

Environmental Report **in June 2007**



Agenda

- 1. Summary of Environment**
- 2. Stack Emissions**
- 3. Ambient Air Quality (AQMS)**
- 4. Seawater Discharge & Residual Chlorine**
- 5. Visible Plume Study**

➡ 1. Summary of Environment

○ Sulfur dioxide (SO₂) and Nitrogen oxides (NO_x) emissions were below the permitted levels. *Opacity of unit 1 was high on 16th due to shut down and start up period*



2. Stack Emissions

The record data as shown below: **Unit 1**

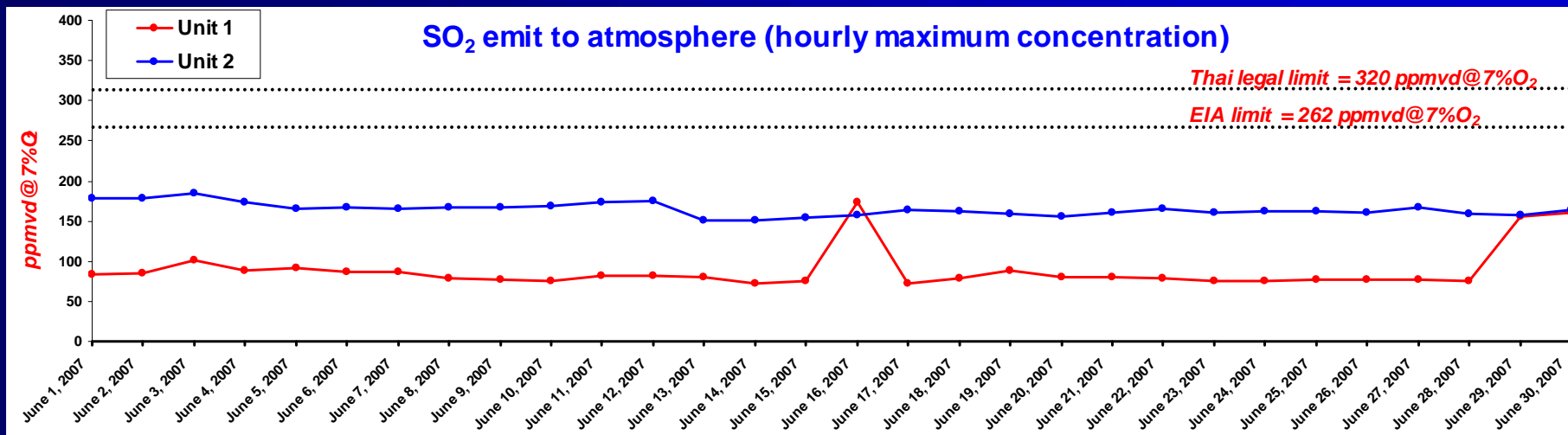
Emission in hourly average	Result of June 2007			EIA limit ^{1/}	Thai legal limit ^{2/}
	maximum	average	Over EIA permit		
SO ₂ (ppmvd@7%O ₂)	173	79	0 hour	262	320
NO _x (ppmvd@7%O ₂)	225	169	0 hour	241	350
Opacity (%)	43	20	N/A	-	-

3. Stack Emissions

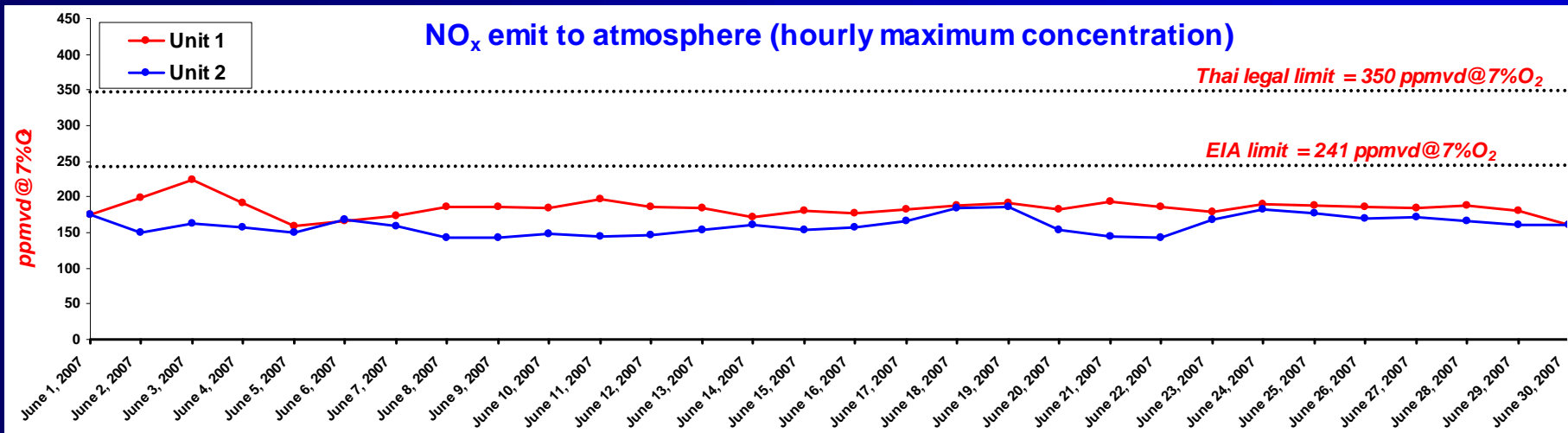
The record data as shown below: **Unit 2**

Emission in hourly average	Result of June 2007			EIA limit ^{1/}	Thai legal limit ^{2/}
	maximum	average	Over EIA permit		
SO ₂ (ppmvd@7%O ₂)	184	158	0 hour	262	320
NO _x (ppmvd@7%O ₂)	186	149	0 hour	241	350
Opacity (%)	27	16	N/A	-	-

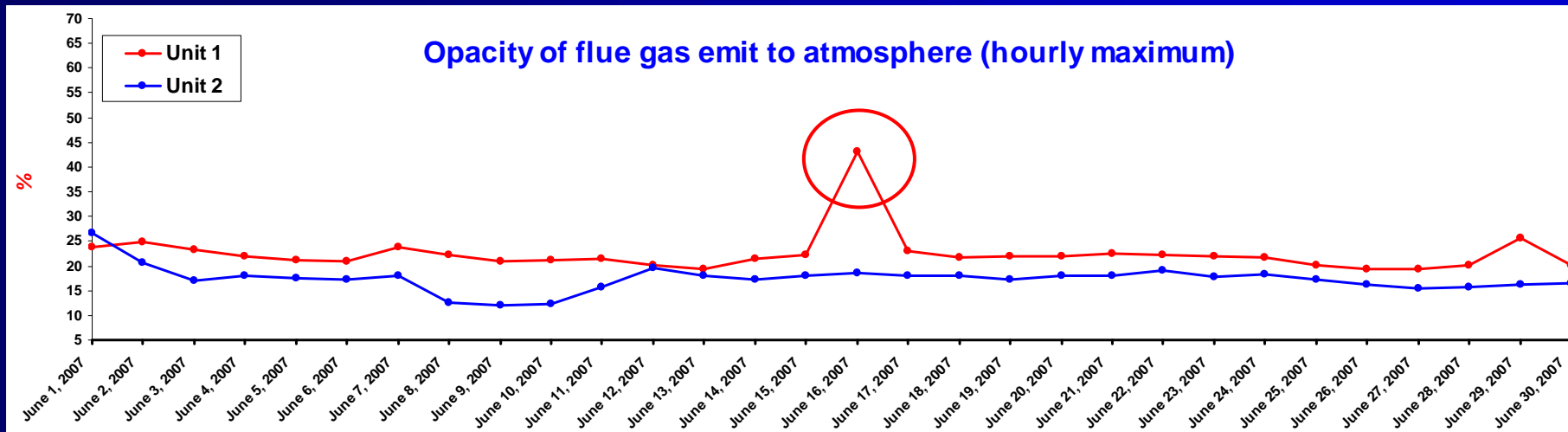
Stack Emission : Sulfur Dioxide (SO₂) Unit 1 & 2



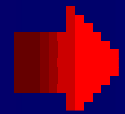
Stack Emission : Nitrogen Oxides (NO_x) Unit 1 & 2



Stack Emission : Opacity - Unit 1 & 2



Opacity of unit 1 was high on 16th due to shut down and start up period. .



2.3 Ambient Air Quality



The ambient air quality at all monitoring stations were *within Thai legal limit*. They are reported in the table below.

2.3 The Table Report for Ambient Air Quality

Station	Ambient air quality data in June 2007							
	TSP avg. 24 hrs ($\mu\text{g}/\text{Nm}^3$)		PM-10 avg. 24 hrs ($\mu\text{g}/\text{Nm}^3$)		SO ₂ avg. 1 hr (ppb)		NO ₂ avg. 1 hr (ppb)	
	min-max	over limit (day)	min-max	over limit (day)	min-max	over limit (hr.)	min-max	over limit (hr.)
A	8-42	0	1-29	0	N.D ^{2/} -19	0	N.D ^{2/} -18	0
B	10-107	0	7-35	0	N.D ^{2/} -47	0	1-34	0
C	10-46	0	9-37	0	N.D ^{2/} -19	0	N.D ^{2/} -35	0
D	7-50	0	5-38	0	N.D ^{2/} -29	0	N.D ^{2/} -23	0
Thai legal limit^{1/}	330		120		300		170	

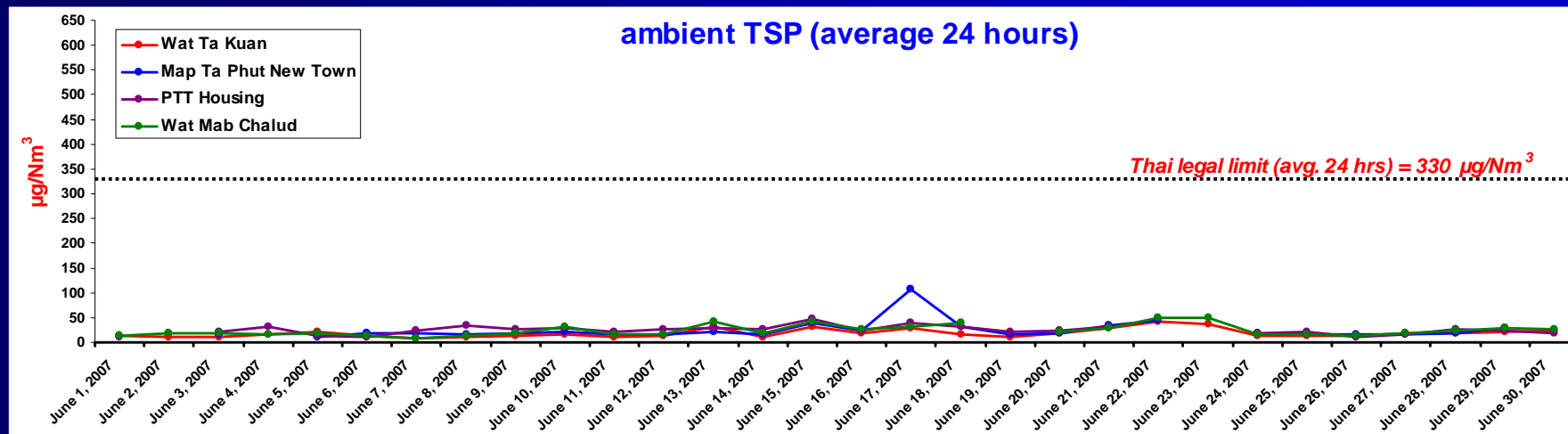
Remark: ^{1/} Thai legal limit refer from Thai National Environmental Committee Announcement edition 10 (B.E.2538) subject Ambient Air Quality Standard and Thai National Environmental Committee Announcement edition 21 (B.E.2544) subject Ambient Sulfur Dioxide average 1 hour Standard.

^{2/} N.D. mean Non- Detectable.

Station A: Wat Ta Kuan
Station B: Soi Therd Thai Muslim
Station C: PTT Housing Zone
Station D: Wat Map Chalud

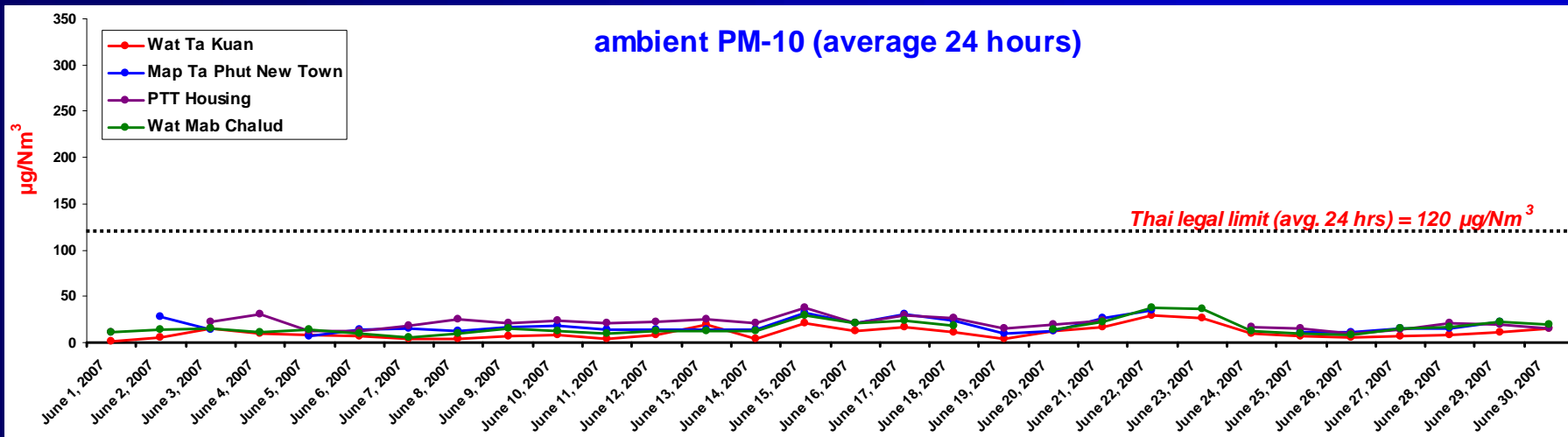
Ambient Air Quality

Total Suspended Particulate matter : TSP



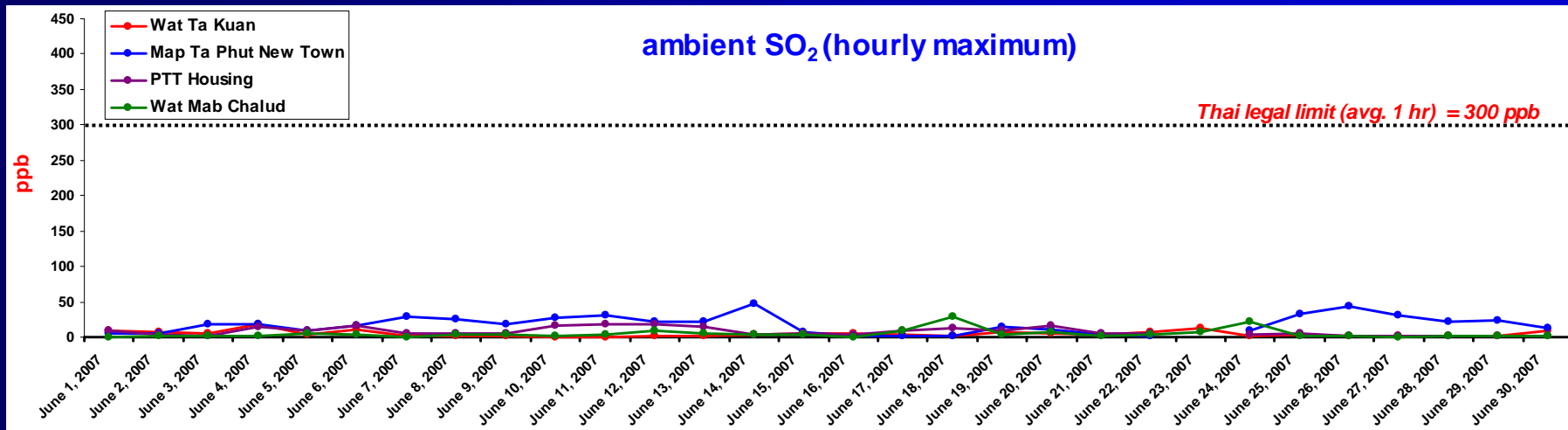
Ambient Air Quality

Particulate Matter having an aerodynamic diameter of less than or equal to 10 μm (PM10)



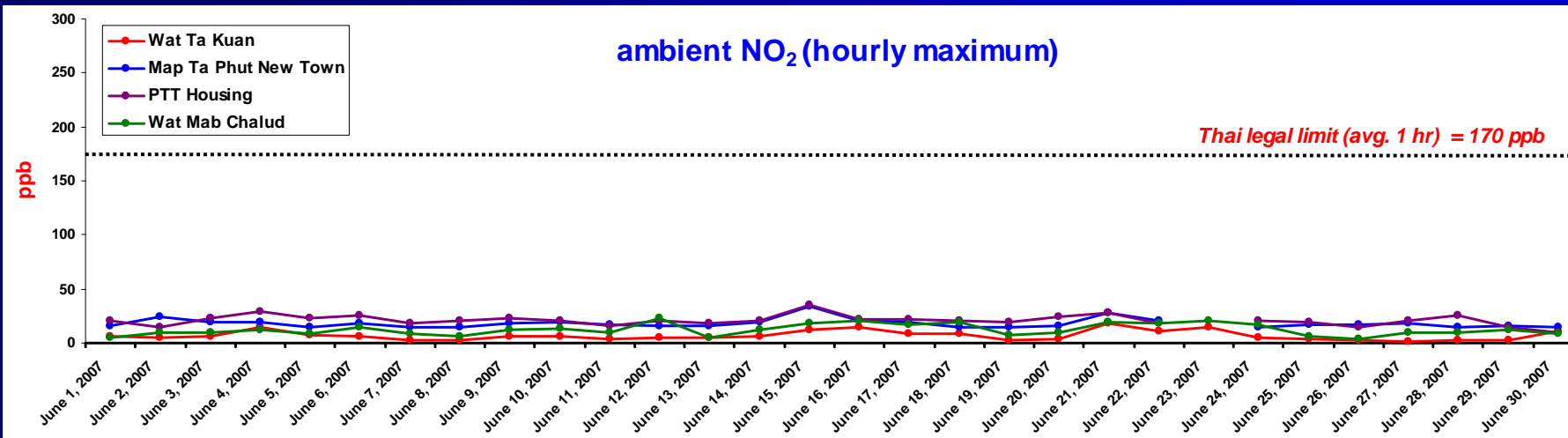
Ambient Air Quality

Sulphur Dioxide : (SO₂)



Ambient Air Quality

Nitrogen Dioxide : (NO₂)



4. Cooling Water Discharge to Sea

Power Plant Unit 1

Parameters	Discharge data in hourly average in May 2007			Thai legal limit ^{1/}
	maximum	Avg.	Over Thai legal limit permit hour	
Temperature (°C)	40	38	0 hour	≤ 40
pH	(min-max) 7.2-8.2	7.5	0 hour	5.5-9.0
Residual Chlorine (mg/L)	0.8	N.D. ^{2/}	0 hour	≤ 1.0

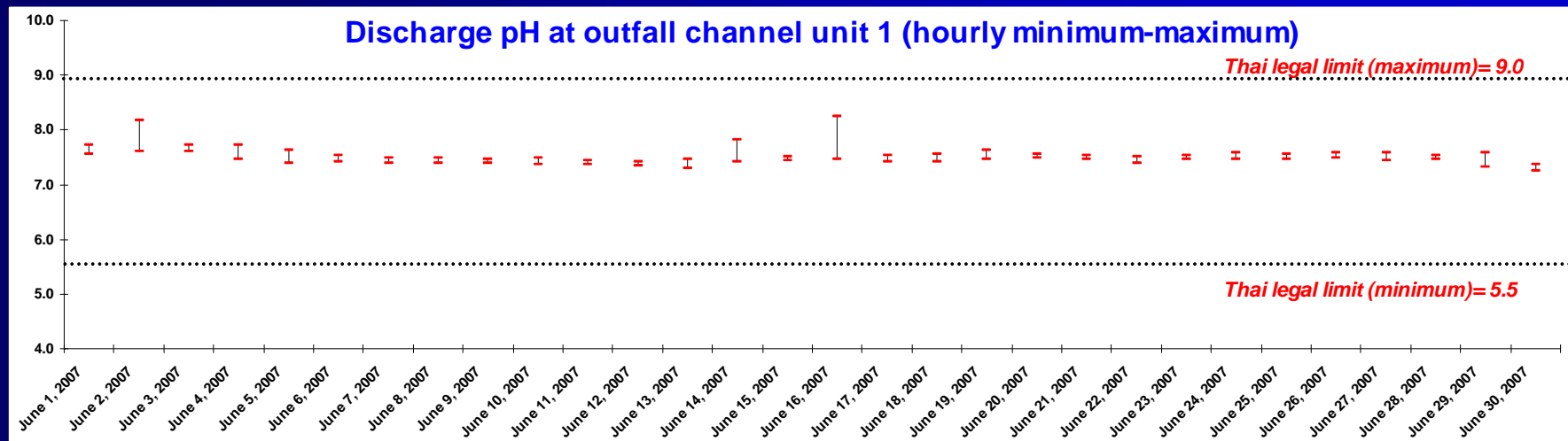
4. Cooling Water Discharge to Sea

Power Plant Unit 2

Parameters	Discharge data in hourly average in May 2007			Thai legal limit ^{1/}
	maximum	Avg.	Over Thai legal limit permit hour	
Temperature (°C)	39	38	0 hour	≤ 40
pH	(min-max) 7.1-7.7	7.4	0 hour	5.5-9.0
Residual Chlorine (mg/L)	0.9	N.D. ^{2/}	0 hour	≤ 1.0

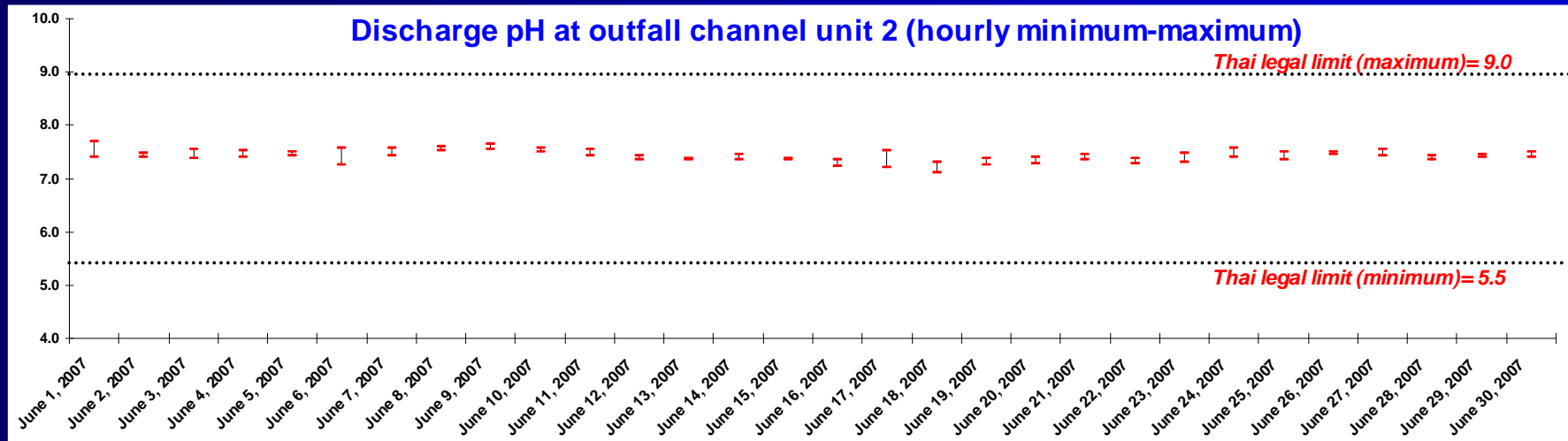
Seawater Discharge

Discharge at CW outfall : pH Unit 1



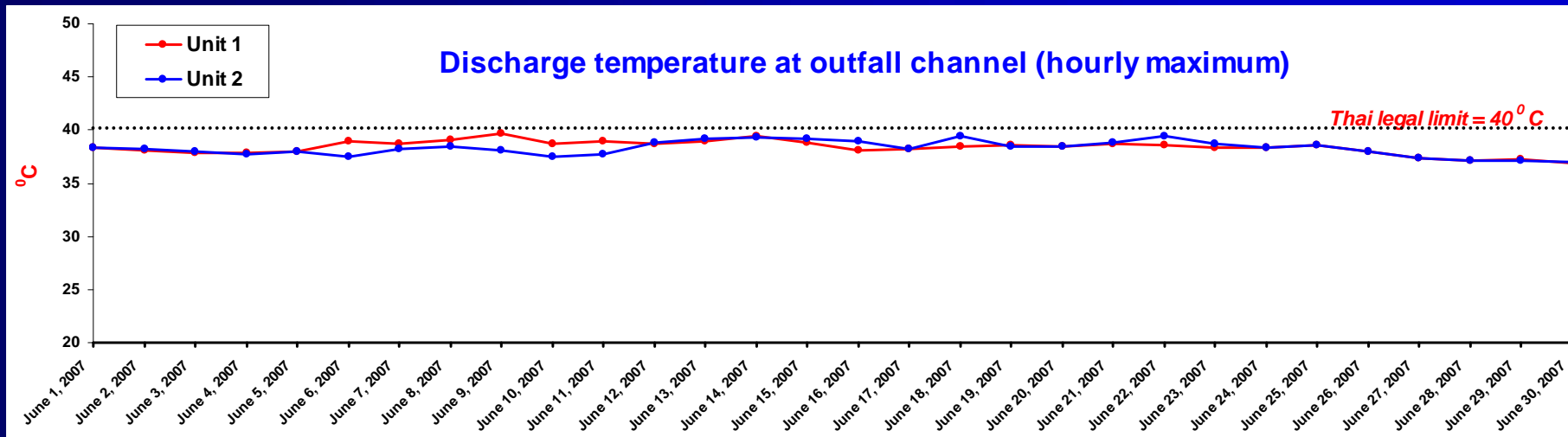
Seawater Discharge

Discharge at CW outfall : pH Unit 2

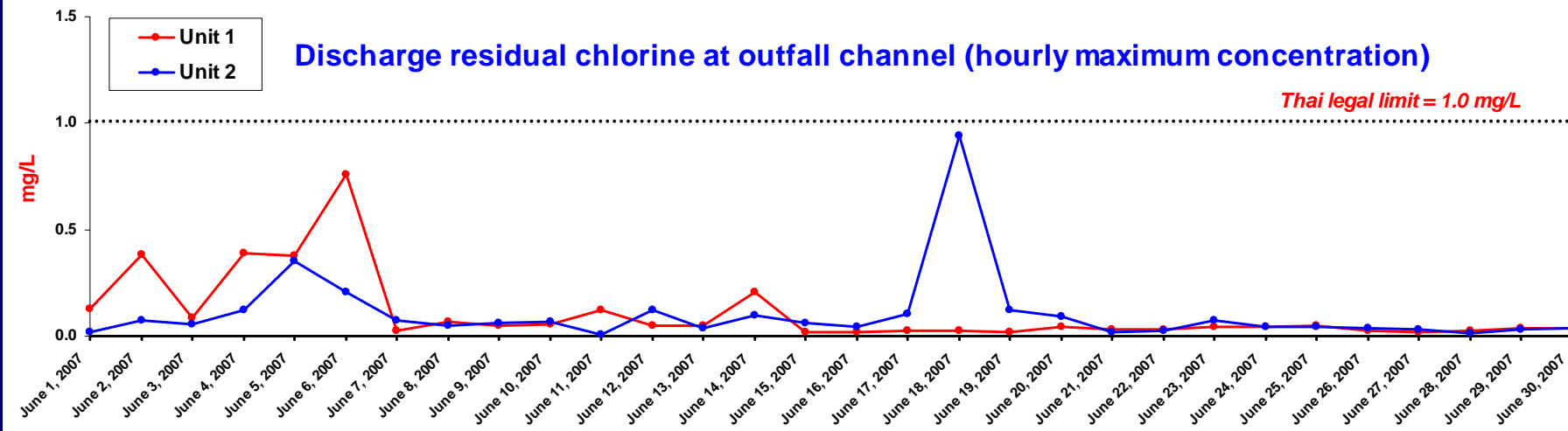


Seawater Discharge

Discharge temperature at CW outfall : Unit 1 & 2



Residual Chlorine : Unit 1 & 2



Visible Plume Study

- An error in the measurement of gas flow through the FGD was discovered and corrected. Previously the gas flow was lower than design – 62% as opposed to a design value of 70%. *The increased air flow through the FGD will reduce opacity as well.*

*. This *Combustion tuning has been carried out on both units resulting in an opacity reduction of 2-3% approximately* has been achieved by a combination of reducing the excess air flow and also by biasing the distribution of air to individual burners

Thank You

