

Determination of the scientific background of the available water resources for the Water law procedure procedure for the Waterworks Graft, Delmenhorst

Client: Stadtwerke Delmenhorst

Location: Delmenhorst, Lower Sachsony, Germany

Scope of work: Determination of the water balance, discharge measurements, survey of transects and maintenance of existing gauging stations

Method: ADCP-measurements, migration of historic water levels into a digital database, DGPS-survey of transects and buildings

INTRODUCTION

The Stadtwerke Delmenhorst applied for a reactivation permit for the waterworks Graft, which was shut down in 2010 (Fig. 1). This requires a database including water resource management data and a full water balance of the catchment area.

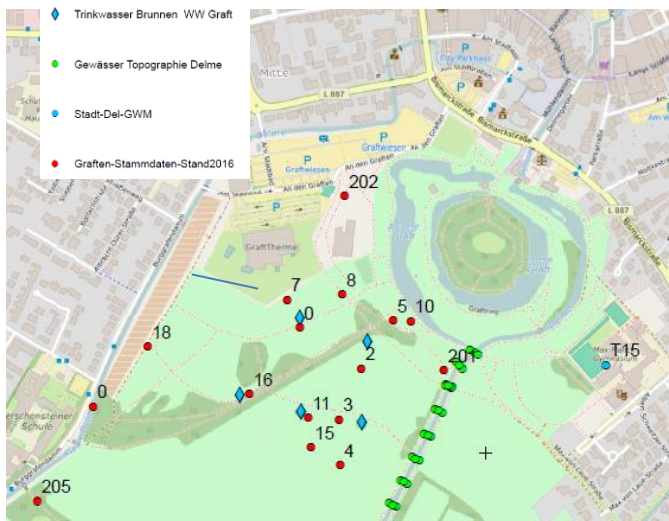


Fig. 1: Location of the drinking water wells of the waterworks Graft in the city of Delmenhorst

All data were collected and consolidated in a groundwater model to estimate the effects of future drinking water extraction.

METHOD

The survey of transects and buildings was carried out with a DGPS Trimble R6.



Fig. 2: Reservoir outlet flood control reservoir Annenheide

The discharge measurements were carried out with a ADCP RDI Stream Pro and where appropriate, due to shallow water, with current meters from SEBA Hydrometrie.

The hydrological database software WISKI* was applied for the evaluation of water levels, the determination of rating curves and the calculation of catchment discharge. WISKI also enables the standardized calculation of hydrological characteristic values. River geometry was post processed in AQUA TERRA and building geometry in AutoCAD Civil 3D.

RESULTS

This database serves as input data for 1D hydrological models of the most relevant river stretches to determine water levels for the whole longitudinal section.

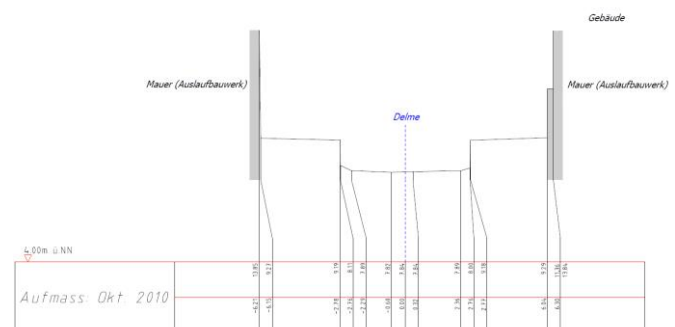


Fig. 3: Survey transect Station 0+007 between reservoir outlet and Graft

Furthermore, the data was used to calibrate the groundwater model.

*hydrological database & software for statistical evaluation by the company Kister