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Estimates of Fish Passage at St. Joseph River Dams in Fall 1992 Using Time-Lapse Video Recording

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Abstract.—In fall of 1992, final modification of the Berrien Springs fish ladder in the St. Joseph River completed a 17-year project to construct fish passage facilities at the first 5 dams in the lower river. Monitoring of total fish passage at the Berrien Springs, Niles, and South Bend dams was accomplished between 11 September and 30 November 1992 using time-lapse video recording. Total passage of fish varied from 5,081 at the Berrien Springs dam to 3,403 at the South Bend dam. Various warm and coolwater species utilized the passage facilities, however, potamodromous salmonines comprised 99.6% of all fish passed at the three ladders. Approximately 25% of the total movements occurred at night (2000 to 0800 EST). The South Bend ladder showed the highest night usage. Numbers of fish passed at the Berrien Springs ladder were within the range of passage determined by manual counting in previous years. Steelhead and chinook salmon were the most prevalent species passed. The use of video time-lapse photography proved to be a good method for estimating returns of salmonines. With video, filming can take place continuously, improving fish identification and counting in order to evaluate ladder success. Continuous filming also allows better fish passage, since ladders can remain open throughout the 24-h period.

The St. Joseph River, located in southwest Michigan and northwest Indiana, is the third largest river basin in Michigan. It drains a watershed of approximately 2,600 square miles in Michigan and 1,685 square miles in Indiana. The average discharge (measured at the river mouth in St. Joseph, Michigan) is 4,598 cubic feet per second. The river is 306 miles long and has an additional 1,641 miles of tributary streams (Brown 1944). The St. Joseph River is designated as a top quality warmwater system in Michigan. The river has hosted runs of