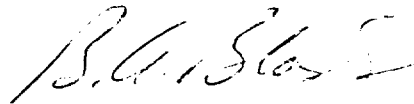


CAJA DEL RIO GRANDE UNIT

PEYTON YATES

May 30, 1985



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TABLE OF CONTENTS

	Page
Introduction.....	1
Proposed Unit Location and Description.....	1
Geologic Discussion.....	4
Summary and Conclusion.....	13

LIST OF ILLUSTRATIONS

FIGURE	Page
1. Regional Index Map.....	2
2. Land Map.....	Pocket
3. Pre-Tertiary Cretaceous Subcrop and Structure Contour Map.....	6
4. Stratigraphic Log Section.....	7

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INTRODUCTION

Peyton Yates proposes to drill a 6000' wildcat well in Section 21 of T.18N., R.8E., a 6500' wildcat well in Section 26 of T.17N., R.7E., and a 5000' wildcat well in Section 26 of T.16N., R.7E. to test the Cretaceous section. Accordingly, the purpose of this report is to summarize the geological reasons for forming a 168 section federal unit.

PROPOSED UNIT LOCATION AND DESCRIPTION:

The proposed Caja Del Rio Grande Unit (Figure 1) is located in central Santa Fe County, approximately six (6) miles west of Santa Fe, New Mexico. The unit is situated in a region of semi arid, low relief, pinon and juniper covered range land. The surface is covered by a thin veneer of eolian sands and soil over sandstone and basalt outcrops.

Surface drainage is provided by intermittent streams and arroyos which generally drain northeasterly, southeasterly and west and eventually into the Rio Grande. Topographically, the area is hilly and elevations range from 4384' in the central unit area to 5500' along the south side of the unit.

Primary access to the unit area will be provided by existing dirt roads which serve ranches in the area. Secondary access will be feasible from a loose network of smaller dirt roads serving windmills and wood gathering areas, as well as smaller ranches. New road construction for the proposed tests will be minimal.

The proposed unit area (Figure 2) comprises approximately 168 sections (4-2/3 townships). The unit is geographically bounded on the northwest by the Rio Grande River Canyon; on the west and southwest by the Sandoval County line; to the north by the San Ildefonso and Pojoaque Indian Pueblo Grants, and on the east by the La Mesa Federal Unit. It is bounded on the south by the Juana Lopez and Santo Domingo Grants.

GEOLOGICAL DISCUSSION

The Caja Del Rio Grande Unit is located on the east flank of the Espanola Basin. Within the unit, approximately 12,000' of sedimentary rocks of Mississippian, Pennsylvanian, Permian, Triassic, Jurassic and Cretaceous rock are believed to exist. An additional 5,000 feet of Tertiary rocks are believed to overlie the Mesozoic and Paleozoic section.

To date, no oil or gas wells have been drilled within the unit outline and only shallow, near surface water wells have penetrated the Tertiary section. However, reflection seismic lines are available which can be correlated to well control in the area south of the unit. These seismic lines show that a more or less complete geologic section does exist beneath the unit area.

The unit is located on prominent structural nosing and folding (Figure 3) on the westward plunging east flank of the Espanola Basin. Within this area, the Cretaceous section is directly analogous to the nosing, folding, and west plunging east flank of the San Juan Basin in the Puerto Chiquito and west Puerto Chiquita field areas. In these fields, the Cretaceous produces from fractured shale across westward plunging structural noses and synclines similar to our proposed unit.

The Cretaceous rocks in this area are our primary objectives. Figure 4 is a stratigraphic log section which shows the expected portion of the Cretaceous section to be drilled and illustrates the Cretaceous lithologies which are identical to and produce on depositional strike in the San Juan Basin.

From the east side of the unit, (which is defined geologically by the subcrop of the Dakota under the Tertiary cover), the Cretaceous section plunges westerly into the deeper axial portion of the basin.. The western limit of the unit is drawn at the -2000' contour on the top of the Niobrara. This is the approximate projected maximum depth of 9000' to the objective Niobrara section. Open fractures in our objectives deeper than the 9000' contour are in doubt.

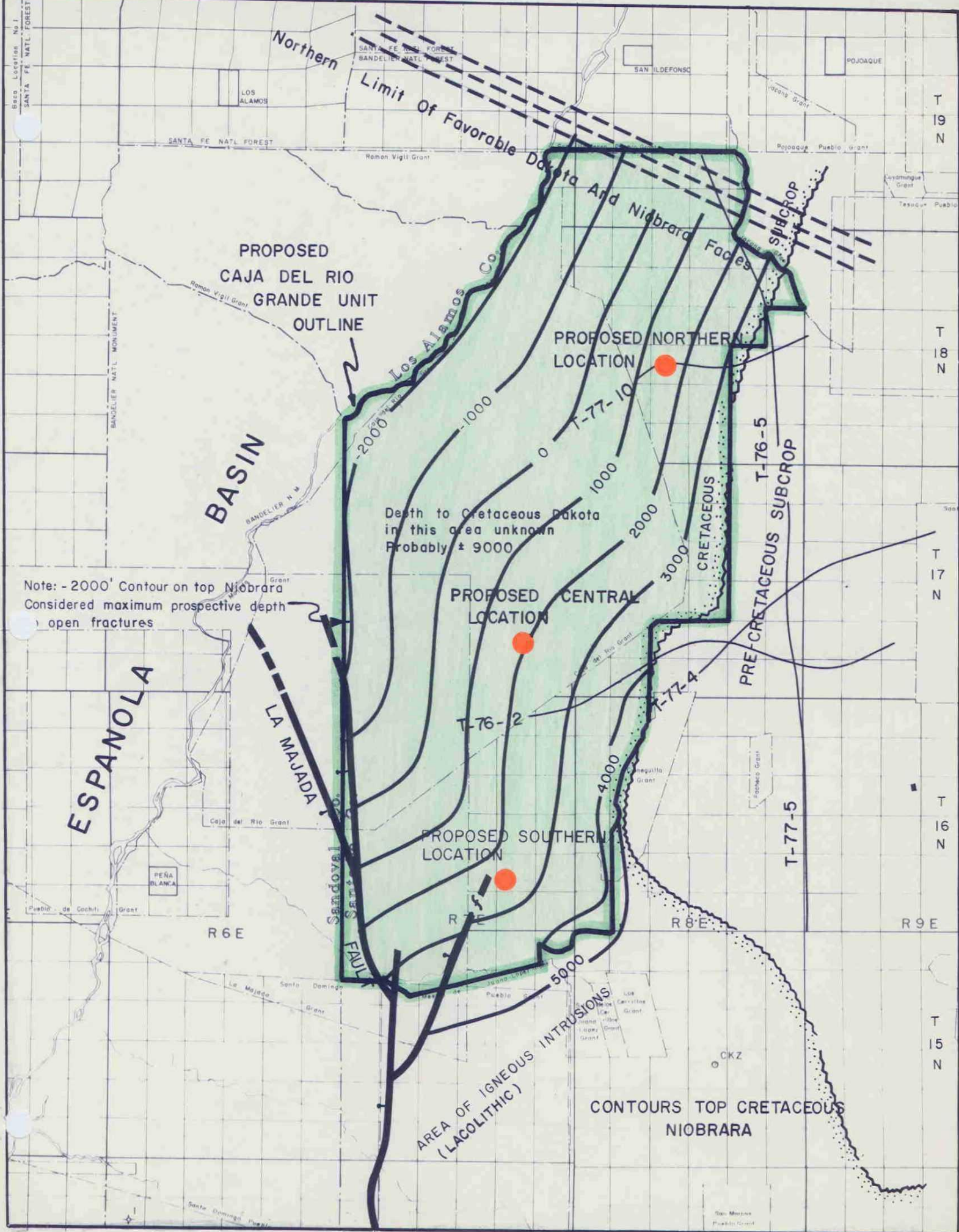
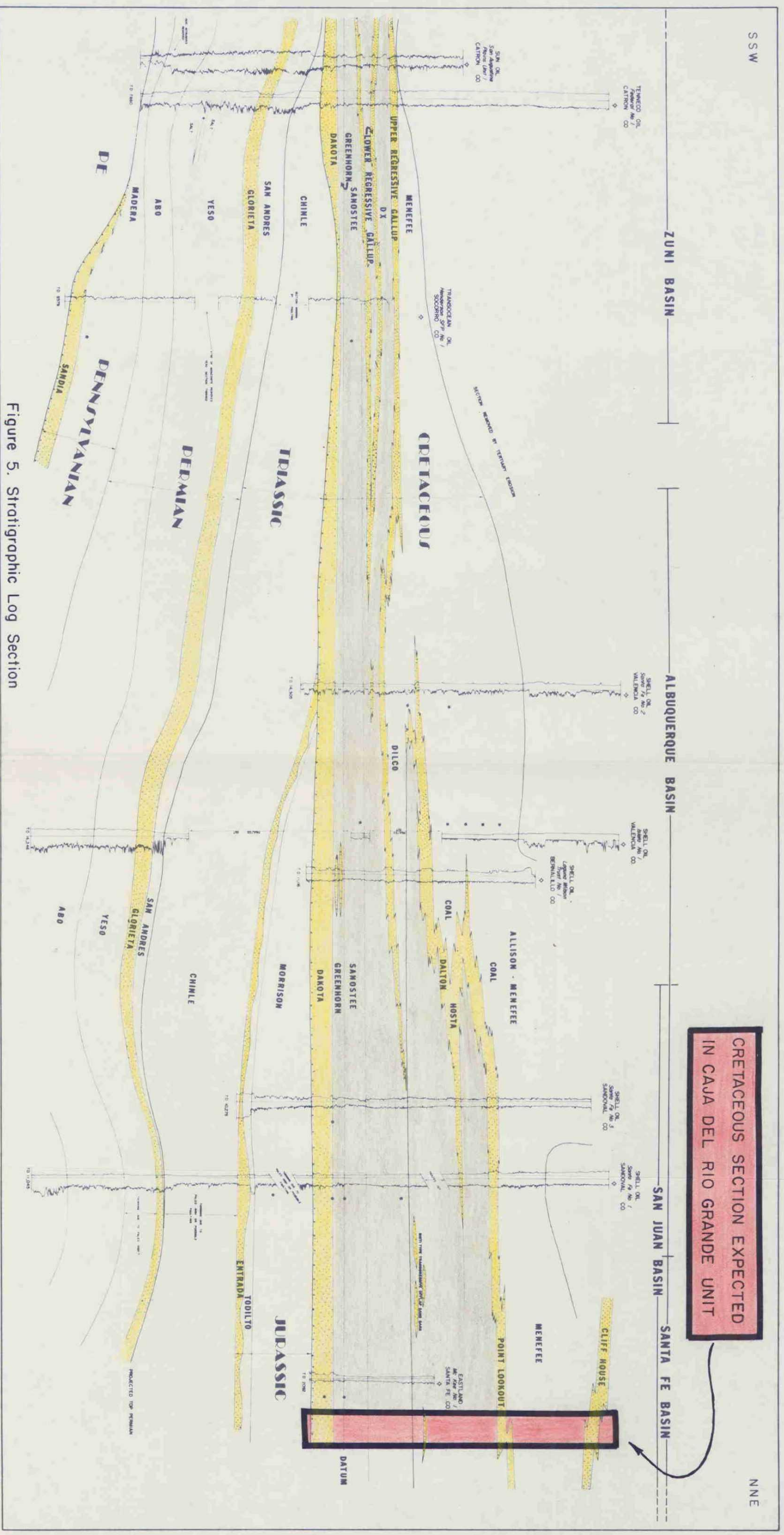


Figure No. 3 Pre-Tertiary Cretaceous Subcrop Map and Structure Contours.



The La Majada fault zone and its splinter faults limit the unit on the southeast. The Cretaceous section west of this fault zone is downfaulted to unknown depths.

The northern boundary is the limit of our seismic control which is also the San Ildefonso and the Pojoaque Pueblo Grants. This northern boundary is also limited geologically by the northern extent of favorable Dakota and Niobrara bar sands as projected from the San Juan Basin and the shaling out of the Niobrara section into a more calcareous and less prospective facies to the north.

The southern boundary of the unit is defined by the lack of sufficient overburden and fracture potential as the subcrop of the Cretaceous rises near the surface into an area of igneous laccolithic intrusions. Further to the south, there appears to be a lack of sufficient structural deformation or known noses to adequately fracture the potential reservoirs.

The initial well in Section 21 of T.18N., R.8E., will be designed to test the entire Cretaceous section including:

	Drill Depth
Menefee	2500'
Point Lookout	3300'
Mancos shale	3400'
Fractured Niobrara siltstones	4500'
Possible lower Niobrara bar sands	5000'
Lower Mancos shale	5050'
Possible Codell equivalent sands	5400'
Greenhorn limestone	5600'
Dakota bar sands	5800'+

Our primary objectives for expected production are the Mesa Verde, the fractured Niobrara, and Dakota bar sands.

Our second well in Section 21 of T.16N., R.7E., will also test the entire preserved Cretaceous section at this location including:

	Drill Depth
Mancos Shale	2600'
Fractured Niobrara siltstones	3700'
Possible lower Niobrara bar sands	4200'
Lower Mancos shale	4250'
Possible Codell equivalent sands	4600'
Greenhorn limestone	4800'
Dakota bar sands	5000'

Our primary objectives for expected production are the fractured Niobrara, basal Niobrara bar sands, and Dakota bar sands.

Using the West Puerto Chiquita oil field as an analog, the Niobrara in the area could contain in excess of 15 million barrels of oil. From possible bar sands in the Dakota (using the Chacon Dakota analog), and the lower Niobrara (Bisti type), there is a potential of 20 million barrels of oil. From the expected Mesa Verde, there is a potential of 1/2 trillion cu. ft. of gas.

Our third well in Section 26 of T.17N., R.7E., will also test the preserved Cretaceous section at this central location including:

	Drill Depth
Tertiary Basalts	Surface
Santa Fe Group	300'
Galisteo	2500'
Menefee	3600'
Point Lookout	3800'
Mancos shale	3900'
Fractured Niobrara siltstones	5000'
Possible lower Niobrara bar sands	5500'
Lower Mancos shale	5550'
Possible Codell equivalent sands	5900'
Greenhorn limestone	6100'
Dakota bar sands	6300'

Our primary objectives for expected production are the Mesa Verde (Menefee-Point Lookout), the fractured Niobrara, basal Niobrara bar sands, and the Dakota.

Secondary objectives would include other units in the Cretaceous section such as the possible Codell equivalent sands and fractured Greenhorn limestones, as well as sand units in the overlying Tertiary section.

Should the unit wells prove to be non-commercial, the applications may be amended to permit testing the Jurassic Entrada which is approximately 1000 feet below the Dakota throughout the unit area. Such a contingency would require drilling to about 7000' at the first proposed location, to about 6000' at the second location, and to about 7300' at the third location.

The three locations were chosen to test different portions of the unit and on different structural folds. Two locations are on plunging noses (north and central), and the other in a plunging syncline.

SUMMARY AND CONCLUSIONS

The structural map on top of the Cretaceous Niobrara (Figure 3) shows the most compelling evidence for the unit as proposed. Large west-plunging and tectonically fractured anticlinal noses and plunging synclines in the Cretaceous section exist on the east flank of the Espanola Basin in this area. The area is analogous to and on direct stratigraphic trend with the productive fractured Niobrara oil fields on the east flank of the San Juan Basin. Stratigraphically, this area should be almost identical to these fields with the major objective sections in the same general depth range.

In conclusion, the outline of the 4-2/3 township Caja Del Rio Grande Unit includes all prospective drillable locations which we can presently see. All the geological parameters appear to justify the formation of the unit as proposed since fractured reservoirs usually need large spacing considerations for economic drainage and maximum conservation.