

WATER QUALITY IMPROVEMENT IN AN URBAN WATERSHED

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Abstract: Arbor Lake in Grinnell, Iowa lies within a watershed that is almost entirely urban. Lakes are not naturally found in this part of Iowa, and their maintenance for aesthetic purposes must involve dredging at some point. Before dredging can take place, the influx of sediment and nutrients must be stopped. In 2004-5, a grant was used to install riffle pools, retention ponds, and storm interceptors. Water quality improved in the north inlets, by both chemical and biological measures, after riffle pools were installed. Caddis flies and mayflies colonized the new habitat provided by the rocks. In the southeast inlet, however, water quality declined after the water retention structure was installed, not because of this installation, but because of a strip mall immediately adjacent to Arbor Lake Park that was built just after the water quality structures were installed. Water quality was also improved in the small Gully inlet after the Gully wetland was installed; the spring nitrogen peak declined to 20% of its pre-wetland value. A YCC program instituted with the aid of the Center for Prairie Studies at Grinnell College has brought in teams of high school students to clear out invasive plant species from the forest adjacent to the lake and plant desirable native species during the past two summers, and will continue this year. This watershed represents a case study where such installations can be used in conjunction with native species to improve water quality while providing wildlife habitat in an urban setting.