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August 30, 2021

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

**Re: Monthly Water Use Report for July 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 July.

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: D.Penney, CIRNAC, Yellowknife

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

Date	VOLUMES (m ³)					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	7200	5494	1706	6006	7712	15.1	24.7	0
2	7249	5542	1707	6170	7876	15.6	25.2	0
3	7500	5699	1801	6119	7921	15.5	24.5	0
4	7384	5712	1672	5670	7342	15.5	24.1	0
5	7249	5731	1519	5221	6740	15.9	24.3	0
6	7362	5973	1389	4902	6291	16.5	24.6	0
7	7324	5979	1345	5019	6364	16.3	23.5	0
8	6401	4962	1439	4542	5981	16.8	24.6	0
9	5858	4324	1534	3697	5231	16.7	24.7	0
10	5668	4245	1423	2842	4265	16.7	24.7	0
11	3489	2948	541	1125	1666	27.6	22.6	0
12*	0	0	0	0	0	0	0	0
13*	0	0	0	0	0	0	0	0
14*	0	0	0	0	0	0	0	0
15*	0	0	0	0	0	0	0	0
16*	0	0	0	0	0	0	0	0
17*	0	0	0	0	0	0	0	0
18*	0	0	0	0	0	0	0	0
19*	0	0	0	0	0	0	0	0
20*	0	0	0	0	0	0	0	0
21*	0	0	0	0	0	0	0	0
22*	0	0	0	0	0	0	0	0
23*	0	0	0	0	0	0	0	0
24*	0	0	0	0	0	0	0	0
25*	0	0	0	0	0	0	0	0
26*	0	0	0	0	0	0	0	0
27*	0	0	0	0	0	0	0	0
28*	0	0	0	0	0	0	0	0
29*	0	0	0	0	0	0	0	0
30*	0	0	0	0	0	0	0	0
31*	0	0	0	0	0	0	0	0
TOTAL	72,685	56,610	16,076	51,313	67,389			
AVG	2,345	1,826	519	1,655	2,174	6	9	0
HIGH	7,500	5,979	1,801	6,170	7,921			

*Norman Wells facility non-operational for planned maintenance shutdown

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

Water Injection Volumes (m³)

Total fresh water injected	16,076	
Total produced water injected	51,313	
Total Monthly	67,389	Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	72,685	
Total CPF effluent water S13L1-007-02	56,610	
Highest daily water intake S13L1-007-01	7,500	Max. Allow. 16,000 m3/day.
YTD water intake S13L1-007	1,030,787	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	23,200
LT 11 Impound Basin	812
Refinery Water flood Basin	0
CPF Impound Basin	3,500
Misc. Mainland Impound Areas	2182
Misc. Bear Island Impound Areas	27
Misc. Goose Island Impound Areas	99
Total - YTD Surface Runoff	29820

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
July 2021

SNP S13L1-007-1 (Intake Water)			
Dates	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)
Max. Grab Limit			
1-Jul	31	8.06	240
5-Jul	47	8.10	240
8-Jul	140	8.07	240
12-Jul	36	8.18	260
15-Jul	*	*	*
19-Jul	*	*	*
22-Jul	*	*	*
26-Jul	*	*	*
29-Jul	*	*	*

**Norman Wells facility non-operational for planned maintenance shutdown*

SNP S13L1-007-2 (Effluent Water)			
Dates	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)
Max. Grab Limit		6.0 - 9.0	
1-Jul	15	7.91	240
5-Jul	11	8.02	250
8-Jul	17	8.13	240
12-Jul	91	8.25	250
15-Jul	*	*	*
19-Jul	*	*	*
22-Jul	*	*	*
26-Jul	*	*	*
29-Jul	*	*	*

**Norman Wells facility non-operational for planned maintenance shutdown*

SNP S13L1-007-1 (Intake Water)		
Dates	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)
Max. Grab Limit		
1-Jul	-	-
5-Jul	<2.0	<0.0015
8-Jul	-	-
12-Jul	<2.0	<0.0015
15-Jul	-	-
19-Jul	*	*
22-Jul	-	-
26-Jul	*	*
29-Jul	-	-

**Norman Wells facility non-operational for planned maintenance shutdown*

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		
1-Jul	-	-	-	-
5-Jul	<2.0	<0.0015	0	24.3
8-Jul	-	-	-	-
12-Jul	<2.0	<0.0015	0	0.0
15-Jul	-	-	-	-
19-Jul	*	*	*	*
22-Jul	-	-	-	-
26-Jul	*	*	*	*
29-Jul	-	-	-	-

**Norman Wells facility non-operational for planned maintenance shutdown*

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
July 2021

SNP S13L1-007-2 (Effluent Water) - FOUR WEEK AVERAGE CONCENTRATION							
Parameter	Total Petroleum Hydrocarbons (mg/L)	Phenol (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			
July 1 - July 11*	<2.0	<0.0015	34	8.08	245	0	24.3

**Norman Wells facility non-operational for planned maintenance shutdown (July 12-31)*

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

SNP S13L1-007-1 (Intake Water)					
Parameter	Q1 2021 (mg/L)	Q2 2021 (mg/L)	Q3 2021 (mg/L)	Q4 2021 (mg/L)	YTD Avg. (mg/L)
pH	7.65	8.13			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	7.0	5.8			
Total Sodium	7.5	5.7			
Dissolved Potassium	0.78	0.86			
Total Potassium	0.95	1.4			
Dissolved Sulphate	29	34			
Dissolved Chloride	10	5.6			
Dissolved Calcium	23	30			
Total Calcium	26	32			
Dissolved Magnesium	7.6	8.2			
Total Magnesium	9.1	9.1			
Total Alkalinity	75	76			
Specific Conductivity	240	250			
Total Suspended Solids	3.3	33			
Total Dissolved Solids	150	120			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.1	<0.1			
Total Hardness	88	110			

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

SNP S13L1-007-2 (Effluent Water)					
Parameter	Q1 2021 (mg/L)	Q2 2021 (mg/L)	Q3 2021 (mg/L)	Q4 2021 (mg/L)	YTD Avg. (mg/L)
pH	7.39	7.93			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	6.7	5.8			
Total Sodium	7.6	6.1			
Dissolved Potassium	0.78	0.86			
Total Potassium	1.0	1.0			
Dissolved Sulphate	29	34			
Dissolved Chloride	10	6.9			
Dissolved Calcium	22	30			
Total Calcium	27	31			
Dissolved Magnesium	7.3	7.8			
Total Magnesium	9.6	8.7			
Total Alkalinity	76	83			
Specific Conductivity	240	250			
Total Suspended Solids	9.1	11			
Total Dissolved Solids	130	88			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.10	<0.10			
Total Hardness	84	110			

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

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

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

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 Conduct. (uS/cm)
Max Grab Sample Limit				5	0.14	<500	6.0-9.0			
Mainland Areas										
CPF Impound Basin	6-Jul	Mid 8	0	<2.0	0.0029	8.6	7.92	3.7	1000	1500
	13-Jul	Mid 9		<2.0	<0.0015	9.6	7.88	8.7	1100	1600
	20-Jul	Mid 10		<2.0	<0.0015	5.8	8.06	3.1	420	1600
	27-Jul	Mid 11		<2.0	<0.0015	9.0	7.32	3.7	1300	1500
Refinery Impound Basin	6-Jul	Mid 3	0	<2.0	0.0039	31	8.49	1.6	420	800
	20-Jul	Start		<2.0	0.0021	28	8.83	12	1200	750
	27-Jul	Mid 1		<2.0	0.0036	33	8.99	<1.0	500	730
Refinery Waterflood Basin	6-Jul	Mid 8	0	<2.0	0.0034	30	8.52	<1.0	410	900
	13-Jul	Mid 9		<2.0	0.0040	31	8.42	2.1	400	920
	20-Jul	Mid 10		<2.0	<0.0015	26	8.65	3.9	500	930
	27-Jul	Mid 11		<2.0	<0.0015	31	8.45	<1.0	550	940
Misc. Mainland Impound Areas										

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

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					
Bear Island					
Goose Island					