Microcuenca Inalí

45 - 2

Watershed   Rio Inali

Microcuenca Tapacali

45 - 1
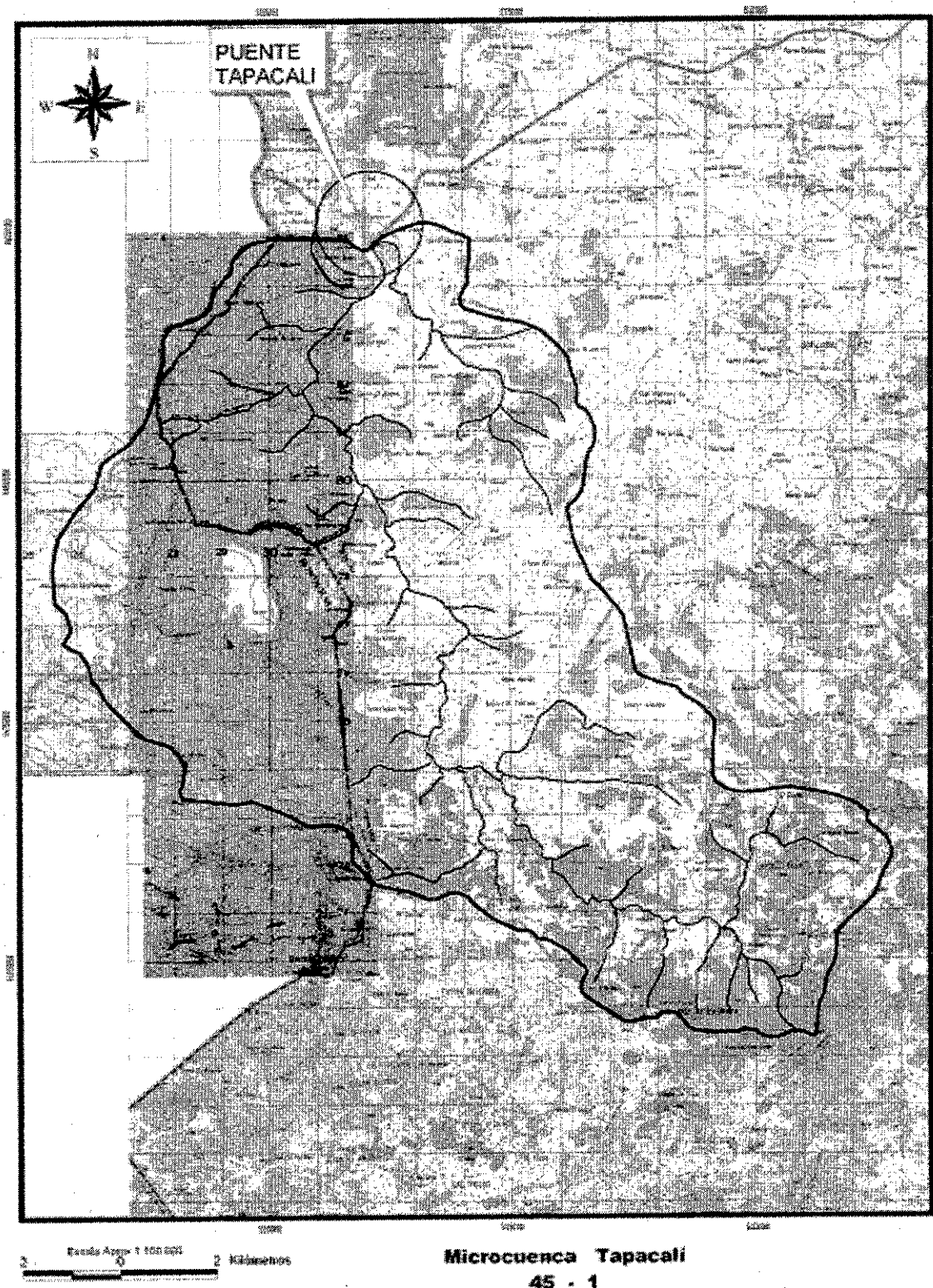
Watershed   Rio Tapacali

Esc. Aprox. 1 : 40 000

Microcuenca El Guayacan
55 · 6

PUENTE
EL GUAYACAN
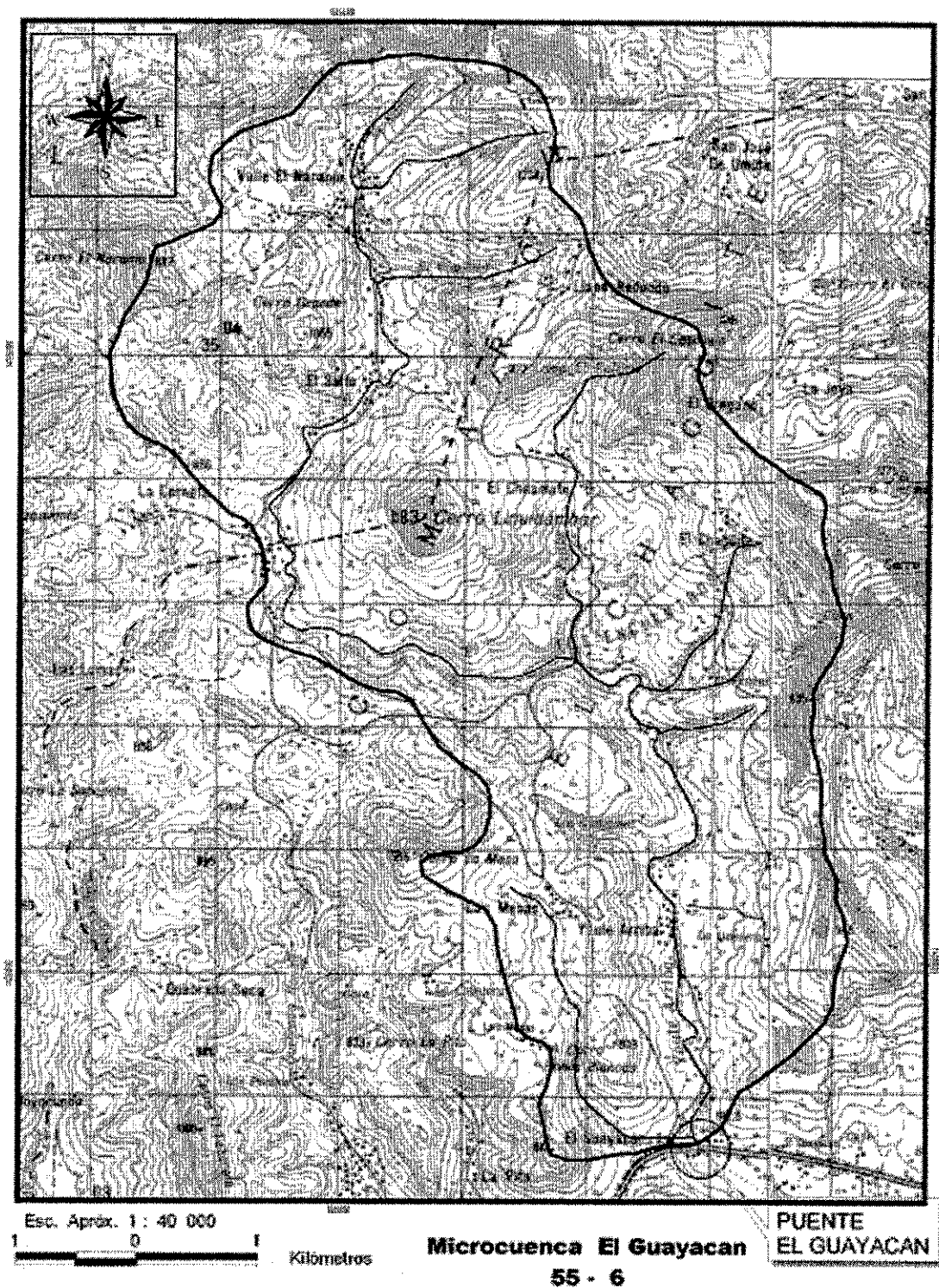
Watershed   El Guayacan
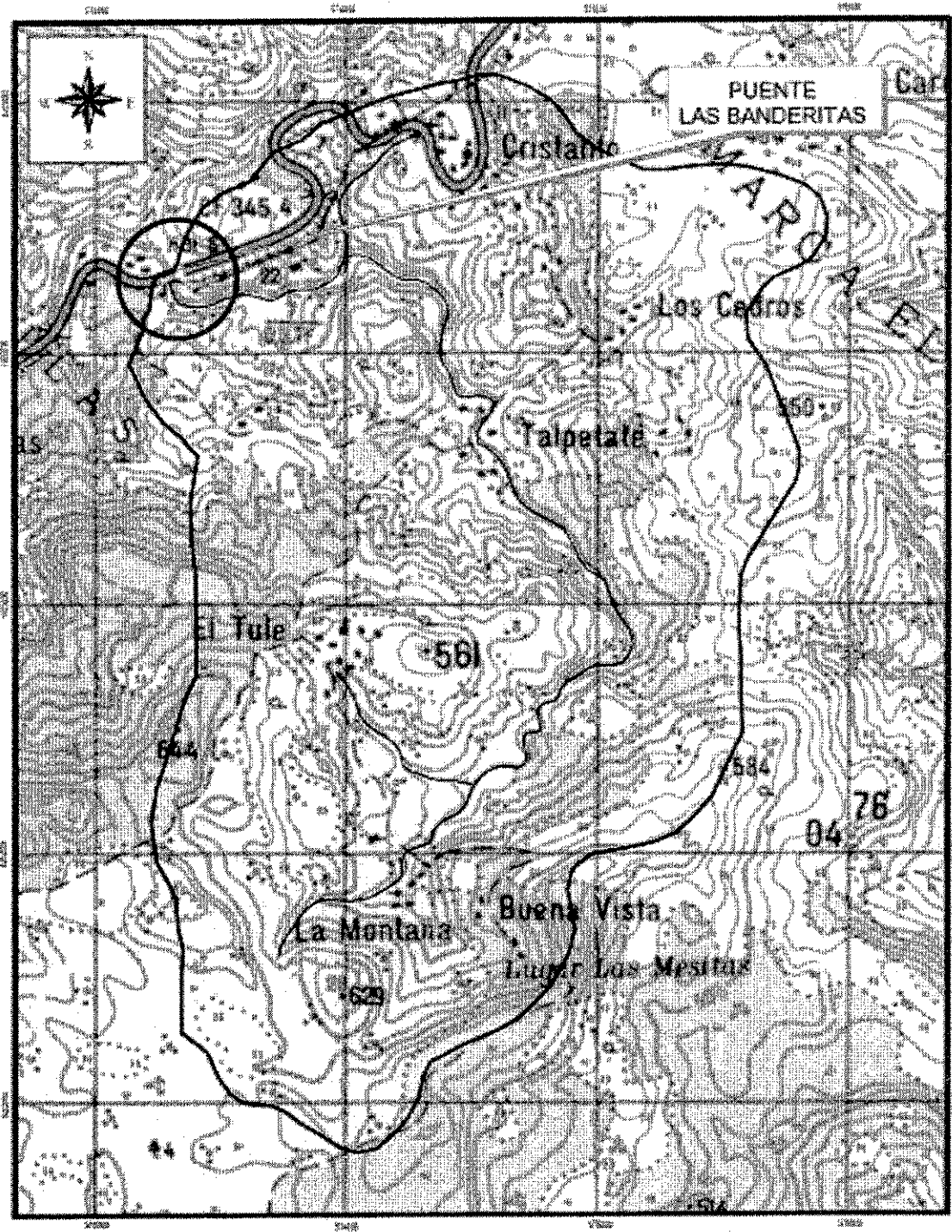
Esc. Apróx. 1 : 20 000

0.5   0   0.5   Kilómetros

Microcuenca Las Banderitas
69 - 8

Watershed   Las Banderita

Esc. Aprox. 1 : 30 000

Microcuenca San Juan de Dios
69 - 9

Watershed   San Juan de Dios

THE STUDY   *PAGE A3-13*
ON VULNERABILITY REDUCTION   *ORIENTAL CONSULTANTS CO., LTD.*
FOR MAJOR ROADS   *in association with*
IN THE REPUBLIC OF NICARAGUA   *JAPAN ENGINEERING CONSULTANTS CO., LTD.*

Esc. Apróx. 1 : 8.000

Microcuencas Solis y papalon
64-10,11
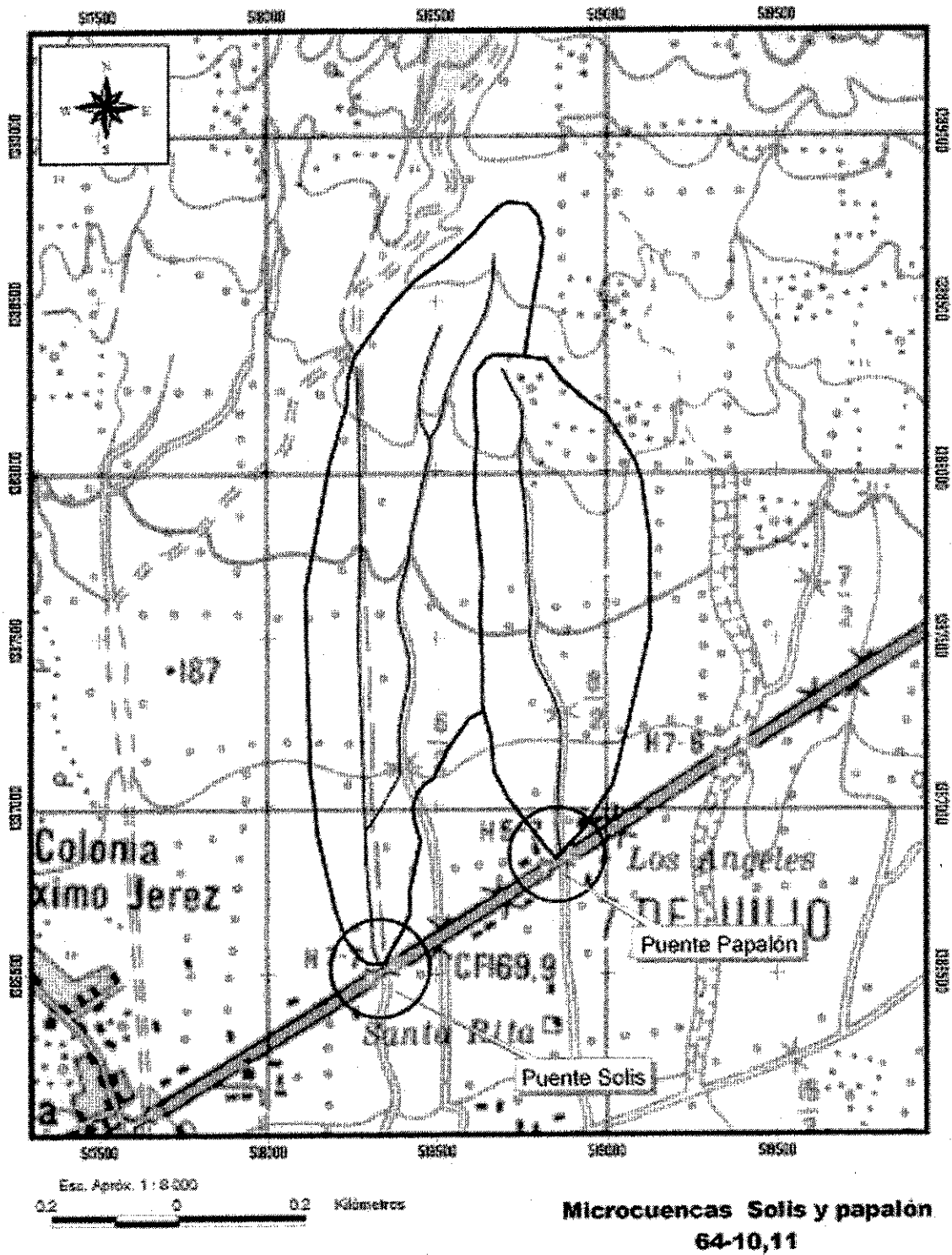
Watershed   Rio Inali

Appendix A4

Data for AHP (Chapter 14)

A.4.1 The analysis result table by the AHP

	Evaluation Criteria			Stability level	Traffic volume	Enviromental evaluation	Natural condition	Benefit B/C	Restoration level	Development situation
	Weight of each Evaluation Criteria			0.3668	0.1673	0.0839	0.1800	0.0383	0.1430	0.0207

Route No.	Type of Disaster	Serial Number of Disaster Critical Spots	Analysis result			Weight of each Alternative Spots						
			Weight	Rank	Judgment*	Stability level	Traffic volume	Enviromental evaluation	Natural condition	Benefit B/C	Restoration level	Development situation
Nic1	R.F.	1	0.0211	15	D.P.S.	0.0110	0.0330	0.0449	0.0322	0.0168	0.0054	0.0246
	R.F.	2	0.0226	10	D.P.S.	0.0215	0.0324	0.0186	0.0322	0.0178	0.0054	0.0246
	Bridge	3	0.0209	16	D.P.S.	0.0276	0.0269	0.0071	0.0141	0.0517	0.0065	0.0114
	Bridge	4	0.0279	7	D.P.S.	0.0527	0.0269	0.0071	0.0028	0.0482	0.0065	0.0114
	Bridge	5	0.0220	12	D.P.S.	0.0276	0.0242	0.0186	0.0141	0.0276	0.0149	0.0237
	Bridge	6	0.0314	3	D.P.S.	0.0527	0.0242	0.0449	0.0028	0.0459	0.0105	0.0237
	R.F.	7	0.0189	23	D.P.S.	0.0215	0.0242	0.0186	0.0141	0.0070	0.0149	0.0237
	R.C.	8	0.0176	29	D.P.S.	0.0090	0.0242	0.0186	0.0299	0.0097	0.0171	0.0237
	R.C.	9	0.0125	44		0.0083	0.0242	0.0186	0.0028	0.0089	0.0171	0.0237
	R.C.	10	0.0131	42		0.0083	0.0242	0.0186	0.0068	0.0072	0.0171	0.0237
	R.C.	11	0.0175	30	D.P.S.	0.0162	0.0242	0.0186	0.0141	0.0109	0.0171	0.0237
	R.C.	12	0.0187	24	D.P.S.	0.0122	0.0242	0.0186	0.0322	0.0178	0.0116	0.0237
	R.C.	13	0.0183	26	D.P.S.	0.0094	0.0242	0.0186	0.0322	0.0129	0.0171	0.0237
	R.F.	14	0.0174	31		0.0094	0.0242	0.0186	0.0299	0.0088	0.0149	0.0237
	R.C.	15	0.0137	40		0.0089	0.0242	0.0186	0.0068	0.0168	0.0171	0.0237
	R.C.	16	0.0164	34		0.0094	0.0242	0.0071	0.0299	0.0206	0.0116	0.0237
	R.F.	17	0.0148	35		0.0070	0.0186	0.0186	0.0322	0.0083	0.0065	0.0246
	Bridge	18	0.0284	6	D.P.S.	0.0527	0.0052	0.0449	0.0068	0.0268	0.0116	0.0246
	Bridge	19	0.0285	5	D.P.S.	0.0527	0.0052	0.0449	0.0028	0.0278	0.0171	0.0246
	R.C.	20	0.0113	50		0.0090	0.0052	0.0186	0.0141	0.0091	0.0149	0.0246
	R.F.	21	0.0090	52		0.0089	0.0052	0.0186	0.0028	0.0160	0.0116	0.0246
	R.F.	22	0.0089	53		0.0089	0.0052	0.0186	0.0068	0.0148	0.0065	0.0246
Nic3	R.C.	23	0.0144	37		0.0090	0.0256	0.0071	0.0028	0.0341	0.0290	0.0090
	R.C.	24	0.0201	19	D.P.S.	0.0090	0.0256	0.0186	0.0299	0.0304	0.0290	0.0090
	R.C.	25	0.0214	14	D.P.S.	0.0147	0.0256	0.0186	0.0299	0.0428	0.0210	0.0090
	Bridge	26	0.0371	1	D.P.S.	0.0527	0.0256	0.0186	0.0322	0.0598	0.0253	0.0090
	R.C.	27	0.0186	25	D.P.S.	0.0094	0.0256	0.0036	0.0299	0.0223	0.0290	0.0090
	R.C.	28	0.0111	51		0.0083	0.0102	0.0071	0.0068	0.0068	0.0290	0.0043
	S.S.	29	0.0177	28	D.P.S.	0.0089	0.0102	0.0071	0.0322	0.0041	0.0423	0.0043
	D.F.	30	0.0217	13	D.P.S.	0.0198	0.0102	0.0071	0.0322	0.0051	0.0423	0.0043
	S.S.	31	0.0169	32		0.0074	0.0102	0.0036	0.0322	0.0061	0.0423	0.0043
	S.S.	32	0.0252	8	D.P.S.	0.0276	0.0102	0.0186	0.0299	0.0072	0.0423	0.0043
	S.S.	33	0.0229	9	D.P.S.	0.0276	0.0102	0.0071	0.0322	0.0111	0.0290	0.0043
	R.C.	34	0.0167	33		0.0198	0.0102	0.0071	0.0141	0.0079	0.0290	0.0043
Nic5	R.F.	35	0.0198	21	D.P.S.	0.0147	0.0101	0.0071	0.0322	0.0068	0.0423	0.0027
Nic15	D.F.	36	0.0117	47		0.0070	0.0053	0.0022	0.0322	0.0061	0.0105	0.0258
	D.F.	37	0.0117	48		0.0070	0.0053	0.0024	0.0322	0.0053	0.0105	0.0258
	D.F.	38	0.0076	55		0.0070	0.0053	0.0071	0.0068	0.0075	0.0105	0.0258
	D.F.	39	0.0082	54		0.0070	0.0053	0.0071	0.0068	0.0064	0.0149	0.0258
Nic26	R.F.	40	0.0138	39		0.0074	0.0207	0.0186	0.0141	0.0155	0.0171	0.0246
	R.F.	41	0.0147	36		0.0070	0.0207	0.0186	0.0141	0.0129	0.0253	0.0246
	R.F.	42	0.0115	49		0.0074	0.0207	0.0186	0.0028	0.0088	0.0171	0.0246
	R.F.	43	0.0120	45		0.0083	0.0207	0.0186	0.0028	0.0129	0.0171	0.0246
	R.F.	44	0.0183	27	D.P.S.	0.0110	0.0207	0.0186	0.0322	0.0118	0.0171	0.0246
	Bridge	45	0.0319	2	D.P.S.	0.0527	0.0207	0.0449	0.0028	0.0200	0.0253	0.0246
	R.F.	46	0.0142	38		0.0110	0.0183	0.0186	0.0141	0.0223	0.0116	0.0246
	R.C.	47	0.0127	43		0.0089	0.0183	0.0186	0.0028	0.0200	0.0210	0.0246
	R.F.	48	0.0134	41		0.0083	0.0183	0.0186	0.0141	0.0276	0.0116	0.0246
	R.C.	49	0.0199	20	D.P.S.	0.0147	0.0183	0.0071	0.0322	0.0111	0.0290	0.0246
	R.F.	50	0.0223	11	D.P.S.	0.0232	0.0183	0.0186	0.0322	0.0107	0.0171	0.0246
	R.C.	51	0.0194	22	D.P.S.	0.0228	0.0183	0.0071	0.0322	0.0155	0.0054	0.0090
	Bridge	52	0.0207	17	D.P.S.	0.0276	0.0199	0.0449	0.0068	0.0304	0.0065	0.0090
	R.C.	53	0.0119	46		0.0074	0.0199	0.0071	0.0141	0.0111	0.0149	0.0090
	Bridge	54	0.0204	18	D.P.S.	0.0276	0.0207	0.0449	0.0028	0.0373	0.0065	0.0090
	Bridge	55	0.0293	4	D.P.S.	0.0527	0.0207	0.0449	0.0028	0.0304	0.0065	0.0090

A.4.2 The Comparison table of the importance of Alternative Spots in stability level

Maximum peculiar value λ max = 56.857

The index of adjustment C. I. = 0.0344

A.4.2   The Comparison table of the importance of Alternative Spots in Traffic volume

Alternatives Spots	Weight
1	0.0330489
2	0.0323853
3	0.0289276
4	0.0289276
5	0.0242322
6	0.0242322
7	0.0242322
8	0.0242322
9	0.0242322
10	0.0242322
11	0.0242322
12	0.0242322
13	0.0242322
14	0.0242322
15	0.0242322
16	0.0242322
17	0.0189915
18	0.005177
19	0.005177
20	0.005177
21	0.005177
22	0.005177
23	0.0256039
24	0.0256038
25	0.0256038
26	0.0256038
27	0.0256038
28	0.0102418
29	0.0102418
30	0.0102418
31	0.0102418
32	0.0102418
33	0.0102418
34	0.0102418
35	0.0102418
36	0.0100533
37	0.005274
38	0.005274
39	0.005274
40	0.005274
41	0.0206534
42	0.0206534
43	0.0206534
44	0.0206534
45	0.0206534
46	0.0206534
47	0.0182633
48	0.0182633
49	0.0182633
50	0.0182633
51	0.0182633
52	0.0199002
53	0.0199002
54	0.0206534
55	0.0206534

Maximum peculiar value λ max = 57.883

The index of adjustment   C. I. = 0.0534

A.4.2 The Comparison table of the importance of Alternative Spots in Enviromental evaluation

Maximum peculiar value λ max $=$ 56.101

The index of adjustment C. I. $=$ 0.0204

A.4.2 The Comparison table of the importance of Alternative Spots in Natural condition

Maximum peculiar value λ max = 56.425

The index of adjustment C. I. = 0.0284

A.4.2   The Comparison table of the importance of Alternative Spots in Benefit B/C

Alternative Spots	Weight
1	0.0168113
2	0.0178245
3	0.0516994
4	0.0482422
5	0.0276894
6	0.0459244
7	0.0089827
8	0.0097213
9	0.0068043
10	0.0073465
11	0.0108939
12	0.0178245
13	0.0128828
14	0.0087692
15	0.0168113
16	0.0206329
17	0.0082592
18	0.0287648
19	0.0278168
20	0.0090713
21	0.0160036
22	0.0147854
23	0.0341273
24	0.0804114
25	0.042871
26	0.0598228
27	0.0222857
28	0.0063346
29	0.0041394
30	0.0051419
31	0.0061278
32	0.0072465
33	0.0110082
34	0.0079345
35	0.0063346
36	0.0081279
37	0.0053189
38	0.0075418
39	0.0084077
40	0.0155421
41	0.0128828
42	0.008822
43	0.0128828
44	0.0117835
45	0.0200379
46	0.0222867
47	0.0200379
48	0.0275594
49	0.0110982
50	0.0100786
51	0.0155421
52	0.0304114
53	0.0110982
54	0.0373194
55	0.0304114

Maximum peculiar value λ max= 58.457

The index of adjustment   C. I. = 0.064

A.4.2 The Comparison table of the importance of Alternative Spots in Restoration level

AlternativeS pots	... (columns 1–55) ...	Weight
1		0.0054081
2		0.0054081
3		0.0064928
4		0.0064928
5		0.0148632
6		0.0105082
7		0.0148632
8		0.0170823
9		0.0170823
10		0.0170823
11		0.0170823
12		0.0118119
13		0.0148632
14		0.0170823
15		0.0170823
16		0.0118119
17		0.0064928
18		0.0118119
19		0.0170823
20		0.0148632
21		0.0115119
22		0.0064928
23		0.028042
24		0.028042
25		0.0210243
26		0.0252833
27		0.028042
28		0.028042
29		0.0422726
30		0.0422726
31		0.0422726
32		0.0422726
33		0.028042
34		0.028042
35		0.0422726
36		0.0105082
37		0.0105082
38		0.0105082
39		0.0148532
40		0.0170823
41		0.0252933
42		0.0170823
43		0.0170823
44		0.0170823
45		0.0252933
46		0.0118119
47		0.0210243
48		0.0118119
49		0.028042
50		0.0170823
51		0.0054081
52		0.0064928
53		0.0148632
54		0.0064928
55		0.0064928

Maximum peculiar value λ max= 57.641

The index of adjustment C. I. = 0.0489

A.4.2 The Comparison table of the importance of Alternative Spots in Development situation

Maximum peculiar value $\lambda_{max} = 55.796$

The index of adjustment   C. I. $= 0.0147$