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July 17, 2022

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

**Re: Monthly Water Use Report for June 2022
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 June.

If you require further information please contact myself at 587-476-2878 or benjamin.fraser@esso.ca.

Sincerely,

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

Benjamin Fraser
Environment and Regulatory Advisor
Imperial

cc: T.Morton CIRNAC, Yellowknife

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF DAILY VOLUMES
June 2022

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	5974	5064	910	5137	6046	9.7	19.5	0.00
2	6077	5181	895	5144	6039	10.2	20.7	0.00
3	6211	5286	924	5251	6176	9.8	19.3	0.00
4	6100	5216	883	5319	6203	10.0	19.3	0.00
5	5787	4866	920	5359	6279	9.2	19.4	0.00
6	6164	5122	1042	5194	6236	9.5	19.7	0.01
7	6606	5719	887	5382	6269	9.9	20.0	0.00
8	6800	5911	889	5280	6169	9.9	19.3	0.02
9	6801	5941	859	5264	6124	9.5	19.4	0.02
10	6851	6083	768	5367	6134	9.9	20.0	0.01
11	7000	6231	769	5358	6127	10.0	19.1	0.01
12	7000	6203	798	5183	5981	9.7	17.4	0.01
13	7000	6309	691	5319	6010	10.7	18.8	0.00
14	7000	6172	829	5348	6177	11.2	19.3	0.01
15	7024	6233	791	5414	6205	11.9	20.6	0.00
16	7035	6123	911	5237	6148	12.4	21.3	0.00
17	6821	5855	966	5166	6132	12.8	21.7	0.00
18	6800	6010	790	5238	6028	13.8	22.6	0.00
19	6801	6069	732	5223	5955	13.8	23.7	0.00
20	6800	5872	929	5086	6015	13.7	22.2	0.00
21	6801	5995	806	5225	6031	14.0	22.1	0.00
22	6800	5812	988	5086	6074	14.2	23.4	0.00
23	6801	5720	1080	4988	6068	14.2	23.8	0.00
24	6800	5920	880	5030	5910	14.2	23.0	0.00
25	6801	5,951	849	4,988	5,837	14.3	23.0	0.00
26	6800	6076	724	5253	5978	14.6	23.6	0.00
27	6862	5987	875	5247	6123	15.4	24.9	0.00
28	7246	6286	959	5160	6119	15.1	24.1	0.00
29	7401	6604	796	5408	6204	15.3	23.9	0.00
30	7400	6378	1022	5276	6298	15.6	24.4	0.00
TOTAL	202,364	176,200	26,164	156,931	183,095	-	-	-
AVG	6,745	5,873	872	5,231	6,103	12.1	21.3	0.00
HIGH	7,401	6,604	1,080	5,414	6,298	15.6	24.9	0.02

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY VOLUMES SUMMARY
June 2022

Water Injection Volumes (m³)

Total fresh water injected	26,164
Total produced water injected	156,931
Total Monthly	183,095

Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	202,364
Total CPF effluent water S13L1-007-02	176,200
Highest daily water intake S13L1-007-01	7,401
YTD water intake S13L1-007	996,164

Max. Allow. 16,000 m³/day.

Max. Allow. 3,500,000 m³/yr.

Alternate Water Usage Volumes (m³)

Alternate surface water usage	0
YTD Alternate surface water usage	0

YTD Surface Runoff Water Release Volumes (m³)

Refinery Impound Basin	17,682
LT 11 Impound Basin	1,307
Refinery Water flood Basin	0
CPF Impound Basin	15,693
Misc. Mainland Impound Areas	1,733
Misc. Bear Island Impound Areas	0
Misc. Goose Island Impound Areas	0
Total - YTD Surface Runoff	36415

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-1
QUARTERLY CPF WATER INLET DATA
 June 2022

SNP S13L1-007-1 (Intake Water)					
Parameter	Q1 2022 (mg/L)	Q2 2022 (mg/L)	Q3 2022 (mg/L)	Q4 2022 (mg/L)	YTD Avg. (mg/L)
pH	6.32	7.50			6.91
Phenols	<0.0015	<0.0015			<0.0015
Dissolved Sodium	8.6	6.2			7.4
Total Sodium	8.2	6.5			7.4
Dissolved Potassium	1.1	0.91			1.01
Total Potassium	0.85	1.2			1.03
Dissolved Sulphate	28	39			33.5
Dissolved Chloride	10	4.6			7.3
Dissolved Calcium	27	35			31
Total Calcium	24	39			31.5
Dissolved Magnesium	9.8	8.9			9.4
Total Magnesium	8.5	9.2			8.9
Total Alkalinity	44	93			69
Specific Conductivity	240	270			255
Total Suspended Solids	<1.0	14			14
Total Dissolved Solids	160	160			160
Total Petroleum	<2.0	<2.0			<2.0
Total Phosphorus	<0.1	<0.1			<0.1
Total Hardness	110	120			115

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY CPF WATER EFFLUENT DATA
 June 2022

SNP S13L1-007-2 (Effluent Water)					
Parameter	Q1 2022 (mg/L)	Q2 2022 (mg/L)	Q3 2022 (mg/L)	Q4 2022 (mg/L)	YTD Avg. (mg/L)
pH	7.61	7.53			7.57
Phenols	<0.0015	<0.0015			<0.0015
Dissolved Sodium	8.6	6.8			7.7
Total Sodium	8.5	6.6			7.6
Dissolved Potassium	0.95	0.93			0.94
Total Potassium	0.90	1.1			1.00
Dissolved Sulphate	28	36			32
Dissolved Chloride	9.9	7.2			8.6
Dissolved Calcium	27	33			30
Total Calcium	25	33			29
Dissolved Magnesium	10	8.9			9.5
Total Magnesium	8.8	9.0			8.9
Total Alkalinity	75	86			80.5
Specific Conductivity	240	260			250
Total Suspended Solids	<1.0	8			4.5
Total Dissolved Solids	140	160			150
Total Petroleum	<2.0	<2.0			<2.0
Total Phosphorus	<0.1	<0.1			<0.1
Total Hardness	110	120			115

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY ACUTE LETHALITY
 June 2022

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		
Q4		

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
June 2022

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-Jun	Mid 5	3981	<2.0	<0.0015	9.5	7.81	1.5	860	1200
	14-Jun	Mid 7		<2.0	0.0018	7.6	7.87	<1.0	830	1100
	20-Jun	Mid 8		<2.0	0.0016	9.3	7.61	11	*	630
	27-Jun	Mid 9		<2.0	<0.0015	13	7.59	1.5	1000	1300
LT-11 Impound Basin	6-Jun	Start	852	<2.0	<0.0015	3.9	7.91	1.0	390	550
	14-Jun	Mid 1		<2.0	<0.0015	2.8	7.90	<1.0	360	510
	20-Jun	Mid 2		<2.0	0.0022	4.2	8.10	3.9	*	600
Refinery Impound Basin	6-Jun	Mid 5	3423	<2.0	<0.0015	16	8.22	1.8	470	720
	14-Jun	Mid 6		<2.0	0.0033	21	8.21	3.7	550	810
	20-Jun	Mid 7		<2.0	<0.0015	19	8.18	<1.0	*	760
	27-Jun	Mid 8		<2.0	<0.0015	19	8.21	1.6	530	770

* Lab unable to complete dissolved solids analysis on June 20th

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
June 2022

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