FACULTY OF HYDRAULIC ENGINEERING

TERMS OF REFERENCE

Var. 1

for Task on Investments in Irrigation Infrastructure

SWARM Student Names: .... Jovana Andrijevic ....

Topic: Estimation of Water Losses and Efficiency of an Irrigation System.
Determining of the Potential Water Savings Due to Investments in Irrigation Infrastructure

1. Initial data

A simplified scheme of the investigated Irrigation System (IS) is presented on Fig. 1. The measured average volumes of water per year at specific locations of the IS are shown on Fig. 1.
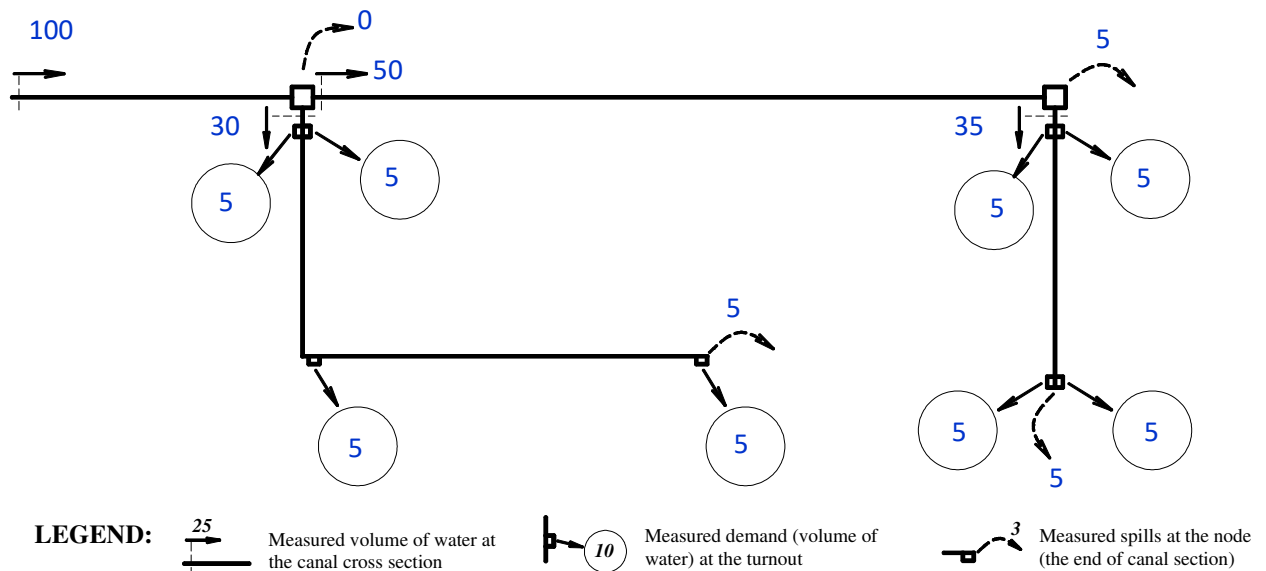

LEGEND:

$\xrightarrow{25}$ Measured volume of water at the canal cross section

$\overset{10}{\bigcirc}$ Measured demand (volume of water) at the turnout

$\overset{3}{\dashrightarrow}$ Measured spills at the node (the end of canal section)

Fig. 1. Simplified view of the delivery network of the IS and measured volumes of water

The investments for improving the technical status of the irrigation infrastructure are planned.
The investments will be will be done for the canal section which has the biggest technical losses of water and the lowest technical efficiency. This canal has 3 subsections, as shown on Fig. 2.
The investments will be for rehabilitation of the subsection of the canal in the worst status, i.e. the subsection with the highest losses. The percentage of losses in each subsection of the canal are shown also on Fig. 2.
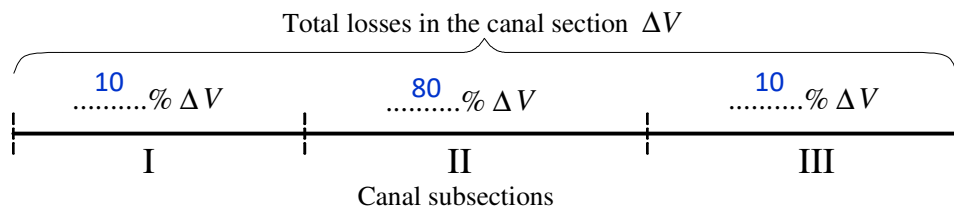
Total losses in the canal section ΔV

10 ....% ΔV	80 ....% ΔV	10 ....% ΔV
I	II	III

Canal subsections

Fig. 2. Subsections of the canal in the worst technical status

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SWARM Student Names: .... Selma Šoljić..................

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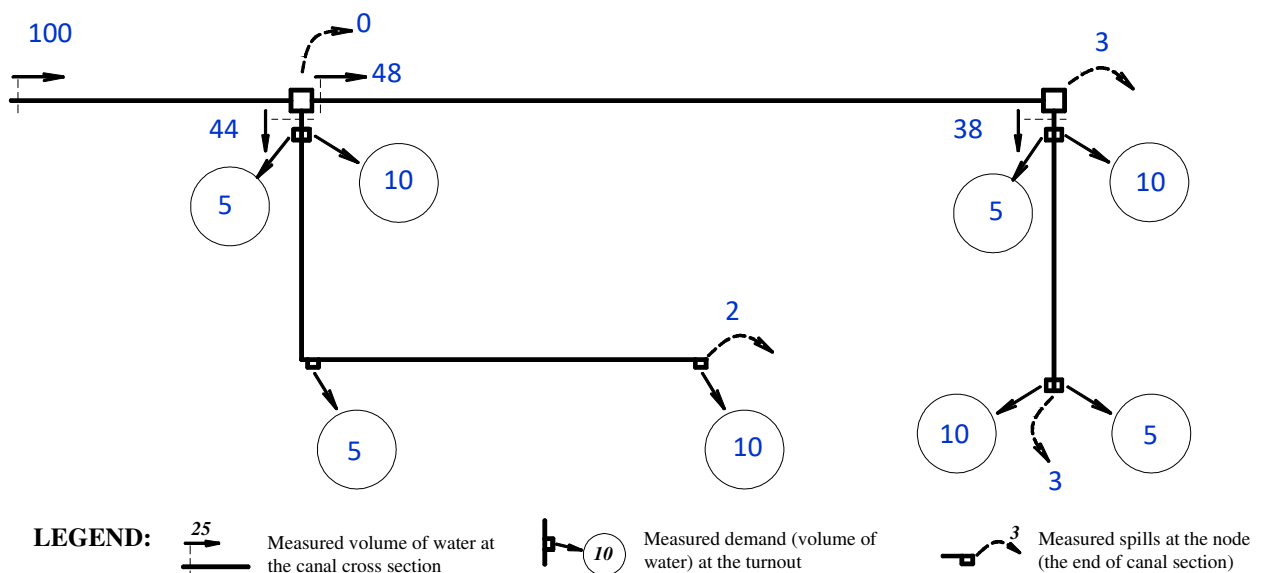

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Fig. 2. Subsections of the canal in the worst technical status

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Var. 1

for Task on Investments in Irrigation Infrastructure

SWARM Student Names: ……… Aleksandar Komatina…………………

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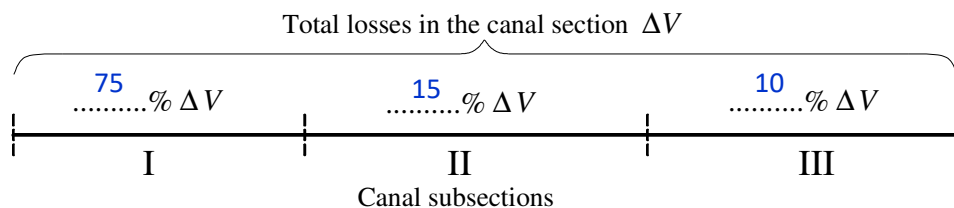

Fig. 2. Subsections of the canal in the worst technical status

FACULTY OF HYDRAULIC ENGINEERING

TERMS OF REFERENCE

Var. 2

for Task on Investments in Irrigation Infrastructure

SWARM Student Names: .... Dražana Miranović ....

Topic: Estimation of Water Losses and Efficiency of an Irrigation System.
Determining of the Potential Water Savings Due to Investments in Irrigation Infrastructure

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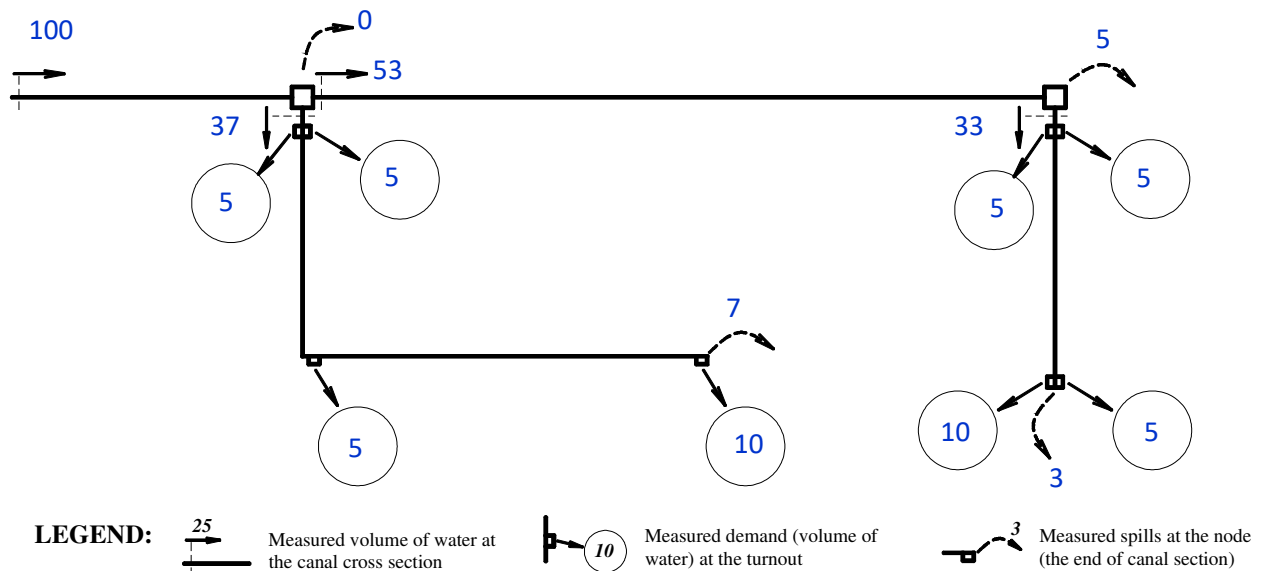

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$\underset{10}{\vdash}$ Measured demand (volume of water) at the turnout

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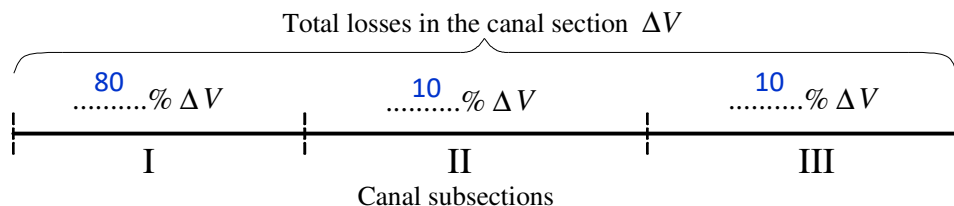
Total losses in the canal section ΔV

..........80...% ΔV | ....10...% ΔV | ....10...% ΔV

I | II | III

Canal subsections

Fig. 2. Subsections of the canal in the worst technical status

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Var. 2

for Task on Investments in Irrigation Infrastructure

SWARM Student Names: .... Nikola Jaksic ....

Topic: Estimation of Water Losses and Efficiency of an Irrigation System.
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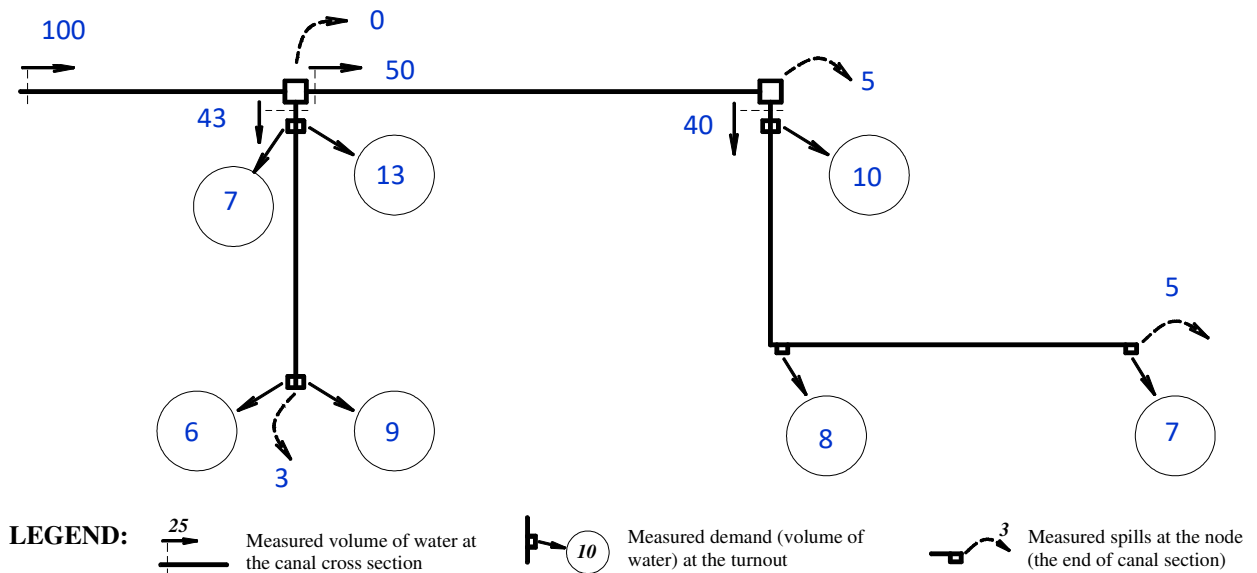

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Fig. 1. Simplified view of the delivery network of the IS and measured volumes of water

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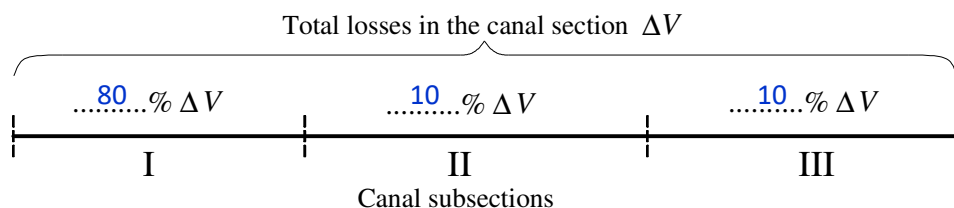
Total losses in the canal section ΔV

..........10...% ΔV	..........80...% ΔV	..........10...% ΔV
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Canal subsections

Fig. 2. Subsections of the canal in the worst technical status

2. Task

2.1. The water losses for each canal section have to be found.
   The technical and operational losses have to be distinguished.
2.2. The efficiency of each canal section, as well as the efficiency of the IS have to be determined.
   The technical, operational and overall efficiencies have to be determined.
2.3. The potential water savings (PWS) at the level of the investments have to be estimated.
   PWS should be estimated under the assumption, that in the canal subsection in the worst technical status, the losses after the investments will be 25% of the losses before the investments.
   The eligibility of the investments has to be established, taking into account that that the minimum required PWS are 5%.

3. Deliverables

3.1. An explanatory note containing necessary estimations and sketches to be prepared and sent as pdf file to pifilkov@yahoo.com (deadline 9 December 2021).
3.2. Short presentation (up to 6 slides) has to be prepared and presented on 10 December 2021.

Sofia City,
30 November 2021