Variability in Water Quality in the Nearshore of Lake Erie Adjacent to the Mouth of the Grand River, Ontario, in 1998.

Todd Howell (howellto@ene.gov.on.ca). Environmental Monitoring and Reporting Branch, Ontario Ministry of the Environment, 125 Resources Road, Toronto, ON M9P 3V6.

The Grand River is the largest tributary discharging to Lake Erie on the north shore. Hard substrate covered with dreissenid mussels, predominantly *Dreissena bugensis*, is abundant in the littoral zone of the lake near the river mouth. In the nearshore, high variability in water quality was anticipated, however, the range of recent conditions had not been well documented. This variability may result from loading of nutrients and particulate material from the river, water circulation along shore, and possibly the effects of dreissenid mussels on particulate levels and water clarity. In 1998, water quality surveys were conducted along approximately 15 km of shoreline adjacent to the mouth of the Grand River as part of a Lake Erie nearshore study. Extensive field measurement of chlorophyll a fluorescence, water clarity (beam attenuation), and conductivity conducted over the area augmented discrete sampling for nutrients and major ions. Results of spring, summer and fall surveys were supplemented by weekly nutrient chemistry and chlorophyll data collected at the nearby Dunnville water intake. Strong gradients in nutrient concentrations, suspended solids, chlorophyll a and conductivity associated with the plume from the Grand River were observed during spring and summer surveys. During the fall survey, high water clarity and low concentrations of chlorophyll a and particulate material were observed over much of the area. Patterns of variability in water quality will be compared with results of earlier studies in the area.