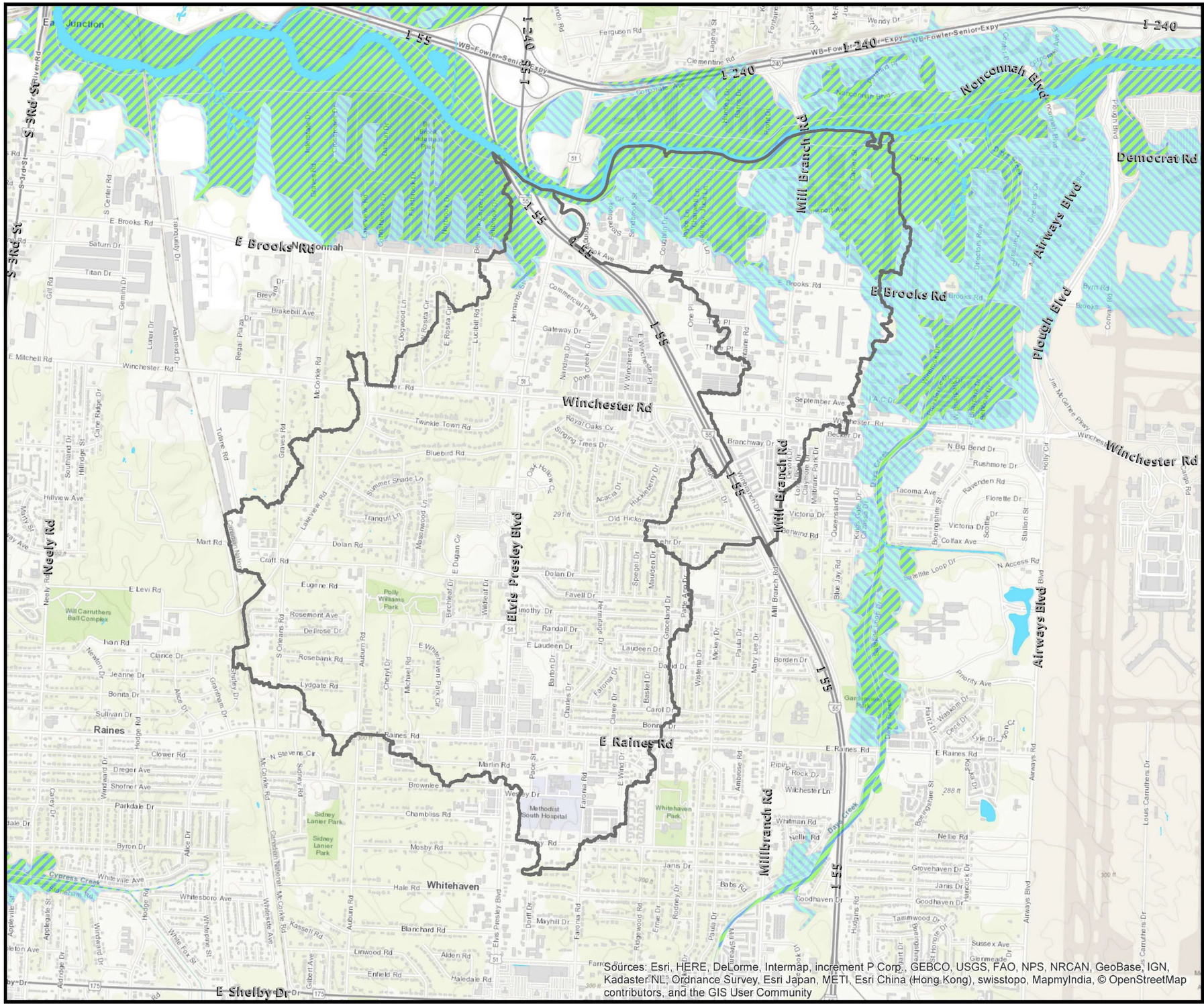
Section 2 Review of Previous Studies and Available Data

Drainage-related studies have been conducted in the vicinity of the Whitehaven basin in the past. Available studies were reviewed in preparation for this study, and pertinent information was incorporated as appropriate.

2.1 FEMA Studies

The Federal Emergency Management Agency (FEMA) has performed a detailed flood study of Nonconnah Creek. However, none of the tributaries of Nonconnah Creek within the Whitehaven basin have been studied. The Nonconnah Creek Flood Insurance Study provides information regarding the boundary conditions at the discharge points of the Whitehaven basin, and establishes relevant tailwater elevations to be used within the InfoSWMM model.

Figure 7 illustrates the FEMA flood zones of Nonconnah Creek, extending into the Whitehaven basin. Figure 8 and Figure 9 depict the Nonconnah Creek FEMA Flood Profile in the area adjacent to the Whitehaven basin.



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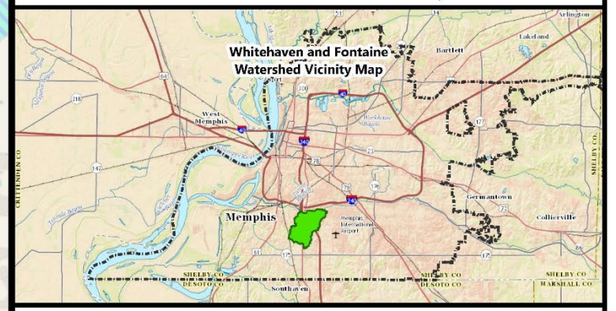

Legend

Study Basin

Water Bodies

FEMA Flood Zones

Zone A

Zone X

0 1,000 2,000 4,000
Feet

0 0.25 0.5 1
Miles

N

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FEMA Flood Zones

Figure 7. FEMA Flood Zones

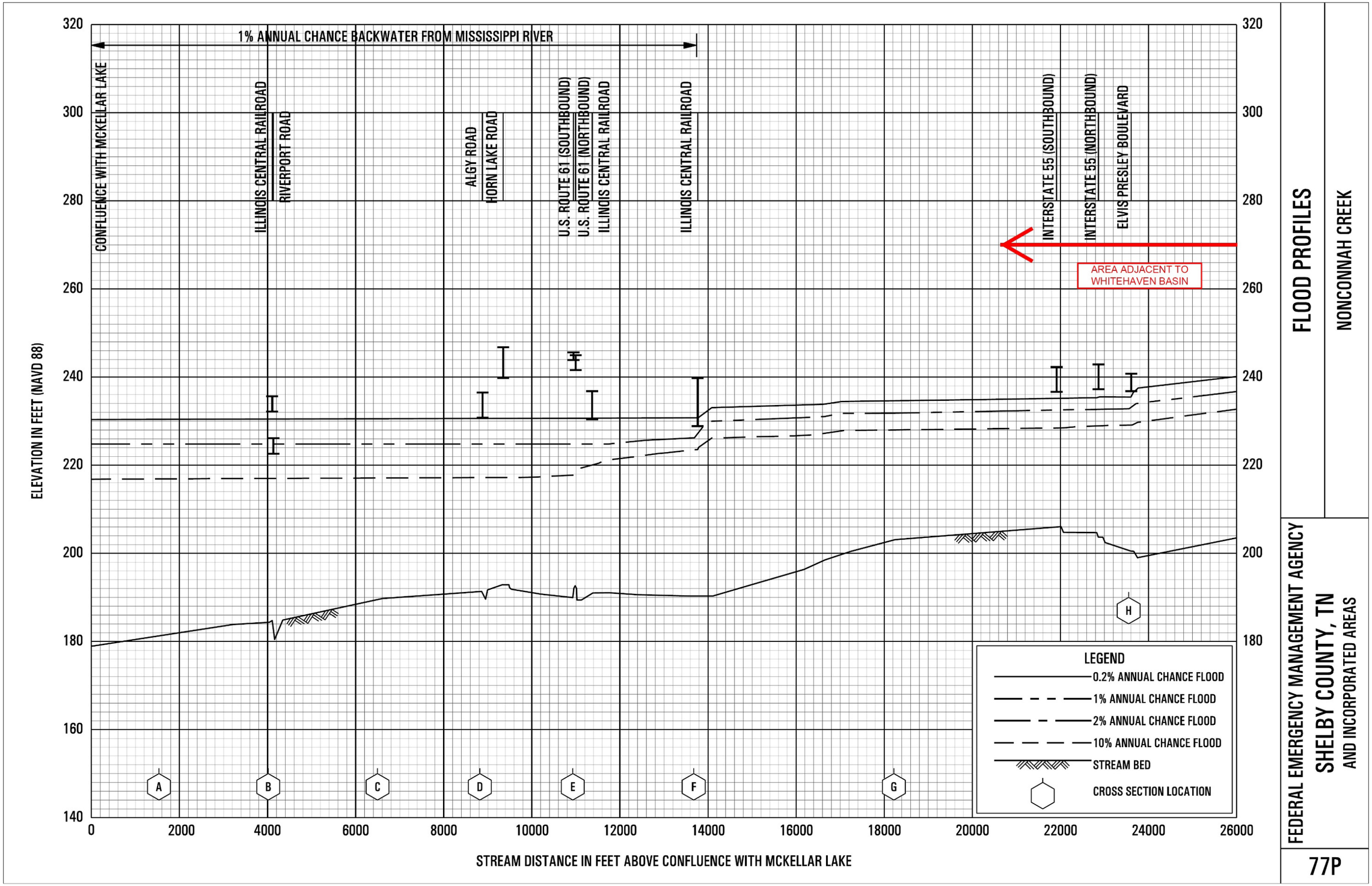

Figure 8. Nonconnah Creek Flood Profiles, 77P

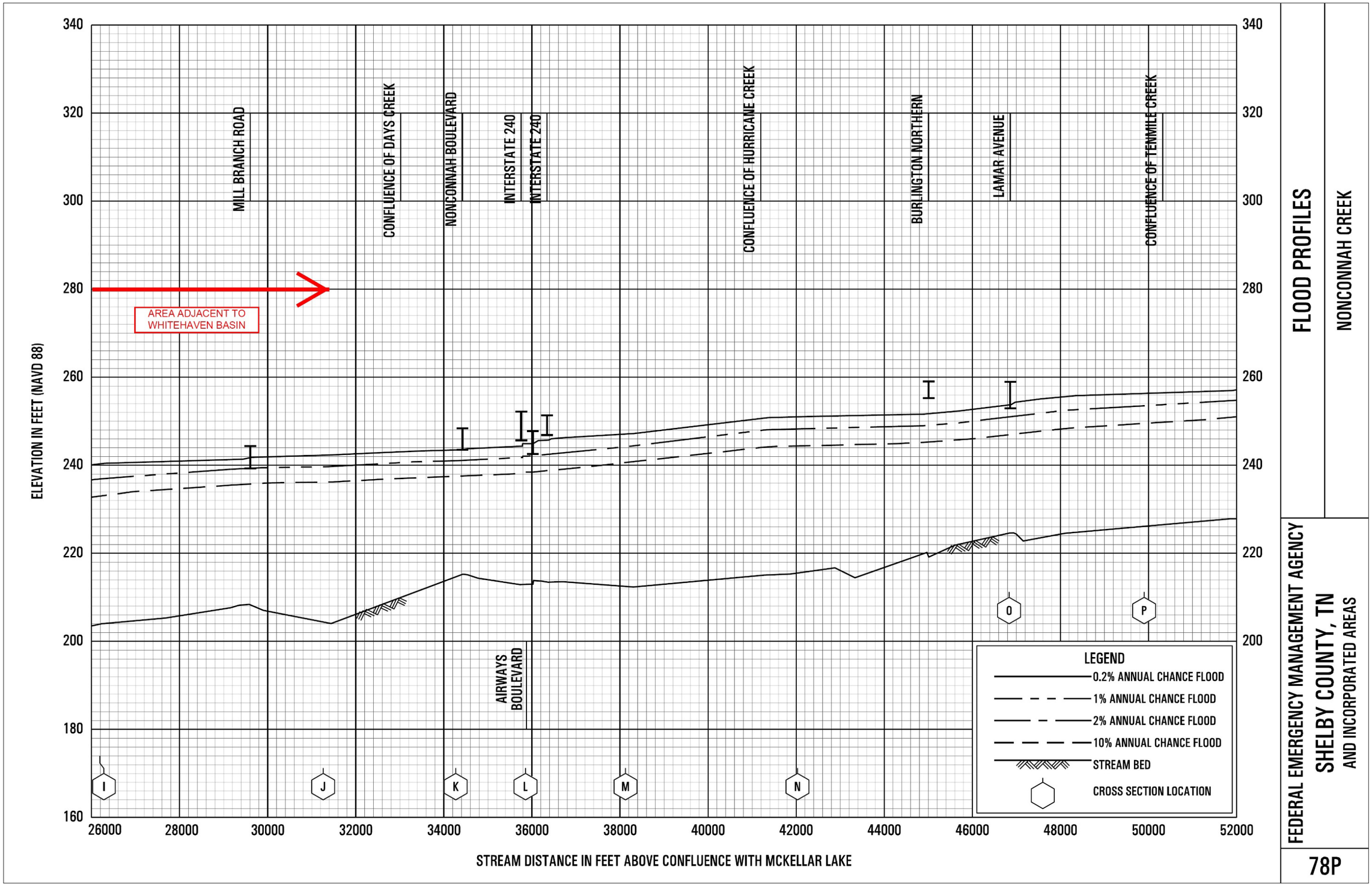

Figure 9. Nonconnah Creek Flood Profiles, 78P

2.2 Millbranch & Fontaine Drainage Analysis (Fisher Arnold)

In September 2010, Fisher Arnold conducted a study in the Fontaine of the area from Millbranch Road north across Brooks and into the flood plain of Nonconnah Creek. FA concluded that it would cost over $6,000,000 in culvert and channel improvements from Winchester to north of Brooks to prevent flooding of the two properties on Millbranch (3343 and 3368). SSR's modeling affirms FA's results for this area of the Fontaine Basin, as discussed in the Recommended Improvements section of this report.

2.3 Complaints Heat Map

As a part of the 2012 assessment of the City's Storm Water Program, City staff provided work order records from 2005 through 2011, which included over 40,000 customer calls and responses by City's Drain Maintenance Division crews. These records were used to create a GIS-based point density "heat map" of work orders to identify areas that received frequent customer complaints and/or required routine maintenance to preserve the function of the storm water drainage system. This heat map was used to determine areas of focus where close attention to ground surface and storm water system characteristics was needed. The heat map for the Whitehaven and Fontaine watersheds is shown in Figure 10. The highest intensity of complaints/work orders is located around the center of the Whitehaven watershed, centered near the intersection of Elvis Presley and Craft Road.

In addition to the heat map data, updated flood complaint information was provided by City staff through 4/28/22, and complaints were provided by area residents during the initial public meetings. These areas of concern were evaluated during the modeling of the basin to evaluate potential improvements to the drainage system.

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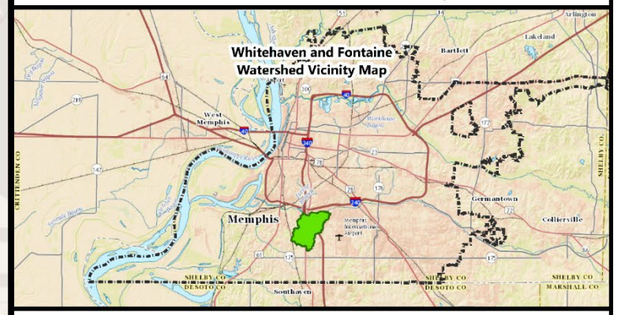

Legend

Complaints Value

- 82 - 231
- 231 - 379
- 379 - 528
- 528 - 676
- 676 - 824
- 824 - 973
- 973 - 1,121
- 1,121 - 1,270

0 950 1,900 3,800
Feet

0 0.25 0.5 1
Miles

N

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Complaints Heatmap

Figure 10. Complaints Heatmap