback Monocline and the Four Corners platform, and on the south side by the Zuni uplift and Chaco Slope (see Figure 4).

The majority oil and gas produced in the San Juan Basin comes from Cretaceous aged rocks with minor amounts from Jurassic and Pennsylvanian Formations. The stratigraphic column in Figure 5, shows the relative thickness and placement of each formation. The Fruitland Formation is composed of sandstone, shales and coals, coals provide for a highly productive coal bed methane (CBM) reservoir. The Pictured Cliffs Sandstone, and the Mesaverde Group which is composed of the Cliff House, Menefee and Point Lookout Formation are

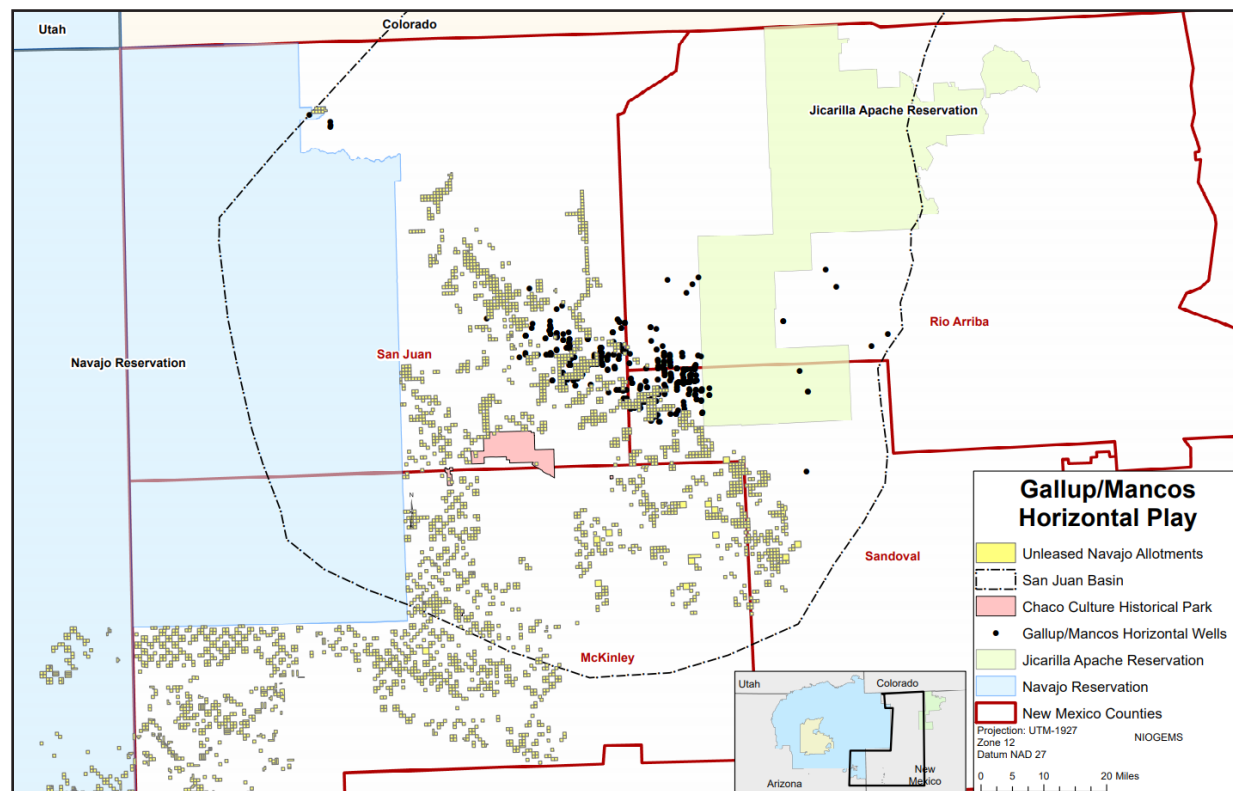


Figure 3: A mineral ownership map of the northwest corner of New Mexico showing Navajo Allotted, Tribal lands and the Gallup/Mancos horizontal oil wells within the San Juan Basin. The tracts colored in yellow are unleased Navajo Allotted lands.

gas bearing zones and combined is a major reservoir known as the Mesaverde Group. The Pictured Cliffs was the first major drilling play to be explored for gas. The Dakota Sandstone is a major gas field in the basin and represents the basal Cretaceous aged rocks. The Chacra Gas Production is a minor gas reservoir in the south half of the basin but is incorporated into the Mesaverde Group in the northern portion.

The major oil bearing formation is located in the Mancos Shale predominately in the Gallup where major fields have been vertically developed since the 1950's. This is currently the zone being developed by horizontal drilling

in the basin. The Mancos Shale lies under portions of the Navajo checkerboard area. Although traditionally viewed as a source rock and seal for conventional plays, the naturally fractured Mancos Shales and interbedded sandstones are now recognized as a major unconventional oil and gas play. There is also a Mancos dry gas play in the northern deeper portion of the basin.

The Gallup, considered the shelf-ward equivalent of the Niobrara, represents a sandy zone within the Mancos Shale. The Mancos interval is composed of the Juana Lopez, Gallup Sandstone, Middle Mancos, Tocito, and El Vado Sands (see Figure 6). In recent years horizontal

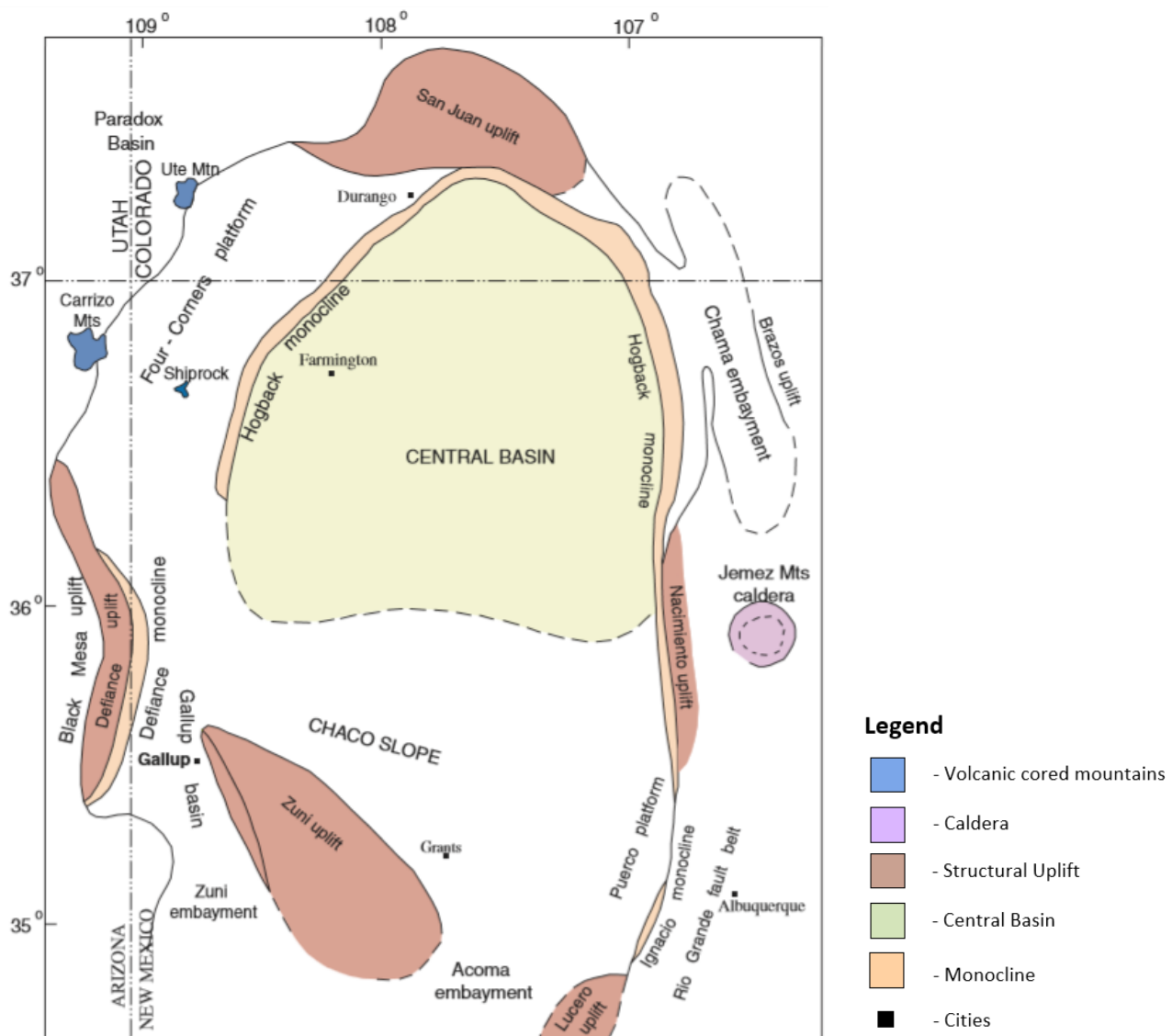


Figure 4. Index map showing the geographic and structural elements of the San Juan Basin (Fasset, 182). Areas of steeper dip (monoclines) are patterned; arrows indicate the direction of dip. The dashed line separating the central basin from the Chaco slope is drawn approximately along the outcrop of the Pictured Cliffs Sandstone

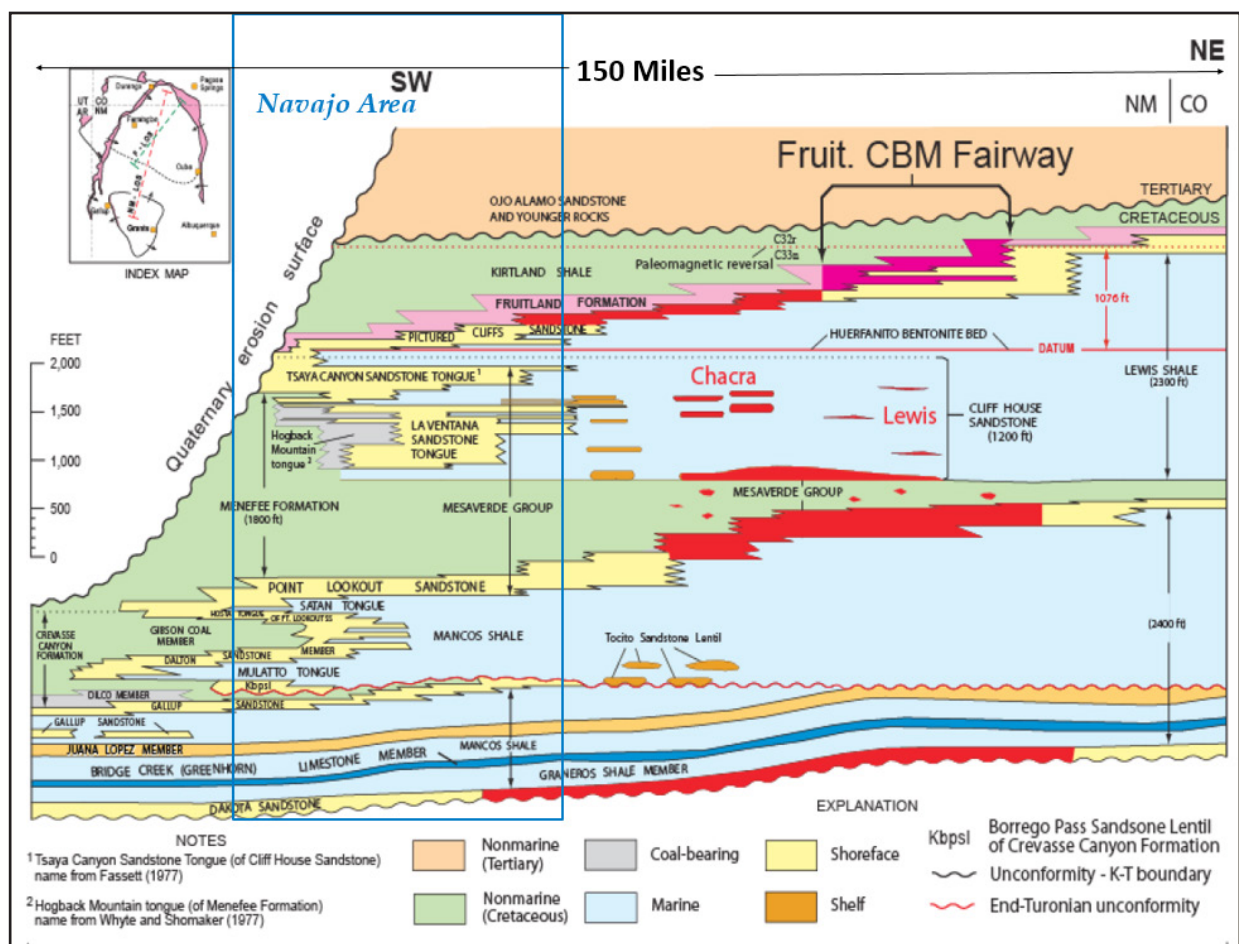


Figure 5. Stratigraphy of the San Juan Basin. Blue outline highlights the stratigraphy under the Navajo Allotted Lands.

development of oil zones along with legacy vertical oil wells from the Late Cretaceous Mancos Shale and associated Gallup Sandstones have produced 145.7 MMBO and 748.7 BCF.

Oil and Gas Activity in the Region

Historically, the San Juan Basin has been primarily a gas producing province with the notable exception of the aforementioned Gallup Oil Fields, but within the last 10 years, new technologies and methodologies have allowed once unrecoverable oil to be economically extracted. In the southwestern portion of the San Juan Basin, the horizontal well play was originally dominated by Encana

Corp. and WPX Energy. These companies sold to DJR Resources and Enduring Resources, respectively and they have continued drilling horizontal wells, with plans to drill more as economics allow. In recent years the majority of the drilling activity has been concentrated within the horizontal play as low natural gas prices have slowed gas drilling in the basin to near zero (see Figure 7).

A recent drilling and leasing moratorium has been placed by the State of New Mexico and the Federal Government by a surrounding Chaco Canyon National Historic 10 mile buffer around Chaco National Historical Park but does not affect the Navajo allotted lands.

Eastern San Juan Cretaceous Stratigraphic Nomenclature

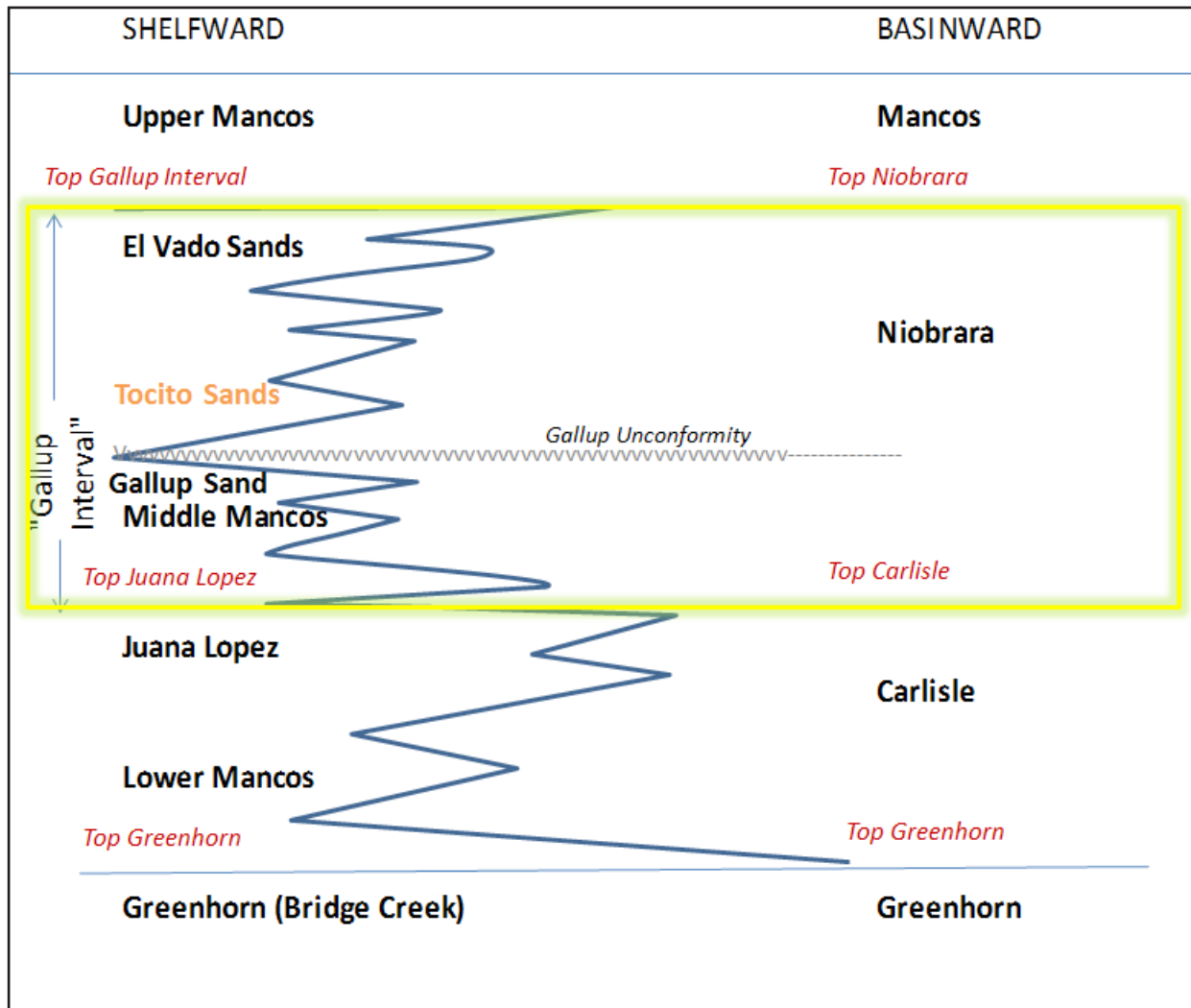
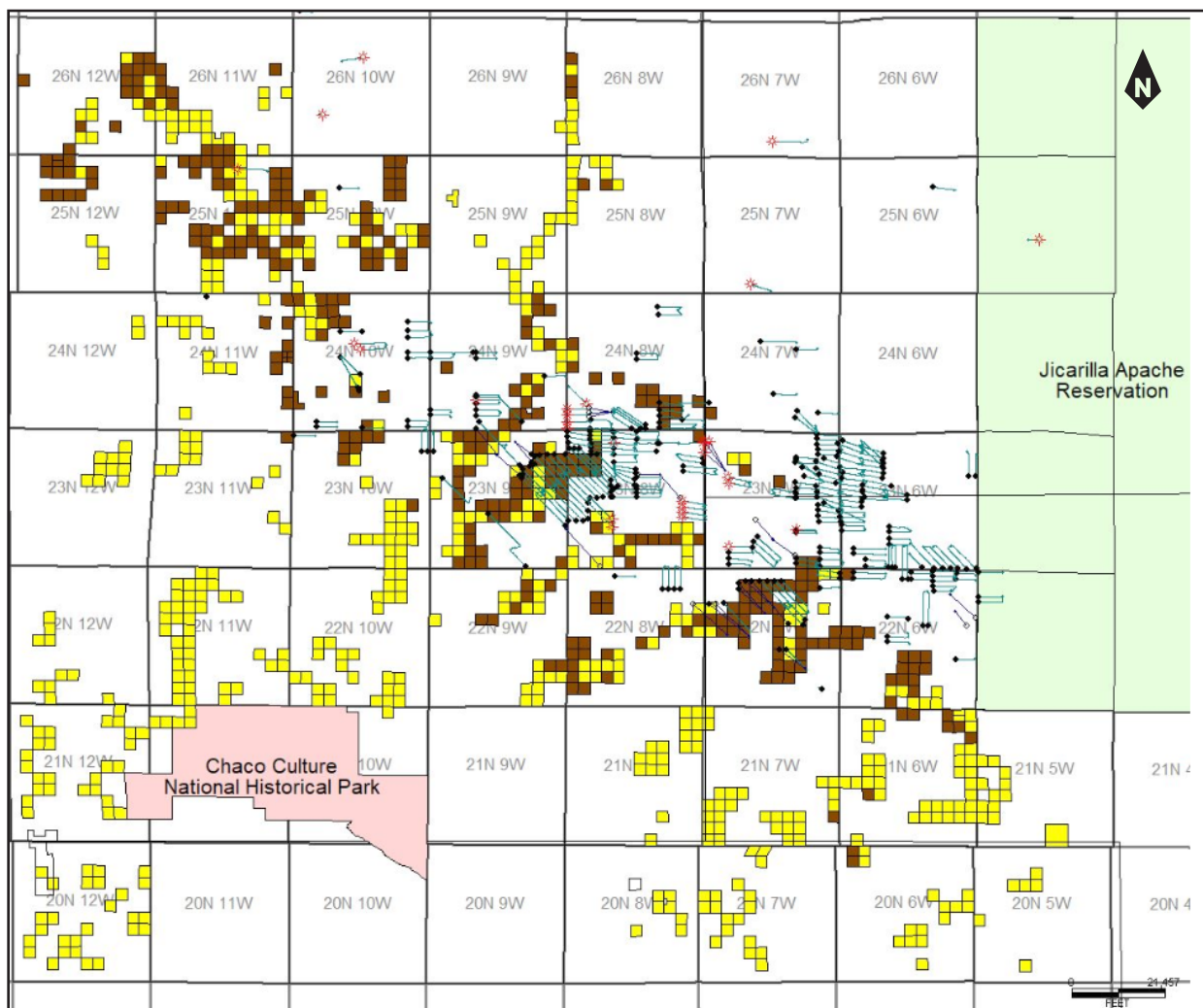


Figure 6. Shows the Eastern San Juan Cretaceous Stratigraphic Nomenclature. Blue lines represent shoreline shifts due to transgressive/regressive cycles.

Leasing Procedure

The mineral rights described in this brochure are held in Trust by the Federal Government for the benefit of the Indian Allottee and leased in accordance with 25 CFR PART 212-Leasing of Allotted Lands. These regulations are intended to ensure that Indian mineral owners desiring to have their resources developed are assured that they will be developed in a manner that maximizes their best economic interests and minimizes any adverse environmental impacts or cultural impacts resulting from such development. Potential unleased allotments are determined by Federal Indian Mineral Office (FIMO). The rental/royalty rate/lease terms are all set

by the FIMO office after an economic analysis for each lease has been completed. Leases for minerals shall be advertised for bids unless one or more of the Indian mineral owners of a tract sought for lease request the Secretary to negotiate for a lease on their behalf without advertising. The individual Indian mineral owners may request the Secretary to prepare, advertise and negotiate mineral leases on their behalf. If advertised, the lease will be offered to the successful highest bidder by way of sealed bid, oral auction or online lease sale. Contact FIMO to obtain information on scheduled lease sales and on updated information on unleased allotted tracts.



Legend

- Navajo Leased Allotment
- Navajo Allotted Open Acreage
- Chaco Culture National Historical Park
- Jicarilla Apache Reservation
- Mancos/Gallup Horizontal Gas Well
- Mancos/Gallup Horizontal Oil Well

Figure 4. New Mexico OCD Oil and Gas Map including townships containing allotments displaying the State, BLM, Tribal, and Private Leases and units with a 10 miles buffer around Chaco Canyon

References

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CONTACT INFORMATION

For more information about the Navajo Allottees and access to geologic data, please contact:

Navajo Nation Allotments

Federal Indian Minerals Office

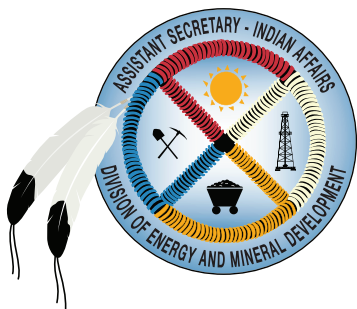
6251 College Blvd., Ste B
Farmington, NM 87402

Maureen Joe

FIMO Director

Maureen.joe@bia.gov

(505) 564-7671



Division of Energy and Mineral Development

13922 Denver West Parkway, Ste. 200
Lakewood, CO 80401

<http://bia.gov/DEMD>

Jerry Cuzella

Petroleum Geologist

jerome.cuzella@bia.gov

(720) 407-0619

Assistant Secretary–Indian Affairs
Office of Indian Energy and Economic Development
Division of Energy and Mineral Development

