



July 29, 2025

Subject: Updated monthly and daily Root River flow rates for 2024 Diversion Report

Dear Shaili-

This letter is follow-up from your July 11, 2025, email noting that Root River monthly flow data reported by the city as part of the *Diversion Approval Report for 2024* did not match values reported on the USGS website for the gage located at 60th Street and Oakwood Road (gage #04087234). Within Appendix G (*Root River Data Collection Summary 2024 Annual Reporting*), Table 2-1 (pages 1 and 2) summarized monthly average flow rates for the Root River and the return flow.

The USGS is migrating flow gage sites to a new reporting platform where monthly statistics are not yet available; consequently, the Root River monthly flow reported in Appendix G was calculated using 15-minute flow data. Through investigating the discrepancies in monthly flow statistics, the 15-minute flow data that was downloaded at the time included erroneous data starting in March 2024 that resulted in under-calculating the actual flow rates. Two updates to Appendix G are required to correct the 15-minute flow data:

Table 2-1

Removing the erroneous 15-minute data and comparing the monthly flow statistics from the historic USGS website¹ where monthly flow statistics are reported resulted in consistent monthly statistics. A corrected Table 2-1 is included below using USGS-calculated monthly flow statistics from their historic gage website. This table should replace Table 2-1 in Appendix G and no modifications to the text are needed. For months where duplicative and erroneous data were present, the corrected monthly flow statistics results in return flow having less of a portion of the total river flow than previously reported.

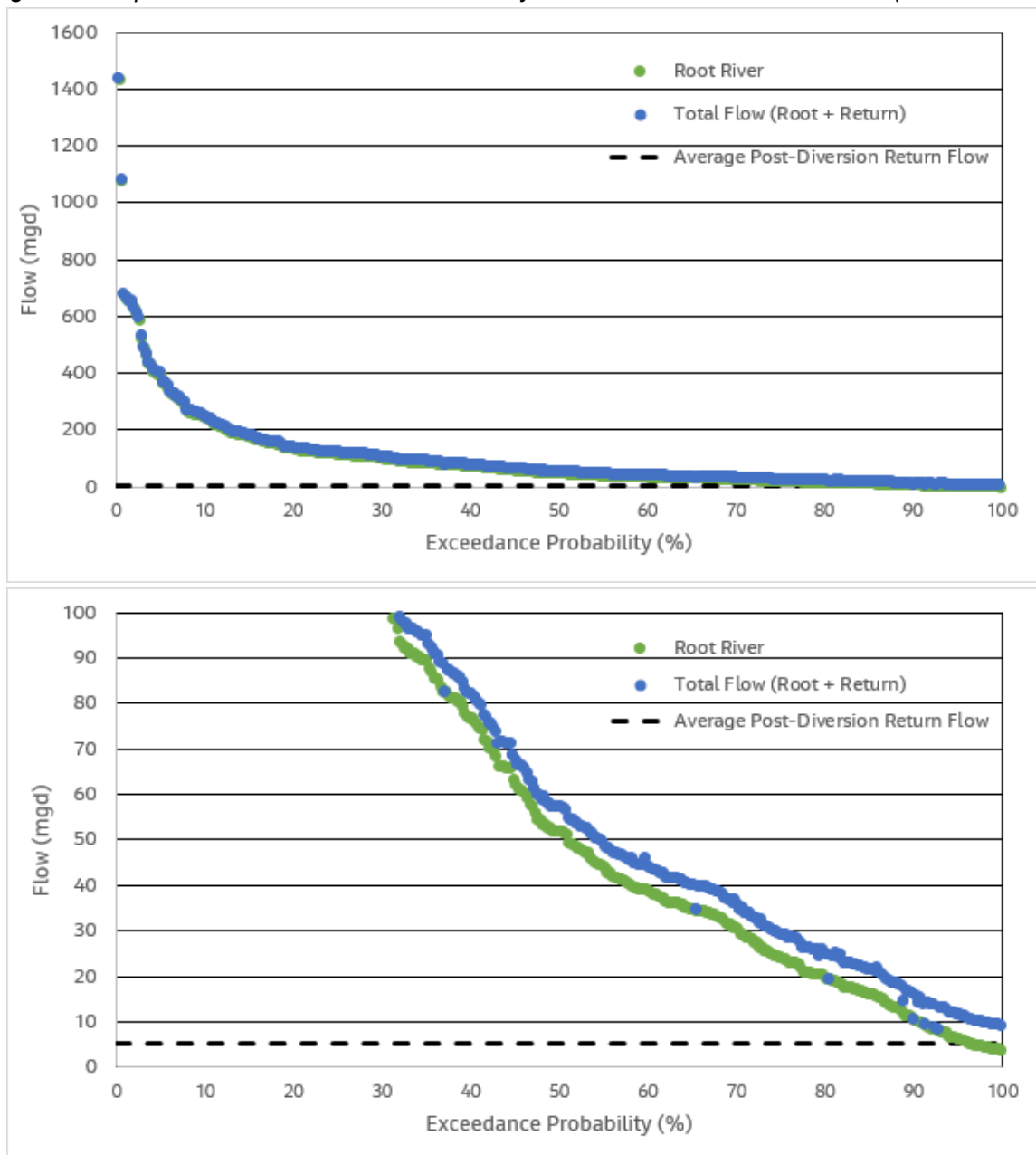
Table 2-1: Updated Reporting Period Root River and Return Flow

Month	Average Monthly Flow (mgd)			
	Root River	Return	Total Flow (Root + Return)	Return % of Total Flow
Oct-23	43.83	4.51	48.34	9.3%
Nov-23	31.42	5.21	36.63	14.2%
Dec-23	63.87	5.08	68.95	7.4%
Jan-24	152.29	5.26	157.55	3.3%
Feb-24	118.03	5.31	123.34	4.3%
Mar-24	200.71	5.31	206.02	2.6%
Apr-24	241.24	5.31	246.55	2.2%
May-24	176.34	5.31	181.65	2.9%
Jun-24	78.41	5.31	83.72	6.3%
Jul-24	70.46	5.35	75.81	7.1%
Aug-24	46.41	5.31	51.72	10.3%
Sep-24	11.70	5.31	17.01	31.2%

Daily Flow Duration Curve

The 15-minute flow data had also been used to calculate the flow duration curves for daily river flow. Similarly to the monthly flow data, USGS-calculated daily flow data is used instead and results in changes to the flow duration curve graphics Figure 2-1 and surrounding text. A corrected Figure 2-1 and summary paragraph is included below and should replace that included in Appendix G on page 3. Underlined text has been updated.

Figure 2-1. Updated Flow Duration Curve of Daily Root River Flow and Total Flow (Root + Return)





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The daily return flow rates are well within the return flow rates projected in the Diversion Approval. The Root River flow exceeded the average daily return flow rate (5.22 mgd) 96.7% of the time. In other words, over the 366 days of the reporting period, the daily return flow exceeded Root River flow 12 days. With the consistent daily return flow, the flow duration curve with return flow also shifts upwards uniformly and the average daily return flow impacts the Root River hydrology uniformly.

If you have any further questions, please do not hesitate to contact me. Thank you for noticing the discrepancy in the reported data and for the opportunity to correct it.

Sincerely,

Kelly Zylstra, PE
Waukesha Water Utility

CC: Adam Freihoefer/WDNR
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