Icelandic River – Washow Bay Watershed

Surficial Geology

The surficial sediments in the watershed comprise carbonate bedrock outcrop, glacial till, glaciolacustrine gravel, sand and clay and modern organics. The units are shown on the surficial geology map, as well as the depth to bedrock map, accompanying this report.

Bedrock outcrop is most common in the north-central part of the area, however, except on the clay plain near Arborg, bedrock is often within 2-3 m of the surface. Glacial erosion has resulted in escarpments forming a steep edge to several of the outcrops. Some of the escarpments are up to 8 m high. Karst development has also created relief on bedrock surfaces.

In the southwestern part of the watershed, the till surface is gently streamlined with flutes averaging 1 to 2 m high and oriented southeast. Across the northern edge, the flutes become more north-south oriented and in the northeast, ridge morphology is southwest. In the southeast, the till ridges are masked by clay deposition and iceberg scouring has further obscured the original till morphology.

There are two till types in the watershed: a silty till over most of the area and a sandy till in the northeastern part. The silt till has a calcareous matrix (40% CO_3) and up to 90% carbonate clasts in the 4-16 mm range. In some locations the till is compact and fissile but it is most often massive. Irregular clay seams, up to 5 cm thick, and sand lenses are common, in part due to iceberg scouring which resulted in the mixing of till and the overlying lake clay in many areas. The sandy till, by contrast, has 60% carbonate clasts in the 4-16 mm size fraction and less than 14% CO_3 in the matrix. It was only seen in outcrop at a few locations along the road to Matheson Island.

Glaciolacustrine silt and clay deposits cover much of the area. Deposit depths are variable as they overlay an undulating till surface but overall the clay thickens eastwards. At Arborg, the surface of the clay plain is flat as the deposits completely mask the underlying topography.

Sand and gravel deposits are found in glaciolacustrine beach ridges across the area. In general, the ridges consist of 1 to 5 m of interbedded sand and gravel and are often found flanking or resting on bedrock highs. The pebble lithology averages 80% carbonate clasts, similar to the surface till which is the source material for these deposits. The exception is in the northeast in the area of the sandy till; the beaches have a much lower carbonate pebble content, again reflecting the till source.

Organic material has formed in lows over much of the area, particularly in the northeast. Many of these deposits are of high quality peat and there is a large commercial operation along the Matheson road.