Environmentally friendly maintenance of forest land drainage systems

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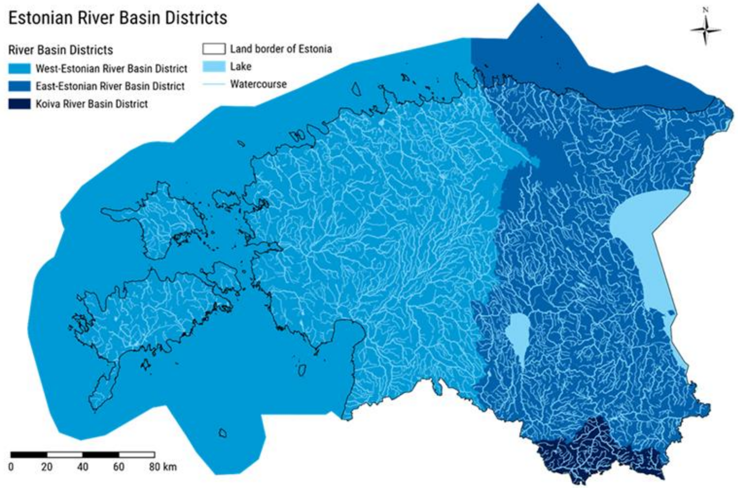
Enabling collaborative efforts for systemic change in Estonian river basin management

- Targeted Plan: West-Estonian River Basin Management Plan
- Total budget: € 29,871,937; co-funding 40%
- Duration: 01.01.2025 - 31.12.2033
- Coordinator: Ministry of Climate of Estonia



Project main tasks

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- Baseline assessment: water and biodiversity monitoring, ecosystem services assessment, land use mapping
- Design of appropriate interventions with input from biodiversity experts
- Implementing innovative maintenance solutions and environmental protection structures
- Post-implementation monitoring: effectiveness of measures on water quality and biota

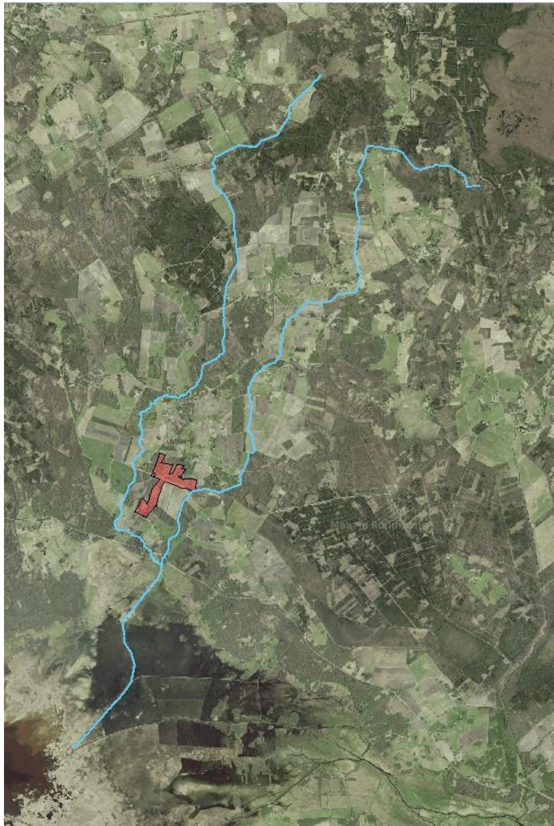
Advancing melioration practices that support ecological status of catchments

Four pilot water bodies selected to test innovative drainage practice

Pilot surface water body

Forest melioration areas

- Located Vihterpalu and Rägina pilot catchments
- Total area under maintenance: 304 hectares
- Maintenance works organized by the State Forest Management Centre



Activities in progress

- Water quality and biodiversity monitoring
- Mapping of the hydro-morphological condition
- Ecosystem services evaluation

Rägina River monitoring

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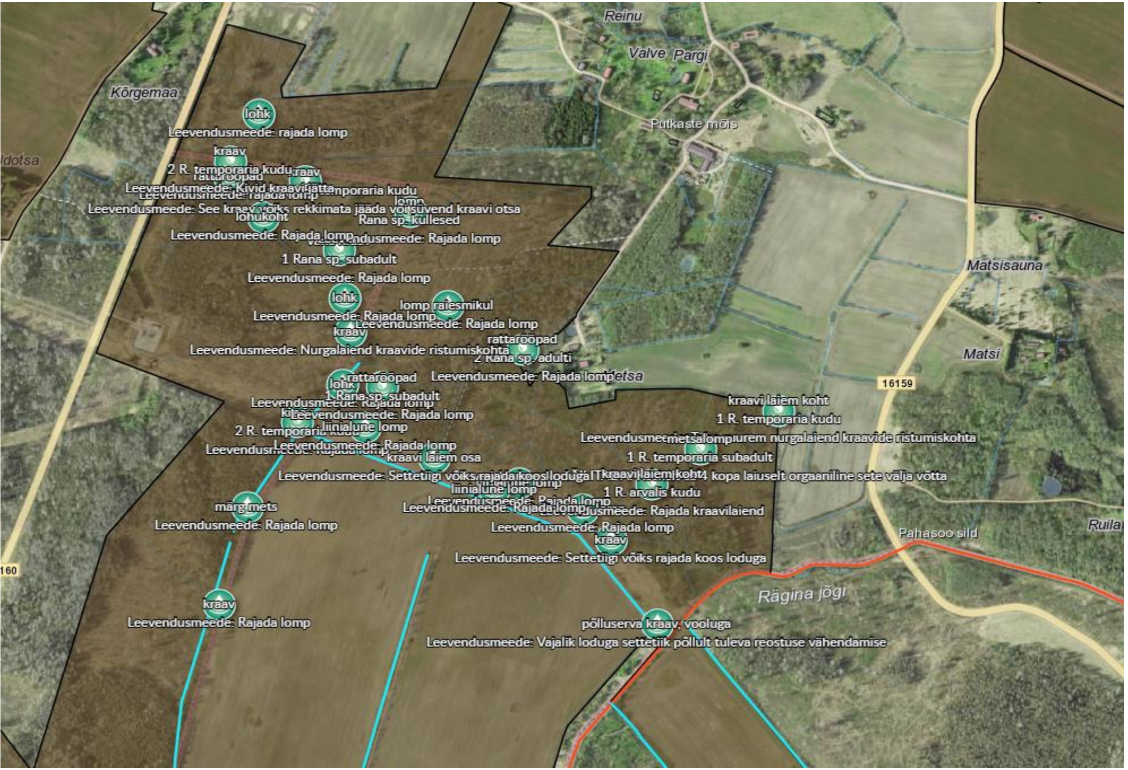
Rägina River monitoring

First mitigation measures mapped



What we aim to achieve

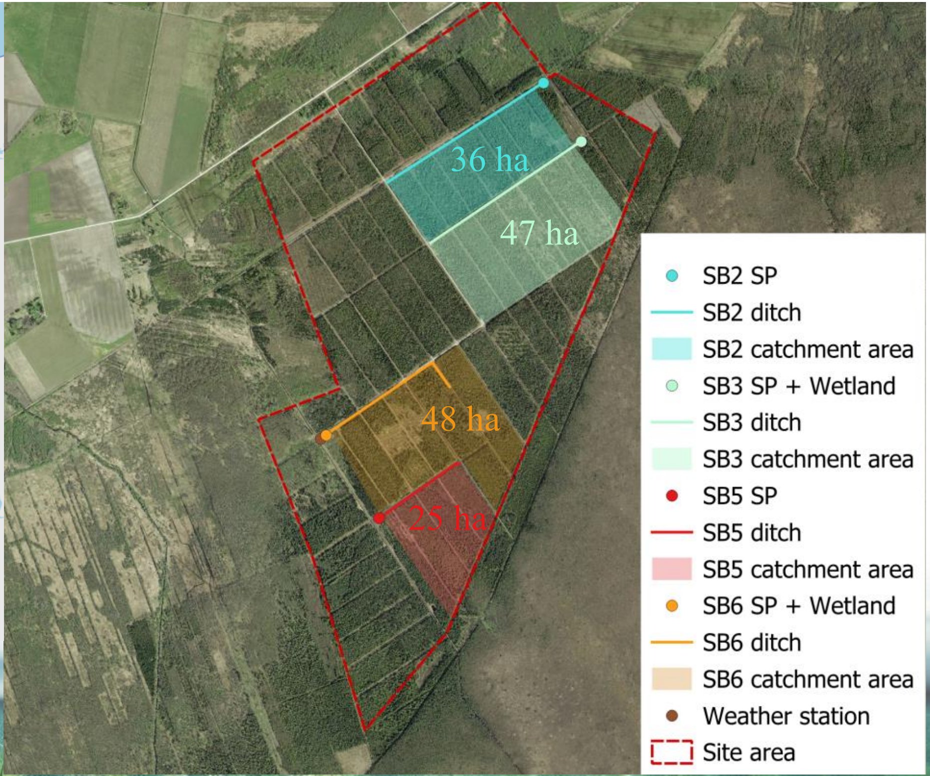
- New data combined with stronger networking helps us make better, more informed decisions

We engage and train stakeholders involved in drainage maintenance from both the private and public sectors, develop guidance materials, and identify opportunities to improve the legal framework

Ditch reconstruction works at Rumba peatland forest site

58°43′N, 24°80′E

Whole area of 507.6 ha



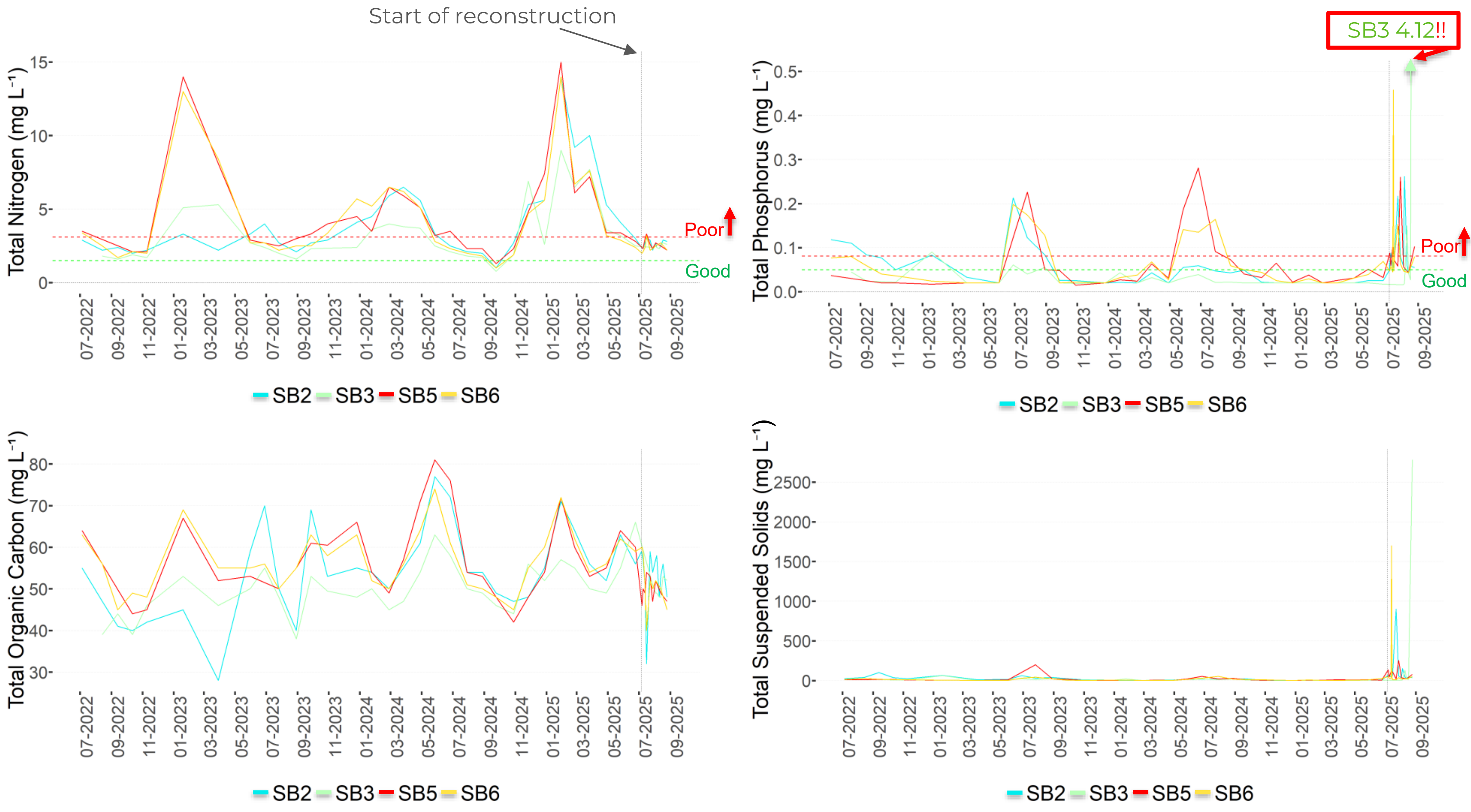
SB2
Sedimentation
pond

SB3 - Hybrid
Sedimentation pond+ Wetland

SB5
Sedimentation
pond

SB6 - Hybrid
Sedimentation pond+ Wetland

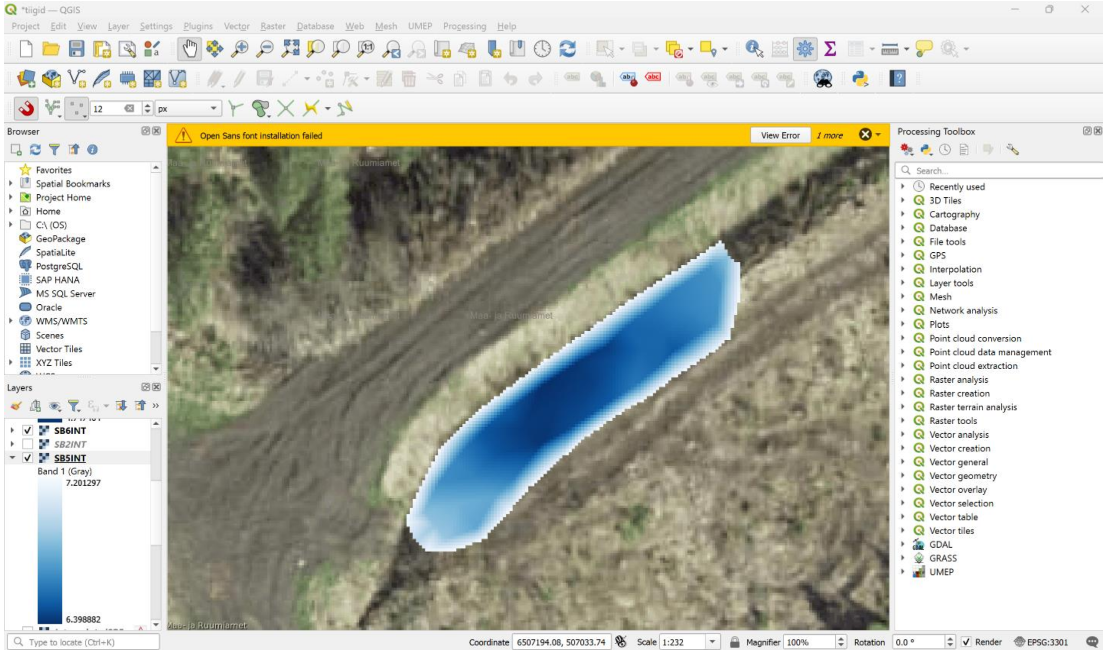

SB2 ditch
SB5 ditch
SB3 ditch
SB6 ditch


Start of reconstruction
Total Nitrogen (mg L-1)
Poor
Good
SB2 SB3 SB5 SB6
SB3 4.12!!
Total Phosphorus (mg L-1)
Poor
Good
SB2 SB3 SB5 SB6
Total Organic Carbon (mg L-1)
SB2 SB3 SB5 SB6
Total Suspended Solids (mg L-1)
SB2 SB3 SB5 SB6



Sediment accumulation

Trimble® R12 GNSS receiver in RTK mode



Interpolation in QGIS

Key takeaways

- The dried peat soil is degrading, leaking nutrients and carbon
- Ditch reconstruction works increase the pollution load
- Surface diffuse pollution mitigation measures need to be implemented during active peatland forest management
- The mitigation measures should be built at least a year before the start of reconstruction (wetlands even earlier)

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Thank you!