

Lake Kopais

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For those surveyors and engineers interested or involved in land drainage the Lake Kopais drainage scheme may be of interest. The area of concern was a marshy lowland north of Athens.

The works were constructed by the ancient Minyans of Orchomenos in the 14th century B.C. and the purpose was to secure fertile farmland similar to the Newmarket, Klondike or Lake Wawanosh areas of Ontario.

The aim was to channel runoff waters from the Melas, Kephisos and Herkyina Rivers and some lesser streams, which became swollen during the winter and caused severe flooding.

When the excess waters were removed the marsh dried up hence creating arable land.



Diking was done by building stone walls inside the lake basin so that an

artificial channel now existed between the dike wall and the natural lake bank. The width of the dikes was 40 m to 50 m with the channel between being 40 m to 60 m wide. Where the lake bank was too low another wall was erected so that this particular area had an artificial channel between two walls.

We now have, in effect, a moat completely surrounding the lake with the mouth passing its runoff waters downstream leading to an artificial channel 9 km long, thence through a manmade tunnel 2.2 km in length through solid rock, continuing along a natural watercourse, and finally emptying into the Euboian Gulf which is part of the Aegean Sea.

In some areas such as the Kephisos and Melas river outlets, where runoff was excessive due to occasional freshets, extra precaution was taken. This additional work consisted of a 2 m thick double wall on either side of a 27 m earth filled section giving a total dike width of some 66 m.

The artificial 9 m wide and 9 km long channel was dug from a point northeast of Topolia to Binia picking up additional waters from the moat area east of Gla. We now have rushing waters being funneled into the underground tunnel from the east end of the channel at Binia northeasterly for a mile and a third.

The tunnel, constructed about 3300 years ago was quite a project. Besides being 2230 m long, it also had 16 vertical square shafts placed at intervals between 100 m and 200 m. The depths varied between 18 m and 63 m. The Minyans then excavated, at an 11% grade between the shafts. How they stayed on course and maintained their slope are mysteries. The shafts were used for inspection and maintenance purposes the same as our manholes of today.

Underground tunnels at irregular locations were found at Pyrgos, Topolia and the eastern side of the lake, however their specific purpose has yet to be resolved.

It cannot be determined at this juncture in time whether the deterioration

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of the drainage works was by destruction or neglect. One assumption is that maintenance was abandoned when central authority ceased to function probably during the breakup of the confederation states caused by warfare. It also cannot be determined when the system ceased to function.

There were attempts to repair the works from time to time as evidenced by ancient Roman inscriptions, however the attempts failed and again the marshy plain was inundated as nature took it's course.

It was not until 1889, some 3200 years after the Minyans constructed this 200 square kilometer drainage basin system, that Lake Kopais was once again operational.

In this day and age, with our advanced technology, a project of this nature would be tricky and costly. Imagine how daunting it must have been so long ago.



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