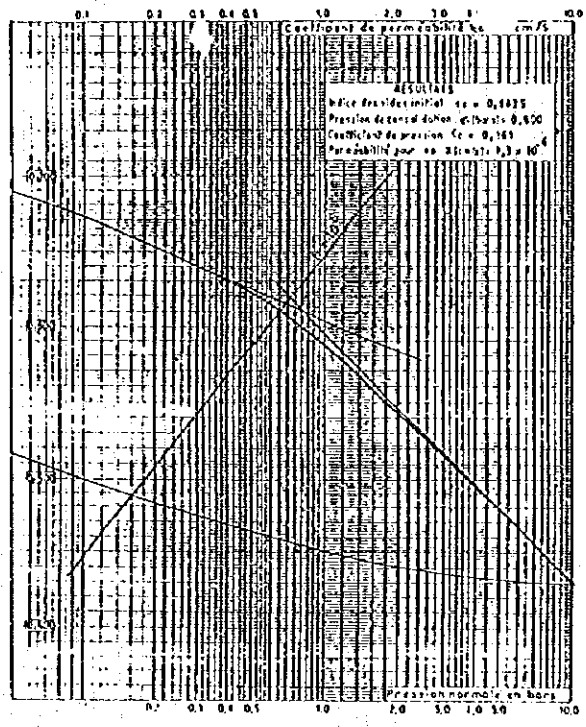
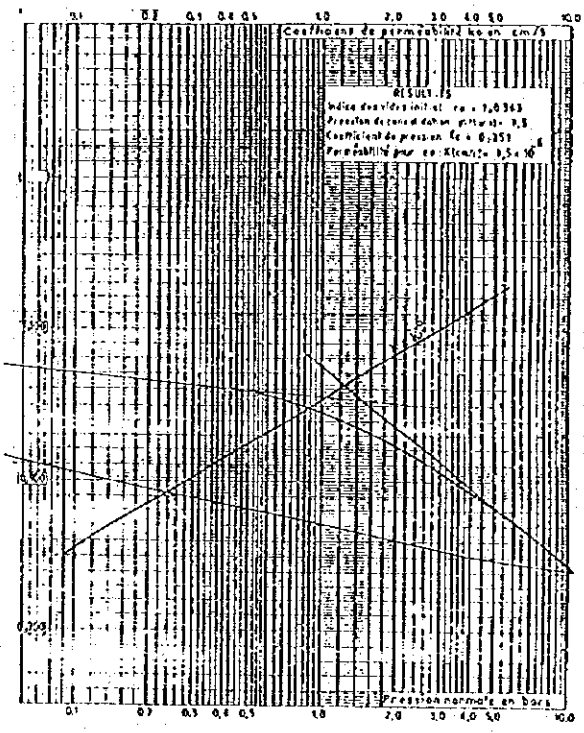
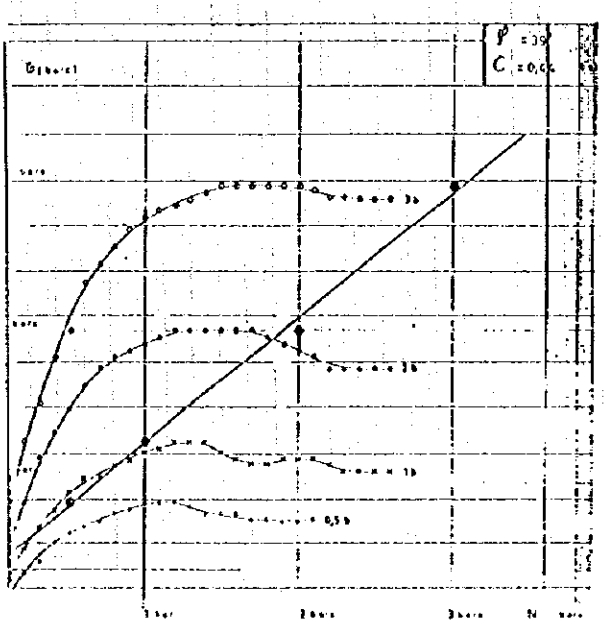
Résultat des expériences dynamiques des matériaux de terre (2/5)

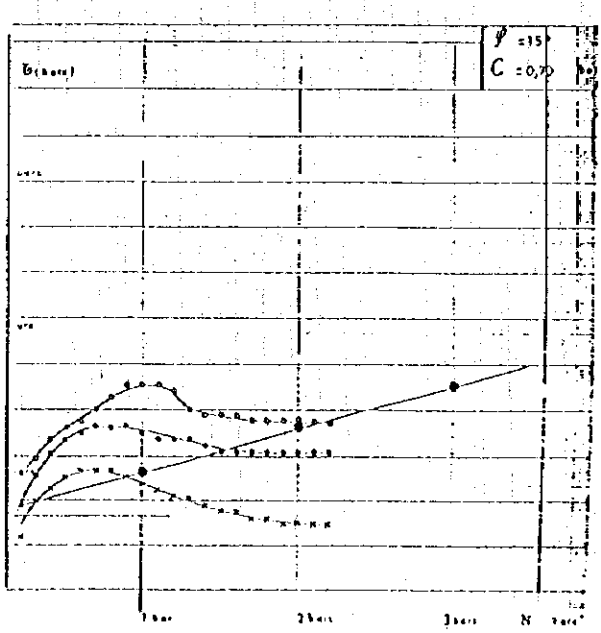
Point T2 (Sable argileux)



Point T6 (Argile altérée)

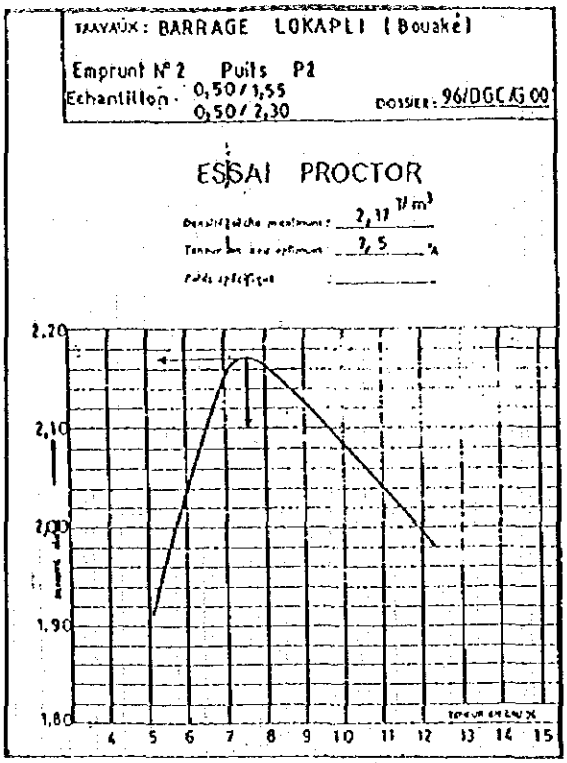




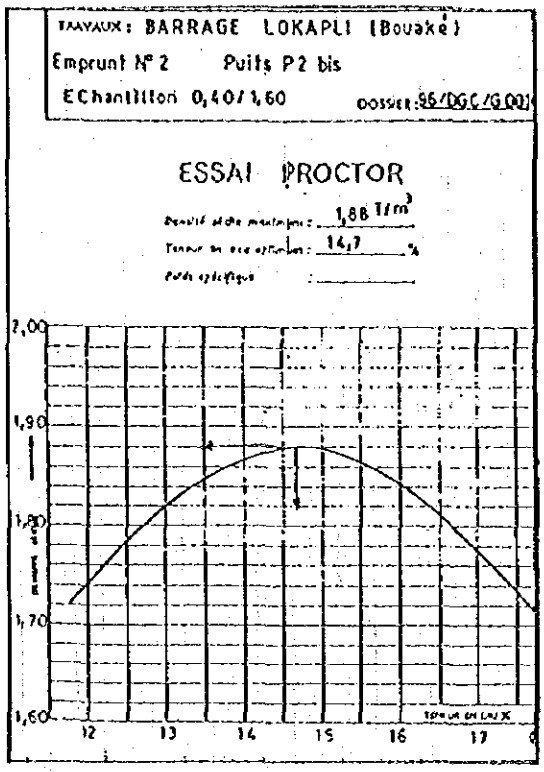


Résultat des expériences dynamiques des matériaux de terre (3/5)

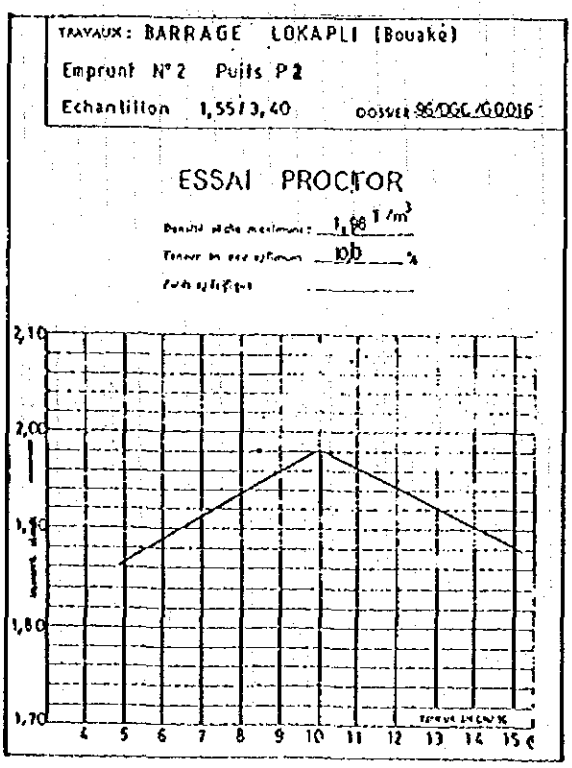
Point TP2 (0,50~2,30m)



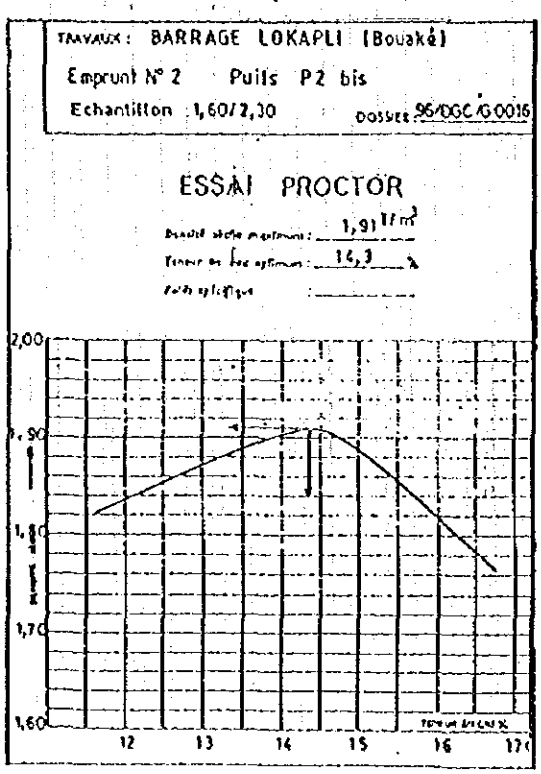
Point TP2 bis (0,40~1,60m)



Point TP2 (1,55~3,40m)

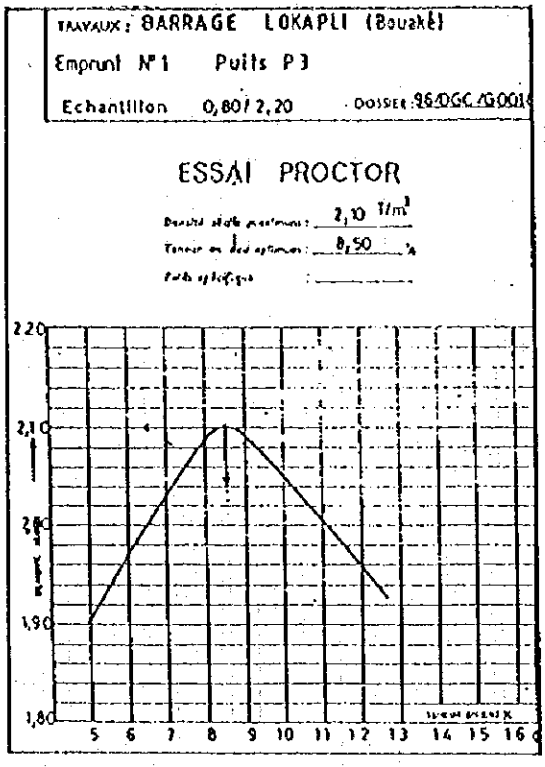


Point TP2 bis (0,80~2,20m)

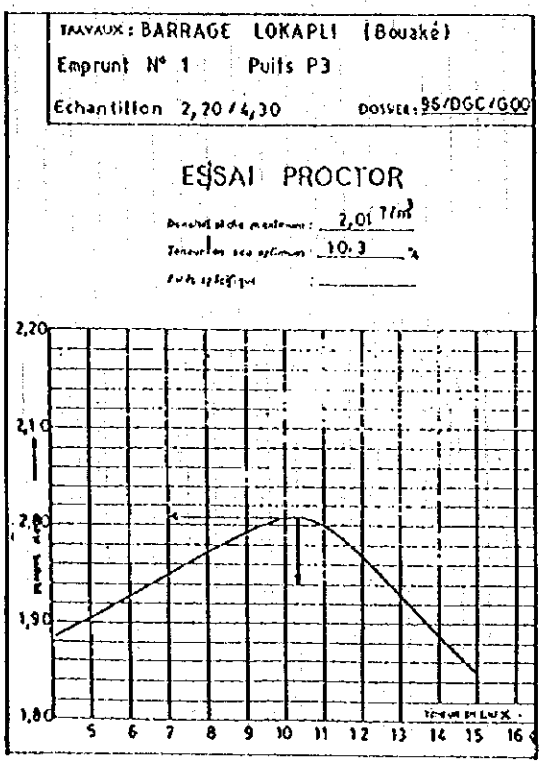


Résultat des expériences dynamiques des matériaux de terre (4/5)

Point TP3 (0,80~2,20m)



Point TP3 (2,20~4,30m)



Résumé des résultats des expériences de compactage du protecteur

Valeur moyenne de la densité maximale des sols secs

(2,17 + 1,98 + 1,88 + 1,91 + 2,10 + 2,01) / 6 = 2,00 t / m³

Valeur moyenne de la densité maximale en 95%

2,00 x 0,95 = 1,90 t / m³

Valeur moyenne du pourcentage de la teneur en eau la plus adaptée

(7,5 + 10,0 + 14,7 + 14,3 + 8,5 + 10,3) / 6 = 10,8 %

Portée des pourcentages de la teneur en eau la plus adaptée

7,5 ~ 14,7 %

Portée des pourcentages de la teneur en eau naturelle

9,4 ~ 15,8 %

ESSAI DE PERMEABILITE A L'OEDOMETRE
K EN M/S

		CHARGES		
SONDAGES	ECHATILLONS	0,5 bar	1 bar	2 bar
TP2	0,50 / 1,55	$1,2\times10^{-5}$	$0,8\times10^{-5}$	$0,6\times10^{-5}$
TP2	1,55 / 3,40	$1,8\times10^{-8}$	$1,3\times10^{-8}$	$1,7\times10^{-8}$
P2 bis	0,40 / 1,60	$1,3\times10^{-6}$	$0,6\times10^{-6}$	$0,5\times10^{-6}$
P2 bis	1,60 / 2,30	$7,5\times10^{-9}$	$4,3\times10^{-9}$	$1,9\times10^{-9}$
TP3	0,80 / 2,20	$1,8\times10^{-6}$	$1,1\times10^{-6}$	$0,4\times10^{-6}$
TP3	2,20 / 4,30	$3,5\times10^{-6}$	$1,9\times10^{-6}$	$0,9\times10^{-6}$

Les échantillons sont compactés à 95% de l'OPM (Optimum Proctor Modifié)

TENEUR EN MATIERE ORGANIQUE (M/O)
EXPRIMEE EN % DE CARBONE

SONDAGES	ECHATILLONS	
TP2	0,50 / 1,55	0,36
TP2	1,55 / 3,40	0,16
P2 bis	0,40 / 1,60	0,19
P2 bis	1,60 / 2,30	0,10
TP3	0,80 / 2,20	0,19
TP3	2,20 / 4,30	0,02

Figure des expérriences dynamiques des matériaux de terre (1/3)

Point TP2

L. B.T.P Dossier :

ESSAI TRIAXIAL

CONSOLIDE DRAINE

MESURE DE LA PRESSION INTERSTITIELLE

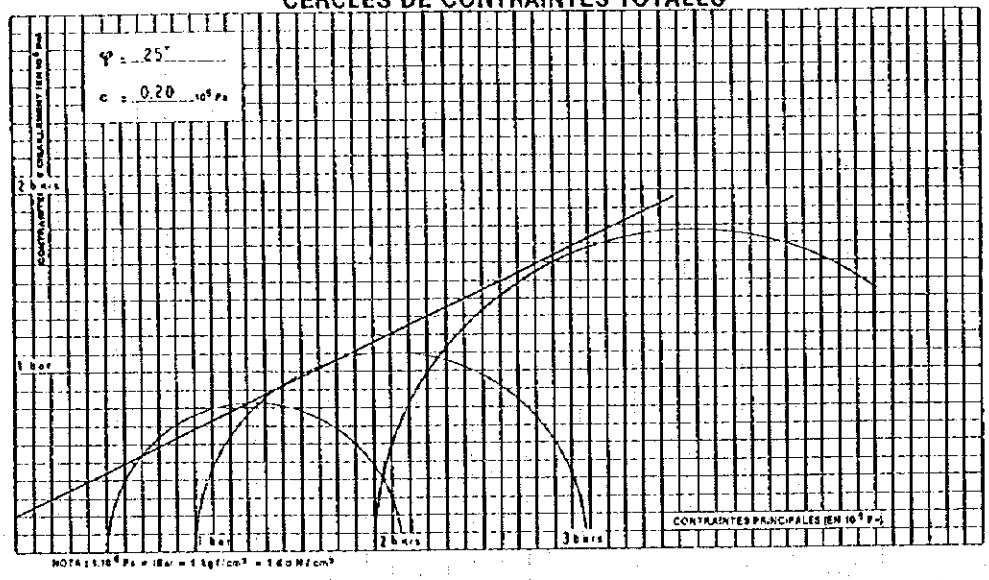
CHANTIER :

SONDAGE : Puits P2

ECHANTILLON :

PROFONDEUR :

CERCLES DE CONTRAINTES TOTALES



L.B.T.P. DOSSIER N°

ESSAI TRIAXIAL - CONSOLIDE NON DRAINE

AVEC MESURE DE LA PRESSION INTERSTITIELLE

SONDAGE : Puits P2

PROFONDEUR :

NATURE :

CONTRE PRESSION 10⁵ Pa

Ø DE L'EPROUVETTE mm

HAUTEUR DE L'EPROUVETTE mm

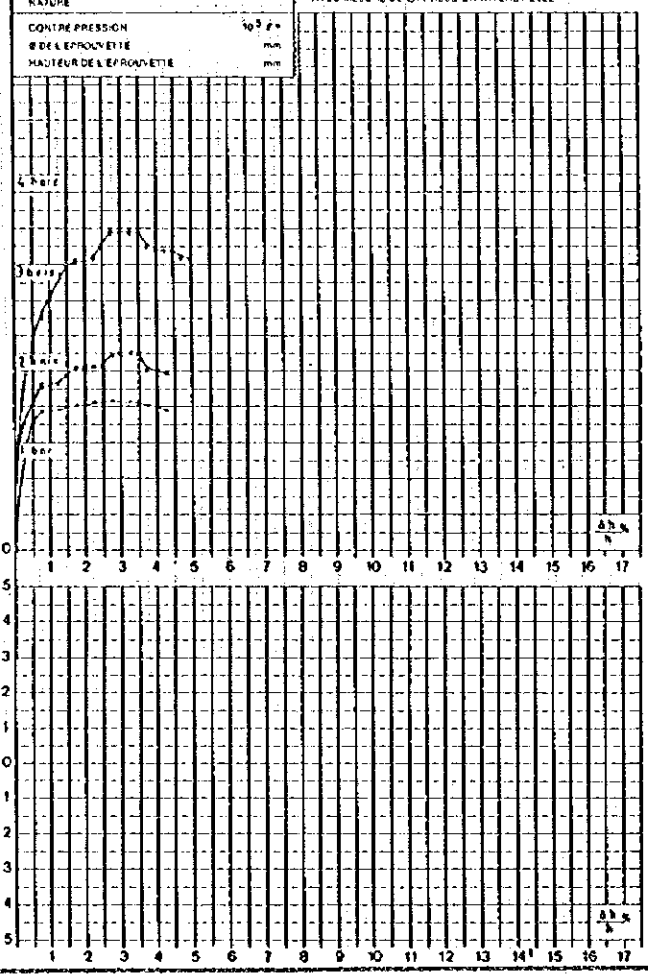
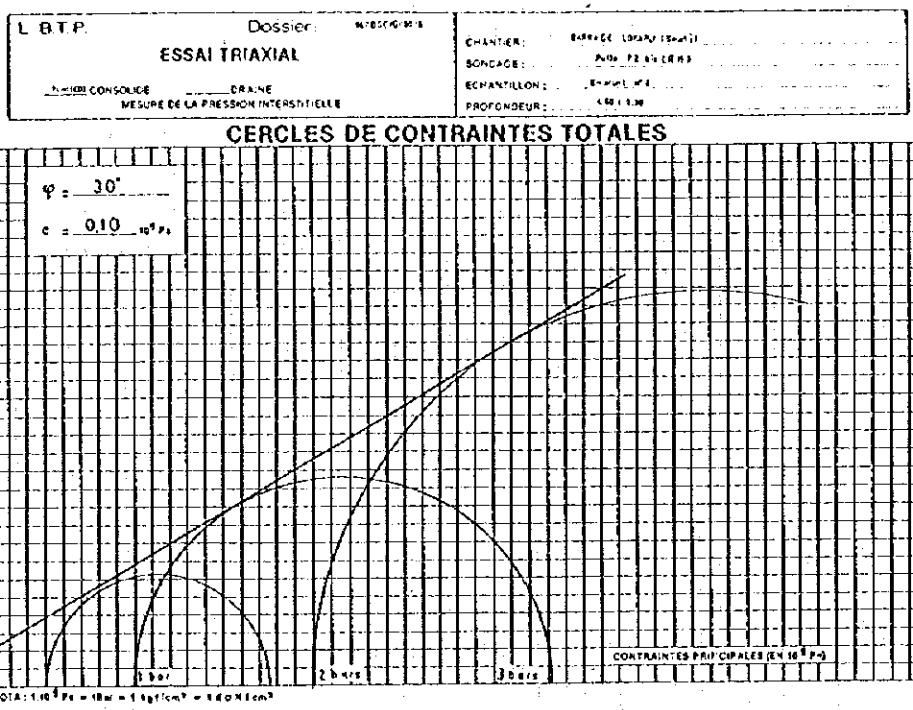


Figure des expérriences dynamiques des matériaux de terre (2/3)

Point TP2 bis



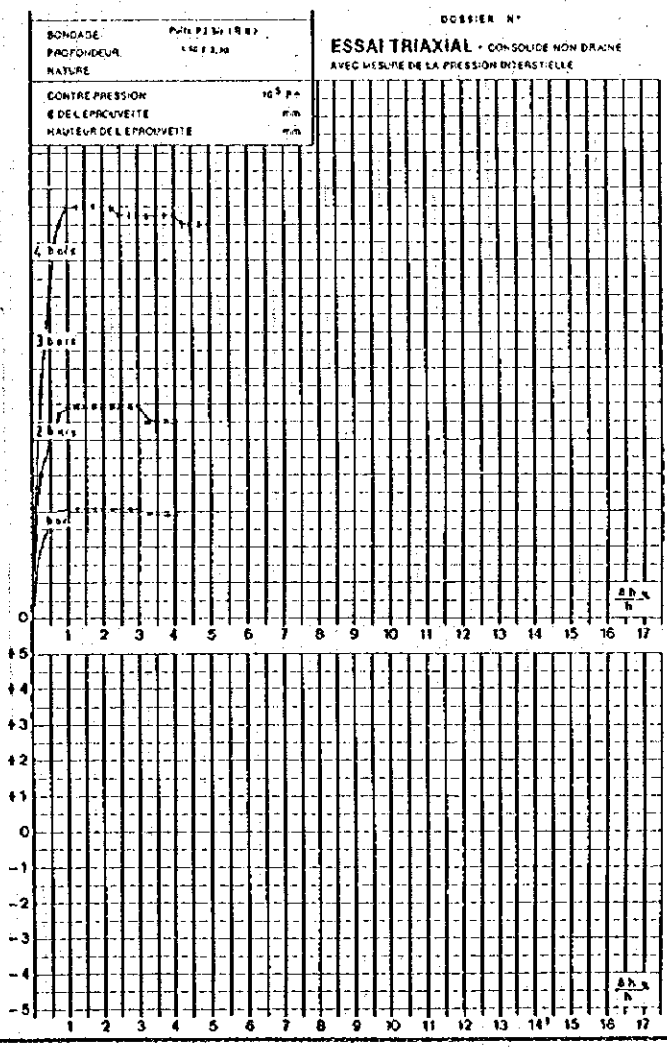


Figure des expérriences dynamiques des matériaux de terre (1/3)

Point TP3

L.B.T.P. Dossier:

ESSAI TRIAXIAL

CONSOLIDE DRAINE

MESURE DE LA PRESSION INTERSTITIELLE

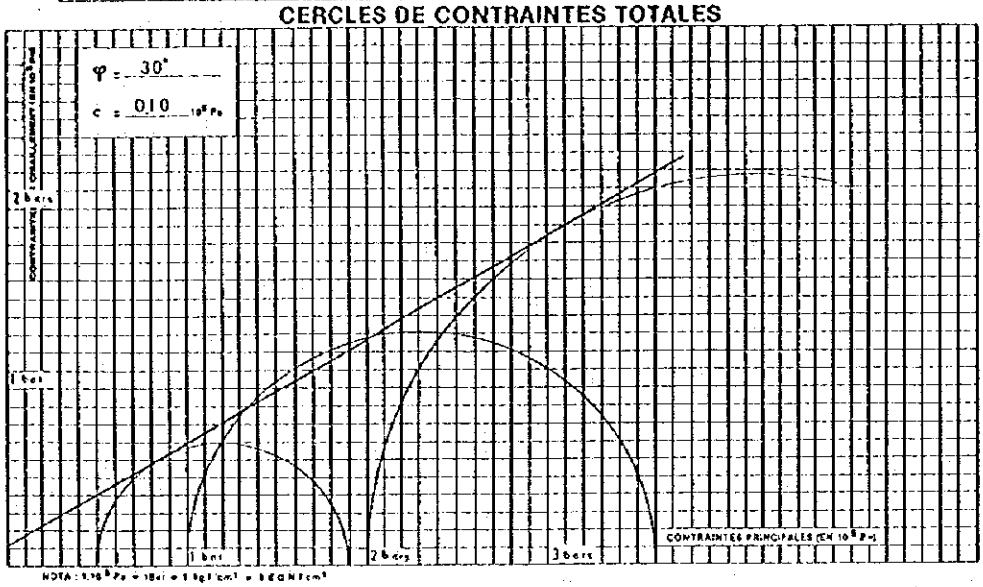
CHANTIER:

SONDAGE: Puits P3

ECHANTILLON:

PROFONDEUR:

CERCLES DE CONTRAINTES TOTALES



GRAPHIQUE :

NOTA : 1 10⁵ Pa = 1 bar = 1 kg/cm² = 0,1 MN/m²

DOSSIER N°

ESSAI TRIAXIAL - CONSOLIDE NON DRAINE

AVEC MESURE DE LA PRESSION INTERSTITIELLE

SONDAGE Puits P3

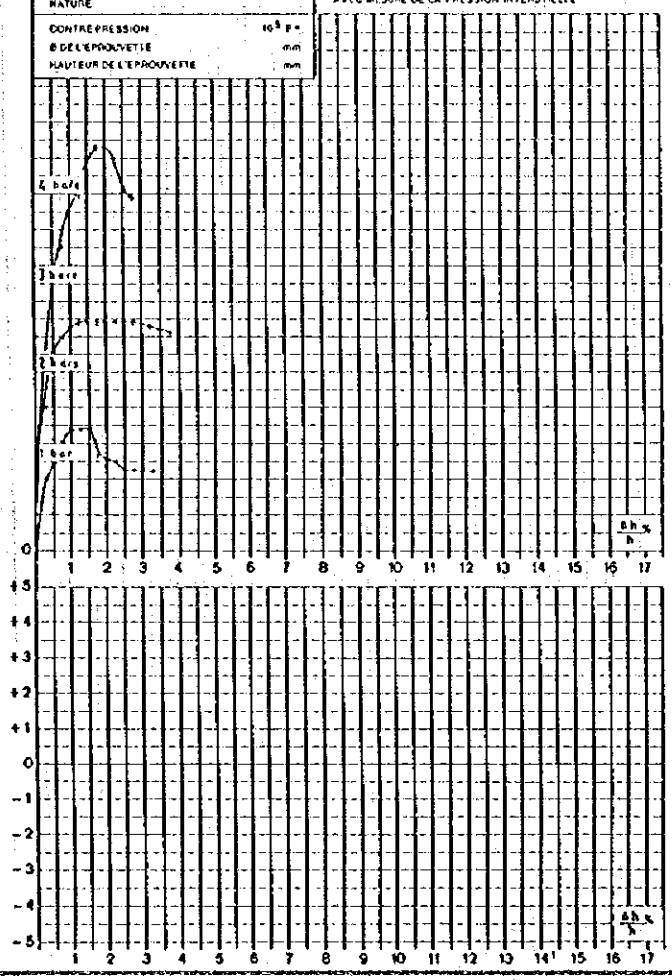
PROFONDEUR

NATURE

CONTRE PRESSION 10⁵ Pa

Ø DE L'EPROUVETTE mm

HAUTEUR DE L'EPROUVETTE mm



Courbe granulométrique des matériaux de terre

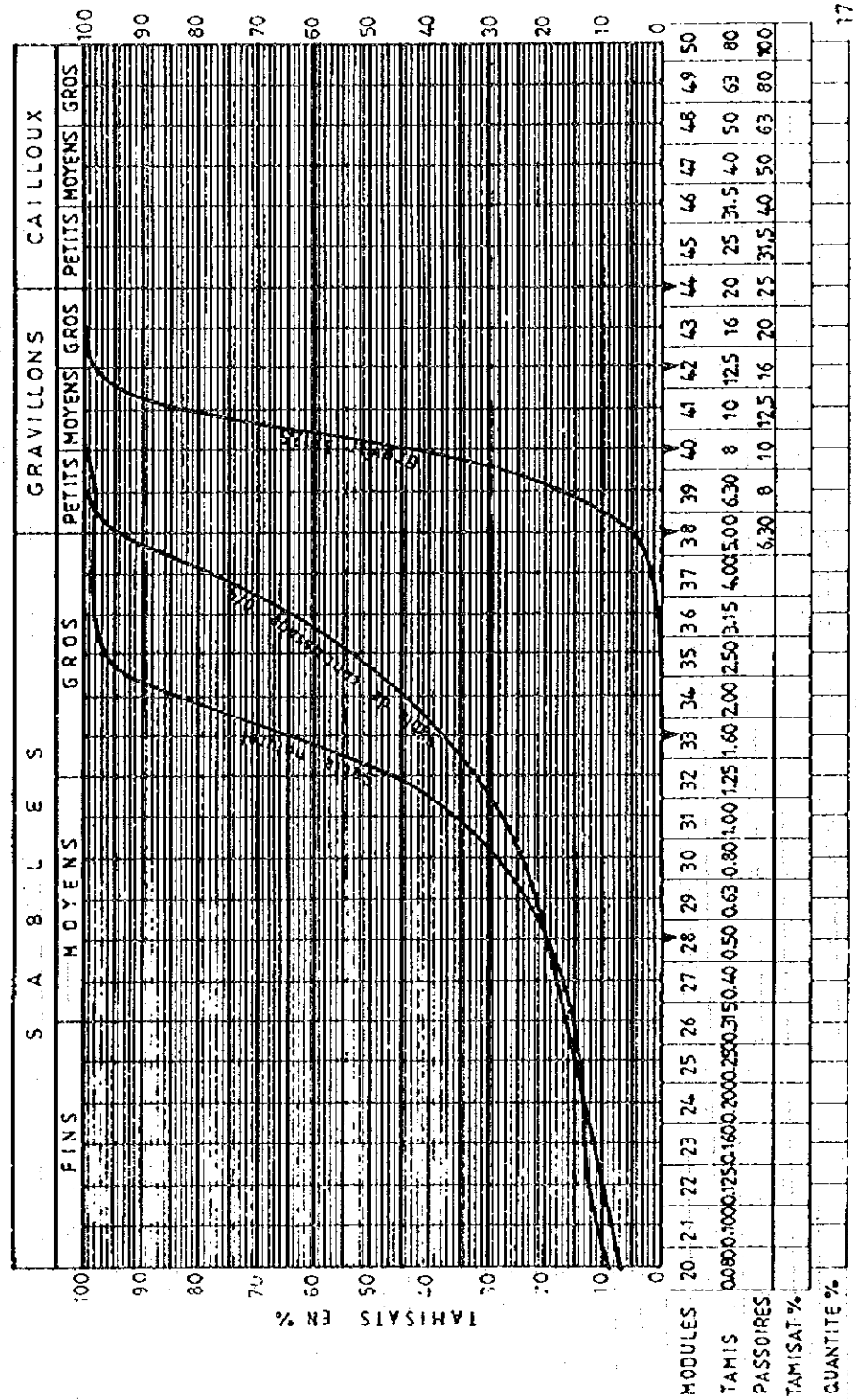
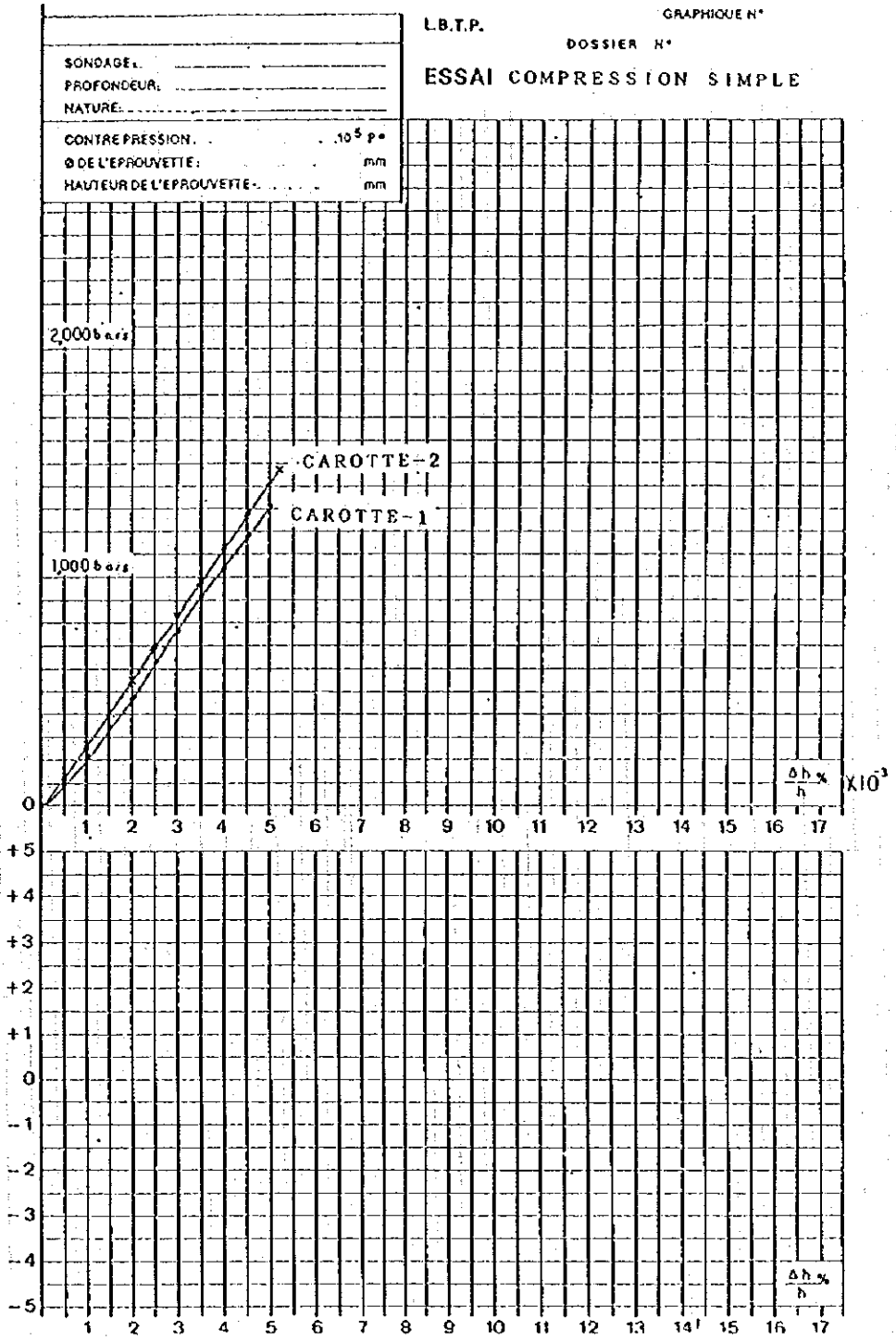


Figure des expérriences dynamiques des matériaux de rocheux

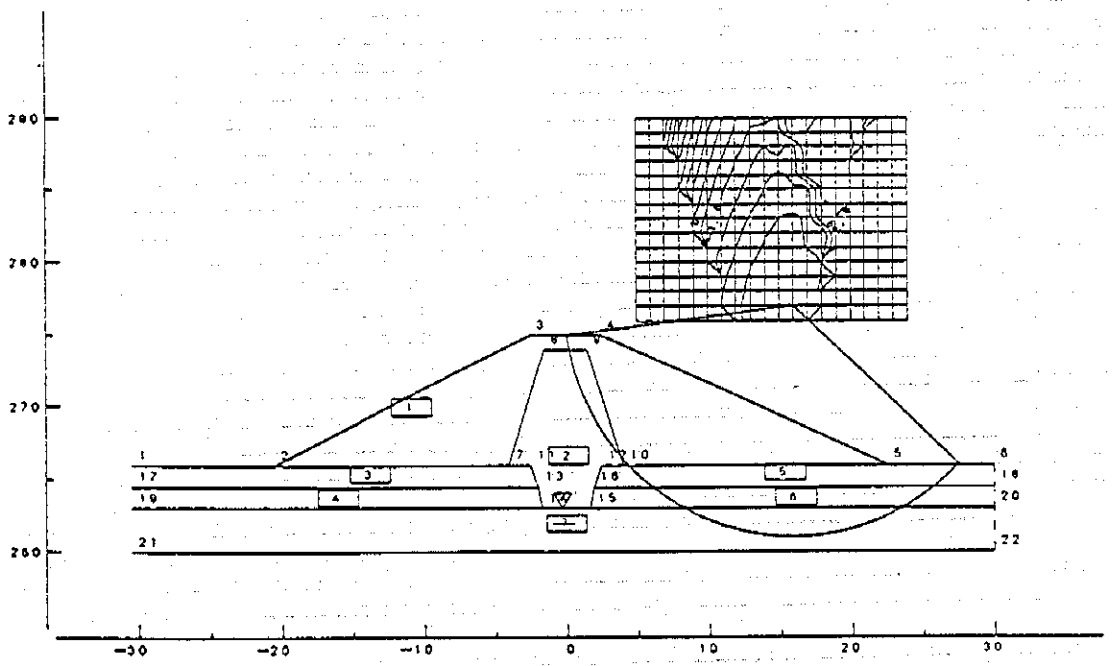


① Côté amont sans niveau d'eau,sans partie perméable

Taux de sécurité minimal	:	Fs_{MIN} =	1,207	
Centre du cercle	:	X =	16,00	(M)
	:	Y =	277,00	(M)
Rayon	:	R =	16,00	(M)
Moment de résistance	:	M_R =	1.665,90	(T-M)
Moment actif	:	M_O =	1.379,84	(T-M)

n° de la couche	Densité humide à saturation (T/M³)	Densité humide (T/M³)	Angle de frottement intérieur (°)	Cohésion (T/M²)	Coefficient primaire de la cohésion	Intensité sismique horizontal	Intensité sismique verticale
1	1,90	1,90	25,0	1,00	0,000	0,000	0,000
2	1,90	1,90	25,0	1,00	0,000	0,000	0,000
3	1,90	1,90	25,0	1,00	0,000	0,000	0,000
4	1,90	1,90	25,0	1,00	0,000	0,000	0,000
5	1,90	1,90	25,0	1,00	0,000	0,000	0,000
6	1,90	1,90	25,0	1,00	0,000	0,000	0,000
7	1,80	1,80	15,0	0,70	0,000	0,000	0,000

Poids spécifique de l'eau = 1,000 (T/M³)



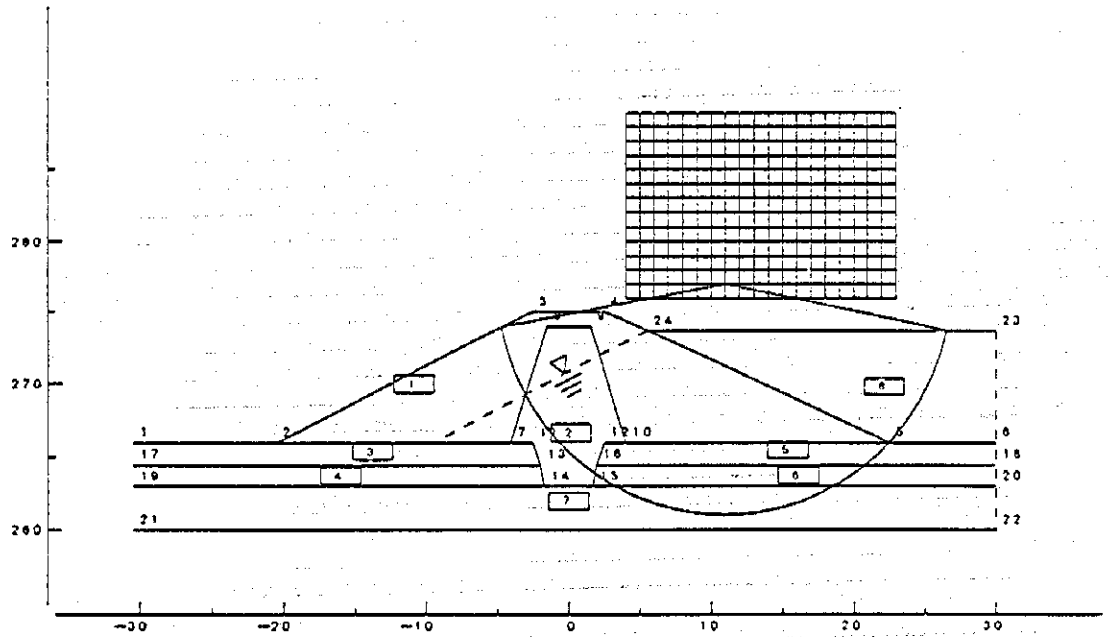
Courbe de niveau des taux de sécurité (permanent)

② Côté amont,niveau d'eau permanente,avec partie perméable

Taux de sécuruté minimal	:	Fs_{MIN}	=	4,447	
Centre du cercle	:	X	=	11,00	(M)
		Y	=	277,00	(M)
Rayon	:	R	=	16,00	(M)
Moment de résistance	:	M_R	=	1.855,08	(T-M)
Moment actif	:	M_O	=	417,06	(T-M)

n° de la couche	Densité humide à saturation (T/M³)	Densité humide (T/M³)	Angle de frottement intérieur (°)	Cohésion (T/M²)	Coefficient primaire de la cohésion	Intensité sismique horizontal	Intensité sismique verticale
1	1,90	1,90	25,0	1,00	0,000	0,000	0,000
2	1,90	1,90	25,0	1,00	0,000	0,000	0,000
3	1,90	1,90	25,0	1,00	0,000	0,000	0,000
4	1,90	1,90	25,0	1,00	0,000	0,000	0,000
5	1,90	1,90	25,0	1,00	0,000	0,000	0,000
6	1,90	1,90	25,0	1,00	0,000	0,000	0,000
7	1,80	1,80	15,0	0,70	0,000	0,000	0,000
8	2,00	1,00	0,0	0,00	0,000	0,000	0,000

Poids spécifique de l'eau = 1,000 (T/M³)



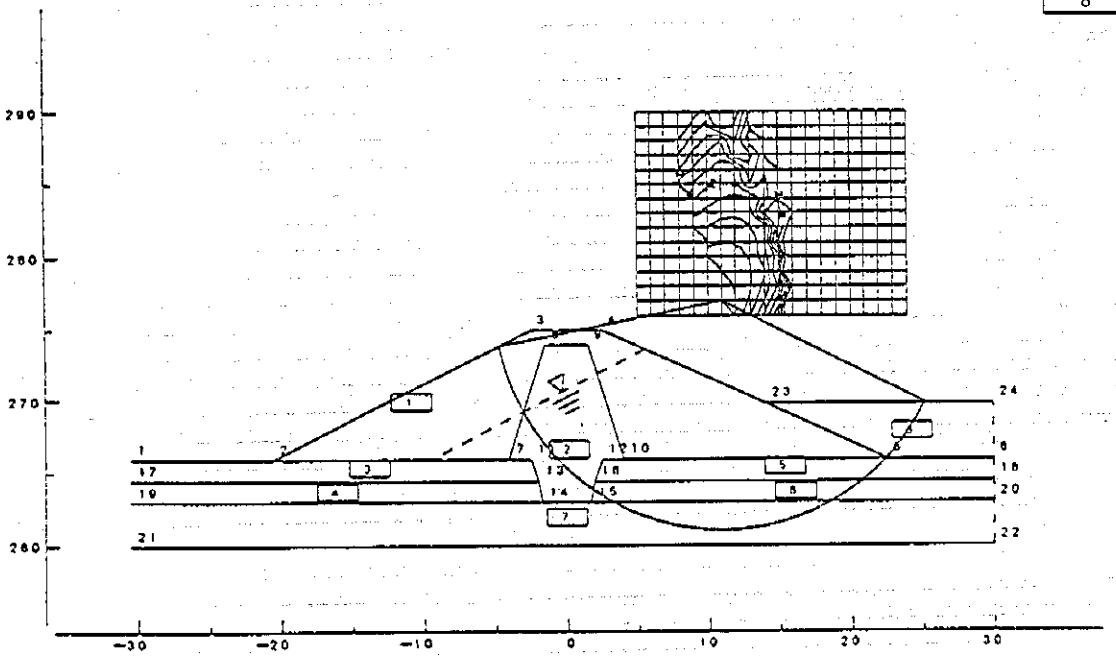
Courbe de niveau des taux de sécurité (permanent)

③ Côt amont,niveau d'eau intermédiaire,avec partie perméable

Taux de sécuruté minimal	:	Fs_{MIN}	=	1,939	
Centre du cercle	:	X	=	11,00	(M)
		Y	=	277,00	(M)
Rayon	:	R	=	16,00	(M)
Moment de résistance	:	M_R	=	1.624,62	(T-M)
Moment actif	:	M_O	=	837,48	(T-M)

n° de la couche	Densité humide à saturation (T/M³)	Densité humide (T/M³)	Angle de frottement intérieur (°)	Cohésion (T/M²)	Coefficient primaire de la cohésion	Intensité sismique horizontal	Intensité sismique verticale
1	1,90	1,90	25,0	1,00	0,000	0,000	0,000
2	1,90	1,90	25,0	1,00	0,000	0,000	0,000
3	1,90	1,90	25,0	1,00	0,000	0,000	0,000
4	1,90	1,90	25,0	1,00	0,000	0,000	0,000
5	1,90	1,90	25,0	1,00	0,000	0,000	0,000
6	1,90	1,90	25,0	1,00	0,000	0,000	0,000
7	1,80	1,80	15,0	0,70	0,000	0,000	0,000
8	2,00	1,00	0,0	0,00	0,000	0,000	0,000

Poids spécifique de l'eau = 1,000 (T/M³)



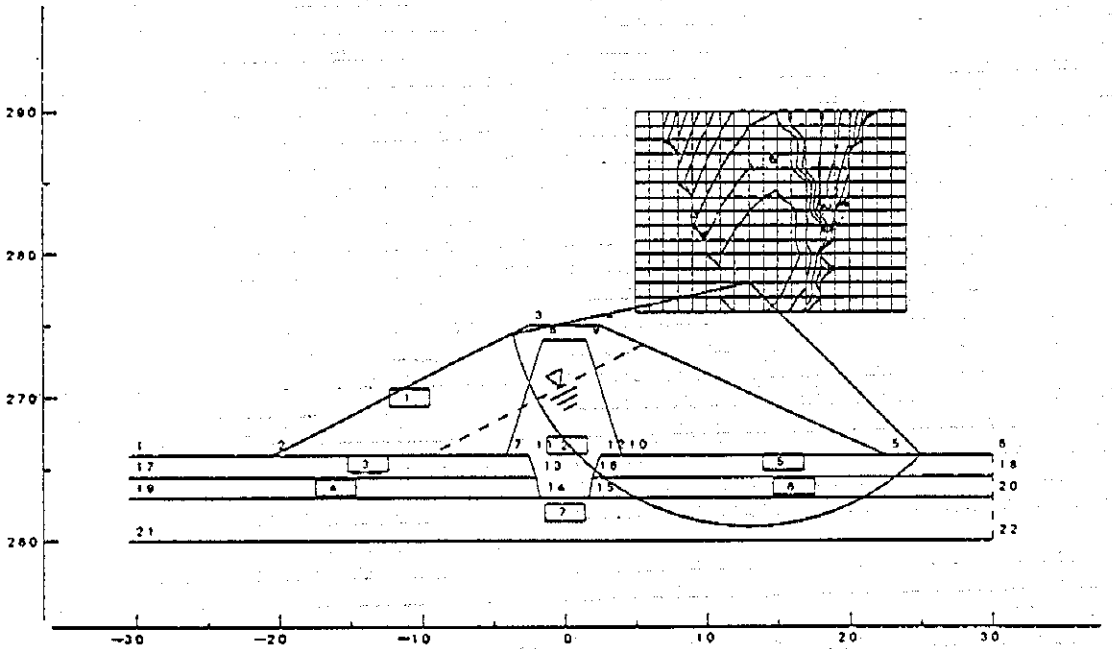
Courbe de niveau des taux de sécurité (permanent)

④ Côt amont,sans niveau d'eau,avec partie perméable

Taux de sécuruté minimal	:	Fs_{MIN}	=	1,419	
Centre du cercle	:	X	=	13,00	(M)
		Y	=	278,00	(M)
Rayon	:	R	=	17,00	(M)
Moment de résistance	:	M_R	=	1.593,05	(T-M)
Moment actif	:	M_O	=	1.122,19	(T-M)

n° de la couche	Densité humide à saturation (T/M³)	Densité humide (T/M³)	Angle de frottement intérieur (°)	Cohésion (T/M²)	Coefficient primaire de la cohésion	Intensité sismique horizontal	Intensité sismique verticale
1	1,90	1,90	25,0	1,00	0,000	0,000	0,000
2	1,90	1,90	25,0	1,00	0,000	0,000	0,000
3	1,90	1,90	25,0	1,00	0,000	0,000	0,000
4	1,90	1,90	25,0	1,00	0,000	0,000	0,000
5	1,90	1,90	25,0	1,00	0,000	0,000	0,000
6	1,90	1,90	25,0	1,00	0,000	0,000	0,000
7	1,80	1,80	15,0	0,70	0,000	0,000	0,000

Poids spécifique de l'eau = 1,000 (T/M³)



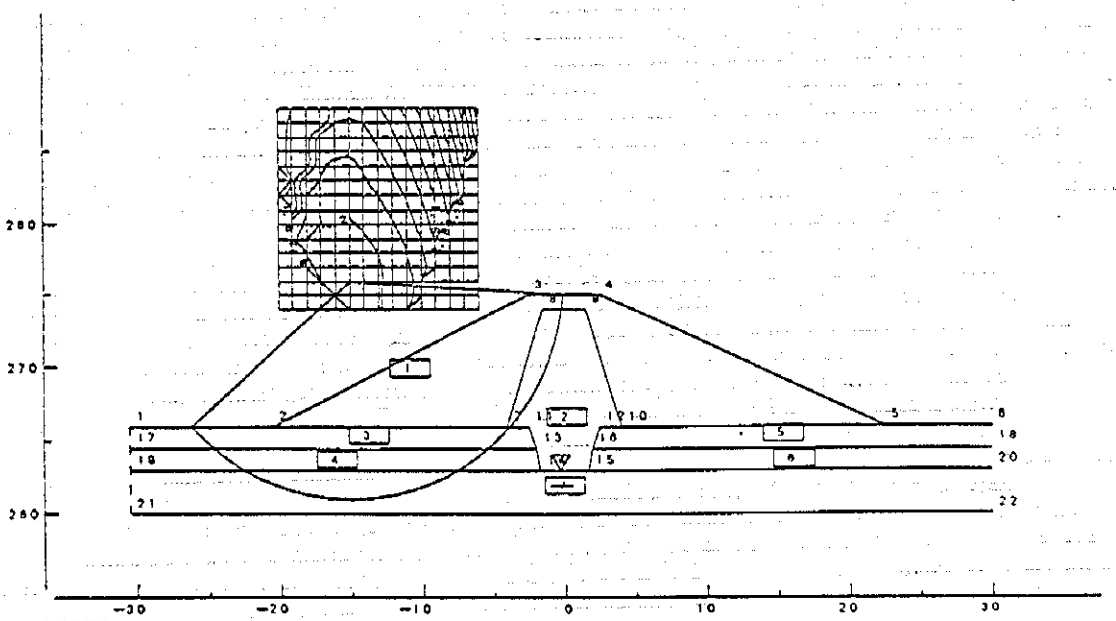
Courbe de niveau des taux de sécurité (permanent)

⑤ Côt aval,sans niveau d'eau,avec partie perméable

Taux de sécuruté minimal : Fs_{MIN} = 1,162
Centre du cercle : X = - 15,00 (M)
Y = 276,00 (M)
Rayon : R = 15,00 (M)
Moment de résistance : M_R = 1.478,02 (T-M)
Moment actif : M_O = -1.122,19 (T-M)

n° de la couche	Densité humide à saturation (T/M³)	Densité humide (T/M³)	Angle de frottement intérieur (°)	Cohésion (T/M²)	Coefficient primaire de la cohésion	Intensité sismique horizontal	Intensité sismique verticale
1	1,90	1,90	25,0	1,00	0,000	0,000	0,000
2	1,90	1,90	25,0	1,00	0,000	0,000	0,000
3	1,90	1,90	25,0	1,00	0,000	0,000	0,000
4	1,90	1,90	25,0	1,00	0,000	0,000	0,000
5	1,90	1,90	25,0	1,00	0,000	0,000	0,000
6	1,90	1,90	25,0	1,00	0,000	0,000	0,000
7	1,80	1,80	15,0	0,70	0,000	0,000	0,000

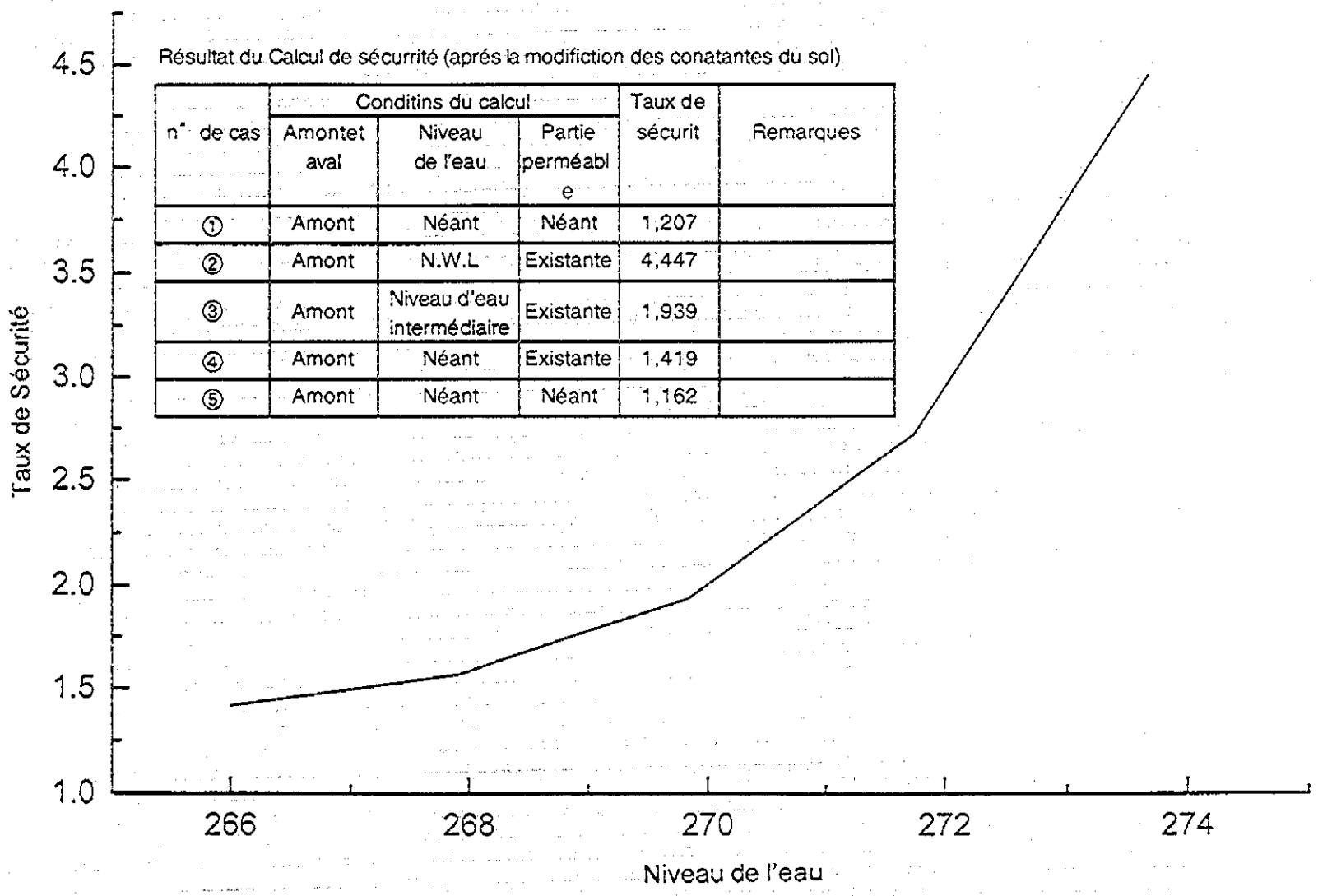
Poids spécifique de l'eau = 1,000 (T/M³)



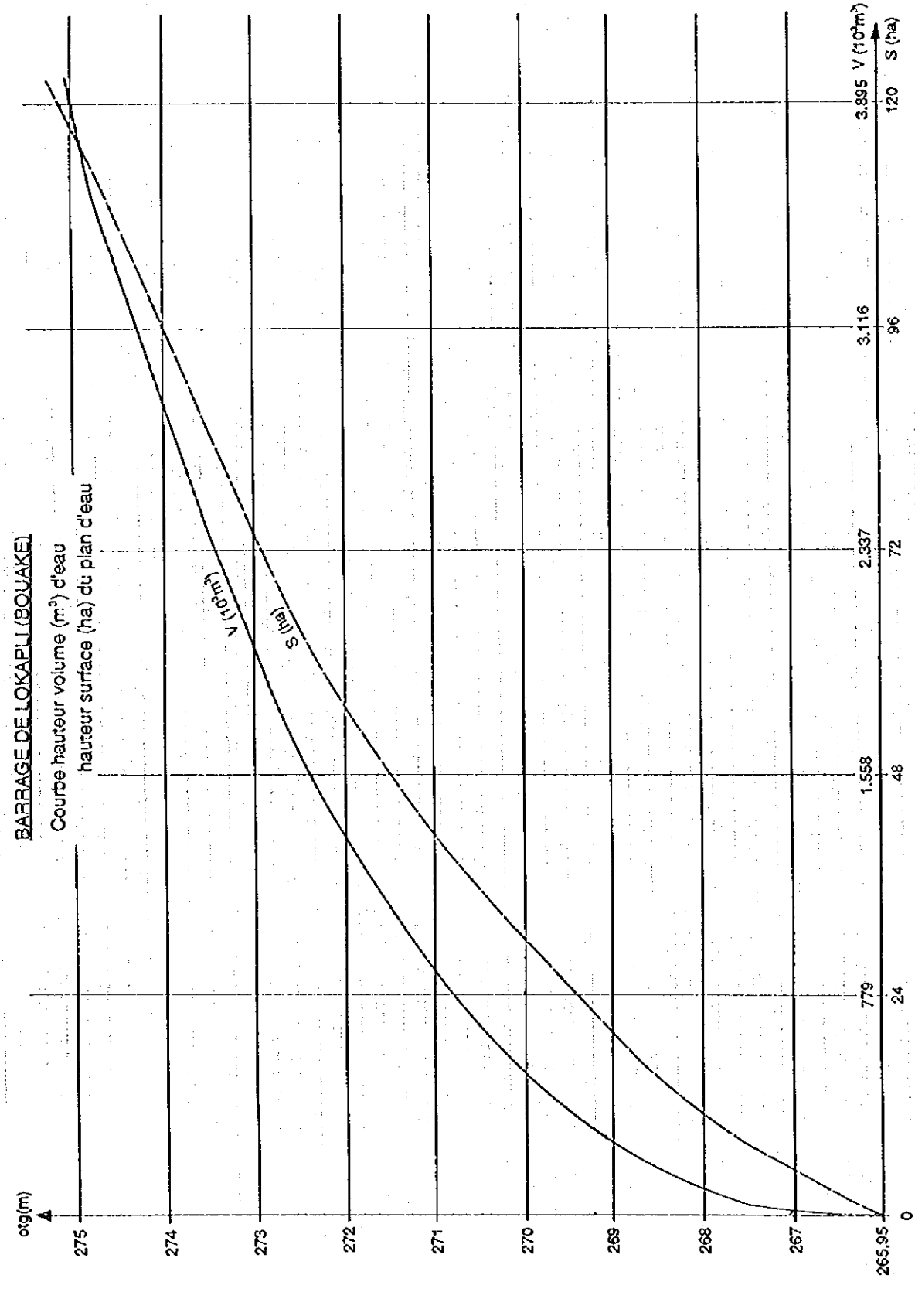
Courbe de niveau des taux de sécurité (permanent)

Résultat du Calcul de sécurrité (aprés la modifiction des conatantes du sol)

n° de cas	Conditins du calcul			Taux de sécurit	Remarques
	Amontet aval	Niveau de l'eau	Partie perméable		
①	Amont	Néant	Néant	1,207	
②	Amont	N.W.L	Existante	4,447	
③	Amont	Niveau d'eau intermédiaire	Existante	1,939	
④	Amont	Néant	Existante	1,419	
⑤	Amont	Néant	Néant	1,162	



B - 6. Courbes H - V , H - A du barrage de Lokapli



C. Données hydrologiques

Résultat du calcul d'écoulement de crues (1/2)

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/ 2	84.06	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Raintall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	3.325	9.410	5.032	1.830
5.50	4.000	8.580	9.175	1.668
8.25	4.457	8.128	13.039	1.580
11.00	4.812	7.822	16.751	1.521
13.75	5.107	7.593	20.300	1.476
16.50	5.362	7.411	23.776	1.441
19.25	5.587	7.260	27.174	1.412
22.00	5.789	7.132	30.508	1.387
24.75	5.974	7.021	33.786	1.365
27.50	6.144	6.923	37.017	1.346
30.25	6.302	6.835	40.204	1.329
33.00	6.450	6.756	43.355	1.314
35.75	6.590	6.683	46.468	1.300
38.50	6.721	6.619	49.550	1.287
41.25	6.846	6.558	52.603	1.275
44.00	6.965	6.502	55.629	1.264
46.75	7.078	6.450	58.630	1.254
49.50	7.187	6.401	61.608	1.245
52.25	7.291	6.355	64.563	1.236
55.00	7.392	6.311	67.498	1.227

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/5	108.17	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Raintall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.988	12.773	6.830	2.484
5.50	3.594	11.646	12.455	2.264
8.25	4.005	11.033	17.699	2.145
11.00	4.324	10.618	22.710	2.065
13.75	4.589	10.306	27.536	2.004
16.50	4.818	10.059	32.273	1.956
19.25	5.020	9.854	36.885	1.916
22.00	5.202	9.680	41.411	1.882
24.75	5.368	9.530	45.861	1.853
27.50	5.521	9.397	50.246	1.827
30.25	5.663	9.278	54.575	1.804
33.00	5.796	9.171	58.847	1.783
35.75	5.921	9.074	63.074	1.764
38.50	6.039	8.984	67.258	1.747
41.25	6.152	8.902	71.403	1.731
44.00	6.258	8.826	75.510	1.716
46.75	6.360	8.755	79.584	1.702
49.50	6.458	8.688	83.625	1.689
52.25	6.552	8.626	87.637	1.677
55.00	6.642	8.567	91.621	1.666

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/10	123.63	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Raintall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.823	15.019	8.031	2.920
5.50	3.396	13.693	14.644	2.663
8.25	3.784	12.972	20.810	2.522
11.00	4.086	12.484	26.703	2.428
13.75	4.336	12.118	32.400	2.356
16.50	4.552	11.827	37.946	2.300
19.25	4.744	11.587	43.370	2.253
22.00	4.915	11.382	48.691	2.213
24.75	5.072	11.205	53.923	2.179
27.50	5.217	11.048	59.079	2.148
30.25	5.351	10.909	64.166	2.121
33.00	5.477	10.783	69.192	2.097
35.75	5.595	10.669	74.162	2.074
38.50	5.707	10.564	79.082	2.054
41.25	5.813	10.467	83.955	2.033
44.00	5.913	10.377	88.784	2.018
46.75	6.010	10.294	93.574	2.002
49.50	6.102	10.216	98.326	1.986
52.25	6.191	10.142	103.043	1.972
55.00	6.276	10.073	107.727	1.959

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/20	138.15	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Raintall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.693	17.184	9.189	3.341
5.50	3.240	15.667	16.755	3.046
8.25	3.610	14.842	23.809	2.886
11.00	3.898	14.284	30.551	2.777
13.75	4.137	13.865	37.070	2.696
16.50	4.343	13.532	43.415	2.631
19.25	4.525	13.257	49.621	2.578
22.00	4.689	13.023	55.709	2.532
24.75	4.839	12.820	61.696	2.493
27.50	4.977	12.641	67.595	2.458
30.25	5.105	12.481	73.415	2.427
33.00	5.225	12.337	79.165	2.399
35.75	5.337	12.206	84.852	2.373
38.50	5.444	12.086	90.480	2.350
41.25	5.545	11.976	96.056	2.329
44.00	5.641	11.873	101.581	2.309
46.75	5.733	11.778	107.061	2.290
49.50	5.821	11.688	112.498	2.273
52.25	5.906	11.604	117.895	2.256
55.00	5.987	11.525	123.255	2.241

Résultat du calcul d'écoulement de crues (2/2)

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/50	156.67	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Rainfall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.553	20.014	10.702	3.892
5.50	3.072	18.247	19.515	3.548
8.25	3.422	17.287	27.731	3.361
11.00	3.693	16.636	35.584	3.235
13.75	3.922	16.149	43.176	3.140
16.50	4.117	15.761	50.566	3.065
19.25	4.290	15.440	57.794	3.002
22.00	4.446	15.168	64.885	2.949
24.75	4.587	14.931	71.858	2.903
27.50	4.718	14.723	78.723	2.863
30.25	4.840	14.537	85.508	2.827
33.00	4.953	14.370	92.205	2.794
35.75	5.060	14.217	98.828	2.764
38.50	5.161	14.077	105.384	2.737
41.25	5.257	13.948	111.877	2.712
44.00	5.348	13.829	118.313	2.689
46.75	5.435	13.717	124.696	2.667
49.50	5.519	13.613	131.028	2.647
52.25	5.599	13.515	137.314	2.628
55.00	5.676	13.423	143.556	2.610

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/100	170.47	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Rainfall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.463	22.171	11.853	4.311
5.50	2.964	20.213	21.617	3.930
8.25	3.302	19.150	30.719	3.724
11.00	3.565	18.429	39.417	3.585
13.75	3.784	17.889	47.827	3.478
16.50	3.972	17.459	56.015	3.395
19.25	4.139	17.104	64.021	3.326
22.00	4.289	16.802	71.876	3.267
24.75	4.426	16.540	79.600	3.216
27.50	4.552	16.309	87.211	3.171
30.25	4.669	16.104	94.720	3.131
33.00	4.779	15.918	102.139	3.095
35.75	4.882	15.749	109.476	3.062
38.50	4.979	15.594	116.739	3.032
41.25	5.072	15.451	123.932	3.004
44.00	5.160	15.319	131.060	2.979
46.75	5.244	15.195	138.131	2.955
49.50	5.325	15.080	145.146	2.932
52.25	5.402	14.972	152.109	2.911
55.00	5.476	14.870	159.023	2.891

Case Name	Return Period	Max. 24 hr Rainfall (mm)	Value of f	Value of C
Lokapli River	1/200	184.20	0.7	350
Catchment Area (km2)	Dulation Time (hr)	Rainfall Intensity	Peak Ruoff (m3/s)	Specific Q (m3/s/km2)
2.75	2.384	24.535	13.022	4.735
5.50	2.868	22.203	23.745	4.317
8.25	3.195	21.035	33.743	4.090
11.00	3.450	20.243	43.298	3.936
13.75	3.662	19.650	52.536	3.821
16.50	3.844	19.178	61.529	3.729
19.25	4.005	18.788	70.323	3.653
22.00	4.150	18.456	78.951	3.589
24.75	4.283	18.168	87.436	3.533
27.50	4.405	17.915	95.796	3.483
30.25	4.518	17.689	104.045	3.440
33.00	4.624	17.485	112.195	3.400
35.75	4.724	17.299	120.254	3.364
38.50	4.818	17.129	128.231	3.331
41.25	4.908	16.972	136.132	3.300
44.00	4.993	16.827	143.964	3.272
46.75	5.074	16.691	151.730	3.246
49.50	5.152	16.565	159.435	3.221
52.25	5.227	16.446	167.083	3.198
55.00	5.299	16.334	174.678	3.176

Volume d'écoulement du bassin (1/2)

Year		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976	
Month		Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)	Raintall (mm)	Runoff (m3)
Jan	(1)	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
	(2)	0.0	0	0.0	0	5.5	1169	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
	(3)	0.0	0	0.0	0	0.0	0	0.0	0	44.6	76854	0.0	0	0.0	0	0.0	0	20.6	16396	0.0	0	0.0	0
	Total	0.0	0	0.0	0	5.5	1169	0.0	0	44.6	76854	0.0	0	0.0	0	0.0	0	20.6	16396	0.0	0	0.0	0
Feb	(1)	0.0	0	11.1	4760	85.3	372709	6.5	1652	0.0	0	0.0	0	0.2	2	19.6	14845	0.0	0	13.5	9282	82.1	328605
	(2)	0.0	0	34.4	45721	0.0	0	17.2	11430	0.0	0	40.9	64632	17.4	11698	3.8	558	8.2	2598	1.8	125	11.5	5110
	(3)	3.0	348	13.2	6732	18.4	13081	14.7	8349	0.0	0	42.0	68155	21.8	18362	1.6	99	0.0	0	0.0	0	0.0	0
	Total	3.0	348	58.7	57213	103.7	385790	38.4	21412	0.0	0	82.9	132787	39.4	30061	25.0	15499	8.2	2598	17.3	9408	95.6	333714
Mar	(1)	17.3	11852	71.6	200381	42.8	70776	32.1	59812	30.3	354721	9.2	5270	2.4	2251	0.0	0	36.9	52608	0.0	0	1.8	125
	(2)	45.3	79286	72.5	210381	0.0	0	23.2	20796	1.8	1251	24.4	23003	78.5	281794	12.0	5564	28.8	32047	85.3	372709	39.6	60388
	(3)	9.3	3342	14.0	7573	3.2	396	17.8	12242	45.1	78587	78.0	275528	133.6	1323603	26.3	26725	70.5	192034	26.1	26320	0.6	14
	Total	72.1	94460	158.1	418334	46.0	71172	73.1	72849	77.2	114184	111.6	301801	214.5	1605622	38.3	32288	136.2	276688	111.4	399028	42.0	60727
Apr	(1)	109.2	776373	14.5	8125	19.7	14994	25.7	25519	51.0	100494	38.1	56085	17.2	11430	26.9	27958	71.2	193996	16.8	10905	30.0	34775
	(2)	52.8	107713	53.7	111416	37.3	55755	45.1	71772	66.5	170861	11.8	5380	28.0	30291	75.9	249835	11.5	5110	77.4	268084	46.8	84623
	(3)	24.2	22627	56.3	122466	19.3	14392	43.8	74122	16.2	10140	62.8	152377	69.6	187162	42.5	69787	71.9	203693	18.2	12798	28.4	31163
	Total	186.2	906713	124.5	242005	76.3	83141	112.6	171413	133.7	281494	112.7	213842	114.8	228883	145.3	347580	154.6	404799	112.4	291786	105.2	150559
May	(1)	18.8	13656	4.3	714	57.7	128633	0.5	10	36.6	51756	21.6	18026	36.1	30352	20.9	16877	27.6	29432	64.6	161257	12.0	5564
	(2)	57.9	55498	79.0	288118	26.0	26118	12.7	6232	19.9	15300	114.0	873238	94.3	509341	42.8	70776	13.0	6330	28.2	30725	61.2	144711
	(3)	91.9	471090	42.1	68480	74.1	228617	0.0	0	30.9	36891	13.4	6938	98.1	572607	62.0	148519	16.0	9891	49.7	95436	55.7	119870
	Total	148.6	540245	125.4	357312	157.8	383368	13.2	6241	87.4	103947	149.0	898202	228.5	1132299	125.7	236172	56.6	45852	142.5	287398	128.9	270145
Jun	(1)	162.2	2138827	21.2	17365	29.4	33396	100.8	619571	42.7	70446	18.4	13081	196.6	3367854	56.6	125775	12.4	3941	53.2	109351	41.2	65583
	(2)	153.6	1873970	97.6	564093	93.9	502874	4.0	618	43.2	72105	196.6	3367854	24.5	23192	12.3	5845	9.8	3711	58.3	131322	20.2	15765
	(3)	78.0	275528	19.8	15147	74.1	228617	0.0	0	15.9	9768	24.5	23192	25.2	24536	13.6	7146	17.8	12242	19.4	14541	28.4	31163
	Total	395.8	4288324	138.6	596605	197.4	764887	104.8	620159	101.8	152319	239.5	3404126	246.3	3415581	82.5	136766	40.0	21893	130.9	255214	89.8	112511
Jul	(1)	6.5	1632	4.9	928	67.0	175440	38.0	35791	64.5	139743	1.1	47	3.8	558	10.4	4179	48.7	91634	39.2	135407	0.0	0
	(2)	64.9	162738	24.7	23572	38.4	36972	88.7	422142	2.0	153	26.7	27544	28.3	30944	0.3	3	31.6	38581	36.4	51192	65.0	163240
	(3)	35.9	49795	2.2	187	78.9	286848	0.8	25	12.2	5751	20.2	13765	1.4	76	32.9	41821	113.3	858783	21.6	18026	19.0	13948
	Total	107.3	214165	31.8	24686	184.3	517260	127.5	477958	78.5	163648	48.0	43356	33.5	31577	43.6	46003	193.6	988998	117.2	204626	84.0	177188
Aug	(1)	7.7	2291	23.2	20796	37.0	32594	31.9	59517	3.0	548	10.2	4020	0.6	14	128.6	1200346	58.2	150872	8.8	2992	0.0	0
	(2)	29.3	33169	31.7	38826	31.5	38557	13.7	7252	96.1	538896	17.8	12242	16.9	11035	6.2	1483	29.6	33852	27.8	29860	55.1	117301
	(3)	32.6	41061	43.8	74122	90.4	447853	39.8	61202	23.9	22070	26.0	26118	88.9	425133	29.3	33169	76.4	255860	7.9	2411	39.1	59068
	Total	69.6	76521	98.7	133743	158.9	539084	85.4	107771	123.0	561314	54.0	42380	106.4	436182	164.1	1235000	164.2	420584	44.5	35263	94.2	176369
Sep	(1)	91.3	461733	26.6	27338	118.1	960161	56.4	51192	42.9	71107	168.5	2543613	86.8	394191	56.2	122031	147.6	1699229	33.4	43101	0.0	0
	(2)	17.2	11430	75.1	240313	30.1	35005	23.0	20439	71.3	197089	127.8	1181156	56.8	124651	91.6	466401	61.5	146133	42.2	68806	96.9	352270
	(3)	61.2	144711	23.6	21519	20.3	15922	55.3	42844	120.1	1003962	91.4	463287	6.7	1734	51.2	101284	92.3	477373	45.7	80692	25.4	24927
	Total	169.7	617874	125.3	289170	168.5	1011088	92.7	114475	234.3	1272158	387.7	3988056	150.3	520576	199.0	689716	301.4	2322736	121.3	192599	122.3	377197
Oct	(1)	111.2	816091	22.7	19909	49.6	95052	74.0	227460	31.0	37150	24.5	23192	55.9	120752	15.7	9524	50.9	100100	31.8	39071	11.4	3021
	(2)	23.8	21885	10.3	4099	19.3	14392	33.8	49518	0.0	0	57.2	126413	33.0	42075	11.9	5471	56.3	122466	14.3	7901	14.5	8123
	(3)	33.5	43360	5.2	1045	73.2	218287	102.9	657255	28.3	30944	0.0	0	55.0	47330	74.9	237955	191.3	3168311	0.6	14	36.4	51192
	Total	168.5	881337	38.2	25053	142.1	327731	212.7	934233	59.3	68073	81.7	1496041	123.9	210137	102.5	252950	298.7	3391077	46.7	46986	62.3	64337
Nov	(1)	11.8	5380	33.1	47601	33.5	43360	87.4	402928	0.0	0	0.0	0	0.0	0	1.5	87	7.8	2351	0.0	0	30.3	35472
	(2)	25.6	21519	0.0	0	10.2	4020	0.1	0	40.6	63687	2.7	282	1.2	561	5.3	421	9.0	3130	40.5	63374	11.3	4934
	(3)	3.3	421	0.0	0	0.0	0	0.0	0	14.2	7791	8.8	2992	0.0	0	0.0	0	0.0	0	19.8	15147	0.0	0
	Total	38.7	27320	33.1	47601	43.7	47380	87.5	402929	54.8	71478	11.5	3274	1.2	561	4.8	508	16.8	5480	60.3	78521	41.6	40405
Dec	(1)	9.9	3787	4.6	818	27.7	29645	11.8	5380	0.0	0	54.5	114760	0.0	0	0.0	0	0.0	0	10.6	4341	0.0	0
	(2)	0.0	0	0.2	2	0.0	0	31.4	38094	0.0	0	37.3	53755	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
	(3)	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	23.9	22070	0.0	0	0.6	14	2.5	241	0.0	0
	Total	9.9	3787	4.8	819	27.7	29645	43.2	43474	0.0	0	91.8	168515	23.9	22070	0.0	0	0.6	14	13.1	4583	0.0	0
Annual		1367.4	7651092	959.2	2192543	1311.9	4161715	991.1	2972943	994.8	2867489	1370.4	9543942	1282.7	7833044	930.8	2992483	1391.5	7897115	917.6	1805412	865.9	1965155

Volume d'écoulement du bassin (2/2)

Year		1977		1978		1979		1980		1991		1992		1993		1994		1995		Average	
Month		Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)	Rainfall (mm)	Runoff (m3)
Jan	(1)	0.5	10	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
	(2)	0.0	0	0.0	0	2.3	204	8.7	2924	3.8	558	0.0	0	0.0	0	0.0	0	0.0	0	1.9	243
	(3)	23.6	21519	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3738
	Total	24.1	21529	0.0	0	2.3	204	8.7	2924	3.8	558	0.0	0	0.0	0	0.0	0	0.0	0	5.5	3982
Feb	(1)	0.0	0	11.7	5289	0.0	0	8.2	2598	25.8	25718	13.6	7146	0.0	0	0.0	0	0.0	0	14.0	38629
	(2)	0.0	0	8.6	2858	0.0	0	21.3	17529	10.4	4179	4.8	890	2.0	155	0.1	0	0.0	0	9.1	8374
	(3)	23.9	22070	0.0	0	0.0	0	0.0	0	80.7	310047	0.0	0	44.8	77345	0.0	0	39.2	59371	15.2	29208
	Total	23.9	22070	20.3	8147	0.0	0	29.5	20127	116.9	339944	18.4	8036	46.8	77700	0.1	0	39.2	59371	38.3	76211
Mar	(1)	0.0	0	67.4	175517	0.0	0	57.1	125971	0.0	0	16.4	10392	27.2	28585	5.7	1255	0.0	0	20.9	57811
	(2)	7.3	2059	13.4	6938	22.1	18871	21.6	18026	0.0	0	2.8	303	14.1	7681	18.1	12658	37.6	54623	27.4	60375
	(3)	69.1	184483	24.8	23763	41.7	67185	4.6	818	126.0	1138517	38.7	37866	168.1	2330340	20.2	15765	43.1	71772	48.0	291844
	Total	76.4	186541	105.6	206218	63.8	86055	83.3	144815	126.0	1138517	57.9	68560	209.4	2366606	44.0	29678	80.7	126395	96.4	390027
Apr	(1)	13.4	6938	58.9	134039	27.2	28585	10.5	4260	20.0	15455	86.0	382670	15.0	8693	95.0	520746	71.0	194767	40.9	127940
	(2)	32.2	40060	88.6	420651	58.1	130422	55.7	119870	11.7	3289	3.4	447	38.0	55791	80.8	311358	8.0	2473	44.1	112260
	(3)	15.3	9044	38.4	131773	38.5	57269	34.0	44664	18.5	13223	34.8	46790	44.3	75824	43.4	72774	79.2	290663	41.0	82138
	Total	60.9	56042	205.9	686462	123.8	216276	100.2	168793	50.2	33967	124.2	429907	97.3	140308	219.2	904879	158.2	487903	125.9	322338
May	(1)	80.0	300957	49.9	96206	52.3	106492	66.9	172922	41.8	67307	10.1	3941	43.3	72439	40.4	63061	50.7	99315	56.8	72954
	(2)	16.0	9891	42.8	70776	74.9	237955	16.1	10015	38.3	56676	94.6	314215	25.4	24927	59.2	135407	12.2	5751	45.4	134610
	(3)	42.9	71107	27.7	29645	6.1	1438	109.5	782272	37.9	129526	18.0	12518	36.7	124212	51.0	100494	41.1	65265	47.2	133741
	Total	138.9	381935	120.4	196627	133.3	345885	192.5	965210	138.0	253709	122.7	330675	125.4	221579	150.6	298962	104.0	170331	129.5	381305
Jun	(1)	92.5	480529	106.6	726110	152.5	1841516	11.9	5471	58.5	132224	66.7	171890	30.7	36415	63.7	156775	49.9	96206	68.4	310606
	(2)	45.7	80692	14.2	7791	95.7	532264	38.7	57866	58.0	129974	4.9	928	2.0	155	17.4	11698	19.3	14392	50.5	369855
	(3)	0.8	14	8.4	2726	36.4	31192	0.0	0	23.4	21156	1.0	39	10.0	3864	0.9	31	20.4	16079	20.9	36849
	Total	138.8	561235	129.2	736627	284.6	2424772	50.6	63337	139.9	283354	72.6	172856	42.7	40433	82.0	168504	89.6	126676	139.8	917311
Jul	(1)	18.6	13567	2.6	261	0.2	2	6.1	1438	73.8	225153	14.3	7901	28.9	32270	23.0	20439	181.0	2776878	52.6	185055
	(2)	0.0	0	1.3	65	109.8	788192	2.3	204	50.3	97754	68.4	180764	0.2	2	91.4	463287	13.0	6530	37.2	125694
	(3)	33.2	42587	31.0	100494	100.2	608990	290.7	8116203	5.2	1045	10.8	4507	1.9	139	31.6	38581	15.4	9163	43.9	310637
	Total	51.8	55954	34.9	100820	210.2	1397184	299.1	8117847	129.3	323952	93.5	193171	31.0	32411	146.0	522306	209.4	2792571	113.7	821384
Aug	(1)	15.5	9282	0.0	0	28.5	51383	15.0	8695	32.5	40810	0.2	2	15.4	9165	16.1	10015	35.2	47872	23.4	80555
	(2)	45.8	81046	36.1	50352	12.9	6430	113.5	904592	94.4	510963	0.0	0	31.9	39317	25.3	24731	137.0	1410696	42.7	194519
	(3)	141.5	1530039	10.0	3864	12.3	5845	52.1	104876	31.3	37852	34.7	46522	56.5	123338	4.9	928	12.2	5751	42.7	165354
	Total	202.8	1620367	46.1	54215	53.7	43657	182.6	1018161	158.2	589625	34.9	46524	103.8	171818	46.3	35674	184.4	1464319	108.8	440429
Sep	(1)	104.0	677397	9.2	3270	45.5	79987	66.9	172922	126.8	1157376	55.1	47601	70.8	193671	80.3	304828	57.6	128187	70.2	446947
	(2)	93.0	488457	96.8	550591	29.1	32718	16.1	10015	0.8	25	60.3	140486	5.8	1300	24.1	22441	78.9	286848	54.9	228829
	(3)	73.7	224003	34.8	46790	17.8	12242	109.5	782272	36.5	51474	76.3	254651	120.2	1006176	71.3	197089	16.2	10140	56.4	248154
	Total	270.7	1389858	140.8	600651	92.4	124947	192.5	965210	164.1	1208874	171.7	442738	196.8	1201147	175.7	524357	152.7	425175	181.5	923930
Oct	(1)	67.6	176560	7.6	2232	30.6	98924	11.9	5471	15.8	7358	49.4	94287	116.8	932183	22.3	19214	48.7	91634	43.4	146057
	(2)	55.3	118154	22.4	19386	29.7	34081	38.7	57866	1.6	99	27.0	28166	0.2	2	38.7	57866	34.2	45191	26.2	38158
	(3)	7.6	2232	99.9	603731	23.9	22070	0.0	0	14.8	8463	9.3	3342	55.8	120301	17.0	11166	0.1	0	40.5	261360
	Total	130.3	296946	129.9	625349	104.2	155074	50.6	63337	30.2	15920	85.7	125795	172.8	1052485	78.0	88245	83.0	136825	110.1	443575
Nov	(1)	0.0	0	0.0	0	13.0	6530	6.1	1438	0.0	0	72.7	212628	9.5	3487	10.6	4341	9.0	3130	16.4	38537
	(2)	4.1	649	0.0	0	0.0	0	2.3	204	1.9	139	63.5	1357931	34.0	112664	0.0	0	0.0	0	15.4	21544
	(3)	0.0	0	0.0	0	0.0	0	1.1	47	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.4	1320
	Total	4.1	649	0.0	0	13.0	6530	9.5	1689	1.9	139	136.2	368421	63.5	116151	10.6	4341	9.0	3130	32.2	61300
Dec	(1)	39.3	59674	4.6	818	0.0	0	12.0	3564	3.3	421	0.0	0	0.0	0	0.0	0	4.1	649	9.1	11295
	(2)	0.0	0	2.3	204	0.0	0	3.9	588	0.0	0	0.0	0	0.0	0	0.0	0	19.3	14392	4.7	3352
	(3)	0.0	0	0.0	0	1.1	47	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.0	155	1.5	1126
	Total	39.3	59674	6.9	1022	1.1	47	15.9	6151	3.3	421	0.0	0	0.0	0	0.0	0	25.4	15196	15.3	17771
Annual		1162.2	4652800	960.0	3216137	1082.6	4800632	1215.0	1537602	1061.8	4188980	917.8	2386682	1089.5	5420638	952.3	2576948	1155.6	5807892	1096.9	4805561

C - 2. Bilan de l'eau du barrage

Résultat du calcul du bilan de l'eau

Case 1 (1/4) : Vmax = 2.735.000 m³

Year.Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1966.01	0.0	0	252,460	103,663	1,343,877	0	0	272.01	35.30
1966.02	3.0	348	596,485	93,639	654,100	0	0	270.43	31.99
1966.03	72.1	94,460	544,731	45,966	157,863	0	0	268.39	14.08
1966.04	186.2	906,713	276,114	28,956	759,505	0	0	270.72	38.21
1966.05	148.6	540,243	128,069	28,120	1,143,560	0	0	271.39	49.52
1966.06	393.8	4,288,324	0	41,548	2,375,000	3,015,336	0	273.30	83.13
1966.07	107.3	214,165	51,308	43,614	2,359,134	135,110	0	273.48	82.74
1966.08	69.6	76,521	426,453	38,388	1,970,813	0	0	272.98	73.08
1966.09	169.7	617,874	389,957	34,713	2,117,968	46,049	0	273.17	76.77
1966.10	168.5	881,337	277,958	38,382	2,139,768	543,196	0	273.20	77.31
1966.11	38.7	27,420	278,162	50,722	1,838,204	0	0	272.77	69.32
1966.12	9.9	3,787	0	79,246	1,762,745	0	0	272.66	67.18
1967.01	0.0	0	252,460	135,483	1,374,802	0	0	272.05	36.18
1967.02	58.7	57,213	494,598	97,902	839,515	0	0	270.95	40.71
1967.03	158.1	418,334	447,759	62,242	747,848	0	0	270.69	37.88
1967.04	124.5	242,005	373,266	33,362	583,225	0	0	270.23	32.80
1967.05	125.4	357,312	182,344	25,533	732,660	0	0	270.65	37.41
1967.06	138.6	596,605	0	25,280	1,103,986	0	0	271.92	54.13
1967.07	31.8	24,686	112,461	28,430	1,187,781	0	0	271.68	50.80
1967.08	98.7	133,743	374,087	23,047	924,390	0	0	271.14	43.20
1967.09	125.3	289,170	358,190	19,862	835,507	0	0	270.94	40.39
1967.10	38.2	25,053	484,937	16,874	358,750	0	0	269.43	24.25
1967.11	35.1	47,601	285,746	15,828	104,776	0	0	268.03	10.87
1967.12	4.8	819	0	12,299	93,296	0	0	267.92	10.06
1968.01	5.5	1,169	252,460	19,683	0	0	-177,677	265.95	0.00
1968.02	103.7	385,790	424,884	16,245	0	0	-55,340	265.95	0.00
1968.03	46.0	71,172	593,495	3,531	0	0	-525,854	265.95	0.00
1968.04	76.3	83,141	446,291	0	0	0	-363,150	265.95	0.00
1968.05	157.8	383,368	132,763	5,061	245,341	0	0	268.97	19.36
1968.06	197.4	764,887	0	15,228	995,203	0	0	271.28	45.24
1968.07	184.3	517,260	0	25,654	1,486,810	0	0	272.23	59.35
1968.08	158.9	539,084	279,497	27,722	1,718,674	0	0	272.59	65.93
1968.09	168.5	1,011,088	436,979	33,756	1,965,361	293,463	0	272.97	72.93
1968.10	142.1	327,731	338,928	34,112	1,920,256	0	0	272.90	71.64
1968.11	43.7	47,380	269,724	47,587	1,650,324	0	0	272.48	63.99
1968.12	27.7	29,645	0	73,821	1,606,148	0	0	272.41	62.74
1969.01	0.0	0	252,460	126,527	1,227,161	0	0	271.77	51.93
1969.02	38.4	21,412	531,176	88,360	629,037	0	0	270.36	31.21
1969.03	73.1	72,849	541,604	44,695	115,587	0	0	268.11	11.53
1969.04	112.6	171,413	381,700	4,918	63,130	0	-162,748	267.32	7.67
1969.05	13.2	6,241	358,629	2,148	0	0	-291,405	265.95	0.00
1969.06	104.8	620,189	0	12,181	608,009	0	0	270.30	33.56
1969.07	127.5	477,958	115,044	20,305	950,618	0	0	271.19	43.95
1969.08	85.4	107,771	398,256	19,686	640,447	0	0	270.39	34.56
1969.09	92.7	114,475	426,405	14,887	313,629	0	0	269.25	22.34
1969.10	212.7	934,233	270,455	12,074	965,334	0	0	271.22	44.38
1969.11	87.3	402,929	281,406	34,530	1,052,327	0	0	271.40	46.89
1969.12	43.2	43,474	0	54,163	1,011,635	0	0	271.38	46.58
1970.01	44.6	76,854	172,042	93,910	852,538	0	0	270.98	41.11
1970.02	0.0	0	602,020	65,150	185,368	0	0	268.57	15.73
1970.03	77.2	114,181	535,778	15,661	0	0	-251,887	265.95	0.00
1970.04	133.7	281,494	348,185	0	0	0	-66,691	265.95	0.00
1970.05	87.4	103,947	223,359	1,448	0	0	-120,860	265.95	0.00
1970.06	101.8	152,319	0	3,836	148,482	0	0	268.32	13.51
1970.07	78.5	165,648	94,012	10,005	210,113	0	0	268.73	17.23
1970.08	123.0	561,314	347,331	8,563	415,533	0	0	269.66	26.65
1970.09	234.3	1,272,158	224,955	12,985	1,449,750	0	0	272.17	58.30
1970.10	59.3	68,073	446,835	25,920	1,045,069	0	0	271.39	46.68
1970.11	54.8	71,478	249,935	30,283	836,328	0	0	270.94	40.61
1970.12	0.0	0	0	46,328	790,000	0	0	270.81	39.18
1971.01	0.0	0	252,460	78,888	458,652	0	0	269.83	28.47
1971.02	82.9	132,787	452,193	39,389	99,855	0	0	268.00	10.38
1971.03	111.6	301,801	479,853	8,330	100,142	0	-186,669	268.00	10.39
1971.04	112.7	213,842	405,062	5,899	152,377	0	-249,354	268.35	13.74
1971.05	149.0	898,202	201,754	17,459	831,365	0	0	270.93	40.46
1971.06	239.5	3,404,126	0	31,760	2,375,000	1,828,731	0	273.30	83.13
1971.07	48.0	43,356	79,253	43,600	2,295,503	0	0	273.40	81.16
1971.08	54.0	42,380	454,214	37,491	1,846,176	0	0	272.79	69.54
1971.09	387.7	3,988,056	191,310	34,994	2,375,000	3,232,928	0	273.30	83.13
1971.10	81.7	149,604	408,766	38,969	2,076,870	0	0	273.12	75.75
1971.11	11.3	3,274	328,344	48,878	1,702,922	0	0	272.56	65.48
1971.12	91.8	168,315	0	78,381	1,793,056	0	0	272.70	68.01

Résultat du calcul du bilan de l'eau

Case 1 (2/4) : Vmax = 2.735.000 m³

Year.Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1972.01	0.0	0	252,460	137,217	1,403,379	0	0	272.10	56.99
1972.02	39.4	30,061	529,331	97,609	806,501	0	0	270.86	39.69
1972.03	214.5	1,605,622	346,886	55,052	2,010,184	0	0	273.03	74.10
1972.04	114.8	228,883	412,753	68,379	1,757,936	0	0	272.65	67.04
1972.05	228.5	1,132,299	41,417	53,583	2,375,000	420,236	0	273.50	83.13
1972.06	246.3	3,415,581	0	49,435	2,375,000	3,366,147	0	273.50	83.13
1972.07	33.5	31,577	113,937	43,609	2,246,785	2,246	0	273.34	79.96
1972.08	106.4	436,182	373,761	36,685	2,272,320	0	0	273.37	80.39
1972.09	150.3	520,576	416,336	36,548	2,061,181	279,031	0	273.10	75.36
1972.10	123.9	210,137	332,253	35,910	1,903,155	0	0	272.87	71.16
1972.11	1.2	56	347,346	45,644	1,510,221	0	0	272.26	60.02
1972.12	23.9	22,070	0	68,529	1,463,761	0	0	272.19	58.70
1973.01	0.0	0	252,460	118,384	1,092,918	0	0	271.49	48.06
1973.02	25.0	15,499	555,898	81,534	470,986	0	0	269.88	29.00
1973.03	38.3	32,288	605,241	31,572	0	0	-133,541	265.95	0.00
1973.04	145.3	347,580	328,447	2,465	131,486	0	-114,818	268.21	12.48
1973.05	125.7	236,172	158,061	9,139	200,458	0	0	268.67	16.64
1973.06	82.5	136,766	0	12,064	325,160	0	0	269.30	22.83
1973.07	43.6	46,003	56,551	11,964	302,648	0	0	269.21	21.87
1973.08	164.1	1,235,000	301,002	21,686	1,214,961	0	0	271.74	51.38
1973.09	199.0	689,716	286,472	23,406	1,592,798	0	0	272.39	62.36
1973.10	102.5	252,950	412,772	27,488	1,405,489	0	0	272.10	57.05
1973.11	4.8	508	340,704	36,300	1,028,992	0	0	271.33	46.21
1973.12	0.0	0	0	52,760	976,232	0	0	271.25	44.69
1974.01	20.6	16,396	214,435	90,105	688,067	0	0	270.52	36.03
1974.02	8.2	2,598	586,892	54,293	49,480	0	0	267.34	6.39
1974.03	136.2	276,688	433,427	7,831	5,299	0	-120,388	266.18	1.01
1974.04	154.6	404,799	350,933	3,941	203,693	0	-148,470	268.69	16.84
1974.05	56.6	45,852	278,774	11,383	0	0	-40,613	265.93	0.00
1974.06	40.0	21,893	0	528	21,365	0	0	266.89	4.07
1974.07	193.6	988,998	0	5,025	1,005,339	0	0	271.31	45.53
1974.08	164.2	420,584	264,586	21,997	1,139,339	0	0	271.58	49.40
1974.09	301.4	2,322,736	269,186	31,744	2,375,000	786,144	0	273.50	83.13
1974.10	298.7	3,391,077	272,263	39,962	2,375,000	3,078,851	0	273.50	83.13
1974.11	16.8	5,480	318,566	54,193	2,007,722	0	0	273.03	74.04
1974.12	0.6	14	0	84,608	1,923,127	0	0	272.91	71.73
1975.01	0.0	0	252,460	144,656	1,526,011	0	0	272.29	60.46
1975.02	17.3	9,408	570,103	104,783	860,532	0	0	271.01	41.35
1975.03	111.4	399,028	484,543	58,464	716,554	0	0	270.60	36.91
1975.04	112.4	291,786	388,113	34,317	585,910	0	0	270.24	32.88
1975.05	142.5	287,398	167,944	26,530	678,834	0	0	270.50	35.75
1975.06	130.9	255,214	0	23,055	910,993	0	0	271.11	42.81
1975.07	117.2	201,626	76,670	23,977	1,014,971	0	0	271.33	45.81
1975.08	44.5	35,263	471,916	20,103	558,216	0	0	270.16	32.03
1975.09	121.3	192,599	370,941	14,041	365,833	0	0	269.46	24.55
1975.10	46.7	46,986	469,877	7,931	0	0	-64,990	265.95	0.00
1975.11	60.3	78,521	239,779	1,161	0	0	-162,419	265.95	0.00
1975.12	13.1	4,583	0	715	3,867	0	0	266.12	0.74
1976.01	0.0	0	252,460	1,330	0	0	-249,923	265.95	0.00
1976.02	93.6	333,714	441,654	14,189	0	0	-122,128	265.95	0.00
1976.03	42.0	60,727	599,709	0	0	0	-538,982	265.95	0.00
1976.04	105.2	150,559	394,634	0	0	0	-244,075	265.95	0.00
1976.05	128.9	270,145	153,970	2,992	159,432	0	-46,249	268.40	14.17
1976.06	89.8	112,311	0	9,915	262,029	0	0	269.63	20.16
1976.07	84.0	177,188	81,467	11,703	346,046	0	0	269.38	23.71
1976.08	94.2	176,369	384,873	8,583	128,959	0	0	268.19	12.33
1976.09	122.3	577,197	375,946	7,658	322,552	0	0	269.29	22.72
1976.10	62.3	64,337	441,543	5,784	25,558	0	-83,996	267.02	4.69
1976.11	41.6	40,403	273,288	2,409	0	0	-209,731	265.95	0.00
1976.12	0.0	0	0	0	0	0	0	265.95	0.00
1977.01	24.1	21,529	208,920	3	0	0	-187,394	265.95	0.00
1977.02	23.9	22,070	537,927	0	0	0	-533,857	265.95	0.00
1977.03	76.4	186,541	541,952	0	0	0	-355,411	265.95	0.00
1977.04	60.9	56,042	474,207	0	0	0	-418,165	265.95	0.00
1977.05	138.9	381,935	202,065	9,279	170,592	0	0	268.47	14.84
1977.06	138.8	561,235	0	16,420	715,406	0	0	270.60	36.88
1977.07	51.8	55,954	56,027	19,411	695,922	0	0	270.55	36.28
1977.08	202.8	1,620,367	275,910	15,961	2,024,419	0	0	273.03	74.45
1977.09	270.7	1,389,858	248,875	35,766	2,375,000	754,633	0	273.50	83.13
1977.10	130.5	296,946	324,963	39,937	2,201,790	105,256	0	273.28	78.84
1977.11	4.1	649	341,996	31,058	1,809,386	0	0	272.73	68.30
1977.12	39.3	39,674	0	79,736	1,789,323	0	0	272.70	67.93

Résultat du calcul du bilan de l'eau

Case 1 (3/4) : Vmax = 2.735.000 m³

Year.Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1978.01	0.0	0	252,460	137,003	1,399,860	0	0	272.09	56.89
1978.02	20.3	8,147	564,569	97,862	745,576	0	0	270.69	37.81
1978.03	105.6	206,218	328,923	53,801	369,069	0	0	269.17	24.68
1978.04	205.9	686,462	244,381	27,723	783,426	0	0	270.79	38.98
1978.05	120.4	196,627	180,878	30,380	768,595	0	0	270.75	38.52
1978.06	129.2	736,627	0	30,380	1,474,842	0	0	272.21	59.01
1978.07	54.9	100,820	24,947	30,851	1,519,864	0	0	272.28	60.29
1978.08	46.1	34,215	469,770	27,191	1,077,119	0	0	271.45	47.60
1978.09	140.8	600,651	342,670	22,756	1,312,344	0	0	271.91	54.39
1978.10	129.9	625,349	408,344	23,556	1,505,792	0	0	272.26	59.89
1978.11	0.0	0	349,560	38,120	1,118,112	0	0	271.54	48.79
1978.12	6.9	1,022	0	55,720	1,063,414	0	0	271.43	47.21
1979.01	2.3	204	252,460	95,182	715,977	0	0	270.66	36.90
1979.02	0.0	0	602,020	55,926	58,031	0	0	267.45	7.27
1979.03	63.8	86,055	559,694	4,061	0	0	-419,672	265.95	0.00
1979.04	123.8	216,276	363,259	0	37,014	0	-183,997	267.17	5.60
1979.05	133.5	345,885	181,121	10,515	191,264	0	0	268.61	16.09
1979.06	284.6	2,424,772	0	32,160	2,375,000	208,876	0	273.50	83.13
1979.07	210.2	1,397,184	0	43,607	2,375,000	1,353,577	0	273.50	83.13
1979.08	53.7	43,657	455,011	38,881	1,924,766	0	0	272.91	71.77
1979.09	92.4	124,947	443,339	31,840	1,374,534	0	0	272.36	61.84
1979.10	104.2	155,074	366,038	29,002	1,334,569	0	0	271.99	55.03
1979.11	13.0	6,530	325,576	35,294	980,228	0	0	271.25	44.81
1979.12	1.1	47	0	51,151	929,121	0	0	271.15	43.33
1980.01	8.7	2,924	252,460	87,432	592,154	0	0	270.26	33.07
1980.02	29.5	20,127	547,395	48,947	15,738	0	0	266.64	3.00
1980.03	83.3	144,815	551,062	7,224	0	0	-397,732	265.95	0.00
1980.04	100.2	168,793	405,581	0	16,546	0	-253,331	266.68	3.13
1980.05	192.5	965,210	108,352	7,216	866,185	0	0	271.02	41.52
1980.06	50.6	63,337	0	24,906	904,616	0	0	271.10	42.63
1980.07	299.1	8,117,847	0	22,295	2,375,000	6,625,168	0	273.50	83.13
1980.08	182.6	1,018,161	256,330	39,865	2,375,000	721,965	0	273.50	83.13
1980.09	192.5	965,210	328,827	36,283	2,375,000	600,100	0	273.50	83.13
1980.10	50.6	63,337	463,351	38,201	1,936,781	0	0	272.93	72.11
1980.11	9.5	1,689	332,033	46,474	1,559,963	0	0	272.34	61.33
1980.12	15.9	6,151	0	70,289	1,495,825	0	0	272.24	59.61
1991.01	3.8	558	252,460	120,230	1,123,693	0	0	271.55	48.95
1991.02	116.9	339,944	397,891	84,252	981,491	0	0	271.26	44.84
1991.03	126.0	1,138,317	489,780	56,814	1,573,417	0	0	272.36	61.81
1991.04	50.2	33,967	493,287	55,988	1,038,109	0	0	271.41	47.06
1991.05	138.0	253,709	137,062	35,982	1,138,773	0	0	271.58	49.38
1991.06	139.9	283,354	0	31,241	1,390,885	0	0	272.08	56.63
1991.07	129.3	323,952	106,927	32,282	1,575,629	0	0	272.37	61.87
1991.08	158.2	589,625	282,662	31,312	1,851,280	0	0	272.79	69.69
1991.09	164.1	1,208,874	461,769	34,031	1,941,663	622,691	0	272.93	72.25
1991.10	30.2	15,920	499,696	32,103	1,425,784	0	0	272.13	57.62
1991.11	1.9	139	346,055	36,626	1,043,243	0	0	271.38	46.63
1991.12	3.3	421	0	53,240	990,424	0	0	271.27	45.10
1992.01	0.0	0	252,460	90,931	647,033	0	0	270.41	31.77
1992.02	18.4	8,036	568,074	52,568	34,428	0	0	267.14	5.39
1992.03	57.9	68,560	570,288	3,017	0	0	-470,316	265.93	0.00
1992.04	124.2	429,907	372,266	7,938	49,703	0	0	267.31	6.61
1992.05	122.7	530,675	214,481	9,046	360,371	0	-3,523	269.44	24.32
1992.06	72.6	172,856	0	16,858	516,369	0	0	270.04	30.73
1992.07	93.5	193,171	96,595	17,106	595,839	0	0	270.27	33.19
1992.08	34.9	46,524	490,297	12,444	139,622	0	0	268.26	12.98
1992.09	171.7	442,738	291,294	6,415	284,650	0	0	269.14	21.11
1992.10	85.7	125,795	399,790	8,130	2,525	0	0	266.06	0.48
1992.11	136.2	368,421	170,111	10,605	190,229	0	0	268.60	16.03
1992.12	0.0	0	0	18,083	172,146	0	0	268.48	14.94
1993.01	0.0	0	252,460	29,485	0	0	-109,799	265.95	0.00
1993.02	46.8	77,700	517,562	0	2,953	0	-442,816	266.08	0.56
1993.03	209.4	2,366,606	399,978	706	2,220,798	0	-251,922	273.30	79.31
1993.04	97.3	140,308	409,451	74,086	1,877,569	0	0	272.84	70.43
1993.05	125.4	221,579	161,520	53,069	1,884,559	0	0	272.85	70.63
1993.06	42.7	40,433	0	42,140	1,882,851	0	0	272.84	70.58
1993.07	31.0	32,411	113,015	37,211	1,765,036	0	0	272.66	67.24
1993.08	103.8	171,818	366,817	30,827	1,539,210	0	0	272.31	60.84
1993.09	196.8	1,201,147	338,063	27,609	2,374,685	0	0	273.50	83.12
1993.10	172.8	1,052,485	286,037	39,026	2,182,264	919,843	0	273.25	78.36
1993.11	63.5	116,151	235,683	52,218	2,010,494	0	0	273.03	74.11
1993.12	0.0	0	0	84,691	1,925,803	0	0	272.91	71.80

Résultat du calcul du bilan de l'eau

Case 1 (3/4) : Vmax = 2.735.000 m³

Year Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1994.01	0.0	0	252,460	141,809	1,528,534	0	0	272.29	60.51
1994.02	0.1	0	601,836	103,654	823,045	0	0	270.90	40.20
1994.03	41.0	29,678	594,640	50,952	207,131	0	0	268.31	17.03
1994.04	219.2	901,879	214,638	28,547	868,825	0	0	271.02	41.59
1994.05	150.6	298,962	113,700	32,619	1,021,468	0	0	271.34	46.00
1994.06	82.0	168,304	0	28,884	1,161,089	0	0	271.63	50.03
1994.07	146.0	522,306	58,823	28,635	1,595,937	0	0	272.40	62.45
1994.08	46.3	35,674	468,362	28,400	1,134,849	0	0	271.37	49.27
1994.09	175.7	524,357	361,144	23,620	1,274,442	0	0	271.86	53.30
1994.10	78.0	88,245	412,801	23,790	926,096	0	0	271.14	43.25
1994.11	10.6	4,341	330,001	27,299	573,133	0	0	270.20	32.49
1994.12	0.0	0	0	37,059	536,076	0	0	270.10	31.34
1995.01	0.0	0	252,460	63,074	220,541	0	0	268.80	17.86
1995.02	39.2	59,371	531,040	14,315	0	0	-265,443	265.95	0.00
1995.03	80.7	126,395	529,836	0	0	0	-403,441	265.95	0.00
1995.04	158.2	487,903	357,709	3,402	290,663	0	-163,871	269.16	21.37
1995.05	101.0	170,331	212,222	16,928	231,845	0	0	268.87	18.54
1995.06	89.6	126,676	0	12,624	345,897	0	0	269.38	23.70
1995.07	209.4	2,792,571	88,109	32,941	2,273,910	743,508	0	273.37	80.63
1995.08	184.4	1,464,319	275,869	39,335	2,223,420	1,199,605	0	273.31	79.38
1995.09	152.7	425,175	364,508	36,413	2,138,248	109,427	0	273.20	77.27
1995.10	83.0	136,825	405,402	36,535	1,833,136	0	0	272.77	69.17
1995.11	9.0	3,130	332,956	44,585	1,458,725	0	0	272.18	58.56
1995.12	25.4	15,196	0	67,063	1,406,859	0	0	272.10	57.09

Résultat du calcul du bilan de l'eau

Case 2 (1/4) : Vmax = 2.819.225 m³

Year Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1966.01	0.0	0	252,460	103,663	1,343,877	0	0	272.01	55.30
1966.02	3.0	348	596,485	93,639	654,100	0	0	270.43	34.99
1966.03	72.1	94,460	544,731	45,966	157,863	0	0	268.39	14.08
1966.04	186.2	906,713	276,114	28,936	759,505	0	0	270.72	38.24
1966.05	148.6	540,243	128,069	28,120	1,143,560	0	0	271.59	49.52
1966.06	393.8	4,288,324	0	45,662	2,819,225	2,566,997	0	274.00	94.56
1966.07	107.3	214,165	51,308	49,607	2,801,385	131,090	0	273.98	94.10
1966.08	69.6	76,321	426,453	43,827	2,407,626	0	0	273.54	83.97
1966.09	169.7	617,874	389,957	39,695	2,558,925	36,923	0	273.71	87.86
1966.10	168.5	881,337	277,958	43,826	2,380,155	538,323	0	273.73	88.41
1966.11	38.7	27,320	278,162	58,076	2,271,236	0	0	273.37	80.56
1966.12	9.9	3,787	0	92,196	2,182,827	0	0	273.25	78.37
1967.01	0.0	0	252,460	158,443	1,771,924	0	0	272.67	67.44
1967.02	38.7	57,213	494,598	119,296	1,215,243	0	0	271.74	51.39
1967.03	158.1	418,334	447,759	77,349	1,108,469	0	0	271.52	48.51
1967.04	124.5	242,005	373,286	44,087	933,121	0	0	271.16	43.43
1967.05	125.4	357,312	182,344	33,393	1,074,697	0	0	271.43	47.33
1967.06	138.6	596,605	0	31,190	1,640,112	0	0	272.47	63.70
1967.07	31.8	24,686	112,461	33,422	1,518,915	0	0	272.28	60.26
1967.08	98.7	133,743	374,087	27,664	1,250,907	0	0	271.81	52.62
1967.09	125.3	289,170	358,190	24,050	1,157,836	0	0	271.62	49.93
1967.10	38.2	25,053	484,937	21,634	676,318	0	0	270.49	35.67
1967.11	35.1	47,601	285,746	23,544	414,629	0	0	269.66	26.61
1967.12	4.8	819	0	30,260	385,188	0	0	269.54	25.37
1968.01	5.5	1,169	252,460	50,723	83,175	0	0	267.78	9.26
1968.02	103.7	385,790	424,884	28,408	15,672	0	0	266.64	2.99
1968.03	46.0	71,172	593,495	5,675	0	0	-512,326	265.95	0.00
1968.04	76.3	83,141	446,291	0	0	0	-363,150	265.95	0.00
1968.05	157.8	383,368	132,763	5,061	245,544	0	0	268.97	19.36
1968.06	197.4	764,887	0	15,228	995,203	0	0	271.38	45.24
1968.07	184.3	517,260	0	25,654	1,486,810	0	0	272.23	59.35
1968.08	158.9	539,084	279,497	27,722	1,718,674	0	0	272.59	65.93
1968.09	168.5	1,011,088	436,979	35,911	2,256,873	0	0	273.35	80.21
1968.10	142.1	327,731	338,928	37,781	2,207,895	0	0	273.29	78.99
1968.11	43.7	47,380	269,724	52,537	1,933,013	0	0	272.92	72.01
1968.12	27.7	29,645	0	82,975	1,879,684	0	0	272.84	70.49
1969.01	0.0	0	252,460	142,171	1,485,053	0	0	272.22	59.30
1969.02	38.4	21,412	531,176	102,435	872,854	0	0	271.03	41.71
1969.03	73.1	72,849	541,604	55,682	348,416	0	0	269.39	23.81
1969.04	112.6	171,413	381,700	17,207	120,922	0	0	268.14	11.85
1969.05	13.2	6,241	358,629	4,772	0	0	-236,238	265.95	0.00
1969.06	104.8	620,189	0	12,181	608,009	0	0	270.30	33.56
1969.07	127.5	477,958	115,044	20,305	950,618	0	0	271.19	43.95
1969.08	85.4	107,771	398,256	19,686	640,447	0	0	270.39	34.56
1969.09	92.7	114,475	426,405	14,887	313,629	0	0	269.23	22.34
1969.10	212.7	934,233	270,455	12,074	965,334	0	0	271.22	44.38
1969.11	87.5	402,929	281,406	34,530	1,052,327	0	0	271.40	46.89
1969.12	43.2	43,474	0	54,165	1,041,633	0	0	271.38	46.58
1970.01	44.6	76,854	172,042	93,910	852,538	0	0	270.98	41.11
1970.02	0.0	0	602,020	65,150	185,368	0	0	268.57	15.73
1970.03	77.2	114,184	535,778	15,661	0	0	-251,887	265.95	0.00
1970.04	133.7	281,491	348,185	0	0	0	-66,691	265.95	0.00
1970.05	87.4	103,947	223,359	1,448	0	0	-120,860	265.95	0.00
1970.06	101.8	152,319	0	3,836	148,482	0	0	268.32	13.51
1970.07	78.5	165,648	94,012	10,005	210,113	0	0	268.73	17.23
1970.08	123.0	561,314	347,331	8,563	415,533	0	0	269.66	26.65
1970.09	234.3	1,272,158	224,955	12,985	1,449,750	0	0	272.17	58.30
1970.10	59.3	68,073	446,835	25,920	1,045,069	0	0	271.39	46.68
1970.11	54.8	71,478	249,935	30,283	836,328	0	0	270.94	40.61
1970.12	0.0	0	0	46,328	790,000	0	0	270.81	39.18
1971.01	0.0	0	252,460	78,888	458,652	0	0	269.83	28.17
1971.02	82.9	132,787	452,195	39,389	99,853	0	0	268.00	10.58
1971.03	111.6	301,801	479,853	8,330	100,142	0	-186,669	268.00	10.59
1971.04	112.7	213,842	405,062	5,899	132,377	0	-249,354	268.35	13.71
1971.05	149.0	898,202	201,754	17,459	831,365	0	0	270.93	40.46
1971.06	239.5	3,404,126	0	33,818	2,819,225	1,382,449	0	274.00	94.56
1971.07	48.0	43,356	79,253	49,575	2,733,753	0	0	273.90	92.36
1971.08	54.0	42,380	454,214	42,865	2,279,053	0	0	273.38	80.75
1971.09	387.7	3,988,056	191,310	40,063	2,819,225	3,216,509	0	274.00	94.56
1971.10	81.7	149,604	408,766	44,434	2,515,630	0	0	273.66	86.73
1971.11	11.3	3,274	328,344	56,254	2,134,306	0	0	273.19	77.17
1971.12	91.8	168,515	0	91,392	2,211,430	0	0	273.29	79.08

Résultat du calcul du bilan de l'eau

Case 2 (2/4) : Vmax = 2.819.225 m³

Year.Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1972.01	0.0	0	252,460	159,874	1,799,695	0	0	272.71	68.21
1972.02	39.4	30,061	529,331	118,935	1,180,890	0	0	271.67	50.60
1972.03	214.5	1,605,622	346,886	70,319	2,369,307	0	0	273.49	82.99
1972.04	114.8	228,883	412,753	77,591	2,107,847	0	0	273.16	76.52
1972.05	228.5	1,132,299	41,417	60,485	2,819,225	319,019	0	274.00	91.56
1972.06	246.3	3,415,581	0	56,232	2,819,225	3,359,350	0	274.00	91.56
1972.07	33.5	31,577	113,937	49,595	2,687,271	0	0	273.85	91.16
1972.08	106.4	436,182	373,761	42,107	2,707,584	0	0	273.87	91.69
1972.09	150.3	520,576	416,336	41,588	2,502,113	268,125	0	273.64	86.40
1972.10	123.9	210,137	332,253	41,277	2,338,720	0	0	273.45	82.23
1972.11	1.2	56	347,346	53,280	1,938,149	0	0	272.93	72.15
1972.12	23.9	22,070	0	82,386	1,877,833	0	0	272.84	70.44
1973.01	0.0	0	252,460	142,065	1,483,308	0	0	272.22	59.25
1973.02	23.0	15,499	555,898	102,963	839,947	0	0	270.95	40.72
1973.03	38.3	32,288	605,244	51,063	213,929	0	0	268.77	17.38
1973.04	145.3	347,580	328,447	14,440	220,622	0	0	268.80	17.86
1973.05	125.7	236,172	158,061	13,108	285,624	0	0	269.14	21.15
1973.06	82.5	136,766	0	14,398	407,993	0	0	269.63	26.33
1973.07	43.6	46,003	56,551	13,791	383,653	0	0	269.53	25.30
1973.08	164.1	1,235,000	301,002	22,996	1,294,655	0	0	271.91	53.88
1973.09	199.0	689,716	286,472	26,418	1,671,480	0	0	272.51	64.39
1973.10	102.5	252,950	412,772	28,571	1,483,088	0	0	272.22	59.25
1973.11	4.8	508	340,704	37,776	1,105,115	0	0	271.51	48.41
1973.12	0.0	0	0	55,268	1,049,847	0	0	271.40	46.82
1974.01	20.6	16,396	214,455	94,388	757,400	0	0	270.72	38.17
1974.02	8.2	2,598	586,892	59,455	113,651	0	0	268.09	11.41
1974.03	136.2	276,688	433,427	12,196	5,299	0	-60,582	266.18	1.01
1974.04	154.6	404,799	350,933	3,941	203,693	0	-148,470	268.69	16.84
1974.05	56.6	45,852	278,774	11,385	0	0	-40,613	265.95	0.00
1974.06	40.0	21,893	0	528	21,365	0	0	266.89	4.07
1974.07	193.6	988,998	0	5,025	1,005,339	0	0	271.31	45.53
1974.08	164.2	426,584	264,586	21,997	1,139,339	0	0	271.58	49.40
1974.09	301.4	2,322,736	269,186	35,042	2,819,225	338,621	0	274.00	91.56
1974.10	298.7	3,391,077	272,265	45,480	2,819,225	3,073,332	0	274.00	91.56
1974.11	16.8	5,480	318,586	61,749	2,444,391	0	0	273.58	84.92
1974.12	0.6	14	0	97,055	2,347,350	0	0	273.46	82.45
1975.01	0.0	0	252,460	166,677	1,928,213	0	0	272.91	71.87
1975.02	17.3	9,408	570,103	126,391	1,241,126	0	0	271.79	52.34
1975.03	111.4	399,028	484,543	73,853	1,081,759	0	0	271.46	47.74
1975.04	112.4	291,786	388,113	45,034	910,399	0	0	271.17	43.66
1975.05	142.5	287,398	167,944	34,425	1,025,428	0	0	271.35	46.11
1975.06	130.9	255,214	0	29,081	1,251,560	0	0	271.82	52.64
1975.07	117.2	204,626	76,670	29,104	1,350,412	0	0	272.02	55.48
1975.08	44.5	35,263	471,916	24,849	888,910	0	0	271.06	42.17
1975.09	121.3	192,599	370,941	18,599	691,970	0	0	270.54	36.16
1975.10	46.7	46,986	469,877	14,979	254,100	0	0	269.01	19.82
1975.11	60.3	78,321	239,779	11,476	81,366	0	0	267.76	9.12
1975.12	13.1	4,383	0	10,517	75,431	0	0	267.68	8.65
1976.01	0.0	0	252,460	16,817	0	0	-193,876	265.95	0.00
1976.02	93.6	333,714	441,654	14,189	0	0	-122,128	265.95	0.00
1976.03	42.0	60,727	399,709	0	0	0	-538,982	265.95	0.00
1976.04	105.2	150,559	394,634	0	0	0	-244,075	265.95	0.00
1976.05	128.9	270,145	133,970	2,992	159,432	0	-46,249	268.40	14.17
1976.06	89.8	112,511	0	9,915	262,029	0	0	269.05	20.16
1976.07	84.0	177,188	81,467	11,703	346,046	0	0	269.38	23.71
1976.08	94.2	176,369	384,873	8,583	128,959	0	0	268.19	12.33
1976.09	122.3	577,197	375,946	7,658	322,552	0	0	269.29	22.72
1976.10	62.3	64,337	441,343	5,784	25,358	0	-85,998	267.02	4.69
1976.11	41.6	40,405	273,288	2,409	0	0	-209,734	265.95	0.00
1976.12	0.0	0	0	0	0	0	0	265.95	0.00
1977.01	24.1	21,529	208,920	3	0	0	-187,394	265.95	0.00
1977.02	23.9	22,070	557,927	0	0	0	-535,857	265.95	0.00
1977.03	76.4	186,541	541,952	0	0	0	-355,411	265.95	0.00
1977.04	60.9	56,042	474,207	0	0	0	-418,165	265.95	0.00
1977.05	138.9	381,935	202,065	9,279	170,592	0	0	268.17	14.84
1977.06	138.8	561,235	0	16,420	715,406	0	0	270.60	36.88
1977.07	51.8	55,954	56,027	19,411	695,922	0	0	270.55	36.28
1977.08	202.8	1,620,367	275,910	15,961	2,024,419	0	0	273.05	74.45
1977.09	270.7	1,389,858	248,875	38,592	2,819,225	307,584	0	274.00	91.56
1977.10	130.5	296,946	324,963	45,454	2,642,151	103,603	0	273.80	90.00
1977.11	4.1	649	341,996	58,423	2,242,380	0	0	273.33	79.85
1977.12	39.3	59,674	0	92,623	2,209,431	0	0	273.29	79.03

Résultat du calcul du bilan de l'eau

Case 2 (3/4) : Vmax = 2.819.225 m³

Year.Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1978.01	0.0	0	252,460	159,774	1,797,197	0	0	272.71	68.15
1978.02	20.3	8,147	564,569	119,270	1,121,505	0	0	271.55	48.88
1978.03	105.6	206,218	528,923	69,246	729,554	0	0	270.64	37.32
1978.04	205.9	686,462	244,381	39,442	1,132,192	0	0	271.57	49.19
1978.05	120.4	196,627	180,878	38,109	1,109,833	0	0	271.52	48.33
1978.06	129.2	736,627	0	36,184	1,810,276	0	0	272.73	68.53
1978.07	54.9	100,820	24,947	35,823	1,850,326	0	0	272.79	69.66
1978.08	46.1	54,215	469,770	31,747	1,403,024	0	0	272.10	56.98
1978.09	140.8	600,651	342,670	26,909	1,634,097	0	0	272.46	63.33
1978.10	129.9	625,349	408,341	28,604	1,823,097	0	0	272.75	68.89
1978.11	0.0	0	349,560	44,116	1,429,421	0	0	272.14	57.73
1978.12	6.9	1,022	0	65,936	1,364,507	0	0	272.01	55.88
1979.01	2.3	201	252,460	112,693	999,358	0	0	271.29	45.37
1979.02	0.0	0	602,020	74,380	323,158	0	0	269.29	22.74
1979.03	63.8	86,055	559,691	20,686	0	0	-171,167	265.95	0.00
1979.04	123.8	216,276	363,259	0	37,014	0	-183,997	267.17	3.60
1979.05	133.5	345,885	181,121	10,515	191,264	0	0	268.61	16.09
1979.06	284.6	2,424,772	0	32,960	2,583,076	0	0	273.73	88.48
1979.07	210.2	1,397,184	0	47,462	2,819,225	1,113,573	0	274.00	94.56
1979.08	53.7	43,657	455,011	44,363	2,363,508	0	0	273.49	82.83
1979.09	92.4	124,917	443,339	36,808	2,008,308	0	0	273.03	74.05
1979.10	104.2	155,074	366,038	34,907	1,762,437	0	0	272.66	67.17
1979.11	13.0	6,530	325,576	43,402	1,399,989	0	0	272.09	56.89
1979.12	1.1	47	0	64,980	1,335,076	0	0	271.99	55.05
1980.01	8.7	2,924	252,460	111,049	974,491	0	0	271.24	44.64
1980.02	29.5	20,127	547,595	74,582	372,440	0	0	269.19	24.83
1980.03	83.3	144,815	551,062	34,616	0	0	-68,423	265.95	0.00
1980.04	100.2	168,793	405,581	0	16,544	0	-253,331	266.68	3.15
1980.05	192.5	965,210	108,352	7,216	866,185	0	0	271.02	41.32
1980.06	50.6	63,337	0	24,906	904,616	0	0	271.10	42.63
1980.07	299.1	8,117,847	0	22,295	2,819,225	6,180,943	0	274.00	94.56
1980.08	182.6	1,018,161	256,330	45,402	2,819,225	716,429	0	274.00	94.56
1980.09	192.5	965,210	328,827	41,348	2,819,225	595,031	0	274.00	94.56
1980.10	50.6	63,337	463,351	43,639	2,375,571	0	0	273.50	83.14
1980.11	9.5	1,689	332,033	54,058	1,991,169	0	0	273.01	73.63
1980.12	15.9	6,151	0	84,245	1,913,075	0	0	272.89	71.44
1991.01	3.8	558	252,460	144,694	1,517,079	0	0	272.27	60.21
1991.02	116.9	339,941	397,891	105,756	1,353,477	0	0	272.02	55.57
1991.03	126.0	1,138,517	489,780	72,012	1,930,101	0	0	272.92	71.92
1991.04	50.2	33,967	493,287	65,909	1,404,872	0	0	272.10	57.03
1991.05	138.0	253,709	137,062	43,391	1,478,128	0	0	272.21	59.11
1991.06	139.9	283,354	0	36,963	1,724,518	0	0	272.60	66.09
1991.07	129.3	323,952	106,927	37,203	1,904,341	0	0	272.88	71.19
1991.08	138.2	589,625	282,662	35,677	2,175,627	0	0	273.23	78.19
1991.09	161.1	1,208,874	461,769	38,631	2,382,626	501,475	0	273.51	83.33
1991.10	30.2	15,920	499,696	37,783	1,861,067	0	0	272.81	69.97
1991.11	1.9	139	346,055	44,859	1,470,293	0	0	272.20	58.88
1991.12	3.3	421	0	67,247	1,403,467	0	0	272.10	56.99
1992.01	0.0	0	252,460	114,932	1,036,074	0	0	271.37	46.42
1992.02	18.4	8,036	568,074	77,750	398,287	0	0	269.59	25.92
1992.03	57.9	68,560	570,288	27,590	0	0	-131,031	265.95	0.00
1992.04	124.2	429,907	372,266	7,938	49,703	0	0	267.34	6.61
1992.05	122.7	530,675	214,481	9,046	360,371	0	-3,523	269.44	24.32
1992.06	72.6	172,856	0	16,858	516,369	0	0	270.04	30.73
1992.07	93.5	193,171	96,595	17,106	595,839	0	0	270.27	33.19
1992.08	34.9	46,524	490,297	12,444	139,622	0	0	268.26	12.98
1992.09	171.7	442,738	291,294	6,415	284,650	0	0	269.14	21.11
1992.10	85.7	125,795	399,790	8,130	2,525	0	0	266.06	0.48
1992.11	136.2	368,421	170,111	10,603	190,229	0	0	268.70	16.03
1992.12	0.0	0	0	18,083	172,146	0	0	268.48	14.94
1993.01	0.0	0	252,460	29,485	0	0	-109,799	265.95	0.00
1993.02	46.8	77,700	517,562	0	2,953	0	-412,816	266.08	0.56
1993.03	209.4	2,366,606	399,978	706	2,220,798	0	-251,922	273.30	79.31
1993.04	97.3	140,308	409,451	74,086	1,877,569	0	0	272.81	70.41
1993.05	125.4	221,579	161,520	53,069	1,884,559	0	0	272.85	70.63
1993.06	42.7	40,433	0	42,140	1,882,851	0	0	272.84	70.58
1993.07	31.0	32,411	113,015	37,211	1,765,036	0	0	272.66	67.24
1993.08	103.8	171,818	366,817	30,827	1,539,210	0	0	272.31	60.84
1993.09	196.8	1,201,147	338,063	27,609	2,374,685	0	0	273.50	83.12
1993.10	172.8	1,052,485	286,037	42,854	2,622,661	475,618	0	273.78	89.50
1993.11	63.5	116,151	235,683	59,652	2,443,478	0	0	273.58	84.89
1993.12	0.0	0	0	97,028	2,346,449	0	0	273.46	82.42

Résultat du calcul du bilan de l'eau

Case 2 (4/4) : Vmax = 2.819.225 m³

Year Month	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Water Level (m)	Water Area (ha)
1993.01	0.0	0	252,460	166,632	1,927,358	0	0	272.91	71.85
1993.02	0.1	0	601,836	125,101	1,200,421	0	0	271.71	51.16
1993.03	44.0	29,678	594,640	66,706	568,753	0	0	270.19	32.35
1993.04	219.2	901,879	214,638	40,911	1,218,083	0	0	271.75	51.67
1993.05	150.6	298,962	113,700	40,112	1,363,233	0	0	272.04	55.85
1993.06	82.0	168,504	0	34,682	1,497,055	0	0	272.24	59.64
1993.07	146.0	522,306	58,823	33,645	1,926,893	0	0	272.91	71.83
1993.08	46.3	35,674	468,362	32,956	1,461,249	0	0	272.19	58.63
1993.09	175.7	324,357	361,144	27,761	1,596,701	0	0	272.40	62.47
1993.10	78.0	88,245	412,801	28,247	1,243,898	0	0	271.80	52.42
1993.11	10.6	4,341	330,004	33,457	884,778	0	0	271.06	42.05
1993.12	0.0	0	0	48,007	836,771	0	0	270.91	40.63
1995.01	0.0	0	252,460	81,795	502,516	0	0	270.01	30.31
1995.02	39.2	59,371	531,040	37,785	0	0	-6,938	265.93	0.00
1995.03	80.7	126,395	529,836	0	0	0	-103,441	265.95	0.00
1995.04	158.2	487,903	337,709	3,402	290,663	0	-163,871	269.16	21.37
1995.05	104.0	170,331	212,222	16,928	231,845	0	0	268.87	18.54
1995.06	89.6	126,676	0	12,624	345,897	0	0	269.38	23.70
1995.07	209.4	-2,792,571	88,109	36,878	2,714,198	299,283	0	273.88	91.86
1995.08	184.4	1,464,319	275,869	44,818	2,665,846	1,191,984	0	273.83	90.61
1995.09	152.7	425,175	361,508	41,469	2,580,820	104,225	0	273.73	88.43
1995.10	83.0	136,825	405,402	41,914	2,270,329	0	0	273.37	80.54
1995.11	9.0	3,130	332,956	52,381	1,888,122	0	0	272.85	70.73
1995.12	25.4	15,196	0	80,967	1,822,351	0	0	272.75	68.87

Volume insuffisant d'eau par saison de culture Case 1 : Vmax = 2.735.000 m³

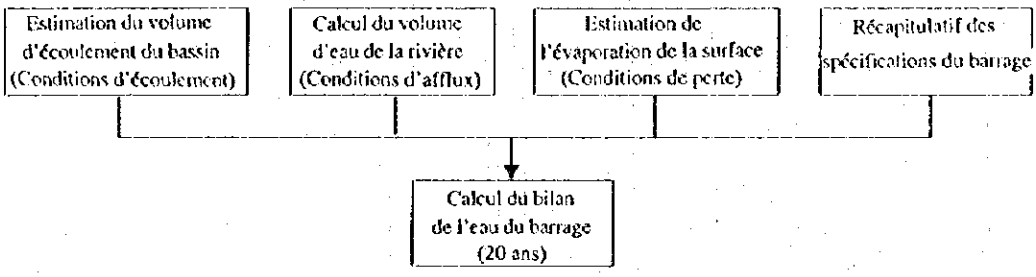
Year.Stage	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Max. Storage Volume (m3)	Min. Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Insufficiency (%)
1966 First	805.7	5,830,088	1,797,859	346,007	2,819,225	157,863	2,366,997		
1966 Second	563.7	1,821,004	1,423,839	327,227	2,819,225	2,182,827	706,336		
1967 First	605.3	1,671,470	1,750,428	463,758	2,147,402	821,902			
1967 Second	333.9	521,072	1,615,422	160,574	1,642,198	385,188			
1968 First	586.7	1,689,526	1,849,893	105,094	995,203	0		-875,476	-47.33%
1968 Second	725.2	2,472,189	1,325,128	262,580	2,668,463	1,160,500			
1969 First	342.1	892,104	2,065,569	334,448	1,847,821	0		-236,238	-11.44%
1969 Second	649.0	2,080,839	1,491,565	155,648	1,360,718	311,864			
1970 First	444.7	728,799	1,881,384	180,006	1,020,581	0		-439,438	-23.36%
1970 Second	549.9	2,138,670	1,363,068	134,085	1,449,750	24,958			
1971 First	695.7	4,950,758	1,791,324	183,783	2,819,225	0	1,382,449	-436,024	-24.34%
1971 Second	674.7	4,395,185	1,461,887	324,584	2,819,225	2,134,306	3,216,509		
1972 First	843.5	6,412,447	1,582,847	543,436	2,819,225	1,080,822	3,678,369		
1972 Second	439.2	1,220,598	1,583,633	310,232	2,819,225	1,877,833	268,125		
1973 First	416.8	768,306	1,900,109	338,058	1,845,994	93,611			
1973 Second	514.0	2,224,177	1,397,502	184,821	1,752,735	383,655			
1974 First	416.2	768,227	1,864,481	181,892	1,028,686	0		-249,665	-13.39%
1974 Second	975.3	7,128,888	1,124,602	266,349	2,819,225	112,267	3,411,953		
1975 First	514.3	1,242,854	1,863,163	475,461	2,310,084	911,032			
1975 Second	405.1	562,577	1,629,183	109,524	1,418,972	75,431			
1976 First	459.5	927,657	1,842,426	43,943	262,029	0		-1,145,309	-62.16%
1976 Second	404.4	1,035,496	1,557,117	36,137	519,980	0		-295,729	-18.99%
1977 First	463.0	1,229,352	1,985,072	25,701	722,068	0		-1,496,827	-75.40%
1977 Second	699.2	3,423,448	1,247,770	270,467	2,819,225	499,129	411,187		
1978 First	581.4	1,834,080	1,771,211	462,024	2,173,709	729,554			
1978 Second	378.6	1,382,057	1,595,291	252,536	1,850,326	1,228,201			
1979 First	608.0	3,073,193	1,958,554	251,234	2,583,076	0		-355,163	-18.13%
1979 Second	474.6	1,727,439	1,589,964	271,902	2,819,225	1,335,076	1,113,573		
1980 First	464.8	1,365,206	1,865,050	252,370	1,310,194	0		-321,754	-17.25%
1980 Second	750.2	10,172,395	1,380,543	290,988	2,819,225	891,256	7,492,406		
1991 First	574.8	2,050,048	1,770,481	468,124	1,930,101	933,452			
1991 Second	487.0	2,138,931	1,697,108	261,400	2,819,225	1,403,467	501,475		
1992 First	395.8	1,210,035	1,977,572	254,114	1,377,708	0		-134,554	-6.80%
1992 Second	522.0	1,176,648	1,448,087	72,784	694,182	2,525			
1993 First	521.6	2,846,626	1,740,972	199,486	2,220,798	0		-804,557	-46.21%
1993 Second	567.9	2,574,012	1,539,615	295,181	2,819,225	1,461,000	475,618		
1994 First	495.9	1,402,024	1,777,274	474,145	2,509,194	568,755			
1994 Second	456.6	1,174,924	1,631,134	204,073	1,959,699	836,771			
1995 First	471.7	970,676	1,883,266	152,534	818,409	0		-574,250	-30.49%
1995 Second	663.9	4,837,216	1,466,843	298,426	2,819,225	1,822,351	1,595,493		
Average First	535.3	2,093,173	1,845,947	286,780			2,542,605	-589,103	-31.36%
Average Second	561.6	2,710,388	1,468,465	223,476			1,919,267	-295,729	-18.99%

Volume insuffisant d'eau par saison de culture Case 2 : Vmax = 2.819.225 m^3

Year.Stage	Rainfall (mm)	Inflow (m3)	Water Requirement (m3)	Evaporation (m3)	Max. Storage Volume (m3)	Min. Storage Volume (m3)	Over Flow (m3)	Insufficiency (m3)	Insufficiency (%)
1966 First	805.7	5,850,088	1,797,859	341,893	2,375,000	157,863	3,015,336		
1966 Second	563.7	1,821,004	1,423,839	285,065	2,375,000	1,762,745	724,355		
1967 First	605.3	1,671,470	1,750,428	379,802	1,732,381	468,853			
1967 Second	333.9	521,072	1,615,422	116,340	1,309,432	93,296			
1968 First	586.7	1,689,526	1,849,895	59,748	995,203	0		-1,122,021	-60.65%
1968 Second	725.2	2,472,189	1,325,128	242,653	2,375,000	1,160,500	293,463		
1969 First	342.1	892,104	2,065,569	278,828	1,377,791	0		-454,153	-21.99%
1969 Second	649.0	2,080,839	1,491,565	155,648	1,360,718	311,864			
1970 First	444.7	728,799	1,881,384	180,006	1,020,581	0		-439,438	-23.36%
1970 Second	549.9	2,138,670	1,363,068	134,085	1,449,750	24,958			
1971 First	695.7	4,950,758	1,791,324	181,726	2,375,000	0	1,828,731	-436,024	-24.34%
1971 Second	674.7	4,395,185	1,461,887	282,313	2,375,000	1,702,922	3,232,928		
1972 First	843.5	6,412,447	1,582,847	461,274	2,375,000	712,533	3,786,383		
1972 Second	439.2	1,220,598	1,583,633	266,926	2,375,000	1,463,761	281,277		
1973 First	416.8	768,306	1,900,109	255,157	1,437,229	0		-248,359	-13.07%
1973 Second	514.0	2,224,177	1,397,502	175,604	1,673,729	302,648			
1974 First	416.2	768,227	1,864,481	168,082	956,031	0		-309,470	-16.60%
1974 Second	975.5	7,128,888	1,124,602	237,530	2,375,000	112,267	3,864,994		
1975 First	514.5	1,242,834	1,863,163	391,806	1,890,707	550,445			
1975 Second	403.1	562,577	1,629,185	67,929	1,081,859	0		-227,408	-13.96%
1976 First	459.5	927,657	1,842,426	28,425	262,029	0		-1,201,556	-65.21%
1976 Second	404.4	1,035,496	1,557,117	36,137	519,980	0		-295,729	-18.99%
1977 First	463.0	1,229,352	1,985,072	25,701	722,068	0		-1,496,827	-75.40%
1977 Second	699.2	3,423,448	1,247,770	241,869	2,375,000	499,129	859,892		
1978 First	581.4	1,834,080	1,771,211	377,350	1,758,618	369,069			
1978 Second	378.6	1,382,057	1,595,291	198,194	1,519,864	909,331			
1979 First	608.0	3,073,193	1,958,554	197,847	2,375,000	0	208,876	-603,669	-30.82%
1979 Second	474.6	1,727,439	1,589,964	229,777	2,375,000	929,121	1,353,577		
1980 First	464.8	1,365,206	1,865,050	175,725	912,329	0		-651,065	-34.91%
1980 Second	750.2	10,172,395	1,380,543	253,410	2,375,000	891,256	7,947,233		
1991 First	574.8	2,050,048	1,770,481	384,508	1,373,417	572,072			
1991 Second	487.0	2,138,931	1,697,108	219,593	2,375,000	990,424	622,691		
1992 First	595.8	1,210,035	1,977,572	180,357	970,038	0		-473,839	-25.96%
1992 Second	522.0	1,176,648	1,448,087	72,784	694,182	2,525			
1993 First	521.6	2,846,626	1,740,972	199,486	2,220,798	0		-804,537	-46.21%
1993 Second	567.9	2,574,012	1,539,615	271,602	2,375,000	1,461,000	919,843		
1994 First	495.9	1,402,024	1,777,274	389,465	1,893,349	207,131			
1994 Second	456.6	1,174,924	1,631,134	168,802	1,627,115	536,076			
1995 First	471.7	970,676	1,885,266	110,344	521,909	0		-832,755	-44.22%
1995 Second	663.9	4,837,216	1,466,843	256,871	2,375,000	1,406,859	2,052,540		
Average First	535.3	2,093,173	1,845,947	238,376			2,209,832	-697,965	-36.98%
Average Second	561.6	2,710,388	1,468,465	195,657			2,013,890	-261,569	-16.48%

C-2. Calcul du bilan de l'eau du barrage

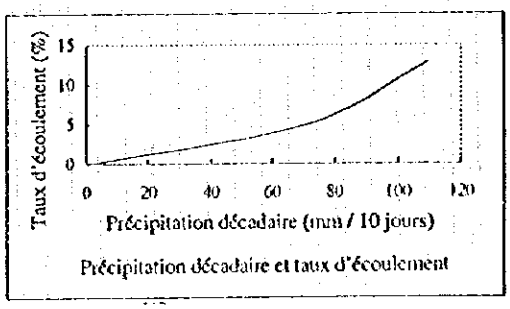
Méthode du calcul du bilan de l'eau du barrage



Estimation du volume d'écoulement

Année	Précipitation (mm)	Perte (mm)	Taux d'écoulement (%)	Volume d'écoulement (m³/an)
Moyen	1,092	996	8	4,800,000
Saison sèche pendant 10 ans	868	825	5	2,400,000
Saison des pluies pendant 10 ans	1,336	1,161	13	9,600,000

Source: DME



Précipitation décadaire et taux d'écoulement

Volume d'écoulement

	Précipitation (mm)	Taux d'écoulement (%)	Volume d'écoulement (m³)
Moyen	1,097	4,803,561	8
Saison sèche pendant 10 ans	978	2,713,548	5
Saison des pluies pendant 10 ans	1,216	6,893,574	10

(Note) Le calcul figure dans C-1 (calcul du volume d'écoulement) des «Données».

Précipitation maximale journalière par probabilité

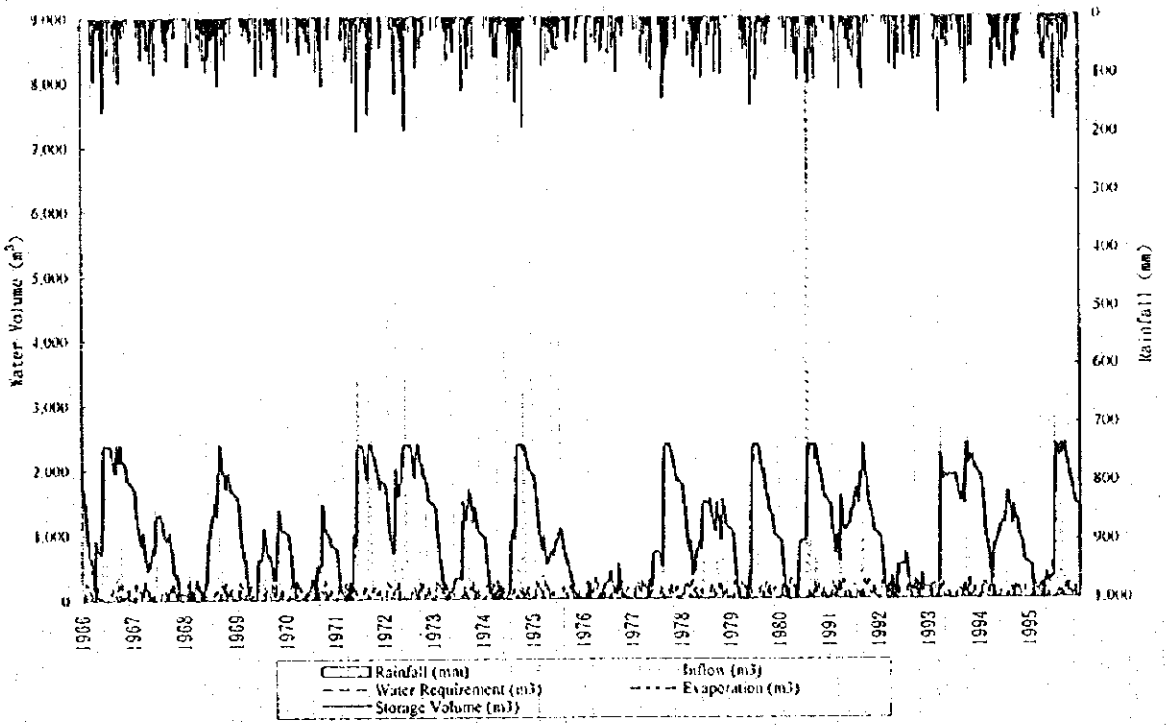
Probabilité	1/2	1/5	1/10	1/20	1/50	1/100	1/200
Précipitation max. journalière (mm)	84.06	108.17	123.63	138.15	156.67	170.47	174.20

Résultat du calcul du volume d'écoulement par probabilité

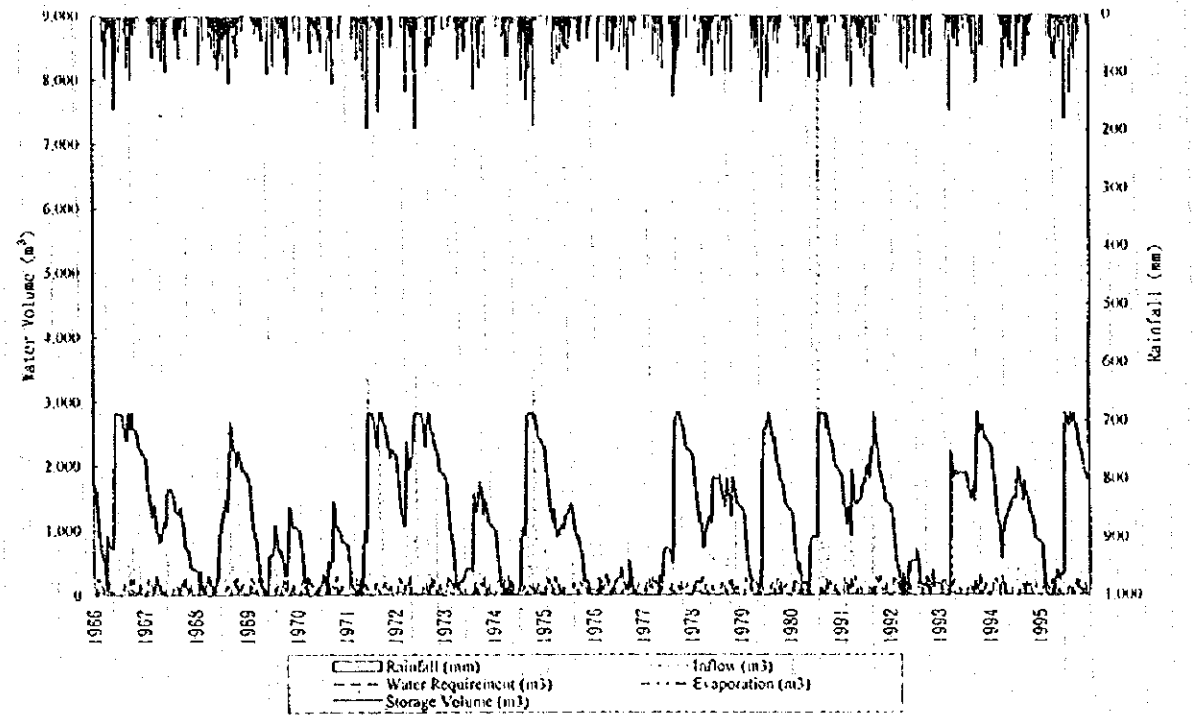
Période de retour	1/2	1/5	1/10	1/20	1/50	1/100	1/200
R_{24}	84.06	108.17	123.63	138.15	156.67	170.47	184.20
T (hr)	7.4	6.6	6.3	6.0	5.7	5.5	5.3
Qp (m^3/s)	67.498	91.621	107.727	123.255	143.556	159.023	174.678

(Note) fp = 0,7, valeur de C = 350, zone (km^2) = 55

Le calcul figure dans C-1 (Calcul du volume d'écoulement) des «Données»



Cas 1 Volume max. 2.375.000 m³



Cas 2 Volume max. 2.815.225 m³

Résultat du calcul du bilan de l'eau du barrage

VII. Listes des documents collectés

Liste des documents collectés

1. MINISTERE DE L'AGRICULTURE ET DES RESSOURCES ANIMALES (MINAGRA), "PLAN DIRECTEUR DU DEVELOPPEMENT AGRICOLE 1992-2015, Septembre 1993, 166p.

2. MINISTERE DE L'AGRICULTURE ET DES RESSOURCES ANIMALES (MINAGRA), "ANNUAIRE DES STATISTIQUES AGRICOLES", 1993, 220 p.

3. MINISTERE DE L'AGRICULTURE ET DES RESSOURCES ANIMALES (MINAGRA), "PROGRAMME DE DEVELOPMENT AGRICOLE DANS LE CENTRE-NORD, RAPPORT DE FORMULATION, Volume I", Novembre 1995, 81 p.

4. MINISTERE DE L'ECONOMIE ET DES FINANCES, "BUDGET GENERAL DE FONCTIONNEMENT", 1996

5. MINISTERE DELEGUE AUPRES DU PREMIER MINISTRE CHARGE DE L'ECONOMIE, DES FINANCES ET DU PLAN, "BUDGET SPECIAL D'INVESTISSEMENT ET D'EQUIPEMENT, ANNEE 1996, RPPORT DE PRESENTATION", 81 p.

6. MINISTERE DELEGUE AUPRES DU PREMIER MINISTRE CHARGE DE L'ECONOMIE, DES FINANCES ET DU PLAN, "BUDGET SPECIAL D'INVESTISSEMENT ET D'EQUIPEMENT, ANNEE 1996, LOI DE FINANCES", 118 p.

7. DIRECTION DE LA MODERNISATION DES EXPLOITATIONS (D.M.E), "Plan de relance de la reiziculture en Côte d'Ivoire, Barrage hydro-agricole de LOKAPLI (s/p de BOUAKE), Avant-projet technique", juin 1994, 22 p.

8. DIRECTION DE LA MODERNISATION DES EXPLOITATIONS (D.M.E), "Plan de relance de la riziculture en Côte d'Ivoire, Amenagement hydro-agricole de LOKAPLI (s/p de BOUAKE), Avanti-projet d'amenagement du perimetre", Decembre 1993, 93 p.

9. DIRECTION ET CONTROLE DES GRANDS TRAVAUX (DCGTx), "LA RIZICULTURE IRRIGUEE ET LES AMENAGEMENTS HYDRO-AGRICOLES", Juin 1991, 70 p.

10. "DEPARTEMENT DE BOUAKE", 49 p.

11. AGENCE NATIONALE D'APPUI AU DEVELOPPEMENT RURAL (ANADER), "ORGANISATION GENERALE DE L'ANADER", 15 p.

12. "LOI 95-15 DU 12 JAVIER 1995, PORTANT CODE DU TRAVEL", 67 p.

13. ASSOCIATION INTERPROFESSIONNELLE DES EMPLOYEURS DE
COTE D'IVOIRE,
"CONVENTION COLLECTIVE INTERPROFESSIONNELLE", 101 p.

14. CONSEIL NATIONAL DU PATRONAT IVOIRIEN (CNPI),
"SALAIRES MINIMAUX CONVENTIONNELS", 1er Juin 1995, 46 p.

15. DIRECTION ET CONTROLE DES GRANDS TRAVAUX, (D.C.G.Tx),
"AMENAGEMENT HYDRO-AGRICOLE DE GUIGUIDOU", Mars 1993

16. INSTITUT GEOGRAPHIQUE,
"BOUAKE CARTE DE TOPOGRAPHIQUE, 1:50,000",
"COTE D'IVOIRE CARTE DE TOPOGRAPHIQUE, 1:200,000",
"BOUAKE AERO-PHOTO, 1:50,000"

17. MINISTERE DES MINES DIRECTION DE LA GEOLOGIE,
"BOUAKE CARTE DE GEOLOGIE, 1:50,000",
"COTE D'IVOIRE CARTE DE GEOLOGIE, 1:1,000,000"

18. AGENCE NATIONALE DES AERODROMES ET DE LA METEOROLOGIE (ANAM), EXPLOITATION METEOROLOGIQUE, BOUAKE 01BP614,
"DONNEES METEOROLOGIQUE, 1991-1995"