FY-00 104(b)3 (x-986540-01) Task 300 – 303(d) List Priority Stream Monitoring

Task 3 – Monitoring on the Glover River and Horse Head Creek

OKLAHOMA CONSERVATION COMMISSION

NOVEMBER 30, 2004

INTRODUCTION

The year 2000 revision process of the 303(d) list identified several priority one waterbodies where state records for the listing were limited and the data for which the original listing was based are over 15 years old. In addition, some segments were listed as a result of impairment attributed to larger 6-digit Water Quality Management Segments (as listed in the OWQS), which were subsequently broken into 12-digit waterbody system identification numbers. Because of the age of the data and limited records regarding the history of the listings the only way to reconcile the listings or to remove the waterbodies from the list was through monitoring and application of the Use Support Assessment Protocols. Other Waterbodies were listed as threatened in older 319 assessment reports and 305(b) reports again based upon data now over 15 years old. Before the state expends valuable resources to establish TMDL's, monitoring should be completed to either verify the need for a TMDL or determine if the waterbody is fully supporting. The objective of this project is to acquire adequate data to either verify the need for TMDL or to determine if the waterbody is fully supporting designated beneficial uses. The data acquisition should verify or refute that the listed cause is still of concern. This report addresses Task 3 "Monitoring on the Glover River and Horse Head Creek". These waterbodies were listed for unknown toxicity in the 2000 Report.

MATERIALS & METHODS

For this task, three segments on Oklahoma's 1998 303(d) list were included with one station located on each segment (Table 1). Two creeks were also sampled as reference streams for the three 303(d) segments. The segments were listed for unknown toxicity. The selected sites were sites where OCC had collected water quality data on these two creeks as part of previous projects. Stations were sampled in 2003.

Table 1. Task 3 Site List.

Site Name	WBID	Latitude	Longitude	Legal	County	Level III Ecoregion
Horse Head Creek Lower	OK410210-01-0060C	34.048	-94.991	SE¼ SW¼ NE¼ Section 10 6S 22E	McCurtain	Central Oklahoma Texas Plains
Horse Head Creek Upper	OK410210-01-0060G	34.0628	-94.9881	ne/ne 3 6s 22e	McCurtain	Central Oklahoma Texas Plains
Glover River (lower)	OK410210-08-0010G	34.1689	-94.9128	ne 32 4s 23e	McCurtain	Ouachita Mountains
Glover River (middle)	OK410210-08-0010M	34.3085	-94.9359	nw 7 3s 23e	McCurtain	Ouachita Mountains
Big Eagle Creek	OK410210-06-0160G	34.4508	-94.6633	se 22 1s 25e	McCurtain	Ouachita Mountains
Cedar Creek	OK410210-08-0120G	34.1761	-94.9086	se 29 4s 23e	McCurtain	Ouachita Mountains

Biological collections and habitat assessments were completed on each of the stream segements. One fish collection, one habitat assessment, and two benthic macroinvertebrate collections were made on each of the streams. Collections were made according to the following OCC SOP documents.

SOP #8 Global Positioning System
SOP #2 Chain of Custody and Sample Labeling
SOP #3 Procedures for Completing Field Forms
SOP #4 Macroinvertebrate Collection and Subsampling

SOP #5 Fish Collection
SOP #8 Habitat Assessment
SOP #C2 Reagents and Standards Shelf Life

Macroinvertebrate Collections

Macroinvertebrate collections were completed to assess the physical and chemical water quality of the sites. To represent an accurate picture of the communities within a stream section, three types of habitats are collected, if present (rocky riffles, streamside vegetation, and woody debris). These habitats generally offer stability and refuge for aquatic invertebrates to live, feed, and reproduce. When one or more habitat is not available throughout the reach of interest, the other is used. Invertebrate sampling is done at base flow conditions, when the community has had no major stream events that may naturally scour the habitat and/or lower its numbers. .

Eight community attributes are used to score the condition of the benthic invertebrate community. These attributes are discussed individually below. Points received for each metric are summed to score a stream, and the total score is then compared to the total score of the reference condition in order to classify the stream.

Number of Taxa refers to the total number of taxonomically different types of animals in the sample. As is the case with the fish, this number rises with increasing water or habitat quality.

The Modified Hilsenhoff Biotic Index is a measure of the invertebrate community's tolerance to organic pollution. It ranges between 0 and 10 with 0 being the most pollution sensitive. The index used in the RBP Manual is based on the pollution tolerance of invertebrates from the upper Midwest. The Index used here is calculated the same way, but uses tolerance values of North Carolina invertebrates.

% Shredders refers to the percentage of the sample composed of invertebrates that shred the remains of plants in order to glean the bacterial and fungal films off their surfaces. Because many toxicants selectively bind to organic material, these animals are especially good indicators of low levels of toxicants. This metric will often detect very low concentrations of pollutants that don't affect the other metrics as noticeably. This group is based on the method of feeding and is independent of taxonomic order.

The EPT Index is the number of different taxa from the orders Ephemeroptera, Plecoptera, and Trichoptera, the mayflies, stoneflies, and caddisflies respectively. With few exceptions, these insects are more sensitive to pollution than any other groups. As a stream deteriorates in quality, members of this group will be the first to disappear. This is a robust metric that allows discrimination between all but the worst of streams.

% EPT is a measure of how many individuals in the sample are members of the EPT group. This metric helps to separate high quality streams from those of moderately high quality. The highest quality streams will have many individuals of many different taxa of EPT. As conditions deteriorate, animals will begin to die or to drift downstream. At this point, the community will still have many taxa of EPT, but there will be fewer individuals.

% Chironomids refers to the percentage of the collection composed of members of the Dipteran family Chironomidae or midges. Many members of this family are pollution tolerant, and they can build up to high numbers as animals that prey on them begin to disappear due to the effects of pollution.

% Dominant Taxa is the percentage of the collection composed of the most common taxa. As more and more species are excluded by increasing pollution, the remaining ones can build up to

larger numbers due to the unused resources left by the excluded animals. This metric helps to separate the high quality from the moderate quality streams.

The Shannon-Weaver Species Diversity Index measures the evenness of the species distribution. It increases as more and more taxa are found in the collection and as individual taxa become less dominant. This metric increases with increasing biotic quality.

Rocky Riffles Collections

A riffle is described as a "sudden downward change in stream level of the streambed as such that the surface of the water is disrupted by waves" (*OCC SOP #29, revision 1*). Collection and assessment methods are geared toward flowing water. Lotic invertebrates typically need stable substrate in which to live, feed, and reproduce. Samples collected for this project were sent to a professional taxonomist for enumeration and identification to genus level.

Streamside Vegetation Collections

Streamside vegetation habitats include any streamside vegetation that offers fine structure for invertebrates to dwell upon or within that occurs withing flowing water having a minimum velocity of 0.5 feet/secong (*OCC SOP #30, revision 1*). This habitat can be fine root masses of grasses, sedges, or trees. Collection methods and analysis are geared towards communities that live in flowing environments. Collections must be made on substrates submerged long enough to be colonized by bacteria, fungus, and algae. Freshly submerged roots at elevated flow are unacceptable habitat to collect from. Samples collected for this project were sent to a professional taxonomist for enumeration and identification to genus level

Woody Debris

Suitable substrates for woody debris include wood with or without bark that has been in the stream long enough to develop a natural community of bacteria, fungus, algae, and invertebrates. The woody debris must also have enough flow for filtering animals to feed on suspended material and be exposed to the range of water quality changes within the stream. Collection protocol is described in OCC SOP (*OCC SOP #31, revision 1*).

Fish Collections

Fish collection protocol is discussed in OCC SOP (*OCC SOP 35, revision 2*). The collection procedure follows a modified version of the EPA Rapid Bioassesment Protocol V (*EPA, 1989*). Fish collection generally involves the use of two methods, seining, and electroshocking. Together, these methods produce a representative collection of the fish community. Collections are typically 400 meters in length. The OCC uses a Coffelt CPS backpack shocker powered by a 300-ma 120 volts generator. Seines range in size and depth. It is up to the crew leader collecting the site to determine the appropriate length and depth of net to use. All fish that are not field identified are placed in a 1-gallon polyethylene jar with a 10% formalin solution. The formalin solution "pickles" or preserves the fish for final identification by a professional taxonomist. All fish that are field identified are inspected, photographed, noted, and released.

Oklahoma Water Quality Standards uses an IBI based on the Index of Biotic Integrity (IBI) and is taken from EPA Rapid Bioassessment Protocols for Use in Streams and Rivers (EPA, 1989). It is similar to the habitat suitability score in that it measures several different attributes of the fish community, assigns points to each attribute, and then sums the points to arrive at a score. The IBI score indicates the quality of the fish community.

Total Number of Fish Species decreases with decreasing water or habitat quality.

Shannon's diversity measures the evenness of the species distribution. It increases as more and more taxa are found in the collection and as individual taxa become less dominant. This metric increases with increasing biotic quality

Number of Sunfish Species decreases with decreasing pool quality and with decreasing cover. Sunfish also require a fairly stable substrate on which to spawn, so their long-term success is also tied to conditions that affect the amount of sediment that enters and leaves the stream.

Proportion of individuals or Percent Tolerant species is a characteristic that allows moderate quality streams to be separated from low quality streams. These are all opportunistic, tolerant fish that dominate communities that have lost their competitors due to loss of habitat or water quality.

Number of Intolerant Species decreases as stream quality decreases.

Percentage of lithophils generally increases as the quality of rocky habitat increases. Lithophilic fish are any that are restricted to rocky substrate at some stage in their lifecycle. Usually they feed on inverts that are rock dependent, feed on periphyton that grows on rock or require rock, gravel, or cobble to spawn.

Percentage of DELT anomolies decreases as the quality of the stream increases. Certain pollutants and other environmental stressors put sufficient stress on the fish such that it will affect their condition, either through the presence of lesions, malformations, or atrophies.

Fish numbers (total individuals) increases as quality of the stream increases. Better streams generally support larger populations with the exception of rare very clean streams that support low numbers of fish due to very low productivity.

Electroshocking

Electroshocking is typically used for collecting from habitat that a seine is unable to collect from such as large logjams, dense tree roots, undercut banks, and rocky banks. Shocking efficiency is most effective around 250-600 (for a backpack shocker, 120 to 300 is a better estimate) micro-seimens. Sampling distance is typically for 400 meters. All fish that cannot be readily field identified are preserved with 10% formalin in labeled jars. A professional taxonomist completes the final identification.

Seining

Seining is used for collecting fish in more open water where snags and other debris are not extensive. However in some areas of very high conductivity, seining may be the only option. In these cases the crew leader must decide when habitats have been sufficiently collected. For an in depth discussion of seining, refer to OCC SOP (*OCC SOP #35, revision 2*).

2.1.1e. Habitat Assessment

The habitat assessment was designed to incorporate habitat quality in relation to support of biological communities in and around the stream. OCC's habitat assessment adheres to a modified version of the EPA RBP (*EPA, 1989*). The assessment is based on particular parameters grouped into three principal categories (*EPA 1989*). Three primary categories are scored; micro scale habitat, macro scale habitat, and riparian/bank structure. Micro scale habitat includes substrate makeup, stable cover, canopy, and flow. Macro scale assesses the channel morphology, sediment deposition, and other parameters. The third category looks at

the riparian zone quality, width, and general makeup (trees, shrubs, vines, and grasses) as well as bank features. Bank erosion, and streamside vegetative cover and are incorporated into this section. Quantitative weighting is given to each of these sections in relation to their biological significance to aquatic fauna. Scores are computed and assigned as an evaluation of that in-stream section and riparian zone. Habitat assessments are usually completed for a reach that is 400-meters long, with measurements or a scoring for each parameter every 20 meters. Further information on habitat assessment can be found in OCC SOP (*OCC SOP #39, revision 7*).

RESULTS

Habitat

Evaluation of instream habitat data shows sufficient habitat to meet or exceed waterquality standards for all sites. Although there was some difference between the Horesehead Lower and it's corresponding reference, the total score for the site still exceeds the threshold for what is normally considered a minimal habitat condition (80) for eastern Oklahoma streams necessary to support a community fully supportive of water quality standards (Dan Butler, personal communication). The difference is mostly realized in three of the metrics: instream cover, pool bottom substrate, and presence of rocky runs or riffles. These metrics have a strong influence on certain fish and macroinvertebrate species in Oklahoma streams and often serve to limit their distribution more than other habitat factors. In this case, conditions accounted for by these 3 metrics were sufficient to allow for the presence of these species if water quality conditions were sufficient for the same.

Table 2. Habitat metric scores and relative percent difference of total habitat scores for test as compared to reference

Site Name	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	***Habitat Score (total points)***	***Relative percent difference***	**Habitat Condition**
Horsehead Creek: Lower	4.6	3.1	20	10	5.9	14	6.7	6	8	4.3	10	92.7	26	good
Horsehead Creek: Upper*	18	16	20	12	14.7	7.9	5	2	9	5.8	10	119.9		reference
Glover River: Lower	20	19	13	0	10.3	20	14	0	10	5	10	120.4	7	excellent
Glover River: Middle	17	15	15	0	7.5	20	17	1	10	6.8	10	117.6	5	excellent
Big Eagle Creek: Lower**	14	7.7	15	10	4.1	20	17	0	10	6.4	10	113.4		reference
Cedar Creek**	18	16	14	7.9	12.4	10	9.9	0	9	3.9	10	110.2		reference

*reference for Horsehead Ck: Lower
**reference sites for Glover river (average)

Fish

Fish collections were evaluated using biocriteria outlined in the state's Use Support Assessment Protocol (OAC 785:46). All streams were subjected to assessment and found to be fully supporting for their respective Fish and Wildlife Propagation beneficial use. Of particular interest, the collection at the Horsehead lower site showed a strong local influence from the nearby confluence with the Little River. Species richness and relative abundance were inflated, and several species more likely to occur in the Little River were present in the collection and affected the overall IBI score.

Table 3. Use support assessment results for fish and wildlife propagation for all sites using established biocriteria (fish only).

SiteName	IBI metric score (Total spp)	IBI metric score (No. intolerant spp)	IBI metric score (% tolerant spp.)	IBI metric score (Shanon Diversity)	IBI metric score (No. sunfish spp)	IBI metric score (No. spp. Comprising 75% of sample)	IBI metric score (percent lithophils)	IBI metric score (% DELT anomolies)	IBI metric score (Fish numbers)	***TOTAL IBI SCORE***	**Use Support--F & W Propagation BU (Biological criteria)**
Horsehead Creek: Lower	5	5	3	3	5	5	1	5	5	37	fully supporting
Horsehead Creek: Upper	3	3	3	3	5	5	3	5	5	35	fully supporting
Glover River: Lower	3	3	3	3	5	5	5	5	5	37	fully supporting
Glover River: Middle	3	5	3	3	5	5	5	5	5	39	fully supporting
Big Eagle Creek: Lower	3	5	3	3	5	5	5	5	3	37	fully supporting
Cedar Creek	3	3	5	3	3	5	3	5	5	35	fully supporting

Macroinvertebrates

Due to lack of biocriteria, benthic macroinvertebrate data were assessed following methods outlined in EPA Rapid Bioassesment Protocols (EPA 1989). Total IBI scores were evaluated as a percentage of reference, and biological condition was assigned based upon thresholds outlined in the RBP. The macroinvertebrate community of Horsehead Creek, Lower was 50 percent lower in total IBI score than its reference indicating moderate impairment. Assuming habitat is adequate, this could be indicative of some loss in water quality downstream of the discharges. The Glover river sites, although somewhat different, showed no impairment when compared to reference collections.

Table 4. Benthic macroinvertebrate IBI metric scores, total IBI scores, and biological condition characterization for all sites.

Site Name	Taxa richness score	Modified Hilsenhoff biotic index score	EPT/EPT + Chironomidae, score	EPT abundance score	EPT taxa richness score	Dominants/total score	Shannon-Weaver diversity index, score	***Total IBI Score***	***Total IBI as percent of reference***	**Biological Condition as per EPA RBP**
Horsehead Creek: Lower	2	2	4	6	0	2	4	20	50	moderately impaired
Horsehead Creek: Upper	6	6	6	6	6	4	6	40	100	reference
Glover River: Lower	6	6	6	6	6	6	6	42	114	non-impaired
Glover River: Middle	2	6	6	6	6	2	4	32	86	non-impaired
Big Eagle Creek: Lower	6	6	6	6	6	4	4	38	100	reference
Cedar Creek	6	6	6	6	6	2	4	36	100	reference

These results suggest that the Glover River should no longer be considered as impaired by unknown toxicity. The results for Horshead Creek are more ambiguous as fish and bug data

suggest two different results. Because the Fish data for Horsehead Creek was strongly influenced by migration from the Little River, we will consider the results of the macroinvertebrate data and consider Horsehead Creek as not supporting its fish and wildlife propogation beneficial use due to cause unknown. An unimpaired fish community with an impaired bug community can often be due to episodic localized pollution where fish from unpolluted reaches recolonize areas that were polluted more rapidly than bugs. It can also be due to low levels of pollution that only affect early life stages so that fish recolonize from areas where larvae weren't subjected to pollution. Finally, the pollution may be in the form of low levels of insecticides or some other toxicants that macroinvertebrates are more sensitive to.

While we cannot confirm the cause of impairment based on these limited collections, we consider Horsehead Creek at this site to not be supporting its fish and wildlife propogation beneficial use and believe there was a justification for it to be listed for unknown toxicity on the 2000 list.

Literature Cited

Oklahoma Water Resources Board. "Standard Operating Procedures For Streams Field Sampling Efforts of the Oklahoma Water Resources Board". 2004.

Oklahoma Water Resources Board. "Oklahoma Water Quality Standards". July 2004. OAC 785:45.

Oklahoma Water Resources Board. "Use Support Assessment Protocols". July 2003. OAC 785:46.

Oklahoma Department of Environmental Quality. "Continuing Planning Process". November 2002.

Oklahoma Department of Environmental Quality. "Quality Management Plan". 2003. QMP Track No. 00-182.

Appendix A1. Habitat Data

SiteName	SAMPLEID	Date	Distance	DepthLqt	DepthCnt	DepthRqt	WidthWater	WidthBank	SubSiltClay	SubSand	SubGravel	SubCobble	SubBoulder	SubBedrock	SubPOM	SubHardPanClay	RiffleHabitat	PoolHabitat	RunHabitat	DryHabitat	CoverUnderCut	CoverLrgWdDeb	CoverSmWdDeb	CoverRoots	CoverBdrkLedge	CoverSubAqVeg	CoverEmergAqVeg	CoverTerVeg	CoverCobBold	Embbeddedness	CanopyCover	PointBar	ScouringDeposit	BankVegCover	DomVegType	PercErodeLeft	PercErodeRight	ErodeHtLeft	ErodeHtRight	LeftSlope	RightSlope	LeftSub	RightSub	LeftWidth	RightWidth	LeftCondition	RightCondition	ExcludedCattle	PercTrampled	NumbCowPies	NumbCowTrails	TrailClass
Horsehead Creek: Lower	27623	06/24/03	20	0.3	1	0.3	5	9	30	10	5	0	0	0	5	50	0	X	0	0	0	1	1	0	0	0	0	0	3	0	15	0	X	40	M	0	25	0	2	45	50			50	50	1A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	40	0.2	0	3	5	9	5	20	35	0	0	0	20	20	0	0	X	0	0	4	3	0	0	0	0	0	5	0	25	0	X	50	M	0	30	0	6	50	70			50	50	1A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	60	0.4	1	0.9	4	9	70	5	5	0	0	0	0	20	0	0	X	0	0	10	5	0	0	0	0	0	3	0	0	0	X	30	M	0	50	0	7	50	70			50	50	1A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	80	0.3	1	0.7	4	9	30	10	45	0	0	0	0	15	0	0	X	0	1	0	0	0	0	0	0	0	10	0	20	0	X	60	M	0	0	0	0	45	70			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	100	0.2	0	0.2	2	10	5	5	60	0	0	0	0	30	X	0	0	0	0	0	0	0	0	0	0	0	15	50	10	X	X	60	M	0	20	0	2	35	60			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	120	0.2	0	0.2	4	10	30	5	15	0	0	0	0	50	0	0	X	0	0	0	0	0	0	0	0	0	10	0	10	0	X	60	M	0	0	0	0	30	65			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	140	0.2	0	0.2	4	10	35	5	30	0	0	0	10	20	0	0	X	0	0	3	3	0	0	0	0	0	5	0	15	X	X	80	M	0	0	0	0	40	55			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	160	0.2	0	0.2	7	11	55	20	5	0	0	0	10	10	0	X	0	0	0	5	2	0	0	0	0	0	10	0	0	0	X	85	M	0	0	0	0	45	60			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	180	0.7	1	0.6	7	10	85	0	0	0	0	0	15	0	0	X	0	0	0	3	2	0	0	0	0	0	0	0	0	0	X	75	M	50	0	4	0	60	45			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	200	0.7	1	1	9	12	80	0	0	0	0	0	10	10	0	X	0	0	0	1	1	0	0	0	0	0	0	0	0	0	X	75	M	50	0	5	0	75	45			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	220	0.2	0	0.1	4	12	15	35	50	0	0	0	0	0	X	0	0	0	0	1	1	0	0	0	0	0	20	0	10	X	X	80	M	0	0	0	0	60	45			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	240	0.2	0	0.2	6	11	55	15	10	0	0	0	5	15	0	0	X	0	0	2	1	0	0	0	0	0	10	0	15	0	X	75	M	0	0	0	0	45	55			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	260	0.3	1	0.3	4	11	30	20	30	0	0	0	0	20	0	0	X	0	0	3	2	0	1	0	0	0	5	0	25	X	X	70	M	0	0	0	0	45	70			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	280	0.2	0	0.2	4	11	35	20	15	0	0	0	0	30	0	0	X	0	0	0	0	0	1	0	0	0	10	0	25	0	X	60	M	0	50	0	4	35	80			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	300	0.2	0	0.3	4	12	70	25	5	0	0	0	0	0	0	0	X	0	0	1	1	0	0	0	0	0	5	0	15	0	X	85	M	0	0	0	0	35	75			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	320	0.2	0	0.2	7	11	50	20	30	0	0	0	0	0	0	0	X	0	0	1	1	0	0	0	0	0	20	0	40	X	X	85	M	0	0	0	0	50	75			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	340	0.4	0	0.3	5	11	50	10	10	0	0	0	0	30	0	X	0	0	0	0	0	0	0	0	0	0	5	0	10	0	X	85	M	0	0	0	0	60	50			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	360	0.5	1	0.3	5	11	50	5	25	0	0	0	0	20	0	X	0	0	1	2	2	1	0	0	0	0	10	0	10	X	X	80	M	0	0	0	0	60	30			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	380	0.9	1	0.3	5	12	50	5	15	0	0	0	0	30	0	0	X	0	1	3	2	1	0	0	0	0	5	0	10	X	X	80	M	0	0	0	0	75	30			50	50	2A	1A	0				
Horsehead Creek: Lower	27623	06/24/03	400	0.2	0	0.1	4	11	2	13	85	0	0	0	0	0	X	0	0	0	0	2	2	0	0	0	0	0	15	50	10	X	X	60	M	40	0	4	0	70	40			50	50	2A	1A	0				
Horsehead Creek: Upper	27624	06/25/03	20	0.4	0	0.5	8	15	15	5	25	35	20	0	0	0	0	X	0	0	1	0	0	0	0	0	5	0	50	0	0	0	X	95	S	0	0	0	0	45	35			5	5	2B	2B	0				
Horsehead Creek: Upper	27624	06/25/03	40	0.1	0	0.1	7	25	15	2	30	43	10	0	0	0	0	0	X	0	0	0	0	0	0	0	60	0	50	40	0	X	X	95	S	0	0	0	0	25	25			5	10	2B	2B	0				
Horsehead Creek: Upper	27624	06/25/03	60	0.1	0	0.4	4	16	15	5	70	10	0	0	0	0	0	X	X	0	1	1	1	0	0	0	50	0	50	20	10	X	X	85	M	0	0	0	0	30	40			10	20	1B	1B	0				
Horsehead Creek: Upper	27624	06/25/03	80	0.3	1	0.6	8	20	20	5	70	5	0	0	0	0	0	X	0	0	0	0	0	1	0	0	0	0	40	0	35	X	X	85	M	0	0	0	0	45	25			15	25	1A	1A	0				
Horsehead Creek: Upper	27624	06/25/03	100	0.3	0	0.2	3	21	2	3	90	5	0	0	0	0	0	0	X	0	1	2	2	1	0	0	0	0	40	0	20	X	X	90	M	0	0	0	0	40	20			15	20	1A	1A	0				
Horsehead Creek: Upper	27624	06/25/03	120	0.1	0	0.1	1	17	0	1	50	49	0	0	0	0	X	0	0	0	0	0	0	0	0	0	5	2	50	20	5	X	X	90	M	0	0	0	0	40	25			5	20	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	140	0.3	0	0.4	10	12	8	2	50	40	0	0	0	0	0	X	0	0	1	1	1	1	0	0	0	0	50	0	30	0	0	70	M	25	0	1	0	60	70			0	20	2B	1A	0			2	1,1
Horsehead Creek: Upper	27624	06/25/03	160	0.1	0	0.7	9	12	10	5	60	25	0	0	0	0	0	X	0	0	1	0	0	1	0	0	0	0	60	0	30	0	0	75	M	0	0	0	0	55	85			0	20	2B	1A	0			1	1
Horsehead Creek: Upper	27624	06/25/03	180	0.2	1	1.3	10	12	15	5	65	10	0	0	0	0	0	X	0	0	0	0	0	1	0	0	0	0	40	0	35	0	0	70	M	0	25	0	1	35	85			5	25	2B	1A	0				

SiteName	SAMPLEID	Date	Distance	DepthLqt	DepthCnt	DepthRqt	WidthWater	WidthBank	SubSiltClay	SubSand	SubGravel	SubCobble	SubBoulder	SubBedrock	SubPOM	SubHardPanClay	RiffleHabitat	PoolHabitat	RunHabitat	DryHabitat	CoverUnderCut	CoverLrgWdDeb	CoverSmWdDeb	CoverRoots	CoverBdrkLedge	CoverSubAqVeg	CoverEmergAqVeg	CoverTerVeg	CoverCobBold	Embbeddedness	CanopyCover	PointBar	ScouringDeposit	BankVegCover	DomVegType	PercErodeLeft	PercErodeRight	ErodeHtLeft	ErodeHtRight	LeftSlope	RightSlope	LeftSub	RightSub	LeftWidth	RightWidth	LeftCondition	RightCondition	ExcludedCattle	PercTrampled	NumbCowPies	NumbCowTrails	TrailClass
Horsehead Creek: Upper	27624	06/25/03	200	0.1	0	0.1	6	12	0	2	70	28	0	0	0	0	X	0	0	0	0	2	2	1	0	0	0	0	50	25	45	X	X	70	M	0	40	0	2	35	80			10	35	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	220	0.5	1	0.3	9	16	10	2	40	18	0	0	0	30	0	X	0	0	0	0	0	0	1	0	5	0	60	0	20	0	X	70	M	40	0	2	0	70	30			20	30	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	240	0.1	0	0.2	10	16	3	2	60	35	0	0	0	0	0	X	0	0	1	0	0	1	0	0	0	0	70	0	15	0	0	60	M	30	0	2	0	75	25			10	35	1B	1A	0			2	1,1
Horsehead Creek: Upper	27624	06/25/03	260	0.4	0	0.2	10	16	6	4	70	20	0	0	0	0	0	X	0	0	1	0	0	0	0	0	0	0	70	0	10	0	0	70	M	0	30	0	1	35	40			10	40	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	280	0.2	0	0.1	9	16	6	4	80	10	0	0	0	0	0	0	X	0	0	0	0	0	0	0	2	0	50	0	10	0	0	80	M	0	0	0	0	40	35			30	30	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	300	0.1	0	0.1	7	18	0	1	85	14	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	75	20	20	0	0	85	M	0	0	0	0	40	25			50	25	1B	1A	0			1	1
Horsehead Creek: Upper	27624	06/25/03	320	0.1	0	0.1	12	16	0	1	80	19	0	0	0	0	X	0	0	0	0	0	0	0	0	0	2	0	80	20	5	X	X	85	M	0	0	0	0	35	25			50	20	1B	1A	0				
Horsehead Creek: Upper	27624	06/25/03	340	0.1	0	0.2	4	18	0	1	70	29	0	0	0	0	0	0	X	0	0	0	2	0	0	0	0	0	70	0	5	X	X	75	M	0	25	0	3	25	70			50	10	1B	1B	0				
Horsehead Creek: Upper	27624	06/25/03	360	0.3	1	0.6	6	16	5	2	65	18	0	0	0	10	0	X	0	0	0	0	0	0	0	0	1	0	70	0	5	X	X	50	M	0	100	0	3	20	85			50	5	1B	2B	0				
Horsehead Creek: Upper	27624	06/25/03	380	0.2	0	0.2	5	15	3	2	35	60	0	0	0	0	0	0	X	0	0	0	0	0	0	0	2	0	80	0	5	X	X	80	M	0	0	0	0	20	70			50	5	1B	2B	0				
Horsehead Creek: Upper	27624	06/25/03	400	0.2	0	0.1	12	16	5	2	75	18	0	0	0	0	0	0	X	0	0	0	0	0	0	0	5	0	80	0	0	0	0	85	M	0	0	0	0	20	60			50	10	1B	2B	0				
Glover River: Lower	27626	06/26/03	20	0.3	1	0.7	18	60	0	0	15	50	35	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	95	5	0	X	X	50	M	0	0	0	0	35	40			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	40	0.4	1	0.3	18	60	0	0	10	70	20	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	95	5	0	X	X	50	M	0	0	0	0	40	40			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	60	0.4	0	0.4	18	55	0	0	5	20	45	30	0	0	0	0	X	0	0	0	0	0	0	0	0	0	85	5	0	0	0	50	M	0	0	0	0	45	40			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	80	0.3	1	0.5	38	55	2	3	10	25	25	35	0	0	0	0	X	0	0	0	0	0	0	0	0	0	85	0	0	0	0	60	M	0	0	0	0	45	45			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	100	0.8	1	0.3	38	55	2	3	10	20	65	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	60	M	0	25	0	3	45	60			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	120	0.8	1	0.7	32	55	2	3	5	20	70	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	60	M	0	50	0	3	45	60			50	50	1A	1B	0				
Glover River: Lower	27626	06/26/03	140	0.9	1	0.8	30	50	2	3	5	20	70	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	60	M	0	25	0	2	45	50			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	160	0.8	1	0.8	27	45	2	3	5	10	8	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	75	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	180	0.8	1	1	32	46	2	3	5	10	80	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	80	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	200	1	1	1	28	40	2	3	5	10	80	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	60	M	0	70	0	2	45	80			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	220	1	1	1	20	35	2	3	5	10	80	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	60	M	0	100	0	2	45	85			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	240	0.6	1	0.6	22	35	2	3	5	10	80	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	70	M	0	75	0	2	45	80			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	260	0.7	1	0.8	25	35	2	3	5	10	80	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	85	0	0	0	0	80	M	0	0	0	0	50	60			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	280	0.8	1	0.6	28	39	2	3	5	20	70	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	90	M	0	0	0	0	60	55			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	300	0.9	1	0.6	22	40	2	3	5	30	60	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	90	M	0	0	0	0	70	60			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	320	0.8	1	0.9	22	40	2	3	5	20	70	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	90	M	0	0	0	0	70	60			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	340	0.9	1	0.4	42	43	2	3	5	20	70	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	95	M	0	0	0	0	60	60			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	360	1	1	0.5	44	46	5	5	10	20	60	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	95	M	0	0	0	0	70	50			50	50	1A	1A	0				

SiteName	SAMPLEID	Date	Distance	DepthLgt	DepthCnt	DepthRgt	WidthWater	WidthBank	SubSiltClay	SubSand	SubGravel	SubCobble	SubBoulder	SubBedrock	SubPOM	SubHardPanClay	RiffleHabitat	PoolHabitat	RunHabitat	DryHabitat	CoverUnderCut	CoverLrgWdDeb	CoverSmWdDeb	CoverRoots	CoverBdrkLedge	CoverSubAqVeg	CoverEmergAqVeg	CoverTerVeg	CoverCobBold	Embbeddedness	CanopyCover	PointBar	ScouringDeposit	BankVegCover	DomVegType	PercErodeLeft	PercErodeRight	ErodeHtLeft	ErodeHtRight	LeftSlope	RightSlope	LeftSub	RightSub	LeftWidth	RightWidth	LeftCondition	RightCondition	ExcludedCattle	PercTrampled	NumbCowPies	NumbCowTrails	TrailClass
Glover River: Lower	27626	06/26/03	380	0.5	1	0.5	42	45	5	5	10	30	50	0	0	0	0	X	X	0	0	0	0	0	0	0	0	0	90	0	0	0	0	95	M	0	0	0	0	50	50			50	50	1A	1A	0				
Glover River: Lower	27626	06/26/03	400	0.3	1	0.6	48	55	2	3	5	30	20	40	0	0	0	0	X	0	0	0	0	0	0	0	0	0	90	0	0	0	0	95	M	0	0	0	0	50	50			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	20	1.7	1	2	55	65	10	5	5	60	20	0	0	0	0	X	0	0	0	0	0	0	0	0	3	0	50	0	0	0	X	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	40	1	3	2	55	65	10	5	5	60	20	0	0	0	0	X	0	0	0	0	0	0	0	0	5	0	50	0	0	0	X	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	60	0.9	2	1.2	55	65	20	5	10	45	20	0	0	0	0	X	0	0	0	1	0	0	0	0	5	0	50	0	0	0	X	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	80	0.8	2	1.2	55	65	8	2	10	60	20	0	0	0	0	X	0	0	0	0	0	0	0	0	10	0	50	0	0	0	X	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	100	0.7	2	0.7	55	65	8	2	10	60	20	0	0	0	0	X	0	0	0	0	0	0	0	0	10	0	50	0	0	0	X	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	120	0.7	1	0.6	55	65	4	1	10	65	20	0	0	0	0	X	0	0	0	0	0	0	0	0	10	0	50	0	0	0	0	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	140	0.4	1	0.5	55	65	4	1	10	65	20	0	0	0	0	X	0	0	0	1	0	0	0	0	10	0	50	0	0	0	0	100	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	160	0.7	1	0.6	56	70	2	3	55	20	20	0	0	0	0	X	0	0	0	0	0	0	2	0	0	0	70	0	0	0	0	50	M	0	0	0	0	40	45			50	50	1B	1B	0				
Glover River: Middle	27627	06/26/03	180	0.8	1	0.6	50	70	2	3	55	20	20	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	50	M	0	0	0	0	45	45			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	200	0.3	0	0.3	10	70	0	0	5	85	10	0	0	0	X	0	0	0	0	0	0	0	0	0	5	0	90	5	0	0	0	55	M	0	50	0	1	45	60			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	220	0.4	0	0.2	14	70	0	0	5	85	10	0	0	0	X	0	0	0	0	0	0	0	0	0	5	0	95	5	0	0	0	75	M	0	50	0	1	45	60			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	240	0.3	0	0.3	15	60	0	0	5	65	30	0	0	0	X	0	0	0	0	0	0	0	0	0	5	0	95	5	0	0	0	90	M	0	0	0	0	45	60			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	260	0.4	1	0.4	18	40	0	0	5	65	30	0	0	0	0	0	X	0	0	0	0	0	0	0	5	0	95	5	0	0	0	80	M	0	0	0	0	45	60			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	280	1	1	0.6	19	40	0	0	0	15	20	65	0	0	0	X	0	0	0	0	0	0	2	0	5	0	60	0	0	0	0	75	M	0	0	0	0	45	70			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	300	1.1	1	1	20	40	0	0	10	20	20	50	0	0	0	X	0	0	0	0	0	0	0	2	0	2	0	50	0	0	0	75	M	0	0	0	0	45	70			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	320	2.2	2	2.2	35	40	0	0	10	10	20	60	0	0	0	X	0	0	0	0	0	0	1	0	1	0	25	0	0	0	0	75	M	0	0	0	0	45	70			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	340	0.4	1	0.5	32	40	0	0	5	5	15	75	0	0	X	0	0	0	0	0	0	0	10	0	2	0	20	0	0	0	0	85	M	0	0	0	0	45	50			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	360	0.9	1	1	17	40	0	0	5	5	15	75	0	0	0	0	X	0	0	0	0	0	10	0	2	0	15	0	0	0	0	85	M	0	0	0	0	45	50			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	380	1.1	1	1	40	45	0	0	10	20	30	40	0	0	0	X	0	0	0	0	0	0	10	0	2	0	20	0	0	0	0	95	M	0	0	0	0	45	50			50	50	1A	1A	0				
Glover River: Middle	27627	06/26/03	400	0.4	0	0.4	25	45	0	0	5	10	25	60	0	0	X	0	0	0	0	0	0	0	5	0	2	0	30	0	0	0	0	95	M	0	0	0	0	45	40			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	20	0.6	1	0.4	15	19	0	2	8	10	20	60	0	0	0	X	X	0	0	0	0	0	3	0	5	0	80	0	0	0	0	70	M	0	0	0	0	50	35			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	40	0.9	1	0.8	16	19	2	3	10	30	25	30	0	0	0	X	0	0	0	0	0	0	5	0	5	0	70	0	0	0	0	70	M	0	0	0	0	80	35			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	60	0.8	1	0.5	18	22	2	0	3	10	5	80	0	0	0	X	0	0	0	0	0	0	5	0	2	0	30	0	10	0	0	70	M	0	0	0	0	80	40			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	80	0.8	1	0.9	20	25	2	0	3	10	15	70	0	0	0	X	0	0	0	0	0	0	5	0	2	0	25	0	5	0	0	80	M	0	0	0	0	60	45			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	100	0.8	1	1.1	22	25	4	0	6	5	15	70	0	0	0	X	0	0	0	0	0	0	5	0	1	0	20	0	15	0	0	80	M	0	0	0	0	45	45			50	50	1A	1A	0				
Big Eagle Creek: Lower	27628	06/27/03	120	1	1	0.7	26	30	5	0	5	10	20	60	0	0	0	X	0	0	0	0	0	0	5	0	2	0	30	0	10	0	0	70	M	0	0	0	0	45	45			5	15	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	140	0.7	1	1.4	28	30	15	5	5	20	30	25	0	0	0	X	0	0	0	0	0	0	2	0	0	0	30	0	10	0	X	80	M	0	0	0	0	70	50			5	15	1B	1B	0				

SiteName	SAMPLEID	Date	Distance	DepthLqt	DepthCnt	DepthRqt	WidthWater	WidthBank	SubSiltClay	SubSand	SubGravel	SubCobble	SubBoulder	SubBedrock	SubPOM	SubHardPanClay	RiffleHabitat	PoolHabitat	RunHabitat	DryHabitat	CoverUnderCut	CoverLrgWdDeb	CoverSmWdDeb	CoverRoots	CoverBdrkLedge	CoverSubAqVeg	CoverEmergAqVeg	CoverTerVeg	CoverCobBold	Embbeddedness	CanopyCover	PointBar	ScouringDeposit	BankVegCover	DomVegType	PercErodeLeft	PercErodeRight	ErodeHtLeft	ErodeHtRight	LeftSlope	RightSlope	LeftSub	RightSub	LeftWidth	RightWidth	LeftCondition	RightCondition	ExcludedCattle	PercTrampled	NumbCowPies	NumbCowTrails	TrailClass
Big Eagle Creek: Lower	27628	06/27/03	160	0.9	1	1.1	28	30	5	0	10	15	10	50	0	0	0	X	0	0	0	0	0	0	3	0	0	0	30	0	75	0	X	80	M	0	0	0	0	60	60			5	15	1C	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	180	0.7	1	0.6	27	30	5	0	0	5	5	85	0	0	0	X	0	0	0	0	0	0	5	0	5	0	10	0	10	0	0	70	M	0	0	0	0	50	65			40	10	1C	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	200	0.9	1	0.8	20	28	3	2	5	10	30	50	0	0	0	X	0	0	0	0	0	0	5	0	5	0	30	0	5	0	0	80	M	0	0	0	0	50	60			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	220	0.8	1	0.4	20	24	3	2	5	20	40	30	0	0	0	X	0	0	0	0	0	0	3	0	5	0	40	0	5	0	0	85	M	0	0	0	0	60	70			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	240	0.9	1	0.8	22	23	3	2	5	15	35	40	0	0	0	X	0	0	0	0	0	0	2	0	5	0	50	0	10	0	0	85	M	0	0	0	0	65	75			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	260	1.1	1	1	22	23	3	2	5	15	25	50	0	0	0	X	0	0	0	0	0	0	2	0	1	0	25	0	25	0	0	85	M	0	0	0	0	65	75			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	280	1.1	1	1.2	24	25	3	2	5	10	20	60	0	0	0	X	0	0	0	0	0	0	5	0	0	0	30	0	25	0	0	85	M	0	0	0	0	65	75			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	300	1.3	1	1.4	26	27	5	2	8	10	15	60	0	0	0	X	0	0	0	0	0	0	3	0	0	0	15	0	10	0	0	80	M	0	0	0	0	70	70			50	10	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	320	1.3	1	1.4	28	29	5	5	10	10	10	60	0	0	0	X	0	0	0	0	0	0	2	0	0	0	25	0	10	0	0	85	M	0	0	0	0	70	70			30	30	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	340	1.4	1	1.3	29	30	5	5	10	10	10	60	0	0	0	X	0	0	0	1	0	0	3	0	0	0	25	0	5	0	0	95	M	0	0	0	0	60	70			30	40	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	360	1.6	1	0.9	35	40	15	5	5	5	10	50	10	0	0	X	0	0	0	3	2	0	2	0	0	0	20	0	5	0	X	95	M	0	0	0	0	60	75			20	40	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	380	0.2	0	0.2	12	45	0	0	5	85	10	0	0	0	X	0	0	0	0	0	0	0	2	0	20	0	60	5	5	0	0	95	M	0	0	0	0	40	75			30	40	1B	1B	0				
Big Eagle Creek: Lower	27628	06/27/03	400	0.6	1	0.4	13	15	0	0	5	65	30	0	0	0	0	0	X	0	0	0	0	0	0	0	15	0	90	10	15	0	0	95	M	0	0	0	0	40	75			35	40	1B	1B	0				
Cedar Creek	27625	06/25/03	20	0.5	1	1	16	18	3	2	20	60	15	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	70	0	10	0	0	60	M	20	20	1	1	45	50			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	40	1	1	0.4	18	20	5	5	20	45	25	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	70	0	10	0	0	60	T	20	20	1	1	50	75			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	60	0.3	1	0.9	16	20	5	10	45	30	10	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	70	0	10	0	0	60	T	0	0	0	0	45	60			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	80	0.3	1	0.8	15	20	3	2	45	30	20	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	70	0	15	0	0	60	M	0	0	0	0	45	45			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	100	0.3	0	0.3	11	20	3	2	30	40	25	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	70	0	15	0	0	60	M	0	0	0	0	50	50			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	120	0.2	0	0.2	10	18	2	3	40	35	20	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	75	0	10	0	0	70	M	0	0	0	0	55	45			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	140	0.1	0	0.1	7	17	0	2	40	40	18	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	80	15	5	0	0	80	M	0	0	0	0	35	40			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	160	0.1	0	0.1	7	19	0	1	40	59	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	90	10	0	0	0	85	M	0	0	0	0	35	35			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	180	0.1	0	0.1	6	25	0	2	60	38	0	0	0	0	0	0	X	0	0	1	1	0	0	0	0	0	85	15	0	X	X	70	M	0	25	0	2	40	60			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	200	0.2	0	0.1	6	24	0	2	50	48	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	85	15	20	X	X	50	M	0	100	0	2	40	85			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	220	0.2	0	0.2	5	25	0	2	58	40	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	85	15	10	X	X	50	M	0	100	0	2	40	85			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	240	0.1	0	0.1	7	22	0	0	30	70	0	0	0	0	X	0	0	0	0	0	0	1	0	0	0	0	90	5	10	X	X	50	M	0	100	0	2	40	85			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	260	0.2	0	0.3	12	21	0	2	35	50	13	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	85	0	0	X	X	50	M	0	100	0	3	35	80			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	280	0.1	0	0.2	7	19	0	2	40	43	15	0	0	0	0	0	X	0	0	0	0	2	0	0	0	0	60	0	30	0	0	60	M	0	50	0	3	35	80			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	300	1.2	1	0.4	28	30	5	5	30	40	10	10	0	0	0	X	0	0	1	0	0	0	0	0	0	0	50	0	0	0	0	80	M	0	0	0	0	85	45			50	50	1A	1A	0				
Cedar Creek	27625	06/25/03	320	1.6	2	1	24	30	5	5	5	5	0	10	70	0	0	X	0	0	1	0	0	0	0	0	0	0	20	0	0	0	X	85	M	0	0	0	0	85	40			50	50	1A	1B	0				

SiteName	SAMPLEID	Date	Distance	DepthLqt	DepthCnt	DepthRqt	WidthWater	WidthBank	SubSiltClay	SubSand	SubGravel	SubCobble	SubBoulder	SubBedrock	SubPOM	SubHardPanClay	RiffleHabitat	PoolHabitat	RunHabitat	DryHabitat	CoverUnderCut	CoverLrgWdDeb	CoverSmWdDeb	CoverRoots	CoverBdrkLedge	CoverSubAqVeg	CoverEmergAqVeg	CoverTerVeg	CoverCobBold	Embbeddedness	CanopyCover	PointBar	ScouringDeposit	BankVegCover	DomVegType	PercErodeLeft	PercErodeRight	ErodeHtLeft	ErodeHtRight	LeftSlope	RightSlope	LeftSub	RightSub	LeftWidth	RightWidth	LeftCondition	RightCondition	ExcludedCattle	PercTrampled	NumbCowPies	NumbCowTrails	TrailClass
Cedar Creek	27625	06/25/03	340	1	1	1.1	26	30	5	5	20	30	10	10	20	0	0	X	0	0	1	0	0	0	0	0	0	0	30	0	0	0	X	90	M	0	0	0	0	85	30			50	50	1A	1B	0					
Cedar Creek	27625	06/25/03	360	1.7	2	1.2	16	21	50	20	10	0	5	5	10	0	0	X	0	0	0	0	0	0	0	0	0	0	20	0	10	0	X	50	M	0	0	0	0	85	40			50	50	1A	1B	0					
Cedar Creek	27625	06/25/03	380	1.6	1	0.9	20	21	10	5	20	25	15	10	5	0	0	X	0	0	0	0	0	0	0	0	0	0	50	0	10	0	X	50	M	0	0	0	0	80	40			50	50	1A	1B	0					
Cedar Creek	27625	06/25/03	400	0.4	1	0.4	13	18	3	2	25	30	40	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	75	0	25	0	0	90	M	0	0	0	0	50	40			50	50	1A	1A	0					

Appendix A1. Fish Data

SiteName	SAMPLEID	Date	Time	ShockTime	SeinTime	RefNum	Number	No. Diseased	Family	Species	VernName	Overall Tolerance	Insectivore	Omnivore	Piscivore	Herbivore	Generalist	Lithophil
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	6.00	2		Lepisosteidae	Lepisosteus oculatus	Spotted gar	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	19.00	1	0	Esocidae	Esox americanus	Grass pickerel	Interm	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	30.00	73	0	Cyprinidae	Cyprinella venusta	Blacktail shiner	Interm	TRUE	FALSE	FALSE	TRUE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	31.00	34	0	Cyprinidae	Cyprinella whipplei	Steelcolor shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	42.00	6	0	Cyprinidae	Lythrurus umbratilis	Redfin shiner	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	49.00	2	0	Cyprinidae	Notropis atherinoides	Emerald shiner	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	50.00	1	0	Cyprinidae	Notropis atrocaudalis	Blackspot shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	90.00	1		Catostomidae	Minytrema melanops	Spotted sucker	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	92.00	10	0	Catostomidae	Moxostoma duquesnei	Black redhorse	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	93.00	4		Catostomidae	Moxostoma erythrurum	Golden redhorse	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	97.00	4		Ictaluridae	Ameiurus natalis	Yellow bullhead	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	115.00	36	0	Fundulidae	Fundulus olivaceus	Blackspotted topminnow	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	118.00	12	0	Poeciliidae	Gambusia affinis	Mosquitofish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	130.00	12		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	131.00	2	0	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	133.00	50		Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	134.00	24	0	Centrarchidae	Lepomis marginatus	Dollar sunfish	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	135.00	110		Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	136.00	1	0	Centrarchidae	Lepomis microlophus	Redear sunfish	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	140.00	2	0	Centrarchidae	Micropterus punctulatus	Spotted bass	Interm	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	141.00	1	0	Centrarchidae	Micropterus salmoides	Largemouth bass	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	146.00	1	0	Percidae	Ammocrypta vivax	Scaly sand darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	154.00	1	0	Percidae	Etheostoma gracile	Slough darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	161.00	1	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	200.01	1	0	Percidae	Etheostoma	Unidentified Etheostoma sp. (darter)	Intolerant	FALSE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Lower	27623	06/24/03	11:00	3945	95	400.02	3	0	Centrarchidae	Unidentified Lepomis hybrid	Green x bluegill sunfish	tolerant	FALSE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	23.00	215	0	Cyprinidae	Campostoma anomalum	Central stoneroller	Interm	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	38.00	12	0	Cyprinidae	Luxilus chrysocephalus	Striped shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	42.00	2	0	Cyprinidae	Lythrurus umbratilis	Redfin shiner	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	53.00	140	0	Cyprinidae	Notropis boops	Bigeye shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	92.00	1	0	Catostomidae	Moxostoma duquesnei	Black redhorse	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE

SiteName	SAMPLEID	Date	Time	ShockTime	SeinTime	RefNum	Number	No. Diseased	Family	Species	VernName	Overall Tolerance	Insectivore	Omnivore	Piscivore	Herbivore	Generalist	Lithophil
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	97.00	28		Ictaluridae	Ameiurus natalis	Yellow bullhead	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	115.00	20	0	Fundulidae	Fundulus olivaceus	Blackspotted topminnow	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	118.00	13	0	Poeciliidae	Gambusia affinis	Mosquitofish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	130.00	30		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	133.00	2	0	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	135.00	75	0	Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	141.00	1	0	Centrarchidae	Micropterus salmoides	Largemouth bass	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	154.00	2	0	Percidae	Etheostoma gracile	Slough darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Horsehead Creek: Upper	27624	06/25/03	6:30	4111	90	161.00	43	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	7.00	1		Lepisosteidae	Lepisosteus osseus	Longnose gar	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	23.00	20	0	Cyprinidae	Campostoma anomalum	Central stoneroller	Interm	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	31.00	121	0	Cyprinidae	Cyprinella whipplei	Steelcolor shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	53.00	263	0	Cyprinidae	Notropis boops	Bigeye shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	72.00	1	0	Cyprinidae	Pimephales notatus	Bluntnose minnow	Interm	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	92.00	74		Catostomidae	Moxostoma duquesnei	Black redhorse	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	93.00	1		Catostomidae	Moxostoma erythrurum	Golden redhorse	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	99.00	5		Ictaluridae	Ictalurus punctatus	Channel catfish	tolerant	FALSE	FALSE	TRUE	FALSE	TRUE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	107.00	3		Ictaluridae	Pylodictis olivaris	Flathead catfish	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	114.00	3	0	Fundulidae	Fundulus notatus	Blackstripe topminnow	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	119.00	13	0	Atherinidae	Labidesthes sicculus	Brook silverside	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	130.00	41		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	135.00	186		Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	139.00	4		Centrarchidae	Micropterus dolomieui	Smallmouth bass	Intolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	140.00	2		Centrarchidae	Micropterus punctulatus	Spotted bass	Interm	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	161.00	1	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Lower	27626	06/26/03	10:00	4076	105	167.00	4	0	Percidae	Percina caprodes	Logperch	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Lower	27626	06/26/03	10:00	4076	105	179.00	6		Sciaenidae	Aplodinotus grunniens	Freshwater drum	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	23.00	63	0	Cyprinidae	Campostoma anomalum	Central stoneroller	Interm	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
Glover River: Middle	27627	06/26/03	17:40	3880	105	31.00	8	0	Cyprinidae	Cyprinella whipplei	Steelcolor shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Middle	27627	06/26/03	17:40	3880	105	49.00	22	0	Cyprinidae	Notropis atherinoides	Emerald shiner	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	53.00	333	0	Cyprinidae	Notropis boops	Bigeye shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE

SiteName	SAMPLEID	Date	Time	ShockTime	SeinTime	RefNum	Number	No. Diseased	Family	Species	VernName	Overall Tolerance	Insectivore	Omnivore	Piscivore	Herbivore	Generalist	Lithophil
Glover River: Middle	27627	06/26/03	17:40	3880	105	72.00	14	0	Cyprinidae	Pimephales notatus	Bluntnose minnow	Interm	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
Glover River: Middle	27627	06/26/03	17:40	3880	105	92.00	41		Catostomidae	Moxostoma duquesnei	Black redhorse	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Middle	27627	06/26/03	17:40	3880	105	93.00	7		Catostomidae	Moxostoma erythrurum	Golden redhorse	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Glover River: Middle	27627	06/26/03	17:40	3880	105	105.00	4	0	Ictaluridae	Noturus nocturnus	Freckeled madtom	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	107.00	1		Ictaluridae	Pylodictis olivaris	Flathead catfish	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	119.00	29	0	Atherinidae	Labidesthes sicculus	Brook silverside	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	130.00	60		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	131.00	1	0	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	135.00	144		Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	139.00	2		Centrarchidae	Micropterus dolomieui	Smallmouth bass	Intolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	140.00	2		Centrarchidae	Micropterus punctulatus	Spotted bass	Interm	FALSE	FALSE	TRUE	FALSE	FALSE	
Glover River: Middle	27627	06/26/03	17:40	3880	105	161.00	41	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	7.00	1		Lepisosteidae	Lepisosteus osseus	Longnose gar	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	23.00	16	0	Cyprinidae	Campostoma anomalum	Central stoneroller	Interm	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	31.00	7	0	Cyprinidae	Cyprinella whipplei	Steelcolor shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	49.00	7	0	Cyprinidae	Notropis atherinoides	Emerald shiner	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	53.00	14	0	Cyprinidae	Notropis boops	Bigeye shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	72.00	17	0	Cyprinidae	Pimephales notatus	Bluntnose minnow	Interm	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	90.00	1		Catostomidae	Minytrema melanops	Spotted sucker	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	92.00	29		Catostomidae	Moxostoma duquesnei	Black redhorse	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	93.00	4		Catostomidae	Moxostoma erythrurum	Golden redhorse	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	97.00	1	0	Ictaluridae	Ameiurus natalis	Yellow bullhead	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	99.00	1		Ictaluridae	Ictalurus punctatus	Channel catfish	tolerant	FALSE	FALSE	TRUE	FALSE	TRUE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	101.00	6	0	Ictaluridae	Noturus exilis	Slender madtom	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	107.00	1		Ictaluridae	Pylodictis olivaris	Flathead catfish	tolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	114.00	1	0	Fundulidae	Fundulus notatus	Blackstripe topminnow	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	119.00	9	0	Atherinidae	Labidesthes sicculus	Brook silverside	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	130.00	13		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	133.00	2		Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	135.00	55		Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	139.00	3		Centrarchidae	Micropterus dolomieui	Smallmouth bass	Intolerant	FALSE	FALSE	TRUE	FALSE	FALSE	

SiteName	SAMPLEID	Date	Time	ShockTime	SeinTime	RefNum	Number	No. Diseased	Family	Species	VernName	Overall Tolerance	Insectivore	Omnivore	Piscivore	Herbivore	Generalist	Lithophil
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	140.00	3		Centrarchidae	Micropterus punctulatus	Spotted bass	Interm	FALSE	FALSE	TRUE	FALSE	FALSE	
Big Eagle Creek: Lower	27628	06/27/03	11:30	3512	85	161.00	9	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Cedar Creek	27625	06/25/03	13:00	4217	105	23.00	148	0	Cyprinidae	Campostoma anomalum	Central stoneroller	Interm	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
Cedar Creek	27625	06/25/03	13:00	4217	105	41.00	34	0	Cyprinidae	Lythrurus snelsoni	Ouachita Mountain shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Cedar Creek	27625	06/25/03	13:00	4217	105	53.00	288	0	Cyprinidae	Notropis boops	Bigeye shiner	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE
Cedar Creek	27625	06/25/03	13:00	4217	105	90.50	6	0	Catostomidae	Moxostoma	Redhorse sucker	Intolerant	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE
Cedar Creek	27625	06/25/03	13:00	4217	105	97.00	44		Ictaluridae	Ameiurus natalis	Yellow bullhead	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Cedar Creek	27625	06/25/03	13:00	4217	105	114.00	2	0	Fundulidae	Fundulus notatus	Blackstripe topminnow	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Cedar Creek	27625	06/25/03	13:00	4217	105	119.00	3	0	Atherinidae	Labidesthes sicculus	Brook silverside	Interm	TRUE	FALSE	FALSE	FALSE	FALSE	
Cedar Creek	27625	06/25/03	13:00	4217	105	130.00	50		Centrarchidae	Lepomis cyanellus	Green sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	TRUE	
Cedar Creek	27625	06/25/03	13:00	4217	105	135.00	115		Centrarchidae	Lepomis megalotis	Longear sunfish	tolerant	TRUE	FALSE	FALSE	FALSE	FALSE	
Cedar Creek	27625	06/25/03	13:00	4217	105	139.00	2	0	Centrarchidae	Micropterus dolomieui	Smallmouth bass	Intolerant	FALSE	FALSE	TRUE	FALSE	FALSE	
Cedar Creek	27625	06/25/03	13:00	4217	105	161.00	35	0	Percidae	Etheostoma radiosum	Orangebelly darter	Intolerant	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE

Appendix A1. Bug Data

Site Name	SAMPLEID	Date	Time	PercSampPick	NumbSqrPick	TotSqr	PercSampCol	Effort(M2)	Number	RefNum	Phylum	Class	Order	Family	Genus
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	2	18.10	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Aulodrilus
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	7	19.00	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	1	54.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	2	90.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	2	94.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	4	95.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	10	131.00	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
Horsehead Creek: Lower	27623	06/24/03	11:00	6.3	14	28	100	3	4	275.00	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	31.10	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	2	58.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	2	60.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	81.00	ARTHROPODA	Insecta	Coleoptera	Psephenidae	Psephenus
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	92.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	95.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	12	122.70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	4	123.00	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	2	128.80	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	4	131.00	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	3	139.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	2	142.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	2	142.40	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	143.00	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	151.00	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	164.00	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	3	213.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	7	225.00	ARTHROPODA	Insecta	Trichoptera	Helicopsychidae	Helicopsyche
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	8	228.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
Horsehead Creek: Upper	27624	06/25/03	6:30	13	11	28	100	3	1	247.00	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	2	8.50	ANNELIDA	Oligochaeta	Haplotaxida	Glossoscolecidae	Sparganophilus
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	17.00	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	8	60.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis

Site Name	SAMPLEID	Date	Time	PercSampPick	NumbSqrPick	TotSqr	PercSampCol	Effort(M2)	Number	RefNum	Phylum	Class	Order	Family	Genus
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	90.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	7	92.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	13	94.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	14	95.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	122.50	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	20	122.70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	6	128.80	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	21	131.00	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	16	139.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	8	142.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	9	143.00	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae	
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	149.50	ARTHROPODA	Insecta	Ephemeroptera	Polymitarcyidae	Ephoron
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	164.00	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	179.00	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	9	213.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	11	228.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	234.00	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	247.00	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	1	252.00	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Polycentropus
Glover River: Lower	27626	06/26/03	10:00	25	7	28	100	3	2	281.50	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	11	58.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	36	60.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	3	122.50	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	1	139.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	1	142.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	13	142.40	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	2	149.50	ARTHROPODA	Insecta	Ephemeroptera	Polymitarcyidae	Ephoron
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	2	211.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Acroneuria
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	8	213.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	17	228.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	2	229.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche

Site Name	SAMPLEID	Date	Time	PercSampPick	NumbSqrPick	TotSqr	PercSampCol	Effort(M2)	Number	RefNum	Phylum	Class	Order	Family	Genus
Glover River: Middle	27627	06/26/03	17:40	25	5	28	100	3	12	247.00	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	9.00	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	23.40	ARTHROPODA	Acari	Arcarina	Torrenticolidae	Torrenticola
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	4	58.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	14	60.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	92.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	95.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	2	104.00	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	117.00	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	4	122.70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	9	123.00	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	4	139.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	25	142.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	16	142.40	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	149.50	ARTHROPODA	Insecta	Ephemeroptera	Polymitarcyidae	Ephoron
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	164.00	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	170.60	ARTHROPODA	Insecta	Neuroptera	Sisyridae	Climacia
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	179.00	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	211.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Acroneuria
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	2	213.00	ARTHROPODA	Insecta	Plecoptera	Perlidae	Neoperla
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	27	228.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	8	247.00	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra
Big Eagle Creek: Lower	27628	06/27/03	11:30	13	7	28	100	3	1	252.00	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Polycentropus
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	9.00	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	13.00	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	1	35.00	ARTHROPODA	Crustacea	Isopoda	Asellidae	Lirceus
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	58.00	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	6	81.00	ARTHROPODA	Insecta	Coleoptera	Psephenidae	Psephenus
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	1	90.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	3	92.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	4	94.00	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae

Site Name	SAMPLEID	Date	Time	PercSampPick	NumbSqrPick	TotSqr	PercSampCol	Effort(M2)	Number	RefNum	Phylum	Class	Order	Family	Genus
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	1	99.00	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	8	122.70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	40	131.00	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	8	139.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	6	141.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	142.00	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	12	142.40	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	164.00	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	1	168.00	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	179.00	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	1	225.00	ARTHROPODA	Insecta	Trichoptera	Helicopsychidae	Helicopsyche
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	4	228.00	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche
Cedar Creek	27625	06/25/03	13:00	25	7	28	100	3	2	247.00	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra