



บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

ภาคผนวก ค

ใบรับรองผลการตรวจวิเคราะห์
ผลกระทบสิ่งแวดล้อม



บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

I

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

คุณภาพน้ำทิ้ง



Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817480-1

Page 1 of 2

Sample Number	23118159-1
Sampled Date	Oct 19, 2023 1:40 PM
Sample Description	น้ำทิ้ง
Location	บ่อรวมและที่กักไขมัน
Date Analysis Commenced	Oct 20, 2023
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Cadmium	mg/L	0.001	0.005	Not Detected	≤0.03	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Lead	mg/L	0.001	0.005	Not Detected	≤0.20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
COD	mg/L	-	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Songkhla
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla
pH at 25 degree C *		-	-	7.6	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	78	(1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Suspended Solids	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817480-1

Page 2 of 2

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817480-2

Page 1 of 1

Sample Number	23118159-1
Sampled Date	Oct 19, 2023 1:40 PM
Sample Description	น้ำทิ้ง
Location	บ่อรวมและที่กักไขมัน
Date Analysis Commenced	Oct 21, 2023
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ว-204-จ-5417

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
ทะเบียนเลขที่ ว-204-ค-6111

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817480-3

Page 1 of 1

Sample Number	23118159-1						
Sampled Date	Oct 19, 2023 1:40 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อรวมและที่กักไขมัน						
Date Analysis Commenced	Oct 20, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
^[A] Fecal Coliform	MPN/100mL	-	-	790.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, E	Bangkok
^[A] Total Coliform	MPN/100mL	-	-	790.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Total Solids Dried at 103-105 degree C	mg/L	-	5	80	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 B	Songkhla

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- [A] Analysis conducted by ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Branch, DSS Accreditation No. 0009.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

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Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817481-1

Page 1 of 2

Sample Number	23118159-2						
Sampled Date	Oct 19, 2023 1:25 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อดักไขมัน						
Date Analysis Commenced	Oct 20, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Cadmium	mg/L	0.001	0.005	Not Detected	≤0.03	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Lead	mg/L	0.001	0.005	Not Detected	≤0.20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
COD	mg/L	-	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Songkhla
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla
pH at 25 degree C *		-	-	7.6	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	66	(1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Suspended Solids	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817481-1

Page 2 of 2

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
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- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817481-2

Page 1 of 1

Sample Number	23118159-2						
Sampled Date	Oct 19, 2023 1:25 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อดักไขมัน						
Date Analysis Commenced	Oct 21, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

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(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ว-204-จ-5417

Approved by

Kanok Korn Anek

Kanok Korn Anek
Senior Manager
ทะเบียนเลขที่ ว-204-ค-6111

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817481-3

Page 1 of 1

Sample Number	23118159-2						
Sampled Date	Oct 19, 2023 1:25 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อดักไขมัน						
Date Analysis Commenced	Oct 20, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
^[A] Fecal Coliform	MPN/100mL	-	-	130.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, E	Bangkok
^[A] Total Coliform	MPN/100mL	-	-	330.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Total Solids Dried at 103-105 degree C	mg/L	-	5	70	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 B	Songkhla

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana

Remark :

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- [A] Analysis conducted by ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Branch, DSS Accreditation No. 0009.
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Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817482-1

Page 1 of 2

Sample Number	23118159-3						
Sampled Date	Oct 19, 2023 1:00 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อกักน้ำทิ้งรอบคลัง						
Date Analysis Commenced	Oct 20, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Cadmium	mg/L	0.001	0.005	Not Detected	≤0.03	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Lead	mg/L	0.001	0.005	<0.005	≤0.20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Songkhla
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
COD	mg/L	-	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Songkhla
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla
pH at 25 degree C *		-	-	7.7	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	26	(1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Suspended Solids	mg/L	-	5	8	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817482-1

Page 2 of 2

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

Technical Management

Ananta B.

Ananta Boonphet

Scientist (2)

ทะเบียนเลขที่ ว-267-จ-0004

Approved by

Kanitta H.

Kanitta Hemprasatporn

Section Head

ทะเบียนเลขที่ ว-267-ค-0001

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817482-2

Page 1 of 1

Sample Number	23118159-3
Sampled Date	Oct 19, 2023 1:00 PM
Sample Description	น้ำทิ้ง
Location	บ่อกักน้ำทิ้งรอบคลัง
Date Analysis Commenced	Oct 21, 2023
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana ทะเบียนเลขที่ ว-204-จ-8610 , Thaksin Aintrom ทะเบียนเลขที่ ว-267-จ-0003

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Technical Management

Suwimon C.

Suwimon Chairuangwut
Scientist (3)
ทะเบียนเลขที่ ว-204-จ-5417

Approved by

Kanokkorn Anek

Kanokkorn Anek
Senior Manager
ทะเบียนเลขที่ ว-204-ค-6111

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Analysis / Test Report

TESTING
No.0166

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23118159

Date Received : Oct 20, 2023

Date Reported : Oct 27, 2023

Report Number : 2817482-3

Page 1 of 1

Sample Number	23118159-3						
Sampled Date	Oct 19, 2023 1:00 PM						
Sample Description	น้ำทิ้ง						
Location	บ่อกักน้ำทิ้งรอบคลัง						
Date Analysis Commenced	Oct 20, 2023						
Condition of Sample	Contained in one amber glass bottle and six plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
^[A] Fecal Coliform	MPN/100mL	-	-	1300.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B, E	Bangkok
^[A] Total Coliform	MPN/100mL	-	-	1300.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Total Solids Dried at 103-105 degree C	mg/L	-	5	35	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 B	Songkhla

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment , effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017) and effluent standard for factories, industrial estate and industrial park set by Notification of Marine Department No.164/2560

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked * is/are not included in scope of Accreditation ISO/IEC 17025.
- [A] Analysis conducted by ALS Laboratory Group (Thailand) Co.,Ltd. Bangkok Branch, DSS Accreditation No. 0009.
- The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025.

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Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

คุณภาพน้ำทะเล



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 1 of 12

Sample Number	23126557-1						
Sampled Date	Oct 31, 2023 11:39 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
Fecal Coliform	CFU/100mL	-	-	<1	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9222 D	Bangkok
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
Conductivity	micromhos/cm	-	0.5	47800	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Songkhla
Depth	m	-	-	11.0	No Standard	Water Level Meter	Songkhla
Dissolved Oxygen	mg/L	-	0.1	6.8	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Songkhla
Floatable Oil & Grease		-	-	Not Visible	Not Visible	Visual Method	Bangkok
Nitrate as N	mg/L	0.003	0.02	0.05	≤0.06	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NO3 E	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	In-house method : STM 13-006 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 2 of 12

Sample Number	23126557-1						
Sampled Date	Oct 31, 2023 11:39 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
pH at 25 degree C		-	-	8.1	7.0-8.5	In-house method : STM 13-001 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Phosphate as P	mg/L	0.005	0.01	Not Detected	≤0.045	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Bangkok
Salinity	ppt	-	-	30.6	Change from lower salinity not more than 10%	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2520 B	Songkhla
Temperature	Degree C	-	-	29.4	Change from natural condition not more than 1 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Songkhla
Total Alkalinity as CaCO ₃	mg/L	-	1	110	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	35400	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids	mg/L	-	2	3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 3 of 12

Sample Number	23126557-1						
Sampled Date	Oct 31, 2023 11:39 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Transparency	m	-	-	1.9	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Songkhla
Turbidity	NTU	-	0.1	4.07	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Songkhla

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Yuttapong Rattana , Thaksin Aintrom

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 4 of 12

Sample Number	23126557-2
Sampled Date	Oct 31, 2023 12:03 PM
Sample Description	น้ำทะเล
Location	หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
Date Analysis Commenced	Nov 01, 2023
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
Fecal Coliform	CFU/100mL	-	-	<1	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9222 D	Bangkok
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
Conductivity	micromhos/cm	-	0.5	47600	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Songkhla
Depth	m	-	-	6.60	No Standard	Water Level Meter	Songkhla
Dissolved Oxygen	mg/L	-	0.1	7.1	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Songkhla
Floatable Oil & Grease		-	-	Not Visible	Not Visible	Visual Method	Bangkok
Nitrate as N	mg/L	0.003	0.02	0.05	≤0.06	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NO3 E	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	In-house method : STM 13-006 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 5 of 12

Sample Number	23126557-2
Sampled Date	Oct 31, 2023 12:03 PM
Sample Description	น้ำทะเล
Location	หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
Date Analysis Commenced	Nov 01, 2023
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
pH at 25 degree C		-	-	8.0	7.0-8.5	In-house method : STM 13-001 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Phosphate as P	mg/L	0.005	0.01	Not Detected	≤0.045	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Bangkok
Salinity	ppt	-	-	30.8	Change from lower salinity not more than 10%	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2520 B	Songkhla
Temperature	Degree C	-	-	24.1	Change from natural condition not more than 1 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Songkhla
Total Alkalinity as CaCO ₃	mg/L	-	1	102	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	35000	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids	mg/L	-	2	3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 6 of 12

Sample Number	23126557-2						
Sampled Date	Oct 31, 2023 12:03 PM						
Sample Description	น้ำทะเล						
Location	หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Transparency	m	-	-	2.2	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Songkhla
Turbidity	NTU	-	0.1	4.18	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Songkhla

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Yuttapong Rattana , Thaksin Aintrom

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 7 of 12

Sample Number	23126557-3
Sampled Date	Oct 31, 2023 10:31 AM
Sample Description	น้ำทะเล
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
Date Analysis Commenced	Nov 01, 2023
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
Fecal Coliform	CFU/100mL	-	-	<1	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9222 D	Bangkok
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
Conductivity	micromhos/cm	-	0.5	47900	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Songkhla
Depth	m	-	-	8.20	No Standard	Water Level Meter	Songkhla
Dissolved Oxygen	mg/L	-	0.1	7.1	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Songkhla
Floatable Oil & Grease		-	-	Not Visible	Not Visible	Visual Method	Bangkok
Nitrate as N	mg/L	0.003	0.02	0.05	≤0.06	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NO3 E	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	In-house method : STM 13-006 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

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Sample Number	23126557-3
Sampled Date	Oct 31, 2023 10:31 AM
Sample Description	น้ำทะเล
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
Date Analysis Commenced	Nov 01, 2023
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
pH at 25 degree C		-	-	8.0	7.0-8.5	In-house method : STM 13-001 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Phosphate as P	mg/L	0.005	0.01	Not Detected	≤0.045	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Bangkok
Salinity	ppt	-	-	31.0	Change from lower salinity not more than 10%	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2520 B	Songkhla
Temperature	Degree C	-	-	29.8	Change from natural condition not more than 1 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Songkhla
Total Alkalinity as CaCO ₃	mg/L	-	1	105	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	34900	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids	mg/L	-	2	5	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

Approved by

Ananta B.

Ananta Boonphet
Scientist (2)

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555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 9 of 12

Sample Number	23126557-3						
Sampled Date	Oct 31, 2023 10:31 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Transparency	m	-	-	1.6	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Songkhla
Turbidity	NTU	-	0.1	4.20	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Songkhla

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Yuttapong Rattana , Thaksin Aintrom

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 10 of 12

Sample Number	23126557-4						
Sampled Date	Oct 31, 2023 11:03 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Microbiological Testing							
Fecal Coliform	CFU/100mL	-	-	<1	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9222 D	Bangkok
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
BOD (5 days at 20 degree C)	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Songkhla
Conductivity	micromhos/cm	-	0.5	48100	No Standard	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Songkhla
Depth	m	-	-	4.60	No Standard	Water Level Meter	Songkhla
Dissolved Oxygen	mg/L	-	0.1	6.7	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Songkhla
Floatable Oil & Grease		-	-	Not Visible	Not Visible	Visual Method	Bangkok
Nitrate as N	mg/L	0.003	0.02	0.05	≤0.06	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NO3 E	Bangkok
Oil & Grease	mg/L	-	3	<3	No Standard	In-house method : STM 13-006 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Songkhla

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Ananta B.

Ananta Boonphet
Scientist (2)

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P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

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Sample Number	23126557-4
Sampled Date	Oct 31, 2023 11:03 AM
Sample Description	น้ำทะเล
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร
Date Analysis Commenced	Nov 01, 2023
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
pH at 25 degree C		-	-	8.0	7.0-8.5	In-house method : STM 13-001 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Songkhla
Phosphate as P	mg/L	0.005	0.01	Not Detected	≤0.045	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Bangkok
Salinity	ppt	-	-	31.2	Change from lower salinity not more than 10%	Based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2520 B	Songkhla
Temperature	Degree C	-	-	28.8	Change from natural condition not more than 1 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Songkhla
Total Alkalinity as CaCO ₃	mg/L	-	1	107	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2320 B	Songkhla
Total Dissolved solids Dried at 180 degree C	mg/L	-	5	34800	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Songkhla
Total Kjeldahl Nitrogen as N	mg/L	0.15	1.0	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C)	Bangkok
Total Suspended Solids	mg/L	-	2	4	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Songkhla

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Ananta B.

Ananta Boonphet
Scientist (2)

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P/O : 4170008459

Project Name :

Project Location: คลังน้ำมันภูเก็ต

Lot ID: 23126557

Date Received : Nov 01, 2023

Date Reported : Nov 15, 2023

Report Number : 2820064-1

Page 12 of 12

Sample Number	23126557-4						
Sampled Date	Oct 31, 2023 11:03 AM						
Sample Description	น้ำทะเล						
Location	ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร						
Date Analysis Commenced	Nov 01, 2023						
Condition of Sample	Contained in two BOD bottles, one amber glass bottle and five plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Transparency	m	-	-	1.8	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Songkhla
Turbidity	NTU	-	0.1	4.26	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Songkhla

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Yuttapong Rattana , Thaksin Aintrom

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

คุณภาพนิเวศวิทยาทางทะเล



สถานีวิจัยประมงศรีราชา

101/12 หมู่ 9 ต. บางพระ

อ. ศรีราชา จ. ชลบุรี 20110

โทร./โทรสาร. (038) 311379

Client : PTT Oil and Retail Business Public Company Limited

Address : 555 Ardnarong Rd., Klongtoey, Klongtoey, Bangkok, Thailand, 10260

Project Location : คลังน้ำมันภูเก็ต

รายงานผลการวิเคราะห์แพลงก์ตอนพืช

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Division Cyanophyta				
Class Cyanophyceae				
Order Nostocales				
Family Oscillatoriaceae				
1. <i>Oscillatoria</i> sp.	19,000	31,000	34,000	-
2. <i>Oscillatoria tenuis</i>	75,000	577,000	1,362,000	332,000
Family Nostocaceae				
3. <i>Pseudanabaena</i> sp.	9,000	41,000	-	107,000
Division Chlorophyta				
Class Chlorophyceae				
Order Volvocales				
Family Volvocaceae				
4. <i>Eudorina eledans</i>	-	-	11,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Class Euglenophyceae				
Order Euglenales				
Family Euglenaceae				
5. <i>Trachelomonas mirabilis</i>	-	-	11,000	-
Division Chromophyta				
Class Bacillariophyceae				
Order Biddulphiales				
Suborder Coscinodiscineae				
Family Thalassiosiraceae				
6. <i>Cyclotella striata</i>	299,000	113,000	45,000	36,000
7. <i>Skeletonema costatum</i>	-	10,000	-	-
8. <i>Thalassiosira pacifica</i>	84,000	-	-	-
9. <i>Thalassiosira</i> sp.	28,000	206,000	-	36,000
Family Melosiraceae				
10. <i>Paralia sulcata</i>	-	134,000	34,000	-
Family Aulacoseiraceae				
11. <i>Aulacodiscus kittoni</i>	-	-	-	12,000
12. <i>Aulacoseira granulata</i>	-	-	-	12,000
Family Coscinodiscaceae				
13. <i>Coscinodiscus concinnus</i>	-	-	11,000	-
14. <i>Coscinodiscus granii</i>	37,000	10,000	45,000	12,000
15. <i>Coscinodiscus radiatus</i>	-	-	11,000	-
16. <i>Coscinodiscus</i> sp.	37,000	10,000	-	-
17. <i>Coscinodiscus wailesii</i>	9,000	-	-	-
18. <i>Palmeria hardmaniana</i>	-	-	11,000	-
Family Hemidiscaceae				
19. <i>Actinocyclus</i> sp.	9,000	-	-	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Family Asterolampraceae				
20. <i>Asteromphalus flabellatus</i>	9,000	31,000	-	24,000
Family Heliopeltaceae				
21. <i>Actinoptychus grundleri</i>	9,000	31,000	-	47,000
Suborder Rhizosoleniineae				
Family Rhizosoleniaceae				
22. <i>Dactyliosolen antarcticus</i>	-	21,000	11,000	24,000
23. <i>Guinardia delicatula</i>	-	-	-	24,000
24. <i>Guinardia flaccida</i>	131,000	21,000	-	-
25. <i>Guinardia striata</i>	131,000	10,000	-	12,000
26. <i>Proboscia alata</i>	65,000	113,000	34,000	24,000
27. <i>Pseudosolenia calcar-avis</i>	-	10,000	-	-
28. <i>Rhizosolenia acuminata</i>	9,000	10,000	-	-
29. <i>Rhizosolenia borealis</i>	65,000	-	-	-
30. <i>Rhizosolenia imbricata</i>	159,000	124,000	23,000	95,000
31. <i>Rhizosolenia setigera</i>	150,000	93,000	79,000	190,000
32. <i>Rhizosolenia striata</i>	47,000	51,000	11,000	-
33. <i>Rhizosolenia styliformis</i>	-	10,000	-	-
Suborder Biddulphiineae				
Family Hemiaulaceae				
34. <i>Cerataulina bicornis</i>	178,000	52,000	-	12,000
35. <i>Climacosphenia moniligera</i>	9,000	-	-	-
36. <i>Eucampia cornuta</i>	-	-	11,000	-
37. <i>Hemiaulus hauckii</i>	-	10,000	57,000	36,000
38. <i>Hemiaulus indicus</i>	19,000	10,000	-	-
Family Chaetoceraceae				
39. <i>Bacteriastrum delicatulum</i>	-	21,000	-	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
40. <i>Bacteriastrum elongatum</i>	-	31,000	23,000	-
41. <i>Bacteriastrum furcatum</i>	19,000	21,000	11,000	-
42. <i>Chaetoceros compressus</i>	19,000	-	34,000	-
43. <i>Chaetoceros curvisetus</i>	-	41,000	34,000	-
44. <i>Chaetoceros didymus</i>	224,000	525,000	91,000	201,000
45. <i>Chaetoceros diversus</i>	374,000	175,000	272,000	521,000
46. <i>Chaetoceros laciniosus</i>	112,000	-	79,000	-
47. <i>Chaetoceros lorenzianus</i>	9,000	21,000	57,000	12,000
48. <i>Chaetoceros mitra</i>	9,000	-	11,000	12,000
49. <i>Chaetoceros peruvianus</i>	-	31,000	-	12,000
50. <i>Chaetoceros pseudocurvisetus</i>	56,000	-	-	-
51. <i>Chaetoceros radicans</i>	103,000	-	-	95,000
52. <i>Chaetoceros</i> sp.	28,000	103,000	45,000	36,000
Family Lithodesmaceae				
53. <i>Ditylum brightwellii</i>	47,000	51,000	23,000	59,000
Family Eupodiscaceae				
54. <i>Odontella aurita</i>	19,000	-	-	-
55. <i>Odontella mobiliensis</i>	19,000	41,000	-	24,000
56. <i>Odontella sinensis</i>	9,000	41,000	11,000	-
57. <i>Triceratium favus</i>	-	10,000	-	12,000
Order Bacillariales				
Suborder Fragilariineae				
Family Fragilariaceae				
58. <i>Asterionellopsis glacialis</i>	-	103,000	11,000	12,000
Family Thalassionemataceae				
59. <i>Thalassionema frauenfeldii</i>	140,000	103,000	102,000	71,000
60. <i>Thalassionema nitzschioides</i>	56,000	10,000	11,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
61. <i>Thalassionema</i> sp.	56,000	-	-	-
Suborder Bacillariineae				
Family Eunotiaceae				
62. <i>Eunotia flexuosa</i>	19,000	-	-	12,000
Family Lyrellaceae				
63. <i>Lyrella lyra</i>	19,000	-	-	-
Family Naviculaceae				
64. <i>Amphora exigua</i>	9,000	21,000	-	12,000
65. <i>Amphora ovalis</i>	65,000	82,000	11,000	12,000
66. <i>Amphora robusta</i>	19,000	31,000	-	36,000
67. <i>Haslea tromphii</i>	19,000	72,000	11,000	-
68. <i>Meunier membranacea</i>	140,000	371,000	45,000	36,000
69. <i>Navicula lanceolata</i>	-	-	11,000	-
70. <i>Navicula</i> sp.	112,000	82,000	-	-
71. <i>Pinnularia gibba</i>	-	62,000	23,000	-
72. <i>Pleurosigma aestuarii</i>	122,000	82,000	23,000	107,000
73. <i>Pleurosigma angulatum</i>	159,000	124,000	-	237,000
74. <i>Pleurosigma elongatum</i>	9,000	10,000	-	-
75. <i>Pleurosigma normanii</i>	84,000	103,000	-	59,000
76. <i>Pleurosigma</i> sp.	28,000	41,000	-	36,000
77. <i>Trachyneis</i> sp.	65,000	113,000	-	59,000
Family Bacillariaceae				
78. <i>Bacillaria paxillifer</i>	-	134,000	-	24,000
79. <i>Cylindrotheca closterium</i>	1,945,000	2,431,000	681,000	995,000
80. <i>Nitzschia lorenziana</i>	187,000	206,000	182,000	190,000
81. <i>Nitzschia sigmoidea</i>	65,000	-	-	-
82. <i>Pseudo-nitzschia</i> sp.	309,000	536,000	57,000	142,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
83. <i>Tryblionella apiculata</i>	-	-	-	12,000
Family Surirellaceae				
84. <i>Entomoneis alata</i>	84,000	31,000	-	-
85. <i>Entomoneis robusta</i>	37,000	41,000	91,000	59,000
86. <i>Surirella didyma</i>	-	10,000	-	-
87. <i>Surirella ovata</i>	94,000	155,000	34,000	178,000
88. <i>Surirella robusta</i>	28,000	93,000	11,000	12,000
Class Dictyochophyceae				
Order Dictyochales				
Family Dictyochophyceae				
89. <i>Dictyocha fibula</i>	9,000	21,000	11,000	12,000
Class Dinophyceae				
Order Prorocentrales				
Family Prorocentraceae				
90. <i>Prorocentrum micans</i>	9,000	10,000	-	24,000
91. <i>Prorocentrum sigmoides</i>	-	41,000	11,000	-
Order Dinophysiales				
Family Dinophysiaceae				
92. <i>Dinophysis caudata</i>	-	21,000	-	-
Order Gymnodiniales				
Family Gymnodiniaceae				
93. <i>Gymnodinium sanguineum</i>	-	10,000	-	-
Order Gonyaulacales				
Family Ceratiaceae				
94. <i>Ceratium furca</i>	37,000	-	-	95,000
95. <i>Ceratium fusus</i>	9,000	31,000	-	12,000
96. <i>Ceratium porrectum</i>	-	10,000	-	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Family Goniodomaceae				
97. <i>Goniodoma polyedricum</i>	9,000	-	-	-
Family Gonyaulacaceae				
98. <i>Gonyaulax diegensis</i>	-	-	-	12,000
99. <i>Gonyaulax spinifera</i>	-	21,000	-	-
100. <i>Gonyaulax turbynei</i>	9,000	10,000	-	-
Family Pyrophacaceae				
101. <i>Pyrophacus horologium</i>	-	-	-	12,000
Order Peridiniales				
Family Calciodinellaceae				
102. <i>Scrippsiella trocoidea</i>	75,000	124,000	68,000	95,000
Family Peridiniaceae				
103. <i>Peridinium quinquecorne</i>	28,000	-	57,000	12,000
Family Protoperidiniaceae				
104. <i>Protoperidinium angustum</i>	19,000	-	45,000	83,000
105. <i>Protoperidinium conicum</i>	-	51,000	-	12,000
106. <i>Protoperidinium curtipes</i>	-	72,000	-	24,000
107. <i>Protoperidinium depressum</i>	-	10,000	-	-
108. <i>Protoperidinium latispinum</i>	-	21,000	-	-
109. <i>Protoperidinium pellucidum</i>	56,000	247,000	136,000	47,000
110. <i>Protoperidinium</i> sp.	94,000	62,000	57,000	47,000
111. <i>Protoperidinium spinulosum</i>	-	-	-	12,000
112. <i>Protoperidinium thorianum</i>	9,000	31,000	-	-
ชนิดแพลงก์ตอนพืช	74	79	51	61
ปริมาณแพลงก์ตอนพืช	6,867,000	8,681,000	4,181,000	4,819,000
ดัชนีความหลากหลายแพลงก์ตอนพืช	3.3168	3.2780	2.7723	3.2695
ดัชนีความสม่ำเสมอแพลงก์ตอนพืช	0.7706	0.7502	0.7051	0.7953

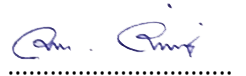
Sample Location :

1. สถานี 23118161-1 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร
2. สถานี 23118161-2 : หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
3. สถานี 23118161-3 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
4. สถานี 23118161-4 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment-preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขาวค้อน)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา

101/12 หมู่ 9 ต. บางพระ

อ. ศรีราชา จ. ชลบุรี 20110

โทร./โทรสาร. (038) 311379

Client : PTT Oil and Retail Business Public Company Limited

Address : 555 Ardnarong Rd., Klongtoey, Klongtoey, Bangkok, Thailand, 10260

Project Location : คลังน้ำมันภูเก็ต

รายงานผลการวิเคราะห์แพลงก์ตอนสัตว์

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Phylum Protozoa				
Subphylum Ciliophora				
Class Ciliata				
Subclass Spirotricha				
Order Tintinnida				
Family Tintinnididae				
1. <i>Leprotintinnus nordquisti</i>	9,000	52,000	-	-
Family Codonellidae				
2. <i>Tintinnopsis beroidea</i>	28,000	82,000	34,000	71,000
3. <i>Tintinnopsis fimbriata</i>	-	-	11,000	-
4. <i>Tintinnopsis tocaninensis</i>	65,000	52,000	34,000	24,000
5. <i>Tintinnopsis turgida</i>	9,000	-	23,000	36,000
Family Codonellopsidae				
6. <i>Codonellopsis ostenfeldi</i>	-	-	-	12,000
7. <i>Stenosemella nivalis</i>	9,000	-	-	24,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)			
	23118161-1	23118161-2	23118161-3	23118161-4
Family Rhabdonellidae				
8. <i>Protorhabdonella curta</i>	9,000	-	11,000	-
Family Tintinnidae				
9. <i>Amphorella infundibulum</i>	-	10,000	-	24,000
10. <i>Eutintinnus fraknoii</i>	-	10,000	-	-
Phylum Arthropoda				
Class Crustacea				
Subclass Copepoda				
11. Copepod nauplii	140,000	227,000	45,000	261,000
Order Calanoida				
12. Calanoid copepod	-	41,000	-	24,000
Order Cyclopoida				
13. Cyclopoid copepod	9,000	-	-	-
Order Harpacticoida				
14. Harpacticoid copepod	-	10,000	-	12,000
Phylum Mollusca				
Class Bivalvia				
15. Pelecypod larvae	9,000	10,000	11,000	-
Phylum Chordata				
Subphylum Urochordata				
Class Larvacea				
Family Oikopleuridae				
16. <i>Oikopleura</i> sp.	19,000	-	11,000	-
ชนิดแพลงก์ตอนสัตว์	10	9	8	9
ปริมาณแพลงก์ตอนสัตว์	306,000	494,000	180,000	488,000
ดัชนีความหลากหลายแพลงก์ตอนสัตว์	1.7005	1.6517	1.9223	1.5823
ดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์	0.7385	0.7517	0.9244	0.7201

Sample Location :

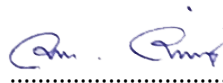
1. สถานี 23118161-1 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร
2. สถานี 23118161-2 : หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
3. สถานี 23118161-3 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
4. สถานี 23118161-4 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment-preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขาวด่อน)

ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)

หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : PTT Oil and Retail Business Public Company Limited

Address : 555 Ardnarong Rd., Klongtoey, Klongtoey, Bangkok, Thailand, 10260

Project Location : คลังน้ำมันภูเก็ต

รายงานผลการวิเคราะห์สัตว์หน้าดิน

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร)			
	23118164-1	23118164-2	23118164-3	23118164-4
Phylum Annelida				
Class Polychaeta				
Order Capitellida				
Family Capitellidae				
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	45	30	15	15
Family Maldanidae				
<i>Euchymene</i> sp. (ไส้เดือนทะเล)	15	-	-	-
Order Eunicida				
Family Eunicidae				
<i>Marphysa</i> sp. (ไส้เดือนทะเล)	-	-	-	15
Order Opheliida				
Family Opheliidae				
<i>Armandia</i> sp. (ไส้เดือนทะเล)	-	-	-	45
Order Phyllodocida				
Family Glyceridae				
<i>Glycera</i> sp. (ไส้เดือนทะเล)	-	-	15	15

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566) (ต่อ)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร)			
	23118164-1	23118164-2	23118164-3	23118164-4
Family Nephtyidae <i>Nephtys</i> sp. (ไส้เดือนทะเล)	15	-	15	-
Family Nereididae <i>Nereis</i> sp. (แม่เพรียง)	15	15	15	-
Order Terebellida				
Family Cirratulidae <i>Monticellina</i> sp. (ไส้เดือนทะเล)	15	-	-	-
Family Sternaspidae <i>Sternaspis</i> sp. (ไส้เดือนทะเล)	15	60	-	-
Phylum Arthropoda				
Class Malacostraca				
Order Amphipoda				
Family Ampeliscidae <i>Ampelisca</i> sp. (แอมฟิพอด)	30	-	-	30
Order Decapoda				
Family Alpheidae <i>Alpheus</i> sp. (กุ้งดีดขัน)	-	-	15	-
Family Leucosiidae <i>Leucosia</i> sp. (ปูกระดุม)	-	-	15	-
Order Tanaidacea				
Family Leptocheliidae <i>Leptochelia</i> sp. (ทานิดาเซียน)	-	15	-	-
Phylum Mollusca				
Class Bivalvia				
Order Cardiida				
Family Psammobiidae <i>Soletellina</i> sp. (หอยสองฝาชนิดหนึ่ง)	-	-	-	15

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 27 ตุลาคม 2566) (ต่อ)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร)			
	23118164-1	23118164-2	23118164-3	23118164-4
Family Tellinidae				
<i>Tellina</i> sp. (หอยสองฝาชนิดหนึ่ง)	15	-	-	30
Order Mytilida				
Family Mytilidae				
<i>Musculista</i> sp. (หอยกะพง)	-	-	-	89
Order Nuculanida				
Family Nuculanidae				
<i>Nuculana</i> sp. (หอยสองฝาชนิดหนึ่ง)	15	-	-	-
Order Venerida				
Family Veneridae				
<i>Pitar</i> sp. (หอยสองฝาชนิดหนึ่ง)	-	-	15	-
<i>Timoclea</i> sp. (หอยสองฝาชนิดหนึ่ง)	15	15	-	-
Phylum Echinodermata				
Class Echinoidea				
Order Clypeasteroida				
Family Clypeasteridae				
<i>Arachnoides</i> sp. (หริญทะเล)	-	30	-	-
Class Stellerioidea				
Order Ophiurida				
Family Ophiocomidae				
<i>Ophiocoma</i> sp. (ดาวแปดงา)	-	-	15	15
ชนิดสัตว์หน้าดิน	10	6	8	9
ปริมาณสัตว์หน้าดิน	195	165	120	269
ค่าดัชนีความหลากหลายสัตว์หน้าดิน	2.2048	1.6417	2.0794	1.9592

Sample Location :

1. สถานี 23118164-1 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร
2. สถานี 23118164-2 : หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
3. สถานี 23118164-3 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
4. สถานี 23118164-4 : ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร

Condition of Sample : contained in one plastic zip bag



(นายอรรถวุฒิ กันทะวงศ์)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

ผลการศึกษาผลผลิตขั้นปฐมภูมิ
(Primary Productivity)



สถานีวิจัยประมงศรีราชา

101/12 หมู่ 9 ต. บางพระ

อ.ศรีราชา จ. ชลบุรี 20110

โทร./โทรสาร. (038) 311379

Client : PTT Oil and Retail Business Public Company Limited

Address : 555 Ardnarong Rd., Klongtoey, Klongtoey, Bangkok, Thailand, 10260

Project Location : คลังน้ำมันภูเก็ต

รายงานผลการวิเคราะห์ผลผลิตเบื้องต้น (Primary productivity)

ค่า Primary productivity (ผลผลิตเบื้องต้น) จะบอกถึงความอุดมสมบูรณ์ของแหล่งน้ำ แหล่งน้ำใดที่มีค่า Primary productivity สูงก็就会有ความอุดมสมบูรณ์มาก ในทางกลับกันแหล่งน้ำใดที่มีค่า Primary productivity ต่ำก็就会有ความอุดมสมบูรณ์น้อย ซึ่งค่า Primary productivity มักจะมีความสัมพันธ์กับปริมาณแพลงก์ตอนพืชและแพลงก์ตอนสัตว์ในน้ำ และในการศึกษาเกี่ยวกับค่า Primary productivity จะมีส่วนที่ทำการศึกษาคือ 3 ส่วน คือ

ค่า Gross production เป็นค่าที่บอกถึงความสามารถในการผลิตของผู้ผลิตขั้นปฐมในแหล่งน้ำ ซึ่งก็คือแพลงก์ตอนพืช ในกระบวนการสังเคราะห์แสง ในกระบวนการดังกล่าวสามารถวัดได้โดยการวัดออกมาในรูปของปริมาณออกซิเจนที่เพิ่มขึ้นหรือปริมาณคาร์บอนไดออกไซด์ที่ใช้ไป แต่ในการคำนวณขั้นสุดท้ายมักจะคำนวณออกมาในรูปของคาร์บอน (C) ซึ่งเป็นสารอินทรีย์ที่เกิดขึ้นในกระบวนการผลิต โดยจะแสดงในรูปของ $\text{mgC}/\text{m}^3/\text{hr}$

ค่า Respiration จะบอกถึงการใช้ออกซิเจนของแพลงก์ตอนพืช และแพลงก์ตอนสัตว์ที่อยู่ในน้ำ รวมทั้งขบวนการย่อยสลายสารอินทรีย์ที่มีอยู่ในน้ำโดยแบคทีเรีย

ค่า Net production หรือผลผลิตเบื้องต้นสุทธิ จะบอกถึงความสามารถในการรองรับกิจกรรมในการใช้ออกซิเจนของแหล่งน้ำนั้นๆ เช่น การเพาะเลี้ยงสัตว์น้ำหรือเป็นแหล่งที่อยู่อาศัยให้กับสัตว์น้ำขนาดใหญ่อื่นๆ ถ้าค่า Net production มีค่าเป็นลบ แสดงว่าความสามารถในการผลิตของแพลงก์ตอนพืชน้อยกว่าการใช้ออกซิเจนของแพลงก์ตอนพืช แพลงก์ตอนสัตว์ที่อยู่ในน้ำและการย่อยสลายสารอินทรีย์ที่มีอยู่ในน้ำโดยแบคทีเรีย ซึ่งแสดงถึงความอุดมสมบูรณ์ของแพลงก์ตอนพืชในแหล่งน้ำบริเวณนั้นต่ำ หรือมีปริมาณแพลงก์ตอนพืชหรือการย่อยสลายสารอินทรีย์มาก แต่ค่าปริมาณออกซิเจนที่ละลายในน้ำที่วัดได้ในแหล่งน้ำนั้นอาจมาจากกระบวนการทางกายภาพ ได้แก่ กระแสน้ำและกระแสลม

ตาราง ผลการวิเคราะห์ผลผลิตเบื้องต้น บริเวณคลั่งน้ำมันภูเก็ต
(เก็บตัวอย่างเมื่อวันที่ 27 ตุลาคม 2566)

Station	Gross production (mgC/m ³ /hr)	Respiration (mgC/m ³ /hr)	Net production (mgC/m ³ /hr)
Lot 23118162-1 ห่างจากท่าเทียบเรือคลั่งน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร	84.40	49.40	43.24
Lot 23118162-2 หน้าท่าเทียบเรือคลั่งน้ำมันภูเก็ต	65.98	46.34	27.37
Lot 23118162-3 ห่างจากท่าเทียบเรือคลั่งน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร	95.65	42.79	59.99
Lot 23118162-4 ห่างจากท่าเทียบเรือคลั่งน้ำมันภูเก็ตไปทางทิศ ตะวันออก 100 เมตร	109.47	85.39	38.31

Condition of Sample : contained in incubation bottles; S1 – 9 bottles, S2 – 9 bottles, S3 – 9 bottles,
S4 – 6 bottles

จากการวิเคราะห์ค่าผลผลิตเบื้องต้นบริเวณคลั่งน้ำมันภูเก็ต เก็บตัวอย่างมาเมื่อวันที่ 27 ตุลาคม 2566 ซึ่งค่าผลผลิตเบื้องต้นแสดงในรูปค่าของ Gross production โดยมีค่าอยู่ระหว่าง 65.98-109.47 mgC/m³/hr ดังแสดงไว้ในตาราง สถานี Lot 23118162-4 (ห่างจากท่าเทียบเรือคลั่งน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร) สถานีที่มีผลผลิตเบื้องต้นมากที่สุด ซึ่งมีค่าผลผลิตเบื้องต้น 109.47 mgC/m³/hr ส่วนสถานีที่มีผลผลิตเบื้องต้นน้อยที่สุด คือ สถานี Lot 23118162-2 (หน้าท่าเทียบเรือคลั่งน้ำมันภูเก็ต) ซึ่งมีค่าผลผลิตเบื้องต้น 65.98 mgC/m³/hr ซึ่งปัจจัยที่มีผลต่อการเพิ่มขึ้นหรือลดลงของผลผลิตเบื้องต้นนี้ ได้แก่ ปริมาณของแพลงก์ตอนพืช แพลงก์ตอนสัตว์ อุณหภูมิ และปริมาณแสง ซึ่งจะมีผลต่อกระบวนการสังเคราะห์แสงของแพลงก์ตอนพืชในน้ำนั่นเอง


.....

(นางสาวกนกวรรณ ขวต่อน)

ผู้วิเคราะห์


.....

(นายอลงกต อินทราชา)

หัวหน้าสถานีวิจัยประมงศรีราชา



บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

คุณภาพตะกอนดิน



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23126547

Date Received : Nov 01, 2023
Date Reported : Nov 17, 2023
Report Number : 2820053-1

Page 1 of 4

Sample Number 23126547-1
Sampled Date Oct 31, 2023 11:39 AM
Sample Description ตะกอนดิน
Location ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศใต้ 100 เมตร
Date Analysis Commenced Nov 02, 2023
Condition of Sample Packed in two amber glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Chemical Testing						
Oil & Grease	mg/kg	-	100	453	In-house method based on United States Environmental Protection Agency, EPA Method 9071 B	Bangkok
Total Organic Carbon	%	-	0.1	0.50	In-house method based on United States Environmental Protection Agency, EPA Method 9060	Bangkok
Total Petroleum Hydrocarbon	mg/kg	-	100	448	In-house method based on United States Environmental Protection Agency, EPA Method 418.1	Bangkok
Physical Parameters						
Moisture	%	-	0.1	61.1	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 G	Bangkok
Soil Testing						
pH aqueous phase 50% (w/v)		-	-	7.8	United States Environmental Protection Agency, EPA Method 9045 D	Bangkok

Note : Analysis Results expressed on dry basis.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. No part of this report may be reproduced in any form without written consent from the laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Nanthawadee Somboon
Specialist 1



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23126547

Date Received : Nov 01, 2023
Date Reported : Nov 17, 2023
Report Number : 2820053-1

Page 2 of 4

Sample Number 23126547-2
Sampled Date Oct 31, 2023 12:03 PM
Sample Description ตะกอนดิน
Location หน้าท่าเทียบเรือคลังน้ำมันภูเก็ต
Date Analysis Commenced Nov 02, 2023
Condition of Sample Packed in two amber glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Chemical Testing						
Oil & Grease	mg/kg	-	100	140	In-house method based on United States Environmental Protection Agency, EPA Method 9071 B	Bangkok
Total Organic Carbon	%	-	0.1	2.14	In-house method based on United States Environmental Protection Agency, EPA Method 9060	Bangkok
Total Petroleum Hydrocarbon	mg/kg	-	100	130	In-house method based on United States Environmental Protection Agency, EPA Method 418.1	Bangkok
Physical Parameters						
Moisture	%	-	0.1	32.3	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 G	Bangkok
Soil Testing						
pH aqueous phase 50% (w/v)		-	-	8.2	United States Environmental Protection Agency, EPA Method 9045 D	Bangkok

Note : Analysis Results expressed on dry basis.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Nanthawadee Somboon
Specialist 1

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23126547

Date Received : Nov 01, 2023
Date Reported : Nov 17, 2023
Report Number : 2820053-1

Page 3 of 4

Sample Number 23126547-3
Sampled Date Oct 31, 2023 10:31 AM
Sample Description ตะกอนดิน
Location ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศเหนือ 100 เมตร
Date Analysis Commenced Nov 02, 2023
Condition of Sample Packed in two amber glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Chemical Testing						
Oil & Grease	mg/kg	-	100	259	In-house method based on United States Environmental Protection Agency, EPA Method 9071 B	Bangkok
Total Organic Carbon	%	-	0.1	0.52	In-house method based on United States Environmental Protection Agency, EPA Method 9060	Bangkok
Total Petroleum Hydrocarbon	mg/kg	-	100	254	In-house method based on United States Environmental Protection Agency, EPA Method 418.1	Bangkok
Physical Parameters						
Moisture	%	-	0.1	46.0	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 G	Bangkok
Soil Testing						
pH aqueous phase 50% (w/v)		-	-	7.9	United States Environmental Protection Agency, EPA Method 9045 D	Bangkok

Note : Analysis Results expressed on dry basis.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Nanthawadee Somboon
Specialist 1

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23126547

Date Received : Nov 01, 2023
Date Reported : Nov 17, 2023
Report Number : 2820053-1

Page 4 of 4

Sample Number 23126547-4
Sampled Date Oct 31, 2023 11:03 AM
Sample Description ตะกอนดิน
Location ห่างจากท่าเทียบเรือคลังน้ำมันภูเก็ตไปทางทิศตะวันออก 100 เมตร
Date Analysis Commenced Nov 02, 2023
Condition of Sample Packed in two amber glass bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Chemical Testing						
Oil & Grease	mg/kg	-	100	160	In-house method based on United States Environmental Protection Agency, EPA Method 9071 B	Bangkok
Total Organic Carbon	%	-	0.1	0.29	In-house method based on United States Environmental Protection Agency, EPA Method 9060	Bangkok
Total Petroleum Hydrocarbon	mg/kg	-	100	150	In-house method based on United States Environmental Protection Agency, EPA Method 418.1	Bangkok
Physical Parameters						
Moisture	%	-	0.1	28.5	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 G	Bangkok
Soil Testing						
pH aqueous phase 50% (w/v)		-	-	8.5	United States Environmental Protection Agency, EPA Method 9045 D	Bangkok

Note : Analysis Results expressed on dry basis.

Sampling By : Yuttapong Rattana

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

Approved by

Nanthawadee Somboon
Specialist 1

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บริษัท ปตท. น้ำมันและการค้าปลีก จำกัด (มหาชน)

รายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการท่าเทียบเรือและคลังน้ำมันภูเก็ต

ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

คุณภาพอากาศในบรรยากาศโดยทั่วไป



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023
Date Reported : Oct 30, 2023
Report Number : 2801245-1

Page 1 of 6

Sample Number : 23118167-1
Sampled Date : Oct 18, 2023
Sample Description : Air Quality
Location : บริเวณพื้นที่ Bay จ่ายน้ำมัน (GPS 47N 434263, 865263)
Date Analysis Commenced : Oct 24, 2023
Condition of Sample : Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	1.0	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Orawan R.

Orawan Rakyong
Scientist (3)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023
Date Reported : Oct 30, 2023
Report Number : 2801245-1

Page 2 of 6

Sample Number : 23118167-2
Sampled Date : Oct 19, 2023
Sample Description : Air Quality
Location : บริเวณพื้นที่ Bay จ่ายน้ำมัน (GPS 47N 434263, 865263)
Date Analysis Commenced : Oct 24, 2023
Condition of Sample : Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	0.3	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Approved by

Orawan R.

Orawan Rakyong
Scientist (3)

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Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023
Date Reported : Oct 30, 2023
Report Number : 2801245-1

Page 3 of 6

Sample Number : 23118167-3
Sampled Date : Oct 20, 2023
Sample Description : Air Quality
Location : บริเวณพื้นที่ Bay จ่ายน้ำมัน (GPS 47N 434263, 865263)
Date Analysis Commenced : Oct 24, 2023
Condition of Sample : Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	0.2	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Orawan R.

Orawan Rakyong
Scientist (3)



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023
Date Reported : Oct 30, 2023
Report Number : 2801245-1

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Sample Number : 23118167-4
Sampled Date : Oct 18, 2023
Sample Description : Air Quality
Location : บริเวณพื้นที่รับน้ำมันทางรถ (GPS 47N 434275, 865276)
Date Analysis Commenced : Oct 24, 2023
Condition of Sample : Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	0.5	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Approved by

Orawan R.

Orawan Rakyong
Scientist (3)



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260
P/O : 4170008459
Project Name :
Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023
Date Reported : Oct 30, 2023
Report Number : 2801245-1

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Sample Number : 23118167-5
Sampled Date : Oct 19, 2023
Sample Description : Air Quality
Location : บริเวณพื้นที่รับน้ำมันทางรถ (GPS 47N 434275, 865276)
Date Analysis Commenced : Oct 24, 2023
Condition of Sample : Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	0.2	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Orawan R.

Orawan Rakyong
Scientist (3)



Analysis / Test Report

Client : PTT Oil and Retail Business Public Company Limited
555, Ardnarong Rd., Klongtoey, Klongtoey, Bangkok Thailand 10260

P/O : 4170008459

Project Name :

Project Location : คลังน้ำมันภูเก็ต

Lot ID: 23118167

Date Received : Oct 21, 2023

Date Reported : Oct 30, 2023

Report Number : 2801245-1

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Sample Number 23118167-6
Sampled Date Oct 20, 2023
Sample Description Air Quality
Location บริเวณพื้นที่รับน้ำมันทางรถ (GPS 47N 434275, 865276)
Date Analysis Commenced Oct 24, 2023
Condition of Sample Drawn into one 10-L air sampling bag

Analyte	Sampled Date/time	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Air Testing							
Total VOC	09:00 AM - 12:00 PM	ppm	-	0.10	0.2	Total VOC Analyzer	Bangkok

Sampled By : Sakkarin Panpheng

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)

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Orawan R.

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