

SUPPLEMENTARY INFORMATION

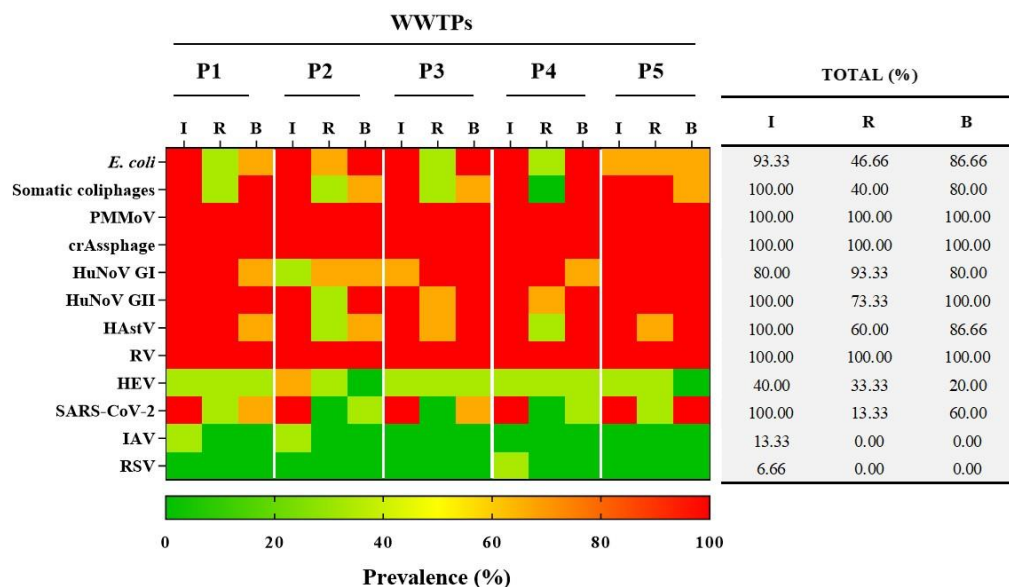
Evaluating viral pollution in wastewater and Mediterranean ecosystems

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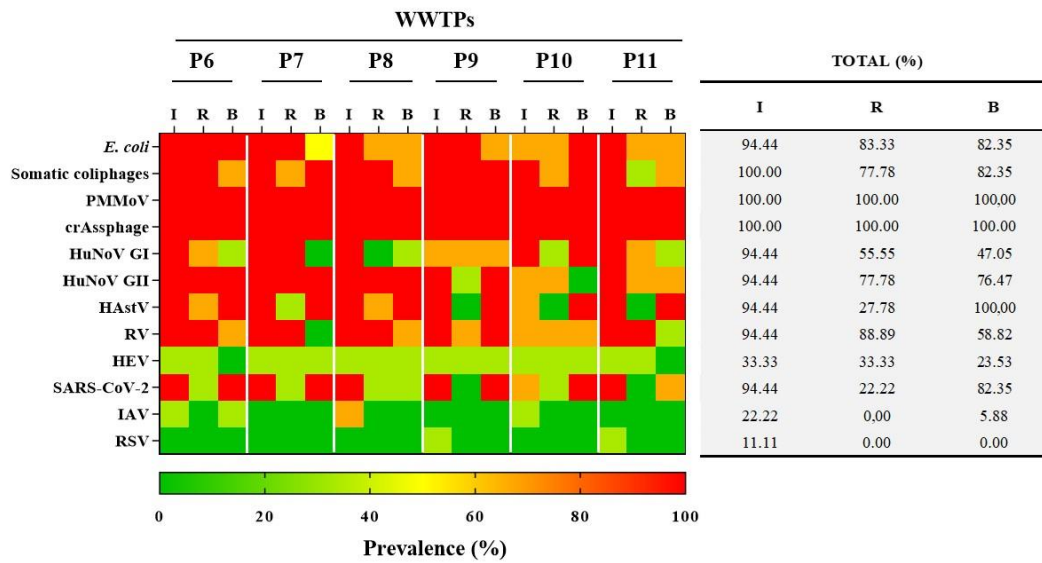
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Suppl. Fig. S1 Prevalence of faecal indicators, human enteric viruses and human respiratory viruses in influent wastewater (I), reclaimed water (R) and biosolids (B) samples collected from five different WWTPs (P1-P5) of Albufera Natural Park. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAsTV, human astrovirus; RV, rotavirus; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus



Suppl. Fig. S2 Prevalence of faecal indicators, human enteric viruses and human respiratory viruses (%) in influent wastewater (I), reclaimed water (R) and biosolids (B) samples collected from five different WWTPs (P6-P11) of Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAsV, human astrovirus; RV, rotavirus; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; gc, genome copies; pfu, plate forming units; cfu, colony forming units

Suppl. Table S1 Information of Albufera Natural Park sampling points: sample type, period, physico-chemical parameters and coordinates. Abbreviations: Nd, Not determined

Sampling points	Sample type	Period	Physico-chemical parameters				Coordinates
			Temperature	DO	Conductivity	pH	
			(°C)	(mg/L)	(µS/cm)		
P1	Influent Wastewater Reclaimed Water Biosolid	-			Nd		39.4546, -0.4134
P2							39.2708, -0.4029
P3							39.2742, -0.2810
P4							39.3629, -0.3281
P5							39.4423, -0.3442
SW/SD 1	Surface Water Sediment	January 22'	13.6	11.64	1493	6.76	39.4221, -0.3530
		July 22'	25.6	17.09	2105	8.33	
		March 23'	16.7	5.86	2230	7.99	
SW/SD 2		January 22'	11.3	13.68	2181	6.67	39.3060, -0.3588
		July 22'	28.2	6.69	1439	7.78	
		March 23'	17.9	11.11	1707	8.03	
SW/SD 3		January 22'	9.7	11.39	2918	6.83	39.3939, -0.3506
		July 22'	31.4	13.47	2144	7.84	
		March 23'	17.1	13.47	3555	8.00	
SW/SD 4		January 22'	9.3	14.79	2398	6.77	39.3814, -0.3397
		July 22'	28.2	6.69	1439	7.87	
		March 23'	22.0	10.03	2145	8.00	
SW/SD 5		January 22'	10.6	14.26	1706	6.69	39.3252, -0.3188
		July 22'	28.6	8.45	1806	7.98	
		March 23'	17.1	8.49	1442	8.02	
SW/SD 6		January 22'	9.8	14.79	1897	7.20	39.3252, -0.3188
		July 22'	29.2	8.52	1673	7.87	
		March 23'	19.3	11.35	1630	8.03	

Suppl. Table S2 Information of Ebro River region sampling points: sample type, period, physico-chemical parameters and coordinates. Abbreviations: Nd, Not determined

Sampling points	Sample type	Period	Physico-chemical parameters				Coordinates
			Temperature	DO	Conductivity	pH	
			(°C)	(mg/L)	(µS/cm)		
P6	Influent Wastewater Reclaimed Water Biosolid	-			Nd		41.609941, -0.810948
P7							41.667902, -0.926062
P8							41.239129, 0.551910
P9							40.796114, 0.508704
P10							40.783837, 0.610137
P11							40.627071, 0.622038
SW/SD 7	Surface Water Sediment	January 22’	7.6	28.8	1037	6.24	41.581299, -0.760028
		July 22’	27.0	6.66	2420	7.62	
		March 23’	14.6	9.08	1207	8.24	
SW/SD 8		January 22’	7.4	14.60	1169	6.68	41.650499, -0.855215
		July 22’	25.1	7.59	2165	8.18	
		March 23’	13.2	10.43	1250	8.00	
SW/SD 9		January 22’	7.3	19.71	981	5.84	41.245315, 0.556073
		July 22’	24.7	7.42	1175	7.81	
		March 23’	13.4	15.53	1295	7.97	
SW/SD 10		January 22’	9.7	12.85	830	7.26	40.774842, 0.534803
		July 22’	26.6	7.60	1230	7.68	
		March 23’	15.8	15.56	1292	8.03	
SW/SD 11		January 22’	9.6	16.92	954	6.50	40.704215, 0.619198
		July 22’	28.3	10.15	3063	7.76	
		March 23’	15.6	15.56	1330	7.97	

Suppl. Table S3 Characteristics and wastewater treatments for each analysed WWTP surrounding Albufera Natural Park

		P1	P2	P3	P4	P5
Population equivalents Flow (m³/day)		133.351	94.515	45.783	4.102	664.185
		29.364	21.303	2.200	1.708	200.484
Pretreatment	Coarse screening	X	X		X	X
	Fine screening	X	X	X		X
	Flow homogenization tank	X	X			
	Grift removal	X	X	X	X	X
	Grease removal	X	X	X	X	X
Primary treatment	Physicochemical treatment	X				X
	Decantation	X	X			X
	Activated sludge	X	X	X	X	X
Secondary treatment	Extended aeration	X	X	X	X	X
	Nitrogen removal	X	X	X	X	X
	Phosphor removal	X	X	X	X	X
Tertiary treatment	Coagulation-Flocculation	X		X		X
	Filtration	X				X
	UV	X		X	X	X
	Chlorination		X			

Suppl. Table S4 Characteristics and wastewater treatments for each analysed WWTP surrounding Ebro River region

		P6	P7	P8	P9	P10	P11
Population equivalents		1.200.000	100.000	12.928	46.847	27.500	28.291
Flow (m³/day)		259.000	34.700	1.943	10.296	5.500	6.310
Pretreatment	Coarse screening	X	X	X	X	X	X
	Fine screening	X	X	X	X	X	X
	Flow homogenization tank	X	X		X	X	X
	Grift removal	X	X	X	X	X	X
	Grease removal	X	X		X	X	X
Primary treatment	Physicochemical treatment	X	X	X	X	X	X
	Decantation	X	X	X	X	X	X
	Activated sludge	X	X	X	X	X	X
Secondary treatment	Extended aeration	X	X	X	X	X	X
	Nitrogen removal				X	X	X
	Phosphor removal	X	X	X	X	X	X
Tertiary treatment	Coagulation-Flocculation						
	Filtration						
	UV				X	X	X
	Chlorination	X					

Suppl. Table S5 Primers, probes, PCR conditions, limit of quantification (LoQ/reaction) and limit of detection (LoD/reaction) for all targeted viruses in this work. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAV, hepatitis A virus; HEV, hepatitis E virus; HAsV, human astrovirus; RV, rotavirus A; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; SARS-CoV-2, severe acute respiratory syndrome coronavirus; RSV, respiratory syncytial virus; IAV, influenza A virus; LoQ/reaction, limit of quantification per reaction; LoD/reaction, limit of detection per reaction

Virus	Primers + probe	Sequence (5' --> 3')	PCR conditions	LoQ/reaction	LoD/reaction	Reference
CrAssphage	064F1	TGTATAGATGCTGCTGCAACTGTACTC	95 °C, 30 sec; [95 °C, 05 sec ; 60 °C, 30 sec] x45 cycles	1.23x10 ²	37.02	Stachler et al. (2017)
	064R1	CGTTGTTTTATCTTTATCTTGTCAT				
	064P	6-FAM-CTGAAATTGTTTCATAAGCAA-NFQMGB				
PMMoV		COMERCIAL KIT (PMMoV Fecal Indicator RT-qPCR Kit)	45 °C, 15 min (RT); 95 °C, 2 min; [95 °C, 15 sec; 60 °C, 60 sec] x45 cyc	1.46	1.06	PMMoV Fecal Indicator RT-qPCR Kit
HuNoV GI	QNIF4	CGCTGGATGCGNTTCCAT	55 °C, 20 min (RT); 95 °C, 2 min; [95 °C, 10 sec; 60 °C, 30 sec] x45 cyc	6.58	2.08	ISO 15216-1:2017
	NV1LCR	CCTTAGACGCCATCATCATTTAC				
	TM9	6-FAM-TGGACAGGAGATCG-NFQMGB				
HuNoV GII	QNIF2	ATGTTCAGRTGGATGAGRTTCTCWGA	55 °C, 20 min (RT); 95 °C, 2 min; [95 °C, 10 sec; 60 °C, 30 sec] x45 cyc	2.50x10 ³	1.88x10 ³	ISO 15216-1:2017
	COG2R	TCGACGCCATCTTCATTACACA				
	QNIFs	6-FAM-AGCACGTGGGAGGGGATCG-3HBQ_1				
HAV	HAV68	TCACCGCCGTTTGCCCTAG	55 °C, 20 min (RT); 95 °C, 2 min; [95 °C, 10 sec; 60 °C, 30 sec] x45 cyc	19.33	9.47	ISO 15216-1:2017
	HAV240	GGAGAGCCCTGGAAGAAA				
	HAV150	6-FAM-CCTGAACCTGCAGGAATTAA-NFQMGB				
HEV	JHRVF	GGTGGTTTCTGGGGTGAC	50 °C, 30 min (RT); 95 °C, 15 min; [95 °C, 10 sec; 55 °C, 20 sec; 72 °C, 10 sec] x45 cyc	22.44	9.01	Jothikumar et al. (2006)
	JHEVR	AGGGGTTGGTTGGATGAA				
	JHEVPmod	6-FAM-TGATTCTCAGCCCTTCGC-NFQMGB				
HAsV	AstVor1b+	AAGCAGCTTCGTGACTCTGG	55 °C, 20 min (RT); 95 °C, 2 min; [95 °C, 10 sec; 60 °C, 30 sec] x45 cyc	1.30x10 ²	80.06	Sano et al. (2009)
	AstVor1b-	AGCCATCACACTTCTTTGGTC				
	AstVor1BP	6-FAM-AGAGCAACTCCATCGCATTT-3BHQ				
RV	JVKF	CAGTGGTTGATGCTCAAGATGGA	55 °C, 20 min (RT); 95 °C, 2 min; [94 °C, 10 sec; 55 °C, 30 sec] x45 cyc	3.01x10 ²	2.68x10 ²	Jothikumar et al. (2009)
	JVKR	TCATTGTAATCATATTGAATACCCA				
	JVKP	6-FAM-ACAACCTGCAGCTTCAAAAGAAGWGT-3BHQ				
PEDV	Forward	CAGGACACATTCTTGGTGGTCTT	42 °C, 15 min (RT); 95 °C, 2 min; [95 °C, 15 sec; 60 °C, 60 sec] x45 cyc	15.54	10.96	Zhou et al. (2017)
	Reverse	CAAGCAATGTACCACTAAGGAGTGTT				
	Probe	6-FAM-ACGCGCTTCTCACTAC-NFQMGB				
MgV	Mengo110	GCGGGTCTGCCGAAAGT	42 °C, 15 min (RT); 95 °C, 2 min; [95 °C, 15 sec; 60 °C, 60 sec] x45 cyc	73.65	51.19	ISO 15216-1:2017
	Mengo209	GAAGTAACATATAGACAGCGCACAC				
	Mengo147	6-FAM-ATCACATTACTGCCGAAGC-NFQMGB				
SARS-CoV-2 (N1)		COMERCIAL KIT (2019-nCoV_N1 Combined Primer/Probe Mix)	50°C, 15 min (RT); 95°C, 2 min; [95°C, 30 sec; 60°C, 30 sec] x45 cycles	12.69	8.14	CDC (2020)
RSV	Forward	CACWGAAGATGCWAATCATAAATTCA	50°C, 20 min (RT); 95°C, 15 min; [95°C, 45 sec; 56°C, 75 sec] x45 cycle	12.87	3.05	Sanghavi et al. (2011)
	Reverse	GTATYTTTATRGTTCTTCYCTTCCTAACC				
	Probe	6-FAM-TAATAGGTA/ZEN/TGTATATGCKATGTC-3IABkFQ				
IAV	Forward 1	CAAGACCAATCYTGTACCTCTGAC	50°C, 30 min (RT); 95°C, 2 min; [95°C, 15 sec; 55°C, 30 sec] x45 cycles	1.44x10 ³	1.27x10 ³	CDC (2021)
	Forward 2	CAAGACCAATYCTGTACCTYTGAC				
	Reverse 1	CGATTYTGACAAAACGCTCTACG				
	Reverse 2	GCATTTTGGATAAAGCGTCTACG				
	Probe	6-FAM-TGCAGTCCT/ZEN/CGCTCACTGGGCACG-3IABkFQ				

Suppl. Table S6 Primers, location and PCR conditions of typing nested PCR for HEV

PCR Reaction	Primers	Sequence (5' → 3')	Location	Reference
Reaction 1	Reverse (HEV-orf2-ro-ch)	GAR AAi GGR CGi GAi GGR GCi GG	6510-6488	Boxman et al. (2017)
	Forward (HEV-orf2-fo-ch)	AAY CAR GGi TGG CGY TCi GTi GAR AC	5885-5910	
Reaction 2	Forward (HEV-orf2-fi-ch)	GAG GAG GAA GCT ACC TCY GGY YT _i GT _i ATG CTY TGY AT	5924-5961	
	Reverse (HEV-orf2-ri-ch)	GGA GAA GGA GTT GGT CGR TCY TGY TCR TGY TGR TT	6489-6455	

Suppl. Table S7 Levels faecal indicators, enteric viruses, respiratory viruses and mean recoveries of PEDV and MgV of influent wastewater samples from wastewater treatment plants in proximity to Albufera Natural Park. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/L); ^bExpressed in (Log10 cfu/L); ^cExpressed in (Log10 gc/L)

		Faecal indicators				Enteric viruses (Log ₁₀ gc/L)					Respiratory viruses (Log ₁₀ gc/L)			Process control viruses (% recovery)	
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAstV	RV	HEV	SARS-CoV-2	IAV	RSV	PEDV	MgV
January-22	P1	7.54 ± 0.07	7.46*	6.07 ± 0.00	7.83 ± 0.06	4.21	7.48 ± 0.01	7.07 ± 0.03	7.67 ± 0.00	6.11 ± 0.03	6.12 ± 0.17	<LoD	<LoD	44.52	4.81
	P2	6.51 ± 0.04	6.48*	5.95 ± 0.02	7.77 ± 0.02	<LoD	7.31 ± 0.21	6.84 ± 0.04	7.33 ± 0.08	6.05	5.48 ± 0.08	<LoD	<LoD	12.54	16.44
	P3	7.04 ± 0.05	7.34*	5.95 ± 0.02	8.28 ± 0.16	<LoD	7.30 ± 0.02	7.06 ± 0.11	7.61 ± 0.01	5.29 ± 0.16	5.95 ± 0.00	<LoD	<LoD	14.74	10.23
	P4	6.78 ± 0.03	7.23*	6.15 ± 0.00	8.56 ± 0.07	4.43	7.80 ± 0.02	7.12 ± 0.02	7.27 ± 0.01	6.54 ± 1.43	5.42 ± 0.16	<LoD	4.75	13.44	11.75
	P5	7.34 ± 0.23	7.43*	6.30 ± 0.02	8.42 ± 0.04	4.22 ± 0.21	7.82 ± 0.02	7.28 ± 0.01	7.69 ± 0.02	5.41	5.92 ± 0.05	<LoD	<LoD	22.51	11.42
July-22	P1	7.76 ± 0.20	7.45 ± 0.17	4.94 ± 0.03	7.92 ± 0.06	4.00 ± 0.19	7.27 ± 0.07	7.44 ± 0.02	7.41 ± 0.02	<LoD	5.60 ± 0.12	<LoD	<LoD	32.91	5.11
	P2	7.39 ± 0.06	7.13 ± 0.27	4.37 ± 0.01	7.62 ± 0.05	4.04 ± 0.02	7.18 ± 0.02	7.09	7.10	3.52	5.14 ± 0.17	<LoD	<LoD	23.78	31.37
	P3	7.33 ± 0.07	8.16 ± 0.04	5.64 ± 0.27	8.56 ± 0.31	4.06 ± 0.13	7.51 ± 0.01	7.50 ± 0.12	7.56 ± 0.03	<LoD	5.58 ± 0.06	<LoD	<LoD	32.45	5.06
	P4	7.02 ± 0.02	7.43 ± 0.09	4.89 ± 0.03	7.65 ± 0.05	3.96 ± 0.16	7.24 ± 0.08	7.12 ± 0.04	7.35	<LoD	5.08 ± 0.08	<LoD	<LoD	63.05	83.07
	P5	6.77 ± 0.02	7.82 ± 0.19	4.96 ± 0.23	7.31 ± 0.00	4.08 ± 0.44	7.17 ± 0.09	7.14 ± 0.00	7.15 ± 0.00	<LoD	5.19 ± 0.05	<LoD	<LoD	55.35	33.21
March-23	P1	5.95 ± 0.21	7.53 ± 0.00	5.54 ± 0.07	8.10 ± 0.31	2.81	7.39 ± 0.00	7.67 ± 0.01	7.80 ± 0.00	<LoD	5.16 ± 0.45	6.68	<LoD	6.91	13.51
	P2	5.30 ± 0.00	6.70 ± 0.00	5.30 ± 0.01	7.78 ± 0.17	<LoD	7.02 ± 0.06	7.79 ± 0.04	7.58 ± 0.05	<LoD	5.02 ± 0.07	6.42	<LoD	21.79	15.06
	P3	4.77 ± 0.05	7.33 ± 0.04	5.46 ± 0.01	7.64 ± 0.06	4.10 ± 0.16	7.00 ± 0.02	7.68 ± 0.03	7.71 ± 0.05	<LoD	4.72 ± 0.03	<LoD	<LoD	20.47	18.33
	P4	5.48 ± 0.00	7.65 ± 0.07	5.73 ± 0.10	7.74 ± 0.07	3.42 ± 0.13	7.17 ± 0.08	7.68 ± 0.09	7.91 ± 0.02	<LoD	4.74 ± 0.00	<LoD	<LoD	14.96	10.28
	P5	5.40 ± 0.12	6.60 ± 0.16	5.55 ± 0.10	7.82 ± 0.10	4.03 ± 0.14	8.06 ± 0.03	8.06 ± 0.02	7.93 ± 0.01	<LoD	5.28 ± 0.02	<LoD	<LoD	29.33	9.62

Suppl. Table S8 Levels of faecal indicators, enteric viruses, respiratory viruses and mean recoveries of PEDV and MgV of influent wastewater samples from wastewater treatment plants in proximity to Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log₁₀ pfu/L); ^bExpressed in (Log₁₀ cfu/L); ^cExpressed in (Log₁₀ gc/L)

		Faecal indicators				Enteric viruses (Log ₁₀ gc/L)					Respiratory viruses (Log ₁₀ gc/L)			Process control viruses (% recovery)	
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAstV	RV	HEV	SARS-CoV-2	IAV	RSV	PEDV	MgV
January-22	P6	7.36 ± 0.08	8.29*	6.43 ± 0.01	8.85 ± 0.11	3.67 ± 0.34	7.88 ± 0.01	7.53 ± 0.13	6.91 ± 0.05	5.14 ± 0.11	6.31 ± 0.00	<LoD	<LoD	26.34	5.80
	P7	6.97 ± 0.03	7.32*	6.22 ± 0.10	8.58 ± 0.06	2.80	7.58 ± 0.04	7.32 ± 0.08	7.36 ± 0.16	5.00	6.19 ± 0.09	<LoD	<LoD	47.55	19.74
	P8	6.93 ± 0.03	7.18*	6.52 ± 0.05	8.67 ± 0.17	3.68 ± 0.48	7.68 ± 0.01	7.82 ± 0.07	7.70 ± 0.03	4.75	6.22 ± 0.04	6.44	<LoD	12.52	4.59
	P9	7.54 ± 0.05	7.52*	6.22 ± 0.00	8.22 ± 0.03	<LoD	7.34 ± 0.12	7.46 ± 0.01	7.92 ± 0.04	4.89 ± 0.53	6.08 ± 0.03	<LoD	4.48	45.50	8.77
	P10	7.45 ± 0.11	7.38*	5.80 ± 0.02	8.25 ± 0.02	3.54 ± 0.13	7.37 ± 0.08	6.84 ± 0.01	7.64 ± 0.20	5.04	6.12 ± 0.31	<LoD	<LoD	33.79	4.80
	P11	6.65 ± 0.03	7.38*	5.81 ± 0.03	8.01 ± 0.14	3.01	8.09 ± 0.17	7.33 ± 0.02	7.84 ± 0.40	5.03 ± 0.11	6.04 ± 0.12	<LoD	5.08 ± 0.20	32.73	11.25
July-22	P6	7.54 ± 0.12	7.77 ± 0.04	5.22 ± 0.13	8.43 ± 0.01	3.68 ± 0.38	7.19 ± 0.08	7.63 ± 0.00	7.04 ± 0.14	<LoD	5.57 ± 0.07	<LoD	<LoD	16.84	12.52
	P7	7.47 ± 0.03	7.65 ± 0.09	5.59 ± 0.70	7.98 ± 0.13	3.93 ± 0.04	7.13 ± 0.12	7.37 ± 0.05	8.29 ± 0.01	<LoD	5.27 ± 0.15	<LoD	<LoD	57.58	72.86
	P8	7.30 ± 0.09	6.40 ± 0.43	5.43 ± 0.14	7.54 ± 0.03	3.62	6.97 ± 0.02	7.53 ± 0.07	7.03 ± 0.03	<LoD	5.07 ± 0.09	<LoD	<LoD	77.20	43.62
	P9	4.19 ± 0.06	7.53 ± 0.02	4.98 ± 0.09	8.32 ± 0.01	3.82	7.06 ± 0.06	7.46 ± 0.01	7.40 ± 0.07	<LoD	5.59 ± 0.11	<LoD	<LoD	60.90	6.14
	P10	7.48 ± 0.05	7.00	2.83 ± 0.06	8.57 ± 0.04	3.46	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	78.00	20.95
	P11	8.16 ± 0.07	6.70	5.30 ± 0.17	8.62 ± 0.04	4.15 ± 0.01	7.01 ± 0.06	7.61 ± 0.05	7.02 ± 0.00	<LoD	5.48 ± 0.02	<LoD	<LoD	56.22	22.26
March-23	P6	5.18 ± 0.21	6.74 ± 0.17	4.77 ± 0.03	7.90 ± 0.14	3.70 ± 0.00	7.43 ± 0.05	7.97 ± 0.00	7.68 ± 0.01	<LoD	5.20 ± 0.09	6.14	<LoD	15.19	4.26
	P7	5.95 ± 0.14	6.48 ± 0.00	6.10 ± 0.25	8.25 ± 0.06	3.90 ± 0.05	7.48 ± 0.40	8.18 ± 0.01	8.17 ± 0.06	<LoD	5.44 ± 0.44	<LoD	<LoD	14.16	8.31
	P8	6.74 ± 0.17	6.00 ± 0.00	5.18 ± 0.02	8.01 ± 0.51	3.17	7.11 ± 0.10	7.74 ± 0.01	8.57 ± 0.09	<LoD	5.71 ± 0.11	6.53	<LoD	49.07	13.54
	P9	6.02 ± 0.03	6.18 ± 0.21	5.60 ± 0.06	8.05 ± 0.36	3.34	7.64 ± 0.05	7.94 ± 0.05	8.26 ± 0.03	<LoD	5.29 ± 0.01	<LoD	<LoD	28.92	4.63
	P10	6.18 ± 0.08	6.40 ± 0.12	5.62 ± 0.30	8.76 ± 0.10	3.40	7.62 ± 0.41	7.68 ± 0.01	7.84 ± 0.09	<LoD	5.06 ± 0.38	6.27	<LoD	7.53	3.69
	P11	5.54 ± 0.00	7.55 ± 0.08	5.24 ± 0.06	8.01 ± 0.08	3.40 ± 0.61	7.82 ± 0.33	7.73 ± 0.01	8.55 ± 0.01	<LoD	5.72 ± 0.01	<LoD	<LoD	75.31	5.24

Suppl. Table S9 Levels of faecal indicators, enteric viruses, respiratory viruses and mean recoveries of PEDV and MgV of reclaimed water samples from wastewater treatment plants in proximity to Albufera Natural Park. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log₁₀ pfu/L); ^bExpressed in (Log₁₀ cfu/L); ^cExpressed in (Log₁₀ gc/L)

		Faecal indicators				Enteric viruses (Log ₁₀ gc/L)					Respiratory viruses (Log ₁₀ gc/L)			Process control viruses (% recovery)	
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAstV	RV	HEV	SARS- CoV-2	IAV	RSV	PEDV	MgV
January- 22	P1	5.89 ± 0.04	<LoD	5.38 ± 0.06	6.09 ± 0.11	2.88	6.56 ± 0.09	5.75 ± 0.02	7.40 ± 0.01	5.22	<LoD	<LoD	<LoD	8.35	24.17
	P2	<LoD	1.18*	3.64 ± 0.01	5.07 ± 0.10	3.03 ± 0.08	6.09	<LoD	7.34 ± 0.05	5.04 ± 0.37	<LoD	<LoD	<LoD	26.93	42.65
	P3	<LoD	<LoD	4.42 ± 0.02	5.59 ± 0.01	3.24	<LoD	<LoD	6.59 ± 0.18	4.93	<LoD	<LoD	<LoD	4.74	16.51
	P4	<LoD	<LoD	4.27 ± 0.12	4.69 ± 0.11	2.88 ± 0.02	6.06	<LoD	6.78 ± 0.15	4.22	<LoD	<LoD	<LoD	15.12	63.43
	P5	5.76 ± 0.10	2.54*	5.19 ± 0.06	6.92 ± 0.06	2.83 ± 0.03	7.07 ± 0.03	6.10 ± 0.10	8.06 ± 0.07	4.56	4.60 ± 0.25	<LoD	<LoD	8.68	5.08
July-22	P1	<LoD	<LoD	4.52 ± 0.03	5.79 ± 0.05	3.24	6.40 ± 0.15	6.93	7.14 ± 0.04	<LoD	4.36	<LoD	<LoD	46.23	43.99
	P2	4.24 ± 0.02	0.88	2.53 ± 0.07	<LoD	<LoD	<LoD	<LoD	6.53	<LoD	<LoD	<LoD	<LoD	5.27	19.43
	P3	<LoD	<LoD	3.67 ± 0.32	4.87 ± 0.10	3.32	6.05	5.27	7.03	<LoD	<LoD	<LoD	<LoD	17.36	8.86
	P4	<LoD	2.87 ± 0.31	3.75 ± 0.06	4.36	2.91	5.99	<LoD	7.44 ± 0.15	<LoD	<LoD	<LoD	<LoD	36.13	11.99
	P5	5.50 ± 0.03	<LoD	3.95 ± 0.41	6.05 ± 0.10	3.28 ± 0.07	5.99	<LoD	7.09 ± 0.06	<LoD	<LoD	<LoD	<LoD	13.49	19.96
March-23	P1	<LoD	0.70*	4.51 ± 0.04	5.80 ± 0.17	2.78	6.10 ± 0.16	6.55 ± 0.01	7.91 ± 0.02	<LoD	<LoD	<LoD	<LoD	25.82	54.84
	P2	<LoD	<LoD	3.59 ± 0.03	5.30 ± 0.09	3.53	<LoD	6.77 ± 0.00	7.21 ± 0.01	<LoD	<LoD	<LoD	<LoD	14.47	30.67
	P3	<LoD	1.00*	4.29 ± 0.15	5.61 ± 0.16	3.06	6.29	6.54 ± 0.07	7.05 ± 0.03	<LoD	<LoD	<LoD	<LoD	22.83	59.61
	P4	<LoD	<LoD	4.29 ± 0.03	4.36 ± 0.35	3.69	<LoD	6.42 ± 0.02	7.83 ± 0.00	<LoD	<LoD	<LoD	<LoD	16.11	58.53
	P5	4.18 ± 0.00	3.18*	5.24 ± 0.03	6.85 ± 0.09	3.42 ± 0.29	6.66 ± 0.08	6.75 ± 0.01	8.57 ± 0.04	<LoD	<LoD	<LoD	<LoD	22.20	64.71

Suppl. Table S10 Levels of faecal indicators, enteric viruses, respiratory viruses and mean recoveries of PEDV and MgV of reclaimed water samples from wastewater treatment plants in proximity to Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAsV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/L); ^bExpressed in (Log10 cfu/L); ^cExpressed in (Log10 gc/L)

		Faecal indicators				Enteric viruses (Log ₁₀ gc/L)					Respiratory viruses (Log ₁₀ gc/L)			Process control viruses (% recovery)	
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAsV	RV	HEV	SARS-CoV-2	IAV	RSV	PEDV	MgV
January-22	P6	6.34 ± 0.18	2.26*	5.35 ± 0.05	6.16 ± 0.04	<LoD	6.78 ± 0.05	5.98 ± 0.02	7.24 ± 0.00	6.03 ± 0.43	4.56 ± 0.15	<LoD	<LoD	32.93	48.38
	P7	6.46 ± 0.13	1.48 *	5.77 ± 0.06	6.83 ± 0.11	2.87 ± 0.02	7.35 ± 0.04	<LoD	8.28 ± 0.02	4.86 ± 0.51	4.87 ± 0.08	<LoD	<LoD	28.02	48.73
	P8	5.04 ± 0.10	<LoD	4.90 ± 0.09	5.94 ± 0.11	<LoD	6.25 ± 0.21	<LoD	7.80 ± 0.03	4.30	<LoD	<LoD	<LoD	22.86	53.05
	P9	4.83 ± 0.05	1.18*	4.33 ± 0.06	5.15 ± 0.08	<LoD	<LoD	<LoD	6.90 ± 0.05	4.71	<LoD	<LoD	<LoD	57.61	43.39
	P10	5.13 ± 0.03	<LoD	5.36 ± 0.07	5.67 ± 0.05	<LoD	6.04 ± 0.07	<LoD	6.47 ± 0.09	5.03 ± 0.87	4.23	<LoD	<LoD	84.78	78.71
	P11	<LoD	<LoD	4.94 ± 0.01	5.11 ± 0.15	<LoD	6.45 ± 0.06	<LoD	6.46 ± 0.06	4.20	<LoD	<LoD	<LoD	61.25	65.85
July-22	P6	3.55 ± 0.04	3.52 ± 0.07	4.58 ± 0.03	6.06 ± 0.05	3.78 ± 0.01	6.56 ± 0.06	7.04 ± 0.25	7.39 ± 0.14	<LoD	<LoD	<LoD	<LoD	67.62	16.14
	P7	3.52 ± 0.06	1.24 ± 0.55	4.32 ± 0.05	5.96 ± 0.02	4.05 ± 0.04	6.28 ± 0.27	6.53 ± 0.72	7.19 ± 0.01	<LoD	<LoD	<LoD	<LoD	51.15	24.06
	P8	3.47 ± 0.03	2.03 ± 0.01	4.95 ± 0.02	6.32 ± 0.01	<LoD	6.35 ± 0.27	7.13 ± 0.04	7.16 ± 0.03	<LoD	<LoD	<LoD	<LoD	38.87	30.71
	P9	3.26 ± 0.05	2.55 ± 0.06	3.61 ± 0.16	5.42 ± 0.03	3.02	5.94 ± 0.07	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	27.56	67.33
	P10	3.19 ± 0.12	0.40	3.20 ± 0.01	4.41	3.28	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	<LoD	29.37	24.88
	P11	3.15 ± 0.02	1.00 ± 0.34	3.53 ± 0.04	5.50 ± 0.10	3.39 ± 0.34	<LoD	<LoD	6.67 ± 0.15	<LoD	<LoD	<LoD	<LoD	76.76	48.08
March-23	P6	4.74 ± 0.06	3.48*	4.59 ± 0.12	7.25 ± 0.75	3.41 ± 0.03	6.46 ± 0.19	<LoD	7.72 ± 0.02	<LoD	<LoD	<LoD	<LoD	12.36	17.86
	P7	<LoD	2.18*	4.40 ± 0.04	5.82 ± 0.07	3.37 ± 0.11	6.23	<LoD	7.31 ± 0.11	<LoD	<LoD	<LoD	<LoD	64.56	80.98
	P8	5.32 ± 0.09	3.88*	4.89 ± 0.12	7.08 ± 0.19	<LoD	7.33 ± 0.04	7.69	7.62 ± 0.92	<LoD	4.44	<LoD	<LoD	54.14	69.84
	P9	3.00	2.00*	3.79 ± 0.05	5.60 ± 0.47	2.99	<LoD	<LoD	7.59 ± 0.45	<LoD	<LoD	<LoD	<LoD	24.95	74.67
	P10	<LoD	1.93*	4.35 ± 0.34	5.28 ± 0.20	<LoD	6.14 ± 0.01	<LoD	7.05 ± 0.20	<LoD	<LoD	<LoD	<LoD	36.04	54.70
	P11	<LoD	1.00*	4.91 ± 0.36	5.42 ± 0.02	3.18 ± 0.20	6.52 ± 0.32	<LoD	8.14 ± 0.05	<LoD	<LoD	<LoD	<LoD	50.09	76.90

Suppl. Table S11 Levels of faecal indicators, enteric viruses, respiratory viruses of biosolid samples from wastewater treatment plants in proximity to Albufera Natural Park. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/g); ^bExpressed in (Log10 cfu/g); ^cExpressed in (Log10 gc/g)

		Faecal indicators				Enteric viruses (Log ₁₀ gc/g)					Respiratory viruses (Log ₁₀ gc/g)		
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAstV	RV	HEV	SARS-CoV-2	IAV	RSV
January-22	P1	2.86 ± 0.00	<LoD	5.85 ± 0.20	7.52 ± 0.01	<LoD	6.80 ± 0.33	6.15 ± 0.24	7.14 ± 0.04	4.84 ± 0.00	4.22	<LoD	<LoD
	P2	<LoD	3.60*	5.64 ± 0.02	7.15 ± 0.12	6.09	6.78 ± 0.28	6.42 ± 0.02	7.41 ± 0.01	<LoD	4.53 ± 0.07	<LoD	<LoD
	P3	1.15 ± 0.21	4.11*	6.14 ± 0.01	7.12 ± 0.02	5.74	7.10 ± 0.04	6.77 ± 0.00	7.17 ± 0.01	4.60 ± 0.00	4.13	<LoD	<LoD
	P4	1.63 ± 0.21	3.60*	5.85 ± 0.01	7.49 ± 0.13	<LoD	7.08 ± 0.03	6.92 ± 0.02	7.95 ± 0.01	4.23 ± 0.00	<LoD	<LoD	<LoD
	P5	2.59 ± 0.02	<LoD	5.71 ± 0.01	7.52 ± 0.11	5.93	7.07 ± 0.00	6.69 ± 0.06	7.84 ± 0.05	<LoD	4.86 ± 0.01	<LoD	<LoD
July-22	P1	3.22 ± 0.02	6.13 ± 0.09	4.64 ± 0.28	6.45 ± 0.07	5.45	6.29 ± 0.15	<LoD	6.81 ± 0.15	<LoD	<LoD	<LoD	<LoD
	P2	3.93 ± 0.15	4.94 ± 0.34	3.68 ± 0.09	6.31 ± 0.05	<LoD	6.28	<LoD	7.41 ± 0.09	<LoD	<LoD	<LoD	<LoD
	P3	5.41 ± 0.05	4.98 ± 0.07	4.88 ± 0.32	6.21 ± 0.03	5.21 ± 0.16	6.46 ± 0.14	7.10	8.05 ± 0.12	<LoD	<LoD	<LoD	<LoD
	P4	5.48 ± 0.07	4.97 ± 0.05	4.72 ± 0.21	6.21 ± 0.08	5.08	6.71 ± 0.03	6.99 ± 0.11	7.79 ± 0.00	<LoD	<LoD	<LoD	<LoD
	P5	5.31 ± 0.05	4.45 ± 0.38	4.61 ± 0.03	6.55 ± 0.00	5.40	6.68 ± 0.14	6.76 ± 0.19	7.28 ± 0.01	<LoD	4.36 ± 0.14	<LoD	<LoD
March-23	P1	2.37 ± 0.21	3.69 ± 0.12	4.78 ± 0.03	6.75 ± 0.00	5.19	6.17 ± 0.51	6.71 ± 0.02	7.15 ± 0.18	<LoD	4.15	<LoD	<LoD
	P2	2.10 ± 0.00	3.95 ± 0.07	4.10 ± 0.08	6.62 ± 0.36	4.85 ± 0.20	5.89	7.34 ± 0.17	7.77 ± 0.15	<LoD	<LoD	<LoD	<LoD
	P3	<LoD	4.74 ± 0.11	5.09 ± 0.05	6.66 ± 0.16	5.21 ± 0.14	6.75 ± 0.36	7.51 ± 0.08	8.05 ± 0.06	<LoD	4.52	<LoD	<LoD
	P4	2.30 ± 0.00	4.98 ± 0.02	5.36 ± 0.02	6.51 ± 0.05	5.13 ± 0.48	6.80 ± 0.17	7.65 ± 0.11	7.92 ± 0.04	<LoD	4.32 ± 0.10	<LoD	<LoD
	P5	<LoD	4.10 ± 0.14	5.38 ± 0.06	6.93 ± 0.00	5.30	6.64 ± 0.11	6.55 ± 0.01	7.83 ± 0.00	<LoD	4.73	<LoD	<LoD

Suppl. Table S12 Levels of faecal indicators, enteric viruses, respiratory viruses of biosolid samples from wastewater treatment plants in proximity to Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/g); ^bExpressed in (Log10 cfu/g); ^cExpressed in (Log10 gc/g). Na, not analysed

		Faecal indicators				Enteric viruses (Log ₁₀ gc/g)					Respiratory viruses (Log ₁₀ gc/g)		
		Somatic coliphages ^a	Total <i>E. coli</i> ^b	PMMoV ^c	crAssphage ^c	HuNoV GI	HuNoV GII	HAstV	RV	HEV	SARS-CoV-2	IAV	RSV
January-22	P6	3.32 ± 0.02	3.90*	4.59 ± 0.03	7.00 ± 0.11	<LoD	6.71 ± 0.09	6.64 ± 0.01	5.33	<LoD	4.96 ± 0.05	<LoD	<LoD
	P7	2.84 ± 0.08	<LoD	5.12 ± 0.03	6.83 ± 0.20	<LoD	6.64 ± 0.08	6.37 ± 0.04	<LoD	4.11	5.37 ± 0.03	<LoD	<LoD
	P8	1.74 ± 0.06	<LoD	5.11 ± 0.00	6.49 ± 0.01	<LoD	6.47 ± 0.05	5.98 ± 0.01	<LoD	3.59	<LoD	<LoD	<LoD
	P9	3.58 ± 0.03	<LoD	4.73 ± 0.03	6.88 ± 0.01	5.89 ± 0.20	7.03 ± 0.08	7.26 ± 0.01	6.24 ± 0.11	3.47	4.86 ± 0.03	<LoD	<LoD
	P10	2.16 ± 0.02	4.56*	5.73 ± 0.01	7.17 ± 0.04	6.36 ± 0.18	7.32 ± 0.00	7.34 ± 0.02	7.83 ± 0.04	4.71	4.77 ± 0.14	<LoD	<LoD
	P11	2.78 ± 0.74	<LoD	5.81 ± 0.04	6.75 ± 0.22	5.93	6.91 ± 0.02	6.33 ± 0.03	<LoD	<LoD	4.66	<LoD	<LoD
July-22	P6	5.34 ± 0.03	5.45 ± 0.10	4.46 ± 0.12	6.92 ± 0.01	<LoD	6.38 ± 0.15	7.41 ± 0.00	<LoD	<LoD	4.74 ± 0.07	6.38	<LoD
	P7	3.77 ± 0.02	4.87 ± 0.11	5.23 ± 0.23	6.16 ± 0.03	<LoD	5.88	7.04 ± 0.06	<LoD	<LoD	4.04	<LoD	<LoD
	P8	5.83 ± 0.03	4.61 ± 0.06	5.22 ± 0.18	7.13 ± 0.04	<LoD	6.27 ± 0.08	7.21 ± 0.01	7.24	<LoD	4.96 ± 0.06	<LoD	<LoD
	P9	5.77 ± 0.01	4.93 ± 0.06	4.59 ± 0.12	6.57 ± 0.05	<LoD	6.08	7.44 ± 0.00	7.32 ± 0.05	<LoD	4.40 ± 0.15	<LoD	<LoD
	P10	5.45 ± 0.02	5.62 ± 0.48	5.00 ± 0.07	7.20 ± 0.02	4.73	6.37 ± 0.45	6.77 ± 0.00	<LoD	<LoD	4.11	<LoD	<LoD
	P11	5.80 ± 0.01	4.70 ± 0.01	4.67 ± 0.25	6.52 ± 0.02	<LoD	<LoD	7.51 ± 0.00	<LoD	<LoD	4.12	<LoD	<LoD
March-23	P6	<LoD	5.48 ± 0.00	5.48 ± 0.25	7.47 ± 0.10	6.04 ± 0.25	6.98 ± 0.16	7.84 ± 0.10	7.54 ± 0.46	<LoD	4.34 ± 0.19	<LoD	<LoD
	P7	Na				Na					Na		
	P8	<LoD	4.04 ± 0.19	4.87 ± 0.07	6.86 ± 0.03	5.32 ± 0.09	7.39 ± 0.29	8.01 ± 0.31	7.36 ± 0.05	<LoD	<LoD	<LoD	<LoD
	P9	3.31 ± 0.05	4.50 ± 0.02	4.36 ± 0.02	7.31 ± 0.07	5.91 ± 0.44	6.92 ± 0.07	7.65 ± 0.14	7.99 ± 1.05	<LoD	4.14 ± 0.05	<LoD	<LoD
	P10	3.15 ± 0.21	5.27 ± 0.07	5.32 ± 0.44	7.27 ± 0.04	5.31 ± 0.36	7.12 ± 0.02	7.58 ± 0.04	8.32 ± 0.04	<LoD	4.29 ± 0.16	<LoD	<LoD
	P11	<LoD	4.60 ± 0.01	5.14 ± 0.03	7.40 ± 0.04	<LoD	7.01	8.11 ± 0.03	8.21 ± 0.05	<LoD	<LoD	<LoD	<LoD

Suppl. Table S14 Levels of faecal indicators, enteric viruses, respiratory viruses in sediments of Albufera Natural Park. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/g); ^bExpressed in (Log10 cfu/g); ^cExpressed in (Log10 gc/g). Na, not analysed

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Suppl. Table S15 Levels of faecal indicators, enteric viruses, respiratory viruses and mean recoveries of PEDV and MgV in surface waters of Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAsV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; PEDV, porcine epidemic diarrhoea virus; MgV, mengovirus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/L); ^bExpressed in (Log10 cfu/L); ^cExpressed in (Log10 gc/L)

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Suppl. Table S16 Levels of faecal indicators, enteric viruses, respiratory viruses in sediments of Ebro River region. Abbreviations: PMMoV, pepper mild mottle virus; HuNoV GI, human norovirus genogroup I; HuNoV GII, human norovirus genogroup II; HAstV, human astrovirus; RV, rotavirus A; HEV, hepatitis E virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; IAV, influenza A virus; RSV, respiratory syncytial virus; pfu, plaque forming units; cfu, colony forming units; gc, genome copies. *one replicate analysed in this sampling campaign. ^aExpressed in (Log10 pfu/g); ^bExpressed in (Log10 cfu/g); ^cExpressed in (Log10 gc/g)

[illegible]