

SINCLAIR UNIT NO. 12 - WATERFLOOD NO. 44

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

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## Introduction

Sinclair Unit No. 12 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Waterflood Order No. 44, effective February 1, 2015 with Tundra Oil and Gas (Tundra) as Operator. The EOR Unit area contains wells in 112 LSDs in Township 8 Ranges 28 & 29 W1. The Unit contains 63 wells. 38 producers, 10 injectors, and 15 abandoned/suspended/other.

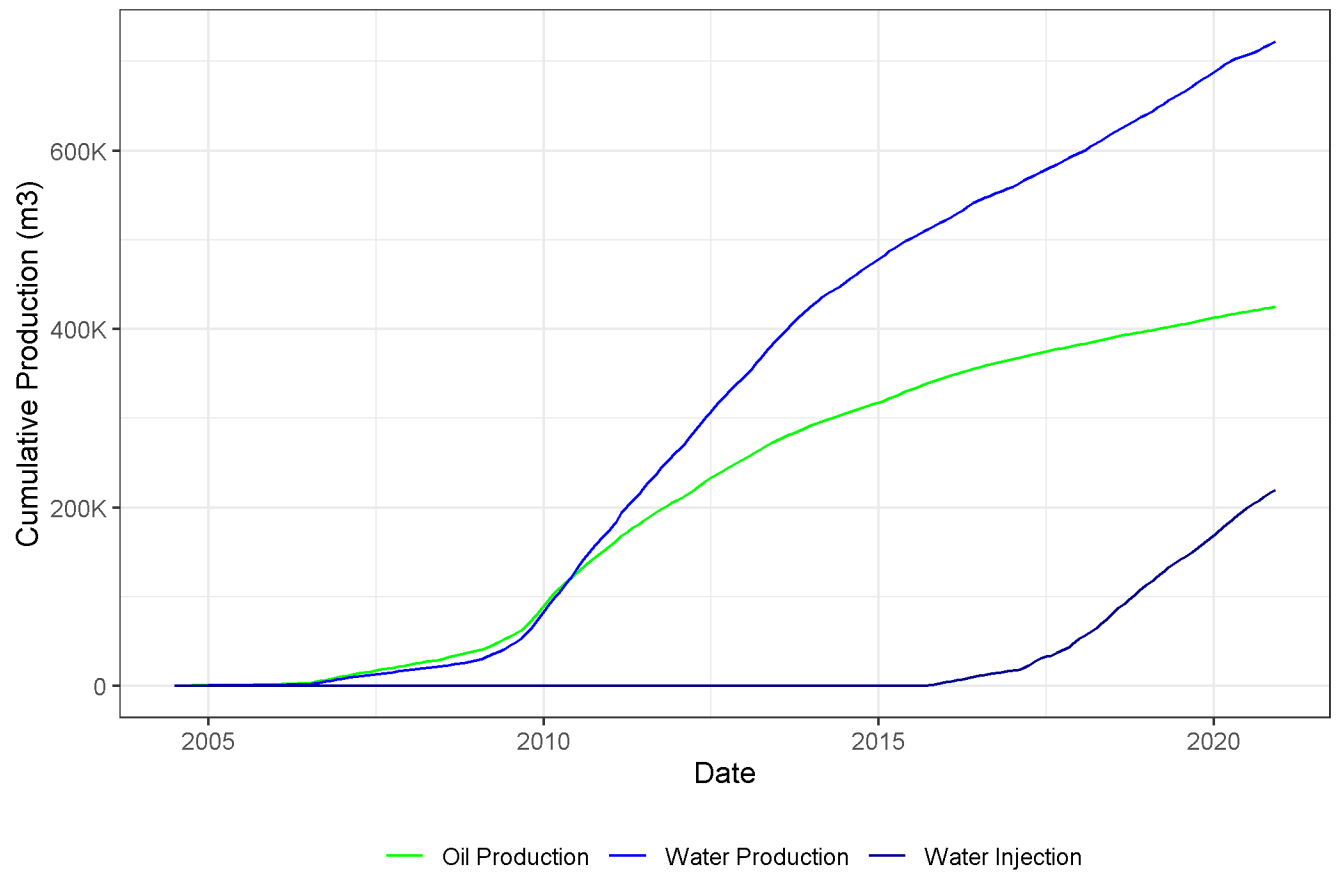
## Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Day Oil m3/d	Cal Day Water m3/d	Cal Day Injection m3/d	WOR	GOR
JAN 2020	39.15	137.38	163.77	3.51	0.26
FEB 2020	40.24	143.96	175.38	3.58	0.00
MAR 2020	38.57	138.28	168.29	3.59	0.00
APR 2020	41.59	119.46	168.83	2.87	0.00
MAY 2020	37.95	104.68	166.03	2.76	0.00
JUN 2020	30.50	54.92	163.70	1.80	0.00
JUL 2020	33.87	67.92	164.68	2.01	0.00
AUG 2020	34.60	79.25	135.77	2.29	0.00
SEP 2020	37.48	105.23	134.47	2.81	0.00
OCT 2020	35.14	100.10	139.68	2.85	0.00
NOV 2020	36.08	107.67	123.40	2.98	0.00
DEC 2020	34.36	99.90	120.39	2.91	0.00
Average	36.63	104.90	152.03		

## Year summary of produced oil, gas, water and fluid injected

Categories	m3
Oil Production	13,402
Water Production	38,346
Gas Production	0
Water Injection	55,615
Cumulative Oil	424,927
Cumulative Water	722,156
Cumulative Injection	219,680

Cumulative Production and Injection



## Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.04-18-008-28W1.00	6,232	6,141	6,077	6,125	5,838	6,199	6,221	6,353	6,137	6,047	2,615	2,124	5,509
100.09-16-008-28W1.00	6,109	5,985	6,069	6,098	6,098	5,764	6,089	6,230	6,189	6,418	6,574	6,572	6,183
100.12-17-008-28W1.00	6,138	6,007	6,087	6,060	6,060	5,747	6,087	6,234	6,178	6,427	6,576	6,576	6,181
102.05-07-008-28W1.00	1,527	962	1,165	1,345	1,115	2,254	2,703	1,287	1,270	1,396	1,497	1,773	1,524
102.12-05-008-28W1.00	-94	-93	459	1,133	1,353	2,323	2,696	3,017	1,632	2,946	2,982	2,955	1,776
103.01-13-008-29W1.00	5,475	5,466	5,466	5,453	5,413	5,382	5,442	5,469	5,467	5,454	5,455	5,467	5,451
103.05-07-008-28W1.00	1,860	2,128	2,423	2,709	2,907	2,977	2,936	2,990	2,972	2,997	3,229	3,510	2,803
103.09-13-008-29W1.00	1,779	1,901	2,050	2,175	2,138	2,272	2,379	2,520	2,657	2,769	2,888	3,002	2,378
103.12-07-008-28W1.00	1,111	1,461	1,448	1,566	2,619	2,289	2,383	2,898	2,879	2,953	5,750	3,110	2,539
103.16-13-008-29W1.00	3,366	2,977	2,987	2,984	2,890	2,758	2,947	2,977	2,980	2,934	2,968	2,984	2,979

## Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
100.04-18-008-28W1.00	571	513	550	526	506	501	551	547	516	462			5,243
100.09-16-008-28W1.00	227	195	219	205	181	203	238	215	198	247	232	226	2,586
100.12-17-008-28W1.00	246	207	232	219	215	205	253	240	225	255	247	249	2,793
102.05-07-008-28W1.00	1,212	1,148	1,227	1,187	1,160	1,094	1,020	439	443	454	440	454	10,278
102.12-05-008-28W1.00		397	231	294	334	365	419	177	196	429	353	314	3,509
103.01-13-008-29W1.00	774	686	689	632	620	571	595	569	534	535	505	510	7,220
103.05-07-008-28W1.00	611	577	619	608	641	539	512	470	420	414	442	457	6,310
103.09-13-008-29W1.00	446	432	462	447	438	414	445	460	445	456	444	451	5,340
103.12-07-008-28W1.00	608	576	616	597	703	694	731	759	743	760	736	765	8,288
103.16-13-008-29W1.00	382	355	372	350	349	325	341	333	314	318	303	306	4,048
Grand Total	5,077	5,086	5,217	5,065	5,147	4,911	5,105	4,209	4,034	4,330	3,702	3,732	55,615

## Voidage

All Volumes are in m3 Oil Formation Volume Factor (Rm3/Sm3) = 1.071

MONTH	Oil	Water	Injection	Cumulative Oil	Cumulative Water	Cumulative Injection	VRR	Cumulative VRR
JAN 2020	1,214	4,258	5,077	412,744	688,065	169,142	0.913	0.150
FEB 2020	1,167	4,174	5,086	413,911	692,239	174,228	0.938	0.153
MAR 2020	1,196	4,287	5,217	415,107	696,526	179,445	0.937	0.157
APR 2020	1,248	3,583	5,065	416,355	700,109	184,510	1.030	0.161
MAY 2020	1,176	3,246	5,147	417,531	703,355	189,657	1.142	0.165
JUN 2020	916	1,647	4,911	418,447	705,002	194,568	1.869	0.169
JUL 2020	1,050	2,106	5,105	419,497	707,108	199,673	1.580	0.173
AUG 2020	1,073	2,457	4,209	420,570	709,565	203,882	1.167	0.176
SEP 2020	1,125	3,158	4,034	421,695	712,723	207,916	0.925	0.179
OCT 2020	1,090	3,102	4,330	422,785	715,825	212,246	1.014	0.182
NOV 2020	1,082	3,230	3,702	423,867	719,055	215,948	0.844	0.184
DEC 2020	1,065	3,098	3,732	424,932	722,153	219,680	0.880	0.187

## Workovers

UWI	Date	Description
102.01-13-008-29W1.00	2020-12-01	Cleanouts

## Well List

UWI	Type	Status
100.12-05-008-28W1.00	Horizontal	Producing
102.12-05-008-28W1.00	Horizontal	Injection
100.13-05-008-28W1.00	Horizontal	Producing
100.14-05-008-28W1.00	Vertical	Producing
100.15-05-008-28W1.02	Vertical	Abandoned Zone
100.03-07-008-28W1.00	Vertical	Abandoned Zone
100.04-07-008-28W1.00	Horizontal	Producing
103.04-07-008-28W1.00	Horizontal	Injection
100.05-07-008-28W1.00	Horizontal	Producing
102.05-07-008-28W1.00	Horizontal	Injection
103.05-07-008-28W1.00	Horizontal	Injection
100.08-07-008-28W1.00	Vertical	Producing
100.11-07-008-28W1.00	Vertical	Producing
100.12-07-008-28W1.00	Vertical	Potential
102.12-07-008-28W1.00	Horizontal	Producing
103.12-07-008-28W1.00	Horizontal	Injection
100.13-07-008-28W1.00	Horizontal	Producing
100.15-07-008-28W1.00	Vertical	Producing
100.04-08-008-28W1.00	Vertical	Producing
102.04-08-008-28W1.00	Horizontal	Producing
100.07-08-008-28W1.00	Vertical	Producing
100.08-08-008-28W1.00	Horizontal	Producing
100.10-08-008-28W1.00	Horizontal	Producing
100.11-08-008-28W1.00	Horizontal	Producing
100.16-08-008-28W1.00	Vertical	Producing
102.16-08-008-28W1.00	Horizontal	Suspended
100.01-16-008-28W1.00	Horizontal	Producing
100.04-16-008-28W1.00	Vertical	Producing
100.08-16-008-28W1.00	Vertical	Producing
102.08-16-008-28W1.00	Horizontal	Producing
100.09-16-008-28W1.00	Horizontal	Injection
100.13-16-008-28W1.00	Vertical	Producing
100.16-16-008-28W1.00	Horizontal	Producing
100.04-17-008-28W1.00	Vertical	Producing
102.04-17-008-28W1.00	Horizontal	Producing
100.05-17-008-28W1.00	Horizontal	Producing
100.12-17-008-28W1.00	Horizontal	Injection
100.13-17-008-28W1.00	Horizontal	Producing
100.14-17-008-28W1.00	Vertical	Abandoned
100.04-18-008-28W1.00	Horizontal	Injection
100.05-18-008-28W1.00	Horizontal	Producing
100.12-18-008-28W1.00	Horizontal	Producing
100.13-18-008-28W1.00	Horizontal	Producing

UWI	Type	Status
100.04-20-008-28W1.00	Horizontal	Producing
103.04-20-008-28W1.00	Horizontal	Injection
100.05-20-008-28W1.00	Vertical	Abandoned Zone
102.05-20-008-28W1.00	Horizontal	Producing
100.07-20-008-28W1.02	Vertical	Producing
102.01-13-008-29W1.00	Horizontal	Producing
103.01-13-008-29W1.00	Horizontal	Injection
100.02-13-008-29W1.00	Vertical	Producing
100.03-13-008-29W1.00	Vertical	Producing
100.04-13-008-29W1.00	Vertical	Producing
100.05-13-008-29W1.00	Vertical	Abandoned Zone
100.06-13-008-29W1.00	Vertical	Abandoned Zone
100.08-13-008-29W1.00	Horizontal	Producing
102.08-13-008-29W1.00	Horizontal	Producing
102.09-13-008-29W1.00	Horizontal	Producing
103.09-13-008-29W1.00	Horizontal	Injection
100.12-13-008-29W1.00	Vertical	Abandoned Zone
100.16-13-008-29W1.00	Vertical	Abandoned
102.16-13-008-29W1.00	Horizontal	Producing
103.16-13-008-29W1.00	Horizontal	Injection