



CITY OF PORTLAND ENVIRONMENTAL SERVICES

Erickson



Columbia Blvd. Wastewater Treatment Plant, 5001 N. Columbia Blvd., Portland, OR 97203-2098
(503) 823-2400, FAX (503) 823-2409

13 April 1994

Lyle Christensen, DEQ Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland OR 97201-4959

Dear Mr. Christensen,

Our NPDES permit requires that we conduct quarterly bioassay on chlorinated plant effluent during calendar 1994.

For the first quarter, we collected extra composite (24 hour) samples of chlorinated plant effluent on March 3, 6, and 8. These samples were sent each next-day to CH2M in Corvallis.

Their tests result are:

	acute <u>LC50</u>	chronic survival <u>IC25</u>	chronic growth <u>IC25</u>	chronic <u>NOEC</u>	<u>IWC</u>
fathead minnow	>100.0%	>100.0%	70.3%	25.0%	0.24%
water flea	>100.0%	>100.0%	45.9%	50.0%	0.24%
green alga	>100.0%	>100.0%	>100.0%	100.0%	0.24%

The IWC ratio was calculated from a previously determined 7Q10 in our receiving stream (Willamette River) of 5910 cfs and a plant average discharge during this sample period of 14.0 cfs.

In conclusion, our effluent was not acutely toxic at the edge of the zone-of-initial-dilution. This bioassay indicates no acute toxicity for 100% effluent. From a previous mixing study, our ZID dilution is 1.12% of whole effluent.

Similarly, our effluent was not chronically toxic at the edge of the mixing-zone. This bioassay indicates no chronic toxicity at dilutions equal to or less than 25% effluent. From the same mixing study, our MZ dilution is 0.53% of whole effluent.

I am attaching a copy of our contractor's letter and I have available an extra copy of CH2M's full report if you wish.

Please call me at 823-2318 if you have questions.

Sincerely,

Larry Erickson

Larry Erickson
Operations Manager
Tryon Creek WWTP

MEMORANDUM

CH2M HILL

TO: Larry Erickson/Tryon Creek

COPIES: Mike Stanaway/CH2M HILL

FROM: Richard Raymond/CH2M HILL

DATE: March 31, 1994

SUBJECT: Tryon Creek Bioassay Results

PROJECT: TSE142.31

Effluent from the Tryon Creek waste water treatment plant demonstrated chronic toxicity to test organisms in bioassay tests conducted March 4 through 11, 1994. The concentration with no observed effect (NOEC) was 25 percent effluent for the fathead minnow test and 50 percent for the water flea (*Ceriodaphnia dubia*) test.

DEQ and EPA regulations allow for some toxicity in the effluent if there is an established mixing zone at the outfall, but there can be no chronic toxicity outside of the mixing zone. There must be sufficient dilution within the mixing zone to reduce the concentration of effluent below that which causes toxicity. For the effluent most recently tested, the dilution required would be at least 3:1.

The Tryon Creek outfall has an established mixing zone extending 200 feet downstream from the outfall. The mixing zone includes a zone of initial dilution (ZID) of 20-ft radius centered on each port of the outfall diffuser.

CH2M HILL conducted an evaluation of the Tryon Creek mixing zone in 1993 to establish the dilution that was achieved within the mixing zone and the ZID. The results of that study show that the dilution achieved at the edge of the mixing zone under summertime conditions is 187:1 or 0.53 percent effluent. Dilution at the edge of the ZID is 89:1 or 1.12 percent effluent.

The results of the recent bioassay test, combined with the results of the mixing zone study, show that Tryon Creek effluent is well within the range necessary to comply with DEQ and EPA requirements.



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Lyle Christensen, DEQ Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland OR 97201-4959

Dear Mr. Christensen,

Once again I am making corrections on this March's preprinted DMR.

Beginning with the April DMR, I expect our preprints to accurately state our permitted discharge conditions, thus ending the need to make corrections.

Over the past several months I have had discussions with Lucita Valiere (our ATA contractor in Seattle). I was quite impressed by her willingness to spend the time discussing the necessary corrections.

And I need to point out several missing data points on this March DMR.

For March 1, we do not have an effluent TSS. We had a lab procedural error where tare+solids weight was less than tare weight alone, giving a negative solids value.

For March 2 and 12, we do not have influent and effluent BODs. For each of these days, we experienced excessive dissolved oxygen depletion for the BOD blanks, which compromised each BOD set.

Please call me at 823-2318 if you have questions.

Sincerely,

Larry Erickson
Operations Manager
Tryon Creek WWTP



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13 April 1994

Lyle Christensen, DEQ Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland OR 97201-4959

Dear Mr. Christensen,

With this March DMR, we have completed 15 months of Enterococcus testing and reporting. Our NPDES permit required 12 months of testing and reporting.

Effective with the April DMR, we will be deleting Enterococcus testing and reporting.

We hope our data has been useful in the DEQ's assessment of indicator organisms available for monitoring disinfection.

Please call me at 823-2318 if you have questions.

Sincerely,

Larry Erickson
Operations Manager
Tryon Creek WWTP

cc:

Greg Hettman
Tim Neketin
Marvieta Redding

TRYON CREEK PLANT: CITY OF PORTLAND CLACKAMAS COUNTY
PLANT TYPE: ACTIVATED SLUDGE

PERMIT NO. 33409-J (FILE 70735)

POPULATION SERVED: 31000

RECEIVING STREAM: WILLAMETTE RIVER

WASTEWATER TREATMENT PLANT MONITORING REPORT

WASTEWATER TREATMENT PROCESS CONTROL

NUTRIENTS

Date	FLOW		PLANT INFLUENT				PLANT EFFLUENT												ANAEROBIC DIGESTER				AERATION BASIN			Sludge Flow to			PLANT EFFLUENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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PLANT EFFLUENT PERMIT STANDARDS: pH 6.0-9.0; Fecal Coli 200/100 CL2 Res. 1.0 (Daily Max)

*Sus Sol 20/30 mg/l Sus Sol Discharged 1384/ 2077 lbs

*BOD 20/30 mg/l BOD Discharged 1384/ 2077 lbs

*May 1 - October 31 / November 1 - April 30

I certify that I am familiar with the information contained in this report and that to the best of my knowledge such information is true and complete.

Name and Title: Larry K. Erickson
Operations Manager

Signature *Larry K. Erickson*

Remarks: (Improvements, Operational Changes, Weed Control Programs, Etc.)

Influent BOD5 is a Blended Sample Sludge Hauled to Columbia Blvd WTP

All Test Data Subject to Variability of Test

Page 1									
Date Apr-94	Plant Effluent Nutrients				Flow		Weather		Precip "
	Total P	NH3-N	NO3 + NO2-N	TKN	Portland	Lake Oswego	Temperature Max o F	Min o F	
	mg/l	mg/l	mg/l	mg/l	mgd	mgd			
4/1/94					3.74	4.21	49		0.00
4/2/94					3.23	4.29	69	43	0.00
4/3/94					3.23	3.92	64	45	0.00
4/4/94					3.45	4.08	66	44	0.00
4/5/94					3.66	4.05	58	41	0.25
4/6/94					4.37	4.59	63	45	0.35
4/7/94					4.19	4.67	60	45	0.24
4/8/94					5.33	6.74	62	48	0.61
4/9/94					4.94	6.38	66	46	0.11
4/10/94					4.57	5.63	65	46	0.65
4/11/94					4.26	5.05	77	38	0.00
4/12/94					4.24	4.95	69	46	0.00
4/13/94					4.01	4.42	53	39	0.10
4/14/94					3.94	4.25	69	39	0.00
4/15/94					3.75	4.09	82	40	0.00
4/16/94					3.80	4.31	83	47	0.00
4/17/94					3.70	4.13	80	50	0.00
4/18/94					3.41	3.89	89	52	0.00
4/19/94					3.43	4.04	77	50	0.00
4/20/94					3.22	3.77	82	45	0.00
4/21/94					3.33	3.73	75	51	0.00
4/22/94					3.34	3.91	75	42	0.00
4/23/94					3.47	4.00	69	43	0.15
4/24/94					3.67	3.99	71	41	0.00
4/25/94					3.88	3.82	75	46	0.00
4/26/94					3.35	3.84	70	44	0.10
4/27/94					3.14	3.84	77	47	0.00
4/28/94					3.10	3.76	67	45	0.00
4/29/94					3.21	3.75	70	50	0.15
4/30/94					3.20	3.82	71	47	0.00
5/1/94									
Max	0.00	0.00	0.00	0.00	5.33	6.74	89	52	0.65
Min	0.00	0.00	0.00	0.00	3.10	3.73	49	38	0.00
Avg	#DIV/O!	#DIV/O!	#DIV/O!	#DIV/O!	3.74	4.33	70	45	0.09
Sum					112.16	129.92			2.71

PRIMARY TREATMENT

INFLUENT									EFFLUENT				Det	No.
Date	Flow	Susp Sol.		BOD5		Pop	Temp	pH	Susp Sol.		BOD5		Time	Basins
Apr-94	mgd	mg/l	lbs	mg/l	lbs	Equiv	oC		mg/l	lbs	mg/l	lbs	hrs	On
4/1/94	7.95	177	11736	200	13261	78004	14	7.4					2.8	4
4/2/94	7.52	136	8529	135	8467	49805	14	7.1					3.0	4
4/3/94	7.15	163	9720	175	10435	61385	14	7.3					3.2	4
4/4/94	7.53	172	10802	210	13188	77577		7.5					3.0	4
4/5/94	7.71	182	11703	210	13503	79431	14	7.4					2.9	4
4/6/94	8.96	180	13451	175	13077	76924	14	7.3					1.9	3
4/7/94	8.86	141	10419	140	10345	60853		7.4					1.9	3
4/8/94	12.07	139	13992	105	10570	62175	13	7.4					1.9	4
4/9/94	11.32	118	11140	120	11329	66642		7.0					2.0	4
4/10/94	10.20	110	9357	125	10634	62550		7.4					2.2	4
4/11/94	9.31	130	10094	135	10482	61660	14	7.6					2.4	4
4/12/94	9.19	130	9964	135	10347	60865	14	7.3					2.5	4
4/13/94	8.43	147	10335	170	11952	70306	14	7.2					2.7	4
4/14/94	8.19	147	10041	185	12636	74331	14	7.4					2.8	4
4/15/94	7.84	167	10919	150	9808	57693	14	7.2					2.9	4
4/16/94	8.11	175	11837	130	8793	51723	14	7.1					2.8	4
4/17/94	7.83	171	11167	220	14366	84509	14	7.2					2.9	4
4/18/94	7.30	177	10776	190	11568	68045		7.5					3.1	4
4/19/94	7.47	174	10840	190	11837	69629	15	7.4					3.0	4
4/20/94	6.99	188	10960	205	11951	70299	16	7.3					3.2	4
4/21/94	7.06	198	11658	210	12365	72735		7.4					3.2	4
4/22/94	7.25	205	12395	230	13907	81806	15	7.3					3.1	4
4/23/94	7.47	216	13457	205	12771	75126	15	7.3					3.0	4
4/24/94	7.66	200	12777	180	11499	67642	15	7.4					2.9	4
4/25/94	7.70	186	11945	190	12201	71773		7.6					2.2	3
4/26/94	7.19	171	10254	175	10494	61728	16	7.4					3.1	4
4/27/94	6.98	237	13797	255	14844	87320	15	7.0					3.2	4
4/28/94	6.86	204	11671	200	11442	67309		7.4					3.3	4
4/29/94	6.96	238	13815				16	7.1					3.2	4
4/30/94	7.02	210	12295	215	12588	74044	16	7.2					3.2	4
5/1/94														
Max	12.07	238	13992	255	14844	87320	16	7.6	0	0	0	0	3.3	4
Min	6.86	110	8529	105	8467	49805	13	7.0	0	0	0	0	1.9	3
Avg	8.07	173	11395	178	11747	69100	14		####	####	####	####	2.8	4
Sum	242.08		341845		340661				0		0			

Page 3		SECONDARY EFFLUENT											
Date	Flow	Susp Sol.		BOD5		FCSS		SBD	RSSS	Ovr-flow	pH	No.	
Apr-94	mgd	mg/l	lbs	mg/l	lbs	mg/l	lbs	ft	mg/l	Rate gpd / ft2		Basins On	
4/1/94	7.95	10	663	16	1061	2130	32333	2.5		527		2	
4/2/94	7.52	9	564	16	1003	2584	39225	3.0		499		2	
4/3/94	7.14	11	655	21	1250	2242	34034	3.0		473		2	
4/4/94	7.51	14	877	26	1629	3083	46800	3.2		498		2	
4/5/94	7.68	15	961	25	1601	1889	28675	2.5		509		2	
4/6/94	8.94	18	1342	26	1938	1973	29950	2.4		593		2	
4/7/94	8.84	14	1032	22	1622	2379	36113	2.8		586		2	
4/8/94	12.05	47	4725	32	3217	2225	33776	4.6		800		2	
4/9/94	11.31	12	1132	20	1887	3096	46997	4.5		750		2	
4/10/94	10.17	12	1018	22	1866	3007	45646	4.3		674		2	
4/11/94	9.29	19	1472	29	2246	2673	40576	3.3		616		2	
4/12/94	9.17	19	1453	27	2065	2668	40500	3.1		608		2	
4/13/94	8.41	22	1543	28	1964	2585	39240	3.2		558		2	
4/14/94	8.16	17	1158	30	2043	2159	32774	2.5		541		2	
4/15/94	7.82	18	1175	30	1958	2120	32182	2.4		519		2	
4/16/94	8.11	16	1082	26	1759	1874	28447	2.4		538		2	
4/17/94	7.82	18	1174	34	2217	2757	41851	2.6		519		2	
4/18/94	7.28	20	1215	26	1579	2059	31256	2.1		483		2	
4/19/94	7.45	13	807	12	745	2329	35354	2.5		494		2	
4/20/94	6.97	6	349	10	581	1500	22770	2.2		462		2	
4/21/94	7.01	12	702	11	643	1790	27172	1.8		465		2	
4/22/94	7.23	9	543	11	664	1701	25821	2.2		480		2	
4/23/94	7.47	11	685	12	748	1852	28113	2.0		495		2	
4/24/94	7.65	8	510	14	893	2401	36447	2.0		507		2	
4/25/94	7.69	12	770	14	898	2058	31240	1.8		510		2	
4/26/94	7.18	8	479	16	958	1960	29753	2.3		476		2	
4/27/94	6.96	9	522	17	987	2380	36128	2.4		461		2	
4/28/94	6.84	7	399	18	1027	1507	22876	4.6		454		2	
4/29/94	6.93	7	405	18	1040	1614	24501	1.8		460		2	
4/30/94	7.01	7	409	13	760	1728	26231	2.0		465		2	
5/1/94													
Max	12.05	47	4725	34	3217	3096	46997	4.6	0	800		2	
Min	6.84	6	349	10	581	1500	22770	1.8	0	454		2	
Avg	8.05	14	994	21	1428	2211	33559	2.7	#DIV/O!	534		2	
Sum	241.58		29821		42850								

Page 4											Fecal Coliform Count G Ave				
PLANT EFFLUENT															
Date	Flow	Susp Sol.			BOD5			Cl2 Cntct	Cl2	Cl2	Fecal Coliform Count	G Ave	DO	pH	Flow to Cl2 Str
Apr-94	mgd	mg/l	lbs	% Rem	mg/l	lbs	% Rem	Time hrs	Feed lbs/day	Res mg/l					
4/1/94	7.95	6	398	97	12	796	94	2.1	60	0.5	110		7.4	7.5	0.00
4/2/94	7.52	6	376	96	12	753	91	2.2	60	0.5		93	7.6	7.3	0.00
4/3/94	7.14	5	298	97	15	893	91	2.4	40	0.4			7.0	7.4	0.00
4/4/94	7.51	5	313	97	16	1002	92	2.2	50	0.5	32			7.6	0.00
4/5/94	7.68	10	641	95	26	1665	88	2.2	50	0.5	76		6.7	7.5	0.00
4/6/94	8.94	12	894	93	25	1863	86	1.9	150	0.5	34		7.2	7.5	0.00
4/7/94	8.84	10	737	93	23	1696	84	1.9	90	0.6	12			7.4	0.00
4/8/94	12.05	10	1005	93	24	2413	77	1.4	160	0.6			7.1	7.5	0.00
4/9/94	11.31	10	944	92	24	2265	80	1.5	160	0.6		32		7.2	0.00
4/10/94	10.17	10	848	91	25	2120	80	1.7	190	0.7				7.5	0.00
4/11/94	9.29	9	697	93	24	1859	82	1.8	200	0.7	7		7.4	7.3	0.00
4/12/94	9.17	8	612	94	23	1759	83	1.8	120	0.6	32		7.8	7.4	0.00
4/13/94	8.41	6	421	96	21	1473	88	2.0	170	0.6	2		7.8	7.3	0.00
4/14/94	8.16	7	477	95	23	1566	88	2.1	90	0.6	17		7.6	7.3	0.00
4/15/94	7.82	8	522	95	30	1958	80	2.2	60	0.6	8		7.2	7.3	0.00
4/16/94	8.11	8	541	95	25	1691	81	2.1	50	0.6		9	7.6	7.2	0.00
4/17/94	7.82	5	326	97	23	1500	90	2.2	40	0.5			7.2	7.5	0.00
4/18/94	7.28	6	364	97	15	911	92	2.3	30	0.5	3			7.4	0.00
4/19/94	7.45	4	248	98	10	621	95	2.3	50	0.6	2250		6.7	7.3	0.00
4/20/94	6.97	4	232	98	9	523	96	2.4	60	0.6	10		7.4	7.4	0.00
4/21/94	7.01	4	234	98	7	409	97	2.4	50	0.6	70			7.5	0.00
4/22/94	7.23	4	241	98	8	483	97	2.3	40	0.5	33		7.1	7.3	0.00
4/23/94	7.47	5	311	98	8	498	96	2.3	40	0.5		44	7.4	7.5	0.00
4/24/94	7.65	2	128	99	11	702	94	2.2	60	0.6			7.8	7.5	0.00
4/25/94	7.69	5	321	97	8	513	96	2.2	80	0.6	70			7.4	0.00
4/26/94	7.18	4	240	98	10	599	94	2.3	80	0.6	55		7.3	7.4	0.00
4/27/94	6.96	3	174	99	9	522	96	2.4	110	0.7	32		7.2	7.5	0.00
4/28/94	6.84	3	171	99	9	513	96	2.5	60	0.5	35			7.5	0.00
4/29/94	6.93	5	289	98	8	462		2.4	10	0.5	44		6.9	7.6	0.00
4/30/94	7.01	3	175	99	9	526	96	2.4	30	0.5		45	7.1	7.4	0.00
5/1/94															
Max	12.05	12	1005	99	30	2413	97	2.5	200	0.7	2250.0	93.0	7.8	7.6	0.00
Min	6.84	2	128	91	7	409	77	1.4	10	0.4	2.0	9.1	6.7	7.2	0.00
Avg	8.05	6	439	96	16	1152	91	2.1	81	0.6	29.2	44.5	7.3		0.00
Sum	241.58		13180			34556			2440						0.00

[illegible]

[illegible]

Page 7					SLUDGE PROCESSING									
Date Apr-94	Thickened Primary Sludge				WAS		Gravity Belt			TWAS			Sludge Disp	
	Flow gal	Tot Sol %	Vol Sol %	Vol Content %	Flow mgd	Susp. mg/l	Sols lbs	Capture %	Filtrate mg/l	Poly lbs	Total Sols. %	lbs	Gal Hauled	Off Site MGD
4/1/94	15420				0.000		0					0	0	0.0000
4/2/94	15730				0.000		0					0	0	0.0000
4/3/94	12050	5.12	4.13	80.6	0.037	18000	5565				6.50	5817	10730	0.0107
4/4/94	13900				0.056	20664	9722				6.78	9833	17390	0.0174
4/5/94	12730				0.082	20180	13752				6.65	13277	23940	0.0299
4/6/94	11060				0.058	20372	9916				6.38	9290	17460	0.0235
4/7/94	11180				0.036	21270	6429				6.63	6657	12040	0.0180
4/8/94	10600				0.045	18480	6936				5.97	7468	15000	0.0150
4/9/94	10570				0.000		0					0	0	0.0060
4/10/94	12630				0.143	15270	18151				6.20	15559	30090	0.0301
4/11/94	13360	5.28	4.48	84.9	0.052	17280	7526				6.60	8730	15860	0.0219
4/12/94	14320				0.045	19970	7523				7.11	8628	14550	0.0206
4/13/94	15380				0.041	21650	7445				7.00	7636	13080	0.0191
4/14/94	11570				0.062	20380	10490				6.65	10798	19470	0.0255
4/15/94	10570				0.051	20700	8779				6.88	9295	16200	0.0162
4/16/94	12190				0.000		0					0	0	0.0000
4/17/94	15280				0.049	18140	7409				6.98	6566	11280	0.0113
4/18/94	13540	5.90	5.02	85.0	0.058	23060	11062				6.00	8782	17550	0.0176
4/19/94	13640				0.045	19790	7402				6.27	9308	17800	0.0238
4/20/94	14100				0.060	20000	10023				6.17	8408	16340	0.0223
4/21/94	14100				0.089	12920	9642				6.29	21576	41130	0.0471
4/22/94	12100				0.072	18690	11273				6.43	8564	15970	0.0160
4/23/94	13600				0.000		0					0	0	0.0000
4/24/94	17120	6.02	5.14	85.4	0.031	18670	4804				6.43	5078	9470	0.0095
4/25/94	14440				0.025	21120	4381				5.39	4181	9300	0.0093
4/26/94	12550				0.058	19230	9227				5.84	5031	10330	0.0103
4/27/94	13710				0.057	20150	9554				6.45	8446	15700	0.0217
4/28/94	13000				0.047	20000	7831				6.24	7713	14820	0.0208
4/29/94	14470				0.081	18190	12309				6.30	13225	25170	0.0312
4/30/94	16380				0.000		0					0	0	0.0060
5/1/94														
Max	17120	6.02	5.14	85.4	.143	23060	18151	0.00	0		7.11	21576	41130	0.047
Min	10570	5.12	4.13	80.6	.000	12920	0	0.00	0		5.39	0	0	0.000
Avg	13376	5.58	4.69	84.0	.046	19341	7238	#DIV/0!	#DIV/0!		6.42	7329	13689	0.017
Sum	401290				1.380		217148					219868	410670	0.501

MONTHLY REPORT SUMMARY

PRIMARY TREATMENT										
Influent		Effluent		Rem	Primary					
mg/l	lbs/ day	mg/l	lbs/ day	%	Flow		Feed Sludge			
S S	173	11395	#DIV/0!	#DIV/0!	#DIV/0!	gal/ day	Total Solids %	Volatile Content %		
BOD5	178	11747	#DIV/0!	#DIV/0!	#DIV/0!	13376	5.58	84.0		
Detent Time hrs		Population Equivalent		Flow mgd	Precip "	Detention Time days		Loading lbs VS / ft3 /day		
2.8		69100		8.07	2.71	27		0.12		
SECONDARY TREATMENT										
Influent		Effluent		Rem						
mg/l	lbs/ day	mg/l	lbs/ day	%	Total Solids %		Volatile Content %		Vol Sol Reduct %	
S S	173	11395	6	439	96	5.43		53.7		77.8
BOD5	178	11747	16	1152	91	5.43		53.7		77.8
F/M	SVI		SRT days		MLSS mg/l					
#DIV/0!	196		6.6		1390	Total Solids (TWS) %		Capture %		Filtrate Solids mg/l
RAS Flow mgd		CL2 Res mg/l		CL2 Feed lbs/day		6.42		#DIV/0!		#DIV/0!
0.41		0.6		81				Sludge Hauled gal/day		lbs/mo
WAS Flow mgd		Aerator Detention Time hrs		Aerator DO mg/l		Digst		3000	1359	0
.046		4.2		1.3		TWS		13689	7332	0
						Total		16689	8691	0