

2025 Aquatic Effects Monitoring Program Hydrometric Monitoring Report

**Mary River Project
Baffinland Iron Mines Corporation**

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1. INTRODUCTION

Stream flow is monitored at the Mary River Project (the Project) as part of the Hydrometric Monitoring Program, which is a component study of the Project's Aquatic Effects Monitoring Plan (AEMP, Baffinland, 2025). Hydrometric data were collected at seven stations during 2025. Station identifiers, names, period of records, drainage areas, and station coordinates are summarized in Table 1. The locations of the monitoring stations are shown on Figure 1 (attached).

Table 1 2025 Hydrometric Monitoring Program Stations

Station ID	Station Name	Period of Record	Drainage Area (km ²)	Coordinates (UTM)	
				Easting	Northing
H01	Phillips Creek Tributary	2006-2008, 2011-2025	250	532831	7946247
H02	Tom River near outlet to Mary Lake	2006-2008, 2010-2025	210	555712	7915514
H04	Camp Lake Tributary (CLT-2)	2006-2008, 2010-2025	8.3	557639	7915579
H05	Camp Lake Tributary (CLT-1)	2006-2008, 2010-2025	5.3	558906	7915079
H06	Mary River	2006-2008, 2010-2025	240	563922	7912984
H07	Mary River Tributary F	2006-2008, 2010, 2011, 2017-2025	14.7	564451	7913194
H11	Sheardown Lake Tributary (SDLT-1)	2011-2025	5.9 ¹	560503	7913545

Note:

1. The natural catchment area at H11 is 3.6 km². The flow from upstream of the KM105 Sedimentation Pond is directed through a channel that eventually flows to H11, which has increased the catchment to 5.9 km²

2. HYDROMETRIC MONITORING PROGRAM

The Hydrometric Monitoring Program consists of water level or stage being measured at each station using a pressure transducer and data logger (Seametrics PT2X), which record water level and temperature at 15-minute intervals. The pressure transducers are installed in a stilling well at each station. The water level is measured manually during each site visit relative to at least two benchmarks installed in bedrock. The benchmarks have been maintained throughout the life of each station and differential levelling surveys are conducted during each site visit to relate water level to a local datum. The dataloggers are downloaded and checked for proper operation during each site visit. The data logger water level data are related to the local datum at the end of the season using the survey data.

Where flows permit safe access to a watercourse's channel, a Hach FH950 wading current meter is used to measure stream velocity. Discharge is estimated from the current meter velocity using the area-velocity technique (mid-section method) per the Water Survey of Canada (WSC) guidelines (WSC, 1999). Whenever possible, the stream is divided into a minimum of 20 sections to measure depth and velocity with the objective of having less than 5% of the flow in each section. At least two cross sections of depth and velocity are measured during each site visit. Velocity is measured at 60% of the stream depths where the stream depth is less than or equal to 0.75 m at the time of measurement.

Where higher flows prevent the use of a wading current meter, dilution gauging using Rhodamine WT or an Acoustic Doppler Current Profiler (ADCP) is utilized to estimate discharge. The fluorescence of the Rhodamine WT is measured in-situ and recorded using a handheld fluorometer (YSI with EXO Rhodamine Sensor). Three-point calibration of the fluorometer is conducted in the field using a known concentration of Rhodamine WT solution and stream water. For estimating discharge, Rhodamine WT is added upstream of the station as an instantaneous release of a known volume. The fluorescence is recorded at a sufficient distance downstream to allow for complete mixing of the tracer. At least two measurements are typically performed during each site visit, and the stream discharge is estimated using the integration method.

A summary of the data collected in 2025 is provided in the following section.

3. STAGE-DISCHARGE DATA

3.1 Overview

Reconnaissance of the hydrometric stations was initiated in June 2025 to monitor the onset and progression of snow melt and associated freshet flow. Each of the stations were installed as early as possible in June, when the stream channels were ice-free. As in previous seasons, flow monitoring is not possible with ice in the channel as the melting process continuously modifies the stage discharge relationship. The onset of freshet occurred before some of the stations were able to be installed, due to the presence of ice. Additional site visits were conducted at all stations in July, August, and September. The stations were decommissioned for winter in anticipation of or during the onset of freeze-up in September.

The stage-discharge data obtained in 2025 were compared to the existing rating curves, which were last evaluated in the 2024 Hydrometric Monitoring Program Summary (North Water, 2025). The WSC Hydrometric Manual (EC, 2012) suggests that rating curves should not be extrapolated beyond twice the highest measured discharge. Where the observed water level is greater than twice the highest measured discharge, it is understood that flow data estimated from extrapolated rating curves are less reliable. Rating curves are extrapolated to the maximum recorded stage to capture the range of observed water level in a given year, relative to measured discharge. Rating curves for each station, inclusive of the data collected in 2025, are presented in Figures 2 to 8 (attached). A discussion of the 2025 data collected at each station and an interpretation of the fit of the rating curves is provided in the following sections:

3.2 H01 (Phillip's Creek Tributary)

The H01 hydrometric station was installed on June 22. A stage-discharge measurement was recorded at the time of installation using dilution gauging and provides good validation of the middle portion of the rating curve. Subsequent stage-discharge measurements were recorded in June using an ADCP and in July and August using dilution gauging. The 2025 measurements are consistent with the existing rating curve presented in Figure 2 (attached). As such, no update to the rating curve was required and the existing curve developed in 2007 was used for the development of the 2025 streamflow record.

3.3 H02 (Tom River)

The H02 hydrometric station was installed on June 20. Stage-discharge measurements were recorded at the time of installation and again in June using dilution gauging, in July using dilution gauging and a wading current meter, and in August using a wading current meter. The measurements are generally consistent with the existing 2012 rating curve presented in Figure 3 (attached). Two of the stage-discharge measurements deviate slightly from the curve (one below and one above the rating curve), however are within the range of measurement uncertainty. The remaining stage-discharge measurements are in good agreement with and validate the 2012 rating curve, which was used for the development of the 2025 flow record.

3.4 H04 (Camp Lake Tributary CLT-2)

The H04 hydrometric station was installed on June 20. Stage-discharge measurements were recorded in June, July, and August using a wading current meter and the area-velocity technique. All of the measurements are consistent with the rating curve that was updated in 2013 (Figure 4 (attached)). The high flow measured in June further validates the upper portion of the rating curve. The 2013 rating curve was used for the development of the 2025 flow record.

3.5 H05 (Camp Lake Tributary CLT-1)

The H05 hydrometric station was installed on June 19. Stage-discharge measurements were recorded in June, July, and August using a wading current meter and the area-velocity technique. The measurements are generally consistent with the 2007 rating relationship (Figure 5 (attached)). Two of the stage-discharge measurements fall slightly below the rating curve but are consistent with the variability and range of previous measurements. The 2007 rating curve was used for the development of the 2025 flow record.

3.6 H06 (Mary River)

The H06 hydrometric station was installed on June 19. Stage-discharge measurements were recorded in June, July, and August using dilution gauging. All of the measurements are consistent with and further validate the rating curve that was updated in 2007 (Figure 6 (attached)). The 2007 rating curve was used for the development of the 2025 flow record.

The H06 rating curve is extrapolated to the maximum recorded stage in 2025 to capture the range of observed water level at the hydrometric station. The observed water level in 2025 corresponds to a discharge that is greater than twice the highest discharge measured at H06. As outlined in Section 3.1, it is understood that flow data estimated from rating curves extrapolated beyond twice the highest measured discharge are less reliable. Future measurements can be aimed at validating the high flow portion of the rating curve, however, this is difficult to do as these types of extreme events are rare, can be difficult to anticipate, and produce high flows over a period of only a few hours. Fortunately, the portion of the rating curve extrapolated beyond twice the highest measured discharge represents a very small duration of the overall 2025 flow record.

3.7 H07 (Mary River Tributary F)

The H07 hydrometric station was installed on June 19. Stage-discharge measurements were recorded at H07 during June and July using dilution gauging and during August using a wading current meter. All of the stage-discharge measurements were in good agreement with the 2019 rating curve shown on Figure 7 (attached), which was used for the development of the 2025 flow record.

3.8 H11 (Sheardown Lake Tributary SDLT-1)

The H11 hydrometric station was installed on June 20. Stage-discharge measurements were recorded at H11 during June, July, and August. The discharge measurements were consistent with the rating curve updated in 2021 (Figure 8 (attached)). The 2021 rating curve was used for the development of the 2025 flow record.

4. STREAMFLOW HYDROGRAPHS

Streamflow records were developed for each station by applying the water level data to the corresponding rating curves. The discharge hydrographs for the H01, H02, H04, H05, H06, H07, and H11 hydrometric stations are presented in Figures 9 to 15 (attached).

The discharge records from all stations were converted to equivalent unit runoff (discharge per unit area) and are presented for comparison purposes on Figure 16 (attached). The 2025 records of unit runoff generally agree well with each other, exhibiting similar timing and magnitude of runoff events and similar patterns to previous years. The higher unit runoff at H11 relative to other stations with natural catchments corresponds to the added flow from upstream of the KM105 Sedimentation Pond being directed through a channel that eventually flows to H11. The additional area added to the H11 catchment has a higher relative gradient, water management features, and channelling that capture more runoff relative to a natural catchment.

The measured snowmelt freshet was similar to most previous years and the stations were installed as soon as practical following the stream channel and station mounting locations becoming ice free. As in previous seasons, flow monitoring is not possible with ice in the channel as the melting process continuously modifies the stage discharge relationship. The majority of the freshet occurred before some of the stations were able to be installed, particularly those around nearest to the Mine. The majority of the freshet period was captured at the H02, H06, and H07 stations. A strong diurnal melt pattern is evident into mid July at the H02, H06, and H07 stations as they have higher elevation catchments. The data logger at H02 failed in mid-July and was replaced in early-August. No data were recorded at H02 between July 13 and August 2.

Generally similar patterns of unit runoff are evident at all stations in August and into September, which suggests that the precipitation was consistent throughout the region. A high rainfall event and corresponding runoff in mid-July was evident at all the stations. The H06 station produced a much greater unit runoff than other stations during this event, which is consistent with similar rainfall events in previous years. The estimated mean monthly discharge and unit runoff for each station in 2025 are summarized in Table 2.

The H05 station has been used since 2014 to provide a comparison of general flow conditions from year to year. The H05 station has been used for this purpose because it is positioned near the Mine, has a relatively small drainage area, has had a stable rating relationship, and has a record of flow since 2006. A summary of daily average flow at H05 from 2006 to 2025 is shown on Figure 17 (attached) and Table 3 (attached). The total annual runoff recorded in 2025 at the H05 station was less than the average recorded from 2006 to 2025 for concurrent periods of record. The flow measured in 2025 was below normal in June to mid-July due to the majority of freshet occurring before this period. The volume of flow measured during summer (mid-July to mid-August) was slightly above average, likely due to the rainfall event in mid-July. The volume of flow during late August and September was much lower than average.

Table 2 Summary of 2025 Mean Monthly Estimated Discharge and Unit Runoff

Station	Drainage Area (km ²)	Estimated Mean Monthly Discharge (m ³ /s)				Period of Record
		June	July	August	Sept	
H01	250	18.2	8.5	2.7	1.0	June 22 to September 8
H02	210	35.2	15.3	7.0	1.5	June 20 to September 11
H04	8.3	0.27	0.20	0.08	0.05	June 20 to September 10
H05	5.3	0.13	0.17	0.07	0.04	June 19 to September 9
H06	240	22.8	12.2	4.2	0.9	June 19 to September 10
H07	14.7	1.2	0.47	0.20	0.02	June 19 to September 8
H11	5.9	0.159	0.20	0.17	0.14	June 20 to September 9

Station	Drainage Area (km ²)	Estimated Mean Monthly Unit Runoff (l/s/km ²)				Period of Record
		June	July	August	Sept	
H01	250	73	34	11	4	June 22 to September 8
H02	210	168	73	33	7	June 20 to September 11
H04	8.3	32	24	10	6	June 20 to September 10
H05	5.3	24	32	13	8	June 19 to September 9
H06	240	95	51	18	4	June 19 to September 10
H07	14.7	83	32	14	1	June 19 to September 8
H11	5.9	27	34	28	23	June 20 to September 9

5. DISCUSSION

The Project Final Environmental Impact Statement (FEIS) includes three potential effects on surface water quantity in the Milne and Mine Site Local Study Areas (LSA) resulting from (Baffinland, 2012):

- Water withdrawal;
- Water diversion; and
- Runoff or effluent discharge.

Previous analysis of hydrometric data shows that there is considerable variability in monthly flow within each year and there is also considerable variability in the runoff from year to year (SEI, 2018). The natural variability in stream flow is high as it is controlled primarily by spatial and temporal variability in snow cover and snow melt, which are transient in the wind blown tundra environment, and rainfall. Detecting potential changes in water quantity is challenging as the predicted effects from water withdrawals, diversions, and discharges would typically be well within the range of natural variability and in some cases be below quantifiable limits.

Water quantity effects within the Mine Site LSA that were carried through the effects assessment included freshwater withdrawal, freshwater diversion, and runoff or effluent discharge (Baffinland, 2012). Water withdrawal was anticipated to be from Camp Lake, water diversions were expected to occur around the Waste Rock Stockpile, the Open Pit, and the Ore Stockpile Platform, and effluent was expected to be discharged from the Waste Rock Stockpile, the Ore Stockpile, and the Sewage Treatment Plant.

Several of the AEMP monitoring stations are located at or near the outlets of the catchments used in the effects assessment and as such can be used for analysis of the predicted changes in water quantity. The predicted effects to the MR-08, MR-10, MR-12, and MR-19 catchments are presented in the FEIS (Baffinland, 2012). The predicted effects to the SDLT-1 catchment in the FEIS were updated in KP (2021a)

and the effects of the water management measures currently proposed are summarized in KP (2021b). A summary of the predicted effects and corresponding AEMP monitoring station is provided in Table 4.

Table 4 Summary of Predicted Effects on Water Quantity

Catchment	Predicted Effect	AEMP Monitoring Station
MR-08	Reduction in mean monthly discharge between 17% and 32% from flow diversions (Baffinland, 2012)	H04
MR-10	Reduction in mean monthly flow of up to 30% from diversions and increase in mean monthly flow of up to 63% from discharge of effluent (Baffinland, 2012)	H05
MR-12	Reduction in mean monthly flow of up to 8% from diversions and increase in mean monthly flow of up to 16% from discharge of effluent (Baffinland, 2012)	H07
MR-19	Less than or equal to a 1% change in mean monthly discharge (Baffinland, 2012)	H06
SDLT-1	Reduction in flow of up to 26% due to diversions and corresponding increase in flow up to 31% from discharge of effluent (net mean annual discharge reduction of 5%) (KP, 2021b)	H11

5.1 Trend Analysis Methodology

The change in streamflow over time is a result of variability or change in weather and climate. In several regions of northern Canada there is evidence that streamflow is increasing, flood events are becoming more frequent, and the magnitude of spring peak flows is changing (Cunderlik and Ouarda, 2009; Zadeh et al., 2020). The year-to-year variability of streamflow at each of the AEMP monitoring stations was examined and compared to the effects on water quantity predicted in the FEIS.

To detect a linear trend in the streamflow data, a widely used nonparametric Mann-Kendall statistical test was applied (Mann, 1945; Kendall, 1975). The Mann-Kendall test is preferred over standard parametric tests such as regression because it does not assume the data follow a specific distribution, does not require data to be normally distributed, and it is less sensitive to extreme or missing values. The magnitude of the trend was calculated using the Sen's slope, which calculates the slope of the trend as a change in measurement per change in time (Sen, 1968). The significance of the trend is determined by whether or not the Sen's slope is statistically different from zero (Gocic and Trajkovic, 2013). A trend is typically considered statistically significant if $p < 0.05$, meaning the trend is not due to chance and typically implying there is a less than 5% probability that the observed data occurred by random chance. Although not normally accepted as statistically significant, trends with $p < 0.1$ were noted for discussion purposes.

Trend analysis was focussed on July and August average monthly flow as most stations have complete data records for these months. The period of record in June and September is not consistent from year to year due to the timing of station installation and removal, and as such a statistical comparison would not be representative of monthly trends in streamflow.

5.2 MR-08 Catchment (H04)

The predicted effects within the MR-08 catchment are a reduction in flow between 17% and 32% from flow diversions (Baffinland, 2012). The H04 station is located in the MR-08 catchment, downstream of the

potential flow diversions and approximately 750 m from the outlet of the catchment. The monthly average flows from 2006 to 2025 at the H04 station are provided in Table 5.

Table 5 Monthly Average Flows at H04 (m³/s)

	2006	2007	2008	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
June		0.24	1.36	0.38	0.88		0.32	0.30	0.60	1.71	0.17	0.30	0.61	0.32	0.48		0.29	0.27
July	0.77	0.20	0.32	0.07	0.39	0.08	0.51	0.27	0.17	0.33	0.24	0.21	0.12	0.18	0.13	0.41	0.21	0.20
Aug	0.29	0.14	0.26	0.03	0.16	0.07	0.25	0.17	0.23	0.19	0.31	0.11	0.07	0.13	0.05	0.14	0.20	0.08
Sept	0.28	0.09	0.18	0.03	0.28	0.05	0.06	0.06	0.10	0.17	0.13	0.09	0.03	0.07	0.05	0.08	0.15	0.05

Note:

1. June and September have different periods of record each year due to the timing of station installation and removal

The data from H04 emphasize that there is considerable natural variability in the runoff from month-to-month and year-to-year. Patterns of higher and lower annual runoff are evident and are generally seen among all stations within a given year, which suggests that the annual runoff trends occur on a regional scale. There appears to be a period of lower flow at H04 from 2020 to 2022, followed by a period of increasing flows from 2022 to 2025, particularly in July and August. These trends are generally consistent with flows at other stations and likely a result of natural variability in regional precipitation.

The linear trends in the streamflow using the Mann-Kendall statistical test for July and August at H04 are shown on Figure 18.

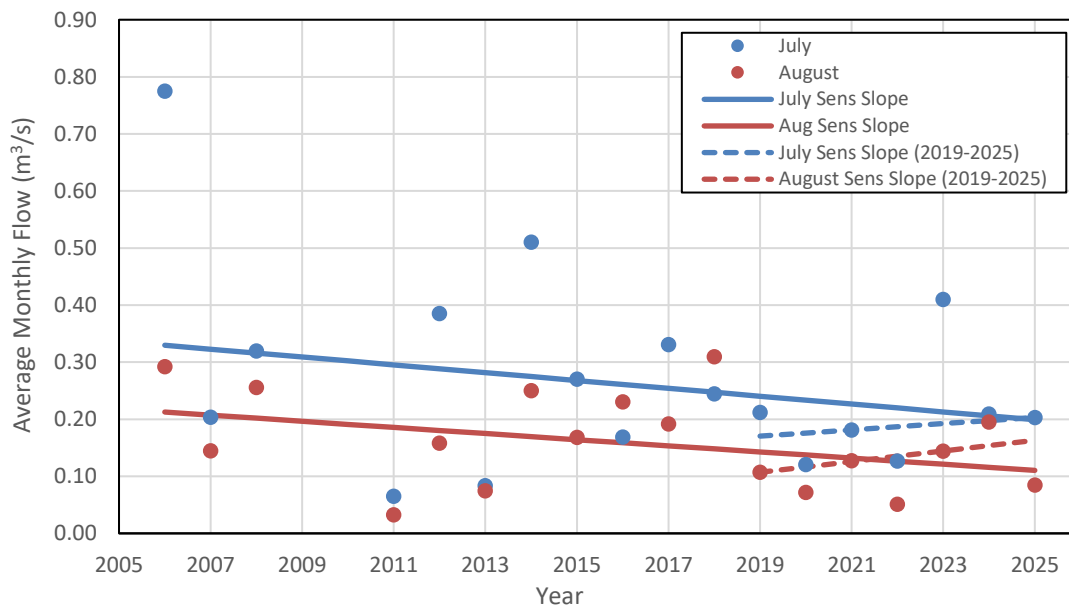


Figure 18 Trends in Monthly Average Flows at H04

There are apparent decreasing trends in monthly average July and August flow at H04 from 2006 to 2025, with the Sen's slope showing a 39% percent decrease for July and a 40% decrease for August. However, due to the variability in flow, neither of the Sen's slopes are significant, meaning they are not statistically different than no slope or no trend ($p > 0.1$). Although not statistically significant, the present change in the Sen's slope from 2006 to 2025 is slightly greater than the predicted reduction in the MR-08 catchment of 17% to 32% relative to other stations. There are general trends toward increasing flow evident from 2019 to 2025 (17% increase in July and 45% increase in August monthly flow). Neither of the trends are

statistically significant, however they suggest that changes in flow from year to year are controlled primarily by natural variability and are not outside the range of predicted effects.

5.3 MR-10 Catchment (H05)

The predicted effects within the MR-10 catchment are a reduction in mean monthly flow of up to 30% from diversions and increase in mean monthly flow of up to 63% from discharge of effluent (Baffinland, 2012). As there are no active discharges occurring to CLT-1, the expected effect would be limited to reduction in mean monthly flow of up to 30% from diversions. The H05 station is located in the MR-10 catchment, approximately 1500 m from the outlet of the catchment. The monthly average flows from 2006 to 2025 at the H05 station are provided in Table 6.

Table 6 Monthly Average Flows at H05 (m³/s)

	2006	2007	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
June		0.30	0.42	0.80	0.30	0.81	0.30	0.29	0.13	0.17	0.63	0.07	0.11	0.24	0.16	0.13	0.68	0.15	0.13
July	0.35	0.10	0.22	0.19	0.05	0.22	0.25	0.42	0.06	0.06	0.13	0.15	0.13	0.08	0.13	0.07	0.32	0.16	0.17
Aug	0.15	0.10	0.22	0.08	0.02	0.10	0.08	0.20	0.08	0.14	0.11	0.21	0.06	0.06	0.12	0.04	0.13	0.19	0.07
Sept	0.16	0.05	0.12	0.15	0.02	0.12	0.06	0.06	0.03	0.03	0.10	0.07	0.04	0.03	0.05	0.03	0.10	0.18	0.04

Note:

1. June and September have different periods of record each year due to the timing of station installation and removal

The data from H05 have natural variability in the runoff from month-to-month and year-to-year consistent with data from the other stations. A period of lower average July monthly flow is evident from 2015 to 2022, which is generally consistent with trends at other stations, is not apparent in other months, and was lowest in 2015 and 2016, prior to notable flow diversion. There is a trend towards increasing flows from 2022 to 2025 in both July and August average monthly flow. These trends are also evident in the H04 data, which has a similarly sized and adjacent catchment, are generally consistent with flows at other stations, and likely a result of natural variability in regional precipitation.

The linear trends in the streamflow using the Mann-Kendall statistical test for July and August at H05 are shown on Figure 19.

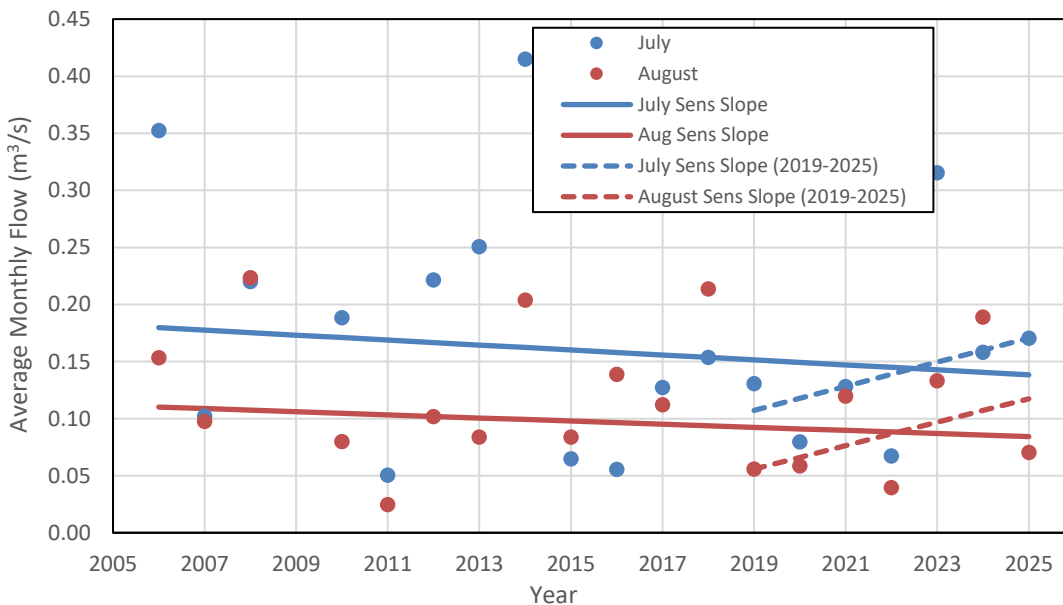


Figure 19 Trends in Monthly Average Flows at H05

There are apparent decreasing trends in monthly average July and August flow at H05 from 2006 to 2025, with the Sen's slope showing a 22% percent decrease for both July and August. However, neither of the Sen's slopes are significant, meaning they are not statistically different than no slope or no trend ($p > 0.1$). Although not statistically significant, the present change in the Sen's slope is less than the predicted reduction in the MR-10 catchment of 30% relative to other stations. Similar to the H04 data, there are general trends toward increasing flow evident from 2019 to 2025 (54% increase in July and 100% increase in August monthly flow). The increase in flow is in-line with predicted effect from discharge, however neither of the trends are statistically significant. Similar trends from 2019 to 2025 are evident at other stations, which suggests that the increase in flow at H05 may be driven primarily by natural variability.

5.4 MR-12 Catchment (H07)

The predicted effects within the MR-12 catchment are a reduction in mean monthly flow of up to 8% from potential diversions and increase in mean monthly flow of up to 16% from discharge of effluent (Baffinland, 2012). The H07 station is located in the MR-12 catchment, downstream of the flow diversions and approximately 200 m from the outlet of the catchment. The monthly average flows from 2006 to 2024 at the H07 station are provided in Table 7.

Table 7 Monthly Average Flows at H07 (m³/s)

	2006	2007	2008	2010	2011	2017	2018	2019	2020	2021	2022	2023	2024	2025
June		1.2	1.3	1.4	1.2	1.9	0.9	1.7	2.3	1.6	0.5	2.3	1.1	1.2
July	1.7	0.6	0.9	1.2	0.2	1.4	0.9	0.6	0.4	0.6	0.7	1.8	0.5	0.5
Aug	0.4	0.2	0.3	0.1	0.1	0.5	0.7	0.3	0.2	0.3	0.3	0.6	0.3	0.2
Sept	0.2	0.1	0.1	0.1	0.0	0.6	0.3	0.1	0.1	0.1	0.1	0.2	0.3	0.02

Note:

1. June and September have different periods of record each year due to the timing of station installation and removal

The data from H07 show natural variability in the runoff from month-to-month and year-to-year consistent with data from the other stations. There are no clear trends and the patterns of higher and lower flow are generally consistent with other stations.

The linear trends in the streamflow using the Mann-Kendall statistical test for July and August at H05 are shown on Figure 20.

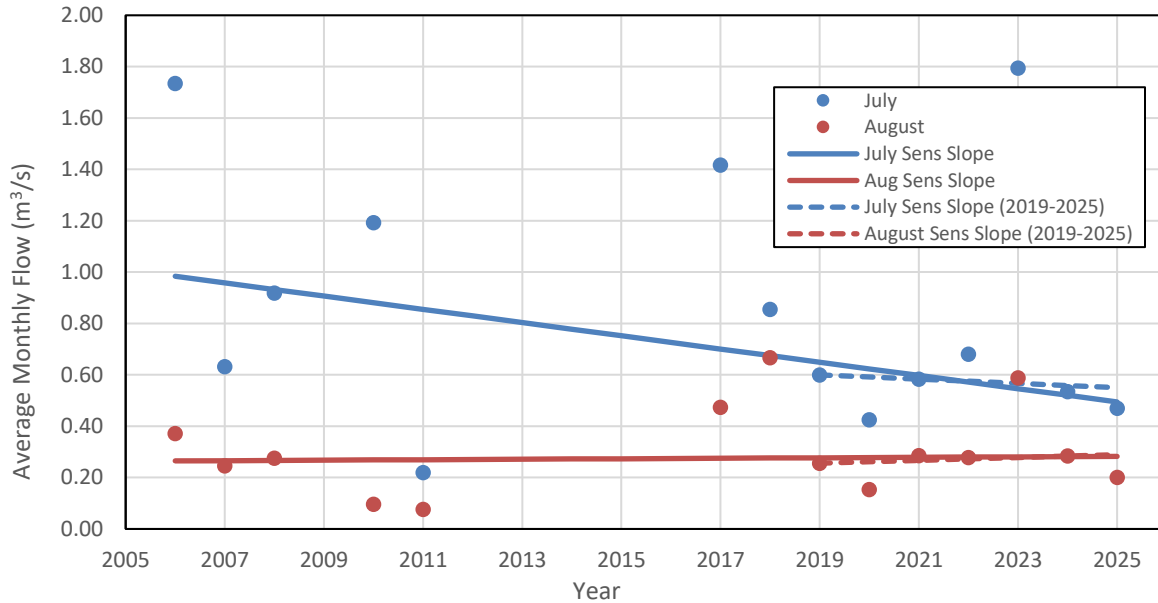


Figure 20 Trends in Monthly Average Flows at H07

There is considerable variability in flow at H07 in July and an apparent decreasing trend from 2006 to 2025. The Sen’s slope shows a 50% percent decrease in July average flow, however the slope is not statistically significant, meaning the trend line is not statistically different than no slope or no trend ($p > 0.1$). There is a slight trend towards increasing flow in August, however the slope is nearly flat and not statistically significant. Although not statistically significant, the percent change in the Sen’s slope for July is greater than the predicted change in flow in the MR-12 catchment, while the lack of change in August is less than predicted. There are trends from 2019 to 2025 towards a decrease in July average flow (8% decrease, which is greater than predicted) and slight increase in August average flow (11% increase, which is slightly higher than predicted), however neither of these trends are statistically significant.

5.5 MR-19 Catchment (H06)

The predicted effects within the MR-19 catchment are less than or equal to a 1% change in mean monthly discharge (Baffinland, 2012). The H06 station is located at the outlet of the MR-19 catchment. The monthly average flows from 2006 to 2024 at the H06 station, which is at the outlet of the MR-19 catchment are provided in Table 8.

Table 8 Monthly Average Flows at H06 (m³/s)

	2006	2007	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
June			23.2	19.9	18.4	32.2	19.0		18.1	36.5	39.1	17.5	23.6	48.5	40.4	12.9	3.9	31.2	22.8
July	26.0	10.9	16.8	18.8	5.3	11.6	21.0	30.1	9.2	13.1	22.3	15.0	9.3	10.6	13.1	18.6	23.2	16.3	12.2
Aug	14.2	5.6	7.4	3.7	2.3	5.5	4.6	9.8	3.8	7.2	4.5	9.1	4.9	3.4	8.2	3.3	5.4	6.2	4.2
Sept	21.2	3.2	6.2	6.1	1.5	7.8	3.1	1.8	1.0	1.3	19.3	2.8	3.2	2.4		3.5	1.6	10.6	0.9

Note:

1. June and September have different periods of record each year due to the timing of station installation and removal

The data from H06 have natural variability in the runoff from month-to-month and year-to-year consistent with data from the other stations. The predicted 1% change in mean monthly discharge would be difficult to detect as it is within the range of uncertainty for flow gauging and would be difficult to separate from

natural variability. The linear trends in the streamflow using the Mann-Kendall statistical test for July and August at H05 are shown on Figure 21.

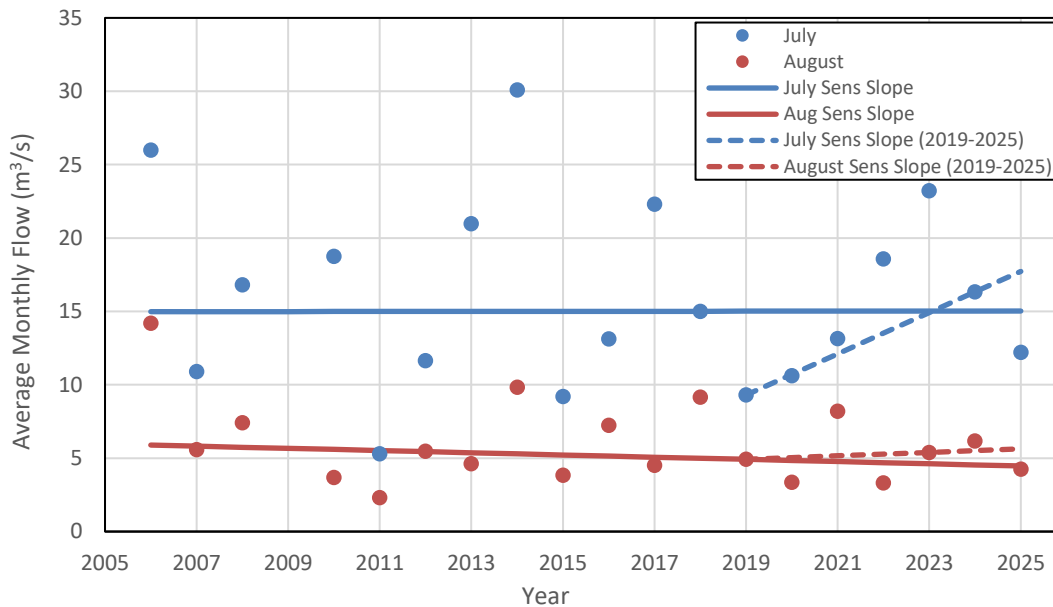


Figure 21 Trends in Monthly Average Flows at H06

There are no apparent trends in monthly average July and August flow at H06 from 2006 to 2025. There are very slight Sen's slopes, which are not significant, meaning they are not statistically different than no slope or no trend ($p > 0.1$). No evident change in flow is in line with the predicted effect of less than or equal to a 1% change in mean monthly flow in the MR-19 catchment. There are general trends toward increasing flow from 2019 to 2025, especially for July, however none of the trends are statistically significant.

5.6 SDLT-1 Catchments (H11)

The predicted effects within the SDLT-1 catchment are a reduction in flow of up to 26% due to diversions and corresponding increase in flow up to 31% from discharge of effluent (net mean annual discharge reduction of 5%) (KP, 2021b). The H11 station is located in the SDLT-1 catchment, downstream of the potential flow diversions and approximately 220 m from the outlet of the catchment. The monthly average flows from 2011 to 2024 at the H11 station, which is near the outlet of the SDLT-1 catchment, are provided in Table 9.

Table 9 Monthly Average Flows at H11 (m³/s)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
June	0.07	0.12	0.13	0.13	0.03	0.03	0.06	0.04	0.07	0.06	0.06	0.19		0.08	0.16
July	0.02	0.07	0.12	0.09	0.04	0.04	0.06	0.11	0.09	0.05	0.12	0.09	0.11	0.11	0.20
Aug	0.02	0.06	0.05	0.09	0.06	0.14	0.09	0.15	0.05	0.04	0.15	0.07	0.17	0.13	0.17
Sept	0.02	0.08	0.06	0.04	0.03	0.04	0.14	0.04	0.03	0.03	0.07	0.07	0.13	0.15	0.14

Note:

1. June and September have different periods of record each year due to the timing of station installation and removal

The data from H11 have similar natural variability in runoff from month-to-month and year-to-year as at other stations prior to 2021. During 2021, the diversion of the Mine Haul Road increased the catchment size of H11. Since then, the average flow has been relatively higher in all months.

The linear trends in the streamflow using the Mann-Kendall statistical test for July and August at H05 are shown on Figure 22.

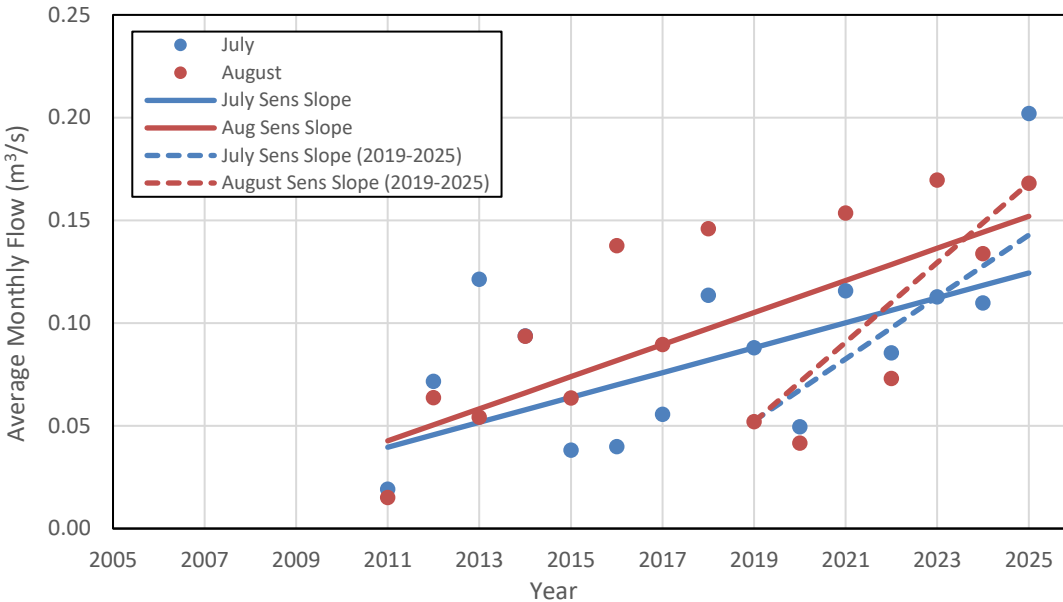


Figure 22 Trends in Monthly Average Flows at H06

There are increasing trends in monthly average July and August flow at H11 from 2006 to 2025. The July Sen's slope is significant at $p = 0.1$ and the August slope is significant at $p = 0.05$. The percent increase for July is 200% and for August is 275%, which is greater than the predicted change for the SDLT-1 catchment. There are also general trends toward increasing flow evident from 2019 to 2025. Neither of the trends are statistically significant, however they confirm that the diversion of the Mine Haul Road has increased the catchment size of H11 and magnitude of flow.

6. SUMMARY AND RECOMMENDATIONS

The 2025 iteration of the Hydrometric Monitoring Program allowed for the continued monitoring of streamflow at hydrometric stations identified in the Project's AEMP (Baffinland, 2025). The data collected confirmed that the rating curves at all stations continue to be applicable.

The predicted effects to the MR-08, MR-10, MR-12, and MR-19 catchments presented in the FEIS were evaluated relative to the available streamflow data. The Mann-Kendall test and calculation of the Sen's slope were used to evaluate trends in the flow data. Trend analysis was focussed on July and August monthly average flow as most stations have complete data records for these months. There are apparent decreasing trends in monthly average July and August flow at several stations from 2006 to 2025. None of the decreasing Sen's slopes are significant, meaning they are not statistically different than no slope or no trend ($p > 0.1$). Although not statistically significant, the percent decrease was typically within the range of predicted effects. There are statistically significant trends toward increasing flow at H11 from 2011 to 2025, due primarily to the diversion of the Mine Haul Road and increased the catchment size of H11. There are also general trends towards increasing flow at all stations from 2019 to 2025, however none of the trends are statistically significant. The trend analysis and consistent patterns among stations suggests that changes in flow from year to year are driven largely by natural variability and there are no evident changes in flow beyond the effects predicted in the FEIS.

Additional site visits are recommended throughout future seasons to verify the operation of data loggers and perform flow measurements. It is recommended that future hydrometric monitoring continue to target low flow and/or high flow periods to maintain and further validate the rating relationships. Peak flows tend to occur in the spring but not always when the channels are ice-free or when conditions permit safe access for gauging. Following the rainfall event observed in July 2025, peak flows that occur in summer and fall months continue to be a good to target. It is recommended continue regular monthly monitoring events to continue to validate the rating curves and water level data.

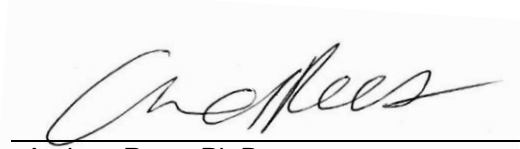
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8. CERTIFICATION

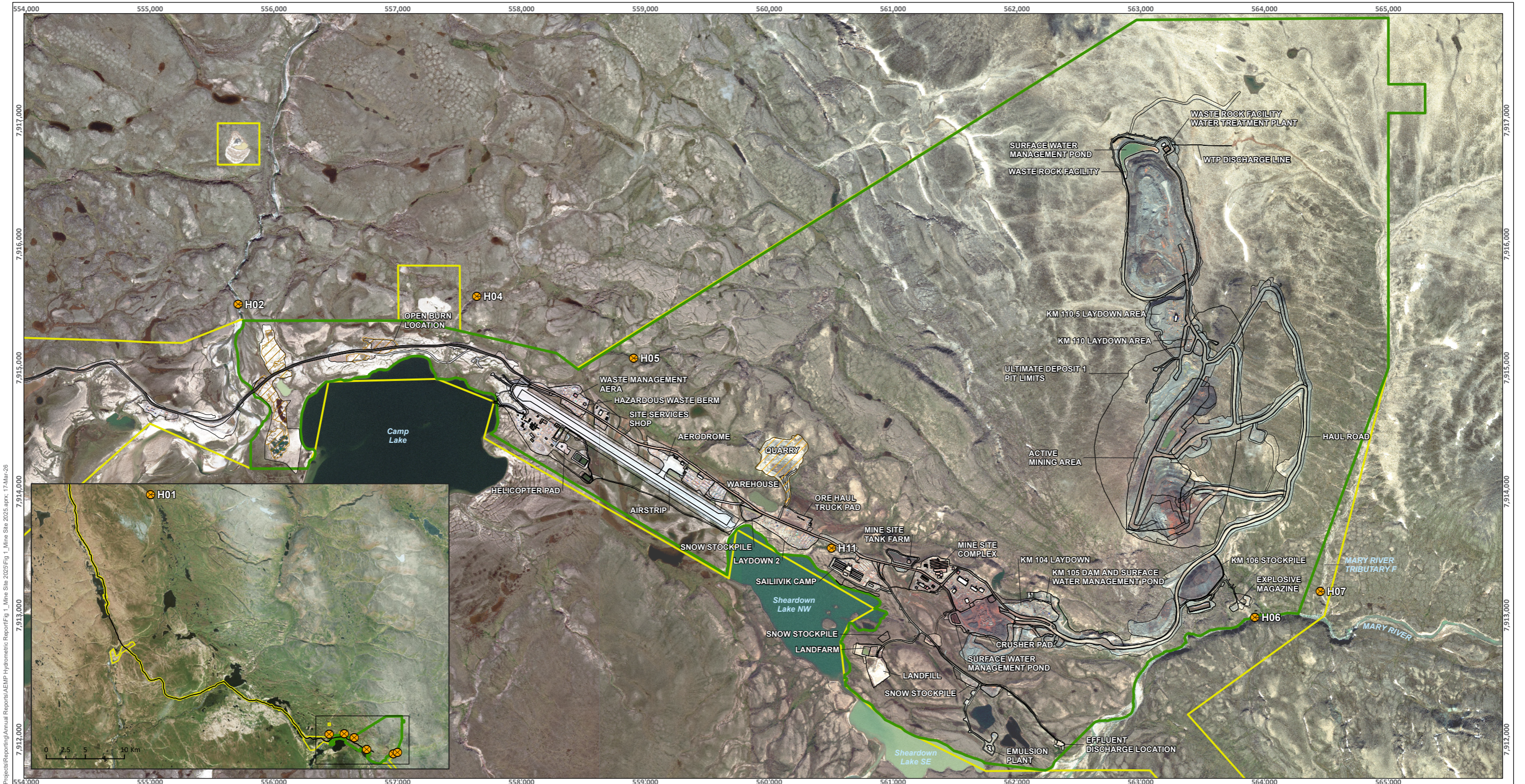
This document was prepared by the undersigned.

Prepared by:









Andrew Rees, Ph.D.

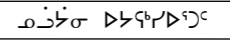
Senior Environmental Scientist / Hydrologist



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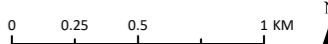
LEGEND


 Borrow Area	 Project Development Area	 Hydrometric Monitoring Station
 Quarry Area	 Commercial Lease Boundary	
 Current Infrastructure		


 **MARY RIVER PROJECT**


2025 Hydrometric Monitoring Program Stations

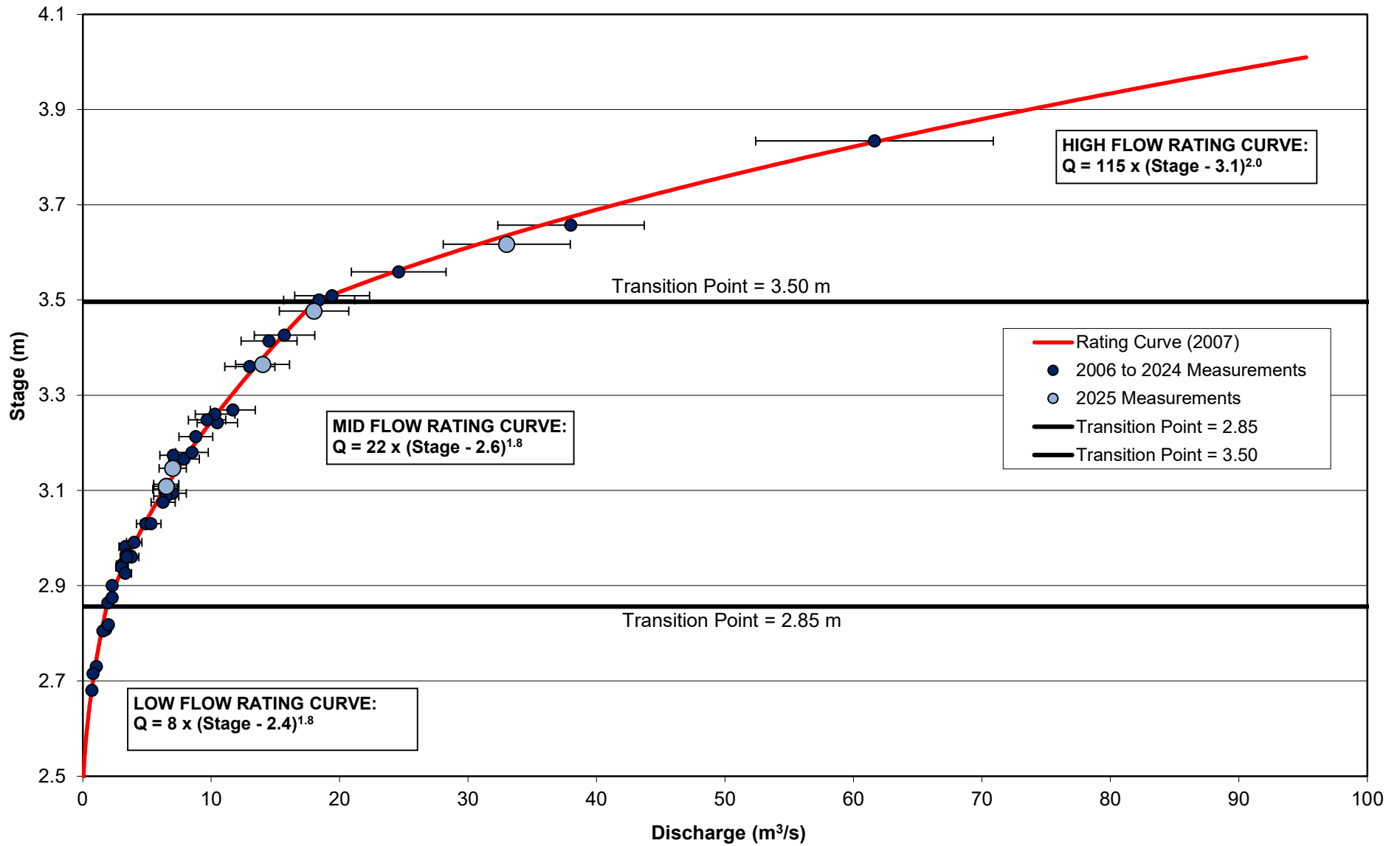
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 Base Map: © 2025 PhotoSat Information Ltd.
 Imagery and Infrastructure are representative as of July 2025.


 Scale: 1:30,000



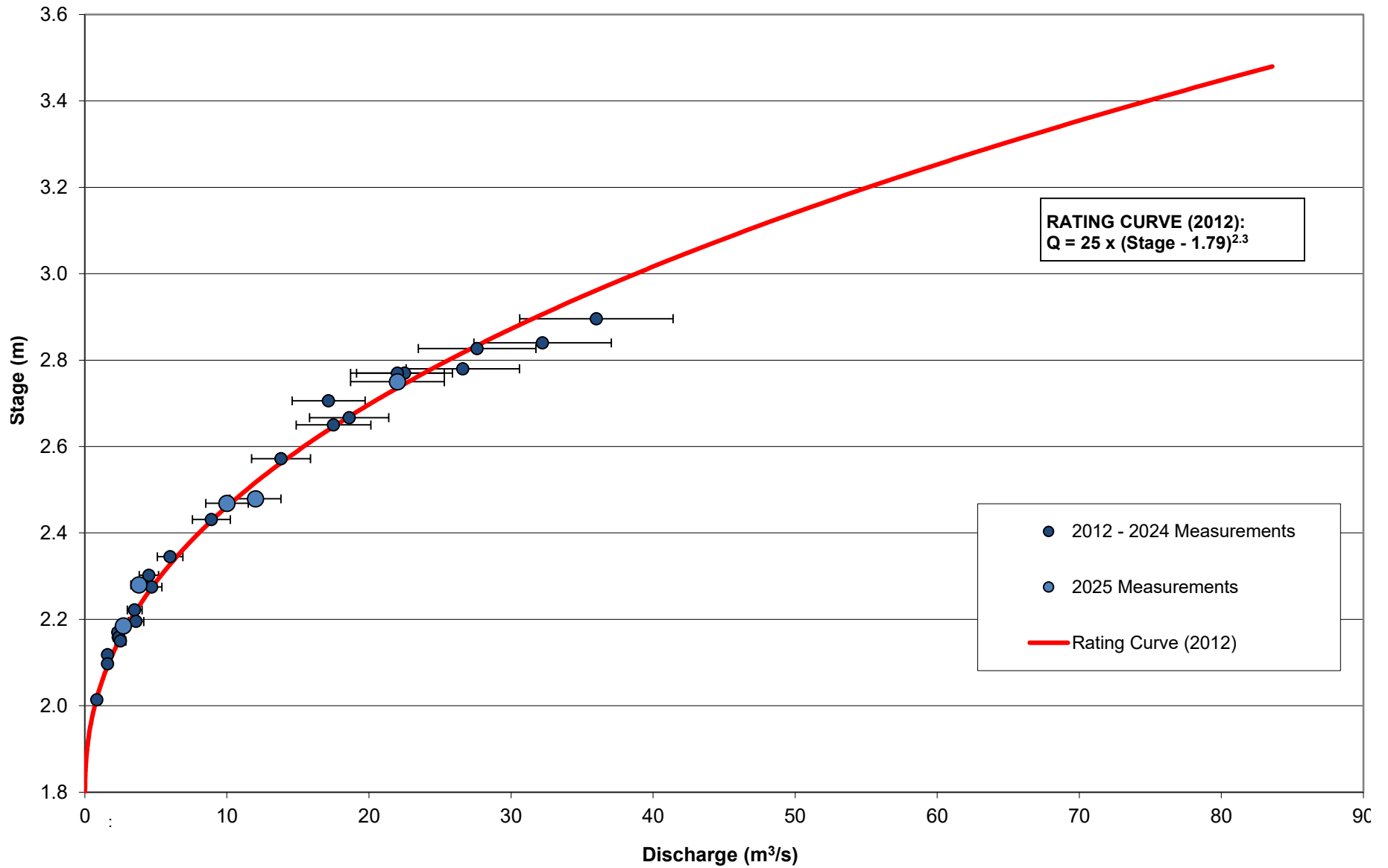


 **FIGURE 1**



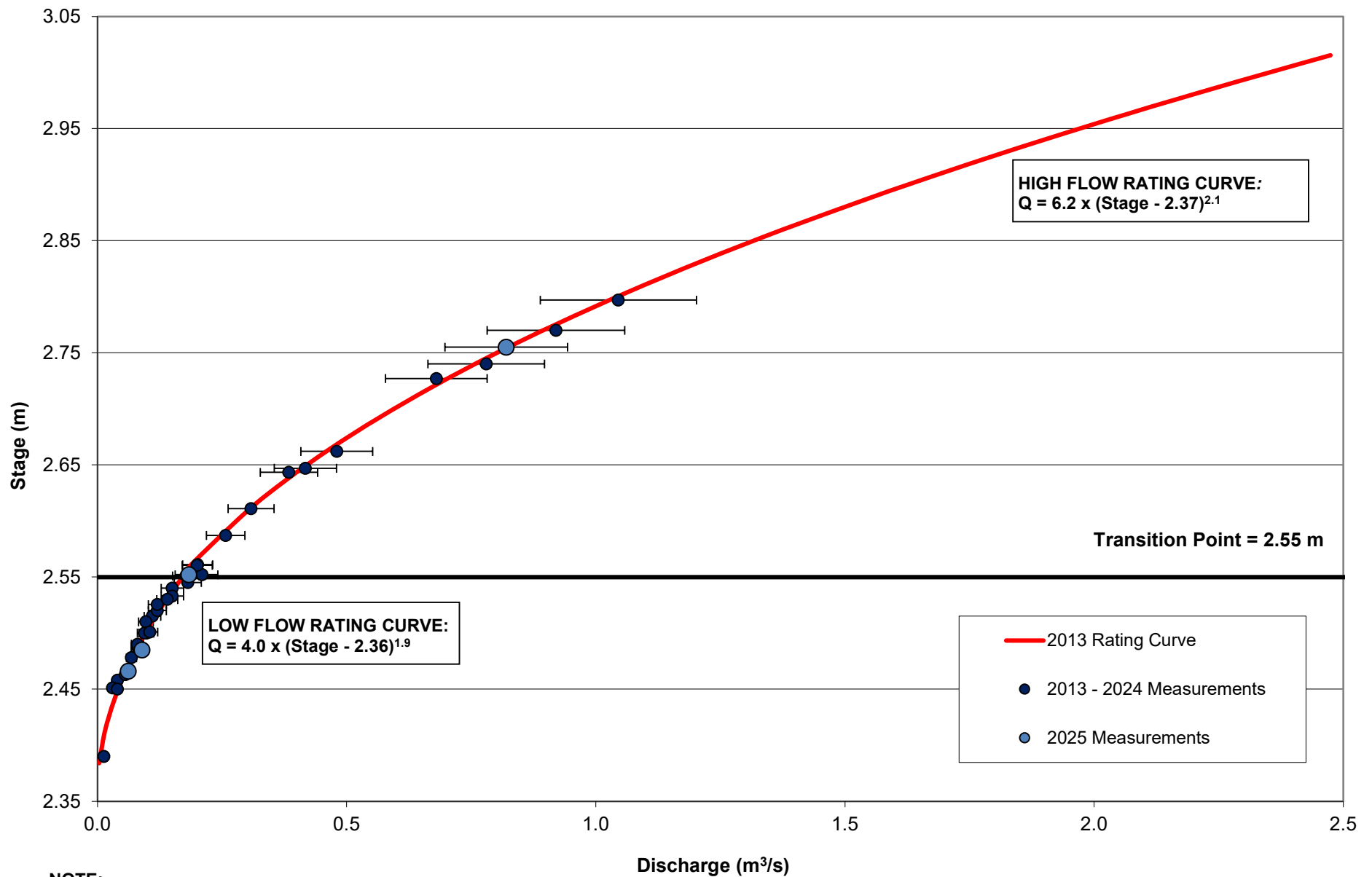
NOTE:
 1. RATING CURVE SHOWN TO MAXIMUM RECORDED STAGE IN 2025

Figure 2 H01 - Philips Creek Tributary Rating Curve



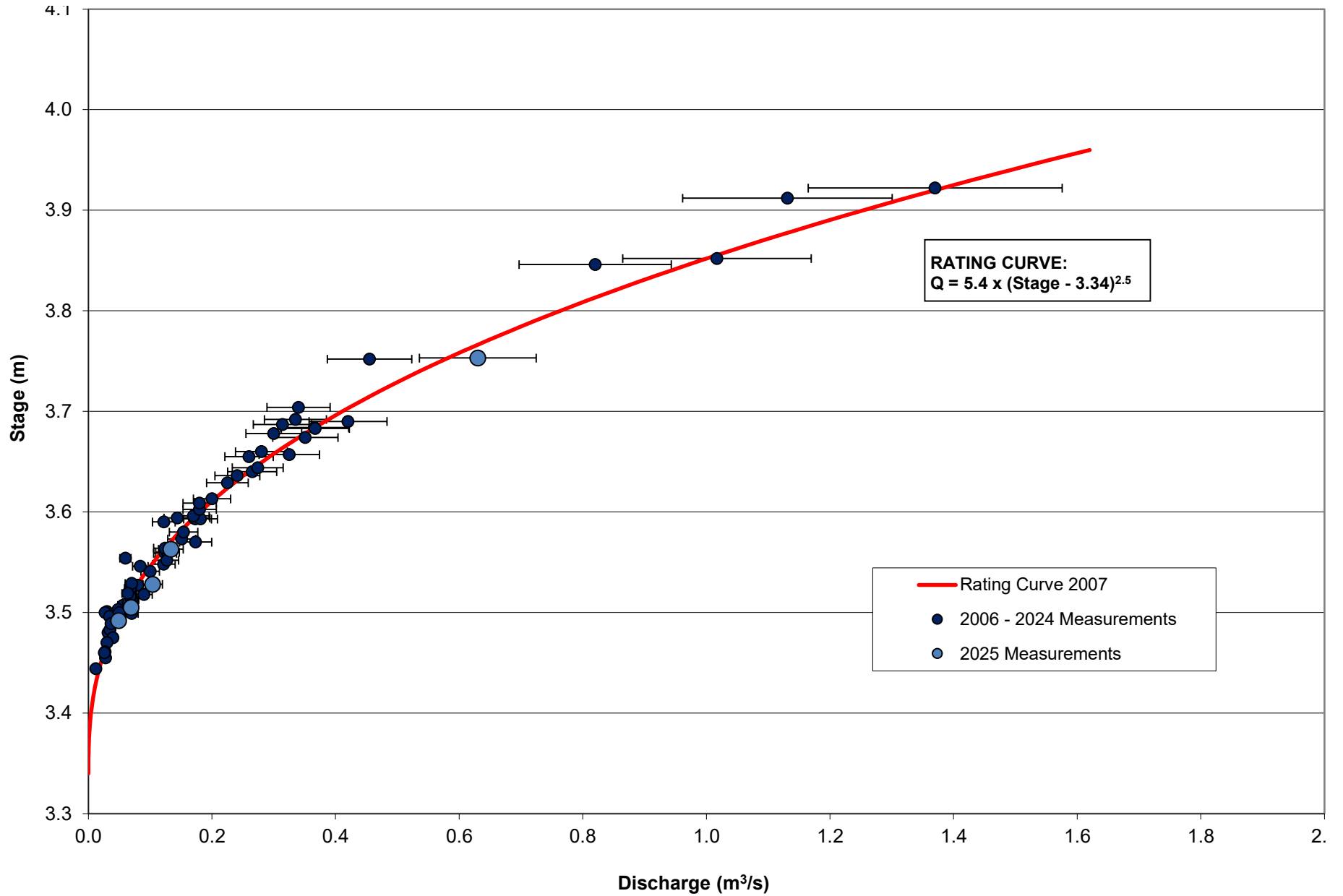
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Figure 3 H02 - Tom River Rating Curve



NOTE:
1. RATING CURVE SHOWN TO MAXIMUM RECORDED STAGE IN 2025

Figure 4 H04 - Camp Lake Tributary (CLT-2) Rating Curve

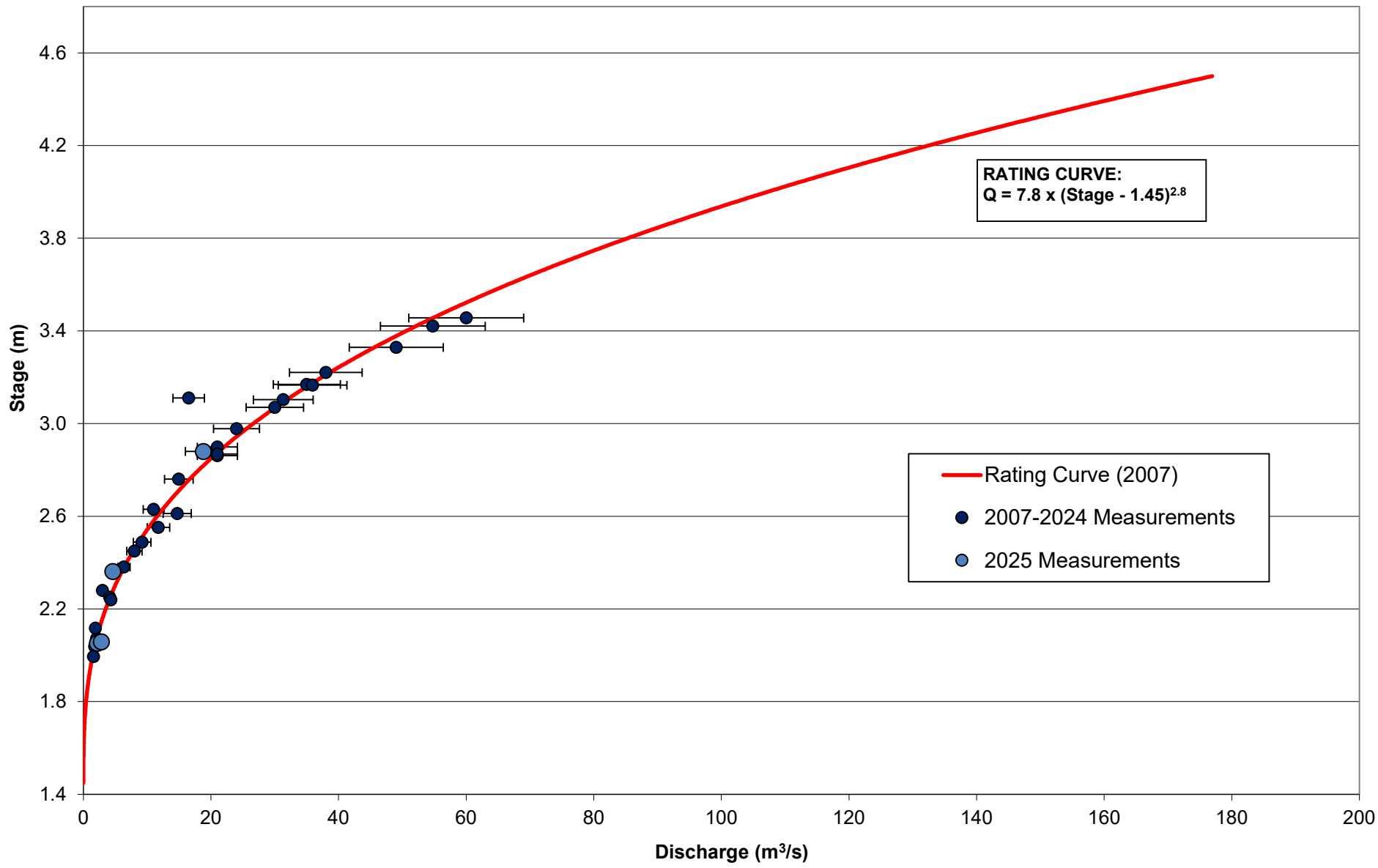


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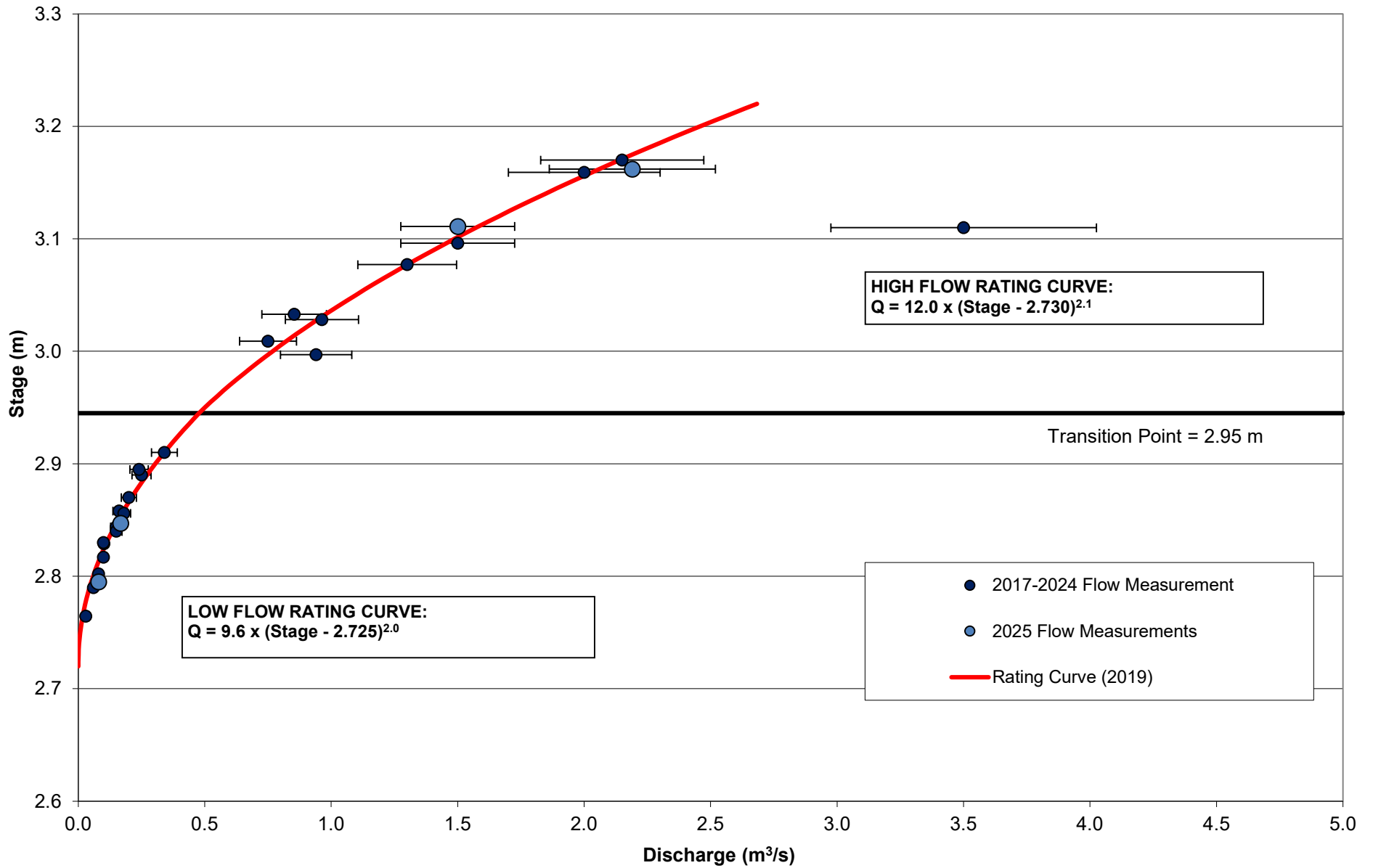
Figure 5

H05 - Camp Lake Tributary (CLT-1) Rating Curve



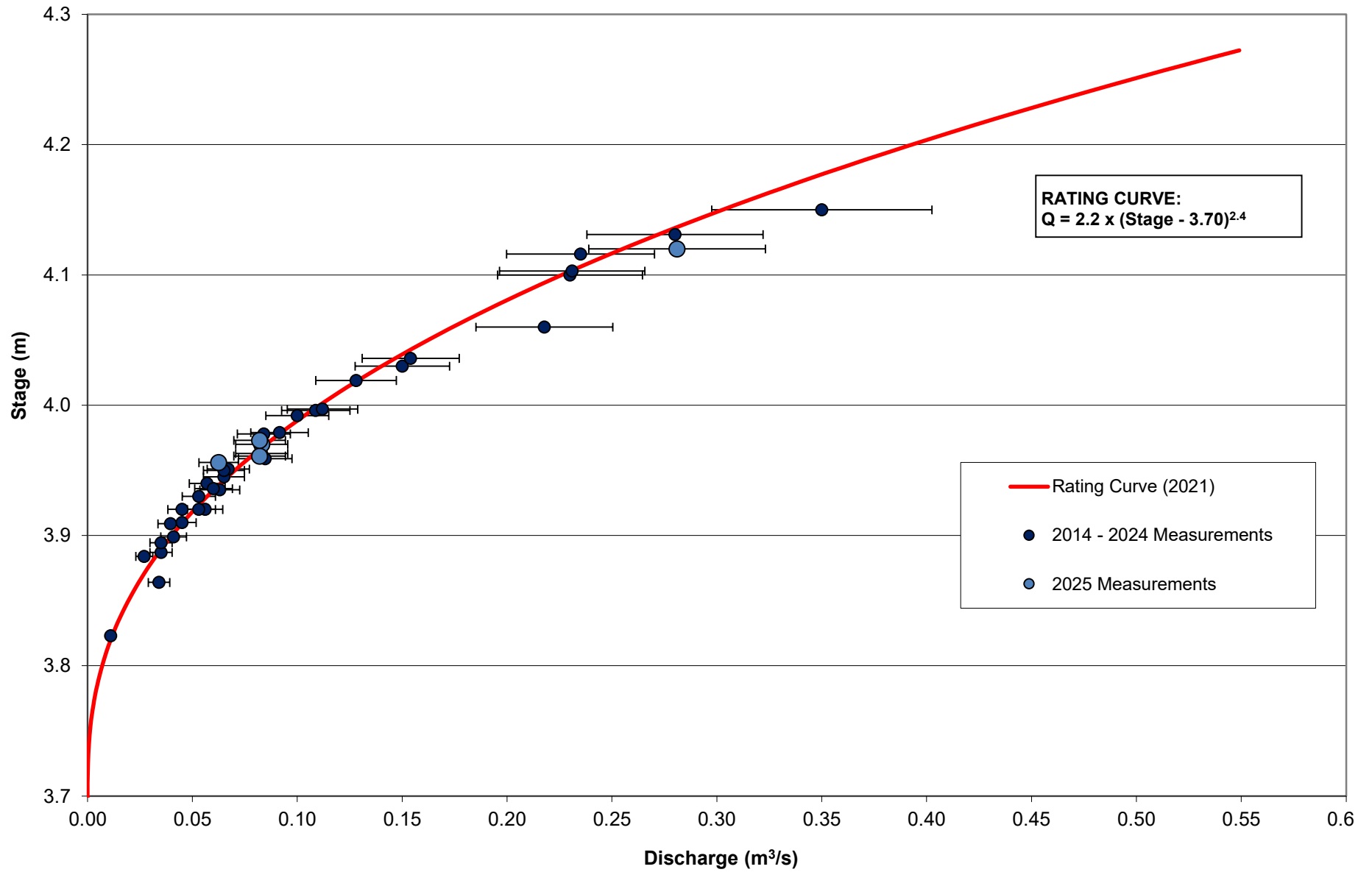
NOTES:
 1. RATING CURVE SHOWN TO MAXIMUM RECORDED STAGE IN 2025

Figure 6 H06 - Mary River Rating Curve



NOTES:
 1. RATING CURVE SHOWN TO MAXIMUM RECORDED STAGE IN 2025

Figure 7 H07 - Mary River Tributary F Rating Curve



NOTE:

1. UPDATED RATING CURVE SHOWN TO MAXIMUM RECORDED STAGE IN 2025

Figure 8

H11 - Sheardown Lake Tributary (SDLT-1) Rating Curve

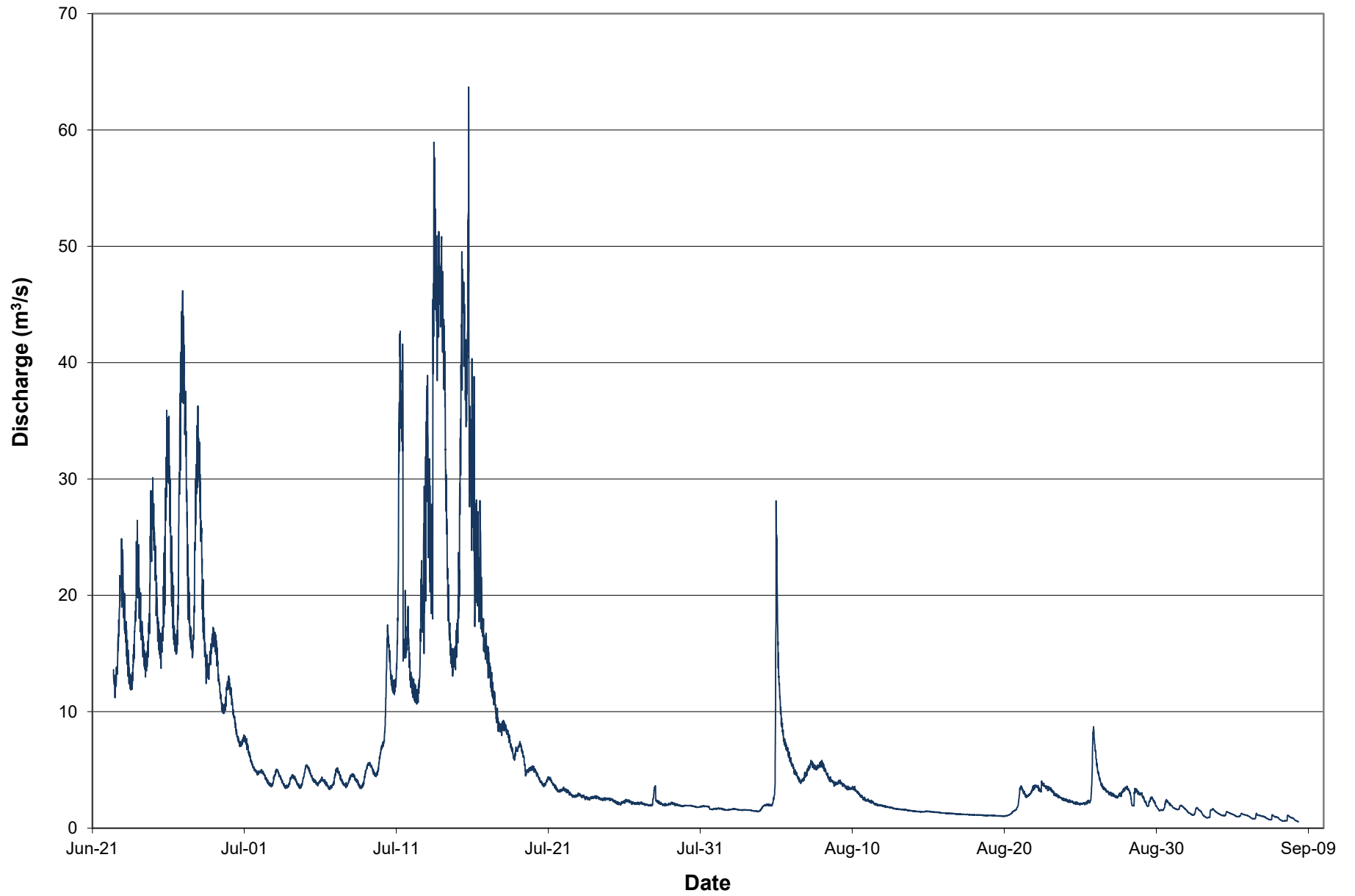


Figure 9

H01 - Philips Creek Tributary 2025 Streamflow Record

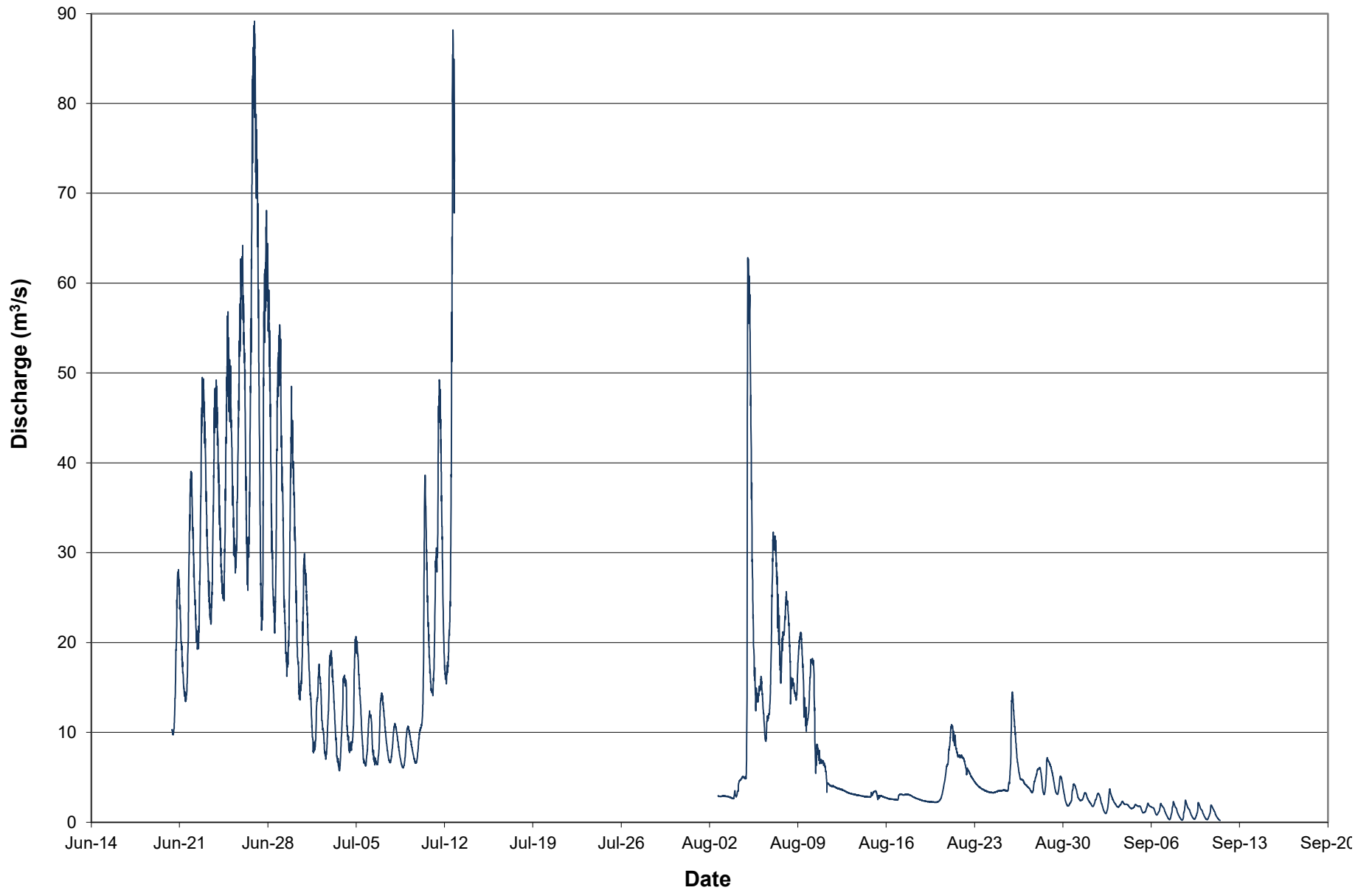


Figure 10 H02 - Tom River 2025 Streamflow Record

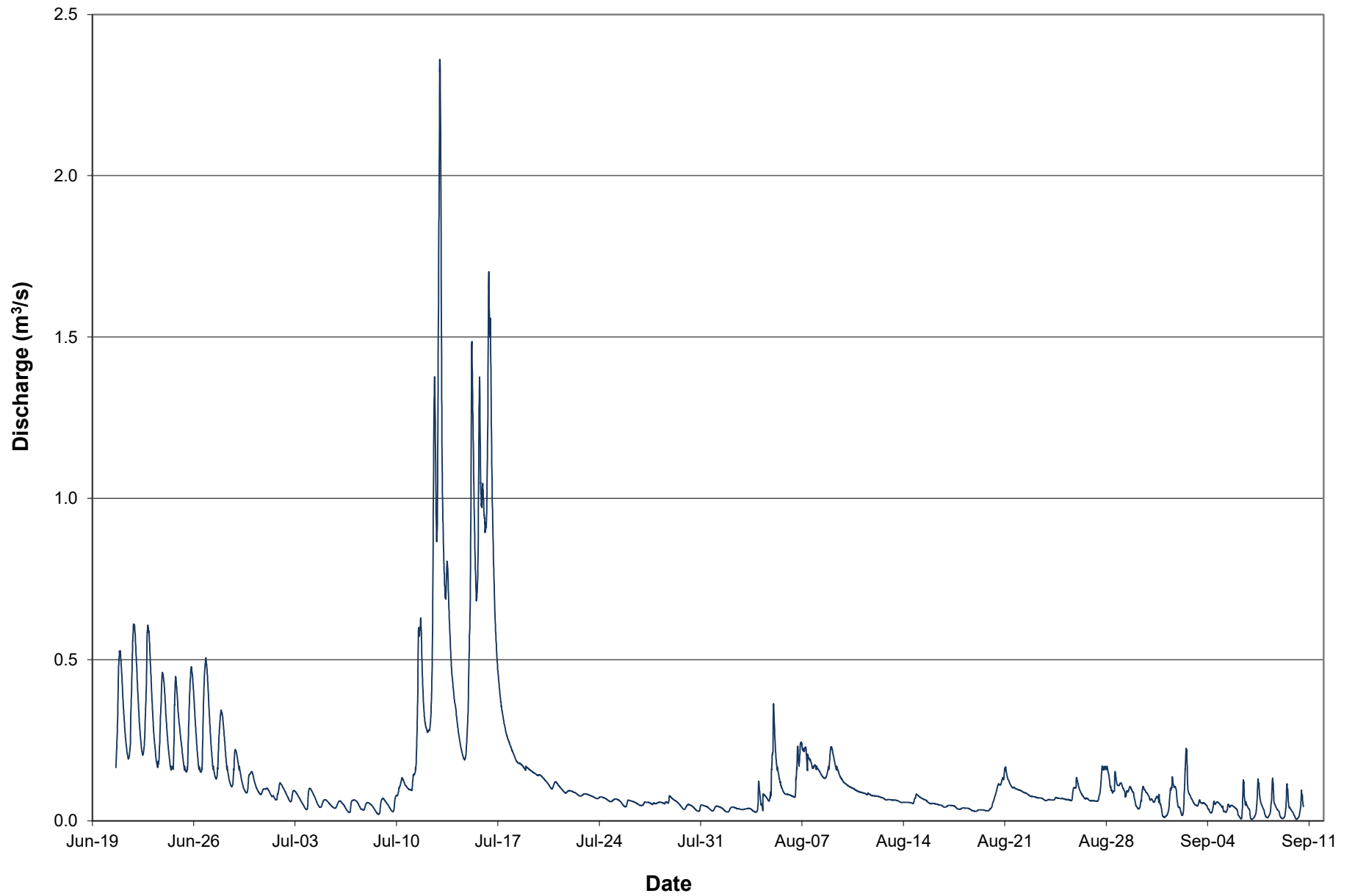


Figure 11 H04 - Camp Lake Tributary (CLT-2) 2025 Flow Record

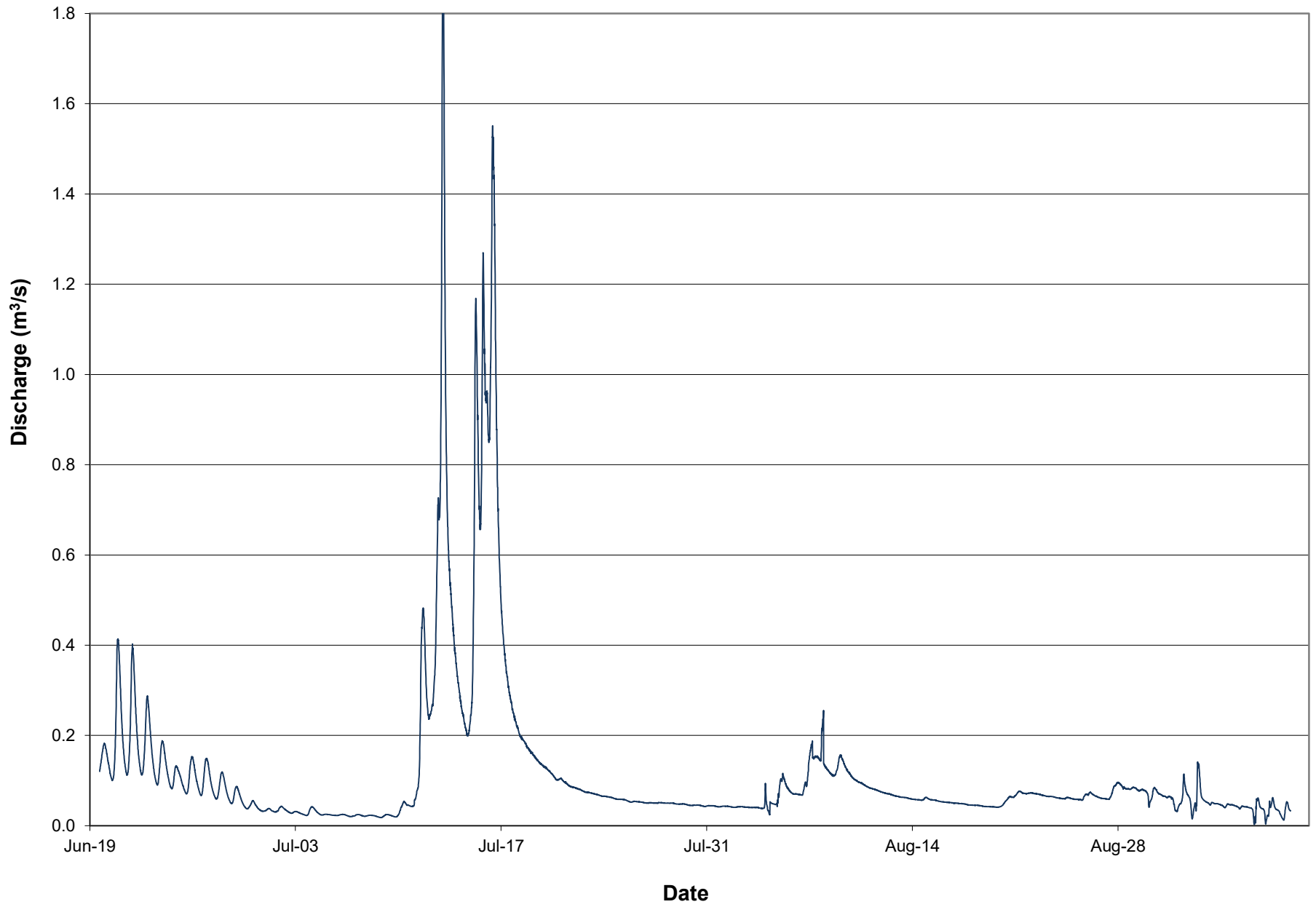


Figure 12 H05 - Camp Lake Tributary (CLT-1) 2025 Flow Record

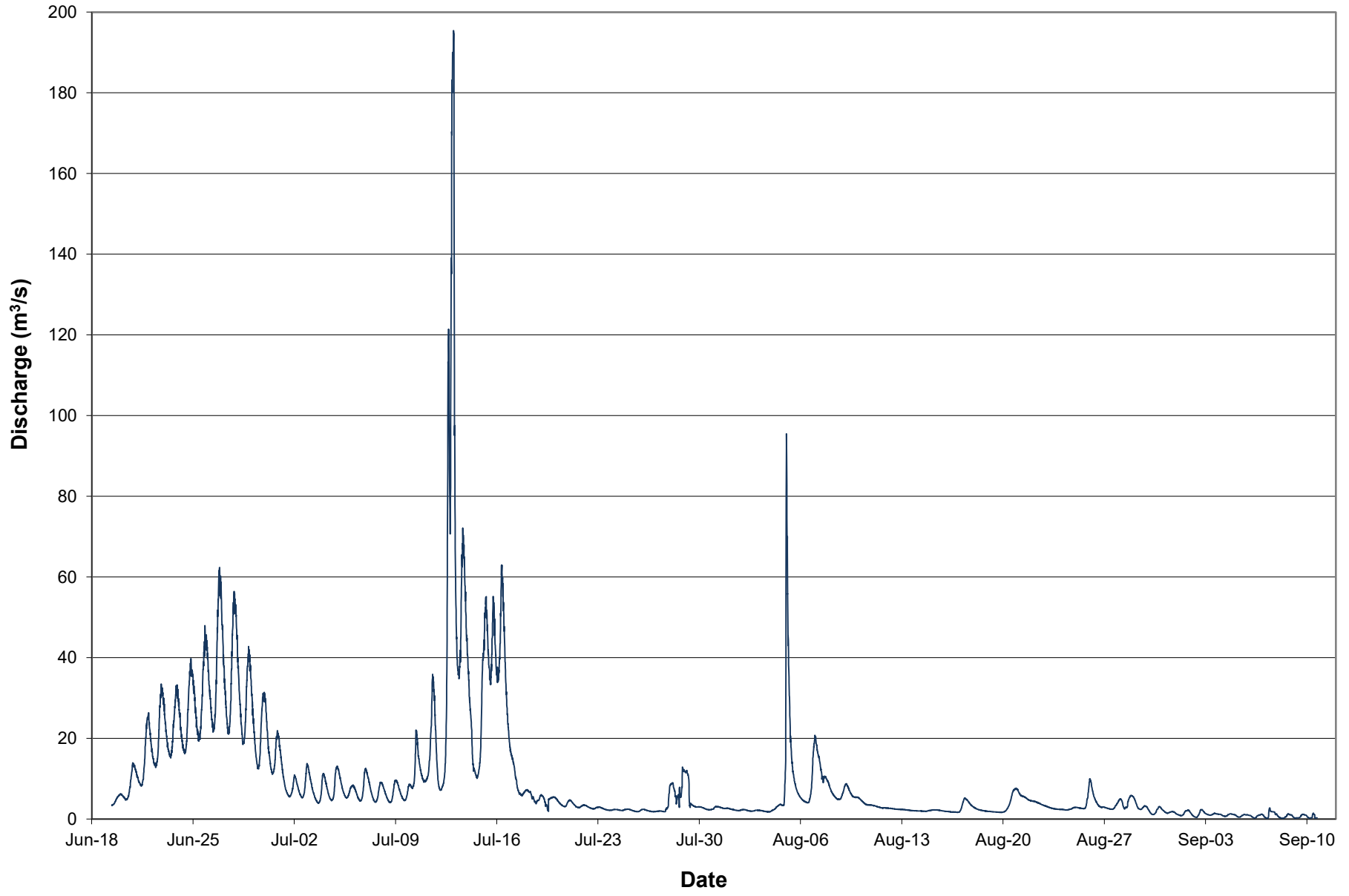


Figure 13 H06 - Mary River 2025 Flow Record

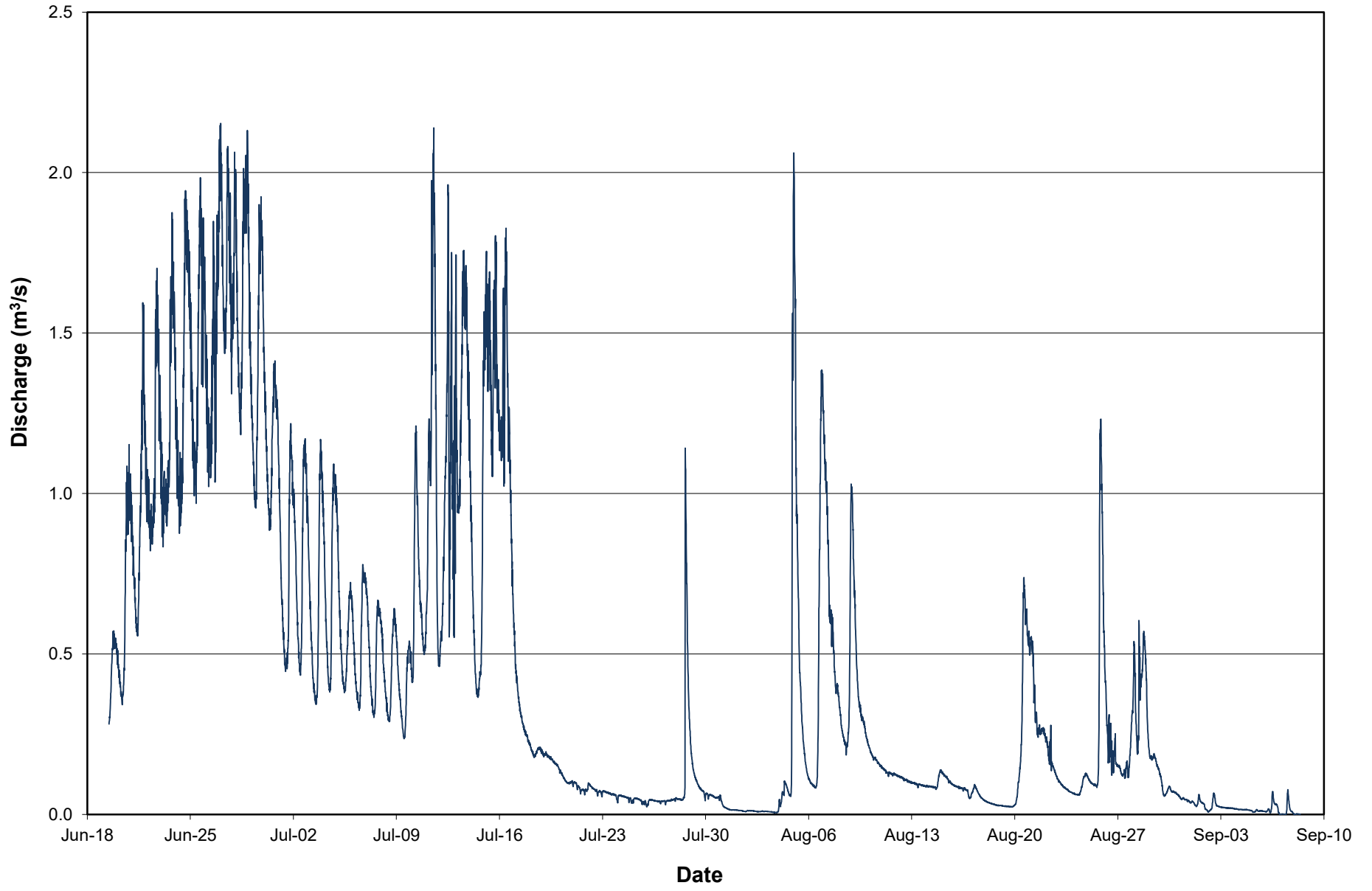


Figure 14 H07 - Mary River Tributary F 2025 Flow Record

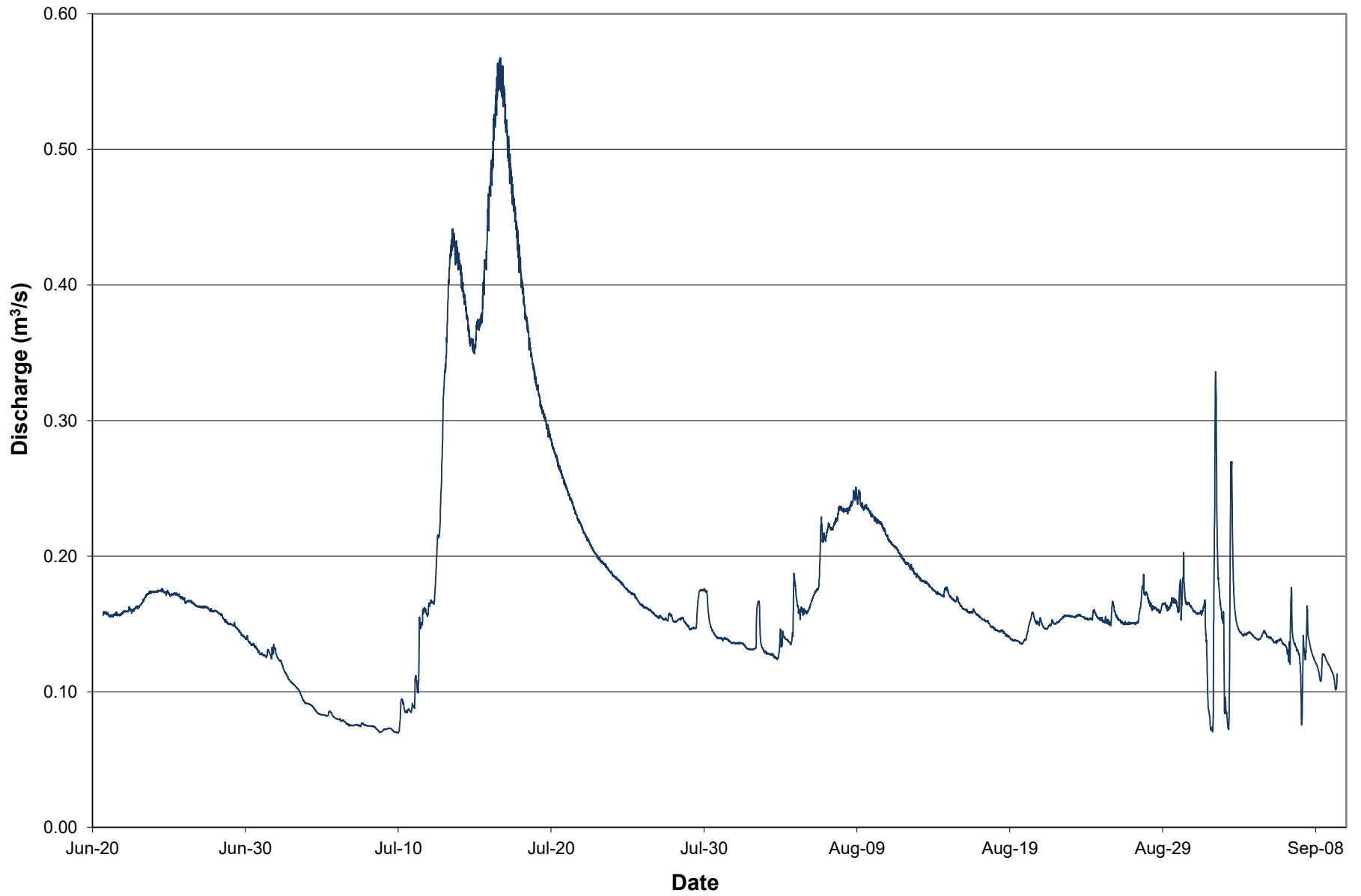


Figure 15 H11 - Sheardown Lake Tributary (SDLT-1) 2025 Streamflow Record

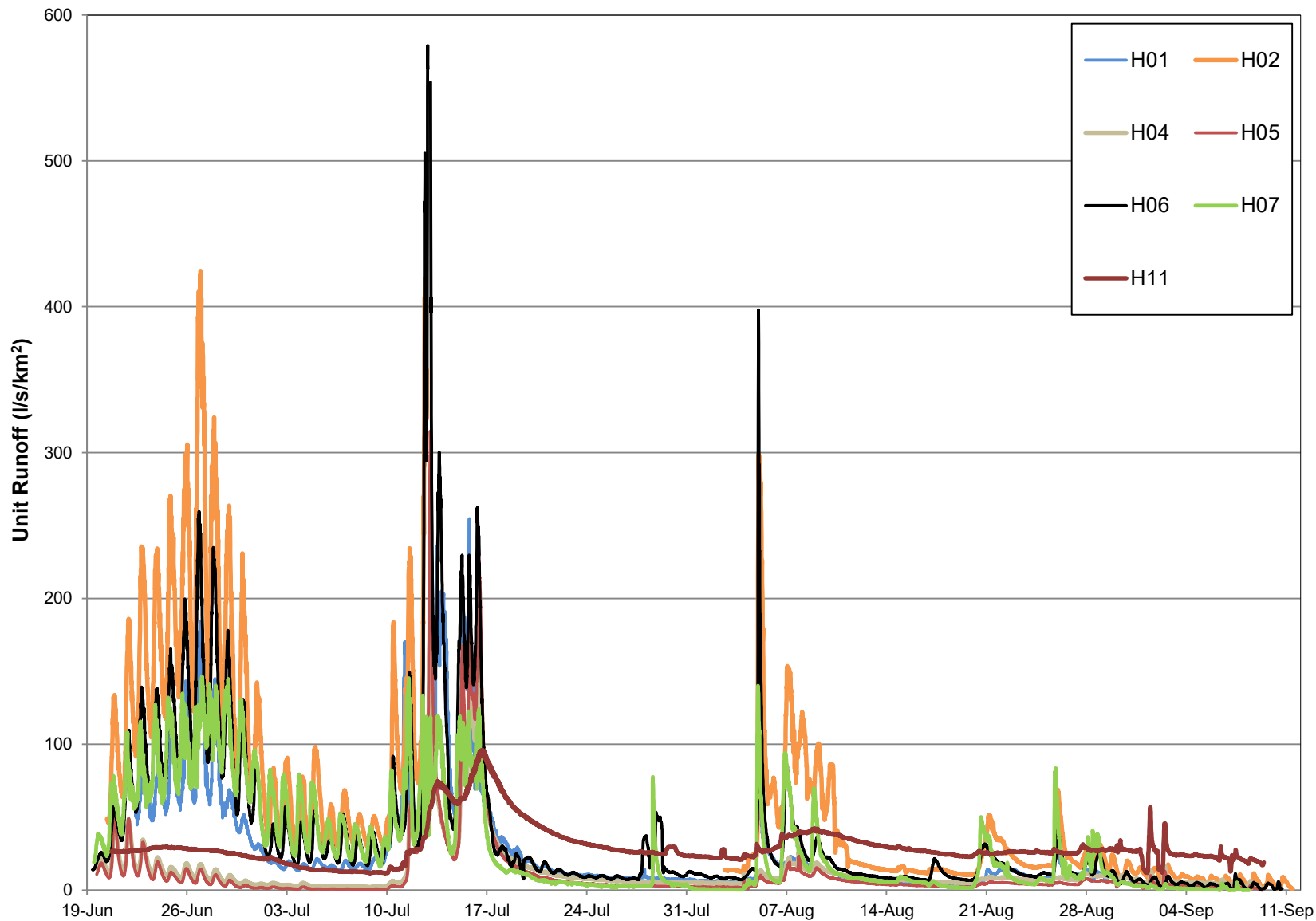


Figure 16 Comparison of 2025 Unit Runoff

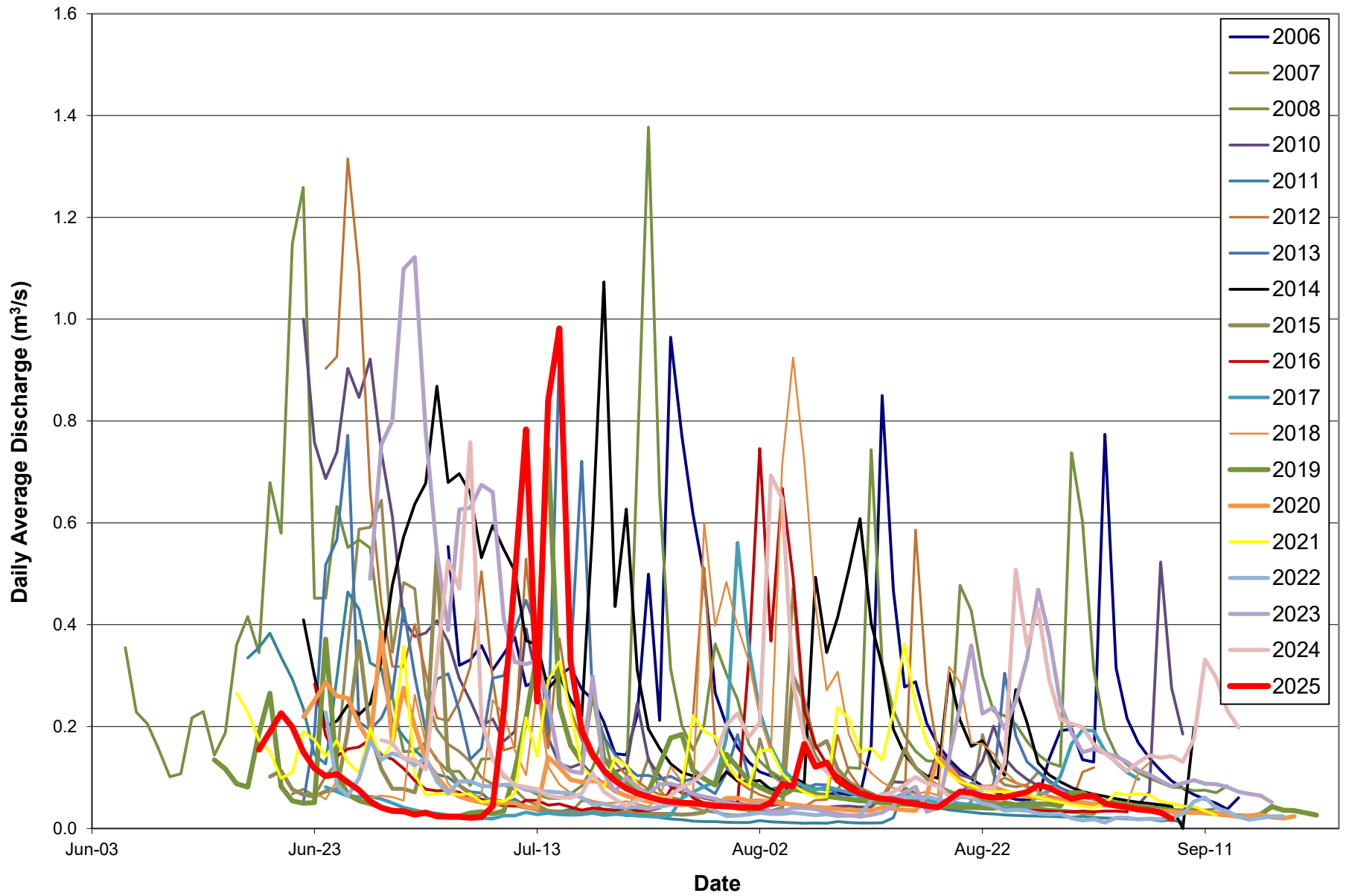


Figure 17 H05 - Camp Lake Tributary (CLT-1) Measured Streamflow Hydrographs 2006 - 2025