

EXHIBIT "B"

SAN JUAN 30-5 UNIT  
Rio Arriba County, New Mexico

GEOLOGIC REPORT

AMENDED INITIAL DAKOTA PARTICIPATING AREA

NORTHWEST PIPELINE CORPORATION

BY:



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EXHIBIT "B"

SAN JUAN 30-5 UNIT  
RIO ARriba COUNTY, NEW MEXICO

GEOLOGIC REPORT  
DAKOTA PRODUCING INTERVAL

AMENDED INITIAL DAKOTA PARTICIPATING AREA

GENERAL INFORMATION

The San Juan 30-5 Unit is located along the central-eastern margin of the productive portion of the San Juan Basin. The unit has a total of 20,092.24 acres in Township 30 North, Range 5 West. All or parts of Sections 1, 2, 3, 4, and 12 totaling 2,329.56 acres have been eliminated from the unit.

Within the unit area, the "Dakota Producing Interval" (discussed below) has been tested in four (4) wells, resulting in two (2) plugged and abandoned wells, one (1) non-commercial gas well and one (1) commercial gas well (No. 37). In addition, the #1-57 Schalk well, located in Section 12, is indicated to be commercial. This well is located in a communitized drilling block which includes unit acreage.

The "Dakota Producing Interval" consists of the Graneros, Dakota, and Upper Morrison formations below the Greenhorn limestone. This interval has been defined and the lithology and stratigraphy have been discussed in geological reports for adjacent units.

Included in this report under Exhibit "C" are two maps (Figure No. 1 and Figure No. 2). Figure No. 1 is a Dakota Structure Map contoured on the Graneros shale (contour interval = 50 feet). Present structural control indicates an anticlinal nose trending northerly on the east side of the Unit. The corresponding southerly nosing synclinal flexure occupies the central portion of the unit. Regional strike is indicated to be northwest-southeast and regional dip is approximately 50 feet per mile to the northeast.

Figure No. 2 is an isopachous map of the net productive Dakota sandstone as interpreted from well logs in the presently producing wells.

Exhibit "D", Table I is a tabulation of the Dakota gas production from the Unit. The cumulative production to January 1, 1975; the 1975 monthly production for January through November; the total production for eleven (11) months of 1975; and the cumulative production to December 1, 1975 are shown.

The San Juan Unit #30-5 has produced a total of 504,452 MCF from the Dakota as of December 1, 1975.

AMENDED INITIAL DAKOTA PARTICIPATING AREA

Effective Date: January 1, 1974

Proposed Acreage: Township 30 North, Range 5 West, N.M.P.M.,  
Section 8: W/2 (320 Acres)  
Section 12: Lot 1 (14.29 Acres)  
                    Lot 2 (14.34 Acres) and,  
                    SW/4 of the NE/4 (40 Acres)  
Total: Section 12 (68.63 Acres)  
  
Total: Section 8 & 12 (388.63 Acres)

The Amended Initial Dakota Participating Area is based on interpretation of suites of well logs, the initial test results and analysis of the monthly production of the Northwest Pipeline Corporation (formerly El Paso Natural Gas Company) San Juan Unit No. 37 and the Coastline Petroleum #1-57 Schalk wells. From this data, it is inferred that the proposed acreage is capable of producing unitized substances in commercial quantities from the Dakota Producing Interval.

The Northwest Pipeline #37 well is located 1630' from the South Line and 1670' from the West Line of Section 8, Township 30 North, Range 5 West, N.M.P.M., Rio Arriba County, New Mexico. The well was spudded on November 23, 1973 and completed January 10, 1974 at a total depth of 7872' (7863' PBTD). The Dakota Producing Interval was perforated as follows: 7696'-7702', 7712'-7718', 7744'-7752', 7776'-7782' and 7812'-7820'. The well was tested for three (3) hours with an Absolute Open Flow potential of 4039 MCF/D. The shut-in tubing pressure was 2956 psia and the shut-in casing pressure was 2967 psia. On the basis of this well, the W/2

of Section 8 (320 Acres) is recommended for inclusion in the Amended Initial Dakota Participating Area.

The Coastline Petroleum #1-57 Schalk well is located 790' from the North Line and 1650' from the West Line of Section 12, Township 30 North, Range 5 West, N.M.P.M., Rio Arriba County, New Mexico. The well is situated in a communitized drilling block in the N/2 of Section 12, which includes 68.63 acres of unit land. The well was spudded on March 31, 1973 and reached the total depth of 8222' on July 19, 1973. The Dakota Producing Interval was perforated with two shots per foot as follows: 8010'-8024', 8056'-8066', 8080'-8114', 8141'-8162', and 8176'-8190'. The perforations were hydraulically fractured with a mixture of 200,000 gallons of water and 100,000 pounds of sand. The well was flowed for four (4) hours on a back pressure test January 17, 1974. The Absolute Open Flow potential was 5147 MCF/D with a SIPT of 2922 psia and a SIPC of 2947 psia. On the basis of this well, Lots 1 and 2 and the SW/4 of the NE/4 of Section 12 are also recommended for inclusion in the Amended Initial Dakota Participating Area.

The E/2 of Section 8 and Sections 9, 10 and 11 between the #37 and the #1-57 Schalk wells are not recommended for inclusion in the participating area at this time. While it is apparent that the Dakota Producing Interval covers much of the unit, the occasional dry holes and/or non-commercial wells indicate that single step-outs are the preferred development procedure. The future plan of development will allow for orderly expansion of the present participating area.

## EXHIBIT "B"

SAN JUAN 30-5 UNIT  
Rio Arriba County, New Mexico

Geologic Report  
Dakota Producing Interval

First and Second Expansions  
of the Dakota Participating Area

### GENERAL INFORMATION

The San Juan 30-5 Unit is located along the central eastern margin of the productive portion of the San Juan Basin. The unit has a total of 20,092.24 acres in Township 30 North, Range 5 West. All or parts of Sections 1, 2, 3, 4 and 12 totaling 2,392.56 acres have been eliminated from the unit.

Within the unit area, the "Dakota Producing Interval" has been tested in seven (7) wells, resulting in two (2) plugged and abandoned wells (#6 and #28), one (1) non-commercial gas well (#27) and three (3) commercial gas wells (#37, #39 and #47). A fourth gas well, the Coastline Petroleum #1-57 Schalk Well has been discussed in the Amended Initial Dakota Participating Area.

The "Dakota Producing Interval" consists of the Graneros, Dakota and Upper Morrison formations below the Greenhorn limestone. This interval has been defined and the lithology and stratigraphy have been discussed in geological reports for adjacent units.

Included in this report under Exhibit "C" are two maps (Figures No. 1 and 2). Figure No. 1 is a Dakota structure map contoured on the Graneros shale (contour interval - 50 feet). Present structural control indicates an anticlinal nose trending northerly on the east side of the unit. The corresponding southerly nosing synclinal flexure occupies the central portion of the unit. Regional strike is indicated to be northwest-southeast and regional dip is approximately 50 feet per mile to the northeast.

Figure No. 2 is an isopachous map of the net productive

Dakota sandstone as interpreted from well logs in the presently producing wells.

Exhibit "D", Table I is a tabulation of the Dakota gas production from the unit. The cumulative production to January 1, 1975; the 1975 monthly production for January through November; the total production for eleven (11) months of 1975; and the cumulative production to December 1, 1975 are shown. The San Juan 30-5 Unit has produced a total of 504,452 MCF from the Dakota as of December 1, 1975.

FIRST EXPANSION OF THE DAKOTA PARTICIPATING AREA

Effective Date: July 1, 1975

Proposed Acreage: Township 30 North, Range 5 West, N.M.P.M.,  
Section 7, N/2 (320 Acres)

The First Expansion of the Dakota Participating Area is based on interpretation of the well logs and the initial test results of the Northwest Pipeline Corporation San Juan 30-5 Unit #39 Well. From this data, it is inferred that the proposed acreage is capable of producing unitized substances in commercial quantities from the Dakota Producing Interval.

The Northwest Pipeline #39 Well is located 1830' from the North line and 1700' from the East line of Section 7, Township 30 North, Range 5 West, N.M.P.M., Rio Arriba County, New Mexico. The well was spudded July 4, 1975 and reached the total depth of 7860' on July 16, 1975. The Dakota Producing Interval was perforated as follows: 7697'-7714', 7740'-7748', 7766'-7784'; and 7812'-7822'. The perforated intervals were treated with 500 gallons of 7 1/2% hydrochloric acid solution, then hydraulically fractured with 46,000 pounds of sand and 70,000 gallons of water. The Absolute Open Flow potential of 1703 MCF/Day was established on July 30, 1975. The seven (7) day shut-in pressures were 2754 psia on the tubing and 2761 psia on the casing.

On the basis of this well, the N/2 of Section 7 (320 Acres) is recommended as the First Expansion of the Dakota Participating Area.

SECOND EXPANSION OF THE DAKOTA PARTICIPATING AREA

Effective Date: August 1, 1975

Proposed Acreage: Township 30 North, Range 5 West, N.M.P.M.,  
Section 17, W/2 (320 Acres)

The Second Expansion of the Dakota Participating Area is based on interpretation of the well logs and the initial test results of the Northwest Pipeline Corporation's San Juan Unit #47. From this data, it is inferred that the proposed acreage is capable of producing unitized substances in commercial quantities from the Dakota Producing Interval.

The Northwest Pipeline #47 Well is located 1450' from the South line and 970' from the West line of Section 17, Township 30 North, Range 5 West, N.M.P.M., Rio Arriba County, New Mexico. The well was spudded on July 20, 1975 and reached the total depth of 7945' on July 31, 1975. The Dakota Producing Interval was perforated with one shot per foot as follows: 7808', 7816', 7846', 7862', 7878', 7886', 7914' and 7924'. The perforated intervals were treated with 800 gallons of 7 1/2% hydrochloric acid solution, then hydraulically fractured with 43,000 pounds of sand and 30,000 gallons of water. The Absolute Open Flow potential of 2468 MCF/Day was established on August 19, 1975. The seven (7) day shut-in pressures were 2643 psia on the tubing and 2645 psia on the casing.

On the basis of this well, the W/2 of Section 17 (320 Acres) is recommended for inclusion in the Dakota Participating Area as the second expansion.

JND/pt