

Visit report 21/10/16: Bay Model Visitor Centre

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The last day of the study tour. Of course every good thing comes to an end. And with the last day of our trip, we also had our last excursion. Destination: The Bay Model Visitors Center. At first, we were welcomed by Arcadis, whom hosted a well-deserved Subway lunch after the long, but amazing biking trip across the Golden Gate Bridge.

After the lunch, Arcadis gave a short introduction into their company and the things they do. Apparently, a lot of the participants of the study tour want to work at Arcadis, because question kept on coming.

When the introduction was finished, a lady working for the U.S. Army Core of Engineers (USACE) entered the room. Immediately, she started talking about the San Francisco Bay Model very enthusiastically. If I were to write down everything she told us during the first fifteen minutes, I would already have enough material for this whole visit report, so I will only elucidate the most important parts of her story.

The San Francisco Bay Model is a very detailed physical model of the Bay-area build in 1957. It's function back then was to evaluate the so called 'John Reber Plan'. A civil engineering plan of epic proportions to close off the SF-Bay from the Pacific Ocean and turn it into a sweet water supply. To still facilitate shipping, a special lift was to be installed. Also a lot of military structures were proposed to get the marine on board with this plan.

However, when the final test of the John Reber plan was done with the model, it turned out that San Francisco had dodged a bullet by testing it in a model first. The plan turned out to be disastrous. It failed on 99 different points, for example on the mechanics of the dam. If this plan would have been installed, the whole Bay-area and the whole California Central Valley would have been flooded.

After the testing of the Reber Plan, the model has been used for a lot of different researches. However, validation of the model turned out to be a challenge, especially because of the great detail this model provides. For example, the model is able to simulate tides very realistically. This is not done in real-time six hour cycles, but with a simulation of a 19-year cycle, with an all-time high and all-time low. Furthermore, a big part of the Pacific Ocean is also part of the model, all the way to the end of the continental plate. Besides, the model also simulates the levels of salt in the water. When the model was still operating, the level of salt had to be monitored continuously, with several scientists doing a lot titrations. Especially the mixing-zone, the part where sweet water bumps into the salt water, was hard to monitor.

The model has not been officially operated by the USACE since the 21st century, but even nowadays the model is still used by students for research purposes, even though it has not been updated since 2000. The new (computer) model ERDC proves to be a much cheaper, faster and more reliable option these days. The Bay Model however, still serves a good referencing point for how things were before 2000.

We would like to thank the USACE and Arcadis for this interesting opportunity and being the last writer of the visit reports, I sincerely want to thank everybody that has been reading our reports on behalf of study tour American Ambitions.