



Jody Crawford
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March 21, 2019

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

**Re: Monthly Water Use Report for February 2019
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 February.

If you require further information please contact Christine Wickens at 587-476-5007 or christine.a.wickens@exxonmobil.com.

Sincerely,

A handwritten signature in blue ink that reads "C Wickens".

Christine Wickens
Environment and Regulatory Advisor
Imperial

cc: T. Morton, INAC, Yellowknife

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF DAILY VOLUMES
February 2019

Date	VOLUMES (m ³)					TEMP (C)		CHLORINE (mg/L)
	S13L1-007-1 CPF Intake Water	S13L1-007-2 CPF Effluent	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	5,001	5,001	0	4,365	4,365	2.4	6.7	*
2	5,001	5,001	0	4,820	4,820	2.3	7.5	*
3	5,001	5,001	0	4,871	4,871	2.4	7.9	*
4	5,001	5,001	0	4,870	4,870	2.6	7.4	*
5	5,001	5,001	0	5,087	5,087	2.7	7.4	*
6	5,001	5,001	0	4,801	4,801	2.7	7.4	*
7	4,686	4,686	0	4,724	4,724	2.7	8.0	*
8	4,501	4,501	0	4,920	4,920	2.7	9.7	*
9	4,758	4,758	0	4,868	4,868	2.7	10.6	*
10	5,001	5,001	0	4,669	4,669	2.3	10.5	*
11	5,001	5,001	0	4,488	4,488	2.6	10.8	*
12	5,001	4,017	983	5,049	6,032	2.2	10.8	*
13	5,001	3,701	1,299	5,154	6,454	2.3	10.3	*
14	5,001	3,666	1,335	5,236	6,570	2.5	9.4	*
15	5,001	3,706	1,295	5,056	6,351	2.7	9.9	*
16	5,001	3,704	1,297	5,217	6,514	2.2	8.6	*
17	5,001	3,688	1,312	5,087	6,400	2.6	8.8	*
18	5,001	3,706	1,295	5,267	6,561	2.3	8.5	*
19	5,001	3,717	1,284	5,403	6,687	2.7	10.9	*
20	5,001	3,744	1,257	5,448	6,705	2.5	10.4	*
21	4,888	3,663	1,224	5,601	6,826	2.7	10.2	*
22	4,740	3,491	1,249	5,575	6,824	2.7	9.3	*
23	4,558	3,312	1,247	5,548	6,795	2.6	10.1	*
24	4,560	3,320	1,240	5,519	6,759	2.1	10.5	*
25	4,601	3,376	1,224	5,480	6,704	2.0	10.7	*
26	4,601	3,398	1,203	5,462	6,665	2.5	11.2	*
27	4,679	3,467	1,212	5,462	6,674	2.8	11.6	*
28	4,801	3,546	1,254	5,706	6,961	2.4	8.9	*
TOTAL	136,380	115,170	21,210	143,754	164,965			
AVG	4,871	4,113	758	5,134	5,892	2	9	-
HIGH	5,001	5,001	1,335	5,706	6,961			

* Chlorine injection offline

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY VOLUMES SUMMARY
February 2019

Water Injection Volumes (m³)

Total fresh water injected	21,210	
Total produced water injected	143,754	
Total Monthly	164,965	Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	136,380	
Total CPF effluent water S13L1-007-02	115,170	
Highest daily water intake S13L1-007-01	5,001	Max. Allow. 16,000 m3/day.
YTD water intake S13L1-007	292,153	Max. Allow. 3,500,000 m3/yr.

Alternate Water Usage Volumes (m³)

Alternate surface water usage	0
YTD Alternate surface water usage	0

Surface Runoff Water Release Volumes (m³)

Refinery Impound Basin	0
LT 11 Impound Basin	0
Refinery Water flood Basin	0
CPF Impound Basin	0
Misc. Mainland Impound Areas	0
Misc. Bear Island Impound Areas	0
Misc. Goose Island Impound Areas	0
Total - YTD Surface Runoff	0

IMPERIAL - NORMAN WELLS OPERATIONS
 WATER LICENCE S13L1-007
 CPF MONTHLY WATER DATA
 February 2019

SNP S13L1-007-1 (Intake Water)			
Dates	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)
Max. Grab Limit			
4-Feb	<1.0	8.1	250
7-Feb	<1.0	8.07	250
11-Feb	<1.0	8.16	250
14-Feb	<1.0	8.18	250
18-Feb	<1.0	8.07	250
22-Feb	<1.0	8.12	260
28-Feb	<1.0	8.11	260

SNP S13L1-007-2 (Effluent Water)			
Dates	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)
Max. Grab Limit		6.0 - 9.0	
4-Feb	1.0	8.07	250
7-Feb	1	8.01	250
11-Feb	1.3	8.07	250
14-Feb	<1.0	8.11	250
18-Feb	<1.0	8.1	250
22-Feb	1	8.06	260
28-Feb	<1.0	8.01	260

SNP S13L1-007-1 (Intake Water)		
Dates	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)
Max. Grab Limit		
4-Feb	<2.0	0.0023
11-Feb	2	<0.0020
18-Feb	<2.0	<0.0020

SNP S13L1-007-2 (Effluent Water)				
Dates	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)	Daily Chlorine (mg/L)	Temp (C)
Max. Grab Limit	5	0.14		
4-Feb	<2.0	<0.0020	*	7.4
11-Feb	<2.0	0.0021	*	10.8
18-Feb	<2.0	0.0020	*	8.5

**chlorine injection offline*

IMPERIAL - NORMAN WELLS OPERATIONS
 WATER LICENCE S13L1-007
 CPF MONTHLY WATER DATA
 February 2019

SNP S13L1-007-2 (Effluent Water) - FOUR WEEK AVERAGE CONCENTRATION							
Parameter	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)	Daily Chlorine (mg/L)	Temp (C)
Max. Average Limit	5.00	0.14		6.0 - 9.0			
Feb 1 - 28	2.0	0.0020	1.0	8.06	253*		9.4

**chlorine injection offline*

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-1
QUARTERLY CPF WATER INLET DATA
February 2019

SNP S13L1-007-1 (Intake Water)					
Parameter	Q1 2019 (mg/L)	Q2 2019 (mg/L)	Q3 2019 (mg/L)	Q4 2019 (mg/L)	YTD Avg. (mg/L)
pH					
Phenols					
Dissolved Sodium					
Total Sodium					
Dissolved Potassium					
Total Potassium					
Dissolved Sulphate					
Dissolved Chloride					
Dissolved Calcium					
Total Calcium					
Dissolved Magnesium					
Total Magnesium					
Total Alkalinity					
Specific Conductivity					
Total Suspended Solids					
Total Dissolved Solids					
Total Petroleum Hydrocarbons					
Total Phosphorus					
Total Hardness					

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY CPF WATER EFFLUENT DATA
February 2019

SNP S13L1-007-2 (Effluent Water)					
Parameter	Q1 2019 (mg/L)	Q2 2019 (mg/L)	Q3 2019 (mg/L)	Q4 2019 (mg/L)	YTD Avg. (mg/L)
pH					
Phenols					
Dissolved Sodium					
Total Sodium					
Dissolved Potassium					
Total Potassium					
Dissolved Sulphate					
Dissolved Chloride					
Dissolved Calcium					
Total Calcium					
Dissolved Magnesium					
Total Magnesium					
Total Alkalinity					
Specific Conductivity					
Total Suspended Solids					
Total Dissolved Solids					
Total Petroleum Hydrocarbons					
Total Phosphorus					
Total Hardness					

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY ACUTE LETHALITY
February 2019

SNP S13L1-007-2 (Effluent Water)		
Date	Rainbow Trout (% Survival)	Daphnia Magna (% Survival)
Licence Criteria	> 50% Survival	> 50% Survival
Q1 - January	100%	100%
Q2		
Q3		
Q4		

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
February 2019

Discharge Where Contamination Suspected										
	Date	Start/ Middle/ End	Total Discharge Volume (m ³)	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										
			0							
Misc. Mainland Impound Areas										
			0							

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
February 2019

Discharge Where No Contamination Suspected					
	Date	Total Discharge Volume (m ³)	Chlorides (mg/L)	pH	Sheen Y/N
Sample Limits			< 500	6.0-9.0	N
Mainland					
		0			
Bear Island					
		0			
Goose Island					
		0			