REGIONAL DISTRICT OF EAST KOOTENAY

EDGEWATER SEWAGE LAGOON MONITORING 2020 ANNUAL REPORT

ECO/LOGIC ENVIRONMENTAL

APRIL 2021

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1. INTRODUCTION

Registration number RE-17372, under the Municipal Sewage Regulation (MSR) was issued July 2003 in the name of the Regional District of East Kootenay. The letter of instruction, accompanying the Registration specifies the quantity ($417m^3/d$) and quality (BOD=45, TSS=60) restrictions, applicable to effluent discharged to the Columbia River.

The Letter of Instruction also details monitoring requirements designed to determine compliance with the MSR as well as assess impact on the receiving environment (Columbia River). Furthermore, the RDEK is required to submit an annual report, which addresses both the compliance and impact issues as well as make recommendations on future monitoring programs.

The Letter of Instruction was amended January 12, 2010 (Appendix A) to reflect constantly high effluent quality and the demonstrated lack of impact on the receiving environment.

The Municipal Sewage Regulation (MSR) was replaced by the Municipal Wastewater Regulation (MWR) B.C. Reg. 87/2012 O.C. 230/2012 in 2012.

The 2020 annual report indicates that the effluent quality is in compliance with the standards presented in the Municipal Wastewater Regulation.

2. MONITORING REQUIREMENTS

Table 1. MWR Monitoring Requirements

Maximum Daily Flow Range (m^3/d)	Frequency of Data Submission to Director	Flow	BOD, TSS		Fecal Coliform		Toxicity	
		Freq.	Freq.	Type	Freq.	Type	Freq.	Type
>10 - <500	2/Y	W	Q	G	Q	G	1X/3YR	G

Table 2. 2010 Registration Letter Monitoring Requirements

Parameter	**Site**		
	Columbia River		Sewage Treatment Facility
	Upstream	Initial Dilution Zone (IDZ)	Effluent
pH (field test)	WS/G/2Y	WS/G/2Y	WS/G
Temp (field test)	WS/G/2Y	WS/G/2Y	WS/G
Flow			W
BOD			Q/G
TSS			Q/G
Ammonia (as Nitrogen)	WS/G/2Y	WS/G/2Y	
Nitrate (as Nitrogen)	WS/G/2Y	WS/G/2Y	
Nitrite (as Nitrogen)	WS/G/2Y	WS/G/2Y	
Sodium	WS/G/2Y	WS/G/2Y	
Chloride	WS/G/2Y	WS/G/2Y	
Fecal Coliform	WS/G/2Y	WS/G/2Y	Q/G
Enterococci	WS/G/2Y	WS/G/2Y	
E-Coli	WS/G/2Y	WS/G/2Y	
Toxicity			1/2Y/G

Sample Frequencies

W = Weekly

WS = Weekly seasonal (five consecutive weeks during late summer or early autumn every second year).

1X/2Y/G = Once every two years

Sample Types

G = Grab

Table 3. MSR Effluent Quality Requirements (maximum daily flows > $50m^3/d$)

Parameter	Concentration	
BOD	45 mg/l	
TSS	60 mg/l	Specified by Letter of Instruction and Part 1, Interpretation of the MWR.
pH	6.0-9.0	

3. REPORTING REQUIREMENTS

The RDEK is required to submit an annual report to a director before May 1 of each year.

All analytical data must be uploaded to the Provincial data base (EMS) on an annual basis or more frequently if required.

In 2016 the Ministry of Environment introduced an additional reporting requirement. Quarterly and Annual reports are to be submitted to EnvironmentalReporting@gov.bc.ca. in a format specified on the Ministry website.

Eco/Logic Environmental has been contracted to submit the 2020 Annual Report.

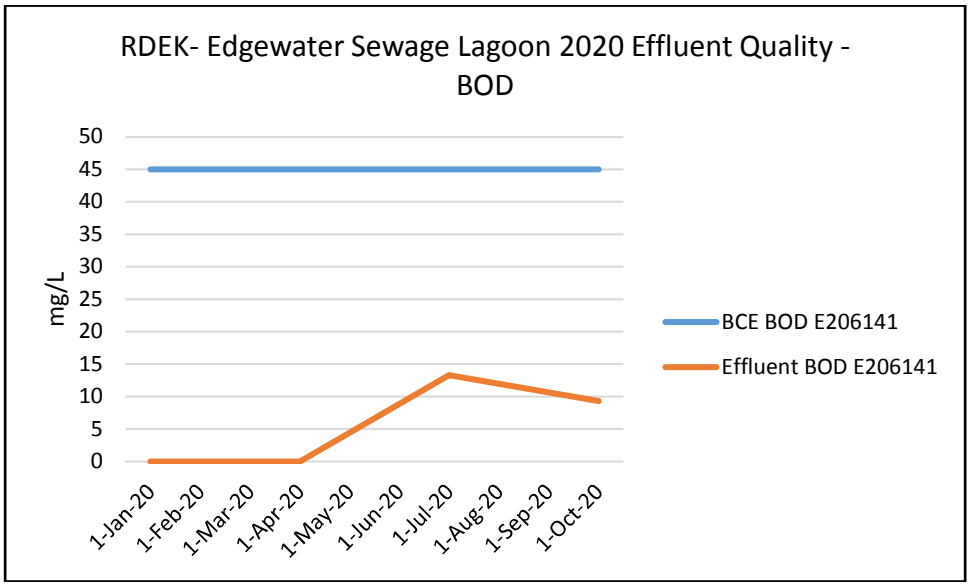
4. 2020 MONITORING PROGRAM

4.1 Effluent Quality

Effluent quality was monitored as per MWR during 2020.

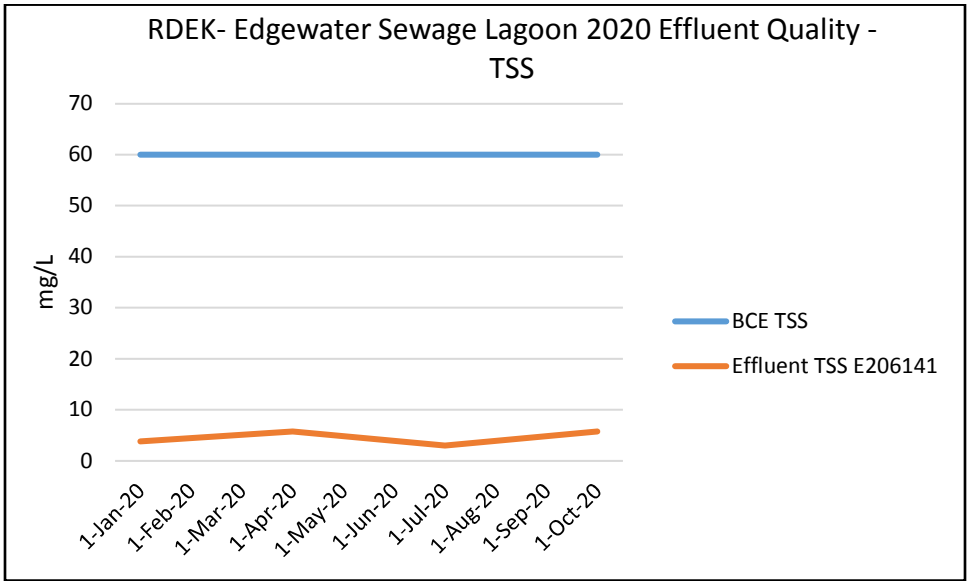
REGIONAL DISTRICT OF EAST KOOTENAY - EDGEWATER SEWAGE TREATMENT SYSTEM MONITORING DATA - 2020						
EFFLUENT (E206141)						
Date	BCE BOD	Effluent BOD	BCE TSS	Effluent TSS	Effluent Fecal Coli	Effluent Total Coli
	E206141	E206141		E206141	E206141	E206141
21-Jan-20	45	0	60	3.8	0	0
15-Apr-20	45	0	60	5.8	0	1
9-Jul-20	45	13.3	60	3	56	0
10-Oct-20	45	9.3	60	5.8	0	0

4.1.1 Biochemical Oxygen Demand (BOD)



2020 effluent BOD values complied with the limits prescribed by Authorization RE-17372.

4.1.2. Total Suspended Solids



2020 effluent TSS values complied with the limits prescribed by Authorization RE-17372.

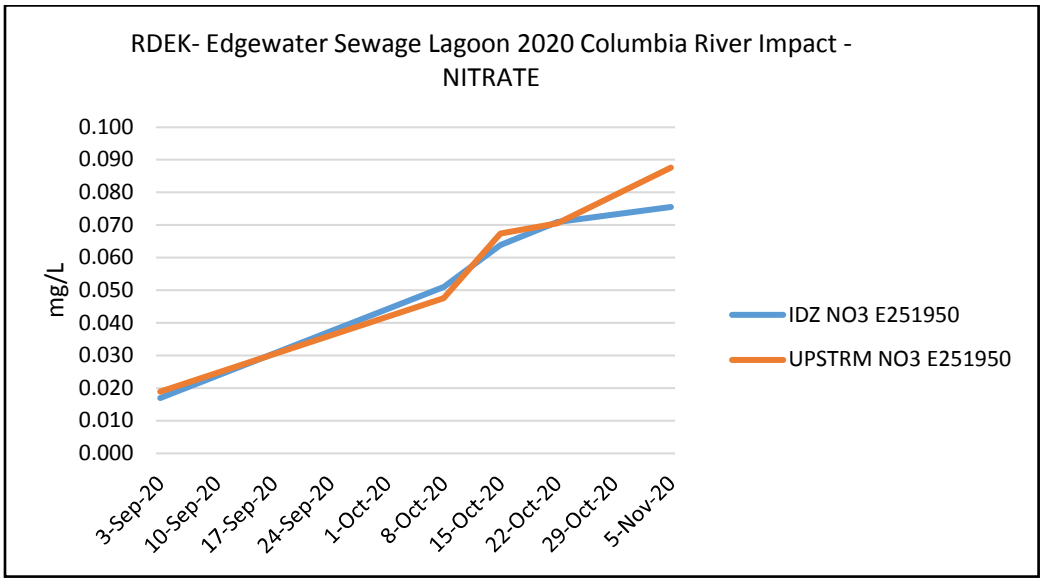
4.2 Effluent Impact on Columbia River Water Quality

The Columbia River was sampled during the fall of 2020. The next scheduled sampling event is scheduled for the fall of 2022 as per instruction.

COLUMBIA RIVER @ EDGEWATER

2020	INITIAL DILUTION ZONE (E251950)							UPSTREAM OF DISCHARGE (E207529)						
	IDZ NO2	IDZ NO3	IDZ CL	IDZ NH4	IDZ Na	IDZ FECAL COLI	IDZ ENTEROCOCCICOLI	UPSTRM NO2	UPSTRM NO3	UPSTRM CL	UPSTRM NH4	UPSTRM Na	UPSTRM FECAL COLI	UPSTRM ENTEROCOCCI COLI
	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950	E251950
3-Sep-20	0	0.017	0.037	0.000	1.12	76		0	0.019	0.38	0.058	1.10	96	
8-Oct-20	0	0.051	0.056	0.011	1.64	13	11	0	0.0476	0.55	0.0123	1.66	7	11.9
15-Oct-20	0	0.064	0.820	0.031	2.13	2	2	0	0.0674	0.82	0.0217	2.12	2	2
22-Oct-20	0	0.0709	0.95	0.0067	2.28	1	3.1	0	0.0705	0.96	0.0084	2.33	3	2
5-Nov-20	0.0016	0.0756	1.08	0.0056	2.92	7	2	0.0013	0.0876	1.11	0.0055	2.82	5	3.1

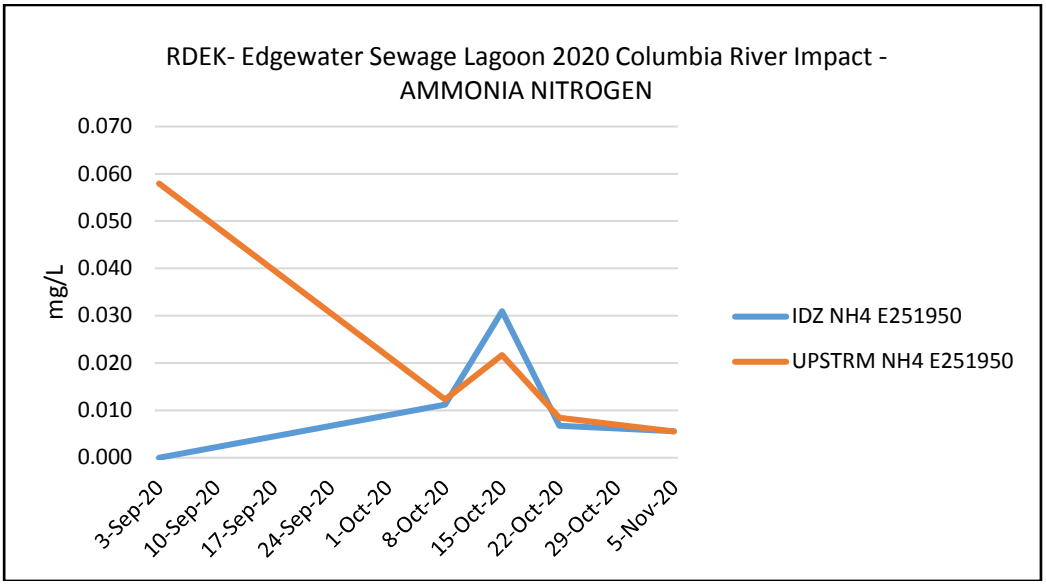
4.2.1 Nitrate Nitrogen



The 2020 monitoring program indicated no significant increase in Nitrate Nitrogen levels within the Initial Dilution Zone (IDZ).

Nitrate Nitrogen levels met or exceeded the British Columbia "Compendium of Working Water Quality Guidelines, 2006 Edition.

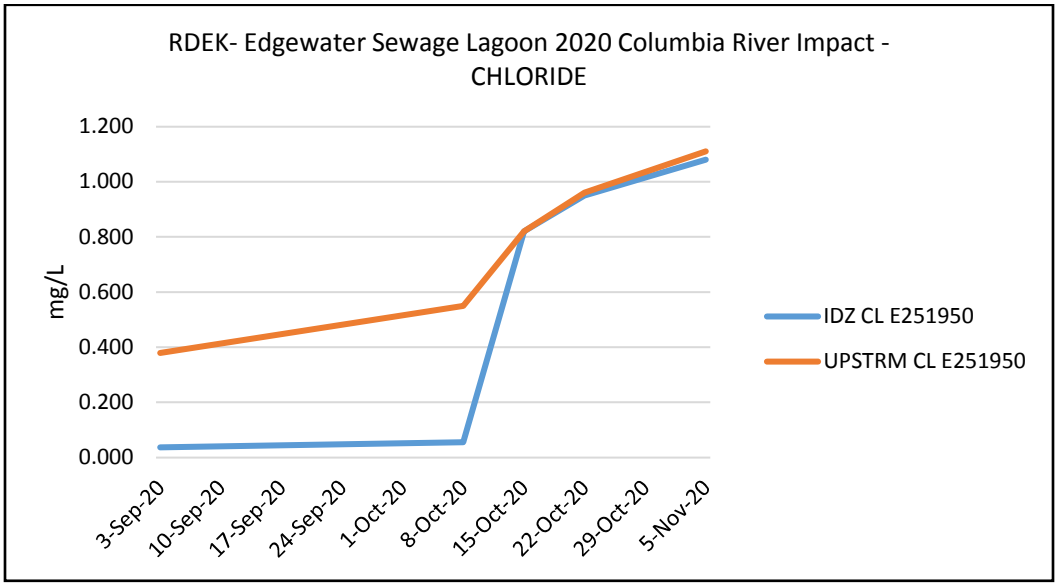
4.2.2. Ammonia Nitrogen



The 2020 monitoring program indicated no significant increase in Ammonia Nitrogen levels within the Initial Dilution Zone (IDZ).

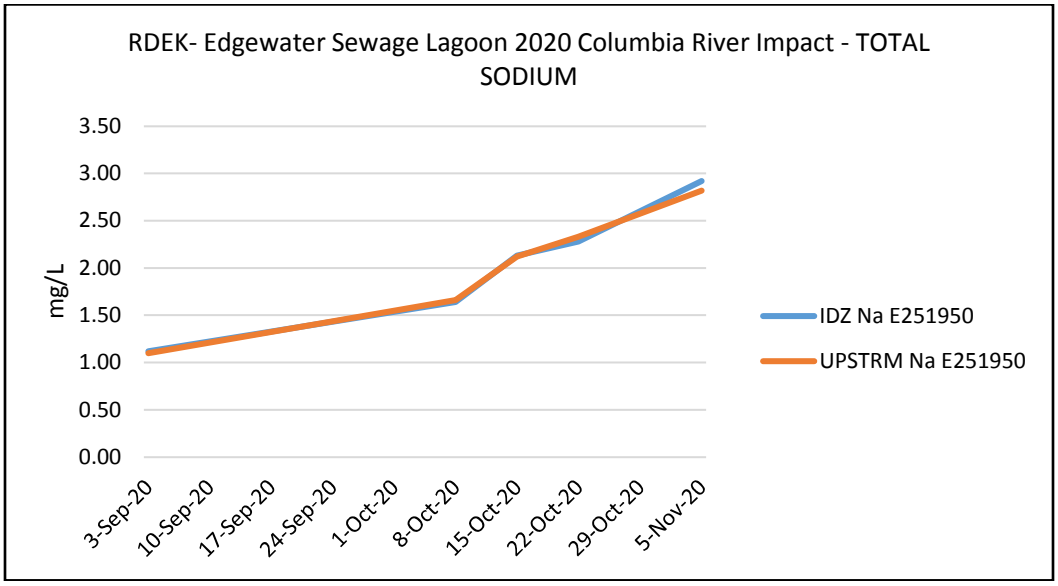
Ammonia Nitrogen levels met or exceeded the British Columbia "Compendium of Working Water Quality Guidelines, 2006 Edition.

4.2.3 Chloride



Dissolved Chloride levels met or exceeded the British Columbia "Compendium of Working Water Quality Guidelines, 2006 Edition.

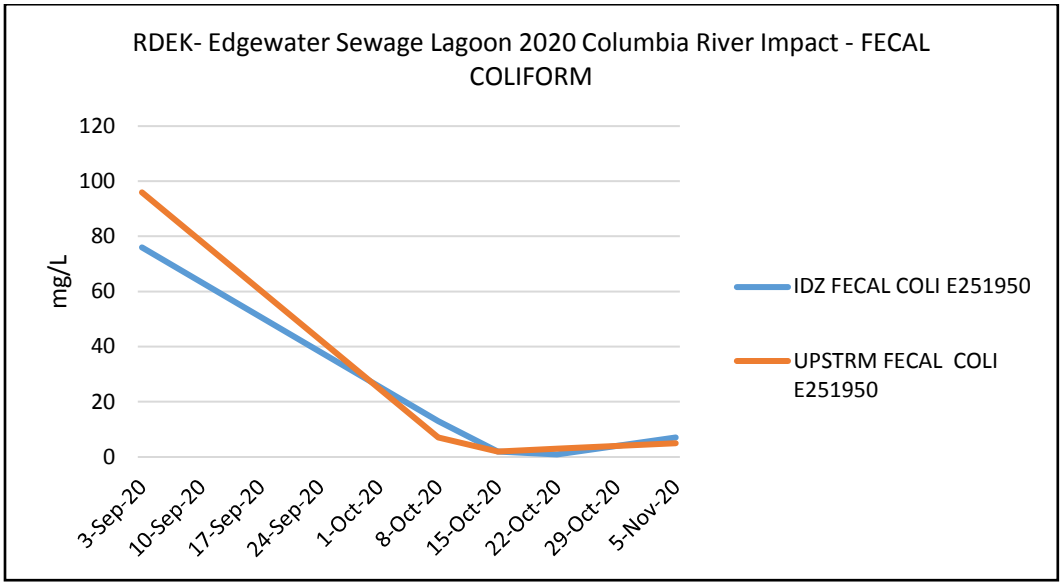
4.2.4. Sodium Total



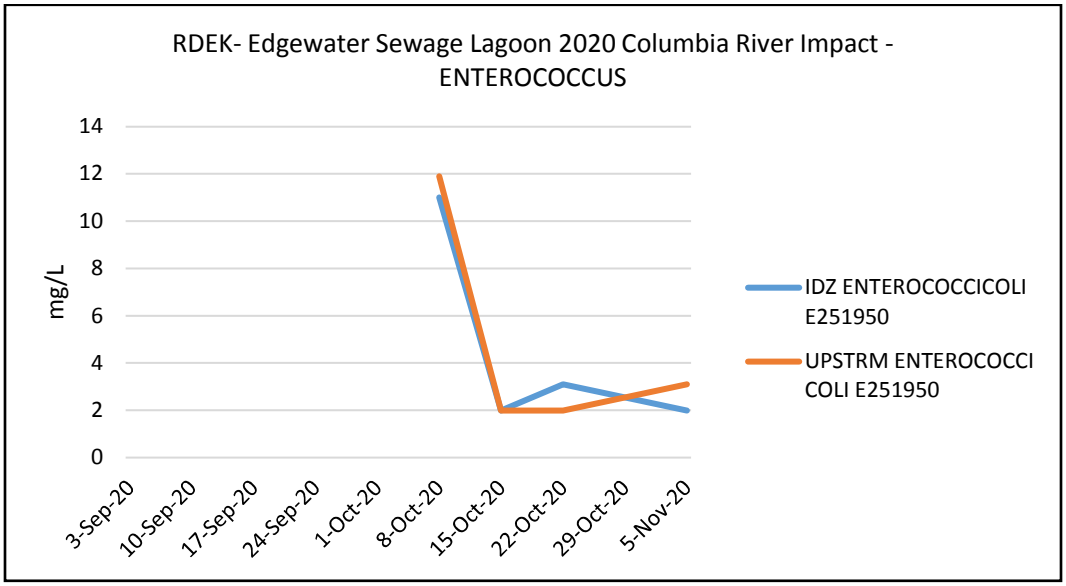
The 2020 monitoring program indicated there was no increase in Sodium levels between upstream and the Initial Dilution Zone (IDZ).

Sodium levels met or exceeded the British Columbia "Compendium of Working Water Quality Guidelines, 2006 Edition.

4.2.5 Fecal Coliform



4.2.6 Enterococcus



The 2020 monitoring program indicated no increase in coliform levels between upstream and the Initial Dilution Zone (IDZ).

Coliform concentrations met the British Columbia "Compendium of Working Water Quality Guidelines, 2006 Edition however exceeded the Drinking Water Guidelines. Since there are no consumptive water users upstream or within the IDZ the Aquatic Guidelines should apply.

5. POPULATION STATISTICS

2020 population data is not available however effluent flows are down significantly, likely due to the COVID pandemic's impact of travel and tourism.

5.1. FLOWS.

The maximum flow recorded during 2020 was 165m^3/d.
Flows were estimated using volumetric test. A volumetric flow test protocol was established during 2012 and was implemented for the 2013 season.

January 2020 - no discharge		May 19/20	104.59	Sep 17/20	143.49
		May 27/20	90.33	Sep 24/20	0
Feb 6/20	66.24	June 3/20	110.39	Oct 5/20	33.12
Feb 12/20	66.24	June 13/20	167	Oct 14/20	45.16
Feb 20/20	73.6	June 16/20	180.65	Oct 19/20	44.16
Feb 24/20	36.13	June 23/20	124.2	Oct 26/20	43.2
Mar 2/20	48.47	July 6/20	152.8	Nov 1/20	24.52
Mar 11/20	141.69	July 13/20	165.6	Nov 10/20	28.51
Mar 20/20	76.4	July 20/20	141.69	Nov 16/20	22.5
Mar 31/20	123.55	July 28/20	152.86	Nov 25/20	23.4
April 3/20	132.19	Aug 5/20	165.59	4-Dec-20	25.15
April 12/20	129.3	Aug 10/20	189.26	11-Dec-20	21.1
April 21/20	141.9	Aug 19/20	152.86	16-Dec-20	22.3
April 30/20	152.86	Aug 27/20	108.13	21-Dec-20	23.65
May 1/20	152.86	Sep 5/20	86.44	31-Dec-20	30.79
May 8/20	152.86	Sep 9/20	101.91		

The 2020 flow records indicate that the RDEK did not exceed the volumes authorized by Authorization RE-17372.

6. CONCLUSIONS

Effluent Quality complied with MWR limits during the 2020 sampling events.

The Edgewater effluent discharge does not appear to be impacting the water quality of the Columbia River.

7. 2022 MONITORING PROGRAM

The 2021 monitoring program should consist of the following

EFFLUENT QUALITY MONITORING PROGRAM				
PARAMETERS	FREQUENCY			
	JANUARY	APRIL	JULY	OCTOBER
BOD	X	X	X	X
TSS	X	X	X	X
TOXICITY				X
Ph	WEEKLY			
Temp				
Flow	WEEKLY (24 HR)			

The effluent monitoring program should reflect normal operating conditions. Sampling during or immediately following spring draw-down should be avoided.

Ron Mickel
Eco/Logic Environmental

APPENDIX A
REGISTRATION LETTER

BRITISH COLUMBIA
The Best Place on Earth

[sign]LetterDate

Tracking Number: 59311
Authorization Number: 17372

REGIONAL DISTRICT OF EAST KOOTENAY
19 24 AVE S
CRANBROOK, BC
V1C 3H8

Dear REGIONAL DISTRICT OF EAST KOOTENAY,

Re: Registration under the Municipal Sewage Regulation

Receipt of your completed registration under the Municipal Sewage Regulation is acknowledged. The effective date of registration is October 29, 2001. On and following the effective date of registration you are exempt from section 6(2) and 6(3) of the Environmental Management Act and may discharge waste to the environment from this facility provided all conditions and requirements of the regulation are met.

Please indicate the ministry authorization number shown above on all future correspondence with the Ministry regarding this facility.

Your attention is respectfully directed to the terms and conditions specified in the regulation. Contravention of any of the conditions is a violation of the Environmental Management Act and may result in prosecution. If the regulation does not cover all waste streams at the site, additional authorizations may be required under the Environmental Management Act.

An annual registration fee will be determined according to the Permit Fees Regulation and you will be receiving an annual invoice from the ministry for payment of this fee. Payment of all fees due is necessary to comply with the Municipal Sewage Regulation. Fees will be calculated using a maximum daily effluent discharge of 417m3/day, a maximum BOD of 45mg/L, a maximum TSS of 45mg/L, and a maximum number of fecal coliform organisms at the edge of the initial dilution zone must be less than 200/100mL.

Registration Reference Documents

Acceptance of this registration under the Regulation is based on the following documents:

1.The Regional District of East Kootenay, amended Registration Form dated October 25, 2001 and received October 29, 2001, the covering letter from Focus Intec dated October 25, 2001 and the original Regional District of East Kootenay Registration Form dated June 12, 2000 and received June 13, 2000.
2.Environmental Impact Study for the Edgewater Sewage Lagoon Upgrade submitted by AGRA Earth & Environmental Limited, an AMEC Company, Calgary, Alberta dated June 2000.
3.Edgewater Sewage Lagoon Upgrade, Aerated Lagoon Design Summary Information, June 2000, submitted to Ministry of Environment, Lands and Parks on behalf of the Regional District of East Kootenay by Focus Intec, Cranbrook.

Ministry of Environment
Environmental Protection Division 401 - 333 Victoria St. Nelson, BC V1L 4K3
Kootenay Region
Telephone: (250) 354-6333
Facsimile: (250) 354-6332

4.Environmental Impact Study for the Edgewater Sewage Lagoon Upgrade - Appendix C: Additional Data and Information dated December 4, 2000 and covering letter dated January 10, 2001 from Focus Intec signed by Doug Cassidy, P.Eng. and Regional District of East Kootenay - Edgewater Cadastral Map dated March 3, 1995.
5. Edgewater STP 2005-2008 Assessment Report, prepared by Ron Mickel, Eco/Logic Environmental , dated March 2009.
6. EQ Memorandum: Proposed Reduction in Monitoring Requirements to the Regional District of East Kootenay Edgewater Sewage Treatment Plant, Prepared by Alison Stent A/Impact Assessment Biologist, MoE, dated August 10, 2009.

Pursuant to Part 2, Section 3 (2) (k), condition of the Municipal Sewage Regulation, more stringent standards or requirements may be specified by the Director. Accordingly, in addition to the terms and conditions of the regulation, for this discharge the following standards and requirements apply:

1.Primary Screening and Dewatered Biosolids (Sludge) Disposal

Biosolids (sludge) from the treatment plant must be disposed in accordance with an authorization issued under the *Act* or the Organic Matter Recycling Regulation.

2.Semi-solid Waste

The discharger shall not accept semi-solid wastes at the treatment plant. Semi-solid wastes mean septic tank pumpage, holding tank solids or sludge from sewage facilities.

3.Plant Design

The treatment plant design must be in accordance with Schedule 7 of the *Regulation* and meet reliability Category I.

4.Additional Works

The works are to be designed to allow for additional facilities in future to reduce effluent ammonia levels if ammonia levels in the Columbia River exceed the current British Columbia Approved Water Quality Guidelines (Criteria). Water quality Criteria apply at the edge of the initial dilution zone.

5.Effluent and Environmental Monitoring Program

The discharger shall undertake monitoring in accordance with Part 7 and applicable conditions of Schedule 6 of the *Regulation* subject to the requirements as follows:

Sampling and Analysis

Sampling and analysis shall be in accordance with Part 7, Section 25 of the *Regulation*. Minimum detection limits for nutrients shall be:

Ammonia	5 µg/L
Nitrate	5 µg/L
Nitrite	2 µg/L

Total Phosphorus	3 µg/L
Orthophosphate	3 µg/L

These detection limits shall only apply to the analysis of samples obtained from the Columbia River. These detection limits will not apply to the analysis of samples obtained from the plant effluent. Please note the requirement to submit data in accordance with the *Environmental Data Quality Assurance Regulation* as per Section 25 (3) of the *Regulation*.

Discharge Monitoring and Receiving Environment Monitoring

In accordance with Part 7, Section 26 and 27 of the *Regulation* the discharger shall undertake the following monitoring program:

Sampling Location Frequency/Type

	Columbia River[4] (At Upstream site)	Columbia River[4] (IDZ site)	Plant Effluent[3]
Parameter			
pH (field test)	WS/G/2Y	WS/G/2Y	WS/G
temperature (field test)	WS/G/2Y	WS/G/2Y	WS/G
flow		WS/G/2Y	W
BOD_5 [1]			Q/G
TSS[2]			Q/G
ammonia (as nitrogen)	WS/G/2Y	WS/G/2Y	
nitrate (as nitrogen)	WS/G/2Y	WS/G/2Y	
nitrite (as nitrogen)	WS/G/2Y	WS/G/2Y	
sodium	WS/G/2Y	WS/G/2Y	
chloride	WS/G/2Y	WS/G/2Y	
fecal coliform	WS/G/2Y	WS/G/2Y	Q/G
enterococci	WS/G/2Y	WS/G/2Y	
Toxicity			1/2Y/G

1. BOD_5 - means the 5-day biochemical oxygen demand.
2. TSS - means total suspended solids or non-filterable residue.
3. Plant effluent samples must be obtained at peak flow during the day.
4. Sampling of the Columbia River shall also correspond with effluent peak flow during the day similar to plant effluent sampling.

Sampling Frequency	Definition
1/2Y	Once every two years
Q	Quarterly

W	Weekly
G	Grab sample
WS/2Y Fall	Weekly seasonal (This means obtaining samples weekly for a five week period in the late summer or early fall.) every second year

Environmental Monitoring System (EMS) Numbers

The following are the EMS site numbers assigned to the monitoring sites listed above. These numbers are to be used when entering data directly into the Ministry EMS database in accordance with Part 7, Section 28 (2) of the *Regulation*. Monitoring data shall be submitted to the Ministry data base quarterly within 30 days of the end of each quarter.

Name	EMS Number	Description
Columbia River above Edgewater STP.	E207529	Upstream of the discharge.
Columbia River within the IDZ.	E251950	Within the initial dilution zone.
Edgewater STP Effluent	E206141	Sample at the treatment plant after disinfection.

Reporting Requirements

The discharger shall report monitoring data in accordance with Part 7, Section 28 of the *Regulation* and in accordance with the following requirements:

In accordance with Part 7, Section 28(3) of the *Regulation* the discharger shall submit an annual report and do so in accordance with the annual report requirements of Section 28 of the *Regulation* by March 31. The annual report shall be made available to the public by posting it on the internet.

Monitoring Program Changes

The *Manager* may modify the monitoring program from time to time. The annual report shall contain recommendations regarding changes (additions/deletions/modifications) to the monitoring program.

This decision to specify more stringent standards or requirements under the Municipal Sewage Regulation may be appealed to the Environmental Appeal Board in accordance with Part 8 of the Environmental Management Act. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at 250 387-3464.

Registration under the Municipal Sewage Regulation should not be construed as a representation that the works

October 22, 2009	5	Tracking Number:	59311
		Authorization Number:	17372

are adequately designed or will satisfy the regulation. It is the responsibility of the discharger to ensure that the works are adequately designed, constructed and operated and that the discharge quality complies with the regulation. Registration under the regulation is without prejudice to any additional works that may be required or any additional requirements that may be specified by the Director. The Director may also issue Orders under the *Environmental Management Act*.

Registration under the regulation is without prejudice to any additional requirements that may be specified by the Director.

Registration under the regulation does not authorize entry upon, crossing over, or use for any purpose of private of Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the operator. It is It is the responsibility of the operator to ensure that all activities conducted under this regulation are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force. The operator must also obtain any necessary approvals from other agencies.

Administration of this regulation will be carried out by staff from the ministry regional office. Plans, data, reports pertinent to the regulation are to be submitted to the Regional Manager, Environemntal Protection, at the regional office indicated on this letter.

Yours truly,

[sign]image:SignatureImageObjectId

[sign]SignatureBlock

CC: Environment Canada

ENCL: None

APPENDIX B
EFFLUENT QUALITY DATA

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	0011350
PROJECT	Effluent Monitoring- RE17372	**REPORTED**	2020-01-28 14:03

Analyte	Result	RL	Units	Analyzed	Qualifier
Edgewater Lagoons- UV Effluent (E206141) (0011350-01) | Matrix: Wastewater | Sampled: 2020-01-21 10:20					
General Parameters					
BOD, 5-day	< 6.2	2.0	mg/L	2020-01-28	
Solids, Total Suspended	**3.6**	2.0	mg/L	2020-01-24	
Microbiological Parameters					
Coliforms, Total	< 1.0	1.0	MPN/100 mL	2020-01-22	
E. coli	< 1.0	1.0	MPN/100 mL	2020-01-22	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	0041166
PROJECT	Effluent Monitoring- RE17372	**REPORTED**	2020-04-22 16:30

Analyte	Result	RL	Units	Analyzed	Qualifier
Edgewater Lagoons- UV Effluent (E206141) (0041166-01) | Matrix: Fresh Water | Sampled: 2020-04-15 10:50					
General Parameters					
BOD, 5-day	< 5.8	2.0	mg/L	2020-04-22	
Solids, Total Suspended	**5.8**	2.0	mg/L	2020-04-21	
Microbiological Parameters					
Coliforms, Total	**1.0**	1.0	MPN/100 mL	2020-04-16	
E. coli	< 1.0	1.0	MPN/100 mL	2020-04-16	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	0070936
PROJECT	Effluent Monitoring- RE17372	**REPORTED**	2020-07-17 12:06

Analyte	Result	RL	Units	Analyzed	Qualifier
Edgewater Lagoons- UV Effluent (E206141) (0070936-01) | Matrix: Fresh Water | Sampled: 2020-07-09 10:30					
General Parameters					
BOD, 5-day	**13.3**	2.0	mg/L	2020-07-15	
Solids, Total Suspended	**3.0**	2.0	mg/L	2020-07-16	
Microbiological Parameters					
Coliforms, Total	**56**	1	MPN/100 mL	2020-07-10	
E. coli	< 1	1	MPN/100 mL	2020-07-10	

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	20J2373
PROJECT	Effluent Monitoring- RE17372	**REPORTED**	2020-10-29 13:11

Analyte	Result	RL	Units	Analyzed	Qualifie
Edgewater Lagoons- UV Effluent (E206141) (20J2373-01) | Matrix: Fresh Water | Sampled: 2020-10-21 11:00					
General Parameters					
BOD, 5-day	**9.3**	2.0	mg/L	2020-10-29	
Solids, Total Suspended	**5.8**	2.0	mg/L	2020-10-26	
Microbiological Parameters					
Coliforms, Total	< 1	1	MPN/100 mL	2020-10-23	
E. coli	< 1	1	MPN/100 mL	2020-10-23	

APPENDIX C
COLUMBIA RIVER IMPACT ANALYTICAL DATA

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Regional District of East Kootenay	**WORK ORDER**	0090616
PROJECT	2020 Edgewater Columbia River	**REPORTED**	2020-09-14 08:43

Analyte	Result	RL	Units	Analyzed	Qualif
WK#1 IDZ (Discharge) (0090616-01) | Matrix: Water | Sampled: 2020-09-03 11:10					
Anions					
Chloride	**0.37**	0.10	mg/L	2020-09-04	
Nitrate (as N)	**0.017**	0.010	mg/L	2020-09-04	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-04	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-09	
Microbiological Parameters					
Coliforms, Fecal	**76**	1	MPN/100 mL	2020-09-04	
Total Metals					
Sodium, total	**1.12**	0.10	mg/L	2020-09-11	
WK#1 UZ (Upstream) (0090616-02) | Matrix: Water | Sampled: 2020-09-03 11:10					
Anions					
Chloride	**0.38**	0.10	mg/L	2020-09-04	
Nitrate (as N)	**0.019**	0.010	mg/L	2020-09-04	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-04	
General Parameters					
Ammonia, Total (as N)	**0.058**	0.050	mg/L	2020-09-09	
Microbiological Parameters					
Coliforms, Fecal	**96**	1	MPN/100 mL	2020-09-04	
Total Metals					
Sodium, total	**1.10**	0.10	mg/L	2020-09-11	

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2514357-1 EDGEWATER RIVER SAMPLING UPSTREAM							
Sampled By: CLIENT on 08-OCT-20 @ 10:20							
Matrix: WATER							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	1.66		0.050	mg/L		14-OCT-20	R5254262
Miscellaneous Parameters							
Ammonia as N	0.0123		0.0050	mg/L		15-OCT-20	R5255262
Chloride (Cl)	0.55		0.10	mg/L		08-OCT-20	R5252355
Enterococcus	See Attached					09-OCT-20	R5260977
Coliform Bacteria - Fecal	7	OCR	1	CFU/100mL		09-OCT-20	R5253248
Fecal Streptococcus	41		1	CFU/100mL		09-OCT-20	R5252959
Nitrate (as N)	0.0476		0.0050	mg/L		08-OCT-20	R5252355
Nitrite (as N)	<0.0010		0.0010	mg/L		08-OCT-20	R5252355
Total Kjeldahl Nitrogen	0.102		0.050	mg/L		13-OCT-20	R5253899
Total Nitrogen							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.0476		0.0051	mg/L		09-OCT-20	
Total Nitrogen (Calculation)							
Total Nitrogen	0.150		0.050	mg/L		14-OCT-20	
L2514357-2 EDGEWATER RIVER SAMPLING DILUTION ZONE							
Sampled By: CLIENT on 08-OCT-20 @ 10:25							
Matrix: WATER							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	1.64		0.050	mg/L		14-OCT-20	R5254262
Miscellaneous Parameters							
Ammonia as N	0.0112		0.0050	mg/L		15-OCT-20	R5255262
Chloride (Cl)	0.56		0.10	mg/L		08-OCT-20	R5252355
Enterococcus	See Attached					09-OCT-20	R5260977
Coliform Bacteria - Fecal	13	OCR	1	CFU/100mL		09-OCT-20	R5253248
Fecal Streptococcus	44		1	CFU/100mL		09-OCT-20	R5252959
Nitrate (as N)	0.0510		0.0050	mg/L		08-OCT-20	R5252355
Nitrite (as N)	<0.0010		0.0010	mg/L		08-OCT-20	R5252355
Total Kjeldahl Nitrogen	0.081		0.050	mg/L		13-OCT-20	R5253899
Total Nitrogen							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.0510		0.0051	mg/L		09-OCT-20	
Total Nitrogen (Calculation)							
Total Nitrogen	0.132		0.050	mg/L		14-OCT-20	

RESULTS

Microbial test results

Sample ID	MPN/100 mL *Enterococcus*
L2514357-1 EDGEWATER RIVER SAMPLING UPSTREAM	11.9
L2514357-2 EDGEWATER RIVER SAMPLING DILUTION ZONE	11.0

MPN = Most Probable Number

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517071-1 WEEK #2 EDGEWATER RIVER SAMPLE UPSTREAM							
Sampled By: CLIENT on 15-OCT-20 @ 10:10							
Matrix: Water							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	2.13		0.050	mg/L		16-OCT-20	R5255824
Miscellaneous Parameters							
Ammonia as N	0.0310		0.0050	mg/L		21-OCT-20	R5264117
Chloride (Cl)	0.82		0.10	mg/L		16-OCT-20	R5256904
Enterococcus	See Attached					16-OCT-20	R5267796
Coliform Bacteria - Fecal	2	OCR	1	CFU/100mL		16-OCT-20	R5256395
Fecal Streptococcus	11		1	CFU/100mL		16-OCT-20	R5256446
Nitrate (as N)	0.0638		0.0050	mg/L		16-OCT-20	R5256904
Nitrate and Nitrite (as N)	0.0638		0.0051	mg/L		19-OCT-20	
Nitrite (as N)	<0.0010		0.0010	mg/L		16-OCT-20	R5256904
Total Kjeldahl Nitrogen	0.227		0.050	mg/L		18-OCT-20	R5256455
Total Nitrogen							
Total Nitrogen (Calculation)							
Total Nitrogen	0.291		0.050	mg/L		19-OCT-20	
L2517071-2 WEEK #2 EDGEWATER RIVER SAMPLE DILUTION ZONE							
Sampled By: CLIENT on 15-OCT-20 @ 10:20							
Matrix: Water							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	2.12		0.050	mg/L		16-OCT-20	R5255824
Miscellaneous Parameters							
Ammonia as N	0.0217		0.0050	mg/L		21-OCT-20	R5264117
Chloride (Cl)	0.82		0.10	mg/L		16-OCT-20	R5256904
Enterococcus	See Attached					16-OCT-20	R5267796
Coliform Bacteria - Fecal	2	OCR	1	CFU/100mL		16-OCT-20	R5256395
Fecal Streptococcus	12		1	CFU/100mL		16-OCT-20	R5256446
Nitrate (as N)	0.0674		0.0050	mg/L		16-OCT-20	R5256904
Nitrate and Nitrite (as N)	0.0674		0.0051	mg/L		19-OCT-20	
Nitrite (as N)	<0.0010		0.0010	mg/L		16-OCT-20	R5256904
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		18-OCT-20	R5256455
Total Nitrogen							
Total Nitrogen (Calculation)							
Total Nitrogen	0.067		0.050	mg/L		19-OCT-20	

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2517071-1 WEEK #2 EDGEWATER RIVER SAMPLE UPSTREAM	2.0
L2517071-2 WEEK #2 EDGEWATER RIVER SAMPLE DILUTION ZONE	2.0

MPN = Most Probable Number

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2520358-1 WK#3 EDGEWATER RIVER SAMPLING UPSTREAM							
Sampled By: CLIENT on 22-OCT-20 @ 10:20							
Matrix: GRAB							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	2.33		0.050	mg/L		26-OCT-20	R5268866
Miscellaneous Parameters							
Ammonia as N	0.0084		0.0050	mg/L		30-OCT-20	R5272333
Chloride (Cl)	0.96		0.10	mg/L		23-OCT-20	R5268070
Enterococcus	See Attached					22-OCT-20	R5270103
Coliform Bacteria - Fecal	3	OCR	1	CFU/100mL		23-OCT-20	R5268473
Fecal Streptococcus	5		1	CFU/100mL		23-OCT-20	R5268334
Nitrate (as N)	0.0705		0.0050	mg/L		23-OCT-20	R5268070
Nitrite (as N)	<0.0010		0.0010	mg/L		23-OCT-20	R5268070
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		24-OCT-20	R5268090
Total Nitrogen							
Nitrate in Water by IC							
Nitrate (as N)	0.071		0.020	mg/L		23-OCT-20	R5268070
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.0705		0.0051	mg/L		24-OCT-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-OCT-20	R5268070
Total Kjeldahl Nitrogen by Fluorescence							
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		24-OCT-20	R5268090
Total Nitrogen (Calculation)							
Total Nitrogen	0.071		0.050	mg/L		24-OCT-20	
L2520358-2 WK#3 EDGEWATER RIVER SAMPLING DILUTION ZONE							
Sampled By: CLIENT on 22-OCT-20 @ 10:15							
Matrix: GRAB							
Individual Total Metal by CCMS							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	2.28		0.050	mg/L		26-OCT-20	R5268866
Miscellaneous Parameters							
Ammonia as N	0.0067		0.0050	mg/L		30-OCT-20	R5272333
Chloride (Cl)	0.95		0.10	mg/L		23-OCT-20	R5268070
Enterococcus	See Attached					22-OCT-20	R5270103
Coliform Bacteria - Fecal	1	OCR	1	CFU/100mL		23-OCT-20	R5268473
Fecal Streptococcus	7		1	CFU/100mL		23-OCT-20	R5268334
Nitrate (as N)	0.0709		0.0050	mg/L		23-OCT-20	R5268070
Nitrite (as N)	<0.0010		0.0010	mg/L		23-OCT-20	R5268070
Total Kjeldahl Nitrogen	0.078		0.050	mg/L		24-OCT-20	R5268090
Total Nitrogen							
Nitrate in Water by IC							
Nitrate (as N)	0.071		0.020	mg/L		23-OCT-20	R5268070
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.0709		0.0051	mg/L		24-OCT-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-OCT-20	R5268070
Total Kjeldahl Nitrogen by Fluorescence							
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		24-OCT-20	R5268090
Total Nitrogen (Calculation)							
Total Nitrogen	0.149		0.050	mg/L		24-OCT-20	

Microbial test results

Sample ID	MPN/100 mL
	Enterococcus
L2520358-1 WK #3 EDGEWATER RIVER SAMPLING UPSTREAM	2.0
L2520358-2 WK #3 EDGEWATER RIVER SAMPLING DILUTION ZONE	3.1

MPN = Most Probable Number