

Validation of Mount Bold Aerator 2021-23

September 2023

Mt Bold Reservoir



Mt Bold Reservoir



Installed 2020



Mount Bold - derator

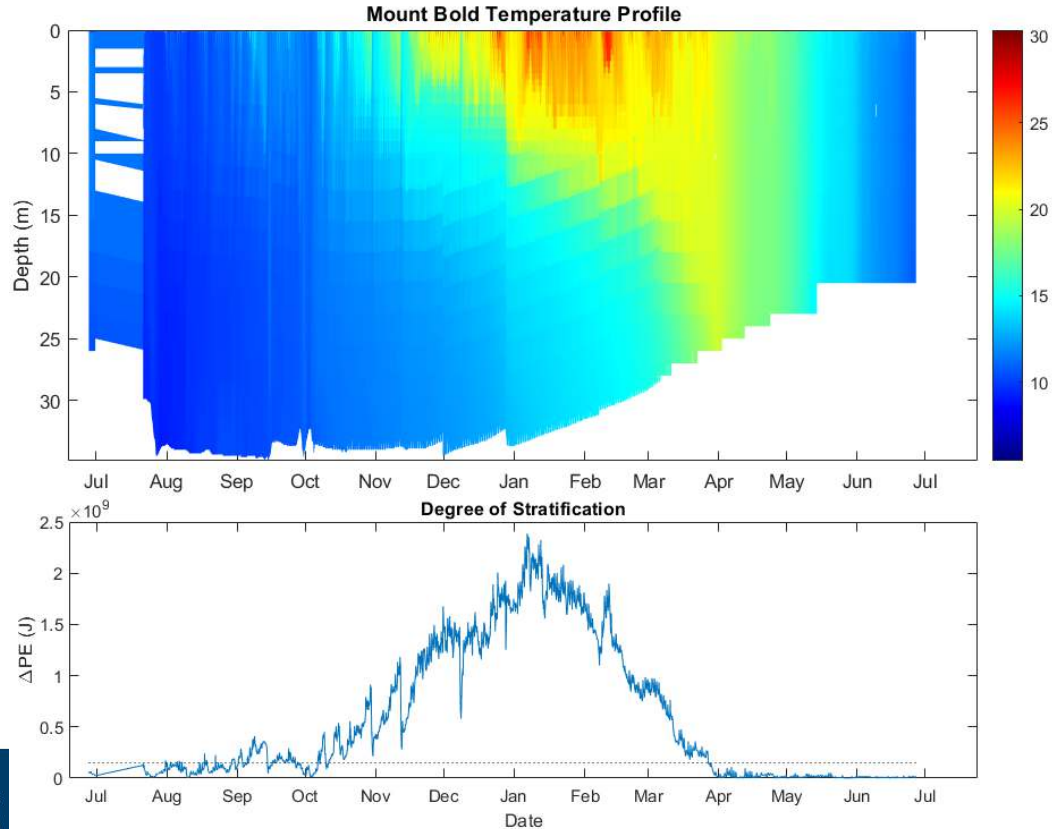
Aerator promised benefits (Mt Bold)

- Stop thermal stratification
- Maintain Oxygen >4mg/L
- Prevent the release of phosphorus, and ammonia from sediments
- Reduce the release of iron and manganese from sediment
- Reduce blue-green algae blooms in Mt Bold

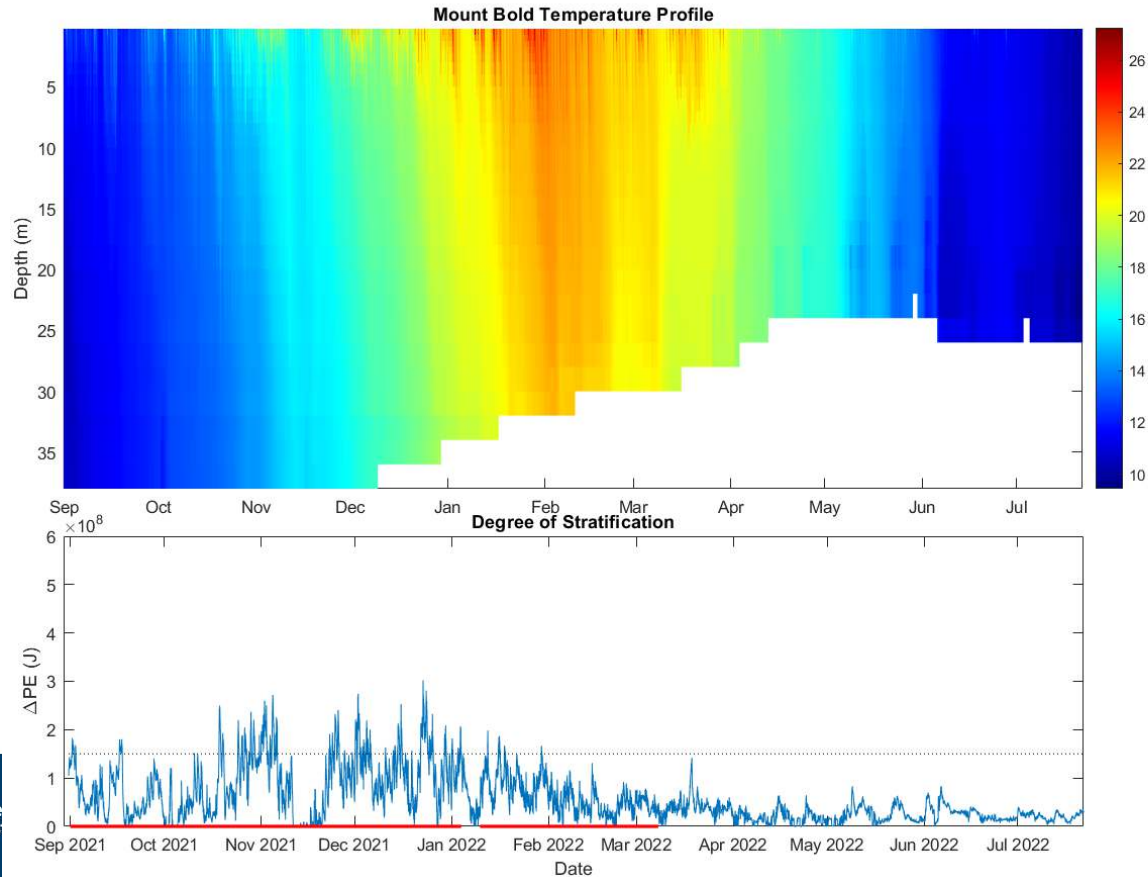
Aerator expected benefits (Happy Valley)

- Reduce the growth of algae in Happy Valley reservoir (Nov-Feb)
- Reduce cyanobacterial blooms and resultant taste, odour and toxin problems

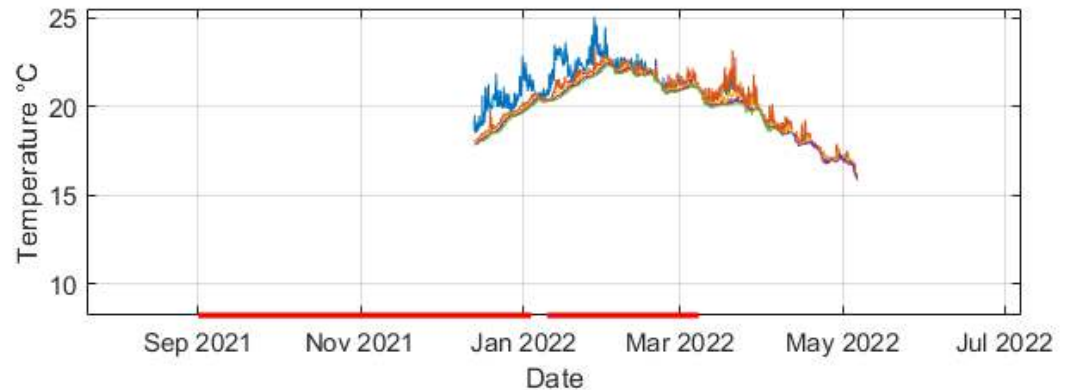
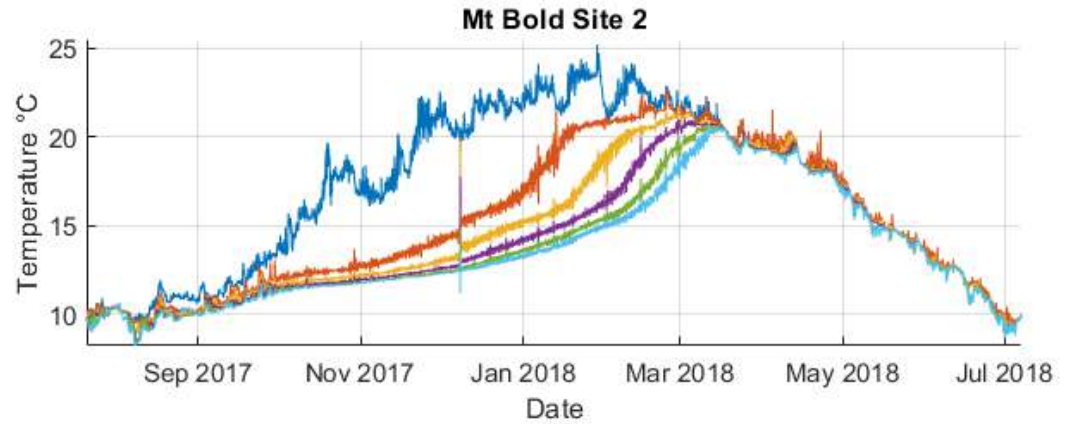
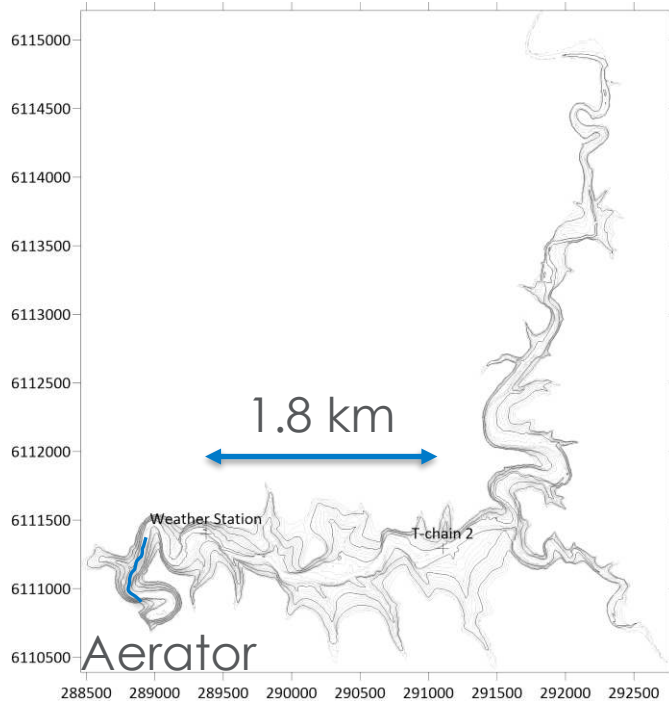
Thermal Stratification 2016-2017



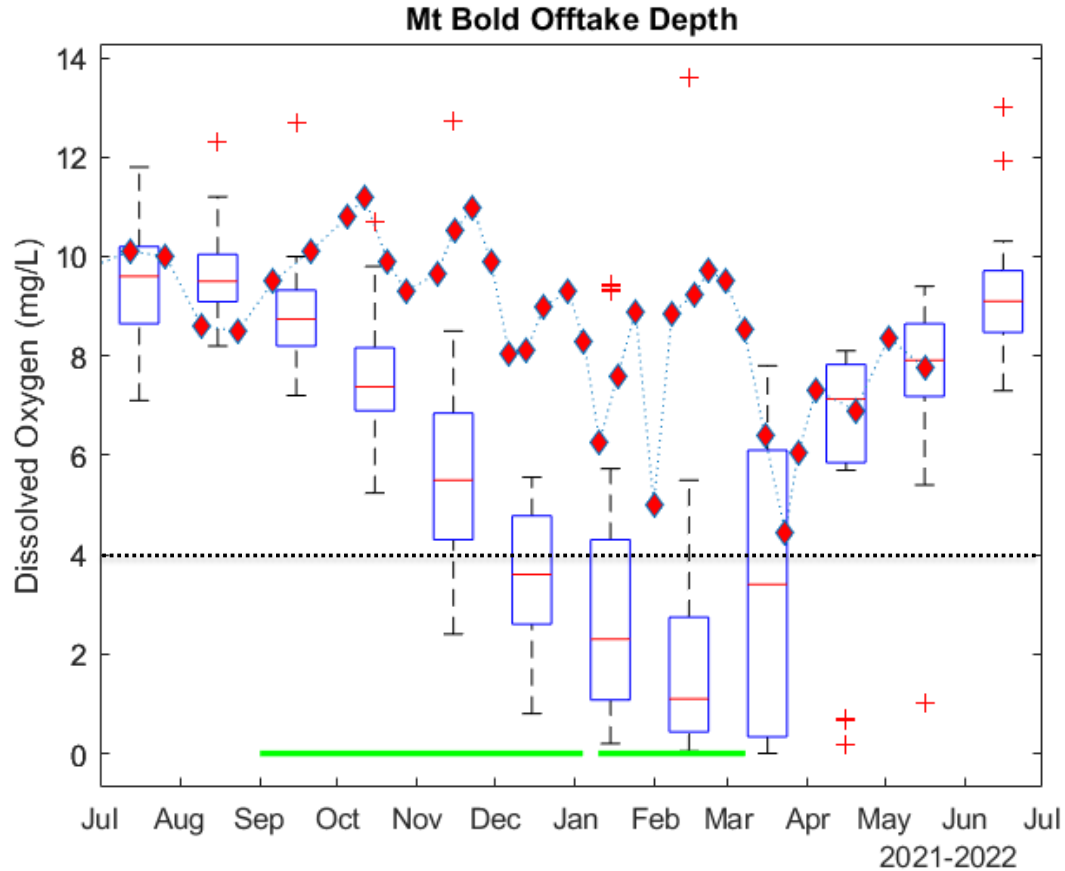
Thermal Stratification 2021-2022



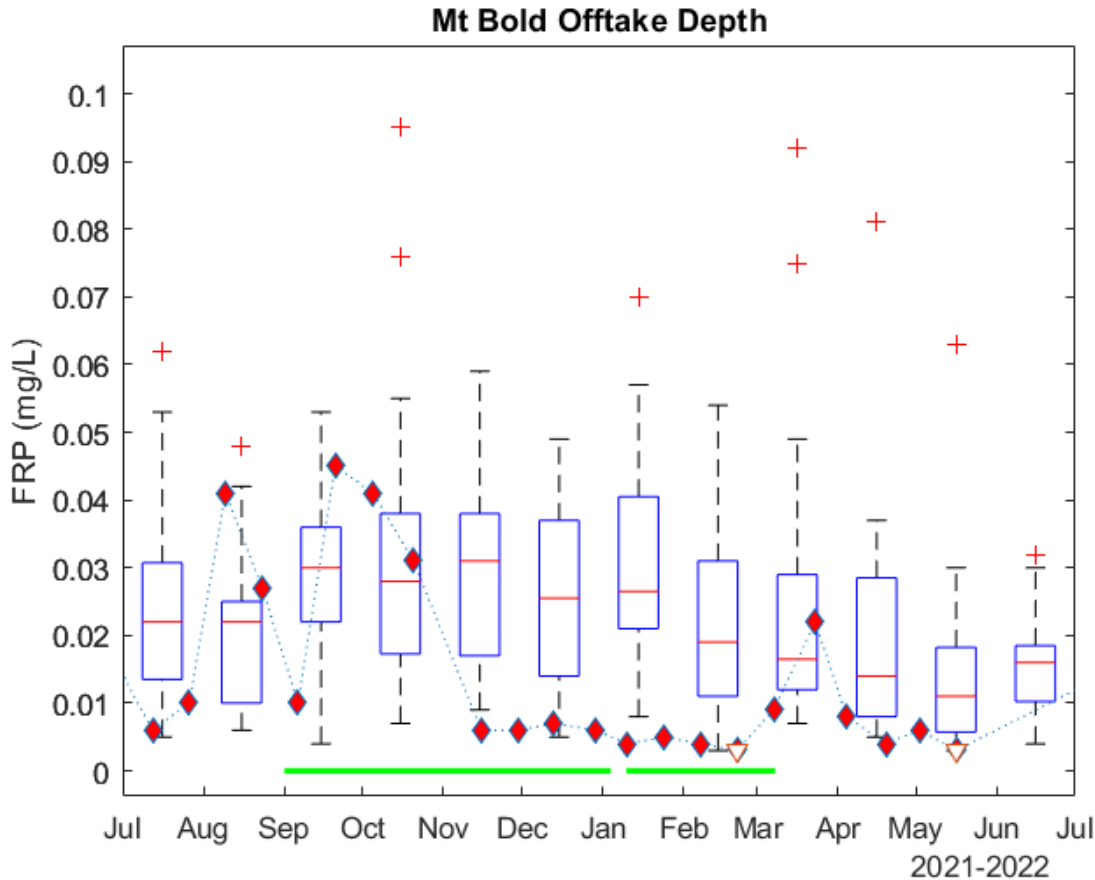
Aerator area of influence



Mt Bold Dissolved Oxygen

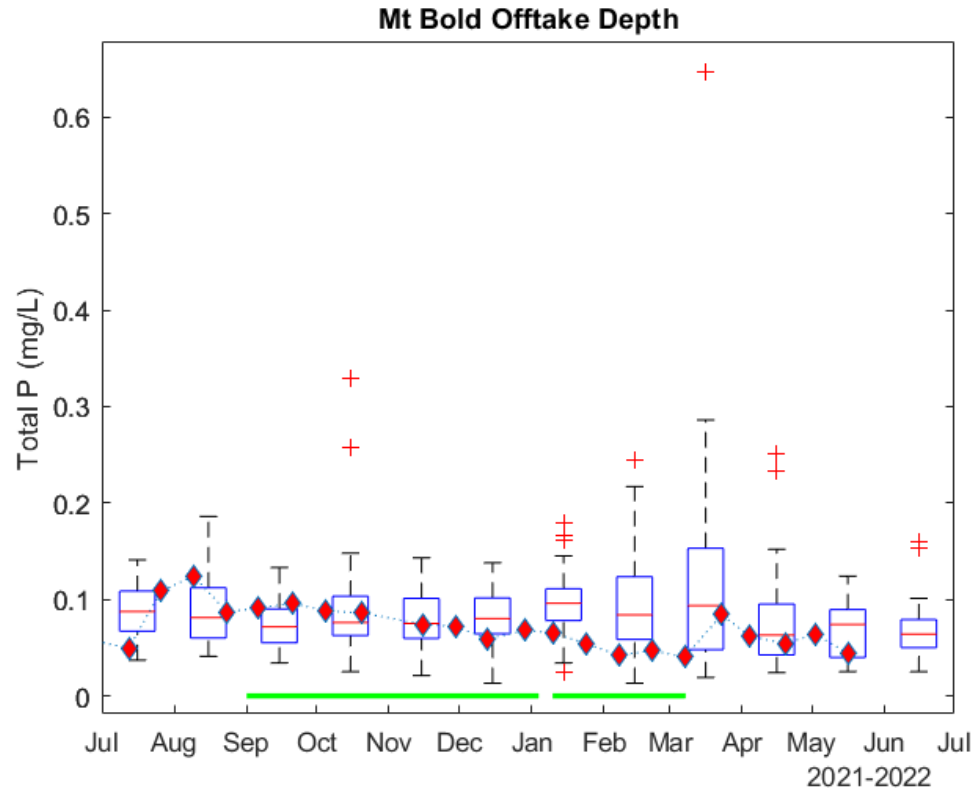


Mt Bold Dissolved Phosphorus



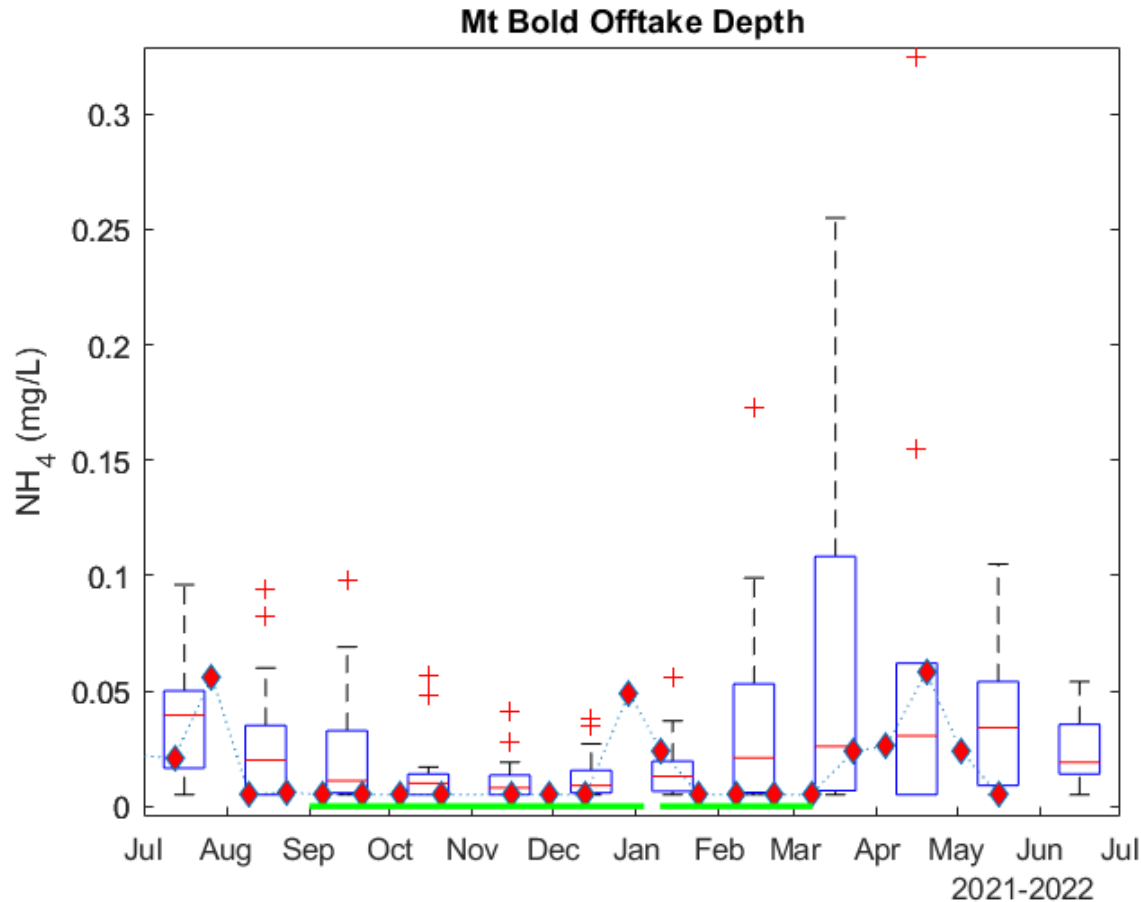
**Average FRP
reduction 81%
Nov-Feb**

Mt Bold Total Phosphorus




**Average TP
reduction 32%
Nov-Feb**

Mt Bold Ammonium



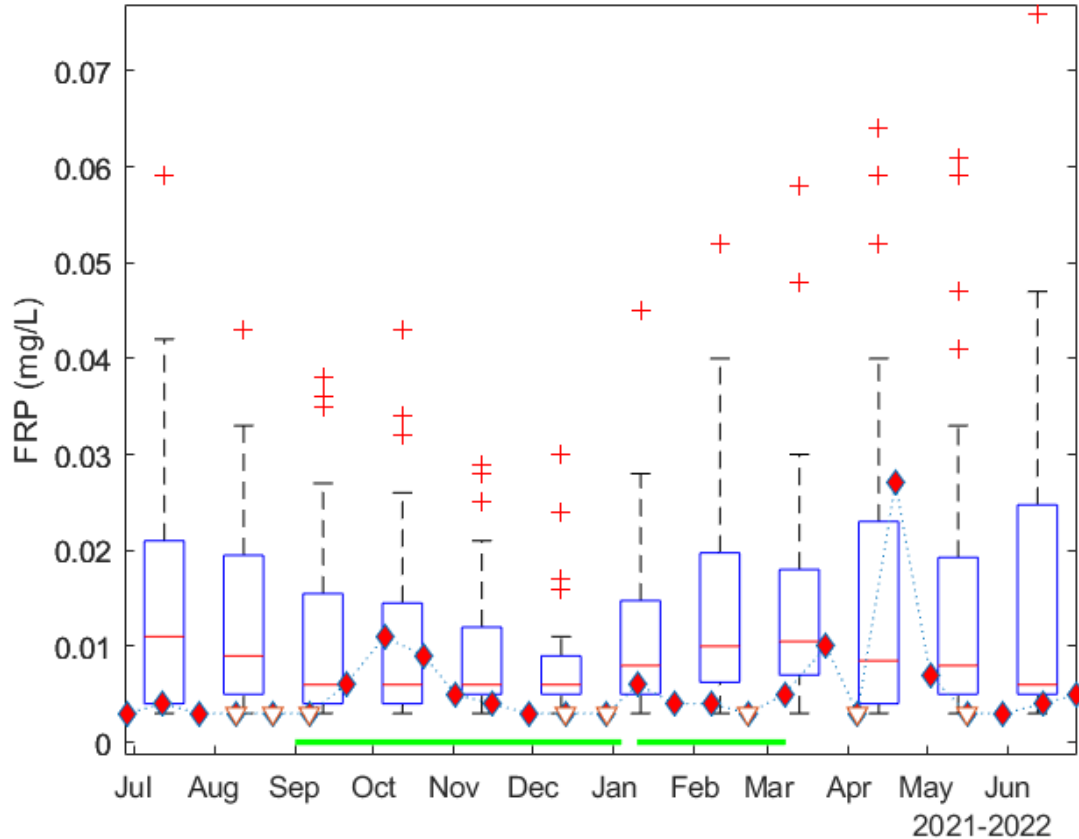
**Average NH₄
reduction 25%
Nov-Feb**

An aerial photograph of a large, dark green reservoir with a dam on the left side. The reservoir is surrounded by a mix of green vegetation and brown, sandy areas. In the top left, there are some industrial or construction sites. The overall scene is a natural landscape with human-made structures.

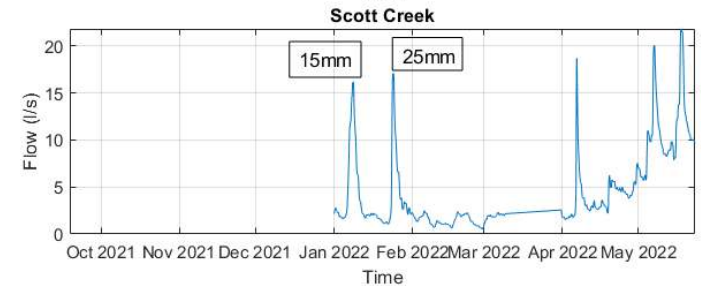
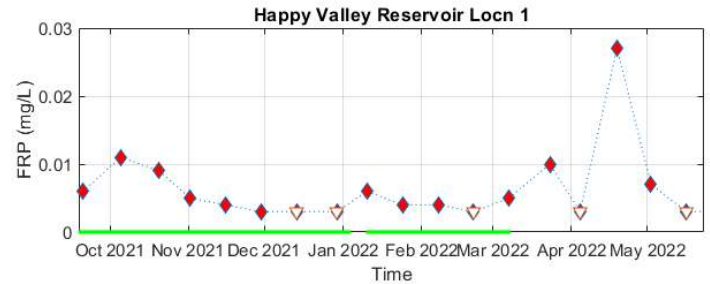
Happy Valley

Happy Valley FRP

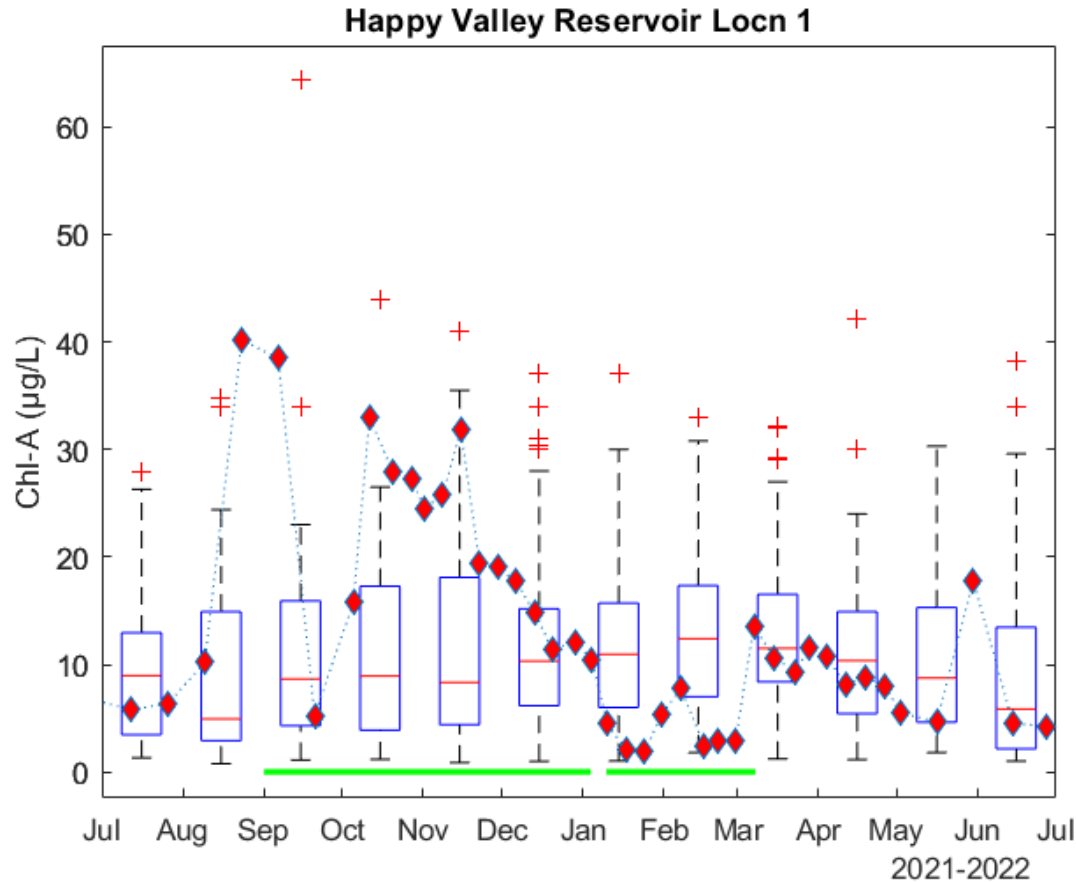
Happy Valley Reservoir Locn 1



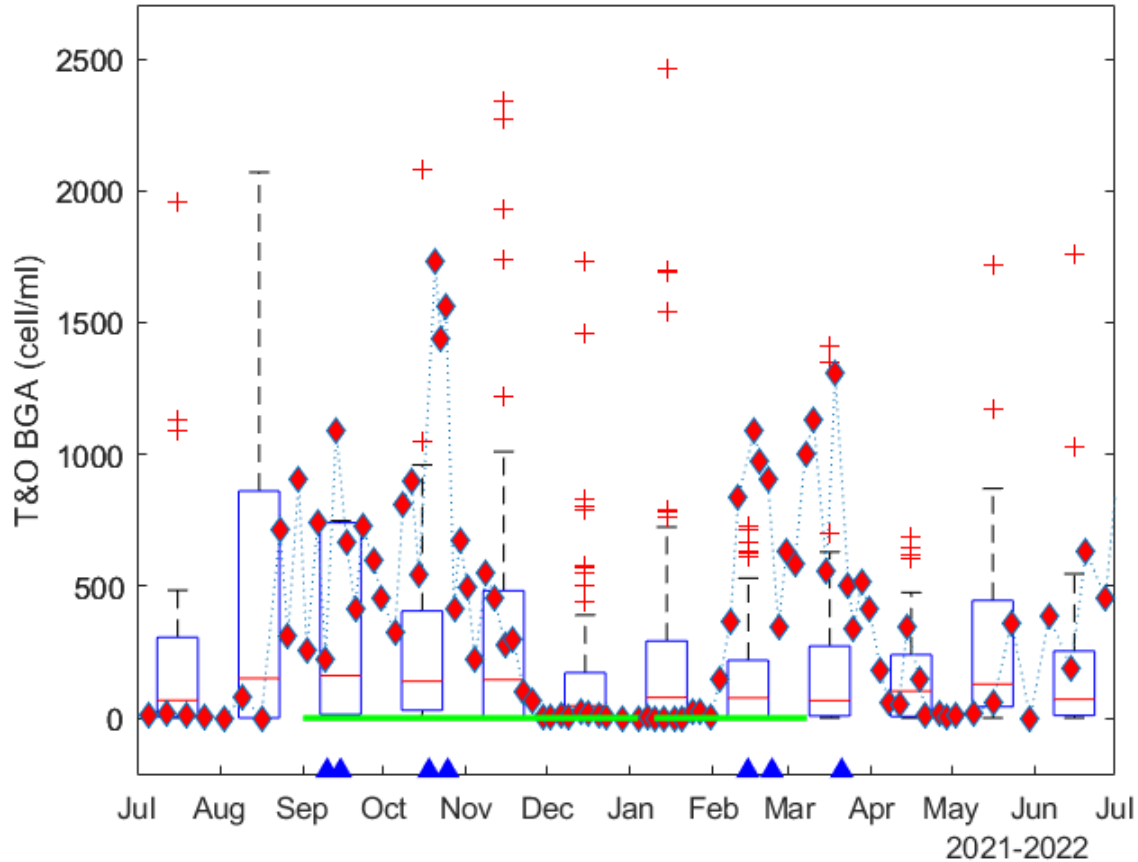
Local Catchment



Happy Valley Chlorophyll



Happy Valley T&O BGA

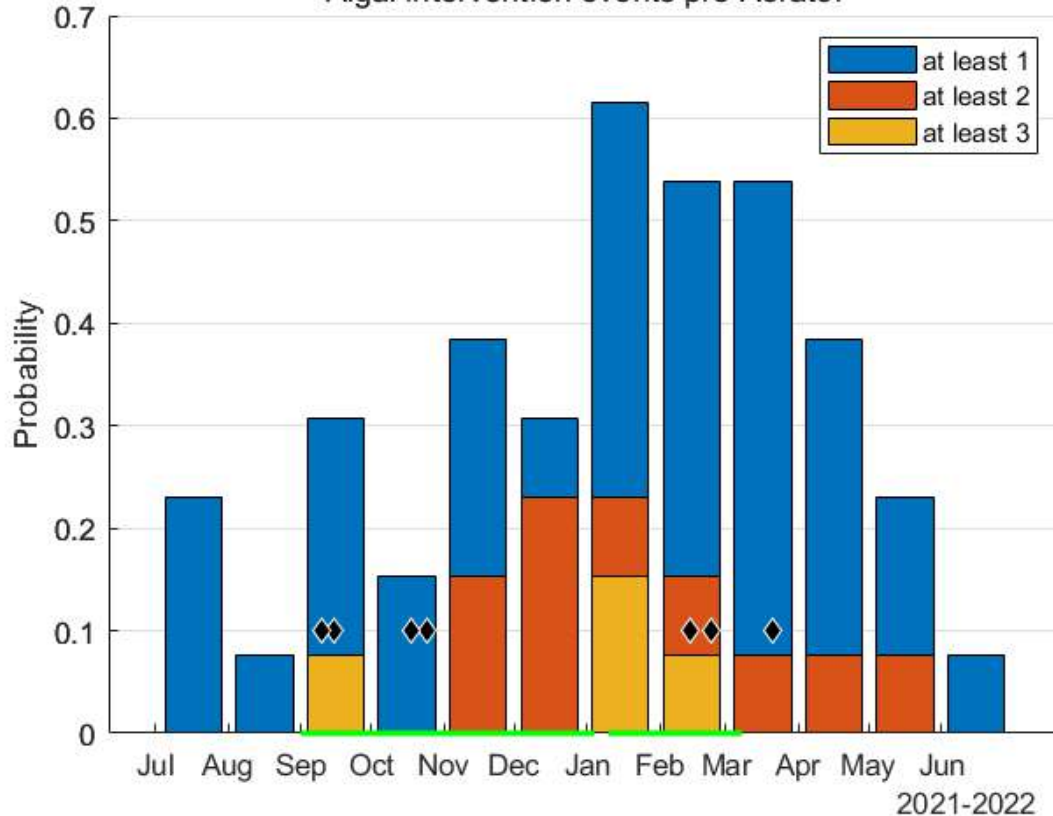


dolichospermum circinale

Happy Valley Algal Interventions

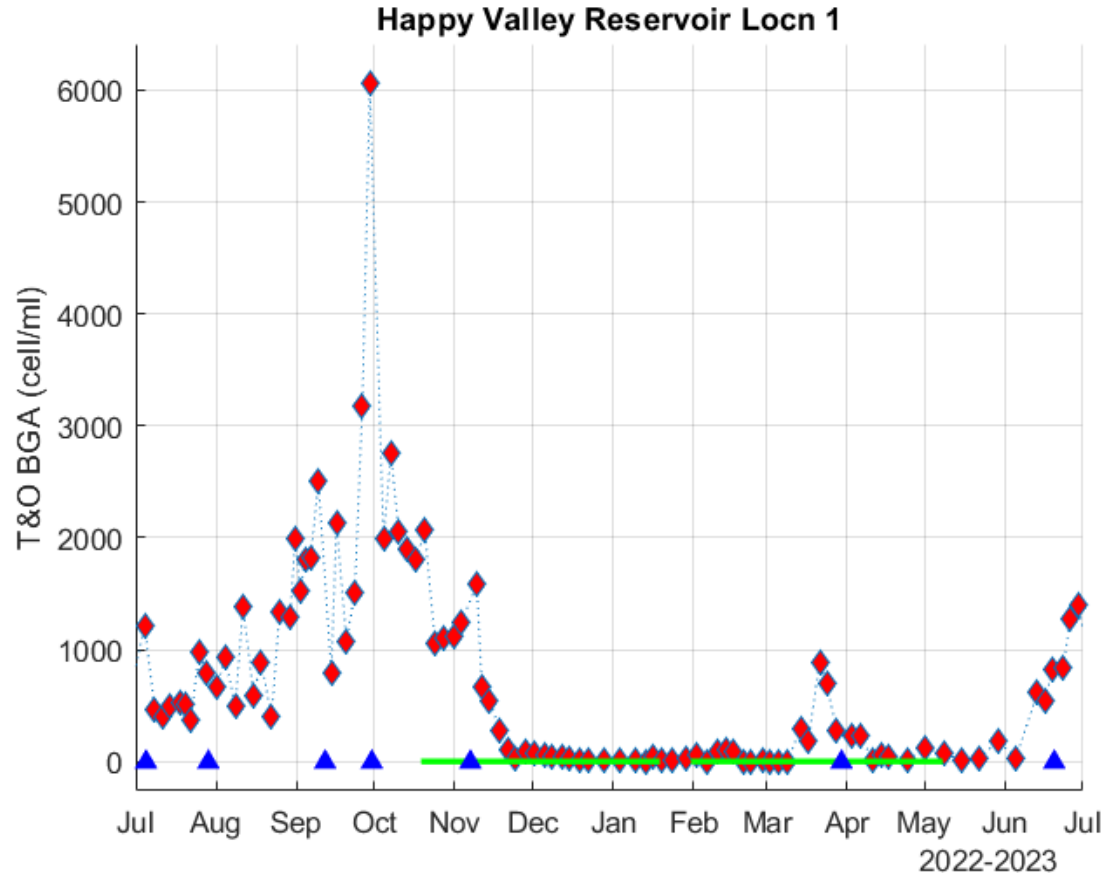
Happy Valley Reservoir

Algal intervention events pre Aerator



No Interventions in Nov,
Dec & Jan
Probability this occurred
just by chance is **16%**
based on previous 13
years.
Has occurred twice in
13 years
Expected Outcome 2
Worst was 5

Happy Valley Algal Interventions 2022/23



No Interventions in Dec-Feb 2022/23
Probability this occurred just by chance is **12%** based on 13 years before aerator.

Probability of 6 summer months without interventions **2%**

Aerator promised benefits

- Stop thermal stratification. ✓
- Maintain Oxygen >4mg/L ✓
- Prevent the release of phosphorus, and ammonia from sediments ✓
- Minimising the release of iron and manganese from sediment. ✓
- Reducing blue-green algae blooms in Mt Bold

Too soon
to tell

Aerator expected benefits

- Reduce the growth of algae in Happy Valley reservoir ✓
- Reduce cyanobacterial blooms and resultant taste, odour and toxin problems ✓