

ภาคผนวก ข
ใบรายงานผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : MARCH 2, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS AMONRAT PUTTALEE ๓-145-๓-0009

RECEIVED DATE : MARCH 2, 2023
ANALYTICAL DATE : MARCH 2-10, 2023
REPORT NO. : 2023-U017556
WORK NO. : 2019-002022
ANALYSIS NO. : T23AD649-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AD649-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.4 (25°C)	-
TEMPERATURE ^c	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	35	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	193	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	356	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	60.4	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	4.40	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	9,902	25
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	13	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, COLOURIMETRIC METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.022	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			GREY/TURBID GREY	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-03-001



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
MARCH 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : MARCH 2, 2023
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS ARIYA THARAROM

RECEIVED DATE : MARCH 2, 2023
ANALYTICAL DATE : MARCH 2-8, 2023
REPORT NO. : 2023-U017557
WORK NO. : 2019-002022
ANALYSIS NO. : T23AD649-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AD649-0002	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	11,260	25
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			GREY/TURBID	
SEDIMENT			GREY	

RELEASE ORDER NO. : EV-02-03-001



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE :
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : JUNE 1, 2023
SAMPLING TIME : 09:25 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS ARIYA THARAROM ๓-145-๓-0067

RECEIVED DATE : JUNE 2, 2023
ANALYTICAL DATE : JUNE 2-9, 2023
REPORT NO. : 2023-U046614
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK197-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AK197-0001	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	40	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	292	2.0
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	474	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	35.9	5.0
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD (SM: PART 4500-S ²⁻ D)	0.16	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	8,080	25
FAT, OIL AND GREASE ^a	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	22	3
CYANIDE ^c	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	0.020	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			GREY/TURBID	
SEDIMENT			GREY	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-01-06-001

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
JUNE 16, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : JUNE 1, 2023
SAMPLING TIME : 09:25 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS ARIYA THARAROM

RECEIVED DATE : JUNE 2, 2023
ANALYTICAL DATE : JUNE 2-7, 2023
REPORT NO. : 2023-U046615
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK197-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW001 : INLET API T23AK197-0002	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	8,900	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			GREY/TURBID GREY	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-01-06-001

(MRS PIYAPAT SUTTAMANGI WONG)
LABORATORY SUPERVISOR

JUNE 16, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: MARCH 2, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: MARCH 2-10, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U017561
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AD649-0006
SAMPLE TYPE	: EFFLUENT		
SAMPLING DATE	: MARCH 2, 2023		
SAMPLING TIME	: 10:05 HOUR		
SAMPLING METHOD °	: GRAB		
SAMPLING BY °	: MR THANADET WANSANOR ๓-145-๓-0056		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA ๓-145-๓-0074		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AD649-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	29	-
BIOCHEMICAL OXYGEN DEMAND ^a	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	2.4	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	54.9	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	5.1	5.0
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	37,780	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3
CYANIDE °	mg/L CN ⁻	DISTILLATION, COLOURIMETRIC METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-03-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
MARCH 14, 2023



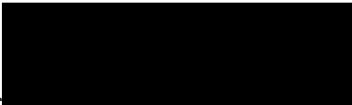
ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : MARCH 2, 2023
SAMPLING TIME : 10:05 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS ARIYA THARAROM

RECEIVED DATE : MARCH 2, 2023
ANALYTICAL DATE : MARCH 2-8, 2023
REPORT NO. : 2023-U017562
WORK NO. : 2019-002022
ANALYSIS NO. : T23AD649-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AD649-0007	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	42,200	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW	

RELEASE ORDER NO. : EV-02-03-001


(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JUNE 1, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR ๓-145-๓-0056
ANALYZED BY : MISS KANNIKAR SUMLEETHA ๓-145-๓-0074

RECEIVED DATE : JUNE 2, 2023
ANALYTICAL DATE : JUNE 2-9, 2023
REPORT NO. : 2023-U046619
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK197-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AK197-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	51.2	25.0
TOTAL SUSPENDED SOLIDS °	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	< 5.0	5.0
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,000	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3
CYANIDE °	mg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 0.005	0.005
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-06-001

(MR. TITAPAT SUKTHANONG)
LABORATORY SUPERVISOR
๓-145-๓-0004
JUNE 16, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : WASTEWATER
SAMPLING DATE : JUNE 1, 2023
SAMPLING TIME : 09:35 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS ARIYA THARAROM

RECEIVED DATE : JUNE 2, 2023
ANALYTICAL DATE : JUNE 2-7, 2023
REPORT NO. : 2023-U046620
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK197-0007

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW004 : OP OUTLET T23AK197-0007	
TOTAL SOLIDS	mg/L	TOTAL SOLIDS DRIED AT 103-105 °C (SM: PART 2540 B)	39,720	25
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-01-06-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JUNE 16, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JANUARY 4, 2023
SAMPLING TIME : 11:08 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR
ANALYZED BY : MISS AMONRAT PUTTALEE

RECEIVED DATE : JANUARY 4, 2023
ANALYTICAL DATE : JANUARY 4-10, 2023
REPORT NO. : 2023-U003196
WORK NO. : 2019-002022
ANALYSIS NO. : T23AA059-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AA059-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: 2550 B)	32	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: 5210 B AND 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	32.0	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	78.4	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	DRIED AT 103-105 °C (SM: 2540 D)	6.1	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: 4500-NO ₃ ⁻ E)	3.01	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD (SM: 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: 2540 C)	36,701	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.8	3
METALS				
LEAD °	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: 3030 E AND 3111 B)	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-01-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 26, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JANUARY 11, 2023
SAMPLING TIME : 10:58 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR THANADET WANSANOR
ANALYZED BY : MISS AMONRAT PUTTALEE

RECEIVED DATE : JANUARY 11, 2023
ANALYTICAL DATE : JANUARY 11-13, 2023
REPORT NO. : 2023-U004459
WORK NO. : 2019-002022
ANALYSIS NO. : T23AA454-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AA454-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: 2550 B)	30	-
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: 2540 C)	36,190	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.8	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-11-01-004

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 19, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: FEBRUARY 1, 2023
SAMPLING DATE	: FEBRUARY 1, 2023	ANALYTICAL DATE	: FEBRUARY 1-10, 2023
SAMPLING TIME	: 10:45 HOUR	REPORT NO.	: 2023-U009494
SAMPLING METHOD ^c	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY ^c	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AB655-0006
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AB655-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE ^c	°C	LABORATORY AND FIELD METHODS (SM: 2550 B)	31	-
BIOCHEMICAL OXYGEN DEMAND ^c	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: 5210 B AND 4500-O G)	< 2.0	2.0
SALINITY ^c	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	30.0	0.1
CHEMICAL OXYGEN DEMAND ^c	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	44.8	25.0
TOTAL SUSPENDED SOLIDS ^c	mg/L	DRIED AT 103-105 °C (SM: 2540 D)	< 5.0	5.0
NITRATE ^c	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: 4500-NO ₃ ⁻ E)	7.09	0.09
SULPHIDE ^c	mg/L	METHYLENE BLUE METHOD (SM: 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS ^c	mg/L	DRIED AT 180 °C (SM: 2540 C)	36,820	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.6	3
METALS				
LEAD ^c	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: 3030 E AND 3111 B)	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.
RELEASE ORDER NO. : EV-01-02-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

FEBRUARY 10, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: FEBRUARY 8, 2023
SAMPLING DATE	: FEBRUARY 8, 2023	ANALYTICAL DATE	: FEBRUARY 8-10, 2023
SAMPLING TIME	: 10:20 HOUR	REPORT NO.	: 2023-U011878
SAMPLING METHOD °	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY °	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AC145-0005
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AC145-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: 2550 B)	33	-
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: 2540 C)	36,520	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.6	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-08-02-003

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

FEBRUARY 17, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: EFFLUENT	RECEIVED DATE	: MARCH 2, 2023
SAMPLING DATE	: MARCH 2, 2023	ANALYTICAL DATE	: MARCH 2-10, 2023
SAMPLING TIME	: 10:25 HOUR	REPORT NO.	: 2023-U017563
SAMPLING METHOD °	: GRAB	WORK NO.	: 2019-002022
SAMPLING BY °	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AD649-0008
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AD649-0008	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.7 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	33	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	31.8	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	53.3	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	6.3	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	0.71	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	37,920	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AD649-0008	
METALS				
LEAD ^c	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-03-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 14, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
MEASURING DATE : MARCH 2, 2023
MEASURING TIME : 10:25 HOUR
SAMPLING METHOD : GRAB
MEASURED BY : MR THANADET WANSANOR

RECEIVED DATE : -
ANALYTICAL DATE : -
REPORT NO. : 2023-U017564
WORK NO. : 2019-002022
ANALYSIS NO. : T23AD649-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AD649-0009	
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.0	0.5
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR WHITE	

RELEASE ORDER NO. : EV-02-03-001

(MR THEERAWAT CHOMMING)
LABORATORY SUPERVISOR

MARCH 14, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : MARCH 9, 2023
SAMPLING TIME : 09:52 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : MARCH 9, 2023
ANALYTICAL DATE : MARCH 9-14, 2023
REPORT NO. : 2023-U019841
WORK NO. : 2019-002022
ANALYSIS NO. : T23AE196-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AE196-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.6 (25°C)	-
TEMPERATURE ^c	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	33	-
TOTAL DISSOLVED SOLIDS ^c	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	38,550	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-09-03-003

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 21, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: APRIL 7, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: APRIL 7-18, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U028431
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AG235-0006
SAMPLE TYPE	: EFFLUENT		
SAMPLING DATE	: APRIL 6, 2023		
SAMPLING TIME	: 11:25 HOUR		
SAMPLING METHOD °	: GRAB		
SAMPLING BY °	: MR THANADET WANSANOR		
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AG235-0006	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
TEMPERATURE °	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	35	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	5-DAY BOD TEST, MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	36.6	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	59.2	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	DRIED AT 103-105 °C (SM: PART 2540 D)	8.9	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	0.75	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD (SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	44,094	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AG235-0006	
METALS				
LEAD °	mg/L Pb	DIGESTION, DIRECT AIR-ACETYLENE FLAME METHOD (SM: PART 3030 E AND PART 3111 B)	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-04-002

(MRS PIYAPAT SUTTAMANDITWONG)
LABORATORY SUPERVISOR

APRIL 20, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : APRIL 12, 2023
SAMPLING TIME : 10:00 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : APRIL 12, 2023
ANALYTICAL DATE : APRIL 12-20, 2023
REPORT NO. : 2023-U030677
WORK NO. : 2019-002022
ANALYSIS NO. : T23AG704-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AG704-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.0 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	36	-
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,303	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-12-04-004

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

APRIL 27, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY			RECEIVED DATE	: MAY 5, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED			ANALYTICAL DATE	: MAY 5-19, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230			REPORT NO.	: 2023-U036768
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com			WORK NO.	: 2019-002022
SAMPLING SOURCE	: -			ANALYSIS NO.	: T23AI006-0009
SAMPLE TYPE	: EFFLUENT				
SAMPLING DATE	: MAY 4, 2023				
SAMPLING TIME	: 10:00 HOUR				
SAMPLING METHOD °	: GRAB				
SAMPLING BY °	: MR THANADET WANSANOR				
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM				

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AI006-0009	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	35	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	34.8	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	76.0	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	12.3	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	17.3	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD (SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,000	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.1	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AI006-0009	
METALS				
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-05-002

.....
(MRS PITTAPAT SUTTHAMANGTONG)
LABORATORY SUPERVISOR

MAY 19, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : MAY 11, 2023
SAMPLING TIME : 10:00 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR
ANALYZED BY : MISS KEWALEE SUKHAREE

RECEIVED DATE : MAY 12, 2023
ANALYTICAL DATE : MAY 12-18, 2023
REPORT NO. : 2023-U037863
WORK NO. : 2019-002022
ANALYSIS NO. : T23AI500-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AI500-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	34	-
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,062	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR GREEN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-11-05-004

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MAY 22, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: JUNE 2, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: JUNE 2-14, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U046621
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AK197-0008
SAMPLE TYPE	: EFFLUENT		
SAMPLING DATE	: JUNE 1, 2023		
SAMPLING TIME	: 09:55 HOUR		
SAMPLING METHOD °	: GRAB		
SAMPLING BY °	: MR THANADET WANSANOR		
ANALYZED BY	: MISS NAPAPORN KHUNNOKKHUM		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AK197-0008	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE °	°C	THERMOMETER AT SITE (SM: PART 2550 B)	35	-
BIOCHEMICAL OXYGEN DEMAND °	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	< 2.0	2.0
SALINITY °	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	35.5	0.1
CHEMICAL OXYGEN DEMAND °	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	54.4	25.0
TOTAL SUSPENDED SOLIDS ^a	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: PART 2540 D)	12.9	5.0
NITRATE °	mg/L NO ₃ ⁻	CADMIUM REDUCTION METHOD (SM: PART 4500-NO ₃ ⁻ E)	5.09	0.09
SULPHIDE °	mg/L	METHYLENE BLUE METHOD(SM: PART 4500-S ²⁻ D)	< 0.02	0.02
TOTAL DISSOLVED SOLIDS °	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	38,300	25
FAT, OIL AND GREASE °	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.0	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AK197-0008	
METALS				
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: PART 3030 E AND PART 3111 B	< 0.015	0.015
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-06-001

(THAI REPORT SOFT PINK THONG)
LABORATORY SUPERVISOR

JUNE 16, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
MEASURING DATE : JUNE 1, 2023
MEASURING TIME : 09:55 HOUR
SAMPLING METHOD : GRAB
MEASURED BY : MR THANADET WANSANOR

RECEIVED DATE : -
ANALYTICAL DATE : -
REPORT NO. : 2023-U046622
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK197-0009

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AK197-0009	
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.4	0.5
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
RELEASE ORDER NO. : EV-01-06-001

.....
(MR THEERAWAT CHOMMING)
LABORATORY SUPERVISOR

JUNE 16, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : EFFLUENT
SAMPLING DATE : JUNE 8, 2023
SAMPLING TIME : 09:25 HOUR
SAMPLING METHOD ^c : GRAB
SAMPLING BY ^c : MR THANADET WANSANOR
ANALYZED BY : MISS KEWALEE SUKHAREE

RECEIVED DATE : JUNE 9, 2023
ANALYTICAL DATE : JUNE 9-16, 2023
REPORT NO. : 2023-U049063
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK817-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW005 : REFINERY MIX T23AK817-0005	
pH ^a	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: PART 2550 B)	34	-
TOTAL DISSOLVED SOLIDS ^c	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	37,829	25
FAT, OIL AND GREASE ^c	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.9	3
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			YELLOW	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-08-06-003

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JUNE 21, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: JANUARY 4, 2023
SAMPLING DATE	: JANUARY 4, 2023	ANALYTICAL DATE	: JANUARY 4-10, 2023
SAMPLING TIME	: 10:11 HOUR	REPORT NO.	: 2023-U003797
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AA061-0001
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AA061-0001	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.9 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: 5530 B AND 5530 C)	0.008	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	27	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	28.3	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: 4500-O G)	5.1	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: 4500-O G AND 5210 B)	1.1	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	73.7	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: 2540 D)	8.2	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	35,748	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: 4500-CN ⁻ C AND 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	18.8	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.4	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AA061-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.740	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-01-002



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 26, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : JANUARY 11, 2023
SAMPLING TIME : 10:50 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS AMONRAT PUTTALEE

RECEIVED DATE : JANUARY 11, 2023
ANALYTICAL DATE : JANUARY 11-13, 2023
REPORT NO. : 2023-U004460
WORK NO. : 2019-002022
ANALYSIS NO. : T23AA454-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AA454-0006	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	27	-
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	33,880	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.9	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-11-01-004

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 19, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : FEBRUARY 1, 2023
SAMPLING TIME : 11:00 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS AMONRAT PUTTALEE

RECEIVED DATE : FEBRUARY 1, 2023
ANALYTICAL DATE : FEBRUARY 1-16, 2023
REPORT NO. : 2023-U009853
WORK NO. : 2019-002022
ANALYSIS NO. : T23AB656-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AB656-0001	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	7.9 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: 5530 B AND 5530 C)	0.007	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	26	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	27.6	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: 4500-O G)	4.6	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: 4500-O G AND 5210 B)	1.2	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	41.6	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: 2540 D)	6.7	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	33,720	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: 4500-CN ⁻ C AND 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	30.6	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.5	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AB656-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.300	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-02-001



(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

FEBRUARY 17, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : FEBRUARY 8, 2023
SAMPLING TIME : 10:35 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS AMONRAT PUTTALEE

RECEIVED DATE : FEBRUARY 8, 2023
ANALYTICAL DATE : FEBRUARY 8-10, 2023
REPORT NO. : 2023-U011879
WORK NO. : 2019-002022
ANALYSIS NO. : T23AC145-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AC145-0006	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	8.0 (25°C)	-
TEMPERATURE	°C	LABORATORY AND FIELD METHODS (SM: 2550 B)	28	-
TOTAL DISSOLVED SOLIDS	mg/L	DRIED AT 180 °C (SM: 2540 C)	34,220	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.7	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23RD EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-08-02-003

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

FEBRUARY 17, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: MARCH 2, 2023
SAMPLING DATE	: MARCH 2, 2023	ANALYTICAL DATE	: MARCH 2-19, 2023
SAMPLING TIME	: 10:35 HOUR	REPORT NO.	: 2023-U019855
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AD651-0001
ANALYZED BY	: MISS AMONRAT PUTTALEE		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AD651-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H* B)	7.7 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: 5530 B AND 5530 C)	0.009	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	28	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	27.3	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.2	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 4500-O G AND PART 5210 B)	2.2	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	51.7	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	8.0	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,300	25
CYANIDE	µg/L CN	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN C AND PART 4500-CN E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	3.41	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AD651-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.450	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-03-001

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 22, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : MARCH 9, 2023
SAMPLING TIME : 09:10 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR THAPAGORN PIMSORN

RECEIVED DATE : MARCH 9, 2023
ANALYTICAL DATE : MARCH 9-14, 2023
REPORT NO. : 2023-U019842
WORK NO. : 2019-002022
ANALYSIS NO. : T23AE196-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AE196-0006	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE	°C	LABORATORY AND FIELD METHODS (SM: PART 2550 B)	29	-
TOTAL DISSOLVED SOLIDS	mg/L	DRIED AT 180 °C (SM: PART 2540 C)	34,400	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23RD EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-09-03-003

.....
(MRS PITAPAT SUTTAMANOI WONG)
LABORATORY SUPERVISOR

MARCH 21, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: APRIL 7, 2023
SAMPLING DATE	: APRIL 6, 2023	ANALYTICAL DATE	: APRIL 7-21, 2023
SAMPLING TIME	: 11:35 HOUR	REPORT NO.	: 2023-U029369
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AG236-0001
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AG236-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.0 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	0.009	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	32.2	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.3	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	0.8	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	62.4	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	4.6	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	45,444	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	5.33	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.6	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AG236-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.460	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-04-002

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

APRIL 24, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : APRIL 12, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR THAPAGORN PIMSORN

RECEIVED DATE : APRIL 12, 2023
ANALYTICAL DATE : APRIL 12-20, 2023
REPORT NO. : 2023-U030678
WORK NO. : 2019-002022
ANALYSIS NO. : T23AG704-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AG704-0006	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	34,409	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.5	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.
RELEASE ORDER NO. : EV-12-04-004

(MRS PIYAPAT SUTTAMANOTWONG)
LABORATORY SUPERVISOR

APRIL 27, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : MAY 4, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS KANNIKAR SUMLEETHA

RECEIVED DATE : MAY 5, 2023
ANALYTICAL DATE : MAY 5-17, 2023
REPORT NO. : 2023-U037824
WORK NO. : 2019-002022
ANALYSIS NO. : T23AI004-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AI004-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.0 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	0.007	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	32.0	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.6	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.2	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	55.4	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	7.4	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	34,700	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	5.63	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AI004-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.460	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-05-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MAY 19, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : MAY 4, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR KORNVIT CHIASIRISAKUL

RECEIVED DATE : MAY 5, 2023
ANALYTICAL DATE : MAY 5-17, 2023
REPORT NO. : 2023-U037825
WORK NO. : 2019-002022
ANALYSIS NO. : T23AI004-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006 : 500 M OFFSHORE (JETTY) T23AI004-0002	
METALS				
MERCURY	µg/L Hg	COLD-VAPOUR ATOMIC FLUORESCENCE SPECTROMETRIC METHOD (US EPA 2005: 245.7)	< 0.020	0.020
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			WHITE	

RELEASE ORDER NO. : EV-04-05-002



LABORATORY SUPERVISOR

MAY 19, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : MAY 11, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR THAPAGORN PIMSORN

RECEIVED DATE : MAY 12, 2023
ANALYTICAL DATE : MAY 12-18, 2023
REPORT NO. : 2023-U037864
WORK NO. : 2019-002022
ANALYSIS NO. : T23AI500-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AI500-0006	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.9 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,833	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.9	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR GREEN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.
FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.
RELEASE ORDER NO. : EV-11-05-004

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MAY 22, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: JUNE 2, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: JUNE 2-20, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U047784
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AK195-0001
SAMPLE TYPE	: SEAWATER		
SAMPLING DATE	: JUNE 1, 2023		
SAMPLING TIME	: 10:05 HOUR		
SAMPLING METHOD	: COMPOSITE		
SAMPLING BY	: MR THANADET WANSANOR		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AK195-0001	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
PHENOLS	mg/L	DISTILLATION, 4-AMINOANTIPYRINE METHOD (SM: PART 5530 B AND PART 5530 C)	< 0.005	0.005
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	33	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	31.1	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.8	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.2	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	46.4	25.0
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	13.8	1.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	34,120	25
CYANIDE	µg/L CN ⁻	DISTILLATION, PYRIDINE-BARBITURIC ACID METHOD (SM: PART 4500-CN ⁻ C AND PART 4500-CN ⁻ E)	< 5	5
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	6.41	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.4	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AK195-0001	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.150	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-06-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JUNE 23, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : JUNE 8, 2023
SAMPLING TIME : 09:40 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MR THAPAGORN PIMSORN

RECEIVED DATE : JUNE 9, 2023
ANALYTICAL DATE : JUNE 9-16, 2023
REPORT NO. : 2023-U049064
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK817-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW006. 500 M OFFSHORE (JETTY) T23AK817-0006	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.0 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	35,562	25
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.5	3
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-08-06-003

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JUNE 21, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER
SAMPLING DATE : JANUARY 4, 2023
SAMPLING TIME : 10:40 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS KANNIKAR SUMLEETHA

RECEIVED DATE : JANUARY 4, 2023
ANALYTICAL DATE : JANUARY 4-16, 2023
REPORT NO. : 2023-U003798
WORK NO. : 2019-002022
ANALYSIS NO. : T23AA061-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AA061-0002	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	8.0 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	26	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	27.9	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: 4500-O G)	5.5	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: 4500-O G AND 5210 B)	1.0	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	86.2	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	34,000	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	3.71	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.8	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AA061-0002	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.760	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			BROWN	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-01-002

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 17, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: FEBRUARY 1, 2023
SAMPLING DATE	: FEBRUARY 1, 2023	ANALYTICAL DATE	: FEBRUARY 1-16, 2023
SAMPLING TIME	: 11:35 HOUR	REPORT NO.	: 2023-U009854
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AB656-0002
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AB656-0002	
pH	-	ELECTROMETRIC METHOD (SM: 4500-H ⁺ B)	8.0 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	26	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	27.8	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: 4500-O G)	4.6	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: 4500-O G AND 5210 B)	1.2	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: 5220 C)	56.0	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	35,032	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	4.31	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: 5520 B)	0.4	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AB656-0002	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	< 0.100	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-02-001

(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

FEBRUARY 17, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: MARCH 2, 2023
SAMPLING DATE	: MARCH 2, 2023	ANALYTICAL DATE	: MARCH 2-19, 2023
SAMPLING TIME	: 10:55 HOUR	REPORT NO.	: 2023-U019856
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AD651-0002
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AD651-0002	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	7.8 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	28	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	27.3	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	5.7	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 4500-O G AND PART 5210 B)	1.4	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	48.5	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,940	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	3.71	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AD651-0002	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.400	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-02-03-001

.....
(MRS PITTAPAT SUTTHAMONGWONG)
LABORATORY SUPERVISOR

MARCH 22, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE :
SAMPLE TYPE : SEAWATER
SAMPLING DATE : MARCH 2, 2023
SAMPLING TIME : 10:55 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS ARIYA THARAROM

RECEIVED DATE : MARCH 2, 2023
ANALYTICAL DATE : MARCH 2-3, 2023
REPORT NO. : 2023-U019857
WORK NO. : 2019-002022
ANALYSIS NO. : T23AD651-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007 : BERTH ISLAND T23AD651-0003	
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	3.7	1.0
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-02-03-001

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

MARCH 22, 2023



ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: APRIL 7, 2023
SAMPLING DATE	: APRIL 6, 2023	ANALYTICAL DATE	: APRIL 7-21, 2023
SAMPLING TIME	: 12:20 HOUR	REPORT NO.	: 2023-U029371
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AG236-0002
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AG236-0002	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	31	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	32.6	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.9	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	0.7	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	38.4	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	45,767	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	5.03	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.7	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AG236-0002	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.640	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-06-04-002

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

APRIL 24, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY		
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED		
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230		
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com		
SAMPLING SOURCE	: -		
SAMPLE TYPE	: SEAWATER	RECEIVED DATE	: MAY 5, 2023
SAMPLING DATE	: MAY 4, 2023	ANALYTICAL DATE	: MAY 5-17, 2023
SAMPLING TIME	: 10:45 HOUR	REPORT NO.	: 2023-U037826
SAMPLING METHOD	: COMPOSITE	WORK NO.	: 2019-002022
SAMPLING BY	: MR THANADET WANSANOR	ANALYSIS NO.	: T23AI004-0003
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AI004-0003	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	31.4	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.8	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	1.1	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	47.5	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	36,500	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	6.53	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	0.8	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AI004-0003	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.280	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-04-05-002

.....
[REDACTED]
.....

LABORATORY SUPERVISOR

MAY 19, 2023

ANALYSIS REPORT

PROJECT NAME	: ENVIRONMENTAL & SOCIOECONOMIC SURVEY	RECEIVED DATE	: JUNE 2, 2023
CUSTOMER NAME	: ESSO (THAILAND) PUBLIC COMPANY LIMITED	ANALYTICAL DATE	: JUNE 2-20, 2023
ADDRESS	: 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230	REPORT NO.	: 2023-U047785
CONTACT INFORMATION	: TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com	WORK NO.	: 2019-002022
SAMPLING SOURCE	: -	ANALYSIS NO.	: T23AK195-0002
SAMPLE TYPE	: SEAWATER		
SAMPLING DATE	: JUNE 1, 2023		
SAMPLING TIME	: 10:20 HOUR		
SAMPLING METHOD	: COMPOSITE		
SAMPLING BY	: MR THANADET WANSANOR		
ANALYZED BY	: MISS KANNIKAR SUMLEETHA		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AK195-0002	
pH	-	ELECTROMETRIC METHOD (SM: PART 4500-H ⁺ B)	8.1 (25°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: PART 2550 B)	32	-
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: PART 2520 B)	30.4	0.1
DISSOLVED OXYGEN	mg/L	MEMBRANE ELECTRODE METHOD AT SITE (SM: PART 4500-O G)	4.8	0.5
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: PART 5210 B AND PART 4500-O G)	0.8	0.5
CHEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM: PART 5220 C)	38.4	25.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: PART 2540 C)	33,140	25
NITRATE-NITROGEN	µg/L N	CADMIUM REDUCTION AND COLOURIMETRIC METHOD (BASED ON PRACTICAL HANDBOOK OF SEAWATER ANALYSIS (STRICKLAND AND PARSON, 1972, II.6))	6.47	0.50
SULPHIDE	µg/L	METHYLENE BLUE COLOURIMETRIC METHOD (METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 5)	< 10	10
FAT, OIL AND GREASE	mg/L	LIQUID-LIQUID, PARTITION-GRAVIMETRIC METHOD (SM: PART 5520 B)	1.1	3



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007. BERTH ISLAND T23AK195-0002	
METALS				
LEAD	µg/L Pb	PRE-CONCENTRATION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (BASED ON METHOD OF SEAWATER ANALYSIS, GRASSHOFF, 1999, CHAPTER 12)	0.160	0.100
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			COLOURLESS/CLEAR	
SEDIMENT			WHITE	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

FAT, OIL AND GREASE : THIS REPORTED VALUE IS BELOW LIMIT OF DETECTION. ITS USE IS SUBJECT TO CUSTOMER JUSTIFICATION.

RELEASE ORDER NO. : EV-01-06-001

(MRS PIPAT SUTTHAMONGKOLWONG)
LABORATORY SUPERVISOR

JUNE 23, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2891 e-mail : wanlop.boongor@exxonmobil.com
SAMPLING SOURCE :
SAMPLE TYPE : SEAWATER
SAMPLING DATE : JUNE 1, 2023
SAMPLING TIME : 10:20 HOUR
SAMPLING METHOD : COMPOSITE
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS NAPAPORN KHUNNOKKHUM

RECEIVED DATE : JUNE 2, 2023
ANALYTICAL DATE : JUNE 2-7, 2023
REPORT NO. : 2023-U047786
WORK NO. : 2019-002022
ANALYSIS NO. : T23AK195-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			LBW007 : BERTH ISLAND T23AK195-0003	
SUSPENDED SOLIDS	mg/L	GRAVIMETRIC METHOD (SM: PART 2540 D)	4.8	1.0
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR YELLOW	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

RELEASE ORDER NO. : EV-01-06-001

.....
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JUNE 23, 2023



ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHILA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2416 e-mail : sitanun.chayochaichana@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEAWATER **RECEIVED DATE** : APRIL 27, 2023
SAMPLING DATE : APRIL 27, 2023 **ANALYTICAL DATE** : APRIL 27-28, 2023
SAMPLING TIME : * **REPORT NO.** : 2023-U033499
SAMPLING METHOD : PLANKTON NET **WORK NO.** : 2019-002022
SAMPLING BY : MR THANADET WANSANOR **ANALYSIS NO.** : T23AH539-0001, T23AH539-0003
ANALYZED BY : MISS NAPAPORN PURATAKO

PHYTOPLANKTON (UNITS/m3)	COUNTING UNIT	RESULT	
		SAMPLE NO. 1 10:15 HOUR * T23AH539-0001	SAMPLE NO. 2 09:48 HOUR * T23AH539-0003
Division Cyanophyta			
Class Cyanophyceae			
Family Oscillatoriaceae			
<i>Oscillatoria</i> spp.	FILAMENT	16,842	0
Division Chromophyta			
Class Bacillariophyceae			
Family Thalassiosiraceae			
<i>Detonula</i> spp.	FILAMENT	48,127	0
<i>Lauderia annulata</i>	FILAMENT	375,856	157,509
<i>Thalassiosira</i> spp.	CELL	450,446	106,216
Family Melosiraceae			
<i>Paralia sulcata</i>	CELL	31,279	0
<i>Stephanopyxis</i> spp.	CELL	0	2,424
Family Leptocylindraceae			
<i>Corethron criophilum</i>	CELL	18,769	0
<i>Leptocylindrus danicus</i>	FILAMENT	582,310	132,471
Family Coscinodiscaceae			
<i>Coscinodiscus</i> spp.	CELL	51,491	27,062
<i>Palmeria hardmaniana</i>	CELL	2,888	2,424
Family Rhizosoleniaceae			
<i>Dactyliosolen</i> spp.	CELL	923,508	2,646,555
<i>Guinardia</i> spp.	CELL	3,717,139	831,163
<i>Proboscia alata</i>	CELL	2,300,357	3,530,216
<i>Rhizosolenia</i> spp.	CELL	1,621,317	1,535,106
Family Hemiaulaceae			
<i>Cerataulina</i> spp.	CELL	1,247,389	49,270
<i>Eucampia</i> spp.	CELL	2,032,782	3,837,964
<i>Hemiaulus</i> spp.	CELL	5,969,368	3,210,758

• PROHIBITED TO PARTIALLY COPY ANALYSIS REPORT PRIOR TO WRITTEN PERMISSION BY THE LABORATORY.

• THIS ANALYSIS REPORT APPROVES ONLY FOR SUBMITTED SAMPLES.



PHYTOPLANKTON (UNITS/m3)	COUNTING UNIT	RESULT	
		SAMPLE NO. 1 10:15 HOUR * T23AH539-0001	SAMPLE NO. 2 09:48 HOUR * T23AH539-0003
Family Chaetocerotaceae			
<i>Bacteriastrum</i> spp.	FILAMENT	472,102	13,734
<i>Chaetoceros</i> spp.	CELL	27,158,616	3,957,913
Family Lithodesmaceae			
<i>Ditylum</i> spp.	CELL	81,333	85,619
<i>Helicotheca tamesis</i>	CELL	84,221	0
Family Eupodiscaceae			
<i>Odontella</i> spp.	CELL	87,108	26,250
Family Naviculaceae			
<i>Amphora</i> spp.	CELL	197,792	27,062
<i>Diploneis</i> spp.	CELL	22,140	0
<i>Meuniera membranacea</i>	CELL	73,147	26,250
<i>Navicula</i> spp.	CELL	16,842	0
<i>Pleurosigma</i> spp.	CELL	473,546	332,387
<i>Trachyneis</i> spp.	CELL	2,888	1,212
Family Bacillariaceae			
<i>Bacillaria paxillifer</i>	CELL	169,401	27,462
<i>Nitzschia longissima</i>	CELL	357,564	190,629
<i>Pseudo-nitzschia</i> spp.	CELL	475,950	109,451
Family Surirellaceae			
<i>Entomoneis</i> spp.	CELL	56,306	2,424
<i>Surirella</i> spp.	CELL	1,417,266	349,749
Class Dinophyceae			
Family Dinophysiaceae			
<i>Dinophysis</i> spp.	CELL	0	5,653
Family Ceratiaceae			
<i>Ceratium</i> spp.	CELL	2,888	24,639
<i>C. furca</i>	CELL	0	2,424
<i>C. fusus</i>	CELL	0	2,424
Family Pyrophacaceae			
<i>Pyrophacus</i> spp.	CELL	0	5,253
Family Peridiniaceae			
<i>Peridinium</i> spp.	CELL	26,948	0

• PROHIBITED TO PARTIALLY COPY ANALYSIS REPORT PRIOR TO WRITTEN PERMISSION BY THE LABORATORY.

• THIS ANALYSIS REPORT APPROVES ONLY FOR SUBMITTED SAMPLES.

PHYTOPLANKTON (UNITS/m ³)	COUNTING UNIT	RESULT	
		SAMPLE NO. 1 10:15 HOUR * T23AH539-0001	SAMPLE NO. 2 09:48 HOUR * T23AH539-0003
Family Protoperidiniaceae <i>Protoperidinium</i> spp.	CELL	173,249	32,714
TOTAL ABUNDANCE (UNITS/m ³)		50,739,175	21,292,387
AMOUNT OF SPECIES		35	32
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT		COLOURLESS/CLEAR GREEN	COLOURLESS/CLEAR GREEN

REMARK : PLANKTON COUNTING TECHNIQUES IS NATURAL UNIT COUNT. REFERENCE : AMERICAN PUBLIC HEALTH ASSOCIATION, AMERICAN WATER WORKS ASSOCIATION ENVIRONMENT AND WATER FEDERATION (APHA, AWWA AND WEF) 2017 . STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER. AMERICAN PUBLIC HEALTH ASSOCIATION WASHINGTON, DC., U.S.A.

ZOOPLANKTON (UNITS/m ³)	COUNTING UNIT	RESULT	
		SAMPLE NO. 1 10:15 HOUR * T23AH539-0001	SAMPLE NO. 2 09:48 HOUR * T23AH539-0003
Phylum Protozoa			
Class Sarcodina			
Family Actinommididae			
<i>Actinomma leptoderma</i>	CELL	484	0
Class Ciliata			
Family Vorticellidae			
<i>Vorticella</i> sp.	CELL	0	12,681
Family Codonellidae			
<i>Tintinnopsis</i> sp.	CELL	239	791
Family Cyrtarocylindae			
<i>Favella</i> sp.	CELL	6,014	1,588
Phylum Chaetognatha			
Class Sagittoidea			
Family Sagittidae			
<i>Sagitta</i> sp.	INDIVIDUAL	0	2,777
Phylum Annelida			
Class Polychaeta			
Polychaete Larva	INDIVIDUAL	15,398	3,169
Phylum Arthropoda			
Class Crustacea			
Cyclopoid Copepod	INDIVIDUAL	22,378	25,961
Calanoid Copepod	INDIVIDUAL	19,975	7,925
Harpacticoid Copepod	INDIVIDUAL	12,272	8,127
Nauplius of Copepod	INDIVIDUAL	44,756	66,184
Cerripecta Nauplius	INDIVIDUAL	12,272	1,189
Zoea	INDIVIDUAL	0	399
Phylum Mollusca			
Class Gastropoda			
Gastropod Larva	INDIVIDUAL	961	0
Class Bivalvia			
Bivalvia Larva	INDIVIDUAL	6,014	5,351

ZOOPLANKTON (UNITS/m ³)	COUNTING UNIT	RESULT	
		SAMPLE NO. 1 10:15 HOUR * T23AH539-0001	SAMPLE NO. 2 09:48 HOUR * T23AH539-0003
Phylum Chordata Class Larvacea Family Oikopleuridae <i>Oikopleura</i> sp.	INDIVIDUAL	21,895	14,666
TOTAL ABUNDANCE (UNITS/m ³)		162,658	150,808
AMOUNT OF SPECIES		12	13
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT		COLOURLESS/CLEAR GREEN	COLOURLESS/CLEAR GREEN

SAMPLE NO. 1 500 m OFFSHORE (JETTY)

SAMPLE NO. 2 BERTH ISLAND

.....
(MISS CHAWEEWAN BOONLA)
LABORATORY SUPERVISOR

MAY 15, 2023

ANALYSIS REPORT

PROJECT NAME : ENVIRONMENTAL & SOCIOECONOMIC SURVEY
CUSTOMER NAME : ESSO (THAILAND) PUBLIC COMPANY LIMITED
ADDRESS : 118 MOO 2 THUNG SUKHLA SI RACHA CHON BURI 20230
CONTACT INFORMATION : TEL : 0 3314 2416 e-mail : sitanun.chayochaichana@exxonmobil.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEDIMENT
SAMPLING DATE : APRIL 27, 2023
SAMPLING TIME : *
SAMPLING METHOD : PETERSEN GRAB
SAMPLING BY : MR THANADET WANSANOR
ANALYZED BY : MISS PATCHAREE KONGCHUMNAN
RECEIVED DATE : APRIL 27, 2023
ANALYTICAL DATE : APRIL 27-28, 2023
REPORT NO. : 2023-U033500
WORK NO. : 2019-002022
ANALYSIS NO. : T23AH539-0002, T23AH539-0004

BENTHOS (INDIVIDUALS/m ²)	RESULT	
	SAMPLE NO. 1 10:30 HOUR * T23AH539-0002	SAMPLE NO. 2 09:58 HOUR * T23AH539-0004
Phylum Annelida		
Class Polychaeta		
Family Capitellidae	0	7
Family Nereididae	0	7
Family Spionidae	14	21
Phylum Chordata		
Class Leptocardii		
Family Branchiomidae		
Branchiostoma sp.	14	0
TOTAL DENSITY (INDIVIDUALS/m ²)	28	35
AMOUNT OF SPECIES	2	3
SAMPLE CONDITION	SAND	SAND

SAMPLE NO. 1 500 m OFFSHORE (JETTY)

SAMPLE NO. 2 BERTH ISLAND

(MISS CHAWEEWAN BOONLA)
LABORATORY SUPERVISOR

MAY 15, 2023





Your Project #: SRT-RF-2023

Attention: Tanaphorn Taweeyat

ESSO SRIRACHA REFINERY
118, Moo 2, Sukhapiban 7 Rd
Sriracha, Chonburi
Thailand 20230

Report Date: 05/09/2023

Report #: R7621073

Version: 1 - Final

ANALYTICAL REPORT

BV LABS JOB #: C3C3073

Received: 05/02/2023, 00:00

Sample Matrix: Passive Monitor
Samples Received: 2

Analyses	Quantity	Date Analyzed	Laboratory Method	Analytical Method
Naphthas by NIOSH 1550 - Monitor	2	05/04/2023	NOV4SOP-00001	NIOSH 1550 / 1551
Hydrocarbons by NIOSH 1501 - Monitor	2	05/04/2023	NOV SOP-00005	NIOSH 1501

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

Results relate only to the items tested.

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

Encryption Key

Please direct all questions regarding this Analytical Report to your Project Manager.

Wendy Lesniak, CS

Email: Wendy.Lesniak@bureauveritas.com

Phone# (248) 344-1770

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
This report is authorized by Jason Forbes, Director of Operations responsible for Michigan Industrial Hygiene laboratory operations.



BUREAU
VERITAS

BV Labs Job #: C3C3073
Report Date: 05/09/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023

ANALYTICAL RESULTS

Client ID: SRT-RF-2023-01-001					Matrix: Passive Monitor			
BV Labs ID: VRT992					Sample Media: AT 566/3M3500+Monitor Charcoal			
Date Sampled: 03/27/2023					Sampling Time (Minutes): 420			
	Samp Rate	Mass	Concentration		RL		Date	
ANALYTE	cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene	9.7	<0.50	<0.12	<0.038	0.50	NIOSH 1501	05/04/2023	8646646
THCs as n-Hexane	9.9	<30	<7.2	<2.1	30	NIOSH 1550 / 1551	05/04/2023	8646637
QC Batch = Quality Control Batch								
RL = Reporting Limit								

Client ID:	SRT-RF-2023-01-BLANK					Matrix:	Passive Monitor	
BV Labs ID:	VRT993					Sample Media:	AT 566/3M3500+Monitor Charcoal	
Date Sampled:								
	Samp Rate	Mass	Concentration		RL		Date	
ANALYTE	cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene	9.7	<0.50	N/A	N/A	0.50	NIOSH 1501	05/04/2023	8646646
THCs as n-Hexane	9.9	<30	N/A	N/A	30	NIOSH 1550 / 1551	05/04/2023	8646637
QC Batch = Quality Control Batch								
RL = Reporting Limit								



BUREAU
VERITAS

BV Labs Job #: C3C3073
Report Date: 05/09/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023

GENERAL COMMENTS

Unless otherwise noted below the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and /or do not adversely affect the reported results and 3) the industrial hygiene results have not been blank corrected.

The client provided their pertinent field sampling data on the analysis request paperwork submitted with the samples. Results apply to the sample as received.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8646646	CWX	LCS	Benzene	05/04/2023		99	%	80 - 120
8646646	CWX	LCS DUP	Benzene	05/04/2023		99	%	80 - 120
8646646	CWX	LCS/LCSD RPD	Benzene	05/04/2023	0.27		%	20
8646646	CWX	Method Blank	Benzene	05/04/2023	<1.0		ug	

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

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.



Your Project #: SRT-RF-2023

Attention: Tanaphorn Taweeyat

ESSO SRIRACHA REFINERY
118, Moo 2, Sukhapiban 7 Rd
Sriracha, Chonburi
Thailand 20230

Report Date: 07/13/2023

Report #: R7714044

Version: 1 - Final

ANALYTICAL REPORT

BV LABS JOB #: C3K0187

Received: 07/07/2023, 00:00

Sample Matrix: Passive Monitor
Samples Received: 4

Analyses	Quantity	Date Analyzed	Laboratory Method	Analytical Method
Naphthas by NIOSH 1550 - Monitor	4	07/10/2023	NOV4SOP-00001	NIOSH 1550 / 1551
Volatiles (VOC) - List 1 -GC/FID-Monitor	4	07/10/2023	NOV SOP-00005	NOV SOP-00005

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

Results relate only to the items tested.

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

Encryption Key

Please direct all questions regarding this Analytical Report to your Project Manager.

Wendy Lesniak, CS

Email: Wendy.Lesniak@bureauveritas.com

Phone# (248) 344-1770

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
This report is authorized by Jason Forbes, Director of Operations responsible for Michigan Industrial Hygiene laboratory operations.

BUREAU
VERITAS

BV Labs Job #: C3K0187

Report Date: 07/13/2023

ESSO SRIRACHA REFINERY

Client Project #: SRT-RF-2023

ANALYTICAL RESULTS

Client ID: SRT-RF-2023-03-001					Matrix:		Passive Monitor		
BV Labs ID: WHY230					Sample Media:		AT 566/3M3500+Monitor Charcoal		
Date Sampled: 06/22/2023					Sampling Time (Minutes): 480				
		Samp Rate	Mass	Concentration		RL	Date		
ANALYTE		cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene		9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	07/10/2023	8781596
THCs as n-Hexane		9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	07/10/2023	8781611
Toluene		9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	07/10/2023	8781596
Xylenes		7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	07/10/2023	8781596
QC Batch = Quality Control Batch									
RL = Reporting Limit									

Client ID: SRT-RF-2023-03-002					Matrix: Passive Monitor				
BV Labs ID: WHY231					Sample Media: AT 566/3M3500+Monitor Charcoal				
Date Sampled: 06/12/2023					Sampling Time (Minutes): 480				
		Samp Rate	Mass	Concentration		RL	Date		
ANALYTE		cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene		9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	07/10/2023	8781596
THCs as n-Hexane		9.9	<30	<6.3	<1.8	30	NIOSH 1550 / 1551	07/10/2023	8781611
Toluene		9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	07/10/2023	8781596
Xylenes		7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	07/10/2023	8781596
QC Batch = Quality Control Batch									
RL = Reporting Limit									

Client ID: SRT-RF-2023-03-003					Matrix: Passive Monitor				
BV Labs ID: WHY233					Sample Media: AT 566/3M3500+Monitor Charcoal				
Date Sampled: 06/13/2023					Sampling Time (Minutes): 480				
		Samp Rate	Mass	Concentration		RL	Date		
ANALYTE		cc/min	ug	mg/m3	ppm	ug	Test Method	Analyzed	QC Batch
Benzene		9.7	<0.50	<0.11	<0.034	0.50	NOV SOP-00005	07/10/2023	8781596
THCs as n-Hexane		9.9	92	19	5.5	30	NIOSH 1550 / 1551	07/10/2023	8781611
Toluene		9.5	<3.0	<0.66	<0.17	3.0	NOV SOP-00005	07/10/2023	8781596
Xylenes		7.5	<6.0	<1.7	<0.38	6.0	NOV SOP-00005	07/10/2023	8781596
QC Batch = Quality Control Batch									
RL = Reporting Limit									



BUREAU
VERITAS

BV Labs Job #: C3K0187
Report Date: 07/13/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023

ANALYTICAL RESULTS

Client ID: SRT-RF-2023-03-BLANK					Matrix: Passive Monitor			
BV Labs ID: WHY234					Sample Media: AT 566/3M3500+Monitor Charcoal			
Date Sampled:								
ANALYTE	Samp Rate cc/min	Mass ug	Concentration mg/m3 ppm		RL ug	Test Method	Date Analyzed	QC Batch
Benzene	9.7	<0.50	N/A	N/A	0.50	NOV SOP-00005	07/10/2023	8781596
THCs as n-Hexane	9.9	<30	N/A	N/A	30	NIOSH 1550 / 1551	07/10/2023	8781611
Toluene	9.5	<3.0	N/A	N/A	3.0	NOV SOP-00005	07/10/2023	8781596
Xylenes	7.5	<6.0	N/A	N/A	6.0	NOV SOP-00005	07/10/2023	8781596
QC Batch = Quality Control Batch								
RL = Reporting Limit								



BUREAU
VERITAS

BV Labs Job #: C3K0187
Report Date: 07/13/2023

ESSO SRIRACHA REFINERY
Client Project #: SRT-RF-2023

GENERAL COMMENTS

Unless otherwise noted below the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and /or do not adversely affect the reported results and 3) the industrial hygiene results have not been blank corrected.

The client provided their pertinent field sampling data on the analysis request paperwork submitted with the samples. Results apply to the sample as received.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8781596	CWX	LCS	Benzene	07/10/2023		93	%	80 - 120
			Toluene	07/10/2023		95	%	80 - 120
			Xylenes	07/10/2023		95	%	80 - 120
8781596	CWX	LCS DUP	Benzene	07/10/2023		94	%	80 - 120
			Toluene	07/10/2023		95	%	80 - 120
			Xylenes	07/10/2023		93	%	80 - 120
8781596	CWX	LCS/LCSD RPD	Benzene	07/10/2023	0.64		%	20
			Toluene	07/10/2023	0.32		%	20
			Xylenes	07/10/2023	1.8		%	20
8781596	CWX	Method Blank	Benzene	07/10/2023	<1.0		ug	
			Toluene	07/10/2023	<3.0		ug	
			Xylenes	07/10/2023	<6.0		ug	

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

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.