Sediment chemistry results met remedial goals each year, and no sediment toxicity was identified. Five fish species were identified; mainly tolerant insectivores. The size and number of young of year specimens indicated conditions are conducive to maintenance of the fish community.

4.3 Parksville Reservoir

4.3.1 Surface Water

Parksville Reservoir surface-water results for 2009 and 2010 are summarized in Table 21. Two summer high pool (August 2009 and August 2010) and one winter low pool (February 2010) sampling events are represented. Surface-water sampling locations are shown in Figure 3. Average concentrations of copper, lead, zinc and pH at a specific location will determine whether associated remedial goals have been met and were the primary basis for evaluation. Other parameters are discussed to provide a full account of water quality conditions. One-half the detection limit was substituted for non-detects when computing location average. Where applicable, water quality criteria were computed using 17 mg/L hardness.

Neither dissolved copper nor zinc was detected above remedial goals in any grab sample during any event. Dissolved lead slightly exceeded its goal in the deep grab sample from location OM1560 in August 2009 but the average concentration was less than the criterion. In February 2010, dissolved lead concentrations were above the criterion in all but one sample (location BI0160, surface). The elevated dissolved lead levels throughout the reservoir during the 2010 low pool event suggest a source potentially unrelated to historically-deposited mine wastes. The lead criterion was not exceeded in any sample during the 2010 high pool sampling event.

Deep grab samples at locations BI0160 and SI0040 had pH slightly below 6 s.u. during the 2009 summer high pool event but location average was above 6 s.u. in each case. Deep water at location OM1560 had a pH below 6 s.u. during the 2010 summer high pool event and the location average was 5.92 s.u.; slightly below the criterion.

Additional parameters that do not have specific remedial goals within the long-term monitoring program were also analyzed. Aluminum (total) was detected above its water quality criterion (87 ug/L) in the shallow and deep grab sample from location OM1560 and the shallow Sylco Inlet (SI0040) grab sample in August 2009. Only OM1560 had an average concentration above the standard. All 2010 winter pool event samples had total aluminum concentrations above the criterion and the pattern did not suggest a link to identified sources. The criterion was not exceeded in any sample during the 2010 summer high pool event. Dissolved aluminum concentrations in all grab samples were well below the criterion.

Iron (total and dissolved) and manganese (dissolved) concentrations in the deep grab samples from location SI0040 exceeded their respective criteria during 2009 and 2010 summer high pool sampling events. The location average iron concentration was above the criterion in 2010. Location average manganese concentrations exceeded the criterion during both summer high pool events. Proximate sediments had an organic muck component, and dissolved oxygen readings for these samples indicated a reducing environment. Those conditions would be favorable for liberation of iron and manganese from underlying sediments.

4.3.2 Sediment

Table 22 summarizes sediment chemistry data for the three Parksville reservoir transects sampled in August 2009 along with sediment remedial goals developed during the RI. Sediment sampling locations are shown in Figure 3. Average concentrations of copper, iron, lead and zinc at a specific transect will determine whether associated remedial goals have been met and were the primary basis for evaluation.

As shown in Table 22, each individual grab sample result and average concentrations of copper, iron and lead exceeded their respective goals at transects OM1560 and SI0040. Similar results were reported for zinc although one grab sample result from location SI0040A (right bank area) was below its goal. Baker Inlet (transect BI0160) was to serve as a reference location. The average iron and lead concentrations exceeded their respective goals at BI0160. Individual iron, lead and zinc results for the grab sample from the center of the channel (BI0160B) also exceeded goals as did the left bank lead result.

Tables 23 through 25 describe the characteristics of each sediment sample collected from Parksville Reservoir in 2009. Sediment characteristics varied between locations and samples on a transect. The following summarizes observations for each location.

Baker Inlet sediments were silt to clayey silt with a prominent (up to 20%) sand fraction. Both coarse and fine particulate organic matter was present with the surface layer described as muck at the deeper center and left bank locations. Sylco Inlet sediments were primarily clayey silt with a minor sand component. Each had an organic (coarse and fine particulate organic matter) or muck fraction; sufficient to produce mixed samples that were dark black. Although Sylco Inlet sediments appeared to have the highest organic percentage of all locations, analytical results showed their total organic carbon content was the lowest on average. Sediments collected along the Parksville delta toe were clayey silt and silt with a small fine sand fraction. Visible organic materials were limited primarily to leaves and twigs with fine particulate organic matter noted only in the grab sample closest the left bank; near the primary channel.

The 2009 toxicity testing report is presented in Appendix D along with a detailed summary. As shown in Table 26, seven of nine Parksville Reservoir samples exhibited 100% mortality including all three samples from the Baker Inlet reference area. The Ogeechee River control sample had 30% mean survival; substantially lower than observed during USEPA studies. The secondary lab control had 77.1% survival; acceptable given the non-standard overlying water composition. Compared to the secondary lab control, no statistically significant reductions in survival were observed in one of the remaining two Parksville samples; OM1560D - collected near mid-channel along the delta toe (left center looking downstream). The mean biomass results for OM1560D were also not statistically different from the secondary lab control. For those samples in which some survival was reported, none had a mean survival dry weight statistically different from that of the secondary lab control.

All but one Parksville Reservoir sediment sample exhibited some toxicity (based on survival or growth) under the test conditions. The failure of the Ogeechee River field control as well as reference area samples to support acceptable survival and growth suggested that test methods played some part

in eliciting the observed responses in 'affected' area sample tests. As discussed in Section 3.2, a toxicity test optimization study was performed in early 2010 (see Appendix D). The study determined that a higher water exchange was necessary when using simulated Ocoee River water in order to obtain acceptable lab and material control sample results. As a result, 2009 toxicity test results were ultimately determined to be non-representative and will not be used for decision-making purposes. For future Parksville Reservoir toxicity testing, methods will be altered to more closely simulate both the composition and water contact conditions that would be expected under *in situ* conditions.

Table 26

Parksville Reservoir Sediment Toxicity Summary

Sample	Mean Survival %	Mean Biomass Dry Weight (mg)	Mean Survival Dry Weight (mg)
Laboratory Control	77.1	0.1043	0.133
Ogeechee	30.0	0.0410	0.129
BI0160A	0.0	NA	NA
BI0160B	0.0	NA	NA
BI0160C	0.0	NA	NA
SI0040A	0.0	NA	NA
SI0040B	0.0	NA	NA
SI0040C	0.0	NA	NA
OM1560B	0.0	NA	NA
OM1560C	42.5	0.0534	0.112
OM1560D	66.3	0.1254	0.196

4.3.3 Macroinvertebrates

The 2010 macroinvertebrate survey was conducted to provide an assessment of baseline conditions. The Baker Inlet location (BI0160) was to serve as a reference site with OM1560 (delta toe) and SI0040 (Sylco Inlet) as potentially affected areas. Macroinvertebrate sampling locations in Parksville Reservoir are shown in Figure 3. Table 27 presents a species list along with computed individual sample metrics for 2010 macroinvertebrate samples. Table 28 presents transect-specific summary statistics for the computed metrics. TDEC's MMI scoring system is not appropriate for application in a reservoir setting.

Various metrics were selected for macroinvertebrate data analysis including total abundance, taxa richness, and EPT richness. Each of the metrics used for general discussion was described in Section 4.1.3. Additional metrics were computed based on those utilized in TVA's Vital Signs program. These included % Long-lived species (+), % Chironomids (midges, -), % Tubificidae (aquatic worms, -), % Dominant (evenness measure, -) and % Zero samples (-). Those denoted by '+' indicate that a higher result is generally indicative of a healthier community and those with '-', a poorer community.

As shown in Table 28, the greatest number of organisms and highest taxa richness was found in the vicinity of the delta toe (transect OM1560). Sylco Inlet (transect SI0040) had the lowest total abundance but taxa richness was comparable to that in Baker Inlet (transect BI0160). EPT richness at transect OM1560 was equal to the maximum observed in Baker Inlet and % Dominant was the lowest observed (suggesting better evenness in the community). EPT were poorly represented accounting for less than 7 percent of total organisms at all locations. % Chironomids results were comparable in the delta toe and reference areas, but were lowest in Sylco Inlet (transect SI0040). % Tubificidae and % long-lived species (negatively correlated metrics) lagged at transects OM1560 (delta toe) and SI0040 compared to the Baker Inlet reference. It is noteworthy that eight of 10 samples from the Sylco Inlet transect had fewer than 10 organisms. Based on these findings, it does not appear that the Parksville delta presents any localized threat to macroinvertebrate productivity or diversity, although some community metrics were inferior to those in the reference area.

4.3.4 Habitat

Physical habitat in Parksville Reservoir was evaluated in conjunction with macroinvertebrate sampling efforts in September 2010 as described in Section 3.4.2. The 2010 efforts were intended to establish the baseline condition. Habitat characterization is used to assess general conditions and trends, and can support diagnostic analysis should biotic measures not meet goals. At each sampling transect, the characteristics of the riparian and littoral zones were photographed and described. Banks were evaluated individually. Figure 3 shows the habitat characterization transects. Table 29 presents 2010 habitat characterization results. Figures 23 through 25 provide representative photographs of riparian and littoral conditions in Sylco Inlet, the delta toe area and Baker Inlet, respectively.

In general, riparian and littoral zone conditions at each transect were comparable. The tree canopy consisted of mixed deciduous and coniferous trees with predominantly deciduous understory. Few grasses and forbs were observed. Understory vegetation was primarily woody plants but was sparse where the canopy was also limited; right bank at transects OM1560 and BI0160. There was evidence that the latter observations were attributable to historical fire or infestation.

Shoreline materials ranged from cobble to silt/clay size and the mainly vertical banks were commonly comprised of saprolitic materials. Human influences were limited apart from the boat ramp, parking lot and beach on the right bank at OM1560 and vacation homes along the left bank near BI0160. The littoral zone at BI0160 had a more gradual slope (to 10 m offshore) than did the other two transects.

Bottom materials in the littoral zone were comprised primarily of fine inorganic and woody detrital matter. Sediments along the delta toe (OM1560) exhibited an organic odor while those from Sylco Inlet (SI0040) gave olfactory evidence of anoxic conditions. Aquatic macrophytes were largely absent and did not extend any significant distance lakeward where observed (OM1560, right bank). Fish cover, in the form of snags, woody debris, overhanging vegetation or rock ledges, was present on both banks at each transect. Snags and large woody debris were most prominent and would be expected to provide the majority of littoral fish cover.

4.3.5 Sediment Revegetation

The Parksville delta was evaluated to determine whether and to what extent vegetation has been reestablished. The delta was created by deposition of sediments originating in upstream areas of the Toccoa/Ocoee watershed. Over 260 acres of exposed sediments are present in the Parksville delta during winter low pool. Although the delta began forming upon creation of Parksville Reservoir, TVA sluicing practices through 2001 significantly accelerated material deposition. The delta had sparse to no vegetation when GSHI initiated their restoration efforts in the Copper Basin (Figures 26 and 27). A few cypress trees planted on the upstream end of the delta as part of revegetation studies in the late 1990's represented the only significant vegetative growth on the delta.

Sediment revegetation was assessed in August 2009 and 2010 through photodocumentation. Findings for the Parksville Delta in 2009 serve as the baseline for formal assessment. The reservoir water level fluctuates over 10 feet during the year between summer high pool and winter low pool conditions. As a consequence, vegetative cover comparable to that observed on sediment formations in the Copper Basin reach would not be expected. As shown in Figures 28 through 30, the cypress stands previously mentioned remained the only obvious vegetation in the area. No aquatic plants were obvious over the delta although dense algal growth was noted during a reconnaissance visit in summer 2008. No formal estimates of total vegetative coverage could be made due to high pool conditions in August but the cypress trees covered less than 5 percent of the feature.

4.3.6 Fish Community

The 2010 fish community survey was conducted to provide an assessment of baseline conditions. The Baker Inlet location (BI0160) was to serve as a reference site with OM1560 (delta toe) and SI0040 (Sylco Inlet) as potentially affected areas. Fish community sampling locations in Parksville Reservoir are shown in Figure 3. Various metrics commonly used as part of TVA's Vital Signs program were computed to assess the fish community. Table 30 summarizes 2010 fish community survey results for Parksville Reservoir.

As shown in Table 30, the greatest number of fish (for each collection method and total) and highest diversity were found in the vicinity of the delta toe (OM1560). Both young and adult specimens were collected indicating local reproduction. The number of sunfish and intolerant species was fairly consistent between locations. The lowest percentage of tolerant specimens was found in Sylco Inlet (SI0040) followed by the delta toe area (OM1560) while the Baker Inlet (BI0160) reference area had the highest proportion. The delta toe area produced the lowest % Dominant metric, indicating the evenness of community composition, followed by Sylco Inlet. The Baker Inlet reference area had the highest % Insectivores and lowest % Piscivores of the survey locations.

It is also noteworthy that record yellow perch and spotted bass were harvested from Parksville Reservoir and downstream Ocoee River in 2010. At the very least, the presence of extremely healthy specimens provides evidence that the delta and other historical mine waste deposits do not pose a threat to the reservoir fish community as a whole.

Based on these findings, it does not appear that the delta presents any localized threat to productivity or diversity of the fish community. Diversity and productivity in Sylco Inlet were also comparable to those reported for the reference area.

4.3.7 Fish Tissue

The 2010 fish tissue analyses were intended to provide data to support PCB concentration trend analysis and updating of the baseline risk assessment. Table 31 summarizes data for fish tissue collected in October 2010. The analytical results for fish tissue collected in 2002 as part of the RI are also provided.

As shown, the PCB concentrations reported in the 2010 fish tissue samples collected from the delta toe area (OM1560) were nearly identical to those from the 2002 RI sampling event. The following was excerpted from the final Ocoee River FS, Section 2.2 (December 2009):

"...PCB levels in fish tissue from the eastern part of Parksville Reservoir could present a cancer risk of 1 in 10,000 at consumption rates over 1.5 meals per month of channel catfish or 12 meals per month of largemouth bass. Risks from consuming fish from the western parts of the reservoir and from the Baker/Indian Creek Inlet area would be lower."

The FS did not consider human health risk associated with fish consumption actionable. Based on the 2010 long-term monitoring results, the FS conclusion regarding fish tissue related risk would not be expected to change.

Table 30
Summary of 2010 Parksville Reservoir Fish Community Survey

			BI0160			OM1560			SI0040		
	Tol	Trophic Level	Baker Inlet (Reference)			Delta Toe			Sylco Inlet		
Common Name			Gill Net	Shock	Total	Gill Net	Shock	Total	Gill Net	Shock	Total
Black crappie	M	P	0	0		4	0	4	0	0	
Bluegill	T	I/G	1	116	117	2	104	106	1	98	99
Channel catfish	M	G	5	0	5	12	0	12	12	0	12
Common carp	T	G	0	0		2	0	2	1	0	1
Flathead catfish	M	P	1	0	1	7	0	7	1	0	1
Gizzard shad	T	H	7	0	7	51	1	52	0	0	
Green sunfish	T	I	0	6	6	0	6	6	0	1	1
Largemouth Bass	T	P/I	1	2	3	7	12	19	4	5	9
Long ear sunfish	I	I	0	0		0	1	1	0	0	
Northern hogsucker	M	I	0	0		1	0	1	0	0	
Rainbow trout	M/I	P/I	1	0	1	0	0		1	0	1
Red ear sunfish	M	I	1	0	1	1	1	2	1	1	2
Redbreast Sunfish	M	I	0	12	12	0	22	22	0	4	4
Spotted bass	M	P	9	30	39	11	52	63	13	41	54

Table 30
Summary of 2010 Parksville Reservoir Fish Community Survey

	Tol	Trophic Level	BI0160			OM1560			SI0040		
			Baker Inlet (Reference)			Delta Toe			Sylco Inlet		
Common Name			Gill Net	Shock	Total	Gill Net	Shock	Total	Gill Net	Shock	Total
Warmouth	M	P	1	4	5	1	6	7	0	3	3
White bass	M	P	0	0		9	0	9	12	0	12
No. of Species			9	6	11	12	9	15	9	7	12
No. of Fish			27	170	197	108	205	313	46	153	199
No. Sunfish Species			5	6	7	6	8	9	4	7	7
No. Intolerant Species			1	0	1	0	1	1	1	0	1
% Tolerant Species			33.3%	72.9%	67.5%	57.4%	60.0%	59.1%	13.0%	68.0%	55.3%
% Dominant Species			33.3%	68.2%	59.4%	47.2%	50.7%	33.9%	28.3%	64.1%	49.7%
% Insectivores			7.4%	78.8%	69.0%	3.7%	65.4%	44.1%	4.3%	68.0%	53.3%
% Piscivores			48.1%	21.2%	24.9%	36.1%	34.1%	34.8%	67.4%	32.0%	40.2%
Shock Time (sec)				6,047			6,000			6,031	

Notes:

- 'Tol' = Tolerance I = intolerant, M = Intermediate tolerance and T = tolerant
- Trophic Level: I = insectivore, G = generalist, H = herbivore and P = piscivore

4.3.8 Conclusions

In the Parksville Reservoir reach, dissolved copper and zinc concentrations as well as pH (in all but one instance) met established water quality goals. Dissolved lead concentrations exceeded the remedial goal during 2010 winter low pool sampling. Based on these finding, surface-water quality monitoring will continue for at least five years (low and high pool sampling events).

Total aluminum concentrations were above the water quality benchmark at one location in August 2009 and all locations in February 2010. Total iron and dissolved manganese concentrations above their respective water quality benchmarks were reported at one location or more locations during 2009 and 2010 summer high pool events; attributable to deep sample results.

Sediment copper, iron, lead and zinc concentrations exceeded remedial goals at transects OM1560 and SI0040. Reference transect (BI0160) sediments also exceeded the goals for iron and lead. Toxicity test results for those samples were not used based upon poor lab and study control material response. An optimization study was performed in 2010 and a modified toxicity test method will be employed for future efforts.

The macroinvertebrate community along the delta toe (OM1560) was found to be the most productive and diverse of those studied in 2010. Some metrics at this location did, however, lag behind those reported in the Baker Inlet reference area (BI0160). Sylco Inlet (SI0040) results were comparable to the reference area in terms of diversity and productivity.

Riparian and littoral habitat characteristics were assessed in conjunction with macroinvertebrate sampling efforts. Conditions at the three transect locations were similar in many ways with good riparian vegetation and ample littoral zone fish habitat. Human disturbances were minimal in all but a few isolated areas. The Parksville delta has experienced very limited revegetation. GSHI will continue to chronicle the success and extent of sediment formation natural (and augmented) revegetation on the Parksville delta as part of the long-term monitoring program. Upon attainment of reservoir biological goals, annual surveys will be terminated.

The delta toe area (OM1560) produced the highest number and greatest diversity of fish among the Parksville Reservoir survey sites. Fish tissue PCB concentrations detected in largemouth (and spotted) bass and channel catfish samples were comparable to those reported during the RI.

5.0 2011 Monitoring Summary

5.1 Planned Activities

Table 32 shows activities currently planned for 2011. The schedule is considered tentative. Parksville Reservoir low winter pool surface-water sampling was completed in January 2011.

Table 32
2011 Planned Monitoring Activities

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Surface Water	X b	X b		X a			X b			X d		
Macroinvertebrates				X a								
Habitat				X a								
Sediment Chemistry/Toxicity							Xc					
Fish Tissue												
Fish Community												
Sediment Revegetation				X a			X b					

a – Copper Basin reaches only (OM3670, OM3510)
b – Parksville only; for surface water – summer high pool and winter low pool
c – Parksville only; initial and every other year thereafter
d – Copper Basin reach and Ocoee #3; for surface water – low flow period September or October
e – Coincides with Parksville fish community monitoring during first year only, USEPA/TDEC may conduct
f – Set for Parksville in fall, Copper Basin/Ocoee #3 may be monitored during early fall

5.2 Potential Issues

TVA is currently performing scheduled maintenance and upgrades on the Blue Ridge dam. TVA initiated drawdown in mid July 2010 and achieved the required water level in November 2010. The reduced pool will be maintained until repairs/upgrades are complete; currently projected for April 2011. During the low pool period, the dam will be operated in flow thru status with discharge from the lower level gates. Once maintenance is completed, they'll be regulating discharge again with normal pool levels slated to be reestablished by summer 2011. TVA will continue to provide standard

agreed water discharge rates for the Ocoee whitewater sections throughout the process. Other reservoirs will be managed as usual. These activities have the potential to disrupt the long-term monitoring program.

Special precautions will be taken when scheduling the April 2011 Copper Basin reach macroinvertebrate community, habitat and sediment revegetation work. The sampling event will be scheduled opportunistically when available TVA Blue Ridge influent and release data indicate Copper Basin reach flow should be within the historical range (and other work plan conditions are met). If the flow through conditions result in very limited discharge (<150 cfs), sampling can still be performed although it would be noted that atypical conditions existed. Because TVA may be exacting no control over Blue Ridge discharge, large, unregulated storm flows (greater amplitude than would 'normally' be experienced) could periodically disrupt the macroinvertebrate community. As a result, a buffer may be incorporated around such a storm event to avoid associated effects.

6.0 References:

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Table 5 - Copper Basin Reach 2009 and 2010 Surface Water Data Summary

				Transect/Location																	
Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760
Conductivity Field	uS/cm		2009-2Q	---	---	53.9	52.2	51.9	49.1	43.5	---	---	---	---	---	49.5	27.8	24.6	21.6	19.6	---
			2009-4Q	406	601	110	110	110	109	108	34	33	30	30	29	106	30	28	24	21	30
			2010-2Q	---	---	62	56	53	45	36	---	---	---	---	---	32	22	20	19	20	---
			2010-4Q	37.4	1008	118	110	107	99	84	88	88	79	72	68	57.8	22.6	21.7	21.1	21.7	21.3
Dissolved Oxygen, Field	mg/L		2009-2Q	---	---	10.71	10.59	10.79	10.71	10.92	---	---	---	---	---	11.04	10.74	10.58	10.65	10.53	---
			2009-4Q	9.65	9.2	10.69	10.6	10.63	10.59	10.53	12.19	12.18	12.16	12.1	11.79	11.59	11.88	11.92	11.82	11.72	11.51
			2010-2Q	---	---	10.59	10.69	10.69	10.79	10.69	---	---	---	---	---	11.64	11.84	11.68	11.48	11.33	---
			2010-4Q	11.55	9.64	11.17	10.97	10.93	10.9	10.9	11.14	10.43	10.52	10.46	10.39	10.3	10.73	10.29	10.36	10.97	8.95
Flow (field)	gal/min		2009-2Q	---	---	255049	---	---	---	---	---	---	---	---	---	284827	---	---	---	---	---
			2009-4Q	3097	9659	255698	---	---	---	---	229734	---	---	---	---	265303	---	---	---	---	---
			2010-2Q	---	---	320431	---	---	---	---	---	---	---	---	---	335711	---	---	---	---	---
			2010-4Q	1105	4519	224510	---	---	---	---	161792	---	---	---	---	212141	---	---	---	---	---
ORP, Field	millivolts		2009-2Q	---	---	115	101	114	106	97	---	---	---	---	---	79	76	97	106	112	---
			2009-4Q	124.7	37.5	97.9	110.1	115.6	116.8	116.3	105.5	115.4	125.8	133.4	118.9	84.1	113.1	137.2	158.1	180.8	184.4
			2010-2Q	---	---	67.7	74.7	78	100	88.9	---	---	---	---	---	34.5	50.6	53.1	60.7	62.1	---
			2010-4Q	82	87.9	64.1	64.9	63.3	62.4	61.4	114.4	74.7	67.1	67	64.8	69	82	95	116	130	188
pH Field	s.u.	6	2009-2Q	---	---	6.44	6.39	6.39	6.36	6.35	---	---	---	---	---	5.77	6.27	6.02	6.02	5.86	---
			2009-4Q	6	7.42	6.79	6.84	6.81	6.74	6.83	6.88	6.47	6.33	6.23	6.43	6.81	6.48	6.38	6.23	5.85	6.66
			2010-2Q	---	---	6.16	6.05	5.96	5.42	5.72	---	---	---	---	---	6.58	6.42	6.44	6.38	6.32	---
			2010-4Q	6.68	8.39	7.24	7.1	7.05	6.98	6.94	6.55	6.5	6.56	6.55	6.55	6.68	6.89	6.94	6.88	6.76	6.78
Temperature, Field	Deg C		2009-2Q	---	---	13.84	13.85	13.84	13.84	13.83	---	---	---	---	---	12.13	11.93	12.04	12.24	12.44	---
			2009-4Q	13.08	13.56	11.15	11.13	11.14	11.17	11.2	11.7	11.67	11.48	11.42	11.36	11.93	11.72	11.48	10.8	10.35	12.28
			2010-2Q	---	---	10.93	10.8	10.77	10.72	10.74	---	---	---	---	---	12.4	12.1	12.43	12.78	12.93	---
			2010-4Q	7.46	13.18	12.68	12.7	12.67	12.66	12.64	11.32	11.43	11.42	11.36	11.39	13.01	12.9	12.71	11.9	11.44	11.58
Turbidity (Field)	NTU		2009-4Q	9.8	5.37	2.36	2.19	2.21	3.24	2.55	2.8	1.8	0.9	1.5	1.7	2.5	1.6	1.5	0.7	0.75	3.32
			2010-2Q	---	---	4.71	4.23	3.98	4.12	3.68	---	---	---	---	---	4.58	4.09	3.19	4.14	5.41	---
			2010-4Q	1.16	4.83	8.1	6.51	6.51	5.24	6.57	6.12	6.48	5.96	6.27	5.82	7.97	7.57	6.79	6.44	6.44	7.5
Aluminum	ug/L	87	2009-2Q	---	---	225	238	248	244	223	---	---	---	---	---	251	242	247	286	336	---
			2009-4Q	1040	47.8	99.5	110	101	117	93.7	99	96.4	96.5	99.6	84.5	239	79.7	79.5	90.8	108.75	77.45
			2010-2Q	---	---	134	171	194	170	138	---	---	---	---	---	127.5	135	122	149	142	---
			2010-4Q	290	25	203	210	248	182	203	219	191	194	245	226	231.5	237	212	174	180	286
Aluminum (Dissolved)	ug/L	87	2009-2Q	---	---	26.1	25.8	24.8	27.3	26.5	---	---	---	---	---	29.8	31.2	32.2	28.6	27	---
			2009-4Q	86.2	14.6	15.1	15.2	12.8	13.1	10.8	14.9	16.2	14.2	14	16.5	ND	19.2	21.1	13	11.1	12.75
			2010-2Q	---	---	13.1	15.3	12.6	12	12.6	---	---	---	---	---	26.8	20.8	16.8	15.6	16	---
			2010-4Q	25.8	13	48.2	45.4	44	46.8	40	35.4	42	41.2	42.4	40.7	36.7	64.8	61.7	57.2	39	64.3
Cadmium	ug/L		2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2009-4Q	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND
Cadmium (Dissolved)	ug/L	0.1	2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2009-4Q	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND
Calcium	ug/L		2009-2Q	---	---	4700	4570	4340	4410	3680	---	---	---	---	---	3465	2030	1730	1430	1300	---
			2009-4Q	38800	79800	11300	11400	11100	11200	10900	2530	2460	2220	2230	2220	17100	2270	2030	1650	1470	2170
			2010-2Q	---	---	5680	4780	4330	3320	2130	---	---	---	---	---	2675	1360	1280	1200	1240	---
			2010-4Q	3500	135000	10300	10000	10100	7890	7730	8270	8550	6950	7000	6180	13100	1750	1680	1590	1670	1680
Calcium (Dissolved)	ug/L		2009-2Q	---	---	4750	4720	4390	4650	3740	---	---	---	---	---	3330	2040	1790	1500	1340	---

Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760
			2009-4Q	41100	80200	11000	11200	10900	10800	10700	2560	2600	2310	2120	2130	14500	2220	2070	1700	1430	2050
			2010-2Q	---	---	5670	5030	4270	3380	2270	---	---	---	---	---	2215	1370	1270	1230	1270	---
			2010-4Q	3570	132000	10900	10200	9860	9070	7780	8110	8340	7390	6730	6000	15100	1740	1660	1630	1600	1700
Copper	ug/L		2009-2Q	---	---	3.2	3.1	3.3	3.2	3.1	---	---	---	---	---	15	2.5	1.3	1	0.98	---
			2009-4Q	170	2.3	2.7	2.5	3.1	2.5	2.4	2.9	2.6	2.2	2.1	2	23.2	2.3	0.91	0.52	0.57	0.42
			2010-2Q	---	---	1.2	1.1	1.2	1.1	1.1	---	---	---	---	---	2.75	1.6	0.75	0.6	0.52	---
			2010-4Q	1.7	2	1.2	1.3	1.4	1.2	1.3	1.3	1.3	1.1	1.2	1.1	2.9	2.2	1	0.62	0.62	0.74
Copper (Dissolved)	ug/L	2	2009-2Q	---	---	2	1.9	1.8	2	1.9	---	---	---	---	---	6.8	2.1	ND	ND	ND	---
			2009-4Q	131	1.4	1.4	1.5	1.4	2	1.8	1.8	1.8	1.4	1.2	3.2	5.1	1.9	0.81	0.47	0.345	0.34
			2010-2Q	---	---	0.76	0.83	0.79	0.73	0.82	---	---	---	---	---	1.95	1.2	0.62	0.43	0.45	---
			2010-4Q	1.2	1.7	1.1	1.1	1	0.99	0.95	0.97	0.94	1.1	0.84	0.91	1.8	1.5	0.78	0.52	0.47	0.44
Iron	ug/L	1000	2009-2Q	---	---	495	495	495	492	474	---	---	---	---	---	1150.5	413	381	421	485	---
			2009-4Q	16300	1270	421	440	413	431	406	403	388	359	369	352	2040	287	263	276	297	250
			2010-2Q	---	---	314	335	356	328	299	---	---	---	---	---	489.5	296	222	253	273	---
			2010-4Q	568	932	391	386	434	326	362	374	356	350	403	371	636	373	330	318	353	378
Iron (Dissolved)	ug/L	1000	2009-2Q	---	---	138	147	129	129	136	---	---	---	---	---	402.5	118	154	99.6	96	---
			2009-4Q	13000	65	116	118	115	117	134	139	150	126	124	125	136	115	103	99.2	87.5	86.3
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	224.5	ND	ND	ND	ND	---
			2010-4Q	180	ND	162	146	130	118	112	147	119	124	114	118	257	164	148	144	140	126
Lead	ug/L		2009-2Q	---	---	0.25	0.25	0.26	0.25	0.29	---	---	---	---	---	0.615	ND	0.22	0.23	0.24	---
			2009-4Q	1.5	ND	0.072	0.075	0.047	0.056	0.061	0.045	ND	0.024	ND	0.046	0.39	ND	ND	ND	ND	ND
			2010-2Q	---	---	0.16	0.18	0.18	0.18	0.16	---	---	---	---	---	0.205	0.11	0.11	0.13	0.14	---
			2010-4Q	0.38	ND	0.23	0.34	0.24	0.25	0.23	0.27	0.22	0.2	0.28	0.23	0.29	0.25	0.2	0.17	0.17	0.28
Lead (Dissolved)	ug/L	0.3	2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2009-4Q	ND	ND	ND	ND	ND	0.076	ND	ND	ND	ND	ND	0.056	ND	ND	ND	ND	ND	ND
			2010-2Q	---	---	0.046	0.048	0.035	0.042	0.053	---	---	---	---	---	0.0555	0.037	0.024	0.042	0.03	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	ug/L		2009-2Q	---	---	1430	1390	1360	1380	1160	---	---	---	---	---	1255	820	714	637	626	---
			2009-4Q	12500	22000	2770	2820	2730	2750	2660	896	887	831	843	843	4140	839	769	688	643.5	818.5
			2010-2Q	---	---	1470	1280	1190	1000	748	---	---	---	---	---	909	593	574	556	559	---
			2010-4Q	1270	44600	2980	2910	2880	2210	2100	2100	2160	1820	1840	1660	3060	726	706	681	733	694
Magnesium (Dissolved)	ug/L		2009-2Q	---	---	1460	1440	1350	1450	1240	---	---	---	---	---	1155	782	732	665	614	---
			2009-4Q	13700	22700	2710	2780	2700	2680	2640	906	916	857	792	793	3650	816	781	685	608.5	773
			2010-2Q	---	---	1460	1330	1200	983	782	---	---	---	---	---	797	591	563	560	567	---
			2010-4Q	1210	44400	3070	2900	2780	2520	2090	2050	2080	1880	1740	1590	3440	687	668	685	682	676
Manganese	ug/L		2009-2Q	---	---	99	95.1	93.3	93.6	82.3	---	---	---	---	---	190.5	35.3	23.4	21	22.4	---
			2009-4Q	3640	3420	280	281	274	274	264	53	48	39.5	38.6	39.4	603	27.3	16.8	15.4	15.45	12.6
			2010-2Q	---	---	87.6	73	67.2	54.7	41.3	---	---	---	---	---	71.2	27.2	19.1	16.8	17.3	---
			2010-4Q	27.5	6380	301	288	278	202	174	149	152	123	122	106	294.5	37.5	26	21.8	21.9	26
Manganese (Dissolved)	ug/L	914	2009-2Q	---	---	99.3	97.6	92.9	99.5	85	---	---	---	---	---	170.5	35.5	24	20.7	19.6	---
			2009-4Q	3840	3420	270	271	265	262	258	53	54.1	45.3	35.9	37.3	556	27	17	15.3	15.35	11.2
			2010-2Q	---	---	82.3	72.3	61.2	50.9	39.7	---	---	---	---	---	60.2	28.1	19.6	17.1	16.9	---
			2010-4Q	27.3	6420	311	284	269	228	171	142	144	124	110	98.3	337	30.8	19	16.4	16.9	15.8
Potassium	ug/L		2009-2Q	---	---	932	905	912	938	858	---	---	---	---	---	974.5	850	775	709	697	---
			2009-4Q	3450	5960	1250	1280	1240	1250	1230	838	836	814	830	840	1560	883	826	771	738.5	864.5
			2010-2Q	---	---	927	863	862	804	720	---	---	---	---	---	827.5	699	686	672	678	---
			2010-4Q	1300	9750	1340	1340	1390	1150	1190	1220	1220	1130	1180	1110	1365	941	930	891	942	952
Potassium (Dissolved)	ug/L		2009-2Q	---	---	944	947	917	966	903	---	---	---	---	---	944.5	842	804	745	700	---
			2009-4Q	3690	6070	1240	1270	1240	1230	1220	859	862	850	804	817	1480	883	851	781	721	836.5
			2010-2Q	---	---	909	891	858	800	764	---	---	---	---	---	789.5	710	691	687	700	---
			2010-4Q	1270	9680	1440	1380	1340	1280	1190	1200	1190	1150	1130	1090	1465	933	914	917	898	949
Sodium	ug/L		2009-2Q	---	---	1350	1310	1320	1360	1300	---	---	---	---	---	2010	1290	1190	1060	1040	---

Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760
			2009-4Q	13400	3770	1950	1960	1950	1960	1940	1540	1540	1490	1520	1530	3460	1600	1480	1370	1315	1580
			2010-2Q	---	---	1620	1540	1570	1520	1440	---	---	---	---	---	1750	1480	1450	1400	1420	---
			2010-4Q	1640	4790	1780	1780	1900	1580	1740	1840	1830	1690	1810	1690	2150	1500	1490	1400	1480	1460
Sodium (Dissolved)	ug/L		2009-2Q	---	---	1380	1390	1350	1400	1360	---	---	---	---	---	1960	1330	1240	1140	1070	---
			2009-4Q	14700	3970	2020	1960	1920	1910	1920	1610	1600	1600	1490	1480	3320	1610	1530	1410	1315	1545
			2010-2Q	---	---	1630	1600	1600	1520	1540	---	---	---	---	---	1690	1520	1460	1440	1480	---
			2010-4Q	1640	4780	1950	1850	1850	1820	1750	1830	1800	1740	1740	1690	2305	1490	1450	1450	1440	1490
Zinc	ug/L		2009-2Q	---	---	18	17.8	17.7	17.9	16.5	---	---	---	---	---	88.2	ND	ND	ND	ND	---
			2009-4Q	2450	41	22.8	22.8	28.3	25.7	26	22.6	25.1	19.4	16.3	19.1	252	14.2	9.4	7.6	7.1	5.15
			2010-2Q	---	---	13.4	14.9	12.6	11.8	ND	---	---	---	---	---	32.85	ND	ND	ND	ND	---
			2010-4Q	23	21	9	ND	9.6	ND	ND	ND	8.5	ND	ND	ND	19.45	8.2	ND	ND	ND	ND
Zinc (Dissolved)	ug/L	26	2009-2Q	---	---	ND	18.5	18.1	ND	ND	---	---	---	---	---	78.5	ND	ND	ND	ND	---
			2009-4Q	2650	17.9	21.6	20.2	20.6	25.3	20.1	26.5	26.9	18.1	14.6	15.6	253	13.7	9.5	ND	ND	ND
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	24.5	ND	ND	ND	ND	---
			2010-4Q	60	ND	ND	ND	ND	ND	ND	14.4	17.6	ND	ND	ND	19.4	ND	ND	20.5	ND	ND
Acidity	mg/L		2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2009-4Q	30.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Alkalinity, Total (as CaCO3)	mg/L		2009-2Q	---	---	7.7	7.5	7.5	7.7	7.6	---	---	---	---	---	7.7	8.6	7.4	6.3	6.4	---
			2009-4Q	ND	25.8	8	7.8	8.1	8.3	7.8	7.3	8	7.2	7.3	6.9	6.3	8.4	8.3	7.6	6.15	8.65
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---
			2010-4Q	ND	32.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	mg/L		2009-2Q	---	---	1.5	1.4	1.4	1.4	1.4	---	---	---	---	---	1.7	1.4	1.3	1.2	1.1	---
			2009-4Q	11.6	4.1	1.8	1.9	1.8	1.8	1.8	1.5	1.5	1.4	1.4	1.4	3	1.4	1.5	1.3	1.2	1.45
			2010-2Q	---	---	1.5	1.5	1.5	1.4	1.4	---	---	---	---	---	1.5	1.4	1.4	1.4	1.4	---
			2010-4Q	1	5	1.7	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.5	2.05	1.2	1.2	1.2	1.3	1.2
Hardness	mg/L		2009-2Q	---	---	18	18	18	18	16	---	---	---	---	---	15	10	8	8	6	---
			2009-4Q	180	290	42	42	40	42	44	10	12	10	10	10	46	12	10	10	12	10
			2010-2Q	---	---	28	20	18	14	10	---	---	---	---	---	12	6	6	6	6	---
			2010-4Q	16	510	40	38	34	32	30	28	28	26	24	22	44	6	6	6	6	6
Sulfate	mg/L		2009-2Q	---	---	12.4	12.2	11.2	11	8.5	---	---	---	---	---	9.15	2.2	1.5	1.5	1.2	---
			2009-4Q	193	264	34.5	34.3	34.1	34	33.4	4.5	4.5	3.5	3.2	3.1	58.1	2.4	1.9	1.5	1.5	1.8
			2010-2Q	---	---	16.2	13.8	11.4	8.8	5.6	---	---	---	---	---	7.3	3.6	3.2	3.3	3.3	---
			2010-4Q	3.7	480	33.1	31.2	29.4	26.3	22.6	23.2	23.9	20.8	18.5	16.3	46.9	1.6	1.3	1	1.3	1.1
Total Dissolved Solids (TDS)	mg/L		2009-2Q	---	---	42	33	33	47	34	---	---	---	---	---	59	27	30	33	34	---
			2009-4Q	211	445	68	59	63	61	66	29	26	29	20	17	95	27	23	15	20	22
			2010-2Q	---	---	53	36	34	30	28	---	---	---	---	---	42.5	35	27	33	41	---
			2010-4Q	41	772	84	62	64	81	60	57	55	69	66	60	99.5	37	62	65	67	44
Total Suspended Solids (TSS)	mg/L		2009-2Q	---	---	2.4	ND	3.6	4.4	2.8	---	---	---	---	---	3.8	2	2.4	2.4	5.2	---
			2009-4Q	16	2.8	2.4	ND	ND	2	ND	ND	ND	ND	ND	ND	8	ND	ND	ND	2	ND
			2010-2Q	---	---	4.8	3.6	4	3.2	3.6	---	---	---	---	---	ND	2.4	2.8	3.2	3.2	---
			2010-4Q	5.6	2	2.4	2.4	ND	ND	ND	2	ND	ND	ND	ND	2.4	ND	2	ND	4	3.2

Notes:
- --- indicates location was not sampled during the event
- ND indicates non-detect
- WQC for Cd, Cu, Pb, Mn and Zn calculated using a hardness of 17 mg/L.

Table 6 - Copper Basin Reach Transect Point Flow Distributions 2006 to 2010

Transect/Segment	2006				2007				2008				April 2009				Nov 2009				April 2010				Nov 2010			
OM-3760	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction	Flow 1	Flow 2	Average	Fraction
A	9.46	8.73	9.09	0.04	5.53	5.00	5.27	0.03	2.70	2.65	2.67	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B	46.27	42.40	44.34	0.20	32.49	35.67	34.08	0.20	38.27	36.46	37.36	0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C	54.04	50.66	52.35	0.24	42.69	41.03	41.86	0.24	52.56	44.02	48.29	0.29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D	54.53	56.27	55.40	0.25	49.97	53.08	51.53	0.30	55.25	57.76	56.50	0.34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E	62.85	54.58	58.71	0.27	42.20	37.82	40.01	0.23	21.08	24.01	22.54	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (cfs)	227.14	212.64	219.89	1.00	172.89	172.60	172.75	1.00	169.86	164.89	167.37	1.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OM-3670																												
A	NA	NA	NA	NA	NA	NA	NA	NA	36.40	31.41	33.90	0.15	NA	NA	NA	0.12	59.91	72.37	66.14	0.12	107.18	NA	NA	0.14	76.71	77.47	77.09	0.15
B	NA	NA	NA	NA	NA	NA	NA	NA	69.71	60.96	65.34	0.29	NA	NA	NA	0.19	99.78	113.95	106.86	0.19	148.92	NA	NA	0.20	93.29	85.98	89.63	0.18
C	NA	NA	NA	NA	NA	NA	NA	NA	54.90	63.21	59.05	0.26	NA	NA	NA	0.23	118.66	145.64	132.15	0.23	174.37	NA	NA	0.23	122.53	123.26	122.89	0.24
D	NA	NA	NA	NA	NA	NA	NA	NA	58.31	58.30	58.31	0.26	NA	NA	NA	0.21	126.16	116.16	121.16	0.21	167.33	NA	NA	0.22	116.25	121.48	118.87	0.23
E	NA	NA	NA	NA	NA	NA	NA	NA	12.89	9.90	11.39	0.05	NA	NA	NA	0.25	149.51	133.94	141.72	0.25	150.18	NA	NA	0.20	91.01	107.43	99.22	0.20
Total (cfs)	NA	NA	NA	NA	NA	NA	NA	NA	232.21	223.79	228.00	1.00	NA	NA	NA	1.00	554.01	582.05	568.03	1.00	747.97	NA	NA	1.00	499.79	515.62	507.70	1.00
OM-3570																												
A	10.22	7.15	8.68	0.03	5.04	4.99	5.01	0.03	5.81	4.88	5.34	0.03	NA	NA	NA	0.06	28.38	33.20	30.79	0.06	NA	NA	NA	NA	14.87	10.60	12.73	0.04
B	39.58	41.41	40.50	0.16	28.13	25.17	26.65	0.15	37.61	36.05	36.83	0.19	NA	NA	NA	0.28	130.89	137.47	134.18	0.28	NA	NA	NA	NA	80.46	76.92	78.69	0.22
C	77.84	78.27	78.06	0.31	52.46	52.86	52.66	0.30	69.66	69.07	69.37	0.35	NA	NA	NA	0.35	159.42	180.74	170.08	0.35	NA	NA	NA	NA	131.66	126.36	129.01	0.36
D	69.52	70.03	69.77	0.28	45.34	45.13	45.23	0.26	62.13	60.20	61.16	0.31	NA	NA	NA	0.26	120.38	128.86	124.62	0.26	NA	NA	NA	NA	103.16	99.31	101.23	0.28
E	54.34	56.12	55.23	0.22	47.13	48.52	47.82	0.27	25.53	23.00	24.26	0.12	NA	NA	NA	0.05	21.64	30.16	25.90	0.05	NA	NA	NA	NA	37.24	40.44	38.84	0.11
Total (cfs)	251.50	252.98	252.24	1.00	178.10	176.66	177.38	1.00	200.74	193.20	196.97	1.00	NA	NA	NA	1.00	460.71	510.43	485.57	1.00	NA	NA	NA	NA	367.38	353.62	360.50	1.00
OM-3510																												
A	24.38	28.55	26.47	0.09	16.75	9.21	12.98	0.06	47.46	43.81	45.63	0.20	NA	NA	NA	0.07	41.33	40.51	40.92	0.07	56.79	NA	NA	0.08	83.36	82.14	82.75	0.17
B	46.56	49.98	48.27	0.16	31.22	24.12	27.67	0.12	61.06	62.29	61.67	0.27	NA	NA	NA	0.25	149.56	144.11	146.84	0.25	230.32	NA	NA	0.32	120.00	117.40	118.70	0.24
C	73.33	81.54	77.43	0.26	45.65	49.11	47.38	0.21	48.50	50.19	49.34	0.21	NA	NA	NA	0.26	152.47	147.78	150.13	0.26	213.86	NA	NA	0.30	116.98	110.20	113.59	0.23
D	64.94	62.38	63.66	0.22	48.89	52.74	50.81	0.22	42.30	40.92	41.61	0.18	NA	NA	NA	0.26	154.98	150.12	152.55	0.26	157.50	NA	NA	0.22	95.93	84.86	90.40	0.18
E	81.35	74.73	78.04	0.27	82.95	95.37	89.16	0.39	32.96	33.13	33.05	0.14	NA	NA	NA	0.15	80.64	90.66	85.65	0.15	55.45	NA	NA	0.08	99.36	90.27	94.81	0.19
Total (cfs)	290.55	297.17	293.86	1.00	225.46	230.54	228.00	1.00	232.28	230.33	231.30	1.00	NA	NA	NA	1.00	578.99	573.18	576.08	1.00	713.93	NA	NA	1.00	515.63	484.86	500.25	1.00

Notes:
- NA - Not applicable, transect not sampled during event
- April 2009 flow distributions assumed to be equal to those in November 2009 based on comparable total flow.

Table 7 - Copper Basin Reach 2006 to 2010 Flow-Weighted Average Concentrations

Parameter	Units	Water Quality Criteria	Location	Sampling Event				
				August 2006	October 2007	October 2008	April 2009	November 2009
pH Field	s.u.	6	OM3510	6.53	6.55	7.07	6.38	6.80
			OM3570	5.63	6.58	7.25	---	6.38
			OM3670	---	---	7.25	6.00	6.28
			OM3760	5.90	6.48	8.44	---	---
Aluminum (total)	ug/L	87	OM3510	122.9	78.6	62.6	239.0	106.3
			OM3570	123.1	65.1	136.2	---	96.8
			OM3670	---	---	55.0	277.0	107.8
			OM3760	107.2	48.2	37.4	---	77.45
Copper (dissolved)	ug/L	2	OM3510	2.76	4.21	2.54	1.91	1.64
			OM3570	2.98	2.32	1.79	---	1.58
			OM3670	---	---	1.7	1.5	1.3
			OM3760	ND	1.0	0.3	---	0.34
Iron (total)	ug/L	1000	OM3510	356.7	525.0	450.9	491.1	424.2
			OM3570	341.3	449.8	498.5	---	372.0
			OM3670	---	---	484.6	511.1	485.7
			OM3760	180.9	246.3	311.2	---	250
Lead (dissolved)	ug/L	0.3	OM3510	ND	ND	ND	ND	0.03
			OM3570	ND	0.02	ND	---	0.01
			OM3670	---	---	ND	ND	ND
			OM3760	ND	0.06	ND	---	ND
Zinc (dissolved)	ug/L	26	OM3510	25.3	30.4	23.0	13.4	21.7
			OM3570	28.6	35.0	22.0	---	20.0
			OM3670	---	---	23.6	12.0	35.8
			OM3760	ND	3.7	ND	---	ND

Notes:
- --- indicates location was not sampled during the event
- ND indicates non-detect for all samples
- WQC for Cd, Cu, Pb, Mn and Zn calculated using a hardness of 17 mg/L.
- Where parameter detected in at least one sample, 1/2 DL substituted for NDs at other transect points.

Table 8 - Copper Basin Reach 2006 to 2010 Surface Water Data Summary

				Transect/Location																							
Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760	OM3760 A	OM3760 B	OM3760 C	OM3760 D	OM3760 E
Conductivity Field	uS/cm		2006-3Q	562	708	54	53	54	54	54	27	28	33	40	41	---	---	---	---	---	---	21	21	21	21	21
			2007-4Q	---	---	77	66	61	61	60	117.4	126	138.7	129.4	122.7	---	---	---	---	---	---	22	22	22	22	22
			2008-4Q	646	966	48	46	43	43	42	30	29	29	28	28	70	27	22	22	23	---	21	21	21	21	21
			2009-2Q	---	---	53.9	52.2	51.9	49.1	43.5	---	---	---	---	---	49.5	27.8	24.6	21.6	19.6	---	---	---	---	---	---
			2009-4Q	406	601	110	110	110	109	108	34	33	30	30	29	106	30	28	24	21	30	---	---	---	---	---
			2010-2Q	---	---	62	56	53	45	36	---	---	---	---	---	32	22	20	19	20	---	---	---	---	---	---
			2010-4Q	37.4	1008	118	110	107	99	84	88	88	79	72	68	57.8	22.6	21.7	21.1	21.7	21.3	---	---	---	---	---
Dissolved Oxygen, Field	mg/L		2006-3Q	6.1	7	8.19	8.32	8.09	7.81	7.96	6.73	6.6	6.88	6.61	6.4	---	---	---	---	---	---	8.7	8.8	8.84	8.9	8.98
			2007-4Q	---	---	9.35	9.09	9.27	9.24	9.14	9.1	9.3	9.3	9.3	9.3	---	---	---	---	---	---	9.2	9.5	9.5	9.5	9.5
			2008-4Q	6.07	7.42	9.07	9.22	9.38	9.46	9.63	9.24	9.72	9.81	9.88	9.86	9.62	9.82	9.44	9.36	9.2	---	10.65	10.22	9.98	9.74	9.68
			2009-2Q	---	---	10.71	10.59	10.79	10.71	10.92	---	---	---	---	---	11.04	10.74	10.58	10.65	10.53	---	---	---	---	---	---
			2009-4Q	9.65	9.2	10.69	10.6	10.63	10.59	10.53	12.19	12.18	12.16	12.1	11.79	11.59	11.88	11.92	11.82	11.72	11.51	---	---	---	---	---
			2010-2Q	---	---	10.59	10.69	10.69	10.79	10.69	---	---	---	---	---	11.64	11.84	11.68	11.48	11.33	---	---	---	---	---	---
			2010-4Q	11.55	9.64	11.17	10.97	10.93	10.9	10.9	11.14	10.43	10.52	10.46	10.39	10.3	10.73	10.29	10.36	10.97	8.95	---	---	---	---	---
Flow (field)	gal/min		2006-3Q	718	4129	131947	---	---	---	---	113546	---	---	---	---	---	---	---	---	---	---	98736	---	---	---	---
			2007-4Q	---	---	103224	---	---	---	---	79438	---	---	---	---	---	---	---	---	---	---	78091.2	---	---	---	---
			2008-4Q	673	1849	104538	---	---	---	---	86642	---	---	---	---	100650	---	---	---	---	---	76279	---	---	---	---
			2009-2Q	---	---	255049	---	---	---	---	---	---	---	---	---	284827	---	---	---	---	---	---	---	---	---	---
			2009-4Q	3097	9659	255698	---	---	---	---	229734	---	---	---	---	265303	---	---	---	---	---	---	---	---	---	---
			2010-2Q	---	---	320431	---	---	---	---	---	---	---	---	---	335711	---	---	---	---	---	---	---	---	---	---
			2010-4Q	1105	4519	224510	---	---	---	---	161792	---	---	---	---	212141	---	---	---	---	---	---	---	---	---	---
ORP, Field	millivolts		2008-4Q	368.5	-8.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
			2009-2Q	---	---	115	101	114	106	97	---	---	---	---	---	79	76	97	106	112	---	---	---	---	---	---
			2009-4Q	124.7	37.5	97.9	110.1	115.6	116.8	116.3	105.5	115.4	125.8	133.4	118.9	84.1	113.1	137.2	158.1	180.8	184.4	---	---	---	---	---
			2010-2Q	---	---	67.7	74.7	78	100	88.9	---	---	---	---	---	34.5	50.6	53.1	60.7	62.1	---	---	---	---	---	---
			2010-4Q	82	87.9	64.1	64.9	63.3	62.4	61.4	114.4	74.7	67.1	67	64.8	69	82	95	116	130	188	---	---	---	---	---
pH Field	s.u.	6	2006-3Q	3.41	8.72	6.75	6.7	6.75	6.27	6.35	5.87	5.99	5.01	6.11	5.58	---	---	---	---	---	---	5.6	5.81	5.88	5.96	5.98
			2007-4Q	---	---	6.61	6.62	6.57	6.48	6.54	6.65	6.6	6.57	6.59	6.57	---	---	---	---	---	---	6.46	6.47	6.48	6.49	6.48
			2008-4Q	3.64	7.11	6.95	6.94	6.93	6.92	7.87	7.18	7.24	7.25	7.26	7.28	6.84	7.21	7.39	7.38	7.29	---	8.36	8.42	8.5	8.47	8.3
			2009-2Q	---	---	6.44	6.39	6.39	6.36	6.35	---	---	---	---	---	5.77	6.27	6.02	6.02	5.86	---	---	---	---	---	---
			2009-4Q	6	7.42	6.79	6.84	6.81	6.74	6.83	6.88	6.47	6.33	6.23	6.43	6.81	6.48	6.38	6.23	5.85	6.66	---	---	---	---	---
			2010-2Q	---	---	6.16	6.05	5.96	5.42	5.72	---	---	---	---	---	6.58	6.42	6.44	6.38	6.32	---	---	---	---	---	---
			2010-4Q	6.68	8.39	7.24	7.1	7.05	6.98	6.94	6.55	6.5	6.56	6.55	6.55	6.68	6.89	6.94	6.88	6.76	6.78	---	---	---	---	---
Temperature, Field	Deg C		2006-3Q	23.4	27.8	19.2	18.7	18.4	18.4	18.1	18.1	18.6	19.2	18.9	19.4	---	---	---	---	---	---	16.8	16.7	16.7	16.8	16.7
			2007-4Q	---	---	16.4	15.9	15.7	15.7	15.3	16.3	16.4	16.5	16.4	16.4	---	---	---	---	---	---	15.1	15.1	15.2	15.2	15.2
			2008-4Q	22.26	22.62	15.66	15.57	15.52	15.49	15.46	17.36	17.28	17.04	16.99	17.06	18.14	17.42	17.1	16.88	16.57	---	18.14	18.15	18.15	18.09	18
			2009-2Q	---	---	13.84	13.85	13.84	13.84	13.83	---	---	---	---	---	12.13	11.93	12.04	12.24	12.44	---	---	---	---	---	---
			2009-4Q	13.08	13.56	11.15	11.13	11.14	11.17	11.2	11.7	11.67	11.48	11.42	11.36	11.93	11.72	11.48	10.8	10.35	12.28	---	---	---	---	---
			2010-2Q	---	---	10.93	10.8	10.77	10.72	10.74	---	---	---	---	---	12.4	12.1	12.43	12.78	12.93	---	---	---	---	---	---
			2010-4Q	7.46	13.18	12.68	12.7	12.67	12.66	12.64	11.32	11.43	11.42	11.36	11.39	13.01	12.9	12.71	11.9	11.44	11.58	---	---	---	---	---
Turbidity (Field)	NTU		2009-4Q	9.8	5.37	2.36	2.19	2.21	3.24	2.55	2.8	1.8	0.9	1.5	1.7	2.5	1.6	1.5	0.7	0.75	3.32	---	---	---	---	---
			2010-2Q	---	---	4.71	4.23	3.98	4.12	3.68	---	---	---	---	---	4.58	4.09	3.19	4.14	5.41	---	---	---	---	---	---
			2010-4Q	1.16	4.83	8.1	6.51	6.51	5.24	6.57	6.12	6.48	5.96	6.27	5.82	7.97	7.57	6.79	6.44	6.44	7.5	---	---	---	---	---
Aluminum	ug/L	87	2006-3Q	1660	50.4	126	124	129	111	125	130	147	126	118	107	---	---	---	---	---	---	112	106	111	103	108
			2007-4Q	---	---	89.9	86.1	77.9	65.4	82.6	95	69.6	54.8	64.6	71.2	---	---	---	---	---	---	49.7	49.8	46.8	42	56
			2008-4Q	1170	23.8	70	62.5	55.2	61.2	65.5	112	477	55.4	56.6	56.1	73.8	50	51	53.7	54.4	---	34.4	34.1	37.4	39.9	37.1
			2009-2Q	---	---	225	238	248	244	223	---	---	---	---	---	251	242	247	286	336	---	---	---	---	---	---
			2009-4Q	1040	47.8	99.5	110	101	117	93.7	99	96.4	96.5	99.6	84.5	239	79.7	79.5	90.8	108.75	77.45	---	---	---	---	---
			2010-2Q	---	---	134	171	194	170	138	---	---	---	---	---	127.5	135	122	149	142	---	---	---	---	---	---
			2010-4Q	290	25	203	210	248	182	203	219	191	194	245	226	231.5	237	212	174	180	286	---	---	---	---	---
Aluminum (Dissolved)	ug/L	87	2006-3Q	1550	40.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	18	ND	ND	ND	ND
			2007-4Q	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2008-4Q	1190	ND	8.8	10	9.4	8.2	10.9	11.25	10	9.9	10.6	12.1	ND	ND	ND	ND	ND	---	ND	ND	ND	ND	ND
			2009-2Q	---	---	26.1	25.8	24.8	27.3	26.5	---	---	---	---	---	29.8	31.2	32.2	28.6	27	---	---	---	---	---	---
			2009-4Q	86.2	14.6	15.1	15.2	12.8	13.1	10.8	14.9	16.2	14.2	14	16.5	ND	19.2	21.1	13	11.1	12.75	---	---	---	---	---
			2010-2Q	---	---	13.1	15.3	12.6	12	12.6	---	---	---	---	---	26.8	20.8	16.8	15.6	16	---	---	---	---	---	---
			2010-4Q	25.8	13	48.2	45.4	44	46.8	40	35.4	42	41.2	42.4	40.7	36.7	64.8	61.7	57.2	39	64.3	---	---	---	---	---
Cadmium	ug/L		2006-3Q	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2008-4Q	3.6	0.18	ND	ND	0.13	ND	ND	ND	ND	ND	ND	ND	0.2	0.25	0.16	ND	ND	---	0.12	0.13	0.14	0.19	0.16

Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760	OM3760 A	OM3760 B	OM3760 C	OM3760 D	OM3760 E
			2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	---
			2009-4Q	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.1	2006-3Q	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2008-4Q	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	ND	ND	ND	ND	ND
			2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	---
			2009-4Q	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---
Calcium	ug/L		2006-3Q	32500	108000	4790	4860	4900	4740	4930	1880	2000	3410	4530	4600	---	---	---	---	---	---	1520	1420	1450	1350	1420
			2007-4Q	---	---	7660	6210	5520	5330	5200	10900	12900	15100	14900	14600	---	---	---	---	---	---	1490	1460	1460	1450	1475
			2008-4Q	41600	135000	3660	3670	3290	3260	3180	1885	1990	1920	1810	1780	6150	1690	1400	1380	1390	---	1370	1280	1280	1340	1310
			2009-2Q	---	---	4700	4570	4340	4410	3680	---	---	---	---	---	3465	2030	1730	1430	1300	---	---	---	---	---	---
			2009-4Q	38800	79800	11300	11400	11100	11200	10900	2530	2460	2220	2230	2220	17100	2270	2030	1650	1470	2170	---	---	---	---	---
			2010-2Q	---	---	5680	4780	4330	3320	2130	---	---	---	---	---	2675	1360	1280	1200	1240	---	---	---	---	---	---
			2010-4Q	3500	135000	10300	10000	10100	7890	7730	8270	8550	6950	7000	6180	13100	1750	1680	1590	1670	1680	---	---	---	---	---
Calcium (Dissolved)	ug/L		2006-3Q	31300	111000	4740	5010	4690	4760	4690	1890	1980	3350	4240	4820	---	---	---	---	---	---	1410	1410	1360	1360	1380
			2007-4Q	---	---	7300	6340	5620	5350	5400	12500	13000	15200	15200	14900	---	---	---	---	---	---	1510	1500	1470	1480	1485
			2008-4Q	41500	137000	3640	3620	3450	3240	3120	1900	1960	2000	1830	1780	5430	1840	1480	1370	1370	---	1320	1230	1220	1250	1240
			2009-2Q	---	---	4750	4720	4390	4650	3740	---	---	---	---	---	3330	2040	1790	1500	1340	---	---	---	---	---	---
			2009-4Q	41100	80200	11000	11200	10900	10800	10700	2560	2600	2310	2120	2130	14500	2220	2070	1700	1430	2050	---	---	---	---	---
			2010-2Q	---	---	5670	5030	4270	3380	2270	---	---	---	---	---	2215	1370	1270	1230	1270	---	---	---	---	---	---
			2010-4Q	3570	132000	10900	10200	9860	9070	7780	8110	8340	7390	6730	6000	15100	1740	1660	1630	1600	1700	---	---	---	---	---
Copper	ug/L		2006-3Q	412	1.4	4.3	4.3	4.4	4.2	4.2	4.7	4.9	4.5	4	3.9	---	---	---	---	---	---	0.68	0.67	0.63	0.61	0.58
			2007-4Q	---	---	4	4	4.1	3.8	3.7	4.5	4.6	4.1	4	3.8	---	---	---	---	---	---	0.36	0.32	0.36	0.32	0.375
			2008-4Q	464	ND	2.8	2.9	2.8	2.8	2.8	3.45	3.1	2.7	2.6	2.4	11.5	ND	ND	ND	ND	---	ND	ND	ND	ND	ND
			2009-2Q	---	---	3.2	3.1	3.3	3.2	3.1	---	---	---	---	---	15	2.5	1.3	1	0.98	---	---	---	---	---	---
			2009-4Q	170	2.3	2.7	2.5	3.1	2.5	2.4	2.9	2.6	2.2	2.1	2	23.2	2.3	0.91	0.52	0.57	0.42	---	---	---	---	---
			2010-2Q	---	---	1.2	1.1	1.2	1.1	1.1	---	---	---	---	---	2.75	1.6	0.75	0.6	0.52	---	---	---	---	---	---
			2010-4Q	1.7	2	1.2	1.3	1.4	1.2	1.3	1.3	1.3	1.1	1.2	1.1	2.9	2.2	1	0.62	0.62	0.74	---	---	---	---	---
Copper (Dissolved)	ug/L	2	2006-3Q	362	ND	2.7	2.9	2.8	2.7	2.7	3	3.1	3.1	2.9	2.8	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	2.1	2	9.7	1.9	3.6	2.6	2.4	2.3	2.3	2.3	---	---	---	---	---	---	0.37	3.3	0.33	0.34	0.525
			2008-4Q	360	2.1	3	2.7	2.4	2.25	2.2	2.35	1.9	1.8	1.7	1.7	4.6	2.1	1	0.53	0.36	---	0.87	0.27	0.19	0.29	0.43
			2009-2Q	---	---	2	1.9	1.8	2	1.9	---	---	---	---	---	6.8	2.1	ND	ND	ND	---	---	---	---	---	---
			2009-4Q	131	1.4	1.4	1.5	1.4	2	1.8	1.8	1.8	1.4	1.2	3.2	5.1	1.9	0.81	0.47	0.345	0.34	---	---	---	---	---
			2010-2Q	---	---	0.76	0.83	0.79	0.73	0.82	---	---	---	---	---	1.95	1.2	0.62	0.43	0.45	---	---	---	---	---	---
			2010-4Q	1.2	1.7	1.1	1.1	1	0.99	0.95	0.97	0.94	1.1	0.84	0.91	1.8	1.5	0.78	0.52	0.47	0.44	---	---	---	---	---
Iron	ug/L	1000	2006-3Q	15700	695	358	369	370	335	353	358	381	356	330	303	---	---	---	---	---	---	193	175	189	176	181
			2007-4Q	---	---	525	530	549	514	517	506	489	434	448	441	---	---	---	---	---	---	256	246	240	240	260
			2008-4Q	25800	1140	454	468	439	451.5	432	591	516	491	508	449	1080	473	346	326	310	---	316	312	306	315	311
			2009-2Q	---	---	495	495	495	492	474	---	---	---	---	---	1150.5	413	381	421	485	---	---	---	---	---	---
			2009-4Q	16300	1270	421	440	413	431	406	403	388	359	369	352	2040	287	263	276	297	250	---	---	---	---	---
			2010-2Q	---	---	314	335	356	328	299	---	---	---	---	---	489.5	296	222	253	273	---	---	---	---	---	---
			2010-4Q	568	932	391	386	434	326	362	374	356	350	403	371	636	373	330	318	353	378	---	---	---	---	---
Iron (Dissolved)	ug/L	1000	2006-3Q	8030	ND	122	120	104	115	106	132	144	147	127	119	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	ND	ND	ND	ND	ND	95.4	95.4	97.6	92.5	99.1	---	---	---	---	---	---	ND	ND	74.3	ND	75
			2008-4Q	17900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	395	ND	ND	ND	ND	---	ND	ND	ND	ND	ND
			2009-2Q	---	---	138	147	129	129	136	---	---	---	---	---	402.5	118	154	99.6	96	---	---	---	---	---	---
			2009-4Q	13000	65	116	118	115	117	134	139	150	126	124	125	136	115	103	99.2	87.5	86.3	---	---	---	---	---
			2010-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	224.5	ND	ND	ND	ND	---	---	---	---	---	---
			2010-4Q	180	ND	162	146	130	118	112	147	119	124	114	118	257	164	148	144	140	126	---	---	---	---	---
Lead	ug/L		2006-3Q	ND	ND	0.41	0.34	0.49	0.47	0.36	0.33	0.38	0.28	0.26	0.34	---	---	---	---	---	---	ND	ND	ND	0.32	0.26
			2007-4Q	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	0.21
			2008-4Q	2.2	ND	0.24	0.26	0.24	0.2	0.26	0.575	0.26	0.23	ND	0.18	ND	ND	ND	ND	ND	---	ND	ND	ND	0.34	ND
			2009-2Q	---	---	0.25	0.25	0.26	0.25	0.29	---	---	---	---	---	0.615	ND	0.22	0.23	0.24	---	---	---	---	---	---
			2009-4Q	1.5	ND	0.072	0.075	0.047	0.056	0.061	0.045	ND	0.024	ND	0.046	0.39	ND	ND	ND	ND	ND	---	---	---	---	---
			2010-2Q	---	---	0.16	0.18	0.18	0.18	0.16	---	---	---	---	---	0.205	0.11	0.11	0.13	0.14	---	---	---	---	---	---
			2010-4Q	0.38	ND	0.23	0.34	0.24	0.25	0.23	0.27	0.22	0.2	0.28	0.23	0.29	0.25	0.2	0.17	0.17	0.28	---	---	---	---	---
Lead (Dissolved)	ug/L	0.3	2006-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	ND	ND	ND	ND	ND	ND	0.032	ND	ND	ND	---	---	---	---	---	---	ND	0.18	0.096	ND	ND
			2008-4Q	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	ND	ND	ND	ND	ND

Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760	OM3760 A	OM3760 B	OM3760 C	OM3760 D	OM3760 E
			2009-2Q	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	ND	ND	ND	ND	ND	---	---	---	---	---	---
			2009-4Q	ND	ND	ND	ND	ND	0.076	ND	ND	ND	ND	ND	0.056	ND	ND	ND	ND	ND	ND	---	---	---	---	---
			2010-2Q	---	---	0.046	0.048	0.035	0.042	0.053	---	---	---	---	---	0.0555	0.037	0.024	0.042	0.03	---	---	---	---	---	---
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---	---	---	---	---
Magnesium	ug/L		2006-3Q	12100	18100	1180	1210	1220	1170	1220	707	725	843	900	885	---	---	---	---	---	---	623	581	588	560	588
			2007-4Q	---	---	1780	1650	1590	1540	1520	1600	1780	1930	1910	1890	---	---	---	---	---	---	619	614	615	596	610
			2008-4Q	16400	37600	1190	1170	1090	1060	1040	743.5	732	723	690	665	1700	696	594	587	594	---	536	550	540	554	548
			2009-2Q	---	---	1430	1390	1360	1380	1160	---	---	---	---	---	1255	820	714	637	626	---	---	---	---	---	---
			2009-4Q	12500	22000	2770	2820	2730	2750	2660	896	887	831	843	843	4140	839	769	688	643.5	818.5	---	---	---	---	---
			2010-2Q	---	---	1470	1280	1190	1000	748	---	---	---	---	---	909	593	574	556	559	---	---	---	---	---	---
			2010-4Q	1270	44600	2980	2910	2880	2210	2100	2100	2160	1820	1840	1660	3060	726	706	681	733	694	---	---	---	---	---
Magnesium (Dissolved)	ug/L		2006-3Q	11700	18700	1160	1240	1150	1160	1160	701	722	841	857	899	---	---	---	---	---	---	581	570	555	568	569
			2007-4Q	---	---	1770	1640	1580	1520	1550	1750	1790	1970	1980	1950	---	---	---	---	---	---	622	618	609	613	604
			2008-4Q	17300	40700	1170	1170	1090	1070	1010	707.5	696	680	708	677	1650	745	636	620	619	---	562	568	572	578	563
			2009-2Q	---	---	1460	1440	1350	1450	1240	---	---	---	---	---	1155	782	732	665	614	---	---	---	---	---	---
			2009-4Q	13700	22700	2710	2780	2700	2680	2640	906	916	857	792	793	3650	816	781	685	608.5	773	---	---	---	---	---
			2010-2Q	---	---	1460	1330	1200	983	782	---	---	---	---	---	797	591	563	560	567	---	---	---	---	---	---
			2010-4Q	1210	44400	3070	2900	2780	2520	2090	2050	2080	1880	1740	1590	3440	687	668	685	682	676	---	---	---	---	---
Manganese	ug/L		2006-3Q	4480	93.3	62.2	63.6	65.4	63.2	65.6	69.2	70.2	69.4	67.2	63.2	---	---	---	---	---	---	22.2	20.3	20.1	18.6	19.3
			2007-4Q	---	---	127	120	116	112	109	162	172	173	172	169	---	---	---	---	---	---	52.3	49.5	47.8	47.5	49.2
			2008-4Q	6250	2210	88.8	87.4	82.6	81.45	78.5	67.75	62.2	59.7	56	54.2	291	75.8	40.3	33	29.7	---	31.1	30.2	28.3	28.6	29.9
			2009-2Q	---	---	99	95.1	93.3	93.6	82.3	---	---	---	---	---	190.5	35.3	23.4	21	22.4	---	---	---	---	---	---
			2009-4Q	3640	3420	280	281	274	274	264	53	48	39.5	38.6	39.4	603	27.3	16.8	15.4	15.45	12.6	---	---	---	---	---
			2010-2Q	---	---	87.6	73	67.2	54.7	41.3	---	---	---	---	---	71.2	27.2	19.1	16.8	17.3	---	---	---	---	---	---
			2010-4Q	27.5	6380	301	288	278	202	174	149	152	123	122	106	294.5	37.5	26	21.8	21.9	26	---	---	---	---	---
Manganese (Dissolved)	ug/L	914	2006-3Q	4310	83.2	61.3	65.4	59.3	59.9	62	66.1	66.8	69.5	63.3	64.4	---	---	---	---	---	---	19.8	18.3	18.9	16.2	21.4
			2007-4Q	---	---	121	112	107	102	104	167	168	174	175	170	---	---	---	---	---	---	49.8	47.3	46	45.8	46.25
			2008-4Q	5460	2230	84.6	85.7	81.3	79.05	78.1	64.5	58.3	55.4	53.2	53.4	267	73.9	43.1	29.9	28	---	25.6	24.6	23.2	23.3	24.8
			2009-2Q	---	---	99.3	97.6	92.9	99.5	85	---	---	---	---	---	170.5	35.5	24	20.7	19.6	---	---	---	---	---	---
			2009-4Q	3840	3420	270	271	265	262	258	53	54.1	45.3	35.9	37.3	556	27	17	15.3	15.35	11.2	---	---	---	---	---
			2010-2Q	---	---	82.3	72.3	61.2	50.9	39.7	---	---	---	---	---	60.2	28.1	19.6	17.1	16.9	---	---	---	---	---	---
			2010-4Q	27.3	6420	311	284	269	228	171	142	144	124	110	98.3	337	30.8	19	16.4	16.9	15.8	---	---	---	---	---
Potassium	ug/L		2006-3Q	3460	6560	1190	1250	1220	1240	1210	813	1070	932	1020	987	---	---	---	---	---	---	943	1090	805	965	895
			2007-4Q	---	---	883	1050	1050	1150	973	1070	1130	1440	1030	1120	---	---	---	---	---	---	781	980	933	654	688
			2008-4Q	3460	9330	827	833	797	795.5	785	727	728	724	702	684	999	802	799	798	812	---	768	767	762	769	763
			2009-2Q	---	---	932	905	912	938	858	---	---	---	---	---	974.5	850	775	709	697	---	---	---	---	---	---
			2009-4Q	3450	5960	1250	1280	1240	1250	1230	838	836	814	830	840	1560	883	826	771	738.5	864.5	---	---	---	---	---
			2010-2Q	---	---	927	863	862	804	720	---	---	---	---	---	827.5	699	686	672	678	---	---	---	---	---	---
			2010-4Q	1300	9750	1340	1340	1390	1150	1190	1220	1220	1130	1180	1110	1365	941	930	891	942	952	---	---	---	---	---
Potassium (Dissolved)	ug/L		2006-3Q	3460	6650	1390	1160	1130	1320	1380	984	1080	1170	1010	919	---	---	---	---	---	---	1100	956	972	1190	768
			2007-4Q	---	---	1020	959	1010	1190	1020	1030	1000	1310	1080	1030	---	---	---	---	---	---	892	745	850	734	692
			2008-4Q	3510	9640	836	844	820	818.5	798	739	726	712	724	722	967	804	767	782	799	---	753	759	762	767	746
			2009-2Q	---	---	944	947	917	966	903	---	---	---	---	---	944.5	842	804	745	700	---	---	---	---	---	---
			2009-4Q	3690	6070	1240	1270	1240	1230	1220	859	862	850	804	817	1480	883	851	781	721	836.5	---	---	---	---	---
			2010-2Q	---	---	909	891	858	800	764	---	---	---	---	---	789.5	710	691	687	700	---	---	---	---	---	---
			2010-4Q	1270	9680	1440	1380	1340	1280	1190	1200	1190	1150	1130	1090	1465	933	914	917	898	949	---	---	---	---	---
Sodium	ug/L		2006-3Q	20900	4120	1590	1720	1620	1560	1590	1590	1610	2130	2410	2450	---	---	---	---	---	---	1500	1440	1440	1360	1380
			2007-4Q	---	---	2050	1860	1770	1710	1700	2910	3180	3370	3430	3440	---	---	---	---	---	---	1430	1400	1420	1410	1420
			2008-4Q	19400	5470	1690	1720	1680	1695	1660	1720	1710	1720	1650	1590	2690	1530	1480	1450	1470	---	1430	1440	1450	1460	1430
			2009-2Q	---	---	1350	1310	1320	1360	1300	---	---	---	---	---	2010	1290	1190	1060	1040	---	---	---	---	---	---
			2009-4Q	13400	3770	1950	1960	1950	1960	1940	1540	1540	1490	1520	1530	3460	1600	1480	1370	1315	1580	---	---	---	---	---
			2010-2Q	---	---	1620	1540	1570	1520	1440	---	---	---	---	---	1750	1480	1450	1400	1420	---	---	---	---	---	---
			2010-4Q	1640	4790	1780	1780	1900	1580	1740	1840	1830	1690	1810	1690	2150	1500	1490	1400	1480	1460	---	---	---	---	---
Sodium (Dissolved)	ug/L		2006-3Q	19800	4160	1590	1700	1550	1590	1560	1570	1610	2060	2370	2470	---	---	---	---	---	---	1380	1380	1360	1330	1420
			2007-4Q	---	---	2030	1900	1750	1660	1710	3110	3150	3400	3500	3420	---	---	---	---	---	---	1450	1440	1450	1450	1425
			2008-4Q	19200	5530	2150	1950	1830	1810	1750	1720	1700	1650	1660	1670	2560	1580	1440	1460	1500	---	1410	1450	1460	1470	1440
			2009-2Q	---	---	1380	1390	1350	1400	1360	---	---	---	---	---	1960	1330	1240	1140	1070	---	---	---	---	---	---
			2009-4Q	14700	3970	2020	1960	1920	1910	1920	1610	1600	1600	1490	1480	3320	1610	1530	1410	1315	1545	---	---	---	---	---
			2010-2Q	---	---	1630	1600	1600	1520	1540	---	---	---	---	---	1690	1520	1460	1440	1480	---	---	---	---	---	---
			2010-4Q	1640	4780	1950	1850	1850	1820	1750	1830	1800	1740	1740	1690	2305	1490	1450	1450	1440	1490	---	---	---	---	---
Zinc	ug/L		2006-3Q	3170	15.6	25.6	27.4	27	29.6	26.1	28.9	29.7	27.5	25.8	23.2	---	---	---	---	---	---	ND	ND	ND	ND	ND
			2007-4Q	---	---	33.4	32.8	33.2	33.4	30.4	39.9	38	36	35	36.8	---	---	---	---	---	---	4	ND	3.9	3.8	ND
			2008-4Q	4040	26.8	22.4	26.4	22.8	24.7	22.3	27.85	39.4	24.6	20.6	18.7	113	20	5.3	3.4	5.9	---	4.4	ND	7.2	ND	4.2

Parameter	Units	Water Quality Criteria	Sampling Event	DMC000	NPC000	OM3510 A	OM3510 B	OM3510 C	OM3510 D	OM3510 E	OM3570 A	OM3570 B	OM3570 C	OM3570 D	OM3570 E	OM3670 A	OM3670 B	OM3670 C	OM3670 D	OM3670 E	OM3760	OM3760 A	OM3760 B	OM3760 C	OM3760 D	OM3760 E
			2009-2Q	—	—	18	17.8	17.7	17.9	16.5	—	—	—	—	—	88.2	ND	ND	ND	ND	—	—	—	—	—	—
			2009-4Q	2450	41	22.8	22.8	28.3	25.7	26	22.6	25.1	19.4	16.3	19.1	252	14.2	9.4	7.6	7.1	5.15	—	—	—	—	—
			2010-2Q	—	—	13.4	14.9	12.6	11.8	ND	—	—	—	—	—	32.85	ND	ND	ND	ND	—	—	—	—	—	—
			2010-4Q	23	21	9	ND	9.6	ND	ND	ND	8.5	ND	ND	ND	19.45	8.2	ND	ND	ND	ND	—	—	—	—	—
Zinc (Dissolved)	ug/L	26	2006-3Q	3050	ND	30	25.6	24.5	24.5	24.8	30	27.8	31.8	27.8	25.5	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2007-4Q	—	—	32.9	31.1	30.6	29.4	30.3	37.2	38.5	36.3	34.4	32.1	—	—	—	—	—	—	3.7	6.2	3.7	ND	4.45
			2008-4Q	3140	21.8	22.4	24.2	23.3	22.25	22.3	22.95	21.8	24.4	20.2	19.9	109	20.6	ND	ND	ND	—	ND	ND	ND	ND	ND
			2009-2Q	—	—	ND	18.5	18.1	ND	ND	—	—	—	—	—	78.45	ND	ND	ND	ND	—	—	—	—	—	—
			2009-4Q	2650	17.9	21.6	20.2	20.6	25.3	20.1	26.5	26.9	18.1	14.6	15.6	253	13.7	9.5	ND	ND	ND	—	—	—	—	—
			2010-2Q	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	24.5	ND	ND	ND	ND	—	—	—	—	—	—
			2010-4Q	60	ND	ND	ND	ND	ND	ND	14.4	17.6	ND	ND	ND	19.4	ND	ND	20.5	ND	ND	—	—	—	—	—
Acidity	mg/L		2006-3Q	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2007-4Q	—	—	ND	ND	11.4	ND	7.4	ND	ND	ND	7.4	ND	—	—	—	—	—	—	ND	ND	ND	21.3	11.4
			2008-4Q	65.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	ND	ND	ND	ND	ND
			2009-2Q	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	—
			2009-4Q	30.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
			2010-2Q	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	—
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
Alkalinity, Total (as CaCO3)	mg/L		2006-3Q	ND	14.4	6.2	6	6	5.9	6	5.7	5.8	6	5.6	5.8	—	—	—	—	—	—	6.1	6	5.6	5.6	5.9
			2007-4Q	—	—	6.9	6.9	7.2	6.9	7	7.1	6.9	6.9	6.9	7.2	—	—	—	—	—	—	7.4	7.3	7.1	6.8	7.15
			2008-4Q	ND	20.2	6.8	6.8	6.8	6.95	6.8	7.05	7.3	6.9	7	7.2	4.9	6.4	6.6	6.5	7	—	7	6.3	6.4	6.6	6.7
			2009-2Q	—	—	7.7	7.5	7.5	7.7	7.6	—	—	—	—	—	7.7	8.6	7.4	6.3	6.4	—	—	—	—	—	—
			2009-4Q	ND	25.8	8	7.8	8.1	8.3	7.8	7.3	8	7.2	7.3	6.9	6.3	8.4	8.3	7.6	6.15	8.65	—	—	—	—	—
			2010-2Q	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	ND	ND	ND	ND	ND	—	—	—	—	—	—
			2010-4Q	ND	32.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—
Chloride	mg/L		2006-3Q	12.9	2.9	ND	ND	ND	ND	ND	ND	ND	1	1.1	1.2	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2007-4Q	—	—	ND	ND	ND	ND	ND	1.1	1.2	1.2	1.2	1.2	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2008-4Q	15.8	3.7	0.99	0.98	0.9	0.91	0.9	0.905	0.9	0.88	0.91	0.89	1.2	0.95	0.81	0.85	0.85	—	0.79	ND	0.79	0.76	0.78
			2009-2Q	—	—	1.5	1.4	1.4	1.4	1.4	—	—	—	—	—	1.7	1.4	1.3	1.2	1.1	—	—	—	—	—	—
			2009-4Q	11.6	4.1	1.8	1.9	1.8	1.8	1.8	1.5	1.5	1.4	1.4	1.4	3	1.4	1.5	1.3	1.2	1.45	—	—	—	—	—
			2010-2Q	—	—	1.5	1.5	1.5	1.4	1.4	—	—	—	—	—	1.5	1.4	1.4	1.4	1.4	—	—	—	—	—	—
			2010-4Q	1	5	1.7	1.7	1.7	1.6	1.6	1.7	1.6	1.6	1.6	1.5	2.05	1.2	1.2	1.2	1.3	1.2	—	—	—	—	—
Hardness	mg/L		2006-3Q	160	360	18	16	18	18	18	8	8	10	16	16	—	—	—	—	—	—	6	6	6	6	6
			2007-4Q	—	—	30	26	30	30	22	34	38	48	44	44	—	—	—	—	—	—	10	8	8	12	8
			2008-4Q	240	540	16	20	14	14	14	9	8	8	8	8	22	8	6	6	6	—	6	6	6	8	6
			2009-2Q	—	—	18	18	18	18	16	—	—	—	—	—	15	10	8	8	6	—	—	—	—	—	—
			2009-4Q	180	290	42	42	40	42	44	10	12	10	10	10	46	12	10	10	12	10	—	—	—	—	—
			2010-2Q	—	—	28	20	18	14	10	—	—	—	—	—	12	6	6	6	6	—	—	—	—	—	—
			2010-4Q	16	510	40	38	34	32	30	28	28	26	24	22	44	6	6	6	6	6	—	—	—	—	—
Sulfate	mg/L		2006-3Q	223	335	10.9	10.8	10.8	10.8	10.7	3.1	3.5	6.9	10	11.9	—	—	—	—	—	—	1	1	ND	ND	1
			2007-4Q	—	—	20.2	15.4	13.7	13.1	12.6	30	36.9	41.8	41	40.2	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2008-4Q	259	487	8.9	8.5	7.7	7.45	7	2.95	3	2.8	2.7	2.6	15.9	4	ND	ND	ND	—	ND	ND	ND	ND	ND
			2009-2Q	—	—	12.4	12.2	11.2	11	8.5	—	—	—	—	—	9.15	2.2	1.5	1.5	1.2	—	—	—	—	—	—
			2009-4Q	193	264	34.5	34.3	34.1	34	33.4	4.5	4.5	3.5	3.2	3.1	58.1	2.4	1.9	1.5	1.5	1.8	—	—	—	—	—
			2010-2Q	—	—	16.2	13.8	11.4	8.8	5.6	—	—	—	—	—	7.3	3.6	3.2	3.3	3.3	—	—	—	—	—	—
			2010-4Q	3.7	480	33.1	31.2	29.4	26.3	22.6	23.2	23.9	20.8	18.5	16.3	46.9	1.6	1.3	1	1.3	1.1	—	—	—	—	—
Total Dissolved Solids (TDS)	mg/L		2006-3Q	316	524	42	43	41	35	41	21	22	32	33	41	—	—	—	—	—	—	19	30	28	18	18
			2007-4Q	—	—	64	66	60	57	51	80	95	93	99	95	—	—	—	—	—	—	27	35	27	32	35
			2008-4Q	391	654	25	44	40	34	34	32.5	30	36	28	29	54	25	31	33	32	—	23	26	17	32	22
			2009-2Q	—	—	42	33	33	47	34	—	—	—	—	—	59	27	30	33	34	—	—	—	—	—	—
			2009-4Q	211	445	68	59	63	61	66	29	26	29	20	17	95	27	23	15	20	22	—	—	—	—	—
			2010-2Q	—	—	53	36	34	30	28	—	—	—	—	—	42.5	35	27	33	41	—	—	—	—	—	—
			2010-4Q	41	772	84	62	64	81	60	57	55	69	66	60	99.5	37	62	65	67	44	—	—	—	—	—
Total Suspended Solids (TSS)	mg/L		2006-3Q	16.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	—	—	—	—	—	—	ND	ND	ND	ND	ND
			2007-4Q	—	—	ND	ND	ND	4	4	5	ND	ND	ND	ND	—	—	—	—	—	—	ND	4	ND	ND	ND
			2008-4Q	10	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	5.2	2.4	ND	ND	ND	—	ND	ND	ND	ND	ND
			2009-2Q	—	—	2.4	ND	3.6	4.4	2.8	—	—	—	—	—	3.8	2	2.4	2.4	5.2	—	—	—	—	—	—
			2009-4Q	16	2.8	2.4	ND	ND	2	ND	ND	ND	ND	ND	ND	8	ND	ND	ND	2	ND	—	—	—	—	—
			2010-2Q	—	—	4.8	3.6	4	3.2	3.6	—	—	—	—	—	ND	2.4	2.8	3.2	3.2	—	—	—	—	—	—
			2010-4Q	5.6	2	2.4	2.4	ND	ND	ND	2	ND	ND	ND	ND	2.4	ND	2	ND	4	3.2	—	—	—	—	—

Table 9 - Copper Basin Reach 2010 Sediment Chemistry Summary

			Copper Basin Reach							Copper Basin Reference		
Parameter	Units	Lotic Goal	OM3510A-0-SE-061410-001	OM3510C-0-SE-061410-001	OM3510E-0-SE-061410-001	OM3510E-0-SE-061410-002	OM3650A-0-SE-061510-001	OM3650A-0-SE-061510-002	OM3650A-0-SE-061510-003	OM3680C-0-SE-061510-001	OM3680D-0-SE-061510-001	OM3680E-0-SE-061510-001
Aluminum	mg/kg	NA	13200	11800	10800	11500	5980	5110	6380	4490	4720	4350
Cadmium	mg/kg	NA	0.48	0.91	0.69	0.49	0.57	0.58	0.68	0.15	0.18	0.14
Calcium	mg/kg	NA	9350	14300	20700	2330	5310	3540	3730	704	338	366
Copper	mg/kg	680	**987**	**1590**	**1560**	**720**	**1150**	**1150**	**1120**	259	97.4	66.3
Iron	mg/kg	57000	**127000**	**237000**	**182000**	**107000**	**87600**	**101000**	**104000**	29900	28300	16000
Lead	mg/kg	145	**151**	**442**	**210**	**197**	**240**	**258**	**266**	43.3	64.4	11.4
Magnesium	mg/kg	NA	9230	9710	10800	4230	4260	3440	3690	1020	858	693
Manganese	mg/kg	NA	1140	1340	2430	851	1080	846	903	362	395	352
Potassium	mg/kg	NA	1780	1220	1620	1230	789	641	961	355	502	356
Sodium	mg/kg	NA	489	595	745	163	301	213	291	48.8	32.9	58.6
Zinc	mg/kg	2200	**4090**	**8670**	**8230**	**2230**	**3370**	**3020**	**3420**	492	481	168
TOC	mg/kg	NA	3020	1640	1230	1400	1770	2040	2770	2630	1630	1560
Total Solids	%	NA	81.8	91.2	77.5	86.1	79.8	85.7	74.1	78.6	83.9	84.7

Notes:

- **Bold** indicates value that exceeds sediment goal.

Table 10 - Copper Basin/Ocoee #3 Reservoir 2010 Sediment Toxicity Test Results

Location/Material	Description	% Survival	Biomass (mg)	Growth (mg)
Glass Beads	Lab Control	96	0.3195	0.3339
Control	Material Control	86.3	0.3123	0.3631
OM3680C	Reference, LB d.s. of DMC	80	0.7293	0.9092
OM3680D	Reference, LB d.s. of DMC	78.8	0.6663	0.8394
OM3680E	Reference, LB d.s. of DMC	78.8	0.8206	1.0441
OM3650A	Ocoee RB d.s. of DMC	80	0.8574	1.0924
OM3650A	Ocoee RB d.s. of DMC	85	0.4611	0.5637
OM3650A	Ocoee RB d.s. of DMC	88.6	0.5107	0.5838
OM3510A	Ocoee RB d.s. of NPC	85	0.3064	0.3600
OM3510C	Ocoee RB d.s. of NPC	82.5	0.4086	0.5009
OM3510E	Ocoee RB d.s. of NPC	87.5	0.3690	0.4137
OM3000A	Ocoee #3 Reservoir	83.8	0.3065	0.3731
OM3000C	Ocoee #3 Reservoir	90	0.4230	0.4701
OM3000E	Ocoee #3 Reservoir	82.5	0.3746	0.4562

Notes:

- LB = left bank, RB = right bank, d.s. = downstream, DMC = Davis Mill Creek, NPC = North Potato Creek

Table 11 - Copper Basin/Ocoee #3 Reservoir 2010 Sediment Toxicity Test Statistics by Reach

Location/ Material	Description	Mean Survival	Mean Biomass	Mean Growth
Glass Beads	Lab Control	96	0.3339	0.3195
Control	Material Control	86.3	0.3631	0.3123
OM3680	Reference, LB d.s. of DMC	79.2	0.7387	0.9309
OM3650A	Ocoee RB d.s. of DMC	84.5	0.6097	0.7466
OM3510	Ocoee RB d.s. of NPC	85	0.3613	0.4249
OM3000	Ocoee #3 Reservoir	85.4	0.3680	0.4331

Notes:

- LB = left bank, RB = right bank, d.s. = downstream, DMC = Davis Mill Creek, NPC = North Potato Creek
- Biomass based on no. of organisms exposed, Growth based on no. of survivors.
- Statistics represent the mean for all samples from a location/reach.
- OM3680 samples collected in left bank half of channel; OM3510 samples collected along a full transect.

Table 12 - Copper Basin Reach 2009 Macroinvertebrate Species List

							Sample ID											
							OM3510-21-TMIK-042009-001	OM3510-21-TMIK-042009-002	OM3510-21-TMIK-042009-003	OM3670A-21-TMIK-042109-001	OM3670A-21-TMIK-042109-002	OM3670A-21-TMIK-042109-003	OM3670D-21-TMIK-042109-001	OM3670D-21-TMIK-042109-002	OM3670D-21-TMIK-042109-003	OM3670D-21-TMIK-042109-004	OM3670D-21-TMIK-042109-005	OM3670D-21-TMIK-042109-006
Taxonomic Classifications						SSF:	1	1	1	1	1	1	6	9	7.5	7.5	7.5	15
Phylum	Class	Order	Family	Genus	Tolerance Value	Clinger?												
ANNELIDA	Oligochaeta	Lumbriculida	Lumbriculidae		7.03	N			19	2	3		4			2		
		Tubificida	Enchytraeidae		9.84	N	1				2							
ARTHROPODA	Arachnoidea	Acariformes			5.53	N							1	1				
			Hygrobatidae	Atractides	5.53	N		6										
			Lebertiidae	Lebertia	5.53	N				1					1			1
	Crustacea	Decapoda	Cambaridae	Cambarus	7.62	N									2			1
		Isopoda	Asellidae	Caecidotea	9.11	N			1									
	Insecta	Coleoptera	Elmidae	Dubiraphia	5.93	Y			1									
				Optioservus	2.36	Y	12	6	6	1		2	22	5	2	1	9	3
				Oulimnius	1.8	Y	9	22	17	3			8	18	13	10	16	13
				Promoresia	2.35	Y	1	1		1		1	7	9	3	2	3	10
				Stenelmis	5.1	Y						1						
			Psephenidae	Psephenus	2.35	Y								1			1	
		Collembola			ND	N						1						
		Diptera	Ceratopogonidae		5.9	N				1	1							
				Dasyhelea	4	N					4							
			Chironomidae	Ablabesmyia	7.2	N										1		
				Conchapelopia	4.5	N	9	9	6	10		1	5	9	8	7	6	11
				Corynoneura	6.01	N		1	2				3			2		
				Cricotopus	5.78	Y	14	8	3	10	46	14	2	2	5	8	5	3
				Cryptochironomus	6.4	N												1
				Diamesa	8.12	N				7	19			3		2		1
				Eukiefferiella	3.43	N			3	2	12	1	8	1		2	2	3
				Microtendipes	5.53	Y	4	11	1				1		3	3		
				Orthocladius	5.95	N	8	8	6	5	77	15	31	9	18	17	13	1
				Pagastia	1.77	N												1
				Parametriocnemus	3.65	N	19	21	14	2		1	20	2	4	15	9	2
				Paratanytarsus	8.45	N						1						
				Polypedilum	5.69	N	6	8	5		4	2	8	3	2	12	7	5
				Potthastia	6.4	N										1		3
				Pseudorthocladius	1.51	N	1	1	2	1								
				Rheotanytarsus	5.89	Y	6	2	12					2	6	2	1	
				Smittia	2	N			1									
				Stempellina	0	N		1					1					
				Synorthocladius	4.36	N	4	2	2				2			1	1	
				Tanytarsus	6.76	N	1	3	6						1	3		
				Thienemanniella	5.86	N							1					
				Tribelos	6.31	N	1					1					2	
				Tvetenia	3.65	N	5	5	7	2	19	1	10	7	11	9	9	7
			Empididae	Clinocera	7.57	Y										1		
				Hemerodromia	7.57	N	3	19	9	4	2	3	1	1	1	2	2	1
				Neoplasta	7.6	N					1			1	1			
			Simuliidae	Prosimulium	4.01	Y			2									
				Simulium	4	Y	1			10	17	5	18	18	6		4	2
			Tipulidae	Antocha	4.25	Y	1	1					1	5	5	3	3	5
				Ormosia	6.27	N	1											
		Ephemeroptera	Baetidae		6.1	N				1								

							Sample ID											
							OM3510-21-TMIK-042009-001	OM3510-21-TMIK-042009-002	OM3510-21-TMIK-042009-003	OM3670A-21-TMIK-042109-001	OM3670A-21-TMIK-042109-002	OM3670A-21-TMIK-042109-003	OM3670D-21-TMIK-042109-001	OM3670D-21-TMIK-042109-002	OM3670D-21-TMIK-042109-003	OM3670D-21-TMIK-042109-004	OM3670D-21-TMIK-042109-005	OM3670D-21-TMIK-042109-006
				Baetis	4.51	N	2	1					6	1	2	2	1	3
				Plauditus	4.51	N	2	2	3				2	11	8	5	17	24
			Baetiscidae	Baetisca	3.4	N												1
			Ephemerellidae	Drunella	0.26	Y			1	1			2			1		2
				Ephemerella	2.04	Y	11	13	6	13	7	12	18	27	35	20	27	23
			Heptageniidae		4	Y				1								
				Epeorus	1.27	Y						1	1		1	3	5	
				Leucrocuta	2.4	Y										1		
				Maccaffertium	3.45	Y	3	7	6				10	4	11	6	2	6
				Rhithrogena	0.3	Y						2						
			Isonychiidae	Isonychia	3.45	N						2	1		1	1		1
		Megaloptera	Corydalidae	Nigronia	5.25	Y	1											
		Plecoptera	Chloroperlidae		0.7	N									1			
				Haploperla	0.98	Y	1							1				
			Leuctridae	Leuctra	0.67	Y	19	19	28	10	1	7	13	3	10	26	4	5
			Nemouridae	Amphinemura	3.33	N		1				1						
			Perlidae		1.5	Y		2			1		1			1		
				Acroneuria	1.47	Y								1	1			
				Perlesta	4.7	Y					1	2		1			1	5
			Perlodidae		1.6	Y			1						1			
				Cultus	1.57	Y							1			2	1	1
				Isoperla	1.5	Y	1	1		2	2	1	2	2	2		2	1
				Remenus	0.2	Y	1									1		
			Taeniopterygidae	Taeniopteryx	5.37	N	2	1										
		Trichoptera	Brachycentridae	Brachycentrus	2.08	Y		1		1	1						2	4
				Micrasema	0.56	Y							1		2			
			Glossosomatidae	Glossosoma	1.55	Y	5	3					1	1			1	
				Matrioptila	0	Y		1	1				1	2	1		2	
			Goeridae	Goera	0.13	Y		2	6									
			Hydropsychidae		4	Y				2								
				Ceratopsyche	3.11	Y	4	4	1		1	2		4	3	2	10	2
				Cheumatopsyche	6.22	Y	8	3	3			1	4	8	5	4	10	11
			Hydroptilidae	Hydroptila	6.22	Y		5										
			Lepidostomatidae	Lepidostoma	0.9	N								2	6	3	2	2
			Leptoceridae	Setodes	0	Y			1				1					
			Philopotamidae	Chimarra	2.76	Y								1				
				Dolophilodes	0.81	Y							3	1	1		1	1
			Polycentropodidae		4	Y		1										
				Nyctiophylax	0.9	Y									1			
			Psychomyiidae	Psychomyia	2.44	Y	1								1	2		
			Rhyacophilidae	Rhyacophila	0.73	Y				1							2	2
	Malacostraca	Amphipoda	Crangonyctidae	Crangonyx	7.87	N	1	2	9									
MOLLUSCA	Bivalvia	Veneroida	Sphaeriidae	Pisidium	6.48	N		1										
	Gastropoda	Basommatophora	Arcylidae	Ferrissia	ND	N							2				1	2
		Mesogastropoda	Pleuroceridae	Elimia	2.46	N	3		1				7	1	1			
Nemertea	Enopla	Haplonemertea	Tetrastemmatidae	Prostoma	6.1	N							1					
SARCOMASTIGOPHORA	Zoomastigophora	Diplomonadida	Hexamitidae	Giardia	ND	ND				1								
				Macroinvertebrate Metrics														
				No. of Organisms Counted			172	205	192	95	221	81	232	168	186	186	184	170
				Abundance (No. of Organisms Counted x SSF)			172	205	192	95	221	81	1392	1512	1382	1395	1380	2536
				Taxa Richness (gross)			36	38	34	26	20	25	40	35	38	38	35	37
				EPT Richness (gross)			13	17	11	9	7	10	17	16	19	16	17	17

	Sample ID											
	OM3510-21-TMIK-042009-001	OM3510-21-TMIK-042009-002	OM3510-21-TMIK-042009-003	OM3670A-21-TMIK-042109-001	OM3670A-21-TMIK-042109-002	OM3670A-21-TMIK-042109-003	OM3670D-21-TMIK-042109-001	OM3670D-21-TMIK-042109-002	OM3670D-21-TMIK-042109-003	OM3670D-21-TMIK-042109-004	OM3670D-21-TMIK-042109-005	OM3670D-21-TMIK-042109-006
Family' Taxa with underlying genera	0	0	0	0	2	0	0	0	1	0	0	0
Family' EPT Taxa with underlying genera	0	0	0	0	1	0	0	0	1	0	0	0
Taxa Richness (adusted)	36	38	34	26	18	25	40	35	37	38	35	37
EPT Richness (adjusted)	13	17	11	9	6	10	17	16	18	16	17	17
% EPT	34.9%	32.7%	29.7%	33.7%	6.3%	38.3%	29.3%	41.7%	50.0%	43.0%	48.9%	55.3%
% Oligochaetes & Chironomids	45.9%	39.0%	46.4%	43.2%	82.4%	45.7%	41.4%	22.6%	31.2%	46.8%	29.9%	22.4%
NCBI	3.74	3.94	4.01	4.00	5.40	4.14	3.56	3.47	3.44	3.63	3.48	3.56
% Dominant	11.0%	10.7%	14.6%	13.7%	34.8%	18.5%	13.4%	16.1%	18.8%	14.0%	14.7%	14.1%
% Clingers	59.9%	55.1%	50.0%	58.9%	34.8%	63.0%	50.9%	69.0%	63.4%	53.2%	60.9%	58.2%
TDEC MMI Metric Scores - 2003 SOP												
Taxa Richness	6	6	6	4	2	4	6	6	6	6	6	6
EPT Richness	4	6	4	2	2	4	6	6	6	6	6	6
% EPT	2	2	2	2	0	2	2	4	4	4	4	4
% Oligochaetes & Chironomids	4	4	4	4	0	4	4	6	6	4	6	6
NCBI	6	6	6	6	4	4	6	6	6	6	6	6
% Dominant	6	6	6	6	4	6	6	6	6	6	6	6
% Clingers	6	4	4	6	2	6	4	6	6	4	6	6
TDEC MMI Score	34	34	32	30	14	30	34	40	40	36	40	40
TDEC MMI Metric Scores - 2006 SOP												
%NUTOL	23.8%	10.7%	22.4%	23.2%	32.6%	28.4%	21.1%	21.4%	14.5%	16.1%	15.8%	14.1%
% NUTOL-MMI	6	6	6	6	4	6	6	6	6	6	6	6
Taxa Richness	6	6	6	4	2	4	6	6	6	6	6	6
EPT Richness	4	6	4	2	2	4	6	6	6	6	6	6
% EPT	2	2	2	2	0	2	2	4	4	4	4	4
% Oligochaetes & Chironomids	4	4	4	4	0	4	4	6	4	4	6	6
NCBI	6	6	6	6	4	4	6	6	6	6	6	6
% Clingers	6	4	4	4	2	6	4	6	6	4	6	4
Revised MMI	34	34	32	28	14	30	34	40	38	36	40	38
MMI Change	0	0	0	-2	0	0	0	0	-2	0	0	-2

Table 13 - Copper Basin Reach 2010 Macroinvertebrate Species List

Taxonomic Classifications							Sample ID											
							OM3510-21-TMIK-041210-001	OM3510-21-TMIK-041210-002	OM3510-21-TMIK-041210-003	OM3670A-21-TMIK-041210-001	OM3670A-21-TMIK-041210-002	OM3670A-21-TMIK-041210-003	OM3670D-21-TMIK-041210-001	OM3670D-21-TMIK-041210-002	OM3670D-21-TMIK-041210-003	OM3670D-21-TMIK-041210-004	OM3670D-21-TMIK-041210-005	OM3670D-21-TMIK-041210-006
						SSF:	1	1	1	3.33	5	5	7.5	5	10	10	5	16.67
Phylum	Class	Order	Family	Genus	Tolerance Value	Clinger?												
ANNELIDA	Oligochaeta	Lumbriculida	Lumbriculidae		7.03	N	1	2										
ARTHROPODA	Arachnoidea	Acariformes			5.53	N	2											12
			Lebertiidae	Lebertia	5.53	N	1	1			1					6		
	Insecta	Coleoptera	Elmidae	Dubiraphia	5.93	Y			1									
				Optioservus	2.36	Y	7	6	6	2		2	8	3	1	3	9	
				Oulimnius	1.8	Y	7	9	5	2	1	4	10	13	10	8	9	5
				Promoresia	2.35	Y	4	17		1			12	7	9	34	30	15
				Stenelmis	5.1	Y			1				1					
			Ptilodactylidae	Anchytarsus	3.64	Y	1											
		Diptera	Ceratopogonidae		5.9	N		1										
			Chironomidae	Ablabesmyia	7.2	N			1									
				Cardiocladius	5.87	N					1							
				Cladotanytarsus	4.09	N							1					1
				Conchapelopia	4.5	N	1	2	2		1		1		2	1	1	
				Cricotopus	5.78	Y	6	3	2	3	13	7	1	16	8	4	16	
				Diamesa	8.12	N				5	15	3			1		1	
				Eukiefferiella	3.43	N	4	5		7	5	10	14	5	4	6	7	19
				Euorthocladius	5.95	N									5	5		
				Limnophyes	7.43	N								3				
				Microtendipes	5.53	Y			1		1							
				Orthocladius	5.95	N	17	22	8	81	98	87	26	66	42	15	26	42
				Pagastia	1.77	N									1			
				Parachaetocladius	0	N		1	1									
				Parakiefferiella	5.4	N								1			1	
				Parametriocnemus	3.65	N	5	4		1				1	1	1		1
				Paratanytarsus	8.45	N						1						
				Polypedilum	5.69	N	6	1	2	5	3	8	4	14	4	5	4	3
				Pseudochironomus	5.36	N											2	
				Rheocricotopus	7.3	N									1			
				Rheotanytarsus	5.89	Y		1			1		12	2	12	2	4	5
				Tanytarsus	6.76	N	2	1							2			
				Tvetenia	3.65	N		1		2		1	5	6	5	9	7	4
			Empididae		7.6	N		1	1	6	6				1			
				Hemerodromia	7.57	N		1	1	4	4	9	3	1	3	2	5	5
				Neoplasta	7.6	N		3		18	20	9		4	1	1		
			Simuliidae		3.5	Y	2											
				Prosimulium	4.01	Y						1						
				Simulium	4	Y	2	2		9	2	4	23	8	5	3	7	15
			Tipulidae	Antocha	4.25	Y				9	5		2	1	3	1	1	
		Ephemeroptera	Baetidae		6.1	N	1	1					1	2	2			4
				Acentrella	3.6	N							1					
				Baetis	4.51	N												1
				Plauditus	4.51	N					2		1		3	2	1	9
			Ephemerellidae	Drunella	0.26	Y									1			
				Ephemerella	2.04	Y	20	10	5	18	9	13	24	29	23	29	44	12
			Heptageniidae		4	Y	2							2				

							Sample ID											
							OM3510-21-TMIK-041210-001	OM3510-21-TMIK-041210-002	OM3510-21-TMIK-041210-003	OM3670A-21-TMIK-041210-001	OM3670A-21-TMIK-041210-002	OM3670A-21-TMIK-041210-003	OM3670D-21-TMIK-041210-001	OM3670D-21-TMIK-041210-002	OM3670D-21-TMIK-041210-003	OM3670D-21-TMIK-041210-004	OM3670D-21-TMIK-041210-005	OM3670D-21-TMIK-041210-006
				Epeorus	1.27	Y							4		1	1	2	
				Maccaffertium	3.45	Y	1	3	1	3	2		2		1	1	1	1
			Isonychiidae	Isonychia	3.45	N		2		1	1							
		Megaloptera	Corydalidae	Nigronia	5.25	Y	1											
		Plecoptera	Chloroperlidae		0.7	N		1										
				Haploperla	0.98	Y	3							1				
			Leuctridae		0.2	Y						5						
				Leuctra	0.67	Y	18	16	3	1	11		2	2	13	2	1	
			Nemouridae	Amphinemura	3.33	N						3						
			Perlidae		1.5	Y				1							1	
				Acroneuria	1.47	Y										1		
				Perlesta	4.7	Y	9	2	1		1	1	6			10	11	2
			Perlodidae	Cultus	1.57	Y	1				1		4	1		2	2	
				Isoperla	1.5	Y	1	4	6	5	6	5	2	3	1		2	1
			Taeniopterygidae	Taeniopteryx	5.37	N	1								2	3	1	1
			Pteronarcidae	Pteronarcys (nee: Allonarcys)	1.67	Y	1											
		Trichoptera			ND	N		1										
			Glossosomatidae	Glossosoma	1.55	Y								2				
				Matrioptila	0	Y												1
			Hydropsychidae		4	Y	1											
				Ceratopsyche	3.11	Y		2	1	1	4		10	3	10	2	14	1
				Cheumatopsyche	6.22	Y	1	2	1		1	1	1	6	1	14	9	1
				Hydropsyche	4.3	Y											1	
			Hydroptilidae	Hydroptila	6.22	Y		1										
			Lepidostomatidae	Lepidostoma	0.9	N								3		8		
			Leptoceridae		2.7	N							2				1	
			Philopotamidae	Dolophilodes	0.81	Y				1								
			Polycentropodidae		4	Y												1
			Rhyacophilidae	Rhyacophila	0.73	Y				2	1		1		1	1		
	Malacostraca	Amphipoda			ND	N/A						1						
			Crangonyctidae	Crangonyx	7.87	N	1		1									
MOLLUSCA	Gastropoda	Basommatophora	Arcylidae	Ferrissia	ND	N										2		
		Mesogastropoda	Pleuroceridae	Elimia	2.46	N							2	1		1		
NEMATODA					ND	N					1							
				Macroinvertebrate Metrics														
				No. of Organisms Counted			130	129	51	188	217	175	186	206	180	185	221	162
				Total Abundance (No. of Organisms Counted x SSF)			130	129	51	626	1085	875	1395	1030	1800	1850	1105	2701
				Taxa Richness (gross)			31	32	21	24	28	20	30	28	33	32	30	24
				EPT Richness (gross)			13	12	7	9	11	6	14	11	12	13	14	12
				Family' Taxa with underlying genera			4	2	1	1	1	0	1	0	2	0	1	1
				Family' EPT Taxa with underlying genera			2	1	0	0	0	0	1	0	1	0	1	1
				Taxa Richness (adusted)			27	30	20	23	27	20	29	28	31	32	29	23
				EPT Richness (adjusted)			11	11	7	9	11	6	13	11	11	13	13	11
				% EPT			46.2%	34.9%	35.3%	17.6%	18.0%	16.0%	32.8%	26.2%	32.8%	41.1%	41.2%	21.6%
				% Oligochaetes & Chironomids			32.3%	33.3%	33.3%	55.3%	63.6%	66.9%	34.4%	55.3%	48.9%	25.9%	31.2%	46.3%
				NCBI			3.46	3.47	3.69	5.14	5.44	5.14	3.68	4.42	4.13	3.66	3.72	4.44
				% Dominant			15.4%	17.1%	15.7%	43.1%	45.2%	49.7%	14.0%	32.0%	23.3%	18.4%	19.9%	25.9%
				% Clingers			67.7%	60.5%	66.7%	30.9%	27.2%	24.6%	67.2%	48.1%	55.6%	63.8%	74.2%	37.0%
				TDEC MMI Metric Scores - 2003 SOP														
				Taxa Richness			4	4	2	4	4	2	4	4	4	4	4	4
				EPT Richness			4	4	2	2	4	2	4	4	4	4	4	4

	Sample ID											
	OM3510-21-TMIK-041210-001	OM3510-21-TMIK-041210-002	OM3510-21-TMIK-041210-003	OM3670A-21-TMIK-041210-001	OM3670A-21-TMIK-041210-002	OM3670A-21-TMIK-041210-003	OM3670D-21-TMIK-041210-001	OM3670D-21-TMIK-041210-002	OM3670D-21-TMIK-041210-003	OM3670D-21-TMIK-041210-004	OM3670D-21-TMIK-041210-005	OM3670D-21-TMIK-041210-006
% EPT	4	2	2	0	0	0	2	2	2	4	4	2
% Oligochaetes & Chironomids	4	4	4	2	2	2	4	2	4	6	4	4
NCBI	6	6	6	4	4	4	6	4	4	6	6	4
% Dominant	6	6	6	4	4	4	6	6	6	6	6	6
% Clingers	6	6	6	2	2	2	6	4	6	6	6	4
TDEC MMI Score	34	32	28	18	20	16	32	26	30	36	34	28
TDEC MMI Metric Scores - 2006 SOP	31	3.1		18	2		31	3.7				
%NUTOL	12.3%	8.5%	11.8%	9.0%	9.2%	11.4%	23.7%	22.8%	16.7%	15.7%	18.1%	15.4%
% NUTOL-MMI	6	6	6	6	6	6	6	6	6	6	6	6
Taxa Richness	4	4	2	4	4	2	4	4	4	6	4	4
EPT Richness	4	4	2	2	4	2	4	4	4	4	4	4
% EPT	4	2	2	0	0	0	2	2	2	4	4	2
% Oligochaetes & Chironomids	4	4	4	2	2	2	4	2	4	6	4	4
NCBI	6	6	6	4	4	4	6	4	4	6	6	4
% Clingers	6	6	6	2	2	2	6	4	4	6	6	2
Revised MMI	34	32	28	20	22	18	32	26	28	38	34	26
MMI Change	0	0	0	2	2	2	0	0	-2	2	0	-2

Table 14- Copper Basin Reach 2009 and 2010 Macroinvertebrate Metric Summary

Metrics/Measures												
2009	OM3510-21-TMIK-042009-001	OM3510-21-TMIK-042009-002	OM3510-21-TMIK-042009-003	OM3670A-21-TMIK-042109-001	OM3670A-21-TMIK-042109-002	OM3670A-21-TMIK-042109-003	OM3670D-21-TMIK-042109-001	OM3670D-21-TMIK-042109-002	OM3670D-21-TMIK-042109-003	OM3670D-21-TMIK-042109-004	OM3670D-21-TMIK-042109-005	OM3670D-21-TMIK-042109-006
Total Abundance	172	205	192	95	221	81	1392	1512	1382	1395	1380	2536
Taxa Richness (adusted)	36	38	34	26	18	25	40	35	37	38	35	37
EPT Richness (adjusted)	13	17	11	9	6	10	17	16	18	16	17	17
TDEC 2003 MMI Score	34	34	32	30	14	30	34	40	40	36	40	40
TDEC 2006 MMI Score	34	34	32	28	14	30	34	40	38	36	40	38
2010	OM3510-21-TMIK-041210-001	OM3510-21-TMIK-041210-002	OM3510-21-TMIK-041210-003	OM3670A-21-TMIK-041210-001	OM3670A-21-TMIK-041210-002	OM3670A-21-TMIK-041210-003	OM3670D-21-TMIK-041210-001	OM3670D-21-TMIK-041210-002	OM3670D-21-TMIK-041210-003	OM3670D-21-TMIK-041210-004	OM3670D-21-TMIK-041210-005	OM3670D-21-TMIK-041210-006
Total Abundance	130	129	51	626	1085	875	1395	1030	1800	1850	1105	2701
Taxa Richness (adusted)	27	30	20	23	27	20	29	28	31	32	29	23
EPT Richness (adjusted)	11	11	7	9	11	6	13	11	11	13	13	11
TDEC 2003 MMI Score	34	32	28	18	20	16	32	26	30	36	34	28
TDEC 2006 MMI Score	34	32	28	20	22	18	32	26	28	38	34	26

Notes:
- Total Abundance = No. of Organisms Counted x Subsampling Factor
- EPT = Ephemeroptera, Plecoptera and Trichoptera genera
- MMI = Multi-metric index
- 2 of 3 2009 samples from OM3670A had too few organisms to compute valid MMI scores.
- Each 2010 samples from OM3510 had too few organisms to compute valid MMI scores.

Table 15 - Copper Basin Reach 2009 and 2010 Macroinvertebrate Metric Statistical Summary

		OM3510		OM3670A		OM3670D	
Metric	Statistic	OM3510 2009	OM3510 2010 (a)	OM3670A 2009 (b)	OM3670A 2010	OM3670D 2009	OM3670D 2010
Total Abundance	Mean	190	**103**	**132**	862	1600	1647
	Minimum	172	51	81	626	1380	1030
	Maximum	205	130	221	1085	2536	2701
	Std Dev	17	45.3	77.1	229.8	461.5	618.5
Taxa Richness	Mean	36	26	**23**	23	37	29
	Minimum	34	20	18	20	35	23
	Maximum	38	30	26	27	40	32
	Std Dev	2	5.1	4.4	3.5	1.9	3.1
EPT Richness	Mean	14	10	**8**	9	17	12
	Minimum	11	7	6	6	16	11
	Maximum	17	11	10	11	18	13
	Std Dev	3	2.3	2.1	2.5	0.8	1.1
TDEC 2003 MMI	Mean	33	31	25	**18**	38	31
	Minimum	32	28	14	16	34	26
	Maximum	34	34	30	20	40	36
	Std Dev	1	3.1	9.2	2.0	2.7	3.7
TDEC 2006 MMI	Mean	33	31	24	**20**	38	31
	Minimum	32	28	14	18	34	26
	Maximum	34	34	30	22	40	38
	Std Dev	1	3.1	8.7	2.0	2.3	4.8

Notes:
(a) - 3 of 3 samples had too few organisms to compute valid MMI scores.
(b) - 2 of 3 samples had too few organisms to compute valid MMI scores.
- Total Abundance = No. of Organisms Counted x Subsampling Factor
- EPT = Ephemeroptera, Plecoptera and Trichoptera genera
- MMI = Multi-metric index
- Std Dev = standard deviation
- OM3670D = reference area in left half of stream
- Bold results are statistically different than reference area findings

Table 16 - Copper Basin Reach 2009 and 2010 Habitat Assessment Scores

	Year/Location ID (Reach) (a)					
	2009	2010	2009	2010	2009	2010
Habitat Parameter	OM3670D		OM3670A		OM3510	
Epifaunal Substrate/Available Cover	16	16	14	15	[illegible]	[illegible]
Embeddedness	18	15	16	15	[illegible]	14
Velocity/Depth Regime	11	11	13	12	14	11
Sediment Deposition	18	19	19	19	12	13
Channel Flow Status	17	19	18	19	19	19
Channel Alteration	20	18	14	13	15	19
Frequency of Riffles (or bends)	16	18	16	19	12	[illegible]
Bank Stability (left bank)	9	7	NA	NA	[illegible]	2
Bank Stability (right bank)	NA	NA	8	6	7	[illegible]
Vegetative Protection (left bank)	10	8	NA	NA	[illegible]	[illegible]
Vegetative Protection (right bank)	NA	NA	6	7	6	6
Riparian Vegetative Zone Width (left bank)	10	8	NA	NA	[illegible]	[illegible]
Riparian Vegetative Zone Width (right bank)	NA	NA	[illegible]	7	8	8
Total Score (b, c)	174	172	148	152	118	118
Iron Present	0%	0%	100%	[illegible]	0%	0%
Iron Effects	18	18	3	[illegible]	18	18

Notes:

Left and right bank designations are based on downstream orientation.

(a) Values indicate consensus scores from field team with condition category listed for each score.
Green = optimal, Yellow = suboptimal, Orange= marginal, Brown = Poor.

(b) Overall habitat categories based on the following criteria: 0 to 47 = Poor, 60 to 100 = Marginal, 113 to 153 = Suboptimal, 166 to 200 = Optimal. For scores falling between category cutoffs, the most frequently occurring category was used.

('c) For OM3670A and OM3670D, bank-specific scores (bank stability, vegetative protection and riparian vegetative zone width) were doubled to compute total score.

present

(e) Iron Effect is scored as Optimal, Suboptimal, Marginal or Poor.

Table 17 - Copper Basin Reach 2009 and 2010 Sediment Revegetation Observations

Sediment Feature	Assessment Date	Sampling Crew	Species Present	Total Coverage	Estimated % Native	Estimated % Exotic	Target Tree Species	Height	Circum (dbh)(ft)	Tree Description	Latitude (N)	Longitude (W)	Comments
Davis Mill delta	4/20/2009	Bowers, McComb, Eldridge, Treutelaar, Ezell	Alder, river birch, rye (planted), equisetum, knot weed, black willow, scrub pine, autumn olive	95%	95%	5%	River birch	15	0.58	largest of 3 trunks (east side), budding out on all 3	34 59.609	84 23.048	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations.
	4/13/2010	Bowers, Helton, Treutelaar	River birch, locust, alder, reeds, grasses, chicken knot weed, olive, maple	95%	90%	10%	River birch	18	0.54	largest of 3 trunks, budding out on all 3. No apparent stress or local erosion threat.	34 59.609	84 23.048	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations. Some erosion observed along Ocoee River bank
North Potato Creek Island	6/2/2009	Bowers, Ezell, Hall	River birch, knot weed, iron weed, alder, jewel weed, wild grape, panic grass, spike rush, clover, blackberry, mulberry, honeysuckle, royal paulownia, ragweed	90%	90%	10%	River birch	20	0.625	one of many in stand, no signs of stress, 50' d.s. of d.s. stake parallel to flow. GPS not functioning; no lat/long collected	N/A	N/A	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations.
	4/13/2010	Bowers, Helton, Treutelaar	River birch, chicken knot weed, privet, olive, various grasses, reeds, black willow, alder, bramble, blackberry, wild violet	80%	80%	20%	River birch	25	0.8	one of many in stand, budding, vigorous, 50' d.s. of d.s. stake parallel to flow. Potential for local erosion/debris around base	N/A	N/A	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations. Upstream end of formation eroding/sloughing, significant coarse sediment deposits p
Barker Mill Bar	4/20/2009	Bowers, McComb, Eldridge, Treutelaar, Ezell	Grasses, black willow, river birch, maple, briar/bramble, alder, black alder, royal paulownia, bamboo, knot weed, yellow root	20-25%	85%	15%	River birch	30	1.58	upstream end of formation, budding out, appears healthy. Paired within 5 ft. Royal paulownia located on shore side of tree	35 00.248	84 24.740	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations.
	4/13/2010	Bowers, Helton, Treutelaar	River birch, royal paulownia, chicken knot weed, various grasses, sumac, brambles, privet, bamboo, black willow, yellow root	30%	55%	45%	River birch	35	1.78	upstream end of formation, no apparent stress or local erosion threat. Paired within 5 ft. Royal paulownia located on shore side of tree	35 00.248	84 24.740	Four permanent photopoints established - d.s. end, u.s. end, mid formation near shore and mid formation inland. Photographs taken at each from at least two orientations. Secondary flow path apparent. Two prominent lines of natural levee.

Table 18 - Copper Basin Reach and Ocoee #3 Reservoir 2010 Fish Community Survey Results

					Copper Basin	Ocoee #3
Common Name	Species	Tolerance	Trophic Level	Age	OM3530	OM3040
Bluegill	Lepomis macrochirus	T	I/G	> 1 yr	0	21
Bluntnose minnow	Pimephales notatus	NA	NA	> 1 yr	1	0
Central stoneroller	Campostoma anomalum	M/T	H	> 1 yr	1	0
Green sunfish	Lepomis cyanellus	T	I	> 1 yr	1	0
Largemouth Bass	Micropterus salmoides	T	P/I	> 1 yr	0	9
				yoy	0	846
Mottled sculpin	Cottus bairdi	I	I	> 1 yr	5	0
Northern hogsucker	Hypentelium nigricans	M	I	> 1 yr	1	0
Rainbow trout	Oncorhynchus mykiss	M/I	P/I	> 1 yr	1	0
Redbreast Sunfish	Lepomis auritus	M	I	> 1 yr	0	6
River chub	Nocomis micropogon	I/M	I	> 1 yr	6	0
Whitetail shiner	Cyprinella galactura	I	I	> 1 yr	4	0
Yellow perch	Perca flavescens	T	I/P	> 1 yr	0	1
				Number of Species	8	5
				Number of Fish	20	37
				No. Sunfish Species	2	3
				No. Benthic Invertivores	4	0
				No. Intolerant Species	4	0
				% Tolerant Species	5%	84%
				% Dominant Species	30%	57%
				% Insectivores	90%	76%
				% Piscivores	5%	27%
				Shocker Minutes	17.5	30.7

Notes:
- 'yoy' indicates young of year or fry
- Tolerance: T = tolerant, M = intermediate tolerance, I = intolerant
- Trophic Level: I = insectivore, G = generalist, H = herbivore, P = piscivore

Table 19 - Ocoee #3 Reservoir 2009 and 2010 Surface Water Data Summary

Parameter	Units	Water Quality Criteria	Sampling Event	OM2920	OM2920 Deep	OM2920 Average	OM3000	OM3000 Deep	OM3000 Average	OM3280	OM3280 Deep	OM3280 Average
Conductivity Field	uS/cm	---	2009-4Q	68	75	71.5	59	57	58	100	93	96.5
			2010-4Q	65	66	65.5	75	68	71.5	68	---	68
Dissolved Oxygen, Field	mg/L		2009-4Q	8.24	10.45	9.3	9.3	9.95	9.6	9.76	9.3	9.5
			2010-4Q	9.59	8.81	9.2	9.57	8.88	9.2	10.03	---	10.0
ORP, Field	millivolts	---	2009-4Q	137.3	92.6	115.0	121.4	117.3	119.4	115.5	138.6	127.1
			2010-4Q	37.9	34.7	36.3	43.1	29.7	36.4	43.9	---	43.9
pH Field	s.u.	6	2009-4Q	6.36	6.43	6.40	6.68	6.7	6.69	6.6	6.25	6.43
			2010-4Q	6.51	6.64	6.58	6.46	6.56	6.51	6.9	---	6.9
Temperature, Field	Deg C	---	2009-4Q	12.84	11.52	12.18	12.29	10.84	11.57	11.83	11.94	11.89
			2010-4Q	12.86	12.12	12.49	13.84	11.88	12.86	11.66	---	11.66
Turbidity (Field)	NTU	---	2009-4Q	26.5	5.05	15.78	2.56	2.55	2.56	2.68	4.19	3.44
			2010-4Q	6	6.4	6.2	7.98	6.78	7.38	5.7	---	5.7
Aluminum	ug/L	87	2009-4Q	261	162	212	74	77.9	76.0	102	104	103
			2010-4Q	165	151	158	165	183	174	195	---	195
Aluminum (Dissolved)	ug/L	87	2009-4Q	26.7	12	19.4	8.3	11.7	10	8.8	9.1	9.0
			2010-4Q	35.1	28.6	31.9	31.2	31.6	31.4	35.8	---	35.8
Cadmium	ug/L	---	2009-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	ND
Cadmium (Dissolved)	ug/L	0.1	2009-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	ND
Calcium	ug/L	---	2009-4Q	5780	7020	6400	4860	5030	4945	10200	9900	10050
			2010-4Q	5700	6260	5980	7010	6410	6710	5850	---	5850
Calcium (Dissolved)	ug/L	---	2009-4Q	5870	6960	6415	4950	4990	4970	10200	9750	9975
			2010-4Q	5730	6230	5980	7150	6520	6835	6020	---	6020
Copper	ug/L	---	2009-4Q	12.5	4.6	8.6	2.8	2.6	2.7	2.8	2.7	2.8
			2010-4Q	1.4	1.5	1.5	1.6	1.6	1.6	1.8	---	1.8
Copper (Dissolved)	ug/L	2	2009-4Q	3.6	1.9	2.8	1.8	1.7	1.8	1.8	1.6	1.7
			2010-4Q	1.1	1.1	1.1	1.3	1.1	1.2	1.3	---	1.3
Iron	ug/L	1000	2009-4Q	931	628	780	418	432	425	435	424	430
			2010-4Q	437	445	441	451	546	499	427	---	427
Iron (Dissolved)	ug/L	1000	2009-4Q	186	144	165	122	122	122	151	106	129
			2010-4Q	163	147	155	148	180	164	140	---	140
Lead	ug/L	---	2009-4Q	6.7	1.3	4	0.34	0.089	0.2145	0.085	0.051	0.068
			2010-4Q	0.33	0.32	0.325	0.37	0.39	0.38	0.24	---	0.24
Lead (Dissolved)	ug/L	0.3	2009-4Q	1.2	0.082	0.64	ND	0.046	0.028	0.038	ND	0.024
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	ND
Magnesium	ug/L	---	2009-4Q	1750	2000	1875	1530	1600	1565	2610	2520	2565
			2010-4Q	1940	2040	1990	2190	2100	2145	2130	---	2130
Magnesium (Dissolved)	ug/L	---	2009-4Q	1780	2000	1890	1580	1610	1595	2600	2460	2530
			2010-4Q	1920	2030	1975	2240	2140	2190	2190	---	2190
Manganese	ug/L	---	2009-4Q	303	216	260	149	153	151	253	247	250
			2010-4Q	177	189	183	193	199	196	227	---	227
Manganese (Dissolved)	ug/L	914	2009-4Q	324	208	266	153	151	152	254	240	247
			2010-4Q	174	183	179	198	202	200	227	---	227
Potassium	ug/L	---	2009-4Q	1180	1170	1175	1030	1080	1055	1270	1190	1230
			2010-4Q	1180	1220	1200	1230	1230	1230	1200	---	1200
Potassium (Dissolved)	ug/L	---	2009-4Q	1200	1150	1175	1030	1070	1050	1260	1180	1220
			2010-4Q	1170	1190	1180	1240	1260	1250	1230	---	1230
Sodium	ug/L	---	2009-4Q	1790	1830	1810	1620	1670	1645	2030	1920	1975
			2010-4Q	1650	1650	1650	1670	1670	1670	1600	---	1600
Sodium (Dissolved)	ug/L	---	2009-4Q	1850	1880	1865	1660	1740	1700	2040	1900	1970
			2010-4Q	1620	1660	1640	1720	1710	1715	1640	---	1640
Zinc	ug/L	---	2009-4Q	28.2	25.8	27	25.8	29.3	27.6	41.7	25.3	33.5
			2010-4Q	ND	8.5	6.1	8.2	ND	6	8.7	---	8.7
Zinc (Dissolved)	ug/L	26	2009-4Q	19.8	19.9	19.9	18.6	19.9	19.3	24.2	23.3	23.8
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	6.95
Acidity	mg/L	---	2009-4Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	ND
Alkalinity, Total (as CaCO3)	mg/L	---	2009-4Q	8.2	8.1	8.2	7.6	8.8	8.2	7.8	8.5	8.2
			2010-4Q	ND	ND	ND	ND	ND	ND	ND	---	ND
Chloride	mg/L	---	2009-4Q	1.6	1.7	1.7	1.5	1.5	1.5	1.8	1.8	1.8
			2010-4Q	1.5	1.5	1.5	1.6	1.5	1.55	1.4	---	1.4
Hardness	mg/L	---	2009-4Q	24	26	25	20	22	21	38	36	37
			2010-4Q	22	22	22	26	22	24	22	---	22
Sulfate	mg/L	---	2009-4Q	17.1	20.1	18.6	13	13.2	13.1	30.4	29.3	29.9
			2010-4Q	15.9	17.2	16.6	20.8	17.8	19.3	17.3	---	17.3
Total Dissolved Solids (TDS)	mg/L	---	2009-4Q	49	52	50.5	45	38	41.5	69	69	69
			2010-4Q	44	49	46.5	37	42	39.5	32	---	32
Total Suspended Solids (TSS)	mg/L	---	2009-4Q	4.8	2.8	3.8	ND	ND	ND	ND	ND	ND
			2010-4Q	ND	2.4	2.2	ND	ND	ND	ND	---	ND

Notes:
- ND = not detected; where one sample was non-detect, average was calculated using one-half the detection limit.
- WQC for Cd, Cu, Pb, Mn and Zn calculated using a hardness of 17 mg/L.

Table 20 - Ocoee #3 Reservoir 2009 and 2010 Sediment Chemistry Data Summary

Parameter	Units	Lentic Sediment Goal	OM3000A-SE-110709-001	OM3000C-SE-110709-001	OM3000E-SE-110709-001	2009 OM3000 Average	OM3000A-0-SE-061610-001	OM3000C-0-SE-061610-001	OM3000E-0-SE-061610-001	2010 OM3000 Average
Aluminum	mg/kg	NA	41600	38900	8000	29500	5280	34700	47100	29027
Cadmium	mg/kg	NA	1.6	1.1	0.72	1.14	0.84	0.75	2	1.20
Calcium	mg/kg	NA	1430	1420	712	1187	815	1290	1320	1142
Copper	mg/kg	640	358	243	255	285	240	134	606	327
Iron	mg/kg	53000	**56400**	48900	29500	44933	21700	39700	**73500**	44967
Lead	mg/kg	250	80.6	86.1	130	98.9	64.7	49.7	111	75.1
Magnesium	mg/kg	NA	4260	4390	1660	3437	1160	4760	3870	3263
Manganese	mg/kg	NA	3590	651	185	1475	162	497	3960	1540
Potassium	mg/kg	NA	3100	3270	1200	2523	704	3410	2870	2328
Sodium	mg/kg	NA	129	101	48.5	92.8	33.5	78.7	97.5	69.9
Zinc	mg/kg	970	696	490	694	627	603	303	**996**	634
Total Organic Carbon (TOC)	mg/kg	NA	27300	39700	ND	33500	2360	24800	29800	18987
Total Solids	%	NA	27.2	33.4	75.5	45.4	68.6	40.5	27.1	45.4

Notes:

- TOC was non-detect (ND) at OM3000E in 2009.
- NA - no goal was established
- **Bold** indicates value that exceeds sediment goal.

Table 21 - Parksville Reservoir 2009 and 2010 Surface Water Data Summary

Parameter	Units	Water Quality Criteria	Sampling Event	BI0160	BI0160 Deep	BI0160 Average	OM1560	OM1560 Deep	OM1560 Average	SI0040	SI0040 Deep	SI0040 Average
Conductivity Field	uS/cm	---	2009-3Q	46	47.6	46.8	49.2	51.2	50.2	43.4	52.4	47.9
			2010-1Q	35	35	35	38	39	38.5	36	37	36.5
			2010-3Q	44	40	42	32	31	31.5	30	63	46.5
Dissolved Oxygen, Field	mg/L	---	2009-3Q	6.86	2.84	4.85	7.98	6.98	7.48	9.1	0.26	4.68
			2010-1Q	8.94	8.82	8.88	9.26	9.34	9.3	9.2	9.24	9.22
			2010-3Q	6.6	4.39	5.495	8.14	8.23	8.185	8.73	0.24	4.485
ORP, Field	millivolts	---	2009-3Q	147	175	161	156	159	157.5	146	-20	63
			2010-1Q	98.7	111.5	105.1	60.2	75.8	68	64.4	89.9	77.15
			2010-3Q	125.6	138.4	132	106.2	105.1	105.65	132.6	109.6	121.1
pH Field	s.u.	6	2009-3Q	6.73	5.98	6.36	7.15	6.73	6.94	6.98	5.82	6.40
			2010-1Q	6.65	6.77	6.71	6.61	6.42	6.52	6.49	6.01	6.25
			2010-3Q	6.78	6.07	6.43	6.05	5.78	5.92	6.17	6.44	6.31
Temperature, Field	Deg C	---	2009-3Q	27.1	23.7	25.4	26.4	24.0	25.2	24.9	11.1	18.0
			2010-1Q	6.3	5.7	6.0	6.3	5.3	5.8	6.3	5.5	5.9
			2010-3Q	29.2	24.8	27.0	26.5	25.0	25.8	24.0	15.8	19.9
Turbidity (Field)	NTU	---	2009-3Q	2.73	2.62	2.675	3.67	9.23	6.45	5.33	3.31	4.32
			2010-1Q	6.1	7	6.55	6.2	7.5	6.85	5.5	6.29	5.895
			2010-3Q	2.14	2.05	2.095	2.6	3.91	3.255	2.58	2.13	2.355
Aluminum	ug/L	87	2009-3Q	23.3	16.7	20	87.8	612	349.9	124	21	72.5
			2010-1Q	199	260	229.5	271	266	268.5	181	206	193.5
			2010-3Q	ND	ND	ND	ND	53.3	31.2	33.6	ND	19.4
Aluminum (Dissolved)	ug/L	87	2009-3Q	4.8	4.1	4.45	36.3	16.7	26.5	13.5	ND	7.4
			2010-1Q	33.4	33.1	33.3	14.4	14	14.2	18.3	17.3	17.8
			2010-3Q	4	ND	2.65	5.7	7.2	6.45	8.7	3.9	6.3
Cadmium	ug/L	---	2009-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-1Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium (Dissolved)	ug/L	0.1	2009-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-1Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	ug/L	---	2009-3Q	4600	4700	4650	4680	4890	4785	4450	5500	4975
			2010-1Q	2840	2810	2825	3210	3300	3255	3100	3100	3100
			2010-3Q	4340	3920	4130	ND	ND	ND	ND	5180	3370
Calcium (Dissolved)	ug/L	---	2009-3Q	4830	4800	4815	4730	4970	4850	4530	5860	5195
			2010-1Q	2800	2830	2815	3150	3260	3205	3060	2970	3015
			2010-3Q	4310	3900	4105	3350	2920	3135	3100	5230	4165
Copper	ug/L	---	2009-3Q	1.2	1.6	1.4	1.5	7.3	4.4	1.5	1.4	1.45
			2010-1Q	2.2	2.4	2.3	5.9	5.9	5.9	3.1	3.6	3.35
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper (Dissolved)	ug/L	2	2009-3Q	1.1	1.3	1.2	1.3	1.4	1.35	1.2	0.52	0.86
			2010-1Q	1.4	1.5	1.45	1.5	1.3	1.4	1.3	1.5	1.4
			2010-3Q	1.2	1	1.1	0.92	1.1	1.01	1.1	0.29	0.695
Iron	ug/L	1000	2009-3Q	71.1	207	139.1	141	983	562	216	1430	823
			2010-1Q	200	263	231.5	501	492	496.5	309	335	322
			2010-3Q	ND	ND	ND	99.6	291	195.3	156	2830	1493
Iron (Dissolved)	ug/L	1000	2009-3Q	ND	ND	ND	ND	106	62.4	ND	1630	830.3
			2010-1Q	52.1	65.6	58.85	50.4	52.9	51.65	54.2	125	89.6
			2010-3Q	22.2	7.4	14.8	37	66.7	51.85	58.9	2850	1454
Lead	ug/L	---	2009-3Q	0.078	0.13	0.104	0.24	4.4	2.32	0.2	0.15	0.18
			2010-1Q	1.2	1.4	1.3	4.3	4.4	4.35	2.3	2.5	2.4
			2010-3Q	ND	0.059	0.034	0.078	0.76	0.419	0.13	0.074	0.10
Lead (Dissolved)	ug/L	0.3	2009-3Q	0.024	0.023	0.024	0.045	0.37	0.208	0.052	0.024	0.038
			2010-1Q	0.26	0.31	0.29	0.56	0.53	0.545	0.43	0.67	0.55
			2010-3Q	ND	ND	ND	ND	0.064	0.037	ND	ND	ND
Magnesium	ug/L	---	2009-3Q	1270	1350	1310	1320	1400	1360	1190	1570	1380
			2010-1Q	1010	1000	1005	1070	1090	1080	1020	1040	1030
			2010-3Q	1170	1100	1135	ND	ND	ND	ND	1320	865
Magnesium (Dissolved)	ug/L	---	2009-3Q	1290	1320	1305	1260	1330	1295	1180	1610	1395
			2010-1Q	1000	1010	1005	1050	1070	1060	1020	1010	1015
			2010-3Q	1130	1070	1100	874	776	825	804	1300	1052
Manganese	ug/L	---	2009-3Q	15.7	665	340	16.8	64.3	40.6	17.5	1970	994
			2010-1Q	44	44.5	44.25	54.6	58.2	56.4	54.2	55.4	54.8
			2010-3Q	ND	114	58.7	ND	ND	ND	ND	2150	1079
Manganese (Dissolved)	ug/L	914	2009-3Q	4	632	318	7.2	44.3	25.8	11.1	2300	1156
			2010-1Q	41.6	40.7	41.2	49.8	53.6	51.7	51.1	52.2	51.7
			2010-3Q	2.1	108	55.1	5.5	16	10.8	7.7	2120	1064
Potassium	ug/L	---	2009-3Q	785	843	814	827	914	870.5	856	804	830
			2010-1Q	615	614	615	657	653	655	597	622	610
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium (Dissolved)	ug/L	---	2009-3Q	840	868	854	862	920	891	870	860	865
			2010-1Q	604	616	610	627	633	630	582	602	592
			2010-3Q	781	776	779	719	730	725	719	776	748
Sodium	ug/L	---	2009-3Q	1220	1260	1240	1230	1220	1225	1220	1270	1245
			2010-1Q	1070	1060	1065	1230	1230	1230	1190	1220	1205
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium (Dissolved)	ug/L	---	2009-3Q	1310	1300	1305	1300	1280	1290	1290	1390	1340
			2010-1Q	1070	1080	1075	1210	1230	1220	1200	1200	1200
			2010-3Q	1260	1220	1240	1160	1180	1170	1170	1270	1220
Zinc	ug/L	---	2009-3Q	2.2	10.3	6.25	4.3	14.1	9.2	4.9	25.6	15.3
			2010-1Q	ND	ND	ND	20.7	18.6	19.65	ND	ND	ND
			2010-3Q	2.35	4.25	3.3	2.1	3.2	2.65	4.3	26.9	15.6
Zinc (Dissolved)	ug/L	26	2009-3Q	ND	15.1	8.58	ND	ND	ND	ND	15.2	8.45
			2010-1Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acidity	mg/L	---	2009-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-1Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
Alkalinity, Total (as CaCO3)	mg/L	---	2009-3Q	ND	ND	ND	ND	ND	ND	ND	23.3	13.8
			2010-1Q	2.7	3.1	2.9	3.4	3.5	3.4	3.1	3.1	3.1
			2010-3Q	ND	ND	ND	ND	ND	ND	ND	22	13.1
Chloride	mg/L	---	2009-3Q	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.15
			2010-1Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-3Q	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.4	1.3
Hardness	mg/L	---	2009-3Q	20	20	20	18	20	19	18	26	22
			2010-1Q	14	12	13	14	14	14	14	12	13
			2010-3Q	16	16	16	12	12	12	12	32	22
Sulfate	mg/L	---	2009-3Q	8.6	8.8	8.7	8.3	8.9	8.6	7.9	6.8	7.4
			2010-1Q	6.4	6.5	6.5	7	7.1	7.1	6.4	6.8	6.6
			2010-3Q	8.7	8.1	8.4	6.3	ND	4.4	5.1	6.1	5.6
Total Dissolved Solids (TDS)	mg/L	---	2009-3Q	ND	ND	ND	ND	ND	ND	ND	ND	ND
			2010-1Q	26	30	28	30	31	30.5	31	28	29.5
			2010-3Q	16	26	21	21	20	20.5	24	33	28.5
Total Suspended Solids (TSS)	mg/L	---	2009-3Q	ND	ND	ND	2	9.6	5.8	2.4	2.8	2.6
			2010-1Q	2.4	ND	2.2	5.2	6	5.6	3.2	4.4	3.8
			2010-3Q	ND	ND	ND	ND	2.4	2.2	ND	4	3

Notes:

- ND = not detected; where one sample was non-detect, average was calculated using one-half the detection limit.
- WQC for Cd, Cu, Pb, Mn and Zn calculated using a hardness of 17 mg/L.

Table 22 - Parksville Reservoir 2009 Sediment Data Summary

			Parksville Delta Area				Sylco Inlet					Baker Inlet			
Parameter	Units	Lentic Sediment Goal	OM1560B-0-SE-082509-001	OM1560C-0-SE-082509-001	OM1560D-0-SE-082509-001	OM1560 Average	SI0040A-0-SE-082409-001	SI0040B-0-SE-082409-001	SI0040B-0-SE-082409-002	SI0040C-0-SE-082409-001	SI0040 Average	BI0160A-0-SE-082409-001	BI0160B-0-SE-082409-001	BI0160C-0-SE-082409-001	BI0160 Average
Aluminum	mg/kg	NA	28900	25000	29200	27700	37000	38100	44300	31200	37650	15200	36800	21700	24567
Cadmium	mg/kg	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	mg/kg	NA	1950	2710	2980	2547	903	1610	1830	1160	1376	773	1040	1460	1091
Copper	mg/kg	640	**780**	**730**	**680**	**730**	**963**	**923**	**1040**	**854**	**945**	181	559	499	413
Iron	mg/kg	53000	**82100**	**77000**	**77100**	**78733**	**83800**	**88700**	**104000**	**77000**	**88375**	37000	**75500**	49600	**54033**
Lead	mg/kg	250	**382**	**290**	**314**	**329**	**486**	**601**	**671**	**507**	**566**	100	**478**	**315**	**298**
Magnesium	mg/kg	NA	3990	5470	4770	4743	2790	3200	3880	3190	3265	1490	2410	1430	1777
Manganese	mg/kg	NA	919	829	1020	923	636	735	878	757	751.5	679	3240	1400	1773
Potassium	mg/kg	NA	2340	3540	2830	2903	1630	1910	2250	2020	1953	585	1180	772	846
Sodium	mg/kg	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	mg/kg	970	**1160**	**1290**	**1070**	**1173**	869	**1080**	**1250**	**974**	**1043**	671	**1010**	965	882
Total Organic Carbon (TOC)	mg/kg	NA	16700	11800	29000	19167	12900	16700	14900	10700	13800	14400	13800	40600	22933
Total Solids	%	NA	39	48.5	37.2	41.6	31.7	33.5	34.5	42	35.4	45.7	29.5	34	36.4

Notes:

- NA - no goal was established
- ND = not detected; where one or more samples were non-detect, average was calculated using one-half the detection limit.

Table 23 - Parksville Reservoir 2009 Sediment Descriptions - Baker Inlet	
Area:	Parksville Reservoir
Sub-Area:	Baker Inlet
Transect:	BI0160
Location:	BI0160A
Sample ID:	BI0160A-0-SE-082409-001
Munsell Color	N/A
Layering	Silt on silty sand
Bedding	Sandy layer beneath surface silt and muck
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	15 (mixed fine particulate organic matter with silt layer)
Texture	Predominantly silt with clay and organics, sand 15-20%
General grain size	Silt with some sand, clay and organics (secondary)
Location:	BI0160B
Sample ID:	BI0160B-0-SE-082409-001
Munsell Color	N/A
Layering	Black muck on brown
Bedding	No distinct planes
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	20
Texture	clayey silt with 10-15% sand (loamy)
General grain size	Silt with some sand, clay and organics (secondary)
Location:	BI0160C
Sample ID:	BI0160C-0-SE-082409-001
Munsell Color	N/A
Layering	Clayey silt , more organics in upper part of sample
Bedding	Silt with organic on silt
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	20 (mixed fine particulate organic matter and muck)
Texture	clayey silt with 5-10% sand
General grain size	Silt with some clay, organics and sand

Table 24 - Parksville Reservoir 2009 Sediment Descriptions - Sylco Inlet	
Area:	Parksville Reservoir
Sub-Area:	Sylco Inlet
Transect:	SI0040
Location:	SI0040A
Sample ID:	SI0040A-0-SE-082409-001
Munsell Color	dark brown/black
Layering	coarse particulate organic matter (<5%), fine particulate organic matter and silty clay over brown and tan (<5%) silt at depth, minor sand component (<1-2%)
Bedding	clayey silt with organics (4-5") over si with some fine sand
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	20-25 some coarse leaves plus black muck
Texture	fine clayey silt with minor sand fraction
General grain size	Silt with clay and organics, little sand at depth (<1%)
Location:	SI0040B
Sample ID:	SI0040B-0-SE-082409-001
Munsell Color	dark brown/black
Layering	coarse particulate organic matter (5-10%), fine particulate organic matter and brown clayey silt over brown/tan silt
Bedding	lighter silt at 2-4" deep
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	25-30 coarse leaves plus black muck, tannic - black soup when mixed
Texture	fine clayey silt with minor fine sand fraction
General grain size	silt with clay, sand and organics
Location:	SI0040C
Sample ID:	SI0040C-0-SE-082409-001
Munsell Color	dark brown/black
Layering	coarse particulate organic matter (1-2%), fine particulate organic matter and brown clayey silt over brown clayey silt with tan streak
Bedding	clayey silt with organics (3-4") over silt with clay and very minor sand, no distinct planes
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	20-25, some coarse leaves plus black muck
Texture	fine clayey silt, minor fine sand fraction
General grain size	si with clay, organics; little sand at depth (<1%)

Table 25 - Parksville Reservoir 2009 Sediment Descriptions - Parksville Delta	
Area:	Parksville Reservoir
Sub-Area:	Parksville Delta
Transect:	OM1560
Location:	OM1560B
Sample ID:	OM1560B-0-SE-082509-001
Munsell Color	gray brown
Layering	banded red/orange silt in brown/gray brown
Bedding	none visible
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	<5, some coarse particulate organic matter (leaves, twigs) and FPOM
Texture	clayey silt
General grain size	si with clay and organics, little sand
Location:	OM1560C
Sample ID:	OM1560C-0-SE-082509-001
Munsell Color	gray brown
Layering	micaceous, clayey silt
Bedding	none visible
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	<5
Texture	fine sand with silt (30-40%)
General grain size	micaceous clayey schist and sand
Location:	OM1560D
Sample ID:	OM1560D-0-SE-082509-001
Munsell Color	gray brown
Layering	micaceous clayey silt (finer than 'C' above)
Bedding	none visible
% Mine Waste (visual)	0
% Sulfide Minerals (visual)	0
% Organic detritus/description	5 twigs/leaves, some fine particulate organic matter
Texture	clayey silt
General grain size	silt with some clay and organics (micaceous clayey silt)

Table 27 - Parksville Reservoir 2010 Macroinvertebrate Species List

Phylum	Class	Order	Family	Genus	TolValue	Clinger	BI0160A-98-TVMD-091610-001	BI0160A-98-TVMD-091610-002	BI0160B-98-TVMD-091610-001	BI0160B-98-TVMD-091610-002	BI0160C-98-TVMD-091610-001	BI0160C-98-TVMD-091610-002	BI0160D-98-TVMD-091610-001	BI0160D-98-TVMD-091610-002	BI0160E-98-TVMD-091610-001	BI0160E-98-TVMD-091610-002	BI0160F-98-TVMD-091610-001	BI0160F-98-TVMD-091610-002	BI0160G-98-TVMD-091610-001	BI0160G-98-TVMD-091610-002	BI0160H-98-TVMD-091610-001	BI0160H-98-TVMD-091610-002	BI0160I-98-TVMD-091610-001	BI0160I-98-TVMD-091610-002	BI0160J-98-TVMD-091610-001	BI0160J-98-TVMD-091610-002	OM1560 A-98-TVMD-091610-001	OM1560 B-98-TVMD-091610-001	OM1560 C-98-TVMD-091610-001	OM1560 D-98-TVMD-091610-001	OM1560 E-98-TVMD-091610-001	OM1560 F-98-TVMD-091610-001	OM1560 G-98-TVMD-091610-001	OM1560 H-98-TVMD-091610-001
ANNELIDA	Oligochaeta	Tubificida	Naididae	Nais	8.88	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
				Stylaria	9.38	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0
			Tubificidae	Aulodrilus	4.63	N	0	5	4	1	1	1	0	0	46	53	19	74	65	6	1	14	1	0	8	15	19	14	1	17	1	10	24	7
				Branchiura	8.28	N	1	5	0	0	2	6	3	7	5	2	5	5	3	3	3	0	7	1	2	0	1	10	3	3	5	16	10	5
			Tubificidae w.h.c.		7.11	N	1	0	0	0	1	1	3	0	23	0	15	13	17	11	3	7	0	0	0	0	0	0	1	0	2	0	3	5
			Tubificidae w.o.h.c.		9.5	N	0	0	3	0	1	1	0	0	4	0	4	0	4	3	0	3	0	0	0	0	1	7	32	10	9	57	8	29
				Limnodrilus	9.5	N	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARTHROPODA	Crustacea	Branchiopoda	Chydoridae		N/A	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
			Daphnidae	Daphnia	N/A	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Sididae	Sida	N/A	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3	0	1	2	0
		Harpacticoida			N/A	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Insecta	Coleoptera	Curculionidae		4	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
		Diptera	Athericidae	Atheria	2	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Ceratopogonidae		5.9	N	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Chaoboridae	Chaoborus	8.5	N	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Chironomidae	Ablabesmyia	7.2	N	2	1	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	3	4	2	3	1	0	1	1
				Chironomus	9.63	N	0	1	0	0	1	0	1	0	3	0	2	4	4	1	0	0	1	0	0	0	0	1	0	0	0	3	4	5
				Cladopelma	3.49	N	4	2	0	0	0	0	0	1	0	1	0	0	1	0	1	1	0	0	0	1	5	7	0	4	0	1	12	19
				Clinotanypus	4.09	N	44	27	13	5	13	12	19	44	5	11	6	6	6	0	3	3	8	9	0	2	27	4	0	3	0	4	5	10
				Coelotanypus	8	N	12	10	3	3	1	3	0	1	0	1	1	0	0	0	0	1	0	0	0	0	3	0	2	0	0	0	0	0
				Cryptochironomus	6.4	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	1	0	1	5
				Einfeldia	7.08	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
				Glyptotendipes	9.47	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3
				Microtendipes	5.53	Y	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				Nanocladius	7.07	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				Nilothauma	5.03	N	8	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
				Parachironomus	9.42	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
				Paracladopelma	5.51	N	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
				Parakiefferiella	4.77	Y	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				Polypedilum	5.69	N	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1
				Procladius	9.1	N	6	4	0	2	7	2	0	5	0	2	1	2	1	0	1	1	4	2	4	1	6	4	7	3	0	3	12	6
				Psectrocladius	3.59	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0
				Pseudochironomus	5.36	N	14	26	0	0	8	1	2	3	0	0	0	0	0	0	0	0	2	0	2	1	25	0	0	0	0	0	0	0
				Rheotanytarsus	5.89	Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
				Stictochironomus	6.52	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	5	0	3
				Tanytarsus	6.76	N	0	0	0	0	0	1	0	0	0	1	1	0	1	0	0	0	1	0	0	0	3	0	25	0	0	0	0	0
		Ephemeroptera	Baetidae	Centroptilum	6.6	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Caenidae	Caenis	7.41	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Ephemeridae	Hexagenia	4.9	N	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Megaloptera	Sialidae	Sialis	7.17	N	7	4	3	0	2	1	1	1	0	0	0	1	1	2	2	0	0	2	3	3	4	2	0	1	0	0	1	0
		Odonata	Gomphidae		5	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
		Trichoptera	Dipseudopsidae	Phylocentropus	6.2	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Hydroptychidae	Digrectrona	2.21	Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			Hydroptilidae		4	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
			Leptoceridae		2.7	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
			Molannidae	Molanna	4.27	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			Polycentropodidae		4	Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0
				Polycentropus	3.53	Y	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Malacostraca	Amphipoda	Crangonyctidae	Crangonyx	7.87	N	0	0	2	1	3	0	5	5	0	10	0	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0
MOLLUSCA	Bivalva	Veneroida	Corbiculidae	Corbicula	6.12	N	0	8	3	6	9	8	3	3	0	2	0	0	0	0	0	1	3	0	0	2	0	0	0	1	6	2	0	0
			Sphaeriidae		6.6	N	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				Pisidium	6.48	N	0	6	0	1	0	2	0	2	0	10	13	6	12	3	10	7	0	2	7	14	0	0	0	0	0	0	0	0
NEMATODA					ND	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLATYHELMINTHES	Turbellaria	Tricladida	Dugesiidae	Girardia	7.23	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TDEC MMI Metrics																																	
No. of Organisms Counted	107	111	32	20	53	40	37	73	89	96	67	112	116	31	25	37	28	26	27	38	106	61	86	60	25	103	83	99
bundance (No. of Organisms Counted x SSF)	107	111	32	20	53	40	37	73	89	96	67	112	116	31	25	37	28	26	27	38	106	61	86	60	25	103	83	99
Taxa Richness (gross)	13	18	8	8	15	13	8	11	7	13	10	9	12	8	9	8	9	10	7	8	17	15	15	15	7	11	12	13
EPT Richness (gross)	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3	0	0	0	0	0
Family' Taxa with underlying genera	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Family' EPT Taxa with underlying genera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxa Richness (adjusted)	13	18	8	8	15	13	8	11	7	13	10	9	12	7	9	8	9	10	7	8	17	15	15	15	7	11	12	13
EPT Richness (adjusted)	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3	0	0	0	0	0
% EPT	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	0.0%	0.9%	1.6%	8.1%	0.0%	0.0%	0.0%	0.0%	0.0%
% Oligochaetes & Chironomids	93.5%	79.3%	75.0%	55.0%	71.7%	72.5%	75.7%	84.9%	96.6%	75.0%	80.6%	92.9%	87.9%	83.9%	48.0%	81.1%	85.7%	53.8%	63.0%	52.6%	92.5%	93.4%	91.9%	88.3%	76.0%	97.1%	96.4%	100.0%
NCBI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
% Dominant	41.1%	24.3%	40.6%	30.0%	24.5%	30.0%	51.4%	60.3%	51.7%	55.2%	28.4%	66.1%	56.0%	35.5%	40.0%	37.8%	28.6%	34.6%	29.6%	39.5%	25.5%	23.0%	37.2%	28.3%	36.0%	55.3%	28.9%	29.3%
% Clingers	1.9%	0.9%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	0.0%	1.9%	0.0%	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%
TVA Vital Signs Metrics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Taxa Richness	13	18	8	8	15	13	8	11	7	13	10	9	12	7	9	8	9	10	7	8	17	15	15	15	7	11	12	13
EPT Richness	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3	0	0	0	0	0
% Long-lived Species	0.0%	14.4%	15.6%	40.0%	22.6%	25.0%	21.6%	13.7%	3.4%	22.9%	19.4%	5.4%	10.3%	9.7%	40.0%	18.9%	14.3%	34.6%	25.9%	36.8%	1.9%	0.0%	0.0%	1.7%	24.0%	1.9%	0.0%	0.0%
% Chironomid	91.6%	70.3%	53.1%	50.0%	64.2%	50.0%	59.5%	75.3%	9.0%	17.7%	16.4%	10.7%	11.2%	3.2%	20.0%	16.2%	57.1%	50.0%	25.9%	13.2%	72.6%	42.6%	46.5%	35.0%	8.0%	16.5%	42.2%	53.5%
% Tubificidae	1.9%	9.0%	21.9%	5.0%	7.5%	22.5%	16.2%	9.6%	67.6%	57.3%	64.2%	82.1%	76.7%	80.6%	28.0%	64.9%	28.6%	3.8%	37.0%	39.5%	19.8%	50.0%	45.3%	53.3%	68.0%	62.0%	54.2%	46.5%
% Dominant	41.1%	24.3%	40.6%	30.0%	24.5%	30.0%	51.4%	60.3%	51.7%	55.2%	28.4%	66.1%	56.0%	35.5%	40.0%	37.8%	28.6%	34.6%	29.6%	39.5%	25.5%	23.0%	37.2%	28.3%	36.0%	55.3%	28.9%	29.3%
% Zero Samples	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 27 - Parksville Reservoir 2010 Macroinvertebrate Species List

Phylum	Class	Order	Family	Genus	TolValue	Clinger	OM1560I-98-TVMDI-091610-001	OM1560J-98-TVMDI-091610-001	SI0040A-98-TVMDI-091610-001	SI0040B-98-TVMDI-091610-001	SI0040C-98-TVMDI-091610-001	SI0040D-98-TVMDI-091610-001	SI0040E-98-TVMDI-091610-001	SI0040F-98-TVMDI-091610-001	SI0040G-98-TVMDI-091610-001	SI0040H-98-TVMDI-091610-001	SI0040I-98-TVMDI-091610-001	SI0040J-98-TVMDI-091610-001
ANNELIDA	Oligochaeta	Tubificida	Naididae	Nais	8.88	N	2	0	0	0	0	0	0	0	0	0	0	0
				Stylaria	9.38	N	0	0	0	0	0	0	0	0	0	0	0	0
			Tubificidae	Aulodrilus	4.63	N	5	18	14	0	0	0	0	0	0	0	0	17
				Branchiura	8.28	N	3	2	0	0	0	0	0	0	0	0	0	0
			Tubificidae w.h.c.		7.11	N	0	0	1	0	0	0	0	0	0	1	2	1
			Tubificidae w.o.h.c.		9.5	N	31	3	3	2	0	1	1	2	1	2	1	16
				Limnodrilus	9.5	N	0	0	0	0	0	0	0	0	0	0	0	0
ARTHROPODA	Crustacea	Branchiopoda	Chydoridae		N/A	N/A	1	0	0	0	0	0	0	0	0	0	0	0
			Daphnidae	Daphnia	N/A	N	0	0	0	1	0	0	0	1	2	1	0	0
			Sididae	Sida	N/A	N	1	0	0	0	0	0	0	0	0	0	0	0
		Harpacticoida			N/A	N	1	0	0	0	0	0	0	0	0	0	0	0
	Insecta	Coleoptera	Curculionidae		4	N	0	0	0	0	0	0	0	0	0	0	0	0
		Diptera	Athericidae	Atherix	2	N	0	0	0	0	0	0	0	0	0	0	0	0
			Ceratopogonidae		5.9	N	0	0	0	0	0	0	0	0	0	0	0	0
			Chaoboridae	Chaoborus	8.5	N	0	0	1	0	0	0	0	0	1	0	0	0
			Chironomidae	Abiskomyia	7.2	N	0	0	0	0	0	0	0	0	0	0	0	6
				Chironomus	9.63	N	1	1	0	0	1	1	0	1	0	0	3	0
				Cladopelma	3.49	N	3	1	0	0	0	0	0	0	0	0	0	0
				Cladotanytarsus	4.09	N	20	0	0	0	0	0	0	0	0	0	0	59
				Coelotanypus	8	N	0	0	0	0	0	0	0	0	0	0	0	0
				Cryptochironomus	6.4	N	4	0	0	0	0	0	0	0	0	0	0	0
				Eurlistia	7.08	N	0	0	0	0	0	0	0	0	0	0	0	0
				Glypotendipes	9.47	N	2	0	0	0	0	0	0	0	0	0	0	2
				Microtendipes	5.53	Y	0	0	0	0	0	0	0	0	0	0	0	0
				Nanocladius	7.07	N	0	0	0	0	0	0	0	0	0	0	0	1
				Nilothauma	5.03	N	4	0	0	0	0	0	0	0	0	0	0	0
				Parachironomus	9.42	N	0	0	0	0	0	0	0	0	0	0	0	0
				Paracladopelma	5.51	N	0	0	0	0	0	0	0	0	0	0	0	0
				Paralauterborniella	4.77	Y	0	0	0	0	0	0	0	0	0	0	0	0
				Polypedilum	5.69	N	0	0	0	0	0	0	0	0	0	0	0	2
				Psectrocladius	9.1	N	1	3	0	0	0	0	0	0	0	0	0	7
				Pseudochironomus	3.59	N	1	0	0	0	0	0	0	0	0	0	0	1
				Rheotanytarsus	5.36	N	0	0	0	0	0	0	0	0	0	0	0	11
				Stictochironomus	5.89	Y	0	0	0	0	0	0	0	0	0	0	0	0
				Tanytarsus	6.52	N	5	0	0	0	0	0	0	0	0	0	0	0
		Ephemeroptera	Baetidae	Centroptilum	6.76	N	1	0	0	0	0	0	0	0	0	0	0	38
			Caenidae	Caenis	6.6	N	0	0	0	0	0	0	0	0	0	0	0	1
			Ephemeridae	Hexagenia	7.41	N	0	0	0	0	0	0	0	0	0	0	0	0
		Megaloptera	Sialidae	Sialis	4.9	N	0	0	0	0	0	0	0	0	0	0	0	5
		Odonata	Gomphidae		7.17	N	0	3	0	0	0	0	0	0	0	0	0	4
		Trichoptera	Dipseudopsidae	Phylocentropus	5	N	0	0	0	0	0	0	0	0	0	0	0	0
			Hydropsychidae	Diplectrona	6.2	N	0	1	0	0	0	0	0	0	0	0	0	5
			Hydroptilidae		2.21	Y	0	0	0	0	0	0	0	0	0	0	0	0
			Leptoceridae		4	N	0	0	0	0	0	0	0	0	0	0	0	0
			Molannidae	Molanna	2.7	N	0	0	0	0	0	0	0	0	0	0	0	0
			Polycentropodidae		4.27	N	0	0	0	0	0	0	0	0	0	0	0	3
				Polycentropus	4	Y	0	0	0	0	0	0	0	0	0	0	0	0
	Malacostraca	Amphipoda	Crangonyctidae	Crangonyx	3.53	Y	0	0	0	0	0	0	0	0	0	0	0	0
MOLLUSCA	Bivalvia	Veneroida	Corbiculidae	Corbicula	7.87	N	0	0	0	0	0	0	0	0	0	0	0	0
			Sphaeriidae		6.12	N	0	0	0	0	0	0	0	0	0	0	0	0
				Pisidium	6.6	N	0	0	0	0	0	0	0	0	0	0	0	1
NEMATODA					6.48	N	0	0	0	0	0	0	0	0	0	0	0	0
PLATYHELMINTHES	Turbellaria	Tricladida	Dugesiidae	Girardia	ND	N	2	0	1	0	0	0	0	0	0	0	0	0
					7.23	N	0	1	0	0	0	0	0	0	0	0	0	0

TDEC MMI Metrics												
No. of Organisms Counted	88	33	20	3	1	2	1	4	4	4	6	180
bundance (No. of Organisms Counted x SSF)	88	33	20	3	1	2	1	4	4	4	6	180
Taxa Richness (gross)	18	9	5	2	1	2	1	3	3	3	3	18
EPT Richness (gross)	0	1	0	0	0	0	0	0	0	0	0	4
Family Taxa with underlying genera	0	0	0	0	0	0	0	0	0	0	0	0
Family EPT Taxa with underlying genera	0	0	0	0	0	0	0	0	0	0	0	0
Taxa Richness (adusted)	18	9	5	2	1	2	1	3	3	3	3	18
EPT Richness (adusted)	0	1	0	0	0	0	0	0	0	0	0	4
% EPT	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%
% Oligochaetes & Chironomids	94.3%	84.8%	90.0%	66.7%	100.0%	100.0%	100.0%	75.0%	25.0%	75.0%	100.0%	89.4%
NCBI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
% Dominant	35.2%	54.5%	70.0%	66.7%	100.0%	50.0%	100.0%	50.0%	50.0%	50.0%	50.0%	32.8%
% Clingers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
TVA Vital Signs Metrics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Taxa Richness	18	9	5	2	1	2	1	3	3	3	3	18
EPT Richness	0	1	0	0	0	0	0	0	0	0	0	4
% Long-lived Species	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%
% Chironomid	47.7%	15.2%	0.0%	0.0%	100.0%	50.0%	0.0%	25.0%	0.0%	0.0%	50.0%	70.6%
% Tubificidae	46.6%	69.7%	90.0%	66.7%	0.0%	50.0%	100.0%	50.0%	25.0%	75.0%	50.0%	18.9%
% Dominant	35.2%	54.5%	70.0%	66.7%	100.0%	50.0%	100.0%	50.0%	50.0%	50.0%	50.0%	32.8%
% Zero Samples	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table 28- Parksville Reservoir 2010 Macroinvertebrate Metric Summary

	Transect Composite Sample			
	BI0160 - 001	BI0160- 002	OM1560	SI0040
TDEC MMI Metrics				
No. of Organisms Counted	581	584	744	225
Total Abundance (No. of Organisms Counted x SSF)	581	584	744	225
Taxa Richness (gross)	23	30	37	22
EPT Richness (gross)	0	5	6	4
Family' Taxa with underlying genera	1	1	1	0
Family' EPT Taxa with underlying genera	0	0	1	0
Taxa Richness (adusted)	22	29	36	22
EPT Richness (adjusted)	0	5	5	4
TVA Vital Signs Metrics				
Taxa Richness	22	29	36	22
EPT Richness	0	5	5	4
% Long-lived Species	10.5%	14.6%	1.5%	2.7%
% Chironomid	40.8%	35.7%	38.0%	29.6%
% Tubificidae	37.0%	37.4%	53.5%	52.6%
% Dominant	39.2%	41.3%	35.3%	61.9%
% Zero Samples	0.0%	0.0%	0.0%	0.0%

Notes:

- All TDEC metrics as well as TVA Vital Signs taxa richness, EPT richness, % Long-lived Species and % Zero samples were based on the sum of all organisms collected across the 10 point transect. TVA Vital Signs metrics for % Chironomids, % Tubificidae and % Dominant metrics were based on the average of individual samples collected across the 10 point transect.

Table 29 - Parksville Reservoir 2010 Habitat Characterization Summary

		Transect/Bank					
		BI0160		OM1560		SI0040	
Zone	Habitat Parameter	BI0160LB	BI0160RB	OM1560LB	OM1560RB	SI0040LB	SI0040RB
Riparian Zone	Vegetation Type - Canopy Layer (>5 m)	M	M	M	M	M	M
	Vegetation Type - Understory (0.5 to 5 m)	M	D	D	D	D	D
	Canopy Layer (>5 m height) - Trees >/= 0.3 m DBH	3	1	3	1	2	2
	Canopy Layer (>5 m height) - Trees <0.3 m DBH	3	2	2	3	2	2
	Understory (0.5 to 5 m height) - Woody shrubs & saplings	2	3	1	2	2	1
	Understory (0.5 to 5 m height) - Tall herbs, forbs & grasses	1	1	1	1	1	1
	Ground cover (<0.5 m height) - Woody shrubs & seedlings	2	3	1	2	1	1
	Ground cover (<0.5 m height) - Herbs, forbs & grasses	1	1	0	2	0	0
	Ground cover (<0.5 m height) - Standing water or inundated veg	0	0	0	0	0	0
	Ground cover (<0.5 m height) - Barren or buildings	2	1	2	2	2	2
	Shoreline substrate zone - Bedrock (>400 cm)	0	0	1	1	0	0
	Shoreline substrate zone - Boulder (25 to 400 cm)	0	0	1	1	0	0
	Shoreline substrate zone - Cobble/gravel (0.2 to 25 cm)	2	1	2	2	2	0
	Shoreline substrate zone - Loose sand (0.006 to 0.2 cm)	2	2	2	2	1	0
	Shoreline substrate zone - Other fine soil/sed (<0.006 cm)	2	2	2	2	1	0
	Shoreline substrate zone - Vegetated	1	1	1	1	1	3
	Shoreline substrate zone - Other	2	3	2	2	2	2
	Bank features - Angle (V=vert/U.C., S = 30-75, G=<30)	V	V	V	V	V	V
	Bank features - Vertical distance (m) WL to high water	0.5	0.5	0.5	0.5	0.5	0.5
	Bank features - Horizontal distance (m) WL to high water	0	0	0	0	0	0
	Human Influence - Buildings	0	0	0	0	0	0
	Human Influence - Commercial	0	0	0	0	0	0
	Human Influence - Park Facilities	0	0	0	B	0	0
	Human Influence - Docks/Boats	B	0	0	B	0	0
	Human Influence - Walls, Dikes or Revetments	0	0	0	B	0	0
	Human Influence - Litter, Trash Dump or Landfill	0	0	0	0	0	0
	Human Influence - Roads or Railroad	0	0	0	B	0	0
	Human Influence - Row Crops	0	0	0	0	0	0
	Human Influence - Pasture or hay fields	0	0	0	0	0	0
	Human Influence - Orchard	0	0	0	0	0	0
	Human Influence - Lawn	0	0	0	0	0	0
	Human Influence - Other (explain in comments)	0	0	0	0	0	0
Littoral Zone	General - Station depth (m) at 10 m offshore	10	6	5	5	2	2
	General - Surface Film	N	N	N	N	N	N
	Bottom Substrate - Bedrock (>400 cm)	0	0	1	0	0	0
	Bottom Substrate - Boulder (25 to 400 cm)	0	0	1	0	1	1
	Bottom Substrate - Cobble (6.4 to 25 cm)	1	1	2	1	1	1
	Bottom Substrate - Gravel (0.2 to 6.4 cm)	1	1	2	1	1	1
	Bottom Substrate - Sand (0.006 to 0.2 cm)	3	2	2	2	2	2
	Bottom Substrate - Silt, clay or muck (<0.006 cm)	3	3	2	3	3	3
	Bottom Substrate - Woody debris	2	2	2	2	2	2
	Bottom Substrate - Color	BR	BR	BR	BR	BR	BR
	Bottom Substrate - Odor	N	N	P	P	A	A
	Macrophytes - Submergent	0	0	0	1	0	0
	Macrophytes - Emergent	0	0	0	0	0	0
	Macrophytes - Floating	0	0	0	0	0	0
	Macrophytes - Total Weed Cover	0	0	0	0	0	0
	Macrophytes - Do macrophytes extend lakeward?	N	N	N	Y	N	N
	Fish Cover - Aquatic weeds	0	1	0	1	0	0
	Fish Cover - Snags (<0.3 m diameter)	2	2	2	2	2	2
	Fish Cover - Brush or woody debris (<0.3 m diameter)	2	2	2	2	3	2
	Fish Cover - Inundated live trees (>0.3 m diameter)	0	0	0	0	0	0
	Fish Cover - Overhanging vegetation (<1 m above surface)	2	1	2	1	1	1
	Fish Cover - Rock ledges or sharp dropoffs	2	2	2	2	2	2
	Fish Cover - Boulders	0	0	2	1	1	1
	Fish Cover - Human structures (e.g. docks, landings, pilings, riprap, etc.)	0	0	0	0	0	0
	Littoral Fish Habitat Classification - Disturbance	N	N	N	M	N	N
	Littoral Fish Habitat Classification - Cover class	M	O	M	M	M	M
	Littoral Fish Habitat Classification - Cover type	W	W	W	W	W	W
	Littoral Fish Habitat Classification - Substrate	M/S	M/S	M/S/C	M/S	M/S/C	M/S/C

Notes:

- Vegetation Type - M = mixed deciduous/coniferous, D = deciduous, C = coniferous, N = none
- Riparian Canopy, Understory, Ground cover, Shoreline substrate, Bottom substrate and Macrophytes - 0 = absent, 1 = sparse (<10%), 2 = moderate (10-40%), 3= Heavy (40-75%) and 4 = Very Heavy (>75%)
- Fish Cover - 0 = absent, 1 = present but sparse, 2 = present in moderate to heavy density
- BR = brown, N = none/no, Y = yes, LB = left bank, RB = right bank
- Substrate Odor - S = hydrogen sulfide, A = anoxic, P = organic, C = chemical, N = none
- Human Influences - B = observed adjacent to or behind plot, 0 = absent
- Littoral Fish Habitat Disturbance, Cover Class and Type - M = mixed, N = natural or none (for cover type), H = human, O = open, W = woody, A = artificial, F = fill, V = veg, B = boulders
- Littoral Fish Habitat Substrate - M = mud/muck, S = sand/gravel, C = cobble/boulder, B = bedrock

Table 31 - Parksville Reservoir 2002 and 2010 Fish Tissue PCB Data Summary

		Largemouth Bass			Channel Catfish	
Parameter	Units	2002	OM1560-TA-101210-001	OM1560-TA-101210-002	2002	OM1560-TA-101310-001
Aroclor-1016 (PCB-1016)	ug/kg	NR	ND	ND	NR	ND
Aroclor-1221 (PCB-1221)	ug/kg	NR	ND	ND	NR	ND
Aroclor-1232 (PCB-1232)	ug/kg	NR	ND	ND	NR	ND
Aroclor-1242 (PCB-1242)	ug/kg	NR	ND	ND	NR	ND
Aroclor-1248 (PCB-1248)	ug/kg	NR	ND	ND	NR	360
Aroclor-1254 (PCB-1254)	ug/kg	NR	ND	ND	NR	ND
Aroclor-1260 (PCB-1260)	ug/kg	NR	190	ND	NR	710
Total PCBs	ug/kg	190 (100)	190	<11	970 (530)	1070
Lipids	%	NR	0.62	0.14	NR	3.9
Percent moisture	%	NR	78.4	79.4	NR	78.4

Notes:

- (##) indicates mean concentration
- Where two 2010 results are presented for bass, the first (OM1560-TA-101210-001) represents the largest bass (4-2) and the second (OM1560-TA-101210-002) represents a composite bass result. Composite = (4) LMB (1-12 to 2-7). Sample OM1560-TA-101310-001 is a channel catfish composite = (5) fish (3-11 to 5-4)
- 2002 = Ocoee River RI sampling results

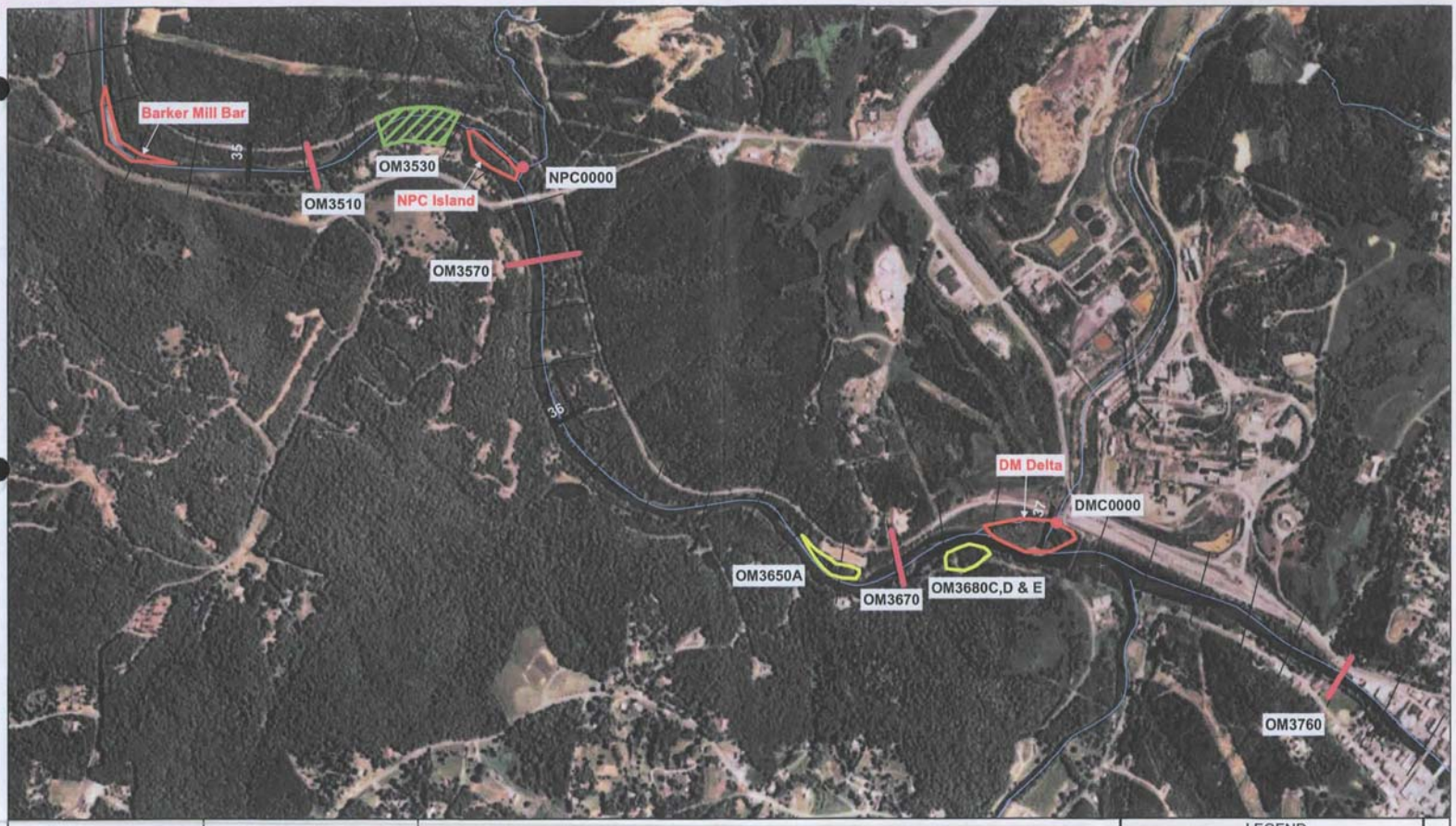


Figure 1

800
Feet

BWSC

Copper Basin Reach

Ocoee Long-Term Monitoring Program 2010
Sampling and Assessment Locations
COPPERHILL, TENNESSEE

LEGEND
- Transect Location
- Sample Location
- Fish Survey Area (Approx.)
- Sediment Feature
- Sediment Sampling Area (Approx.)

Figure 1

Figure 2

Ocoee #3 Reservoir

Ocoee Long-Term Monitoring Program 2010
Sampling and Assessment Locations
COPPERHILL, TENNESSEE

LEGEND

- Transect Location
- Sample Location
- Fish Survey Area (Approx.)

Figure 2

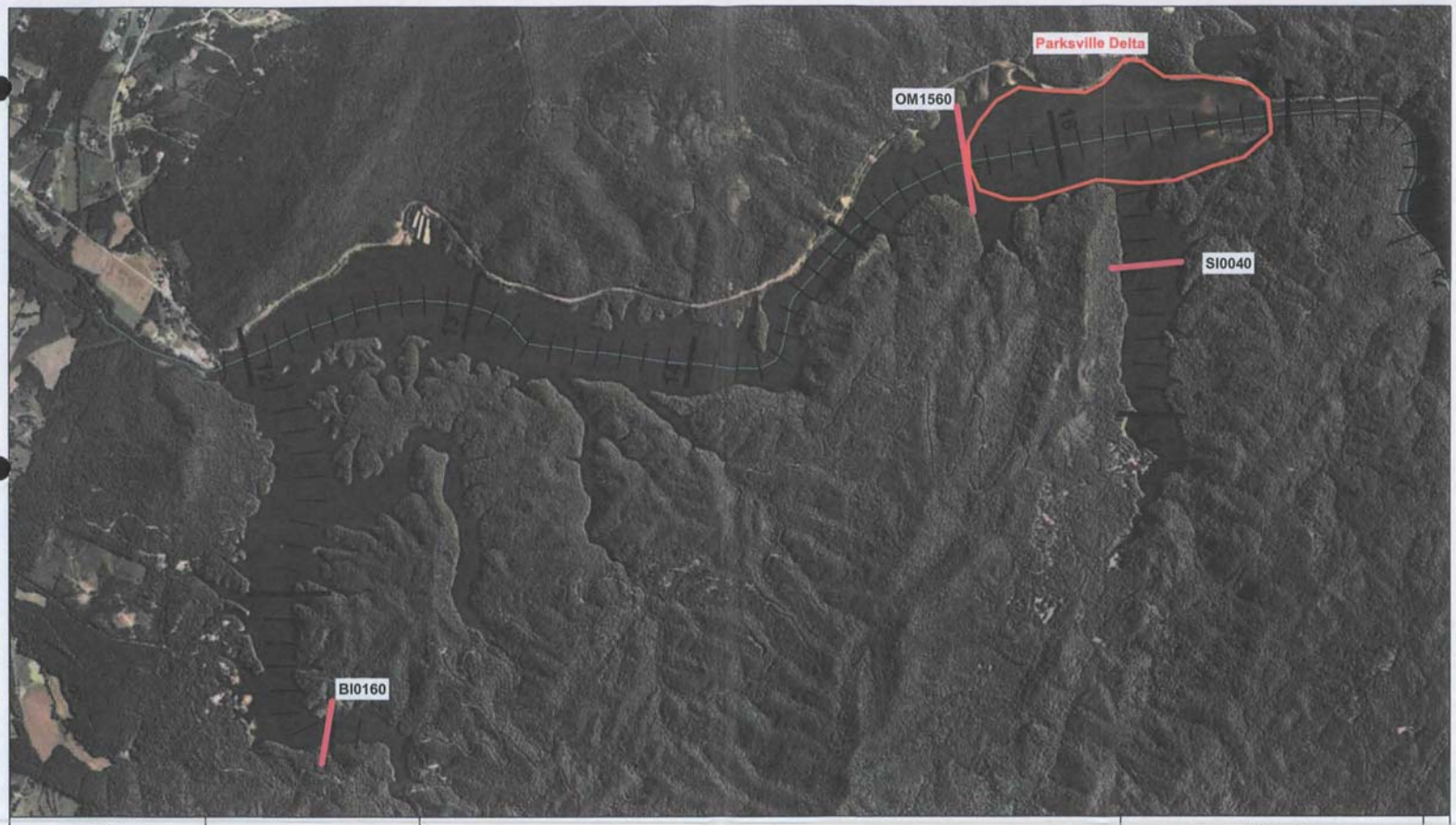


Figure 3

2,000
Feet

BWSC

Parksville Reservoir

Ocoee Long-Term Monitoring Program 2010
Sampling and Assessment Locations
COPPERHILL, TENNESSEE

LEGEND

Transect Location
Sample Location
Sediment Feature

Figure 3

Figure 4 - Copper Basin Reach 2009 and 2010 Macroinvertebrate Total Abundance

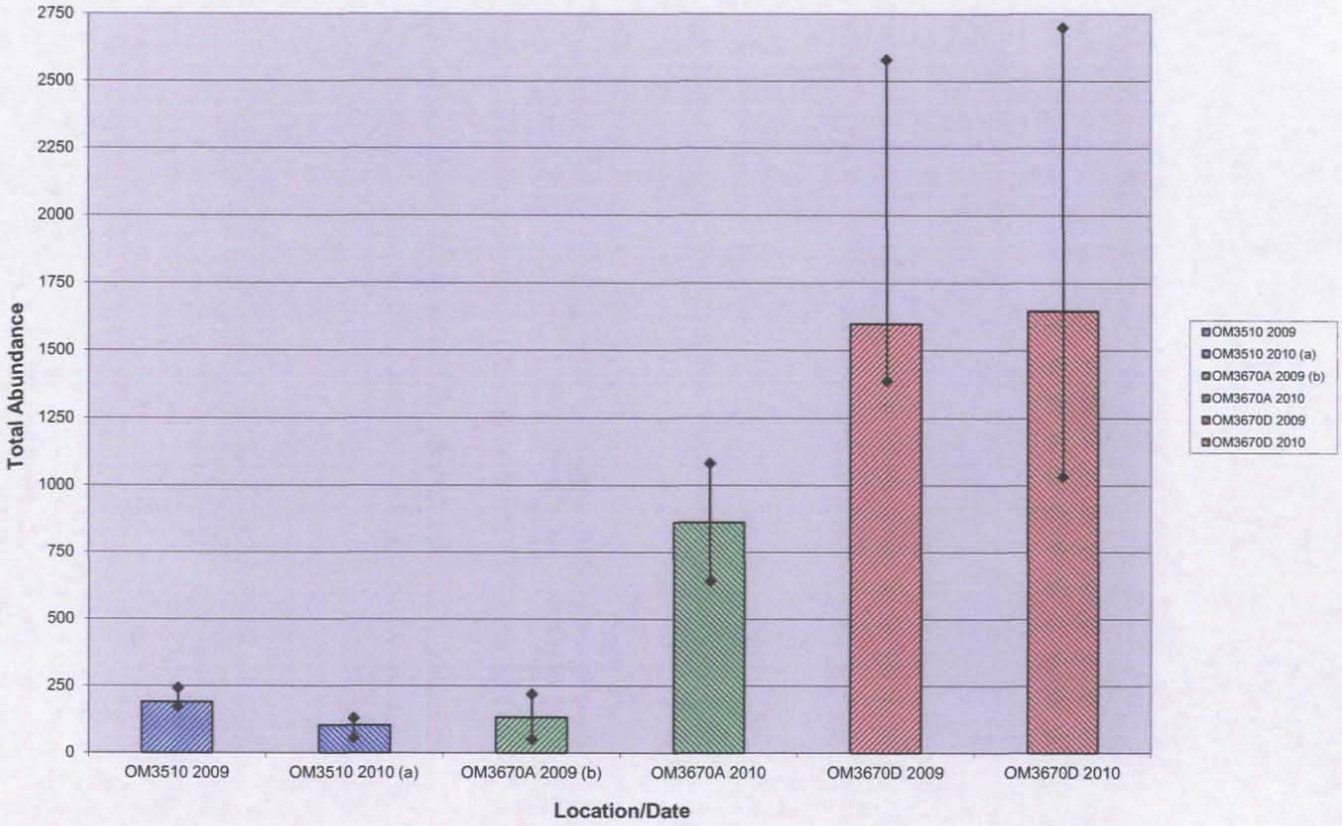


Figure 5 - Copper Basin Reach 2009 and 2010 Macroinvertebrate Taxa Richness

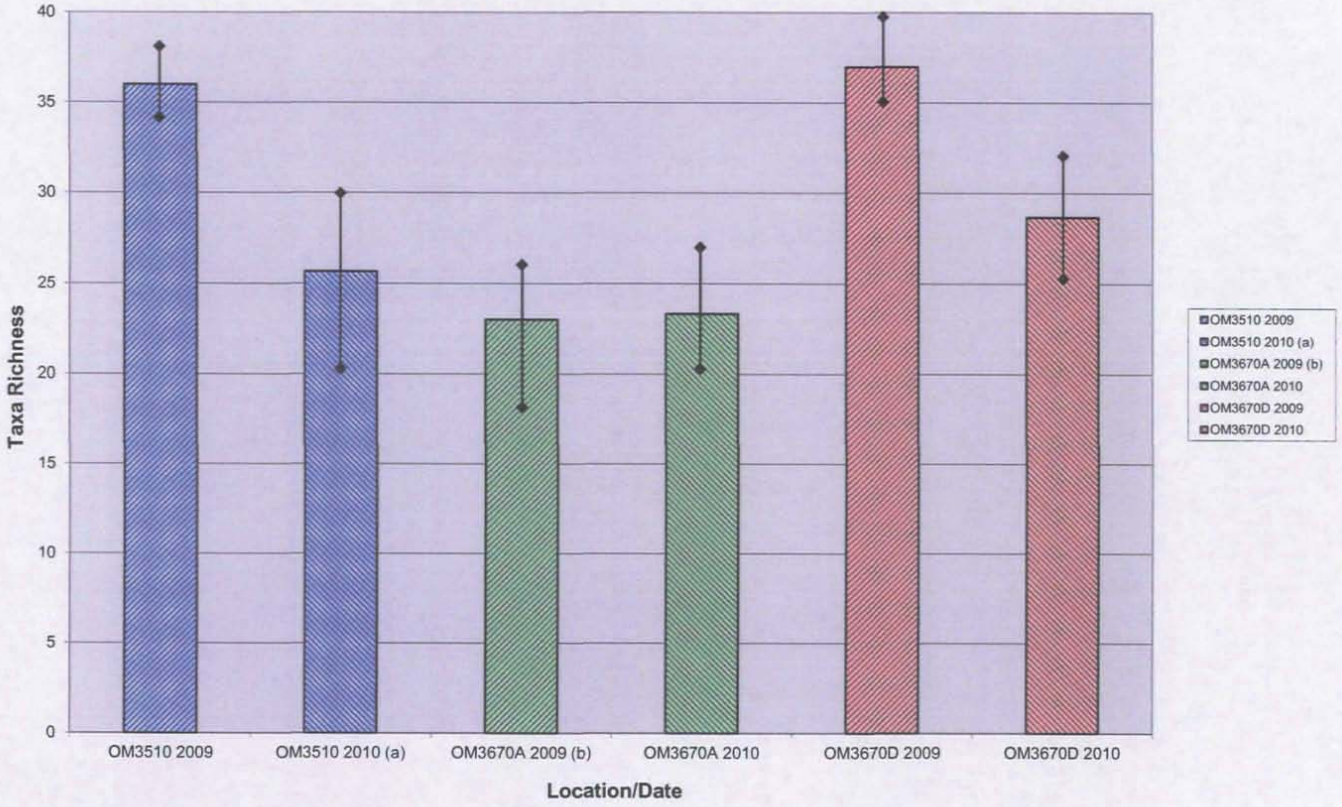


Figure 6 - Copper Basin Reach 2009 and 2010 Macroinvertebrate EPT Richness

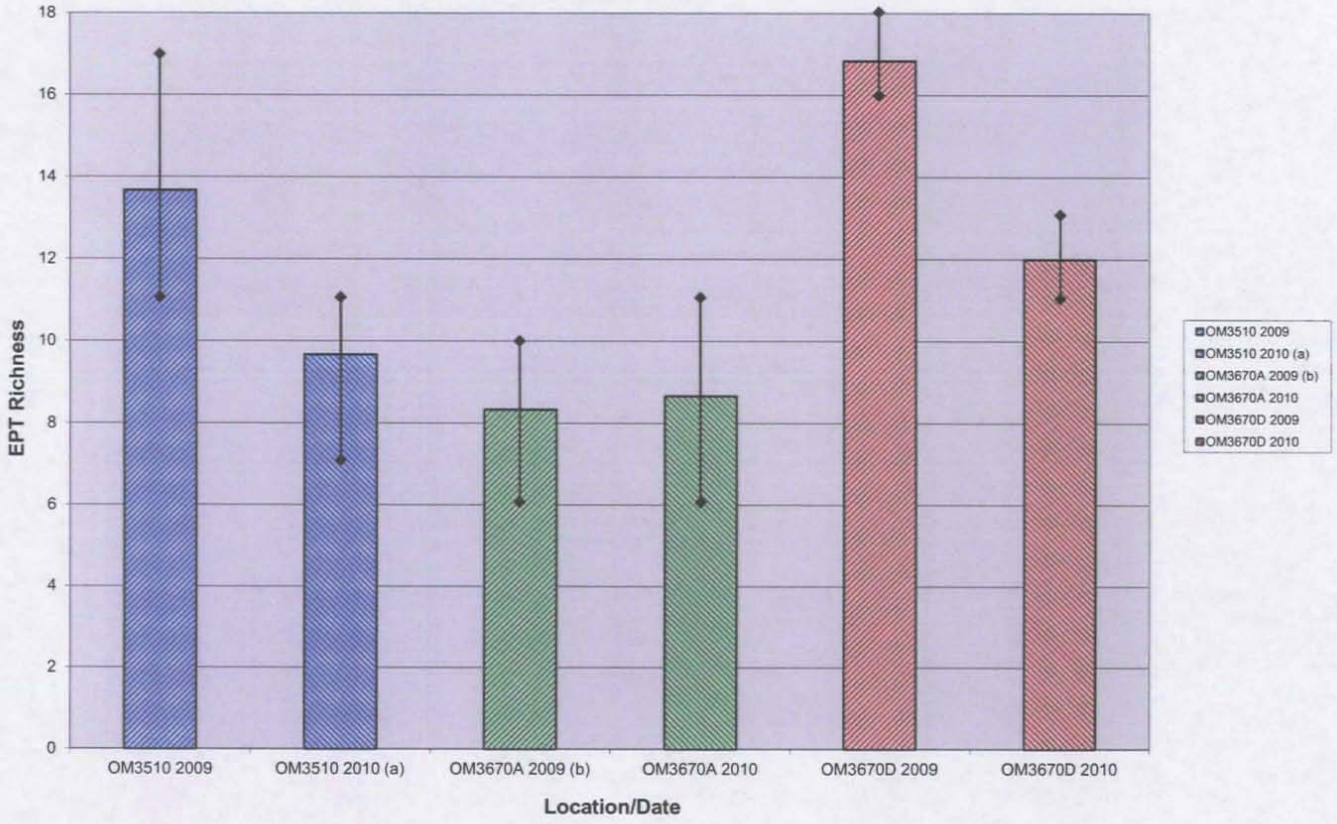


Figure 7 - Copper Basin Reach 2009 and 2010 Macroinvertebrate MMI Score

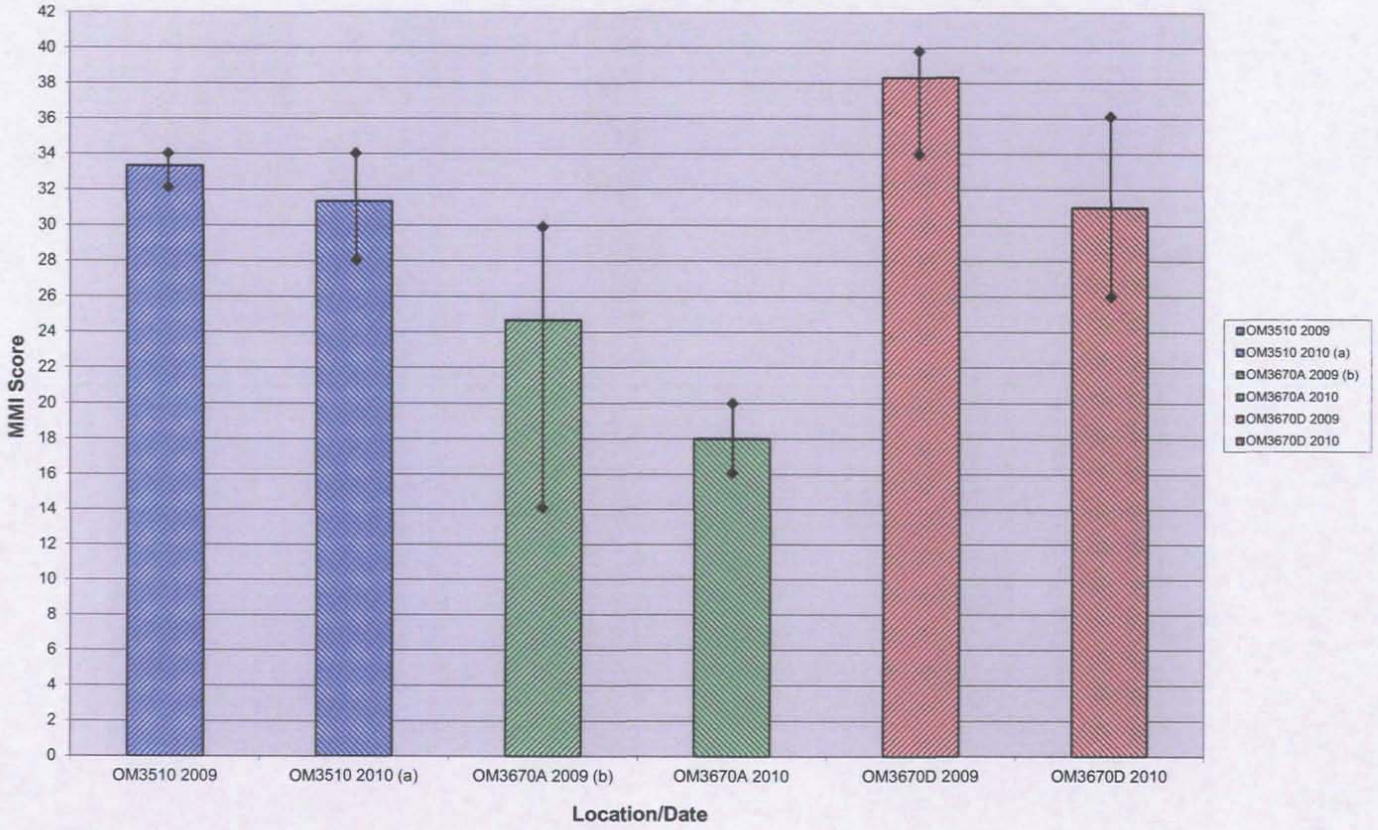
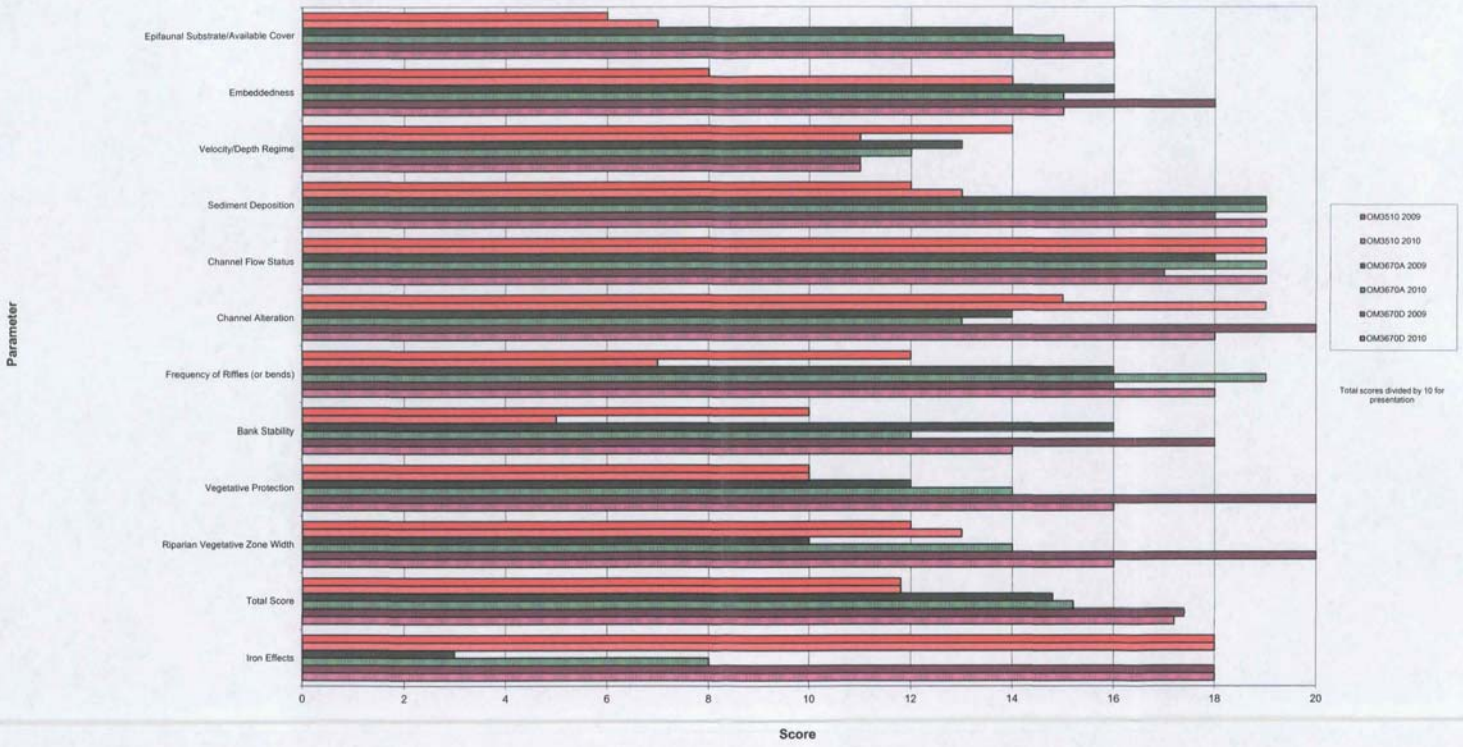


Figure 8 -
Copper Basin Reach 2009 and 2010 Habitat Assessment Scores



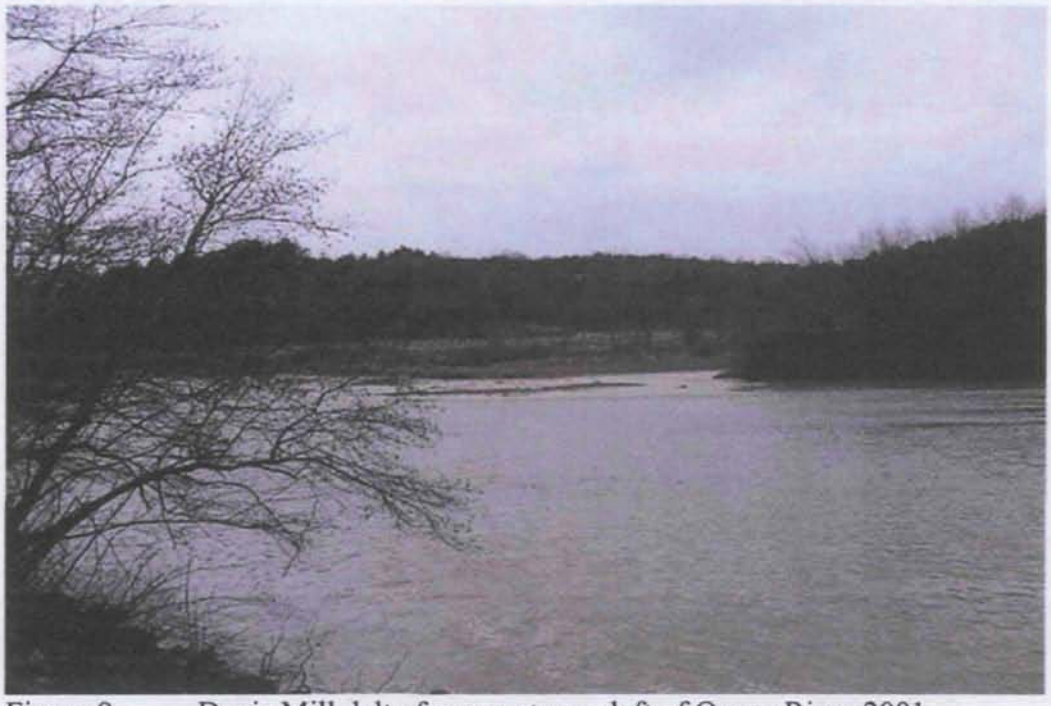


Figure 9 Davis Mill delta from upstream left of Ocoee River 2001

Figure 10 Davis Mill delta along Ocoee River bank 2001

Figure 11 Davis Mill delta from downstream end looking upstream (N110) April 2009

Figure 12 Davis Mill delta along Ocoee River looking upstream (N110) April 2009

Figure 13 Davis Mill delta from upstream end looking downstream (N290) April 2010

Figure 14 North Potato Creek island from Grassy Creek bridge 2002

Figure 15 Upstream end of North Potato Creek island along Ocoee River bank 2002

Figure 16 Upstream end of North Potato Creek island looking downstream (N310) June 2009

Figure 17 Upstream end of North Potato Creek island looking downstream (N310) April 2010

Figure 18 Downstream end of North Potato Creek island looking upstream (N160) June 2009

Figure 19 Barker Mill bar looking across Ocoee River at Barker Mill 2002

Figure 20 Barker Mill bar downstream end looking upstream (N180) April 2009

Figure 21 Barker Mill bar upstream end looking upstream (N170) April 2009

Figure 22 Barker Mill bar downstream end looking downstream (N010) April 2010

Figure 23 Sylco Inlet (SI0040) right bank habitat snags and woody debris 2010

Figure 24 Delta toe area (OM1560) left bank habitat snags and woody debris 2010

Figure 25 Baker Inlet (BI0160) right bank habitat snags and woody debris 2010

Figure 26 Parksville delta cypress stand from upstream end 1999

Figure 27 Parksville delta looking downstream during low pool 2008

Figure 28 Upper End of Parksville delta during high pool 2009

Figure 29 Bald cypress along middle of Parksville delta during high pool 2009

Figure 30 Bald cypress along middle of Parksville delta during high pool 2010

Appendix F
State of Tennessee Concurrence with Selected Remedy

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF REMEDIATION
401 CHURCH STREET, 4TH FLOOR L&C ANNEX
NASHVILLE, TENNESSEE 37243

September 26, 2011

Franklin E. Hill, Director
Superfund Division
US EPA - Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

Subject: Record of Decision Concurrence Letter
Copper Basin Mining District Site, Operable Unit 5
EPA ID # TN0001890839,
TDEC/DOR ID # 70-511

Dear Mr. Hill,

The Tennessee Department of Environment and Conservation (TDEC) Divisions of Remediation and Water Pollution Control have participated with the United States Environmental Protection Agency (EPA) and Glenn Springs Holdings, Inc (GSHI) to address the Copper Basin Mining District Site (the Site) since the three parties executed the Memorandum of Understanding for the Site in January 2001. We appreciate the cooperation between the parties and the many accomplishments achieved over the years. This is exemplified by the significant reduction in loading to the Ocoee River through treatment of Davis Mill and North Potato Creek.

Operable Unit 5 includes the Ocoee River and the Record of Decision for Operable Unit 5 selects the following remedy by reach:

- *Copper Basin Reach:* Monitored Natural Recovery
- *Ocoee No. 3 Reservoir:* Monitored Natural Recovery with Hydraulic Controls
- *Parksville Reservoir:* Monitored Natural Recovery with Permanent Inundation Using Flashboards and Superboards

Provided there is ongoing treatment of Davis Mill and North Potato Creek, we agree with the remedy selected in the Operable Unit 5 Record of Decision with appropriate monitoring to verify effectiveness of monitored natural recovery and the statutory Five-Year Reviews referenced in the Record of Decision. TDEC remains committed to working with EPA and GSHI to make the

Copper Basin Mining District reclamation a success and desires to participate in future monitoring plan discussions on the Ocoee River and resulting data evaluation.

If you have any questions, please feel free to contact me at (615) 532-0911 or Andy.Binford@tn.gov .

Sincerely,

Robert A. Binford

Robert A. Binford
Director
Division of Remediation

cc: DOR/NCO
DOR/CHEFO
WPC/CHEFO