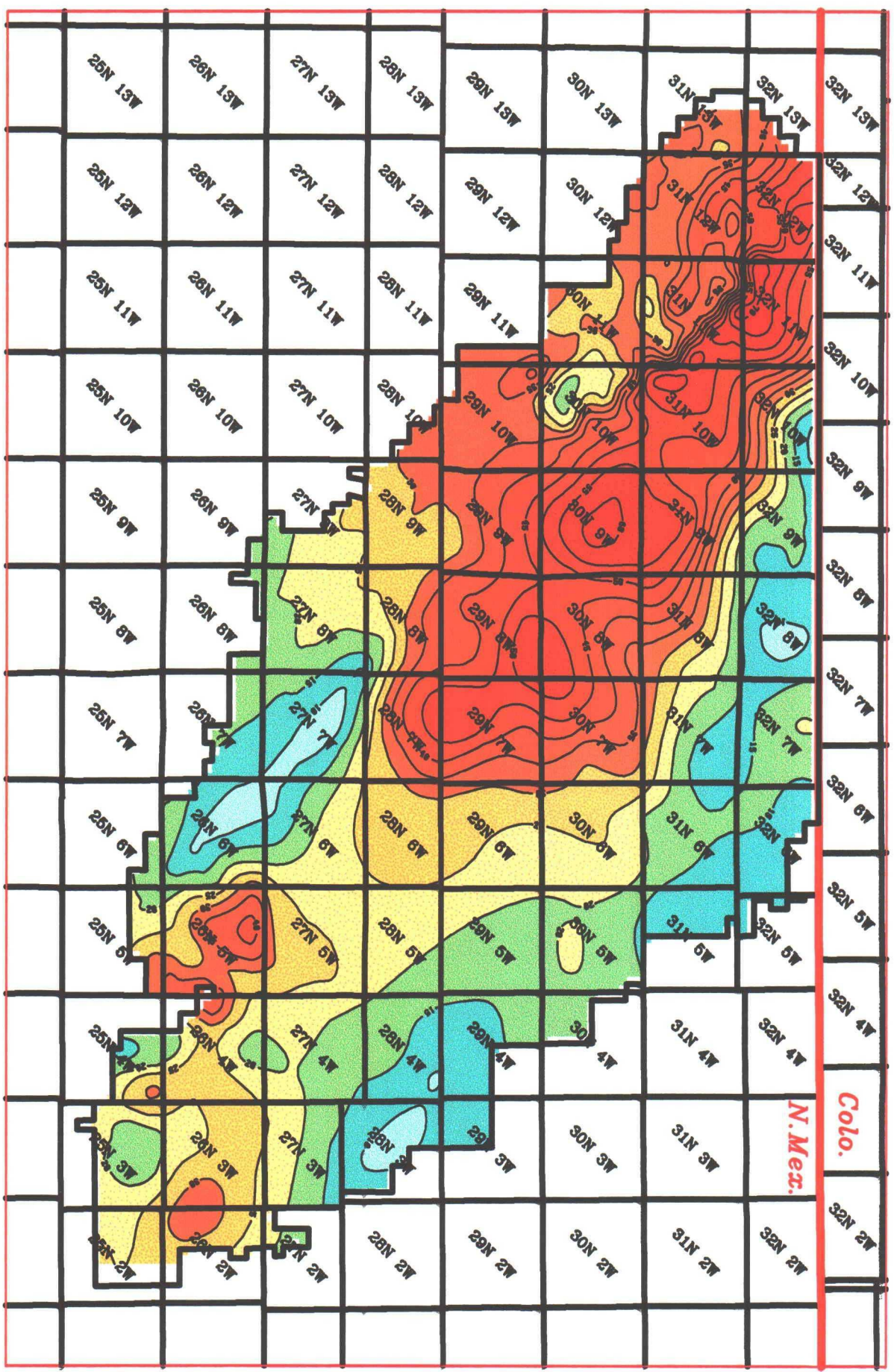Mesaverde OGIP
CI = 5 MMCF/ACRE

J. Dehart
W. H. Babcock
10/98

Steps to Determine Original Gas in Place

1) Gather 1720' core from 9 wells distributed in high and low EUR areas.

FEET CORED BY ZONE AND WELL

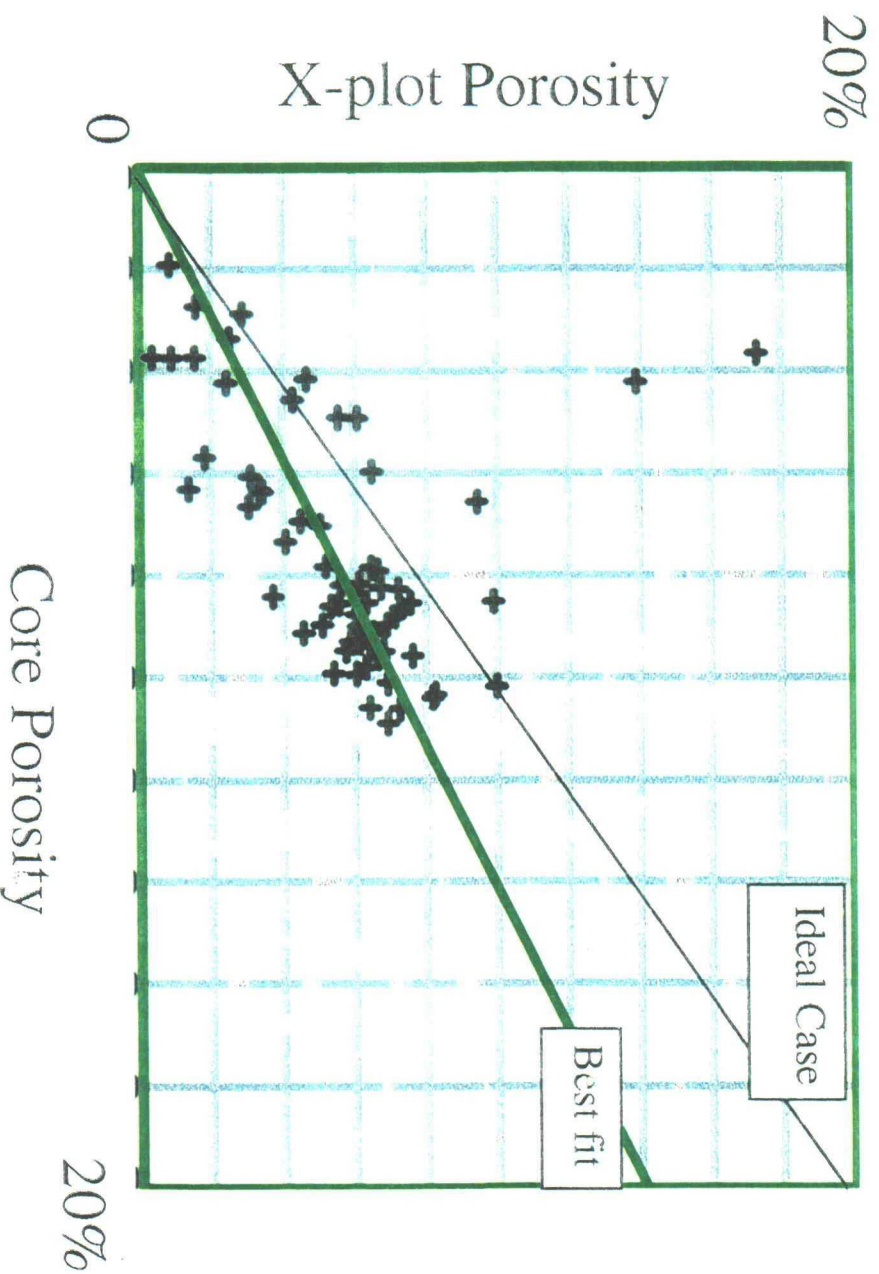| WELL	CLIFF HOUSE	MENEFEE	POINT LOOKOUT
Howell D2R	90	58	90
SJ 28-4 #1	136	165	76
SJ 28-6 #3	100	49	103
SJ 29-7 #102A	50	71	69
SJ 30-4 #40	60		
SJ 32-9 #7A	72	39	77
Sunray H Com #6	123	57	
Atlantic C #4	28	10	109
Morris Com #100	88		

2) Digitize approximately 2000 well logs with Gamma ray, Induction, and Density logs. Coverage is approximately 1-2 well per section in the fully developed portion of the field.

3) Determine best log analysis algorithm to match core values (matrix) to log data. This gives a firm tie of indirect data (logs) to direct data (core) for the matrix parameters. Used Core Lab and Geoquest as consultants to help with the technical analysis.

4) Identify Fracture component of reservoir from wire-line logs and determine Original Gas in Place (OGIP). This involved first using above log analysis algorithm on 2000 logs to get to matrix parameters. Then using Picket plots and comparing results with core data determining the fracture component of the reservoir for final analysis. Only used matrix parameters in Menefee because of uncertainties in fracture analysis in these rocks, probably due to rapid changes in facies. OGIP was then calculated at ½ foot intervals and summed up for each zone and each well.

5) Prepare contour maps of OGIP.

Dphi vs Core Data

20%

Dphi

Phi

0

Core Porosity

20%

Best fit

Ideal Case

20%
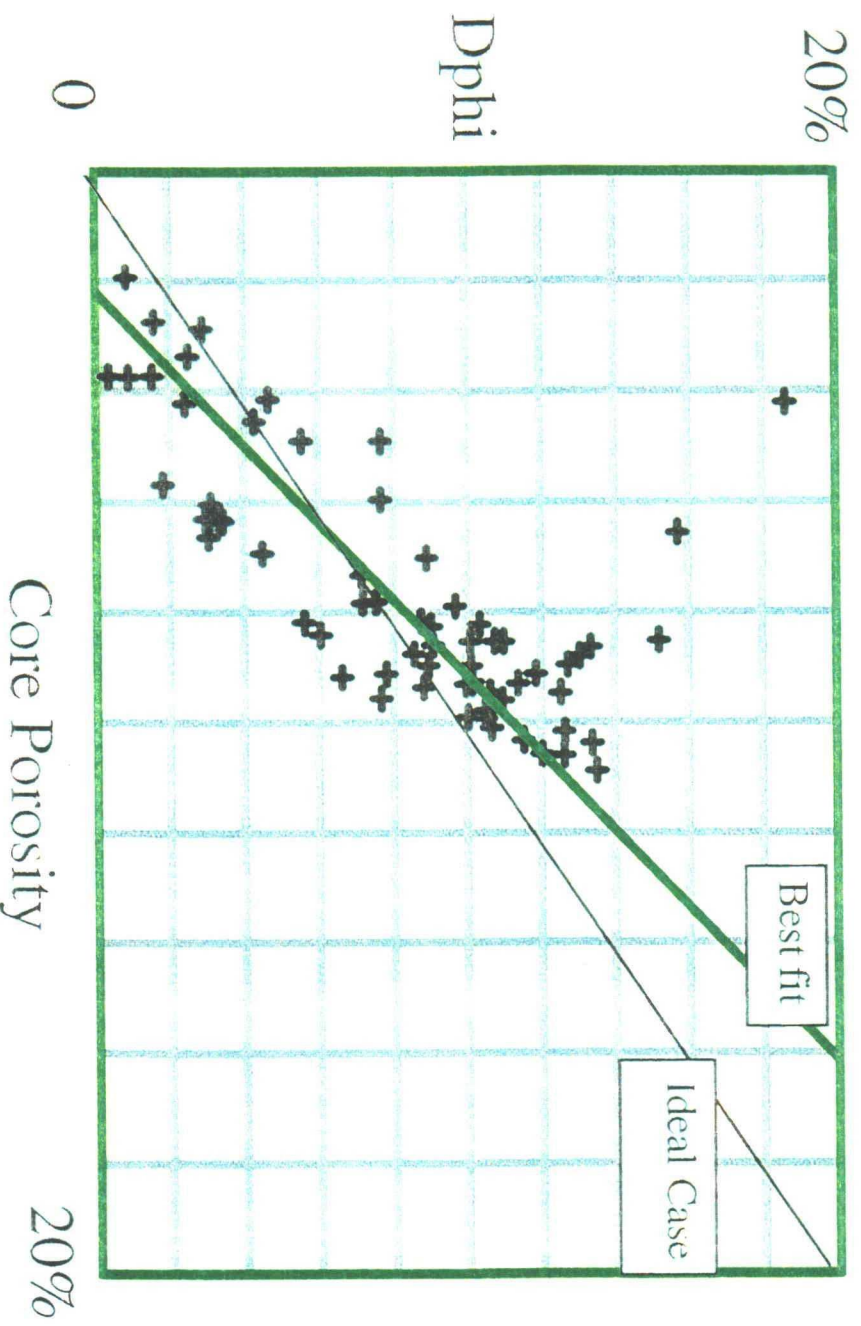
*Data from SJ 32-9 Unit #7A, Cliffhouse

X-Plot Porosity vs Core Porosity

X-plot Porosity

20%

0

Core Porosity

20%

Ideal Case

Best fit
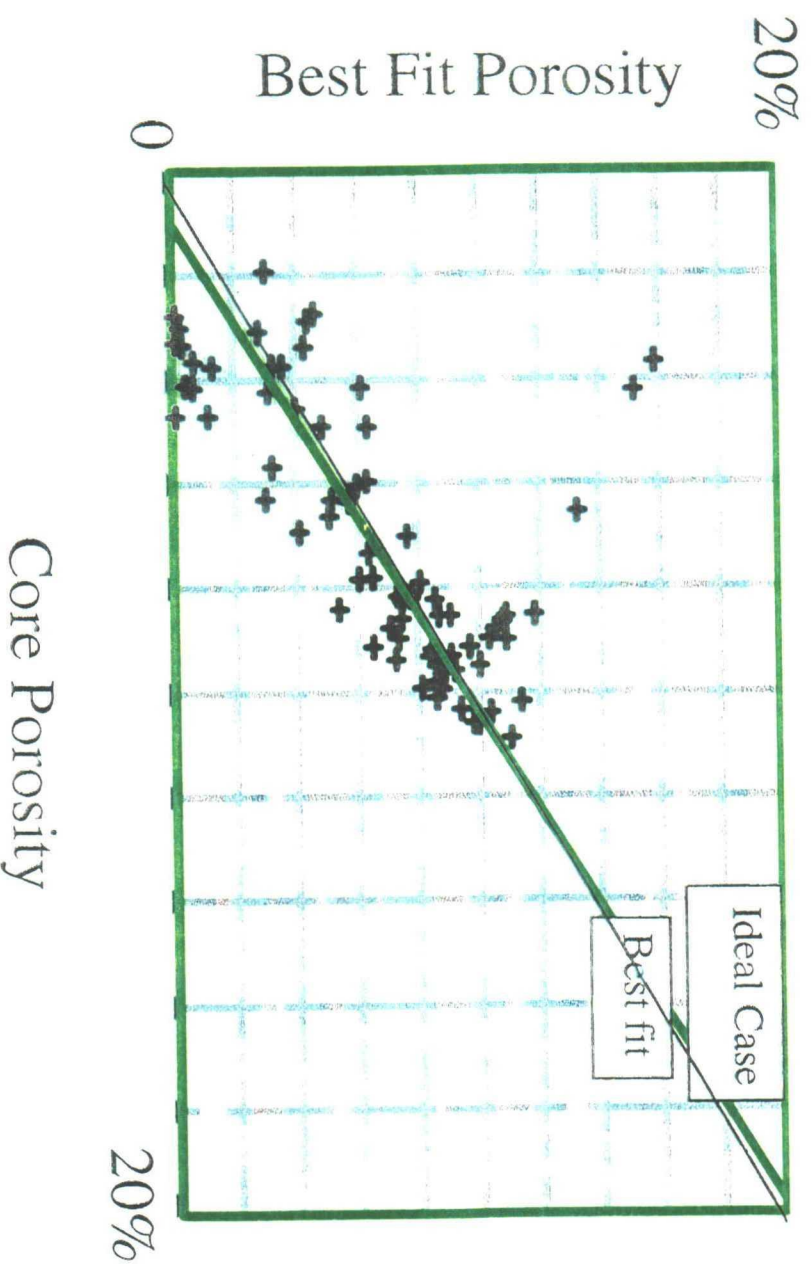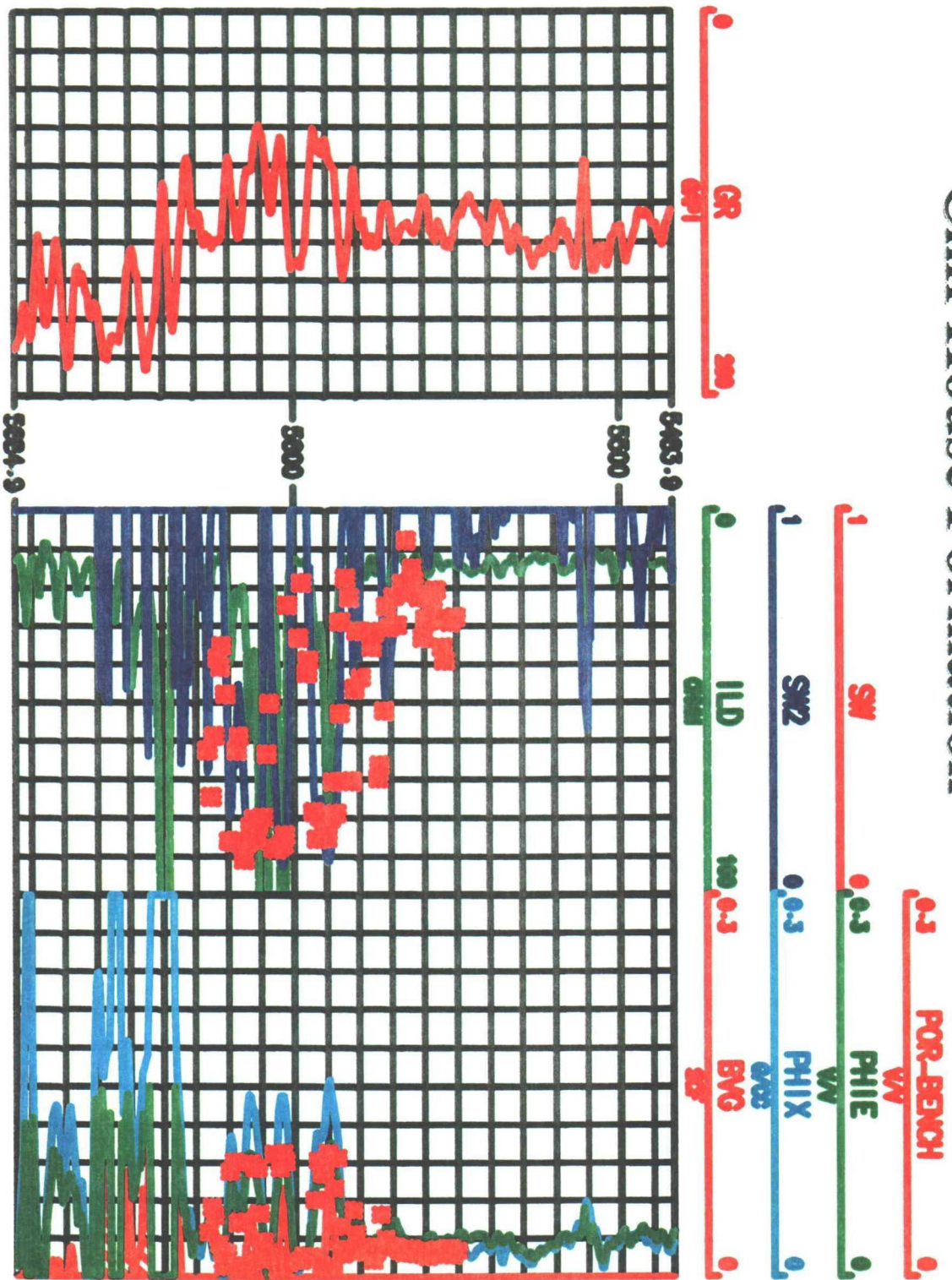
*Data from SJ 32-9 Unit #7A, Cliffhouse

Empirical Best Fit Core to Log

- 1) Calculate Dphi
  - Rho_fluid = .3
  - Rho_matrix = 2.66

- 2) Correct for shale volume
  - Gr derived Vsh (60-180)
  - Rho_shale = 2.6

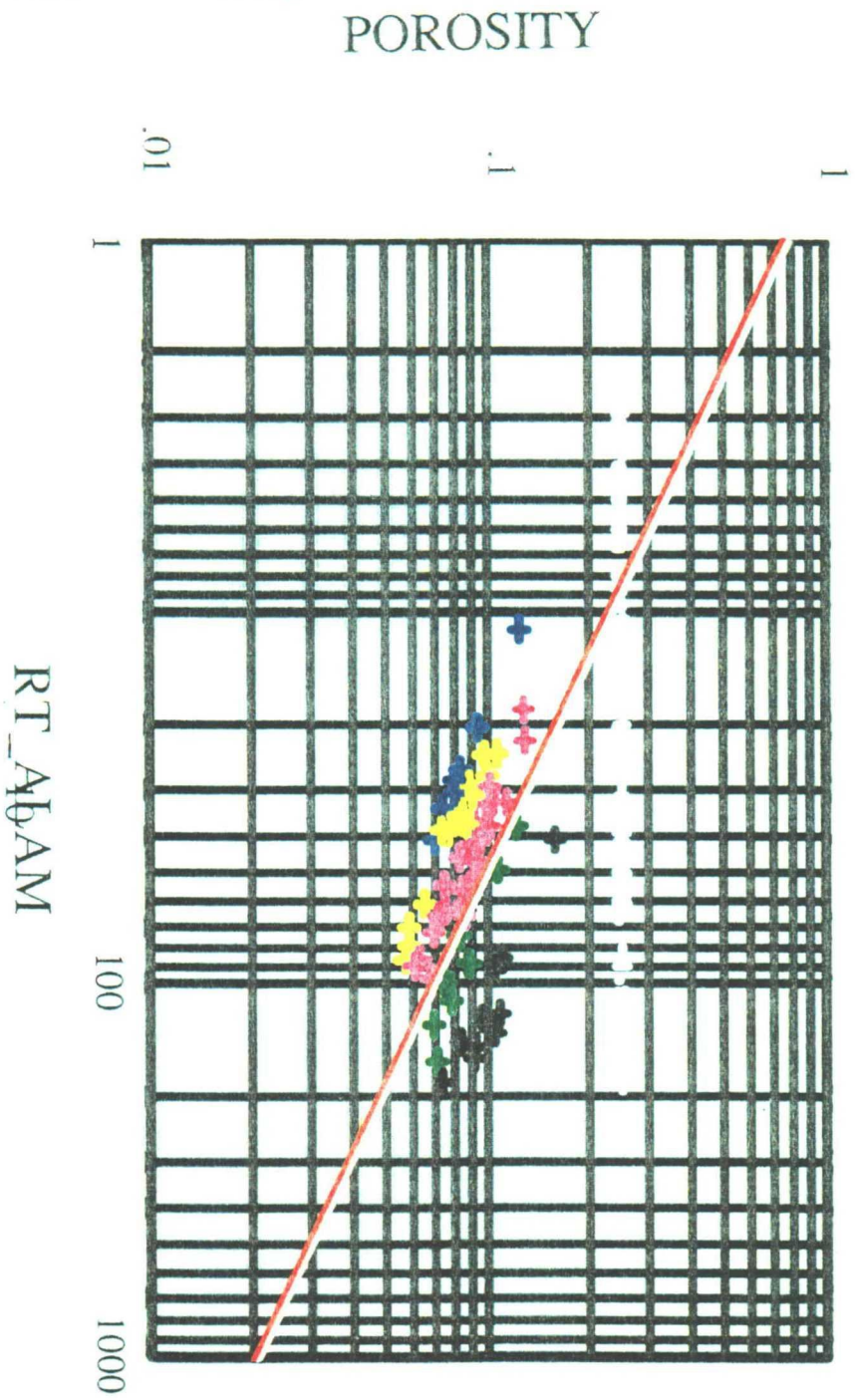- 3) Increase rho_matrix for higher v_shale to account for thin bed affects

Best fit core to log

Best Fit Porosity

20%

0

Core Porosity

Best fit

Ideal Case

20%

*Data from SJ 32-9 Unit #7A, Cliffhouse

San Juan 32-9 #7A
Cliff House Formation

Pickett Plot

POROSITY

RT_AbAM

*Data from SJ 32-9 Unit #7A, Cliffhouse

Partitioning Coefficient Chart

Matrix m = 2.0

System m

Matrix Porosity (%)

Total Porosity

4%
6%
8%
10%
12%
14%

v = 0.70
v = 0.60
v = 0.50
v = 0.40
v = 0.30
v = 0.20
v = 0.10
v = 0.05
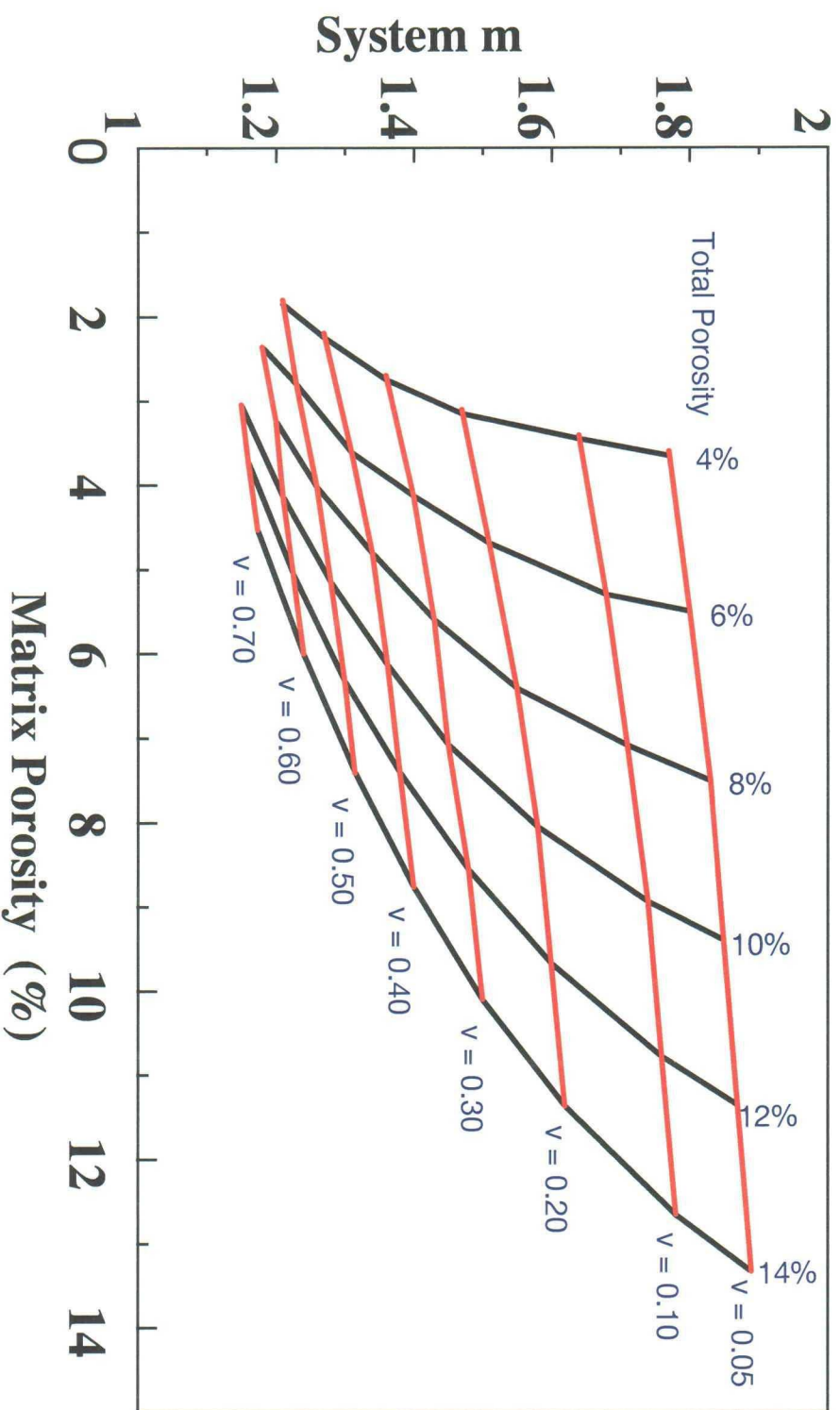
Sensitivity to "M"
San Juan 32-9 Unit #7A - Cliffhouse Formation

GIP (BCF)

Cementation Exponent "M"

v = 0
v = .03
v = .08
v = .15

BURLINGTON
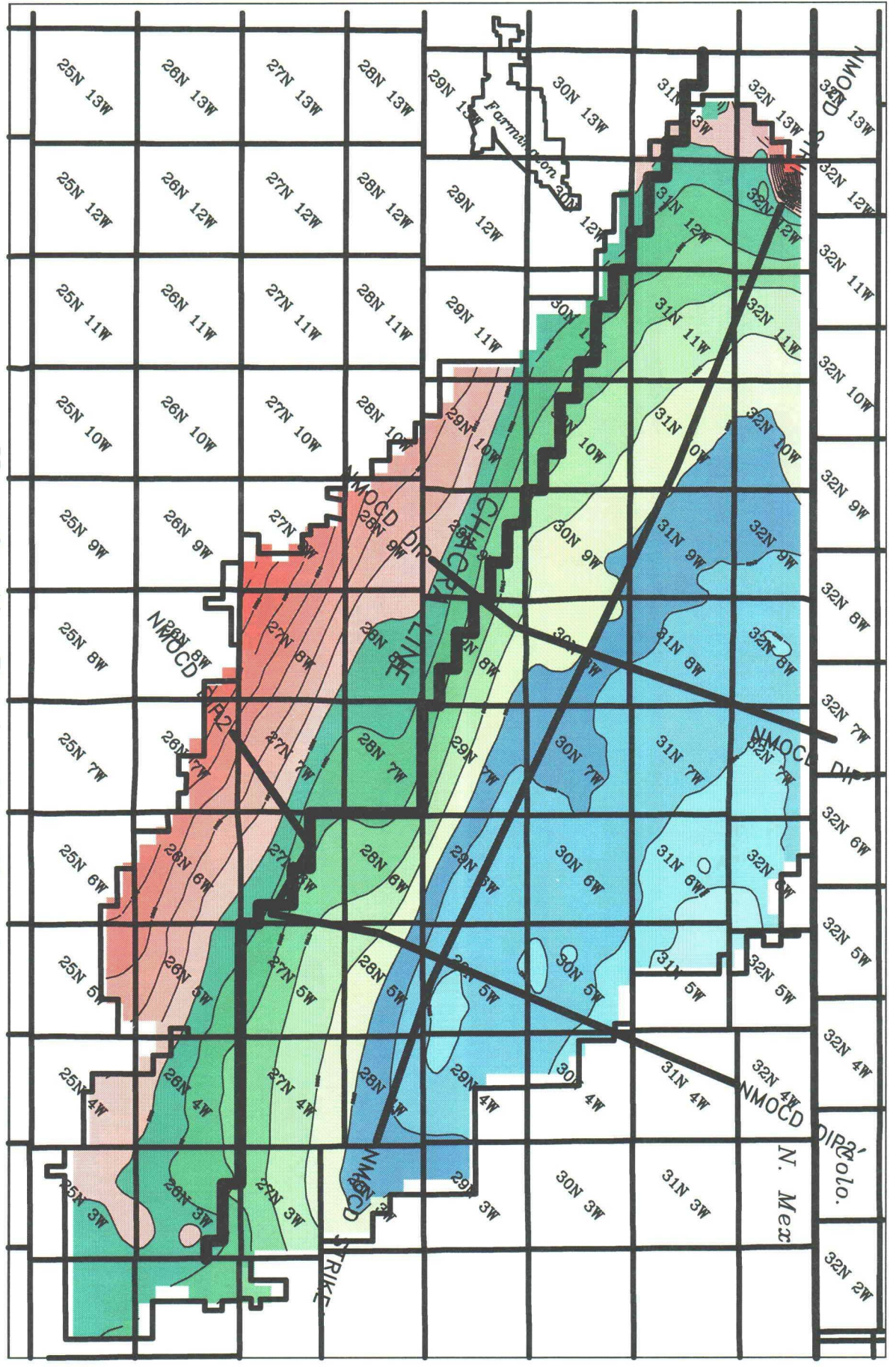RESOURCES
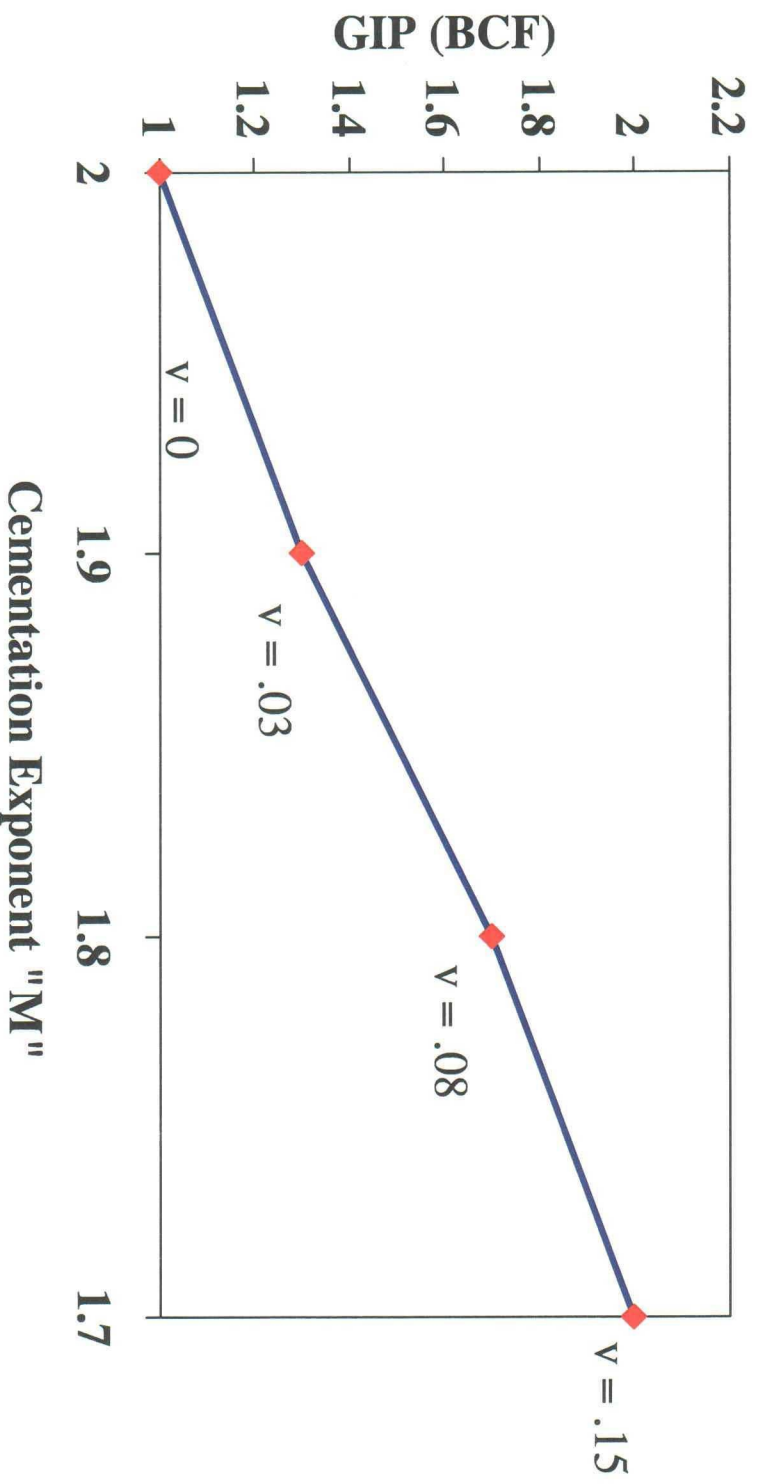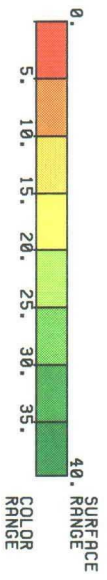
Mesaverde PSI/Yr Drop
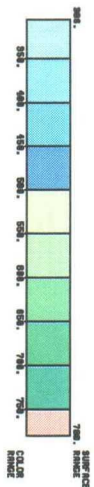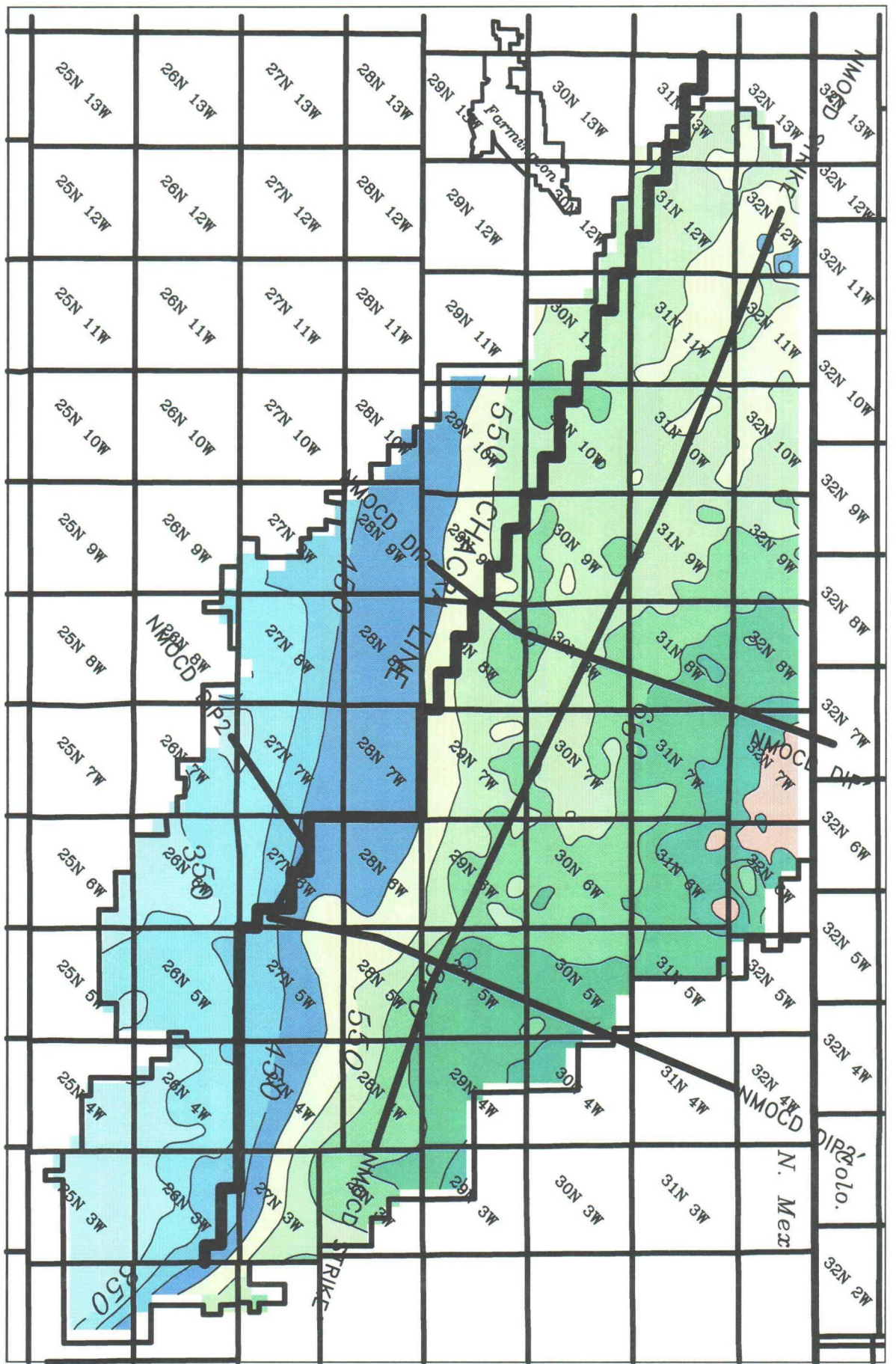
CI = 5 PSI/Yr

J.L.Dehart
W.H.Babcock
10/98
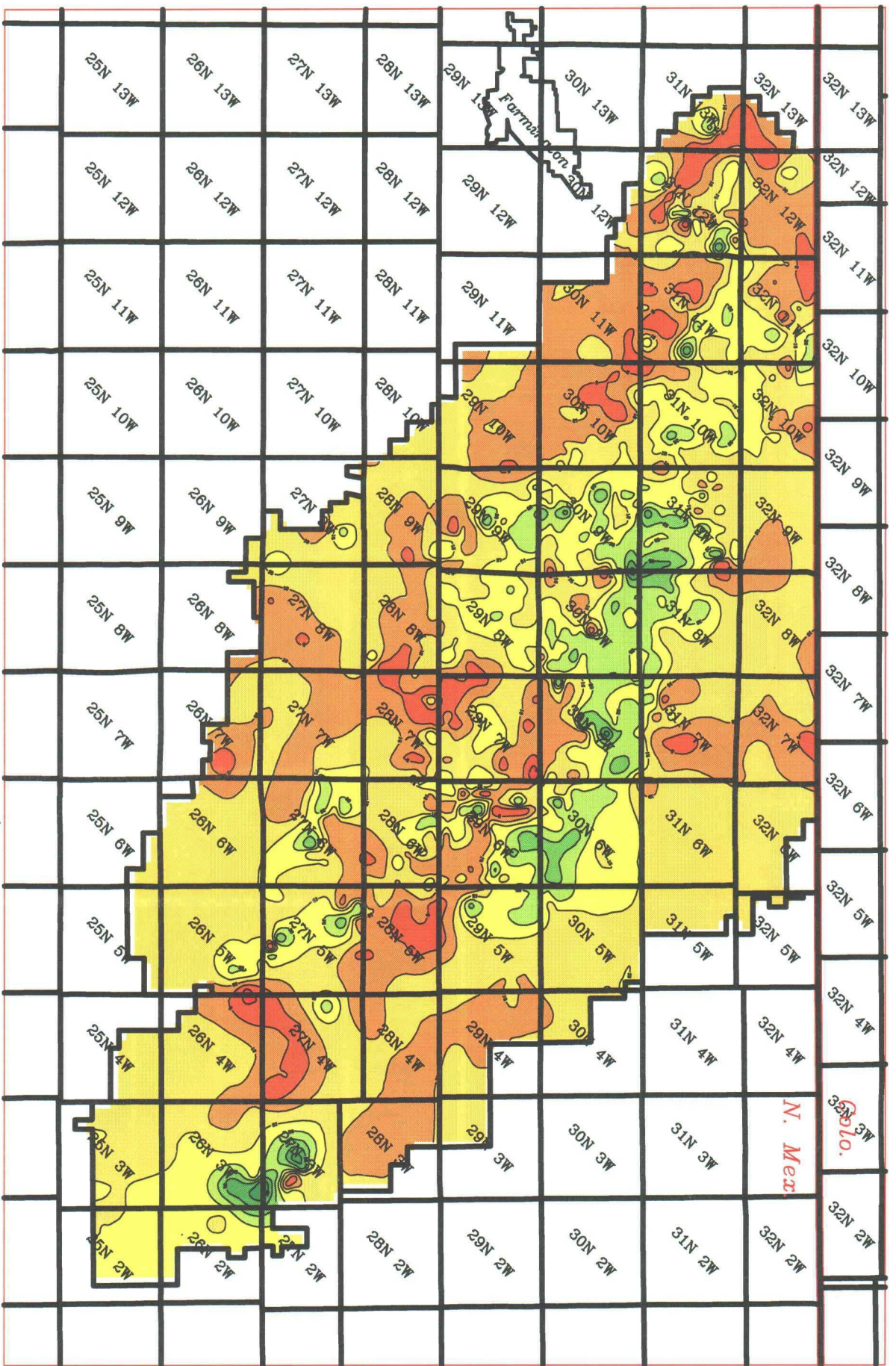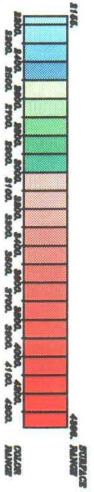
Huerfanito Bentonite Structure

CI = 100'

W.H. Babcock
J. Dehart
10/98

Bottom of Pictured Cliffs to Huerfanito Bentonite Isopach

CI = 50'

W.H. Babcock
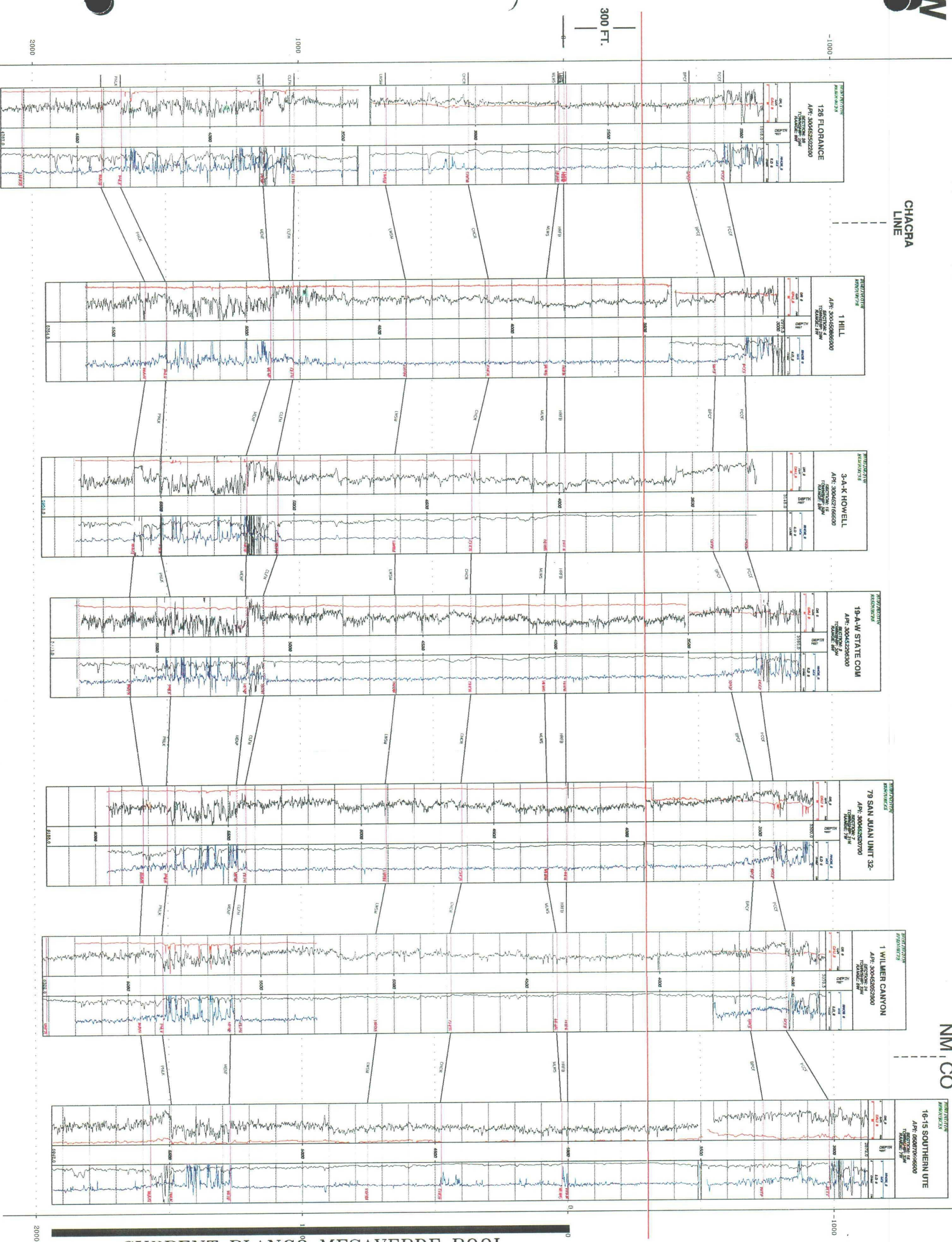J. Dehart
10/98

NMOCD Dip

SW · · NE

CHACRA LINE

NM, CO

300 FT.

CURRENT BLANCO MESAVERDE POOL

PROPOSED BLANCO MESAVERDE POOL