The riverbed width reaches about 50 m between EL. 240 m and EL. 730 m but becomes wider in the area above EL. 730 m as much as 100 m. Topography of the area below EL. 240 m shows an aspect of valley-bottom plain and the river width is as wide as 150 m (the valley width is some 1 km). Distribution of the largest grain diameter varies in places at EL. 70 m and EL. 180 m.

The K. Glidik basin was hardly hit by the disaster of May 14, 1981 but the left bank where the elevation is as low as EL. 70 m to EL. 180 m was hit by the disaster on January 18, 1982. The area between EL. 350 m and EL. 630 m forms a V shaped valley, and the riverbed there is formed by consecutive base rock. The riverbeds below EL. 350 m and above EL. 630 m are covered with loose Lahar (or Ladu) sediment.

4. RIVERBED MATERIALS

4.1 ITEMS OF INVESTIGATION

The grain size distribution test and the physical characteristics test were conducted on riverbed materials, hillside materials and flowing debris materials to provide data for the understanding of sediment transfer and the riverbed fluctuation simulation.

Table-4.1 shows the item of investigation.

Table-4.1 Items of Riverbed Material Investigation

Classification	Time and Place of Collection	Test		
		Grain Size Distri-bution	Specific Density	Field Density
Riverbed Materials	K. Mujur (6 Locations)	○	X	X
	K. Rejali (6 Locations)	○	○	○
	K. Lengkong (2 Locations)	○	X	X
Hillside Materials	Landslide area of BS. Tunggeng	○	○	X
Flowing Debris	K. Lengkong 11:20 Feb. 9, 1983	○	○	X
Suspended Materials	K. Lengkong 14:00 Feb. 9, 1983	○	○	X
	K. Mujur 17:25 May 1, 1983	○	○	X
	K. Lengkong 14:00 Feb. 15, 1983	○	○	X

○ : Data collected X : Data not collected

4.2 GRAIN SIZE DISTRIBUTION

The result of the grain size distribution test on riverbed and other materials is shown in Table-4.2 and 4.3 and Fig.-4.1.

The values shown in these Tables and Figure are the average values of three testing materials.

4.3 SPECIFIC GRAVITY AND FIELD DENSITY

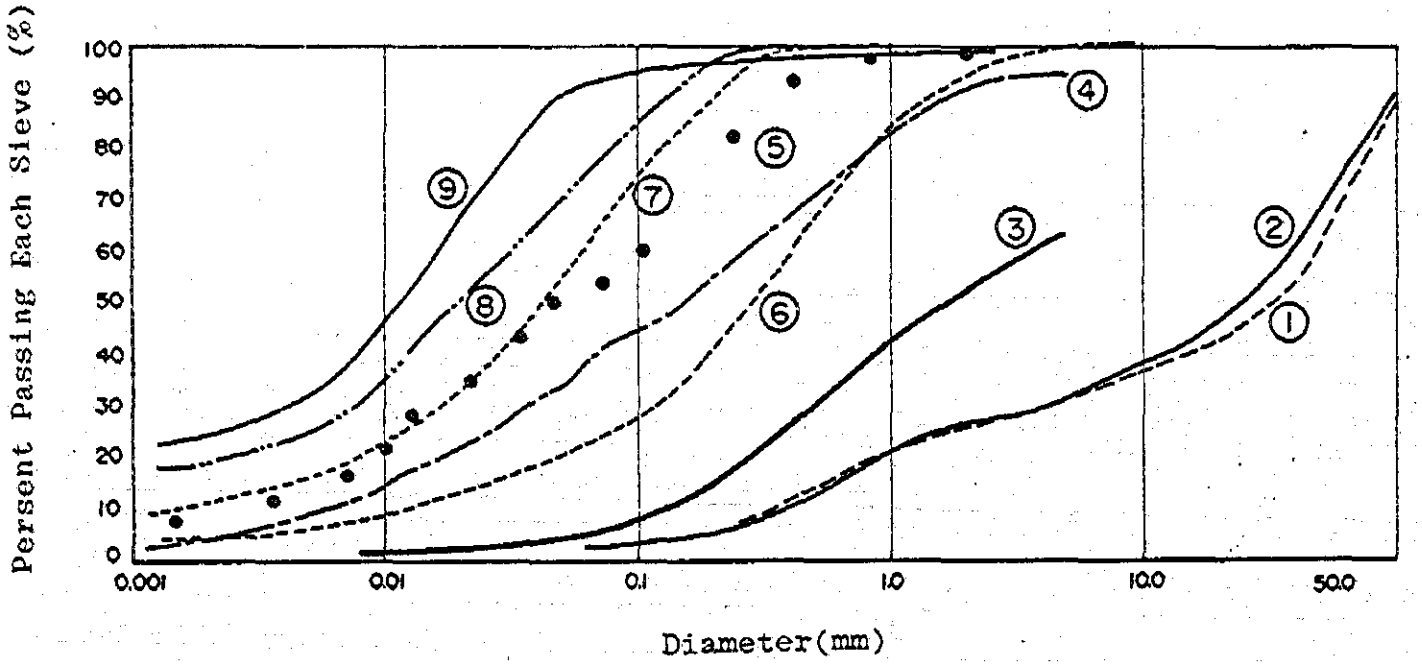
The result of the specific gravity test and the field density test is shown in Table-4.4.

Table-4.2 Grain Size Distribution

Test Location \ Diameter (mm)	100	50	40	25	20	10	4.75	2,00	1.00	0.425	0.250	0.106	0.075	0.054	0.041	0.020	0.012	0.009	0.006	0.003	0.0013
R-2	81.66	65.24	61.29	54.74	51.03	46.55	38.58	32.31	22.84	10.37	6.25	2.23	1.62								
R-4	93.67	64.3	58.30	47.43	41.72	35.43	27.52	22.98	17.24	7.31	3.56	0.78	0.48								
R-6	90.64	68.12	59.33	43.93	37.24	30.93	24.55	21.63	18.27	12.36	9.22	4.24	3.16	2.29	1.78	0.98	0.65	0.43	0.33	0.20	0.17
R-10	94.27	71.42	62.18	53.12	46.62	36.62	27.26	23.90	20.42	14.22	10.52	4.79	3.63	2.54	1.92	1.07	0.61	0.45	0.31	0.20	0.16
R-11	88.00	67.72	62.32	51.81	47.75	42.21	34.10	30.05	25.56	15.76	9.22	2.08	1.20								
R-12	91.95	72.42	65.79	56.55	50.44	43.12	34.89	29.16	21.90	9.87	4.89	0.85	0.49								
M-1	88.32	52.81	48.85	41.59	37.70	32.74	25.12	19.84	15.26	8.71	5.46	1.60	1.07								
M-2	84.24	59.17	54.25	49.43	46.22	42.22	38.24	34.03	26.99	16.09	7.13	2.11	1.42								
M-3	88.37	57.10	51.63	43.37	39.41	35.14	27.20	23.31	19.84	13.84	7.90	2.01	1.32								
M-5	86.42	60.73	56.38	49.57	46.38	42.50	35.54	31.16	23.90	12.20	7.98	3.21	2.33	1.65	1.34	0.72	0.43	0.30	0.22	0.10	0.08
M-9	92.35	66.88	60.85	49.77	43.97	37.52	29.55	24.54	20.45	13.75	9.05	2.25	1.33								
M-10	91.34	64.06	58.57	48.90	44.24	39.28	32.09	27.84	22.91	11.99	6.38	1.43	0.92								
G-1 (Pronojiwo)							62.86	52.73	42.61	27.24	19.49	8.18	5.97	4.70	4.06	1.99	1.16	0.80	0.68	0.42	0.26
G-2 (Lengkong fan)							94.22	91.10	82.58	68.38	59.19	46.33	42.35	35.53	31.85	21.82	16.90	13.28	10.20	5.91	3.70

Table-4.3 Grain Size Distribution

Tested Materials \ Diameter (mm)	9.25	4.76	2.00	0.84	0.42	0.25	0.105	0.074	0.0521	0.0374	0.024	0.014	0.010	0.0071	0.0036	0.0015
Lahar at K. Lengkong (11:20 Feb. 9, 1983)	100	99.6	94.4	79.2	61.6	48.0	28.4	23.8	21.2	17.9	14.6	11.7	9.5	7.6	6.0	4.4
Lahar at K. Lengkong (14:00 Feb. 9, 1983)				100	99.2	96.8	76.5	66.3	57.2	47.1	37.1	29.5	23.6	18.6	14.0	10.6
Lahar at K. Mujur (17:25 May 1, 1983)					100	99.3	87.5	77.4	71.9	63.9	54.3	45.2	35.6	28.89	23.3	18.1
Hillside material at upstream of BS. Tunggeng	100	99.5	99.0	97.9	92.5	81.5	59.9	53.9	50.5	43.5	35.8	29.1	20.7	15.9	11.3	7.1
Lahar at K. Lengkong (14:00 Feb. 15, 1983)		100	99.2	96.8	97.8	96.7	95.6	94.6	89.9	80.0	68.9	54.8	45.0	37.0	29.0	22.2



Legend:

① Riverbed Deposit of K. Mujur
② Riverbed Deposit of K. Rejali
③ Riverbed Deposit of K. Glidik (Pronojiwo)
④ Deposit of K. Lengkong Fan
⑤ Erosion Sediment at the Upper Stream of BS. Tunggeng
⑥ Flowing Lahar Materials (At 11:20 on Feb. 9, 1983)
⑦ Flowing Lahar Materials (At 14:00 on Feb. 9, 1983)
⑧ Suspended Sediment of K. Mujur at the Mujur Bridge (At 17:25 on May 1, 1983)
⑨ Suspended Sediment of K. Lengkong (Pronojiwo) (At 14:00 on Feb. 15, 1983)

Fig.-4.1 Grain size distribution curves

Table-4.4 Sepcific Gravity and Field Density

Classification	Location	Position No.	Specific Gravity	Field Density	*Grain Concentration by Volume
Riverbed Materials	K. Rejali	R-2	2,777	1,535	0.55
		R-4	2,793	1,675	0.60
		R-12	2,824	1,435	0.51
Flowing Debris	K. Lengkong 11:20 Feb. 9, 1983		2,751	-	
Suspended Materials	K. Lengkong 14:40 Feb. 9, 1983		2,739	-	
	K. Lenkgong 14:00 Feb. 15, 1983		2,718	-	
	K. Mujur 17:25 May 1, 1983		2,806	-	
Hillside Materials	Landslide Zone at BS. Tunggeng		2,727	-	

* Given from specific gravity and field density.

4.4 GRAIN CONCENTRATION OF LAHAR BY VOLUME

The volume density of debris observed in 1983 is shown in Table-4.5.

Table-4.5 Debris Density of Flowing Lahar

Date	Time	Station	Water Discharge (m /s)	Observed Volume			Estimated Value	
				① Total Volume (m)	② Soil (gr)	③ Water (gr)	④ Dd	⑤ D
Feb. 9, 1983	11:20	Pronojiwo Bridge II	598.0 (11:00)	530	612.350	315.125	0.41	1.75
Feb. 9, 1983	11:20	Pronojiwo Bridge I	598.0 (11:00)	530	710.875	270.075	0.49	1.85
Feb. 15, 1983	13:00	K. Lengkong II	19.2	1900	186.050	1862.800	0.02	1.08
Feb. 15, 1983	14:00	K. Lengkong I	3.78 (14:15)	1900	516.800	1652.075	0.13	1.14
Feb. 8, 1983	15:00	K. Leprak II	1.1	530	7.200	535.950	-	1.02
Feb. 8, 1983	16:00	K. Leprak I	1.1	530	18.375	524.625	0.01	1.02
Mar. 16, 1983	15:30	Mujur Bridge	10.8	2000	10.525	1995.450	0.00	1.00

D: Specific Gravity of Lahar $D = \frac{② + ③}{①}$

Cd: Grain Concentration of Lahar by Volume $Dd = \frac{① - ③}{①}$

* Estimated Value from Flood Mark

4.5 CHARACTERISTICS OF RIVERBED MATERIALS

The characteristics of riverbed materials and others are described below on the basis of the investigation data mentioned above.

(1) The grain size distribution of riverbed materials of the K. Mujur and the K. Rejali is almost uniform from the upper stream to the river mouth. The average grain size of the K. Mujur and the K. Rejali are dm = 40 mm and dm = 30 mm respectively. Silt with a diameter of less than 0.074 mm is almost non-existant at less than 2%.

(2) The riverbed materials of the K. Glidik are generally finer than those of the other two rivers but the volume of silt is still low at less than 6%.

(3) The grain size distribution of lahar deposit in the K. Lengkong fan (accumulated in 1976) shows a slight shift towards the finer grain size in comparison with the distribution of riverbed materials mentioned above and is similar to the distribution of hillside sediments and flowing debris. Silt constitutes 40% by volume.

(4) The grain size distribution of hillside sediments and flowing debris shows a shift to much finer grains than riverbed materials. The hillside sediments are finr than the flowing debris as shown in the ratio of silt at 54% and 24% respectively.

(5) The grain size distribution of suspended materials at times other than flood shows the strong presence of finer grains, as silt constitutes 70% - 90%.

(6) The density of flowing debris is quite high. At Pronojiwo of the K. Glidik (riverbed incline i = 1/20), the volume density is 44% and the weight density is 1.80 t/m .

5. EXISTING FACILITY

The facility existing along the river channels in the study area is classified as follows for the use of planning:

① Disaster prevention works executed by Mt. Semeru Project Office after 1977 in which it was established.

② Disaster prevention work executed before 1977.

③ Intakes for irrigation.

Existing facilities belonging to group ① and ③ are shown in Fig.-5.1 and Table-5.1 - 5.3. Existing facilities belonging to group ②, which were executed along K. BS. Sat and K. BS. Sat lama before 1977, are shown in Table-5.4 and Fig.-5.2.

The simbols which are used in tables and figures have the following means.

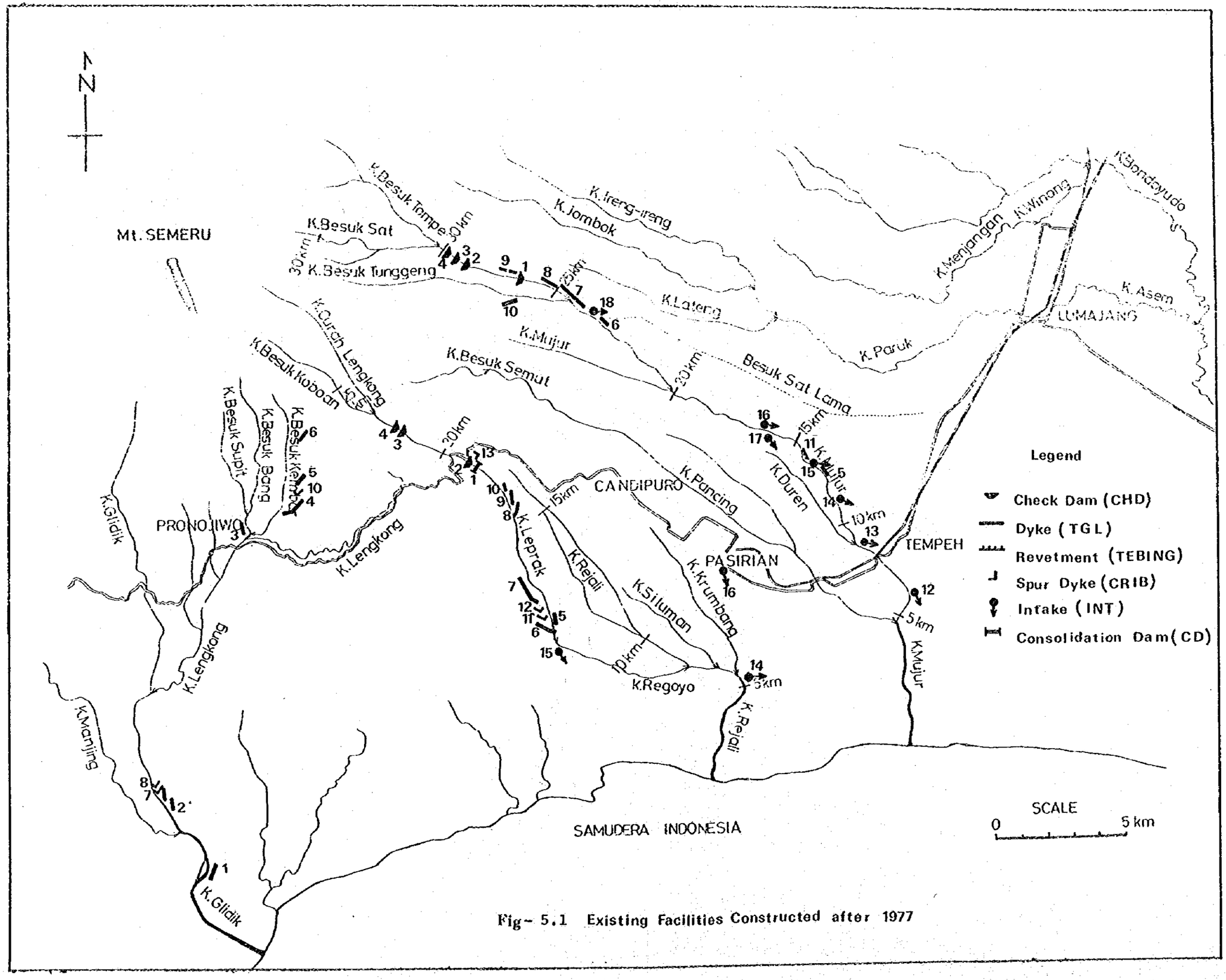


Fig- 5.1 Existing Facilities Constructed after 1977

K. Mujur

1. CHD Besuk Sat I
2. " IV
3. " III
4. " II
5. TGL Mujur
6. " Tunggeng Bawah
7. " Kertosari I+II
8. " Leces
9. " Besuk Sat
10. " Sumbersari
11. TEBING Mujur
12. INT Pandanwangi
13. " Soponyono
14. " Kedung Caring
15. " Klerek
16. " Lobang 1
17. " Lobang 2

K. Rejali

1. CD Leprak 1
2. CHD Leprak 2
3. CD Curah kobo'an 2
4. CHD Curah kobo'an 1
5. TGL Leprak 10
6. " Leprak 9
7. " Leprak 8
8. " Leprak 2+3+5+6+1
9. " Leprak 1+7
10. " Leprak 4
11. KRIB Swakelola
12. " Swakelola

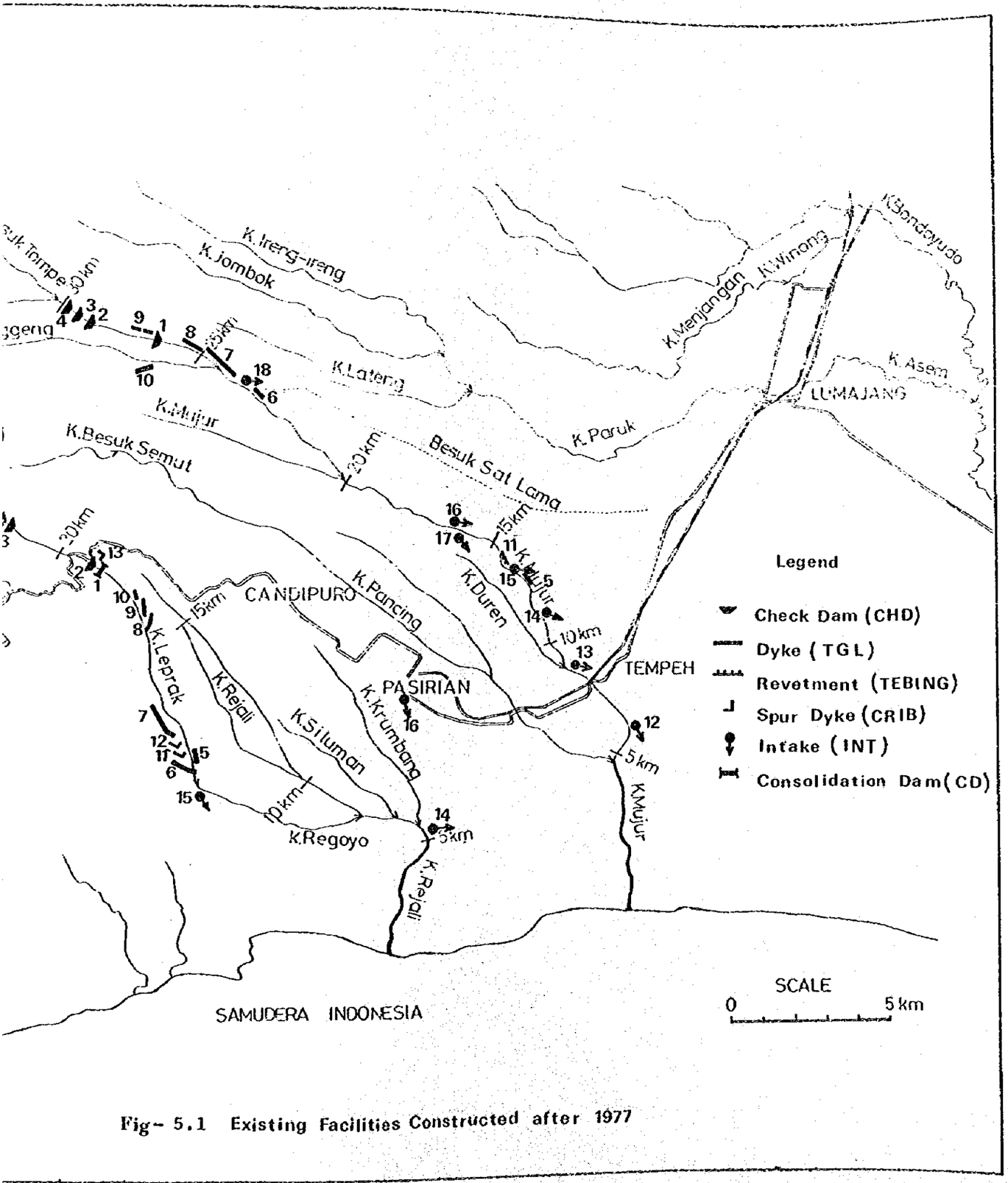


Fig- 5.1 Existing Facilities Constructed after 1977

K. Mujur

1. CHD Besuk Sat I
2. " IV
3. " III
4. " II
5. TGL Mujur
6. " Tunggeng Bawah
7. " Kertosari I+II
8. " Leces
9. " Besuk Sat
10. " Sumbersari
11. TEBING Mujur
12. INT Pandanwangi
13. " Soponyono
14. " Kedung Caring
15. " Klerek
16. " Lobang 1
17. " Lobang 2

K. Rejali

1. CD Leprak 1
2. CHD Leprak 2
3. CD Curah kobo'an 2
4. CHD Curah kobo'an 1
5. TGL Leprak 10
6. " Leprak 9
7. " Leprak 8
8. " Leprak 2+3+5+6+11
9. " Leprak 1+7
10. " Leprak 4
11. KRIB Swakelola
12. " Swakelola
13. KRIB Leprak
14. INT Banjr Scherm
15. " Rahayu
16. " Talang

K. Glidik

1. TGL Umbul Sari
2. " Wareng
3. " Besuk Bang
4. " Besuk Sarat 2+3
5. " Besuk Sarat 1
6. " Besuk Sarat 4+5
7. KRIB Wareng 1
8. " Wareng 2
9. " Besuk Sarat.

LEGEND. :

——— . PRESENT RIVER COURCE.
- - - - . OLD RIVER COURCE (1900 ~ 1951)
▬▬ . DIKE
▼ . DAM
▭▭ . RIVER EXCAVATION
═══ . MAIN ROAD

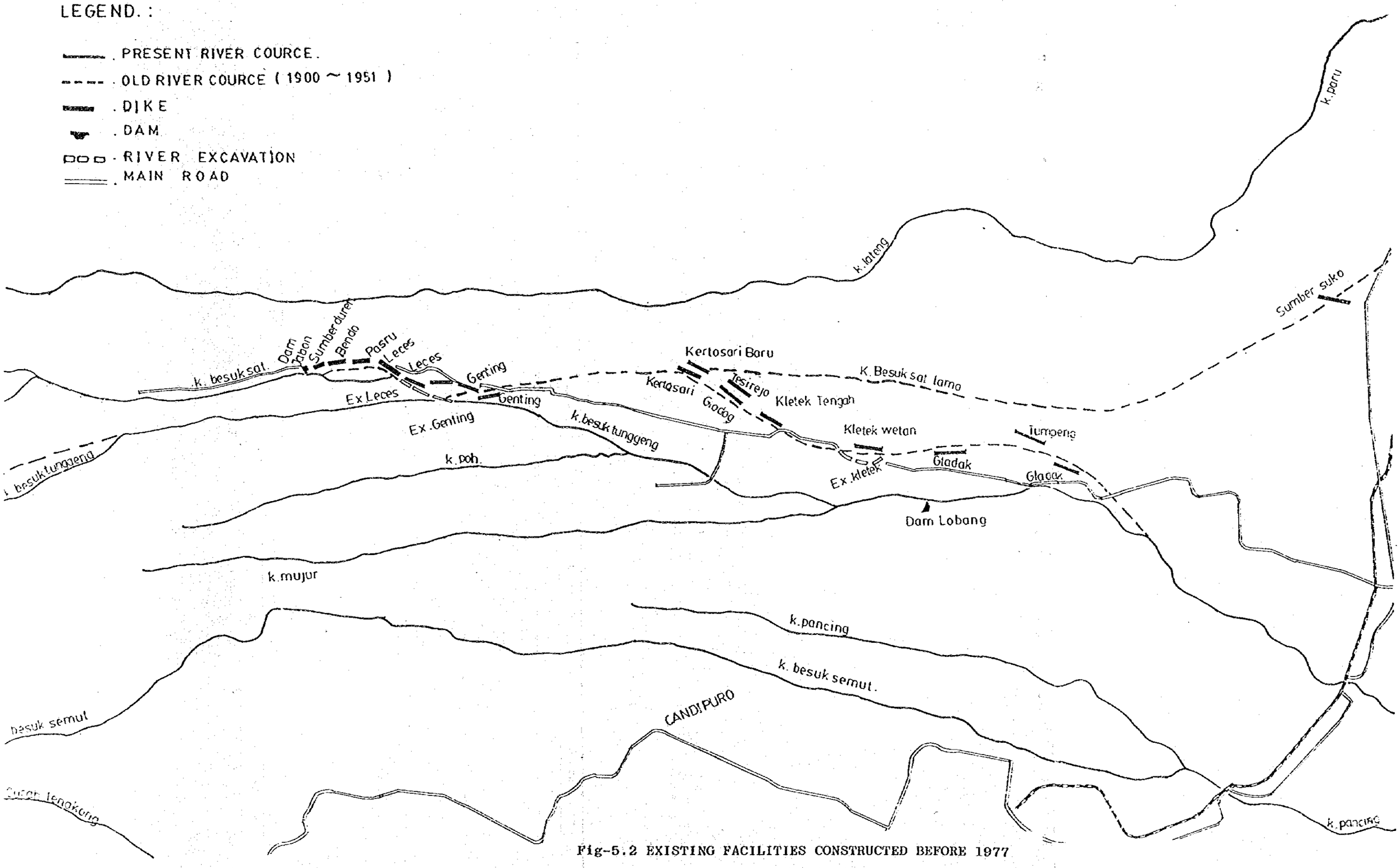


Fig-5.2 EXISTING FACILITIES CONSTRUCTED BEFORE 1977

Table-5.1 Existing Facility in K. Mujur

River Name	Tributary Name	Facility	Facility Name	Completed Year	Elements	Constructor	Remarks
K. Mujur	K. Besuk Sat	Check dam	CHD.BS.SAT 1	'77 '79	H=7.3,Bl=28,B=129,h=4.0	Mt. Semeru	destroyed at May 1981
			CHD.BS.SAT 4	'80	H=10.5,Bl=62.14,B=203,h=5.6	Project Office	
			CHD.BS.SAT 3	'80	H=9.0,Bl=50,B=200,h=6.0	"	
			CHD.BS.SAT 2	'79	H=11.0,Bl=48,B=197,h=5.25	"	
	K. Mujur	Dyke	TGL.MUJUR	'81	L=86,H=2.5,bl=2.5	"	
	K. Tunggeng		TGL.TUNGGENG BAWAH	'81	L=190,H=5,bl=5.5,b2=15.5	"	
	K. Besuk Sat		TGL.LECES	'78	L=160,H=4.0	"	partially destroyed at May 1981
			TGL.KERTOSARI 1+2	'81	L=835,H=5,bl=4,b2=15	"	
			TGL.BS.SAT	'80	L=200,H=3,bl=2.5	"	destroyed at May 1981
	K. Tunggeng		TGL.SUMBERSARI	'81	L=275,H=4,bl=5.5,b2=15.5	"	
	K. Mujur	Revetment	TEBING MUJUR	'78	L=120, H=4	"	
	K. Mujur	Intake	INT. PANDANWANGI		TECH		
			" SOPONYONO		"		
			" KEDUNG				
			CARING		"		
			INT. KLEREK		"		
			" LOBANG 2		"		
			" LOBANG 1		"		
	K. Tunggeng		INT. ROWOGEDANG		HALF-TECH		

Table-5.2 Existing Facility in K. Rejali

River Name	Tributary Name	Facility	Facility Name	Completed Year	Elements	Constructor	Remarks
K. Rejali	K. Leprak	Check dam	CHD.Leprak 1	'82	H=8,B=30,B1-18,h=7.5	Mt. Semeru Project	
			CD.Leprak 2	'82		"	under construction
	K. Kobo'an		CD.Kobo'an 2	'80	H=6.5,B=56,B1=20,h=6.5	"	
			CD.Kobo'an 1	'80	H=11.5,B1=30,h=7	"	
	K. Leprak	Dyke	TGL.Leprak 1	'78	L=250,H=3	"	
			" 7	'80	L=30,H=4.3,b1=4,b2=12.3	"	
			" 2	'78	L=157,h=3.5,b1=3,b2=8	"	
			" 3	'78	L=98.5,H=3.0,b1=4.0,b2=7.0	"	
			" 5	'79	L=125,H=2,b1=3,b2=8	"	
			" 6	'80	L=49,H=2,b1=3,b2=11	"	
			" 11	'82	L=185,H=3	"	
			" 4	'78	L=160,H=45,b1=3,b2=11	"	
			" 8	'80	L=308,H=2.5,b1=3,b2=8	"	
			" 9	'81	L=132,H=3,b1=2.5,b2=6	"	destroyed at May 1981
			" 10	'82	L=215,H=3,b1=3,b2=10	"	
			TGL.Jugosari 1			"	destroyed at May 1981
			TGL.Jugosari 2			"	"
		Spur dyke	KRIB.Leprak			"	
			KRIB.Swakelola	'81		"	
	K. Rejali	Intake	INT.Banjir SCHERM		TECH		
			INT.Talang		TECH		
			INT.Rahayu		HALF-TECH		

Table-5.3 Existing Facility in K. Glidik

River Name	Tributary Name	Facility	Facility Name	Completed Year	Elements	Constructor	Remarks
K.Glidik	K. Besuk Bang	Dyke	TGL. Besuk Bang	'81	L=275, H_1=3.0, b_1=2, b_2=4	Mt. Semeru Project	
	K. Besuk Sarat		TGL. Besuk Sarat 3	'81	L=350 H_1=3.5, b_1=3, b_2=10	"	
			TGL. Besuk Sarat 2	'80	L=58 H_1=2.0 b_1=3 b_2=7	"	
			TGL. Besuk Sarat 1	'79	L=136 H_1=2.0 b_1=3 b_2=7	"	
			TGL. Besuk Sarat	'82	L=121, H_1=6.0	" "	
	K. Glidik		TGL. Wareng	'82	H_1=3.0, L=116	"	
			TGL. Umbulsari	'81	H_1=3.0, L=42	"	
		Spur dyke	KRIB Besuk Sarat			"	
			KRIB Wareng 1	'81	H_1=3, L=102	"	
			KRIB Wareng 2	'81	H_1=3, L=41	"	

Table - 5.4 Existing Facilities Constructed before 1977

Facility name	Constructed year	Facility name	Constructed year
Jabon dam	1951	penutup baru dyke	1913
Lobang dam		Kertosari "	1910
Leces excavation	1912	Kertosari baru "	1912
Genting "	1909	Tesirejo "	1912
Kletek "	1910	Glodog "	
Sumber Duren dyke	1913	Kletek tengah "	1910
Bendo dyke	1922	Kletek wetan "	1910
Pasru dyke	1914	Tumpeng "	1912
Leces dyke	1913	Gladak "	
Genting dyke	1910	Sumber suko "	before 1910

6. PROMISING SITE FOR SEDIMENT CONTROL FACILITIES

6.1 ITEMS AND METHOD OF INVESTIGATION

Data was collected during the field investigation on the following items in view of finding possible construction sites of check dam(s), consolidation dam(s) and dike(s).

- Height of both banks
- Nature of the foundation
- Appropriate facilities; type, height and length
- Expected effect of facilities
- Aspects to be considered in view of constructing these facilities

6.2 INVESTIGATION RESULT

The result of the investigation on promising sites for new sediment control facilities has been reflected in Supporting Report (I).

Promising sites for new sediment control facilities in each catchment area are described below.

(1) K. Mujur

The founation of the river below EL. 900 m consists of gravel and, therefore, there is no promising site for a large-scale check dam ($H \geqq 25$ m).

The section betwen EL. 900 m and 640 m enjoys a bank height of more than 20 m which makes the construction of a small check dam possible. There is not an effective site in this section except at the confluence of the BS. Tompe and the BS. Sat as the river channel maintains a U shape all the way through.

The bank height lowers to 3 - 10 m on both sides of the river below EL. 640 m which makes it impossible to build a check dam. A possible sediment control facility, if any, will be a sand pocket where the height of banks will be heightened by dikes.

Two promising sites for the sand pocket construction were found at about EL. 580 m and about EL. 250 m as the sand pocket is suited to the inflection point of the riverbed incline.

Since there are many intakes along the K. Mujur, construction of consolidation dams should be necessary to protect these intakes for the river section below EL. 220 m.

A promising site for a check dam is almost non-existent along the BS. Tunggeng, the right side tributary, as its width is narrow (river width = 10 - 20 m) and its cross sectionshows a U shape.

(2) K. Rejali

The foundation mostly consists of gravel except the section between EL. 500 m and EL. 660 m and the section over EL. 900 m. As such, a check dam of over 25 m in height can only be constructed in these sections. However, the section over EL. 900 m has a riverbed incline of i = 1/10 and is not suitable for a large check dam as this teep incline reduces the sediment control efficiency of a check dam.

Moreover, the section between EL. 500 m and EL. 600 m forms a narrow neck section with steep cliffs on both sides and makes it practically impossible to construct a check dam. On the contrary, a large check dam can be constructed for the section between EL. 600 m and EL. 660 m as it has a solid rock riverbed.

The section below EL. 500 m forms an alluvial fan and the construction of a check dam is impossible as the bank

height is as low as 2 - 10 m on both sides. However, a sand pocket at around EL. 400 m will be a suitable choice in this section as the best place for a sand pocket is at the inflection point.

(3) K. Glidik

The construction of a large check dam is possible in the section between EL. 280 m and EL. 630 m as it has a solid rock riverbed. However, the construction of access roads will be quite difficult there because of the deep valley with 200 m-high sheer cliffs on both sides. A promising site for a check dam, therefore, should be limited to either the top of the upper stream or the bottom of the lower stream.

The west bank of the K. Lengkong over EL. 630 m is lower than the east bank and, therefore, renders it impossible to build a high dam. The construction of consolidation dam is nevertheless possible at any point along the river.

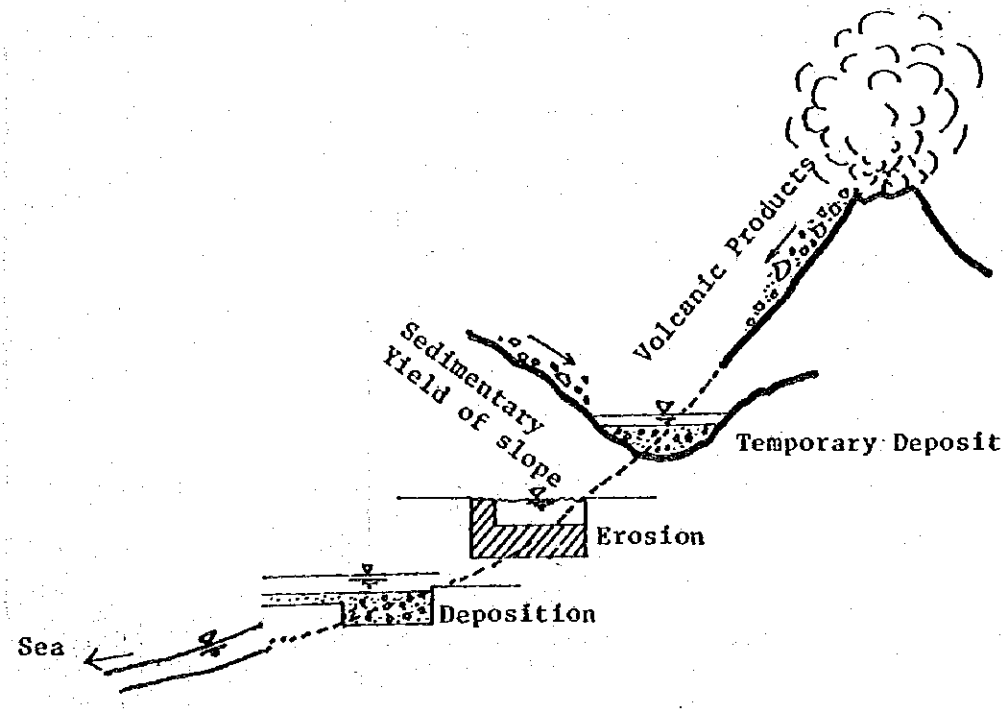
7. RIVERBED FLUCTUATION SIMULATION

7.1 METHOD OF ANALYSIS

The riverbed fluctuation simulation was conducted to understand the sediment transfer from the valley head to the river mouth at the time of flooding.

As Fig.-7.1 shows, sediment is directly produced at the crator and the slope and temporarilly accumulated on the riverbed. Later, it is transported to the lower stream area by water flow when flooding occurs.

Fig.-7.1 Transportion of Sediment



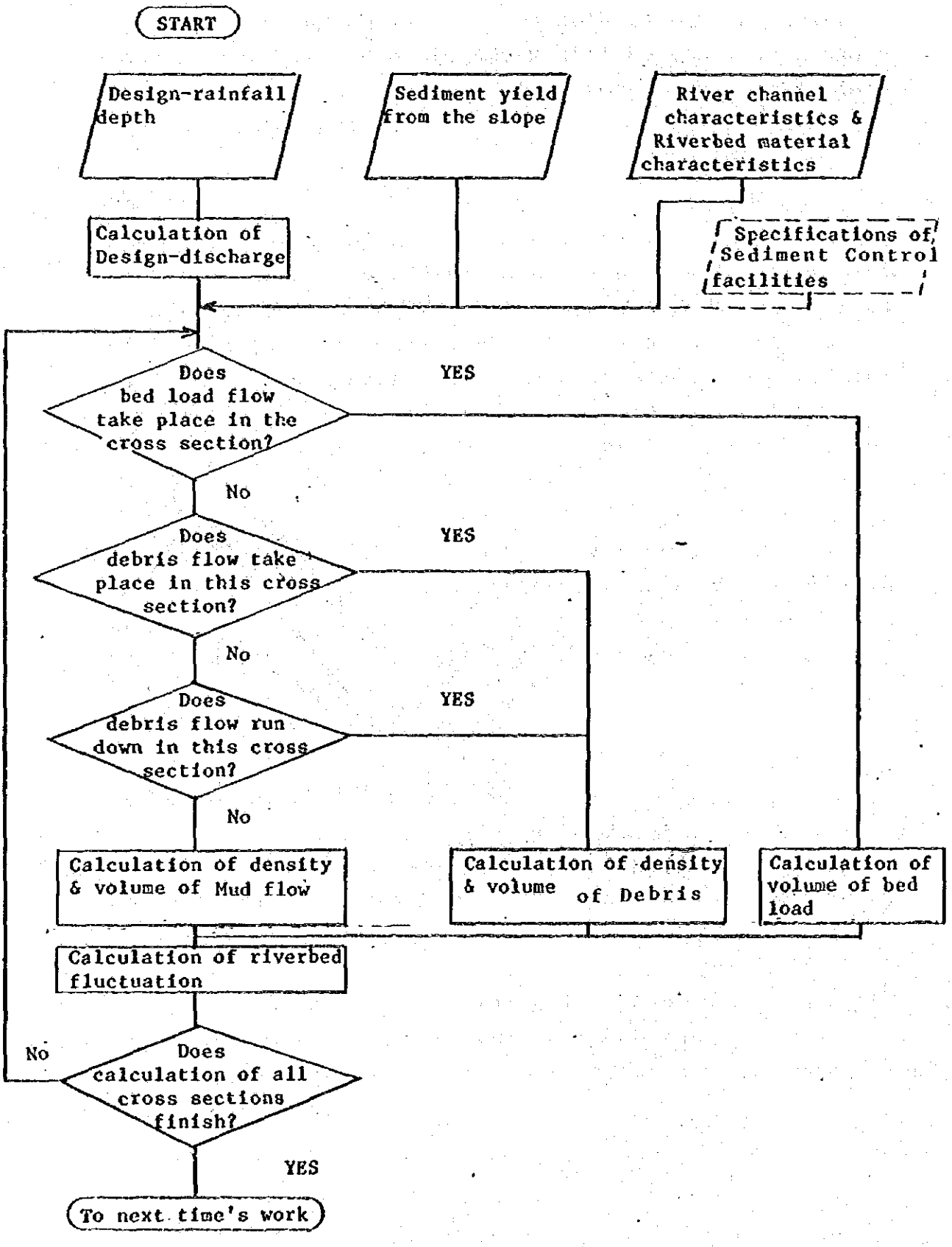


Fig.-7.2 Flow Chart of Riverbed Fluctuation Simulation

During this transportation, erosion of the riverbed or deposition of sediment will occur. In short, therefore, sediment will flow down while its actual volume is fluctuating.

The erosion and accumulation within the above-mentioned channels are calculated by the riverbed fluctuation simulation, which is shown in Figure-7.2. The simulation is based on the understanding that the sediment is transported by tractive force. In addition, it is understood that the sediment tractive force of water varies according to the different types of sediment flow, where there are three types of flow, i.e. debris flow, mud flow and bed load flow.

As there is no small grain size sediment (cf. figure-4.1) at the riverbeds of the K. Mujur, K. Rejali and K. Glidik, the suspended load flow is considered to have been discharged into the sea, and therefore is not included in the simulation.

The method of detail calculation and its formula are described below.

(1) Calculation of Design Discharge

The design discharge is calculated by the Kinematic Wave Method using the design rainfall depth as input. The detail of the Kinematic Wave Method and of the calculation results are shown in Part - 5 HYDROLOGY.

(2) Sediment Yield from Slopes

The types of sediment yield from slopes in this basin are as follows:

Direct Yield from volcanic activities
Yield from breaking, landslides and surface erosion

Although it is not easy to estimate the volume of direct yield from volcanic activities, it should be of a large quantity as Mt. Semeru is so active that it erupts every ten minutes or so. Therefore, the volume of the sediment yield at the most upper-stream areas of the following branch rivers, where the direct ejecta from the crators will be discharged, is assumed to be more than the sediment tractive force at these places.

K. Besuk Bank	(Branch of K. Glidik)
K. Besuk Kembar	(Branch of K. Glidik)
K. Curah Kobo'an	(Branch of K. Rejali)

Data concerning breaking, landslides and surface erosion around Mt. Semeru is non existent. Therefore, data on bare-land surface erosion on the slopes where volcanic ash falls for active volcanoes in Japan and the American continent (cf. Figure-7.2 and -7.3) is used as a reference to achieve the following formula:

$$Qe = 0.35.a.\sin^3\theta.C^* \qquad (7.1)$$

Where θ: Average Gradient of Slope
a: Bare-land Size (m^2)
C^*: Grain Concentration by Volume
Qe: Eroded Sediment Volume per Year (m^3/year)

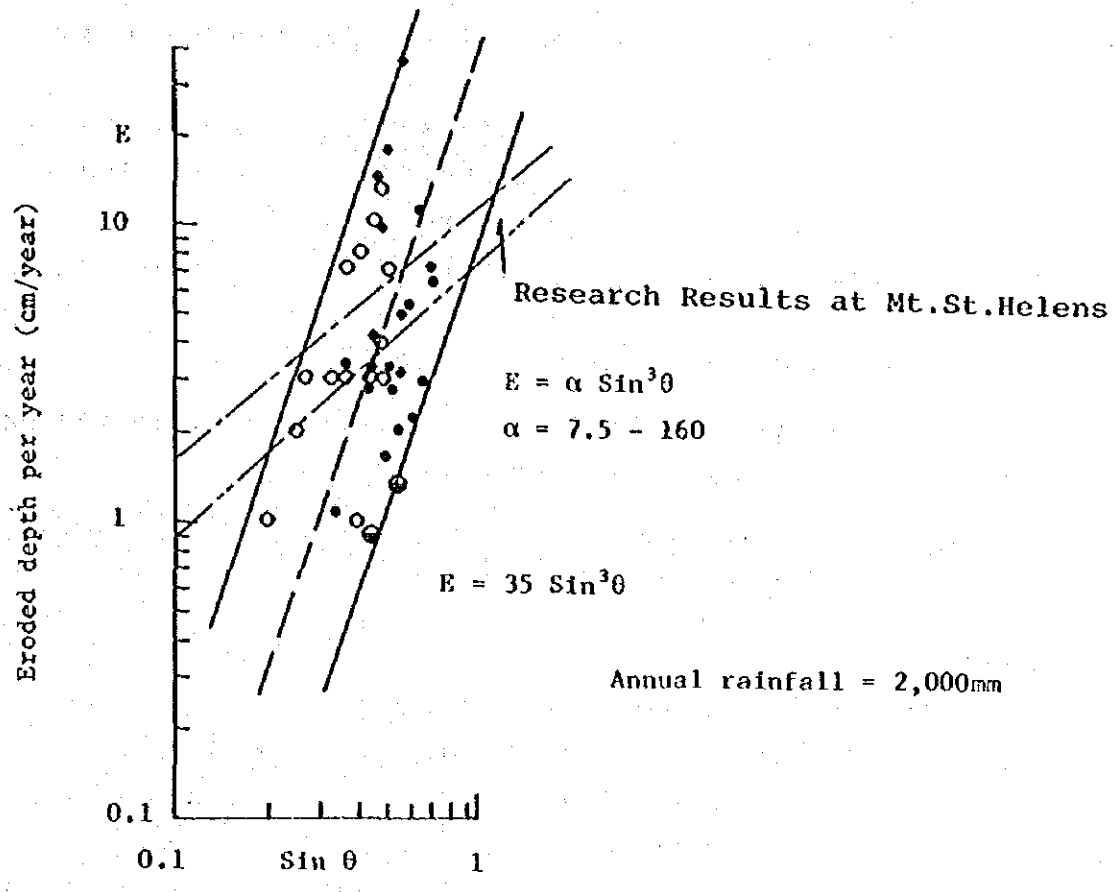


Fig.-7.3 Erosion Depth of Bare-Land in Japan

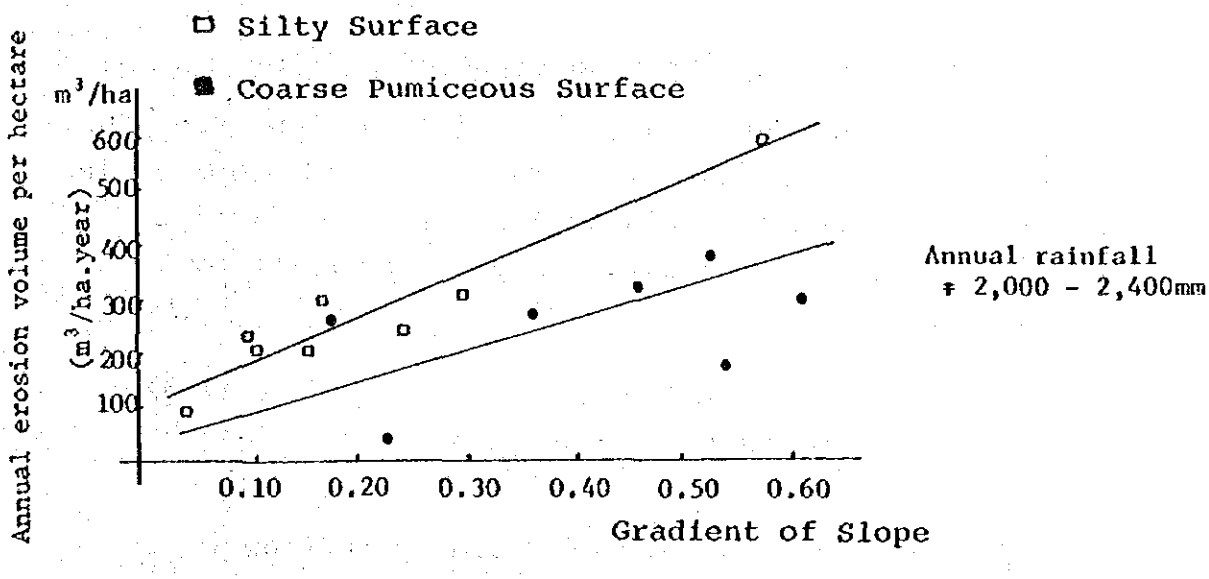


Fig.-7.4 Erosion of Volcanic Deposit at Mt. St. Helens

The bare-land size of the slope (An) is given from Fig.-2.2 in Part E, LAND USE. The bare-land size (An) and the gradient of the bare-land slope (Is) are as follows:

Curah Lengkong	An = 2.62 km^2,	Is = 0.255
B. Sat	An = 1.38 km^2,	Is = 0.350
B. Tengah	An = 0.9 km^2,	Is = 0.370
B. Tunggeng	An = 1.5 km^2,	Is = 0.289

(3) Occurrence Conditions for Debris Flow

The following (T. Takahashi's) formula is used to indicate the occurrence conditions for debris flow.

$$\tan\theta \geqq \frac{C^* \cdot (\sigma - \rho)}{C^* \cdot (\sigma - \rho) + \rho\left(1 + \frac{h}{d_2}\right)} \tan\phi \qquad (7.2)$$

Where,

C*: Grain Concentration by Volume
σ : Specific Gravity of Particle
ρ : Specific Gravity of Water
h : Water Depth
d_2: Mean Diameter of Riverbed Material at its surface
θ : Riverbed Gradient
ϕ : Friction Angle of Riverbed Material

(4) Formula to Show Stopping Conditions of Mudflow

The term mudflow here means the bed load flow type debris flow in the terminology of T. Takahashi and others. The smallest gradient for this type of flow to exist is calculated by the following formula, suggested by T. Takahashi.

$$\tan\theta > \frac{C^* \cdot (\sigma - P2) \cdot \tan\phi}{C^* \cdot (\sigma - \rho 2) + (1 + \frac{h}{d_2})} \qquad (7.3)$$

Where,

ρ_2: Specific Gravity of Fluid in Mudflow

(5) Calculation of Density and Volume of Debris

The density of debris flow and the volume of debris discharged by running water are given by the following (T. Takahashi's) formula.

$$Cd = \frac{\rho 2 \tan \theta}{(\sigma - \rho 2)(\tan \phi - \tan \theta)} \qquad (7.4)$$

$$Cd = \leqq 0.8\, C^*$$

$$Q_B = \frac{C^*}{C^* - Cd} \cdot Cd \cdot Qw \qquad (7.5)$$

Where,

Cd: Debris Flow Density

Qw: Water Discharge

Q_B: Sediment Discharge

(6) Calculation of Sediment Discharge Volume by Mudflow

The intermediate type of flow, during the transformation of debris flow to bed load flow, is called mudflow here.

The sediment discharge volume by mudflow is given by T. Mizuyama's formula.

$$Q_B = 5.5 \tan^2\theta \cdot Qw \qquad (7.6)$$

(7) Calculation of Sediment Discharge Volume by Bed Load Flow

The Meyer-Peter-Mülür formular is used to calculate the sediment discharge volume by bed load flow.

$$\frac{q_B}{(\sigma/\rho_1 - 1)\, g d_1} = 8.0\, (\tau^* - 0.047)^{1.5} \qquad (7.7)$$

$$\tau^* = \frac{gh \tan \theta}{(\sigma/\rho_1 - 1) g d_1} \qquad (7.8)$$

$$Q_B = q_B \frac{Qw}{h} \qquad (7.9)$$

d_1 : Average Grain Size of Riverbed Material

(8) Calculation of Riverbed Fluctuation

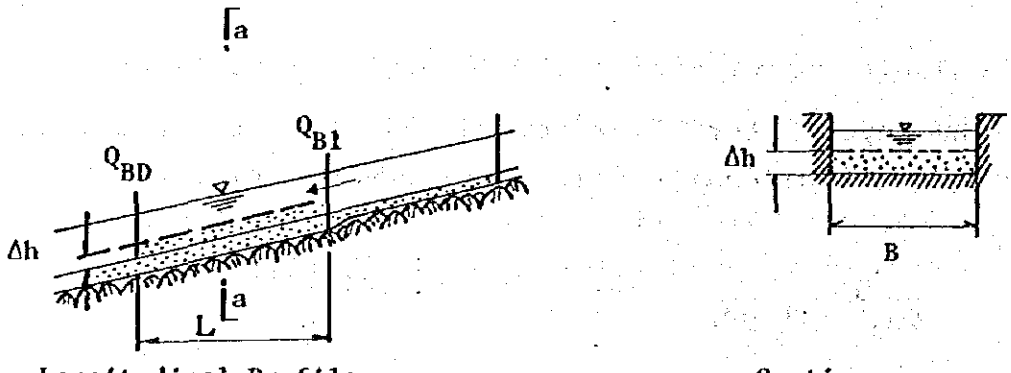
The sediment fluctuation volume (ΔQ_B) at a certain section of a river channel is shown as the difference between the inflowing and the outflowing sediment discharge volume to and from the section, and is as shown in Fig.-7.5. In addition, the height of the riverbed fluctuation (Δh) is given by the following formula.

$$\Delta Q_B = Q_{Bx} - Q_{Bo} \tag{7.10}$$

$$\Delta h = \frac{\Delta Q_B}{B \cdot L \cdot C^*} \tag{7.11}$$

The sediment discharge volume given in (7.5) - (7.7) must be smaller than the accumulated sediment volume of the upperstream section.

The initial value of accumulated sediment volume for each of these sections is given while the bed rock, which will not be eroded, is used as the input data.



Longitudinal Profile of Channel

Section a-a

Fig.-7.5 Calculation of Riverbed Fluctuation

7.2 Input Data for the Riverbed Fluctuation Calculation

The input data for each of the previous calculations is as follows:

(1) Design Discharge

The calculation results in Part 5, HYDROLOGY are used. The water depth (h) is calculated from the design discharge and the river channel characteristics shown below.

(2) River Channel Characteristics

The longitudinal profiles and the lateral profiles of the river channels shown by the study results in section 3.2 are used here. The elevation of the riverbed, the width of the river channel, section distance and height of bank are as shown in Table 7.1 - Table 7.5. The elevation and the width indicated in these tables are the mean elevation of the riverbed and the mean river width, calculated based on our survey. The riverbed gradient (O) can be calculated from the section distance and the elevation of each riverbed.

(3) Characteristics of Riverbed Material

The characteristics of riverbed material is given as follows, based on the survey results shown in Chapter 4.

Grain Concentration by Volume	$C^* = 0.55$
Specific Gravity of Particle	$\sigma = 2.8\ t/m^3$
Specific Gravity of Water	$\rho_1 = 1.0\ t/m^3$
Specific Gravity of Fluid in Debris Flow	$\rho_2 = 1.56\ t/m^3$
Mean Diameter of Riverbed Materials	$d_1 = 0.1\ m$
Mean Diameter of Materials on Riverbed Surface	$d_2 = 0.03\ m$
Friction Angle of Riverbed Material	$\phi = 20^o$

Among the values shown above, ρ_2 and ϕ are given by the formula (7.4), based on the specific gravity of lahar = 1.8 t/m^3 (cf. Table-4.5), measured at Pronojiwo Bridge on February 9, 1983.

Table-7.1 River Channel Characteristics of K. Mujur (1)

No. of Section	Elevation of Riverbed	Height of Bank	Distance	Width of River Channel
TENG NO.13	1,003.31	50.0	397	18
TENG NO.9+43	963.31	50.0	323	18
TENG NO.6	934.63	50.0	400	20
TENG NO.3	905.77	50.0	185	29
TUN NO.45	1,000.00	25.0	900	35
TUN NO.44	887.00	25.0	2,000	35
TUN NO.43	704.33	25.0	370	21
TUN NO.39+65	688.70	25.0	215	24
TUN NO.38-85	668.72	14.0	550	31
TUN NO.34-35	637.24	14.0	270	26
TUN NO.31+95	625.20	14.0	1,075	28
TUN NO.25+20	581.02	8.0	290	31
TUN NO.23-70	570.32	8.0	360	12
TUN NO.21-30	555.16	8.0	350	12
TUN NO.19+20	541.06	10.0	890	28
TUN NO.11+65	500.93	5.0	1,165	23
SA NO.325	1,035.27	50.0	553	63
SA NO.319+53	990.13	50.0	491	78
SA NO.314	953.34	50.0	482	27
SA NO.307	902.80	50.0	185	37
SA NO.304	886.82	50.0	718	38
SA NO.296	836.22	50.0	102	28
SA NO.293+4	829.96	50.0	449	36
SA NO.288	799.22	50.0	169	62
SA NO.285+84	789.68	50.0	715	157
SA NO.277+34	736.22	16.0	245	74
SA NO.276-81	724.44	16.0	344	94
SA NO.273+20	707.90	16.0	486	123
SA NO.266+25	678.26	13.0	342	75
SA NO.262-50	662.52	13.0	250	201
SA NO.260	643.02	11.0	112	87
SA NO.259	644.79	14.0	280	93
SA NO.255+48	629.19	14.0	844	200
SA NO.247+15	586.10	7.0	712	96
SA NO.240	551.44	10.3	657	98
SA NO.231+5	523.94	16.0	1,416	73
SA NO.213+30	460.71	10.0	154	63
SA NO.211+90	447.90	15.0	402	40
SA NO.207+25	433.30	12.7	492	41
SA NO.201+70	416.76	9.5	559	68
SA NO.193+50	396.98	9.5	917	37
SA NO.186	366.44	50.0	307	152
SA NO.183	355.59	50.0	571	84
SA NO.178	332.90	50.0	294	121
SA NO.176	323.84	50.0	463	208
SA NO.171+86	304.41	11.8	132	99
SA NO.170+55	302.19	1.71	145	130
SA NO.169	296.69	6.8	300	158
SA NO.166	286.79	9.7	692	118
SA NO.160+62	272.24	3.3	394	161
SA NO.157+10	258.11	13.9	432	114

Table-7.2 River Channel Characteristics of K. Mujur (2)

No. of Section	Elevation of Riverbed	Height of Bank	Distance	Width of River Channel
SA NO.153+50	248.73	3.0	571	142
SA NO.148+30	237.52	4.0	345	174
SA NO.145	230.35	2.5	428	258
SA NO.141	216.22	2.28	833	118
SA NO.134+10	191.07	1.83	548	145
SA NO.128+65	178.08	4.4	302	100
SA NO.126+15	173.27	4.4	275	107
SA NO.123	167.96	4.4	548	265
SA NO.117+67	158.78	4.4	394	156
SA NO.113+95	150.34	4.4	659	137
SA NO.107+30	141.01	4.4	638	188
SA NO.102	130.28	6.0	162	133
SA NO.100+30	128.62	3.0	441	265
SA NO.95	118.08	3.1	324	123
SA NO.92+60	110.74	3.16	833	79
SA NO.84+25	96.86	2.64	1,145	130
SA NO.73	81.25	2.25	385	156
SA NO.68+20	75.22	2.08	832	173
SAT NO.61	65.04	2.3	313	110
SAT NO.58	62.75	2.90	348	108
SAT NO.55	60.03	2.67	373	124
SAT NO.52	56.04	2.5	327	39
SAT NO.49	53.36	3.42	325	119
SAT NO.46	49.09	3.24	400	114
SAT NO.42	46.12	3.2	378	105
SAT NO.39	42.23	4.10	297	78
SAT NO.36	40.33	3.75	333	86
SAT NO.33	37.07	3.0	289	112
SAT NO.31	35.25	8.0	327	146
SAT NO.29	32.64	8.0	370	100
SAT NO.26	28.98	8.0	364	112
SAT NO.23	27.69	8.0	393	89
SAT NO.20	22.89	8.0	510	145
SAT NO.17	20.62	8.0	369	383
SAT NO.15	18.55	8.0	407	419
SAT NO.13	15.44	8.0	482	333
SAT NO.10	12.34	8.0	513	453
SAT NO.7	8.42	0.85	471	296
SAT NO.4	5.68	1.0	390	690
SAT NO.2	3.40	1.27	361	664

Table-7.3 River Channel Characteristics of K. Rejali (1)

No. of Section	Elevation of Riverbed	Height of Bank	Distance	Width of River Channel
LENGKONG 66	1,500.0	20	1,900	20
LENGKONG 65	1,200.0	20	2,970	20
LENGKONG 35	960.0	20	1,100	20
LENGKONG 24	880.0	8	330	20
LENGKONG 21	855.0	20	300	28
LENGKONG 18	836.3	20	800	35
LENGKONG 10	785.6	6	500	35
LENGKONG 5	752.5	15	500	14
LENGKONG 154	1,500.0	40	1,620	55
LENGKONG 153	1,190.0	40	500	55
LENGKONG 152	1,150.0	40	1,100	55
LENGKONG 141	1,020.0	70	700	30
LENGKONG 135	952.8	60	430	50
LENGKONG 131	930.0	50	440	28
LENGKONG 126	890.0	40	390	26
LENGKONG 122	860.0	40	590	26
LENGKONG 117	820.0	30	600	55
LENGKONG 111	780.0	20	650	60
LENGKONG 104	744.0	15	500	80
LENGKONG 99	718.0	40	200	170
LENGKONG 97	707.7	40	710	170
LENGKONG 90	670.0	30	90	60
LENGKONG 89	660.0	45	700	60
LENGKONG 82	610.0	30	130	30
LENGKONG 80	590.0	100	1,070	70
LENGKONG 70	523.41	100	391	36
LENGKONG 67	493.93	50	286	57
LENGKONG 65	487.18	31	695	57
LENGKONG 60	443.52	7.2	221	80
LENGKONG 58	432.42	1.2	858	56
LENGKONG 51	408.67	1.2	883	121
LENGKONG 43	368.94	1.2	1,357	127
LENGKONG 31	326.46	2.6	667	130
LENGKONG 25	306.96	4.0	399	106
LENGKONG 21	283.06	5.2	742	106

Table-7.3 River Channel Characteristics of K. Rejali (2)

No. of Section	Elevation of Riverbed	Height of Bank	Distance	Width of River Channel
K.LEP NO.14	259.86	5.2	519	106
K.LEP NO.10	241.54	2.0	570	119
K.LEP NO. 5	221.59	2.0	496	72
K.LEP NO. 0	209.32	1.2	478	141
K.LEP CP56 A	195.8	2.4	772	205
K.LEP CP57	179.07	1.6	709	173
K.LEP CP57 A	166.11	2.8	490	197
K.LEP CP58	156.20	1.8	860	229
K.LEP CP58 A	144.18	2.8	510	261
K.LEP CP59	137.54	6.4	505	352
K.LEP CP59 A	129.09	2.8	485	128
K.LEP CP60	120.45	2.0	425	92
K.LEP CP60 A	113.67	10.0	490	223
K.LEP CP61	103.93	4.0	505	63
K.LEP CP61 A	98.02	4.0	440	76
K.LEP CP62	89.85	3.8	505	80
K.LEP CP62 A	83.85	4.0	495	244
K.LEP CP63	74.29	6.0	395	76
K.LEP CP63 A	66.34	6.0	490	107
K.LEP CP64	57.16	3.2	1,095	41
K.LEP CP64 A	41.53	4.8	550	258
K.LEP CP65	31.23	1.6	540	149
K.LEP CP65 A	22.45	3.2	440	163
K.LEP CP66	18.85	2.4	530	184
K.LEP CP66 A	12.45	2.4	950	123
K.LEP CP67	3.61	1.2	950	477

Table-7.3 River Channel Characteristics of K. Glidik

No. of Section	Elevation of Riverbed	Height of Bank	Distance	Width of River Channel
BS.BANG 58	1,200.0	50	1,530	45
BS.BANG 57	936.12	50	430	45
BS.BANG 53	886.37	50	463	60
BS.BANG 47	861.41	50	358	64
BS.BANG 44	826.05	50	577	130
BS.BANG 37	801.63	50	371	41
BS.BANG 31	783.62	50	162	95
BS.BANG 29	758.97	50	862	45
BS.BANG 25	751.75	50	647	37
BS.BANG 19	726.57	11.0	717	66
BS.BANG 12	692.91	8.6	838	75
BS.BANG 4	650.48	14.0	299	93
BS.BANG 1	634.59	11.5	112	104
K.LENG 240	767.0	15	1,120	36
K.LENG 238	739.5	10	473	36
K.LENG 237	727.24	10	676.2	36
K.LENG 236	721.86	7	581.3	23
K.LENG 235	719.22	6	538.1	25
K.LENG 234	717.99	2.8	594.4	22
K.LENG 231	717.91	1.5	964	94
K.LENG 220	715.91	3.3	1,073	67
K.LENG 206	704.41	3.5	1,686	95
K.LENG 186	695.63	0.9	1,343	37
K.LENG 171	689.68	4.5	875	104
K.LENG 161	694.66	3.4	1,016	289
K.LENG 151	688.70	2.6	462	113
K.LENG 147	674.68	3.3	322	82
K.LENG 144	662.60	4.5	78	56
K.LENG 143	658.83	8.2	507	94
K.LENG 138	634.59	11.5	615	104
K.LENG 131	593.47	100	130	50
K.LENG 129	466.26	100	586	50
K.LENG 124	425.86	100	618	60
K.LENG 119	390.92	100	751	38
K.LENG 113	372.44	100	379	40
K.LENG 109	355.87	100	500	41
K.LENG 104	339.28	100	625	38
K.LENG 98	318.97	100	1,418	59
K.LENG 87	270.71	100	297	94
K.LENG 85	262.27	100	304	44
K.LENG 83	255.53	100	754	87
K.LENG 78	223.69	100	390	262
K.LENG 74	209.32	2.4	946	208
K.GLIDIK 65	183.25	1.9	462	296
K.GLIDIK 64	178.33	1.9	280	296
K.GLIDIK 62	173.68	3.8	904	355
K.GLIDIK 54	148.66	2.6	439	336
K.GLIDIK 51	136.76	2.0	772	246
K.GLIDIK 44	123.35	0.8	443	289
K.GLIDIK 40	113.10	0.8	609	207
K.GLIDIK 34	101.48	1.0	522	223
K.GLIDIK 30	90.34	0.4	597	319
K.GLIDIK 24	80.75	1.4	1,149	191
K.GLIDIK 14	59.54	1.4	1,082	261
K.GLIDIK 4	48.88	2.0	2,400	313
K.GLIDIK 0	21.92	1.9	2,400	267

7.3 FINDINGS OF THE RIVERBED FLUCTUATION CALCULATION

(1) Riverbed Fluctuation Tendency

The probability rainfall used in the riverbed fluctuation calculation was set for the probability of exceedence at 1/3, 1/5, 1/10, 1/20, 1/40, 1/70 and 1/100.

Fig.-7.6 and 7.8 show the calculation results for the probability one hundredth. The fluctuation tendency shown there is the same when the probability of exceedence is small.

The simulation shows that each river causes flooding in the alluvial fan and the major flooding points are as follows:

K. Mujur	The section between 10 and 20 km from the river mouth;
K. Rejali	The sections between 10 and 19 km and between 3.5 and 10.5 km from the river mouth.

(2) Design Sediment Volume

The harmful sediment volume, in other words, the sediment volume to be controlled (Q_{BD}), for each design size should be given. Their actual values are given by the following formula.

$$Q_{BD} = \frac{Q\ in - Q\ out}{C^*} \qquad (7.12)$$

Q_{BD} : Design Sediment Volume
Q in : Passing Sediment Volume at Supplementary Reference Point
Q out: Passing Sediment Volume at Design Reference Point
C* : Grain Concentration by Volume C* = 0.55

The design sediment volume which is given by the formula (7.12), based on the results of river fluctuation simulation, is shown in Table-7.6.

Table-7.6 Design Sediment Volume

River System / Return Period (Year)	K. Mujur (m^3)	K. Rejali (m^3)	K. Glidik (m^3)
3	250,000	1,610,000	1,510,000
5	270,000	1,940,000	1,830,000
10	330,000	2,390,000	2,310,000
20	1,250,000	3,020,000	3,200,000
40	2,070,000	3,680,000	3,200,000
70	3,480,000	4,510,000	4,200,000
100	5,040,000	5,220,000	4,500,000
Supplementary reference point	No.11+65 No.277+34	No.80	No.74
Design reference point	No.29	No.62	No.4

(3) Riverbed Fluctuation Tendency with the Planned Control Facilities

Fig.-7.9 through Fig.-7.11 show the result of the riverbed fluctuation calculation after completion of the planned sediment control facilities.

In this calculation, the computed facilities are those which are described as the first and the second steps in the master plan. Furthermore, it is assumed, for the purpose of calculation, that the check dams are filled to their capacity by sediment and that the sand pockets are empty.

The prospect is clearly shown that with the completion of the planned sediment control facilities in the master plan, sediment flooding will be practically contained.

(4) Control Sediment Volume by Facilities

The control volume by check dam (Vc) is given by the following formula.

$$Vc = [(\text{Run-off Sediment Volume without Facilities}) - (\text{Run-off Sediment Volume with facilities})] \cdot \frac{1}{C^*} \quad (7.13)$$

The control sediment volume given above consists of the run-off sediment regulation volume and the yield suppression sediment volume.

The value of Vc, given by the formula (7.13), varies according to the design magnitude. However, values for the 40-100 return period plan do not show any substantial difference. Moreover, as the value of Vc attained here will be also used for the economic evaluation of sediment control facilities, the value of Vc to be used is determined in consideration of the storage capacity of the check dams and of their efficiency as a group, while based on the control volume at the return period of 40 years.

At the K. Glidik, however, the 100 years return period plan is used as the amount of sediment discharge is so small that it does not reach to the dam at the lower stream if the 40 years return period plan is used.

The run-off storage sediment volume is used as the control volume for sand pockets, as such maintenance work as removing deposits is expected to be carried out.

The effects of the sediment control facilities are as shown in Table-7.7.

Table-7.7 Effects of Sediment Control Facilities

River System	Type of Work	Function	Name of Facility	Controllable volume (10^3 m^3)
K. Hujur	Check dam	Sediment yield suppression Regulation of runoff sediment	BS. Sat Check Dam-4	15
			BS. Sat Check Dam-5	30
			" 6	130
			" 7	1,050
			" 8	240
			" 9	340
			" 10	278
			Sember sari check dam	2,117
	Sand pocket	Storage of runoff sediment	Kertosari Sand Pocket	1,414
			Keloposawit Sand Pocket	313
			Benda Sand Pocket	423
	Check dam (Under construction)	Sediment yeild suppression Control of runoff sediment	BS. Sat Check Dam-2	164
			BS. Sat Check Dam-3	94
	Total			6,608
K. Rejali	Check dam	Suppression of sediment yeild Regulation of runoff sediment	BS. Kobo'an Check Dam-3	90
			" 4	660
			" 5	90
			" 6	430
			" 7	300
			Curah Lengkong Check Dam-1	160
			" 2	80
	Diversion channel	Reduction of runoff sediment	Diversion channel	2,220
	Sand pocket	Storage of runoff sediment	K. Leprak Sand Pocket-1	250
			" 2	730
			" 3	360
	Total			5,370
K. Glidik	Check Dam	Suppression of sediment yield suppression Regulation of runoff sediment	K. Lengkong Check Dam-7	2
			" 6	165
			" 5	22
			" 4	12
			" 3	360
			" 2	2,100
			" 1	440
			K. Glidik 2 Check Dam-1	480 980
	Total			4,561

Fig-7.6 *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/100) ***

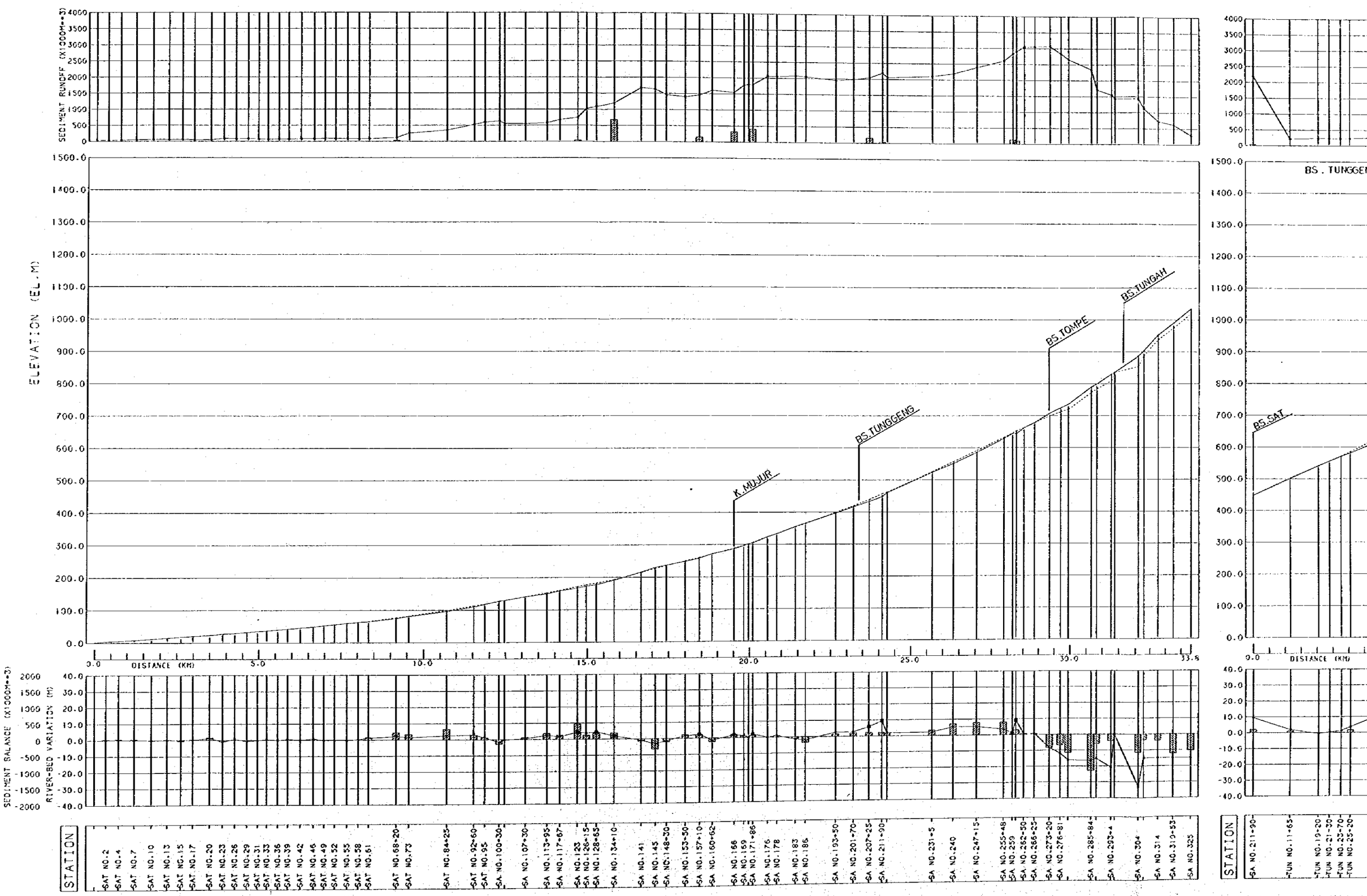
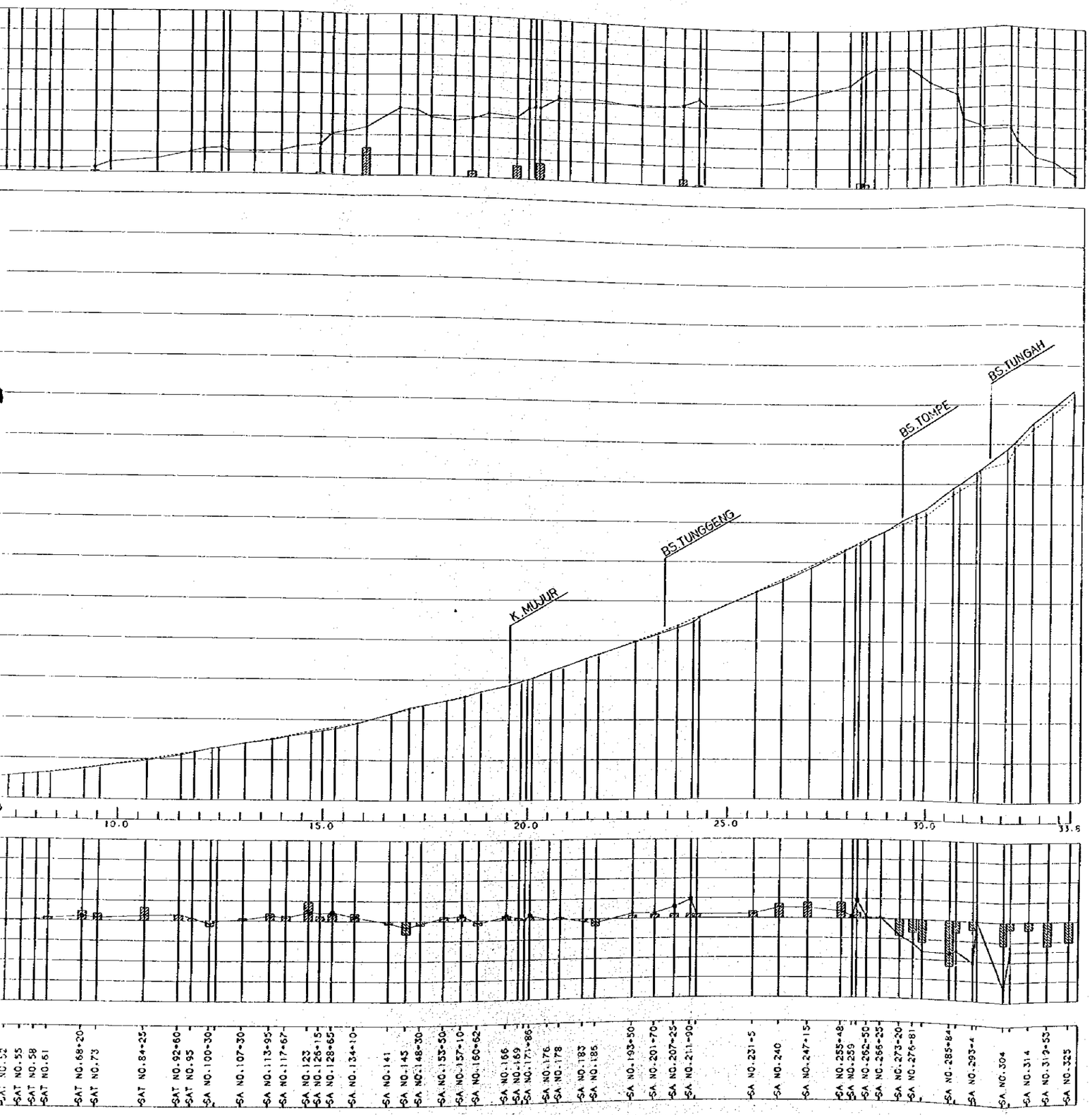
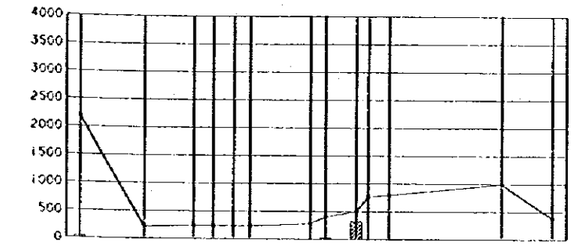
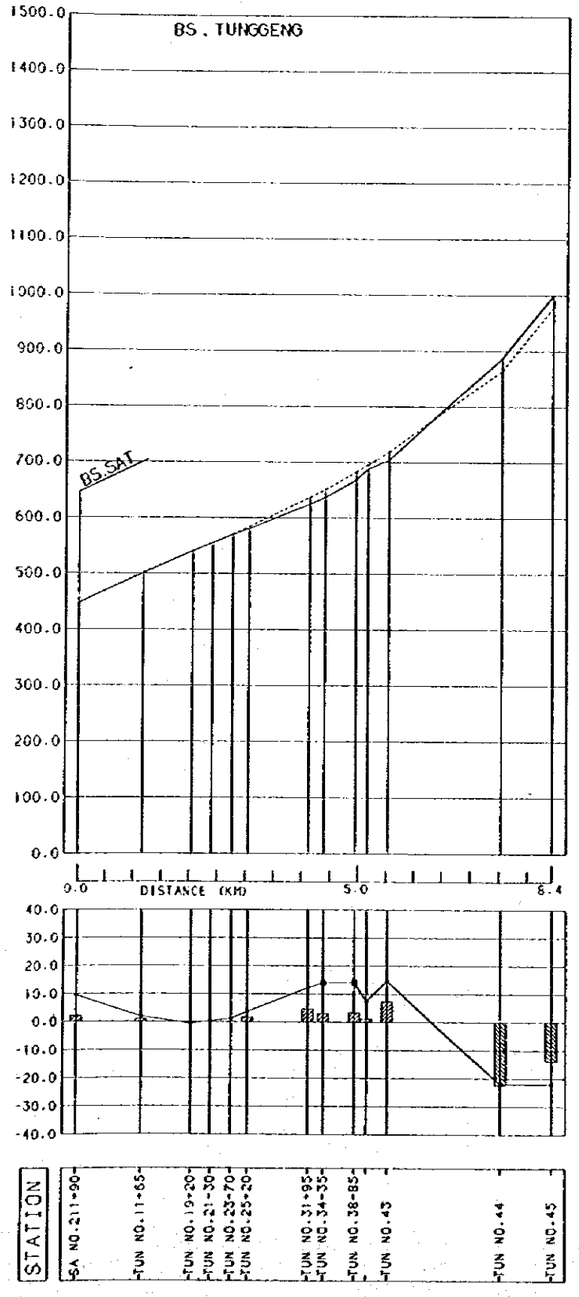
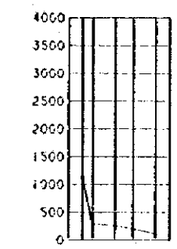


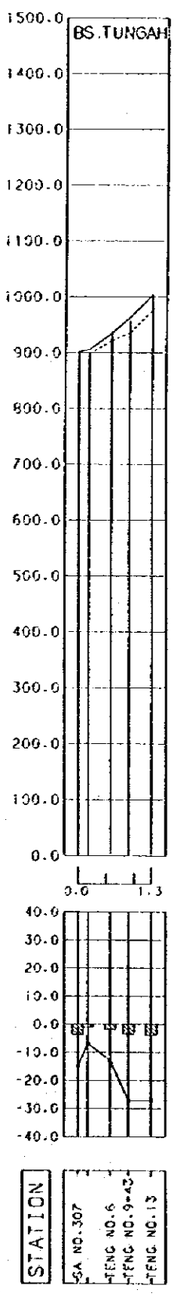
Fig-7.6 *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/100) ***











STATION

SA NO.211+90
TUN NO.11+65
TUN NO.19+20
TUN NO.21+30
TUN NO.23+70
TUN NO.25+20
TUN NO.31+95
TUN NO.34+35
TUN NO.38+85
TUN NO.43
TUN NO.44
TUN NO.45

STATION

SA NO.307
TENG NO.6
TENG NO.9+43
TENG NO.13

Fig-7.8 ••• K.REJARI SEDIMENT RUNOFF ANALYSIS (1/100) •••

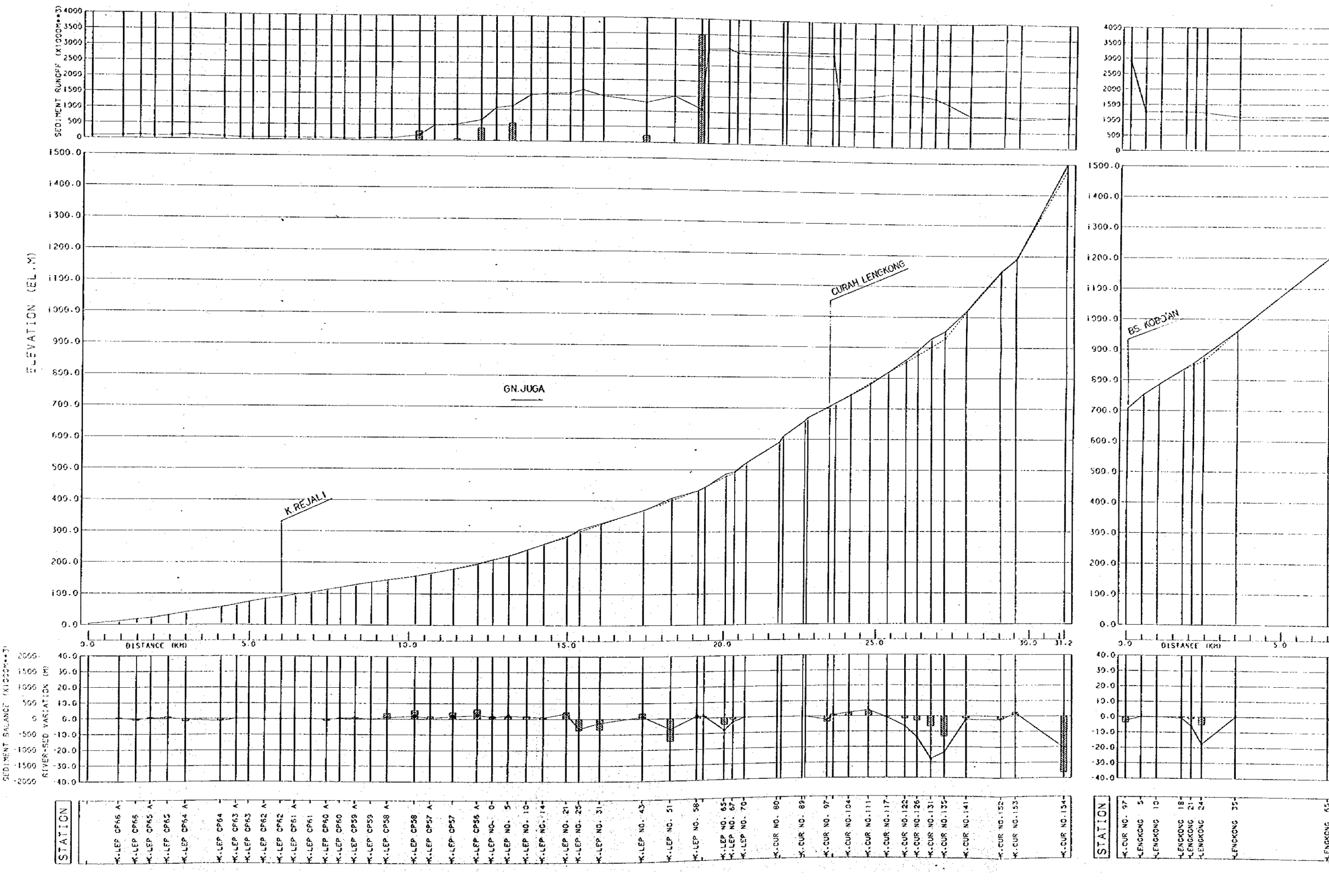


Fig-7.8 *** K.REJARI SEDIMENT RUNOFF ANALYSIS (1/100) ***

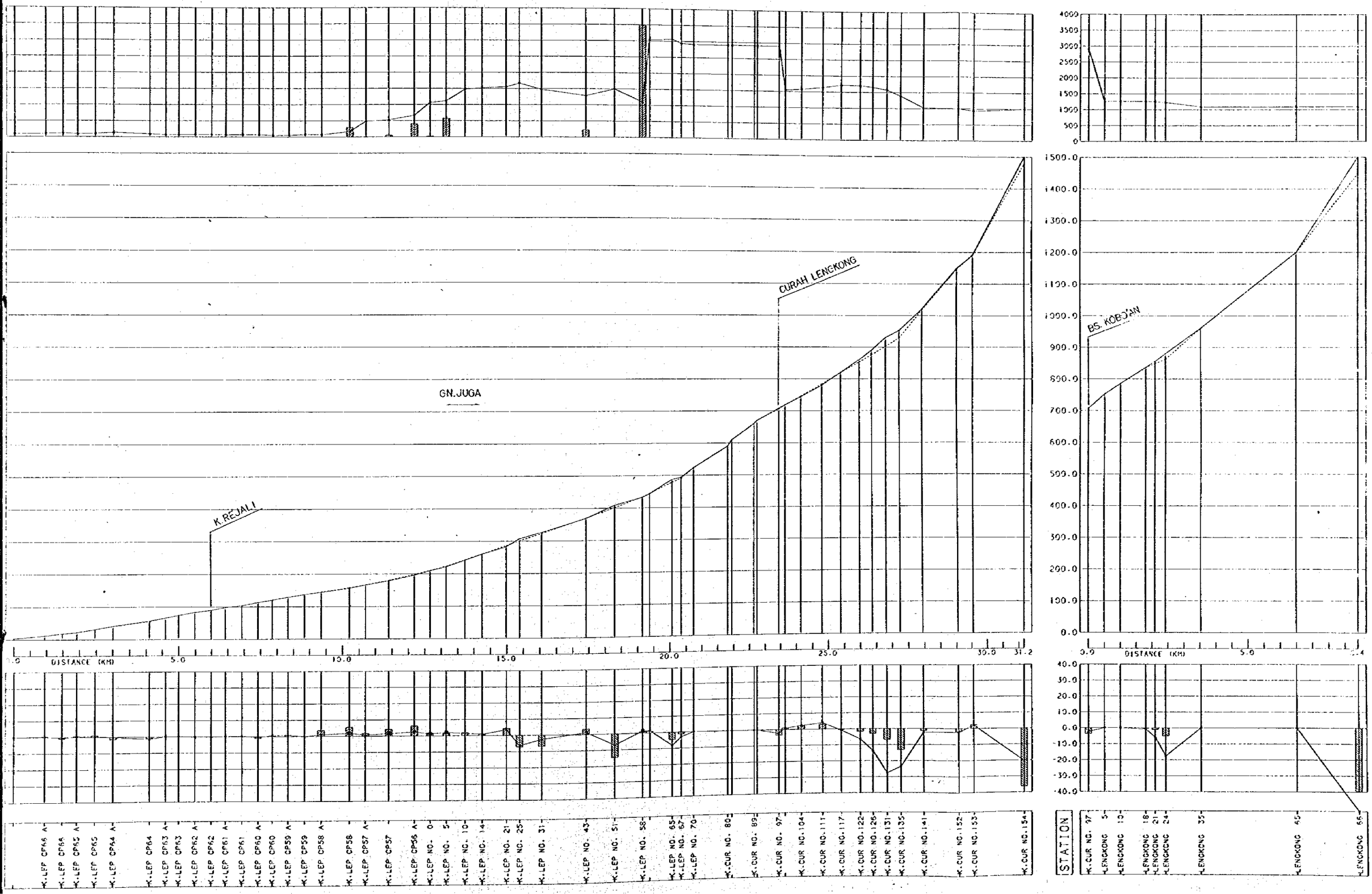


Fig-7.7 ••• K.GLIDIK SEDIMENT RUNOFF ANALYSIS (1/100) •••

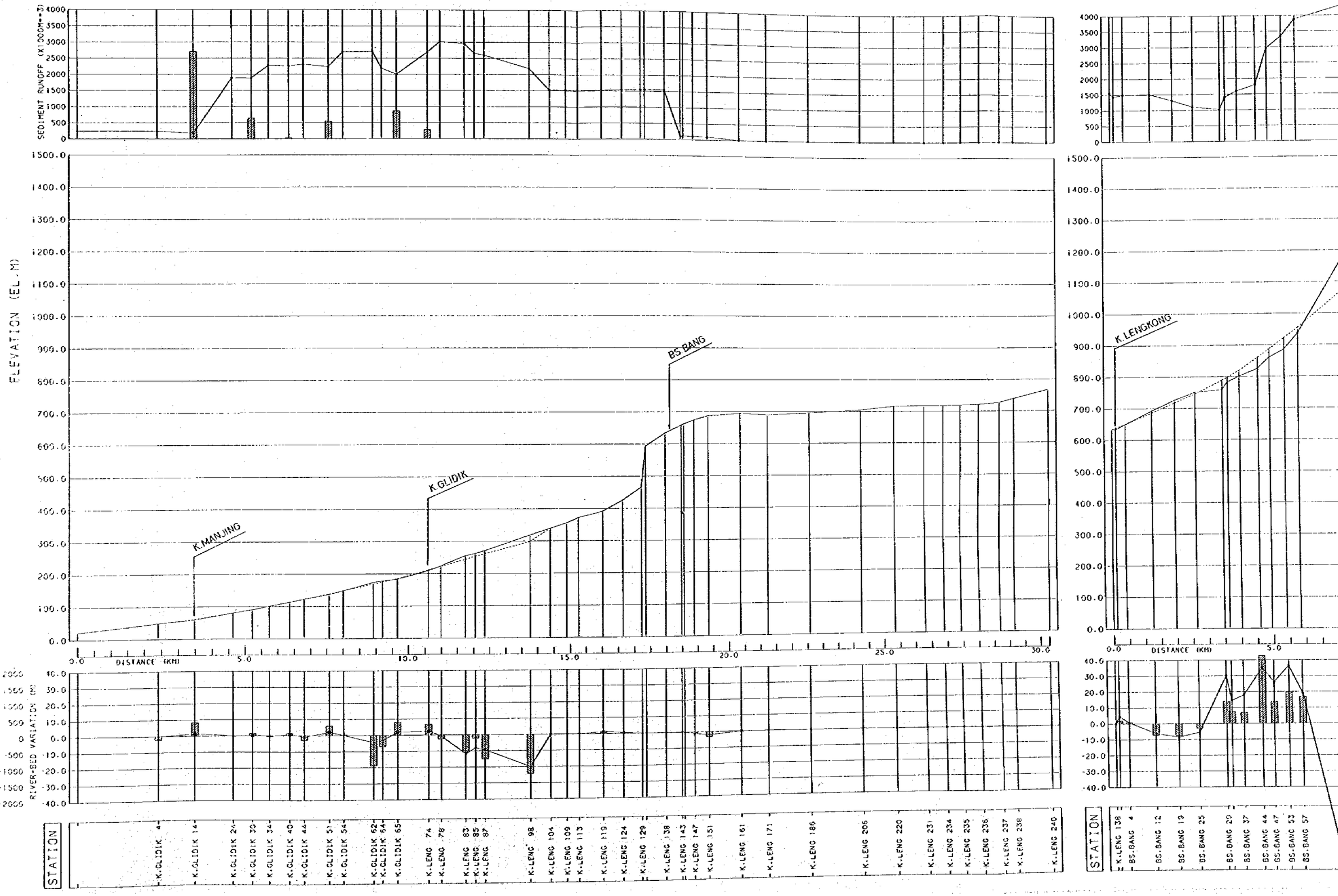


Fig-7.7 ••• K.GLIDIK SEDIMENT RUNOFF ANALYSIS (1/100) •••

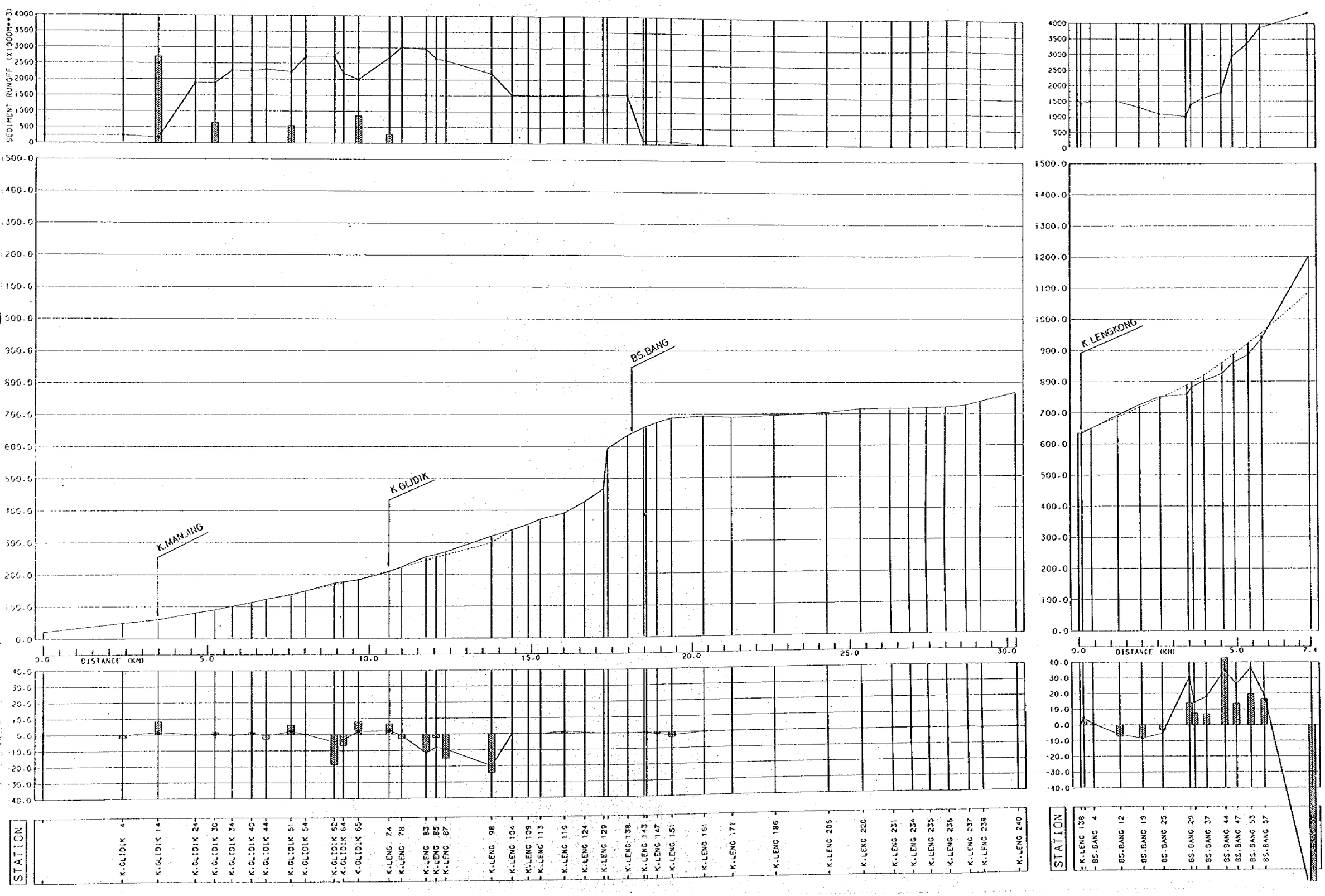


Fig-7.9 ••• K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/100) •••

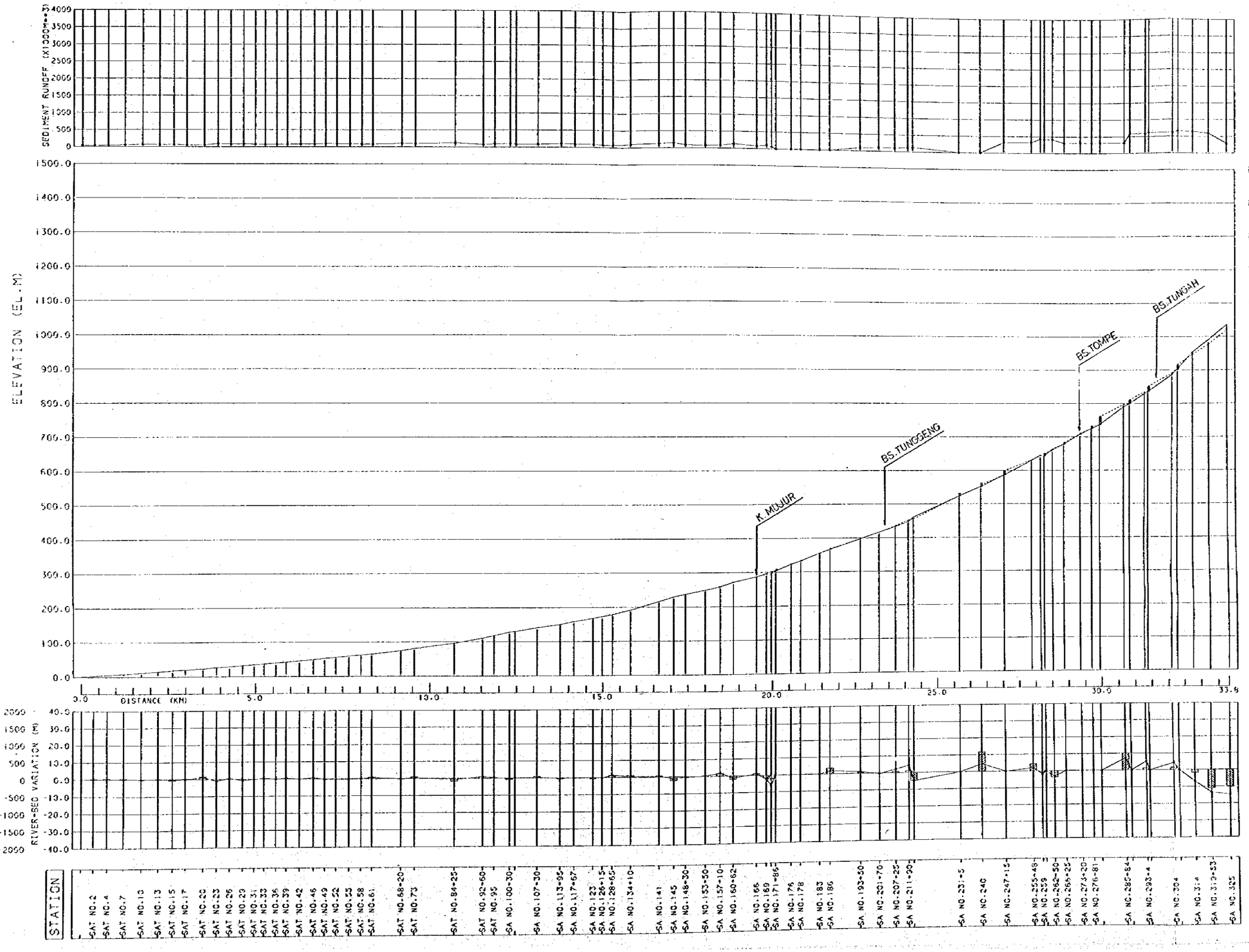


Fig-7.9 *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/100) ***

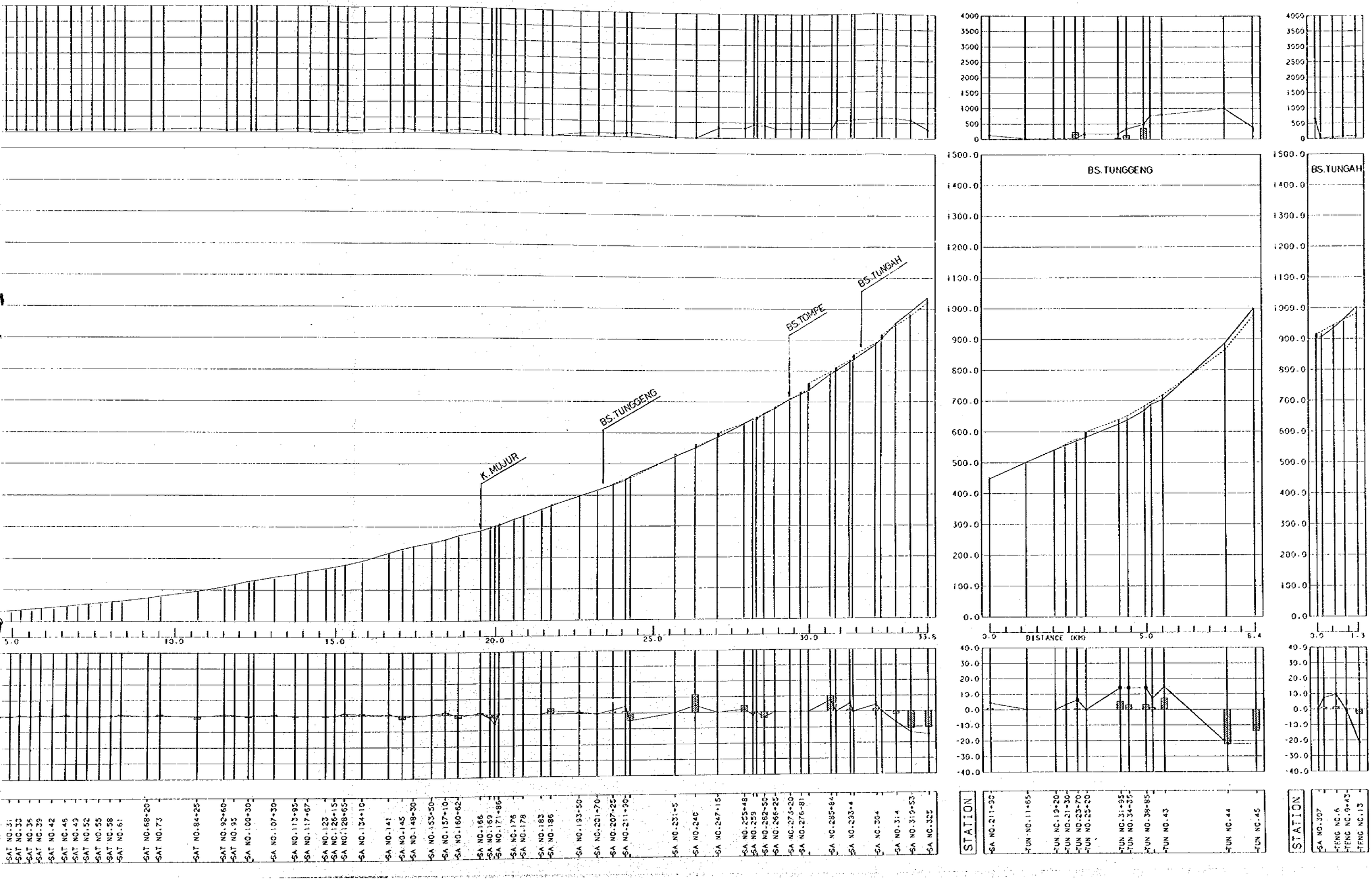


Fig-7.10 ••• K.REJARI SEDIMENT RUNOFF ANALYSIS (1/100) •••

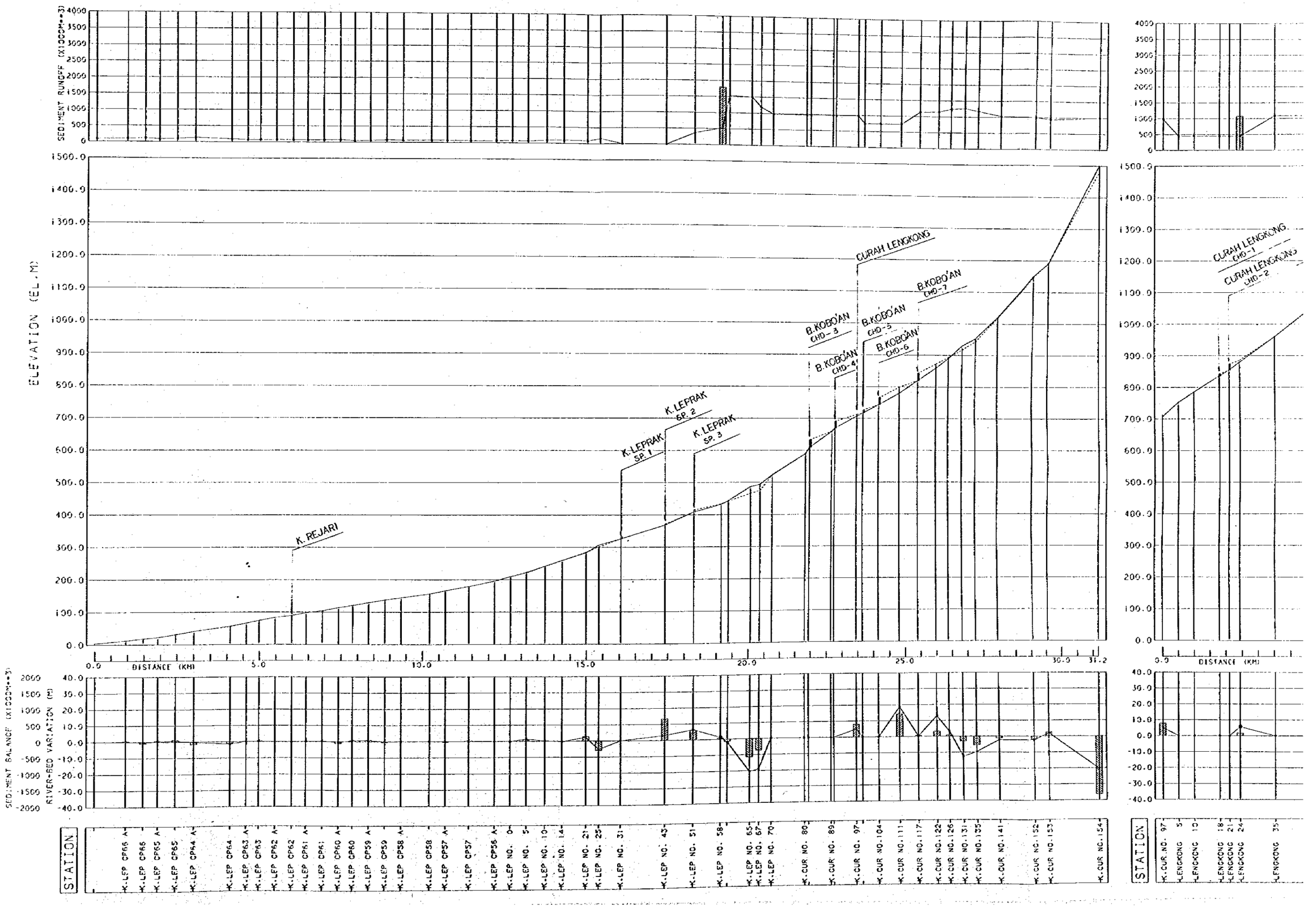


Fig-7.10 ••• K.REJARI SEDIMENT RUNOFF ANALYSIS (1/100) •••

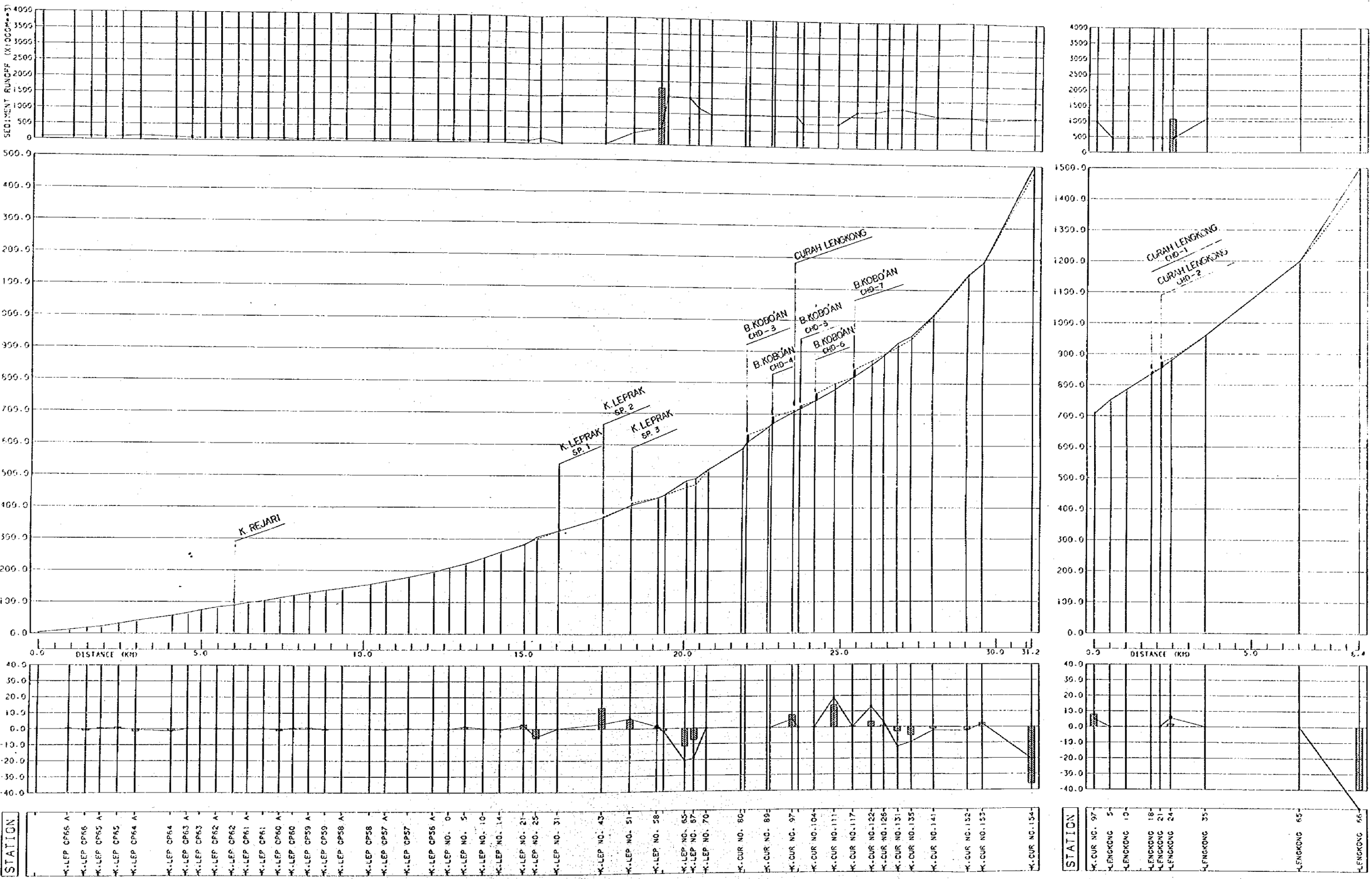


Fig-7.11 ••• K.GLIDIK SEDIMENT RUNOFF ANALYSIS (1/100) D-2 •••

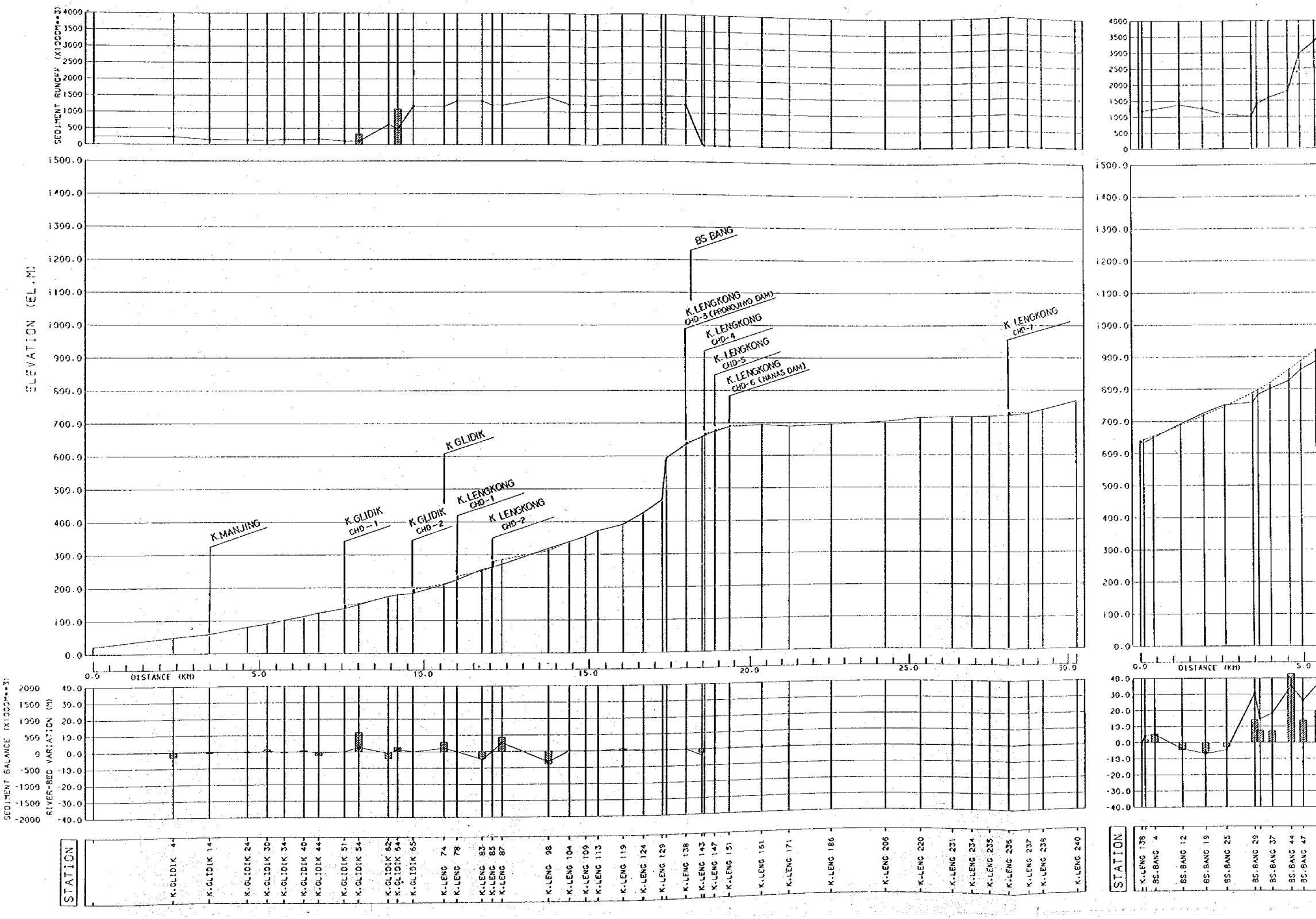


Fig-7.11 ••• K.GLIDIK SEDIMENT RUNOFF ANALYSIS (1/100) D-2 •••

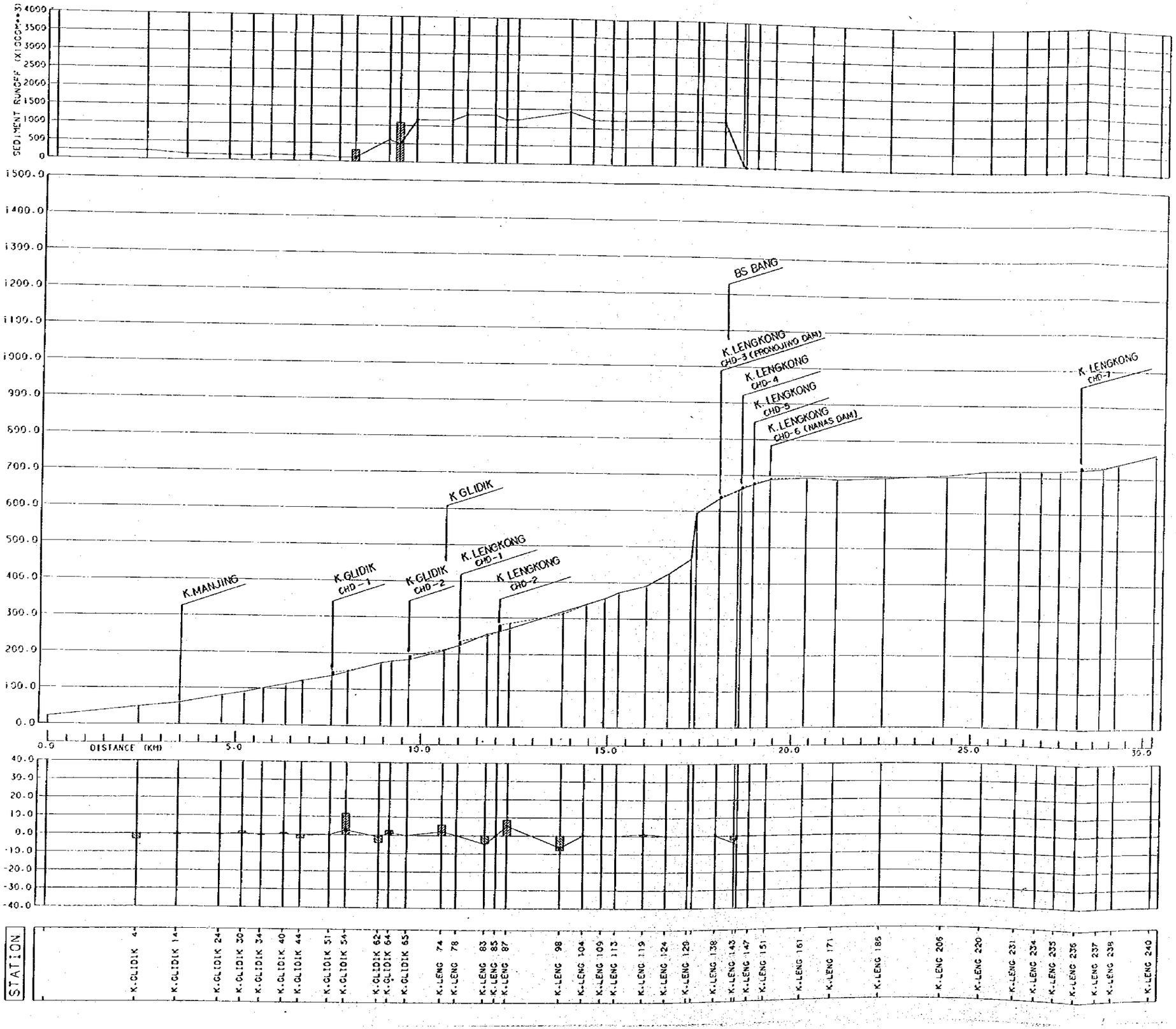
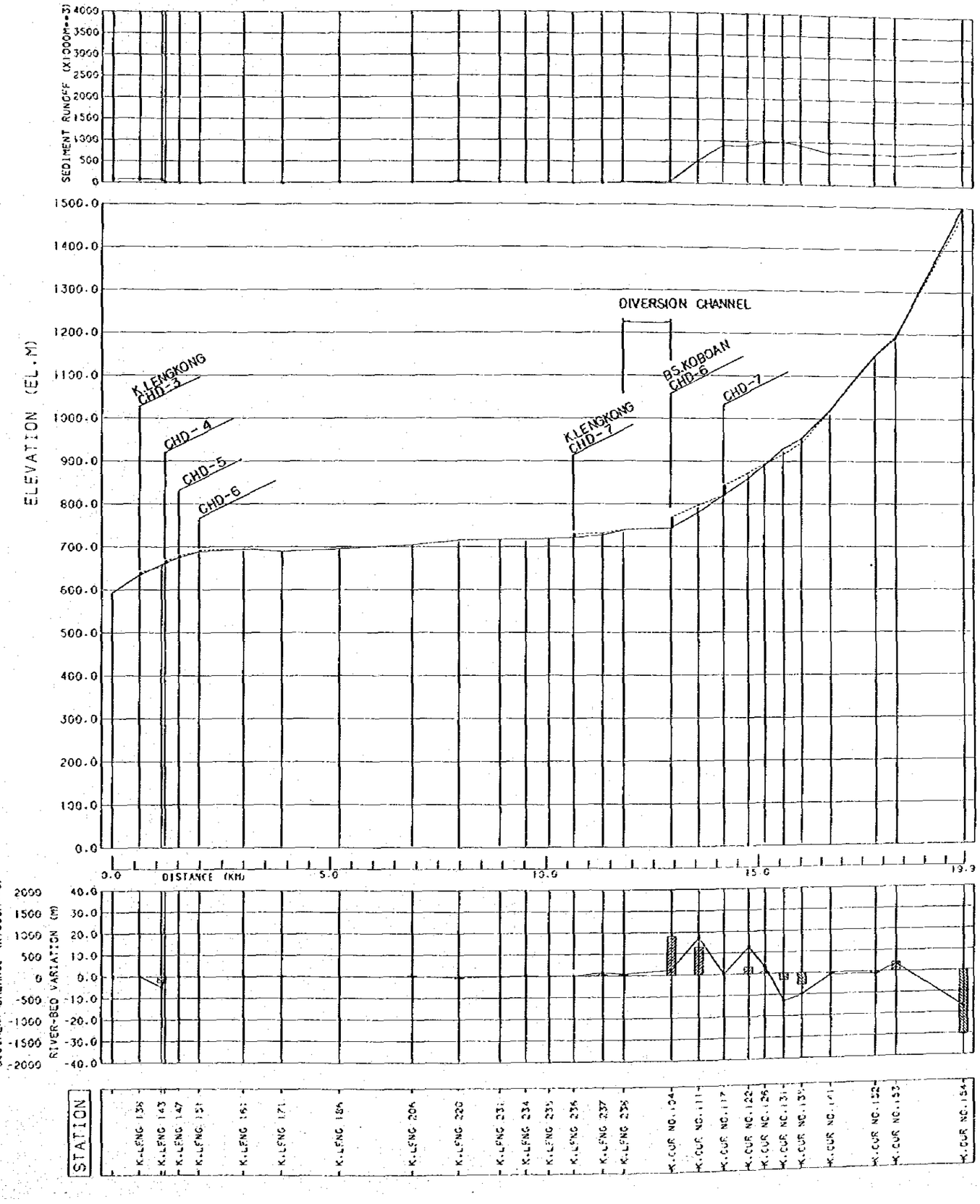


Fig-7.12 K.REJARI SEDIMENT RUNOFF ANALYSIS (1/40) DIV-2 GLIDIK



OUTPUT OF RIVERBED FLUCTUATION SIMULATION ON K. MUJUR

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)      *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/5) ***
  2)    1   24    0    0    2
  3)5   7
  4)   60   18
  5)    1          6.0       7.0       9.0      12.0      28.0     244.0     158.0
  6)              20.0      15.0      11.0       9.0       7.0       6.0       5.0
  7)               5.0       4.0       4.0       4.0
  8)    2          3.0       3.0       4.0       5.0       9.0      99.0      80.0
  9)              17.0       8.0       5.0       4.0       3.0       3.0       5.0
 10)               2.0       2.0       2.0       2.0
 11)    3          7.0       9.0      11.0      14.0      23.0     266.0     268.0
 12)               96.0      67.0      53.0      38.0      29.0      23.0      19.0
 13)               16.0      14.0      13.0      12.0
 14)    4          9.0      11.0      14.0      17.0      26.0     336.0     473.0
 15)              184.0     107.0      79.0      57.0      42.0      35.0      29.0
 16)               24.0      21.0      19.0      17.0
 17)    5          8.0      10.0      12.0      15.0      20.0     207.0     558.0
 18)              404.0     231.0     158.0     112.0      85.0      65.0      55.0
 19)               46.0      39.0      35.0      31.0
 20)    6          8.0       9.0      11.0      14.0      19.0     148.0     164.0
 21)              440.0     246.0     166.0     119.0      87.0      68.0      55.0
 22)               46.0      40.0      36.0      32.0
 23)    7          8.0       9.0      10.0      12.0      16.0      34.0     558.0
 24)              685.0     348.0     223.0     157.0     113.0      88.0      71.0
 25)               59.0      51.0      45.0      41.0
 26)8
 27)    1
 28)    0.82
 29)    2
 30)    0.82
 31)    3
 32)    0.82
 33)    4
 34)    0.82
 35)    5
 36)    0.66
 37)    6
 38)    0.66
 39)   16
 40)    0.45
 41)   17
 42)    0.45
 43)   18
 44)    0.45
 45)   19
 46)    0.45
 47)   20
 48)    0.45
 49)  -10
 50)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/3) ***

NAME	ES (EL.M)	EE (EL.M)	DZ (M)	SS	SE	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VDAM (M3)
TENG NO.13	1003.310	1002.490	-0.820	0.1008	0.1008	0.322E+04	0.815E+06	0.4	0.000E+00	-0.586E+04	0.000E+00	0.000
TENG NO.9+43	963.310	962.490	-0.820	0.0888	0.0888	0.614E+04	0.820E+06	0.7	0.000E+00	-0.531E+04	0.000E+00	0.000
TENG NO.6	934.630	933.810	-0.820	0.0721	0.0679	0.937E+04	0.825E+06	1.1	0.000E+00	-0.587E+04	0.000E+00	0.000
TENG NO.3	905.770	906.657	0.887	0.0161	0.0233	0.513E+04	0.814E+06	0.6	0.000E+00	0.771E+04	0.000E+00	0.000
TUN NO.45	1000.000	999.340	-0.660	0.1256	0.1256	0.114E+05	0.935E+06	1.2	0.000E+00	-0.208E+05	0.000E+00	0.000
TUN NO.44	987.000	986.340	-0.660	0.0913	0.0906	0.297E+05	0.968E+06	3.1	0.000E+00	-0.333E+05	0.000E+00	0.000
TUN NO.43	704.330	705.198	0.868	0.0422	0.0566	0.173E+05	0.932E+06	1.9	0.000E+00	0.226E+05	0.000E+00	0.000
TUN NO.39+65	688.700	684.268	-4.432	0.0929	0.0612	0.344E+05	0.960E+06	3.6	0.000E+00	-0.310E+05	0.000E+00	0.000
TUN NO.38+85	668.720	671.115	2.395	0.0572	0.0597	0.186E+05	0.933E+06	2.0	0.000E+00	0.288E+05	0.000E+00	0.000
TUN NO.34+35	637.240	638.305	1.065	0.0446	0.0477	0.122E+05	0.927E+06	1.3	0.000E+00	0.116E+05	0.000E+00	0.000
TUN NO.31+95	625.200	625.426	0.226	0.0411	0.0412	0.948E+04	0.924E+06	1.0	0.000E+00	0.487E+04	0.000E+00	0.000
TUN NO.25+20	581.020	581.097	0.077	0.0369	0.0400	0.819E+04	0.923E+06	0.9	0.000E+00	0.235E+04	0.000E+00	0.000
TUN NO.23+70	570.320	569.485	-0.835	0.0421	0.0397	0.992E+04	0.924E+06	1.1	0.000E+00	-0.314E+04	0.000E+00	0.000
TUN NO.21+30	555.160	555.176	0.016	0.0403	0.0408	0.986E+04	0.924E+06	1.1	0.000E+00	0.976E+02	0.000E+00	0.000
TUN NO.19+20	541.060	540.882	-0.178	0.0451	0.0448	0.112E+05	0.926E+06	1.2	0.000E+00	-0.252E+04	0.000E+00	0.000
TUN NO.11+65	500.930	501.017	0.087	0.0455	0.0412	0.101E+05	0.924E+06	1.1	0.000E+00	0.217E+04	0.000E+00	0.000
SA NO.325	1035.270	1034.820	-0.450	0.0816	0.0816	0.841E+04	0.123E+07	0.7	0.000E+00	-0.153E+05	0.000E+00	0.000
SA NO.319+53	990.130	989.680	-0.450	0.0749	0.0749	0.183E+05	0.125E+07	1.5	0.000E+00	-0.180E+05	0.000E+00	0.000
SA NO.314	953.340	952.890	-0.450	0.1049	0.1049	0.216E+05	0.124E+07	1.7	0.000E+00	-0.590E+04	0.000E+00	0.000
SA NO.307 *	902.800	902.350	-0.450	0.0864	0.1252	0.297E+05	0.206E+07	1.4	0.513E+04	-0.555E+04	0.000E+00	0.000
SA NO.304	886.820	879.194	-7.625	0.0705	0.0549	0.101E+06	0.217E+07	4.7	0.000E+00	-0.130E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.0973	0.101E+06	0.217E+07	4.7	0.000E+00	0.102E+03	0.000E+00	0.000
SA NO.293+4	829.960	826.299	-3.661	0.0685	0.0630	0.121E+06	0.221E+07	5.5	0.000E+00	-0.359E+05	0.000E+00	0.000
SA NO.288	799.220	797.992	-1.228	0.0564	0.0635	0.134E+06	0.223E+07	6.0	0.000E+00	-0.231E+05	0.000E+00	0.000
SA NO.285+84	789.680	787.260	-2.420	0.0748	0.0666	0.225E+06	0.240E+07	9.4	0.000E+00	-0.166E+06	0.000E+00	0.000
SA NO.277+34	738.220	739.630	3.410	0.0481	0.0546	0.158E+06	0.341E+07	4.6	0.000E+00	0.122E+06	0.000E+00	0.000
SA NO.276+81	724.440	726.251	1.811	0.0481	0.0560	0.130E+06	0.336E+07	3.9	0.000E+00	0.511E+05	0.000E+00	0.000
SA NO.273+20	707.900	706.998	-0.902	0.0610	0.0557	0.154E+06	0.344E+07	4.5	0.000E+00	-0.446E+05	0.000E+00	0.000
SA NO.266+25	678.260	679.908	1.648	0.0460	0.0528	0.125E+06	0.343E+07	3.7	0.000E+00	0.523E+05	0.000E+00	0.000
SA NO.262+50	662.520	641.836	-0.684	0.0780	0.0517	0.147E+06	0.347E+07	4.2	0.000E+00	-0.388E+05	0.000E+00	0.000
SA NO.260	643.020	648.914	5.894	-0.0158	0.0493	0.954E+05	0.341E+07	2.8	0.000E+00	0.933E+05	0.000E+00	0.000
SA NO.259	644.790	643.387	-1.403	0.0557	0.0507	0.109E+06	0.343E+07	3.2	0.000E+00	-0.250E+05	0.000E+00	0.000
SA NO.255+48	629.190	629.200	0.010	0.0511	0.0510	0.107E+06	0.343E+07	3.1	0.000E+00	0.449E+04	0.000E+00	0.000
SA NO.247+15	586.100	586.161	0.062	0.0487	0.0480	0.103E+06	0.349E+07	2.9	0.000E+00	0.697E+04	0.000E+00	0.000
SA NO.240	551.440	551.953	0.513	0.0419	0.0430	0.827E+05	0.350E+07	2.4	0.000E+00	0.365E+05	0.000E+00	0.000
SA NO.231+5	523.940	523.670	-0.270	0.0447	0.0451	0.924E+05	0.355E+07	2.6	0.000E+00	-0.176E+05	0.000E+00	0.000
SA NO.223+30	460.710	459.747	-0.963	0.0832	0.0434	0.118E+06	0.370E+07	3.2	0.000E+00	-0.470E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	453.060	5.160	0.0363	0.0433	0.966E+05	0.424E+07	2.3	0.101E+05	0.576E+05	0.000E+00	0.000
SA NO.207+25	433.300	435.655	2.355	0.0336	0.0386	0.727E+05	0.431E+07	1.7	0.000E+00	0.435E+05	0.000E+00	0.000
SA NO.201+70	416.760	416.669	-0.091	0.0354	0.0346	0.742E+05	0.448E+07	1.7	0.000E+00	-0.277E+04	0.000E+00	0.000
SA NO.193+50	396.980	397.329	0.349	0.0333	0.0341	0.687E+05	0.463E+07	1.5	0.000E+00	0.100E+05	0.000E+00	0.000
SA NO.186	366.440	366.104	-0.336	0.0353	0.0361	0.851E+05	0.492E+07	1.7	0.000E+00	-0.297E+05	0.000E+00	0.000
SA NO.183	355.590	355.026	-0.564	0.0397	0.0376	0.963E+05	0.505E+07	1.9	0.000E+00	-0.204E+05	0.000E+00	0.000
SA NO.178	332.900	333.540	0.640	0.0308	0.0330	0.774E+05	0.518E+07	1.5	0.000E+00	0.343E+05	0.000E+00	0.000
SA NO.176	323.440	323.849	0.009	0.0420	0.0393	0.767E+05	0.515E+07	1.5	0.000E+00	0.128E+04	0.000E+00	0.000
SA NO.171+86	304.410	305.660	1.250	0.0164	0.0319	0.562E+05	0.531E+07	1.1	0.000E+00	0.373E+05	0.000E+00	0.000
SA NO.170+55	302.190	301.443	-0.747	0.0379	0.0319	0.634E+05	0.537E+07	1.2	0.000E+00	-0.132E+05	0.000E+00	0.000
SA NO.169	296.490	296.621	0.131	0.0330	0.0320	0.604E+05	0.537E+07	1.1	0.000E+00	0.514E+04	0.000E+00	0.000
SA NO.166	286.790	287.236	0.446	0.0210	0.0221	0.458E+05	0.538E+07	0.9	0.000E+00	0.270E+05	0.000E+00	0.000
SA NO.160+62	272.240	271.954	-0.286	0.0359	0.0341	0.590E+05	0.554E+07	1.1	0.000E+00	-0.240E+05	0.000E+00	0.000

*** K.MUJUW SEDIMENT RUNOFF ANALYSIS (1/3) ***

NAME	ES	EE	DZ	SS	SE	SQS	SQO	C	SQB	SVB	SVO	VDAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	258.519	0.409	0.0217	0.0223	0.480E+05	0.561E+07	0.9	0.000E+00	0.200E+05	0.000E+00	0.000
SA NO.153+50	248.730	248.897	0.167	0.0196	0.0200	0.411E+05	0.568E+07	0.7	0.000E+00	0.124E+05	0.000E+00	0.000
SA NO.148+30	237.520	237.451	-0.069	0.0208	0.0215	0.439E+05	0.583E+07	0.8	0.000E+00	-0.502E+04	0.000E+00	0.000
SA NO.145	230.350	230.045	-0.305	0.0330	0.0319	0.602E+05	0.592E+07	1.0	0.000E+00	-0.297E+05	0.000E+00	0.000
SA NO.141	216.220	216.371	0.151	0.0302	0.0304	0.538E+05	0.599E+07	0.9	0.000E+00	0.118E+05	0.000E+00	0.000
SA NO.134+10	191.070	191.042	-0.028	0.0237	0.0226	0.549E+05	0.614E+07	0.9	0.000E+00	-0.210E+04	0.000E+00	0.000
SA NO.128+65	178.080	178.631	0.551	0.0159	0.0183	0.419E+05	0.628E+07	0.7	0.000E+00	0.237E+05	0.000E+00	0.000
SA NO.126+15	173.270	173.112	-0.158	0.0193	0.0180	0.445E+05	0.628E+07	0.7	0.000E+00	-0.469E+04	0.000E+00	0.000
SA NO.123	167.960	168.160	0.200	0.0166	0.0179	0.320E+05	0.634E+07	0.5	0.000E+00	0.227E+05	0.000E+00	0.000
SA NO.117+67	158.780	158.351	-0.429	0.0214	0.0192	0.491E+05	0.651E+07	0.8	0.000E+00	-0.311E+05	0.000E+00	0.000
SA NO.113+95	150.340	150.766	0.426	0.0142	0.0149	0.319E+05	0.657E+07	0.5	0.000E+00	0.312E+05	0.000E+00	0.000
SA NO.107+30	141.010	140.950	-0.060	0.0168	0.0164	0.356E+05	0.665E+07	0.5	0.000E+00	-0.670E+04	0.000E+00	0.000
SA NO.102	130.280	130.478	0.198	0.0102	0.0148	0.297E+05	0.679E+07	0.4	0.000E+00	0.108E+05	0.000E+00	0.000
SA NO.100+30	128.620	128.083	-0.537	0.0239	0.0224	0.530E+05	0.681E+07	0.8	0.000E+00	-0.425E+05	0.000E+00	0.000
SAT NO.95	118.060	118.199	0.119	0.0227	0.0214	0.499E+05	0.696E+07	0.7	0.000E+00	0.573E+04	0.000E+00	0.000
SAT NO.92+60	110.740	111.273	0.533	0.0167	0.0172	0.364E+05	0.702E+07	0.5	0.000E+00	0.245E+05	0.000E+00	0.000
SAT NO.84+25	96.860	96.907	0.047	0.0136	0.0137	0.328E+05	0.717E+07	0.5	0.000E+00	0.651E+04	0.000E+00	0.000
SAT NO.73	81.250	81.163	-0.087	0.0157	0.0149	0.383E+05	0.740E+07	0.5	0.000E+00	-0.100E+05	0.000E+00	0.000
SAT NO.68+20	75.220	75.425	0.205	0.0122	0.0120	0.263E+05	0.746E+07	0.4	0.000E+00	0.218E+05	0.000E+00	0.000
SAT NO.61	65.040	65.433	0.393	0.0073	0.0085	0.126E+05	0.616E+07	0.2	0.000E+00	0.249E+05	0.000E+00	0.000
SAT NO.58	62.750	62.762	0.012	0.0078	0.0084	0.124E+05	0.616E+07	0.2	0.000E+00	0.463E+03	0.000E+00	0.000
SAT NO.55	60.030	59.831	-0.199	0.0107	0.0107	0.172E+05	0.617E+07	0.3	0.000E+00	-0.882E+04	0.000E+00	0.000
SAT NO.52	56.040	55.858	-0.182	0.0082	0.0082	0.186E+05	0.617E+07	0.3	0.000E+00	-0.246E+04	0.000E+00	0.000
SAT NO.49	53.360	53.189	-0.171	0.0131	0.0113	0.222E+05	0.617E+07	0.4	0.000E+00	-0.655E+04	0.000E+00	0.000
SAT NO.46	49.090	49.515	0.425	0.0074	0.0089	0.125E+05	0.616E+07	0.2	0.000E+00	0.177E+05	0.000E+00	0.000
SAT NO.42	46.120	45.951	-0.169	0.0103	0.0092	0.162E+05	0.616E+07	0.3	0.000E+00	-0.684E+04	0.000E+00	0.000
SAT NO.39	42.230	42.490	0.260	0.0064	0.0080	0.125E+05	0.616E+07	0.2	0.000E+00	0.689E+04	0.000E+00	0.000
SAT NO.36	40.330	40.128	-0.202	0.0098	0.0083	0.154E+05	0.616E+07	0.3	0.000E+00	-0.543E+04	0.000E+00	0.000
SAT NO.33	37.070	37.372	0.302	0.0063	0.0078	0.962E+04	0.616E+07	0.2	0.000E+00	0.106E+05	0.000E+00	0.000
SAT NO.31	35.250	35.132	-0.118	0.0080	0.0094	0.125E+05	0.616E+07	0.2	0.000E+00	-0.525E+04	0.000E+00	0.000
SAT NO.29	32.440	32.061	-0.379	0.0099	0.0072	0.236E+05	0.947E+07	0.2	0.000E+00	-0.201E+05	0.000E+00	0.000
SAT NO.26	28.980	29.400	0.420	0.0035	0.0073	0.141E+05	0.937E+07	0.2	0.000E+00	0.173E+05	0.000E+00	0.000
SAT NO.23	27.690	26.749	-0.941	0.0122	0.0083	0.315E+05	0.938E+07	0.3	0.000E+00	-0.317E+05	0.000E+00	0.000
SAT NO.20	23.890	23.495	0.605	0.0045	0.0056	0.969E+04	0.936E+07	0.1	0.000E+00	0.396E+05	0.000E+00	0.000
SAT NO.17	20.620	20.657	0.037	0.0056	0.0058	0.627E+04	0.927E+07	0.1	0.000E+00	0.624E+04	0.000E+00	0.000
SAT NO.15	18.550	18.500	-0.050	0.0076	0.0075	0.107E+05	0.927E+07	0.1	0.000E+00	-0.804E+04	0.000E+00	0.000
SAT NO.13	15.440	15.459	0.019	0.0064	0.0065	0.912E+04	0.918E+07	0.1	0.000E+00	0.286E+04	0.000E+00	0.000
SAT NO.10	12.340	12.333	-0.007	0.0076	0.0076	0.100E+05	0.918E+07	0.1	0.000E+00	-0.161E+04	0.000E+00	0.000
SAT NO.7	8.420	8.446	0.026	0.0058	0.0058	0.788E+04	0.909E+07	0.1	0.000E+00	0.385E+04	0.000E+00	0.000
SAT NO.4	5.680	5.711	0.031	0.0058	0.0059	0.279E+04	0.909E+07	0.0	0.000E+00	0.926E+04	0.000E+00	0.000
SAT NO.2	3.400	3.409	0.009	0.0049	0.0050	0.152E+04	0.899E+07	0.0	0.000E+00	0.231E+04	0.000E+00	0.000
SAT NO.0	1.620	1.621	0.001	0.0049	0.0050	0.140E+04	0.899E+07	0.0	0.000E+00	0.221E+03	0.000E+00	0.000

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)      ***  K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/5) ***
  2)    1   24    0    0    2
  3)5   7
  4)   60   1A
  5)    1          7.0       9.0      11.0      14.0      33.0     288.0     183.0
  6)              32.0      18.0      13.0      10.0       8.0       7.0       6.0
  7)               6.0       5.0       5.0       4.0
  8)    2          3.0       4.0       4.0       6.0      11.0     117.0      89.0
  9)              19.0       9.0       6.0       5.0       4.0       3.0       3.0
 10)               3.0       2.0       2.0       2.0
 11)    3          9.0      10.0      12.0      16.0      27.0     320.0     333.0
 12)             133.0      93.0      65.0      45.0      35.0      28.0      25.0
 13)              20.0      18.0      14.0      15.0
 14)    4         11.0      13.0      16.0      21.0      31.0     417.0     582.0
 15)             235.0     140.0      96.0      66.0      51.0      41.0      34.0
 16)              30.0      26.0      24.0      22.0
 17)    5         10.0      12.0      14.0      18.0      25.0     291.0     919.0
 18)             409.0     283.0     188.0     127.0      96.0      75.0      61.0
 19)              52.0      46.0      41.0      37.0
 20)    6         10.0      11.0      13.0      17.0      23.0     220.0     949.0
 21)             541.0     300.0     199.0     134.0     100.0      79.0      63.0
 22)              54.0      47.0      42.0      38.0
 23)    7          9.0      10.0      12.0      15.0      20.0      57.0     901.0
 24)             803.0     420.0     267.0     179.0     129.0     102.0      82.0
 25)              69.0      60.0      54.0      49.0
 26)8
 27)    1
 28)    1.36
 29)    2
 30)    1.36
 31)    3
 32)    1.36
 33)    4
 34)    1.36
 35)    5
 36)    1.10
 37)    6
 38)    1.10
 39)   16
 40)    0.75
 41)   17
 42)    0.75
 43)   18
 44)    0.75
 45)   19
 46)    0.75
 47)   20
 48)    0.75
 49)  -10
 50)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/5) ***

NAME	ES (EL.M)	FE (EL.M)	DZ (M)	SS	SE	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VDAM (M3)
TENG NO.13	1003.310	1001.950	-1.360	0.1008	0.1008	0.534E+04	0.959E+06	0.6	0.000E+00	-0.972E+04	0.000E+00	0.000
TENG NO.9+43	963.310	961.950	-1.360	0.0888	0.0888	0.102E+05	0.967E+06	1.1	0.000E+00	-0.880E+04	0.000E+00	0.000
TENG NO.6	934.630	933.270	-1.360	0.0721	0.0639	0.156E+05	0.973E+06	1.6	0.000E+00	-0.976E+04	0.000E+00	0.000
TENG NO.3	905.770	907.712	1.942	0.0161	0.0306	0.638E+04	0.955E+06	0.7	0.000E+00	0.167E+05	0.000E+00	0.000
TUN NO.45	1000.000	998.900	-1.100	0.1256	0.1256	0.190E+05	0.109E+07	1.8	0.000E+00	-0.346E+05	0.000E+00	0.000
TUN NO.44	887.000	885.900	-1.100	0.0913	0.0898	0.496E+05	0.114E+07	4.3	0.000E+00	-0.556E+05	0.000E+00	0.000
TUN NO.43	706.330	706.318	1.988	0.0422	0.0591	0.220E+05	0.107E+07	2.0	0.000E+00	0.502E+05	0.000E+00	0.000
TUN NO.39+65	688.700	684.458	-4.242	0.0929	0.0616	0.383E+05	0.110E+07	3.5	0.000E+00	-0.296E+05	0.000E+00	0.000
TUN NO.38-85	668.720	671.206	2.486	0.0572	0.0593	0.218E+05	0.107E+07	2.0	0.000E+00	0.299E+05	0.000E+00	0.000
TUN NO.34-35	637.240	638.588	1.348	0.0446	0.0488	0.138E+05	0.106E+07	1.3	0.000E+00	0.147E+05	0.000E+00	0.000
TUN NO.31+95	625.200	625.413	0.213	0.0411	0.0412	0.112E+05	0.106E+07	1.1	0.000E+00	0.463E+04	0.000E+00	0.000
TUN NO.25+20	581.020	581.114	0.094	0.0369	0.0402	0.979E+04	0.106E+07	0.9	0.000E+00	0.260E+04	0.000E+00	0.000
TUN NO.23-70	570.320	569.466	-0.854	0.0421	0.0398	0.116E+05	0.106E+07	1.1	0.000E+00	-0.321E+04	0.000E+00	0.000
TUN NO.21-30	555.160	555.151	-0.009	0.0403	0.0409	0.115E+05	0.106E+07	1.1	0.000E+00	0.448E+02	0.000E+00	0.000
TUN NO.19+20	541.060	540.845	-0.214	0.0451	0.0447	0.132E+05	0.106E+07	1.2	0.000E+00	-0.312E+04	0.000E+00	0.000
TUN NO.11+65	500.930	501.033	0.103	0.0455	0.0412	0.118E+05	0.106E+07	1.1	0.000E+00	0.258E+04	0.000E+00	0.000
SA NO.325	1035.270	1034.520	-0.750	0.0816	0.0816	0.141E+05	0.145E+07	1.0	0.000E+00	-0.256E+05	0.000E+00	0.000
SA NO.319+53	990.130	989.380	-0.750	0.0749	0.0749	0.307E+05	0.148E+07	2.1	0.000E+00	-0.301E+05	0.000E+00	0.000
SA NO.314	953.340	952.590	-0.750	0.1049	0.1049	0.361E+05	0.147E+07	2.5	0.000E+00	-0.984E+04	0.000E+00	0.000
SA NO.307 *	902.800	902.050	-0.750	0.0866	0.1267	0.475E+05	0.243E+07	2.0	0.638E+04	-0.925E+04	0.000E+00	0.000
SA NO.304	886.420	878.603	-8.217	0.0705	0.0590	0.125E+06	0.256E+07	4.9	0.000E+00	-0.140E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.1047	0.125E+06	0.256E+07	4.9	0.000E+00	0.973E+02	0.000E+00	0.000
SA NO.293+4	829.960	825.541	-4.419	0.0685	0.0619	0.149E+06	0.260E+07	5.7	0.000E+00	-0.435E+05	0.000E+00	0.000
SA NO.288	799.220	797.748	-1.472	0.0564	0.0607	0.164E+06	0.263E+07	6.2	0.000E+00	-0.275E+05	0.000E+00	0.000
SA NO.285+94	780.680	747.485	-2.195	0.0748	0.0667	0.246E+06	0.278E+07	8.9	0.000E+00	-0.150E+06	0.000E+00	0.000
SA NO.277+34	736.220	739.793	3.573	0.0481	0.0533	0.176E+06	0.420E+07	4.2	0.000E+00	0.128E+06	0.000E+00	0.000
SA NO.276-81	724.440	726.731	2.291	0.0481	0.0568	0.141E+06	0.414E+07	3.4	0.000E+00	0.641E+05	0.000E+00	0.000
SA NO.273+20	707.900	707.176	-0.724	0.0610	0.0560	0.160E+06	0.422E+07	3.8	0.000E+00	-0.352E+05	0.000E+00	0.000
SA NO.266+25	678.260	679.944	1.684	0.0460	0.0531	0.131E+06	0.421E+07	3.1	0.000E+00	0.535E+05	0.000E+00	0.000
SA NO.262-50	662.520	661.761	-0.759	0.0780	0.0521	0.154E+06	0.426E+07	3.6	0.000E+00	-0.425E+05	0.000E+00	0.000
SA NO.260	643.020	648.746	5.726	-0.0154	0.0482	0.104E+06	0.421E+07	2.5	0.000E+00	0.907E+05	0.000E+00	0.000
SA NO.259	644.790	643.353	-1.437	0.0557	0.0507	0.118E+06	0.424E+07	2.8	0.000E+00	-0.257E+05	0.000E+00	0.000
SA NO.255+48	629.190	629.160	-0.030	0.0511	0.0509	0.118E+06	0.424E+07	2.8	0.000E+00	0.569E+03	0.000E+00	0.000
SA NO.247+15	586.100	586.179	0.079	0.0487	0.0480	0.113E+06	0.432E+07	2.6	0.000E+00	0.862E+04	0.000E+00	0.000
SA NO.240	551.440	552.003	0.563	0.0419	0.0432	0.911E+05	0.433E+07	2.1	0.000E+00	0.401E+05	0.000E+00	0.000
SA NO.231+5	523.940	523.646	-0.293	0.0447	0.0451	0.102E+06	0.439E+07	2.3	0.000E+00	-0.195E+05	0.000E+00	0.000
SA NO.213+30	460.710	459.736	-0.974	0.0832	0.0432	0.126E+06	0.457E+07	2.8	0.000E+00	-0.475E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	453.088	5.188	0.0363	0.0429	0.108E+06	0.523E+07	2.1	0.118E+05	0.579E+05	0.000E+00	0.000
SA NO.207+25	433.300	435.834	2.534	0.0336	0.0366	0.822E+05	0.532E+07	1.5	0.000E+00	0.467E+05	0.000E+00	0.000
SA NO.201+70	416.760	416.745	-0.015	0.0354	0.0350	0.822E+05	0.552E+07	1.5	0.000E+00	0.279E+02	0.000E+00	0.000
SA NO.193+50	396.980	397.200	0.220	0.0333	0.0339	0.787E+05	0.572E+07	1.4	0.000E+00	0.647E+04	0.000E+00	0.000
SA NO.186	366.440	366.138	-0.302	0.0355	0.0364	0.931E+05	0.607E+07	1.5	0.000E+00	-0.263E+05	0.000E+00	0.000
SA NO.183	355.590	354.954	-0.636	0.0397	0.0373	0.106E+06	0.622E+07	1.7	0.000E+00	-0.229E+05	0.000E+00	0.000
SA NO.178	332.900	333.639	0.739	0.0304	0.0333	0.840E+05	0.639E+07	1.3	0.000E+00	0.395E+05	0.000E+00	0.000
SA NO.174	323.840	323.844	0.004	0.0420	0.0404	0.836E+05	0.636E+07	1.3	0.000E+00	0.673E+03	0.000E+00	0.000
SA NO.171+86	304.410	305.143	0.733	0.0168	0.0303	0.715E+05	0.657E+07	1.1	0.000E+00	0.220E+05	0.000E+00	0.000
SA NO.170+55	302.190	301.142	-1.048	0.0379	0.0301	0.817E+05	0.666E+07	1.2	0.000E+00	-0.186E+05	0.000E+00	0.000
SA NO.169	296.490	296.770	0.280	0.0330	0.0302	0.799E+05	0.645E+07	1.2	0.000E+00	0.337E+04	0.000E+00	0.000
SA NO.166	286.790	287.714	0.924	0.0210	0.0231	0.497E+05	0.719E+07	0.7	0.000E+00	0.550E+05	0.000E+00	0.000
SA NO.160+62	272.240	271.721	-0.519	0.0354	0.0324	0.739E+05	0.742E+07	1.0	0.000E+00	-0.441E+05	0.000E+00	0.000

*** K.NUJUR SEDIMENT RUNOFF ANALYSIS (I/S) ***

NAME	ES	EE	DZ	SS	SF	SRS	SQO	C	SQR	SVB	SVO	VDAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	258.962	0.852	0.0217	0.0251	0.515E+05	0.749E+07	0.7	0.000E+00	0.407E+05	0.000E+00	0.000
SA NO.153+50	248.730	248.974	0.244	0.0194	0.0203	0.418E+05	0.759E+07	0.6	0.000E+00	0.178E+05	0.000E+00	0.000
SA NO.148+30	237.520	237.403	-0.117	0.0208	0.0222	0.467E+05	0.779E+07	0.6	0.000E+00	-0.891E+04	0.000E+00	0.000
SA NO.145	230.350	229.748	-0.602	0.0330	0.0311	0.793E+05	0.792E+07	1.0	0.000E+00	-0.593E+05	0.000E+00	0.000
SA NO.141	216.220	216.425	0.205	0.0302	0.0302	0.705E+05	0.802E+07	0.9	0.000E+00	0.159E+05	0.000E+00	0.000
SA NO.134+10	191.070	191.303	0.233	0.0237	0.0230	0.572E+05	0.820E+07	0.7	0.000E+00	0.242E+05	0.000E+00	0.000
SA NO.128+65	178.080	178.700	0.620	0.0159	0.0187	0.426E+05	0.839E+07	0.5	0.000E+00	0.266E+05	0.000E+00	0.000
SA NO.126+15	173.270	173.050	-0.220	0.0193	0.0185	0.462E+05	0.859E+07	0.6	0.000E+00	-0.658E+04	0.000E+00	0.000
SA NO.123	167.960	167.972	0.012	0.0168	0.0172	0.451E+05	0.849E+07	0.5	0.000E+00	0.197E+04	0.000E+00	0.000
SA NO.117+67	158.780	158.561	-0.219	0.0214	0.0203	0.537E+05	0.870E+07	0.6	0.000E+00	-0.156E+05	0.000E+00	0.000
SA NO.113+95	150.340	150.562	0.222	0.0142	0.0147	0.447E+05	0.880E+07	0.5	0.000E+00	0.164E+05	0.000E+00	0.000
SA NO.107+30	141.010	140.902	-0.108	0.0168	0.0163	0.514E+05	0.890E+07	0.6	0.000E+00	-0.126E+05	0.000E+00	0.000
SA NO.102	130.280	130.474	0.194	0.0102	0.0152	0.458E+05	0.910E+07	0.5	0.000E+00	0.107E+05	0.000E+00	0.000
SA NO.100+30	128.620	128.011	-0.609	0.0239	0.0211	0.723E+05	0.912E+07	0.8	0.000E+00	-0.482E+05	0.000E+00	0.000
SAT NO.95	118.080	118.702	0.622	0.0227	0.0224	0.561E+05	0.931E+07	0.6	0.000E+00	0.295E+05	0.000E+00	0.000
SAT NO.92+60	110.740	111.455	0.715	0.0167	0.0177	0.380E+05	0.939E+07	0.4	0.000E+00	0.329E+05	0.000E+00	0.000
SAT NO.84+25	96.460	96.734	-0.126	0.0136	0.0136	0.467E+05	0.960E+07	0.5	0.000E+00	-0.158E+05	0.000E+00	0.000
SAT NO.73	81.250	81.130	-0.120	0.0157	0.0147	0.544E+05	0.991E+07	0.5	0.000E+00	-0.141E+05	0.000E+00	0.000
SAT NO.68+20	75.220	75.479	0.259	0.0122	0.0121	0.394E+05	0.100E+08	0.4	0.000E+00	0.276E+05	0.000E+00	0.000
SAT NO.61	65.040	65.429	0.389	0.0073	0.0086	0.257E+05	0.102E+08	0.3	0.000E+00	0.246E+05	0.000E+00	0.000
SAT NO.58	62.750	62.728	-0.022	0.0076	0.0086	0.261E+05	0.102E+08	0.3	0.000E+00	-0.737E+03	0.000E+00	0.000
SAT NO.55	60.030	59.741	-0.289	0.0107	0.0105	0.332E+05	0.103E+08	0.3	0.000E+00	-0.129E+05	0.000E+00	0.000
SAT NO.52	56.040	55.806	-0.234	0.0082	0.0082	0.350E+05	0.103E+08	0.3	0.000E+00	-0.316E+04	0.000E+00	0.000
SAT NO.49	53.360	53.116	-0.244	0.0131	0.0107	0.401E+05	0.103E+08	0.4	0.000E+00	-0.941E+04	0.000E+00	0.000
SAT NO.46	49.090	49.646	0.556	0.0074	0.0092	0.275E+05	0.103E+08	0.3	0.000E+00	0.230E+05	0.000E+00	0.000
SAT NO.42	46.120	45.958	-0.162	0.0103	0.0090	0.311E+05	0.103E+08	0.3	0.000E+00	-0.656E+04	0.000E+00	0.000
SAT NO.39	42.230	42.562	0.332	0.0064	0.0081	0.262E+05	0.102E+08	0.3	0.000E+00	0.879E+04	0.000E+00	0.000
SAT NO.36	40.330	40.146	-0.184	0.0098	0.0081	0.290E+05	0.103E+08	0.3	0.000E+00	-0.495E+04	0.000E+00	0.000
SAT NO.33	37.070	37.446	0.376	0.0063	0.0080	0.217E+05	0.102E+08	0.2	0.000E+00	0.132E+05	0.000E+00	0.000
SAT NO.31	35.250	35.143	-0.107	0.0080	0.0091	0.244E+05	0.102E+08	0.2	0.000E+00	-0.474E+04	0.000E+00	0.000
SAT NO.29	32.640	32.152	-0.488	0.0099	0.0077	0.337E+05	0.123E+08	0.3	0.000E+00	-0.170E+05	0.000E+00	0.000
SAT NO.26	29.980	29.482	0.502	0.0035	0.0076	0.223E+05	0.121E+08	0.2	0.000E+00	0.207E+05	0.000E+00	0.000
SAT NO.23	27.690	26.701	-0.989	0.0122	0.0079	0.406E+05	0.122E+08	0.3	0.000E+00	-0.333E+05	0.000E+00	0.000
SAT NO.20	22.890	23.600	0.710	0.0045	0.0058	0.150E+05	0.121E+08	0.1	0.000E+00	0.466E+05	0.000E+00	0.000
SAT NO.17	20.620	20.663	0.043	0.0056	0.0059	0.109E+05	0.120E+08	0.1	0.000E+00	0.735E+04	0.000E+00	0.000
SAT NO.15	18.550	18.479	-0.071	0.0076	0.0074	0.172E+05	0.120E+08	0.1	0.000E+00	-0.114E+05	0.000E+00	0.000
SAT NO.13	15.440	15.469	0.029	0.0064	0.0065	0.148E+05	0.119E+08	0.1	0.000E+00	0.438E+04	0.000E+00	0.000
SAT NO.10	12.340	12.326	-0.014	0.0076	0.0075	0.165E+05	0.119E+08	0.1	0.000E+00	-0.302E+04	0.000E+00	0.000
SAT NO.7	8.420	8.465	0.045	0.0058	0.0058	0.129E+05	0.118E+08	0.1	0.000E+00	0.659E+04	0.000E+00	0.000
SAT NO.4	5.680	5.719	0.039	0.0058	0.0059	0.647E+04	0.118E+08	0.1	0.000E+00	0.116E+05	0.000E+00	0.000
SAT NO.2	3.400	3.417	0.017	0.0049	0.0050	0.416E+04	0.117E+08	0.0	0.000E+00	0.420E+04	0.000E+00	0.000
SAT NO.0	1.620	1.621	0.001	0.0049	0.0050	0.397E+04	0.117E+08	0.0	0.000E+00	0.349E+03	0.000E+00	0.000

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)      *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/10) ***
  2)    1   24    0    0    2
  3)5   7
  4)   60   18
  5)    1          9.0       10.0       15.0       17.0       40.0      352.0      221.0
  6)               37.0       21.0       15.0       12.0       10.0        9.0        8.0
  7)                7.0        6.0        6.0        5.0
  8)    2          4.0        4.0        5.0        7.0       12.0      138.0      102.0
  9)               21.0       10.0        7.0        6.0        5.0        4.0        4.0
 10)               3.0        3.0        3.0        2.0
 11)    3          10.0       12.0       15.0       20.0       33.0      403.0      451.0
 12)              200.0      126.0       79.0       58.0       43.0       43.0       30.0
 13)               26.0       24.0       21.0       20.0
 14)    4          13.0       16.0       19.0       25.0       39.0      536.0      759.0
 15)              319.0      186.0      115.0       82.0       63.0       51.0       44.0
 16)               38.0       34.0       31.0       28.0
 17)    5          12.0       14.0       17.0       22.0       32.0      424.0     1235.0
 18)              664.0      365.0      224.0      154.0      115.0       90.0       76.0
 19)               65.0       58.0       52.0       47.0
 20)    6          12.0       14.0       17.0       21.0       30.0      334.0     1232.0
 21)              717.0      389.0      239.0      162.0      121.0       94.0       78.0
 22)               67.0       60.0       53.0       48.0
 23)    7          11.0       13.0       15.0       19.0       25.0      110.0     1306.0
 24)             1058.0      542.0      326.0      214.0      159.0      123.0      101.0
 25)               87.0       76.0       68.0       62.0
 26)8
 27)    1
 28)    2.72
 29)    2
 30)    2.72
 31)    3
 32)    2.72
 33)    4
 34)    2.72
 35)    5
 36)    2.20
 37)    6
 38)    2.20
 39)   16
 40)    1.50
 41)   17
 42)    1.50
 43)   18
 44)    1.50
 45)   19
 46)    1.50
 47)   20
 48)    1.50
 49)  -10
 50)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUK SEDIMENT RUNOFF ANALYSIS (1/10) ***

NAME	ES (EL.M)	EE (EL.M)	DZ (M)	SS	SE	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VDAM (M3)
TENG NO.13	1003.310	1000.590	-2.720	0.1008	0.1008	0.107E+05	0.117E+07	0.9	0.000E+00	-0.194E+05	0.000E+00	0.000
TENG NO.9+43	963.310	960.590	-2.720	0.0888	0.0888	0.204E+05	0.119E+07	1.7	0.000E+00	-0.176E+05	0.000E+00	0.000
TENG NO.6	934.630	931.910	-2.720	0.0721	0.0568	0.311E+05	0.119E+07	2.6	0.000E+00	-0.196E+05	0.000E+00	0.000
TENG NO.3	905.770	909.208	3.438	0.0161	0.0427	0.150E+05	0.116E+07	1.3	0.000E+00	0.294E+05	0.000E+00	0.000
TUN NO.45	1000.000	997.800	-2.200	0.1256	0.1256	0.381E+05	0.129E+07	2.9	0.000E+00	-0.692E+05	0.000E+00	0.000
TUN NO.44	887.000	884.800	-2.200	0.0913	0.0892	0.993E+05	0.140E+07	7.1	0.000E+00	-0.111E+06	0.000E+00	0.000
TUN NO.43	704.330	708.404	4.074	0.0422	0.0606	0.431E+05	0.128E+07	3.4	0.000E+00	0.102E+06	0.000E+00	0.000
TUN NO.39+45	689.700	685.984	-2.716	0.0929	0.0624	0.535E+05	0.130E+07	4.1	0.000E+00	-0.189E+05	0.000E+00	0.000
TUN NO.38+85	668.720	672.573	3.853	0.0572	0.0609	0.281E+05	0.125E+07	2.2	0.000E+00	0.461E+05	0.000E+00	0.000
TUN NO.34+35	637.240	639.091	1.851	0.0446	0.0503	0.171E+05	0.124E+07	1.4	0.000E+00	0.200E+05	0.000E+00	0.000
TUN NO.32+95	625.200	625.522	0.322	0.0411	0.0413	0.134E+05	0.124E+07	1.1	0.000E+00	0.674E+04	0.000E+00	0.000
TUN NO.25+20	581.020	581.142	0.122	0.0369	0.0403	0.117E+05	0.124E+07	0.9	0.000E+00	0.321E+04	0.000E+00	0.000
TUN NO.23+70	570.320	569.453	-0.867	0.0421	0.0399	0.134E+05	0.124E+07	1.1	0.000E+00	-0.326E+04	0.000E+00	0.000
TUN NO.21+30	555.160	555.096	-0.064	0.0403	0.0409	0.134E+05	0.124E+07	1.1	0.000E+00	-0.188E+03	0.000E+00	0.000
TUN NO.19+20	541.060	540.793	-0.267	0.0451	0.0447	0.158E+05	0.124E+07	1.3	0.000E+00	-0.400E+04	0.000E+00	0.000
TUN NO.11+05	500.930	501.050	0.120	0.0455	0.0409	0.140E+05	0.124E+07	1.1	0.000E+00	0.310E+04	0.000E+00	0.000
SA NO.325	1035.270	1033.770	-1.500	0.0816	0.0816	0.285E+05	0.177E+07	1.6	0.000E+00	-0.518E+05	0.000E+00	0.000
SA NO.310+53	990.130	988.630	-1.500	0.0749	0.0749	0.619E+05	0.183E+07	3.4	0.000E+00	-0.607E+05	0.000E+00	0.000
SA NO.314	953.340	951.840	-1.500	0.1049	0.1049	0.727E+05	0.181E+07	4.0	0.000E+00	-0.197E+05	0.000E+00	0.000
SA NO.307 *	902.800	901.300	-1.500	0.0864	0.1232	0.979E+05	0.299E+07	3.3	0.150E+05	-0.185E+05	0.000E+00	0.000
SA NO.304	886.420	878.513	-8.307	0.0705	0.0589	0.176E+06	0.314E+07	5.6	0.000E+00	-0.142E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.1124	0.176E+06	0.314E+07	5.6	0.000E+00	0.902E+02	0.000E+00	0.000
SA NO.293+4	829.960	824.755	-5.204	0.0685	0.0601	0.204E+06	0.320E+07	6.4	0.000E+00	-0.513E+05	0.000E+00	0.000
SA NO.288	799.220	797.749	-1.471	0.0564	0.0582	0.219E+06	0.323E+07	6.8	0.000E+00	-0.275E+05	0.000E+00	0.000
SA NO.285+84	789.680	787.911	-1.769	0.0748	0.0673	0.286E+06	0.335E+07	8.5	0.000E+00	-0.120E+06	0.000E+00	0.000
SA NO.277+34	736.220	739.789	3.569	0.0481	0.0521	0.215E+06	0.554E+07	3.9	0.000E+00	0.128E+06	0.000E+00	0.000
SA NO.276+81	724.440	727.017	2.577	0.0481	0.0573	0.175E+06	0.547E+07	3.2	0.000E+00	0.723E+05	0.000E+00	0.000
SA NO.273+20	707.900	707.291	-0.609	0.0610	0.0555	0.192E+06	0.556E+07	3.4	0.000E+00	-0.293E+05	0.000E+00	0.000
SA NO.266+25	678.260	680.326	2.066	0.0460	0.0540	0.156E+06	0.556E+07	2.8	0.000E+00	0.653E+05	0.000E+00	0.000
SA NO.262+50	662.520	661.843	-0.677	0.0780	0.0537	0.177E+06	0.560E+07	3.2	0.000E+00	-0.385E+05	0.000E+00	0.000
SA NO.260	643.020	648.906	5.886	-0.0158	0.0516	0.125E+06	0.557E+07	2.3	0.000E+00	0.932E+05	0.000E+00	0.000
SA NO.259	644.790	643.132	-1.657	0.0557	0.0497	0.142E+06	0.559E+07	2.5	0.000E+00	-0.297E+05	0.000E+00	0.000
SA NO.255+48	629.190	629.220	0.030	0.0511	0.0510	0.138E+06	0.559E+07	2.5	0.000E+00	0.662E+04	0.000E+00	0.000
SA NO.247+15	586.100	586.202	0.102	0.0487	0.0480	0.132E+06	0.570E+07	2.3	0.000E+00	0.108E+05	0.000E+00	0.000
SA NO.240	551.440	552.016	0.576	0.0419	0.0432	0.110E+06	0.572E+07	1.9	0.000E+00	0.407E+05	0.000E+00	0.000
SA NO.231+5	523.940	523.624	-0.316	0.0447	0.0450	0.122E+06	0.590E+07	2.1	0.000E+00	-0.215E+05	0.000E+00	0.000
SA NO.213+30	460.710	459.851	-0.859	0.0832	0.0420	0.145E+06	0.602E+07	2.4	0.000E+00	-0.416E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	453.377	5.477	0.0363	0.0431	0.125E+06	0.673E+07	1.9	0.140E+05	0.611E+05	0.000E+00	0.000
SA NO.207+25	433.300	436.049	2.749	0.0336	0.0393	0.971E+05	0.687E+07	1.4	0.000E+00	0.507E+05	0.000E+00	0.000
SA NO.201+70	416.760	416.714	-0.046	0.0354	0.0345	0.978E+05	0.713E+07	1.4	0.000E+00	-0.121E+04	0.000E+00	0.000
SA NO.193+50	394.980	397.411	0.431	0.0333	0.0342	0.911E+05	0.738E+07	1.2	0.000E+00	0.122E+05	0.000E+00	0.000
SA NO.186	366.440	366.013	-0.427	0.0353	0.0356	0.112E+06	0.784E+07	1.4	0.000E+00	-0.381E+05	0.000E+00	0.000
SA NO.183	355.590	355.094	-0.496	0.0397	0.0377	0.122E+06	0.802E+07	1.5	0.000E+00	-0.177E+05	0.000E+00	0.000
SA NO.178	332.400	333.571	0.671	0.0308	0.0331	0.102E+06	0.825E+07	1.2	0.000E+00	0.361E+05	0.000E+00	0.000
SA NO.176	323.840	323.840	0.000	0.0420	0.0401	0.102E+06	0.822E+07	1.2	0.000E+00	0.238E+03	0.000E+00	0.000
SA NO.171+86	304.410	305.255	0.845	0.0168	0.0314	0.878E+05	0.849E+07	1.0	0.000E+00	0.253E+05	0.000E+00	0.000
SA NO.170+55	302.190	301.104	-1.086	0.0379	0.0310	0.984E+05	0.860E+07	1.1	0.000E+00	-0.193E+05	0.000E+00	0.000
SA NO.169	294.490	296.609	-0.081	0.0330	0.0282	0.994E+05	0.860E+07	1.2	0.000E+00	-0.220E+04	0.000E+00	0.000
SA NO.166	286.790	288.139	1.349	0.0210	0.0237	0.554E+05	0.943E+07	0.6	0.000E+00	0.799E+05	0.000E+00	0.000
SA NO.160+42	272.240	271.736	-0.504	0.0359	0.0324	0.792E+05	0.971E+07	0.8	0.000E+00	-0.428E+05	0.000E+00	0.000

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/10) ***

NAME	ES	EE	DZ	SS	SE	SQS	SQO	C	SQB	SVB	SVO	VOAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	258.963	0.853	0.0217	0.0237	0.567E+05	0.942E+07	0.6	0.000E+00	0.408E+05	0.000E+00	0.000
SA NO.153+50	248.730	248.732	0.002	0.0196	0.0199	0.563E+05	0.995E+07	0.6	0.000E+00	0.659E+03	0.000E+00	0.000
SA NO.148+30	237.520	237.360	-0.160	0.0205	0.0217	0.631E+05	0.102E+08	0.6	0.000E+00	-0.122E+05	0.000E+00	0.000
SA NO.145	230.350	229.868	-0.482	0.0360	0.0310	0.891E+05	0.104E+08	0.9	0.000E+00	-0.473E+05	0.000E+00	0.000
SA NO.141	216.220	216.594	0.374	0.0302	0.0304	0.735E+05	0.105E+08	0.7	0.000E+00	0.283E+05	0.000E+00	0.000
SA NO.134+10	191.070	191.276	0.206	0.0237	0.0229	0.617E+05	0.108E+08	0.6	0.000E+00	0.216E+05	0.000E+00	0.000
SA NO.128+65	178.080	178.739	0.659	0.0159	0.0191	0.461E+05	0.110E+08	0.4	0.000E+00	0.283E+05	0.000E+00	0.000
SA NO.126+15	173.270	172.983	-0.287	0.0193	0.0189	0.508E+05	0.110E+08	0.5	0.000E+00	-0.859E+04	0.000E+00	0.000
SA NO.123	167.960	167.779	-0.181	0.0166	0.0164	0.612E+05	0.111E+08	0.5	0.000E+00	-0.190E+05	0.000E+00	0.000
SA NO.117+67	158.780	158.765	-0.015	0.0214	0.0213	0.615E+05	0.114E+08	0.5	0.000E+00	-0.561E+03	0.000E+00	0.000
SA NO.113+95	150.340	150.359	0.019	0.0142	0.0144	0.606E+05	0.115E+08	0.5	0.000E+00	0.180E+04	0.000E+00	0.000
SA NO.107+30	141.010	140.861	-0.149	0.0164	0.0160	0.703E+05	0.117E+08	0.6	0.000E+00	-0.176E+05	0.000E+00	0.000
SA NO.102	130.280	130.658	0.378	0.0102	0.0152	0.590E+05	0.119E+08	0.5	0.000E+00	0.204E+05	0.000E+00	0.000
SA NO.100+30	128.620	128.201	-0.419	0.0239	0.0223	0.772E+05	0.120E+08	0.6	0.000E+00	-0.331E+05	0.000E+00	0.000
SAT NO.95	118.080	118.371	0.291	0.0227	0.0213	0.696E+05	0.122E+08	0.6	0.000E+00	0.139E+05	0.000E+00	0.000
SAT NO.92+60	110.740	111.466	0.726	0.0167	0.0177	0.512E+05	0.123E+08	0.4	0.000E+00	0.334E+05	0.000E+00	0.000
SAT NO.84+25	96.860	96.692	-0.168	0.0136	0.0134	0.628E+05	0.126E+08	0.5	0.000E+00	-0.211E+05	0.000E+00	0.000
SAT NO.73	81.250	81.342	0.092	0.0157	0.0157	0.566E+05	0.130E+08	0.4	0.000E+00	0.112E+05	0.000E+00	0.000
SAT NO.69+20	75.220	75.280	0.060	0.0122	0.0117	0.529E+05	0.131E+08	0.4	0.000E+00	0.675E+04	0.000E+00	0.000
SAT NO.61	65.040	65.508	0.468	0.0073	0.0088	0.366E+05	0.133E+08	0.3	0.000E+00	0.296E+05	0.000E+00	0.000
SAT NO.58	62.750	62.747	-0.003	0.0078	0.0088	0.367E+05	0.133E+08	0.3	0.000E+00	-0.644E+02	0.000E+00	0.000
SAT NO.55	60.030	59.694	-0.336	0.0107	0.0105	0.449E+05	0.133E+08	0.3	0.000E+00	-0.149E+05	0.000E+00	0.000
SAT NO.52	56.040	55.776	-0.264	0.0082	0.0082	0.469E+05	0.133E+08	0.4	0.000E+00	-0.357E+04	0.000E+00	0.000
SAT NO.49	53.360	53.086	-0.274	0.0131	0.0104	0.527E+05	0.133E+08	0.4	0.000E+00	-0.105E+05	0.000E+00	0.000
SAT NO.46	49.090	49.704	0.614	0.0074	0.0093	0.387E+05	0.133E+08	0.3	0.000E+00	0.254E+05	0.000E+00	0.000
SAT NO.42	46.120	45.981	-0.139	0.0103	0.0090	0.418E+05	0.133E+08	0.3	0.000E+00	-0.563E+04	0.000E+00	0.000
SAT NO.39	42.230	42.597	0.367	0.0064	0.0082	0.364E+05	0.133E+08	0.3	0.000E+00	0.970E+04	0.000E+00	0.000
SAT NO.36	40.330	40.170	-0.160	0.0098	0.0081	0.388E+05	0.133E+08	0.3	0.000E+00	-0.430E+04	0.000E+00	0.000
SAT NO.33	37.070	37.469	0.399	0.0063	0.0082	0.311E+05	0.133E+08	0.2	0.000E+00	0.139E+05	0.000E+00	0.000
SAT NO.31	35.250	35.110	-0.140	0.0080	0.0093	0.344E+05	0.133E+08	0.3	0.000E+00	-0.622E+04	0.000E+00	0.000
SAT NO.29	32.640	32.078	-0.562	0.0099	0.0070	0.453E+05	0.164E+08	0.3	0.000E+00	-0.195E+05	0.000E+00	0.000
SAT NO.26	29.980	29.476	0.496	0.0035	0.0077	0.341E+05	0.162E+08	0.2	0.000E+00	0.204E+05	0.000E+00	0.000
SAT NO.23	27.690	26.668	-1.022	0.0122	0.0075	0.530E+05	0.162E+08	0.3	0.000E+00	-0.344E+05	0.000E+00	0.000
SAT NO.20	22.890	23.720	0.830	0.0045	0.0060	0.231E+05	0.162E+08	0.1	0.000E+00	0.544E+05	0.000E+00	0.000
SAT NO.17	20.620	20.675	0.055	0.0056	0.0060	0.179E+05	0.160E+08	0.1	0.000E+00	0.937E+04	0.000E+00	0.000
SAT NO.15	18.550	18.454	-0.096	0.0076	0.0073	0.265E+05	0.160E+08	0.2	0.000E+00	-0.156E+05	0.000E+00	0.000
SAT NO.13	15.440	15.481	0.041	0.0064	0.0066	0.231E+05	0.159E+08	0.1	0.000E+00	0.617E+04	0.000E+00	0.000
SAT NO.10	12.340	12.319	-0.021	0.0076	0.0075	0.257E+05	0.159E+08	0.2	0.000E+00	-0.479E+04	0.000E+00	0.000
SAT NO.7	8.420	8.490	0.070	0.0058	0.0059	0.201E+05	0.157E+08	0.1	0.000E+00	0.103E+05	0.000E+00	0.000
SAT NO.4	5.680	5.728	0.048	0.0058	0.0059	0.122E+05	0.157E+08	0.1	0.000E+00	0.144E+05	0.000E+00	0.000
SAT NO.2	3.400	3.426	0.026	0.0049	0.0050	0.860E+04	0.155E+08	0.1	0.000E+00	0.652E+04	0.000E+00	0.000
SAT NO.0	1.620	1.622	0.002	0.0049	0.0050	0.835E+04	0.155E+08	0.1	0.000E+00	0.461E+03	0.000E+00	0.000

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)      ***  K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/20) ***
  2)    1   24    0    0    2
  3)5   7
  4)   60   18
  5)    1          10.0       12.0       15.0       20.0       50.0      421.0      251.0
  6)               43.0       24.0       18.0       14.0       12.0       10.0        9.0
  7)                8.0        7.0        6.0        6.0
  8)    2           4.0        5.0        6.0        8.0       14.0      160.0      115.0
  9)               23.0       12.0        8.0        6.0        5.0        5.0        4.0
 10)                4.0        3.0        3.0        3.0
 11)    3          12.0       14.0       17.0       23.0       41.0      508.0      593.0
 12)              275.0      154.0       98.0       69.0       54.0       45.0       39.0
 13)               34.0       31.0       28.0       25.0
 14)    4          16.0       19.0       23.0       30.0       48.0      687.0      960.0
 15)              413.0      224.0      138.0       99.0       76.0       63.0       55.0
 16)               48.0       43.0       39.0       36.0
 17)    5          14.0       17.0       21.0       27.0       39.0      580.0     1536.0
 18)              692.0      433.0      257.0      179.0      131.0      106.0       90.0
 19)               78.0       70.0       63.0       57.0
 20)    6          14.0       16.0       20.0       26.0       36.0      476.0     1576.0
 21)              887.0      462.0      273.0      188.0      137.0      110.0       93.0
 22)               81.0       71.0       64.0       58.0
 23)    7          13.0       15.0       18.0       23.0       31.0      194.0     1756.0
 24)             1302.0      647.0      373.0      250.0      183.0      144.0      121.0
 25)              104.0       92.0       83.0       75.0
 26)8
 27)   1
 28)   5.44
 29)   2
 30)   5.44
 31)   3
 32)   5.44
 33)   4
 34)   5.44
 35)   5
 36)   4.40
 37)   6
 38)   4.40
 39)  16
 40)   3.0
 41)  17
 42)   3.0
 43)  18
 44)   3.0
 45)  19
 46)   3.0
 47)  20
 48)   3.0
 49) -10
 50)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/20) ***

NAME	ES (EL.M)	EE (EL.M)	DZ (M)	SS	SE	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VDAM (M3)
TENG NO.13	1003.310	997.870	-5.440	0.1008	0.1008	0.214E+05	0.139E+07	1.5	0.000E+00	-0.389E+05	0.000E+00	0.000
TENG NO.9+43	963.310	957.870	-5.440	0.0888	0.0816	0.407E+05	0.142E+07	2.9	0.000E+00	-0.352E+05	0.000E+00	0.000
TENG NO.6	934.630	931.498	-3.132	0.0721	0.0515	0.531E+05	0.142E+07	3.7	0.000E+00	-0.224E+05	0.000E+00	0.000
TENG NO.3	905.770	910.879	5.109	0.0161	0.0599	0.291E+05	0.138E+07	2.1	0.000E+00	0.435E+05	0.000E+00	0.000
TUN NO.45	1000.000	995.600	-4.400	0.1256	0.1256	0.761E+05	0.154E+07	5.0	0.000E+00	-0.138E+06	0.000E+00	0.000
TUN NO.44	887.000	882.600	-4.400	0.0913	0.0864	0.199E+06	0.176E+07	11.3	0.000E+00	-0.223E+06	0.000E+00	0.000
TUN NO.43	704.330	709.777	5.447	0.0422	0.0593	0.124E+06	0.160E+07	7.7	0.000E+00	0.136E+06	0.000E+00	0.000
TUN NO.39+65	688.700	687.846	-0.854	0.0929	0.0610	0.127E+06	0.161E+07	7.9	0.000E+00	-0.583E+04	0.000E+00	0.000
TUN NO.38-85	668.720	674.729	6.009	0.0572	0.0593	0.875E+05	0.153E+07	5.7	0.000E+00	0.716E+05	0.000E+00	0.000
TUN NO.34-35	637.240	642.135	4.895	0.0446	0.0540	0.586E+05	0.148E+07	3.9	0.000E+00	0.526E+05	0.000E+00	0.000
TUN NO.31+95	625.200	627.557	2.357	0.0411	0.0430	0.332E+05	0.145E+07	2.3	0.000E+00	0.450E+05	0.000E+00	0.000
TUN NO.25+20	581.020	581.354	0.334	0.0369	0.0406	0.296E+05	0.144E+07	2.1	0.000E+00	0.774E+04	0.000E+00	0.000
TUN NO.23-70	570.320	569.566	-0.754	0.0421	0.0406	0.311E+05	0.144E+07	2.2	0.000E+00	-0.281E+04	0.000E+00	0.000
TUN NO.21-30	555.160	554.962	-0.198	0.0403	0.0415	0.315E+05	0.144E+07	2.2	0.000E+00	-0.754E+03	0.000E+00	0.000
TUN NO.19+20	541.060	540.449	-0.611	0.0451	0.0440	0.371E+05	0.145E+07	2.6	0.000E+00	-0.101E+05	0.000E+00	0.000
TUN NO.11+65	500.930	501.271	0.341	0.0455	0.0406	0.325E+05	0.144E+07	2.3	0.000E+00	0.827E+04	0.000E+00	0.000
SA NO.325	1035.270	1032.270	-3.000	0.0816	0.0816	0.573E+05	0.213E+07	2.7	0.000E+00	-0.104E+06	0.000E+00	0.000
SA NO.319+53	990.130	987.130	-3.000	0.0749	0.0749	0.124E+06	0.225E+07	5.5	0.000E+00	-0.122E+06	0.000E+00	0.000
SA NO.314	953.340	950.340	-3.000	0.1049	0.1049	0.146E+06	0.222E+07	6.6	0.000E+00	-0.393E+05	0.000E+00	0.000
SA NO.307 *	902.800	899.800	-3.000	0.0864	0.1491	0.195E+06	0.365E+07	5.4	0.291E+05	-0.369E+05	0.000E+00	0.000
SA NO.304	886.820	872.225	-14.595	0.0705	0.0501	0.333E+06	0.394E+07	8.5	0.000E+00	-0.250E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.1361	0.333E+06	0.388E+07	8.6	0.000E+00	0.104E+03	0.000E+00	0.000
SA NO.293+4	829.960	822.336	-7.624	0.0685	0.0610	0.374E+06	0.401E+07	9.3	0.000E+00	-0.753E+05	0.000E+00	0.000
SA NO.288	799.220	794.951	-4.269	0.0564	0.0643	0.419E+06	0.409E+07	10.3	0.000E+00	-0.811E+05	0.000E+00	0.000
SA NO.285+84	789.680	784.091	-5.589	0.0748	0.0731	0.631E+06	0.447E+07	14.1	0.000E+00	-0.386E+06	0.000E+00	0.000
SA NO.277+34	736.220	731.851	-4.369	0.0481	0.0387	0.716E+06	0.791E+07	9.1	0.000E+00	-0.154E+06	0.000E+00	0.000
SA NO.276-81	724.440	722.366	-2.074	0.0481	0.0466	0.747E+06	0.796E+07	9.4	0.000E+00	-0.565E+05	0.000E+00	0.000
SA NO.273+20	707.900	706.350	-1.550	0.0610	0.0519	0.789E+06	0.811E+07	9.7	0.000E+00	-0.773E+05	0.000E+00	0.000
SA NO.266+25	678.260	681.142	2.882	0.0460	0.0534	0.740E+06	0.810E+07	9.1	0.000E+00	0.906E+05	0.000E+00	0.000
SA NO.262-50	662.520	662.880	0.360	0.0780	0.0519	0.727E+06	0.807E+07	9.0	0.000E+00	0.233E+05	0.000E+00	0.000
SA NO.260	643.020	649.901	6.881	-0.0158	0.0529	0.667E+06	0.805E+07	8.3	0.000E+00	0.109E+06	0.000E+00	0.000
SA NO.259	644.790	643.977	-0.813	0.0557	0.0518	0.675E+06	0.806E+07	8.4	0.000E+00	-0.142E+05	0.000E+00	0.000
SA NO.255+48	629.190	629.460	0.270	0.0511	0.0501	0.656E+06	0.802E+07	8.2	0.000E+00	0.334E+05	0.000E+00	0.000
SA NO.247+15	586.100	587.161	1.062	0.0487	0.0475	0.611E+06	0.809E+07	7.6	0.000E+00	0.819E+05	0.000E+00	0.000
SA NO.240	551.440	553.325	1.885	0.0419	0.0455	0.540E+06	0.805E+07	6.7	0.000E+00	0.129E+06	0.000E+00	0.000
SA NO.231+5	523.940	523.422	-0.518	0.0447	0.0448	0.561E+06	0.816E+07	6.9	0.000E+00	-0.372E+05	0.000E+00	0.000
SA NO.213+30	460.710	460.021	-0.689	0.0832	0.0390	0.579E+06	0.841E+07	6.9	0.000E+00	-0.333E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	454.016	6.116	0.0363	0.0416	0.574E+06	0.924E+07	6.2	0.325E+05	0.682E+05	0.000E+00	0.000
SA NO.207+25	433.300	437.280	3.980	0.0336	0.0390	0.534E+06	0.939E+07	5.7	0.000E+00	0.732E+05	0.000E+00	0.000
SA NO.201+70	416.760	418.110	1.350	0.0354	0.0357	0.507E+06	0.967E+07	5.2	0.000E+00	0.488E+05	0.000E+00	0.000
SA NO.193+50	396.980	398.156	1.176	0.0333	0.0361	0.489E+06	0.997E+07	4.9	0.000E+00	0.326E+05	0.000E+00	0.000
SA NO.186	364.440	365.046	-1.394	0.0353	0.0341	0.560E+06	0.106E+08	5.3	0.000E+00	-0.128E+06	0.000E+00	0.000
SA NO.183	355.590	354.572	-1.018	0.0397	0.0359	0.580E+06	0.109E+08	5.3	0.000E+00	-0.370E+05	0.000E+00	0.000
SA NO.178	332.900	334.055	1.155	0.0308	0.0346	0.546E+06	0.111E+08	4.9	0.000E+00	0.612E+05	0.000E+00	0.000
SA NO.176	323.840	323.869	0.029	0.0420	0.0377	0.545E+06	0.108E+08	5.0	0.000E+00	0.272E+04	0.000E+00	0.000
SA NO.171+86	304.410	306.419	2.009	0.0168	0.0306	0.489E+06	0.114E+08	4.3	0.000E+00	0.596E+05	0.413E+05	0.000
SA NO.170+55	302.190	302.378	0.188	0.0379	0.0307	0.487E+06	0.115E+08	4.2	0.000E+00	0.366E+04	0.000E+00	0.000
SA NO.169	296.690	297.931	1.241	0.0330	0.0308	0.463E+06	0.114E+08	4.0	0.000E+00	0.442E+05	0.000E+00	0.000
SA NO.166	286.790	288.681	1.891	0.0210	0.0258	0.401E+06	0.119E+08	3.4	0.000E+00	0.112E+06	0.000E+00	0.000
SA NO.160+62	272.240	270.813	-1.427	0.0359	0.0262	0.469E+06	0.123E+08	3.8	0.000E+00	-0.123E+06	0.000E+00	0.000

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/20) ***

NAME	ES	EE	DZ	SS	SE	SQS	SQO	C	SQB	SVB	SVO	VOAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	260.498	2.388	0.0217	0.0232	0.382E+06	0.173E+08	3.1	0.000E+00	0.113E+06	0.459E+05	0.000
SA NO.153+50	248.730	250.479	1.749	0.0196	0.0226	0.313E+06	0.124E+08	2.5	0.000E+00	0.125E+06	0.000E+00	0.000
SA NO.148+30	237.520	237.558	0.038	0.0208	0.0245	0.311E+06	0.127E+08	2.5	0.000E+00	0.372E+04	0.000E+00	0.000
SA NO.145	230.350	229.090	-1.260	0.0330	0.0291	0.360E+06	0.130E+08	2.9	0.000E+00	-0.125E+06	0.000E+00	0.000
SA NO.141	216.220	216.621	0.401	0.0302	0.0288	0.363E+06	0.131E+08	2.8	0.000E+00	0.304E+05	0.000E+00	0.000
SA NO.134+10	191.070	192.668	1.598	0.0237	0.0224	0.275E+06	0.133E+08	2.1	0.000E+00	0.161E+06	0.000E+00	0.000
SA NO.128+05	178.080	180.407	2.327	0.0159	0.0188	0.220E+06	0.135E+08	1.6	0.000E+00	0.992E+05	0.000E+00	0.000
SA NO.126+15	173.270	174.736	1.466	0.0193	0.0181	0.195E+06	0.134E+08	1.5	0.000E+00	0.455E+05	0.000E+00	0.000
SA NO.123	167.960	169.754	1.794	0.0168	0.0194	0.872E+05	0.134E+08	0.7	0.000E+00	0.196E+06	0.000E+00	0.000
SA NO.117+67	158.780	159.103	0.323	0.0214	0.0209	0.739E+05	0.137E+08	0.5	0.000E+00	0.242E+05	0.000E+00	0.000
SA NO.113+95	150.340	150.855	0.515	0.0142	0.0151	0.532E+05	0.138E+08	0.4	0.000E+00	0.377E+05	0.000E+00	0.000
SA NO.107+30	141.010	140.875	-0.135	0.0168	0.0165	0.618E+05	0.140E+08	0.4	0.000E+00	-0.157E+05	0.000E+00	0.000
SA NO.102	130.280	130.321	0.041	0.0102	0.0142	0.605E+05	0.143E+08	0.4	0.000E+00	0.247E+04	0.000E+00	0.000
SA NO.100+30	128.620	128.018	-0.602	0.0239	0.0209	0.866E+05	0.143E+08	0.6	0.000E+00	-0.476E+05	0.000E+00	0.000
SAT NO.95	118.080	118.782	0.702	0.0227	0.0229	0.684E+05	0.146E+08	0.5	0.000E+00	0.332E+05	0.000E+00	0.000
SAT NO.92+60	110.740	111.375	0.635	0.0167	0.0178	0.523E+05	0.147E+08	0.4	0.000E+00	0.292E+05	0.000E+00	0.000
SAT NO.84+25	96.860	96.525	-0.334	0.0136	0.0133	0.757E+05	0.151E+08	0.5	0.000E+00	-0.425E+05	0.000E+00	0.000
SAT NO.73	81.250	81.348	0.098	0.0157	0.0157	0.691E+05	0.156E+08	0.4	0.000E+00	0.120E+05	0.000E+00	0.000
SAT NO.68+20	75.220	75.286	0.066	0.0122	0.0117	0.651E+05	0.157E+08	0.4	0.000E+00	0.732E+04	0.000E+00	0.000
SAT NO.61	65.040	65.532	0.492	0.0073	0.0089	0.479E+05	0.166E+08	0.3	0.000E+00	0.311E+05	0.000E+00	0.000
SAT NO.58	62.750	62.745	-0.005	0.0078	0.0089	0.480E+05	0.166E+08	0.3	0.000E+00	-0.131E+03	0.000E+00	0.000
SAT NO.55	60.030	59.653	-0.377	0.0107	0.0105	0.573E+05	0.166E+08	0.3	0.000E+00	-0.168E+05	0.000E+00	0.000
SAT NO.52	56.040	55.755	-0.285	0.0082	0.0082	0.594E+05	0.166E+08	0.4	0.000E+00	-0.387E+04	0.000E+00	0.000
SAT NO.49	53.360	53.065	-0.295	0.0131	0.0102	0.656E+05	0.166E+08	0.4	0.000E+00	-0.114E+05	0.000E+00	0.000
SAT NO.46	49.090	49.745	0.655	0.0074	0.0093	0.507E+05	0.166E+08	0.3	0.000E+00	0.271E+05	0.000E+00	0.000
SAT NO.42	46.120	46.010	-0.110	0.0103	0.0089	0.531E+05	0.166E+08	0.3	0.000E+00	-0.443E+04	0.000E+00	0.000
SAT NO.39	42.230	42.630	0.400	0.0064	0.0082	0.473E+05	0.166E+08	0.3	0.000E+00	0.106E+05	0.000E+00	0.000
SAT NO.36	40.330	40.195	-0.135	0.0098	0.0081	0.493E+05	0.166E+08	0.3	0.000E+00	-0.362E+04	0.000E+00	0.000
SAT NO.33	37.070	37.481	0.411	0.0063	0.0083	0.414E+05	0.166E+08	0.3	0.000E+00	0.144E+05	0.000E+00	0.000
SAT NO.31	35.250	35.082	-0.168	0.0080	0.0093	0.455E+05	0.166E+08	0.3	0.000E+00	-0.750E+04	0.000E+00	0.000
SAT NO.29	32.640	32.028	-0.612	0.0099	0.0069	0.572E+05	0.206E+08	0.3	0.000E+00	-0.213E+05	0.000E+00	0.000
SAT NO.26	28.980	29.460	0.480	0.0035	0.0077	0.464E+05	0.204E+08	0.2	0.000E+00	0.198E+05	0.000E+00	0.000
SAT NO.23	27.690	26.667	-1.023	0.0122	0.0073	0.653E+05	0.204E+08	0.3	0.000E+00	-0.344E+05	0.000E+00	0.000
SAT NO.20	22.890	23.812	0.922	0.0045	0.0061	0.321E+05	0.203E+08	0.2	0.000E+00	0.604E+05	0.000E+00	0.000
SAT NO.17	20.620	20.691	0.071	0.0056	0.0061	0.254E+05	0.201E+08	0.1	0.000E+00	0.121E+05	0.000E+00	0.000
SAT NO.15	18.550	18.429	-0.121	0.0076	0.0072	0.362E+05	0.201E+08	0.2	0.000E+00	-0.196E+05	0.000E+00	0.000
SAT NO.13	15.440	15.491	0.051	0.0064	0.0066	0.320E+05	0.199E+08	0.2	0.000E+00	0.765E+04	0.000E+00	0.000
SAT NO.10	12.340	12.312	-0.028	0.0076	0.0074	0.354E+05	0.200E+08	0.2	0.000E+00	-0.629E+04	0.000E+00	0.000
SAT NO.7	8.420	8.515	0.095	0.0058	0.0059	0.278E+05	0.197E+08	0.1	0.000E+00	0.138E+05	0.000E+00	0.000
SAT NO.4	5.680	5.737	0.057	0.0058	0.0059	0.285E+05	0.197E+08	0.1	0.000E+00	0.169E+05	0.000E+00	0.000
SAT NO.2	3.400	3.436	0.036	0.0049	0.0050	0.136E+05	0.195E+08	0.1	0.000E+00	0.893E+04	0.000E+00	0.000
SAT NO.0	1.620	1.622	0.002	0.0049	0.0050	0.133E+05	0.195E+08	0.1	0.000E+00	0.526E+03	0.000E+00	0.000

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)     *** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/40) ***
  2)    1   24    0    0    2
  3)7
  4) 5000
  5)    2
  6)2
  7)      0.243        3.0        1.3 20.  20.        1.0        2.8       0.55       0.44
  8)      0.040        8.0      0.047     1.E-10        2.0       0.45         10       1.56
  9)4  92
 10)TENG NO.13     1 1003.31  10.88 50.0   0.4 397.        18.                          -900
 11)TENG NO.9+43   1  965.31  10.88 50.0   0.4 323.        18.
 12)TENG NO.6      1  934.63  10.88 50.0   0.4 400.        20.
 13)TENG NO.3      1  905.77  10.88 50.0   0.4 185.        29.                           20
 14)TUN NO.45      2 1000.00   8.81 25.0   1.0 900.        35.                          -900
 15)TUN NO.44      2  887.00   8.81 25.0  1.02000.        35.
 16)TUN NO.43      2  704.33    500. 25.0   1.0 370.        21.
 17)TUN NO.39+65   2  688.70    500. 25.0   1.0 215.        24.
 18)TUN NO.38+85   2  668.72    500. 14.0   1.0 550.        31.
 19)TUN NO.34+55   2  657.24    500. 14.0   1.0 270.        26.
 20)TUN NO.31+95   2  625.20     0.0 14.0  1.01075.        28.
 21)TUN NO.25+20   2  581.02    500.  8.0   1.0 290.        31.
 22)TUN NO.23+70   2  570.32    500.  8.0   1.0 360.        12.
 23)TUN NO.21+30   2  555.16    500.  8.0   1.0 350.        12.
 24)TUN NO.19+20   2  541.06    500. 10.0   1.0 890.        28.
 25)TUN NO.11+65   2  500.93    500.  5.0  1.01165.        23.                           38
 26)SA NO.325      1 1035.27   6.00 50.0   0.6 553.        63.                          -900
 27)SA NO.319+53   1  990.13   6.00 50.0   0.6 491.        78.
 28)SA NO.314      1  953.34   6.00 50.0   0.6 462.        27.
 29)SA NO.307      1  902.80   6.00 50.0   1.0 185.        37.
 30)SA NO.304      1  886.82    500. 50.0   1.0 718.        38.
 31)SA NO.296      1  856.22     0.0 50.0   1.0 102.        28.
 32)SA NO.293+4    1  829.96    500. 50.0   1.0 449.        36.
 33)SA NO.288      1  799.22    500. 50.0   1.0 169.        62.
 34)SA NO.285+84   1  789.68    500. 50.0   1.0 715.       157.
 35)SA NO.277+54   3  754.22    500. 16.0  0.90 245.        74.
 36)SA NO.276+81   3  724.44    500. 16.0  0.90 344.        94.
 37)SA NO.275+20   3  707.90    500. 16.0  0.91 486.       123.
 38)SA NO.266+25   3  678.26    500. 13.0  0.92 342.        75.
 39)SA NO.262+50   3  662.52    500. 13.0  0.92 250.       201.
 40)SA NO.260      3  643.02    500. 11.0  0.93 112.        87.
 41)SA NO.259      3  644.79    500. 14.0  0.93 260.        93.
 42)SA NO.255+48   3  629.19    500. 14.0  0.93 844.       200.
 43)SA NO.247+15   3  586.10    500.  7.0  0.95 712.        96.
 44)SA NO.240      3  551.44    500.  7.0  0.96 657.        98.
 45)SA NO.231+5    3  523.94    500. 16.0 0.971416.        73.
 46)SA NO.213+30   3  460.71    500. 10.0  1.00 154.        63.
 47)SA NO.211+90   4  447.90    500. 15.0  0.76 402.        40.
 48)SA NO.207+25   4  433.30    500.  6.0  0.78 492.        41.
 49)SA NO.201+70   4  416.76    500.  6.0  0.81 559.        68.
 50)SA NO.193+50   4  396.98    500.  6.0  0.84 917.        37.

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

 51)SA NO.186      4  366.44   500. 50.0 0.89 307.      152.
 52)SA NO.183      4  355.59   500. 50.0 0.91 571.       84.
 53)SA NO.178      4  332.90     0.0 50.0 0.94 294.      121.
 54)SA NO.176      4  323.84     0.0 50.0 0.94 463.      208.
 55)SA NO.171+86   4  304.41     0.0 2.10 0.97 132.       99.
 56)SA NO.170+55   4  302.19   500. 1.71 0.98 145.      130.
 57)SA NO.169      4  296.69   500.  5.0 0.98 300.      158.
 58)SA NO.166      5  286.79   500. 2.32 0.71 692.      118.
 59)SA NO.160+62   5  272.24   500. 1.86 0.73 394.      161.
 60)SA NO.157+10   5  258.11   500. 2.39 0.74 432.      114.
 61)SA NO.153+50   5  248.73   500.  3.0 0.75 571.      142.
 62)SA NO.148+30   5  237.52   500.  4.0 0.77 345.      174.
 63)SA NO.145      5  230.35   500.  2.5 0.78 428.      258.
 64)SA NO.141      5  216.72   500. 2.28 0.79 833.      118.
 65)SA NO.134+10   5  191.07   500. 1.83 0.81 548.      145.
 66)SA NO.128+65   5  178.08   500.  4.4 0.83 302.      100.
 67)SA NO.126+15   5  175.27   500.  4.4 0.83 275.      107.
 68)SA NO.123      5  167.96   500.  4.4 0.84 548.      265.
 69)SA NO.117+67   5  158.78   500.  4.4 0.86 394.      156.
 70)SA NO.113+95   5  150.34   500.  4.4 0.87 659.      137.
 71)SA NO.107+30   5  141.01   500.  4.4 0.88 638.      188.
 72)SA NO.102      5  130.28   500.  6.0 0.90 162.      133.
 73)SA NO.100+30   5  128.62   500.  3.0 0.90 441.      265.
 74)SAT NO.95      5  118.08   500.  3.1 0.92 324.      123.
 75)SAT NO.92+60   5  110.74   500. 3.16 0.93 833.       79.
 76)SAT NO.84+25   5   96.86   500. 2.64 0.951145.      130.
 77)SAT NO.73      5   81.25   500. 2.25 0.98 385.      156.
 78)SAT NO.68+20   5   75.22   500. 2.08 0.99 832.      173.
 79)SAT NO.61      6   65.04   500.  2.3 1.00 313.      110.
 80)SAT NO.58      6   62.75   500. 2.90 1.00 348.      108.
 81)SAT NO.55      6   60.03   500. 2.67 1.00 373.      124.
 82)SAT NO.52      6   56.04   500.  2.5 1.00 327.       39.
 83)SAT NO.49      6   53.36   500. 3.42 1.00 325.      119.
 84)SAT NO.46      6   49.09   500. 3.24 1.00 400.      114.
 85)SAT NO.42      6   46.12   500.  3.2 1.00 378.      105.
 86)SAT NO.39      6   42.23   500. 4.10 1.00 297.       78.
 87)SAT NO.36      6   40.33   500. 3.75 1.00 333.       86.
 88)SAT NO.33      6   37.07   500.  3.0 1.00 289.      112.
 89)SAT NO.31      6   35.25   500.  8.0 1.00 327.      146.
 90)SAT NO.29      7   32.64   500.  8.0 1.05 370.      100.
 91)SAT NO.26      7   28.98   500.  8.0 1.04 364.      112.
 92)SAT NO.23      7   27.69   500.  8.0 1.04 393.       89.
 93)SAT NO.20      7   22.89   500.  8.0 1.04 510.      145.
 94)SAT NO.17      7   20.62   500.  8.0 1.03 369.      383.
 95)SAT NO.15      7   18.55   500.  8.0 1.03 407.      419.
 96)SAT NO.13      7   15.44   500.  8.0 1.02 482.      333.
 97)SAT NO.10      7   12.34   500.  8.0 1.02 513.      453.
 98)SAT NO.7       7    8.42   500. 0.85 1.01 471.      296.
 99)SAT NO.4       7    5.68   500.  1.0 1.01 390.      690.
100)SAT NO.2       7    3.40   500. 1.27 1.00 361.      664.

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

101)SAT NO.0       7    1.62   500. 1.24 1.00 301.       684.
102)5   7
103)    00   1R
104)    1          12.0       14.0       17.0       23.0       58.0      479.0      272.0
105)               48.0       27.0       20.0       16.0       13.0       11.0       10.0
106)                9.0        8.0        7.0        7.0
107)    2          5.0        6.0        7.0        9.0       18.0      182.0      127.0
108)               25.0       13.0        9.0        7.0        6.0        5.0        4.0
109)                4.0        4.0        3.0        3.0
110)    3          14.0       16.0       20.0       26.0       49.0      616.0      752.0
111)              346.0      182.0      116.0       81.0       65.0       55.0       47.0
112)               42.0       38.0       34.0       32.0
113)    4          18.0       21.0       26.0       35.0       57.0      845.0     1178.0
114)              505.0      259.0      161.0      114.0       90.0       75.0       65.0
115)               57.0       51.0       47.0       43.0
116)    5          17.0       20.0       24.0       32.0       46.0      760.0     1931.0
117)              978.0      489.0      292.0      200.0      149.0      122.0      104.0
118)               90.0       81.0       73.0       66.0
119)    6          16.0       19.0       23.0       30.0       44.0      639.0     1947.0
120)             1054.0      523.0      308.0      211.0      155.0      126.0      107.0
121)               93.0       83.0       75.0       68.0
122)    7          15.0       17.0       21.0       27.0       37.0      302.0     2252.0
123)             1544.0      737.0      419.0      283.0      207.0      166.0      139.0
124)              121.0      107.0       96.0       87.0
125)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/40) ***

NAME	ES (EL.M)	EE (EL.M)	DZ (M)	SS	SF	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VOAM (M3)
TENG NO.13	1003.310	992.430	-10.880	0.1008	0.1008	0.427E+05	0.159E+07	2.7	0.000E+00	-0.777E+05	0.000E+00	0.000
TENG NO.9+43	963.310	952.430	-10.880	0.0884	0.0872	0.815E+05	0.166E+07	4.9	0.000E+00	-0.704E+05	0.000E+00	0.000
TENG NO.6	934.630	924.272	-10.358	0.0721	0.0443	0.123E+06	0.172E+07	7.1	0.000E+00	-0.747E+05	0.000E+00	0.000
TENG NO.3	905.770	906.569	0.799	0.0161	0.0528	0.119E+06	0.171E+07	6.9	0.000E+00	0.697E+04	0.000E+00	0.000
TUN NO.45	1000.000	991.190	-8.810	0.1256	0.1256	0.153E+06	0.185E+07	8.2	0.000E+00	-0.277E+06	0.000E+00	0.000
TUN NO.44	887.000	878.190	-8.810	0.0913	0.0820	0.398E+06	0.230E+07	17.3	0.000E+00	-0.447E+06	0.000E+00	0.000
TUN NO.43	704.330	714.134	9.804	0.0422	0.0593	0.264E+06	0.203E+07	13.0	0.000E+00	0.245E+06	0.000E+00	0.000
TUN NO.39+65	688.700	692.200	3.500	0.0929	0.0617	0.250E+06	0.201E+07	12.5	0.000E+00	0.247E+05	0.000E+00	0.000
TUN NO.38+85	666.720	678.926	10.206	0.0572	0.0603	0.183E+06	0.188E+07	9.7	0.000E+00	0.121E+06	0.000E+00	0.000
TUN NO.34-35	637.240	645.740	8.500	0.0446	0.0561	0.133E+06	0.180E+07	7.4	0.000E+00	0.909E+05	0.000E+00	0.000
TUN NO.31+95	625.200	630.607	5.407	0.0411	0.0454	0.768E+05	0.170E+07	4.5	0.000E+00	0.102E+06	0.000E+00	0.000
TUN NO.25+20	581.020	581.789	0.769	0.0369	0.0416	0.475E+05	0.168E+07	4.0	0.000E+00	0.170E+05	0.000E+00	0.000
TUN NO.23-70	570.320	569.723	-0.597	0.0421	0.0415	0.687E+05	0.169E+07	4.1	0.000E+00	-0.220E+04	0.000E+00	0.000
TUN NO.21-30	555.160	554.787	-0.373	0.0403	0.0417	0.695E+05	0.169E+07	4.1	0.000E+00	-0.148E+04	0.000E+00	0.000
TUN NO.19+20	541.060	540.190	-0.870	0.0451	0.0433	0.776E+05	0.170E+07	4.6	0.000E+00	-0.148E+05	0.000E+00	0.000
TUN NO.11+65	500.930	501.640	0.710	0.0455	0.0392	0.683E+05	0.169E+07	4.1	0.000E+00	0.170E+05	0.000E+00	0.000
SA NO.325	1035.270	1029.270	-6.000	0.0816	0.0816	0.115E+06	0.248E+07	4.6	0.000E+00	-0.209E+06	0.000E+00	0.000
SA NO.319+53	990.130	984.130	-6.000	0.0749	0.0749	0.249E+06	0.272E+07	9.1	0.000E+00	-0.244E+06	0.000E+00	0.000
SA NO.314	953.340	947.340	-6.000	0.1049	0.1049	0.292E+06	0.273E+07	10.7	0.000E+00	-0.787E+05	0.000E+00	0.000
SA NO.307 *	902.800	896.800	-6.000	0.0864	0.1544	0.452E+06	0.453E+07	10.0	0.119E+06	-0.739E+05	0.000E+00	0.000
SA NO.304	886.820	868.233	-18.587	0.0705	0.0446	0.627E+06	0.489E+07	12.8	0.000E+00	-0.318E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.1451	0.627E+06	0.477E+07	13.1	0.000E+00	0.108E+03	0.000E+00	0.000
SA NO.293+4	829.960	822.436	-7.524	0.0685	0.0641	0.667E+06	0.495E+07	13.5	0.000E+00	-0.743E+05	0.000E+00	0.000
SA NO.288	799.220	793.659	-5.561	0.0564	0.0641	0.726E+06	0.507E+07	14.3	0.000E+00	-0.106E+06	0.000E+00	0.000
SA NO.285+84	789.680	782.830	-6.850	0.0764	0.0760	0.986E+06	0.553E+07	17.8	0.000E+00	-0.473E+06	0.000E+00	0.000
SA NO.277+34	734.220	728.445	-7.755	0.0481	0.0561	0.114E+07	0.102E+08	11.1	0.000E+00	-0.274E+06	0.000E+00	0.000
SA NO.276-81	724.440	719.631	-4.809	0.0481	0.0432	0.121E+07	0.103E+08	11.7	0.000E+00	-0.132E+06	0.000E+00	0.000
SA NO.273+20	707.900	704.755	-3.145	0.0410	0.0490	0.130E+07	0.106E+08	12.3	0.000E+00	-0.159E+06	0.000E+00	0.000
SA NO.266+25	678.260	680.939	2.679	0.0460	0.0522	0.125E+07	0.106E+08	11.8	0.000E+00	0.840E+05	0.000E+00	0.000
SA NO.262-50	662.520	663.042	0.522	0.0780	0.0494	0.123E+07	0.105E+08	11.7	0.000E+00	0.356E+05	0.000E+00	0.000
SA NO.260	643.020	650.611	7.591	0.0158	0.0553	0.116E+07	0.105E+08	11.1	0.000E+00	0.120E+06	0.000E+00	0.000
SA NO.259	644.790	644.419	-0.371	0.0557	0.0518	0.117E+07	0.105E+08	11.1	0.000E+00	-0.618E+04	0.000E+00	0.000
SA NO.255+48	629.190	629.924	0.734	0.0511	0.0497	0.112E+07	0.104E+08	10.7	0.000E+00	0.862E+05	0.000E+00	0.000
SA NO.247+15	586.100	587.987	1.887	0.0487	0.0476	0.104E+07	0.105E+08	9.9	0.000E+00	0.143E+06	0.000E+00	0.000
SA NO.240	551.440	554.069	2.629	0.0419	0.0458	0.944E+06	0.104E+08	9.1	0.000E+00	0.179E+06	0.000E+00	0.000
SA NO.231+5	523.940	524.010	0.070	0.0447	0.0442	0.940E+06	0.105E+08	9.0	0.000E+00	0.646E+04	0.000E+00	0.000
SA NO.213+30	460.710	461.414	0.704	0.0932	0.0357	0.921E+06	0.107E+08	8.6	0.000E+00	0.356E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	455.919	8.019	0.0363	0.0435	0.940E+06	0.116E+08	8.1	0.683E+05	0.894E+05	0.000E+00	0.000
SA NO.207+25	433.300	438.446	5.146	0.0334	0.0394	0.888E+06	0.118E+08	7.5	0.000E+00	0.946E+05	0.000E+00	0.000
SA NO.201+70	416.760	419.059	2.299	0.0354	0.0361	0.842E+06	0.121E+08	7.0	0.000E+00	0.828E+05	0.000E+00	0.000
SA NO.193+50	396.980	398.885	1.905	0.0333	0.0371	0.814E+06	0.125E+08	6.5	0.000E+00	0.524E+05	0.000E+00	0.000
SA NO.186	366.440	364.859	-1.581	0.0353	0.0347	0.894E+06	0.133E+08	6.7	0.000E+00	-0.145E+06	0.000E+00	0.000
SA NO.183	355.590	354.195	-1.395	0.0397	0.0350	0.922E+06	0.136E+08	6.8	0.000E+00	-0.509E+05	0.000E+00	0.000
SA NO.178	332.900	334.186	1.286	0.0308	0.0336	0.884E+06	0.139E+08	6.4	0.000E+00	0.681E+05	0.000E+00	0.000
SA NO.174	323.840	324.309	0.469	0.0420	0.0384	0.863E+06	0.134E+08	6.5	0.000E+00	0.377E+05	0.000E+00	0.000
SA NO.171+86	304.410	306.510	2.100	0.0168	0.0276	0.683E+06	0.139E+08	4.9	0.000E+00	0.620E+05	0.265E+06	0.000
SA NO.170+55	302.190	302.872	0.682	0.0379	0.0302	0.677E+06	0.140E+08	4.8	0.000E+00	0.126E+05	0.000E+00	0.000
SA NO.169	296.490	298.490	1.800	0.0330	0.0333	0.641E+06	0.140E+08	4.6	0.000E+00	0.638E+05	0.000E+00	0.000
SA NO.166	286.790	288.513	1.723	0.0210	0.0261	0.570E+06	0.150E+08	3.8	0.000E+00	0.102E+06	0.245E+05	0.000
SA NO.160+42	272.240	270.479	-1.761	0.0350	0.0254	0.654E+06	0.155E+08	4.2	0.000E+00	-0.152E+06	0.000E+00	0.000

K.MUJUK SEDIMENT RUNOFF ANALYSIS (1/40)

NAME	ES	EE	DZ	SS	SE	SQS	SQO	C	SQB	SVB	SVO	VOAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	260.476	2.366	0.0217	0.0234	0.536E+06	0.155E+08	3.5	0.000E+00	0.112E+06	0.102E+06	0.000
SA NO.153+50	244.730	250.350	1.621	0.0196	0.0239	0.473E+06	0.156E+08	3.0	0.000E+00	0.116E+06	0.000E+00	0.000
SA NO.148+30	237.520	236.692	-0.828	0.0208	0.0251	0.509E+06	0.160E+08	3.2	0.000E+00	-0.655E+05	0.000E+00	0.000
SA NO.145	230.350	228.036	-2.314	0.0330	0.0274	0.635E+06	0.165E+08	3.9	0.000E+00	-0.230E+06	0.000E+00	0.000
SA NO.141	216.220	216.309	0.089	0.0302	0.0281	0.631E+06	0.166E+08	3.8	0.000E+00	0.723E+04	0.000E+00	0.000
SA NO.134+10	191.070	192.900	1.830	0.0237	0.0206	0.467E+06	0.168E+08	2.8	0.000E+00	0.184E+06	0.114E+06	0.000
SA NO.128+65	178.080	181.590	3.510	0.0159	0.0178	0.385E+06	0.170E+08	2.3	0.000E+00	0.149E+06	0.000E+00	0.000
SA NO.126+15	174.270	176.225	2.955	0.0193	0.0169	0.335E+06	0.169E+08	2.0	0.000E+00	0.915E+05	0.000E+00	0.000
SA NO.123	167.960	171.579	3.619	0.0168	0.0217	0.117E+06	0.167E+08	0.7	0.000E+00	0.395E+06	0.000E+00	0.000
SA NO.117+67	158.780	159.700	0.920	0.0214	0.0243	0.796E+05	0.170E+08	0.5	0.000E+00	0.682E+05	0.000E+00	0.000
SA NO.113+95	150.340	150.131	-0.209	0.0142	0.0137	0.876E+05	0.172E+08	0.5	0.000E+00	-0.145E+05	0.000E+00	0.000
SA NO.107+30	141.010	141.084	0.074	0.0168	0.0168	0.823E+05	0.174E+08	0.5	0.000E+00	0.976E+04	0.000E+00	0.000
SA NO.102	130.280	130.356	0.076	0.0102	0.0147	0.799E+05	0.178E+08	0.4	0.000E+00	0.437E+04	0.000E+00	0.000
SA NO.100+30	128.620	127.970	-0.650	0.0239	0.0202	0.108E+06	0.178E+08	0.6	0.000E+00	-0.515E+05	0.000E+00	0.000
SAT NO.95	118.080	119.044	0.964	0.0227	0.0223	0.832E+05	0.182E+08	0.5	0.000E+00	0.456E+05	0.000E+00	0.000
SAT NO.92+60	110.740	111.835	1.095	0.0167	0.0186	0.555E+05	0.184E+08	0.3	0.000E+00	0.502E+05	0.000E+00	0.000
SAT NO.84+25	96.860	96.305	-0.555	0.0136	0.0129	0.945E+05	0.188E+08	0.5	0.000E+00	-0.704E+05	0.000E+00	0.000
SAT NO.73	81.250	81.567	0.317	0.0157	0.0169	0.734E+05	0.194E+08	0.4	0.000E+00	0.383E+05	0.000E+00	0.000
SAT NO.68+20	76.220	75.075	-0.145	0.0122	0.0113	0.816E+05	0.196E+08	0.4	0.000E+00	-0.149E+05	0.000E+00	0.000
SAT NO.61	65.040	65.633	0.593	0.0073	0.0091	0.610E+05	0.199E+08	0.3	0.000E+00	0.375E+05	0.000E+00	0.000
SAT NO.58	62.750	62.787	0.037	0.0078	0.0091	0.603E+05	0.199E+08	0.3	0.000E+00	0.139E+04	0.000E+00	0.000
SAT NO.55	60.030	59.631	-0.399	0.0107	0.0104	0.700E+05	0.199E+08	0.4	0.000E+00	-0.178E+05	0.000E+00	0.000
SAT NO.52	56.040	55.746	-0.294	0.0082	0.0082	0.722E+05	0.199E+08	0.4	0.000E+00	-0.398E+04	0.000E+00	0.000
SAT NO.49	53.360	53.051	-0.309	0.0131	0.0101	0.787E+05	0.200E+08	0.4	0.000E+00	-0.119E+05	0.000E+00	0.000
SAT NO.46	49.090	49.776	0.686	0.0074	0.0093	0.631E+05	0.199E+08	0.3	0.000E+00	0.284E+05	0.000E+00	0.000
SAT NO.42	46.120	46.041	-0.079	0.0103	0.0089	0.648E+05	0.199E+08	0.3	0.000E+00	-0.315E+04	0.000E+00	0.000
SAT NO.39	42.230	42.662	0.432	0.0064	0.0082	0.586E+05	0.199E+08	0.3	0.000E+00	0.114E+05	0.000E+00	0.000
SAT NO.36	40.330	40.218	-0.112	0.0098	0.0082	0.602E+05	0.199E+08	0.3	0.000E+00	-0.299E+04	0.000E+00	0.000
SAT NO.33	37.070	37.487	0.417	0.0063	0.0084	0.522E+05	0.199E+08	0.3	0.000E+00	0.146E+05	0.000E+00	0.000
SAT NO.31	35.250	35.055	-0.195	0.0080	0.0094	0.570E+05	0.199E+08	0.3	0.000E+00	-0.872E+04	0.000E+00	0.000
SAT NO.29	32.640	31.988	-0.652	0.0099	0.0049	0.695E+05	0.249E+08	0.3	0.000E+00	-0.227E+05	0.000E+00	0.000
SAT NO.26	28.980	29.441	0.461	0.0035	0.0076	0.590E+05	0.247E+08	0.2	0.000E+00	0.190E+05	0.000E+00	0.000
SAT NO.23	27.690	26.679	-1.011	0.0122	0.0071	0.777E+05	0.247E+08	0.3	0.000E+00	-0.340E+05	0.000E+00	0.000
SAT NO.20	22.890	23.884	0.994	0.0045	0.0062	0.419E+05	0.247E+08	0.2	0.000E+00	0.652E+05	0.000E+00	0.000
SAT NO.17	20.620	20.706	0.086	0.0056	0.0062	0.339E+05	0.244E+08	0.1	0.000E+00	0.145E+05	0.000E+00	0.000
SAT NO.15	18.550	18.406	-0.144	0.0070	0.0071	0.467E+05	0.244E+08	0.2	0.000E+00	-0.233E+05	0.000E+00	0.000
SAT NO.13	15.440	15.500	0.060	0.0064	0.0066	0.410E+05	0.242E+08	0.2	0.000E+00	0.485E+04	0.000E+00	0.000
SAT NO.10	12.340	12.306	-0.034	0.0070	0.0073	0.461E+05	0.242E+08	0.2	0.000E+00	-0.764E+04	0.000E+00	0.000
SAT NO.7	8.420	8.539	0.119	0.0058	0.0059	0.365E+05	0.239E+08	0.2	0.000E+00	0.174E+05	0.000E+00	0.000
SAT NO.4	5.680	5.748	0.068	0.0058	0.0059	0.254E+05	0.239E+08	0.1	0.000E+00	0.201E+05	0.000E+00	0.000
SAT NO.2	3.400	3.445	0.045	0.0049	0.0050	0.192E+05	0.237E+08	0.1	0.000E+00	0.113E+05	0.000E+00	0.000
SAT NO.0	1.620	1.622	0.002	0.0049	0.0050	0.188E+05	0.237E+08	0.1	0.000E+00	0.621E+03	0.000E+00	0.000

```
LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

  1)      ***  K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/70) ***
  2)    1   24    0    0    2
  3)5   7
  4)   60   1A
  5)    1          13.0      16.0      19.0      26.0      65.0     530.0     290.0
  6)               53.0      30.0      22.0      17.0      14.0      12.0      11.0
  7)               10.0       9.0       8.0       8.0
  8)    2           5.0       6.0       6.0      10.0      20.0     199.0     137.0
  9)               27.0      14.0      10.0       8.0       6.0       6.0       5.0
 10)                4.0       4.0       4.0       3.0
 11)    3          15.0      18.0      22.0      29.0      56.0     727.0     922.0
 12)              408.0     209.0     131.0      95.0      77.0      65.0      57.0
 13)               51.0      46.0      42.0      38.0
 14)    4          20.0      24.0      29.0      39.0      65.0    1001.0    1403.0
 15)              588.0     293.0     180.0     129.0     104.0      88.0      76.0
 16)               67.0      61.0      55.0      51.0
 17)    5          19.0      22.0      27.0      36.0      53.0     928.0    2253.0
 18)             1108.0     541.0     324.0     220.0     168.0     138.0     116.0
 19)              103.0      92.0      83.0      76.0
 20)    6          18.0      21.0      26.0      34.0      49.0     770.0    2256.0
 21)             1208.0     598.0     347.0     233.0     175.0     143.0     121.0
 22)              105.0      94.0      85.0      78.0
 23)    7          17.0      20.0      24.0      30.0      42.0     363.0    2541.0
 24)             1735.0     903.0     523.0     333.0     238.0     189.0     157.0
 25)              135.0     120.0     109.0     100.0
 26)8
 27)   1
 28)  19.04
 29)   2
 30)  19.04
 31)   3
 32)  19.04
 33)   4
 34)  19.04
 35)   5
 36)  15.41
 37)   6
 38)  15.41
 39)  16
 40)  10.49
 41)  17
 42)  10.49
 43)  18
 44)  10.49
 45)  19
 46)  10.49
 47)  20
 48)  10.49
 49) -10
 50)9

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0

LINE....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0....5....0
```

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/70) ***

NAME	ES (EL.M)	EE (EL.M)	DZ (M)	SS	SE	SQS (M3)	SQO (M3)	C (%)	SQB (M3)	SVB (M3)	SVO (M3)	VDAM (M3)
TENG NO.13	1003.310	984.270	-19.040	0.1006	0.1008	0.748E+05	0.179E+07	4.2	0.000E+00	-0.136E+06	0.000E+00	0.000
TENG NO.9+43	963.310	944.270	-19.040	0.0888	0.0635	0.143E+06	0.191E+07	7.5	0.000E+00	-0.123E+06	0.000E+00	0.000
TENG NO.6	934.030	923.774	-10.256	0.0721	0.0514	0.184E+06	0.198E+07	9.4	0.000E+00	-0.782E+05	0.000E+00	0.000
TENG NO.3	905.770	903.230	-2.540	0.0161	0.0590	0.197E+06	0.200E+07	9.9	0.000E+00	-0.213E+05	0.000E+00	0.000
TUN NO.45	1000.000	984.590	-15.410	0.1256	0.1256	0.267E+06	0.220E+07	12.1	0.000E+00	-0.485E+06	0.000E+00	0.000
TUN NO.44	887.000	871.590	-15.410	0.0913	0.0773	0.697E+06	0.298E+07	23.4	0.000E+00	-0.782E+06	0.000E+00	0.000
TUN NO.43	704.330	717.003	12.673	0.0422	0.0584	0.523E+06	0.265E+07	19.7	0.000E+00	0.316E+06	0.000E+00	0.000
TUN NO.39+65	688.700	695.377	6.677	0.0929	0.0600	0.497E+06	0.260E+07	19.1	0.000E+00	0.471E+05	0.000E+00	0.000
TUN NO.38-85	668.720	682.478	13.758	0.0572	0.0581	0.370E+06	0.237E+07	15.6	0.000E+00	0.163E+06	0.663E+05	0.000
TUN NO.34-35	637.240	650.549	13.309	0.0446	0.0555	0.292E+06	0.223E+07	13.1	0.000E+00	0.142E+06	0.000E+00	0.000
TUN NO.31+95	625.200	635.568	10.368	0.0411	0.0486	0.185E+06	0.204E+07	9.1	0.000E+00	0.196E+06	0.000E+00	0.000
TUN NO.25+20	581.020	583.323	2.303	0.0369	0.0449	0.157E+06	0.199E+07	7.9	0.000E+00	0.494E+05	0.000E+00	0.000
TUN NO.23-70	570.320	570.299	-0.021	0.0421	0.0426	0.157E+06	0.199E+07	7.9	0.000E+00	0.505E+02	0.000E+00	0.000
TUN NO.21-30	555.160	554.978	-0.182	0.0403	0.0428	0.158E+06	0.199E+07	7.9	0.000E+00	-0.683E+03	0.000E+00	0.000
TUN NO.19+20	541.060	539.987	-1.073	0.0451	0.0425	0.168E+06	0.201E+07	8.4	0.000E+00	-0.182E+05	0.000E+00	0.000
TUN NO.11+65	500.930	502.196	1.266	0.0455	0.0391	0.151E+06	0.198E+07	7.6	0.000E+00	0.301E+05	0.000E+00	0.000
SA NO.325	1035.270	1024.780	-10.490	0.0816	0.0816	0.201E+06	0.286E+07	7.0	0.000E+00	-0.365E+06	0.000E+00	0.000
SA NO.319+53	990.130	979.640	-10.490	0.0749	0.0749	0.435E+06	0.328E+07	13.3	0.000E+00	-0.427E+06	0.000E+00	0.000
SA NO.314	953.340	942.850	-10.490	0.1049	0.1049	0.511E+06	0.338E+07	15.1	0.000E+00	-0.138E+06	0.000E+00	0.000
SA NO.307 *	902.800	892.310	-10.490	0.0864	0.1903	0.780E+06	0.552E+07	14.1	0.197E+06	-0.129E+06	0.000E+00	0.000
SA NO.304	886.820	857.098	-29.722	0.0705	0.0291	0.106E+07	0.607E+07	17.5	0.000E+00	-0.510E+06	0.000E+00	0.000
SA NO.296	836.220	836.220	0.000	0.0614	0.2205	0.106E+07	0.570E+07	18.6	0.000E+00	0.117E+03	0.000E+00	0.000
SA NO.293+4	829.960	813.728	-16.232	0.0685	0.0386	0.115E+07	0.622E+07	18.5	0.000E+00	-0.161E+06	0.000E+00	0.000
SA NO.288	799.220	796.380	-2.839	0.0564	0.0470	0.118E+07	0.627E+07	18.8	0.000E+00	-0.539E+05	0.000E+00	0.000
SA NO.285+84	789.680	788.432	-1.248	0.0748	0.0673	0.129E+07	0.634E+07	19.3	0.000E+00	-0.848E+05	0.000E+00	0.000
SA NO.277+34	736.220	740.306	4.086	0.0481	0.0466	0.114E+07	0.117E+08	9.8	0.000E+00	0.146E+06	0.000E+00	0.000
SA NO.276-81	724.440	728.899	4.459	0.0481	0.0553	0.108E+07	0.116E+08	9.3	0.000E+00	0.124E+06	0.000E+00	0.000
SA NO.273+20	707.900	709.889	1.989	0.0610	0.0549	0.102E+07	0.116E+08	8.8	0.000E+00	0.104E+06	0.000E+00	0.000
SA NO.266+25	678.260	683.215	4.955	0.0460	0.0564	0.933E+06	0.116E+08	8.1	0.000E+00	0.155E+06	0.000E+00	0.000
SA NO.262-50	662.520	663.943	1.423	0.0780	0.0480	0.886E+06	0.115E+08	7.7	0.000E+00	0.865E+05	0.000E+00	0.000
SA NO.260	643.020	651.937	8.918	-0.0158	0.0590	0.808E+06	0.114E+08	7.1	0.000E+00	0.141E+06	0.000E+00	0.000
SA NO.259	644.790	645.335	0.545	0.0557	0.0529	0.802E+06	0.114E+08	7.0	0.000E+00	0.106E+05	0.000E+00	0.000
SA NO.255+48	629.190	630.522	1.332	0.0511	0.0508	0.718E+06	0.113E+08	6.4	0.000E+00	0.153E+06	0.000E+00	0.000
SA NO.247+15	586.100	587.616	1.516	0.0487	0.0480	0.654E+06	0.114E+08	5.8	0.000E+00	0.116E+06	0.000E+00	0.000
SA NO.240	551.440	553.436	1.996	0.0414	0.0452	0.579E+06	0.114E+08	5.1	0.000E+00	0.137E+06	0.000E+00	0.000
SA NO.231+5	523.940	523.747	-0.193	0.0447	0.0439	0.586E+06	0.115E+08	5.1	0.000E+00	-0.126E+05	0.000E+00	0.000
SA NO.213+30	460.710	461.625	0.915	0.0832	0.0325	0.561E+06	0.118E+08	4.8	0.000E+00	0.461E+05	0.000E+00	0.000
SA NO.211+90 *	447.900	456.615	8.715	0.0363	0.0445	0.659E+06	0.128E+08	5.1	0.151E+06	0.971E+05	0.000E+00	0.000
SA NO.207+25	433.300	438.707	5.407	0.0336	0.0404	0.604E+06	0.130E+08	4.6	0.000E+00	0.994E+05	0.000E+00	0.000
SA NO.201+70	414.760	418.813	2.053	0.0354	0.0359	0.563E+06	0.134E+08	4.2	0.000E+00	0.740E+05	0.000E+00	0.000
SA NO.193+50	398.980	398.768	1.788	0.0333	0.0369	0.536E+06	0.138E+08	3.9	0.000E+00	0.493E+05	0.000E+00	0.000
SA NO.186	366.440	364.949	-1.491	0.0353	0.0341	0.611E+06	0.147E+08	4.2	0.000E+00	-0.137E+06	0.000E+00	0.000
SA NO.183	355.590	354.468	-1.122	0.0397	0.0360	0.634E+06	0.151E+08	4.2	0.000E+00	-0.408E+05	0.000E+00	0.000
SA NO.178	332.900	333.883	0.983	0.0306	0.0341	0.605E+06	0.155E+08	3.9	0.000E+00	0.523E+05	0.000E+00	0.000
SA NO.176	323.840	323.848	0.008	0.0420	0.0375	0.604E+06	0.151E+08	4.0	0.000E+00	0.107E+04	0.000E+00	0.000
SA NO.171+86	304.410	306.505	2.095	0.0168	0.0306	0.533E+06	0.158E+08	3.4	0.000E+00	0.619E+05	0.681E+05	0.000
SA NO.170+55	302.190	302.462	0.272	0.0379	0.0311	0.530E+06	0.160E+08	3.3	0.000E+00	0.522E+04	0.000E+00	0.000
SA NO.169	294.690	297.951	1.261	0.0330	0.0299	0.505E+06	0.159E+08	3.2	0.000E+00	0.449E+05	0.000E+00	0.000
SA NO.166	284.790	288.967	2.177	0.0210	0.0264	0.311E+06	0.166E+08	1.9	0.000E+00	0.128E+06	0.225E+06	0.000
SA NO.160+62	272.240	270.693	-1.547	0.0359	0.0261	0.385E+06	0.172E+08	2.2	0.000E+00	-0.134E+06	0.000E+00	0.000

*** K.MUJUR SEDIMENT RUNOFF ANALYSIS (1/70) ***

NAME	ES	FE	DZ	SS	SE	SQS	SQO	C	SQB	SVB	SVO	VDAM
	(EL.M)	(EL.M)	(M)			(M3)	(M3)	(%)	(M3)	(M3)	(M3)	(M3)
SA NO.157+10	258.110	260.428	2.316	0.0217	0.0248	0.30AE+06	0.173E+08	1.8	0.000E+00	0.110E+06	0.297E+05	0.000
SA NO.153+50	248.730	249.704	0.974	0.0196	0.0229	0.269E+06	0.175E+08	1.5	0.000E+00	0.699E+05	0.000E+00	0.000
SA NO.148+30	237.520	236.630	-0.890	0.0208	0.0244	0.30AE+06	0.180E+08	1.7	0.000E+00	-0.703E+05	0.000E+00	0.000
SA NO.145	230.350	228.201	-2.149	0.0330	0.0276	0.425E+06	0.184E+08	2.3	0.000E+00	-0.214E+06	0.000E+00	0.000
SA NO.141	216.220	216.369	0.149	0.0302	0.0282	0.419E+06	0.186E+08	2.3	0.000E+00	0.117E+05	0.000E+00	0.000
SA NO.134+10	191.070	192.900	1.830	0.0237	0.0221	0.314E+06	0.189E+08	1.7	0.000E+00	0.184E+06	0.709E+04	0.000
SA NO.128+65	178.080	180.804	2.724	0.0159	0.0192	0.250E+06	0.193E+08	1.3	0.000E+00	0.116E+06	0.000E+00	0.000
SA NO.126+15	173.270	175.003	1.733	0.0193	0.0186	0.221E+06	0.192E+08	1.1	0.000E+00	0.53AE+05	0.000E+00	0.000
SA NO.123	167.960	169.898	1.938	0.0168	0.0196	0.104E+06	0.192E+08	0.5	0.000E+00	0.212E+06	0.000E+00	0.000
SA NO.117+67	158.780	159.154	0.374	0.0214	0.0232	0.884E+05	0.196E+08	0.5	0.000E+00	0.281E+05	0.000E+00	0.000
SA NO.113+95	150.340	150.019	-0.321	0.0142	0.0135	0.101E+06	0.199E+08	0.5	0.000E+00	-0.226E+05	0.000E+00	0.000
SA NO.107+30	141.010	141.106	0.096	0.0165	0.0163	0.940E+05	0.201E+08	0.5	0.000E+00	0.125E+05	0.000E+00	0.000
SA NO.102	130.280	130.694	0.414	0.0102	0.0147	0.816E+05	0.205E+08	0.4	0.000E+00	0.225E+05	0.000E+00	0.000
SA NO.100+30	128.620	128.308	-0.312	0.0239	0.0223	0.950E+05	0.205E+08	0.5	0.000E+00	-0.243E+05	0.000E+00	0.000
SAT NO.95	118.080	118.460	0.380	0.0227	0.0212	0.850E+05	0.210E+08	0.4	0.000E+00	0.181E+05	0.000E+00	0.000
SAT NO.92+60	110.740	111.582	0.842	0.0167	0.0185	0.63AE+05	0.212E+08	0.3	0.000E+00	0.387E+05	0.000E+00	0.000
SAT NO.84+25	96.860	96.212	-0.648	0.0136	0.0128	0.109E+06	0.217E+08	0.5	0.000E+00	-0.827E+05	0.000E+00	0.000
SAT NO.73	81.250	81.588	0.338	0.0157	0.0169	0.86AE+05	0.223E+08	0.4	0.000E+00	0.407E+05	0.000E+00	0.000
SAT NO.68+20	75.220	75.077	-0.143	0.0122	0.0113	0.949E+05	0.226E+08	0.4	0.000E+00	-0.147E+05	0.000E+00	0.000
SAT NO.61	65.040	65.681	0.641	0.0073	0.0092	0.726E+05	0.230E+08	0.3	0.000E+00	0.406E+05	0.000E+00	0.000
SAT NO.58	62.750	62.810	0.060	0.0078	0.0092	0.714E+05	0.230E+08	0.3	0.000E+00	0.218E+04	0.000E+00	0.000
SAT NO.55	60.030	59.618	-0.412	0.0107	0.0104	0.815E+05	0.230E+08	0.4	0.000E+00	-0.184E+05	0.000E+00	0.000
SAT NO.52	56.040	55.748	-0.292	0.0082	0.0083	0.637E+05	0.230E+08	0.4	0.000E+00	-0.396E+04	0.000E+00	0.000
SAT NO.49	53.360	53.043	-0.317	0.0131	0.0100	0.904E+05	0.230E+08	0.4	0.000E+00	-0.122E+05	0.000E+00	0.000
SAT NO.46	49.090	49.798	0.708	0.0074	0.0093	0.743E+05	0.230E+08	0.3	0.000E+00	0.293E+05	0.000E+00	0.000
SAT NO.42	46.120	46.069	-0.051	0.0103	0.0089	0.754E+05	0.230E+08	0.3	0.000E+00	-0.201E+04	0.000E+00	0.000
SAT NO.39	42.230	42.691	0.461	0.0064	0.0083	0.687E+05	0.230E+08	0.3	0.000E+00	0.122E+05	0.000E+00	0.000
SAT NO.36	40.330	40.240	-0.090	0.0098	0.0082	0.700E+05	0.230E+08	0.3	0.000E+00	-0.239E+04	0.000E+00	0.000
SAT NO.33	37.070	37.496	0.426	0.0063	0.0085	0.61AE+05	0.230E+08	0.3	0.000E+00	0.149E+05	0.000E+00	0.000
SAT NO.31	35.250	35.040	-0.210	0.0080	0.0095	0.670E+05	0.230E+08	0.3	0.000E+00	-0.940E+04	0.000E+00	0.000
SAT NO.29	32.640	31.945	-0.695	0.0099	0.0068	0.803E+05	0.287E+08	0.3	0.000E+00	-0.242E+05	0.000E+00	0.000
SAT NO.26	29.980	29.427	0.447	0.0035	0.0075	0.702E+05	0.284E+08	0.2	0.000E+00	0.184E+05	0.000E+00	0.000
SAT NO.23	27.690	26.698	-0.992	0.0122	0.0070	0.485E+05	0.265E+08	0.3	0.000E+00	-0.334E+05	0.000E+00	0.000
SAT NO.20	22.890	23.938	1.048	0.0045	0.0063	0.507E+05	0.284E+08	0.2	0.000E+00	0.687E+05	0.000E+00	0.000
SAT NO.17	20.620	20.719	0.099	0.0056	0.0043	0.415E+05	0.281E+08	0.1	0.000E+00	0.168E+05	0.000E+00	0.000
SAT NO.15	18.550	18.389	-0.161	0.0076	0.0071	0.55AE+05	0.282E+08	0.2	0.000E+00	-0.261E+05	0.000E+00	0.000
SAT NO.13	15.440	15.504	0.064	0.0064	0.0066	0.506E+05	0.279E+08	0.2	0.000E+00	0.957E+04	0.000E+00	0.000
SAT NO.10	12.340	12.302	-0.038	0.0076	0.0073	0.553E+05	0.279E+08	0.2	0.000E+00	-0.853E+04	0.000E+00	0.000
SAT NO.7	8.420	8.559	0.139	0.0058	0.0059	0.441E+05	0.276E+08	0.2	0.000E+00	0.203E+05	0.000E+00	0.000
SAT NO.4	5.680	5.759	0.079	0.0058	0.0059	0.312E+05	0.276E+08	0.1	0.000E+00	0.234E+05	0.000E+00	0.000
SAT NO.2	3.400	3.454	0.054	0.0049	0.0051	0.234E+05	0.273E+08	0.1	0.000E+00	0.135E+05	0.000E+00	0.000
SAT NO.0	1.620	1.623	0.003	0.0049	0.0051	0.234E+05	0.273E+08	0.1	0.000E+00	0.700E+03	0.000E+00	0.000