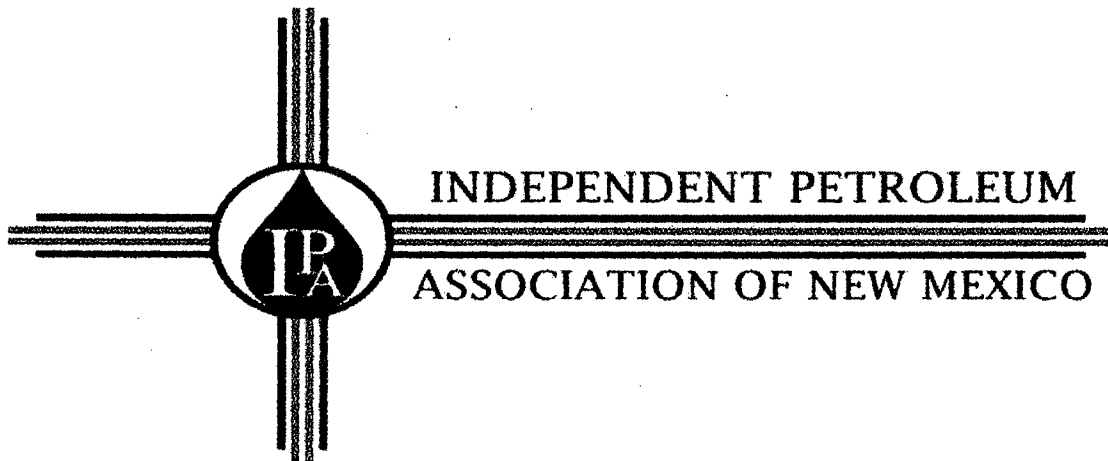




OCD CASE NOS. 14784 AND 14785

IPANM Petition to amend Title 19, Chapter 15,
part 17 (The PIT Rule)

May 14 – 18, 2012

IPANM exhibit 16
Rebuttal Modeling - Mullins

RECEIVED
2012 JUN 12 P 2 1-5

Pit Release Modeling

Temporary Drilling Reserve Pit Risk Assessment Modeling for
New Mexico Rule 17 Modifications

Case # 14784 (NMOGA)
Case # 14785 (IPANM)

Prepared by Thomas E. Mullins, P.E.
June 11, 2012

Prepared for the Independent Petroleum Association of New Mexico

Risk Based Assessment

HELP & MULTIMED Modeling for 25' to Ground Water, Low Chloride Drilling Fluids (< 15,000 mg/l)

100' Distance to a receptor

Utilized Aztec, NM Climatological Conditions & Carlsbad, NM Conditions

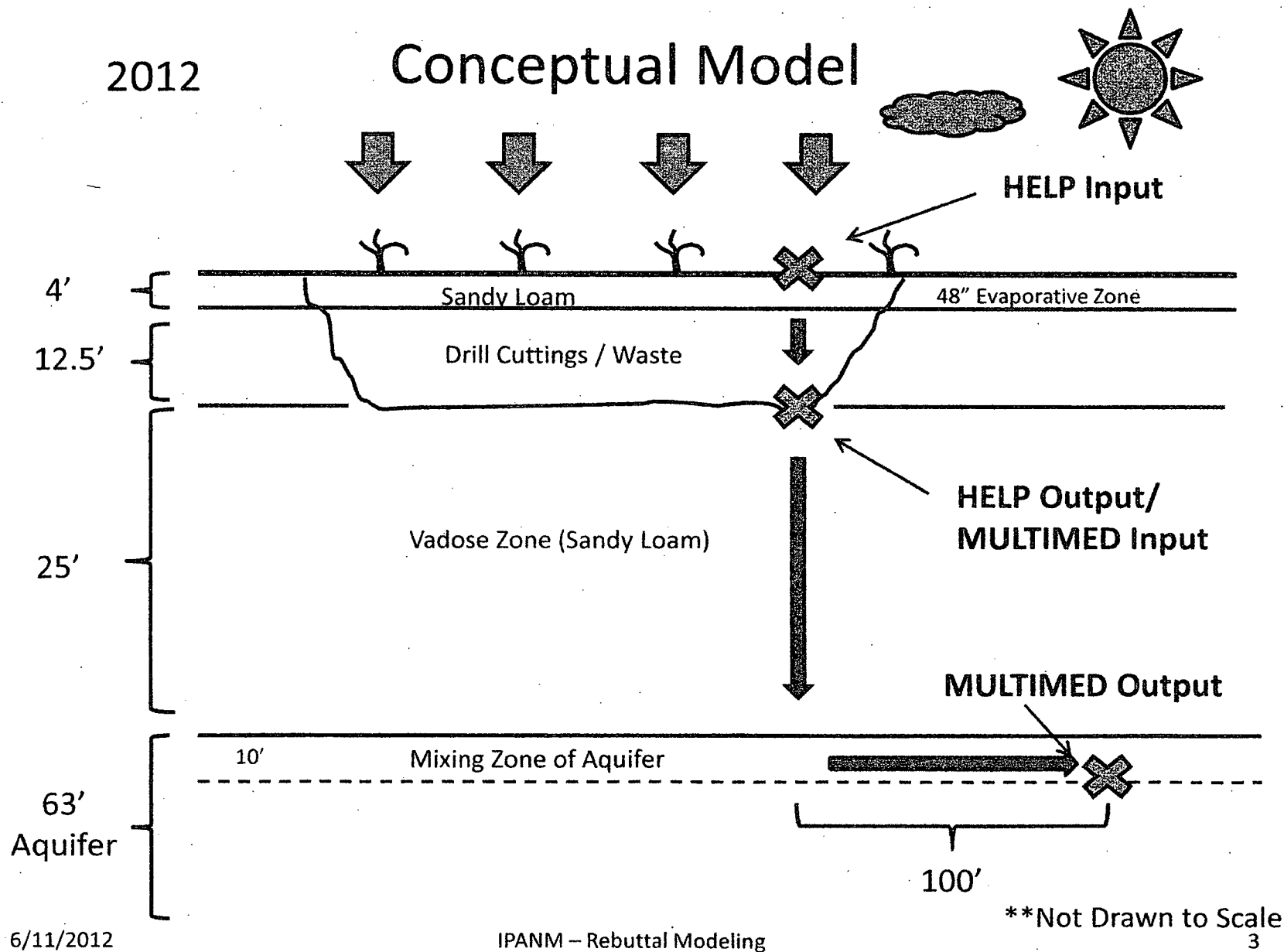
Highest NW Reading (5,290 mg/kg) diluted 20:1 SPLP yields 265 mg/l

Modeled Leachate at: 1,000 mg/l

Results indicate siting recommendations protective of Fresh Water, Human Health and the Environment

2012

Conceptual Model



25' to Ground Water - Low Chloride Focus

48" Evaporative Depth Annual Average Precipitation:	Carlsbad 14.1"	Aztec 10.8"
Elevation (m):	950	1,714
HELP Model Infiltration Rates Liner (mm/yr):	1.53	0.01
Years until reaching 100' Lateral @ 25' depth:	950	n/a
Years until max Cl:	1,350	n/a
Max Cl (mg/l) @ 100' lateral distance:	2.3	n/a

Conclusions

4' of Soil Cover protective in all instances.

No liner necessary on top of pit.

25' Ground Water is protective for burial in place, Low Chloride Drilling Fluids

100' Siting Requirement is protective of fresh water, human health & environment for Low Chloride Drilling Cuttings buried in place

Pit Rule - HELP Model Simulations
Summary of Basic Parameters

	2007 & 2009	2007	2007 & 2009	2007	2007	2007	2007	2012	2012	2012	2012	2012
Permian # 1	Permian # 1	Permian # 2	Permian # 3	SIB # 1	SIB # 2	SIB # 3	2012	2012	2012	2012	2012	2012
Hobbs - 50	Hobbs - 50	Hobbs - 50	Hobbs - 50	Dulce - 50	Dulce - 50	Dulce - 50	Artesia - 48"	Artesia - 50	Carlsbad - 50	Carlsbad - 48"	Hobbs - 50	Majamar - 50
2' - No Liner	4' - Poor Liner	4' - Poor Liner	4' - Good Liner	2' - No Liner	4' - Poor Liner	4' - Good Liner	4' - Good Liner	4' - Good Liner	4' - Good Liner	4' - Good Liner	4' - Good Liner	4' - Good Liner
6	7	7	7	6	7	7	7	7	7	7	7	7
24	6	6	6	24	6	6	6	6	6	6	6	6
0.453	0.473	0.473	0.473	0.453	0.473	0.473	0.473	0.473	0.473	0.473	0.473	0.473
0.19	0.222	0.222	0.222	0.19	0.222	0.222	0.222	0.222	0.222	0.222	0.222	0.222
0.085	0.104	0.104	0.104	0.085	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
0.1113	0.1335	0.1335	0.1335	0.1113	0.1335	0.1335	0.1335	0.1335	0.1335	0.1335	0.1335	0.1335
7.20E-04	5.20E-04	5.20E-04	7.20E-04	7.20E-04	5.20E-04	5.20E-04	5.20E-04	5.20E-04	5.20E-04	5.20E-04	5.20E-04	5.20E-04
Layer # 1 (Root Zone Covering)												
Soil Texture Number	8	8	8	8	8	8	8	8	8	8	8	8
Layer Thickness (inches)	36	36	36	36	36	36	36	36	36	36	36	36
Layer Porosity	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
Layer Field Capacity	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232
Layer Wilting Point	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116
Layer Initial Sw	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145
Hydraulic Conductivity (cm/s)	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04
Layer # 2 (Main Vertical Cover)												
Soil Texture Number	8	8	8	8	8	8	8	8	8	8	8	8
Layer Thickness (inches)	36	36	36	36	36	36	36	36	36	36	36	36
Layer Porosity	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
Layer Field Capacity	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232
Layer Wilting Point	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116
Layer Initial Sw	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145
Hydraulic Conductivity (cm/s)	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04
Layer # 3 (Top Run-Off Layer)												
Soil Texture Number	8	8	8	8	8	8	8	8	8	8	8	8
Layer Thickness (inches)	6	6	6	6	6	6	6	6	6	6	6	6
Layer Porosity	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
Layer Field Capacity	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232	0.232
Layer Wilting Point	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116
Layer Initial Sw	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145	0.145
Hydraulic Conductivity (cm/s)	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04	3.70E-04
Drainage Slope (%)	1	1	1	1	1	1	1	1	1	1	1	1
Drainage Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Layer # 4 (Top Liner)												
Soil Texture Number	36	36	36	36	36	36	36	36	36	36	36	36
Layer Thickness (inches)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hydraulic Conductivity (cm/s)	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13
Pin Hole Density (holes/acre)	1	1	1	1	1	1	1	1	1	1	1	1
Installation Defects (holes/acre)	10	10	10	10	10	10	10	10	10	10	10	10
Placement Quality	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor
Layer # 5 (Stabilized Cuttings)												
Soil Texture Number	9	9	9	9	9	9	9	9	9	9	9	9
Layer Thickness (inches)	150	150	150	150	150	150	150	150	150	150	150	150
Layer Porosity	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501	0.501
Layer Field Capacity	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284	0.284
Layer Wilting Point	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135	0.135
Layer Initial Sw	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283
Hydraulic Conductivity (cm/s)	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04	1.90E-04
Layer # 6 (Bottom Liner)												
Soil Texture Number	36	36	36	36	36	36	36	36	36	36	36	36
Layer Thickness (inches)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Hydraulic Conductivity (cm/s)	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13	3.99E-13
Pin Hole Density (holes/acre)	1	1	1	1	1	1	1	1	1	1	1	1
Installation Defects (holes/acre)	10	10	10	10	10	10	10	10	10	10	10	10
Placement Quality	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor	4 - Poor
Total Inches Modeled:												
Leachate thru bin layer (inches/yr)	174	198.04	198.04	174	198.04	198.04	198.04	198.02	198.02	198.02	198.02	198.02
Convert to (ft / yr)	1.1716	0.1937	0.09107	0.526	0.12275	0.05902	0.0421	0.0559	0.06037	0.04617	0.04617	0.04617
Convert to (cm / yr)	0.097633333	0.016141667	0.007589167	0.043833333	0.010229167	0.004918333	0.003508333	0.004583333	0.005030833	0.0038475	0.0038475	0.0038475
Convert to (mm/yr)	2.975864	0.491998	0.231178	1.13604	0.2611785	0.12604	0.090934	0.11986	0.12604	0.11986	0.11986	0.11986
Convert to (mm/yr)	0.02975864	0.00491998	0.00231178	0.0113604	0.002611785	0.0012604	0.00090934	0.0011986	0.0012604	0.0011986	0.0011986	0.0011986
Convert to (mm/yr)	29.75864	4.91998	2.31178	13.3604	3.11785	1.2604	0.90934	1.1986	1.2604	1.1986	1.1986	1.1986

u.s. climate data

Temperature - Precipitation - Sunshine

7

California

Florida

Georgia

Illinois

Michigan

Massachusetts

New Jersey

New York

North Carolina

Ohio

Pennsylvania

Texas

Other States

Climate - Aztec - New Mexico

Temperature - Precipitation

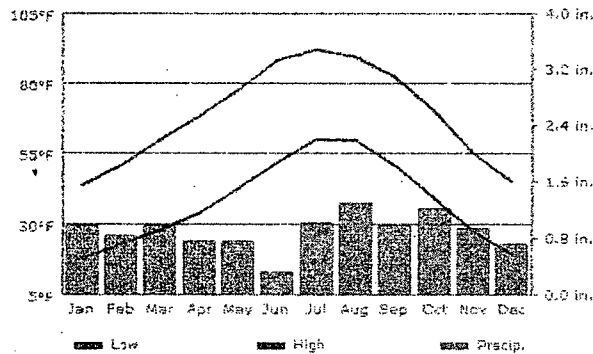
Q1E

	Jan	Feb	March	April	May	June
Average high in °F	43	51	60	68	77	88
Average low in °F	18	23	28	34	42	51
Av. precipitation - inch	0.98	0.83	0.98	0.75	0.75	0.31
CALCULATED MEAN	30.5	37	44	51	59.5	69.5
	July	Aug	Sep	Oct	Nov	Dec
Average high in °F	92	89	82	70	55	45
Average low in °F	60	59	51	39	27	19
Av. precipitation - inch	1.02	1.3	0.98	1.22	0.94	0.71

Free climate chart on your website

76 74 66.5 54.5 41 32

Aztec Climate Graph - New Mexico Climate Chart



TI High Temperature Parts

Features An Extended Temp Range Of -55°C to 210°C w/1,000 Hour Op Life

ti.com/HighTemp

AdChoices

Totals and averages

Annual average high temperature	68.3 °F
Annual average low temperature	37.5 °F
Average temperature	52.9 °F
Average annual precipitation	10.8 in.

Map of Aztec

AdChoices

Humidity & Temp Loggers

USB, Wireless & Network
Models Starting Under
\$100. Best Prices
www.DataLoggerInc.com

Dating Aztec Girls

Beautiful Blonde, Short
Skirt, High Heels. Discover
Aztec Dating Now.
AmoLatina.com

Events in New Mexico

Savor Albuquerque: June
7-16, 2012. Arts, Culture,
Cuisine. Explore!
savorabq.com

The Best Places to Retire

World's Best Locations to
Retire in Style Today. Free
Report.
www.InternationalLiving.com

Spiritual Video Game

Support a Kickstarter
campaign for a video game
about Mayan wisdom
www.KickStarter.com

5,623 + 1
1,713.89 m

1

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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 8

THICKNESS = 42.00 INCHES
 POROSITY = 0.4630 VOL/VOL
 FIELD CAPACITY = 0.2320 VOL/VOL
 WILTING POINT = 0.1160 VOL/VOL
 INITIAL SOIL WATER CONTENT = 0.1450 VOL/VOL
 EFFECTIVE SAT. HYD. COND. = 0.369999994000E-03 CM/SEC

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 9

THICKNESS = 150.00 INCHES
 POROSITY = 0.5010 VOL/VOL
 FIELD CAPACITY = 0.2840 VOL/VOL
 WILTING POINT = 0.1350 VOL/VOL
 INITIAL SOIL WATER CONTENT = 0.2840 VOL/VOL
 EFFECTIVE SAT. HYD. COND. = 0.190000006000E-03 CM/SEC

LAYER 4

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 36

THICKNESS = 0.02 INCHES
 POROSITY = 0.0000 VOL/VOL
 FIELD CAPACITY = 0.0000 VOL/VOL
 WILTING POINT = 0.0000 VOL/VOL
 INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL
 EFFECTIVE SAT. HYD. COND. = 0.399999993000E-12 CM/SEC
 FML PINHOLE DENSITY = 1.00 HOLES/ACRE
 FML INSTALLATION DEFECTS = 4.00 HOLES/ACRE
 FML PLACEMENT QUALITY = 3 - GOOD

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
 SOIL DATA BASE USING SOIL TEXTURE # 7 WITH A
 POOR STAND OF GRASS, A SURFACE SLOPE OF 1.0%
 AND A SLOPE LENGTH OF 75. FEET.

SCS RUNOFF CURVE NUMBER = 83.90
 FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT
 AREA PROJECTED ON HORIZONTAL PLANE = 0.500 ACRES
 EVAPORATIVE ZONE DEPTH = 48.0 INCHES
 INITIAL WATER IN EVAPORATIVE ZONE = 6.891 INCHES
 UPPER LIMIT OF EVAPORATIVE STORAGE = 22.284 INCHES
 LOWER LIMIT OF EVAPORATIVE STORAGE = 5.496 INCHES
 INITIAL SNOW WATER = 0.000 INCHES

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INITIAL WATER IN LAYER MATERIALS	=	49.491	INCHES
TOTAL INITIAL WATER	=	49.491	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA -----

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
AZTEC NEW MEXICO

STATION LATITUDE	=	36.82 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.60
START OF GROWING SEASON (JULIAN DATE)	=	98
END OF GROWING SEASON (JULIAN DATE)	=	299
EVAPORATIVE ZONE DEPTH	=	48.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	9.00 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	50.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	45.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	40.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	50.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ALBUQUERQUE NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
0.51	0.47	0.71	0.59	0.55	0.24
0.98	1.14	1.02	0.98	0.79	0.43

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ALBUQUERQUE NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
30.50	37.00	44.00	51.00	59.50	69.50
76.00	74.00	66.50	54.50	41.00	32.00

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR PUEBLO COLORADO
AND STATION LATITUDE = 36.82 DEGREES

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 50

AZTEC.OUT

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION						

TOTALS	0.47 0.93	0.48 1.17	0.75 1.05	0.60 1.07	0.47 0.76	0.26 0.48
STD. DEVIATIONS	0.44 0.47	0.36 0.51	0.69 0.61	0.66 0.93	0.40 0.75	0.25 0.35
RUNOFF						

TOTALS	0.014 0.000	0.007 0.000	0.000 0.000	0.007 0.002	0.000 0.002	0.000 0.003
STD. DEVIATIONS	0.040 0.000	0.022 0.000	0.002 0.002	0.048 0.007	0.000 0.007	0.000 0.011
EVAPOTRANSPIRATION						

TOTALS	0.381 0.878	0.569 1.138	0.993 0.910	0.814 0.757	0.705 0.520	0.392 0.416
STD. DEVIATIONS	0.250 0.463	0.227 0.477	0.448 0.504	0.546 0.451	0.441 0.374	0.360 0.245
PERCOLATION/LEAKAGE THROUGH LAYER 4						

TOTALS	0.0000 0.0001	0.0000 0.0001	0.0000 0.0001	0.0000 0.0000	0.0000 0.0000	0.0001 0.0000
STD. DEVIATIONS	0.0000 0.0002	0.0000 0.0001	0.0000 0.0001	0.0000 0.0001	0.0001 0.0001	0.0002 0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	0.0001 0.0008	0.0000 0.0007	0.0000 0.0006	0.0000 0.0004	0.0003 0.0002	0.0010 0.0001
STD. DEVIATIONS	0.0002 0.0023	0.0001 0.0016	0.0000 0.0011	0.0000 0.0008	0.0011 0.0005	0.0030 0.0003

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 50

	INCHES		CU. FEET	PERCENT
	-----		-----	-----
PRECIPITATION	8.48	(1.774)	15395.9	100.00
RUNOFF	0.035	(0.0632)	62.95	0.409

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EVAPOTRANSPIRATION	8.474	(1.7111)	15380.35	99.899
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00042	(0.00079)	0.761	0.00494
AVERAGE HEAD ON TOP OF LAYER 4	0.000	(0.001)		
CHANGE IN WATER STORAGE	-0.027	(0.8984)	-48.14	-0.313

□

PEAK DAILY VALUES FOR YEARS		1 THROUGH	50
		(INCHES)	(CU. FT.)
PRECIPITATION		2.44	4428.600
RUNOFF		0.342	620.8238
PERCOLATION/LEAKAGE THROUGH LAYER 4		0.000036	0.06561
AVERAGE HEAD ON TOP OF LAYER 4		0.018	
SNOW WATER		1.05	1903.7914
MAXIMUM VEG. SOIL WATER (VOL/VOL)			0.1999
MINIMUM VEG. SOIL WATER (VOL/VOL)			0.1145

□

FINAL WATER STORAGE AT END OF YEAR			50
LAYER	(INCHES)	(VOL/VOL)	
1	0.6426	0.1071	
2	4.9221	0.1172	
3	42.5999	0.2840	
4	0.0000	0.0000	
SNOW WATER	0.000		

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11

AZTEC.OUT

1

AGENCY U. S. ENVIRONMENTAL PROTECTION
EXPOSURE ASSESSMENT
MULTIMEDIA MODEL
MULTIMED (Version 1.01, June 1991)

1

Run options

.. CARLSBAD, NM - 4' COVER - 25' TO GROUNDWATER - 100' TO RECEPTOR

20 yr pulse. - loam cover - good liner - 1K chloride - 10' mixing zone
Chemical simulated is CHLORIDE

Option Chosen	Saturated and unsaturated zone models
Run was	DETERMIN
Infiltration input by user	
Run was transient	
Reject runs if Y coordinate outside plume	
Do not reject runs if Z coordinate outside plume	
Gaussian source used in saturated zone model	

1

1

UNSATURATED ZONE FLOW MODEL PARAMETERS
(input parameter description and value)
NP - Total number of nodal points

240

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NMAT - Number of different porous materials 1
 KPROP - Van Genuchten or Brooks and Corey 1
 IMSHGN - Spatial discretization option 1
 NVFLAYR - Number of layers in flow model 1

OPTIONS CHOSEN

Van Genuchten functional coefficients
 User defined coordinate system

1

Layer information

LAYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	7.62	1

DATA FOR MATERIAL 1

VADOSE ZONE MATERIAL VARIABLES

PARAMETERS		VARIABLE NAME LIMITS		UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX		
3.60	-999.	0.100E-10	0.100E+05	cm/hr	CONSTANT
0.250	-999.	0.100E-08	0.990	--	CONSTANT
0.700	-999.	0.000E+00	-999.	m	CONSTANT
7.62	-999.	0.100E-08	-999.	m	CONSTANT

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

PARAMETERS		VARIABLE NAME LIMITS		UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX		
0.116	-999.	0.100E-08	1.00	--	CONSTANT
				--	CONSTANT

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0.000E+00	-999.	0.000E+00	10.0		
		ALFA coefficient		1/cm	CONSTANT
0.500E-02	-999.	0.000E+00	1.00		
		Van Genuchten exponent, ENN		--	CONSTANT
1.09	-999.	1.00	5.00		
1					

UNSATURATED ZONE TRANSPORT MODEL PARAMETERS

NLAY	- Number of different layers used	1
NTSTPS	- Number of time values concentration calc	40
DUMMY	- Not presently used	1
ISOL	- Type of scheme used in unsaturated zone	1
N	- Stehfest terms or number of increments	18
NTEL	- Points in Lagrangian interpolation	3
NGPTS	- Number of Gauss points	104
NIT	- Convolution integral segments	2
IBOUND	- Type of boundary condition	2
ITSGEN	- Time values generated or input	1
TMAX	- Max simulation time	-- 0.0
WTFUN	- Weighting factor	-- 1.2

OPTIONS CHOSEN

 Stehfest numerical inversion algorithm
 Nondecaying pulse source
 Computer generated times for computing concentrations
 1

DATA FOR LAYER 1

 VADOSE TRANSPORT VARIABLES

PARAMETERS		VARIABLE NAME LIMITS		UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX		

7.62		Thickness of layer		m	CONSTANT
	-999.	0.100E-08	-999.		
1.00		Longitudinal dispersivity of layer		m	DERIVED
	-999.	0.100E-02	0.100E+05		
0.000E+00		Percent organic matter		--	CONSTANT
	-999.	0.000E+00	100.		
1.73		Bulk density of soil for layer		g/cc	CONSTANT
	-999.	0.100E-01	5.00		
0.000E+00		Biological decay coefficient		1/yr	CONSTANT
	-999.	0.000E+00	-999.		
1					

CHEMICAL SPECIFIC VARIABLES

PARAMETERS		VARIABLE NAME LIMITS		AZTEC.OUT UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX		

-999.		Solid phase decay coefficient		1/yr	DERIVED
-999.	-999.	0.000E+00	0.100E+11		
-999.		Dissolved phase decay coefficient		1/yr	DERIVED
-999.	-999.	0.000E+00	0.100E+11		
-999.		Overall chemical decay coefficient		1/yr	DERIVED
-999.	-999.	0.000E+00	0.100E+11		
0.000E+00		Acid catalyzed hydrolysis rate		1/M-yr	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
0.000E+00		Neutral hydrolysis rate constant		1/yr	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
0.000E+00		Base catalyzed hydrolysis rate		1/M-yr	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
20.0		Reference temperature		C	CONSTANT
20.0	-999.	0.000E+00	100.		
0.000E+00		Normalized distribution coefficient		ml/g	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
-999.		Distribution coefficient		--	DERIVED
-999.	-999.	0.000E+00	0.100E+11		
0.000E+00		Biodegradation coefficient (sat. zone)		1/yr	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
0.000E+00		Air diffusion coefficient		cm2/s	CONSTANT
0.000E+00	-999.	0.000E+00	10.0		
20.0		Reference temperature for air diffusion		C	CONSTANT
20.0	-999.	0.000E+00	100.		
0.000E+00		Molecular weight		g/M	CONSTANT
0.000E+00	-999.	0.000E+00	-999.		
0.000E+00		Mole fraction of solute		--	CONSTANT
0.000E+00	-999.	0.100E-08	1.00		
0.000E+00		Vapor pressure of solute		mm Hg	CONSTANT
0.000E+00	-999.	0.000E+00	100.		
0.000E+00		Henry's law constant		atm-m ³ /M	CONSTANT
0.000E+00	-999.	0.100E-09	1.00		
0.000E+00		Overall 1st order decay sat. zone		1/yr	DERIVED
0.000E+00	0.000E+00	0.000E+00	1.00		
-999.		Not currently used			CONSTANT
-999.	-999.	0.000E+00	1.00		
-999.		Not currently used			CONSTANT
-999.	-999.	0.000E+00	1.00		

1

SOURCE SPECIFIC VARIABLES

PARAMETERS		VARIABLE NAME LIMITS		UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX		

0.153E-02		Infiltration rate		m/yr	CONSTANT
0.153E-02	-999.	0.100E-09	0.100E+11		
167.		Area of waste disposal unit		m ²	CONSTANT
167.	-999.	0.100E-01	-999.		

AZTEC.OUT

20.0	Duration of pulse	yr	CONSTANT
-999.	0.100E-08 -999.		
	Spread of contaminant source	m	DERIVED
-999.	0.100E-08 0.100E+11		
	Recharge rate	m/yr	CONSTANT
0.000E+00	0.000E+00 0.100E+11		
	Source decay constant	1/yr	CONSTANT
0.000E+00	0.000E+00 -999.		
	Initial concentration at landfill	mg/l	CONSTANT
0.100E+04	0.000E+00 -999.		
	Length scale of facility	m	DERIVED
-999.	0.100E-08 0.100E+11		
	Width scale of facility	m	DERIVED
-999.	0.100E-08 0.100E+11		
	Near field dilution		DERIVED
1.00	0.000E+00 0.000E+00 1.00		
1			

AQUIFER SPECIFIC VARIABLES

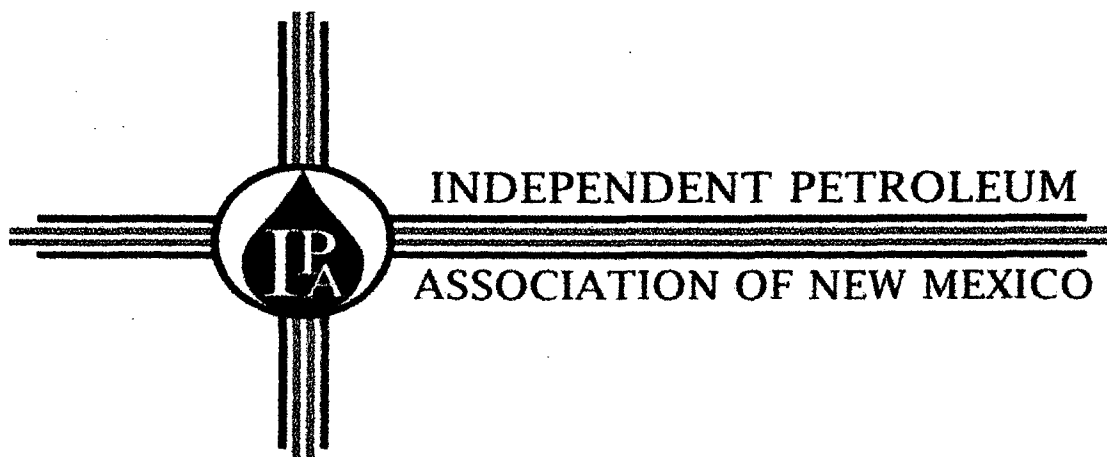
PARAMETERS		VARIABLE NAME LIMITS	UNITS	DISTRIBUTION
MEAN	STD DEV	MIN	MAX	
0.500E-01		Particle diameter	cm	CONSTANT
-999.		0.100E-08 100.		
		Aquifer porosity	--	CONSTANT
0.300		0.100E-08 0.990		
		Bulk density	g/cc	CONSTANT
1.70		0.100E-01 5.00		
		Aquifer thickness	m	CONSTANT
21.0		0.100E-08 0.100E+06		
		Source thickness (mixing zone depth)	m	CONSTANT
3.05		0.100E-08 0.100E+06		
		Conductivity (hydraulic)	m/yr	CONSTANT
30.0		0.100E-06 0.100E+09		
		Gradient (hydraulic)		CONSTANT
0.100E-02		0.100E-07 -999.		
		Groundwater seepage velocity	m/yr	DERIVED
-999.		0.100E-09 0.100E+09		
		Retardation coefficient	--	DERIVED
1.00		1.00 0.100E+09		
		Longitudinal dispersivity	m	FUNCTION OF X
-999.		0.100E-02 0.100E+05		
		Transverse dispersivity	m	FUNCTION OF X
-999.		-999. -999.		
		Vertical dispersivity	m	FUNCTION OF X
-999.		0.100E-02 0.100E+05		
		Temperature of aquifer	C	CONSTANT
20.0		0.000E+00 100.		
		pH	--	CONSTANT
7.00		0.300 14.0		
		Organic carbon content (fraction)		CONSTANT
0.000E+00		0.100E-05 1.00		
		well distance from site	m	CONSTANT
30.4		1.00 -999.		
		Angle off center	degree	CONSTANT

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0.000E+00 -999. 0.000E+00 360. AZTEC.OUT
 well vertical distance
 0.000E+00 -999. 0.000E+00 1.00
 1

m CONSTANT

TIME	CONCENTRATION
0.800E+03	0.22057E-07
0.850E+03	0.58235E-03
0.900E+03	0.44574E-01
0.950E+03	0.21399E+00
0.100E+04	0.48098E+00
0.105E+04	0.82864E+00
0.110E+04	0.12084E+01
0.115E+04	0.15781E+01
0.120E+04	0.19005E+01
0.125E+04	0.21494E+01
0.130E+04	0.23108E+01
0.135E+04	0.23822E+01
0.140E+04	0.23692E+01
0.145E+04	0.22828E+01
0.150E+04	0.21376E+01
0.155E+04	0.19503E+01
0.160E+04	0.17340E+01
0.165E+04	0.15050E+01
0.170E+04	0.12708E+01
0.175E+04	0.10459E+01



OCD CASE NOS. 14784 AND 14785

IPANM Petition to amend Title 19, Chapter 15,
part 17 (The PIT Rule)

May 14 – 18, 2012

IPANM exhibit 17
Rebuttal Economic testimony

Cost Comparison Reserve Pit versus Closed Loop System

Eddy BD State No. 2
Unit Letter B, Section 32, T-20S, R-30E

Reserve Pit

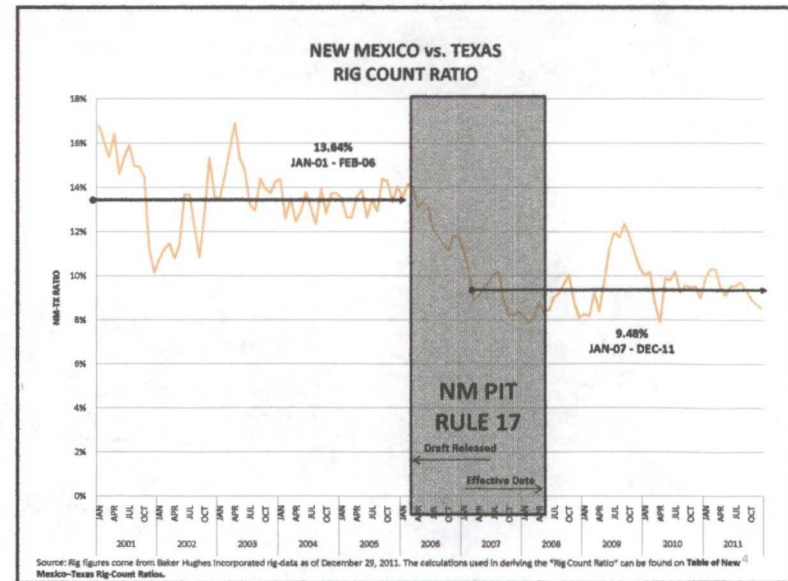
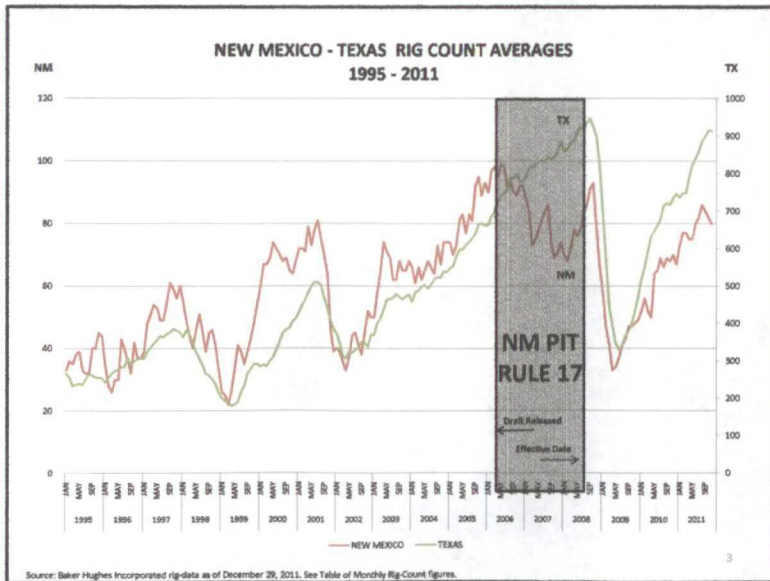
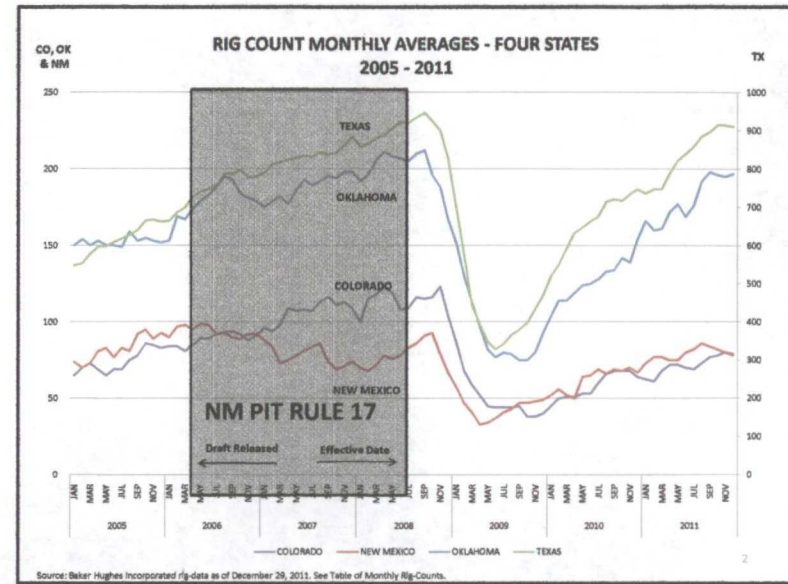
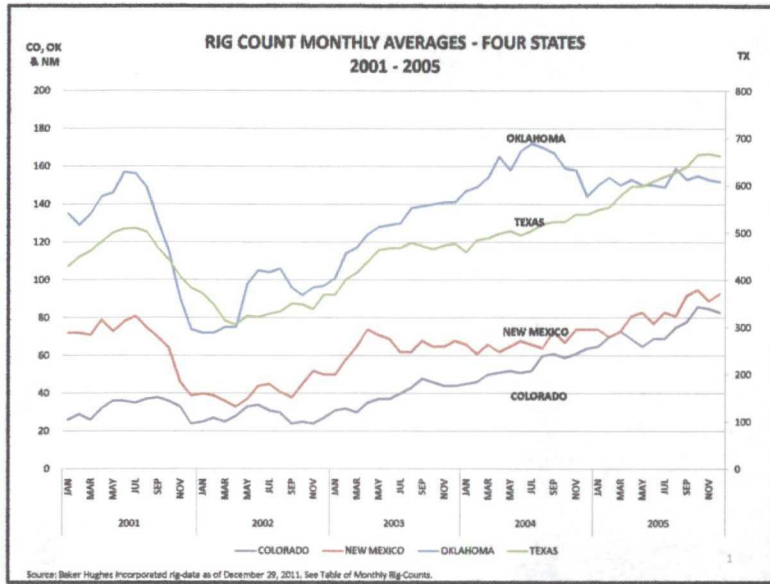
Banta Oilfield Service, Inc.	\$353.01
Diamondback Disposal	\$25,347.88
Mesquite Services, Inc.	\$1,990.99
TFH Rental Tools	\$24,895.26
Total	<u><u>\$52,587.14</u></u>

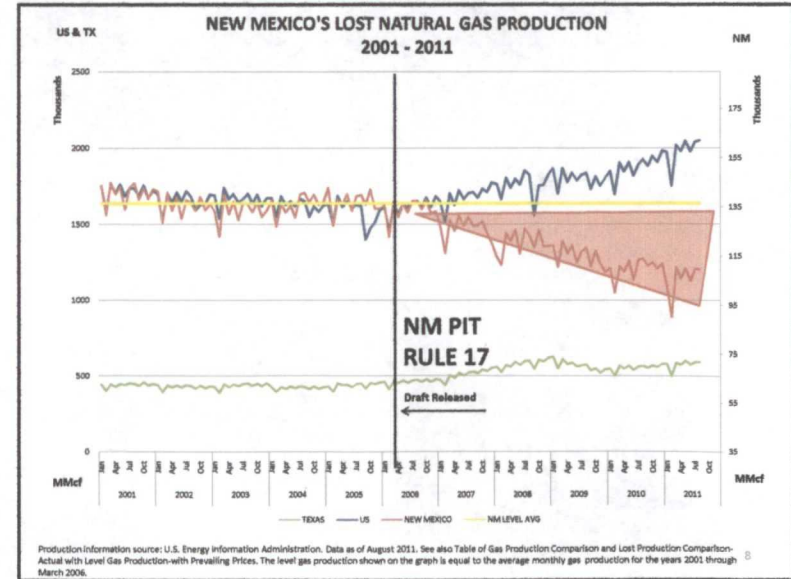
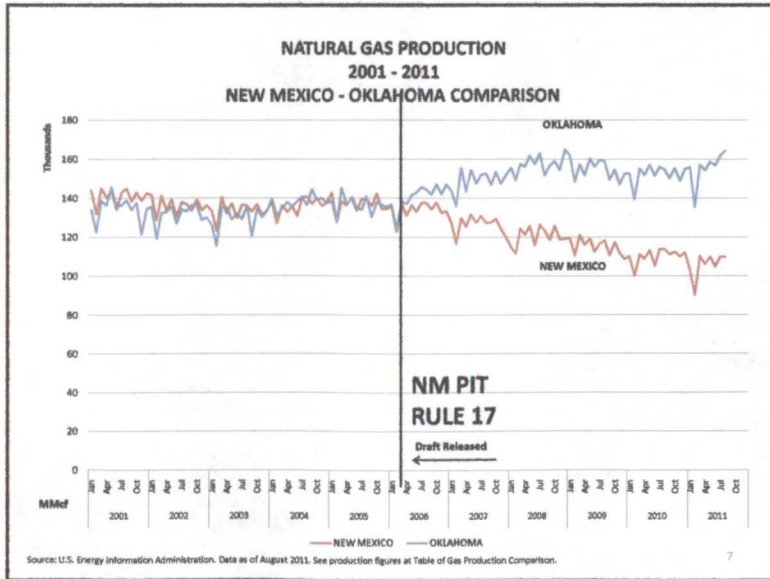
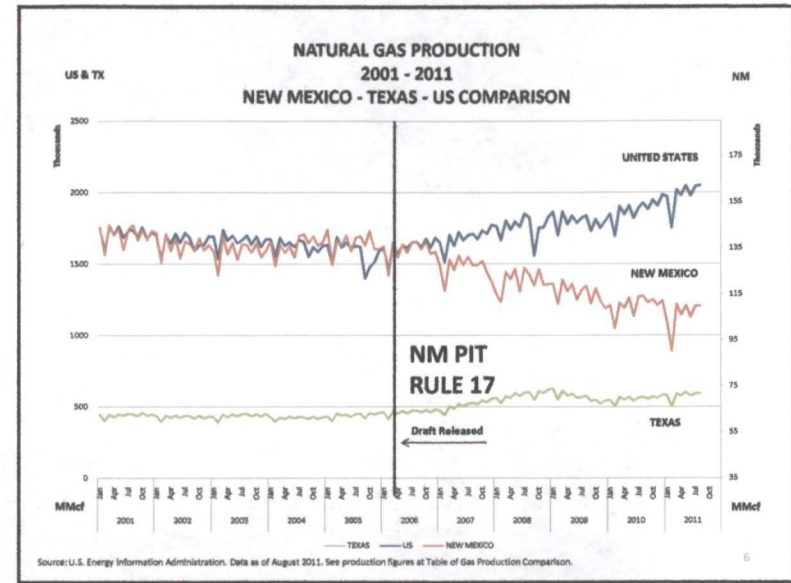
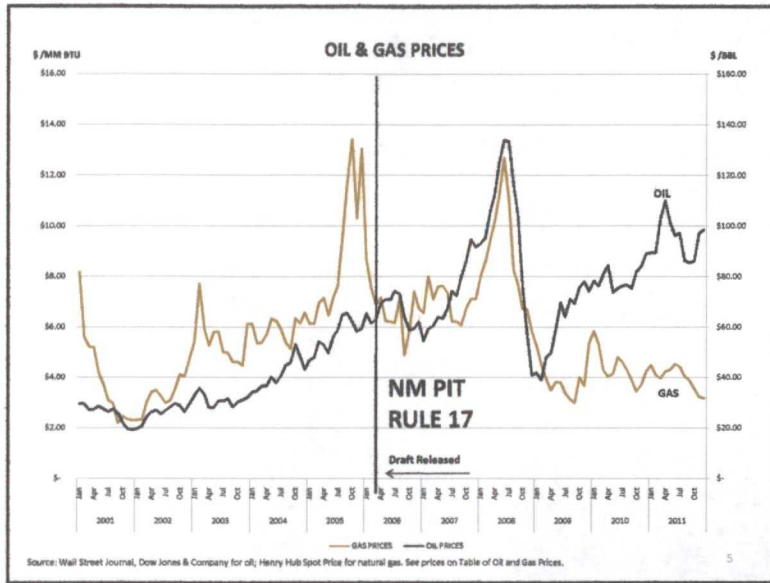
Eddy BD State No. 3
Unit Letter G, Section 32, T-20S, R-30E

Closed Loop System

Closed Loop Specialties	\$113,864.40
CRI Holdings, LLC	\$78,037.34
Dorado	\$11,734.85
Mesquite Services, Inc.	\$51,957.57
R.T. Hicks Consultants, Ltd.	\$5,675.11
Roadrunner Environmental	\$703.24
Total	<u><u>\$261,972.51</u></u>

Prepared by Lynx Petroleum
June 2012





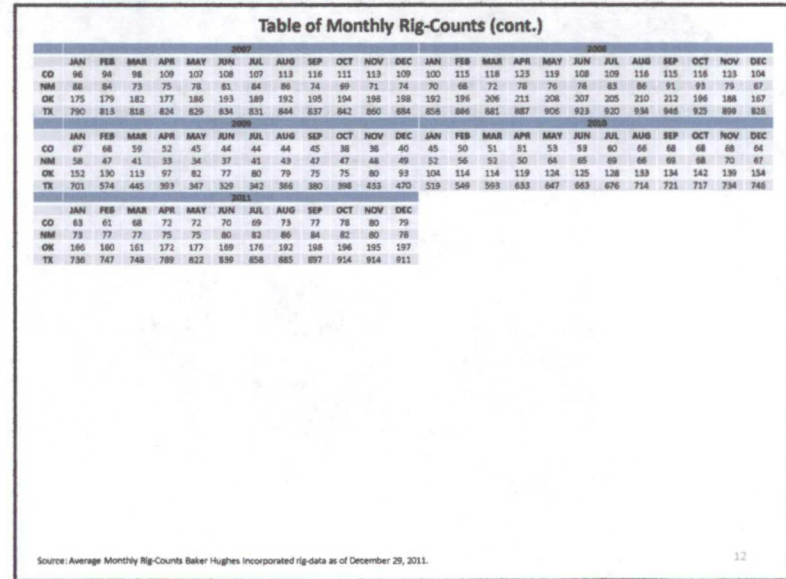
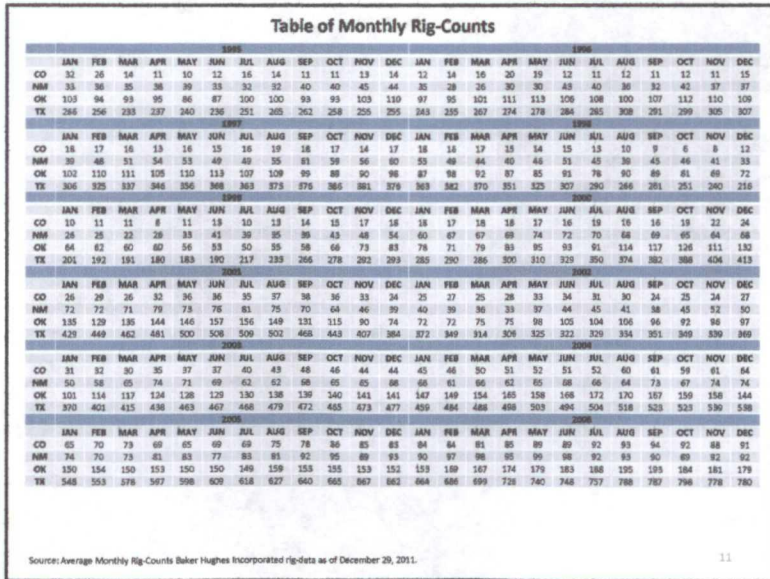


Table of Oil & Gas Prices

DATE	Oil PRICES	GAS PRICES	DATE	Oil PRICES	GAS PRICES	DATE	Oil PRICES	GAS PRICES
Jan-01	\$ 25.58	\$ 8.17	Jan-08	\$ 32.84	\$ 5.43	Jan-05	\$ 46.84	\$ 6.13
Feb-01	\$ 26.61	\$ 8.61	Feb-08	\$ 35.87	\$ 7.71	Feb-05	\$ 47.97	\$ 6.14
Mar-01	\$ 27.24	\$ 5.23	Mar-08	\$ 33.85	\$ 5.88	Mar-05	\$ 54.31	\$ 6.98
Apr-01	\$ 27.41	\$ 5.19	Apr-08	\$ 28.23	\$ 5.26	Apr-05	\$ 53.04	\$ 7.16
May-01	\$ 28.64	\$ 4.39	May-08	\$ 25.14	\$ 5.82	May-05	\$ 49.83	\$ 6.48
Jun-01	\$ 27.60	\$ 3.72	Jun-08	\$ 30.72	\$ 5.82	Jun-05	\$ 56.26	\$ 7.17
Jul-01	\$ 26.45	\$ 3.11	Jul-08	\$ 30.76	\$ 5.03	Jul-05	\$ 58.70	\$ 7.83
Aug-01	\$ 27.47	\$ 2.97	Aug-08	\$ 31.59	\$ 4.99	Aug-05	\$ 64.87	\$ 9.53
Sep-01	\$ 25.88	\$ 2.13	Sep-08	\$ 28.29	\$ 4.62	Sep-05	\$ 65.57	\$ 11.75
Oct-01	\$ 22.21	\$ 2.46	Oct-08	\$ 30.33	\$ 4.63	Oct-05	\$ 62.37	\$ 13.42
Nov-01	\$ 19.67	\$ 2.34	Nov-08	\$ 31.09	\$ 4.47	Nov-05	\$ 58.30	\$ 10.30
Dec-01	\$ 19.33	\$ 2.80	Dec-08	\$ 32.15	\$ 6.13	Dec-05	\$ 59.43	\$ 13.05
Jan-02	\$ 19.67	\$ 2.32	Jan-04	\$ 34.27	\$ 6.14	Jan-06	\$ 65.31	\$ 8.89
Feb-02	\$ 20.74	\$ 2.32	Feb-04	\$ 34.74	\$ 5.37	Feb-06	\$ 61.63	\$ 7.54
Mar-02	\$ 24.42	\$ 3.03	Mar-04	\$ 36.76	\$ 5.39	Mar-06	\$ 62.90	\$ 6.89
Apr-02	\$ 26.27	\$ 3.48	Apr-04	\$ 36.69	\$ 5.71	Apr-06	\$ 69.69	\$ 7.16
May-02	\$ 27.02	\$ 3.50	May-04	\$ 40.28	\$ 6.33	May-06	\$ 70.94	\$ 6.25
Jun-02	\$ 25.52	\$ 3.26	Jun-04	\$ 38.02	\$ 6.27	Jun-06	\$ 70.96	\$ 6.12
Jul-02	\$ 26.94	\$ 2.98	Jul-04	\$ 40.69	\$ 5.93	Jul-06	\$ 74.41	\$ 6.17
Aug-02	\$ 28.56	\$ 3.08	Aug-04	\$ 44.94	\$ 5.41	Aug-06	\$ 73.05	\$ 7.14
Sep-02	\$ 25.67	\$ 3.35	Sep-04	\$ 45.95	\$ 5.15	Sep-06	\$ 63.87	\$ 4.80
Oct-02	\$ 28.83	\$ 4.13	Oct-04	\$ 53.13	\$ 6.35	Oct-06	\$ 58.88	\$ 5.93
Nov-02	\$ 26.27	\$ 4.04	Nov-04	\$ 48.46	\$ 6.17	Nov-06	\$ 59.37	\$ 7.41
Dec-02	\$ 29.42	\$ 4.74	Dec-04	\$ 43.33	\$ 6.58	Dec-06	\$ 62.03	\$ 6.78

Sources: Wall Street Journal, Dow Jones & Company for oil prices and Henry Hub Spot Price for natural gas

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DATE	OIL PRICES	GAS PRICES	DATE	OIL PRICES	GAS PRICES	DATE	OIL PRICES	GAS PRICES
Jan-07	\$ 54.57	6.55	Jan-09	\$ 41.74	5.24	Jan-11	\$ 89.42	4.49
Feb-07	\$ 59.26	8.00	Feb-09	\$ 39.16	4.52	Feb-11	\$ 89.56	4.09
Mar-07	\$ 60.56	7.11	Mar-09	\$ 47.98	3.86	Mar-11	\$ 102.94	3.97
Apr-07	\$ 63.87	7.60	Apr-09	\$ 49.79	5.50	Apr-11	\$ 110.04	4.24
May-07	\$ 63.46	7.64	May-09	\$ 59.16	5.83	May-11	\$ 101.58	4.51
Jun-07	\$ 67.48	7.35	Jun-09	\$ 69.68	5.80	Jun-11	\$ 98.29	4.54
Jul-07	\$ 74.18	6.22	Jul-09	\$ 84.09	5.38	Jul-11	\$ 97.19	4.42
Aug-07	\$ 72.39	6.22	Aug-09	\$ 71.06	5.14	Aug-11	\$ 86.33	4.06
Sep-07	\$ 79.93	6.08	Sep-09	\$ 69.46	2.99	Sep-11	\$ 85.61	3.90
Oct-07	\$ 86.20	6.74	Oct-09	\$ 75.82	4.01	Oct-11	\$ 86.41	3.57
Nov-07	\$ 94.62	7.10	Nov-09	\$ 78.08	3.66	Nov-11	\$ 97.21	3.24
Dec-07	\$ 91.73	7.11	Dec-09	\$ 74.30	5.35			
Jan-08	\$ 92.95	7.99	Jan-10	\$ 78.22	5.83			
Feb-08	\$ 95.53	8.54	Feb-10	\$ 76.42	5.32			
Mar-08	\$ 103.56	9.41	Mar-10	\$ 81.24	4.29			
Apr-08	\$ 112.57	10.18	Apr-10	\$ 84.48	4.03			
May-08	\$ 125.39	11.27	May-10	\$ 73.84	4.14			
Jun-08	\$ 133.93	12.69	Jun-10	\$ 75.35	4.80			
Jul-08	\$ 133.44	11.09	Jul-10	\$ 78.57	4.63			
Aug-08	\$ 116.61	8.26	Aug-10	\$ 76.82	4.32			
Sep-08	\$ 103.90	7.67	Sep-10	\$ 75.31	3.89			
Oct-08	\$ 76.85	6.74	Oct-10	\$ 81.90	3.43			
Nov-08	\$ 57.44	6.88	Nov-10	\$ 84.14	3.71			
Dec-08	\$ 41.02	5.82	Dec-10	\$ 89.04	4.25			

Source: Wall Street Journal, Dow Jones & Company for oil prices and Henry Hub Spot Price for natural gas.

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Table of New Mexico-Texas Rig-Count Ratios

	2000												2001											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	72	72	71	79	73	78	78	81	75	84	86	39	40	39	36	83	37	44	45	41	38	45	52	50
TX	429	449	462	481	500	508	509	502	468	443	402	384	372	346	314	356	325	322	339	334	341	349	339	368
RATIO	0.17	0.16	0.15	0.16	0.15	0.13	0.16	0.13	0.15	0.14	0.11	0.10	0.11	0.11	0.11	0.13	0.14	0.14	0.13	0.11	0.13	0.15	0.15	0.16
	2002												2003											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	50	56	65	74	71	69	62	68	65	65	68	66	61	56	62	63	68	66	64	64	64	73	67	74
TX	370	405	415	436	463	467	468	479	472	485	473	477	469	484	486	498	503	484	504	534	523	521	538	538
RATIO	0.14	0.14	0.16	0.17	0.15	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.12	0.13	0.14	0.13	0.12	0.14	0.13	0.14	0.14
	2004												2005											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	74	70	73	81	83	77	83	81	82	95	89	93	90	97	98	93	99	98	92	93	90	89	92	92
TX	574	574	578	597	629	628	638	637	643	663	660	664	664	666	699	724	804	748	757	788	787	798	778	804
RATIO	0.14	0.13	0.13	0.14	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.12	0.12	0.11	0.11	0.12	0.12
	2006												2007											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	68	84	73	75	78	81	84	80	74	89	71	74	70	68	72	78	76	79	83	86	93	93	79	67
TX	592	618	624	637	659	652	651	644	617	642	680	670	619	549	593	633	605	615	674	734	646	625	609	626
RATIO	0.11	0.10	0.09	0.09	0.10	0.10	0.10	0.10	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.08	0.09	0.09	0.10	0.10	0.09	0.08	0.08
	2008												2009											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	58	47	43	33	34	37	41	43	47	48	49	49	32	36	52	50	64	65	69	69	68	70	67	
TX	445	393	347	327	342	366	382	396	388	433	470	464	319	349	593	633	605	615	674	734	646	625	609	
RATIO	0.08	0.08	0.09	0.08	0.10	0.10	0.12	0.12	0.12	0.12	0.11	0.10	0.10	0.09	0.08	0.10	0.10	0.10	0.10	0.09	0.10	0.09	0.10	0.09
	2011												2012											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
NM	73	77	75	75	80	82	86	87	82	80	84	911	748	747	748	788	822	808	808	897	897	897	897	897
RATIO	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Source : Average Monthly Rig-Counts Baker Hughes Incorporated rig-data as of December 29, 2011.

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Table of Gas Production Comparison

1941	Jan	68003	43935	133884	44426	173757	Jan	95113	157895	139667	42452	167438	Jan	106900	127348	166675	479161	1387470	Jan	158141	157172	164440	148313	Jan	150773	133612	13000	148313	
		67442	133489	140900	44426	173757		95146	164778	120481	42452	167438		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313	
		67621	144581	140900	44426	173757		95239	161101	135840	42452	167438		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313	
		67621	144581	140900	44426	173757		95239	161101	135840	42452	167438		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313	
		67778	143123	140900	44426	173757		95300	157027	133767	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		66449	143123	133717	40338	168274		95383	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		66449	143123	133717	40338	168274		95383	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		70127	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		70127	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		71406	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		71406	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		72497	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		72497	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	17375		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
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		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
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		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
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		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
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		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
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		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581	140900	44426	173757		95436	156850	134040	40337	163270	168274		106921	127348	166675	479161	1387470		158141	157172	164440	148313		150773	133612	13000	148313
		73141	144581</																										

Source : U.S. Energy Information Administration. Data as of August 2011. (Black areas on the table indicated months for which data were not available.)

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**Table of Lost Production Comparison-Actual with Level Gas Production-with
Prevailing Prices**

NATURAL GAS (MMBtu)							NATURAL GAS (MMBtu)							
DATE	NEW MEXICO	MM DLY AVG	DIFFERENCE	ACTUAL LOSS/SAVINGS			DATE	NEW MEXICO	MM DLY AVG	DIFFERENCE	ACTUAL LOSS/SAVINGS			
2009	Nov	131,979	136,489	4,510	\$26,361,830	\$ 7.41	Jan	110,141	136,489	26,348	\$18,661,390	\$ 5.80		
	Dec	128,529	136,489	7,960	\$51,843,120	\$ 6.79	Feb	106,173	136,489	30,316	\$19,212,120	\$ 6.32		
	Jan	127,284	136,489	9,205	\$60,413,980	\$ 6.30	Mar	111,674	136,489	24,815	\$16,647,180	\$ 4.29		
	Feb	116,409	136,489	20,080	\$107,731,070	\$ 8.00	Apr	106,834	136,489	29,655	\$12,460,430	\$ 4.06		
	Mar	105,887	136,489	30,602	\$47,466,640	\$ 7.11	May	110,160	136,489	26,329	\$9,144,060	\$ 4.14		
	Apr	119,411	136,489	17,078	\$84,209,870	\$ 7.80	Jun	109,166	136,489	27,323	\$14,801,420	\$ 4.80		
	May	121,654	136,489	14,835	\$57,277,810	\$ 7.84	Jul	118,705	136,489	17,784	\$18,441,360	\$ 4.68		
	Jun	127,442	136,489	9,047	\$68,806,880	\$ 7.85	Aug	110,961	136,489	25,528	\$9,212,020	\$ 4.32		
	Jul	130,009	136,489	6,480	\$44,313,480	\$ 6.22	Sep	111,547	136,489	24,942	\$9,601,360	\$ 5.89		
	Aug	127,114	136,489	9,375	\$59,512,840	\$ 6.51	Oct	112,594	136,489	23,895	\$10,202,740	\$ 4.43		
	Sep	127,943	136,489	8,546	\$54,370,570	\$ 6.28	Nov	108,872	136,489	27,617	\$9,454,110	\$ 5.71		
	2010	Oct	126,149	136,489	10,340	\$68,202,760	\$ 6.74	Dec	111,125	136,489	25,364	\$10,312,890	\$ 4.29	
Nov		134,471	136,489	2,018	\$93,346,710	\$ 7.10	Jan	105,486	136,489	31,003	\$19,101,040	\$ 6.89		
Dec		130,549	136,489	5,940	\$124,896,450	\$ 7.31	Feb	90,283	136,489	46,206	\$18,318,940	\$ 4.09		
Jan		124,679	136,489	11,810	\$127,102,180	\$ 7.39	Mar	116,189	136,489	20,300	\$16,721,400	\$ 5.97		
Feb		111,490	136,489	25,000	\$113,380,180	\$ 6.56	Apr	105,960	136,489	30,529	\$12,250,010	\$ 4.24		
Mar		124,499	136,489	12,000	\$113,012,470	\$ 9.41	May	110,018	136,489	26,471	\$14,373,370	\$ 4.51		
Apr		120,190	136,489	16,299	\$104,680,710	\$ 10.14	Jun	104,854	136,489	31,635	\$14,312,020	\$ 4.56		
May		123,819	136,489	12,670	\$110,240,230	\$ 11.27	Jul	109,404	136,489	27,085	\$18,006,740	\$ 4.42		
Jun		113,897	136,489	22,592	\$100,761,230	\$ 11.09	Aug	109,772	136,489	26,717	\$16,411,020	\$ 4.06		
Jul		116,327	136,489	20,162	\$111,880,410	\$ 11.00	Sep							
Aug		128,579	136,489	7,910	\$102,240,270	\$ 8.24	Oct							
Sep		114,664	136,489	21,825	\$116,700,640	\$ 7.87	Nov							
2011	Oct	113,791	136,489	22,698	\$12,072,420	\$ 6.74	Dec							
	Nov	118,014	136,489	18,475	\$117,404,460	\$ 6.66								
	Dec	118,171	136,489	18,318	\$108,690,240	\$ 6.62								
	Jan	118,408	136,489	18,081	\$88,207,880	\$ 6.24								
	Feb	110,619	136,489	25,870	\$116,700,640	\$ 4.30								
	Mar	121,180	136,489	15,309	\$40,750,160	\$ 3.80								
	Apr	118,072	136,489	18,417	\$71,360,810	\$ 3.90								
	May	118,119	136,489	18,370	\$64,611,610	\$ 3.65								
	Jun	112,482	136,489	24,007	\$82,236,680	\$ 3.80								
	Jul	114,797	136,489	21,692	\$68,750,140	\$ 3.84								
	Aug	118,416	136,489	18,073	\$16,787,280	\$ 3.14								
	Sep	110,749	136,489	25,740	\$74,811,640	\$ 3.89								
	Oct	127,549	136,489	8,940	\$16,700,110	\$ 4.01								
	Nov	111,877	136,489	24,612	\$88,787,110	\$ 3.46								
Dec	108,897	136,489	27,592	\$118,112,890	\$ 3.89									

NATURAL GAS		
DIFFERENCE (MT)	LOSS	
1,137,181,000	\$6,050,823,466	
Last Production Value for New Mexico		
Value of Last Volume at prevailing prices between November 2008 and August 2011:		
\$ 6,050,823,466		
Estimated Government Portion at 12.85%:		\$ 777,350,813
Estimated Government Portion at 20%:		\$ 1,210,164,166

NATURAL GAS
DIFFERENCE (MMBtu) 10508
\$1,197,181,000 \$6,090,823,466

Lost Production Value to New Mexico

Value of Lost Volume at prevailing prices between November 2008 and August 2011:	\$ 6,090,823,466
Estimated Government Portion at 12.85%:	\$ 777,530,815
Estimated Government Portion at 20%:	\$ 1,210,164,693

Source: For Actual Gas Production: U.S. Energy Information Administration for production, Henry Hub Spot for natural gas prices, Data as of August 2011. Natural gas numbers are shown in millions of cubic feet. Gas is sold in units of a thousand cubic feet.