Appendix E: Substrate Score Maps for Each Assessment Unit

The substrate metric is one components of the QHEI (Qualitative Habitat Evaluation Index). Plate 1 shows that there is substantial correlation between the QHEI substrate metric and the IBI (Index of Biotic Integrity) scores, when the mean watershed scores are compared[1]. The data shown includes watersheds in the Eastern Corn Belt Plains ecoregion, where the Sandusky watershed is located. The IBI (fish index) is one of the biological criteria that is evaluated to determine if a site meets its designated use. Therefore, it can be inferred that any management practices that lead to improvement in the QHEI substrate score is likely to improve the score of the IBI index.

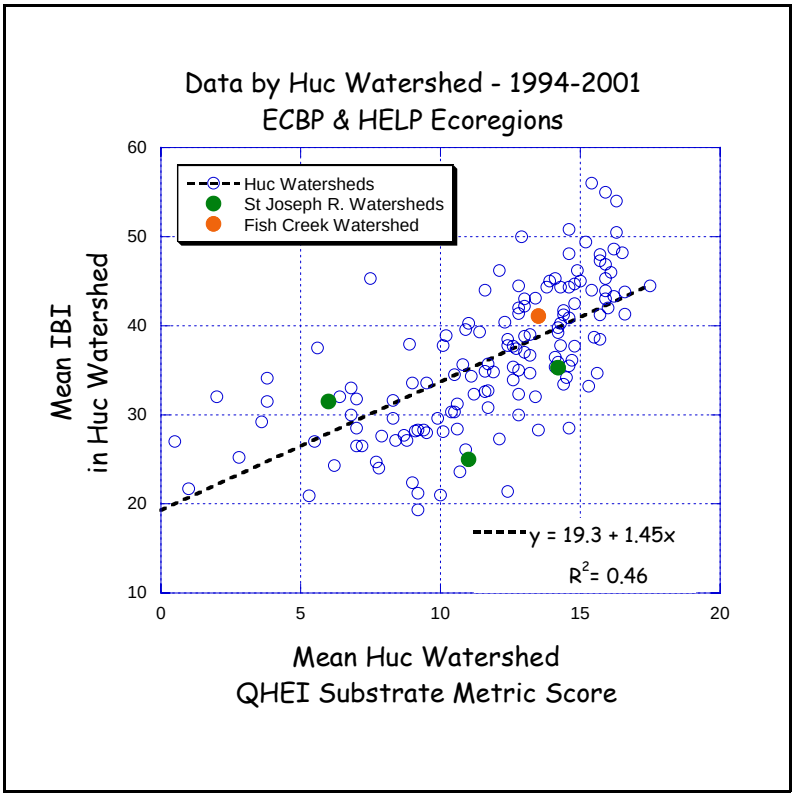


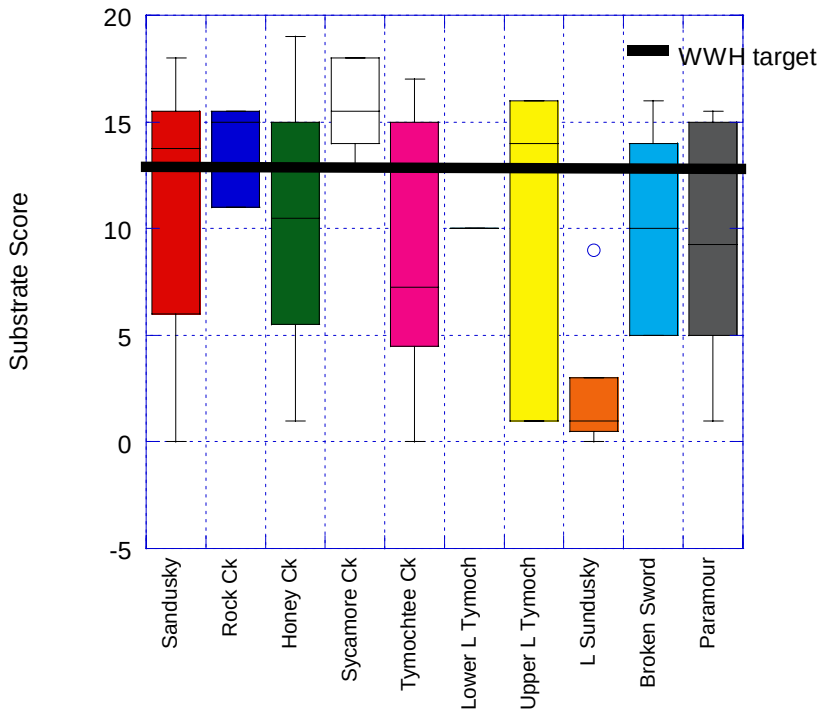
Plate 1. Comparison of mean QHEI substrate metric scores to IBI scores in northwest Ohio watersheds

The box & whisker plots in Plate 2 show the substrate scores grouped by subwatershed and by major tributary. Analyses in other ecoregions (Rankin, 2003) indicate that a QHEI substrate metric score of 12 to 13 should be the target for warm water habitat streams.

The maps in Figures 1 through 8 display the results of the substrate scores determined at the biological monitoring stations in the Sandusky watershed. An arbitrary color scheme was used to indicate the condition of the substrate at each site based on the score observed at the site. The same condition was assumed to prevail upstream of the site, unless another monitoring site indicated otherwise. The distance between stations allows for only a rough estimate of the spatial distribution of the substrate scores, therefore the figures should be used as screening tools, rather than as definitive maps of substrate condition.

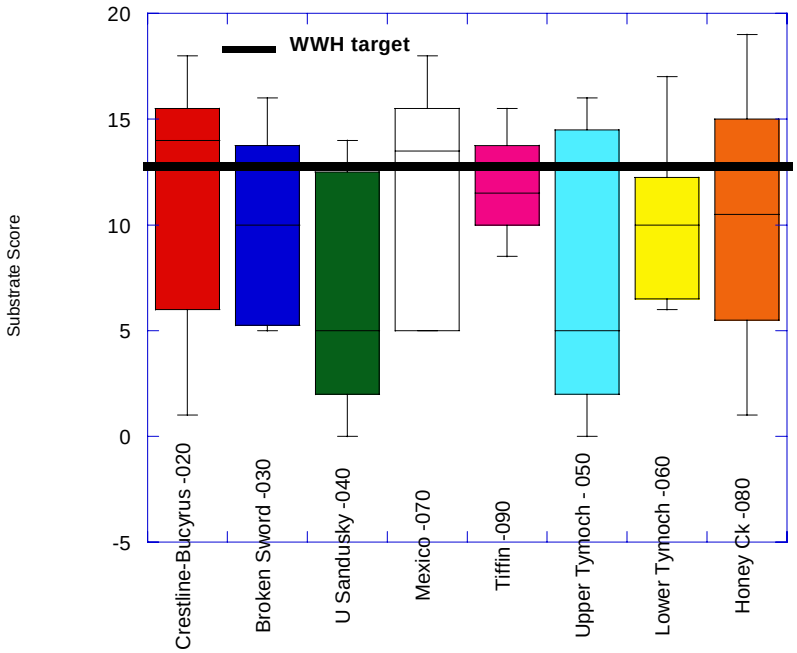
[1]Rankin, E.T., 2003. Midwest Biodiversity Institute Center for Applied Bioassessment and Biocriteria, ILGARD. A Proposal to Generate Clean Sediment TMDL Targets Based on Associations between Biocriteria and Measures of Substrate Condition (draft presentation).

Substrate Scores for the Sandusky & tributaries



This plot shows the substrate scores observed in the mainstem Sandusky and major tributaries during 2002, in comparison with a reasonable substrate target score expected for WWH streams in full attainment.

Sandusky Substrate Score by Assessment Unit



This plot shows the substrate scores observed in most of the Sandusky River assessment units during 2002, compared to a reasonable substrate target score expected for WWH streams in full attainment.

Figure 1: Substrate scores of the Bucyrus assessment unit (04100011-020)

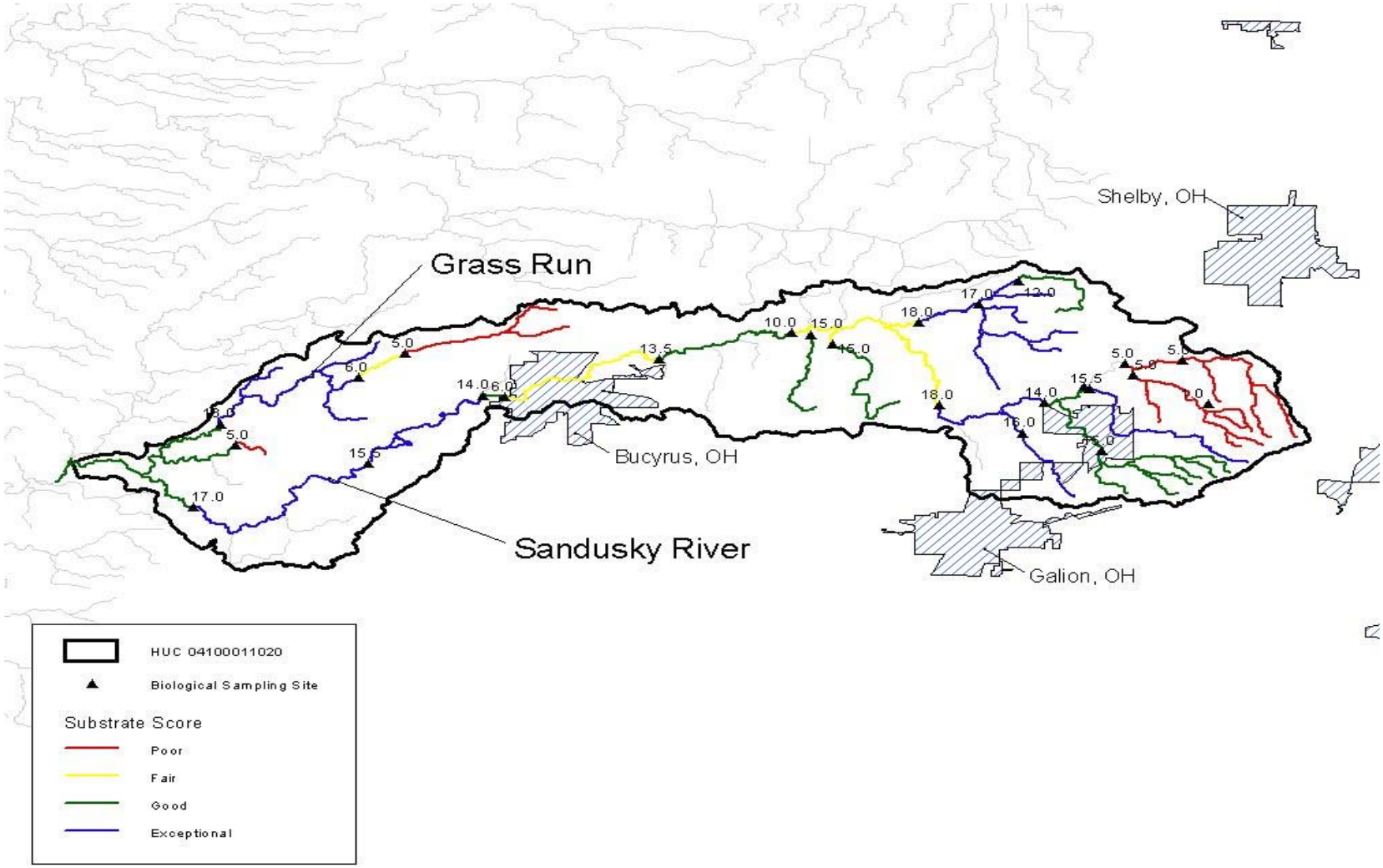


Figure 2: Substrate scores of the Broken Sword Creek assessment unit (04100011-030)

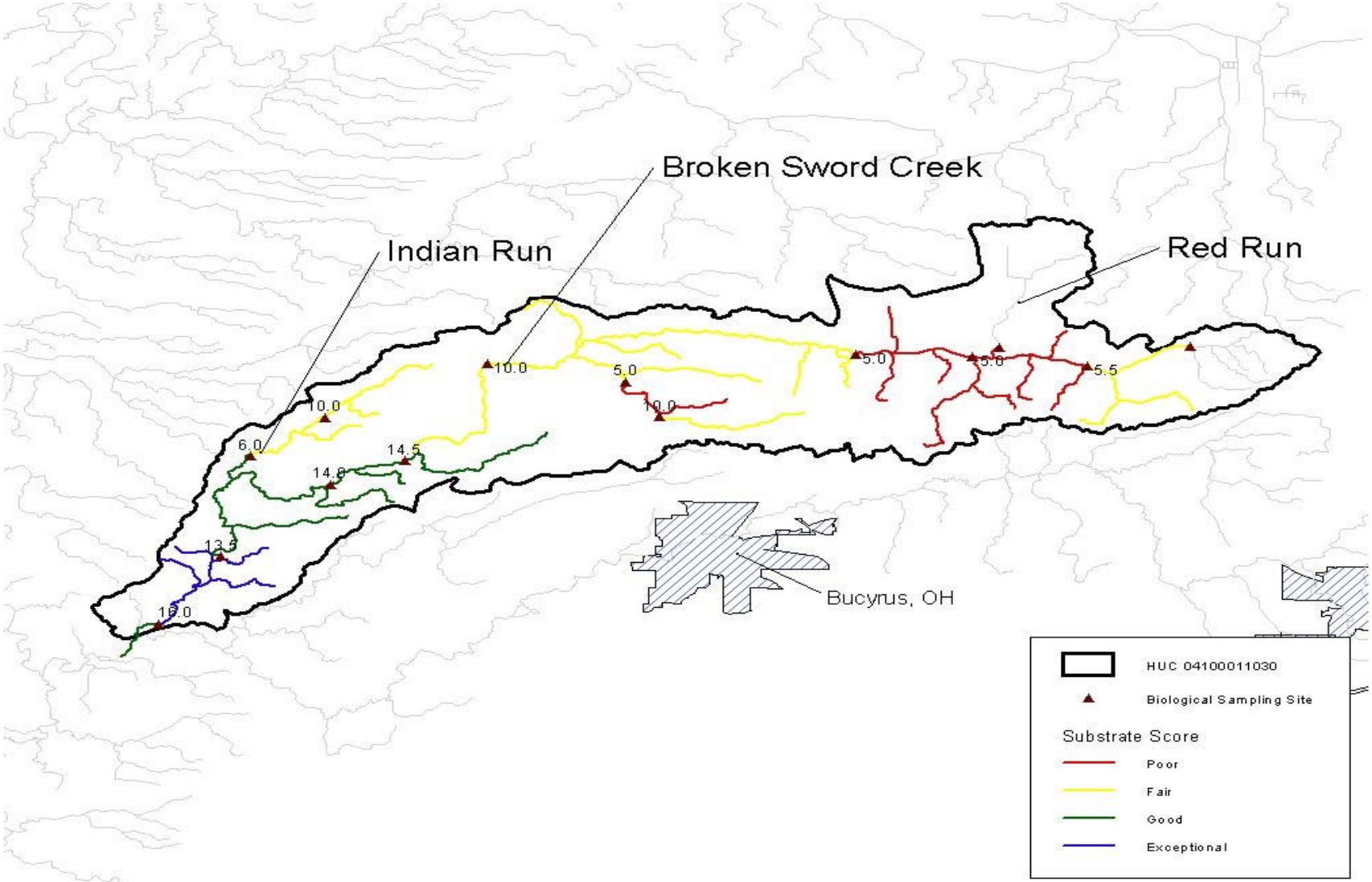


Figure 3: Substrate scores of the upper Sandusky assessment unit (04100011-040)

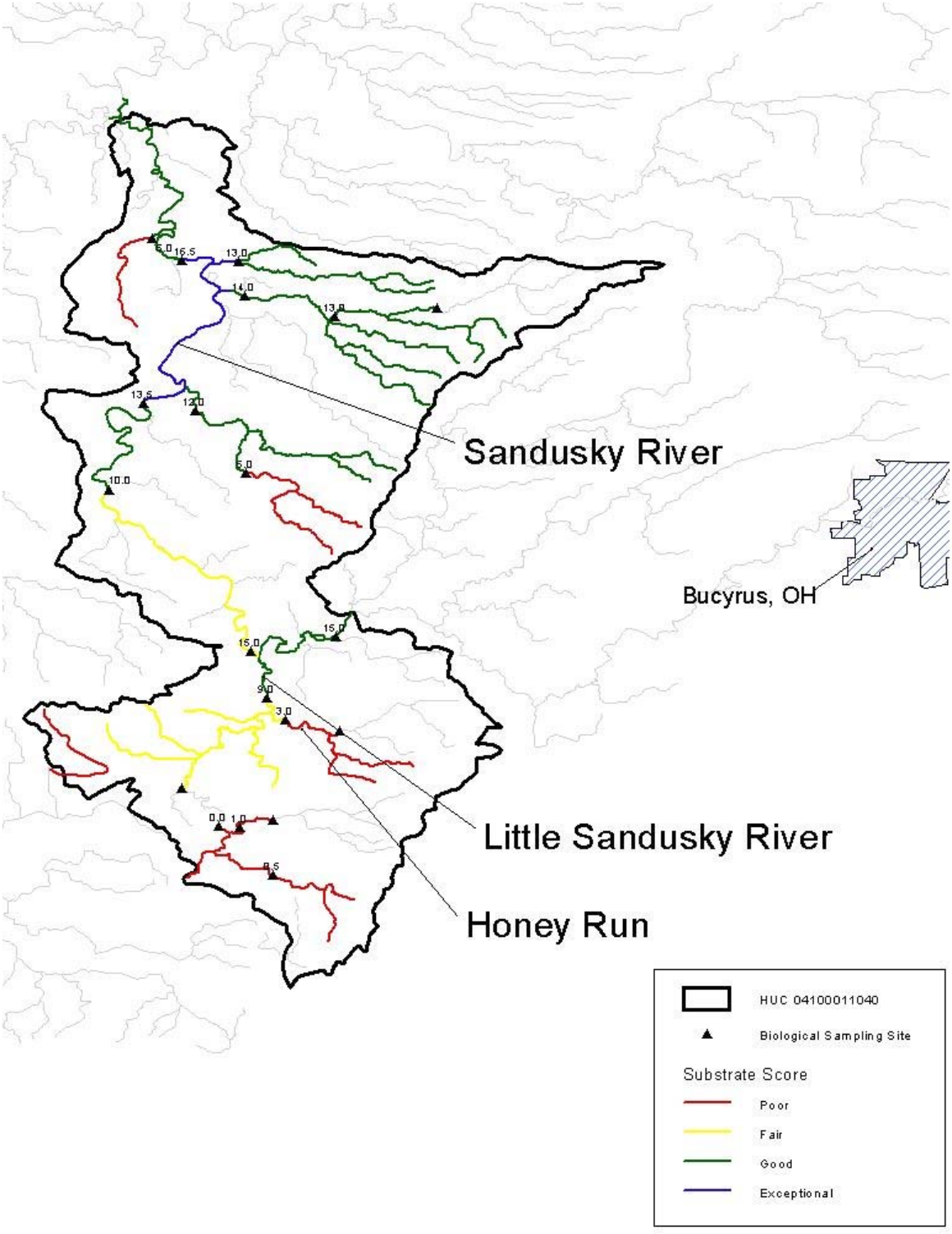


Figure 4: Substrate scores of the upper Tymochtee Creek assessment unit (04100011-050)

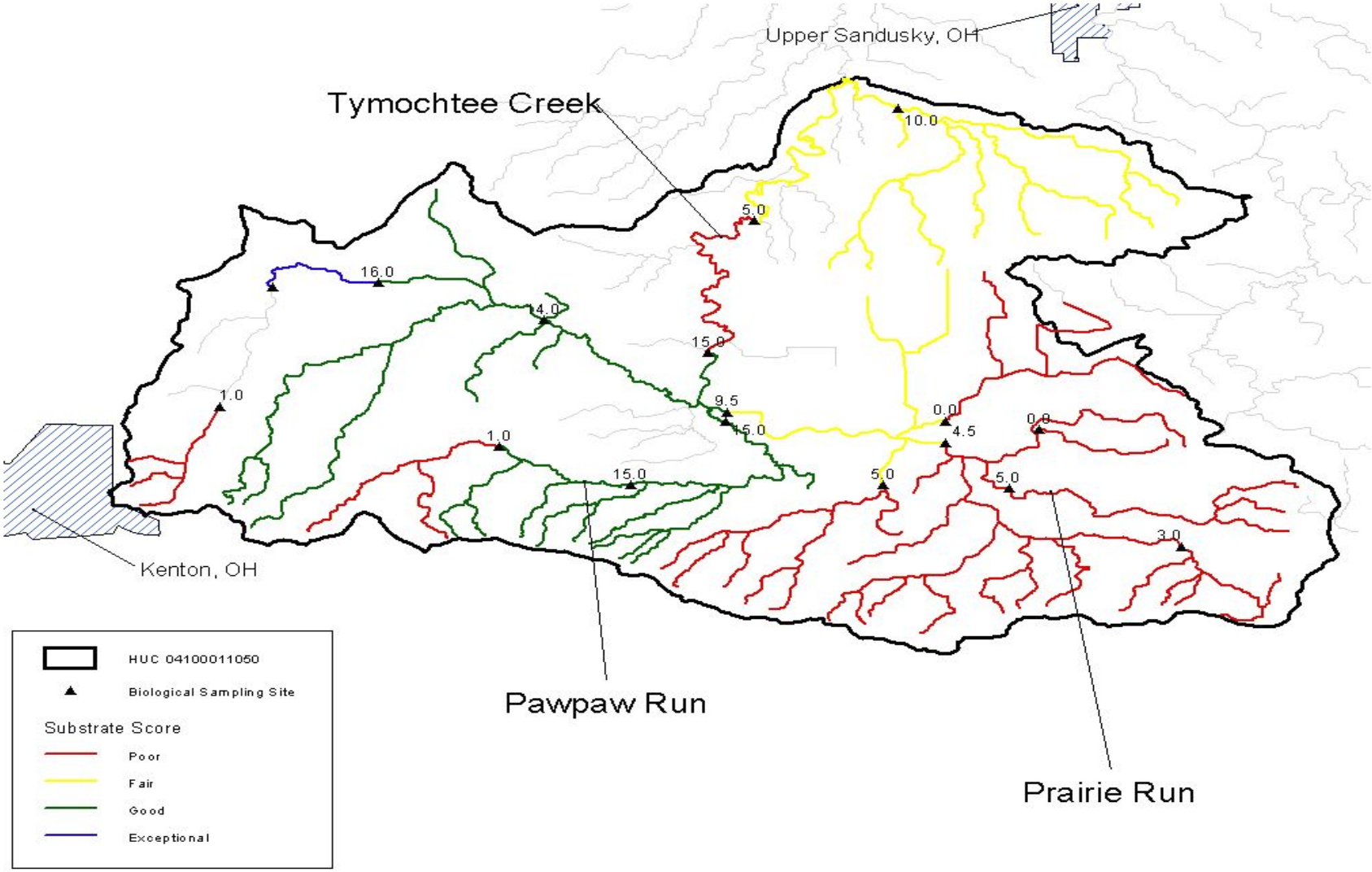


Figure 5: Substrate scores of the lower Tymochtee Creek assessment unit (04100011-060)

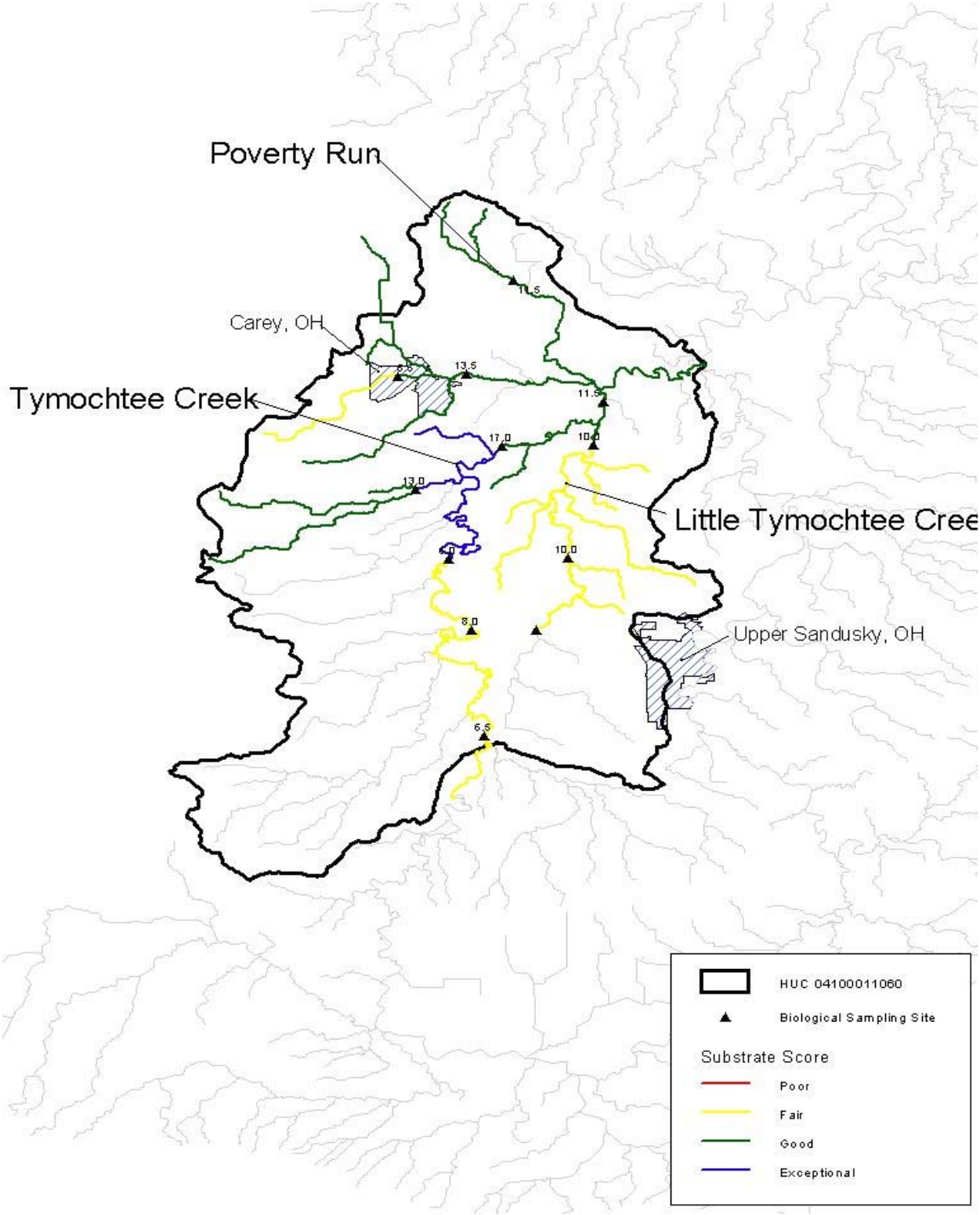


Figure 6: Substrate scores of the Mexico assessment unit (04100011-070)

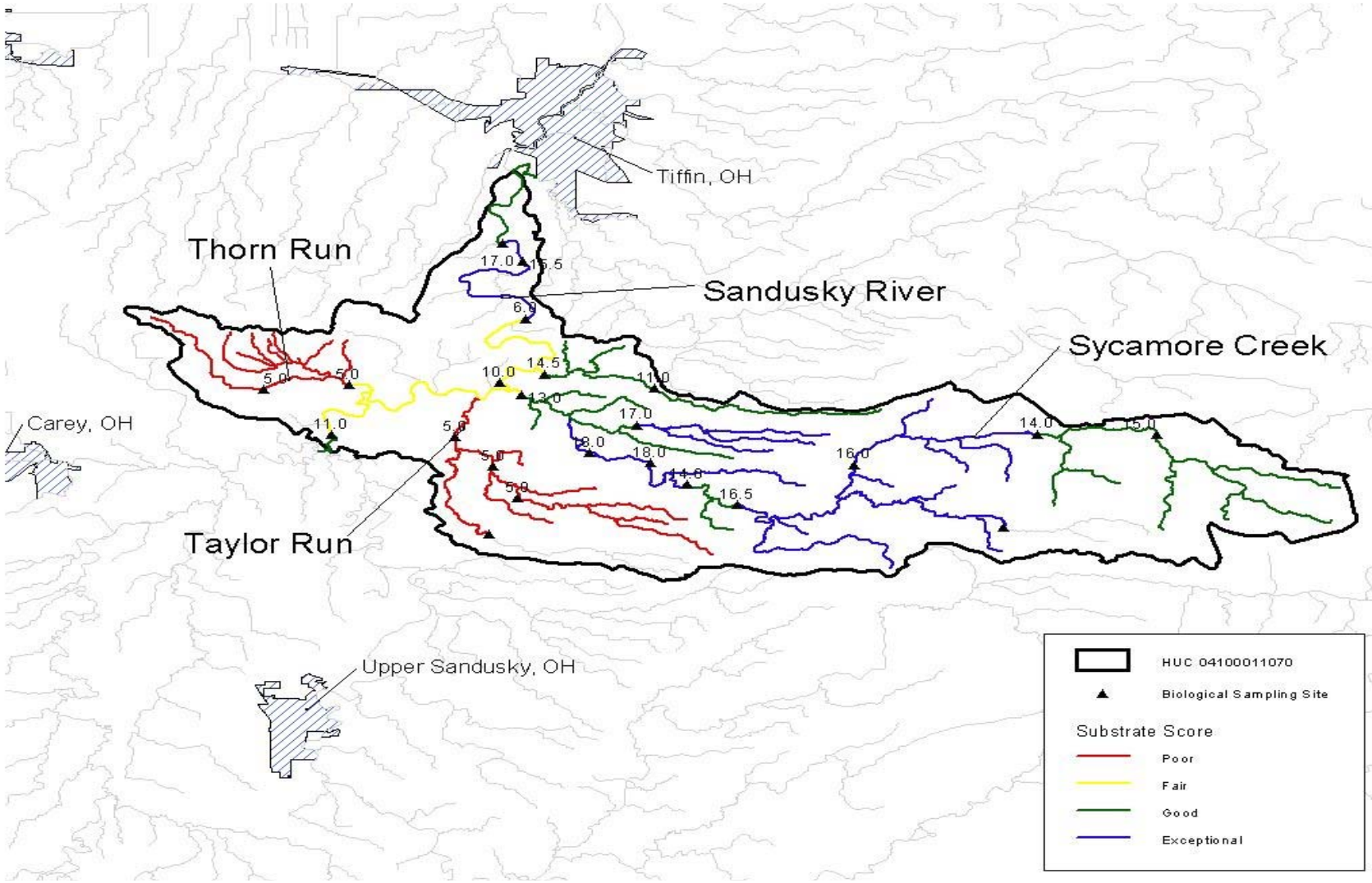


Figure 7: Substrate scores of the Honey Creek assessment unit (04100011-080)

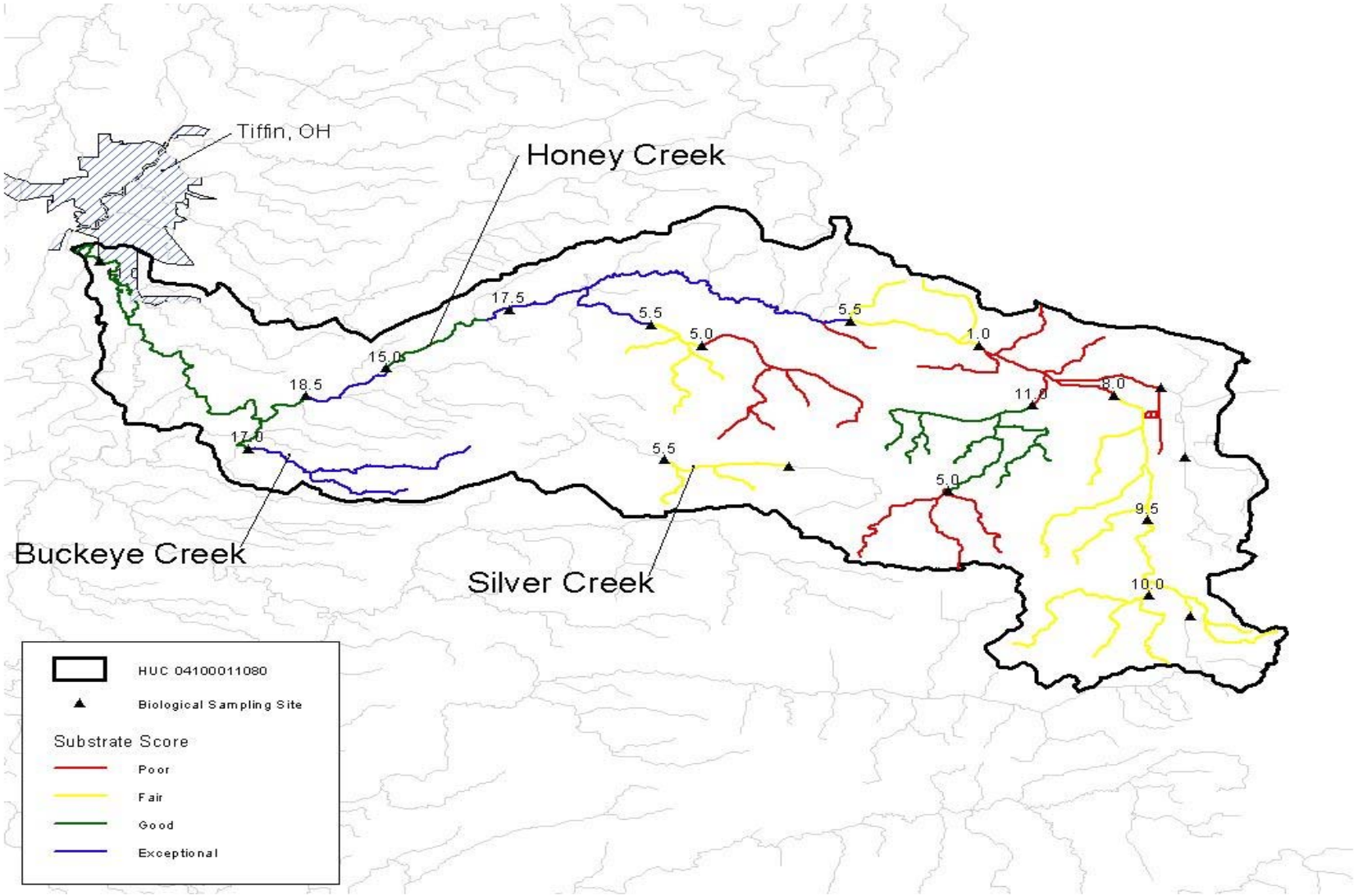


Figure 8: Substrate scores of the Tiffin assessment unit (04100011-090)