

APPENDIX 7B: BASELINE HYDROLOGY REPORT

VOLUME III: BIOPHYSICAL VALUED COMPONENTS

6 Terrain Features

- 6A Surficial Geology, Terrain and Soils Baseline
- 6B Terrain Hazards Assessment for Proposed Access Roads and Airstrip
- 6C Preliminary Geotechnical Study
- 6D Terrain Hazards Assessment for Proposed Mine Site
- 6E Fluvial Geomorphology Hazard Assessment for Proposed Access Roads

7 Water Quality

- 7A Water and Sediment Quality Baseline
- 7B Baseline Hydrology Report
- 7C 2012 Baseline Hydrogeology Report
- 7D Geochemistry Reports
- 7E Numerical Groundwater Modelling
- 7F Water Balance Report
- 7G Water Quality Model Report
- 7H Project Effects on Water Quantity

8 Air Quality

- 8A Baseline Climate Report
- 8B Met, Dustfall, and Noise Data Summary Report 2011
- 8C Air Quality Baseline 2013

9 Noise

10 Fish & Aquatic Resources

- 10A Fish and Aquatic Resources Baseline Report
- 10B Freegold Road Fish and Aquatic Baseline
- 10C Preliminary Fish Habitat Compensation Plan
- 10D Freegold Road Extension S&EC Risk Assessment

11 Rare Plants & Vegetation Health

- 11A Vegetation Baseline Report

12 Wildlife

- 12A Wildlife Baseline Report
- 12B Bird Baseline Report

CASINO MINING CORPORATION CASINO PROJECT



BASELINE HYDROLOGY REPORT

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VA101-325/14-5
Rev 0
October 10, 2013

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ISO 9001 - FS 64925
ISO 14001 - EMS 550121
OHSAS 18001 - OHS 550122

CASINO MINING CORPORATION CASINO PROJECT

BASELINE HYDROLOGY REPORT VA101-325/14-5

Rev	Description	Date	Approved
0	Issued in Final	October 10, 2013	<i>KB</i>

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APPENDICES

Appendix A Stage-Discharge Tables, Rating Curves, and Measured Hydrographs
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ABBREVIATIONS

HKPL.....	Hallam Knight Piésold Ltd
KPL	Knight Piésold Ltd.
Project.....	Casino Project
WSC.....	Water Survey of Canada

1 – INTRODUCTION

1.1 PROJECT AND REPORT OVERVIEW

The Casino Project is a proposed copper-gold open pit mining development located within the Dip Creek and Britannia Creek watersheds, approximately 300 km northwest of Whitehorse, Yukon Territory, Canada, as shown on Figure 1.1-1. Dip Creek flows in a southwesterly direction, eventually discharging into the White River, which is a tributary of the Yukon River; while Britannia Creek flows in a northerly direction and discharges directly into the Yukon River.

Streamflow data have been collected at several locations in the Project area to support permitting, design, and future operations. Previous data collection programs and reporting include:

- Hallam Knight Piésold (HKPL) in 1993 (HKPL, 1993) and 1994 (HKPL, 1997) collected preliminary data.
- AECOM initiated new data collection program in 2008 which they continued to operate to 2010.
- Knight Piésold Ltd. (KPL) completed a review of all data collected up to 2010 (KPL, 2010).
- KPL began operating the AECOM network in 2011 and continues to operate this streamflow network to date.

The purpose of this report is to update the Project hydrology dataset and provide long-term streamflow estimates for the Project area. These long-term estimates were developed by comparing the available Project data (2008-2012) with regional streamflow stations operated by the Water Survey of Canada (WSC).

The final products presented in this report are:

1. A set of synthetic (modelled) daily streamflows for a 36-year period for each of nine active hydrometric monitoring stations in the Project area.
2. Estimates of extreme flow conditions for the Project, including:
 - a. Peak instantaneous flows for return periods ranging from mean annual to 200 years.
 - b. 10-year, 7-day low flows.
 - c. 10-year wet and dry monthly flows.

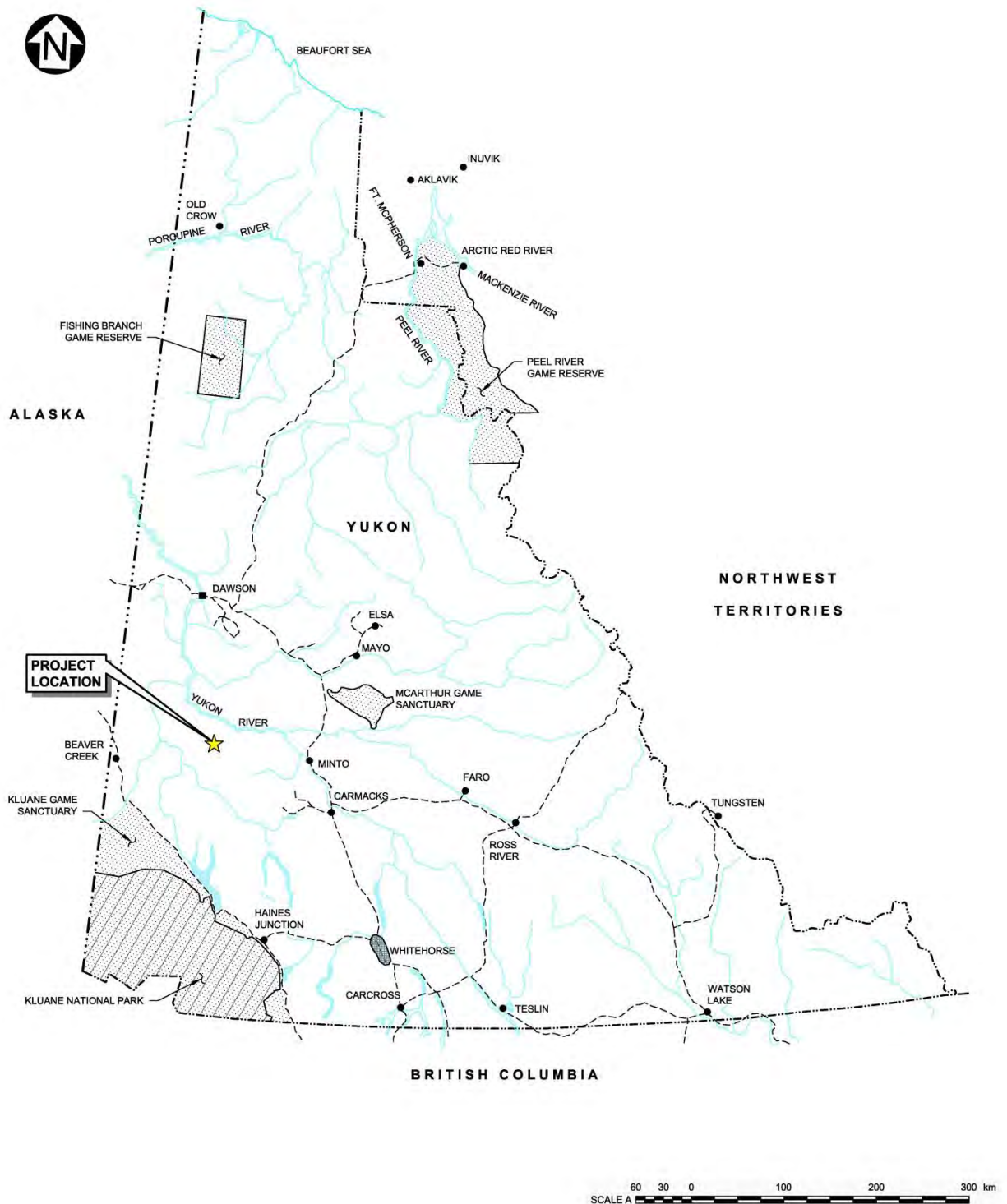


Figure 1.1-1 Project Location Map

2 – REGIONAL HYDROLOGY

2.1 REGIONAL SETTING

The Casino Project is located in the Dawson Mountain Range of the Klondike Plateau, approximately 300 km northwest of Whitehorse, Yukon Territory, Canada. The Project is situated in the Dip Creek and Britannia Creek watersheds; Dip Creek drains southwest, eventually flowing into the White River, which is a tributary of the Yukon River; Britannia Creek drains north directly into the Yukon River.

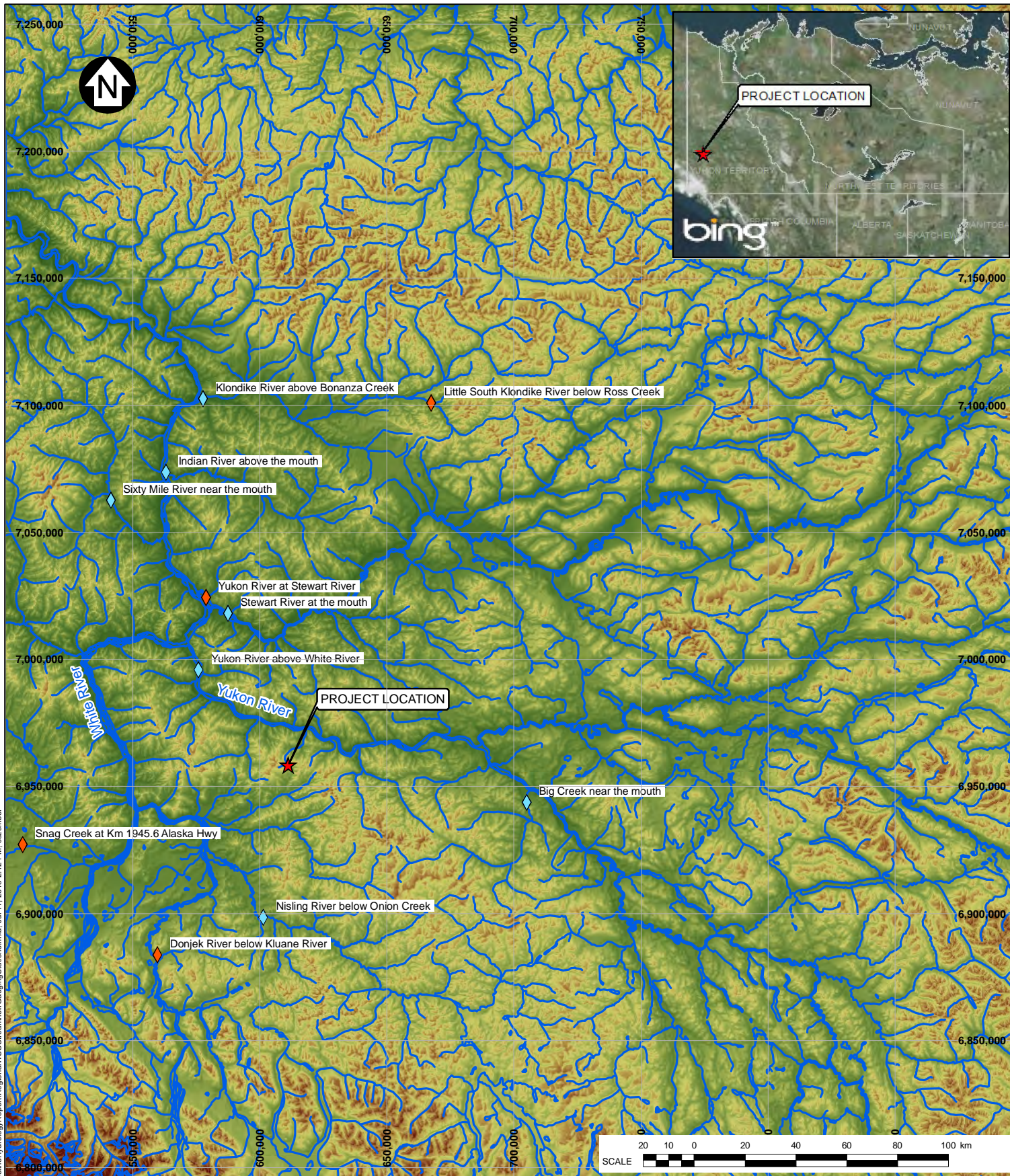
The Project is located within the Boreal Cordillera ecozone, which comprises much of the southern Yukon and a large portion of northern British Columbia, and is more specifically located within the Dawson Range ecoregion (Natural Resources Canada, 1993). The Boreal Cordillera ecozone is characterized by the presence of several mountain ranges, including the Dawson Range, that trend in the north-westerly direction and include extensive plateau regions. The plateaus consist of flat or gently rolling terrain separated by broad valleys and lowlands. The climate is characterized by long, cold, dry winters and short, warm, wet summers, with conditions varying according to altitude and aspect. Average annual precipitation is generally quite low, with values in the range of 300 mm to 450 mm (Smith, Meikle, & Roots, 2004).

2.2 REGIONAL STREAMFLOW





Water Survey of Canada has operated 11 hydrometric monitoring stations within a 150 km radius of the Project site and within the Dawson Range and Klondike Plateau for varying periods of time over the past few decades. All of the regional stations are located in watersheds much larger than the Project watersheds, some of which contain high mountain terrain in the headwaters. Seven of the regional stations are currently active. The locations of the 11 regional WSC stations are presented on Figure 2.2-1, and station details are summarized in Table 2.2-1.

Mean annual unit runoff in the actively monitored regional watersheds ranges between 2.8 l/s/km² and 9.2 l/s/km². In two of the smaller regional watersheds that lack high mountain headwaters – Big Creek and Indian River – the mean annual unit runoff rates are 4.5 l/s/km² and 2.8 l/s/km², respectively. Streamflow in the region is typically highest in May due to melting of the winter snowpack; flows are usually sustained at moderate to high levels in the summer months due to the influence of rainfall combined with melting permafrost; followed by receding and low flows in the colder fall and winter months, as presented on Figure 2.2-2. Annual peak instantaneous flows commonly occur in the spring snowmelt freshet period on larger rivers, but on smaller streams they may also occur in summer or early autumn due to intense rain or rain-on-snow events. Flows decrease throughout the winter and minimum flows typically occur in March or early April.

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LEGEND

-  PROJECT LOCATION
-  WATER SURVEY OF CANADA (WSC) ACTIVE STREAM FLOW STATION
-  WATER SURVEY OF CANADA (WSC) INACTIVE STREAM FLOW STATION
-  RIVER/CREEK

NOTES:

1. BASE MAP: (C) MICROSOFT BING MAPS.
2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 7N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:2,000,000 FOR 8.5x11 (LETTER) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

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REGIONAL SETTING AND WSC STREAMFLOW
GAUGING STATIONS

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FIGURE 2.2-1

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TABLE 2.2-1

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WSC REGIONAL STREAMFLOW STATIONS

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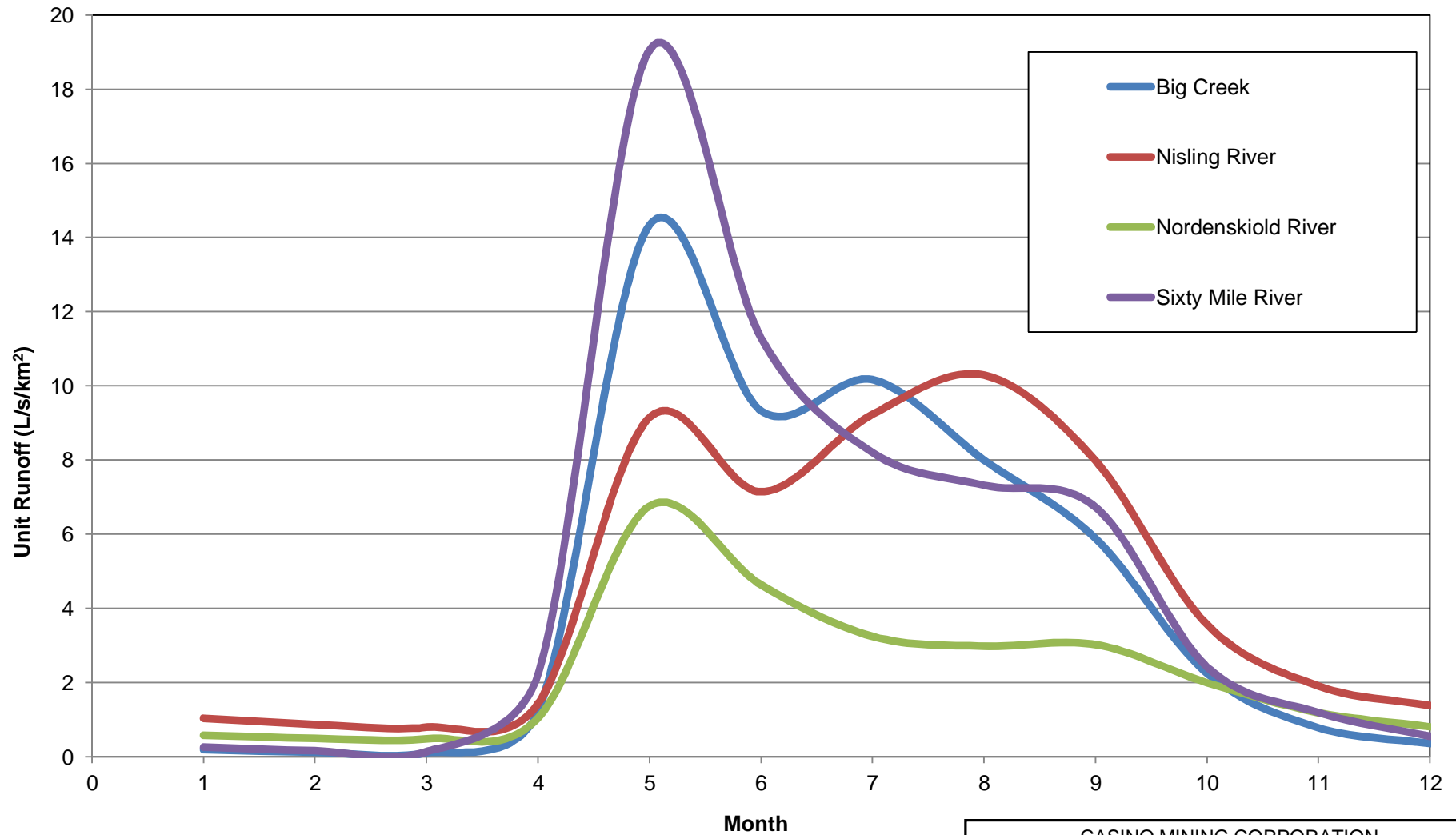
	WSC Station Name	Station ID	Years of Record	No. of Years of Complete Record	Start Year	End Year	Latitude	Longitude	Drainage Area (km ²)	Mean Annual Discharge (m ³ /s)	Average Annual Unit Runoff (l/s/km ²)
Active	Klondike River above Bonanza Creek	09EA003	44	42	1965	2012	64°2'34"	139°24'28"	7,800	64.7	8.3
	Indian River above the mouth	09EB003	27	25	1982	2012	63°47'6"	139°43'31"	2,220	6.3	2.8
	Stewart River at the mouth	09DD003	46	44	1963	2012	63°16'56"	139°15'16"	51,000	470	9.2
	Nisling River below Onion Creek	09CA006	18	16	1995	2012	62°12'17"	139°2'33"	7,910	36.2	4.6
	Sixty Mile River	09EB004	7	6	1995	2012	63°41'21"	140°9'35"	3,060	15.3	5.0
	Yukon River above White River	09CD001	53	46	1956	2012	63°4'58"	139°29'54"	150,000	1190	7.9
	Big Creek near the mouth	09AH003	34	31	1974	2012	62°34'7"	137°0'58"	1,750	7.8	4.5
Discontinued	Snag Creek at Km 1945.6 Alaska Hwy	09CB002	8	5	1989	1996	62°28'35"	140°52'7"	676	6.17	9.1
	Little South Klondike River below Ross Creek	09EA005	12	11	1983	1994	63°59'45"	137°34'20"	860	7.06	8.2
	Donjek River below Kluane River	09CA003	15	11	1979	1994	62°4'56"	139°51'35"	12,400	168.0	13.5
	Yukon River at Stewart River	09EB002	10	6	1956	1965	63°18'42"	139°25'43"	251,000	2,380	9.5

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\MSC_WSC_stations_Table2.1.xls]WSC stations Table 2.2-1

NOTES:

1. DATA OBTAINED FROM THE WATER SURVEY OF CANADA (WSC), BRANCH OF ENVIRONMENT CANADA.

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CASINO COPPER-GOLD PROJECT

WSC STATIONS IN CASINO AREA
MEAN MONTHLY UNIT RUNOFF***Knight Piésold***
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5**FIGURE 2.2-2**REV
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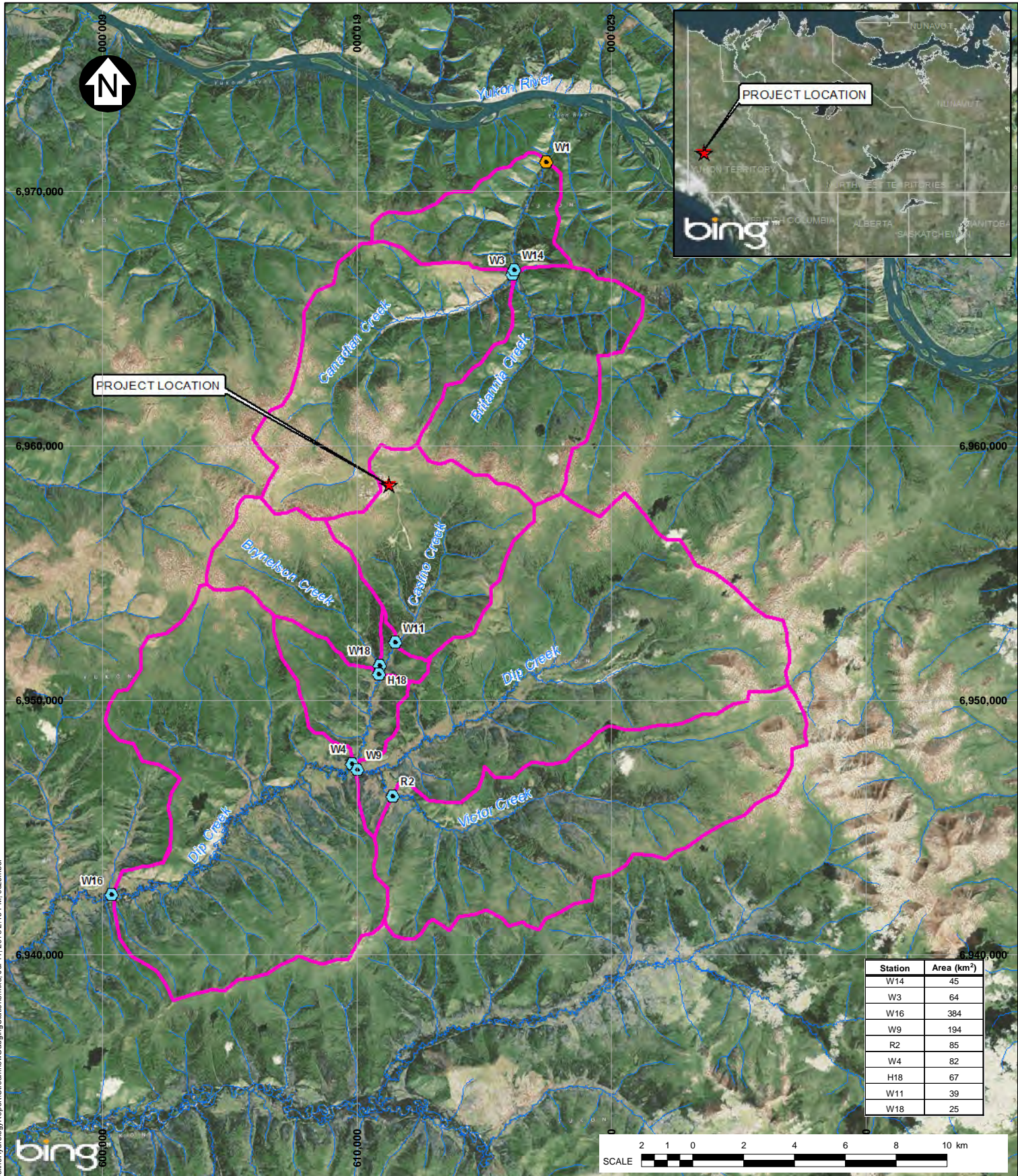
3 – CASINO HYDROMETRIC SAMPLING PROGRAM

3.1 PROGRAM DESCRIPTION

Ten hydrometric monitoring stations have been operated in the Project area at various times since 2008. At present, nine stations are considered to be in active operation. One site (W1) was deactivated in 2011 due to the development and natural destruction of a beaver dam that interfered with the station's hydraulic control and caused the loss of the 2011 data. The locations of all active and discontinued stations are presented on Figure 3.1-1, and a simple schematic of the station network is provided on Figure 3.1-2. The stations were located in order to best record baseline hydrometric conditions upstream and downstream of proposed Project infrastructure, both near field and far field. As a result, three stations are located in the Canadian and Britannia Creek watersheds (including the deactivated W1 station) and seven stations in the Casino and Dip Creek watersheds. Watershed areas at each station are provided in an inset table on Figure 3.1-1. Station W16, located on lower Dip Creek, is the largest watershed of the Project gauging stations, at 384 km². Stations W18 and W11, located in the upper part of Casino Creek sub-watershed, are the smallest gauged watersheds, at 25 km² and 39 km², respectively.

All data collected prior to the 2011 open water season have previously undergone a data quality review. The review results suggested there was shifting of the station equipment, though at the time of the review it was not possible to determine the extent of the suspected shift. Benchmarks were installed at the Project stations at the outset of the 2011 open water season in order to improve data quality for ongoing data collection efforts by linking future hydrometric data at each station to a local benchmark datum. By routinely surveying the stations during each site visit, damage to or failure of station equipment will not result in loss of continuity in the stage (water level) time-series, and tracking of equipment movement due to frost heave or debris collision is possible. A quality review of the 2011 data was presented in KPL (2012). As discussed above, the W1 station was deactivated prior to the establishment of local benchmarks and the implementation of survey procedures designed to improve the confidence in the data collected on site. Because the 2008-2010 rating curve for W1 cannot be more rigorously validated with surveyed stage-discharge measurements, the W1 streamflow record has greater uncertainty than the records collected at the other stations and so will not be carried forward in this report.

The most recent data review and analysis included further efforts to incorporate the pre-2011 data with the current 2011-2012 dataset. In a stable stream channel with no unusual flow obstructions downstream, the relationship between stage and discharge at any given location should remain approximately constant over time. The following section provides a rationale for the adjustment and merging of pre-2011 and 2011-12 stage-discharge rating curves, and an updated summary of measured streamflow records at the Project stations.



Station	Area (km ²)
W14	45
W3	64
W16	384
W9	194
R2	85
W4	82
H18	67
W11	39
W18	25

LEGEND

- ★ PROJECT LOCATION
- ACTIVE PROJECT STREAMFLOW GAUGING STATION
- DISCONTINUED PROJECT STREAMFLOW GAUGING STATION
- RIVER/CREEK
- WATERSHED BOUNDARY

NOTES:

1. BASE MAP: (C) MICROSOFT BING MAPS.
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PROJECT STREAMFLOW GAUGING STATION LOCATIONS

Knight Piésold CONSULTING

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FIGURE 3.1-1

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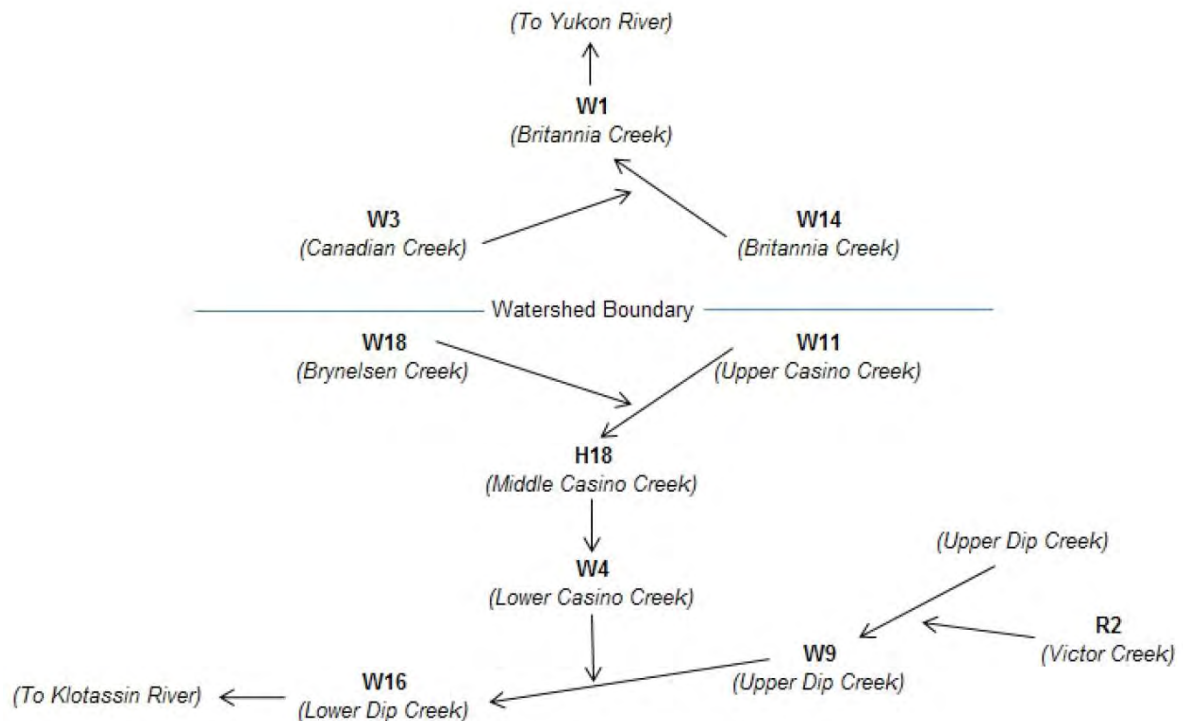


Figure 3.1-2 Streamflow Gauging Network Schematic

3.2 DATA CORRECTION AND STREAMFLOW RECORD DEVELOPMENT

Stage-discharge measurements provided the primary basis for guiding stage adjustments at stations where there was no reason to suspect that the stage-discharge relationship had changed over time due to changes in channel geometry, downstream beaver dam activity, or other similar factors. At each such station, the surveyed stage-discharge measurements collected in 2011 and 2012 were compared to the un-surveyed pre-2011 measurements and an appropriate vertical adjustment was applied to the pre-2011 stage values to bring the points into alignment with the 2011-12 stage-discharge points. The stage-discharge measurements, their corresponding rating curves, and measured hydrographs used in this analysis are provided in tables and figures in Appendix A.

The British Columbia hydrometric guidelines (BC MoE, 2009) specify that a minimum of 10 stage-discharge points are necessary to define a rating curve, and that rating curves should be extrapolated to no greater than twice the maximum measured discharge. While these guidelines are taken from a neighbouring jurisdiction, they are generally applicable to the collection of good-quality hydrometric data and provide a useful basis for assessing the data collected to date in the Project area. Most of the monitoring stations have 10 or more stage-discharge points defining their rating curves, although this has been achieved by subjectively adjusting the pre-2011 stage data, as described above, which introduces some uncertainty. The exceptions are stations W16 and R2 which have eight and nine stage-discharge points, respectively, defining their rating curves.

The rating curves for most of the monitoring stations are not fully developed for high-flow conditions. Therefore, large extrapolations are required to estimate the discharge values associated with the

highest flow events. Only two stations have sufficiently developed rating curves such that the maximum estimated discharge (by rating curve extrapolation) was less than two times the maximum measured discharge. These two stations are W14, and W11. Greater extents of rating curve extrapolation were required at the other stations, making their high-flow estimates generally less certain.

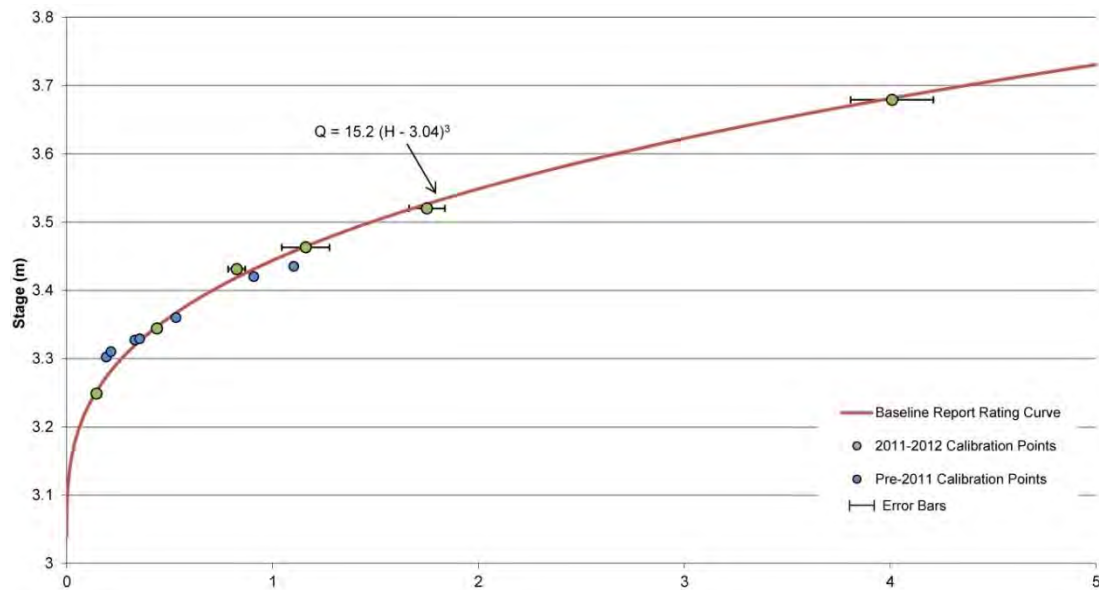
To demonstrate the methodology used, the results obtained, and the challenges faced to combine the pre-2011 and 2011-12 datasets, the stage adjustments and rating curve updates are described below for two stations, W3 and H18.

3.2.1 Canadian Creek (W3)

The W3 hydrometric monitoring station is located on Canadian Creek in the Britannia Creek watershed. Seven stage-discharge measurements were collected prior to 2011, and another six measurements were collected in 2011-12. The six stage measurements that define the 2011-12 rating curve for this station were surveyed to a local benchmark datum. There is no indication of a shift in the hydraulic control recorded in field notes or that is discernible from site photos for the pre-2011 discharge measurements, so the stage values for the seven pre-2011 measurements were shifted to align with the 2011-12 stage-discharge relationship by applying a constant offset (Figure 3.2-1). The pre-2011 points fall generally along the rating curve, though there is a slight discrepancy between the 2011-12 rating curve and the pre-2011 stage-discharge points in the low flow range. The highest recorded stage corresponds to a discharge that is approximately 4.6 times the highest measured discharge. This is much higher than the BC hydrometric standard for maximum extrapolation of 2.0 times the highest measured discharge (BC MoE, 2009), indicating that uncertainty in the high flow extrapolations for this station exceeds the standards.

3.2.2 Middle Casino Creek (H18)

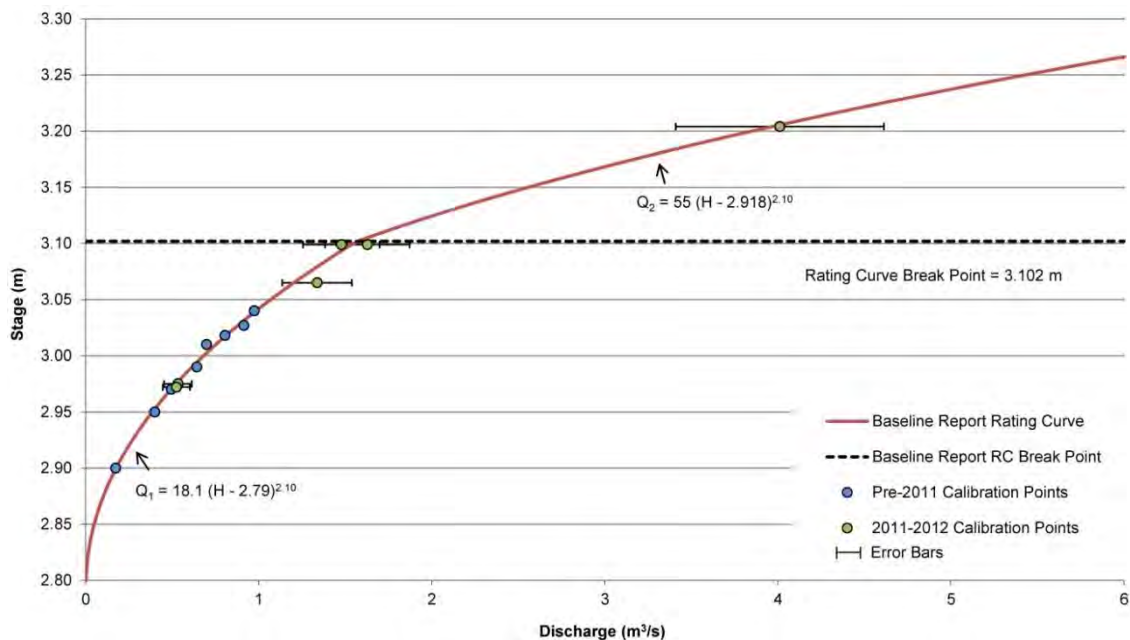
The H18 hydrometric monitoring station is located on Casino Creek in the Dip Creek watershed. Eight stage-discharge measurements were collected prior to 2011, and another six measurements were collected in 2011-12. The six measurements that define the 2011-12 rating curve for this station were surveyed to a local benchmark datum. Photos taken during the highest measured discharge indicate a slight overbank condition, proving some validation for the break point in the curve, although the exact stage at which the break point should be applied could be refined with additional data collection. There is no indication of a shift in the hydraulic control recorded in field notes or that is discernible from site photos for the pre-2011 discharge measurements, so the stages for the eight pre-2011 discharge measurements were shifted to align with the 2011-12 stage-discharge relationship by applying a constant offset (Figure 3.2-2). The eight pre-2011 discharge measurements generally cover a lower range of flows compared to the 2011-12 measurements that form the basis of the rating curve, but the pre-2011 and 2011-12 line up well in the range of overlap. The maximum recorded stage corresponds to a flow that is approximately 2.6 times the highest measured discharge. This is slightly higher than the BC hydrometric standard for maximum extrapolation of 2.0 times the highest measured discharge (BC MoE, 2009), indicating that uncertainty in the high flow extrapolations for this station slightly exceeds the standards.



NOTES:

1. Measurement error determined from visual estimation of measurement quality combined with the error from instrumentation.
2. The maximum recorded stage corresponds to an extrapolation 4.6 times the maximum measured discharge.

Figure 3.2-1 Canadian Creek Station (W3) Rating Curve



NOTES:

1. Measurement error determined from visual estimation of measurement quality combined with the error from instrumentation.
2. The maximum recorded stage corresponds to an extrapolation 2.6 times the maximum measured discharge.

Figure 3.2-2 Middle Casino Creek Station (H18) Rating Curve

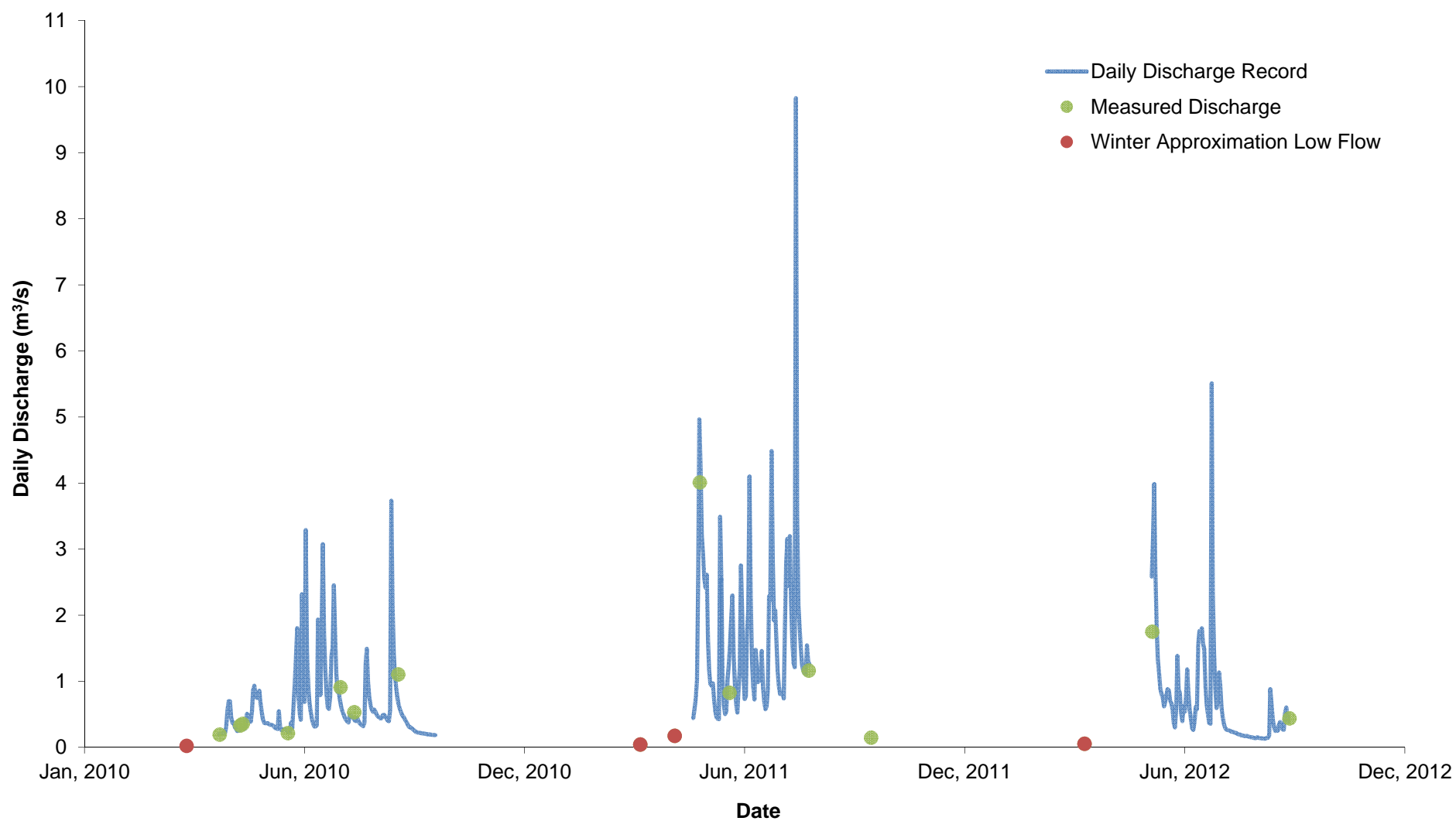
3.3 WINTER SEASON STREAMFLOW APPROXIMATION

The presence of ice within a stream channel results in an increase in water level (stage) at a given discharge compared to ice-free conditions. Therefore, the stage-discharge rating curve, which relates water level to discharge during ice-free conditions, cannot be applied to stage recorded during an ice-affected period. This means that a continuous streamflow record cannot be calculated from the stage record during the approximately seven-month winter season when ice is present in the channels (typically late October to mid-May). However, low flow estimates and monthly average flows for the entire year are needed for various modelling and statistical analyses, so an approximation must be made to infill the winter periods. WSC manually corrects the winter streamflow record at Big Creek to compensate for frozen water conditions. Winter flows for the Project stations are based on the flow patterns approximated by WSC for Big Creek. Winter low flow discharge measurements were recorded at the Project monitoring stations in 2010, 2011 and 2012, and these values were used to calibrate winter low flow estimates based on the Big Creek winter flow values and patterns. Details of the low flow calibration are provided in Section 4.1.1.

3.4 DISCUSSION OF MEASURED STREAMFLOW RESULTS

The measured streamflow hydrographs, including discharge measurements, for stations W3 and H18 are shown on Figures 3.4-1 and 3.4-2, respectively. The complete set of measured streamflow hydrographs is provided in Appendix A. The Project monitoring network records flows in a nested set of watersheds and sub-watersheds, which provides the opportunity to conduct “reality checks” on individual streamflow series and rating curves. Figures 3.4-3 to 3.4-6 show comparisons of measured unit runoff for the period of record for all stations, and for stations grouped by watershed. Figure 3.4-7 presents a comparison of flow duration curves, normalized by drainage area, for all nine active stations.

As presented on Figure 3.4-3, all of the monitoring stations recorded very consistent streamflow records, both in terms of flow timing and magnitude, with the expected small variability between stations resulting from local groundwater-surface water interactions, upstream watershed characteristics, data uncertainty, etc. This consistency lends strength to the recorded data and the analyses used to derive it. When the streamflow records are divided into individual catchments, as presented on Figures 3.4-4 to 3.4-6, it becomes apparent that in general, Britannia Creek is slightly drier than either Casino or Dip Creek, and the Dip Creek stations typically experience slightly larger rainfall-runoff events. The typically recorded flow pattern for the spring freshet seems somewhat muted in magnitude, and is followed by a brief period of very low flows and then a period of increased baseflow for the remainder of the summer. This pattern is evident even during years of low precipitation. The working hypothesis to explain this flow pattern is that the freshet runoff gets trapped in the active permafrost layer and is not released to the streams until later in the summer when the active layer melts.

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

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**CANADIAN CREEK STATION (W3)
MEASURED DISCHARGE HYDROGRAPH**

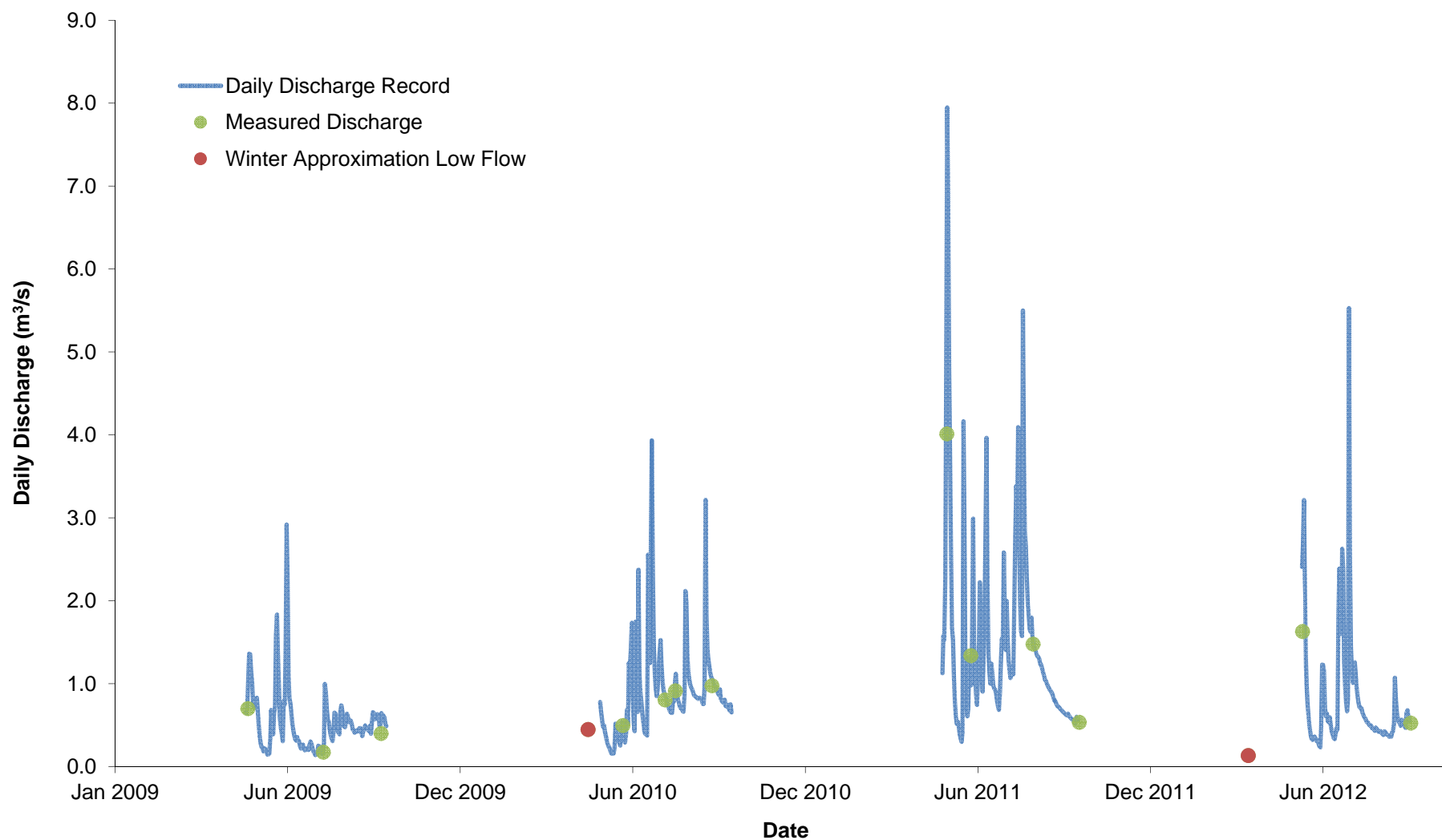
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FIGURE 3.4-1

REV
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**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

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CASINO COPPER-GOLD PROJECT

MIDDLE CASINO CREEK STATION (H18)
MEASURED DISCHARGE HYDROGRAPH

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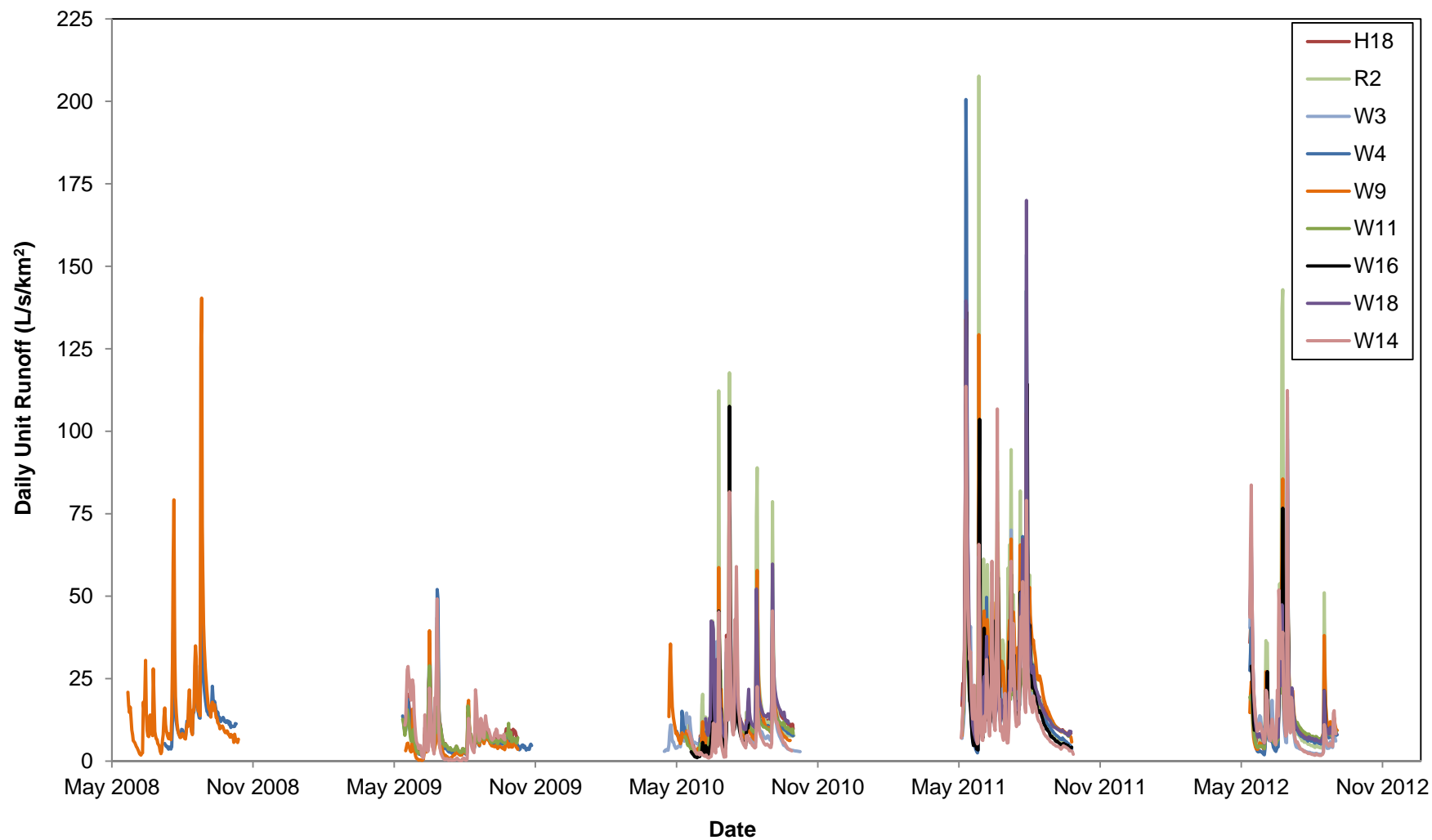
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FIGURE 3.4-2

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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**ALL SUB-WATERSHEDS
MEASURED UNIT RUNOFF HYDROGRAPHS**

Knight Piésold
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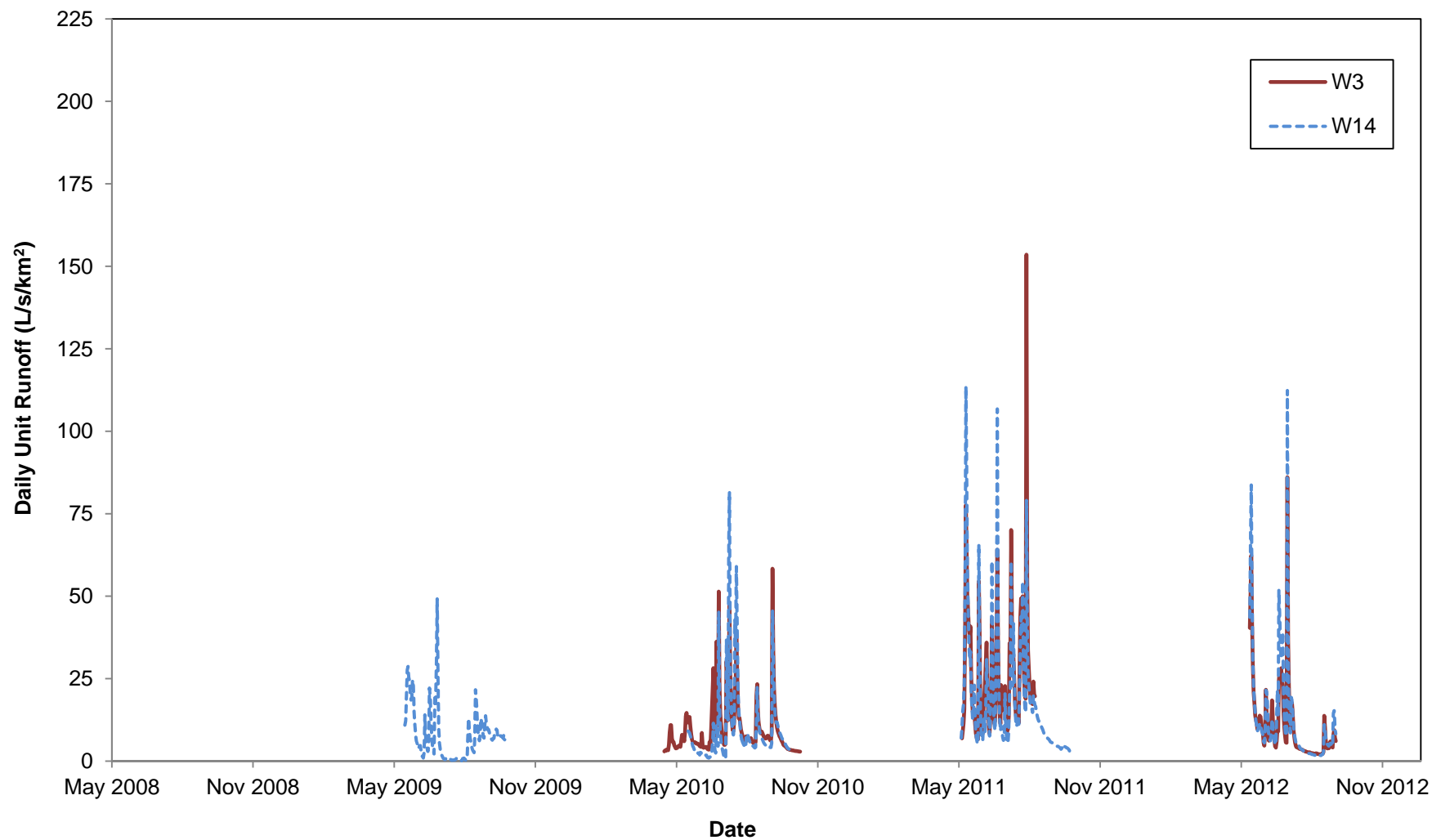
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FIGURE 3.4-3

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REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'



CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**BRITANNIA CREEK SUB-WATERSHEDS
MEASURED UNIT RUNOFF HYDROGRAPHS**

Knight Piésold
CONSULTING

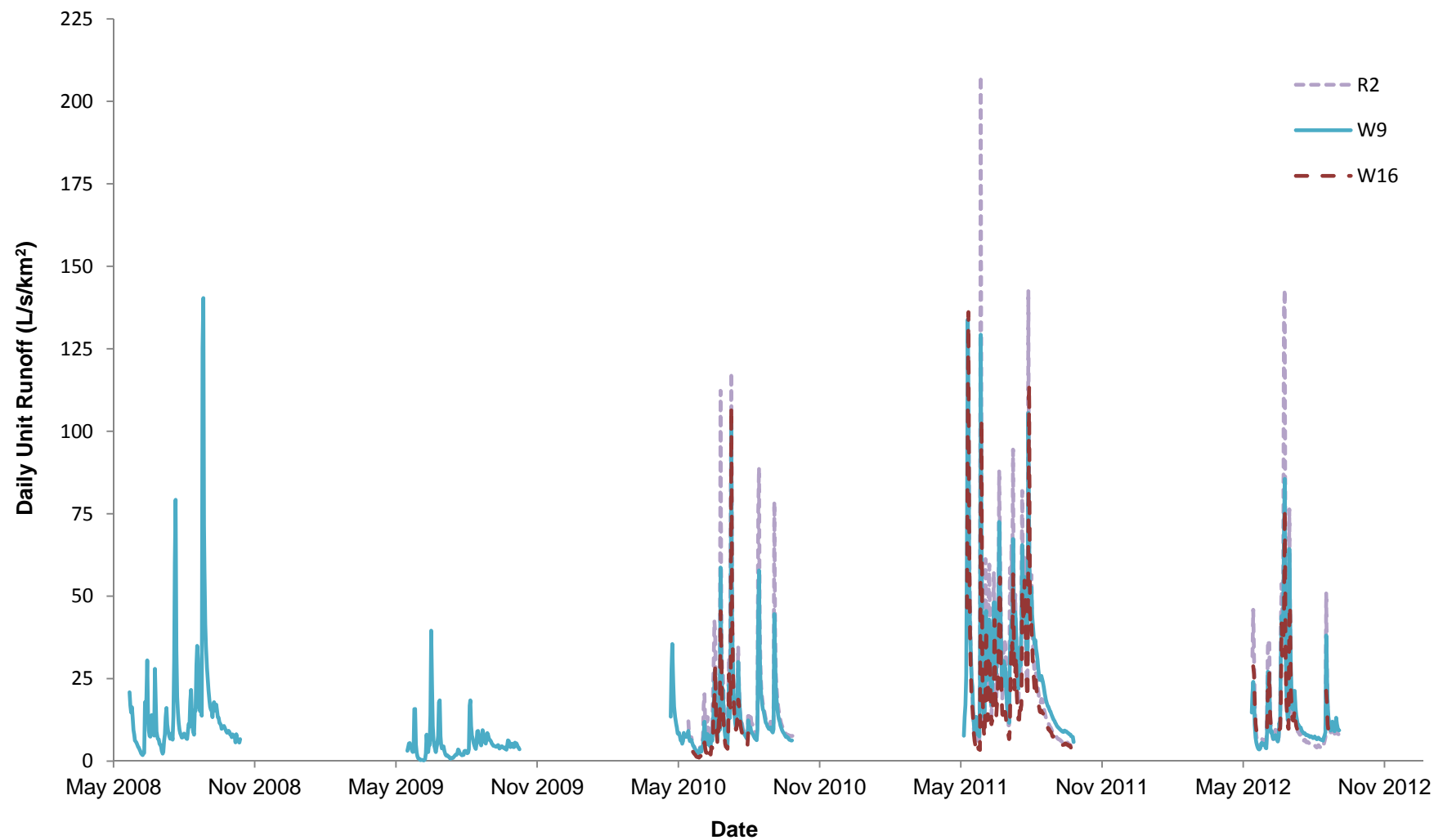
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5

FIGURE 3.4-4

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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

DIP CREEK SUB-WATERSHEDS
MEASURED UNIT RUNOFF HYDROGRAPHS

Knight Piésold
CONSULTING

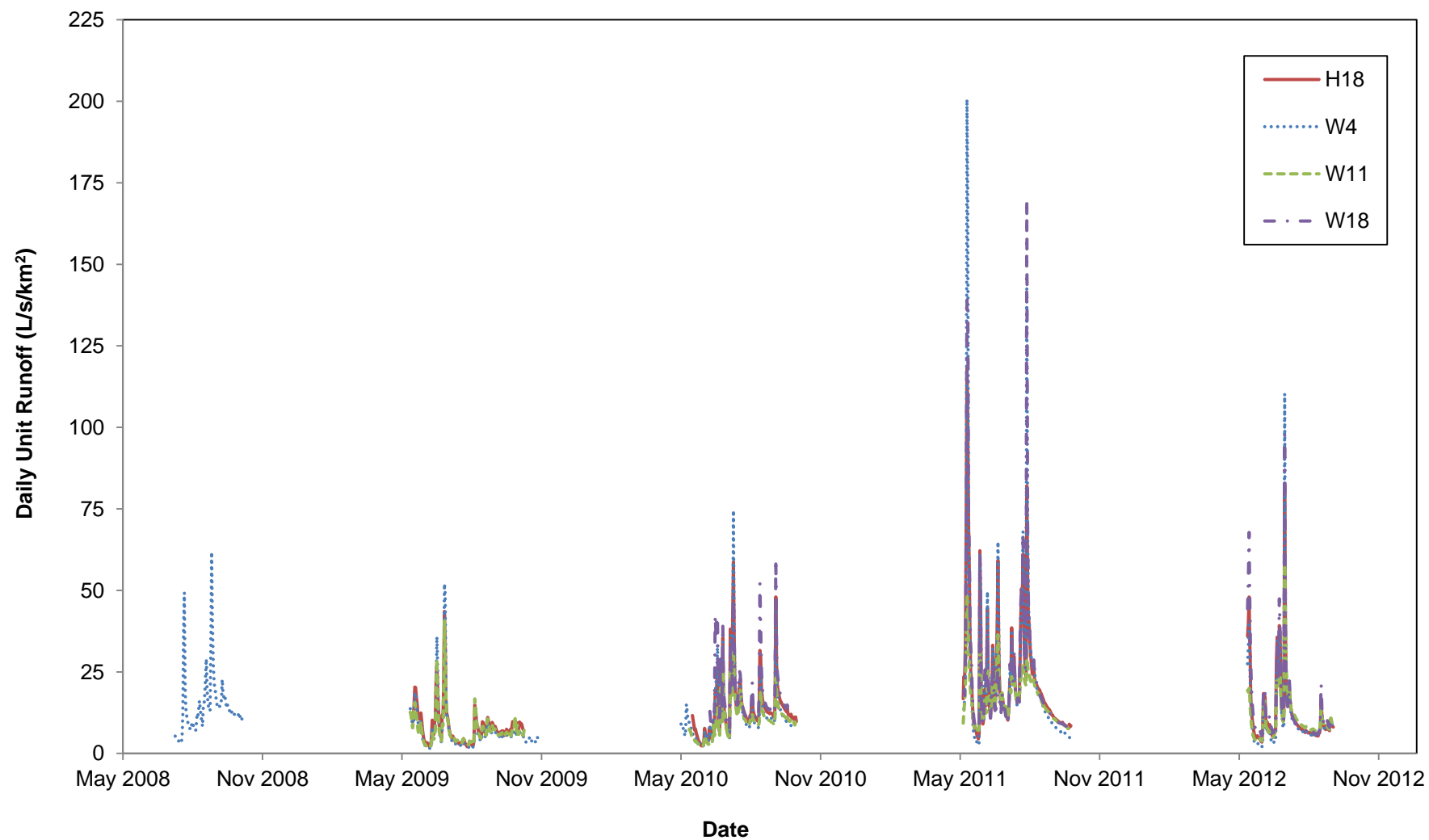
P/A NO.
VA101-325/14

REF. NO.
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FIGURE 3.4-5

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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

CASINO CREEK SUB-WATERSHEDS MEASURED UNIT RUNOFF HYDROGRAPHS

Knight Piésold
CONSULTING

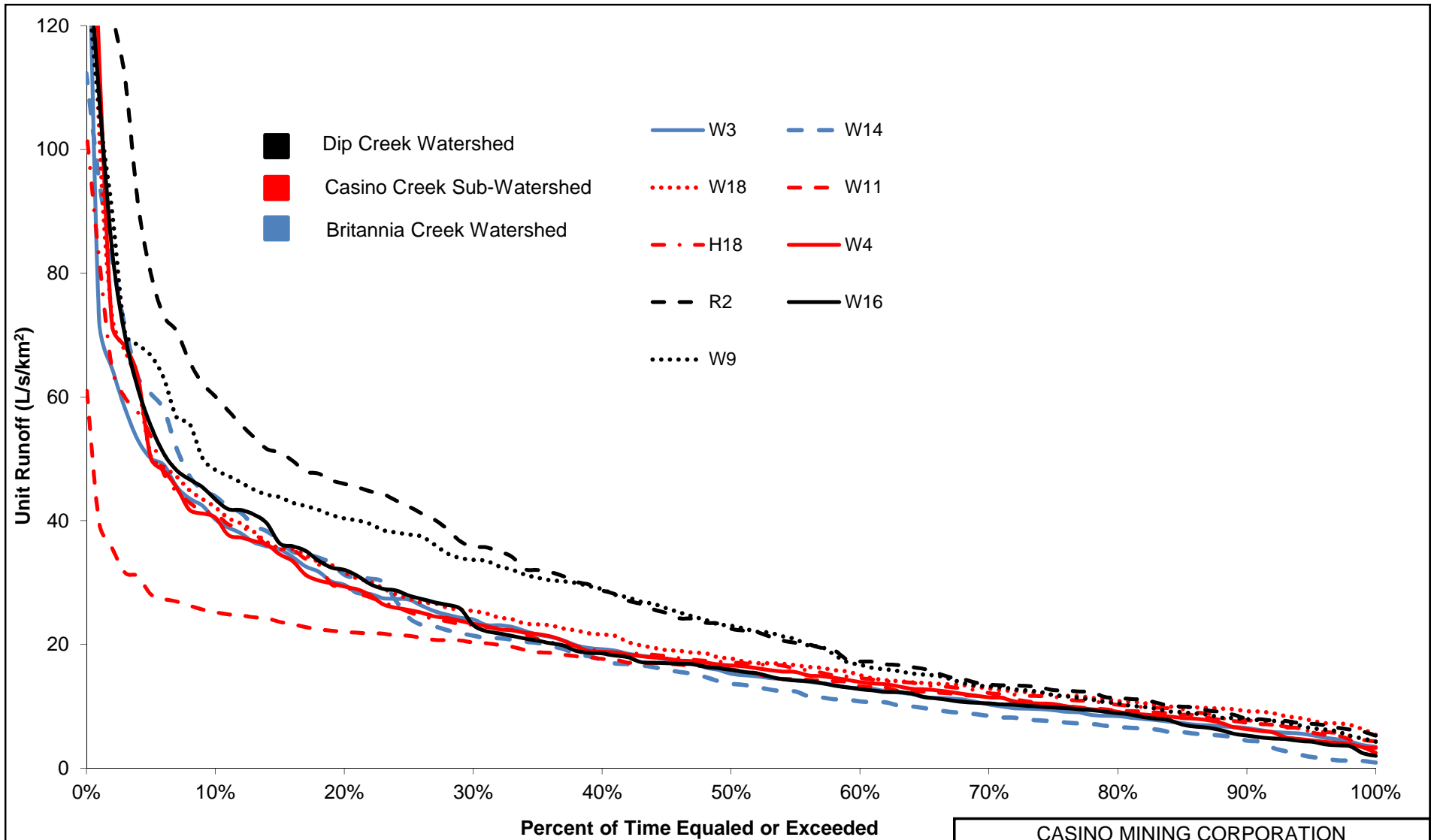
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FIGURE 3.4-6

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**NOTE:**

1. THE CURVES PRESENTED INCLUDE CONCURRENT MEASURED DATA ONLY.

CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**MEASURED UNIT RUNOFF DURATION
ALL STATIONS*****Knight Piésold***
CONSULTINGP/A NO.
VA101-325/14REF. NO.
5**FIGURE 3.4-7**REV
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4 – SYNTHETIC FLOW SERIES GENERATION

4.1 METHODOLOGY

4.1.1 Ranked Regression Methodology

A long-term synthetic flow series was developed for each active Project hydrometric station using a ranked regression modelling approach, which involved regressing ranked daily flows recorded at the Project station against ranked daily flows from a regional WSC station for the concurrent period of record. The equations describing the regression trends were then applied to the long-term WSC flow record, in this case the 37-year record for Big Creek, to produce synthetic daily flow series for the Project stations.

Since the concurrent flow records from the Project stations and the WSC station are of equal length, each flow value of equal rank has an equal probability of exceedance in the dataset. The monthly regression equations account for differences in drainage area and other physical characteristics that affect runoff and it is assumed that these parameters are approximately constant within months over a period of several years. The comparison of flow distributions rather than simultaneous daily flows overcomes differences in the timing of rainstorm or snowmelt events between watersheds, and ultimately provides a better model for synthetically generating a likely scenario of future flow patterns. It must be recognized that the ultimate objective of this exercise is not to reproduce the exact historical flow pattern in the Project area so that one can predict what the flow was or will be on any particular day, but to generate a dataset that provides a good representation of the expected future long-term mean annual discharge in the stream and the associated year to year, month to month, and day to day variability of flows.

A detailed description of the methodology used to select an appropriate regional surrogate watershed was undertaken for the 2010 Hydrometeorology Report (ref: VA101-325/3-1), issued on June 15, 2010 (KPL, 2010). Big Creek and the Indian River were identified as the regional flow records most suitable for use in developing long-term synthetic flow series for the Project stations. Both of these WSC stations have considerably larger drainage areas than the Project stations, so they might tend to under-represent the unit runoff generated during convective rainstorm events at the Project stations. Convective storms can cover an entire watershed where drainage areas are small, but this becomes decreasingly common as drainage area increases. The WSC gauging stations on Big Creek and Indian River have drainage areas of 1,750 km² and 2,200 km², respectively. The Project gauging stations have drainage areas ranging between 25 km² and 384 km², or one to two orders of magnitude smaller than the WSC gauging stations.

The Big Creek station has more data concurrent with the Project stations, and thus provided a larger sample to produce more meaningful correlations. In addition, the Big Creek streamflow record produced better correlations with the Project stations in general than did the Indian River record when regressed against the measured flow data for H18, W14, and W4, which are considered to represent the range of watershed characteristics in the study area. Therefore, the Big Creek streamflow record was selected for use in developing long-term synthetic flow series for all Project stations.

The ranked regression modelling was applied to data from discrete time periods defined by the primary mechanism determining flow patterns: May for rising limb of the spring freshet; June for the

falling limb of the spring freshet; July and August each for the period of elevated baseflow; and September and October combined for the autumn falling limb of the annual hydrograph. For example, if the bulk of runoff is due to snowmelt in May and June in both the subject (Project) watershed and the surrogate (WSC) watershed, the relationship between the two flow patterns is likely different than during drier summer months when runoff is largely driven by convective rainfall and groundwater discharge. A long-term synthetic flow series was produced by applying ranked regression equations to the long-term streamflow record from Big Creek. The synthetic series for each station contains 37 complete years of data spanning 1975 to 2012.

As discussed in Section 3.3, daily streamflow data are not available during the winter months of November through April with which to conduct regression modelling. However, long-term estimates of winter streamflow are required to best evaluate the magnitude of winter low flows, and the variability in these flows. Therefore, in order develop a synthetic winter flow series the regression correlations developed for other months in the year were applied to the period of November through April. These synthetic datasets were then compared to the instantaneous discharge measurements collected during the winters of 2010, 2011 and 2012, and the synthetic series that best matched the recorded data was selected as applicable for the winter season.

4.1.2 Ranked Regression Results

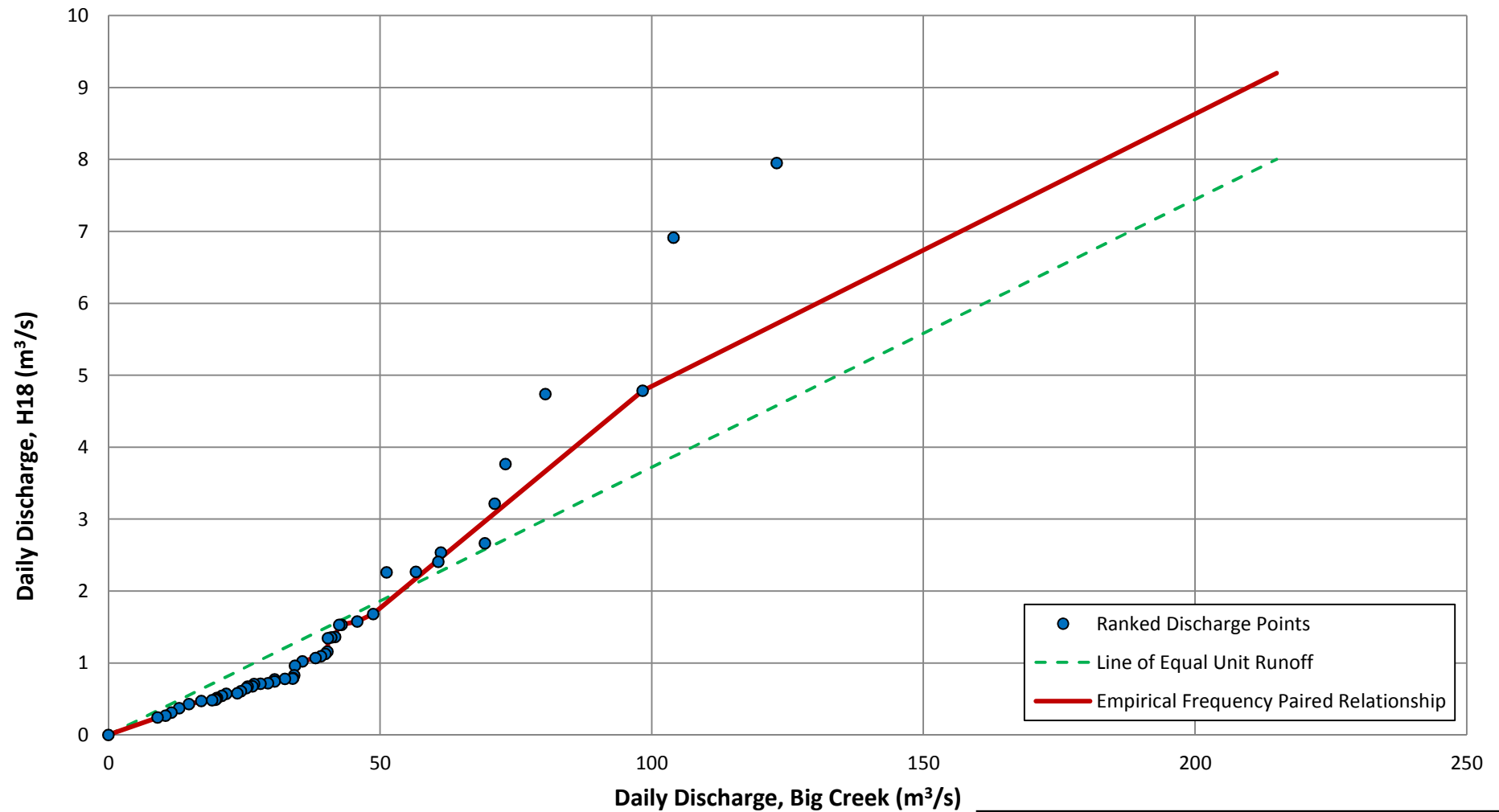
Representative examples of ranked regression plots for May and July are shown on Figures 4.1-1 and 4.1-2 for the H18 station. The complete set of ranked regression plots used to develop the regression equations and long-term flow series for each of the nine stations are included in Appendix B along with the resulting synthetic hydrographs.

During May, the regression plot shows that there is generally greater snowmelt runoff in Big Creek, however at higher flows the relationship changes and high unit runoff flows are recorded at H18. As mentioned in Section 3.4, the lower freshet runoff at H18 may be a result of proportionally more melt being lost to ground and stored in the active permafrost layer. The higher flows are inferred to be either rainfall or snowmelt derived. Proportionally higher rainfall derived flows at H18 are due to the greater likelihood of having substantial areal coverage of a convective storm system in a small watershed, thereby resulting in higher peak flows. Proportionally higher snowmelt derived flows at H18 are due to its smaller basin with smaller range of elevations and storage, so snowmelt runoff is concentrated in a smaller number of days, compared to attenuation in Big Creek. The higher flow trend is somewhat conservatively fit to the more sparse high flow dataset, in recognition of the greater uncertainty in these flows and in an attempt not to over-estimate long-term mean monthly discharge in May, as these infrequent but large high flows can easily skew the monthly mean. During July, runoff is proportionally higher at H18 over the full range of flows. This is interpreted as resulting from the release of the freshet runoff stored in the active permafrost layer at lower and mid flows, and the effect of greater areal coverage of rainfall events at higher flows. Since the quality of the results of a regression analysis is dependent on the quality of the rating curve, some divergence from these generally observed patterns is expected for stations where the maximum recorded stage corresponds to flows many times greater than the largest measured discharge.

Figure 4.1-3 shows an example comparison of concurrent measured and synthetic flows for H18. There is general agreement of flow event timing between the measured and the synthetic flow series for the measured period of record, with the exception of an August 2012 flow event predicted by the

ranked regressions that was not measured at the H18 station. This discrepancy shows up at other Project stations as well and is likely due to a precipitation event that did not occur in the immediate Project area but did affect the Big Creek watershed. The synthetic flow regression equations for H18 exhibit periods of over-prediction and under-prediction in the daily record, but do not appear to consistently under- or over-predict flows in any given season. This variability is expected, considering the transient nature of the summer storm events and the modelling approach which is to correctly model the magnitude and distribution of flows within each month or season, but is less concerned with actually predicting specific runoff events. The measured and synthetic flow hydrograph comparisons for the remainder of the stations are included in Appendix B.

The measured and synthetic flow duration curves (FDC's) for the H18 station are shown on Figure 4.1-4 for the period of concurrent data. The plot shows exact agreement between the measured and synthetic flows until the highest flows which are exceeded less than 5% of the time. This exact agreement is a result of the regression model methodology since each flow value is fit during the modelling process, except where extrapolations are developed such as in the May high flow trend, and therefore the FDC's should be an exact match except where extrapolations were applied. Consequently, the FDC plot is simply a tool used to assess whether the model is performing correctly, and since little other meaningful information can be gleaned from this comparison, no other measured/synthetic flow duration curve comparisons are presented in this report.



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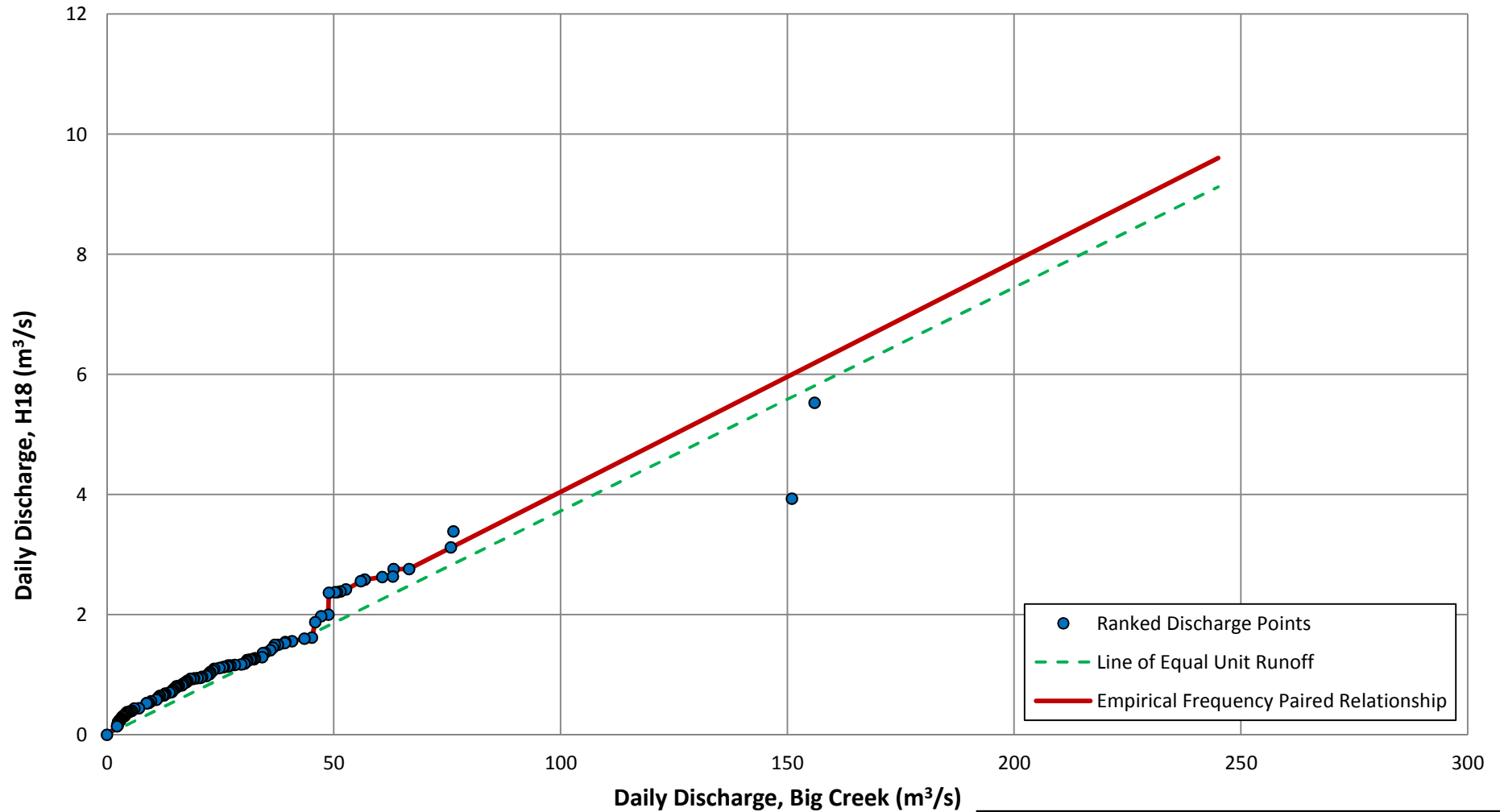
**H18 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 4.1-1**REV
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0	18MAR'13	ISSUED WITH REPORT P/A NO. VA101-325/14	PN	KT	KJB
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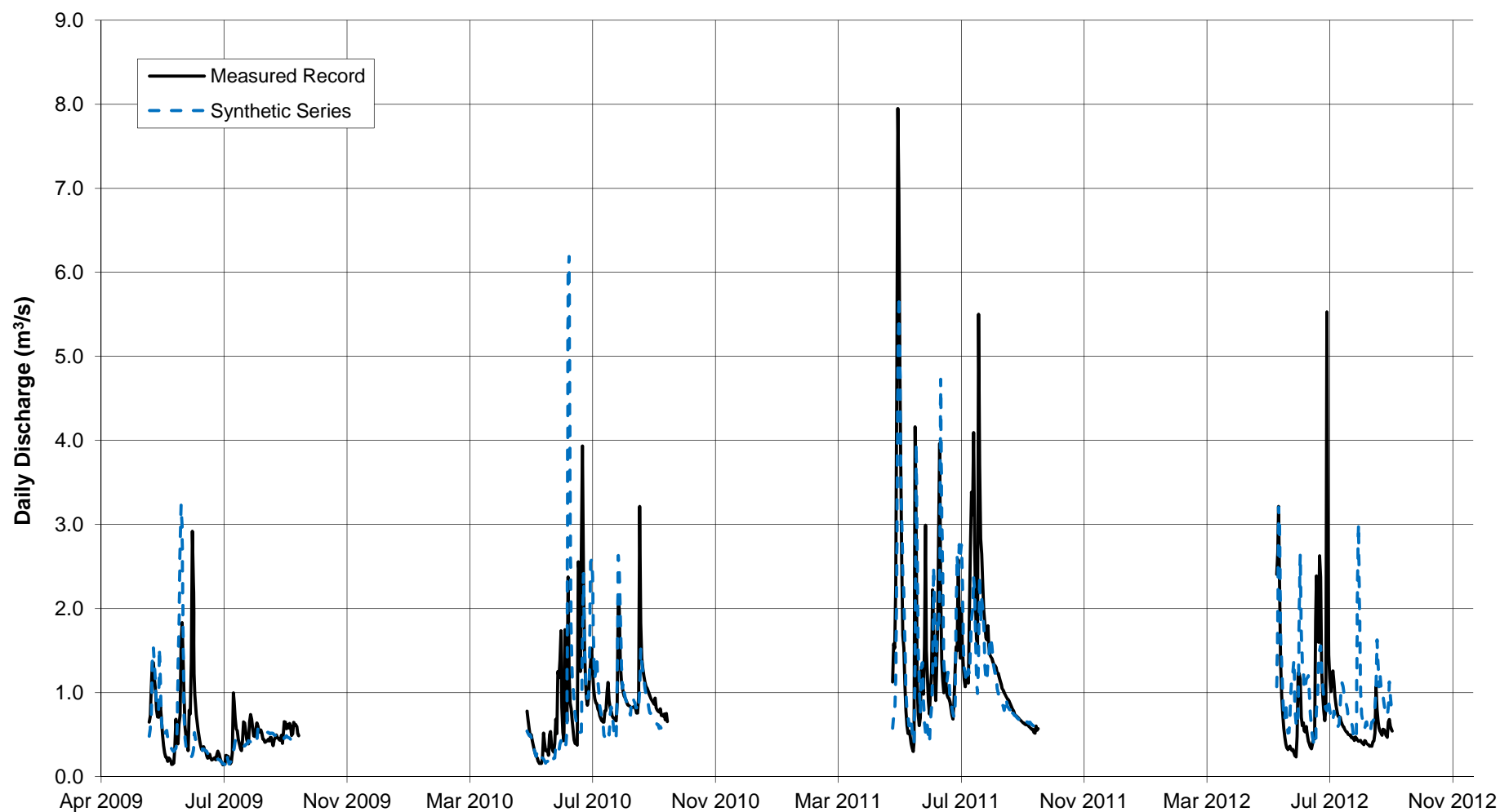
**H18 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 4.1-2**REV
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0	18MAR'13	ISSUED WITH REPORT P/A NO. VA101-325/14	PN	KT	KJB
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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

MIDDLE CASINO CREEK STATION (H18)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

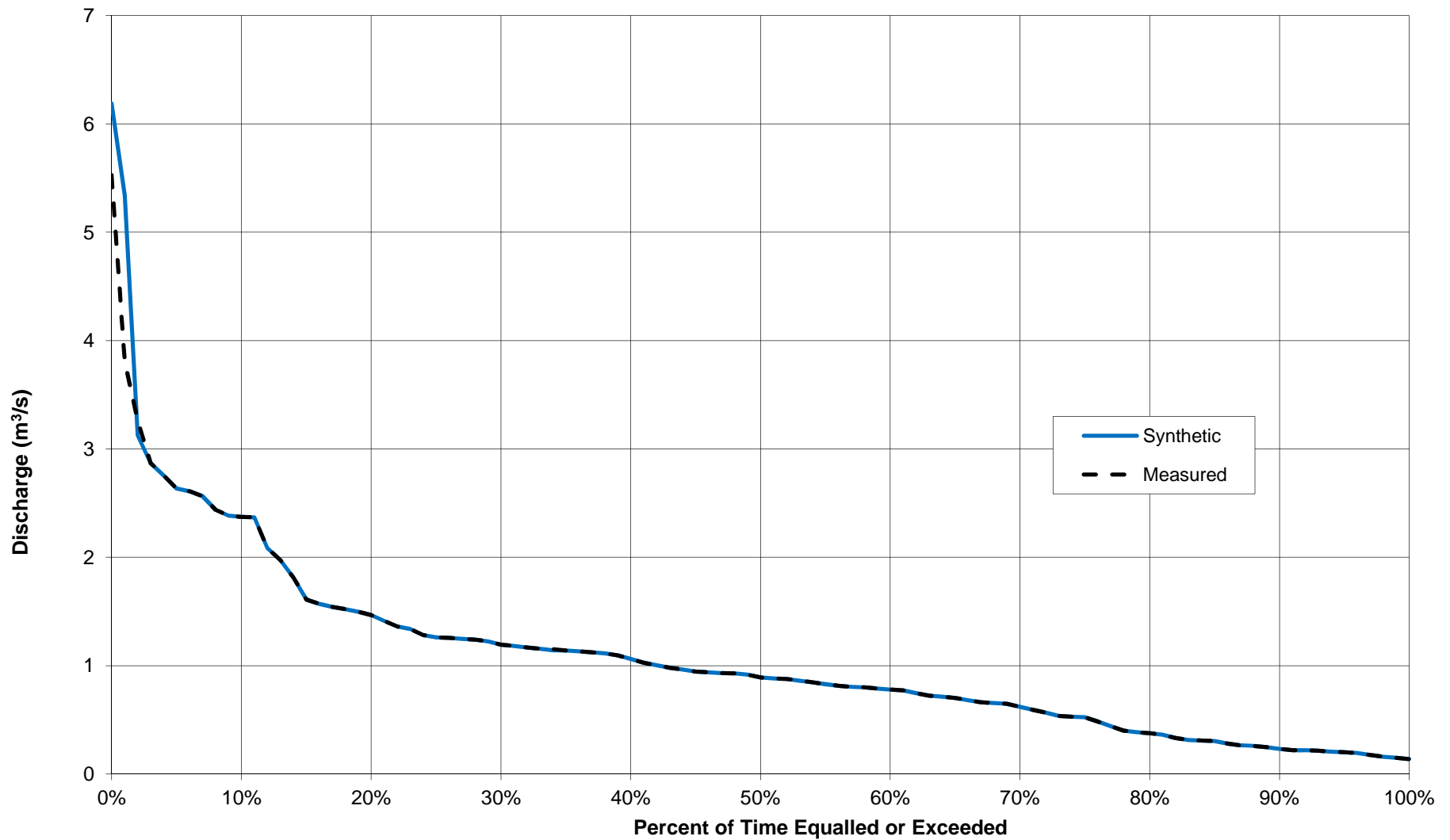
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VA101-325/14

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FIGURE 4.1-3

REV
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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**H18
JULY FLOW DURATION CURVE**

Knight Piésold
CONSULTING

REF. NO.
6

FIGURE 4.1-4

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REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

4.2 SYNTHETIC FLOW RESULTS

The resulting mean monthly and mean annual long-term synthetic flow estimates for all stations are summarized in Table 4.2-1 (discharge) and Table 4.2-2 and Figure 4.2-1 (unit runoff). The monthly flows for all 37 years in the synthetic flow series are provided in Appendix B.

The unit runoff results presented in Table 4.2-2 and Figure 4.2-1 illustrate the following patterns:

- Mean annual unit runoff at the nine active Project monitoring stations ranges between 4.3 l/s/km² and 5.8 l/s/km², with an average of 5.2 l/s/km² (~165 mm annual runoff).
- Maximum monthly unit runoff occurs in May, June, or July depending on the station, with maximum mean monthly values ranging between 12.0 l/s/km² and 16.5 l/s/km².

Similar to the measured flow comparison, the good coverage provided by the overlapping Project station network provides an opportunity to validate the synthetic flow. Useful “reality checks” for individual results can be provided by comparing stations situated in nested watersheds, as discussed below. Furthermore, the overall mean monthly runoff distribution for the Project, developed by averaging all nine long-term synthetic flow series, generally agrees well with the most representative regional flow series as presented on Figure 4.2-2.

4.2.1 Britannia Creek Unit Runoff Comparison

A comparison of long-term synthetic mean monthly unit runoff for the two active monitoring stations in Britannia Creek watershed is shown on Figure 4.2-3. It indicates that the two stations have very similar unit runoff in all months of the year, except May, where the unit runoff at W14 is higher than at W3. Furthermore, both of these stations exhibit lower runoff than in the Casino and Dip Creek watersheds, as shown on Figure 4.2-1. These differences may result from their different watershed aspect on the leeward side of the Casino/Britannia watershed divide. The average long-term mean annual unit runoff at these stations was determined to be 4.4 l/s/km² (~135 mm annual runoff).

TABLE 4.2-1

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

LONG-TERM MONTHLY AND ANNUAL DISCHARGE AT PROJECT STREAMFLOW STATIONS

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Station	Drainage Area (km ²)	Mean Monthly Discharge (m ³ /s)												
		January	February	March	April	May	June	July	August	September	October	November	December	Annual
Britannia Creek (W14)	45	0.01	0.01	0.00	0.05	0.71	0.43	0.43	0.27	0.31	0.12	0.04	0.02	0.20
Canadian Creek (W3)	64	0.01	0.01	0.01	0.06	0.82	0.71	0.64	0.37	0.39	0.15	0.06	0.03	0.27
Lower Dip Creek (W16)	384	0.02	0.01	0.01	0.26	3.90	4.59	4.29	3.49	2.20	0.82	0.29	0.13	1.68
Upper Dip Creek (W9)	194	0.07	0.05	0.04	0.35	2.43	2.34	3.20	2.22	1.68	0.80	0.31	0.14	1.13
Victor Creek (R2)	85	0.02	0.01	0.01	0.18	0.91	1.35	1.39	0.72	0.72	0.23	0.08	0.04	0.47
Lower Casino Creek (W4)	82	0.05	0.03	0.03	0.18	0.99	0.79	1.05	0.80	0.74	0.41	0.20	0.10	0.45
Middle Casino Creek (H18)	67	0.04	0.03	0.02	0.14	0.86	0.68	0.85	0.63	0.67	0.39	0.17	0.08	0.39
Upper Casino Creek (W11)	39	0.02	0.02	0.01	0.08	0.44	0.41	0.53	0.37	0.35	0.21	0.09	0.04	0.22
Brynelsen Creek (W18)	25	0.01	0.01	0.01	0.06	0.35	0.28	0.31	0.22	0.25	0.13	0.06	0.03	0.14

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NOTES:

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TABLE 4.2-2

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

LONG-TERM MONTHLY AND ANNUAL UNIT RUNOFF AT PROJECT STREAMFLOW STATIONS

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Station	Drainage Area (km ²)	Mean Monthly Unit Runoff (l/s/km ²)												
		January	February	March	April	May	June	July	August	September	October	November	December	Annual
Britannia Creek (W14)	45	0.19	0.13	0.10	1.1	15.7	9.6	9.6	6.1	6.8	2.6	0.8	0.4	4.4
Canadian Creek (W3)	64	0.23	0.15	0.13	0.9	12.8	11.1	10.0	5.8	6.0	2.3	1.0	0.4	4.3
Lower Dip Creek (W16)	384	0.05	0.03	0.03	0.7	10.1	12.0	11.2	9.1	5.7	2.1	0.8	0.3	4.4
Upper Dip Creek (W9)	194	0.38	0.26	0.21	1.8	12.6	12.1	16.5	11.5	8.6	4.1	1.6	0.7	5.8
Victor Creek (R2)	85	0.22	0.15	0.12	2.2	10.8	15.9	16.3	8.4	8.5	2.7	0.9	0.4	5.6
Lower Casino Creek (W4)	82	0.63	0.43	0.36	2.1	12.1	9.7	12.8	9.8	9.0	5.0	2.5	1.2	5.5
Middle Casino Creek (H18)	67	0.54	0.36	0.30	2.2	13.9	11.0	12.3	8.8	9.9	5.1	2.2	1.1	5.7
Upper Casino Creek (W11)	39	0.59	0.39	0.33	2.1	11.2	10.5	13.7	9.6	9.0	5.4	2.4	1.1	5.6
Brynelsen Creek (W18)	25	0.54	0.36	0.30	2.2	13.9	11.0	12.3	8.8	9.9	5.1	2.2	1.1	5.7

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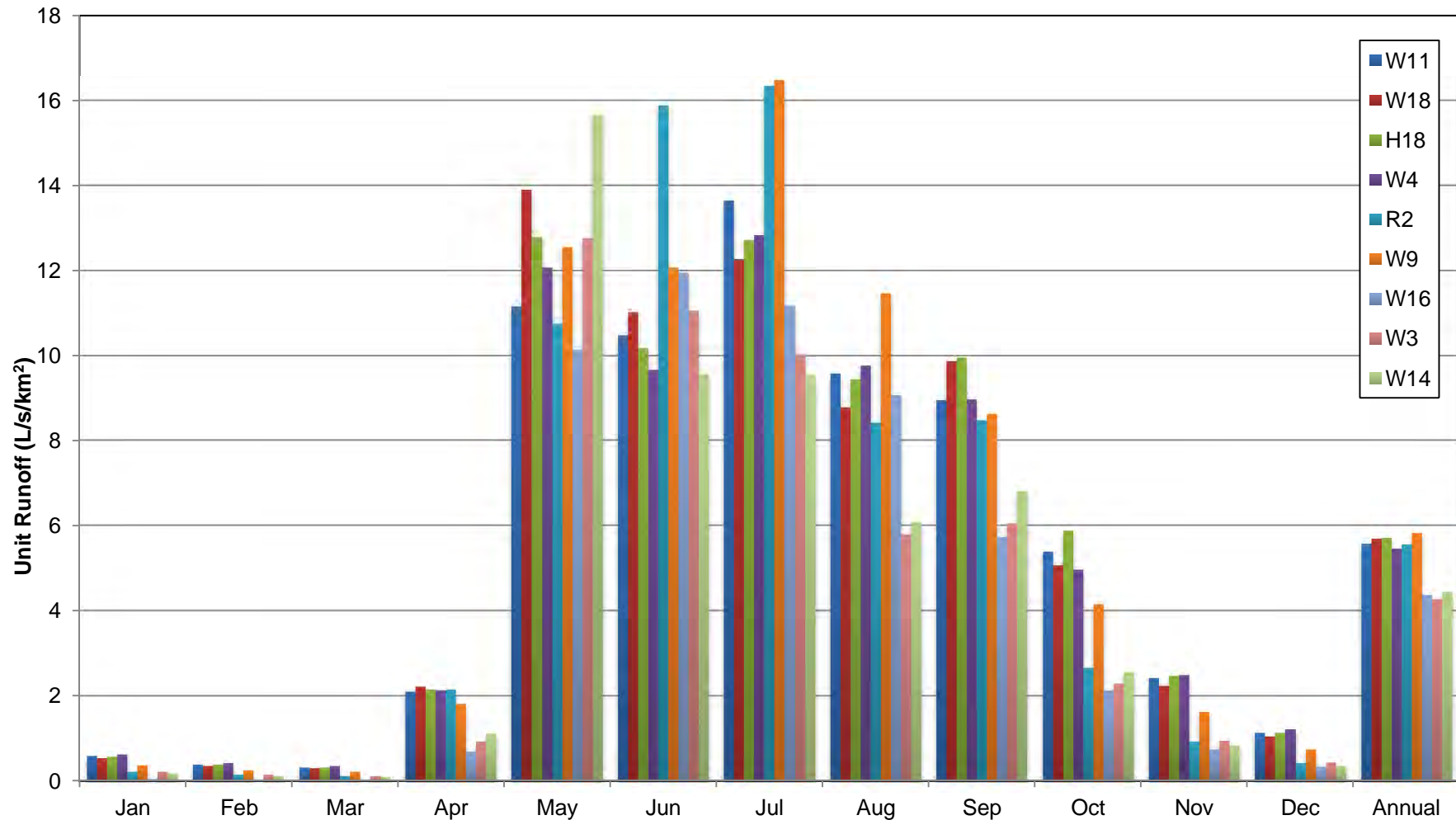
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4.2.2 Dip Creek Unit Runoff Comparison

A comparison of long-term synthetic mean monthly unit runoff for the Dip Creek watershed is shown on Figure 4.2-4. Monthly unit runoff is fairly variable between these stations during the open water season, and this is likely a result of numerous factors including variability in surface water-ground water interactions, varying effects of permafrost, spatial diversity of massive surface ice formed over the winter and the resulting effect on melt timing (strong influence on flows at R2), and streamflow record uncertainty. However, in general, it can be said that the magnitude of runoff is similar at stations R2 and W9, and is much lower at W16, which is likely a result of its lower average watershed elevation and inferred much larger capacity of the groundwater system to convey flow beneath the channel. The average long-term mean annual unit runoff at these stations, excluding W16, was determined to be 5.7 l/s/km^2 (~180 mm annual runoff).

4.2.3 Casino Creek Unit Runoff Comparison

A comparison of long-term synthetic mean monthly unit runoff for the Casino Creek sub-watershed is shown on Figure 4.2-5. All four stations exhibit very similar long-term synthetic mean monthly unit runoff with only minor variation in each month, which again can be primarily attributed to groundwater and permafrost variability and streamflow record uncertainty. Overall, these series strongly support each other and lend strength to the individual flow series. The average long-term mean annual unit runoff at these stations was determined to be 5.6 l/s/km^2 (~175 mm annual runoff).



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LONG-TERM UNIT RUNOFF COMPARISON ALL STATIONS

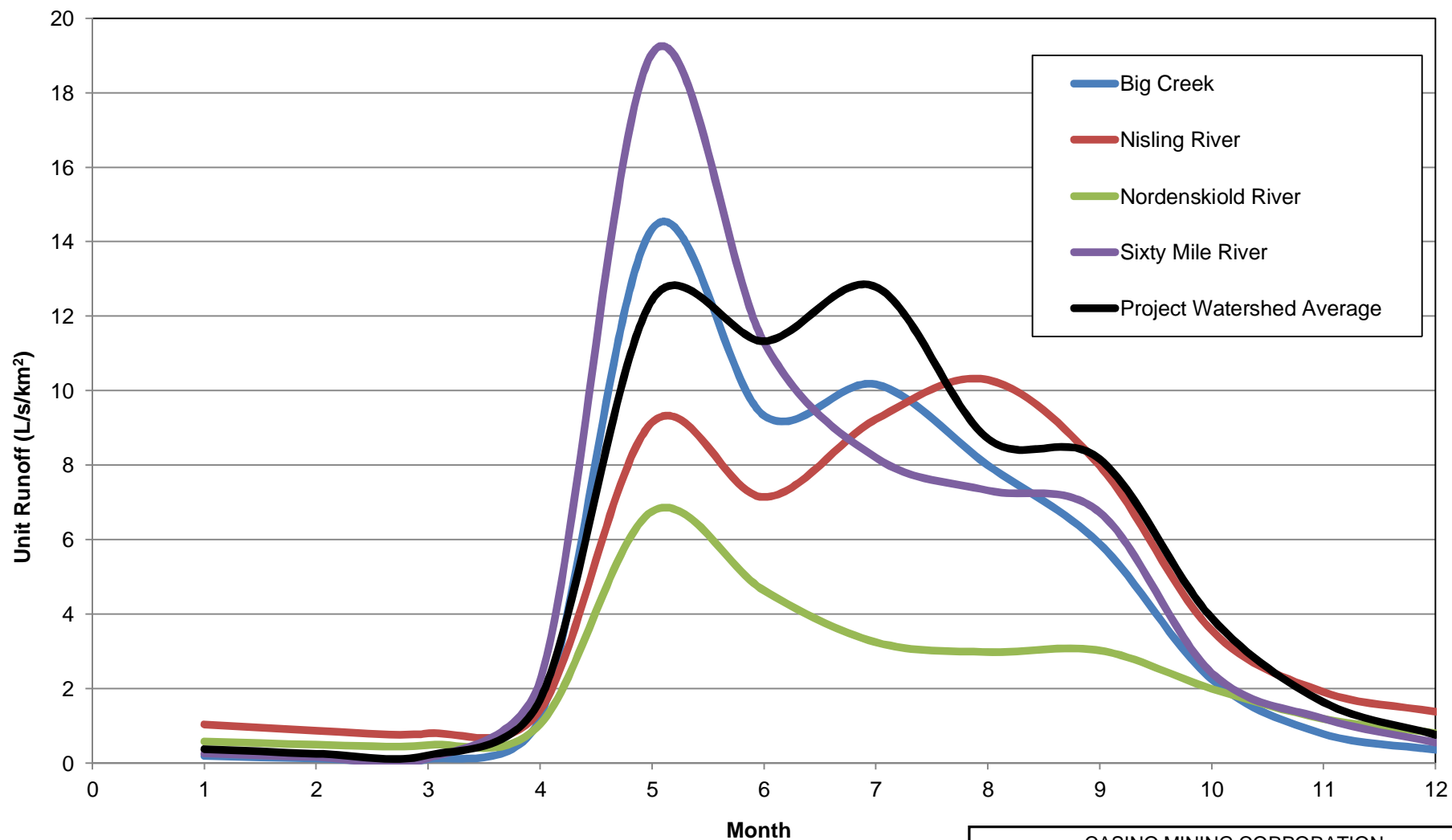
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CONSULTING

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FIGURE 4.2-1

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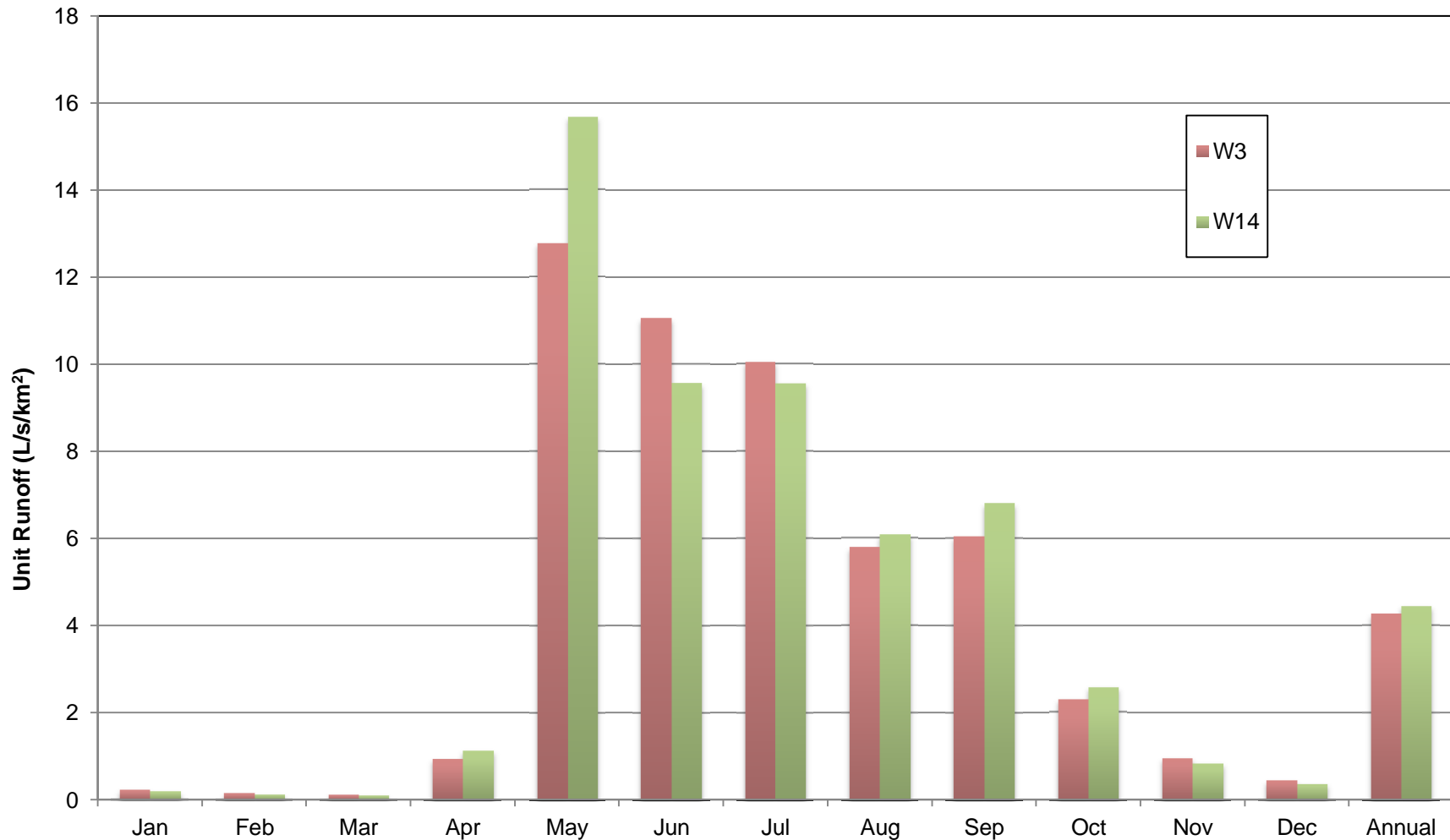


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CASINO COPPER-GOLD PROJECT

WSC STATIONS IN CASINO AREA
MEAN MONTHLY UNIT RUNOFF***Knight Piésold***
CONSULTINGP/A NO.
VA101-325/14REF. NO.
5**FIGURE 4.2-2**REV
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CASINO MINING CORPORATION

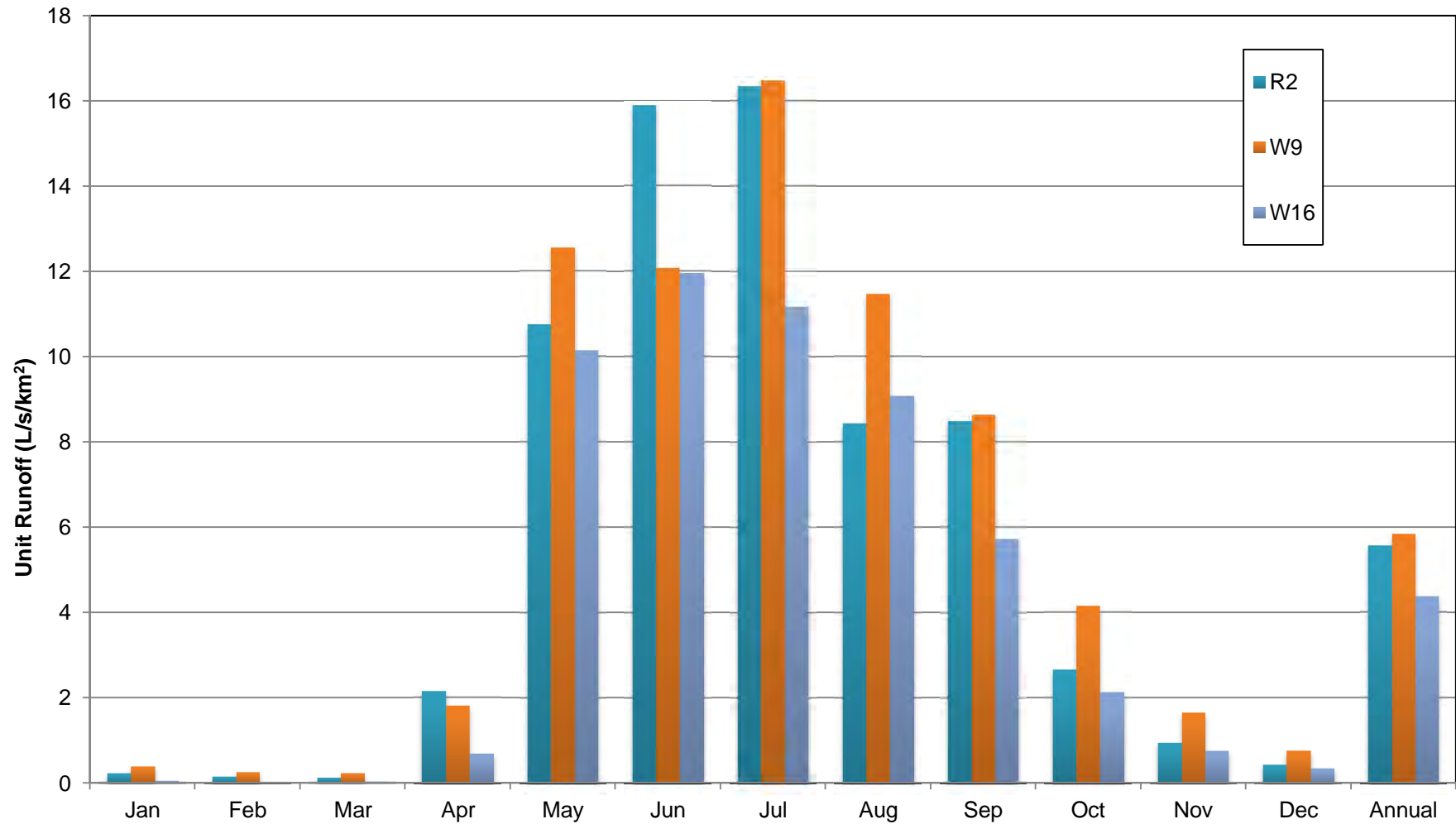
CASINO COPPER-GOLD PROJECT

LONG-TERM UNIT RUNOFF COMPARISON BRITANNIA CREEK SUB-WATERSHED

Knight Piésold
CONSULTING

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5**FIGURE 4.2-3**REV
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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**LONG-TERM UNIT RUNOFF COMPARISON
DIP CREEK SUB-WATERSHED**

Knight Piésold
CONSULTING

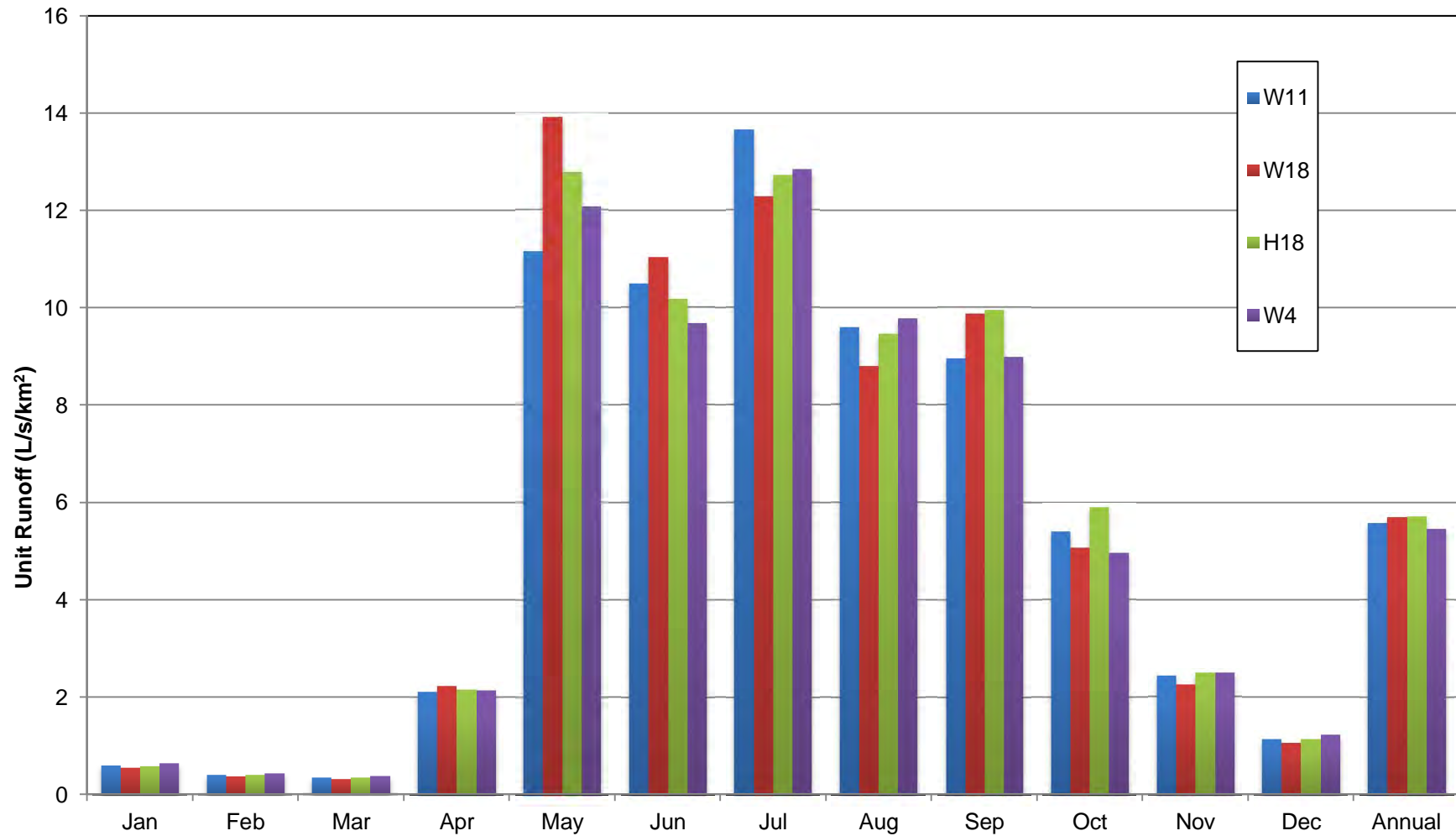
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FIGURE 4.2-4

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CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**LONG-TERM UNIT RUNOFF COMPARISON
CASINO CREEK SUB-WATERSHED**

Knight Piésold
CONSULTING

P/A NO.
VA101-325/14

REF. NO.
5

FIGURE 4.2-5

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5 – STREAMFLOW STATISTICS

Peak and low flow statistics were estimated for the Project on the basis of the long-term synthetic flow series, and then were compared to regional information for validation. The variability of monthly flows was also quantified in the form of 10-year wet and dry monthly values.

5.1 PEAK FLOW ANALYSIS

5.1.1 Methodology

In the Yukon interior, peak instantaneous flows commonly occur during the spring freshet period on larger rivers. However, on smaller streams such as those in the Project area, peak instantaneous flows may occur either during the freshet or throughout the late summer and early autumn due to intense rain or rain-on-snow events. Return period peak flows were calculated using the 37-year synthetic flow series developed for each station. The annual maximum daily discharge values in the synthetic series were entered into Environment Canada's CFA flood frequency software, which employs a Generalized Extreme Value distribution to fit the data, returning peak daily discharge estimates for the range of return periods. Peak daily values were then adjusted to peak instantaneous flows by applying an estimated ratio of instantaneous-to-daily peak discharge. The Project wide instantaneous-to-daily peak discharge ratio was determined by identifying several major flow events throughout the measured record for each site, dividing the flow corresponding to the highest stage measurement recorded on those days by the average flow of the same day, and then averaging the results from all stations. The resultant average instantaneous-to-daily peak discharge ratio is 1.6 for the Project area.

In order to support the results of the statistical peak flow analysis using a regional perspective, the methodology presented below provides a means of estimating return-period peak flows for rivers and streams in the Yukon (Janowicz, 1989). This methodology allows for peak flows to be estimated for any known drainage area, based on the following equation:

$$Q = a (A)^b \quad (1)$$

Where, Q = discharge in m^3/s

A = drainage area in km^2

a, b = empirical parameters

The empirical parameters "a" and "b" are specified for mean annual, 5-year, 10-year, 20-year, 50-year, and 100-year return periods, and are presented in Table 5.1-1. In addition to calculating flood values using the Janowicz approach, the peak flows recorded at regional WSC stations were reviewed as a final check against the peak flow values derived using the statistical analysis.

5.1.2 Results

The peak flows generated by the two methods described above were fairly similar, although the statistical analysis of the Project station flow series tended to result in larger, and therefore more conservative, peak flow values than the regional method. The results were quite variable between the Project stations, likely owing to the considerable uncertainty in deriving flows of this magnitude from the on-site records, which did not incorporate long return period floods into their development.

It is also understood that the goal of this exercise is to develop return period flood estimates for the overall Project area, and not necessarily for each individual hydrometric monitoring station. Therefore, in order to achieve this goal and to address the uncertainty and variability in the statistical results, a single set of return period flood values, or Project values, was derived for the Project area by selecting the largest discharge per unit area value from all of the monitoring stations, for each return period. The peak flows generated by statistical analysis of the synthetic series, and combined into a single set of peak flow values for the Project area are recommended for Project design. The peak flow values are presented in terms of unit-area discharge in Table 5.1-2. All values have been adjusted to include a 15% safety factor to account for potentially greater weather extremes and permafrost melt due to climate change.

These peak flow values contain considerable uncertainty due to the extent of rating curve extrapolation required to estimate high flows at the Project monitoring stations. Such uncertainty should be considered during project design.

Return Period	Regression Constant a	Regression Coefficient b
Mean Annual	0.122	0.968
2 yr	0.085	1.007
5 yr	0.176	0.952
10 yr	0.257	0.923
20 yr	0.352	0.899
50 yr	0.500	0.873
100 yr	0.631	0.855

M:\101\00325\14\VA\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\PeakFlow_20130521.xlsx\Janowicz Coeff TBL5.1-1

NOTES:

1. THE REGRESSION VALUES PRESENTED ABOVE CORRESPOND TO THE YUKON MOUNTAIN ZONE AS DESCRIBED BY JANOWICZ (1989).

Table 5.1-1 Regional Peak Flow Return Period Coefficients

TABLE 5.1-2

**CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT**

RECOMMENDED PEAK FLOW VALUES FOR PROJECT STREAMFLOW STATIONS

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Station	Drainage Area (km ²)	Return Period Peak Instantaneous Discharge (l/s/km ²)							
		Mean Annual	2 Year	5 Year	10 Year	20 Year	50 Year	100 Year	200 Year
Britannia Creek (W14)	45	167	162	238	283	322	368	399	425
Canadian Creek (W3)	64	159	141	225	284	345	428	495	564
Lower Dip Creek (W16)	384	183	173	272	331	383	443	484	522
Upper Dip Creek (W9)	194	183	167	264	326	386	461	516	572
Victor Creek (R2)	84.5	199	194	268	314	353	398	431	459
Lower Casino Creek (W4)	82	140	130	201	245	285	334	370	406
Middle Casino Creek (H18)	67	129	124	184	219	250	286	310	332
Upper Casino Creek (W11)	39	144	138	205	243	276	314	339	362
Brynelsen Creek (W18)	25	143	135	199	239	275	318	348	376
Maximum Return Period UR (Recommended)	-	199	194	272	331	386	461	516	572

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\PeakFlow_20130521.xlsx\ALL Table 5.2 UR

NOTES:

1. THE MAXIMUM RETURN PERIOD VALUES ARE RECOMMENDED FOR APPLICATION WITHIN THE CASINO CREEK, DIP CREEK AND BRITANNIA CREEK WATERSHEDS.
2. RECOMMENDED PEAKFLOW VALUES INCLUDE A 15% SAFETY FACTOR TO ACCOUNT FOR POSSIBLE FLOW CHANGES DUE TO CLIMATE CHANGE.

0	07MAY'13	ISSUED WITH REPORT VA101-325/14	ICC	KT	KJB
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5.2 10-YEAR, 7-DAY LOW FLOWS

Annual low flows in the Yukon Territory typically occur in February, March or April, as groundwater inflows to the creeks diminish through the winter. Watershed area, the extent and thickness of permafrost within the watershed, storage (aquifers, lakes, and wetlands), and channel slope are all factors that influence low flows (Janowicz, 1990). Low flow return period statistics were developed for each Project monitoring station using Environment Canada's LFA low-flow statistical software package. The results of this analysis are presented in Table 5.2-1. The results exhibit a high degree of consistency between mean annual low flows at stations within the each watershed, with the Casino Creek stations all exhibiting the highest average low flows, the stations in Dip Creek and Britannia Creek exhibiting the lowest average low flows, and station W9 on Dip Creek immediately upstream of Casino Creek exhibiting intermediate low flows. However, the analysis concludes that 7-day low flows are essentially zero at all stations for a 10-year return period. The results are generally consistent with flow observations made on site, and therefore the average Project 7-day low flow values are the watershed averaged (Casino, Dip/Britannia, W9) values presented in Table 5.2-1, and the 10-year return period low flow values are assumed to be zero at all sites.

Station	Drainage Area (km ²)	Return Period Unit Runoff 7- Day Low Flows (l/s/km ²)	
		Mean	10-Year
W14	45	0.07	0.00
W3	64	0.08	0.00
W16	384	0.02	0.00
W9	192	0.17	0.01
R2	85	0.09	0.00
W4	82	0.28	0.01
H18	67	0.27	0.01
W11	39	0.26	0.01
W18	25	0.24	0.01
Casino Creek Average	-	0.26	0.00
W9	-	0.17	0.00
Dip and Britannia Creek Average	-	0.07	0.00

M:\101\00325\14\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline
Report\LowFlows_20130529.xlsx]Table5.2-1

NOTES:

1. RETURN PERIOD VALUES WERE GENERATED USING WSC'S LFA SOFTWARE AND THE LONG-TERM SYNTHETIC FLOW SERIES DEVELOPED FOR EACH HYDROLOGY STATION.
2. 10-YEAR RETURN PERIOD VALUES ARE SO SMALL THAT THEY ARE CONSIDERED TO BE ZERO FOR ALL STATIONS.

Table 5.2-1 Low Flow Statistics, 10-year return Period 7-Day Low Flows

5.3 WET AND DRY MONTHLY FLOWS

For each Project station, the variability of monthly average flows was estimated by calculating monthly average flows for a 10-year wet and 10-year dry return period. These monthly average

flows were calculated based on the long-term synthetic flow series for each station using the Palisade Decision Tools @RISK statistical software. For each month, a statistical distribution was fit to the monthly flow values in the synthetic flow series, with the 10th and 90th percentile values of the distribution representing the 10-year dry and 10-year wet monthly flows, respectively. A relatively high degree of consistency in the resultant runoff values was observed within each watershed. Watershed averaged values were developed, and are presented in Table 5.3-1 and on Figure 5.3-1 for each month and return period. It is believed that the development of watershed average values will simplify the application of these results to various Project locations should it be required.

TABLE 5.3-1

**CASINO MINING CORPORATION
CASINO PROJECT**

**WET AND DRY RUNOFF
10-YEAR WET AND DRY MONTHLY UNIT RUNOFF (l/s/km²)**

Print Oct/10/13 14:10:13

Month	Casino Creek Watershed			Dip Creek Watershed			Britannia Creek Watershed		
	10-Year Dry	Average	10-Year Wet	10-Year Dry	Average	10-Year Wet	10-Year Dry	Average	10-Year Wet
Jan	0.10	0.60	1.3	0.05	0.31	0.69	0.04	0.21	0.47
Feb	0.07	0.40	0.86	0.04	0.21	0.44	0.02	0.14	0.30
Mar	0.06	0.35	0.76	0.03	0.18	0.39	0.02	0.12	0.27
Apr	0.11	2.0	5.4	0.05	1.9	4.2	0.02	0.99	2.2
May	3.0	13	31	2.4	12	31	3.2	15	33
Jun	3.6	11	19	4.3	14	28	3.8	11	20
Jul	4.7	13	23	3.3	16	30	1.8	10	21
Aug	4.2	9.8	17	2.7	11	22	1.3	6.3	14
Sep	5.5	9.6	15	3.0	8.1	15	2.4	6.5	12
Oct	3.6	5.4	7.2	1.7	3.2	4.7	1.3	2.5	3.6
Nov	0.91	2.5	4.5	0.42	1.2	2.2	0.32	0.94	1.7
Dec	0.22	1.2	2.6	0.10	0.55	1.2	0.08	0.43	0.92

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\Wet&DryMonthlyFlow_20130520.xlsx]average ratio Tab5.3-1

NOTES:

1. RETURN PERIOD VALUES WERE GENERATED USING PALISADE DECISION TOOLS @RISK DISTRIBUTION FITTING SOFTWARE AND THE LONG-TERM SYNTHETIC FLOW SERIES DEVELOPED FOR EACH OF THE CASINO HYDROLOGY STATIONS.
2. THE CASINO CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS W4, H18, W18 AND W11.
3. THE DIP CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS R2, W9 AND W16.
4. THE BRITANNIA CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS W3 AND W14.

0	27MAR'13	ISSUED WITH REPORT VA101-325/14	MH	KT	KJB
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TABLE 5.3-1

**CASINO MINING CORPORATION
CASINO PROJECT**

**WET AND DRY RUNOFF
10-YEAR WET AND DRY MONTHLY UNIT RUNOFF (l/s/km²)**

Print Oct/10/13 14:10:13

Month	Casino Creek Watershed			Dip Creek Watershed			Britannia Creek Watershed		
	10-Year Dry	Average	10-Year Wet	10-Year Dry	Average	10-Year Wet	10-Year Dry	Average	10-Year Wet
Jan	0.10	0.60	1.3	0.05	0.31	0.69	0.04	0.21	0.47
Feb	0.07	0.40	0.86	0.04	0.21	0.44	0.02	0.14	0.30
Mar	0.06	0.35	0.76	0.03	0.18	0.39	0.02	0.12	0.27
Apr	0.11	2.0	5.4	0.05	1.9	4.2	0.02	0.99	2.2
May	3.0	13	31	2.4	12	31	3.2	15	33
Jun	3.6	11	19	4.3	14	28	3.8	11	20
Jul	4.7	13	23	3.3	16	30	1.8	10	21
Aug	4.2	9.8	17	2.7	11	22	1.3	6.3	14
Sep	5.5	9.6	15	3.0	8.1	15	2.4	6.5	12
Oct	3.6	5.4	7.2	1.7	3.2	4.7	1.3	2.5	3.6
Nov	0.91	2.5	4.5	0.42	1.2	2.2	0.32	0.94	1.7
Dec	0.22	1.2	2.6	0.10	0.55	1.2	0.08	0.43	0.92

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\Wet&DryMonthlyFlow_20130520.xlsx]average ratio Tab5.3-1

NOTES:

1. RETURN PERIOD VALUES WERE GENERATED USING PALISADE DECISION TOOLS @RISK DISTRIBUTION FITTING SOFTWARE AND THE LONG-TERM SYNTHETIC FLOW SERIES DEVELOPED FOR EACH OF THE CASINO HYDROLOGY STATIONS.
2. THE CASINO CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS W4, H18, W18 AND W11.
3. THE DIP CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS R2, W9 AND W16.
4. THE BRITANNIA CREEK WATERSHED VALUES WERE DERIVED BY AVERAGING THE VALUES CALCULATED FOR STATIONS W3 AND W14.

0	27MAR'13	ISSUED WITH REPORT VA101-325/14	MH	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

6 – REFERENCES

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APPENDIX A

STAGE-DISCHARGE TABLES, RATING CURVES, AND MEASURED HYDROGRAPHS

(Pages A-1 to A-27)

TABLE 1

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

BRITANNIA CREEK STATION (W14)
SUMMARY OF DISCHARGE MEASUREMENTS

Print Jul/10/13 14:33:39

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
23 May 2008	1	Current Meter	-	0.86	-	-
8 Jul 2008	1	Current Meter	-	0.29	-	-
10 Sep 2008	1	Current Meter	-	0.40	-	-
10 Oct 2008	1	Current Meter	-	0.15	-	-
19 May 2009	1	Current Meter	3.960	0.47	10%	-
30 Jun 2009	1	Current Meter	4.037	1.10	10%	-
8 Aug 2009	1	Current Meter	3.887	0.16	10%	-
6 Oct 2009	1	Current Meter	3.867	0.12	10%	-
21 Apr 2010	1	Current Meter	-	0.16	-	-
8 May 2010	2	Current Meter	-	0.53	-	-
16 Jun 2010	1	Current Meter	3.842	0.07	15%	-
29 Jul 2010	1	Current Meter	3.952	0.45	15%	-
8 Aug 2010	1	Current Meter	3.922	0.34	15%	-
14 Sep 2010	1	Current Meter	3.947	0.50	15%	-
31 Mar 2011	2	Rhodamine	-	0.00	15%	-
28 Apr 2011	2	Rhodamine	-	0.13	15%	-
19 May 2011	2	Current Meter	4.213	2.77	15%	0.5
12 Jun 2011	2	Current Meter	3.962	0.57	15%	0.2
16 Aug 2011	2	Current Meter	4.017	1.28	15%	0.2
6 Oct 2011	1	Current Meter	3.856	0.07	15%	0.2
27 Mar 2012	2	Rhodamine	-	0.10	15%	-
23 May 2012	1	Current Meter	4.083	2.01	20%	-
12 Sep 2012	1	Current Meter	3.928	0.30	5%	-

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W14\W14 Rating Curve.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
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TABLE 2

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

CANADIAN CREEK STATION (W3)
SUMMARY OF DISCHARGE MEASUREMENTS

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Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
23 May 2008	1	Current Meter	-	1.60	-	
8 Jul 2008	1	Current Meter	-	0.33	-	
10 Sep 2008	1	Current Meter	-	1.57	-	
11 Oct 2008	1	Current Meter	-	0.38	-	
19 May 2009	1	Current Meter	-	0.67	-	
30 Jun 2009	1	Current Meter	-	1.54	-	
8 Aug 2009	1	Current Meter	-	1.07	-	
6 Oct 2009	1	Current Meter	-	0.25	-	
25 Mar 2010	1	Salt Dilution	-	0.02	25%	
21 Apr 2010	1	Current Meter	3.302	0.19	10%	5.0
8 May 2010	2	Current Meter	3.327	0.33	10%	1.0
10 May 2010	1	Current Meter	3.329	0.35	10%	0.5
16 Jun 2010	1	Current Meter	3.310	0.21	10%	
29 Jul 2010	1	Current Meter	3.420	0.91	10%	
9 Aug 2010	1	Current Meter	3.360	0.53	10%	
14 Sep 2010	1	Current Meter	3.435	1.10	10%	
31 Mar 2011	2	Rhodamine	-	0.04	15%	
28 Apr 2011	2	Rhodamine	-	0.17	10%	
19 May 2011	2	Current Meter	3.679	4.01	5%	0.5
12 Jun 2011	2	Current Meter	3.431	0.83	5%	0.2
16 Aug 2011	2	Current Meter	3.463	1.16	10%	1.0
6 Oct 2011	1	Current Meter	3.249	0.15	15%	0.5
29 Mar 2012	2	Rhodamine	-	0.05	15%	
23 May 2012	1	Current Meter	3.520	1.75	5%	0.5
12 Sep 2012	1	Current Meter	3.344	0.44	5%	0.5

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W3\W3 Rating Curve 20130305.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 3

**CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT**

**LOWER DIP CREEK STATION (W16)
SUMMARY OF DISCHARGE MEASUREMENTS**

Print Jul/10/13 14:36:26

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
9 May 2010	2	Current Meter	-	2.14	-	-
15 Jun 2010	1	Current Meter	3.869	2.16	15%	-
28 Jul 2010	1	Current Meter	3.945	3.27	15%	-
9 Aug 2010	1	Current Meter	4.000	4.80	15%	-
15 Sep 2010	1	Current Meter	4.025	5.65	15%	-
29 Apr 2011	1	Current Meter	-	0.63	15%	-
18 Aug 2011	4	ADCP	4.147	8.94	15%	0.2
4 Oct 2011	1	Current Meter	3.845	1.75	15%	0.2
29 Mar 2012	1	Estimation	-	0.00	-	-
25 May 2012	1	Current Meter	4.187	9.25	15%	0.2
13 Sep 2012	1	Current Meter	3.901	3.08	15%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W16\W16 Rating Curve 20130305.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 4

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

UPPER DIP CREEK STATION (W9)
SUMMARY OF DISCHARGE MEASUREMENTS

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Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
22 May 2008	1	Current Meter	3.539	4.71	20%	
9 Jul 2008	1	Current Meter	3.514	3.63	20%	
9 Sep 2008	1	Current Meter	3.520	3.27	20%	
10 Oct 2008	1	Current Meter	3.359	1.11	20%	
19 May 2009	1	Current Meter	3.279	0.56	DISCARD	
5 Aug 2009	1	Current Meter	3.248	0.43	20%	
5 Oct 2009	1	Current Meter	3.313	0.84	20%	
24 Mar 2010	1	Current Meter	-	0.04	-	
22 Apr 2010	1	Current Meter	-	0.77	-	
9 May 2010	2	Current Meter	3.361	1.25	5%	
10 May 2010	2	Current Meter	3.355	1.21	5%	
15 Jun 2010	1	Current Meter	3.353	1.21	5%	
29 Jul 2010	1	Current Meter	3.443	2.00	5%	
9 Aug 2010	1	Current Meter	3.438	2.14	5%	
15 Sep 2010	1	Current Meter	3.464	2.62	5%	
30 Mar 2011	2	Rhodamine	-	0.23	15%	
29 Apr 2011	2	Rhodamine	-	0.41	15%	-
18 Aug 2011	1	ADCP	3.603	4.55	15%	-
4 Oct 2011	1	Current Meter	3.336	1.08	15%	0.2
28 Mar 2012	2	Rhodamine	-	0.26	15%	-
24 May 2012	2	Current Meter	3.546	5.51	5%	-
14 Sep 2012	1	Current Meter	3.423	1.68	10%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W9\W9 Rating Curve 20130305.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 5

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

VICTOR CREEK STATION (R2)
SUMMARY OF DISCHARGE MEASUREMENTS

Print Jul/10/13 14:44:57

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
22 Apr 2010	1	Current Meter	-	0.30	-	-
10 May 2010	2	Current Meter	-	0.29	-	-
15 Jun 2010	1	Current Meter	3.190	0.68	10%	-
28 Jul 2010	1	Current Meter	3.240	0.94	10%	-
9 Aug 2010	1	Current Meter	3.275	1.23	10%	-
15 Sep 2010	1	Current Meter	3.275	1.35	10%	-
30 Mar 2011	2	Rhodamine	-	0.09	15%	-
29 Apr 2011	2	Rhodamine	-	0.15	10%	-
12 Jun 2011	2	Current Meter	3.467	3.57	5%	0.2
16 Aug 2011	2	Current Meter	3.359	1.91	10%	0.5
4 Oct 2011	1	Current Meter	3.134	0.32	15%	0.5
28 Mar 2012		Rhodamine	-	0.10	15%	-
24 May 2012	2	Current Meter	3.419	2.88	5%	-
13 Sep 2012	1	Current Meter	3.198	0.74	5%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\R2\[(R2 Rating Curve 20130307.xlsx)Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 6

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

LOWER CASINO CREEK STATION (W4)
SUMMARY OF DISCHARGE MEASUREMENTS

Print Jul/10/13 14:22:40

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
22 May 2008	1	Current Meter	-	1.50	-	-
9 Jul 2008	1	Current Meter	2.521	0.52	20%	
9 Sep 2008	1	Current Meter	2.777	2.10	20%	
10 Oct 2008	1	Current Meter	2.614	0.81	20%	
19 May 2009	1	Current Meter	2.569	0.62	20%	
5 Aug 2009	1	Current Meter	2.413	0.22	20%	
5 Oct 2009	1	Current Meter	2.520	0.44	20%	
22 Apr 2010	1	Current Meter	-	0.29	-	
9 May 2010	2	Current Meter	2.541	0.53	10%	
10 May 2010	2	Current Meter	2.547	0.55	10%	
15 Jun 2010	1	Current Meter	2.532	0.44	10%	
29 Jul 2010	1	Current Meter	2.619	0.86	10%	
9 Aug 2010	1	Current Meter	2.659	1.04	10%	
15 Sep 2010	1	Current Meter	2.659	1.16	10%	
30 Mar 2011	2	Rhodamine	-	0.12	15%	
29 Apr 2011	2	Current Meter	-	0.39	10%	-
12 Jun 2011	2	Current Meter	2.765	1.91	10%	0.5
16 Aug 2011	2	Current Meter	2.792	1.94	10%	0.5
4 Oct 2011	1	Current Meter	2.460	0.29	10%	0.2
28 Mar 2012	1	Rhodamine	-	0.14	15%	-
23 May 2012	2	Current Meter	2.748	1.79	10%	0.5
14 Sep 2012	1	Current Meter	2.568	0.63	10%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W4\W4 Rating Curve 20130219.xlsx\Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 7

**CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT**

**MIDDLE CASINO CREEK STATION (H18)
SUMMARY OF DISCHARGE MEASUREMENTS**

Print Jul/10/13 14:45:23

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
9 Oct 2008	2	Current Meter	2.990	0.64	20%	-
19 May 2009	2	Current Meter	3.010	0.70	20%	-
6 Aug 2009	2	Current Meter	2.900	0.17	20%	-
5 Oct 2009	2	Current Meter	2.950	0.40	20%	-
9 May 2010	2	Current Meter	-	0.45	-	-
14 Jun 2010	2	Current Meter	2.970	0.49	10%	-
28 Jul 2010	2	Current Meter	3.018	0.80	10%	-
8 Aug 2010	2	Current Meter	3.027	0.91	10%	-
15 Sep 2010	2	Current Meter	3.040	0.97	10%	-
18 May 2011	2	Current Meter	3.204	4.01	10%	-
12 Jun 2011	2	Current Meter	3.065	1.34	15%	0.2
16 Aug 2011	2	Current Meter	3.099	1.48	15%	0.2
3 Oct 2011	2	Current Meter	2.975	0.53	15%	-
28 Mar 2012	2	Rhodamine	-	0.13	15%	-
23 May 2012	1	Current Meter	3.099	1.63	10%	0.5
13 Sep 2012	1	Current Meter	2.972	0.53	5%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\H18\H18 Rating Curve 20130304.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 8

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT

UPPER CASINO CREEK STATION (W11)
SUMMARY OF DISCHARGE MEASUREMENTS

Print Jul/10/13 14:39:04

Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
22 May 2008	1	Current Meter	-	0.87	-	-
9 Jul 2008	1	Current Meter	-	0.15	-	-
9 Sep 2008	1	Current Meter	-	0.69	-	-
10 Oct 2008	1	Current Meter	-	0.41	-	-
19 May 2009	1	Current Meter	4.057	0.36	20%	-
6 Aug 2009	1	Current Meter	3.965	0.12	20%	-
5 Oct 2009	1	Current Meter	4.021	0.23	20%	-
9 May 2010	2	Current Meter	-	0.18	-	-
15 Jun 2010	1	Current Meter	3.976	0.14	10%	-
28 Jul 2010	1	Current Meter	4.085	0.46	10%	-
9 Aug 2010	1	Current Meter	4.080	0.44	10%	-
15 Sep 2010	1	Current Meter	4.090	0.53	10%	-
29 Mar 2011	2	Rhodamine	-	0.08	-	-
30 Apr 2011	2	Rhodamine	-	0.11	-	-
18 May 2011	2	Current Meter	4.198	2.40	15%	0.5
12 Jun 2011	2	Current Meter	4.105	0.60	15%	0.2
16 Aug 2011	2	Current Meter	4.163	0.84	15%	0.5
4 Oct 2011	2	Current Meter	-	0.21	-	-
28 Mar 2012	3	Rhodamine	-	0.08	-	-
23 May 2012	2	Current Meter	4.122	0.78	15%	-
13 Sep 2012	1	Current Meter	4.055	0.32	15%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W11\W11 Rating Curve 20130326.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 9

**CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT**

**BRYNELSEN CREEK STATION (W18)
SUMMARY OF DISCHARGE MEASUREMENTS**

Print Jul/10/13 14:38:18

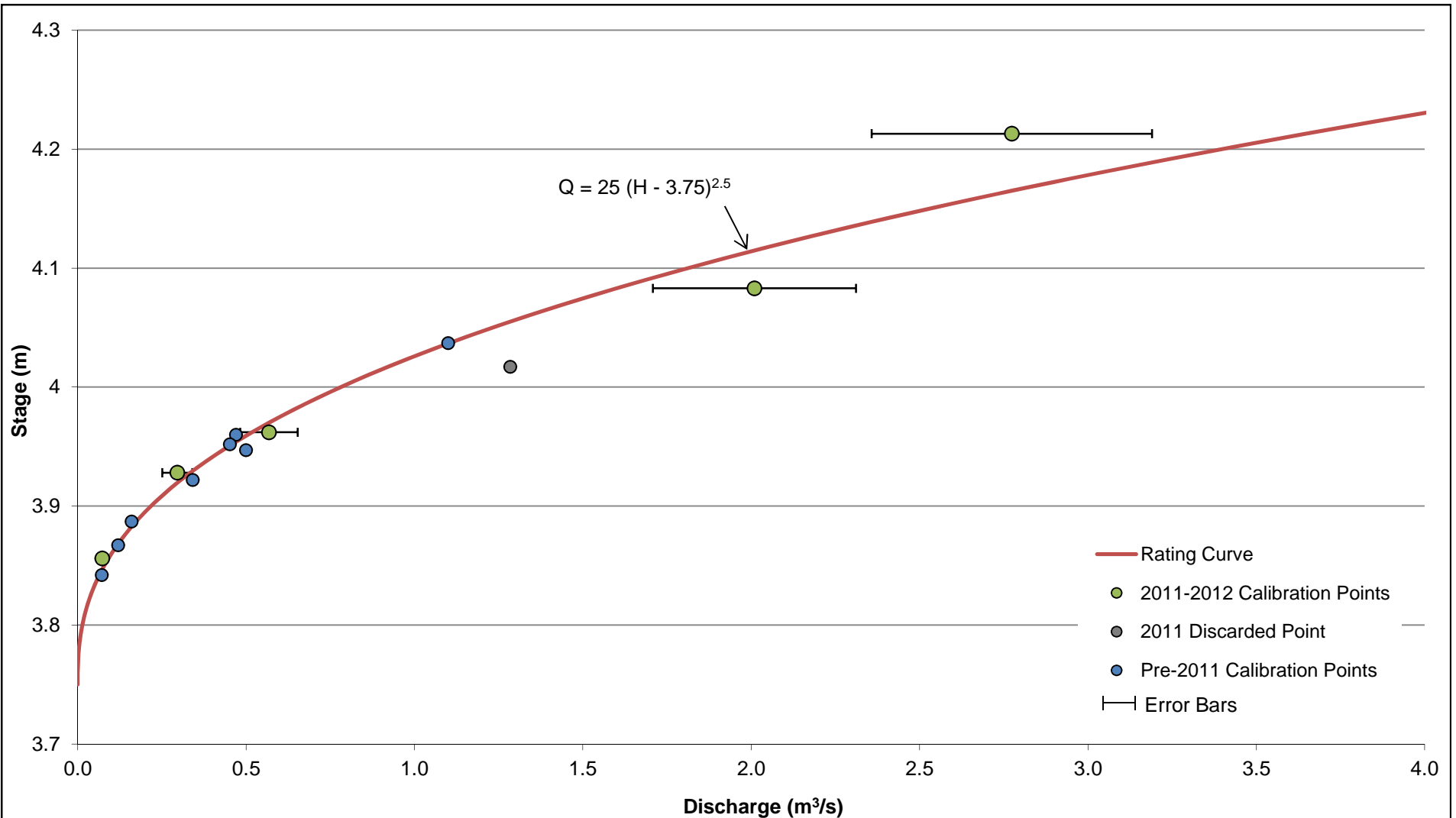
Date	Number of Measurements	Method	Gauge Height [m]	Discharge [m ³ /s]	Discharge Uncertainty	Stage Uncertainty [cm]
9 May 2010	2	Current Meter	-	0.13	15%	-
14 Jun 2010	1	Current Meter	3.177	0.34	15%	-
28 Jul 2010	1	Current Meter	3.172	0.32	15%	-
9 Aug 2010	1	Current Meter	3.208	0.40	15%	-
15 Sep 2010	1	Current Meter	3.196	0.45	15%	-
31 Mar 2011	4	Rhodamine	-	0.06	15%	-
30 Apr 2011	2	Rhodamine	-	0.09	15%	-
18 May 2011	1	Current Meter	3.319	1.32	15%	0.2
12 Jun 2011	2	Current Meter	3.225	0.61	15%	0.2
16 Aug 2011	2	Current Meter	3.240	0.54	15%	0.5
3 Oct 2011	2	Current Meter	3.124	0.19	15%	0.2
28 Mar 2012	2	Rhodamine	-	0.05	-	-
23 May 2012	2	Current Meter	3.262	0.77	15%	-
13 Sep 2012	1	Current Meter	3.131	0.20	15%	0.2

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W18\W18 Rating Curve 20130305.xlsx]Table 1

NOTES:

1. NUMBER OF MEASUREMENTS REFERS TO THE NUMBER OF DISCRETE DISCHARGE MEASUREMENTS COLLECTED DURING EACH SITE VISIT. MULTIPLE MEASUREMENTS WERE AVERAGED TO PRODUCE ONE RATING POINT.
2. DISCHARGE UNCERTAINTY REFERS TO THE IN SITU MEASUREMENT UNCERTAINTY ESTIMATED BY THE FIELD ENGINEER.
3. STAGE UNCERTAINTY IS BASED ON A VISUAL ASSESSMENT OF THE WAVE AMPLITUDE IN THE GAUGE POOL.

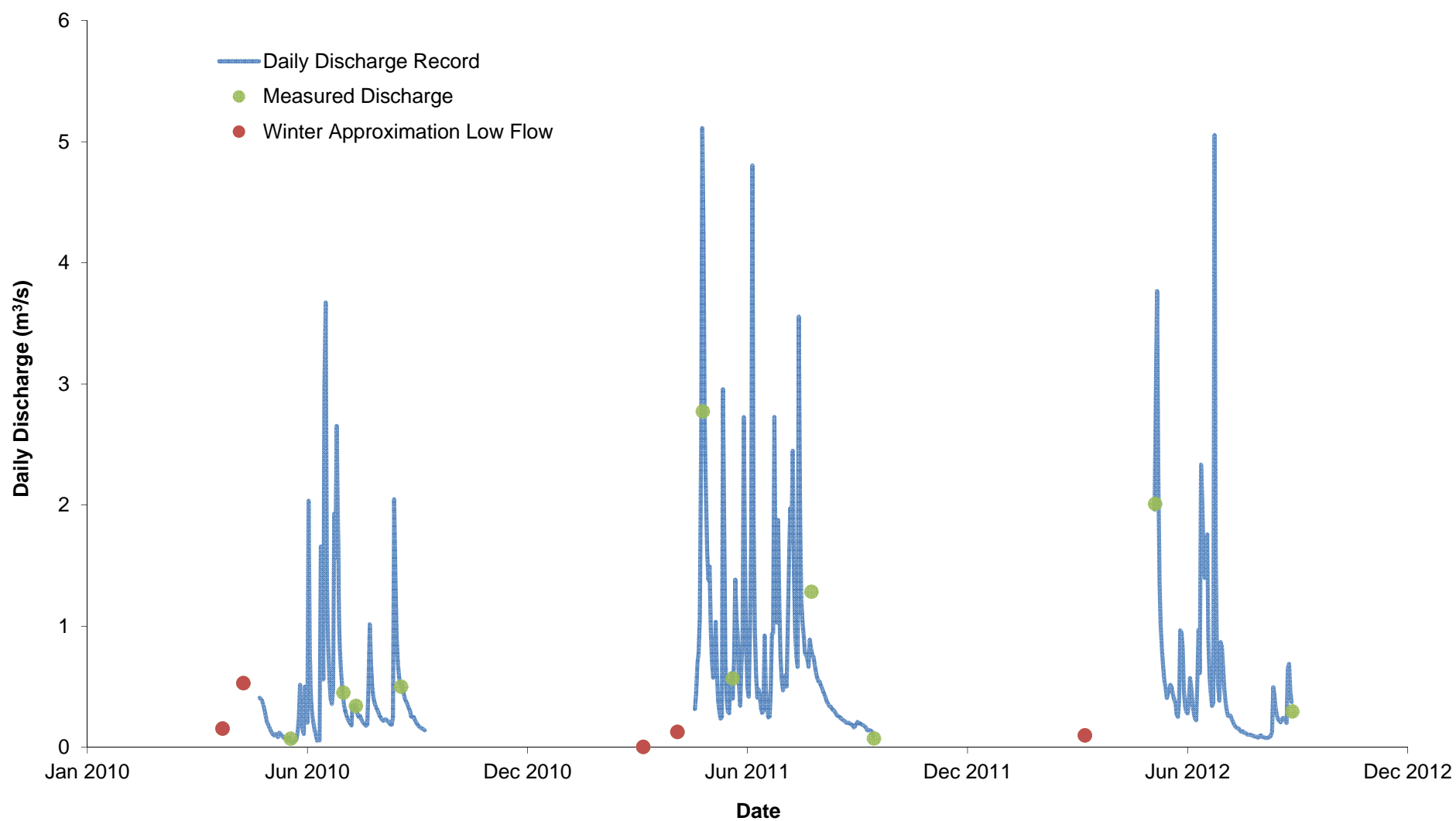
0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 4.1 TIMES THE MAXIMUM MEASURED DISCHARGE.

0	21MAR'13	ISSUED WITH REPORT P/A NO. VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

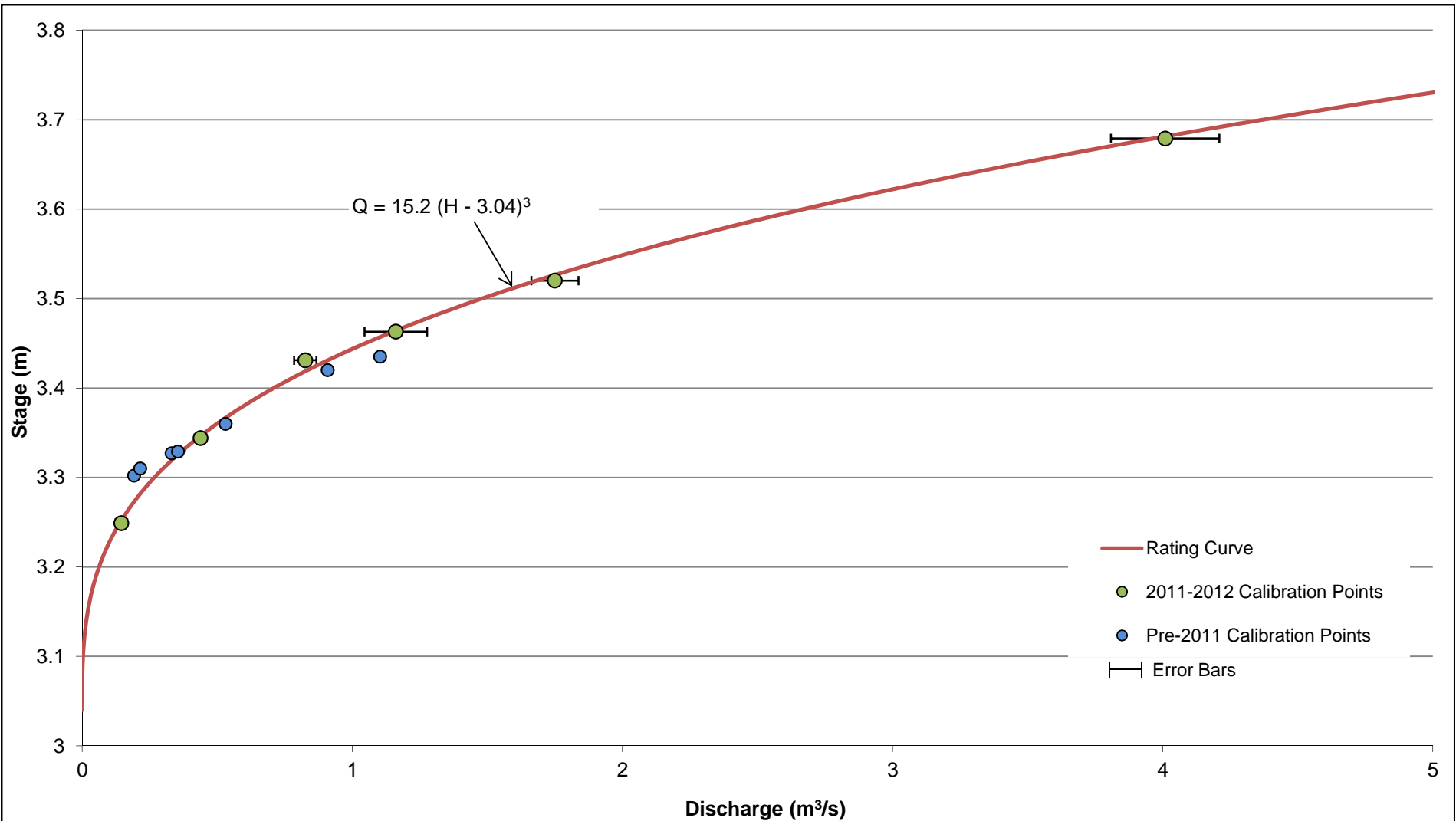
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
BRITANNIA CREEK STATION (W14) RATING CURVE		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 1a	REV 0

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
BRITANNIA CREEK STATION (W14) MEASURED DISCHARGE HYDROGRAPH		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 1b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 1.4 TIMES THE MAXIMUM MEASURED DISCHARGE.

0	21MAR'13	ISSUED WITH REPORT VA101-325	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT
**CANADIAN CREEK STATION (W3)
RATING CURVE**

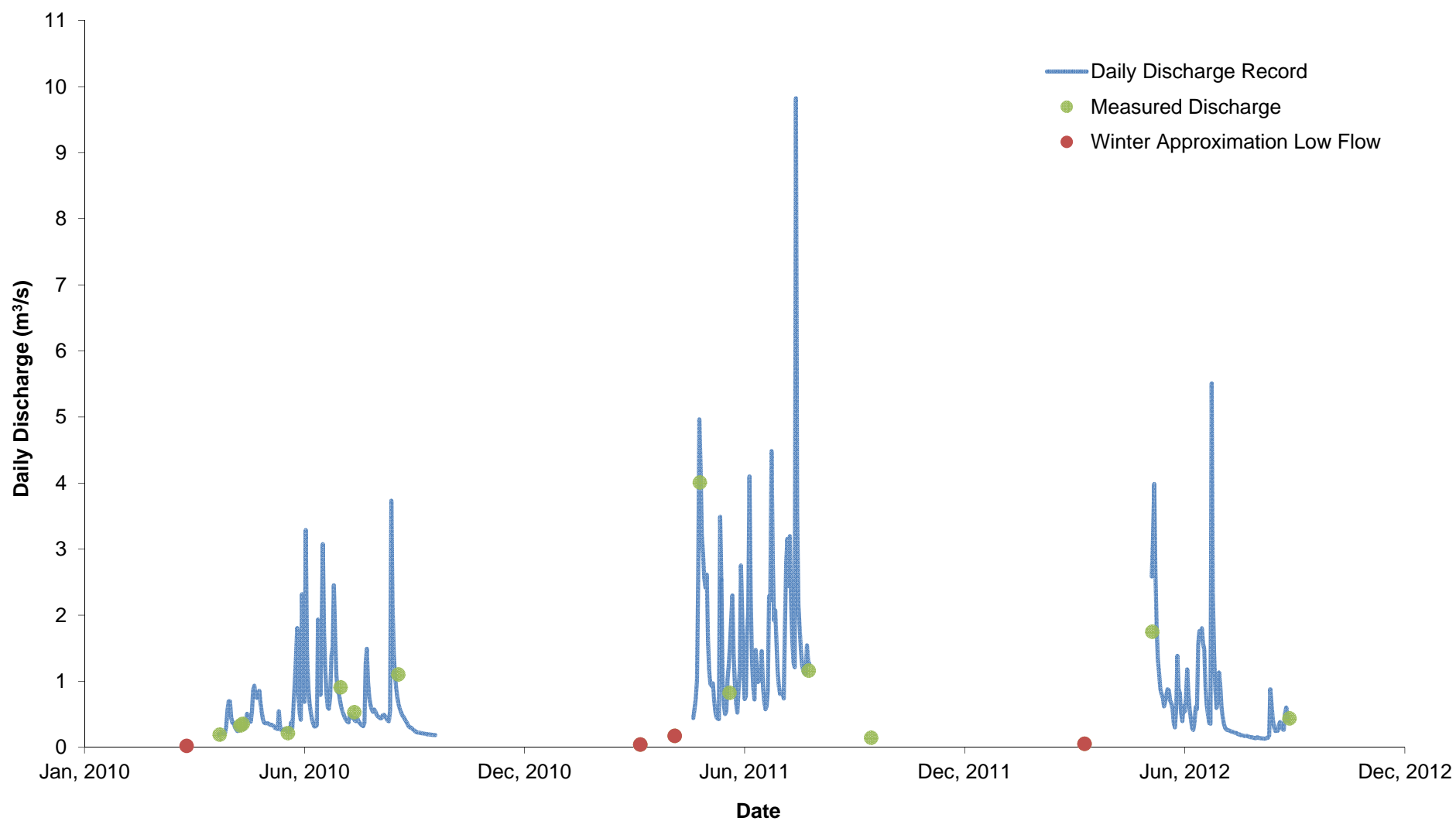
Knight Piésold
CONSULTING

P/A NO.
VA101-325/14

REF. NO.
5

FIGURE 2a

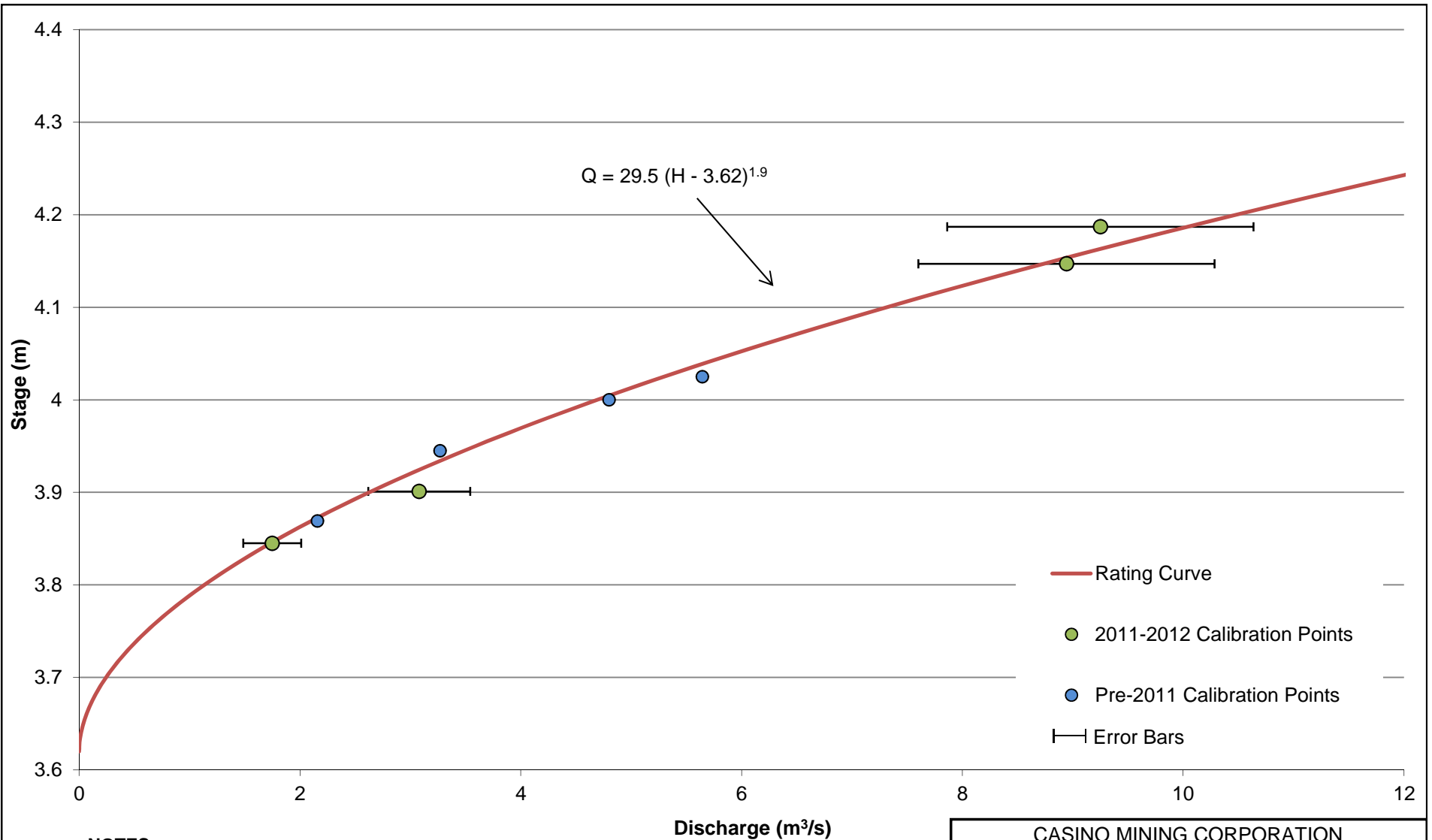
REV
0

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

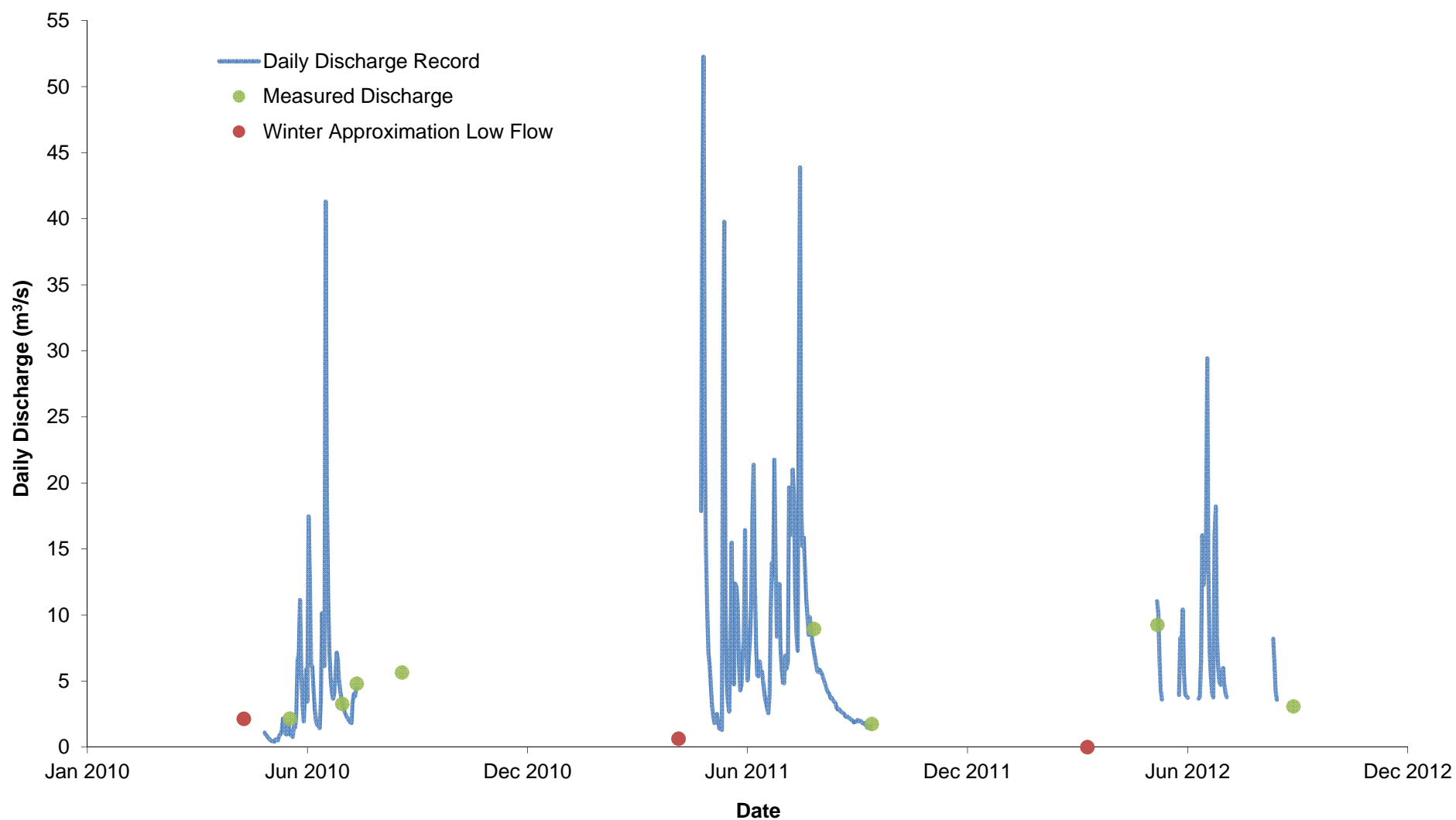
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
CANADIAN CREEK STATION (W3) MEASURED DISCHARGE HYDROGRAPH		
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 2b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 7.0 TIMES THE MAXIMUM MEASURED DISCHARGE.

0	21Mar'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

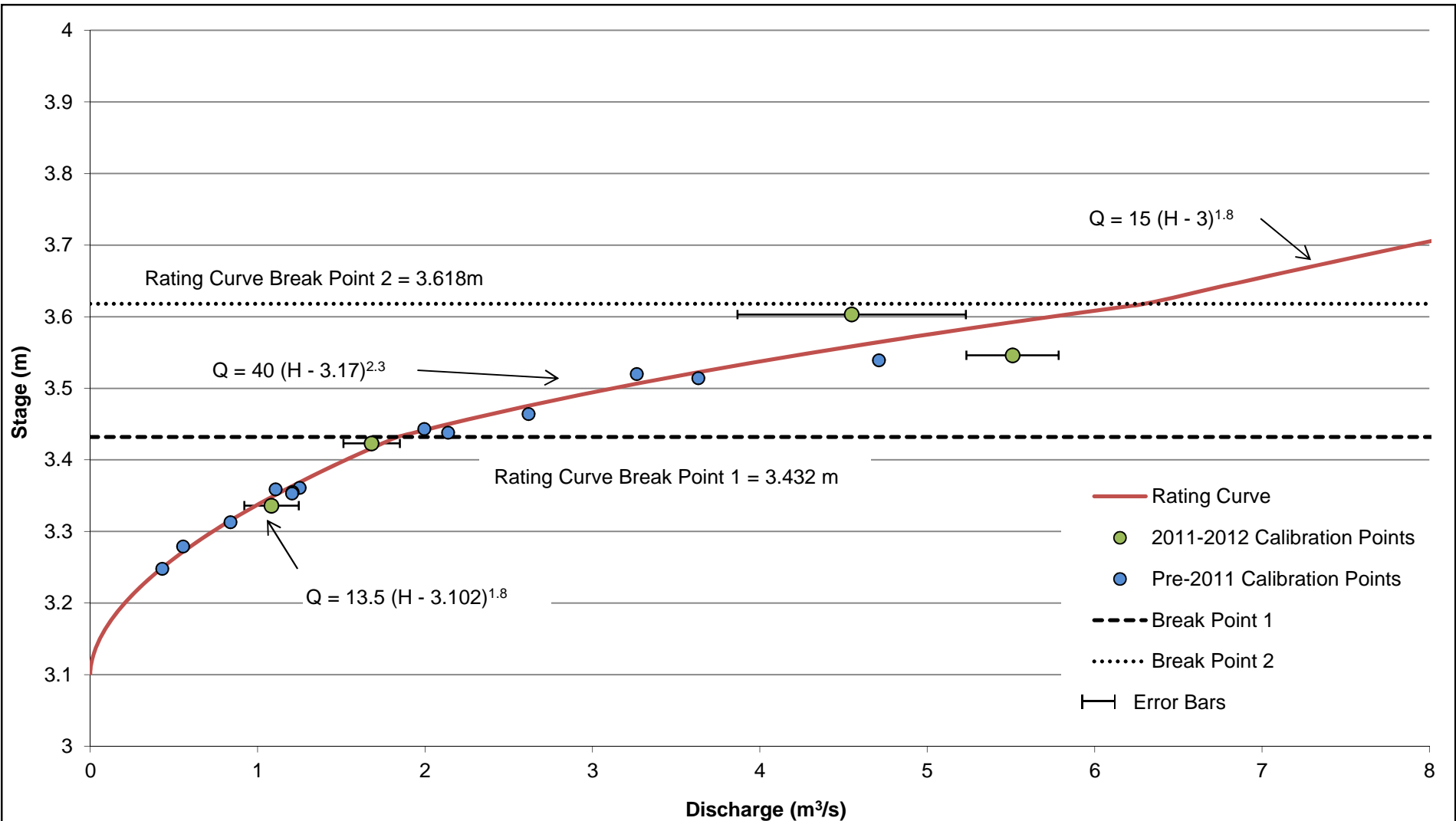
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
LOWER DIP CREEK STATION (W16) RATING CURVE		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 3a	REV 0

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
LOWER DIP CREEK STATION (W16) MEASURED DISCHARGE HYDROGRAPH		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 3b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 7.7 TIMES THE MAXIMUM MEASURED DISCHARGE.

CASINO MINING CORPORATION
CASINO COPPER-GOLD PROJECT
**UPPER DIP CREEK STATION (W9)
RATING CURVE**

Knight Piésold
CONSULTING

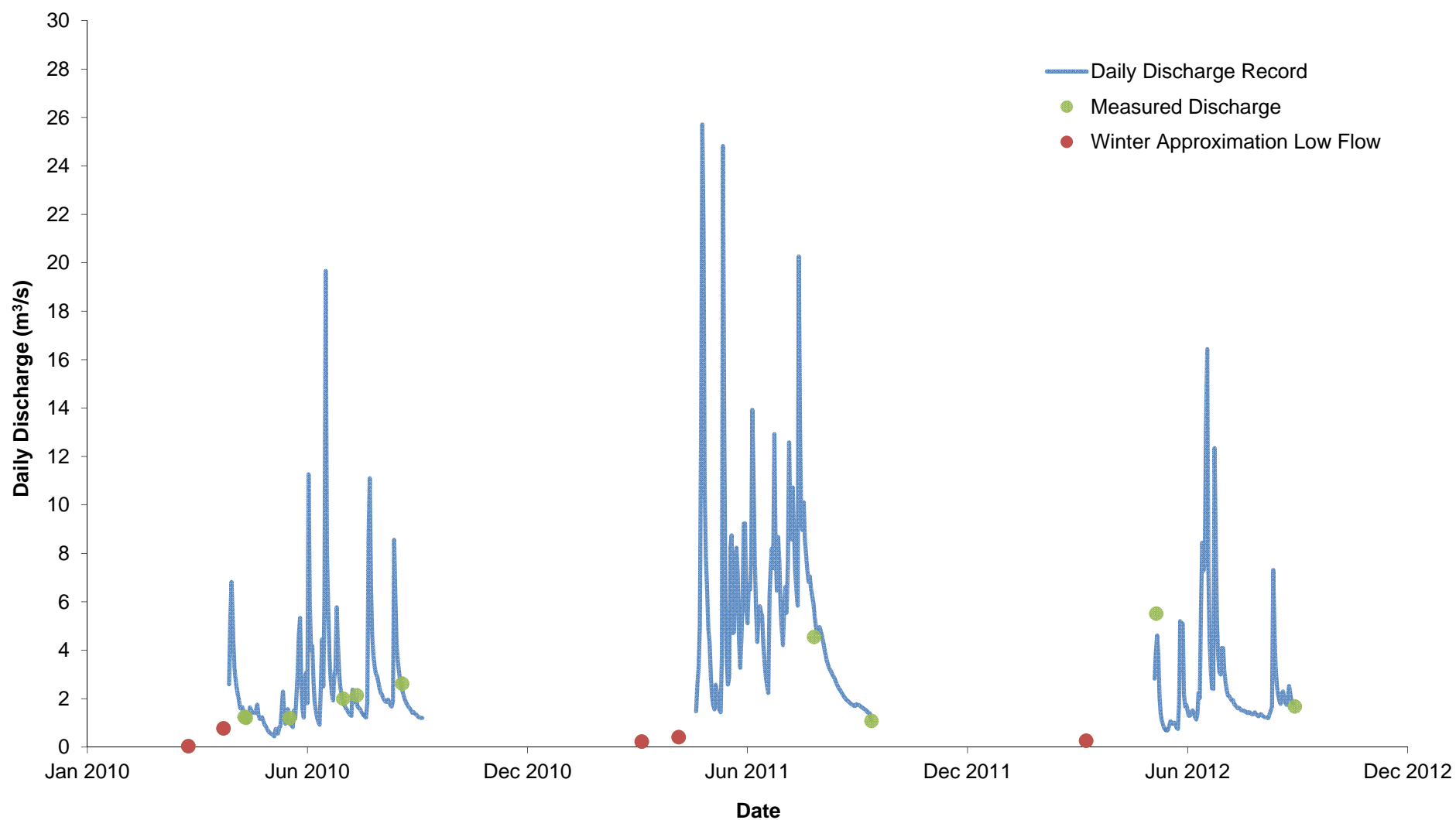
P/A NO.
VA101-325/14

REF. NO.
5

FIGURE 4a

REV
0

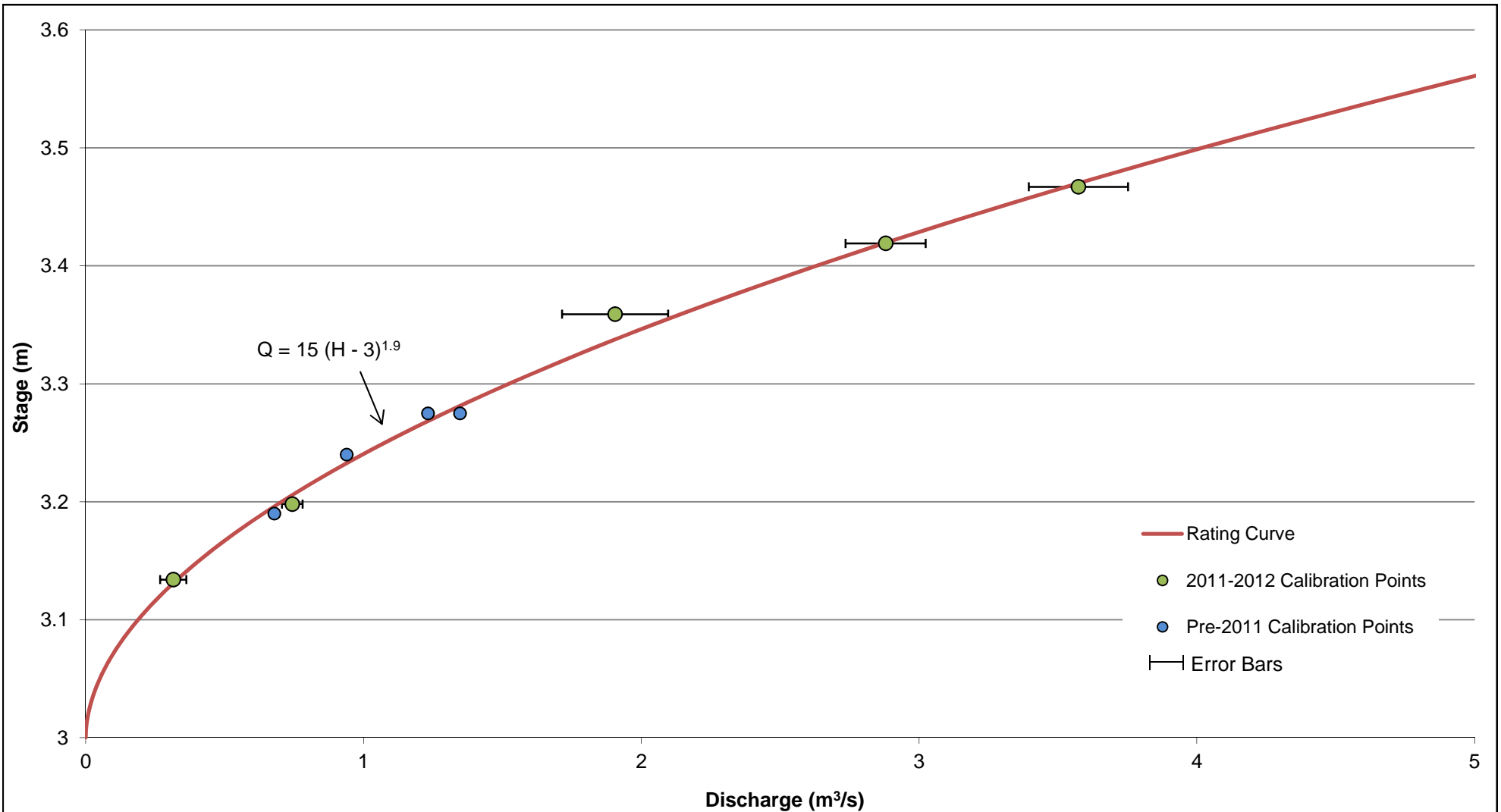
0	18MAR'13	ISSUED WITH REPORT P/A NO. VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
UPPER DIP CREEK STATION (W9) MEASURED DISCHARGE HYDROGRAPH		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 4b	
		REV 0

**NOTE:**

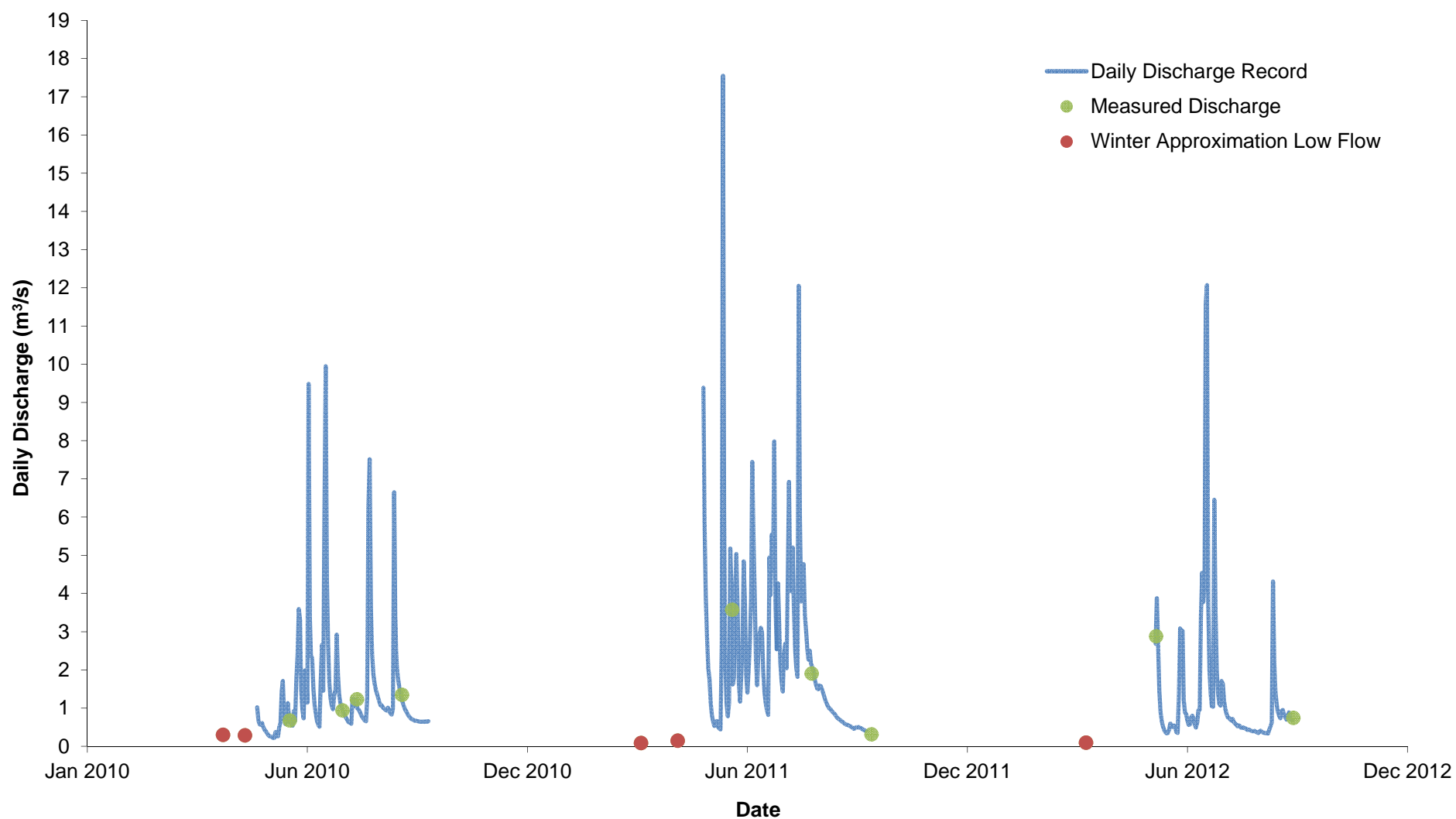
1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 6.5 TIMES THE MAXIMUM MEASURED DISCHARGE.

CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

**VICTOR CREEK STATION (R2)
RATING CURVE**
Knight Piésold
CONSULTING
P/A NO.
VA101-325/12REF. NO.
5**FIGURE 5a**REV
0

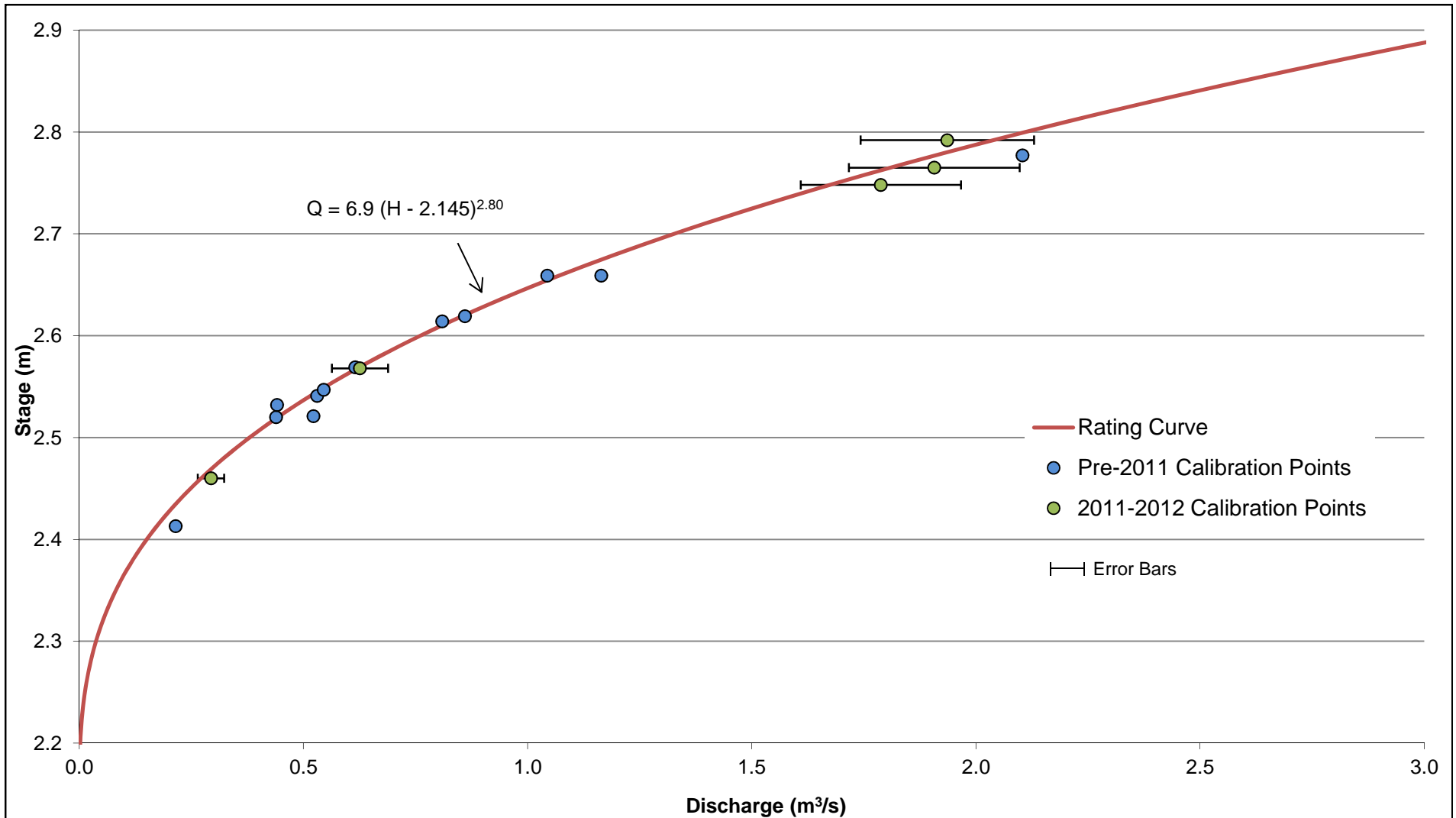
0	21MAR'13	ISSUED WITH REPORT VA101-325	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

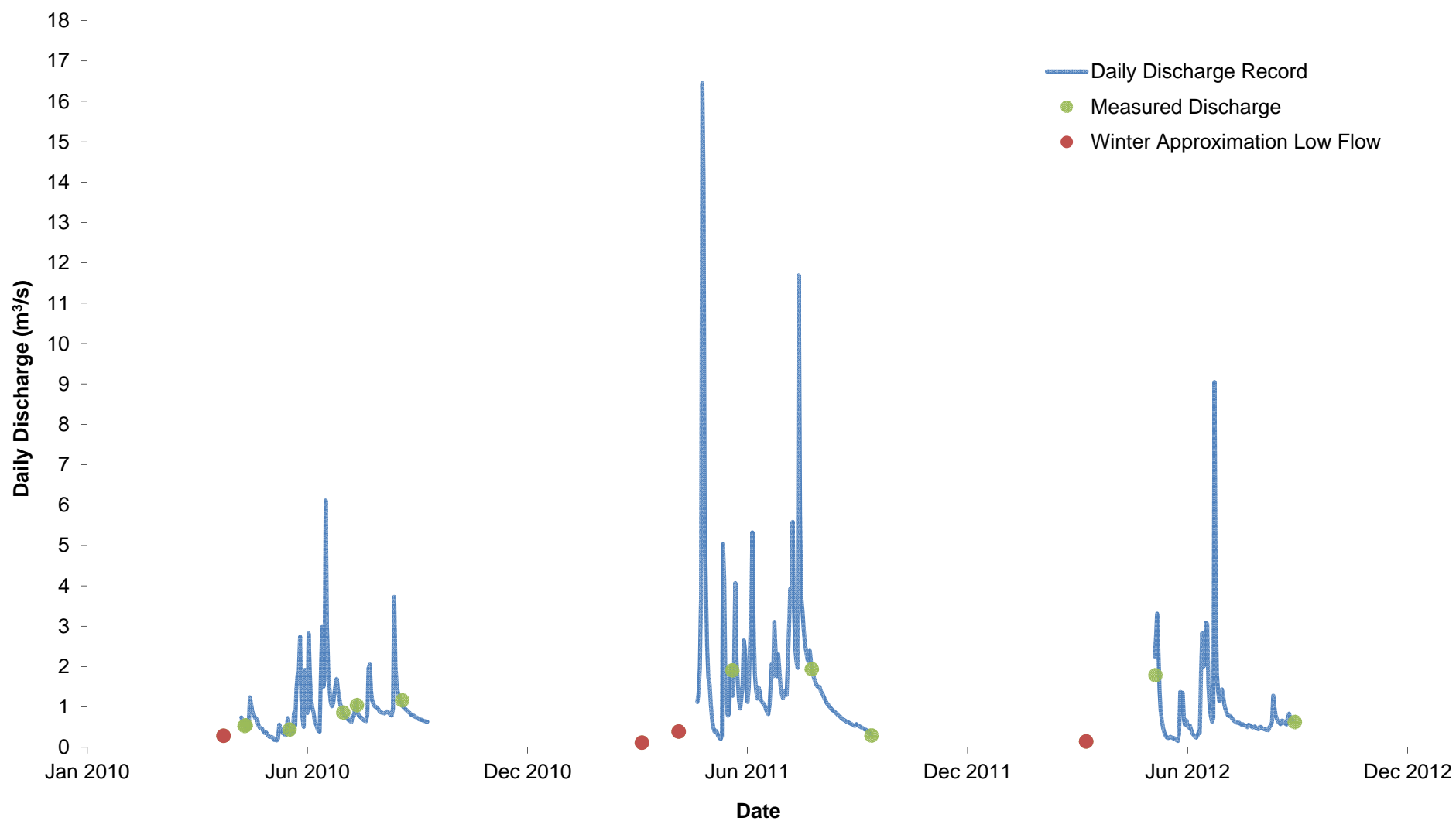
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
VICTOR CREEK STATION (R2) MEASURED DISCHARGE HYDROGRAPH		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 5b	
		REV 0

**NOTES:**

1. MEASUREMENT UNCERTAINTY (ERROR BARS) WAS DETERMINED FROM A VISUAL ESTIMATION OF MEASUREMENT QUALITY BY THE FIELD ENGINEER.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 11.9 TIMES THE MAXIMUM MEASURED DISCHARGE.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

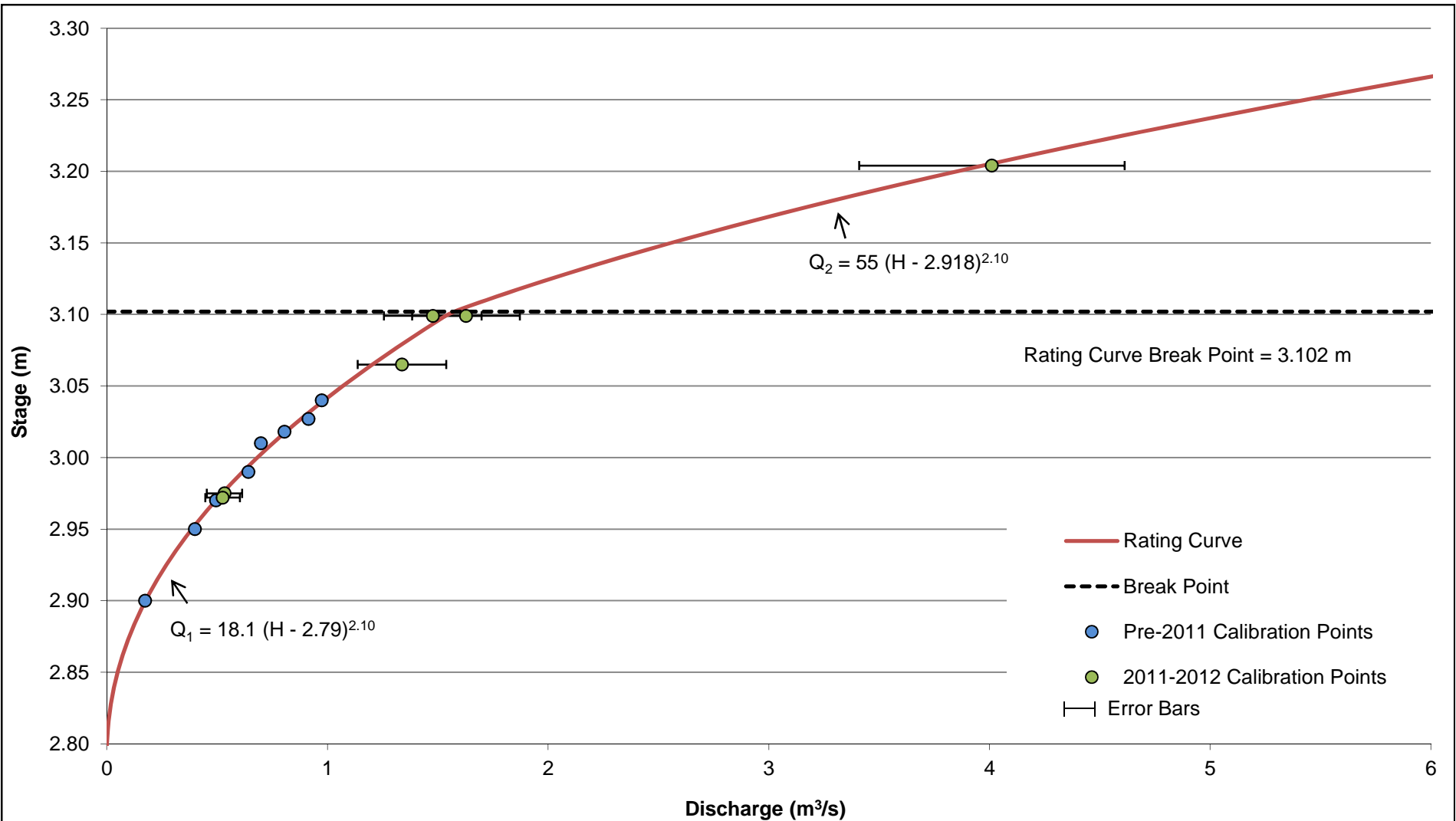
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
LOWER CASINO CREEK STATION (W4) RATING CURVE		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 6a	
		REV 0

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
LOWER CASINO CREEK STATION (W4) MEASURED DISCHARGE HYDROGRAPH		
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 6b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 2.5 TIMES THE MAXIMUM MEASURED DISCHARGE.

CASINO MINING CORPORATION

CASINO COPPER-GOLD PROJECT

MIDDLE CASINO CREEK STATION (H18)
RATING CURVE

Knight Piésold
 CONSULTING

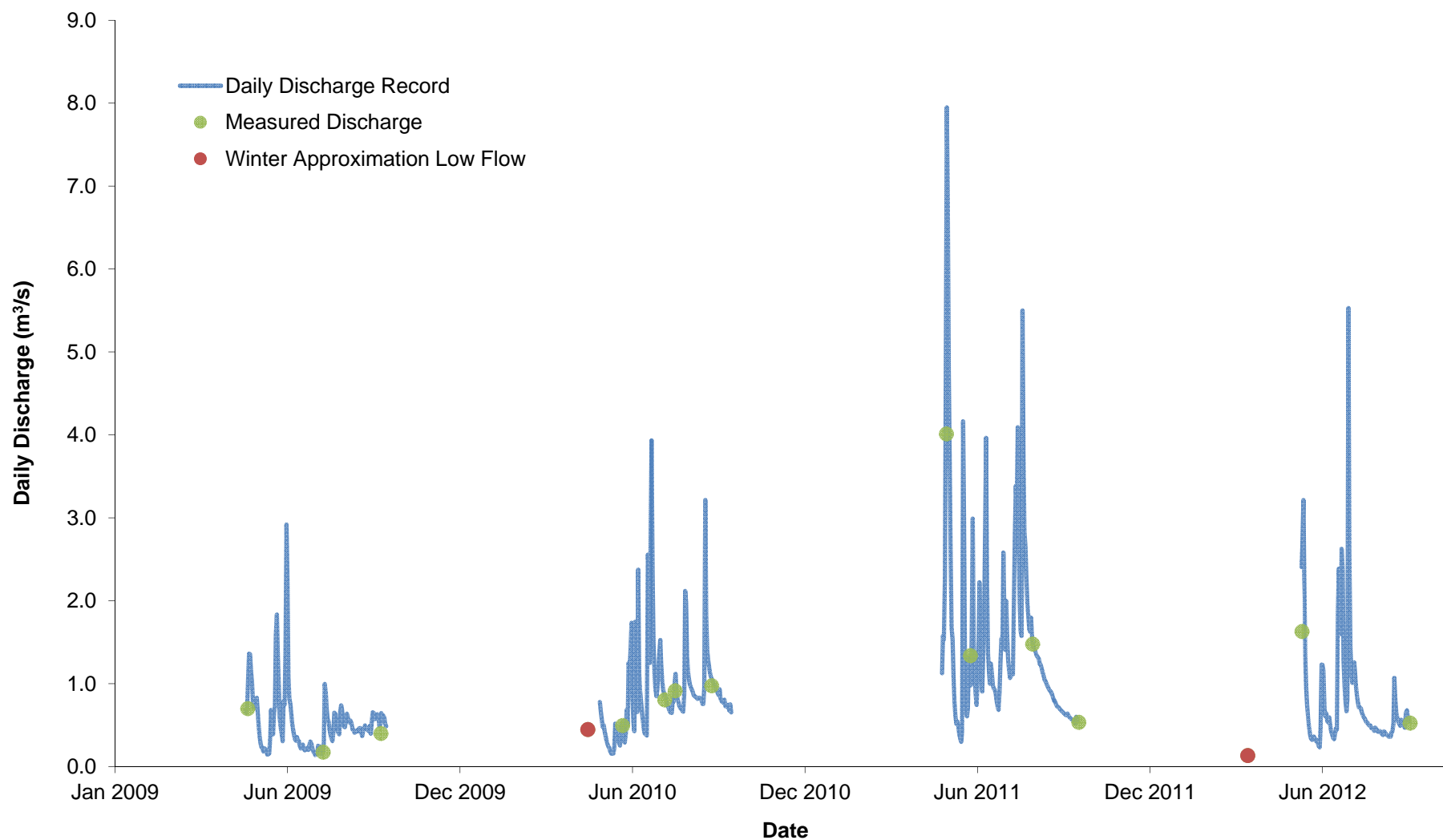
P/A NO.
 VA101-325/14

REF. NO.
 5

FIGURE 7a

REV
 0

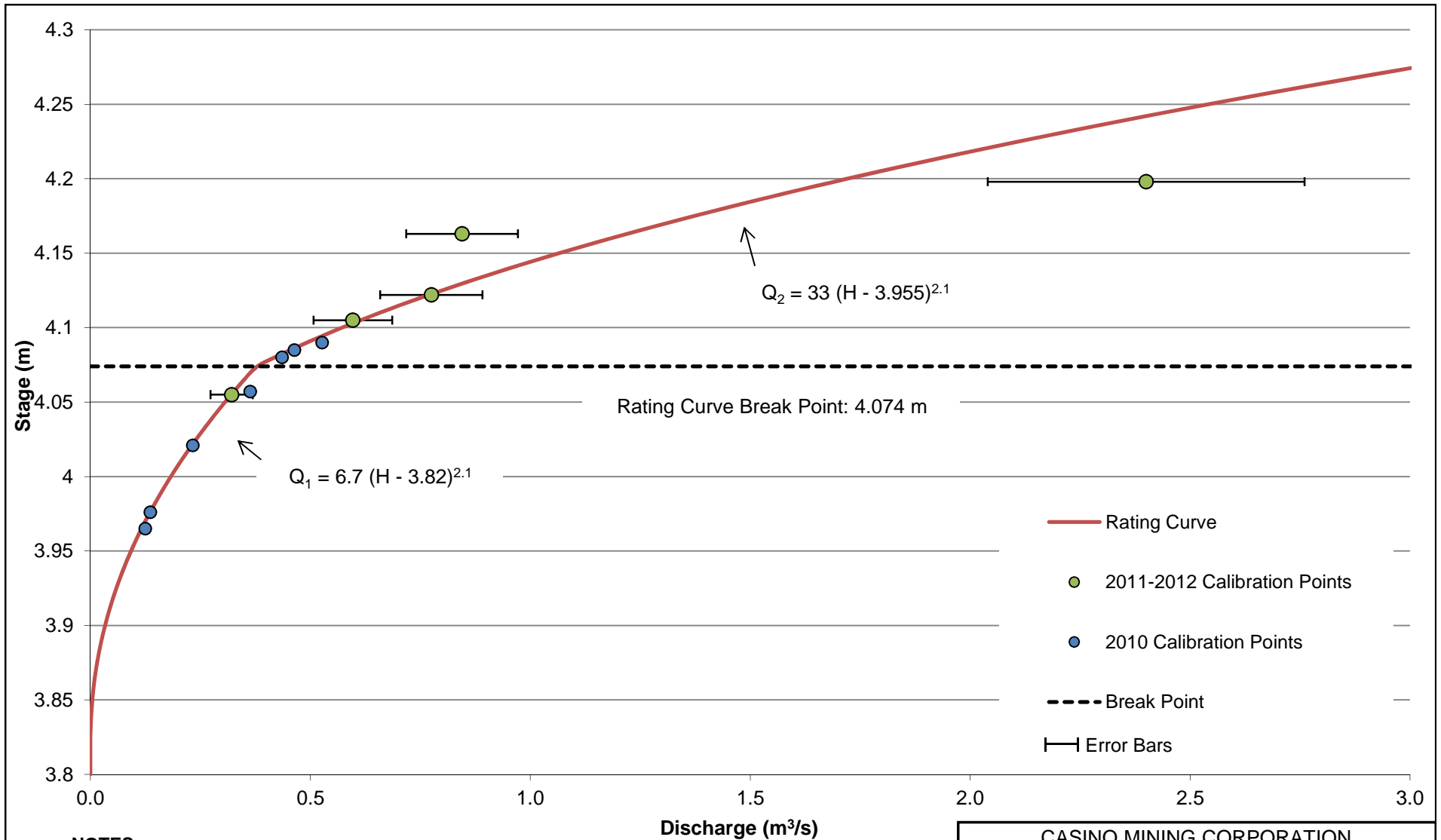
0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

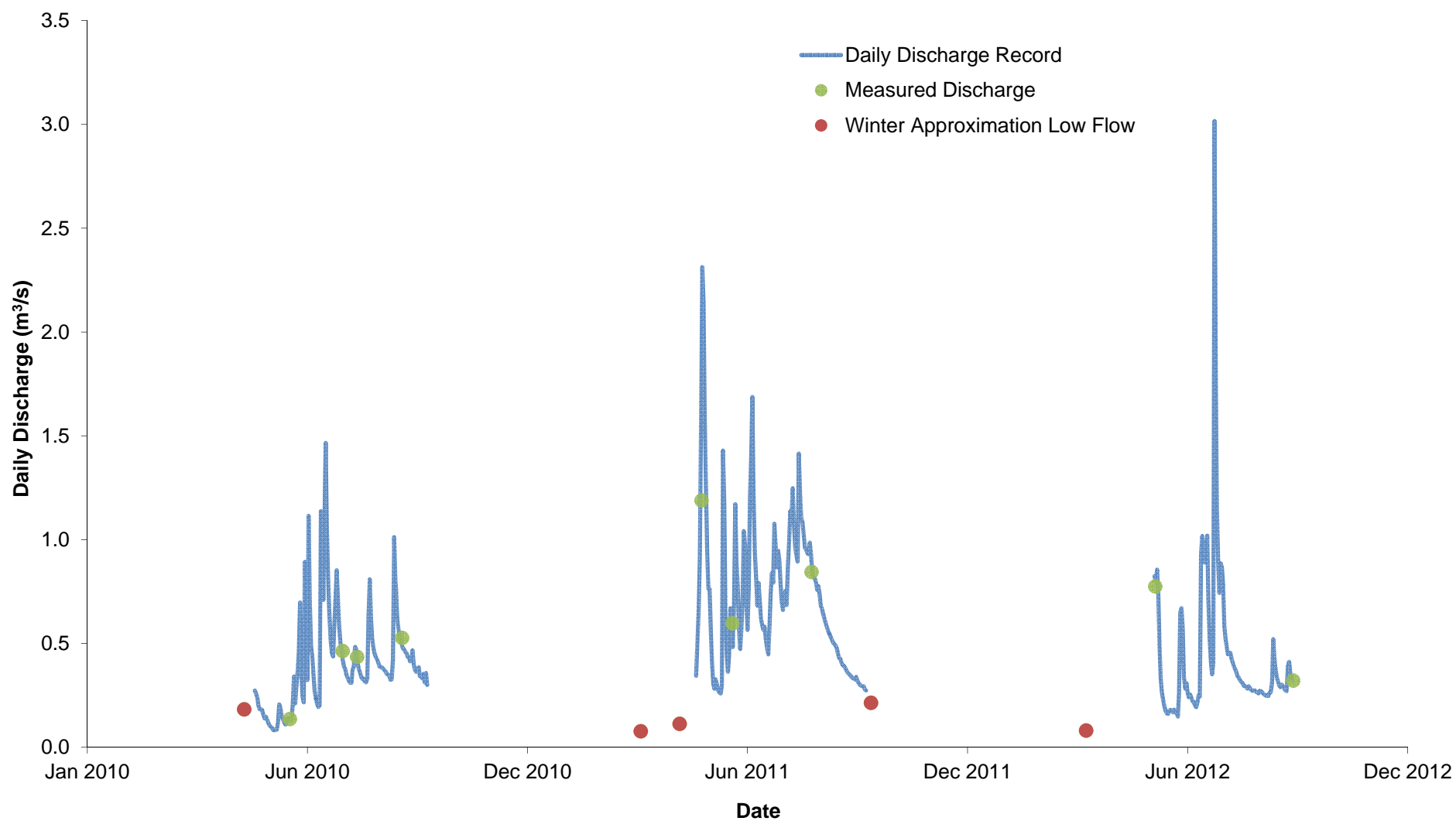
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
MIDDLE CASINO CREEK STATION (H18) MEASURED DISCHARGE HYDROGRAPH		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 7b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 1.8 TIMES THE MAXIMUM MEASURED DISCHARGE.

0	21Mar'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

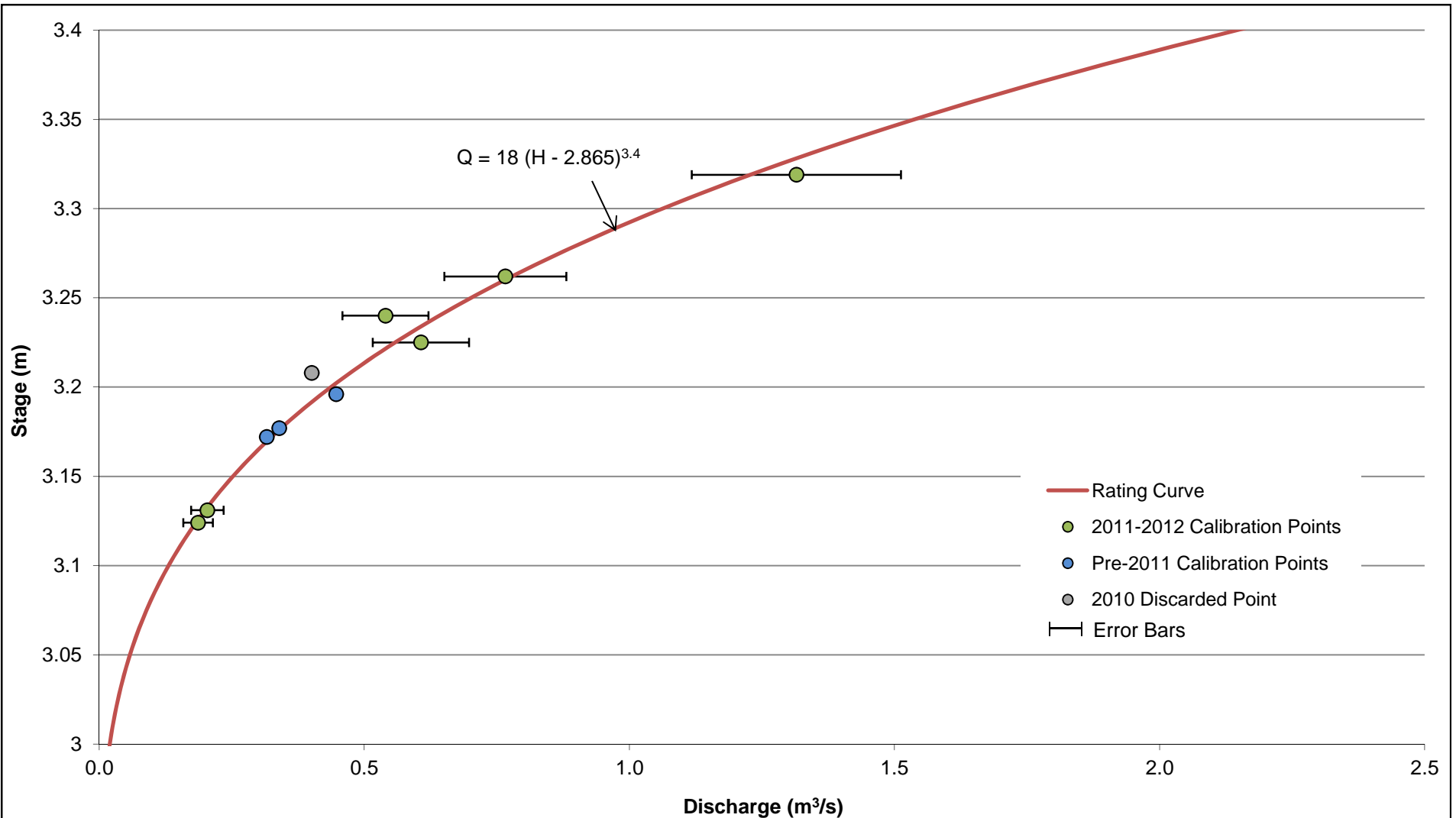
CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
UPPER CASINO CREEK STATION (W11) RATING CURVE		
Knight Piésold CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 8a	REV 0

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
UPPER CASINO CREEK STATION (W11) MEASURED DISCHARGE HYDROGRAPH		
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 8b	
		REV 0

**NOTES:**

1. MEASUREMENT ERROR DETERMINED FROM VISUAL ESTIMATION OF MEASUREMENT QUALITY COMBINED WITH THE ERROR FROM INSTRUMENTATION.
2. THE MAXIMUM RECORDED STAGE CORRESPONDS TO AN EXTRAPOLATION 4.8 TIMES THE MAXIMUM MEASURED DISCHARGE.

CASINO MINING CORPORATION

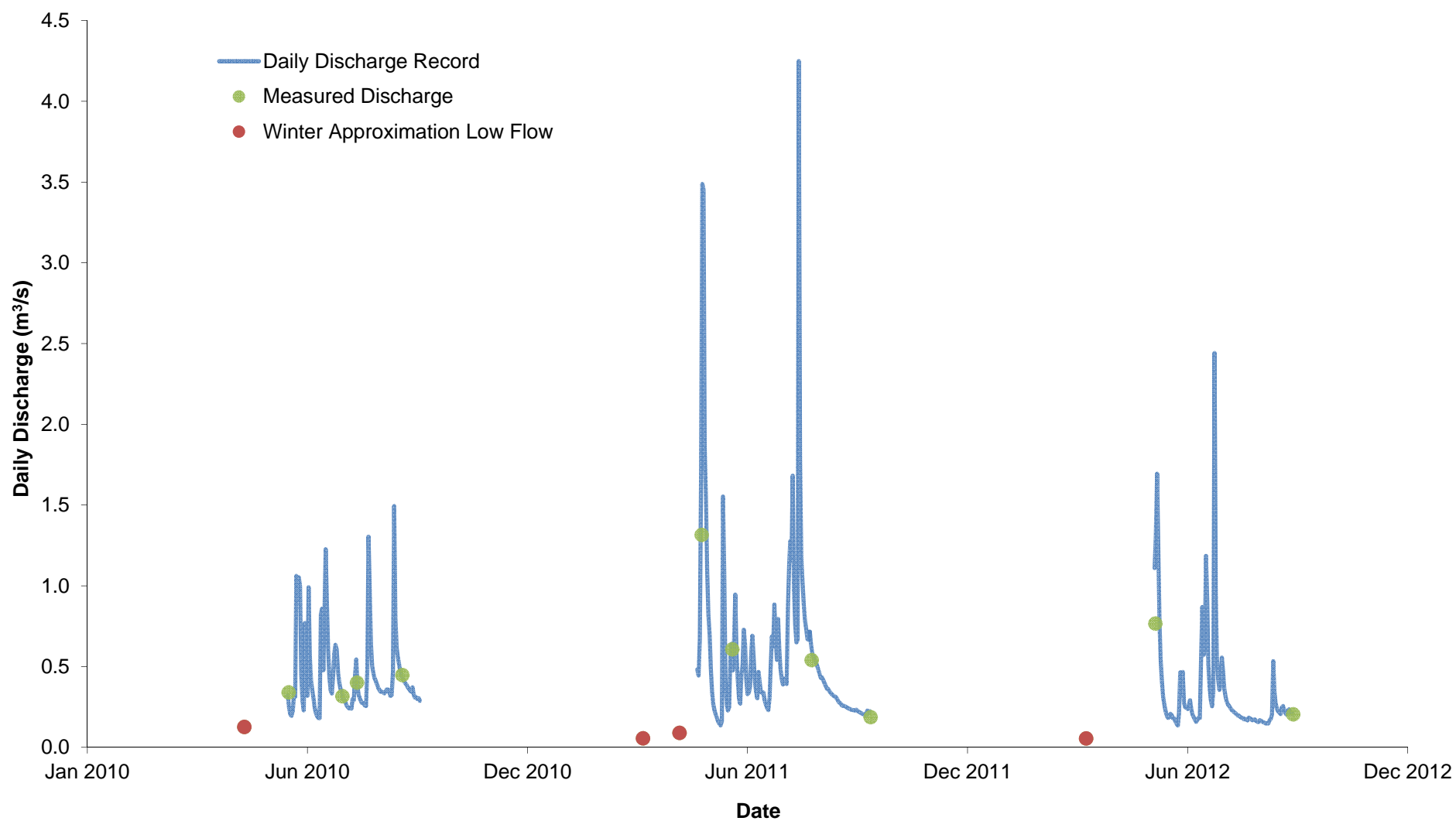
CASINO COPPER-GOLD PROJECT

BRYNELSEN CREEK STATION (W18)
RATING CURVE

Knight Piésold
 CONSULTING

P/A NO.
VA101-325/14REF. NO.
5**FIGURE 9a**REV
0

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**NOTE:**

1. THE WINTER APPROXIMATION LOW FLOW DISCHARGE IS BASED ON A MEASUREMENT WHERE POSSIBLE, OR BASED ON A COMBINATION OF CONCURRENT MEASUREMENTS AT ADJACENT STATIONS AND REGIONAL UNIT RUNOFF.

0	21MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'	APP'

CASINO MINING CORPORATION		
CASINO COPPER-GOLD PROJECT		
BRYNELSEN CREEK STATION (W18) MEASURED DISCHARGE HYDROGRAPH		
<i>Knight Piésold</i> CONSULTING	P/A NO. VA101-325/14	REF. NO. 1
	FIGURE 9b	REV 0

APPENDIX B
SYNTHETIC FLOW SERIES
(Pages B-1 to B-63)

TABLE 1

**CASINO MINING CORPORATION
CASINO PROJECT**

**BRITANNIA CREEK STATION (W14)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 17:15

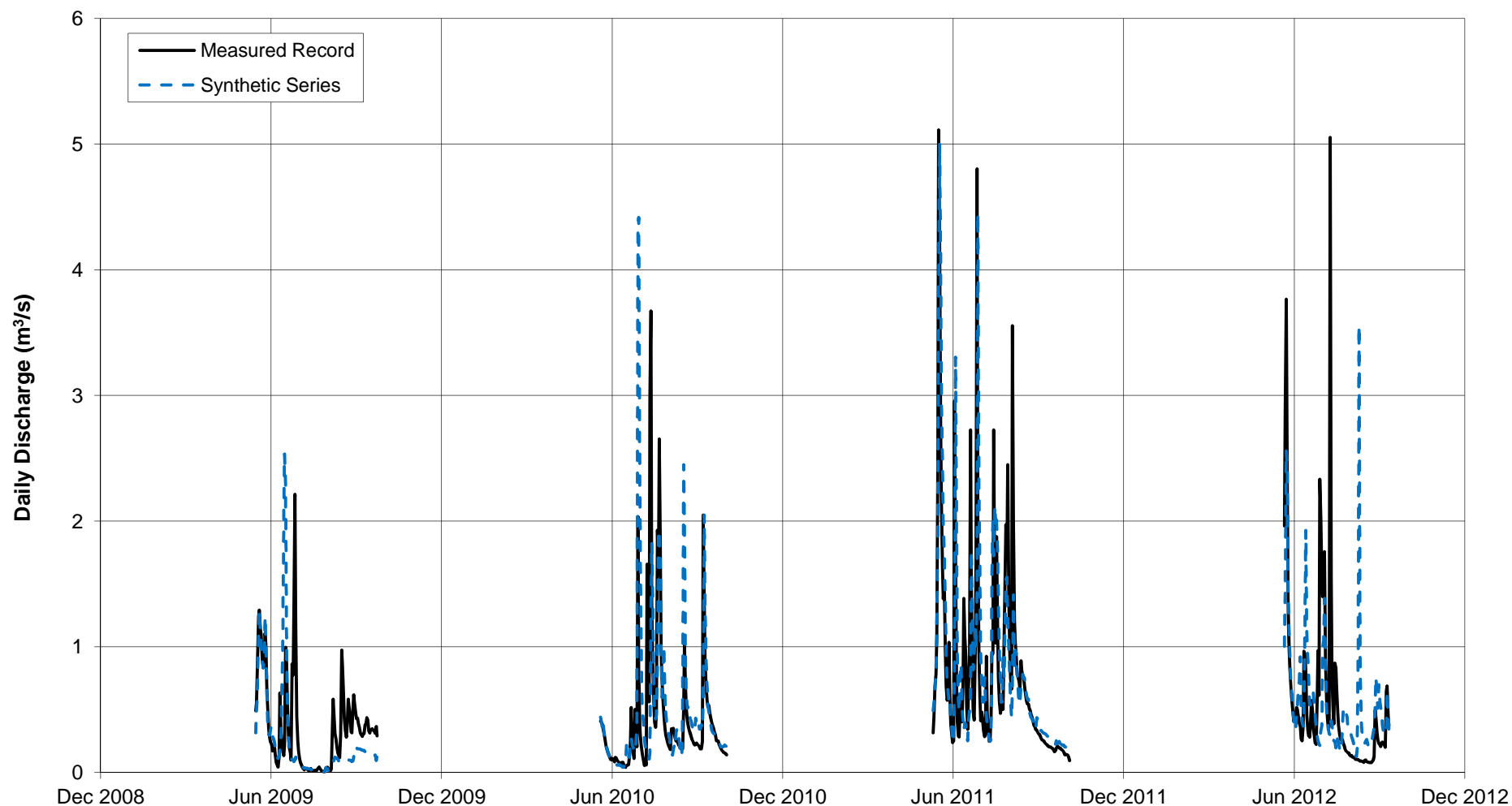
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.00	0.00	0.01	1.21	0.30	0.60	0.43	0.33	0.11	0.01	0.00	0.25
1976	0.00	0.00	0.00	0.01	0.56	0.67	1.13	0.11	0.07	0.04	0.02	0.01	0.22
1977	0.01	0.01	0.00	0.01	0.36	0.39	0.35	0.09	0.13	0.08	0.02	0.00	0.12
1978	0.00	0.00	0.00	0.00	0.12	0.68	1.13	0.55	0.20	0.14	0.04	0.02	0.24
1979	0.01	0.00	0.00	0.00	0.37	0.41	0.46	0.20	0.26	0.11	0.03	0.01	0.16
1980	0.00	0.00	0.00	0.00	0.13	0.08	0.41	0.14	0.71	0.20	0.02	0.00	0.14
1981	0.00	0.00	0.00	0.00	0.24	0.07	0.40	0.23	0.19	0.15	0.04	0.01	0.11
1982	0.00	0.00	0.00	0.00	0.65	0.53	0.06	0.41	0.07	0.05	0.02	0.01	0.15
1983	0.00	0.00	0.00	0.00	0.20	0.62	0.43	0.60	0.23	0.10	0.01	0.00	0.18
1984	0.00	0.00	0.00	0.00	0.06	0.48	0.54	0.09	0.43	0.07	0.01	0.00	0.13
1985	0.00	0.00	0.00	0.00	0.78	0.59	0.45	0.19	0.26	0.10	0.03	0.02	0.20
1986	0.01	0.01	0.00	0.00	0.77	0.42	0.40	0.16	0.24	0.11	0.02	0.01	0.18
1987	0.01	0.01	0.00	0.01	0.68	0.57	0.11	0.21	0.20	0.10	0.03	0.01	0.16
1988	0.00	0.00	0.01	0.01	0.67	0.20	0.59	0.26	0.19	0.09	0.04	0.02	0.17
1989	0.01	0.00	0.00	0.00	0.18	0.13	0.09	0.09	0.13	0.06	0.03	0.01	0.06
1990	0.01	0.00	0.00	0.74	2.84	0.35	0.14	0.06	0.48	0.15	0.02	0.01	0.40
1991	0.01	0.01	0.01	0.05	1.55	0.57	0.38	0.35	0.64	0.17	0.11	0.05	0.33
1992	0.03	0.01	0.01	0.02	1.83	0.99	0.97	0.19	0.48	0.13	0.05	0.03	0.40
1993	0.01	0.01	0.00	0.10	0.96	0.17	0.23	0.21	0.19	0.05	0.05	0.03	0.17
1994	0.02	0.01	0.00	0.16	0.39	0.15	0.09	0.08	0.09	0.06	0.01	0.01	0.09
1996	0.01	0.00	0.00	0.00	0.10	0.10	0.57	0.35	0.29	0.09	0.02	0.00	0.13
1997	0.00	0.00	0.00	0.00	0.82	1.19	0.65	0.53	0.26	0.11	0.04	0.02	0.30
1998	0.00	0.00	0.00	0.00	0.14	0.14	0.02	0.01	0.06	0.03	0.01	0.00	0.03
1999	0.00	0.00	0.00	0.00	0.18	0.63	0.09	0.08	0.24	0.10	0.01	0.00	0.11
2000	0.00	0.00	0.00	0.01	1.78	0.67	0.71	0.69	1.27	0.30	0.13	0.06	0.47
2001	0.03	0.02	0.01	0.03	0.36	1.24	0.88	0.43	0.35	0.15	0.06	0.03	0.30
2002	0.01	0.01	0.01	0.01	0.43	0.18	0.18	0.24	0.56	0.15	0.05	0.03	0.15
2003	0.01	0.01	0.00	0.08	0.21	0.58	0.51	0.18	0.19	0.13	0.04	0.02	0.17
2004	0.01	0.01	0.01	0.04	1.21	0.10	0.06	0.13	0.19	0.14	0.03	0.02	0.16
2005	0.01	0.01	0.01	0.16	0.26	0.15	0.20	0.20	0.43	0.16	0.05	0.01	0.14
2006	0.01	0.00	0.00	0.01	0.50	0.23	0.17	0.10	0.16	0.08	0.03	0.01	0.11
2007	0.00	-	0.00	0.05	0.51	0.15	0.22	0.11	0.20	0.11	0.02	0.01	0.14
2008	0.00	0.00	0.00	0.02	1.27	0.22	0.09	0.93	0.41	0.17	0.06	0.03	0.27
2009	0.02	0.02	0.01	0.03	1.40	0.48	0.03	0.08	0.16	0.07	0.04	0.02	0.20
2010	0.01	0.01	0.01	0.19	0.34	0.13	1.06	0.46	0.46	0.13	0.06	0.03	0.24
2011	0.03	0.03	0.02	0.06	1.35	0.93	1.07	0.67	0.28	0.16	0.08	0.04	0.40
2012	-	-	-	-	1.35	0.59	0.43	0.45	0.38	0.47	1.07	0.59	0.57
Average	0.01	0.01	0.00	0.05	0.72	0.43	0.44	0.28	0.30	0.12	0.05	0.03	0.21
Maximum	0.03	0.03	0.02	0.74	2.84	1.24	1.13	0.93	1.27	0.47	1.07	0.59	0.57
Minimum	0.00	0.00	0.00	0.00	0.06	0.07	0.02	0.01	0.06	0.03	0.01	0.00	0.03

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NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREPD	CHKD	APPD



CASINO MINING CORPORATION

CASINO PROJECT

BRITANNIA CREEK STATION (W14)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

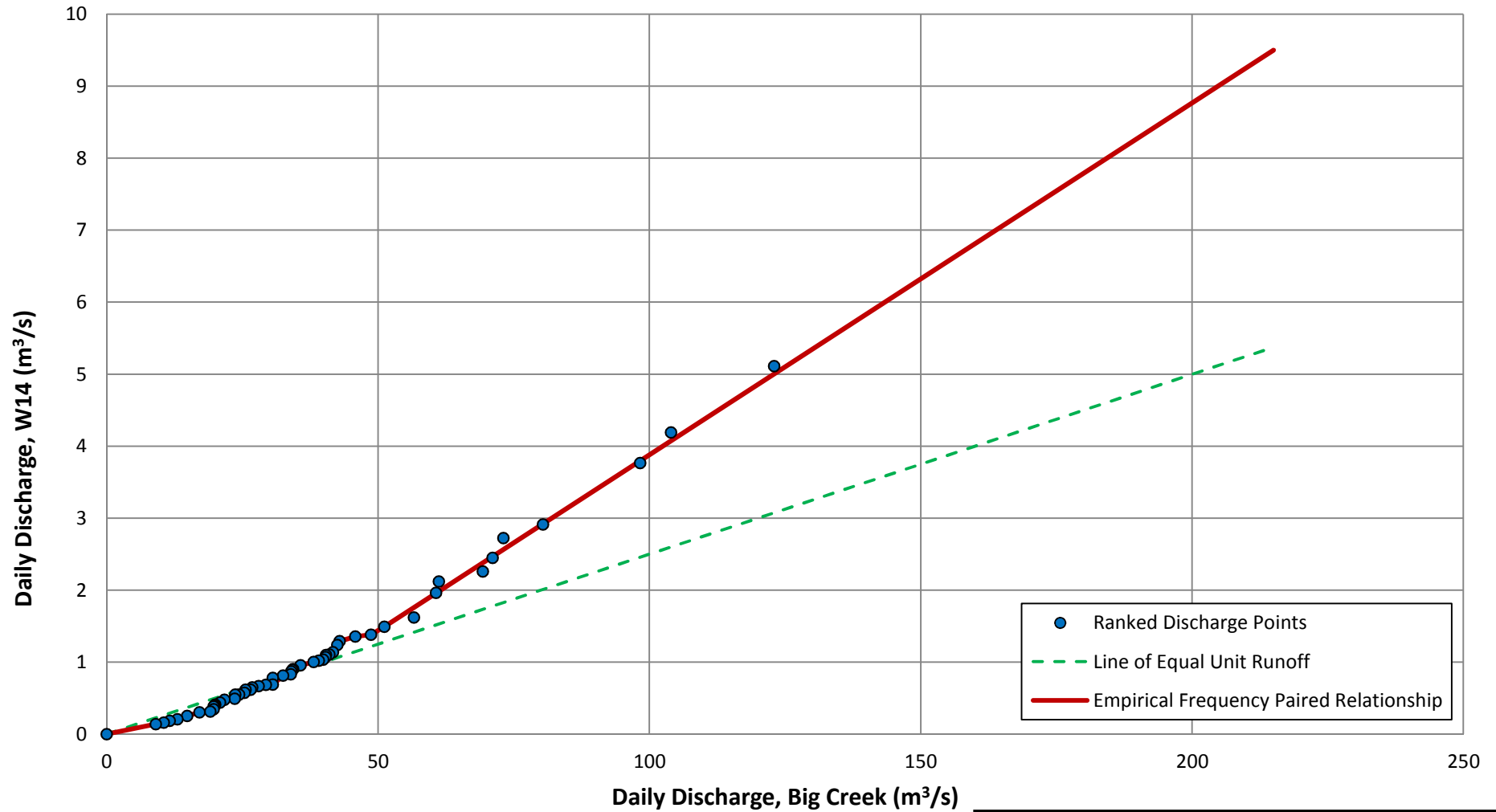
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 1a

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

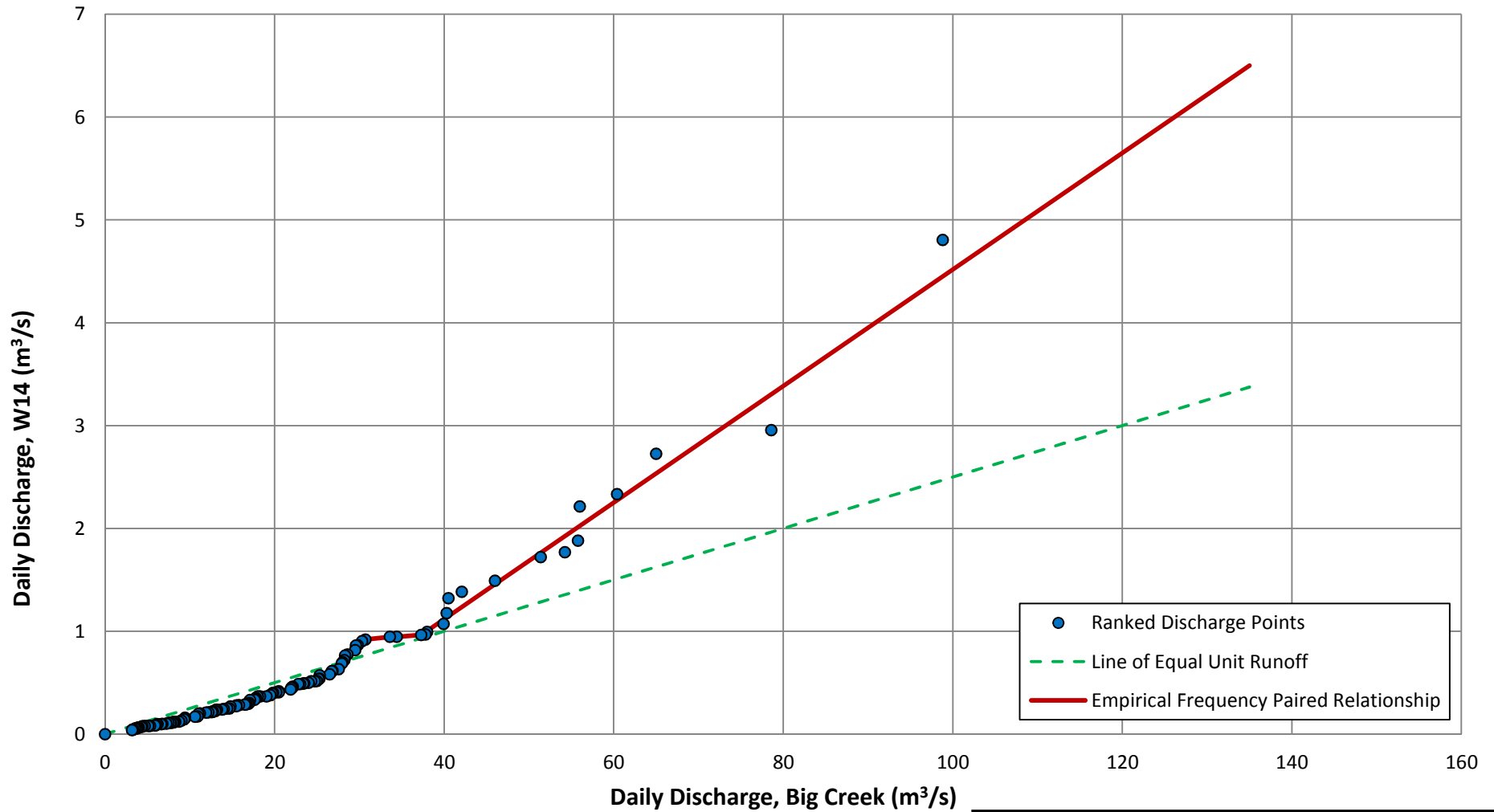
**W14 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 1b**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

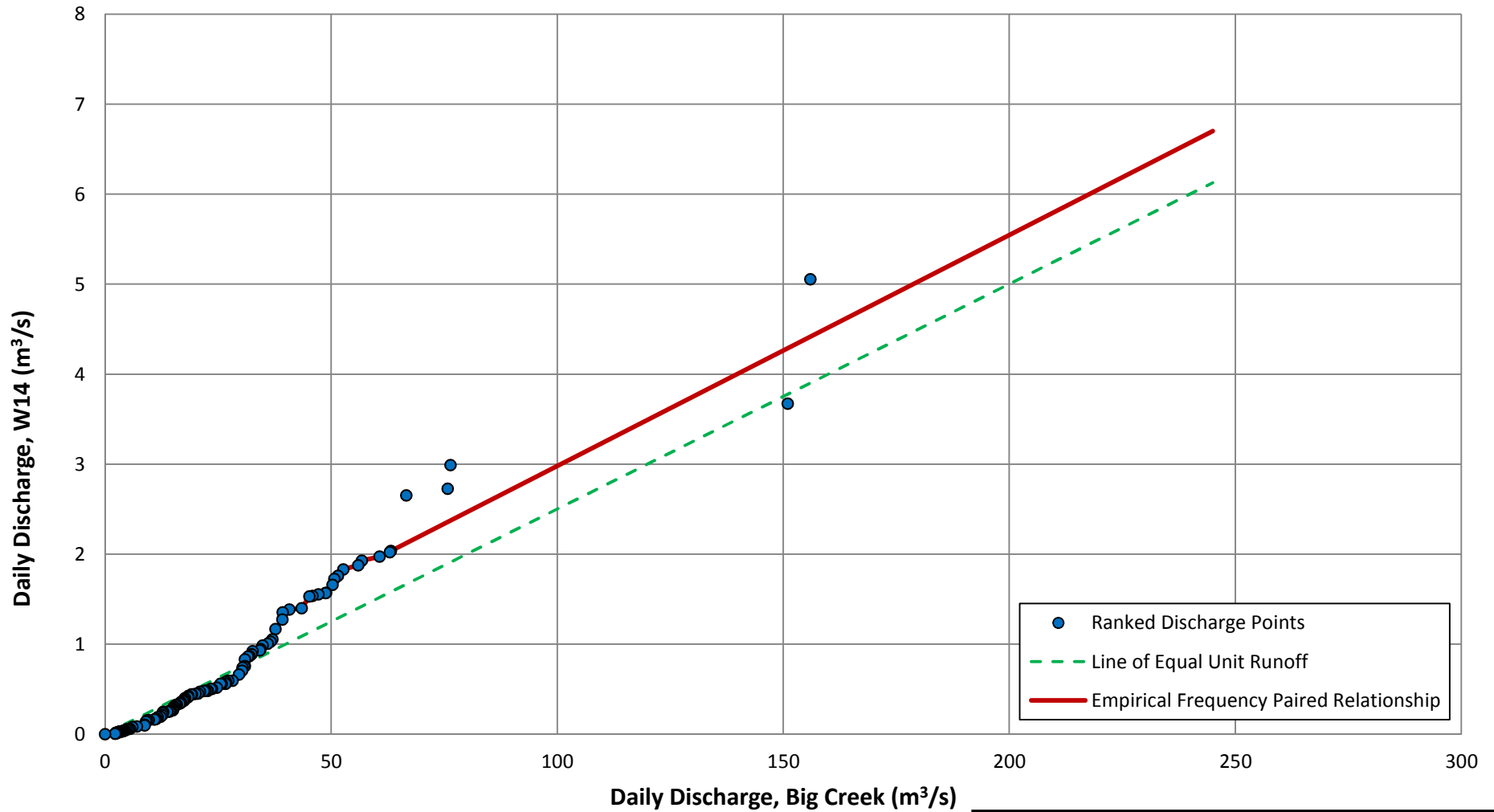
**W14 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 1c**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

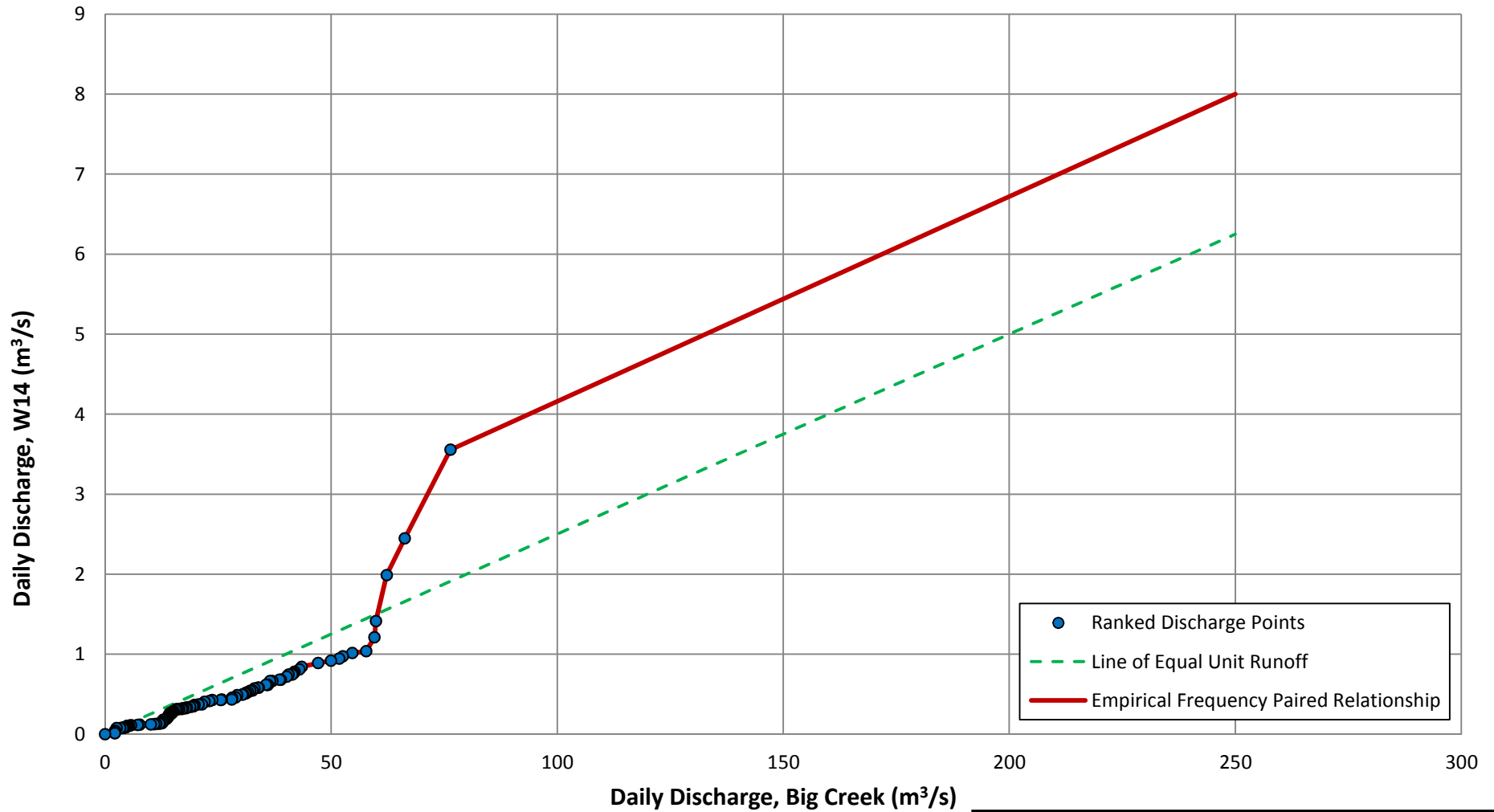
**W14 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 1d**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

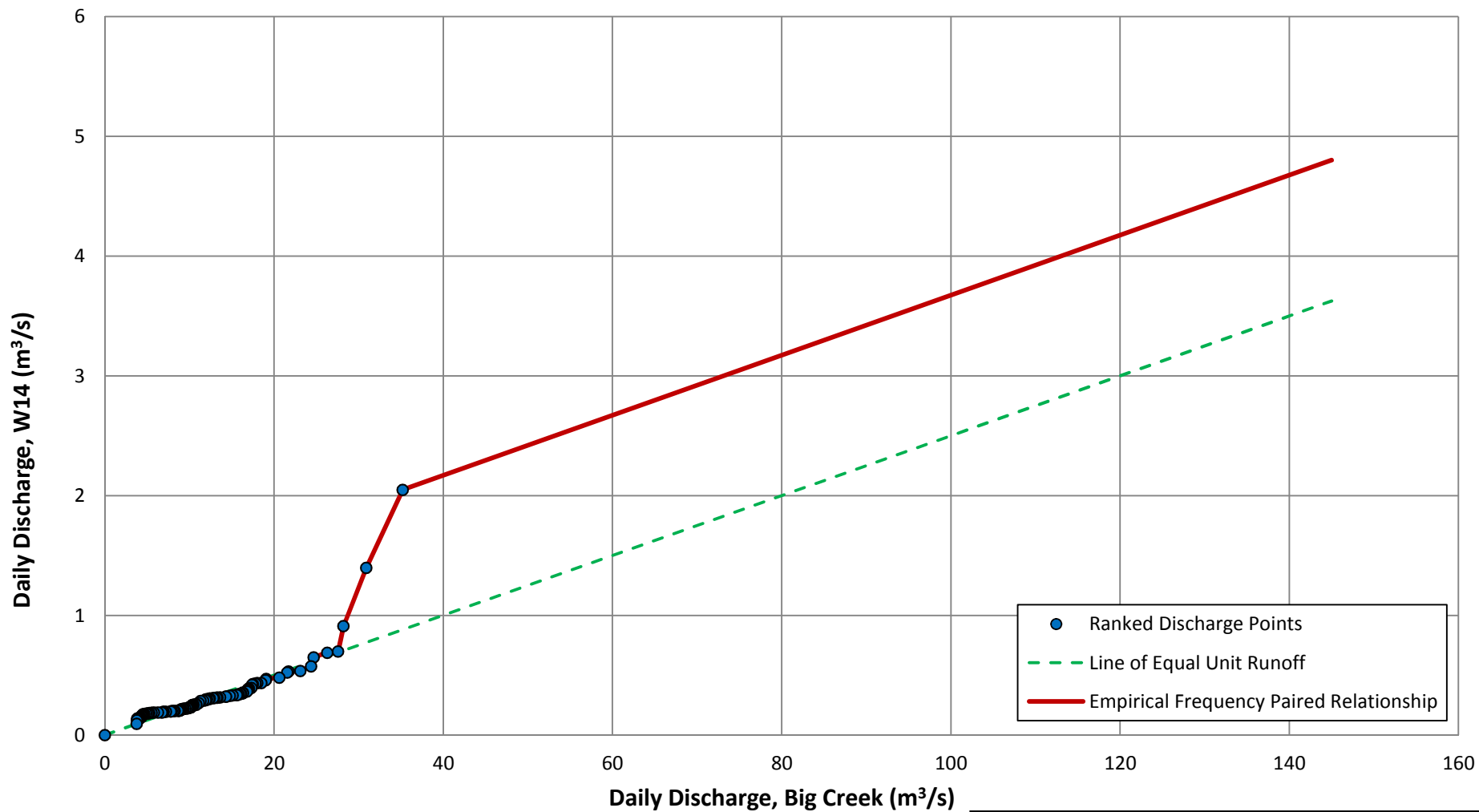
**W14 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 1e**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**W14 AND BIG CREEK SEPTEMBER - OCTOBER
RANKED REGRESSION RELATIONSHIP**
Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5

FIGURE 1f

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 2

**CASINO MINING CORPORATION
CASINO PROJECT**

**CANADIAN CREEK STATION (W3)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 16:11

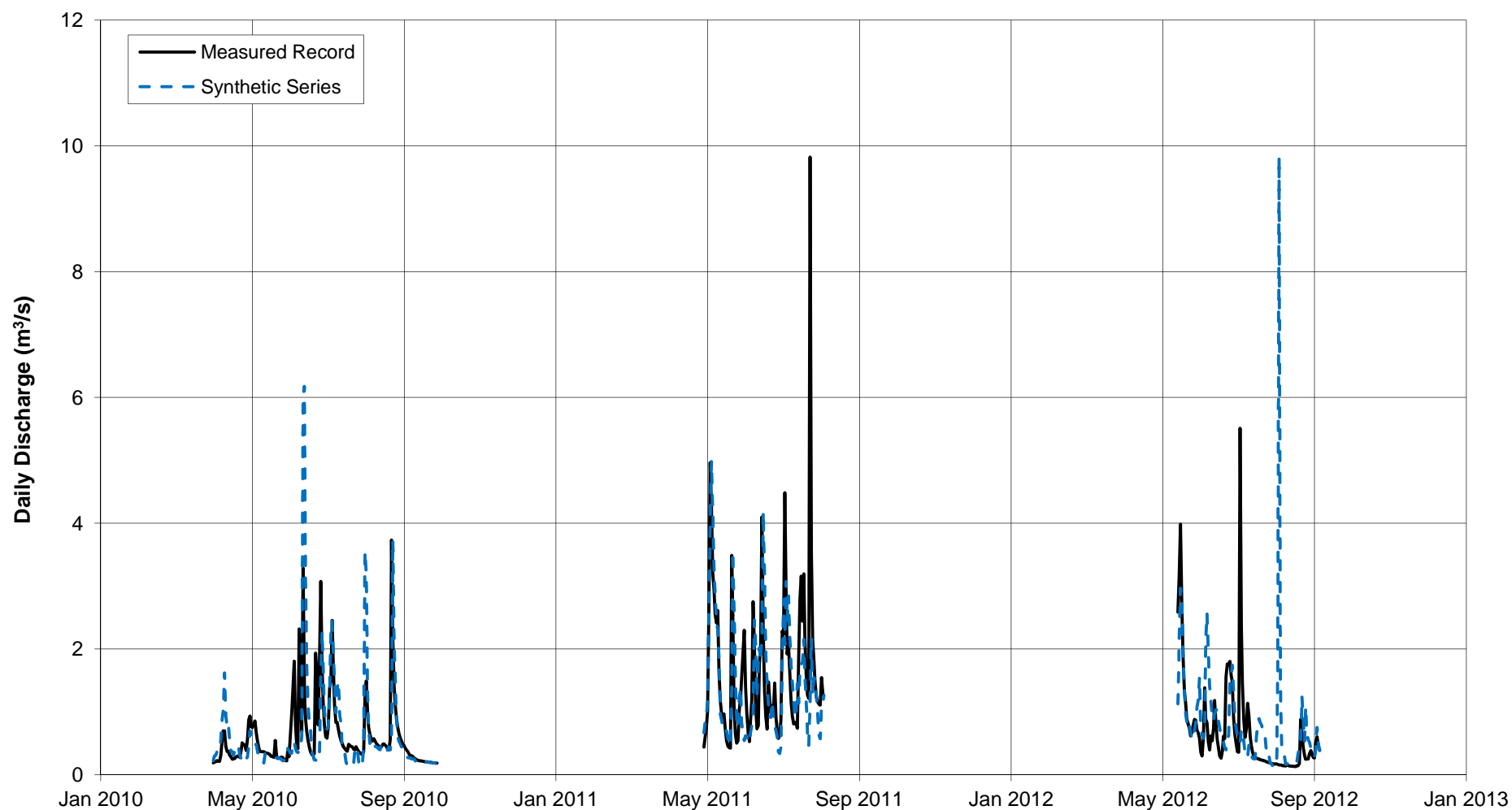
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.00	0.01	0.01	1.35	0.58	0.89	0.53	0.35	0.14	0.02	0.01	0.33
1976	0.01	0.00	0.00	0.01	0.68	1.08	1.62	0.07	0.13	0.07	0.03	0.01	0.31
1977	0.01	0.01	0.01	0.01	0.44	0.70	0.54	0.05	0.17	0.12	0.03	0.00	0.17
1978	0.00	0.00	0.00	0.00	0.14	0.91	1.59	1.02	0.21	0.17	0.08	0.03	0.35
1979	0.01	0.01	0.01	0.00	0.45	0.70	0.69	0.20	0.28	0.14	0.05	0.02	0.21
1980	0.01	0.01	0.01	0.01	0.16	0.29	0.58	0.13	1.05	0.21	0.03	0.01	0.21
1981	0.01	0.01	0.01	0.00	0.30	0.27	0.62	0.27	0.20	0.18	0.07	0.02	0.16
1982	0.01	0.01	0.01	0.00	0.83	0.90	0.14	0.81	0.12	0.08	0.04	0.01	0.25
1983	0.01	0.00	0.00	0.00	0.24	0.90	0.63	1.00	0.23	0.14	0.02	0.00	0.27
1984	0.00	0.00	0.00	0.00	0.08	0.68	0.75	0.05	0.57	0.11	0.02	0.00	0.18
1985	0.00	0.00	0.00	0.00	0.94	0.96	0.70	0.18	0.27	0.14	0.06	0.03	0.28
1986	0.02	0.01	0.00	0.00	0.84	0.73	0.59	0.16	0.25	0.14	0.03	0.03	0.23
1987	0.02	0.01	0.00	0.01	0.82	0.82	0.21	0.23	0.21	0.13	0.04	0.02	0.21
1988	0.01	0.01	0.01	0.01	0.84	0.42	0.87	0.28	0.20	0.14	0.07	0.03	0.24
1989	0.02	0.01	0.00	0.00	0.22	0.35	0.17	0.06	0.17	0.11	0.05	0.02	0.10
1990	0.01	0.00	0.00	0.80	2.98	0.62	0.25	0.05	0.58	0.18	0.04	0.01	0.46
1991	0.01	0.01	0.02	0.06	1.84	0.90	0.61	0.47	0.91	0.19	0.15	0.09	0.44
1992	0.05	0.02	0.02	0.03	1.88	1.43	1.40	0.19	0.63	0.16	0.09	0.05	0.50
1993	0.02	0.01	0.01	0.13	1.15	0.38	0.38	0.21	0.21	0.09	0.08	0.06	0.23
1994	0.03	0.01	0.01	0.20	0.48	0.36	0.19	0.04	0.13	0.09	0.02	0.01	0.13
1996	0.01	0.00	0.00	0.00	0.13	0.29	0.84	0.43	0.31	0.12	0.03	0.01	0.18
1997	0.00	0.00	0.00	0.00	1.03	1.75	0.97	0.83	0.27	0.14	0.08	0.03	0.43
1998	0.01	0.01	0.00	0.00	0.17	0.35	0.07	0.02	0.10	0.05	0.01	0.00	0.07
1999	0.00	0.00	0.00	0.00	0.22	0.88	0.18	0.05	0.26	0.13	0.02	0.00	0.15
2000	0.00	0.00	0.00	0.01	1.93	1.15	1.05	1.00	2.03	0.32	0.17	0.10	0.65
2001	0.05	0.03	0.02	0.04	0.44	1.49	1.28	0.69	0.38	0.18	0.11	0.05	0.40
2002	0.02	0.01	0.01	0.02	0.53	0.42	0.31	0.27	0.83	0.18	0.08	0.04	0.23
2003	0.02	0.01	0.01	0.10	0.26	0.77	0.73	0.18	0.20	0.17	0.07	0.03	0.21
2004	0.02	0.02	0.02	0.05	1.44	0.30	0.13	0.10	0.20	0.17	0.05	0.03	0.21
2005	0.02	0.02	0.01	0.19	0.33	0.37	0.33	0.20	0.53	0.19	0.09	0.02	0.19
2006	0.01	0.01	0.01	0.01	0.61	0.48	0.29	0.07	0.18	0.12	0.05	0.01	0.16
2007	0.00	-	0.00	0.06	0.63	0.37	0.35	0.08	0.22	0.14	0.04	0.01	0.19
2008	0.01	0.01	0.01	0.03	1.53	0.45	0.16	1.82	0.48	0.19	0.10	0.06	0.41
2009	0.04	0.03	0.03	0.04	1.57	0.78	0.09	0.05	0.18	0.12	0.07	0.03	0.25
2010	0.02	0.01	0.01	0.23	0.41	0.33	1.48	0.57	0.59	0.16	0.10	0.06	0.33
2011	0.05	0.05	0.04	0.08	1.55	1.33	1.48	0.96	0.30	0.18	0.13	0.07	0.52
2012	-	-	-	0.00	1.65	0.96	0.68	0.70	0.41	0.73	1.70	0.71	0.83
Average	0.01	0.01	0.01	0.06	0.84	0.71	0.65	0.39	0.38	0.16	0.09	0.04	0.28
Maximum	0.05	0.05	0.04	0.80	2.98	1.75	1.62	1.82	2.03	0.73	1.70	0.71	0.83
Minimum	0.00	0.00	0.00	0.00	0.08	0.27	0.07	0.02	0.10	0.05	0.01	0.00	0.07

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NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

CANADIAN CREEK STATION (W3)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

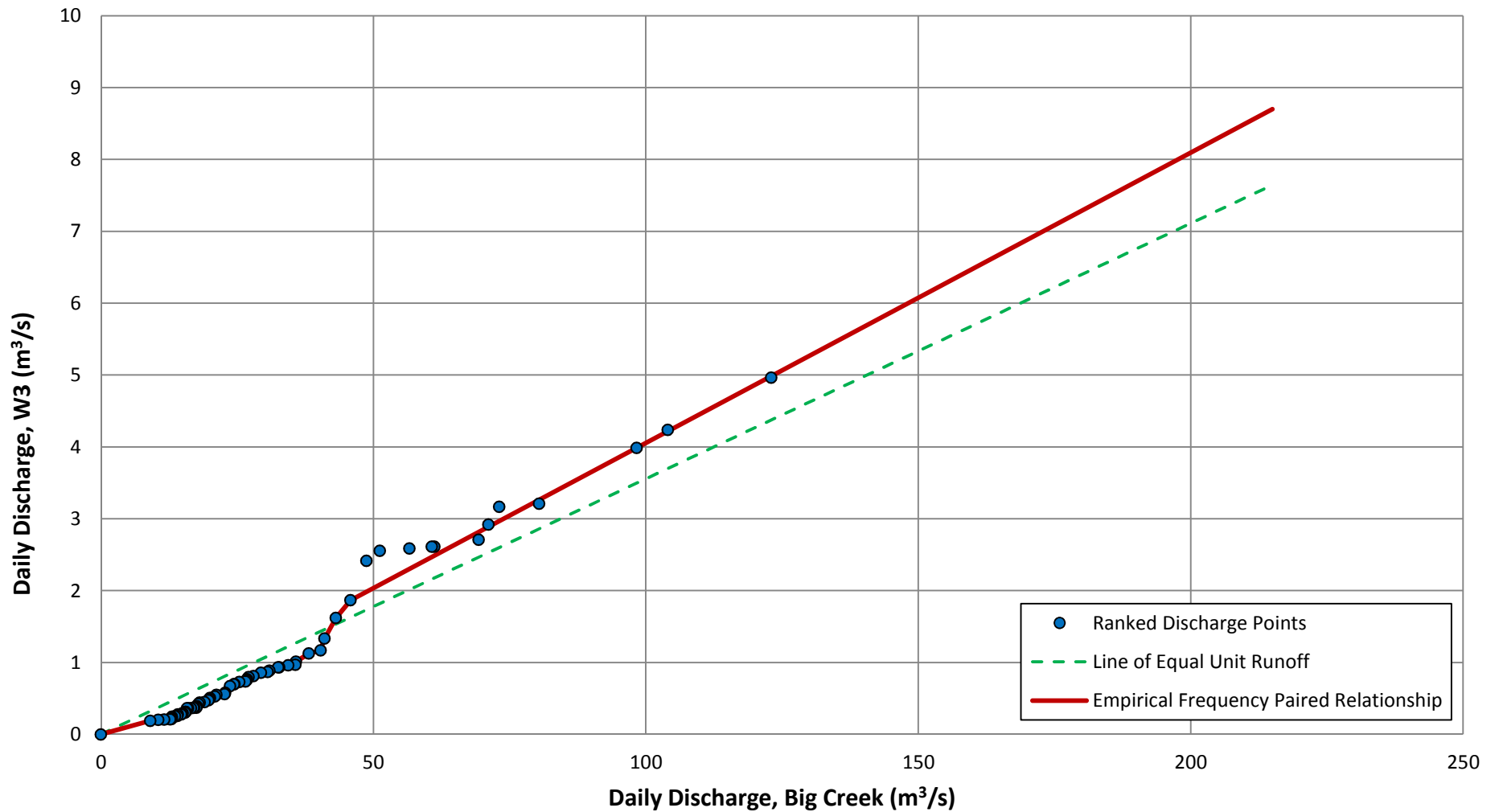
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 2a

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

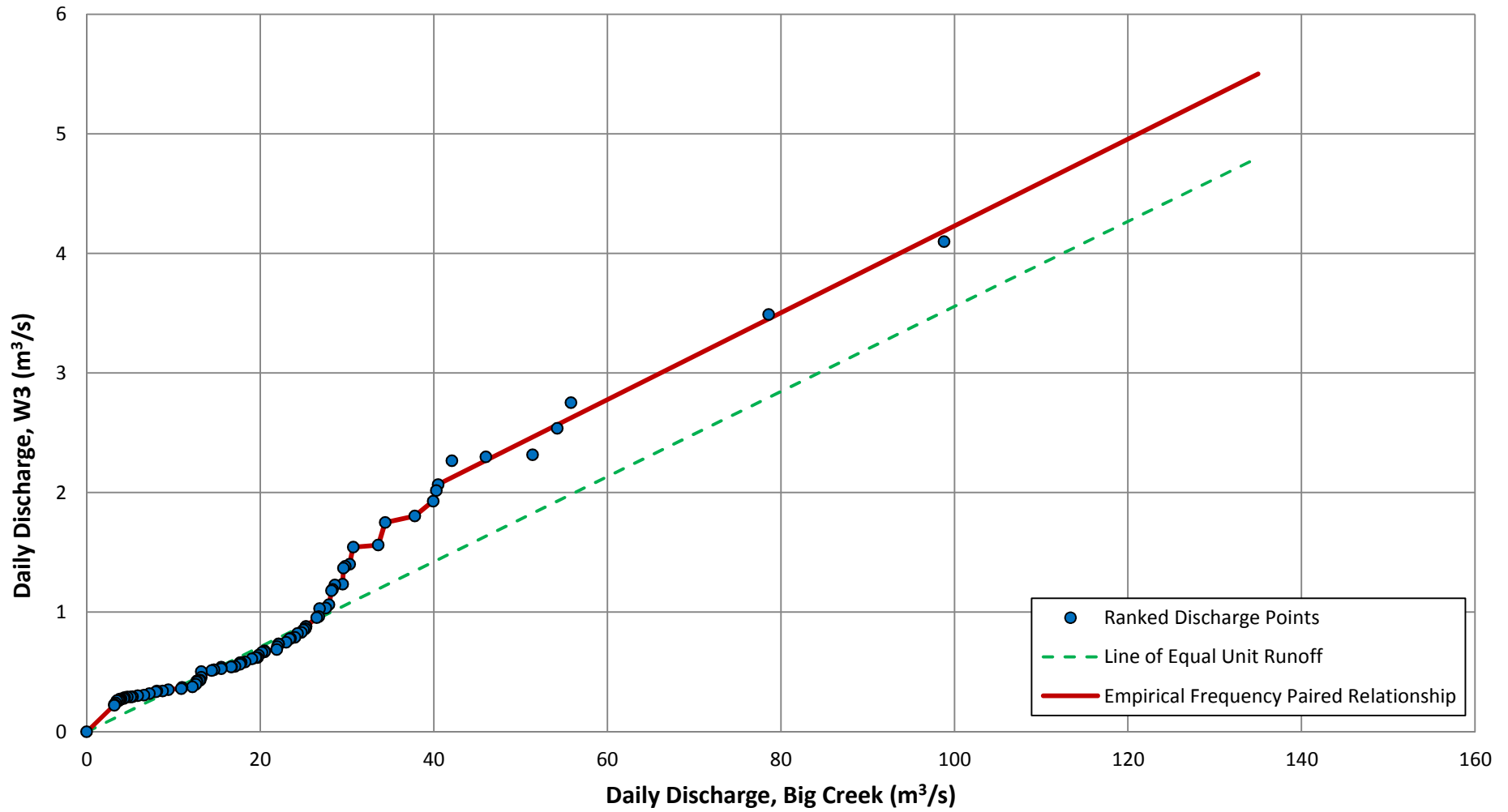
**W3 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 2b**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

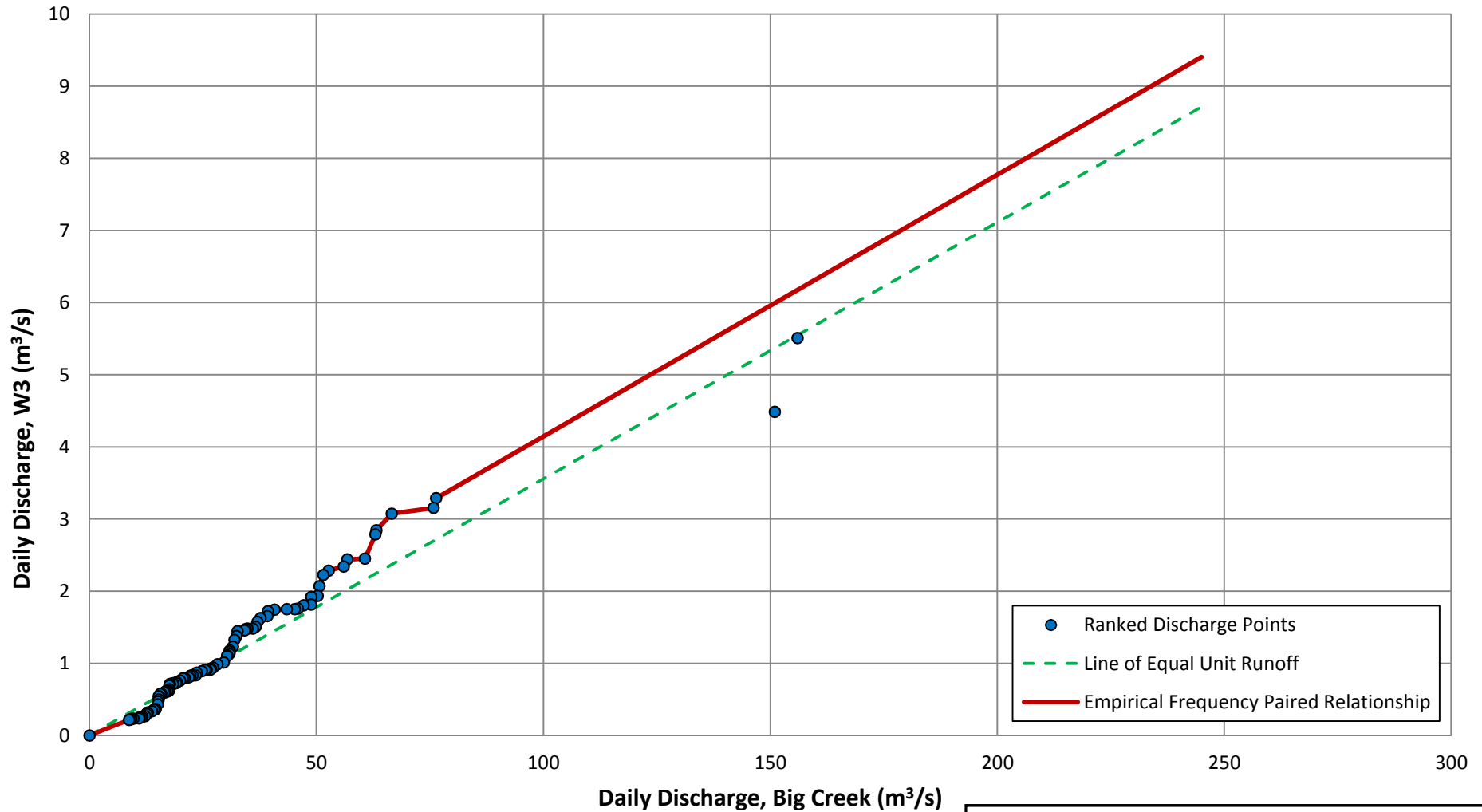
**W3 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 2c**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

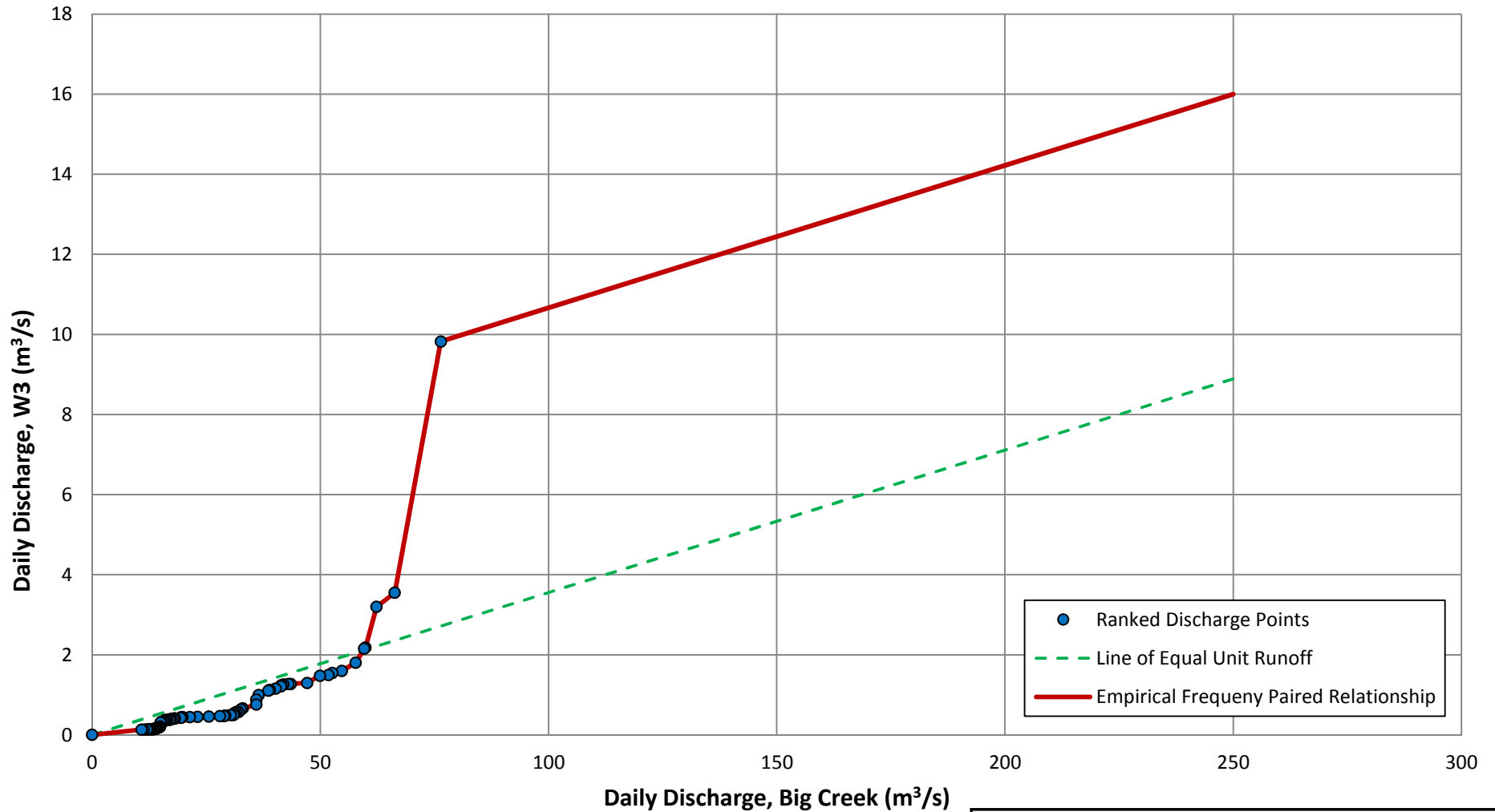
**W3 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 2d**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

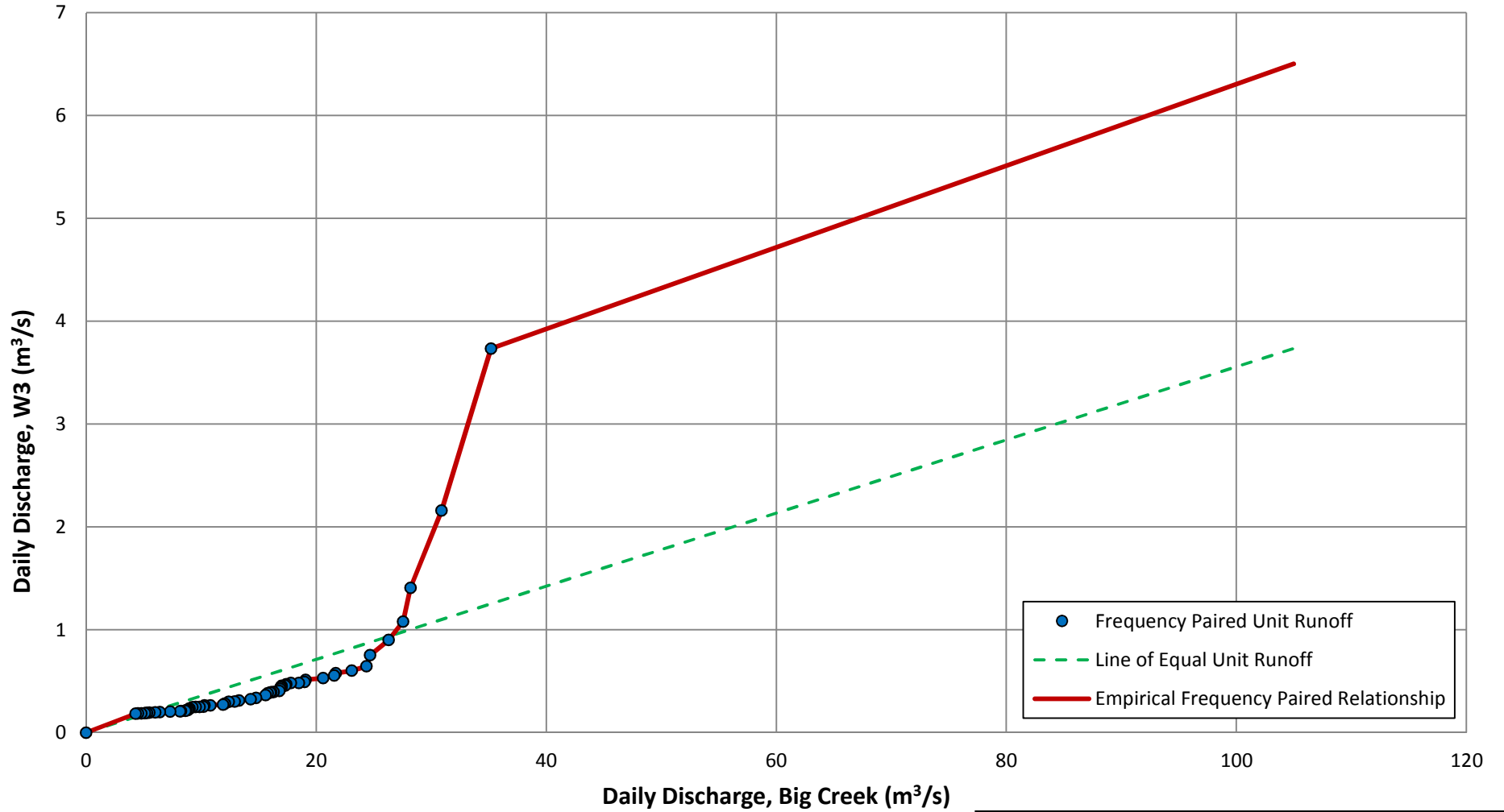
**W3 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 2e**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION		
CASINO PROJECT		
W3 AND BIG CREEK SEPTEMBER - OCTOBER RANKED REGRESSION RELATIONSHIP		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 2f	REV 0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 3

CASINO MINING CORPORATION
CASINO PROJECT

LOWER DIP CREEK STATION (W16)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS

Print: 7/10/13 17:29

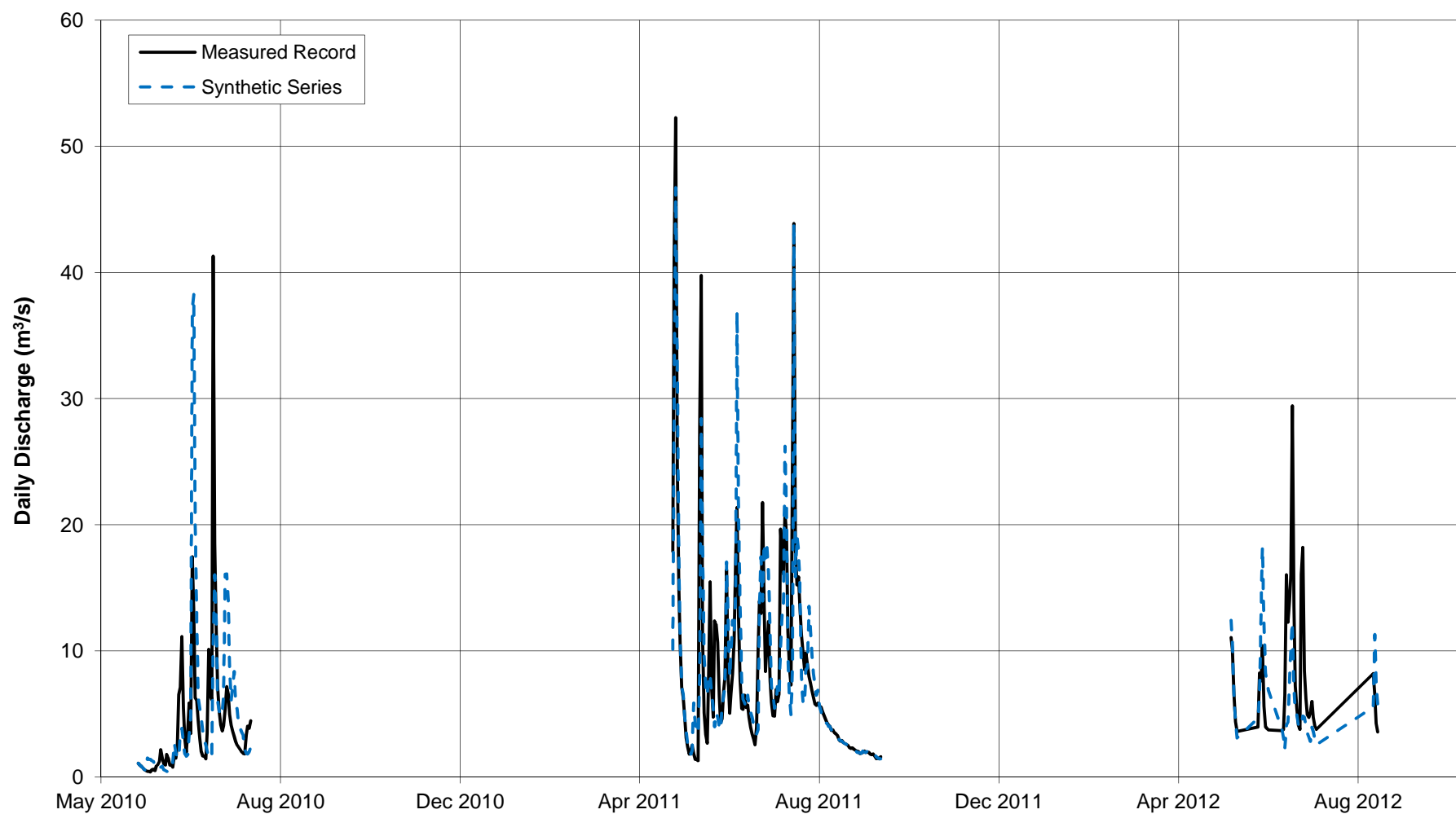
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.00	0.01	0.02	8.17	3.64	5.90	5.82	2.82	0.80	0.08	0.04	2.30
1976	0.01	0.00	0.00	0.02	2.21	7.33	10.44	0.86	0.59	0.34	0.15	0.05	1.84
1977	0.01	0.01	0.01	0.03	1.28	4.61	3.60	0.57	0.86	0.56	0.14	0.02	0.98
1978	0.00	0.00	0.00	0.00	0.44	6.35	10.23	7.99	1.50	0.96	0.35	0.13	2.35
1979	0.02	0.01	0.01	0.01	1.33	4.71	4.64	2.14	2.07	0.69	0.22	0.07	1.33
1980	0.01	0.01	0.01	0.02	0.47	1.01	4.08	1.63	4.60	1.55	0.16	0.04	1.13
1981	0.01	0.01	0.01	0.01	0.87	0.90	4.30	3.07	1.17	0.96	0.32	0.09	0.99
1982	0.01	0.01	0.01	0.01	2.62	5.66	0.93	5.58	0.55	0.38	0.17	0.06	1.34
1983	0.01	0.00	0.00	0.00	0.74	6.24	4.27	7.87	1.77	0.66	0.09	0.01	1.82
1984	0.00	0.00	0.00	0.01	0.23	4.65	4.97	0.62	2.84	0.51	0.08	0.01	1.10
1985	0.00	0.00	0.00	0.00	3.46	6.50	4.81	2.08	2.20	0.70	0.27	0.15	1.69
1986	0.03	0.02	0.01	0.00	5.30	4.64	4.02	1.80	1.87	0.71	0.13	0.12	1.57
1987	0.02	0.01	0.00	0.04	2.49	5.62	1.42	2.60	1.52	0.66	0.21	0.09	1.23
1988	0.01	0.01	0.01	0.03	2.68	2.36	5.78	2.93	1.22	0.64	0.33	0.16	1.36
1989	0.02	0.01	0.00	0.01	0.67	1.68	1.20	0.69	0.79	0.50	0.23	0.10	0.49
1990	0.01	0.01	0.00	5.60	23.02	4.17	1.76	0.62	3.95	1.17	0.19	0.06	3.41
1991	0.01	0.01	0.02	0.18	7.94	6.48	4.11	4.85	4.26	1.13	0.72	0.43	2.53
1992	0.06	0.02	0.03	0.08	15.58	10.33	9.00	2.14	3.39	0.96	0.41	0.22	3.54
1993	0.03	0.01	0.01	0.36	3.76	2.09	2.80	2.31	1.41	0.41	0.38	0.27	1.16
1994	0.04	0.02	0.01	0.59	1.43	1.82	1.28	0.48	0.61	0.46	0.11	0.06	0.53
1996	0.01	0.00	0.00	0.00	0.38	1.23	5.67	4.81	2.43	0.59	0.14	0.03	1.28
1997	0.00	0.00	0.00	0.00	3.33	11.99	6.46	7.54	2.21	0.77	0.36	0.13	2.75
1998	0.01	0.01	0.01	0.01	0.50	1.72	0.44	0.27	0.48	0.24	0.04	0.01	0.31
1999	0.00	0.00	0.00	0.01	0.64	6.44	1.18	0.60	1.79	0.63	0.07	0.01	0.94
2000	0.00	0.00	0.00	0.04	12.56	7.48	6.94	11.46	7.20	2.41	0.82	0.49	4.14
2001	0.07	0.04	0.03	0.10	1.47	11.45	8.26	5.70	3.04	1.06	0.51	0.22	2.67
2002	0.03	0.02	0.01	0.04	1.57	2.08	1.99	2.80	3.35	0.93	0.38	0.20	1.12
2003	0.03	0.01	0.01	0.28	0.79	5.45	5.00	1.96	1.38	0.94	0.33	0.13	1.36
2004	0.02	0.02	0.02	0.14	6.39	1.22	0.86	1.15	1.22	0.96	0.25	0.12	1.04
2005	0.02	0.02	0.02	0.61	0.97	1.99	2.63	2.16	3.41	1.19	0.43	0.09	1.13
2006	0.01	0.01	0.01	0.03	1.83	2.56	2.05	0.85	0.99	0.57	0.23	0.06	0.77
2007	0.00	-	0.00	0.18	1.82	1.96	2.48	0.98	1.49	0.73	0.17	0.06	0.99
2008	0.01	0.01	0.01	0.07	6.31	2.48	1.21	10.66	3.43	1.18	0.49	0.27	2.19
2009	0.05	0.04	0.03	0.09	8.43	5.21	0.59	0.63	0.95	0.55	0.33	0.15	1.43
2010	0.02	0.01	0.01	0.67	1.23	1.57	9.52	6.72	3.45	0.93	0.49	0.27	2.10
2011	0.07	0.07	0.05	0.21	7.35	9.58	9.60	10.53	2.43	1.07	0.61	0.34	3.52
2012	-	-	-	-	5.76	6.86	4.78	6.07	3.30	2.45	5.97	5.01	4.88
Average	0.02	0.01	0.01	0.26	3.98	4.65	4.36	3.63	2.20	0.85	0.37	0.21	1.73
Maximum	0.07	0.07	0.05	5.60	23.02	11.99	10.44	11.46	7.20	2.45	5.97	5.01	4.88
Minimum	0.00	0.00	0.00	0.00	0.23	0.90	0.44	0.27	0.48	0.24	0.04	0.01	0.31

M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W16\10100325_W16_PERIOD_REGRESSION_20130319.xlsm\Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

LOWER DIP CREEK STATION (W16)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

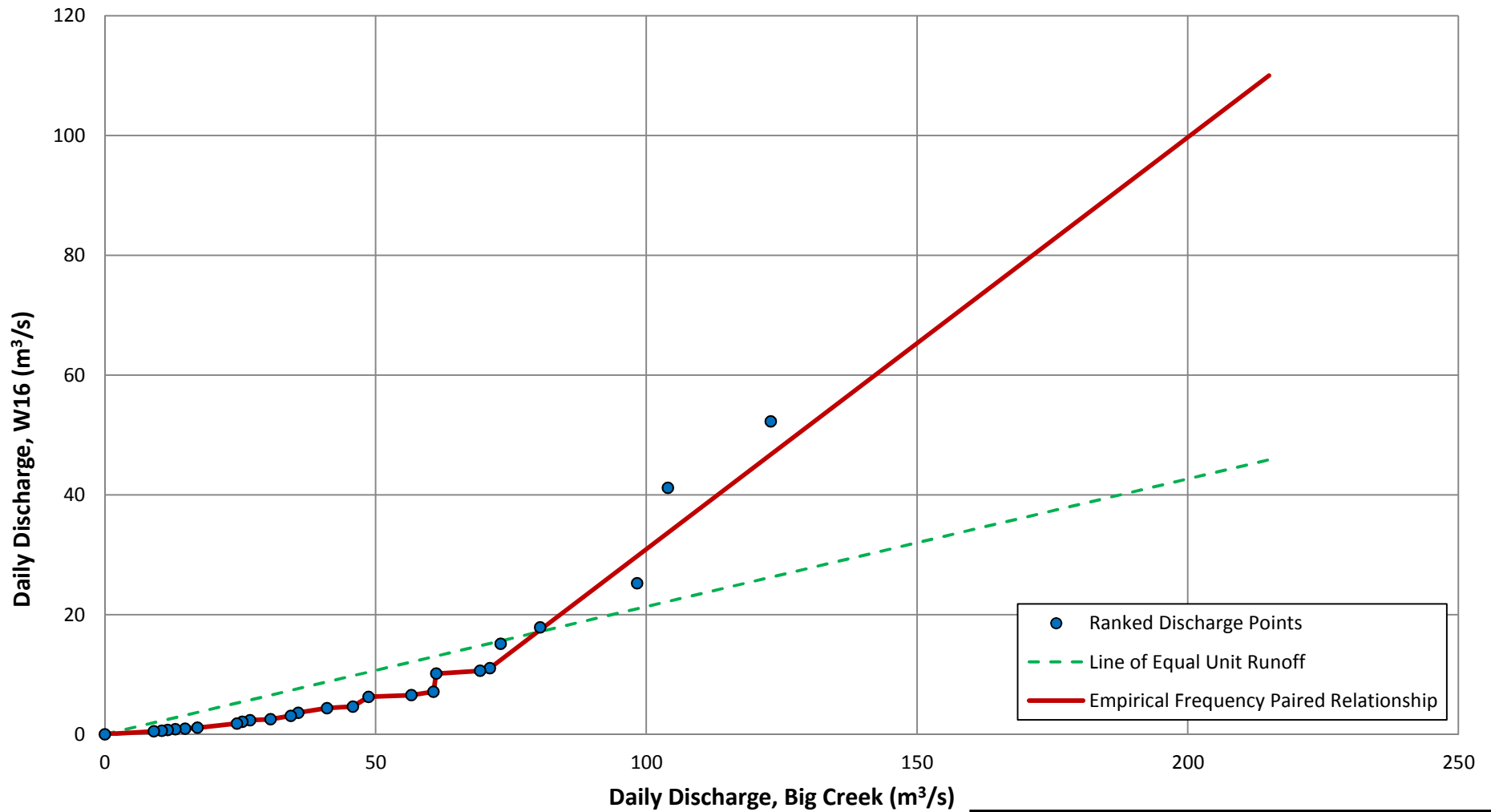
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 3a

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

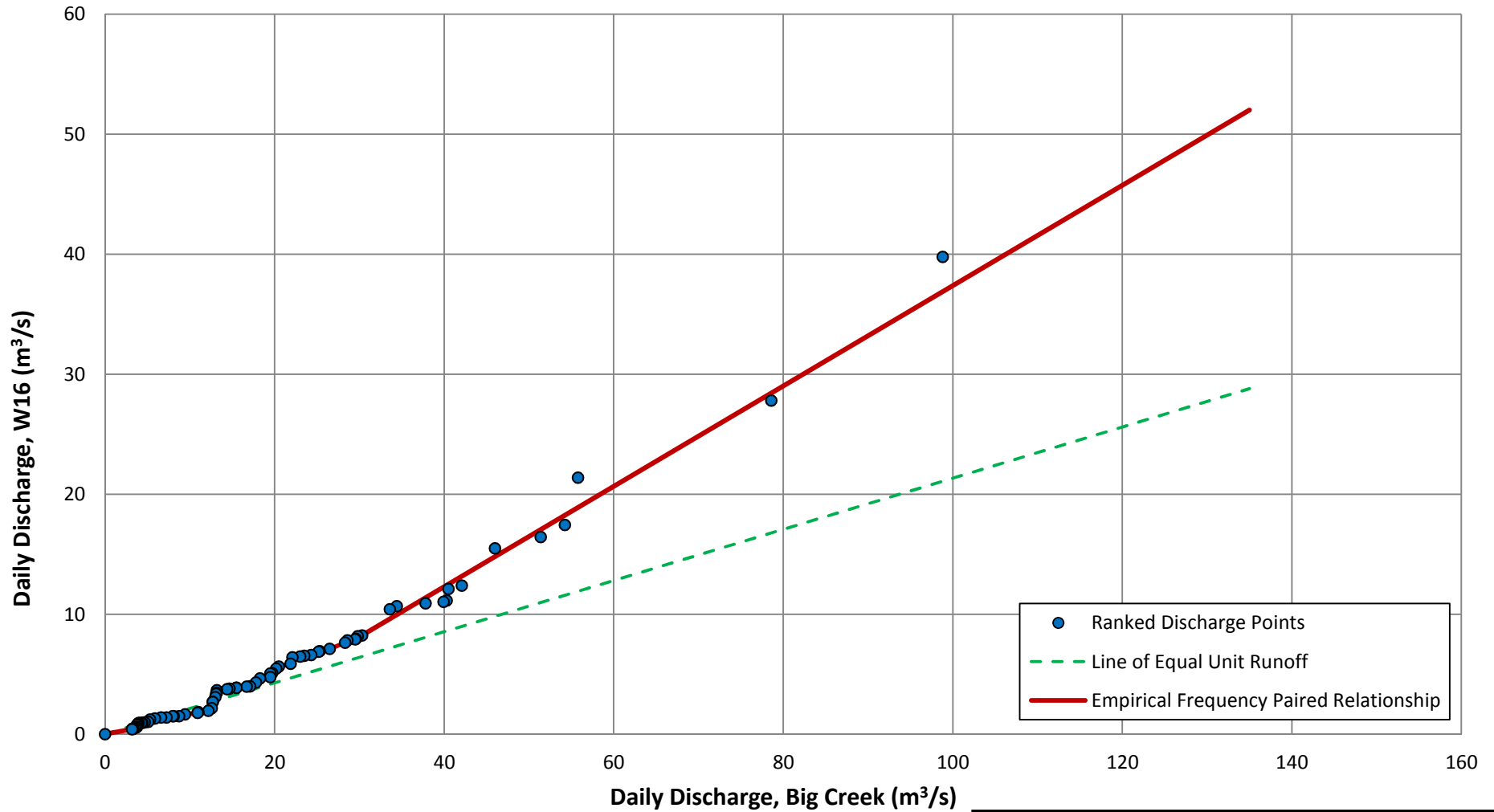
**W16 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 3b**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

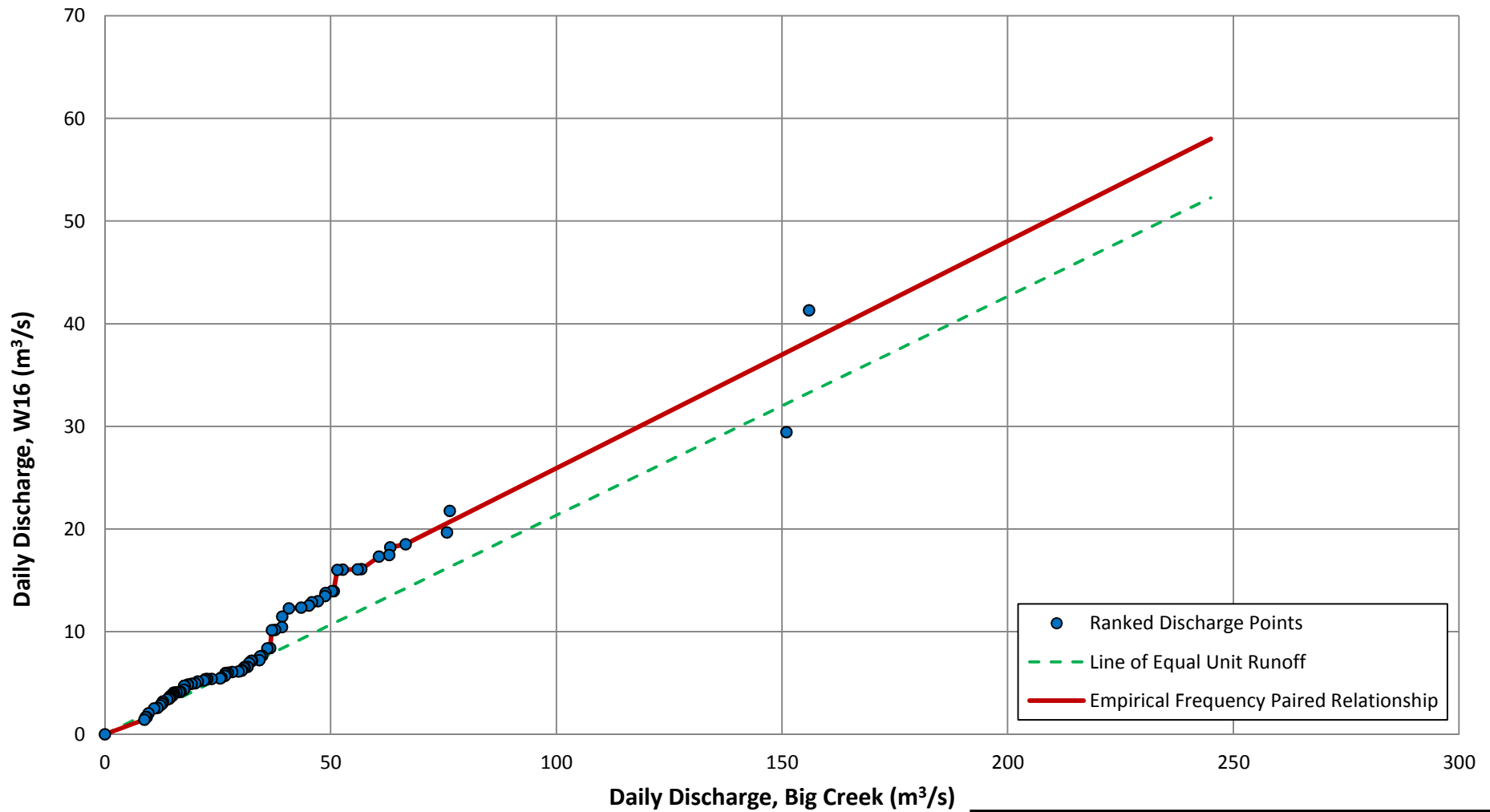
**W16 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 3c**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

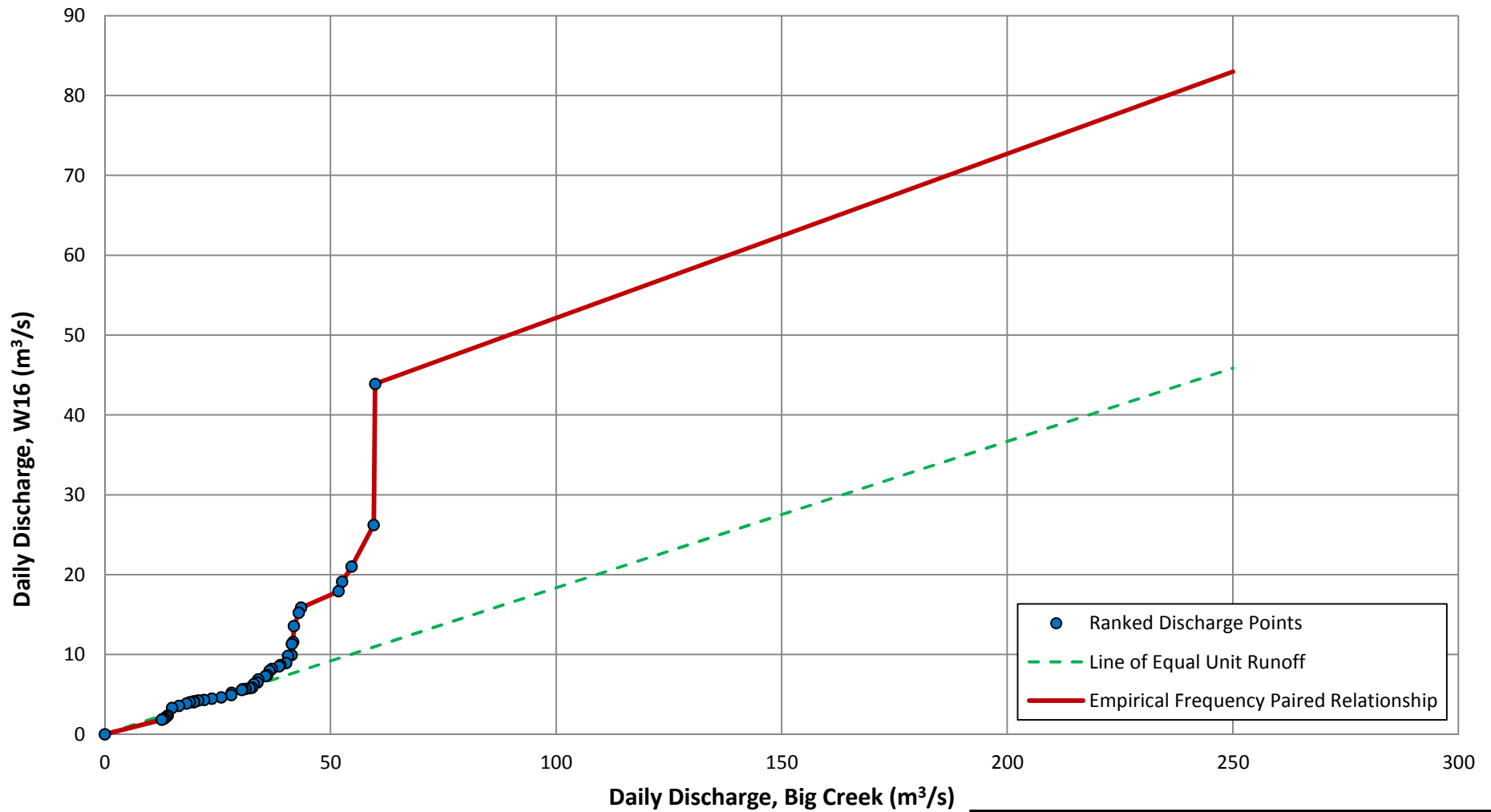
**W16 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 3d**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**W16 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 3e**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**W16 AND BIG CREEK SEPTEMBER - OCTOBER
RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5

FIGURE 3f

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 4

**CASINO MINING CORPORATION
CASINO PROJECT**

**UPPER DIP CREEK STATION (W9)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 16:51

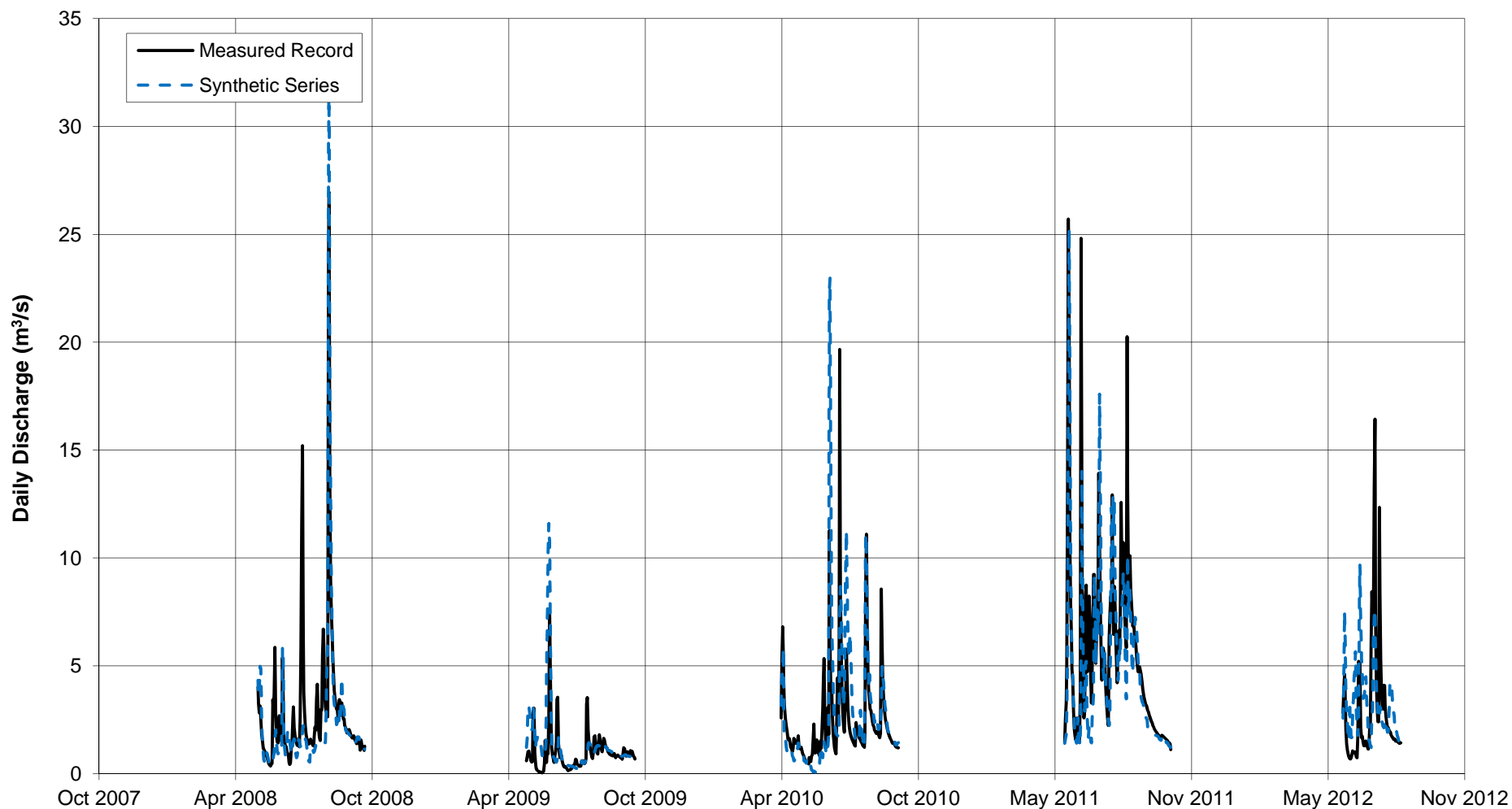
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.01	0.02	0.03	0.10	4.72	1.80	4.23	3.29	2.01	0.77	0.09	0.04	1.44
1976	0.03	0.02	0.01	0.09	1.58	3.94	6.86	1.28	0.64	0.37	0.16	0.06	1.26
1977	0.05	0.04	0.03	0.11	0.99	2.44	2.87	0.99	0.90	0.60	0.15	0.02	0.77
1978	0.01	0.01	0.00	0.01	0.38	3.12	6.92	3.50	1.28	0.94	0.38	0.14	1.40
1979	0.07	0.03	0.03	0.04	1.05	2.40	3.52	1.87	1.59	0.74	0.23	0.08	0.98
1980	0.03	0.03	0.04	0.07	0.44	0.29	2.88	1.47	3.00	1.26	0.17	0.04	0.81
1981	0.04	0.04	0.04	0.05	0.71	0.27	3.33	2.20	1.13	0.97	0.35	0.09	0.78
1982	0.03	0.03	0.03	0.05	1.73	3.07	0.75	2.79	0.59	0.41	0.18	0.06	0.82
1983	0.03	0.01	0.01	0.01	0.53	3.15	3.27	4.00	1.43	0.71	0.09	0.01	1.11
1984	0.00	0.00	0.00	0.03	0.21	2.20	3.55	0.99	2.07	0.55	0.08	0.02	0.80
1985	0.01	0.00	0.01	0.02	2.23	3.44	3.63	1.73	1.62	0.74	0.29	0.16	1.17
1986	0.11	0.06	0.02	0.01	3.00	2.54	3.04	1.58	1.48	0.74	0.14	0.13	1.08
1987	0.09	0.04	0.02	0.15	1.73	2.74	1.15	1.98	1.30	0.69	0.22	0.09	0.86
1988	0.04	0.04	0.05	0.11	1.86	1.17	4.15	2.19	1.15	0.69	0.36	0.17	1.01
1989	0.09	0.04	0.02	0.04	0.56	0.70	1.05	1.08	0.86	0.54	0.24	0.11	0.45
1990	0.06	0.02	0.01	2.82	12.74	2.05	1.50	0.72	2.61	1.02	0.21	0.07	2.00
1991	0.05	0.06	0.08	0.46	4.78	3.22	3.24	2.61	2.80	1.07	0.78	0.47	1.65
1992	0.24	0.10	0.11	0.28	8.66	5.42	6.34	1.77	2.36	0.92	0.44	0.24	2.25
1993	0.10	0.05	0.04	0.85	2.49	0.95	2.31	1.93	1.23	0.44	0.41	0.29	0.93
1994	0.15	0.06	0.04	1.21	1.10	0.86	1.64	0.83	0.65	0.49	0.11	0.06	0.51
1996	0.04	0.01	0.00	0.00	0.34	0.46	4.01	3.02	1.79	0.62	0.15	0.03	0.88
1997	0.01	0.01	0.00	0.01	2.21	6.73	4.61	3.57	1.67	0.77	0.38	0.14	1.69
1998	0.04	0.03	0.02	0.05	0.45	0.73	0.29	0.40	0.51	0.26	0.05	0.01	0.24
1999	0.00	0.00	0.00	0.04	0.54	3.09	1.07	0.98	1.46	0.68	0.08	0.02	0.66
2000	0.01	0.01	0.01	0.13	7.20	4.12	4.93	4.73	4.56	1.79	0.88	0.52	2.42
2001	0.28	0.15	0.12	0.38	1.03	5.73	5.67	2.77	2.14	1.00	0.55	0.23	1.68
2002	0.11	0.06	0.05	0.16	1.15	1.03	1.54	2.19	2.37	0.95	0.41	0.22	0.86
2003	0.12	0.06	0.03	0.62	0.65	2.65	3.68	1.81	1.23	0.92	0.35	0.14	1.03
2004	0.08	0.08	0.09	0.44	3.90	0.50	0.77	1.46	1.16	0.93	0.27	0.13	0.82
2005	0.09	0.08	0.07	1.06	0.82	0.85	2.15	1.88	2.30	1.08	0.46	0.10	0.92
2006	0.04	0.04	0.04	0.14	1.29	1.35	1.75	1.25	1.01	0.62	0.25	0.06	0.66
2007	0.00	-	0.01	0.45	1.34	0.87	2.06	1.33	1.29	0.74	0.18	0.06	0.84
2008	0.03	0.03	0.03	0.24	3.91	1.28	1.34	4.96	2.37	1.11	0.53	0.29	1.35
2009	0.19	0.14	0.13	0.34	4.99	2.60	0.50	1.06	0.98	0.60	0.35	0.16	1.01
2010	0.09	0.06	0.05	1.26	1.00	0.65	6.54	3.27	2.36	0.90	0.53	0.29	1.43
2011	0.26	0.27	0.19	0.72	4.44	5.02	6.72	5.72	1.79	1.03	0.66	0.36	2.28
2012	-	-	-	-	3.63	3.60	3.39	3.11	2.23	1.86	3.96	3.28	3.02
Average	0.07	0.05	0.04	0.35	2.46	2.35	3.20	2.27	1.65	0.82	0.36	0.19	1.16
Maximum	0.28	0.27	0.19	2.82	12.74	6.73	6.92	5.72	4.56	1.86	3.96	3.28	3.02
Minimum	0.00	0.00	0.00	0.00	0.21	0.27	0.29	0.40	0.51	0.26	0.05	0.01	0.24

M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W9\10100325_W9_PERIOD_REGRESSION_20130318 - DS.xlsx\Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT P/A NO. VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

UPPER DIP CREEK CREEK STATION (W9)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

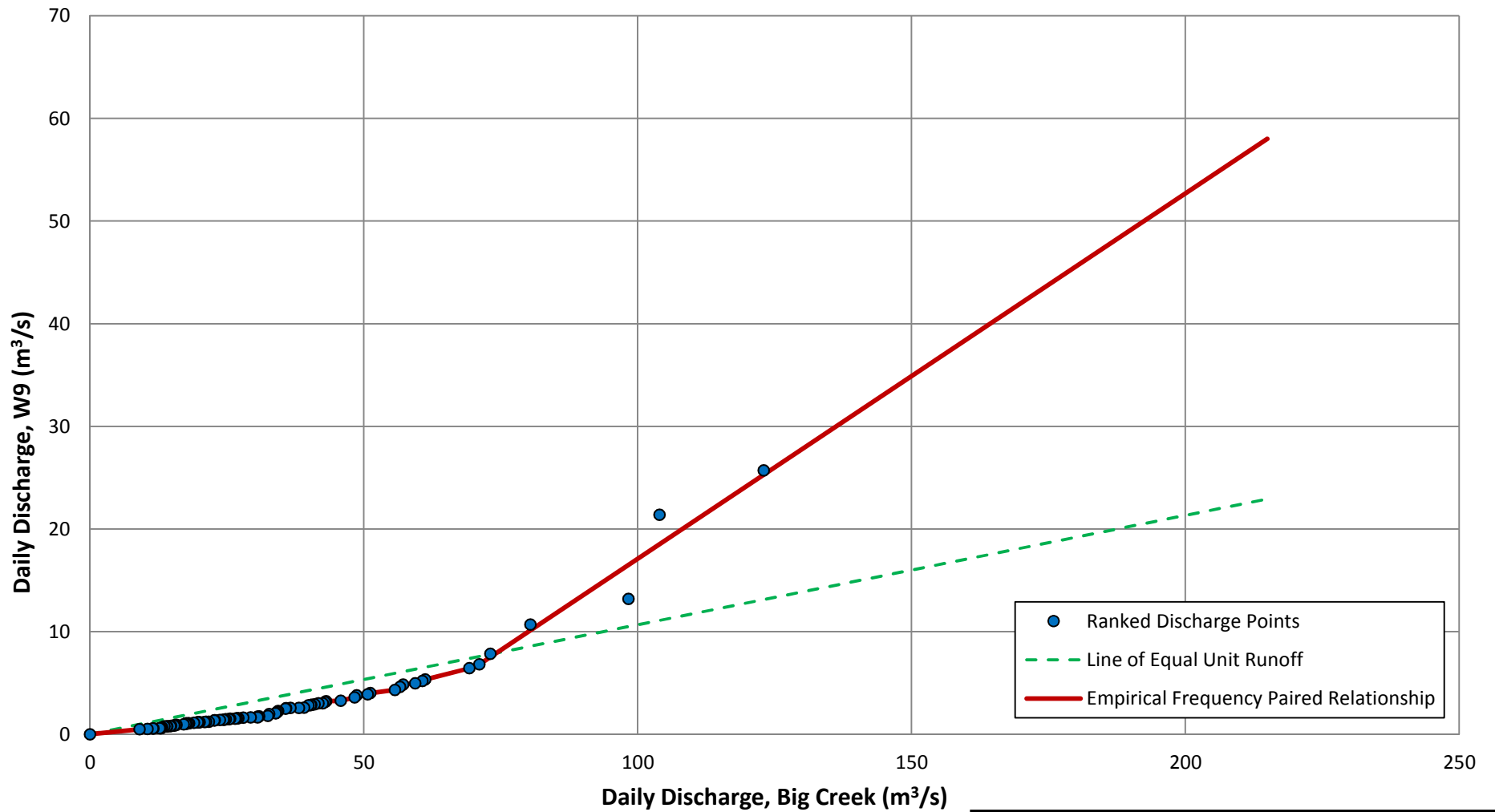
P/A NO.
VA103-325/14


REF. NO.
5

FIGURE 4a

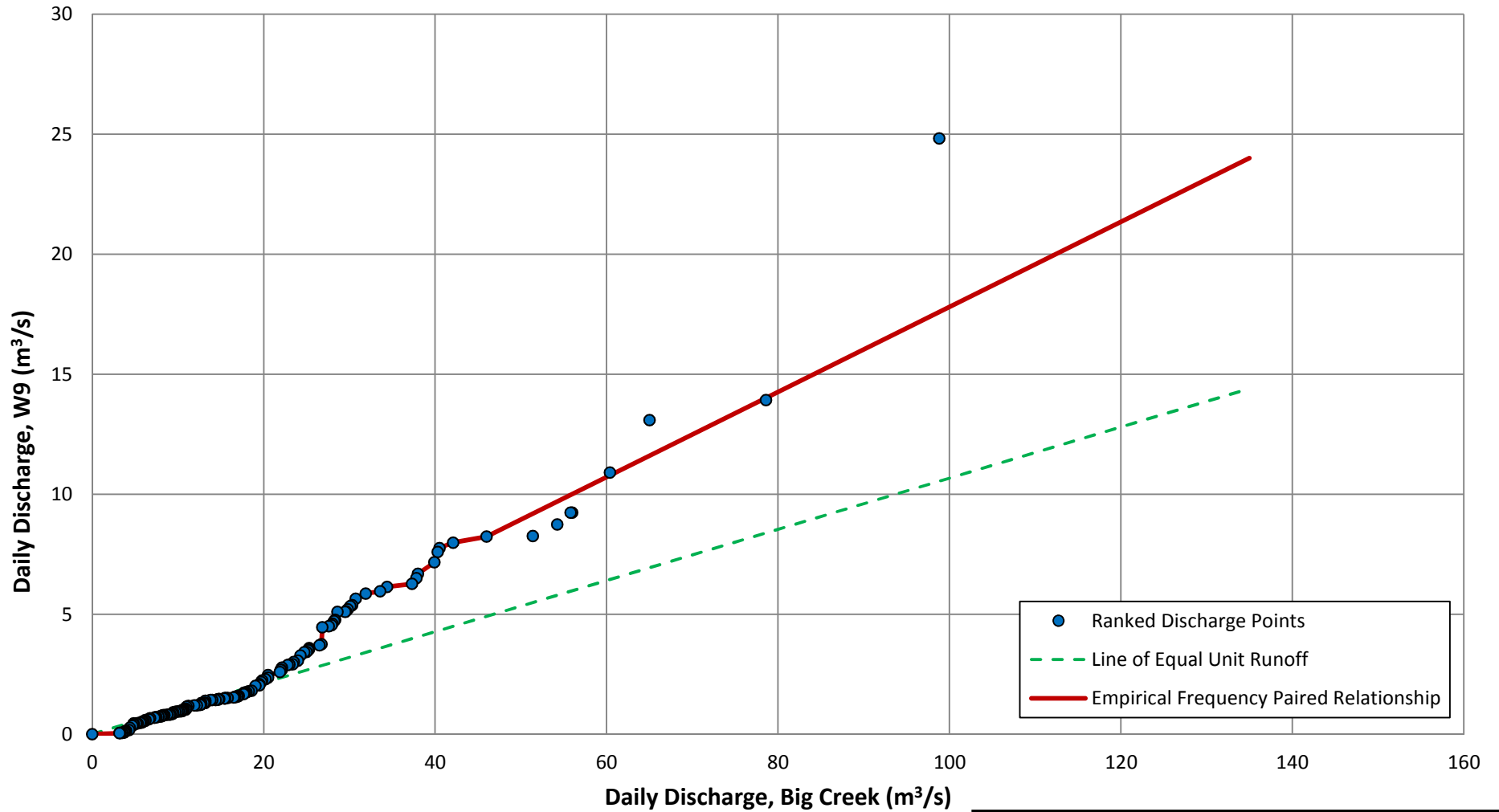
REV
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0	18MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION		
CASINO PROJECT		
W9 AND BIG CREEK MAY RANKED REGRESSION RELATIONSHIP		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 4b	
		REV 0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

W9 AND BIG CREEK
JUNE RANEKD REGRESSION RELATIONSHIP

Knight Piésold
CONSULTING

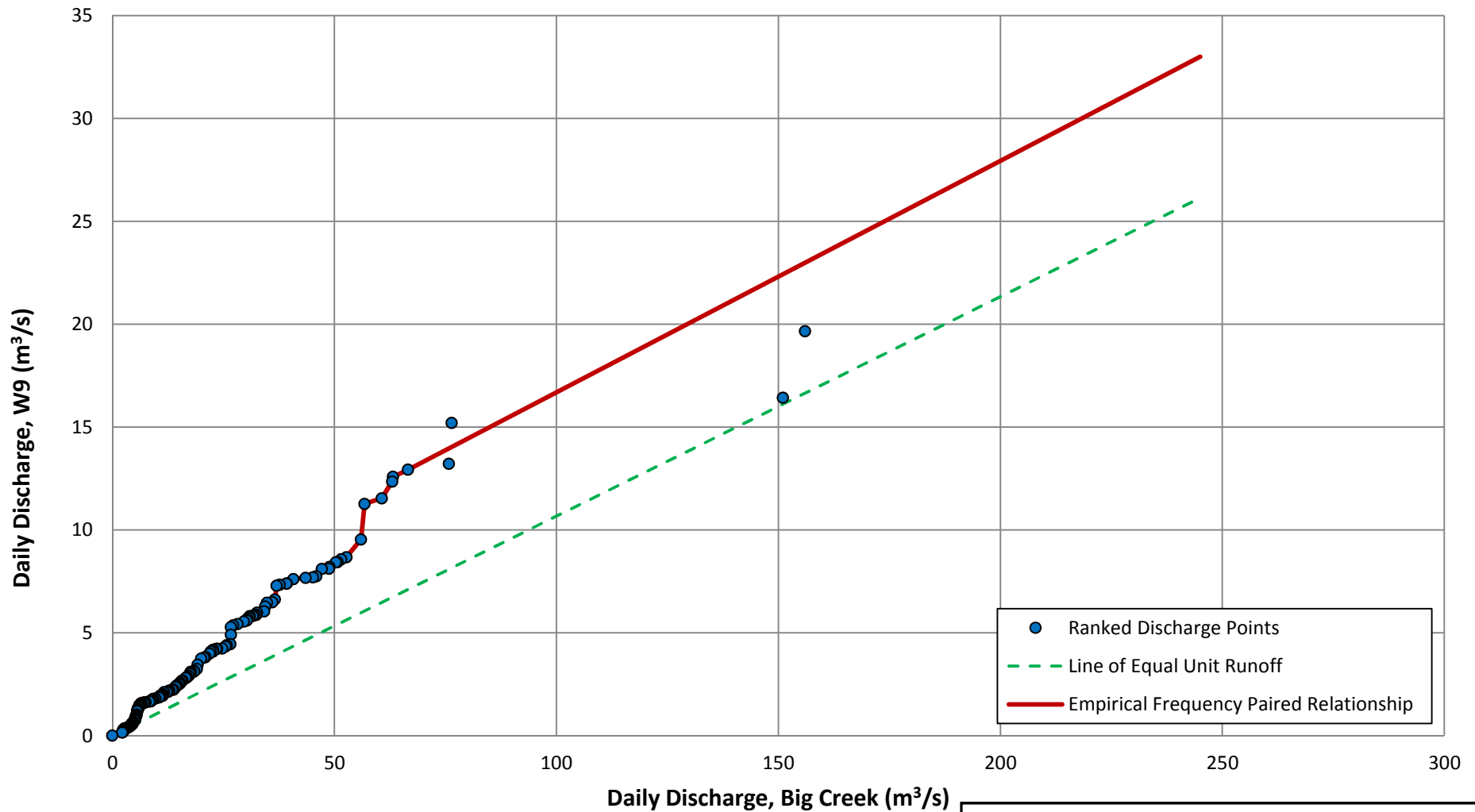
P/A NO. VA101-325/14

REF. NO.
5

FIGURE 4c

REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

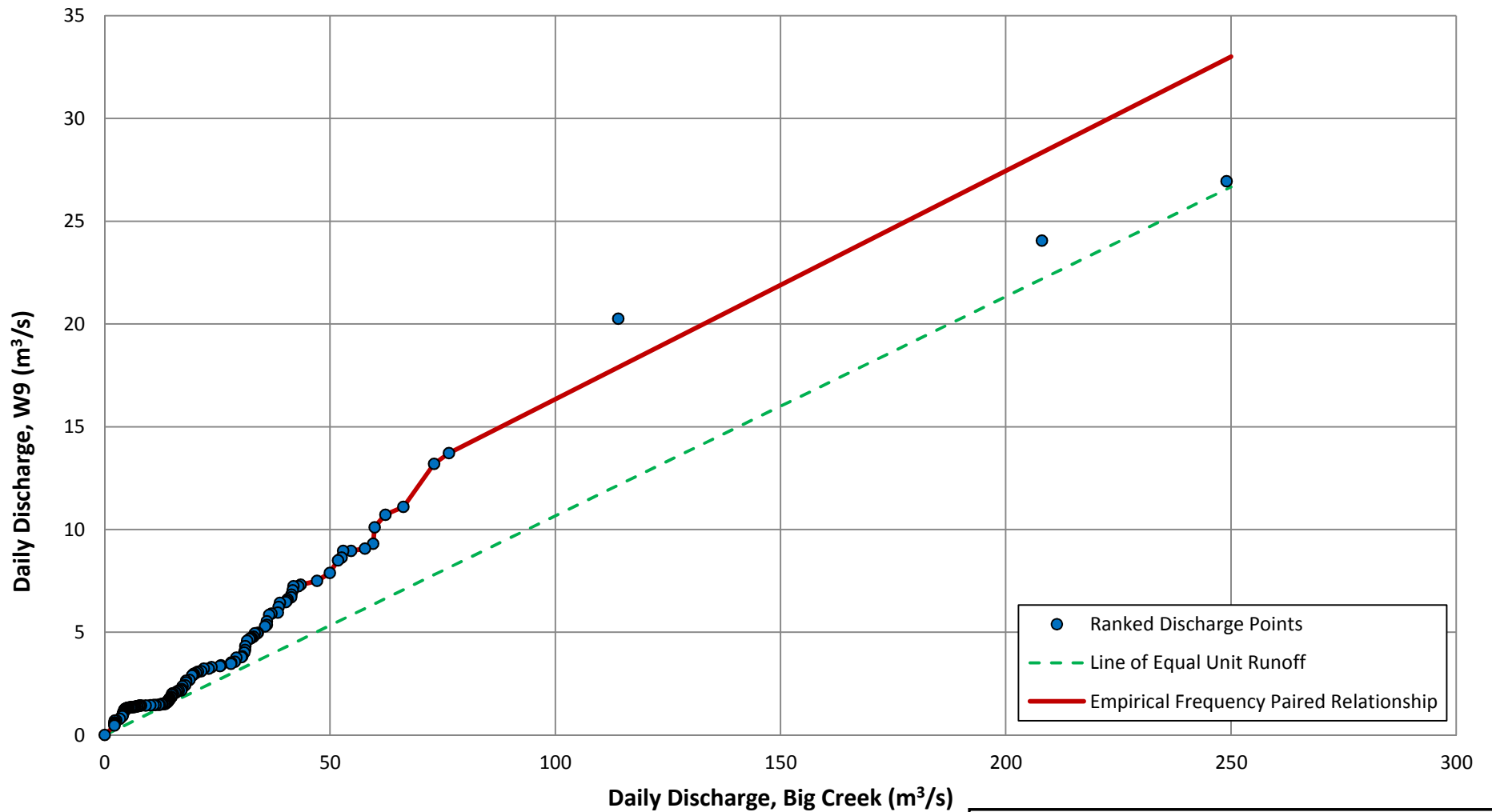
CASINO PROJECT


**W9 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP*****Knight Piésold***
CONSULTING

P/A NO. VA101-325/14

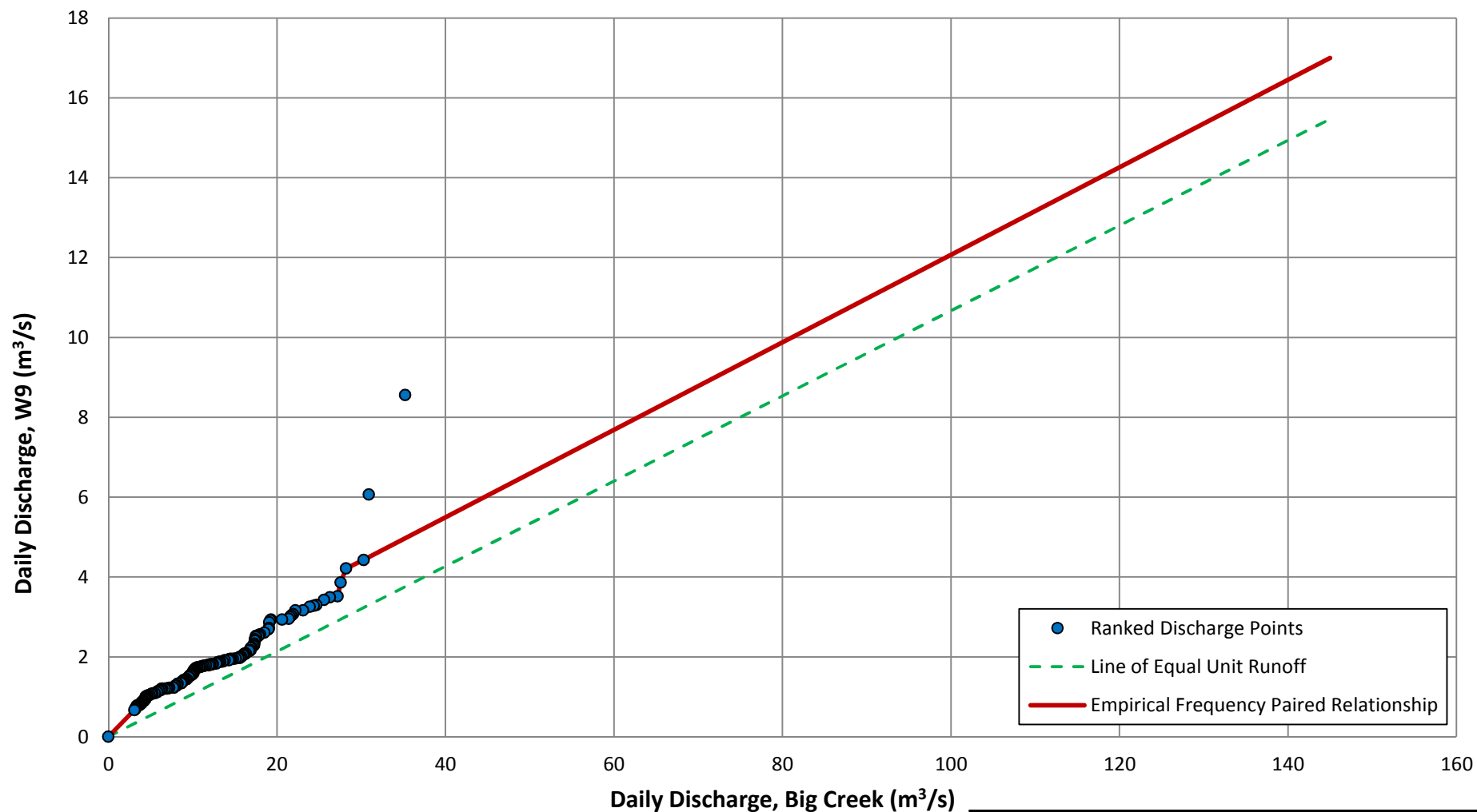
REF. NO.
5**FIGURE 4d**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION		
CASINO PROJECT		
W9 AND BIG CREEK AUGUST RANKED REGRESSION RELATIONSHIP		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 4e	
		REV 0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION		
CASINO PROJECT		
W9 AND BIG CREEK SEPTEMBER - OCTOBER RANKED REGRESSION RELATIONSHIP		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 4f	
		REV 0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 5

**CASINO MINING CORPORATION
CASINO PROJECT**

**VICTOR CREEK STATION (R2)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 15:54

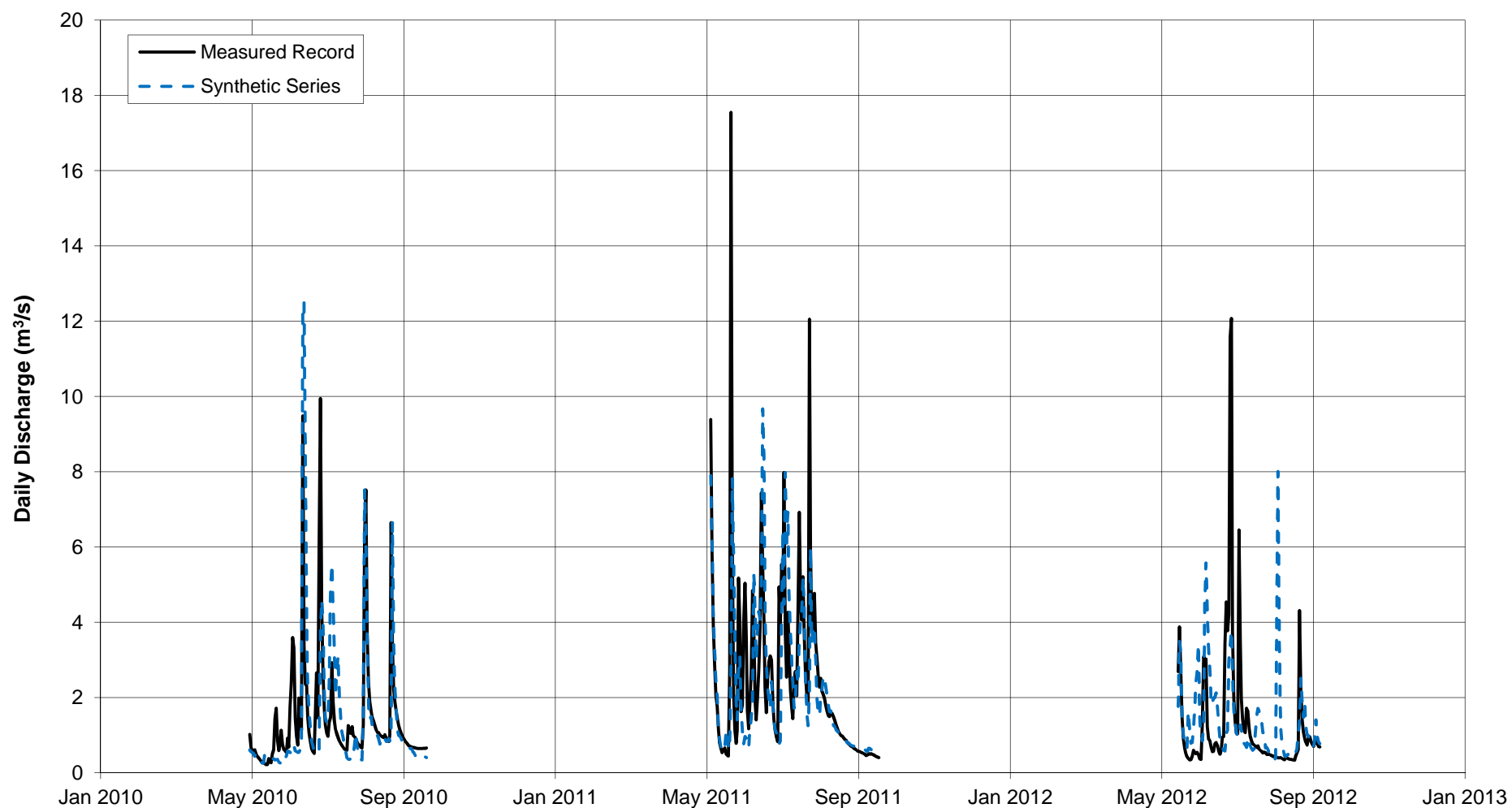
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.00	0.01	0.02	1.65	1.02	1.91	1.20	0.75	0.22	0.02	0.01	0.57
1976	0.01	0.00	0.00	0.02	0.66	2.18	3.38	0.18	0.16	0.09	0.04	0.01	0.57
1977	0.01	0.01	0.01	0.03	0.43	1.29	1.12	0.12	0.24	0.15	0.04	0.00	0.29
1978	0.00	0.00	0.00	0.00	0.19	1.83	3.51	1.47	0.42	0.26	0.10	0.04	0.66
1979	0.02	0.01	0.01	0.01	0.45	1.25	1.43	0.48	0.56	0.19	0.06	0.02	0.38
1980	0.01	0.01	0.01	0.02	0.21	0.41	1.37	0.33	1.86	0.43	0.04	0.01	0.39
1981	0.01	0.01	0.01	0.01	0.32	0.35	1.31	0.66	0.32	0.26	0.09	0.02	0.28
1982	0.01	0.01	0.01	0.01	0.74	1.80	0.30	1.07	0.15	0.11	0.05	0.02	0.36
1983	0.01	0.00	0.00	0.00	0.23	1.81	1.44	1.65	0.49	0.18	0.02	0.00	0.49
1984	0.00	0.00	0.00	0.01	0.11	1.30	1.62	0.13	1.06	0.14	0.02	0.00	0.35
1985	0.00	0.00	0.00	0.00	0.92	1.91	1.43	0.43	0.60	0.19	0.07	0.04	0.47
1986	0.03	0.02	0.01	0.00	1.10	1.40	1.27	0.37	0.51	0.19	0.04	0.03	0.42
1987	0.02	0.01	0.00	0.04	0.65	1.64	0.44	0.58	0.43	0.18	0.06	0.02	0.34
1988	0.01	0.01	0.01	0.03	0.81	0.68	1.77	0.65	0.34	0.18	0.09	0.04	0.39
1989	0.02	0.01	0.00	0.01	0.28	0.51	0.37	0.15	0.22	0.14	0.06	0.03	0.15
1990	0.01	0.01	0.00	2.12	4.16	1.07	0.53	0.12	1.11	0.32	0.05	0.02	0.80
1991	0.01	0.01	0.02	0.15	1.86	1.73	1.24	0.95	1.67	0.31	0.20	0.12	0.69
1992	0.06	0.02	0.03	0.07	2.74	3.02	2.99	0.46	1.17	0.26	0.11	0.06	0.92
1993	0.03	0.01	0.01	0.37	1.01	0.57	0.78	0.52	0.40	0.11	0.10	0.07	0.33
1994	0.04	0.02	0.01	0.66	0.47	0.54	0.46	0.10	0.17	0.13	0.03	0.02	0.21
1996	0.01	0.00	0.00	0.00	0.17	0.40	1.76	1.09	0.64	0.16	0.04	0.01	0.36
1997	0.00	0.00	0.00	0.00	0.98	3.81	2.03	1.47	0.62	0.21	0.10	0.04	0.77
1998	0.01	0.01	0.01	0.01	0.23	0.50	0.16	0.06	0.13	0.07	0.01	0.00	0.10
1999	0.00	0.00	0.00	0.01	0.25	1.70	0.40	0.13	0.50	0.17	0.02	0.00	0.26
2000	0.00	0.00	0.00	0.04	2.43	2.34	2.32	2.18	3.45	0.64	0.23	0.13	1.15
2001	0.07	0.04	0.03	0.10	0.49	3.16	2.69	1.08	0.81	0.29	0.14	0.06	0.75
2002	0.03	0.02	0.01	0.04	0.48	0.69	0.65	0.62	1.53	0.25	0.10	0.06	0.37
2003	0.03	0.01	0.01	0.24	0.32	1.53	1.65	0.44	0.38	0.26	0.09	0.04	0.42
2004	0.02	0.02	0.02	0.13	1.52	0.43	0.29	0.25	0.34	0.27	0.07	0.03	0.28
2005	0.02	0.02	0.02	0.98	0.38	0.57	0.70	0.50	1.07	0.33	0.12	0.02	0.39
2006	0.01	0.01	0.01	0.03	0.52	0.84	0.63	0.18	0.27	0.16	0.06	0.02	0.23
2007	0.00	-	0.00	0.15	0.55	0.57	0.76	0.21	0.42	0.20	0.05	0.02	0.29
2008	0.01	0.01	0.01	0.07	1.54	0.75	0.39	2.10	0.95	0.34	0.13	0.07	0.53
2009	0.05	0.04	0.03	0.09	1.77	1.48	0.21	0.13	0.26	0.15	0.09	0.04	0.36
2010	0.02	0.01	0.01	0.84	0.44	0.47	3.13	1.31	1.14	0.26	0.13	0.07	0.66
2011	0.07	0.07	0.05	0.21	1.66	2.77	3.30	2.26	0.68	0.29	0.17	0.09	0.98
2012	-	-	-	0.00	1.55	1.90	1.35	1.19	0.87	1.32	2.97	1.31	1.48
Average	0.02	0.01	0.01	0.18	0.93	1.36	1.40	0.74	0.71	0.25	0.12	0.06	0.49
Maximum	0.07	0.07	0.05	2.12	4.16	3.81	3.51	2.26	3.45	1.32	2.97	1.31	1.48
Minimum	0.00	0.00	0.00	0.00	0.11	0.35	0.16	0.06	0.13	0.07	0.01	0.00	0.10

M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\R2\10100325_R2_PERIOD_REGRESSION_20130319.xlsm]Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT 101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**VICTOR CREEK STATION (R2)
MEASURED AND SYNTHETIC HYDROGRAPHS**

Knight Piésold
CONSULTING

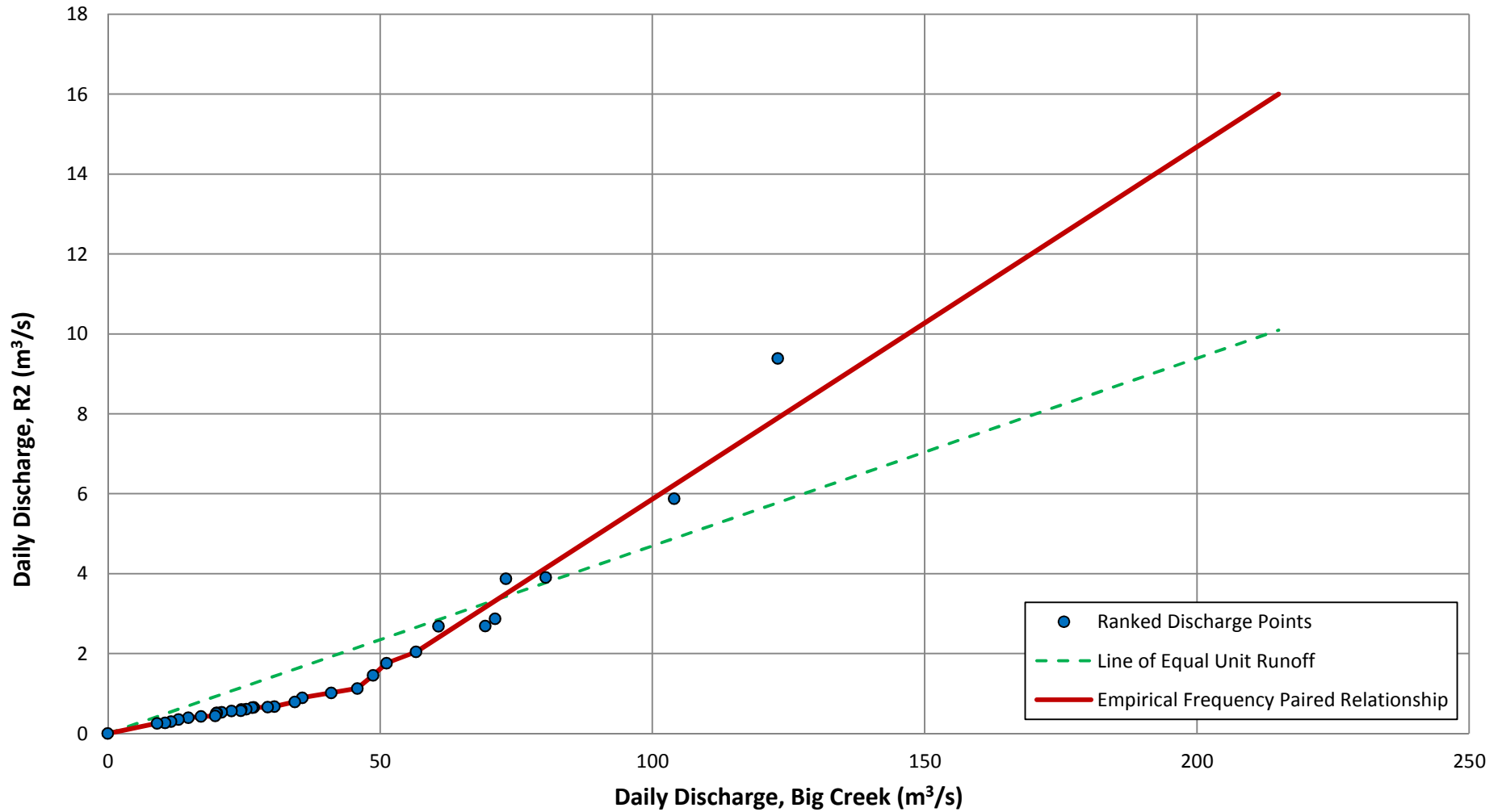
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 5a

REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

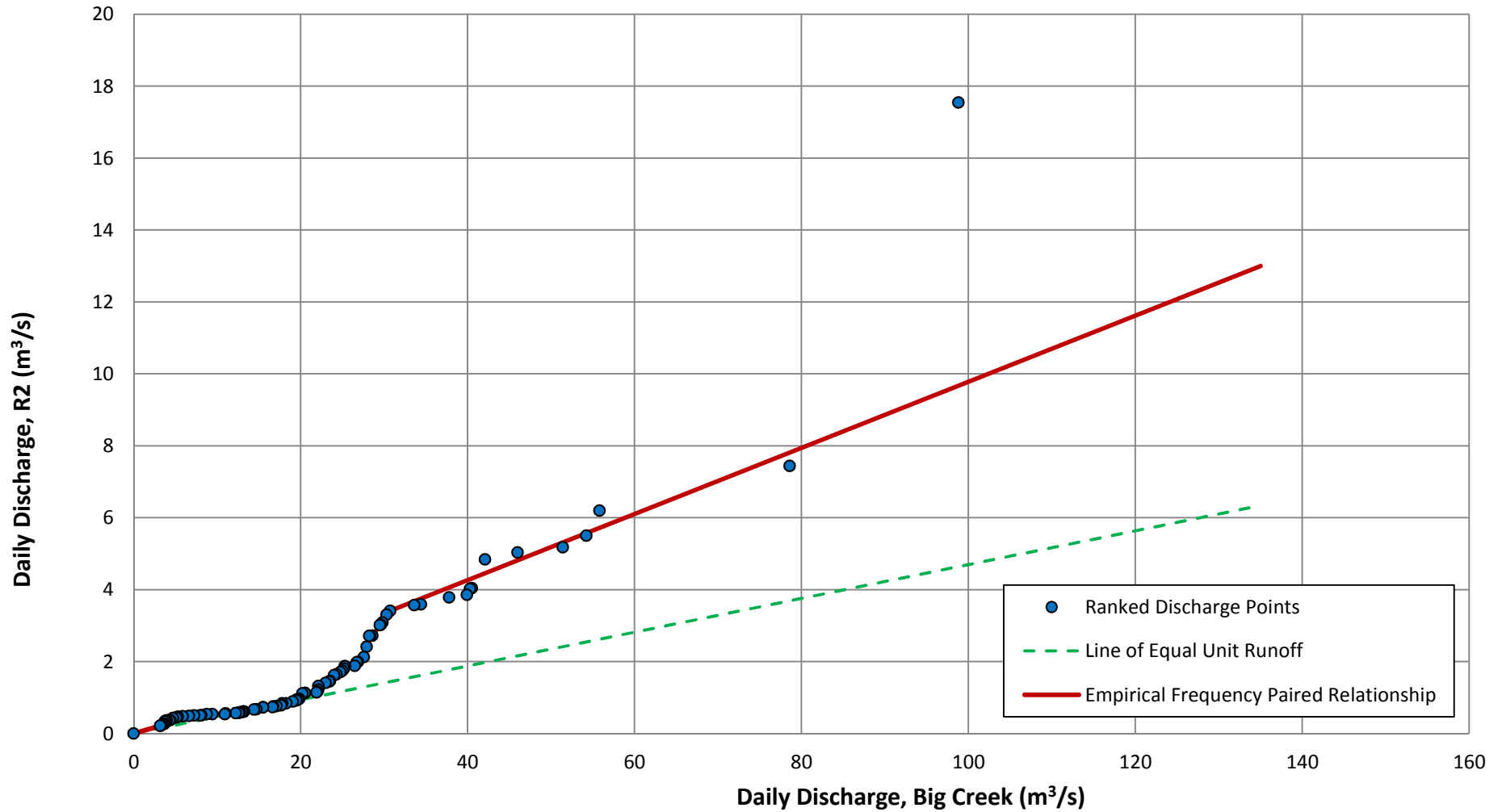
**R2 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 5b**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

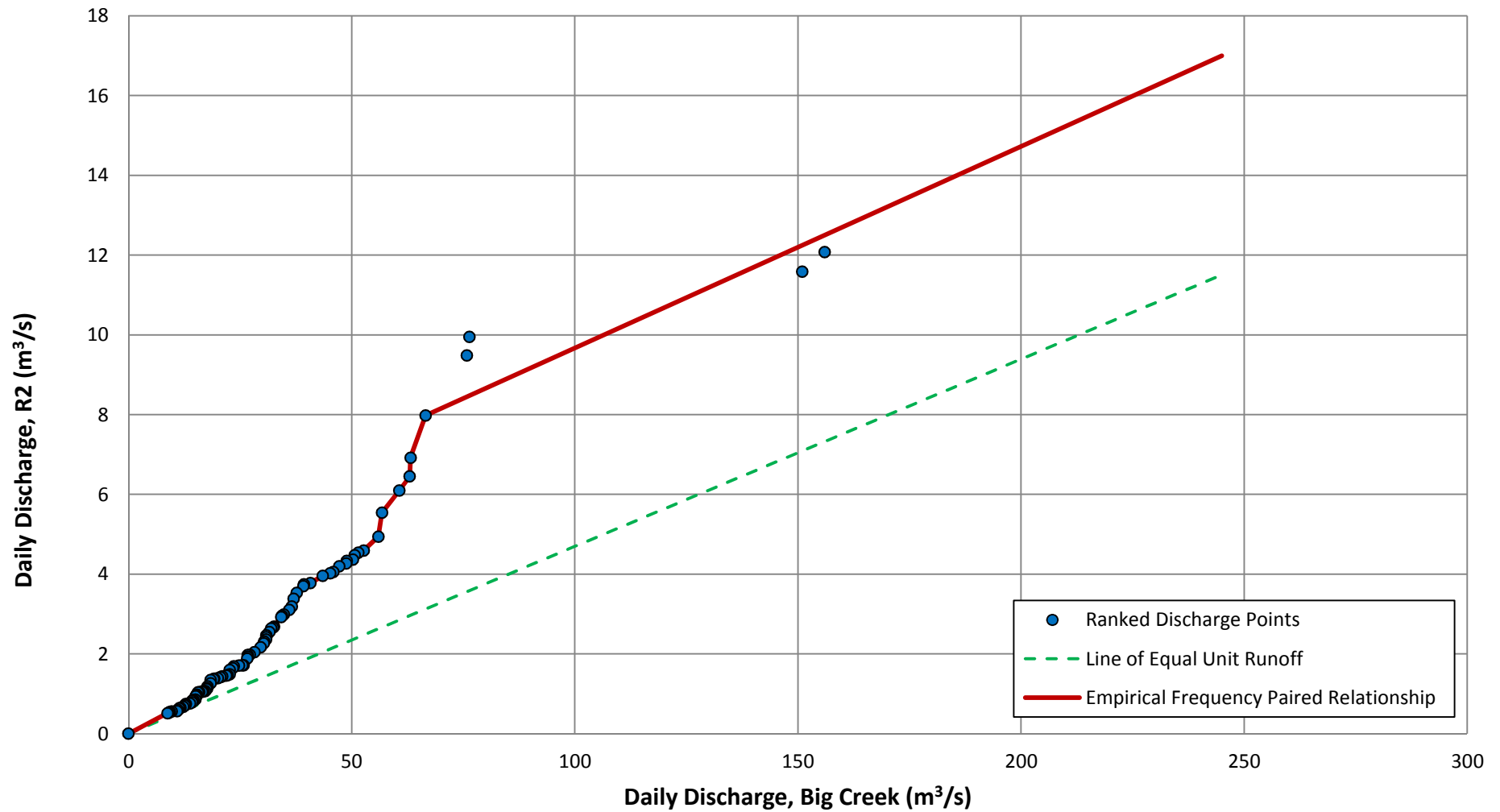
**R2 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 5c**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

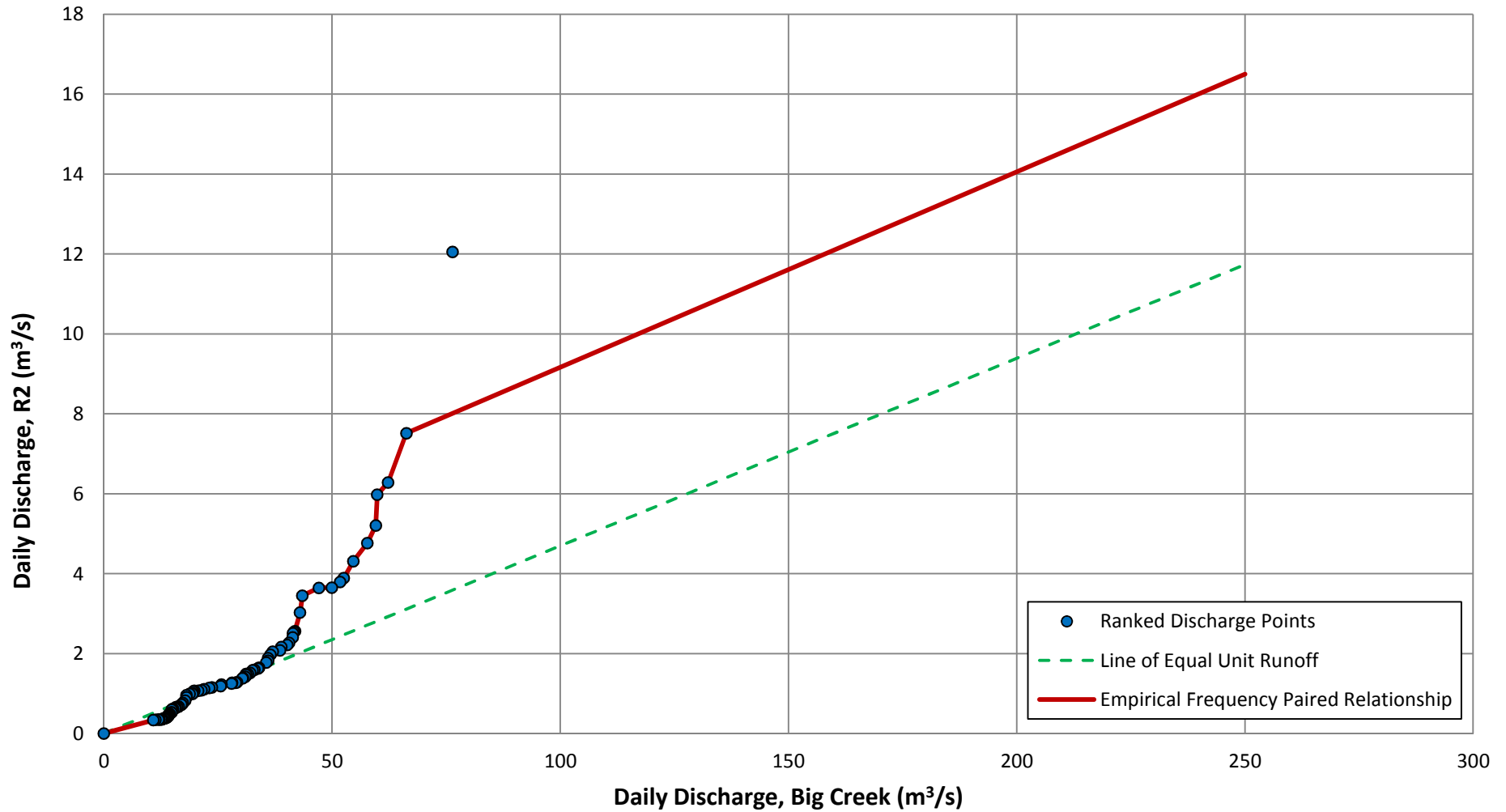
**R2 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 5d**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

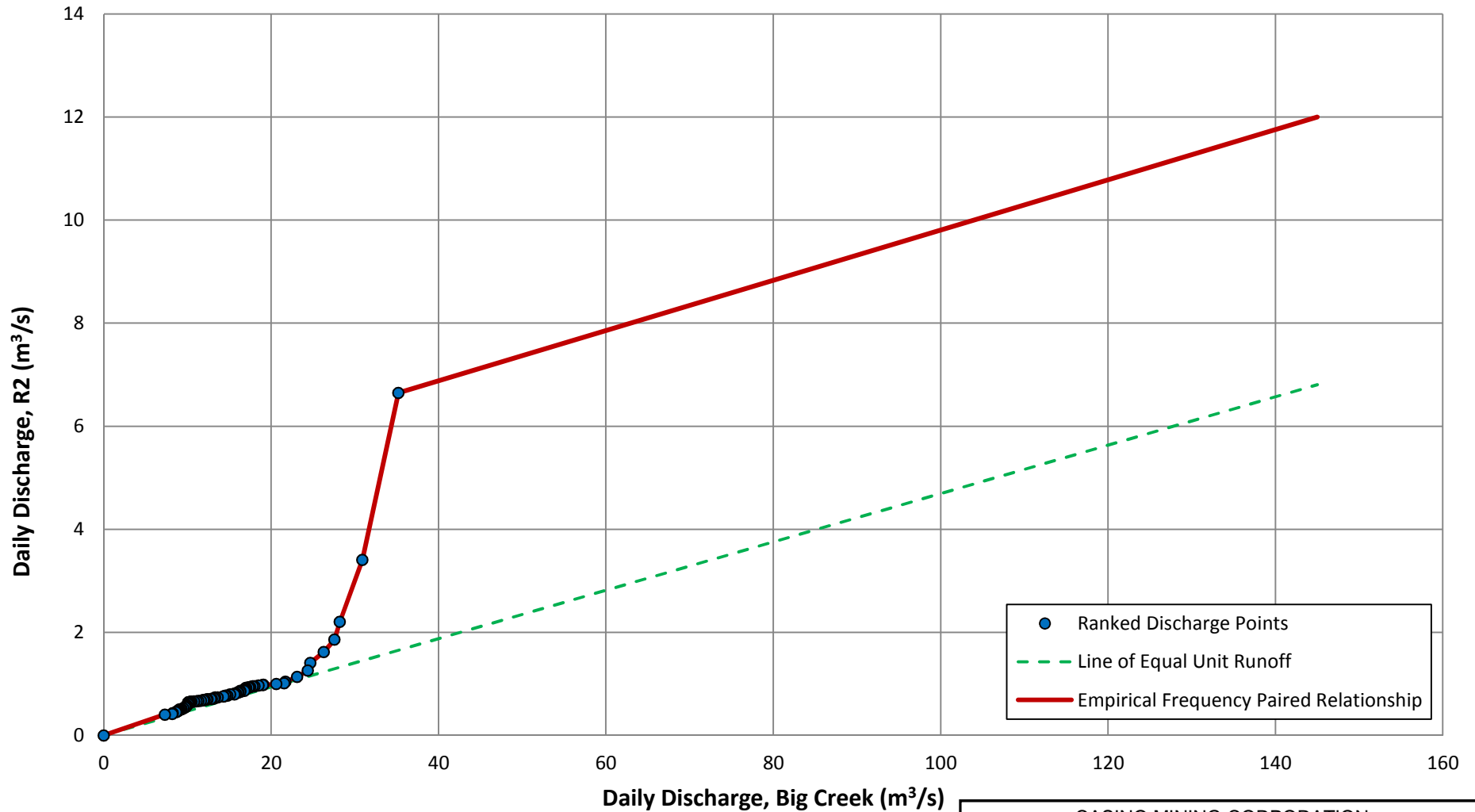
**R2 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 5e**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**R2 AND BIG CREEK SEPTEMBER-OCTOBER DAILY
DISCHARGE RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 5f**REV
0

0	19MAR'13	ISSUED WITH REPORT VA101-325/14	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 6

**CASINO MINING CORPORATION
CASINO PROJECT**

**LOWER CASINO CREEK STATION (W4)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 16:23

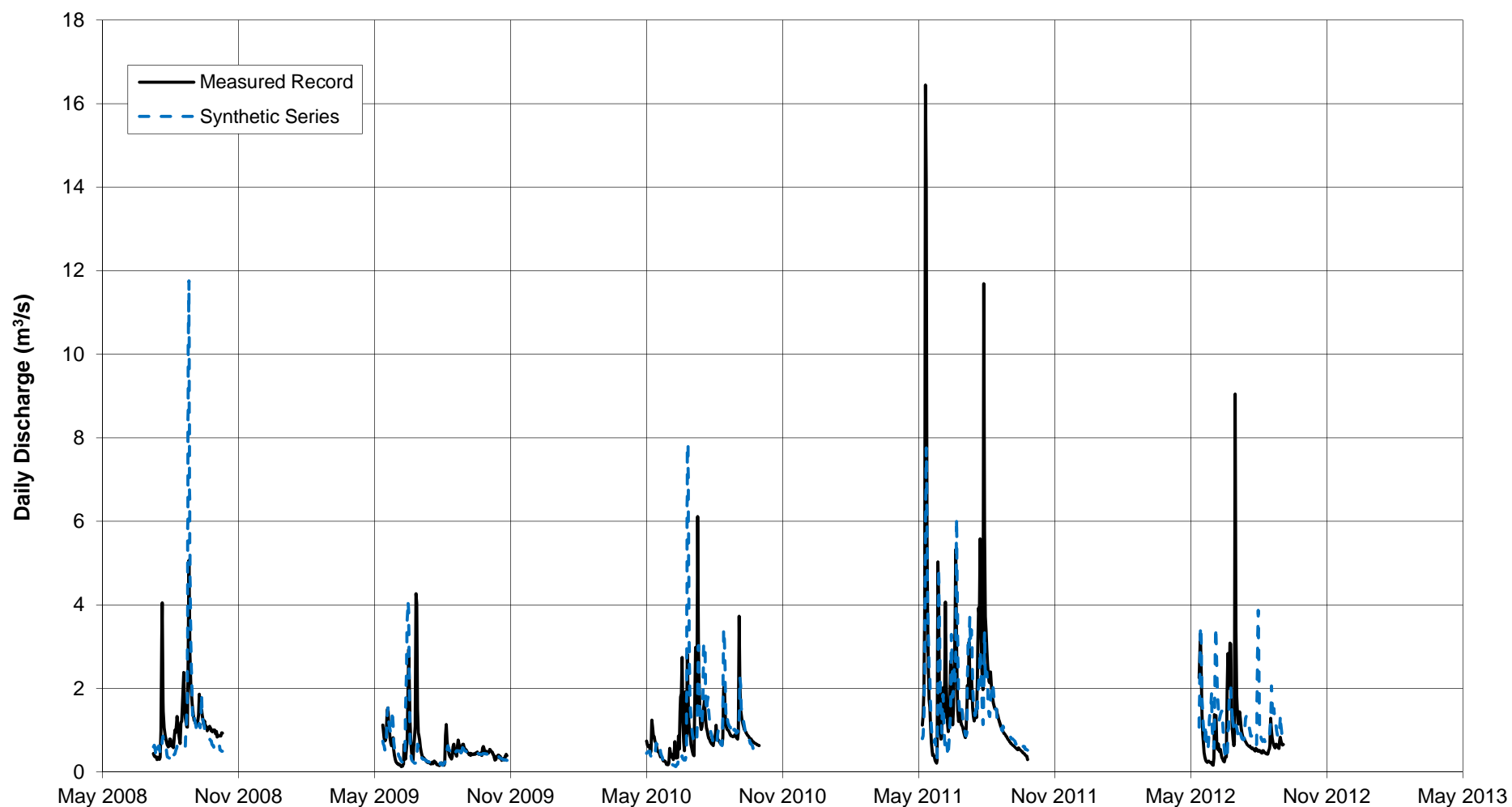
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.01	0.01	0.02	0.07	1.71	0.58	1.36	1.12	0.86	0.38	0.06	0.03	0.52
1976	0.02	0.01	0.01	0.06	0.74	1.31	2.28	0.52	0.39	0.25	0.12	0.04	0.48
1977	0.03	0.03	0.02	0.08	0.48	0.78	0.94	0.40	0.44	0.36	0.11	0.01	0.31
1978	0.01	0.00	0.00	0.00	0.19	1.09	2.16	1.20	0.54	0.45	0.26	0.10	0.50
1979	0.05	0.02	0.02	0.03	0.51	0.75	1.11	0.72	0.68	0.39	0.17	0.05	0.38
1980	0.02	0.02	0.03	0.05	0.21	0.18	0.99	0.64	1.31	0.58	0.12	0.03	0.35
1981	0.03	0.03	0.03	0.03	0.35	0.17	1.07	0.81	0.49	0.46	0.24	0.07	0.31
1982	0.02	0.02	0.02	0.03	0.83	1.07	0.34	0.93	0.38	0.28	0.13	0.05	0.34
1983	0.02	0.01	0.01	0.01	0.26	1.06	1.07	1.30	0.62	0.38	0.07	0.00	0.40
1984	0.00	0.00	0.00	0.02	0.11	0.75	1.13	0.41	0.89	0.32	0.06	0.01	0.31
1985	0.00	0.00	0.01	0.01	1.00	1.13	1.14	0.70	0.71	0.40	0.20	0.12	0.45
1986	0.08	0.05	0.02	0.01	1.10	0.82	1.07	0.67	0.64	0.38	0.10	0.09	0.42
1987	0.06	0.03	0.01	0.11	0.81	0.97	0.48	0.72	0.55	0.38	0.16	0.07	0.36
1988	0.03	0.03	0.03	0.08	0.89	0.35	1.28	0.82	0.49	0.40	0.25	0.12	0.40
1989	0.06	0.03	0.01	0.03	0.30	0.25	0.45	0.44	0.43	0.34	0.17	0.08	0.22
1990	0.04	0.02	0.01	1.25	4.20	0.62	0.57	0.28	1.10	0.49	0.15	0.05	0.73
1991	0.03	0.04	0.06	0.23	2.02	1.06	1.06	0.95	1.22	0.48	0.41	0.32	0.66
1992	0.17	0.07	0.07	0.17	2.77	1.82	1.93	0.72	1.02	0.45	0.30	0.17	0.80
1993	0.07	0.04	0.03	0.40	1.15	0.30	0.83	0.75	0.54	0.29	0.29	0.20	0.41
1994	0.10	0.05	0.02	0.56	0.53	0.27	0.65	0.35	0.39	0.30	0.08	0.04	0.28
1996	0.03	0.01	0.00	0.00	0.17	0.21	1.29	1.04	0.76	0.32	0.11	0.02	0.33
1997	0.01	0.00	0.00	0.01	1.07	2.29	1.47	1.22	0.72	0.41	0.27	0.10	0.63
1998	0.03	0.02	0.02	0.03	0.23	0.25	0.20	0.14	0.35	0.18	0.03	0.01	0.12
1999	0.00	0.00	0.00	0.03	0.27	1.04	0.45	0.40	0.61	0.35	0.05	0.01	0.27
2000	0.01	0.00	0.00	0.07	2.53	1.35	1.56	1.51	1.97	0.76	0.44	0.35	0.88
2001	0.20	0.11	0.09	0.22	0.51	1.94	1.83	1.00	0.91	0.47	0.35	0.17	0.65
2002	0.08	0.04	0.03	0.11	0.55	0.37	0.57	0.82	1.02	0.45	0.29	0.15	0.37
2003	0.08	0.04	0.02	0.28	0.33	0.89	1.20	0.70	0.52	0.44	0.25	0.10	0.40
2004	0.06	0.06	0.07	0.24	1.62	0.21	0.36	0.57	0.50	0.45	0.19	0.10	0.37
2005	0.07	0.05	0.05	0.50	0.41	0.29	0.80	0.74	1.00	0.50	0.29	0.07	0.40
2006	0.03	0.03	0.03	0.10	0.60	0.49	0.65	0.50	0.46	0.36	0.18	0.04	0.29
2007	0.00	-	0.01	0.21	0.65	0.30	0.72	0.54	0.56	0.39	0.13	0.04	0.32
2008	0.02	0.02	0.02	0.13	1.67	0.40	0.54	1.67	1.00	0.50	0.34	0.20	0.54
2009	0.13	0.10	0.09	0.19	1.90	0.85	0.28	0.41	0.46	0.36	0.25	0.12	0.43
2010	0.06	0.04	0.04	0.59	0.49	0.24	2.03	1.13	1.01	0.45	0.35	0.21	0.55
2011	0.19	0.19	0.14	0.37	1.77	1.70	1.97	1.72	0.77	0.47	0.38	0.26	0.83
2012	-	-	-	-	1.71	1.20	1.11	1.09	0.96	-	-	-	-
Average	0.05	0.03	0.03	0.18	0.99	0.79	1.05	0.80	0.74	0.41	0.20	0.10	0.44
Maximum	0.20	0.19	0.14	1.25	4.20	2.29	2.28	1.72	1.97	0.76	0.44	0.35	0.88
Minimum	0.00	0.00	0.00	0.00	0.11	0.17	0.20	0.14	0.35	0.18	0.03	0.00	0.12

M:\1\01\00325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W4\10100325_W4_PERIOD_REGRESSION_20130315.xlsm\Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**LOWER CASINO CREEK STATION (W4)
MEASURED AND SYNTHETIC HYDROGRAPHS**

Knight Piésold
CONSULTING

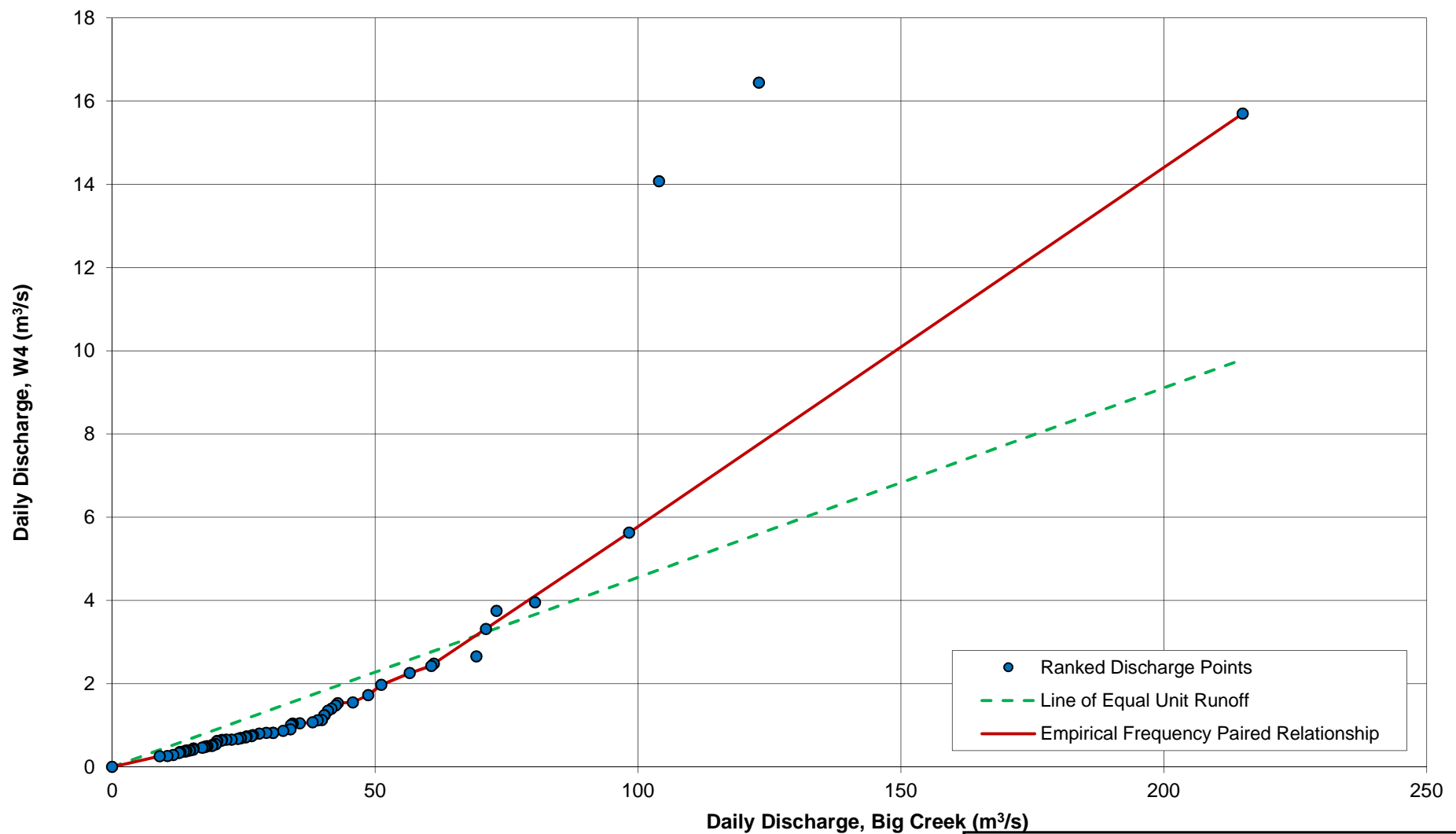
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 6a

REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

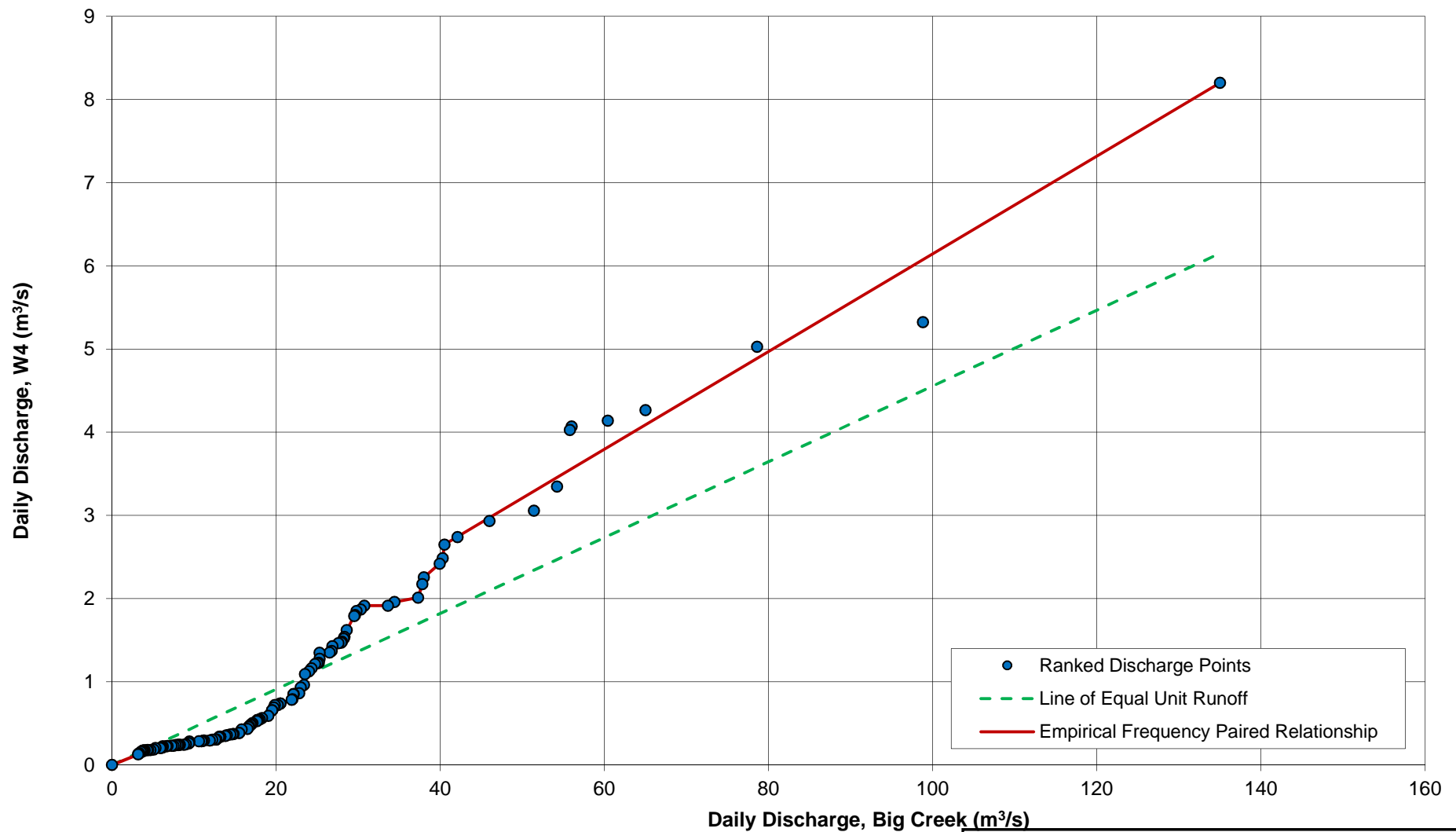
**W4 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 6b**REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

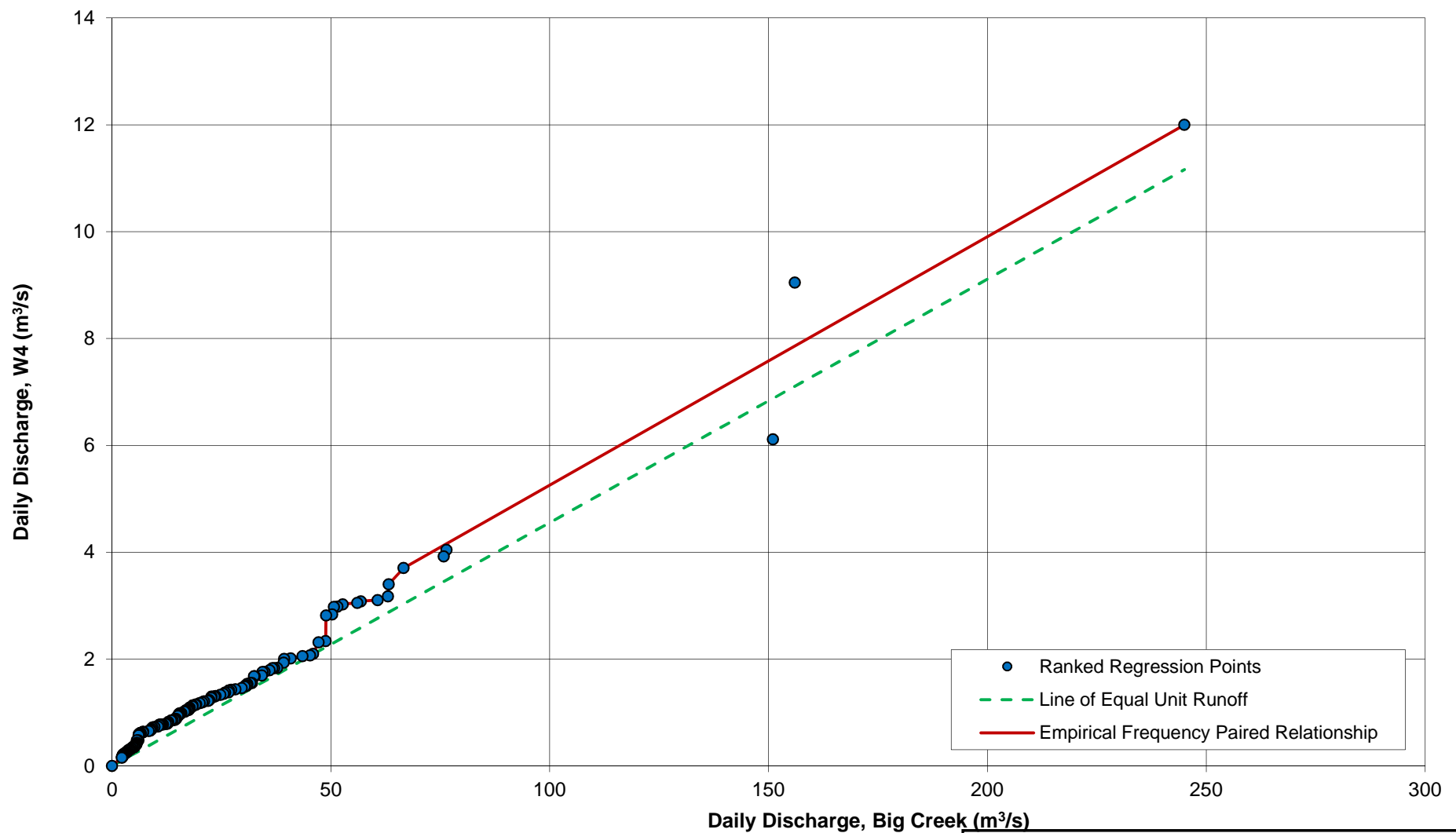
**W4 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 6c**REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

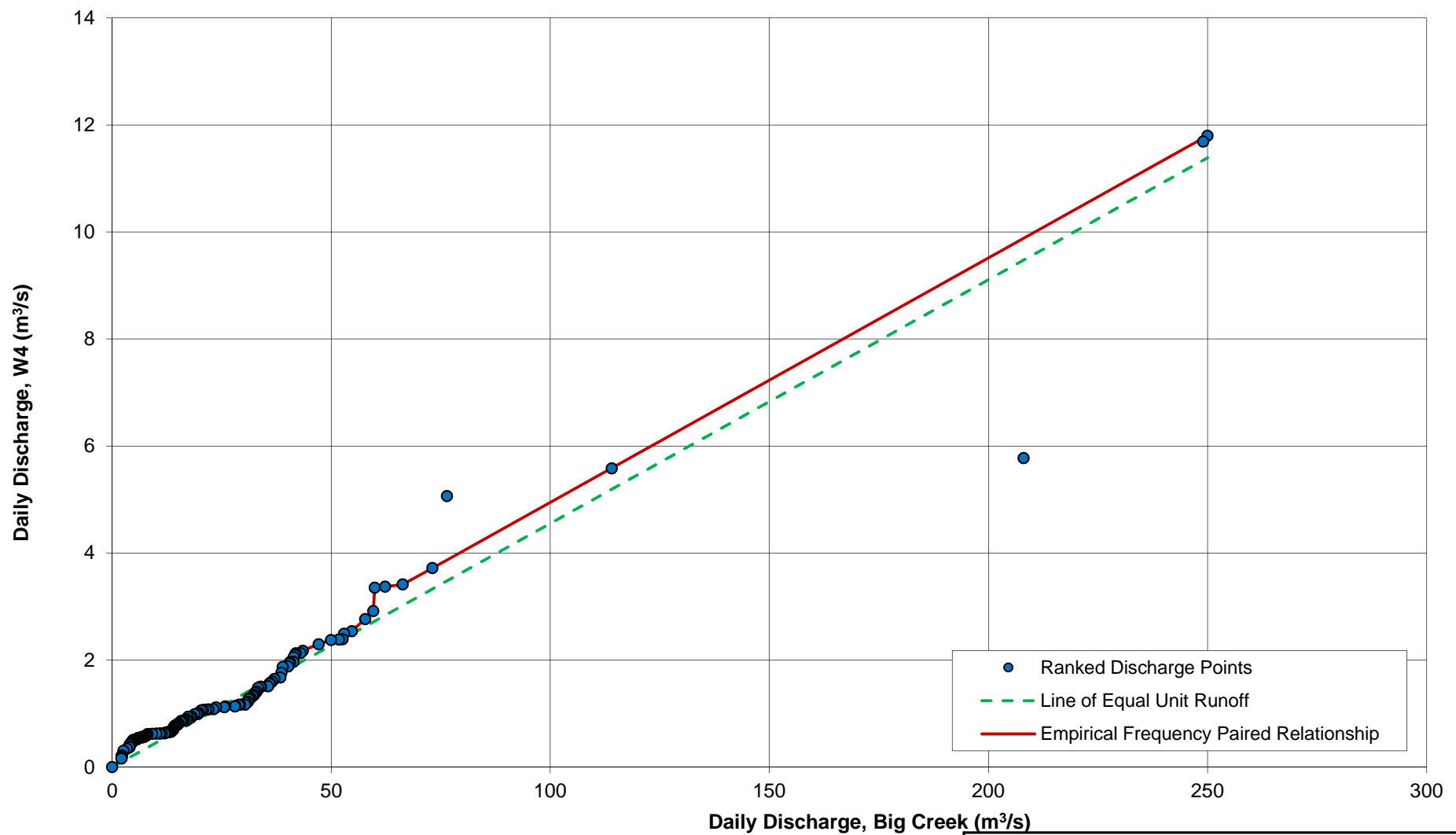
**W4 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 6d**REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

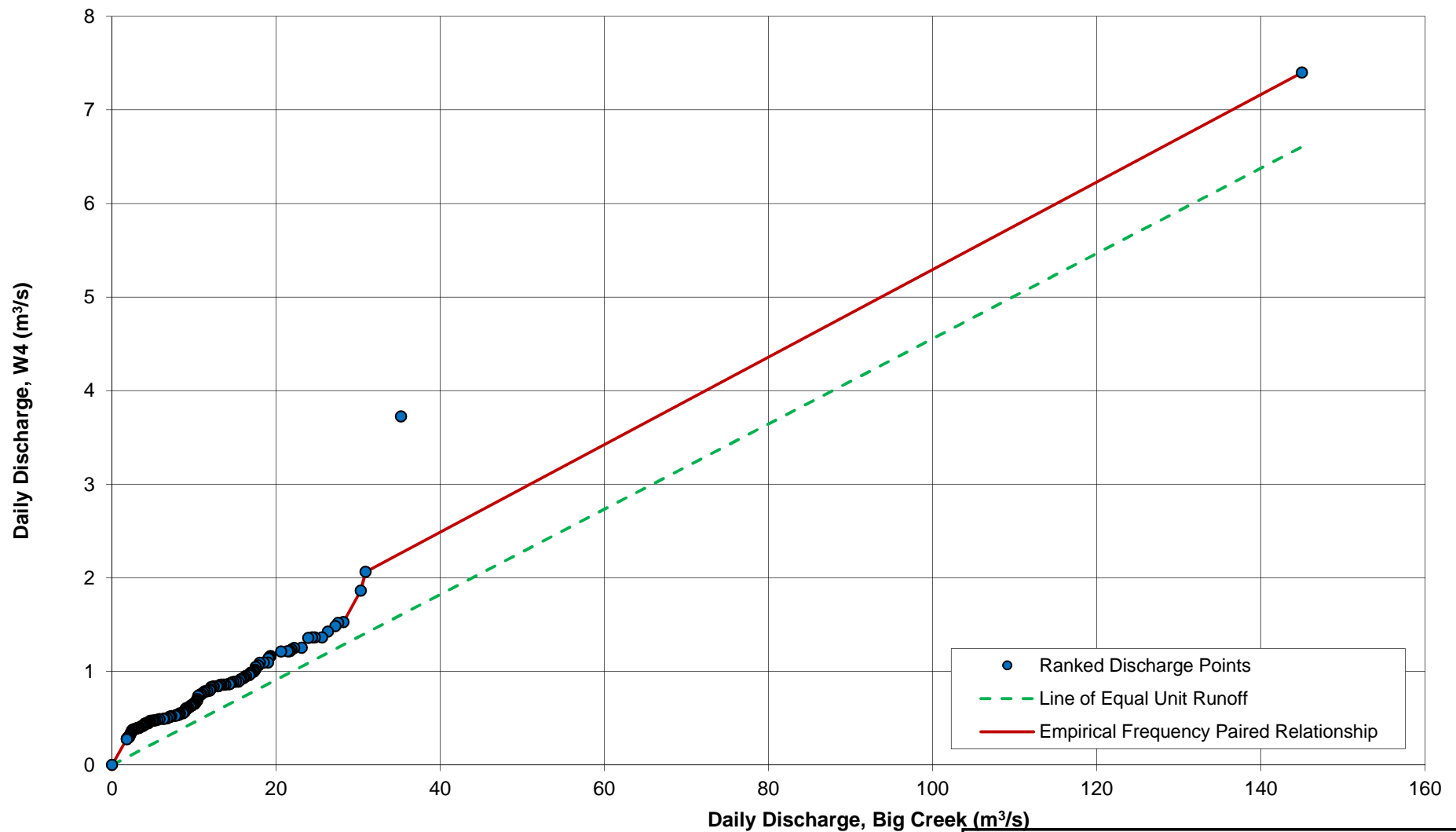
**W4 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 6e**REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**W4 AND BIG CREEK SEPTEMBER AND OCTOBER
RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 6f**REV
0

0	15MAR'13	ISSUED WITH REPORT VA101-325/14	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 7

CASINO MINING CORPORATION
CASINO PROJECT

MIDDLE CASINO CREEK STATION (H18)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS

Print: 7/10/13 15:42

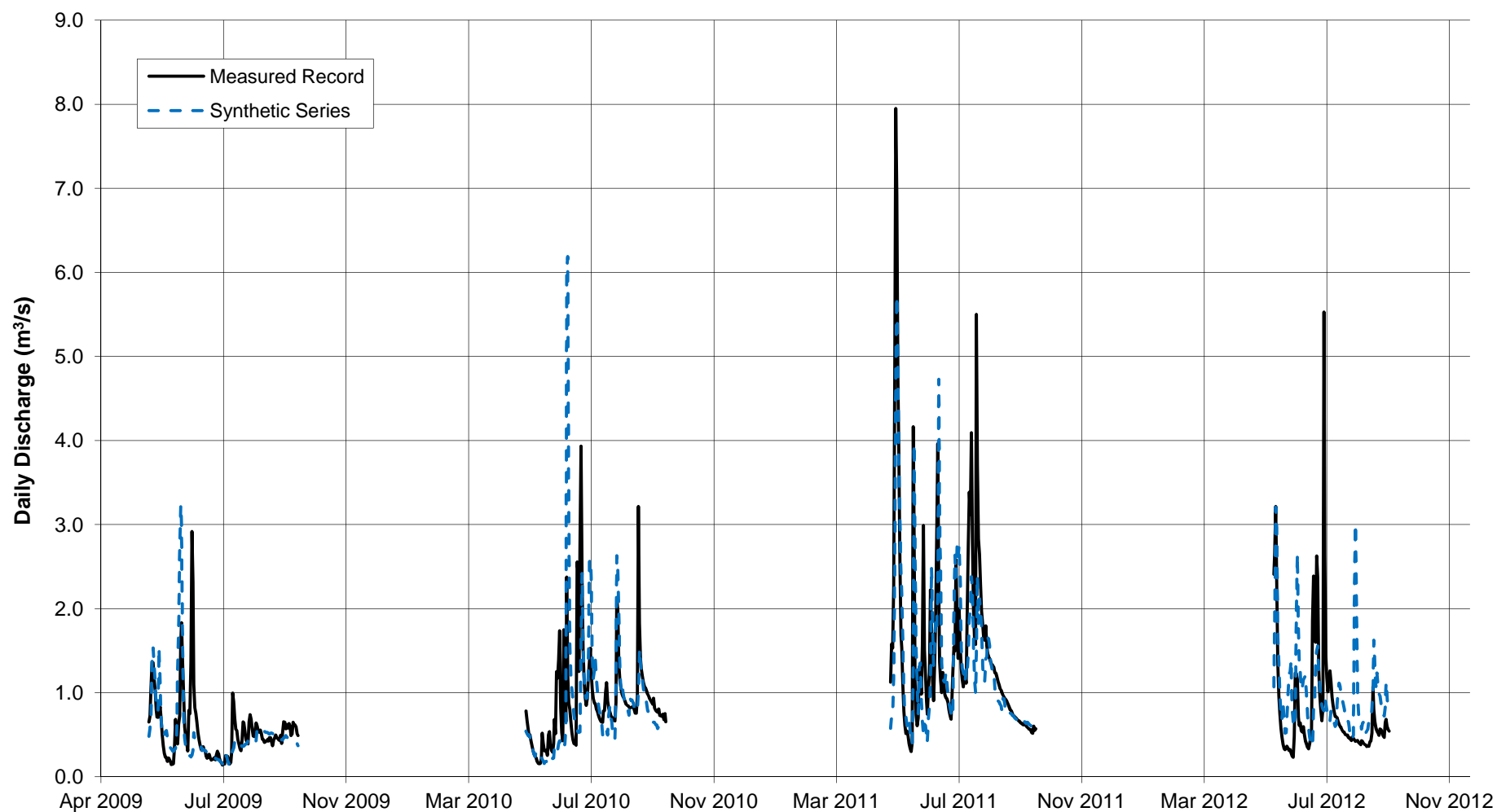
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.01	0.01	0.02	0.05	1.41	0.53	1.09	0.90	0.76	0.37	0.05	0.02	0.44
1976	0.01	0.01	0.01	0.05	0.70	1.06	1.81	0.41	0.34	0.20	0.09	0.03	0.40
1977	0.03	0.02	0.02	0.06	0.45	0.69	0.76	0.36	0.46	0.32	0.08	0.01	0.27
1978	0.01	0.00	0.00	0.00	0.19	0.93	1.72	0.93	0.57	0.47	0.20	0.07	0.43
1979	0.04	0.01	0.01	0.02	0.49	0.67	0.89	0.57	0.65	0.38	0.12	0.04	0.33
1980	0.02	0.02	0.02	0.04	0.21	0.21	0.83	0.45	1.06	0.55	0.09	0.02	0.29
1981	0.02	0.02	0.02	0.03	0.33	0.20	0.87	0.63	0.55	0.49	0.19	0.05	0.28
1982	0.02	0.02	0.02	0.03	0.80	0.87	0.31	0.75	0.32	0.22	0.10	0.03	0.29
1983	0.01	0.01	0.01	0.01	0.24	0.89	0.86	1.06	0.61	0.38	0.05	0.00	0.35
1984	0.00	0.00	0.00	0.01	0.11	0.69	0.93	0.36	0.77	0.30	0.04	0.01	0.27
1985	0.00	0.00	0.01	0.01	0.94	0.94	0.93	0.54	0.67	0.39	0.16	0.09	0.39
1986	0.06	0.03	0.01	0.01	0.95	0.71	0.85	0.49	0.63	0.38	0.08	0.07	0.36
1987	0.05	0.02	0.01	0.08	0.76	0.83	0.43	0.59	0.57	0.36	0.12	0.05	0.32
1988	0.02	0.02	0.02	0.06	0.87	0.38	1.03	0.64	0.54	0.37	0.19	0.09	0.36
1989	0.05	0.02	0.01	0.02	0.29	0.29	0.39	0.38	0.47	0.29	0.13	0.06	0.20
1990	0.03	0.01	0.01	0.96	3.28	0.58	0.50	0.26	0.93	0.47	0.11	0.04	0.60
1991	0.02	0.03	0.04	0.20	1.87	0.90	0.86	0.74	1.00	0.52	0.42	0.25	0.58
1992	0.13	0.05	0.06	0.15	2.03	1.45	1.54	0.54	0.85	0.45	0.23	0.13	0.64
1993	0.06	0.03	0.02	0.34	1.09	0.33	0.66	0.57	0.55	0.24	0.22	0.15	0.36
1994	0.08	0.03	0.02	0.47	0.51	0.32	0.48	0.34	0.35	0.26	0.06	0.03	0.22
1996	0.02	0.00	0.00	0.00	0.17	0.23	1.03	0.84	0.70	0.32	0.08	0.02	0.29
1997	0.01	0.00	0.00	0.01	1.02	1.76	1.18	0.98	0.67	0.39	0.21	0.08	0.53
1998	0.02	0.01	0.01	0.03	0.23	0.29	0.20	0.13	0.27	0.14	0.03	0.00	0.12
1999	0.00	0.00	0.00	0.02	0.25	0.88	0.40	0.35	0.62	0.36	0.04	0.01	0.25
2000	0.00	0.00	0.00	0.06	2.04	1.08	1.23	1.21	1.48	0.71	0.46	0.28	0.72
2001	0.15	0.08	0.07	0.20	0.49	1.57	1.45	0.77	0.79	0.48	0.30	0.13	0.54
2002	0.06	0.03	0.03	0.08	0.52	0.36	0.51	0.64	0.86	0.48	0.22	0.12	0.33
2003	0.06	0.03	0.02	0.24	0.33	0.77	0.94	0.53	0.56	0.46	0.19	0.08	0.35
2004	0.04	0.04	0.05	0.21	1.48	0.24	0.34	0.46	0.55	0.46	0.14	0.07	0.34
2005	0.05	0.04	0.04	0.38	0.40	0.32	0.63	0.56	0.85	0.50	0.25	0.05	0.34
2006	0.02	0.02	0.02	0.07	0.57	0.43	0.54	0.41	0.51	0.33	0.13	0.03	0.26
2007	0.00	-	0.01	0.19	0.59	0.33	0.60	0.42	0.57	0.37	0.10	0.03	0.32
2008	0.02	0.01	0.02	0.12	1.54	0.41	0.45	1.34	0.86	0.52	0.28	0.15	0.48
2009	0.10	0.08	0.07	0.17	1.63	0.76	0.28	0.35	0.50	0.32	0.19	0.09	0.38
2010	0.05	0.03	0.03	0.47	0.47	0.27	1.61	0.90	0.86	0.44	0.28	0.16	0.47
2011	0.14	0.15	0.10	0.36	1.58	1.36	1.59	1.41	0.70	0.50	0.35	0.19	0.71
2012	-	-	-	-	1.61	0.98	0.91	0.88	0.83	0.71	1.26	1.09	0.95
Average	0.04	0.03	0.02	0.14	0.88	0.69	0.86	0.65	0.67	0.40	0.18	0.09	0.39
Maximum	0.15	0.15	0.10	0.96	3.28	1.76	1.81	1.41	1.48	0.71	1.26	1.09	0.95
Minimum	0.00	0.00	0.00	0.00	0.11	0.20	0.20	0.13	0.27	0.14	0.03	0.00	0.12

M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\H18\10100325_H18_PERIOD_REGRESSION_20130516.xlsm\Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

MIDDLE CASINO CREEK STATION (H18)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

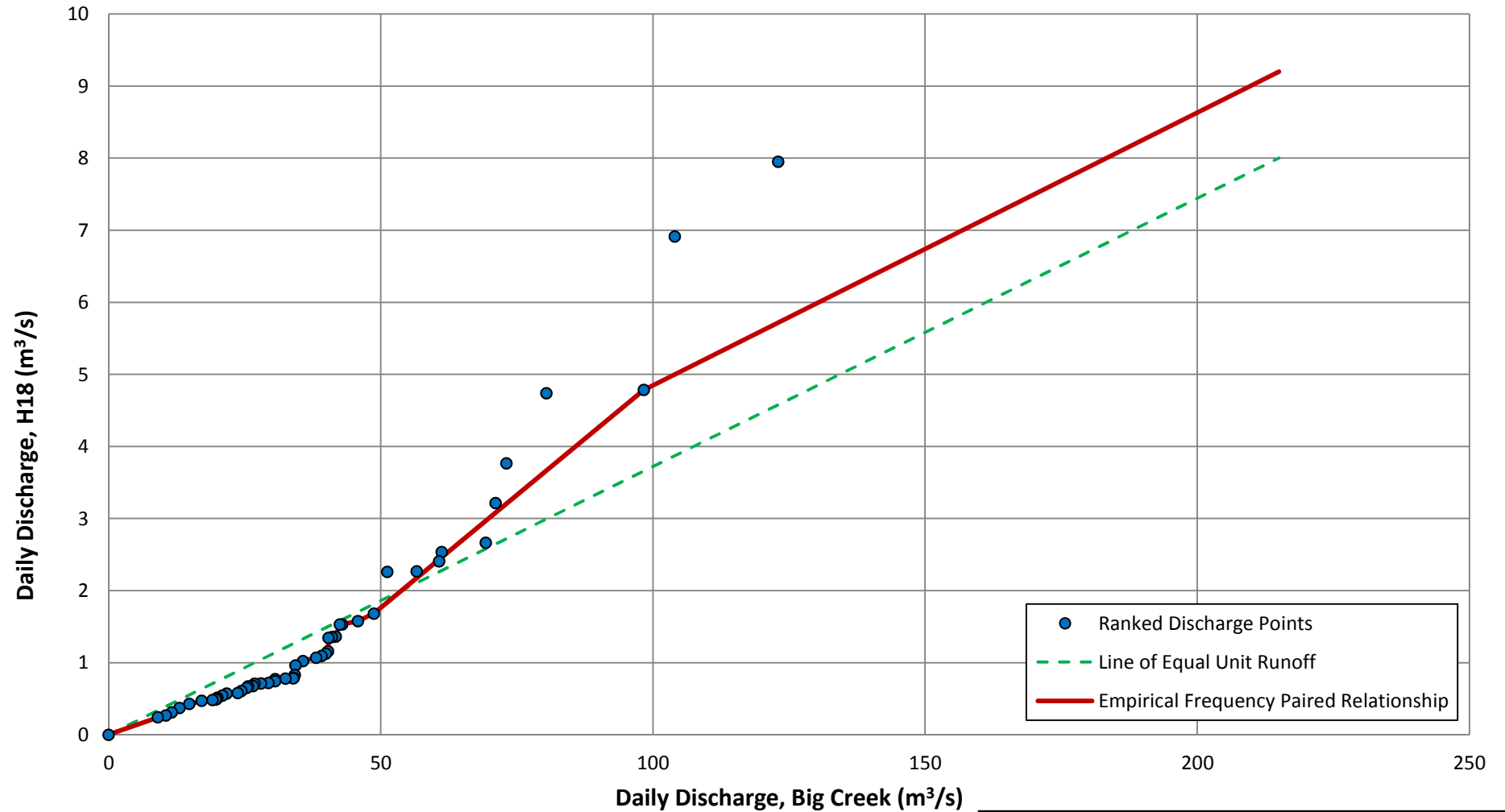
P/A NO.
VA101-325/14

REF. NO.
5

FIGURE 7a

REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

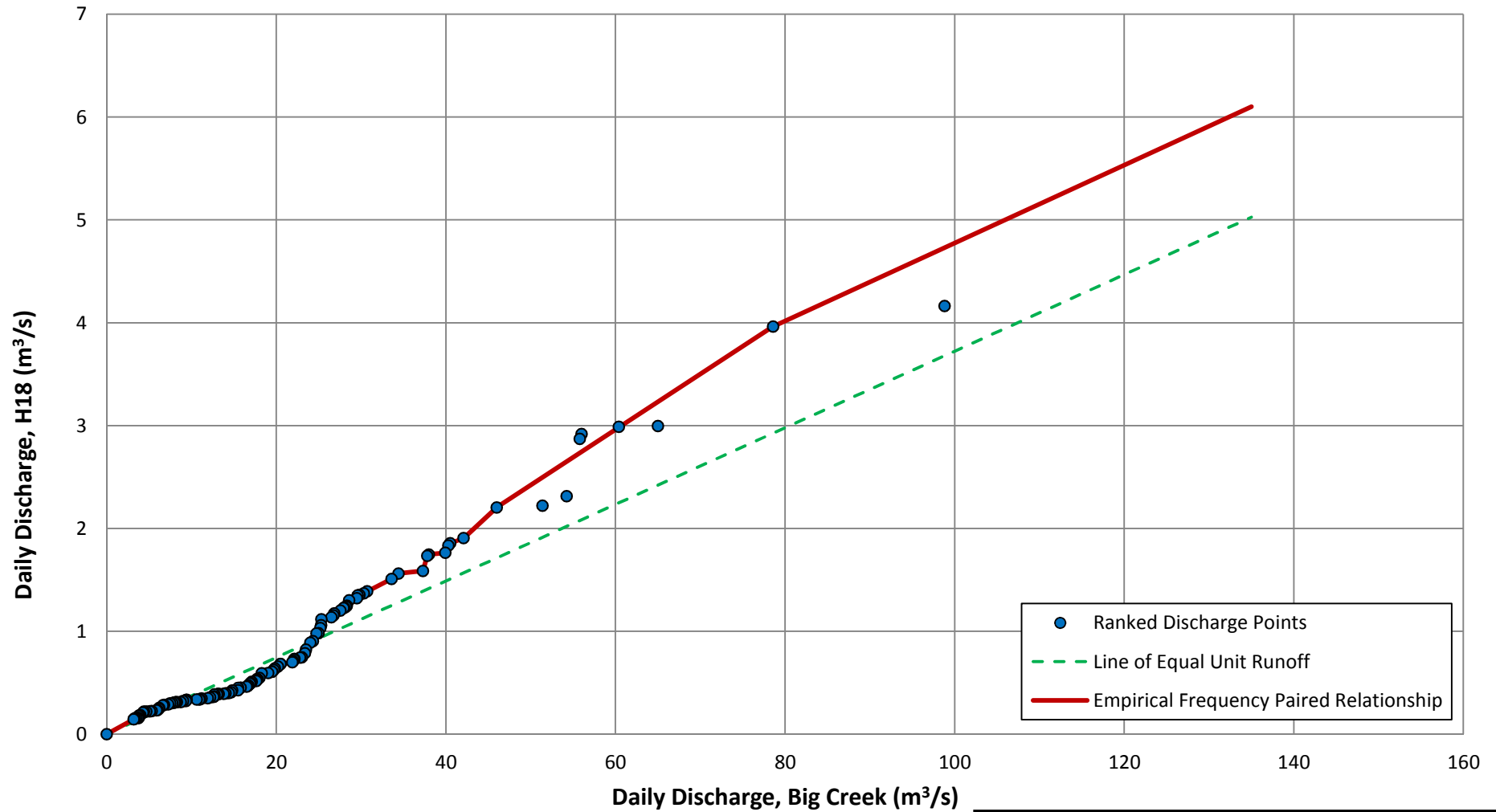
**H18 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 7b**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

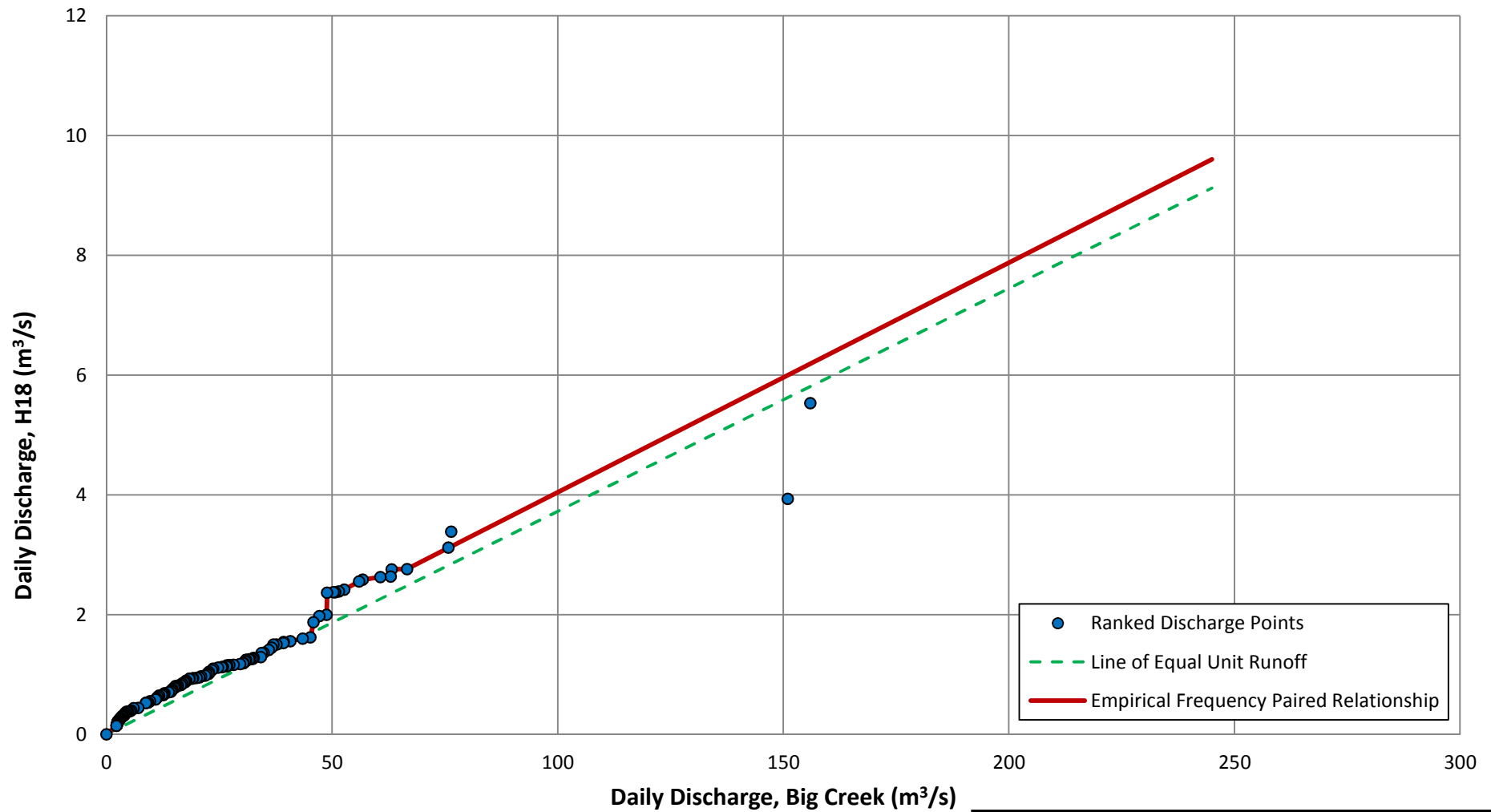
**H18 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 7c**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

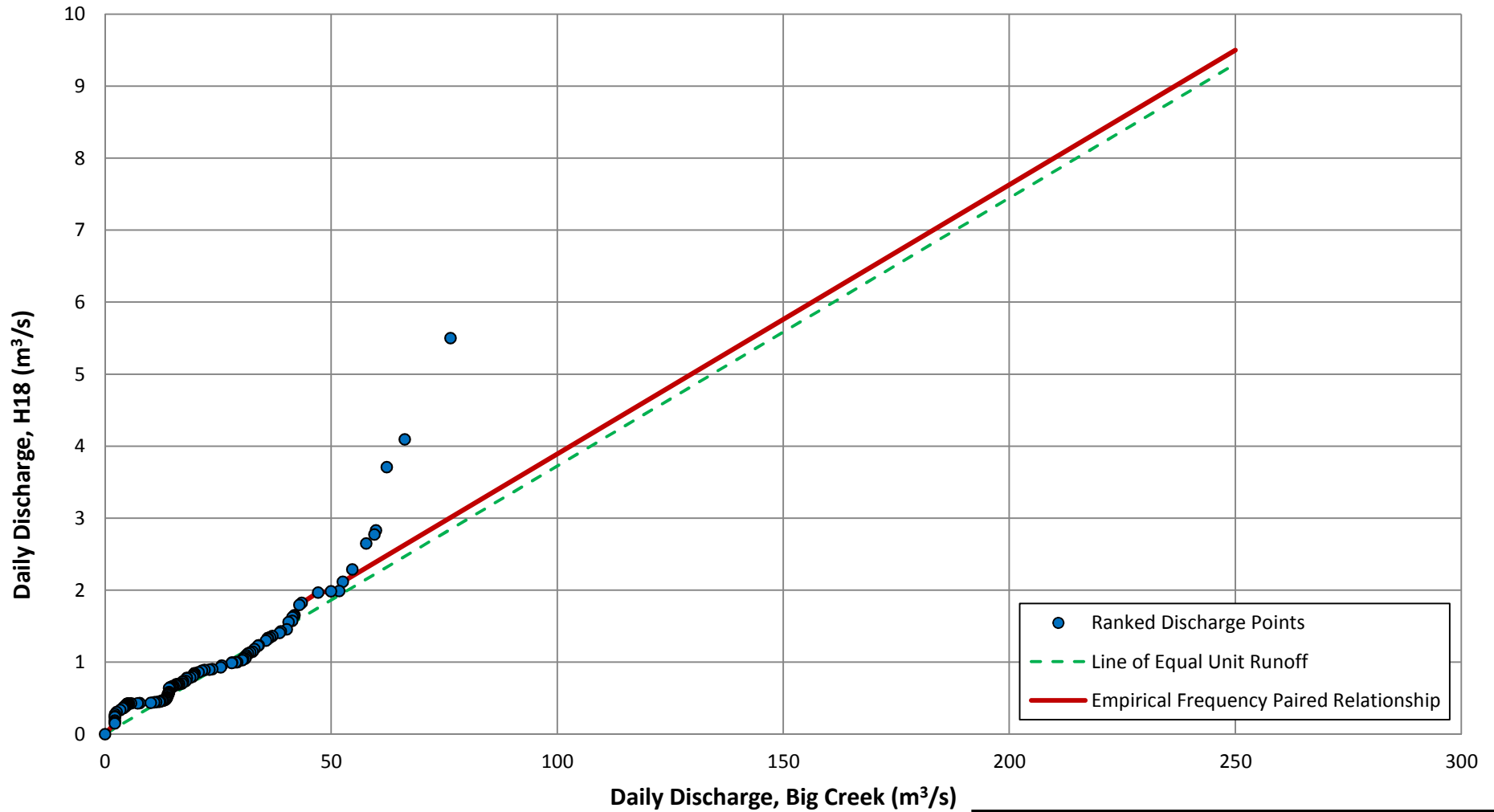
**H18 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 7d**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

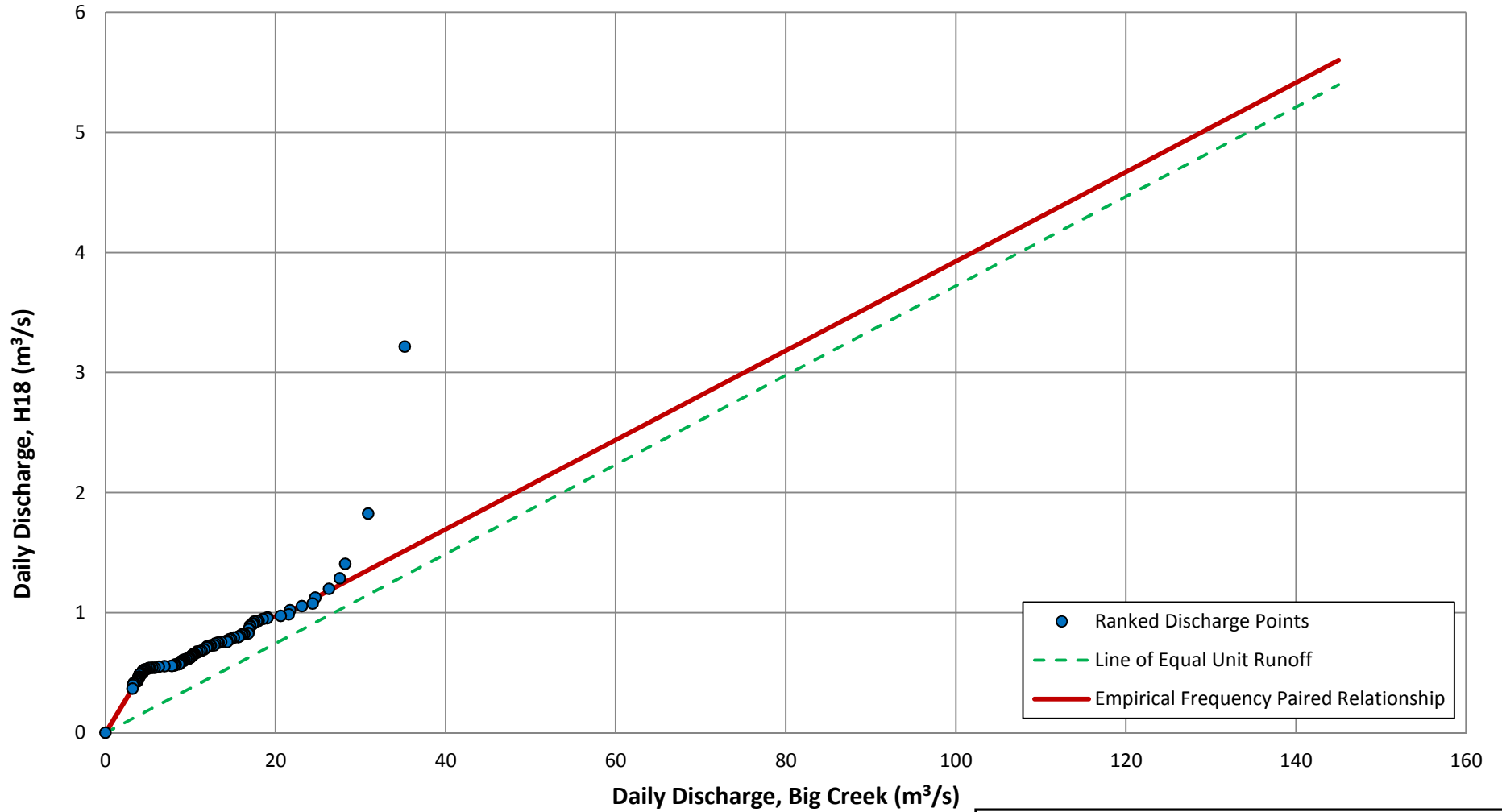
CASINO PROJECT

**H18 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP*****Knight Piésold***
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 7e**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION		
CASINO PROJECT		
H18 AND BIG CREEK SEPTEMBER - OCTOBER RANKED REGRESSION RELATIONSHIP		
	P/A NO. VA101-325/14	REF. NO. 5
	FIGURE 7f	
REV 0		

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 8

**CASINO MINING CORPORATION
CASINO PROJECT**

**UPPER CASINO CREEK STATION (W11)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 17:05

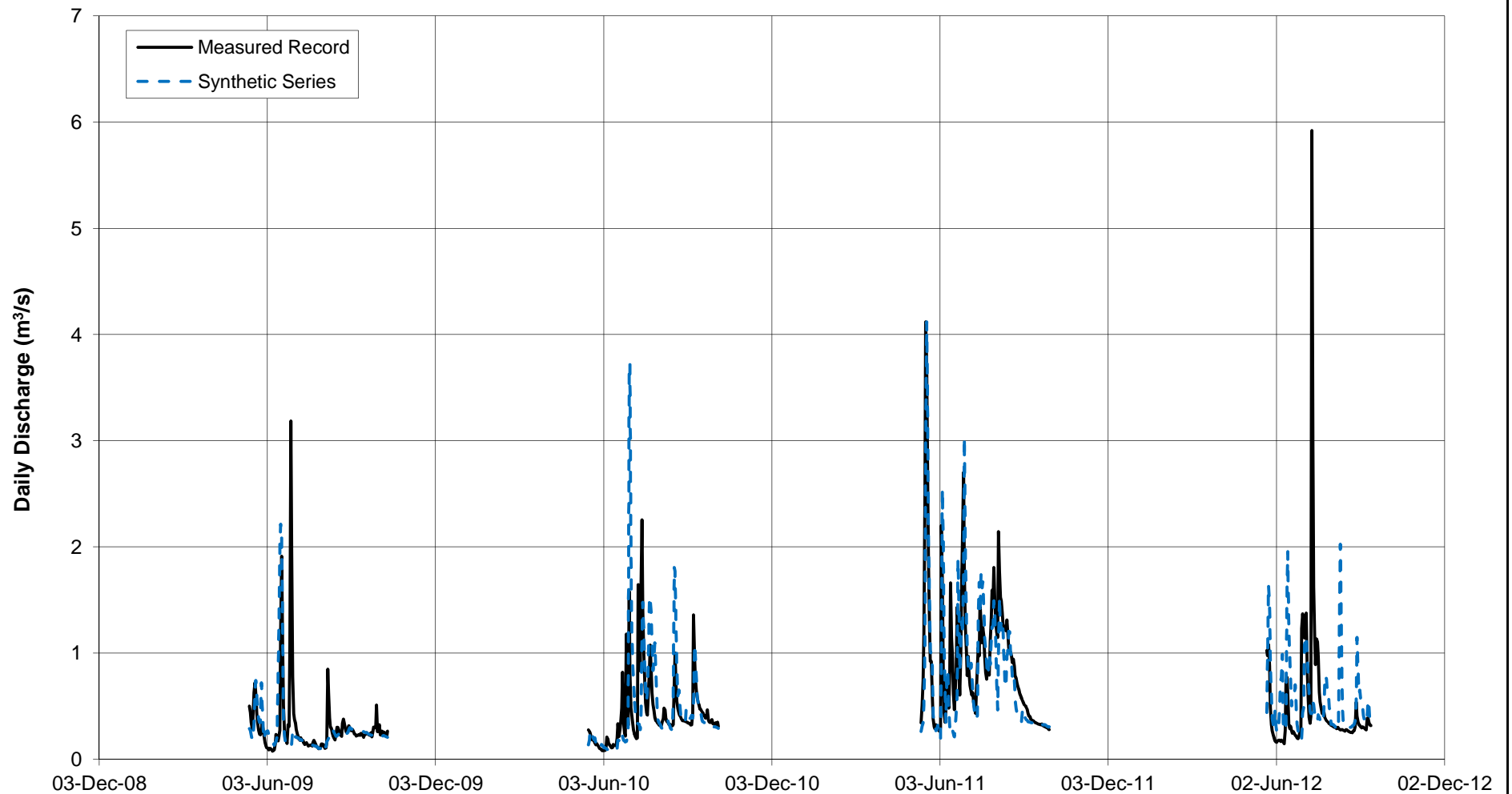
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.01	0.01	0.03	0.80	0.30	0.68	0.50	0.38	0.20	0.03	0.01	0.25
1976	0.01	0.01	0.00	0.03	0.30	0.69	1.10	0.26	0.19	0.11	0.05	0.02	0.23
1977	0.02	0.01	0.01	0.03	0.18	0.38	0.49	0.22	0.24	0.18	0.05	0.01	0.15
1978	0.00	0.00	0.00	0.00	0.07	0.58	1.08	0.56	0.29	0.25	0.12	0.04	0.25
1979	0.02	0.01	0.01	0.01	0.20	0.40	0.58	0.31	0.33	0.20	0.07	0.02	0.18
1980	0.01	0.01	0.01	0.02	0.08	0.10	0.49	0.28	0.59	0.28	0.05	0.01	0.16
1981	0.01	0.01	0.01	0.02	0.13	0.10	0.55	0.38	0.28	0.25	0.11	0.03	0.16
1982	0.01	0.01	0.01	0.01	0.37	0.58	0.19	0.47	0.18	0.13	0.06	0.02	0.17
1983	0.01	0.00	0.00	0.00	0.10	0.55	0.54	0.59	0.31	0.20	0.03	0.00	0.20
1984	0.00	0.00	0.00	0.01	0.04	0.40	0.59	0.22	0.42	0.16	0.03	0.00	0.16
1985	0.00	0.00	0.00	0.01	0.45	0.59	0.61	0.30	0.33	0.21	0.09	0.05	0.22
1986	0.03	0.02	0.01	0.00	0.54	0.42	0.51	0.29	0.31	0.20	0.04	0.04	0.20
1987	0.03	0.01	0.01	0.05	0.35	0.49	0.26	0.35	0.29	0.19	0.07	0.03	0.18
1988	0.01	0.01	0.01	0.03	0.37	0.19	0.67	0.35	0.28	0.20	0.11	0.05	0.19
1989	0.03	0.01	0.01	0.01	0.11	0.14	0.23	0.23	0.24	0.16	0.08	0.03	0.11
1990	0.02	0.01	0.00	0.59	2.09	0.31	0.30	0.15	0.47	0.25	0.06	0.02	0.36
1991	0.01	0.02	0.02	0.11	0.96	0.54	0.56	0.42	0.54	0.27	0.22	0.14	0.32
1992	0.07	0.03	0.03	0.08	1.24	0.93	1.00	0.30	0.46	0.24	0.14	0.07	0.39
1993	0.03	0.02	0.01	0.19	0.48	0.16	0.39	0.32	0.28	0.13	0.13	0.09	0.19
1994	0.05	0.02	0.01	0.26	0.20	0.15	0.26	0.20	0.20	0.14	0.04	0.02	0.11
1996	0.01	0.00	0.00	0.00	0.06	0.11	0.65	0.45	0.35	0.17	0.05	0.01	0.16
1997	0.00	0.00	0.00	0.00	0.47	1.21	0.75	0.53	0.33	0.21	0.12	0.04	0.31
1998	0.01	0.01	0.01	0.02	0.09	0.14	0.13	0.09	0.16	0.08	0.01	0.00	0.06
1999	0.00	0.00	0.00	0.01	0.10	0.53	0.24	0.22	0.32	0.19	0.02	0.00	0.14
2000	0.00	0.00	0.00	0.03	1.22	0.69	0.77	0.77	0.90	0.36	0.24	0.16	0.43
2001	0.09	0.05	0.04	0.11	0.21	1.01	0.92	0.45	0.39	0.25	0.17	0.07	0.31
2002	0.03	0.02	0.02	0.05	0.22	0.21	0.32	0.36	0.48	0.25	0.13	0.07	0.18
2003	0.04	0.02	0.01	0.13	0.13	0.46	0.58	0.32	0.29	0.24	0.11	0.04	0.20
2004	0.02	0.03	0.03	0.12	0.75	0.12	0.20	0.28	0.28	0.24	0.08	0.04	0.18
2005	0.03	0.02	0.02	0.24	0.15	0.15	0.36	0.31	0.43	0.26	0.14	0.03	0.18
2006	0.01	0.01	0.01	0.04	0.26	0.26	0.32	0.26	0.26	0.18	0.08	0.02	0.14
2007	0.00	-	0.00	0.10	0.25	0.16	0.36	0.27	0.29	0.20	0.06	0.02	0.17
2008	0.01	0.01	0.01	0.06	0.78	0.22	0.25	0.84	0.44	0.27	0.16	0.09	0.26
2009	0.06	0.04	0.04	0.09	0.90	0.46	0.16	0.22	0.26	0.18	0.11	0.05	0.22
2010	0.03	0.02	0.02	0.27	0.18	0.13	1.05	0.51	0.45	0.23	0.16	0.09	0.26
2011	0.08	0.08	0.06	0.19	0.83	0.86	1.04	0.87	0.35	0.26	0.19	0.11	0.41
2012	-	-	-	-	0.78	0.58	0.57	0.51	0.41	0.41	0.75	0.55	0.54
Average	0.02	0.02	0.01	0.08	0.45	0.41	0.54	0.38	0.35	0.21	0.10	0.05	0.22
Maximum	0.09	0.08	0.06	0.59	2.09	1.21	1.10	0.87	0.90	0.41	0.75	0.55	0.54
Minimum	0.00	0.00	0.00	0.00	0.04	0.10	0.13	0.09	0.16	0.08	0.01	0.00	0.06

M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W11\10100325_W11_PERIOD_REGRESSION_20130326.xlsm\Av Monthly Flows

NOTES:

1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

UPPER CASINO CREEK STATION (W11)
MEASURED AND SYNTHETIC HYDROGRAPHS

Knight Piésold
CONSULTING

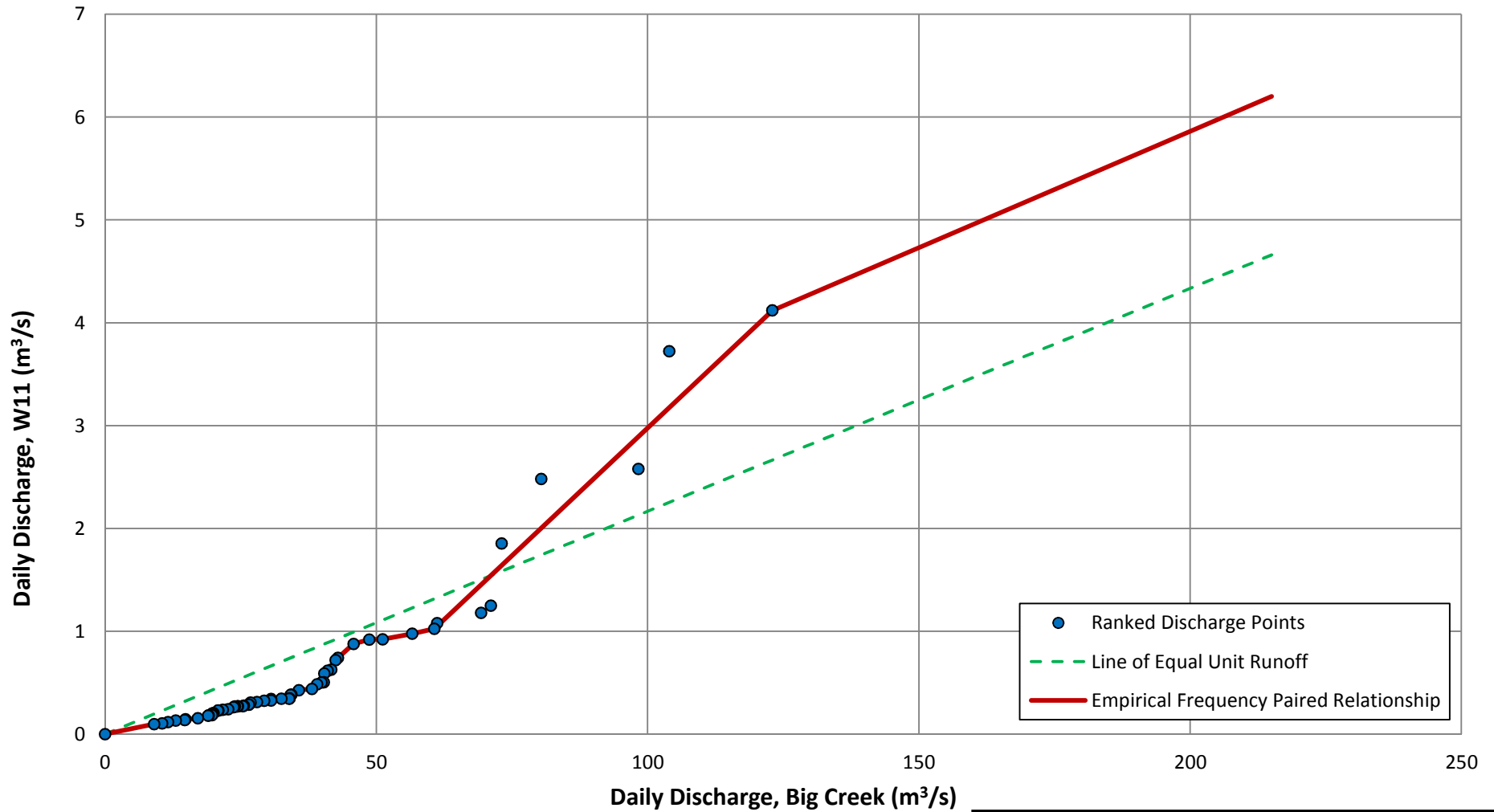
P/A NO.
VA103-325/14

REF. NO.
5

FIGURE 8a

REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

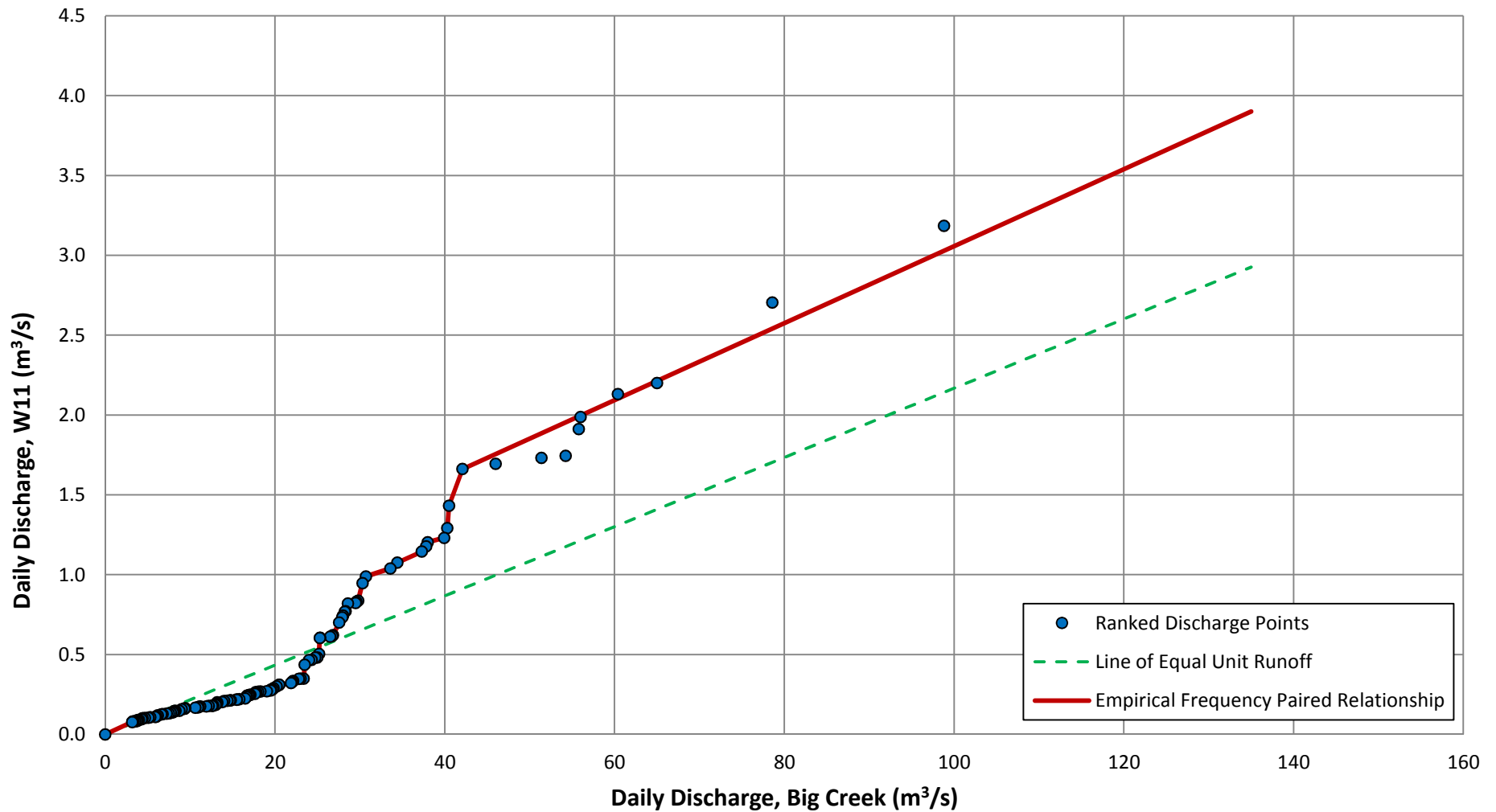
**W11 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 8b**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

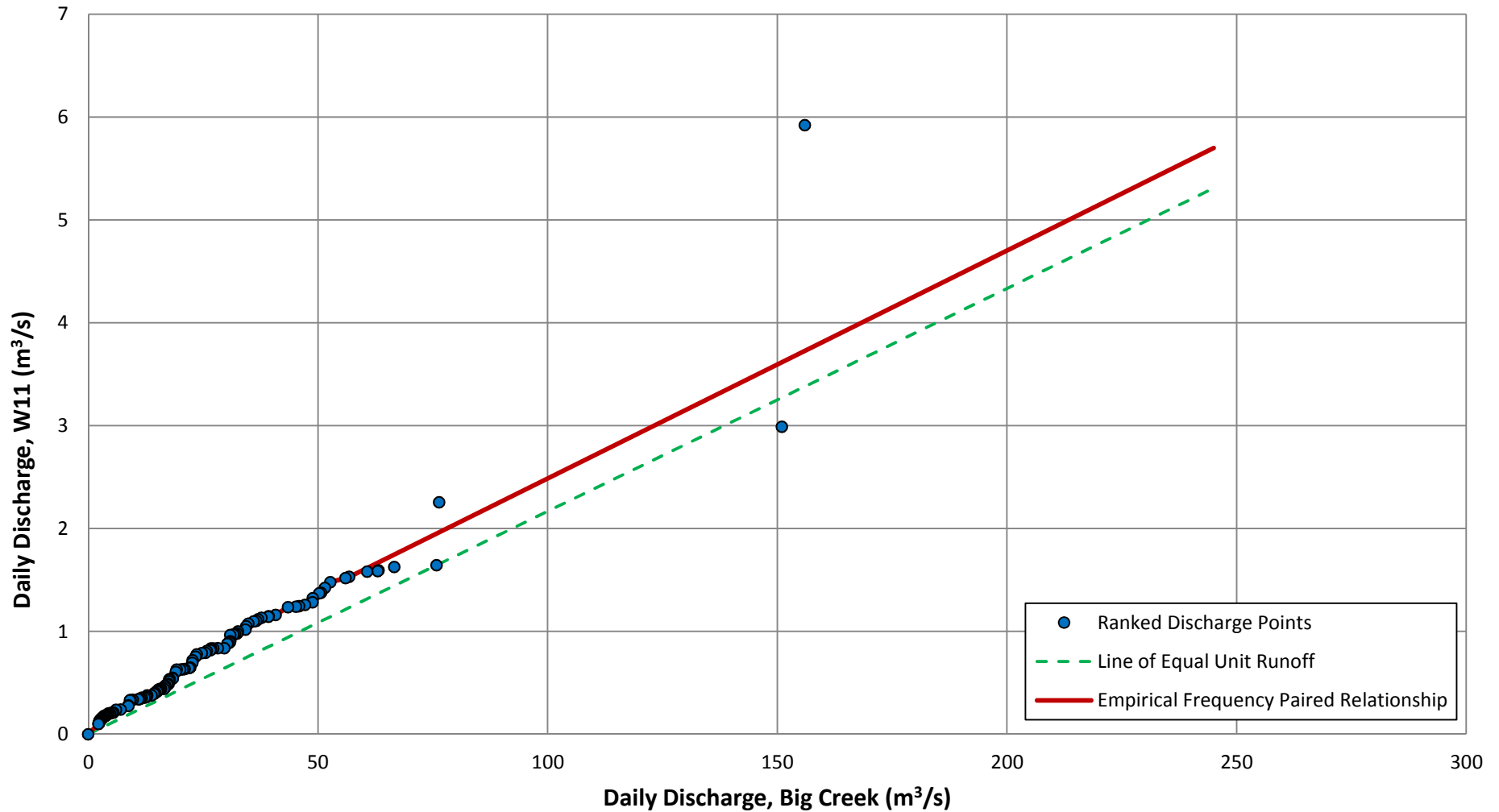
**W11 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 8c**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

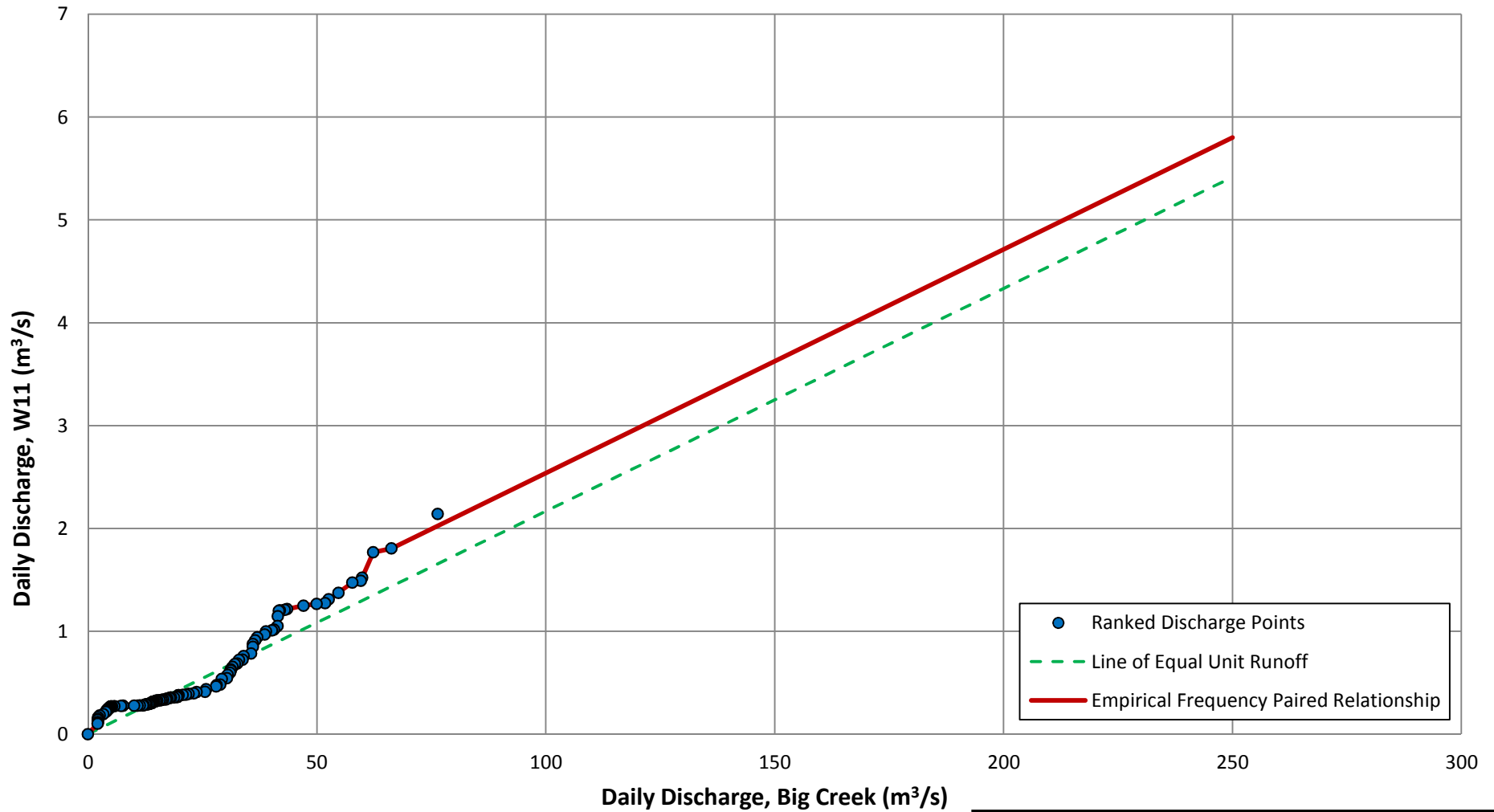
**W11 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 8d**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

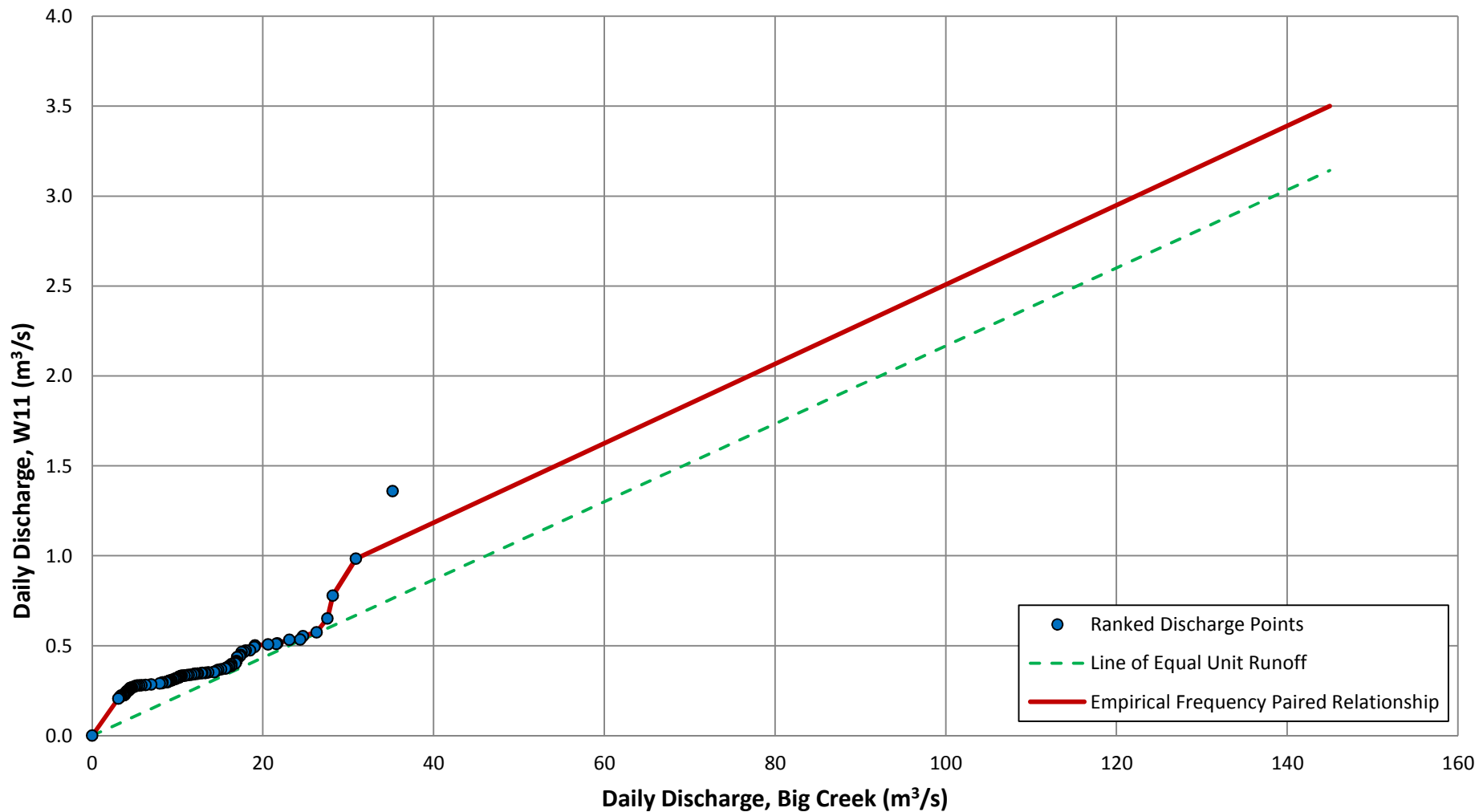
**W11 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 8e**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

W11 AND BIG CREEK SEPTEMBER - OCTOBER
RANKED REGRESSION RELATIONSHIP

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5

FIGURE 8f

REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 9

**CASINO MINING CORPORATION
CASINO PROJECT**

**BRYNELSEN CREEK STATION (W18)
SUMMARY OF LONG-TERM SYNTHETIC FLOWS**

Print: 7/10/13 17:38

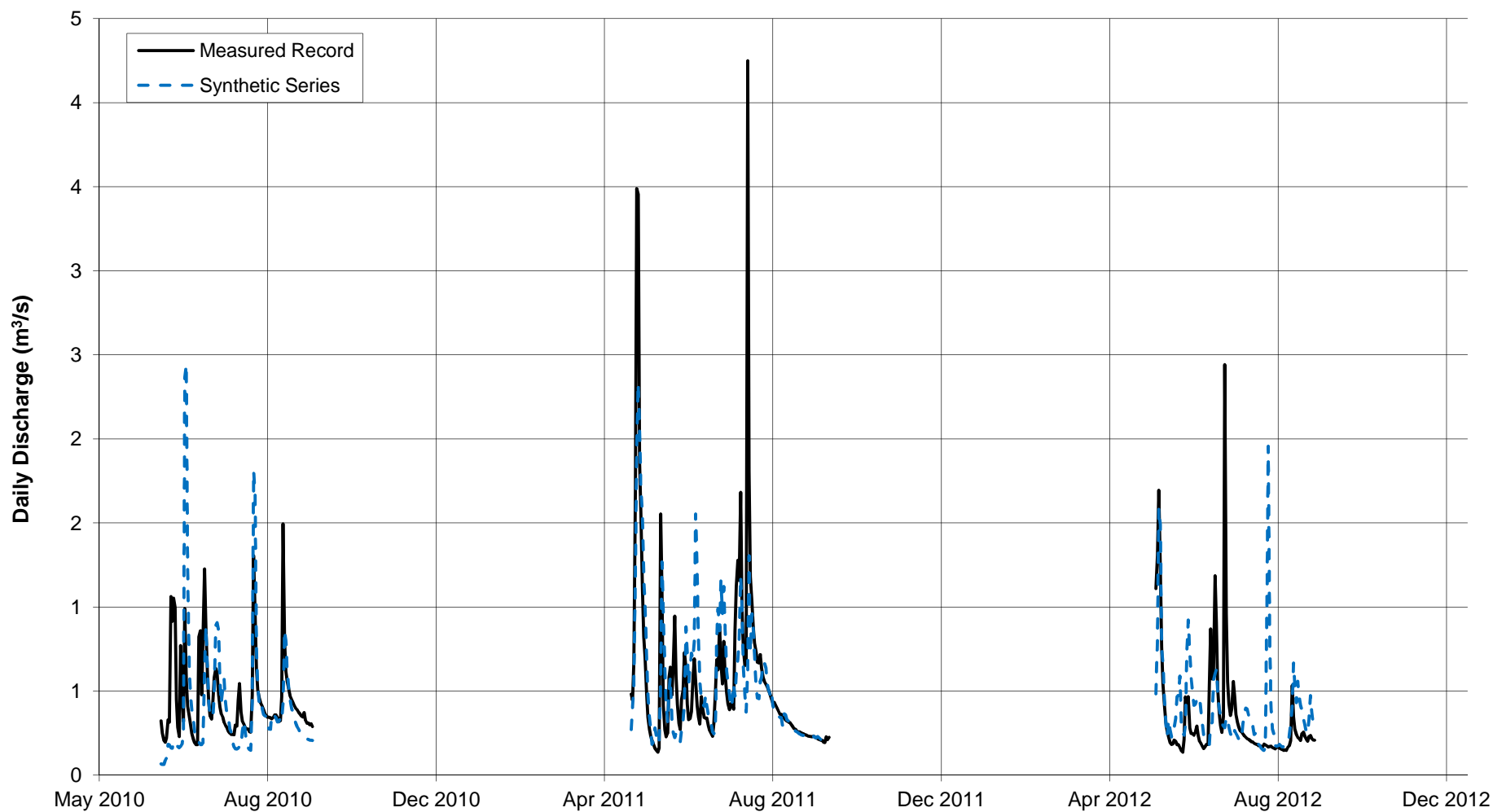
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1975	0.00	0.00	0.01	0.02	0.59	0.23	0.40	0.36	0.28	0.12	0.02	0.01	0.17
1976	0.00	0.00	0.00	0.02	0.27	0.42	0.69	0.08	0.11	0.07	0.03	0.01	0.14
1977	0.01	0.01	0.01	0.02	0.15	0.29	0.27	0.05	0.14	0.10	0.03	0.00	0.09
1978	0.00	0.00	0.00	0.00	0.05	0.34	0.65	0.41	0.19	0.15	0.07	0.03	0.16
1979	0.01	0.00	0.00	0.01	0.16	0.28	0.33	0.17	0.23	0.12	0.04	0.01	0.12
1980	0.01	0.01	0.01	0.01	0.06	0.09	0.29	0.14	0.45	0.19	0.03	0.01	0.11
1981	0.01	0.01	0.01	0.01	0.11	0.09	0.31	0.21	0.16	0.15	0.06	0.02	0.10
1982	0.01	0.01	0.01	0.01	0.35	0.34	0.09	0.29	0.11	0.08	0.03	0.01	0.11
1983	0.00	0.00	0.00	0.00	0.09	0.35	0.31	0.46	0.21	0.11	0.02	0.00	0.13
1984	0.00	0.00	0.00	0.00	0.03	0.27	0.33	0.06	0.31	0.09	0.02	0.00	0.09
1985	0.00	0.00	0.00	0.00	0.43	0.38	0.34	0.16	0.23	0.12	0.05	0.03	0.15
1986	0.02	0.01	0.00	0.00	0.41	0.30	0.30	0.15	0.21	0.12	0.03	0.02	0.13
1987	0.02	0.01	0.00	0.03	0.33	0.31	0.13	0.18	0.19	0.11	0.04	0.02	0.11
1988	0.01	0.01	0.01	0.02	0.35	0.18	0.39	0.22	0.17	0.12	0.07	0.03	0.13
1989	0.02	0.01	0.00	0.01	0.08	0.13	0.12	0.06	0.13	0.10	0.05	0.02	0.06
1990	0.01	0.00	0.00	0.42	1.37	0.26	0.16	0.05	0.38	0.16	0.04	0.01	0.24
1991	0.01	0.01	0.01	0.07	0.84	0.36	0.31	0.29	0.42	0.16	0.13	0.09	0.23
1992	0.04	0.02	0.02	0.05	0.82	0.55	0.58	0.17	0.36	0.15	0.08	0.04	0.24
1993	0.02	0.01	0.01	0.13	0.49	0.16	0.23	0.19	0.18	0.08	0.08	0.05	0.14
1994	0.03	0.01	0.01	0.19	0.17	0.15	0.16	0.04	0.11	0.08	0.02	0.01	0.08
1996	0.01	0.00	0.00	0.00	0.05	0.10	0.38	0.32	0.26	0.10	0.03	0.01	0.10
1997	0.00	0.00	0.00	0.00	0.46	0.66	0.44	0.42	0.24	0.13	0.07	0.03	0.21
1998	0.01	0.01	0.00	0.01	0.06	0.14	0.06	0.03	0.09	0.05	0.01	0.00	0.04
1999	0.00	0.00	0.00	0.01	0.07	0.34	0.12	0.06	0.21	0.11	0.01	0.00	0.08
2000	0.00	0.00	0.00	0.02	0.86	0.45	0.46	0.56	0.70	0.26	0.14	0.10	0.30
2001	0.05	0.03	0.02	0.06	0.19	0.57	0.55	0.33	0.30	0.16	0.10	0.04	0.20
2002	0.02	0.01	0.01	0.03	0.19	0.16	0.17	0.21	0.36	0.14	0.08	0.04	0.12
2003	0.02	0.01	0.01	0.09	0.10	0.30	0.34	0.16	0.18	0.15	0.07	0.03	0.12
2004	0.01	0.02	0.02	0.07	0.64	0.11	0.10	0.10	0.17	0.14	0.05	0.02	0.12
2005	0.02	0.01	0.01	0.18	0.11	0.14	0.22	0.18	0.34	0.17	0.08	0.02	0.12
2006	0.01	0.01	0.01	0.03	0.24	0.18	0.18	0.08	0.15	0.11	0.05	0.01	0.09
2007	0.00	-	0.00	0.07	0.21	0.15	0.20	0.09	0.19	0.12	0.03	0.01	0.11
2008	0.01	0.00	0.01	0.04	0.67	0.19	0.14	0.58	0.34	0.16	0.10	0.05	0.19
2009	0.03	0.03	0.02	0.06	0.70	0.31	0.07	0.06	0.15	0.11	0.07	0.03	0.14
2010	0.02	0.01	0.01	0.20	0.14	0.13	0.61	0.38	0.35	0.14	0.10	0.05	0.18
2011	0.05	0.05	0.04	0.11	0.69	0.51	0.61	0.59	0.25	0.16	0.11	0.07	0.27
2012	-	-	-	-	0.76	0.39	0.33	0.35	0.32	0.30	0.62	0.47	0.39
Average	0.01	0.01	0.01	0.06	0.36	0.28	0.31	0.23	0.25	0.13	0.06	0.03	0.15
Maximum	0.05	0.05	0.04	0.42	1.37	0.66	0.69	0.59	0.70	0.30	0.62	0.47	0.39
Minimum	0.00	0.00	0.00	0.00	0.03	0.09	0.06	0.03	0.09	0.05	0.01	0.00	0.04


M:\10100325\14\A\Data\Task 310 - Hydrology\Baseline Report\2012 Baseline Report\W18\10100325_W18_PERIOD_REGRESSION_20130516.xlsm\Av Monthly Flows

NOTES:

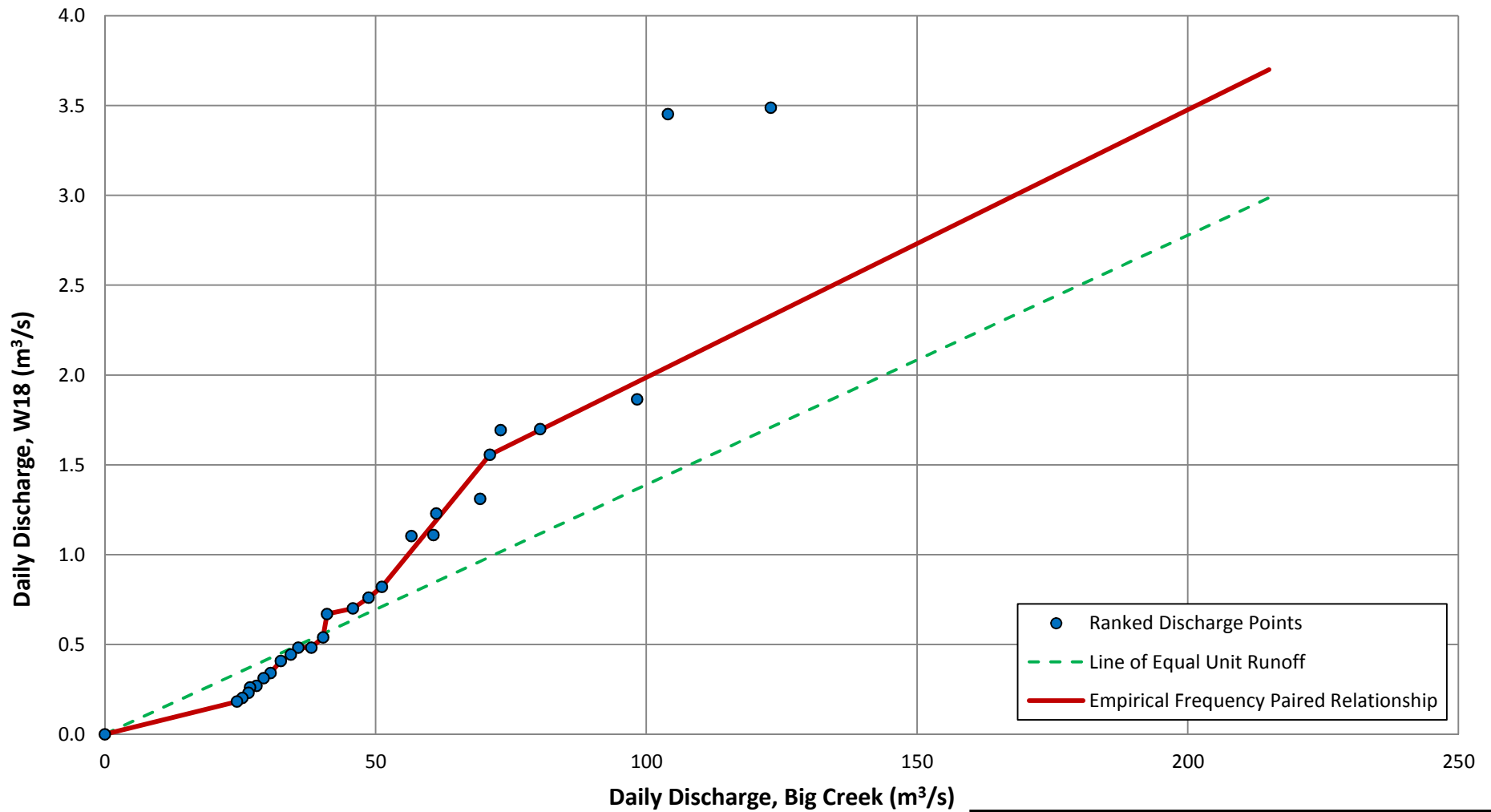
1. MAY THROUGH OCTOBER VALUES WERE DERIVED BY RANKED REGRESSION WITH BIG CREEK (WSC 09AH003).
2. NOVEMBER THROUGH APRIL VALUES WERE DERIVED BY APPLYING THE MOST APPROPRIATE OPEN WATER REGRESSION TO THE BIG CREEK NOVEMBER THROUGH APRIL FLOWS.

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION	
CASINO PROJECT	
BRYNELSEN CREEK STATION (W18) MEASURED AND SYNTHETIC HYDROGRAPHS	
	P/A NO. VA103-325/14
	REF. NO. 5
FIGURE 9a	
REV 0	

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	DS	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

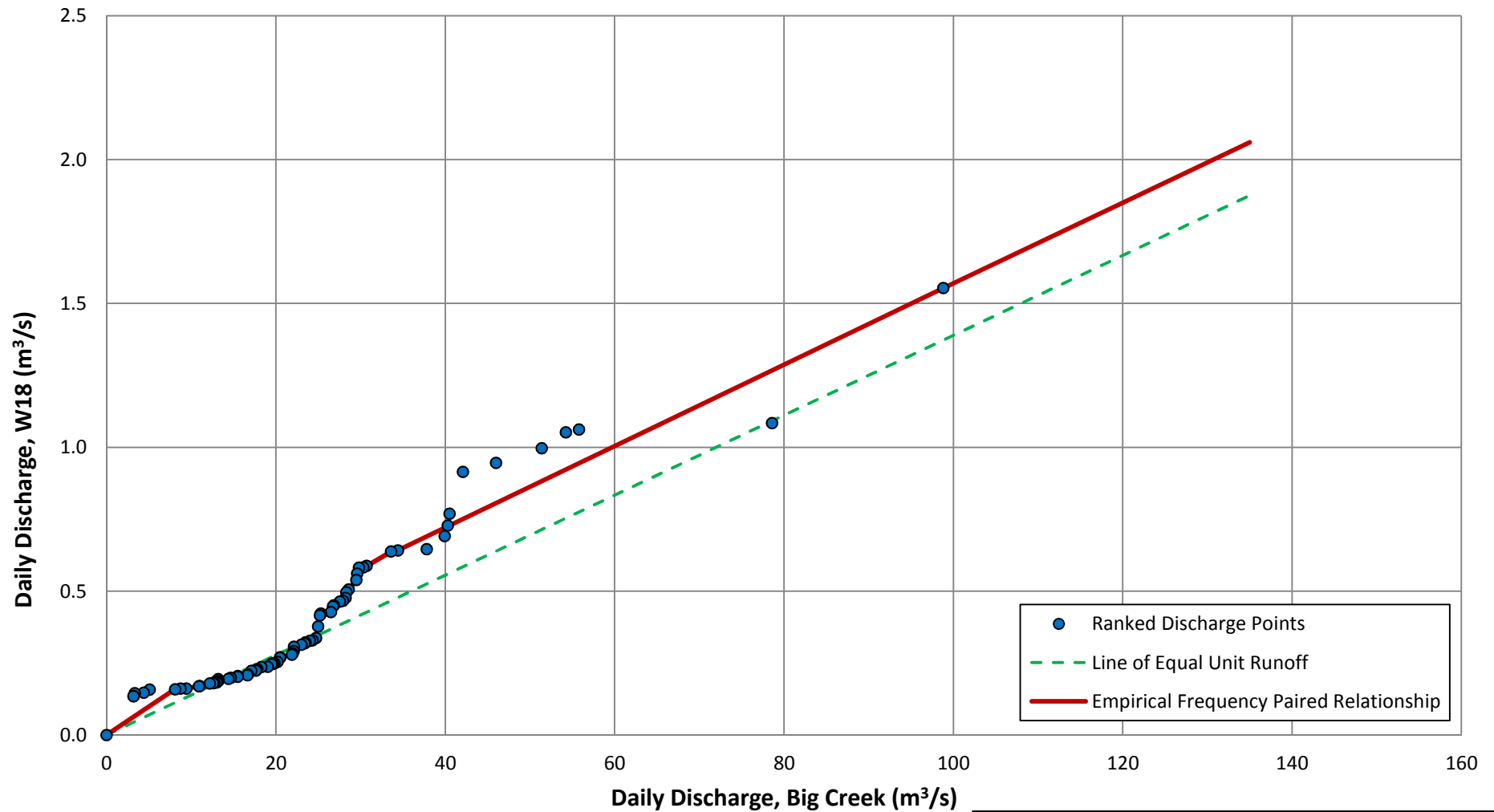
**W18 AND BIG CREEK
MAY RANKED REGRESSION RELATIONSHIP**

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CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 9b**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

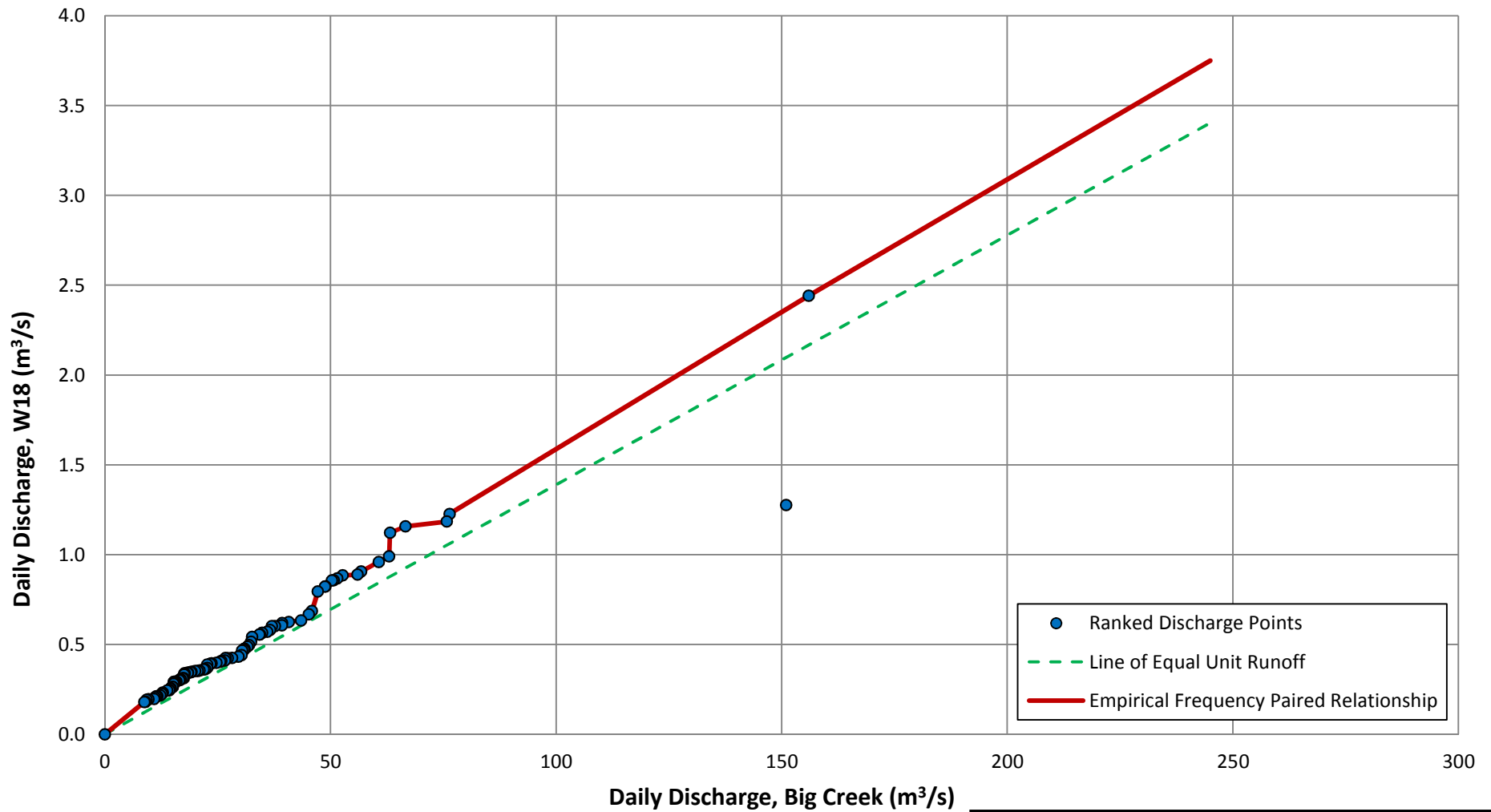
**W18 AND BIG CREEK
JUNE RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 9c**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

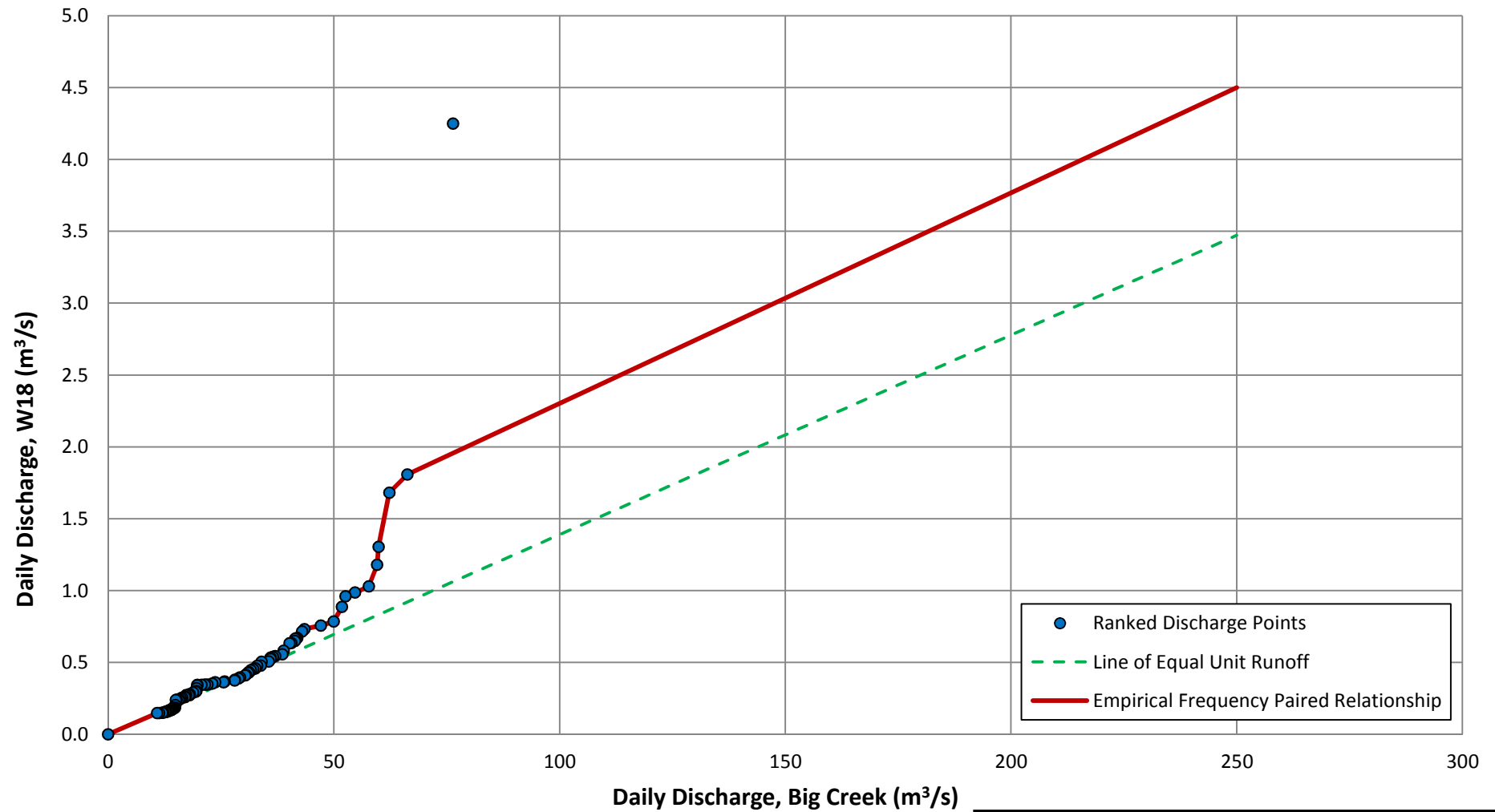
**W18 AND BIG CREEK
JULY RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 9d**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

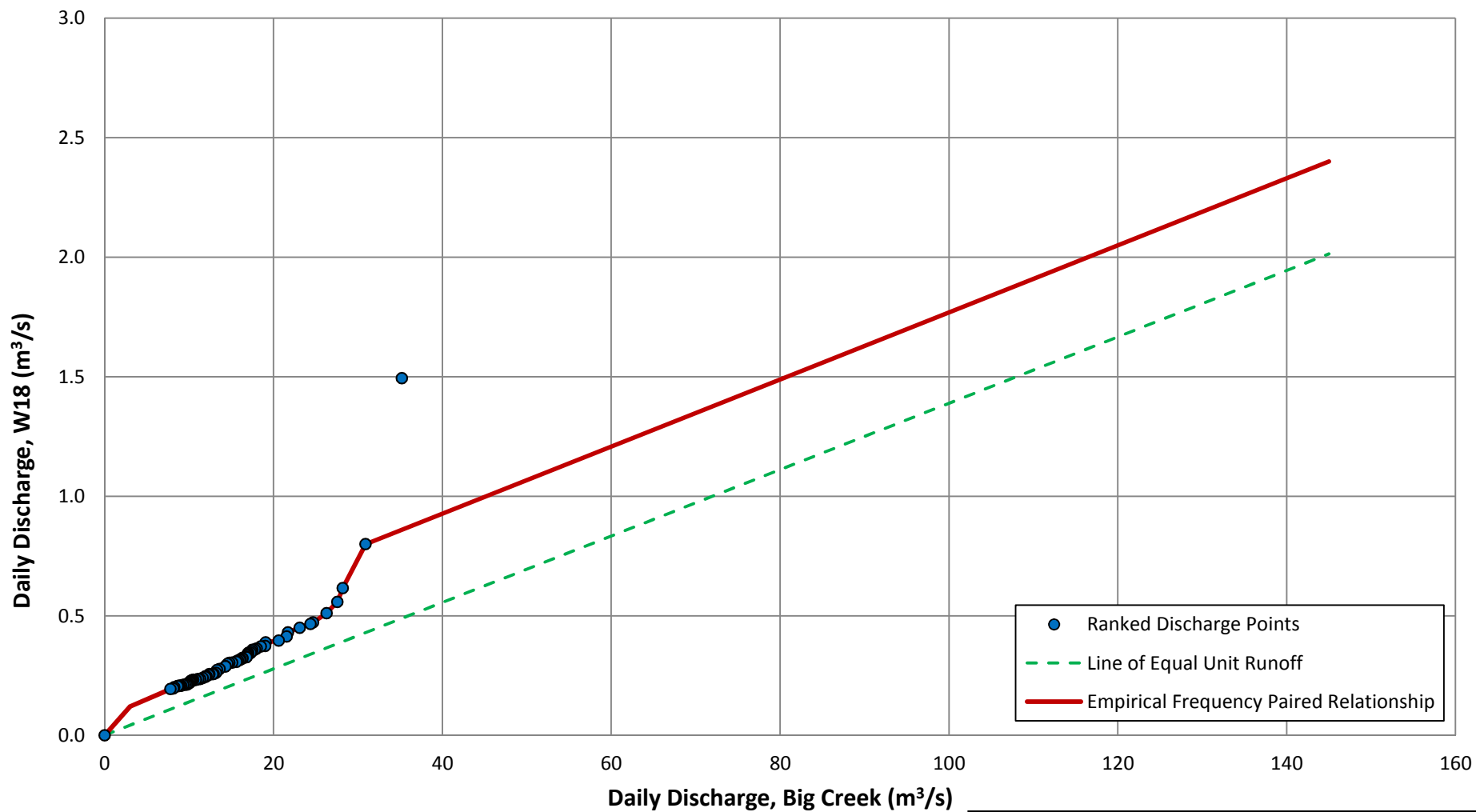
**W18 AND BIG CREEK
AUGUST RANKED REGRESSION RELATIONSHIP**

Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5**FIGURE 9e**REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



CASINO MINING CORPORATION

CASINO PROJECT

**W18 AND BIG CREEK SEPTEMBER - OCTOBER
RANKED REGRESSION RELATIONSHIP**
Knight Piésold
CONSULTING

P/A NO. VA101-325/14

REF. NO.
5

FIGURE 9f

REV
0

0	18MAR'13	ISSUED WITH REPORT VA101-325/14-5	PN	KT	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

