TABLE S3. UniProtKB-Prokka annotation and metadata for 10 circular viral assembled genomes (VAGs).

NOTE: Data for only non-hypothetical proteins presented here; bold indicates VAGs that were presented in Figure 5 of the main text

VAG#	vOTU ID	WGCNA module	Water-column distribution	Genome size (bp)	Total ORFs	Contig hit	EC number	UniProtKB code	UniProtKB gene ID	UniProtKB viral ID	UniProtKB viral lineage
6	VIRSorter_NODE_47_length_54735_cov_16_1727	*none*	abundant at 5m, present at 15m	54,735	91	KNFAEGHP_00023	NA	Q05235	Minor tail protein Gp28	*Mycobacterium phage L5 (Mycobacteriophage L5)*	Viruses › Caudovirales › Siphoviridae › Fromanvirus
						KNFAEGHP_00051	2.7.7.-	P21442	Integrase	*Haemophilus phage HP1 (strain HP1c1) (Bacteriophage HP1)*	Viruses › Caudovirales › Myoviridae › Peduovirinae › Hpunavirus › Haemophilus phage HP1
						KNFAEGHP_00082	NA	Q9ZX29	Probable transcriptional regulator WhiBTM4	*Mycobacterium phage TM4 (Mycobacteriophage TM4)*	Viruses › Caudovirales › Siphoviridae › Timquatrovirus › Mycobacterium virus TM4
7	VIRSorter_NODE_11_length_101329_cov_28_0366	*none*	only present at 5m, largest genome (>100kb), 150-160 ORFs	101,329	159	GCLMJFHJ_00029	NA	P25480	Probable portal protein	*Escherichia phage P2 (Bacteriophage P2)*	Viruses › Caudovirales › Myoviridae › Peduovirinae › Peduovirus
						GCLMJFHJ_00058	1.17.4.1	O64174	Ribonucleoside-diphosphate reductase subunit beta	*Bacillus phage SPbeta (Bacillus phage SPBc2) (Bacteriophage SP-beta)*	Viruses › Caudovirales › Siphoviridae › Spbetavirus
						GCLMJFHJ_00059	1.17.4.1	Q76RD8	Ribonucleoside-diphosphate reductase large subunit	*Vaccinia virus (strain Ankara) (VACV)*	Viruses › Poxviridae › Chordopoxvirinae › Orthopoxvirus › Vaccinia virus
5	**VIRSorter_NODE_30_length_42405_cov_14_8062**	**J (metalimnion)**	**present everywhere but 5m, very abundant at 15m**	**42,350**	**63**	***none***					
8	VIRSorter_NODE_4_length_87432_cov_13_5877	N	present only in metalimnion, especially at 15m	87,432	155	LOFIEDBH_00018	3.4.-.-	P85500	Capsid polyprotein	*Pseudomonas phage PAJU2*	Viruses › Caudovirales › Siphoviridae › Detrevirus › unclassified Detrevirus
						LOFIEDBH_00019	3.4.21.-	Q6QGD7	Prohead protease	*Escherichia phage T5 (Enterobacteria phage T5)*	Viruses › Caudovirales › Siphoviridae › Tequintavirus
9	VIRSorter_NODE_13_length_64037_cov_26_883	T (bacterio-chlorophyll-e-likes pigments)	unique to 28m, pretty abundant	64,037	91	KBGDBGMK_00072	NA	P68928	Terminase small subunit	*Bacillus phage SF6 (Bacteriophage SF6)*	Viruses › Caudovirales › Siphoviridae › unclassified Siphoviridae
						KBGDBGMK_00078	NA	P06153	Immunity repressor protein	*Bacillus phage phi105 (Bacteriophage phi-105)*	Viruses › Caudovirales › Siphoviridae › unclassified Siphoviridae
						KBGDBGMK_00088	2.7.7.7	P19822	DNA polymerase	*Escherichia phage T5 (Enterobacteria phage T5)*	Viruses › Caudovirales › Siphoviridae › Tequintavirus
						KBGDBGMK_00089	NA	P04526	Sliding-clamp-loader gp44 subunit	*Enterobacteria phage T4 (Bacteriophage T4)*	Viruses › Caudovirales › Myoviridae › Tevenvirinae › Tequatrovirus
2	**VIRSorter_NODE_8_length_62171_cov_111_284**	***none***	**unique to metalimnion, especially at 15m**	**62,116**	**106**	**CGDLDOEA_00094**	**NA**	**Q05233**	**Minor tail protein Gp26**	***Mycobacterium phage L5 (Mycobacteriophage L5)***	**Viruses › Caudovirales › Siphoviridae › Fromanvirus**
10	VIRSorter_NODE_10_length_54657_cov_20_8832	*none*	unique to metalimnion	54,657	72	NKNDGJMO_00050	3.2.1.17	P11187	Endolysin	*Bacillus phage phi29 (Bacteriophage phi-29)*	Viruses › Caudovirales › Podoviridae › Picovirinae › Salasvirus
						NKNDGJMO_00065	2.7.7.7	P19822	DNA polymerase	*Escherichia phage T5 (Enterobacteria phage T5)*	Viruses › Caudovirales › Siphoviridae › Tequintavirus
						NKNDGJMO_00069	3.1.11.1	P04536	Exodeoxyribonuclease	*Enterobacteria phage T4 (Bacteriophage T4)*	Viruses › Caudovirales › Myoviridae › Tevenvirinae › Tequatrovirus
						NKNDGJMO_00071	3.1.22.-	P03015	Serine recombinase gin	*Escherichia phage Mu (Bacteriophage Mu)*	Viruses › Caudovirales › Myoviridae › Muvirus
4	**VIRSorter_NODE_29_length_49320_cov_59_3851**	**U (monimo-limnion)**	**abundant at 28 and 40m**	**49,265**	**76**	**ICIEGKNE_00023**	**2.7.7.-**	**P03692**	**DNA primase/helicase**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						ICIEGKNE_00055	**2.7.7.7**	**P19822**	**DNA polymerase**	***Escherichia phage T5 (Enterobacteria phage T5)***	**Viruses › Caudovirales › Siphoviridae › Tequintavirus**
1	**VIRSorter_NODE_36_length_44859_cov_34_6262**	**T (bacterio-chlorophyll-e-likes pigments)**	**only present at 28m**	**44,805**	**50**	**DHLCIPJL_00019**	**3.6.4.-**	**P11107**	**Probable helicase D10**	***Escherichia phage T5 (Enterobacteria phage T5)***	**Viruses › Caudovirales › Siphoviridae › Tequintavirus**
						DHLCIPJL_00021	**2.7.7.6**	**P00573**	**T7 RNA polymerase**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						DHLCIPJL_00025	**NA**	**P03728**	**Portal protein**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						DHLCIPJL_00028	**NA**	**P19727**	**Minor capsid protein**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						DHLCIPJL_00035	**NA**	**P03746**	**Tail tubular protein gp11**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						DHLCIPJL_00036	**NA**	**P03747**	**Tail tubular protein gp12**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
						DHLCIPJL_00041	**3.1.-.-**	**P03694**	**Terminase, large subunit gp19**	***Enterobacteria phage T7 (Bacteriophage T7)***	**Viruses › Caudovirales › Podoviridae › Autographivirinae › Teseptimavirus › Escherichia virus T7**
3	**VIRSorter_NODE_144_length_30467_cov_60_9971**	**B (mixolimnion & oxygen)**	**very abundant at 5m, present at 15m**	**30,412**	**33**	**FIEOIHON_00024**	**NA**	**B4YNG0**	**Putative capsid protein V20**	***Sputnik virophage***	**Viruses › Lavidaviridae › Sputnikvirus › Mimivirus-dependent virus Sputnik**