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Compensation pool „Ahäuser Zuschlag“: Conversion of a stepped bottom ramp made of concrete box profiles into a continuous flat bed glide with gravel fill at the Puchgraben, Niedersächsische Landesforsten

Client: Niedersächsische Landesforsten, Forstamt Ankum
Location: Ankum, Niedersachsen, Germany
Scope of work: Planning of a continuous flat bed glide, simulation of flow scenarios
Method: DGPS measurement, planning, hydraulic modelling with MIKE11

INTRODUCTION

The Ankum Forestry Office intends to ensure the ecological continuity of the Puchgraben (Fig. 1)

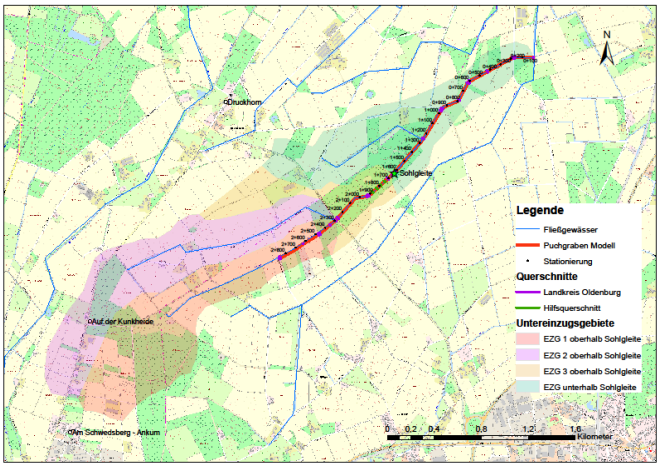

Fig. 1: Catchment area and location of the planned bed glide on the Puchgraben

in the compensation pool "Ahäuser Zuschlag" by converting a stepped bottom ramp of concrete box profiles (Fig. 2) into a continuous bottom glide with gravel fill.

Fig. 2: Soil ramp made of box concrete profiles

METHOD

With a DGPS Trimble R6 the current condition of the bottom ramp and its surroundings was recorded.

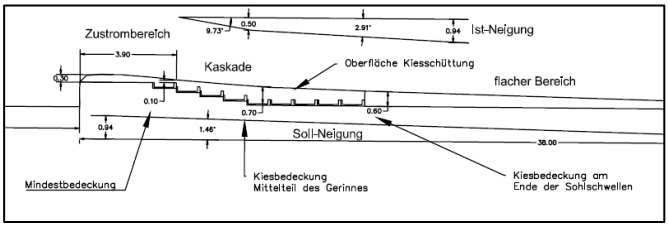

Fig. 3: Detail of plan drawing for the conversion to a bottom glide with gravel filling

The execution of the bottom glide was planned in detail (Fig. 3) and an optimum gravel class was calculated.

Further, the surveying and planning data and additional cross sections of the client were converted into a hydraulic model (MIKE11 of the DANISH HYDRAULIC INSTITUTE). This was used to simulate the current and 2 planning conditions each for one summer and one winter flood.

RESULTS

The hydraulic model calculations have shown that the conversion into a bed glide with a crown elevation of approx. 40 cm higher than the current state represents an optimal solution. Here ecological continuity, greatest possible groundwater recharge and flood safety are combined.