

## Hydraulic Fracturing Fluid Product Component Information Disclosure

|                                |                               |
|--------------------------------|-------------------------------|
| Job Start Date:                | 7/8/2019                      |
| Job End Date:                  | 7/17/2019                     |
| State:                         | Texas                         |
| County:                        | Ward                          |
| API Number:                    | 42-475-37766-00-00            |
| Operator Name:                 | Abraxas Petroleum Corporation |
| Well Name and Number:          | Woodberry 3 #101H             |
| Latitude:                      | 31.55950300                   |
| Longitude:                     | -103.13841000                 |
| Datum:                         | NAD83                         |
| Federal Well:                  | NO                            |
| Indian Well:                   | NO                            |
| True Vertical Depth:           | 10,863                        |
| Total Base Water Volume (gal): | 11,575,620                    |
| Total Base Non Water Volume:   | 0                             |



### Hydraulic Fracturing Fluid Composition:

| Trade Name | Supplier            | Purpose                | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|------------|---------------------|------------------------|-------------|--|--|--|----------|
| Water      | Abraxas Petroleum   | Carrier Fluid          |             |  |  |  |          |
|            |                     |                        | Water       | 7732-18-5                                | 100.00000  | 88.84551   |          |
| ICA-2      | C&J Energy Services | Iron Control Additives |             |  |  |  |          |
|            |                     |                        |             | Listed Below                             |  |  |          |

|                        |                     |                            |  |              |  |  |  |
|------------------------|---------------------|----------------------------|--|--------------|--|--|--|
| TX Local 100 mesh Sand | C&J Energy Services | Sand - Bulk - Texas        |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| CS-5                   | C&J Energy Services | Clay Control Additives     |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| FR-23                  | C&J Energy Services | Friction Reducer           |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| SI-9                   | C&J Energy Services | Paraffin & Scale Additives |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| SU-2                   | C&J Energy Services | Surfactants & Foamers      |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| BR-6                   | C&J Energy Services | Gel Breakers               |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| HC-15                  | C&J Energy Services | Bulk Acid                  |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| CI-7                   | C&J Energy Services | Acid Corrosion Inhibitors  |  |              |  |  |  |
|                        |                     |                            |  | Listed Below |  |  |  |
| DV-1F                  | C&J Energy Services | Diverting Agents           |  |              |  |  |  |

|  |  |  |  |              |           |          |  |
|--|--|--|--|--------------|-----------|----------|--|
|  |  |  |  | Listed Below |           |          |  |
| Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients. |  |  |  |              |           |          |  |
|  |  |  | Crystalline Silica, quartz                                     | 14808-60-7   | 99.90000  | 10.64903 |  |
|  |  |  | Water  | 7732-18-5    | 85.00000  | 0.16130  |  |
|  |  |  | Aluminum Oxide   | 1344-28-1    | 1.10000   | 0.11726  |  |
|  |  |  | Water  | 7732-18-5    | 100.00000 | 0.09111  |  |
|  |  |  | Water  | 7732-18-5    | 47.00000  | 0.06816  |  |
|  |  |  | Water  | 7732-18-5    | 100.00000 | 0.05083  |  |
|  |  |  | Distillates (Petroleum), Hydrotreated Light                    | 64742-47-8   | 30.00000  | 0.04351  |  |
|  |  |  | 2-Propenoic acid, polymer with 2-propenamide, sodium salt      | 25987-30-8   | 30.00000  | 0.04351  |  |
|  |  |  | Buffering agents   | Proprietary  | 22.00000  | 0.03191  |  |
|  |  |  | Hydrochloric Acid  | 7647-01-0    | 15.00000  | 0.02846  |  |
|  |  |  | Ethoxylated Alcohols (C10-C16)                                 | 68002-97-1   | 30.00000  | 0.02733  |  |
|  |  |  | Water  | 7732-18-5    | 100.00000 | 0.01456  |  |
|  |  |  | Iron Oxide   | 1309-37-1    | 0.10000   | 0.01066  |  |
|  |  |  | Titanium Oxide   | 13463-67-7   | 0.10000   | 0.01066  |  |
|  |  |  | Calcium Chloride   | 10043-52-4   | 20.00000  | 0.01017  |  |
|  |  |  | Propylene Glycol   | 57-55-6      | 10.00000  | 0.00911  |  |
|  |  |  | Alcohols, C12-15-branched and linear, ethoxylated propoxylated | 120313-48-6  | 5.00000   | 0.00725  |  |
|  |  |  | Nonylphenol Ethoxylate   | 127087-87-0  | 3.00000   | 0.00435  |  |
|  |  |  | Proprietary  | Proprietary  | 3.00000   | 0.00435  |  |
|  |  |  | Potassium Chloride   | 7447-40-7    | 5.00000   | 0.00254  |  |
|  |  |  | DETA-Phosphonate sodium salt                                   | 22042-96-2   | 10.00000  | 0.00146  |  |
|  |  |  | Sodium Perborate, Tetrahydrate                                 | 10486-00-7   | 100.00000 | 0.00121  |  |
|  |  |  | Amorphous Silica   | 7631-86-9    | 1.00000   | 0.00091  |  |

|  |  |  |  |             |           |         |  |
|--|--|--|--|-------------|-----------|---------|--|
|  |  |  | Polydimethyl siloxane                                    | 63148-62-9  | 1.00000   | 0.00091 |  |
|  |  |  | Hydroxyethylcellulose                                    | 9004-62-0   | 1.00000   | 0.00091 |  |
|  |  |  | Citric Acid  | 77-92-9     | 70.00000  | 0.00088 |  |
|  |  |  | Polyactide resin   | 9051-89-2   | 100.00000 | 0.00083 |  |
|  |  |  | Proprietary Polysaccharide                               | Proprietary | 1.50000   | 0.00076 |  |
|  |  |  | Sodium Chloride  | 7647-14-5   | 5.00000   | 0.00073 |  |
|  |  |  | Water  | 7732-18-5   | 50.00000  | 0.00063 |  |
|  |  |  | Acrylamide as residual                                   | 79-06-1     | 0.10000   | 0.00015 |  |
|  |  |  | Ethylene Glycol  | 107-21-1    | 40.00000  | 0.00009 |  |
|  |  |  | Dipropylene Glycol Monomethyl Ether                      | 34590-94-8  | 20.00000  | 0.00005 |  |
|  |  |  | Water  | 7732-18-5   | 20.00000  | 0.00005 |  |
|  |  |  | Cinnamaldehyde   | 104-55-2    | 10.00000  | 0.00002 |  |
|  |  |  | Formic Acid  | 64-18-6     | 10.00000  | 0.00002 |  |
|  |  |  | Tar bases, quinoline derivs, benzyl chloride-quaternized | 72480-70-7  | 10.00000  | 0.00002 |  |
|  |  |  | Alcohol C12-15 Ethoxylate                                | 68131-39-5  | 8.50000   | 0.00002 |  |
|  |  |  | Isopropanol  | 67-63-0     | 2.40000   | 0.00001 |  |

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)