



Task Order#: 4502835071  
 Line Item: 10  
 Site#: 70511625  
 Site Location: NORMAN WELLS, NT  
 Project #: Weekly Environmental  
 Your C.O.C. #: 683793-14-01

**Attention: Benjamin Fraser**

Imperial Oil Resources Ltd.  
 Bag Service 5000  
 Norman Wells, NT  
 CANADA XOE OVO

**Report Date: 2023/05/11**  
 Report #: R3334821  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C332789**

**Received: 2023/05/09, 15:15**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Laboratory Method	Analytical Method
Chloride/Sulphate by Auto Colourimetry	4	AB SOP-00020	SM24-4500-Cl/SO4-E m
Conductivity @25C	4	AB SOP-00005	SM 23 2510 B m
pH @25°C (1)	4	AB SOP-00005	SM 23 4500-H+B m
Phenols (4-AAP)	4	AB SOP-00088	EPA 9066 R0 m
Total Dissolved Solids (Filt. Residue)	4	AB SOP-00065	SM 23 2540 C m
Hydrocarbon by IR (Mineral oil & grease)	4	CAL SOP-00096	SM 23 5520C,F m
Total Suspended Solids (NFR)	4	AB SOP-00061	SM 24 2540 D m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.



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Encryption Key

Please direct all questions regarding this Certificate of Analysis to:  
Jasbirjit Kaur, Customer Solutions Representative  
Email: Jasbirjit.KAUR@bureauveritas.com  
Phone# (403)219-3651

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### RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID			BQD276			BQD276		
Sampling Date			2023/05/08 08:15			2023/05/08 08:15		
COC Number			683793-14-01			683793-14-01		
	<b>UNITS</b>	<b>Criteria</b>	<b>REFINERY IMPOUND BASIN</b>	<b>RDL</b>	<b>QC Batch</b>	<b>REFINERY IMPOUND BASIN Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>								
Conductivity	uS/cm	-	410	2.0	A958825			
pH	pH	6:9	6.92	N/A	A958824			
Total Suspended Solids	mg/L	-	1.6	1.0	A957716			
Total Dissolved Solids	mg/L	-	270	10	A957857	270	10	A957857
<b>Anions</b>								
Chloride (Cl)	mg/L	500	5.5	1.0	A957531			
<b>Misc. Organics</b>								
Phenols	mg/L	0.14	<0.0015	0.0015	A957790			
Total Petroleum Hydrocarbon	mg/L	5	<2.0	2.0	A956134			
No Fill	No Exceedance							
Grey	Exceeds 1 criteria policy/level							
Black	Exceeds both criteria/levels							
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable								

Bureau Veritas ID			BQD277	BQD278	BQD279		
Sampling Date			2023/05/08 08:20	2023/05/08 08:25	2023/05/08 08:25		
COC Number			683793-14-01	683793-14-01	683793-14-01		
	<b>UNITS</b>	<b>Criteria</b>	<b>CPF IMPOUND BASIN</b>	<b>LT II</b>	<b>LT II CULVERT</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>							
Conductivity	uS/cm	-	250	440	270	2.0	A958825
pH	pH	6:9	6.76	7.43	6.76	N/A	A958824
Total Suspended Solids	mg/L	-	2.1	4.6	4.0	1.0	A957716
Total Dissolved Solids	mg/L	-	160	280	190	10	A957857
<b>Anions</b>							
Chloride (Cl)	mg/L	500	2.1	11	3.4	1.0	A957531
<b>Misc. Organics</b>							
Phenols	mg/L	0.14	<0.0015	<0.0015	<0.0015	0.0015	A957790
Total Petroleum Hydrocarbon	mg/L	5	<2.0	<2.0	<2.0	2.0	A956134
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit N/A = Not Applicable							



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Site Location: NORMAN WELLS, NT  
Project #: Weekly Environmental

### TEST SUMMARY

**Bureau Veritas ID:** BQD276  
**Sample ID:** REFINERY IMPOUND BASIN  
**Matrix:** Water

**Collected:** 2023/05/08  
**Relinquished:** 2023/05/08  
**Received:** 2023/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride/Sulphate by Auto Colourimetry	KONE	A957531	N/A	2023/05/10	Tyler Orr
Conductivity @25C	COND	A958825	N/A	2023/05/10	Jeanette Chavol Melo
pH @25°C	AT/ALK	A958824	N/A	2023/05/10	Jeanette Chavol Melo
Phenols (4-AAP)	TECH/4AAP	A957790	N/A	2023/05/10	Ming Dong
Total Dissolved Solids (Filt. Residue)	BAL	A957857	2023/05/10	2023/05/10	Eliza Javier Herrera
Hydrocarbon by IR (Mineral oil & grease)	IR	A956134	2023/05/10	2023/05/11	Zeynab (Sara) Naserifar
Total Suspended Solids (NFR)	BAL	A957716	2023/05/10	2023/05/10	Haydee Estilong

**Bureau Veritas ID:** BQD276 Dup  
**Sample ID:** REFINERY IMPOUND BASIN  
**Matrix:** Water

**Collected:** 2023/05/08  
**Relinquished:** 2023/05/08  
**Received:** 2023/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (Filt. Residue)	BAL	A957857	2023/05/10	2023/05/10	Eliza Javier Herrera

**Bureau Veritas ID:** BQD277  
**Sample ID:** CPF IMPOUND BASIN  
**Matrix:** Water

**Collected:** 2023/05/08  
**Relinquished:** 2023/05/08  
**Received:** 2023/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride/Sulphate by Auto Colourimetry	KONE	A957531	N/A	2023/05/10	Tyler Orr
Conductivity @25C	COND	A958825	N/A	2023/05/10	Jeanette Chavol Melo
pH @25°C	AT/ALK	A958824	N/A	2023/05/10	Jeanette Chavol Melo
Phenols (4-AAP)	TECH/4AAP	A957790	N/A	2023/05/10	Ming Dong
Total Dissolved Solids (Filt. Residue)	BAL	A957857	2023/05/10	2023/05/10	Eliza Javier Herrera
Hydrocarbon by IR (Mineral oil & grease)	IR	A956134	2023/05/10	2023/05/11	Zeynab (Sara) Naserifar
Total Suspended Solids (NFR)	BAL	A957716	2023/05/10	2023/05/10	Haydee Estilong

**Bureau Veritas ID:** BQD278  
**Sample ID:** LT II  
**Matrix:** Water

**Collected:** 2023/05/08  
**Relinquished:** 2023/05/08  
**Received:** 2023/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride/Sulphate by Auto Colourimetry	KONE	A957531	N/A	2023/05/10	Tyler Orr
Conductivity @25C	COND	A958825	N/A	2023/05/10	Jeanette Chavol Melo
pH @25°C	AT/ALK	A958824	N/A	2023/05/10	Jeanette Chavol Melo
Phenols (4-AAP)	TECH/4AAP	A957790	N/A	2023/05/10	Ming Dong
Total Dissolved Solids (Filt. Residue)	BAL	A957857	2023/05/10	2023/05/10	Eliza Javier Herrera
Hydrocarbon by IR (Mineral oil & grease)	IR	A956134	2023/05/10	2023/05/11	Zeynab (Sara) Naserifar
Total Suspended Solids (NFR)	BAL	A957716	2023/05/10	2023/05/10	Haydee Estilong



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Site Location: NORMAN WELLS, NT  
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### TEST SUMMARY

**Bureau Veritas ID:** BQD279  
**Sample ID:** LT II CULVERT  
**Matrix:** Water

**Collected:** 2023/05/08  
**Relinquished:** 2023/05/08  
**Received:** 2023/05/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride/Sulphate by Auto Colourimetry	KONE	A957531	N/A	2023/05/10	Tyler Orr
Conductivity @25C	COND	A958825	N/A	2023/05/10	Jeanette Chavol Melo
pH @25°C	AT/ALK	A958824	N/A	2023/05/10	Jeanette Chavol Melo
Phenols (4-AAP)	TECH/4AAP	A957790	N/A	2023/05/10	Ming Dong
Total Dissolved Solids (Filt. Residue)	BAL	A957857	2023/05/10	2023/05/10	Eliza Javier Herrera
Hydrocarbon by IR (Mineral oil & grease)	IR	A956134	2023/05/10	2023/05/11	Zeynab (Sara) Naserifar
Total Suspended Solids (NFR)	BAL	A957716	2023/05/10	2023/05/10	Haydee Estilong



### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.0°C
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Criteria: Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

**Results relate only to the items tested.**



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### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A956134	ZSN	Method Blank	Total Petroleum Hydrocarbon	2023/05/11	<2.0		mg/L	
A957531	TOR	Method Blank	Chloride (Cl)	2023/05/10	<1.0		mg/L	
A957716	HE1	Method Blank	Total Suspended Solids	2023/05/10	<1.0		mg/L	
A957790	MDO	Method Blank	Phenols	2023/05/10	<0.0015		mg/L	
A957857	EH2	Method Blank	Total Dissolved Solids	2023/05/10	<10		mg/L	
A958825	JVM	Method Blank	Conductivity	2023/05/10	<2.0		uS/cm	
A957857	EH2	RPD [BQD276-03]	Total Dissolved Solids	2023/05/10	0		%	20
A957857	EH2	Matrix Spike [BQD276-03]	Total Dissolved Solids	2023/05/10		94	%	80 - 120
A956134	ZSN	LCS	Total Petroleum Hydrocarbon	2023/05/11		96	%	70 - 130
A957531	TOR	LCS	Chloride (Cl)	2023/05/10		99	%	80 - 120
A957716	HE1	LCS	Total Suspended Solids	2023/05/10		94	%	80 - 120
A957790	MDO	LCS	Phenols	2023/05/10		105	%	80 - 120
A957857	EH2	LCS	Total Dissolved Solids	2023/05/10		98	%	80 - 120
A958824	JVM	LCS	pH	2023/05/10		100	%	97 - 103
A958825	JVM	LCS	Conductivity	2023/05/10		97	%	90 - 110

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



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### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Sandy Yuan, M.Sc., QP, Scientific Specialist



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EXXONMOBIL/IMPERIAL OIL - BUREAU VERITAS  
 CHAIN-OF-CUSTODY RECORD  
 ANALYSIS REQUESTED

Page 1 of 1  
 C of C # 683793-14-01



INVOICE INFORMATION				REPORT INFORMATION											
Company Name: IMPERIAL OIL RESOURCES N.W.T LIMITED				Company Name: Imperial Oil Resources Ltd.											
Contact Name: Benjamin Fraser				Contact Name: Benjamin Fraser											
Address: BAG SERVICE 5000 NORMAN WELLS NT X0E 0V0				Address: BAG SERVICE 5000 NORMAN WELLS NT X0E 0V0											
Email: benjamin.fraser@esso.ca				Email: benjamin.fraser@esso.ca											
Phone: (587) 476-5007				Phone: (587) 476-2878											
Sampler Name (Print): Geoff Sharpe				Consultant Project #: Weekly Environmental											
FIELD SAMPLE ID	MATRIX					SAMPLING					NORMAN WELLS #1	NORMAN WELLS #2	NORMAN WELLS #3	Norman Wells #G	
	GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	DATE (YYYYMMDD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED						
1				✓	4	2023/05/08	0815								
2				✓	4	2023/05/08	0820								
3				✓	4	2023/05/08	0825								
4				✓	4	2023/05/08	0825								
5															
6															
7															
8															
9															
10															

  

IOL SITE LOCATION: Norman Wells, NT			REGULATORY CRITERIA / DETECTION LIMITS:			SPECIAL INSTRUCTIONS:			# JARS USED AND NOT SUBMITTED Enter N/A for Water			TURNAROUND TIME		
IOL PROJECT # (if applicable): N/A			<input type="checkbox"/> Alberta Tier I <input type="checkbox"/> CDWG <input type="checkbox"/> SEQG (SK) <input type="checkbox"/> NoSC (SK) <input type="checkbox"/> CCME <input checked="" type="checkbox"/> Other License Specific									Standard (5 days) <input type="checkbox"/> Rush (3 days) <input checked="" type="checkbox"/> (2 days) <input type="checkbox"/> (1 day) <input type="checkbox"/> (same day) <input type="checkbox"/> Date Required: _____		
BUREAU VERITAS TASK ORDER # OR SERVICE ORDER # + LINE ITEM: WB-70511625			COOLER ID: mca1			COOLER ID:			COOLER ID:			LAB USE ONLY		
SEAL PRESENT <input checked="" type="checkbox"/>			SEAL PRESENT <input checked="" type="checkbox"/>			SEAL PRESENT <input checked="" type="checkbox"/>			SEAL PRESENT <input checked="" type="checkbox"/>			BUREAU VERITAS JOB # C332789		
SEAL INTACT <input checked="" type="checkbox"/>			SEAL INTACT <input checked="" type="checkbox"/>			SEAL INTACT <input checked="" type="checkbox"/>			SEAL INTACT <input checked="" type="checkbox"/>			SAMPLES		
COOLING MEDIA PRESENT <input checked="" type="checkbox"/>			COOLING MEDIA PRESENT <input checked="" type="checkbox"/>			COOLING MEDIA PRESENT <input checked="" type="checkbox"/>			COOLING MEDIA PRESENT <input checked="" type="checkbox"/>			LABELED BY: JJO		
* RELINQUISHED BY: Geoff Sharpe			DATE: 2023/05/08			TIME (24 HR): 0830			RECEIVED BY: Leo Chai			DATE: 2023/05/09		
												TIME (24 HR): 1315		
												VERIFIED BY: MTG		

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