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NWS EARLE  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

JACOB K. JAVITS FEDERAL BUILDING

NEW YORK, NEW YORK 10278

FEB 10 1992

Mr. Gerald F. Hoover  
Project Engineer, Code 142  
Environmental Restoration Branch  
U.S. Navy, Northern Division  
Naval Facilities Engineering Command  
U.S. Naval Base, Bldg. 77Low  
Philadelphia, PA 19112-5094

Re: NWS Earle Rapid Bioassessment

Dear Mr. Hoover:

Enclosed is a copy of the Rapid Bioassessment conducted at NWS Earle on October 24, 1991 by representatives of the U.S. Environmental Protection Agency.

If you have any questions concerning this matter, please contact me at 212-264-6609.

Sincerely yours,

A handwritten signature in cursive script that reads "Paul G. Ingrisano".

Paul G. Ingrisano  
Project Manager  
Federal Facilities Section

Enclosure

cc: CPT W. M. Migrala, Jr., NWS Earle  
LCDR J. P. Dell, NWS Earle  
J. Freudenberg, DEPE  
R. Johnson, Weston

**OBJECTIVE:** The purpose of this site reconnaissance was to ascertain if the surface waters of the Naval Weapons Station (NWS) Earle are amenable to rapid bioassessment.

**ACTIVITIES:** On October 24, 1991, J.B. Gebler and James Kurtenback, conducted a site reconnaissance of NWS Earle. After meeting with Dennis Swalwell and Tom Gentile of the Environmental Division of NWS Earle, various surface waters of the site were examined to determine if these held water, and if so, if aquatic insects were present in said waters. Streams visited were:

- two branches of Hockhockson Creek; one which was named "south branch" and the other was named "west branch,"
- three headwater tributaries of Mingamahone Brook; east, central, and west tributaries,
- the main stem of Mingamahone Brook, upstream of its intersection with NJ Route 33.

#### **RESULTS**

Substrates of both branches of Hockhockson Creek were characterized by hard sand, with interspersed "pea" gravel in riffle areas. The surrounding area was dominated by deciduous forests and forested wetlands, with a minimal number of patches of pinebarrens vegetation. The areas of the stream which were examined, were just above and below the confluence of the two branches. These streams are relatively small permanent systems, which are not expected to have very diverse aquatic insect communities, yet should contain some aquatic insects. Only one aquatic insect (a tipulid) was found after multi-habitat kick and sweep sampling. This sampling included an area of anthropogenic debris (pieces of concrete). A light tan colored-flocculent was noted in both branches and the mainstream, downstream of the confluence. A few frogs were also observed, almost certainly the species commonly known as the "green frog."

All three branches of Mingamahone Brook were also characterized by hard sand bottoms, with interspersed pea gravel in riffle areas. The surrounding area was predominantly pinebarrens, with interspersed patches of deciduous tree species. As above, the streams are relatively small permanent systems, which are not expected to have very diverse aquatic insect communities, yet should contain some aquatic insects. No aquatic insects were discovered in the eastern tributary, while both the central and western tributaries contained low numbers of aquatic insects. Using a lower level of effort than in the Hockhockson, a few aquatic insects were discovered in the central tributary. These included a hellgrammite, a dragonfly nymph (family Gomphidae), and a few aquatic hemipterans (true bugs). The majority of the insects were found on rocks (rip-rap) that had been placed in the

stream in association with a road crossing the stream. A green frog was also captured and the water appeared cleaner; no flocculent was observed.

A fair number of intolerant aquatic insects were discovered in the eastern-most on-site tributary. Included were unidentified stoneflies, mayflies of the family Heptageniidae, and species from two families of caddis fly: Philopotamidae and Limnephilidae. As in the central branch, most were discovered on rip-rap, although a few individual insects were found on instream woody debris. Frogs, presumably greens, were observed, as well as clear water.

After departing the base, the mainstream of the Mingamahone immediately upstream of Route 33 was examined. The stream in this vicinity was slower moving, contained a dark brown "floc", had a soft mud and silt and organic bottom, and flowed through forested wetlands. In short, this portion of the stream is not comparable to the upper on-site areas examined. In an attempt to find comparable habitat, an area approximately 100 yards upstream was examined without success. No aquatic insects were observed on instream debris, but a few frogs were noted.

#### CONCLUSIONS

The streams examined are not amenable to rapid bioassessment due to their small size, and expected concomitant depauperate insect communities. However, the lack of insects observed in some of the streams, yet not in others, may indicate water quality problems, (although natural variability cannot be completely ruled out as a cause). ~~Surface water and sediment sampling for chemical analyses is suggested to determine if contaminants have entered streams from on-site sources.~~

Additionally, the eastern tributary of Mingamahone Creek, due to its high diversity, could potentially serve as a reference location for investigating potential recovery of insect communities as water quality improves. However, this area would only be appropriate as a reference if comparable habitats are found (or constructed) in the other streams.