



سلطة منطقة العقبة الاقتصادية الخاصة  
AQABA SPECIAL ECONOMIC ZONE AUTHORITY



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**BENHAYYAN AQABA INTERNATIONAL LABORATORIES**

**Water Tests Consultancy Report**

**Submitted to**

**REPORT REVIEW & EVALUATION OF TETRA TECH  
INTERNATIONAL DEVELOPMENT B.V., UK BRANCH  
PROJECT**

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## Introduction

BEN HAYYAN - Aqaba International Laboratories / ASEZA were approached by tetra tech international development B.V., UK branch project to conduct an ambient water quality monitoring for Aqaba sea water.

The water quality analysis was conducted for two parameters (THM's and free chlorine).

The study area lies within the Jordanian portion of the Gulf of Aqaba (Figure 1). It is a partially enclosed water body that constitutes the eastern segment of V-shaped situated at the northern tip of the Gulf and extends south for about 27 km to the Saudi Arabia border. It is in a sub-tropical arid area between longitude  $34^{\circ} 25'$  to  $35^{\circ} 00'$  E and latitude  $28^{\circ}00'$  to  $29^{\circ}33'$  N.



Figure 1: Satellite Jordanian Coast of Gulf of Aqaba

## Materials and Methods

### Sampling Sites

Thirty-two sea water samples from 16 locations were collected between Marine Science Station site and Aqaba New Port site as shown in Table 1 and Figure 2.



Figure 2: Satellite water samples sites

Table 1: Sea water samples locations

NO.	Site's description
1.	KEMAPCO Cooling Water - Outlet at source, Surface
2.	KEMAPCO Cooling Water - Marina Open Sea Interface, Surface
3.	KEMAPCO Cooling Water - Marina Open Sea Interface, 20m depth
4.	JPMC IC Cooling Water Outlet - Surface
5.	JPMC IC Cooling Water Outlet - At Source, 25m depth
6.	AAWDC Proposed Intake - Surface
7.	AAWDC Proposed Intake - Near Bottom, 15m depth
8.	Thermal Power Station Cooling Water Outfall - Surface
9.	Thermal Power Station Cooling Water Outfall at Source, 20m depth
10.	Tala Bay - Marina Inside Central, Surface
11.	Tala Bay - Marina Open Sea Interface, Surface
12.	Tala Bay - Marina Open Sea Interface, Bottom 20m depth
13.	Aqaba Marine Reserve Visitors Centre - Surface
14.	Aqaba Marine Reserve Visitors Centre 20 - m depth
15.	Aqaba Marine Reserve – Marine Science Station Surface
16.	Aqaba Marine Reserve – Marine Science Station 20m depth

## Sampling Methodology

The samples were taken from the surface and the other were taken from 15, 20 and 25 m depth using Kemmerer Water Sampler Vertical Acrylic TT PU Type (Figure 3) in 250 ml plastic bottles for free chlorine test and 50 ml amber glass vial with 1:1 Acetic acid and distilled water preservative for THM's test. Collected samples were immediately transported to the laboratory in ice boxes.

THM's sea water samples were analysed by GC-MS. Free chlorine sea water samples analysed by portable data logging colorimeter.



Figure 3: Kemmerer Water Sampler

## Results and Interpretation

The results of this analysis showed that THM's concentrations for all sea water samples were below the detection limit of analytical instrument. Free Chlorine were lower than 0.1 ppm except Aqaba Marine Reserve Visitors Centre – Surface and Aqaba Marine Reserve – Marine Science Station 20m depth were above 0.1 ppm, but still these results

indicate slight increase of free chlorine, and this is because of sampling and analysis measurement uncertainty. Beside that chlorine gas maybe form slightly due to microorganism's activity.





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