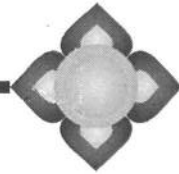


ประเมินผลคุณภาพน้ำใช้ และน้ำดื่ม

เสนอ

Centara Grand Mirage Beach Resort Pattaya



กุมภาพันธ์ 2566

บริษัท เทสท์ เทค จำกัด

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150
Tel. 0 - 2893-4211 - 17 Fax : 0 - 2893-4218



SRR NO. 66L0710

Messrs : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5 , Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Factory Site : Centara Grand Pattaya Date : 22 กุมภาพันธ์ 2566

Recommendation For : คุณภาพน้ำใช้และน้ำดื่มประจำเดือนกุมภาพันธ์ 2566

Report Reference : R04335-43/66, R03891-92/66, R03579-82/66, R03821-22/66, R03990/66

RECOMMENDATION

1. คุณภาพน้ำใช้

1.1 Storage Tank : คุณภาพน้ำ มีค่าความขุ่นต่ำ ค่าเหล็กตรวจไม่พบ ค่าความกระด้างมีค่าต่ำ, ค่าคลอรีนมีค่าต่ำ ตรวจไม่พบเชื้อ Coliform/E.Coli (คุณภาพน้ำมีค่าสารละลายต่างๆ ใกล้เคียงจากเดือนมกราคม 2566)

หมายเหตุ : การดูแล

- เติมน้ำคลอรีนในระบบผลิตน้ำ และน้ำเชื้อก่อนเก็บในถังพัก
- ควรตรวจสอบถังพัก 2 ครั้ง/เดือน และล้างถังเพื่อลดการสะสมของเหล็ก
- ควรดูแลขบวนการปรับสภาพน้ำส่วนต่อเนื่อง

1.2 Soft Water (Main Point) :

- pH ปกติ, ความขุ่นค่อนข้างสูง
- ค่าความกระด้าง มีค่าต่ำ
- ค่าเหล็กสูง
- ค่าแอมโมเนียต่ำ
- ตรวจไม่พบเชื้อ Coliform, E.Coli
- คุณภาพน้ำทางเคมีอื่น ๆ ปกติอยู่ในมาตรฐาน

หมายเหตุ : การดูแลระบบ

- ควบคุมค่าเหล็กของน้ำในถังพักให้มีค่าต่ำ เพื่อลดการสะสมของเหล็กใน Softener
- ล้างกลับระบบ Softener ให้บ่อย เพื่อลดการสะสมของเหล็กและเชื้อในระบบกรอง
- ตรวจสอบค่าความกระด้าง และควบคุมการล้างเกลือ Softener ให้ต่อเนื่อง เพื่อควบคุมค่าความกระด้าง และควบคุมการล้างเกลือที่ตกค้างให้หมด ก่อนใช้งานปกติ
- ควรเติมน้ำคลอรีนในถังพักน้ำใช้ และ Regenerate Softener ด้วยน้ำหลังเติมน้ำคลอรีน เพื่อลดการสะสมของเหล็กใน Softener และฆ่าเชื้อที่สะสมในระบบกรอง

1.3 Hot Water System (Main Point) :

- ค่า pH ปกติ, ความขุ่นต่ำ
- ค่าเหล็กตรวจไม่พบ
- ค่าแมงกานีสตรวจไม่พบ
- ตรวจไม่พบ Coliform/E.Coli
- ค่าความกระด้างต่ำ

หมายเหตุ : - ควร Flushing ในระบบผลิตน้ำร้อน เพื่อลดการสะสมของเหล็กในระบบ
- ควบคุม Softener เพื่อควบคุมความกระด้างในระบบผลิตน้ำร้อน อาจก่อให้เกิดปัญหาตะกรันในระบบ

1.4 Guest Room Usage Water (Cold Water) : คุณภาพน้ำเย็นห้องพักแขก 2 จุด North A # 1203

และ South A # 1010 พบค่าดังนี้

- ค่าเหล็กตรวจไม่พบ
- ค่าแมงกานีสตรวจไม่พบ
- ค่าความกระด้างและคลอไรด์ใกล้เคียงน้ำในถังพัก
- ตรวจไม่พบ Coliform/ E.Coli

หมายเหตุ : ในกรณีไม่ค่อยเปิดใช้ห้อง ควร Flushing ท่อก่อนเปิดใช้ในโซนที่ไม่ค่อยเปิดห้องพัก เพื่อลดการสะสมของเหล็ก/แมงกานีสในเส้นท่อ
- ตรวจสอบการเติมคลอรีนในถังพักน้ำประปา เพื่อฆ่าเชื้อที่สะสม

1.5 Guest Room Usage Water (Hot Water) : คุณภาพน้ำ 2 จุด คือ North A # 1203

และ South A# 1010 พบค่าดังนี้

- คุณภาพน้ำทางเคมีพบความขุ่นต่ำ
- ค่าเหล็กต่ำ
- ค่าแมงกานีสตรวจไม่พบ
- ตรวจไม่พบ Coliform/E.Coli
- ค่าความกระด้างและคลอไรด์ใกล้เคียงน้ำในถังพัก

หมายเหตุ : ควร Flushing ระบบท่อ ก่อนเปิดใช้ห้องพักเพื่อป้องกันการสะสมของตะกอนเหล็กในเส้นท่อ

1.6 Cooling :

- 1) คุณภาพน้ำมีค่าการนำไฟฟ้าค่อนข้างสูง
- 2) ค่าความกระด้างสูง
- 3) ค่าเหล็กต่ำ
- 4) เคมิป้องกันตะกรัน (phosphate) มีค่าต่ำ ควรตรวจสอบการเติมเคมี
- 5) ตรวจไม่พบ Legionella spp.

การดูแล

- ตรวจสอบระบบ Softener และผลิตน้ำ Soft ใช้เป็น Make Up Water ให้เพียงพอ และควบคุมการล้างเกลือ เพื่อควบคุมค่าความกระด้าง ≤ 20 ppm
- ควบคุมการเติมเคมีป้องกันตะกรัน และตะไคร่น้ำ เนื่องจาก เคมิป้องกันตะกรัน (phosphate) ยังต่ำ
- ควบคุมการระบายน้ำทิ้ง ให้สม่ำเสมอ เพื่อควบคุมค่า การนำไฟฟ้า ≤ 2500 umhos/cm

1.7 Chilled Water : คุณภาพน้ำเหลืองใสมีตะกอน และค่าเหล็กมีค่าสูง ค่า Nitrite ตรวจพบ มีค่าต่ำกว่าเกณฑ์ ควบคุม มีค่า pH สูง

หมายเหตุ : - ควรเติมเคมีเพิ่มในรอบการบำรุงรักษาถัดไป โดยล้างระบบก่อนเติมเคมีเพื่อลดการสะสมของเหล็กก่อนเติมเคมี

2. น้ำดื่ม

- 1) Canteen : ค่าความกระด้างต่ำกว่ามาตรฐาน ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ คุณภาพน้ำทางเคมีอื่นๆ อยู่ในมาตรฐาน ตรวจไม่พบ Coliform/E.Coli
- 2) Oasis Kitchen : ค่าความกระด้างต่ำกว่ามาตรฐาน ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ คุณภาพน้ำทางเคมีอื่นๆ อยู่ในมาตรฐาน ตรวจไม่พบ Coliform/E.Coli
- 3) Guest Room (1203) : ค่าความกระด้างต่ำ, ค่าเหล็กและ ค่าแมงกานีสตรวจไม่พบ ตรวจไม่พบ Coliform/E.Coli

การดูแล :

- ล้างระบบกรอง Softener และล้างสม่ำเสมอ เพื่อลดค่าความกระด้าง
- Flushing line ด้วยน้ำหลังเติมคลอรีน เพื่อฆ่าเชื้อแบคทีเรียที่สะสมในระบบ
- ตรวจสอบความสะอาดของถังและแท็งก์บรรจุน้ำดื่ม

3. Swimming Pool :

1) Main Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.92 pm
- ตรวจไม่พบ Coliform/ E.Coli

2) Lab Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.94 ppm
- ตรวจไม่พบ Coliform/ E.Coli

3) Lazy Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.85 ppm
- ตรวจไม่พบ Coliform/E.Coli

4) 18th Flr Pool :

- pH ปกติ
- คลอรีนตรวจพบ 0.91 ppm
- ตรวจไม่พบ Coliform/E.Coli

หมายเหตุ : การดูแล

1. ควรตรวจสอบ pH สม่ำเสมอในกรณีที่กำลังค่า pH ทำให้ปรับด้วยโซดาไฟหรือโซดาแอช และปรับด้วยกรดเกลือในกรณีค่า pH สูง
2. ตรวจสอบคลอรีนและเติมให้สม่ำเสมอ
3. หมุนเวียนน้ำผ่านกรอง เพื่อไม่ให้ตะกอนสะสม และเชื้อแบคทีเรีย

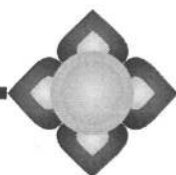
4. น้ำแข็ง :

- 1) Canteen (Cube) : ตรวจไม่พบ Coliform/E.Coli
- 2) Banquet (Flake) : ตรวจไม่พบ Coliform/E.Coli
- 3) Flames : ตรวจไม่พบ Coliform/E.Coli
- 4) Oasis Kitchen (Flake) : ตรวจไม่พบ Coliform/E.Coli

การดูแล :

1. เติมน้ำคลอรีนในน้ำประปา และล้างระบบผลิตน้ำแข็งด้วยน้ำหลังเติมน้ำคลอรีน
 2. ตรวจสอบความสะอาดระบบผลิตน้ำแข็ง
 3. ภาชนะตักน้ำแข็งต้องสะอาด และถังบรรจุต้องสะอาด และควรล้างทุกวัน
 4. อย่าให้อาหารปะปนในถังบรรจุน้ำแข็ง
 5. ในกรณีน้ำแข็งซื้อ ควรตรวจสอบถุงบรรจุ
5. น้ำเสียออกจากระบบ : ลักษณะน้ำเหลืองขุ่น BOD ~ 208 mg/l และอยู่ในเกณฑ์การควบคุมของ
พหยา ในการปล่อยน้ำทิ้งลงระบบบำบัดรวม (BOD \leq 1000 mg/l) โดยต้องจ่ายค่าบริการบำบัดน้ำทิ้ง
ตามข้อกำหนด

Recommendation & Water Analysis Report
for
Centara Grand Mirage Beach Resort Pattaya



February, 2023

บริษัท เทสต์ เทค จำกัด

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150
Tel. 0 – 2893-4211 - 17 Fax : 0 – 2893-4218



SRR NO. 66L0711

Messrs : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Factory Site : Centara Grand Pattaya Date : February 22, 2023

Recommendation For : Water Analysis of February, 2023

Report Reference : R04335-43/66, R03891-92/66, R03579-82/66, R03821-22/66, R03990/66

RECOMMENDATION

1. Raw Water

1.1 Storage Tank :

- Iron was not found.
- Turbidity was low.
- Manganese was low.
- Coliform/ E.Coli was not found.
- Hardness was low.

Note : - Storage Tank should be check and cleaned 1 -2 time/month to reduce iron accumulation.
- Chlorine should be routine added into buied-water and feeding into raw water to prevent bacterial growth.
- Softener in next step treatment must be taken care.

1.2 Soft Water (Main Point) :

- Hardness was low.
- Iron was not high.
- Manganese was low.
- Coliform/ E.Coli was not found.

Note : The system should be operated.

- Water storage tank should be checked and cleaned if iron and bacteria accumulation.
- Softener should be flushing with low iron of raw water to reduce iron and bacteria accumulation, Rinsing step must be checked before use.
- The regeneration with salt should be routine operation to control hardness.

- Chlorine should be added in storage tank and back wash softener/regeneration should be done with chlorinated – water to prevent bacteria growth and accumulation.

1.3 Hot Water System (Main Point) :

- Hardness was low.
- Iron was not found.
- Manganese was not found.
- Coliform/E.Coli was not found.

Note : The system should be checked.

- Raw water storage tank cleaning and flushing should be done increase of iron accumulation.
- Hot water unit should be flushing with low iron water.
- Metal type in hot water system and pipe line should be checked to prevent Galvanic Corrosion Problems.

1.4 Guest Room Usage Water (Cold Water) : (North A # 1203, South A # 1010)

- Total Hardness was like raw water.
- Turbidity was low.
- Iron was not found.
- Manganese was not found.
- Coliform/ E.Coli was not found.

Note : In the room which not usually open, flushing pipe line before open should be done to reduce iron and bacteria accumulation.

- Chlorine should be routine added into water supply.

1.5 Guest Room Usage Water (Hot Water) : (North A # 1203, South A # 1010)

- Hardness was like raw water.
- Turbidity was low.
- Iron was low.
- Manganese was not found.
- Coliform/E.Coli was not found.

Note:

- Flushing of pipe – line before used should be done to reduce iron accumulation in pipe line.
- Soft water before hot water machine should be checked.

1.6 Cooling

- 1) Conductivity was high. Hardness was high.
- 2) Iron was low.
- 3) Antiscale and anticorrosion chemicals including with biocide should be adding into system.
- 4) Legionella spp. was not found.

Note :

- Bleed off should be controlled.
- Softener should be checked about regeneration cycle to control hardness < 20 ppm.
- Cooling water must be drained and adding new make up water to reduce TDS.

- 1.7 Chilled :** Iron was high. pH was high Anticorrosion chemical (Nitrite) was low for control.
Anti corrosion chemical should be added after cleaning, incase of maintenance.

2. Drinking Water :

- 1) Canteen : Hardness was low. Iron was not found. Manganese was not found.
Other water quality was in standard. Coliform/E.Coli was not found.
- 2) Oasis Kitchen : Hardness was low. Manganese was not found.
Iron was not found. Other water quality was in standard. Coliform/E.Coli was not found.
- 3) Guest Room (1203) : Other water quality was in standard. Hardness was low. Iron was not found.
Manganese was not found. Coliform/E.Coli was not found.

Note :

- Chlorine feeding into raw water should be done.
- Clean unit and Tank with chlorination water should be done.
- Drinking water treatment unit should be cleaned and regenerate to reduce hardness.

3. Swimming Water :

- 1) Main Pool : On used.
 - pH was normal.
 - Chlorine was found 0.92 ppm.
 - Coliform/ E.Coli was not found.
- 2) Lab Pool : On used.
 - pH was normal.
 - Chlorine was found 0.94 ppm.
 - Coliform/ E.Coli was not found.
- 3) Lazy Pool :
 - pH was normal.
 - Chlorine was found 0.85 ppm.
 - Coliform/E.Coli was not found.
- 4) 18th Flr Pool
 - pH was normal.
 - Chlorine was found 0.91 ppm.
 - Coliform/E.Coli was not found.

Recommendation :

1. pH should be routine checked. If pH low, the feeding of NaOH or Na₂CO₃ should be done.
If pH high , the pH adjustment by HCl should be added.
2. Chlorine should be routine checked to control ~ 1 – 3 ppm
3. Circulation water should be passed through filter for reduce bacteria accumulation.

4. Ice

- 1) Canteen (Cube) : Coliform/E.Coli was not found.
- 2) Banquet (Flake) : Coliform/E.Coli was not found.
- 3) Flames : Coliform/E.Coli was not found.
- 4) Oasis Kitchen (Flake): Coliform/E.Coli was not found.

Recommendation : The ice machine should be disinfection by.

1. Flushing system by chlorine – added water should be done.
2. Scoop equipment should be cleaned without contamination.
3. Ice machine and filter system should be cleaned.
4. Ice box should be cleaned.

5. Waste Water : BOD of Effluent ~208 mg/L was in Pattaya Regulation (≤ 1000 mg/l).

The owner should pay for treatment following regulation rate.



Accreditation No. 1201/54

TESTING
NO.0001

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04335/66

Parameters	Unit	Method	TW03150 /66	TW03151 /66	TW03152 /66	Standard ^a
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.4	7.3	7.4	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	0.85	4.64	< 0.50	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	312	328	317	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	187	197	190	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	70	76	69	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	36	36	36	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	0.36	< 0.10	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	0.04	0.08	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	2.27	2.26	2.60	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	31.76	34.31	31.91	250
Sample Condition		Observation	Clear	Colorless, Brown Particles	Clear	

- Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017
2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.
3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.
4. Test marked " * " on this report are not included in scope of Accreditation
5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

21/02/2023

Technical Manager

21/02/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04336/66

Parameters	Unit	Method	TW03150 /66	TW03151 /66	TW03152 /66	Standard ^a
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	not found
Sample Condition		Observation	Clear	Colorless, Brown Particles	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

21/02/2023

Technical Manager

21/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04337/66

Parameters	Unit	Method	TW03153 /66	TW03154 /66	Standard ^a
			Guest Room Cold Water (North A1203)	Guest Room Cold Water (South A1010)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.4	7.3	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	< 0.50	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	317	315	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	190	189	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	74	73	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	36	36	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 0.10	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	2.03	2.06	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	32.51	31.30	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

21/02/2023

Technical Manager

21/02/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04338/66

Parameters	Unit	Method	TW03153 /66	TW03154 /66	Standard ^a
			Guest Room Cold Water (North A1203)	Guest Room Cold Water (South A1010)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

21/02/2023



Technical Manager

21/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04339/66

Parameters	Unit	Method	TW03155 /66	TW03156 /66	Standard ^a
			Guest Room Hot Water (North A1203)	Guest Room Hot Water (South A1010)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.5	7.5	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	0.84	5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	314	314	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	188	188	1000
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	72	73	300
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	36	35	250
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	0.10	0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate [#]	mg/L as NO ₃ ⁻	SM 2017 (4500-NO ₃ ⁻ E)	2.35	2.94	50
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	31.91	33.71	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMS.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

21/02/2023

Technical Manager

21/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04340/66

Parameters	Unit	Method	TW03155 /66	TW03156 /66	Standard ^a
			Guest Room Hot Water (North A1203)	Guest Room Hot Water (South A1010)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

3. Coliform Bacteria < 1.1 MPN/100 mL is meaning not found



Analyst

21/02/2023



Technical Manager

21/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 09/02/2023

Received Date : 09/02/2023

Report Date : 21/02/2023

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 10:00 AM

Analytical Date : 09 - 20/02/2023

Report No. : R04341/66

Parameters	Unit	Method	TW03157 /66	Standard ^a
			Cooling Water	(Cooling Water)
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	8.6	8.5 - 9.5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	2520	< 2500
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	1512	< 2000
* P-Alkalinity	mg/L as CaCO ₃	Titration	20	-
* M-Alkalinity	mg/L as CaCO ₃	Titration	185	-
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	570	< 100
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	465	< 400
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	0.16	< 1.0
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	-
* Sulfate	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	314	-
* Silica	mg/L as SiO ₂	SM 2017 (4500-SiO ₂ C)	27.31	-
* Total Phosphorus	mg/L as P	Stannous Chloride	0.20	-
Sample Condition		Observation	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked " #" on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ



Analyst

21/02/2023

Technical Manager

21/02/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.

TESTING
NO.0001

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 20/02/2023

Report Date : 21/02/2023

Report No. : R04342/66

Parameters	Unit	Method	TW03157 /66
			Cooling Water
Legionella spp.	CFU/L	ISO 11731 : 2017	not detected
Sample Condition		Observation	Clear

Analyst

21/02/2023

Technical Manager

21/02/2023

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Test report shall not be reproduced except in full, without written approved of the laboratory.



Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 09/02/2023

Received Date : 09/02/2023

Report Date : 21/02/2023

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 10:00 AM

Analytical Date : 09 - 20/02/2023

Report No. : R04343/66

Parameters	Unit	Method	TW03158 /66	Standard ^a (Chilled Water)
			Chilled Water	
* pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	10.4	7.5 - 9.5
Conductivity [#]	uS/cm	SM 2017 (2510 B)	938	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	563	-
* P-Alkalinity	mg/L as CaCO ₃	Titration	115	-
* M-Alkalinity	mg/L as CaCO ₃	Titration	245	-
* Total Hardness	mg/L as CaCO ₃	SM 2017 (2340 C)	5	-
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	40	-
* Total Iron	mg/L as Fe	SM 2017 (3500-Fe B)	2.67	< 1.0
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	-
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	34.92	-
Silica [#]	mg/L as SiO ₂	SM 2017 (4500-SiO ₂ C)	4.48	-
* Nitrite	mg/L as NO ₂ ⁻	SM 2017 (4500-NO ₂ ⁻ B)	61.54	500 - 1000
Sample Condition		Observation	Light Yellow, Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. Test marked " #" on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSQ.

4. Test marked " * " on this report are not included in scope of Accreditation

5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ (Chilled Water)



Analyst

21/02/2023

Technical Manager

21/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Drinking Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 15/02/2023

Report Date : 16/02/2023

Report No. : R03891/66

Parameters	Unit	Method	TW03159 /66	TW03160 /66	TW03161 /66	Standard ^a
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 1203)	
pH (25°C) [#]	-	Based on SM 2017 (4500-H ⁺ B)	7.2	7.4	7.3	6.5-8.5
Turbidity [#]	NTU	SM 2017 (2130 B)	< 0.50	< 0.50	< 0.50	≤ 5.0
Conductivity [#]	uS/cm	SM 2017 (2510 B)	311	310	311	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	187	186	187	-
Total Hardness [@]	mg/L as CaCO ₃	SM 2017 (2340 C)	67	69	68	≤ 100.0
Chloride [@]	mg/L as Cl ⁻	SM 2017 (4500-Cl ⁻ B)	34	34	34	≤ 250.0
Total Iron [#]	mg/L as Fe	SM 2017 (3500-Fe B)	< 0.10	< 0.10	< 0.10	≤ 0.3
Manganese [#]	mg/L	SM 2017 (3500-Mn B)	< 0.04	< 0.04	< 0.04	≤ 0.05
Nitrate Nitrogen [#]	mg/L as NO ₃ ⁻ -N	SM 2017 (4500-NO ₃ ⁻ E)	0.52	0.49	0.52	≤ 4.0
Sulfate [#]	mg/L as SO ₄ ²⁻	Based on SM 2017 (4500-SO ₄ ²⁻ E)	32.21	31.91	34.31	≤ 250.0
Sample Condition		Observation	Clear	Clear	Clear	

- Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017
2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.
3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSQ.
4. Test marked " * " on this report are not included in scope of Accreditation
5. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))



Analyst

16/02/2023

Technical Manager

16/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Drinking Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 15/02/2023

Report Date : 16/02/2023

Report No. : R03892/66

Parameters	Unit	Method	TW03159 /66	TW03160 /66	TW03161 /66	Standard ^a
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 1203)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	not found	negative
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))



Analyst

16/02/2023

Technical Manager

16/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 13/02/2023

Report Date : 14/02/2023

Report No. : R03579/66

Parameters	Unit	Method	TW03162 /66	TW03163 /66	Standard ^a
			Main Pool	Lab Pool	
pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	7.4	7.6	7.2-8.4
Residual Chlorine	mg/L as Cl ₂	DPD Colorimetric	0.92	0.94	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017
2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)



Analyst

14/02/2023

Technical Manager

14/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 09/02/2023

Received Date : 09/02/2023

Report Date : 14/02/2023

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 10:00 AM

Analytical Date : 09 - 13/02/2023

Report No. : R03580/66

Parameters	Unit	Method	TW03162 /66	TW03163 /66	Standard ^a
			Main Pool	Lab Pool	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)

Analyst

14/02/2023

Technical Manager

14/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 13/02/2023

Report Date : 14/02/2023

Report No. : R03581/66

Parameters	Unit	Method	TW03164 /66	TW03165 /66	Standard ^a
			Lazy Pool	18 th Flr Pool	
pH (25°C)	-	Based on SM 2017 (4500-H ⁺ B)	7.3	7.5	7.2-8.4
Residual Chlorine	mg/L as Cl ₂	DPD Colorimetric	0.85	0.91	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)



Analyst

14/02/2023

Technical Manager

14/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 13/02/2023

Report Date : 14/02/2023

Report No. : R03582/66

Parameters	Unit	Method	TW03164 /66	TW03165 /66	Standard ^a
			Lazy Pool	18 th Flr Pool	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)



Analyst

14/02/2023



Technical Manager

14/02/2023

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Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 13/02/2023

Report Date : 15/02/2023

Report No. : R03821/66

Parameters	Unit	Method	TW03166 /66	TW03167 /66	Standard ^a
			Canteen (Cube)	Banquet (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 20172. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

15/02/2023

Technical Manager

15/02/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 13/02/2023

Report Date : 15/02/2023

Report No. : R03822/66

Parameters	Unit	Method	TW03168 /66	TW03169 /66	Standard ^a
			Flames	Oasis Kitchen (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2017 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2017 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 20172. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)
(Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

15/02/2023

Technical Manager

15/02/2023

Reported results refer to the sample as received only.

Test report shall not be reproduced except in full, without written approved of the laboratory.

Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Waste Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 09/02/2023

Sampling Time : 10:00 AM

Received Date : 09/02/2023

Analytical Date : 09 - 16/02/2023

Report Date : 17/02/2023

Report No. : R03990/66

Parameters	Unit	Method	TW03170 /66	Standard ^a
			Effluent	
pH	-	SM 2017 (4500-H ⁺ B)	6.7	-
BOD	mg/L	SM 2017 (5210 B, 4500-O G)	208	≤ 1000
Total Suspended Solids	mg/L	SM 2017 (2540 D)	104	-
Oil & Grease	mg/L	SM 2017 (5520 D)	49.7	-
Sample Condition		Observation	Light Yellow, Cloud	

Remark : 1. SM 2017 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017

2. a : ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 22 (พ.ศ. 2544) เรื่อง กำหนดอัตราค่าบริการบำบัดน้ำเสียของระบบบำบัดน้ำเสียรวมเมืองพัทยา



Analyst

17/02/2023



Technical Manager

17/02/2023

Reported results refer to the sample as received only.

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