



מכון ויצמן למדע

Weizmann Institute of Science

רחובות 76100, ישראל

המחלקה להוראת המדעים

## **Ein Gedi's Mineral Water Plant Is it a Geoethical case?**

**Ron Ben Shalom and Nir Orion**

**4th GOAL workshop**

**January 2020**

### **The learning stops and expected schedule**

08:30 – Leaving the guesthouse

09:00 – 10:00 – A nice walk Arugot gorge

10:00 – 10:30 – discussion

## **Background**

The En Gedi Reserve, near the Dead Sea, is the most visited reserve in Israel, and attracts about 400,000 visitors a year. Its main attraction is the two canyon streams, Nahal David and Nahal Arugot, which attract not only hikers, but also a huge variety of rare animals and plants. Two Springs: En Gedi Spring and Shulamit Spring, originate from the slopes between the streams. In the last fifty years, a new competing factor was added: Kibbutz En Gedi. The issue is rooted in the 1950s, when agriculture was at its peak and the kibbutz received a permit from the state to pump huge quantities of water from the area. Since then, though agriculture has declined, the pumping rights remain.

The plant was established in 1997 and has been approved for use of 60,000 cubic meters of Spring water per year. Over time, the quota has grown to 120,000 cubic meters per year. In 2006 the kibbutz applied for an increase to around 320,000.

In recent years, the kibbutz has suffered economic losses, due to the sinkholes, which destroyed most of the agriculture. Today, the plant is "the only stable source of income of the kibbutz", members claim.

In the past – water was pumped upstream in the Arugot Stream and used for Kibbutz domestic needs and for agriculture, reducing significantly the amount of water sustaining the ecosystem. Water from David Stream was captured at the mouth (bottom) of the stream, in order to keep the ecosystem there intact.

The mineral water plant started pumping Spring water from both En Gedi Spring and Shulamit Spring reduced significantly the amount of water available for the eco-system in the reserve.

Protest started by environmental organizations and agencies, appeals were made to the supreme court but were rejected.

Nature interfered in the Arugot stream, when several years ago, the kibbutz catchment facility was destroyed by a flood. Thanks to the environmental protest, the catchment facility was rebuilt downstream.

In 2007, a treaty was signed between the kibbutz, the water authority, and the Nature protection agencies, regulating water use in En Gedi.

## **The treaty**

According to the treaty, the kibbutz is allowed to catch all water of David & Arugot Streams downstream from the Nature reserve. In addition, the Mineral Water Plant can pump 40 m<sup>3</sup>/hour out of the 70 m<sup>3</sup>/hour available from the En-Gedi and Shulamit Springs.

The kibbutz is obliged to return 25 m<sup>3</sup>/hour from the Arugot Stream catch to the En Gedi Spring, for benefit of the ecosystem.

## **The current situation**

The kibbutz is pumping up only 15 m<sup>3</sup>/hour back to En-Gedi Spring, due to decrease in the discharge of the Arugot Stream. The Arugot average discharge was around 50 m<sup>3</sup>/hour when the treaty was signed and it's down to 20-25 m<sup>3</sup>/hour at the present.

Daily fluctuations in the discharge of the Arugot Stream is a new phenomenon still understood.



## Stop 1: The Arugot gorge

1. During the hike, observe the dry creek, the pipe, the creek and the ecosystem.

## Stop 2: Following the hike

1. Does the use of Nahal Arugot and Ein-Gedi springs water pose a Geoethical problem?

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As you could learn from the background presented, the use of the water of the Arugot and David natural reserves for a private industry raised a loud public debate. However, the solution was based on hydrological data.

2. What hydrological data is needed for dealing with this geoethical dilemma? \_\_\_\_\_

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3. Can you suggest a university course in hydrology that can use this case study for teaching hydrology in a geoethical context?

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