ARCADIS

City of Raleigh 2007 Sampling and Monitoring Program Report

Appendix C

Benthic Macroinvertebrate Sampling Data, Pennington and Associates

Table 1. Physical and Field Chemistry taken for Sta. J2230000, July 2007.

LOCATION NAME	**Smith Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J2230000**
LAT/LONG.	**N35°55.143' , W78°32.051'**
DATE	**10-Jul-07**
HABITAT SCORE	**54**

Temperature °C	26.7
Dissolved Oxygen mg/l	6.69
Conductivity *u* s/cm	134
PH std. units.	5.68
Stream width (ft)	9
Stream depth (ft)	0.19
Velocity (ft/sec)	1.27
Flow (ft^3/sec)	2.17

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	2	2%
Very Fine Sand (0.002-0.005")	2	
Fine Sand (0.005"-0.01")	9	
Medium Sand (0.01"-0.02")	13	
Coarse Sand (0.02"-0.04")	28	
Very Coarse Sand (0.04"-0.08")	19	71%
Very Fine Gravel (0.08"-0.16")	10	
Fine Gravel (0.16"-0.31")	12	
Medium Gravel (0.31"-0.63")	1	
Coarse Gravel (0.63"-1.3")	6	
Very Coarse Gravel (1.3"-2.5")		29%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 2. Physical and Field Chemistry taken for Sta. J2360000, July 2007.

LOCATION NAME	**Neuse River**
COUNTY	**Wake County**
LOCATION NUMBER	**J2360000**
LAT/LONG.	**N35°47.993', W78°32.335'**
DATE	**9-Jul-07**
HABITAT SCORE	**88**

Temperature °C	29.3
Dissolved Oxygen mg/l	6.34
Conductivity *u* s/cm	93
PH std. units.	7.11
Stream width (ft)	300+
Stream depth (ft)	
Velocity (ft/sec)	
Flow (ft^3/sec)	~190 cfs[a]

	Pebble Count	**Total**
SUBSTRATE	Mostly boulders on Bedrock	
Silt/Clay (<0.002")		
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		mostly bedrock

[a] Data taken from USGS site 02087183 near Falls for July 9, 2007

Table 3. Physical and Field Chemistry taken for Sta. J3000000, July 2007.

LOCATION NAME	**Crabtree Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J3000000**
LAT/LONG.	**N35°50.697', W78°43.523'**
DATE	**10-Jul-07**
HABITAT SCORE	**58**

Temperature °C	26
Dissolved Oxygen mg/l	5.11
Conductivity *u* s/cm	442
PH std. units.	6.82
Stream width (ft)	30
Stream depth (ft)	0.42
Velocity (ft/sec)	Negligible
Flow (ft^3/sec)	Not measured

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	8	8%
Very Fine Sand (0.002-0.005")	14	
Fine Sand (0.005"-0.01")	27	
Medium Sand (0.01"-0.02")	38	
Coarse Sand (0.02"-0.04")	9	
Very Coarse Sand (0.04"-0.08")	1	89%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")	3	
Large Cobble (5.0"-10.1")		3%
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')	2	
Large-Very Large Boulder (3.3'-13.4')		2%
Bedrock (>13.4')		

Table 4. Physical and Field Chemistry taken for Sta. J3210000, July 2007.

LOCATION NAME	**Crabtree Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J3210000**
LAT/LONG.	**N35°49.639', W78°39.009'**
DATE	**10-Jul-07**
HABITAT SCORE	**55**

Temperature °C	27.8
Dissolved Oxygen mg/l	6.87
Conductivity *u* s/cm	323
PH std. units.	7.3
Stream width (ft)	44
Stream depth (ft)	1.1
Velocity (ft/sec)	0.27
Flow (ft^3/sec)	13.1

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	1	1%
Very Fine Sand (0.002-0.005")	4	
Fine Sand (0.005"-0.01")	3	
Medium Sand (0.01"-0.02")	13	
Coarse Sand (0.02"-0.04")	8	
Very Coarse Sand (0.04"-0.08")	10	38%
Very Fine Gravel (0.08"-0.16")	3	
Fine Gravel (0.16"-0.31")	1	
Medium Gravel (0.31"-0.63")	11	
Coarse Gravel (0.63"-1.3")	23	
Very Coarse Gravel (1.3"-2.5")	17	55%
Small Cobble (2.5"-5.0")	6	
Large Cobble (5.0"-10.1")	2	8%
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 5. Physical and Field Chemistry taken for Sta. J3970000, July 2007.

LOCATION NAME	**Walnut Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J3970000**
LAT/LONG.	**N35°44.968', W78°32.054'**
DATE	**12-Jul-07**
HABITAT SCORE	[a]

Temperature °C	25.2
Dissolved Oxygen mg/l	5.59
Conductivity *u* s/cm	163
PH std. units.	7.58
Stream width (ft)	28
Stream depth (ft)	1.4
Velocity (ft/sec)	0.96
Flow (ft^3/sec)	37.63

SUBSTRATE	**Pebble Count**	**Total**
Silt/Clay (<0.002")		
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] Water turbid and deep - no habitat score or pebble count taken.

Table 6. Physical and Field Chemistry taken for Sta. J4080000, July 2007.

LOCATION NAME	**Poplar Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J4080000**
LAT/LONG.	**N35°43.879', W78°28.636'**
DATE	**12-Jul-07**
HABITAT SCORE	**80**

Temperature °C	24.2
Dissolved Oxygen mg/l	6.96
Conductivity *u* s/cm	225
PH std. units.	6.89
Stream width (ft)	9
Stream depth (ft)	0.25
Velocity (ft/sec)	1.04
Flow (ft^3/sec)	2.34

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	3	3%
Very Fine Sand (0.002-0.005")	6	
Fine Sand (0.005"-0.01")	22	
Medium Sand (0.01"-0.02")	17	
Coarse Sand (0.02"-0.04")	18	
Very Coarse Sand (0.04"-0.08")	7	70%
Very Fine Gravel (0.08"-0.16")	8	
Fine Gravel (0.16"-0.31")	9	
Medium Gravel (0.31"-0.63")	3	
Coarse Gravel (0.63"-1.3")	8	
Very Coarse Gravel (1.3"-2.5")	1	29%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 7. Physical and Field Chemistry taken for J4170000, July 2007.

LOCATION NAME	**Neuse River**
COUNTY	**Wake County**
LOCATION NUMBER	**J4170000**
LAT/LONG.	**N35°38.845', W78°24.336'**
DATE	**July 12,07**
HABITAT SCORE	**41**

Temperature °C	27.9
Dissolved Oxygen mg/l	4.66
Conductivity *u* s/cm	129
PH std. units.	7.68
Stream width (ft)	~225
Stream depth (ft)	[a]
Velocity (ft/sec)	[a]
Flow (ft^3/sec)	[b]~200 cfs

SUBSTRATE	**Pebble Count**	**Total**
Silt/Clay (<0.002")		
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] Water turbid and deep - no pebble count taken

[b] Flow for Neus River at Site USGS 02087183 near Falls, NC

Table 8. Physical and Field Chemistry taken for Sta. J4414000, July 2007.

LOCATION NAME	**Swift Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J4414000**
LAT/LONG.	**N35°43.134', W78°45.129'**
DATE	**9-Jul-07**
HABITAT SCORE	**62**

Temperature °C	23.7
Dissolved Oxygen mg/l	4.14
Conductivity *u* s/cm	142
PH std. units.	5.98
Stream width (ft)	3
Stream depth (ft)	0.11
Velocity (ft/sec)	0.42
Flow (ft^3/sec)	0.14

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	3	80%
Very Fine Sand (0.002-0.005")	2	
Fine Sand (0.005"-0.01")	8	
Medium Sand (0.01"-0.02")	8	
Coarse Sand (0.02"-0.04")	2	
Very Coarse Sand (0.04"-0.08")		20%
Very Fine Gravel (0.08"-0.16")	4	
Fine Gravel (0.16"-0.31")	4	
Medium Gravel (0.31"-0.63")	9	
Coarse Gravel (0.63"-1.3")	20	
Very Coarse Gravel (1.3"-2.5")	37	74%
Small Cobble (2.5"-5.0")	5	
Large Cobble (5.0"-10.1")	1	6%
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 9. Physical and Field Chemistry taken for Sta. J4590000, July 2007.

LOCATION NAME	**Swift Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J4590000**
LAT/LONG.	**N35°31.115', W78°22.920'**
DATE	**11-Jul-07**
HABITAT SCORE	**54**

Temperature °C	29.8
Dissolved Oxygen mg/l	6.55
Conductivity *u* s/cm	97
PH std. units.	7.44
Stream width (ft)	20
Stream depth (ft)	0.71
Velocity (ft/sec)	0.83
Flow (ft^3/sec)	11.8

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	5	5%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	41	
Medium Sand (0.01"-0.02")	45	
Coarse Sand (0.02"-0.04")	8	
Very Coarse Sand (0.04"-0.08")		95%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 10. Physical and Field Chemistry taken for Sta. J5010000, July 2007.

LOCATION NAME	**Middle Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J5010000**
LAT/LONG.	**N35°30.461', W78°24.091'**
DATE	**11-Jul-07**
HABITAT SCORE	**67**

Temperature °C	27.8
Dissolved Oxygen mg/l	6.78
Conductivity *u* s/cm	225
PH std. units.	7.78
Stream width (ft)	53
Stream depth (ft)	1 1/2 - 3
Velocity (ft/sec)	[a]
Flow (ft^3/sec)	[a]

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	12	12%
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")	6	
Coarse Sand (0.02"-0.04")	7	
Very Coarse Sand (0.04"-0.08")	8	21%
Very Fine Gravel (0.08"-0.16")	7	
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")	3	
Coarse Gravel (0.63"-1.3")	6	
Very Coarse Gravel (1.3"-2.5")	4	20%
Small Cobble (2.5"-5.0")	9	
Large Cobble (5.0"-10.1")	12	21%
Small Boulder (10.1"-1.7')	11	
Medium Boulder (1.7'-3.3')	5	
Large-Very Large Boulder (3.3'-13.4')	2	18%
Bedrock (>13.4')		

[a] Not measured

Table 11. Physical and Field Chemistry taken for Sta. J5620000, July 2007.

LOCATION NAME	**Little River**
COUNTY	**Wake County**
LOCATION NUMBER	**J5620000**
LAT/LONG.	**N35°51.661', W78°21.985'**
DATE	**12-Jul-07**
HABITAT SCORE	**44**

Temperature °C	26.9
Dissolved Oxygen mg/l	0.49
Conductivity *u* s/cm	122
PH std. units.	6.3
Stream width (ft)	~150
Stream depth (ft)	>6
Velocity (ft/sec)	[a]
Flow (ft^3/sec)	[a]

	Pebble Count	**Total**
SUBSTRATE	[a]	
Silt/Clay (<0.002")		
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] not measured

Table 12. Physical and Field Chemistry taken for Sta. MI-4, July 2007.

LOCATION NAME	**Walnut Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-4**
LAT/LONG.	**N35°46.065', W78°41.509'**
DATE	
HABITAT SCORE	**55**

Temperature °C	23.9
Dissolved Oxygen mg/l	5.13
Conductivity *u* s/cm	98
PH std. units.	6.45
Stream width (ft)	3
Stream depth (ft)	0.13
Velocity (ft/sec)	1.67
Flow (ft^3/sec)	0.65

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	21	21%
Very Fine Sand (0.002-0.005")	4	
Fine Sand (0.005"-0.01")	14	
Medium Sand (0.01"-0.02")	9	
Coarse Sand (0.02"-0.04")	3	
Very Coarse Sand (0.04"-0.08")		30%
Very Fine Gravel (0.08"-0.16")	1	
Fine Gravel (0.16"-0.31")	3	
Medium Gravel (0.31"-0.63")	19	
Coarse Gravel (0.63"-1.3")	19	
Very Coarse Gravel (1.3"-2.5")	2	44%
Small Cobble (2.5"-5.0")	7	
Large Cobble (5.0"-10.1")		7%
Small Boulder (10.1"-1.7')	1	
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		1%
Bedrock (>13.4')		

Table 13. Physical and Field Chemistry taken for Sta. MI-8, July 2007.

LOCATION NAME	**House Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-8**
LAT/LONG.	**N35°50.036', W78°40.659'**
DATE	**10-Jul-07**
HABITAT SCORE	**71**

Temperature °C	25.8
Dissolved Oxygen mg/l	5.86
Conductivity *u* s/cm	124
PH std. units.	7.03
Stream width (ft)	3
Stream depth (ft)	0.13
Velocity (ft/sec)	0.78
Flow (ft^3/sec)	0.3

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	8	8%
Very Fine Sand (0.002-0.005")	5	
Fine Sand (0.005"-0.01")	5	
Medium Sand (0.01"-0.02")	5	
Coarse Sand (0.02"-0.04")	3	
Very Coarse Sand (0.04"-0.08")	2	20%
Very Fine Gravel (0.08"-0.16")	4	
Fine Gravel (0.16"-0.31")	4	
Medium Gravel (0.31"-0.63")	7	
Coarse Gravel (0.63"-1.3")	21	
Very Coarse Gravel (1.3"-2.5")	26	62%
Small Cobble (2.5"-5.0")	10	
Large Cobble (5.0"-10.1")		10%
Small Boulder (10.1"-1.7')	2	
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		2%
Bedrock (>13.4')		

Table 14. Physical and Field Chemistry taken for Sta. MI-10, July 2007.

LOCATION NAME	**Marsh Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-10**
LAT/LONG.	**N35°49.008', W78°35.574'**
DATE	**9-Jul-07**
HABITAT SCORE	**59**

Temperature °C	25.6
Dissolved Oxygen mg/l	4.71
Conductivity *u* s/cm	139
PH std. units.	6.8
Stream width (ft)	2.67
Stream depth (ft)	0.25
Velocity (ft/sec)	2.5
Flow (ft^3/sec)	1.67

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	5	5%
Very Fine Sand (0.002-0.005")	7	
Fine Sand (0.005"-0.01")	13	
Medium Sand (0.01"-0.02")	20	
Coarse Sand (0.02"-0.04")	16	
Very Coarse Sand (0.04"-0.08")	9	65%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")	4	
Medium Gravel (0.31"-0.63")	11	
Coarse Gravel (0.63"-1.3")	12	
Very Coarse Gravel (1.3"-2.5")	3	30%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	2	2%
Small Boulder (10.1"-1.7')	1	1%
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 15. Physical and Field Chemistry taken for Sta. MI-11, July 2007.

LOCATION NAME	**Pigeon House Branch**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-11**
LAT/LONG.	**N35°48.261', W78°36.639'**
DATE	**9-Jul-07**
HABITAT SCORE	**53**

Temperature °C	25.8
Dissolved Oxygen mg/l	6.49
Conductivity *u* s/cm	271
PH std. units.	7.38
Stream width (ft)	4
Stream depth (ft)	0.52
Velocity (ft/sec)	1.02
Flow (ft^3/sec)	2.12

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	15	15%
Very Fine Sand (0.002-0.005")	5	
Fine Sand (0.005"-0.01")	8	
Medium Sand (0.01"-0.02")	34	
Coarse Sand (0.02"-0.04")	18	
Very Coarse Sand (0.04"-0.08")		65%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")	4	
Coarse Gravel (0.63"-1.3")	8	
Very Coarse Gravel (1.3"-2.5")	10	22%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	1	1%
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

Table 16. Physical and Field Chemistry taken for Sta. MI-12, July 2007.

LOCATION NAME	**Mine Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-12**
LAT/LONG.	**N35°51.313', W78°39.709'**
DATE	**10-Jul-07**
HABITAT SCORE	**72**

Temperature °C	28.5
Dissolved Oxygen mg/l	2.65
Conductivity *u* s/cm	150
PH std. units.	6.89
Stream width (ft)	6
Stream depth (ft)	0.65
Velocity (ft/sec)	0.22
Flow (ft^3/sec)	0.86

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	2	2%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	1	
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		2%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")	1	
Medium Gravel (0.31"-0.63")	4	
Coarse Gravel (0.63"-1.3")	23	
Very Coarse Gravel (1.3"-2.5")	37	65%
Small Cobble (2.5"-5.0")	17	
Large Cobble (5.0"-10.1")	10	27%
Small Boulder (10.1"-1.7')	6	
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')	1	7%
Bedrock (>13.4')		

Table 17. Physical and Field Chemistry taken for Sta. MI-14, July 2007.

LOCATION NAME	**Perry Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-14**
LAT/LONG.	**N35°52.793', W78°32.888'**
DATE	**10-Jul-07**
HABITAT SCORE	**52**

Temperature °C	27.2
Dissolved Oxygen mg/l	7.1
Conductivity *u* s/cm	150
PH std. units.	7.28
Stream width (ft)	6
Stream depth (ft)	0.52
Velocity (ft/sec)	0.74
Flow (ft^3/sec)	2.31

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	3	3%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	2	
Medium Sand (0.01"-0.02")	31	
Coarse Sand (0.02"-0.04")	20	
Very Coarse Sand (0.04"-0.08")	21	75%
Very Fine Gravel (0.08"-0.16")	5	
Fine Gravel (0.16"-0.31")	5	
Medium Gravel (0.31"-0.63")	4	
Coarse Gravel (0.63"-1.3")	5	
Very Coarse Gravel (1.3"-2.5")	1	20%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	1	1%
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')	1	
Large-Very Large Boulder (3.3'-13.4')		1%
Bedrock (>13.4')		

Table 18. Physical and Field Chemistry taken for Sta. MI-18, July 2007.

LOCATION NAME	**Rocky Branch**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-18**
LAT/LONG.	**N35°46.614', W78°39.738'**
DATE	**9-Jul-07**
HABITAT SCORE	**74**

Temperature °C	24
Dissolved Oxygen mg/l	6.76
Conductivity *u* s/cm	234
PH std. units.	7.05
Stream width (ft)	4
Stream depth (ft)	0.58
Velocity (ft/sec)	0.31
Flow (ft^3/sec)	0.72

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	11	11%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	3	
Medium Sand (0.01"-0.02")	7	
Coarse Sand (0.02"-0.04")	11	
Very Coarse Sand (0.04"-0.08")		22%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")	4	
Medium Gravel (0.31"-0.63")	2	
Coarse Gravel (0.63"-1.3")	17	
Very Coarse Gravel (1.3"-2.5")	11	34%
Small Cobble (2.5"-5.0")	12	
Large Cobble (5.0"-10.1")	19	31%
Small Boulder (10.1"-1.7')	4	
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		4%
Bedrock (>13.4')		

Table 19. Physical and Field Chemistry taken for Sta. MI-21, July 2007.

LOCATION NAME	**Trib to Turkey Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-21**
LAT/LONG.	**N35°52.189', W78°43.377'**
DATE	**10-Jul-07**
HABITAT SCORE	**82**

Temperature °C	24.6
Dissolved Oxygen mg/l	3.41
Conductivity *u* s/cm	301
PH std. units.	7.08
Stream width (ft)	1.33
Stream depth (ft)	0.08
Velocity (ft/sec)	0.4
Flow (ft^3/sec)	0.04

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	13	13%
Very Fine Sand (0.002-0.005")	5	
Fine Sand (0.005"-0.01")	3	
Medium Sand (0.01"-0.02")	8	
Coarse Sand (0.02"-0.04")	6	
Very Coarse Sand (0.04"-0.08")	5	27%
Very Fine Gravel (0.08"-0.16")	2	
Fine Gravel (0.16"-0.31")	3	
Medium Gravel (0.31"-0.63")	8	
Coarse Gravel (0.63"-1.3")	10	
Very Coarse Gravel (1.3"-2.5")	12	35%
Small Cobble (2.5"-5.0")	7	
Large Cobble (5.0"-10.1")	8	15%
Small Boulder (10.1"-1.7')	4	
Medium Boulder (1.7'-3.3')	2	
Large-Very Large Boulder (3.3'-13.4')	1	7%
Bedrock (>13.4')	5	5%

Table 20. Physical and Field Chemistry taken for Sta. MI-22, July 2007.

LOCATION NAME	**Walnut Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**MI-22**
LAT/LONG.	**N35°45.504', W78°34.942'**
DATE	**9-Jul-07**
HABITAT SCORE	**68**

Temperature °C	26.2
Dissolved Oxygen mg/l	6.27
Conductivity *u* s/cm	248
PH std. units.	7.17
Stream width (ft)	17
Stream depth (ft)	0.44
Velocity (ft/sec)	0.7
Flow (ft^3/sec)	5.24

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	5	5%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	10	
Medium Sand (0.01"-0.02")	33	
Coarse Sand (0.02"-0.04")	12	
Very Coarse Sand (0.04"-0.08")	14	70%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")	1	
Coarse Gravel (0.63"-1.3")	1	
Very Coarse Gravel (1.3"-2.5")	2	4%
Small Cobble (2.5"-5.0")	1	
Large Cobble (5.0"-10.1")	5	6%
Small Boulder (10.1"-1.7')	5	
Medium Boulder (1.7'-3.3')	4	
Large-Very Large Boulder (3.3'-13.4')	2	11%
Bedrock (>13.4')	6	6%

Table 21. Physical and Field Chemistry taken for Sta. J4500000, July 2007.

LOCATION NAME	**Swift Crk. Below Lake Bensom Dam**
COUNTY	**Wake County**
LOCATION NUMBER	**J4500000**
LAT/LONG.	**N35°38.860', W78°36.250'**
DATE	**11-Jul-07**
HABITAT SCORE	**57**

Temperature °C	25.1
Dissolved Oxygen mg/l	3.25
Conductivity *u* s/cm	103
PH std. units.	4.37
Stream width (ft)	45
Stream depth (ft)	1-3
Velocity (ft/sec)	<0.25
Flow (ft^3/sec)	[a]

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	20	20%
Very Fine Sand (0.002-0.005")	3	
Fine Sand (0.005"-0.01")	8	
Medium Sand (0.01"-0.02")	37	
Coarse Sand (0.02"-0.04")	25	
Very Coarse Sand (0.04"-0.08")	5	78%
Very Fine Gravel (0.08"-0.16")	2	2%
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] No measurable Flow

Table 22. Physical and Field Chemistry taken for Sta. J4510000, July 2007.

LOCATION NAME	**Swift Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J4510000**
LAT/LONG.	**N35°36.817', W78°32.943'**
DATE	**11-Jul-07**
HABITAT SCORE	**59**

Temperature °C	27.1
Dissolved Oxygen mg/l	5.39
Conductivity *u* s/cm	119
PH std. units.	7.16
Stream width (ft)	~40
Stream depth (ft)	2-6
Velocity (ft/sec)	<0.25
Flow (ft^3/sec)	[a]

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	6	6%
Very Fine Sand (0.002-0.005")	1	
Fine Sand (0.005"-0.01")	13	
Medium Sand (0.01"-0.02")	42	
Coarse Sand (0.02"-0.04")	26	
Very Coarse Sand (0.04"-0.08")	5	87%
Very Fine Gravel (0.08"-0.16")	5	6%
Fine Gravel (0.16"-0.31")	1	
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	2	2%
Small Boulder (10.1"-1.7')	1	1%
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] Not measurable

Table 23. Physical and Field Chemistry taken for Sta. J4511000, July 2007.

LOCATION NAME	**White Oak Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J4511000**
LAT/LONG.	**N35°37.059', W78°31.691'**
DATE	**11-Jul-07**
HABITAT SCORE	**47**

Temperature °C	30
Dissolved Oxygen mg/l	3.15
Conductivity *u* s/cm	92
PH std. units.	7.83
Stream width (ft)	15
Stream depth (ft)	0.78
Velocity (ft/sec)	0.37
Flow (ft^3/sec)	4.33

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	15	15%
Very Fine Sand (0.002-0.005")	5	
Fine Sand (0.005"-0.01")	16	
Medium Sand (0.01"-0.02")	29	
Coarse Sand (0.02"-0.04")	8	
Very Coarse Sand (0.04"-0.08")	2	60%
Very Fine Gravel (0.08"-0.16")	1	
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")	4	
Coarse Gravel (0.63"-1.3")	7	
Very Coarse Gravel (1.3"-2.5")	9	21%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	5	5%
Small Boulder (10.1"-1.7')	1	
Medium Boulder (1.7'-3.3')	1	
Large-Very Large Boulder (3.3'-13.4')		2%
Bedrock (>13.4')		

Table 24. Physical and Field Chemistry taken for Sta. J4520000, July 2007.

LOCATION NAME	**Swift Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J4520000**
LAT/LONG.	**N35°33.093', W78°27.600'**
DATE	**11-Jul-07**
HABITAT SCORE	**75**

Temperature °C	27.6
Dissolved Oxygen mg/l	6.84
Conductivity *u* s/cm	102
PH std. units.	7.12
Stream width (ft)	30
Stream depth (ft)	0.72
Velocity (ft/sec)	0.74
Flow (ft^3/sec)	15.98

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	9	9%
Very Fine Sand (0.002-0.005")	13	
Fine Sand (0.005"-0.01")	13	
Medium Sand (0.01"-0.02")	28	
Coarse Sand (0.02"-0.04")	2	
Very Coarse Sand (0.04"-0.08")	1	57%
Very Fine Gravel (0.08"-0.16")	2	
Fine Gravel (0.16"-0.31")	1	
Medium Gravel (0.31"-0.63")	1	
Coarse Gravel (0.63"-1.3")	1	
Very Coarse Gravel (1.3"-2.5")	4	9%
Small Cobble (2.5"-5.0")	10	
Large Cobble (5.0"-10.1")	2	12%
Small Boulder (10.1"-1.7')	3	
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		3%
Bedrock (>13.4')	13	13%

Table 25. Physical and Field Chemistry taken for Sta. J5790000, July 2007.

LOCATION NAME	**Buffalo Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J5790000**
LAT/LONG.	**N35°46.183', W78°22.616'**
DATE	**12-Jul-07**
HABITAT SCORE	**39**

Temperature °C	25.4
Dissolved Oxygen mg/l	3.82
Conductivity *u* s/cm	98
PH std. units.	6.54
Stream width (ft)	3
Stream depth (ft)	0.17
Velocity (ft/sec)	0.5
Flow (ft^3/sec)	0.26

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	17	17%
Very Fine Sand (0.002-0.005")	10	
Fine Sand (0.005"-0.01")	18	
Medium Sand (0.01"-0.02")	22	
Coarse Sand (0.02"-0.04")	3	
Very Coarse Sand (0.04"-0.08")		53%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")	2	
Medium Gravel (0.31"-0.63")	3	
Coarse Gravel (0.63"-1.3")	3	
Very Coarse Gravel (1.3"-2.5")	3	11%
Small Cobble (2.5"-5.0")	4	
Large Cobble (5.0"-10.1")	5	9%
Small Boulder (10.1"-1.7')	5	
Medium Boulder (1.7'-3.3')	3	
Large-Very Large Boulder (3.3'-13.4')		8%
Bedrock (>13.4')	2	2%

Table 26. Physical and Field Chemistry taken for Sta. J5002000, July 2007.

LOCATION NAME	**Middle Creek**
COUNTY	**Johnston County**
LOCATION NUMBER	**J5002000**
LAT/LONG.	**N35°33.384', W78°33.931'**
DATE	**11-Jul-07**
HABITAT SCORE	**63**

Temperature °C	25.6
Dissolved Oxygen mg/l	5.72
Conductivity *u* s/cm	268
PH std. units.	6.9
Stream width (ft)	~40
Stream depth (ft)	1-5
Velocity (ft/sec)	<0.25
Flow (ft^3/sec)	[a] ~25 cfs

	Pebble Count[b]	**Total**
SUBSTRATE		
Silt/Clay (<0.002")		
Very Fine Sand (0.002-0.005")		
Fine Sand (0.005"-0.01")		
Medium Sand (0.01"-0.02")		
Coarse Sand (0.02"-0.04")		
Very Coarse Sand (0.04"-0.08")		
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")		
Coarse Gravel (0.63"-1.3")		
Very Coarse Gravel (1.3"-2.5")		
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")		
Small Boulder (10.1"-1.7')		
Medium Boulder (1.7'-3.3')		
Large-Very Large Boulder (3.3'-13.4')		
Bedrock (>13.4')		

[a] Not measurable infield - USGS gage places flows near 25 cfs at USGS gage 02088000
[b] Not measurable

Table 27. Physical and Field Chemistry taken for Sta. J4110000, July 2007.

LOCATION NAME	**Marks Creek**
COUNTY	**Wake County**
LOCATION NUMBER	**J4110000**
LAT/LONG.	**N35°42.367', W78°25.876'**
DATE	**12-Jul-07**
HABITAT SCORE	**90**

Temperature °C	27.3
Dissolved Oxygen mg/l	8.78
Conductivity *u* s/cm	92
PH std. units.	6.75
Stream width (ft)	13
Stream depth (ft)	0.39
Velocity (ft/sec)	1.24
Flow (ft^3/sec)	6.3

	Pebble Count	**Total**
SUBSTRATE		
Silt/Clay (<0.002")	20	20%
Very Fine Sand (0.002-0.005")	7	
Fine Sand (0.005"-0.01")	5	
Medium Sand (0.01"-0.02")	30	
Coarse Sand (0.02"-0.04")	10	
Very Coarse Sand (0.04"-0.08")	5	57%
Very Fine Gravel (0.08"-0.16")		
Fine Gravel (0.16"-0.31")		
Medium Gravel (0.31"-0.63")	2	
Coarse Gravel (0.63"-1.3")	3	
Very Coarse Gravel (1.3"-2.5")		5%
Small Cobble (2.5"-5.0")		
Large Cobble (5.0"-10.1")	3	
Small Boulder (10.1"-1.7')	2	
Medium Boulder (1.7'-3.3')	2	
Large-Very Large Boulder (3.3'-13.4')	7	11%
Bedrock (>13.4')	5	5%

TABLE 28. BENTHIC MACROINVERTEBRATES, CITY OF RALEIGH, WAKE AND JOHNSTON COUNTIES, NORTH CAROLINA, JULY 2007.

SPECIES	T.V.	F.F.G.	Station J2230000	Station J2360000	Station J3000000	Station J3210000	Station J3970000	Station J4080000	Station J4170000	Station J4414000	Station J4590000	Station J5010000	Station J5620000	Station MI-4	Station MI-8	Station M1-10	Station MI-11	Station MI-12	Station MI-14	Station MI-18	Station MI-21	Station MI-22	Station J4500000	Station J4510000	Station J4511000	Station J4520000	Station J5790000	Station J5002000	Station J4110000
PLATYHELMINTHES																													
Turbellaria																													
Dugesiidae																													
Girardia (Dugesia) tigrina	**7.2**			10								1	3				1	10						1	10	3		1	1
NEMERTEA																													
Enopla																													
Tertastemmatidae																													
Prostoma sp.			1	3		3			1		3	3		1	3			1						3	1	1	3	10	3
NEMATODA						1									1					1	1		1						
MOLLUSCA																													
Bivalvia																													
Unionoida																													
Unionidae																													
Elliptio complanata	**5.1**	**FC**											1					10	1				1	1	3	3			
Veneroida																													
Corbiculidae																													
Corbicula fluminea	**6.1**	**FC**	3	10	10	3	3	3	3	3	10	10				3		3	1	1		3	10	10	3	3		10	10
Sphaeriidae	***8**	**FC**																											
Musculium transversum	***8**	**FC**		10		10												10				3	3		3				
Pisidium sp.	**6.5**	**FC**		10				10	10			3	3	10													1		
Sphaerium fabale	**7.6**	**FC**								1																			
Sphaerium sp.	**7.6**	**FC**									3			1				3									1	10	10
Gastropoda																													
Mesogastropoda																													
Hydrobiidae	***8**	**SC**																											
Amnicola limosa	**5.2**	**SC**										3	1																
Somatogyrus sp.	**6.4**	**SC**																						1	1				3
Pleuroceridae																													
Elimia sp.	**2.5**	**SC**																								10			
Leptoxis carinata	**1.8**	**SC**							1																				
Viviparidae																													
Campeloma decisum	**6.5**	**SC**								1																1	1		
Basommatophora																													
Ancylidae		**SC**																											
Ferrissia rivularis	***6**	**SC**			1				3															1					
Lymnaeidae		**SC**																											
Fossaria sp.	***7**	**SC**					3						1												1		1		1
Pseudosuccinea columella	**7.7**	**SC**							1																			1	
Physidae																													
Physella sp.	**8.8**	**CG**		1		3	1		1	3	1	1	1	1	3	1	1	3		10			3				10	10	3
Planorbidae	***6**	**SC**																											
Helisoma anceps	**6.2**	**SC**		1			1			1		3						3											
Menetus dilatatus	**8.2**	**SC**								1		3	3	10	3					3				1					
Planorbella sp.	**6.8**																										3	10	
ANNELIDA																													
Oligochaeta	***10**	**CG**																											
Tubificida																													
Lumbricidae		**SC**								3				1	3		1					1			1		1	3	
Naididae	***8**	**CG**		10			3		3	1	1		3	3	1	1	1	10	3	10	1		10	1	10	1	3	3	10
Bratislavia unidentata																	1			1									
Dero sp.	**10**	**CG**		1		1			10		1	1	10					10		1			1	1	10		1		1
Dero digitata																				1					3				
Nais sp.	**8.9**	**CG**			1					1				1	1					1					3				
Nais communis	**8.8**	**CG**								1										3	1				3		3		
Pristina sp.	**9.6**	**CG**							1								1						1		1			3	1
Pristina breviseta																							1		1		3		
Pristina leidyi	**9.6**	**CG**																		3	1							3	
Ripistes parasita	**2**	**FC**				3																							
Slavina appendiculata	**7.1**	**CG**	1	1				1	1											1	1		1	1	1				3
Stylaria lacustris	**9.4**	**CG**										1		3		1													
cf. Uncinais uncinata						10	1	1																					
Tubificidae w.h.c.	**7.1**	**CG**	3	3					3	1	3	1	10			1	1	10		1		1	1	1	1			1	1
Branchiura sowerbyi	**8.3**	**CG**		1			1	1																					
Tubificidae w.o.h.c.	**7.1**	**CG**		10	1	1		1	10	1		3	10	10	10	10	3	10	3	10	10		3	3	10		3	3	1
Limnodrilus hoffmeisteri	**9.5**	**CG**		3		1			1											1			1					1	
Lumbriculida																													
Lumbriculidae	**7**	**CG**				1	1	1	3		1			3	1	1	1	1		10		1					1	1	
Hirudinea		**P**													1														
Arhynchobdellida																													
Erpobdellidae		**P**														1			1	1					1		1		
Erpobdella punctata	**8.3**	**P**												1															
Rhynchobdellida																													
Glossiphoniidae		**P**																											
Helobdella stagnalis	**8.6**	**P**			1	1			1									3											
Helobdella triserialis	**9.2**	**P**															1	1		1			1						
Helobdella sp.						1																							
ARTHROPODA																													
Arachnoidea																													
Acariformes	**5.5**																												
Arrenuridae	**5.5**																												
Arrenurus sp.	**5.5**											1																	
Lebertiidae	**5.5**																												
Lebertia sp.	**5.5**		1				1					1												3					1
Unionicolidae	**5.5**																												
Neumania sp.	**5.5**												3																

TABLE 28. BENTHIC MACROINVERTEBRATES, CITY OF RALEIGH, WAKE AND JOHNSTON COUNTIES, NORTH CAROLINA, JULY 2007.

SPECIES	T.V.	F.F.G.	Station J2230000	Station J2360000	Station J3000000	Station J3210000	Station J3970000	Station J4080000	Station J4170000	Station J4414000	Station J4590000	Station J5010000	Station J5620000	Station MI-4	Station MI-8	Station M1-10	Station MI-11	Station MI-12	Station MI-14	Station MI-18	Station MI-21	Station MI-22	Station J4500000	Station J4510000	Station J4511000	Station J4520000	Station J5790000	Station J5002000	Station J4110000
Crustacea																													
Ostracoda				1		1	1	1		1						1			1	1			3	3	3		1	1	3
Copepoda								1															1						1
Cladocera																													
Chydoridae							1																						
Daphnidae																													
Ceriodaphnia sp.									1							1							1						
Sidaidae																													
Sida crystillina																									1				
Isopoda																													
Asellidae		**SH**																											
Caecidotea sp.	**9.1**	**CG**							3			1					1										1		
Amphipoda		**CG**																											
Crangonyctidae																													
Crangonyx sp.	**7.9**	**CG**				1																							
Hyalellidae																													
Hyalella azteca	**7.8**	**CG**		1									10			3								3	3		10		
Decapoda																													
Cambaridae	**7.5**																										3		
Cambarus sp.	**7.6**	**CG**						1							1		1			1		1			1				1
Procambarus sp.	**7**	**SH**	1							1			1																
Orconectes sp.	**2.6**	**SH**	1	1					3													1							
Palaemonidae																													
Palaemonetes sp.	**7.1**	**CG**										3	10										1	1			10		
Collembola																3													
Insecta																													
Ephemeroptera																													
Baetidae		**CG**	3					1				1								1		10						1	1
Acerpenna pygmaea	**3.9**																										1		
Baetis flavistriga	**7**	**CG**						1		3				1	3	10	3		1	3	3	1							
Baetis intercalaris	**7**	**CG**	1	1	3				3	10	3								3			3							3
Baetis sp.		**CG**																	10										1
Callibaetis sp.	**9.8**	**CG**											10																
Centroptilum sp.	**6.6**	**CG**	1			3	10	3	10		10	10		10	1				1				3	10			3	10	3
Procloeon sp.	**5**						1				1																		
Pseudocloeon sp.	**4**	**CG**	3	3	1			1	10													3							1
Caenidae		**CG**																											
Caenis sp.	**7.4**	**CG**		1		1			1	1	10	1	10								1		10	10	3		10	10	
Ephemerellidae		**SC**																											
Serratella sp.		**SC**						1																					
Heptageniidae		**SC**																											
Maccaffertium (Stenonema) sp.		**SC**	10	3	3	10	1	10	10	10	3	3		10	3		3		3			10		10			10	10	10
Maccaffertium (Stenonema) exiguum	**3.8**	**SC**		3					1																	3			
Maccaffertium (Stenonema) integrum	**5.8**	**SC**		1					3																				
Maccaffertium (Stenonema) mediopunctatum	**3.8**	**SC**	1																										
Maccaffertium (Stenonema) modestum	**5.5**	**SC**	10		10			10						10		1							3			10			
Stenacron interpunctatum	**6.9**	**SC**							10		1	3	1								3					3	3		
Isonychiidae		**FC**																											
Isonychia sp.	**3.5**	**FC**		3				1	3		1															10	3		10
Tricorythidae		**CG**																											
Tricorythodes sp.	**5.1**	**CG**	10	10	3	10			10		1								3			1		1				1	1
Odonata																													
Aeshnidae		**P**											1																
Boyeria vinosa	**5.9**	**P**	1					3						1									1			3	1		1
Calopterygidae		**P**																											
Calopteryx sp.	**7.8**	**P**																		1									
Hetaerina sp.	**5.6**	**P**	10					10																					
Coenagrionidae		**P**				1							10						1	3					10		1		
Argia sp.	**8.2**	**P**	1		1	3	1	1	1			3			3				1	1		1	1	3	1	3	3	3	
Enallagma sp.	**8.9**	**P**											3														3		
Ischnura sp.	**9.5**			1																									
Corduliidae		**P**																											
Didymops transversa	**2.4**	**P**																					1						
Epicordulia princeps	**5.6**	**P**											1																
Macromia sp.	**6.2**	**P**									3													1					3
Neurocordulia sp.	**5**																							1					
Gomphidae		**P**										1									1						1		
Gomphus sp.	**5.8**	**P**	1	1			1	3			1		3																
Dromogomphus sp.	**5.9**	**P**																											1
Ophiogomphus sp.	**5.5**	**P**						1																					
Progomphus obscurus	**8.2**	**P**	3				1	3		1						1	1			3		1		1			3		1
Libellulidae		**P**	1					1				1	10	1										1	1				
Erythemis sp.												1																	
Erythemis simplicicollis	**9.7**												10																
Plecoptera																													
Perlidae		**P**	1					3			3																		
Paragnetina sp.	**1.5**	**P**	3					1																		1			
Pteronarcidae	**1.6**	**SH**																											
Pteronarcys (Allonarcys) sp.	**1.7**	**SH**																								1			
Hemiptera																				1									
Belostomatidae																													
Belostoma sp.	**9.8**	**P**											1																
Corixidae	**9**	**PI**								10			3														3		
Gerridae		**P**																											
Aquarius sp.		**P**								1																			
Metrobates sp.		**P**																										1	
Rheumatobates sp.		**P**							3																		3		1

TABLE 28. BENTHIC MACROINVERTEBRATES, CITY OF RALEIGH, WAKE AND JOHNSTON COUNTIES, NORTH CAROLINA, JULY 2007.

SPECIES	T.V.	F.F.G.	Station J2230000	Station J2360000	Station J3000000	Station J3210000	Station J3970000	Station J4080000	Station J4170000	Station J4414000	Station J4590000	Station J5010000	Station J5620000	Station MI-4	Station MI-8	Station M1-10	Station MI-11	Station MI-12	Station MI-14	Station MI-18	Station MI-21	Station MI-22	Station J4500000	Station J4510000	Station J4511000	Station J4520000	Station J5790000	Station J5002000	Station J4110000
Trepobates sp.		**P**											3							1					1		1		
Hydrometridae																													
Hydrometra sp.																1													
Notonectidae													3																
Notonecta sp.	**8.7**	**P**																											
Pleidae																													
Neoplea sp.													3																
Veliidae		**P**																											
Microvelia sp.		**P**														1		1			3								
Rhagovelia obesa		**P**			1	1				3											10							1	
Megaloptera																													
Corydalidae		**P**																											
Corydalus cornutus	**5.2**	**P**																								1			1
Nigronia sp.	**5**	**P**									1																		
Nigronia serricornis	**5**	**P**																				1					3		3
Sialidae		**P**																											
Sialis sp.	**7.2**	**P**											3	3											1				3
Sisyridae				1																									
Trichoptera																													
Brachycentridae		**SH**																											
Micrasema sp.		**SH**																								1			
Hydropsychidae		**FC**	1																	1									
Cheumatopsyche sp.	**6.2**	**FC**	10	10	10	1		10	10	10	10	1		10	10	10	10	10	3	3	10	10		3	10	10	10	3	10
Diplectrona modesta	**2.2**	**FC**																		1									
Hydropsyche sp.		**FC**		1				1		1				3	3		1									3		1	
Hydropsyche betteni gp.	**7.8**	**FC**		1		1		1		10				3	10	10		1	1	10	10	3							10
Hydropsyche incommoda	**4.8**			1							1																		
Hydropsyche cf. simulans					1				1		3																		
Hydroptilidae		**PI**																											
Hydroptila sp.	**6.2**	**PI**		3	1	3	10		1										1			1	1	1		1	3		
Oxyethira sp.	**2.2**	**PI**									1	1	3																
Leptoceridae		**CG**									1			1															
Ceraclea sp.	**2**	**CG**		1		1																							
Nectopsyche sp.	**2.9**	**SH**																											1
Oecetis avara	**4.7**	**P**	1		1																								
Oecetis sp.	**4.7**	**P**		1			1		1	1	3	3	1	1						1			1	1			1	3	
Triaenodes sp.	**4.5**	**SH**	3																										
Triaenodes ignitus	**4.6**		1			3		1																					
Philopotamidae		**FC**																											
Chimarra aterrima	**2.8**	**FC**													10						10								3
Chimarra obscurus	**2.8**	**FC**																								1			1
Chimarra socia	**2.8**																									3	1		
Polycentropodidae		**FC**							1																				
Cyrnellus fraternus	**7.3**	**FC**				1																							
Neureclipsis sp.	**4.2**	**FC**		3					3														1					1	
Polycentropus sp.	**3.5**	**FC**									10													3				1	
Psychomyiidae		**CG**																											
Lype diversa	**4.1**	**SC**						1																					
Coleoptera																													
Carabidae							1																						
Dryopidae																													
Helichus basalis		**SC**						1																					
Helichus lithophilus		**SC**																						1					
Dytiscidae		**P**																											
Hydroporus sp.	**8.6**	**PI**											3															3	
Elmidae		**CG**																											
Ancyronyx variegata	**6.5**	**SC**	1		3		1		1	1				3	3	1	1						3	3				3	
Dubiraphia sp.	**5.9**	**SC**				1		10	1		3	3		3		1		1					1	1	1	1	1	10	10
Dubiraphia vittata	**4.1**	**SC**										1		1	1								1	1			1	3	
Macronychus glabratus	**4.6**	**SH**	10	1	10	3	3	3	10		10			3	3	1			3			3	1	10		10		10	1
Microcylloepus pusillus	**2.1**	**SC**			1	1		1				1																	
Stenelmis sp.	**5.1**	**SC**				3	1			10		1						1		1	1					1	10		
Gyrinidae		**P**																											
Dineutus sp.	**5.5**	**P**	3								3											3				3			
Gyrinus sp.	**6.2**	**P**																							1				
Haliplidae																													
Haliplus sp.	**8.7**	**SH**																										1	
Peltodytes sp.	**8.7**	**SH**							1			1	10											1			1	3	1
Hydrophilidae		**P**																									1		
Berosus sp.	**8.4**	**CG**		1						1														1				1	
Hydrochus sp.	**6.6**	**SH**											1															3	
Tropisternus sp.	**9.7**	**P**																									1		
Psephenidae		**SC**																											
Ectopria sp.		**SC**																								1			
Ptilodactylidae		**SH**																											
Anchytarsus bicolor	**3.6**	**SH**																	1										
Staphylinidae		**P**				1																1							1
Diptera																													
Ceratopogonidae		**P**					1	1	1		3	1	10				1						3	3	1	1		3	1
Atrichopogon sp.	**6.5**	**P**																									1	1	1
Chaboridae																													
Chaoborus punctipennis	**8.5**	**P**											3																
Chironomidae																													
Ablabesmyia mallochi	**7.2**	**P**	3			10	10	10	3	10	3	10	3	10	10	10	10		3	10	10	10	10	10	1	1	10	1	10
Ablabesmyia rhamphe gp.	**7.2**	**P**		3		10			1				3										1	1			1		
Brillia flavifrons	**5.2**	**SH**						1																					
Cardiocladius obscurus	**5.9**	**P**		1																									1

TABLE 28. BENTHIC MACROINVERTEBRATES, CITY OF RALEIGH, WAKE AND JOHNSTON COUNTIES, NORTH CAROLINA, JULY 2007.

SPECIES	T.V.	F.F.G.	Station J2230000	Station J2360000	Station J3000000	Station J3210000	Station J3970000	Station J4080000	Station J4170000	Station J4414000	Station J4590000	Station J5010000	Station J5620000	Station MI-4	Station MI-8	Station M1-10	Station MI-11	Station MI-12	Station MI-14	Station MI-18	Station MI-21	Station MI-22	Station J4500000	Station J4510000	Station J4511000	Station J4520000	Station J5790000	Station J5002000	Station J4110000
Chaetocladius sp.		CG																		1									
Chironomus sp.	9.6	CG		10		10		3		1						1	3	1	1		3		1	1	10		10	10	3
Cladopelma sp.	3.5	CG																					1	1					
Cladotanytarsus sp.	4.1	FC	10		10	10	3	1			10	3	10				1		10		10	1	10	10	10	10	10	10	10
Clinotanypus sp.		P											3										1						
Conchapelopia sp.	8.4	P	10	1		1	1	3	10	10	3	1	1	10	10	10	10		10	10	10	10			1		10	1	1
Corynoneura sp.	6	CG	1		1						3			1		1	3		3	3		3				1			3
Cricotopus bicinctus	8.5	CG	3	3	1	1	1	1	1			3							1			3	1				1		1
Cricotopus sp.		CG							1			1							1										
Cricotopus tremulus		CG																			1								
Cricotopus trifascia	2.8	CG																						1					
Cryptochironomus sp.	6.4	P	3	10	3	10	3	1	3	3		1	1	10	3	3	3		1		1	1	3	10	1	1		3	1
Dicrotendipes neomodestus	8.1	CG	3	1	1	10	10		10	1	3	10		3					3				10	10	3		10	3	3
Einfeldia sp.	7.1	CG											1																
Endochironomus sp.		SH																							1				
Glyptotendipes sp.	9.5	FC																							10	1			
Labrundinia sp.	5.9	P								1			3	1						1			1						
Microtendipes pedellus gp.	5.5	CG	3					10	1	10	1				10		1		3	10	1			1					1
Nanocladius distinctus	7.1	CG		3														1					1		1				3
Nanocladius sp.	7.1	CG								3		1																	
Natarsia sp.	10														1				1								3		
Nilotanypus sp.	3.9	P	10					3		1					3						3								1
Nilothauma sp.	5	CG																					1						
Orthocladius (Eurothocladius) sp.				1																									
Paracladopelma sp.	5.5	CG	3	1			3	10	3	10	3	10	3	1	3			1						10	1	3	1	3	3
Parakiefferiella sp.	5.4	CG	3					10					1	1											1	1			
Paralauterborniella nigrohalteralis	4.8	CG		1				1																					
Paratanytarsus sp.	8.5	CG						1						1		1			1										
Paratendipes sp.	5.1	CG	3					1							1			1	1										
Pentaneura inconspicua			3														1		3	10		3					1		
Phaenopsectra punctipes gp.										1																			
Polypedilum fallax	6.4	SH						1	1																			1	
Polypedilum flavum (convictum)	4.9	SH	10	10	10	1	3	10	10	10		1		1	10	10	10	10	10	10	10	10		1	10	10	3	3	10
Polypedilum halterale gp.	7.3	SH	3	10	10	10	10	3	3	10	10	1		3	3	10	3	1	10	10	10	10	10	10	10	1	1	10	3
Polypedilum illinoense	9	SH	1	3	10	1	1	10	3	3			10	3	3	3	3		3	10	1	10	1	1	1	1			3
Potthastia longimana	6.5	CG									1		1										3						1
Procladius sp.	9.1	P								1			10	1	10	1							3	1	3		3		3
Pseudochironomus sp.	5.4	CG					3			3		3		1													10		
Rheocricotopus robacki	7.3	CG	1		3						1			3	10	10	3		3	3	1	10				3	1		10
Rheosmittia arcuata																						3							
Rheotanytartsus exiguus gp.	5.9	FC	10	10	10	1		10	1	10		1	3	10	10	10	10	10	3		10	10		3	10	10	3		10
Rheotanytarsus pellucidus																				10	3								1
Robackia demeijerei	3.7	CG	3																3			10							
Saetheria tylus	7.1	CG	3		10	3	1	1	1		10					1			10			10		3					3
Smittia sp.		CG												1															
Stenochironomus sp.	6.5	SH	3		3		1			1	1																	3	
Synorthocladius semivirens		CG							1					1															
Tanypus neopunctipennis													1																
Tanytarsus sp.	6.8	FC	10	10	10	10	10	10	3	10	3	10	10	10	10	10	10	1	10	10	10	10	10	10	10	1	10	10	10
Thienemanniella xena	5.9	CG			3				1	1							3		10	3	1	3							1
Tribelos fuscicorne									3	1																			
Tribelos jucundum	6.3		10			10	3	10		1				10	3	1	1		3	1		3	1				3		
Tvetenia vitracies	3.6	CG																											1
Xenochironomus xenolabis	7.1	P		10																									
Xylotopus par	6	SH	1							3																			
Zavrelia sp.	5.3	CG	1					1											1										
Zavrelimyia sp.	9.1	P															1												
Culicidae		FC											3							1									
Anopheles sp.	8.6	FC											3	3									1						
Dolichopodidae		P	1				1																						
Empididae	7.6	P			1		1																						
Hemerodromia sp.		P	1												1					3									
Ephydridae							1																	1				1	
Muscidae					1																								
Psychodidae		CG																											
Psychoda sp.	9.6	CG					1																						
Sciaridae													1																
Simuliidae		FC																											
Simulium sp.	6	FC		10						10				3	3	10	10			10	3	10				3			
Tanyderidae																													
Protoplasa fitchii			1																										
Tipulidae		SH																										3	
Antocha sp.	4.3	CG						1																					
Ormosia sp.	6.3	CG							1																			3	
Tipula sp.	7.3	SH		1			10	1								1				3							1	1	1
TOTAL NO. OF ORGANISMS			**218**	**227**	**150**	**187**	**127**	**219**	**217**	**208**	**161**	**132**	**247**	**197**	**182**	**157**	**120**	**128**	**150**	**212**	**155**	**193**	**145**	**187**	**189**	**140**	**236**	**224**	**236**
TOTAL NO. OF TAXA			**59**	**57**	**35**	**48**	**44**	**62**	**62**	**53**	**44**	**48**	**57**	**50**	**40**	**39**	**37**	**28**	**44**	**53**	**33**	**41**	**51**	**55**	**50**	**42**	**66**	**56**	**70**
EPT			**11**	**15**	**8**	**10**	**5**	**13**	**14**	**8**	**15**	**7**	**5**	**7**	**7**	**4**	**4**	**2**	**9**	**5**	**6**	**8**	**6**	**8**	**2**	**12**	**10**	**9**	**12**
NCBI			**5.93**	**6.77**	**6.38**	**6.93**	**6.91**	**6.26**	**6.67**	**6.77**	**6.28**	**6.71**	**7.51**	**6.93**	**6.91**	**6.88**	**6.83**	**7.02**	**6.50**	**7.25**	**6.56**	**6.60**	**6.98**	**6.55**	**7.29**	**5.31**	**7.26**	**7.03**	**6.49**

Table 29 Benthic Macroinvertebrate Monitoring Data Summary, City of Raleigh, July 2007

STATION NO.	LOCATION	NO.OF TAXA	NO.EPT TAXA	NCBI	Bioclassification
J2230000	Smith Crk at St Rt 2045	59	11	5.93	Good-Fair
J2360000	Neuse River at Milburnie Dam	57	15	6.77	Fair
J3000000	Crabtree Crk at S. Rt. 1795	35	8	6.38	Good-Fair
J3210000	Crabtree Crk at Lassiter Dam	48	10	6.93	Fair
J3970000	Walnut Crk at St. Rt. 2551	44	5	6.91	Fair
J4080000	Popular Crk at St. Rt. 2049	62	13	6.26	Good-Fair
J4170000	Neuse River at NC42	62	14	6.67	Fair
J4414000	Swift Crk at St. Rt. 1152	53	8	6.77	Fair
J4590000	Swift Crk at NC210	44	15	6.28	Good-Fair
J5010000	Middle Crk at NC210	48	7	6.71	Fair
J5620000	Little River at St. Rt. 2333	57	5	7.51	Poor
MI-4	Walnut Crk	50	7	6.93	Fair
MI-8	House Crk	40	7	6.91	Fair
MI-10	Marsh Crk	39	4	6.88	Fair
MI-11	Pigeon House Br	37	4	6.83	Fair
MI-12	Mine Crk	28	2	7.02	Fair
MI-14	Perry Crk	44	9	6.5	Fair
MI-18	Rocky Br	53	5	7.25	Poor
MI-21	Turkey Crk	33	6	6.56	Fair
MI-22	Walnut Crk (2)	41	8	6.6	Fair
NEW1	Swift Crk below Lake Benson Da	51	6	6.98	Fair
NEW2	Swift Crk	55	8	6.55	Fair
NEW3	White Oak Crk	50	2	7.29	Poor
NEW4	Swift Crk	42	12	5.31	Good-Fair
NEW5	Buffalo Crk downstream	66	10	7.26	Poor
NEW6	Middle Crk	56	9	7.03	Poor
NEW7	Marks Crk	70	12	6.49	Fair