



02188032

8-17-17

## 511 Documents

**RECEIVED**  
AUG 17 2017  
COGCC

# **Fifth Creek Energy Operating Company, LLC**

Cause No. 421

Docket No. 170900555

BEFORE THE OIL AND GAS CONSERVATION COMMISSION  
OF THE STATE OF COLORADO

IN THE MATTER OF THE APPLICATION OF ) CAUSE NO. 421  
FIFTH CREEK ENERGY OPERATING )  
COMPANY, LLC FOR AN ORDER ) DOCKET NO. 170900555  
AUTHORIZING ADDITIONAL WELLS IN SIX (6) )  
APPROXIMATE 1,280-ACRE DRILLING AND ) TYPE: ADDITIONAL  
SPACING UNITS ESTABLISHED FOR ) WELLS  
SECTIONS 19, 20, 21, 22, 27, 27, 29 AND 30, )  
TOWNSHIP 12 NORTH, RANGE 62 WEST, )  
6TH P.M., AND SECTIONS 23, 24, 25 AND 26, )  
TOWNSHIP 12 NORTH, RANGE 63 WEST, )  
6TH P.M., FOR PRODUCTION FROM THE )  
NIOBRARA FORMATION, HEREFORD FIELD, )  
WELD COUNTY, COLORADO. )

**REQUEST FOR RECOMMENDATION OF  
APPROVAL OF APPLICATION WITHOUT A HEARING**

Fifth Creek Energy Operating Company, LLC ("Applicant"), by and through its undersigned attorneys, hereby requests pursuant to Rule 511.a. of the Rules of Regulations of the Colorado Oil and Gas Conservation Commission for the Director to recommend approval of its July 13, 2017, verified application ("Application") and the supporting exhibits without a hearing.

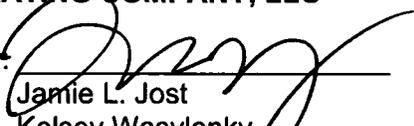
Applicant requests that the above-captioned matter be approved based upon: (i) the merits of the Application, and (ii) Applicant's sworn written testimony verifying sufficient facts along with exhibits that adequately support the relief requested in the Application. To Applicant's information and belief, no protests were timely filed in this matter.

WHEREFORE, Applicant requests that its request for a recommendation for approval of its Application without a hearing be granted.

DATED this 17<sup>th</sup> day of August 2017.

Respectfully submitted,

**FIFTH CREEK ENERGY OPERATING COMPANY, LLC**

By: 

Jamie L. Jost  
Kelsey Wasylenky  
Jost Energy Law, P.C.  
Attorney for Applicant  
1401 17<sup>th</sup> St., Suite 370  
Denver, Colorado 80202  
(720) 446-5620

**Fifth Creek Energy Operating Company, LLC  
Teale Stone - Land Testimony**

Cause No. 421; Docket No. 170900555  
Increased Density – Niobrara Formation  
Wattenberg Field, Weld County, Colorado

September 2017 Colorado Oil and Gas Conservation Commission Hearing

My name is Teale Stone, and I am currently employed as a Senior Landman at Fifth Creek Energy Operating Company, LLC (“Applicant”). I have over five years of professional experience in oil and gas land work and I am familiar with the lands subject to, and matters set forth in, the verified application (“Application”).

In support of Applicant’s Application and my sworn testimony herein, I am submitting six (6) exhibits. This testimony and exhibits provide the supporting basis for approval of the Applicant’s request for an order to authorize an additional seven (7) horizontal wells, for a total of fifteen (15) horizontal wells, in each of six (6) approximate 1,280-acre drilling and spacing units established by Order No. 421-84 for Sections 19, 20, 21, 22, 27, 27, 29 and 30, Township 12 North, Range 62 West, 6th P.M., and Sections 23, 24, 25 and 26, Township 12 North, Range 63 West, 6th P.M., for the efficient and economic development of oil, gas and associated hydrocarbons from the Niobrara Formation underlying the below-described lands.

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 19: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 30: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 20: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 29: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 21: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 28: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 22: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 27: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 63 West, 6<sup>th</sup> P.M.

Section 23: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 26: All  
1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 63 West, 6<sup>th</sup> P.M.

Section 24: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 25: All  
1,280 acres, more or less, Weld County, Colorado

Exhibit 1: Leasehold Ownership Map:

Exhibit 1 is a map showing the location of the Application Lands and the leasehold ownership. Upon information and belief, the following parties own leasehold or unleased mineral interests in the Application Lands:

Retamco Operating, Inc.  
8 North, LLC  
Arapahoe Resources, LLC  
RK Pinson & Associates  
Anadarko E&P Company  
Glen Hodgell  
Jesse Ernest Loyd  
Incline Niobrara Partners  
William and Thomas Breeden  
Richard Leigh Faris  
Sherryl E. Faris

Exhibit 2: Mineral Ownership Map:

Exhibit 2 is a map showing the mineral ownership of the Application Lands, which is owned in fee.

Exhibit 3: Property Location Plat:

Attached as Exhibit 3 is a Property Location Plat. The Applicant will conform to its statement that the treated perforation of the Wells within the Niobrara Formation will not be closer than 300 feet from the unit boundaries of the 1,280.00-acre drilling and spacing unit and not less than 150 feet from the treated interval of another well within the unit.

Exhibit 4: Surface Ownership Map:

Exhibit 4 is a map showing the surface ownership of the Application Lands, which is owned in fee.

Exhibit 5: Topographic Map:

Exhibit 5 is a map showing the topography of the Application Lands. Approval of the Application for a drilling and spacing unit would allow for a less impactful surface development plan.

Exhibit 6: Interested Parties:

Attached as Exhibit 6 are interested parties within the Application Lands. Based upon our examination of relevant documents all of the interested parties received proper notice. As of the date of this testimony, the Applicant is not aware of any unresolved protests or objections to the Application.

**Affirmation**

The matters described herein were all conducted under my direction and control. I hereby swear that to the best of my knowledge and belief, all of the matters set forth herein and in the exhibits are true, correct, and accurate.

Teale Stone

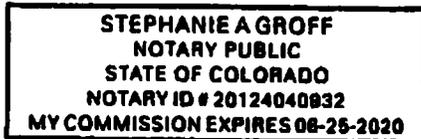
Teale Stone  
Senior Landman  
Fifth Creek Energy Operating Company, LLC

STATE OF COLORADO                    )  
  ) ss.  
COUNTY OF ARAPAHOE                )

The foregoing instrument was subscribed and sworn to before me this 1<sup>st</sup> day of August 2017, by Teale Stone, Senior Landman for Fifth Creek Energy Operating Company, LLC.

Witness my hand and official seal.

[SEAL]



My commission expires: June 22, 2020

Stephanie A Groff

Notary Public

# Teale Philip Stone

---

1850 Bassett Street #401  
Denver, CO 80202  
(918) 694-3231 teale.stone@gmail.com

## EDUCATION

**B.S. in Business Administration – 2011**

**UNIVERSITY OF DENVER**

Major: Management through the Daniels College of Business

- Dean's List
- Academic All Conference (Soccer)

**Petroleum Land Management Certificate – Expected 2017**

**UNIVERSITY OF DENVER**

**CASCIA HALL PREPARATORY SCHOOL - 2007**

Tulsa, Oklahoma

## EXPERIENCE

---

**Fifth Creek Energy Operating Company, LLC**

Denver, Colorado

Senior Landman

**March 2017 – Present**

- Oversee all Land Operation tasks, including but not limited to managing brokers, ordering and curing title, clearing surface locations for drill sites, assisting in acquisitions, and planning for all future development.

**BILL BARRETT CORPORATION**

Denver, Colorado

Landman I – Uinta Basin and DJ Basin

**August 2014 to March 2017**

- Nearly 5 years of professional in house land experience with a primary focus in the Rocky Mountain Region (Utah, Colorado, Wyoming and New Mexico).
- Prepare and present Uinta Basin and DJ Basin Asset Status Reports directly to Senior Management on a weekly basis.
- Perform aspects of title research, fee and federal leasing, purchasing fee working interests and aid in the maintenance of multiple drilling prospects throughout the Uinta and DJ Basin.
- Operations Land Lead on BBC's recent divestiture of over 120,000 net acres in the Uinta Basin which closed in July of 2016.
- Source and evaluate potential acquisitions and acreage swaps of all sizes within the DJ Basin.
- Negotiate and draft JOAs, acquire various surface and subsurface contracts from fee mineral owners, Bureau of Land Management, and Bureau of Indian Affairs.
- Extensive work dealing with Exploration Development Agreements, Joint Development Agreements and Farmout Agreements throughout BBC's assets in the Uinta and DJ Basin
- Calculate Net Revenue Interests, Gross Working Interests, and Acreage Totals for multiple drilling prospects throughout the Uinta and DJ Basin.
- Manage all Operated and Non-Operated Wells still owned by BBC within the Uinta Basin.
- Point of contact for multiple attorneys and coordinating the ordering of Drilling and Division Order Title Opinions.
- Manage two field brokerage firms to direct leasing efforts, help with Surface Use Agreements and Right of Ways across Public, Private, BIA, and Division of Wildlife lands.
- Testified before the Utah Division of Oil, Gas and Mining several times regarding Compulsory Force Pooling and various Spacing Orders.
- Maintain and manage company owned surface property throughout the Uinta Basin. Recently started assisting on the DJ Basin Surface Team.
- Certified Registered Landman with the AAPL. Seeking RPL Certificate in 2017.

**BILL BARRETT CORPORATION**

Denver, Colorado

Land Technician I & II – Uinta Basin

**March 2012 to August 2014**

- Help manage various assets within the Uinta Basin

# Teale Philip Stone

---

1850 Bassett Street #401

Denver, CO 80202

(918) 694-3231 teale.stone@gmail.com

- Help draft Operating Agreements, AFE's, Fee Assignments, and Leases & Assignments for the Bureau of Indian Affairs
- Performance of regular data entry tasks (Oildex, Wellview, and Excalibur)
- Proficient in Microsoft Excel

## **KROENKE SPORTS & ENTERTAINMEN**

**October 2011 – March 2012**

Denver, Colorado

### Marketing Team

- In game marketing before, during and after all sporting events located at the Pepsi Center
- Promoted Altitude Sports Network

---

## COMMUNITY SERVICE/LEADERSHIP

---

### **2014 ENGEN CLASS GRADUATE**

- Colorado Oil and Gas Association sponsored group for Young Professionals in Energy
- Currently serving as board member for the program.

### **AAPL**

- Registered Landman

### **UNIVERSITY OF DENVER SOCCER**

- Team Captain
- NCAA Tournament Appearances 2008 and 2010

### **CAMBUUR SOCCER CLUB**

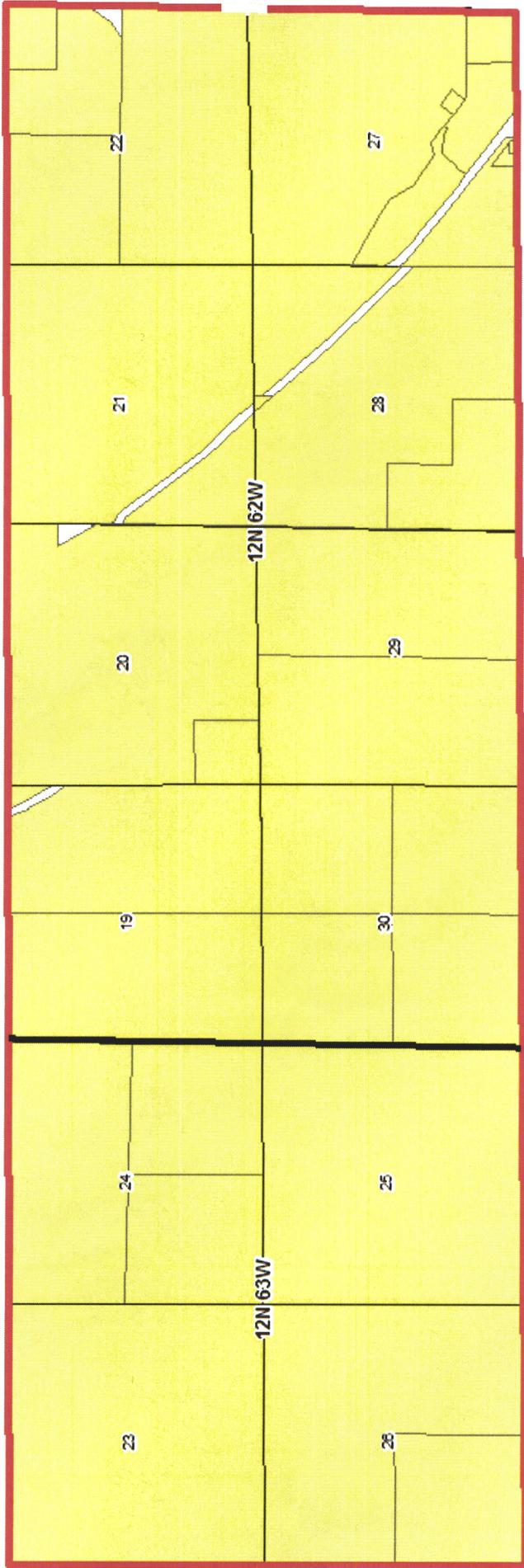
- Played for Professional Soccer Team located in Leeuwarden, Netherlands in 2008

### **YOU CAN PLAY PROJECT**

- Manager of College Operations. Served as the liaison between the organization, various College and Universities, and the NCAA. "You Can Play" is a Community Service/Non-Profit Organization visit [youcanplayproject.org](http://youcanplayproject.org) for more information.

# Exhibit 1

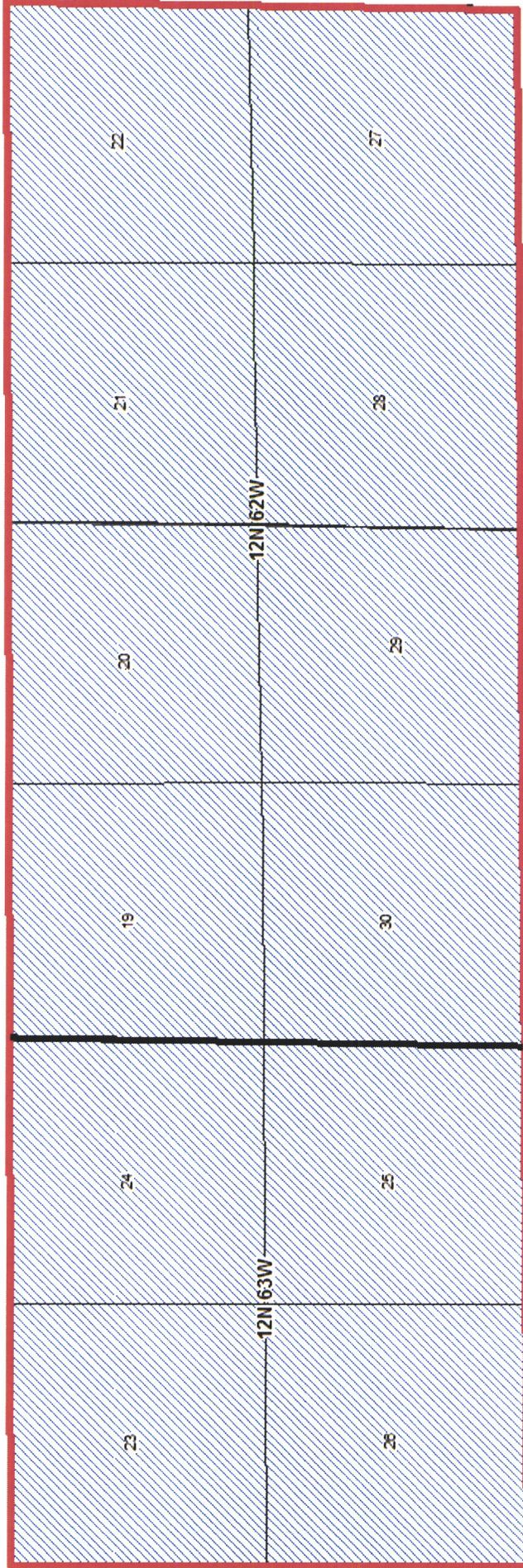
## Leasehold Ownership



- Fee Leasehold
- Application Lands

# Exhibit 2

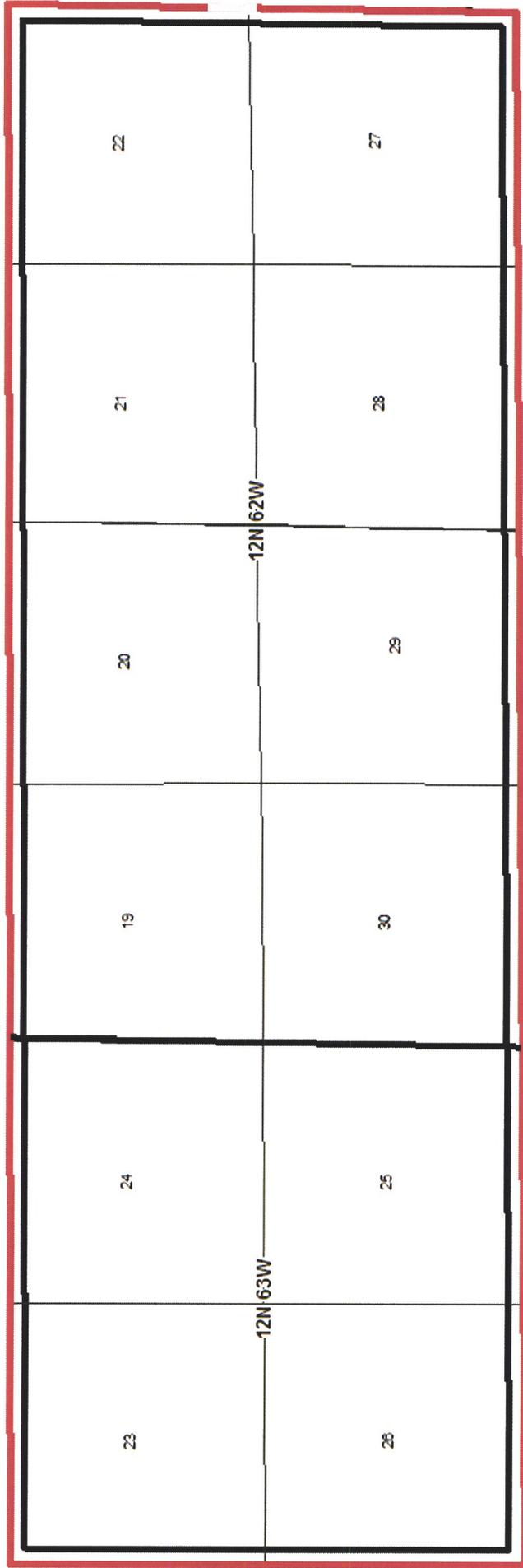
## Mineral Ownership



- Fee Minerals
- Application Lands

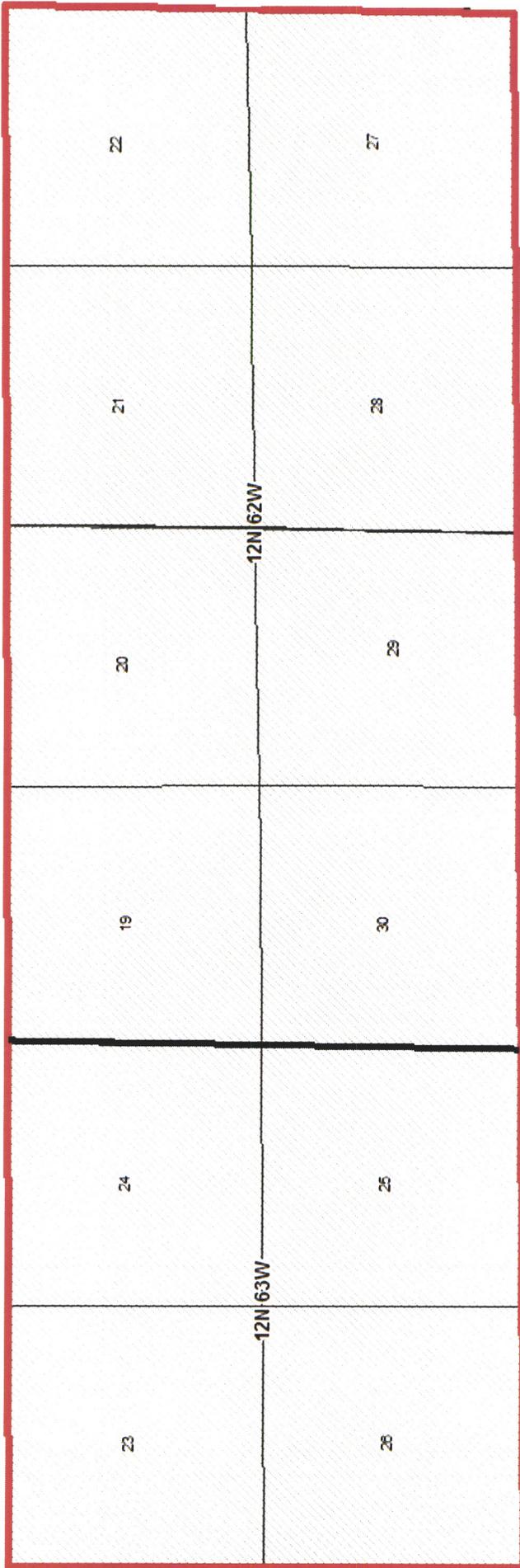
# Exhibit 3

## Property Location Plat



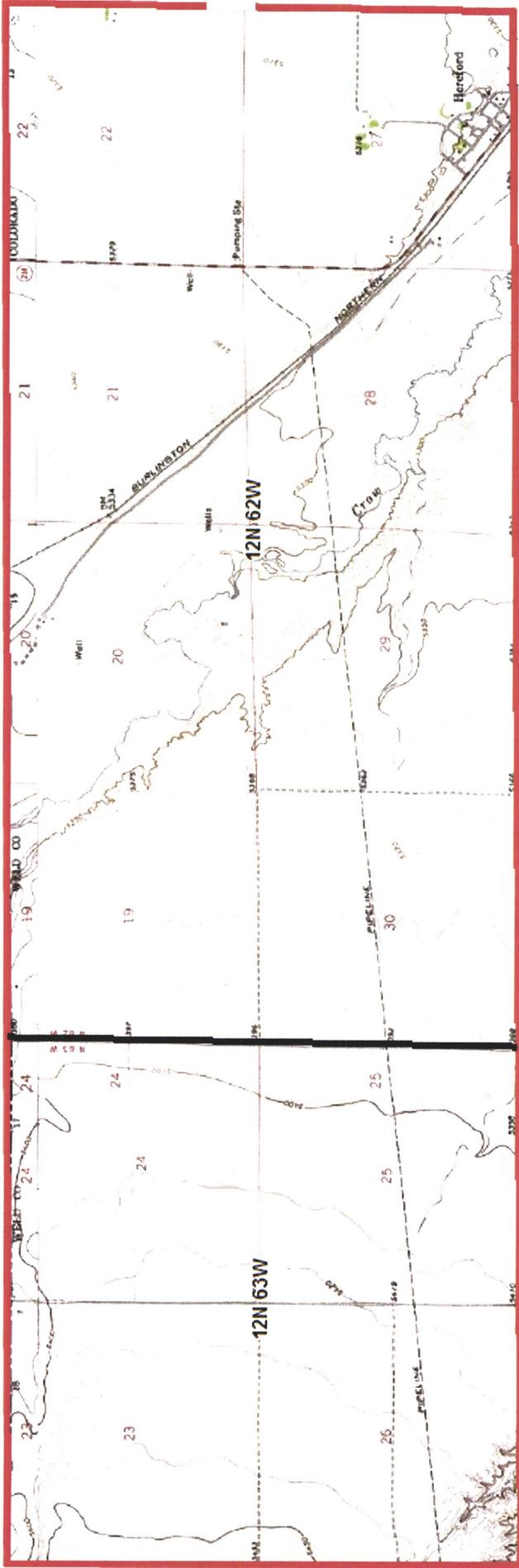
# Exhibit 4

## Surface Ownership



- Fee Surface
- Application Lands

# Exhibit 5 Topography



 Application Lands

**Exhibit 6**  
**ID - T12N-R62/63W - 6 Units**

FIFTH CREEK ENERGY OPERATING  
COMPANY 5251 DTC PKWY  
GREENWOOD, VILLAGE, CO 80111

GAIL J BOWMAN TRUSTEE GAIL J BOWMAN  
REVOCABLE TRUST  
29330 CR 358A  
BUENA VISTA, CO 81211-3477

RONALD R BOWMAN TRUSTEE  
RONALD R BOWMAN REVOCABLE TRUST  
29330 CR 358A  
BUENA VISTA, CO 81211-3477

TIETMEYER MINERAL CO LLC  
67125 WELD COUNTY 83  
GROVER, CO 80729-0000

8 NORTH LLC  
1888 SHERMAN STREET, SUITE 200  
DENVER, CO 80203

FIFTH CREEK ENERGY OPERATING  
COMPANY  
5251 DTC PARKWAY, SUITE 420  
ATTN: TRICIA DIGRAPPA  
GREENWOOD VILLAGE, CO 80111

GLEN HODGELL  
3405 16TH STREET, NO. 16  
GREELEY, CO 80631

JESSE ERNEST LOYD  
66732 WCR 136 & 87  
HEREFORD, CO 80732

ANADARKO E&P ONSHORE LLC  
P O BOX 730875  
DALLAS, TX 75373-0875

FRANCIS W BLAKE AND ESTHER JOANNE  
BLAKE  
5700 EAST COUNTRY RD 48  
FORT COLLINS, CO 80524-0000

LOYD FARMS  
66732 WCR 87  
GROVER, CO 80729-0000

RETAMCO OPERATING INC  
P O BOX 790  
RED LODGE, MT 59068-0790

SWSMK ENERGY LLC  
1842 EMERALD WAY  
LYNDEN, WA 98264-0000

TERRY W STELLING ROBIN Z STELLING  
5 MT RAINIER DRIVE  
SAN RAFAEL, CA 94903-0000

THE REGENTS OF THE UNIVERSITY OF  
COLORADO  
1800 GRANT ST SUITE 600  
DENVER, CO 80203-0000

CURTIS W BOOMER  
231 TONTO DR  
SEDONA, AZ 86351-0000

DELTHEA M ANDERSON  
BOX 1264  
CONGRESS, AZ 85332-0000

EMMANUEL FARM LLP  
220 RD 148  
CARPENTER, WY 82054-0000

GARY W SMITH AND NORMA J SMITH  
BOX 365  
CARPENTER, WY 82054-0000

IVY ENERGY INC  
P O BOX 52219  
TULSA, OK 74152-0000

JEREMY R HARDCASTLE  
6875 LILLIAN DR  
SHINGLETON, CA 96088-0000

LEWIS CHURCH OF CHRIST C/O JAMES R  
CONN  
200 WASHINGTON ST  
LEWIS, IA 51544-0000

TARA L TURNER  
405 ALAMINE DR  
REDDING, CA 96003-0000

TRICIA HOPPER  
2146 WASHINGTON AVENUE  
REDDING, CA 96001-0000

WILLA CHARLENE DEWITT CONKLIN  
TRUSTEE FOR THE DEWITT-CONKLIN  
TRUST  
1911 27TH STREET  
ROCK ISLAND, IL 61201-4748

DOUBLE EAGLE ENERGY ROCKIES, LLC  
1401 BALLINGER STREET, SUITE 203  
FORT WORTH, TX 76102

"R.K. PINSON & ASSOCIATES, LLC "  
621 17TH ST. SUITE 5300  
DENVER, CO 80293

THE PROSPECT COMPANY  
P.O. BOX 1100  
EDMOND, OK 73083

"WILLIAM J. BREEDEN AND THOMAS V.  
BREEDEN"  
3630 FOXCROFT ROAD  
CHEYENNE, WY 82001

BETTY FARIS MAUCK  
314 N. MISSOURI STREET  
ATWOOD, IL 61913

LANCE LACY  
15741 W. VENTURA STREET  
SURPRISE, AZ 85379

MERRITT LACY  
12733 W. COLUMBINE DRIVE  
EL MIRAGE, AZ 85335

RICHARD LEIGH FARIS  
431 CAMINO DE GRATO  
SPARKS, NV 89441

SHERRYL E. FARIS  
2238 PERU ROAD  
PERU, IA 50222

THE PROSPECT COMPANY  
P.O. BOX 1100  
EDMOND, OK 73083-1100

THOMAS V. BREEDEN  
3630 FOXCROFT  
CHEYENNE, WY 82001

WESLEY F. FARIS  
1120 MARCY STREET  
OTTAWA, IL 61350

WILLIAM J. BREEDEN  
3630 FOXCROFT  
CHEYENNE, WY 82001

ANDREW L PEABODY  
P O BOX 2120  
NATCHEZ, MS 39121-0000

ARNOLD GLEIT  
4301 NORTH OCEAN BLVD APT 506A  
BOCA RATON, FL 33431-0000

ARTHUR G RICE  
328 OLDE POINT LOOP  
HAMPSTEAD, NC 28443-0000

BAMBI FERNANDEZ 2004 TRUST  
1637 EDMONTON AVE  
SUNNYVALE, CA 94087-5202

BANKIM PATEL AND HEMMA PATEL  
9162 CEDAR RIDGE DR  
GRANITE BAY, CA 95746-0000

BELD OIL & MINERALS COMPANY  
1738 S POPLAR ST  
CASPER, WY 82601-0000

BERNARD CAPUTO  
34 WOODCREST RD  
BOXFORD, MA 19210000

BLACK BEAR OIL & GAS LLC  
P O BOX 621226  
LITTLETON, CO 80162-0000

BRIAN H DAVIS  
628 AQUA CIRCLE  
LINO LAKES, MN 55014-0000

BRUCE FULLER  
3049 CLARION DR  
SPRINGFIELD, OH 45503-0000

BUTKIN INVESTMENT COMPANY, LLC  
P O BOX 2090  
DUNCAN, OK 73534-0000

C THREE J LLC  
13705 HWY 11  
ALLENDALE, IL 62410-0000

CHARLES FULLER CHARLES FULLER 2006  
TRUST MORGAN STANLEY 101-088923-066  
101 CALIFORNIA ST 3RD FLOOR  
SAN FRANCISCO, CA 94111-0000

DALE HARLAN  
7005 WAGON TRAIN RD  
P O BOX 348  
HICKMAN, NE 68372-0348

DANIEL STUBBLEFIELD  
600 E MAIN  
ODESSA, MO 64076-0000

DANNY POSS  
48981 801ST ROAD  
SCOTIA, NE 68875-0000

DAVID A DENT  
6712 ARROWHEAD PASS  
EDINA, MN 55439-1003

DAVID A POOL  
HC 65 BOX 3 128 E HICKEY RD  
PIE TOWN, NM 87827-0000

DENIS M DESMOND TRUSTEE  
THE DESMOND FAMILY LIVING TR  
111 HIDDEN VALLEY DRIVE  
JOPLIN, MO 64804-5061

DERK SMITH  
3321 HERITAGE LAKE DR  
LOCKPORT, IL 60441-0000

DOMESTIC INVESTMENT SURVEYS LLC  
14901 QUORUM DR #800  
DALLAS, TX 75254-0000

DOMESTIC ROYALTY PROPERTIES LLC  
13601 PRESTON RD SUITE E112  
DALLAS, TX 75240-0000

DRJ VENTURES LLC C/O JOHNNY BOGGS  
P O BOX 2097  
SUGAR LAND, TX 77487-0000

EDWARD NALL STRADER  
3718 DOVER ROAD  
CHEYENNE, WY 82001-0000

ELSR LP BENGAL JONES GROUP LLC  
GENERAL PARTNERS  
STE 1420 LB12 8080 N CENTRAL EXPWY  
DALLAS, TX 75206-0000

EQUITY TRUST COMPANY CUSTODIAN  
FBO MICHAEL E MANOLOFF IRA  
P O BOX 451159  
WESTLAKE, OH 44145-0629

FREDERICK H J & RITA ANN WYEN LIVING  
TRUST AGREEMENT  
2564 MIDDLE URBANA RD  
SPRINGFIELD, OH 45502-8215

FUTURA LLC  
9302 S 83RD COURT  
HICKORY HILLS, IL 60457-1932

GARY W ZIEVE  
59 JUNE AVE  
NORTHPORT, NY 11768-0000

GERALD W SIMONSON  
5813 JEFF PLACE  
EDINA, MN 55436-0000

GERALD WERNER  
10254 SOUTH 700 WEST  
UNION MILLS, IN 46382-0000

GRANT AVERY  
15543 S E FRONTAGE RD  
PLAINFIELD, IL 60544-6600

GUY M ANTHONY  
10931 SADDLERY RD  
SANTA ANA, CA 92705-0000

HARRIE M CURTIS  
19 MAPLEWOOD AVE  
ALBANY, NY 12203-0000

IRA RESOURCES INC FBO HARRY W  
BUEHRLE II IRA #32486 IRA RESOURCES  
INC  
ATTN: NICOLE MARTINEZ 6825 LA JOLLA  
BLVD  
LA JOLLA, CA 92037-0000

JACK E EARNEST  
C/O JACK EARNEST ENERGY LP  
P O BOX 11628  
ASPEN, CO 81612-0000

JAMES A HANNON & REGINA A HANNON  
4507 WINDWOOD ST  
SPRINGFIELD, OH 45503-2726

JAMES S WITHERELL TRUST DATED  
06/17/1997 JAMES S WITHERELL TRUSTEE  
2610 DEEP CUT ROAD  
WOODSTOCK, IL 60098-9743

JEFFERY B BLACKBURN IRA  
4877 W NEW SHADOW WAY  
MARANA, AZ 85658-0000

JERRY S STRATTON  
2504 DOWNING DR  
PLANO , TX 75023-0000

JIM CLAYTON  
1258 WHISPERING OAKS  
DESOTO, TX 75115-0000

JOHN C PETERSON  
12472 89TH PL N  
MAPLE GROVE, MN 55369-6500

JOHN D CONROY  
3566 HEATHERWOOD AVE  
SPRINGFIELD, OH 45503-5307

JUDY AVERY  
23524 W COPPER DR  
PLAINFIELD, IL 60544-0000

KARL SCHREIBER  
5100 MILLER RD  
BRECKSVILLE, OH 44141-0000

KATHRYN J RIGEL  
32 THOMASTON TRAIL  
SPRINGFIELD, OH 45503-0000

KEN WARD  
732 BLUFF RIDGE DR  
CEDAR HILL, TX 75104-0000

KENNETH H KING  
1680 NEW LOVE RD.  
S CHARLESTON, OH 45368-0000

LAWRENCE BECK  
P O BOX 16940  
GOLDEN, CO 80402-0000

MARCEIL MALAK  
7444 MEINERS RD  
LEDBETTER, TX 78946-0000

MARYL BETZWISER  
6369 WHITETAIL RIDGE CT  
YORKVILLE, IL 60560-0000

MATT WITHERELL AND KIRSTEN  
WITHERELL  
4 OXFORD DR  
ROGERS, AR 72758-0000

MILDRED HOLEMAN  
P O BOX 10008  
HOUSTON, TX 77206-0008

MITSUO FUSE  
13601 PRESTON RD SUITE 112E  
DALLAS, TX 75240-4911

MKB LAND LTD  
1024 PRUITT PLACE  
TYLER, TX 75703-1132

MURRAY A LEWIS  
4181 SOUTHPOINT DR E SUITE 400  
JACKSONVILLE, FL 32216-0000

NOBLE ENERGY INC  
P O BOX 910083  
DALLAS, TX 75391-0083

OVERLAND MINERALS AND ROYALTIES LLC  
518 17TH STREET STE 1005  
DENVER, CO 80202-0000

PETRO-SENTINEL LLC  
P O BOX 477  
WILLISTON, ND 58802-0477

R D HOLDER OIL COMPANY INC  
P O BOX 40  
NEW CARLISLE, OH 45344-0000

RANDY JAMES PETERS  
27819 ARIKAREE ROAD  
LOVELAND, CO 80534-0000

RDMB HOLDINGS INC  
3106 DRUID HILL DR  
DES MOINES, IA 50315-0000

REBECCA S BISHOP ROTH IRA  
HUNTINGTON NATIONAL BANK  
2835 OXFORD DR  
SPRINGFIELD, OH 45506-0000

REGIONAL MARKETING GROUP LLC  
13601 PRESTON RD SUITE E112  
DALLAS, TX 75240-0000

ROBERT E AND ROSALIE T DETTLE LIVING  
TRUST DATED 02/29/1980 ROBERT E  
DETTLE TRUSTEE  
1101 WATER ST  
SANTA CRUZ, CA 95062-1514

ROBERT J SAMOSKY  
2912 BURRWOOD  
SPRINGFIELD, OH 45503-0000

ROBIN OIL & GAS CORP  
P O BOX 720420  
OKLAHOMA CITY, OK 73172-0000

RODELLA A VERGAMINI AND JOHN L  
VERGAMINI  
113 BONHAM CIR  
COUNCIL BLUFFS, IA 51503-0000

TED N STEFFEN LVG TR UTA DATED 02-03-  
2003  
ATTN ELIZABETH STEFFEN TTEE  
5830 E GREENLAKE WAY N  
SEATTLE, WA 98103-0000

THOMAS E SHOWS & EDNA M SHOWS  
150 TOM SHOWS RD  
SEMINARY, MS 39479-4220

THOMAS J BUCKLEY  
2310 ROYAL OAKS DR  
MANSFIELD, TX 76063-5314

TITUS A MORTON  
259 LENOX AVENUE APT #1  
NEW YORK, NY 10027-0000

TODD M KRINGEN AND KARLA R KRINGEN  
8540 EAST DOWELL ROAD #59  
MESA, AZ 85207-0000

WILLIAM GARY ALBERG  
21 ROBLIN DR APT 2  
PAWTUCKET, RI 02860-1016

JOHN L PETERS AND SHARON A PETER  
P O BOX M  
CARPENTER, WY 82054-0000

LUANN ANDERSON AND  
WILLIAM C ANDERSON  
15313 HERITAGE CIRCLE  
THORNTON, CO 806020000

MARY ANN KIRCHGESSNER  
12229 YELLOWSTONE RD NE  
ALBUQUERQUE, NM 871110000

PETERS 313 RANCH INC  
P O BOX M  
CARPENTER, WY 820540000

KENT KUSTER  
COLORADO DEPARTMENT OF  
PUBLIC HEALTH & ENVIRONMENT  
4300 CHERRY CREEK DRIVE SOUTH  
DENVER, CO 80246-1530

BRANDON MARETTE  
ENERGY LIAISON  
COLORADO PARKS AND WILDLIFE  
NORTHEAST REGIONAL OFFICE  
6060 BROADWAY  
DENVER, CO 80216

TROY SWAIN  
WELD COUNTY  
DEPARTMENT OF PLANNING SERVICES  
1555 NORTH 17<sup>TH</sup> AVENUE  
GREELEY, CO 80631

ANITA RUTH JOHNSON  
67464 WELD COUNTY RD 390  
HEREFORD, CO 80732-0000

CHRISTINA KAFKA  
4690 W 102ND PL  
WESTMINSTER, CO 80031-2319

ETTIE P BLAKE LIVING TRUST DTD 8-15-88  
C/O FRANCIS W BLAKE  
5700 E COUNTY ROAD 48  
FORT COLLINS, CO 80524-0000

MARK JENKINS AND KAREN R JENKINS  
11776 COUNTY ROAD 42  
PLATTEVILLE, CO 80651-8918

T E MCCLINTOCK TRUST BANK OF  
OKLAHOMA NA FBO MARY M SWIFT  
PO BOX1588  
TULSA, OK 74101-1588

ARAPAHOE RESOURCES LLC  
P O BOX 57107  
OKLAHOMA CITY, OK 73157-0000

CATHERYN L GEISSLER  
7300 W 107TH APT 229  
OVERLAND PARK, KS 6621-20000

DIANA R RICKARD LIVING TRUST DTD 10-13-  
04 DIANA R RICKARD & DWIGHT F RICKARD  
CO-TRUSTEES1  
604 S 189TH CT  
OMAHA, NE 68130-0000

DIANA RICKARD  
1604 S 189TH CT  
OMAHA, NE 68130-0000

EOG RESOURCES INC DOMINION PLAZA  
600 17TH ST #1000N  
DENVER, CO 80202

KONIG LAND & CATTLE LLC JAMES M KONIG  
MANAGING MEMBER  
57851 CR 81  
GROVER, CO 80729-0000

COBANK FCB SUCCESSOR TO US AGBANK  
FCB  
245 N WACO ST  
WICHITA, KS 67202-0000

CURTIS C ANDERSON AND CATHLEEN L  
ANDERSON TTEES OF ANDERSON FAMILY  
TR DTD 1-17-14  
208 REDBUD DR  
PARADISE, CA 95969-0000

DOUGLAS D ANDERSON  
800 CANYON VIEW  
LAGUNA BEACH, CA 92651-0000

KATHRYN L ELLIOTT  
27624 S NN HWY  
SHELDON, MO 64784-0000

ANADARKO LAND CORP  
1099 18TH STREET SUITE 1800  
DENVER, CO 80202

KAISER-FRANCIS OIL COMPANY  
PO BOX 21468  
TULSA, OK 74121

SONYA J. MCFALL  
2560 RAMONA DRIVE  
GERING, NE 69341

BEN A REID  
5071 CEDAR CREEK DR  
HOUSTON, TX 77056-0000

BILLY SHAW  
5071 CEDAR CREEK DR  
HOUSTON, TX 77056-0000

COLORADO STATE BOARD OF LAND  
COMMISSIONERS  
1127 SHERMAN STREET SUITE 300  
DENVER, CO 80203-0000

CPX PICEANCE HOLDINGS LLC  
ATTN WARD GILTNER  
880 WOLVERINE CT  
CASTLE ROCK, CO 80108-9082

DAN A MAGEE  
136 THUNDER RD  
KERRVILLE, TX 780280-000

EDWARD A HIRS III C/O HILLHOUSE  
RESOURCES LLC  
4265 SAN FELIPE SUITE 1100  
HOUSTON, TX 77027-0000

ERIN K GOERGES  
4265 SAN FELIPE STE 1100  
HOUSTON, TX 77027-0000

FREDDIE L DAUME  
2414 WATTS RD  
IOWA PARK, TX 76367-0000

GARY L PRICE  
PO BOX 5945  
KINGWOOD, TX 77325-0000

HARRY FENDRICH THE FENDRICH  
FAMILY PARTNERSHIP LP  
28 WARREN STREET  
CHARLESTON, SC 29403-0000

ILENE GOVERNALE  
2247 TRIWAY LN  
HOUSTON, TX 77043-0000

JACK ROSENTHAL  
877 S PEARL ST  
DENVER, CO 80209-0000

JAMES H GLANVILLE 2007 IRREV TR DTD 6-  
7-07 JILL GLANVILLE ROBERT PARSLEY &  
SHAWN MILTON GLANVILLE TTEES 421  
BUCKINGHAM DR  
HOUSTON, TX 77024-0000

JILL S GLANVILLE  
421 BUCKINGHAM DR  
HOUSTON, TX 77024-0000

JOHN HARMS  
5 MEADOWBROOK RD  
LITTLETON, CO 80120-0000

K DENTON CRANFORD  
3707 VILLA PINES DRIVE  
KINGWOOD, TX 77339-0000

KAREN JONES DAWSON  
20806 TALLOW VIEW LANE  
CYPRESS, TX 77433-0000

LRW ROYALTIES LLC  
P O BOX 440483  
HOUSTON, TX 77244-0000

MARY E LISA LEHMAN  
1827 GRANT ST NO. 502  
DENVER, CO 80203-0000

MITCH W HALE  
1149 FRIES RD  
HOUSTON, TX 77055-0000

NANCY W FENDRICH THE FENDRICH  
FAMILY PARTNERSHIP LP  
28 WARREN STREET  
CHARLESTON, SC 29403-0000

RANDALL B RICE  
249 NORTHRIDGE  
NEW BRAUNFELS, TX 78132-0000

RICHARD S BISHOP  
13622 KINGSRIDE LN  
HOUSTON, TX 77079-0000

THE FRASER IAN DAWSON SPECIAL NEEDS  
TRUST C/O ALISTAIR B DAWSON  
11518 SHADOW WAY  
HOUSTON, TX 77024-0000

WILLIAM A KELLY  
2371 LAKE VILLAGE DR  
KINGWOOD, TX 77339-0000

WILLIAM R GLAZNER  
3704 GARROTT STREET  
HOUSTON, TX 77006-4424

WILLOW STREET PARTNERS LP  
510 BERING DRIVE SUITE NO 300  
HOUSTON, TX 77057-0000

CONTEX ENERGY COMPANY  
621 17TH ST.SUITE 1020  
DENVER, CO 80239

DJ RESOURCES HOLDINGS, LLC  
ONE RIVER WAY SUITE 1870  
HOUSTON, TX 77056

KOOTENAI EXPLORATION COMPANY  
3302 4TH AVE NORTH SUITE 102 PO BOX  
611  
BILLINGS, MT 59103

THE BOARD OF REGENTS OF THE  
UNIVERSITY OF COLORADO  
1800 GRANT ST. SUITE 600 25 UCA  
DENVER, CO 80203

HRM RESOURCES II, LLC  
410 17TH STREET SUITE 1100  
DENVER, CO 50202

HALLIBURTON ENERGY SERVICES, INC.  
2107 CITY WEST BLVD. BUILDING 2  
HOUSTON, TX 77042

BILL BARRETT CORPORATION  
1099 18TH STREET SUITE 2300  
DENVER, CO 80202

GBK INVESTMENTS, LLC  
6733 S. YALE AVENUE  
TULSA, OK 74136

NEXEN  
ATTN: NEAL HARRINGTON  
100 THROCKMORTON STREET SUITE 1200  
FORT WORTH, TX 76102

LONE STAR LAND & ENERGY II, LLC  
300 N. COIT ROAD SUITE 950  
RICHARDSON, TX 75080

NEXTERA ENERGY GAS PRODUCING  
WYOMING LLC 1000 LOUISIANA, SUITE 5550  
HOUSTON, TX 77002

WINNIE STEPHAN  
P.O. BOX 692  
CHEYENNE WY 82003

GEORGE FARRIS  
136 WASHINGTON ROAD  
WHEATLAND WY 82202

WESLEY J. FARIS  
1120 MARCY ST.  
OTTAWA IL 61350

BETTY MAUCK  
314 N. MISSOURI ST.  
ATWOOD IL 61913

FARIS HAWKINS  
2275 SQUAK MOUNTAIN LOOP SW  
ISSAQUAH WA 98027

EDMOND COOK  
P.O. BOX 1327  
CHADRON NE 69337

TENA COOK  
P.O. BOX 1327  
CHADRON NE 69337

LANCE LACY AND TRICIA LACY  
15741 W. VENTURA ST.  
SURPRISE AZ 85379

MERRITT LACY  
12733 W. COLUMBINE DR.  
EL MIRAGE AZ 85335

THE PROSPECT COMPANY  
P.O. BOX 1100  
EDMOND OK 73083-1100

CINDY JO HAMILTON  
P.O. BOX 214  
HILLSDALE WY 82060

PEARLENE HAWKINS  
4701A 2ND ST. SW  
ALBUQUERQUE NM 87105

CONNIE LOU RIVAS  
751 ACENUE C#45-45  
CHEYENNE WY 82007

AMY CHRISTINE COLLINS  
P.O. BOX 1356  
STEVENSON WA 98648

JIMMIE D. COLLINS  
4408 E. 6TH ST.  
CHEYENNE WY 82001

PAULA MARIE YARGER  
4908 F.M. 879  
PALMER TX 75152

SHERRY LYNN MUCHMORE  
78 WESTVIEW CIRCLE  
WHEATLAND WY 82201

DEBRA ANN JACKSON  
P.O. BOX 75  
BURNSWY 82053

**Fifth Creek Energy Operating Company, LLC**  
**Benjamin C. Burke - Geology Testimony**  
Cause No. 421; Docket No. 170900555  
Increased Density – Niobrara Formation  
Wattenberg Field, Weld County, Colorado

September 2017 Colorado Oil and Gas Conservation Commission Hearing

My name is Benjamin C. Burke, and I am currently employed as the Geoscience Manager for Fifth Creek Energy Operating Company, LLC (“Applicant”). I earned a Bachelors of Arts in Geology from Bowdoin College, a Masters of Business Administration from Texas A&M University, and a PhD in Earth Sciences from Dartmouth College. I have 14 years of private sector geology experience, 12 of which is in the oil and gas industry. I am familiar with the lands described, and the matters set forth in, the verified application (“Application”) subject to the above-referenced docket.

In support of Applicant’s Application and my sworn testimony herein, I am submitting five (5) exhibits. This testimony and exhibits provide the supporting basis for approval of the Applicant’s request for an order to authorize an additional seven (7) horizontal wells, for a total of fifteen (15) horizontal wells, in each of six (6) approximate 1,280-acre drilling and spacing units established by Order No. 421-84 for Sections 19, 20, 21, 22, 27, 27, 29 and 30, Township 12 North, Range 62 West, 6th P.M., and Sections 23, 24, 25 and 26, Township 12 North, Range 63 West, 6th P.M., for the efficient and economic development of oil, gas and associated hydrocarbons from the Niobrara Formation underlying the below-described lands.

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 19: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 30: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 20: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 29: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 21: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 28: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 62 West, 6<sup>th</sup> P.M.

Section 22: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 27: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 63 West, 6<sup>th</sup> P.M.

Section 23: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 26: All

1,280 acres, more or less, Weld County, Colorado

Township 12 North, Range 63 West, 6<sup>th</sup> P.M.

Section 24: All portions of this section within the State of Colorado and excluding any portion within the State of Wyoming

Section 25: All

1,280 acres, more or less, Weld County, Colorado

1. Exhibit G-1 – Structure Contour Map – Top Niobrara with offset well locations  
Exhibit G-1 is a structure map constructed on the top of the Niobrara Formation. The contour interval of the map is 25 feet. The Niobrara is gently dipping to the west in the mapped area.
2. Exhibit G-2 – Isopach Map – Niobrara with offset well locations  
Exhibit G-2 is an isopach map of the Niobrara Formation measured in feet. The contour interval of Niobrara thickness is 10 feet. Total thickness across the Application Lands ranges from approximately 230-260 feet.
3. Exhibit G-3 – Cross Section showing Niobrara section.  
Exhibit G-3 is a cross section that includes the entire Niobrara Formation. This cross section and the isopach maps show the Niobrara intervals to be present and continuous throughout the Application Lands.
4. Exhibit G-4 – Hereford Field Type Log.  
Exhibit G-4 is a type log showing the Formations and Members of the Cretaceous-aged lithology present in the Lamotta 5-01M (05-123-30556). The Lamotta well is located in Section 1, 11N 63W and has wireline logs that are typical of the geology of the Hereford Field. The wireline logs shown in the type section are the gamma ray, deep resistivity, and density porosity.
5. Exhibit G-5 – Offset Well Locations  
Exhibit G-5 shows well locations on and in the vicinity of the Application Lands, according to the COGCC reference base map as of August 4, 2017.

The stratigraphy, geochemistry, and pressure data reviewed show that the additional wells in the Niobrara are necessary to adequately and economically recover the oil, gas and associated hydrocarbons from the Niobrara Formation.

Dated this 14<sup>th</sup> day of August 2017



# Exhibit G-1

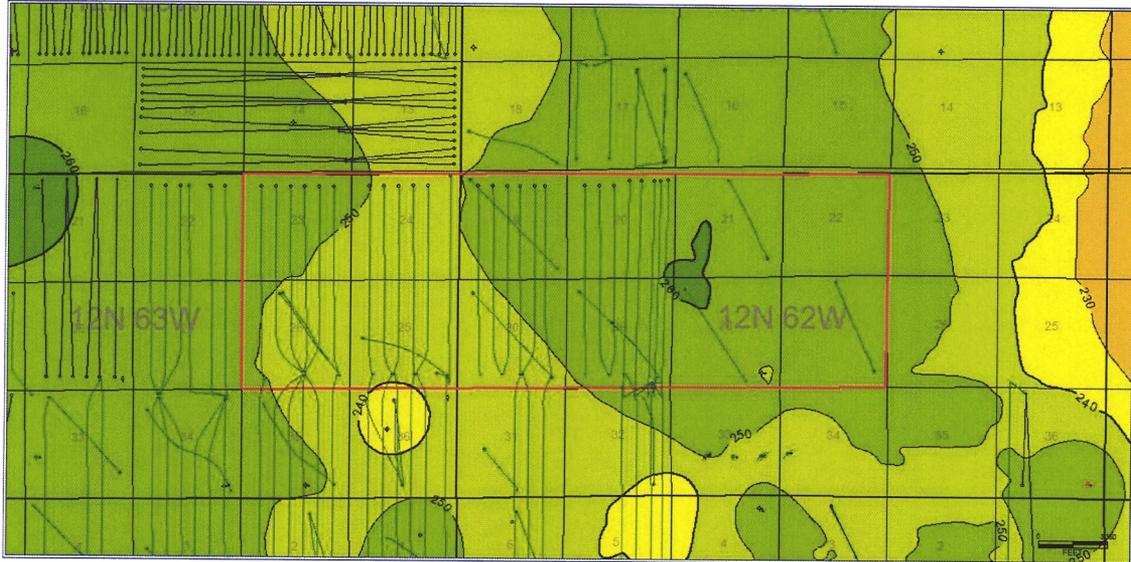
## Structure Contour Map on the top of the Niobrara Formation



25 ft contour intervals

## Exhibit G-2

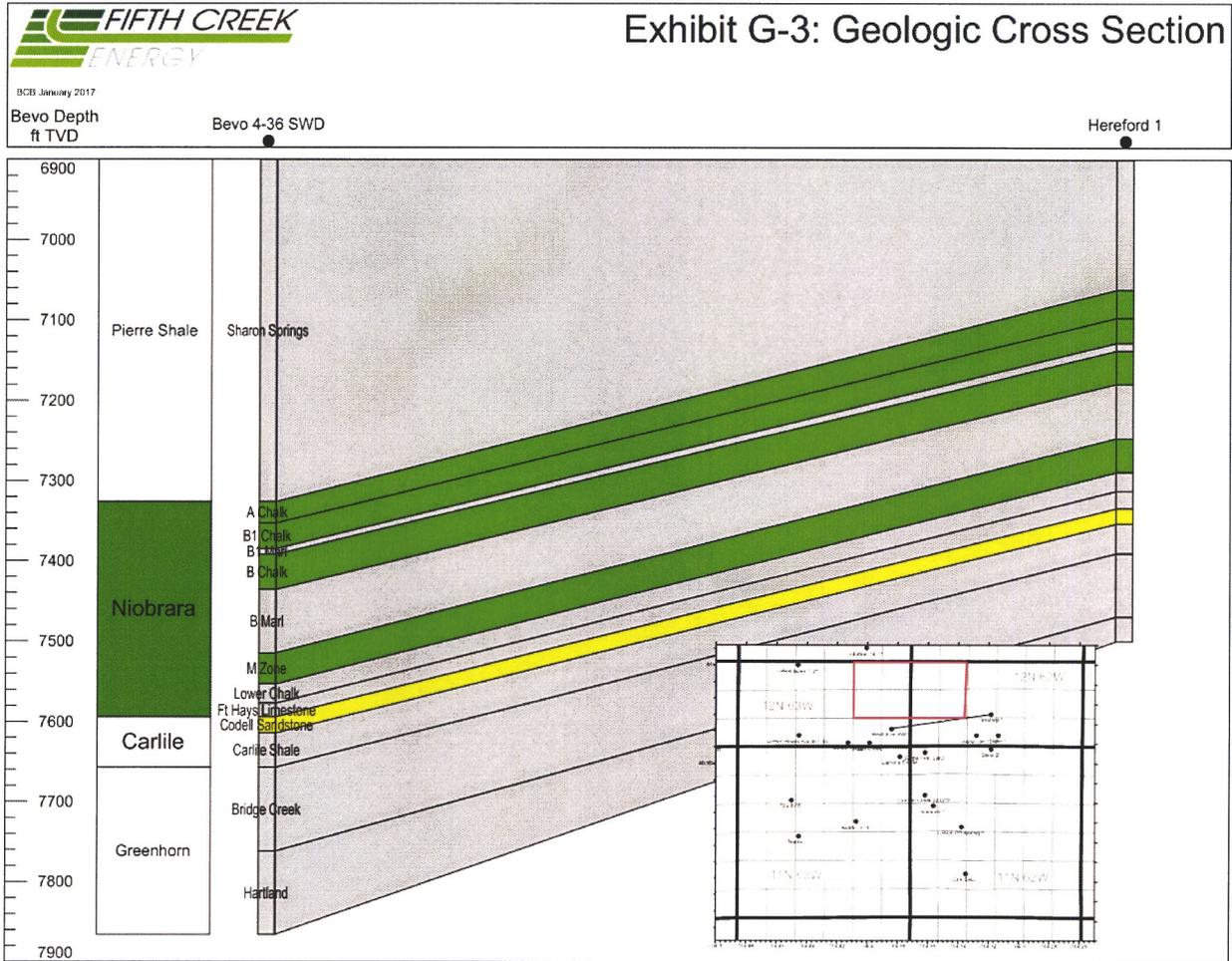
### Isopach Map on the top of the Niobrara Formation



10 ft isopach intervals

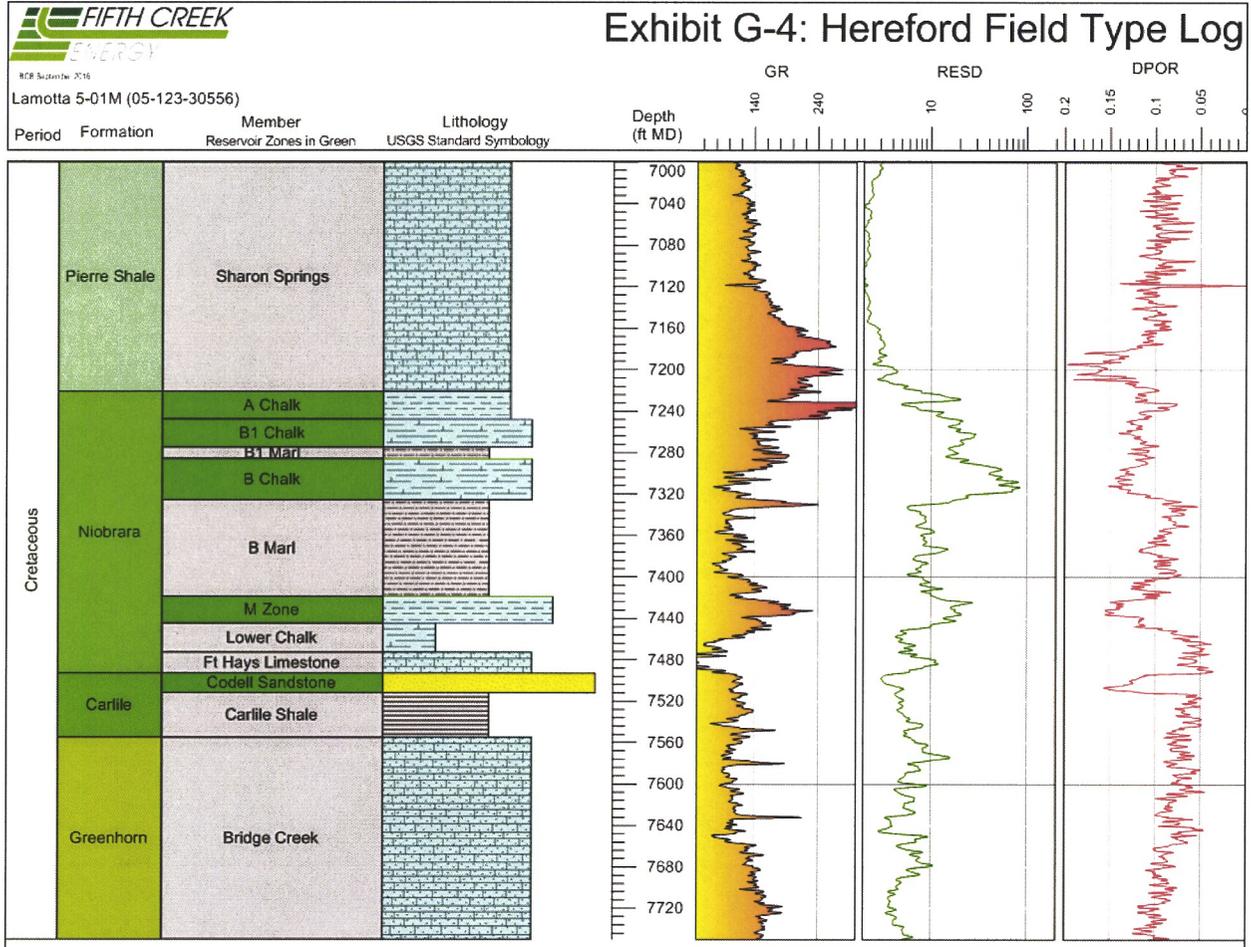
# Exhibit G-3

## Cross section showing Niobrara section



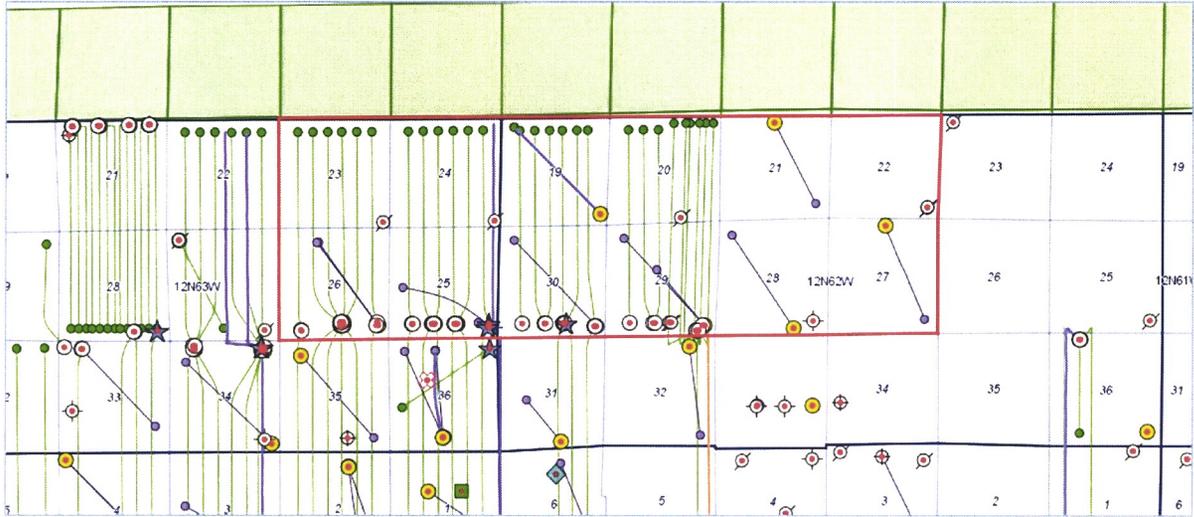
# Exhibit G-4

## Type log showing formations and lithology present



# Exhibit G-5

## Offset Well Locations



COGCC GIS Well Database, retrieved August 3, 2017

**Fifth Creek Energy Operating Company, LLC**  
**Engineering Testimony – William Irwin**  
Cause No. 421  
Docket No. 170900555

**September 2017 Colorado Oil and Gas Conservation Commission Hearing**

My name is William Irwin and I am currently employed as the Engineering Advisor for Fifth Creek Energy Operating Company, LLC (“Fifth Creek”). I hold a Bachelor’s of Science in Petroleum Engineering from Montana Tech. I have 32 years of experience in oil and gas engineering. I am familiar with the lands subject to, and matters set forth in, the verified application (“Application”) subject to the above-referenced docket.

In support of Fifth Creek’s Application in the above referenced docket, I am submitting three (3) exhibits along with this sworn testimony. This Application requests an order to approve an additional seven (7) horizontal wells, for a total of fifteen (15) horizontal wells, in DSU #1, DSU #2, DSU #3, DSU #4, DSU #5 and DSU #6, to require that the productive interval of each additional proposed horizontal well in each approximate 1,280-acre drilling and spacing unit shall be no closer than 300 feet from the boundaries of the unit (regardless of the lease lines within the unit) and all horizontal wells shall be no closer than 150 feet from the productive interval of another well producing from the same source of supply within the unit, unless an exception is granted by the Director, and providing that the wells will be drilled from no more than five well pads, including the existing wellpads, in each of the six drilling and spacing units to be located within such unit or adjacent thereto, unless an exception is granted by the Director, consistent with Order No. 421-84 underlying the following lands (“Application Lands”):

Township 12 North, Range 62 West, 6th P.M.

Section 19: All (All portions of this section within the State of Colorado)

Section 30: All

(“DSU #1”)

Township 12 North, Range 62 West, 6th P.M.

Section 20: All (All portions of this section within the State of Colorado)

Section 29: All

(“DSU #2”)

Township 12 North, Range 62 West, 6th P.M.

Section 21: All (All portions of this section within the State of Colorado)

Section 28: All

(“DSU #3”)

Township 12 North, Range 62 West, 6th P.M.

Section 22: All (All portions of this section within the State of Colorado)

Section 27: All

(“DSU #4”)

Township 12 North, Range 63 West, 6th P.M.

Section 23: All (All portions of this section within the State of Colorado)

Section 26: All

("DSU #5")

Township 12 North, Range 63 West, 6th P.M.

Section 24: All (All portions of this section within the State of Colorado)

Section 25: All

("DSU #6")

**1. Exhibit E-1 – OOIP and EUR Calculations**

Exhibit E-1 shows OOIP calculations, estimated ultimate recovery, and drainage area for fifteen Niobrara Formation wells drilled in a 1280-acre drilling and spacing unit within the underlying the Application Lands as compared to eight wells drilled in the same drilling and spacing unit. The improved recovery factor by 47% shows the drilling of up to fifteen wells will promote efficient drainage, protect correlative rights and prevent waste in a 1280-acre unit versus only drilling eight wells. These reserves would not be fully recovered without the application of horizontal well technology in a 1280-acre drilling and spacing unit.

**2. Exhibit E-2 – Analog Well Evaluation**

Exhibit E-2 reflects an evaluation of analog 2-section lateral well results in Table A and 1-section lateral well results in Table B. Estimated ultimate recovery and associated drainage area are calculated through decline curve analysis utilizing available public data and the inclusion of one new well drill by the Fifth Creek underlying the Application Lands. The 2-section lateral analog wells have an average lateral length of 9,261' and average estimated ultimate recovery of 431,333 bbl for the Niobrara Formation, for a drainage per well of 85 acres. The 1-section lateral analog wells have an average lateral length of 4,143' and average estimated ultimate recovery of 191,000 bbl for the Niobrara Formation, for a drainage area per well of 38 acres. These estimates are within a reasonable expected range and support the Application.

**3. Exhibit E-3 – Economic Analysis**

Economic calculations show in improved value of 50% by drilling on 1280-acre units with total of 15 wells versus not developing the resource in an efficient, scientific manner. This result leads to the conclusion that reserves will not be appropriately accessed or drained in a tight unconventional resource with only eight wells per 1280 acre spacing unit, therefore leaving reserves under-developed and creating waste.

## **Conclusions**

Based on each drilling and spacing unit area of 1,280 acres, the drainage calculations are consistent with the development of up to fifteen Niobrara horizontal wells. This testimony and attached exhibits support my conclusion that the drilling, completion, and production of up to fifteen horizontal wells within each proposed drilling and spacing unit will increase total recovery and reduce resource waste relative to an eight-well 1280-acre drilling and spacing unit. In addition, the proposed development plan can be accomplished in an economic and efficient manner while protecting correlative rights.

**Affirmation**

The matters described herein were all conducted under my direction and control. To the best of my knowledge and belief, all of the matters set forth herein and in the exhibits are true, correct, and accurate.

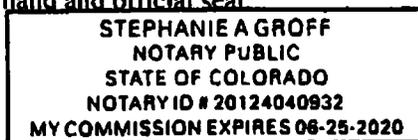
  
\_\_\_\_\_  
William Irwin  
Engineering Advisor  
Fifth Creek Energy Operating Company, LLC

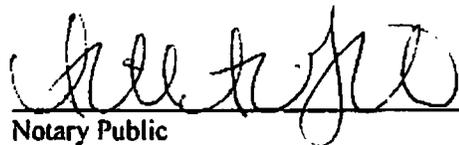
State of Colorado     )  
  ) ss.  
County of                 )

The foregoing instrument was subscribed and sworn to before me this 16<sup>th</sup> day of August, 2017, by William Irwin as Engineering Advisor for Fifth Creek Energy Operating Company, LLC.

Witness my hand and official seal

[SEAL]



  
\_\_\_\_\_  
Notary Public

My commission expires: June 25 2020



5251 DTC Parkway, Suite 420  
Greenwood Village, Colorado 80111

**William (Bill) L. Irwin, P.E., Senior Engineering Advisor**

Mr. Irwin has a Bachelor of Science Degree in Petroleum Engineering from Montana Tech, and over 30 years of oil industry experience. In his most recent role as Vice President of Operations with Bakken Hunter, LLC, a division of Magnum Hunter Resources Corporation (MHR), he was instrumental in developing significant Bakken and Three Forks shale oil assets; using modern unconventional resource drilling and completion techniques. These techniques include horizontal drilling and multistage hydraulic fracturing. In addition, his facilities team planned, permitted, constructed and commissioned numerous field gathering and processing facilities. These cutting edge facilities produced, in record time, a cross-border, FERC regulated gas pipeline.

Prior to joining the MHR, Mr. Irwin was the Founder, President, and CEO of Pinon Oil & Gas Ltd. (1997) and Red Mike Energy Inc. (2000). Both private exploration and production companies primarily operated in southern Alberta. From 2007 to 2010, he was the Vice President, Business Development and Board Advisor for Fractal Systems Inc.; an oil services company with proprietary heavy oil viscosity reduction, and partial upgrading technology.

From 1994 through 1997 he was the Operations Manager for Tidal Resources Inc. (Tidal) in Canada and North Dakota. Tidal was a leader in the implementation of horizontal drilling technology to legacy assets in North Dakota. Prior to 1994, Mr. Irwin held varying technical and management roles with Unocal Corp and Quintana Petroleum Corporation in Canada, Colorado, New Mexico, Texas, and Utah. Mr. Irwin is a registered Professional Engineer in Alberta and is an accepted professional engineering witness in North Dakota and New Mexico.

**Exhibit E-1 OOIP  
OOIP and EUR Calculations**

Date: 8/1/17

Reference Sections:

Engineer: William L. Irwin

Key Variables & Assumptions	8 Niobrara wells		15 Niobrara wells	
	Porosity ( $\phi$ )	10%	10%	10%
Water Saturation ( $S_w$ )	75%	75%	75%	75%
Area (A)	1280	1280	1280	1280
Height (h)	272	272	272	272
Oil Formation Volume Factor ( $B_o$ )	1.5	1.5	1.5	1.5
				bbi/STB
				Median porosity for Niobrara
				Core-based corrected saturation
				Drilling and Spacing Unit acreage
				Niobrara Total Thickness (chalks & marls)

**Calculation Original Oil in Place**

Estimated Oil Equivalent in Place:	45,017,088	45,017,088	Bbl oil
------------------------------------	------------	------------	---------

**Niobrara Well Performance**

Horizontal Well Count	8	15	Density of wells
Drainage area for 1 well	85	85	acres
Average EUR per well	431,333	431,333	Bbl oil
Estimated Total Oil	3,450,667	6,470,000	Bbl of oil (total 8 wells, total 15 wells)
Estimated Rf of OOIP	7.7%	14.4%	

**Comparison of Recovery Factors**

Total increased Rf	47%	Increase in Recovery factor due to increase in well density
--------------------	-----	---

*Symbols, Terminology, and Equations*

$\phi$	Porosity as %	Rf	Recovery Factor, %
h	height, feet	bbl	barrel of oil, 42 gallons
A	Area, acres (1 acre is 42,560 ft <sup>2</sup> )	STB	Stock Tank Barrel
$B_o$	Oil Formation Volume Factor, bbl/STB		
$S_w$	Water Saturation as %		
OOIP	Original Oil in Place, bbls	EUR	Estimated Ultimate Recovery, BBL of oil
	OOIP = 7758 A h $\phi$ (1- $S_w$ ) / $B_o$		EUR = 7758 (A) (Rf) (h) ( $\phi$ ) (1- $S_w$ ) / ( $B_o$ )

Exhibit E-2  
Analog Well Evaluation

Date: 8/1/17

Reference Sections:

Engineer: William L. Irwin

Table A: 2-Section Laterals

Type	Zone	API	Township	Range	Section	Lateral Length (ft)	EUR (MBO)	Net Thickness (h, ft)	Average Porosity (φ, %)	Average Water Saturation (Sw, %)	Recovery Factor (Rf, %)	Bo (Rb/STB)	Drainage Area (A, acres)	
JUBILEE 113-1609H	Niobrara	49-021-21078	13N	65W	16, 9	8,875	237,000	272	10%	75%	14.5%	1.50	46	
JUBILEE 151-1034H	Niobrara	49-021-21087	13N	65W	10, 34	9,484	557,000	272	10%	75%	14.5%	1.50	109	
JUBILEE 153-1034H	Niobrara	49-021-21082	13N	65W	10, 34	9,371	353,000	272	10%	75%	14.5%	1.50	69	
JUBILEE 154-1034H	Niobrara	49-021-21086	13N	65W	10, 34	9,365	685,000	272	10%	75%	14.5%	1.50	134	
JUBILEE 194-2311H	Niobrara	49-021-21094	13N	65W	23, 11	9,515	338,000	272	10%	75%	14.5%	1.50	66	
Fox Creek 222-3422H	Niobrara	05-123-42582	12N	63W	34, 22	8,955	418,000	272	10%	75%	14.5%	1.50	82	
<b>Averages</b>							<b>9,261</b>	<b>431,333</b>	<b>272</b>	<b>10%</b>	<b>75%</b>	<b>14.5%</b>	<b>1.50</b>	<b>85</b>

Table B: 1-Section Laterals

Type	Zone	API	Township	Range	Section	Lateral Length (ft)	EUR (MBO)	Net Thickness (h, ft)	Average Porosity (φ, %)	Average Water Saturation (Sw, %)	Recovery Factor (Rf, %)	Bo (Rb/STB)	Drainage Area (A, acres)	
CASPER 1-26H	Niobrara	49-021-21111	16N	65W	25	4,468	241	272	10%	75%	14.5%	1.50	47	
CRITTER CREEK 21-26H	Niobrara	05-123-31796	11N	63W	26	4,655	148	272	10%	75%	14.5%	1.50	29	
CRITTER CREEK 22-27H	Niobrara	05-123-31507	11N	63W	27	4,955	52	272	10%	75%	14.5%	1.50	10	
CRITTER CREEK 29-02H	Niobrara	05-123-33687	11N	63W	2	3,117	60	272	10%	75%	14.5%	1.50	12	
CRITTER CREEK 30-26H	Niobrara	05-123-32328	11N	63W	26	4,266	94	272	10%	75%	14.5%	1.50	18	
CRITTER CREEK 34-16H	Niobrara	05-123-33103	11N	63W	16	4,736	169	272	10%	75%	14.5%	1.50	33	
ELMER 8-31H	Niobrara	05-123-30584	12N	62W	31	1,827	318	272	10%	75%	14.5%	1.50	62	
ELSIE 7-34H	Niobrara	05-123-30631	12N	63W	34	4,930	473	272	10%	75%	14.5%	1.50	93	
FOX CREEK 1-35H	Niobrara	05-123-31385	12N	63W	35	4,669	256	272	10%	75%	14.5%	1.50	50	
FOX CREEK 2-25H	Niobrara	05-123-31400	12N	63W	25	3,776	168	272	10%	75%	14.5%	1.50	33	
FOX CREEK 3-26H	Niobrara	05-123-31417	12N	63W	26	3,987	247	272	10%	75%	14.5%	1.50	48	
FOX CREEK 6-33H	Niobrara	05-123-31558	12N	63W	33	4,140	37	272	10%	75%	14.5%	1.50	7	
ROSIE 1-35H	Niobrara	49-021-21009	16N	65W	35	4,327	225	272	10%	75%	14.5%	1.50	44	
<b>Averages</b>							<b>4,143</b>	<b>191</b>	<b>272</b>	<b>10%</b>	<b>75%</b>	<b>14.5%</b>	<b>1.50</b>	<b>38</b>

$$\text{Drainage Area (acres)} = \frac{(EUR_{Net} \cdot B_o)(5.615 \frac{ft^3}{bbl})}{(RF)(\phi)(1 - S_w)(h)(43,560 \frac{ft^2}{acre})}$$

Where:  
 RF = Recovery Factor, %  
 φ = Porosity, %  
 S<sub>w</sub> = Water Saturation, %  
 h = Net Thickness, ft  
 B<sub>o</sub> = Oil Formation Volume Factor, RB/STB  
 EUR<sub>Net</sub> = Estimated Ultimate Oil Recovery, bbls

Note: 1-section lateral average drainage area calculates to roughly half of 2-section lateral - check

**Exhibit E-3  
Economic Analysis**

Date: 8/1/17

Reference Sections:

Engineer: William L. Irwin

**Key Variables & Assumptions**

	Type Well 8	Type Well 15	8 wells	15 wells	
Capex	\$ 5,800	\$ 5,600	\$ 46,400	\$ 84,000	M\$, Pad development and shared facilities lowers cost by \$200 M\$
LOE	\$ 13,000	\$ 13,000	\$ 13,000	\$ 13,000	Monthly operating expenses per well, \$
Total Equivalent EUR	503	503	4,026	7,548	Estimated ultimate recovery, MBOE
EUR, Oil	431	431	3,451	6,470	Estimated oil recovery, Mbbbls
EUR, Gas	431	431	3,451	6,470	Estimated gas recovery, Mscf (assuming 1,000 scf/bbl)
WI	100	100	100	100	Estimated Working Interest
NRI	86	86	86	86	Estimated Net Revenue Interest
Oil Price	\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00	\$/bbl, Estimated realized price, includes differential from Nymex
Gas Price	\$ 3.00	\$ 3.00	\$ 3.00	\$ 3.00	\$/Mcf, Estimated realized price, includes differential from Henry Hub
<b>Economic Outputs</b>					
BT NPV10	\$ 2,987	\$ 3,187	\$ 23,896	\$ 47,805	M\$, Net present value discounted at 10%
BT ROR	41%	57%	41%	57%	Rate of Return as %
Estimated Improved Value				50%	Due to improved Recovery Factor from increase in well density and pad development lowering per well cost.