WQMN May 2024 Update for NCAG members

There are currently **four flyfishing clubs** in the Nidd Catchment Angling Group (NCAG) taking monthly water samples since September 2022 from the Nidd, using the Angling Trust's Water Quality Monitoring Network (WQMN) Water-Quality-Monitoring-Network-A4-FINAL-v2-17.11.2022.pdf (anglingtrust.net)

- Nidderdale Anglers, Harrogate Flyfishers, Knaresborough Anglers and AJS

The purposes of the WQMN for our group are:

- to understand the water quality (WQ) in the river Nidd,
- to establish a solid foundation of data to identify locations with particularly high levels of pollution and their potential sources, and
- to promote the development of effective solutions to improve the Nidd's WQ.

River water samples are assessed at the riverside for the concentration of nutrient chemicals – Phosphates, Nitrates and Electrical Conductivity, as well as recording water temperature, river levels and flow rates and the presence of algal blooms and pollution, using the WQMN protocol.

Phosphate – The WFD standards for Orthophosphate (PO_4^{3-}) as annual means for **Good** ecological status (close to natural) in Rivers for the Nidd are <0.06 ppm
Moderate is 0.10 to 0.14; **Poor** is 0.8 to 0.92) - as measured by the Hanna Phosphate Colorimeter in WQMN.

The local EA standards on the Nidd for MODERATE phosphate vary from 0.10 at the top of the Nidd to 0.17 further down.

Electrical Conductivity - Significantly elevated electrical conductivity indicates that pollution has entered the river – showing that there is a problem that may harm invertebrates and/or fish. Electrical conductivity may be high in a river without any visible effects on the clarity of the river water. Any human activity that adds inorganic, charged chemicals to a river will alter the electrical conductivity e.g. in a river downstream of a sewage treatment works due to chemicals from household products, from winter road runoff, containing salt.

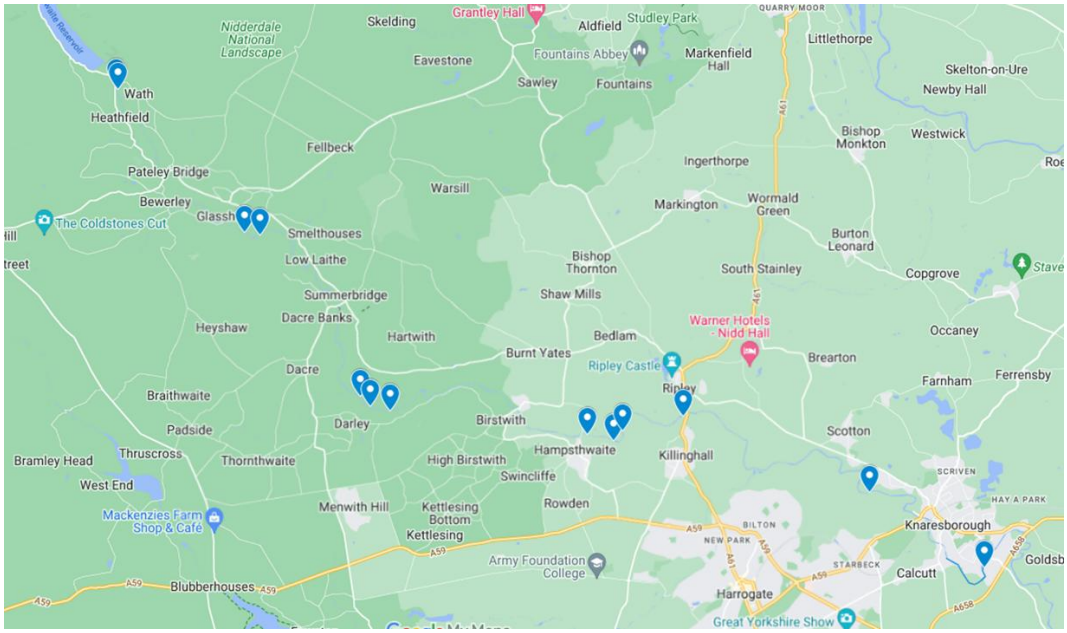
Nitrate - There are no ecological status standards for Nitrogen in Rivers. The standard for Lakes and Reservoirs is 0.75 – 1.5 mg/l ppm). Natural levels of Nitrate in freshwater are typically low, generally well below 5 ppm.

As of May 9th, 2024, NCAG anglers have added **225** samples from the Nidd to the national WQMN database, since September 2022 Epicollect5 - Free and easy-to-use mobile data-gathering platform.

10 of our samplers are on the WQMN database, though we are often working in pairs or trios, and only one name goes onto the database for each entry – so other sampling colleagues are taking part too, they are just anonymous as far as this database is concerned.

Peter Bainbridge, David Clayden, Ian Dodd, Stephen Duffy, Christopher Gill, Paul Leng, David Phillips, Adrian Sturdy, Peter Solomon, Ian Wynn.

Here graphs from **210 samples** from **12 locations** are presented, as a few of the samples were one-offs, or part of a short series for a specific purpose – often in small becks – and have been excluded from this analysis.

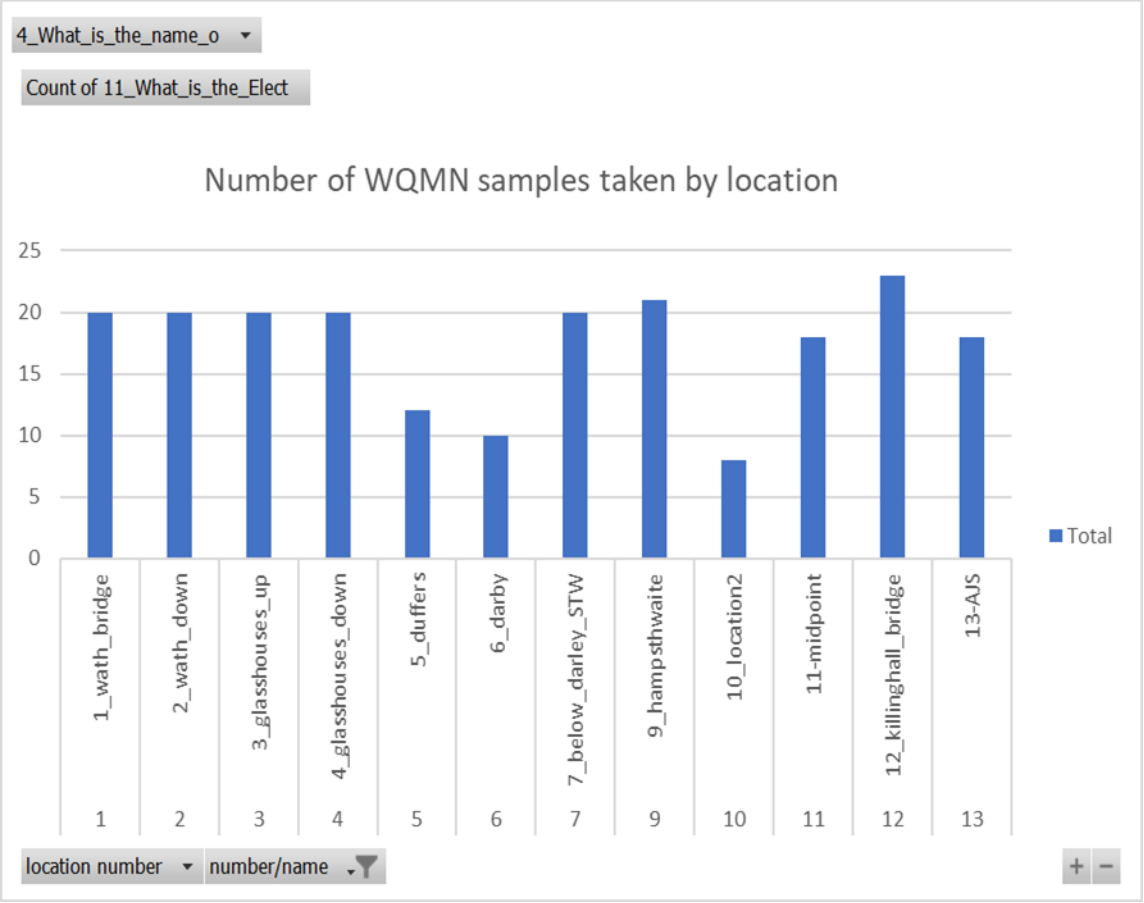


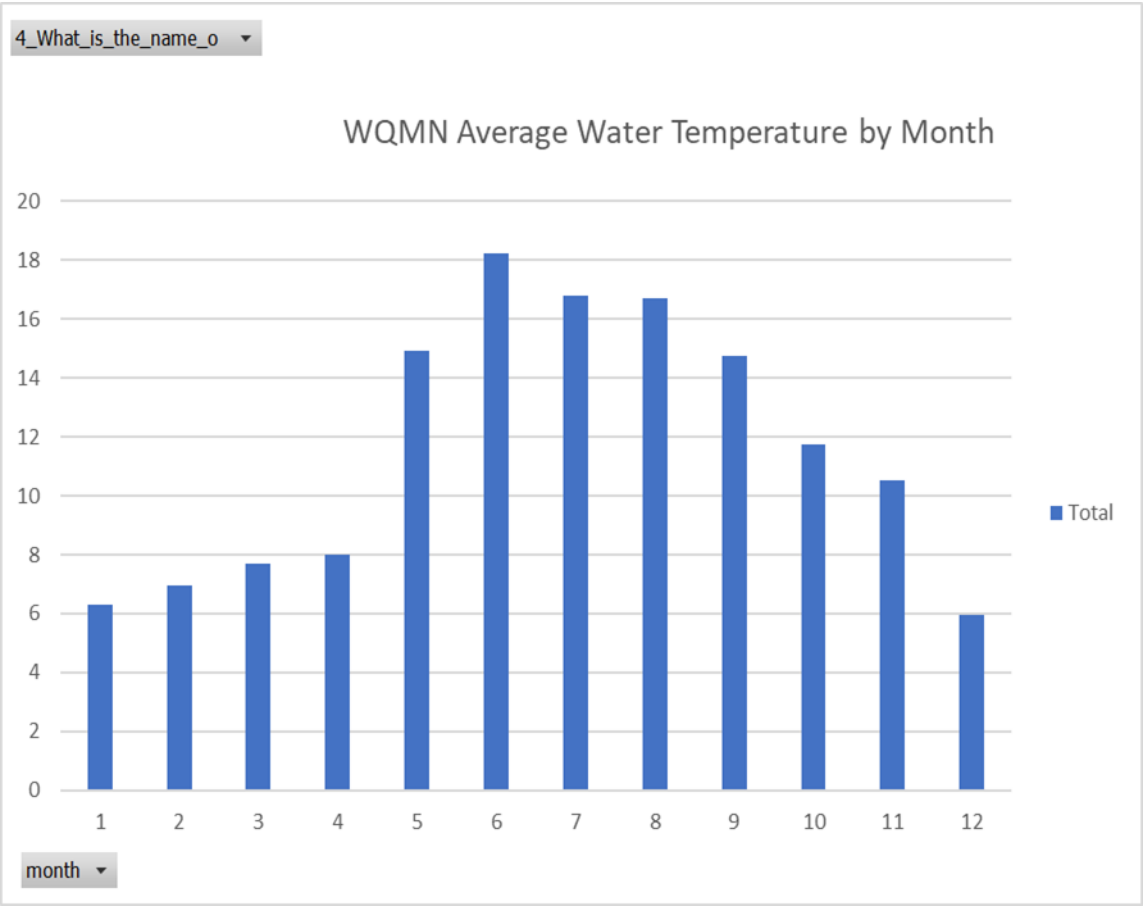
Graphs are ordered from upstream (Wath, locations 1 & 2), through Pateley Bridge (locations 4 & 5) and Darley (locations 5,6 &7), then Hampsthwaite and Killinghall (locations 9 to 12) and finally to the lowest location downstream (AJS Beachpool, location 13). *[There is no location 8 being analysed here.]*

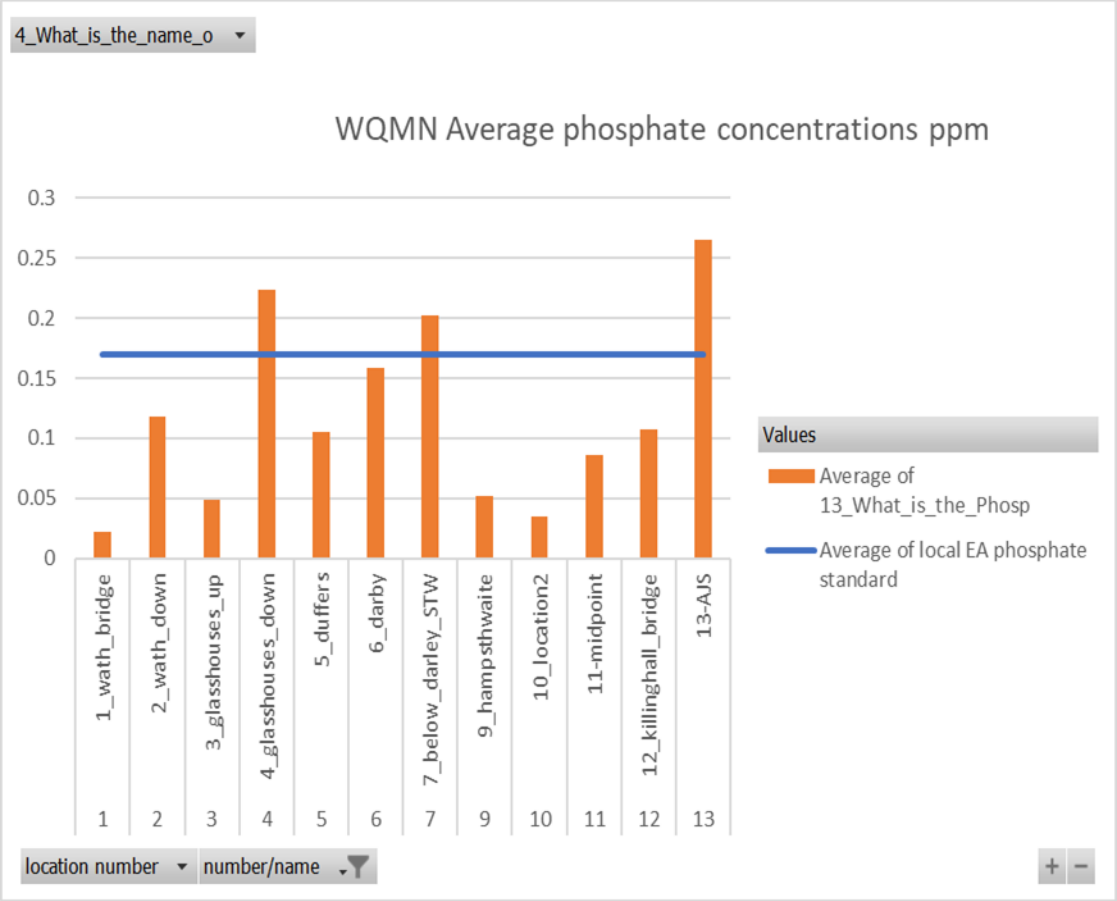
AJS Beachpool is approximately 5.5 kms upstream from the Knaresborough Lido, designated as a Safe Bathing Water by DEFRA in May 2024.

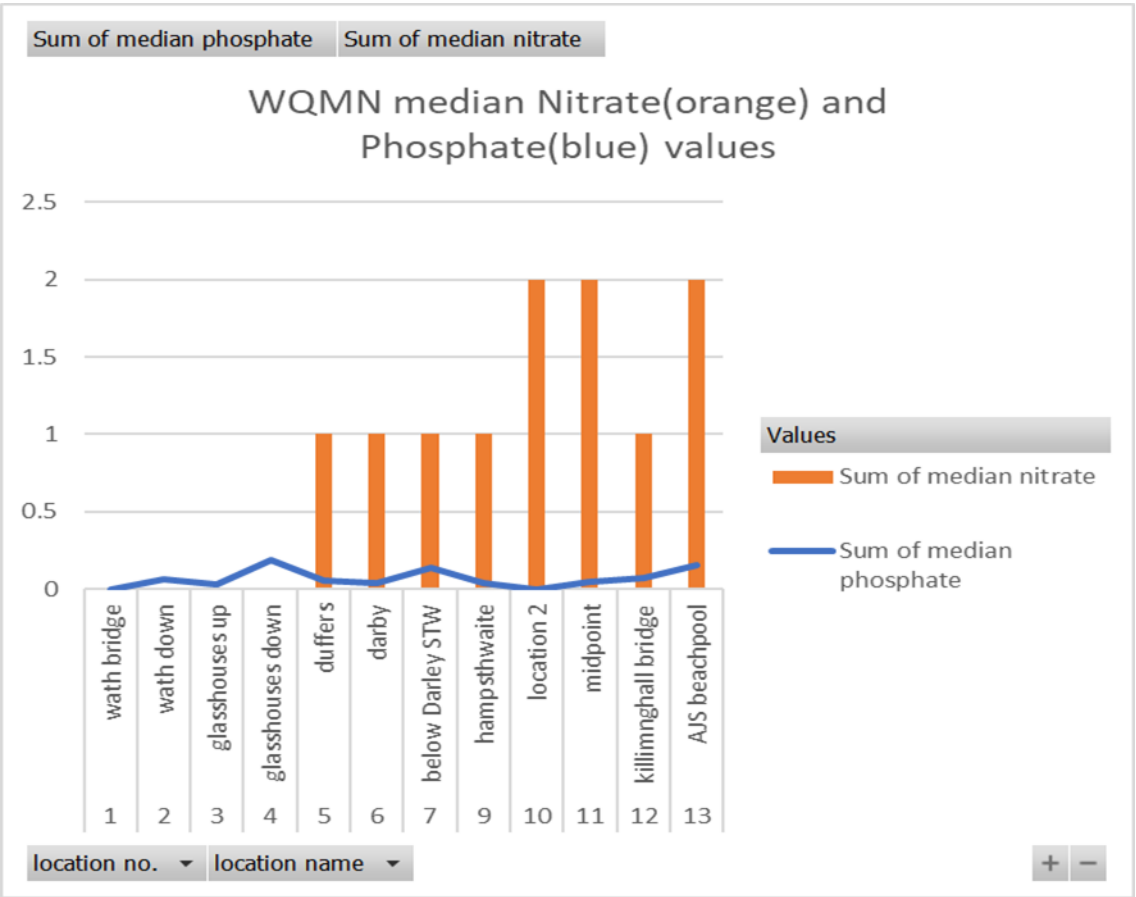
The number of samples taken at each of the 12 locations varies from 8 to 23 since September 2022 (a maximum of 20 months).

The average temperature of the river water over the twelve months was 6 to 8 degrees C in the Spring, rising to 18 degrees C in June.

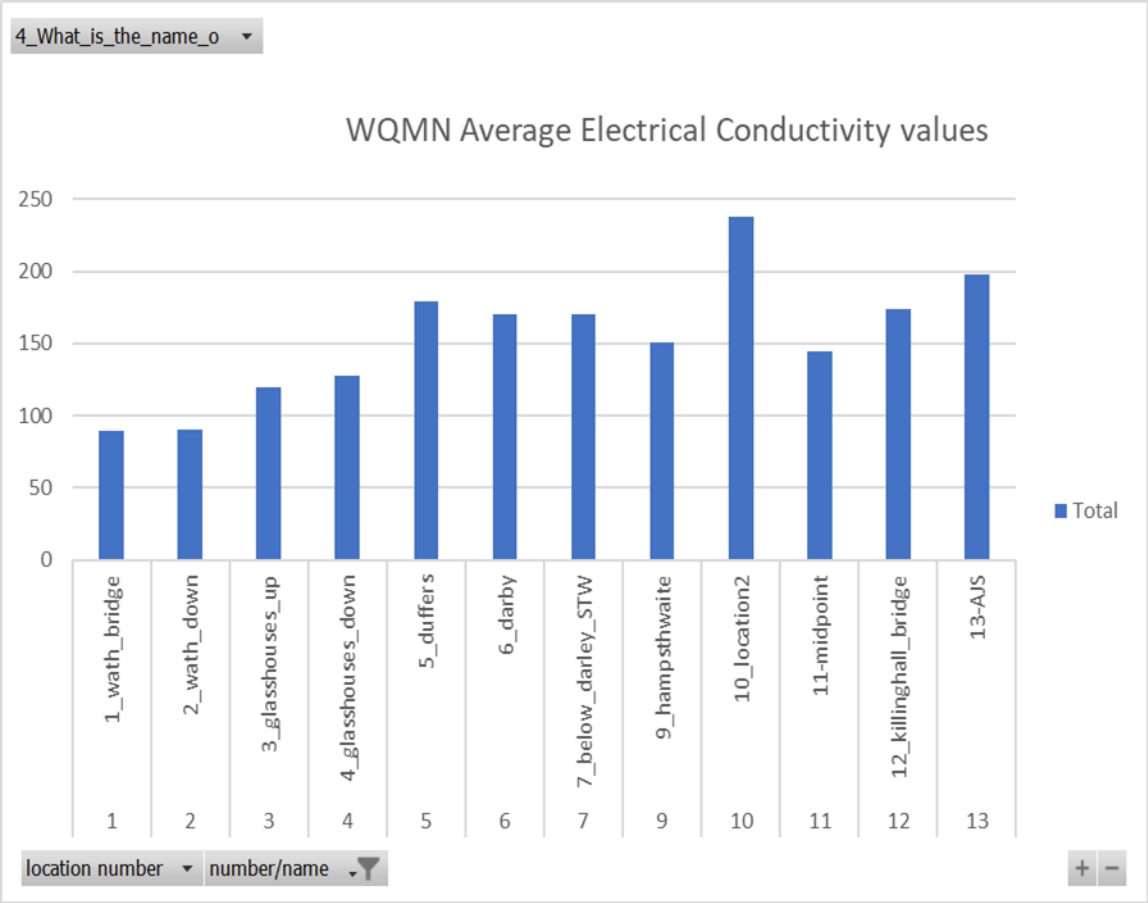

4_What_is_the_name_o
Count of 11_What_is_the_Elect
Number of WQMN samples taken by location
25
20
15
10
5
0
1_wath_bridge
2_wath_down
3_glasshouses_up
4_glasshouses_down
5_duffers
6_darby
7_below_darley_STW
9_hampsthwaite
10_location2
11-midpoint
12_killinghall_bridge
13-AJS
1
2
3
4
5
6
7
9
10
11
12
13
Total
location number
number/name


4_What_is_the_name_o
WQMN Average Water Temperature by Month
20
18
16
14
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
11
12
Total
month


4_What_is_the_name_o
WQMN Average phosphate concentrations ppm
0.3
0.25
0.2
0.15
0.1
0.05
0
1_wath_bridge
2_wath_down
3_glasshouses_up
4_glasshouses_down
5_duffers
6_darby
7_below_darley_STW
9_hampsthwaite
10_location2
11-midpoint
12_killinghall_bridge
13-AJS
1 2 3 4 5 6 7 9 10 11 12 13
Values
Average of 13_What_is_the_Phosp
Average of local EA phosphate standard
location number
number/name

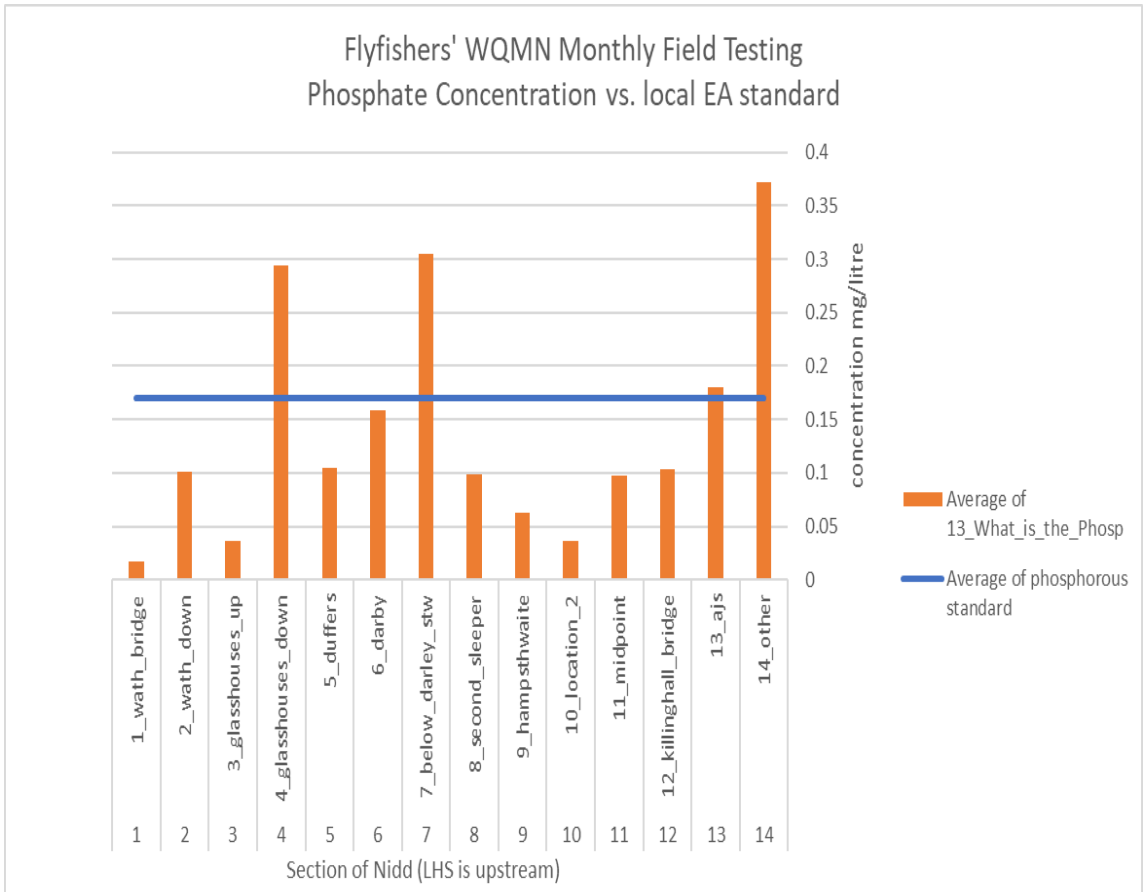

Sum of median phosphate
Sum of median nitrate
WQMN median Nitrate(orange) and Phosphate(blue) values
2.5
2
1.5
1
0.5
0
wath bridge
wath down
glasshouses up
glasshouses down
duffers
darby
below Darley STW
hampsthwaite
location 2
midpoint
killimnghall bridge
AJS beachpool
1 2 3 4 5 6 7 9 10 11 12 13
Values
Sum of median nitrate
Sum of median phosphate
location no.
location name

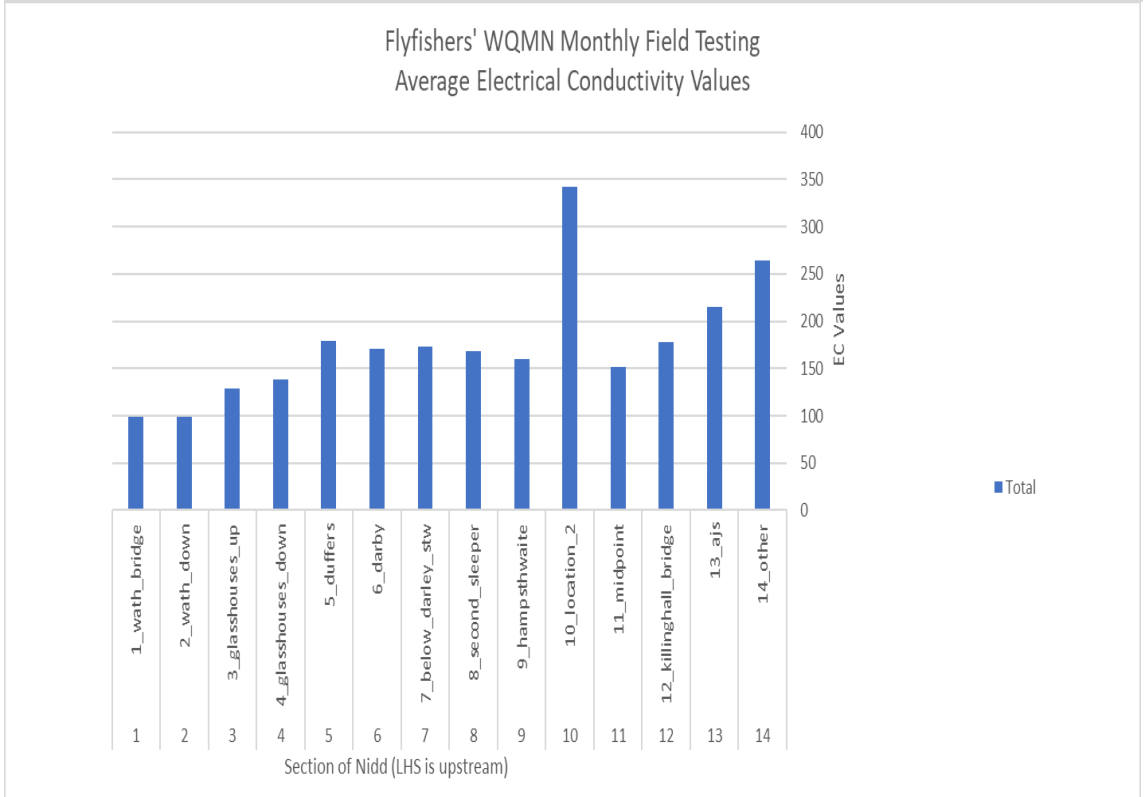
- **Average phosphate concentrations** were above local EA moderate in 3 locations, all downstream from STWs - Glasshouses (3), Darley (7) and Harrogate North (13).
- **Median phosphate concentrations** exceed Moderate at Glasshouses (3) and approach that level below Darley (7) and at AJS Beachpool (13)
- **Median (50th centile) nitrate concentrations** rise as you go downstream the river Nidd



Electrical Conductivity rises the further downstream you go, but there seems to be no association with STW location - except for Killinghall(12).
The highest value of EC is found at location 2, above Cockhill Beck and below Hampsthwaite.

David Clayden June 11th, 2024


Flyfishers' WQMN Monthly Field Testing
Phosphate Concentration vs. local EA standard
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
concentration mg/litre
1_wath_bridge
2_wath_down
3_glasshouses_up
4_glasshouses_down
5_duffers
6_darby
7_below_darley_stw
8_second_sleeper
9_hampsthwaite
10_location_2
11_midpoint
12_killinghall_bridge
13_ajs
14_other
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Section of Nidd (LHS is upstream)
Average of 13_What_is_the_Phosp
Average of phosphorous standard


Flyfishers' WQMN Monthly Field Testing
Average Electrical Conductivity Values
400
350
300
250
200
150
100
50
0
EC Values
1_wath_bridge
2_wath_down
3_glasshouses_up
4_glasshouses_down
5_duffers
6_darby
7_below_darley_stw
8_second_sleeper
9_hampsthwaite
10_location_2
11_midpoint
12_killinghall_bridge
13_ajs
14_other
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Section of Nidd (LHS is upstream)
Total