Goodlands Unit No. 2

Waterflood Progress Report 2019

January 1st through December 31st 2019

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:

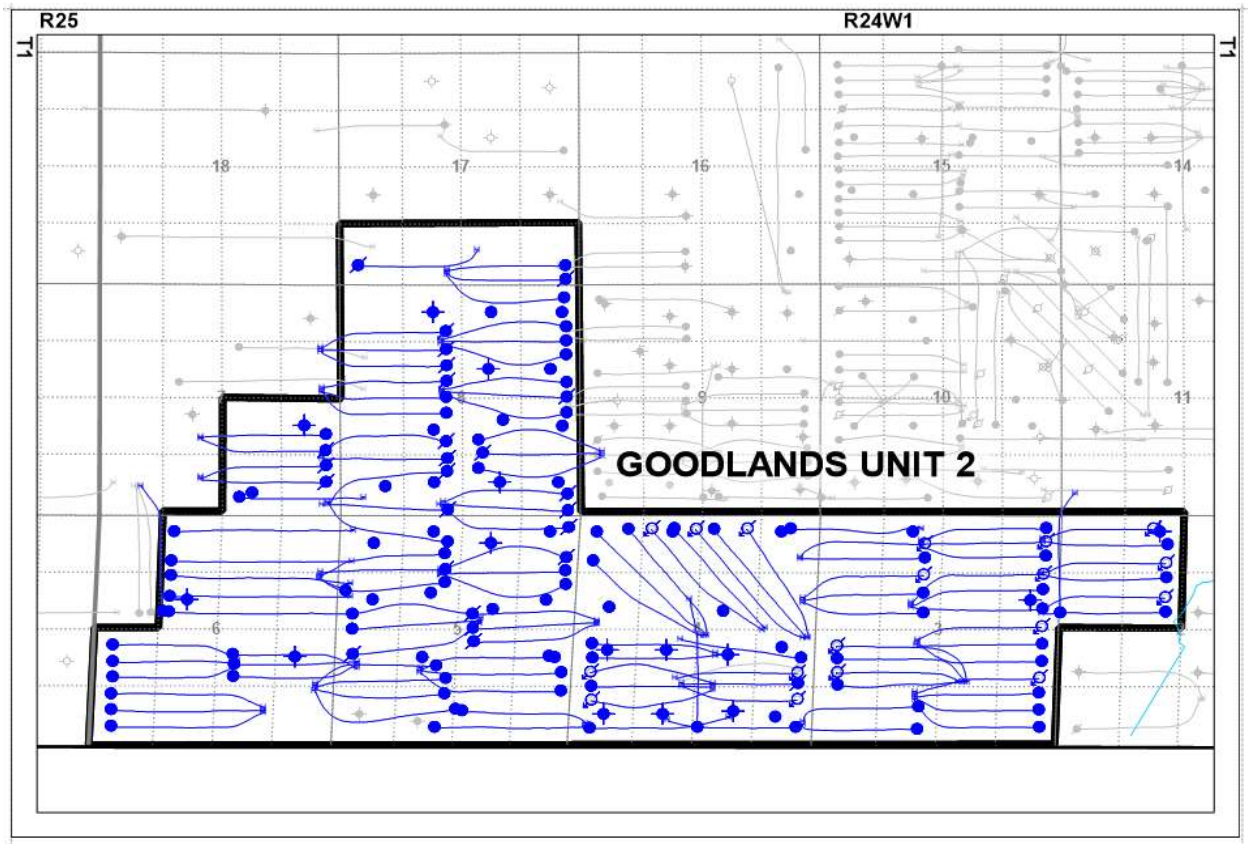
Tundra Oil and Gas

April 29, 2020

INTRODUCTION

Goodlands Unit No. 2 Enhanced Oil Recovery (EOR) Waterflood project was approved under Waterflood Order No. 57 effective December 2016 with Tundra Oil and Gas (Tundra) as Operator. The EOR project area contains 15 abandoned wells, 129 active/inactive producing wells and 18 injection wells covering 90 LSDs in Township 1, Range 24W1.

Figure 1: Goodlands Unit No. 2 Area Outline



Goodlands Unit No. 2

Tundra Oil and Gas (Tundra), as the operator of the Goodlands Unit No. 2 Enhanced Oil Recovery (EOR) project hereby submits the 2019 EOR report as per section 73 of the Drilling and Production Regulations.

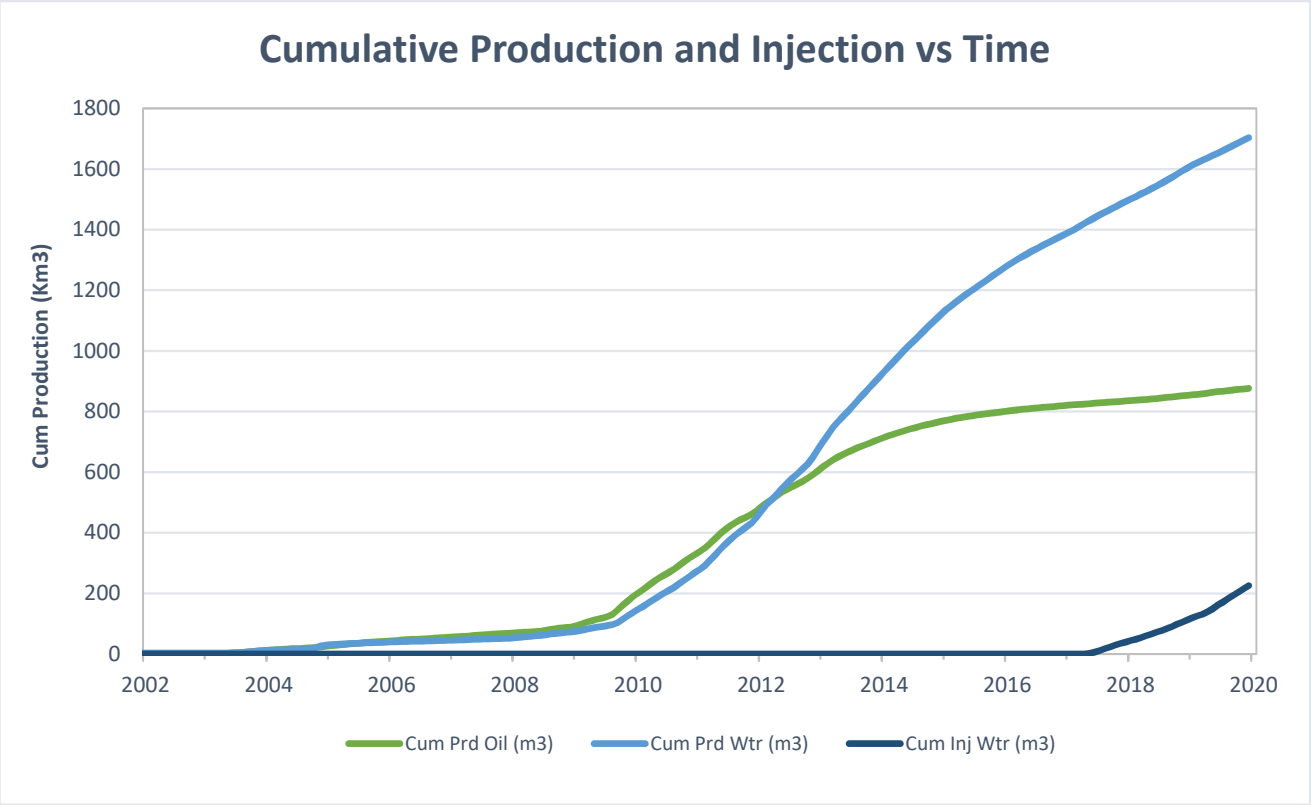
a) Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Dly Oil m^3/day	Cal Dly Wtr m^3/day	Cal Inj Wtr m^3/day	WOR m^3/m^3	GOR m^3/m^3
Jan-2019	49.25	318.54	236.65	6.47	0
Feb-2019	48.89	268.82	207.21	5.50	0
Mar-2019	67.02	263.22	194.42	3.93	0
Apr-2019	89.19	274.09	263.50	3.07	0
May-2019	80.31	258.32	319.74	3.22	0
Jun-2019	65.29	244.40	401.20	3.74	0
Jul-2019	58.39	282.31	335.45	4.83	0
Aug-2019	65.06	278.36	346.48	4.28	0
Sep-2019	62.53	279.54	351.33	4.47	0
Oct-2019	58.83	268.36	352.55	4.56	0
Nov-2019	58.96	297.38	382.93	5.04	0
Dec-2018	55.74	330.77	234.23	5.93	0

b) Cumulative volume of oil, gas and water produced and fluid injected

2019 PRODUCTION	
Produced Oil (m^3)	23,121
Produced Gas (m^3)	0
Produced Water (m^3)	102,385
Fluid Injected (m^3)	110,376
CUMULATIVE PRODUCTION	
Produced Oil (m^3)	853,455
Produced Water (m^3)	1,603,109

Goodlands Unit No. 2



c) Monthly wellhead injection pressure for each injection well

MONTH	02/01-04 Inj		02/04-04 Inj		02/05-03 Inj		02/05-04 Inj		02/08-03 Inj		02/09-03 Inj	
	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2019	0.0	0	0.0	0	711.0	2984	0.0	0	817.0	1989	924.0	-79
Feb-2019	0.0	0	0.0	0	529.0	2748	0.0	0	651.0	2365	721.0	-75
Mar-2019	0.0	0	0.0	0	527.0	3245	0.0	0	683.0	2605	656.0	-66
Apr-2019	244.0	176	0.0	0	555.0	3770	243.0	272	798.0	2637	890.0	-27
May-2019	712.0	-91	0.0	0	642.0	4428	707.0	-92	886.0	3393	1115.0	816
Jun-2019	858.0	-95	0.0	0	542.0	4899	862.0	-98	799.0	3900	1145.0	2069
Jul-2019	790.0	-94	0.0	0	442.0	4901	786.0	54	709.0	3970	1034.0	2805
Aug-2019	870.0	-93	4.0	483	463.0	4920	879.0	-96	723.0	3907	1031.0	2907
Sep-2019	868.0	127	534.0	-25	406.0	4947	869.0	-96	659.0	3942	896.0	2931
Oct-2019	898.0	958	594.0	-77	389.0	4942	901.0	-93	683.0	3989	883.0	3019
Nov-2019	906.0	1904	595.0	58	363.0	4981	1194.0	-89	790.0	4932	975.0	4013
Dec-2019	743.0	1922	611.0	-83	356.0	4975	713.0	51	719.0	4975	985.0	4376
Total	6889.0		2338.0		5925.0		7154.0		8917.0		11255.0	
Avg Inj P		393		30		4312		-16		3550		1891

MONTH	02/11-02 Inj		02/14-02 Inj		02/14-04 Inj		02/15-04 Inj		02/16-03 Inj		03/11-03 Inj	
	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2019	0.0	0	0.0	0	613.0	75	769.0	-51	655.0	4862	703.0	4323
Feb-2019	33.0	207	33.0	30	447.0	-82	568.0	-47	480.0	4608	666.0	3761
Mar-2019	376.0	-59	376.0	-82	304.0	-80	491.0	-54	437.0	3652	559.0	3625
Apr-2019	508.0	-84	509.0	-89	494.0	-91	636.0	-56	526.0	4787	685.0	4606
May-2019	749.0	-88	750.0	-89	450.0	-84	563.0	-56	519.0	4952	751.0	4916
Jun-2019	852.0	-91	860.0	-93	0.0	-82	0.0	-56	476.0	4927	696.0	4876
Jul-2019	781.0	-89	765.0	-91	0.0	-88	0.0	-60	461.0	4911	648.0	4920
Aug-2019	878.0	-89	862.0	-90	0.0	-89	0.0	-61	510.0	4932	697.0	4882
Sep-2019	868.0	84	868.0	689	0.0	-73	0.0	-61	480.0	4952	662.0	4925
Oct-2019	897.0	806	884.0	1607	0.0	-83	0.0	-56	488.0	4944	668.0	4923
Nov-2019	983.0	1910	704.0	1990	0.0	-80	0.0	-54	476.0	4806	645.0	4974
Dec-2019	833.0	1989	588.0	1987	22.0	-45	24.0	-47	489.0	4878	659.0	4975
Total	7758.0		7199.0		2330.0		3051.0		5997.0		8039.0	
Avg Inj P		375		481		-67		-55		4768		4642

c) Monthly wellhead injection pressure for each injection well

MONTH	03/14-03 Inj		04/05-03 Inj		04/14-02 Inj		04/14-04 Inj		05/08-04 Inj		05/09-03 Inj	
	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2019	803.0	4347	765.0	-88	0.0	0	0.0	123	0.0	0	576.0	4477
Feb-2019	606.0	4300	611.0	-82	33.0	5	0.0	398	0.0	0	457.0	4232
Mar-2019	579.0	5148	590.0	-90	375.0	-76	0.0	204	0.0	0	450.0	4058
Apr-2019	727.0	4472	763.0	-56	508.0	-88	0.0	0	267.0	267	547.0	4686
May-2019	747.0	4913	982.0	815	750.0	-89	0.0	0	1210.0	-92	547.0	4939
Jun-2019	677.0	4852	999.0	1657	859.0	-93	0.0	0	1914.0	1093	497.0	4900
Jul-2019	640.0	4916	903.0	2000	784.0	-91	0.0	0	1186.0	1945	470.0	4913
Aug-2019	704.0	4859	853.0	1836	873.0	-20	0.0	0	877.0	1919	521.0	4908
Sep-2019	663.0	4915	725.0	1522	857.0	956	44.0	67	662.0	1957	479.0	4941
Oct-2019	663.0	4912	990.0	2979	819.0	1897	147.0	301	571.0	1894	454.0	4938
Nov-2019	638.0	4875	1038.0	3762	815.0	2914	148.0	399	793.0	3682	425.0	4975
Dec-2019	647.0	4975	1030.0	4108	665.0	2982	151.0	666	607.0	3836	424.0	4975
Total	8094.0		10249.0		7338.0		490.0		8087.0		5847.0	
Avg Inj P		4790		1530		691		180		1375		4745

MONTH	GU2	
	Inj Water (m^3)	Avg Inj P (kPa)
Jan-2019	7336.0	2088
Feb-2019	5802.0	1939
Mar-2019	6027.0	1574
Apr-2019	7905.0	1489
May-2019	9912.0	1676
Jun-2019	12036.0	1916
Jul-2019	10399.0	2048
Aug-2019	10741.0	2022
Sep-2019	10540.0	2039
Oct-2019	10929.0	2322
Nov-2019	11488.0	2775
Dec-2019	10266.0	2861
Total	113381.0	
Avg Inj P		2062

c) Monthly wellhead injection pressure for each injection well

MONTH	Jan-2019	Feb-2019	Mar-2019	Apr-2019	May-2019	Jun-2019	Jul-2019	Aug-2019	Sep-2019	Oct-2019	Nov-2019	Dec-2019
Total m3	7336.0	5802.0	6027.0	7905.0	9912.0	12036.0	10399.0	10741.0	10540.0	10929.0	11488.0	10266.0
Daily (m^3/d)	236.65	207.21	194.42	263.50	319.74	401.20	335.45	346.48	351.33	352.55	382.93	331.16

2019 AVG. ANNUAL DAILY INJECTION =	310.22 m3/d
CUMULATIVE INJECTION TO Dec 31, 2018 =	112,410 m3
TOTAL 2019 ANNUAL INJECTION =	113,381 m3
CUMULATIVE INJECTION TO Dec 31, 2019 =	225,791 m3

d) Summary of the result of any survey of reservoir pressure conducted in 2019. N/A

e) Date and type of any well servicing.

Well	Service Description	Date
100.07-06-001-24W1.00	Rigless Acid	8/16/2019
100.13-04-001-24W1.00	Rigless Acid	8/1/2019
100.14-06-001-24W1.00	Rigless Acid	8/1/2019
102.03-03-001-24W1.00	Rigless Acid	9/6/2019
102.09-05-001-24W1.00	Rigless Acid	8/1/2019
103.04-06-001-24W1.00	Rigless Acid	9/6/2019
103.06-05-001-24W1.00	Rigless Acid	8/30/2019
104.03-05-001-24W1.00	Rigless Acid	8/30/2019
104.14-05-001-24W1.00	Rigless Acid	7/30/2019

f) Calculations of voidage replacement ratio on a monthly and cumulative basis

VOIDAGE CALCULATIONS

OIL FORMATION VOLUME FACTOR (Rm3/Sm3) = 1.17

MONTH	Mth Oil Prod (m3)	Cum Oil Prod (Km3)	Mth Water Prod (m3)	Cum Water Prod (Km3)	Mth Water Inj (m3)	Cum Water Inj (Km3)	VRR	Cum VRR
Jan-2019	1526.9	854.98	9874.8	1612.98	7336.0	119.75	0.629	0.046
Feb-2019	1368.9	856.35	7526.9	1620.51	5802.0	125.55	0.636	0.048
Mar-2019	2077.6	858.43	8159.9	1628.67	6027.0	131.58	0.569	0.050
Apr-2019	2675.7	861.10	8222.6	1636.89	7905.0	139.48	0.696	0.053
May-2019	2489.5	863.59	8007.9	1644.90	9912.0	149.39	0.908	0.056
Jun-2019	1958.7	865.55	7331.9	1652.23	12036.0	161.43	1.251	0.061
Jul-2019	1810.2	867.36	8751.7	1660.98	10399.0	171.83	0.957	0.064
Aug-2019	2017.0	869.38	8629.1	1669.61	10741.0	182.57	0.977	0.068
Sep-2019	1876.0	871.26	8386.2	1678.00	10540.0	193.11	0.996	0.072
Oct-2019	1823.8	873.08	8319.3	1686.32	10929.0	204.04	1.046	0.075
Nov-2019	1768.9	874.85	8921.3	1695.24	11488.0	215.53	1.045	0.079
Dec-2019	1669.1	876.52	8240.8	1703.48	10266.0	225.79	1.007	0.083

g) An outline of the method used for quality control and treatment of the injected fluid

The injected fluid is treated by filtration.

h) A report of any unusual performance problems and remedial measures taken or being considered. N/A

i) Any other information necessary to evaluate the project

j) Well List

Goodlands Unit No.2 Well List

UWI	*Type*	*Status*	*Future Plans*
100/11-02-001-24W1/0	Horizontal	Producing	-
102/11-02-001-24W1/0	Horizontal	Injection	-
103/11-02-001-24W1/0	Horizontal	Producing	-
100/14-02-001-24W1/0	Vertical	Abandoned Zone	-
102/14-02-001-24W1/0	Horizontal	Injection	-
103/14-02-001-24W1/0	Horizontal	Producing	-
104/14-02-001-24W1/0	Horizontal	Injection	-
100/01-03-001-24W1/0	Horizontal	Producing	WIW Conversion
102/01-03-001-24W1/0	Horizontal	Producing	-
103/01-03-001-24W1/0	Horizontal	Producing	-
100/03-03-001-24W1/0	Horizontal	Producing	-
102/03-03-001-24W1/0	Horizontal	Producing	-
100/05-03-001-24W1/0	Horizontal	Producing	-
102/05-03-001-24W1/0	Horizontal	Injection	-
103/05-03-001-24W1/0	Horizontal	Producing	-
104/05-03-001-24W1/0	Horizontal	Injection	-
100/08-03-001-24W1/0	Horizontal	Producing	-
102/08-03-001-24W1/0	Horizontal	Injection	-
103/08-03-001-24W1/0	Horizontal	Producing	-
100/09-03-001-24W1/0	Vertical	Abandoned	-
102/09-03-001-24W1/0	Horizontal	Injection	-
103/09-03-001-24W1/0	Horizontal	Producing	-
104/09-03-001-24W1/0	Horizontal	Producing	-
105/09-03-001-24W1/0	Horizontal	Injection	-
106/09-03-001-24W1/0	Horizontal	Producing	-
100/11-03-001-24W1/0	Horizontal	Producing	-
102/11-03-001-24W1/0	Horizontal	Producing	-
103/11-03-001-24W1/0	Horizontal	Injection	-
100/14-03-001-24W1/0	Vertical	Pumping	-
102/14-03-001-24W1/0	Horizontal	Producing	-
103/14-03-001-24W1/0	Horizontal	Injection	-
100/16-03-001-24W1/0	Horizontal	Producing	-
102/16-03-001-24W1/0	Horizontal	Injection	-
103/16-03-001-24W1/0	Horizontal	Producing	-
100/01-04-001-24W1/0	Vertical	Producing	-
102/01-04-001-24W1/0	Horizontal	Injection	-
103/01-04-001-24W1/0	Horizontal	Producing	-
100/02-04-001-24W1/0	Vertical	Abandoned Zone	-
100/03-04-001-24W1/0	Vertical	Abandoned Zone	-
102/03-04-001-24W1/0	Horizontal	Producing	-
100/04-04-001-24W1/0	Vertical	Abandoned Zone	-
102/04-04-001-24W1/0	Horizontal	Injection	-
103/04-04-001-24W1/0	Horizontal	Producing	-
104/04-04-001-24W1/0	Horizontal	Producing	-
100/05-04-001-24W1/0	Vertical	Abandoned Zone	-

j) Well List

Goodlands Unit No.2 Well List

UWI	*Type*	*Status*	*Future Plans*
102/05-04-001-24W1/0	Horizontal	Injection	-
103/05-04-001-24W1/0	Horizontal	Producing	-
104/05-04-001-24W1/0	Horizontal	Producing	-
100/06-04-001-24W1/0	Vertical	Abandoned Zone	-
100/07-04-001-24W1/0	Vertical	Abandoned Zone	-
100/08-04-001-24W1/0	Vertical	Producing	-
102/08-04-001-24W1/0	Horizontal	Producing	-
104/08-04-001-24W1/0	Horizontal	Suspended	-
105/08-04-001-24W1/0	Horizontal	Injection	-
100/10-04-001-24W1/0	Vertical	Producing	-
100/12-04-001-24W1/0	Vertical	Producing	-
100/13-04-001-24W1/0	Horizontal	Producing	-
102/13-04-001-24W1/0	Horizontal	Producing	-
103/13-04-001-24W1/0	Horizontal	Producing	-
100/14-04-001-24W1/0	Vertical	Producing	-
102/14-04-001-24W1/0	Horizontal	Injection	-
103/14-04-001-24W1/0	Horizontal	Producing	-
104/14-04-001-24W1/0	Horizontal	Injection	-
100/15-04-001-24W1/0	Horizontal	Producing	-
102/15-04-001-24W1/0	Horizontal	Injection	-
100/16-04-001-24W1/0	Vertical	Producing	-
102/16-04-001-24W1/0	Horizontal	Producing	-
100/01-05-001-24W1/0	Horizontal	Producing	-
100/02-05-001-24W1/0	Horizontal	Producing	-
102/03-05-001-24W1/0	Horizontal	Producing	-
103/03-05-001-24W1/0	Horizontal	Producing	-
104/03-05-001-24W1/0	Horizontal	Producing	-
100/05-05-001-24W1/0	Horizontal	Producing	-
102/05-05-001-24W1/0	Horizontal	Suspended	-
100/06-05-001-24W1/2	Vertical	Producing	-
102/06-05-001-24W1/0	Horizontal	Producing	-
103/06-05-001-24W1/0	Horizontal	Producing	-
100/07-05-001-24W1/0	Horizontal	Suspended	-
100/08-05-001-24W1/0	Vertical	Producing	-
102/08-05-001-24W1/0	Horizontal	Producing	-
103/08-05-001-24W1/0	Horizontal	Producing	-
100/09-05-001-24W1/0	Vertical	Producing	-
102/09-05-001-24W1/0	Horizontal	Producing	-
100/10-05-001-24W1/0	Vertical	Producing	-
102/10-05-001-24W1/0	Horizontal	Suspended	-
103/10-05-001-24W1/0	Horizontal	Suspended	-
100/11-05-001-24W1/0	Vertical	Producing	-
102/11-05-001-24W1/2	Horizontal	Producing	-
100/12-05-001-24W1/0	Vertical	Producing	-
102/12-05-001-24W1/0	Horizontal	Producing	-
103/12-05-001-24W1/0	Dir/Dev	Producing	-

j) Well List

Goodlands Unit No.2 Well List

UWI	*Type*	*Status*	*Future Plans*
100/13-05-001-24W1/0	Vertical	Producing	-
100/14-05-001-24W1/0	Vertical	Producing	-
102/14-05-001-24W1/0	Horizontal	Suspended	-
103/14-05-001-24W1/0	Horizontal	Producing	-
104/14-05-001-24W1/0	Horizontal	Producing	-
100/15-05-001-24W1/0	Vertical	Abandoned Zone	-
100/16-05-001-24W1/0	Vertical	Producing	-
102/16-05-001-24W1/0	Horizontal	Producing	-
103/16-05-001-24W1/0	Horizontal	Suspended	-
104/16-05-001-24W1/0	Horizontal	Suspended	-
100/04-06-001-24W1/0	Horizontal	Producing	-
102/04-06-001-24W1/0	Horizontal	Producing	-
103/04-06-001-24W1/0	Horizontal	Producing	-
100/05-06-001-24W1/0	Horizontal	Producing	-
102/05-06-001-24W1/0	Horizontal	Producing	-
103/05-06-001-24W1/0	Horizontal	Producing	-
100/07-06-001-24W1/0	Horizontal	Producing	-
102/07-06-001-24W1/0	Horizontal	Producing	-
103/07-06-001-24W1/0	Horizontal	Producing	-
100/08-06-001-24W1/0	Vertical	Abandoned	-
100/11-06-001-24W1/0	Vertical	Abandoned	-
102/11-06-001-24W1/0	Horizontal	Producing	-
103/11-06-001-24W1/0	Horizontal	Producing	-
104/11-06-001-24W1/0	Horizontal	Producing	-
105/11-06-001-24W1/0	Horizontal	Producing	-
100/14-06-001-24W1/0	Horizontal	Producing	-
102/14-06-001-24W1/0	Horizontal	Producing	-
100/01-07-001-24W1/0	Horizontal	Suspended	-
102/01-07-001-24W1/0	Horizontal	Suspended	-
100/02-07-001-24W1/0	Vertical	Producing	-
102/02-07-001-24W1/0	Horizontal	Producing	-
100/08-07-001-24W1/0	Vertical	Abandoned Zone	-
102/08-07-001-24W1/0	Horizontal	Suspended	-
103/08-07-001-24W1/0	Horizontal	Producing	-
100/01-08-001-24W1/0	Vertical	Producing	-
102/01-08-001-24W1/0	Horizontal	Suspended	-
103/01-08-001-24W1/0	Horizontal	Suspended	-
100/02-08-001-24W1/0	Vertical	Abandoned Zone	-
102/02-08-001-24W1/0	Horizontal	Producing	-
100/03-08-001-24W1/0	Vertical	Producing	-
102/03-08-001-24W1/0	Horizontal	Suspended	-
103/03-08-001-24W1/0	Horizontal	Suspended	-
104/03-08-001-24W1/0	Horizontal	Suspended	-
100/04-08-001-24W1/0	Vertical	Producing	-
100/06-08-001-24W1/0	Vertical	Producing	-
102/06-08-001-24W1/0	Horizontal	Producing	-

j) Well List

Goodlands Unit No.2 Well List

UWI	*Type*	*Status*	*Future Plans*
103/06-08-001-24W1/0	Horizontal	Suspended	-
100/07-08-001-24W1/0	Vertical	Producing	-
102/07-08-001-24W1/0	Horizontal	Suspended	-
103/07-08-001-24W1/0	Horizontal	Producing	-
100/08-08-001-24W1/0	Vertical	Producing	-
102/08-08-001-24W1/0	Horizontal	Producing	-
100/09-08-001-24W1/0	Vertical	Producing	-
102/09-08-001-24W1/0	Horizontal	Suspended	-
103/09-08-001-24W1/0	Horizontal	Producing	-
104/09-08-001-24W1/0	Horizontal	Producing	-
100/10-08-001-24W1/0	Vertical	Abandoned Zone	-
100/11-08-001-24W1/0	Horizontal	Producing	-
102/11-08-001-24W1/0	Horizontal	Suspended	-
103/11-08-001-24W1/0	Horizontal	Suspended	-
104/11-08-001-24W1/0	Horizontal	Suspended	-
100/14-08-001-24W1/0	Vertical	Abandoned	-
102/14-08-001-24W1/0	Horizontal	Suspended	-
100/15-08-001-24W1/0	Vertical	Producing	-
100/16-08-001-24W1/0	Vertical	Producing	-
102/16-08-001-24W1/0	Horizontal	Producing	-
103/16-08-001-24W1/0	Horizontal	Producing	-
104/16-08-001-24W1/0	Horizontal	Producing	-
100/01-17-001-24W1/0	Horizontal	Suspended	-
102/01-17-001-24W1/0	Horizontal	Producing	-
100/04-17-001-24W1/0	Horizontal	Suspended	-