GREAT LAKES WATER LEVELS

John Allis, PE

Chief, Great Lakes Hydraulics & Hydrology Office
Detroit District, Corps of Engineers
2 Nov 2020

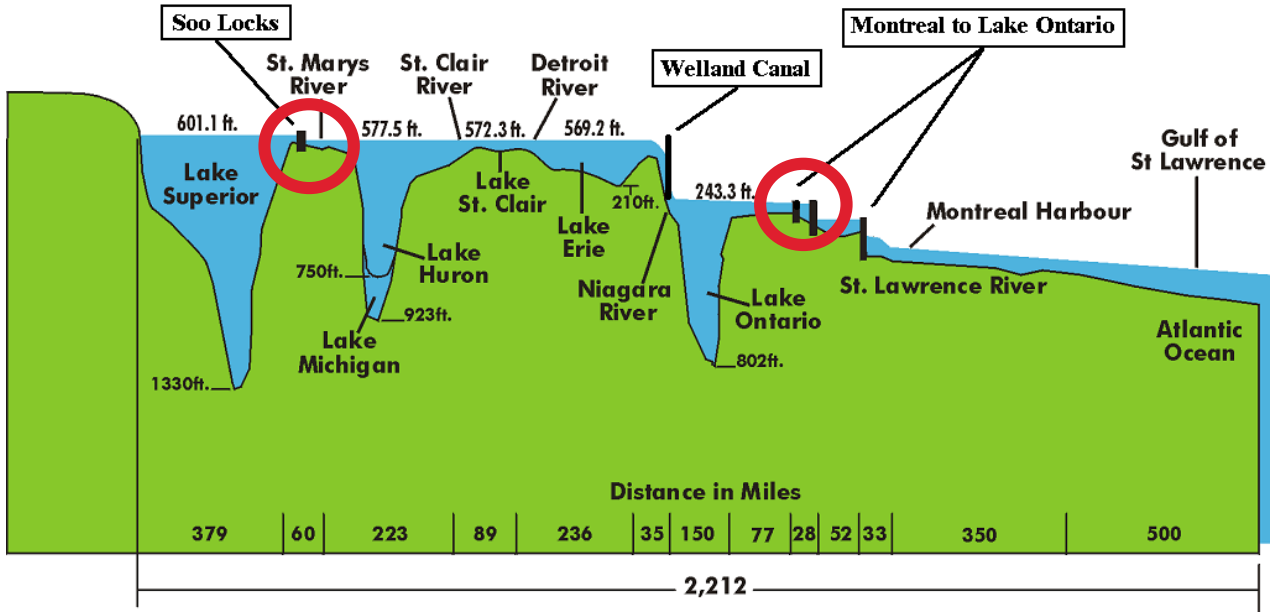
NWS-GRR

US Army Corps of Engineers®

MONITORING GREAT LAKES WATER LEVELS

The Great Lakes Basin

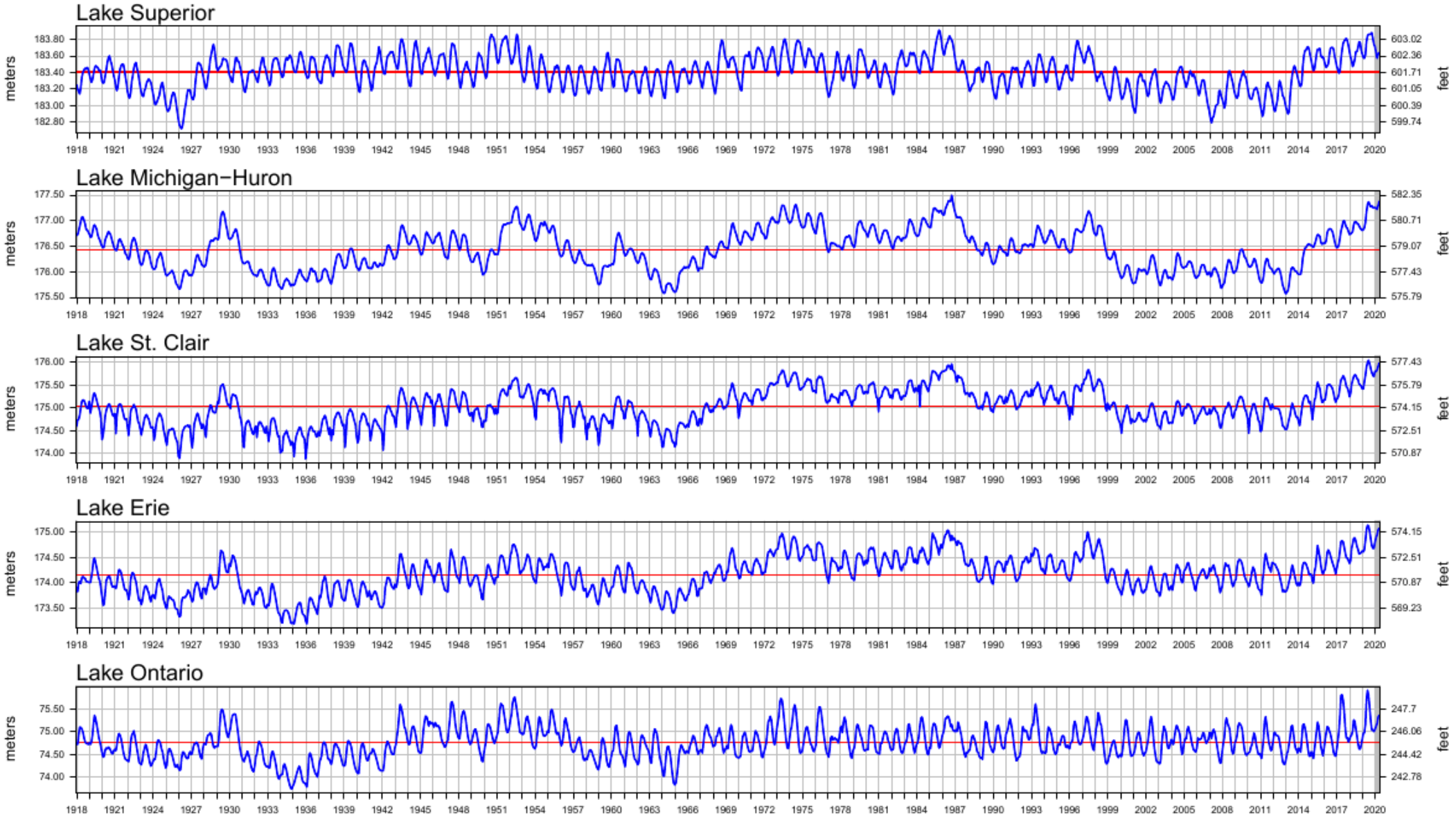
- 14,000 miles of shoreline
- 95,000 square miles of water
- 200,000 square miles of land
- 8 States & 2 Provinces



Outflow regulation

Great Lakes Water Levels (1918–2020)

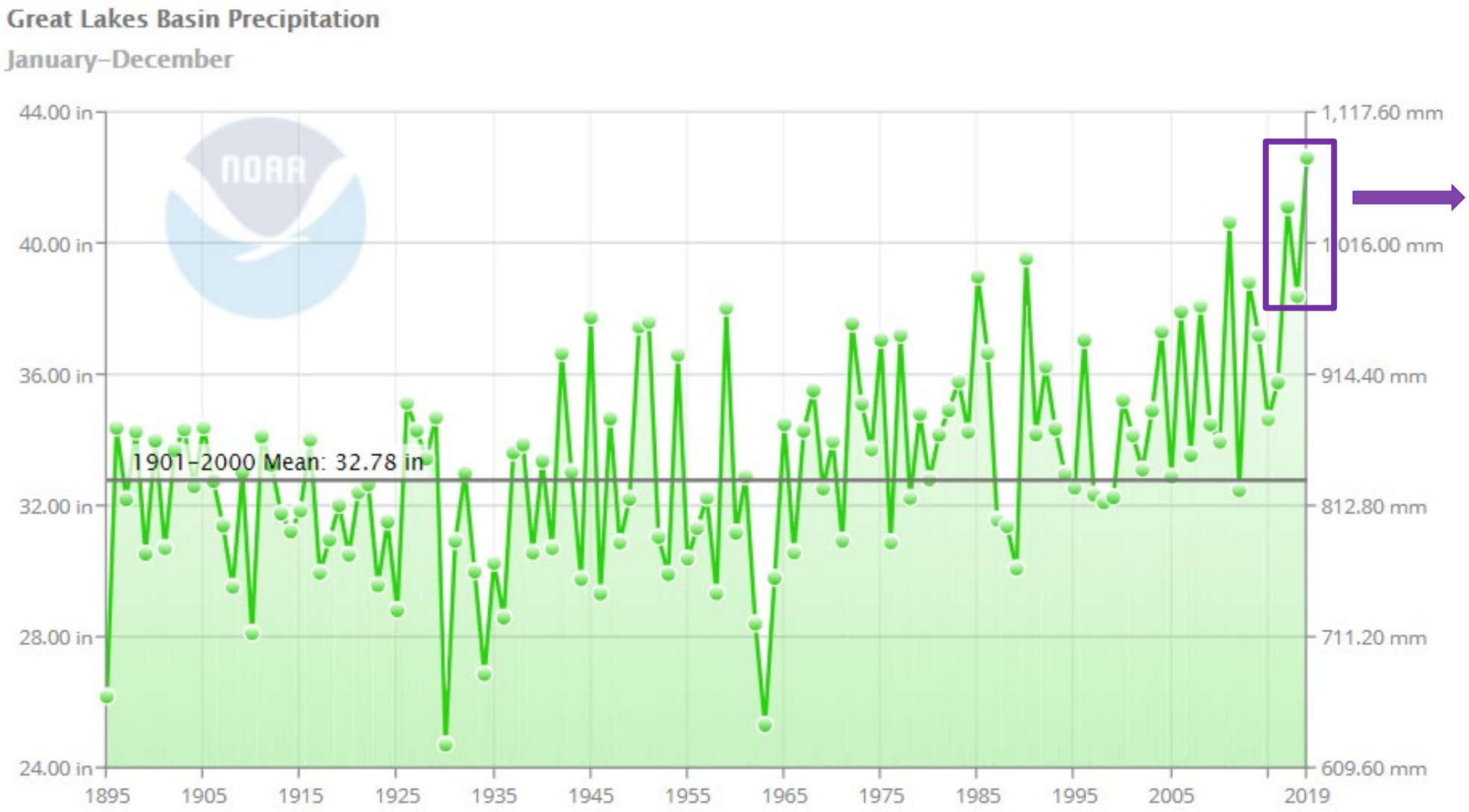
Monthly Mean Level — Long Term Average Annual



The monthly average levels are based on a network of water level gages located around the lakes.
Elevations are referenced to the International Great Lakes Datum (1985).

Water levels have been coordinated through 2019. Values highlighted in gray are provisional.

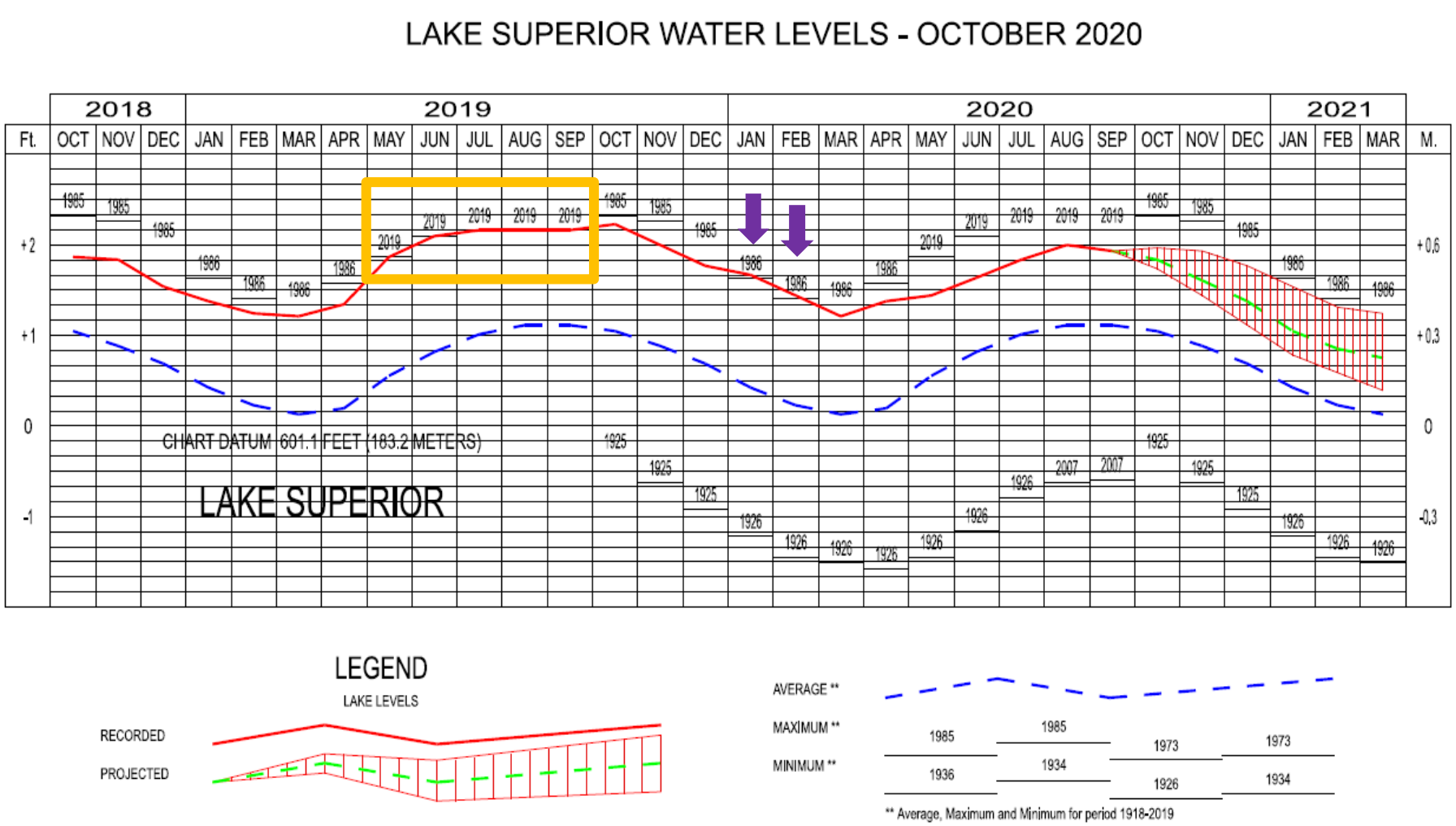
WHY ARE LEVELS SO HIGH? – WET PATTERN



Last 3 years (2017-2019), exceptionally wet for the Great Lakes Basin.

NOAA National Centers for Environmental information, Climate at a Glance

6-MONTH FORECAST (OCTOBER-MARCH)



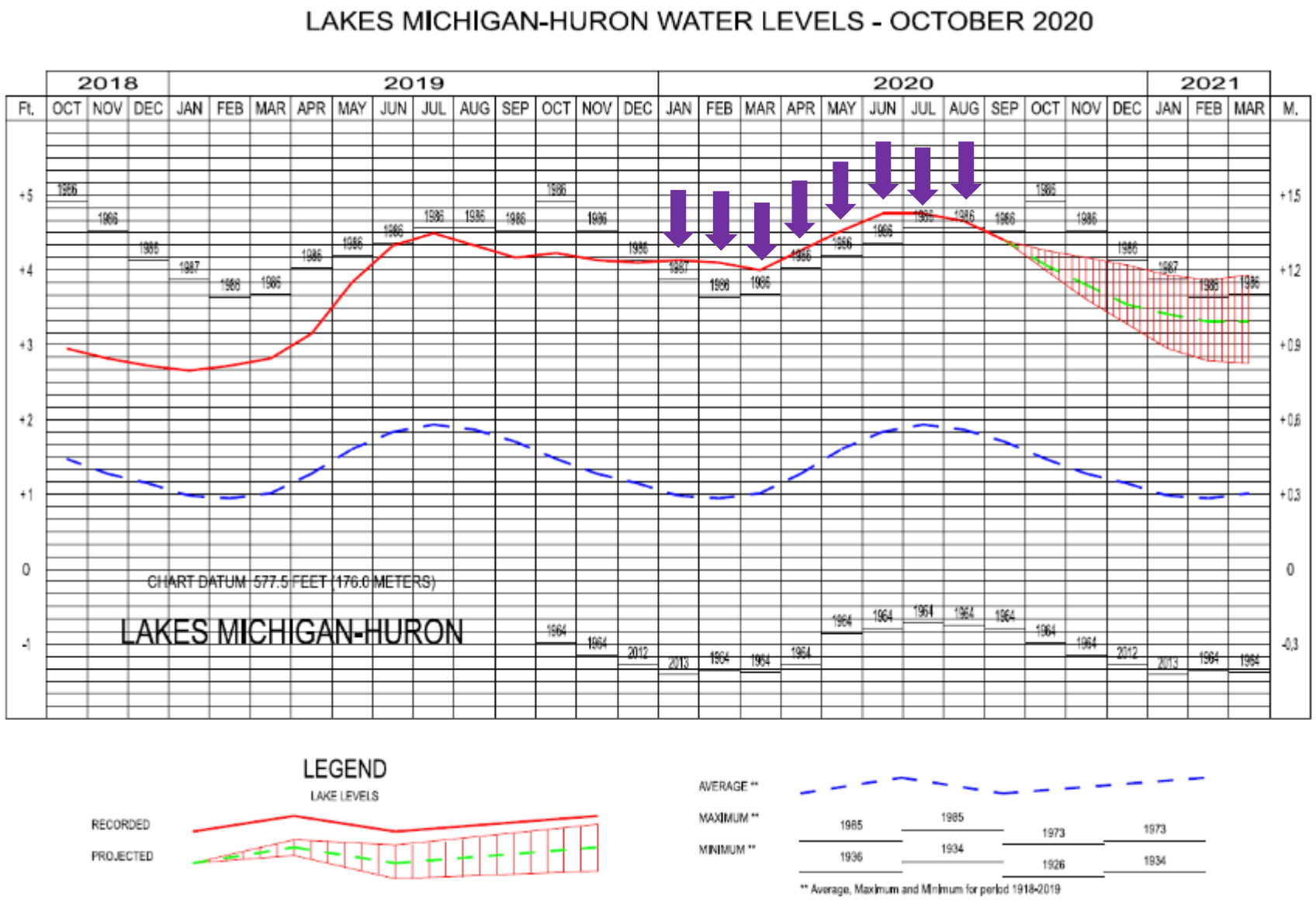
- 2019 Records
- 2020 Provisional Record

Projected Levels (dashed green line):

- Has begun its seasonal decline
- September 2020 level was 3 inches below the September 2019 record high level.
- Forecast to be 6 to 8 inches below record high levels over next 6 months.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/

6-MONTH FORECAST (OCTOBER-MARCH)



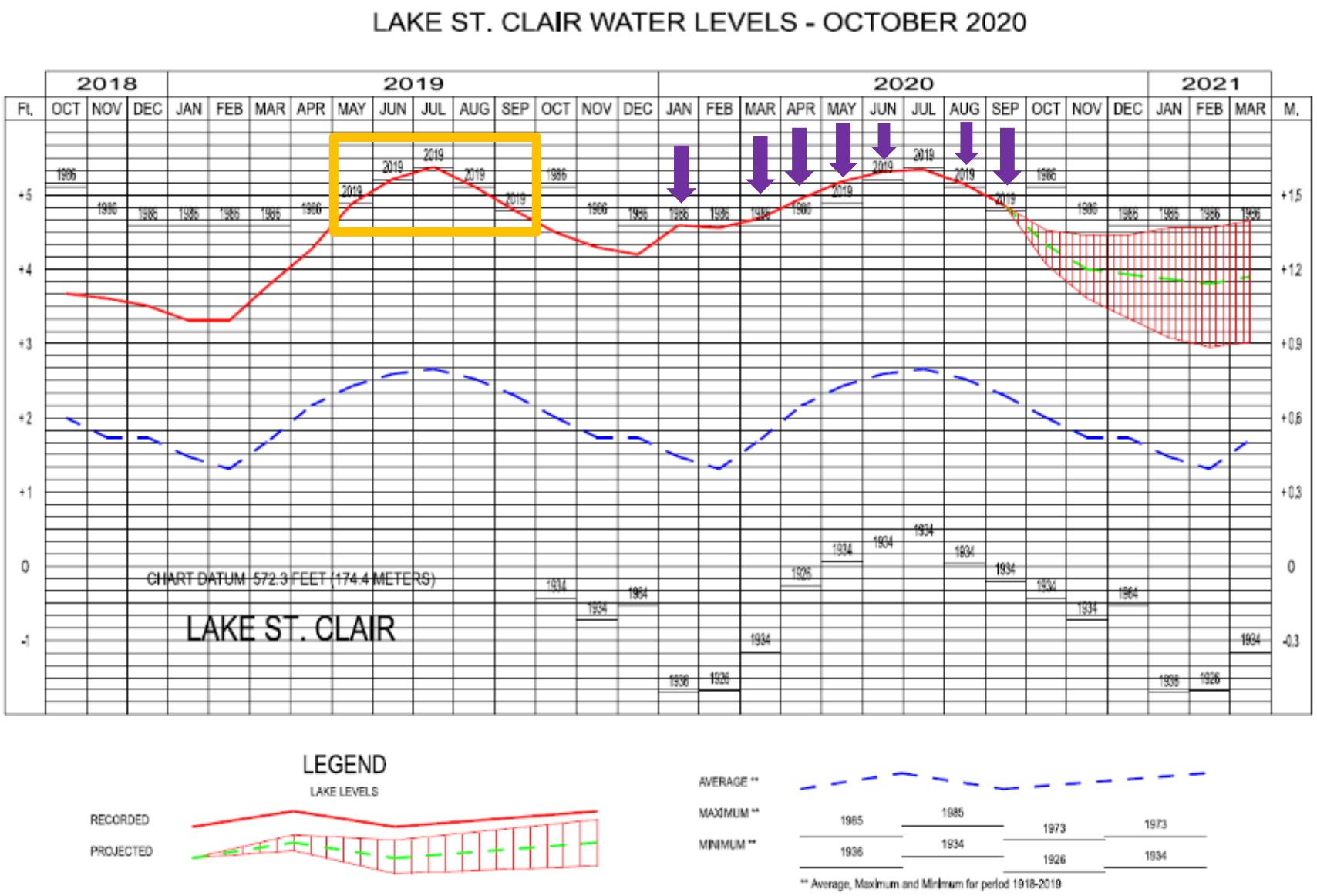
- 2019 Records
- 2020 Provisional Record

Projected Levels (dashed green line):

- In period of seasonal decline
- September 2020 level was 3 inches above the September 2019 level.
- Forecast to be 7 to 10 inches below record high levels through Dec. and remain 8 to 9 inches below provisional 2020 record highs Jan to March.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/

6-MONTH FORECAST (OCTOBER-MARCH)



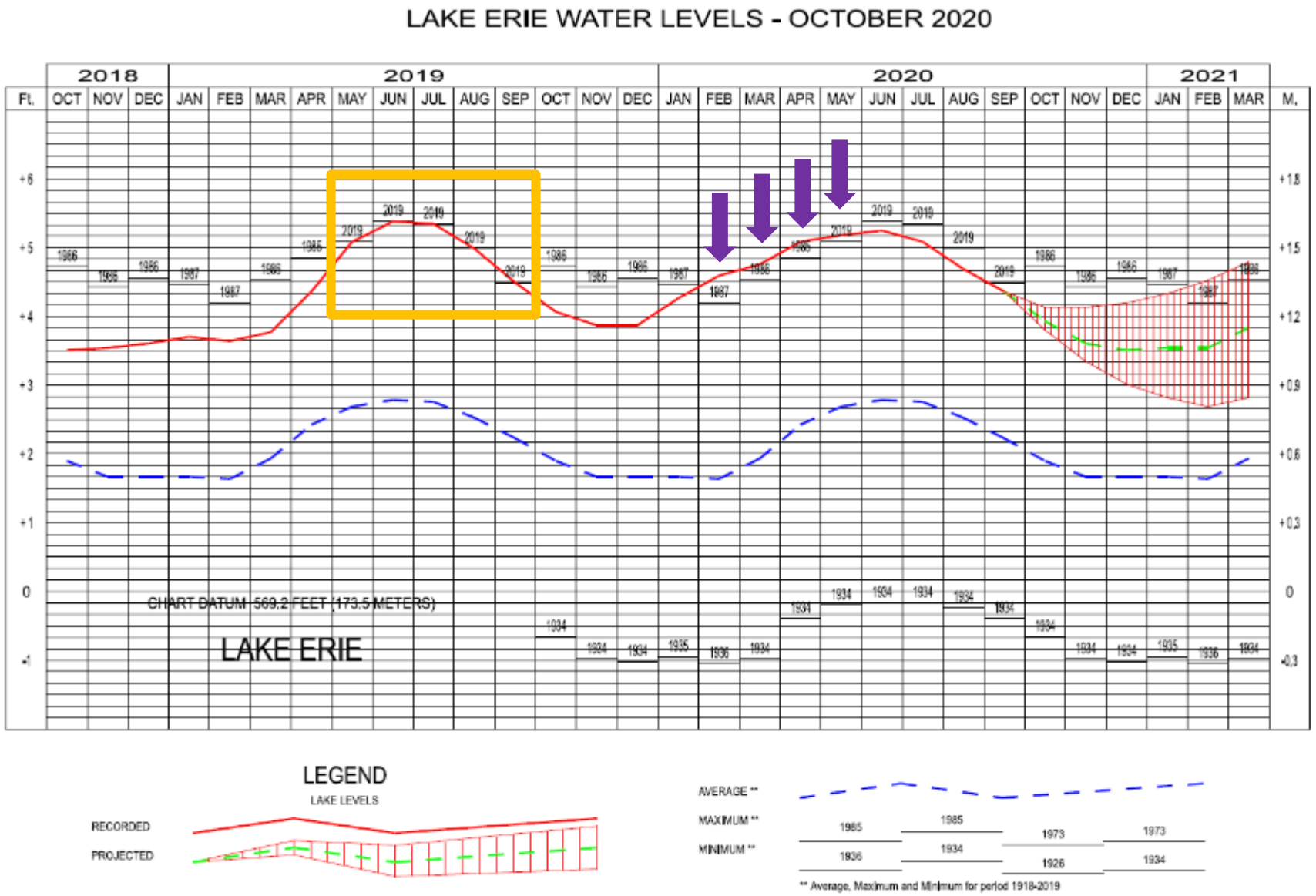
- 2019 Records
- 2020 Provisional Record

Projected Levels (dashed green line):

- In period of seasonal decline
- September 2020 level was an inch above the September 2019 record high level.
- Forecast to be about 8 to 9 inches below record high levels over the next 6 months.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/

6-MONTH FORECAST (OCTOBER-MARCH)



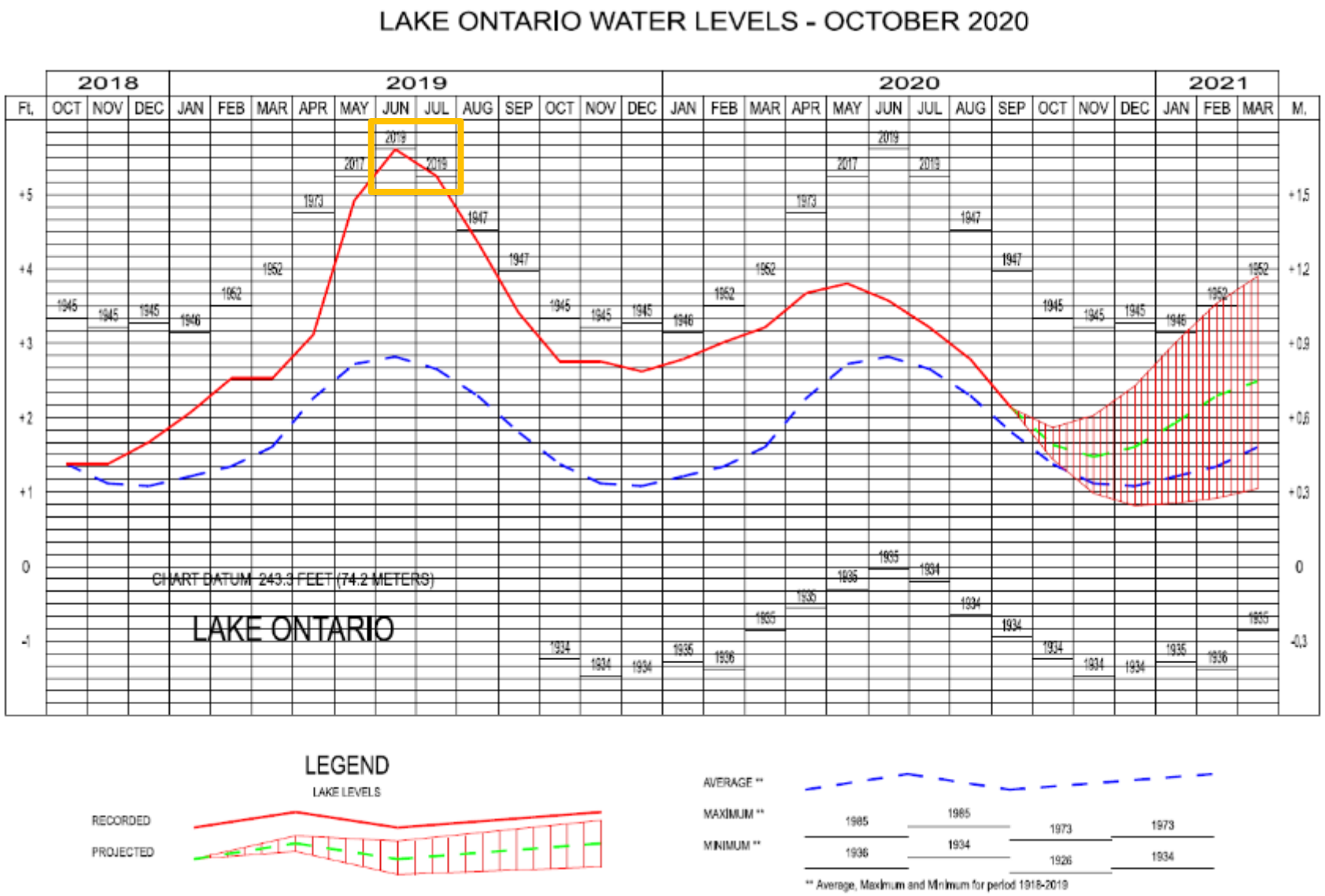
- 2019 Records
- 2020 Provisional Record

Projected Levels (dashed green line):

- In period of seasonal decline
- September 2020 level was 2 inches below the September 2019 record high level.
- Forecast to be 9 to 13 inches below record high levels through January and remain 11 to 13 inches below provisional 2020 record high levels in Feb. & March.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/

6-MONTH FORECAST (OCTOBER-MARCH)



- 2019 Records
- 2020 Provisional Record

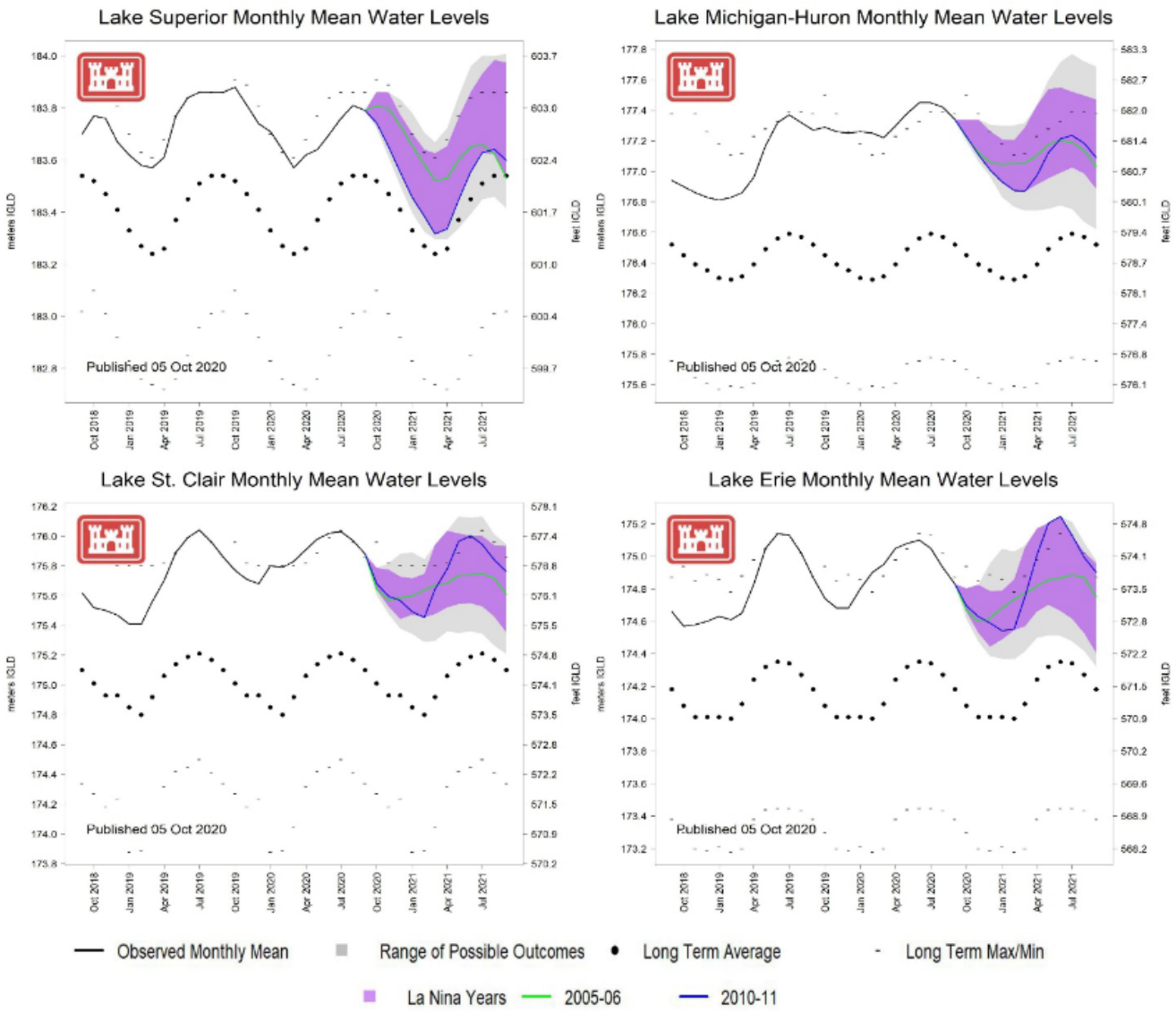
Projected Levels (dashed green line):

- In period of seasonal decline
- September 2020 level was 15 inches below the September 2019 level.
- Forecast to be 15 to 21 inches below record high levels, but 3 to 11 inches above average levels over the next 6 months.

https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/

LA NINA?

Volume 21: October 2020 12-Month Outlook



https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Water-Level-Outlook/

WATER LEVEL RESOURCES

GREAT LAKES WATER LEVEL RESOURCES AND CONTACT INFORMATION

Websites

USACE Detroit District	Link at the top of the page provides USACE resources related to high water levels	https://www.lre.usace.army.mil
Water level forecasts	Monthly Bulletin of Great Lakes Water Levels (6-month forecast) Weekly Great Lakes Water Levels (update on current conditions and forecast for next month) Great Lakes Water Level Outlook (Scenario-based 12-month outlook) Connecting Channels Forecast (channel depths for next month)	https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/
Water level observations	Current Conditions (preliminary daily lake-wide average levels and connecting channel water levels) Historical Data (long term average, maximum, and minimum Great Lakes water levels)	https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Water-Level-Data/
Basin Conditions and Other Great Lakes Information	Water Level Summaries (lake-by-lake summaries of recent conditions) Great Lakes Update Articles (periodic publications on various Great Lakes topics)	https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Basin-Conditions/
Living on the Coast	Brochure on coastal impacts	https://www.lre.usace.army.mil/Portals/69/docs/GreatLakesInfo/docs/CoastalProgram/Living%20on%20the%20Coast%20Booklet.pdf?ver=2016-06-06-105107-683

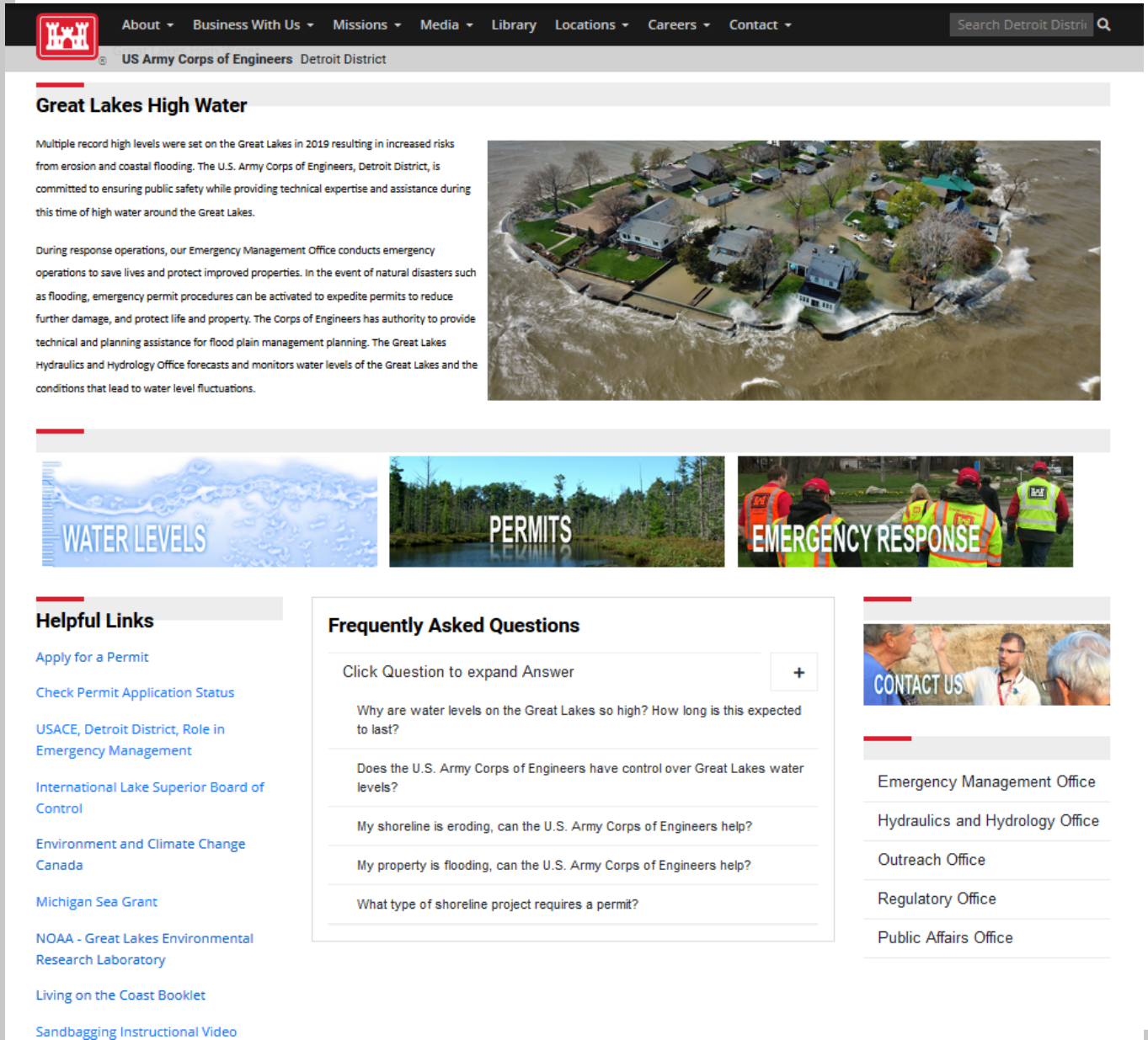
Contact Information

Water level forecasts

- John Allis, Chief Office of Great Lakes Hydraulics and Hydrology (313-226-2137)
- Deanna Apps (313-226-2979)

US Army Corps of Engineers

HTTPS://WWW.LRE.USACE.ARMY.MIL/ABOUT/GREAT-LAKES-HIGH-WATER/



Water Level Contacts

John Allis
313 226 2137
John.t.allis@usace.army.mil

Deanna Apps
313 226 2979
Deanna.Apps@usace.army.mil