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July 28, 2020

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

**Re: Monthly Water Use Report for June 2020
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 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
June 2020

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	4,437	3,251	1,186	4,995	6,181	8.4	20.3	0.01
2	4,950	4,213	737	5,860	6,597	9.3	21.1	0.02
3	5,371	4,628	743	6,080	6,823	8.9	20.4	0.02
4	5,363	4,452	911	5,852	6,762	9.6	20.4	0.01
5	4,630	3,834	796	5,919	6,715	9.8	20.8	0.01
6	5,316	4,448	868	5,777	6,645	9.9	21.3	0.01
7	5,256	4,944	313	5,831	6,143	10.6	22.2	0*
8	5,288	5,288	0	5,833	5,833	10.7	21.7	0*
9	5,199	5,198	0	5,756	5,756	10.1	22.0	0*
10	5,601	5,600	0	5,727	5,728	10.5	23.0	0*
11	5,601	5,600	0	5,778	5,779	10.8	24.7	0*
12	5,657	5,656	1	5,776	5,776	10.8	25.3	0*
13	5,798	5,797	0	5,759	5,760	10.3	23.6	0*
14	5,839	5,838	0	5,716	5,716	10.5	23.7	0*
15	5,816	5,815	0	5,718	5,718	10.4	24.5	0*
16	5,801	5,800	0	5,718	5,719	10.9	24.3	0*
17	5,701	4,090	1,611	5,826	7,436	7.9	17.0	0*
18	6,626	6,626	1	5,787	5,787	11.7	24.7	0*
19	6,701	6,700	0	5,429	5,430	11.5	24.4	0*
20	6,701	6,700	0	5,349	5,349	11.6	23.1	0*
21	6,701	6,700	0	5,432	5,432	11.7	22.0	0*
22	6,701	6,700	0	5,480	5,480	11.8	22.4	0*
23	6,163	6,163	0	5,469	5,469	11.9	20.9	0*
24	5,369	5,369	0	5,423	5,423	12.2	23.1	0*
25	5,757	5,757	0	5,321	5,322	12.4	24.7	0*
26	6,219	6,219	0	5,163	5,163	12.9	24.8	0*
27	6,083	6,083	0	5,256	5,256	12.7	23.8	0*
28	6,396	6,395	0	5,575	5,576	13.6	25.6	0*
29	7,229	7,229	0	5,600	5,601	13.3	25.0	0*
30	7,163	7,162	0	5,363	5,364	14.1	24.9	0*
TOTAL	175,429	168,256	7,174	168,567	175,741			
AVG	5,848	5,609	239	5,619	5,858	11	23	0
HIGH	7,229	7,229	1,611	6,080	7,436			

*Chlorine System Temporarily Offline

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY VOLUMES SUMMARY
June 2020

Water Injection Volumes (m³)

Total fresh water injected	7,174
Total produced water injected	168,567
Total Monthly	175,741

Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	175,429
Total CPF effluent water S13L1-007-02	168,256
Highest daily water intake S13L1-007-01	7,229
YTD water intake S13L1-007	939,361

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

Surface Runoff Water Release Volumes (m³)

Refinery Impound Basin	24,329
LT 11 Impound Basin	2,542
D-42 Impound Basin	792
Refinery Water flood Basin	0
CPF Impound Basin	16,353
Misc. Mainland Impound Areas	1,630
Misc. Bear Island Impound Areas	25
Misc. Goose Island Impound Areas	67
Total - YTD Surface Runoff	45,738

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
June 2020

SNP S13L1-007-1 (Intake Water)			
Dates	Total Suspended Solids (mg/L)	pH	Specific Conductivity (uS/cm)
Max. Grab Limit			
1-Jun	29	7.5	230
4-Jun	89	8.1	240
8-Jun	11	7.9	250
11-Jun	24	7.5	250
15-Jun	17	7.9	260
18-Jun	36	8.2	280
23-Jun	160	7.8	250
25-Jun	41	8.1	300
29-Jun	110	7.8	250

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-Jun	5.8	6.8	260
4-Jun	14	8.0	250
8-Jun	12	7.6	260
11-Jun	14	8.0	250
15-Jun	21	8.0	250
18-Jun	27	8.0	250
23-Jun	42	7.3	260
25-Jun	85	8.1	260
29-Jun	100	7.8	260

SNP S13L1-007-1 (Intake Water)		
Dates	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)
Max. Grab Limit		
1-Jun	<2.0	<0.0015
4-Jun	-	-
8-Jun	<2.0	<0.0015
11-Jun	-	-
15-Jun	<2.0	0.0017
18-Jun	-	-
23-Jun	<2.0	<0.0015
25-Jun	-	-
29-Jun	<2.0	<0.0015

SNP S13L1-007-2 (Effluent Water)				
Dates	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)	Daily Chlorine (mg/L)	Temp (C)
Max. Grab Limit	3	0.07		
1-Jun	<2.0	<0.0015	0.01	20.3
4-Jun	-	-	-	-
8-Jun	<2.0	<0.0015	0*	21.7
11-Jun	-	-	-	-
15-Jun	<2.0	0.0064	0*	24.5
18-Jun	-	-	-	-
23-Jun	<2.0	0.0086	0*	20.9
25-Jun	-	-	-	-
29-Jun	<2.0	<0.0015	0*	25.0

*Chlorine System Temporarily Offline

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
June 2020

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	3.00	0.07		6.0 - 9.0			
June 1-30	<2.0	0.0039	35.6	7.7	256	0.01*	22.9

*Average when chlorine system is online (June 1-7)

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-1
QUARTERLY CPF WATER INLET DATA
June 2020

SNP S13L1-007-1 (Intake Water)					
Parameter	Q1 2020 (mg/L)	Q2 2020 (mg/L)	Q3 2020 (mg/L)	Q4 2020 (mg/L)	YTD Avg. (mg/L)
pH	6.86	6.90			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	8.8	6			
Total Sodium	8.4	6.4			
Dissolved Potassium	0.88	0.8			
Total Potassium	0.89	1.9			
Dissolved Sulphate	31	31			
Dissolved Chloride	10	6.8			
Dissolved Calcium	26	30			
Total Calcium	26	32			
Dissolved Magnesium	9	8			
Total Magnesium	9	8.4			
Total Alkalinity	100	96			
Specific Conductivity	250	230			
Total Suspended Solids	15.0	6.7			
Total Dissolved Solids	140	140			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.10	<0.10			
Total Hardness	100	110			

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY CPF WATER EFFLUENT DATA
June 2020

SNP S13L1-007-2 (Effluent Water)					
Parameter	Q1 2020 (mg/L)	Q2 2020 (mg/L)	Q3 2020 (mg/L)	Q4 2020 (mg/L)	YTD Avg. (mg/L)
pH	6.87	6.89			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	8.3	6.5			
Total Sodium	8.4	7.2			
Dissolved Potassium	0.84	0.87			
Total Potassium	0.88	1.0			
Dissolved Sulphate	30	36			
Dissolved Chloride	10	11			
Dissolved Calcium	25	35			
Total Calcium	26	38			
Dissolved Magnesium	9	8.4			
Total Magnesium	9	8.9			
Total Alkalinity	85	95			
Specific Conductivity	250	260			
Total Suspended Solids	<1.0	7.0			
Total Dissolved Solids	140	180			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.10	<0.10			
Total Hardness	100	120			

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY ACUTE LETHALITY
June 2020

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 2020

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	1-Jun	Mid 7	4088	<2.0	0.0016	10	7.83	1.3	270	510
	8-Jun	Mid 8	1363	<2.0	0.0033	9.5	7.99	7.3	740	1000
	15-Jun	Mid 9	0	<2.0	<0.0015	11	7.54	7.9	1100	1500
	23-Jun	Mid 9		<2.0	<0.0015	9.9	7.70	5.1	1100	1300
LT-11	1-Jun	Mid 4	0	<2.0	0.0044	3.4	8.05	25	740	710
	8-Jun	Mid 5		<2.0	<0.0015	6.8	7.96	12	480	780
	15-Jun	Mid 6		<2.0	0.0074	7.1	7.31	2.3	510	650
	23-Jun	Mid 7		<2.0	<0.0015	7.6	7.98	2.9	330	580
Refinery Impound Basin	1-Jun	Mid 4	0	<2.0	<0.0015	7.6	7.98	2.9	330	580
	8-Jun	Mid 5	1312	<2.0	0.0066	10	8.27	2.2	420	630
	15-Jun	Mid 6	397	<2.0	0.0021	13	8.32	2.1	380	630
	23-Jun	Mid 7	0	<2.0	0.0041	17	8.02	3.7	480	680
Refinery Waterflood Basin	1-Jun	Mid 3	0	<2.0	<0.0015	23	8.24	2.3	370	750
	8-Jun	Mid 4		<2.0	<0.0015	28	8.46	1.8	460	860
	23-Jun	Mid 6		<2.0	0.0025	26	8.33	<1.0	440	850
	15-Jun	Mid 5		<2.0	0.0018	26	8.34	3.5	490	880
Misc. Mainland Impound Areas										
RTK 109	1-Jun	Start	0	<2.0	0.0058	2.6	7.98	<1.0	190	360
	8-Jun	Mid 1		<2.0	0.0054	3.3	8.15	3.7	260	390
	15-Jun	End		<2.0	0.0086	3.7	7.95	19	660	900
	23-Jun	Start		<2.0	0.0053	3.3	7.78	2.3	530	710
RTK 112	15-Jun	End	0	<2.0	0.0067	37	8.11	3.7	720	1100
RTK 116	15-Jun	End	0	<2.0	0.0084	7.2	7.73	36	470	790
	23-Jun	Start		<2.0	0.0081	20	7.73	3.5	460	680
RTK 119	15-Jun	End	0	<2.0	0.0044	7.2	7.9	4.0	310	560
	23-Jun	Start		<2.0	0.0023	6.2	7.95	1.6	430	600
Tank 102	25-Jun	Start	0	<2.0	0.0026	1.2	8.37	1.3	180	290
Tank 112	1-Jun	Start	0	<2.0	0.0067	7.1	7.83	4.0	180	400
	8-Jun	Mid 1		<2.0	0.0072	9.7	8.19	1.9	250	450
Tank 113	25-Jun	Start	0	<2.0	0.0037	27	8.28	4.6	630	980
Tank 116	1-Jun	Start	0	<2.0	0.067	8.1	7.75	100	180	380
	8-Jun	Mid 1		<2.0	0.0073	10	8.25	2.3	250	430
Tank 119	1-Jun	Start	0	<2.0	0.0080	5.2	8.03	<1.0	150	290
	8-Jun	Mid 1		<2.0	0.0085	5.7	8.13	3.8	200	330

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
June 2020

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					
Bear Island					
M-44	26-Jun	3	28	7	N
M-46	26-Jun	3	28	7	N
M-48	26-Jun	5	28	6	N
N-13	27-Jun	2	28	7	N
N-15	27-Jun	2	28	7	N
N44	26-Jun	2	28	6.5	N
O-36	26-Jun	3	28	6.5	N
P-13	27-Jun	5	28	7	N
Goose Island					
M-19	30-Jun	10	28	6.5	N
O-14	28-Jun	10	28	6	N
O-17	28-Jun	3	28	6	N
O-18	28-Jun	10	28	6.5	N
O-20	28-Jun	9	28	6.5	N
Q14	30-Jun	2	28	6.5	N
Q17	29-Jun	3	28	6.5	N
T-16	29-Jun	10	28	6.5	N
T-21	28-Jun	10	28	6.5	N