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# MEMORANDUM

TO: Randy Sanford

FROM: David Schofield

DATE: November 2, 2018

RE: Riverside North – Preliminary Review of Floodplain and Stormwater Requirements SEH No. WIRRN 148437 14.00

The purpose of this memorandum is to provide a preliminary review review of the City of La Crosse (City), Wisconsin Department of Natural Resources (WisDNR) and Federal Emergency Management Agency (FEMA) floodplain and stormwater management requirements as they relate to the proposed Riverside North Development. This is by no means an exhaustive recital of all applicable floodplain and stormwater requirements.

The proposed Riverside North development, which is adjacent to the confluence of the Mississippi, Black and La Crosse Rivers, must comply with local, state and federal requirements for flood protection and stormwater management. As a reminder of the history of the site, **Figure 1**, below, was shown in the FEMA Flood Insurance Study and shows site during historic flooding in April 1965 (note: USH 53 has since been relocated from Copeland Avenue to West Avenue).

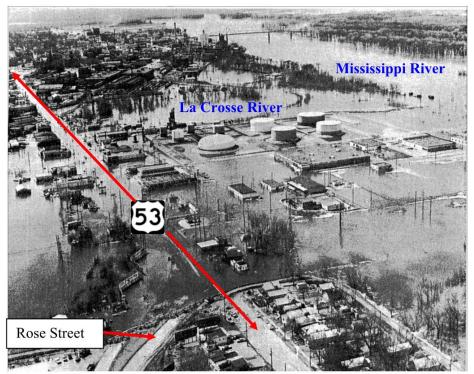


Figure 1: Photo of site taken in April 1965

Engineers | Architects | Planners | Scientists Short Elliott Hendrickson Inc., 329 Jay Street, Suite 301, La Crosse, WI 54601-4034 SEH is 100% employee-owned | sehinc.com | 608.782.3161 | 888.908.8166 fax November 2, 2018 Page 2

According to documentation provided by City, WisDNR and FEMA:

- 1% Annual Chance Flood (commonly known as the 100-year flood) Base Flood Elevation (BFE) adjacent to the site is 644.0<sup>1</sup>.
- A majority of the site is located in Special Flood Hazard Area (SFHA) Zone AE Floodplain. SFHA Zone AE Floodplain is subject to flooding in the 1% Annual Chance Flood. SFHA Zone AE Floodplain can be separated into two separate areas:
  - A portion of the site, generally located north and east of the former rail bed, is located in the Floodfringe. Floodfringe is covered by floodwaters during the regional flood and associated with standing water rather than flowing water.
  - A portion of the site, generally located south and west of the former rail bed, is located in the Floodway. Floodway includes those portions of the floodplain adjacent to the channel required to carry the regional flood discharge and associated with flowing rather than standing water.
- Flood Protection Elevation (FPE) is two feet above BFE or 646.0.
- 0.2% Annual Chance Flood (commonly known as the 500-year flood) elevation adjacent to the site is 648.0<sup>2</sup>.

All elevations herein are referenced to the NAVD88 vertical datum.

## CITY OF LA CROSSE FLOODPLAIN REQUIREMENTS

The City of La Crosse regulates development within floodplains by way of City Code Chapter 115 Article V Overlay Zoning District Regulations, Division 2 Floodplain Zoning<sup>3</sup>. A brief summary of City Code §115 is as follows:

- §115-212 requires Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) for any changes within SFHA Zone AE.
- §115-219 notes that the flood protection standards herein may not protect against larger floods.
- §115-254 establishes Floodway District (FW) and Floodfringe District (FF) within the SFHA Zone AE.
- §115-280 regulates development within the Floodway District:
  - Allowed:
    - "Non-structural recreational uses, such as ... picnic grounds, boat ramps, swimming areas, parks, wildlife and nature preserves ... hiking and horseback riding trails..."
    - "Uses or structures accessory to open space uses..."
    - "Functionally water-dependent uses, such as docks, piers or wharves ... that comply with Wis. Stats. chs. 30 and 31."
    - Required:
      - Structures shall be designed to prevent floatation, collapse or lateral movement.
      - Mechanical or utility equipment must be elevated or floodproofed to or above the Flood Protection Elevation (646.0).
      - Not obstruct the flow of floodwaters or cause any increase in flood levels.
    - o Prohibited:
      - "Habitable structures or any structure with high flood damage potential.
      - "Any ... sewage systems, except portable latrines that are removed prior to flooding"

<sup>&</sup>lt;sup>1</sup> From FEMA Flood Insurance Rate Map Numbers 55063C0234D and 55063C0253D. See Attachments.

<sup>&</sup>lt;sup>2</sup> From FEMA Flood Insurance Study 55063CV002B, Figures 04P and 64P. See Attachments.

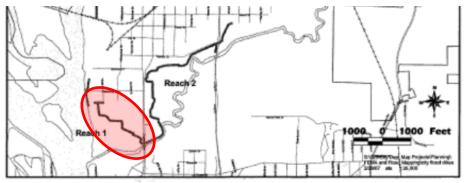
<sup>&</sup>lt;sup>3</sup> https://library.municode.com/wi/la\_crosse/codes/code\_of\_ordinances accessed on 11/2/18.

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- §115-281 regulates development within the Floodfringe District:
  - Allowed:
    - Any structures or land use otherwise allowed by City Zoning.
  - Required:
    - Residential, Commercial and Industrial structure lowest floor must be at or above the flood protection elevation (646.0).
    - Fill one foot or more above the regional flood elevation (645.0) must extend fifteen feet beyond the limits of the structure.
    - Basements or crawlway floors may be placed at the regional flood elevation (644.0) if it is floodproofed to the flood protection elevation (646.0). No basement or crawlway floor is allowed below the regional flood elevation (644.0).
    - Contiguous dryland access shall be provided unless the City has written assurance from emergency services that rescue and relief can be provided by wheeled vehicles OR the City has a DNR approved evacuation.
    - Fully enclosed areas below the lowest floor that are used solely for parking of vehicles shall be designed to flood including automatically equalize hydrostatic flood forces by allowing the entry and exit of floodwaters.

The City of Lacrosse Floodplain Task Force *Comprehensive Plan for Addressing Floodplain Related Issues*, dated July 2008<sup>4</sup>, provides an outline of the City's proactive stance toward floodplain management. The *Comprehensive Plan* shows a proposed Levee through the Riverside North Development, labeled as Reach 1 (see **Figure 2**, below). The *Comprehensive Plan* indicates that the desired Levee top elevation is three feet above the BFE or 647.0<sup>5</sup>.



CITY OF LA CROSSE DIKE and LEVEE SYSTEM

Figure 2: Excerpt from Comprehensive Plan

#### WISDNR FLOODPLAIN REQUIREMENTS

WisDNR Code NR 116<sup>6</sup> generally follows City Code §115 (or vice versa) with the exception that WisDNR code does not discuss fully enclosed areas below the lowest floor that are used solely for parking of vehicles (see above).

#### FEMA FLOODPLAIN REQUIRMENTS

FEMA Code 44 CFR 60.3<sup>7</sup> generally follows City Code §115 and Wisconsin DNR Code NR 116 (or vice versa).

<sup>&</sup>lt;sup>4</sup> <u>https://www.cityoflacrosse.org/filestorage/593/844/1391/6929/Task Force Comprehensive Plan 7 10 2008.pdf</u> accessed on 11/2/18.

<sup>&</sup>lt;sup>5</sup> From Levee Design and Construction Standards on Page 16 of the Comprehensive Plan.

<sup>&</sup>lt;sup>6</sup> http://docs.legis.wisconsin.gov/code/admin\_code/nr/100/116.pdf accessed 11/2/18.

<sup>&</sup>lt;sup>7</sup> https://www.law.cornell.edu/cfr/text/44/60.3 accessed 11/2/18.

# **APPENDIX 6.5**

## **CITY OF LA CROSSE STORMWATER REQUIREMENTS**

The City of La Crosse regulates stormwater management by way of City Code §115-555 which adopts La Crosse County Code §29. A brief summary of County Code §29 is as follows:

- §29.06(3) exempts sites that drain directly to the Black River, La Crosse River or Mississippi River from the requirements of §29.09(1)(b)(1)(a),(b) and (c) but does require pre- vs. post-construction detention for the 10-year 24-hour storm event and safe passage of the 100-year 24-hour storm event.
- §29.06(5) exempts redevelopment sites and, separately, sites where contaminants of concern as defined in NR 720.03(2) are present from infiltration requirements.
- §29.09(1) requires (unless otherwise exempted, see above) pre- vs. post-construction detention for the 1-, 2-, 5-, 10- and 25-year 24-hour storm events and safe passage of the 100-year 24-hour storm event.
- §29.09(2) requires 60% TSS reduction compared to no controls for runoff from impervious areas other than disconnected rooftops as a redevelopment area.
- §29.09(3) requires (unless otherwise exempted, see above) infiltration of between 60% and 90% of the predevelopment infiltration volume, depending upon the level of imperviousness. However, no more than 2% of the site is required to be used as effective infiltration area.
- §29.09(5) requires protective areas from certain susceptible areas.
- §29.09(6) requires fueling and maintenance areas to install and maintain oil/water separators.

### WISDNR STORMWATER REQUIREMENTS

WisDNR Code NR 151<sup>8</sup> generally follows County Code §29 (or vice versa) with the exception that WisDNR code requires only 40% TSS removal and exempts the site from all pre- vs. post-construction detention requirements as both redevelopment site and a site that drains directly into a river segment draining more than 500 square miles<sup>9</sup>.

## ATTACHMENTS

FEMA FIRM 55063C0234D and 55063C0253D FEMA FIS 55063CV002B, Figures 04P and 64P.

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<sup>&</sup>lt;sup>8</sup> <u>https://docs.legis.wisconsin.gov/code/admin\_code/nr/100/151.pdf</u> accessed 11/2/18.

<sup>&</sup>lt;sup>9</sup> According to FEMA, the Black and Mississippi Rivers have watersheds of 2,200 acres and 62,080 acres, respectively, at this location.

# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15N. The horizontal datum was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202 1315 East-West Highway Silver Spring, Maryland 20910-3282 (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713- 3242, or visit its website at <u>http://www.ngs.noaa.gov</u>.

Base map information shown on this FIRM was provided by La Crosse County. The aerial photography was acquired in the spring of 2007 to create 1":200' scale digital orthophotos with 12-inch ground resolution and resampled to a 24-inch ground resolution.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

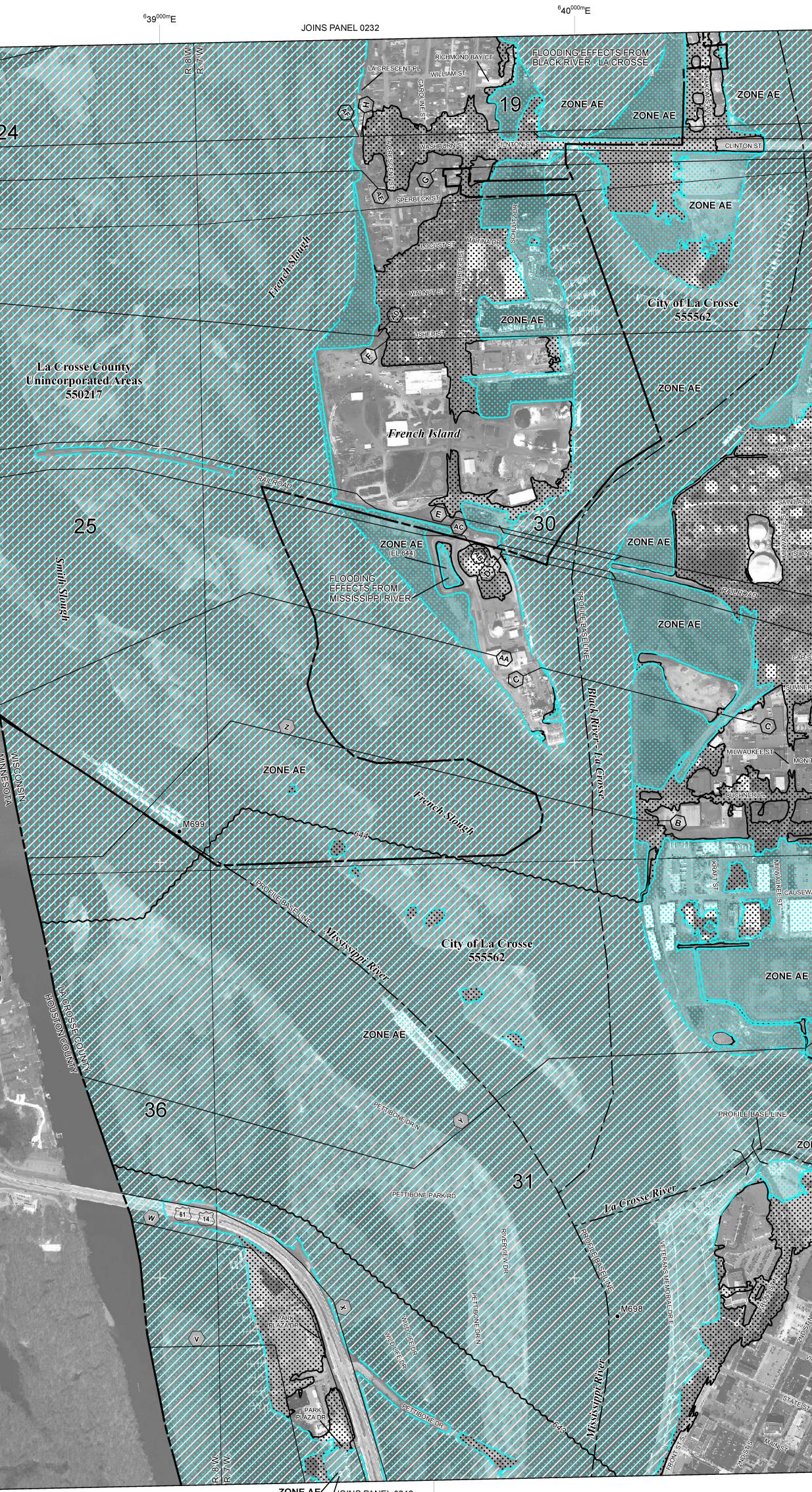
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<sup>48</sup>55<sup>000m</sup>N-<sup>48</sup>54<sup>000m</sup>N-FLOOD HAZARD INFORMATION S NOT SHOWN ON THIS MAP IN AREAS OUTSIDE OF LA CROSSE COUNTY <sup>48</sup>53<sup>000m</sup>N-

91° 16' 52.5"

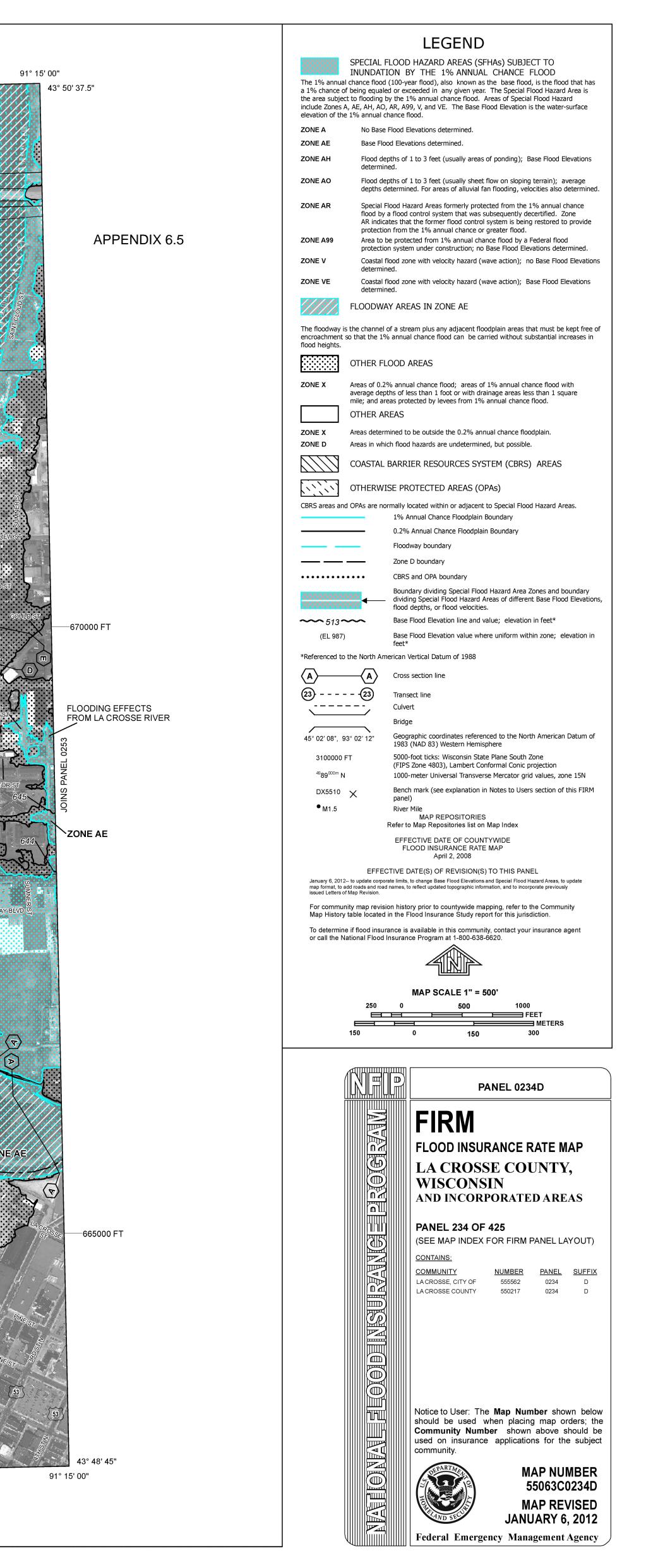
43° 50' 37.5"

43° 48' 45" 91° 16' 52.5"



ZONE AE JOINS PANEL 0242 (EL 604) 1635000 FT FLOODING EFFECTS FROM MISSISSIPPI RIVER

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 16 NORTH, RANGE 7 WEST AND TOWNSHIP 16 NORTH, RANGE 8 WEST.



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