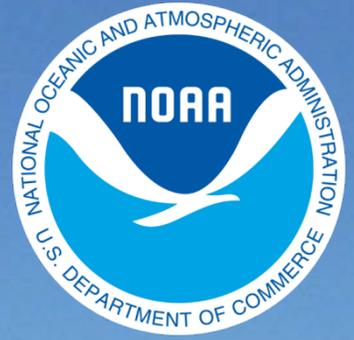


BookletChart™



Muskegon Lake, Including Muskegon Harbor

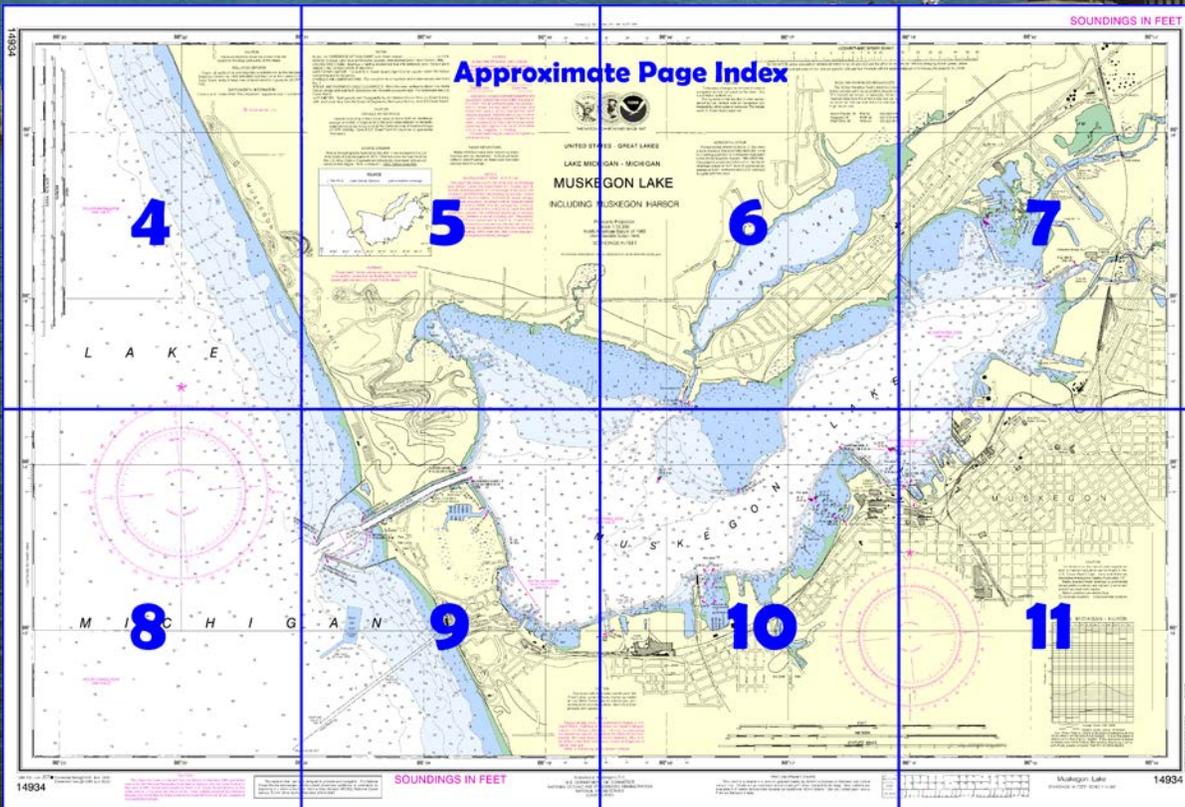
NOAA Chart 14934

A reduced-scale NOAA nautical chart for small boaters

When possible, use the full-size NOAA chart for navigation.



- Complete, reduced-scale nautical chart
- Print at home for free
- Convenient size
- Up-to-date with Notices to Mariners
- Compiled by NOAA's Office of Coast Survey, the nation's chartmaker



**Published by the
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Coast Survey
www.NauticalCharts.NOAA.gov
888-990-NOAA**

What are Nautical Charts?

Nautical charts are a fundamental tool of marine navigation. They show water depths, obstructions, buoys, other aids to navigation, and much more. The information is shown in a way that promotes safe and efficient navigation. Chart carriage is mandatory on the commercial ships that carry America's commerce. They are also used on every Navy and Coast Guard ship, fishing and passenger vessels, and are widely carried by recreational boaters.

What is a BookletChart™ ?

This BookletChart is made to help recreational boaters locate themselves on the water. It has been reduced in scale for convenience, but otherwise contains all the information of the full-scale nautical chart. The bar scales have also been reduced, and are accurate when used to measure distances in this BookletChart. See the Note at the bottom of page 5 for the reduction in scale applied to this chart.

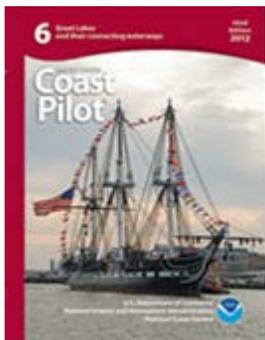
Whenever possible, use the official, full scale NOAA nautical chart for navigation. Nautical chart sales agents are listed on the Internet at <http://www.NauticalCharts.NOAA.gov>.

This BookletChart does NOT fulfill chart carriage requirements for regulated commercial vessels under Titles 33 and 44 of the Code of Federal Regulations.

Notice to Mariners Correction Status

This BookletChart has been updated for chart corrections published in the U.S. Coast Guard Local Notice to Mariners, the National Geospatial Intelligence Agency Weekly Notice to Mariners, and, where applicable, the Canadian Coast Guard Notice to Mariners. Additional chart corrections have been made by NOAA in advance of their publication in a Notice to Mariners. The last Notices to Mariners applied to this chart are listed in the Note at the bottom of page 7. Coast Pilot excerpts are not being corrected.

For latest Coast Pilot excerpt visit the Office of Coast Survey website at <http://www.nauticalcharts.noaa.gov/nsd/searchbychart.php?chart=14934>



(Selected Excerpts from Coast Pilot).
Muskegon Harbor, 31 miles SSE of Little Sable Point, consists of Muskegon Lake and a dredged entrance channel which connects it with Lake Michigan. Facilities for a wide range of commerce are on the S shore of the harbor at the city of **Muskegon, Mich.**, and at its E end. A lighted stack of the Consumers Energy Co. at the mouth of the Muskegon River in 43°15'16"N., 86°14'23"W. is prominent from Lake Michigan. Sand hills N and S of the harbor entrance may obstruct the stack from some directions.

Muskegon South Breakwater Light (43°13'30"N., 86°20'48"W.), 70 feet above the water, is shown from a pyramidal tower on the outer end of the S breakwater; a fog signal is at the light.

Muskegon Lake is about 4 miles long and varies from 2 miles wide at the W end to as little as 0.6 mile in the E part. The lake has central depths of 25 to 79 feet. Near mid-length of the lake, shoals marked at the outer edges by lights extend from the N and S shores and restrict the available width of deep water to 1,600 feet. There are many obstructions in the shallow parts of the lake, including cribs, pipelines, and submerged pilings and dock ruins.

The North Channel of the **Muskegon River** flows into the NE end of Muskegon Lake. The channel, at a river stage of about 2 feet above extreme low water, has depths of 2½ to 9 feet for 33 miles above the mouth to the former dam at **Newaygo, Mich.** Two fixed bridges, with a reported least clearance of 8 feet, cross the river about 0.3 mile and 0.4 mile above the mouth.

Bear Lake parallels the NW side of the NE end of Muskegon Lake and has its outflow through a narrow channel into its N side. **North** A **speed limit** of 8 mph is enforced in Muskegon Harbor. (See **33 CFR 162.120**, chapter 2, for regulations.) A **slow-no wake speed** is enforced in the Bear Lake entrance channel.

A public docking facility is available mid-length of the S lakeshore at the Hartshorn Marina (43°13'48"N., 86°15'54"W.), jointly constructed by the city and the Michigan State Waterways Commission. Several private marinas are along the S shore of Lake Muskegon and can provide: transient berths, gasoline, diesel fuel, marine supplies, sewage pump-out, complete vessel repair, and hoists to 110 tons. A private marina is on the N shore at the outlet of Bear Lake. Transient berths, gasoline, diesel fuel, water, electricity, sewage pump-out, limited marine supplies, launching ramp, and harbormaster services are available. The harbormaster monitors VHF-FM channels 16 and 9. A 30-ton mobile hoist is available for engine repairs, and limited hull and electronic repairs.

Muskegon Harbor. Currents in the channel attain velocities up to 3 mph in either direction.

The outer basin is not adapted for anchorage of vessels, but reduces wave action in the entrance channel.

Mooring to the breakwaters, piers, and revetments is prohibited. Mariners are cautioned against navigating outside channel limits in the vicinity of structures protected by stone riprap. In 2001, a rock bed was reported 30 feet N of the South Breakwater Light.

Anchorage.—Muskegon Lake affords good anchorage, generally sand or mud bottom. Special anchorages are in the SW part of the lake and on the S side at Muskegon. (See **33 CFR 110.1 and 110.81**, chapter 2, for limits and re he dredged entrance channel leads from deep water in Lake Michigan between converging breakwaters to an outer basin, thence between piers and revetments to Muskegon Lake. The outer ends of the breakwaters and piers, and the inner ends of piers, are marked by lights. A sound signal, which reportedly operates by keying the microphone five times on VHF-FM channel 79, is at the light on the south pier. (See Notices to Mariners and the latest edition of the chart for controlling depths.

Mooring to the breakwaters, piers, and revetments is prohibited. Mariners are cautioned against navigating outside channel limits in the vicinity of structures protected by stone riprap. In 2001, a rock bed was reported 30 feet north of the South Breakwater Light.

**U.S. Coast Guard Rescue Coordination Center
24 hour Regional Contact for Emergencies**

RCC Cleveland Commander
9th CG District (216) 902-6117
Cleveland, OH

Navigation Managers Area of Responsibility



NOAA's navigation managers serve as ambassadors to the maritime community. They help identify navigational challenges facing professional and recreational mariners, and provide NOAA resources and information for safe navigation. For additional information, please visit nauticalcharts.noaa.gov/service/navmanagers

To make suggestions or ask questions online, go to nauticalcharts.noaa.gov/inquiry.
To report a chart discrepancy, please use ocsdata.ncd.noaa.gov/idrs/discrepancy.aspx.

Lateral System As Seen Entering From Seaward

on navigable waters except Western Rivers



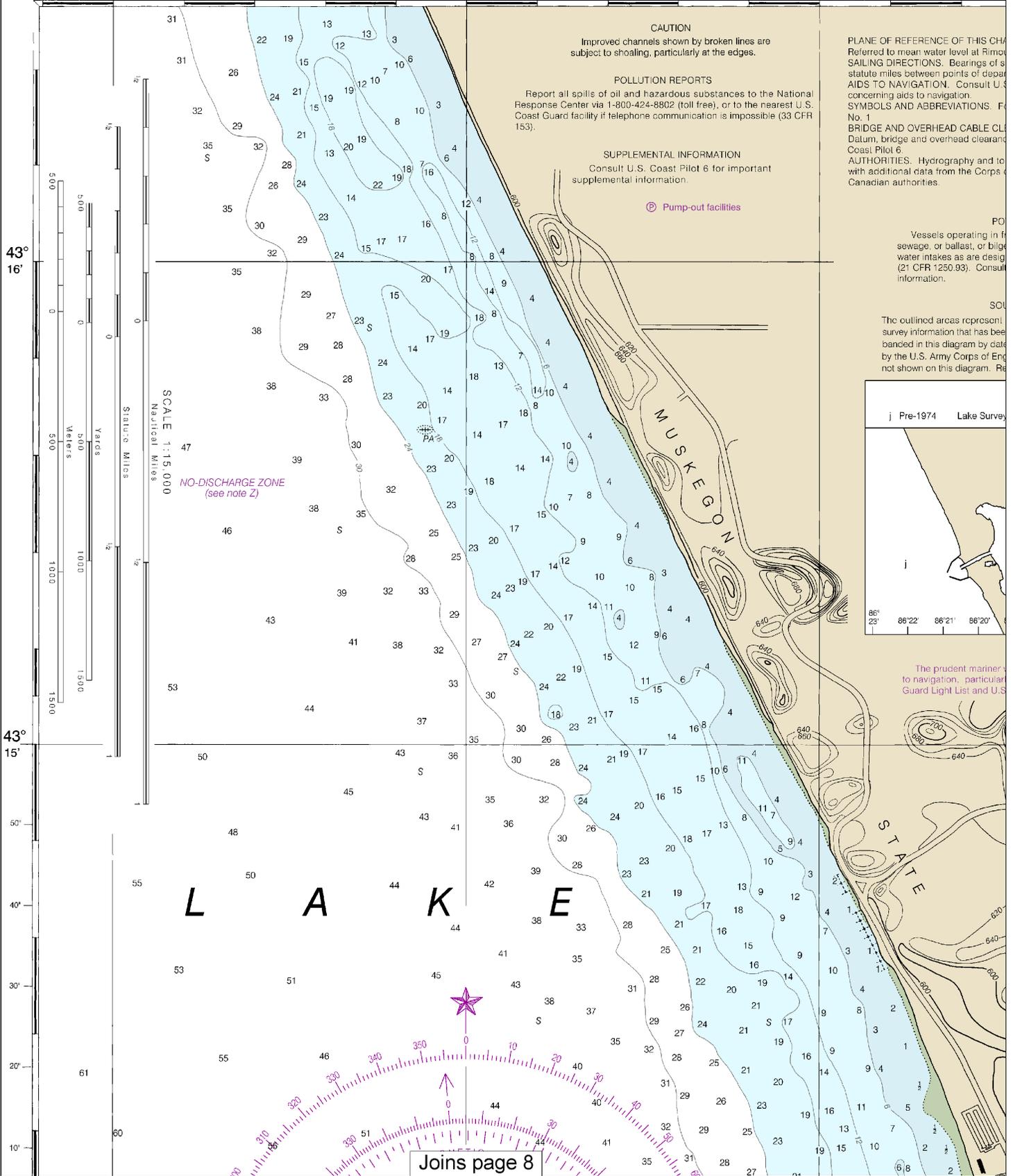
For more information on aids to navigation, including those on Western Rivers, please consult the latest USCG Light List for your area. These volumes are available online at <http://www.navcen.uscg.gov>

14934

86° 23'

86° 22'

86° 21'



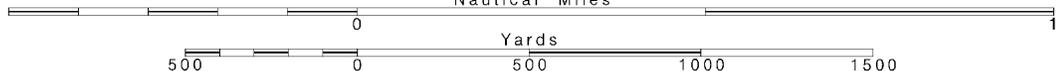
4

Note: Chart grid lines are aligned with true north.

Printed at reduced scale.

SCALE 1:15,000
Nautical Miles

See Note on page 5.



86° 20'

86° 19'

86° 18'

NOTES

HART (Low Water Datum).....557.5 ft.
ouski, Quebec, International Great Lakes Datum (1985).
sailing courses are true and distances given thereon are in
arture

For complete list of symbols and abbreviations see Chart

CLEARANCES. When the water surface is above Low Water
nces are reduced correspondingly. For clearances see U.S.

topography by the National Ocean Service, Coast Survey,
s of Engineers, Geological Survey, U.S. Coast Guard, and

CAUTION

STABLE WATER INTAKE

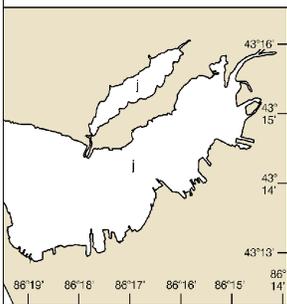
fresh water lakes or rivers shall not discharge
ge water within such areas adjacent to domestic
gnated by the Commissioner of Food and Drugs
ult U.S. Coast Pilot 6 for important supplemental

SOURCE DIAGRAM

At the limits of the most recent hydrographic
een evaluated for charting. Surveys have been
ate and type of survey. Channels, maintained
ngineers are periodically resurveyed and are
Refer to Chapter 1, United States Coast Pilot.

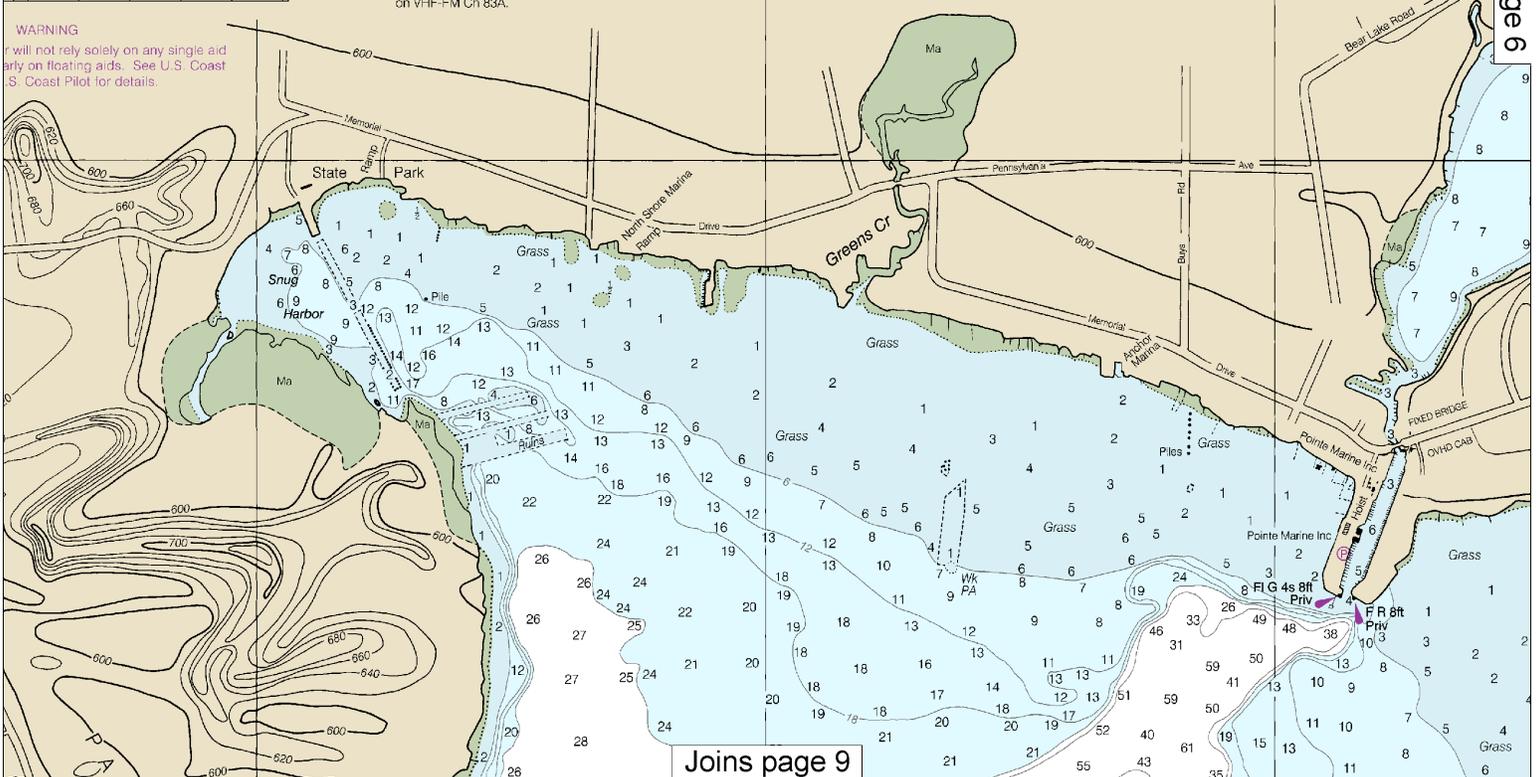
SOURCE

by Surveys partial bottom coverage

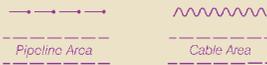


WARNING

Do not rely solely on any single aid
arily on floating aids. See U.S. Coast
S' Coast Pilot for details.



CAUTION
SUBMARINE PIPELINES AND CABLES
Charted submarine pipelines and submarine
cables and submarine pipeline and cable areas
are shown as:



Additional uncharted submarine pipelines and
submarine cables may exist within the area of
this chart. Not all submarine pipelines and sub-
marine cables are required to be buried, and
those that were originally buried may have
become exposed. Mariners should use extreme
caution when operating vessels in depths of
water comparable to their draft in areas where
pipelines and cables may exist, and when
anchoring, dragging, or trawling.
Covered wells may be marked by lighted or
unlighted buoys.

RADAR REFLECTORS

Radar reflectors have been placed on many
floating aids to navigation. Individual radar
reflector identification on these aids has been
omitted from this chart.

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

This chart falls entirely within the limits of a No-Discharge
Zone (NDZ). Under the Clean Water Act, Section 312, all
vessels operating within a No-Discharge Zone (NDZ) are
completely prohibited from discharging any sewage, treated
or untreated, into the waters. Commercial vessel sewage
shall include graywater. All vessels with an installed marine
sanitation device (MSD) that are navigating, moored,
anchored, or docked within a NDZ must have the MSD
disabled to prevent the overboard discharge of sewage
(treated or untreated) or install a holding tank. Regulations
for the NDZ are contained in the U.S. Coast Pilot.
Additional information concerning the regulations and
requirements may be obtained from the Environmental
Protection Agency (EPA) web site: http://www.epa.gov/
owow/oceans/regulatory/vessel_sewage/

MARINER ACTIVATED SOUND SIGNAL
MUSKEGON SOUTH BREAKWATER LIGHT -
(MRASS) Horn is activated by keying mic 5 times
on VHF-FM Ch 83A.



THE NATION'S CHARTMAKER SINCE 1807

UNITED STATES - GREAT LAKES

LAKE MICHIGAN - MICHIGAN

MUSKEGON LAKE
INCLUDING MUSKEGON HARBOR

Polyconic Projection
Scale 1:15,000
North American Datum of 1983
(World Geodetic System 1984)

SOUNDINGS IN FEET

Additional information can be obtained at nauticalcharts.noaa.gov.

Temporary chan
navigation are not in
Local Notice to Marin
During some wint
gered by ice, certai
replaced by other typ
see U.S. Coast Guard

HORIZON
The horizontal refe
is North American Datu
for charting purposes
to the World Geodetic
Geographic positio
American Datum of 19
average of 0.051" north
to agree with this cha

Joins page 6

Joins page 9

This BookletChart was reduced to 75% of the original chart scale.
The new scale is 1:20000. Barscales have also been reduced and
are accurate when used to measure distances in this BookletChart.



86° 19'

50'

40'

30'

20'

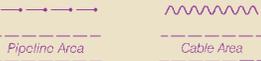
10'

86° 18'

50'

86° 17'

CAUTION
SUBMARINE PIPELINES AND CABLES
Charted submarine pipelines and submarine cables and submarine pipeline and cable areas are shown as:



Additional uncharted submarine pipelines and submarine cables may exist within the area of this chart. Not all submarine pipelines and submarine cables are required to be buried, and those that were originally buried may have become exposed. Mariners should use extreme caution when operating vessels in depths of water comparable to their draft in areas where pipelines and cables may exist, and when anchoring, dragging, or trawling. Covered wells may be marked by lighted or unlighted buoys.



THE NATION'S CHARTMAKER SINCE 1807

CAUTION
Temporary changes or defects in aids to navigation are not indicated on this chart. See Local Notice to Mariners.
During some winter months or when endangered by ice, certain aids to navigation are replaced by other types or removed. For details see U.S. Coast Guard Light List.

RADAR REFLECTORS
Radar reflectors have been placed on many boating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
This chart falls entirely within the limits of a No-Discharge (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage must be held in a holding tank. Regulations for NDZ are contained in the U.S. Coast Pilot. For more information concerning the regulations and requirements, visit the Environmental Protection Agency (EPA) web site: http://www.epa.gov/regulatory/vessel_sewage/.

BUOY ACTIVATED SOUND SIGNAL
MUSKEGON SOUTH BREAKWATER LIGHT - 5
Hom is activated by keying mic 5 times
FM Ch 83A.

Joins page 5

UNITED STATES - GREAT LAKES

LAKE MICHIGAN - MICHIGAN

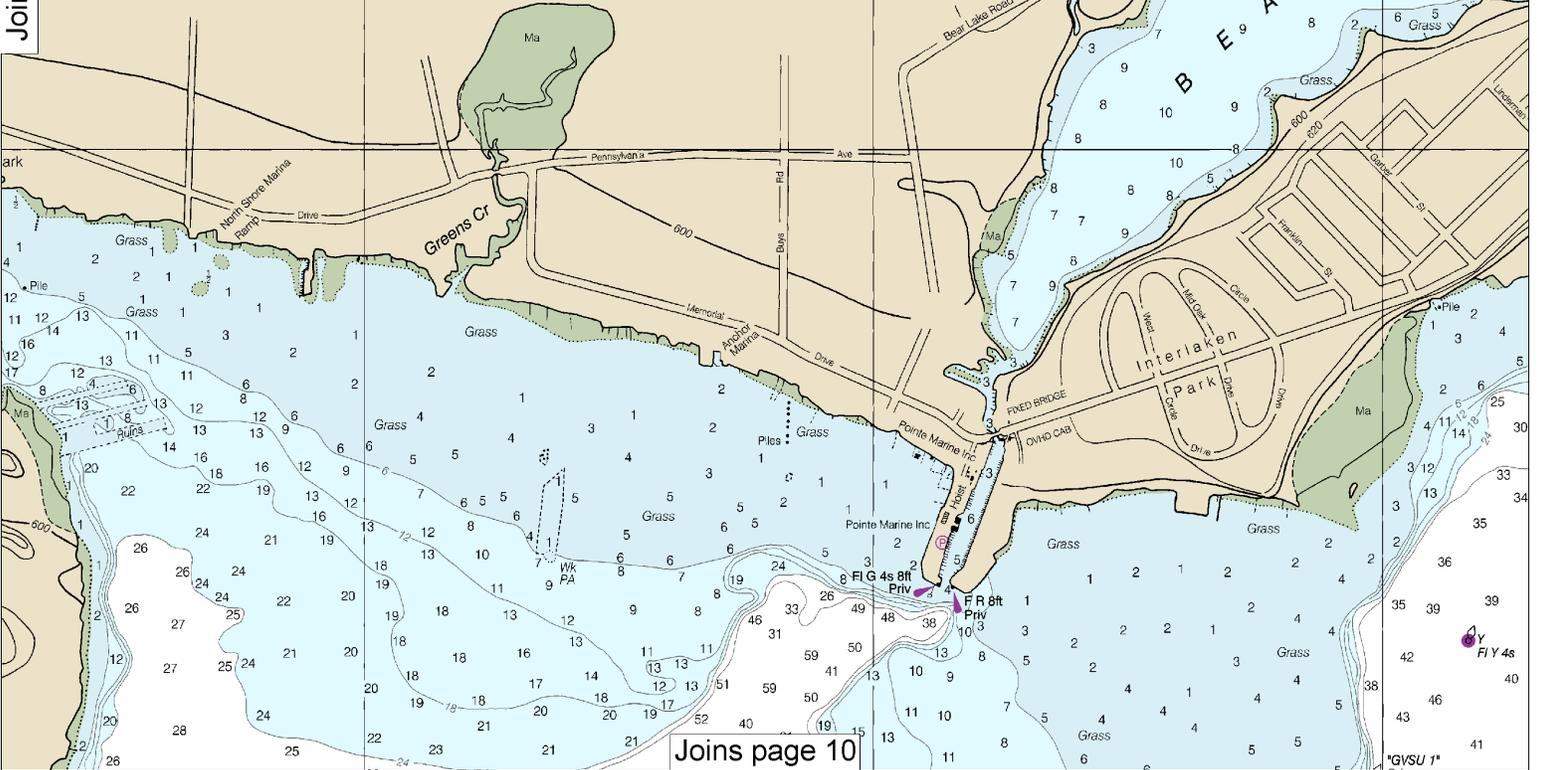
MUSKEGON LAKE

INCLUDING MUSKEGON HARBOR

Polyconic Projection
Scale 1:15,000
North American Datum of 1983
(World Geodetic System 1984)
SOUNDINGS IN FEET

Additional information can be obtained at nauticalcharts.noaa.gov.

HORIZONTAL DATUM
The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.051' northward and 0.212' westward to agree with this chart.



Joins page 10

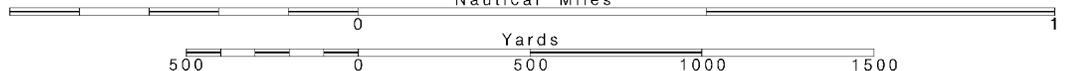


Note: Chart grid lines are aligned with true north.

Printed at reduced scale.

SCALE 1:15,000
Nautical Miles

See Note on page 5.



SOUNDINGS IN FEET

86° 16'

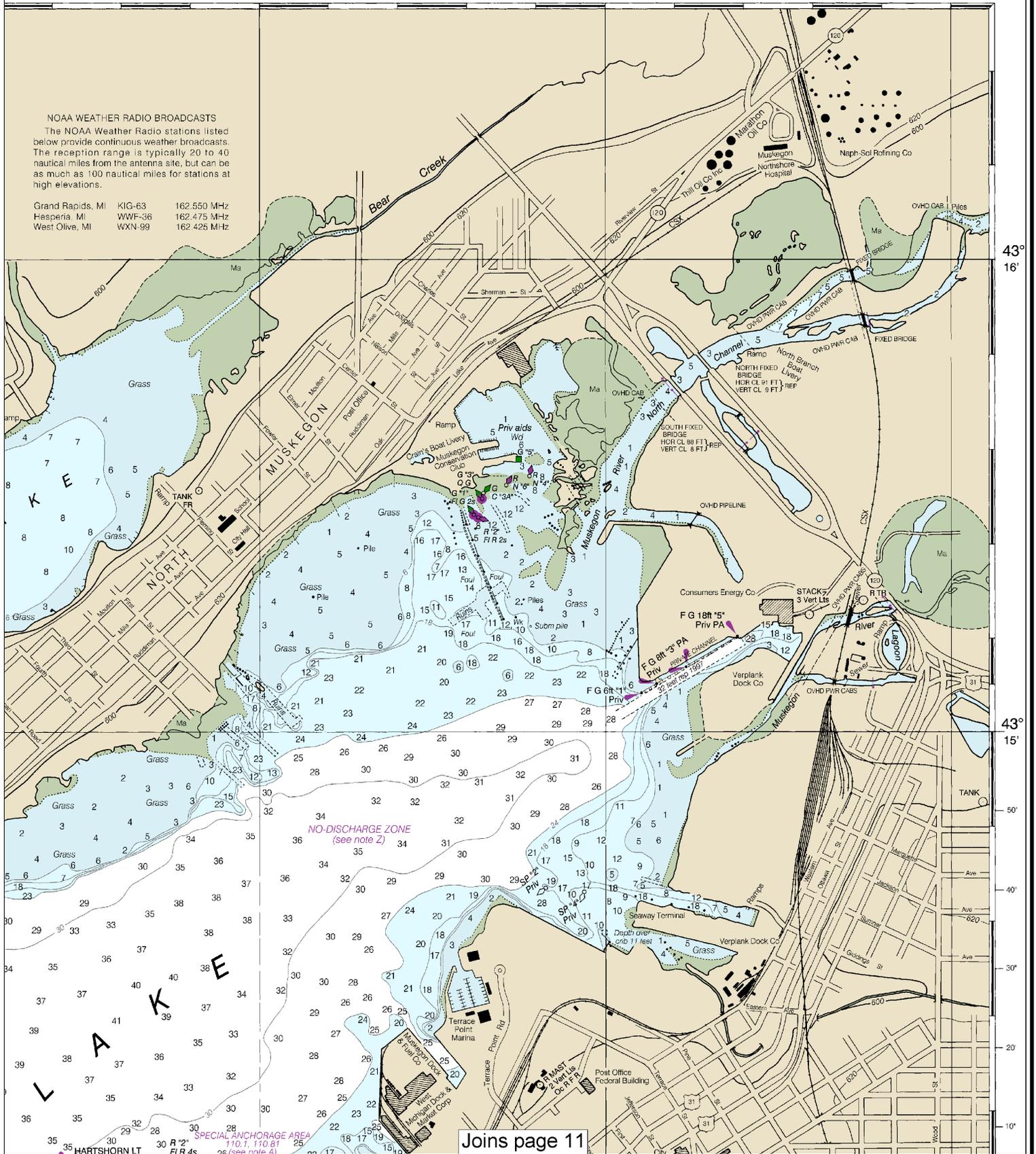
86° 15'

86° 14'

NOAA WEATHER RADIO BROADCASTS

The NOAA Weather Radio stations listed below provide continuous weather broadcasts. The reception range is typically 20 to 40 nautical miles from the antenna site, but can be as much as 100 nautical miles for stations at high elevations.

Grand Rapids, MI	KIG-63	162.550 MHz
Hesperia, MI	WWF-36	162.475 MHz
West Olive, MI	WXN-99	162.425 MHz



43° 16'

43° 15'

50'

40'

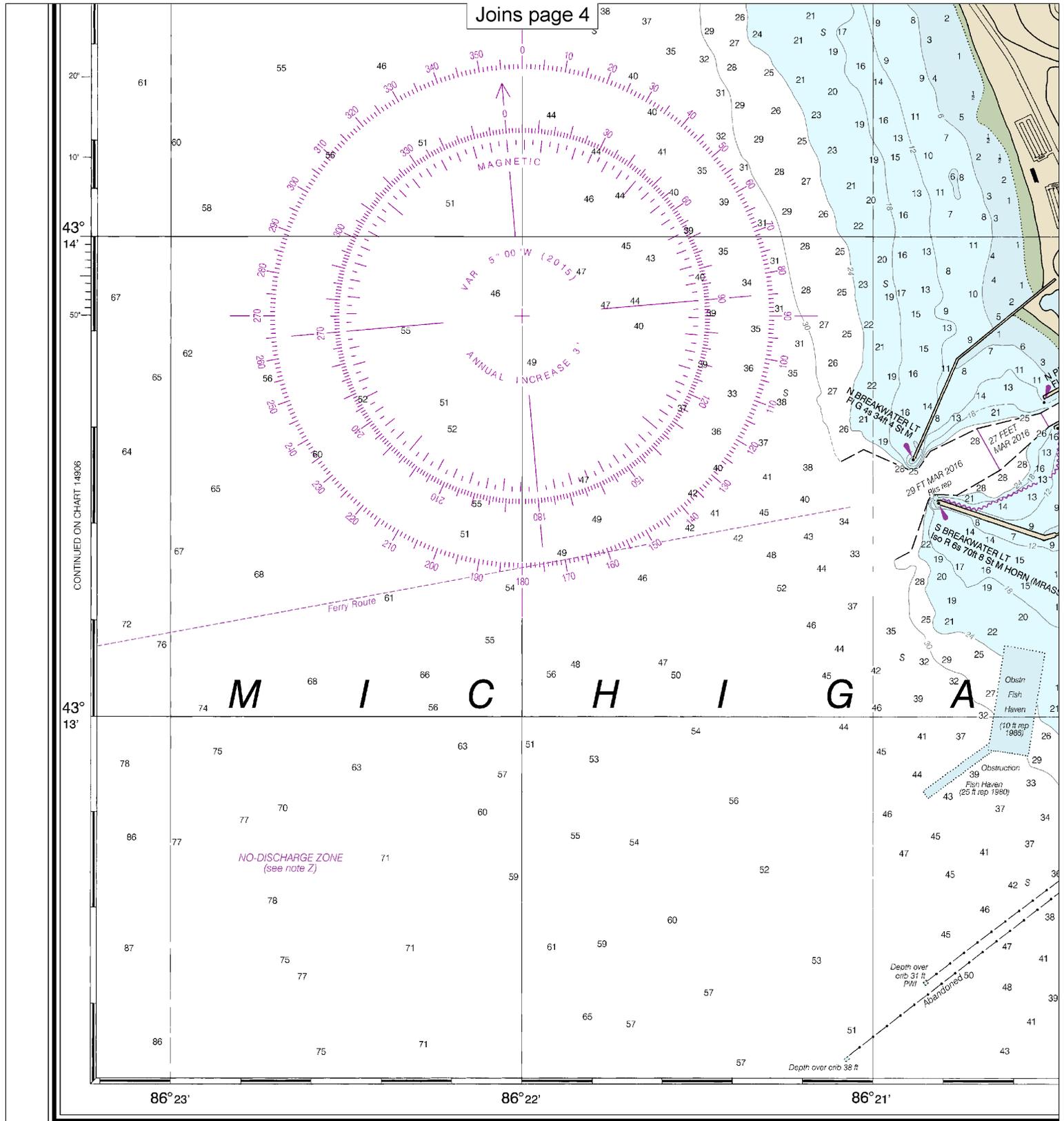
30'

20'

10'

Joins page 11

Last Correction: 9/27/2016. Cleared through:
LNM: 4616 (11/15/2016), NM: 4616 (11/12/2016), CHS: 1016 (10/28/2016)



Joins page 4

CONTINUED ON CHART 14906

30th Ed., Dec. 2015

14934

CAUTION

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner. Chart updates corrected from Notice to Mariners published after the dates shown in the lower left hand corner are available at nauticalcharts.noaa.gov.

NOAA encourages users to submit inquiries, discuss about this chart at <http://www.nauticalcharts.noaa.gov>

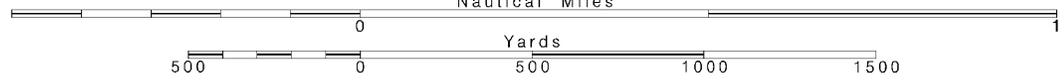
Last Correction: 9/27/2016. Cleared through:
 LNM: 4616 (11/15/2016), NM: 4616 (11/12/2016), CHS: 1016 (10/28/2016)

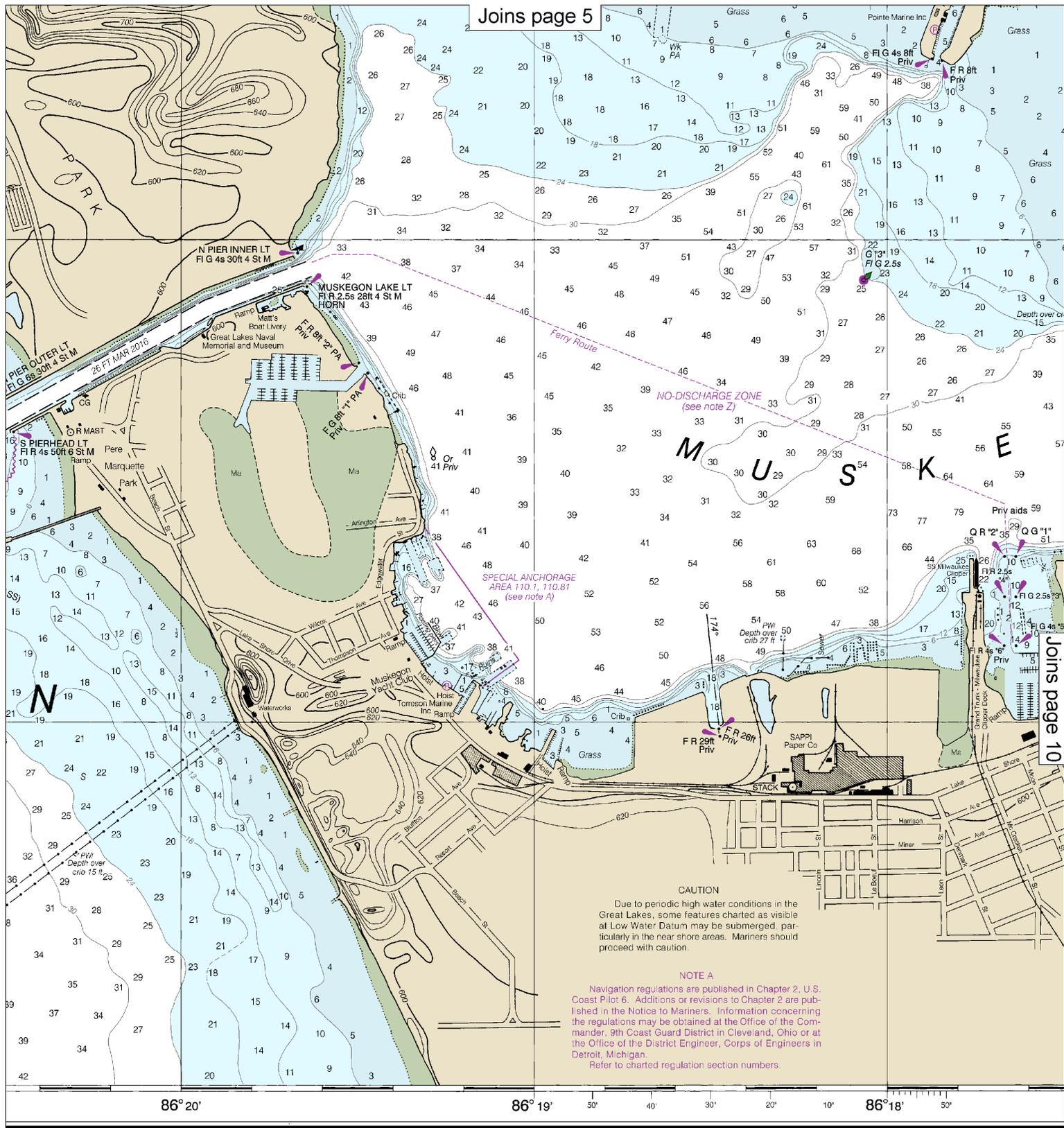


Note: Chart grid lines are aligned with true north.

Printed at reduced scale. SCALE 1:15,000 Nautical Miles

See Note on page 5.





CAUTION
 Due to periodic high water conditions in the Great Lakes, some features charted as visible at Low Water Datum may be submerged, particularly in the near shore areas. Mariners should proceed with caution.

NOTE A
 Navigation regulations are published in Chapter 2, U.S. Coast Pilot 6. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 9th Coast Guard District in Cleveland, Ohio or at the Office of the District Engineer, Corps of Engineers in Detroit, Michigan.
 Refer to charted regulation section numbers.

86° 20'

86° 19'

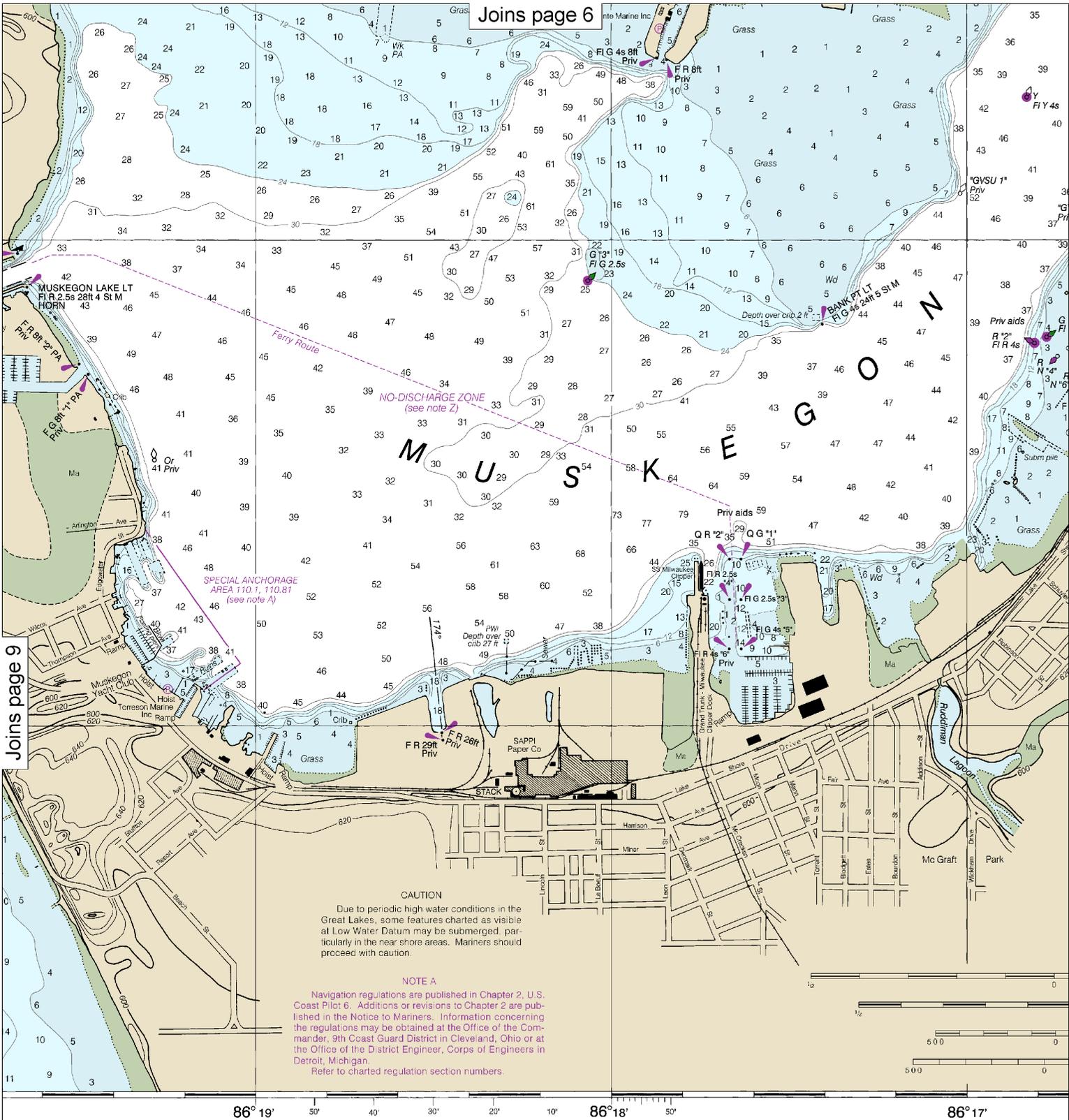
86° 18'

discrepancies or comments
 by:staff/contact.htm.

Published at Washington, D.C.
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL OCEAN SERVICE
 COAST SURVEY

SOU

Joins page 6



Joins page 9

CAUTION
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 Refer to charted regulation section numbers.

86° 19' 50' 40' 30' 20' 10' 86° 18' 86° 17'

Published at Washington, D.C.
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL OCEAN SERVICE
 COAST SURVEY

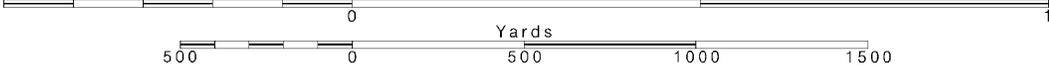
SOUNDINGS IN FEET

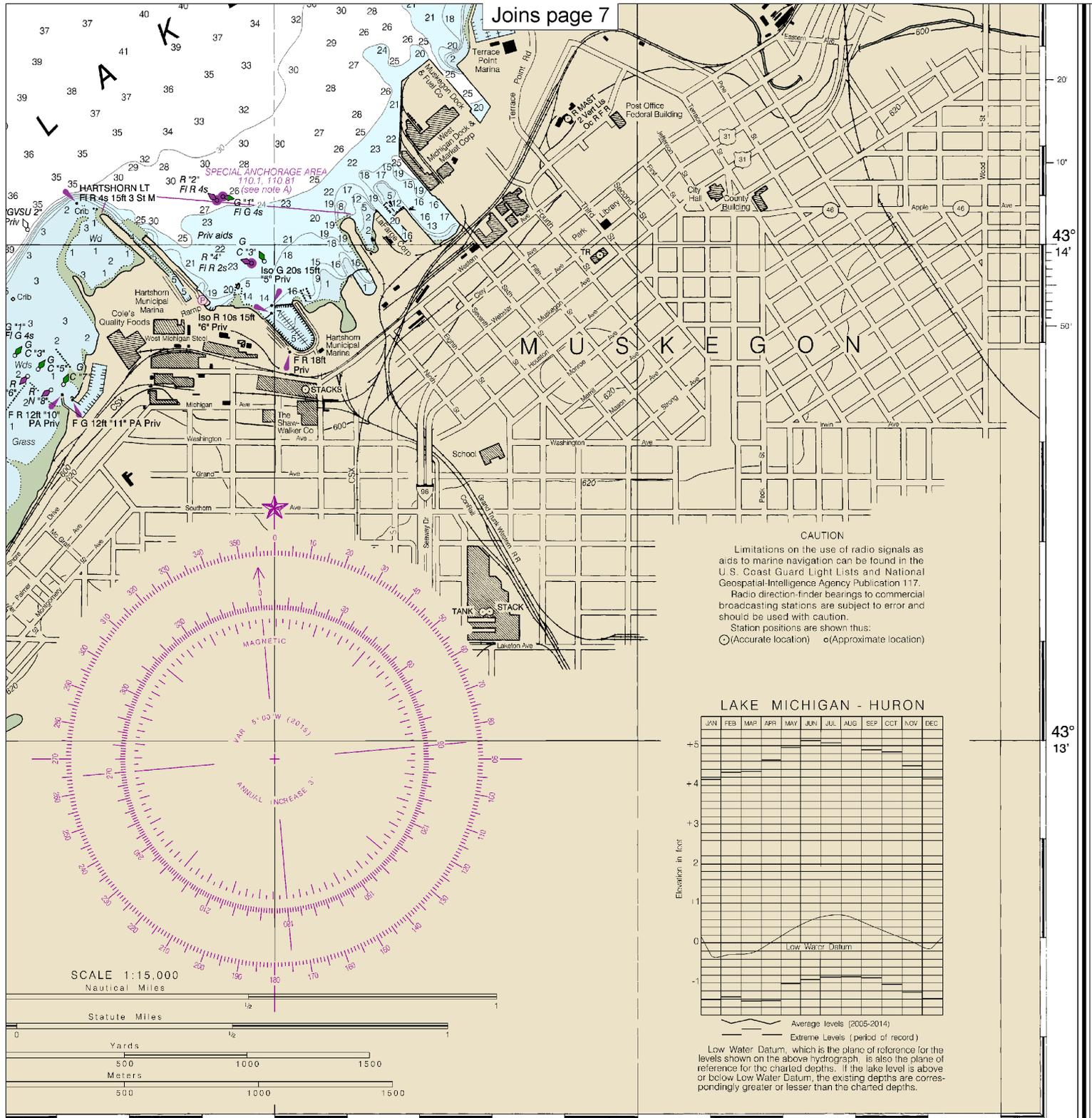
10

Note: Chart grid lines are aligned with true north.

Printed at reduced scale. SCALE 1:15,000 Nautical Miles

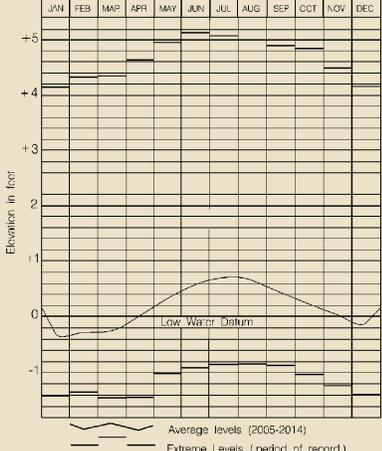
See Note on page 5.





CAUTION
 Limitations on the use of radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and National Geospatial-Intelligence Agency Publication 117.
 Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.
 Station positions are shown thus:
 ○ (Accurate location) ● (Approximate location)

LAKE MICHIGAN - HURON

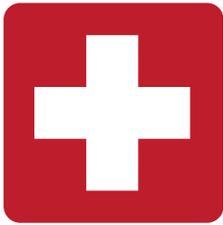


Low Water Datum, which is the plane of reference for the levels shown on the above hydrograph, is also the plane of reference for the charted depths. If the lake level is above or below Low Water Datum, the existing depths are correspondingly greater or lesser than the charted depths.

FATHOMS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
FEET	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102
METERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Muskegon Lake
 SOUNDINGS IN FEET - SCALE 1:15,000

14934



EMERGENCY INFORMATION

VHF Marine Radio channels for use on the waterways:

Channel 6 – Inter-ship safety communications.

Channel 9 – Communications between boats and ship-to-coast.

Channel 13 – Navigation purposes at bridges, locks, and harbors.

Channel 16 – Emergency, distress and safety calls to Coast Guard and others, and to initiate calls to other vessels. Contact the other vessel, agree to another channel, and then switch.

Channel 22A – Calls between the Coast Guard and the public. Severe weather warnings, hazards to navigation and safety warnings are broadcast here.

Channels 68, 69, 71, 72 and 78A – Recreational boat channels.

Getting and Giving Help – Signal other boaters using visual distress signals (flares, orange flag, lights, arm signals); whistles; horns; and on your VHF radio. You are required by law to help boaters in trouble. Respond to distress signals, but do not endanger yourself.

Distress Call Procedures

- Make sure radio is on.
- Select Channel 16.
- Press/Hold the transmit button.
- Clearly say: "MAYDAY, MAYDAY, MAYDAY."
- Also give: Vessel Name and/or Description; Position and/or Location; Nature of Emergency; Number of People on Board.
- Release transmit button.
- Wait for 10 seconds — If no response Repeat MAYDAY call.

HAVE ALL PERSONS PUT ON LIFE JACKETS!



NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week.

<http://www.nws.noaa.gov/nwr/>

Quick References

- Nautical chart related products and information — <http://www.nauticalcharts.noaa.gov>
- Interactive chart catalog — <http://www.charts.noaa.gov/InteractiveCatalog/nrnc.shtml>
- Report a chart discrepancy — <http://ocsddata.ncd.noaa.gov/idrs/discrepancy.aspx>
- Chart and chart related inquiries and comments — <http://ocsddata.ncd.noaa.gov/idrs/inquiry.aspx?frompage=ContactUs>
- Chart updates (LNM and NM corrections) — http://www.nauticalcharts.noaa.gov/mcd/updates/LNM_NM.html
- Coast Pilot online — <http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>
- Tides and Currents — <http://tidesandcurrents.noaa.gov>
- Marine Forecasts — <http://www.nws.noaa.gov/om/marine/home.htm>
- National Data Buoy Center — <http://www.ndbc.noaa.gov/>
- NowCoast web portal for coastal conditions — <http://www.nowcoast.noaa.gov/>
- National Weather Service — <http://www.weather.gov/>
- National Hurricane Center — <http://www.nhc.noaa.gov/>
- Pacific Tsunami Warning Center — <http://ptwc.weather.gov/>
- Contact Us — <http://www.nauticalcharts.noaa.gov/staff/contact.htm>



— For the latest news from Coast Survey, follow @NOAAcharts



This Booklet chart has been designed for duplex printing (printed on front and back of one sheet). If a duplex option is not available on your printer, you may print each sheet and arrange them back-to-back to allow for the proper layout when viewing.