Practices for water and nutrient management in riparian zones of agricultural streams in Latvia

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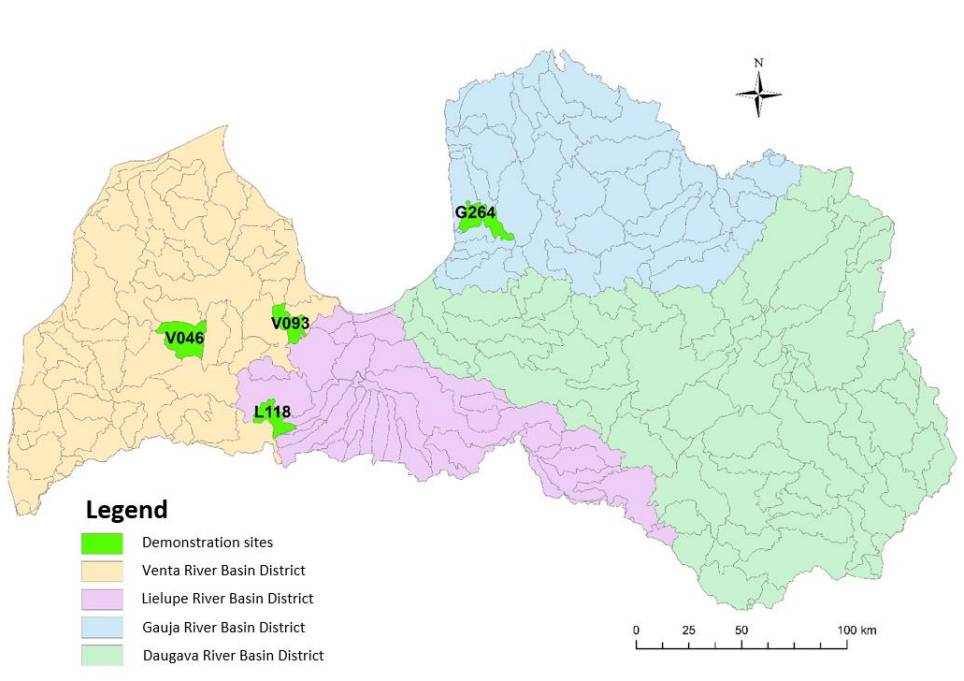
EU LIFE Programme integrated project
"Implementation of River Basin Management Plans of Latvia towards good surface water status"

Content

1. Planning of water quality monitoring activities
2. The results of water quality monitoring activities
3. The in-field practices implemented (buffer strips)
4. The edge-of-field practices implemented and planned (surface flow constructed wetlands, sedimentation ponds, woodchip bioreactors, saturated buffers, controlled drainage)

LIFE GoodWater IP – the selected water bodies at risk (V093 Slocene, G264 Aģe, L118 Auce, and V046 Ēda)



LIFE GoodWater IP – planning of monitoring activities

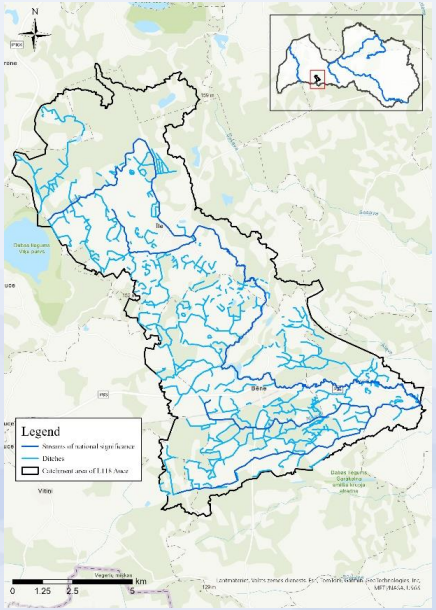
The following geospatial datasets have been processed using GIS software:

- Land use (source: Corine Land Cover 2018);
- Distribution of agricultural crops (source: Rural Support Service of Latvia);
- Digital Drainage Cadaster on subsurface and surface drainage systems in agricultural and forested areas (source: REMA; LEGMC);
- Digital elevation model as derived from LiDAR (source: Latvian Geospatial Information Agency, LEGMC);
- Existing livestock facilities as potential source of agricultural point source pollution (source: Agricultural Data Centre of Latvia; LEGMC);
- Number and spatial distribution of the existing wastewater treatment plants and their treatment efficiency (source: LEGMC);
- Number and spatial distribution of the existing small hydropower plants and water reservoirs (source: LEGMC).

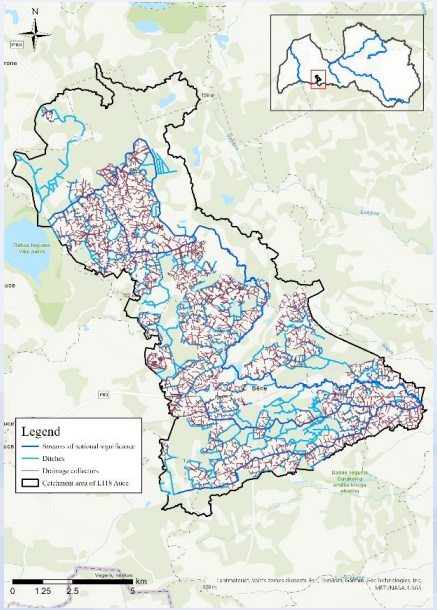
LIFE GoodWater IP – planning of monitoring activities

Streams of national significance

Agricultural ditches



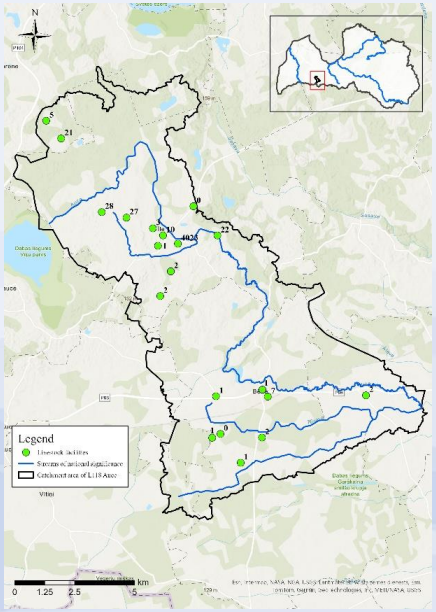
Drainage collectors



Small hydropower plant

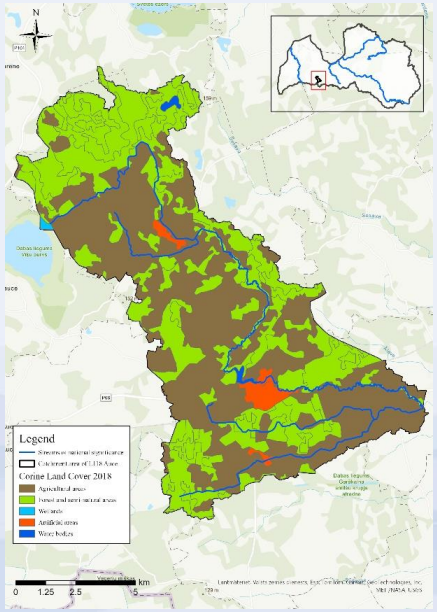
LIFE GoodWater IP – planning of monitoring activities

Livestock facilities

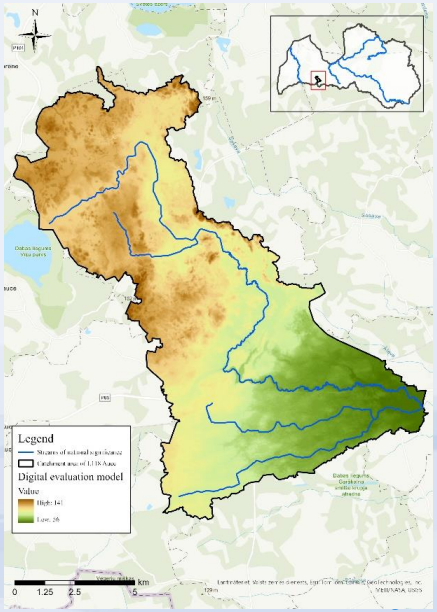


Wastewater treatment plants

Corine Land Cover

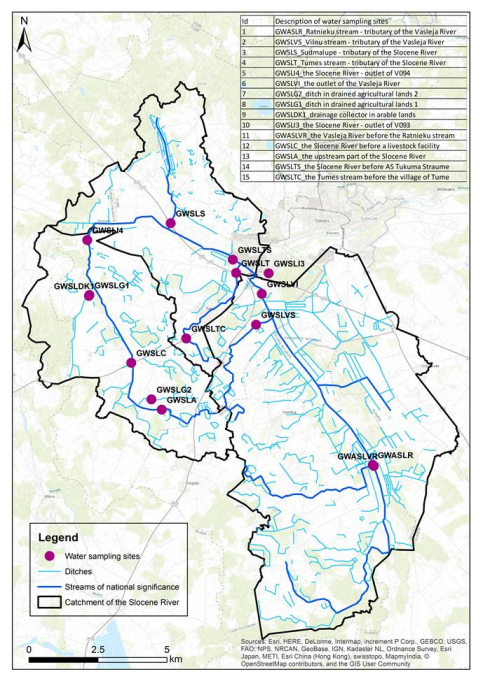


Digital elevation model

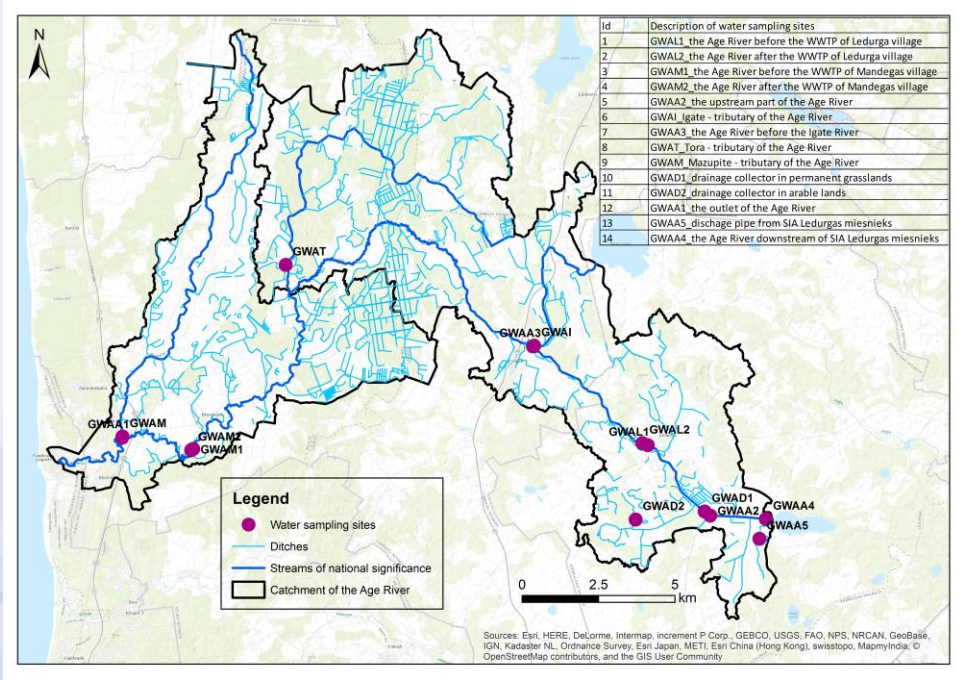


LIFE GoodWater IP – selection of monitoring sites

V093 Slocene

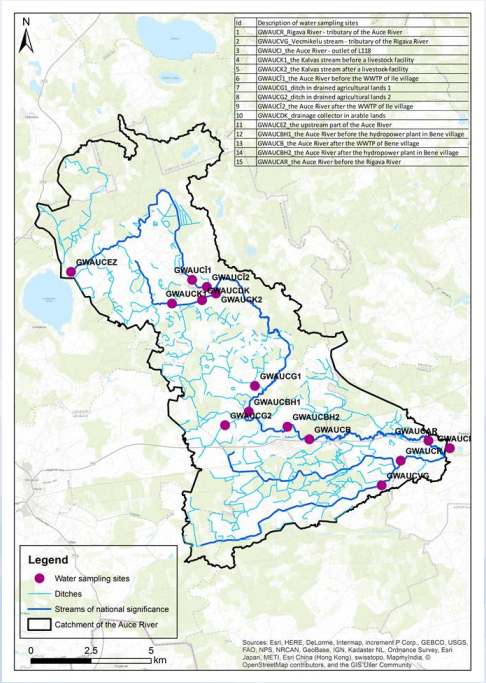


G264 Aģe

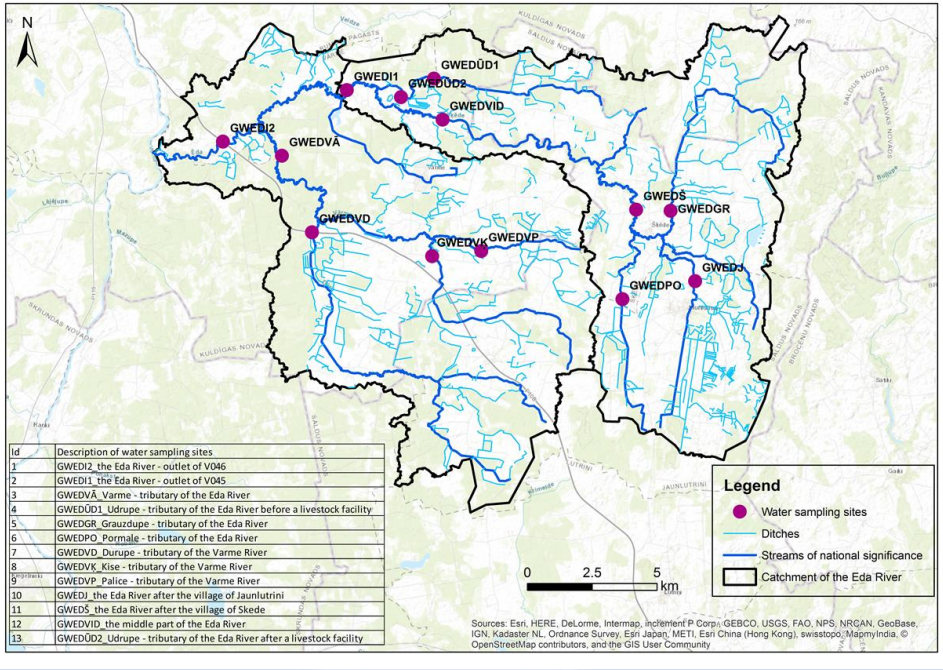


LIFE GoodWater IP – selection of monitoring sites

L118 Auce



V046 Ēda



LIFE GoodWater IP – implementation of monitoring activities

The monitoring results showed in this presentation were collected:

- from May 2020 to December 2024 for the water bodies of G264 Aģe and V093 Slocene;
- from March 2021 to December 2024 for the water bodies of L118 Auce and V046 Eda.

Water samples were collected and hydrological measurements were carried out at all selected waterbodies on **a monthly basis by the colleagues of State Limited Liability Company "Latvian Environment, Geology and Meteorology Centre" (LEGMC)** - Mārcis Tīrums, Arturs Bilerts, Artis Teibe, Atis Konošonoks, Marija Krūmiņa, Andris Rode, Ēriks Vaišļa.

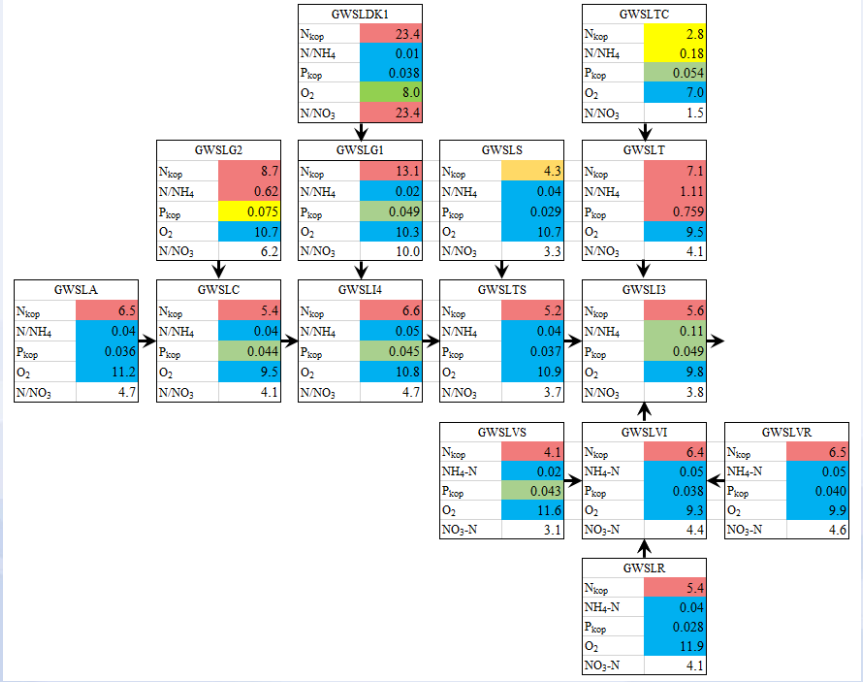
LIFE GoodWater IP – implementation of monitoring activities

The water samples collected were analyzed in the laboratories of LEGMC, the Scientific Institute of Food Safety, Animal Health and Environment "BIOR" and Latvian Institute of Aquatic Ecology for concentrations of **NH_4-N**, **NO_3-N**, NO_2-N, **TN**, PO_4-P, **TP**, colour and suspended solids.

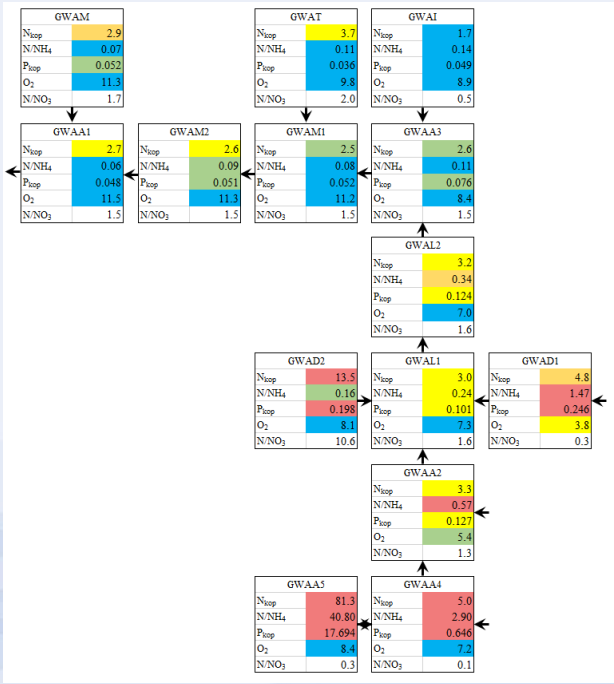
Field measurements of water temperature, **dissolved oxygen**, pH and conductivity were carried out by the portable equipment by the colleagues of LEGMC.

LIFE GoodWater IP – the results of monitoring activities

V093 Slocene

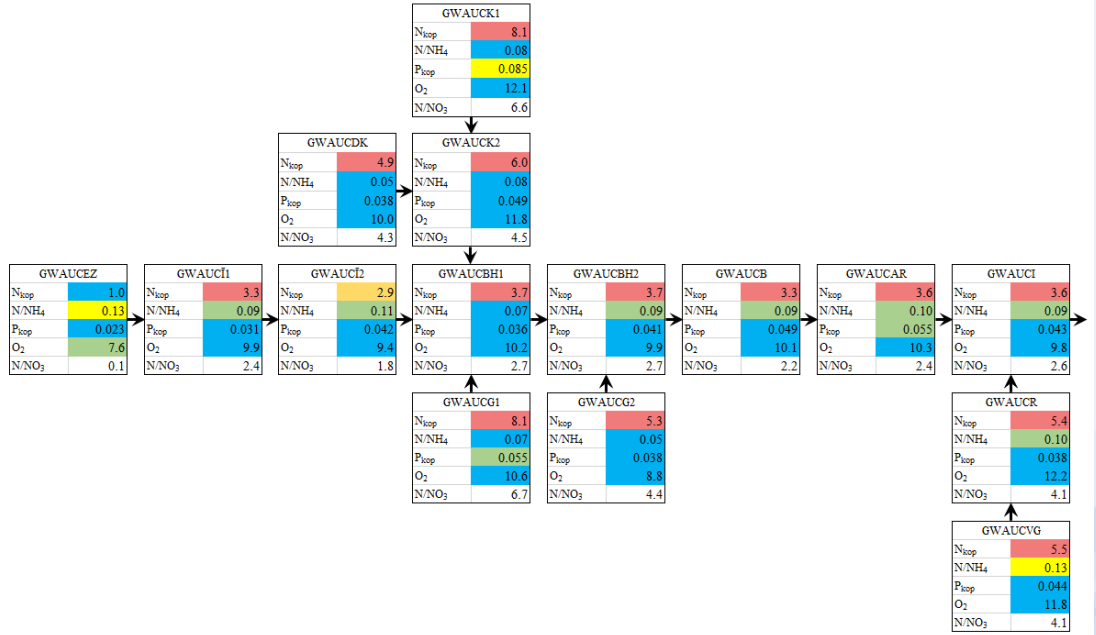


G264 Aģe

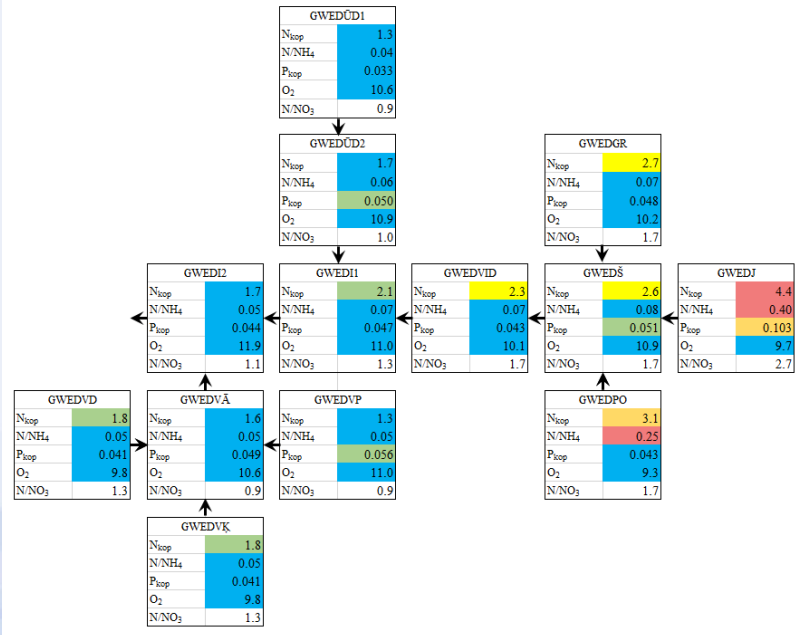


LIFE GoodWater IP – the results of monitoring activities

L118 Auce



V046 Ēda



LIFE GoodWater IP – the practices implemented in Latvia

Within the initial framework of the LIFE GoodWater IP project, FP was intended to focus on the development of green infrastructure, specifically, buffer strips. The project aimed to strategically locate buffer strips within the water bodies at risk and establish agreements with landowners offering appropriate compensation for any limitations on their economic activities.

During the project implementation, the intensive preparatory work was undertaken to establish conditions for the Common Agricultural Policy for 2023-2027. During this process, the project experts provided practical expertise and knowledge to decision-makers in the Ministry of Agriculture. Following the active involvement of FP and other project partners, since 2023 farmers in Latvia have been able to apply for the agri-environmental measures entitled "green strips".

LIFE GoodWater IP – the practices implemented in Latvia

Field margins:
At least 4 m wide vegetative strips situated along the water courses not classified in the regulations on water economic districts (agricultural ditches). A mix of different plant species such as grasses and nectar plants, as well as oilseeds such as hemp and sunflower. Forbiden to apply plant protection products and fertilizers on both specific measures including field margins and buffer strips. Vegetation must be cut or chopped no more than once before September 15 if the field margin is managed in the current season, or more often in cereal and seed-growing fields in order to limit the spread of expansive and invasive species. Along all water courses in Latvia not classified in the regulations on water economic districts (agricultural ditches). Higher payments for those water courses situated in the Nitrate Vulnerable Zones (Nitrates Directive) or water bodies under the risk not to meet water quality objectives due to significant contribution from diffuse pollution sources of agricultural origin, which are determined in the River Basin Management Plans (Water Framework Directive) - 750 EUR/ha and 650 EUR/ha

LIFE GoodWater IP – the practices implemented in Latvia

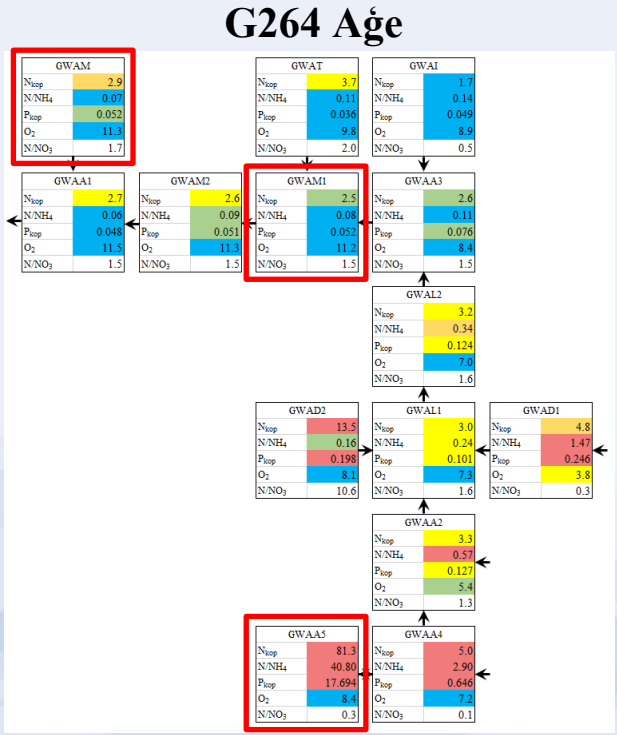
Buffer strips:

At least 8 m wide vegetative strips situated along the water courses classified in the regulations on water economic districts (streams and rivers). Natural vegetation (plants that have sown naturally), as well as sown flowers (a mixture of perennial, biennial or annual herbs or herbaceous plants). Forbiden to apply plant protection products and fertilizers on both specific measures including field margins and buffer strips. Vegetation must be cut and taken away from the field no more than once until September 15 if the buffer strip is managed in the current season, or more often in cereal and seed-growing fields in order to limit the spread of expansive and invasive species. If vegetation remains in the buffer strip until March 15 of the following season, this vegetation is cut to its full length along with the ground level and left or chopped. Along all water courses in Latvia classified in the regulations on water economic districts (streams and rivers). Higher payments for those water courses situated in the Nitrate Vulnerable Zones (Nitrates Directive) or water bodies under the risk not to meet water quality objectives due to significant contribution from diffuse pollution sources of agricultural origin, which are determined in the River Basin Management Plans (Water Framework Directive) - 890 EUR/ha and 742 EUR/ha.

LIFE GoodWater IP – the practices implemented in Latvia

Photo: A. Lagzdiņš, I. Grudovska

LIFE GoodWater IP – the practices implemented in G264 Aģe



LIFE GoodWater IP – the practices implemented in G264 Aģe

Three sedimentation ponds, three fish spawning areas and two crossings for livestock have been constructed in the Mazupite River

Photo: A. Lagzdiņš, A. Bley

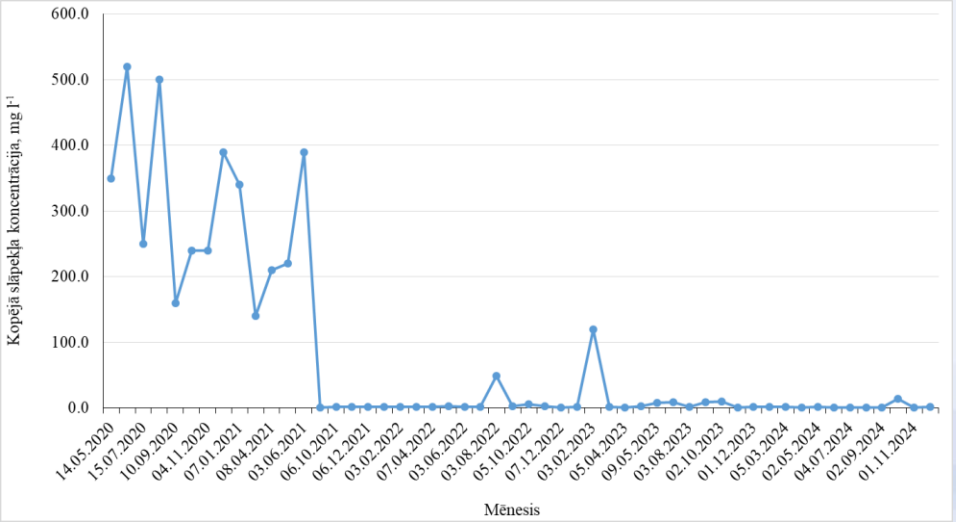
LIFE GoodWater IP – the practices implemented in G264 Aģe

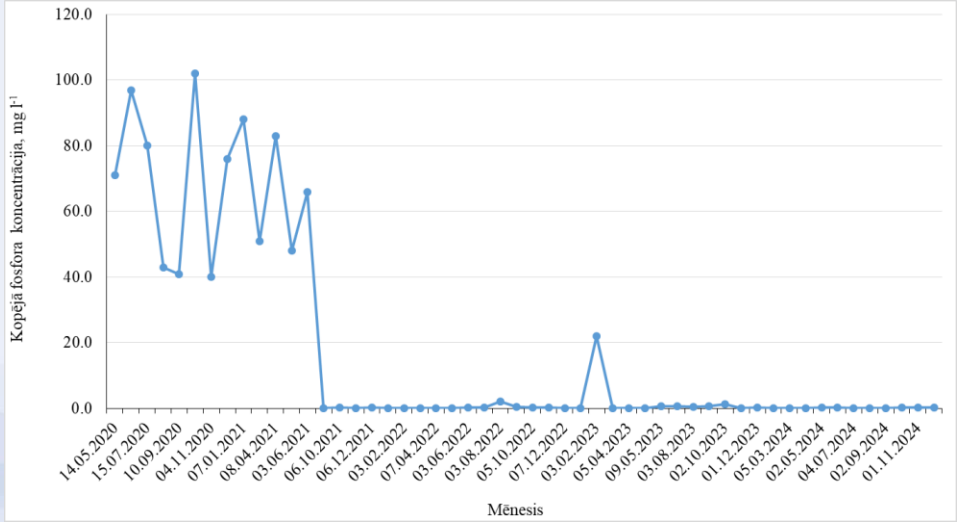
One large scale surface flow constructed wetland has been constructed in the Age River

Photo: Real Estates of the Ministry of Agriculture

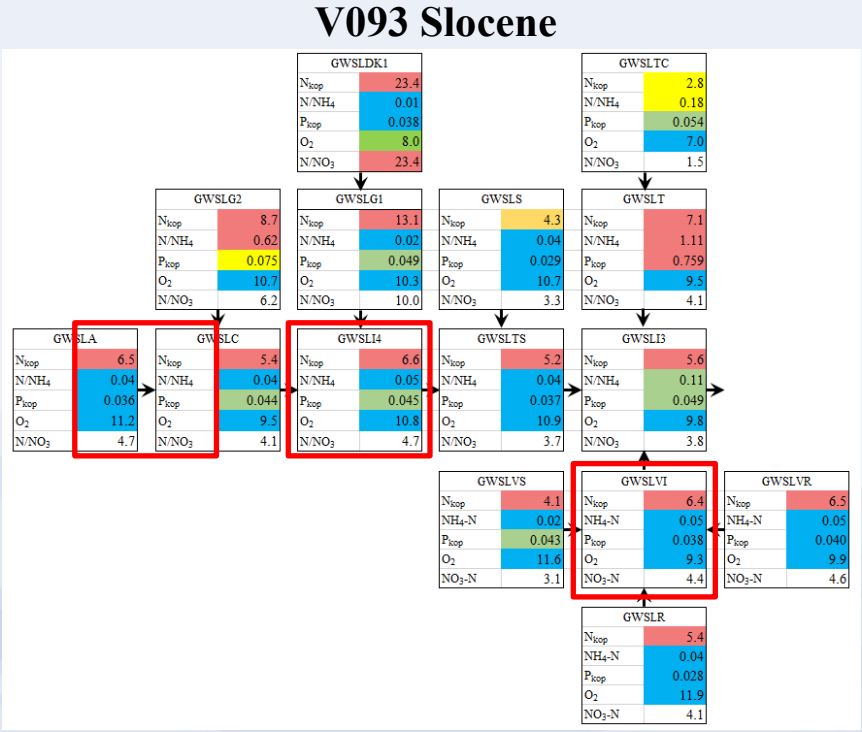
LIFE GoodWater IP – the practices implemented in G264 Aģe

Improved perfomance of wastewater treatment at the slaughter house





LIFE GoodWater IP – the practices implemented in V093 Slocene



LIFE GoodWater IP – the practices implemented in V093 Slocene

Three sedimentation ponds have been constructed in the catchment area of the Slocene River

Photo: J. Pilecka-Uļčugačeva

LIFE GoodWater IP – the practices implemented in V093 Slocene

One surface flow constructed wetland has been constructed in the Slocene River

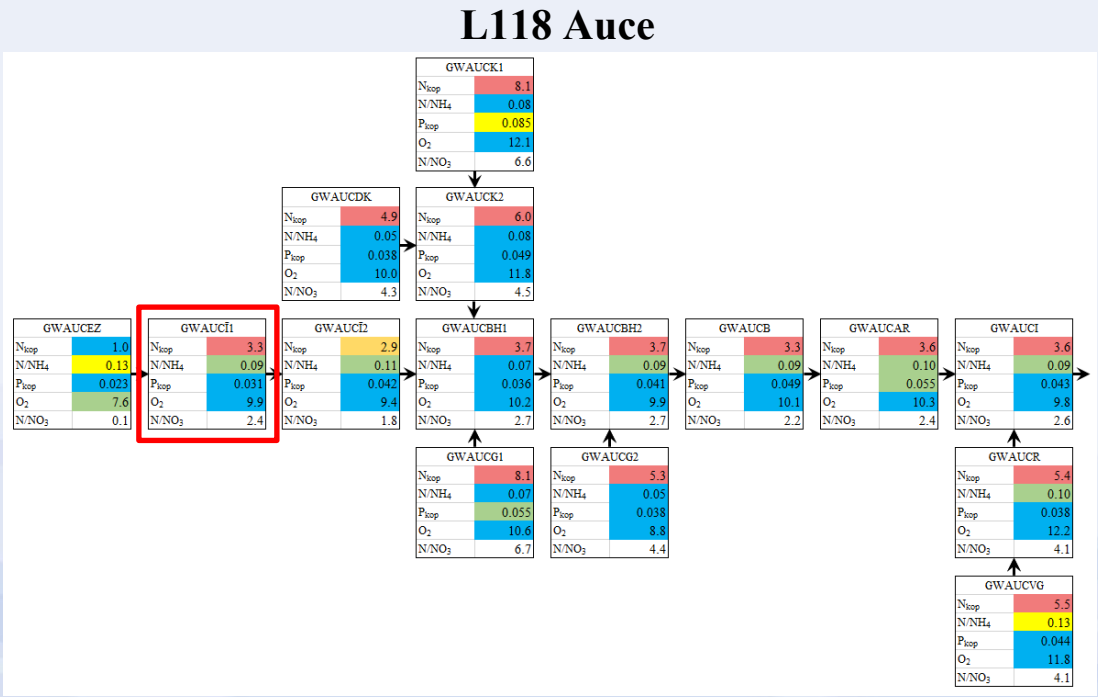
Photo: J. Pilecka-Uļčugačeva

LIFE GoodWater IP – the practices implemented in V093 Slocene

One surface flow constructed wetland has been constructed in the Vasleja River

Photo: J. Pilecka-Uļčugačeva

LIFE GoodWater IP – the practices implemented in L118 Auce



LIFE GoodWater IP – the practices implemented in L118 Auce

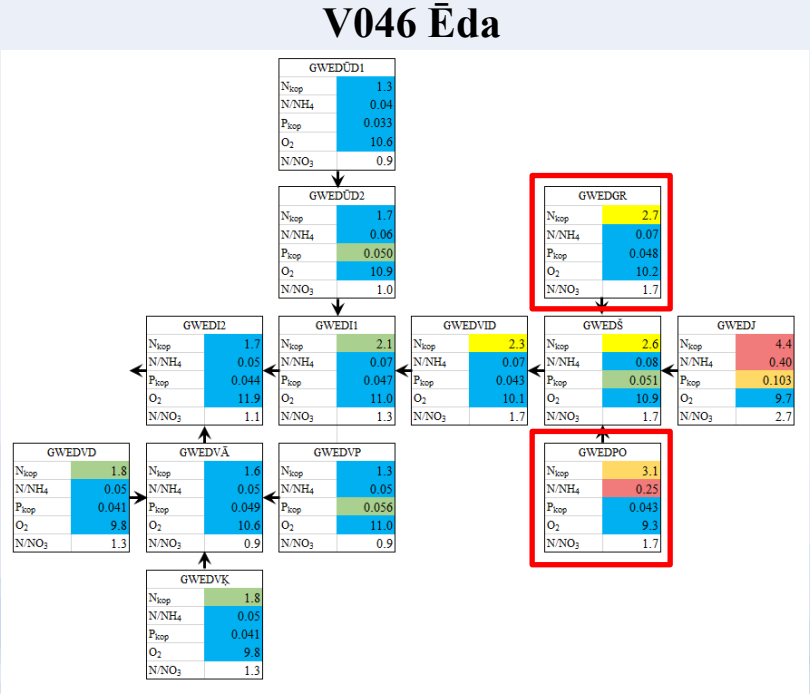
One surface flow constructed wetland has been constructed in the Auce River

Photo: E. Griķītis

LIFE GoodWater IP – the practices to be implemented in L118 Auce

- Two sites for woodchip bioreactors
- One site for saturated buffers

LIFE GoodWater IP – the practices implemented in V046 Ēda



LIFE GoodWater IP – the practices implemented in V046 Ēda

One surface flow constructed wetland and two woodchip bioreactors have been constructed in the Grauzdupe River

Photo: D. Samoška, G.Žideņš

LIFE GoodWater IP – the practices implemented in V046 Ēda

Two sedimentation ponds have been constructed in the ditch discharging water into the Grauzdupe River

Photo: A. Lagzdiņš

LIFE GoodWater IP – the practices implemented in V046 Ēda

One sedimentation pond and water intake have been constructed in the ditch discharging water into the Pormale River

Photo: A. Lagzdiņš

LIFE GoodWater IP – the practices to be implemented in V046 Ēda

- Two sites for woodchip bioreactors
- One site for controlled drainage

Thank you for your attention!

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The integrated project "Implementation of River Basin Management Plans of Latvia towards good surface water status" (LIFE GOODWATER IP, LIFE18 IPE/LV/000014) has received funding from the LIFE Programme of the European Union and the Ministry of Smart Administration and Regional Development Republic of Latvia. www.goodwater.lv