

*Greek Mythology:
The origin of Water Resources
Management & Engineering*

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The semi-God Hercules



[Gilded Bronze Hercules](#)
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Greek Mythology

- Behind most of the **myths** in the ancient **Greek Mythology** lies the fight of the humankind to survive against the elements of nature, against the wildlife, as well as against the extreme events of that period of time.
- In this context, most of the **12 labors of the ancient Greek hero and semi-God Hercules** concern this fight of the humankind against the unfriendly and hostile natural environment of that times.

Hercules: The first Water Resources Engineer

- Specifically the 2 among of the 12 labors, the 2nd and the 5th, describe the great hero **Hercules as the first Water Resources Engineer in the earth.**
- These two labors symbolize the fight of the humans for survival, through the use of engineering methods and technologies.
- The first symbolizes **the struggle against extreme water events and the use of engineering methods** to get through them
- The second labor symbolizes **the fight against deteriorated sanitary conditions in an agricultural area through the design and construction of an engineering project dealing with the diversion of two rivers**

To kill the monster known as the Lernean Hydra.

- In the Lake Lerne, close to Korinthus in Peloponese, lived in the ancient times **a horrible monster that had nine poisonous heads**. When one head was cut off, two more would grow in its place.
- The Lernean Hydra, was actually **a harmful swamp around the lake Lerne**, bringing illnesses due to the mosquitoes it sustained, which transferred **malaria to the population**, (malaria was symbolized by the poison of the monster)
- The swamp was provoking **poverty and death to the whole area** all around.
- The fact that when one head was cut off, meaning when the reeds of the swamp were cut off, two more heads would grow back in its place, means that the reeds were strengthened by cutting them off and therefore were extended in the double area each time people tried to cut them off.



- Hercules and the Hydra, Antonio Pollaiuolo (1431-1498 CE). This painting, which represents one of the Twelve Labors of [Hercules](#), is now in the Uffizi Gallery, Florence.

The first reclamation engineering project

- The hero Hercules undertook the job to **kill the monster**.
- What he did was to cut off the heads and then to burn the necks with a torch to prevent them growing back.
- Hercules finally dugged one big hole and buried the central and greater head of the monster into the ground, just to be sure that the monster would remain dead and inactive for ever.
- These three steps that Hercules followed to kill the Hydra monster, surprisingly are exactly the same with the steps been followed up today in a drainage reclamation project in case of an undesirable wetland or swamp.

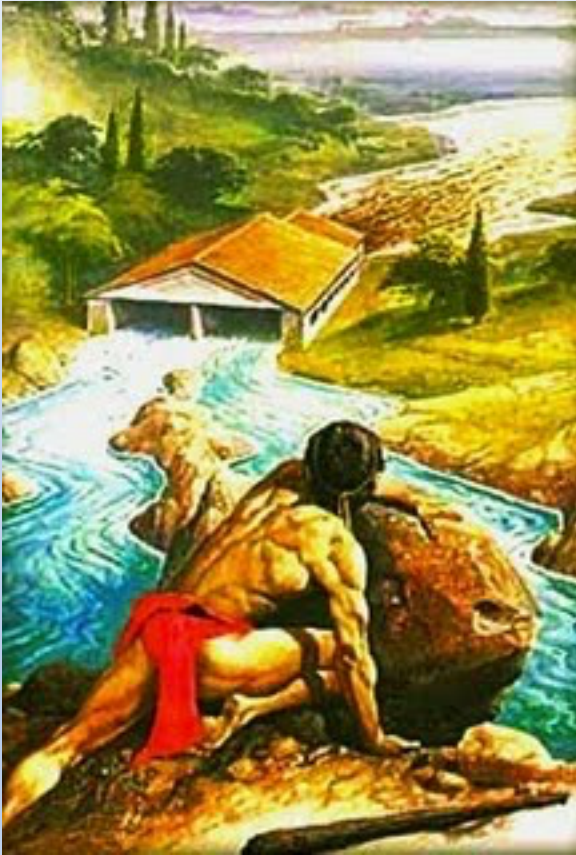
The first reclamation engineering project

1. First **the reeds are cut off** all around the swamp
 2. Then the areas with **the reeds are burned** to extinguish all of them from their roots
 3. Final step of the drainage procedure is **the burial of the central area of the swamp** under the ground
- Hercules followed in the swamp of the lake Lerne all the three steps of a **reclamation project to drain the swamp**, saving thus the population from malaria and death, giving back the area restored and reclaimed.

Cleaning the Stables of Augeus

- The stables of King Augeus were immense and his herd vast, with great accumulated quantities of manure, i.e. of animal wastes, deteriorating health and economic conditions and bringing illnesses and poverty to the kingdom.
- What Hercules did to achieve this extremely hard mission, was that he took advantage of the power of the water flow of two rivers nearby, Penios and Alfios, in order to clean the stables.
- He, therefore, acting as a well educated and efficient Water Resources Engineer, diverted these two rivers, constructing two diversion dams, using big stones from the area.

Cleaning the Stables of Augeus



Cleaning the Stables of Augeus in a day

- The river flow in the two rivers changed, as water was forced to pass through the stables of Augeus, cleaning the wastes in a very fast and very effective way.
- After the end of the day **Hercules**, following the today's guidelines of **Sustainable Water Resources Management & Engineering**, he restored the two diversions, bringing the river beds of the two rivers back in their original position.
- So, the rivers continued to flow through their normal river beds and the stables started to operate again clean, as well as safe and sound from the sanitary point of view.

Hercules: The first Water Resources Engineer

- In both mythic labors Hercules acted as a very well educated and experienced **Water Resources Engineer**.
- In the first case study, that of the **Lernean Hydra**, by successfully executing a **reclamation engineering project**, within which he managed **to drain a harmful swamp** which was spreading illnesses and death in the population of the area.
- In the second case study, that of **the Cleaning of the Stables of Augeus from the wastes**, by successfully **constructing two diversion dams** in order to divert the river flow of two rivers, **using thus the water power to clean the stables up**.
- After the end of the labor, **he restored the diversions**, following the principles of **sustainable water resources management and engineering**.

The Lion of Nemea



Lions In ancient Greece?

- Finally, let me refer to the first and maybe the most well known labor, that of **killing the Nemean lion**, which was supposed to be impervious to all weapons.
- Hercules trapped the lion in a cave and strangled it with his bare hands. He then skinned it and ever after wore the skin as his cloak.
- In this labor the point is not to the engineering discipline of Hercules, who managed the labor through his enormous physical strength.
- What is important in this myth is the fact that **lions were very common in the ancient times in Greece**.
- Meaning that **the climate conditions in the Mediterranean area were very close to the African ones**, with higher temperatures and mild winters.

Remarkable Climate Change through history

- Another indication of a **remarkable climate change** through centuries come from the historic data.
- The **Epidaurus Theater Festival**, during which ancient Greeks were following theater events written by Aristophanes, Sophocles, Euripides or Aeschylus, living therefore for a remarkable period of time completely in the open air, used to take place each February. Which means that temperatures in February then were much more mild and without rainfalls, comparing to the today's conditions, that allowed people to stay out and live in the open air for a long time period, like we do now in summer time.
- These two stories of Climate Change through centuries can be viewed as an introduction to the presentation that my good friend and colleague, Prof. Demetres Koutsoyannis, will make in a while.

Thank you for your attention

