Modelling impacts of wastewater irrigation from the Waipa Stream catchment

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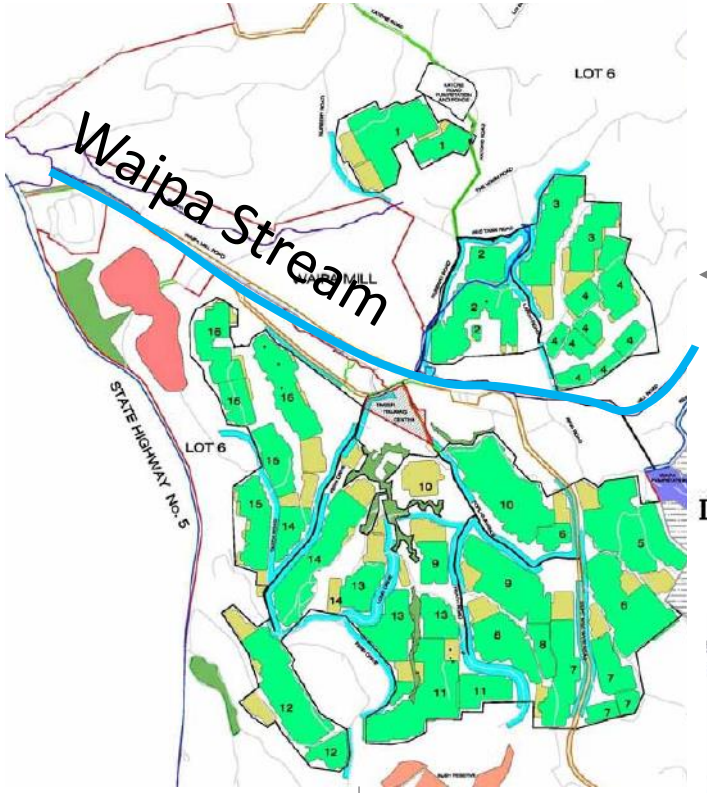
Te Whare Wānanga o Waikato

Outline:

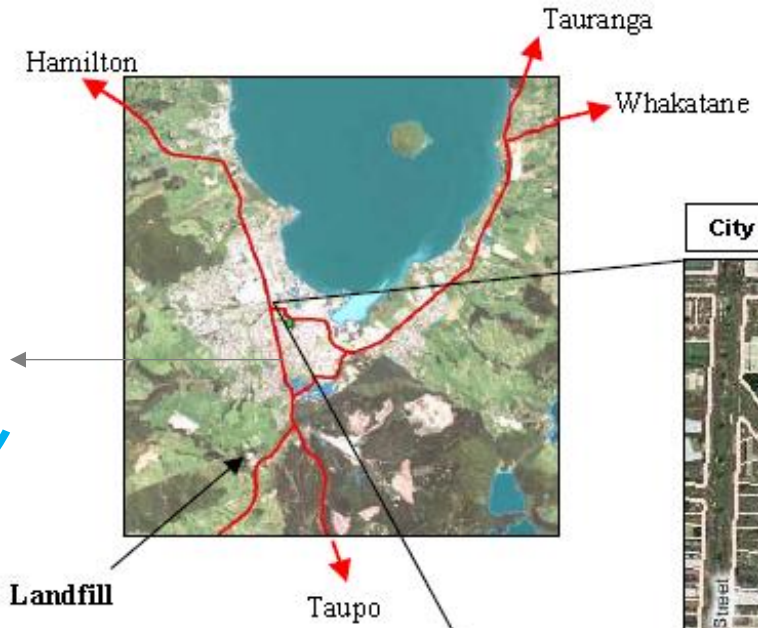
- Study area
- Catchment model application

Science presentation evening, 8th October 2014, Rotorua

(c) Whakarewarewa Forestry area (193 ha)



(a) Lake Rotorua



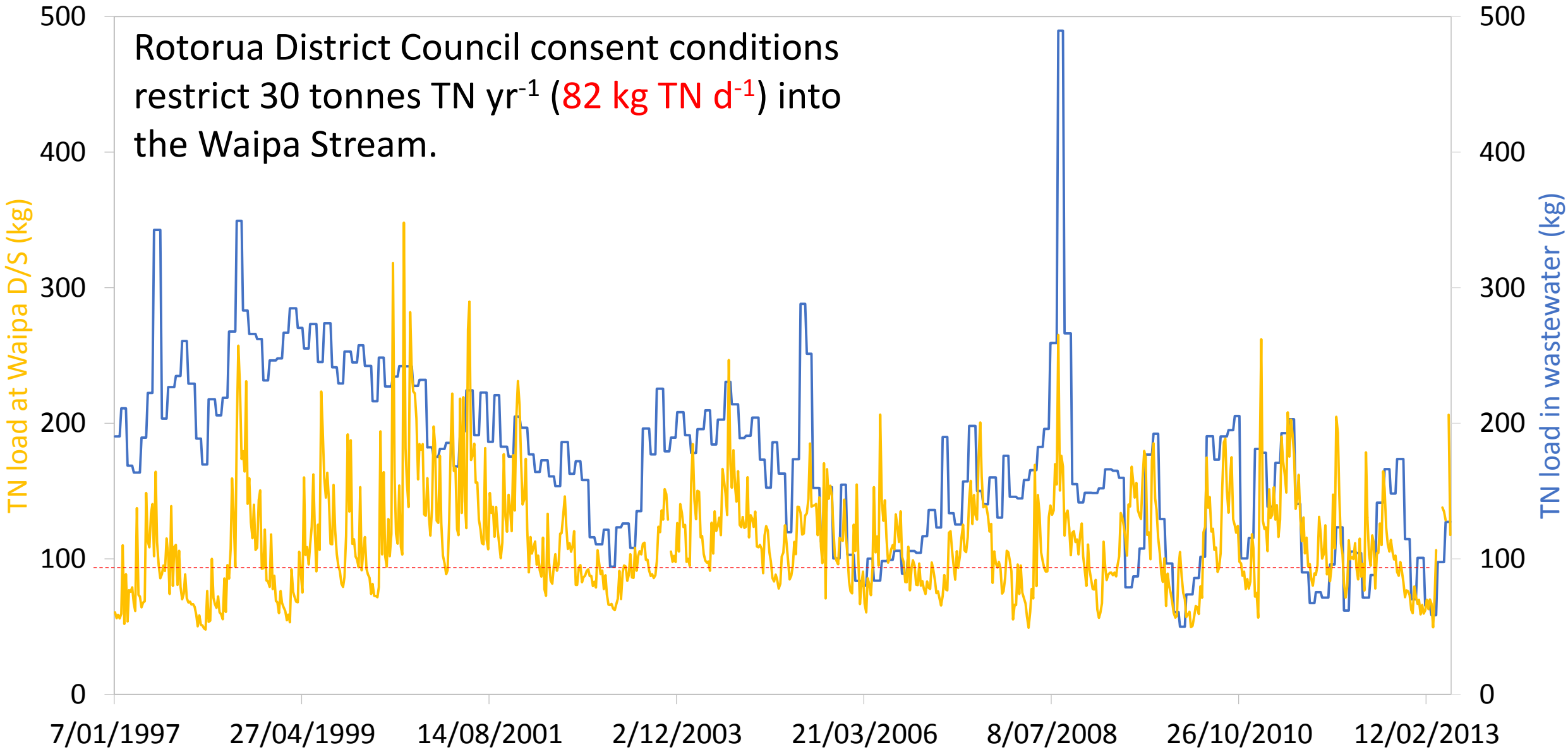
(b) Rotorua Wastewater Treatment Plant

Study area

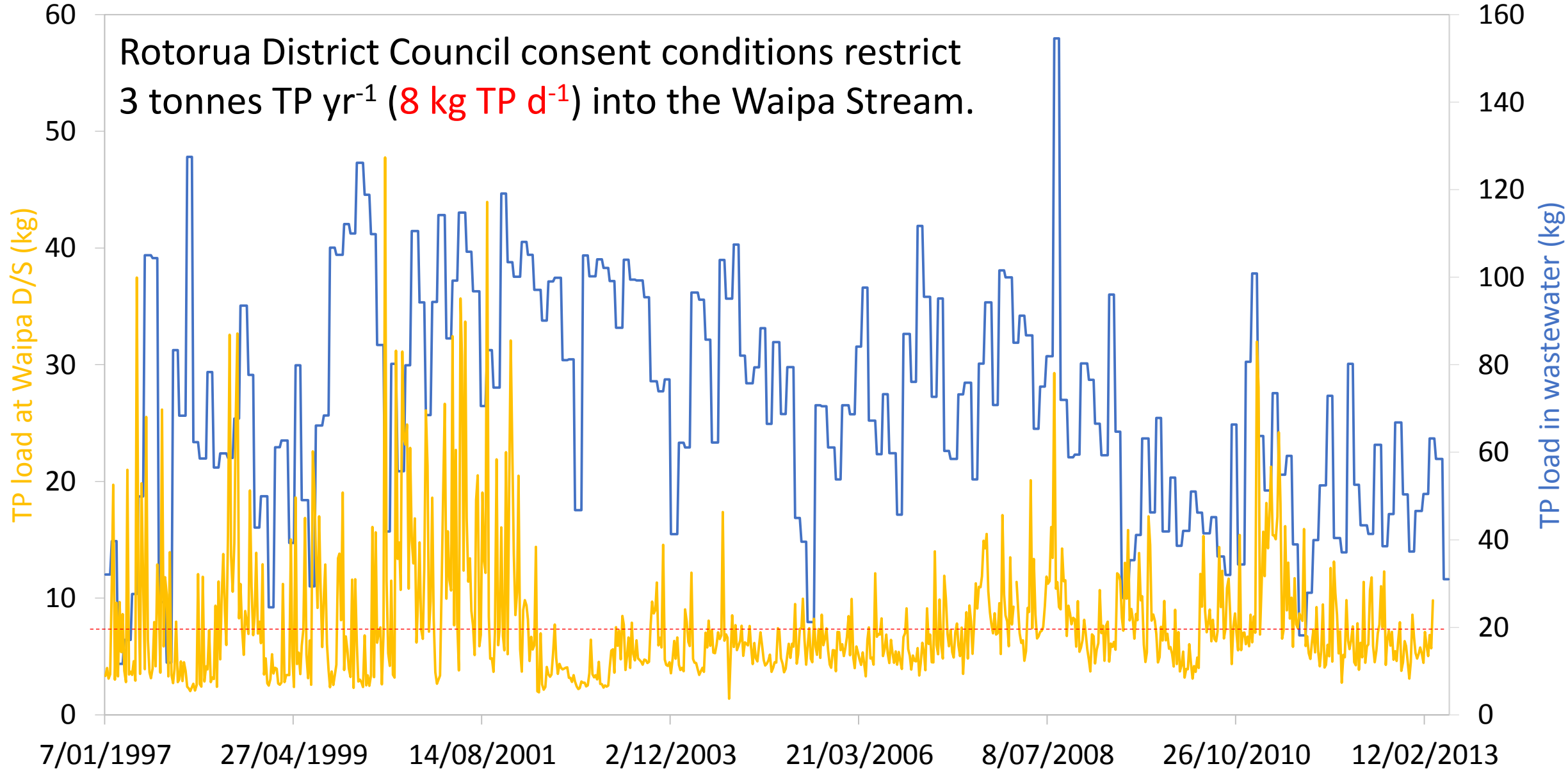
(d) Treated wastewater from Rotorua city was spray-irrigated into Whakarewarewa Forest.

Photo source:
a-c: Rotorua District Council
d: http://www.niwa.co.nz/publications/wa/vol16-no4-december-2008/natural-purification-of-groundwater

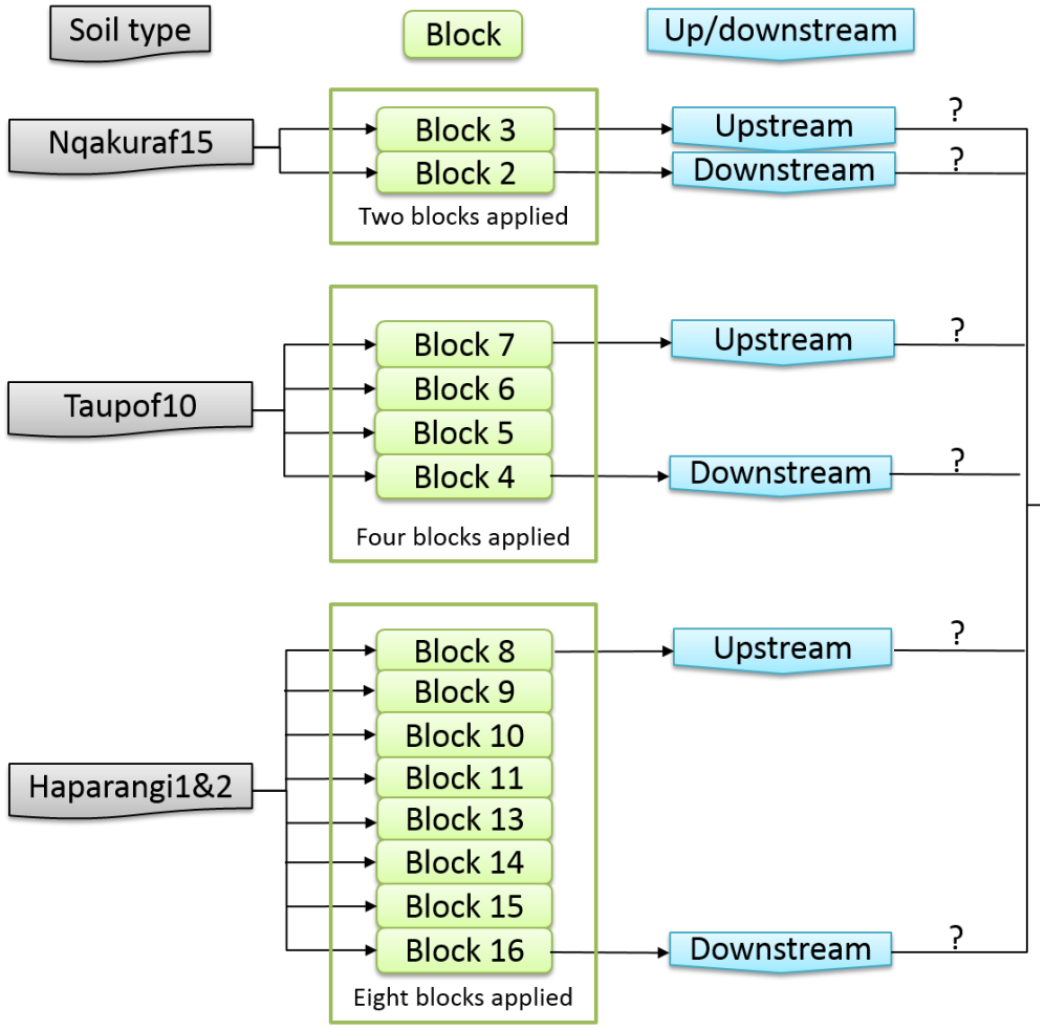
Influence of wastewater irrigation: total nitrogen (TN)

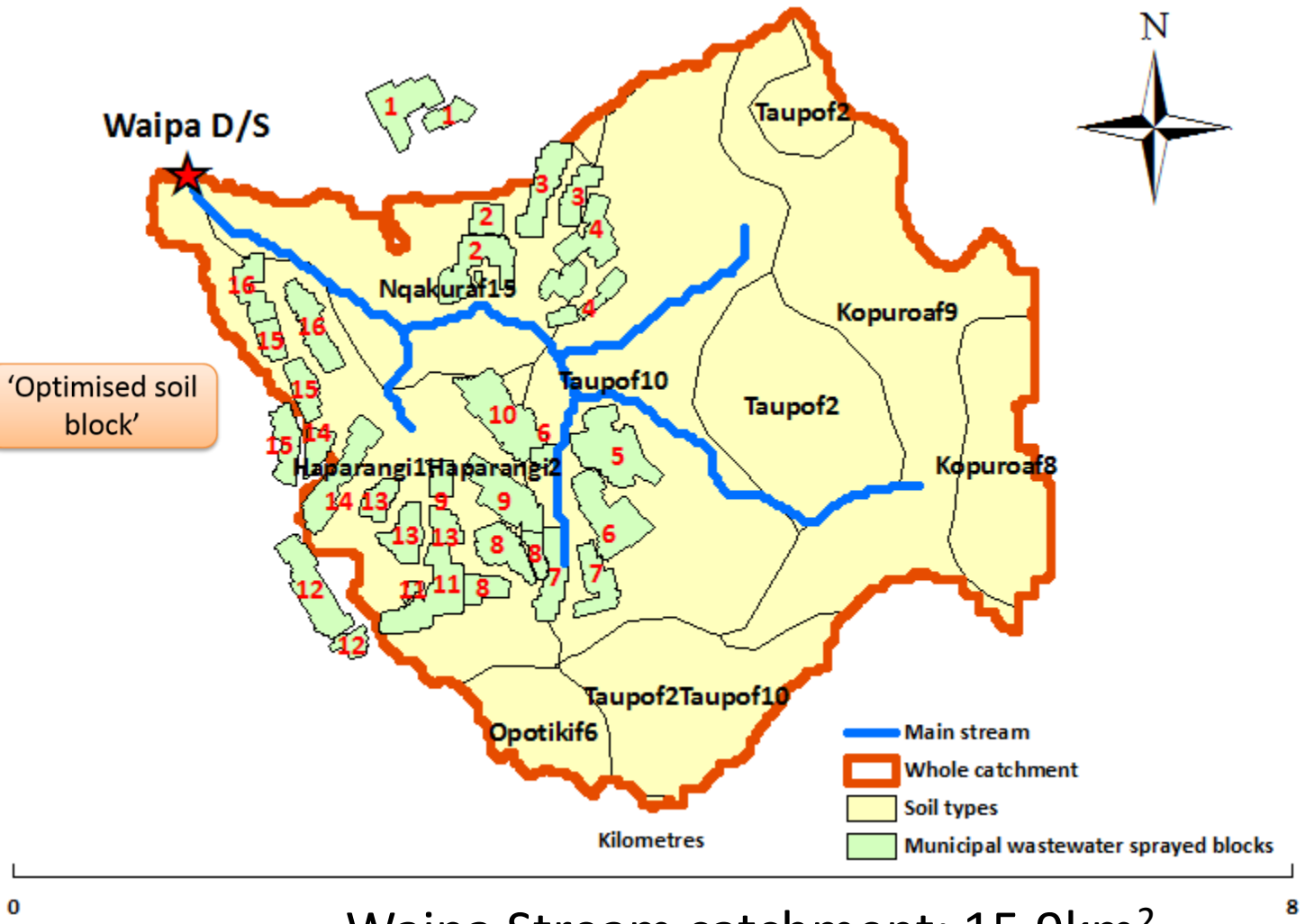


Influence of wastewater irrigation: total phosphorus (TP)



Catchment model application



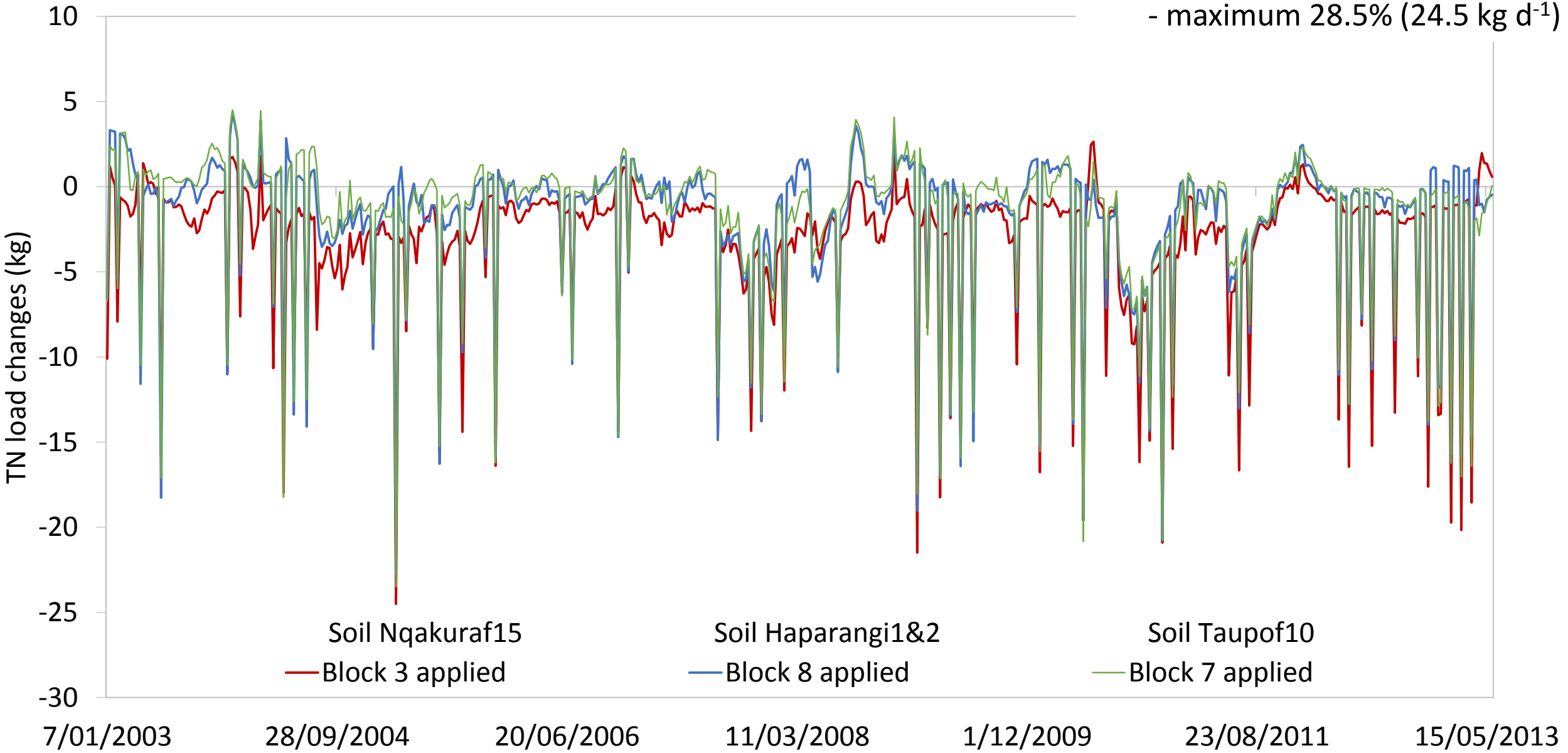


The frequency of wastewater applied, from every day, every two days, to every seven days.

Waipa Stream catchment: 15.9km^2

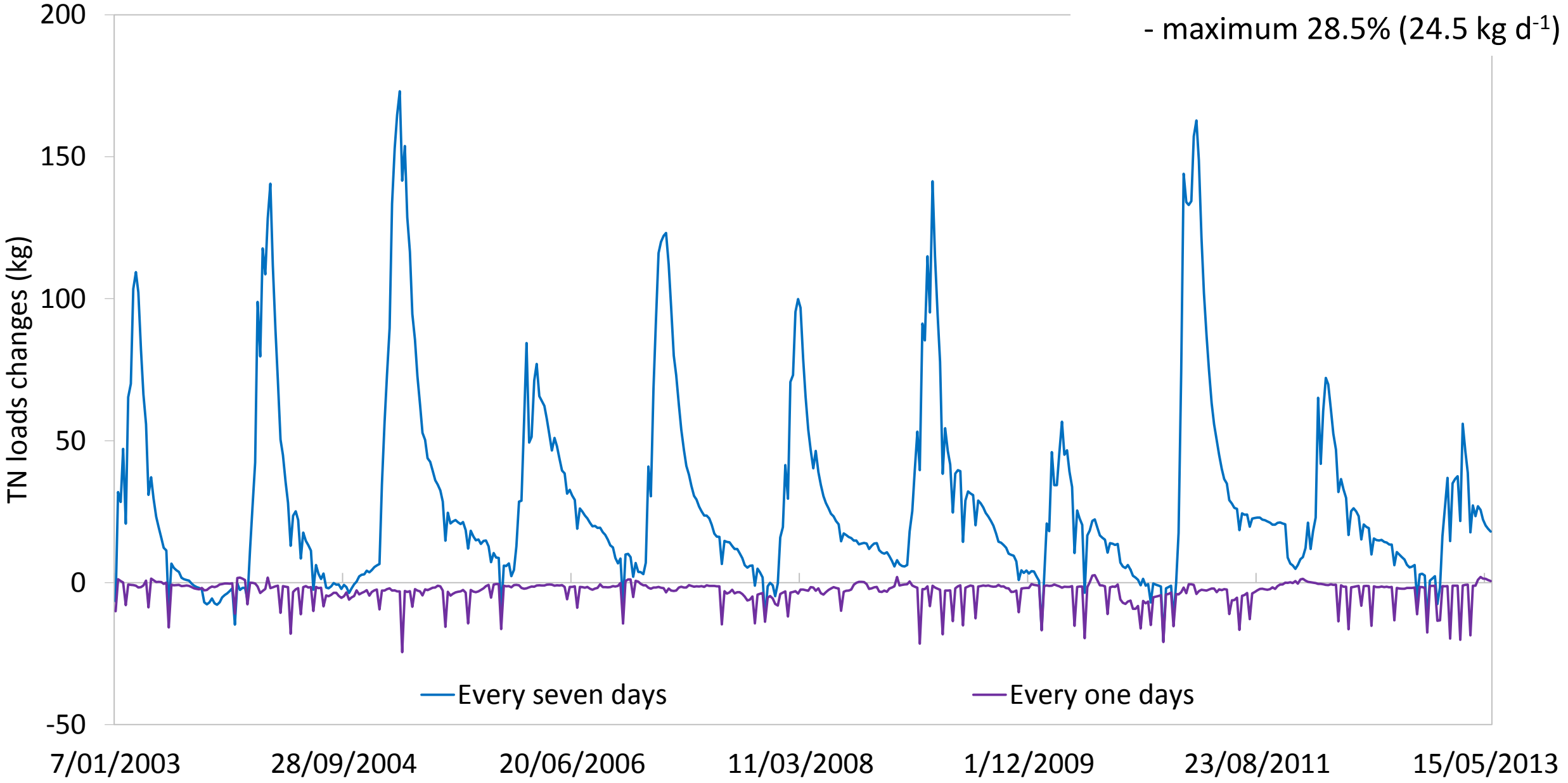
Irrigation scenarios: TN load simulations

Optimised soil block No.3
Daily frequency irrigation
TN load reduction
- maximum 28.5% (24.5 kg d^{-1})



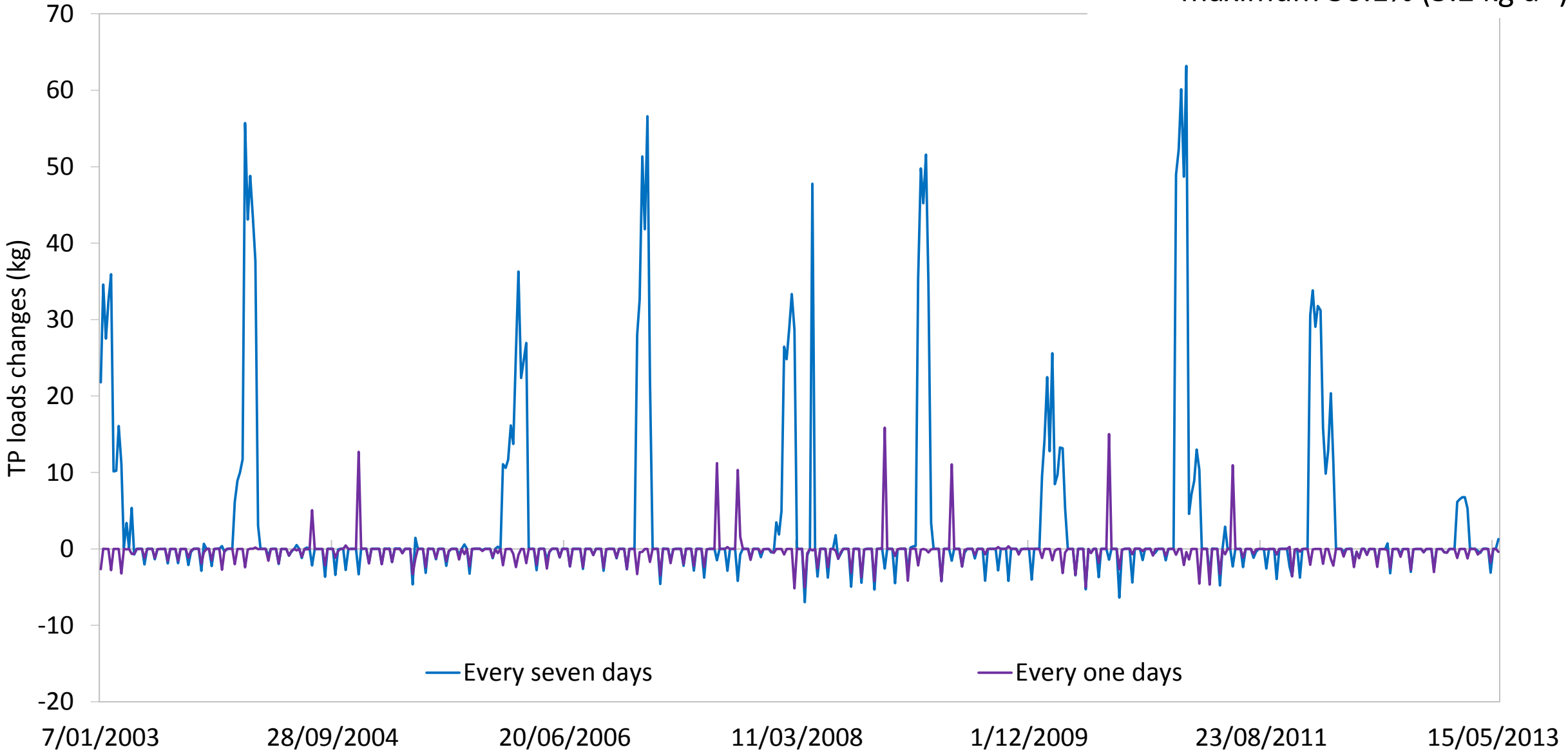
Irrigation scenarios: TN load simulations

Optimised soil block No.3
Daily frequency irrigation
TN load reduction
- maximum 28.5% (24.5 kg d^{-1})



Irrigation scenarios: TP load simulations

Optimised soil block No.3
Daily frequency irrigation
TP load reduction
- maximum 56.1% (5.2 kg d^{-1})



Acknowledgements

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