

REPORT FA 40/2024: To The Full Authority

FROM: Peter Dragunas, Water Management Technician

SUBJECT: Catfish Creek Channel Sounding

DATE: June 4, 2024

PURPOSE:

To update the Full Authority on the results of the June 3, 2024, Catfish Creek channel sounding at Port Bruce.

DISCUSSION:

Please find attached maps for the July 2023 and June 2024 Catfish Creek Channel Soundings at Port Bruce.

At the time of the July 2023 survey, the Lake Erie water level at Port Bruce was verified at the Environment Canada, Lake Erie water level station #12400 at Port Stanley.

The recorded Lake Erie water level at the time of the sounding (2024) was 1.163m (3.82ft) above the Chart Datum (CD) of 173.5m. Comparing the July 2023 sounding to June 2024 sounding Lake Erie water level is up by 0.05m (0.16ft). Since the Catfish Creek Channel Sounding data and information is evaluated relative to CD, the lake levels do not affect the bathymetric results and are included for information purposes only.

The July 2023 sounding identifies three persistent areas of deposition along with an additional ephemeral area for 2024. The first zone is located at the northern reach of the sounding area, the second is just south of the Imperial Street bridge, the third is at BeeLine trailer park, and the 2024 ephemeral area is located immediately north of the harbour breakwall at the southern outlet end of Rocabore Bay.

The Rocabore Bay depositional area can be rationalized by the 2023, 2024 mild winter weather, lack of lake ice coupled with winter storm wave swells which transport lake sediment into the northern margins of the harbour at the southern outlet of Rocabore Bay. This lake sediment, combined with the natural winter season riverine sediment transport collide in this area which equalizes (deeper and larger cross sectional area) the sediment transport forces allowing the sediment to precipitate out of suspension.

Similar to the July 2023 sounding the June 2024 results identify a variable thalweg depth from North Erie Marina to Lake Erie. As usual a short segment at North Erie Marina exhibits a deeper dependable thalweg, who's connectivity with a seasonally moderate depth thalweg at Levis Street is interrupted by a lesser depositional zone at the BeeLine trailer park.

The soundings recognize that the Catfish Creek at Port Bruce is in morphological equilibrium (*Port Bruce Sedimentation Study*, Riggs Engineering Ltd., May, 2012), meaning the eroded sediment transported by the creek is ultimately removed by the creek out to Lake Erie. This is apparent since the Catfish Creek is maintaining a similar thalweg in June 2024 as it did in July 2023.

It is anticipated that the aforementioned sediment depositional zone volumes may decrease as channel water levels rise and flows increase over the wetter fall season. The increased flows are anticipated to flush and distribute some of the grounded sediment more evenly over the study area as the sediment migrates out to the lake. This will relieve the depositional zones of excess sediment and conceivably reduce the probability of ice jamming in these continued zones of deposition.

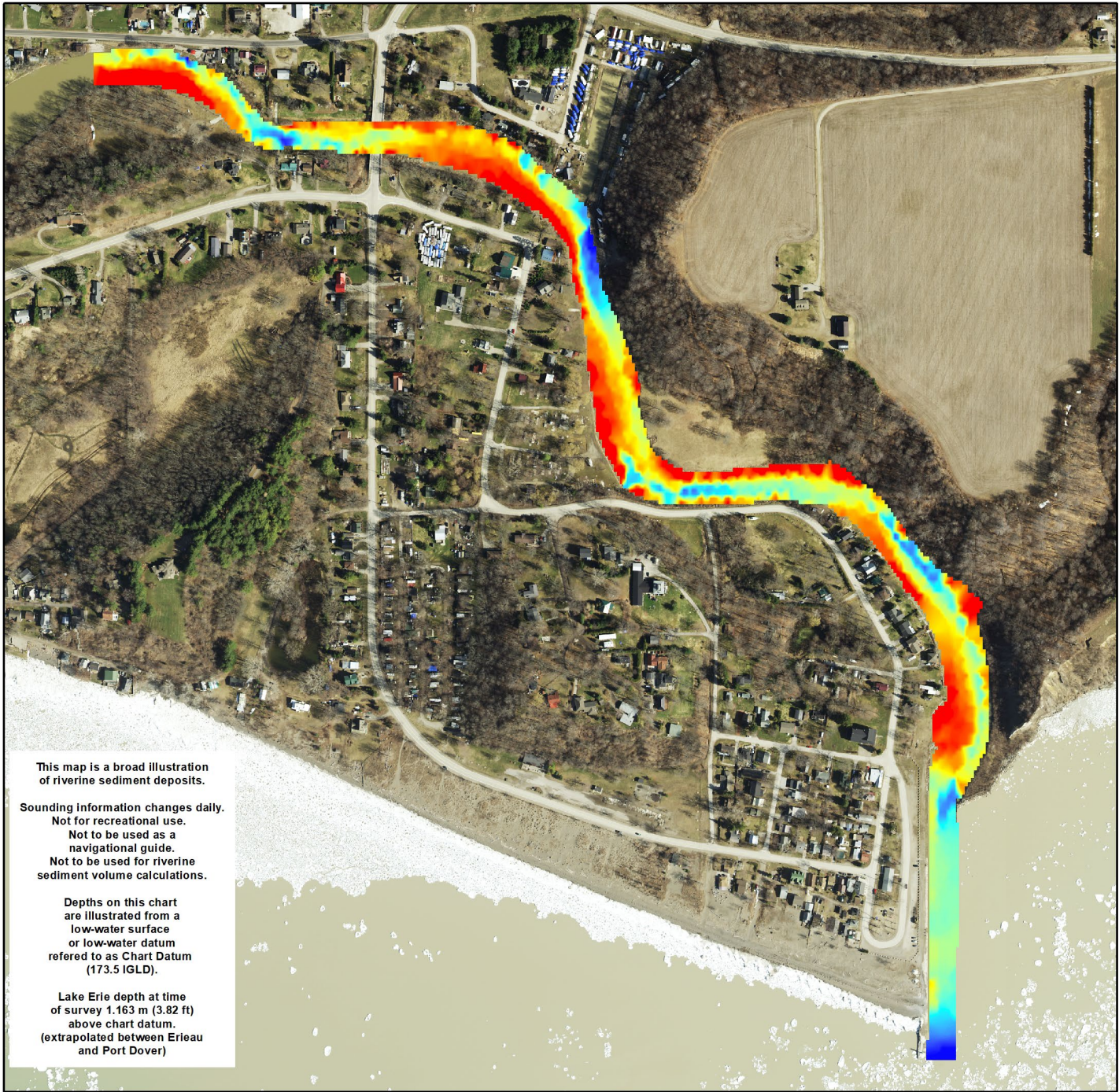
Thalweg Rationalization

Due to the mild and drier 2023, 2024 winter season there was a lesser amount of freeze thaw cycles, and generally lower than average winter season flows which provided a lesser opportunity for the channel to scour and consequently transport and deposit sediment in the creeks lower reaches. The continued natural depositional areas (inside bends, wider and deeper channel areas) along with the channels transport zones (narrower, straighter with less depth) within the Hamlet of Port Bruce identify the channels morphological equilibrium allowing the channel to maintain a suitable hydrological conveyance resulting in a characterized thalweg within the lower reaches of the Catfish Creek within Port Bruce.

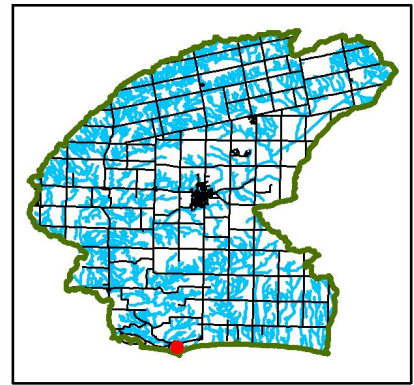
RECOMMENDATION:

THAT, the channel sounding observations described in Report FA 40/2024, be received as information at this time.

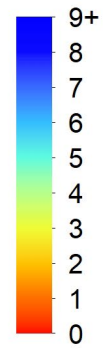
Peter Dragunas,
Water Management Technician



Port Bruce
June 3, 2024
Sounding



Feet



Data Sources: NRVIS, DFO, CCCA
CCCA GIS
June 3, 2024

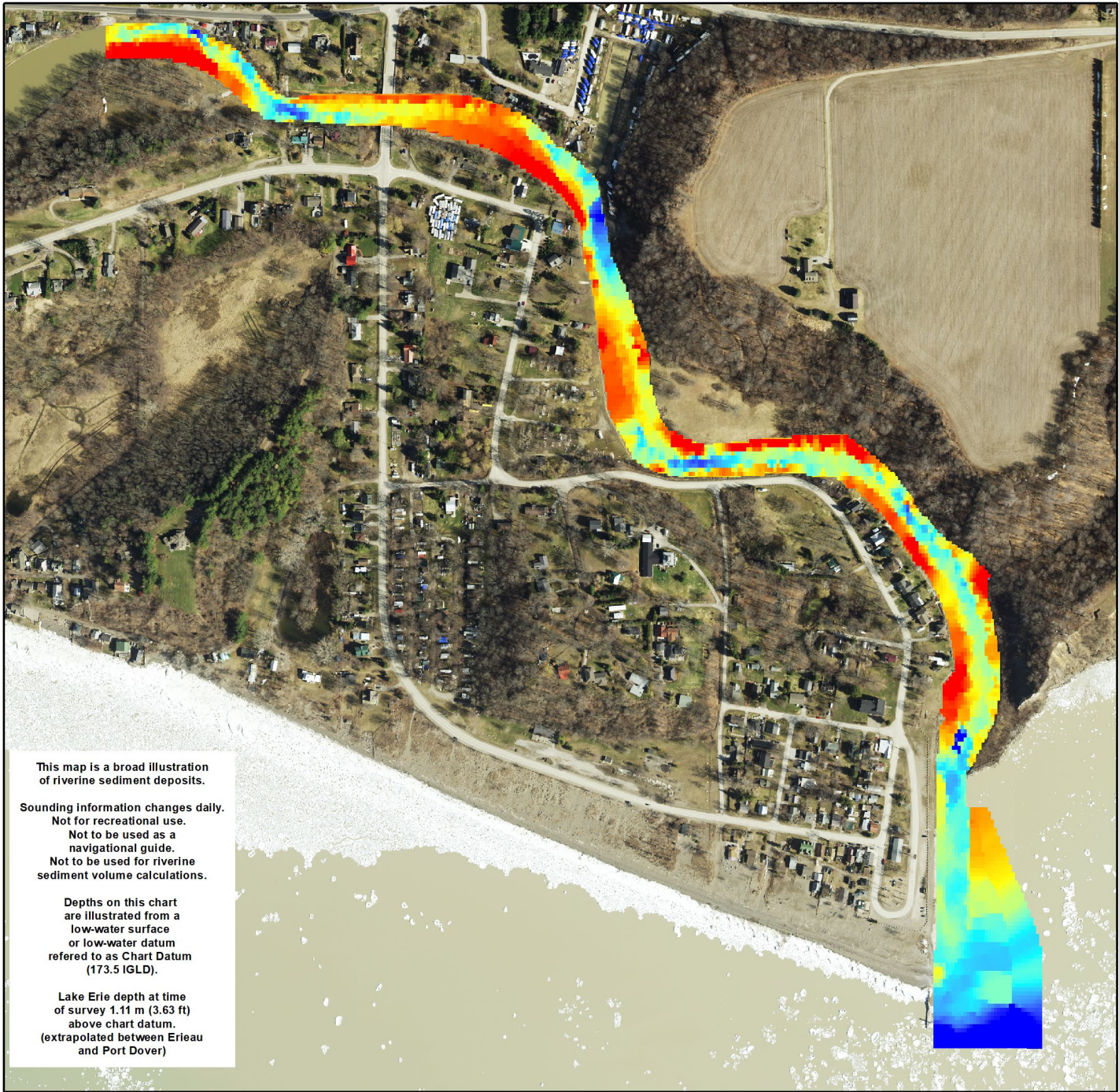
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This map is a broad illustration of riverine sediment deposits.

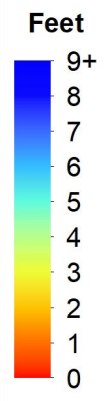
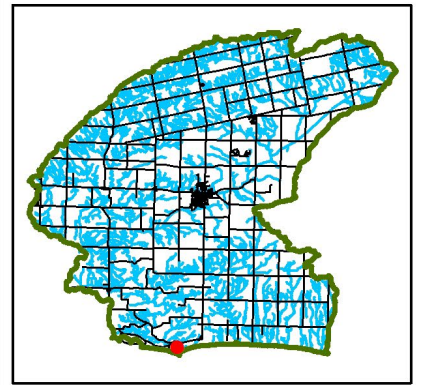
Sounding information changes daily.
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Not to be used for riverine sediment volume calculations.

Depths on this chart are illustrated from a low-water surface or low-water datum referred to as Chart Datum (173.5 IGLD).

Lake Erie depth at time of survey 1.163 m (3.82 ft) above chart datum. (extrapolated between Erieau and Port Dover)



Port Bruce
 July 10, 2023
 Sounding



Data Sources: NRVIS, DFO, CCCA
 CCCA GIS
 July 10, 2023

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