MANAGEMENT RECOMMENDATIONS

Biological monitoring

French Creek has a diverse and seemingly healthy aquatic community. Further study is underway by WPC and partners to examine freshwater mussel distributions, densities, and recruitment. The same study will also examine fish distribution in the watershed, with particular interest in those species that play an essential role in mussel reproduction. The objectives of this study are to determine the present status of unionids in the French Creek watershed and to interpret unionid distributional trends within western Pennsylvania rivers with respect to present habitat, water quality, and fish data. Results of this study will be the subject for the 2nd Annual State of the Stream Report on the Health of French Creek in early 2005. While current efforts are focused on aquatic communities in French Creek proper, similar comprehensive assessments should be conducted throughout the watershed. Western Pennsylvania Conservancy is currently seeking funding for this work. Macroinvertebrate communities should also continue to be monitored at selected sites throughout the watershed. Biological data will be used to develop a monitoring and protection plan for French Creek's aquatic resources and restoration and recovery plans for species of special concern throughout western Pennsylvania.

With many groups inventorying and assessing various components of French Creek's aquatic communities throughout the watershed, a concerted effort should be made to coordinate research findings. The watershed community, scientists, natural resources agencies, and conservation organizations would benefit by an annual symposium of research findings.

Water quality monitoring

Because important parameters such as temperature, nutrient/sediment loads, and dissolved oxygen vary spatially and temporally, we recommend permanent water quality/discharge monitoring stations be installed at the mouths of each major sub-basin and along the main-stem river, particularly above and below urban areas. Proposed meters can provide continuous water quality and turbidity data and allow us to determine sediment loads and their sources. Continuous water quality monitoring should also take place in strategic areas across the watershed, particularly those streams we noted as problem areas. These data will be used to develop a hydrologic model and a water budget for the system. After the sediment and pollution sources are known, we can better address restoration efforts to control any areas of concern.

French Creek Project partners, including The Nature Conservancy and WPC, with the help of county conservation districts and USFWS, are currently planning the installation of 10 such stations at the mouths of the 10 major tributaries to French Creek.

Stream hydrology/geomorphology

Development of a hydrologic budget remains a crucial need for the understanding of the French Creek system and adequate protection of water quantity and aquatic habitat. Through the current mussel/fish project, WPC is working with Edinboro University to continue evaluation of the physical stream characteristics impacting aquatic habitat. This work should be expanded and using Straffin's model project (Appendix A), a comprehensive study of French Creek's hydrology and geomorphology should be undertaken. Special attention should be given to impacts

from dam construction at Union City and Woodcock. Additionally, geomorphology, hydrology, and glacial geology data should be interpreted along with freshwater mussel distributional data to assess biogeographical relationships between mussel ranges and physical stream parameters.

Riparian habitat restoration

Because of the significant correlations we found between riparian and in-stream habitat with water quality and macroinvertebrate parameters, we propose efforts be made to restore riparian habitat in the priority areas. In highly agricultural areas, we propose a promotion of agricultural BMPs, restoration of wetlands and riparian buffers, and an increase in stream bank fencing to reduce impacts from livestock. We suggest monitoring restoration efforts with physical stream assessments, including visual assessment of stream channel and riparian areas throughout the watershed. Macroinvertebrate communities should also continue to be monitored at these sites.
Similar restoration efforts should take place in urban and developed areas to restore bank and riparian habitats. Landowners should be educated on watershed issues and restoration practices.