

ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
 - Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



*Parallel Petroleum  
 Swale 1525-16 #1 and 2*

**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

- [NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**
- [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**
- [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**
- [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**
- [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**
- [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

- [1] **TYPE OF APPLICATION - Check Those Which Apply for [A]**
- [A] Location - Spacing Unit - Simultaneous Dedication  
 NSL  NSP  SD
- Check One Only for [B] or [C]
- [B] Commingling - Storage - Measurement  
 DHC  CTB  PLC  PC  OLS  OLM
- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
 WFX  PMX  SWD  IPI  EOR  PPR
- [D] Other: Specify FIRST Amend Application

RECEIVED  
 2007 AUG 20 PM 4 48

- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or  Does Not Apply
- [A]  Working, Royalty or Overriding Royalty Interest Owners
- [B]  Offset Operators, Leaseholders or Surface Owner
- [C]  Application is One Which Requires Published Legal Notice
- [D]  Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E]  For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F]  Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

*[Signature]*  
 Print or Type Name \_\_\_\_\_ Signature \_\_\_\_\_

**Kellahin & Kellahin**  
**Attorneys At Law**  
 706 Gonzales Rd.  
 Santa Fe, NM 87501  
 Date 8/20/07

e-mail Address TKellahin@Comcast.net

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATE  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

**FIRST AMENDED  
ADMINISTRATIVE APPLICATION**

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation for two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25 East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

- (a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL
  
- (b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and

In support of its application, Parallel states:

(1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**

(2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**

(3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"

(4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.

Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."

(5) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

(6) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached locator map and index. **Exhibit “C”** and the notice letter attached **as Exhibit “D”**

(7) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:

(a) the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/2 of Section 16, that will not be effectively recovered by the gas in the S/2S/2 of Section 16 and will not adversely affecting the correlative rights of the offsetting interest owners.

(b) A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.

(8) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer to support the following Exhibits:

#### Exhibit F

This exhibit is a regional map of the Wolfcamp Formation (Permian Age) of the Permian Basin of Southeast New Mexico and West Texas. The Wolfcamp gas play is located on the Northwest Shelf of New Mexico in northwest Eddy County and western and southeastern Chaves County.

#### Exhibit G

This exhibit is a stratigraphic chart of the Northwest Shelf. The Wolfcamp gas zone is Permian in age and produces from the Wolfcamp Formation.

#### Exhibit H

This is a diagrammatic cross-section that explains the Wolfcamp pay zone is a stratigraphic reservoir with tight basinal limestones and shales providing the down-dip seal and evaporite deposits providing the updip seal.

#### Exhibit I

This exhibit is from the Pinnacle micro seismic presentation which shows pictorially the entire 4-stage fracture stimulation procedure done on the Alysheba 1426-34 #1 well. This well is a horizontal well completed in the Wolfcamp formation in the same general area as the Swale #1 and #2 wells. The method of stimulation used for the Alysheba #1 is the same method that continues to be used for Parallel Petroleum Corporation on this reservoir. This method was used on the Swale #1 well and is planned to be used on the Swale #2 well. The picture represents the micro seismic events recorded from the offset Bold Venture #1 well in the Alysheba #1 during stimulation. The second comment on the slide gives an approximate fracture half-length of 900'. Indicated in the picture, this fracture half-length is concentrated in the Stage 2 (red), and does not extend along the entire horizontal. This fracture half-length is greater than the proppant-laden fracture and greater still than the effective half-length that is actually drained from the reservoir in the well.

#### Exhibit J

This exhibit is the graphical data that represents the Stage 2 (red) micro seismic events in exhibit I. The maximum distance of only 3 events are 900' or more normal distance from the wellbore, and the log normal distribution of events yields a normal distance from wellbore of just over 700'. This further supports the estimation that the effective "drained" half-length is less than half the normal distance between horizontal wells spaced on 160 acres (2 wells per 320-acre unit).

#### Exhibit K

This exhibit is the Pinnacle conclusions made from the data derived from the Alysheba #1 stimulation, and restate in the 4<sup>th</sup> bullet point that the fracture half-length of 900' is longer than another Parallel Petroleum well, the Seabiscuit #2, but less than competitors. This is a restatement of the interpretation of the data given in Exhibits I and J.

#### Exhibit L

This exhibit is the gas analysis of the Forego State Com 1525-16 #1, which is a horizontal well completed in the N/2 Section 16, Township 15 South, Range 25 East. This exhibit is given to prove the gas make-up in the pool, and demonstrate that this gas make-up along with reservoir liquids at reservoir pressure and temperature will yield a viscous product with much higher viscosity than that of air at surface pressure and temperature.

Exhibit M

This exhibit is data gathered from a Wolfcamp core sample and shows pore throat size distribution that is in the majority of the .05 micron range and below, which yields a porosity of 1.3% and permeability to Air of .019 md. The permeability to the viscous product at reservoir pressure and temperature will be much less and estimated at an average of less than .01 md.

Exhibit N

This is a stratigraphic cross-section from the Parallel Swale 1525-16 #1 to the Parallel Forego 16B #1 (0.9 miles apart) to the Parallel Alysheba 1426-34 D#1 (7 miles apart) that shows you can correlate the gross interval of the Wolfcamp gas zone but internally there is lateral and vertical variability. This heterogeneity is common in lagoonal carbonates. This geological and the corresponding reservoir engineering data shows these wells are not draining 160 acres.

(10) These exhibit are basically the same data presented to the Division at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division's attorney, David K. Brooks.

(11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.

(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:



W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285

KELLAHIN & KELLAHIN  
Attorney at Law

W. THOMAS KELLAHIN  
706 GONZALES ROAD  
SANTA FE, NEW MEXICO 87501

TELEPHONE 505-982-4285  
FACSIMILE 505-982-2047  
TKELLAHIN@COMCAST.NET

August 20, 2007

**HAND DELIVERED**

Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

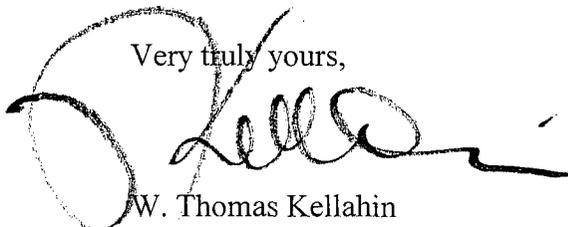
Re: First Amended Administrative Application  
of Parallel Petroleum Corporation for authorization  
to simultaneously dedicate a standard gas spacing and  
proration unit in the Wolfcamp formation to two horizontal  
wellbores, including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

2007 AUG 20 PM 4 23  
RECEIVED

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our first amended administrative application referenced above. This filing is to replace the application filed on Friday, August 17, 2007. Please retain all previously filed exhibits—they continue to be correctly identified and filed.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray

ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
 - Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

- [NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**
- [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**
- [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**
- [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**
- [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**
- [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

- [1] **TYPE OF APPLICATION - Check Those Which Apply for [A]**
- [A] Location - Spacing Unit - Simultaneous Dedication  
 NSL  NSP  SD
- Check One Only for [B] or [C]
- [B] Commingling - Storage - Measurement  
 DHC  CTB  PLC  PC  OLS  OLM
- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
 WFX  PMX  SWD  IPI  EOR  PPR
- [D] Other: Specify FIRST Amend Application

- [2] **NOTIFICATION REQUIRED TO: - Check Those Which Apply, or  Does Not Apply**
- [A]  Working, Royalty or Overriding Royalty Interest Owners
- [B]  Offset Operators, Leaseholders or Surface Owner
- [C]  Application is One Which Requires Published Legal Notice
- [D]  Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E]  For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F]  Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Print or Type Name

Signature

**Kellahin & Kellahin**  
**Attorneys At Law**  
**706 Gonzales Rd.**  
**Santa Fe, NM 87501**

Date

8/20/07

e-mail Address

TKellahin@Comcast.net

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATE  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

**FIRST AMENDED  
ADMINISTRATIVE APPLICATION**

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation for two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25 East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

- (a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL
- (b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and

In support of its application, Parallel states:

(1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**

(2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**

(3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"

(4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.

Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."

(5) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

(6) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached locator map and index. **Exhibit “C”** and the notice letter attached as **Exhibit “D”**

(7) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:

(a) the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/2 of Section 16, that will not be effectively recovered by the gas in the S/2S/2 of Section 16 and will not adversely affecting the correlative rights of the offsetting interest owners.

(b) A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.

(8) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer to support the following Exhibits:

#### Exhibit F

This exhibit is a regional map of the Wolfcamp Formation (Permian Age) of the Permian Basin of Southeast New Mexico and West Texas. The Wolfcamp gas play is located on the Northwest Shelf of New Mexico in northwest Eddy County and western and southeastern Chaves County.

#### Exhibit G

This exhibit is a stratigraphic chart of the Northwest Shelf. The Wolfcamp gas zone is Permian in age and produces from the Wolfcamp Formation.

#### Exhibit H

This is a diagrammatic cross-section that explains the Wolfcamp pay zone is a stratigraphic reservoir with tight basinal limestones and shales providing the down-dip seal and evaporite deposits providing the updip seal.

#### Exhibit I

This exhibit is from the Pinnacle micro seismic presentation which shows pictorially the entire 4-stage fracture stimulation procedure done on the Alysheba 1426-34 #1 well. This well is a horizontal well completed in the Wolfcamp formation in the same general area as the Swale #1 and #2 wells. The method of stimulation used for the Alysheba #1 is the same method that continues to be used for Parallel Petroleum Corporation on this reservoir. This method was used on the Swale #1 well and is planned to be used on the Swale #2 well. The picture represents the micro seismic events recorded from the offset Bold Venture #1 well in the Alysheba #1 during stimulation. The second comment on the slide gives an approximate fracture half-length of 900'. Indicated in the picture, this fracture half-length is concentrated in the Stage 2 (red), and does not extend along the entire horizontal. This fracture half-length is greater than the proppant-laden fracture and greater still than the effective half-length that is actually drained from the reservoir in the well.

#### Exhibit J

This exhibit is the graphical data that represents the Stage 2 (red) micro seismic events in exhibit I. The maximum distance of only 3 events are 900' or more normal distance from the wellbore, and the log normal distribution of events yields a normal distance from wellbore of just over 700'. This further supports the estimation that the effective "drained" half-length is less than half the normal distance between horizontal wells spaced on 160 acres (2 wells per 320-acre unit).

#### Exhibit K

This exhibit is the Pinnacle conclusions made from the data derived from the Alysheba #1 stimulation, and restate in the 4<sup>th</sup> bullet point that the fracture half-length of 900' is longer than another Parallel Petroleum well, the Seabiscuit #2, but less than competitors. This is a restatement of the interpretation of the data given in Exhibits I and J.

#### Exhibit L

This exhibit is the gas analysis of the Forego State Com 1525-16 #1, which is a horizontal well completed in the N/2 Section 16, Township 15 South, Range 25 East. This exhibit is given to prove the gas make-up in the pool, and demonstrate that this gas make-up along with reservoir liquids at reservoir pressure and temperature will yield a viscous product with much higher viscosity than that of air at surface pressure and temperature.

Exhibit M

This exhibit is data gathered from a Wolfcamp core sample and shows pore throat size distribution that is in the majority of the .05 micron range and below, which yields a porosity of 1.3% and permeability to Air of .019 md. The permeability to the viscous product at reservoir pressure and temperature will be much less and estimated at an average of less than .01 md.

Exhibit N

This is a stratigraphic cross-section from the Parallel Swale 1525-16 #1 to the Parallel Forego 16B #1 (0.9 miles apart) to the Parallel Alysheba 1426-34 D#1 (7 miles apart) that shows you can correlate the gross interval of the Wolfcamp gas zone but internally there is lateral and vertical variability. This heterogeneity is common in lagoonal carbonates. This geological and the corresponding reservoir engineering data shows these wells are not draining 160 acres.

(10) These exhibit are basically the same data presented to the Division at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division's attorney, David K. Brooks.

(11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.

(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:



W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285

**KELLAHIN & KELLAHIN**  
Attorney at Law

W. THOMAS KELLAHIN  
706 GONZALES ROAD  
SANTA FE, NEW MEXICO 87501

TELEPHONE 505-982-4285  
FACSIMILE 505-982-2047  
TKELLAHIN@COMCAST.NET

August 20, 2007

**HAND DELIVERED**

Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

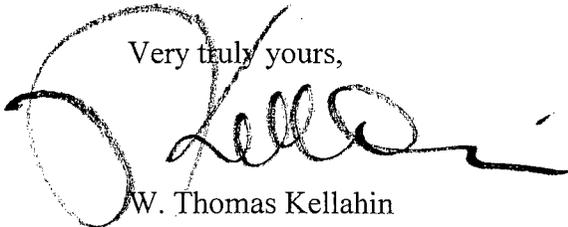
Re: First Amended Administrative Application  
of Parallel Petroleum Corporation for authorization  
to simultaneously dedicate a standard gas spacing and  
proration unit in the Wolfcamp formation to two horizontal  
wellbores, including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

RECEIVED  
2007 AUG 20 PM 4 23

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our first amended administrative application referenced above. This filing is to replace the application filed on Friday, August 17, 2007. Please retain all previously filed exhibits—they continue to be correctly identified and filed.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray

**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
706 GONZALES ROAD  
SANTA FE, NEW MEXICO 87501

TELEPHONE 505-982-4285  
FACSIMILE 505-982-2047  
TKELLAHIN@COMCAST.NET

August 20, 2007

**HAND DELIVERED**

Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

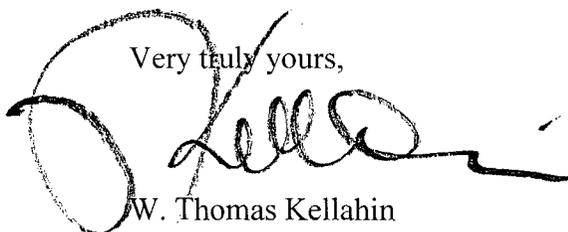
Re: First Amended Administrative Application  
of Parallel Petroleum Corporation for authorization  
to simultaneously dedicate a standard gas spacing and  
proration unit in the Wolfcamp formation to two horizontal  
wellbores, including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

2007 AUG 20 PM 4:23  
RECEIVED

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our first amended administrative application referenced above. This filing is to replace the application filed on Friday, August 17, 2007. Please retain all previously filed exhibits—they continue to be correctly identified and filed.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
---------	----------	----------	-----------	------	---------

ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
 - Engineering Bureau -  
 1220 South St. Francis Drive, Santa Fe, NM 87505



**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

- [NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**
- [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**
- [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**
- [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**
- [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**
- [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

- [1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]
- [A] Location - Spacing Unit - Simultaneous Dedication  
 NSL  NSP  SD
- Check One Only for [B] or [C]
- [B] Commingling - Storage - Measurement  
 DHC  CTB  PLC  PC  OLS  OLM
- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
 WFX  PMX  SWD  IPI  EOR  PPR
- [D] Other: Specify FIRST Amend Application

- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or  Does Not Apply
- [A]  Working, Royalty or Overriding Royalty Interest Owners
- [B]  Offset Operators, Leaseholders or Surface Owner
- [C]  Application is One Which Requires Published Legal Notice
- [D]  Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E]  For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F]  Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

*[Handwritten Signature]*  
 Print or Type Name \_\_\_\_\_ Signature \_\_\_\_\_

**Kellahin & Kellahin**  
**Attorneys At Law**  
**706 Gonzales Rd.**  
 Santa Fe, NM 87501

8/20/07  
 Date

TKellahin@CUMCAST.net  
 e-mail Address

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATE  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

**FIRST AMENDED  
ADMINISTRATIVE APPLICATION**

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation for two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25 East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

(a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL

(b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and

In support of its application, Parallel states:

(1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**

(2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**

(3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"

(4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.

Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."

(5) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

(6) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached locator map and index. **Exhibit “C”** and the notice letter attached **as Exhibit “D”**

(7) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:

(a) the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/2 of Section 16, that will not be effectively recovered by the gas in the S/2S/2 of Section 16 and will not adversely affecting the correlative rights of the offsetting interest owners.

(b) A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.

(8) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer to support the following Exhibits:

#### Exhibit F

This exhibit is a regional map of the Wolfcamp Formation (Permian Age) of the Permian Basin of Southeast New Mexico and West Texas. The Wolfcamp gas play is located on the Northwest Shelf of New Mexico in northwest Eddy County and western and southeastern Chaves County.

#### Exhibit G

This exhibit is a stratigraphic chart of the Northwest Shelf. The Wolfcamp gas zone is Permian in age and produces from the Wolfcamp Formation.

#### Exhibit H

This is a diagrammatic cross-section that explains the Wolfcamp pay zone is a stratigraphic reservoir with tight basinal limestones and shales providing the down-dip seal and evaporite deposits providing the updip seal.

#### Exhibit I

This exhibit is from the Pinnacle micro seismic presentation which shows pictorially the entire 4-stage fracture stimulation procedure done on the Alysheba 1426-34 #1 well. This well is a horizontal well completed in the Wolfcamp formation in the same general area as the Swale #1 and #2 wells. The method of stimulation used for the Alysheba #1 is the same method that continues to be used for Parallel Petroleum Corporation on this reservoir. This method was used on the Swale #1 well and is planned to be used on the Swale #2 well. The picture represents the micro seismic events recorded from the offset Bold Venture #1 well in the Alysheba #1 during stimulation. The second comment on the slide gives an approximate fracture half-length of 900'. Indicated in the picture, this fracture half-length is concentrated in the Stage 2 (red), and does not extend along the entire horizontal. This fracture half-length is greater than the proppant-laden fracture and greater still than the effective half-length that is actually drained from the reservoir in the well.

#### Exhibit J

This exhibit is the graphical data that represents the Stage 2 (red) micro seismic events in exhibit I. The maximum distance of only 3 events are 900' or more normal distance from the wellbore, and the log normal distribution of events yields a normal distance from wellbore of just over 700'. This further supports the estimation that the effective "drained" half-length is less than half the normal distance between horizontal wells spaced on 160 acres (2 wells per 320-acre unit).

#### Exhibit K

This exhibit is the Pinnacle conclusions made from the data derived from the Alysheba #1 stimulation, and restate in the 4<sup>th</sup> bullet point that the fracture half-length of 900' is longer than another Parallel Petroleum well, the Seabiscuit #2, but less than competitors. This is a restatement of the interpretation of the data given in Exhibits I and J.

#### Exhibit L

This exhibit is the gas analysis of the Forego State Com 1525-16 #1, which is a horizontal well completed in the N/2 Section 16, Township 15 South, Range 25 East. This exhibit is given to prove the gas make-up in the pool, and demonstrate that this gas make-up along with reservoir liquids at reservoir pressure and temperature will yield a viscous product with much higher viscosity than that of air at surface pressure and temperature.

Exhibit M

This exhibit is data gathered from a Wolfcamp core sample and shows pore throat size distribution that is in the majority of the .05 micron range and below, which yields a porosity of 1.3% and permeability to Air of .019 md. The permeability to the viscous product at reservoir pressure and temperature will be much less and estimated at an average of less than .01 md.

Exhibit N

This is a stratigraphic cross-section from the Parallel Swale 1525-16 #1 to the Parallel Forego 16B #1 (0.9 miles apart) to the Parallel Alysheba 1426-34 D#1 (7 miles apart) that shows you can correlate the gross interval of the Wolfcamp gas zone but internally there is lateral and vertical variability. This heterogeneity is common in lagoonal carbonates. This geological and the corresponding reservoir engineering data shows these wells are not draining 160 acres.

(10) These exhibit are basically the same data presented to the Division at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division's attorney, David K. Brooks.

(11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.

(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:



W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285