## **Supplementary Materials:**



## Figure S1. Graphical representation of the Adv IPC plasmids.

A synthetic DNA sequence, AdvIPC, was inserted into two different vectors: pSMART (left) and pGEM-Teasy plasmid (Right). The inserted sequence is shown below (bottom). The synthetic sequence consisted of the portion of the adenovirus hexon gene between nucleotides 17651 and 17746 of Adenovirus 41 Tak (NCBI accession number DQ315364) with nucleotides to 17679 to 17700 replaced with a probe sequence not found in nature [41].

		Number of	Temperature
Target	<b>Cycling Parameters</b>	Cycles	(°C)/Time (mm:ss)
blaSHV/TEM	Initial denaturation	1	95/01:00
	Denaturation of DNA		95/00:10
	Annealing and	50	60/00:45
	extension		00/00.45
sul1	Initial denaturation	1	
	Denaturation of DNA		95/00:10
	Annealing of	50	50/00:15
	primers/probe	00	00,00.10
	Extension		72/00:15
	Melt	1	60-95°C
Bacterial 16S rDNA	Initial denaturation	1	95/00:30
	Denaturation of DNA		95/00:10
	Annealing of	45	50/01:00
	primers/probe	-10	50/01.00
	Extension		72/00:20
AdvIPC	Initial denaturation	1	95/02:00
	Denaturation of DNA	-	95/00:15
	Annealing and	50	20,00020
	extension		65/00:30
Salmon SPC	Initial denaturation	1	95/10:00
	Denaturation of DNA	50	95/00:30
	Annealing and		60/00-60
	extension		00/00.00

 Table S1. QPCR Parameters using the Roche LC480 Thermocycler

		Number of	Temperature
Target	<b>Cycling Parameters</b>	Cycles	(°C)/Time (mm:ss)
Bacterial 16S rDNA	Initial denaturation	1	95/00:30
	Denaturation of DNA		95/00:10
	Annealing	45	50/01:00
	Extension		72/00:20
AdvIPC	Initial denaturation	1	95/01:00
	Denaturation of DNA		95/00:10
	Annealing	45	55/00:30
	Extension		68/00:20
Salmon SPC	Initial denaturation	1	95/10:00
	Denaturation of DNA		95/00:30
	Annealing and extension	45	60/00:60

Table S2. QPCR Parameters using the RotorGene Thermocycler

The limit of detection (LOD) was determined for each qPCR according to rational provide by Bustin et. al. (2009) and Kralik et. al. (2017). At least ten replicate qPCRs were performed with ten-fold dilutions of plasmid standards. The lowest concentration that was detected in at least 90% of the assays was identified as the LOD. In addition, the efficiency and mean square error (LightCycler480) or r<sup>2</sup> (RotorGene) were compiled for each qPCR. Limit of quantification (LOQ) was also determined according to Kralik et. al. (2017) as the lowest detectable concentration with a coefficient of variation below 25%. The coefficient of variation for the *sul1*, *blashvitem*, and *16S* qPCRs at the LOD concentrations were all below 25% indicating that there was no difference between the LOD and LOQ values.

The *blashvittem* hydrolysis probe qPCR was designed to detect a wide variety of SHV and TEM  $\beta$ lactamase variants to increase the likelihood of detecting the resistance genes in the treatment matrices. Alignments of both TEM and SHV-class  $\beta$ -lactamase genes were performed using the DNASTAR software (Megalign application) and sequences downloaded from the NCBI sequence database. Eighteen SHV and 51 TEM-type  $\beta$ -lactamase genes were aligned and scanned manually for probable qPCR primers and probes. The target region identified as being most favorable for the detection of both SHV and TEM genes was between nucleotide 370 and 695 yielding a PCR product of 325 nucleotides (based on  $\beta$ lactamase TEM-1 sequence accession number EF035622). The primers were examined *in silico* for specificity using the NCBI primer BLAST tool (https://blast.ncbi.nlm.nih.gov/Blast.cgi) and were shown to match only  $\beta$ -lactamase genes. Furthermore, DNA sequencing of fifteen amplicons from different wastewater matrices showed that all readable sequences matched  $\beta$ -lactamase genes in the NCBI Genbank sequence database.

The *blashvitem* qPCR was linear over eight orders of magnitude (Figure S2) and showed a limit of detection (LOD) of 70 copies/ $\mu$ l (positive in  $\geq$ 95% of qPCRs) with an average efficiency of 95% <u>+</u>17% and error of 0.12 <u>+</u> 0.18 (n=68).



**Figure S2. TEM-SHV \beta-lactamase qPCR characterization.** Serial ten-fold dilutions of a plasmid containing a blashv/TEM gene were analyzed in triplicate with the blashv/TEM qPCR using the LightCycler480. The plot shows qPCR results from a single representative experiment. Linear regression statistics and the r<sup>2</sup> value are depicted in the box located in the upper right corner.

The *sul1* qPCR showed a LOD of 6 copies/ $\mu$ l (positive in  $\geq$ 95% of qPCRs) with an average efficiency of 86% <u>+</u> 6% (n=18) and error (calculated as mean square error not r<sup>2</sup>) of 0.095.

Assessment of the total bacteria was done by a qPCR targeting a portion of the *16S* ribosomal DNA gene that is well conserved across a broad spectrum of bacteria, as described by Harms et. al. (2003). Samples were pretreated with a heat-labile dsDNase prior to addition of the template to reduce the amount of bacterial DNA in the commercial master mix preparation. The detection limit was determined to be 57 copies/µl (positive in ≥95% of qPCRs) with an average efficiency of 99% ± 5% (n= 17) using the Qiagen RotorGene thermocycler. The linearity was assessed using the r<sup>2</sup> metric resulting in an average of 0.99 (±0.01).

The salmon SPC qPCR was performed as described previously 44]. The AdvIPC qPCR targeted an artificial DNA insert not found in nature. It demonstrated a detection limit of 10 copies/ $\mu$ l with an average efficiency of 97% ± 6% and an r<sup>2</sup> of 0.998 ± 0.002 (n=22).

WRP matrix ª	blasнv/тем (copies/L) <sup>ь</sup>	positive samples	sul1 (copies/L) <sup>ь</sup>	positive samples	16S rDNA (copies/L) <sup>ь</sup>	positive samples
Raw	1.41x10 <sup>7</sup> <u>+</u> 3.31x10 <sup>6</sup>	3/3	7.61x10 <sup>7</sup> <u>+</u> 4.43x10 <sup>7</sup>	3/3	6.58x10 <sup>9</sup> <u>+</u> 5.14x10 <sup>9</sup>	3/3
AS	1.95x10 <sup>7</sup> <u>+</u> 1.06x10 <sup>7</sup>	9/9	1.82x10 <sup>10</sup> <u>+</u> 2.36x10 <sup>10</sup>	9/9	1.21x10 <sup>12</sup> +7.22x10 <sup>11</sup>	9/9
SE	1.09x10 <sup>5</sup> <u>+</u> 9.24x10 <sup>4</sup>	3/3	3.03x10 <sup>7</sup> <u>+</u> 1.85x10 <sup>7</sup>	3/3	5.77x10 <sup>8</sup> <u>+</u> 1.74x10 <sup>8</sup>	3/3
FE	<5.30x10 <sup>3</sup>	0/6	7.89x10 <sup>3</sup> <u>+</u> 9.18x10 <sup>3</sup>	3/6	4.57x10⁵ <u>+</u> 6.30x10⁵	6/6
Filter backwash	1.55x10 <sup>6</sup> <u>+</u> 1.91x10 <sup>6</sup>	5/5	ND	-	ND	-

Table S3. The quantity of *blashvitem*, *sul1* and bacterial 16S genes in full-scale WRP treatment processes: solids fraction.

<sup>a</sup> Samples were collected from a full-scale tertiary WRP. Final effluent refers to tertiary-treated water that was chlorinated and de-chlorinated. Backwash was collected from the filtration tanks during the backwash cycle after approximately 24-hours of continuous use. SE and FE samples were concentrated by HFF. AS: activated sludge; SE: secondary effluent; FE: final effluent.

<sup>b</sup> Results are in qPCR copies per L of original matrix  $\pm$  standard deviation. Final effluents were obtained as grab samples prior to entering the distribution piping. ND= Not done. Averages were calculated using the qPCR concentrations of positive samples and the limit of detection for all samples that were negative. "Less than" values denote all samples were negative and the concentration given represents the LOD for each assay.

WRP matrix <sup>a</sup>	blasнv/тем (copies/L) <sup>ь</sup>	positive samples	sul1 (copies/L) <sup>ь</sup>	positive samples	16S rDNA (copies/L) <sup>ь</sup>	positive samples
Raw	6.31x10 <sup>6</sup> <u>+</u> 2.32x10 <sup>6</sup>	3/3	1.04x10 <sup>9</sup> <u>+</u> 1.70x10 <sup>9</sup>	3/3	6.22x10 <sup>9</sup> <u>+</u> 3.03x10 <sup>9</sup>	3/3
AS	9.29x10⁵ <u>+</u> 4.46x10⁵	3/9	3.57x10 <sup>7</sup> <u>+</u> 2.57x10 <sup>7</sup>	9/9	1.46x10 <sup>9</sup> <u>+</u> 1.43x10 <sup>9</sup>	9/9
SE	9.17x10 <sup>3</sup> <u>+</u> 4.55x10 <sup>2</sup>	3/3	1.88x10 <sup>6</sup> <u>+</u> 1.39x10 <sup>6</sup>	3/3	3.60x10 <sup>8</sup> +2.43x10 <sup>8</sup>	3/3
FE	<5.30x10 <sup>3</sup>	0/6	1.68x10 <sup>4</sup> <u>+</u> 1.85x10 <sup>4</sup>	5/6	6.32x10 <sup>5</sup> <u>+</u> 8.38x10 <sup>5</sup>	6/6
Filter backwash	3.29x10 <sup>5</sup> +2.16x10 <sup>5 d</sup>	2/5	ND	-	ND	-

Table S4. The quantity of *blashvitem*, *sul1* and bacterial 16S genes in full-scale WRP treatment processes: dissolved fraction.

<sup>a</sup> Samples were collected from a full-scale WRP. Final effluent refers to tertiary-treated water that was chlorinated and de-chlorinated. Backwash was collected from the filtration tanks during the backwash cycle after approximately 24-hours of continuous use. SE and FE samples were concentrated by HFF. AS: activated sludge; SE: secondary effluent; FE: final effluent.

<sup>b</sup> Results are in qPCR copies per L of original matrix  $\pm$  standard deviation. Final effluents were obtained as grab samples prior to entering the distribution piping. ND= Not done. Averages were calculated using the qPCR concentrations of positive samples and the limit of detection for all samples that were negative. "Less than" values denote all samples were negative and the concentration given represents the LOD for each assay.

Solids (SA) to a	dissolved (D	F) ratios				
	16S	St. Dev.	sul1	St. Dev.	<b>bla</b> shv/tem	St. Dev.
Raw (SA/DF)	1.94E+00		2.67E+00		3.96E+00	
	1.08E+00		1.48E+00		2.42E+00	
	1.65E-01		9.82E-03		1.28E+00	
Average=	1.06E+00	8.86E-01	1.38E+00	1.33E+00	2.55E+00	1.34E+00
AS (SA/DF)	1.01E+04		1.32E+03		1.09E+01	
(collected with HFF FE	2.75E+03		7.61E+02		1.53E+01	
samples)	3.84E+03		1.47E+03		8.85E+00	
	1.43E+04		3.77E+03		1.12E+01	
	1.75E+02		3.82E+02		2.31E+01	
	6.57E+02		6.19E+02		4.17E+00	
Average=	5.31E+03	5.68E+03	1.39E+03	1.24E+03	1.23E+01	6.44E+00
AS (SA/DF)	6.42E+02		9.38E+01		1.80E+02	
(collected with HFF SE	6.21E+02		2.01E+02		1.57E+02	
samples)	3.03E+02		7.33E+01		3.73E+01	
Average=	5.22E+02	1.90E+02	1.23E+02	6.84E+01	1.25E+02	7.67E+01
HFF SE (SA/DF)	2.31E+00		9.98E+00		7.42E+00	
	2.08E+00		2.09E+01		5.12E+00	
	1.18E+00		3.72E+01		2.26E+01	
Average=	1.86E+00	6.00E-01	2.27E+01	1.37E+01	1.17E+01	9.51E+00
HFF FE (SA/DF)	9.91E-01		5.25E-01		1.00E+00	
	7.29E-01		4.98E-01		1.00E+00	
	1.41E+00		8.37E-01		1.00E+00	
	4.69E-01		2.64E-01		1.00E+00	
	7.54E-02		1.73E+00		1.00E+00	
	5.06E-01		1.00E+00		1.00E+00	
Average=	6.96E-01	4.62E-01	8.09E-01	5.20E-01	1.00E+00	0.00E+00
Combined AS d	ata					
Average=	3.71E+03	5.09E+03	9.65E+02	1.17E+03	4.98E+01	6.38E+01

Table S5. The ratio of solids and dissolved fractions for different wastewater matrices.

Sample a	blasнv/тем vs sul1 b	blacuv/TEM VE 16S b	cull ve 16S b	Number of
	1.005.00	1.00E.00	<i>Sull VS 105 *</i>	samples
Raw to AS (SF)	1.00E-03	1.00E-03	1.88E-01	3
Raw to AS (DF)	>0.05	>0.05	>0.05	3
AS to SE HFF (SF)	>0.05	3.00E-03	1.00E-03	3
AS to SE HFF (DF)	>0.05	>0.05	>0.05	3
SE HFF to FE HFF (SF)	2.00E-03 c	2.00E-03 °	>0.05	6
SE HFF to FE HFF (DF)	2.00E-03 °	2.00E-03 °	>0.05	6
AS to FE HFF (SF)	2.00E-03 °	2.00E-03 °	>0.05	6
AS to FE HFF (DF)	3.00E-03 °	3.00E-03 °	>0.05	6
Raw to FE HFF (SF)	>0.05 °	1.00E-03 °	>0.05	3
Raw to FE HFF (DF)	8.00E-03 °	>0.05 °	>0.05	3

Table S6. ANOVA statistical analysis of ARGs and 16S qPCR concentration between different water types.

<sup>a</sup> The qPCR data (copy/L) was log transformed and subtracted between two matrices to determine the log increase or decrease between two stages. The log difference data were compared via one way ANOVA (SigmaPlot) between the three gene targets.AS: activated sludge; SE: secondary effluent; FE final effluent; HFF: hollow fiber filtration concentrated; SF: solids associated fraction; DF: dissolved fraction. Where normality or equal variance tests failed the Kruskal-Wallis One Way Analysis of Variance on Ranks was used for statistical comparisons.

<sup>b</sup> ANOVA p-values listed. Statistically significant differences are indicated by p-values less than 0.05.

<sup>c</sup> Note that the blashvitem concentrations were below the LOD for all final effluent samples and the assay's LOD was used in these calculations however, the statistical relevance should be interpreted cautiously.

	Solids-as	sociated	Dissolved			
Water matrices <sup>a</sup>	bla:16S t-test ª	Sul:16S t-test <sup>a</sup>	bla:16S t-test ª	Sul:16S t-test <sup>a</sup>		
Raw vs AS	0.015	0.244	0.035	0.807		
AS vs SE	0.074	0.359	0.036	0.145		
SE vs FE	0.018 <sup>b</sup>	0.005	0.044 <sup>b</sup>	0.016		
Raw vs SE	0.004	0.358	0.035	0.807		
Raw vs FE	0.671 <sup>b</sup>	0.006	0.499 <sup>ь</sup>	0.077		
AS vs FE	0.036 <sup>ь</sup>	0.002	<b>0.389</b> ь	0.015		

Table S7. Statistical comparison of the bla or sul1 to 16S rDNA ratio between different water types.

<sup>a</sup> The qPCR concentrations (copies/L) for each gene target were log transformed and divided by the log transformed 16S concentrations. Each ratio was compared between different wastewater matrices via t-test (Microsoft Excel). Statistically significant differences are indicated by p-values less than 0.05. SE and FE samples were HFF concentrated. AS: activated sludge; SE: secondary effluent; FE final effluent; HFF: hollow fiber filtration concentrated; SF: solids associated fraction; DF: dissolved fraction.

<sup>b</sup> The red font denotes samples where the ARG was below LOD for all samples analyzed. The assay's LOD was used in these situations.

		Dissolved		Solids
	Dissolved	fraction +	Solids	fraction +
Sample <sup>a</sup>	fraction <sup>b</sup>	chlorine <sup>b</sup>	fraction <sup>b</sup>	chlorine <sup>b</sup>
Due filtuation	1.23x10 <sup>8</sup> <u>+</u>	2.06x10 <sup>6</sup> <u>+</u>	8.79x10 <sup>6</sup> <u>+</u>	$1.11 \times 10^{5}$ +
Pre-juiration	$1.17 \times 10^{8}$	5.29x10 <sup>6</sup>	1.39x10 <sup>7</sup>	2.27x10 <sup>5</sup>
20 min filtrate	1.07x10 <sup>7</sup> <u>+</u>	$2.84 \times 10^{2} +$	1.33x10 <sup>5</sup> <u>+</u>	<2.00-102
20 min. filtrate	7.47x10 <sup>6</sup>	9.10x10 <sup>1 c</sup>	$9.28 \times 10^4$	<3.00x10 <sup>2</sup>
00 min filmete	1.39x10 <sup>7</sup> <u>+</u>	-21(-10)	$1.60 \times 10^{6} +$	<b>&lt;2</b> 00-102 c
90 min. filtrate	1.04x10 <sup>7</sup>	<3.16X10 <sup>2</sup>	1.56x10 <sup>6</sup>	<3.00X10 <sup>2</sup> °

Table S8. Reduction of exogenous plasmid DNA in tertiary filtration and chlorination processes.

<sup>a</sup> Samples collected prior to filtration but after plasmid addition and at different times during the filtration. Filtrate refers to the water collected immediately after filtration. The last sample was taken after the last volume had entered the filter column.

<sup>b</sup> Data for the dissolved and solids-associated fractions represent the averages and standard deviations from eight independent filtration/disinfection experiment (seven for the solids fraction). Samples that were below the LOD were assigned the LOD. Units are copies per ml of original matrix.

<sup>c</sup> One of the eight experiments showed a positive qPCR signal but below the quantification limit of the assay and therefore the LOD value was assigned.

	Average log difference		Rank sum test p-
Sample <sup>a</sup>	(n=7) <sup>b</sup>	t-test p-value °	value <sup>c</sup>
Pre-filtration	1.39	0.028	0.021
Pre-filtration + chlorine	0.506	0.342	0.867
Post-filtration	1.17	0.007	0.014
Post-filtration + chlorine	-	Below LOD	Below LOD

Table S9. Comparison of plasmid concentrations between the solids-associated and dissolved fractions during filtration and disinfection.

<sup>a</sup> Upon addition of the plasmid, samples were collected before and after filtration. Post-filtration refers to the 90 minute time point after filtration had begun.

<sup>b</sup> Each individual sample was log transformed and the difference calculated between both fractions. The average of the seven log differences is given.

<sup>c</sup> Two-tailed t-test was performed assuming unequal variance between the solids-associated and dissolved fractions of each type of sample using MS Excel (n=7). Rank sum performed on SigmaPlot version 11 (n=7). "Below LOD" signifies that seven of the data points were below LOD therefore accurate statistical determinations cannot be made.

Sample date	Water type	Turbidity (NTU)
8/1/16	Secondary effluent	1.58
8/8/16	Secondary effluent	0.98
8/29/16	Secondary effluent	1.57
9/7/16	Tertiary, disinfected effluent	0.37
9/19/16	Tertiary, disinfected effluent	0.55
9/28/16	Tertiary, disinfected effluent	0.62
10/11/16	Tertiary, disinfected effluent	0.53
10/18/16	Tertiary, disinfected effluent	0.69
10/24/16	Tertiary, disinfected effluent	0.72

Table S10. Turbidity measurements on full-scale WRP waters prior to HFF concentration.

		Raw qPCR data	in copies/L (not l	og transformed)			
Units are qPCR copies/L of matrix	qPCR concen	trations: Solids-associa	ited fraction		qPCI	R concentrations: Disso	lved fraction
	165	sul1	bla		16S	sul1	bla
Raw (SA)	8.48E+09	8.12E+07	1.47E+07	Raw (DF)	4.38E+09	3.04E+07	3.71E+06
	1.05E+10	1.18E+08	1.70E+07		9.73E+09	7.96E+07	7.05E+06
	7.54E+08	2.94E+07	1.05E+07		4.57E+09	3.00E+09	8.17E+06
Average=	6.58E+09	7.61E+07	1.41E+07	Average=	6.22E+09	1.04E+09	6.31E+06
AS (SA)	3.03E+12	7.98E+10	1.28E+07	AS (DF)	2.98E+08	6.05E+07	1.18E+06
	9.56E+11	1.38E+10	1.81E+07		3.48E+08	1.81E+07	1.18E+06
	6.00E+11	9.94E+09	1.04E+07		1.56E+08	6.78E+06	1.18E+06
	1.40E+12	1.15E+10	1.33E+07		9.77E+07	3.05E+06	1.18E+06
unconcentrated samples collected	7.48E+11	1.90E+10	2.73E+07	unconcentrated samples collected	4.28E+09	4.97E+07	1.18E+06
along with HFF FE	9.80E+11	7.44E+09	4.92E+06	along with HFF FE	1.49E+09	1.20E+07	1.18E+06
Average=	1.28E+12	2.36E+10	1.45E+07	Average=	1.11E+09	2.50E+07	1.18E+06
AS (SA)	1.14E+12	6.00E+09	3.23E+07	AS (DF)	1.78E+09	6.40E+07	1.79E+05
unconcentrated samples collected	1.17E+12	1.30E+10	1.94E+07	unconcentrated samples collected	1.88E+09	6.48E+07	1.23E+05
along with HFF SE	8.60E+11	3.09E+09	3.66E+07	along with HFF SE	2.84E+09	4.22E+07	9.80E+05
Average 3 samples above=	1.06E+12	7.37E+09	2.94E+07	Average 3 samples above=	2.17E+09	5.70E+07	4.28E+05
Average of all AS samples=	1.21E+12	1.82E+10	1.95E+07	Average of all AS samples=	1.46E+09	3.57E+07	9.29E+05
HFF SE (SA)	5.69E+08	2.97E+07	6.42E+04	HFF SE (DF)	2.46E+08	2.98E+06	8.66E+03
	4.07E+08	4.91E+07	4.78E+04		1.95E+08	2.35E+06	9.34E+03
	7.54E+08	1.20E+07	2.15E+05		6.40E+08	3.23E+05	9.52E+03
Average=	5.77E+08	3.03E+07	1.09E+05	Average=	3.60E+08	1.88E+06	9.17E+03
HFF FE (SA)	5.96E+05	2.14E+04	5.30E+03	HFF FE (DF)	6.01E+05	4.08E+04	5.30E+03
	1.68E+06	1.72E+04	5.30E+03		2.30E+06	3.45E+04	5.30E+03
	1.43E+05	8.40E+02	5.30E+03		1.02E+05	1.00E+03	5.30E+03
	1.90E+05	6.18E+03	5.30E+03		4.06E+05	2.34E+04	5.30E+03
	1.02E+04	8.40E+02	5.30E+03		1.35E+05	4.86E+02	5.30E+03
	1.25E+05	8.40E+02	5.30E+03		2.47E+05	8.40E+02	5.30E+03
Average=	4.57E+05	7.89E+03	5.30E+03	Average=	6.32E+05	1.68E+04	5.30E+03

## Table S11. Individual qPCR data from all full-scale WRP samples.

 Average
 4.5/1/03
 3.50/1/03
 1.00/1/04
 5.50/1/03

 Red font indicates samples resulted in a negative qPCR and were assigned the assays LOD.

 Data set includes the AS data from the HFF FE and HFF SE samples. SE grab and FE grab data were omitted because of the high percentage of negative samples. SHFF samples showed a higher rate of qPCR signals above LOD. The qPCR data for the AS(DF) samples collected with the HFF SE samples had a standard curve that detected one-log lower than the LOD resulting in positive concentrations that were below the LOD but are reported here because they were within the quantifiable range and above background.

## Table S12. Solids and dissolved plasmid qPCR data from pilot-scale media filtration experiments.

Units for all results are copies	per ml matrix	Eluted i	111 30 UI EI	5								
Experiment Date	Chlori	e Solutio	on made	Diluted date		2nd Eff-	+DNA SN	2nd Eff+DN	A SN+C	2nd Eff+DNA	Pellet	2nd Eff+DNA P+C
7/26	/2012	7,	/13/2012	7	/26/2012		4.96E+07		7.39E+05	1.	07E+06	1.26E+05
8/6	/2012	7,	/13/2012		8/6/2012		3.66E+05	4	1.55E+02			
9/5	/2012	9	9/4/2012		9/5/2012		7.52E+07	3	3.16E+02	1.	86E+06	7.14E+02
9/10	/2012	<u>e</u>	9/7/2012		9/7/2012		1.17E+08	:	L.51E+07	3.	60E+06	6.15E+05
Post-Shock Treatment 10/9/20	)12	1(	0/9/2012	1	0/9/2012		3.51E+07		L.21E+02	7.	77E+06	2.26E+04
Post-Shock Treatment 10/16/1	2	10	/16/2012	10	/16/2012		2.92E+08		L.40E+04	1.	85E+06	9.63E+03
Post-Shock Treatment 10/22/1	2	10	/22/2012	10	/22/2012		3.12E+08		2.77E+05	3.	99E+07	2.74E+03
Post-Shock Treatment 10/29/1	2	10	/29/2012	10	/29/2012		1.01F+08		2.07F+04	5.	46F+06	3.00F+02
	-	/		average	//		1 23E+08		2 02E+06	8	79F+06	1 11F+05
				St. Dev			1 17F+08		5 29E+06	1	39F+07	2 27E+05
				50. 001.			1.172.00		.252.00	1.	352.07	2.272.03
All data checked and valid as o	f 8-4-17. RR			Note that t	he qPCR f	or the 8-	-6-12 pellet fr	actions did r data was no f detection f	not meet t t used. or this set	he efficiency	requirem was 50	ent and thus the
Legend. 2nd Eff= secondary e fraction; SN= supernatant f	effluent; +DN raction; C or	= with A hl= chlo	AdvIPC pla orinated; o	asmid added, copies= qPCR	P=pellet copies	copi extrac	ies/PCR tube. cted from 1m	5ul templat I matrix (0.9	e added pe 5ml for SN	er PCR tube. I ) was eluted i	DNA n 30ul	
Chlorine treated vs no chlorine	Copies	'ml matr	ix	Copies/ml ma	ıtrix	Conc in	pellet vs SN	Copies/ml n	natrix	2nd Eff+DNA	Pellet	2nd Eff+DNA P+C
Log difference (copy/ml)	2nd Ff	+DNA Pe	llet	2nd Eff+DNA	P+C	% of to	tal	copies, initia		Log transform	ned	Log transformed
	0.93	· DINATIC	1 07E+06	2nd En Oliv	1 26F+05	70 01 10	2 10	7	26/2012	Log transform	6.03	5 10
			1.07 - 100		1.202.03		2.10		2/6/2012		0.05	5.10
	3.42		1 86F±04		7 14F±02		ר∧ <b>ר</b>		)/5/2012		6 27	2 00
	0.77		1.00E+00		6 1EF . 05		2.42		10/2012		6.50	2.85
	0.77		3.0UE+Ub		0.135+05		2.98	Post Charl	10/2012		0.50	5.79
	2.54		/.//E+U6		2.26E+04		18.14	Post-Shock	reatmer		6.89	4.35
	2.28		1.85E+06		9.63E+03		0.63	Post-Shock	Treatmer		6.27	3.98
	4.16	2	3.99E+07		2.74E+03		11.35	Post-Shock	Treatmer		7.60	3.44
	4.26	!	5.46E+06		3.00E+02		5.11	Post-Shock	Treatmer		6.74	2.48
	2.62	1	8.79E+06		1.11E+05		6.11	Average diff	erence		2.62	Pellet + Chlorine
	1.42	:	1.39E+07		2.27E+05		6.36	St. Dev diffe	rence		1.42	
Chlorine treated Units for all results are copies per ml r Experiment Date C	natrix. Eluted in	0 ul EB	ed date	20-min Pellet	20-min P+C		90-min Pellet	90-min P+C	20-min SN	20-min SN+C	90-min SN	90-min SN+C
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Dot Shock Treatment 10/9/12	natrix. Eluted in hlorine Solution 7/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/	0 ul EB nade Dilute 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 1.43E+05 8.75E-04	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02	90-min Pellet 1.91E+05  4.68E+05 1.47E+05 4.44E+06 1.37E+06	90-min P+C 5.76E+00  3.00E+02 3.00E+02 3.00E+02 2.00E+02	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.55E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 2 16E+02	90-min SN 3.02 7.71 9.57 6.44 4.48	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12	natrix. Eluted in hlorine Solution 7/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/	0 ul EB nade Dilute 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/9/2012 10/22/2012	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 1.43E+05 8.70E+04 4.32E+04	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02	90-min Pellet 	90-min P+C 5.76E+00  3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.58E+0 1.07E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02
Chlorine treated Units for all results are copies per mr Experiment Date 7/26/2012 8/6/2012 9/10/2012 9/10/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/28/12	matrix. Eluted in hlorine Solution 7/13, 7/13, 9/4, 9/7, 10/9, 10/16, 10/22, 10/29	0 ul EB nade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/16/2012 10/22/2012	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02	90-min Pellet 1.91E+05  4.68E+05 1.47E+05 4.44E+06 1.30E+06 2.49E+06 2.18E+06 2.18E+06	90-min P+C 5.76E+00  5.3.00E+02 3.00E+02 3.00E+02 5.3.00E+	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 1.07E+0 7.07E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02
Chlorine treated Units for all results are copies per mit F Experiment Date C 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12	matrix. Eluted in 7/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/	0 ul EB Dilute 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/9/2012 10/22/2012 10/22/2012 10/29/2012 age cpr/ml ev. cpy/ml ont= below	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 1.43E+05 8.70E+04 4.32E+04 3.15E+05 1.33E+05 9.28E+04 LOD.	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00	90-min Pellet 1.91E+05  4.68E+05 1.47E+05 4.44E+06 2.48E+06 1.56E+06 1.56E+06	90-min P+C 5.76E+00 	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.58E+0 1.07E+0 7.07E+0 1.07E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 2.84E+02 6 9.10E+01	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Less than values were given the value for the assay which is 50 cc.	matrix. Eluted in 7/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 0/ the detection opies/PCR gnal but beyond	0 ul EB ande Dilute 012 012 012 012 012 012 012 012 012 012	2d date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/22/2012 10/22/2012 age cpy/ml ev. cpy/ml ont= below	20-min Pellet 7.23E+04  8.61E+04 1.43E+05 8.70E+04 4.32E+05 1.33E+05 9.28E+04 LOD.	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00	90-min Pellet 1.91E+00 4.68E+00 1.47E+00 1.47E+00 2.49E+00 1.60E+00 1.56E+00	90-min P+C 5.76E+00 	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.47E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02 7 2.84E+02 6 9.10E+01	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E+14
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 co Note that the 90 min P+C gave qPCR s data is shown but the detection 1	matrix. Eluted in T/13/ T/13/ 1/13/ 1/14	0 ul EB ande Dilute 012 012 012 012 012 012 012 012 012 012	2d date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/22/2012 10/22/2012 age cpy/ml ev. cpy/ml ont= below	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 1.43E+05 8.70E+04 4.32E+04 3.15E+05 1.33E+05 9.28E+04 LOD.	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00	90-min Pellet 1.91E+05 4.68E+05 1.47E+05 4.44E+06 2.49E+06 2.18E+06 1.56E+06	90-min P+C 5.76E+00 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 1.11E+02	20-min SN 2.35E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.07E+0	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 2.84E+02 6 9.10E+01	90-min SN 3.02 7.7.1 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/29/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cc Note that the 90 min P+C gave qPCR s data is shown but the detection 1	natrix. Eluted in hlorine Solution 7/13, 9/4, 9/7, 10/9, 10/16, 10/22, 10/29, 0 f the detection opies/PCR ignal but beyond mit of the assay og difference (cc	0 ul EB aade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 10/9/2012 10/16/2012 10/22/2012 10/22/2012 10/22/2012 10/22/2012 10/22/2012 10/22/2012 see c.pt/ml ont= below	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 4.32E+04 4.32E+04 4.32E+04 3.15E+05 1.33E+05 9.28E+04 LOD.	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00	90-min Pellet 1.91E+05  4.68E+05 1.47E+05 4.44E+06 1.30E+06 2.49E+06 1.56E+06 20-min Pellet	90-min P+C	20-min SN 2.35E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.47E+0 90-min Pelle	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 2.84E+02 6 9.10E+01	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04	90-min SN+C E+07 3.16E+02 E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C
Chlorine treated Units for all results are copies per mit Experiment Date C 7/26/2012 8/6/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cc Note that the 90 min P+C gave qPCR s data is shown but the detection L	matrix. Eluted in hlorine Solution 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 10/29/ 10/29/ 10/29/ 0/5/20 10/29/	0 ul EB aade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/9/2012 age cpy/ml ev. cpy/ml ont= below on limit of tt or calculatio trixj Sampl	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00 0.00E+00	90-min Pellet 1.91F+05 4.68E+05 1.47F+05 4.44E+06 2.49E+06 2.49E+06 1.56E+06 2.0-min Pellet Log transforme	90-min P+C 5.76 ±00 3.00 ±02 3.00	20-min SN 2.35E+0 4.26E+0 1.34E+0 2.74E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.47E+0 90-min Pelle Log transfo	20-min SN+C 7 5.84E+01 4 3.166+02 7 3.166+02 6 3.166+02 7 3.166+02 6 3.166+02 7 3.166+02 6 9.10E+01 9.10E+01 9.10E+01	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transfe	90-min SN+C E+07 3.16E+02 E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C C C C C C C D C D C
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Less than values were given the value for the assay which is 50 cr Note that the 90 mi P-C gave qPCR s data is shown but the detection I 1.07E+00	matrix. Eluted in T/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 0/16/ 10/22/ 10/29/ 0/20/ 0	0 ul EB nade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/7/2012 10/16/2012 10/9/2012 10/22/2012 10/22/2012 10/22/2012 age cpt/ml ex. cpy/ml ont= below on limit of th or calculatio trix) Sampl	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00 0.00E+00 NA Pellet 6.03	90-min Pellet 1.91F+05 1.47F+05 4.44E+06 1.30E+06 2.49F+06 1.56E+06 1.56E+06 20-min Pellet Log transforme 4.88	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 90-min Pelle Log transfor	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02 7 3.16E+02 6 3.16E+02 6 9.10E+01 9.10E+01 9.10E+01 9.10E+01 8 0.766 8 0.766	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transfe	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C c c c c c c c c c c c c c c c c c
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cc Note that the 90 mi P-C gave qPCR s data is shown but the detection 1.07E+06  1.86E+06	matrix. Eluted in T/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 0f the detection opies/PCR ignal but beyond imit of the assay og difference (co #VALUE!	0 ul EB nade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/16/2012 10/22/2012 10/2010	20-min Pellet 7.23E+04  1.82E+05 8.61E+04 1.43E+05 8.70E+04 4.32E+05 9.28E+04 LOD. e assay.The raw n purposes. e date 7/26/2012 8/6/2012 8/6/2012	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00 0.00E+00 NA Pellet 6.03 6.27	90-min Pellet 1.91F+05 4.68E+05 1.47F+05 4.44E+06 1.30E+06 1.56E+06 1.56E+06 20-min Pellet Log transforme 4.86 5.26	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 1.07E+0 7.47E+0 90-min Pelle Log transfor 5.2	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 2.84E+02 6 9.10E+01 9 9.0E+01 9	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2.184 4 1.39 1.04	90-min SN+C E+07 3.16E+02 E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C c c c c c c c c c c c c c c c c c
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 c Note that the 90 min P+C gave qPCR s data is shown but the detection 1 data is shown but the detection 1 .07E+06  1.86E+06 3.60E+06	matrix. Eluted in hlorine Solution 7/13, 9/4, 9/7, 10/7, 10/22, 10/29, 0f the detection opies/PCR ignal but beyond mit of the assay og difference (co #VALUE!	0 ul EB nade Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/9/2012 10/9/2012 10/22/2012 1	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+02 0.00E+00 NA Pellet 6.03 6.27 6.56	90-min Pellet 1.91E+05 1.47E+05 4.44E+06 1.30E+06 2.49E+06 1.56E+06 1.56E+06 20-min Pellet Log transforme 4.48 5.26 4.52 4.52	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 1.07E+0 7.47E+0 90-min Pelle Log transfor 5.6 5.1	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02 6 3.16E+02 6 9.10E+01 9 10E+01 9 10E+01 8 0.76 7 2.48 7 2.48	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transf	90-min SN+C E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C C C C C C C C
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Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cr Mote that the 90 mi P-C gave qPCR s data is shown but the detection I 1.07E+006  1.86E+06 3.36E+06 3.99E+07 5.46E+06 2 2nd Eff+DNA Supernatant (cpr/ml mat 4.96E+07 3.66E+05	matrix. Eluted in T/13/ 7/13/ 9/14/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 10/29/ 0/10/20/ 10/29/	D ul EB adde Dilute 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/16/2012 10/22/2012 10/2	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+02 NA Pellet 6.03 0.00E+02 0.00E+02 NA Super 7.760 6.74	90-min Pellet 1.91E+05 4.68E+05 1.47E+05 4.44E+06 1.30E+06 2.49E+06 1.56E+06 2.0-min Pellet Log transformed 4.88 5.26 4.94 5.15 6.55 0.66E+06 20-min Pellet Log transformed 20-min SN Log transformed 7.33 4.65	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 1.07F+0 7.47E+0 90-min Pelle Log transfor 5.2 5.6 6.1 6.6 6.1 1 6.4 6.3 0.6 6 0.4 90-min SN Log transformer 7.4 4.8 8	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 6 9.10E+01 90-min P+C 7 2.84E+02 6 9.10E+01 7 2.84E+02 7 2.84 7 2.48 7 2.48 7 2.48 8 0.76 7 2.48 7 2.48 8 4.39 7 0.60 9 0-min SN+C Log d transformed 8 2.50 9 2.50	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transfr	90-min SN+C E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C C C C C C C C
Chlorine treated Units for all results are copies per mI Experiment Date 7/26/2012 8/6/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cc Note that the 90 min P+C gave qPCR s data is shown but the detection1 Less than values were given the value for the assay which is 50 cc 1.07E+06 1.86E+06 3.30E+07 5.46E+06 3.39E+07 2.04 Eff+DNA Supernatant (cpt/ml mat 4.96E+07 3.66E+05 7.75E+07	natrix. Eluted in Thorine Solution 7/13, 9/4, 9/7, 10/9, 10/16, 10/22, 10/29, 10/29, 0 f the detection opies/PCR ignal but beyond init of the assay og difference (co #VALUE! og difference (co rix)	0 ul EB adde Dilute 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/16/2012 10/22/2012 10/2	20-min Pellet 7.23E+04 	20-min P+C 2nd Eff+DI	3.00E+02 	90-min Pellet 1.91F+05 4.68E+05 1.47F+05 4.44E+06 1.30E+06 2.49E+06 1.56E+06 1.56E+06 20-min Pellet Log transforme 4.86 5.22 4.94 5.15 4.94 5.15 0.666 Log removal= lc 20-min SN Log transformed 7.33 4.63 7.13 4.65 1.55 1	90-min P+C 5.76E+00 3.00E+02 3	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.07E+0 90-min Pellel Log transform 5.2 5.6 5.1 6.6 5.1 6.6 0.4 0.4 0.4 0.90-min SN Log 1.08CM 0.4 0.4 0.4 0.4 0.4 0.5 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 2.84E+02 6 9.10E+01 6 9.10E+01 8 0.76 7 2.48 7 2.48 8 0.76 7 2.48 9 2.48 9 2.48 9 0.06 8 2.50 9 2.50 8 2.50 9 2.50	90-min SN 3.02 7.71 9.57 6.44 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transform SN Log transform	90-min SN+C E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 5.10 2.85 5.79 4.35 3.98 3.44 2.48 2.46 2.42 2.52 2.56 2.56 2.66 2.56 2.56 2.66 2.56
Chlorine treated Units for all results are copies per mit Experiment Date T/26/2012 %/6/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cr Note that the 90 min P+C gave qPCR s data is shown but the detection1 1.07E+06 Less than values were given the value for the assay which is 50 cr 3.60E+05 3.60E+05 3.40E+07 3.66E+05 Later the the supermatant (cpt/ml mat 4.96E+07 3.66E+07 7.752E+07 1.17E+08 2.752E+07 1.17E+08 2.75E+07 2.75	matrix. Eluted in T/13; 7/13; 9/4; 9/7; 10/9; 10/16; 10/22; 10/29; 10/29; of the detection opies/PCR ignal but beyond imit of the assay og difference (co #VALUE! og difference (co rix)	D UI EB adde Dilute UI2 UI2 UI2 UI2 UI2 UI2 UI2 Red f Red f Red f Red f Red sused fc Red sused fc Red sused fc Red sused fc Poy/ml mat Sused fc Po	ed date 7/26/2012 8/6/2012 9/7/2012 10/9/2012 10/9/2012 10/9/2012 10/22/2012 10/22/2012 10/22/2012 are cpt/ml ex. cpt/ml ont= below are nimit of th or calculation trix) Sampl Shock Treat Shock Tr	20-min Pellet 7.23E+04 8.61E+04 1.43E+05 8.61E+04 1.43E+05 8.70E+04 4.32E+04 3.15E+05 9.28E+04 LOD. e assay.The raw n purposes. e date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 8.6/2012 8.6/2012 8.6/2012 8.6/2012 8.6/2012 8.6/2012	20-min P+C 2nd Eff+DI	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00 0.00E+00 0.00E+00 6.27 7.66 6.88 6.27 7.66 6.88 6.27 7.66 7.70 7.66 7.70 7.70 5.56 8.80 7.78 8.80 7.78	90-min Pellet 1.91F+05 	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.36E+0 1.26E+0 2.74E+0 1.58E+0 1.07E+0 1.07E+0 1.07E+0 1.07E+0 1.07E+0 1.07E+0 5.2 5.6 5.1 6.6 6.1 6.4 4.6.3 0.6 0.4 90-min SN Log transformer 7.47E+0 90-min SN Log transformer 7.47E+0 90-min SN Log transformer 7.47E+0 90-min SN Log 1.6 8.6 90-min SN Log 1.6 8.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02 7 3.16E+02 6 3.16E+02 7 3.16E+02 6 9.10E+01 7 2.84E+02 6 9.10E+01 7 2.84 7 2.48 7 2.48 7 2.48 7 2.48 8 0.76 7 2.48 7 2.48 8 0.76 9 .076 9 .076 1 2.48 9 .076 1 2.48 9 .076 1 2.48 1 2.48 1 2.48 1 2.48 1 2.48 1 2.48 1 2.48 1 2.48 2 4.48 1 2.48 2 4.48 1 2.48 2 4.48 2 4.48 3 2.50 9 2.50 1	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2.04 Eff PH Log transference SN Log transform	90-min SN+C E+07 3.16E+02 E+04 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C C C C C C C C C C C C C C C C C C
Chlorine treated Units for all results are copies per mir C Experiment Date T/26/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 Post-Shock Treatment 10/20/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Less than values were given the value for the assay which is 50 cr Note that the 90 min P+C gave qPCk s data is shown but the detection1 1.07E+06 Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value for the assay which is 50 cr Less than values were given the value the distribut	matrix. Eluted in T/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 10/29/ 0/16/ 10/29/ 0/20/ 0/29/ 0/20/ 0/29/ 0/20/ 0	D ul EB D ul E	ed date 7/26/2012 8/6/2012 9/5/2012 9/7/2012 10/16/2012 10/22/2012 10/2	20-min Pellet 7.23E+04 	20-min P+C 2nd Eff+DI	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+00E+02 0.00E+02 0.00E+02 0.00E+02 0.00E+02 0.00E+02 0.00E+02 0.00E+00	90-min Pellet 1.91F+05 4.68F+05 1.47F+05 4.44F+06 2.49F+06 2.49F+06 1.56F+06 1.56F+06 20-min Pellet Log transforme 4.88 5.26 4.99 5.51 4.99 4.66 Log removal= lc 20-min SN Log transformed 7.33 4.62 7.11 7.11 7.12 1.71 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.	90-min P+C 5.76E+00 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 1.07E+0 7.47E+0 90-min Pelle Log transfor 5.2 5.6 5.1 6.6 6.1 6.4 0.4 0.4 0.4 0.10g(Sample 90-min SN Log transformer 7.4 4.8 6.9 0.6 8.6 9.7 7.4 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02 6 3.16E+02 7 3.16E+02 6 9.10E+01 7 2.84E+02 6 9.10E+01 7 2.84E+02 7 2.84 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 7 2.48 9 .0.76 9 .0.76 8 2.50 8 2.50 8 2.50 8 2.50 9 2.50	90-min SN 3.02 7.71 9.57 6.44 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transform	90-min SN+C E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-14 C C C C C C C C C C C C C C C C C C C
Chlorine treated Units for all results are copies per ml r Experiment Date 7/26/2012 9/5/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Less than values were given the value for the assay which is 50 cc for	natrix. Eluted in hlorine Solution 7/13, 9/4, 9/7, 10/9, 10/16, 10/22, 10/29, 10/29, of the detection opies/PCR ignal but beyond mit of the assay og difference (co #VALUE! og difference (co rix)	D ul EB adde Dilute 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 10/16/2012 10/16/2012 10/22/2012 10/2 10/	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+02 0.00E+00 NA Pellet 6.03 0.00E+02 NA Super 7.760 6.74 NA Super 7.770 5.55 7.888 8.077 7.54 8.40 8	90-min Pellet 1.91E+00 4.68E+00 1.47E+00 4.44E+00 1.30E+00 2.49E+00 1.56E+00 1.56E+00 20-min Pellet Log transforme 4.86 5.26 4.94 5.15 0.66E Log removal= 10 20-min SN Log transformed 20-min SN Log transformed 7.33 4.62 7.13 4.62 7.13 4.62 7.13 7.11 6.44 7.22 7.12 7.11 7.11 6.44 7.22 7.12	90-min P+C 5.76E+00 7 3.00E+02 3	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.07E+0 90-min Pelk Log transfor 5.2 5.6 5.1 6.6 6.1 6.4 6.3 0.6 6.3 0.6 90-min SN Log transformer 7.4 4.8 6.9 6.8 6.8 6.8 7.3 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 2.84E+02 6 9.10E+01 8 0.76 7 2.84E 9 0-min P+C rr Log transforme 8 0.76 7 2.48 7 2.48 8 4.39 7 0.60 9 0-min SN+C Log 4 transformed 8 2.50 8 2.50 8 2.50 8 2.50 1	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transform	90-min SN+C E+07 3.16E+02 4-04 3.16E+02 4-06 3.16E+02 4+07 3.16E+02 4+07 3.16E+02 4+07 3.16E+02 4+07 3.16E+02 4+07 3.16E+02 4-07 5.10 4-0 5 5.10 5.10 5.10 5.10 5.10 5.10 5.10 5
Chlorine treated Units for all results are copies per mI Experiment Date 7/26/2012 9/5/2012 9/5/2012 9/10/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/9/2012 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/22/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cr Note that the 90 min P+C gave qPCR s data is shown but the detection1 1.07E+06 1.86E+06 3.30E+07 5.46E+06 3.39E+07 5.46E+06 3.36E+06 3.36E+05 7.52E+07 1.17E+08 3.35E+07 3.56E+05 3.35E+07 2.92E+08 3.12E+08 3.12E	natrix. Eluted in T/13, 7/13, 7/13, 9/4, 9/7, 10/9, 10/16, 10/22, 10/29, 10/29, 10/29, 0 f the detection opies/PCR ignal but beyond imit of the assay og difference (co #VALUE! og difference (co rix)	0 ul E8 adde Dilute 012 012 012 012 012 012 012 012 012 012	ed date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 9/7/2012 10/16/2012 10/26/201 10/26/20 10/26/20 10/26/20 10/26/20 10/26/20 10/26/20 10/26/20 10/26/20	20-min Pellet 7.23E+04 	20-min P+C	3.00E+02 	90-min Pellet 1.91F+05 4.68F+05 1.47F+05 4.44F+06 1.30F+06 2.49F+06 2.18F+06 1.56F+06 1.56F+06 20-min Pellet Log transformed 4.86 5.226 1.55 0.66 Log removal= lc 20-min SN Log transformed 7.33 4.62 5.55 0.66 1.55 0.65 1.55 1.	90-min P+C 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 7.07E+0 7.07E+0 90-min Pelle Log transform 5.2 5.2 5.6 5.1 6.6 5.1 6.6 0.4 90-min SN Log transformer 7.4 4.8 6.9 6.8 6.7 3.7 2.7 2.7 2.7 2.7 2.7 2.7 2.7 2	20-min SN+C 7 5.84E+01 4 3.166+02 7 3.166+02 7 3.166+02 7 3.166+02 6 3.166+02 7 3.166+02 6 9.10E+01 8 0.76 7 2.84E+02 6 9.10E+01 7 2.84E+02 6 9.10E+01 7 2.84E+02 6 9.10E+01 7 2.84E+02 6 9.10E+01 9.0E+01 9.0E+01 90-min P+C 1 2.88 4 2.48 8 4.39 7 0.60 8 4.39 7 0.60 8 2.50 8 5 8 2.50 8 5 8	90-min SN 3.02 7.71 9.57 6.44 2.39 1.82 1.84 1.39 1.04 2nd Eff P+ Log transform SN Log transform	90-min SN+C E+07 3.16E+02 E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 5.10 E+07 5.10 E+07 4.35 5.50 2.85 5.79 4.35 3.98 3.44 2.48 2.62 1.02 E+07 SN+C E-0 Log transformed 7.70 5.86 2.66 2.66 5.5 2.66 2.66 7.78 2.25 5.56 2.66 5.6 2.66 5.79 5.56 2.66 5.78 5.56 2.66 5.78 5.56 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.
Chlorine treated Units for all results are copies per mit Experiment Date T/26/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/16/12 Post-Shock Treatment 10/29/12 Less than values were given the value for the assay which is 50 cr Note that the 90 min P+C gave qPCR s data is shown but the detection1 1.07E+06 1.8EE+06 2nd Eff+DNA Supernatant (cpy/ml mat 4.96E+07 7.52E+07 1.17E+08 3.51E+07 2.92E+08 3.12E+08 1.01E+08	matrix. Eluted in T/13/ 7/13/ 9/4/ 9/7/ 10/9/ 10/16/ 10/22/ 10/29/ 0 f the detection opies/PCR ignal but beyond imit of the assay og difference (co #VALUE! og difference (co	b ul EB adde Dilute 1012 10	ed date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 10/16/2012 10/29/2012 10/201 10/29/2012 10/20 1	20-min Pellet 7.23E+04 8.61E+04 1.43E+05 8.61E+04 4.32E+05 1.33E+05 9.28E+04 LOD. e assay.The raw n purposes. e date 7/26/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 8.46/2012 Xverage difference 5. Dev difference 5. Dev difference 5. Dev difference 7/26/2012 8/6/2012 8/6/2012 8/6/2012 8/6/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 9/5/2012 10/9/2012 ment 10/9/2012 tment 10/9/2012 tment 10/9/2012 tment 10/9/2012 tment 10/9/2012 tment 10/9/2012 tment 10/9/2012 tment 10/9/2012	20-min P+C 2nd Eff+DI	3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 3.00E+02 0.00E+000 0.00E+000E+0	90-min Pellet 1.91F+05 4.68E+05 1.47F+05 1.47F+06 2.49E+06 2.49E+06 1.56E+06 1.56E+06 20-min Pellet Log transforme 4.88 5.26 5.27 1.56E 0.66 Log removal= lo 20-min SN Log transformed 7.33 4.66 7.11 7.10 6.44 7.22 7.00 6.88 1.00	90-min P+C 3.00E+02 3.0E	20-min SN 2.35E+0 4.26E+0 1.34E+0 1.26E+0 2.74E+0 1.07E+0 1.07E+0 7.47E+0 90-min Pelle Log transfor 5.2 5.6 6.1 6.4 6.3 0.4 6.4 90-min SN Log transformed transformed 7.4.4 8.6 9.6 8.8 6.6 7.3 3.7 7.2 0.8 8 8 6.7 3.2 7.2 0.8 8 8 6.8 6.7 3.3 7.2 2 0.8 8 8 6.8 6.7 3.3 7.2 2 0.8 8 7.2 0.8 8 7.2 0.8 8 7.2 0.8 8 7.2 0.8 8 7.2 0.8 8 7.2 0.8 7.2 0.8 7.2 0.8 8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 0.8 7.2 7.2 0.8 8 7.2 7.2 0.8 7.2 7.2 0.8 8 7.2 7.2 0.8 7.2 7.2 0.8 7.2 7.2 0.8 7.2 7.2 0.8 7.2 7.2 0.8 7.2 7.2 0.8 7.2 7.2 7.2 0.8 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2	20-min SN+C 7 5.84E+01 4 3.16E+02 7 3.16E+02 6 3.16E+02 6 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 3.16E+02 7 2.84E+02 7 2.84E+02 7 2.84 8 0.76 7 2.84 7 2.48 7 2.48 7 2.48 8 0.76 7 2.48 7 2.48 8 4.39 7 0.60 2 4.48 8 4.39 7 0.60 2 4.48 8 4.39 7 0.60 2 4.48 8 2.50 8 2.50 9 2.50 8 2.50 6 2.50 6 2.50 6 2.50 6 2.50 6 2.50 6 2.50 6 2.50 6 2.50 6 2.50	90-min SN 3.02 7.71 9.57 6.44 4.48 2.39 1.82 1.84 1.39 1.04 2.04 Eff PH Log transference SN Log transference SN	90-min SN+C E+07 3.16E+02 E+07 3.16E+02 E+06 3.16E+02 E+06 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 3.16E+02 E+07 6.08E-12 C C C C C C C C C C C C C C C C C C C

Units for all results are copies per m	Il matrix. Eluted in 30 ul E	В				
Experiment Date	Chlorine Solution made	Diluted date	Post-Column BLANK SN	Post-Column BLANK SN+C	Post-Column BLANK Pellet	Post-Column BLANK P+C
7/26/2012	7/13/2012	7/26/2012		0.00E+00	0.00E+00	0.00E+00
8/6/2012	7/13/2012	8/6/2012	0.00E+00	0.00E+00		
9/5/2012	9/4/2012	9/5/2012	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9/10/2012	9/7/2012	9/7/2012	0.00E+00	0.00E+00	3.16E+03	0.00E+00
Post-Shock Treatment 10/9/2012	10/9/2012	10/9/2012	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Post-Shock Treatment 10/16/12	10/16/2012	10/16/2012	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Post-Shock Treatment 10/22/12	10/22/2012	10/22/2012	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Post-Shock Treatment 10/29/12	10/29/2012	10/29/2012	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Post column blank= filtrate sample t	aken before the plasmid v	vas added, negative	control. BLANK= sample o	of the secondary effluent colle	cted before the addition of the	
plasmid, negative co	ontrol. Post shock treatme	ent= after the filter i	matrix was treated with a l	high dose of chlorine to decrea	ase bio-fouling	
Experiment Date	Chlorine Solution made	Diluted date	2nd Eff BLANK SN	2nd Eff BLANK SN+C	2nd Eff BLANK Pellet	2nd Eff BLANK P+C
7/26/2012	7/13/2012	7/26/2012	<50	<50	<50	<50
8/6/2012	7/13/2012	8/6/2012	<50	<50		
9/5/2012	9/4/2012	9/5/2012	<50	<50	<50	<50
9/10/2012	9/7/2012	9/7/2012	<50	<50	<50	<50
Post-Shock Treatment 10/9/2012	10/9/2012	10/9/2012	<50	<50	<50	<50
Post-Shock Treatment 10/16/12	10/16/2012	10/16/2012	<50	<50	<50	<50
Post-Shock Treatment 10/22/12	10/22/2012	10/22/2012	<50	<50	<50	<50
Post-Shock Treatment 10/29/12	10/29/2012	10/29/2012	<50	<50	<50	<50