SUMMARY OF RESULTS – FIBI020

1. Stream Name:	Rahway
2. Sampling Date:	7/13/00
3. Sampling Location:	Kenilworth Blvd. (40 40 24.01N; 74 18 46.51W)
4. County:	Union
5. Watershed Management Area:	7
6. Contributing Drainage Area (Sq. Mi.):	29.4
7. Stream Water Quality Class:	FW2-NT
8. FIBI Rating:	Fair (34) (See Appendix 3)
9. Habitat Assessment Rating:	Marginal (77) (See Appendix 3)
10. Fishable Species Present:	Yes
11. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	Same as AN0194
AMNET Rating:	1992 - Moderate; 1999 - Severe
12. Stream Chemistries:	
Dissolved Oxygen (mg/l)	7.8
Temperature ^{0}C.	21.2
pH	7.76
Conductivity (μmhos/cm)	614
Secchi Disk (inches)	NA
13. Number of Fish With Anomalies:	0
14. Water Clarity:	slightly turbid
15. Forest Canopy:	Mostly Open
16. Flow:	moderate
17. Substrate: (qualitative)	70% Gravel/Sand, 10% Mud, 20% Silt
18. Habitat Type: (qualitative)	10% Riffle, 60% Run, 30% Pool
19. Other observations:	
20. Number of Fish Species Identified: (see next page)	12
21. Total Number of Fish Collected:	276

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[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI020 07/13/00

LISTED IN ORDER OF ABUNDANCE FOUND (see also Figure 1.1)

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Common Shiner	*Luxilus cornutus*	89	NOT MEASURED
Green Sunfish*	*Lepomis cyanellus*	49	"
White Sucker*	*Catostomus commersoni*	40	"
Banded Killifish	*Fundulus diaphanus*	25	"
American Eel*	*Anguilla rostrata*	25	"
Pumpkinseed*	*Lepomis gibbosus*	22	"
Spottail Shiner	*Notropis hudsonius*	8	"
Bluegill*	*Lepomis macrochirus*	7	"
Blacknose Dace	*Rhinichthys atratulus*	4	"
Mummichog	*Fundulus heteroclitus*	3	"
Tessellated Darter	*Etheostoma olmstedi*	2	"
Redfin Pickerel*	*Esox americanus americanus*	2	"

*Regulated as a fishable species under current New Jersey Fish and Wildlife codes

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS RAHWAY RIVER (FIBI020) – 7/13/00

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 5	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	**5** 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 1	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 **1** 0
3. Riffle Quality	Well-developed riffle and run; riffle is as wide as stream and length extends two times the width of stream; abundance of cobble. (Boulders prevalent in headwater streams).	Riffle is as wide as stream but length is less than two times width; abundance of cobble; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is less than 2 times the stream width; gravel or bedrock prevalent; some cobble present.	Riffles or runs virtually nonexistent; bedrock prevalent; cobble lacking
SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **6**	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 12	20 19 18 17 16	15 14 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. All 4 velocity/depth patterns present.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. Only 3 of 4 velocity/depth patterns present (i.e. slow [<0.3 m/s]-deep [>0.5 m]; slow-shallow; fast-deep; fast-shallow).	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. May be only 2 velocity/depth patterns present; usually lacking deep areas.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. Dominated by one velocity/depth pattern.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **8** 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___3___ (LB)	Left Bank 10 9	8 7 6	5 4 **3**	2 1 0
SCORE ___3___ (RB)	Right Bank 10 9	8 7 6	5 4 **3**	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___5___ (LB)	Left Bank 10 9	8 7 6	**5** 4 3	2 1 0
SCORE ___5___ (RB)	Right Bank 10 9	8 7 6	**5** 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___4___ (LB)	Left Bank 10 9	8 7 6	5 **4** 3	2 1 0
SCORE ___4___ (RB)	Right Bank 10 9	8 7 6	5 **4** 3	2 1 0

HABITAT SCORE

77

HABITAT SCORES	VALUE
OPTIMAL	160 ᴄ 200
SUB-OPTIMAL	110 ᴄ 159
MARGINAL	60 ᴄ 109
POOR	< 60

FIBI020-Rahway River @ Kenilworth Rd   Excellent   Good   <mark>**Fair**</mark>   Poor

Date Sampled - 7/13/2000

Score

# of Fish Species

| 5 |

# of Benthic Insectivorous Species (BI)

| 5 |

# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)

| 3 |

# of Intolerant Species (IS)

| 1 |

Proportion of Individuals as White Suckers

| 3 |

Proportion of Individuals as Generalists (carp, creek chub, banded killifish,

goldfish, fathead minnow, green sunfish)

| 3 |

Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)

| 3 |

Proportion of Individuals as Trout   *whichever gives better score

OR

Proportion of Individuals as Pisciviores (Excluding American Eel)*

| 1 |

Number of Individuals in Sample

| 5 |

Proportion of Individuals w/disease/anomalies (excluding blackspot)

| 5 |

Total

| <mark>**34**</mark> |

Stream Rating

45-50	**Excellent**
37-44	**Good**
29-36	**Fair**
10-28	**Poor**