



Eketahuna WWTP discharge to the Makakahi River

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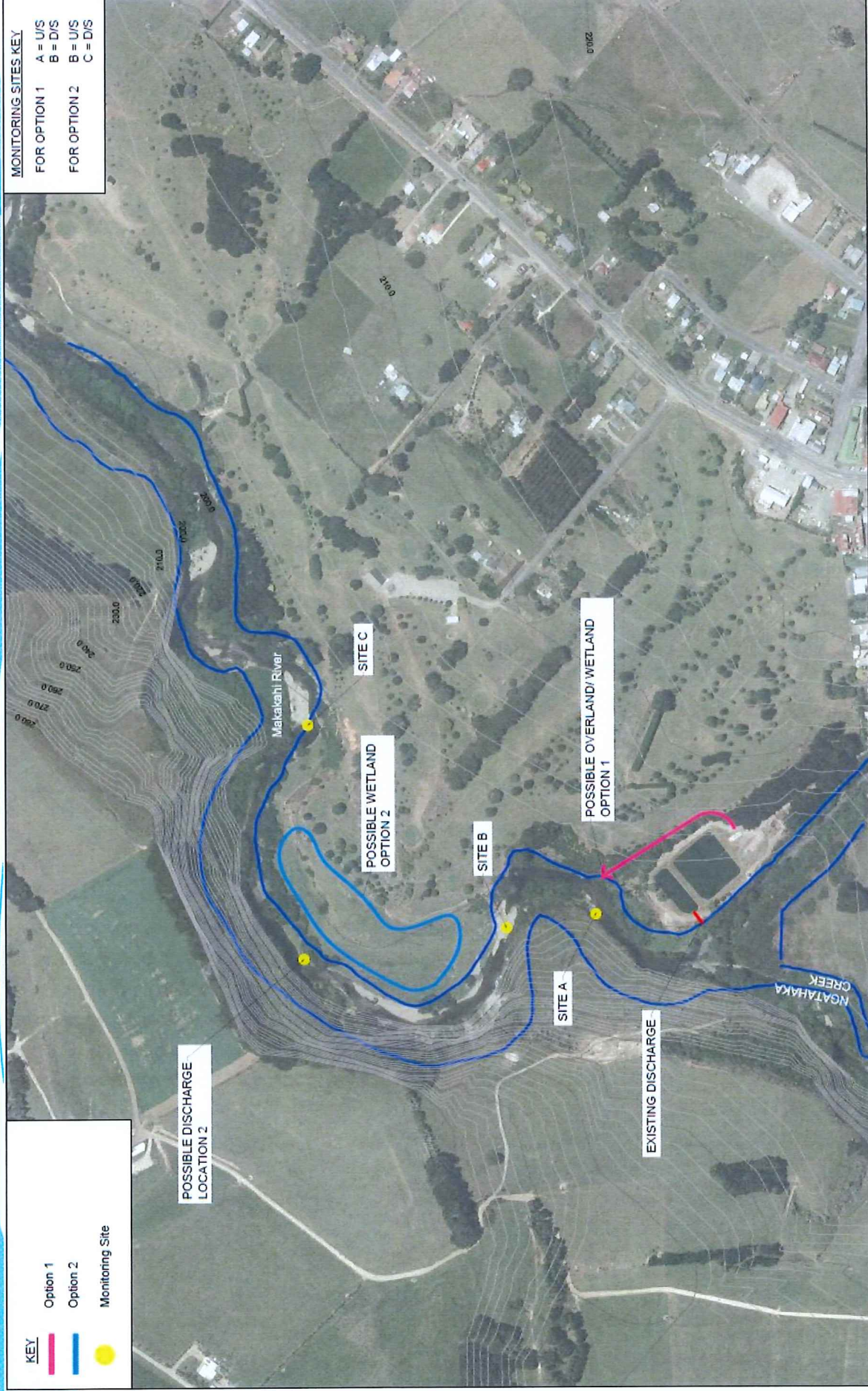


Eketahuna WWTP – Overview

Overview of presentation:

- Monitoring sites and mixing
- Ecological effects (Macroinvertebrates & Periphyton)
- Potential causes
- Effects after the proposed upgrades

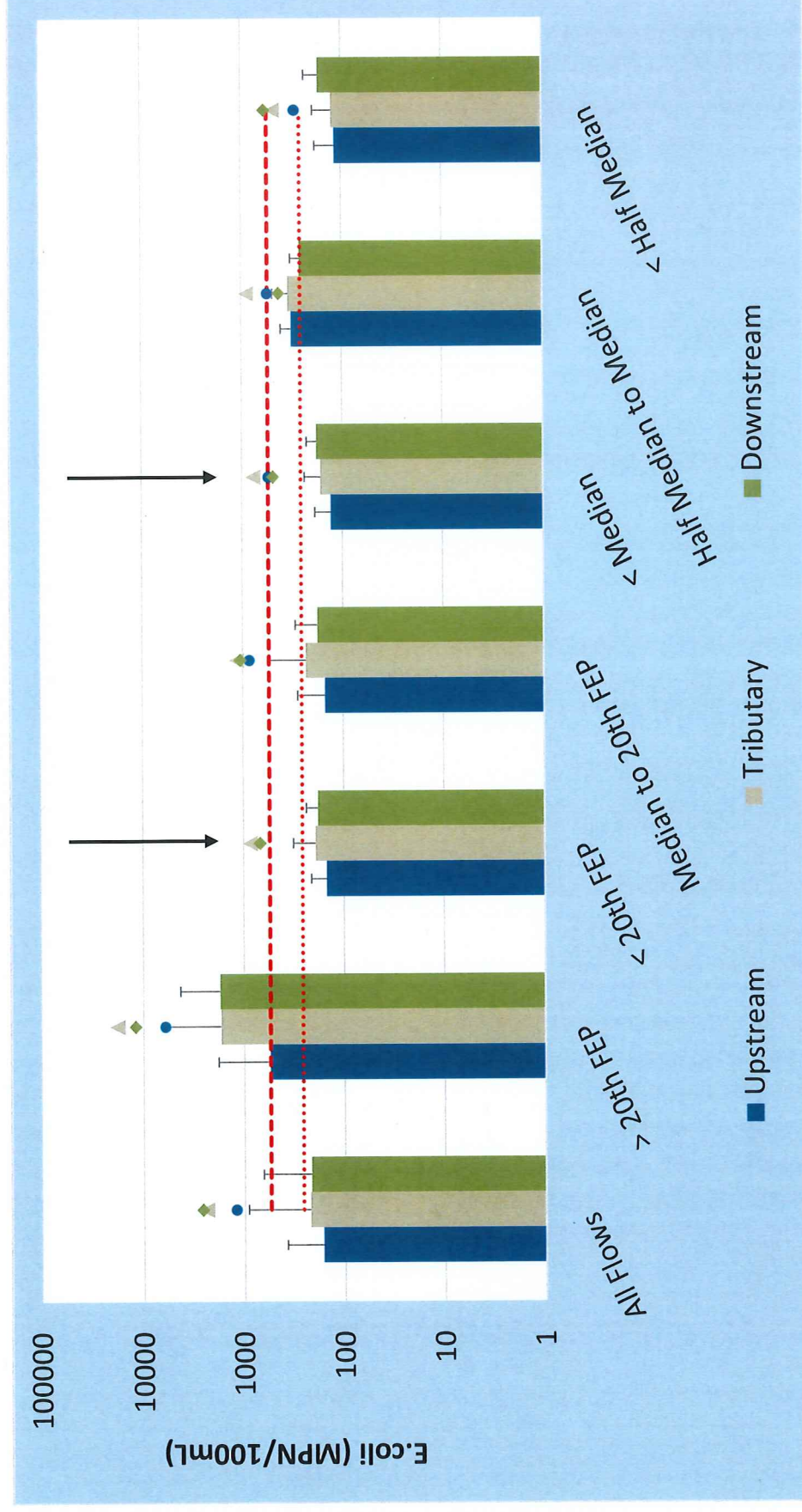
Eketahuna WWTP – mixing and monitoring sites



Eketahuna WWTP – Option 1



Instream Water Quality – E.coli



Macroinvertebrate Communities



Snails



Worms



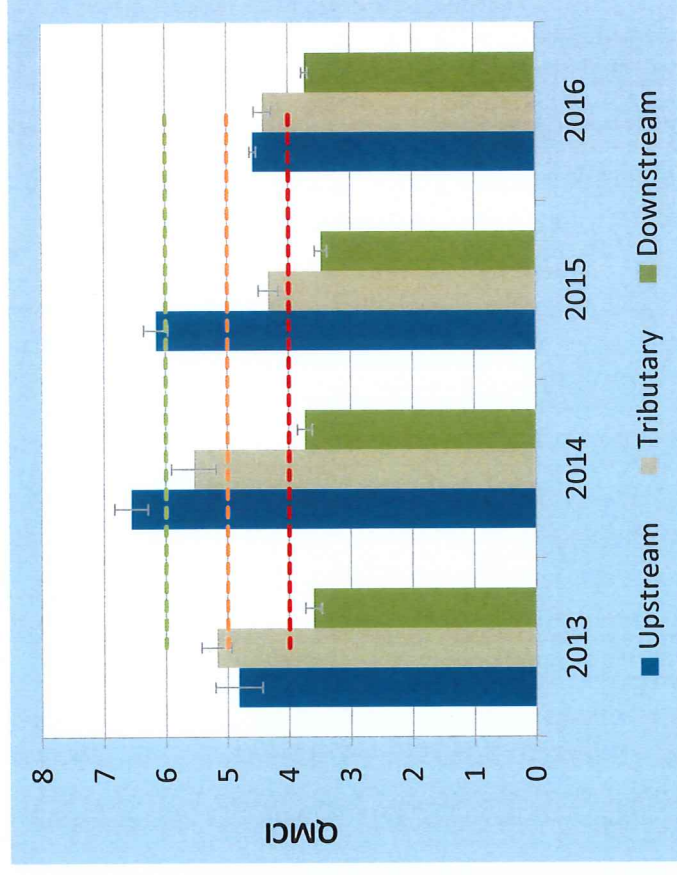
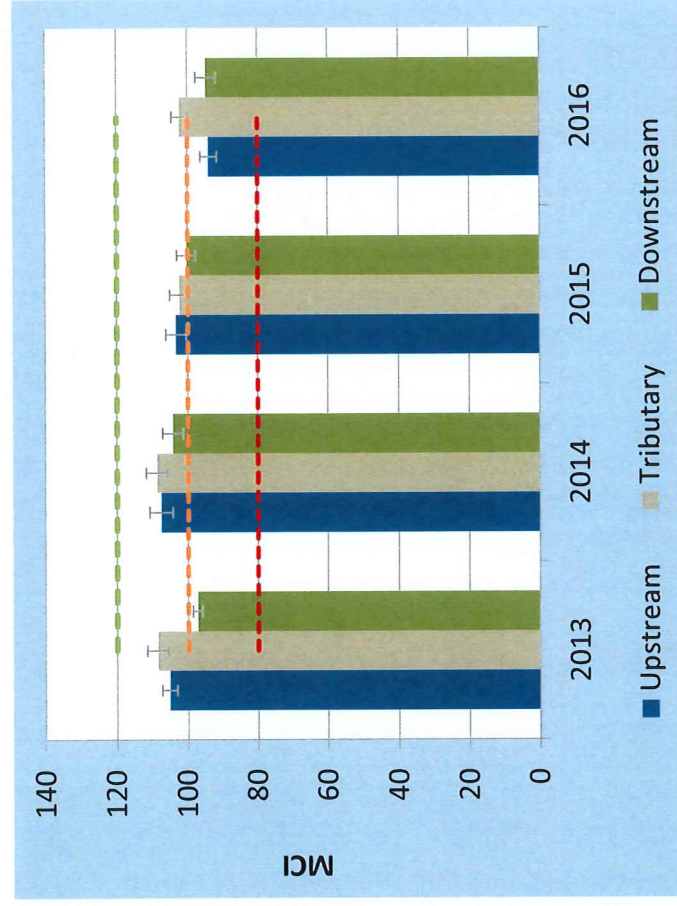
Stoneflies

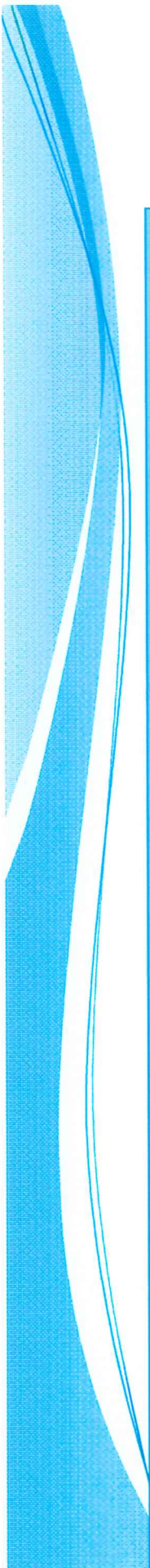


Mayflies



Macroinvertebrate Communities





Possible causes of macroinvertebrate community changes

Discharge:

- Direct toxicity (e.g. ammonia)
- Organic matter deposition (POM)
- Periphyton

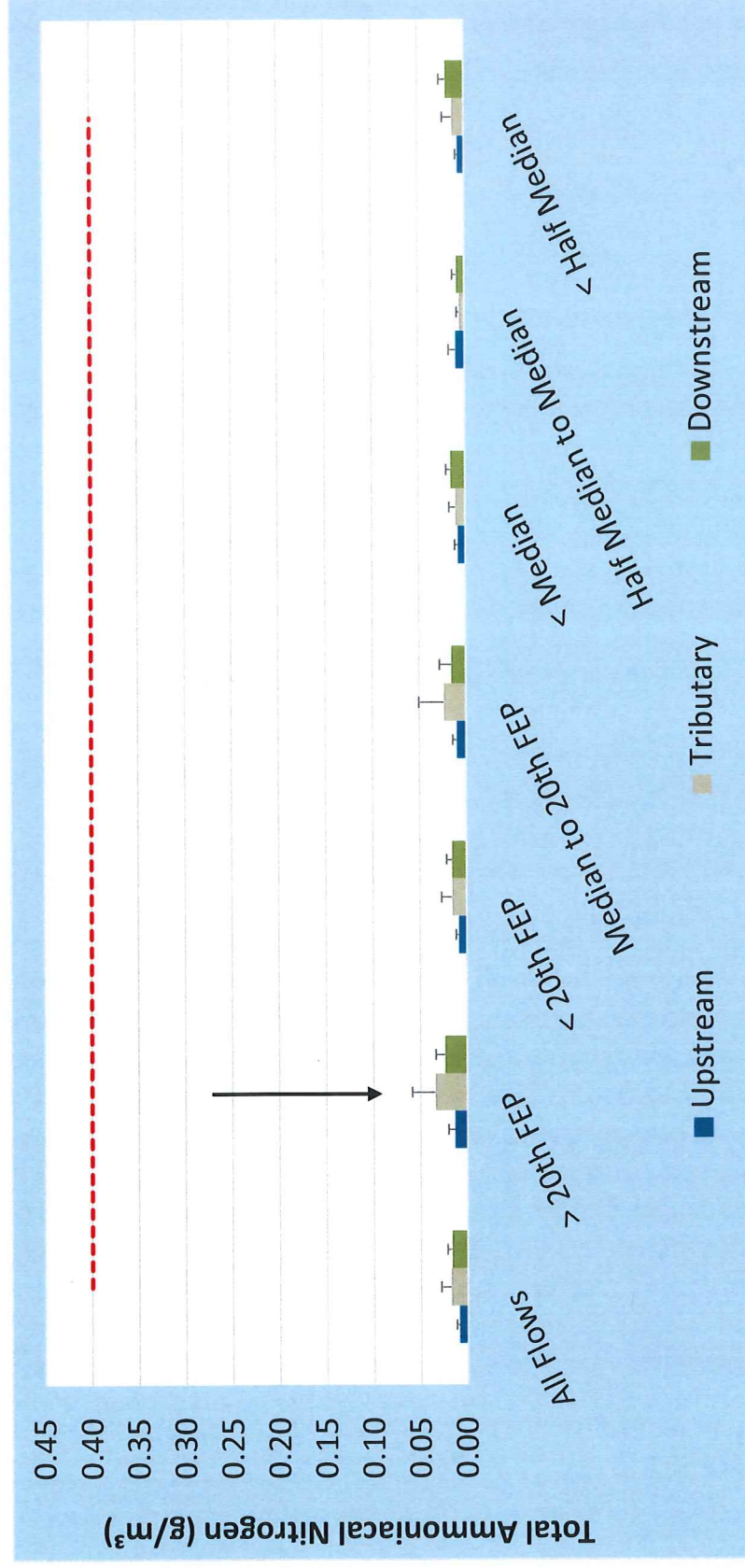
Ngatahaka:

- Sediment deposition
- Periphyton

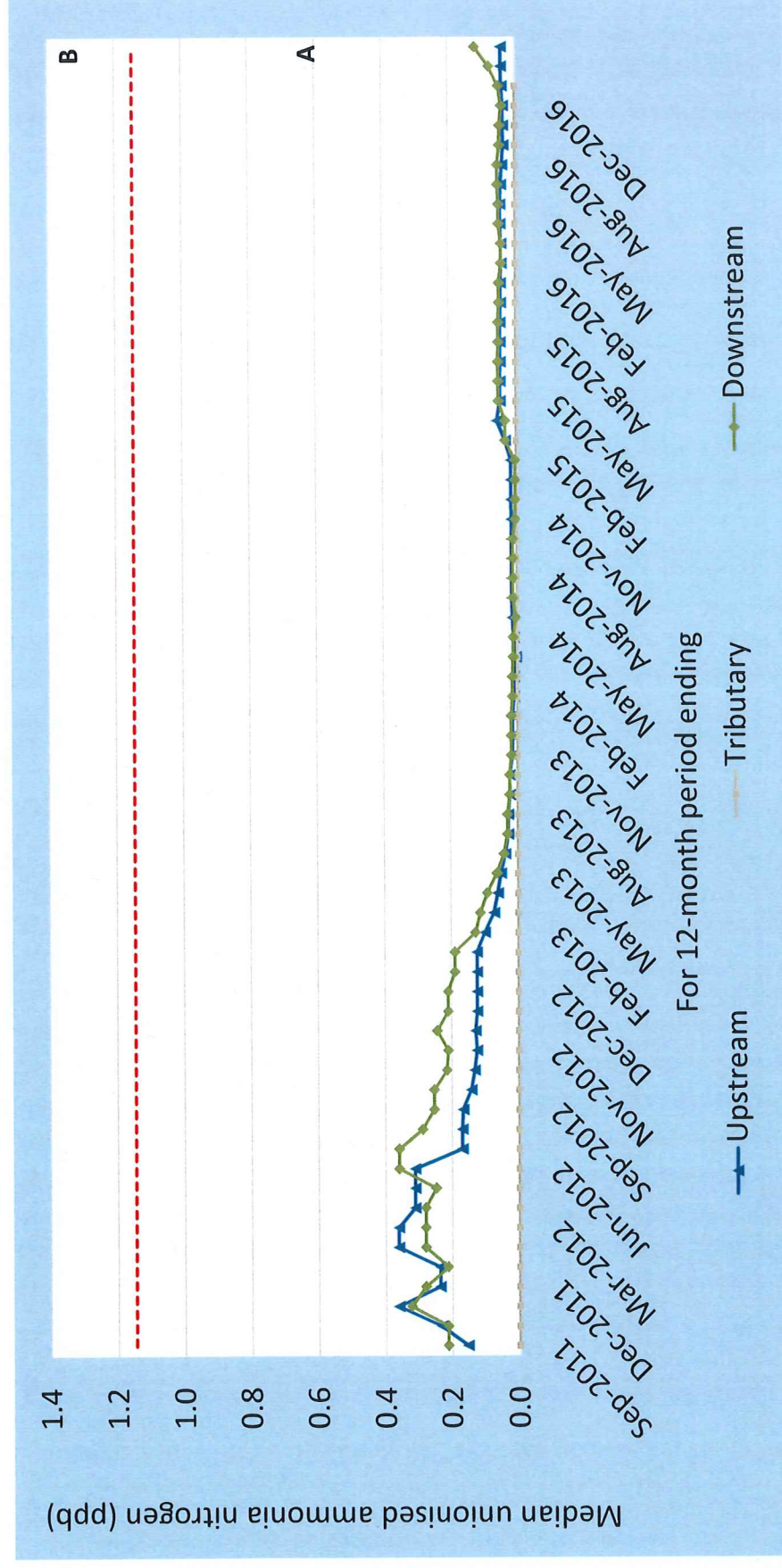
Periphyton:

- SIN
- DRP

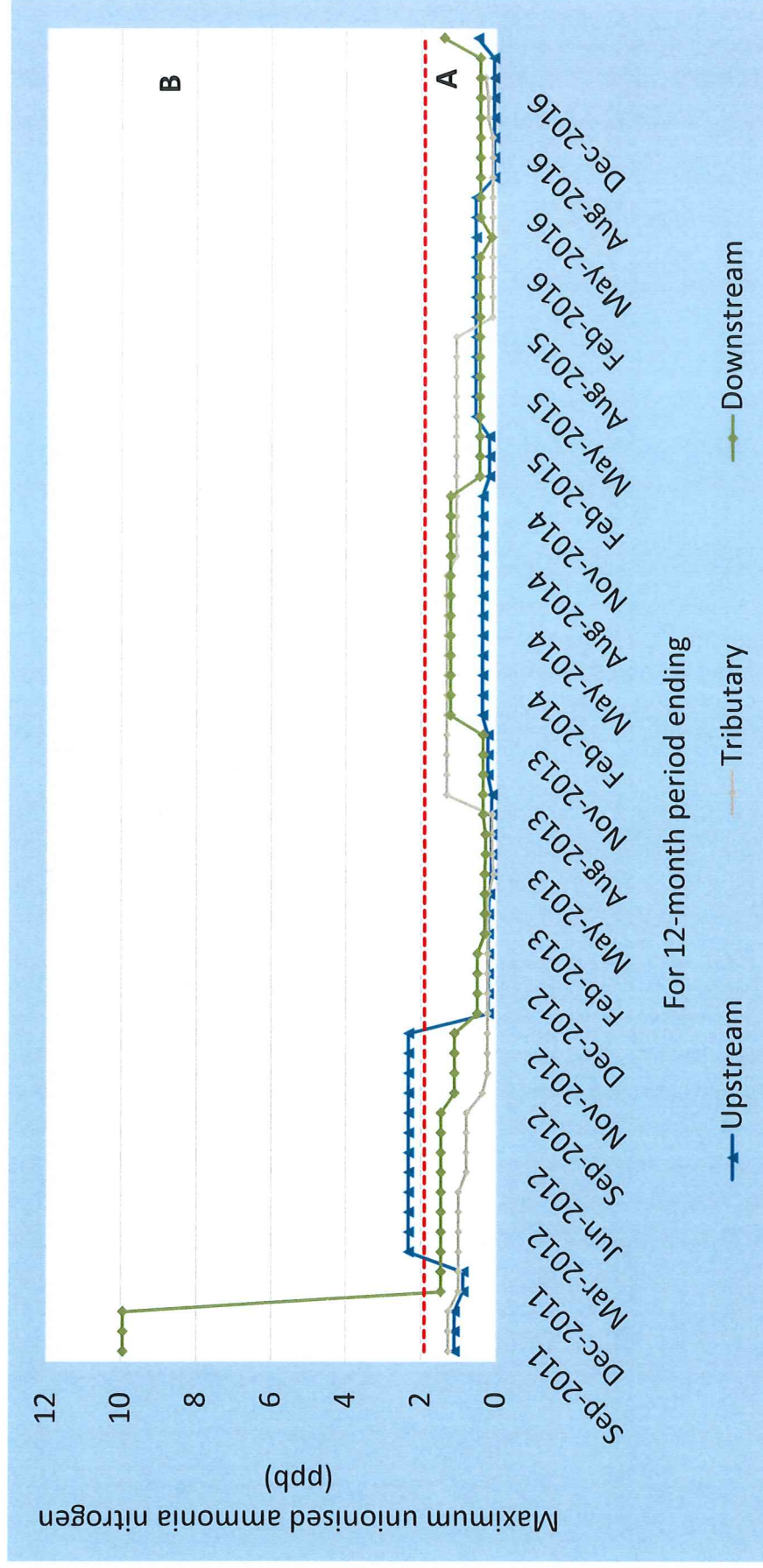
Instream Water Quality – Ammoniacal Nitrogen



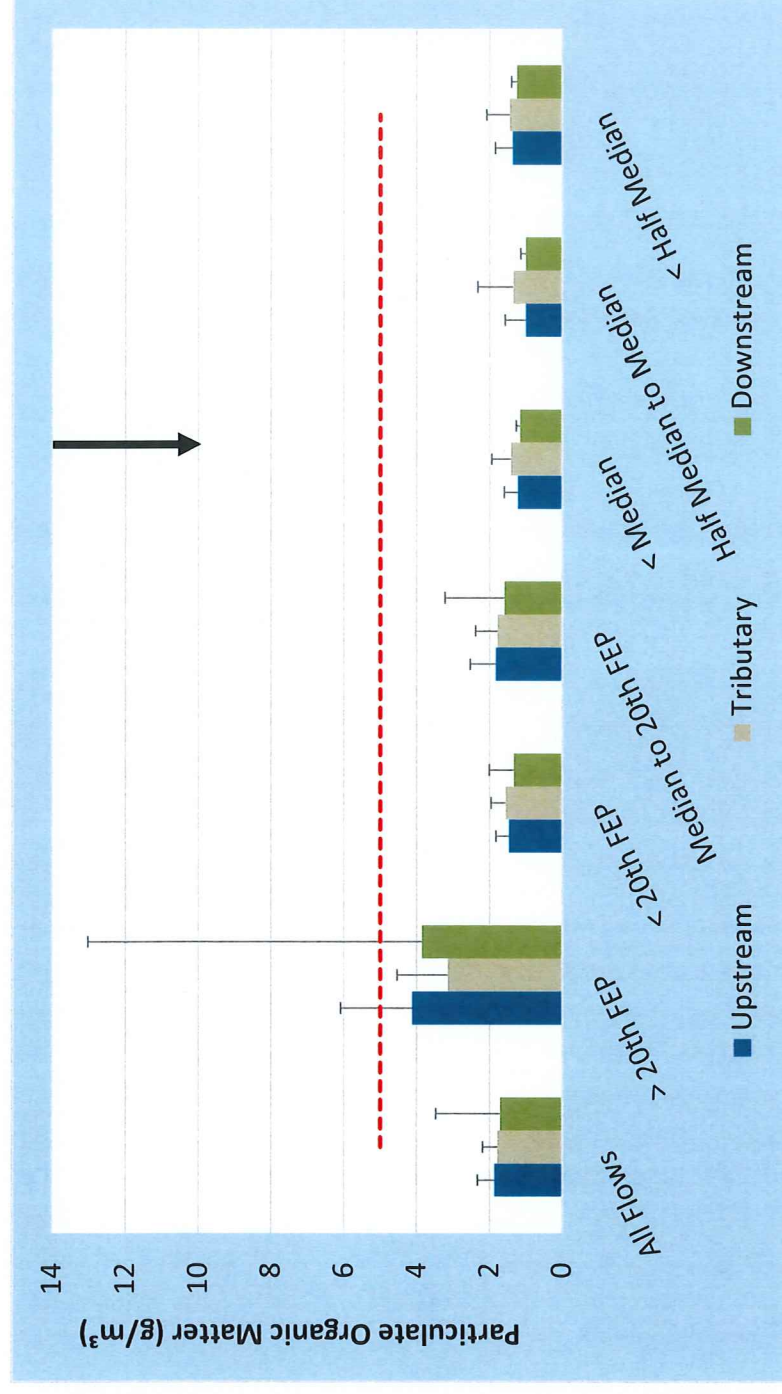
Instream Water Quality – Ammoniacal Nitrogen (NPSFM)



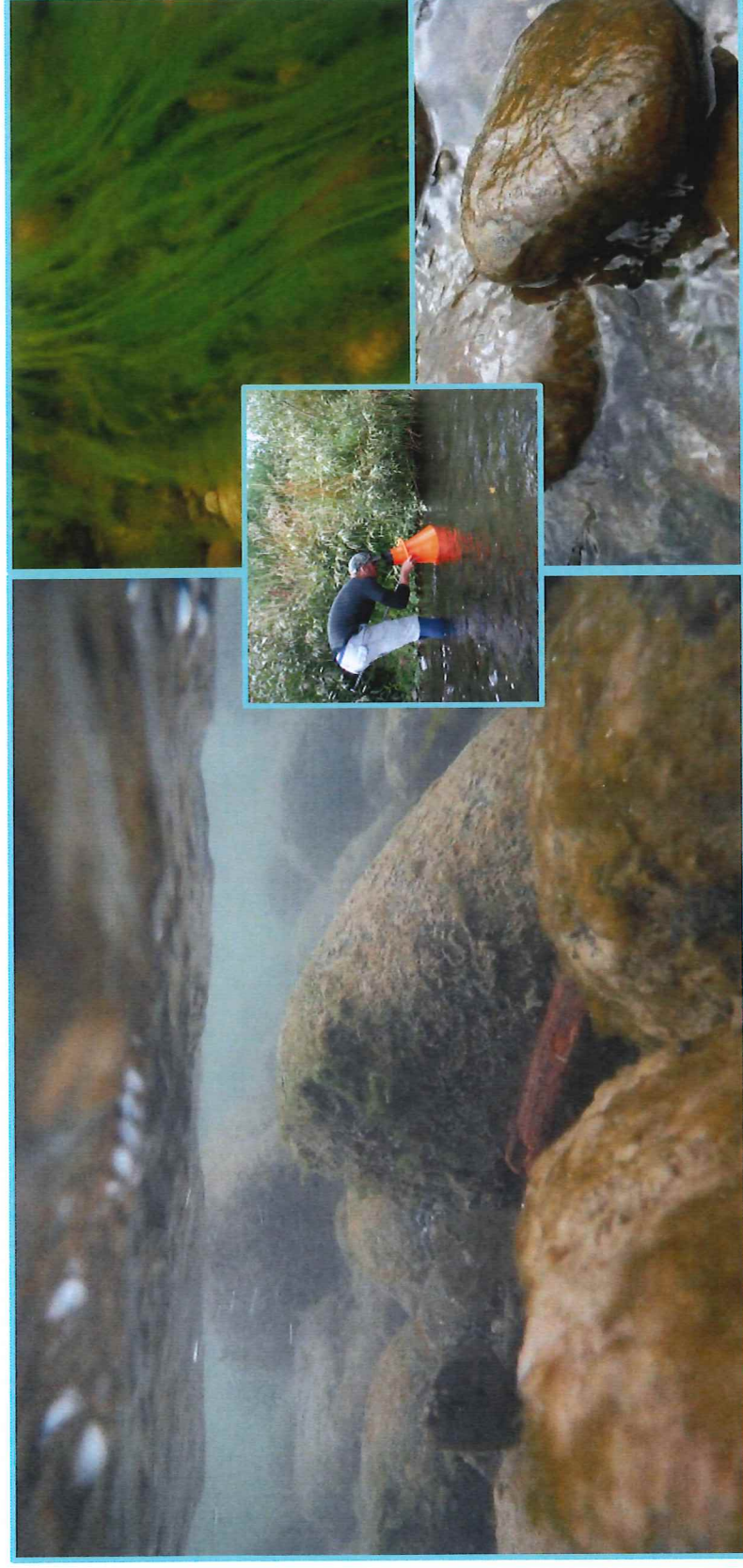
Instream Water Quality – Ammoniacal Nitrogen (NPSFM)



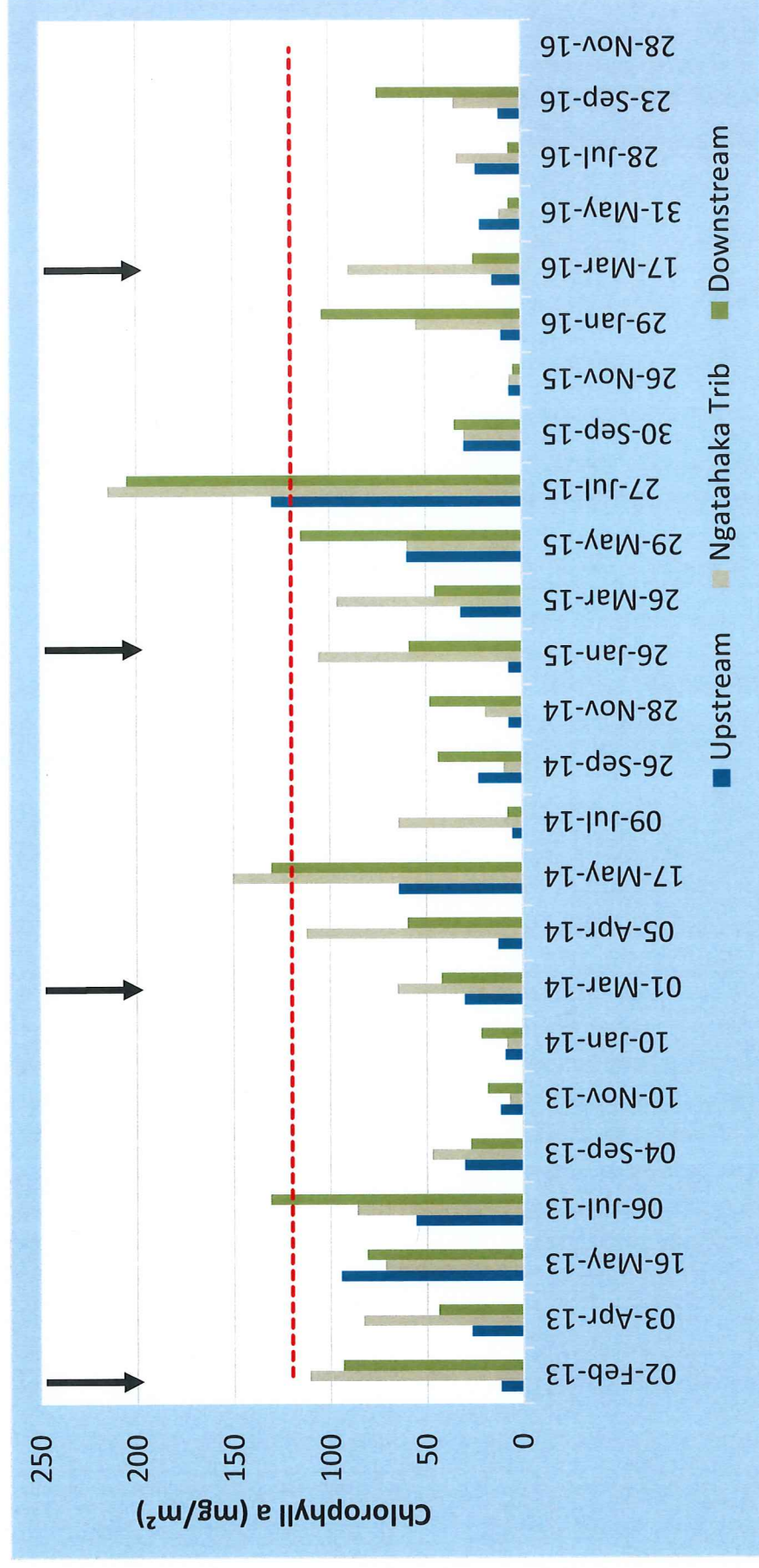
Instream Water Quality – POM



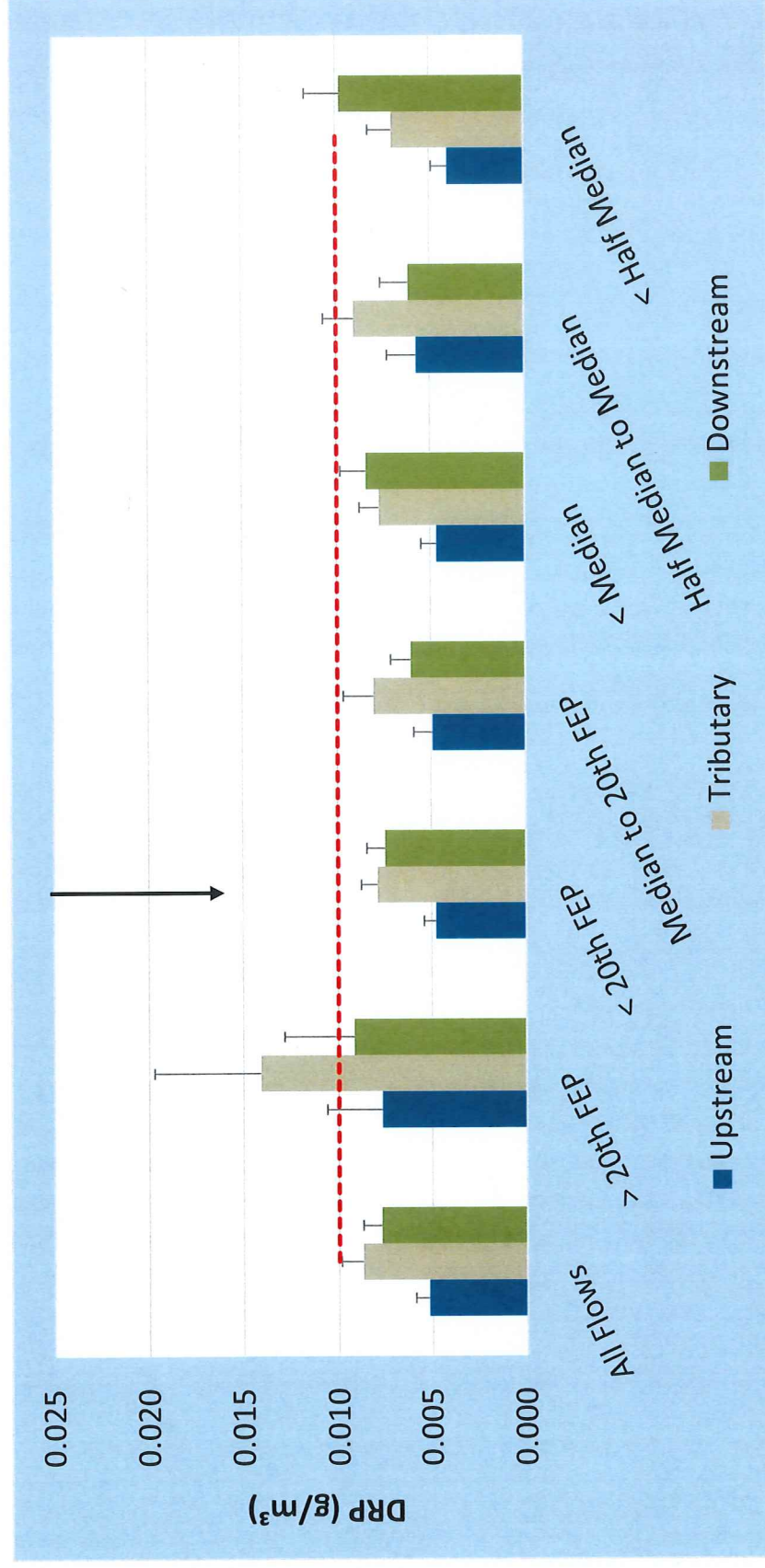
Periphyton



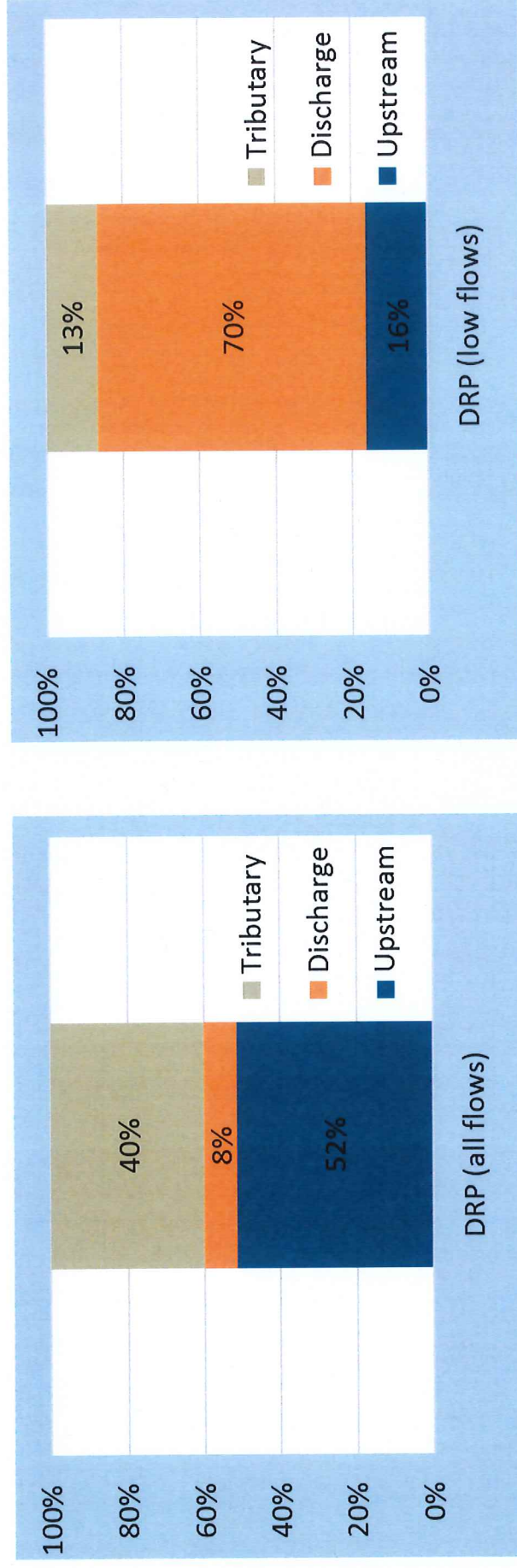
Periphyton – Chlorophyll *a*



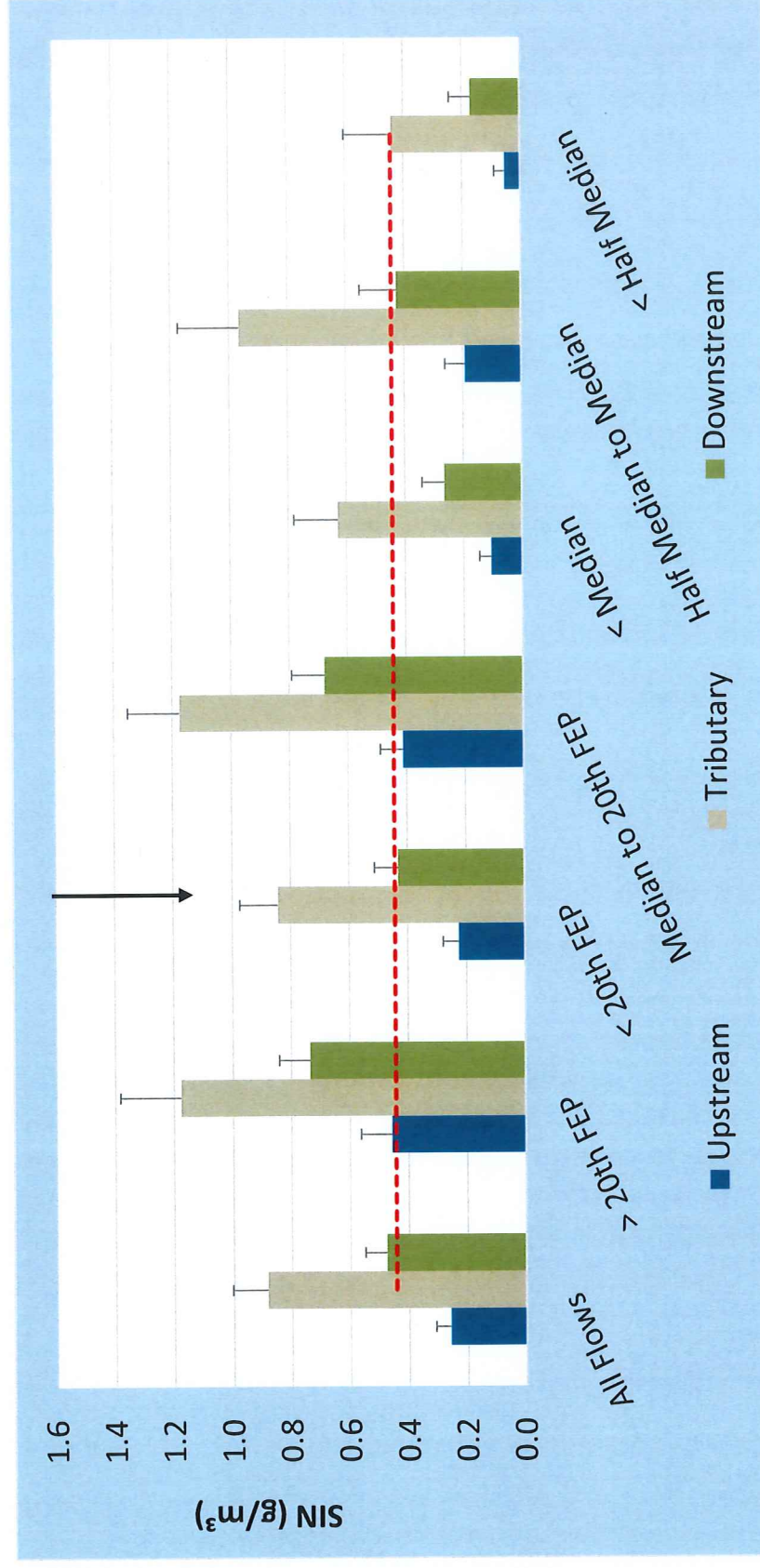
Instream Water Quality – DRP



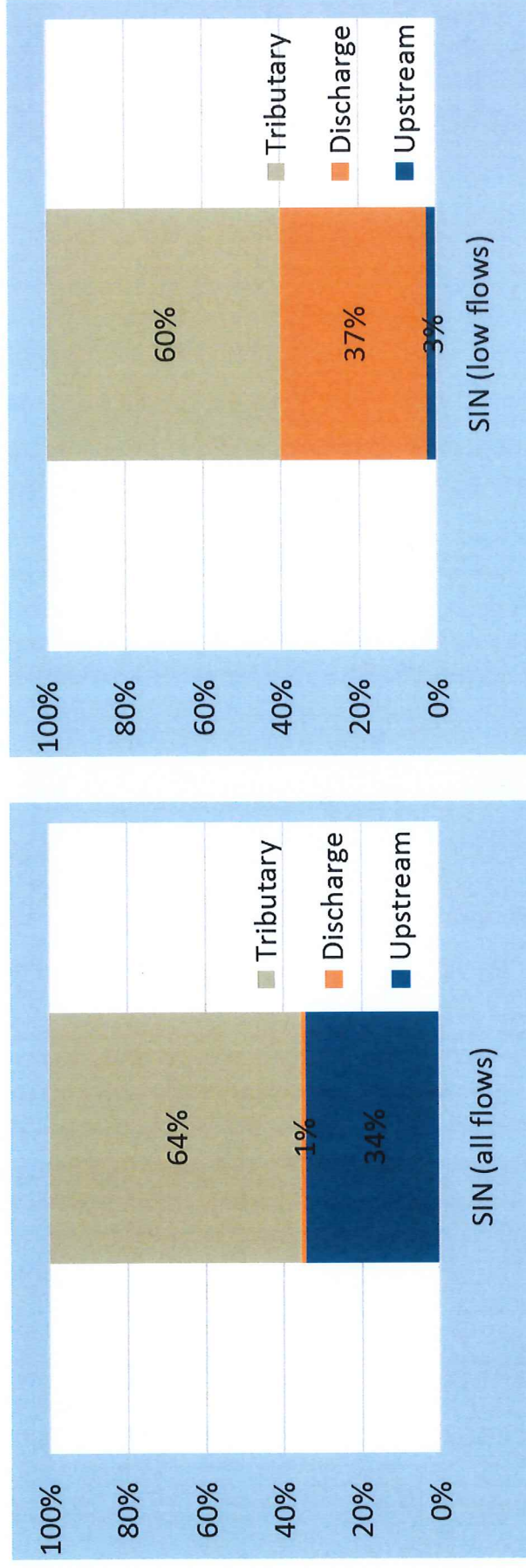
Instream Water Quality – DRP



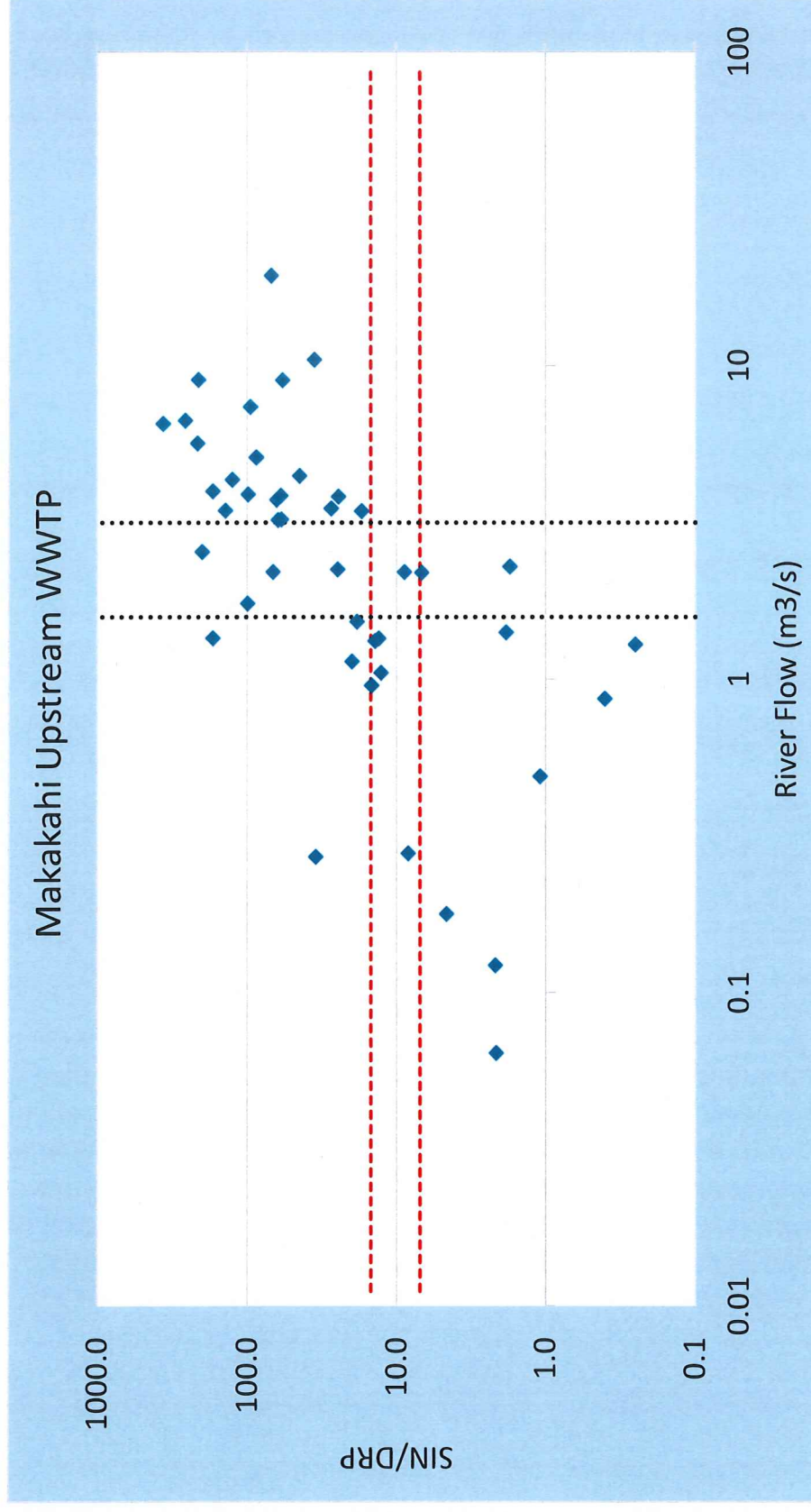
Instream Water Quality – SIN



Instream Water Quality – SIN



Instream Water Quality – SIN:DRP ratios



Post-upgrade – improvements and effects

- Shifting the discharge downstream will enable physical separation from tributary and direct monitoring of effects of the discharge

Effect/Value	Contamnt	Current effect from the discharge	Post-upgrade effect from the discharge
Contact recreation/ swimmability	E.coli		Addressed
Macroinvertebrates	Ammonia	Unlikely effect	No change
	POM	Possible effect	Substantially mitigated
	SIN (via periphyton)	Only as a minority contributor	No change
	DRP (via periphyton)	Majority contributor at low flows	Substantially mitigated