

**Brandywine Creek Downstream of Former Hudson WWTP**

**7/30/2017**

**River Mile: 7.85**

**Collection Method: Longline Electrofishing**

**Drainage Area: 5.8 miles<sup>2</sup>**

**Collection Distance: 0.15 km**

<b>Code</b>	<b>Species</b>	<b>Number</b>	<b>Pollution Tolerance</b>	<b>DELT #</b>	<b>Anomalies Description</b>
40-016	<i>Catostomus commersonii</i> Common white sucker	19	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	54	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	6	--	0	---
43-043	<i>Pimephales notatus</i> Bluntnose minnow	2	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	41	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	29	Highly Tolerant	0	---
47-006	<i>Ictalurus melas</i> Black bullhead	1	Moderately Tolerant	0	---
77-006	<i>Micropterus salmoides</i> Largemouth bass	41	--	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	7	Highly Tolerant	0	---
77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	27	Moderately Tolerant	0	---
77-013	<i>Lepomis gibbosus</i> Pumpkinseed sunfish	2	Moderately Tolerant	0	---
34-001	<i>Umbra limi</i> Central Mudminnow	25	Tolerant	0	---
Totals		<u>254</u>		<u>0</u>	

\*DELT anomalies were observed on 0.00 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 36 (Marginally Good)

**Brandywine Creek Downstream of Former Hudson WWTP**

**9/14/2017**

**River Mile: 7.85**

**Collection Method: Longline Electrofishing**

**Drainage Area: 5.8 miles<sup>2</sup>**

**Collection Distance: 0.15 km**

<b>Code</b>	<b>Species</b>	<b>Number</b>	<b>Pollution Tolerance</b>	<b>DELT Anomalies #</b>	<b>Description</b>
40-016	<i>Catostomus commersonii</i> Common white sucker	5	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	33	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	14	--	0	---
43-042	<i>Pimephales promelas</i> Northern fathead minnow	2	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	73	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	16	Highly Tolerant	0	---
77-006	<i>Micropterus salmoides</i> Largemouth bass	30	--	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	6	Highly Tolerant	0	---
77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	37	Moderately Tolerant	0	---
34-001	<i>Umbra limi</i> Central Mudminnow	9	Tolerant	0	---
	<b>Totals</b>	<u><u>225</u></u>		<u><u>0</u></u>	

\*DELT anomalies were observed on 0.00 % of the fish collected.  
Index of Biotic Integrity (IBI) = 36 (Marginally Good)

**Brandywine Creek Upstream of East Highland Road**

**July 27, 2017**

**River Mile: 3.55**

**Collection Method: Longline Electrofishing**

**Drainage Area: 22.9 miles<sup>2</sup>**

**Collection Distance: 0.2 km**

Code	Species	Number	Weight (kg)	Pollution Tolerance	DELT Anomalies	
					#	Description
40-016	<i>Catostomus commersonii</i> Common white sucker	11	0.9	Highly Tolerant	0	---
43-011	<i>Rhinichthys atratulus</i> Western blacknose dace	15	0.065	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	55	0.39	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	3	0.05	--	0	---
43-039	<i>Ericymba buccata</i> Silverjaw minnow	1	0.002	--	0	---
43-042	<i>Pimephales promelas</i> Northern fathead minnow	1	0.005	Highly Tolerant	0	---
43-043	<i>Pimephales notatus</i> Bluntnose minnow	2	0.02	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	211	1.433	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	1	0.003	Highly Tolerant	0	---
77-006	<i>Micropterus salmoides</i> Largemouth bass	1	0.012	--	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	25	0.25	Highly Tolerant	0	---
77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.008	Moderately Tolerant	0	---
80-022	<i>Etheostoma caeruleum</i> Rainbow darter	2	0.006	Moderately Intolerant	0	---
Totals		<u>329</u>	<u>3.144</u>		<u>0</u>	

\*DELT anomalies were observed on 0.00 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 28 (Fair)  
 Modified Index of Well-Being (MIwb) = 6.0 (Fair)

**Brandywine Creek Upstream of East Highland Road  
July 27, 2017**

**River Mile: 3.55**

Shannon Diversity Index, no.	1.227
Shannon Diversity Index, wt.	1.425
N	328.5
B	2.267

**Brandywine Creek Upstream of East Highland Road**

**August 31, 2017**

**River Mile: 3.55**

**Collection Method: Longline Electrofishing**

**Drainage Area: 22.9 miles<sup>2</sup>**

**Collection Distance: 0.2 km**

<b>Code</b>	<b>Species</b>	<b>Number</b>	<b>Weight (kg)</b>	<b>Pollution Tolerance</b>	<b>DELT Anomalies #</b>	<b>Description</b>
40-016	<i>Catostomus commersonii</i> Common white sucker	22	1.21	Highly Tolerant	0	---
43-011	<i>Rhinichthys atratulus</i> Western blacknose dace	20	0.094	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	63	0.575	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	2	0.18	--	0	---
43-042	<i>Pimephales promelas</i> Northern fathead minnow	6	0.01	Highly Tolerant	0	---
43-043	<i>Pimephales notatus</i> Bluntnose minnow	4	0.042	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	321	2.56	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	3	0.072	Highly Tolerant	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	38	0.41	Highly Tolerant	0	---
77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	2	0.008	Moderately Tolerant	0	---
<b>Totals</b>		<u><b>481</b></u>	<u><b>5.161</b></u>		<u><b>0</b></u>	

\*DELT anomalies were observed on 0.00 % of the fish collected.

Index of Biotic Integrity (IBI) = 28 (Fair)

Modified Index of Well-Being (MIwb) = 6.4 (Fair)

Shannon Diversity Index, no. 1.182

Shannon Diversity Index, wt. 1.444

N 487.5

B 4.122

**Brandywine Creek at Brandywine Ski Resort**

**July 27, 2017**

**River Mile: 0.45**

**Collection Method: Longline Electrofishing**

**Drainage Area: 27 miles<sup>2</sup>**

**Collection Distance: 0.2 km**

<b>Code</b>	<b>Species</b>	<b>Number</b>	<b>Weight (kg)</b>	<b>Pollution Tolerance</b>	<b>DELT Anomalies #</b>	<b>Description</b>
40-015	<i>Hypentelium nigricans</i> Northern hog sucker	22	1.28	Moderately Intolerant	0	---
40-016	<i>Catostomus commersonii</i> Common white sucker	87	2.905	Highly Tolerant	0	---
43-011	<i>Rhinichthys atratulus</i> Western blacknose dace	33	0.095	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	81	0.781	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	162	1.64	--	0	---
43-032	<i>Cyprinella spiloptera</i> Spotfin shiner	1	0.005	--	0	---
43-034	<i>Notropis stramineus</i> Sand shiner	2	0.008	Moderately Intolerant	0	---
43-039	<i>Ericymba buccata</i> Silverjaw minnow	14	0.049	--	0	---
43-042	<i>Pimephales promelas</i> Northern fathead minnow	2	0.008	Highly Tolerant	0	---
43-043	<i>Pimephales notatus</i> Bluntnose minnow	40	0.16	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	812	3.616	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	10	0.225	Highly Tolerant	0	---
77-006	<i>Micropterus salmoides</i> Largemouth bass	7	0.02	--	0	---
77-007	<i>Lepomis gulosus</i> Warmouth sunfish	3	0.4	--	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	20	0.168	Highly Tolerant	0	---

**Brandywine Creek at Brandywine Ski Resort**

**July 27, 2017**

**River Mile: 0.45**

77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	14	0.08	Moderately Tolerant	0	---
77-013	<i>Lepomis gibbosus</i> Pumpkinseed sunfish	6	0.045	Moderately Tolerant	0	---
77-014	<i>HYBRID</i> Bluegill X Pumpkinseed	2	0.03	--	0	---
80-014	<i>Etheostoma nigrum</i> Johnny darter	23	0.034	--	0	---
80-015	<i>Etheostoma blenniodes</i> Greenside darter	22	0.064	Moderately Intolerant	0	---
80-022	<i>Etheostoma caeruleum</i> Rainbow darter	122	0.195	Moderately Intolerant	0	---
80-024	<i>Etheostoma flabellare</i> Barred Fantail darter	27	0.02	--	0	---
	Totals	<u>1512</u>	<u>11.828</u>		<u>0</u>	

*DELT anomalies were observed on	0.00	% of the fish collected.
Index of Biotic Integrity (IBI) =	46	(Very Good)
Modified Index of Well-Being (MIwb) =	8.8	(Good)
Shannon Diversity Index, no.	1.803	
Shannon Diversity Index, wt.	1.989	
N	1856	
B	11.18	

**Brandywine Creek at Brandywine Ski Resort**  
**August 30, 2017**  
**River Mile: 0.45**  
**Collection Method: Longline Electrofishing**  
**Drainage Area: 27 miles<sup>2</sup>**  
**Collection Distance: 0.2 km**

<b>Code</b>	<b>Species</b>	<b>Number</b>	<b>Weight (kg)</b>	<b>Pollution Tolerance</b>	<b>#</b>	<b>DELT Anomalies Description</b>
40-015	<i>Hypentelium nigricans</i> Northern hog sucker	44	2.235	Moderately Intolerant	0	---
40-016	<i>Catostomus commersonii</i> Common white sucker	105	3.46	Highly Tolerant	0	---
43-011	<i>Rhinichthys atratulus</i> Western blacknose dace	1	0.05	Highly Tolerant	0	---
43-013	<i>Semotilus atromaculatus</i> Creek chub	60	0.854	Highly Tolerant	0	---
43-026	<i>Notropis cornutus</i> Common shiner	174	1.359	--	0	---
43-039	<i>Ericymba buccata</i> Silverjaw minnow	18	0.045	--	0	---
43-042	<i>Pimephales promelas</i> Northern fathead minnow	2	0.015	Highly Tolerant	0	---
43-043	<i>Pimephales notatus</i> Bluntnose minnow	63	0.025	Highly Tolerant	0	---
43-044	<i>Campostoma anomalum</i> Central stoneroller minnow	1051	4.855	--	0	---
47-004	<i>Ictalurus natalis</i> Yellow bullhead	8	0.125	Highly Tolerant	0	---
77-006	<i>Micropterus salmoides</i> Largemouth bass	4	0.02	--	0	---
77-007	<i>Lepomis gulosus</i> Warmouth sunfish	1	0.06	--	0	---
77-008	<i>Lepomis cyanellus</i> Green sunfish	25	0.35	Highly Tolerant	0	---
77-009	<i>Lepomis macrochirus</i> Northern bluegill sunfish	22	0.19	Moderately Tolerant	0	---
77-013	<i>Lepomis gibbosus</i> Pumpkinseed sunfish	11	0.11	Moderately Tolerant	0	---



**Brandywine Creek at Brandywine Ski Resort**

**August 30, 2017**

**River Mile: 0.45**

80-014	<i>Etheostoma nigrum</i> Johnny darter	20	0.03	--	0	---
80-015	<i>Etheostoma blenniodes</i> Greenside darter	17	0.087	Moderately Intolerant	0	---
80-022	<i>Etheostoma caeruleum</i> Rainbow darter	119	0.19	Moderately Intolerant	0	---
80-024	<i>Etheostoma flabellare</i> Barred Fantail darter	54	0.068	--	0	---
	Totals	<u>1799</u>	<u>14.128</u>		<u>0</u>	

*DELT anomalies were observed on	0.00	% of the fish collected.
Index of Biotic Integrity (IBI) =	46	(Very Good)
Modified Index of Well-Being (MIwb) =	8.7	(Good)
Shannon Diversity Index, no.	1.65	
Shannon Diversity Index, wt.	1.845	
N	2303	
B	13.87	