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APPROVED

Habitat, Fish and Macroinvertebrate Sampling Report for Drum Creek at the Former National Zinc Site Cherryvale, Montgomery County, Kansas

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Introduction

The former National Zinc site is a smelter facility located in Cherryvale, Montgomery County, Kansas. An unnamed intermittent stream drains the site before entering Drum Creek, a tributary of the Verdigris River. Elevated levels of heavy metals have been detected in soils, ground water, surface water and sediments adjacent to and downstream of the site drainage. Precipitation events causing changes in flow rates may subject both terrestrial and aquatic wildlife downstream of the former National Zinc site to periods of elevated levels of heavy metals. The Kansas Department of Health and Environment (KDHE), the Kansas Department of Wildlife and Parks (KDWP) and the United States Fish and Wildlife Service (USFWS) recently performed a preliminary biological assessment sampling habitat, fish and macroinvertebrate populations at five sample sites on one occasion. Three sample locations (sites 55, 56, and 53) were upstream of the Drum Creek confluence with the unnamed tributary draining the former National Zinc site, and two sites (57 and 54) were located downstream.

Methods

Habitat

Habitat was sampled by measuring the total length of each site and dividing each site into eleven equivalent transects. The stream width was measured along each transect and a Channel/Riparian Cross-Section & Thalweg Profile performed per transect. Total site area was estimated by multiplying total length by mean width. An estimate of "wadeable area" was made by visual observation. This estimate is made to determine what percentage of the site could be accessed by the field crew and sampled by the selected gear. In addition, a Habitat Development Score was computed for macrohabitat types using a Habitat Development Index (HDI) for each site.

Fish

Fish communities were sampled at the five locations previously described on Drum Creek. For the purposes of this evaluation, fish results for the upstream site (55) were used as the unaffected condition to which the remaining sites were compared. Fish were captured by electrofishing or seining at each site. All fish samples were combined into appropriately sized floating mesh cages for identification and enumeration. All fish were stored, identified and enumerated together with no effort made to evaluate the efficiencies or differences between the two sampling methods. Total electrofishing time was recorded in seconds (sec) by a built in clock on the electrofishing unit. An estimate of total area electrofished and total area seined was made by visual observation. Fish were identified to the species level and enumerated in the field before being released at each site. A representative subsample of "juggable" size fish was placed in one-gallon containers and preserved in a 10% formalin solution. The preserved fish were identified to the species level (where possible) and enumerated at Kansas State University.

Macroinvertebrates

Macroinvertebrates were collected using D-frame kicknets within wadeable habitats. Specimens were picked out of debris collected at each stream transect using forceps and preserved in 70% ethanol solution for identification to species level (where possible) at KDHE. Additionally, methodology in which personnel collect specimens from the best habitats available throughout the site, on a time-restricted basis, was utilized. For the purposes of this evaluation, macroinvertebrate results for the upstream site (55) were used as the unaffected condition to which the remaining sites were compared.

Results

Habitat

Sites 53, 55, 56 and 57 all had a HDI score of 7. Site 54 had a HDI score of 21. Sites 53, 55, 56 and 57 consisted of only a pool-designated macrohabitat. Site 54 had all three

macrohabitat types present consisting of a riffle, run and pool. Observed land use and disturbances associated with site 53 consisted of low trash/litter, surface films, a former bridge and moderate agricultural pasture. Unused land at site 53 consisted of low amounts of forest and grassland prairie. Land use and disturbances observed at site 55 included high levels of trash and dumping, an old bridge, moderate agricultural pasture, low intensity of surface films and roads. Land unused at site 55 included low intensities of forest and moderate intensities of grassland prairie. It is noted that site 55 was used as our intended upstream reference in which all other sites were compared for the purposes of this report. Site 56 consisted of low intensity residential, maintained lawns and roads. Moderate crop and pasture for agricultural use was observed. Unused land at site 56 consisted of low intensity forests and grassland prairie. Site 57 had low intensity impacts from residential, pipes, drains and roads. Moderate surface film and industry were observed at this site. Agricultural land use was moderate for pasture and livestock. Unused land for site 57 consisted of low intensity forest and moderate grassland prairie. Low intensity use and disturbance was observed at site 54 for residential, maintained yards, pipes, drains, roads, trash, surface films and livestock. Moderate intensity was observed in the use of land for crops. Unused land portions consisted of low intensity forest and grassland prairie. Habitat was generally limited to leaf packs and woody debris.

Fish

Sampling Effort

There was a large amount of variation in the total area sampled at each of the sites. Upstream sites 55 and 56 consisted of 3,546 m^2 sampled per site; 5,019 m^2 composed the area sampled for site 53; at site 57, 6,150 m^2 composed the area sampled while site 54 had an area sampled of 1904.4 m^2. Site 57 was over 3.2 times as large as site 54. The percent of area shocked was relatively consistent, ranging from a minimum of 70% at site 57 to a maximum of 80% at site 56. Approximately 75% of the total area was sampled at the remaining three sites.

Due to more time being spent sampling on larger sites, there were resulting variations in electrofishing time. Site 55 was sampled for 3,485 sec, site 56 was sampled for 4,093 sec, site 53 was sampled for 4,201 sec, site 57 was sampled for 4,710 sec and site 54 was sampled for 4,093 sec. The variation in electrofishing time closely mirrors the variation in site size. The area seined was also variable, ranging from a minimum of 40% at site 53 to a maximum of 70% at sites 56 and 57. At the remaining sites, 65% of the area was seined.

Number of Families

There were 10 families observed across the study sites. These include Cyprinidae (minnows), Catostomidae (suckers), Ictaluridae (catfish), Poecilliidae (live-bearers), Atherinidae (silversides), Centrarchidae (sunfish), Percidae (perch and darters), Sciaenidae (drum), Clupeidae (herring), and Lepisosteidae (gar). Of these, eight families were observed at site 55. Members of the families Sciaenidae and Clupeidae were not observed at site 55. There was an increase of 12.5% in families present (9) at site 56 and 53. This is accounted for by the additional presence of members of the family Sciaenidae. There was a 25% increase in families present (10) at site 57 (all families observed at this site) as compared to site 55 and a decrease of 12.5% in the number of families observed at site 54. The families not observed at this site were Sciaenidae, Clupeidae and Lepisosteidae.

Number of Species

There were 43 different species observed across the study sites. Included in this number are natural, identifiable hybrids of Catostomids (1) and Centrarchids (1), and a group of Centrarchids of the genus *Lepomis*, which were unidentifiable to the species level from being either young-of-the-year or hybridized individuals. These fish were identified simply as "*Lepomis* spp." The number of species (1) from the families Poecilliidae and Atherinidae were equally represented at all sites. There were 26 species observed at site 55. There was an increase of 15.4% in the number of species observed (30) at site 56. There were fewer species of

the families Cyprinidae and Ictaluridae, and more species of Catostomidae, Centrarchidae and Sciaenidae at site 56 as compared to site 55. There was a 38.5% increase in total species (36) observed at site 53. At site 53, there were more species of Catostomidae, Ictaluridae, Centrarchidae, and Sciaenidae than at site 55. There was an increase of 26.9% in the number of species observed (33) at site 57. Of these, there were fewer Ictaluridae species present, and more Catostomidae, Centrarchidae, Percidae, Sciaenidae, and Clupeidae as compared to site 55. Site 54 had a 7.7% increase in total species (28) as compared to site 55. There were fewer representatives of the families Catostomidae and Lepisosteidae, and more Ictaluridae and Percidae at site 54 as compared to site 55.

Number of Individuals

There were 2,760 individual fish observed at site 55 and 2,028 at site 56. This represents a decline of 26.5% at site 56. This decline is represented by a large decrease in the number of individuals of the families Cyprinidae, Ictaluridae, Poecilliidae, and Atherinidae, and a smaller increase in the number of individuals from the families Catostomidae, Centrarchidae, Percidae, Sciaenidae, and Lepisosteidae. There was a decrease of 32.9% (1,852) at site 53. This total decline is represented by a large decrease in the number of individuals of the families Cyprinidae, Ictaluridae, Poecilliidae, Percidae and a smaller increase in the number of individuals of the families Catostomidae, Atherinidae, Centrarchidae, Sciaenidae, and Lepisosteidae. There was a decrease of 58.0% (1,158) at site 57. This total decline is represented by a large decrease in the number of individuals from the families Cyprinidae, Ictaluridae, Atherinidae, and Centrarchidae, with a smaller increase in the number of individuals from the families Catostomidae, Poecilliidae, Percidae, Sciaenidae, Clupeidae, and Lepisosteidae. There was a decrease of 8.8% (2,517) at site 54. This total decline is represented by a large decrease in the number of individuals from the families Cyprinidae, Poecilliidae,

Centrarchidae, and Lepisosteidae, and a smaller increase in the number of individuals from the remaining families.

Macroinvertebrates

Total Taxa

The total number of taxa observed at sites 53 and 54 were equal (38). The total number of taxa observed at sites 55, 56 and 57 were 37, 34 and 40, respectively. An increase in number of taxa of 2.6% was observed at sites 53 and 54 compared to upstream site 55. The number of taxa decreased by 8.1% at site 56. Site 57 demonstrated an increase of 7.5%. Diptera (flies) represented the dominant order at sites 53, 54, 56 and 57, with the number of taxa observed being 15, 10, 11 and 13, respectively. Nine taxa of the order Coleoptera (beetles) represented the dominant order at site 55.

In the HDI samples, the total number of taxa observed at sites 55, 56, 53, 57 and 54 were 35, 36, 30, 35 and 32, respectively. A 2.9% increase in number of taxa occurred at site 56 compared to site 55. A decrease of 14.3% was observed for site 53. Site 57 remained unchanged compared to site 55 and site 54 exhibited a decrease in number of taxa by 8.6%. The dominant order for all sites excluding site 54 was Diptera. Sites 56 and 57 had 10 taxa in Diptera, while sites 55 and 53 had 8 and 9 taxa, respectively. Site 54 was dominated by 6 taxa in the order Coleoptera.

Number of Individuals

The number of individuals observed at site 55 was 310. Site 53 had 120 individuals with a decrease of 61.3 %. Site 54, the furthest downstream site, had an increase of 42.9 % (443). Sites 56 and 57 had decreases of 42.3% (179) and 7.7% (286), respectively. The most dominant individuals observed at sites 54, 55, 56 and 57 were from the genus *Caenis* of the order Ephemeroptera (mayflies). The most dominant individual at site 53 was the amphipod *Hyalella azteca*.

The number of individuals observed in the HDI sample for site 55 was 148. Site 54 had the most individuals in the HDI sample at 206. Sites 56, 53 and 57 had numbers of individuals of 157, 139 and 166, respectively. The percent increases of 6.1%, 12.2% and 39.2% for the number of individuals occurred at sites 56, 57 and 54, respectively. Site 53 decreased by 6.1%. The most dominant individuals in the HDI samples were more variable than the transect samples. *Hyalella azteca* was the dominant individual at sites 55 and 56. *Enallagama* a genus of the order Odonata (dragonflies, damselflies), was the dominant individual at sites 53 and 57. Site 54 was dominated by the individual, *Dugesia,* a member of the class Turbellaria (flatworms).

Discussion

Habitat

Low habitat diversity is commonly associated with low biodiversity and decreased biomass. However, it is extremely difficult to measure these kinds of associations in one sampling event, using limited techniques along a relatively short distance of stream. Time restraints and sampling error can also play a factor in site variability for assessing habitat. The percentage of a site that is wadeable may also affect habitat analysis.

It appears that the most downstream site (54) had the most diverse habitat relative to the other sites, for this sampling event. All sites were dominated by leaf packs and woody debris for habitat. Anthropogenic disturbances and land use at our unchanged, reference upstream site (55) may have caused difficulty in interpreting data, and may not be a suitable in reference for this sampling event. Impacts of the former National Zinc Smelter on local aquatic and terrestrial habitats could not be fully evaluated at this time. It may be that the former National Zinc smelter has had much broader impacts on Drum Creek that may be beyond the scope of this investigation. It is also possible that the former National Zinc smelter has affected the entire Verdigris watershed over time. These types of impacts are not capable of being measured with this one sampling event on such a relatively short stretch of stream.

Fish

The largest areas sampled were sites 53 and 57, which are immediately upstream and downstream of the confluence with the unnamed tributary, respectively. The smallest site sampled was site 54 at the downstream end of the study area. Sites 55 and 56, at the upstream end of the study area, were of equal size. There is a strong correlation (coefficient = 0.91; n = 5) between site size and time spent electrofishing during this study. This correlation demonstrates a consistent electrofishing effort across the sites. There is a weak negative correlation between site size and percent area seined (coefficient = -0.2). Increasing the sample area or the sample effort may increase the likelihood of collecting an additional species representing an additional family.

The distribution of fish families across a stream study area of this size would be expected to be somewhat uniform, with some variation related to the presence of particular habitats at any one site, collection method efficiency and effort and the number of different species representing a particular family. There were 7 to 10 families observed across the study area. Centrarchidae was the most diverse family present, represented by 12 species, followed by Cyprinidae (9 species), Catostomidae (8 species), Ictaluridae (5 species), and Percidae (4 species). The families Poecilliidae, Atherinidae, Sciaenidae, Clupeidae, and Lepisosteidae were each represented by a single species. Members of the families Sciaenidae and Clupeidae were observed at three and one of the five sites, respectively, which is most likely a result of being represented by a single species. This is in contrast to the families Poecilliidae and Atherinidae, which were represented by a single species observed at each site. The collection of an additional individual or species could affect the number of families observed at a site, considering that 5 of the 10 families observed during this study were represented by a single species. Lepisosteidae was observed at four of the five sites with the single species longnose gar representing ≤ 2 individuals at any one site. There were strong correlations between site size and the number of families observed (coefficient = 0.93). The larger sites (53 and 57) could account for increases

in families observed by contributing more habitat types, or simply more habitat of each type, within the sampled area.

There were 43 species present across the study area, ranging from 26 to 36 present at any one site. This number of species includes natural, identifiable hybrids of Catostomids and Centrarchids, and a group of Centrarchids of the genus *Lepomis*. Individuals of this genus were unidentifiable to the species level due to either young-of-the-year or hybridized individuals. These fish were identified simply as "*Lepomis* spp." The number of species would also be expected to be somewhat uniform across these sites, although this measure would be more variable than the number of families. The presence of particular habitat types, and the ability of the collecting gear to sample all habitats, may have a significant effect on determining species presence at a site. In addition to the aforementioned variability in the presence of species of the families Poecilliidae, Atherinidae, Sciaenidae, and Clupeidae, Catostomidae was also quite variable across the study area. There was a moderate correlation between site size and the number of species observed at each site (coefficient = 0.72). As with the distribution and diversity of families at each site, the relative diversity of the fish species observed at the sites can be related to the area sampled.

The more sensitive measure of a fish community would be the number of individuals at any particular site. This measure showed the greatest variability when compared to the upper-most site (55), from -8.8% to -58.0% across the study area. The sites with the lowest number of individuals were 57 and 53, which are immediately downstream and upstream of the confluence with the unnamed tributary, respectively. The sites with the most individuals were 55 and 54, which are the farthest upstream and downstream sites, respectively. The change in number of individuals across the study area is primarily observed in the number of total Cyprinids, which is the most abundant family present. Total Cyprinids range from a maximum of 1,987 at site 55, which is the upper-most site in the study area; to a minimum of 375 at site 53, immediately

below the confluence with the unnamed tributary. The most abundant species at all sites were bluntnose minnows (*Pimephales notatus),* redfin shiners (*Lythrurus umbratilis*) or red shiners (*Cyprinella lutrensis*). The number of individuals of the families Centrarchidae, Atherinidae, and Poecilliidae is also quite variable across the sample sites. Adult, juvenile, and young-of-the-year fish of the genus *Lepomis* were observed at all sites and in varying ratios amongst the genus. Orangespotted sunfish (*L. humilis*), bluegill (*L. macrochirus*), and longear sunfish (*L. megalotis*) were the most numerous species of Centrarchids at all sites. There is a strong, inverse correlation between total area and total individuals captured (coefficient = -0.85). Sites 53 and 57, although the largest sites sampled in terms of area, yielded the smallest total number of individual fish captured. Again, sites 53 and 57 are immediately above and below the confluence with the unnamed tributary draining the former National Zinc smelter.

Macroinvertebrates

A one time sampling event of a stream this size, with generally non-existent to low flow, bearing mostly shallow pools and poor habitat diversity, would expectantly demonstrate a fairly uniform macroinvertebrate distribution. According to the Macroinvertebrate Biotic Index (MBI), only sample sites 55 and 54 the most upstream and downstream sites respectively, were considered "partially supporting" of aquatic macroinvertebrates and contained the most number of individuals of all the sites (310) and (443) respectively. Sites 53, 56 and 57 were considered "not supporting" of aquatic insects. The Ephemeroptera, Plecoptera (stoneflies) and Tricoptera (caddisflies) (EPT) Index deemed site 54 the only "partially supporting" site; sites 53, 55, 56 and 57 were "not supporting." Sites 55 and 56 were considered "partially supporting," while sites 53, 54 and 57 were "not supporting" based on the EPT Abundance metric. The HDI samples for sites 55, 53 and 57 were "not supporting" of aquatic life and sites 56 and 54 were "partially supporting" using the MBI. Both the EPT Index and the EPT Abundance metrics consider all HDI samples from Drum Creek indications of a "not supporting" system.

Of the 34-40 taxa occurring at each site in the transect samples, between 60 and 87 percent respectively, were comprised of tolerant species. Between 39 and 81 percent of the HDI samples were composed of tolerant species, with the two sites closest to the confluence (53 and 57) containing 81 and 73 percent tolerant species, respectively.

Not surprisingly, the order Diptera is the most tolerant to total pollutants when comparing mean tolerance values of six aquatic insect orders. Although it was the dominant order overall, it is surprising to observe the lack of number of individuals in all samples for this order of insect. Typically, the number of *Chironomus* larvae is much greater as has been observed in similar samples. Low number of individuals for this order may be an indication of detrimental effects from elevated levels of heavy metals to bottom-dwelling, burrowing invertebrates residing in the detritus and sediment layers.

Coleoptera (most dominant order at site 55 transect sample and 54 HDI sample) is the second most tolerant order examined, followed by Ephemeroptera, Odonata, Tricoptera and ending with the most sensitive Plecoptera. Only four individuals were found at site 55 (1) and site 54 (3) of the transect samples from the order Tricoptera and no specimens were observed from the order Plecoptera. Trichoptera individuals (12) were only observed at site 54 of the HDI samples. No Plecoptera was observed. The very low number of individuals of Tricoptera and absence of Plecoptera may be indication of an impacted stream.

In Kansas, the six above-mentioned aquatic insect orders demonstrate the lowest mean tolerance to heavy metals when compared to other contaminant categories (nutrient and oxygen demanding substances, persistent organic compounds, agricultural pesticides, salinity, suspended solids and sediments). Ephemeroptera exhibits a known sensitivity in the presence of moderate levels of heavy metals and is the most tolerant aquatic insect order (examined) for this pollutant in Kansas. However, it is also one of the most sensitive orders when exposed to persistent organic compounds and agricultural pesticides demonstrating a no tolerance or rare tolerance to

moderate levels of these pollutants. The percent dominant individual for sites 54, 55, 56 and 57 was *Caenis,* a genus of Ephemeroptera. Of the species of *Caenis* known to occur in Kansas, three are proposed to be unaffected by moderate levels of heavy metal contamination, three exhibit known sensitivity and one is definitively sensitive. In lotic systems, *Caenis* are characterized as sprawlers and climbers, feeding as collectors and gatherers. They are located within the water column and rarely in the sediment. Based on analytical analysis of heavy metals for Drum Creek, several heavy metals exceed Sediment Quality Guidelines (SQG's). It appears that during precipitation events, a number of heavy metals exceed Maximum Contaminant Levels (MCL's) for surface waters. Under normal flow conditions, the majority of heavy metal contamination seems to be occurring in the sediments and not in the water column. *Caenis* being the most tolerant to heavy metals, the percent dominant individual in four of five Drum Creek macroinvertebrate samples and a macroinvertebrate with a lotic habitat in the water column, may be factors to consider in the explanation as to why there is reduced biomass and biodiversity of macroinvertebrates in this one sampling event of Drum Creek. In addition, the sensitivity of *Caenis* to exposures of agricultural pesticides and/or persistent organic compounds was not observed for this sampling event due to the extreme intolerance all known members of this genus exhibit in the presence of these types of pollutants and the number of individuals collected at the Drum Creek sites.

Although the order Ephemeroptera exhibits a known sensitivity to heavy metals and is considered the most tolerant of the aquatic insect orders examined, a definite sensitivity in the presence of heavy metals exists in Diptera, Coleoptera, Odonata, Trichoptera and Plecoptera. For example, *Enallagama* of the order Odonata is definitively sensitive to heavy metal pollution and is considered tolerant of agricultural pesticides. *Enallagama* is categorized as a predatory climber and was the dominant individual at sites 53 and 57 of the HDI samples. Like *Caenis*, *Enallagama* spends most of the time in the water column. The presence of *Enallagama* could be

used as a potential indicator for heavy metals released into the water column during and after precipitation events. Further investigation is warranted.

The amphipod *Hyalella azteca* is a standard organism used in toxicity testing with heavy metals. Detrimental effects are known to occur but several other biological and chemical parameters must be evaluated site specifically to determine the magnitude of exposure and impact. The presence of this species as the dominant individual at the upstream sites 55 and 56 in the HDI samples and 53 of the transect sample and virtual absence downstream alone is not definitive for establishing impact. Further investigation is needed.

Although some species may be capable of tolerating exposure to heavy metal pollution, it has been documented that even tolerant species demonstrate a known slower development and reduced emergence rates when exposed to environmental levels of Cadmium, Chromium and Zinc bound to sediment. Therefore, heavy metals are capable of producing detrimental effects in biomass and biodiversity for these insects and others at an even greater magnitude. In particular, bottom-dwelling invertebrate species are at higher risk due to the partitioning of heavy metals into sediment via adsorption and water column invertebrates sustaining higher concentrations of metals during high flow events.

Conclusion

The cumulative inabilities of the sampling methods and data interpretations to provide clear, concise associations represent the limitations of this report. However, in comparison, these primary results are consistent with injuries sustained from heavy metal exposures cited in other streams of the Verdigris and Neosho watersheds. It is possible that the former National Zinc site may have a negative impact on the unnamed intermittent stream, Drum Creek and possibly the Verdigris River. A direct negative impact of heavy metal contamination in surrounding water and sediment could be the underlying factor for the poor representation of biomass and biodiversity. Poor habitat because of de-vegetation in riparian and aquatic habitats

due to heavy metal contamination could also be a factor. A full-scale biological assessment is warranted for the unnamed intermittent stream, Drum Creek and the Verdigris River. A complete biological assessment may provide further scientific evidence useful in determining the magnitude of injury. Further investigation of possible injury to biota is justified, in particular for threatened, endangered and species in need of conservation (SINC) unionid mussel species to determine possible bioaccumulation of heavy metals within tissue and mussel percent loss.

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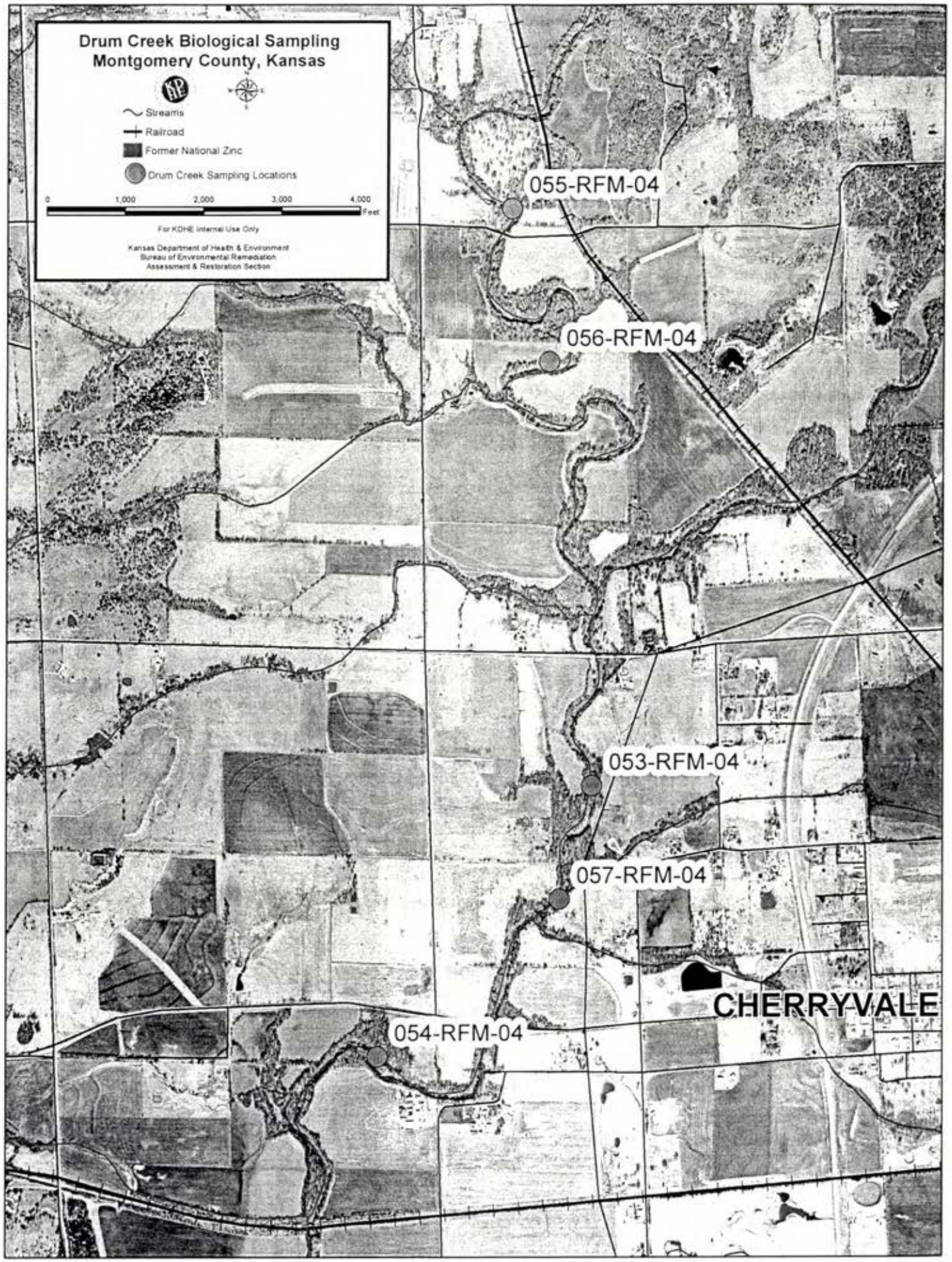
Figures and Tables


Drum Creek Biological Sampling
Montgomery County, Kansas
Streams
Railroad
Former National Zinc
Drum Creek Sampling Locations
0
1,000
2,000
3,000
4,000
Feet
For KDHE Internal Use Only
Kansas Department of Health & Environment
Bureau of Environmental Remediation
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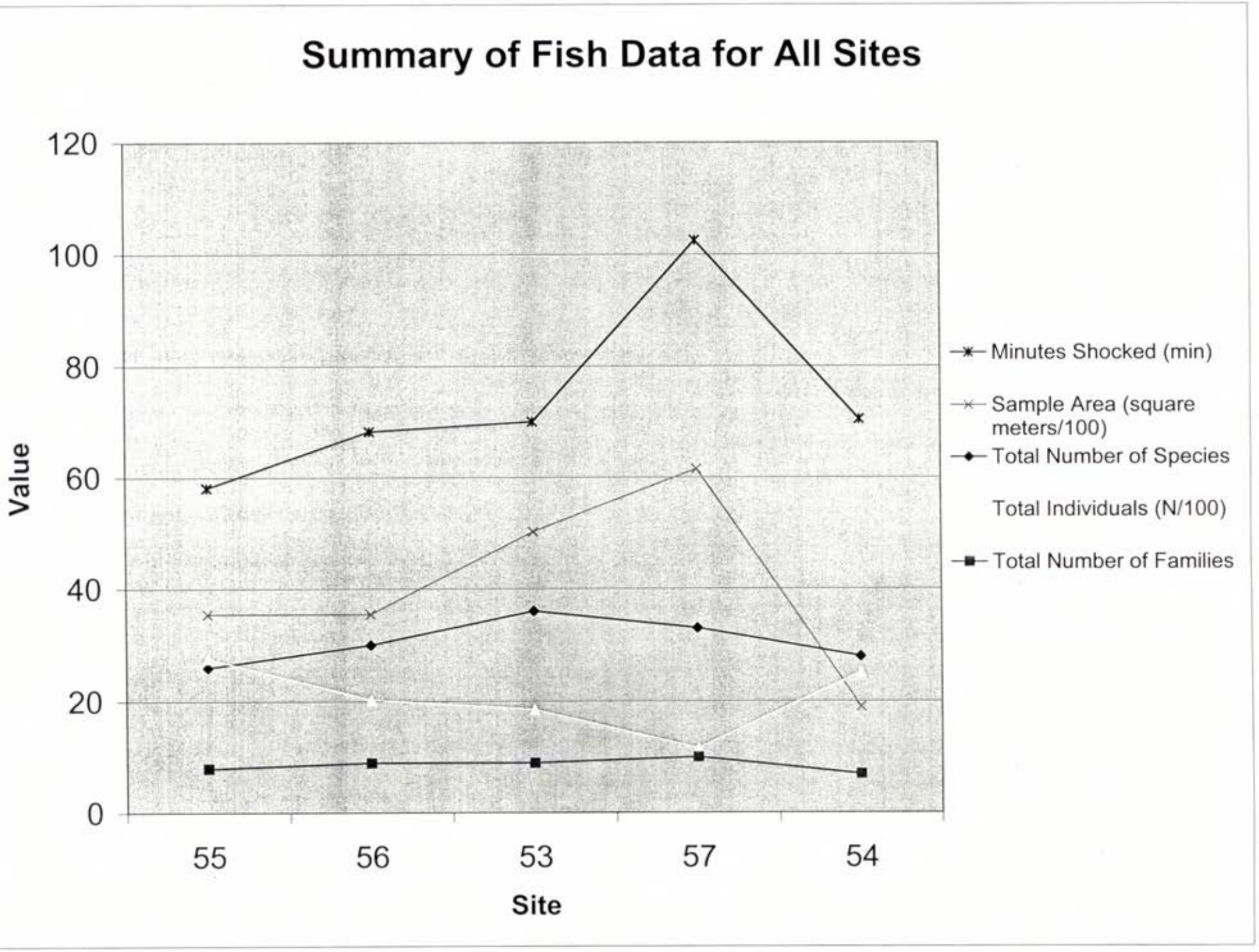
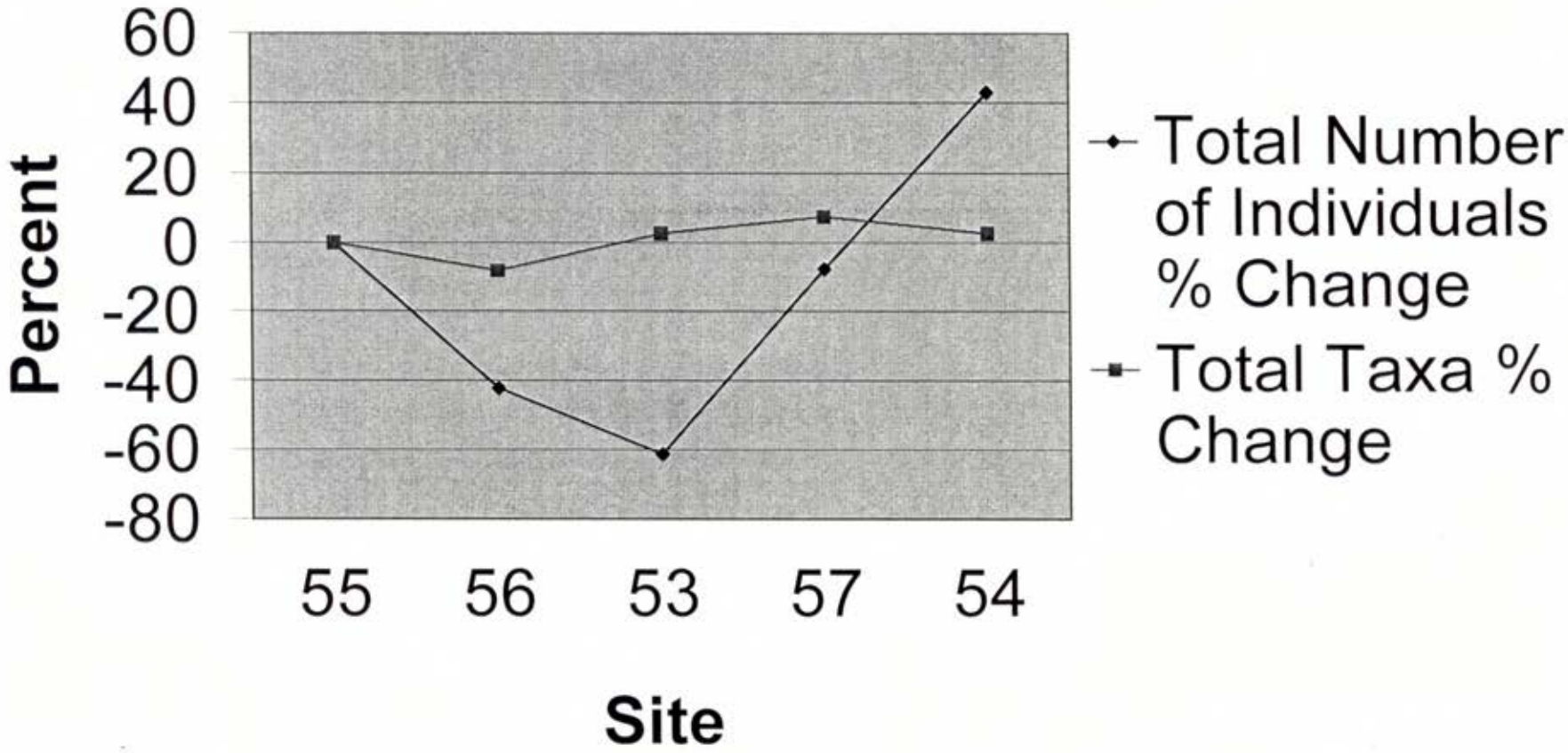
CHERRYVALE
054-RFM-04


Summary of Fish Data for All Sites
120
100
80
60
40
20
0
Value
55
56
53
57
54
Site
Minutes Shocked (min)
Sample Area (square meters/100)
Total Number of Species
Total Individuals (N/100)
Total Number of Families

% Change of Macroinvertebrates Using Site 55 for Comparison



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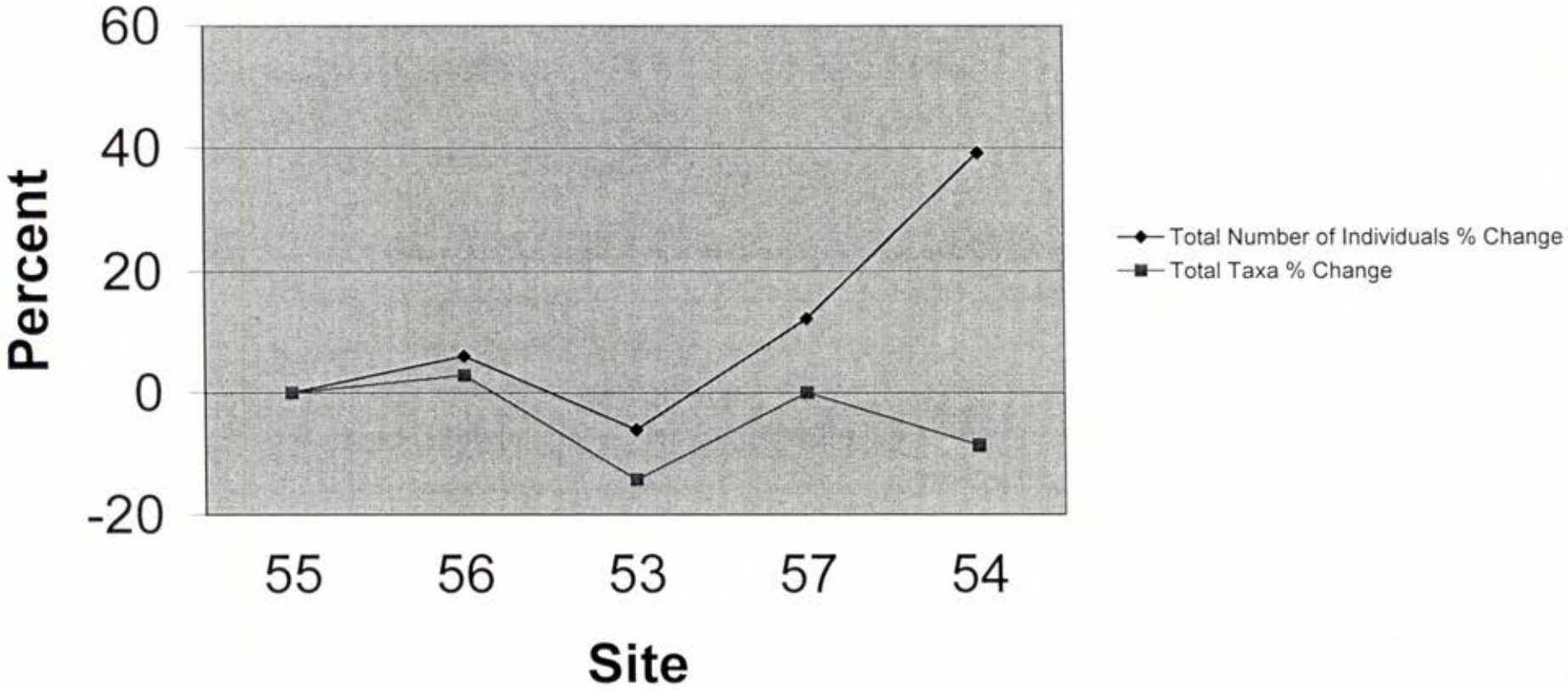
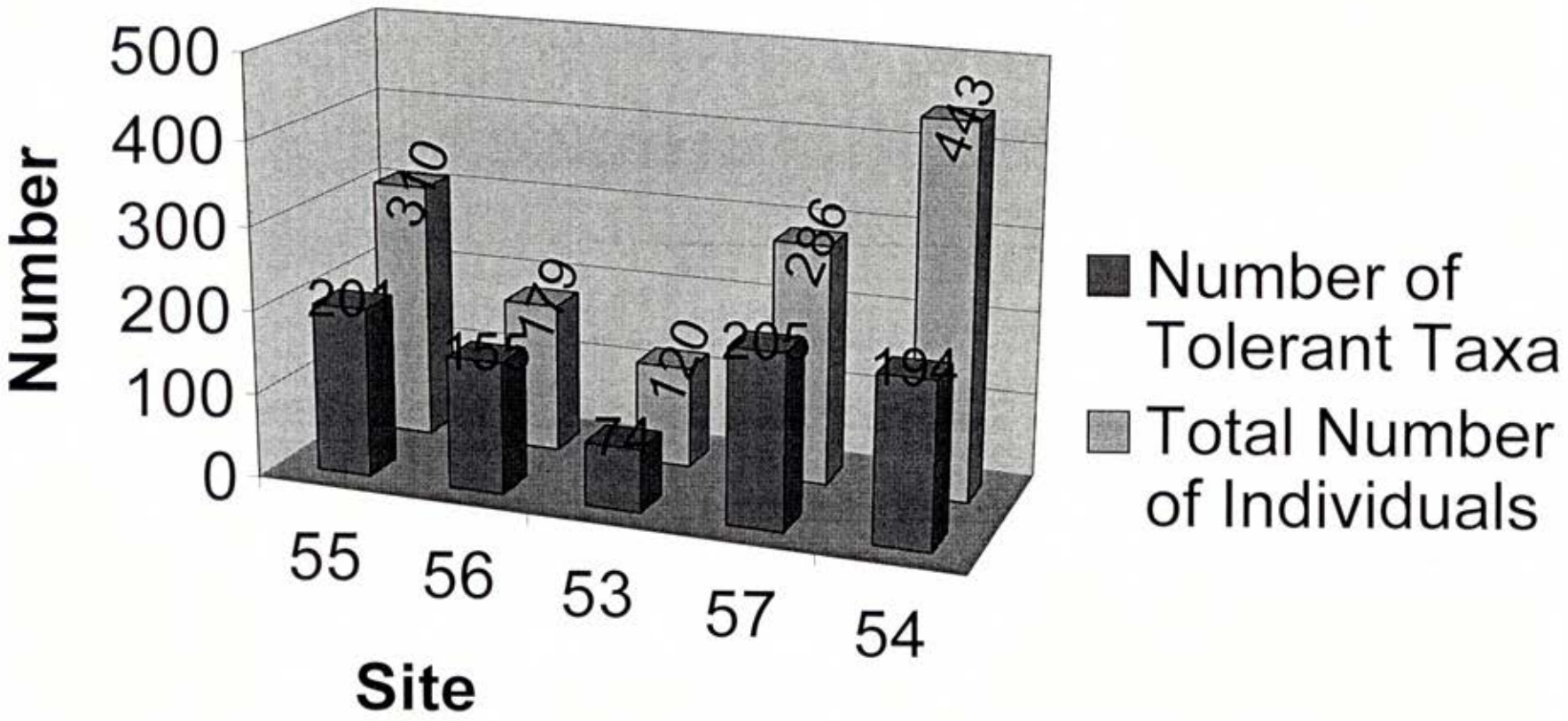
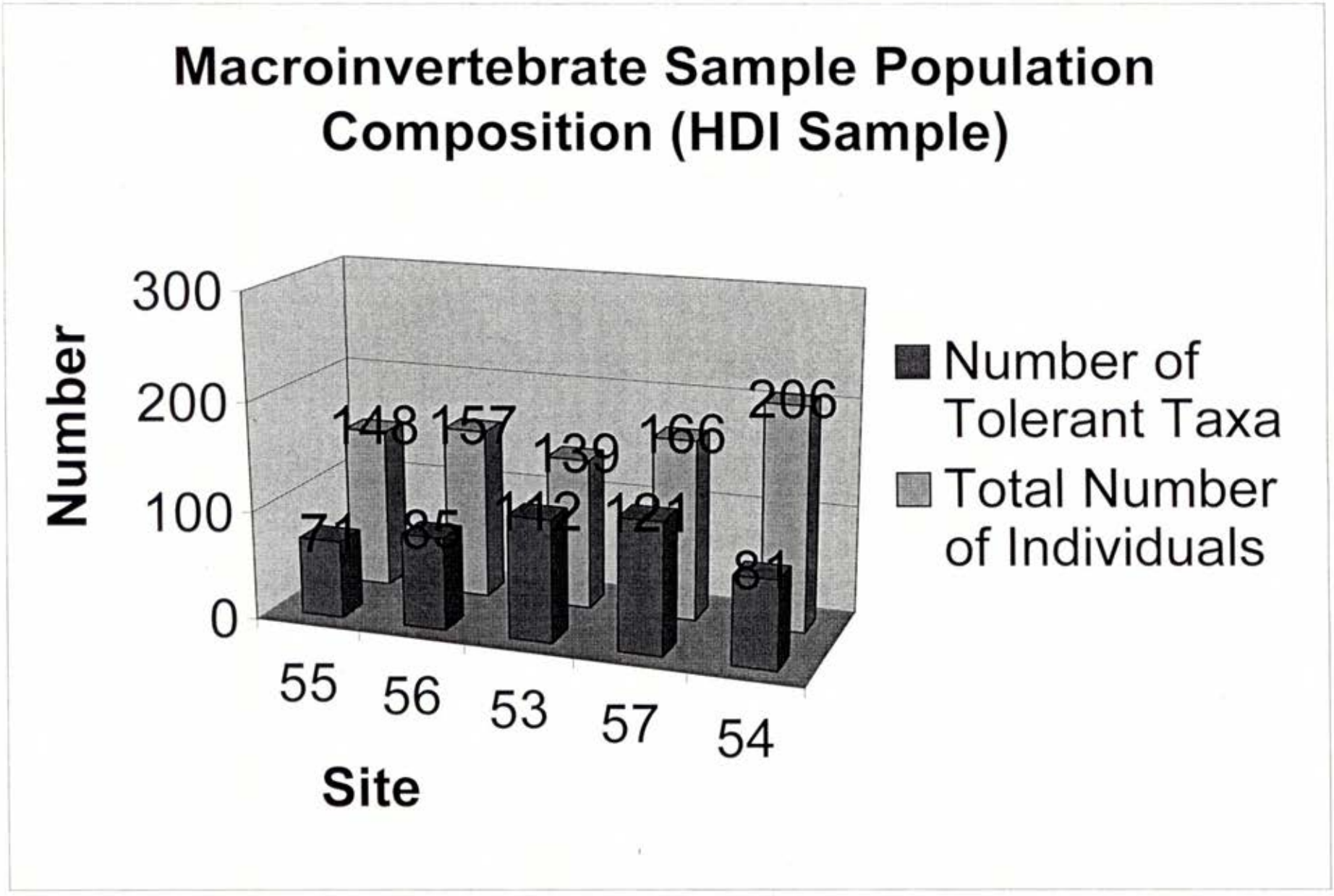


Macroinvertebrate Sample Population Composition




Macroinvertebrate Sample Population Composition (HDI Sample)
Number
300
200
100
0
148
157
139
166
206
71
85
112
121
81
55
56
53
57
54
Site
Number of Tolerant Taxa
Total Number of Individuals

Site Locations										
Site#	Date	Stream	County	1/4 1/4	1/4	Section	Township	Range	Latitude	Longitude
053-RFM-04	27-Sep-04	Drum Creek	Montgomery	NE	SE	7	32S	17E	37-16.613	095-34.689
054-RFM-04	02-Sep-04	Drum Creek	Montgomery	NW	NE	18	32S	17E	37-16.064	095-35.279
055-RFM-04	29-Sep-04	Drum Creek	Montgomery	SE	SE	31	31S	17E	37-17.824	095-34.849
056-RFM-04	30-Sep-04	Drum Creek	Montgomery	SE	NE	6	32S	17E	37-17.501	095-34.764
057-RFM-04	01-Oct-04	Drum Creek	Montgomery	SE	NE	7	32S	17E	37-16.379	095-34.784

Site Number	055-RFM-04	Date: Sept. 29, 2004						
Family	Species	Common	Field Identified	Preserved			Total Collected	Counts
Cyprinidae								
	Campostoma anomalum	Central stoneroller	146	276			422	1987
	Cyprinella camura	Bluntface shiner	x	23			23	
	Cyprinella lutrensis	Red shiner	55	538			593	
	Lythrurus umbratilis	Redfin shiner	84	257			341	
	Pimaphales notatus	Bluntnose minnow	79	462			541	
	Pimaphales tenellus	Slim minnow	x	23			23	
	Pimaphales vigilax	Bullhead minnow	x	25			25	
	Phenacobius mirabilis	Suckermouth minnow	16	3			19	
	Cyprinus carpio	Common Carp	x	x			0	
Catostomidae								
	Minytrema melanops	Spotted sucker	x	x			0	6
	Moxostoma erythrurum	Golden redhorse	1	x			1	
	Ictiobus bubalus	Smallmouth buffalo	3	x			3	
	Ictiobus niger	Black buffalo	1	x			1	
	Ictiobus cyprinellus	Bigmouth buffalo	x	x			0	
	Ictiobus spp.	Hybrid buffalo	1	x			1	
	Carpoides carpio	River carpsucker	x	x			0	
	Moxostoma macrolepidotum	Shorthead redhorse	x	x			0	
Ictaluridae								
	Ameiurus melas	Black bullhead	x	x			0	14
	Ameiurus natalis	Yellow bullhead	4	3			7	
	Ictalurus punctatus	Channel catfish	1	2			3	
	Noturus nocturnus	Freckled madtom	x	4			4	
	Pylodictus olivaris	Flathead catfish	x	x			0	
Poecilliidea								
	Gambusia affinis	Mosquitofish	30	70			100	100
Atherinidae								
	Labidesthes sicculus	Brook silverside	21	125			146	146
Centrachidae					Juv.-Adult	YOY		
	Lepomis cyanellus	Green Sunfish	91	24	19	5	115	438
	Lepomis gulosus	Warmouth	4	2	2		6	
	Lepomis humilis	Orangespotted sunfish	33	69	10	59	102	
	Lepomis machrochirus	Bluegill	41	20	11	9	61	
	Lepomis machrochirus x gulosus		x	x			0	
	Lepomis megalotis	Longear sunfish	13	31	11	20	44	
	Lepomis spp		x	102			102	
	Micropterus punctatus	Spotted bass	x	x			0	
	Micropterus salmoides	Largemouth bass	4	4			8	
	Pomoxis annularis	White crappie	x	x			0	
	Pomoxis nigromaculatis	Black Crappie	x	x			0	
	Lepomis microlophus	Redear sunfish	x	x			0	
Percidae								
	Etheostoma spectabile	Orangethroat darter	21	44			65	68
	Percina caprodes	Logperch	2	1			3	
	Percina copelandi	Channel darter	x	x			0	
	Percina phoxocephala	Slenderhead darter	x	x			0	
Sciaenidae								
	Aplodinotus grunniens	Drum	x	x			0	0
Clupeidae								
	Dorosoma cepedianum	Gizzard shad	x	x			0	0
Lepisostidae								
	Lepisosteus osseus	Longnose gar	1	x			1	1
Tot. indivs.							2760	2760
#Spp								26
#Families								8

Site Number	056-RFM-04	Date: Sept. 30, 2004						
Family	Species	Common	Field Identified	Preserved			Total Collected	Counts
Cyprinidae								
	Campostoma anomalum	Central stoneroller	2	9			11	1067
	Cyprinella camura	Bluntface shiner	x	x			0	
	Cyprinella lutrensis	Red shiner	10	171			181	
	Lythrurus umbratilis	Redfin shiner	x	238			238	
	Pimaphales notatus	Bluntnose minnow	15	456			471	
	Pimaphales tenellus	Slim minnow	x	71			71	
	Pimaphales vigilax	Bullhead minnow	x	87			87	
	Phenacobius mirabilis	Suckermouth minnow	x	x			0	
	Cyprinus carpio	Common Carp	8	x			8	
Catostomidae								
	Minytrema melanops	Spotted sucker	1	9			10	47
	Moxostoma erythrurum	Golden redhorse	11	3			14	
	Ictiobus bubalus	Smallmouth buffalo	7	1			8	
	Ictiobus niger	Black buffalo	9	x			9	
	Ictiobus cyprinellus	Bigmouth buffalo	2	x			2	
	Ictiobus spp.	Hybrid buffalo	x	x			0	
	Carpoides carpio	River carpsucker	4	x			4	
	Moxostoma macrolepidotum	Shorthead redhorse	x	x			0	
Ictaluridae								
	Ameiurus melas	Black bullhead	x	x			0	3
	Ameiurus natalis	Yellow bullhead	x	x			0	
	Ictalurus punctatus	Channel catfish	2	1			3	
	Noturus nocturnus	Freckled madtom	x	x			0	
	Pylodictus olivaris	Flathead catfish	x	x			0	
Poecilliidea								
	Gambusia affinis	Mosquitofish	1	24			25	25
Atherinidae								
	Labidesthes sicculus	Brook silverside	2	33			35	35
Centrachidae					Juv.-Adult	YOY		
	Lepomis cyanellus	Green Sunfish	35	53	26	27	88	729
	Lepomis gulosus	Warmouth	5	1	1		6	
	Lepomis humilis	Orangespotted sunfish	40	247	10	237	287	
	Lepomis machrochirus	Bluegill	32	20	8	12	52	
	Lepomis machrochirus x gulosus		x	x			0	
	Lepomis megalotis	Longear sunfish	37	83	22	61	120	
	Lepomis spp		x	165			165	
	Micropterus punctatus	Spotted bass	x	1			1	
	Micropterus salmoides	Largemouth bass	6	1			7	
	Pomoxis annularis	White crappie	2	x			2	
	Pomoxis nigromaculatis	Black Crappie	1	x			1	
	Lepomis microlophus	Redear sunfish	x	x			0	
Percidae								
	Etheostoma spectabile	Orangethroat darter	21	95			116	119
	Percina caprodes	Logperch	2	1			3	
	Percina copelandi	Channel darter	x	x			0	
	Percina phoxocephala	Slenderhead darter	x	x			0	
Sciaenidae								
	Aplodinotus grunniens	Drum	1	x			1	1
Clupeidae								
	Dorosoma cepedianum	Gizzard shad	x	x			0	0
Lepisostidae								
	Lepisosteus osseus	Longnose gar	2	x			2	2
Tot. indivs.							2028	2028
#Spp								30
#Families								9

Site Number	053-RFM-04	Date: Sept. 27, 2004						
Family	Species	Common	Field Identified	Preserved			Total Collected	Counts
Cyprinidae								
	Campostoma anomalum	Central stoneroller	x	6			6	796
	Cyprinella camura	Bluntface shiner	x	10			10	
	Cyprinella lutrensis	Red shiner	x	10			10	
	Lythrurus umbratilis	Redfin shiner	1	438			439	
	Pimaphales notatus	Bluntnose minnow	x	293			293	
	Pimaphales tenellus	Slim minnow	x	10			10	
	Pimaphales vigilax	Bullhead minnow	x	25			25	
	Phenacobius mirabilis	Suckermouth minnow	x	x			0	
	Cyprinus carpio	Common Carp	3	x			3	
Catostomidae								
	Minytrema melanops	Spotted sucker	2	2			4	13
	Moxostoma erythrurum	Golden redhorse	x	x			0	
	Ictiobus bubalus	Smallmouth buffalo	3	x			3	
	Ictiobus niger	Black buffalo	1	x			1	
	Ictiobus cyprinellus	Bigmouth buffalo	x	x			0	
	Ictiobus spp.	Hybrid buffalo	x	x			0	
	Carpoides carpio	River carpsucker	3	x			3	
	Moxostoma macrolepidotum	Shorthead redhorse	2	x			2	
Ictaluridae								
	Ameiurus melas	Black bullhead	x	1			1	10
	Ameiurus natalis	Yellow bullhead	1	1			2	
	Ictalurus punctatus	Channel catfish	2	1			3	
	Noturus nocturnus	Freckled madtom	x	2			2	
	Pylodictus olivaris	Flathead catfish	2	x			2	
Poecilliidea								
	Gambusia affinis	Mosquitofish	2	70			72	72
Atherinidae								
	Labidesthes sicculus	Brook silverside	14	255			269	269
Centrachidae					Juv.-Adult	YOY		
	Lepomis cyanellus	Green Sunfish	26	56	39	17	82	654
	Lepomis gulosus	Warmouth	15	44	38	6	59	
	Lepomis humilis	Orangespotted sunfish	4	106	19	87	110	
	Lepomis machrochirus	Bluegill	44	115	83	32	159	
	Lepomis machrochirus x gulosus		x	1	1		1	
	Lepomis megalotis	Longear sunfish	52	80	53	27	132	
	Lepomis spp		x	86			86	
	Micropterus punctatus	Spotted bass	4	3			7	
	Micropterus salmoides	Largemouth bass	3	12			15	
	Pomoxis annularis	White crappie	2	x			2	
	Pomoxis nigromaculatis	Black Crappie	x	x			0	
	Lepomis microlophus	Redear sunfish	1	x			1	
Percidae								
	Etheostoma spectabile	Orangethroat darter	6	19			25	34
	Percina caprodes	Logperch	5	3			8	
	Percina copelandi	Channel darter	x	1			1	
	Percina phoxocephala	Slenderhead darter	x	x			0	
Sciaenidae								
	Aplodinotus grunniens	Drum	1	1			2	2
Clupeidae								
	Dorosoma cepedianum	Gizzard shad	x	x			0	0
Lepisostidae								
	Lepisosteus osseus	Longnose gar	2	x			2	2
Tot. indivs.							1852	1852
#Spp								36
#Families								9

Site Number	057-RFM-04	Date: Oct. 1, 2004						
Family	Species	Common	Field Identified	Preserved			Total Collected	Counts
Cyprinidae								
	Campostoma anomalum	Central stoneroller	x	58			58	375
	Cyprinella camura	Bluntface shiner	x	3			3	
	Cyprinella lutrensis	Red shiner	x	55			55	
	Lythrurus umbratilis	Redfin shiner	x	60			60	
	Pimaphales notatus	Bluntnose minnow	1	142			143	
	Pimaphales tenellus	Slim minnow	x	26			26	
	Pimaphales vigilax	Bullhead minnow	x	22			22	
	Phenacobius mirabilis	Suckermouth minnow	x	x			0	
	Cyprinus carpio	Common Carp	8	x			8	
Catostomidae								
	Minytrema melanops	Spotted sucker	x	x			0	30
	Moxostoma erythrurum	Golden redhorse	1	2			3	
	Ictiobus bubalus	Smallmouth buffalo	11	x			11	
	Ictiobus niger	Black buffalo	4	x			4	
	Ictiobus cyprinellus	Bigmouth buffalo	5	x			5	
	Ictiobus spp.	Hybrid buffalo	x	x			0	
	Carpoides carpio	River carpsucker	6	x			6	
	Moxostoma macrolepidotum	Shorthead redhorse	1	x			1	
Ictaluridae								
	Ameiurus melas	Black bullhead	x	x			0	8
	Ameiurus natalis	Yellow bullhead	x	x			0	
	Ictalurus punctatus	Channel catfish	3	1			4	
	Noturus nocturnus	Freckled madtom	x	x			0	
	Pylodictus olivaris	Flathead catfish	3	1			4	
Poecilliidea								
	Gambusia affinis	Mosquitofish	9	292			301	301
Atherinidae								
	Labidesthes sicculus	Brook silverside	5	86			91	91
Centrachidae					Juv.-Adult	YOY		
	Lepomis cyanellus	Green Sunfish	12	12	12		24	264
	Lepomis gulosus	Warmouth	7	5	5		12	
	Lepomis humilis	Orangespotted sunfish	5	42	10	32	47	
	Lepomis machrochirus	Bluegill	19	77	29	48	96	
	Lepomis machrochirus x gulosus		x	x			0	
	Lepomis megalotis	Longear sunfish	15	16	13	3	31	
	Lepomis spp		x	43			43	
	Micropterus punctatus	Spotted bass	x	2			2	
	Micropterus salmoides	Largemouth bass	5	3			8	
	Pomoxis annularis	White crappie	x	1			1	
	Pomoxis nigromaculatis	Black Crappie	x	x			0	
	Lepomis microlophus	Redear sunfish	x	x			0	
Percidae								
	Etheostoma spectabile	Orangethroat darter	2	64			66	76
	Percina caprodes	Logperch	2	7			9	
	Percina copelandi	Channel darter	x	x			0	
	Percina phoxocephala	Slenderhead darter	x	1			1	
Sciaenidae								
	Aplodinotus grunniens	Drum	5	1			6	6
Clupeidae								
	Dorosoma cepedianum	Gizzard shad	1	4			5	5
Lepisostidae								
	Lepisosteus osseus	Longnose gar	2	x			2	2
Tot. indivs.							1158	1158
#Spp								33
#Families								10

Site Number	054-RFM-04	Date: Oct. 1, 2004						
Family	Species	Common	Field Identified	Preserved			Total Collected	Counts
Cyprinidae								
	Campostoma anomalum	Central stoneroller	12	191			203	1550
	Cyprinella camura	Bluntface shiner	25	83			108	
	Cyprinella lutrensis	Red shiner	8	229			237	
	Lythrurus umbratilis	Redfin shiner	x	599			599	
	Pimaphales notatus	Bluntnose minnow	12	292			304	
	Pimaphales tenellus	Slim minnow	x	36			36	
	Pimaphales vigilax	Bullhead minnow	x	57			57	
	Phenacobius mirabilis	Suckermouth minnow	1	5			6	
	Cyprinus carpio	Common Carp	x	x			0	
Catostomidae								
	Minytrema melanops	Spotted sucker	x	x			0	10
	Moxostoma erythrurum	Golden redhorse	x	1			1	
	Ictiobus bubalus	Smallmouth buffalo	6	x			6	
	Ictiobus niger	Black buffalo	3	x			3	
	Ictiobus cyprinellus	Bigmouth buffalo	x	x			0	
	Ictiobus spp.	Hybrid buffalo	x	x			0	
	Carpoides carpio	River carpsucker	x	x			0	
	Moxostoma macrolepidotum	Shorthead redhorse	x	x			0	
Ictaluridae								
	Ameiurus melas	Black bullhead	x	x			0	29
	Ameiurus natalis	Yellow bullhead	x	1			1	
	Ictalurus punctatus	Channel catfish	13	2			15	
	Noturus nocturnus	Freckled madtom	3	8			11	
	Pylodictus olivaris	Flathead catfish	1	1			2	
Poecilliidea								
	Gambusia affinis	Mosquitofish	2	88			90	90
Atherinidae								
	Labidesthes sicculus	Brook silverside	13	433			446	446
Centrachidae					Juv.-Adult	YOY		
	Lepomis cyanellus	Green Sunfish	23	15			38	193
	Lepomis gulosus	Warmouth	x	3			3	
	Lepomis humilis	Orangespotted sunfish	11	4			15	
	Lepomis machrochirus	Bluegill	7	25	19	6	32	
	Lepomis machrochirus x gulosus		x	x			0	
	Lepomis megalotis	Longear sunfish	79	16	8	8	95	
	Lepomis spp		x	x			0	
	Micropterus punctatus	Spotted bass	1	1			2	
	Micropterus salmoides	Largemouth bass	4	4			8	
	Pomoxis annularis	White crappie	x	x	68		0	
	Pomoxis nigromaculatis	Black Crappie	x	x			0	
	Lepomis microlophus	Redear sunfish	x	x			0	
Percidae								
	Etheostoma spectabile	Orangethroat darter	87	91			178	199
	Percina caprodes	Logperch	10	4			14	
	Percina copelandi	Channel darter	x	4			4	
	Percina phoxocephala	Slenderhead darter	x	3			3	
Sciaenidae								
	Aplodinotus grunniens	Drum	x	x			0	0
Clupeidae								
	Dorosoma cepedianum	Gizzard shad	x	x			0	0
Lepisostidae								
	Lepisosteus osseus	Longnose gar	x	x			0	0
Tot. indivs.							2517	2517
#Spp								28
#Families								7

Summary of Fish Results for All Sites					
Site #	**55**	**56**	**53**	**57**	**54**
Rank	1	2	3	4	5
Tot. Indivs.	2760	2028	1852	1158	2517
# Spp.	26	30	36	33	28
# Families	8	9	9	10	7
Tot.Indivs2	27.6	20.28	18.52	11.58	25.17
Tot. Ind. % change	x	-26.52	-32.90	-58.04	-8.80
# Spp % change	x	15.38	38.46	26.92	7.69
# Fam. %change	x	12.50	12.50	25.00	-12.50
Sample Area	3546	3546	5019	6150	1904.4
Sample Area 2	35.46	35.46	50.19	61.5	19.04
% Area shocked	75	80	75	70	75
% Area Seined	65	70	40	70	65
Seconds Shocked	3485	4093	4201	4710	1904.4
Minutes Shocked	58.08	68.22	70.02	102.5	70.48
Area v Time	0.908804				
Area v Seined	-0.20325				
Area v Indivs	-0.84576				
Area v Spp	0.718466				
Area v Families	0.930379				

Drum Creek
Sampled 9-27-04
Pools and Riffles

	STATION				
TAXA	53	54	55	56	57
COLEOPTERA					
Berosus	1	13	28		2
Copelatus					1
Dineutus	1				
Dubiraphia		1	1	1	1
Enochrus			1		
Helodidae	2	1	1		7
Hydroporus				1	1
Laccophilus f. rufus	1		1		
Peltodytes					1
Peltodytes litoralis			3		
Stenelmis sexlineata		10	1	1	
Stenelmis	2	25	1	1	4
Tropisternus		1		1	
Uvarus			2		3
DIPTERA					
Ablabesmyia		3	6	5	1
Anopheles	1		1		
Chaoborus	2			28	10
Chironomus	5	1		3	14
Cladopelma					6
Clinotanypus	2				
Cricotopus	1				
Cryptochironomus	1	2		4	2
Cryptotendipes	1				
Culcoides	1			3	1
Culex				1	
Dicrotendipes	1	2	1		12
Glyptotendipes	1				6
Palpomyia				1	
Paratendipes	7	6			
Polypedilum	6	15	1	4	9
Procladius	6	8	3	7	25
Rheotanytarsus		1	1		1
Stictochironomus	3	4		10	7
Tabanus					1
Tanytarsus	1	1	2	4	
EPHEMEROPTERA					
Caenis	11	97	114	46	46
Callibaetis		3	9	3	5
Centroptilum		1		2	
Hexagenia		3		3	
Procleon	1				
Stenacron interpunctatum		1	3	2	5
Stenonema integrum	1				
Stenonema femoratum		13	9	4	3
Tricorythodes		1			

	STATION				
TAXA	53	54	55	56	57
HEMIPTERA					
Belastoma				1	
Mesovelia	1	1			
Microvelia				1	
Palmacorixa	1				
Rheumatobates					2
Sigara			1		
Trichocorixa		1	1		33
MEGALOPTERA					
Sialis	1				1
ODONATA					
Argia	6	22	5	1	11
Enallagama	4	5	24	6	31
Gomphidae	1			2	
Gomphus			3		
Gomphus externus				1	
Libellulidae	3	2	4		1
Nasiaeschna pentacantha		2			
Macromia	1	2		1	
PLECOPTERA					
TRICHOPTERA					
Helicopsyche borealis		3			
Oecetis			1		
CRUSTACEA					
Hyalella azteca	18	1	30	2	7
GASTROPODA					
Amnicola	1		8		
Ancylidae		6	4		3
Physella		4	21	11	12
Planorbidae			1	1	
Planorbella					1
HIRUDINEA	2	1			1
Erpobdellidae	4		3		
OLIGOCHAETA	2	8	1	14	4
BIVALVIA					
Corbicula fluminea		29			
Musculium transversum	6	71	10	3	2
TURBELLARIA					
Dugesia	10	72	3		2
OTHER					
Isotomus					1
Ligumia subrostrata			1		

DATA SUMMARY	**53**	***54**	**55**	**56**	**57**
N	120	443	310	179	286
MBI(N)	114	397	272	175	235
Total Taxa	38	38	37	34	40
EPT Index	3	8	5	6	4
% Relative Abundance EPT T	11	28	44	34	21
MBI	5.66	4.8	4.99	6.66	6.07

*Pooled sample: 8 pools, 1 riffle

Drum Creek
Sampled 9-27-04
HDI

	STATION				
TAXA	53	54	55	56	57
COLEOPTERA					
Berosus		5	13	12	8
Copelatus					
Dineutus			1	1	
Dubiraphia		1			
Haliplus					1
Helodidae			1		1
Hydroporus dimidiatus		1		2	3
Peltodytes		1			2
Peltodytes litoralis			2	3	2
Stenelmis sexlineata	7	11	2	3	
Stenelmis	5	20		1	
Tropisternus			5		1
DIPTERA					
Ablabesmyia		4	1	2	2
Anopheles	3			3	
Chaoborus			1	1	
Chironomus	6		3		3
Cricotopus					1
Cryptochironomus				2	
Cryptotendipes			1		
Dicrotendipes	4				10
Glyptotendipes	1			1	14
Nanocladius				1	
Phaenopsectra	2				
Polypedilum	3	11	4	2	8
Procladius	4	5	5	4	6
Stenochironomus					1
Stictochironomus	1	1	6	1	1
Tabanus					
Tanytarsus	1		1	2	1
Thienemannimyia		1			
EPHEMEROPTERA					
Baetis				1	
Caenis	12	11	6	26	14
Callibaetis		1	9		3
Centroptilum				1	
Choroterpes				1	
Stenacron interpunctatum	2	2		3	2
Stenonema femoratum	3	5	1	4	1
HEMIPTERA					
Belastoma			1		
Corixidae				1	
Mesovelia	1				
Microvelia					1
Palmacorixa					1
Ranatra	1		1		1
Trepobates			2	4	2
Trichocorixa		1			

	STATION				
TAXA	53	54	55	56	57
MEGALOPTERA					
Corydalus cornutus		1			
ODONATA					
Argia	10	8	1	6	8
Basiaeschna janata				1	
Dromogomphus spoiliatus	1				
Enallagama	42	26	6	19	35
Gomphidae			2		
Gomphus	1				
Ischnura			1	1	
Libellulidae	1	1	1	3	1
Perithemis	3				
Nasiaeschna pentacantha	8	2			
PLECOPTERA					
TRICHOPTERA					
Chimarra obscura		8			
Cheumatopsyche		2			
Helicopsyche borealis		2			
CRUSTACEA					
Hyalella azteca	2	2	28	32	13
GASTROPODA					
Amnicola			3		
Ancylidae		3	11	2	1
Fosaria			1		
Physella	3	3	8	4	11
Planorbidae					1
HIRUDINEA					1
Erpobdellidae	2	3	1	1	
Glossiphoniidae	3		1		
OLIGOCHAETA	1	2	7	3	2
BIVALVIA					
Corbicula fluminea		12			
Musculium transversum	4	13	9	2	3
TURBELLARIA					
Dugesia	2	37	2		
OTHER					
Uniomerus tetralasmus				1	

DATA SUMMARY	**53**	**54**	**55**	**56**	**57**
N	139	206	148	157	166
MBI(N)	137	186	122	134	143
Total Taxa	30	32	35	36	35
EPT Index	3	7	3	6	4
% Relative Abundance EPT	12	15	11	23	12
MBI	5.64	4.75	5.72	5.1	5.81

KBI Heavy Metals	53ni	54ni	55ni	56ni	57ni	Tolerance Rating (t_i)	ni*ti53	ni*ti54	ni*ti55	ni*ti56	ni*ti57
Berosus	1	13	28		2	3	3	39	84	0	6
Copelatus					1	1	0	0	0	0	1
Dineutus	1					3	3	0	0	0	0
Dubiraphia		1	1	1	1	1	0	1	1	1	1
Enochrus			1			2	0	0	2	0	0
Helodidae	2	1	1		7	3	6	3	3	0	21
Hydroporus				1	1	1	0	0	0	1	1
Laccophilus f. rufus	1		1			3	3	0	3	0	0
Peltodytes					1	3	0	0	0	0	3
Peltodytes litoralis			3			3	0	0	9	0	0
Stenelmis sexlineata		10	1	1		2	0	20	2	2	0
Stenelmis	2	25	1	1	4	1	2	25	1	1	4
Tropisternus		1		1		1	0	1	0	1	0
Uvarus			2		3	1	0	0	2	0	3
Ablabesmyia		3	6	5	1	1	0	3	6	5	1
Anopheles	1		1			3	3	0	3	0	0
Chaoborus	2			28	10	4	8	0	0	112	40
Chironomus	5	1		3	14	4	20	4	0	12	56
Cladopelma					6	1	0	0	0	0	6
Clinotanypus	2					1	2	0	0	0	0
Cricotopus	1					3	3	0	0	0	0
Cryptochironomus	1	2		4	2	3	3	6	0	12	6
Cryptotendipes	1					2	2	0	0	0	0
Culcoides	1			3	1	3	3	0	0	9	3
Culex				1		3	0	0	0	3	0
Dicrotendipes	1	2	1		12	3	3	6	3	0	36
Glyptotendipes	1				6	1	1	0	0	0	6
Palpomyia				1		3	0	0	0	3	0
Paratendipes	7	6				1	7	6	0	0	0
Polypedilum	6	15	1	4	9	3	18	45	3	12	27
Procladius	6	8	3	7	25	3	18	24	9	21	75
Rheotanytarsus		1	1		1	1	0	1	1	0	1
Stictochironomus	3	4		10	7	1	3	4	0	10	7
Tabanus					1	5	0	0	0	0	5
Tanytarsus	1	1	2	4		3	3	3	6	12	0
Caenis	11	97	114	46	46	3	33	291	342	138	138
Callibaetis		3	9	3	5	3	0	9	27	9	15
Centroptilum		1		2		1	0	1	0	2	0
Hexagenia		3		3		3	0	9	0	9	0
Procleon	1					2	2	0	0	0	0
Stenocron interpunctatum		1	3	2	5	3	0	3	9	6	15
Stenonema integrum	1					2	2	0	0	0	0
Stenonema femoralum		13	9	4	3	3	0	39	27	12	9
Tricorythodes		1				2	0	2	0	0	0
Belastoma				1		3	0	0	0	3	0
Mesovelia	1	1				3	3	3	0	0	0
Microvelia				1		2	0	0	0	2	0
Palmacorixa	1					3	3	0	0	0	0
Rheumatobates					2	2	0	0	0	0	4
Sigara			1			4	0	0	4	0	0
Trichocorixa		1	1		33	3	0	3	3	0	99
Sialis	1				1	5	5	0	0	0	5
Argia	6	22	5	1	11	1	6	22	5	1	11
Enallagama	4	5	24	6	31	1	4	5	24	6	31
Gomphidae	1			2		1	1	0	0	2	0
Gomphus			3			1	0	0	3	0	0
Gomphus externus				1		1	0	0	0	1	0
Libellulidae	3	2	4		1	2	6	4	8	0	2
Nasiaeschna pentacantha		2				2	0	4	0	0	0
Macromia	1	2		1		1	1	2	0	1	0
Helicopsyche borealis		3				1	0	3	0	0	0
Oecetis			1			1	0	0	1	0	0
Totals	**77**	**251**	**228**	**148**	**253**		**180**	**591**	**591**	**409**	**638**
	N	**N**	**N**	**N**	**N**		**SUM(ni*ti)**	**SUM(ni*ti)**	**SUM(ni*ti)**	**SUM(ni*ti)**	**SUM(ni*ti)**
(SUM(ni*ti))/N	2.34	2.35	2.59	2.76	2.52						

KBI (HDI) Heavy Metals	53ni	54ni	55ni	56ni	57ni	Tolerance Rating (t_i)	ni*ti53	ni*ti54	ni*ti55	ni*ti56	ni*ti57
Berosus		5	13	12	8	3	0	15	39	36	24
Copelatus						1	0	0	0	0	0
Dineutus			1	1		3	0	0	3	3	0
Dubiraphia		1				1	0	1	0	0	0
Enochrus						2	0	0	0	0	0
Haliplus					1	2	0	0	0	0	2
Helodidae			1		1	3	0	0	3	0	3
Hydroporus						1	0	0	0	0	0
Hydroporus dimidiatus		1		2	3	1	0	1	0	2	3
Laccophilus f. rufus						3	0	0	0	0	0
Peltodytes		1			2	3	0	3	0	0	6
Peltodytes litoralis			2	3	2	3	0	0	6	9	6
Stenelmis sexlineata	7	11	2	3		2	14	22	4	6	0
Stenelmis	5	20		1		1	5	20	0	1	0
Tropisternus			5		1	1	0	0	5	0	1
Uvarus						1	0	0	0	0	0
Ablabesmyia		4	1	2	2	1	0	4	1	2	2
Anopheles	3			3		3	9	0	0	9	0
Chaoborus			1	1		4	0	0	4	4	0
Chironomus	6		3		3	4	24	0	12	0	12
Cladopelma						1	0	0	0	0	0
Clinotanypus						1	0	0	0	0	0
Cricotopus					1	3	0	0	0	0	3
Cryptochironomus				2		3	0	0	0	6	0
Cryptotendipes			1			2	0	0	2	0	0
Culcoides						3	0	0	0	0	0
Culex						3	0	0	0	0	0
Dicrotendipes	4				10	3	12	0	0	0	30
Glyptotendipes	1			1	14	1	1	0	0	1	14
Nanocladius				1		1	0	0	0	1	0
Palpomyia						3	0	0	0	0	0
Paratendipes						1	0	0	0	0	0
Phaenopsectra	2					1	2	0	0	0	0
Polypedilum	3	11	4	2	8	3	9	33	12	6	24
Procladius	4	5	5	4	6	3	12	15	15	12	18
Rheotanytarsus						1	0	0	0	0	0
Stenochironomus					1	0	0	0	0	0	0
Stictochironomus	1	1	6	1	1	1	1	1	6	1	1
Tabanus						5	0	0	0	0	0
Tanytarsus	1		1	2	1	3	3	0	3	6	3
Thienemannimyia		1				1	0	1	0	0	0
Baetis				1		2	0	0	0	2	0
Caenis	12	11	6	26	14	3	36	33	18	78	42
Callibaetis		1	9		3	3	0	3	27	0	9
Centroptilum				1		1	0	0	0	1	0
Choroterpes				1		2	0	0	0	2	0
Hexagenia						3	0	0	0	0	0
Procleon						2	0	0	0	0	0
Stenocron interpunctatum	2	2		3	2	3	6	6	0	9	6
Stenonema integrum						2	0	0	0	0	0
Stenonema femoratum	3	5	1	4	1	3	9	15	3	12	3
Tricorythodes						2	0	0	0	0	0
Belastoma			1			3	0	0	3	0	0
Corixidae				1		3	0	0	0	3	0
Mesovelia	1					3	3	0	0	0	0
Microvelia					1	2	0	0	0	0	2
Palmacorixa					1	3	0	0	0	0	3
Ranatra	1		1		1	3	3	0	3	0	3
Rheumatobates						2	0	0	0	0	0
Sigara						4	0	0	0	0	0
Trepobates			2	4	2	2	0	0	4	8	4
Trichocorixa		1				3	0	3	0	0	0
Corydalus cornutus		1				5	0	5	0	0	0
Sialis						5	0	0	0	0	0
Argia	10	8	1	6	8	1	10	8	1	6	8
Basiaeschna janata				1		1	0	0	0	1	0
Dromogomphus spoiliatus	1					1	1	0	0	0	0
Enallagama	42	26	6	19	35	1	42	26	6	19	35
Gomphidae			2			1	0	0	2	0	0
Gomphus	1					1	1	0	0	0	0
Gomphus externus						1	0	0	0	0	0
Ischnura			1	1		1	0	0	1	1	0
Libellulidae	1	1	1	3	1	2	2	2	2	6	2
Perithemis	3					2	6	0	0	0	0
Nasiaeschna pentacantha	8	2				2	16	4	0	0	0
Macromia						1	0	0	0	0	0
Chimarra obscura		8				1	0	8	0	0	0
Cheumatopsyche		2				3	0	6	0	0	0
Helicopsyche borealis		2				1	0	2	0	0	0
Oecetis						1	0	0	0	0	0
Totals	122	131	77	112	134		227	237	185	253	269
	N	N	N	N	N		SUM(ni*ti)	SUM(ni*ti)	SUM(ni*ti)	SUM(ni*ti)	SUM(ni*ti)
(SUM(ni*ti))/N	1.86	1.81	2.40	2.26	2.01						

Summary of Macroinvertebrate Results for All Sites

Site	55	56	53	57	54
Total Number of Individuals	310	179	120	286	443
Total Taxa	37	34	38	40	38
Total Number of Individuals % Change	0	-42.3	-61.3	-7.7	42.9
Total Taxa % Change	0	-8.1	2.6	7.5	2.6
% Dominant Insect	Caenis (36.77%)	Caenis (25.70%)	Caenis (9.16%)	Caenis (16.08%)	Caenis (21.90%)
% Dominant Individual	Caenis (36.77%)	Caenis (25.70%)	Hyalella azteca (15.00%)	Caenis (16.08%)	Caenis (21.90%)
% Tolerant Taxa	65%	87%	62%	72%	44%
Number of Tolerant Taxa	201	155	74	205	194
HDI sample					
HDI	7	7	7	7	21
Total Number of Individuals	148	157	139	166	206
Total Taxa	35	36	30	35	32
Total Number of Individuals % Change	0	6.1	-6.1	12.2	39.2
Total Taxa % Change	0	2.9	-14.3	0	-8.6
% Dominant Insect	Berosus (8.78%)	Caenis (16.56%)	Enallagama (30.22%)	Enallagama (21.08%)	Enallagama (12.62%)
% Dominant Individual	Hyalella azteca (18.92%)	Hyalella azteca (20.38%)	Enallagama (30.22%)	Enallagama (21.08%)	Dugesia (17.96%)
% Tolerant Taxa	48%	54%	81%	73%	39%
Number of Tolerant Taxa	71	85	112	121	81

RECEIVED
2005
BUREAU OF ENVIRONMENTAL REMEDIATION

KDHE/BEFS
IDENTIFICATION BENCH SHEET

STATION 055-RFM-04 STREAM/LOCATION Drum Creek 8 Pools
DATE COLLECTED 9-29-04 DATE EXAMINED 12-9, 10, 11-04 DETERMINED BY Fry
COLLECTOR(S) _____ TYPE OF SAMPLE (EFFORT) _____

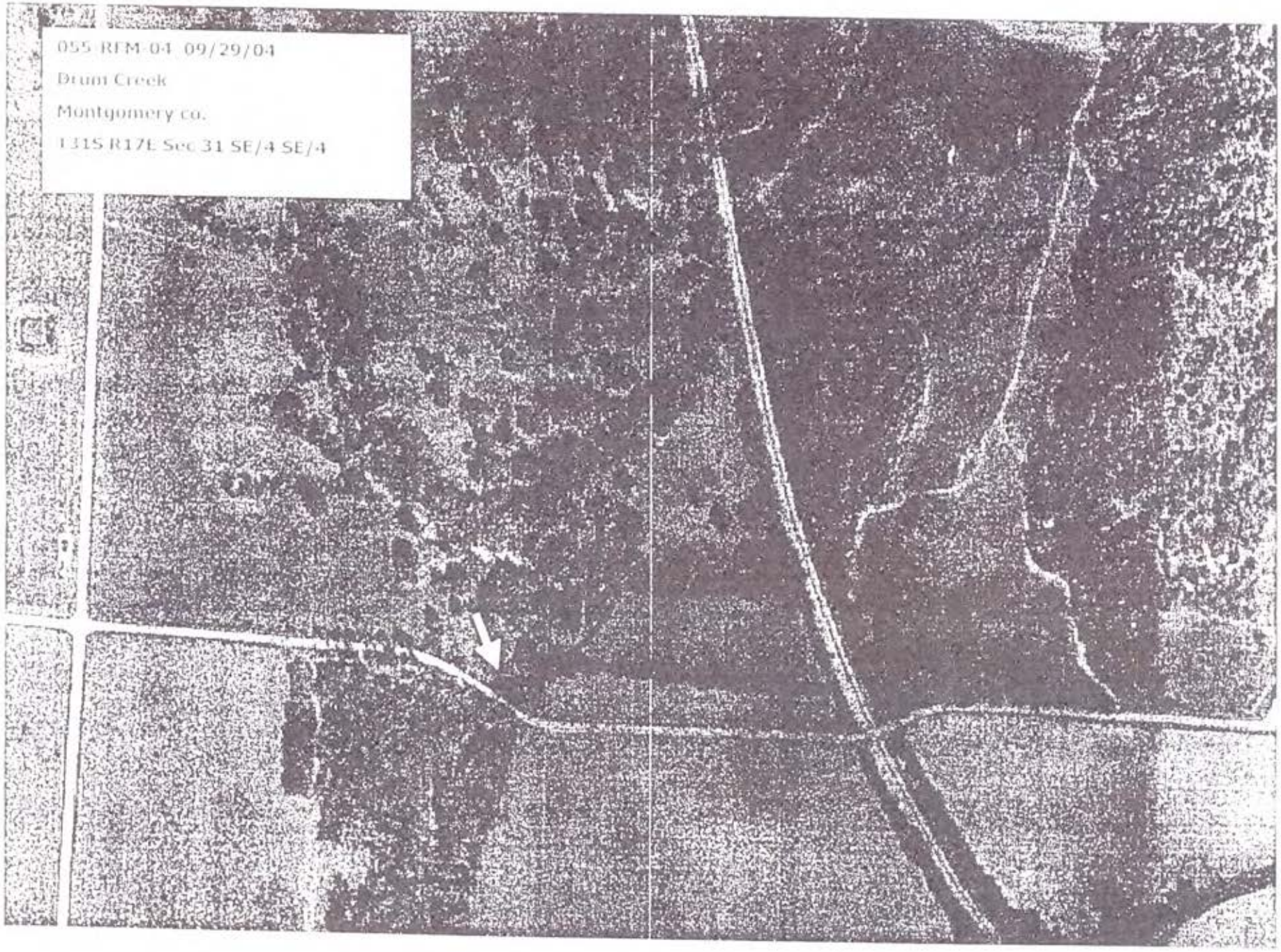
RECEIVED
APR 05 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

	KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA						
Stenelmis sexlineata	✓	X				1
S. sp.	✓			X		1
Dubiraphia	✓			X		1
Berosus	✓	3X		24X		28
Enochrus ENOCHRUS	✓	X				1
Helodidae	✓			X		1
Laccophilus fl. rufus	✓	X				1
Uvarus	✓	X				2
Peltodytes litoralis	✓	X				3
DIPTERA						
Dicrotendipes	✓			X		1
Polypedilum	✓			X		1
Ablabesmyia	✓			X		6
Procladius	✓			X		3
Tanytarsus	✓			X		2
Rheotanytarsus	✓			X		1
Anopheles	✓			X		1
EPHEMEROPTERA						
Callibaetis	✓		X			9
Caenis	✓		X			114
Stenacron interpunctatum	✓		X			3
Stenonema femoratum femoratum	✓		X			9
HEMIPTERA						
Sigara	✓	X				1
Trichocorixa	✓	X				1

	KBS CODE #	A #	N #	L #	P #	TO #
MEGALOPTERA						
ODONATA						
Argia	✓		X			
Enallagma	✓		X			2
Gomphus (early instar)	✓		X			1
Libellulidae (early instar)	✓		X			
PLECOPTERA						
TRICHOPTERA						
Oecetis	✓			X		
CRUSTACEA						
Hyalella azteca	✓	X				36
GASTROPODA						
Physella	✓	X				21
~~Lymnaea~~ Cincinnatia integra	✓	X				8
HIRUDINEA						
Erpobdellidae	✓	X				3
OLIGOCHAETA	✓	X				1
PELECEPODA						
Musculium transversum	✓	X				10
TURBELLARIA						
Dugesia	✓	X				3
OTHER						
Planarbidae	✓	X				1
Ancylidae	✓	X				4
Ligumia subrostrata Unionidae	✓	X				1

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE
N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE
P#=NUMBER OF PUPAE IN SAMPLE

TOTAL ORGANISMS 210


055-RFM-04 09/29/04
Drum Creek
Montgomery co.
T31S R17E Sec 31 SE/4 SE/4

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

HABITAT DEVELOPMENT INDEX

Date: 29 Sept 2004 Collector(s): T. Hase, K. Hase

Hydrologic Unit: 055-RFM-04

Stream Name: Drum Creek Stream Code No. _____

Legal Description: ____/4, ____/4, Sec. ___, T____, R____, MG CO.

Macrohabitat Type (s)

Fill in macrohabitat type (s) – riffle (RF) run (RN), and/ or pool (P) which are sampled in the 50 m. site. If all 3 macrohabitat types are present (and sampled), score each. If the site is predominately runs with some pools, then score 2 runs and 1 pool. If only runs are present, score 3 different runs. Multiple samples of a single macrohabitat type should be properly identified (e.g. RN #1, RN #2, RN #3).

Macrohabitat Type (s)														
Minimum Habitat Score	Score = 3 for each macrohabitat sample collected in the 50 m. site.													
Average Depths	Riffles:	< 5 cm.	= 0	5 - 10 cm.	= 1	> 10 cm.	= 2							
	Runs:	< 15 cm.	= 0	15 - 45 cm.	= 1	> 45 cm.	= 2							
	Pools:	< 30 cm.	= 0	30 - 60 cm.	= 1	> 60 cm.	= 2							
Velocity Range (m./sec.)	Riffles:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Runs:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Pools:	< 0.1	= 0	≥ 0.1	= -1									
Riffle Substrate Score	% Cobble: Score A							Score A						
	0 - 10 %	= 0	11 - 25 %	= 1	26 - 50 %	= 2	> 50 %	= 3						
	If % cobble is ≤ 10 % and boulders or bedrock are present, Score A = 1.													
	% Embeddedness: Score B							Score B						
	0 - 25 %	= 0	26 - 75 %	= -1	> 75 %	= -2								
	Record score in riffle column (s) only if Score A + Score B > zero.													
Organic Detritus and Debris	None = 0	Sparsely scattered bits of detritus = 1	Large leaf packs or large amounts of scattered detritus = 2	Detritus, debris, logs = 3										

Macrohabitat Type (s)

P1	P2	P3
3	3	3
0	0	0
0	0	0
2	1	2

(OVER)

Algal Masses	No algal masses = 0		Algal masses = 1	1	1	0
Macrophytes	None = 0	Few or Small Patches = 1	Large areas of dense growth = 2	1	0	0
Bank Vegetation	None = 0	Small amounts or thin = 1	Submerged tree roots or thick vegetation = 2	0	1	2
				Total Score	Total Score	Total Score
Total Scores	Sum each column and enter sums into Total Score boxes.			7	5	7
HDI Score	Compute HDI by summing the Total Scores for each unique macrohabitat sampled. If a macrohabitat was sampled more than once, only use the highest Total Score for that macrohabitat to compute the HDI Score. Examples: 1 P and 2 RN were sampled, HDI Score = P sample Total Score + RN sample with the highest Total Score. If one macrohabitat was sampled and scored three times, HDI Score = column with highest Total Score.			HDI Score 7		

TRANSECT SAMPLING: # POOLS 8 # RIFFLES Ø

ORGANIC DETRITUS includes seeds, pods, leaves, small bark, twigs, leaf fragments accumulated in packs.

ORGANIC DEBRIS includes larger sticks, bark, and logs.

ALGAL MASSES should be sampled if they provide habitat and not just food.

MACROPHYTES include floating-leaved, emergent, or submerged aquatic plants.

BANK VEGETATION includes submerged terrestrial plants, tree limbs, and roots.

Corbicula Released: ✓

Crayfish Released: ✓

FORM #1
FORM FOR DOCUMENTING A SAMPLE SITE

1a.Storet # 055-RFM-04 1b.Randcm map # _____ 2. Date: 04/09/29
yr/ mo/ day

3.USGS Quadrangle Name _____

4.State Code KS 5.County Code MG

6.Waterbody Type ____ 7.Ecoregion Code ____

8.Waterbody Name: Drum Creek

9.Reference Location (Narrative and/or legal description of closest landmark)
North on 169 past Cherryvale to 5150 Rd - turn west to 5450 Rd (dead end)
south to old bridge site - SE/4 SE/4 Sec. 31 T31S R17E

10.Description of site marker (e.g., re-bar, PVC pipe, etc.):

11.Distance and direction of site marker relative to reference location (e.g., upstream-downstream, direction; left bank or right bank, etc.):

	longitude	latitude
12.X-site lat/long (from map):	095.580816667	37.297066667
13.X-site lat/long measured:	W095° 34.849'	N37° 17.824'

14.X-Site lat/long by GPS or map interpolation (G or M): G

15.GPS file name: ____/____/____

16.Difference between map X-site and measured X-site (in seconds): lat:_____ long:_____

HDI = 19

17.Avg. Channel Width: 7.5 meters

18.Sample Site Length: 300 meters

19.Sample Site Length based on: 1)width X 40; 2)min.(150m) or 3)max.(300m) (circle one)

20.Stream order: _____ 21. stream discharge (CFS): Ø

22.Landowner Name, Address, phone #: Robert + Naomi Harriman
RR2 Cherryvale, KS 67335 620-336-2940

23.Contact method T, P, W (circle one) ← no permission granted

24.site photo taken: (Y) N 25. Managed Fishery: Y (N)

26. Land Use in area and 27.disturbances observed in the area (see reverse side of form to record information for 26 and 27)
28. Weather information (see reverse side of this form)

LAND USE & DISTURBANCES OBSERVED (INTENSITY: BLANK = NOT OBSERVED, L = LOW, M = MODERATE, H = HEAVY)

16. RESIDENTIAL	RECREATIONAL	AGRICULTURAL	INDUSTRIAL	STREAM MANAGEMENT
__ Residences	__ Parks, Campgrounds	__ Cropland	__ Industrial Plants	__ Lining
__ Maintained Lawns	__ Primitive Parks, Camping	M Pasture	__ Mines/Quarries	__ Drinking Water Intake
17. __ Construction	H Trash/Litter	__ Livestock	__ Oil/Gas Wells	__ Angling Pressure
__ Pipes, Drains	L Surface Films, Scums, or Slicks	__ Orchards	__ Power Plants	__ Dredging
H Dumping		__ Poultry	__ Logging	__ Channelization
L Roads			__ Evidence of Fire	__ Water Level Fluct. (no)
M Bridge/Culverts			__ Odors	__ Fish Stocking
old bridge			__ Commercial	

26. NOT USED
L FOREST
27. M GRASSLAND (PRAIRIE)
__ SWAMP
__ OTHER

28. WEATHER CONDITIONS (Circle)					
Cloud Cover	< 5%	5-25%	25-50%	50-75%	>75%
Precipitation	None	Light	Moderate	Heavy	
Previous Precipitation (24 H)	None	Light	Moderate	Heavy	
Air Temperature	13 (°C)				

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

WATER CHEMISTRY

Date: 09-29-04 Data Collector(s): E. Johnson, K. Hase

Hydrologic Unit: 055-RFM-04

Stream Name: Drum Creek Stream Code No. ____

Legal Description: SE /4, SE /4, Sec. 31, T 31S, R 17E, MG County

Air Temperature (°C): 13.0 Time of Day: Begin 8:15 a.m./p.m. End 8:58 a.m./p.m.

METHODS

1. Hach Spectrophotometer
2. Digital Titration
3. D.O. Meter
4. Conductivity Meter
5. Thermometer
6. pH Meter
7. pH Pocket Tester
8. Other (specify)

PHYSICAL VARIABLES

	Measure	Method
Water Temperature(°C):	16.2	4
Conductivity (micro Siemens):	475	4
Turbidity (~~NTUs~~): FAU	14	1
*TDS (mg/l):	231	4
Salinity (‰)	0.2	4

CHEMICAL VARIABLES

	Measure	Method
Dissolved oxygen (mg/l): 3.70	50.3 5.3.0	2
pH:	7.7	7
Total Alkalinity (mg/l as $CaCO_3$):	182	2
Chlorides (mg/l):	29	2
Ammonia (mg/l):	0.04	1
Nitrates (mg/l):	0.5	1
Phosphorus, Reactive (mg/l):	0.00	1
*Sulfates (mg/l):	—	—
*Total Hardness (mg/l as $CaCO_3$):	—	—

*Level II parameters

FORM #2
FISH DATA FORM

ELECTRO-FISHED METHOD: (BP) - TB - E

SITE # 055-RFm-04 DATE: 9 / 29 / 04 BPJ @ SAMPLE REP: (Y) or N

ELECTROFISHING TIME (SEC.): 3485 SEINING TIME (MIN.): 12:19

% OF TOTAL SAMPLE SITE: ELECTRO-FISHED: 75 % SEINED: 65

TOTAL AREA OF SAMPLE SITE: 3546 SQ. M. % OF SAMPLE SITE WADEABLE: 85%

TOTAL SAMPLE VOL. 1 GAL. SUB-SAMPLE VOL. _____ GAL.

	# OF GABLEHOUSE SPECIES / SIZE*							
SPECIES COMMON NAME	S	Q	P	M	T	JUVENILE	ADULT	TOTAL # OF SPECIMENS
Green Sunfish 3.9	3	5.3	6.8	8.3	10.9			91
Longear Sunfish 2.0	2.9	4.3	5.3	7.0	8.8			13
yellow bullhead								4
Bluegill 4.9	3	5.4	6.8	8.8	11.1			41
orangethroat darter								21
orangespotted sunfish 1.4	2.9	4.3	5.3					33
golden redhorse								1
Warmouth 3.0	2.9	4.3	5.3					4
Channel catfish								1
Largemouth bass								4
brook silverside								21
W. mosquitofish								30
redfin shiner	A							84
red shiner								55
Suckermouth minnow								16
bluntnose minnow								79
longnose gar								1
Logperch								2
Central stoneroller	A 27							146
Smallmouth buffalo								3

hybrid buffalo - 15 in (photo) black buffalo - 19.5 in (photo)

COMMENTS:

2 live pondhorn [illegible] - see mussel data

FLOW SHEET

TE # 055-RFM-04

TREAM Drum Creek

OUNTY Montgomery

ATE 9 / 29 / 04

No Flow

#	Distance From Initial Point	WIDTH STREAM WIDTH / 30	DEPTH	REVO-LUTIONS	SECONDS 40 OR 60	VELOCITY REVO. / SECONDS	AREA WIDTH X DEPTH	DISCHARGE VELOCITY X AREA
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

TOTAL: Ø CFS

Kansas State University - Salina
GPS Field Data Record

Date	: 9-29-04	Project Name	:
Town	:	Latitude	: N 37° 17.824'
County	: Montgomery	Longitude	: W095° 34.849'
Site Name	: 055-RFM-04	Elevation	: 739 ft.
File Name	:	Time	: 8:25 a.m.
Surveyed By	: Van Scoyoc	Weather	: Cloudy
Surveyed By	: -	PDOP	: accuracy: 30 feet

Survey Results

Marker Type : Flag F

Recovered Damaged Destroyed Not Recovered

Marker Description: left bank - at beginning of bend upstream of old bridge

Instrument Results

Instrument Name	: Garmin etrex	Instrument S/N	: -
Latitude	:	Antenna S/N	: -
Longitude	:	Available Sats.	: 6
Elevation	:	Locked Satellites	: 5
Setup Time	: 8:25 a.m.	Take Down Time	: 8:28 a.m.

Comments :

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Creek

DATE OF VISIT: 09/29/04

AM ID: 055 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

Slope (Backsite)	___.___ %	Suppl. Slope (Backsite)	___.___ %	Bearing (Backsite)	___ ___ ___ °	Suppl. Bearing (Backsite)	___ ___ ___ °

UBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

DC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	2.1	0	FN	100	
	1.57	11	GF	50	
	1.05	13	GC	80	
	0.52	10	GC	70	
	0	0	GF	80	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	1	
Woody Debris > 0.3 m (Big)	0	
Brush/Woody Debris < 0.3 m (Small)	0	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

"A" is below highlines across creek

V. VISUAL RIPARIAN ESTIMATES

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	1	
Small Trees Trunk < 0.3 m DBH	0	2	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	1	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	3	
Barren, Bare dirt or duff	1	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash	B		
Park/Lawn			
Row Crops	P		
Pasture/Range/Hay field		B	
Logging Operations			
Mining Activity			

II. BANK MEASUREMENTS

DC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	15 °		
	19 °		

FULL WIDTH	15.1 m	
ED HT.	2.8 m	
FULL HT.	0.6 m	
TED WIDTH	2.1 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	15		CenR	13	
CenL	15		Lft	15	
CenDwn	1		Rgt	11	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20

RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 054 S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K) F

THALWEG PROFILE | Reach Length (m) 30.0 | Increment (m) 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	14			Y	GL			
1	19			Y	GL			
2	54			N	PL	F		
3	56			N				
4	54			N				
5	55			Y				
6	40			N				UNDER BRIDGE
7	46			N				
8	68			Y				
9	71		1.7	N			Y	

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1111					
0.3 - 0.6 m				1		
0.6 - 0.8 m		11				
> 0.8 m		1				

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

:AM NAME: Drum Creek

DATE OF VISIT: 09/29/04

:AM ID: 055s

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): B

Slope (Backsite)	0.1 %	Suppl. Slope (Backsite)	__.__ %	Bearing (Backsite)	202°	Suppl. Bearing (Backsite)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	16.1	35	FN	100	
	12.07	67	RS	100	
	8.05	36	GF	70	
	4.02	53	GF	50	
	0	10	FN	100	

SUBSTRATE SIZE CLASS CODES

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM) *(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- = WOOD (ANY SIZE)
- * OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	1	
Brush/Woody Debris < 0.3 m (SMALL)	2	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	2	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

Riparian Vegetation Cover: 0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)

	Left Bank	Right Bank	Flag
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	4	3	
Small Trees Trunk < 0.3 m DBH	2	3	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	1	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	2	
Non-woody Herbs, Grasses, & Forbs	2	2	
Barren, Bare dirt or duff	2	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P		
Pasture/Range/Hay field		B	
Logging Operations			
Mining Activity			

II. BANK MEASUREMENTS

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	135°	0.4	
	130°	0.15	

(FULL WIDTH	16.4 m	
ED HT.	3.1 m	
KFULL HT.	0.6 m	
TED WIDTH	16.1 m	
WIDTH	0.8 m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	15		CenR	16	
CenL	16		Lft	17	
CenDwn	16	6 bits	Rgt	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 40

RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K)

THALWEG PROFILE Reach Length (m) 30.0 Increment (m) 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/fine sediment (Y or N)	Channel Unit Code	Pool Form code	Side Channel (SC)?	Comments
0	71		0.8	N	PL	F	Y	
1	72			Y	PB			
2	72			Y	PB			
3	19			N	GL			
4	10							
5	5							
6	5							
7	5							
8	12							
9	10							

Large Woody Debris (≥ 10 cm small end diam.: ≥1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	III					
0.3 - 0.6 m	II			I		
0.6 - 0.8 m						
> 0.8 m	I					

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum CK.

DATE OF VISIT: 09/29/04

AM ID: 055 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
1.0 %	___.__ %	225°	___°

Substrate Measurements Cross-Sectional Information

oc.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	5.5	6	RS	100	
	4.12	9	RS	100	
	2.75	10	RS	100	
	1.37	12	RS	100	
	0	0	GC	80	

Substrate Size Class Codes

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	2	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	1	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	2	4	
Small Trees Trunk < 0.3 m DBH	3	1	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	1	
Non-woody Herbs, Grasses, & Forbs	1	2	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	1	
Barren, Bare dirt or duff	2	3	
HUMAN INFLUENCE (0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P		
Pasture/Range/Hay field		B	
Logging Operations			
Mining Activity			

II. Bank Measurements

oc.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	15°		
	10°		

full Width	21.0 m	
ed Ht.	4.4 m	
full Ht.	0.6 m	
ted Width	5.5 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	10		CenR	16	
CenL	17		Lft	16	
CenDwn	6		Rgt	15	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 15
RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME:

DATE OF VISIT: / /

STREAM ID: 055 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	11			N	GL			
1	40				PL	F		
2	59							
3	50							
4	52			Y				
5	45			N				
6	39			Y	GL			
7	29			Y				
8	29			N				
9	41			N				

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: > 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1					
0.3 - 0.6 m					None	
0.6 - 0.8 m						
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

M NAME: Drum Ck. DATE OF VISIT: 09/29/04

.M ID: 055s TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): D

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.2 %	___.__ %	224°	___°

Substrate Measurements Cross-Sectional Information

C.	Dist LB X.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag
	4.5	0	FN	100	
	3.37	24	FN	100	
	2.25	52	GC	10	
	1.12	35	GF	80	
	0	0	GC	90	

Substrate Size Class Codes

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. Fish Cover/Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	2	
Woody Debris > 0.3 m (Big)	0	
Brush/Woody Debris < 0.3 m (Small)	0	
Overhanging Veg. ≤ 1 m of surface	2	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	2	3	
Small Trees Trunk < 0.3 m DBH	1	2	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	1	2	
Non-woody Herbs, Grasses, & Forbs	2	2	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	2	1	
Non-woody Herbs, Grasses, & Forbs	3	1	
Barren, Bare dirt or duff	2	3	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P		
Pasture/Range/Hay field		B	
Logging Operations			
Mining Activity			

II. Bank Measurements

C.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	20°		
	19°		

Full Width	15.7 m	
D Ht.	4.6 m	
Full Ht.	0.6 m	
ED Width	4.5 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	0		CenR	6	
CenL	5		Lft	16	
CenDwn	2		Rgt	9	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 30
RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: __ __ 055 S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE | Reach Length (m) 30.0 | Increment (m) 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	56			Y	P.T.	F		
1	47			Y	PT			
2	49			N	PT	L		
3	19			N	GL			
4	22			Y				
5	13			N				
6	21			N				
7	65			N	PT	F		
8	115			N	PT	F		
9	155			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m	1					
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

EAM NAME: Drum Ck. DATE OF VISIT: 09/24/04

EAM ID: 055s TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): E

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	___.__ %	BEARING (BACKSITE)	205°	SUPPL. BEARING (BACKSITE)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

.OC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	19.3	0	FN	100	
	14.47	98	RS	100	
	9.65	170	RS	100	
	4.82	170	RS	100	
	0	0	GC	70	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	4	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	1	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	1	
BARREN, BARE DIRT OR DUFF	1	2	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P		
PASTURE/RANGE/HAY FIELD		B	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

.OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	36°		
	45°		

(FULL WIDTH	24.2 m	
ED HT.	4.4 m	
KFULL HT.	0.6 m	
TED WIDTH	19.3 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	0		CENR	0	
CENL	0		LFT	16	
CENDWN	0		RGT	16	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 15 RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K)

THALWEG PROFILE Reach Length (m) 30.0 Increment (m) 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	170			N	PT	F		
1	160			N				
2	150							
3	146							
4	95							
5	80							
6	75			Y				
7	65			N				
8	78			N				
9	18			Y	GL			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1111			1		
0.3 - 0.6 m	1			1		
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): _____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Ck.

DATE OF VISIT: 09/29/04

AM ID: 055s

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

Slope (Backsite)	0.1 %	Suppl. Slope (Backsite)	0.1 %	Bearing (Backsite)	90°	Suppl. Bearing (Backsite)	90°

Substrate Measurements Cross-Sectional Information

DC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	7.0	0	FN	100	
	5.25	20	GF	70	
	3.5	22	GF	70	
	1.75	24	GF	70	
	0	0	FN	100	

Substrate Size Class Codes

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	1	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	4	
Small Trees Trunk < 0.3 m DBH	2	1	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	N	D	
Woody Shrubs & Saplings	2	2	
Non-woody Herbs, Grasses, & Forbs	2	2	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	0	2	
Non-woody Herbs, Grasses, & Forbs	1	3	
Barren, Bare dirt or duff	3	1	
Human Influence (0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	B	B	
Logging Operations			
Mining Activity			

II. Bank Measurements

DC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	5°		
	65°		

Full Width	16.2 m	
ed Ht.	3.4 m	
(Full Ht.	0.6 m	
ted Width	7.0 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	11		CenR	17	
CenL	2		Lft	3	
CenDwn	14		Rgt	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 50
RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K) F

THALWEG PROFILE Reach Length (m) 30.0 Increment (m) 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	25			Y	GL			
1	30							
2	45							
3	49							
4	80				PL	F		
5	125							
6	60							
7	30				GL			
8	10				GL			
9	0				DR			

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: >1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1 |||			None		
0.3 - 0.6 m	||					
0.6 - 0.8 m						
> 0.8 m		1				

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

EAM NAME: Drum Ck.

DATE OF VISIT 09/29/04

EAM ID: 055 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.1 %	___.___ %	96°	___ °

Substrate Measurements Cross-sectional Information

Loc.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	0.0	0	0		

Substrate Size Class Codes

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- WOOD (ANY SIZE)
- OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	0	
Macrophytes		
Woody Debris > 0.3 m (BIG)		
Brush/Woody Debris < 0.3 m (SMALL)		
Overhanging Veg. ≤ 1 m of surface		
Undercut Banks		
Boulders		
Artificial Structures		

V. Visual Riparian Estimates

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	0	4	
Small Trees Trunk < 0.3 m DBH	1	2	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	N	
Woody Shrubs & Saplings	1	0	
Non-woody Herbs, Grasses, & Forbs	1	1	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	0	2	
Non-woody Herbs, Grasses, & Forbs	1	3	
Barren, Bare dirt or duff	4	2	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash	B		
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	B	B	
Logging Operations			
Mining Activity			

II. Bank Measurements

Loc.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	°		
	°		

(Full Width	18.1 m	
ED Ht.	2.2 m	
KFULL Ht.	0.6 m	
TED Width	0.0 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	1		CenR	1	
CenL	1		Lft	1	
CenDwn			Rgt		

Flag Codes: K = no measurement made; U = suspect

Riparian Width Lft 50

Rgt 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: __055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K)

THALWEG PROFILE Reach Length (m) 30.0 Increment (m) 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	0			N	DR			
1	0							
2	0							
3	0							
4	0							
5	0							
6	0							
7	0							CROSSING
8	25			N	GL			
9	20			N	GL			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to <0.3 m	1					
0.3 - 0.6 m	1					
0.6 - 0.8 m						
> 0.8 m	11					

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): _____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Ck. DATE OF VISIT: 09/29/04

AM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): H

Slope (Backsite)	0.1 %	Suppl. Slope (Backsite)	___.__ %	Bearing (Backsite)	105°	Suppl. Bearing (Backsite)	___°

UBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	4.1	0	FN	100	
	3.07	13	RS	100	
	2.05	16	RS	100	
	1.02	10	GF	90	
	0	0	GC	80	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
: OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	2	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	2	
Small Trees Trunk < 0.3 m DBH	2	0	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	N	
Woody Shrubs & Saplings	1	0	
Non-woody Herbs, Grasses, & Forbs	4	0	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	1	0	
Non-woody Herbs, Grasses, & Forbs	3	0	
Barren, Bare dirt or duff	1	4	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	B	B	
Logging Operations			
Mining Activity	1	B	instream

II. BANK MEASUREMENTS

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	70°		
	3°		

FULL WIDTH	12.3 m	
ED HT.	1.9 m	
FULL HT.	0.6 m	
TED WIDTH	4.1 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	5		CenR	2	
CenL	13		Lft	14	
CenDwn	1		Rgt	4	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 50
RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K)

THALWEG PROFILE Reach Length (m) 30.0 Increment (m) 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	15			N	GL			
1	16							
2	22							
3	24							
4	25							
5	25							
6	16							
7	18							
8	7							
9	19							

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m		NONE				
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

EAM NAME: Drum Ck. DATE OF VISIT: 09/29/04

EAM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): I

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.5 %	___.___ %	105°	___ °

Substrate Measurements Cross-Sectional Information

OC.	Dist LB X.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag
	10.3	0	GF	90	
	7.92	3	RS	100	
	5.15	7	RS	100	
	2.57	20	FN	100	
	3	0	FN	100	

Substrate Size Class Codes

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	3	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	N	
Big Trees Trunk > 0.3 m DBH	2	0	
Small Trees Trunk < 0.3 m DBH	0	0	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	N	D	
Woody Shrubs & Saplings	0	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	1	1	
Non-woody Herbs, Grasses, & Forbs	1	4	
Barren, Bare dirt or duff	3	1	

Human Influence	Left Bank	Right Bank	Flag
(0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	B	B	
Logging Operations			
Mining Activity			

II. Bank Measurements

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	3 °		
	5 °		

Full Width	26.1 m	
ed Ht.	3.9 m	
(Full Ht.	0.6 m	
ted Width	10.3 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	0		CenR	1	
CenL	4		Lft	13	
CenDwn	2		Rgt	0	

Flag Codes: K = no measurement made; U = suspect

Riparian Width Lft 50
Rgt 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055 S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K): 1

THALWEG PROFILE | Reach Length (m) 30.0 | Increment (m) 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	20			Y	GL			
1	25			N				
2	16			N				
3	0			N	DR			
4	0							
5	0							
6	0							
7	0							
8	5				GL			
9	3			N	GL			

Large Woody Debris (≥ 10 cm small end diam.: ≥1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m		NONE				
0.6 - 0.8 m						
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Ck. DATE OF VISIT: 09 29 04

AM ID: 055 S TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): J

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	___.__ %	BEARING (BACKSITE)	122°	SUPPL. BEARING (BACKSITE)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0.0	0	1	1	
	1	1	1	1	
	1	1	1	1	
	1	1	1	1	
	1	1	1	1	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	1	
ARTIFICIAL STRUCTURES	1	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER: 0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)

	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	N	
BIG TREES TRUNK > 0.3 M DBH	2	0	
SMALL TREES TRUNK < 0.3 M DBH	0	0	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	1	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	0	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	3	3	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	B	B	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	°		
	°		

FULL WIDTH	19.3 m	
ED HT.	3.9 m	
FULL HT.	0.6 m	
TED WIDTH	0.0 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP			CENR		
CENL			LFT		
CENDWN			RGT		

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 50 RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: 055 S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K) J

THALWEG PROFILE | Reach Length (m) 30.0 | Increment (m) 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	0			N	DR			
1	5				GL			
2	5				GL			
3	0				DR			
4	2				GL			
5	5				GL			
6	10				GL			
7	19							
8	23							
9	4							

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	1					
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m	1			1		

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Ck. DATE OF VISIT: 09/29/04

AM ID: 055s TEAM ID (circle): 1 2 3 4 5 6 7 8 Transect Station (A to K): K

Slope (Backsite)	1.0 %	Suppl. Slope (Backsite)	__.__ %	Bearing (Backsite)	124°	Suppl. Bearing (Backsite)	___°

Substrate Measurements Cross-Sectional Information

OC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	2.8	0	FN	100	
	2.1	10	GF	75	
	1.4	8	GF	70	
	0.7	2	CB	30	
	0	0	FN	100	

Substrate Size Class Codes

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	2	
Macrophytes	1	
Woody Debris > 0.3 m (BIG)	2	
Brush/Woody Debris < 0.3 m (SMALL)	1	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	4	0	
Small Trees Trunk < 0.3 m DBH	0	2	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	N	D	
Woody Shrubs & Saplings	0	1	
Non-woody Herbs, Grasses, & Forbs	3	1	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	2	1	
Non-woody Herbs, Grasses, & Forbs	3	2	
Barren, Bare dirt or duff	1	2	
Human Influence (0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	B	B	
Logging Operations			
Mining Activity			

II. Bank Measurements

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	19°		
	9°		

Full Width	14.1 m	
ed Ht.	3.7 m	
(Full Ht.	0.6 m	
ted Width	2.8 m	
Width	0.0 m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	8		CenR	1	
CenL	13		Lft	11	
CenDwn	5		Rgt	3	

Flag Codes: K = no measurement made; U = suspect

Riparian Width Lft 50 Rgt 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: _ _ _ _ _ S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE | Reach Length (m) | Increment (m)

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

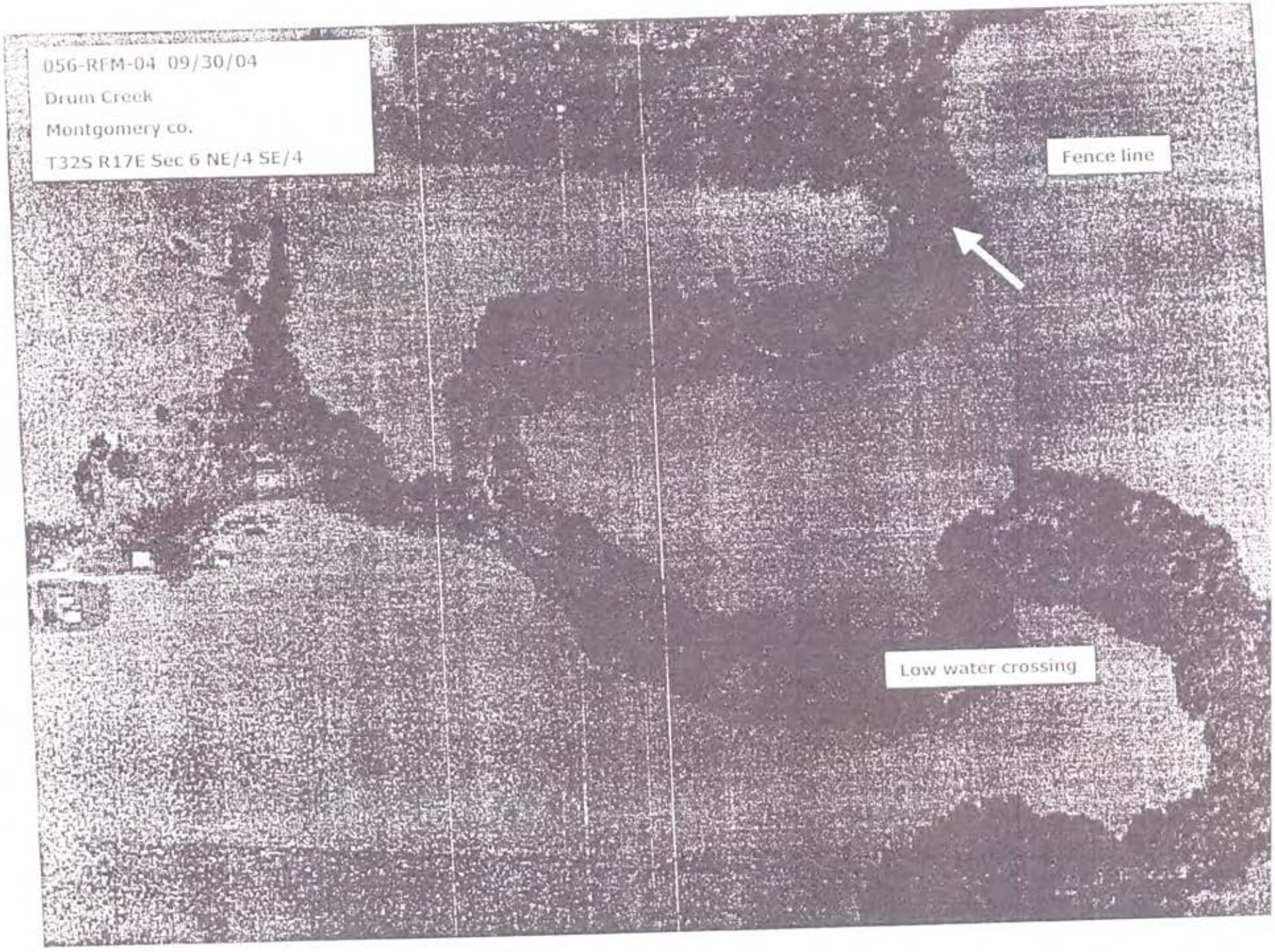
DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:


056-RFM-04 09/30/04
Drum Creek
Montgomery co.
T32S R17E Sec 6 NE/4 SE/4
Fence line
Low water crossing

KDHE/BEFS

IDENTIFICATION BENCH SHEET

RECEIVED

STATION 056-RFM-04 STREAM/LOCATION Drum Cr. 9 Pools

DATE COLLECTED 9-30-04 DATE EXAMINED 1-4 to 5-05 DETERMINED BY [illegible]

COLLECTOR(S) _____ TYPE OF SAMPLE (EFFORT) _____

RECEIVED
APR 05 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

	KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA						
Dubiraphia	✓			X		1
Stenelmis sexlineata	✓	X				1
S. sp.	✓			X		1
Hydroporus	✓	X				1
Tropisternus	✓	X				1
DIPTERA						
Chaoborus	✓			X		28
Palpomyia	✓			X		1
Culicoides	✓			X		3
Chironomus	✓			X		3
Cryptochironomus	✓			X		4
Stictochironomus	✓			X		10
Polypedilum	✓			X		4
Ablabesmyia	✓			X		5
Procladius	✓			X		7
Tanytarsus	✓			X		4
Culex - Culicidae	✓			X		1
EPHEMEROPTERA						
Hexagenia	✓		X			3
Caenis	✓		X			46
Callibaetis	✓		X			3
Centroptilum	✓		X			2
Stenacron interpunctatum	✓		X			2
Stenonema femoratum	✓		X			4
HEMIPTERA						
Belostoma	✓	X				1
Microvelia	✓	X				1

	KBS CODE #	A #	N #	L #	P #	TOT #
MEGALOPTERA						
ODONATA						
Argia	✓		X			
Ischnura	✓		X			
Gomphus externus	✓		X			
Gomphidae (early instars)	✓		X			
Macromia	✓		X			
PLECOPTERA						
TRICHOPTERA						
CRUSTACEA						
Hyalella azteca	✓	X				2
GASTROPODA						
Physella	✓	X				11
Planorbidae	✓	X				1
HIRUDINEA						
OLIGOCHAETA		X				14
PELECEPODA						
Musculium transversum	✓	X				3
TURBELLARIA						
OTHER						

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE

N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE

P#=NUMBER OF PUPAE IN SAMPLE

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

HABITAT DEVELOPMENT INDEX

Date: 9-30-04 Collector(s): M. VanScoyoc, K. Hase

Hydrologic Unit: 056-RFM-04

Stream Name: Drum Creek Stream Code No. ______

Legal Description: NE /4, SE /4, Sec. 6, T 32S, R 17E, MG CO.

Macrohabitat Type (s)

Fill in macrohabitat type (s) – riffle (RF) run (RN), and/ or pool (P) which are sampled in the 50 m. site. If all 3 macrohabitat types are present (and sampled), score each. If the site is predominately runs with some pools, then score 2 runs and 1 pool. If only runs are present, score 3 different runs. Multiple samples of a single macrohabitat type should be properly identified (e.g. RN #1, RN #2, RN #3).

		Macrohabitat Type (s): P1	P2	P3
Minimum Habitat Score	Score = 3 for each macrohabitat sample collected in the 50 m. site.	3	3	3
Average Depths	Riffles: < 5 cm. = 0 5 - 10 cm. = 1 > 10 cm. = 2 Runs: < 15 cm. = 0 15 - 45 cm. = 1 > 45 cm. = 2 Pools: < 30 cm. = 0 30 - 60 cm. = 1 > 60 cm. = 2	0	0	0
Velocity Range (m./sec.)	Riffles: < 0.3 = 0 both < and ≥ 0.3 = 1 Runs: < 0.3 = 0 both < and ≥ 0.3 = 1 Pools: < 0.1 = 0 ≥ 0.1 = -1	0	0	0
Riffle Substrate Score	% Cobble: Score A — 0 - 10 % = 0 11 - 25 % = 1 26 - 50 % = 2 > 50 % = 3 Score A [ ] If % cobble is ≤ 10 % and boulders or bedrock are present, Score A = 1. % Embeddedness: Score B — 0 - 25 % = 0 26 - 75 % = -1 > 75 % = -2 Score B [ ] Record score in riffle column (s) only if Score A + Score B > zero.			
Organic Detritus and Debris	None = 0 ; Sparsely scattered bits of detritus = 1 ; Large leaf packs or large amounts of scattered detritus = 2 ; Detritus, debris, logs = 3	2	3	24

(OVER)

Algal Masses	No algal masses = 0		Algal masses = 1	1	1	1
Macrophytes	None = 0	Few or Small Patches = 1	Large areas of dense growth = 2	1	0	0
Bank Vegetation	None = 0	Small amounts or thin = 1	Submerged tree roots or thick vegetation = 2	0	0	0
				Total Score	Total Score	Total Score
Total Scores	Sum each column and enter sums into Total Score boxes.			7	7	6
HDI Score	Compute HDI by summing the Total Scores for each unique macrohabitat sampled. If a macrohabitat was sampled more than once, only use the highest Total Score for that macrohabitat to compute the HDI Score. Examples: 1 P and 2 RN were sampled, HDI Score = P sample Total Score + RN sample with the highest Total Score. If one macrohabitat was sampled and scored three times, HDI Score = column with highest Total Score.			HDI Score		
				7		

TRANSECT SAMPLING: **# POOLS** 9 **# RIFFLES** _____

ORGANIC DETRITUS includes seeds, pods, leaves, small bark, twigs, leaf fragments accumulated in packs.

ORGANIC DEBRIS includes larger sticks, bark, and logs.

ALGAL MASSES should be sampled if they provide habitat and not just food.

MACROPHYTES include floating-leaved, emergent, or submerged aquatic plants.

BANK VEGETATION includes submerged terrestrial plants, tree limbs, and roots.

Corbicula Released: _____

Crayfish Released: _____

FORM #1
FORM FOR DOCUMENTING A SAMPLE SITE

1a.Storet # CS: RM: 04 1b.Random map #_____ 2. Date: 04 / 09 / 30
yr/ mo/ day

3.USGS Quadrangle Name _____

4.State Code KS 5.County Code MG

6.Waterbody Type ____ 7.Ecoregion Code _____

8.Waterbody Name: Drum Creek NE/4 SE/4 Sec. 6 T32S R17E

9.Reference Location (Narrative and/or legal description of closest landmark)

North on 169 to Cherryvale, KS - West on West Winnistreet Rd. to 5150 Road - past waste treatment ponds to first homestead which is the Longs residence - along pasture access to low water crossing

10.Description of site marker (e.g., re-bar, PVC pipe, etc.):

11.Distance and direction of site marker relative to reference location (e.g., upstream-downstream, direction; left bank or right bank, etc.):

	longitude	latitude
12.X-site lat/long (from map):	-095.5794	37.291683333
13.X-site lat/long measured:	W095° 34.764'	N37° 17.501'

14.X-Site lat/long by GPS or map interpolation (G or M): G

15.GPS file name: ____/____/____

16.Difference between map X-site and measured X-site (in seconds): lat:_____ long:_____

17.Avg. Channel Width: 11.82 meters HDI = 20

18.Sample Site Length: 300 meters

19.Sample Site Length based on: 1)width X 40; 2)min.(150m) or 3)max.(300m) (circle one)

20.Stream order: _____ 21. stream discharge (CFS): 0

22.Landowner Name, Address, phone #: Harry & Geraldine Long
620-336-3014 Cherryvale, KS 67335-9802

23.Contact method (T), (P), W (circle one)

24.site photo taken: (Y) N 25. Managed Fishery: Y (N)

26. Land Use in area and 27.disturbances observed in the area (see reverse side of form to record information for 26 and 27)

28. Weather information (see reverse side of this form)

LAND USE & DISTURBANCES OBSERVED (INTENSITY: BLANK = NOT OBSERVED, L = LOW, M = MODERATE, H = HEAVY)

16. RESIDENTIAL	RECREATIONAL	AGRICULTURAL	INDUSTRIAL	STREAM MANAGE
L Residences	__ Parks, Campgrounds	M Cropland	__ Industrial Plants	__ Lining
L Maintained Lawns	__ Primitive Parks, Camping	M Pasture	__ Mines/Quarries	__ Drinking Water T
17. __ Construction	__ Trash/Litter	__ Livestock	__ Oil/Gas Wells	__ Angling Pressure
__ Pipes, Drains	__ Surface Films, Scums, or Slicks	__ Orchards	__ Power Plants	__ Dredging
__ Dumping		__ Poultry	__ Logging	__ Channelization
L Roads			__ Evidence of Fire	__ Water Level Fluctuation
__ Bridge/Culverts			__ Odors	__ Fish Stocking
			__ Commercial	

26. NOT USED

27.
- L FOREST
- L GRASSLAND (PRAIRIE)
- __ SWAMP
- __ OTHER

28. WEATHER CONDITIONS (Circle)					
Cloud Cover	< 5%	5-25%	25-50%	50-75%	>75%
Precipitation	None	Light	Moderate	Heavy	
Previous Precipitation (24 H)	None	Light	Moderate	Heavy	
Air Temperature	19.5 (°C)				

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

WATER CHEMISTRY

Date: 9-30-04 Data Collector(s): E. Johnson

Hydrologic Unit: 056-RFM-04

Stream Name: Drum Creek Stream Code No. ___

Legal Description: NE /4, SE /4, Sec. 6, T 32S, R 17E, MG County

Air Temperature (°C): 19.5 Time of Day: Begin 8:18 a.m./p.m.
End 9:06 a.m./p.m.

METHODS

1. Hach Spectrophotometer
2. Digital Titration
3. D.O. Meter
4. Conductivity Meter
5. Thermometer
6. pH Meter
7. pH Pocket Tester
8. Other (specify)

PHYSICAL VARIABLES

	Measure	Method
Water Temperature(°C):	17.0	4
Conductivity (micro Siemens):	519	4
Turbidity (~~FTUs~~): FAU	40	1
*TDS (mg/l):	251	4
Salinity (‰)	0.2	4

CHEMICAL VARIABLES

Dissolved oxygen (mg/l):	3.83 3.7, 4.3, 3.5	2
pH:	8.0	7
Total Alkalinity (mg/l as $CaCO_3$):	204	2
Chlorides (mg/l):	27	2
Ammonia (mg/l):	0.07	1
Nitrates (mg/l):	0.2	1 read backwards
Phosphorus, Reactive (mg/l):	0.01	1
*Sulfates (mg/l):	—	—
*Total Hardness (mg/l as $CaCO_3$):	—	—

*Level II parameters

FORM #2
FISH DATA FORM

ELECTRO-FISHED METHOD: BP - (TB) - B

SITE # 056-RFM-04 DATE: 9 / 30 / 04 BPJ @ SAMPLE REP: (Y) or N

ELECTROFISHING TIME (SEC.): 4093 SEINING TIME (MIN.): 16:37

% OF TOTAL SAMPLE SITE: ELECTRO-FISHED: 80 % SEINED: 70

TOTAL AREA OF SAMPLE SITE: 3546 SQ. M. % OF SAMPLE SITE WADEABLE: 95

TOTAL SAMPLE VOL. 0.8 GAL. SUB-SAMPLE VOL. _____ GAL.

	# OF GABLEHOUSE SPECIES / SIZE*							
SPECIES COMMON NAME	S	Q	P	M	T	JUVENILE	ADULT	TOTAL # OF SPECIMENS
Longnose gar 23.6	18.2	20	32.5 |			|	|	2
River carpsucker 11.8	6.5	9	12	15 ||||	18		||||	4
Smallmouth buffalo .5	8.2	14.8 ~~||||~~	18.4 ||				~~||||~~ ||	7
Bigmouth buffalo 9.8	9.7	17.5 |	21.8 |	20.6			||	2
Black buffalo .5	9 |	15 |||	20 ~~||||~~	26		|	~~||||~~ |||	9
Golden redhorse 7.9	3.1 |	5.9 |	8.6 |	10.7 ||	12.2	~~||||~~ |||	|||	11
Common carp 7.9	8.4	15.1	18.9 ~~||||~~ ||	24.8 |	31.1		~~||||~~ |||	8
Channel catfish 9.8	9.4 |	17 |	21.3				||	2
Green sunfish 3.9	3 ||| ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~	5.3 ||||	6.6 |			~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ||	~~||||~~ ~~||||~~ |||	35
Warmouth 3	2.4 |	4.3	5.3 ||||	7		|	||||	5
Orangespotted sunfish 1.4	2.4 |||| ~~||||~~	4.3				||||	~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ |	40
Bluegill 4.9	3 | ~~||||~~ ~~||||~~	5.4 ||	6.8			(8) ~~||||~~ ~~||||~~ ~~||||~~ |||	~~||||~~	32
Longear sunfish 2	2.4 ~~||||~~ ~~||||~~ ~~||||~~ || ~~||||~~	4.3	5.3			||	~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~	37
Largemouth bass 4.7	6.5 |	1				||||	||	6
Black crappie 5.1	4	7.2	9.0 |	11.8			|	1
White crappie 5.1	4.2	7.6	9.4 ||	12.4			||	2
Orangethroat darter						(9)	(12)	21
Bluntnose minnow							~~||||~~ ~~||||~~ ~~||||~~	15
Central stoneroller							||	2
Red shiner							~~||||~~ ~~||||~~	10
Spotted sucker						|		1

COMMENTS: Logperch I/T A/II [2] Brook silverside I/T A/II [2]

mosquitofish I/T A/I [1]

line w/ hooked-other ~5 lbs (snapper)

FLOW SHEET

E # 056-[illegible] 04

REAM Drum Creek

UNTY Montgomery

ATE 9 / 30 / 04

No flow

TOTAL: Ø CFS

#	Distance From Initial Point	WIDTH STREAM WIDTH / 30	DEPTH	REVO-LUTIONS	SECONDS 40 OR 60	VELOCITY REVO. / SECONDS	AREA WIDTH X DEPTH	DISCHARGE VELOCITY X AREA
1						Ø		Ø
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

Kansas State University - Salina
GPS Field Data Record

Date	: 9-30-04	Project Name	:
Town	:	Latitude	: N 37° 17.501
County	: Montgomery	Longitude	: W095° 34.764
Site Name	: OSG-RFM-04	Elevation	: 804 ft.
File Name	: -	Time	: 8:30 am
Surveyed By	: Van Scoyoc	Weather	: Clear
Surveyed By	:	PDOP	: accuracy: 31 ft.

Survey Results

Marker Type : Flag F

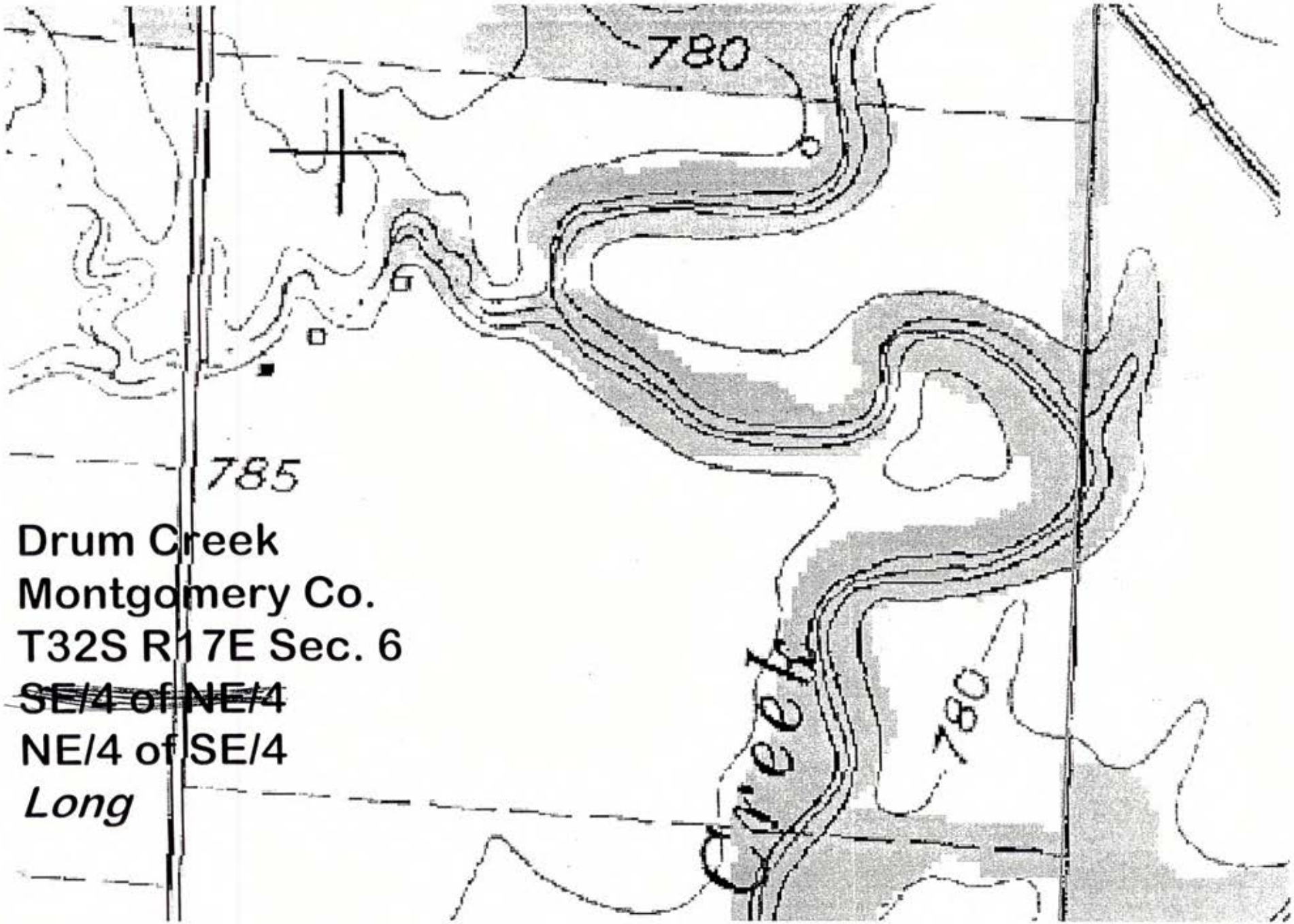
(Recovered) Damaged Destroyed Not Recovered

Marker Description: right bank - NW of Cherryvale, KS 2.22 miles

Instrument Results

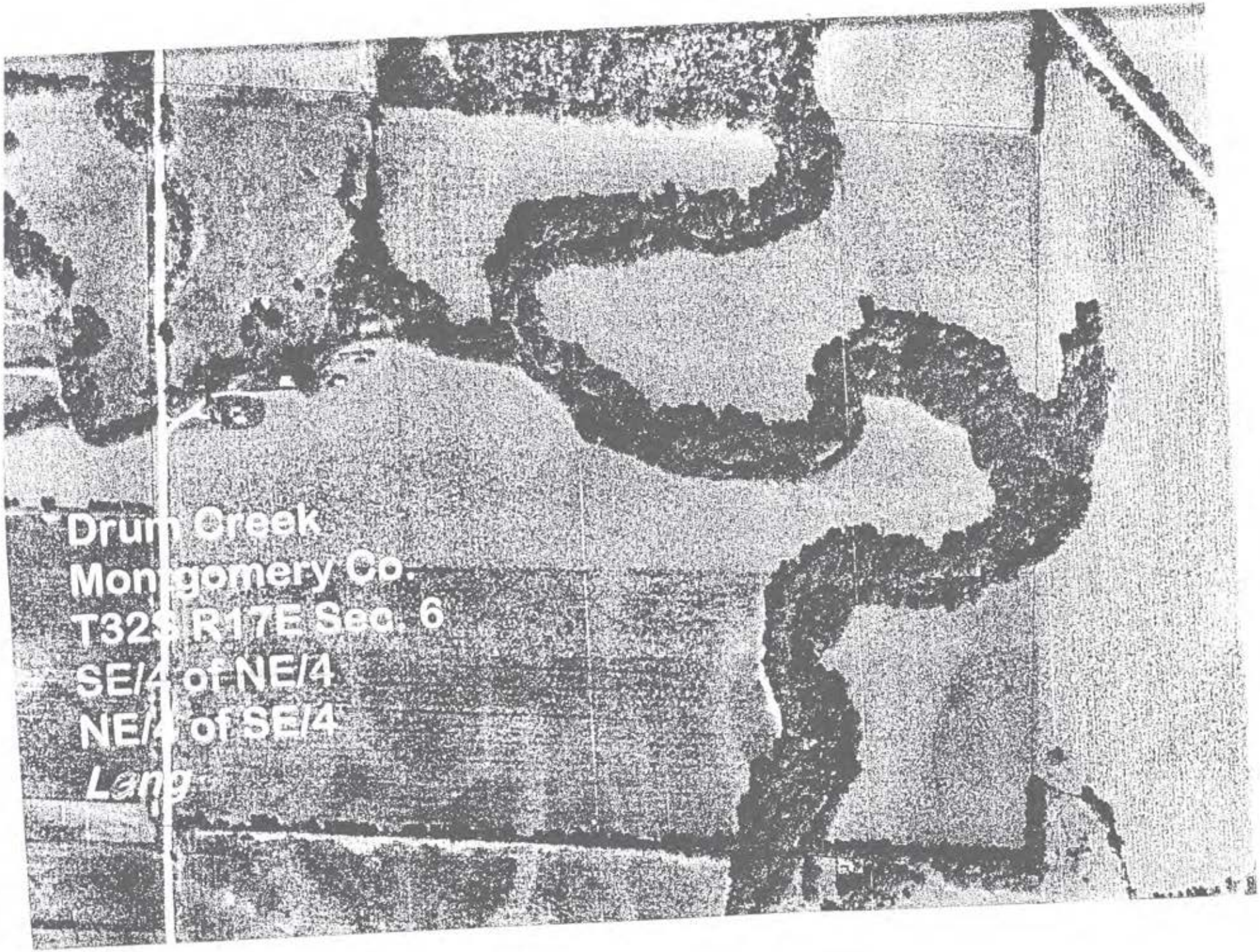
Instrument Name	: Garmin etrex	Instrument S/N	:
Latitude	:	Antenna S/N	:
Longitude	:	Available Sats.	: 6
Elevation	:	Locked Satellites	: 5
Setup Time	: 8:30 am	Take Down Time	: 8:33 am

Comments :



Drum Creek
Montgomery Co.
T32S R17E Sec. 6
~~SE/4 of NE/4~~
NE/4 of SE/4
Long

(4) ~~[illegible]~~ - mainstem


Drum Creek
Montgomery Co.
T32S R17E Sec. 6
SE/4 of NE/4
NE/4 of SE/4
Lang

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

M NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

M ID: OSU-RFKI-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

SLOPE (BACKSITE)	___.___ %	Suppl. Slope (Backsite)	___.___ %	BEARING (BACKSITE)	___ °	SUPPL. BEARING (BACKSITE)	___ °

BSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	14.9	10	FN	100	
	11.17	70	RS	100	
	7.45	65	GF	90	
	3.72	70	GF	10	
	0	34	FN	100	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	4	4	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	1	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD			
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	64 °		
	60 °		

FULL WIDTH	16.3 m	
D HT.	4.0 m	
FULL HT.	0.8 m	
TED WIDTH	14.9 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	13		CENR	17	
CENL	17		LFT	17	
CENDWN	14		RGT	16	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20
RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 02

STREAM ID: 056-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	70			N	PT	F		
1	75			N				
2	80							
3	80							
4	80							
5	68							
6	70			Y				
7	65			N				
8	61			N	GL			
9	60			Y	GL			

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	11					
0.3 - 0.6 m				1		
0.6 - 0.8 m						
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): _____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

1 NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

M ID: 056-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): B

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	250°	SUPPL. BEARING (BACKSITE)	___°

BSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	10.2	7	GF	90	
	7.65	53	RS	100	
	5.1	34	RR	100	
	2.55	39	GF	90	
	0	0	FN	100	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	3	2	
SMALL TREES TRUNK < 0.3 M DBH	0	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	4	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	1	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD			
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	90°		
	60°		

FULL WIDTH	16.6 m	
ED HT.	3.8 m	
FULL HT.	0.6 m	
TED WIDTH	10.2 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	3		CENR	4	
CENL	7		LFT	14	
CENDWN	1		RGT	7	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 28

RGT 40

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / [illegible]

STREAM ID: OSG-RFN-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	53			N	GL			
1	40			Y				
2	44			N				
3	46			N				
4	54							
5	58							
6	52							
7	56							
8	54			Y				
9	62			Y				

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	11					
0.3 - 0.6 m	1			1		
0.6 - 0.8 m						
> 0.8 m		1			1	

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AME: Drum Creek — DATE OF VISIT: 4 / 30 / 04

I: 056-RFH-04 S — TEAM ID (circle): 1 2 3 4 5 6 7 8 — Transect Station (A to K): C

PE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.1 %	___.__ %	255°	___°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	15.8	0	FN	100	
	11.85	48	GF	90	
	7.9	45	GF	90	
	3.95	39	GF	90	
	0	0	FN	100	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
NE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	43°		
	53°		
ULL WIDTH		16.7 m	
HT.		2.9 m	
ULL HT.		0.6 m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	15		CENR	3	
CENL	15		LFT	16	
CENDWN	6		RGT	3	

Flag Codes: K=no measurement made; U=suspect

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER	0 = ABSENT 1 = SPARSE (0-10%) 2 = MODERATE (10-40%) 3 = HEAVY (40-75%) 4 = VERY HEAVY (> 75%)		
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	4	1	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	4	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
BARREN, BARE DIRT OR DUFF	1	1	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD			
LOGGING OPERATIONS			

25

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / [illegible]

STREAM ID: OSG-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	52			Y	GL			
1	61			N	GL			
2	57		1.5	↓	↓		Y	
3	55		3.0	↓	↓		↓	
4	29		5.8	↓	↓		↓	
5	36			Y				
6	46			N				
7	56			↓				
8	52			↓				
9	55			↓	↓			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	IIII					
0.3 - 0.6 m	III	I				
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

ME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

: 056-RF11-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): D

E (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.1 %	__.__ %	254°	___°

RATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	13.6	31	RR	100	
	10.2	54	RS	100	
	6.8	44	GF	90	
	3.4	55	RS	100	
	0	0	FN	100	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
VE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
LT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
THER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	135°	0.2	
	59°		

LL WIDTH	14.4 m	
HT.	2.1 m	
LL HT.	0.6 m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	2	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	2	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	13		CENR	7	
CENL	14		LFT	16	
CENDWN	7		RGT	14	

Flag Codes: K = no measurement made; U = suspect

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	3	2	
SMALL TREES TRUNK < 0.3 M DBH	1	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	4	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	4	3	
BARREN, BARE DIRT OR DUFF	1	1	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD			
LOGGING OPERATIONS			

75

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Dream Creek

DATE OF VISIT: 9 / 30

STREAM ID: 056-RFW-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K):

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	56			N	GL			
1	54							
2	56							
3	55							
4	60							
5	59							
6	61							
7	79				PL	F		
8	78							
9	79							

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	//////					
0.3 - 0.6 m				None		
0.6 - 0.8 m	//					
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

ID: 050-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

SLOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.1 %	___.___ %	277°	___ ___ °

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	8.4	0	FN	100	
	6.3	36	GC	80	
	4.2	50	GC	50	
	2.1	25	GF	90	
	0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	2	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
BARREN, BARE DIRT OR DUFF	2	2	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH		B	
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	C	P	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	28 °		
	8 °		

FULL WIDTH	13.6 m	
D HT.	4.5 m	
FULL HT.	0.8 m	
ED WIDTH	8.4 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	13		CENR	5	
CENL	16		LFT	15	
CENDWN	5		RGT	4	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 10
RGT 45

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / [illegible]

STREAM ID: 056-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/fine sediment (Y or N)	Channel Unit Code	Pool Form code	Side Channel (SC)?	Comments
0	56			Y	GL			
1	50			N	GL			
2	85			N	PL	F		
3	85							
4	99							
5	87			Y				
6	92			Y				
7	125			N	PT	W		
8	113			Y	PT	W		
9	80			Y	PL	W		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	1					
0.3 - 0.6 m	1					
0.6 - 0.8 m	1					
> 0.8 m				1		

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

ID: 056-RFW-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

LOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
1.0 %	___.__ %	271 °	___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	11.0	0	FN	100	
	8.25	50	GF	70	
	5.5	24	GF	70	
	2.75	12	GF	95	
	0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

:DROCK (SMOOTH) *(LARGER THAN A CAR)
:DROCK (ROUGH) *(LARGER THAN A CAR)
)ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
:OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
)THER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	3	4	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	2	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	-		
BUILDINGS	-		
PAVEMENT	-		
ROAD/RAILROAD	-		
PIPES (INLET/OUTLET)	-		
LANDFILL/TRASH	-	B	
PARK/LAWN			
ROW CROPS	C	P	
PASTURE/RANGE/HAY FIELD	-		
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	68 °		
	10 °		

ULL WIDTH	14.9 m	
D HT.	4.3 m	
ULL HT.	0.8 m	
ED WIDTH	11.0 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	17	
CENL	15		LFT	17	
CENDWN	14		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 8

RGT 45

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 98

STREAM ID: 056-RFU-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	66			Y	GL			
1	62			Y				
2	61			Y				
3	56			Y				
4	56			N				
5	80				PL	F		
6	98				PL	F		
7	77			N	PL	F		
8	71			Y	PL	F		
9	64			Y	GL			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	III			I		
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): _____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

M NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

M ID: 056-RFW-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
1.0 %	__.__ %	260°	___°

IBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

C.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	5.4	0	FN	100	
	4.05	53	FN	100	
	2.7	33	GC	70	
	1.35	19	GC	70	
	0	0	GF	80	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent, 1 = Sparse (0-10%), 2 = Moderate (10-40%), 3 = Heavy (40-75%), 4 = Very Heavy (> 75%))			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	2	
Small Trees Trunk < 0.3 m DBH	2	1	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	2	
Non-woody Herbs, Grasses, & Forbs	2	1	
Barren, Bare dirt or duff	2	3	

Human Influence (0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	C	P	
Pasture/Range/Hay field			
Logging Operations			
Mining Activity			

II. BANK MEASUREMENTS

C.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	10°		
	20°		

ULL WIDTH	15.5 m	
D HT.	4.4 m	
FULL HT.	0.6 m	
ED WIDTH	5.4 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	10		CenR	2	
CenL	16		Lft	17	
CenDwn	12		Rgt	4	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 8
RGT 45

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / [illegible]

STREAM ID: 256-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	55			Y	GL			
1	48			Y				
2	39			N				
3	55			N				
4	57			Y				
5	66			Y			*	OUT-PIPE 6" DIA COMING IN ON
6	98			N	PL	F		LFT BANK 12"
7	102			N	PL	F		
8	116			N	PT	F		above of water
9	107			N	PL	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1					
0.3 - 0.6 m					None	
0.6 - 0.8 m						
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

ME: Drum Creek — DATE OF VISIT: 9 / 30 / 04

: 256-RFm-04 S — TEAM ID (circle): 1 2 3 4 5 6 7 8 — Transect Station (A to K): H

(BACKSITE)	0.8 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	234 °	SUPPL. BEARING (BACKSITE)	___ °

RATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
12.8	29	FN	100	
9.6	89	RR	100	
6.4	73	GF	80	
3.2	25	GF	80	
0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	3	
Small Trees Trunk < 0.3 m DBH	3	3	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	2	
Non-woody Herbs, Grasses, & Forbs	1	4	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	2	
Non-woody Herbs, Grasses, & Forbs	1	2	
Barren, Bare dirt or duff	2	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash		B	
Park/Lawn			
Row Crops	C	P	
Pasture/Range/Hay field			
Logging Operations			

II. BANK MEASUREMENTS

	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	90 °		
	40 °		
ULL WIDTH	16.3 m		
HT.	4.6 m		
HT.	0.9 m		

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	6		CenR	16	
CenL	4		LFT	16	
CenDwn	6		RGT	17	

Flag Codes: K = no measurement made; U = suspect

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / [illegible]

STREAM ID: OSO-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	116			N	PL	F		
1	120			N	PL			
2	136			N	PT			
3	134				PT			
4	126				PT			
5	91				PL			
6	116							
7	126							
8	102							
9	121							

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: > 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	IIIIII			II		
0.3 - 0.6 m	IIII			I		
0.6 - 0.8 m	III			III		
> 0.8 m	I	I				

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AME: Drum Creek

DATE OF VISIT: 9 / 30 / 04

): 056-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

PE (BACKSITE)	1.0 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	227°	SUPPL. BEARING (BACKSITE)	___°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	16.4	0	FN	100	
	12.3	135	FN	100	
	8.2	143	RS	100	
	4.1	119	GF	70	
	0	0	GF	50	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	3	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	3	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

"I" is across nice adequate log jam not the biggest, but fine

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	3	2	
SMALL TREES TRUNK < 0.3 M DBH	1	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	M	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	4	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	3	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	2	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP			
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	C	P	
PASTURE/RANGE/HAY FIELD			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	40°		
	15°		
ULL WIDTH		21.3 m	
D HT.		4.2 m	
FULL HT.		0.7 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	4		CENR	17	
CENL	15		LFT	15	
CENDWN	6		RGT	13	

Flag Codes: K = no measurement made; U = suspect

10

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 / 7

STREAM ID: OS6-RFW-cxt S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	160			N	PT	W		
1	160			N	⊥	⊥		
2	150			N	⊥	⊥		
3	76			Y	PL	F		
4	96			Y	⊥	⊥		
5	95			Y	⊥	⊥		
6	56			Y	GL			
7	44			⊥	⊥			
8	46			⊥	⊥			
9	36			⊥	⊥			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	11 / 1111					
0.3 - 0.6 m	111					
0.6 - 0.8 m	11	1		111		
> 0.8 m	111	111				

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

ME: Drum Creek — DATE OF VISIT: 9 / 30 / 04

: 056-RFM-04 S — TEAM ID (circle): 1 2 3 4 5 6 7 8 — Transect Station (A to K): J

PE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	0.1 %	BEARING (BACKSITE)	146°	SUPPL. BEARING (BACKSITE)	175°

RATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	Dist LB X.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag
	12.5	0	GF	95	
	9.37	15	GF	95	
	6.25	16	GF	90	
	3.12	20	GF	90	
	0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
IBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
NE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	2	
Macrophytes	1	
Woody Debris > 0.3 m (Big)	0	
Brush/Woody Debris < 0.3 m (Small)	1	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	3	2	
Small Trees Trunk < 0.3 m DBH	0	2	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	N	D	
Woody Shrubs & Saplings	0	3	
Non-woody Herbs, Grasses, & Forbs	4	2	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	3	
Non-woody Herbs, Grasses, & Forbs	3	2	
Barren, Bare dirt or duff	1	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P	P	
Pasture/Range/Hay field			
Logging Operations			

II. BANK MEASUREMENTS

	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	64°		
	29°		
LL Width	14.1 m		
Ht.	4.1 m		
LL Ht.	.08 m		

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	7		CenR	15	
CenL	5		Lft	17	
CenDwn	3		Rgt	17	

Flag Codes: K = no measurement made; U = suspect

40

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 30 /

STREAM ID: 056-RIFm-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 30.0 — Increment (m): 3.0

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	29			Y	GL			
1	36							
2	40							
3	36							
4	41							
5	42							
6	40							
7	53							
8	54							
9	70				PL	W		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	11					
0.3 - 0.8 m		1		1		
0.8 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Dorum Creek

DATE OF VISIT: 9 / 30 / 04

AM ID: 050 RIFW-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): K

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.1 %	___.__ %	152°	___.__°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	9.0	0	GF	90	
	6.75	30	GF	80	
	4.5	50	GC	70	
	2.25	66	GC	70	
	0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
= OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	1	
Brush/Woody Debris < 0.3 m (SMALL)	1	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

"K" is even with property line. N. side of section

V. VISUAL RIPARIAN ESTIMATES

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	4	2	
Small Trees Trunk < 0.3 m DBH	0	3	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	N	D	
Woody Shrubs & Saplings	0	1	
Non-woody Herbs, Grasses, & Forbs	2	3	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	1	3	
Non-woody Herbs, Grasses, & Forbs	1	2	
Barren, Bare dirt or duff	3	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap			
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P	C	
Pasture/Range/Hay field			
Logging Operations			
Mining Activity			

II. BANK MEASUREMENTS

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	6°		
	48°		

FULL WIDTH	17.1 m	
ED HT.	4.4 m	
KFULL HT.	0.8 m	
TED WIDTH	9.0 m	
WIDTH	0.0 m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	17		CenR	15	
CenL	17		Lft	17	
CenDwn	13		Rgt	16	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 45
RGT 10

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / /

STREAM ID: _ _ _ _ _ S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE			Reach Length (m)			Increment (m)		
STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

KDHE/BEFS
IDENTIFICATION BENCH SHEET

RECEIVED
FEB 17 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

STATION 053-RFM-04 STREAM/LOCATION Drum Cr. 9 pools
DATE COLLECTED 9-27-04 DATE EXAMINED 12-16-04 DETERMINED BY [illegible]
COLLECTOR(S) _____ TYPE OF SAMPLE (EFFORT) _____

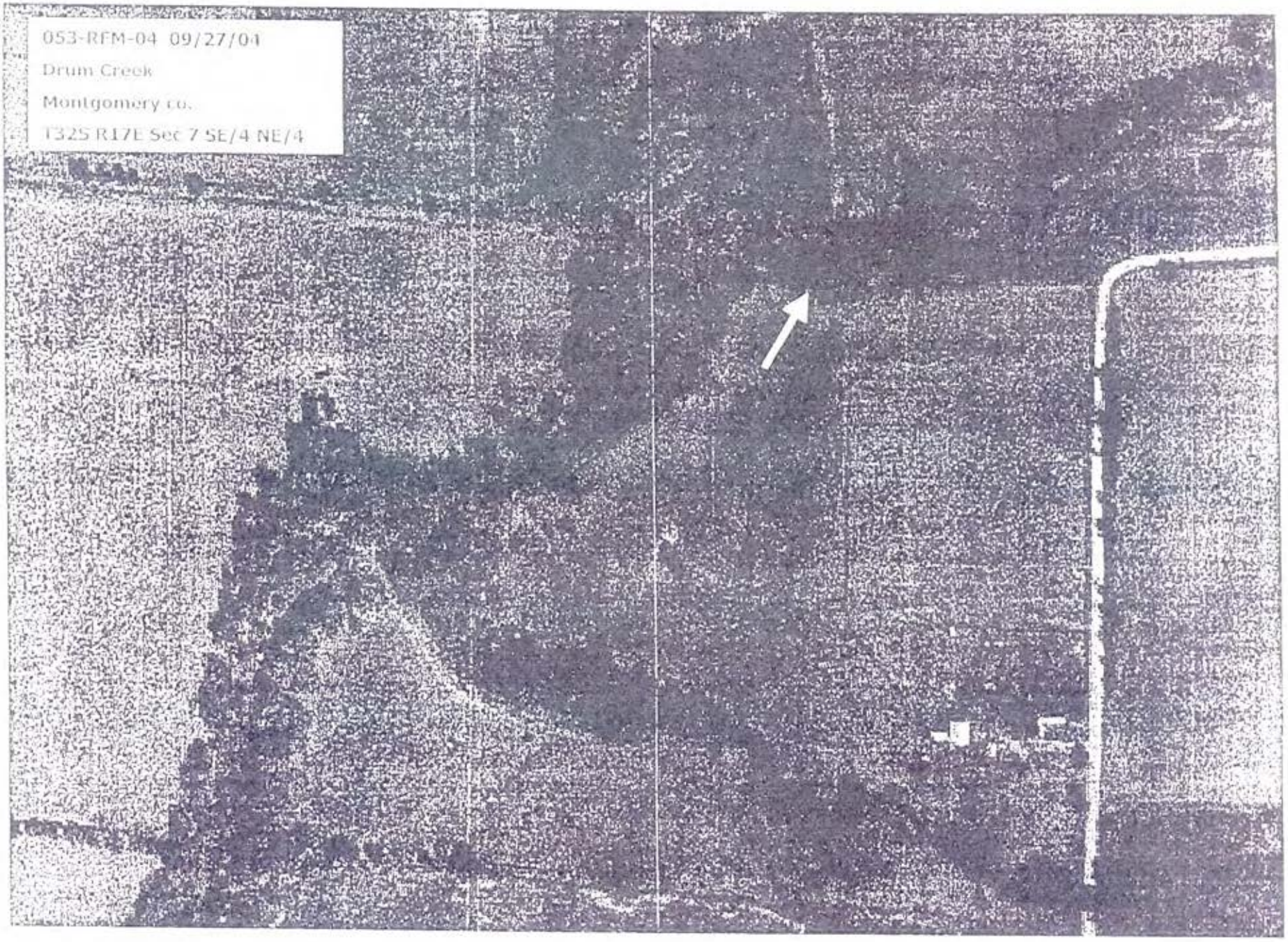
RECEIVED
APR 05 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

	KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA						
Dubiraphia ✓				X		1
Stenelmis ✓				X		2
Laccophilus fasciatus ✓		X				1
Berosus ✓				X		1
Haliplidae ✓				X		2
DIPTERA Paratendipes ✓				X		7
Chironomus ✓				X		5
Glyptotendipes ✓				X		1
Stictochironomus ✓				X		3
Polypedilum ✓				X		6
Tanytarsus ✓				X		1
Dicrotendipes ✓				X		1
Cryptochironomus ✓				X		1
Glyptotendipes ✓				X		1
Cricotopus ✓				X		1
Procladius ✓				X		6
Clinotanypus ✓				X		2
Chaoborus ✓				X		2
Anopheles ✓				X		1
Culicoides ✓				X		1
EPHEMEROPTERA						
Caenis ✓			X			11
Stenacron interpunctatum ✓			X			1
Procloeon			X			1
				Hydrobiidae		
				midland siltsnail		

	KBS CODE #	A #	N #	L #	P #	TOT #
MEGALOPTERA						
Sialis ✓				X		
ODONATA						
Argia ✓			X			6
Enallagma ✓			X			1
Macromia ✓			X			1
Libellulidae (early instar) ✓			X			1
Gomphidae (early instar) ✓			X			1
PLECOPTERA						
TRICHOPTERA						
CRUSTACEA						
Hyalella azteca ✓		X				16
GASTROPODA						
~~Amnicola~~ ORDER?		X				1
Cincinnatia integra ✓						
HIRUDINEA (very small) ✓		X				2
Erpobdellidae ✓		X				4
OLIGOCHAETA ✓		X				2
PELECEPODA						
Musculium transversum ✓		X				6
TURBELLARIA						
Dugesia ✓		X				10
OTHER						

	KBS CODE #	A #	N #	L #	P #	TOTAL #
HEMIPTERA						
Mesovelia ✓		X				1
Palmacorixa ✓		X				1

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE
N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE
P#=NUMBER OF PUPAE IN SAMPLE


053-RFM-04 09/27/04
Drum Creek
Montgomery co.
T32S R17E Sec 7 SE/4 NE/4

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

HABITAT DEVELOPMENT INDEX

Date: 09-27-04 Collector(s): E. Johnson, K. Hase

Hydrologic Unit: 053-REM-04

Stream Name: Dum Creek Stream Code No. ___

Legal Description: SE/4, NE/4, Sec. 7, T 32S, R 17E, MG CO.

Macrohabitat Type (s)

Fill in macrohabitat type (s) – riffle (RF) run (RN), and/ or pool (P) which are sampled in the 50 m. site. If all 3 macrohabitat types are present (and sampled), score each. If the site is predominately runs with some pools, then score 2 runs and 1 pool. If only runs are present, score 3 different runs. Multiple samples of a single macrohabitat type should be properly identified (e.g. RN #1, RN #2, RN #3).

		Macrohabitat Type (s)		
		P	P2	P3
Minimum Habitat Score	Score = 3 for each macrohabitat sample collected in the 50 m. site.	3	3	3
Average Depths	Riffles: < 5 cm. = 0; 5 - 10 cm. = 1; > 10 cm. = 2 Runs: < 15 cm. = 0; 15 - 45 cm. = 1; > 45 cm. = 2 Pools: < 30 cm. = 0; 30 - 60 cm. = 1; > 60 cm. = 2	0	0	0
Velocity Range (m./sec.)	Riffles: < 0.3 = 0; both < and ≥ 0.3 = 1 Runs: < 0.3 = 0; both < and ≥ 0.3 = 1 Pools: < 0.1 = 0; ≥ 0.1 = -1	0	0	0
Riffle Substrate Score	% Cobble: Score A (Score A ☐) 0 - 10 % = 0; 11 - 25 % = 1; 26 - 50 % = 2; > 50 % = 3 If % cobble is ≤ 10 % and boulders or bedrock are present, Score A = 1. % Embeddedness: Score B (Score B ☐) 0 - 25 % = 0; 26 - 75 % = -1; > 75 % = -2 Record score in riffle column (s) only if Score A + Score B > zero.			
Organic Detritus and Debris	None = 0	3	2	2
	Sparsely scattered bits of detritus = 1			
	Large leaf packs or large amounts of scattered detritus = 2			
	Detritus, debris, logs = 3			

(OVER)

Algal Masses	No algal masses = 0		Algal masses = 1	0	0	0
Macrophytes	None = 0	Few or Small Patches = 1	Large areas of dense growth = 2	0	1	2
Bank Vegetation	None = 0	Small amounts or thin = 1	Submerged tree roots or thick vegetation = 2	0	0	0
				Total Score	Total Score	Total Score
Total Scores	Sum each column and enter sums into Total Score boxes.			6	6	7
HDI Score	Compute HDI by summing the Total Scores for each unique macrohabitat sampled. If a macrohabitat was sampled more than once, only use the highest Total Score for that macrohabitat to compute the HDI Score. Examples: 1 P and 2 RN were sampled, HDI Score = P sample Total Score + RN sample with the highest Total Score. If one macrohabitat was sampled and scored three times, HDI Score = column with highest Total Score.			HDI Score 7		

TRANSECT SAMPLING: # POOLS 9 # RIFFLES 0

ORGANIC DETRITUS includes seeds, pods, leaves, small bark, twigs, leaf fragments accumulated in packs.

ORGANIC DEBRIS includes larger sticks, bark, and logs.

ALGAL MASSES should be sampled if they provide habitat and not just food.

MACROPHYTES include floating-leaved, emergent, or submerged aquatic plants.

BANK VEGETATION includes submerged terrestrial plants, tree limbs, and roots.

Corbicula Released: _____

Crayfish Released: _____

FORM #1
FORM FOR DOCUMENTING A SAMPLE SITE

1a. Storet # 053-RFM-04 1b. Random map # _____ 2. Date: 04/09/27 (yr/ mo/ day)

3. USGS Quadrangle Name _____

4. State Code KS 5. County Code MT

6. Waterbody Type ____ 7. Ecoregion Code ____

8. Waterbody Name: Drum Creek

9. Reference Location (Narrative and/or legal description of closest landmark)

SE/4 NE/4 Sec 7 T32S R17E
1 mile west 1/2 mile north of Cherryvale, KS

10. Description of site marker (e.g., re-bar, PVC pipe, etc.):

11. Distance and direction of site marker relative to reference location (e.g., upstream-downstream, direction; left bank or right bank, etc.):

	longitude	latitude
12. X-site lat/long (from map):	95.57815	37.2768833
13. X-site lat/long measured:	W095° 34.689'	N37° 16.613'

14. X-Site lat/long by GPS or map interpolation (G or M): G

15. GPS file name: ____/____/____

16. Difference between map X-site and measured X-site (in seconds): lat: _____ long: _____

17. Avg. Channel Width: 16.73 meters HDI = 19

18. Sample Site Length: 300 meters

19. Sample Site Length based on: 1) width X 40; 2) min. (150m) or 3) max. (300m) (circle one)

20. Stream order: _____ 21. stream discharge (CFS): .0025

22. Landowner Name, Address, phone #: City of Cherryvale, City Clerk
620-336-2776 123 W Main St. Cherryvale, KS 67335

23. Contact method (T) (P) W (circle one)

24. site photo taken: (Y) N 25. Managed Fishery: Y (N)

26. Land Use in area and 27. disturbances observed in the area (see reverse side of form to record information for 26 and 27)
28. Weather information (see reverse side of this form)

LAND USE & DISTURBANCES OBSERVED (INTENSITY: BLANK = NOT OBSERVED, L = LOW, M = MODERATE, H = HEAVY)

16. RESIDENTIAL	RECREATIONAL	AGRICULTURAL	INDUSTRIAL	STREAM MANAGEMENT
__ Residences	__ Parks, Campgrounds	__ Cropland	__ Industrial Plants	__ Lining
__ Maintained Lawns	__ Primitive Parks, Camping	M Pasture	__ Mines/Quarries	__ Drinking Water Intake
17. __ Construction	L Trash/Litter	__ Livestock	__ Oil/Gas Wells	__ Angling Pressure
__ Pipes, Drains	L Surface Films, Scums, or Slicks	__ Orchards	__ Power Plants	__ Dredging
__ Dumping		__ Poultry	__ Logging	__ Channelization
__ Roads			__ Evidence of Fire	__ Water Level Fluctuation
L Bridge/Culverts * Foundation for Former bridge			__ Odors	__ Fish Stocking
			__ Commercial	

26. NOT USED

27. L FOREST
L GRASSLAND (PRAIRIE)
__ SWAMP
__ OTHER

28. WEATHER CONDITIONS (Circle)					
Cloud Cover	< 5%	5-25%	25-50%	50-75%	>75%
Precipitation	None	Light	Moderate	Heavy	
Previous Precipitation (24 H)	None	Light	Moderate	Heavy	
Air Temperature	18 (°C)				

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

WATER CHEMISTRY

Date: 9-27-04 Data Collector(s): E. Johnson, K. Hase

Hydrologic Unit: 053-RFm-04

Stream Name: Drum Creek Stream Code No. ___

Legal Description: SE /4, NE /4, Sec. 7, T 32S, R 17E, Wig County

Air Temperature (°C): 18.0 Time of Day: Begin 8:16 a.m./p.m.
End 9:04 a.m./p.m.

METHODS

1. Hach Spectrophotometer
2. Digital Titration
3. D.O. Meter
4. Conductivity Meter
5. Thermometer
6. pH Meter
7. pH Pocket Tester
8. Other (specify)

PHYSICAL VARIABLES

	Measure	Method
Water Temperature(°C):	18.4	4
Conductivity (micro Siemens):	504	4
Turbidity (~~FTUs~~): FAU	19	1
*TDS (mg/l):	242	4
Salinity (‰)	0.2	4

CHEMICAL VARIABLES

	Measure	Method
Dissolved oxygen (mg/l):	4.33 5.5, 3.8, 3.7	2
pH:	7.8	7
Total Alkalinity (mg/l as $CaCO_3$):	195	2
Chlorides (mg/l):	16	2
Ammonia (mg/l):	0.03	1
Nitrates (mg/l):	0.6	1
Phosphorus, Reactive (mg/l):	0.03	1
*Sulfates (mg/l):	—	—
*Total Hardness (mg/l as $CaCO_3$):	—	—

FORM #2
FISH DATA FORM

SITE # 053-RFM-04 DATE: 9 / 27 / 04 BPJ @ SAMPLE REP: (Y) or N

ELECTROFISHING TIME (SEC.): 4201 SEINING TIME (MIN.): 18.14

% OF TOTAL SAMPLE SITE: ELECTRO-FISHED: 75 % SEINED: 40

TOTAL AREA OF SAMPLE SITE: 5019 SQ. M. % OF SAMPLE SITE WADEABLE: 80

TOTAL SAMPLE VOL. 1.0 GAL. SUB-SAMPLE VOL. _____ GAL.

	# OF GABLEHOUSE SPECIES / SIZE*							
SPECIES COMMON NAME	S	Q	P	M	T	JUVENILE	ADULT	TOTAL # OF SPECIMENS
✓ Longnose Gar	14.4 1	26	1			1	1	2
Black bullhead 5.9	3.8	6.8						—
✓ River carpsucker				III			III	3
✓ Yellow bullhead						1		1
✓ Channel catfish 9.8	9.4 1	1 11.7				1	1	2
✓ Green Sunfish 3.9	3.1 III ~~IIII~~ ~~IIII~~ I ~~IIII~~	5.3 III	6.6 I			~~IIII~~ ~~IIII~~	~~IIII~~ ~~IIII~~ ~~IIII~~ I	26
✓ Warmouth 3	~~IIII~~ ~~IIII~~ IIII 2.4	1 4.3 II				II	~~IIII~~ ~~IIII~~ III	15
✓ Bluegill 4.9	3.0 ~~IIII~~ ~~IIII~~ ~~IIII~~ II	5.4 I				~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII (11)	~~IIII~~ IIII	44
✓ Longear Sunfish 2	2.4 (6) II ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~	4.3 III				II	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII (6)	52
✓ Smallmouth Buffalo		III					II	3
✓ Black Buffalo		I					I	1
✓ Spotted Bass		III	I				IIII	4
✓ Brook Silverside							(10) (4)	14
✓ Common Carp		I	II				II	3
✓ Redfin Shiner							I	1
✓ Freshwater drum	I					I		1
✓ White Crappie		I	II				II	2
✓ Flathead catfish	I				I	I	I	2
✓ Shorthead Redhorse				II			II	2
✓ Lg mouth bass	I					II	I	3
✓ Spotted Sucker						I	I	2

COMMENTS: ✓ Log Perch J 1 A IIII [5] ✓ Orangethroat darter J 1 A ~~IIII~~ [6]

✓ Orange spotted Sunfish - 2.8; 1.5; 2.3; 2.0 [4] 4 adults 1 stock 3 spawn

1 juvenile

J A [2]

05-RFM-04

M Drum Creek

TY Montgomery

9 / 27 / 04

very low to non-existent flow

#	Distance From Initial Point	WIDTH STREAM WIDTH / 30	DEPTH	REVO-LUTIONS	SECONDS 40 OR 60	VELOCITY REVO. / SECONDS	AREA WIDTH X DEPTH	DISCHARGE VELOCITY X AREA
1		0.5	0.1	2	40	.05	.05	.0025
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

Kansas State University - Salina
GPS Field Data Record

Date	: 9-27-04	Project Name	:
Town	:	Latitude	: N37° 16.613'
County	: Montgomery	Longitude	: W095° 34.689'
Site Name	: 053-RPM-04	Elevation	: 776 ft.
File Name	:	Time	: 8.29 am
Surveyed By	: Von Stanger	Weather	: clear
Surveyed By	:	PDOP	: accuracy: 4 feet

Survey Results

Marker Type : Flag F

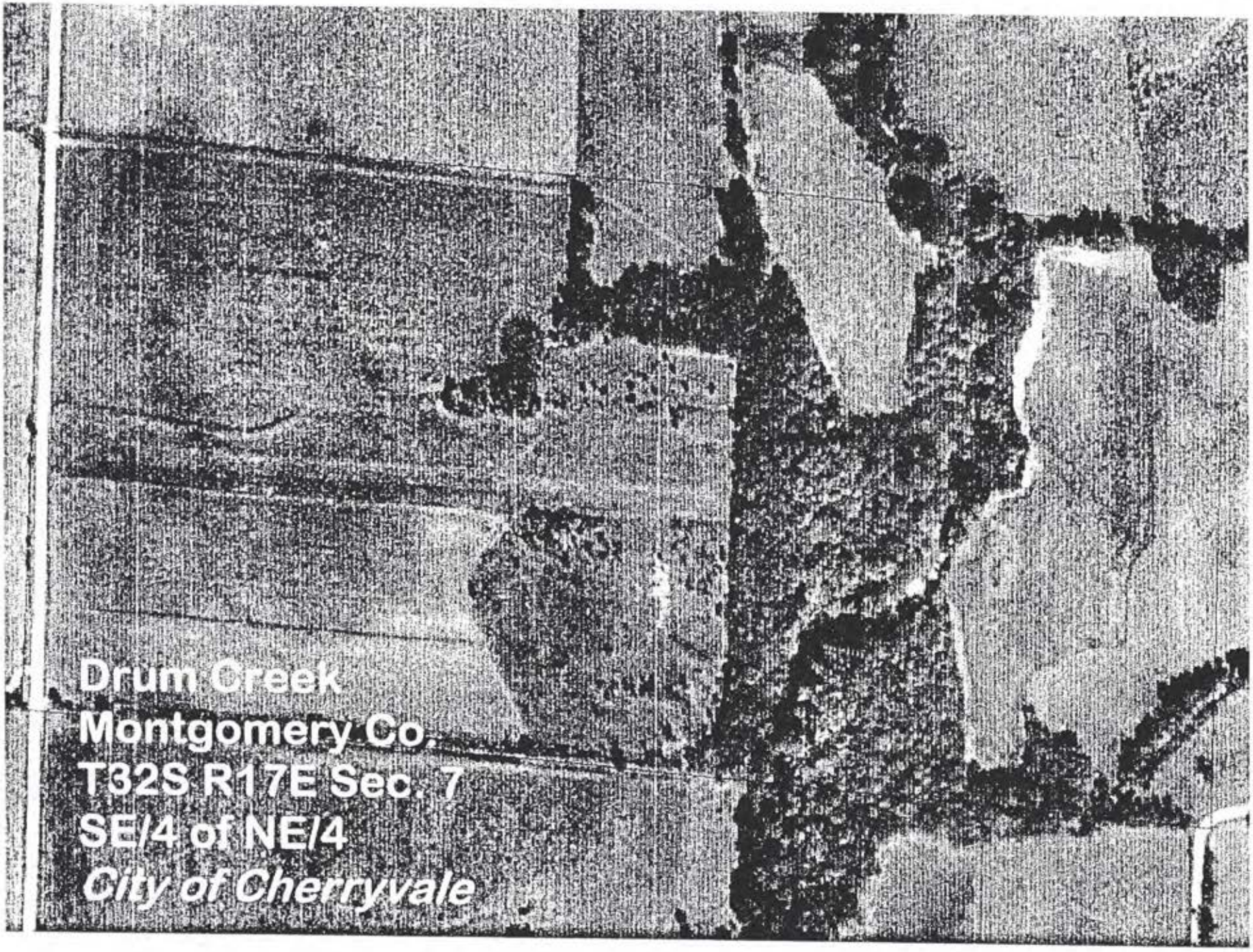
Recovered Damaged Destroyed Not Recovered

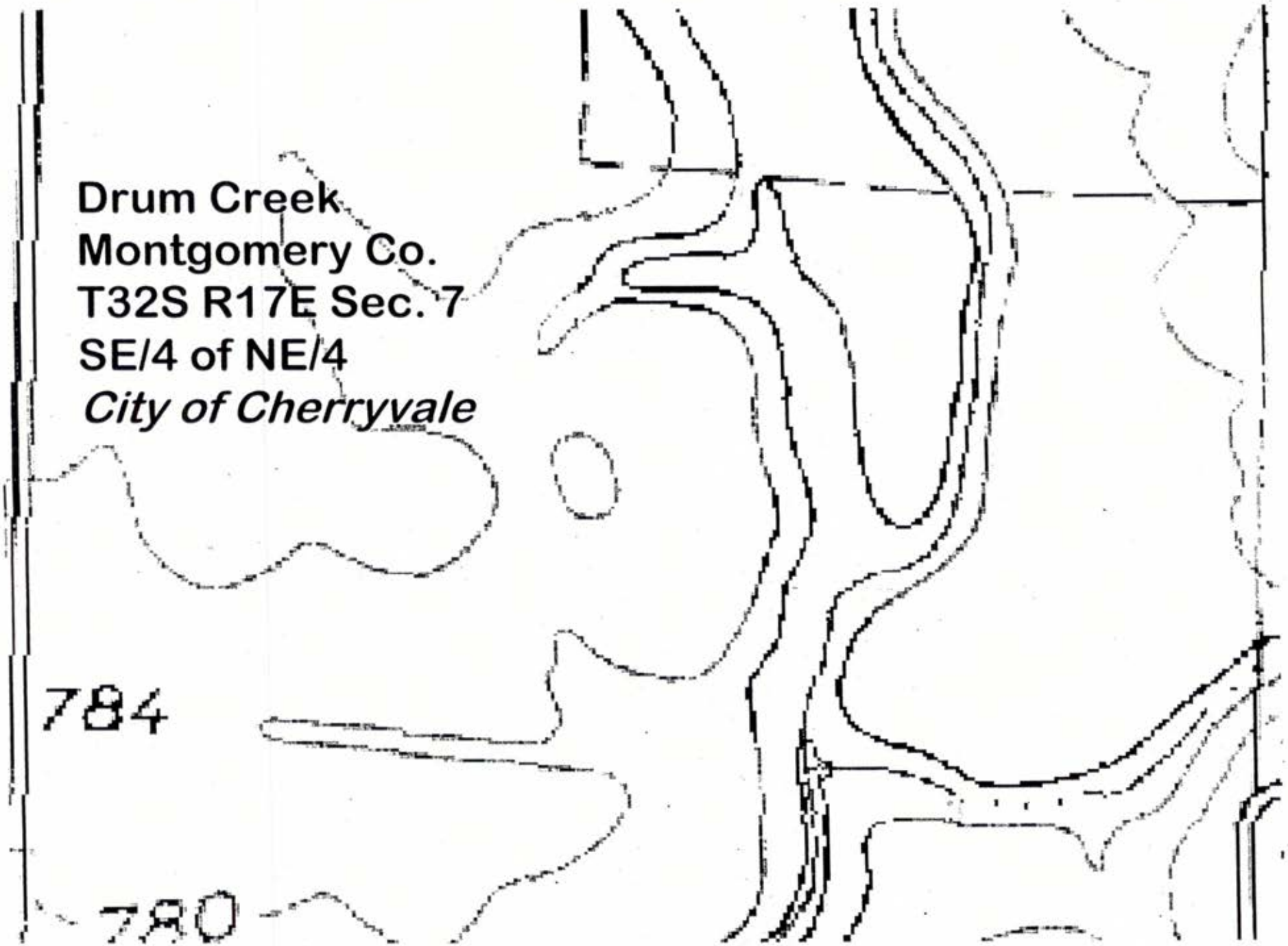
Marker Description: left bank

Instrument Results

Instrument Name	: Garmin etrex	Instrument S/N	:
Latitude	:	Antenna S/N	:
Longitude	:	Available Sats.	: 5
Elevation	:	Locked Satellites	: 4
Setup Time	: 8:29 am	Take Down Time	: 8:34 am

Comments :


Drum Creek
Montgomery Co.
T32S R17E Sec. 7
SE/4 of NE/4
City of Cherryvale


Drum Creek
Montgomery Co.
T32S R17E Sec. 7
SE/4 of NE/4
City of Cherryvale
784
780

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

ID: 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

OPE (BACKSITE)	___.__ %	Suppl. Slope (Backsite)	___.__ %	BEARING (BACKSITE)	___ °	SUPPL. BEARING (BACKSITE)	___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	CB	30	
	1.35	18	RS	100	
	2.7	15	RS	100	
	4.05	15	RS	100	
	5.4	0	CB	30	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

II. BANK MEASUREMENTS

C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	°		
	°		

FULL WIDTH	22.1 m	
ED HT.	3.8 m	
FULL HT.	0.5 m	
TED WIDTH	5.4 m	
WIDTH	___ m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	15	
CENL	16		LFT	17	
CENDWN	13		RGT	14	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 50
RGT 50

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	2	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	3	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD		P	
LOGGING OPERATIONS		P	
MINING ACTIVITY			
Bridge	1		

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 03

STREAM ID: 053-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3.0

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	18			N	GL			
1	21			N	GL			
2	11			N	GL			
3	10			N	GL			
4	7			N	RI			
5	11			N	RI			
6	30			N	PT	F		
7	37			N	PT	F		
8	32			N	PT	F		
9	40			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	1111 1111			1111 1111		
0.3 - 0.6 m	1					
0.6 - 0.8 m		1	1			
> 0.8 m	1	1				

Channel Unit Codes

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Revi by (i :

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

AM ID: 053-RFM-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): B

SLOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
1.0 %	. %	165 °	°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

...C.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	98	
	3.725	25	GC	80	
	7.45	32	RS	100	
	11.175	46	RS	100	
	14.9	0	CB	30	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

II. BANK MEASUREMENTS

...C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	50 °		
	15 °		

...ULL WIDTH	18.3 m	
...D HT.	3.3 m	
...ULL HT.	0.5 m	
...ED WIDTH	14.9 m	
...WIDTH	0.9 m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	11		CENR	15	
CENL	10		LFT	17	
CENDWN	13		RGT	12	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 50
RGT 40

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
BARREN, BARE DIRT OR DUFF	3	3	
HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	O	O	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH	B		
PARK/LAWN	O		
ROW CROPS			
PASTURE/RANGE/HAY FIELD		P	
LOGGING OPERATIONS		O	
MINING ACTIVITY			
Bridge			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / [illegible]

STREAM ID: 053-RF1-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): B

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	49		0.9	N	PT	F	Y	
1	54			N	PT	F		
2	56			N	PT	F		
3	55			N	PT	F		
4	58			N	PT	F		
5	60			N	PT	F		
6	65			N	PT	F		
7	65			N	PT	F		
8	64			N	PT	F		
9	61			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

R ed b al):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

REAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

REAM ID: OTR pb-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

SLOPE (BACKSITE)	0.8 %	Suppl. Slope (Backsite)	. %	BEARING (BACKSITE)	184 °	SUPPL. BEARING (BACKSITE)	°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

LOC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
TR	5.2	50	RS	100	
	10.4	55	GF	10	
TR	15.6	18	CB	10	
T	20.6	0	CB	20	

SUBSTRATE SIZE CLASS CODES

; = BEDROCK (SMOOTH) *(LARGER THAN A CAR)
l = BEDROCK (ROUGH) *(LARGER THAN A CAR)
. = BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
3 = COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
C = COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
F = FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
A = SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
M = SILT/CLAY.MUCK (NOT GRITTY)
/D = WOOD (ANY SIZE)
T = OTHER (COMMENT)

II. BANK MEASUREMENTS

LOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
FT	75 °		
GT	35 °		

BANKFULL WIDTH	21.5 m	
INCISED HT.	2.4 m	
BANKFULL HT.	10.5 m	
WETTED WIDTH	20.6 m	
BAR WIDTH	. m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	12		CENR	14	
CENL	13		LFT	17	
CENDWN	15		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 50
RGT 30

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	1	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD		P	
LOGGING OPERATIONS		0	
MINING ACTIVITY			
Bridge			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 12 71

STREAM ID: OS3-RFm-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	57			N	PT	F		
1	46			N	PT	F		
2	60			N	PT	F		
3	60			N	PT	F		
4	57			N	PT	F		
5	34			Y	GL			
6	30			N	GL			
7	36			N	GL			
8	48			N	PT	F		
9	50			N	PT	F		

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: >1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	III			II		
0.3 - 0.6 m	II			I		
0.6 - 0.8 m	I					
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

REAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

REAM ID: ____ S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): D

SLOPE (BACKSITE)	0.2 %	SUPPL. SLOPE (BACKSITE)	___ %	BEARING (BACKSITE)	170°	SUPPL. BEARING (BACKSITE)	___ °

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

LOC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	30	
R	3.7	58	RS	100	
	7.4	50	RS	100	
TR	11.1	47	RS	100	
	14.8	0	GC	85	

SUBSTRATE SIZE CLASS CODES

- = BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- = BEDROCK (ROUGH) *(LARGER THAN A CAR)
- = BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- = COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- = COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- = FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- = SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- = SILT/CLAY.MUCK (NOT GRITTY)
-) = WOOD (ANY SIZE)
- = OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH	B		
PARK/LAWN	0		
ROW CROPS			
PASTURE/RANGE/HAY FIELD		P	
LOGGING OPERATIONS		0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

LOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	15°		
T	60°		

NKFULL WIDTH	25.7 m	
ISED HT.	2.8 m	
NKFULL HT.	0.6 m	
ETTED WIDTH	14.8 m	
R WIDTH	___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	15		CENR	17	
CENL	16		LFT	10	
CENDWN	14		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 50 RGT 30

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 02

STREAM ID: 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): D

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	65			N	PT	F		
1	74			N	PT	F		
2	78			N	PT	F		
3	76			N	PT	F		
4	76			N	PT	F		
5	85			Y	PT	F		
6	95			N	PT	F		
7	98			N	PT	F		
8	96			N	PT	F		
9	97			N	PT	F		

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: >1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	~~IIII~~ ~~IIII~~ II			~~IIII~~		
0.3 - 0.6 m		I		III	I	
0.6 - 0.8 m				II	I	
> 0.8 m	I					

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT; F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

TREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

TREAM ID: 05-DRM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

SLOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
6.7 %	___ %	177°	___ °

. SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

LOC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	20	FN	100	
TR	4.875	91	RS	100	
R	9.75	103	RS	100	
TR	14.625	85	RS	100	
T	19.5	0	FN	100	

SUBSTRATE SIZE CLASS CODES

- = BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- = BEDROCK (ROUGH) *(LARGER THAN A CAR)
- = BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- = COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- C = COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- F = FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- A = SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- = SILT/CLAY.MUCK (NOT GRITTY)
- D = WOOD (ANY SIZE)
- T = OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	2	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
BARREN, BARE DIRT OR DUFF	1	1	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

LOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
T	125°	0.3	
GT	78°		

ANKFULL WIDTH	19.9 m	
ICISED HT.	2.6 m	
ANKFULL HT.	0.6 m	
VETTED WIDTH	19.5 m	
AR WIDTH	___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	17	
CENL	17		LFT	17	
CENDWN	17		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 30 RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Dunn Creek

DATE OF VISIT: 9 / 27 / 0

STREAM ID: 053-RFm-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	105			N	PT	F		
1	101			N	PT	F		
2	96			N	PT	F		
3	98			N	PT	F		
4	98			N	PT	F		
5	90			Y	PT	F		
6	64			N	PT	F		
7	85			N	PT	F		
8	108			N	PT	F		
9	125			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	II			I		
0.3 - 0.6 m	III	I		III	I	
0.6 - 0.8 m						
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Re d by ___ d): ___

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

EAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

EAM ID: 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

SLOPE (BACKSITE)	0.1 %	SUPPL. SLOPE (BACKSITE)	. %	BEARING (BACKSITE)	180 °	SUPPL. BEARING (BACKSITE)	°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

LOC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	98	
	5.2	66	CB	80	
	10.4	102	CB	10	
	15.6	115	RS	100	
	20.8	40	FN	100	

SUBSTRATE SIZE CLASS CODES

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- WOOD (ANY SIZE)
- OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
BARREN, BARE DIRT OR DUFF	1	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

LOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	45 °		
	140 °	0.50	

(FULL WIDTH	21.9 m	
ED HT.	3.6 m	
(FULL HT.	0.6 m	
TED WIDTH	20.8 m	
WIDTH	m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	17	
CENL	17		LFT	17	
CENDWN	17		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 25 RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 127 ~~05~~ 04

STREAM ID: 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	120			N	PT	F		
1	116			N	PT	F		
2	115			Y	PT	F		
3	130			N	PT	F		
4	126			N	PT	F		
5	125			N	PT	F		
6	109			N	PT	F		
7	125			N	PT	F		
8	90			N	PT	F		
9	54			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	~~IIII~~					
0.3 - 0.6 m	II					
0.6 - 0.8 m	II	I				
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

reviewed by (initial) ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

): 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

PE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
1.0 %	___ %	179 °	___ °

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	CB	80	
	0.95	5	GC	80	
	1.9	5	CB	80	
	2.85	3	CB	80	
	3.8	0	CB	30	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
ILT/CLAY,MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	2	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER: 0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)

	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
BARREN, BARE DIRT OR DUFF	3	2	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)	LEFT BANK	RIGHT BANK	FLAG
WALL/DIKE/REVETMENT/RIPRAP	C	C	
BUILDINGS	0	4	
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY	0	0	

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	7 °		
	25 °		

FULL WIDTH	25.8 m	
D HT.	2.9 m	
FULL HT.	0.6 m	
ED WIDTH	3.8 m	
	___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	13		CENR	17	
CENL	15		LFT	6	
CENDWN	17		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 25 RGT 50

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 02

STREAM ID: _ _ _ _ _ S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	44			N	PB	B		
1	28			N	PB	B		
2	5			N	RI			
3	5			N	RI			
4	9			N	RI			
5	20			N	GL			
6	14			N	GL			
7	48			N	PT	F		
8	78			N	PT	F		
9	135			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length) Tally Between This Transect and Next

Diameter: Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	1111 1111 1	1				
0.3 - 0.6 m	111					
0.6 - 0.8 m	1	1				
> 0.8 m						

Channel Unit Codes

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Re d by l):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

EAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

EAM ID: DS3-PFenicals

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

SLOPE (BACKSITE)	0.7 %	Suppl. Slope (Backsite)	. %	BEARING (BACKSITE)	191 °	SUPPL. BEARING (BACKSITE)	°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

LOC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	RS	100	
	5.75	115	RS	100	
	11.5	140	RS	100	
	17.25	100	GF	80	
	23.0	0	RS	100	

SUBSTRATE SIZE CLASS CODES

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- WOOD (ANY SIZE)
- OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	2	1	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY	0	0	
Bridge	0	0	

II. BANK MEASUREMENTS

LOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	48 °		
	45 °		

KFULL WIDTH	23.7 m	
IED HT.	2.8 m	
KFULL HT.	0.6 m	
TED WIDTH	23.0 m	
WIDTH	10.0 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	10		CENR	10	
CENL	8		LFT	17	
CENDWN	17		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 20

RGT 15

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 03

STREAM ID: OS2-RFM-01S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	150			N	PT	F		
1	147			N	PT	F		
2	146			N	PT	F		
3	161			N	PT	F		
4	170			N	PT	F		
5	174			N	PT	F		
6	165			N	PT	F		
7	160			N	PT	F		
8	154			N	PT	F		
9	174			Y	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	1HT	1		111	1	
0.3 - 0.6 m				1		
0.6 - 0.8 m				1		
> 0.8 m				1		

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Rev: by ( ):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

AM ID: 053-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.6 %	___ %	155 °	___ °

Substrate Measurements Cross-Sectional Information

oc.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	0	0	FN	100	
	6	135	FN	100	
	12	122	GC	95	
	18	83	GC	80	
	24	0	FN	100	

Substrate Size Class Codes

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- = WOOD (ANY SIZE)
- OTHER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	0	
Macrophytes	0	
Woody Debris > 0.3 m (Big)	1	
Brush/Woody Debris < 0.3 m (Small)	1	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. Visual Riparian Estimates

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	1	1	
Small Trees Trunk < 0.3 m DBH	1	2	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	1	2	
Non-woody Herbs, Grasses, & Forbs	2	3	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	1	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
Barren, Bare dirt or duff	2	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap	0	0	
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	P	P	
Logging Operations	0	0	
Mining Activity			
Bridge			

II. Bank Measurements

oc.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	75 °		
	75 °		

Full Width	24.2 m	
ed Ht.	0.6 m	
(Full Ht.	3.2 m	
ted Width	24.0 m	
Width	___ m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	6		CenR	15	
CenL	15		Lft	17	
CenDwn	14		Rgt	17	

Flag Codes: K=no measurement made; U=suspect

Riparian Width LFT 20

RGT 25

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 03

STREAM ID: 053-RFH-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	138			Y	PT	F		
1	121			Y	PT	F		
2	115			Y	PT	F		
3	114			N	PT	F		
4	130			N	PT	F		
5	125			N	PT	F		
6	146			N	PT	F		
7	150			Y	PT	F		
8	150			N	PT	F		
9	151			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 𝍸 I	III		III		
0.3 - 0.6 m	𝍸 II	I		I		
0.6 - 0.8 m	𝍸					
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Rev 1 by):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 04

AM ID: 053-RFn1-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

SLOPE (BACKSITE)	1.0 %	Suppl. Slope (Backsite)	%	BEARING (BACKSITE)	134°	SUPPL. BEARING (BACKSITE)	°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
	5.25	53	GF	80	
	10.5	82	GC	90	
	15.75	138	GC	95	
	21	22	FN	100	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	2	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
BARREN, BARE DIRT OR DUFF	1	1	

HUMAN INFLUENCE	O = NOT PRESENT, B = ON BANK C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	O	O	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	O	C	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	38°		
	140°	0.3	

FULL WIDTH	22.6 m	
ED HT.	2.7 m	
FULL HT.	0.6 m	
ED WIDTH	21.0 m	
WIDTH	. m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	8		CENR	10	
CENL	13		LFT	17	
CENDWN	6		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 15
RGT 20

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 27 / 00

STREAM ID: 053-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/fine sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	140			N	PT	F		
1	142			N	PT	F		
2	118			N	PT	F		
3	120			N	PT	F		
4	143			N	PT	F		
5	144			N	PT	F		
6	152			N	PT	F		
7	174			N	PT	F		
8	166			N	PT	F		
9	170			N	PT	F		

Large Woody Debris (> 10 cm small end diam.: >1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 II	I				
0.3 - 0.6 m	𝍸	I				
0.6 - 0.8 m	III					
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Rev ____ by (____): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AM NAME: Drum Creek

DATE OF VISIT: 9 12 7 04

AM ID: 053-PFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): K

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	____ %	BEARING (BACKSITE)	130 °	SUPPL. BEARING (BACKSITE)	____ °

UBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

DC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	20	SA	100	
	4.05	66	GF	70	
	8.1	145	GF	50	
	12.15	147	RS	100	
	16.2	0	FN	100	clay pan

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	1	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	0	
SMALL TREES TRUNK < 0.3 M DBH	1	1	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	1	
BARREN, BARE DIRT OR DUFF	2	3	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	135 °	0.31	
	40 °		

ULL WIDTH	18.9 m	
D HT.	3.5 m	
ULL HT.	0.6 m	
ED WIDTH	16.2 m	
VIDTH	____ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	2		CENR	3	
CENL	13		LFT	17	
CENDWN	10		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 15
RGT 15

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / / 0

STREAM ID: __ __ __ __ __ S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE			Reach Length (m)			Increment (m)		
STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to <0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

RECEIVED
FEB 1 2005

KDHE/BEFS
IDENTIFICATION BENCH SHEET

STATION 057-RFM-04 STREAM/LOCATION Drum Cr. 9 Pools
DATE COLLECTED 10-1-04 DATE EXAMINED 12-14,15,16-04 DETERMINED BY
COLLECTOR(S) TYPE OF SAMPLE (EFFORT)

RECEIVED
APR 0 5 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

	KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA						
Dubiraphia	✓	X				1
Stenelmis	✓			X		4
Coptolatus	✓	X				1
Hydropsyche	✓	X				1
Optioservus	✓	X				3
Helodidae	✓			X		2
Berosus	✓			X		2
Deltodytes	✓	X				1
DIPTERA						
Chironomus	✓			X		14
Cryptochironomus	✓			X		2
Glyptotendipes	✓			X		6
Micrapsectrotendipes	✓			X		12
Stictochironomus	✓			X		7
Polypedilum	✓			X		9
Procladius	✓			X		25
Abbabesmyia	✓			X		1
~~Rheumatobates~~ Rheotanytarsus sp				X		1
Cladopelma	✓			X		6
Culicoides	✓			X		1
Tabanus - Tabanidae	✓			X		1
Chaoborus - Chaoboridae	✓			X		10
EPHEMEROPTERA						
Caenis	✓		X			46
Callibaetis	✓		X			5
Stenacron interpunctatum	✓		X			5
Stenonema femoratum	✓		X			3
HEMIPTERA						
Rheumatobates	✓	X				2
Trichocorixa	✓	X				33

	KBS CODE #	A #	N #	L #	P #	TOTAL #
MEGALOPTERA						
Sialis	✓			X		
ODONATA						
Argia	✓		X			1
Enallagma	✓		X			31
Libellulidae (early instar)	✓		X			1
PLECOPTERA						
TRICHOPTERA						
CRUSTACEA						
Hyalella azteca	✓	X				7
GASTROPODA Cont'd						
Physella	✓	X				1
Planorbella	✓	X				1
HIRUDINEA		X				
OLIGOCHAETA	✓	X				4
PELECEPODA						
Musculium transversum	✓	X				1
TURBELLARIA						
Dugesia ✓		X				1
OTHER						
Isotomus		X				
Ancylidae	✓	X				2

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE
N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE

057-RFM-04 10/01/04
Drum Creek
Montgomery co.
T32S R17E Sec 7 NE/4 SE/4

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

HABITAT DEVELOPMENT INDEX

Date: 1 Oct 2004 Collector(s): E Johnson, K. Huse

Hydrologic Unit: 057-RFM-04

Stream Name: Drum Creek Stream Code No. MG

Legal Description: NE /4, SE /4, Sec. 7, T 32S, R 17E, MG CO.

Macrohabitat Type (s)

Fill in macrohabitat type (s) – riffle (RF) run (RN), and/ or pool (P) which are sampled in the 50 m. site. If all 3 macrohabitat types are present (and sampled), score each. If the site is predominately runs with some pools, then score 2 runs and 1 pool. If only runs are present, score 3 different runs. Multiple samples of a single macrohabitat type should be properly identified (e.g. RN #1, RN #2, RN #3).

Macrohabitat Type (s)														
Minimum Habitat Score	Score = 3 for each macrohabitat sample collected in the 50 m. site.													
Average Depths	Riffles:	< 5 cm.	= 0	5 - 10 cm.	= 1	> 10 cm.	= 2							
	Runs:	< 15 cm.	= 0	15 - 45 cm.	= 1	> 45 cm.	= 2							
	Pools:	< 30 cm.	= 0	30 - 60 cm.	= 1	> 60 cm.	= 2							
Velocity Range (m./sec.)	Riffles:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Runs:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Pools:	< 0.1	= 0	≥ 0.1	= -1									
Riffle Substrate Score	% Cobble: Score A							Score A						
	0 - 10 %	= 0	11 - 25 %	= 1	26 - 50 %	= 2	> 50 %	= 3						
	If % cobble is ≤ 10 % and boulders or bedrock are present, Score A = 1.													
	% Embeddedness: Score B							Score B						
	0 - 25 %	= 0	26 - 75 %	= -1	> 75 %	= -2								
	Record score in riffle column (s) only if Score A + Score B > zero.													
Organic Detritus and Debris	None = 0	Sparsely scattered bits of detritus = 1	Large leaf packs or large amounts of scattered detritus = 2	Detritus, debris, logs = 3										
	P1	P2	P3											
	3	3	3											
	0	1	0											
	0	0	0											
	2	2	2											

(OVER)

Algal Masses	No algal masses = 0		Algal masses = 1	0	0	1
Macrophytes	None = 0	Few or Small Patches = 1	Large areas of dense growth = 2	1	0	1
Bank Vegetation	None = 0	Small amounts or thin = 1	Submerged tree roots or thick vegetation = 2	1	0	0
				Total Score	Total Score	Total Score
Total Scores	Sum each column and enter sums into Total Score boxes.			7	6	7
HDI Score	Compute HDI by summing the Total Scores for each unique macrohabitat sampled. If a macrohabitat was sampled more than once, only use the highest Total Score for that macrohabitat to compute the HDI Score. Examples: 1 P and 2 RN were sampled, HDI Score = P sample Total Score + RN sample with the highest Total Score. If one macrohabitat was sampled and scored three times, HDI Score = column with highest Total Score.			HDI Score 7		

TRANSECT SAMPLING: # POOLS 9 # RIFFLES 0

ORGANIC DETRITUS includes seeds, pods, leaves, small bark, twigs, leaf fragments accumulated in packs.

ORGANIC DEBRIS includes larger sticks, bark, and logs.

ALGAL MASSES should be sampled if they provide habitat and not just food.

MACROPHYTES include floating-leaved, emergent, or submerged aquatic plants.

BANK VEGETATION includes submerged terrestrial plants, tree limbs, and roots.

Corbicula Released: _____

Crayfish Released: _____

FORM #1
FORM FOR DOCUMENTING A SAMPLE SITE

1a.Storet # 057-RFM-04 1b.Random map #_____ 2. Date: 04/10/01
yr/ mo/ day

3.USGS Quadrangle Name _____

4.State Code KS 5.County Code MG

6.Waterbody Type ____ 7.Ecoregion Code _____

8.Waterbody Name: Drum Creek Sec 7 NE/4 SE/4 T32S R17E

9.Reference Location (Narrative and/or legal description of closest landmark)
5050 Rd. West from Cherryvale, KS to 5500 Rd - turn south
~ 0.5 mile to pasture gate, across pasture to Creek site

10.Description of site marker (e.g., re-bar, PVC pipe, etc.):

11.Distance and direction of site marker relative to reference location (e.g., upstream-downstream, direction; left bank or right bank, etc.):

	longitude	latitude
12.X-site lat/long (from map):	095.579733333	37.272983333
13.X-site lat/long measured:	W095° 34.784'	N37° 16.379'

14.X-Site lat/long by GPS or map interpolation (G or M): G

15.GPS file name: ____/____/____

16.Difference between map X-site and measured X-site (in seconds): lat:_____ long:_____

17.Avg. Channel Width: 20.5 meters HDI = 20

18.Sample Site Length: 300 meters

19.Sample Site Length based on: 1)width X 40; 2)min.(150m) or 3)max.(300m) (circle one)

20.Stream order: _____ 21. stream discharge (CFS): Ø

22.Landowner Name, Address, phone #: Marilyn Arthur-Flanders
620-336-2388 730 E 6th St. Cherryvale, KS 67335-2316

23.Contact method (T) P, W (circle one)

24.site photo taken: (Y) N 25. Managed Fishery: Y (N)

26. Land Use in area and 27.disturbances observed in the area (see reverse side of form to record information for 26 and 27)
information (see reverse side of this form)

LAND USE & DISTURBANCES OBSERVED (INTENSITY: BLANK = NOT OBSERVED, L = LOW, M = MODERATE, H = HEAVY):

16.

RESIDENTIAL	RECREATIONAL	AGRICULTURAL	INDUSTRIAL	STREAM MANAGEMENT
L Residences	__ Parks, Campgrounds	__ Cropland	M Industrial Plants *	__ Liming
__ Maintained Lawns	__ Primitive Parks, Camping	m Pasture	__ Mines/Quarries	__ Drinking Water Tap
__ Construction	__ Trash/Litter	M Livestock	__ Oil/Gas Wells	__ Angling Pressure
L Pipes, Drains	M Surface Films, Scums, or Slicks	__ Orchards	__ Power Plants	__ Dredging
__ Dumping		__ Poultry	__ Logging	__ Channelization
L Roads			__ Evidence of Fire	__ Water Level Fluctuations
__ Bridge/Culverts			__ Odors	__ Fish Stocking
			__ Commercial	

17.

26. NOT USED

27.
- L FOREST
- m GRASSLAND (PRAIRIE)
- __ SWAMP
- __ OTHER

* Cherryvale sewage treatment downstream of treatment ponds

28. WEATHER CONDITIONS (Circle)

Cloud Cover	< 5%	5-25%	25-50%	50-75%	>75%
Precipitation	None	Light	Moderate	Heavy	
Previous Precipitation (24 H)	None	Light	Moderate	Heavy	
Air Temperature	20 (°C)				

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

WATER CHEMISTRY

Date: 10-1-04 Data Collector(s): E. Johnson, R. Hose

Hydrologic Unit: 057-RPm-04

Stream Name: Drum Creek Stream Code No. ___

Legal Description: NE /4, SE /4, Sec. 7, T 32S, R 17E, Wilson Cou

Air Temperature (°C): 20.0 Time of Day: Begin 7:35 a.m./p.
End 8:34 a.m./p.

METHODS

1. Hach Spectrophotometer
2. Digital Titration
3. D.O. Meter
4. Conductivity Meter
5. Thermometer
6. pH Meter
7. pH Pocket Tester
8. Other (specify)

PHYSICAL VARIABLES

	Measure	Method
Water Temperature(°C):	18.9	4
Conductivity (micro Siemens):	572	4
Turbidity (~~FTUs~~): FAU	45	1
*TDS (mg/l):	278	4
Salinity (‰)	0.3	4

CHEMICAL VARIABLES

	Measure	Method
Dissolved oxygen (mg/l): 3.23	3.1, 3.1, 3.5	2
pH:	7.9	7
Total Alkalinity (mg/l as $CaCO_3$):	147	2
Chlorides (mg/l):	30	2
Ammonia (mg/l):	0.06	1
Nitrates (mg/l):	0.1	1 *read backwards
Phosphorus, Reactive (mg/l):	0.35	1
*Sulfates (mg/l):	—	—
*Total Hardness (mg/l as $CaCO_3$):	—	—

*Optional IT parameters

FORM #2
FISH DATA FORM

ELECTRO-FISHED METHOD: BP - TB - B.

SITE # 057-RFm-04 DATE: 10 / 1 / 04 BPJ @ SAMPLE REP: Y or N

ELECTROFISHING TIME (SEC.): 4710 SEINING TIME (MIN.): 23:52

% OF TOTAL SAMPLE SITE: ELECTRO-FISHED: 70 % SEINED: 70

TOTAL AREA OF SAMPLE SITE: 6150 SQ. M. % OF SAMPLE SITE WADEABLE: 70

TOTAL SAMPLE VOL. .70 GAL. SUB-SAMPLE VOL. _____ GAL.

	# OF GABLEHOUSE SPECIES / SIZE*							
SPECIES COMMON NAME	S	Q.	P	M	T	JUVENILE	ADULT	TOTAL # OF SPECIMENS
Longnose gar 23.6	14.4	26 II					II	2
Common carp 7.9	8.4	15.1	18.9 II ~~IIII~~	24.8 I	31.1		~~IIII~~ III	8
River carpsucker 11.8	6.5	9	12	15 ~~IIII~~	18		~~IIII~~ I	6
Smallmouth buffalo 15	8.2 . 1	14.8 ~~IIII~~ IIII	18.4 I	24.2	30.3		~~IIII~~ ~~IIII~~ I	11
Bigmouth buffalo 9.8	9.7	17.5 IIII	21.8 I	28.6	35.9		~~IIII~~	5
Black buffalo 15	9	15 II	20 II	26	32		IIII	4
gizzard shad 7.9						I		1
Channel catfish 9.8	9.4 I	17	21.3 II	27.9	35		III	3
Flathead catfish 13.8	8.8	15.8	19.8 I	26.0 II	32.6		III	3
Green sunfish 3.9	3 I ~~IIII~~	5.3	6.6			~~IIII~~ II	IIII	12
Warmouth 3	2.4 I	4.3 IIII	5.3 I	I			~~IIII~~ II	7
Bluegill 4.9	3 III ~~IIII~~	5.4 III	6.8			~~IIII~~ ~~IIII~~	~~IIII~~ IIII	19
Longear sunfish 2	2.4 ~~IIII~~ ~~IIII~~ III	4.3 II	5.3				~~IIII~~ ~~IIII~~ ~~IIII~~	15
Freshwater drum 9.8	6.3 I	11.3 I	14.2 III	18.6	23.3		~~IIII~~	5
Lg mouth bass 4.7	6.5 III	11.6 II	14.6				~~IIII~~	5
Orangespotted Sunfish 1.4	2.4 II	4.3	5.3				~~IIII~~	5
Logperch						I	I	2
Brook silverside							~~IIII~~	5
Golden redhorse						I		1
W. mosquitofish							~~IIII~~ IIII	9
Orangethroat darter							II	2

COMMENTS: Bluntnose minnow I A 1 [1] ✓

Shorthead redhorse 13.5" M-adult [1] ✓

E# 057-RFM-04

REAM Drum Creek

OUNTY Montgomery

ATE 10 / 1 / 04

NO measureable flow

#	Distance From Initial Point	WIDTH STREAM WIDTH / 30	DEPTH	REVO-LUTIONS	SECONDS 40 OR 60	VELOCITY REVO. / SECONDS	AREA WIDTH X DEPTH	DISCHARGE VELOCITY X AREA
1						Ø		Ø
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

TOTAL: 0 CFS

Kansas State University - Salina
GPS Field Data Record

Date	: 10/1/04	Project Name	: Drum Creek
Town	:	Latitude	: N 37° 16.379'
County	: Montgomery	Longitude	: W095° 34.784'
Site Name	: 057-RFM-04	Elevation	: 782 ft.
File Name	:	Time	: 8:00 am
Surveyed By	:	Weather	: partly cloudy w 50%
Surveyed By	:	PDOP	: accuracy 23 ft.

Survey Results

Marker Type : F

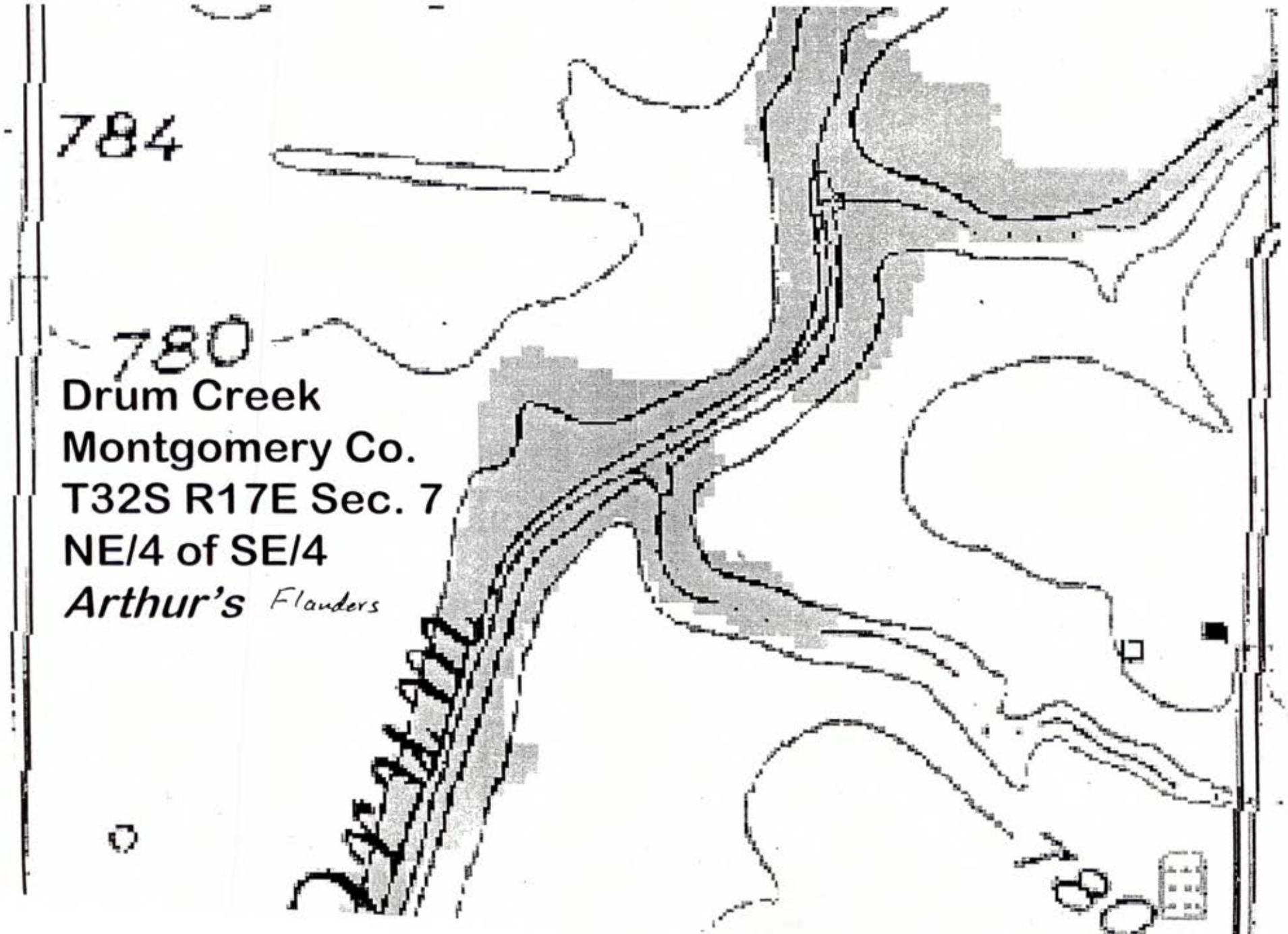
Recovered Damaged Destroyed Not Recovered

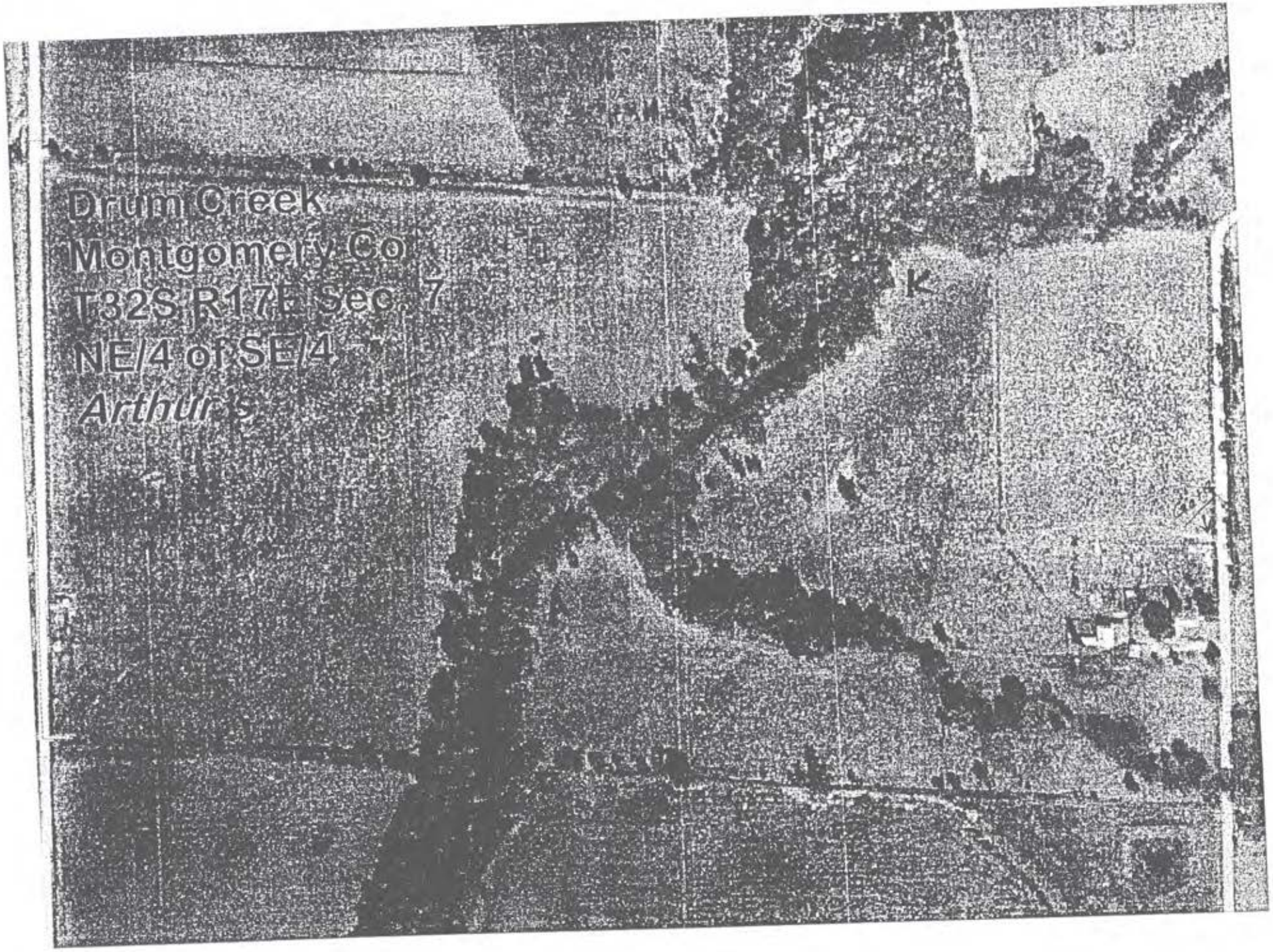
Marker Description: left bank

Instrument Results

Instrument Name	: Garmin etrex	Instrument S/N	:
Latitude	:	Antenna S/N	:
Longitude	:	Available Sats.	: 5
Elevation	:	Locked Satellites	: 5
Setup Time	: 8:00 am	Take Down Time	: 8:03 am

Comments :


784
780
Drum Creek
Montgomery Co.
T32S R17E Sec. 7
NE/4 of SE/4
Arthur's Flanders


Drum Creek
Montgomery Co
T32S R17E Sec 7
NE/4 of SE/4
Arthur's
K

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 1~~03~~ 04

ID: 057-RFm-04-S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

LOPE (BACKSITE)	___.___ %	Suppl. Slope (Backsite)	___.___ %	BEARING (BACKSITE)	___ °	SUPPL. BEARING (BACKSITE)	___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	20	FN	100	
	4.625	46	FN	100	
	9.25	107	CRC	20	
	13.875	113	CB	10	
	18.5	0	BL	20	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
* WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	2	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	0	
SMALL TREES TRUNK < 0.3 M DBH	1	1	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	0	
NON-WOODY HERBS, GRASSES, & FORBS	2	1	
BARREN, BARE DIRT OR DUFF	1	3	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH	B		
PARK/LAWN	0		
ROW CROPS	0		
PASTURE/RANGE/HAY FIELD	P	P	

II. BANK MEASUREMENTS

OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	135 °	0.95	
	45 °		

FULL WIDTH	19.3 m	
ED HT.	3.2 m	
KFULL HT.	0.5 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	13		CENR	15	
CENL	16		LFT	17	
CENDWN	17		RGT	15	

Flag Codes: K = no measurement made; U = suspect

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03

STREAM ID: OS7-Rrm-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): 1

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3.00

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/fine sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	122			N	PT	F		
1	104			N	PT	F		
2	110			N	PT	F		
3	100			N	PT	F		
4	109			N	PT	F		
5	115			N	PT	F		
6	103			N	PT	F		
7	100			N	PT	F		
8	110			N	PT	F		
9	148			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to <0.3 m	III			~~III~~		
0.3 - 0.6 m	II			III		
0.6 - 0.8 m				II		
> 0.8 m				I		

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

wed ' ' '

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 2003

STREAM ID: 057-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): 3

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3.00

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	158			N	PT	F		
1	163			N	PT	F		
2	162			N	PT	F		
3	155			N	PT	F		
4	156			N	PT	F		
5	148			N	PT	F		
6	146			N	PT	F		
7	152			N	PT	F		
8	152			N	PT	F		
9	153			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	~~IIII~~ ~~IIII~~	I				
0.3 - 0.6 m	~~IIII~~ I	II		III	I	
0.6 - 0.8 m	III	I		III	I	
> 0.8 m					I	

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

ME: Drum Creek — DATE OF VISIT: 10 / 1 / 04

: 057 - RFM-04S — TEAM ID (circle): 1 2 3 4 5 6 7 8 — Transect Station (A to K): C

PE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.2 %	___.___ %	222°	___°

RATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
	5.45	107	GF	10	
	10.9	140	RS	100	
	16.35	147	RS	100	
	21.8	0	FN	100	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	65°		
	64°		

ULL WIDTH	22.3 m	
O HT.	3.2 m	
ULL HT.	0.5 m	
	21.8 m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	2	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	3		CENR	14	
CENL	5		LFT	17	
CENDWN	3		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 10

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	1	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	C	P	
LOGGING OPERATIONS	0	0	

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1

STREAM ID: 057-R-F01-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A

THALWEG PROFILE — Reach Length (m) 30 — Increment (m) 3.00

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	154			N	PT	F		
1	145			N	PT	F		
2	136			N	PT	F		
3	125			N	PT	F		
4	125			N	PT	F		
5	112			N	PT	F		
6	95			Y	PT	F		
7	77			Y	PT	F		
8	59			Y	PT	F		
9	37			Y	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 ||	|||		𝍸		
0.3 - 0.6 m	𝍸 ||	||		||	|	
0.6 - 0.8 m	|||	|		||	|	
> 0.8 m	|	|		||		

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AME: Drum Creek

DATE OF VISIT: 10 / 1 / ~~03~~ 02

): 057-RFM-04/S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): D

PE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	___.__ %	BEARING (BACKSITE)	225 °	SUPPL. BEARING (BACKSITE)	___ °

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GF	95	
	6.425	28	GF	80	
	12.85	4	GC	10	
	19.275	20	GC	70	
	25.7	0	GF	98	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
INE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	2	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	0	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH	C		
PARK/LAWN	P		
ROW CROPS			
PASTURE/RANGE/HAY FIELD	C	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			

II. BANK MEASUREMENTS

C.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	58 °		
	50 °		

FULL WIDTH	26.4 m	
D HT.	2.9 m	
FULL HT.	0.6 m	
ED WIDTH	25.7 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	0		CENR	4	
CENL	4		LFT	17	
CENDWN	0		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 10 RGT 15

Reviewed by (initial): ____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1

STREAM ID: 057-12Fm-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A K

THALWEG PROFILE — Reach Length (m) 30 — Increment (m) 3.00

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form code	Side Channel (SC)?	Comments
0	28			N	PB	F		
1	23			Y	GL			
2	16			N	GL			
3	7			N	GL			
4	9			N	GL			
5	7			N	GL			
6	10			N	GL			
7	13			N	GL			
8	15			N	GL			
9	20			N	GL			

Large Woody Debris (> 10 cm small end diam.: > 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m	11			1		
0.6 - 0.8 m	11			1		
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 1993

ID: 057-RFm-cu1 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

LOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.1 %	___.___ %	219°	___ ___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	30	
	3.025	7	GF	70	
	6.05	3	GC	80	
	9.075	12	GF	70	
	12.1	20	GC	80	

SUBSTRATE SIZE CLASS CODES

EDROCK (SMOOTH) *(LARGER THAN A CAR)
EDROCK (ROUGH) *(LARGER THAN A CAR)
OULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	2	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	3	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	7°		
	30°	0.15	

FULL WIDTH	28.1 m	
ED HT.	2.7 m	
FULL HT.	0.6 m	
TED WIDTH	12.1 m	
WIDTH	1.6 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	15		CENR	17	
CENL	17		LFT	7	
CENDWN	17		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20
RGT 25

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03

STREAM ID: OST-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	20		1.6	N	GL		Y	
1	14		2.3	N	GL		Y	
2	24			N	PT	F		
3	36			N	PT	F		
4	47			N	PT	F		
5	67			N	PT	F		
6	66			Y	PT	F		
7	64			N	PT	F		
8	75			N	PT	F		
9	75			Y	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to <0.3 m						
0.3 - 0.6 m	III	II		II		
0.6 - 0.8 m	III	I		I		
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (Initial):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03

ID: CST-RFM-04/S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	243°	SUPPL. BEARING (BACKSITE)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	70	
	5.85	22	GF	70	
	11.7	50	GC	90	
	17.55	65	FN	100	
	23.4	40	FN	100	

SUBSTRATE SIZE CLASS CODES

- BEDROCK (SMOOTH) *(LARGER THAN A CAR)
- BEDROCK (ROUGH) *(LARGER THAN A CAR)
- BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
- COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
- COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
- FINE GRAVEL (2 TO 16 MM) *(LADYBUG TO MARBLE)
- SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
- SILT/CLAY.MUCK (NOT GRITTY)
- WOOD (ANY SIZE)
- OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	2	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	2	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	1	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	10°		
	100°	0.13	

FULL WIDTH	26.3 m	
ED HT.	3.2 m	
FULL HT.	0.6 m	
TED WIDTH	23.4 m	
WIDTH	__.__ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	9		CENR	11	
CENL	4		LFT	17	
CENDWN	12		RGT	16	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 30

RGT 15

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03

STREAM ID: OS7-R Fin-04/S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m) 30 — Increment (m) 3.00

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	85			N	PT	F		
1	80			N	PT	F		
2	138			N	PT	F		
3	138			N	PT	F		
4	153			N	PT	F		
5	150			N	PT	F		
6	144			N	PT	F		
7	145			N	PT	F		
8	145			N	PT	F		
9	145			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to <0.3 m	~~IIII~~ 4			~~IIII~~ 11		
0.3 - 0.6 m	IIII			III		
0.6 - 0.8 m	I			II		
> 0.8 m	I					

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03 α

ID: OS7-RFin-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

SLOPE (BACKSITE)	0.2 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	230°	SUPPL. BEARING (BACKSITE)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	41	FN	100	
	6.1	123	RS	100	
	12.2	126	RS	100	
	18.3	143	RS	100	
	24.4	35	FN	100	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	3	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	2	1	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	1	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	P	C	
LOGGING OPERATIONS	0	0	

II. BANK MEASUREMENTS

DOC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	120°	2.0	
	130°	1.8	

BFULL WIDTH	25.4 m	
BED HT.	3.4 m	
BKFULL HT.	0.6 m	
WETTED WIDTH	24.4 m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	12		CENR	17	
CENL	15		LFT	17	
CENDWN	17		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 15

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 98

STREAM ID: 057-RFm-cxf S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K) 7

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	145			N	PT	F		
1	144			N	PT	F		
2	137			N	PT	F		
3	137			N	PT	F		
4	125			N	PT	F		
5	117			N	PT	F		
6	118			N	PT	F		
7	84			N	PT	F		
8	72			N	PT	F		
9	68			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length)
Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to <0.3 m	𝍸 𝍸			𝍸 𝍸 𝍸 𝍸 𝍸		
0.3 - 0.6 m	𝍸 I	I		𝍸		
0.6 - 0.8 m		III		II		
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

...wed ... (Initial):

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03 04

ID: CS7-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

SLOPE (BACKSITE)	0.8 %	Suppl. Slope (Backsite)	___.__ %	BEARING (BACKSITE)	226°	SUPPL. BEARING (BACKSITE)	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	0	30	GF	95	
	4.275	30	CB	60	
	8.55	40	GC	60	
	12.825	58	GF	90	
	17.1	30	FN	100	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
WOOD (ANY SIZE)
OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	0	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	1	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	1	
Undercut Banks	2	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	0	0	
Small Trees Trunk < 0.3 m DBH	1	1	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	1	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
Barren, Bare dirt or duff	1	1	

HUMAN INFLUENCE	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap	0	0	
Buildings	?	?	
Pavement	?	?	
Road/Railroad	?	?	
Pipes (inlet/outlet)	?	B	
Landfill/Trash	?	0	
Park/Lawn	?	?	
Row Crops	?	?	
Pasture/Range/Hay field	P	C	
Logging Operations	0	0	
Mining Activity	?	?	
Bridge	?	?	

II. BANK MEASUREMENTS

	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	120°	0.5	
	110°	0.5	

Full Width	18.5 m	
Bed Ht.	3.1 m	
Bankfull Ht.	0.6 m	
Wetted Width	17.1 m	
Width	___.__ m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	10		CenR	14	
CenL	4		Lft	15	
CenDwn	12		Rgt	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 15
RGT 5

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03

STREAM ID: OS7-R17m-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3.00

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	67			N	PT	F		
1	55			N	PT	F		
2	57			N	PT	F		
3	60			N	PT	F		
4	102			N	PT	F		
5	103			N	PT	F		
6	80			N	PT	F		
7	64			N	PT	F		
8	68			N	PT	F		
9	70			N	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m				~~IIII~~ I		
0.3 - 0.6 m				III		
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Revie... by (in...) ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

.M NAME: Drum Creek

DATE OF VISIT: 10 / 1 / ~~03~~ 04

.M ID: CS7-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

SLOPE (BACKSITE)	0.1 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	229°	SUPPL. BEARING (BACKSITE)	___°

UBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

OC.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	BL	80	
	4.3	89	RS	100	
	8.6	60	CB	70	
	12.9	27	FN	100	
	17.2	40	GF	70	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
* OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	3	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER: 0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)

	LEFT BANK	RIGHT BANK	FLAG
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	0	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	C	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	35°		
	120°	0.65	

KFULL WIDTH	17.7 m	
SED HT.	3.1 m	
IKFULL HT.	0.6 m	
TTED WIDTH	17.2 m	
I WIDTH	__.__ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	6		CENR	4	
CENL	14		LFT	17	
CENDWN	10		RGT	16	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 5
RGT 15

CHANNEL/RIPARIAN CROSS

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 11 / 13

STREAM ID: OS1-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3.00

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	92			N	PT	F		
1	87			N	PT	F		
2	74			N	PT	F		
3	60			N	PT	F		
4	46			N	PT	F		
5	44			N	PT	F		
6	52			N	PT	F		
7	82			N	PT	F		
8	104			N	PT	F		
9	115			N	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to <0.3 m				~~IIII~~		
0.3 - 0.6 m	II			III		
0.6 - 0.8 m				~~IIII~~		
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

.M NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 1993 04

.M ID: 057-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

SLOPE (BACKSITE)	0.2 %	SUPPL. SLOPE (BACKSITE)	__.__ %	BEARING (BACKSITE)	229°	SUPPL. BEARING (BACKSITE)	___°

UBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

...C.	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	95	
	4.25	94	RS	100	
	8.5	114	RS	100	
	12.75	107	RS	100	
	17.0	35	FN	100	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
= OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	2	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	0	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	1	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	2	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK; C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS			
PASTURE/RANGE/HAY FIELD	C	P	
LOGGING OPERATIONS	0	0	
MINING ACTIVITY			
Bridge			

II. BANK MEASUREMENTS

...OC.	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	30°		
	135°	0.65	

...(FULL WIDTH	18.2 m	
...ED HT.	3.0 m	
...KFULL HT.	0.6 m	
...TED WIDTH	17.0 m	
... WIDTH	__.__ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	8		CENR	9	
CENL	8		LFT	16	
CENDWN	0		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 5
RGT 15

CHANNEL/RIPARIAN CROSS

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 1 E 3

STREAM ID: OS7-RFn-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

THALWEG PROFILE — Reach Length (m): 30 — Increment (m): 3

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	114			N	PT	F		
1	117			N	PT	F		
2	117			N	PT	F		
3	116			N	PT	F		
4	111			N	PT	F		
5	115			N	PT	F		
6	110			N	PT	F		
7	110			N	PT	F		
8	109			N	PT	F		
9	107			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to <0.3 m				III		
0.3 - 0.6 m	I	II		I	III	
0.6 - 0.8 m		I			III	
> 0.8 m						

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initials): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

M NAME: Drum Creek

DATE OF VISIT: 10 / 1 / 03 ok

M ID: 057-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): K

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.1 %	__.__ %	215°	___°

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

C.	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	0	15	FN	100	
	6	106	RS	100	
	12	105	RS	100	
	18	108	RS	100	
	24	10	FN	100	

SUBSTRATE SIZE CLASS CODES

BEDROCK (SMOOTH) *(LARGER THAN A CAR)
BEDROCK (ROUGH) *(LARGER THAN A CAR)
BOULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
COBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
COARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
FINE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
SAND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
SILT/CLAY.MUCK (NOT GRITTY)
= WOOD (ANY SIZE)
* OTHER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	0	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	1	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	3	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

Riparian Vegetation Cover	Left Bank	Right Bank	Flag
0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)			
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	1	1	
Small Trees Trunk < 0.3 m DBH	2	2	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	1	
Non-woody Herbs, Grasses, & Forbs	2	3	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	1	1	
Non-woody Herbs, Grasses, & Forbs	2	2	
Barren, Bare dirt or duff	1	1	

Human Influence	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap	0	0	
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops			
Pasture/Range/Hay field	P	P	
Logging Operations	0	0	
Mining Activity			
Bridge			

II. BANK MEASUREMENTS

OC.	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	155°	0.35	
	130°	0.25	

KFULL WIDTH	24.5 m	
SED HT.	1.9 m	
IKFULL HT.	0.6 m	
TTED WIDTH	24.0 m	
R WIDTH	__.__ m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	14		CenR	16	
CenL	15		Lft	17	
CenDwn	16		Rgt	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 10
RGT 15

CHANNEL/RIPARIAN CROSS

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / / 03

STREAM ID: __ __ __ __ __ S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE | Reach Length (m) | Increment (m)

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

RECEIVED
APR 1 1 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

KDHE/BEFS
IDENTIFICATION BENCH SHEET

STATION 054-RFM-04 STREAM/LOCATION Drum Cr. 8 pools
DATE COLLECTED 9-28-04 DATE EXAMINED 12-30-04 - 3-4-05 DETERMINED BY E.F.
COLLECTOR(S) _____ TYPE OF SAMPLE (EFFORT) _____

RECEIVED
APR 0 5 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

	KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA						
Dubiraphia	✓			X		1
Stenelmis sexlineata	✓	X				8
S. sp.	✓			X		16
Berosus	✓			X		12
Helodidae	✓			X		1
Tropisternus	✓	X				1
DIPTERA						
Chironomus	✓			X		1
Dicrotendipes	✓			X		2
Polypedilum	✓			X		7
Atlabesmyia	✓			X		3
Procladius	✓			X		8
Stictochironomus	✓			X		4
Rheotanytarsus	✓			X		1
Paratendipes	✓			X		6
Cryptochironomus	✓			X		2
EPHEMEROPTERA						
Caenis	✓		X			97
Tricorythodes	✓		X			1
Hexagenia	✓		X			3
Callibaetis	✓		X			3
Centroptilum	✓		X			1
Stenacron interpunctatum	✓		X			1
Stenonema femoratum	✓		X			13
HEMIPTERA						
Mesovelia	✓	X				1
Trichocorixa	✓	X				1

	KBS CODE #	A #	N #	L #	P #	TOTAL #
MEGALOPTERA						
ODONATA						
Argia	✓		X			2
Enallagma	✓		X			
Macromia	✓		X			
Libellulidae (early instars)	✓		X			
Nasiaeschna pentacantha	✓		X			
PLECOPTERA						
TRICHOPTERA						
Helicopsyche borealis	✓			X		
CRUSTACEA						
Hyalella azteca	✓	X				
GASTROPODA						
Physella	✓	X				4
Ancylidae	✓	X				6
HIRUDINEA (small)	✓	X				1
OLIGOCHAETA	✓	X				8
PELECEPODA - Veneroida						
Musculium transversum	✓	X				44
Corbicula fluminea	✓	X				28
TURBELLARIA						
Dugesia	✓	X				23
OTHER						

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE
N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE
P#=NUMBER OF PUPAE IN SAMPLE

KDHE/BEFS

IDENTIFICATION BENCH SHEET

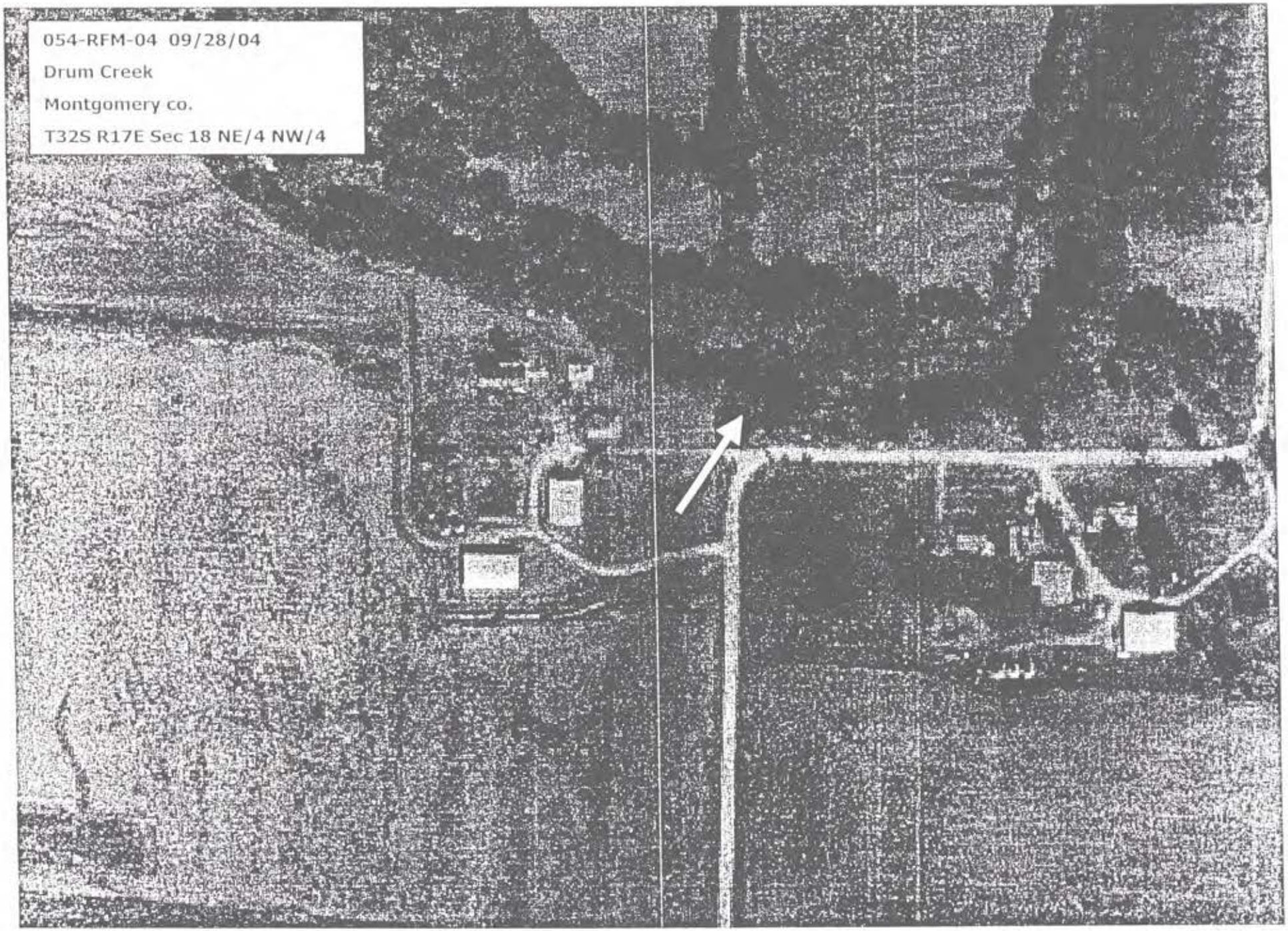
RECEIVED
FEB 1 7 2005
BUREAU OF ENVIRONMENTAL REMEDIATION

STATION 054-RFM-04 STREAM/LOCATION Drum Cr 1 riffle
DATE COLLECTED 9-28-04 DATE EXAMINED 12-27-28-04 DETERMINED BY [illegible]
COLLECTOR(S) _____ TYPE OF SAMPLE (EFFORT) _____

	KBS CODE #	A #	N #	L #	P #	TOTAL #		KBS CODE #	A #	N #	L #	P #	TOTAL #
COLEOPTERA							MEGALOPTERA						
Stenelmis sexlineata	✓	X				2							
S. sp.	✓			X		9							
Berosus	✓			X		1	ODONATA						
							PLECOPTERA						
DIPTERA													
Polypedilum	✓			X		8							
Tabytaisus	✓			X		1							
							TRICHOPTERA						
							Helicopsyche borealis	✓			X		
							CRUSTACEA						
EPHEMEROPTERA													
							GASTROPODA						
							HIRUDINEA						
							OLIGOCHAETA						
							PELECEPODA						
							Musculium transversum	✓	X				2
							Corbicula fluminea	✓	X				
							TURBELLARIA	✓					
HEMIPTERA							Dugesia		X				4
							OTHER						

KBS CODE#=KDHE KANSAS BIOSYSTEM TAXON UNIQUE CODE A#=NUMBER OF ADULTS IN SAMPLE
N#=NUMBER OF NYMPHS IN SAMPLE L#=NUMBER OF LARVAE IN SAMPLE
P#=NUMBER OF PUPAE IN SAMPLE

4,39 SC


054-RFM-04 09/28/04
Drum Creek
Montgomery co.
T32S R17E Sec 18 NE/4 NW/4

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

HABITAT DEVELOPMENT INDEX

Date: 09-28-04 Collector(s): E. Johnson, K. Hase

Hydrologic Unit: 054-RFM-04

Stream Name: Drum Creek Stream Code No. _____

Legal Description: NE /4, NW /4, Sec. 18, T 32S, R 17E, MG CO.

Macrohabitat Type (s)

Fill in macrohabitat type (s) – riffle (RF) run (RN), and/ or pool (P) which are sampled in the 50 m. site. If all 3 macrohabitat types are present (and sampled), score each. If the site is predominately runs with some pools, then score 2 runs and 1 pool. If only runs are present, score 3 different runs. Multiple samples of a single macrohabitat type should be properly identified (e.g. RN #1, RN #2, RN #3).

Minimum Habitat Score	Score = 3 for each macrohabitat sample collected in the 50 m. site.													
Average Depths	Riffles:	< 5 cm.	= 0	5 - 10 cm.	= 1	> 10 cm.	= 2							
	Runs:	< 15 cm.	= 0	15 - 45 cm.	= 1	> 45 cm.	= 2							
	Pools:	< 30 cm.	= 0	30 - 60 cm.	= 1	> 60 cm.	= 2							
Velocity Range (m./sec.)	Riffles:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Runs:	< 0.3	= 0	both < and ≥ 0.3	= 1									
	Pools:	< 0.1	= 0	≥ 0.1	= -1									
Riffle Substrate Score	% Cobble: Score A													Score A
	0 - 10 %	= 0	11 - 25 %	= 1	26 - 50 %	= 2	> 50 %	= 3						1
	If % cobble is ≤ 10 % and boulders or bedrock are present: Score A = 1.													
	% Embeddedness: Score B													Score B
	0 - 25 %	= 0	26 - 75 %	= -1	> 75 %	= -2								-1
	Record score in riffle column (s) only if Score A + Score B > zero.													
Organic Detritus and Debris	None = 0	Sparsely scattered bits of detritus = 1	Large leaf packs or large amounts of scattered detritus = 2	Detritus, debris, logs = 3										

Macrohabitat Type (s)

P	RF	RN
3	3	3
0	0	1
0	1	0
—	0	—
1	1	1

(OVER)

Algal Masses	No algal masses = 0		Algal masses = 1	1	1	1
Macrophytes	None = 0	Few or Small Patches = 1	Large areas of dense growth = 2	1	0	0
Bank Vegetation	None = 0	Small amounts or thin = 1	Submerged tree roots or thick vegetation = 2	1	1	1
				Total Score	Total Score	Total Score
Total Scores	Sum each column and enter sums into Total Score boxes.			7	7	7
HDI Score	Compute HDI by summing the Total Scores for each unique macrohabitat sampled. If a macrohabitat was sampled more than once, only use the highest Total Score for that macrohabitat to compute the HDI Score. Examples: 1 P and 2 RN were sampled, HDI Score = P sample Total Score + RN sample with the highest Total Score. If one macrohabitat was sampled and scored three times, HDI Score = column with highest Total Score.			HDI Score 21		

TRANSECT SAMPLING: # POOLS 8 # RIFFLES 1

ORGANIC DETRITUS includes seeds, pods, leaves, small bark, twigs, leaf fragments accumulated in packs.

ORGANIC DEBRIS includes larger sticks, bark, and logs.

ALGAL MASSES should be sampled if they provide habitat and not just food.

MACROPHYTES include floating-leaved, emergent, or submerged aquatic plants.

BANK VEGETATION includes submerged terrestrial plants, tree limbs, and roots.

Corbicula Released: 10

Crayfish Released: –

FORM #1
FORM FOR DOCUMENTING A SAMPLE SITE

1a.Storet # OS4-RFM-04 1b.Random map # _____ 2. Date: 04/09/28
yr/ mo/ day

3.USGS Quadrangle Name _____

4.State Code KS 5.County Code MT

6.Waterbody Type ____ 7.Ecoregion Code _____

8.Waterbody Name: Drum Creek NE/4 NW/4 Sec. 18 T32S R

9.Reference Location (Narrative and/or legal description of closest landmark)
Hwy 60 E. From Independence, KS to Hwy 169, turn North - turn left (west) onto 4800 St. to 5150 St. - North William Blaes property (end of road access Creek just north of tank batteries adjacent to crop field

10.Description of site marker (e.g., re-bar, PVC pipe, etc.):

11.Distance and direction of site marker relative to reference location (e.g., upstream-downstream, direction; left bank or right bank, etc.):

	longitude	latitude
12.X-site lat/long (from map):	-95.587983333	37.267733333
13.X-site lat/long measured:	W095° 35.279'	N37° 16.064'

14.X-Site lat/long by GPS or map interpolation (G or M): G

15.GPS file name: ____/____/____

16.Difference between map X-site and measured X-site (in seconds): lat:_____ long:_____

17.Avg. Channel Width: 6.9 meters HDI = 21

18.Sample Site Length: 276 meters

19.Sample Site Length based on: 1) width X 40; 2) min. (150m) or 3) max. (300m) (circle one)

20.Stream order: _____ 21. stream discharge (CFS): .2023

22.Landowner Name, Address, phone #: William Blaes
620-336-2807 458 S 5150th Rd. Cherryvale, KS

23.Contact method T, P, W (circle one)

24.site photo taken: Y N 25. Managed Fishery: Y N

26. Land Use in area and 27.disturbances observed in the area
side of form to record information for 26 and 27)
side of this form)

LAND USE & DISTURBANCES OBSERVED (INTENSITY: BLANK = NOT OBSERVED, L = LOW, M = MODERATE, H = HEAVY)

16.

RESIDENTIAL	RECREATIONAL	AGRICULTURAL	INDUSTRIAL	STREAM MANIP
L RESIDENCES	__ PARKS, CAMPGROUNDS	M CROPLAND	__ INDUSTRIAL PLANTS	__ LIMING
L MAINTAINED LAWNS	__ PRIMITIVE PARKS, CAMPING	__ PASTURE	__ MINES/QUARRIES	__ DRINKING WATER
17. __ CONSTRUCTION	L TRASH/LITTER	L LIVESTOCK	__ OIL/GAS WELLS	__ ANGLING PRESSURE
L PIPES, DRAINS	L SURFACE FILMS, SCUMS, OR SLICKS	__ ORCHARDS	__ POWER PLANTS	__ DREDGING
__ DUMPING		__ POULTRY	__ LOGGING	__ CHANNELIZATION
L ROADS			__ EVIDENCE OF FIRE	__ WATER LEVEL CONTROL
__ BRIDGE/CULVERTS			__ ODORS	__ FISH STOCKING
			__ COMMERCIAL	

26. NOT USED

27.
L FOREST
L GRASSLAND (PRAIRIE)
__ SWAMP
__ OTHER

28. WEATHER CONDITIONS (Circle)					
CLOUD COVER	< 5%	5-25%	25-50%	50-75%	>75%
PRECIPITATION	NONE	LIGHT	MODERATE	HEAVY	
PREVIOUS PRECIPITATION (24 H)	NONE	LIGHT	MODERATE	HEAVY	
AIR TEMPERATURE	14 (°C)				

Kansas Department of Wildlife and Parks
Stream Monitoring Program
Field Data Sheet

WATER CHEMISTRY

Date: 09-28-04 Data Collector(s): E. Johnson

Hydrologic Unit: 054-RFM-04

Stream Name: Drum Creek Stream Code No. ___

Legal Description: NE /4, NW /4, Sec. 18, T 32S, R 17E, MG County

Air Temperature (°C): 14.0 Time of Day: Begin 7:31 a.m./p.m.
End 8:14 a.m./p.m.

METHODS

1. Hach Spectrophotometer
2. Digital Titration
3. D.O. Meter
4. Conductivity Meter
5. Thermometer
6. pH Meter
7. pH Pocket Tester
8. Other (specify)

PHYSICAL VARIABLES

	Measure	Method
Water Temperature(°C):	18.5	4
Conductivity (micro Siemens):	507	4
Turbidity (~~ETUS~~): FAU	6	1
*TDS (mg/l):	246	4
Salinity (‰)	0.2	4

CHEMICAL VARIABLES

Dissolved oxygen (mg/l):	4.00 4.6 to 4.9	2
pH:	7.8	7
Total Alkalinity (mg/l as $CaCO_3$):	189	2
Chlorides (mg/l):	27	2
Ammonia (mg/l):	0.04	1
Nitrates (mg/l):	1.0	1
Phosphorus, Reactive (mg/l):	0.03	1
*Sulfates (mg/l):	—	—
*Total Hardness (mg/l as $CaCO_3$):	—	—

*Level II parameters

FORM #2
FISH DATA FORM

SITE # 054-RFm-04 DATE: 9 / 28 / 04 BPJ @ SAMPLE REP: (Y) or N

ELECTROFISHING TIME (SEC.): 4229 SEINING TIME (MIN.): 11:20

% OF TOTAL SAMPLE SITE: ELECTRO-FISHED: 75 % SEINED: 65

TOTAL AREA OF SAMPLE SITE: 1904.4 SQ. M. % OF SAMPLE SITE WADEABLE: 100

TOTAL SAMPLE VOL. 1.4 GAL. SUB-SAMPLE VOL. ______ GAL.

	# OF GABLEHOUSE SPECIES / SIZE*							
SPECIES COMMON NAME	S	Q	P	M	T	JUVENILE	ADULT	TOTAL # OF SPECIMENS
Smallmouth buffalo 15	1 18.2	14.8 III	18.4 II				卌 I	6
Channel catfish 9.8	9.9 I	17	21.3 I			卌 IIII I	II	13
Longear Sunfish 2	2.4 卌	4.1					卌	(5)
Flathead catfish 13.8	d.8	15.8				I		1
Green sunfish 3.9	3.0 II 卌 卌	5.3 I	6.6			卌 卌 卌 卌	III	23
Orangespotted sunfish 1.4	2.4 I 卌	4.3					卌 卌 I	11
Bluegill 4.9	3 I	5.4 I				卌 I	I	7
Longear sunfish 2 (8) IIII	卌 卌 卌 卌 卌 卌 卌 卌 卌	4.3 IIII					卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 (8)	74
Lg. mouth bass 4.7	6.5 IIII	11.7	14.6				IIII	4
Orangethroat darter						I	卌 卌 卌 卌 卌 II (35) 24	87
Logperch							卌 卌	10
Brook silverside							卌 卌 III	13
Bluntnose minnow							卌 卌 II	12
Black buffalo 15	9	15 II	20 I				III	3
Red shiner						III	卌	8
Bluntface Shiner							卌 卌 I (12) II	25
Spotted Bass	I						I	1
Central stoneroller							卌 卌 II	12
Freckled madtom *							III	3
western mosquitofish							II	2
Suckermouth minnow							I	1

COMMENTS: * unverified id

FLOW SHEET

054-R1m-04

.M Drum Creek

TY Montgomery

9 / 28 / 04

ww = 7.1

#	Distance From Initial Point	WIDTH STREAM WIDTH / 30	DEPTH	REVO-LUTIONS	SECONDS 40 OR 60	VELOCITY REVO. / SECONDS	AREA WIDTH X DEPTH	DISCHARGE VELOCITY X AREA
1	1.4	.30	0.1	0	40	0	[illegible]	0
2	1.7	.30	0.2	0		0	.06	0
3	2.0		0.3	0		0	.09	0
4	2.3		0.3	0		0	.09	0
5	2.6		0.3	0		0	.09	0
6	2.9		0.2	2		.05	.06	.003
7	3.2		0.3	4		.1	.09	.009
8	3.5		0.3	1		.025	.09	.0023
9	3.8		0.3	0		0	.09	0
10	4.1		0.3	3		.075	.09	.007
11	4.4		0.3	4		.1	.09	.009
12	4.7		0.2	5		.125	.06	.008
13	5.0		0.3	16		.4	.09	.036
14	5.3		0.3	15		.375	.09	.034
15	5.6		0.3	18		.45	.09	.041
16	5.9		0.2	13		.325	.06	.02
17	6.2		0.2	7		.175	.06	.011
18	6.5		0.2	11		.275	.06	.017
19	6.8		0.1	6		.15	.03	.005
20	7.1		0.1	0		0	.03	0
21	7.4		0.1	0		0	.03	0
22	7.7		0.1	0		0	.03	0
23	8.0		0.1	0		0	.03	0
24	8.3		0.1	0		0	.03	0
25								
26								
27								
28								
29								
30								
31								
32								

.. .2023 CFS

Kansas State University - Salina
GPS Field Data Record

Date	: 9-28-04	Project Name	:
Town	:	Latitude	: N37° 16.064'
County	: Montgomery	Longitude	: W095° 35.279'
Site Name	: 054-RFM-04	Elevation	: 821 ft.
File Name	:	Time	: 8am
Surveyed By	: Van Scoyoc	Weather	: partly cloudy
Surveyed By	:	PDOP	: accuracy: 32 feet

Survey Results

Marker Type : Flag F

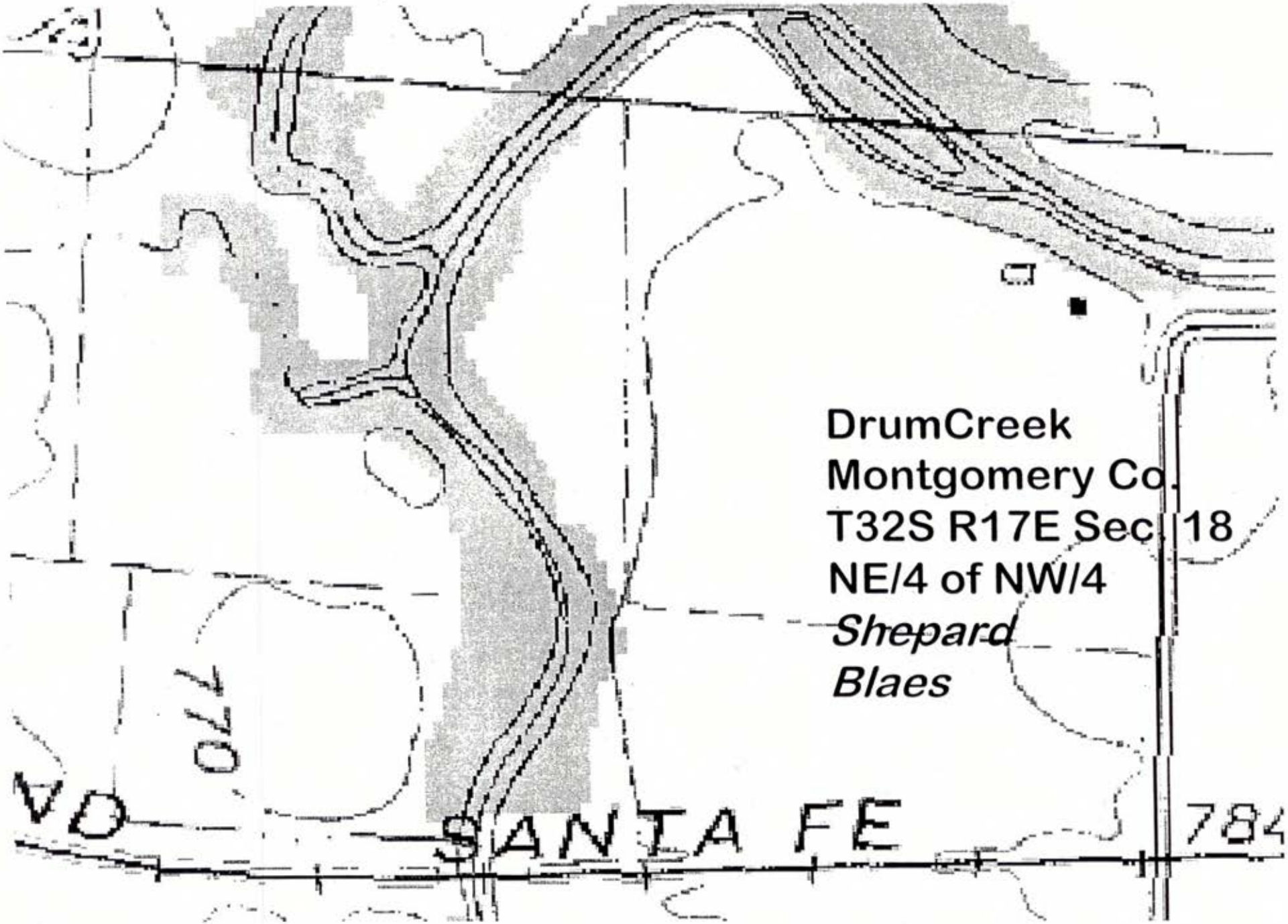
Recovered Damaged Destroyed Not Recovered

Marker Description: right bank

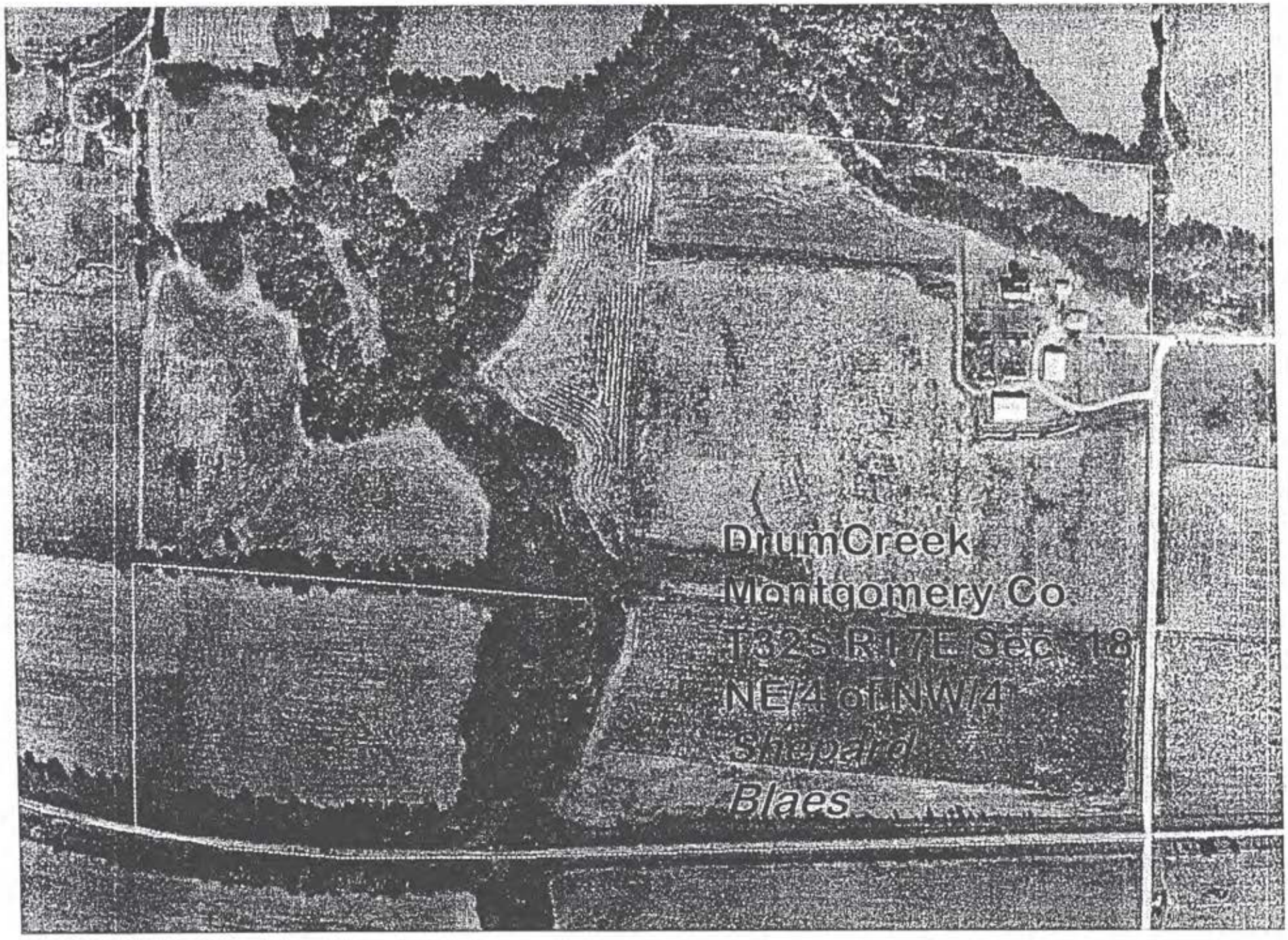
Instrument Results

Instrument Name	: Garmin etrex	Instrument S/N	:
Latitude	:	Antenna S/N	:
Longitude	:	Available Sats.	: 4
Elevation	:	Locked Satellites	: 4
Setup Time	: 8am	Take Down Time	: 8:04 am

Comments :


DrumCreek
Montgomery Co.
T32S R17E Sec. 18
NE/4 of NW/4
Shepard
Blaes
SANTA FE
784
710

(2) T...


Drum Creek
Montgomery Co.
T32S R17E Sec. 18
NE/4 of NW/4
Shepard
Blaes

9-14

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Dillon Creek

DATE OF VISIT: 9 / 28 / 04

ID: 054-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

LOPE (BACKSITE)	___.___ %	Suppl. Slope (Backsite)	___.___ %	BEARING (BACKSITE)	___ ___ °	SUPPL. BEARING (BACKSITE)	___ ___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
	0	0	GC	60	
	1.1	40	GF	10	
	2.2	60	RS	100	
	3.3	63	RS	100	
	4.4	0	GF	90	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
OBBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
OARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
NE GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
AND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
LT/CLAY.MUCK (NOT GRITTY)
NOOD (ANY SIZE)
THER (COMMENT)

III. FISH COVER/ OTHER

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	1	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	0	
Artificial Structures	0	

V. VISUAL RIPARIAN ESTIMATES

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover	0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%)		
CANOPY (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	2	1	
Small Trees Trunk < 0.3 m DBH	2	2	
UNDERSTORY (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	2	
Non-woody Herbs, Grasses, & Forbs	2	2	
GROUND COVER (< 0.5 m high)			
Woody Shrubs & Seedlings	1	1	
Non-woody Herbs, Grasses, & Forbs	3	2	
Barren, Bare dirt or duff	1	2	
HUMAN INFLUENCE	0 = Not present, B = On bank, C = Within 10 m, P = > 10 m		
Wall/Dike/Revetment/Riprap	O	O	
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P	P	
Pasture/Range/Hay field	O	O	
Logging Operations			
Mining Activity			

II. BANK MEASUREMENTS

	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	14 °		
	66 °		

LL WIDTH	26.2 m	
HT.	3.7 m	
JLL HT.	0.5 m	
D WIDTH	4.4 m	
/IDTH	___.___ m	

IV. CANOPY COVER MEASUREMENTS

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	10		CenR	16	
CenL	3		Lft	5	
CenDwn	14		Rgt	16	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 30 RGT 15

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 03

STREAM ID: 054-RFH-04- S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): 4

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	63			N	PT	F		
1	51			N	PT	F		
2	19			N	GL			
3	28			N	GL			
4	41			N	PT	F		
5	42			N	PT	F		
6	56			N	PT	F		
7	65			N	PT	F		
8	71			N	PT	F		
9	67			N	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	III			IIII		
0.3 - 0.6 m	I			II	II	
0.6 - 0.8 m					I	
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

D: 054-RF1m-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): B

OPE (BACKSITE)	0.5 %	Suppl. Slope (Backsite)	1.0 %	BEARING (BACKSITE)	256°	SUPPL. BEARING (BACKSITE)	200°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
	2.95	30	GF	70	
	5.9	29	GF	50	
	8.85	54	GF	5	
	11.8	0	GF	48	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	2	1	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
BARREN, BARE DIRT OR DUFF	1	3	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	35°		
	14°		

L WIDTH	13.9 m	
HT.	4.0 m	
LL HT.	0.6 m	
WIDTH	11.8 m	
IDTH	___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	5		CENR	17	
CENL	6		LFT	17	
CENDWN	15		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 35

RGT 20

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 05

STREAM ID: 054-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): A

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	54			N	PT	F		
1	52			N	PT	F		
2	56			N	PT	F		
3	51			N	PT	F		
4	45			Y	PT	F		
5	34			Y	PT	F		
6	17			N	GL			
7	9			N	RI			
8	16			N	RI			
9	5			N	RI			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	II			~~IIII~~		
0.3 - 0.6 m	~~IIII~~			~~IIII~~ III	II	
0.6 - 0.8 m	II			~~IIII~~		
> 0.8 m				II		

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: [illegible] S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): C

LOPE (BACKSITE)	1.6 %	Suppl. Slope (Backsite)	___.___ %	BEARING (BACKSITE)	290°	SUPPL. BEARING (BACKSITE)	___°

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	CB	30	
	1.2	9	CB	5	
	2.4	0	GC	95	
	3.6	7	CB	5	
	4.8	0	FN	100	

SUBSTRATE SIZE CLASS CODES

DROCK (SMOOTH) *(LARGER THAN A CAR)
DROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
DARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	3°		
	45°		

L WIDTH	12.5 m	
HT.	4.2 m	
L HT.	0.6 m	
WIDTH	4.8 m	
DTH	0.6 m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	2	*
ARTIFICIAL STRUCTURES	0	

Flat Shale

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	16		CENR	17	
CENL	14		LFT	14	
CENDWN	10		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 35
RGT 25

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	3	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	O	O	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	O	O	
LOGGING OPERATIONS			
MINING ACTIVITY			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 0[illegible]

STREAM ID: 054-R1m-04s

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 27.0 — Increment (m): 2.76

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/fine sediment (Y or N)	Channel Unit Code	Pool Form code	Side Channel (SC)?	Comments
0	13		0.6	N	RI		Y	
1	19			N	GL			
2	25			N	GL			
3	23			N	GL			
4	25			N	PT	F		
5	26			N	PT	F		
6	26			N	PT	F		
7	30			N	PT	F		
8	26			N	PT	F		
9	25			N	PT	F		

Large Woody Debris (> 10 cm small end diam.: >1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 𝍸 𝍸 𝍸					
0.3 - 0.6 m				II		
0.6 - 0.8 m		I		I	II	
> 0.8 m				I		

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: 054-KFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): D

OPE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.5 %	__.__ %	297°	___°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GF	98	
	2.75	24	GF	5	
	5.5	15	RS	100	
	8.25	16	RS	100	
	11.0	0	GF	95	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	60°		
	30°		

L WIDTH	12.7 m	
HT.	4.2 m	
LL HT.	0.6 m	
WIDTH	11.0 m	
OTH	__.__ m	

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	16	
CENL	17		LFT	17	*
CENDWN	16		RGT	17	

15 bank

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 25
RGT 35

V. VISUAL RIPARIAN ESTIMATES

RIPARIAN VEGETATION COVER	LEFT BANK	RIGHT BANK	FLAG
0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%)			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	3	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	

HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 0[illegible]

STREAM ID: 054-RFM-04S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	26			N	PT	F		
1	20			N	PT	F		
2	26			N	PT	F		
3	29			N	PT	F		
4	30			N	PT	F		
5	35			N	PT	F		
6	30			N	PT	F		
7	28			N	PT	F		
8	25			N	PT	F		
9	20			N	PT	F		

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH)
TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m				III		
0.3 - 0.6 m	II			I		
0.6 - 0.8 m	I			I		
> 0.8 m	I					

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: 054-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): E

SLOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.5 %	___.___ %	300°	___ ___ °

SUBSTRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
	1.6	17	GF	10	
	3.2	17	GF	5	
	4.8	10	GF	80	
	6.4	0	GF	95	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
ILDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	2	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	3	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	22°		
	2°		

WIDTH	15.4 m	
HT.	4.2 m	
L HT.	0.6 m	
WIDTH	6.4 m	
DTH	___.___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	16		CENR	17	
CENL	17		LFT	17	
CENDWN	16		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 30 RGT 40

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 02

STREAM ID: 054-R1-cl S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m) 27.6 — Increment (m) 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	24			N	PT	F		
1	20			N	GL			
2	22			N	GL			
3	30			N	GL			
4	29			N	GL			
5	14			N	GL			
6	13			N	GL			
7	36			N	PT	F		
8	28			N	PT	F		
9	4			N	RI			

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	11			~~11~~		
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

AME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

): 054-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

PE (BACKSITE)	1.0 %	Suppl. Slope (Backsite)	__.__ %	BEARING (BACKSITE)	317°	SUPPL. BEARING (BACKSITE)	___°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	95	
	1.05	12	GF	80	
	2.1	20	GC	5	
	3.15	5	GC	12	
	4.2	0	GC	70	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
ILDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	76°		
	10°		
L WIDTH	15.3 m		
HT.	3.7 m		
LL HT.	0.6 m		
WIDTH	4.2 m		

m

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	1	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	14		CENR	10	
CENL	17		LFT	17	*
CENDWN	17		RGT	14	

3 bank

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 30
RGT 40

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER	0 = ABSENT 1 = SPARSE (0-10%) 2 = MODERATE (10-40%) 3 = HEAVY (40-75%) 4 = VERY HEAVY (> 75%)		
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	3	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	3	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	3	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 98

STREAM ID: 054-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): F

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	20			N	GL			
1	17			N	GL			
2	8			N	RI			
3	15			N	RI			
4	25			N	PT	F		
5	30			N	PT	F		
6	10			N	RI			
7	8			N	RI			
8	4		2.6	N	RI		Y	
9	5		3.4	N	RI		Y	

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	III			~~IIII~~ II		
0.3 - 0.6 m	III			III		
0.6 - 0.8 m	II			I		
> 0.8 m						

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: CSU-12Fm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): G

OPE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
2.1 %	1.0 %	261°	320°

TRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	70	
	1.8	2	GC	10	
	3.6	2	GC	5	
	5.4	4	GC	80	
	7.2	0	GC	10	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
IBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	1	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER	0 = ABSENT 1 = SPARSE (0-10%) 2 = MODERATE (10-40%) 3 = HEAVY (40-75%) 4 = VERY HEAVY (> 75%)		
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1		
SMALL TREES TRUNK < 0.3 M DBH	2		
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE	0 = NOT PRESENT, B = ON BANK C = WITHIN 10 M, P = > 10 M		
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	4°		
	2°		

WIDTH	17.9 m	
T.	3.8 m	
HT.	0.6 m	
WIDTH	7.2 m	
TH	___.___ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	15		CENR	17	
CENL	6		LFT	6	
CENDWN	17		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 30
RGT 40

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 0

STREAM ID: CS4-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K)

THALWEG PROFILE — Reach Length (m) 27.6 — Increment (m) 2.76

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	16			N	GL			
1	13			N	GL			
2	14			N	GL			
3	15			N	GL			
4	25			N	GL			
5	35			N	PT	F		
6	52			N	PT	F		
7	65			N	PT	F		
8	64			N	PT	F		
9	60			N	PT	F		

Large Woody Debris (> 10 cm small end diam.: > 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m	I			III		
0.6 - 0.8 m				II		
> 0.8 m						

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: JSU-RFM1-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

Slope (Backsite)	Suppl. Slope (Backsite)	Bearing (Backsite)	Suppl. Bearing (Backsite)
0.2 %	___.___ %	302°	___ °

Substrate Measurements Cross-Sectional Information

Dist LB X.XX m	Depth XXX cm	Size Class code	Embed. 0-100%	Flag
0	0	GC	30	
2.25	5	GC	5	
4.5	22	GC	20	
6.75	42	GC	20	
9	0	GC	70	

Substrate Size Class Codes

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. Fish Cover/ Other

0 = Absent
1 = Sparse (0-10%)
2 = Moderate (10-40%)
3 = Heavy (40-75%)
4 = Very Heavy (> 75%)

	Channel	Flag
Filamentous Algae	0	
Macrophytes	0	
Woody Debris > 0.3 m (BIG)	0	
Brush/Woody Debris < 0.3 m (SMALL)	0	
Overhanging Veg. ≤ 1 m of surface	0	
Undercut Banks	0	
Boulders	1	
Artificial Structures	0	

V. Visual Riparian Estimates

	Left Bank	Right Bank	Flag
Riparian Vegetation Cover (0 = Absent; 1 = Sparse (0-10%); 2 = Moderate (10-40%); 3 = Heavy (40-75%); 4 = Very Heavy (> 75%))			
Canopy (> 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Big Trees Trunk > 0.3 m DBH	1	2	
Small Trees Trunk < 0.3 m DBH	2	3	
Understory (0.5 to 5 m high)			
Vegetation Type (D, C, M, or N)	D	D	
Woody Shrubs & Saplings	2	3	
Non-woody Herbs, Grasses, & Forbs	2	3	
Ground Cover (< 0.5 m high)			
Woody Shrubs & Seedlings	1	2	
Non-woody Herbs, Grasses, & Forbs	2	3	
Barren, Bare dirt or duff	2	1	
Human Influence (0 = Not present, B = On bank, C = Within 10 m, P = > 10 m)			
Wall/Dike/Revetment/Riprap	0	0	
Buildings			
Pavement			
Road/Railroad			
Pipes (inlet/outlet)			
Landfill/Trash			
Park/Lawn			
Row Crops	P	P	
Pasture/Range/Hay field	0	0	
Logging Operations			
Mining Activity			

II. Bank Measurements

	Bank Angle 0-360	Undercut Dist (m) X.XX	Flag
	5°		
	30°		
L Width		13.6 m	
Ht.		3.8 m	
LL Ht.		0.6 m	
Width		9.0 m	
IDTH		___.___ m	

IV. Canopy Cover Measurements

Densiometer (0 to 17 max)

		Flag			Flag
CenUp	17		CenR	17	
CenL	16		Lft	17	
CenDwn	11		Rgt	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20 RGT 30

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 0

STREAM ID: 054-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): H

THALWEG PROFILE — Reach Length (m) 27.6 — Increment (m) 2.76

STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0	51			N	PT	F		
1	28			N	PT	F		
2	17			N	PT	F		
3	20			N	PT	F		
4	35			N	PT	F		
5	55			N	PT	F		
6	54			N	PT	F		
7	53			N	PT	F		
8	50			N	PT	F		
9	45			N	PT	F		

LARGE WOODY DEBRIS (> 10 CM SMALL END DIAM.: > 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m	卌 II			卌 卌 IIII		
0.3 - 0.6 m	I			III		
0.6 - 0.8 m				II		
> 0.8 m				I		

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

CHANNEL UNIT CODES

PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES

N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 4 / 28 / 04

ID: 054-RFM-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

LOPE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.8 %	___.__ %	320 °	___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	FN	100	
	1.45	17	GC	10	
	2.9	7	CB	5	
	4.35	1	GC	5	
	5.8	0	GC	20	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	1	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	0	
BOULDERS	1	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	2	
SMALL TREES TRUNK < 0.3 M DBH	2	3	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	3	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	3	
NON-WOODY HERBS, GRASSES, & FORBS	2	3	
BARREN, BARE DIRT OR DUFF	2	1	

HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)	LEFT BANK	RIGHT BANK	FLAG
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	33 °		
	5 °		

L WIDTH	16.0 m	
HT.	3.7 m	
L HT.	0.6 m	
WIDTH	5.8 m	
DTH	___.__ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	8		CENR	3	
CENL	16		LFT	17	
CENDWN	15		RGT	8	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20

RGT 40

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 02

STREAM ID: 054-R1m-cxts

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): I

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	17			N	GL			
1	20			N	GL			
2	34			N	PT	F		
3	48			N	PT	F		
4	47			N	PT	F		
5	50			N	PT	F		
6	65			N	PT	F		
7	67			N	PT	F		
8	60			N	PT	F		
9	45			N	PT	F		

Large Woody Debris (≥ 10 cm small end diam.: ≥ 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 𝍸 𝍸 II			𝍸 𝍸 II		
0.3 - 0.6 m	II			𝍸 I		
0.6 - 0.8 m	I			III		
> 0.8 m				II		

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

ID: 054-RFA-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

OPE (BACKSITE)	Suppl. Slope (Backsite)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
0.1 %	__.__ %	311 °	___ °

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	40	
	5.925	56	RS	100	
	11.85	10	GF	40	
	17.775	28	GF	80	
	23.7	0	SA	100	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
LDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
IBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	6 °		
	68 °		
WIDTH	25.4 m		
T.	3.0 m		
HT.	0.6 m		
WIDTH	23.7 m		
TH	__.__ m		

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	1	
MACROPHYTES	1	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	1	
UNDERCUT BANKS	1	
BOULDERS	0	
ARTIFICIAL STRUCTURES	0	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	8		CENR	15	
CENL	0		LFT	2	
CENDWN	0		RGT	17	

Flag Codes: K=no measurement made; U=suspect

RIPARIAN WIDTH LFT 15
RGT 30

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT, 1 = SPARSE (0-10%), 2 = MODERATE (10-40%), 3 = HEAVY (40-75%), 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	0	1	
SMALL TREES TRUNK < 0.3 M DBH	1	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	1	2	
NON-WOODY HERBS, GRASSES, & FORBS	2	2	
BARREN, BARE DIRT OR DUFF	1	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	C	C	
LOGGING OPERATIONS			
MINING ACTIVITY			

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 0[illegible]

STREAM ID: 054-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): J

THALWEG PROFILE — Reach Length (m): 27.6 — Increment (m): 2.76

Sta.#	Thalweg Depth (cm) (XXX)	Wetted Width (m) (XX.X)	Bar Width (XX.X)	Soft/Fine Sediment (Y or N)	Channel Unit Code	Pool Form Code	Side Channel (SC)?	Comments
0	50			N	PT	F		
1	25			N	GL			
2	18			N	GL			
3	10			N	RI			
4	4			N	RI			
5	4			N	RI			
6	5			N	RI			
7	16			N	RI			
8	6			N	RI			
9	8			N	RI			

Large Woody Debris (> 10 cm small end diam.: > 1.5 m length) Tally Between This Transect and Next

Diameter Large End	Pieces All/Part in Bankfull Chan.			Pieces Bridge Above Bkfl. Chan.		
	Length 1.5 - 5 m	5 - 15 m	> 15 m	Length 1.5 - 5 m	5 - 15 m	> 15 m
0.1 to < 0.3 m	𝍸 𝍸 𝍸 𝍸 𝍸			𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸	
0.3 - 0.6 m	𝍸 𝍸			𝍸	𝍸	
0.6 - 0.8 m	𝍸 II			𝍸 III	III	
> 0.8 m				II		

Channel Unit Codes	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PO	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

Pool Form Codes	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

Flag Codes: K = no measurement made; U = suspect measurement: F1, F2, etc. = misc. flags assigned by each field crew. Explain all flags in comments section

COMMENTS:

Reviewed by (initial): ____

CHANNEL/RIPARIAN CROSS-SECTION & THALWEG PROFILE FORM

M NAME: Drum Creek

DATE OF VISIT: 9 / 28 / 04

M ID: 054-RFm-04 S

TEAM ID (circle): 1 2 3 4 5 6 7 8

Transect Station (A to K): K

SLOPE (BACKSITE)	SUPPL. SLOPE (BACKSITE)	BEARING (BACKSITE)	SUPPL. BEARING (BACKSITE)
2.0 %	__.__ %	319°	___°

STRATE MEASUREMENTS CROSS-SECTIONAL INFORMATION

	DIST LB X.XX M	DEPTH XXX CM	SIZE CLASS CODE	EMBED. 0-100%	FLAG
	0	0	GC	30	
	1.575	4	CB	20	
	3.15	2	CB	40	
	4.725	4	CB	50	
	6.3	0	GC	10	

SUBSTRATE SIZE CLASS CODES

ROCK (SMOOTH) *(LARGER THAN A CAR)
ROCK (ROUGH) *(LARGER THAN A CAR)
ULDER (250 TO 4000 MM) *(BASKETBALL TO CAR)
BBLE (64 TO 250 MM) *(TENNIS BALL TO BASKETBALL)
ARSE GRAVEL (16 TO 64 MM) *(MARBLE TO TENNIS BALL)
E GRAVEL (2 TO 16 MM)*(LADYBUG TO MARBLE)
ND (0.06 TO 2 MM) *(GRITTY - UP TO LADYBUG SIZE)
T/CLAY.MUCK (NOT GRITTY)
OOD (ANY SIZE)
HER (COMMENT)

III. FISH COVER/ OTHER

0 = ABSENT
1 = SPARSE (0-10%)
2 = MODERATE (10-40%)
3 = HEAVY (40-75%)
4 = VERY HEAVY (> 75%)

	CHANNEL	FLAG
FILAMENTOUS ALGAE	0	
MACROPHYTES	0	
WOODY DEBRIS > 0.3 M (BIG)	0	
BRUSH/WOODY DEBRIS < 0.3 M (SMALL)	0	
OVERHANGING VEG. ≤ 1 M OF SURFACE	0	
UNDERCUT BANKS	0	
BOULDERS	1	
ARTIFICIAL STRUCTURES	0	

V. VISUAL RIPARIAN ESTIMATES

	LEFT BANK	RIGHT BANK	FLAG
RIPARIAN VEGETATION COVER (0 = ABSENT; 1 = SPARSE (0-10%); 2 = MODERATE (10-40%); 3 = HEAVY (40-75%); 4 = VERY HEAVY (> 75%))			
CANOPY (> 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
BIG TREES TRUNK > 0.3 M DBH	1	1	
SMALL TREES TRUNK < 0.3 M DBH	2	2	
UNDERSTORY (0.5 TO 5 M HIGH)			
VEGETATION TYPE (D, C, M, OR N)	D	D	
WOODY SHRUBS & SAPLINGS	2	2	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
GROUND COVER (< 0.5 M HIGH)			
WOODY SHRUBS & SEEDLINGS	2	1	
NON-WOODY HERBS, GRASSES, & FORBS	3	2	
BARREN, BARE DIRT OR DUFF	2	2	
HUMAN INFLUENCE (0 = NOT PRESENT, B = ON BANK, C = WITHIN 10 M, P = > 10 M)			
WALL/DIKE/REVETMENT/RIPRAP	0	0	
BUILDINGS			
PAVEMENT			
ROAD/RAILROAD			
PIPES (INLET/OUTLET)			
LANDFILL/TRASH			
PARK/LAWN			
ROW CROPS	P	P	
PASTURE/RANGE/HAY FIELD	0	0	
LOGGING OPERATIONS			
MINING ACTIVITY			

II. BANK MEASUREMENTS

	BANK ANGLE 0-360	UNDERCUT DIST (M) X.XX	FLAG
	16°		
	7°		
WIDTH		23.3 m	
IT.		3.1 m	
HT.		0.6 m	
WIDTH		6.3 m	
TH		__.__ m	

IV. CANOPY COVER MEASUREMENTS

DENSIOMETER (0 TO 17 MAX)

		FLAG			FLAG
CENUP	17		CENR	17	
CENL	17		LFT	15	
CENDWN	17		RGT	17	

Flag Codes: K = no measurement made; U = suspect

RIPARIAN WIDTH LFT 20

RGT 25

Reviewed by (initial): _____

THALWEG PROFILE & WOODY DEBRIS FORM-STREAMS

STREAM NAME: DATE OF VISIT: / / 03

STREAM ID: __ __ __ __ __ S | TEAM ID (circle): 1 2 3 4 5 6 7 8 | Transect Station (A to K)

THALWEG PROFILE			Reach Length (m)			Increment (m)		
STA.#	THALWEG DEPTH (CM) (XXX)	WETTED WIDTH (M) (XX.X)	BAR WIDTH (XX.X)	SOFT/FINE SEDIMENT (Y OR N)	CHANNEL UNIT CODE	POOL FORM CODE	SIDE CHANNEL (SC)?	COMMENTS
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								

LARGE WOODY DEBRIS (≥ 10 CM SMALL END DIAM.: ≥ 1.5 M LENGTH) TALLY BETWEEN THIS TRANSECT AND NEXT

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHAN.			PIECES BRIDGE ABOVE BKFL. CHAN.		
	LENGTH 1.5 - 5 M	5 - 15 M	> 15 m	LENGTH 1.5 - 5 M	5 - 15 m	> 15 m
0.1 to < 0.3 m						
0.3 - 0.6 m						
0.6 - 0.8 m						
> 0.8 m						

CHANNEL UNIT CODES	
PP	Pool, Plunge
PT	Pool, Trench
PL	Pool, Lateral Scour
PB	Pool, Backwater
PD	Pool, Impoundment
GL	Glide
RI	Riffle
RA	Rapid
CA	Cascade
FA	Falls
DR	Dry Channel

POOL FORM CODES	
N	Not a pool
W	Large Woody Debris
R	Rootwad
B	Boulder or bedrock
F	Unknown, fluvial
O	Other (note in comments)

FLAG CODES: K = NO MEASUREMENT MADE; U = SUSPECT MEASUREMENT: F1, F2, ETC. = MISC. FLAGS ASSIGNED BY EACH FIELD CREW. EXPLAIN ALL FLAGS IN COMMENTS SECTION

COMMENTS: