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March 2002



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CROSS SECTIONAL DATA AND A PRELIMINARY ASSESSMENT OF CHANNEL CHANGES IN THE SWIFT CREEK (NGARRADJ) CATCHMENT BETWEEN 1998 AND 2001

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eriss

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1 Introduction

Erskine et al (2001) proposed that a sediment budget framework should be adopted by *eriss* to assess the physical impacts, if any, of the Jabiluka uranium mine on the Swift Creek (Ngarradj¹) catchment (figure 1). At the time that they specified the component projects of such a sediment budget, construction of the portal, retention pond and head works for the Jabiluka mine had already commenced. Therefore, the impact of the mine was to be determined by a comparison of water yields, sediment fluxes, sediment storage volumes and channel erosion rates between mine-impacted and non mine-impacted channels.

Thirteen projects were outlined by Erskine et al (2001) to form the basis of this assessment. These projects included:

1. the preparation of a geomorphic map of the Swift Creek catchment and channel network;
2. the definition and mapping of channel reaches throughout the Swift Creek catchment;
3. an assessment of recent channel changes on the mine site channels and Swift Creek from all available vertical air photographs;
4. systematic sampling of channel bed and bank, and floodplain sediments on the mine site channels and Swift Creek;
5. construction of a digital elevation model linked to a GIS of the Swift Creek catchment for landform evolution modelling;
6. the installation and operation of gauging stations on the mine site tributaries, on Swift Creek upstream and downstream of the mine site and on East Tributary;
7. measurement of suspended sediment loads and turbidity at the above gauging stations;
8. measurement of bedload at the above gauging stations;
9. measurement of bed scour and fill during each Wet season on the mine site tributaries and at the gauging stations;
10. determination of channel erosion rates on the mine site tributaries and Swift Creek;
11. determination of channel sediment storage volumes on the mine site tributaries and Swift Creek;
12. mapping and sampling of discrete sediment storages not monitored by the above programs; and
13. determination of the geomorphic and hydraulic roles of riparian vegetation and large woody debris on the sand-bed channels in the Swift Creek catchment.

Erskine et al (2001) and Saynor et al (2001) describe all the geomorphic field monitoring that is being conducted by *eriss* in the Swift Creek catchment.

¹ The name Swift Creek is used in this report for the river that drains the catchment in which the Jabiluka Mine is located and that flows into the Magela Creek wetlands. Ngarradj is the Aboriginal name for this stream system. The full term is Ngarradj Warde Djobkeng and is the site where the cockatoo vomited on and split the rocks to form the creek known as Ngarradj. It is one of several dreaming (Djang) sites on or adjacent to the Jabiluka mine lease (A Ralph, Gundjehmi Aboriginal Corporation 2001).

The purpose of this Internal Report is twofold, namely to:

- document the channel cross sectional data collected for projects 10 and 11; and
- provide a preliminary interpretation of the data for the first three years of the project.

Erskine et al (2001) recommended that all projects should be reviewed after three years to assess the impact of the mine and to determine whether any of the projects should continue.

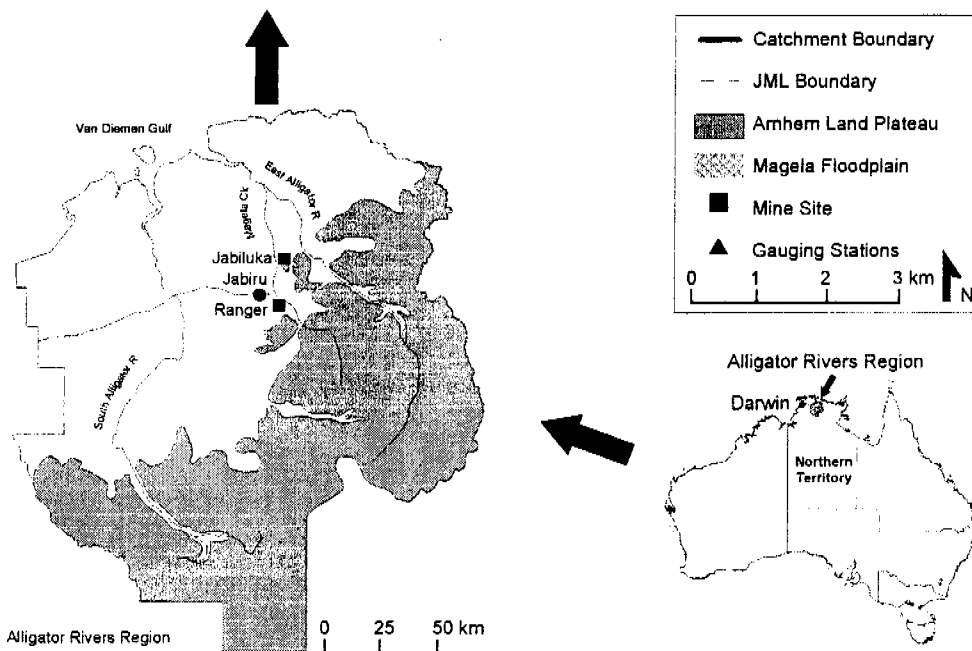
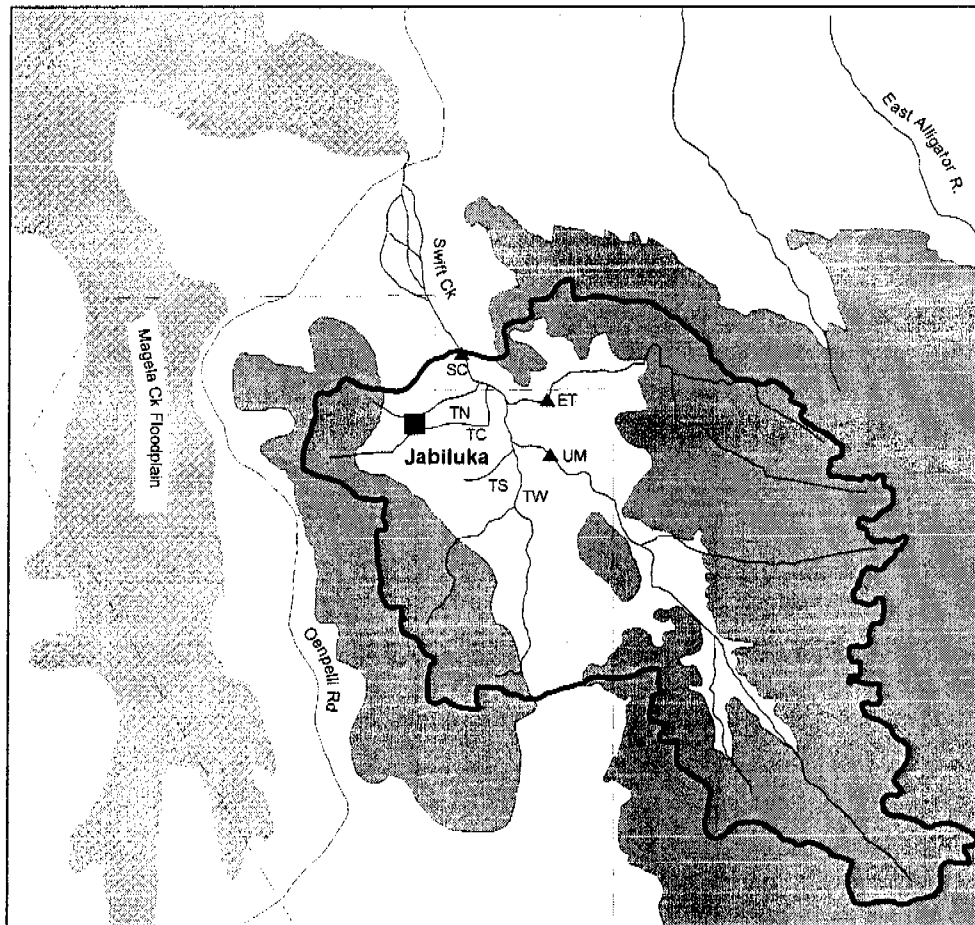


Figure 1 The Swift Creek catchment showing the Jabiluka Mineral Lease, *eriss*'s gauging stations and local creek names. SC refers to Swift Creek gauging station, TN Tributary North, ET East Tributary gauging station, TC Tributary Central, TS Tributary South, TW Tributary West and UM upper Swift Creek gauging station.

2 Methods

Permanently monumented channel cross sections were installed, following the approach of Miller and Leopold (1963) and Leopold et al (1966), to measure large scale erosion and/or deposition that can be detected by standard surveying techniques (Erskine et al 2001). This method was adopted as part of the Vigil Network, the USA's contribution to the International Hydrological Decade (Leopold 1962, Emmett 1965; Leopold & Emmett 1965, Emmett & Hadley 1968). Multiple cross sections were installed at each *eriss* gauging station (upper Swift Creek, lower Swift Creek and East Tributary) as well as on the mine site tributaries, Tributary North and Tributary Central (figure 1). Site specific details are provided below.

2.1 Channel cross sections

A series of permanently marked cross sections were installed during the 1998 Dry season and have been surveyed each subsequent Dry season. The cross sections were located in reaches at each *eriss* gauging station and on Tributaries North and Central downstream of the mine site (figure 1). Saynor et al (2001) describe in detail the *eriss* field program. The cross sections provide data on large scale net channel changes between successive Wet seasons (Erskine et al 2001).

The cross sections have been marked using a star picket driven into the ground with the top 0.3 m encased with a circular concrete collar (plinth) at each end of the cross section. A coach bolt has been set into the concrete (with a small drill hole in the top) to provide an accurate bench mark. At one end of the cross section a recovery star picket has been installed near the concrete plinth. These cross sections have been surveyed using a Topcon Total Station during each Dry season between 1998 and 2001 to determine the net change in channel cross section during each intervening Wet season. The cross section surveys have also been used to determine hydraulic geometry and changes in geometry during each Wet season.

The number of cross sections in each reach is listed in table 1 and the location diagrams, other information as well as the survey details are listed in Saynor et al (2001).

Table 1 Number of cross sections installed

Location	Number of sections
Swift Creek Gauge	8
East Tributary Gauge	8
Swift Creek Uppper Main Gauge	7
Tributary North	13
Tributary Central	13

A plot of every survey (1998, 1999, 2000, 2001) at each cross section is shown in section chapter 3. Tables listing the values of hydraulic geometry parameters are also included. The survey data for each survey of each cross section on each of the channels outlined in table 1 are contained in appendix 1.

2.2 Hydraulic geometry

Mean flow velocity at bankfull stage was calculated by Manning's equation:

$$u = n^{-1} R^{0.67} S^{0.5} \quad (1)$$

where u is mean flow velocity (m/s), n is Manning's roughness coefficient, R is bankfull hydraulic radius (m) and S is energy slope (m/m). Water surface slope or bed slope was substituted for energy slope. A reach-averaged Manning's n value was determined by Cowan's (1956) method. Hydraulic radius is calculated from the cross sections as:

$$R = A / P \quad (2)$$

where A is cross sectional area (m²) and P is wetted perimeter (m). However, hydraulic mean depth (R_d) was substituted for hydraulic radius in Manning's equation and was calculated from the cross sections as:

$$R_d = A / W \quad (3)$$

where W is channel width (m). Bankfull discharge (Q in m³/s) was calculated as:

$$Q = u \cdot A \quad (4)$$

Specific stream power (ω in W/m²) at bankfull stage was calculated by:

$$\omega = \rho \cdot g \cdot Q \cdot S / W \quad (5)$$

where ρ is fluid density (g/cm³) and g is the gravitational acceleration constant (9.8 m/s²).

The bankfull level (channel-floodplain junction) was initially determined at each cross section using Wolman's (1955) objective method of the point corresponding to the minimum width-depth ratio. This was done for any section where the bankfull level was difficult to determine visually. As more experience was gained with local conditions, it was possible to determine the bankfull level from field knowledge (Williams 1978). The lowest inflection point of the bank profile was adopted as bankfull stage. This leads, in some cases, to the adopted bankfull stage being considerably lower than the apparent top of the bank.

3. Cross section survey – Results and discussion

The plots of 51 cross sections are shown in the following sections. Values for various hydraulic geometry parameters have been also calculated and are included in tables for each site.

3.1 Tributary North cross sections

A total of 13 cross sections were installed on this channel downstream of the Jabiluka mine site in the floodout and gullied reaches of Erskine et al (2001). A tributary joins Tributary North on the left bank approximately 30 m upstream of the confluence with Swift Creek. Several cross sections include both the main channel as well as the tributary (figure 2). Four cross sections (10, 11, 12 & 13) of an unchanneled section in the floodout reach are presented but no hydraulic geometry parameters have been calculated because it was impossible to identify the bankfull stage. The cross sections are shown from upstream to downstream in figures 3 to 15 and the location of the cross sections is shown in figure 2. Further details are contained in Saynor et al (2001).

For the determination of the values of the hydraulic geometry parameters in table 2, the slope used was 0.00412 m/m (4.12 m/km) which was determined from a longitudinal bed survey using differential GPS during the 1998 Dry season. The Manning's n value used was 0.04. The cross sectional area at cross section TN01, the closest section to the primary nickpoint at the upstream end of the gullied reach (Erskine et al 2001) increased in area by 18% from 1998 to 2001 due to gully erosion. Of the remaining 12 cross sections, six decreased in area, four increased in area and two were essentially constant. The sections that increased in area were on the main gully as opposed to the tributary gully which is very stable. Cross section 1 is actively widening due to the headward retreat of a nickpoint. Of the remaining 12 cross sections, six have widened and six have contracted. The mean depth decreased at seven sections, increased at five and remained essentially constant at one. The maximum depth increased at nine sections and decreased at four. Cross sections 2 and 3 are actively degrading following the upstream migration of the primary nickpoint.

In comparison to the incised channels discussed in Darby and Simon (1999), the gullied lower reach of Tributary North is slowly developing by the upstream migration of the primary nickpoint and subsequent channel widening and degradation. These geomorphic processes were occurring before the development of the Jabiluka mine and their rates of activity do not appear to have been accelerated. Further work involving interpretation of all available air photographs is required to confirm this conclusion see section 4). The floodout reach immediately downstream of the mine site is currently stable and is not storing substantial amounts of sediment, as usually occurs in floodouts (Erskine & Melville 1983, Melville & Erskine 1986). Accelerated sand supply from the mine site and/or the upstream engineered channel section (diverted reach of Erskine et al 2001) has not been recorded to date. Continued monitoring of the cross sections is recommended while the mine is in a maintenance phase to provide baseline data against which subsequent mine impacts can be determined. Further assessment of gully development on Tributary North from sequential vertical aerial photographs is contained in section 4.

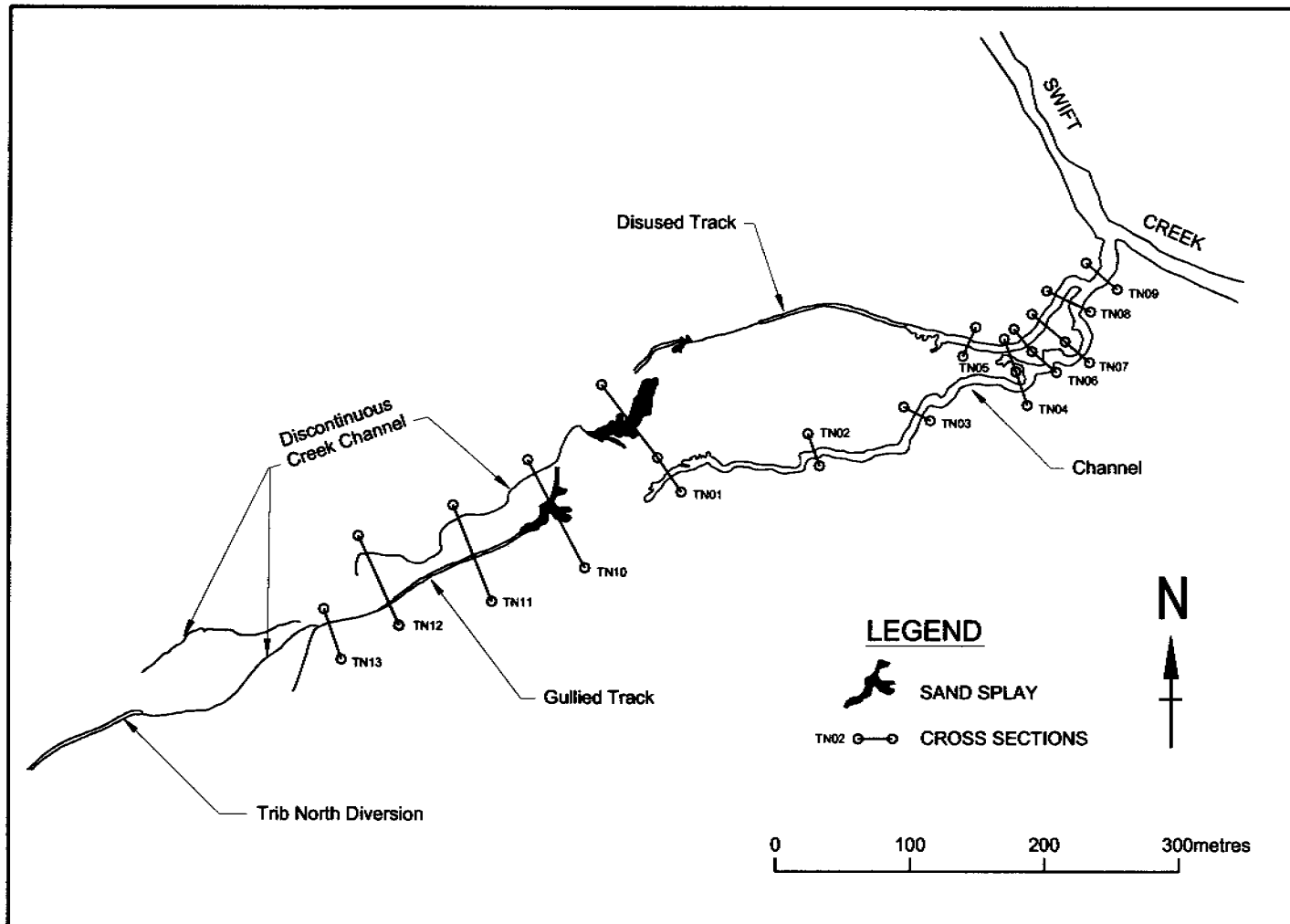


Figure 2 Location of the permanently monumented cross sections on Tributary North

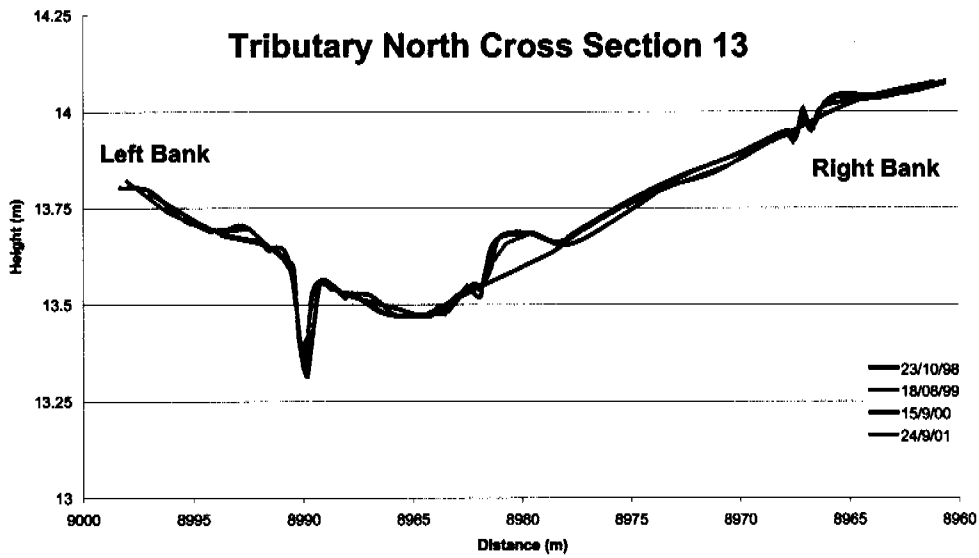


Figure 3 Tributary North Cross Section 13, the most upstream section. For location of all cross sections on Tributary North see figure 2.

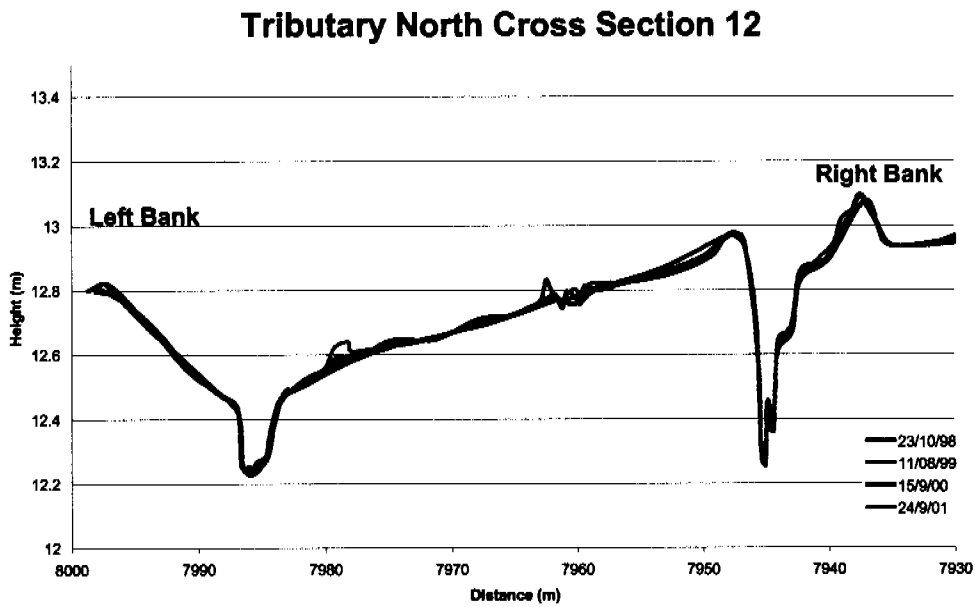


Figure 4 Tributary North Cross Section 12. Incised wheel tracks rather than a channel

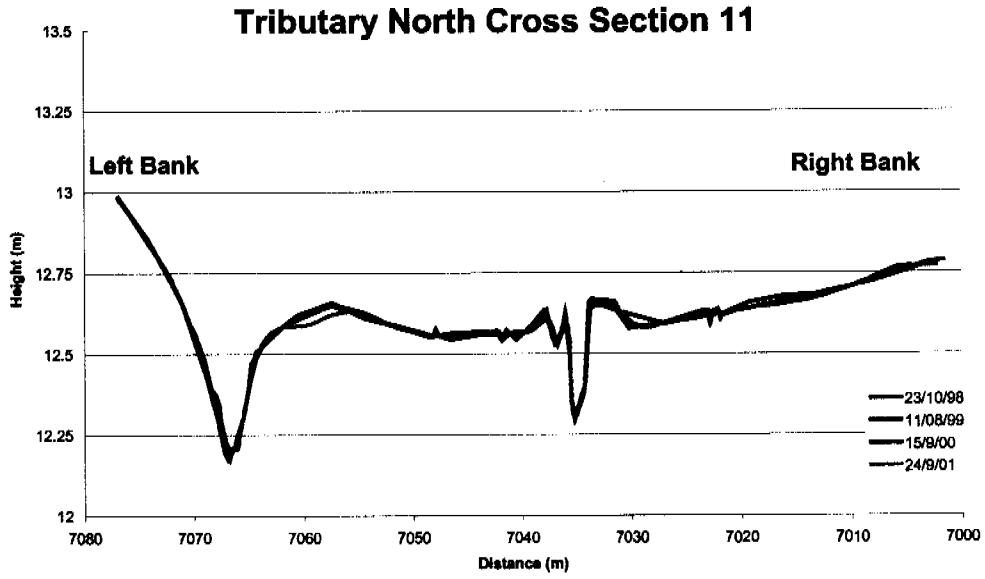


Figure 5 Tributary North Cross Section 11

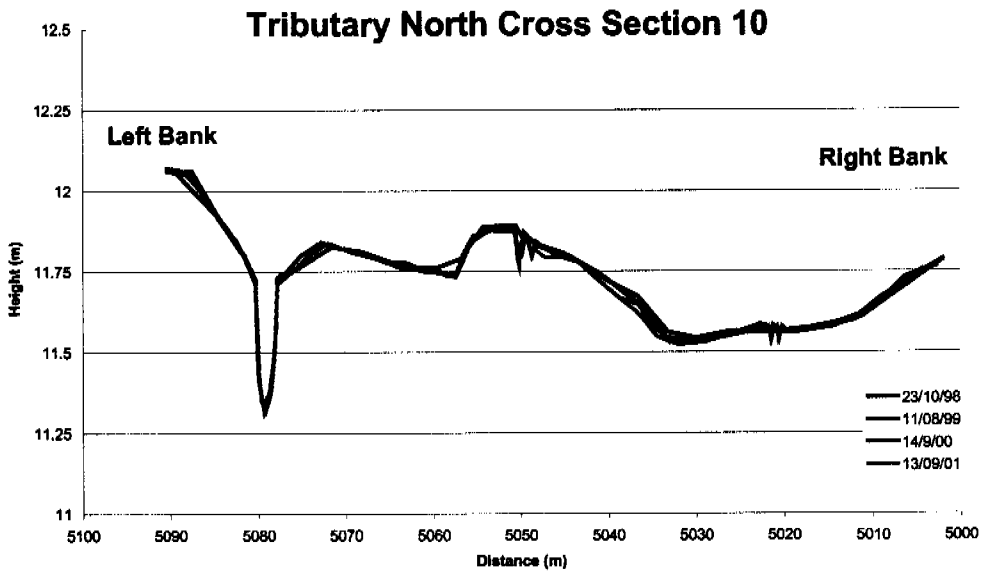


Figure 6 Tributary North Cross Section 10

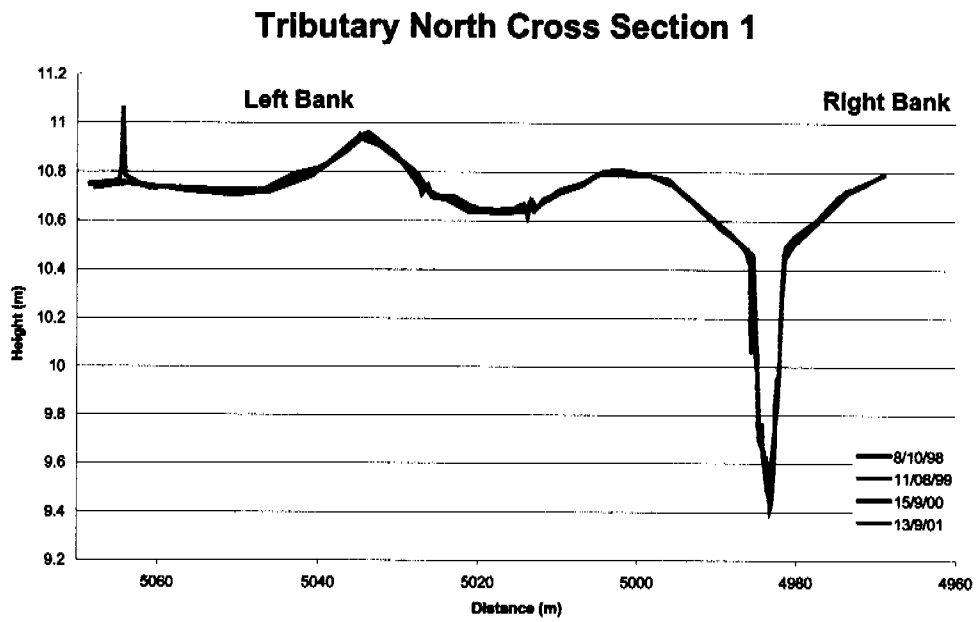


Figure 7 Tributary North Cross Section 1

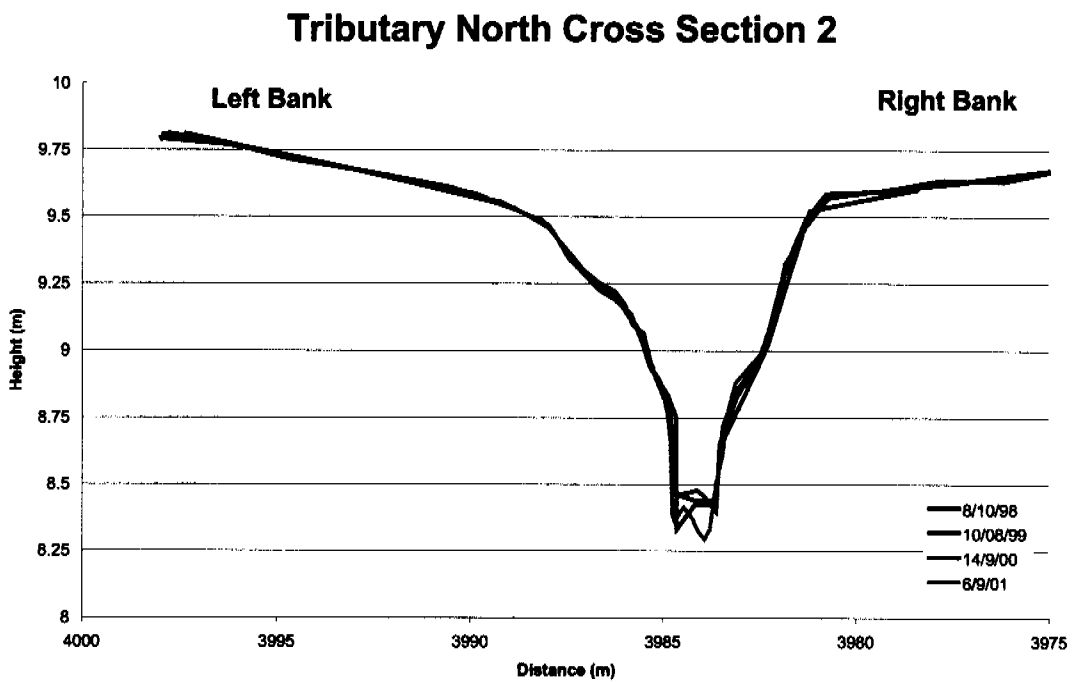


Figure 8 Tributary North Cross Section 2

Tributary North Cross Section 3

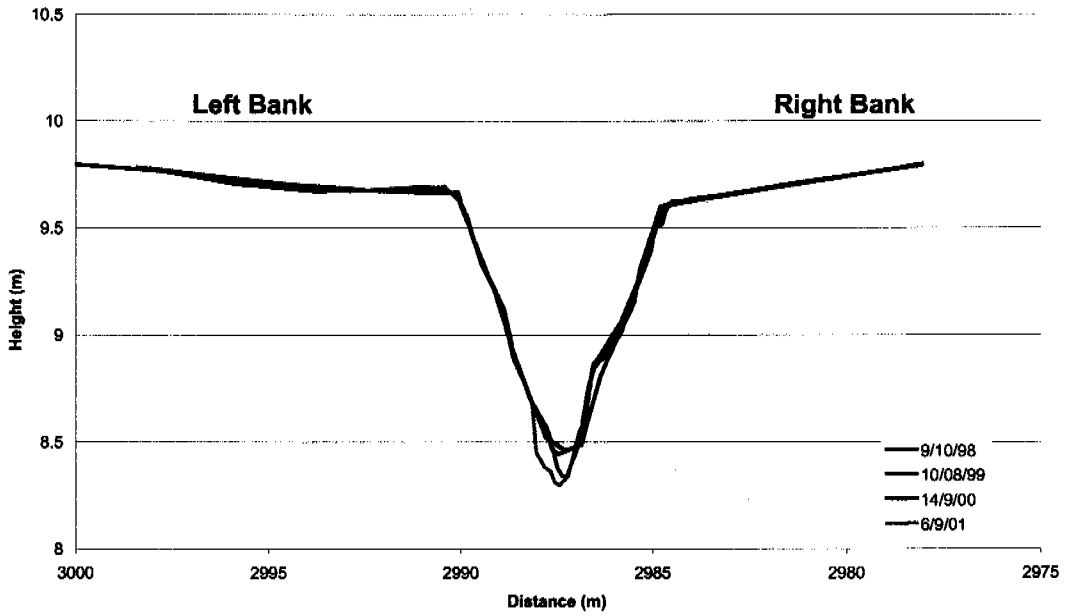


Figure 9 Tributary North Cross Section 3

Tributary North Cross Section 4

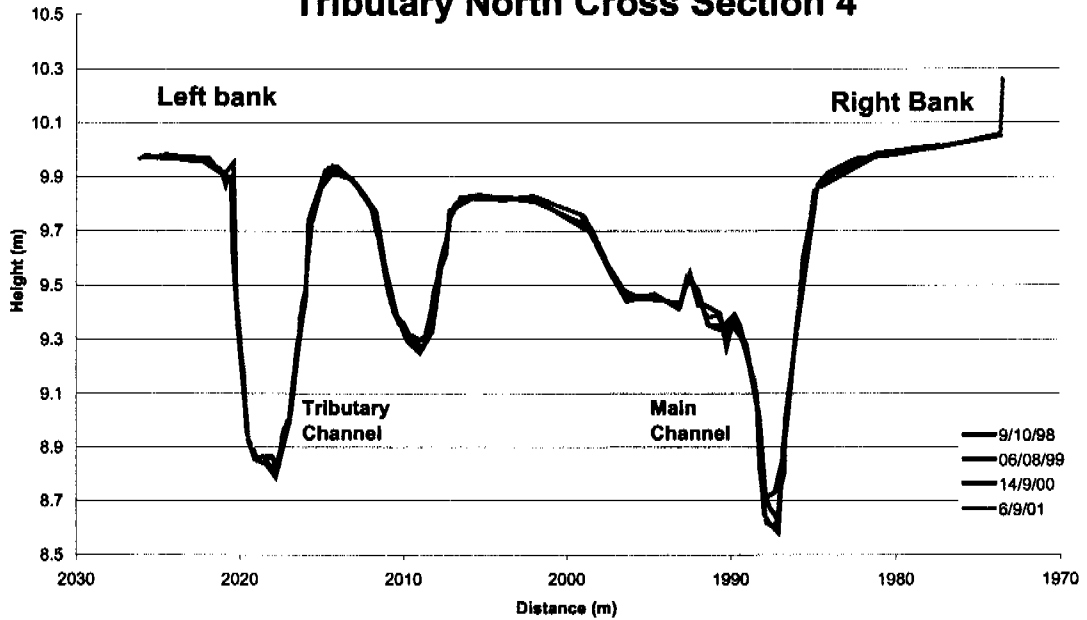


Figure 10 Tributary North Cross Section 4

Tributary North Cross Section 5

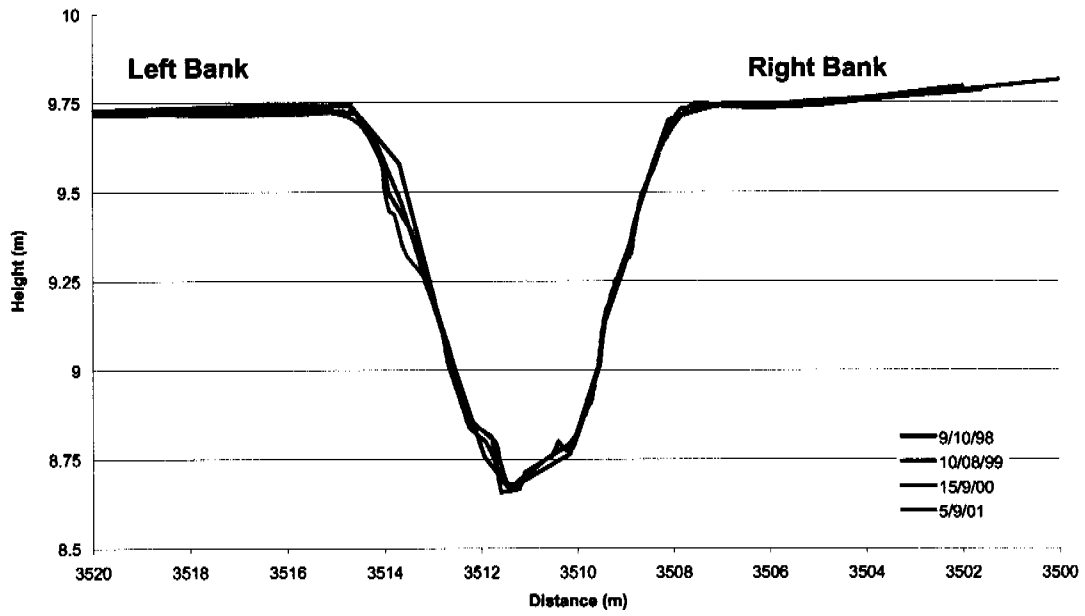


Figure 11 Tributary North Cross Section 5

Tributary North Cross Section 6

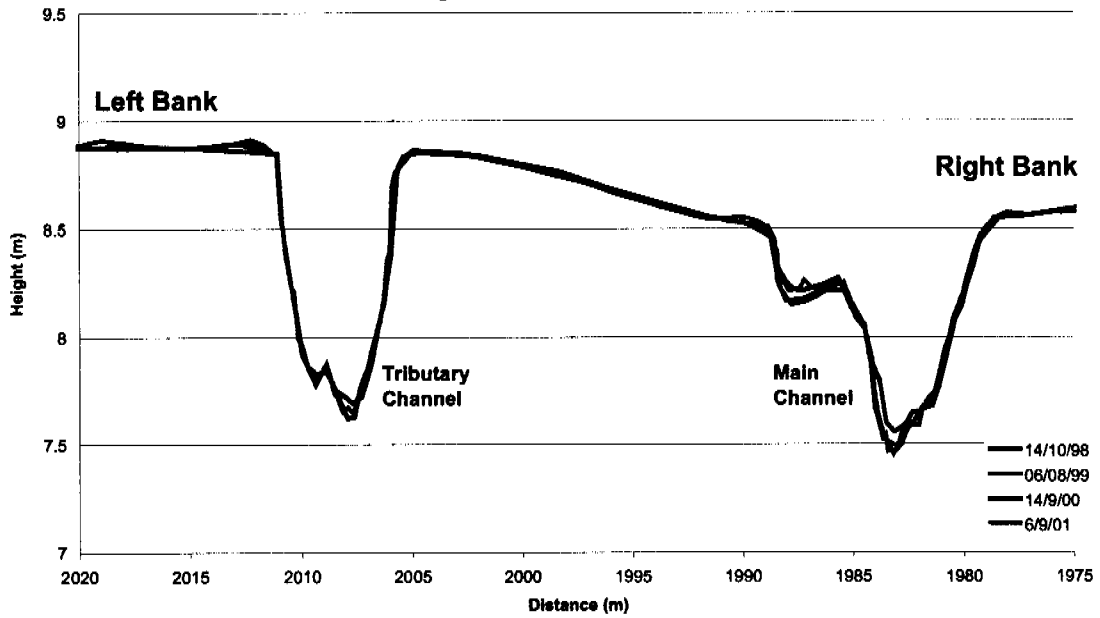


Figure 12 Tributary North Cross Section 6

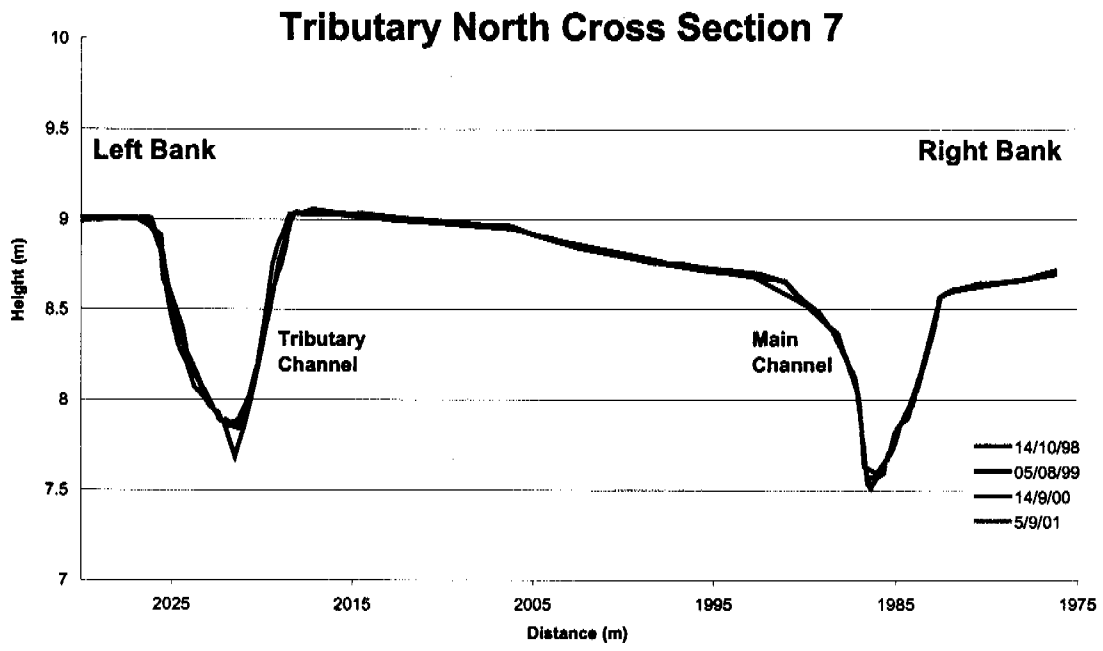


Figure 13 Tributary North Cross Section 7

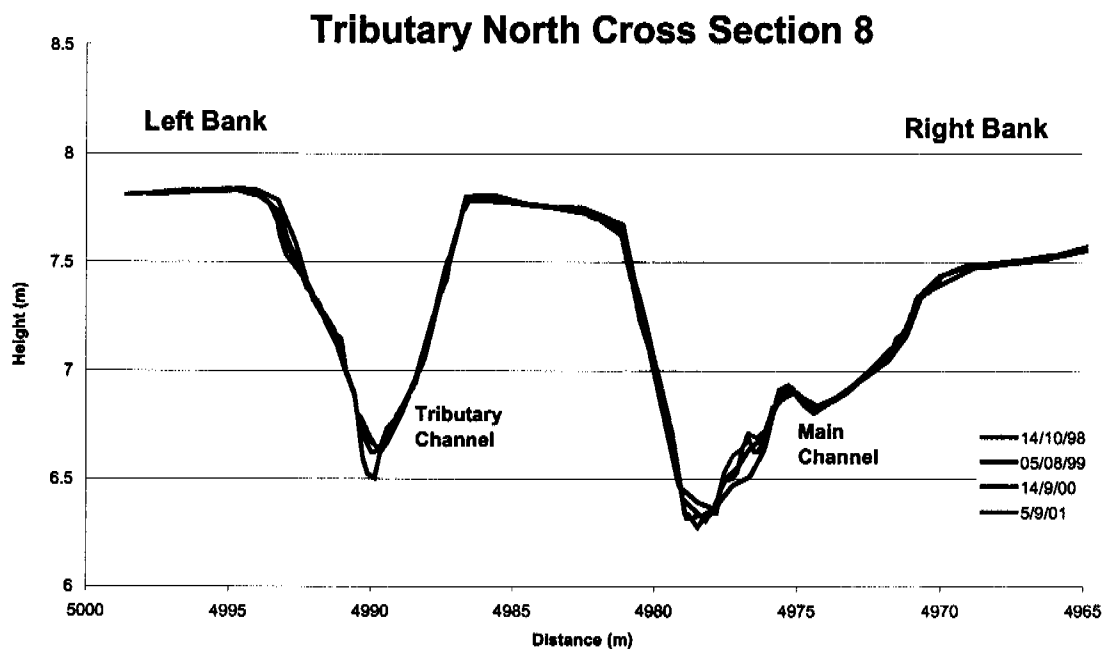


Figure 14 Tributary North Cross Section 8

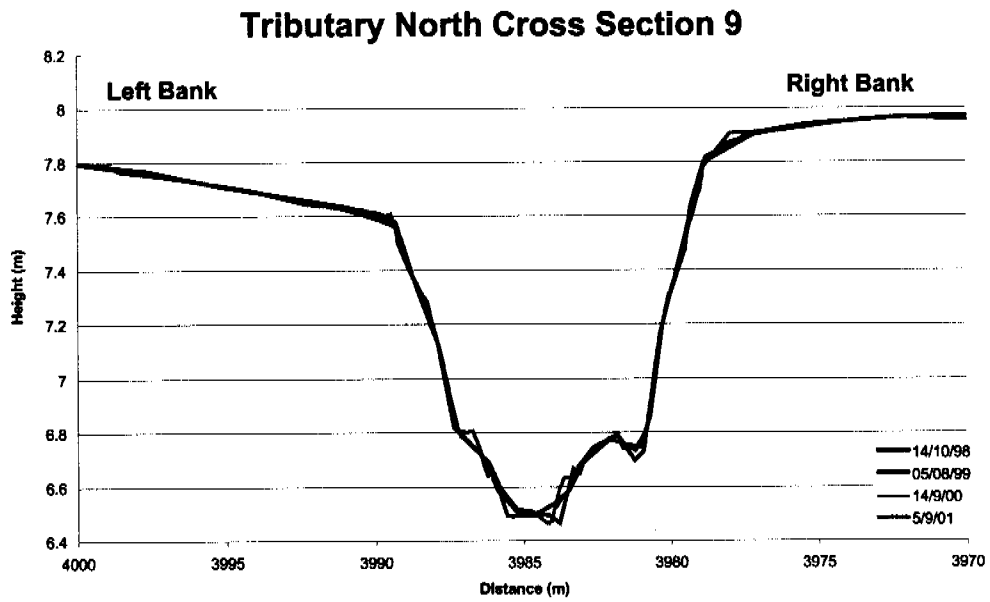


Figure 15 Tributary North Cross Section 9

Table 2 Hydraulic geometry parameter values for Tributary North

Bankfull Hydraulic Geometry Parameters	Cross Section TN01				Cross Section TN02				Cross Section TN03				Cross Section TN04 Tributary			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	2.48	2.48	2.52	2.10	3.04	2.98	2.99	2.99	3.20	3.01	3.13	3.14	3.67	3.70	3.74	3.80
Width (m)	4.41	4.45	4.11	3.81	6.51	6.45	6.48	6.55	5.11	5.05	4.99	5.01	5.39	5.40	5.31	5.33
Hydraulic mean depth (m)	0.563	0.557	0.611	0.550	0.467	0.462	0.462	0.457	0.626	0.597	0.627	0.628	0.680	0.685	0.703	0.714
Maximum depth (m)	0.982	0.955	1.021	0.913	1.154	1.116	1.051	1.009	1.257	1.111	1.216	1.095	1.045	1.019	1.032	1.065
Mean velocity (ms ⁻¹)	1.09	1.09	1.16	1.08	0.97	0.96	0.96	0.95	1.17	1.14	1.18	1.18	1.24	1.25	1.27	1.28
Discharge (m ³ s ⁻¹)	2.72	2.69	2.91	2.26	2.93	2.86	2.87	2.85	3.76	3.43	3.68	3.70	4.55	4.61	4.74	4.87
Specific Stream Power (Wm ⁻²)	24.8	24.4	28.5	23.9	18.2	17.9	17.8	17.5	29.7	27.4	29.7	29.8	34.0	34.4	36.0	36.8
Bankfull Hydraulic Geometry Parameters	Cross Section TN04 Main				Cross Section TN05				Cross Section TN06 Tributary				Cross Section TN06 Main			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	1.35	1.33	1.39	1.25	3.76	3.74	3.75	3.78	4.19	4.24	4.20	4.26	2.17	2.22	2.30	2.10
Width (m)	3.63	3.51	3.64	4.01	6.68	6.47	6.35	6.27	5.35	5.46	5.35	5.39	5.30	5.40	5.43	5.32
Hydraulic mean depth (m)	0.372	0.380	0.381	0.311	0.564	0.578	0.590	0.603	0.783	0.777	0.785	0.791	0.410	0.410	0.423	0.394
Maximum depth (m)	0.750	0.723	0.774	0.644	1.012	1.025	1.034	1.026	1.132	1.152	1.152	1.082	0.729	0.761	0.750	0.661
Mean velocity (ms ⁻¹)	0.83	0.84	0.84	0.74	1.09	1.11	1.13	1.15	1.36	1.36	1.36	1.37	0.89	0.89	0.90	0.86
Discharge (m ³ s ⁻¹)	1.12	1.12	1.17	0.92	4.12	4.16	4.23	4.33	5.71	5.74	5.72	5.85	1.92	1.96	2.07	1.81
Specific Stream Power (Wm ⁻²)	12.4	12.9	13.0	9.25	24.9	25.9	26.8	27.9	43.0	42.5	43.2	43.8	14.6	14.6	15.4	13.7

Table 2 Continued Hydraulic geometry parameter values for Tributary North

Bankfull Hydraulic Geometry Parameters	Cross Section TN07 Tributary				Cross Section TN07 Main				Cross Section TN08 Tributary				Cross Section TN08 Main			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	4.76	4.76	4.70	4.82	2.26	2.27	2.30	2.25	4.26	4.22	4.24	4.31	4.98	5.11	5.12	5.28
Width (m)	7.37	7.22	6.65	7.16	5.18	5.35	5.42	5.36	7.16	7.16	7.05	6.59	9.74	9.80	9.72	9.85
Hydraulic mean depth (m)	0.646	0.659	0.707	0.674	0.435	0.425	0.424	0.421	0.595	0.589	0.601	0.653	0.511	0.521	0.527	0.536
Maximum depth (m)	1.056	1.068	1.039	1.228	0.852	0.862	0.798	0.776	1.152	1.148	1.162	1.280	1.011	1.022	1.053	0.965
Mean velocity (ms ⁻¹)	1.20	1.21	1.27	1.23	0.92	0.91	0.91	0.90	1.13	1.13	1.14	1.21	1.03	1.04	1.05	1.06
Discharge (m ³ s ⁻¹)	5.70	5.78	5.98	5.95	2.08	2.06	2.08	2.03	4.83	4.75	4.84	5.20	5.10	5.30	5.37	5.59
Specific Stream Power (Wm ⁻²)	31.2	32.3	36.3	33.5	16.2	15.5	15.5	15.3	27.2	26.8	27.7	31.8	21.1	21.8	22.3	22.9
Bankfull Hydraulic Geometry Parameters	Cross Section TN09															
	2001	2000	1999	1998												
Area (m ²)	6.91	6.96	7.04	6.98												
Width (m)	9.95	9.96	9.78	9.86												
Hydraulic mean depth (m)	0.694	0.699	0.719	0.709												
Maximum depth (m)	1.095	1.097	1.097	1.069												
Mean velocity (ms ⁻¹)	1.26	1.26	1.29	1.28												
Discharge (m ³ s ⁻¹)	8.68	8.80	9.06	8.90												
Specific Stream Power (Wm ⁻²)	35.2	35.6	37.4	36.4												

3.2 Tributary Central Cross sections

The location of the 14 cross sections installed on Tributary Central downstream of the Jabiluka mine site is shown in figure 16. The most upstream sites, 6 and 7, comprise three cross sections (called A, B & C) on two abrupt angled bends in the sinuous reach of Erskine et al (2001). They were selected to determine the amount of bank erosion and lateral migration on meander loops. The bend at site 6 did not exhibit as much erosion as at site 7 where rapid retreat of the right bank is occurring. The remaining cross sections were located in the large and small capacity reaches of Erskine et al (2001) which extend from the sinuous reach to the anabranch of Swift Creek. Two cross sections (sites 8 and 9) were located in the large capacity reach and the remaining six sections were sited on the small capacity reach

The cross sections are shown in downstream order (figures 17 to 31) and are not numbered sequentially. Bank height and channel capacity decrease rapidly downstream so that the channel is poorly defined where Tributary Central joins the anabranch of Swift Creek (table 3).

For the determination of the values of the hydraulic geometry parameters in table 3, the slope used was 0.00226 m/m (2.26 m/km) which was measured from a longitudinal bed survey using differential GPS during the 1998 Dry season. The Manning's n value used was 0.04. The cross sectional area increased since 1998 at 12 of the 14 cross sections. Five of the six cross sections on the abrupt angled bends (site 6 & 7) increased in area, with the largest increase being 45 % since 1998. Mean depth increased at 10 of the cross sections, decreased at three and was constant at one. Maximum depth increased at all 14 cross sections. Channel erosion by lateral migration, bed degradation and channel widening is active on Tributary Central. Clearly, Tributary Central has been unstable during the life of the Jabiluka mine. However, significant overbank deposition has also occurred on the floodplain in the small capacity reach where crevasses and splays are common. Sand deposition has formed a low angle fan which is well vegetated. Anabranches are developing and avulsions seem likely. While sand has been supplied to the anabranch, it terminates further downstream in a well defined sand front and is not being transported through to Swift Creek.

It is recommended that monitoring of the cross sections during the mine maintenance phase should continue to provide baseline data against which subsequent mine impacts can be assessed and to help determine the causes of the recent channel changes. It is essential that all available vertical air photographs are obtained and interpreted to determine whether Tributary Central was unstable before the development of the Jabiluka mine.

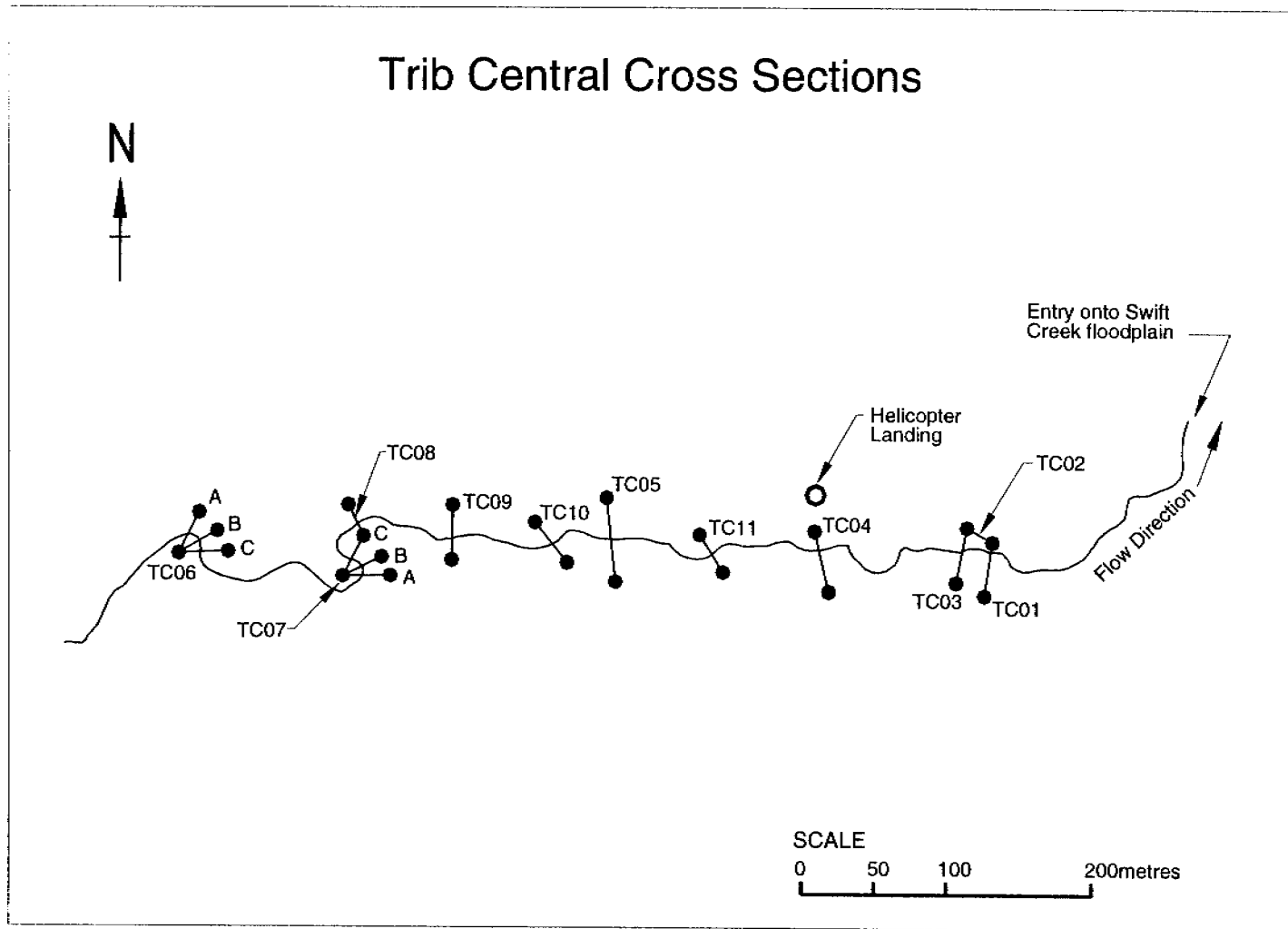


Figure 16 Location of the permanently monumented cross sections on Tributary Central

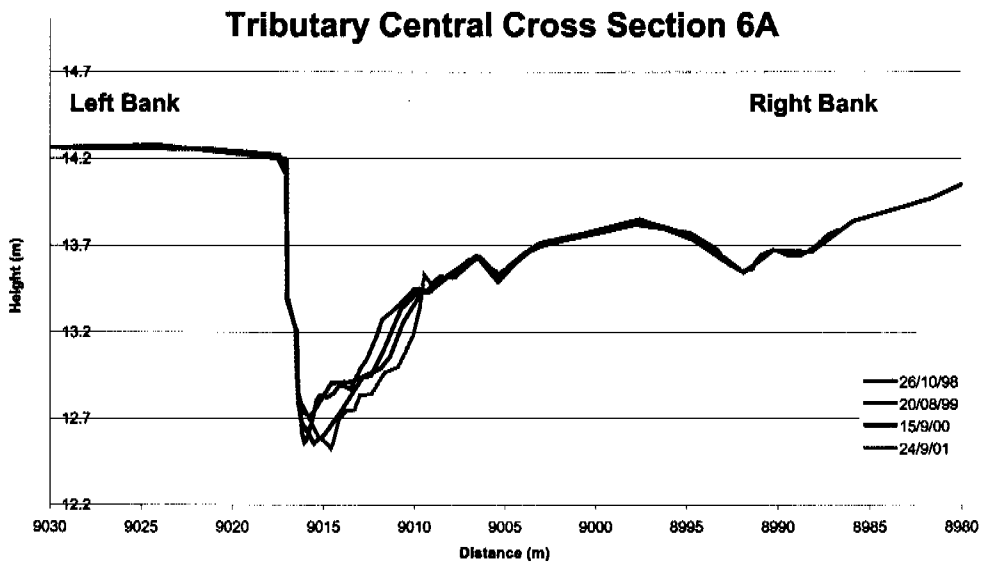


Figure 17 Tributary Central Cross Section 6A

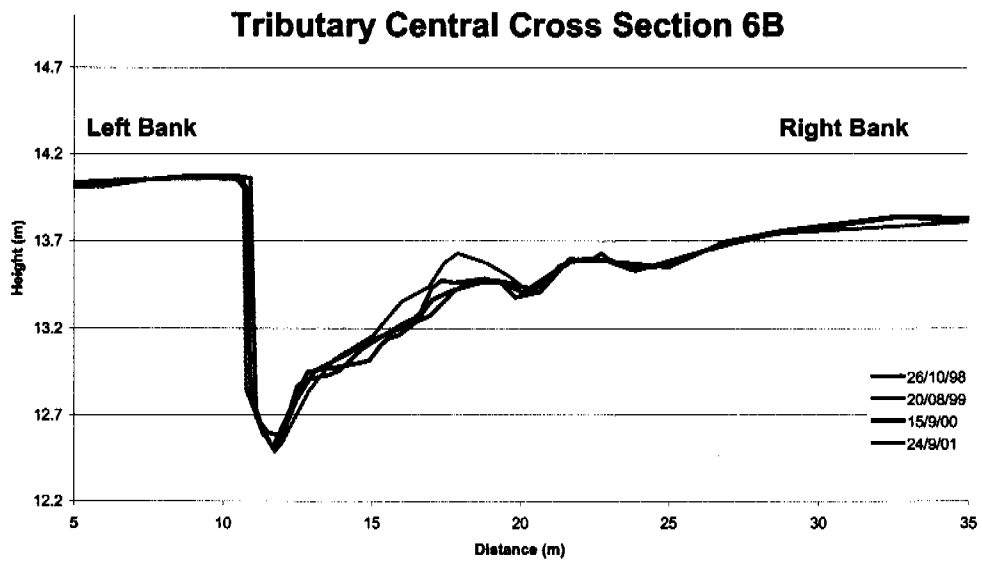


Figure 18 Tributary Central Cross Section 6B

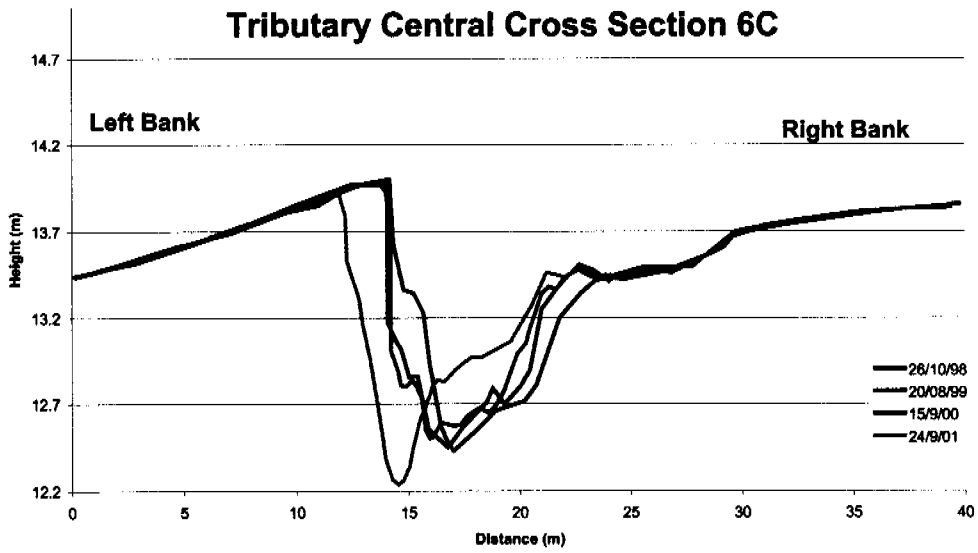


Figure 19 Tributary Central Cross Section 6C

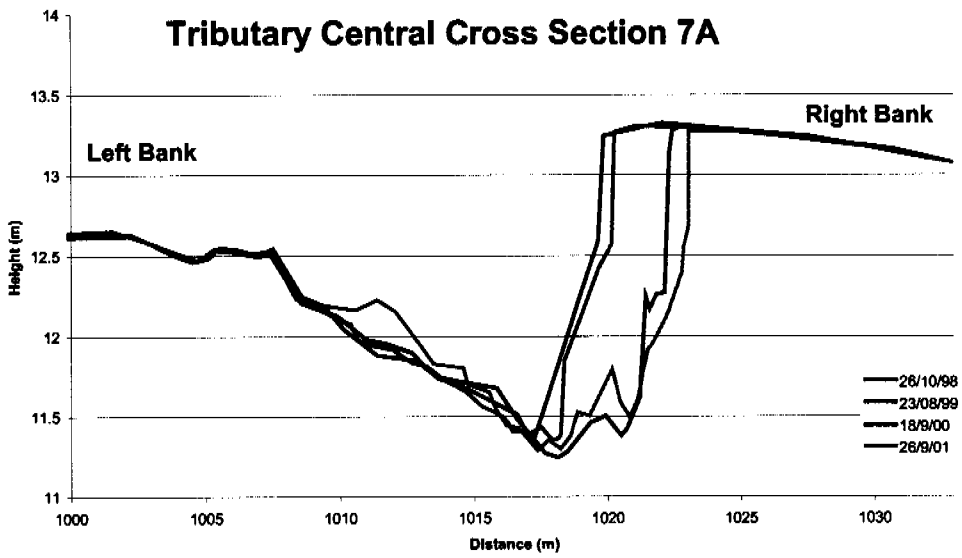


Figure 20 Tributary Central Cross Section 7A

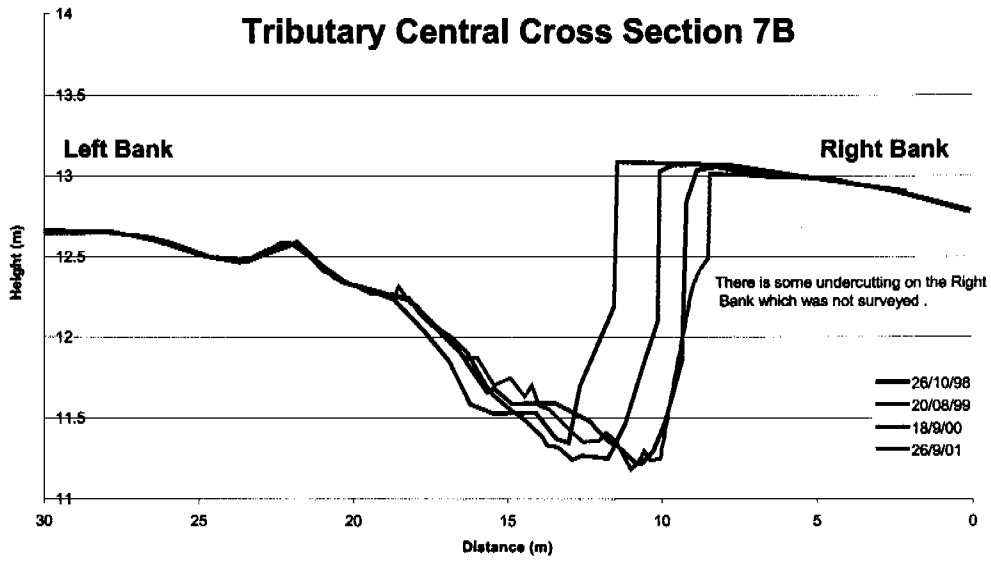


Figure 21 Tributary Central Cross Section 7B

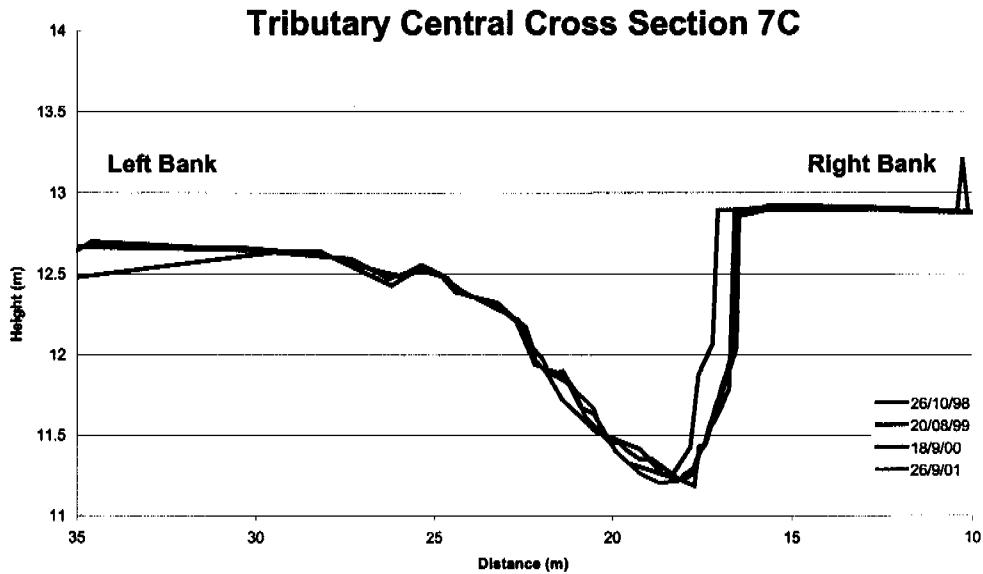


Figure 22 Tributary Central Cross Section 7C

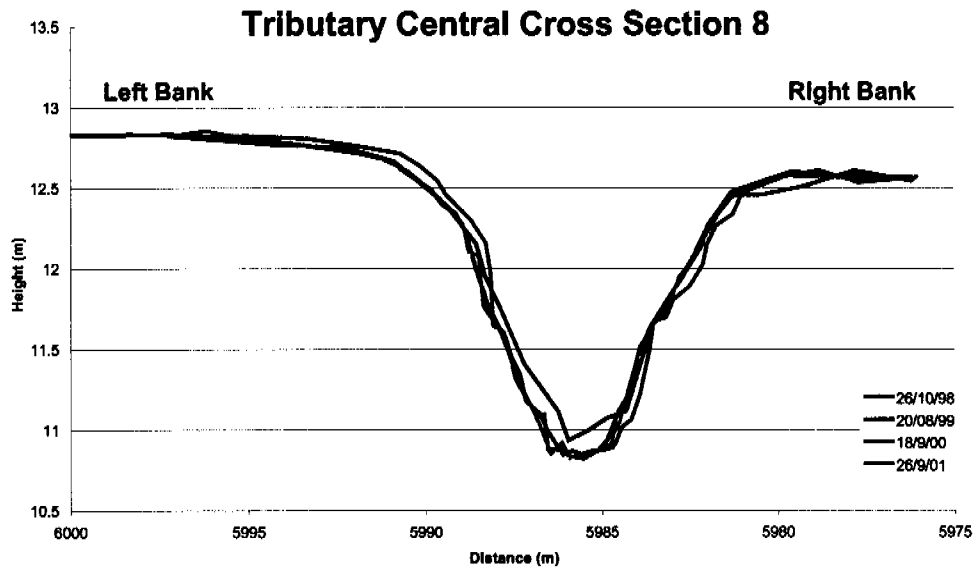


Figure 23 Tributary Central Cross Section 8

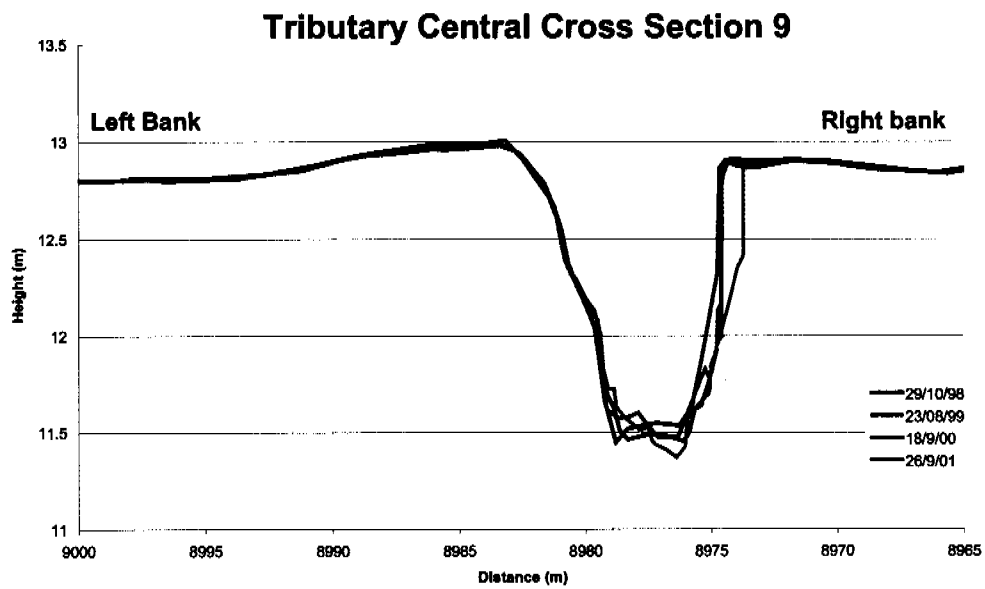


Figure 24 Tributary Central Cross Section 9

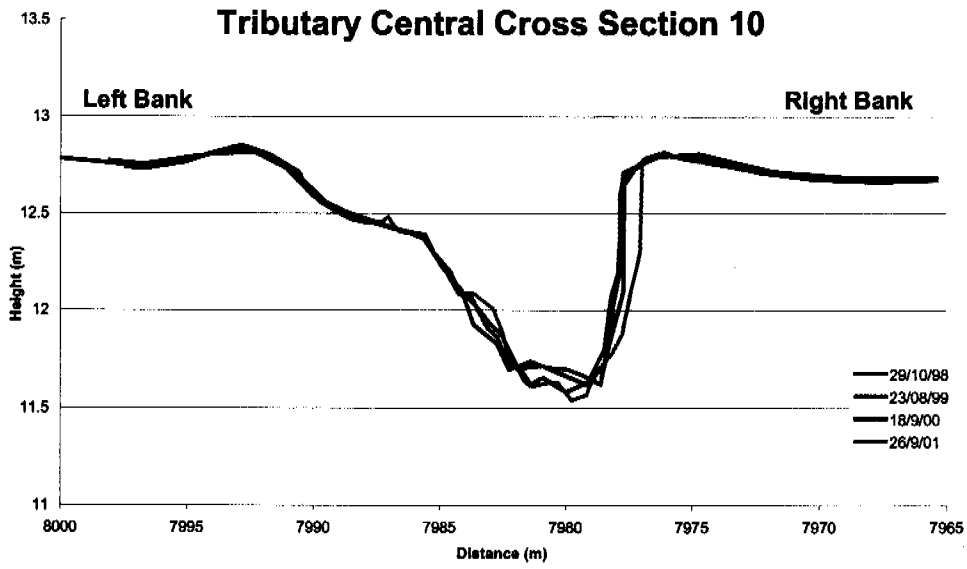


Figure 25 Tributary Central Cross Section 10

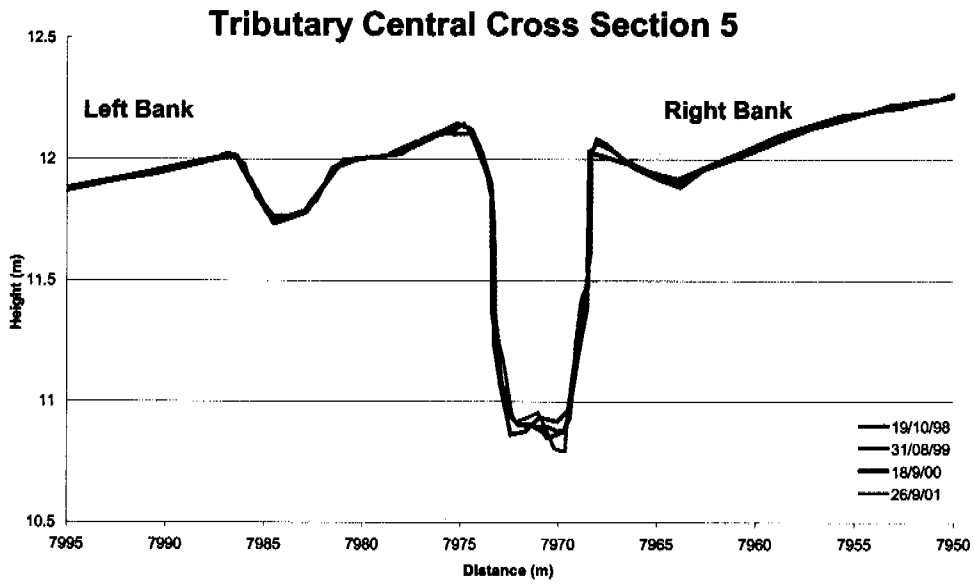


Figure 26 Tributary Central Cross Section 5

Tributary Central Cross Section 11

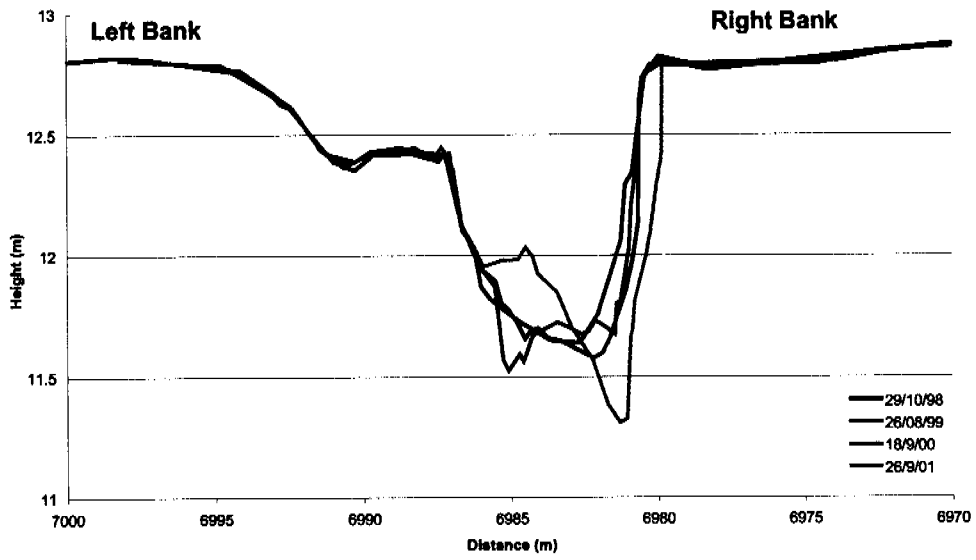


Figure 27 Tributary Central Cross Section 11

Tributary Central Cross Section 4

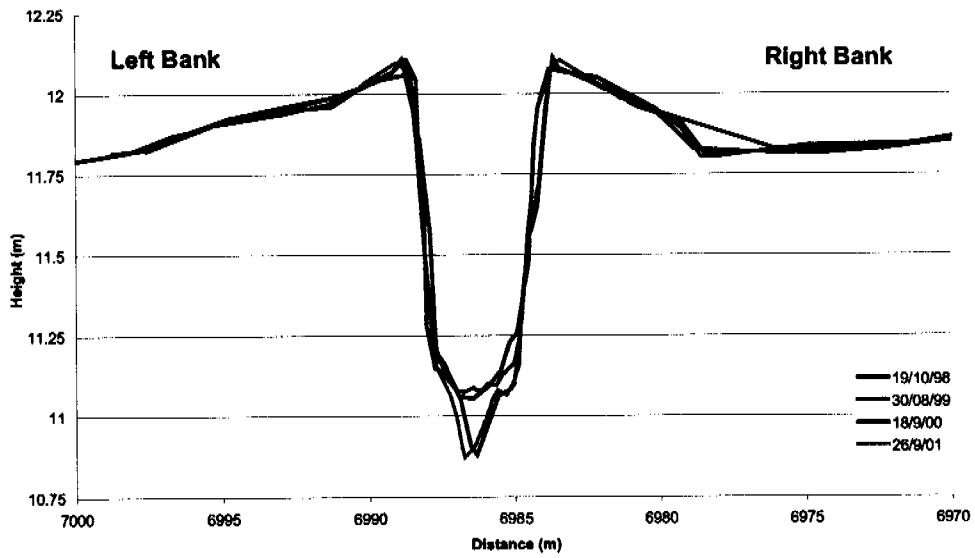


Figure 28 Tributary Central Cross Section 4

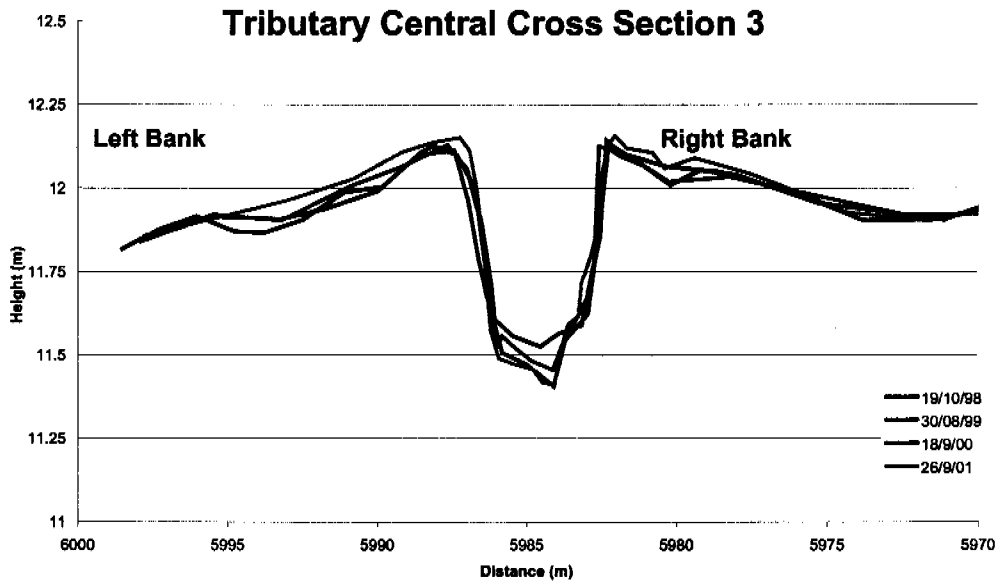


Figure 29 Tributary Central Cross Section 3

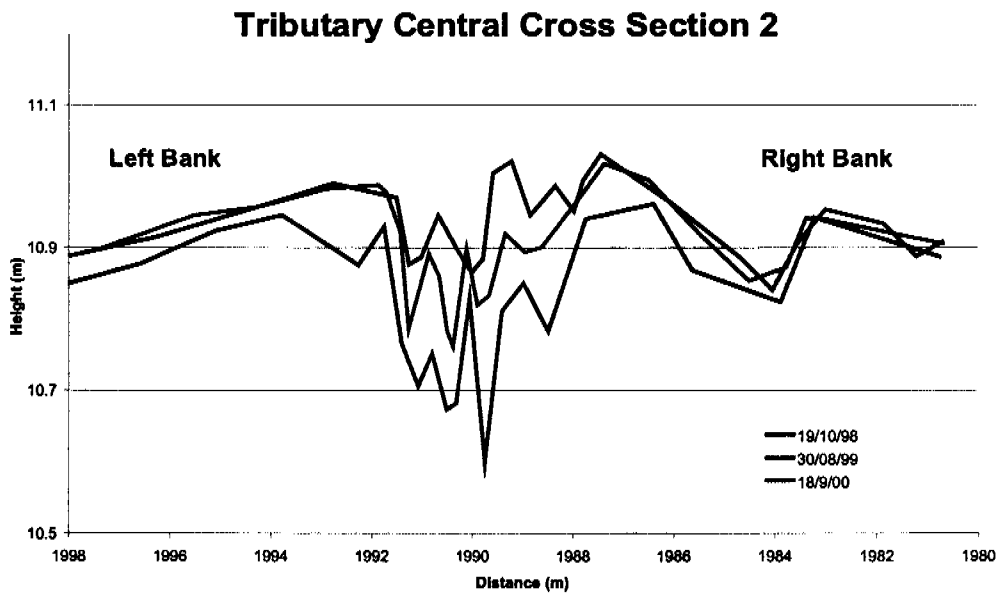


Figure 30 Tributary Central Cross Section 2. Located on an anabranch of the main channel

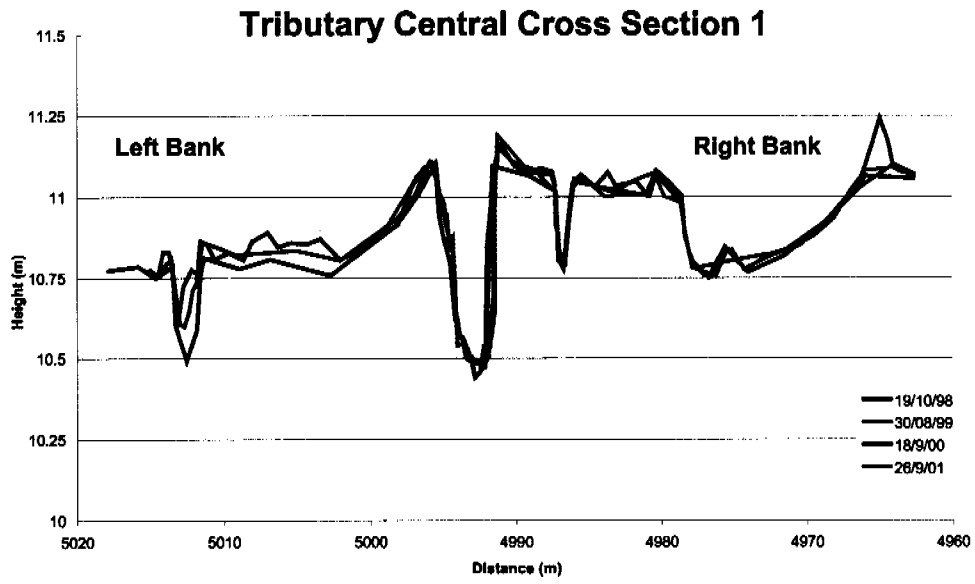


Figure 31 Tributary Central Cross Section 1

Table 3 Hydraulic geometry parameter values for Tributary Central

Bankfull Hydraulic Geometry Parameters	Cross Section TC06A				Cross Section TC06B				Cross Section TC06C				Cross Section TC07A			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	5.92	5.19	4.53	4.87	3.72	4.27	4.18	4.10	4.63	4.60	4.32	4.55	10.01	10.55	7.97	7.39
Width (m)	10.57	10.35	10.64	10.33	6.78	10.85	10.86	10.61	8.49	7.84	7.76	8.70	15.37	14.77	12.43	11.84
Hydraulic mean depth (m)	0.560	0.501	0.426	0.471	0.549	0.394	0.385	0.386	0.545	0.587	0.556	0.523	0.651	0.714	0.641	0.625
Maximum depth (m)	1.107	1.078	1.072	0.919	1.091	1.070	1.090	1.006	1.177	0.962	0.912	0.982	1.220	1.258	1.150	1.169
Mean velocity (ms ⁻¹)	0.81	0.75	0.67	0.72	0.80	0.64	0.63	0.63	0.79	0.83	0.80	0.77	0.89	0.95	0.88	0.87
Discharge (m ³ s ⁻¹)	4.77	3.89	3.05	3.50	2.96	2.73	2.63	2.58	3.67	3.84	3.47	3.51	8.93	10.02	7.04	6.42
Specific Stream Power (Wm ⁻²)	10.0	8.3	6.3	7.5	9.7	5.6	5.4	5.4	9.6	10.8	9.9	8.9	12.9	15.0	12.5	12.0
Bankfull Hydraulic Geometry Parameters	Cross Section TC07B				Cross Section TC07C				Cross Section TC08				Cross Section TC09			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	9.42	9.04	8.33	6.52	5.70	5.59	5.51	4.93	7.50	7.33	7.47	6.76	7.84	7.31	7.16	6.94
Width (m)	13.31	12.71	11.85	10.24	8.18	8.13	8.02	7.56	8.63	8.51	8.37	8.38	9.21	7.71	7.76	7.55
Hydraulic mean depth (m)	0.708	0.711	0.703	0.636	0.697	0.687	0.688	0.652	0.864	0.861	0.892	0.806	0.852	0.948	0.923	0.919
Maximum depth (m)	1.391	1.359	1.333	1.230	1.271	1.258	1.291	1.221	1.644	1.632	1.613	1.524	1.499	1.411	1.393	1.421
Mean velocity (ms ⁻¹)	0.94	0.95	0.94	0.88	0.93	0.93	0.93	0.89	1.08	1.08	1.10	1.03	1.07	1.15	1.13	1.12
Discharge (m ³ s ⁻¹)	8.89	8.55	7.83	5.73	5.32	5.17	5.10	4.41	8.03	7.88	8.22	6.95	8.37	8.38	8.07	7.80
Specific Stream Power (Wm ⁻²)	14.8	14.9	14.6	12.4	14.4	14.1	14.1	12.9	20.6	20.5	21.7	18.4	20.1	24.1	23.0	22.9

Table 3 Continued Hydraulic geometry parameter values for Tributary Central

Bankfull Hydraulic Geometry Parameters	Cross Section TC10				Cross Section TC05				Cross Section TC11				Cross Section TC04			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	4.28	3.96	3.87	3.87	4.81	4.86	4.83	4.95	4.07	3.97	3.85	3.59	3.78	3.74	3.48	3.33
Width (m)	8.55	7.93	7.66	7.79	5.61	5.52	5.37	5.48	7.31	6.60	6.27	6.44	4.70	4.93	4.80	4.88
Hydraulic mean depth (m)	0.501	0.499	0.504	0.497	0.857	0.880	0.900	0.904	0.557	0.601	0.613	0.557	0.804	0.759	0.725	0.682
Maximum depth (m)	0.833	0.789	0.753	0.753	1.209	1.156	1.130	1.141	1.107	0.837	0.890	0.777	1.186	1.177	0.984	1.005
Mean velocity (ms ⁻¹)	0.75	0.75	0.75	0.75	1.07	1.09	1.11	1.11	0.81	0.85	0.86	0.81	1.03	0.99	0.96	0.92
Discharge (m ³ s ⁻¹)	3.21	2.96	2.91	2.89	5.15	5.30	5.35	5.50	3.28	3.36	3.30	2.89	3.88	3.69	3.33	3.06
Specific Stream Power (Wm ⁻²)	8.3	8.3	8.4	8.2	20.3	21.3	22.1	22.3	9.9	11.3	11.6	9.9	18.3	16.6	15.4	13.9
Bankfull Hydraulic Geometry Parameters	Cross Section TC03				Cross Section TC01											
	2001	2000	1999	1998	2001	2000	1999	1998								
Area (m ²)	2.24	2.28	2.28	2.11	1.81	1.74	1.52	1.66								
Width (m)	4.59	5.45	5.15	4.84	4.47	4.29	4.01	3.93								
Hydraulic mean depth (m)	0.488	0.418	0.443	0.435	0.406	0.405	0.378	0.423								
Maximum depth (m)	0.703	0.707	0.658	0.588	0.649	0.653	0.606	0.620								
Mean velocity (ms ⁻¹)	0.74	0.66	0.69	0.68	0.65	0.65	0.62	0.67								
Discharge (m ³ s ⁻¹)	1.65	1.51	1.58	1.44	1.18	1.13	0.94	1.11								
Specific Stream Power (Wm ⁻²)	7.9	6.1	6.8	6.6	5.9	5.8	5.2	6.3								

3.3 East Tributary Cross sections

The gauging station is located in the forested meandering reach of Erskine et al (2001). Eight cross sections were installed near the gauge during the 1998 Dry season. They have been resurveyed during each subsequent Dry season. The location of the cross sections is shown in figure 32 and the cross section plots are shown in order from upstream to downstream in figures 33 to 40. The values of the bankfull hydraulic geometry parameters for each survey at each cross section are listed in table 4. Saynor et al (2001) outline the complete *eriss* field program at this site.

A field surveyed flood (2000/2001 Wet season) slope of 0.0015 m/m (1.5 m/km) was used to determine the values of the hydraulic geometry parameters in table 4. The Manning's n value used was 0.04. There was an increase in cross sectional area at all cross sections between 1998 and 2001. However, the maximum percentage increase in cross sectional area since 1998 was only 8.6%. Mean and maximum depth increased at all cross sections.

The percentage changes in the hydraulic geometry parameters are less than on the mine site tributaries. Nevertheless, the trends are similar, suggesting that there may be a natural trend of bed degradation currently occurring in some reaches in the Swift Creek catchment. It is recommended that monitoring should continue until the cause and duration of degradation are determined.

East Tributary is not impacted by the Jabiluka mine and is flanked by a monsoonal vine forest at the gauging station (Erskine et al 2001). Large woody debris and log steps are common in the channel (figure 41) and are important roughness elements that usually stabilise the bed profile (Webb & Erskine 2002). Project 13 of Erskine et al (2001) involved the determination of the interactive mechanisms between riparian vegetation and large woody debris that stabilise channels and floodplains on sand-bed streams flanked by monsoonal vine forest but has still not been completed. It is recommended that this project should be undertaken to help determine why the bed is currently degrading and the role of large woody debris controlling the mobility of sandy bed sediment.

East Trib Cross Sections

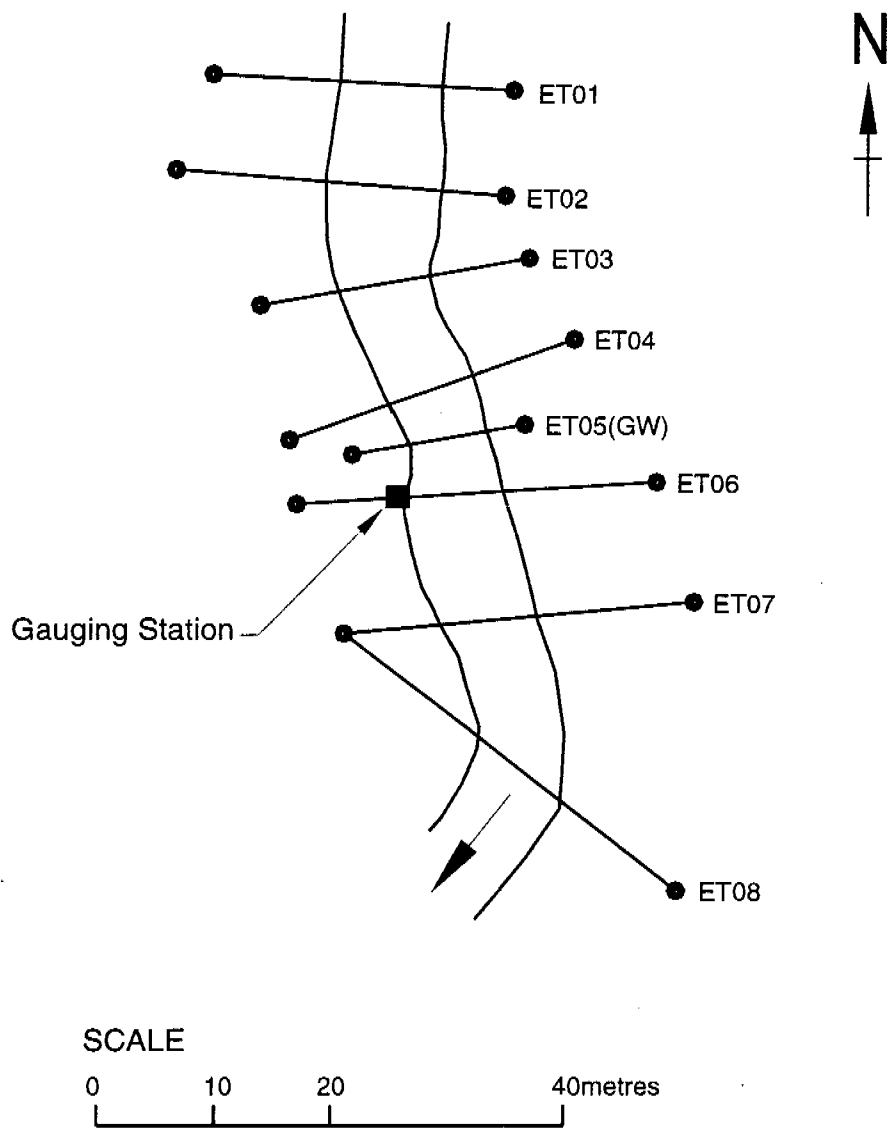


Figure 32 Location of the cross sections on East tributary at the *eriss* gauging station

East Tributary Cross Section 1

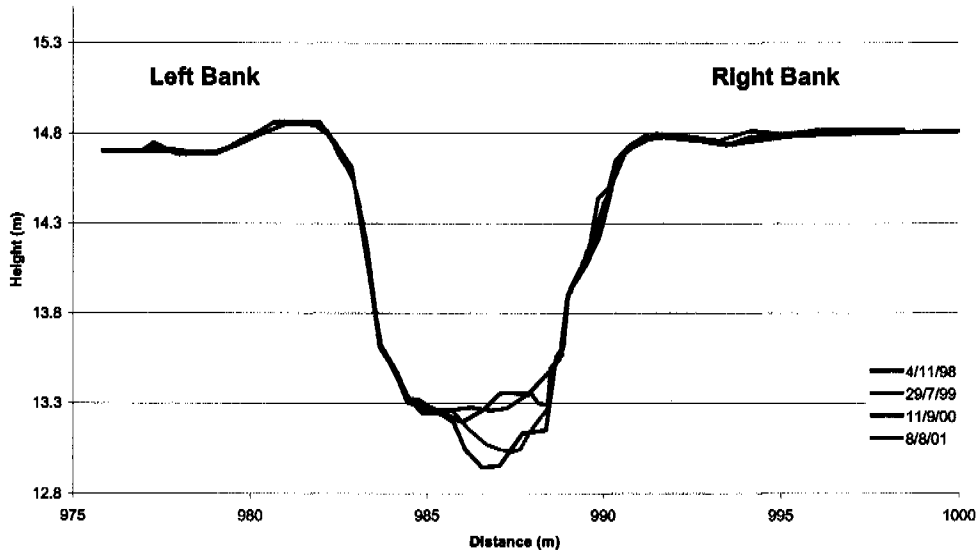


Figure 33 East Tributary Cross section 1

East Tributary Cross Section 2

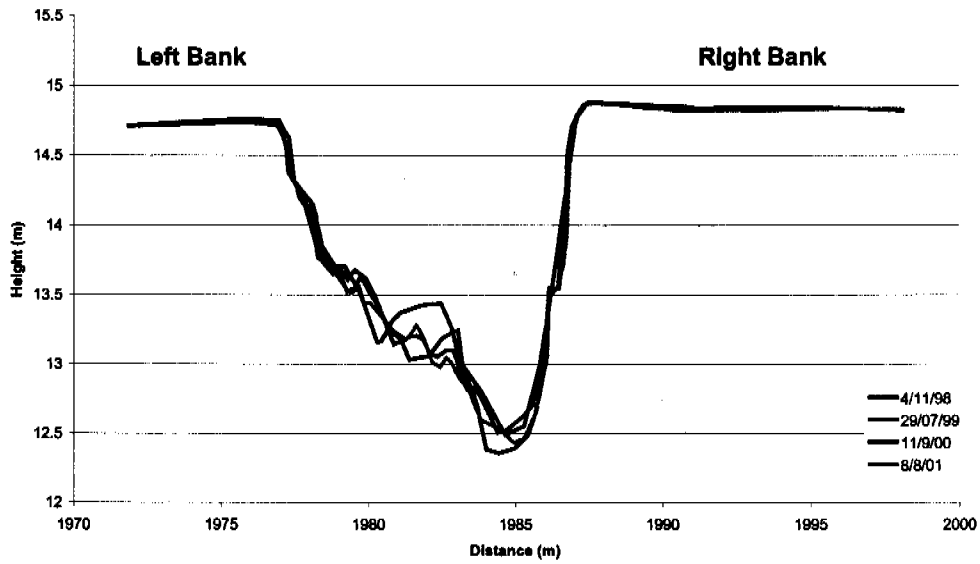


Figure 34 East Tributary Cross section 2

East Tributary Cross Section 3

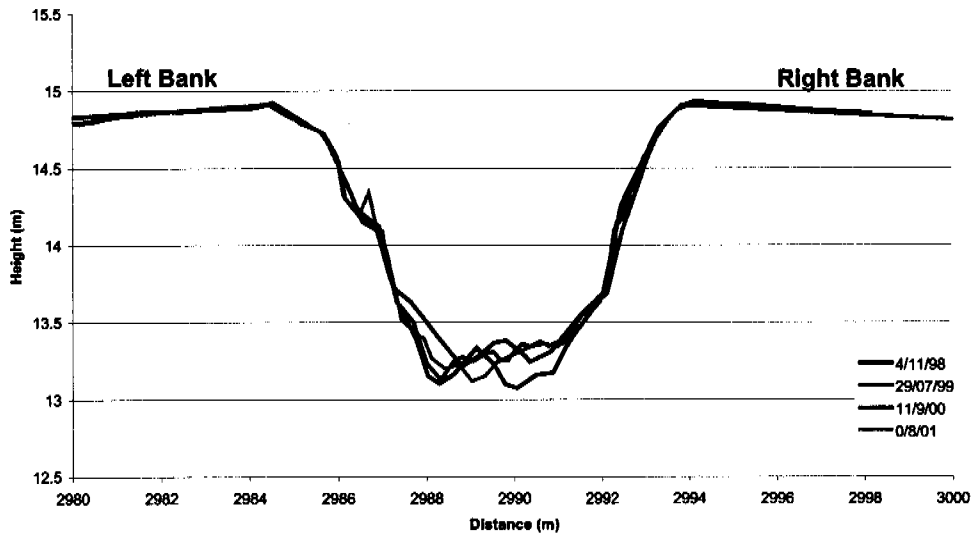


Figure 35 East Tributary Cross Section 3

East Tributary Cross Section 4

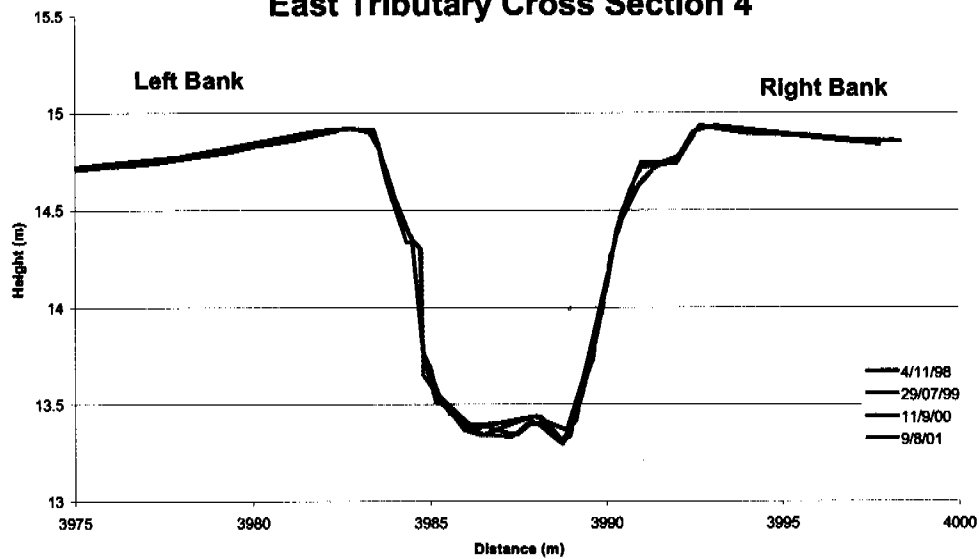


Figure 36 East Tributary Cross Section 4

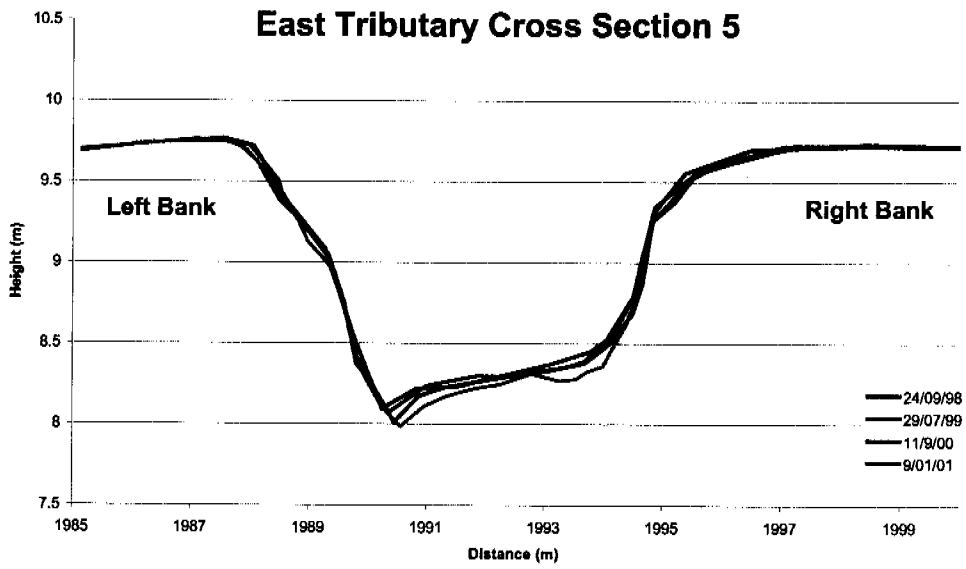


Figure 37 East Tributary Cross Section 5

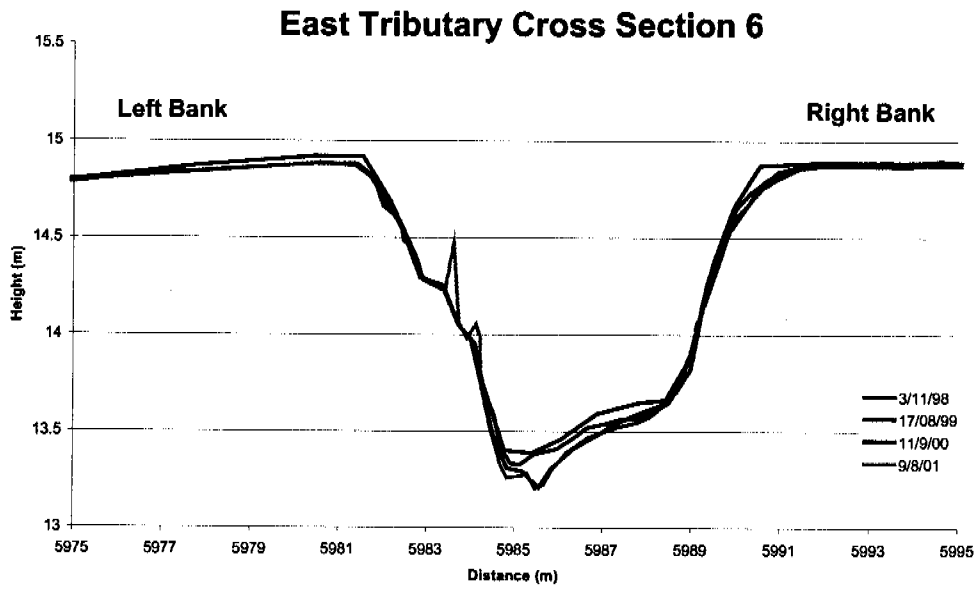


Figure 38 East Tributary Cross Section 6

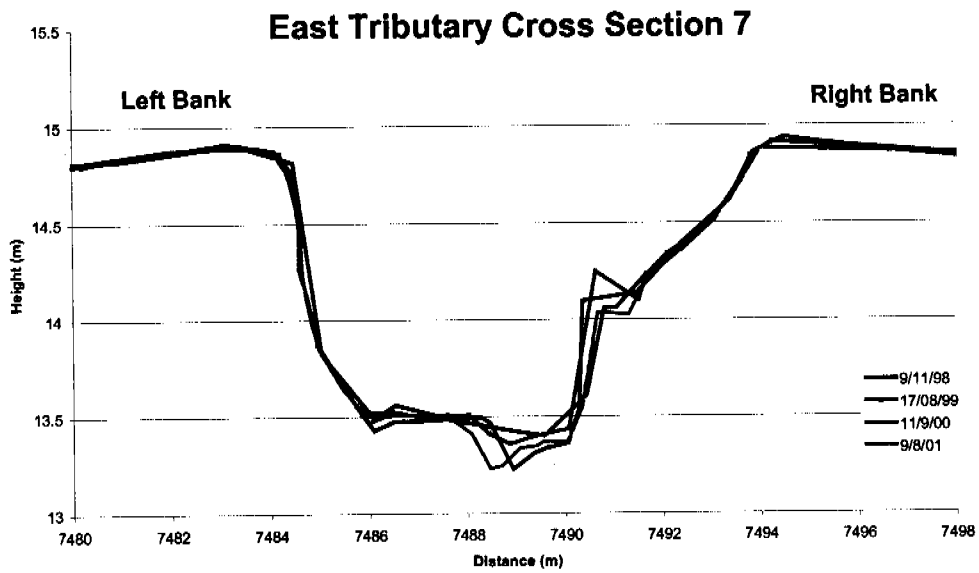


Figure 39 East Tributary Cross Section 7

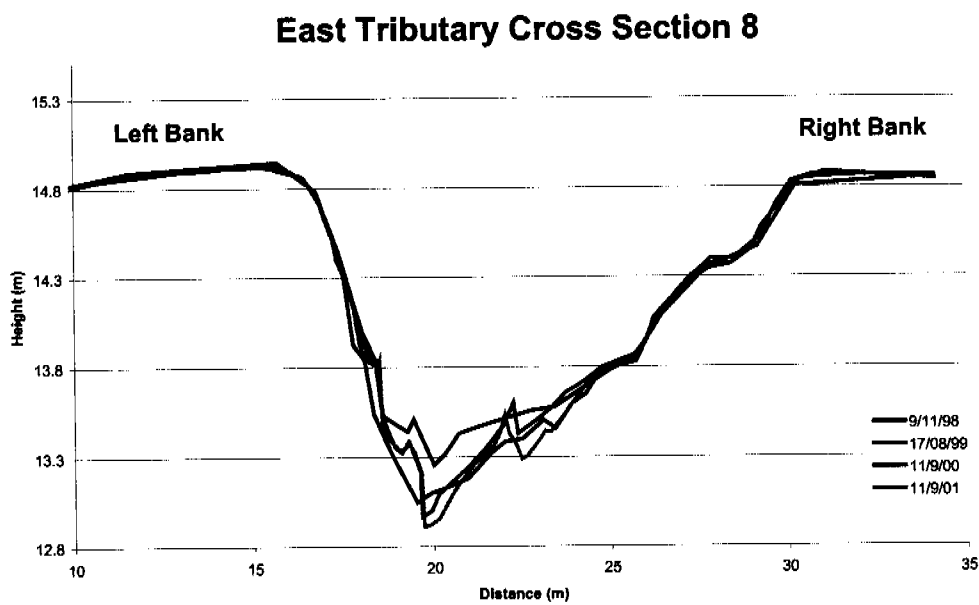


Figure 40 East Tributary Cross Section 8



Figure 41 A log step in the bed of East Tributary at the gauge, which is important for energy dissipation

Table 4 Hydraulic geometry parameter values for East Tributary

Bankfull Hydraulic Geometry Parameters	Cross Section ET01				Cross Section ET02				Cross Section ET03				Cross Section ET04			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	8.83	9.14	8.33	8.30	13.88	13.74	13.53	12.93	7.93	8.31	7.80	7.57	6.55	6.38	6.39	6.26
Width (m)	8.29	8.17	8.13	8.07	10.03	9.86	9.88	10.01	7.74	7.69	7.63	7.65	7.11	7.05	6.85	6.86
Hydraulic mean depth (m)	1.065	1.119	1.025	1.029	1.384	1.393	1.370	1.291	1.024	1.081	1.022	0.990	0.920	0.905	0.932	0.913
Maximum depth (m)	1.671	1.759	1.459	1.510	2.251	2.328	2.181	2.193	1.614	1.654	1.603	1.518	1.336	1.320	1.321	1.261
Mean velocity (ms ⁻¹)	1.01	1.04	0.98	0.99	1.20	1.21	1.19	1.15	0.98	1.02	0.98	0.96	0.92	0.91	0.92	0.91
Discharge (m ³ s ⁻¹)	8.92	9.54	8.20	8.19	16.70	16.59	16.16	14.84	7.80	8.48	7.66	7.29	6.00	5.78	5.90	5.70
Specific Stream Power (Wm ⁻²)	15.8	17.2	14.8	14.9	24.5	24.7	24.1	21.8	14.8	16.2	14.8	14.0	12.4	12.1	12.7	12.2
Bankfull Hydraulic Geometry Parameters	Cross Section ET05				Cross Section ET06				Cross Section ET07				Cross Section ET08			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	5.16	4.94	4.78	4.78	5.80	5.80	5.59	5.37	9.12	8.85	8.64	8.40	13.04	13.30	12.60	12.14
Width (m)	6.02	5.98	5.99	5.95	7.41	7.38	7.33	7.25	9.44	9.30	9.39	8.81	13.48	13.58	13.45	13.64
Hydraulic mean depth (m)	0.856	0.825	0.798	0.803	0.783	0.786	0.762	0.741	0.966	0.952	0.920	0.953	0.968	0.980	0.937	0.890
Maximum depth (m)	1.274	1.247	1.187	1.166	1.324	1.318	1.197	1.137	1.548	1.547	1.418	1.377	1.897	1.761	1.840	1.553
Mean velocity (ms ⁻¹)	0.87	0.85	0.83	0.84	0.82	0.82	0.81	0.79	0.95	0.94	0.92	0.94	0.95	0.96	0.93	0.90
Discharge (m ³ s ⁻¹)	4.50	4.20	3.98	4.00	4.77	4.78	4.51	4.26	8.63	8.30	7.91	7.87	12.35	12.71	11.68	10.88
Specific Stream Power (Wm ⁻²)	11.0	10.3	9.8	9.9	9.5	9.6	9.1	8.6	13.4	13.1	12.4	13.1	13.5	13.8	12.8	11.7

3.4 Upper Swift Creek Cross sections

The gauging station is located on upper Swift Creek in the forested meandering reach of Erskine et al (2001). Seven cross sections were installed at the gauge during the 1998 Dry season. They were resurveyed during each subsequent Dry season. An additional cross section was added in 1999 (the gauging wire). The location of the cross sections is shown in figure 42 and the cross section plots in order from upstream to downstream are included as figures 43 to 50. The values of the bankfull hydraulic geometry parameters for each survey at each cross section are listed in table 5. Saynor et al (2001) outlines the complete *eriss* field program at this site.

A field-surveyed flood slope (2000/2001 Wet season) of 0.00078 m/m (0.78 m/km) was used to determine the values of the hydraulic geometry parameters in table 5. The Manning's *n* value used was 0.035. Channel changes on upper Swift Creek are relatively minor in comparison to the previous sites. At six cross sections, area decreased over the 4 years, with a reduction of - 8.2% being the maximum change. Mean and maximum depth also decreased slightly at six cross sections. It is recommended that monitoring should continue at this site while ever monitoring is continued on the mine site tributaries.

Upper Swift Creek is not impacted by the Jabiluka mine and is flanked by a monsoonal vine forest at the gauging station (Erskine et al 2001). Large woody debris is common in the channel (figure 51) and is an important roughness element that usually stabilises the bed profile (Webb & Erskine 2002). Project 13 of Erskine et al (2001) involved the determination of the interactive mechanisms between riparian vegetation and large woody debris that stabilise channels and floodplains on sand-bed streams flanked by monsoonal vine but has still not been completed. It is recommended that this project should be undertaken to help determine why upper Swift Creek is currently stable.

Upmain Cross Sections

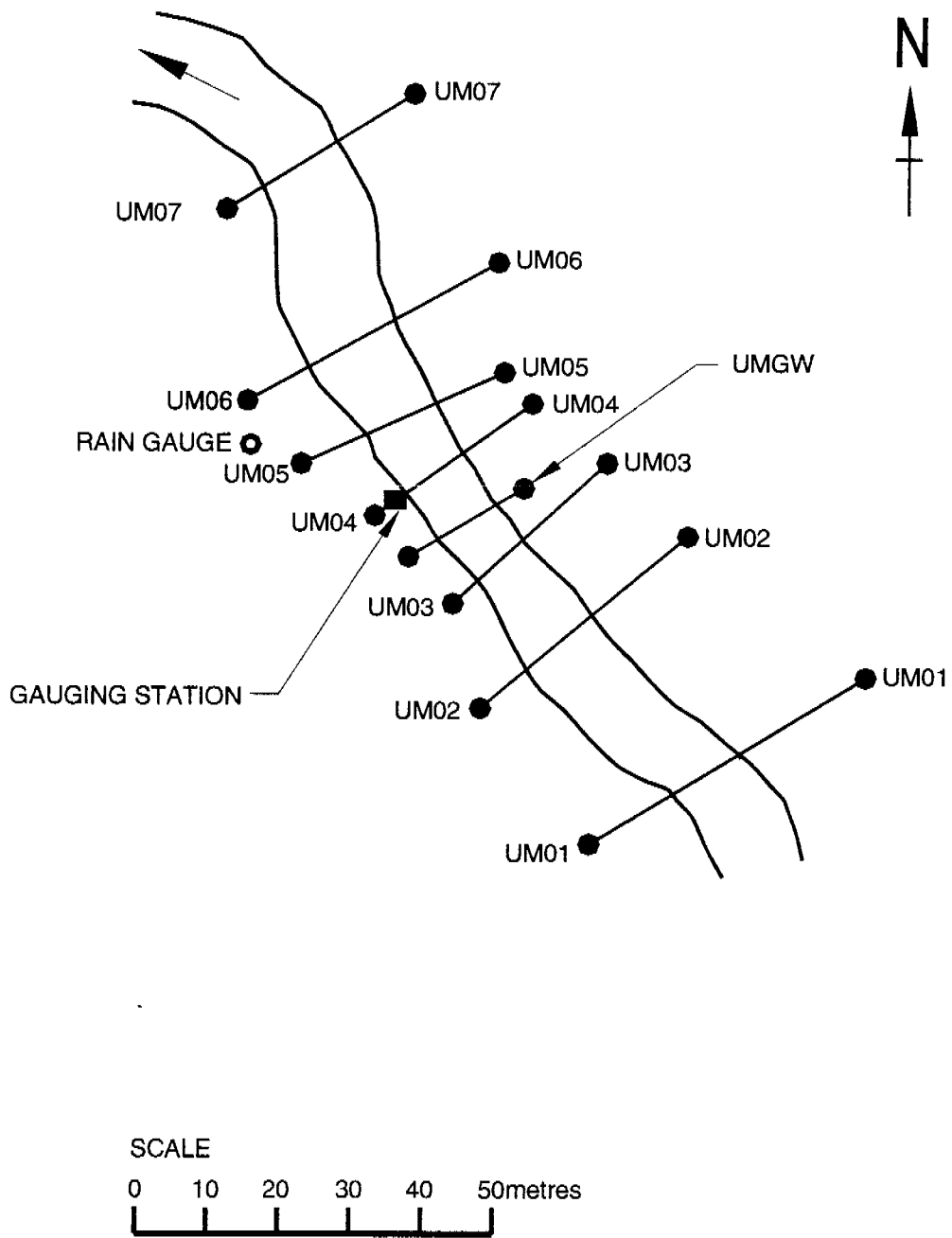


Figure 42 Location of the cross sections at the upper Swift Creek gauge

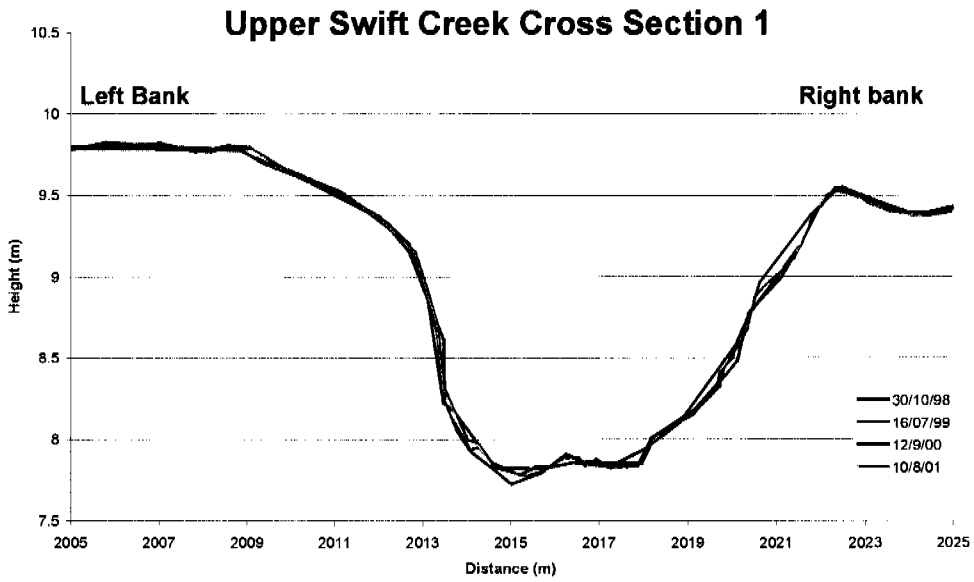


Figure 43 Upper Swift Creek Cross Section 1

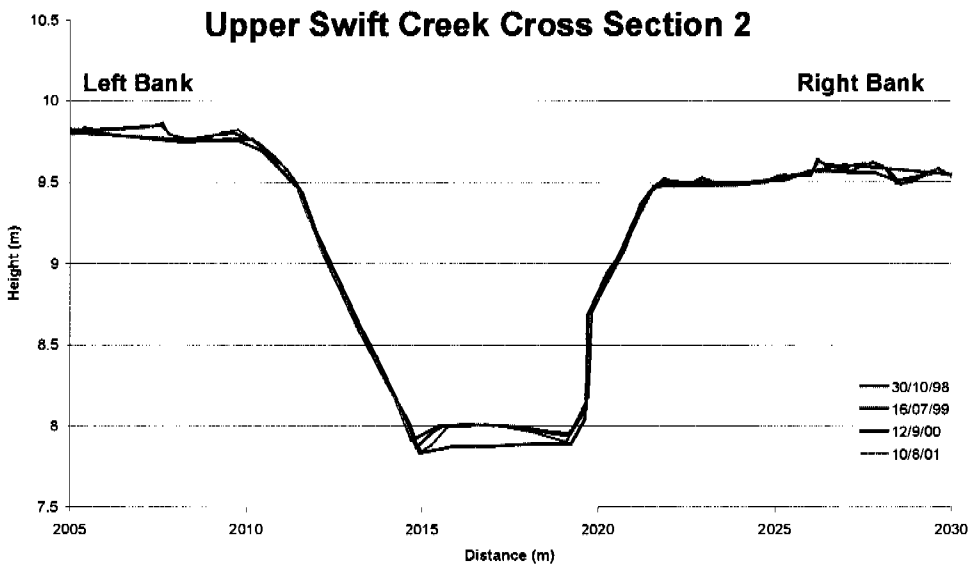


Figure 44 Upper Swift Creek Cross Section 2

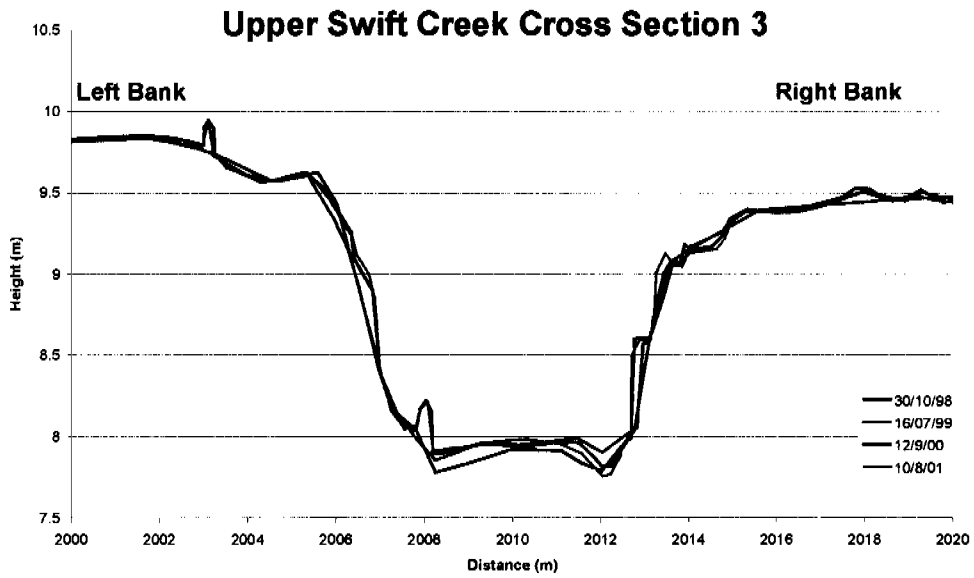


Figure 45 Upper Swift Creek Cross Section 3

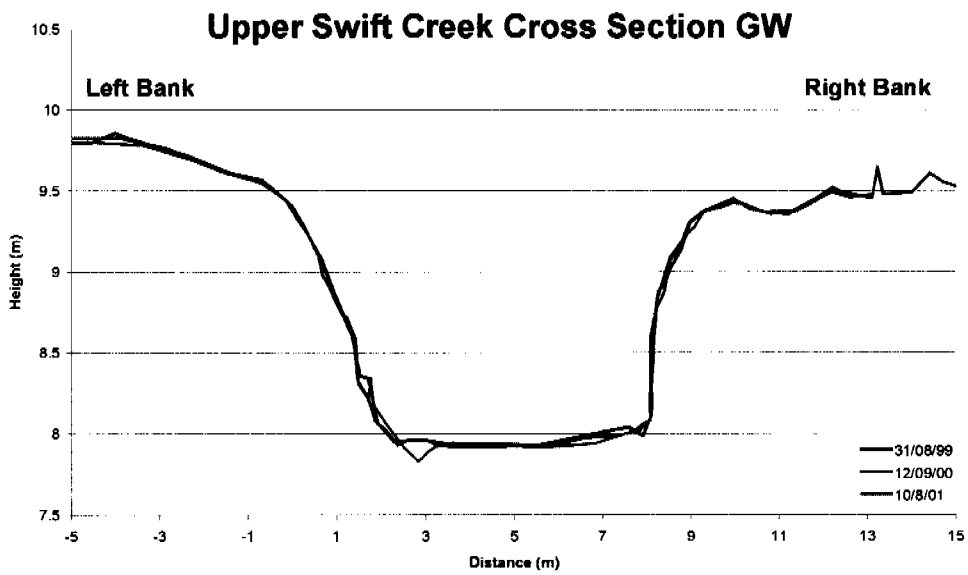


Figure 46 Upper Swift Creek Cross Section Gauging Wire

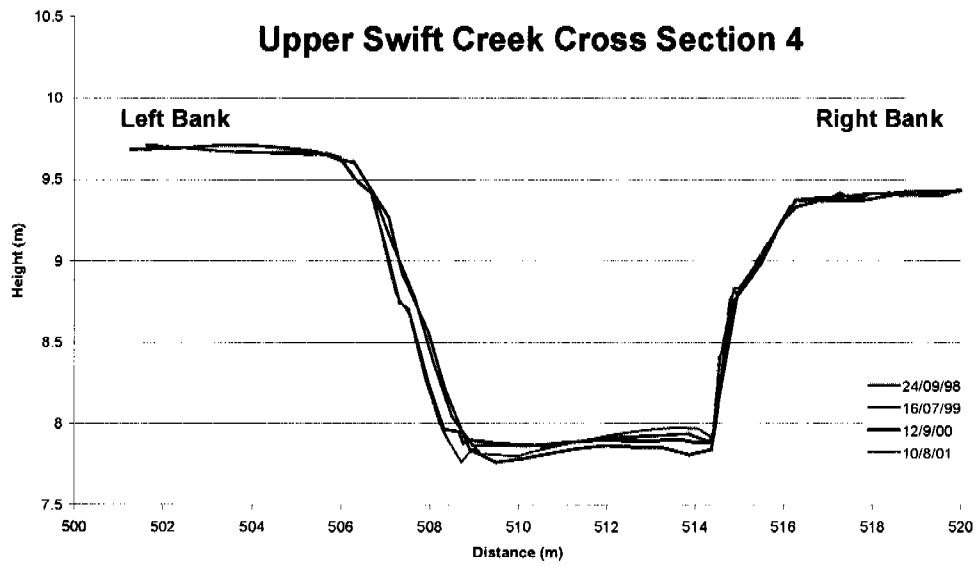


Figure 47 Upper Swift Creek Cross Section 4

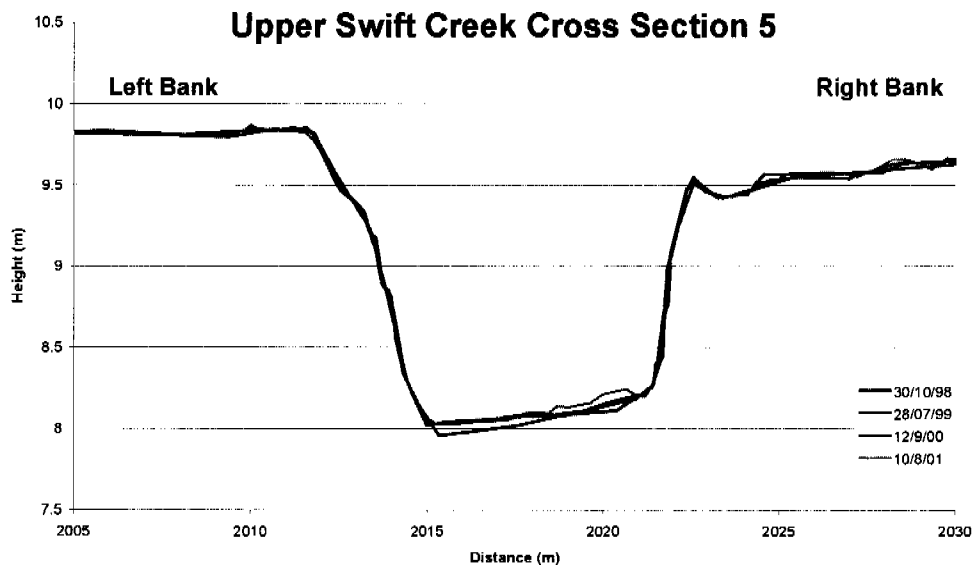


Figure 48 Upper Swift Creek Cross Section 5

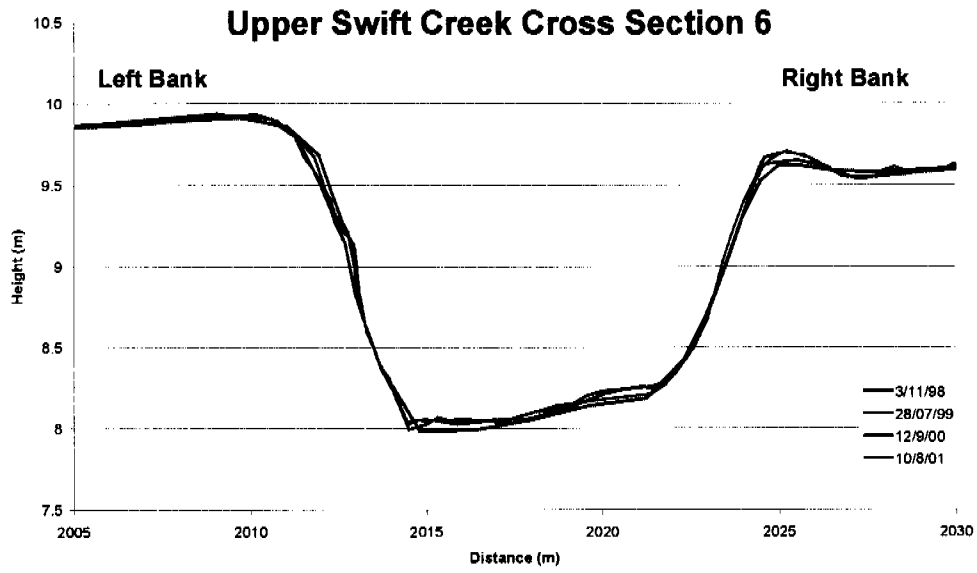


Figure 49 Upper Swift Creek Cross Section 6

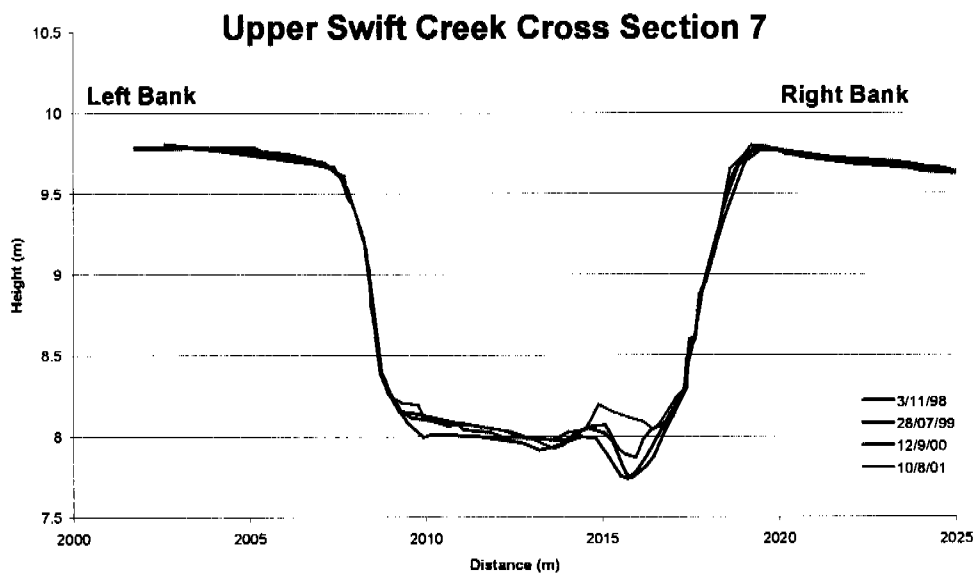


Figure 50 Upper Swift Creek Cross Section 7



Figure 51 An accumulation of large woody debris at the upper Swift Creek gauge

Table 5 Hydraulic geometry parameter values for Upper Swift Creek

Bankfull Hydraulic Geometry Parameters	Cross Section UM01				Cross Section UM02				Cross Section UM03				Cross Section UMGW			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	12.02	11.97	11.94	12.18	10.88	10.67	10.77	11.25	6.53	6.55	6.80	7.11	9.63	9.51	9.46	Not
Width (m)	11.28	11.37	11.57	11.32	10.36	10.21	10.13	10.21	6.73	7.07	7.20	7.25	8.97	8.77	8.75	Installed
Hydraulic mean depth (m)	1.066	1.053	1.032	1.075	1.051	1.045	1.063	1.102	0.970	0.928	0.945	0.981	1.073	1.085	1.081	
Maximum depth (m)	1.758	1.750	1.713	1.807	1.633	1.607	1.564	1.643	1.303	1.241	1.202	1.277	1.474	1.380	1.381	
Mean velocity (ms ⁻¹)	0.46	0.45	0.45	0.46	0.45	0.45	0.45	0.47	0.43	0.42	0.42	0.43	0.46	0.46	0.46	
Discharge (m ³ s ⁻¹)	5.47	5.41	5.32	5.57	4.91	4.79	4.90	5.24	2.79	2.72	2.86	3.06	4.40	4.38	4.35	
Specific Stream Power (Wm ⁻²)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.0	0.9	0.9	1.0	1.1	1.1	1.1	
Bankfull Hydraulic Geometry Parameters	Cross Section UM04				Cross Section UM05				Cross Section UM07				Cross Section UM08			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	10.69	10.66	10.35	10.66	11.23	11.27	11.25	11.53	14.01	14.06	14.09	14.24	14.97	15.49	15.36	15.96
Width (m)	9.36	9.41	9.35	9.36	10.03	10.09	9.94	9.98	12.32	12.83	12.14	12.26	11.54	11.54	11.60	11.60
Hydraulic mean depth (m)	1.142	1.132	1.107	1.139	1.119	1.117	1.132	1.156	1.137	1.096	1.161	1.161	1.297	1.342	1.324	1.376
Maximum depth (m)	1.574	1.471	1.471	1.574	1.490	1.479	1.483	1.551	1.504	1.504	1.535	1.545	1.740	1.923	1.797	1.927
Mean velocity (ms ⁻¹)	0.48	0.47	0.47	0.48	0.47	0.47	0.47	0.48	0.48	0.46	0.48	0.48	0.52	0.53	0.53	0.54
Discharge (m ³ s ⁻¹)	5.09	5.05	4.84	5.07	5.30	5.29	5.33	5.54	6.66	6.52	6.79	6.86	7.77	8.22	8.08	8.61
Specific Stream Power (Wm ⁻²)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.3	1.3	1.5	1.6	1.6	1.7

3.5 Swift Creek Cross sections

The gauging station is located on Swift Creek in the sinuous reach of Erskine et al (2001). Eight cross sections were installed at the gauge during the 1998 Dry season. They were resurveyed during each subsequent Dry season. The location of the cross sections is shown in figure 52 and the plots in order from upstream to downstream are included as figures 53 to 60. The values of the bankfull hydraulic geometry parameters for each survey at each cross section are listed in table 6. Saynor et al (2001) outline the complete *eriss* field program at this site.

A field-surveyed bed slope of 0.00095 m/m (0.95 m/km) was used to determine the values of the hydraulic geometry parameters in table 6. The Manning's n value used was 0.035. All of the cross sections have experienced a decrease in cross sectional area since 1998. Mean depth has also decreased at six cross sections with the other two remaining stable. The cross sections surveys indicate that there has been general bed aggradation since 1998. The sand supplied by erosion of Tributary North and East Tributary are deposited in this reach of Swift Creek as well as further downstream. It is recommended that monitoring should continue at this site while ever monitoring is continued on the mine site tributaries.

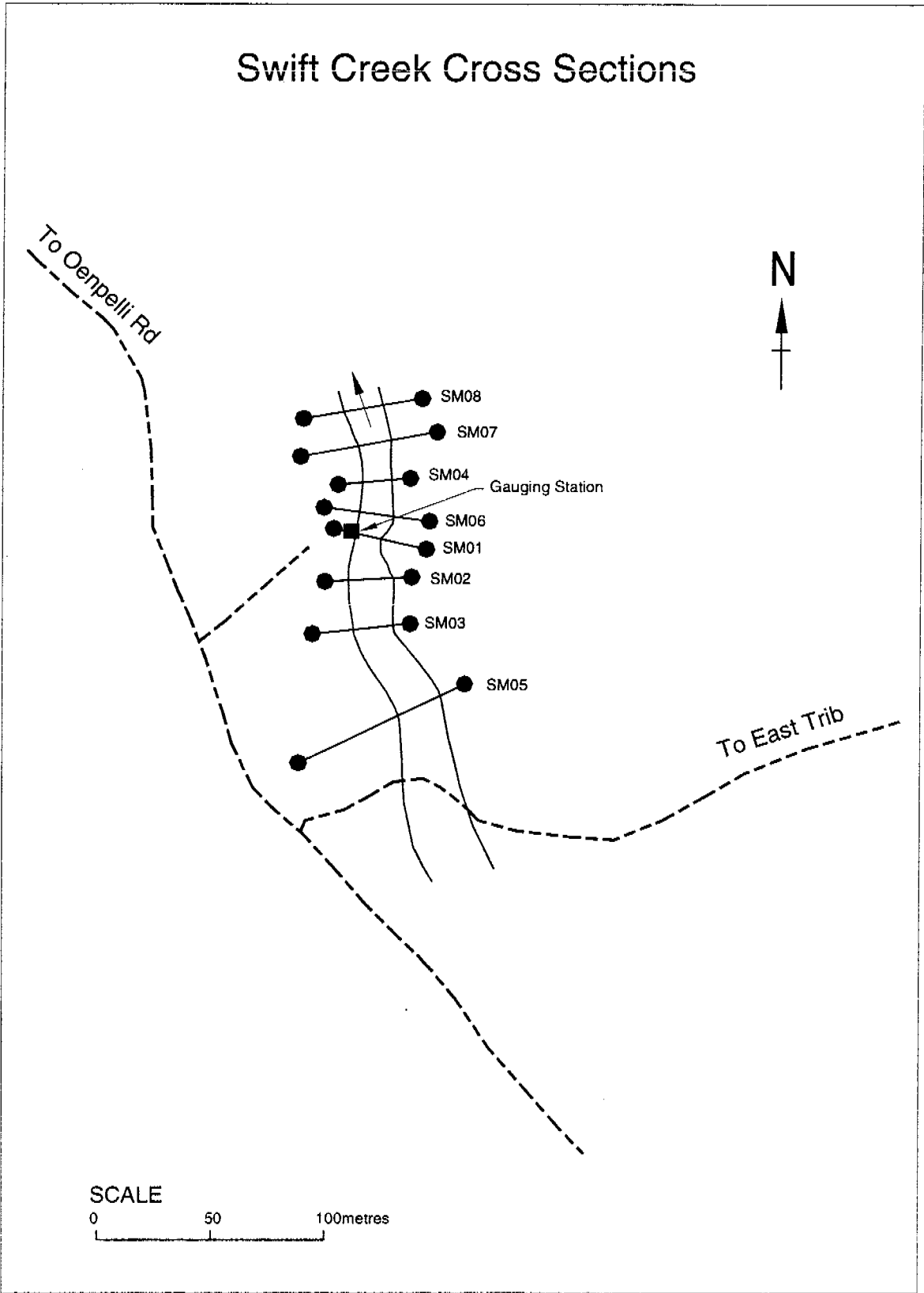


Figure 52 Location of cross sections at the lower Swift Creek gauge

Swift Creek Cross Section 5

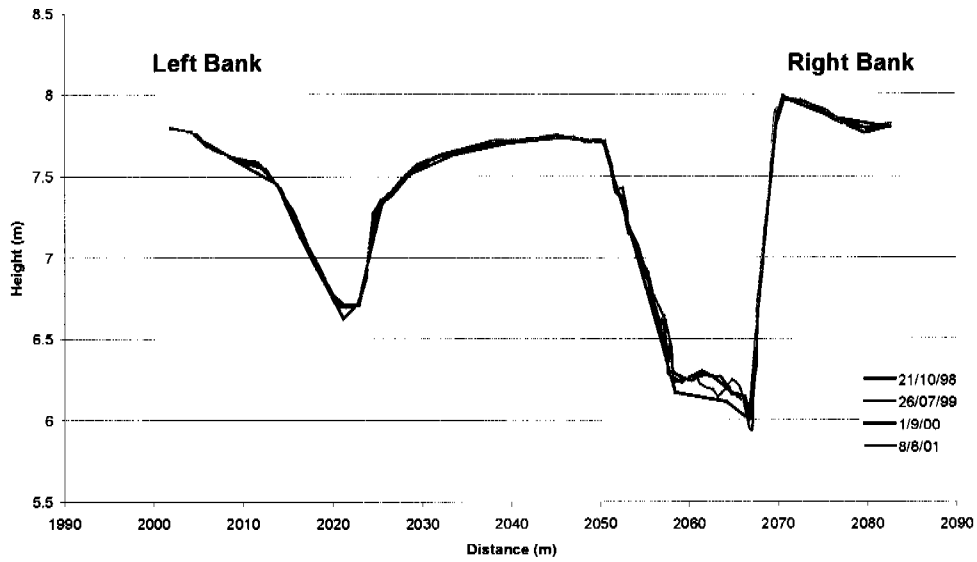


Figure 53 Swift Creek Cross section 5

Swift Creek Cross Section 3

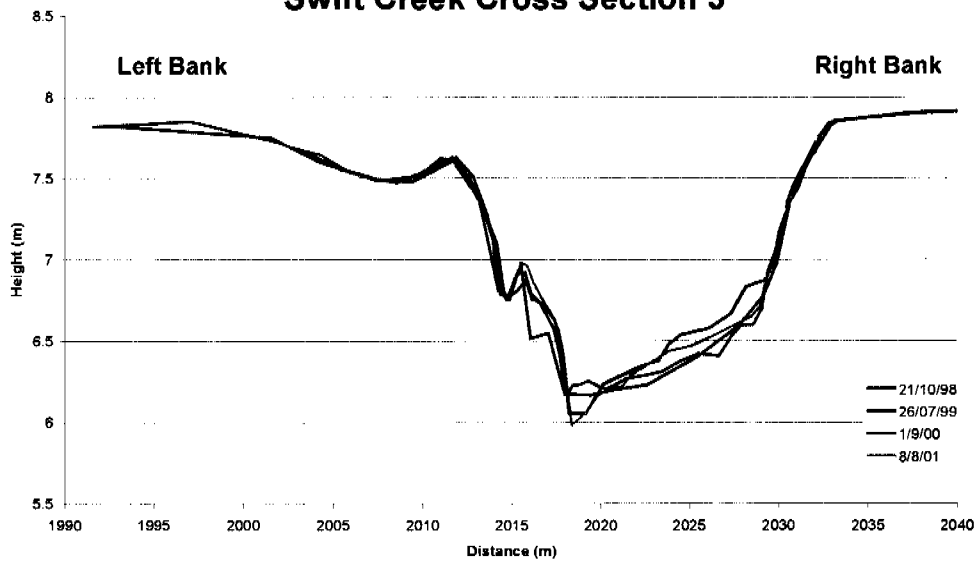


Figure 54 Swift Creek Cross section 3

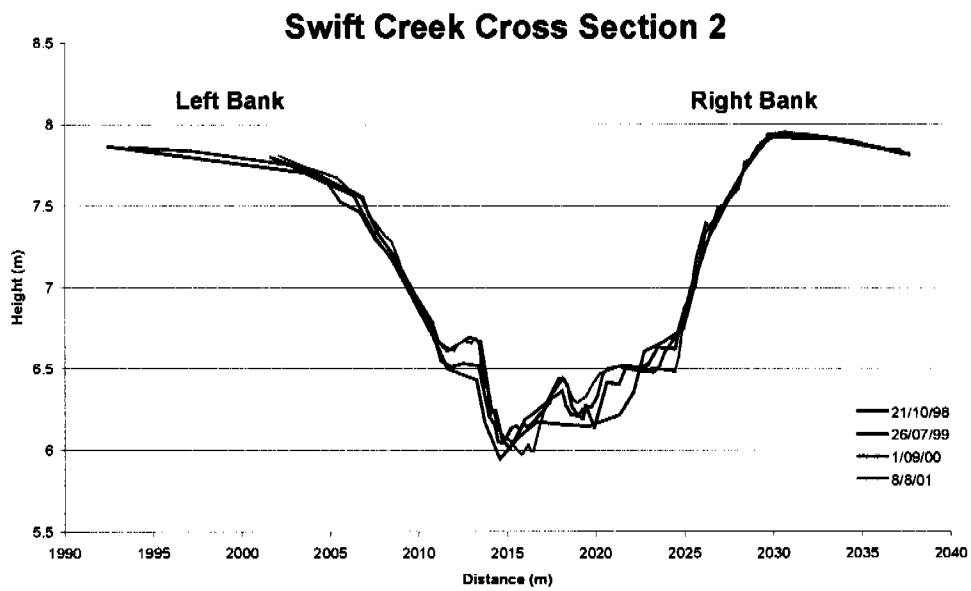


Figure 55 Swift Creek Cross section 2

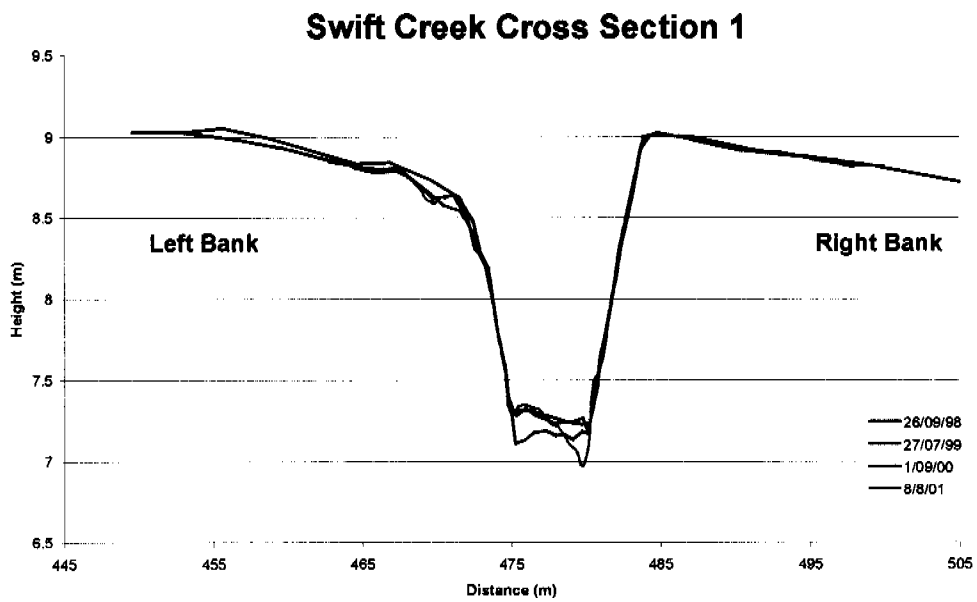


Figure 56 Swift Creek Cross section 1

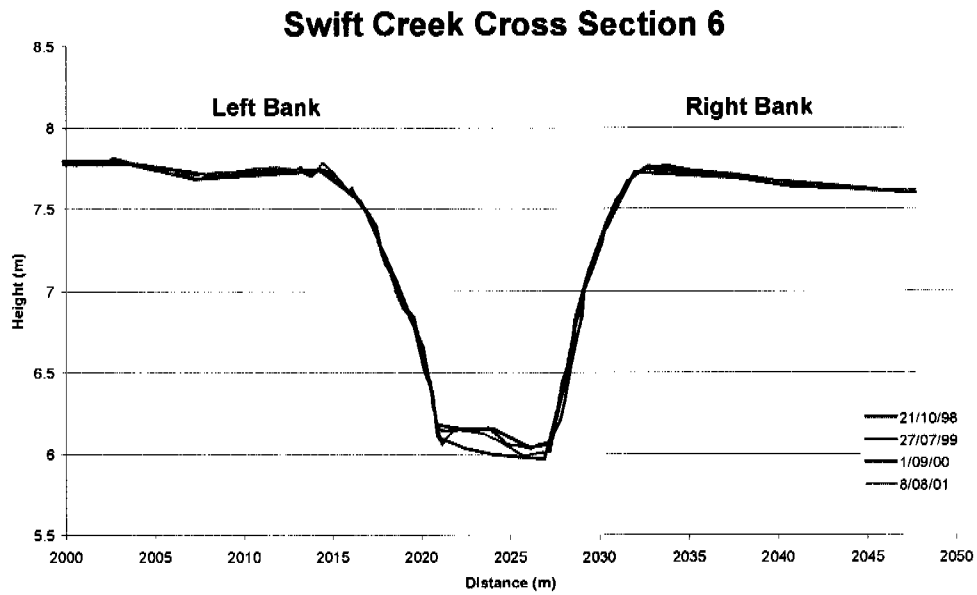


Figure 57 Swift Creek Cross section 6

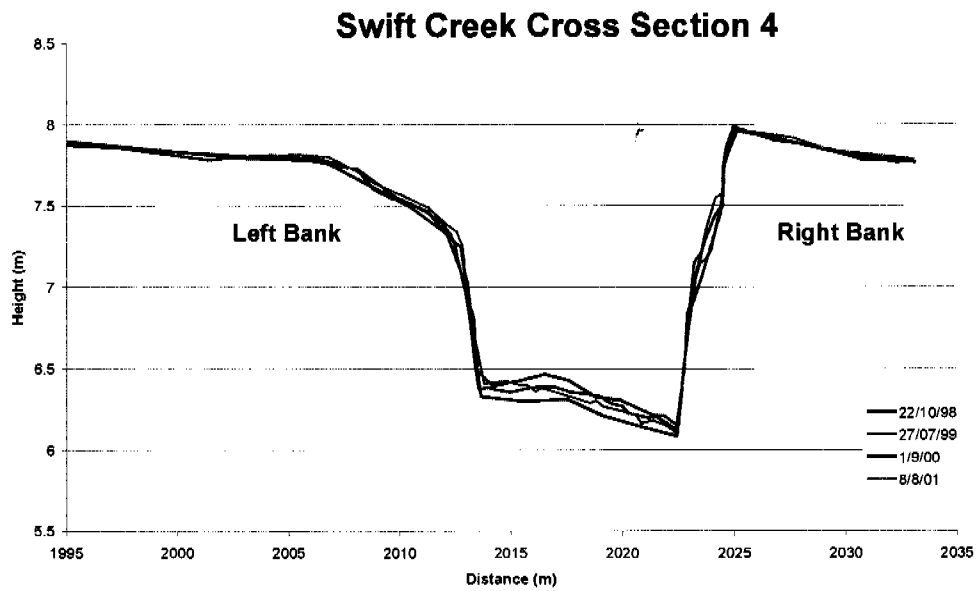


Figure 58 Swift Creek Cross section 4

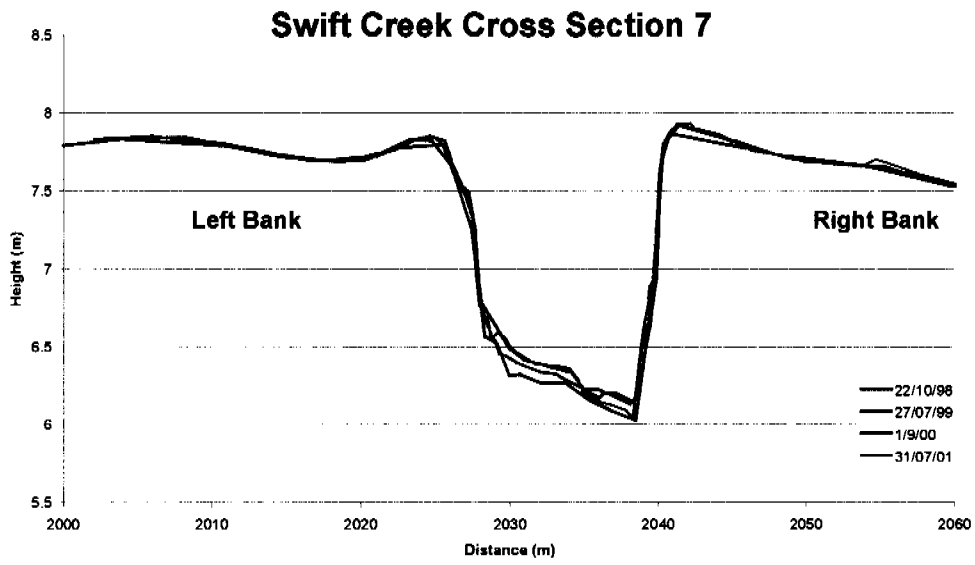


Figure 59 Swift Creek Cross section 7

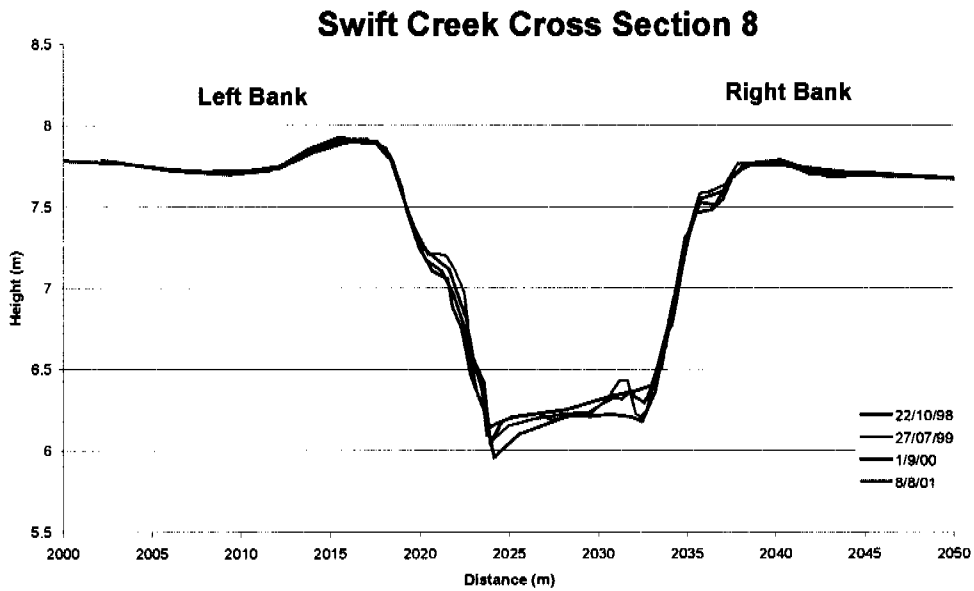


Figure 60 Swift Creek Cross section 8

Table 6 Hydraulic geometry parameter values for lower Swift Creek

Bankfull Hydraulic Geometry Parameters	Cross Section SM05				Cross Section SM03				Cross Section SM02				Cross Section SM01			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	20.24	20.27	20.40	21.53	18.77	18.14	19.08	19.92	16.82	16.66	17.17	18.28	10.20	9.89	9.89	10.35
Width (m)	19.05	19.05	18.89	19.23	20.78	20.06	19.77	20.10	19.68	19.81	20.38	19.56	11.02	11.05	11.30	10.75
Hydraulic mean depth (m)	1.062	1.064	1.080	1.120	0.903	0.904	0.965	0.991	0.855	0.841	0.843	0.934	0.926	0.894	0.875	0.962
Maximum depth (m)	1.772	1.681	1.613	1.702	1.650	1.575	1.460	1.462	1.495	1.456	1.421	1.522	1.565	1.313	1.356	1.431
Mean velocity (ms ⁻¹)	0.92	0.92	0.93	0.95	0.82	0.82	0.86	0.88	0.79	0.79	0.79	0.84	0.84	0.82	0.81	0.86
Discharge Q (m ³ s ⁻¹)	18.58	18.63	18.94	20.48	15.46	14.95	16.43	17.46	13.35	13.10	13.51	15.40	8.55	8.09	7.98	8.89
Specific Stream Power (Wm ⁻²)	9.1	9.1	9.4	9.9	6.9	7.0	7.8	8.1	6.3	6.2	6.2	7.4	7.2	6.8	6.6	7.7
Bankfull Hydraulic Geometry Parameters	Cross Section SM06				Cross Section SM04				Cross Section SM07				Cross Section SM08			
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998
Area (m ²)	17.14	16.91	17.09	17.57	9.25	8.91	9.40	10.08	17.54	17.65	18.16	18.88	18.37	18.21	18.74	19.75
Width (m)	17.43	17.78	17.63	18.00	10.77	10.96	11.51	11.65	14.82	15.61	14.77	15.05	18.55	18.68	18.65	18.80
Hydraulic mean depth (m)	0.984	0.951	0.969	0.977	0.859	0.813	0.817	0.865	1.183	1.130	1.230	1.254	0.990	0.975	1.005	1.050
Maximum depth (m)	1.745	1.691	1.697	1.763	1.158	1.135	1.107	1.173	1.751	1.651	1.662	1.768	1.603	1.634	1.530	1.717
Mean velocity (ms ⁻¹)	0.87	0.85	0.86	0.87	0.80	0.77	0.77	0.80	0.99	0.96	1.01	1.03	0.88	0.87	0.89	0.91
Discharge Q (m ³ s ⁻¹)	14.95	14.42	14.76	15.25	7.37	6.84	7.24	8.07	17.30	16.88	18.38	19.35	16.09	15.79	16.58	18.00
Specific Stream Power (Wm ⁻²)	8.0	7.6	7.8	7.9	6.4	5.8	5.9	6.5	10.9	10.1	11.6	12.0	8.1	7.9	8.3	8.9

4 Gully development on Tributary North

Initial investigations of the Swift Creek catchment were based on stereoscopic interpretation of 1:10000 vertical aerial photographs taken in 1991. During these investigations it was difficult to identify the channel of Tributary North. Field observations revealed that the channel was discontinuous and that an old vehicular track had been eroded to form a tributary gully of the main downstream gully (figure 61). Initial interpretations of gully development from sequential aerial photographs are outlined below. Vertical aerial photographs at a scale less than 1:50000 were not obtained because Tributary North has a catchment area of only 0.6 km² and hence is not clearly visible. Magnification by up to 3 times was necessary to identify some drainage forms.

1950 (1:50000 Black & White)

The scale makes the identification of any drainage features difficult. The vegetation is less dense than on the 1997 aerial photographs. There is no obvious channel present only a light coloured discontinuous depression on the photographs.

1964 (1:16000 Black & White)

These are good quality photographs that clearly show the drainage features. There is a vegetated depression near the Swift Creek junction but no gully. Further upstream, there are a series of depressions, some of which flow downstream of the current location of Tributary North. The floodout that currently exists below the mine site (Erskine et al 2001) is well developed.

1975 (1:25000 Black & White)

A track is probably present along the north side of Tributary North. There are two depressions upstream of Swift Creek which are separated from the sand splays of the upstream floodout by a series of depressions.

1981 (1:25000) Black & White)

A track is clearly visible either following one of the depressions of Tributary North or on slightly higher ground next to these depressions. There is a 100 m long section of sand-bed stream immediately upstream of Swift Creek which is separated from the sand splays of the upstream floodout by vegetated depressions.

1982 (1:34000 Black & White)

A sand-bed stream extends for about 100 m upstream of Swift Creek. Further upstream, there is still a series of depressions which are located downstream of the sand splays of the floodout.

1984 (1:25000 Colour)

These are poor quality images because only colour photocopies were purchased. The lower A straighter sand-bed extends about 300 m upstream of Swift Creek. Further upstream the road is clearly evident but has not eroded.

1987 (1:15000 Colour)

The track has certainly gullied near Swift Creek forming a tributary of the lower sand-bed stream. The length of the tributary is similar to that in 2001.

1991 (1:10000 Colour)

These images show the gullies on the lower section of Tributary North very clearly. Further upstream, there are a series of depressions.

1997 (1:30000 Colour)

Due to the scale, it is difficult to document a change since 1991. There is also an apparent increase in tree and shrub cover.

2001 (1:16000 Colour)

Despite the scale, further increases in tree and shrub cover make it difficult to identify drainage features.

From these initial investigations, it is clear that a vehicular track has eroded to form a tributary to the lower gully. This gully developed between 1984 and 1987 and clearly predates any mining activity. Further upstream, it is impossible to determine the chronology of gully development. It is important to note that the amount of tree and shrub cover has increased greatly since 1964.

At the upstream end of the lower gully is a nick point which is eroding at approximately 2 m per year (figure 62). The planform of the nick point and gully head was surveyed initially in 1998 and has been surveyed during each subsequent Dry season. The surveys are shown in figure 62.

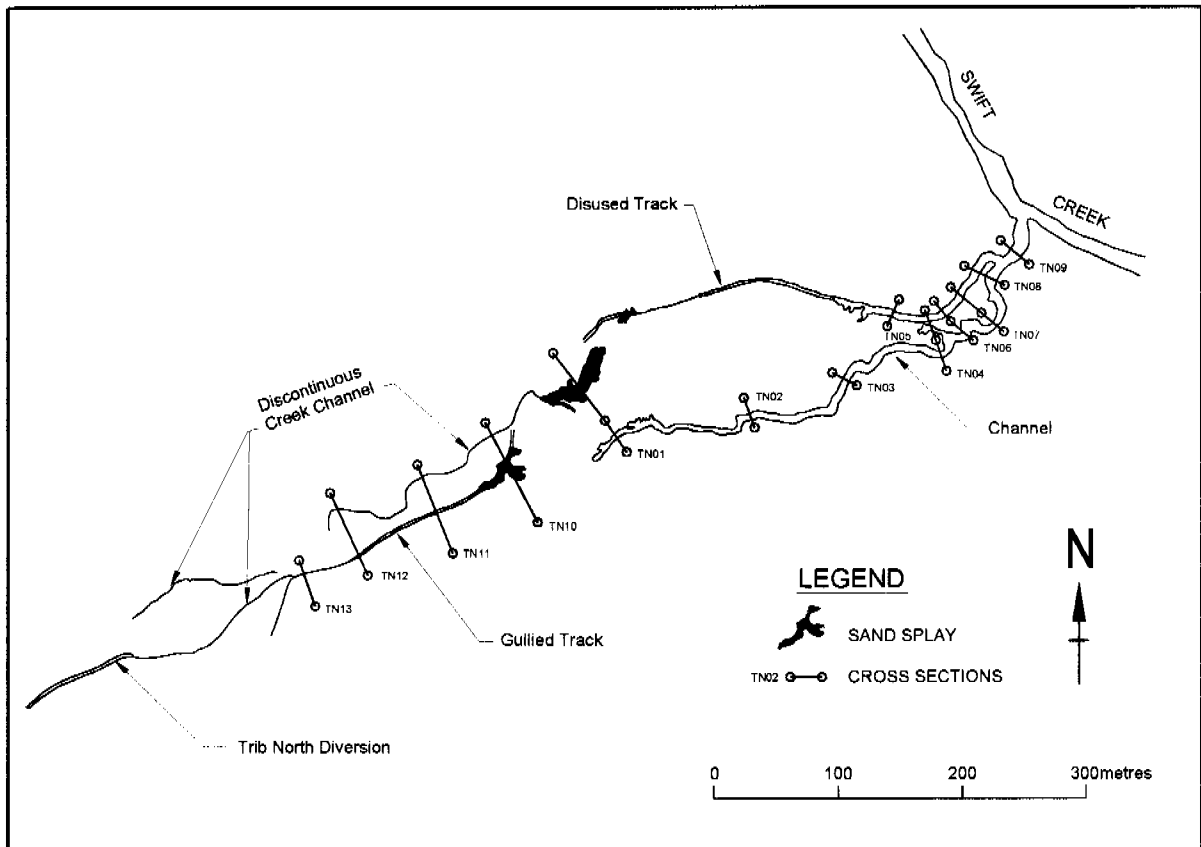


Figure 61 The lower section of Tributary North showing former tracks which have eroded and developed into gullies

Planform of Trib North Gully Knickpoint

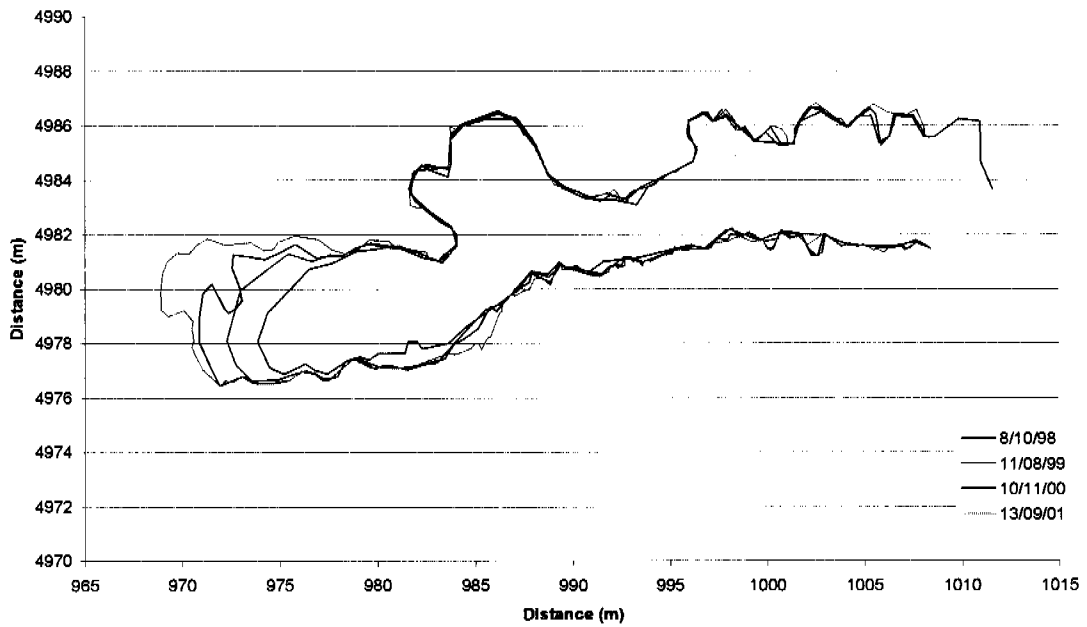


Figure 62 Annual surveys of the primary nickpoint at the head of Erskine et al's (2001) gullied reach on Tributary North

5 Hydraulic influences on recent channel changes

The influence of the hydraulic parameters in tables 2 to 6 on recent channel changes were investigated by determining product moment correlation coefficients between mean bankfull flow velocity, discharge and specific stream power between 1998 and 2001 and the percentage change in channel geometry over the same time period. Percentage change in bankfull area, width, mean depth and maximum depth was calculated by:

$$\left(\frac{V_2}{V_1} - 1\right) \times 100 \quad (6)$$

where V_1 is the value of the hydraulic geometric parameter in 1998 and V_2 is the corresponding value in 2001.

At the gauging wire cross section on upper Swift Creek, the relevant values for 1999 were used for V_1 (table 5). The results are presented in table 7 and are discussed below for each site.

Table 7 Correlation coefficients of mean hydraulic parameter values between 1998 and 2001 and percentage change in hydraulic geometry parameters between 1998 and 2001. Values significant at the 5% level are marked by an asterisk and values significant at the 1% level are marked by two asterisks.

Site	Hydraulic Geometry Parameter	Mean Flow Velocity	Bankfull Discharge	Specific Stream Power
Tributary North	Area	-0.345	-0.543*	-0.340
	Width	0.404	0.179	0.349
	Mean Depth	-0.679**	-0.647*	-0.624*
	Maximum Depth	-0.584*	-0.588*	-0.569*
Tributary Central	Area	0.175	0.550*	0.109
	Width	0.362	0.556*	0.323
	Mean Depth	-0.396	-0.234	-0.399
	Maximum Depth	-0.248	-0.358	-0.296
East Tributary	Area	-0.174	0.074	-0.133
	Width	-0.217	-0.384	-0.248
	Mean Depth	0.119	0.414	0.168
	Maximum Depth	-0.546	-0.133	-0.563
Upper Swift Creek	Area	-0.0003	0.005	-0.121
	Width	0.409	0.439	0.330
	Mean Depth	-0.573	-0.596	-0.652
	Maximum Depth	-0.736*	-0.812**	-0.798**
Swift Creek	Area	-0.026	-0.192	-0.056
	Width	0.092	0.271	0.272
	Mean Depth	-0.138	-0.436	-0.436
	Maximum Depth	-0.125	-0.114	-0.114

5.1 Tributary North

Percentage change in both mean and maximum depth are significantly but negatively correlated with mean bankfull flow velocity, discharge and specific stream power (table 7). This inverse relationship is unusual but can be explained by the active incision that is occurring near the headcut of the lower gully. Erskine (1999, 2002) discussed the processes of channel incision and gully erosion and concluded that initial rapid incision by upstream headcut retreat is followed by substantial channel widening and downstream progressing degradation before gully stabilisation occurs. There is a rapid, logarithmic decline in sediment yields by gully erosion following the first 20 years after gully initiation (Erskine 2002) and so active enlargement ceases about 20 years after initial incision. Therefore, once a gully has enlarged, it stabilises (Erskine 2002). The reason for the inverse relationship between percentage change in depth and the hydraulic parameters is that the unstable sites are those with the smallest cross sectional area that are undergoing active enlargement whereas the enlarged cross sections are now stable and exhibit little contemporary change. There is also a significant negative correlation between percentage change in bankfull area and mean bankfull discharge (table 7) which reinforces this evolutionary trajectory of gullies.

figure 63 shows the regressions of percentage change in mean depth between 1998 and 2001 and all three mean bankfull hydraulic parameters. While the simple linear correlations and regressions are significant, quite clearly the relationships are curvilinear with the quadratic equations always resulting in a significant increase in the explained variance over the linear equations. Such quadratic relationships also support the above evolutionary trajectory of gullies.

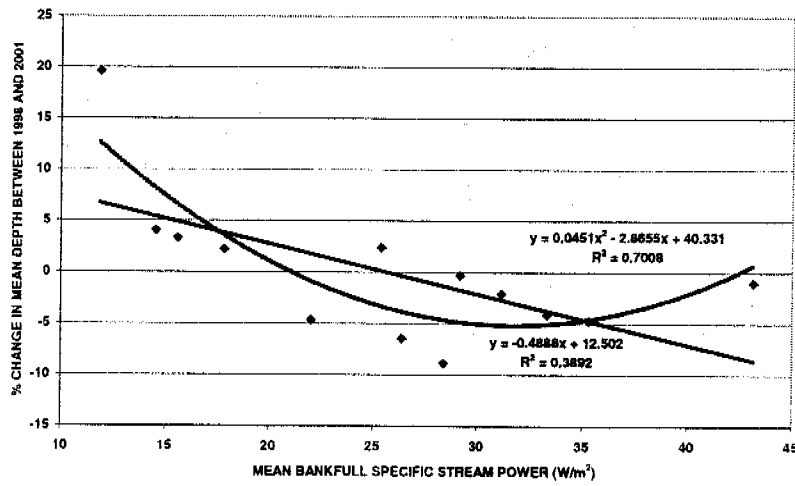
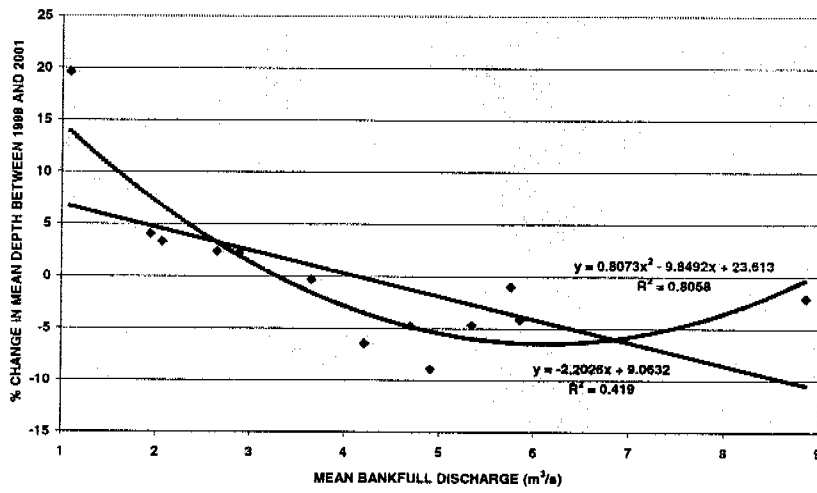
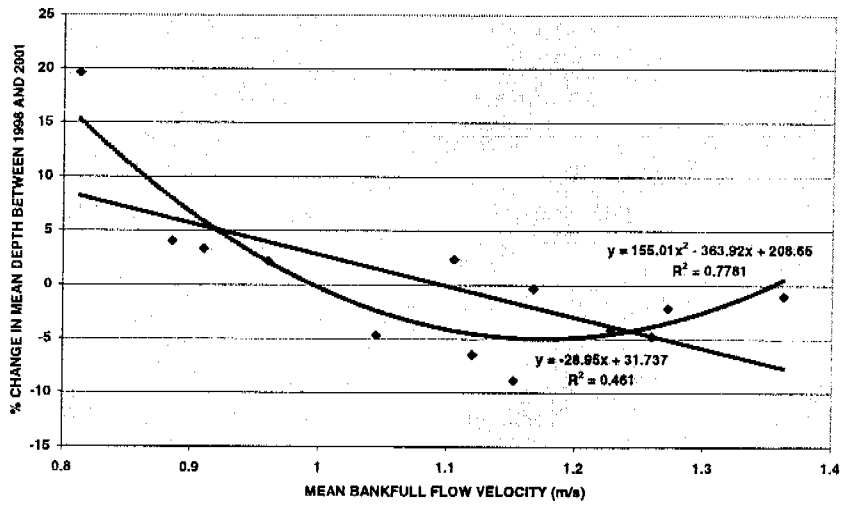


Figure 63 Regressions of bankfull mean velocity, discharge and specific stream power on percentage change in mean depth between 1998 and 2001 on Tributary North

5.2 Tributary Central

There is a significant positive correlation between percentage change in area and width between 1998 and 2001 and mean bankfull discharge (table 7). As noted in Section 3.2, Tributary Central is currently enlarging by widening and deepening. The correlations suggest that channel enlargement may have been a response to increased discharge due to recent high rainfall during the Wet seasons between 1998 and 2001, and/or due to increased runoff from the disturbed parts of the Jabiluka mine site. Further investigations are needed to resolve this issue.

5.3 East Tributary

There were no significant correlations at this site (table 7). Although some of the correlation coefficients are as high as those discussed above, the smaller sample size (ie fewer cross sections) resulted in the correlations being non-significant.

5.4 Upper Swift Creek

There is a significant negative correlation between percentage change in maximum depth between 1998 and 2001 and all hydraulic parameters (table 7). As channel incision is not occurring at this site (see section 3.4), the explanation outlined above for Tributary North does not apply. Instead, the smallest sections are deepening and the largest sections are filling (figure 64). The magnitude of the changes is relatively small (6.7 to -9.7%) and represents a short-term adjustment of the volume of sand stored in the bed.

5.5 Lower Swift Creek

There were no significant correlations at this site (table 7). As the channel is currently aggrading (section 3.5), this result suggests that sand storage may be caused by an oversupply of sand. This issue requires further investigation.

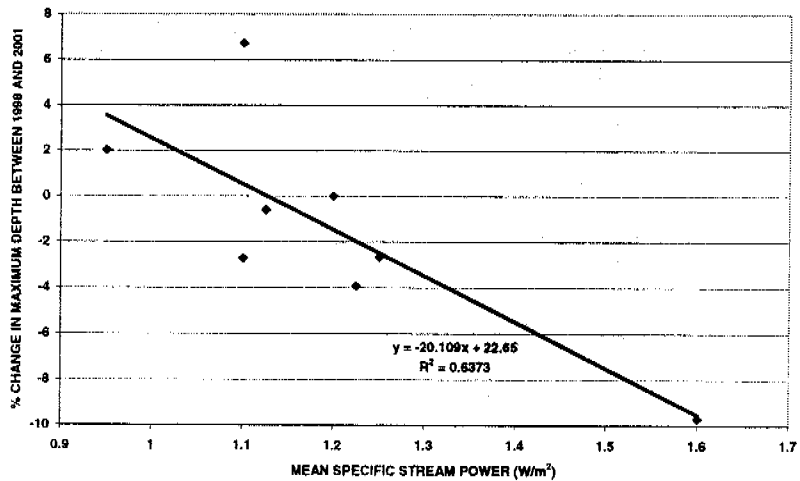
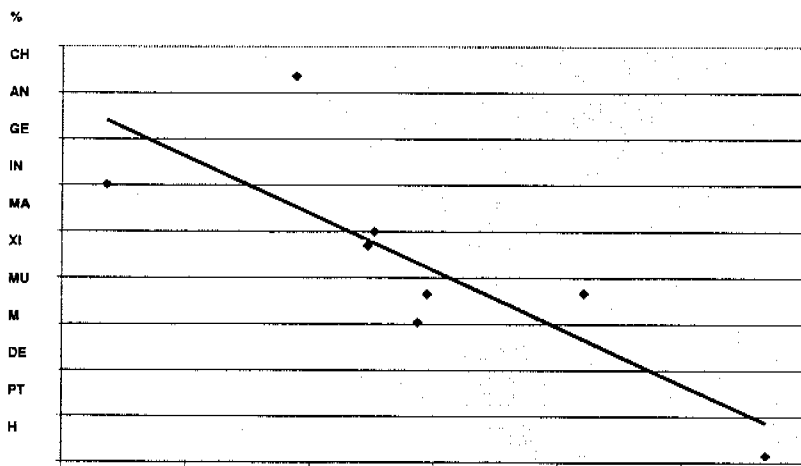
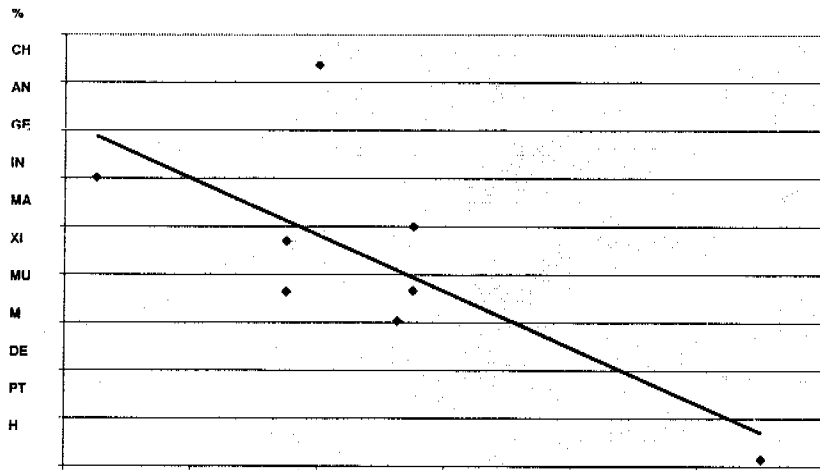


Figure 64 Regressions of bankfull mean velocity, discharge and specific stream power on percentage change in maximum depth between 1998 and 2001 on upper Swift Creek

6 Conclusions and recommendations

The channel cross sectional data collected by *eriss* for projects 10 and 11 of Erskine et al (2001) on Tributary North, Tributary Central, East Tributary and Swift Creek have been presented in this report as survey data (appendix 1) and plots of each cross section in section 3. There are now 51 permanently monumented cross sections installed in the Swift Creek catchment following the Vigil Network method of the US Geological Survey developed for the International Hydrological Decade. These cross sections have been surveyed each Dry season between 1998 and 2001 to determine the impact, if any, of the Jabiluka mine on channel changes and sediment storage in the Swift Creek catchment. The program includes two monitoring reaches (East Tributary and upper Swift Creek) on channels not impacted by the mine, two tributaries draining the mine site (Tributaries North and Central) and Swift Creek downstream of the two mine site tributaries and the two sites not impacted by the mine.

Preliminary interpretation of the cross section data for the first three years of the project indicates that:

- downstream of the mine, the floodout reach of Tributary North is currently stable and is not storing substantial amounts of recently supplied sediment, as usually occurs in floodouts. Accelerated sand supply from the mine site and/or the upstream engineered channel section has not been recorded to date. The gullied reach near Swift Creek is developing by the upstream migration of the primary nickpoint and subsequent channel widening and degradation. These geomorphic processes were occurring before the development of the Jabiluka mine and their rates of activity do not appear to have been accelerated.
- channel erosion by lateral migration, bed degradation and channel widening is active on Tributary Central. The causes of these recent channel changes are currently unknown and all available vertical air photographs should be obtained and interpreted to determine whether Tributary Central was unstable before the development of the mine.
- East Tributary is not impacted by the Jabiluka mine and the percentage changes in the hydraulic geometry parameters since 1998 are less than on the mine site tributaries. Nevertheless, the trends are similar and suggest that there may be a natural trend of bed degradation currently occurring in some reaches in the Swift Creek catchment.
- Upper Swift Creek is not impacted by the Jabiluka mine and the documented channel changes since 1998 are minor in comparison to the above sites.
- Lower Swift Creek is located downstream of the mine site tributaries and the two sites not impacted by the mine, and the cross section surveys indicate that there has been general bed aggradation since 1998. The sand supplied by erosion of the mine site tributaries and East Tributary are deposited in this reach of Swift Creek as well as further downstream.

Continued monitoring of the cross sections is recommended while the mine is in a maintenance phase to provide data against which subsequent mine impacts can be determined.

Project 13 of Erskine et al (2001) involved the determination of the interactive mechanisms between riparian vegetation and large woody debris that stabilise channels and floodplains on sand-bed streams flanked by monsoonal vine forest but has still not been undertaken. It is recommended that this project should be completed to determine these mechanisms and to provide advice on possible remedial measures to stabilise the mine site tributaries.

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Appendix 1

This appendix contains the survey data for each cross section. The sections are shown in order from upstream to downstream on the monitored creeks. This is the same order that they appear in the text.

The datum used in each case is an assumed datum with a horizontal angle of either 0°, 90°, 180°, 270° used so that there is a distance (chainage) and a height. All measurements are in m and each cross section is independent of each other cross section. They will be tied in with dGPS and survey at a later stage.

The location of the data files on the *eriss* network is in the following directories:

R:\31\JABILUKA\projects\channel stability\data\Survey\swift*location*

where *location* refers to one of the five sites at which the cross sections are located.

**Tributary North
Cross Sections**

TN01 to TN13

TRIBUTARY NORTH Cross Section 13 (TN13)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
8961.201	14.076	8960.673	14.079	8960.682	14.073	8960.673	14.076
8964.634	14.029	8963.216	14.044	8962.988	14.042	8962.983	14.041
8968.675	13.921	8965.645	14.043	8965.286	14.026	8965.589	14.037
8973.639	13.81	8966.513	13.985	8966.337	14.007	8966.179	14.023
8977.697	13.681	8966.72	13.957	8966.692	13.952	8966.48	13.975
8978.451	13.64	8967.01	13.976	8966.949	13.969	8966.72	13.949
8981.853	13.547	8967.309	13.958	8967.142	14.007	8967.081	14.004
8982.575	13.527	8967.561	13.932	8967.38	13.942	8967.366	13.943
8983.194	13.51	8967.84	13.939	8967.603	13.921	8967.575	13.919
8983.965	13.486	8968.695	13.918	8967.883	13.949	8967.934	13.948
8984.886	13.468	8971.23	13.84	8970.26	13.887	8970.442	13.862
8986.332	13.476	8973.817	13.796	8972.678	13.83	8973.03	13.808
8987.603	13.519	8975.894	13.736	8975.418	13.73	8975.833	13.741
8988.725	13.54	8978.183	13.664	8977.853	13.656	8978.296	13.651
8989.213	13.56	8979.551	13.685	8979.561	13.683	8979.627	13.682
8989.562	13.428	8980.99	13.676	8981.185	13.667	8980.732	13.657
8989.815	13.315	8981.416	13.595	8981.682	13.585	8981.3	13.612
8990.006	13.34	8981.79	13.554	8981.897	13.522	8981.673	13.592
8990.332	13.495	8982.272	13.551	8982.139	13.525	8981.843	13.535
8990.684	13.603	8982.709	13.533	8982.464	13.547	8982.274	13.544
8991.705	13.652	8983.172	13.514	8983.123	13.502	8982.519	13.549
8993.674	13.678	8983.393	13.486	8983.524	13.477	8983.071	13.512
		8983.812	13.493	8983.876	13.478	8983.511	13.474
		8984.317	13.467	8985.703	13.472	8983.792	13.495
		8985.601	13.487	8986.536	13.508	8984.351	13.471
		8987.001	13.508	8987.056	13.527	8986.138	13.471
		8988.151	13.528	8987.606	13.529	8987.801	13.529
		8989.1	13.565	8988.315	13.533	8988.101	13.514
		8989.355	13.523	8988.673	13.551	8988.648	13.546
		8989.598	13.532	8989.296	13.561	8989.316	13.556
		8989.749	13.449	8989.581	13.532	8989.601	13.52
		8989.953	13.345	8989.85	13.389	8989.787	13.421
		8990.19	13.403	8990.059	13.375	8990.064	13.377
		8990.338	13.505	8990.265	13.453	8990.288	13.469
		8990.526	13.585	8990.458	13.598	8990.443	13.574
		8990.847	13.639	8990.756	13.616	8990.907	13.616
		8991.265	13.648	8991.969	13.661	8992.447	13.694
		8991.608	13.64	8994.069	13.692	8994.269	13.688

TRIBUTARY NORTH Cross Section 13 (TN13)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		8992.032	13.673	8996.926	13.787	8996.162	13.739
		8992.786	13.705			8998.004	13.82
		8993.869	13.692				
		8995.459	13.719				
		8996.947	13.795				
		8998.308	13.803				

TRIBUTARY NORTH Cross Section 12 (TN12)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7928.213	12.976	7927.445	12.967	7927.445	12.965	7927.449	12.982
7932.682	12.943	7930.154	12.953	7930.519	12.945	7929.301	12.98
7935.526	12.95	7932.372	12.94	7933.687	12.936	7931.893	12.944
7937.088	13.078	7934.687	12.935	7935.545	12.946	7934.736	12.938
7939.956	12.897	7935.574	12.953	7936.242	13.008	7935.634	12.964
7942.224	12.831	7936.458	13.036	7937.01	13.061	7936.511	13.038
7943.073	12.68	7937.146	13.07	7937.593	13.09	7937.592	13.097
7944.028	12.647	7938.067	13.051	7938.29	13.033	7938.648	13.002
7944.29	12.495	7939.132	13.014	7939.331	12.974	7939.856	12.935
7944.425	12.364	7939.702	12.914	7940.197	12.899	7941.315	12.878
7944.728	12.368	7940.795	12.885	7941.505	12.864	7942.238	12.847
7944.946	12.446	7942.081	12.871	7942.217	12.857	7942.586	12.814
7945.068	12.256	7942.556	12.819	7942.688	12.74	7942.775	12.715
7945.397	12.281	7942.887	12.703	7942.771	12.696	7943.175	12.668
7945.698	12.593	7943.349	12.669	7943.096	12.655	7943.731	12.641
7946.122	12.779	7944.029	12.645	7944.089	12.607	7944.096	12.642
7946.819	12.962	7944.181	12.597	7944.297	12.46	7944.214	12.574
7948.057	12.969	7944.417	12.398	7944.623	12.415	7944.343	12.428
7953.476	12.864	7944.583	12.366	7944.841	12.455	7944.595	12.38
7959.399	12.797	7944.959	12.432	7944.938	12.432	7944.725	12.409
7960	12.785	7945.039	12.265	7945.024	12.322	7944.892	12.437
7960.846	12.769	7945.404	12.276	7945.424	12.288	7945.003	12.343
7961.609	12.769	7945.475	12.494	7945.473	12.486	7945.402	12.285
7967.027	12.696	7945.787	12.643	7945.55	12.513	7945.456	12.483
7976.212	12.606	7946.013	12.757	7945.85	12.731	7945.635	12.593
7982.018	12.495	7946.559	12.904	7946.543	12.912	7945.947	12.734
7983.625	12.458	7946.937	12.951	7947.425	12.979	7946.203	12.847
7984.814	12.267	7947.955	12.967	7948.574	12.95	7946.833	12.947
7985.103	12.271	7949.464	12.908	7950.012	12.906	7947.965	12.975
7985.397	12.249	7951.972	12.864	7952.159	12.869	7949.251	12.905
7986.075	12.251	7954.502	12.835	7954.474	12.839	7952.153	12.853
7986.573	12.251	7956.386	12.819	7956.261	12.822	7955.415	12.826
7986.918	12.433	7958.458	12.798	7958.665	12.798	7959.024	12.819
7988.476	12.484	7959.431	12.813	7959.802	12.761	7959.443	12.784
7992.837	12.647	7959.76	12.757	7961.021	12.76	7959.713	12.775
7996.898	12.815	7960.294	12.781	7962.021	12.781	7960.17	12.803
7998.703	12.8	7960.866	12.795	7962.852	12.764	7960.87	12.783
		7961.226	12.744	7964.798	12.724	7961.207	12.742

TRIBUTARY NORTH Cross Section 12 (TN12)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		7961.699	12.785	7967.798	12.711	7961.773	12.779
		7962.036	12.794	7971.35	12.647	7965.463	12.72
		7962.506	12.832	7974.829	12.645	7968.89	12.685
		7962.983	12.766	7977.505	12.587	7972.321	12.641
		7964.812	12.726	7978.979	12.594	7975.608	12.622
		7966.932	12.699	7980.125	12.553	7977.953	12.61
		7969.495	12.672	7981.563	12.527	7978.191	12.638
		7972.483	12.646	7983.026	12.479	7979.295	12.622
		7975.194	12.625	7983.755	12.433	7980.151	12.552
		7977.891	12.597	7984.194	12.354	7982.089	12.494
		7980.225	12.55	7984.662	12.274	7983.129	12.49
		7981.938	12.505	7985.803	12.228	7983.543	12.457
		7983.588	12.461	7986.52	12.252	7984.169	12.359
		7984.389	12.36	7986.705	12.386	7984.39	12.335
		7984.713	12.287	7987.279	12.441	7984.691	12.268
		7985.41	12.268	7989.097	12.496	7985.757	12.236
		7985.848	12.241	7990.971	12.567	7986.004	12.25
		7986.435	12.245	7992.962	12.662	7986.427	12.239
		7986.662	12.255	7995.171	12.745	7986.568	12.253
		7986.829	12.398	7997.801	12.808	7986.845	12.413
		7987.208	12.449			7987.25	12.445
		7989.132	12.496			7988.045	12.465
		7991.153	12.561			7990.115	12.529
		7993.704	12.685			7992.265	12.619
		7996.135	12.779			7993.955	12.68
		7998.055	12.796			7997.319	12.82

TRIBUTARY NORTH Cross Section 11 (TN11)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7076.546	12.969	7076.882	12.98	7076.874	12.985	7076.871	12.983
7073.68	12.82	7074.337	12.858	7074.152	12.853	7074.246	12.847
7071.111	12.662	7071.978	12.73	7071.095	12.659	7071.594	12.701
7068.846	12.431	7070.88	12.638	7069.319	12.503	7069.85	12.55
7067.465	12.245	7069.867	12.562	7068.397	12.379	7069.292	12.487
7066.728	12.177	7069.078	12.488	7067.682	12.308	7068.444	12.394
7066.185	12.229	7068.446	12.395	7067.072	12.223	7067.32	12.207
7065.415	12.32	7067.959	12.371	7066.682	12.202	7066.85	12.17
7064.367	12.506	7067.661	12.338	7066.05	12.209	7066.399	12.212
7061.3	12.603	7067.446	12.265	7065.614	12.294	7065.871	12.241
7057.442	12.649	7067.299	12.229	7065.027	12.401	7065.385	12.338
7052.503	12.594	7067.007	12.221	7064.796	12.471	7064.682	12.439
7049.63	12.566	7066.714	12.18	7063.39	12.547	7063.778	12.534
7048.241	12.551	7066.183	12.224	7060.578	12.621	7062.265	12.58
7047.942	12.577	7065.846	12.258	7057.398	12.659	7059.616	12.591
7047.651	12.555	7065.535	12.301	7054.437	12.61	7057.4	12.622
7046.602	12.545	7065.128	12.369	7051.454	12.585	7055.43	12.629
7044.126	12.557	7064.532	12.47	7048.542	12.552	7052.804	12.601
7041.37	12.562	7063.784	12.526	7046.082	12.567	7050.047	12.576
7040.568	12.568	7062.212	12.581	7042.711	12.567	7047.009	12.553
7039.792	12.564	7059.823	12.617	7042.395	12.571	7043.862	12.571
7039.205	12.575	7057.281	12.654	7041.912	12.544	7041.062	12.557
7037.68	12.617	7054.428	12.628	7041.459	12.573	7039.282	12.569
7037.239	12.549	7051.393	12.58	7040.575	12.543	7037.57	12.603
7036.818	12.526	7048.434	12.556	7039.407	12.578	7036.786	12.54
7036.448	12.561	7046.054	12.55	7038.08	12.633	7036.129	12.607
7036.093	12.622	7043.641	12.567	7037.395	12.574	7035.861	12.586
7035.702	12.501	7042.166	12.57	7037.066	12.532	7035.727	12.552
7035.512	12.351	7041.862	12.54	7036.489	12.564	7035.598	12.421
7035.233	12.296	7041.465	12.554	7036.095	12.614	7035.457	12.339
7034.657	12.351	7041.054	12.563	7035.847	12.583	7035.199	12.316
7034.334	12.385	7040.745	12.565	7035.691	12.503	7034.662	12.367
7034.025	12.544	7039.735	12.57	7035.493	12.353	7034.325	12.408
7033.754	12.645	7038.352	12.616	7035.278	12.312	7034.226	12.449
7031.822	12.655	7037.771	12.637	7034.782	12.348	7034.143	12.519
7030.23	12.578	7037.27	12.562	7034.315	12.401	7033.98	12.617
7024.551	12.607	7036.843	12.536	7034.223	12.422	7033.877	12.665
7018.13	12.647	7036.295	12.571	7033.872	12.64	7033.15	12.669

TRIBUTARY NORTH Cross Section 11 (TN11)							
23-Oct-98		11-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7008.127	12.723	7036.011	12.617	7033.753	12.663	7031.368	12.641
7003.499	12.773	7035.672	12.543	7031.381	12.633	7029.048	12.581
		7035.562	12.366	7027.261	12.594	7025.569	12.612
		7035.36	12.31	7023.349	12.622	7023.044	12.634
		7035.032	12.31	7023.017	12.614	7022.837	12.598
		7034.628	12.365	7022.809	12.601	7022.642	12.62
		7034.345	12.387	7022.641	12.628	7022.171	12.625
		7033.93	12.657	7022.154	12.637	7021.764	12.618
		7032.751	12.668	7021.921	12.61	7019.503	12.64
		7031.587	12.663	7021.717	12.623	7016.72	12.65
		7030.646	12.603	7019.27	12.658	7012.604	12.677
		7029.094	12.583	7015.859	12.679	7008.389	12.73
		7026.64	12.594	7012.95	12.681	7003.262	12.78
		7024.824	12.609	7009.79	12.71	7001.707	12.787
		7023.091	12.62	7005.782	12.767		
		7022.872	12.594	7002.405	12.771		
		7022.593	12.63				
		7022.149	12.626				
		7021.89	12.609				
		7021.679	12.625				
		7020.359	12.633				
		7018.157	12.65				
		7017.26	12.653				
		7015.86	12.669				
		7013.52	12.682				
		7011.197	12.693				
		7008.118	12.728				
		7005.49	12.758				
		7002.243	12.782				

TRIBUTARY NORTH Cross Section 10 (TN10)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
5089.715	12.07	5090.348	12.062	5090.364	12.064	5090.362	12.073
5084.772	11.927	5087.764	12.052	5087.499	12.062	5088.658	12.066
5081.329	11.788	5084.91	11.935	5084.544	11.919	5086.429	11.999
5080.299	11.726	5082.304	11.841	5081.52	11.801	5084.443	11.909
5079.872	11.408	5080.315	11.716	5080.268	11.709	5082.409	11.848
5079.318	11.318	5080	11.454	5080.11	11.494	5080.254	11.706
5078.798	11.359	5079.621	11.35	5079.961	11.415	5080.055	11.468
5078.238	11.481	5079.204	11.321	5079.643	11.359	5079.747	11.379
5078.056	11.548	5078.656	11.367	5079.269	11.32	5079.398	11.336
5077.793	11.716	5078.29	11.452	5078.878	11.346	5078.901	11.37
5076.595	11.755	5078.127	11.512	5078.502	11.393	5078.419	11.411
5075.087	11.802	5077.833	11.712	5078.173	11.498	5078.207	11.473
5073.101	11.837	5075.591	11.764	5077.982	11.571	5078.063	11.513
5069.414	11.815	5072.807	11.842	5077.819	11.731	5077.932	11.623
5065.866	11.788	5070.72	11.822	5075.463	11.761	5077.855	11.708
5061.112	11.756	5068.149	11.812	5071.431	11.829	5077.492	11.743
5057.467	11.734	5065.049	11.781	5067.759	11.805	5076.24	11.745
5055.658	11.842	5062.997	11.776	5064.207	11.771	5073.996	11.803
5052.93	11.889	5060.749	11.751	5060.863	11.749	5071.943	11.84
5050.59	11.893	5058.652	11.743	5056.826	11.789	5069.287	11.809
5049.884	11.86	5057.336	11.749	5054.294	11.886	5066.589	11.79
5049.041	11.855	5055.535	11.847	5051.262	11.892	5063.782	11.762
5048.423	11.838	5053.519	11.885	5050.718	11.893	5061.615	11.764
5045.237	11.809	5050.647	11.882	5050.368	11.822	5059.754	11.765
5041.205	11.748	5050.314	11.787	5049.924	11.823	5058.526	11.736
5035.953	11.637	5050.162	11.77	5049.639	11.871	5057.445	11.738
5032.907	11.53	5050.061	11.819	5049.233	11.861	5056.565	11.809
5028.283	11.54	5049.723	11.852	5048.735	11.799	5055.402	11.862
5024.196	11.563	5049.233	11.856	5048.369	11.83	5054.593	11.861
5018.742	11.563	5048.924	11.823	5044.445	11.798	5053.434	11.877
5012.062	11.599	5048.644	11.803	5040.053	11.719	5051.649	11.875
5004.374	11.755	5048.299	11.843	5036.619	11.673	5050.725	11.874
		5046.211	11.805	5033.208	11.561	5050.458	11.826
		5043.451	11.784	5030.022	11.542	5050.224	11.796
		5040.93	11.718	5026.573	11.561	5049.899	11.796
		5038.676	11.668	5023.253	11.57	5049.502	11.848
		5036.534	11.648	5021.79	11.58	5049.165	11.848
		5035.2	11.585	5021.413	11.565	5048.92	11.817

TRIBUTARY NORTH Cross Section 10 (TN10)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		5033.361	11.546	5021.247	11.581	5048.626	11.817
		5031.393	11.537	5020.777	11.569	5048.324	11.817
		5029.492	11.545	5020.554	11.555	5047.181	11.793
		5027.412	11.553	5020.313	11.565	5045.329	11.794
		5025.154	11.56	5017.145	11.574	5043.383	11.777
		5022.82	11.562	5013.888	11.592	5041.261	11.725
		5021.712	11.574	5010.039	11.631	5038.935	11.673
		5021.483	11.539	5006.358	11.732	5036.868	11.629
		5021.242	11.566	5002.809	11.765	5035.691	11.592
		5020.826	11.579			5034.441	11.548
		5020.626	11.542			5032.01	11.523
		5020.377	11.561			5028.845	11.532
		5018.985	11.56			5025.859	11.559
		5016.77	11.568			5022.726	11.588
		5014.244	11.579			5021.752	11.58
		5011.957	11.606			5021.478	11.56
		5009.277	11.666			5021.198	11.564
		5006.724	11.71			5020.847	11.572
		5004.14	11.755			5020.558	11.541
		5002.042	11.788			5020.248	11.581
						5019.698	11.567
						5016.998	11.569
						5013.881	11.584
						5011.184	11.609
						5008.386	11.665
						5005.693	11.715
						5002.092	11.782

TRIBUTARY NORTH Cross Section 1 (TN01)							
23-Oct-98		11-Aug-99		15-Sep-00		13-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
4969.148	10.788	4969.105	10.792	4969.111	10.789	4971.47	10.746
4973.129	10.729	4971.916	10.739	4971.622	10.75	4973.824	10.724
4977.512	10.588	4974.941	10.692	4974.702	10.7	4976.412	10.637
4981.551	10.464	4977.479	10.587	4977.495	10.602	4978.61	10.574
4982.319	9.848	4979.91	10.525	4980.259	10.535	4979.985	10.528
4983.345	9.52	4981.588	10.433	4981.367	10.492	4980.854	10.491
4984.664	9.759	4981.782	10.34	4981.471	10.455	4981.169	10.492
4985.428	10.459	4981.997	10.141	4981.515	10.389	4981.385	10.474
4989.074	10.571	4982.087	9.994	4981.795	10.307	4981.532	10.37
4995.281	10.745	4982.202	9.921	4981.871	10.197	4981.764	10.282
4997.809	10.783	4982.446	9.861	4982.189	9.964	4982.032	10.077
5004.531	10.791	4982.628	9.69	4982.423	9.947	4982.216	9.971
5009.054	10.725	4982.82	9.557	4982.621	9.852	4982.466	9.928
5012.106	10.669	4983.093	9.432	4982.637	9.675	4982.6	9.85
5012.709	10.652	4983.274	9.412	4982.908	9.626	4982.615	9.707
5013.026	10.671	4983.643	9.574	4983.171	9.547	4982.73	9.694
5013.523	10.645	4983.82	9.534	4983.306	9.484	4982.911	9.649
5014.078	10.639	4984.084	9.619	4983.447	9.478	4983.099	9.558
5016.668	10.632	4984.25	9.75	4983.562	9.552	4983.22	9.507
5021.199	10.637	4984.334	9.714	4983.689	9.569	4983.325	9.453
5024.102	10.689	4984.505	9.729	4983.943	9.589	4983.433	9.451
5025.893	10.697	4984.586	9.687	4984.184	9.635	4983.656	9.515
5026.287	10.746	4984.699	9.697	4984.325	9.715	4983.819	9.58
5027.109	10.71	4984.906	10.053	4984.813	9.754	4984.078	9.635
5027.566	10.771	4985.278	10.08	4984.924	9.989	4984.297	9.713
5028.916	10.819	4985.521	10.292	4985.288	10.096	4984.582	9.761
5032.366	10.907	4985.655	10.056	4985.513	10.27	4984.814	9.777
5035.078	10.942	4985.705	10.454	4985.683	10.196	4984.944	10.006
5040.75	10.784	4986.261	10.481	4985.798	10.181	4985.184	10.05
5046.012	10.719	4988.371	10.543	4985.857	10.426	4985.356	10.158
5050.499	10.706	4990.976	10.615	4986.41	10.478	4985.476	10.237
5056.333	10.722	4993.247	10.686	4988.4	10.554	4985.662	10.199
5063.542	10.755	4995.687	10.753	4990.911	10.612	4985.771	10.203
5067.701	10.734	4998.091	10.782	4993.262	10.684	4985.858	10.439
5068.591	10.927	5003.883	10.804	4995.99	10.769	4986.116	10.486
		5007.066	10.748	4998.027	10.784	4986.85	10.495
		5009.568	10.716	5002.258	10.81	4988.024	10.531
		5012.211	10.668	5004.29	10.803	4989.691	10.569

TRIBUTARY NORTH Cross Section 1 (TN01)							
23-Oct-98		11-Aug-99		15-Sep-00		13-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		5012.951	10.64	5007.058	10.753	4991.726	10.647
		5013.419	10.678	5009.823	10.727	4993.754	10.693
		5013.811	10.614	5012.099	10.673	4995.501	10.743
		5014.292	10.667	5012.439	10.657	4997.398	10.769
		5016.11	10.643	5012.595	10.657	4998.744	10.788
		5019.068	10.637	5012.602	10.66	5001.69	10.803
		5022.703	10.688	5012.984	10.647	5004.409	10.8
		5025.982	10.71	5013.3	10.683	5006.942	10.744
		5027.614	10.79	5013.586	10.676	5009.637	10.713
		5028.647	10.821	5013.821	10.633	5011.766	10.693
		5031.307	10.887	5014.057	10.643	5012.778	10.652
		5034.299	10.953	5014.291	10.653	5013.404	10.682
		5036.956	10.872	5016.292	10.645	5013.876	10.635
		5040.027	10.801	5020.706	10.651	5014.253	10.659
		5042.839	10.768	5024.563	10.695	5015.915	10.65
		5047.187	10.719	5027.497	10.746	5019.774	10.642
		5050.42	10.717	5030.269	10.872	5023.085	10.702
		5053.916	10.731	5033.781	10.963	5025.924	10.703
		5057.779	10.733	5036.468	10.885	5028.696	10.82
		5061.105	10.731	5039.662	10.82	5028.695	10.814
		5064.018	10.781	5042.991	10.794	5032.052	10.903
		5064.289	11.064	5046.838	10.727	5034.882	10.955
		5064.504	10.816	5050.782	10.728	5035.963	10.9
		5064.769	10.762	5054.125	10.73	5039.021	10.834
		5066.145	10.749	5057.972	10.736	5042.857	10.771
		5068.443	10.746	5061.656	10.739	5046.591	10.729
		5068.581	10.94	5064.912	10.763	5050.295	10.72
				5068.449	10.75	5053.859	10.718
						5056.971	10.737
						5060.13	10.733
						5063.491	10.748
						5065.864	10.745
						5068.443	10.747
						5068.586	10.935

TRIBUTARY NORTH Cross Section 2 (TN02)							
23-Oct-98		11-Aug-99		15-Sep-00		13-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
3978.44	9.602	3974.834	9.674	3974.838	9.679	3974.707	9.868
3981.2	9.522	3977.453	9.623	3977.143	9.634	3974.709	9.868
3982.282	9.02	3979.144	9.601	3979.186	9.597	3974.844	9.672
3983.484	8.649	3980.728	9.57	3980.771	9.587	3976.217	9.631
3983.645	8.438	3981.388	9.446	3981.303	9.491	3977.808	9.638
3984.15	8.437	3981.924	9.264	3981.779	9.33	3979.472	9.595
3984.7	8.463	3982.321	9.031	3982.13	9.131	3980.536	9.577
3984.816	8.765	3982.737	8.913	3982.509	8.962	3980.787	9.564
3985.835	9.138	3983.096	8.822	3983.145	8.845	3981.226	9.485
3986.945	9.279	3983.526	8.652	3983.276	8.786	3981.56	9.387
3988.116	9.482	3983.62	8.395	3983.439	8.718	3981.855	9.324
3989.88	9.586	3983.91	8.452	3983.619	8.447	3981.957	9.233
3993.393	9.686	3984.116	8.477	3983.735	8.424	3982.103	9.171
3996.276	9.769	3984.349	8.466	3984.167	8.424	3982.288	9.064
3997.969	9.791	3984.668	8.462	3984.64	8.33	3982.493	8.987
3997.968	9.79	3984.8	8.761	3984.671	8.756	3982.903	8.918
		3985.05	8.857	3984.867	8.835	3983.13	8.879
		3985.595	9.058	3985.342	8.942	3983.313	8.781
		3986.119	9.179	3985.673	9.089	3983.443	8.619
		3986.663	9.224	3986.204	9.197	3983.627	8.497
		3987.471	9.346	3987.333	9.332	3983.776	8.331
		3987.882	9.449	3987.988	9.467	3983.915	8.292
		3988.914	9.536	3988.766	9.523	3984.086	8.322
		3990.763	9.598	3990.5	9.61	3984.222	8.369
		3993.045	9.676	3992.89	9.674	3984.458	8.413
		3995.105	9.738	3995.114	9.741	3984.689	8.361
		3997.34	9.81	3997.762	9.811	3984.753	8.383
						3984.81	8.665
						3984.902	8.776
						3985.076	8.89
						3985.28	8.934
						3985.498	9.066
						3985.598	9.077
						3985.812	9.1
						3985.973	9.172
						3986.245	9.22
						3986.718	9.258
						3987.229	9.308

TRIBUTARY NORTH Cross Section 2 (TN02)							
23-Oct-98		11-Aug-99		15-Sep-00		13-Sep-01	
Distance	Assumed	Distance	Assumed	Distance	Assumed	Distance	Assumed
(m)	Height (m)	(m)	Height (m)	(m)	Height (m)	(m)	Height (m)
						3987.655	9.4
						3987.996	9.472
						3988.511	9.505
						3989.215	9.556
						3990.306	9.586
						3991.637	9.629
						3993.11	9.676
						3994.628	9.711
						3996.26	9.772
						3997.937	9.809

TRIBUTARY NORTH Cross Section 3 (TN03)							
23-Oct-98		11-Aug-99		15-Sep-00		13-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2978.1	9.792	2978.057	9.799	2978.057	9.797	2978.057	9.796
2981.383	9.708	2980.364	9.73	2980.738	9.722	2979.918	9.743
2984.787	9.602	2982.379	9.677	2983.129	9.655	2982.09	9.682
2985.33	9.306	2984.58	9.613	2984.502	9.623	2983.48	9.641
2985.482	9.152	2984.815	9.581	2984.813	9.555	2984.435	9.625
2986.356	8.816	2984.96	9.497	2985.227	9.321	2984.655	9.588
2986.852	8.489	2985.031	9.4	2985.824	9.059	2984.756	9.52
2987.266	8.46	2985.176	9.331	2986.483	8.874	2984.97	9.499
2987.77	8.522	2985.594	9.136	2986.681	8.753	2985.038	9.411
2988.487	8.843	2985.78	9.027	2986.873	8.541	2985.255	9.302
2989.091	9.197	2986.043	8.938	2987.005	8.476	2985.539	9.164
2990.111	9.661	2986.312	8.888	2987.451	8.444	2985.893	9.012
2992.221	9.674	2986.543	8.867	2987.622	8.465	2986.211	8.929
2995.043	9.716	2986.695	8.72	2987.767	8.57	2986.563	8.837
2998.059	9.78	2986.836	8.534	2988.189	8.701	2986.73	8.621
		2987.231	8.339	2988.638	8.933	2986.909	8.547
		2987.352	8.341	2988.87	9.126	2987.186	8.345
		2987.48	8.379	2989.482	9.353	2987.418	8.298
		2987.699	8.54	2990.066	9.665	2987.551	8.314
		2988.086	8.66	2991.387	9.679	2987.646	8.363
		2988.35	8.783	2993.814	9.673	2987.803	8.384
		2988.639	8.9	2995.88	9.706	2988.027	8.452
		2988.879	9.112	2998.231	9.782	2988.141	8.692
		2989.208	9.244			2988.401	8.821
		2989.457	9.334			2988.811	9.022
		2989.821	9.542			2988.925	9.149
		2990.008	9.623			2989.18	9.249
		2990.423	9.693			2989.491	9.352
		2991.411	9.687			2989.811	9.553
		2992.95	9.672			2990.077	9.652
		2994.77	9.703			2990.462	9.69
		2997.413	9.76			2991.041	9.695
		3003.107	9.837			2992.54	9.676
						2994.658	9.712
						2996.465	9.747
						2998.405	9.786

TRIBUTARY NORTH Cross Section 5 (TN05)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
3523.763	9.7	3523.811	9.703	3523.813	9.707	3523.963	9.882
3520.17	9.725	3521.875	9.721	3520.811	9.712	3523.959	9.883
3517.015	9.737	3519.097	9.714	3517.865	9.729	3523.824	9.71
3514.68	9.738	3515.898	9.724	3515.072	9.726	3522.222	9.715
3513.683	9.577	3514.569	9.723	3514.579	9.721	3519.768	9.719
3512.785	9.102	3514.133	9.63	3514.026	9.585	3517.584	9.711
3511.938	8.755	3513.631	9.464	3513.902	9.497	3515.611	9.715
3511.41	8.664	3513.063	9.219	3513.445	9.393	3515.017	9.717
3510.164	8.762	3512.792	9.101	3513.319	9.341	3514.494	9.684
3509.542	9.019	3512.694	9.021	3513.214	9.269	3514.073	9.582
3509.424	9.136	3512.249	8.837	3512.767	9.107	3514.001	9.512
3508.857	9.35	3511.902	8.797	3512.702	9.03	3513.89	9.443
3508.696	9.469	3511.717	8.746	3512.253	8.853	3513.784	9.433
3508.091	9.698	3511.586	8.656	3511.786	8.812	3513.579	9.332
3507.228	9.738	3511.371	8.661	3511.674	8.728	3513.222	9.267
3504.463	9.752	3511.21	8.665	3511.427	8.665	3512.996	9.201
3501.627	9.784	3511.094	8.712	3511.134	8.699	3512.827	9.131
		3510.7	8.745	3510.576	8.757	3512.559	9.012
		3510.547	8.753	3510.111	8.796	3512.341	8.885
		3510.393	8.798	3509.707	8.914	3511.838	8.811
		3510.252	8.774	3509.526	9.03	3511.687	8.792
		3510.087	8.782	3509.443	9.138	3511.551	8.714
		3509.805	8.887	3509.312	9.207	3511.39	8.678
		3509.54	9.012	3508.889	9.358	3511	8.709
		3509.427	9.139	3508.816	9.41	3510.62	8.75
		3509.213	9.247	3508.346	9.6	3510.189	8.789
		3508.859	9.345	3507.905	9.711	3509.853	8.868
		3508.663	9.489	3506.936	9.747	3509.622	8.968
		3508.395	9.567	3504.881	9.747	3509.442	9.143
		3508.061	9.69	3502.291	9.792	3509.112	9.278
		3507.842	9.731			3508.867	9.327
		3507.353	9.74			3508.778	9.421
		3506.376	9.732			3508.49	9.547
		3504.963	9.741			3508.139	9.646
		3502.482	9.778			3507.774	9.717
		3496.736	9.862			3507.479	9.746
						3506.676	9.733
						3505.168	9.752

TRIBUTARY NORTH Cross Section 5 (TN05)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						3503.777	9.764
						3502.007	9.794

TRIBUTARY NORTH Cross Section 4 (TN04)							
23-Sep-98		6-Aug-99		14-Sep-00		6-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1973.685	10.052	1973.665	10.058	1973.673	10.057	1973.523	10.262
1977.692	10.005	1976.337	10.022	1976.892	10.017	1973.52	10.262
1981.024	9.982	1978.789	10.006	1980.005	9.983	1973.665	10.054
1984.739	9.856	1981.188	9.985	1982.438	9.967	1975.391	10.036
1986.059	9.295	1983.75	9.911	1984.105	9.914	1977.629	10.012
1986.765	8.873	1984.9	9.846	1984.683	9.872	1979.974	9.988
1987.302	8.733	1985.439	9.64	1985.123	9.754	1981.916	9.967
1987.85	8.712	1985.6	9.604	1985.564	9.611	1983.633	9.922
1988.275	9.025	1986.001	9.324	1985.853	9.428	1984.645	9.868
1989.083	9.287	1986.375	9.16	1986.293	9.172	1985.001	9.8
1989.921	9.356	1986.676	9.008	1986.787	8.909	1985.365	9.672
1990.252	9.275	1986.737	8.807	1986.94	8.76	1985.764	9.512
1990.651	9.397	1986.95	8.745	1987.126	8.633	1985.901	9.39
1991.561	9.428	1987.085	8.582	1987.583	8.67	1986.02	9.301
1991.961	9.427	1987.617	8.617	1988.029	8.737	1986.48	9.093
1992.468	9.542	1987.959	8.65	1988.233	8.823	1986.638	9.008
1993.166	9.414	1988.141	8.802	1988.381	9.048	1986.749	8.882
1994.63	9.468	1988.269	9.016	1988.879	9.205	1986.869	8.834
1996.31	9.442	1988.871	9.208	1989.434	9.35	1987.008	8.741
1997.439	9.554	1989.662	9.369	1989.78	9.392	1987.128	8.64
1998.498	9.696	1990.243	9.335	1990.631	9.336	1987.384	8.606
2001.654	9.806	1990.736	9.351	1991.378	9.354	1987.838	8.619
2005.359	9.834	1991.335	9.354	1992.001	9.483	1988.013	8.742
2007.015	9.78	1992.243	9.506	1992.629	9.524	1988.141	8.804
2007.635	9.599	1992.651	9.528	1992.931	9.457	1988.399	9.095
2008.254	9.33	1993.043	9.436	1993.058	9.425	1988.521	9.142
2008.992	9.252	1993.799	9.441	1993.993	9.445	1988.802	9.204
2009.787	9.298	1995.493	9.463	1995.618	9.452	1989.35	9.317
2010.788	9.441	1996.186	9.454	1996.834	9.496	1989.688	9.376
2011.674	9.772	1997.463	9.574	1997.69	9.59	1990.106	9.366
2013.174	9.891	1998.545	9.714	1999.13	9.761	1990.395	9.347
2014.755	9.923	2002.494	9.823	2002.02	9.828	1990.85	9.392
2015.798	9.741	2004.727	9.816	2003.98	9.813	1991.345	9.382
2015.96	9.496	2006.495	9.823	2005.916	9.829	1991.731	9.419
2016.347	9.314	2007.215	9.74	2007.195	9.773	1992.098	9.486
2016.981	8.996	2007.39	9.614	2007.303	9.678	1992.433	9.512
2017.823	8.79	2007.907	9.531	2008.107	9.489	1992.69	9.505
2018.374	8.838	2008	9.422	2008.332	9.399	1992.964	9.443

TRIBUTARY NORTH Cross Section 4 (TN04)							
23-Sep-98		6-Aug-99		14-Sep-00		6-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2018.973	8.853	2008.245	9.35	2008.742	9.301	1993.349	9.435
2019.475	8.921	2008.831	9.27	2009.103	9.301	1993.998	9.446
2020.153	9.359	2009.572	9.3	2009.945	9.329	1994.923	9.459
2020.496	9.888	2010.312	9.364	2010.587	9.399	1995.77	9.462
2022.415	9.964	2011.147	9.577	2011.133	9.565	1996.37	9.479
2024.476	9.983	2011.719	9.744	2011.971	9.782	1996.976	9.514
		2012.202	9.818	2012.568	9.841	1997.728	9.602
		2013.082	9.889	2013.324	9.9	1998.927	9.757
		2014.038	9.938	2014.334	9.939	2001.097	9.806
		2015.034	9.857	2015.137	9.855	2002.385	9.812
		2015.841	9.672	2015.845	9.688	2003.611	9.828
		2015.955	9.46	2015.973	9.498	2004.657	9.827
		2016.204	9.379	2016.556	9.249	2005.368	9.835
		2016.55	9.216	2017.009	9.008	2006.3	9.825
		2016.846	9.052	2017.636	8.836	2006.882	9.798
		2017.045	8.986	2018.045	8.859	2007.101	9.768
		2017.453	8.914	2018.556	8.866	2007.252	9.696
		2017.765	8.823	2019.117	8.858	2007.675	9.613
		2018.045	8.866	2019.256	8.887	2008.042	9.507
		2018.261	8.868	2019.593	8.961	2008.305	9.389
		2019.137	8.861	2019.811	9.175	2008.625	9.318
		2019.275	8.882	2020.146	9.368	2008.966	9.3
		2019.51	8.94	2020.443	9.624	2009.326	9.281
		2019.825	9.203	2020.551	9.889	2009.958	9.359
		2020.221	9.475	2021.485	9.94	2010.5	9.396
		2020.391	9.951	2022.824	9.974	2010.92	9.468
		2020.991	9.906	2025.347	9.977	2011.305	9.591
		2021.901	9.969			2011.633	9.704
		2023.677	9.967			2012.021	9.79
		2025.829	9.972			2012.636	9.842
						2013.073	9.888
						2013.589	9.915
						2014.065	9.94
						2014.604	9.934
						2014.937	9.881
						2015.321	9.821
						2015.451	9.797
						2015.628	9.712
						2015.79	9.617

TRIBUTARY NORTH Cross Section 4 (TN04)							
23-Sep-98		6-Aug-99		14-Sep-00		6-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						2015.968	9.505
						2016.108	9.466
						2016.32	9.39
						2016.472	9.256
						2016.67	9.196
						2016.816	9.085
						2016.97	9.019
						2017.39	8.958
						2017.619	8.841
						2017.812	8.81
						2018.162	8.835
						2018.604	8.87
						2018.913	8.853
						2019.113	8.888
						2019.379	8.905
						2019.58	8.972
						2019.747	9.172
						2020.025	9.314
						2020.313	9.532
						2020.447	9.797
						2020.537	9.903
						2020.737	9.893
						2020.872	9.867
						2021.176	9.932
						2022.117	9.961
						2023.087	9.961
						2024.331	9.971
						2025.783	9.982
						2026.098	9.968

TRIBUTARY NORTH Cross Section 6 (TN06)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1974.713	8.597	2020.88	8.867	2020.881	8.873	2021.03	9.063
1977.004	8.562	2018.983	8.909	2017.891	8.872	2020.88	8.866
1978.627	8.546	2016.743	8.876	2015.098	8.87	2018.491	8.878
1979.212	8.456	2014.975	8.87	2012.518	8.897	2015.797	8.874
1979.536	8.34	2012.758	8.89	2011.122	8.84	2015.751	8.87
1980.329	8.12	2011.084	8.839	2010.993	8.637	2013.511	8.877
1981.217	7.739	2010.943	8.581	2010.731	8.394	2012.28	8.909
1981.9	7.652	2010.733	8.381	2010.362	8.178	2011.71	8.887
1982.343	7.647	2010.478	8.231	2010.06	7.983	2011.066	8.83
1982.631	7.591	2010.355	8.214	2009.702	7.857	2010.98	8.708
1983.148	7.554	2010.17	7.994	2009.345	7.808	2010.832	8.474
1983.515	7.595	2009.914	7.944	2009.114	7.835	2010.612	8.308
1983.814	7.798	2009.769	7.864	2008.866	7.836	2010.383	8.205
1984.25	7.898	2009.294	7.824	2008.648	7.793	2010.188	8.018
1984.476	8.037	2008.835	7.848	2007.947	7.62	2009.905	7.938
1984.893	8.09	2008.607	7.768	2007.628	7.628	2009.762	7.868
1985.426	8.251	2008.498	7.731	2007.377	7.762	2009.345	7.828
1986.384	8.218	2008.25	7.693	2006.936	7.886	2008.963	7.839
1987.169	8.177	2007.923	7.62	2006.509	8.065	2008.725	7.802
1988.014	8.164	2007.665	7.627	2006.277	8.163	2008.531	7.749
1988.411	8.255	2007.517	7.708	2005.957	8.438	2008.303	7.688
1988.625	8.454	2007.138	7.805	2005.777	8.722	2008.173	7.649
1989.939	8.529	2006.732	7.971	2005.567	8.79	2007.92	7.672
1991.783	8.55	2006.464	8.074	2005.098	8.846	2007.678	7.64
1993.687	8.6	2006.304	8.181	2003.776	8.854	2007.468	7.718
1995.709	8.663	2006.177	8.327	2001.858	8.835	2007.129	7.826
1997.346	8.716	2006.015	8.433	1998.385	8.762	2006.778	7.973
2001.342	8.819	2005.922	8.698	1995.83	8.664	2006.362	8.125
2002.81	8.84	2005.809	8.75	1993.806	8.608	2006.275	8.221
2003.91	8.843	2005.399	8.834	1991.793	8.553	2006.17	8.339
2004.979	8.854	2004.878	8.856	1990.318	8.532	2005.995	8.433
2005.665	8.772	2004.318	8.854	1988.821	8.509	2005.884	8.666
2005.987	8.367	2003.438	8.843	1988.435	8.395	2005.674	8.773
2006.219	8.221	2002.292	8.833	1988.371	8.298	2005.384	8.827
2006.856	7.875	1997.783	8.738	1987.904	8.215	2004.932	8.864
2007.292	7.72	1995.13	8.658	1987.159	8.217	2004.265	8.855
2007.694	7.69	1992.741	8.575	1986.383	8.241	2002.827	8.849
2008.052	7.722	1990.712	8.544	1985.658	8.273	2001.453	8.825

TRIBUTARY NORTH Cross Section 6 (TN06)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2008.536	7.755	1989.2	8.507	1985.075	8.133	1998.326	8.764
2008.892	7.874	1988.72	8.457	1984.486	8.056	1996.136	8.688
2009.364	7.774	1988.519	8.342	1984.224	7.895	1994.332	8.636
2009.985	7.919	1988.359	8.233	1984.018	7.666	1992.651	8.587
2010.943	8.55	1987.785	8.15	1983.588	7.528	1991.076	8.541
2011.088	8.846	1987.176	8.162	1983.18	7.454	1990.036	8.554
2014.595	8.868	1986.652	8.186	1982.705	7.555	1989.238	8.528
2017.811	8.87	1986.238	8.214	1982.256	7.602	1988.775	8.494
2020.861	8.871	1985.751	8.215	1981.85	7.673	1988.533	8.441
2021.026	9.064	1985.339	8.215	1981.341	7.737	1988.404	8.33
		1985.01	8.149	1980.911	7.877	1988.243	8.296
		1984.515	8.058	1980.457	8.09	1987.995	8.252
		1984.142	7.893	1980.12	8.175	1987.635	8.217
		1984	7.668	1979.523	8.397	1987.412	8.221
		1983.666	7.527	1979.213	8.474	1987.22	8.262
		1983.536	7.542	1978.456	8.55	1986.96	8.233
		1983.432	7.465	1976.6	8.567	1986.593	8.214
		1983.277	7.469	1974.368	8.583	1986.176	8.252
		1983.061	7.467	1971.435	8.632	1985.646	8.253
		1982.947	7.483			1985.24	8.206
		1982.821	7.498			1984.9	8.114
		1982.646	7.548			1984.44	8.032
		1982.427	7.593			1984.315	7.938
		1982.328	7.585			1984.129	7.873
		1982.03	7.585			1984.065	7.763
		1981.869	7.662			1983.855	7.636
		1981.413	7.675			1983.57	7.517
		1981.113	7.768			1983.028	7.486
		1980.717	7.936			1982.977	7.492
		1980.363	8.083			1982.794	7.559
		1980.048	8.151			1982.205	7.608
		1979.878	8.231			1981.889	7.659
		1979.534	8.33			1981.611	7.711
		1979.312	8.437			1981.305	7.743
		1978.761	8.506			1981.123	7.829
		1978.336	8.553			1980.832	7.954
		1976.854	8.558			1980.561	8.018
						1980.249	8.144
						1979.761	8.293

TRIBUTARY NORTH Cross Section 6 (TN06)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						1979.478	8.402
						1979.116	8.489
						1978.606	8.545
						1978.047	8.571
						1976.841	8.558
						1975.45	8.578
						1974.443	8.608
						1972.522	8.61
						1972.278	8.609
						1972.278	8.609
						1972.237	8.608

TRIBUTARY NORTH Cross Section 7 (TN07)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1976.317	8.697	1976.326	8.711	1976.296	8.716	1976.293	8.709
1978.384	8.656	1978.278	8.659	1978.405	8.661	1978.169	8.668
1980.533	8.646	1980.558	8.637	1980.963	8.617	1980.084	8.648
1982.539	8.574	1981.879	8.612	1982.077	8.595	1981.28	8.613
1983.851	8.065	1982.551	8.571	1982.629	8.562	1981.79	8.619
1984.366	7.896	1982.849	8.412	1982.728	8.477	1982.204	8.598
1984.73	7.869	1983.391	8.214	1983.378	8.223	1982.564	8.575
1985.069	7.749	1984.085	7.972	1984.214	7.976	1982.73	8.464
1985.559	7.669	1984.563	7.895	1984.647	7.889	1983.148	8.316
1986.053	7.595	1984.825	7.863	1984.935	7.831	1983.349	8.263
1986.734	7.634	1985.151	7.732	1985.205	7.718	1983.56	8.146
1987.007	7.998	1985.269	7.722	1985.791	7.625	1983.847	8.044
1987.252	8.127	1985.453	7.67	1986.35	7.509	1984.166	7.97
1987.802	8.24	1985.571	7.658	1986.542	7.536	1984.435	7.914
1988.475	8.383	1985.621	7.595	1987.046	8.02	1984.669	7.888
1989.819	8.521	1985.927	7.573	1987.582	8.186	1985.044	7.828
1991.064	8.661	1986.338	7.573	1988.35	8.371	1985.287	7.741
1993.164	8.686	1986.569	7.577	1989.737	8.514	1985.54	7.668
1995.604	8.722	1986.904	7.882	1992.904	8.688	1985.973	7.603
1997.998	8.763	1987.175	8.079	1995.322	8.714	1986.316	7.519
2002.233	8.843	1987.646	8.214	1998.151	8.76	1986.592	7.594
2004.005	8.899	1988.003	8.311	2002.465	8.839	1986.767	7.728
2006.436	8.954	1988.403	8.375	2005.957	8.944	1986.958	7.979
2008.997	8.974	1989.109	8.45	2008.852	8.969	1987.181	8.071
2011.789	8.99	1990.031	8.532	2012.098	8.997	1987.555	8.169
2014.086	9.013	1991.065	8.65	2014.125	9.02	1987.816	8.258
2016.392	9.031	1992.466	8.695	2016.217	9.044	1988.179	8.372
2018.311	9.031	1994.548	8.709	2017.853	9.033	1988.626	8.408
2019.077	8.774	1996.458	8.734	2018.374	9.034	1989.184	8.485
2019.544	8.515	1998.381	8.78	2018.635	8.879	1990.129	8.561
2020.42	8.089	2004.836	8.911	2019.043	8.755	1991.162	8.66
2020.967	7.857	2006.219	8.965	2019.275	8.649	1992.43	8.702
2021.482	7.685	2008.243	8.974	2019.641	8.537	1994.09	8.722
2022.1	7.871	2010.067	8.987	2019.992	8.324	1995.645	8.737
2022.703	7.951	2012.564	8.994	2020.467	8.09	1996.915	8.762
2023.477	8.098	2014.555	9.02	2020.723	7.974	1998.298	8.758
2024.124	8.257	2014.564	9.02	2020.989	7.889	2001.48	8.829
2024.363	8.395	2016.419	9.033	2021.309	7.845	2003.02	8.865

TRIBUTARY NORTH Cross Section 7 (TN07)

9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2025.158	8.627	2017.889	9.039	2021.828	7.861	2005.018	8.922
2025.495	8.811	2018.5	9.031	2022.284	7.883	2006.835	8.958
2026.142	9.011	2018.801	8.943	2022.673	7.956	2008.98	8.987
2028.868	9.012	2019.137	8.865	2023.14	8.048	2011.005	9.001
2030.522	9.012	2019.43	8.751	2023.695	8.134	2012.531	9.014
		2019.729	8.538	2024.095	8.228	2014.343	9.037
		2019.943	8.395	2024.907	8.484	2015.421	9.034
		2020.261	8.199	2025.486	8.729	2016.332	9.047
		2020.716	8.019	2025.59	8.875	2017.238	9.059
		2021.314	7.886	2026.069	8.961	2017.785	9.039
		2021.759	7.874	2026.725	9.005	2018.115	9.047
		2022.215	7.887	2029.001	9.006	2018.46	8.974
		2022.417	7.931	2031.859	8.965	2018.744	8.823
		2022.879	7.963			2019	8.733
		2023.166	8.009			2019.311	8.64
		2023.746	8.072			2019.601	8.522
		2024.159	8.203			2019.876	8.354
		2024.599	8.294			2020.111	8.28
		2024.959	8.438			2020.329	8.158
		2025.452	8.693			2020.554	8.055
		2025.58	8.913			2020.832	7.962
		2026.286	8.966			2021.148	7.888
		2026.916	9.004			2021.431	7.857
		2028.871	9.005			2021.998	7.894
		2030.938	8.978			2022.167	7.876
						2022.392	7.895
						2022.58	7.94
						2023.081	8.021
						2023.481	8.125
						2023.993	8.243
						2024.495	8.336
						2024.747	8.469
						2025.101	8.572
						2025.477	8.67
						2025.62	8.825
						2025.991	8.927
						2026.247	8.97
						2026.476	9
						2027.036	9.017

TRIBUTARY CENTRAL Cross Section 6C (TC06C)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
0.179	13.435	0.147	13.437	0.142	13.44	0.143	13.439
2.475	13.507	2.063	13.501	2.772	13.514	2.262	13.498
4.852	13.604	4.722	13.609	5.249	13.618	4.393	13.591
7.848	13.74	7.067	13.683	7.768	13.735	6.727	13.684
10.425	13.846	9.329	13.794	9.979	13.855	8.849	13.786
12.816	13.968	11.112	13.879	12.447	13.97	10.988	13.844
14.144	13.996	12.937	13.968	13.762	13.972	11.894	13.918
14.317	13.63	14.087	13.969	13.994	13.931	12.184	13.784
14.778	13.361	14.208	13.89	14.053	13.873	12.253	13.526
15.224	13.34	14.218	13.001	14.069	13.172	12.583	13.394
15.657	13.229	14.547	12.881	14.425	13.069	12.795	13.301
15.952	12.929	14.648	12.804	14.674	13.018	12.953	13.158
16.453	12.567	14.881	12.796	15.032	12.855	13.292	12.955
16.778	12.469	15.151	12.833	15.403	12.861	13.659	12.656
17.014	12.43	15.350	12.801	15.792	12.62	13.985	12.377
18.071	12.55	15.585	12.729	15.898	12.555	14.274	12.264
18.903	12.66	15.755	12.545	16.750	12.45	14.544	12.235
20.211	12.718	15.943	12.5	17.455	12.57	14.775	12.26
20.744	12.808	16.093	12.508	18.494	12.708	15.011	12.331
21.781	13.196	16.457	12.591	18.779	12.789	15.465	12.592
22.744	13.34	17.043	12.571	19.310	12.701	15.839	12.711
23.387	13.412	17.314	12.578	20.015	12.8	16.081	12.802
25.493	13.488	17.659	12.632	20.457	12.895	16.289	12.839
27.745	13.493	18.182	12.674	20.982	13.251	16.599	12.829
29.688	13.694	18.568	12.648	22.049	13.437	17.160	12.904
31.721	13.749	18.890	12.684	22.621	13.479	17.818	12.969
36.415	13.816	19.287	12.773	23.254	13.436	18.303	12.972
39.730	13.856	19.615	12.893	24.735	13.425	19.094	13.026
43.577	13.831	19.883	12.988	26.582	13.471	19.589	13.06
46.049	13.509	20.277	13.049	28.465	13.565	20.550	13.273
47.364	13.039	20.432	13.128	29.612	13.676	21.199	13.461
48.243	12.903	20.675	13.219	30.404	13.704	21.687	13.445
52.142	12.832	20.976	13.337	32.057	13.743	22.107	13.429
54.792	13.652	21.309	13.377	36.159	13.817	22.520	13.487
58.786	13.922	21.598	13.362	39.207	13.849	23.400	13.445
62.119	14.203	22.083	13.426	42.026	13.831	25.206	13.446
		22.686	13.504	44.043	13.806	27.240	13.486
		23.349	13.469	44.761	13.712	28.710	13.575

TRIBUTARY NORTH Cross Section 8 (TN08)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
4964.121	7.574	4964.121	7.58	4964.14	7.578	4963.99	7.79
4966.688	7.507	4967.101	7.502	4967.034	7.513	4963.995	7.79
4968.802	7.475	4968.964	7.484	4969.164	7.481	4964.128	7.599
4970.645	7.352	4969.896	7.442	4970.037	7.436	4966.147	7.531
4971.176	7.162	4970.571	7.347	4970.847	7.331	4968.403	7.476
4971.804	7.051	4970.854	7.325	4971.241	7.173	4969.233	7.472
4973.377	6.894	4971.152	7.187	4972.323	7.019	4970.028	7.439
4974.39	6.805	4971.533	7.154	4973.402	6.891	4970.365	7.363
4974.733	6.843	4971.814	7.058	4974.396	6.832	4970.782	7.349
4975.279	6.935	4972.98	6.94	4974.786	6.873	4971.232	7.195
4975.613	6.914	4973.754	6.867	4975.028	6.902	4971.616	7.121
4976.147	6.632	4974.518	6.829	4975.391	6.884	4972.178	7.029
4976.639	6.512	4975.153	6.922	4975.816	6.825	4973.201	6.903
4977.241	6.473	4975.51	6.896	4976.15	6.694	4973.723	6.86
4977.873	6.366	4975.889	6.786	4976.64	6.642	4974.256	6.842
4978.444	6.393	4976.308	6.632	4977.068	6.553	4974.748	6.878
4979.12	6.471	4976.479	6.628	4977.585	6.491	4975.006	6.906
4979.765	6.858	4976.68	6.685	4977.831	6.387	4975.641	6.856
4980.335	7.193	4976.875	6.653	4978.184	6.309	4975.851	6.834
4981.102	7.677	4977.07	6.536	4978.991	6.411	4976.085	6.731
4982.527	7.744	4977.246	6.503	4979.352	6.698	4976.397	6.691
4984.128	7.758	4977.499	6.496	4980.063	7.052	4976.701	6.715
4986.636	7.804	4977.644	6.455	4980.499	7.235	4976.891	6.645
4987.318	7.479	4977.813	6.343	4981.151	7.652	4977.221	6.612
4988.093	7.057	4978.144	6.34	4981.583	7.7	4977.539	6.534
4988.979	6.778	4978.47	6.278	4982.488	7.753	4977.745	6.425
4989.414	6.668	4978.779	6.339	4983.71	7.758	4977.901	6.363
4989.665	6.621	4978.918	6.342	4984.972	7.777	4978.304	6.334
4989.837	6.506	4979.081	6.502	4986.542	7.786	4978.857	6.32
4990.099	6.526	4979.351	6.658	4986.791	7.727	4979.338	6.711
4990.27	6.601	4979.709	6.882	4987.334	7.442	4979.719	6.921
4990.523	6.871	4980.045	7.086	4987.832	7.23	4980.094	7.116
4991.189	7.123	4980.466	7.319	4988.433	6.956	4980.414	7.239
4992.208	7.392	4980.741	7.444	4989.035	6.789	4980.608	7.35
4992.623	7.586	4981.106	7.623	4989.411	6.734	4980.817	7.421
4993.265	7.787	4982.191	7.722	4989.668	6.638	4981.218	7.65
4994.068	7.837	4983.576	7.753	4990.155	6.694	4981.449	7.683
4995.483	7.831	4984.23	7.763	4990.479	6.807	4982.187	7.706

TRIBUTARY NORTH Cross Section 8 (TN08)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
4997.693	7.814	4985.552	7.808	4990.565	6.895	4982.897	7.761
		4986.367	7.811	4990.922	7.024	4983.755	7.753
		4986.579	7.793	4991.265	7.184	4984.863	7.775
		4986.858	7.696	4991.93	7.326	4986.067	7.806
		4987.081	7.579	4992.538	7.48	4986.522	7.806
		4987.308	7.499	4993.092	7.601	4986.844	7.713
		4987.525	7.395	4993.238	7.732	4987.063	7.591
		4987.809	7.232	4994.107	7.834	4987.327	7.418
		4988.227	7.03	4995.848	7.828	4987.673	7.299
		4988.682	6.882	4997.832	7.815	4988.07	7.096
		4989.093	6.789			4988.406	6.945
		4989.4	6.697			4988.959	6.806
		4989.648	6.634			4989.274	6.758
		4989.958	6.624			4989.537	6.648
		4990.38	6.733			4989.731	6.634
		4990.559	6.892			4989.976	6.691
		4990.899	7.006			4990.309	6.782
		4991.291	7.168			4990.457	6.808
		4992.022	7.328			4990.544	6.897
		4992.415	7.459			4990.841	7.003
		4992.913	7.599			4991.019	7.149
		4993.172	7.713			4991.38	7.188
		4993.752	7.801			4991.667	7.268
		4994.96	7.841			4991.851	7.323
		4996.941	7.826			4992.269	7.382
		4998.582	7.814			4992.411	7.435
						4992.974	7.534
						4993.199	7.623
						4993.289	7.688
						4993.566	7.769
						4994.077	7.816
						4994.444	7.843
						4995.527	7.834
						4996.881	7.832
						4997.991	7.816

TRIBUTARY NORTH Cross Section 9 (TN09)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
3969.843	7.955	3969.833	7.962	3969.835	7.968	3969.825	7.972
3972.408	7.965	3972.395	7.963	3972.254	7.969	3971.848	7.967
3974.85	7.942	3975.389	7.937	3974.899	7.936	3974.155	7.946
3977.183	7.901	3977.328	7.903	3977.099	7.905	3976.401	7.914
3978.885	7.796	3978.797	7.815	3978.218	7.867	3977.982	7.905
3979.319	7.638	3979.087	7.719	3978.901	7.776	3978.571	7.824
3979.527	7.472	3979.588	7.491	3979.487	7.514	3978.894	7.784
3980.161	7.265	3980.287	7.2	3980.245	7.234	3978.988	7.702
3980.375	7.169	3980.719	6.855	3980.404	7.161	3979.378	7.563
3980.946	6.727	3981.067	6.744	3980.779	6.822	3979.596	7.454
3981.24	6.695	3981.604	6.755	3981.116	6.76	3980.068	7.308
3981.86	6.792	3982.081	6.773	3981.299	6.737	3980.361	7.175
3982.586	6.73	3982.726	6.713	3981.662	6.741	3980.519	7.069
3983.03	6.683	3982.998	6.689	3981.832	6.788	3980.854	6.785
3983.484	6.584	3983.122	6.648	3982.112	6.782	3981.223	6.732
3983.972	6.537	3983.332	6.665	3983.017	6.69	3981.558	6.755
3984.496	6.503	3983.803	6.462	3983.359	6.617	3982.131	6.773
3985.143	6.49	3984.136	6.49	3983.92	6.522	3982.65	6.746
3985.682	6.565	3984.59	6.497	3984.142	6.462	3983.159	6.674
3986.206	6.691	3984.908	6.5	3984.316	6.469	3983.292	6.634
3986.819	6.756	3985.348	6.487	3984.445	6.489	3983.638	6.631
3987.359	6.818	3985.567	6.489	3984.924	6.492	3983.836	6.579
3987.911	7.127	3985.732	6.546	3985.241	6.521	3984.057	6.472
3988.643	7.345	3986.007	6.645	3985.557	6.553	3984.233	6.464
3989.328	7.577	3986.231	6.64	3985.897	6.583	3984.706	6.507
3990.908	7.631	3986.461	6.718	3986.457	6.732	3985.241	6.516
3992.662	7.663	3987.029	6.782	3987.148	6.785	3985.572	6.562
3995.162	7.709	3987.396	6.835	3987.323	6.84	3986.097	6.641
3997.645	7.765	3987.707	7.047	3987.747	7.061	3986.301	6.674
4003.056	7.839	3988.051	7.19	3988.084	7.2	3986.402	6.711
4006.348	7.831	3988.252	7.279	3988.301	7.286	3986.731	6.807
4009.861	7.819	3988.63	7.344	3988.723	7.381	3986.913	6.8
		3988.962	7.426	3989.002	7.443	3987.212	6.806
		3989.223	7.494	3989.454	7.595	3987.395	6.886
		3989.311	7.559	3990.021	7.617	3987.834	7.103
		3989.876	7.584	3992.218	7.639	3988.225	7.256
		3991.015	7.623	3994.385	7.697	3988.683	7.366
		3992.146	7.648	3996.909	7.746	3989.044	7.458

TRIBUTARY NORTH Cross Section 9 (TN09)							
9-Oct-98		10-Aug-99		15-Sep-00		5-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		3994.197	7.695	4002.297	7.828	3989.48	7.607
		3995.913	7.726	4005.505	7.833	3989.783	7.596
		3997.925	7.765	4008.63	7.825	3990.457	7.623
						3991.217	7.633
						3992.31	7.642
						3993.83	7.685
						3995.561	7.719
						3997.033	7.744
						3998.614	7.765

**Tributary Central
Cross Sections**

TC01 to TC11

TRIBUTARY CENTRAL Cross Section 6A (TC06A)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
9031.212	14.261	9031.22	14.263	9031.227	14.265	9031.192	14.261
9027.755	14.269	9028.288	14.263	9027.902	14.261	9027.86	14.27
9024.297	14.28	9025.296	14.276	9021.427	14.257	9024.993	14.277
9020.65	14.238	9022.133	14.259	9017.796	14.225	9021.709	14.257
9017.019	14.196	9018.963	14.238	9017.44	14.221	9019.475	14.226
9016.979	13.373	9017.337	14.206	9017.063	14.114	9018.141	14.215
9016.475	13.211	9017.049	14.13	9017.026	13.411	9017.521	14.201
9016.402	12.852	9017.013	13.388	9016.458	13.192	9017.043	14.107
9016.087	12.738	9016.766	13.306	9016.388	12.803	9017.008	13.434
9015.755	12.714	9016.512	13.21	9016.214	12.682	9016.552	13.233
9015.493	12.745	9016.381	12.791	9015.849	12.617	9016.486	12.988
9014.535	12.907	9016.254	12.729	9015.533	12.555	9016.395	12.781
9013.446	12.913	9016.162	12.61	9014.927	12.607	9016.149	12.778
9011.834	12.991	9016.037	12.561	9014.08	12.732	9015.737	12.694
9011.317	13.061	9015.908	12.578	9012.842	12.939	9015.282	12.599
9010.604	13.258	9015.575	12.711	9012.366	12.948	9014.773	12.555
9009.659	13.421	9015.395	12.806	9011.665	13.097	9014.577	12.526
9007.768	13.55	9015.2	12.833	9010.741	13.335	9014.339	12.599
9006.545	13.642	9014.77	12.821	9009.812	13.435	9014.115	12.698
9005.363	13.491	9014.401	12.848	9009.035	13.447	9013.726	12.746
9003.973	13.655	9014.161	12.883	9008.128	13.525	9013.276	12.75
9002.225	13.731	9013.915	12.889	9006.563	13.642	9013.002	12.834
8997.542	13.852	9013.499	12.867	9006.07	13.591	9012.346	12.841
8993.842	13.702	9012.955	12.987	9005.707	13.554	9011.615	12.968
8991.885	13.546	9012.621	13.041	9005.454	13.502	9010.893	12.998
8990.27	13.675	9012.067	13.176	9004.938	13.558	9010.063	13.182
8988.202	13.664	9011.773	13.275	9003.418	13.687	9009.674	13.352
8985.912	13.843	9011.156	13.325	9001.844	13.728	9009.447	13.533
8981.657	13.973	9010.564	13.388	8997.785	13.824	9009.054	13.48
8978.349	14.133	9010.017	13.45	8995.317	13.785	9008.593	13.526
8975.156	14.246	9009.746	13.453	8992.64	13.591	9007.794	13.515
		9009.509	13.429			9006.969	13.591
		9009.122	13.433			9006.362	13.64
		9008.668	13.494			9005.744	13.573
		9007.589	13.57			9005.489	13.556
		9006.982	13.617			9005.41	13.495
		9006.386	13.633			9005.246	13.504
		9005.914	13.582			9004.81	13.585

TRIBUTARY CENTRAL Cross Section 6A (TC06A)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		9005.549	13.518			9004.071	13.649
		9004.382	13.614			9003.074	13.72
		9003.197	13.712			9001.316	13.759
		9001.909	13.729			8998.975	13.8
		8997.203	13.835			8997.637	13.83
		8994.819	13.769			8996.645	13.812
		8992.738	13.596			8994.778	13.775
						8993.303	13.678
						8992.86	13.605
						8992.059	13.556
						8991.396	13.566
						8991.22	13.614
						8990.915	13.65
						8990.25	13.678
						8989.479	13.645
						8988.791	13.641
						8987.98	13.697
						8987.286	13.769
						8986.768	13.792

TRIBUTARY CENTRAL Cross Section 6B (TC06B)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
0.141736	14.007	0.124258	13.999	0.133989	14.006	0.144941	13.986
3.021489	14.015	2.359749	13.974	3.173605	14.018	1.889706	13.972
6.143067	14.039	4.547375	14.015	6.368544	14.047	3.924902	14.01
9.080094	14.076	7.222496	14.05	9.550446	14.07	5.997915	14.014
10.9245	14.065	9.771151	14.078	10.53453	14.073	7.621309	14.056
11.1133	12.685	10.69562	14.048	10.76779	14.008	9.565954	14.061
11.51838	12.598	10.84012	13.824	10.92894	12.825	10.43616	14.058
11.96955	12.578	10.92575	12.807	11.33944	12.608	10.69244	14.008
12.45233	12.785	11.1972	12.672	11.6767	12.514	10.7731	12.847
13.0767	12.952	11.43494	12.573	12.35735	12.775	11.0377	12.731
15.18373	13.145	11.73583	12.494	12.83996	12.95	11.34776	12.584
16/01/00	13.269	11.86057	12.524	14.33328	12.992	11.47516	12.568
17.74601	13.41	12.49709	12.867	14.9113	13.014	11.75891	12.493
18.26215	13.47	12.73552	12.902	15.28491	13.103	11.95256	12.528
19.29191	13.473	13.55344	12.932	15.53204	13.14	12.88581	12.842
19.8376	13.379	13.91901	12.958	15.94309	13.164	13.76831	13.025
20.67761	13.41	14.67549	13.08	16.45538	13.237	15.05642	13.159
21.66935	13.598	16.03357	13.225	17.03257	13.365	15.34045	13.22
23.02744	13.593	16.42626	13.255	17.70018	13.416	16.01443	13.356
23.88094	13.532	16.63028	13.288	18.62713	13.459	16.91204	13.436
24.95848	13.584	17.022	13.429	19.52523	13.463	17.44704	13.577
26.52199	13.664	17.34923	13.474	20.31655	13.43	17.88969	13.633
28.29499	13.733	17.77335	13.461	21.67341	13.584	18.88937	13.574
32.63572	13.841	18.81116	13.485	22.83445	13.594	19.64894	13.499
34.34508	13.82	19.26787	13.463	23.9622	13.543	20.24573	13.419
36.99532	13.815	19.66416	13.436	25.15292	13.567	21.79894	13.588
39.86553	13.882	20.07413	13.408	26.92443	13.699	22.90452	13.589
43.77799	13.946	20.70519	13.444	28.8202	13.761	23.72466	13.538
48.2004	13.954	20.94042	13.468	32.65252	13.842	25.2099	13.578
52.37172	13.988	21.30321	13.557	36.36029	13.823	26.71902	13.679
		21.92698	13.597			28.63607	13.745
		22.44479	13.6			37.58886	13.838
		22.74089	13.631			39.97333	13.821
		23.06268	13.582			42.44788	13.847
		23.55012	13.577			43.85085	13.799
		24.55859	13.557				
		25.02101	13.55				
		25.37328	13.605				

TRIBUTARY CENTRAL Cross Section 6B (TC06B)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		26.19356	13.644				
		27.92949	13.728				
		32.77793	13.839				
		34.57042	13.814				
		37.09798	13.809				

TRIBUTARY CENTRAL Cross Section 6C (TC06C)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
0.179	13.435	0.147	13.437	0.142	13.44	0.143	13.439
2.475	13.507	2.063	13.501	2.772	13.514	2.262	13.498
4.852	13.604	4.722	13.609	5.249	13.618	4.393	13.591
7.848	13.74	7.067	13.683	7.768	13.735	6.727	13.684
10.425	13.846	9.329	13.794	9.979	13.855	8.849	13.786
12.816	13.968	11.112	13.879	12.447	13.97	10.988	13.844
14.144	13.996	12.937	13.968	13.762	13.972	11.894	13.918
14.317	13.63	14.087	13.969	13.994	13.931	12.184	13.784
14.778	13.361	14.208	13.89	14.053	13.873	12.253	13.526
15.224	13.34	14.218	13.001	14.069	13.172	12.583	13.394
15.657	13.229	14.547	12.881	14.425	13.069	12.795	13.301
15.952	12.929	14.648	12.804	14.674	13.018	12.953	13.158
16.453	12.567	14.881	12.796	15.032	12.855	13.292	12.955
16.778	12.469	15.151	12.833	15.403	12.861	13.659	12.656
17.014	12.43	15.350	12.801	15.792	12.62	13.985	12.377
18.071	12.55	15.585	12.729	15.898	12.555	14.274	12.264
18.903	12.66	15.755	12.545	16.750	12.45	14.544	12.235
20.211	12.718	15.943	12.5	17.455	12.57	14.775	12.26
20.744	12.808	16.093	12.508	18.494	12.708	15.011	12.331
21.781	13.196	16.457	12.591	18.779	12.789	15.465	12.592
22.744	13.34	17.043	12.571	19.310	12.701	15.839	12.711
23.387	13.412	17.314	12.578	20.015	12.8	16.081	12.802
25.493	13.488	17.659	12.632	20.457	12.895	16.289	12.839
27.745	13.493	18.182	12.674	20.982	13.251	16.599	12.829
29.688	13.694	18.568	12.648	22.049	13.437	17.160	12.904
31.721	13.749	18.890	12.684	22.621	13.479	17.818	12.969
36.415	13.816	19.287	12.773	23.254	13.436	18.303	12.972
39.730	13.856	19.615	12.893	24.735	13.425	19.094	13.026
43.577	13.831	19.883	12.988	26.582	13.471	19.589	13.06
46.049	13.509	20.277	13.049	28.465	13.565	20.550	13.273
47.364	13.039	20.432	13.128	29.612	13.676	21.199	13.461
48.243	12.903	20.675	13.219	30.404	13.704	21.687	13.445
52.142	12.832	20.976	13.337	32.057	13.743	22.107	13.429
54.792	13.652	21.309	13.377	36.159	13.817	22.520	13.487
58.786	13.922	21.598	13.362	39.207	13.849	23.400	13.445
62.119	14.203	22.083	13.426	42.026	13.831	25.206	13.446
		22.686	13.504	44.043	13.806	27.240	13.486
		23.349	13.469	44.761	13.712	28.710	13.575

TRIBUTARY CENTRAL Cross Section 6C (TC06C)

26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance	Assumed	Distance	Assumed	Distance	Assumed	Distance	Assumed
(m)	Height (m)	(m)	Height (m)	(m)	Height (m)	(m)	Height (m)
		23.744	13.434	45.407	13.588	29.178	13.603
		23.998	13.408	46.150	13.495	29.651	13.677
		24.362	13.442	46.360	13.441	31.021	13.734
		24.718	13.421	46.928	13.075	32.646	13.766
		25.554	13.48	47.479	12.945	35.118	13.811
		26.826	13.457	47.755	12.934	36.957	13.826
		28.225	13.544	48.514	12.932	39.339	13.833
		29.540	13.664	48.961	12.865	41.611	13.843
		30.643	13.707	49.328	12.937	43.865	13.804
		32.105	13.745	49.479	12.894	44.835	13.722
		36.374	13.816	50.066	12.823	46.019	13.532
		39.590	13.85	50.828	12.822	46.545	13.382
		43.769	13.83	51.747	12.821	46.673	13.276
		46.712	13.554	51.893	12.927	46.923	13.152
		47.626	13.468	52.258	12.955	47.417	13.031
		48.571	12.946	52.812	13.448	47.618	12.953
		50.047	12.882	53.002	13.453	48.540	12.879
		50.362	12.944	53.519	13.568	49.288	12.908
		50.635	12.849	54.353	13.703	50.287	12.894
		51.201	12.831	55.650	13.798	51.946	12.867
		51.861	12.842			52.557	13.04
		52.898	12.877			52.845	13.477
		53.585	12.849			53.510	13.608
		54.139	12.843			54.820	13.757
		54.338	12.942			56.880	13.883
		54.405	13.314				
		55.237	13.634				
		56.414	13.727				

TRIBUTARY CENTRAL Cross Section 7A (TC07A)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1032.808	13.078	1032.87	13.077	1032.876	13.077	1032.867	13.077
1030.269	13.158	1030.753	13.156	1030.13	13.164	1030.646	13.153
1027.597	13.226	1028.644	13.206	1027.535	13.242	1027.76	13.212
1024.828	13.279	1026.313	13.242	1024.428	13.285	1025.07	13.268
1022.07	13.32	1023.273	13.291	1022.812	13.305	1023.07	13.271
1019.858	13.242	1021.077	13.3	1022.457	13.279	1023.044	12.686
1019.642	12.588	1020.28	13.262	1022.341	13.141	1022.866	12.546
1018.838	12.186	1020.166	12.565	1022.149	12.272	1022.794	12.392
1017.579	11.525	1019.673	12.419	1021.833	12.261	1022.224	12.124
1017.181	11.333	1019.04	12.133	1021.586	12.172	1021.695	11.952
1016.583	11.511	1018.382	11.844	1021.445	12.247	1021.509	11.916
1014.717	11.671	1018.236	11.379	1021.211	11.623	1021.136	11.606
1013.655	11.736	1018.12	11.354	1020.726	11.423	1020.835	11.491
1012.889	11.845	1017.892	11.352	1020.513	11.38	1020.475	11.588
1011.366	11.88	1017.507	11.428	1019.927	11.506	1020.171	11.793
1010.149	12.037	1017.233	11.403	1019.347	11.462	1019.317	11.502
1009.454	12.171	1017.079	11.389	1018.491	11.281	1018.868	11.525
1008.646	12.221	1016.604	11.4	1018.143	11.244	1018.604	11.376
1007.488	12.543	1016.433	11.403	1017.658	11.269	1018.232	11.295
1007.011	12.503	1016.315	11.444	1016.557	11.493	1017.781	11.349
1005.537	12.548	1016.083	11.491	1015.837	11.679	1017.373	11.282
1004.658	12.464	1015.691	11.53	1014.406	11.722	1016.655	11.426
1002.257	12.62	1015.289	11.559	1013.685	11.747	1016.214	11.438
997.137	12.601	1014.662	11.653	1013.141	11.814	1015.795	11.547
993.761	12.625	1013.943	11.719	1012.659	11.899	1015.564	11.649
		1013.211	11.811	1011.75	11.953	1014.756	11.697
		1012.642	11.832	1010.987	11.98	1014.594	11.802
		1011.967	11.914	1009.895	12.127	1013.464	11.826
		1011.079	11.945	1008.537	12.208	1013.069	11.922
		1010.674	11.972	1007.356	12.523	1012.033	12.155
		1010.393	12.072	1006.962	12.497	1011.365	12.223
		1009.865	12.105	1005.441	12.543	1010.561	12.16
		1008.942	12.195	1005.106	12.486	1009.399	12.191
		1008.348	12.228	1004.537	12.461	1008.372	12.258
		1007.997	12.346	1003.987	12.495	1007.409	12.521
		1007.52	12.502	1002.244	12.627	1006.322	12.513
		1007	12.499	998.445	12.626	1005.305	12.529
		1006.068	12.538	995.45	12.626	1004.583	12.459

TRIBUTARY CENTRAL Cross Section 7A (TC07A)							
26-Oct-98		20-Aug-99		15-Sep-00		24-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		1005.346	12.539	992.943	12.657	1003.31	12.553
		1004.68	12.465			1001.522	12.652
		1003.867	12.51			998.392	12.628
		1002.283	12.618			996.041	12.647
		997.207	12.602			993.213	12.654

TRIBUTARY CENTRAL Cross Section 7B (TC07B)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2.206	12.907	0.135	12.79	0.138	12.787	0.145	12.776
5.326	12.992	2.482	12.909	2.828	12.92	2.363	12.894
7.775	13.067	4.511	12.977	5.290	12.992	4.460	12.981
11.449	13.086	6.593	13.013	6.807	13.006	6.422	12.991
11.542	12.191	8.323	13.071	8.252	13.057	7.470	13.007
12.657	11.699	9.624	13.066	8.873	13.035	8.443	13.014
13.015	11.347	10.069	13.027	9.211	12.842	8.509	12.488
13.415	11.373	10.131	12.096	9.352	11.854	8.800	12.412
14.081	11.532	10.573	11.839	9.875	11.488	9.017	12.31
15.468	11.528	11.175	11.466	10.262	11.299	9.519	11.81
16.216	11.586	11.741	11.253	10.618	11.222	10.052	11.249
16.909	11.857	11.983	11.258	10.825	11.218	10.350	11.238
17.796	12.056	12.594	11.27	11.393	11.321	10.569	11.296
18.716	12.236	12.904	11.244	11.745	11.362	10.772	11.223
20.624	12.368	13.367	11.321	12.128	11.434	10.995	11.186
21.834	12.594	13.713	11.333	12.308	11.478	11.490	11.357
23.460	12.467	13.867	11.385	13.465	11.594	11.810	11.409
24.671	12.502	14.454	11.49	14.853	11.587	12.032	11.362
26.030	12.595	14.988	11.564	15.437	11.684	12.553	11.353
27.698	12.646	15.483	11.645	15.663	11.659	13.049	11.44
32.637	12.677	15.706	11.705	16.729	11.957	13.652	11.554
35.495	12.609	16.293	11.904	18.176	12.229	13.976	11.575
		16.870	12.008	20.214	12.339	14.219	11.704
		17.453	12.072	20.988	12.439	14.442	11.634
		17.842	12.148	21.957	12.577	14.911	11.747
		18.195	12.242	23.098	12.5	15.434	11.702
		18.928	12.265	23.645	12.472	15.979	11.876
		20.371	12.341	24.680	12.498	16.335	11.866
		21.291	12.494	26.538	12.617	17.577	12.1
		22.000	12.583	28.127	12.656	17.952	12.202
		22.670	12.552	36.672	12.63	18.150	12.209
		23.661	12.464	39.181	12.664	18.539	12.315
		24.758	12.499	41.589	12.66	18.655	12.266
		26.304	12.602			19.468	12.273
		27.812	12.655			20.011	12.325
		33.420	12.674			20.980	12.414
						21.843	12.585
						22.374	12.588

TRIBUTARY CENTRAL Cross Section 7B (TC07B)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance	Assumed	Distance	Assumed	Distance	Assumed	Distance	Assumed
(m)	Height (m)	(m)	Height (m)	(m)	Height (m)	(m)	Height (m)
						23.031	12.505
						23.653	12.488
						24.823	12.501
						26.365	12.595
						27.616	12.65
						28.987	12.643
						31.479	12.644
						33.535	12.645
						36.467	12.625
						40.943	12.683
						44.775	12.605
						46.650	12.595
						47.823	12.528
						48.331	12.499
						48.655	12.355
						49.032	12.362
						49.579	12.469
						49.849	12.416
						50.187	12.163
						50.642	12.105

TRIBUTARY CENTRAL Cross Section 7C (TC07C)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
0.165	12.812	0.152	12.808	0.131	12.807	0.162	12.806
3.185	12.824	2.071	12.805	2.924	12.831	2.884	12.815
6.346	12.846	5.036	12.833	6.008	12.848	6.512	12.842
9.574	12.879	8.211	12.862	9.178	12.867	10.056	12.877
12.434	12.895	11.901	12.887	10.115	12.882	12.669	12.898
17.064	12.893	14.875	12.92	10.273	13.203	15.280	12.915
17.208	12.071	16.597	12.896	10.421	12.888	16.555	12.847
17.610	11.877	16.745	11.792	12.993	12.913	16.613	12.057
17.827	11.426	16.997	11.656	15.607	12.926	17.272	11.582
18.290	11.268	17.316	11.525	16.480	12.866	17.440	11.453
18.578	11.256	17.408	11.446	16.547	12.042	17.628	11.378
19.241	11.417	17.585	11.432	17.252	11.555	17.728	11.301
20.454	11.522	17.713	11.186	17.402	11.445	18.012	11.258
21.408	11.724	18.091	11.222	17.590	11.387	18.167	11.218
21.851	11.893	18.886	11.353	17.695	11.266	18.694	11.206
22.215	11.977	19.223	11.352	18.082	11.219	19.231	11.264
22.654	12.22	19.621	11.411	19.320	11.311	19.690	11.36
24.214	12.395	19.825	11.457	19.512	11.322	19.924	11.403
24.814	12.496	20.059	11.457	19.911	11.401	20.069	11.491
25.478	12.527	20.745	11.61	20.527	11.637	20.284	11.519
26.199	12.429	21.048	11.77	20.878	11.671	20.525	11.669
28.208	12.64	21.397	11.901	21.249	11.827	21.053	11.782
29.757	12.645	21.761	11.88	21.940	11.913	21.208	11.834
34.576	12.701	21.947	11.974	22.156	11.963	21.523	11.894
37.030	12.379	22.239	12.05	22.459	12.163	22.184	11.942
		22.428	12.173	23.201	12.322	22.700	12.204
		23.343	12.333	24.257	12.381	23.338	12.322
		24.412	12.387	24.646	12.477	24.421	12.388
		24.691	12.484	25.341	12.538	24.777	12.481
		25.371	12.557	26.284	12.473	25.211	12.512
		25.930	12.487	27.327	12.593	25.757	12.503
		27.095	12.547	29.474	12.635	26.276	12.476
		28.342	12.636	39.379	12.357	27.189	12.568
		29.835	12.646	45.377	12.666	28.024	12.615
		34.934	12.667	46.858	12.684	29.355	12.647
				48.041	12.49	30.454	12.667
				49.553	12.418	33.588	12.675
				49.716	12.539	35.014	12.675

TRIBUTARY CENTRAL Cross Section 7C (TC07C)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
				50.061	12.38	35.814	12.519
						37.289	12.427
						37.886	12.479
						38.200	12.396
						38.987	12.422
						39.612	12.382
						40.000	12.397
						40.277	12.261
						40.990	12.195
						41.342	11.969
						41.987	11.986
						42.308	11.719

TRIBUTARY CENTRAL Cross Section 8 (TC08)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
5976.262	12.564	5976.094	12.763	5976.249	12.564	5976.251	12.558
5977.943	12.554	5976.25	12.568	5978.52	12.576	5977.729	12.528
5979.595	12.601	5977.84	12.543	5979.897	12.573	5978.852	12.607
5981.329	12.475	5979.317	12.607	5981.3	12.452	5979.838	12.564
5981.981	12.271	5980.481	12.508	5981.626	12.374	5980.816	12.484
5982.574	11.999	5981.059	12.457	5982.065	12.228	5981.321	12.439
5983.201	11.779	5981.29	12.458	5982.159	12.148	5981.679	12.343
5983.591	11.634	5981.77	12.337	5982.755	11.938	5982.634	11.993
5984.315	11.114	5982.018	12.266	5983.61	11.646	5982.828	11.941
5984.878	11.07	5982.149	12.153	5983.992	11.456	5983.12	11.745
5985.401	10.993	5982.52	12.023	5984.149	11.282	5983.524	11.655
5985.965	10.934	5982.983	11.89	5984.319	11.194	5983.942	11.506
5986.249	11.112	5983.177	11.804	5984.52	11.125	5984.484	11.055
5986.722	11.258	5983.534	11.696	5984.865	10.936	5984.658	10.982
5987.201	11.402	5983.658	11.67	5985.109	10.877	5984.744	10.91
5987.895	11.755	5983.926	11.486	5985.301	10.871	5985.547	10.814
5988.319	11.949	5984.174	11.218	5985.91	10.826	5985.947	10.833
5988.577	12.151	5984.451	11.063	5986.141	10.918	5986.144	10.871
5989.454	12.402	5984.595	11.015	5986.458	10.856	5986.503	10.877
5990.907	12.666	5984.695	10.923	5986.545	10.882	5986.799	11.043
5992.65	12.745	5985.267	10.889	5986.651	11.097	5987.438	11.336
5994.828	12.8	5985.565	10.859	5986.834	11.085	5987.656	11.471
5997.148	12.831	5985.854	10.847	5987.149	11.196	5987.895	11.61
6002.947	12.819	5986.112	10.871	5987.458	11.319	5988.372	11.764
		5986.53	10.845	5987.701	11.546	5988.506	12.073
		5986.777	10.988	5988.229	11.764	5988.788	12.099
		5987.165	11.102	5988.592	12.008	5988.96	12.271
		5987.315	11.178	5988.846	12.212	5989.142	12.334
		5987.574	11.332	5989.146	12.343	5989.814	12.475
		5987.794	11.45	5989.543	12.399	5990.518	12.605
		5988.094	11.604	5989.853	12.49	5991.368	12.691
		5988.167	11.648	5991.121	12.682	5992.558	12.732
		5988.3	11.975	5992.283	12.751	5993.993	12.777
		5988.727	12.162	5994.118	12.769	5995.565	12.825
		5989.105	12.304	5997.234	12.824	5996.216	12.853
		5989.449	12.386			5996.975	12.826
		5989.682	12.464			5998.394	12.832
		5990.171	12.548				

TRIBUTARY CENTRAL Cross Section 8 (TC08)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		5990.741	12.638				
		5991.865	12.716				
		5993.34	12.759				
		5995.085	12.806				
		5996.603	12.825				
		5997.883	12.815				

TRIBUTARY CENTRAL Cross Section 9 (TC09)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
8962.922	12.906	8962.604	12.913	8962.608	12.921	8962.607	12.914
8966.215	12.84	8965.608	12.838	8965.723	12.841	8964.64	12.847
8970.524	12.904	8968.577	12.859	8968.607	12.866	8967.097	12.845
8974.4	12.908	8971.716	12.913	8971.871	12.911	8969.255	12.877
8974.659	12.867	8973.733	12.884	8973.903	12.872	8971.757	12.898
8974.754	12.324	8974.379	12.906	8974.324	12.897	8973.19	12.864
8975.32	11.918	8974.568	12.822	8974.514	12.831	8973.721	12.863
8975.768	11.633	8974.597	12.167	8974.604	12.751	8973.735	12.409
8976.269	11.534	8974.734	12.136	8974.586	11.998	8973.96	12.35
8977.181	11.547	8974.777	11.925	8974.73	11.969	8974.286	12.177
8978.313	11.517	8974.975	11.827	8975.067	11.77	8974.681	11.983
8978.797	11.446	8975.121	11.794	8975.405	11.64	8975.01	11.841
8979.237	11.657	8975.233	11.826	8975.662	11.62	8975.072	11.705
8979.638	12.046	8975.399	11.781	8975.88	11.5	8975.8	11.599
8980.09	12.191	8976.315	11.477	8976.086	11.456	8975.952	11.571
8980.815	12.392	8977.107	11.474	8976.848	11.486	8976.039	11.423
8981.211	12.669	8977.489	11.529	8977.421	11.492	8976.377	11.368
8982.158	12.859	8977.887	11.602	8977.857	11.48	8976.77	11.407
8983.158	13.006	8978.316	11.578	8978.316	11.465	8977.218	11.435
8984.923	12.974	8978.681	11.573	8978.64	11.507	8977.356	11.455
8988.769	12.926	8979.152	11.618	8978.892	11.631	8977.509	11.525
8988.77	12.926	8979.296	11.775	8979.215	11.72	8977.823	11.509
8992.745	12.832	8979.478	12.01	8979.52	12.083	8978.445	11.574
8994.981	12.813	8979.891	12.127	8980.593	12.325	8978.767	11.63
8997.74	12.802	8980.249	12.233	8980.935	12.547	8978.857	11.722
9002.68	12.798	8980.709	12.387	8981.192	12.65	8979.086	11.721
9005.95	12.876	8981.055	12.589	8981.621	12.79	8979.289	11.832
9015.719	12.787	8981.535	12.748	8982.59	12.941	8979.402	12.007
		8982.068	12.841	8983.394	12.989	8979.63	12.128
		8982.757	12.952	8985.854	12.992	8979.996	12.196
		8983.394	12.981	8988.982	12.931	8980.318	12.283
		8984.239	12.969	8992.012	12.841	8980.709	12.352
		8986.421	12.964	8994.733	12.814	8980.9	12.444
		8988.795	12.93	8997.944	12.811	8981.227	12.671
		8991.194	12.853			8981.428	12.711
		8993.798	12.81			8982.619	12.932
		8996.425	12.799			8982.859	12.959
		8998.278	12.806			8983.163	13.004

TRIBUTARY CENTRAL Cross Section 9 (TC09)							
26-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						8984.1	12.967
						8985.56	12.955
						8986.851	12.964
						8989.062	12.92
						8991.142	12.858
						8993.226	12.818
						8995.5	12.814
						8998.085	12.8

TRIBUTARY CENTRAL Cross Section 10 (TC10)							
29-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7965.877	12.682	7965.43	12.674	7965.423	12.682	7965.434	12.673
7968.857	12.676	7968.424	12.679	7968.754	12.686	7967.757	12.663
7972.295	12.712	7971.583	12.7	7971.818	12.717	7970.234	12.676
7976.185	12.807	7974.239	12.757	7974.727	12.808	7972.413	12.712
7977.717	12.712	7976.131	12.814	7976.613	12.795	7974.486	12.781
7977.924	12.191	7976.852	12.785	7977.27	12.731	7976.194	12.812
7978.191	12.071	7977.74	12.667	7977.68	12.65	7976.981	12.767
7978.463	11.799	7977.844	12.595	7977.723	12.093	7977.06	12.302
7979.176	11.62	7977.86	12.197	7978.53	11.692	7977.463	12.065
7980.494	11.692	7978.112	12.023	7978.798	11.685	7977.761	11.88
7981.37	11.738	7978.199	11.867	7979.041	11.638	7978.155	11.78
7982.231	11.696	7978.61	11.62	7979.979	11.584	7978.599	11.711
7982.732	11.832	7979.342	11.667	7980.861	11.654	7979.029	11.618
7983.633	11.926	7979.979	11.699	7981.001	11.65	7979.149	11.57
7984.127	12.106	7980.428	11.703	7981.402	11.618	7979.75	11.54
7984.916	12.225	7980.895	11.712	7981.647	11.647	7980.302	11.631
7985.724	12.39	7981.466	11.711	7981.887	11.707	7980.842	11.626
7988.808	12.491	7981.821	11.688	7982.387	11.837	7981.294	11.609
7989.737	12.561	7982.379	11.757	7982.522	11.874	7981.742	11.694
7990.742	12.71	7982.694	11.859	7982.979	11.931	7982.145	11.723
7991.984	12.82	7983.119	11.912	7983.549	12.021	7982.383	11.829
7994.088	12.806	7983.49	12.004	7984.266	12.115	7982.474	11.88
7995.223	12.76	7983.745	12.073	7984.557	12.198	7982.867	12.01
7996.664	12.732	7984.208	12.08	7985.312	12.307	7983.643	12.089
7997.885	12.759	7984.589	12.166	7985.628	12.373	7984.207	12.093
8007.074	12.866	7984.88	12.236	7987.472	12.454	7984.456	12.154
8026.515	12.945	7985.123	12.265	7989.329	12.535	7984.607	12.197
		7985.576	12.39	7990.707	12.709	7984.853	12.237
		7986.742	12.417	7992.599	12.834	7985.281	12.298
		7988.011	12.465	7994.247	12.805	7985.624	12.38
		7990.009	12.59	7997.419	12.74	7986.616	12.409
		7991.317	12.76			7986.897	12.455
		7992.902	12.848			7987.032	12.484
		7993.937	12.82			7987.288	12.46
		7995.388	12.757			7987.857	12.452
		7997.118	12.73			7988.545	12.471
						7989.505	12.545
						7990.083	12.599

TRIBUTARY CENTRAL Cross Section 10 (TC10)							
29-Oct-98		23-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						7990.579	12.719
						7991.786	12.811
						7992.855	12.857
						7994.472	12.8
						7996.15	12.749
						7998.063	12.777

TRIBUTARY CENTRAL Cross Section 5 (TC05)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7942.656	12.391	7942.643	12.394	7942.634	12.397	7942.642	12.387
7945.755	12.339	7945.734	12.34	7946.047	12.339	7945.056	12.353
7948.801	12.277	7948.746	12.292	7949.527	12.267	7948.764	12.272
7951.664	12.233	7952.573	12.214	7953.542	12.211	7953.235	12.226
7954.408	12.194	7955.649	12.181	7956.075	12.151	7956.734	12.143
7957.667	12.126	7958.674	12.103	7958.572	12.099	7960.282	12.027
7960.433	12.038	7961.517	12	7961.414	12.007	7962.652	11.958
7962.612	11.964	7963.159	11.937	7963.953	11.918	7963.808	11.887
7964.153	11.911	7963.888	11.905	7966.115	11.964	7964.758	11.915
7966.182	11.976	7965.573	11.956	7967.64	12.066	7965.994	11.961
7968.454	12.032	7966.538	11.994	7968.065	12.084	7967.095	12.033
7968.532	11.385	7967.931	12.075	7968.431	12.006	7968.084	12.07
7968.912	11.221	7968.442	12.031	7968.469	11.537	7968.328	12.038
7969.401	10.971	7968.491	11.481	7968.815	11.376	7968.365	11.617
7970.048	10.919	7968.848	11.326	7969.071	11.25	7968.611	11.472
7970.954	10.936	7969.162	11.172	7969.217	11.137	7968.812	11.433
7971.679	10.877	7969.267	11.062	7969.53	10.923	7969.121	11.246
7972.414	10.865	7969.411	10.934	7969.683	10.877	7969.251	11.049
7972.927	11.061	7969.655	10.884	7970.559	10.85	7969.553	10.917
7973.269	11.24	7970.017	10.876	7970.774	10.874	7969.642	10.797
7973.401	11.881	7970.473	10.894	7971.416	10.907	7969.811	10.797
7974.358	12.106	7971.112	10.896	7972.015	10.901	7970.192	10.809
7976.002	12.108	7971.651	10.897	7972.33	10.936	7971.009	10.957
7978.21	12.022	7972.018	10.911	7972.86	11.071	7971.746	10.929
7980.963	11.997	7972.414	10.936	7973.066	11.204	7972.159	10.92
7981.917	11.894	7972.803	11.036	7973.238	11.312	7972.347	10.948
7982.82	11.783	7973.161	11.261	7973.293	11.729	7972.736	11.143
7983.784	11.754	7973.363	11.361	7973.4	11.867	7973.043	11.259
7984.502	11.735	7973.426	11.905	7973.732	11.961	7973.211	11.364
7985.534	11.878	7973.896	12.029	7974.565	12.131	7973.236	11.655
7986.5	12.019	7974.414	12.122	7975.138	12.145	7973.327	11.722
7988.431	11.987	7975.183	12.149	7977.031	12.081	7973.416	11.843
7991.035	11.938	7977.044	12.073	7978.808	12.017	7973.679	11.947
7993.402	11.899	7978.025	12.021	7980.853	11.992	7974.268	12.08
7995.7	11.859	7980.178	12	7981.531	11.965	7974.802	12.149
7997.325	11.856	7981.288	11.966	7982.344	11.831	7975.492	12.111
7998.497	11.809	7982.249	11.864	7982.968	11.787	7976.911	12.089
		7982.712	11.796	7984.037	11.759	7977.895	12.034

TRIBUTARY CENTRAL Cross Section 5 (TC05)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance	Assumed	Distance	Assumed	Distance	Assumed	Distance	Assumed
(m)	Height (m)	(m)	Height (m)	(m)	Height (m)	(m)	Height (m)
		7983.513	11.772	7984.386	11.748	7979.928	12.003
		7983.959	11.768	7984.994	11.812	7980.958	11.99
		7984.506	11.764	7985.738	11.922	7981.501	11.954
		7985.359	11.842	7986.367	12.012	7982.224	11.867
		7985.998	11.98	7987.191	12.011	7983.007	11.787
		7986.821	12.025	7989.503	11.973	7983.377	11.77
		7988.013	11.985	7992.169	11.927	7983.919	11.77
		7989.772	11.96	7994.752	11.885	7984.372	11.754
		7991.459	11.932	7997.049	11.846	7984.821	11.774
		7993.542	11.898			7985.352	11.848
		7995.7	11.864			7985.651	11.897
		7997.496	11.863			7986.001	11.986
						7986.62	12.015
						7987.988	11.988
						7990.42	11.94
						7992.953	11.909
						7995.523	11.867
						7998.057	11.838

TRIBUTARY CENTRAL Cross Section 11 (TC11)							
29-Oct-98		26-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
6970.866	12.859	6970.061	12.864	6970.047	12.875	6970.051	12.861
6974.964	12.803	6971.971	12.846	6972.566	12.846	6972.257	12.846
6979.893	12.79	6973.772	12.803	6975.214	12.81	6974.475	12.792
6980.436	12.75	6975.898	12.792	6978.085	12.77	6976.822	12.787
6980.864	12.34	6978.354	12.766	6979.96	12.824	6978.197	12.784
6981.105	12.293	6979.858	12.805	6980.518	12.726	6978.991	12.783
6981.253	12.061	6980.243	12.787	6980.612	12.64	6979.49	12.782
6982.061	11.754	6980.525	12.73	6980.671	12.131	6979.833	12.781
6982.667	11.637	6980.781	12.323	6980.861	11.984	6979.87	12.415
6983.668	11.649	6980.903	12.209	6981.1	11.855	6980.061	12.271
6984.691	11.723	6980.987	12.025	6981.653	11.658	6980.27	12.083
6985.7	11.816	6981.282	11.808	6981.786	11.628	6980.481	11.957
6986.035	11.87	6981.412	11.802	6981.899	11.598	6980.791	11.813
6986.19	11.986	6981.485	11.673	6982.203	11.577	6980.846	11.717
6986.696	12.128	6981.842	11.706	6983.297	11.648	6980.937	11.651
6987.226	12.414	6982.16	11.73	6983.76	11.66	6981.056	11.323
6988.91	12.442	6982.363	11.685	6984.089	11.701	6981.305	11.307
6989.835	12.414	6982.611	11.673	6984.376	11.685	6981.715	11.381
6990.653	12.366	6983.084	11.703	6984.53	11.656	6982.229	11.567
6991.457	12.437	6983.427	11.722	6984.779	11.718	6982.942	11.701
6992.48	12.616	6984.27	11.669	6985.106	11.779	6983.435	11.846
6994.058	12.752	6984.582	11.561	6985.332	11.803	6984.1	11.922
6997.27	12.811	6984.711	11.591	6985.53	11.895	6984.273	11.995
6998.448	12.818	6985.09	11.524	6986.096	11.951	6984.51	12.031
7004.338	12.759	6985.272	11.568	6986.351	12.054	6984.771	11.979
		6985.55	11.868	6986.646	12.101	6985.271	11.978
		6986.112	11.965	6986.969	12.357	6985.938	11.952
		6986.318	12.047	6987.277	12.422	6986.342	12.051
		6986.703	12.125	6987.461	12.391	6986.65	12.108
		6987.09	12.423	6988.372	12.422	6986.888	12.301
		6987.538	12.406	6989.688	12.415	6987.039	12.388
		6988.754	12.445	6990.3	12.354	6987.356	12.447
		6989.768	12.428	6991.01	12.39	6987.617	12.394
		6990.273	12.387	6991.811	12.503	6988.263	12.445
		6991.251	12.419	6992.396	12.606	6989.135	12.426
		6992.588	12.624	6992.799	12.627	6989.942	12.406
		6994.767	12.784	6993.162	12.681	6990.418	12.382
		6997.594	12.801	6994.133	12.763	6991.052	12.405

TRIBUTARY CENTRAL Cross Section 11 (TC11)							
29-Oct-98		26-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
				6996.002	12.793	6991.589	12.461
				6998.188	12.811	6992.291	12.591
						6993.112	12.676
						6994.129	12.759
						6995.175	12.779
						6996.549	12.794
						6998.51	12.819

TRIBUTARY CENTRAL Cross Section 4 (TC04)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
6957.082	12.056	6957.039	12.067	6957.084	12.057	6957.085	12.047
6959.796	11.998	6960.383	11.995	6960.721	11.993	6960.395	11.996
6962.9	11.967	6964.059	11.957	6964.074	11.959	6964.502	11.957
6965.454	11.945	6967.99	11.883	6966.965	11.909	6967.848	11.88
6968.261	11.872	6971.997	11.838	6969.68	11.871	6971.375	11.844
6971.284	11.839	6976.092	11.828	6972.314	11.828	6974.945	11.838
6974.245	11.814	6980.002	11.94	6975.867	11.823	6978.02	11.802
6976.761	11.816	6982.582	12.048	6978.434	11.811	6978.579	11.801
6978.832	11.827	6983.685	12.086	6979.292	11.914	6979.252	11.889
6980.337	11.961	6984.18	11.958	6980.743	11.959	6980.214	11.958
6982.138	12.049	6984.344	11.844	6982.362	12.037	6981.326	11.982
6983.803	12.075	6984.427	11.68	6983.473	12.08	6982.414	12.047
6984.195	11.953	6984.568	11.556	6983.668	12.11	6983.427	12.101
6984.332	11.834	6984.678	11.404	6983.812	12.028	6983.688	12.096
6984.531	11.477	6984.832	11.251	6983.937	11.929	6983.938	11.956
6984.941	11.256	6985.045	11.163	6984.228	11.654	6984.165	11.726
6985.206	11.226	6985.464	11.125	6984.483	11.559	6984.504	11.55
6985.518	11.139	6985.652	11.094	6984.72	11.392	6984.791	11.311
6985.964	11.089	6985.957	11.098	6984.932	11.166	6984.872	11.158
6986.465	11.052	6986.157	11.077	6985.049	11.1	6985.031	11.11
6986.942	11.06	6986.357	11.079	6985.204	11.081	6985.306	11.064
6987.353	11.129	6986.447	11.086	6985.576	11.064	6985.609	11.079
6987.729	11.193	6986.765	11.073	6985.974	10.968	6985.768	11.057
6987.924	11.57	6987.036	11.078	6986.336	10.88	6986.128	10.966
6988.263	11.855	6987.315	11.11	6986.538	10.905	6986.452	10.897
6988.736	12.057	6987.596	11.14	6986.897	11.053	6986.757	10.871
6989.915	12.037	6987.769	11.146	6987.446	11.162	6986.856	10.907
6991.265	11.958	6988.05	11.278	6987.659	11.19	6987.038	11.002
6992.99	11.946	6988.136	11.672	6987.841	11.252	6987.242	11.063
6994.888	11.911	6988.272	11.757	6988.127	11.526	6987.72	11.152
6996.713	11.868	6988.336	11.844	6988.418	11.924	6987.777	11.178
6998.169	11.818	6988.401	11.876	6988.525	12.023	6988.048	11.415
7002.71	11.753	6988.546	12.048	6988.876	12.096	6988.208	11.624
7008.528	11.682	6988.848	12.107	6989.163	12.069	6988.377	12.043
7017.932	11.668	6989.315	12.05	6990.681	11.998	6988.708	12.104
		6990.973	11.995	6992.567	11.966	6989.155	12.09
		6992.581	11.956	6994.758	11.925	6990.151	12.032
		6995.221	11.907	6997.929	11.825	6990.47	12.003

TRIBUTARY CENTRAL Cross Section 4 (TC04)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		6997.543	11.827			6991.414	11.966
		6998.744	11.815			6992.993	11.934
						6995.269	11.902
						6997.572	11.822

TRIBUTARY CENTRAL Cross Section 3 (TC03)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
5962.403	12.115	5962.409	12.115	5962.417	12.116	5962.408	12.111
5964.988	12.133	5964.535	12.137	5965.016	12.158	5963.869	12.133
5967.019	12.035	5967.039	12.03	5966.776	12.048	5965.787	12.112
5969.226	11.944	5969.748	11.923	5968.954	11.974	5967.572	12.008
5971.608	11.904	5972.507	11.922	5971.136	11.906	5969.74	11.928
5971.613	11.905	5975.861	11.987	5973.291	11.932	5972.031	11.905
5973.811	11.904	5978.242	12.034	5975.307	11.956	5974.397	11.929
5975.97	11.983	5980.243	12.019	5978.014	12.041	5976.038	11.992
5978.565	12.049	5982.105	12.126	5979.211	12.054	5977.646	12.047
5980.309	12.064	5982.331	12.144	5980.193	12.01	5979.4	12.091
5982.586	12.126	5982.49	11.944	5981.113	12.069	5980.387	12.059
5982.737	11.784	5982.543	11.859	5981.887	12.097	5980.802	12.108
5983.169	11.589	5982.73	11.773	5982.279	12.121	5981.642	12.12
5983.95	11.564	5982.951	11.623	5982.594	11.873	5982.036	12.158
5984.541	11.525	5983.804	11.535	5982.85	11.692	5982.29	12.129
5985.464	11.557	5984.122	11.455	5983.474	11.586	5982.522	12.022
5986.171	11.616	5984.847	11.483	5983.59	11.588	5982.629	11.872
5986.589	11.781	5985.433	11.526	5984.103	11.406	5982.968	11.766
5986.965	11.964	5985.824	11.557	5985.005	11.471	5983.165	11.718
5987.429	12.113	5985.993	11.523	5985.817	11.507	5983.268	11.616
5988.627	12.1	5986.179	11.586	5986.048	11.585	5983.592	11.595
5989.848	12.003	5986.351	11.745	5986.171	11.71	5983.844	11.525
5991.098	11.988	5986.622	11.926	5986.496	11.891	5984.067	11.41
5992.502	11.905	5986.796	11.988	5986.755	12.005	5984.468	11.417
5993.781	11.866	5986.976	12.056	5987.325	12.098	5984.789	11.457
5994.761	11.87	5987.652	12.129	5988.127	12.127	5985.482	11.474
5996.032	11.915	5989.192	12.064	5988.563	12.106	5985.926	11.489
5997.34	11.874	5990.923	12.005	5989.981	11.991	5986.207	11.575
5998.508	11.818	5993.21	11.904	5991.733	11.938	5986.443	11.824
		5995.477	11.921	5993.236	11.908	5986.664	12.001
		5997.892	11.84	5995.46	11.914	5986.909	12.112
				5997.771	11.848	5987.223	12.153
						5988.093	12.139
						5989.149	12.109
						5990.794	12.028
						5993.027	11.963
						5995.458	11.909

TRIBUTARY CENTRAL Cross Section 2 (TC02)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1980.765	10.888	1980.702	10.906	1980.708	10.908	Not surveyed in 2001	
1983.218	10.943	1983.043	10.941	1981.218	10.888		
1983.888	10.824	1983.385	10.942	1981.879	10.934		
1985.625	10.869	1983.775	10.873	1983.004	10.954		
1986.39	10.962	1984.51	10.854	1983.578	10.905		
1987.741	10.941	1985.476	10.919	1984.046	10.841		
1988.485	10.783	1986.492	10.995	1984.68	10.886		
1988.978	10.851	1987.377	11.018	1986.017	10.962		
1989.404	10.811	1987.812	10.976	1987.445	11.031		
1989.746	10.599	1988.62	10.901	1987.799	10.994		
1990.043	10.83	1988.954	10.894	1987.978	10.952		
1990.319	10.682	1989.342	10.92	1988.35	10.987		
1990.511	10.673	1989.661	10.833	1988.842	10.946		
1990.797	10.752	1989.889	10.82	1989.217	11.021		
1991.069	10.706	1990.108	10.899	1989.585	11.004		
1991.402	10.767	1990.378	10.762	1989.781	10.884		
1991.745	10.93	1990.497	10.783	1990.007	10.866		
1992.259	10.876	1990.657	10.86	1990.306	10.898		
1993.778	10.946	1990.859	10.892	1990.673	10.946		
1995.086	10.924	1991.118	10.825	1991.012	10.887		
1996.579	10.878	1991.265	10.787	1991.255	10.877		
1998.158	10.847	1991.429	10.923	1991.504	10.971		
		1991.706	10.978	1992.77	10.99		
		1991.862	10.988	1993.915	10.965		
		1992.901	10.983	1996.222	10.916		
		1994.209	10.958	1998.343	10.883		
		1995.508	10.946				
		1997.478	10.896				

TRIBUTARY CENTRAL Cross Section 1 (TC01)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
4962.712	11.055	4962.693	11.061	4962.7	11.07	4962.684	11.068
4966.023	11.063	4964.172	11.096	4964.14	11.102	4963.655	11.076
4968.762	10.921	4966.36	11.028	4964.462	11.171	4964.135	11.089
4971.587	10.817	4968.625	10.926	4965.028	11.241	4966.017	11.08
4974.082	10.767	4971.643	10.83	4965.6	11.157	4967.023	11.02
4975.496	10.839	4974.811	10.806	4966.577	11.021	4968.111	10.935
4976.299	10.754	4977.741	10.779	4968.393	10.939	4969.614	10.876
4977.883	10.781	4978.366	10.871	4970.504	10.851	4971.347	10.838
4978.331	10.877	4978.66	10.981	4972.639	10.82	4973.098	10.805
4978.725	10.989	4980.048	11.051	4974.269	10.775	4974.377	10.776
4980.367	11.074	4980.621	11.07	4975.65	10.845	4975.157	10.836
4980.821	11.001	4981.817	11.05	4976.753	10.75	4975.763	10.838
4982.577	11.016	4983.322	11.013	4977.988	10.805	4976.329	10.76
4984.572	11.031	4985.005	11.036	4978.4	10.885	4977.048	10.755
4985.996	11.053	4986.05	11.046	4978.605	11.004	4977.722	10.785
4986.387	10.918	4986.639	10.827	4979.417	11.042	4978.253	10.849
4986.652	10.791	4986.923	10.805	4980.351	11.081	4978.659	10.981
4987.097	10.802	4987.082	10.851	4981.031	11.009	4979.825	11.001
4987.264	11.016	4987.272	11.012	4981.699	11.048	4980.462	11.07
4989.071	11.063	4988.714	11.082	4983.142	11.035	4980.838	11.005
4991.624	11.094	4990.227	11.107	4983.697	11.075	4981.331	11.003
4992.16	10.474	4991.246	11.153	4984.595	11.031	4982.584	11.006
4992.805	10.487	4991.511	11.082	4985.548	11.068	4983.893	10.999
4993.528	10.532	4992.016	10.847	4986.111	11.04	4985.376	11.058
4994.205	10.62	4992.125	10.548	4986.263	10.991	4986.146	11.027
4994.57	10.799	4992.278	10.5	4986.577	10.861	4986.516	10.875
4994.965	10.867	4992.43	10.488	4986.762	10.779	4986.767	10.8
4995.301	10.938	4993.345	10.493	4986.981	10.801	4986.983	10.829
4995.562	11.1	4993.538	10.51	4987.104	10.888	4987.232	10.935
4996.772	11.003	4993.655	10.553	4987.264	10.908	4987.349	11.029
4998.192	10.913	4993.857	10.573	4987.347	11.037	4987.56	11.067
5002.728	10.757	4994.178	10.652	4987.523	11.078	4989.046	11.075
5006.84	10.807	4994.403	10.86	4988.364	11.089	4989.957	11.121
5008.907	10.778	4994.635	10.855	4989.042	11.073	4990.726	11.162
5011.37	10.812	4994.754	10.944	4990.096	11.095	4991.291	11.191
5011.611	10.754	4995.22	10.976	4991.018	11.161	4991.438	10.974
5011.833	10.59	4995.492	11.101	4991.251	11.141	4991.463	10.642
5012.532	10.491	4995.904	11.109	4991.391	11.062	4991.666	10.579

TRIBUTARY CENTRAL Cross Section 1 (TC01)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
5013.289	10.602	4996.97	11.004	4991.487	10.981	4991.888	10.503
5013.486	10.786	4998.116	10.934	4991.583	10.696	4992.402	10.461
5014.636	10.749	5002.094	10.804	4991.783	10.591	4992.854	10.445
5015.832	10.785	5005.1	10.834	4991.907	10.541	4992.995	10.489
5017.863	10.773	5009.142	10.821	4992.102	10.521	4993.339	10.528
		5011.577	10.863	4992.253	10.53	4993.651	10.564
		5011.843	10.732	4992.469	10.457	4994.073	10.561
		5012.1	10.712	4992.848	10.441	4994.216	10.669
		5012.367	10.646	4993.103	10.496	4994.352	10.88
		5012.692	10.598	4993.634	10.544	4994.668	10.882
		5012.93	10.604	4994.062	10.54	4995.158	10.981
		5013.3	10.659	4994.353	10.87	4995.512	11.055
		5013.575	10.809	4994.566	10.848	4995.877	11.1
		5014.584	10.759	4994.97	10.981	4996.818	11.064
				4995.273	11.012	4997.313	11.023
				4995.637	11.096	4998.77	10.916
				4995.95	11.098		
				4996.335	11.09		
				4997.137	11.035		
				4998.114	10.914		
				5002.048	10.806		
				5003.446	10.87		
				5004.343	10.855		
				5005.441	10.858		
				5006.32	10.846		
				5007.018	10.89		
				5008.066	10.864		
				5008.675	10.806		
				5009.637	10.827		
				5010.671	10.808		
				5011.117	10.853		
				5011.452	10.861		
				5011.776	10.762		
				5012.188	10.776		
				5012.743	10.724		
				5012.987	10.651		
				5013.209	10.682		
				5013.493	10.782		
				5013.747	10.83		

TRIBUTARY CENTRAL Cross Section 1 (TC01)							
19-Oct-98		30-Aug-99		18-Sep-00		26-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
				5014.121	10.831		
				5014.487	10.756		
				5015.018	10.774		

East Tributary Cross Sections

ET01 to ET08

EAST TRIBUTARY Cross Section 1 (ET01)							
22-Sep-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
975.883	14.703	975.855	14.695	975.845	14.705	975.848	14.698
977.849	14.702	977.723	14.699	976.94	14.701	976.965	14.697
979.1	14.694	978.919	14.693	977.274	14.748	977.285	14.724
980.112	14.779	979.626	14.732	977.945	14.683	978.504	14.693
981.11	14.859	980.432	14.829	979.032	14.688	979.202	14.704
981.954	14.864	980.694	14.865	979.919	14.762	979.812	14.77
982.407	14.745	981.873	14.862	980.435	14.834	980.42	14.827
982.87	14.611	982.166	14.814	980.703	14.861	980.647	14.856
983.703	13.624	982.594	14.667	981.842	14.847	981.496	14.868
984.157	13.469	982.916	14.536	982.21	14.792	981.919	14.847
984.496	13.322	983.095	14.392	982.591	14.662	982.24	14.787
985.146	13.275	983.316	14.162	982.918	14.539	982.513	14.674
986.02	13.194	983.587	13.76	983.141	14.329	982.883	14.563
986.036	13.197	983.671	13.631	983.392	13.987	983.086	14.419
986.621	13.264	984.184	13.444	983.654	13.633	983.285	14.168
987.058	13.35	984.479	13.329	984.152	13.448	983.408	13.966
987.177	13.357	984.874	13.245	984.444	13.304	983.662	13.61
987.882	13.352	985.291	13.245	985.425	13.238	983.952	13.517
988.482	13.476	985.824	13.266	985.748	13.195	984.246	13.406
988.786	13.572	986.264	13.277	986.082	13.047	984.437	13.327
989.002	13.907	986.809	13.259	986.576	12.945	984.781	13.321
989.586	14.148	987.273	13.271	987.068	12.953	985.207	13.262
990.06	14.374	987.808	13.341	987.713	13.132	985.694	13.267
990.466	14.663	987.973	13.351	988.374	13.15	986.177	13.161
990.714	14.723	988.167	13.298	988.668	13.553	986.704	13.071
991.188	14.781	988.442	13.293	988.879	13.618	987.095	13.042
992.642	14.778	988.543	13.491	988.998	13.907	987.446	13.033
992.979	14.75	988.769	13.544	989.515	14.071	987.652	13.042
993.474	14.734	988.981	13.882	989.882	14.23	987.949	13.148
994.153	14.776	989.312	14.029	990.296	14.543	988.418	13.269
996.764	14.796	989.631	14.19	990.637	14.704	988.502	13.497
1010.806	14.871	989.851	14.438	991.279	14.769	988.838	13.566
		990.14	14.493	991.703	14.781	988.976	13.87
		990.348	14.646	993.611	14.742	989.329	14.037
		990.724	14.727	996.244	14.811	989.605	14.179
		991.186	14.783	998.42	14.82	989.74	14.236
		992.02	14.777			989.982	14.405
		992.712	14.764			990.28	14.521

EAST TRIBUTARY Cross Section 1 (ET01)							
22-Sep-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		993.656	14.734			990.339	14.614
		994.444	14.787			990.653	14.69
		995.024	14.782			990.982	14.748
		996.009	14.819			991.505	14.798
		997.655	14.815			992.209	14.788
						993.261	14.759
						994.2	14.815
						994.998	14.796
						996.208	14.821
						997.847	14.825

EAST TRIBUTARY Cross Section 2 (ET02)							
4-Nov-98		29-Jul-99		11-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1971.907	14.703	1971.866	14.701	1971.854	14.711	1971.849	14.703
1975.205	14.73	1973.38	14.725	1974.251	14.742	1973.135	14.719
1976.243	14.741	1974.993	14.742	1975.887	14.758	1974.388	14.739
1976.72	14.743	1976.455	14.725	1976.953	14.745	1975.828	14.742
1977.071	14.667	1976.984	14.703	1977.096	14.684	1976.829	14.731
1977.456	14.312	1977.187	14.564	1977.287	14.623	1976.985	14.675
1977.896	14.141	1977.261	14.373	1977.461	14.315	1977.21	14.566
1978.065	14.062	1977.537	14.279	1978.09	14.149	1977.461	14.316
1978.292	13.764	1977.652	14.192	1978.227	14.034	1977.729	14.182
1978.838	13.704	1977.833	14.14	1978.423	13.847	1978.21	14.08
1979.18	13.703	1978.217	13.846	1978.991	13.657	1978.358	13.818
1979.708	13.513	1978.441	13.733	1979.264	13.526	1978.669	13.714
1980.282	13.162	1978.795	13.647	1979.527	13.547	1979.007	13.612
1980.43	13.163	1979.064	13.674	1979.721	13.636	1979.243	13.54
1980.819	13.319	1979.296	13.607	1979.977	13.536	1979.41	13.515
1981.084	13.371	1979.53	13.675	1980.268	13.44	1979.669	13.555
1981.735	13.419	1979.909	13.614	1980.7	13.248	1979.838	13.44
1982.088	13.434	1980.209	13.491	1981.086	13.183	1980.062	13.437
1982.462	13.435	1980.852	13.143	1981.374	13.033	1980.831	13.243
1982.812	13.266	1981.42	13.199	1982.056	13.06	1981.264	13.179
1983.048	13.062	1981.618	13.205	1982.476	13.186	1981.465	13.229
1983.268	12.974	1981.853	13.179	1982.903	13.24	1981.624	13.283
1983.858	12.798	1982.066	13.083	1983.032	13.244	1981.86	13.195
1984.638	12.491	1982.334	13.053	1983.196	12.984	1982.147	13.017
1985.287	12.553	1982.621	13.101	1983.687	12.711	1982.425	12.979
1985.825	13	1982.873	13.099	1984.013	12.384	1982.628	13.049
1986.275	13.621	1983.194	12.896	1984.442	12.356	1982.807	13.014
1987.059	14.763	1983.373	12.811	1984.971	12.391	1983.07	12.904
1987.428	14.874	1983.576	12.827	1985.412	12.484	1983.418	12.808
1990.979	14.843	1983.791	12.776	1985.691	12.658	1983.676	12.671
2011.065	14.875	1983.928	12.707	1986.066	13.06	1983.837	12.598
		1984.402	12.503	1986.117	13.522	1984.452	12.531
		1984.676	12.521	1986.438	13.546	1984.955	12.433
		1985.271	12.624	1986.813	14.543	1985.285	12.465
		1985.576	12.703	1987.043	14.773	1985.719	12.668
		1985.717	12.842	1987.303	14.86	1985.814	12.9
		1985.882	12.97	1987.736	14.883	1985.905	12.99
		1985.966	13.104	1989.937	14.829	1986.12	13.472

EAST TRIBUTARY Cross Section 2 (ET02)							
4-Nov-98		29-Jul-99		11-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		1986.138	13.549	1992.39	14.84	1986.429	13.564
		1986.463	13.541	1994.935	14.844	1986.614	13.718
		1986.66	13.872	1998.067	14.819	1986.728	13.898
		1986.751	14.507			1986.843	14.499
		1986.903	14.704			1986.961	14.659
		1987.252	14.845			1987.157	14.821
		1987.46	14.882			1987.384	14.865
		1988.039	14.874			1987.882	14.873
		1988.995	14.852			1988.383	14.87
		1990.397	14.819			1988.847	14.867
		1992.081	14.821			1989.843	14.828
		1993.784	14.818			1991.256	14.836
		1995.726	14.834			1993.055	14.827
		1997.969	14.826			1994.304	14.821
						1995.75	14.828
						1997.784	14.828

EAST TRIBUTARY Cross Section 3 (ET03)							
4-Nov-98		29-Jul-99		11-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2976.83	14.77	2976.78	14.766	2976.783	14.762	2976.748	14.775
2981.889	14.863	2978.965	14.787	2979.162	14.8	2978.838	14.798
2984.141	14.887	2980.417	14.794	2980.173	14.794	2980.19	14.778
2984.516	14.923	2981.344	14.861	2981.118	14.837	2980.807	14.835
2985.687	14.715	2983.012	14.873	2982.85	14.874	2981.947	14.855
2986.244	14.367	2984.409	14.912	2984.455	14.908	2983.393	14.892
2986.551	14.149	2984.941	14.825	2985.632	14.729	2984.438	14.908
2986.874	14.098	2985.679	14.725	2986.015	14.543	2984.887	14.847
2987.182	13.778	2985.986	14.569	2986.161	14.306	2985.149	14.782
2987.302	13.707	2986.153	14.301	2986.573	14.158	2985.595	14.735
2987.648	13.626	2986.378	14.236	2986.998	14.09	2985.969	14.569
2988.226	13.412	2986.924	14.123	2987.051	13.964	2986.126	14.313
2988.802	13.211	2987.053	13.944	2987.329	13.632	2986.467	14.188
2989.203	13.278	2987.339	13.624	2987.761	13.391	2986.692	14.336
2989.534	13.364	2987.702	13.498	2988.03	13.152	2986.886	14.103
2989.815	13.377	2988.006	13.23	2988.297	13.104	2986.973	14.083
2990.247	13.277	2988.325	13.126	2988.615	13.161	2987.118	13.934
2990.354	13.239	2988.623	13.244	2989.141	13.335	2987.43	13.512
2990.838	13.307	2988.812	13.275	2989.531	13.229	2987.794	13.409
2991.498	13.538	2989.074	13.248	2989.799	13.099	2987.931	13.393
2992.026	13.685	2989.385	13.301	2990.064	13.075	2988.115	13.261
2992.448	14.259	2989.536	13.303	2990.503	13.16	2988.446	13.19
2993.305	14.757	2989.691	13.25	2990.898	13.174	2988.721	13.228
2993.821	14.904	2989.848	13.247	2991.144	13.318	2989.038	13.115
3002.853	14.773	2990.013	13.309	2991.309	13.398	2989.339	13.149
		2990.184	13.357	2991.845	13.603	2989.6	13.236
		2990.369	13.338	2992.114	13.687	2989.883	13.274
		2990.596	13.371	2992.474	14.092	2990.406	13.34
		2990.784	13.342	2993.052	14.567	2990.716	13.356
		2991.101	13.381	2993.415	14.789	2990.967	13.337
		2991.355	13.458	2993.802	14.898	2991.141	13.364
		2991.606	13.561	2994.122	14.931	2991.533	13.534
		2992.068	13.683	2995.679	14.893	2992.075	13.67
		2992.29	14.097	2998.126	14.856	2992.37	14.131
		2992.649	14.356			2992.505	14.182
		2992.79	14.398			2992.678	14.348
		2993.033	14.596			2992.807	14.375
		2993.303	14.741			2992.982	14.536

EAST TRIBUTARY Cross Section 3 (ET03)							
4-Nov-98		29-Jul-99		11-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2993.699	14.871			2993.234	14.679
		2994.083	14.917			2993.544	14.815
		2995.239	14.912			2993.8	14.898
		2996.408	14.885			2994.233	14.926
		2997.988	14.844			2995.255	14.9
		3003.134	14.77			2996.31	14.878
						2997.815	14.854

EAST TRIBUTARY Cross Section 4 (ET04)							
4-Sep-98		29-Jul-99		11-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
3974.315	14.707	3974.272	14.699	3974.28	14.699	3974.122	14.897
3978.19	14.776	3976.882	14.733	3975.116	14.718	3974.122	14.897
3981.231	14.88	3979.334	14.797	3977.283	14.743	3974.258	14.689
3982.645	14.921	3981.478	14.894	3979.534	14.814	3975.816	14.718
3983.4	14.909	3982.658	14.919	3981.152	14.861	3977.659	14.764
3983.919	14.612	3983.426	14.904	3982.608	14.918	3979.922	14.841
3984.202	14.441	3983.91	14.605	3983.392	14.913	3981.856	14.909
3984.469	14.359	3984.434	14.363	3983.934	14.595	3982.785	14.915
3984.784	13.776	3984.713	14.307	3984.449	14.361	3983.288	14.898
3985.244	13.541	3984.775	13.775	3984.721	14.296	3983.551	14.811
3986.106	13.393	3985.02	13.679	3984.788	13.742	3983.745	14.653
3986.862	13.398	3985.184	13.521	3985.163	13.527	3984.095	14.46
3987.997	13.439	3985.474	13.487	3985.866	13.409	3984.341	14.331
3988.277	13.409	3985.544	13.448	3986.494	13.343	3984.486	14.335
B 3988.869	13.366	3985.776	13.434	3987.865	13.439	3984.746	14.295
3989.337	13.633	3986.127	13.366	3988.144	13.433	3984.792	13.647
3989.912	14.075	3986.572	13.385	3988.437	13.375	3985.055	13.575
3990.4	14.469	3987.123	13.353	3988.759	13.307	3985.142	13.504
3991.005	14.744	3987.48	13.344	3988.966	13.339	3985.343	13.495
3991.999	14.744	3987.81	13.394	3989.285	13.562	3985.645	13.436
3992.653	14.934	3988.161	13.404	3989.925	14.031	3985.951	13.363
3997.572	14.852	3988.441	13.353	3990.197	14.299	3986.398	13.338
4008.679	14.753	3988.71	13.306	3990.454	14.457	3986.793	13.338
		3988.977	13.375	3990.924	14.627	3987.299	13.326
		3989.14	13.419	3991.494	14.742	3987.617	13.379
		3989.382	13.649	3992.042	14.774	3987.848	13.413
		3989.635	13.778	3992.467	14.904	3988.161	13.381
		3989.974	14.084	3993.093	14.934	3988.428	13.334
		3990.283	14.398	3994.961	14.897	3988.746	13.291
		3990.687	14.613	3996.563	14.86	3988.962	13.345
		3991.004	14.721	3998.23	14.857	3989.186	13.477
		3991.991	14.74			3989.505	13.677
		3992.538	14.906			3989.613	13.729
		3992.889	14.927			3989.754	13.924
		3993.903	14.895			3989.871	13.965
		3995.303	14.884			3990.107	14.266
		3997.035	14.85			3990.333	14.382
		3998.312	14.857			3990.562	14.51

EAST TRIBUTARY Cross Section 4 (ET04)							
4-Sep-98		29-Jul-99		11-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						3990.716	14.582
						3991.05	14.661
						3991.323	14.707
						3991.531	14.727
						3991.531	14.727
						3991.534	14.727
						3991.866	14.741
						3992.198	14.814
						3992.47	14.9
						3992.929	14.928
						3993.709	14.918
						3995.434	14.887
						3996.177	14.871
						3997.747	14.834

EAST TRIBUTARY Cross Section 5 (ET05)							
24-Sep-98		29-Jul-99		11-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1975.047	9.5	1985.163	9.689	1985.161	9.689	1985.161	9.702
1986.633	9.748	1986.089	9.734	1986.29	9.74	1986.188	9.734
1987.545	9.769	1986.793	9.751	1987.386	9.761	1987.09	9.765
1988.057	9.724	1987.754	9.749	1987.786	9.737	1987.587	9.759
1988.654	9.368	1987.99	9.725	1988.105	9.632	1987.937	9.7
1989.285	9.085	1988.286	9.597	1988.493	9.415	1988.13	9.62
1989.754	8.565	1988.478	9.508	1988.793	9.286	1988.354	9.477
1990.254	8.094	1988.569	9.4	1989.282	9.055	1988.505	9.383
1990.821	8.215	1988.82	9.262	1989.565	8.77	1988.79	9.282
1991.588	8.235	1989.134	9.145	1989.831	8.398	1988.987	9.131
1992.411	8.312	1989.341	9.049	1990.457	8.013	1989.195	9.048
1993.125	8.374	1989.603	8.757	1990.872	8.172	1989.364	8.979
1993.797	8.453	1989.771	8.462	1991.288	8.223	1989.555	8.77
1994.065	8.526	1989.953	8.298	1992.415	8.296	1989.639	8.676
1994.562	8.82	1990.261	8.099	1993.059	8.33	1989.805	8.377
1994.891	9.329	1990.366	8.073	1993.683	8.378	1990.014	8.278
1995.385	9.557	1990.732	8.167	1994.119	8.502	1990.315	8.08
1996.506	9.703	1990.999	8.236	1994.493	8.685	1990.564	7.986
1998.331	9.725	1991.408	8.267	1994.667	8.871	1990.958	8.11
2004.422	9.703	1991.876	8.298	1994.835	9.26	1991.311	8.169
2011.674	9.622	1992.347	8.296	1995.222	9.383	1991.801	8.219
2021.678	9.627	1992.864	8.326	1995.575	9.561	1992.27	8.247
2021.724	9.863	1993.371	8.356	1996.313	9.634	1992.791	8.313
		1993.694	8.392	1997.157	9.715	1993.262	8.269
		1993.892	8.47	1998.605	9.734	1993.538	8.279
		1994.122	8.516	1998.608	9.735	1993.73	8.327
		1994.501	8.778			1993.995	8.36
		1994.672	9.053			1994.256	8.529
		1994.868	9.335			1994.4	8.621
		1994.875	9.349			1994.575	8.812
		1995.325	9.48			1994.725	9.121
		1995.622	9.573			1994.849	9.267
		1996.508	9.666			1995.176	9.397
		1997.066	9.724			1995.488	9.518
		1998.26	9.735			1995.712	9.567
		2006.895	9.671			1996.236	9.629
						1996.745	9.678

EAST TRIBUTARY Cross Section 6 (ET06)							
3-Nov-98		17-Aug-99		9-Nov-00		8-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
5968.764	14.682	5968.691	14.677	5968.711	14.671	5968.555	14.869
5971.254	14.771	5971.02	14.751	5971.187	14.756	5968.557	14.869
5974.151	14.776	5973.547	14.788	5973.977	14.778	5968.691	14.686
5977.798	14.875	5975.768	14.806	5976.655	14.823	5970.012	14.716
5980.438	14.922	5978.035	14.85	5979.103	14.863	5971.187	14.747
5981.557	14.92	5980.454	14.884	5980.578	14.888	5972.989	14.773
5982.161	14.694	5981.407	14.884	5981.403	14.874	5975.104	14.788
5982.765	14.395	5981.859	14.8	5981.796	14.802	5976.715	14.833
5982.907	14.296	5982.16	14.665	5981.952	14.713	5978.809	14.857
5983.39	14.236	5982.583	14.478	5982.392	14.573	5980.621	14.887
5983.703	14.062	5982.921	14.284	5982.848	14.294	5981.34	14.881
5984.104	13.954	5983.406	14.228	5983.372	14.254	5981.71	14.816
5984.284	13.756	5983.705	14.058	5983.709	14.059	5981.848	14.771
5984.785	13.405	5984.018	13.971	5984.014	13.971	5981.999	14.666
5985.4	13.392	5984.313	13.72	5984.519	13.486	5982.399	14.589
5986.068	13.462	5984.552	13.586	5984.834	13.311	5982.476	14.483
5986.881	13.595	5984.688	13.424	5985.189	13.293	5982.574	14.47
5987.859	13.653	5984.928	13.337	5985.559	13.211	5982.944	14.283
5988.431	13.664	5985.146	13.332	5985.838	13.307	5983.424	14.241
5988.885	13.843	5985.453	13.382	5986.347	13.415	5983.616	14.478
5989.05	13.934	5985.978	13.413	5987.399	13.552	5983.729	14.066
5989.492	14.37	5986.422	13.48	5988.148	13.621	5983.918	13.986
5989.962	14.666	5986.644	13.521	5988.472	13.644	5984.13	14.054
5990.538	14.877	5987.074	13.542	5988.993	13.822	5984.224	13.99
5991.817	14.893	5987.481	13.566	5989.228	14.107	5984.238	13.751
5995.371	14.892	5987.915	13.572	5989.549	14.323	5984.442	13.533
		5988.345	13.631	5989.847	14.529	5984.693	13.33
		5988.632	13.713	5990.4	14.718	5984.844	13.261
		5988.932	13.854	5990.945	14.841	5985.213	13.275
		5989.18	14.069	5991.504	14.869	5985.296	13.285
		5989.377	14.284	5991.946	14.876	5985.485	13.205
		5989.707	14.473	5993.927	14.871	5985.673	13.227
		5990.004	14.652	5994.589	14.899	5985.867	13.305
		5990.304	14.73	5996.307	14.856	5986.208	13.395
		5990.667	14.796	5998.298	14.839	5986.681	13.472
		5991.161	14.856			5987.306	13.523
		5991.9	14.875			5987.795	13.548
		5993.665	14.875			5988.076	13.578

EAST TRIBUTARY Cross Section 6 (ET06)							
3-Nov-98		17-Aug-99		9-Nov-00		8-Sep-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		5995.45	14.888			5988.477	13.652
		5997.042	14.871			5988.7	13.714
		5998.424	14.827			5988.819	13.758
						5989.003	13.83
						5989.124	14.06
						5989.261	14.12
						5989.379	14.277
						5989.573	14.363
						5989.802	14.495
						5989.952	14.598
						5990.271	14.672
						5990.57	14.753
						5990.886	14.8
						5991.191	14.834
						5991.578	14.876
						5991.935	14.874
						5993.17	14.874
						5994.277	14.877
						5995.783	14.877
						5996.881	14.87
						5998.042	14.878

EAST TRIBUTARY Cross Section 7 (ET07)							
11-Sep-98		17-Aug-99		9-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
7475.376	14.758	7472.972	14.72	1999.983	7473.67	7470.716	14.893
7480.935	14.823	7475.334	14.745	1999.954	7476.385	7470.718	14.892
7483.296	14.904	7477.852	14.759	1999.959	7478.674	7470.718	14.892
7484.473	14.814	7480.206	14.803	1999.981	7481.086	7470.862	14.719
7485.036	13.822	7481.802	14.863	1999.878	7483.099	7473.43	14.741
7485.986	13.524	7483.397	14.903	1999.829	7484.086	7475.36	14.774
7486.291	13.521	7484.2	14.858	1999.845	7484.406	7477.703	14.755
7486.527	13.559	7484.556	14.607	1999.86	7484.584	7479.852	14.805
7487.782	13.476	7484.646	14.219	1999.86	7484.649	7482.024	14.878
7489.027	13.419	7484.95	13.874	1999.85	7484.86	7483.791	14.887
7489.568	13.4	7485.391	13.687	1999.938	7485.019	7484.1	14.859
7490.437	13.607	7485.728	13.557	1999.941	7485.67	7484.363	14.757
7490.798	14.058	7486.067	13.502	1999.924	7486.088	7484.525	14.583
7491.051	14.059	7486.454	13.525	1999.927	7486.494	7484.578	14.477
7491.618	14.217	7486.96	13.501	1999.955	7487.408	7484.573	14.263
7493.391	14.616	7487.577	13.506	1999.94	7488.259	7484.759	14.106
7494.019	14.882	7488.025	13.506	1999.941	7488.461	7484.979	13.847
7497.351	14.861	7488.431	13.411	1999.916	7488.92	7485.464	13.64
7507.614	14.777	7488.862	13.359	1999.854	7489.346	7485.811	13.533
		7489.278	13.393	1999.805	7489.592	7485.99	13.468
		7489.708	13.418	1999.938	7490.051	7486.296	13.499
		7490.064	13.436	1999.915	7490.282	7486.67	13.511
		7490.632	14.248	1999.884	7490.361	7487.283	13.496
		7491.516	14.1	1999.905	7491.476	7487.732	13.473
		7491.685	14.232	1999.978	7492.01	7488.085	13.409
		7492.113	14.339	1999.959	7492.881	7488.458	13.229
		7492.734	14.449	2000	7493.419	7488.71	13.244
		7493.107	14.539	2000.032	7493.867	7489.07	13.335
		7493.563	14.7	2000.095	7494.505	7489.404	13.346
		7493.827	14.844	2000.086	7496.298	7489.562	13.369
		7494.261	14.913	2000.073	7498.487	7490.041	13.368
		7495.531	14.896			7490.339	13.54
		7497.905	14.846			7490.669	14.037
						7491.313	14.023
						7491.632	14.189
						7492.092	14.331
						7492.396	14.353
						7493.086	14.513

EAST TRIBUTARY Cross Section 7 (ET07)							
11-Sep-98		17-Aug-99		9-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						7493.306	14.608
						7493.645	14.715
						7493.902	14.86
						7494.236	14.904
						7494.551	14.933
						7495.816	14.896
						7497.898	14.854

EAST TRIBUTARY Cross Section 8 (ET08)							
11-Sep-98		17-Aug-99		9-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
4.424105	14.591	2.538632	14.457	2.646145	14.468	0.138033	14.365
11.54694	14.888	5.196697	14.636	4.46454	14.581	1.356506	14.435
15.67134	14.943	8.040345	14.698	5.698706	14.655	2.896792	14.499
16.7471	14.78	10.8462	14.856	7.788254	14.713	4.498369	14.583
17.35604	14.45	13.65091	14.905	10.61488	14.838	5.272318	14.654
18.02723	13.991	15.51611	14.922	12.79504	14.891	7.024782	14.676
18.42395	13.824	16.40763	14.858	15.25879	14.922	8.908868	14.751
18.58633	13.528	16.8294	14.722	16.32989	14.865	10.84593	14.856
19.26502	13.441	17.19298	14.516	16.7181	14.775	12.28565	14.887
19.2711	13.441	17.61844	14.265	17.14591	14.554	13.82101	14.906
19.44278	13.508	17.94724	13.996	17.48292	14.339	15.20409	14.916
19.99857	13.254	18.25905	13.833	17.76099	13.924	16.0403	14.896
20.33454	13.323	18.39529	13.81	18.07698	13.843	16.44034	14.841
20.70416	13.429	18.57443	13.524	18.33115	13.537	16.7232	14.757
21.46677	13.481	18.91597	13.355	18.85937	13.303	16.96395	14.662
22.74398	13.556	19.1093	13.323	19.52901	13.046	17.20612	14.512
23.4048	13.576	19.32545	13.38	19.93208	13.1	17.29612	14.403
24.88533	13.77	19.62998	13.218	20.24988	13.12	17.60622	14.261
25.73322	13.862	19.6725	12.967	20.9546	13.179	17.75222	14.172
26.42361	14.085	19.93573	12.999	21.63437	13.324	17.84763	14.042
27.67459	14.345	20.14128	13.093	22.00702	13.384	17.95914	13.915
29.1329	14.465	20.51039	13.159	22.49637	13.399	18.14639	13.836
30.2123	14.807	21.02174	13.252	23.08618	13.503	18.41203	13.801
33.6454	14.849	21.48846	13.356	23.43126	13.458	18.50003	13.842
		21.97813	13.478	23.89515	13.595	18.56805	13.476
		22.23889	13.602	24.29421	13.65	18.68066	13.41
		22.37493	13.429	24.61312	13.748	19.01881	13.344
		22.89399	13.504	24.95837	13.796	19.15701	13.335
		23.27516	13.566	25.71899	13.828	19.28797	13.381
		23.71544	13.659	26.32661	14.096	19.47068	13.32
		23.98588	13.688	27.12433	14.268	19.65264	13.209
		24.28979	13.729	27.7866	14.347	19.72697	12.91
		24.75149	13.798	28.37364	14.369	19.91618	12.922
		25.30701	13.841	28.90222	14.445	20.14206	12.957
		25.67835	13.869	29.60742	14.671	20.56652	13.109
		26.04323	13.968	30.32341	14.847	21.14811	13.259
		26.1968	14.072	31.95228	14.865	21.71096	13.37
		26.7939	14.182	34.08505	14.857	21.86527	13.432

EAST TRIBUTARY Cross Section 8 (ET08)							
11-Sep-98		17-Aug-99		9-Sep-00		9-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		27.13874	14.279			22.00176	13.533
		27.62664	14.364			22.12719	13.426
		27.80673	14.399			22.28365	13.387
		28.46296	14.398			22.49171	13.287
		29.05849	14.497			22.63472	13.303
		29.28245	14.545			22.97696	13.392
		29.65113	14.699			23.1399	13.445
		30.06209	14.82			23.29701	13.438
		31.03056	14.882			23.60025	13.511
		32.7617	14.861			23.87957	13.593
		34.11372	14.842			24.43809	13.733
						24.79801	13.777
						25.35088	13.833
						25.78912	13.876
						25.98583	13.933
						26.12103	13.991
						26.27467	14.057
						26.82514	14.212
						27.28107	14.308
						27.66194	14.361
						28.7447	14.423
						28.98374	14.474
						29.25698	14.582
						29.75893	14.696
						30.09567	14.832
						30.68814	14.868
						31.61665	14.874
						33.54093	14.843

Upper Swift Creek Cross Sections

UM01 to UM07

UPPER SWIFT CREEK Cross Section 1 (UM01)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2036.916	9.566	2037.805	9.592	2036.645	9.572	2042.899	9.994
2033.584	9.543	2033.612	9.541	2035.648	9.601	2042.901	9.994
2032.986	9.598	2033.231	9.603	2033.709	9.547	2042.823	9.82
2032.606	9.515	2031.983	9.48	2033.298	9.573	2041.903	9.778
2031.019	9.483	2030.605	9.576	2032.682	9.517	2041.284	9.692
2029.769	9.592	2029.694	9.575	2031.736	9.488	2038.274	9.594
2029.216	9.504	2028.997	9.485	2031.453	9.515	2036.017	9.583
2027.151	9.516	2026.779	9.547	2030.955	9.503	2033.946	9.543
2026.551	9.556	2024.079	9.374	2030.612	9.561	2033.105	9.552
2025.64	9.477	2022.347	9.532	2030.128	9.549	2032.45	9.504
2024.809	9.39	2021.771	9.38	2029.715	9.579	2031.093	9.504
2023.681	9.397	2020.609	8.962	2029.1	9.478	2030.675	9.564
2022.916	9.502	2020.304	8.669	2028.606	9.487	2030.014	9.55
2022.323	9.546	2018.782	8.091	2028.137	9.471	2029.737	9.549
2021.797	9.362	2018.027	7.939	2027.042	9.508	2029.218	9.502
2021.579	9.212	2017.228	7.829	2026.63	9.546	2028.335	9.476
2021.088	8.991	2016.401	7.857	2025.853	9.519	2027.282	9.492
2020.354	8.775	2015.739	7.819	2025.45	9.435	2026.442	9.54
2020.098	8.48	2015.137	7.824	2024.178	9.375	2025.914	9.522
2019.118	8.154	2014.637	7.823	2023.104	9.48	2025.709	9.437
2018.168	8.005	2014.292	7.952	2022.483	9.549	2024.416	9.37
2017.943	7.853	2014.07	7.933	2022.129	9.498	2023.52	9.401
2017.151	7.854	2013.783	8.05	2021.908	9.403	2023.048	9.45
2016.622	7.86	2013.431	8.277	2021.536	9.195	2022.808	9.5
2016.241	7.907	2013.075	8.94	2020.379	8.767	2022.347	9.524
2015.67	7.793	2012.645	9.211	2020.119	8.609	2022.121	9.491
2015.009	7.725	2011.735	9.399	2020	8.503	2021.746	9.324
2014.604	7.812	2010.492	9.571	2019.718	8.407	2021.386	9.111
2014.108	7.919	2008.782	9.782	2019.681	8.345	2020.737	8.947
2013.657	8.126	2006.946	9.801	2019.162	8.184	2020.492	8.874
2013.488	8.233	2004.247	9.776	2018.189	8.009	2020.342	8.683
2013.463	8.611	2001.977	9.773	2017.861	7.837	2020.14	8.582
2012.676	9.154			2017.255	7.826	2019.804	8.436
2012.032	9.365			2016.925	7.875	2019.71	8.322
2010.979	9.53			2016.681	7.841	2019.177	8.175
2009.387	9.694			2016.521	7.886	2018.16	7.971
2008.859	9.776			2016.142	7.887	2017.946	7.848
2006.151	9.787			2015.939	7.836	2017.346	7.828

UPPER SWIFT CREEK Cross Section 1 (UM01)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2003.075	9.783			2015.55	7.829	2016.761	7.844
1994.887	9.778			2015.199	7.782	2016.247	7.896
				2014.576	7.856	2015.778	7.813
				2013.711	8.173	2015.328	7.774
				2013.461	8.225	2014.616	7.824
				2013.338	8.621	2014.272	7.969
				2013.156	8.873	2014.025	7.992
				2012.98	9.011	2013.58	8.255
				2012.693	9.202	2013.481	8.313
				2012.195	9.332	2013.315	8.717
				2010.991	9.529	2013.086	8.934
				2010.048	9.63	2012.827	9.153
				2009.057	9.793	2012.161	9.332
				2008.572	9.804	2011.139	9.524
				2007.83	9.767	2009.939	9.66
				2007.034	9.82	2009.694	9.675
				2005.5	9.8	2009.143	9.781
				2003.181	9.793	2008.579	9.79
				2002.705	9.836	2008.165	9.763
				2001.582	9.782	2007.82	9.77
						2007.231	9.811
						2006.514	9.815
						2005.79	9.828
						2005.384	9.804
						2005.04	9.778
						2004.697	9.807
						2004.27	9.777
						2003.522	9.828
						2002.37	9.803

UPPER SWIFT CREEK Cross Section 2 (UM02)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2032.875	9.504	2032.878	9.5	2032.795	9.521	2038.575	9.887
2030.588	9.527	2029.754	9.551	2031.832	9.6	2038.574	9.887
2029.545	9.554	2026.92	9.604	2031.454	9.536	2038.436	9.701
2028.42	9.507	2024.152	9.485	2030.996	9.567	2037.367	9.684
2027.818	9.556	2021.559	9.475	2030.731	9.517	2037.163	9.645
2027.09	9.559	2020.851	9.163	2030.011	9.529	2036.203	9.603
2026.594	9.567	2020.339	8.946	2029.609	9.583	2035.027	9.567
2025.935	9.569	2019.747	8.695	2028.549	9.486	2034.395	9.587
2025.411	9.521	2019.661	8.105	2028.14	9.582	2033.959	9.539
2023.675	9.488	2019.225	7.952	2027.773	9.618	2032.769	9.504
2022.134	9.497	2018.6	7.964	2027.034	9.595	2031.807	9.574
2021.853	9.522	2017.816	7.994	2026.439	9.604	2030.838	9.54
2021.421	9.433	2016.447	8.007	2026.216	9.628	2030.153	9.507
2020.934	9.231	2015.51	8.002	2025.997	9.542	2029.581	9.58
2020.407	8.958	2014.716	7.911	2025.128	9.538	2028.853	9.495
2019.789	8.699	2014.133	8.231	2024.623	9.496	2028.409	9.492
2019.613	8.037	2013.176	8.61	2023.251	9.497	2028.018	9.6
2019.229	7.891	2012.078	9.118	2022.93	9.527	2027.745	9.627
2018.322	7.892	2011.447	9.47	2022.689	9.497	2027.149	9.571
2017.017	7.877	2010.176	9.764	2021.875	9.503	2026.69	9.589
2015.878	7.874	2008.347	9.757	2021.466	9.445	2026.418	9.594
2014.927	7.832	2005.337	9.8	2021.179	9.358	2026.19	9.643
2014.654	8.01	2001.99	9.813	2020.795	9.115	2026.029	9.563
2014.009	8.261			2020.256	8.941	2025.163	9.533
2013.21	8.593			2019.708	8.685	2024.727	9.495
2012.245	9.055			2019.661	8.118	2023.873	9.489
2011.724	9.314			2019.142	7.939	2023.145	9.504
2011.496	9.456			2018.24	7.972	2022.242	9.494
2010.443	9.692			2017.943	7.987	2021.61	9.467
2009.722	9.758			2016.8	8.009	2021.403	9.415
2008.17	9.746			2016.051	7.997	2021.143	9.311
2005.609	9.804			2015.612	8.002	2020.762	9.096
2003.122	9.806			2015.343	7.969	2019.804	8.703
1993.57	9.787			2014.841	7.868	2019.715	8.18
				2014.284	8.163	2019.095	7.901
				2013.714	8.42	2018.883	7.913
				2013.241	8.618	2018.116	7.963
				2012.483	8.969	2016.969	8.006

UPPER SWIFT CREEK Cross Section 2 (UM02)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
				2012.004	9.191	2016.112	8.008
				2011.606	9.43	2015.705	7.989
				2011.214	9.556	2015.265	7.884
				2010.803	9.654	2014.981	7.842
				2010.338	9.74	2014.768	7.913
				2009.61	9.805	2014.161	8.214
				2008.34	9.763	2014.075	8.256
				2007.811	9.795	2013.914	8.302
				2007.607	9.847	2013.654	8.445
				2005.84	9.823	2013.356	8.544
				2002.729	9.817	2013.253	8.602
						2012.925	8.733
						2012.868	8.791
						2012.041	9.138
						2011.527	9.446
						2011.29	9.526
						2011.163	9.577
						2010.43	9.709
						2009.76	9.822
						2009.263	9.802
						2008.898	9.771
						2008.281	9.768
						2007.774	9.795
						2007.631	9.865
						2007.181	9.835
						2006.182	9.822
						2005.809	9.817
						2005.4	9.836
						2005.155	9.796
						2004.802	9.796
						2004.409	9.796
						2003.653	9.842
						2002.399	9.805

UPPER SWIFT CREEK Cross Section 3 (UM03)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2024.429	9.495	2023.573	9.499	2024.561	9.509	2029.571	9.731
2023.525	9.504	2020.925	9.484	2024.166	9.524	2029.568	9.73
2022.883	9.543	2018.665	9.457	2023.71	9.51	2029.424	9.556
2021.771	9.512	2015.61	9.393	2023.315	9.551	2028.759	9.524
2020.917	9.478	2014.03	9.153	2022.739	9.571	2027.653	9.562
2019.784	9.466	2013.587	9.072	2022.286	9.53	2026.704	9.576
2019.326	9.501	2013.114	8.604	2021.679	9.538	2024.921	9.542
2018.631	9.448	2012.777	8.048	2021.072	9.478	2023.628	9.516
2017.965	9.504	2012.031	7.901	2020.393	9.494	2023.166	9.535
2017.052	9.439	2011.471	7.989	2019.802	9.436	2022.745	9.582
2016.184	9.377	2010.164	7.949	2019.279	9.516	2022.489	9.525
2015.318	9.384	2009.227	7.951	2018.886	9.457	2022.109	9.523
2014.96	9.337	2008.251	7.854	2018.328	9.483	2021.545	9.519
2014.751	9.256	2007.818	7.986	2018.124	9.521	2021.086	9.468
2014.036	9.167	2007.261	8.193	2017.81	9.529	2020.408	9.483
2013.835	9.047	2006.961	8.411	2017.35	9.445	2020.086	9.436
2013.627	9.056	2006.505	8.934	2016.908	9.426	2019.543	9.451
2013.425	8.856	2006.257	9.165	2016.431	9.38	2019.249	9.476
2013.091	8.574	2005.955	9.341	2015.806	9.385	2018.914	9.447
2012.956	8.567	2005.322	9.624	2015.326	9.397	2018.56	9.456
2012.82	8.055	2004.534	9.572	2014.927	9.337	2018.013	9.505
2012.012	7.787	2003.281	9.735	2014.805	9.243	2017.498	9.459
2011.565	7.835	2002.057	9.837	2014.538	9.172	2017.015	9.413
2011.099	7.912	1997.617	9.784	2014.064	9.147	2016.481	9.38
2010.002	7.921	1994.66	9.761	2013.91	9.182	2015.97	9.373
2008.997	7.834	1991.293	9.751	2013.806	9.067	2015.354	9.396
2008.243	7.779			2013.594	9.075	2014.946	9.314
2007.82	8.036			2013.441	9.002	2014.815	9.216
2007.389	8.14			2013.178	8.706	2014.624	9.151
2007.042	8.365			2013.121	8.606	2014.019	9.126
2006.019	9.432			2012.77	8.598	2013.775	9.071
2005.589	9.625			2012.686	8.006	2013.568	9.084
2005.145	9.601			2012.234	7.82	2013.455	9.124
2004.367	9.564			2012.028	7.815	2013.247	9.002
2003.531	9.651			2011.838	7.875	2013.2	8.699
2003.257	9.732			2011.503	7.962	2013.163	8.702
2002.923	9.766			2011.096	7.963	2013.122	8.592
2002.171	9.813			2010.099	7.939	2012.867	8.593

UPPER SWIFT CREEK Cross Section 3 (UM03)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1992.331	9.745			2009.305	7.963	2012.694	8.494
				2008.715	7.911	2012.688	7.987
				2008.19	7.892	2012.451	7.937
				2008.157	8.149	2012.44	7.876
				2008.038	8.221	2012.228	7.768
				2007.896	8.167	2012.039	7.753
				2007.893	8.158	2011.559	7.892
				2007.825	8.066	2011.093	7.951
				2007.553	8.048	2010.318	7.982
				2007.259	8.159	2009.6	7.969
				2007.006	8.384	2009.167	7.942
				2006.832	8.895	2008.6	7.927
				2006.531	9.035	2008.269	7.911
				2006.407	9.098	2008.187	7.92
				2006.342	9.258	2008.074	8.21
				2005.737	9.526	2007.915	8.167
				2005.328	9.625	2007.808	8.031
				2005.158	9.617	2007.47	8.075
				2004.583	9.574	2007.163	8.24
				2003.984	9.605	2006.997	8.403
				2003.257	9.718	2006.877	8.849
				2003.227	9.893	2006.742	9
				2003.103	9.944	2006.468	9.113
				2003.019	9.903	2006.37	9.225
				2003	9.795	2005.875	9.446
				2002.357	9.833	2005.511	9.577
				2001.679	9.854	2005.344	9.601
				1997.586	9.793	2004.745	9.57
				1995.304	9.771	2004.262	9.565
						2003.717	9.631
						2003.606	9.666
						2003.228	9.723
						2003.104	9.943
						2002.975	9.779
						2001.828	9.825

UPPER SWIFT CREEK Cross Section at Gauging Wire (UMGW)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
Cross section not installed until 1999		13.089	9.455	20.372	9.554	13.217	9.646
		12.246	9.499	19.497	9.498	13.218	9.646
		11.751	9.439	18.849	9.511	13.112	9.476
		11.193	9.356	17.839	9.491	12.602	9.457
		10.619	9.372	16.682	9.505	12.171	9.488
		9.946	9.446	15.82	9.523	11.409	9.375
		9.237	9.365	15.241	9.504	10.635	9.37
		8.959	9.304	14.706	9.554	10.181	9.418
		8.794	9.188	14.408	9.605	9.945	9.424
		8.523	9.089	13.993	9.487	9.724	9.399
		8.228	8.825	13.357	9.48	9.274	9.371
		8.119	8.463	13.22	9.644	9.077	9.278
		8.091	8.111	13.116	9.471	8.851	9.215
		7.908	7.985	12.672	9.464	8.69	9.133
		7.582	8.038	12.214	9.519	8.512	9.064
		7.025	8.01	11.41	9.373	8.396	8.878
		6.006	7.954	10.804	9.36	8.191	8.762
		5.455	7.922	10.302	9.391	8.065	8.081
		4.537	7.921	9.957	9.45	7.885	8.053
		3.562	7.921	9.296	9.375	7.68	8.012
		3.272	7.928	8.983	9.302	6.808	7.938
		3.071	7.955	8.788	9.144	5.673	7.915
		2.604	7.958	8.555	9.032	4.504	7.925
		2.368	7.931	8.407	8.925	3.608	7.941
		2.118	8.016	8.27	8.88	3.23	7.92
		1.922	8.061	8.095	8.604	3.055	7.889
		1.697	8.342	8.068	8.081	2.836	7.828
		1.522	8.357	7.84	8.018	2.514	7.912
		1.35	8.596	7.477	7.995	2.081	8.071
		1.116	8.751	6.544	7.97	1.818	8.181
	0.675	9.07	5.81	7.922	1.755	8.341	
	0	9.403	4.787	7.935	1.704	8.213	
	-0.686	9.565	3.448	7.939	1.485	8.308	
	-1.425	9.612	2.953	7.96	1.418	8.588	
	-2.417	9.719	2.286	7.95	1.23	8.717	
	-3.704	9.821	1.862	8.084	1.119	8.733	
	-4.014	9.855	1.71	8.22	0.914	8.843	
	-4.555	9.795	1.471	8.325	0.801	8.917	

UPPER SWIFT CREEK Cross Section at Gauging Wire (UMGW)							
30-Oct-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		-5.591	9.79	1.38	8.607	0.664	8.986
		-9.5	9.763	1.16	8.737	0.577	9.102
				0.713	9.021	0.413	9.2
				0.269	9.278	0.088	9.329
				0	9.403	-0.17	9.445
				-0.156	9.444	-0.509	9.527
				-0.765	9.562	-0.948	9.566
				-1.537	9.621	-1.564	9.612
				-2.268	9.695	-2.286	9.688
				-2.822	9.76	-3.376	9.778
				-3.907	9.824	-4.647	9.8
				-5.117	9.824		

UPPER SWIFT CREEK Cross Section 4 (UM04)							
24-Sep-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
523.107	9.455	522.196	9.449	522.453	9.434	528.03	9.739
522.344	9.445	518.551	9.42	522.064	9.442	528.034	9.737
521.742	9.514	516.283	9.375	521.719	9.501	527.893	9.519
520.879	9.443	514.943	8.78	521.405	9.457	525.219	9.504
520.058	9.431	514.363	7.885	520.727	9.473	523.184	9.456
519.363	9.399	513.839	7.935	520.456	9.428	521.161	9.477
518.473	9.405	512.171	7.912	519.971	9.432	519.564	9.406
517.73	9.367	510.234	7.862	519.544	9.399	518.583	9.418
516.876	9.372	508.968	7.867	518.701	9.417	517.927	9.409
516.28	9.333	508.493	8.043	517.804	9.413	517.605	9.365
515.941	9.236	508.078	8.377	517.698	9.377	517.266	9.417
515.475	8.98	507.655	8.781	517.431	9.399	516.859	9.361
514.84	8.743	507.137	9.114	516.898	9.369	516.334	9.377
514.666	8.463	506.722	9.42	516.258	9.369	516.123	9.33
514.468	8.013			515.64	9.108	515.857	9.203
514.36	7.839			514.964	8.802	515.438	9.012
513.862	7.807			514.867	8.813	514.968	8.829
513.191	7.855			514.791	8.758	514.863	8.831
512.57	7.854			514.658	8.476	514.547	8.395
511.925	7.862			514.546	8.403	514.387	7.909
511.278	7.843			514.445	7.993	514.056	7.966
510.643	7.811			514.334	7.879	513.554	7.973
510.045	7.78			513.998	7.881	512.907	7.959
509.498	7.759			513.698	7.901	512.192	7.931
508.905	7.838			512.877	7.893	511.22	7.882
508.344	8.212			511.816	7.9	510.346	7.826
507.968	8.565			510.581	7.862	509.975	7.797
507.369	8.927			509.445	7.879	509.283	7.811
507.074	9.267			508.948	7.897	509.157	7.808
506.285	9.609			508.758	7.876	509.034	7.85
506.28	9.601			508.659	7.948	508.885	7.818
505.449	9.668			508.316	7.963	508.716	7.759
504.81	9.688			507.962	8.25	508.398	7.899
504.072	9.705			507.781	8.435	508.221	7.998
503.36	9.71			507.516	8.705	507.879	8.287
502.636	9.693			507.31	8.748	507.77	8.414
501.262	9.681			506.992	9.09	507.524	8.678
500.079	9.677			506.682	9.413	507.251	8.789

UPPER SWIFT CREEK Cross Section 4 (UM04)							
24-Sep-98		16-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
498.124	9.715			506.287	9.512	507.046	9.007
495.21	9.64			506.023	9.61	506.713	9.405
490.862	9.602			505.638	9.653	506.395	9.474
485.889	9.6			504.699	9.659	506.216	9.545
481.156	9.563			503.346	9.669	505.984	9.635
				501.627	9.708	505.678	9.659
						505.434	9.649
						505.264	9.67
						504.729	9.665
						503.681	9.664
						502.041	9.698

UPPER SWIFT CREEK Cross Section 5 (UM05)							
30-Oct-98		27-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2032.83	9.671	2032.879	9.682	2032.885	9.689	2033.046	10.171
2029.949	9.648	2030.813	9.642	2032.264	9.691	2033.041	9.87
2028.246	9.632	2028.119	9.597	2030.31	9.653	2032.889	9.681
2026.958	9.541	2025.654	9.552	2029.757	9.661	2032.237	9.686
2025.405	9.55	2024.732	9.532	2029.325	9.603	2030.656	9.661
2023.654	9.43	2023.925	9.442	2028.676	9.653	2028.922	9.629
2023.17	9.433	2023.256	9.425	2027.893	9.576	2028.552	9.657
2022.552	9.509	2022.865	9.47	2026.242	9.568	2028.19	9.658
2022.104	9.23	2022.506	9.534	2024.565	9.567	2027.711	9.599
2021.81	8.956	2022.354	9.471	2024.197	9.474	2027.197	9.552
2021.634	8.417	2022.154	9.286	2023.393	9.421	2026.786	9.575
2021.378	8.253	2021.816	8.986	2022.877	9.463	2026.489	9.579
2020.371	8.11	2021.685	8.444	2022.629	9.521	2025.582	9.574
2018.945	8.087	2021.521	8.371	2022.361	9.478	2025.313	9.577
2017.569	8.02	2021.419	8.278	2022.221	9.356	2024.743	9.514
2016.218	7.98	2021.197	8.202	2021.928	9.095	2024.328	9.52
2015.333	7.958	2020.894	8.202	2021.852	8.973	2024.087	9.439
2014.737	8.154	2020.124	8.161	2021.847	8.793	2023.744	9.446
2014.435	8.289	2019.643	8.127	2021.718	8.709	2023.53	9.424
2013.753	8.915	2019.414	8.102	2021.528	8.371	2023.111	9.451
2013.384	9.228	2018.855	8.079	2021.434	8.273	2022.8	9.5
2012.901	9.395	2018.251	8.097	2020.916	8.182	2022.543	9.552
2012.384	9.577	2017.807	8.095	2019.46	8.11	2022.392	9.484
2011.767	9.822	2017.304	8.057	2018.33	8.077	2022.153	9.265
2010.743	9.846	2016.643	8.045	2017.623	8.084	2021.903	9.033
2008.161	9.814	2015.97	8.043	2016.174	8.038	2021.855	8.765
2003.392	9.818	2015.564	8.04	2015.234	8.03	2021.752	8.704
1990.967	9.76	2015.075	8.026	2014.856	8.079	2021.692	8.438
		2014.836	8.11	2014.378	8.307	2021.554	8.382
		2014.614	8.197	2013.975	8.81	2021.474	8.401
		2014.315	8.34	2013.688	8.908	2021.428	8.281
		2014.14	8.51	2013.528	9.114	2021.157	8.206
		2013.981	8.8	2013.319	9.229	2020.927	8.205
		2013.75	8.874	2013.187	9.332	2020.651	8.244
		2013.548	9.172	2012.927	9.392	2019.99	8.211
		2013.386	9.208	2012.47	9.507	2019.613	8.157
		2013.219	9.334	2012.097	9.677	2019.019	8.132
		2013.071	9.373	2011.813	9.813	2018.67	8.137

UPPER SWIFT CREEK Cross Section 5 (UM05)							
30-Oct-98		27-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2012.78	9.432	2011.36	9.852	2018.339	8.075
		2012.428	9.531	2010.464	9.837	2017.633	8.071
		2012.175	9.635	2010.006	9.857	2016.928	8.062
		2011.949	9.742	2009.565	9.817	2016.153	8.051
		2011.739	9.822	2008.571	9.805	2015.473	8.043
		2011.555	9.857	2007.737	9.815	2014.985	8.019
		2011.281	9.84	2005.902	9.835	2014.62	8.182
		2010.327	9.831	2002.472	9.807	2014.311	8.342
		2009.36	9.797			2014.095	8.553
		2008.273	9.803			2014.004	8.792
		2006.806	9.809			2013.908	8.852
		2004.883	9.827			2013.7	8.888
		2002.989	9.805			2013.541	9.087
		2001.447	9.799			2013.296	9.24
						2013.129	9.334
						2012.83	9.409
						2012.525	9.466
						2012.313	9.549
						2012.022	9.687
						2011.784	9.777
						2011.514	9.829
						2011.214	9.858
						2010.788	9.839
						2010.308	9.829
						2009.996	9.872
						2009.799	9.834
						2009.09	9.813
						2007.745	9.812
						2006.08	9.821
						2004.528	9.821
						2002.655	9.806

UPPER SWIFT CREEK Cross Section 6 (UM06)							
3-Nov-98		28-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2040.411	9.79	2040.541	9.783	2040.548	9.779	2040.69	9.975
2037.059	9.786	2037.659	9.779	2038.682	9.79	2040.694	9.972
2034.232	9.717	2034.283	9.717	2036.035	9.754	2040.553	9.791
2030.267	9.606	2030.99	9.614	2033.699	9.716	2038.303	9.799
2027.613	9.578	2028.41	9.565	2031.396	9.655	2036.518	9.771
2026.474	9.589	2027.264	9.539	2029.189	9.591	2034.882	9.722
2025.524	9.62	2026.713	9.562	2027.247	9.543	2032.753	9.697
2024.987	9.62	2026.355	9.612	2026.786	9.557	2031.878	9.668
2024.458	9.528	2025.5	9.651	2025.843	9.668	2031.158	9.642
2023.903	9.279	2024.573	9.625	2025.224	9.704	2030.812	9.601
2023.085	8.774	2024.307	9.518	2024.583	9.67	2030.226	9.604
2022.302	8.426	2024.075	9.389	2024.416	9.602	2029.905	9.631
2021.24	8.184	2023.606	9.079	2023.679	9.128	2029.636	9.593
2019.624	8.14	2022.883	8.647	2022.691	8.568	2028.73	9.571
2017.949	8.049	2022.386	8.45	2022.057	8.337	2028.226	9.611
2016.364	7.989	2022.03	8.336	2021.458	8.245	2027.921	9.588
2014.806	7.983	2021.749	8.284	2021.114	8.259	2027.68	9.551
2013.749	8.365	2021.36	8.256	2020.134	8.22	2027.014	9.55
2013.737	8.366	2020.558	8.241	2019.13	8.138	2026.286	9.608
2013.29	8.599	2019.96	8.227	2018.038	8.1	2025.71	9.681
2012.923	9.044	2019.511	8.199	2017.111	8.038	2025.127	9.7
2012.763	9.212	2019.041	8.135	2016.391	8.049	2024.698	9.647
2012.625	9.261	2018.831	8.115	2015.273	8.053	2024.372	9.564
2012.35	9.435	2018.195	8.076	2014.652	8.05	2024.013	9.412
2011.941	9.685	2017.814	8.055	2014.483	8.024	2023.629	9.186
2011.024	9.861	2017.352	8.058	2013.961	8.289	2023.403	9.035
2009.033	9.936	2016.514	8.048	2013.66	8.401	2022.966	8.675
2005.685	9.872	2016.064	8.057	2013.198	8.679	2022.57	8.491
2002.682	9.838	2015.605	8.05	2013.014	8.818	2022.123	8.355
1993.083	9.755	2015.335	8.069	2012.938	9.131	2021.766	8.267
1986.793	9.72	2015.022	8.028	2012.833	9.174	2021.397	8.21
		2014.501	7.993	2012.472	9.247	2020.194	8.183
		2014.04	8.238	2012.224	9.38	2018.698	8.141
		2013.706	8.37	2011.925	9.538	2017.491	8.061
		2013.353	8.573	2011.577	9.683	2016.79	8.048
		2012.964	8.838	2011.261	9.804	2016.525	8.036
		2012.693	9.141	2010.784	9.888	2015.836	8.024
		2012.404	9.271	2010.166	9.931	2015.282	8.045

UPPER SWIFT CREEK Cross Section 6 (UM06)							
3-Nov-98		28-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2012.194	9.429	2008.255	9.904	2014.945	8.056
		2012.004	9.557	2006.08	9.869	2014.438	8.039
		2011.805	9.677			2013.947	8.304
		2011.28	9.793			2013.724	8.378
		2010.8	9.864			2013.349	8.564
		2009.796	9.913			2013.255	8.633
		2008.335	9.896			2013.125	8.755
		2006.258	9.863			2012.971	9.105
		2004.349	9.846			2012.832	9.161
		2002.406	9.824			2012.603	9.239
						2012.39	9.329
						2012.285	9.41
						2011.835	9.577
						2011.51	9.67
						2011.224	9.81
						2010.932	9.866
						2010.603	9.904
						2010.008	9.916
						2008.465	9.904
						2006.871	9.869
						2004.943	9.866
						2002.762	9.838

UPPER SWIFT CREEK Cross Section 7 (UM07)							
3-Nov-98		28-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2025.023	9.634	2026.54	9.608	2027.454	9.628	2032.087	9.819
2023.299	9.696	2024.036	9.648	2025.184	9.621	2032.087	9.819
2021.535	9.72	2022.114	9.683	2024.59	9.66	2031.914	9.642
2020.064	9.768	2020.591	9.727	2023.469	9.676	2029.538	9.651
2019.467	9.768	2019.88	9.779	2022.358	9.685	2027.712	9.618
2019.032	9.697	2019.221	9.757	2020.634	9.726	2026.613	9.603
2018.447	9.353	2018.87	9.682	2019.886	9.77	2025.132	9.619
2017.812	8.889	2018.561	9.501	2019.268	9.777	2023.981	9.634
2017.61	8.629	2018.365	9.368	2018.773	9.657	2022.901	9.703
2017.438	8.477	2018.186	9.151	2018.549	9.549	2022.005	9.694
2017.284	8.277	2017.925	8.952	2018.241	9.255	2020.949	9.719
2016.725	8.067	2017.736	8.877	2017.733	8.836	2020.197	9.739
2016.314	7.903	2017.608	8.597	2017.615	8.614	2019.679	9.788
2015.963	7.781	2017.377	8.479	2017.459	8.6	2019.203	9.798
2015.72	7.737	2017.308	8.275	2017.402	8.485	2018.919	9.719
2015.517	7.752	2016.974	8.121	2017.382	8.3	2018.602	9.652
2015.135	7.88	2016.628	8.065	2016.767	8.034	2018.354	9.367
2014.797	7.987	2016.348	8.037	2016.457	7.874	2018.094	9.092
2014.379	7.997	2016.148	7.977	2016.219	7.809	2017.79	8.864
2013.533	7.929	2015.941	7.867	2015.827	7.741	2017.716	8.824
2013.203	7.914	2015.635	7.889	2015.658	7.768	2017.633	8.622
2012.909	7.943	2015.446	7.921	2015.285	7.968	2017.49	8.56
2012.687	7.961	2015.239	8.004	2015.044	8.02	2017.394	8.456
2011.454	8	2015.074	8.069	2014.587	8.05	2017.365	8.307
2010.168	8.011	2014.677	8.062	2014.193	8.008	2017.08	8.242
2009.923	7.993	2014.282	8.03	2013.937	7.973	2016.827	8.151
2009.459	8.085	2014.019	8.027	2012.838	7.987	2016.589	8.072
2008.9	8.276	2013.768	7.993	2012.203	8.035	2016.419	8.044
2008.707	8.392	2013.529	7.975	2010.654	8.093	2016.131	8.091
2008.227	9.219	2013.08	7.991	2009.574	8.147	2015.787	8.112
2007.774	9.527	2012.53	7.996	2009.24	8.153	2015.267	8.152
2007.374	9.664	2012.192	7.991	2008.868	8.298	2014.885	8.196
2004.467	9.755	2011.821	8.026	2008.701	8.385	2014.534	8.05
2002.59	9.806	2011.345	8.033	2008.518	8.685	2014.238	8.003
1984.774	9.694	2011.055	8.04	2008.302	9.145	2013.873	7.942
		2010.874	8.075	2007.943	9.412	2013.615	7.924
		2010.621	8.064	2007.637	9.602	2013.019	7.98
		2010.147	8.096	2007.124	9.687	2012.39	8.03

UPPER SWIFT CREEK Cross Section 7 (UM07)							
3-Nov-98		28-Jul-99		12-Sep-00		10-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2009.597	8.114	2006.023	9.747	2011.506	8.059
		2009.319	8.147	2004.115	9.784	2010.779	8.082
		2009.043	8.243	2001.741	9.787	2010.049	8.104
		2008.862	8.316			2009.915	8.124
		2008.75	8.386			2009.763	8.193
		2008.5	8.805			2009.305	8.208
		2008.306	9.133			2009.036	8.241
		2008.115	9.277			2008.739	8.399
		2007.934	9.427			2008.408	8.817
		2007.794	9.467			2008.391	9.022
		2007.589	9.597			2008.207	9.228
		2007.156	9.679			2007.983	9.379
		2006.254	9.726			2007.751	9.512
		2004.781	9.752			2007.67	9.607
		2003.328	9.78			2007.233	9.657
		2001.753	9.776			2006.563	9.698
		1997.121	9.794			2005.447	9.75
						2005.096	9.788
						2002.827	9.78

Swift Creek Cross Sections

SM01 to SM08

SWIFT CREEK Cross Section 5 (SM05)							
11-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2082.348	7.797	2082.522	7.8	2082.512	7.804	2082.533	7.824
2075.865	7.861	2079.687	7.796	2079.634	7.763	2079.832	7.788
2070.666	7.973	2076.026	7.866	2076.507	7.839	2077.505	7.817
2069.759	7.813	2072.599	7.962	2072.997	7.953	2075.218	7.906
2069.139	7.466	2070.722	7.969	2070.545	7.971	2073.384	7.942
2068.315	7.06	2069.739	7.896	2069.903	7.894	2071.262	7.972
2066.678	6.002	2069.014	7.443	2069.446	7.68	2070.486	7.99
2064.125	6.111	2068.44	7.101	2068.571	7.158	2069.956	7.908
2058.419	6.166	2068.114	6.924	2067.645	6.652	2069.762	7.861
2056.915	6.475	2067.624	6.677	2067.56	6.331	2069.417	7.666
2055.096	6.818	2067.496	6.338	2067.321	6.304	2069.184	7.581
2053.291	7.176	2067.068	6.091	2066.956	6.023	2069.058	7.492
2050.339	7.704	2066.502	6.102	2066.948	6.025	2068.702	7.281
2045.924	7.737	2065.488	6.141	2066.686	6.037	2068.478	7.179
2039.871	7.703	2065.169	6.161	2066.238	6.145	2068.241	6.948
2033.365	7.628	2064.796	6.159	2064.72	6.171	2067.738	6.679
2027.779	7.491	2064.556	6.194	2062.657	6.267	2067.609	6.656
2025.479	7.326	2063.927	6.233	2061.414	6.301	2067.539	6.32
2024.174	7.03	2063.531	6.267	2059.683	6.252	2067.304	6.251
2022.887	6.722	2062.754	6.264	2058.426	6.283	2067.13	6.102
2021.204	6.626	2061.911	6.278	2058.125	6.303	2067.053	5.955
2018.879	6.864	2061.013	6.268	2057.846	6.478	2066.947	5.932
2016.371	7.125	2060.375	6.241	2057.649	6.366	2066.693	5.945
2013.721	7.453	2059.472	6.252	2057.447	6.393	2066.305	6.045
2008.42	7.616	2058.747	6.241	2057.109	6.641	2065.987	6.144
2005.561	7.719	2058.163	6.266	2056.872	6.601	2065.668	6.197
2002.261	7.789	2057.655	6.283	2056.687	6.575	2065.153	6.236
1988.528	7.886	2057.518	6.391	2056.379	6.658	2064.769	6.246
		2057.212	6.501	2055.633	6.805	2064.478	6.226
		2056.854	6.543	2055.234	6.916	2064.077	6.192
		2056.541	6.632	2054.556	6.955	2063.616	6.165
		2056.237	6.629	2053.955	7.083	2063.163	6.14
		2056.056	6.716	2053.037	7.188	2062.602	6.187
		2055.538	6.842	2052.518	7.373	2061.777	6.201
		2055	6.903	2051.743	7.404	2061.168	6.221
		2053.964	7.062	2050.844	7.65	2060.759	6.27
		2053.579	7.139	2050.41	7.709	2059.995	6.265
		2053.205	7.149	2049.786	7.712	2059.155	6.225

SWIFT CREEK Cross Section 5 (SM05)							
11-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2052.669	7.304	2046.656	7.732	2058.569	6.239
		2052.5	7.361	2043.686	7.736	2058.205	6.226
		2051.912	7.392	2040.252	7.708	2057.959	6.451
		2051.328	7.536	2036.588	7.695	2057.287	6.618
		2050.498	7.714	2032.586	7.634	2056.549	6.699
		2048.517	7.711	2030.018	7.582	2055.825	6.789
		2045.149	7.75	2028.222	7.492	2055.389	6.912
		2041.393	7.723	2026.431	7.378	2054.932	6.949
		2037.82	7.692	2025.295	7.338	2054.219	7.077
		2034.679	7.657	2024.708	7.244	2053.452	7.155
		2031.641	7.62	2024.104	7.088	2053.084	7.214
		2028.505	7.511	2023.701	6.877	2053.001	7.284
		2026.069	7.386	2022.872	6.709	2052.745	7.359
		2024.874	7.312	2021.25	6.709	2052.486	7.428
		2024.162	7.119	2020.065	6.769	2052.053	7.417
		2023.648	6.86	2017.97	6.975	2051.825	7.414
		2022.825	6.712	2015.583	7.282	2051.457	7.49
		2021.785	6.702	2012.478	7.544	2051.296	7.561
		2020.656	6.698	2009.105	7.601	2050.918	7.624
		2020.169	6.726	2005.71	7.71	2050.429	7.705
		2019.128	6.847			2049.904	7.723
		2017.542	7.02			2048.687	7.719
		2016.24	7.178			2048.149	7.71
		2014.152	7.422			2046.979	7.74
		2011.492	7.584			2044.844	7.737
		2008.75	7.618			2042.466	7.736
		2005.973	7.679			2040.74	7.72
		2004.173	7.77			2038.016	7.721
		2001.854	7.795			2034.489	7.668
						2032.016	7.634
						2029.396	7.576
						2028.142	7.51
						2027.116	7.448
						2026.136	7.386
						2025.303	7.353
						2024.777	7.299
						2024.521	7.279
						2023.817	6.94
						2023.208	6.777

SWIFT CREEK Cross Section 5 (SM05)							
11-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
						2022.575	6.704
						2021.407	6.691
						2020.596	6.716
						2019.877	6.764
						2019.009	6.884
						2017.812	7.014
						2016.523	7.135
						2015.032	7.313
						2013.246	7.489
						2011.631	7.587
						2008.834	7.611
						2006.584	7.66
						2006.166	7.677
						2004.795	7.756
						2002.401	7.791

SWIFT CREEK Cross Section 3 (SM03)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2039.723	7.914	2040.516	7.917	2040.632	8.04	2040.627	8.046
2036.554	7.889	2037.671	7.905	2040.625	8.04	2040.624	8.046
2033.092	7.853	2034.759	7.871	2040.51	7.915	2040.503	7.92
2031.764	7.622	2033.319	7.853	2036.9	7.894	2038.785	7.913
2030.616	7.345	2032.367	7.777	2033.174	7.857	2037.075	7.905
2029.888	6.977	2030.775	7.443	2032.374	7.773	2035.692	7.887
2029.159	6.777	2030.513	7.359	2031.417	7.568	2033.735	7.863
2027.71	6.59	2030.173	7.138	2030.599	7.393	2032.776	7.842
2025.449	6.405	2029.853	7	2030.288	7.212	2032.224	7.756
2022.596	6.228	2029.381	6.9	2029.858	7.057	2032.039	7.658
2020.651	6.197	2029.071	6.698	2029.223	6.872	2031.655	7.619
2019.404	6.168	2028.579	6.599	2028.165	6.835	2031.435	7.539
2017.981	6.174	2027.906	6.597	2027.294	6.666	2031.118	7.442
2017.039	6.548	2027.392	6.533	2026.082	6.579	2030.558	7.335
2016.056	6.515	2026.647	6.409	2024.497	6.539	2030.246	7.247
2015.51	6.974	2025.538	6.421	2023.812	6.478	2030.024	7.178
2014.875	6.756	2024.469	6.375	2023.27	6.384	2029.829	7.063
2014.262	6.807	2023.466	6.312	2022.055	6.336	2029.39	6.934
2013.193	7.362	2022.399	6.285	2020.137	6.234	2028.948	6.707
2011.709	7.61	2021.489	6.269	2019.141	6.055	2028.447	6.648
2009.408	7.48	2020.831	6.23	2018.204	6.056	2027.343	6.588
2007.373	7.487	2020.317	6.206	2017.913	6.393	2026.136	6.522
2004.3	7.597	2019.851	6.224	2017.424	6.625	2025.036	6.467
2001.522	7.751	2019.287	6.255	2016.746	6.727	2023.855	6.437
1992.613	7.823	2018.795	6.232	2016.126	6.759	2022.656	6.354
		2018.423	6.226	2015.776	6.876	2021.691	6.287
		2018.122	6.17	2015.341	6.813	2021.213	6.221
		2017.999	6.191	2014.836	6.77	2020.394	6.2
		2017.708	6.416	2014.56	6.793	2019.85	6.168
		2017.361	6.576	2014.142	7.103	2019.331	6.083
		2016.567	6.739	2013.351	7.328	2018.787	6.023
		2016.111	6.789	2012.612	7.508	2018.379	5.98
		2015.768	6.919	2011.642	7.629	2018.163	6.151
		2015.45	6.918	2009.67	7.511	2017.884	6.426
		2015.142	6.877	2007.615	7.49	2017.627	6.563
		2014.905	6.775	2005.182	7.57	2017.368	6.641
		2014.718	6.751	2002.43	7.7	2016.988	6.706
		2014.337	6.82			2016.563	6.781

SWIFT CREEK Cross Section 3 (SM03)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2014.047	7.084			2016.178	6.866
		2013.644	7.275			2015.847	6.962
		2012.851	7.511			2015.566	6.976
		2011.893	7.63			2015.344	6.933
		2010.905	7.608			2015.062	6.859
		2009.622	7.516			2014.741	6.766
		2008.566	7.474			2014.363	6.786
		2007.646	7.49			2014.212	6.833
		2006.704	7.516			2013.937	7.113
		2005.487	7.553			2013.565	7.25
		2003.751	7.647			2013.257	7.362
		2001.869	7.725			2012.814	7.422
		1997.028	7.85			2012.349	7.549
		1991.624	7.82			2011.855	7.615
						2010.98	7.625
						2010.101	7.544
						2008.651	7.484
						2007.025	7.502
						2005.655	7.556
						2004.285	7.644
						2002.485	7.696

SWIFT CREEK Cross Section 2 (SM02)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2036.874	6999.956	2037.646	7.818	2037.63	7.812	2037.644	7.807
2033.134	6999.994	2035.116	7.875	2033.919	7.905	2037.025	7.848
2029.727	6999.981	2032.493	7.923	2030.337	7.947	2036.129	7.846
2028.252	7000.015	2030.654	7.949	2029.108	7.862	2034.553	7.896
2026.365	6999.997	2029.676	7.935	2026.836	7.446	2032.861	7.923
2025.755	7000.012	2029.441	7.869	2026.112	7.33	2031.773	7.94
2024.939	7000.013	2028.536	7.759	2025.569	7.01	2030.492	7.933
2023.712	7000.07	2027.857	7.594	2024.957	6.865	2029.778	7.929
2022.727	7000.115	2027.244	7.518	2024.626	6.734	2029.264	7.884
2022.112	7000.154	2026.742	7.404	2024.471	6.621	2028.724	7.783
2021.339	7000.157	2026.408	7.371	2023.47	6.631	2028.347	7.769
2019.643	7000.277	2026.192	7.392	2022.911	6.521	2028.279	7.694
2018.327	6999.989	2025.663	7.179	2021.644	6.496	2028.012	7.602
2016.704	6999.955	2025.311	6.932	2021.309	6.404	2027.297	7.512
2015.601	6999.974	2024.977	6.791	2020.612	6.412	2026.834	7.486
2014.6	6999.943	2024.416	6.685	2019.902	6.134	2026.316	7.296
2013.747	7000.07	2023.846	6.591	2019.424	6.275	2025.78	7.128
2013.267	7000.053	2023.58	6.515	2019.256	6.189	2025.36	7.01
2011.65	7000.023	2023.269	6.478	2018.922	6.221	2025.152	6.922
2010.735	6999.949	2022.438	6.486	2018.64	6.264	2024.852	6.725
2009.6	6999.9	2021.279	6.51	2018.364	6.401	2024.699	6.584
2008.51	6999.954	2020.707	6.498	2018.114	6.443	2024.448	6.479
2007.571	6999.83	2020.427	6.465	2017.687	6.368	2024.143	6.485
2006.308	7000.036	2020.105	6.33	2017.521	6.352	2023.423	6.496
2003.481	6999.92	2019.759	6.263	2017.372	6.289	2022.485	6.494
1992.411	6999.994	2019.259	6.249	2016.866	6.223	2021.947	6.513
		2018.993	6.207	2016.197	6.137	2021.459	6.516
		2018.613	6.214	2015.89	6.159	2020.257	6.47
		2018.327	6.268	2015.143	6.008	2019.804	6.4
		2018.099	6.362	2014.724	6.063	2019.451	6.328
		2017.788	6.333	2014.349	6.241	2018.926	6.285
		2017.401	6.31	2014.098	6.247	2018.686	6.316
		2017.016	6.271	2013.483	6.665	2018.289	6.411
		2016.432	6.217	2012.864	6.693	2017.91	6.438
		2015.995	6.183	2011.61	6.609	2017.599	6.375
		2015.705	6.12	2011.114	6.665	2017.281	6.309
		2015.507	6.148	2010.761	6.785	2016.84	6.149
		2015.223	6.134	2009.596	6.987	2016.664	6.079

SWIFT CREEK Cross Section 2 (SM02)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2014.977	6.076	2008.651	7.186	2016.471	5.99
		2014.816	6.043	2007.704	7.327	2016.369	5.987
		2014.485	6.046	2006.757	7.551	2016.186	6.031
		2014.32	6.142	2004.321	7.691	2015.965	5.99
		2013.972	6.207	2001.614	7.8	2015.817	5.969
		2013.685	6.355			2015.511	6.003
		2013.368	6.517			2015.217	6.05
		2012.508	6.529			2014.781	6.081
		2011.823	6.51			2014.429	6.135
		2011.25	6.546			2014.264	6.232
		2010.79	6.719			2014.046	6.223
		2009.665	6.955			2013.928	6.359
		2008.692	7.153			2013.581	6.462
		2007.52	7.296			2013.428	6.648
		2006.627	7.464			2013.203	6.683
		2005.555	7.526			2012.952	6.656
		2004.784	7.643			2012.549	6.672
		2002.605	7.751			2012.251	6.651
		1997.315	7.832			2011.991	6.61
		1993.622	7.857			2011.678	6.623
						2011.156	6.664
						2010.908	6.706
						2010.45	6.814
						2009.826	6.907
						2009.345	7.007
						2009.058	7.091
						2008.846	7.176
						2008.462	7.278
						2008.073	7.319
						2007.573	7.391
						2007.174	7.437
						2006.847	7.552
						2006.022	7.603
						2005.372	7.671
						2004.46	7.706
						2003.611	7.734
						2002.045	7.807

SWIFT CREEK Cross Section 1 (SM01)							
26-Sep-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
449.543	9.028	462.73	8.847	452.972	9.026	499.872	8.82
453.101	9.029	465.472	8.804	456.599	8.982	497.839	8.825
455.594	9.052	467.628	8.793	459.746	8.929	495.456	8.852
458.6	8.993	469.334	8.667	462.37	8.864	493.051	8.902
464.558	8.834	470.444	8.576	465.651	8.794	490.611	8.912
466.835	8.841	471.582	8.541	467.339	8.808	488.31	8.965
469.619	8.731	472.517	8.392	468.438	8.725	486.241	8.997
471.442	8.626	472.932	8.265	469.756	8.618	485.112	9.015
472.426	8.477	473.492	8.155	471.097	8.639	483.889	8.994
472.928	8.283	473.899	7.909	472.06	8.491	483.43	8.842
473.461	8.187	474.257	7.716	472.468	8.335	483.175	8.696
473.868	7.933	474.611	7.585	473.243	8.207	482.796	8.53
474.057	7.816	474.795	7.401	473.634	8.031	482.437	8.417
474.679	7.526	475.173	7.301	474.205	7.735	482.152	8.221
474.763	7.351	475.324	7.28	474.625	7.548	481.795	8.02
475.036	7.287	475.96	7.327	474.828	7.374	481.453	7.836
475.26	7.11	476.571	7.284	475.073	7.311	481.171	7.664
475.867	7.13	477.141	7.264	476.147	7.316	480.802	7.539
476.561	7.18	477.877	7.234	477.526	7.279	480.53	7.505
477.323	7.188	478.545	7.241	478.709	7.245	480.354	7.385
477.96	7.16	479.269	7.249	479.697	7.228	480.154	7.103
478.588	7.162	479.811	7.266	480.244	7.24	479.828	6.976
479.108	7.134	480.017	7.206	480.55	7.484	479.653	6.977
479.739	7.184	480.174	7.185	480.794	7.517	479.355	7.061
480.176	7.169	480.566	7.452	481.167	7.67	478.854	7.107
480.304	7.264	480.793	7.511	481.478	7.879	478.541	7.158
480.771	7.459	480.89	7.623	482.038	8.144	478.098	7.213
480.954	7.655	481.101	7.668	482.52	8.441	477.581	7.235
481.28	7.785	481.311	7.761	483.089	8.653	476.936	7.314
481.9	8.097	481.496	7.899	483.647	8.923	476.389	7.332
482.208	8.303	481.794	8.034	484.268	9.008	475.981	7.348
483.583	8.899	482.167	8.246	485.638	9.008	475.505	7.341
483.847	9.005	482.736	8.476	489.155	8.942	475.08	7.3
486.96	9.003	483.178	8.667	493.49	8.893	474.743	7.407
491.925	8.903	483.387	8.777	496.936	8.851	474.567	7.56
495.751	8.859	483.595	8.892			474.373	7.644
498.356	8.833	483.769	8.955			474.097	7.801
510.845	8.62	484.188	9.012			473.743	7.97

SWIFT CREEK Cross Section 1 (SM01)							
26-Sep-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		484.756	9.025			473.644	8.031
		485.312	9.017			473.437	8.155
		486.805	8.991			473.026	8.255
		488.844	8.941			472.577	8.299
		490.311	8.915			472.405	8.344
		492.085	8.898			472.175	8.438
		494.819	8.872			471.879	8.502
		497.852	8.814			471.712	8.591
						471.57	8.62
						471.415	8.611
						471.082	8.634
						470.549	8.625
						470.209	8.625
						469.827	8.59
						469.245	8.616
						468.937	8.665
						468.391	8.721
						467.829	8.761
						467.117	8.788
						466.373	8.779
						465.71	8.78
						464.387	8.806

SWIFT CREEK Cross Section 6 (SM06)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2046.806	7.605	2047.698	7.598	2047.715	7.596	2047.695	7.612
2039.404	7.676	2044.498	7.616	2044.461	7.623	2045.01	7.617
2031.974	7.723	2041.273	7.644	2040.905	7.632	2042.883	7.638
2030.074	7.311	2038.38	7.696	2037.63	7.69	2040.166	7.667
2028.945	6.933	2034.929	7.737	2034.543	7.731	2037.645	7.709
2027.776	6.338	2032.711	7.761	2032.509	7.748	2035.034	7.737
2026.898	5.968	2031.96	7.708	2031.582	7.667	2033.685	7.766
2025.455	5.98	2031.163	7.579	2030.675	7.488	2032.478	7.738
2023.987	5.996	2030.544	7.454	2029.876	7.238	2031.8	7.682
2022.46	6.033	2030.105	7.28	2029.182	7.038	2030.939	7.555
2020.997	6.097	2029.54	7.113	2028.811	6.848	2030.242	7.386
2020.089	6.657	2029.14	7.002	2028.616	6.822	2029.36	7.122
2018.544	7.076	2029.023	6.846	2028.425	6.618	2028.9	6.942
2016.607	7.543	2028.771	6.738	2027.819	6.332	2028.648	6.852
2014.315	7.731	2028.383	6.533	2027.246	6.063	2028.596	6.722
2013.132	7.723	2028.054	6.326	2026.089	6.04	2028.192	6.546
2007.219	7.683	2027.795	6.206	2024.082	6.152	2027.861	6.43
2002.649	7.799	2027.405	6.118	2021.827	6.159	2027.396	6.106
1990.775	7.77	2027.077	6.066	2020.801	6.185	2027.194	6.015
		2026.59	6.059	2020.6	6.384	2026.124	5.996
		2026.156	6.034	2020.168	6.504	2025.717	5.986
		2025.474	6.052	2019.584	6.787	2025.155	6.023
		2024.831	6.057	2018.702	6.983	2024.205	6.087
		2024.339	6.109	2017.819	7.208	2023.418	6.124
		2023.752	6.159	2017.469	7.383	2022.446	6.142
		2023.143	6.144	2016.216	7.588	2021.857	6.148
		2022.429	6.148	2014.475	7.736	2021.32	6.089
		2021.836	6.142	2011.694	7.738	2021.147	6.056
		2021.341	6.142	2008.667	7.7	2020.861	6.112
		2021.022	6.148	2004.05	7.776	2020.545	6.409
		2020.776	6.215	1995.298	7.778	2020.155	6.532
		2020.628	6.301			2019.845	6.698
		2020.507	6.439			2019.57	6.814
		2020.232	6.517			2018.957	6.893
		2019.863	6.705			2018.609	6.978
		2019.576	6.838			2018.262	7.1
		2019.059	6.905			2017.909	7.174
		2018.811	6.972			2017.586	7.289

SWIFT CREEK Cross Section 6 (SM06)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2018.463	7.077			2017.533	7.347
		2018.029	7.178			2017.122	7.438
		2017.759	7.248			2016.304	7.559
		2017.475	7.394			2015.87	7.597
		2017.057	7.468			2015.546	7.659
		2016.573	7.538			2015.054	7.722
		2016.263	7.588			2014.47	7.783
		2016.1	7.628			2014.229	7.755
		2015.904	7.608			2014	7.719
		2015.241	7.697			2013.489	7.718
		2014.6	7.734			2013.2	7.761
		2014.294	7.746			2012.976	7.74
		2013.796	7.701			2011.928	7.754
		2013.102	7.74			2010.766	7.752
		2012.468	7.72			2009.454	7.727
		2011.212	7.746			2008.433	7.724
		2010.012	7.734			2007.132	7.705
		2008.244	7.699			2005.96	7.72
		2007.331	7.682			2003.318	7.788
		2006.009	7.711				
		2004.022	7.772				
		2002.607	7.813				

SWIFT CREEK Swift Creek (SM04)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2032.337	7.766	2033.058	7.768	2033.068	7.776	2033.083	7.787
2028.76	7.861	2030.659	7.785	2030.125	7.811	2031.103	7.818
2025.122	7.96	2028.487	7.874	2027.183	7.906	2029.302	7.842
2024.558	7.767	2026.791	7.903	2025.018	7.97	2027.618	7.917
2024.374	7.457	2025.318	7.969	2024.537	7.747	2026.31	7.944
2023.513	7.054	2024.831	7.939	2024.466	7.509	2025.392	7.959
2023.003	6.846	2024.626	7.86	2024.099	7.436	2024.931	7.992
2022.411	6.085	2024.498	7.74	2023.65	7.276	2024.562	7.77
2020.658	6.148	2024.46	7.504	2023.25	7.064	2024.452	7.578
2019.125	6.209	2024.233	7.412	2022.866	6.677	2024.156	7.548
2017.504	6.312	2023.945	7.229	2022.6	6.328	2023.735	7.361
2015.602	6.298	2023.691	7.165	2022.383	6.123	2023.523	7.22
2013.66	6.327	2023.455	7.147	2021.475	6.207	2023.197	7.151
2012.965	7.021	2023.228	7.048	2019.928	6.304	2022.99	6.89
2012.108	7.328	2023.085	6.907	2018.775	6.328	2022.884	6.831
2010.48	7.493	2022.862	6.657	2017.553	6.429	2022.747	6.48
2008.915	7.605	2022.711	6.453	2016.499	6.466	2022.708	6.453
2006.54	7.78	2022.496	6.151	2015.384	6.426	2022.547	6.297
2002.828	7.795	2022.253	6.166	2014.18	6.393	2022.456	6.1
1992.668	7.929	2021.861	6.209	2013.482	6.487	2021.967	6.146
		2021.498	6.211	2013.33	6.803	2021.369	6.18
		2021.163	6.196	2013.081	6.939	2020.834	6.163
		2020.657	6.214	2012.76	7.247	2020.584	6.211
		2020.263	6.225	2012.222	7.306	2019.846	6.243
		2019.997	6.268	2011.257	7.466	2019.137	6.266
		2019.545	6.282	2009.827	7.554	2018.799	6.302
		2018.89	6.333	2008.151	7.724	2018.53	6.287
		2018.273	6.347	2005.431	7.797	2017.92	6.316
		2017.678	6.355	2002.654	7.81	2017.216	6.345
		2016.956	6.387	1996.25	7.869	2016.387	6.379
		2016.188	6.389	1987.949	7.923	2016.096	6.359
		2015.63	6.374			2015.712	6.398
		2014.976	6.356			2015.299	6.401
		2014.436	6.367			2014.79	6.425
		2013.958	6.384			2014.122	6.411
		2013.553	6.373			2013.803	6.407
		2013.4	6.511			2013.306	6.737
		2013.167	6.795			2013.055	7.034

SWIFT CREEK Swift Creek (SM04)							
21-Oct-98		26-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2012.966	6.964			2012.943	7.088
		2012.647	7.156			2012.834	7.252
		2012.483	7.258			2012.548	7.341
		2012.274	7.326			2012.074	7.389
		2011.88	7.396			2011.267	7.489
		2011.309	7.455			2010.041	7.571
		2010.432	7.519			2008.887	7.638
		2009.613	7.547			2007.993	7.719
		2008.802	7.605			2006.796	7.801
		2008.207	7.705			2005.395	7.817
		2007.486	7.751			2003.116	7.808
		2005.51	7.817				
		2003.144	7.809				
		2001.413	7.784				
		1997.148	7.862				

SWIFT CREEK SM07							
22-Oct-98		27-Jul-99		1-Sep-00		31-Jul-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2059.74	7.525	2060.503	7.516	2060.646	7.717	2060.641	7.426
2053.828	7.66	2057.906	7.572	2060.505	7.531	2060.641	7.426
2053.847	7.658	2055.352	7.65	2056.792	7.611	2060.641	7.426
2048.334	7.724	2051.854	7.666	2053.311	7.669	2060.503	7.531
2040.741	7.865	2048.673	7.708	2049.868	7.689	2057.961	7.592
2040.119	7.639	2045.314	7.814	2046.236	7.768	2055.266	7.681
2039.621	6.866	2042.862	7.876	2043.227	7.879	2054.702	7.697
2039.007	6.389	2041.261	7.92	2041.372	7.917	2053.74	7.655
2038.481	6.025	2040.602	7.836	2040.678	7.831	2051.255	7.672
2036.819	6.089	2040.317	7.733	2040.303	7.722	2048.804	7.716
2035.301	6.158	2040.165	7.603	2040.032	7.395	2046.303	7.753
2033.784	6.263	2040.019	7.247	2039.878	6.947	2044.105	7.858
2032.19	6.263	2039.906	6.982	2039.543	6.733	2042.459	7.898
2030.657	6.323	2039.717	6.879	2039.376	6.659	2042.135	7.928
2029.976	6.315	2039.435	6.631	2039.033	6.607	2041.267	7.925
2029.134	6.521	2039.139	6.481	2038.739	6.396	2040.717	7.869
2028.321	6.569	2038.886	6.344	2038.385	6.142	2040.318	7.794
2027.434	7.254	2038.668	6.195	2037.083	6.205	2040.067	7.596
2026.33	7.578	2038.369	6.165	2036.258	6.199	2039.923	7.343
2025.489	7.793	2038.081	6.131	2035.99	6.172	2039.69	6.931
2022.633	7.773	2037.536	6.16	2035.03	6.22	2039.407	6.882
2020.273	7.695	2036.766	6.191	2034.15	6.336	2039.312	6.774
2018.402	7.687	2035.855	6.228	2032.103	6.388	2038.945	6.592
2016.34	7.694	2035.044	6.225	2030.962	6.416	2038.755	6.441
2012.045	7.779	2034.444	6.257	2029.989	6.489	2038.538	6.253
2003.901	7.83	2033.808	6.282	2028.136	6.781	2038.293	6.042
1991.248	7.693	2033.067	6.327	2027.638	7.118	2037.815	6.091
		2032.162	6.336	2027.541	7.308	2036.874	6.125
		2031.202	6.37	2027.119	7.458	2035.824	6.15
		2030.392	6.404	2026.037	7.663	2034.947	6.207
		2029.747	6.442	2024.727	7.818	2034.593	6.29
		2029.285	6.456	2023.322	7.828	2033.981	6.363
		2029.016	6.543	2021.442	7.742	2033.193	6.375
		2028.735	6.574	2018.741	7.685	2031.729	6.387
		2028.48	6.684	2014.673	7.715	2030.382	6.468
		2028.211	6.71	2010.182	7.803	2029.955	6.511
		2027.955	6.771	2006	7.849	2029.772	6.548

SWIFT CREEK SM07							
22-Oct-98		27-Jul-99		1-Sep-00		31-Jul-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
		2027.721	7	2002.223	7.83	2029.204	6.595
		2027.482	7.33			2028.856	6.562
		2027.019	7.467			2028.374	6.665
		2026.468	7.565			2028.124	6.77
		2026.223	7.636			2027.92	6.939
		2025.936	7.729			2027.684	7.264
		2025.625	7.818			2027.258	7.489
		2024.598	7.849			2026.827	7.529
		2023.542	7.825			2026.284	7.639
		2022.737	7.793			2025.626	7.782
		2021.115	7.72			2024.897	7.843
		2018.713	7.686			2024.102	7.838
		2016.001	7.701			2022.78	7.787
		2012.519	7.766			2020.8	7.719
		2008.21	7.84			2019.164	7.708
		2005.116	7.84			2017.599	7.692
		2002.081	7.824			2015.957	7.712
						2013.672	7.742
						2010.893	7.801
						2008.127	7.831
						2005.897	7.844
						2002.686	7.831

SWIFT CREEK Cross Section 8 (SM08)							
22-Oct-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
2051.84	7.671	2052.788	7.653	2052.952	7.845	2052.931	7.847
2045.712	7.691	2049.134	7.676	2052.77	7.655	2052.933	7.847
2041.874	7.704	2045.444	7.696	2048.389	7.686	2052.937	7.847
2040.025	7.785	2042.938	7.685	2044.389	7.711	2052.78	7.672
2038.214	7.745	2040.351	7.765	2040.759	7.751	2050.149	7.676
2037.504	7.675	2038.095	7.751	2038.483	7.754	2047.079	7.695
2037.013	7.549	2037.33	7.649	2037.497	7.696	2044.753	7.713
2036.386	7.481	2036.568	7.512	2037.02	7.594	2042.314	7.715
2035.457	7.463	2035.717	7.526	2035.774	7.55	2040.253	7.789
2034.623	7.14	2035.341	7.409	2035.352	7.452	2038.923	7.773
2033.783	6.697	2034.982	7.274	2034.846	7.197	2037.824	7.764
2033.205	6.361	2034.742	7.142	2034.293	6.889	2037.11	7.636
2032.474	6.175	2034.359	6.894	2033.844	6.69	2036.214	7.592
2031.872	6.205	2034.121	6.77	2033.526	6.502	2035.689	7.581
2030.64	6.222	2033.74	6.697	2033.331	6.495	2035.051	7.346
2029.555	6.208	2033.342	6.527	2033.12	6.406	2034.835	7.305
2028.411	6.216	2032.795	6.338	2032.235	6.371	2034.116	6.851
2027.079	6.161	2032.578	6.293	2030.634	6.331	2033.802	6.644
2025.563	6.1	2032.246	6.316	2028.225	6.253	2033.112	6.403
2024.607	6.006	2032.059	6.326	2025.1	6.205	2032.696	6.246
2024.158	5.958	2031.838	6.365	2024.555	6.177	2032.375	6.205
2023.575	6.245	2031.35	6.317	2023.941	6.041	2032.09	6.227
2022.86	6.453	2030.846	6.323	2023.558	6.42	2031.636	6.428
2022.317	6.754	2030.128	6.28	2022.96	6.569	2031.225	6.432
2021.816	6.881	2029.426	6.23	2022.596	6.811	2030.803	6.366
2021.544	7.055	2028.291	6.225	2021.617	7.115	2030.566	6.317
2020.683	7.107	2027.829	6.194	2020.195	7.244	2030.108	6.279
2019.92	7.254	2027.408	6.184	2019.412	7.442	2029.589	6.23
2019.17	7.522	2026.584	6.227	2018.388	7.787	2028.202	6.226
2018.304	7.805	2025.57	6.212	2017.528	7.894	2026.328	6.192
2018.302	7.805	2024.782	6.19	2015.469	7.926	2024.939	6.152
2017.546	7.905	2024.298	6.168	2013.793	7.858	2024.145	6.072
2016.125	7.903	2023.92	6.145	2012.038	7.742	2023.72	6.096
2014.046	7.837	2023.68	6.156	2009.621	7.712	2023.505	6.312
2012.122	7.736	2023.479	6.362	2006.054	7.726	2023.235	6.335
2010.012	7.709	2023.232	6.462	2002.189	7.787	2022.883	6.528
2007.145	7.714	2022.927	6.52			2022.658	6.799
2003.286	7.764	2022.521	6.748			2022.462	6.976

SWIFT CREEK Cross Section 8 (SM08)							
22-Oct-98		27-Jul-99		1-Sep-00		8-Aug-01	
Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)	Distance (m)	Assumed Height (m)
1993.021	7.82	2021.926	6.942			2021.935	7.112
1981.291	7.68	2021.217	7.107			2021.473	7.196
1977.835	7.539	2020.324	7.174			2020.996	7.213
1973.556	7.387	2019.732	7.314			2020.457	7.209
		2019.226	7.484			2019.746	7.358
		2018.974	7.621			2019.191	7.517
		2018.491	7.778			2018.669	7.717
		2018.073	7.863			2018	7.866
		2017.519	7.896			2017.04	7.914
		2016.046	7.897			2015.815	7.914
		2014.457	7.87			2014.326	7.879
		2012.887	7.788			2012.318	7.753
		2011.561	7.722			2010.265	7.724
		2009.322	7.698			2007.915	7.718
		2006.062	7.722			2005.878	7.734
		2002.459	7.78			2003.07	7.771