

APPENDIX 12.1 BIOLOGICAL EVALUATION OF WATERCOURSES**KK1**

Site KK1 contained 244 organisms in total and 13 species/higher taxa. Freshwater shrimp (*Gammarus* sp.) were the most abundant organisms, comprising over 50% of the faunal sample. These shrimp are considered to be tolerant of organic pollution (EPA Group C). Other Group C fauna included the mayflies *Baetis rhodani* and *Ephemerella ignita*, which are both common and widespread in Ireland (Kelly-Quinn & Bracken, 2000). Uncased caddisflies (*Hydropsyche sitalai*), dipteran larvae including blackfly larvae (Simuliidae) and riffle beetles with their larvae (Elminthidae) were also recorded from this group. Less pollution tolerant, Group B organisms such as, cased caddis larvae (Limnephilidae), were recorded in small numbers. Group A fauna were also recorded in small numbers and consisted of two mayfly species *Ecydonurus venosus* and *Rhithrogena semicolorata* which are both common and widespread in fast-flowing waters (Kelly-Quinn & Bracken, 2000). Overall, species that are more tolerant to pollution dominated the fauna, while more sensitive species were smaller in number. Macrophytic growth was also recorded in-stream, which can indicate enrichment. A Q-value of 3-4 was assigned to this watercourse, indicating slight to moderate organic pollution.

KK2

Site KK2 contained 260 organisms from 10 different species/higher taxa. Pollution tolerant organisms (EPA Group C) dominated the sample and again, the very high numbers of freshwater shrimp (*Gammarus* sp.) were present. Other Group C fauna included very high numbers of the midge larvae (Chironomidae). Group B fauna were common and comprised mainly of cased caddis larvae from the family Limnephilidae. The flow rate was slow at this site and macrophytic growth was recorded in-stream. Sensitive fauna were absent and more tolerant forms dominated the sample. A Q-value of 3 was assigned to this watercourse, indicating moderate enrichment at the site.

KK3

At site KK3, 138 organisms and 14 species/higher taxa were recorded. Tolerant fauna from Group C dominated the site. These consisted of, freshwater shrimp (*Gammarus* sp.), mayflies *Baetis rhodani* and *Ephemerella ignita*, dipteran larvae and beetle larvae from the families Helodidae and Elminthidae. Very tolerant organisms (Group D) consisted of the waterlouse *Asellus aquaticus*, which were recorded in small numbers. The group B fauna were also numerous consisting of cased caddis larvae (Limnephilidae) and *Agapetus fuscipes*, which is commonly found within the British Isles in waters that have a stony substratum (Wallace *et al.*, 1990). The sensitive group A fauna were absent. In addition, siltation, disturbance by cattle and macrophytic growth were noted in-stream. A Q-value of 3 was assigned to this watercourse, indicating moderate organic pollution.

KK4

Site KK4 contained 129 organisms from 19 species/higher taxa. Of these taxa, Group C species dominated and included relatively high numbers of freshwater shrimp (*Gammarus* sp.) and substantial numbers of riffle beetles *Elmis aenea* and *Limnius volkmari*, blackfly larvae (Tipulidae) and mayfly *Baetis rhodani*. Group B fauna were common, consisting of cased caddis larvae of the genera *Stenophylax* and *Micropterna* and the species *Agapetus fuscipes* and *Sericostoma personatum*. These are widespread and common in the British Isles where there is a stony substratum present (Wallace *et al.*, 1990). No sensitive Group A fauna were recorded. The flow rate in the channel was slow and some macrophytic growth was noted. A Q value of 3 was assigned to this watercourse, which indicates moderate organic pollution.

E1

Site E1 contained 247 organisms in total and 25 species/higher taxa. One of the most common groups of organisms found in the sample were mayflies of the family Heptageniidae. These are among the 'flattened' mayflies that are Group A organisms and are sensitive to organic pollution (Kelly-Quinn & Bracken, 2000). Other Group A organisms found in the sample were 30 individuals from three species of stonefly (Plecoptera). Very few Group B organisms were found - only two individual mayflies from the Baetidae family (excluding *Baetis rhodani*) and five cased caddis individuals. The most abundant organism in the sample was the mayfly *Baetis rhodani*, which is a Group C organism and is both common and widespread in Ireland (Kelly-Quinn & Bracken, 2000). No Group D organisms were recorded, although large numbers of tolerant organisms were found in the sample. There were also significant numbers of sensitive organisms. A Q value of 4 was assigned to this watercourse, indicating that it is unpolluted.

E2

Site E2 contained well over 300 organisms and 37 species/higher taxa. There were a number of Group A organisms found. These included mayflies of the family Heptageniidae. These are among the 'flattened' mayflies, and are all sensitive to organic pollution (Kelly-Quinn & Bracken, 2000). Also quite common were three stonefly species. Group B organisms found included mayflies from the Baetidae family (excluding *Baetis rhodani*) and six cased caddis individuals. By far the most common organism in the sample however, was the mayfly *Baetis rhodani*, which is common and widespread in Ireland (Kelly-Quinn & Bracken, 2000). This made up at least one third of the sample. Other Group C (tolerant) organisms found include caseless caddis larvae, and two species of Chironomids (Diptera – true flies). A number of freshwater shrimp (*Gammarus duebeni*) were also recorded. These are widespread and common in many types of freshwater habitats (Fitter & Manuel, 1986). Group D organisms recorded included four leeches and two individuals of the crustacean *Asellus aquaticus*, common in still or slow-flowing waters crawling among bottom debris (Fitter & Manuel, 1986). Although the sample was dominated by Group C (tolerant) organisms, the presences of a significant number of organisms from Groups A and B allow the sample to receive a Q-value of 4 (unpolluted).

E3

At site E3, 169 organisms from 14 species/higher taxa were recorded. These were dominated by very high numbers of the shrimp *Gammarus* sp. which formed over 75% of the faunal sample. Group B fauna were present in fair numbers consisting of cased caddis larvae from the families Limnephilidae and Glossosomatidae and the mayfly *Baetis muticus* which is common and widespread in Ireland (Kelly-Quinn & Bracken, 2000). Group A taxa were only recorded in very scarce numbers consisting of two specimens of mayfly from the genera *Rhithrogena* and *Ecdyonurus*. A small amount of siltation and some macrophytic growth in-stream were noted. Overall tolerant fauna dominated and sensitive forms were scarce, consequently a Q-value of 3 was assigned indicating moderate organic pollution.

E4

Site E4 had the most diverse fauna with 28 species/higher taxa recorded and a total of 280 organisms. Group C organisms were the dominant indicator group comprising shrimp *Gammarus* sp. and freshwater limpets *Ancylus fluviatilis* which are common in the British Isles often in fast flowing water on hard surfaces (Macan, 1977). Several uncased caddis larvae, dipteran larvae and riffle beetles and their larvae (Elminthidae) were also recorded from Group C. Group B were numerous consisting of the mayfly *Baetis muticus* and cased caddis larvae from 8 taxa. Of these the species *Agapetus fuscipes* and *Lepidostoma hirtum* were the most abundant. Group A organisms were scarce in number, consisting of the mayflies *Rhithrogena semicolorata*, *Ecdyonurus venosus* and *Heptagenia* sp. Although tolerant fauna dominated, more sensitive organisms were reasonably abundant and a Q-value of 3-4 was assigned indicating slight to moderate organic pollution.

E5

Site E5 displayed relatively low species abundance and diversity compared with other sites in the survey. In total 33 organisms from 8 species/higher taxa were recorded. Group C organisms were the most abundant indicator group consisting of the mayfly *Baetis rhodani*, blackfly larvae Simuliidae and midge larvae Chironomidae. Group B fauna included the mayfly *Baetis muticus* and cased caddis larvae *Limnephilus lunatus* which is commonly found in the British Isles in slower flowing conditions (Wallace, *et al.*, 1990). One group A organism, the stonefly *Nemoura cinerea*, was recorded in small numbers. This species is one of the most widespread of the Irish plecoptera (Costello, *et al.* (2003), in press). Although more tolerant forms were dominant and overall abundance was low, sensitive stoneflies were recorded in small numbers and a Q-value of 3-4 was assigned indicating slight enrichment at this site.

E6

At site E6, 130 organisms from 12 species/taxa were recorded. Group C fauna were dominant and consisted of high numbers of the shrimp *Gammarus* sp. and included small numbers of mayfly *Baetis rhodani* and dipteran families Chironomidae and Simuliidae. Group B organisms were common and included mayfly *Baetis muticus* and cased caddis larvae *Stenophylax* sp. and *Sericostoma personatum*. Group A was represented only by one specimen of the stonefly *Brachyoptera risi* which is relatively widespread in Ireland (Costello, *et al.* (2003), in press). As sensitive organisms were not abundant at this site a Q-value of 3 was assigned indicating moderate organic pollution.

E7

Site E7 contained 337 organisms from 18 species/higher taxa. Tolerant organisms (Group C) were dominant, and included high numbers of the shrimp *Gammarus* sp. and the mayflies *Baetis rhodani* and *Ephemerella ignita*. Group D fauna, several species of leech and water louse *Asellus aquaticus*, were recorded in small numbers.

Group B organisms were recorded in small numbers and included mayfly *Baetis muticus* and cased caddis larvae *Agapetus fuscipes* and *Limnephilus mamoratus* which are common in slower flowing waters in the British Isles (Wallace *et al.*, 1990). No sensitive Group A fauna were recorded and some siltation was noted in-stream. A Q-value of 3 was assigned to this site indicating moderate enrichment.

E8

At site E8 360 organisms from 14 species/higher taxa were recorded. Two Group C organisms, freshwater shrimp *Gammarus* sp. and the riffle beetle larvae *Elmis aenea* were recorded in very high numbers, with other tolerant fauna, such as dipteran larvae and uncased caddis larvae, recorded in small numbers. Few Group B fauna were present and no Group A fauna were recorded. The dominance of tolerant species in high numbers suggests enriched conditions and a Q-value of 3 was assigned to the site.

E9

Site E9 contained 211 organisms from 13 species/higher taxa. Group C was dominant and mainly comprised *Gammarus* sp. and mayfly *Baetis rhodani*. However Group B organisms were also abundant and in particular two species of cased caddis larvae, *Agapetus fuscipes* and *Hydropsyche siltalai*. No sensitive Group A fauna were recorded. A Q-value of 3 was assigned indicating moderate enrichment at this site.

E10

Relatively low numbers of organisms and species were recorded at site E10 with 21 individuals from 7 species/higher taxa in total. Groups C and D organisms were co-dominant. Group D consisted of water louse *Asellus aquaticus* and Group C of dipteran larvae and beetle larvae Dysticidae and Noteridae. It is difficult to assign a Q-value to this site with few organisms to use for assessment. The absence of sensitive and less tolerant organisms and presence of macrophytic growth in-stream suggests enrichment and a Q-value of 2-3 was assigned.

E11

Site E11 contained 194 organisms from 15 species/higher taxa. Group C fauna were dominant mainly due to high numbers of *Gammarus* sp. Other Group C fauna included blackfly larvae Simuliidae, mayfly *Baetis muticus* and riffle beetles *Elmis aenea*. Group B organisms were recorded in fair numbers; these were mayfly *Baetis rhodani* and caddisfly larvae from the families Limnephilidae and Glossosomatidae. Group A fauna were entirely absent from the sample. The dominance of tolerant organisms indicates a Q-value of 3 or moderately enriched conditions.

E12

Site E12 contained the highest number of organisms and was one of the most diverse sites of the survey with 394 organisms from 23 taxa recorded. The most abundant organism was the sensitive (Group A) mayfly *Rhithrogena semicolorata* whose numbers accounted for almost one third of the faunal sample. Four other Group A organisms were recorded, the mayflies *Ecdyonurus* sp. and *Heptagenia* sp. and the stoneflies *Amphinemura sulcicollis* and *Isoperla grammatica*, both of which have a relatively widespread distribution in Ireland (Costello, *et al.* (2003), *in press*). Group B fauna were recorded in fair numbers consisting of mayfly *Baetis muticus*, stonefly *Leuctra hippopus* and cased caddis larvae *Stenophylax* sp. Group C fauna included high numbers of *Gammarus* sp., uncased caddis *Hydropsyche siltalai* and mayfly *Baetis rhodani*, as well as small numbers of mayflies *Caenis rivulorum*, dipteran larvae and riffle beetle larvae *Elmis aenea*. Small numbers of Group D fauna (leeches) were also present. The presence of several sensitive stoneflies and mayflies (Group A) in substantial numbers suggests good water quality at this site and a Q-value of 4-5 was assigned.

FW2

The kick sample from site F2 contained 228 individuals representing 15 species/higher taxa. Group C species dominated the faunal community at this site. The most common species in the sample was the mayfly *Baetis rhodani*, which is common and widespread in Ireland (Kelly-Quinn & Bracken, 2000). A second mayfly species - the Group B *Ephemerella ignita*, was present in substantial numbers. This

species shares a similar ubiquitous distribution to the mayfly *Baetis rhodani*, however it is a summer species and the nymphs first appear in late spring and usually persist until October. It is a mainly lotic species but can occur in lentic habitats, preferring waters with high alkalinity but persisting in more acidic mountain streams (Kelly-Quinn & Bracken, 2000). Group A species were also represented – a member of the Ecdyonuridae, (one of the 'flattened' mayfly nymphs from the family Ecdyonurus which are sensitive to organic pollution) was present in the sample. Group A stonefly species recorded were the large stonefly *Perla bipunctata*, and the smaller, slender willow fly *Leuctra fusca*. Other specimens recorded from Group C included the uncased caddis larvae *Rhyacophila dorsalis* and *Hydropsyche siltalai*, members of the Tipulidae, blackfly larvae (Simuliidae), Chironomidae, Ceratopogonidae (aquatic weevils) and several riffle beetle specimens (*Elmis aenea* and *Limnius volckmari*). Species very tolerant to organic pollution (Group D) were recorded as present at the site, represented by two specimens of the horse leech *Haemopsis sanguisuga*. The richness and abundance of species considered sensitive to organic pollution were high at this site. Group A was represented in fair numbers, Group B was common and Group C was dominant. Macroinvertebrate community characteristics were consistent with an unpolluted status, although Group A species diversity was not sufficient to warrant a Q5 classification. As a result a Q4 value was assigned indicating unpolluted, Class A water.

FW3

The kick sample from site F3 contained 208 individuals representing 15 species/higher taxa. The Group B mayfly species *Ephemerella ignita*, which is common and widespread in Ireland (Kelly-Quinn & Bracken, 2000) was the most abundant species present in this sample. However, Group A specimens were again present in relatively large numbers including the stoneflies *Leuctra fusca*, and *Isoperla grammatica*, and the mayflies *Rhithrogena semicolorata* and *Ecdyonurus* 'flattened' mayfly nymphs from the family Heptageniidae which are all sensitive to organic pollution and are known to be adapted to high-gradient mountain streams, fast-flows and stony substrata (Kelly-Quinn & Bracken, 2000). Group B species other than the mayfly *Ephemerella ignita*, were represented by cased caddis species from the family Limnephilidae. Group C specimens recorded were the uncased caddis larvae *Rhyacophila dorsalis* and *Hydropsyche siltalai*, *Polycentropus kingi*, Chironomids, Ceratopogonidae (aquatic weevils) and several riffle beetle specimens (*Elmis aenea*). Species very tolerant to organic pollution (Group D) were present in the form of one leech (*Haemopsis sanguisuga*). The richness and abundance of species considered sensitive to organic pollution was again considered moderate to high. The presence of four Group A species and the dominance of Group B *Ephemerella ignita*, has resulted in a Q4 designation at site F3 indicating unpolluted, Class A water.

FW5

The kick sample from site F5 contained 120 individual organisms, representing 14 species/higher taxa. The Group C gastropod *Potamopyrgus jenkinsi* and the mayfly *Baetis rhodani* were most abundant. Other Group C forms included members of the Tipulidae, Simuliidae, Chironomidae, riffle beetles (*Elmis aenea* and *Limnius volckmari* in both adult and larval form) and *Gammarus* sp. Group D was represented in small numbers by the leech *Haemopsis sanguisuga* and the water louse *Asellus aquaticus*. The Group B mayfly species *Ephemerella ignita* was present in low numbers. One specimen from the flattened mayfly family *Ecdyonurus* was recorded. The richness and abundance of species considered sensitive to organic pollution was low at this site. The dominance of Group C organisms and the absence of any Group A forms suggest some degradation in water quality at this site. Community structure indicates Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

F6

The kick sample from site F6 comprised 372 individual organisms, representing 20 (the highest species richness of all sites surveyed) species/higher taxa. Group C indicator species dominated the sample comprising approximately 83% of the total number of organisms collected. Group C *Gammarus* sp. (freshwater shrimp) dominated the faunal community. The second most common species in the sample was the mayfly *Baetis rhodani*. A second mayfly species - the Group B *Ephemerella ignita*, was present in fair numbers. The cased caddis *Sericostoma personatum* was the second Group B species recorded at this site. Group A was represented only by two specimens of the flattened mayfly *Rhithrogena semicolorata*. Other Group C species recorded included the uncased caddis larvae *Plectrocnemia conspersa*, Chironomids, Tipulidae, Simuliidae, the water bug *Microvelia* sp. and several riffle beetle specimens (*Elmis aenea* and *Limnius volckmari*). The Group C gastropods *Potamopyrgus jenkinsi*, *Ancylus fluviatilis*, *Lynmaea peregra* and (the bivalve) *Pisidium* sp. were all recorded in low to fair

numbers. Species very tolerant to organic pollution (Group D) were present in the form of one leech. The richness and abundance of species considered sensitive to organic pollution was low at this site. The dominance of Group C organisms suggests some degradation in water quality at this site. Community structure indicates Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW7

The kick sample from site F7 contained 1291 individual organisms, representing 19 species/higher taxa. Group C species dominated the sample comprising approximately 96% of the total number of organisms collected. The Group C gastropod *Potamopyrgus jenkinsi* represented over 75% of all organisms collected and its numbers were classed as excessive. Other Group C forms included members of the Tipulidae, Simuliidae, Chironomidae, riffle beetles (*Elmis aenea* and *Limnius volckmari* in both adult and larval form) and *Gammarus* sp. The Group C gastropods *Potamopyrgus jenkinsi*, *Ancylus fluviatilis*, and *Pisidium* sp. were recorded in low to fair numbers. Group D was represented in small numbers by the leech *Haemopsis sanguisuga* and the water louse *Asellus aquaticus*. The Group B mayfly species *Ephemerella ignita*, was present in low numbers. Two specimens from the stonefly family Perlidae (*Perla bipunctata*) represented Group A in this sample.

The richness and abundance of species considered sensitive to organic pollution was low at this site. The dominance of Group C organisms and the low abundance of Group A forms suggest some degradation in water quality at this site. Community structure indicates Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW8

The kick sample from site F8 comprised 114 individual organisms, representing 18 species/higher taxa. The Group C amphipod *Gammarus* sp. and the mayfly *Baetis rhodani* were most abundant. A second mayfly species - the Group B *Ephemerella ignita*, was present in low numbers. Group A was represented only by two specimens of flattened mayfly nymphs from the family Heptageniidae. Other Group C species recorded included the uncased caddis larvae *Plectrocnemia conspersa*, Chironomids, Tipulidae, Simuliidae, the water bug *Microvelia* sp., beetles from the family Dytiscidae and several riffle beetle specimens (*Elmis aenea* and *Limnius volckmari*). The Group C gastropod *Pisidium* sp. was also present. Species very tolerant to organic pollution (Group D) were present in the form of one leech. The richness and abundance of species considered sensitive to organic pollution was low at this site. The dominance of Group C organisms suggests some degradation in water quality at this site. Community structure indicates Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW9

The kick sample from site F9 contained 642 individuals representing 6 species/higher taxa. Group C species dominated the faunal community at this site. The most common species in the sample was the mayfly *Baetis rhodani*. Group A species were represented by a member of the Capniidae - *Capnia atra*, (small stonefly nymphs similar to Leuctidae) which was present in the sample. Other specimens recorded from Group C included members of the blackfly larvae (Simuliidae), Chironomidae, and Hydrophilidae. Species very tolerant to organic pollution (Group D) were recorded as present at the site, represented by one specimen of the horse leech *Haemopsis sanguisuga*. The richness and abundance of species considered sensitive to organic pollution was very low at this site. Group C was dominant. General macroinvertebrate community characteristics indicate a Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW10

The kick sample from site F10 contained 164 individuals representing 7 species/higher taxa. The Group B mayfly species *Ephemerella ignita* was the most abundant species present in this sample. However, Group A specimens were present in relatively large numbers including the stonefly *Leuctra fusca*, and *Ecdyonurus* sp. mayfly nymphs. Group C specimens recorded were Chironomids, Tipulidae and Simuliidae and beetles from the family Dytiscidae. Species very tolerant to organic pollution (Group D) were absent from this sample. The richness and abundance of species considered sensitive to organic pollution was again considered moderate to high. The presence of two Group A species and the dominance of Group B *Ephemerella ignita*, has resulted in a Q4 designation at site F10 indicating unpolluted, Class A water.

FW11

The kick sample from site F11 comprised 226 individuals representing 11 species/higher taxa. Group C Chironomidae dominated the sample. Other Group C species recorded were Gammarus sp., Chironomidae indet., Tipulidae indet., Simuliidae indet., Scritidae indet. and riffle beetles (*Elmis aenea* and *Limnius volckmari*). The Group B mayfly species *Ephemerella ignita* was the second most abundant species present in this sample. However, Group A specimens were absent. Group B species other than the mayfly *Ephemerella ignita*, were represented by three cased caddis specimens from the family Limnephilidae. Species very tolerant to organic pollution (Group D) were present in the form of eight water louse (*Asellus aquaticus*). The richness and abundance of species considered sensitive to organic pollution was very low. The presence of Group A species and the dominance of Group C Chironomidae have resulted in a Q3 designation at site F11 indicating moderately polluted, Class C water.

FW12

The kick sample from site F12 contained 587 individuals representing 10 species/higher taxa. The Group B mayfly species *Ephemerella ignita* was the most abundant species present in this sample. Group B was also represented by six specimens of the cased caddis family Limnephilidae. However, Group A specimens were present in relatively low numbers, including only five specimens of the stonefly *Leuctra fusca*. Group C specimens recorded were Gammarus sp., Chironomidae indet., Simuliidae indet., Microvelia sp. and beetles from the riffle beetle family (*Elmis aenea*). Species very tolerant to organic pollution (Group D) were absent in this sample. The richness and abundance of species considered sensitive to organic pollution was again considered low. General macroinvertebrate community characteristics indicate a Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW13

The kick sample from site F13 contained 361 individual organisms, representing 9 species/higher taxa. Group C species dominated the sample comprising approximately 64% of the total number of organisms collected, while Group D comprised 33%. The Group C mayfly *Baetis rhodani* was most abundant while the Group D water louse *Asellus aquaticus* was second most abundant. Other Group C forms included Gammarus sp., the gastropods *Potamopyrgus jenkinsi* and *Pisidium* sp., riffle beetles (*Elmis aenea*) and beetles from the family Dytiscidae. The richness and abundance of species considered sensitive to organic pollution was low at this site. The abundance of Group C and D organisms and the absence of Group A forms suggest degradation of water quality at this site. Community structure indicates Q3 status representative of unsatisfactory moderately polluted Class C waters.

FW14

The kick sample from site F14 comprised 105 individual organisms, representing 7 species/higher taxa. Group C species dominated the sample comprising approximately 93% of the total number of organisms collected. The Group C amphipod Gammarus sp. was most abundant while the mayfly *Baetis rhodani* was second most abundant. Other Group C forms included unidentified adult Dipterans, Microvelia sp. and several riffle beetles (*Elmis aenea*).

Group B was represented by one specimen from the cased caddis family Limnephilidae. The richness and abundance of species considered sensitive to organic pollution were low at this site. The abundance of Group C and D organisms and the absence of Group A forms suggest degradation of water quality at this site. Community structure indicates Q3 status representative of unsatisfactory moderately polluted Class C waters.

F15

The kick sample from site F15 contained 75 individuals representing 7 species/higher taxa. The Group B mayfly species *Ephemerella ignita* was the most abundant species present in this sample and was classed as dominant according to EPA guidelines. Group A was represented in low numbers in the form of the mayflies *Rhithrogena semicolorata* and *Ecdyonurus* sp. (members of the 'flattened' mayfly nymphs). Group C specimens recorded were Ceratopogonidae (aquatic weevils) and several riffle beetle specimens (*Elmis aenea* and *Limnius volckmari*). Species very tolerant to organic pollution (Group D) were present in the form of two leeches (*Haemopsis sanguisuga*). The richness and abundance of species considered sensitive to organic pollution was considered low to moderate. Had overall abundance and species richness been higher a Q4 designation may have been possible. However, general macroinvertebrate community characteristics indicate a Q3-4 status representative of unsatisfactory transitional (or slightly polluted) Class B waters.

FW17

The kick sample from site F17 contained 541 individuals representing 14 species/higher taxa. The Group B mayfly species *Ephemerella ignita* was the most abundant species present in this sample and was classed as dominant in the community. However, Group A specimens were again present in relatively large numbers including the stoneflies *Leuctra fusca*, and *Isoperla grammatica*, and the mayfly *Ecdyonurus* sp. Group C specimens recorded included the uncased caddis larvae *Hydropsyche siltai* the mayfly *Baetis rhodani*, Chironomidae indet., Tipulidae indet. Simuliidae indet., unidentified adult diptera, Dytiscidae and several riffle beetle specimens (*Elmis aenea*). Species very tolerant to organic pollution (Group D) were present in the form of two specimens of water louse (*Asellus aquaticus*). The richness and abundance of species considered sensitive to organic pollution was considered moderate. The presence of three Group A species and the dominance of Group B *Ephemerella ignita* have resulted in a Q4 designation indicating unpolluted, Class A water.