

River Winniford Testing 2023

WRAG



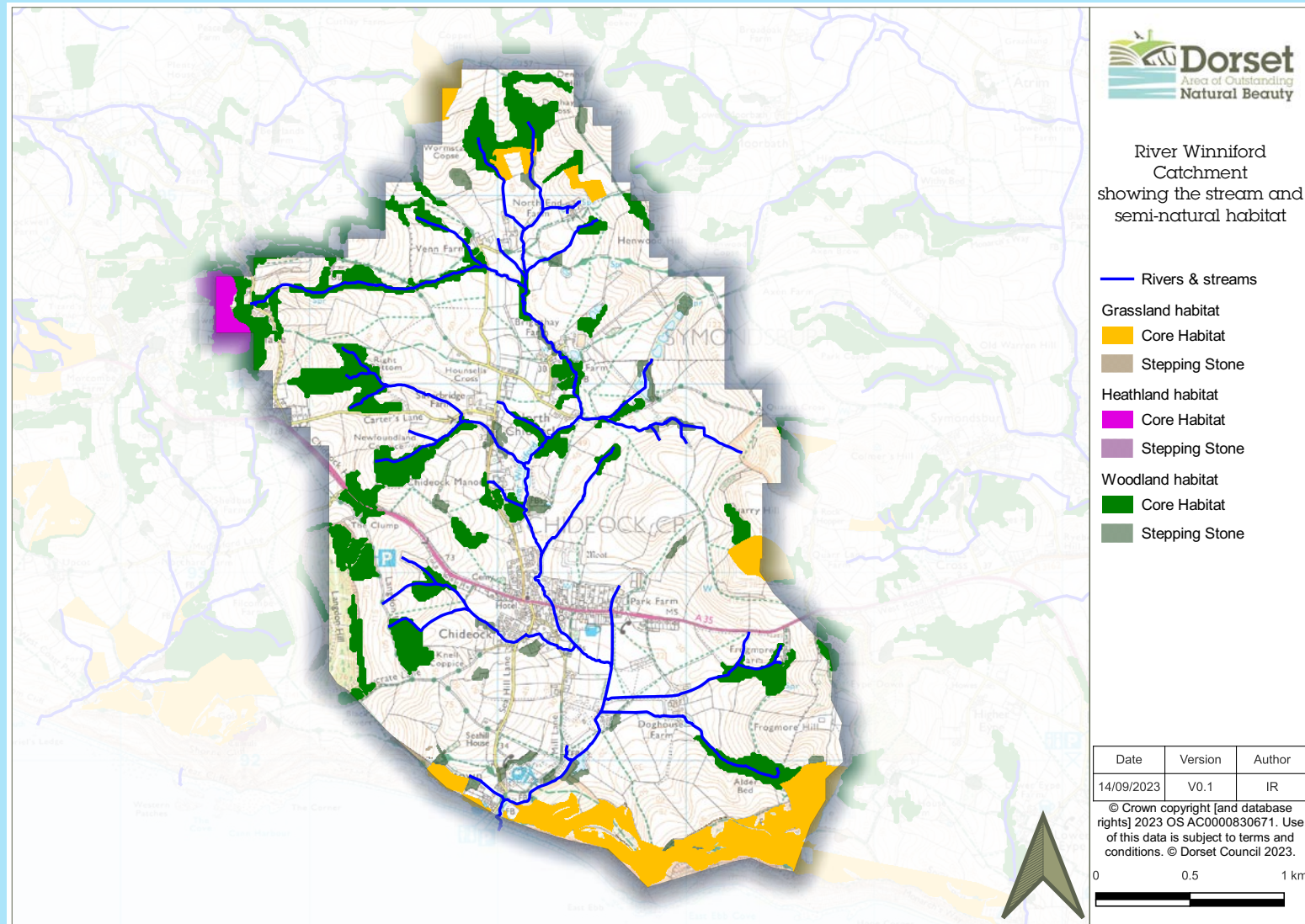
CHIDEOCK
PARISH
COUNCIL



Introduction to River Winniford

- 1.5 miles in length with relatively long tributaries
- Flows from North Chideock through Chideock to Seatown
- Lake between Chideock and North Chideock
- River can be blocked at Seatown by shingle beach creating a lagoon
- Land use
 - Agricultural
 - Housing
 - Holiday accommodation

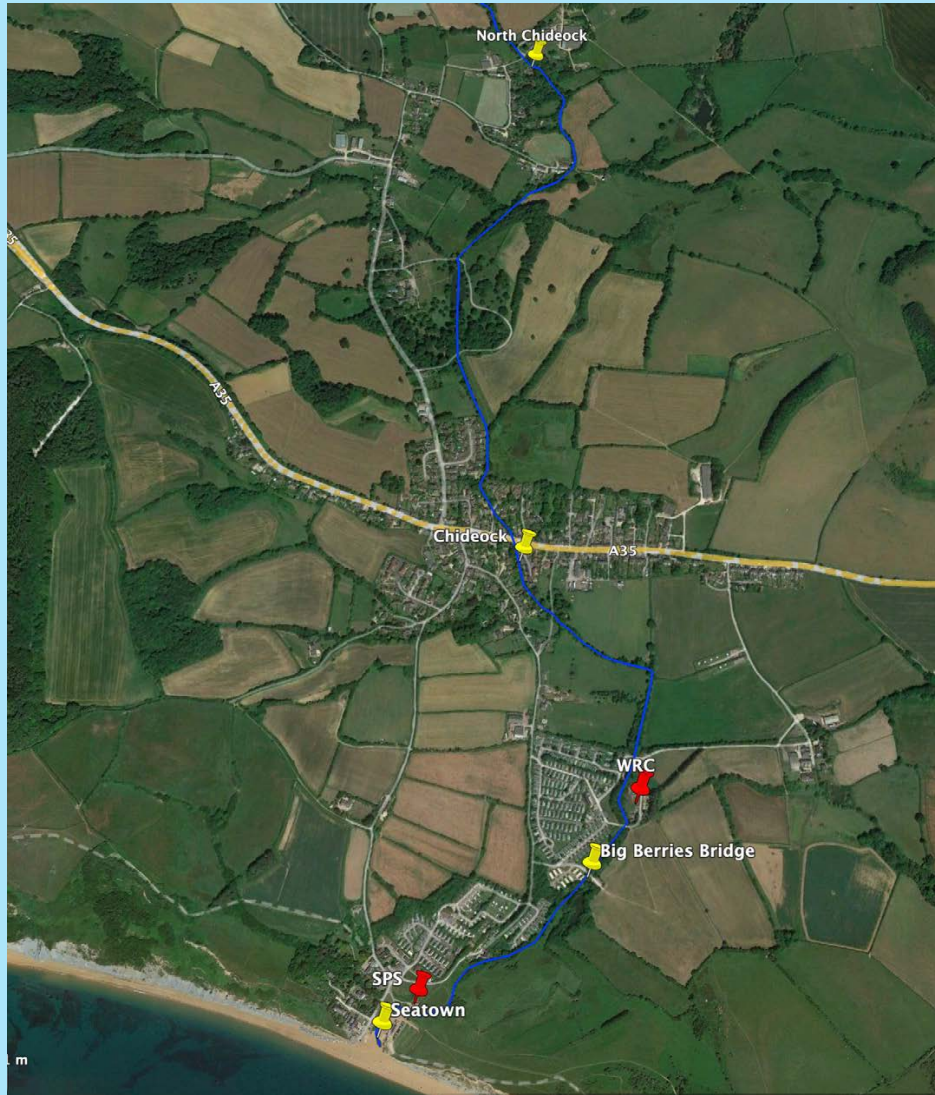
River Winniford Catchment



Issues

- Access to the river is physically difficult along much of its length
- Multiple land owners
- North Chideock has no mains sewage
- Known river health issues pre-WRAG
 - High levels of E.coli and Enterococci at Seatown
 - Active storm overflows
 - Occasional milkiness at North Chideock
 - Residents report lack of fish life compared with the past

Initial testing locations



4 test locations (yellow):

- North Chideock (member garden)
- Chideock Village (member garden)
- Big Berries: Near WRC outfall (WDLH)
- Seatown Car Park (Palmers pub)

Wessex Water assets (red):

- Chideock Water Recycling Centre (WRC)
- Seatown Pumping Station (SPS)

Initial Testing (12th April)

- Westcountry Rivers Citizen Science (CSI) testing
 - 4 locations
 - Turbidity
 - Total dissolved solids (TDS)
 - Temperature
 - Phosphate
- Coliforms
 - 3 locations
 - Total coliforms
 - E.coli
 - Enterococci

Initial Test Results (12th April)

- High levels of E.coli at Seatown and Big Berries
 - 8x EA 'good' inland water bathing limit
- High level of Enterococci at Seatown
 - 2x EA 'good' inland water bathing limit
- Chideock Village was slightly polluted with E.coli
 - 2x EA 'good' inland water bathing limit
- Storm overflow had run that day and previous day

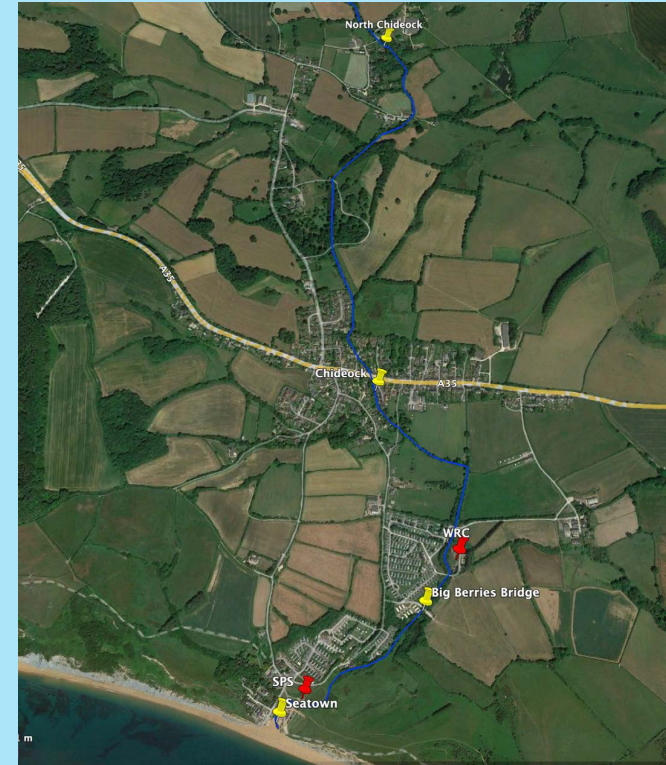
- Hypotheses
 - Sewage had entered the river from the WRC storm overflow
 - Possible sewer/septic tank leakage in, or upstream of, the village

30th May Testing

- CSI and E.coli tests at all four locations
- Weather was good
- No storm overflow reports for previous 3 weeks
- Expectation that results would be good

30th May Results

- Very high levels of E.coli at Seatown and Big Berries
 - 13x EA 'good' inland water bathing limit
- Very High level of Enterococci at Seatown
 - 11x EA 'good' inland water bathing limit
- Chideock Village and North Chideock were good
- WW said that the WRC was working ok
- Hypothesis
 - Source of sewage pollution located between Chideock and Big Berries (just downstream of WRC)
 - This pollution is not associated with storm overflow



3rd August Testing

- Design new test plan
 - Focus on Chideock to Big Berries
- Locations
 - Frying Pan - to test Doghouse tributary
 - Attempt to isolate WRC
 - Upstream of storm overflow outfall at WRC
 - Big Berries (downstream of WRC)
 - Seatown
 - Retained as algae was building in the lagoon



3rd August testing

Notes:

1. Water level was higher than normal due to rainfall the preceding day

2. Frying Pan: E.coli much higher than expected

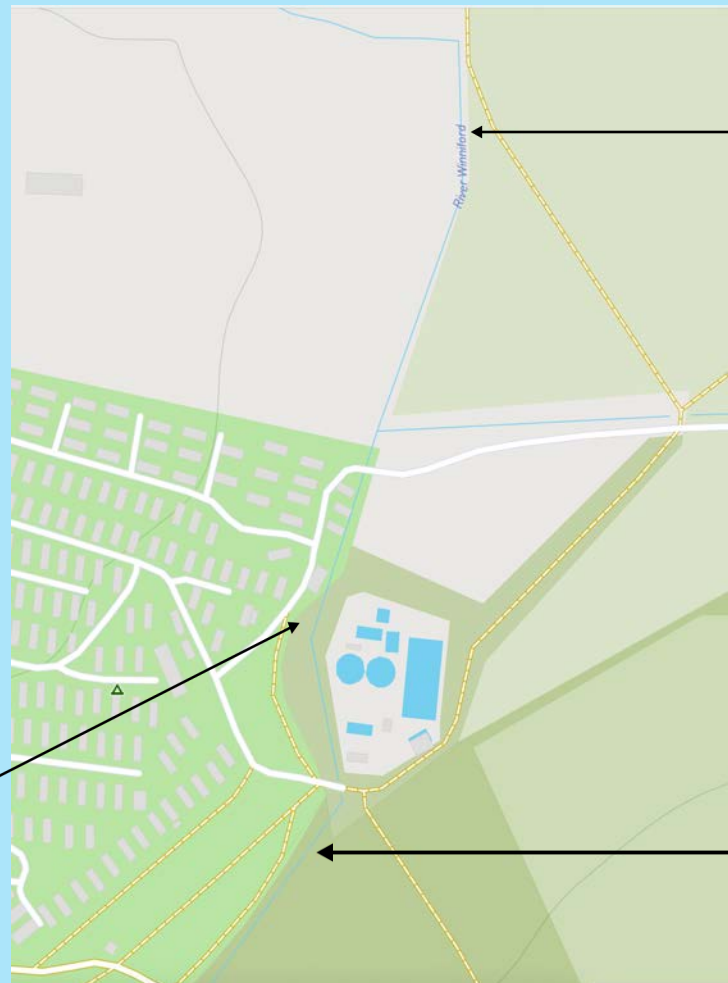
3. WRC storm outfall: sample was taken upstream of a (non-active) outfall from WRC and a high level sewer that was seen to be leaking

4. Big Berries: sample was taken just downstream of the WRC main outfall

5. Seatown test result:
E.coli = 11800 cfu/100ml

EA good inland bathing water limit =
1000 cfu/100ml for E.coli

Upstream of WRC outfall
E.coli = 1800

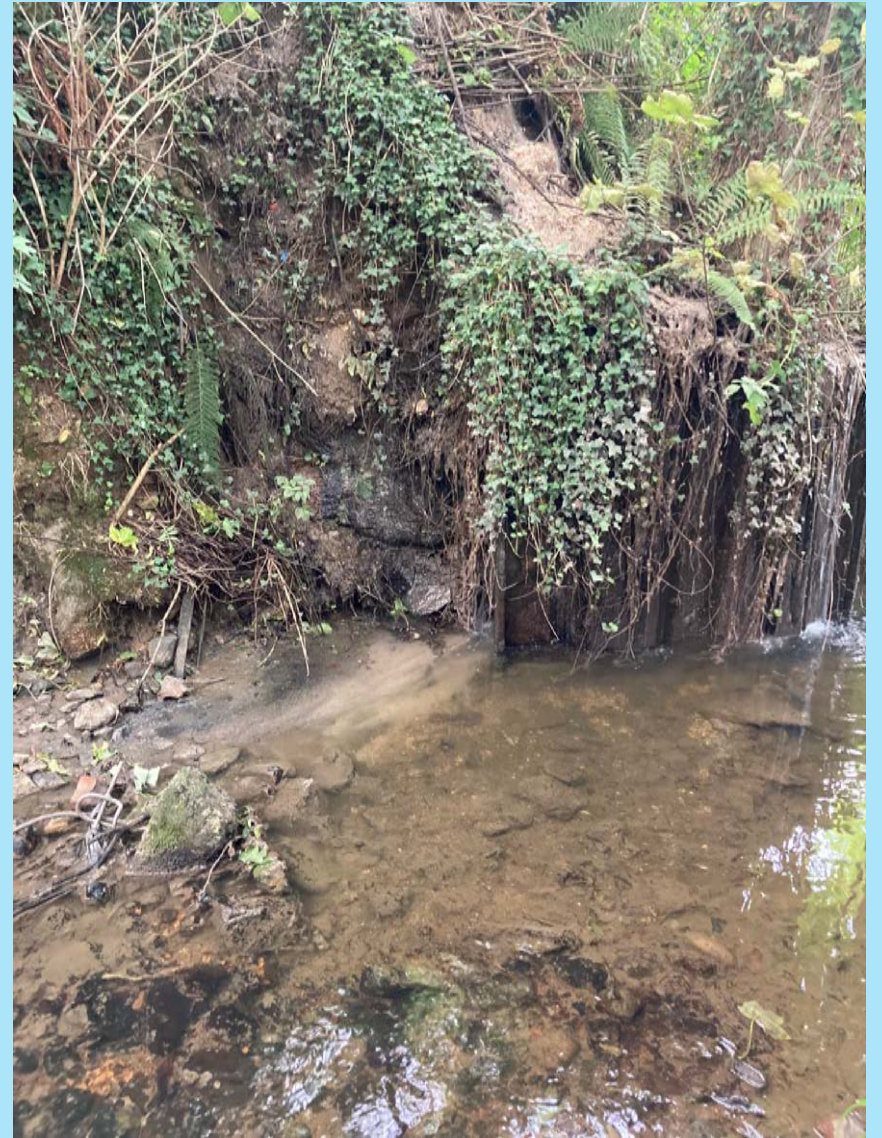


Frying Pan
E.coli = 4000

Big Berries
E.coli = 13600

Findings

Effluent leaking into the Winniford from high level sewer linking holiday park to WRC.



6th September testing

- WW had carried out a repair to the sewer very promptly
- Plan to sample four locations
 - Chideock village: Control point
 - Pettycrate Junction: to check if Pettycrate could be a source of pollution
 - Frying Pan: to see if E.coli was still present
 - Big Berries: to check if sewer repair was effective

6th September testing

Notes:

1. Water level was lower than normal, water appeared very clear

2. Chideock Village: Control

3. Pettycrate Junction: Sample taken downstream of Pettycrate tributary, overhead sewer pipe and Cains Farm pond outfall (active)

4. Frying Pan: Sample taken downstream of Doghouse tributary

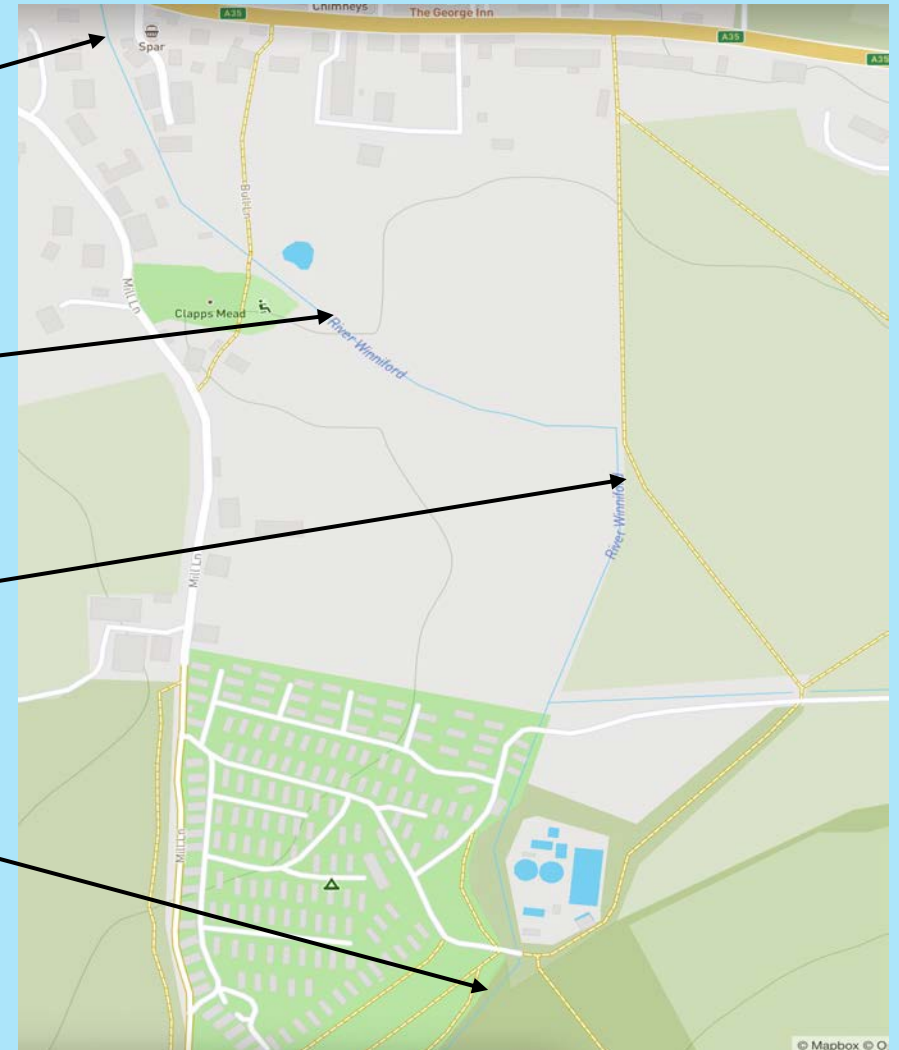
5. Big Berries: Sample taken just downstream of the WRC main outfall

Chideock Village
E.coli = 1300

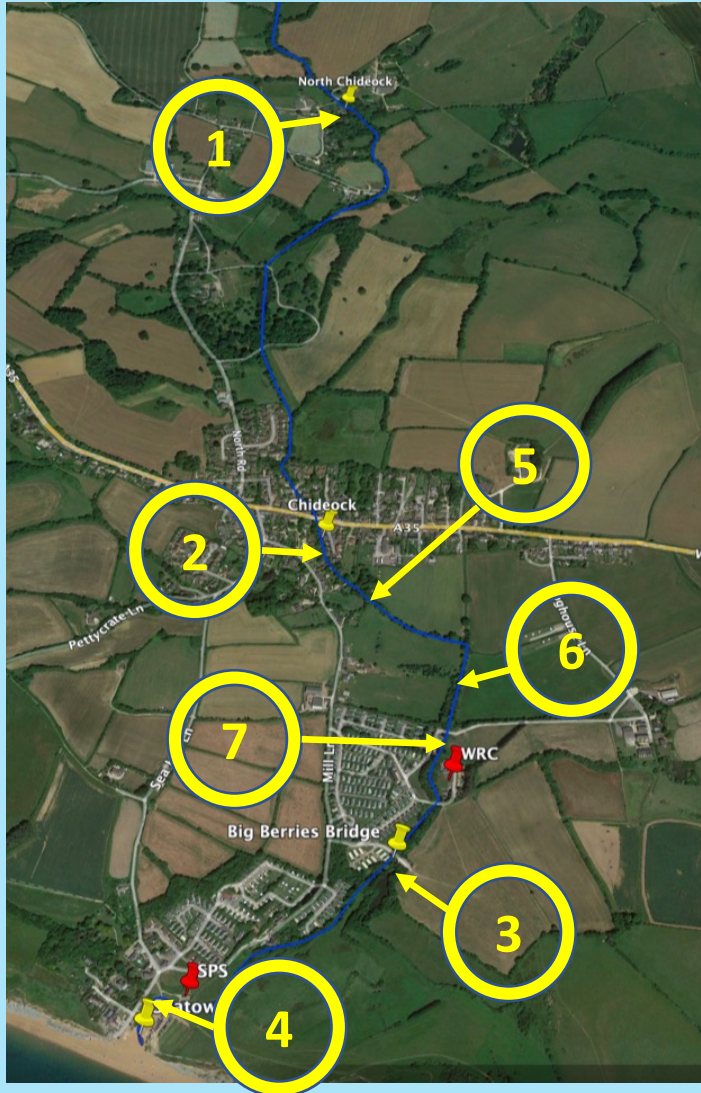
Pettycrate Junction
E.coli = 7400

Frying Pan
E.coli = 5300

Big Berries
E.coli = 3000



Testing locations updated



Testing points

1. Brighthay Lane, North Chideock
2. Chideock Village (upstream of WRC)
3. Big Berries (downstream of WRC)
4. Seatown (upstream of where the lagoon forms)
5. *Pettycrate junction (downstream of Clapps Mead)*
6. *Frying Pan (just downstream of Doghouse Lane tributary)*
7. *Upstream of leaking sewer pipe*

CSI testing example (6th September)

	North Chideock (1)	Chideock Village (2)	Pettycrate Junction (5)	Frying Pan (6)	Big Berries (3)	Seatown (4)
Temperature (°C)	17.6	19.6			21.0	21.4
Turbidity	<12	<12			<12	<12
Dissolved solids (ppm)	232	256			303	282
Phosphate (ppb)	100	0	0	300	2000	1000
pH	8.0	8.0			8.0	8.0

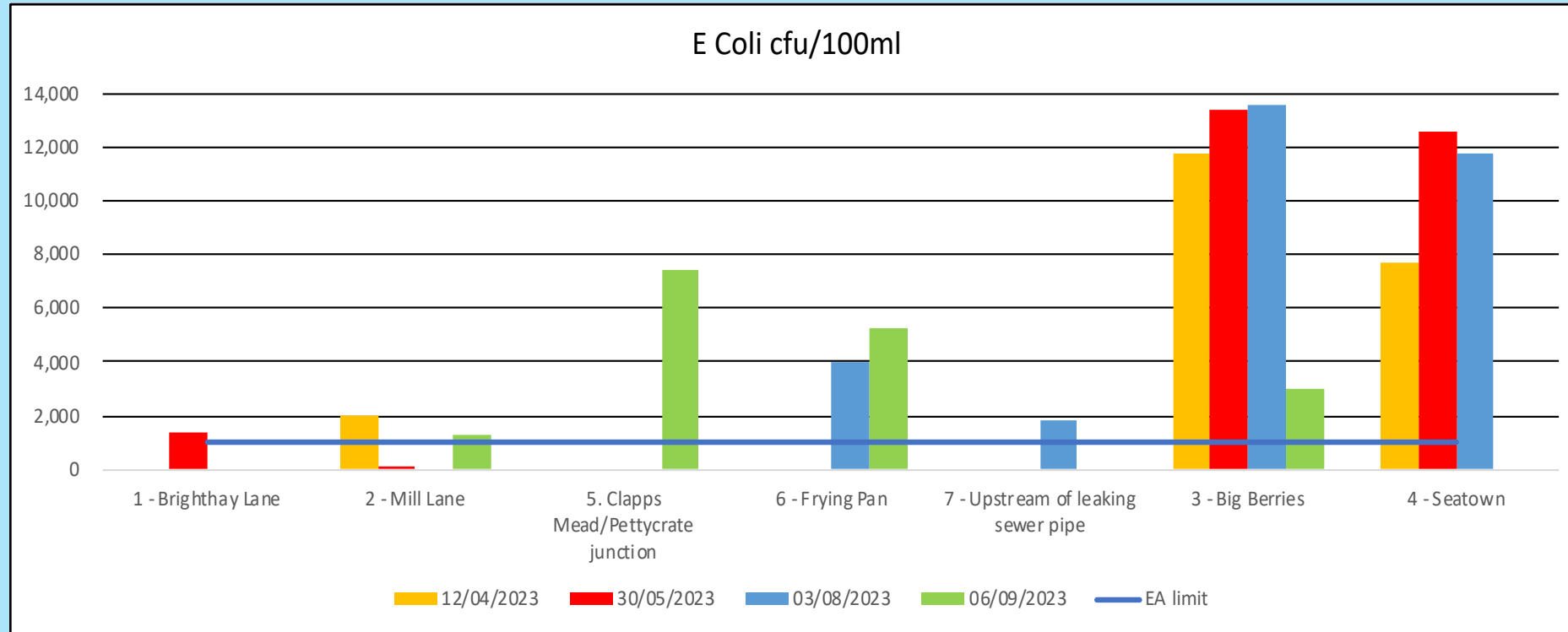
Little variation seen in most measurements along the river except for Phosphate

Riverfly testing

- Two of the group received training from DWT/AONB
- Equipment loaned by DWT
- Two locations sampled
 - North Chideock – Good score (>10) in mid August
 - Medium score (=7) in early September
 - Seatown – Low score (=4) in mid August
- Intend to continue sampling next year at more locations

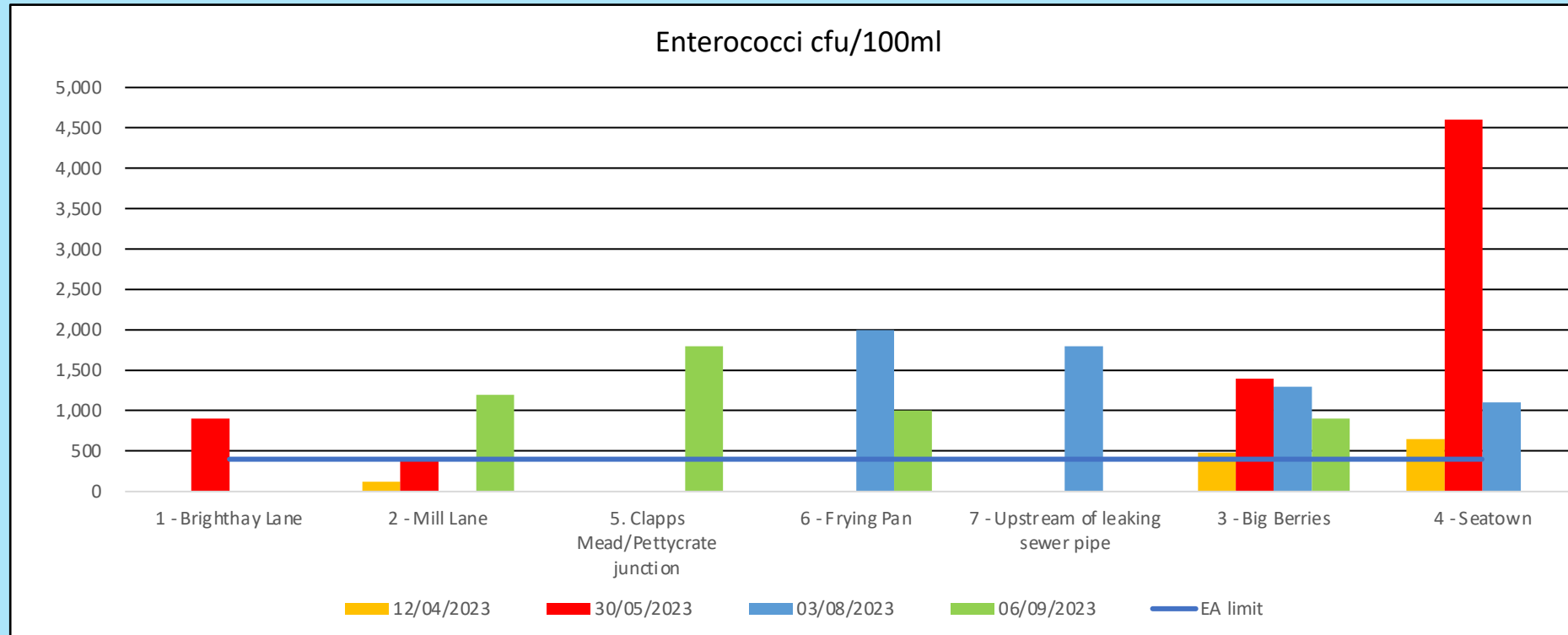
- Note: Scores reflect diversity and number of invertebrates

E.Coli testing summary



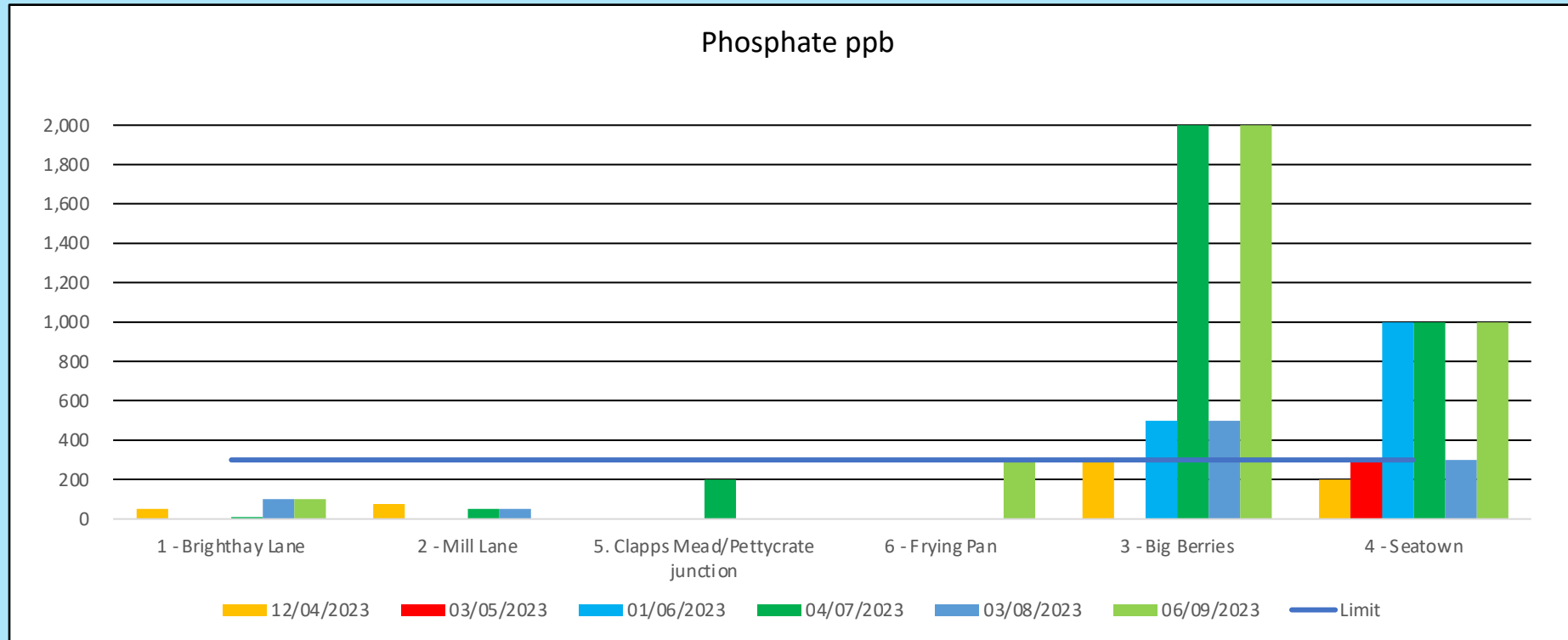
E.coli cfu/100ml	EA limit	12/04/2023	30/05/2023	03/08/2023	06/09/2023
1 - Brighthay Lane	1,000		1,400		
2 - Mill Lane	1,000	2,000	100		1,300
5. Clapps Mead/Pettycrate junction	1,000				7,400
6 - Frying Pan	1,000			4,000	5,300
7 - Upstream of leaking sewer pipe	1,000			1,800	
3 - Big Berries	1,000	11,800	13,400	13,600	3,000
4 - Seatown	1,000	7,700	12,600	11,800	

Enterococci testing summary



Enterococci cfu/100ml	EA limit	12/04/2023	30/05/2023	03/08/2023	06/09/2023
1 - Brighthay Lane	400		900		
2 - Mill Lane	400	120	400		1,200
5 - Clapps Mead/Pettycrate junction	400				1,800
6 - Frying Pan	400			2,000	1,000
7 - Upstream of leaking sewer pipe	400			1,800	
3 - Big Berries	400	480	1,400	1,300	900
4 - Seatown	400	650	4,600	1,100	

Phosphate testing summary



Phosphate level tested using Insta 'low range' Phosphate strips. These measure Orthophosphate. This is 3x EA measure of Phosphate so our threshold changed to $100 \times 3 = 300$ ppb

Orthophosphate ppb	Limit	12/04/2023	03/05/2023	01/06/2023	04/07/2023	03/08/2023	06/09/2023
1 - Brighthay Lane	300	50		0	10	100	100
2 - Mill Lane	300	75		0	50	50	
5 - Clapps Mead/Pettycrate Junction	300				200		
6 - Frying Pan	300						300
3 - Big Berries	300	300		500	2,000	500	2,000
4 - Seatown	300	200	300	1,000	1,000	300	1,000

Conclusions

- CSI testing
 - Phosphate shows variation with time and location
 - Most measurements do not show significant variation
 - E.g. Turbidity, TDS, Temperature, pH
 - Inexpensive
- E.coli and Enterococci testing
 - E.Coli tests working well
 - Enterococci results difficult to interpret
 - Expensive (>£70 per sample for E.coli + Enterococci)
- Ammonia
 - Tried 2 tests but they did not show any response
 - Difficult to understand the chemistry - should we be monitoring nitrates/nitrites?

An ideal testing approach?

- Preparation:
 - Large scale map
 - Soil types
 - Agricultural inputs
- Walk the River
 - Check locations of
 - Tributaries
 - Outfalls (active/periodic/inactive)
 - Sewer pipes
- Tests
 - Phosphate
 - Nitrates/Nitrites/Ammonia?
 - E.coli
 - Riverfly sampling
 - Locations – upstream and downstream of each tributary and outfall

Thankyou for listening