Table 19.

Projected Net Unreclaimed Drilling Related Disturbance for All New Wells Minus New Abandoned Wells for the Next 20 Years

NET DISTURBANCE PROJECTIONS - FOR ALL NEW WELLS MINUS NEW WELLS THAT ARE ABANDONED (based on figures supplied by RMG 11/14/03 - updated 11-18-03)

Unconstrained RFD values: CBM - 4832 wells and Conventional - 4477 wells. All alternatives reflect restrictions that reduce the unconstrained well numbers.

ALTERNATIVE 1 - NO ACTION

4832-181= 4651 3.7% reduction RMG Projections CBM CONVENTIONAL 4477-183= 4294 4.1% reduction TOTAL WELLS 8945

				Disturbance					
	New Wells Added ^j	New Wells Abandoned ^h	Net Wells Added	Each Well and Road (acres)	Total Well and Roads (acres)	Roads Only (acres)	Added Pipeline Activity ⁸ (acres)		
Shallow CBM ^a	4170	667	3503	0.91	3187	3152	490		
Deep CBM ^b	481	77	404	2.1	849	647	57		
Dual CBM ^m									
Intermediate Gas c	3400	340	3060	2.4	7343	4895	918		
Dual Intermed Gas ⁿ									
Intermediate Exploratory ^d	336	34	303	5.5	1664	1422	272		
Deep Gas ^e	508	51	457	6.1	2789	2149	41		
Deep Exploratory f	50	5	45	15.6	705	642	123		
TOTALS	8945	1174	7771		16538	12908	2272		

Average acreage disturbed per well

Total Acres Disturbed= 16538

TOTALS

% of ALT 2=

Average acreage disturbed per well

ALTERNATIVE 2 - DEVELOPMENT EMPHASIS

TOTAL WELLS

Wells

Added ^j

4284

495

3499

346

523

New Wells

Abandoned^h

686

350

1207

RMG Projections CBM

Shallow CBM a

Deep CBM ^b

Dual CBM^m

Intermediate

Exploratory '

Deep Gas e

Intermediate Gas

Dual Intermed Gas

Deep Exploratory

4832-54= 4779

9198

Each We

and Road

(acres)

0.91

2.1

5.5

6.1

15.0

CONVENTIONAL 4477-59= <u>4419</u> 1.3% reduction

Added

3599

415

3149

311

470

7991

Total Acres Disturbed= 17013

1.1% reduction

Total Well

and Roads

(acres)

Disturbance

3275

872

7557

1713

2870

726

17013

Road

Only

3239

665

5038

1464

2211

661

Added

Pipeline

Activity

(acres)

504

945

423

Average acreage disturbed per well

Total Acres Disturbed= 15489

4832-368= 4464

8632

Each Wel

and Road

(acres)

0.91

2.1

0.02

2.4

1.2

5.5

6.1

CONVENTIONAL 4477-309= 4168 6.9% reduction

Net Wells

Added

3347

2554

416

294

444

ALTERNATIVE 3 - PROTECTION/CONSERVATION EMPHASIS

New Well

Abandoned

637

284

CBM

TOTAL WELLS

Wells

Added

3984

458

22

2838

462

326

493

RMG Projections

Shallow CBM a

eep CBM b

ual CBM^{mp}

termediate

xploratory

eep Gas e

TOTALS

ntermediate Gas c

Oual Intermed Gas^r

eep Exploratory

% of ALT 2=

7.6% reduction

Total Well

and Roads

(acres)

3045

808

6130

499

1615

2707

685

15489

Disturbance

Roads

Only

(acres)

3012

615

4086

1380

2086

623

11803

Added

Pipeline

Activity

(acres)

469

766

264

399

119

ALTERNATIVE 4 - PREFERRED ACTION

4832-269= 4563 5.6% reduction RMG Projections CBM CONVENTIONAL 4477-218= 4259 4.9% reduction TOTAL WELLS

			1	P			
ı				Disturbance			
	New Wells Added ^j	New Wells Abandoned ^h	Net Wells Added	Each Well and Road (acres)	Total Well and Roads (acres)	Roads Only (acres)	
Shallow CBM a	4073	652	3421	0.91	3113	3079	
Deep CBM ^b	468	75	393	2.1	826	629	
Dual CBM ^m	22	4	18	0.08	2		
Intermediate Gas c	2910	291	2619	2.4	6285	4190	
Dual Intermed Gas ⁿ	462	74	388	0.28	129		
Intermediate Exploratory ^d	333	33	300	5.5	1651	1411	
Deep Gas ^e	504	50	453	6.1	2766	2131	
Deep Exploratory f	50	5	45	15.6	700	637	
TOTALS	8822	1184	7638		15472	12077	

Average acreage disturbed per well

Total Acres Disturbed=

^aShallow CBM wells are estimated to be 4832^j wells less 500 deep CBM wells with a 16% abandonment rate

^bDeep CBM wells are estimated to be 500 of the total CBM wells with a 16% abandonment rate.

c87% of the estimated 4477^j conventional gas wells are Intermediate Gas and abandon at a rate of 10% per year.

^d9% of the above intermediate conventional wells are exploratory and abandoned at a rate of 10% per year

^e13% of the estimated 4477^j conventional gas wells are Deep Gas and abandon at a rate of 10% per year.

^f9% of the above Deep Gas wells are exploratory and abandoned at a rate of 10% per year

^gPipeline disturbance is considered to be mitigated within 4 years after the pipeline is installed. This calculation is new pipelines disturbance that equils 4 years times the number of wells per year times the respective disturbance factor.

^hWells abandon are at a rate of 16% for CBM and 10% for conventional and deep gas. which are lumped into the intermediate gas category

^jReservoir Management Group estimates of total wells as adjusted February, 2003

^mDual CBM wells are two wells drilled from the same pad and disturbance figure reflects only an increase in the well pad size It is estimated that 2.5% of Alternative 3 wells will be drilled in this manner and is reflected in proportionate reduction of both shallow and deep CBM wells.

ⁿDual Intermed Gas are two wells drilled from the same pad and disturbance figures reflects only an increase in well pad size It is estimated that 27% of Alternative 3 and Alternative 4 wells will be drilled in this manner and is reflected in an equal reduction of Intermediate Gas wells.

PConsiders that only Federal wells can be controlled and required to drill a directional well to limit surface disturbance. Federal wells are estimated to be 45.1% of total wells. Value obtained from Alternative Gross Disturbance Tables.

Tables modified from Chism (2004)

% of ALT 2=

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Projected Net Unreclaimed Drilling Related Disturbance for All New Wells Minus New Abandoned Wells for the Next 20 Years

15472 0.91