Souris Hartney Unit No. 1

Waterflood Progress Report 2019

January 1st through December 31st 2019

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:

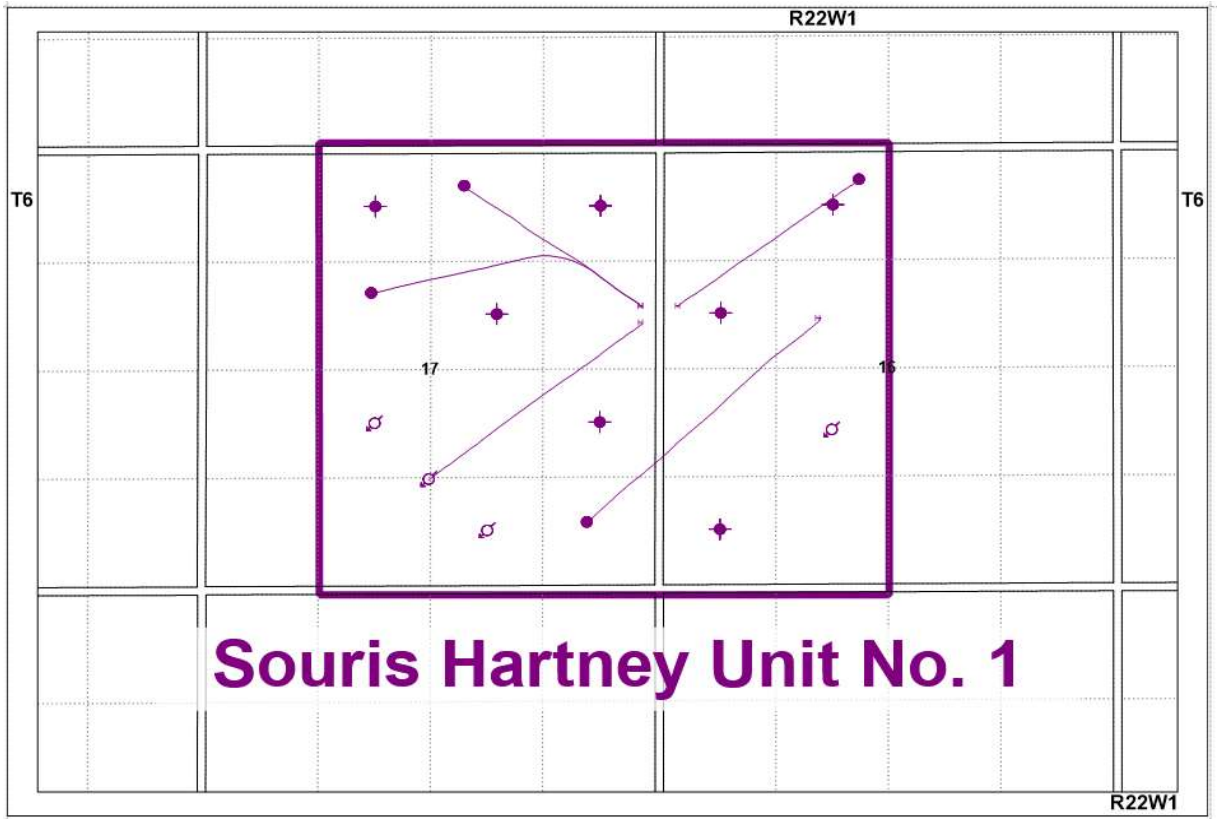
Tundra Oil and Gas

May 25, 2020

INTRODUCTION

Souris Hartney Unit No. 1 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Waterflood Order No. 9 effective November 1, 1999 with Tundra Oil and Gas (Tundra) as Operator. The EOR project area contains 15 wells in 20 LSDs in Township 6, Range 22 W1 as shown in the figure below.

Figure 1: Souris Hartney Unit No. 1 Area Outline



Souris Hartney Unit No.1

Tundra Oil and Gas (Tundra), as the operator of the Souris Hartney Unit No. 1 Enhanced Oil Recovery (EOR) project hereby submits the 2019 EOR report as per section 73 of the Drilling and Production Regulations.

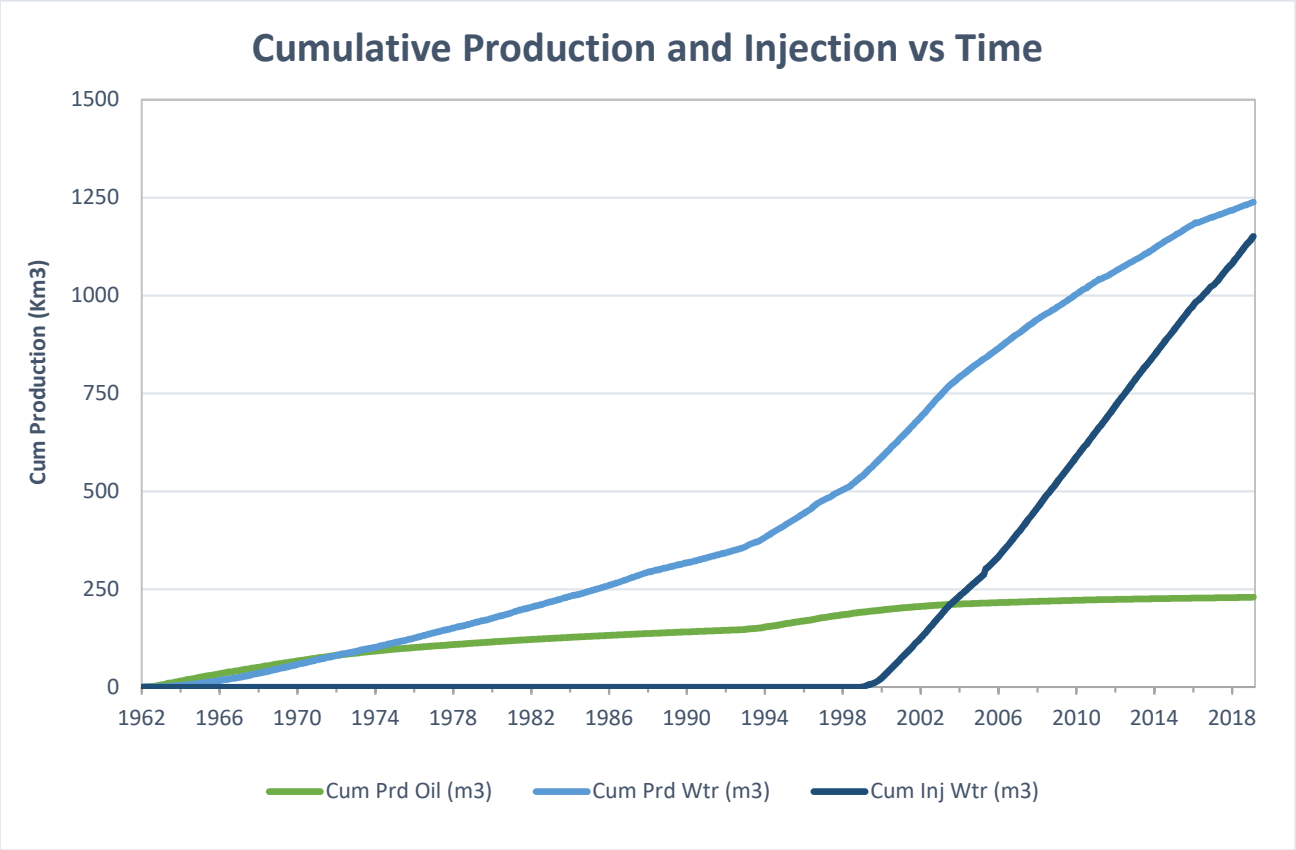
a) Monthly oil and water production rates, injection rate, GOR and WOR

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	2.36	58.86	190.35	24.93	0
Feb-2019	2.65	57.66	196.71	21.73	0
Mar-2019	2.75	54.03	185.03	19.63	0
Apr-2019	2.55	52.64	181.60	20.61	0
May-2019	2.56	54.11	182.52	21.15	0
Jun-2019	2.75	54.25	179.47	19.70	0
Jul-2019	2.35	47.64	165.48	20.26	0
Aug-2019	2.73	51.75	173.32	18.98	0
Sep-2019	2.51	51.05	153.97	20.31	0
Oct-2019	2.65	50.54	121.68	19.06	0
Nov-2019	2.64	50.90	190.40	19.26	0
Dec-2019	2.65	50.34	181.61	19.01	0

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

2019 PRODUCTION	
Produced Oil (m^3)	948
Produced Gas (m^3)	0
Produced Water (m^3)	19,264
Fluid Injected (m^3)	63,871
CUMULATIVE PRODUCTION	
Produced Oil (m^3)	229,608
Produced Water (m^3)	1,238,615

Souris Hartney Unit No.1



c) Monthly wellhead injection pressure for each injection well

MONTH	00/02-17 Inj		00/03-17 Inj		00/06-16 Inj		00/06-17 Inj		SHU1	
	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	735.60	5996	1195.00	5284	2867.00	2679	1103.40	5404	5901.0	4811
Feb-2019	660.00	6000	1079.00	5260	2706.00	2489	1063.00	5400	5508.0	4715
Mar-2019	734.40	5964	1196.00	5266	2704.00	2492	1101.60	5440	5736.0	4808
Apr-2019	713.20	5752	1157.00	5288	2508.00	2201	1069.80	5396	5448.0	4663
May-2019	737.20	5855	1218.00	5343	2597.00	2441	1105.80	5455	5658.0	4847
Jun-2019	685.60	5807	1125.00	5256	2545.00	2149	1028.40	5513	5384.0	4810
Jul-2019	673.20	5867	1073.00	5125	2374.00	1703	1009.80	5574	5130.0	4621
Aug-2019	735.60	5907	1202.00	5233	2332.00	2133	1103.40	5619	5373.0	4839
Sep-2019	656.40	5825	1066.00	5154	1912.00	1911	984.60	5464	4619.0	4669
Oct-2019	708.40	5889	1153.00	5135	848.00	859	1062.60	5574	3772.0	4504
Nov-2019	746.40	6000	1197.00	5285	2649.00	2563	1119.60	5419	5712.0	4832
Dec-2019	763.60	5969	1202.00	5157	2519.00	1771	1145.40	5400	5630.0	4713
Total	8549.6		13863.0		28561.0		12897.4		63871.0	
Avg Inj P		5903		5232		2116		5471		4736

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	5901.0	5508.0	5736.0	5448.0	5658.0	5384.0	5130.0	5373.0	4619.0	3772.0	5712.0	5630.0
Daily (m^3/d)	190.35	196.71	185.03	181.60	182.52	179.47	165.48	173.32	153.97	121.68	190.40	181.61

2019 AVG. ANNUAL DAILY INJECTION = 175.18 m3/d

CUMULATIVE INJECTION TO Dec 31, 2018 = 1,087,169 m3

TOTAL 2019 ANNUAL INJECTION = 63,871 m3

CUMULATIVE INJECTION TO Dec 31, 2019 = 1,151,040 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

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

VOIDAGE CALCULATIONS

OIL FORMATION VOLUME FACTOR (Rm3/Sm3) = 1.057

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	73.2	228.73	1824.7	1221.17	5901.0	1093.07	3.102	0.747
Feb-2019	74.3	228.81	1614.4	1222.79	5508.0	1098.58	3.254	0.750
Mar-2019	85.3	228.89	1674.8	1224.46	5736.0	1104.31	3.250	0.753
Apr-2019	76.6	228.97	1579.1	1226.04	5448.0	1109.76	3.282	0.756
May-2019	79.3	229.05	1677.4	1227.72	5658.0	1115.42	3.213	0.759
Jun-2019	82.6	229.13	1627.6	1229.35	5384.0	1120.80	3.140	0.762
Jul-2019	72.9	229.20	1476.7	1230.82	5130.0	1125.93	3.302	0.764
Aug-2019	84.5	229.29	1604.1	1232.43	5373.0	1131.31	3.173	0.767
Sep-2019	75.4	229.36	1531.4	1233.96	4619.0	1135.93	2.867	0.769
Oct-2019	82.2	229.45	1566.6	1235.53	3772.0	1139.70	2.281	0.771
Nov-2019	79.3	229.53	1527.1	1237.05	5712.0	1145.41	3.546	0.774
Dec-2019	82.1	229.61	1560.4	1238.61	5630.0	1151.04	3.418	0.777

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

Souris Hartney Unit No. 1 Well List

UWI	*Type*	*Status*	*Future Plans*
100/04-16-006-22W1/0	Vertical	Abandoned	
100/06-16-006-22W1/0	Vertical	Injection	-
100/12-16-006-22W1/0	Vertical	Abandoned Zone	
100/14-16-006-22W1/0	Vertical	Abandoned	-
102/14-16-006-22W1/0	Horizontal	Pumping	-
100/01-17-006-22W1/0	Horizontal	Pumping	-
100/02-17-006-22W1/0	Vertical	Injection	-
100/03-17-006-22W1/0	Horizontal	Injection	-
100/06-17-006-22W1/0	Vertical	Injection	-
100/08-17-006-22W1/0	Vertical	Abandoned	-
100/10-17-006-22W1/0	Vertical	Abandoned	-
100/11-17-006-22W1/2	Horizontal	Producing	-
100/14-17-006-22W1/0	Vertical	Abandoned	-
100/15-17-006-22W1/0	Horizontal	Producing	-
100/16-17-006-22W1/0	Vertical	Abandoned	-