



**Jody Crawford**  
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November 23, 2021

Bonnie Bergsma  
Sahtu Land and Water Board  
P.O. Box 1  
Fort Good Hope, NT  
X0E 0H0

**Re: Monthly Water Use Report for October 2021  
Water Licence S13L1-007, Annex A, Part D, Condition 1  
Imperial Oil Resources N.W.T. Limited (Imperial)**

Dear Ms. Bergsma,

Imperial is submitting this report as per Water Licence S13L1-007, Annex A, Part D, Condition 1. Water licence requirements were met for the month of October.

If you require further information please contact Benjamin Fraser at 587-476-2878 or [benjamin.fraser@esso.ca](mailto:benjamin.fraser@esso.ca).

Sincerely,

A handwritten signature in black ink, appearing to read "Benjamin Fraser".

Benjamin Fraser  
Environment and Regulatory Advisor  
Imperial

cc: D.Penney, CIRNAC, Yellowknife  
T.Morton CIRNAC, Yellowknife

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007**  
**CPF DAILY VOLUMES**  
**October 2021**

Date	VOLUMES (m <sup>3</sup> )					TEMP (C)		CHLORINE (mg/L)
	S13L1-007-1 CPF Intake Water	S13L1-007-2 CPF Effluent Water	Fresh Water Injection	Produced Water Injection	Total Water Injection	S13L1-007-1 CPF Intake Water	S13L1-007-2 CPF Effluent Water	S13L1-007-2 CPF Effluent Water
1	5,393	3,791	1,602	5,357	6,958	9.6	15.9	0.01
2	5,500	3,807	1,693	5,508	7,201	9.1	15.1	0.00
3	5,501	3,615	1,886	5,389	7,275	8.0	12.5	0.00
4	5,601	3,564	2,036	5,164	7,200	7.4	12.8	0.00
5	6,601	4,805	1,795	5,377	7,173	7.5	13.8	0.01
6	6,653	4,844	1,809	5,348	7,157	7.5	14.7	0.00
7	5,500	3,728	1,773	5,072	6,845	7.4	15.9	0.00
8	5,500	3,824	1,676	5,398	7,075	7.2	16.3	0.01
9	5,500	3,748	1,752	5,406	7,159	6.9	15.3	0.01
10	5,500	3,673	1,827	5,288	7,115	6.6	14.9	0.01
11	5,500	3,659	1,842	5,247	7,088	6.5	15.0	0.00
12	5,500	3,695	1,806	5,292	7,098	6.6	13.1	0.00
13	5,500	3,822	1,678	5,419	7,097	6.3	12.7	0.00
14	5,454	3,652	1,802	5,296	7,098	5.8	12.3	0.00
15	5,101	3,379	1,722	5,470	7,192	5.7	11.3	0.00
16	5,142	3,257	1,885	5,282	7,168	5.1	10.9	0.00
17	5,289	3,454	1,835	5,358	7,193	5.3	12.0	0.00
18	5,557	3,826	1,731	5,400	7,131	5.0	12.6	0.02
19	5,800	4,116	1,683	5,496	7,179	4.8	12.6	0.02
20	5,800	4,054	1,747	5,450	7,197	4.6	12.9	0.02
21	5,800	4,283	1,517	5,458	6,975	4.9	13.6	0.01
22	5,801	4,258	1,543	5,260	6,802	5.2	13.6	0.02
23	5,800	4,369	1,432	5,620	7,052	5.0	12.6	0.03
24	5,800	4,035	1,765	5,559	7,324	4.3	10.7	0.01
25	5,800	4,100	1,700	5,433	7,133	4.2	10.5	0.02
26	5,800	4,501	1,300	5,549	6,848	4.2	10.1	0.01
27	5,800	4,594	1,206	5,763	6,969	4.1	10.2	0.01
28	6,008	4,532	1,476	5,700	7,176	3.7	10.4	0.01
29	6,504	4,961	1,543	5,557	7,100	3.7	10.8	0.01
30	6,276	4,732	1,543	5,557	7,100	3.6	11.5	0.01
31	6,460	5,049	1,411	5,646	7,057	3.3	10.5	0.02
<b>TOTAL</b>	177,745	125,727	52,017	168,119	220,137			
<b>AVG</b>	5,734	4,056	1,678	5,423	7,101	5.8	12.8	0.01
<b>HIGH</b>	6,653	5,049	2,036	5,763	7,324	9.6	16.3	0.03

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007**  
**CPF MONTHLY VOLUMES SUMMARY**  
**October 2021**

**Water Injection Volumes (m<sup>3</sup>)**

Total fresh water injected	52,017	
Total produced water injected	168,119	
<b>Total Monthly</b>	<b>220,137</b>	Total Injected

**CPF Water Volumes (m<sup>3</sup>)**

Total CPF intake water S13L1-007-01	177,745	
Total CPF effluent water S13L1-007-02	125,727	
Highest daily water intake S13L1-007-01	6,653	Max. Allow. 16,000 m3/day.
<b>YTD water intake S13L1-007</b>	<b>1,470,934</b>	Max. Allow. 3,500,000 m3/yr.

**Alternate Water Usage Volumes (m<sup>3</sup>)**

Alternate surface water usage	0
<b>YTD Alternate surface water usage</b>	<b>0</b>

**YTD Surface Runoff Water Release Volumes (m<sup>3</sup>)**

Refinery Impound Basin	25,271
LT 11 Impound Basin	812
Refinery Water flood Basin	0
CPF Impound Basin	10,078
Misc. Mainland Impound Areas	2,182
Misc. Bear Island Impound Areas	27
Misc. Goose Island Impound Areas	99
<b>Total - YTD Surface Runoff</b>	<b>38,469</b>



**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007-1**  
**QUARTERLY CPF WATER INLET DATA**  
**October 2021**

<b>SNP S13L1-007-1 (Intake Water)</b>					
<b>Parameter</b>	<b>Q1 2021 (mg/L)</b>	<b>Q2 2021 (mg/L)</b>	<b>Q3 2021 (mg/L)</b>	<b>Q4 2021 (mg/L)</b>	<b>YTD Avg. (mg/L)</b>
pH	7.65	8.13	8.14		7.97
Phenols	<0.0015	<0.0015	<0.0015		<0.0015
Dissolved Sodium	7.0	5.8	7.5		6.8
Total Sodium	7.5	5.7	7.6		6.9
Dissolved Potassium	0.78	0.86	0.88		0.8
Total Potassium	0.95	1.4	1.7		1.4
Dissolved Sulphate	29	34	36		33.0
Dissolved Chloride	10	5.6	7.8		7.8
Dissolved Calcium	23	30	32		28.3
Total Calcium	26	32	53		37.0
Dissolved Magnesium	7.6	8.2	8.9		8.2
Total Magnesium	9.1	9.1	16		11.4
Total Alkalinity	75	76	92		81.0
Specific Conductivity	240	250	280		256.7
Total Suspended Solids	3.3	33	7.5		14.6
Total Dissolved Solids	150	120	160		143.3
Total Petroleum	<2.0	<2.0	<2.0		<2.0
Total Phosphorus	<0.1	<0.1	0.17		0.2
Total Hardness	88	110	120		106.0

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007-2**  
**QUARTERLY CPF WATER EFFLUENT DATA**  
**October 2021**

<b>SNP S13L1-007-2 (Effluent Water)</b>					
<b>Parameter</b>	<b>Q1 2021 (mg/L)</b>	<b>Q2 2021 (mg/L)</b>	<b>Q3 2021 (mg/L)</b>	<b>Q4 2021 (mg/L)</b>	<b>YTD Avg. (mg/L)</b>
pH	7.39	7.93	8.07		7.80
Phenols	<0.0015	<0.0015	<0.0015		<0.0015
Dissolved Sodium	6.7	5.8	7.2		6.6
Total Sodium	7.6	6.1	7.6		7.1
Dissolved Potassium	0.78	0.86	0.75		0.8
Total Potassium	1.0	1.0	1.2		1.1
Dissolved Sulphate	29	34	35		32.7
Dissolved Chloride	10	6.9	8.4		8.4
Dissolved Calcium	22	30	27		26.3
Total Calcium	27	31	32		30.0
Dissolved Magnesium	7.3	7.8	7.9		7.7
Total Magnesium	9.6	8.7	9.9		9.4
Total Alkalinity	76	83	83		80.7
Specific Conductivity	240	250	260		250.0
Total Suspended Solids	9.1	11	5.8		8.6
Total Dissolved Solids	130	88	140		119.3
Total Petroleum	<2.0	<2.0	<2.0		<2.0
Total Phosphorus	<0.10	<0.10	<0.10		<0.10
Total Hardness	84	110	99		97.7

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007-2**  
**QUARTERLY ACUTE LETHALITY**  
**October 2021**

<b>SNP S13L1-007-2 (Effluent Water)</b>		
<b>Date</b>	<b>Rainbow Trout (% Survival)</b>	<b>Daphnia Magna (% Survival)</b>
<b>Licence Criteria</b>	<b>&gt; 50% Survival</b>	<b>&gt; 50% Survival</b>
Q1	100%	100%
Q2	100%	100%
Q3	100%	100%
Q4		

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007**  
**SURFACE WATER RUNOFF RELEASE REPORT**  
**October 2021**

Discharge Where Contamination Suspected										
	Date	Start/ Middle/ End	Total Discharge Volume (m <sup>3</sup> )	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)	Chlorides (mg/L)	pH	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Specific Conductivity (uS/cm)
Max Grab Sample Limit				5	0.14	<500	6.0-9.0			
Mainland Areas										
Misc. Mainland Impound Areas										

**IMPERIAL - NORMAN WELLS OPERATIONS**  
**WATER LICENCE S13L1-007**  
**SURFACE WATER RUNOFF RELEASE REPORT**  
**October 2021**

Discharge Where No Contamination Suspected					
	Date	Total Discharge Volume (m <sup>3</sup> )	Chlorides (mg/L)	pH	Sheen Y/N
Sample Limits			< 500	6.0-9.0	N
Mainland					
Bear Island					
Goose Island					