

2003 Summary of Annual Precipitation for the SEMCOG Recording Rain Gauge Network

Annual precipitation totals across the SEMCOG network during 2003 ranged from a high of 38.48 inches at A-05 in east-central Washtenaw County to a low of 24.17 inches at W-42 in northeastern Wayne County (Figure 1 and Tables 1 and 3). Only seven additional gauges recorded more than 34 inches, namely: two in southwest Livingston County (36.19 inches at L-10 and 34.15 inches at L-05); two in central Washtenaw County (35.40 inches at A-03 and 34.74 inches at A-01); two in southeast Oakland County (35.00 inches at O-02 and 34.52 inches at O-18); two in southeastern Wayne County (31.91 inches at W-45 and 30.91 inches at W-35, respectively); and one in southern Macomb County (34.41 inches at M-03). The regions of lowest precipitation (i.e., less than 28 inches) included: east-central (two gauges) and southeastern (one gauge) Macomb County; west-central to northeast central (four gauges) Oakland County; and northeast and east-central (six gauges) Wayne County. It should be noted that four of the six gauges in Wayne County were roof-exposure locations.

Annual precipitation departures from long-term median amounts [(for stations in the network with more than 15 years of record through 2000) (Figure 2) were mostly below the median (47 of 68 gauges, or 69 percent). Values ranged from an above-median 8.00 inches at A-05 in east-central Washtenaw County to a below-median value of 9.14 inches at W-42 in northeast Wayne County. Only three additional stations were more than four inches below the median. In general, the region extending south of a line from northwestern Livingston County to southeastern Wayne County, the southeastern area of Oakland County, and northeastern Macomb County were all above the median. The remainder of the five-county area was below the median, with isolated stations slightly above the median (about one half-inch).

Figure 3 shows the percentile ranking of each annual station total compared to historical data through 2000, based on a gamma probability distribution function. The map values represent the decimal fraction of years that total annual precipitation at that station would have been less than or equal to the 2003 amount. For example, the 0.8 isoline encloses all stations in the area where the annual amount would be less than or equal to that received in 2003 during eight years in 10. The complement of that value, .2, means that during only two years in 10 should a station be expected to record more rain than was recorded in 2003. Care must be used in interpreting the values, however, because of the relatively short periods-of-record, as short as 16 years for some stations. The widely varied nature of the precipitation amounts and departures from the median amount is reflected in the widely disparate calculated probabilities. As expected, only those areas with positive departures from the median had probabilities greater than 0.50. The highest probability value was .95 at A-05, with the others being in the range of 0.60 to 0.83. The extreme low values were at stations in northeastern and east-central Wayne County, southeastern Macomb County, and southwestern Oakland County, where calculated values were between 0.03 and 0.15. Two additional stations, one in northeastern Wayne County and one in northeastern Oakland County, showed a probability of 0.18.

Comparatively, the SEMCOG network was much wetter in 2003 than in 2002 (Figure 4). The greatest changes were recorded in southwestern Livingston County and northwest-to-southeast Oakland County, where totals were more than eight inches above the 2002 values. The extreme changes were +11.07 inches at A-02 and +10.25 inches at L-05. Totals for four nearby stations in southern Livingston County and four in northwest-to-southeast-central Oakland County were more than eight inches greater than in 2002. Two gauges in each of these counties increased nine inches or more, with the two in Livingston County nearing 10 inches (+9.95 inches at L-11 and +9.93 inches at L-10). An area centered along a southwest-to-northeast line from southwestern Livingston County to central Oakland County was more

than six inches wetter than in 2002. Only six stations were drier than in 2002; -0.90 inches at M-03 in southeastern Macomb County was the greatest negative change from 2002 to 2003.

In summary, 2003 was a highly varied year; some areas were very wet and others very dry. For many residents of the five-county area, the change was even more noticeable following the relatively dry year of 2002.