

Appendix D: Lake Allegan Fish Kill Investigation Report

Lake Allegan Fish Kill Investigation

Field Survey Methods

Lake Allegan is a 6-mile long reservoir with a surface area of 1,550 acres at a normal water surface elevation of 615 ft (NGVD). The shoreline length of the reservoir from Allegan Dam up to M-89 is 80,678 ft including the shoreline length of two small islands in the center of the reservoir. Sampling methods for investigating the fish kill followed procedures in Southwick and Loftus (2003) and the MDNR fish kill investigations guidebook (2003). DNR- Fisheries Division staff was divided into five crews consisting of two people per crew. Lake Allegan was separated into two strata, shoreline and open water counts, for enumerating dead fish. Shoreline counts were conducted along five segments that were 2,850 ft long (Figure 1). The total number of dead fish were first estimated within each stratum and then summed together for the total estimate. The total number of dead fish within the shoreline segments was estimated by the average number of dead fish per segment multiplied by the total number of segments in the kill area. The total number of dead fish in the open water zone was estimated by area sampling. Lake Allegan was separated into five transects. Crews were instructed to sample each transect by boat following parallel transects approximately 750 ft apart that were oriented from the north shore to the south shore of the lake. Each open water zone transect began at the end of the outer edge of the shoreline segment. The total number of dead fish in the open water zone was estimated by using an expansion factor. Expansion factor = $T/(W*N)$; whereby T is the length of Lake Allegan, W is the transect width, and N is the number of sample transects.

Results of Investigation

A total of 27 dead fish were collected on August 5, 2010 by DNR staff along the shoreline segments (Table 1). No fish were collected from the sampled open water zones. An additional 12 northern pike, 3 spotfin shiners, and three largemouth bass were observed on August 4, 2010. The total estimated number of dead fish was 168 individuals. Fish losses were relatively minor as a result of the drawdown of Lake Allegan. The species observed were consistent with the composition of fish in Lake Allegan (DNR Fish Collection System Records).

Literature Cited

Michigan Department of Natural Resources. 2003. Fisheries Division fish kill investigation guide book. Lansing, Michigan.

Southwick, R. I., and A. J. Loftus, editors. 2003. Investigation and monetary values of fish and freshwater mussel kills. American Fisheries Society, Special Publication 30. Bethesda, Maryland.

Lake Allegan Fish Kill Investigation
Enbridge Line 6b Incident

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