St. Clair River Ice and Sediment Impacts on Flood Risk

Response Summary:

A site visit was conducted to understand how the St. Clair River and Lake St. Clair interact. The first location visited on the 7th was Port Huron, MI where we evaluated the upper St. Clair River where it leaves Lake Huron (Figure 1). This is a high velocity reach which generally has minimal sediment concerns related to maintaining the navigation channel depth. However, this is a location that can produce significant amounts of ice which move downstream to lower velocity reaches. We also met with local emergency managers in Port Huron to discuss the issues they perceive as critical for reducing flood risk along the St. Clair River. Detroit District (District) staff also took ERDC personnel to gaging station locations along the river.

Figure 1: Head of St. Clair River

On the 8th, District and ERDC staff took a USACE boat to the St. Clair River delta region (Figure 2). The complex interactions of sediment accumulation and ice formation were discussed. The inhabited islands of the delta region add further concern about how ice movement may limit ferry traffic from the mainland locations. Several channels of St. Clair River delta were navigated to provide ERDC staff information about the relatively shallow areas surrounding the federal navigation channel. In conjunction with seeing the delta area from the boat, time was also spent at the Detroit Area Office discussing sediment and ice data collection. This data continue to be collected for the winter of 2022-2023 and can be used for future modeling.

Period of Performance:

The reconnaissance trip was conducted from September 6th to the 9th 2022.

Figure 2: St. Clair River Delta region

Benefits of the Response to the USACE Dredging/Navigation Program:

Understanding sediment movement through the St. Clair River is important for maintaining navigation in the Great Lakes system. Detroit District is responsible for maintaining navigation depths in this part of the system which is the critical connection between the lower and upper Great Lakes. In conjunction with sediment movement, there is significant amounts of ice which form in the St. Clair River delta region which have caused ice jam floods in near the towns of Marine City, MI and St. Clair, MI. Therefore, understanding interactions of ice formation and sediment accumulation can not only be beneficial for the St. Clair River but other regions of the Great Lakes system.

Deliverable:

An ERDC technical report will be published from the follow-on work being funded by the District. In addition, a journal publication is anticipated based specific aspects of the technical report.

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