

Site address: 50 Westney Road

Job No.: 1636-02

Designer: JDP

Date : 10/07/2024

TP108 Rainfall Method

TP108 Storm depth =

Figure A.1	2 yr ARI	(50% AEP)		mm
Figure A.2	5 yr ARI	(20% AEP)		mm
Figure A.3	10 yr ARI	(10% AEP)	130	mm
Figure A.4	20 yr ARI	(5% AEP)		mm
Figure A.5	50 yr ARI	(2% AEP)		mm
Figure A.6	100 yr ARI	(1% AEP)	186	mm

Climate change adjusted percentage increase:

Annual Exceedence Probability (AEP)	Percentage increase in 24-Hour Design Rainfall Depth Due to Future Climate Change	Climate adjusted rainfall depth (mm)
50%	15.1%	NA
20%	16.4%	NA
10%	17.0%	152.1
5%	31.2%	NA
2%	31.9%	NA
1%	32.7%	246.8

Conversion of Depth to intensity (peak Intensity)

Table 2.1 Normalised 24 hr Design (TP108)

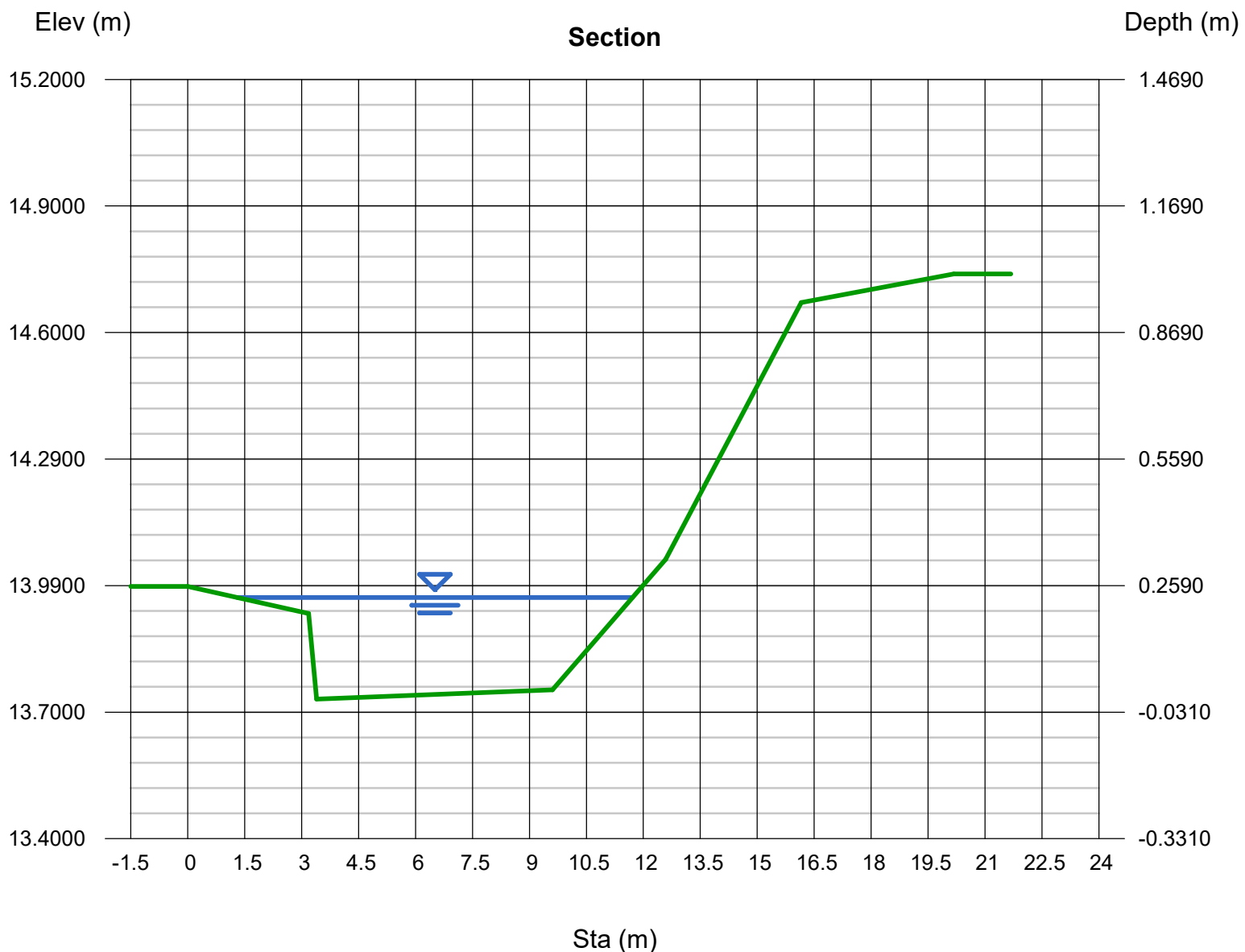
Storm Depth	Corresponding 10 min storm intensity (mm/hr)
152.1	112
246.8	191

Site address: 50 Westney Road
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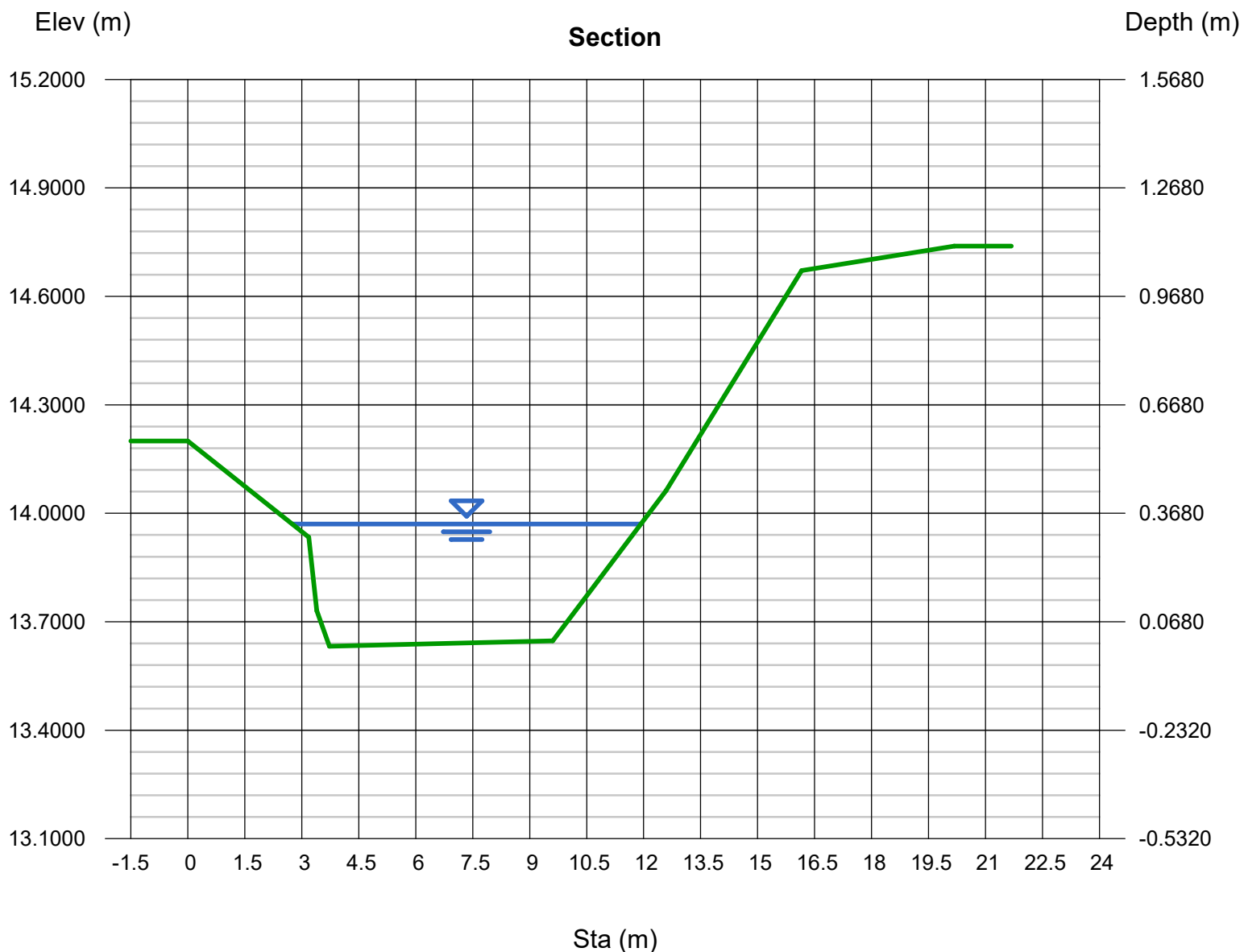
TP108 calculation

		Catchment A	Total (excl A)	Total Post (incl A)	Catchment B	Catchment C	Catchment D	Catchment E	Catchment F
	→	A	All excl A	Total Post (incl A)	B	C	D	E	F
Catchment number									
Impervious Area	ha	0.387	10.544	13.910	0.314	0.079	0.000	0.442	0.300
Pervious Area	ha	0.624	4.051	1.692	0.245	0.585	0.855	0.877	0.269
Total area	ha	1.012	14.595	15.602	0.559	0.664	0.855	1.319	0.569
% Impervious		0.383	0.722	0.892	0.562	0.119	0.000	0.335	0.527
Catchment Slope (S _c)	m/m	0.02	0.02	0.02	0.03	0.02	0.05	0.02	0.03
Catchment Length (l)	km	0.12	0.50	0.50	0.06	0.13	0.30	0.15	0.09
Channelisation Factor (C)		1	1	0.8	0.6	1	1	1	1
Hydrological Soil Group		Group_C	Group_C	Group_C	Group_C	Group_C	Group_C	Group_C	Group_C
SCS Curve Number (CN)		74	74	74	74	74	74	74	74
24-Hour Rainfall Depth (P ₂₄)	mm	246.8	246.8	246.8	246.8	246.8	246.8	246.8	246.8
Weighted Curve Number		83.19	91.34	95.40	87.48	76.85	74.00	82.04	86.66
Initial Abstraction (I _a) weighted	mm	3.086	1.388	0.542	2.192	4.405	5.000	3.324	2.363
t _c	hours	0.17	0.34	0.26	0.17	0.17	0.21	0.17	0.17
t _p	hours	0.11	0.23	0.18	0.11	0.11	0.14	0.11	0.11
Storage (S)	mm	51	24	12	36	76	89	56	39
c*=(P24-2I _a)/(P24-2I _a +2S)		0.701	0.835	0.909	0.769	0.609	0.570	0.684	0.756
q* (from Fig. 6.1)	Approx!!	0.144	0.123	0.141	0.150	0.134	0.121	0.142	0.149
Peak Flowrate (q _p)	m3/s	0.359	4.431	5.412	0.208	0.220	0.256	0.463	0.209
Peak Flowrate (q _p)	L/s	359.39	4431.31	5411.92	207.58	219.95	256.18	462.94	209.43
24 hour rainfall depth (Q ₂₄)	mm	201.3	223.5	234.6	212.9	184.2	176.6	198.2	210.7
24 hour runoff volume (V ₂₄)	m ³	2036	32617	36600	1191	1223	1510.06	2614	1199

Friday, Feb 28 2025



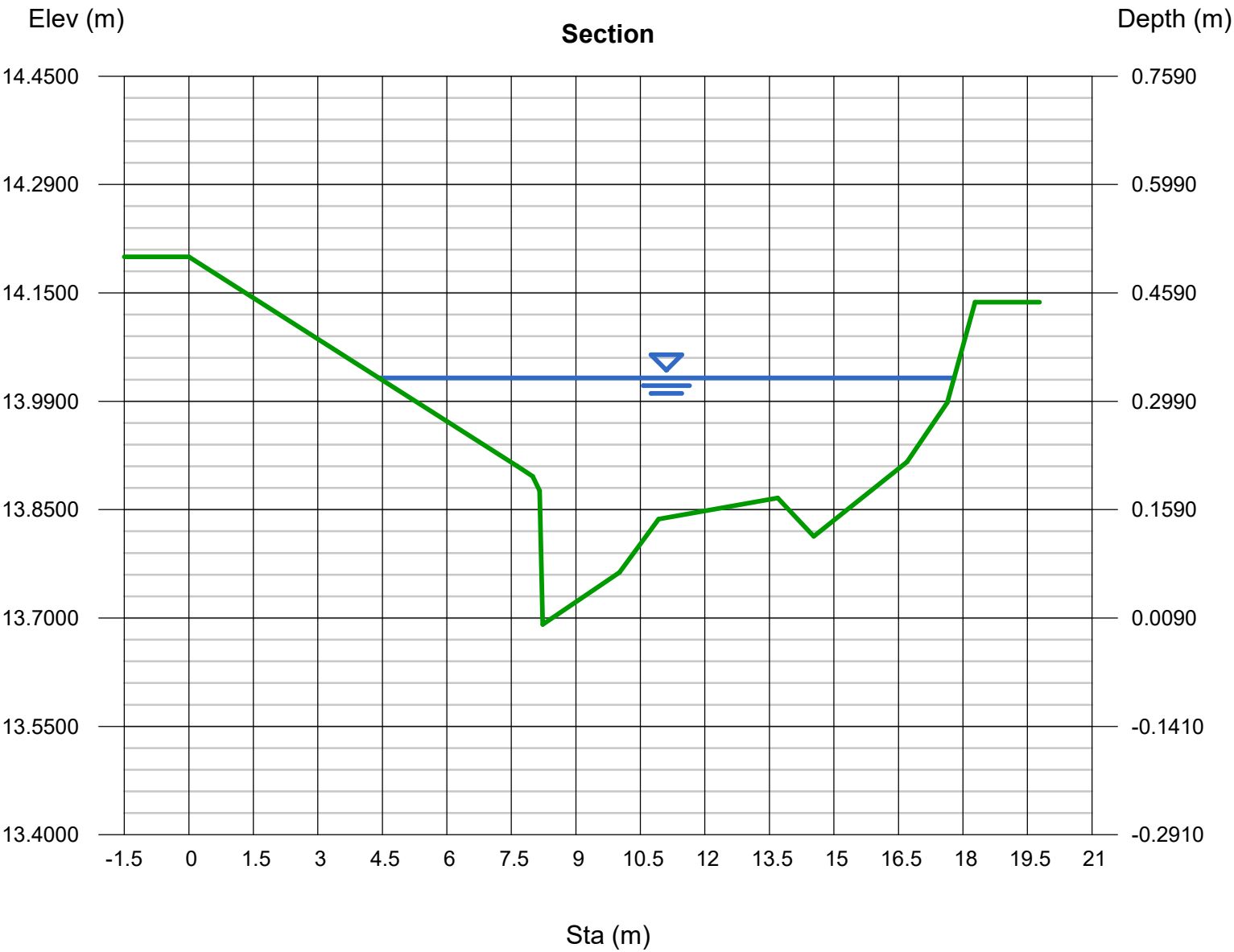
Friday, Feb 28 2025



Channel Report

Cross Section B - 100 Year - Pre

User-defined		Highlighted	
Invert Elev (m)	= 13.6910	Depth (m)	= 0.3414
Slope (%)	= 0.3000	Q (cms)	= 1.1434
N-Value	= 0.030	Area (sqm)	= 2.1419
Calculations Compute by: Known Q Known Q (cms) = 1.1434		Velocity (m/s)	= 0.5338
		Wetted Perim (m)	= 13.5263
		Crit Depth, Yc (m)	= 0.2560
		Top Width (m)	= 13.3818
		EGL (m)	= 0.3559
(Sta, El, n)-(Sta, El, n)... (0.0000, 14.2000)-(7.6390, 13.9100, 0.030)-(7.9960, 13.8960, 0.030)-(8.1550, 13.8760, 0.030)-(8.2300, 13.6910, 0.030)-(10.0150, 13.7630, 0.030)-(10.9270, 13.8500, 0.030)-(13.6900, 13.8660, 0.030)-(14.5300, 13.8130, 0.030)-(16.7000, 13.9160, 0.030)-(17.6380, 13.9980, 0.030)-(18.2820, 14.1370, 0.030)			



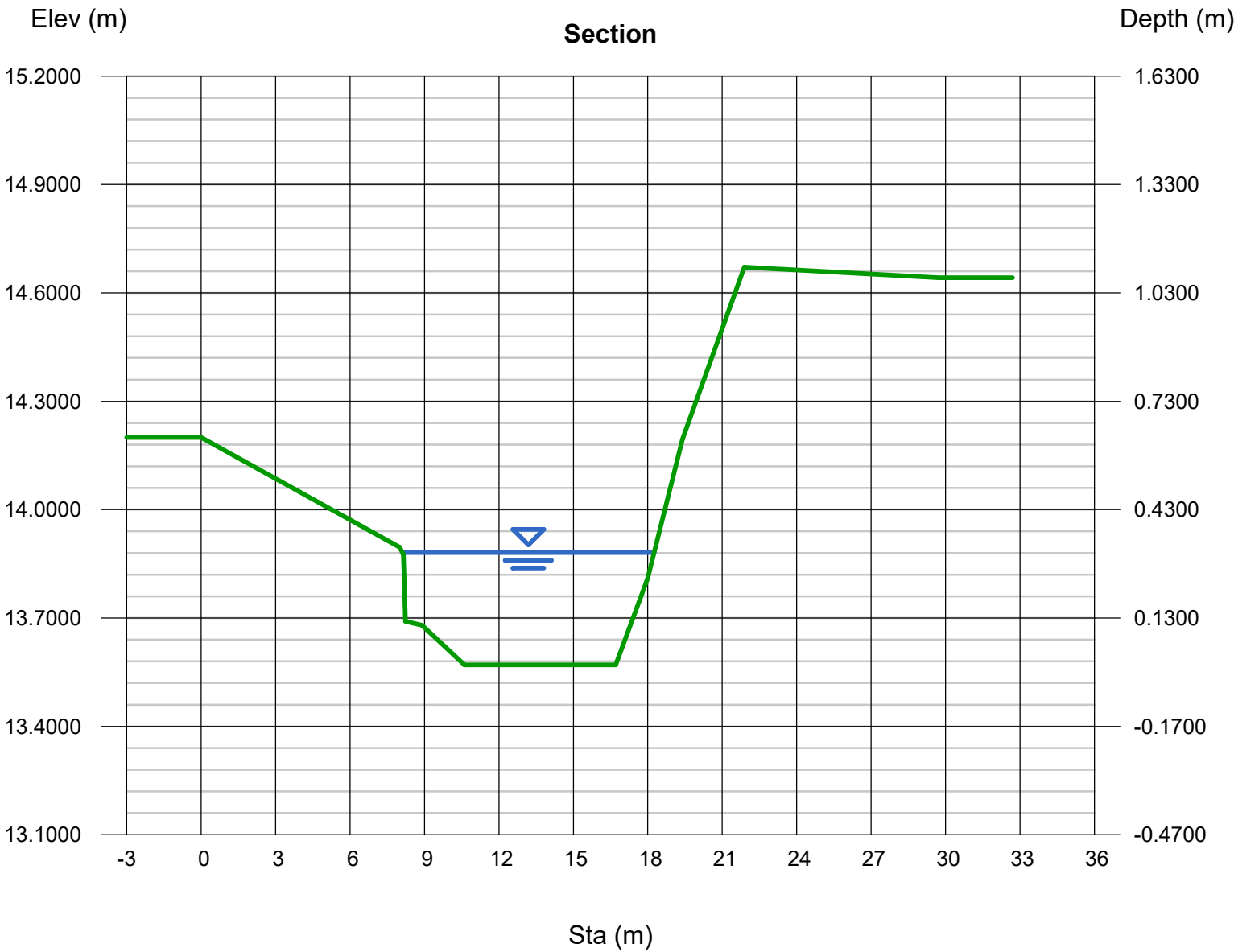
Channel Report

Cross Section B - 100 Year - Post

User-defined		Highlighted	
Invert Elev (m)	= 13.5700	Depth (m)	= 0.3109
Slope (%)	= 0.3000	Q (cms)	= 2.0430
N-Value	= 0.030	Area (sqm)	= 2.7265
Calculations		Velocity (m/s)	= 0.7493
		Wetted Perim (m)	= 10.2988
		Crit Depth, Yc (m)	= 0.1981
		Top Width (m)	= 10.1385
		EGL (m)	= 0.3395

(Sta, El, n)-(Sta, El, n)...

(0.0000, 14.2000)-(7.9960, 13.8960, 0.030)-(8.1550, 13.8760, 0.030)-(8.2300, 13.6910, 0.030)-(8.9020, 13.6800, 0.030)-(10.6160, 13.5700, 0.030)-(16.7080, 13.5700, 0.030)-(17.9970, 13.8100, 0.030)-(19.3960, 14.1950, 0.030)-(21.8920, 14.6710, 0.030)-(29.7060, 14.6420, 0.030)



Channel Report

Cross Section B2 - 100 Year - Pre

User-defined

Invert Elev (m) = 8.2960

Slope (%) = 1.0000

N-Value = 0.003

Calculations

Compute by: Known Q

Known Q (cms) = 4.6730

Highlighted

Depth (m) = 0.2560

Q (cms) = 4.6730

Area (sqm) = 0.5250

Velocity (m/s) = 8.9018

Wetted Perim (m) = 3.6421

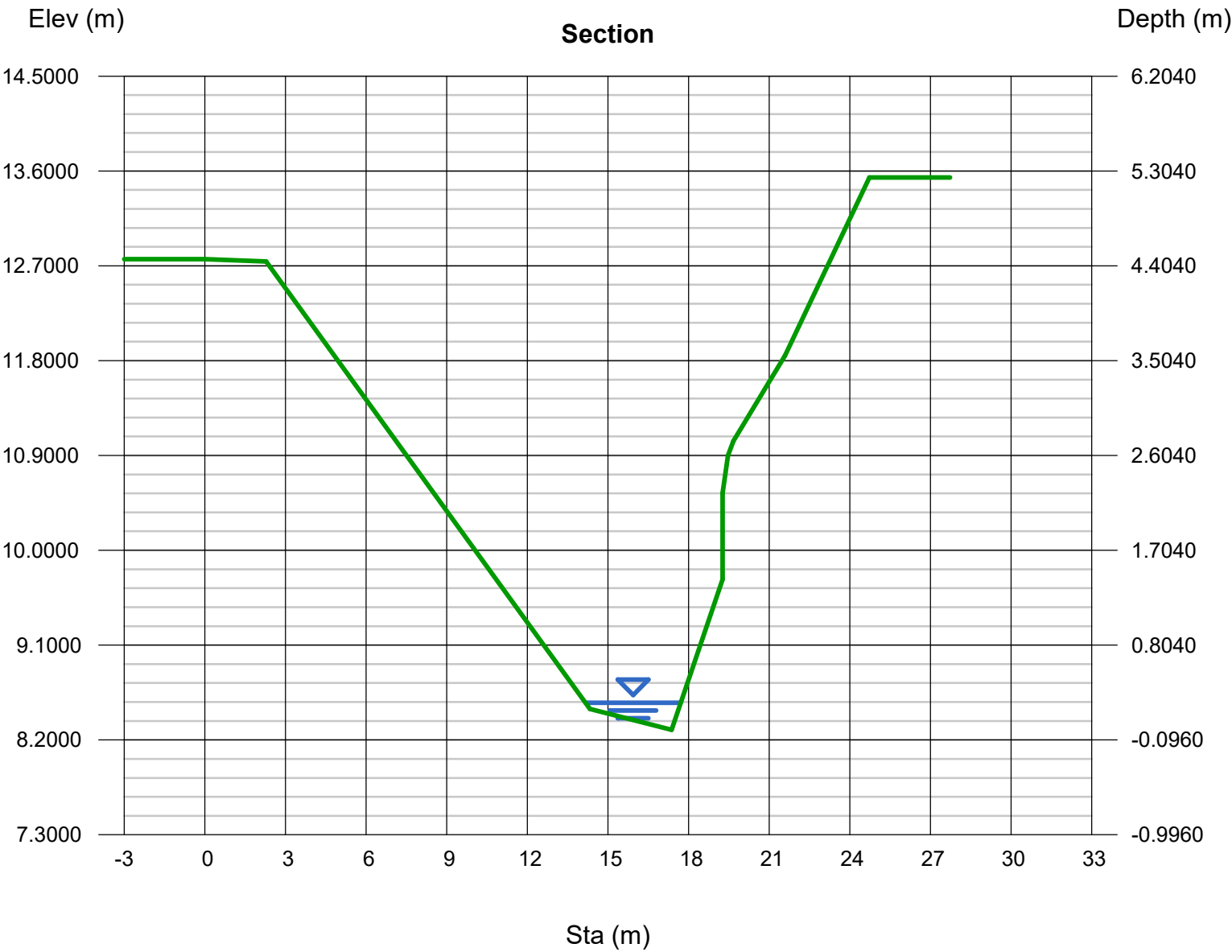
Crit Depth, Yc (m) = 0.6553

Top Width (m) = 3.5402

EGL (m) = 4.2980

(Sta, El, n)-(Sta, El, n)...

(0.0000, 12.7620)-(2.2770, 12.7400, 0.003)-(14.3300, 8.4940, 0.003)-(17.3650, 8.2960, 0.003)-(19.2650, 9.7250, 0.003)-(19.2660, 10.5440, 0.003)-(19.4720, 10.5440, 0.003)-(19.6720, 11.0370, 0.003)-(21.5890, 11.8450, 0.003)-(24.7350, 13.5380, 0.003)



Channel Report

Cross Section B2 - 100 Year - Post

User-defined

Invert Elev (m) = 8.2960
Slope (%) = 1.0000
N-Value = 0.003

Calculations

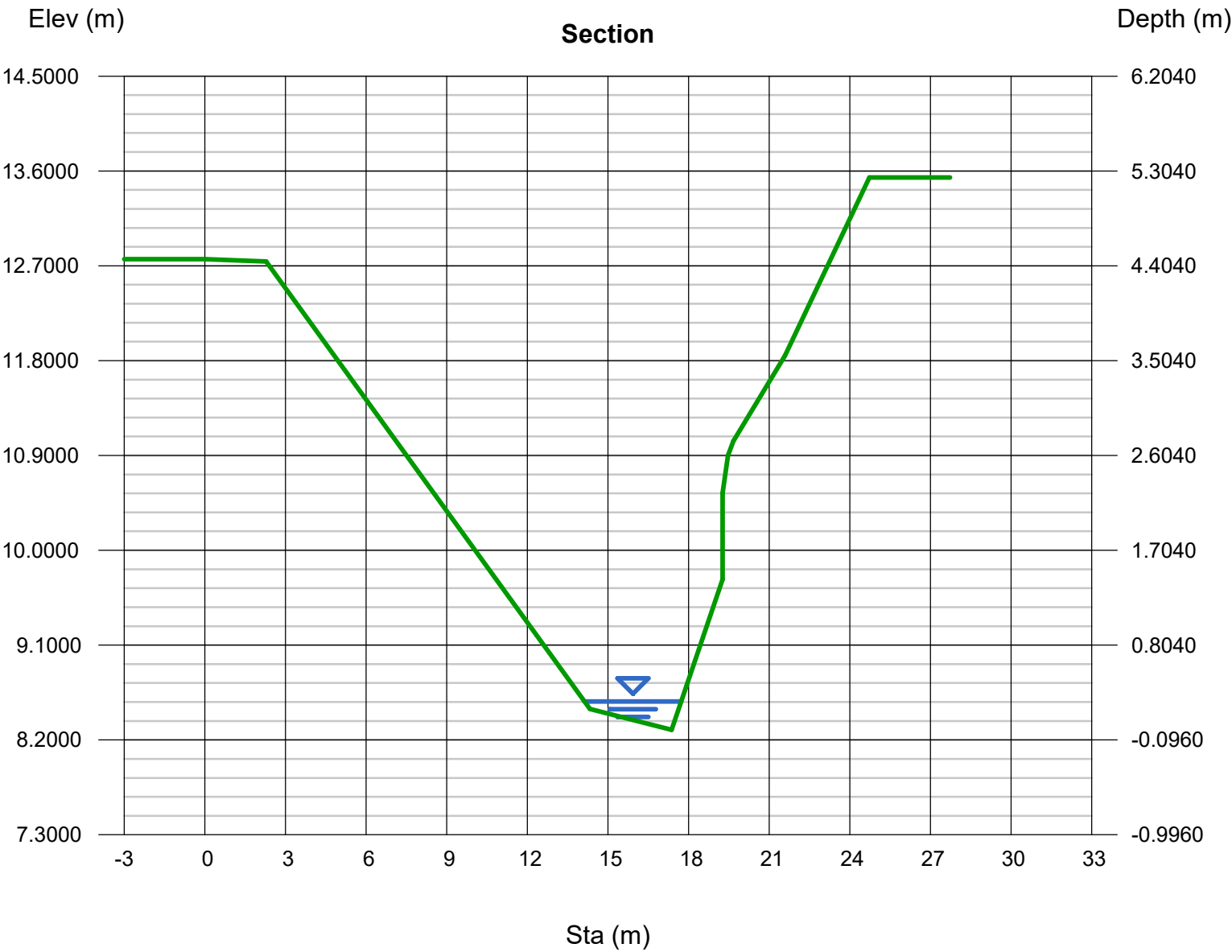
Compute by: Known Q
Known Q (cms) = 5.4100

Highlighted

Depth (m) = 0.2682
Q (cms) = 5.4100
Area (sqm) = 0.5684
Velocity (m/s) = 9.5176
Wetted Perim (m) = 3.6990
Crit Depth, Yc (m) = 0.7041
Top Width (m) = 3.5910
EGL (m) = 4.8887

(Sta, El, n)-(Sta, El, n)...

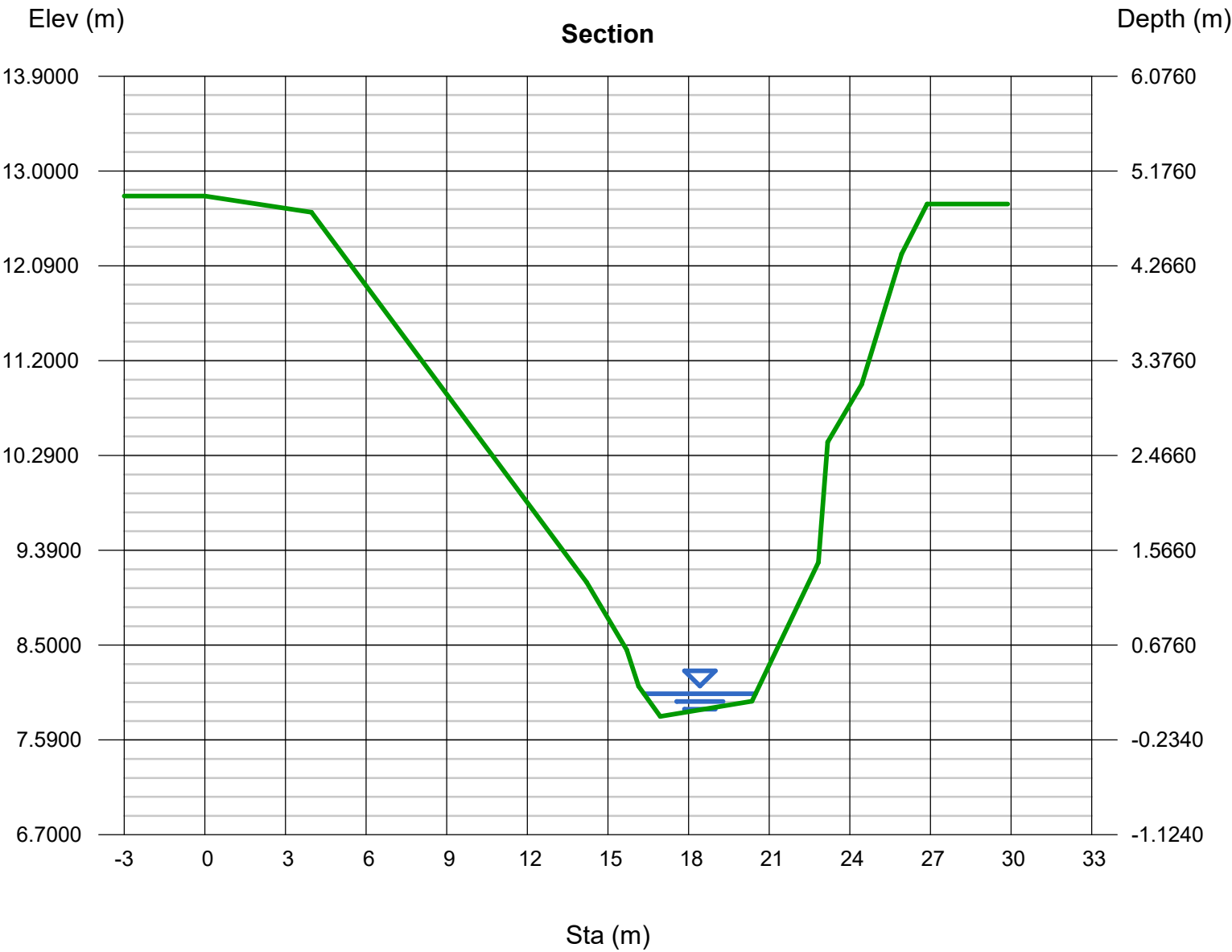
(0.0000, 12.7620)-(2.2770, 12.7400, 0.003)-(14.3300, 8.4940, 0.003)-(17.3650, 8.2960, 0.003)-(19.2650, 9.7250, 0.003)-(19.2660, 10.5440, 0.003)-(19.4720, 10.5440, 0.003)-(19.6720, 11.0370, 0.003)-(21.5890, 11.8450, 0.003)-(24.7350, 13.5380, 0.003)



Channel Report

Cross Section B3 - 100 Year - Pre

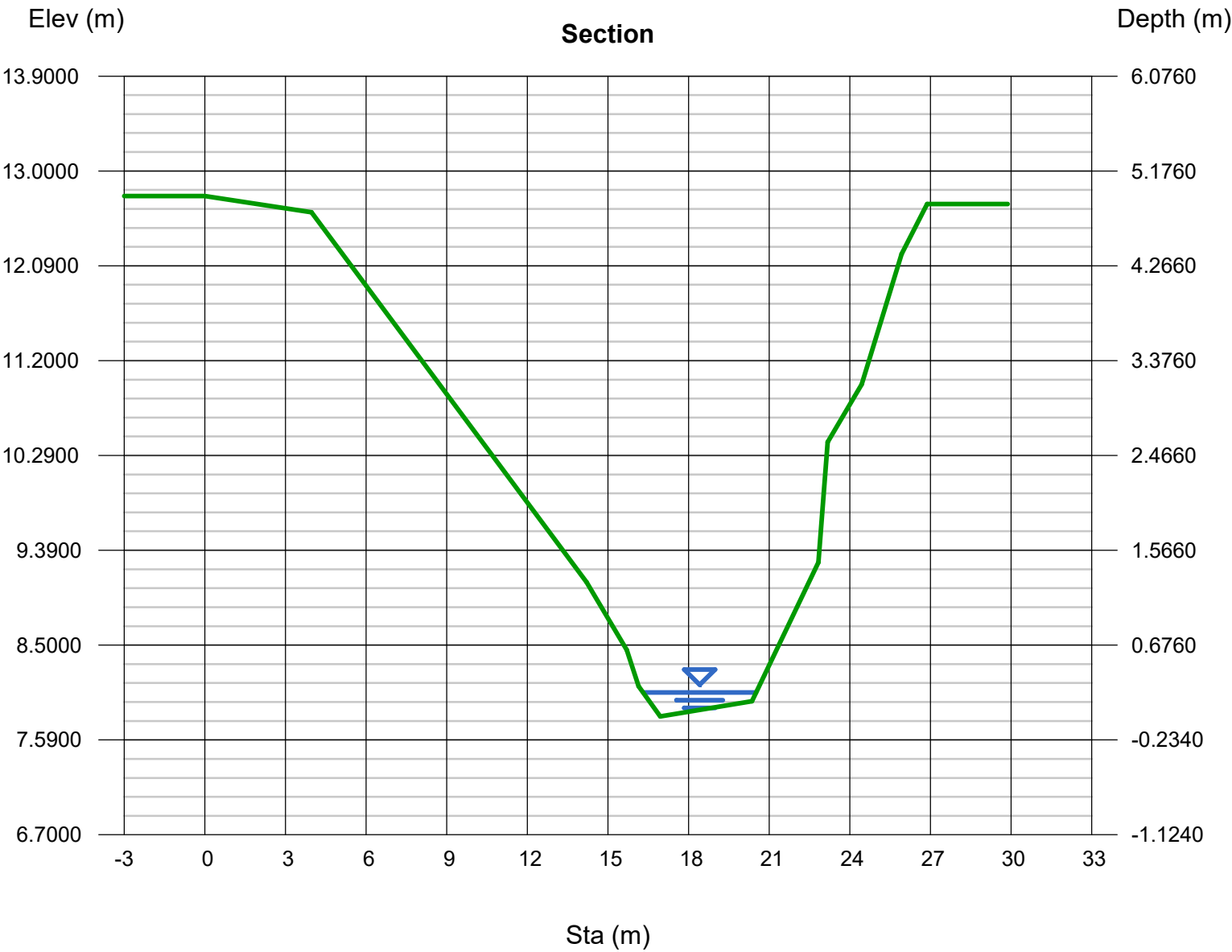
User-defined		Highlighted	
Invert Elev (m)	= 7.8240	Depth (m)	= 0.2134
Slope (%)	= 1.0000	Q (cms)	= 4.6730
N-Value	= 0.003	Area (sqm)	= 0.5516
Calculations Compute by: Known Q Known Q (cms) = 4.6730		Velocity (m/s)	= 8.4724
		Wetted Perim (m)	= 4.2049
		Crit Depth, Yc (m)	= 0.5761
		Top Width (m)	= 4.1479
		EGL (m)	= 3.8748
(Sta, El, n)-(Sta, El, n)... (0.0000, 12.7620)-(3.9710, 12.6090, 0.003)-(14.2090, 9.0980, 0.003)-(15.7030, 8.4530, 0.003)-(16.1420, 8.1090, 0.003)-(16.9490, 7.8240, 0.003)-(20.3630, 7.9240, 0.003)-(22.8290, 9.2860, 0.003)-(23.1790, 10.4280, 0.003)-(24.4420, 10.9750, 0.003)-(25.9310, 12.2110, 0.003)-(26.8790, 12.6850, 0.003)			



Channel Report

Cross Section B3 - 100 Year - Post

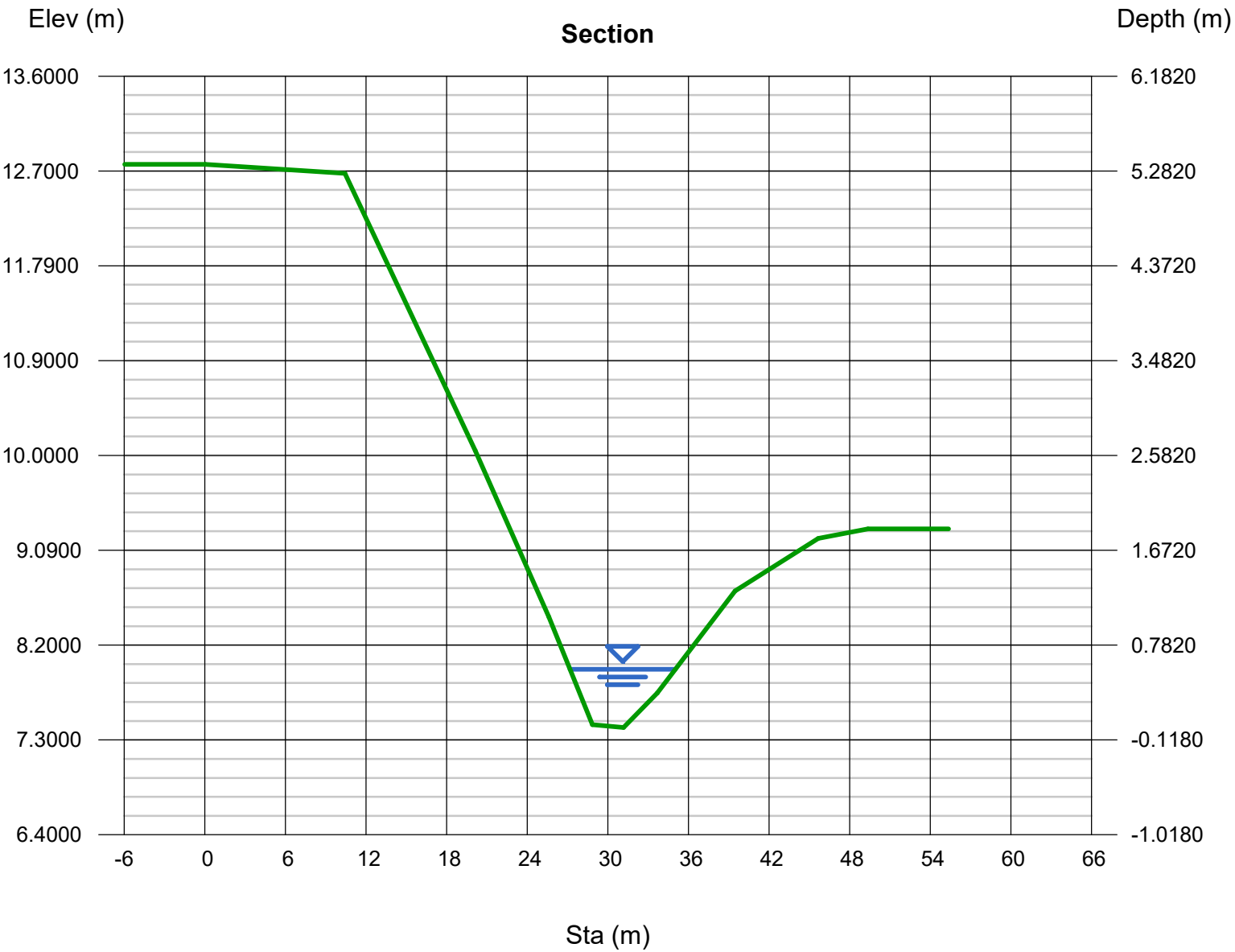
User-defined		Highlighted	
Invert Elev (m)	= 7.8240	Depth (m)	= 0.2256
Slope (%)	= 1.0000	Q (cms)	= 5.4100
N-Value	= 0.003	Area (sqm)	= 0.6025
Calculations Compute by: Known Q Known Q (cms) = 5.4100		Velocity (m/s)	= 8.9796
		Wetted Perim (m)	= 4.2674
		Crit Depth, Yc (m)	= 0.6218
		Top Width (m)	= 4.2053
		EGL (m)	= 4.3385
(Sta, El, n)-(Sta, El, n)... (0.0000, 12.7620)-(3.9710, 12.6090, 0.003)-(14.2090, 9.0980, 0.003)-(15.7030, 8.4530, 0.003)-(16.1420, 8.1090, 0.003)-(16.9490, 7.8240, 0.003)-(20.3630, 7.9240, 0.003)-(22.8290, 9.2860, 0.003)-(23.1790, 10.4280, 0.003)-(24.4420, 10.9750, 0.003)-(25.9310, 12.2110, 0.003)-(26.8790, 12.6850, 0.003)			



Channel Report

Cross Section C - 100 Year - Pre

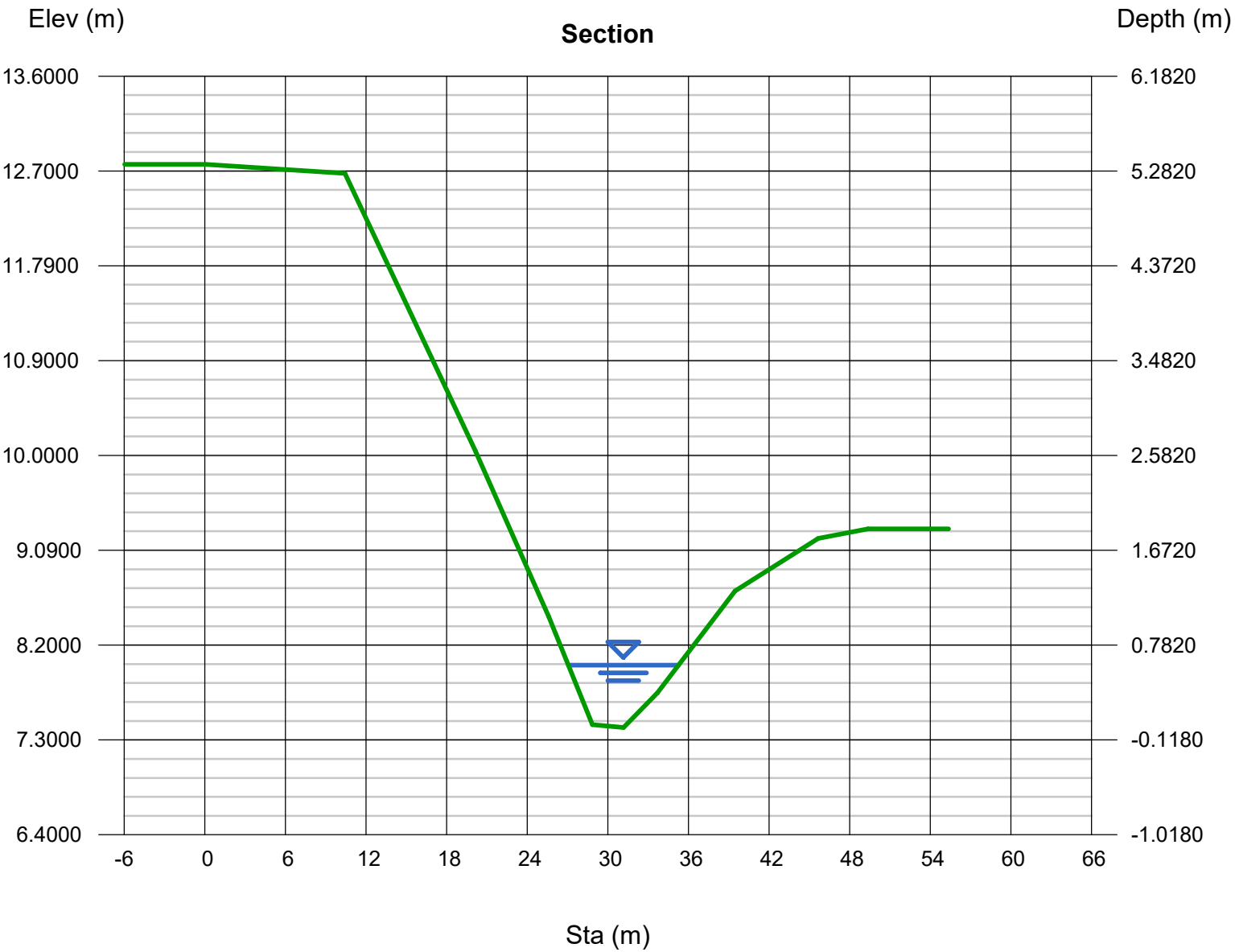
User-defined		Highlighted	
Invert Elev (m)	= 7.4180	Depth (m)	= 0.5517
Slope (%)	= 1.0000	Q (cms)	= 4.6730
N-Value	= 0.030	Area (sqm)	= 2.8130
Calculations Compute by: Known Q Known Q (cms) = 4.6730		Velocity (m/s)	= 1.6612
		Wetted Perim (m)	= 7.9556
		Crit Depth, Yc (m)	= 0.5212
		Top Width (m)	= 7.8343
		EGL (m)	= 0.6924
(Sta, El, n)-(Sta, El, n)... (0.0330, 12.7620)-(10.4170, 12.6760, 0.030)-(20.1180, 10.0470, 0.030)-(25.6170, 8.4670, 0.030)-(28.8450, 7.4440, 0.030)-(31.1730, 7.4180, 0.030)-(33.6770, 7.4180, 0.030)-(39.4770, 8.7150, 0.030)-(45.6590, 9.2120, 0.030)-(49.3660, 9.3040, 0.030)			



Channel Report

Cross Section C - 100 Year - Post

User-defined		Highlighted	
Invert Elev (m)	= 7.4180	Depth (m)	= 0.5913
Slope (%)	= 1.0000	Q (cms)	= 5.4100
N-Value	= 0.030	Area (sqm)	= 3.1306
Calculations		Velocity (m/s)	= 1.7281
		Wetted Perim (m)	= 8.3270
		Crit Depth, Yc (m)	= 0.5608
		Top Width (m)	= 8.1962
		EGL (m)	= 0.7436
		Compute by: Known Q	
Known Q (cms)		= 5.4100	
(Sta, El, n)-(Sta, El, n)...			
(0.0330, 12.7620)-(10.4170, 12.6760, 0.030)-(20.1180, 10.0470, 0.030)-(25.6170, 8.4670, 0.030)-(28.8450, 7.4440, 0.030)-(31.1730, 7.4180, 0.030)-(33.6770, 7.4180, 0.030)-(39.4770, 8.7150, 0.030)-(45.6590, 9.2120, 0.030)-(49.3660, 9.3040, 0.030)			



Channel Report

OLFP Diversion - 100 Year - Post

Trapezoidal

Bottom Width (m)	=	1.0000
Side Slopes (z:1)	=	3.0000, 3.0000
Total Depth (m)	=	0.6000
Invert Elev (m)	=	10.0000
Slope (%)	=	0.5000
N-Value	=	0.030

Calculations

Compute by:	Known Q
Known Q (cms)	= 1.6540

Highlighted

Depth (m)	=	0.5547
Q (cms)	=	1.6540
Area (sqm)	=	1.4779
Velocity (m/s)	=	1.1191
Wetted Perim (m)	=	4.5085
Crit Depth, Yc (m)	=	0.4359
Top Width (m)	=	4.3284
EGL (m)	=	0.6186

