Annual Environmental Report





Tyrellspass

D0099-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

- 1.1 ANNUAL STATEMENT OF MEASURES
- 1.2 TREATMENT SUMMARY
- 1.3 ELV OVERVIEW
- 1.4 LICENSE SPECIFIC REPORT INCLUDED IN AER

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

- 2.1 TYRELLSPASS WWTP TREATED DISCHARGE
 - 2.1.1 INFLUENT SUMMARY TYRELLSPASS WWTP
 - 2.1.2 EFFLUENT MONITORING SUMMARY TYRELLSPASS WWTP -
 - 2.1.3 Ambient Monitoring Summary for The Treatment Plant Discharge -
 - 2.1.4 OPERATIONAL REPORTS SUMMARY FOR TYRELLSPASS WWTP
 - 2.1.5 SLUDGE/OTHER INPUTS TO TYRELLSPASS WWTP

3 COMPLAINTS AND INCIDENTS

- 3.1 COMPLAINTS SUMMARY
- 3.2 REPORTED INCIDENTS SUMMARY
 - 3.2.1 SUMMARY OF INCIDENTS
 - 3.2.2 SUMMARY OF OVERALL INCIDENTS
- 4 INFRASTRUCTURAL ASSESSMENT AND PROGRAMME OF IMPROVEMENTS
 - 4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT
 - 4.1.1 SWO IDENTIFICATION AND INSPECTION SUMMARY REPORT
 - 4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS
 - 4.2.1 Specified Improvement Programme Summary
 - 4.2.2 IMPROVEMENT PROGRAMME SUMMARY
 - 4.2.3 SEWER INTEGRITY RISK ASSESSMENT

5 LICENCE SPECIFIC REPORTS

5.1 SMALL STREAM RISK SCORE ASSESSMENT

6 CERTIFICATION AND SIGN OFF

- 6.1 SUMMARY OF AER CONTENTS
- 7 APPENDIX
 - 7.1 SMALL STREAM RISK SCORE ASSESSMENT

Rev 1: Unaccredited Effluent samples removed from the Effluent Summary Table and replaced with accredited samples

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2021 AER

This Annual Environmental Report has been prepared for D0099-01, Tyrellspass, in Westmeath in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable. It is proposed to replace the FBDA system by Q4 2022.

1.2 TREATMENT SUMMARY

The agglomeration is served by a wastewater treatment plant(s)

• TYRELLSPASS WWTP with a Plant Capacity PE of 2000, the treatment type is 3P - Tertiary P removal.

1.3 ELV OVERVIEW

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF3200D0099SW001	TYRELLSPASS WWTP	Treated	Compliant	N/A

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report

Small Stream Risk Score Assessment

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 TYRELLSPASS WWTP - TREATED DISCHARGE

2.1.1 INFLUENT MONITORING SUMMARY - TYRELLSPASS WWTP

A summary of influent monitoring for the treatment plant is presented below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

Parameters	Number of Samples	Annual Max	Annual Mean
Ammonia-Total (as N) mg/l	12	59	25
BOD - 5 days (Total) mg/l	12	476	166
Total Phosphorus (as P) mg/l	12	11	4.18
Total Nitrogen mg/l	12	82	34
COD-Cr mg/l	12	977	457.84
Suspended Solids mg/l	12	483	203.64
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/I	12	462	184
pH pH units	12	7.90	7.46
ortho-Phosphate (as P) - unspecified mg/l	12	5.76	2.50
Hydraulic Capacity	N/A	740	222

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional 'Operational Performance Summary'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.1.2 EFFLUENT MONITORING SUMMARY - TPEFF3200D0099SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	12	N/A	N/A	28	Pass
Suspended Solids mg/l	35	88	N/A	12	N/A	N/A	11	Pass
pH pH units	6.00	9.00	N/A	12	N/A	N/A	7.43	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	8.00	16	N/A	12	2	N/A	3.86	Pass
Ammonia-Total (as N) mg/l	0.500	1.00	N/A	12	N/A	N/A	0.055	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.260	0.520	N/A	12	N/A	N/A	0.038	Pass

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included ^{Note 1}	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Total Phosphorus (as P) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.216	
Nitrite (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	0.079	
Total Oxidised Nitrogen (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	12	
Total Nitrogen mg/l	N/A	N/A	N/A	12	N/A	N/A	15	
Conductivity @20°C μS/cm	N/A	N/A	N/A	12	N/A	N/A	579	
Nitrate (as N) mg/l	N/A	N/A	N/A	12	N/A	N/A	11	

Notes:

1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied 2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Not applicable

Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

2.1.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF3200D0099SW001

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	240896, 238378	RS25T070150	No	No	No	No	Moderate
Downstream	238455, 239453	RS25T070680	No	No	No	No	Moderate

The table below provides a summary of monitoring results for designated ambient monitoring points. The upstream and downstream annual mean values are shown (mg/l), and the difference between both monitoring stations is given as a percentage of the Environmental Quality Standard (EQS) where relevant.

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
BOD - 5 days (Total) mg/l	RS25T070150	1.30	RS25T070680	1.31	1.50	0.6
Ammonia-Total (as N) mg/l	RS25T070150	0.044	RS25T070680	0.072	0.065	42.7
ortho-Phosphate (as P) - unspecified mg/l	RS25T070150	0.026	RS25T070680	0.034	0.035	22
Suspended Solids mg/l	RS25T070150	13	RS25T070680	3.54	N/A	
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/I	RS25T070150	1.41	RS25T070680	1.41	N/A	

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	% of EQS
Temperature °C	RS25T070150	11	RS25T070680	11	N/A	
Total Phosphorus (as P) mg/l	RS25T070150	0.063	RS25T070680	0.071	N/A	
Dissolved Oxygen % Saturation	RS25T070150	87	RS25T070680	82	N/A	
pH pH units	RS25T070150	7.90	RS25T070680	7.88	N/A	
COD-Cr mg/l	RS25T070150	20	RS25T070680	33	N/A	
Total Nitrogen mg/I	RS25T070150	4.86	RS25T070680	3.64	N/A	
Dissolved Oxygen mg/l	RS25T070150	9.56	RS25T070680	9.16	N/A	
Conductivity @20°C µS/cm	RS25T070150	681	RS25T070680	604	N/A	

Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the downstream monitoring location - The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD, Ammonia & Ortho-P concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.

As per the 3rd Cycle Lower Shannon (Brosna) Catchment Report (HA 25A), Agriculture is the significant pressure on the At Risk Brosna_050 waterbody. The Tyrellspass WWTP, although listed on Cycle 2 as a significant pressure, has been removed from the list of significant pressures in the Cycle 3 report.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

2.1.4 OPERATIONAL PERFORMANCE SUMMARY - TYRELLSPASS WWTP

2.1.4.1 Treatment Efficiency Report - TYRELLSPASS WWTP

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
SS	18644	1149	94
TN	3102	1507	51
ТР	382	22	94
cBOD	16846	388	98
COD	41917	2855	93

Note: The above data is based on sample results for the number of dates reported

2.1.4.2 Treatment Capacity Report Summary - TYRELLSPASS WWTP

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

TYRELLSPASS WWTP						
Peak Hydraulic Capacity (m³/day) - As Constructed						
DWF to the Treatment Plant (m³/day)						
Current Hydraulic Loading - annual max (m³/day)	740					

TYRELLSPASS WWTP					
Average Hydraulic loading to the Treatment Plant (m³/day)					
Organic Capacity (PE) - As Constructed					
Organic Capacity (PE) - Collected Load (peak week) ^{Note1}					
Organic Capacity (PE) - Remaining					
Will the capacity be exceeded in the next three years? (Yes/No)					

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

2.1.5 SLUDGE / OTHER INPUTS - TYRELLSPASS WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)	
There is no Sludge and Other Input data for the Treatment Plant included in the AER.								

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints				
There were no relevant environmental complaints in 2021.							

3.2 REPORTED INCIDENTS SUMMARY

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.2.1 SUMMARY OF INCIDENTS

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	Yes
Abatement Equipment offline	Plant or equipment breakdown at WWTP	1	No	No
Spillage	Plant or equipment breakdown at WWTP	1	No	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2021	3
Number of Incidents reported to the EPA via EDEN in 2021	3
Explanation of any discrepancies between the two numbers above	N/A

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

A summary of the operation of the storm water overflows and their significance where known is included below:

4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2021 (No. of events)	Total volume discharged in 2021 (m³)	Monitoring Status
SW2	240821, 238268	Yes	Low	Meeting	Unknown	Unknown	Not Monitored

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m ³)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0099-SIP:01	Waste Water treatment plant and ancillary works	С	01/12/2014	Yes	Works Completed		

A summary of the status of any other improvements identified by under Condition 5 assessments- is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement	Improvement Description / or any Operational	Improvement	Expected Completion	Comments
Identifier	Improvements	Source	Date	
No additional improver	nents planned at this time.			

4.2.3 SEWER INTEGRITY RISK ASSESSMENT

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Tables 4.2.1 and 4.2.2.

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Licence Specific Report	Required by licence	Year included in AER	Included in this AER
Priority Substances Assessment	Yes	2012	No
Small Stream Risk Score Assessment	Yes	2022	Yes

5.1 SMALL STREAM RISK SCORE ASSESSMENT

The Small Stream Risk Score Assessment Report is included in Appendix 7.2 - Small Stream Risk Score Assessment. A summary of the findings of this report is included below.

Parameter	Value
Condition 5 Improvement Programme Reference	N/A
Does SSRS indicate discharges are posing a pollution risk?	No
Downstream SSRS Water Quality Risk	At Risk
SSRS Required?	Yes
Upstream SSRS Water Quality Risk	At Risk
What is Downstream SSRS?	4

Parameter	Value
What is Upstream SSRS?	1.6
Does improvement programme include any procedural and/or infrastructural works?	N/A

6 CERTIFICATION AND SIGN OFF

6.1 SUMMARY OF AER CONTENTS

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e., have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Has a Technical amendment/licence review application been submitted to the Agency by IW?	No
List reason e.g., additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	Yes
List reason e.g., changes to monitoring requirements	Ambient Monitoring Location Changes
Have these processes commenced?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	N/A

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Date: 12/04/2022

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of,

Katherine Walshe

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix

Appendix 7.1 - Small Stream Risk Score Assessment

River:		Code:	Date:	1110121	Time: 2	: 30pm,	
Station no.		Location: Tu	CRE 114040	suls	Grid (6 figure):		
		Stream Order	in the s		Stream flow:	10	
		Green Green		11 de america	Riffle		
Field Ch	emistry	Modifications: W/	N Canalised-wider	ned-bank erosion-	Riffle/Gilde		
00%	67.6	Dominant Types:	weiter		SIOW NOW		
	10.47	Bedrock	-				
Temp (°C)	12:3	Boulder (>128mm)	5 F				
Conductivity		Cobble (82-128mm)				
pH		Gravel (8-32mm)	-				
Bank width (cm)	lin	Sand (1) 25-2mm)	v				
Wet width (cm)	0.5m	Silt (<0.25mm)					
Avg Depth (am)	10 cm .	Stone Low - Medi	ium – High – Verv	High			
Staff gauge	1.20	Coolemu Coleman	Ne Cillenour-Mika	, colid och	Shading: High – Modera	te - Low None	e).
Velocity	Colour	Geology Calcaled	gs-Silleous-Plike		Cattle accord upstrag	m downetrea	mar N
Torrential	None	Substratum Cond	dition: Calcareou	s-Compacted-	Cattle access() upsue	Tuomisu ca	
Madamha	Moderate 1	Substratum	×.			0.00	
Slow	High	Stoney bottom Mud	ddy bottom-Mud o	over stones	Photo: Y// N	1.0.	
Very slow		Degree of citatie	n: Claan Slight-M	Inderate-Heavy			
Clarity	Discharge	Degree or sheath	Sin Cicariongine i	100L/000 / 10 mm	1 1		
Very clear	Flood	Depth or mud: W	one: <1cm: 1-5cr	n: 5-10cm: >10cm		- ×	
Clear	Normal	Litter: None- Pre	sent – Moderate ·	- Abundant			
Clinkata hankid	Laut	Filamentous Alg	ae:		Sewage Fungus:		
Silgnay curbic	LUW	None + Present - M	Aoderate - Abund	ant	None - Present - Modera	ite - Abundant	
Highly turbid	Very Low	Main land use u/	SI	Sample	Sampled in Minutes:		
	Dry Dry	Bog	Tilage	Y IN	Pond neux Zhun		
	Recent Ploou	Forestry	Other	1.C	Stone wash x		
		1		100 B	Weed sweep x		
		Macroinvertet	orate Compo	sition		Relative	
The macroinvertebr • Group 1 = E • Group 2 = F • Group 3 = T	ates are divided intr phemeroptera (2-tails) - Tickontera	Macroinvertet a the following 5 spec alls) – note that talls r note that talls may b	prate Compo Inc groups: nay be damaged te damaged durin	sition during sampling g sampling		Relative Abundar 1-5 6-20 21-50	nce 1 2 3
The macroinvertebr • Group 1 = E • Group 2 = P • Group 3 = T • Group 4 = C	ates are divided inte phemeroptera (3-ta lecoptera (2-talls) - richoptera 5.OL.D (Gastropoda,	Macroinvertes a the following 5 spect alls) – note that talls r note that talls may b , Oligochaeta and Dip	prate Compo Inc groups: nay be damaged le damaged durin ttera)	sition during sampling g sampling		Relative Abundar 1-5 6-20 21-50 51-100	nce 1 2 3 4
The macroinvertebr • Group 1 = E • Group 2 = F • Group 3 = T • Group 4 = C • Group 5 = 2	ates are divided inte phemeroptera (3-ta lecoptera (2-talls) - richoptera S.OL.D (Gastropoda, <i>scellus</i>	Macroinvertel: a the following 5 specialis) – note that tails r note that tails may b , Oligochaeta and Dip	prate Compo Inc groups: nay be damaged le damaged durin ttera)	sition during sampling g sampling	un beleuu (Abuudaac - Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - richoptera G.OL.D (Gastropoda, <i>ksellus</i> e total number of ta	Macroinvertel: a the following 5 spec alls) – note that tails r note that tails may b , Oligochaeta and Dip axa and relative abund	prate Compo Inc groups: nay be damaged le damaged durin ttera) dance of each ma	sition during sampling g sampling acroinvertebrate gro	oup below: (Abundance – Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+	nce 1 2 3 4 5
The macroinvertebr Group 1 = 5 Group 2 = 7 Group 3 = 7 Group 4 = 0 Group 5 = 7 Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, Asellus e total number of ta	Macroinvertel: a the following 5 spec- alls) – note that tails r note that tails may b , Oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab	prate Compo file groups: nay be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling accoinvertebrate gro atera:	oup below: (Abundance Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+) <i>Leuctra</i> Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, Asellus e total number of ta	Macroinvertel a the following 5 spec- alis) – note that tails r note that tails may b , Oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab	prate Compo Ific groups: nay be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling acroinvertebrate gro atera:	oup below: (Abundance Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = 5 Group 2 = 7 Group 3 = 7 Group 4 = 0 Group 5 = 7 Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>Asellus</i> e total number of ta	Macroinvertel: a the following 5 spec- alls) – note that tails r note that tails may b , Oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab	brate Compo Inc groups: nay be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling acroinvertebrate gro atera:	oup below: (Abundance – Ab Pr	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>Asellus</i> e total number of ta	Macroinvertel a the following 5 spec- alis) – note that tails may be note that tails may be off off off off off off off off off off off	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling accoinvertebrate gro ntera:	pup below: (Abundance Ab Pr An	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>seilus</i> e total number of ta	Macroinvertel a the following 5 spec- alis) – note that tails may be note that tails may be oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling accoinvertebrate gro otera:	pup below: (Abundance Ab Pr An	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>perla</i> Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>setilus</i> e total number of ta	Macroinvertel a the following 5 spec- alis) – note that tails may be note that tails may be official tails may be control that tails may be note that tails may be control that tails may be provided that tails carries that tails may be control to the tails of the tails of tails of the tails of the tails of the tails of tails of the tails of tails of tails	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling accoinvertebrate gro otera:	pup below: (Abundance Ab Pr An	Relative Abundar 1-5 6-20 21-50 51-100 101+)) <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>sellus</i> e total number of ta	Macroinvertel a the following 5 spec- note that tails may be note that tails may be official tails may be control that tails may be provided that tails may be control to the tails may be control to the tails control tails cont	brate Compo Inc groups: nay be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling accoinvertebrate gro otera:	pup below: (Abundance – Ab Pr Am	Relative Abundar 1-5 6-20 21-50 51-100 101+)) <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab	nce 1 2 3 4 5
The macroinvertebri Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>seellus</i> e total number of ta	Macroinvertel a the following 5 spec- note that tails may be note that tails may be official tails may be control that tails may be provided that tails may be control to the tails and relative abund Ecdyonurus Ab Rhithrogena Ab Heptagenia Ab Ephemerella Ab Caenis Ab analeptophiebia Ab behemera danica Ab	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma Plecop	sition during sampling g sampling acroinvertebrate gro ntera:	pup below: (Abundance Ab Pr Am	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab ther Plecop Ab	nce 1 2 3 4 5
The macroinvertebri Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-tails) - Trichoptera S.OL.D (Gastropoda, <i>stellus</i> e total number of ta <u>Prince</u> <u>Prince</u>	Macroinvertel a the following 5 spec- note that tails may be note that tails may be of the following 5 spec- note that tails may be compared to the following provide the following following compared to the following following manual spectra following following compared to the following following compared to the following following following compared to the following following following following following compared to the following following following following following following compared to the following followi	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma	sition during sampling g sampling acroinvertebrate gro	pup below: (Abundance – Ab Pr Am O Ot	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab ther Plecop Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>seellus</i> e total number of ta <i>pa</i> <i>pa</i> <i>pa</i> <i>pa</i> <i>pa</i> <i>pa</i> <i>pa</i> <i>pa</i>	Macroinvertel a the following 5 spec- note that tails may be note that tails may be of the following 5 spec- note that tails may be compared to the following provide the following following compared to the following following manual spectra following following compared to the following following compared to the following following following compared to the following following following compared to the following following following following following following compared to the following following following following following following compared to the following follo	brate Compo Ific groups: may be damaged le damaged durin tera) dance of each ma Plecop	sition during sampling g sampling acroinvertebrate gro ntera:	pup below: (Abundance – Ab Pr An O O Ot Total Relativ	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>Isoperla</i> Ab <i>Dinocras</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab ther Plecop Ab the Plecop Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = 5 Group 2 = 7 Group 3 = 7 Group 4 = 0 Group 5 = 2 Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, setilus e total number of ta <u><u><u></u></u> <u><u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u></u></u>	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be onter that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be control tails may be control tails and tails control tails	Drate Compo- Lific groups: nay be damaged damaged durin tera) dance of each ma Plecop District Lymna	sition during sampling g sampling acroinvertebrate gro ntera:	pup below: (Abundance – Ab Pr Ah O O O Total Relativ Chironomidae (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = 5 Group 2 = F Group 3 = T Group 4 = C Group 5 = 2 Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, setilus e total number of ta 	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be onter that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be control tails may be control tails and tails control tails co	Drate Compo- Lific groups: nay be damaged de damaged durin tera) dance of each ma Plecop D: Lymna 1 Potamopyrg	sition during sampling g sampling acroinvertebrate gro itera:	pup below: (Abundance – Ab Pr An O O Total Relativ Chironomidae (D) Ab Chironomus (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, setilus e total number of ta 	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab <i>araleptophlebla</i> Ab other Ephem Ab etative Abundance lae Ab <i>G.O.L.i</i> and <i>G.O.L.i</i>	prate Compo lific groups: nay be damaged ie damaged durin itera) dance of each ma Plecop Total r D: Lymna I Potamopyrg Planord	sition during sampling g sampling acroinvertebrate gro atera:	pup below: (Abundance – Ab Pr An O O Total Relativ Chironomidae (D) Ab <i>Chironomida</i> e (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab for Asellus: Absor Asellus:	
The macroinvertebr Group 1 = 5 Group 2 = F Group 3 = T Group 4 = C Group 5 = 7 Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, setilus e total number of ta <u>Rip</u> (a O Total Re Hydropsychid Polycentropodid 1 Rhyacopi	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be only a special special special content tails may be different tails may be only a special special special content tails may be provided that tails may be content to tails tails tails tails tails tails to content tails tails tails tails tails to content tails	prate Compo Effic groups: nay be damaged ie damaged durin etera) dance of each ma Plecop D: Lymna I Potamopyrg Denord Ancy/	sition during sampling g sampling acroinvertebrate gro atera:	Pr An O O O C D Chironomidae (D) Ab Chironomidae (D) Ab Chironomidae (D) Ab Chironomidae (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab for Plecop Ab	enti w / L
The macroinvertebr Group 1 = 5 Group 2 = 7 Group 3 = 7 Group 4 = 0 Group 5 = 7 Calculate th Ephemeroptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, setilus e total number of ta <u>Potocentropodic</u> <u>Potycentropodic</u> <u>Potycentropodic</u> <u>Philopotamic</u> <u>Limnephilic</u>	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be onter that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be control to the tails and relative abundance tails Ab chemera danica Ab Other Epherm Ab chaile Ab chemera danica Ab other Epherm Ab chails Ab chemera danica Ab	prate Compo Effic groups: nay be damaged ie damaged durin etera) dance of each ma Plecop D: Lymna I Potamopyrg Denord Ancy/ Phy	sition during sampling g sampling acroinvertebrate gro ntera:	pup below: (Abundance – Ab Pr An O O Total Relativ Chironomidae (D) Ab <i>Chironomida</i> e (D) Ab <i>Chironomida</i> e (D) Ab <i>Chironomida</i> e (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab free Abundance Asellus: Absor Commor Numerou	enti w w J J J J
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera S.OL.D (Gastropoda, <i>setilus</i> e total number of ta <u>Rep</u> (a O Tetal Re Hydropsychid Połycentropodic 1 <i>Rhyacopi</i> (11 Limnephilic Sericostomatic	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be oligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab <i>araleptophlebia</i> Ab other Ephem Ab etative Abundance lae Ab <i>Golu</i> <i>aa</i> Ab <i>Golu</i> <i>aa</i> Ab <i>Golu</i>	prate Compo lific groups: nay be damaged ie damaged durin itera) dance of each ma Plecop Total r D: Lymna I Potamopyrg I Planord Ancy/ Phy Lumbriculu	sition during sampling g sampling acroinvertebrate gro atera:	pup below: (Abundance – Ab Pr An O O O Total Relativ Chironomidae (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab	nce 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera 5.OL.D (Gastropoda, <i>setilus</i> e total number of ta <u>Rep</u> (a O Total Re Hydropsychid Połycentropodic <i>Rhyacopi</i> (11 Limnephilic Sericostomatic Glossosomatic	Macroinvertel a the following 5 spec- note that tails may be note that tails may be of the following 5 spec- note that tails may be complete the following 5 spec- note that tails may be defined and tails of the following 5 specific the following following the following t	prate Compo Ific groups: nay be damaged ie damaged durin itera) dance of each ma Plecop Total r D: Lymna I Potamopyrg I Planord Ancy/ Phy Lumbricula I Eisenled	sition during sampling g sampling acroinvertebrate gro atera:	pup below: (Abundance – Ab Pr An OC OC OC OC OC OC OC OC OC OC OC OC OC	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab	nce 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0 0 0 0
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera S.OL.D (Gastropoda, <i>setilus</i> e total number of ta <u>e total number of ta</u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <u><i>Ri</i></u> <i>Ri</i> <u><i>Ri</i></u> <i>Ri</i> <u><i>Ri</i></u> <i>Ri</i> <u><i>Ri</i></u> <i>Ri</i> <i>Ri</i> <i>Ri</i> <i>Ri</i> <i>Ri</i> <i>Ri</i> <i>Ri</i> <i>Ri</i>	Macroinvertel a the following 5 spec- note that following 5 spec- note that tails may be onter that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be control tails may be	arate Compo- lific groups: nay be damaged de damaged durin tera) dance of each ma Plecop Total r D: Lymna I Potamopyrg I Planord Ancyl Fhy Lumbricula I Eisentei (I Tubificida	sition during sampling g sampling acroinvertebrate gro atera: acroinvertebrate gro atera: acroinvertebrate gro atera: acroinvertebrate gro atera: atera:	Pri An OC OC OC OC OC OC OC OC OC OC OC OC OC	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperia</i> Ab <i>rotonemura</i> Ab <i>Peria</i> Ab <i>Dinocras</i> Ab ther Plecop Ab	Ace 1 2 3 4 5 0 0 0 0 0 0 0 0 0 0 0 0 0
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax	ates are divided into phemeroptera (3-ta lecoptera (2-talls) - Trichoptera S.OL.D (Gastropoda, <i>dsellus</i> e total number of ta e total number of ta <i>e</i> total num	Macroinvertel: a the following 5 spec- spectra in the following 5 spec- note that tails may be a cligochaeta and Dip axa and relative abund <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Caenis</i> Ab <i>C</i>	arate Components in the compon	sition during sampling g sampling acroinvertebrate gro atera: 10. of Taxa <i>ea</i> (G) Ab <i>us</i> (G) Ab <i>(U)</i> <i>bis</i> (G) Ab <i>(U)</i> <i>bis</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>ius</i> (G) Ab <i>(U)</i> <i>(U)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i>(D)</i> <i></i>	Dup below: (Abundance – Ab Pr An O O O Total Relativ Chironomidae (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomidae</i> (D) Ab <i>Olcranota</i> (D) Ab <i>Olcranota</i> (D) Ab <i>Olcranota</i> (D) Ab <i>Olcranota</i> (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab Absellus: Absul Dinocras Ab ther Plecop Ab Absellus: Absul Dinocras Ab Absul Absul Absul Dinocras Ab ther Plecop Ab Absultance Absultance Absellus: Absul Dinocras Ab Absultance Absultance Absellus: Absultance Absellus: Absultance Absellus: Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absultance Absult	Ace 1 2 3 4 5
The macroinvertebr Group 1 = E Group 2 = F Group 3 = T Group 4 = C Group 5 = A Calculate th Ephemeroptera: Total no. of tax Trichoptera:	ates are divided into phemeroptera (3-tails) - Trichoptera S.OL.D (Gastropoda, <i>dsellus</i> e total number of ta <i>e</i> total number of ta <i>Pai</i> <i>e</i> total number of ta <i>e</i> total number of ta <i>Pai</i> <i>e</i> total number of t	Macroinvertela bathe following 5 spec- spectro in the following 5 spec- note that tails may be one that tails may be control that tails may be provided that tails may be provided that tails may be control that tails may be provided that tails may be provided that tails may be provided that tails may be provided that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be control that tails may be provided that tails may be provided that tails may be control that tails may be provided that tails may be control that tails t	prate Compo Ific groups: may be damaged te damaged durin tera) dance of each ma Plecop Plecop Total r D: Lymna 1 Potamopyrg [Planord Ancyl Phy Lumbricula 1 Eisentel (1 Tubificida	sition during sampling g sampling acroinvertebrate gro acroinvertebrate gro acroinv	Dup below: (Abundance – Ab Pr An O O Total Relativ Chironomidae (D) Ab <i>Chironomidae</i> (D) Ab <i>Chironomus</i> (D) Ab	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>rotonemura</i> Ab <i>Perla</i> Ab <i>Dinocras</i> Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab ther Plecop Ab e Abundance <i>Asellus</i> : Absor <i>D</i> Numerou <i>D</i> Numerou <i>D</i> Numerou <i>D</i> <i>NoTE:</i> A must be recorded absent if are foun	Ace 1 2 3 4 5

NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

Garmen Abundant.

Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from *each macroinvertebrate group* calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.



River:		Code	Date	e: ////c	121	Time	*2 1 1	20	
Station no.		Location:			1-10	Frid (6 figure)	3		
		Change O	law			trans (o rigure)			_
		Stream Ord	ier:		8	liffle		÷.	
Field Ch	emistry	Modifications	YN Canalised-w	idened-bank er	osion-	Iffle/Gllde			
00 m=//	91.5	arterial drainage			5	low flow			
	9.93	Bedrock	·C3 •						_
	11.7	Boulder (>128m	រ៣)						
Conductivity		Cobble (32-128)	nw)		L				
pH		Fine Gravel Pa-B	1) (mm)						
Bank width (cm)	6M	Sand (0.25-2mn	n)						
Wet width (cm)	3M	Sflt (<0.25mm)						-	
Avg Depth (cm)	0.60	Slope: Low - M	ledium – High – V	ery High					
Staff gauge	Calavia	Geology: Calca	reous-Siliceous-M	Ixed	S	ihadIng: High-@	oderate	Low - No	ne
Torrential	None	Substratum Co	andition: Calcare	ous-Compacte		attle access V: w	setroam	- downetro	am al
Fast	Slight	Loose (Normal)		ous-compacte			/3/1 C 0111	- dumisu ei	anog
Moderate	Moderate	Substratum:	ner			1	<u></u>		
Slow	High	Stoney bottom-	Muddy bottom-Mu	d over stones	- F	hoto: (Y / N			
Clariby	Direbarga	Degree of silta	tion: Clean-Sligh	Moderate-He	ачу	\mathbf{C}			
Very dear	Flood	Depth of mud:	Nonec <1cmi 1-	5cm: 5-10cm;	>10cm				
Clear	Normal	Litter; None +	Present - Moderat	e - Abundant					
CII-Laborated		Filamentous A	loae:		5	ewage Fungus:	_		
	Law	None > Present	- Moderate - Abu	ndant	đ	lone - Present - Mo	derate	- Abundant	
Highly turbid	Very Low	Main land use	u/st	Sample	10	ampled in Minute	es:		1
	Dry (Bog	Urban	retained	: {P	ond net x			
	Recent Flood	Loon y	1 114 317 148						
		Forestry	Other	Y/N	5	tone wash x			
General Comment	:s:	Macroinverte	Other	osition	S V	tone wash x Veed sweep x		Relative	
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G	ates are divided Into phemeroptera (3-tai lecoptera (2-tails) - I richoptera .OL.D (Gastropoda,	Macroinverte the following 5 sp ils) – note that tails note that tails may Oligochaeta and D	Diperate Comp edific groups: s may be damage / be damaged dur Diptera)	osition d during samp ing sampling	ling	tone wash x Veed sweep x		Relative Abunda 1-5 6-20 21-50 51-100	nce 1 2 3
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, sellus	Macroinverte the following 5 sp ils) – note that talk note that talk may Ol/gochaeta and C	ebrate Comp ecfic groups: s may be damage be damaged dur	osition d during samp ing sampling	ling	tone wash x Veed sweep x	453	Relative Abunda 1-5 6-20 21-50 51-100 101+	nce 1 2 3
General Comment The macroinvertebra Group 1 = F Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax	Macroinverte the following 5 sp lis) – note that tall note that talls may Oligochaeta and C ka and relative abu	Diploterate Comp edific groups: s may be damage / be damaged dur Diptera) indance of each n	osition d during samp ing sampling	ling ate group t	tone wash x Veed sweep x elow: (Abundance	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+	nce 1 2 3
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ka and relative abu Ecdyonurus Ab	Diptera)	eosition during samp ing sampling nacroinvertebr	ling ate group t	tone wash x Veed sweep x	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab	e nce 1 2 3
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ka and relative abu Ecolyonurus Ab Rhithrogena Ab	Diptera)	eosition during sampling nacroinvertebr	ling ate group t	tone wash x Veed sweep x	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab	nce 1 2 3
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each n	Position during sampling ing sampling nacroinvertebr	ling ate group t	tone wash x Veed sweep x	- Ab)	Relative Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab	1 2 3 4
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each n	Y/R cosition ed during sampling fing sampling macroinvertebr optera:	ling ate group t	tone wash x Veed sweep x	Ab)	Relative Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab	1 1 2 3 4 5
General Comment The macroinvertebra • Group 1 = E • Group 2 = P • Group 3 = T • Group 4 = G • Group 5 = A • Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax	Forestry Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each n	Position during sampling ing sampling nacroinvertebr	ling ate group t	tone wash x Veed sweep x	- Ab) Proto. Amphi	Relative Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Peria Ab	1 2 3 4
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, sellus total number of tax 	Macroinverte the following 5 sp ils) – note that tails note that tails may Oilgochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab raleptophilebia Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each n	osition ed during samp ing sampling nacroinvertebr optera:	ling ate group t	tone wash x Veed sweep x	– Ab) I Proto Amphi	Relative Abunda 1-5 6-20 21-50 51-100 101+ <i>Leuctra</i> Ab <i>Isoperla</i> Ab <i>memura</i> Ab <i>Perla</i> Ab <i>Perla</i> Ab	e nce 3 3
General Comment The macroinvertebra • Group 1 = E • Group 2 = P • Group 3 = T • Group 4 = G • Group 5 = A • Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax <u>Pau</u> <u>Pau</u> Eph	Macroinverte the following 5 sp ils) – note that tails note that tails may Oilgochaeta and C ca and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab raleptophlebia Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each n	oosition ed during sampling macroinvertebr	ling ate group t	tone wash x Veed sweep x	- Ab)	Relative Abunda 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperia Ab memura Ab Peria Ab Peria Ab Peria Ab	e nce 3 3
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided Into phemeroptera (3-tai lecoptera (2-tails) - 1 richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax <i>Pan</i> <i>Eph</i>	Macroinverte the following 5 sp iis) – note that tails note that tails may Oligochaeta and C ka and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab <i>raleptophlebia</i> Ab bemera danica Ab	ebrate Comp ecfic groups: s may be damage be damaged dur Diptera) indance of each n	oosition ed during sampling macroinvertebr	ling ate group b	tone wash x Veed sweep x	Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab Isoperla Ab Perla Ab Perla Ab Plecop Ab	
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided Into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax <u>Pan</u> <u>Eph</u>	Macroinverte the following 5 sp ils) – note that tails note that tails may Oligochaeta and D ca and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemereila</i> Ab <i>Caenis</i> Ab <i>raleptophlebia</i> Ab bemera danica Ab Other Ephem Ab ative Abundance	Diptera)	no. of Taxa	ling ate group b	tone wash x Veed sweep x elow: (Abundance	- Ab)	Relative Abundan 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab Peria Ab Placoras Ab Plecop Ab Plecop Ab	
General Comment The macroinvertebra Group 1 = 5 Group 2 = Pl Group 3 = Ti Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax <u>Pau</u> <u>Eph</u> a O Total Rel:	Macroinverte the following 5 sp lis) – note that tails note that tails may Oligochaeta and D ca and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab <i>raleptophlebia</i> Ab temera danica Ab Other Ephem Ab ative Abundance te Ab	Diptera)	no. of Taxa	ling ate group t	tone wash x Veed sweep x elow: (Abundance elow: (Abundance Total Rela	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab Isoperla Ab Isoperla Ab Peria Ab Peria Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab	
General Comment The macroinvertebra • Group 1 = E • Group 2 = P • Group 3 = T • Group 3 = T • Group 5 = A • Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - richoptera .OL.D (Gastropoda, sellus e total number of tax 	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab <i>raleptophiebia</i> Ab <i>bemera danica</i> Ab Other Ephem Ab ative Abundance te Ab (1) IG.OI	Diptera) indance of each m Diptera) indance of each m Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera Diptera	no. of Taxa	ling ate group t	tone wash x Veed sweep x nelow: (Abundance Total Relation Chironomidae (D) Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Perla Ab Plecop Ab Plecop Ab Plecop Ab bundance Abse	
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, sellus e total number of tax Pau Eph a O Total Rela Hydropsychida Polycentropodida	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab <i>raleptophlebia</i> Ab <i>bemera danica</i> Ab Other Ephem Ab ative Abundance te Ab <i>(1)</i> G.OI	Diptera) Indage Other Diptera) Indance of each m Diptera) Indance of each m Diptera Diptera Diptera Diptera Diptera Diptera	No. of Taxa aea (G) Ab gus (G) Ab	ling ate group to	tone wash x Veed sweep x relow: (Abundance relow: (Abundance <u>Total Rela</u> hironomidae (D) Al <i>Chironomus</i> (D) Al Simuliidae (D) Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab Perla Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab bundance Assellus: Abse Few/Loy	
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax <i>Pai</i> <i>Pai</i> <i>Eph</i> a O Total Rela <i>Hydropsychida</i> <i>Polycentropodida</i> <i>Rhyacophil</i> <i>'Philopotamida</i>	Macroinverte the following 5 sp ils) – note that tail note that tails may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab <i>raleptophlebia</i> Ab other Ephem Ab ative Abundance te Ab <i>(1)</i> G.OI te Ab	Diptera) Indage Other Diptera) Indance of each m Diptera Dip	No. of Taxa aea (G) Ab gus (G) Ab vius (G) Ab	ling ate group to	tone wash x Veed sweep x relow: (Abundance relow: (Abundance <u>Total Rela</u> hironomidae (D) Al <i>Chironomus</i> (D) Al Simuliidae (D) Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab Perta Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab Dundance Assellus: Abse Few/Loy Common	
General Comment The macroinvertebra • Group 1 = E • Group 2 = Pl • Group 3 = T • Group 4 = G • Group 5 = A • Calculate the Ephemeroptera:	ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax <i>Pan</i> <i>Eph</i> a O Total Rel: J Hydropsychida Polycentropodida <i>Rhyacophil</i> 'Philopotamida Limnephilida	Macroinverte the following 5 sp ils) – note that tails note that tails may Oligochaeta and D ca and relative abu <i>Ecdyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerelia</i> Ab <i>Caenis</i> Ab raleptophleb/a Ab hemera danica Ab Other Ephem Ab ative Abundance te Ab Mab	Diptera) Place Place Diptera) Indance of each m Place Diptera Dipter	no. of Taxa aea (G) Ab gus (G) Ab tybs (G) Ab	ling ate group to	tone wash x Veed sweep x relow: (Abundance relow: (Abundance Chironomidae (D) Al Chironomidae (D) Al Chironomidae (D) Al Simuliidae (D) Al Dicranota (D) Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Peria Ab Plecop Ab Plecop Ab Plecop Ab plecop Ab bundance Abse Few/Loy Common Numerou	nce 1 2 3 3 4
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 4 = G Group 5 = A Calculate the Ephemeroptera:	Ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax e total number of tax <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Eph</i> a O Total Rel: <i>Hydropsychida</i> <i>Polycentropodida</i> <i>Rhyacophili</i> <i>'Philopotamida</i> <i>Limnephilida</i> Sericostomatida	Macroinverte the following 5 sp ils) – note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Ephemerella</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab raleptophiebia Ab hemera danica Ab Other Ephem Ab ative Abundance te Ab <i>la</i> Ab te Ab te Ab	Diptera) Indage Other Diptera) Indance of each m Place Plac	no. of Taxa aea (G) Ab gus (G) Ab thus (G) Ab	ling ate group t	tone wash x Veed sweep x relow: (Abundance Chironomidae (D) Al Chironomidae (D) Al Chironomidae (D) Al Simuliidae (D) Al Dicranota (D) Al Tipulidae (D) Al atopogonidae (D) Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab Perla Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab plecop Ab plecop Ab Sundance Assellus: Abse Few/Lov Common Numerou	nce 1 3 3 4 5
General Comment The macroinvertebra • Group 1 = E • Group 2 = P • Group 3 = T • Group 5 = A • Calculate the Ephemeroptera:	Ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, <i>sellus</i> e total number of tax e total number of tax <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Constantia</i> <i>Pai</i> <i>Pai</i> <i>Constantia</i> <i>Pai</i> <i>Pai</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i> <i>Constantia</i>	Macroinverte the following 5 sp ils) - note that tall note that talls may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab <i>raleptophiebia</i> Ab temera danica Ab Other Ephem Ab ative Abundance te Ab <i>La</i> A	Piptera) Indage Other Diptera) Indance of each m Place Plac	no. of Taxa aea (G) Ab gus (G) Ab cus (G) Ab	ling ate group to	tone wash x Veed sweep x relow: (Abundance Chironomidae (D) Al Chironomidae (D) Al Chironomidae (D) Al Dicranota (D) Al Tipulidae (D) Al atopogonidae (D) Al	- Ab)	Relative Abundan 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Perla Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab Sundance Assellus: Abse Few/Lov Cammon Numerou	nce 1 2 3 3
General Comment The macroinvertebra • Group 1 = E • Group 2 = P • Group 3 = T • Group 5 = A • Calculate the Ephemeroptera:	Ates are divided into phemeroptera (3-tai lecoptera (2-tails) - i richoptera .OL.D (Gastropoda, sellus e total number of tax e total number of tax Pai Pai Pai Eph A O Total Rel: Hydropsychida Polycentropodida <i>Rhyacophil</i> 'Philopotamida Limnephilida Sericostomatida Glossosomatida Lepidostomatida	Macroinverte the following 5 sp ils) - note that tails note that tails may Oligochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Ephemerella</i> Ab <i>Caenis</i> Ab <i>raleptophiebia</i> Ab <i>raleptophiebia</i> Ab temera danica Ab Other Ephem Ab ative Abundance te Ab <i>La</i> Ab te Ab te Ab te Ab	Place Pl	no. of Taxa aea (G) Ab gus (G) Ab chis (G) Ab	ling ate group to Cer	tone wash x Veed sweep x relow: (Abundance Total Relation Chironomidae (D) Al Chironomidae (D) Al Chironomidae (D) Al Dicranota (D) Al Tipulidae (D) Al Tipulidae (D) Al Other GOLD Al	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Perla Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab Sundance Abse Few/Lov Cammon Numerou	nce
General Comment The macroinvertebra Group 1 = E Group 2 = P Group 3 = T Group 5 = A Calculate the Ephemeroptera: Total no. of taxe	Ates are divided into phemeroptera (3-tai lecoptera (2-tails) - richoptera .OL.D (Gastropoda, <i>sellus</i> total number of tax <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Pai</i> <i>Eph</i> <i>Pai</i> <i>Eph</i> <i>Rhyacophil</i> <i>Philopotamida</i> <i>Limnephilida</i> <i>Sericostomatida</i> <i>Glossosomatida</i> <i>Lepidostomatida</i> <i>Other Trichoptera</i>	Macroinverte the following 5 sp ils) - note that tails note that tails may Ollgochaeta and D ca and relative abu <i>Ecolyonurus</i> Ab <i>Rhithrogena</i> Ab <i>Heptagenia</i> Ab <i>Echemerella</i> Ab <i>Caenis</i> Ab <i>raleptophlebla</i> Ab <i>caenis</i> Ab <i>raleptophlebla</i> Ab <i>caenis</i> Ab	ebrate Comp ecific groups: s may be damaged dur biptera) indance of each m Place Total Diptera Place <i>Place</i> <i>Place</i> <i>Place</i> <i>Place</i> <i>Place</i> <i>Place</i> <i>Place</i> <i>Control</i>	no. of Taxa aea (G) Ab gus (G) Ab this (G) Ab this (G) Ab this (G) Ab this (G) Ab	ling ate group to Cer	tone wash x Veed sweep x relow: (Abundance Total Relation Chironomidae (D) Al Chironomidae (D) Al Dicranota (D) Al Tipulidae (D) Al Tipulidae (D) Al Other GOLD Al Deette	- Ab)	Relative Abundar 1-5 6-20 21-50 51-100 101+ Leuctra Ab Isoperla Ab nemura Ab nemura Ab Peria Ab Plecop Ab Plecop Ab Plecop Ab Plecop Ab Sundance Abse Few/Low Cammon Numerou	nce

NOTE *Baetis* is an Ephemeropteran and is the most commonly occurring invertebrate genus in streams in Ireland. It is vital that *Baetis* is not counted in SSRS. See Appendix B for more details on how to identify *Baetis*.

Gammers alundent.

Baetis present.

Step 1. Calculate the Index Score by circling the appropriate box representing the total number of taxa and the total abundance calculated from *each macroinvertebrate group* calculated from page 1 of the recording sheet and enter in to the boxes in Step 2.

