Eden Catchment – Water Quality Update

Autumn 2024

SES Water closely monitors water quality in Bough Beech Reservoir, the River Eden and wider catchment to ensure we can continue to treat our drinking water to the highest standard. Here we summarise long-term water quality data in the River Eden at Chiddingstone for our key pesticide and nutrient challenges that we are addressing under the Water Industry National Environment Programme (WINEP), as set out by the Environment Agency. These include the pesticides carbetamide, metaldehyde (both now banned and no longer causing a water quality challenge), mecoprop(-p) and propyzamide, plus the nutrient phosphate. The WINEP works in five-year cycles, with the current scheme drawing to a close in December 2024. From 2025, SES Water will have a WINEP scheme to address autumn-applied pesticides in the Eden Catchment, with a specific focus on the herbicide flufenacet, commonly used on winter wheat. Data trends for the WINEP parameters (propyzamide, mecoprop, flufenacet and phosphate) are presented below.

Whilst we are not permitted to abstract water from the River Eden over the summer months, we continue to monitor water quality throughout the year. This summer we have seen some elevated concentrations of herbicides that have both amenity and arable uses, data for which are included below.

Pesticides:

In England there are strict Drinking Water Standards (DWS) to which our treated water must comply. For pesticides, drinking water must not contain more than 0.1 µg/l (micrograms per litre) of any individual pesticide (this is the equivalent of approximately 1 second in 320 years!). We have treatment in place to help reduce concentrations of pesticides in our raw water, however if concentrations are too high the treatment process can be overwhelmed, which is why we're sharing this information to help raise awareness of the issue.

At SES Water we monitor for over 30 different individual pesticides; here we have focused on key pesticides that we are addressing in the catchment through the WINEP, and a number of others that have flagged during this summer.

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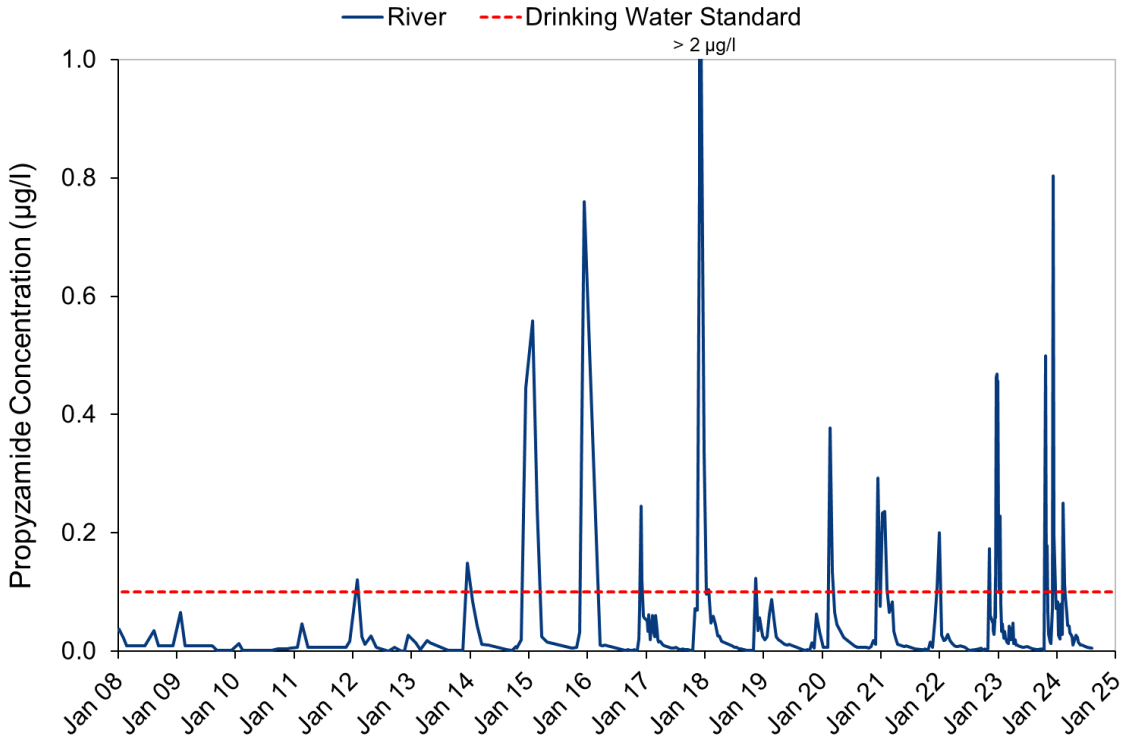
Propyzamide *(an important herbicide for the control of grasses in oilseed rape and winter beans, trade names include: Kerb flo 500, Astrokerb)*

- Propyzamide is a key focus for SES Water, and we appreciate that it is a very valuable active in local farmers' arsenals. Elevated concentrations are detected in the winter months as optimal conditions for application are cold and moist soil. All applications should take place before the cut-off date of 31 January.
    - The Kerb Weather Data tool can be used to check if local conditions are suitable to apply propyzamide products, available from mid-October to 31 January.
- Over the spring and summer months there are minimal detections of propyzamide in the river as the chemical is not used over this period.
- We are anticipating a potentially challenging upcoming propyzamide season given catchment intel about crops planned to be grown (namely oilseed rape and winter beans). As we are preparing to commence abstraction from the River Eden to fill Bough Beech Reservoir soon, we will be monitoring the river closely to ensure we are able to treat the raw water source.
- It is important that propyzamide is used responsibly to protect this product and help ensure it remains available for use. For advice on responsible application, see the Voluntary Initiative's Propyzamide Water Protection Advice Sheet.

Long-term propyzamide trend in the River Eden at Chiddingstone Bridge



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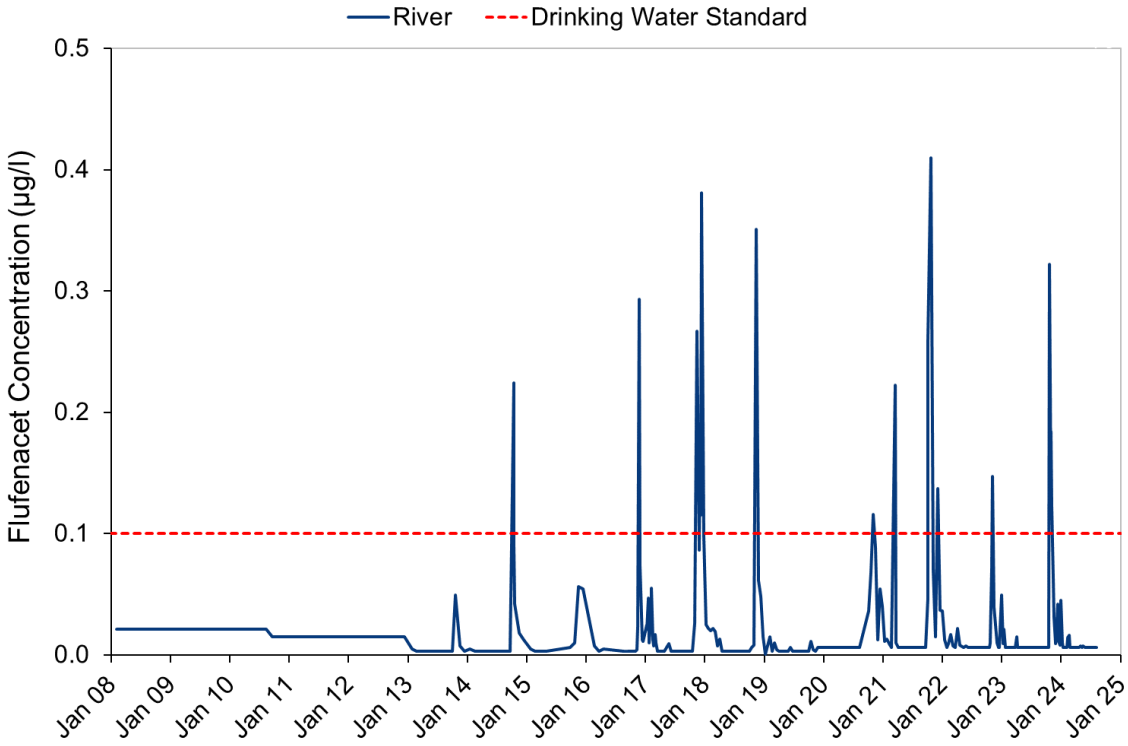
Flufenacet *(used for the control of grasses and broad-leaved weeds in various crops including winter wheat and winter barley, trade names include: Liberator, Shooter, Firebird)*

- Peak concentrations are often detected in October/November which coincides with when we usually start abstracting. Last season we were able to manage abstraction to minimise the impact of flufenacet on water quality in Bough Beech Reservoir, thanks to communications from local farmers. We are hoping to manage abstraction to similarly avoid the peaks in concentration again this year.
- From next year, we will be starting a catchment management scheme to address autumn-applied pesticides, with a specific focus on flufenacet.

Long-term flufenacet trend in the River Eden at Chiddingstone Bridge



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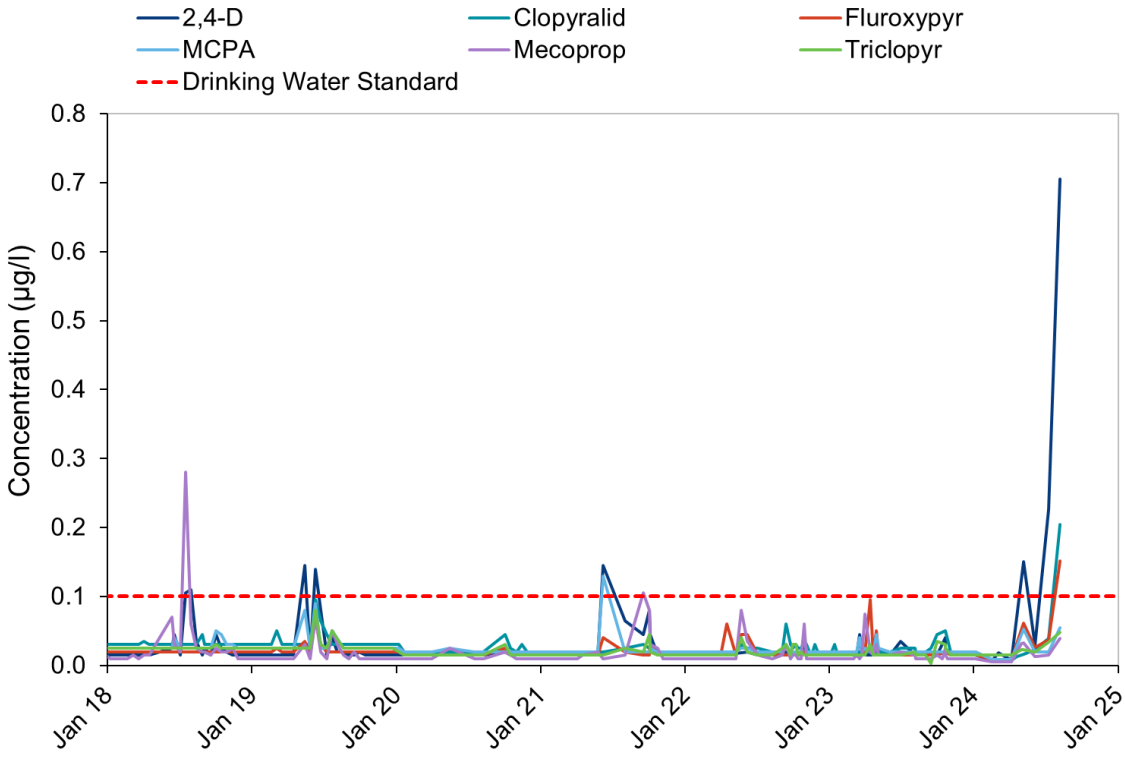
Elevated pesticide concentrations – Summer 2024

During this summer, we have detected elevated concentrations of a number of broad-leaved weed herbicides in River Eden – 2,4-D, clopyralid, fluroxypyr, MCPA, mecoprop and triclopyr. These active ingredients can often be found as a mix in single products and can be used on lawns, amenity grassland and some arable crops. They are often detected at relatively low concentrations during the early summer months as broad-leaved weeds emerge, however this season has seen the highest concentrations in the river in recent years. This may be due to the significant rainfall received prior to the most recent results on 7 August leading to increased run-off.

For SES Water, these chemicals tend to be used outside of our abstraction window and therefore do not pose a significant risk to treatment and drinking water quality.

Trends of broad-leaved herbicides in the River Eden at Chiddingstone Bridge



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Phosphate:

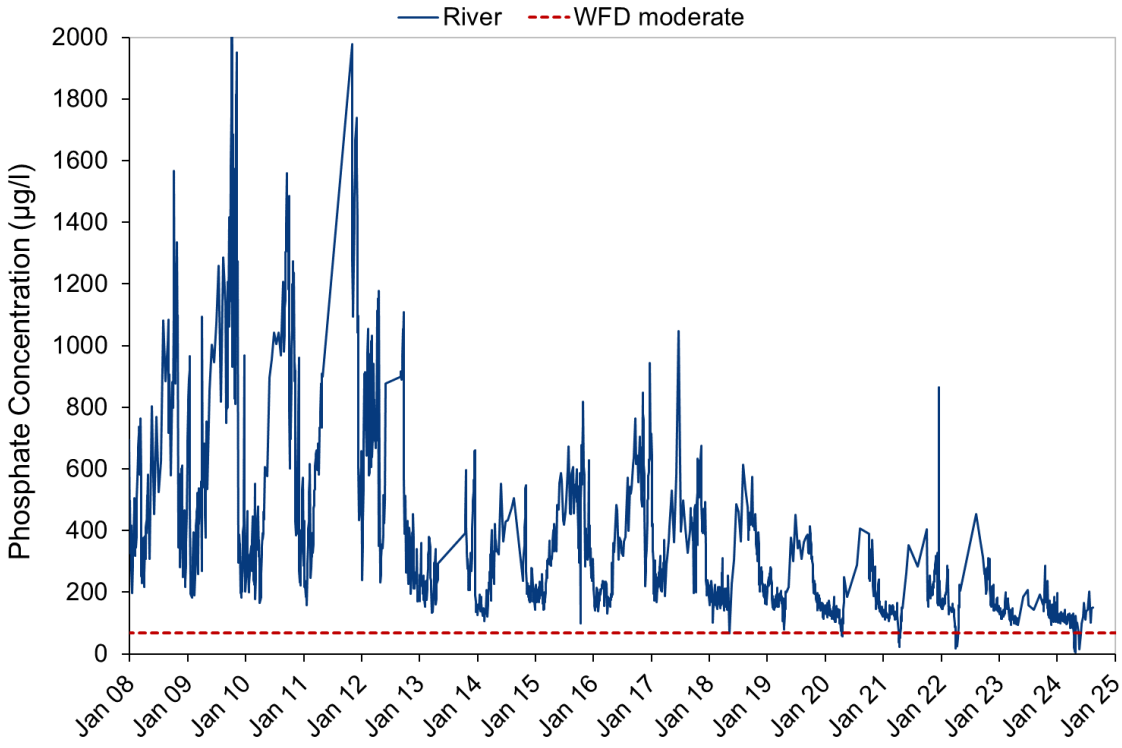
There is no specific drinking water standard for phosphate, however the presence of phosphate in the river (and Bough Beech Reservoir) can promote algal and cyanobacterial growth which can have a detrimental impact on the environment, and pose a challenge in the treatment of drinking water. There are Water Framework Directive (WFD) targets in place for all waterbodies across England and Wales to reach good ecological and surface water chemical status and to progressively reduce pollution.

Investigations by SES Water suggest that wastewater treatment works (WwTW) discharges are the primary source of phosphate in the Eden, however agricultural sources and properties not on mains drainage also contribute. Concentrations can often be higher over summer months when there is less flow to dilute WwTW discharges.

In the graph below, a downward step change in phosphate concentrations can be noted from 2012 onwards due to improvements made at the upstream WwTWs, however more work is needed to further reduce concentrations. We liaise regularly with the local wastewater provider and are also working to help reduce agricultural and unsewered property inputs.

Phosphate concentrations in the River Eden have remained lower than usual over the summer months; this may be a reflection of improved agricultural and wastewater practices in the catchment, and is likely in part due to a greater dilution factor from the high rainfall received (summer rainfall is currently at over 115% of the long-term average).

Long-term phosphate trend in the River Eden at Chiddingstone Bridge



* Graph shows the WFD 'moderate' classification concentration for phosphate in Bough Beech Reservoir for reference.

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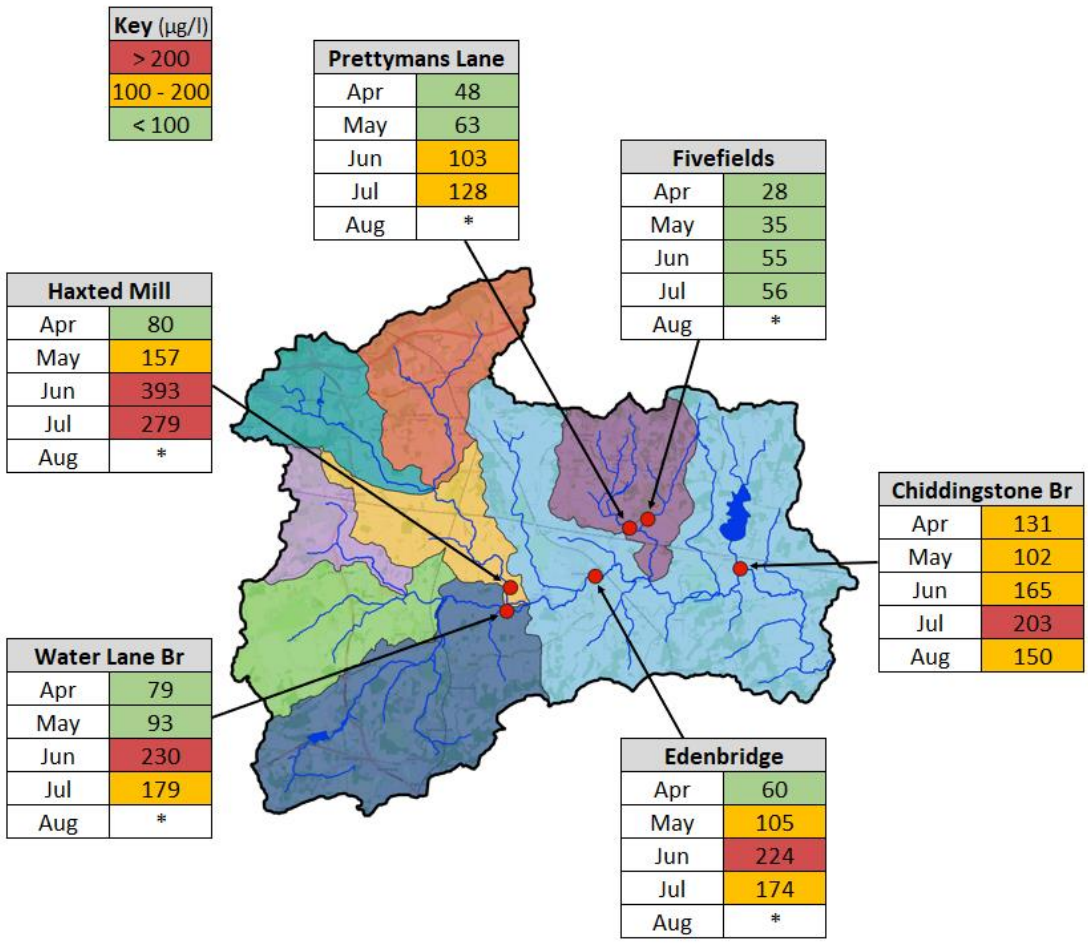
The figure below shows the maximum phosphate concentrations detected at strategic points in the catchment over the past few months. The highest results tend to be detected downstream of WwTW – for example, Haxted Mill is downstream of Oxted and Godstone WwTW, whilst Water Lane is downstream of Lingfield, Felbridge and Eden Vale WwTW. Whilst WwTWs are a significant contributor of phosphate to the Eden, poorly maintained septic tanks/cesspools/small package sewage treatment works and agriculture are also sources of phosphate in the river.

Maximum phosphate concentrations: 2024



* Results pending.

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