

Pollution Travel Time Tables

River Derwent Catchment



Environmental Modelling

Project 94092.A

Ver 1.0 Nov1994



R. DERWENT

BUTTERCRAMBE GAUGING STATION Tel: Regional Control 0532 440191

Outside working hours:

Ask for acting Monitoring duty Officer/Flood-Duty-Officer to provide a flow figure for Buttercrambe via the Regional Telemetry System or the Regional Flood Forecasting Model.

In working hour

Contact Environmental Modelling 0532 440191 x2043/x2117
Dales Area Hydrology section 0904 692296 x2604

INSTRUCTIONS

1. Obtain a level (m) or flow, (m³/s) for Buttercrambe Gauging Station
2. Refer to Table (1) and note the corresponding river discharge, (m³/s) value associated with the level obtained from 1. (If a flow, is obtained proceed to 3.)
3. Using Tables (2) identify the site nearest to where the pollution spill occurred. Using the discharge value obtained from Table (1) read the corresponding time to first arrival; time to peak; time to background and estimated peak concentration.
4. **NOTE:** the peak concentration is represented as a proportion of the amount spilled. Therefore if 50 kg entered the river the downstream peak concentration will be the tabulated figure x50.
5. Once the pollutant identity and volume spilled over time is known, updates to predictions can be obtained from Environmental Modelling on request.
6. If the incident occurs in heavy rainfall/snow melt the gauging station should be interrogated every 30 minutes and predictions revised accordingly.
7. Refer to Tables (3) to estimate travel times from Elvington to Barmby

TABLE (1)

RIVER DERWENT

Stage v flow relationship for Buttercrambe gauging station.

Stage (m)	Flow (m ³ /s)	Stage (m)	Flow (m ³ /s)
0.179	3	0.732	25
0.217	4	0.751	26
0.252	5	0.770	27
0.284	6	0.789	28
0.315	7	0.807	29
0.344	8	0.826	30
0.372	9	0.843	31
0.399	10	0.861	32
0.425	11	0.879	33
0.451	12	0.896	34
0.475	13	0.914	35
0.499	14	0.931	36
0.522	15	0.948	37
0.545	16	0.964	38
0.567	17	0.981	39
0.589	18	0.997	40
0.611	19	1.014	41
0.631	20	1.030	42
0.653	21	1.046	43
0.673	22	1.062	44
0.693	23	1.078	45
0.712	24		

First Arrival Times (hours) at Elvington Water Intake

	Distance from Elvington	3	4	5	6	7	8	9	10	11	12	13	16	20	25	30	35	40	45
R DERWENT	km																		
Yeddingham	91	251	188	149	125	107	94	84	73.30	68	62	56.30	46	38	30	25	21.30	18.30	16.30
Derwent Hse	87	236	178.30	142	117.30	101.00	88	77.30	69	63	58	53	43	35.30	28.30	23.30	20	17.30	15.30
Low Marishes	83	221	165.30	132.30	109.30	93.30	81.30	73	66	60.30	50.30	50.30	41	34	26.30	22.30	19	16.30	14.30
Rye Mouth	80	205.30	154	123	103	87	77	68	60.30			46.30	38	29.30	24	19.30	17.30	15.30	13.00
Malton	66	184	143	111	94	78.30	70.30	62.30	54.30			42	34.30	27.30	22.00	18.00	15.30	14	12.30
Kirkham Weir	46	133	99	80	66	56.30			37			29	23.30	18.30	14.30	12	10.30	9.30	8.30
Buttercrambe	26	69	52.00	41.30	34	29.30			20.30			16	13	10.30	8.30	6.30	6.00	5.00	4.30
Stamford Brdg	17	49	37	29.30	24	20.30			14.30			11	9	7.30	5.30	4.30	4.00	3.30	3
R RYE																			
Rye/Dove	104	273.30	206	163.30	135	116	102	90	73	67	63	61.30	51.30	41	32	27	23	20.30	18.00
Ness	100	252	189	151.30	125.30	108	94	83.30	74.00	67.30	62	56.30	47.30	38	30	25	21.30	19	16.30
Butterwick	96	248.30	187	149	124	106	93	82	74	67	61	56	47	37	29.30	24.30	21	18.30	16.00
Howe Bridge	82	212	157	126.30	104.30	89	77.30	69	63	56.30	51.30	47	39.30	31.30	25	20.30	18	15.30	14.00
COSTA BECK																			
Pickering		247	184	147	122	105	91	82			61	56.30	46	37	29.30	24.30	21	18.30	16.30
Elm Farm	88	219	163	130.30	108	94.30	81.30	73			53.30	49	40	32.30	26.30	21.30	18.30	16	14.00
R SEVEN																			
Sinnington	105	264	195	158	110.30	98	86.30	78			59	47.30	38.30	31.30	28	26	22.30	19.30	17.30
RIVER DOVE																			
Kirkby Mills	112	298	224	178	147	126	111	100			74	16	55	44.30	35.30	29.30	25	22	19.30

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Yeddingham (R.Derwent) SE 892 794	251:00	273:00	324:00	0.007	3
	188:00	205:30	250:00	0.007	4
	149:00	164:00	198:00	0.007	5 DWF
	125:00	137:30	170:00	0.007	6
	107:30	117:00	141:00	0.007	7
	94:00	102:30	128:30	0.007	8
	84:00	91:30	114:30	0.007	9
	73:30	81:00	99:00	0.007	10
	68:00	74:30	94:00	0.007	11
	62:00	68:00	87:00	0.007	12
	56:30	62:00	78:30	0.007	13
	46:00	50:00	64:00	0.007	16 Mean
	38:00	41:30	50:00	0.007	20
	30:00	32:30	41:00	0.007	25
	25:00	27:30	33:30	0.007	30
	21:30	23:30	29:30	0.007	35
18:30	20:30	25:30	0.007	40	
16:30	18:00	23:00	0.007	45	
Derwent House (R.Derwent) SE 854 788	236:00	259:00	309:00	0.007	3
	178:30	194:00	239:00	0.007	4
	142:00	155:00	189:00	0.007	5 DWF
	117:30	129:30	161:00	0.007	6
	101:00	110:30	137:00	0.007	7
	88:00	97:00	122:00	0.007	8
	77:30	85:30	108:00	0.007	9
	69:00	76:30	95:30	0.007	10
	63:00	69:30	88:30	0.007	11
	58:00	64:00	83:00	0.007	12
	53:00	58:30	73:00	0.007	13
	43:00	48:00	60:00	0.007	16 Mean
	35:30	38:30	49:00	0.007	20
	28:30	31:00	38:00	0.007	25
	23:30	25:30	32:00	0.007	30
	20:00	22:00	27:30	0.007	35
17:30	19:00	24:30	0.007	40	
15:30	17:00	22:00	0.007	45	

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Low Marishes	221:00	241:00	302:30	0.01	3
	165:30	180:00	229:30	0.01	4
SE 821-771	132:30	144:00	184:00	0.01	5 DWF
	109:30	120:00	153:30	0.01	6
	93:30	102:30	132:00	0.01	7
	81:30	89:00	116:30	0.01	8
	73:00	80:00	100:00	0.01	9
	66:00	72:00	91:00	0.01	10
	60:30	65:30	83:30	0.01	11
	54:30	60:00	77:00	0.01	12
	50:30	55:30	70:30	0.01	13
	41:00	45:00	58:30	0.01	16 Mean
	34:00	37:00	47:00	0.01	20
	26:30	29:00	36:30	0.01	25
	22:30	24:00	31:00	0.01	30
	19:00	20:30	26:30	0.01	35
	16:30	18:00	23:00	0.01	40
	14:30	16:00	20:30	0.01	45

RIVER DERWENT SYSTEM

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Rye Mouth SE 824 757	205:30	223:30	283:30	0.02	3
	154:00	168:00	144:00	0.02	4
	123:00	134:30	177:00	0.02	5 DWF
	103:00	111:00	144:00	0.02	6
	87:00	96:30	133:00	0.02	7
	77:00	84:00	111:00	0.02	8
	68:00	74:00	100:00	0.02	9
	60:30	65:30	94:00	0.02	10
	46:30	51:30	70:00	0.02	13
	38:00	41:00	57:00	0.02	16 Mean
	29:30	33:00	46:00	0.02	20
	24:00	26:00	35:00	0.02	25
	19:30	21:30	30:00	0.02	30
	17:30	19:00	27:00	0.02	35
	15:30	17:00	24:00	0.02	40
	13:00	14:00	20:00	0.02	45
Malton SE 787 714	184:00	203:30	258:00	0.02	3
	143:00	156:00	195:00	0.02	4
	111:00	123:00	159:00	0.02	5 DWF
	94:00	103:00	134:00	0.02	6
	78:30	87:30	121:00	0.02	7
	70:30	78:00	101:30	0.02	8
	62:30	68:40	90:00	0.02	9
	54:30	61:30	81:00	0.02	10
	42:00	47:30	67:30	0.02	13
	34:30	40:00	52:00	0.02	16 Mean
	27:30	32:30	42:30	0.02	20
	22:00	26:30	34:30	0.02	25
	18:00	22:30	30:00	0.02	30
	15:30	19:30	26:00	0.02	35
	14:00	15:30	20:00	0.02	40
	12:30	13:30	17:30	0.02	45

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Kirkham Weir SE 734 657	133:00	146:30	187:00	0.03	3
	99:00	112:00	150:00	0.03	4
	80:00	88:00	123:30	0.03	5 DWF
	66:00	73:00	106:30	0.03	6
	56:30	62:30	93:00	0.03	7
	37:00	41:00	68:00	0.03	10
	29:00	31:30	56:00	0.03	13
	23:30	25:30	49:30	0.03	16 Mean
	18:30	20:00	42:30	0.03	20
	14:30	16:30	34:30	0.03	25
	12:00	13:30	30:00	0.03	30
	10:30	11:30	26:00	0.03	35
	9:30	10:30	20:00	0.03	40
	8:30	9:30	17:30	0.03	45
Buttercrambe SE 736 585	69:00	74:30	96:00	0.04	3
	52:00	56:00	77:00	0.04	4
	41:30	45:00	65:00	0.04	5 DWF
	34:00	37:00	56:00	0.04	6
	29:30	32:00	50:00	0.04	7
	20:30	22:30	30:30	0.04	10
	16:00	17:00	24:30	0.04	13
	13:00	14:00	20:30	0.04	16 Mean
	10:30	11:15	17:00	0.04	20
	8:30	9:00	14:00	0.04	25
	6:30	7:35	11:30	0.04	30
	6:00	6:30	10:00	0.04	35
	5:00	5:30	8:30	0.04	40
	4:30	5:00	7:30	0.04	45

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Initiation location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn M³/s
Stamford	49:00	54:30	71:00	0.05	3
Bridge	29:30	33:00	45:30	0.05	5 DWF
	20:30	24:00	33:30	0.05	7
GR 712 556	14:30	16:30	23:30	0.05	10
	11:00	12:30	17:00	0.05	13
	9:00	10:30	14:30	0.05	16 Mean
	7:30	8:15	11:30	0.05	20
	5:30	6:15	9:00	0.05	25
	4:30	5:15	7:30	0.05	30
	4:00	4:30	6:30	0.05	35
	3:30	4:00	5:30	0.05	40
	3:00	3:30	5:15	0.05	45

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m ³ /s
Ness (R.Rye)	273:30	301:00	362:00	0.005	3
	206:00	225:00	274:00	0.005	4
	163:30	181:00	222:00	0.005	5 DWF
SE 688 793	135:00	150:00	186:00	0.005	6
	116:00	128:30	158:30	0.005	7
	102:00	111:00	140:30	0.005	8
	90:00	99:00	124:00	0.005	9
	73:00	81:00	102:00	0.005	10
	67:00	74:00	94:00	0.005	11
	63:00	69:30	86:00	0.005	12
	61:30	67:30	81:00	0.005	13
	51:30	56:30	70:30	0.005	16 Mean
	41:00	45:00	57:00	0.005	20
	32:00	36:00	47:30	0.005	25
	27:00	30:00	38:00	0.005	30
	23:00	25:30	33:30	0.005	35
	20:30	22:30	27:30	0.005	40
	18:00	20:00	24:30	0.005	45
Rye/Dove Confluence (R. Rye)	252:00	277:00	338:30	0.006	3
	189:00	207:00	257:00	0.006	4
	151:30	165:30	206:30	0.006	5 DWF
SE 712 789	125:30	137:30	174:00	0.006	6
	108:00	117:30	149:00	0.006	7
	94:00	103:00	133:00	0.006	8
	83:30	90:00	117:00	0.006	9
	74:00	81:30	109:30	0.006	10
	67:30	74:00	95:00	0.006	11
	62:00	68:00	87:00	0.006	12
	56:30	62:00	78:00	0.006	13
	47:30	52:00	66:30	0.006	16 Mean
	38:00	41:30	53:00	0.006	20
	30:00	33:30	44:00	0.006	25
	25:00	27:30	35:30	0.006	30
	21:30	24:00	31:00	0.006	35
	19:00	20:30	25:30	0.006	40
	16:30	18:00	23:00	0.006	45

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging strn m³/s
Butterwick (R.Rye) SE 732 775	248:30	273:30	333:00	0.01	3
	187:00	204:00	253:00	0.01	4
	149:00	163:30	205:00	0.01	5 DWF
	124:00	135:30	170:00	0.01	6
	106:00	116:00	148:30	0.01	7
	93:00	101:00	120:00	0.01	8
	82:00	89:30	113:00	0.01	9
	74:00	81:00	109:00	0.01	10
	67:00	73:00	93:50	0.01	11
	61:00	67:00	88:00	0.01	12
	56:00	62:30	79:30	0.01	13
	47:00	51:00	64:30	0.01	16 Mean
	37:00	41:00	54:00	0.01	20
	29:30	32:30	42:00	0.01	25
	24:30	27:00	35:30	0.01	30
	21:00	23:00	30:00	0.01	35
	18:30	20:00	25:00	0.01	40
16:00	17:30	22:00	0.01	45	
Howe Bridge (R.Rye) SE 809 760	212:00	230:00	290:30	0.019	3
	157:00	169:30	213:30	0.019	4
	126:30	137:00	177:30	0.019	5 DWF
	104:30	113:30	145:00	0.019	6
	89:00	97:30	129:00	0.019	7
	77:30	85:00	110:00	0.019	8
	69:00	75:00	97:00	0.019	9
	63:00	68:00	92:30	0.019	10
	56:30	61:30	79:30	0.019	11
	51:30	55:30	73:30	0.019	12
	47:00	52:30	69:00	0.019	13
	39:30	43:00	59:00	0.019	16 Mean
	31:30	34:00	47:30	0.019	20
	25:00	27:30	36:30	0.019	25
	20:30	23:00	31:30	0.019	30
	18:00	19:30	27:30	0.019	35
	15:30	17:00	22:00	0.019	40
14:00	15:00	19:30	0.019	45	

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Pickering (Costa Beck) SE 791 820	228:00	247:00	304:00	0.0004	3
	171:30	184:00	231:00	0.0004	4
	136:30	147:30	187:00	0.0004	5
	113:00	122:00	154:00	0.0004	6
	96:30	105:00	13:30	0.0004	7
	85:00	91:00	117:30	0.0004	8
	76:00	82:00	103:00	0.0004	9
	68:30	74:00	92:00	0.0004	10
	62:00	67:00	85:00	0.0004	11
	56:30	61:00	78:00	0.0004	12
	52:30	56:30	72:00	0.0004	13
	42:00	46:00	58:00	0.0004	16
	34:00	37:00	46:30	0.0004	20
	27:00	29:30	37:30	0.0004	25
	22:30	24:30	31:30	0.0004	30
19:30	21:00	27:00	0.0004	35	
17:00	18:30	24:00	0.0004	40	
15:00	16:30	21:00	0.0004	45	
Elm Farm (Costa Beck) SE 788 796	219:00	239:00	292:00	0.0006	3
	163:00	176:00	210:00	0.0006	4
	130:30	141:30	187:00	0.0006	5 DWF
	108:00	116:30	142:00	0.0006	6
	94:30	101:00	134:30	0.0006	7
	81:30	88:00	108:00	0.0006	8
	73:00	79:00	97:00	0.0006	9
	64:30	70:30	87:30	0.0006	10
	58:30	63:30	78:00	0.0006	11
	53:30	58:00	71:30	0.0006	12
	49:00	54:00	66:00	0.0006	13
	40:00	43:00	54:00	0.0006	16 Mean
	32:30	36:00	46:00	0.0006	20
	26:30	28:30	37:00	0.0006	25
	21:30	24:00	31:30	0.0006	30
18:30	20:00	26:30	0.0006	35	
16:00	17:30	22:30	0.0006	40	
14:00	15:30	19:30	0.0006	45	

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Initiation location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn M³/s
Sinnington (R.Seven)	264:00	287:00	364:00	0.0008	3
	195:00	213:00	257:30	0.0008	4
SE 745 853	158:00	173:00	224:00	0.0008	5 DWF
	110:30	141:00	173:00	0.0008	6
	98:00	122:30	155:00	0.0008	7
	86:30	106:30	131:30	0.0008	8
	78:00	94:00	116:30	0.0008	9
	70:30	85:30	113:00	0.0008	10
	64:30	77:00	97:00	0.0008	11
	59:00	70:30	87:00	0.0008	12
	47:30	65:30	88:00	0.0008	13
	38:30	53:30	69:00	0.0008	16 Mean
	31:30	42:30	56:00	0.0008	20
	28:00	34:00	46:00	0.0008	25
	26:00	28:30	37:00	0.0008	30
	22:30	25:00	33:00	0.0008	35
	19:30	21:00	27:00	0.0008	40
17:30	19:00	24:00	0.0008	45	

RIVER DERWENT SYSTEM

TABLE (2)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Elvington Water Intake following a Pollution Incident

Time & Concentration at Elvington Intake

Pollution Incident location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn m³/s
Kirkby Mills (R.Dove) SE 705 859	298:00	327:00	374:00	0.0004	3
	224:00	244:00	284:00	0.0004	4
	178:00	194:00	226:00	0.0004	5 DWF
	147:00	162:00	191:00	0.0004	6
	126:00	139:00	164:00	0.0004	7
	111:00	122:00	144:00	0.0004	8
	100:00	109:00	126:00	0.0004	9
	89:30	98:00	116:00	0.0004	10
	81:30	89:00	105:00	0.0004	11
	74:00	81:00	97:00	0.0004	12
	68:00	75:00	89:30	0.0004	13
	55:00	61:00	73:00	0.0004	16 Mean
	44:30	49:00	59:00	0.0004	20
	35:30	39:00	47:30	0.0004	25
	29:30	32:30	39:30	0.0004	30
	25:00	27:30	34:00	0.0004	35
	22:00	24:30	30:00	0.0004	40
	19:30	21:30	27:00	0.0004	45

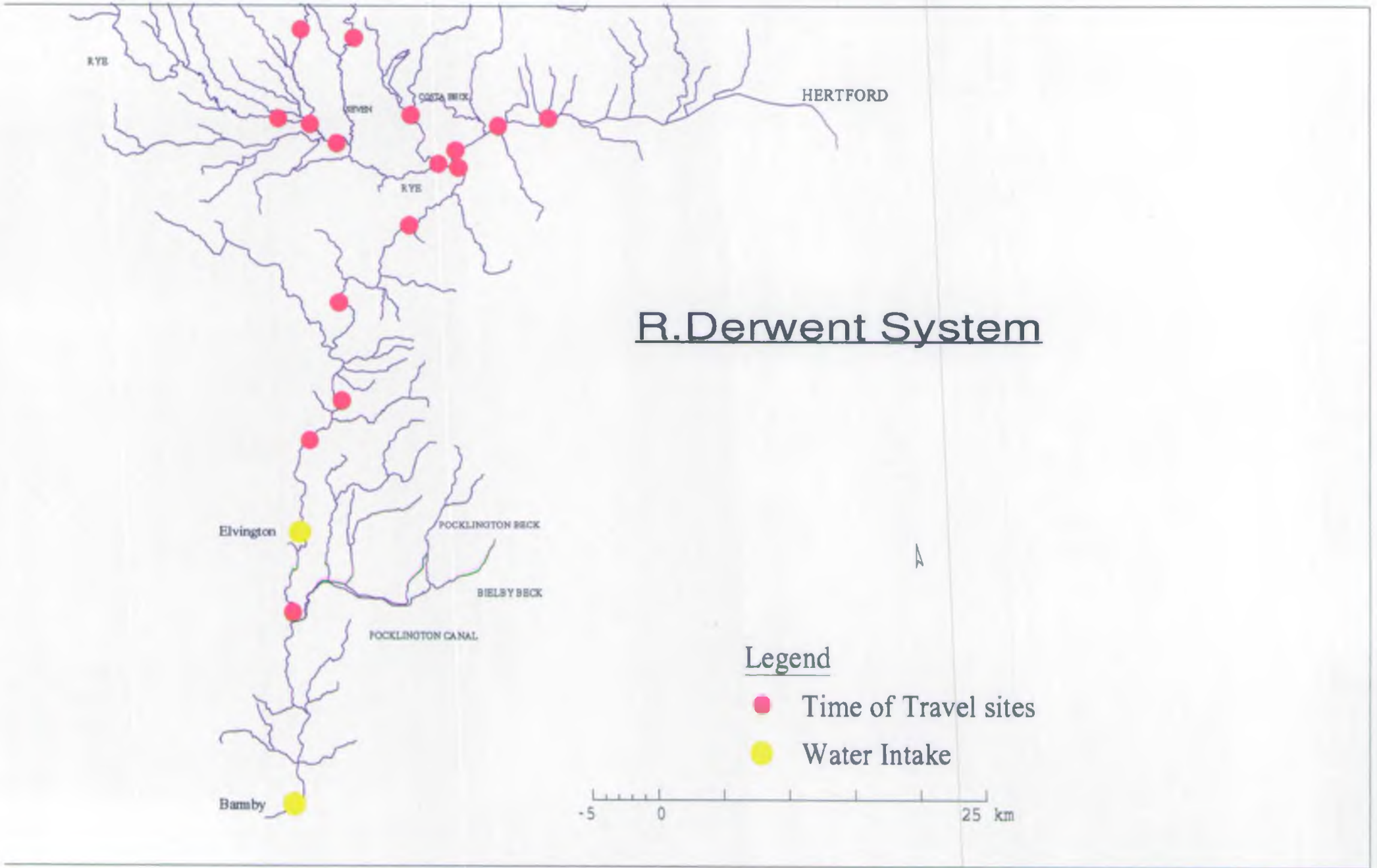
RIVER DERWENT SYSTEM

TABLE (3)

Time of Arrival & Peak Concentrations per kg input of Pollutant at Barmby Intake following a Pollution Incident

Time & Concentration at Barmby Intake

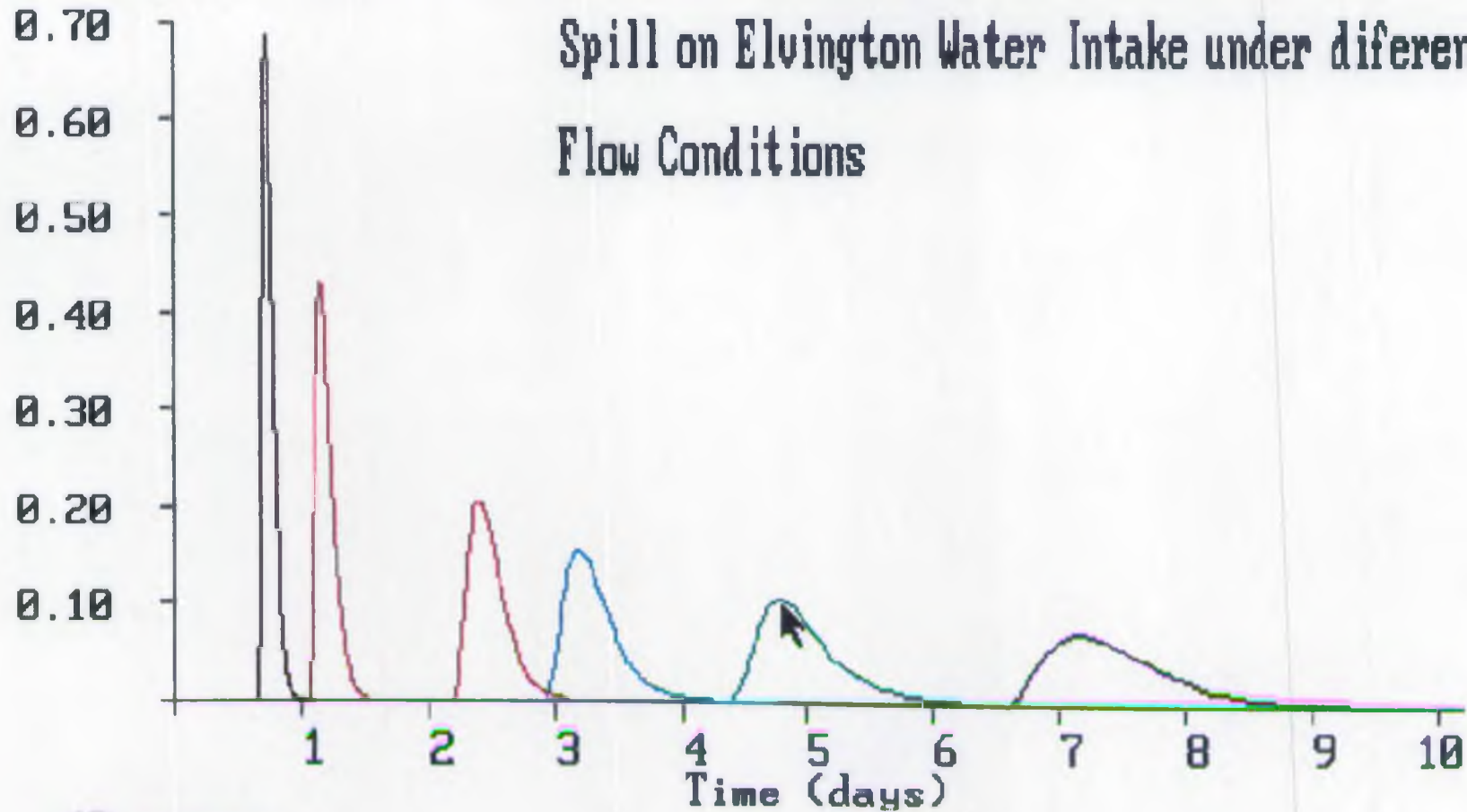
Pollution Initiation location	Time of 1st arrival hrs:mins	Time to peak hrs:mins	Time to background hrs:mins	Peak concentration mg/l per kg of pollutant	Flow at Buttercrambe gauging stn M³/s
Elvington SE 705 485	95:00	101:00	132:00	0.028	3
	56:30	60:30	91:00	0.028	5 DWF
	40:30	43:00	70:30	0.028	7
	27:30	30:00	42:00	0.028	10
	21:30	23:00	33:30	0.028	13
	17:30	18:30	29:00	0.028	16 Mean
	14:00	15:00	22:00	0.028	20
	11:00	12:00	18:00	0.028	25
	9:30	10:00	16:00	0.028	30
	8:00	8:30	14:00	0.028	35
	7:00	7:30	12:50	0.028	40
	6:00	6:30	11:00	0.028	45
Wheldrake Ings SE 695 445	70:30	80:00	99:00	0.030	3
	42:30	48:00	62:30	0.030	5 DWF
	30:00	34:30	48:00	0.030	7
	20:30	24:00	34:30	0.030	10
	16:00	18:00	24:00	0.030	13
	13:00	14:30	20:00	0.030	16 Mean
	10:30	12:00	16:00	0.030	20
	8:30	9:30	13:30	0.030	25
	7:00	8:00	12:00	0.030	30
	6:00	7:00	10:00	0.030	35
	5:00	6:00	8:00	0.030	40
	4:30	5:00	7:00	0.030	45



Conc
mg/l

R.Derwent System - Graph to show the impact of a Pollution

Spill on Elvington Water Intake under diferent Flow Conditions



40 cumecs

25 cumecs

12 cumecs

9 cumecs

6 cumecs

4 cumecs

Time 4.74 Conc 0.101

TIME OF TRAVEL NOTES

1. Predictions across the discharge range are based on a series of tracer surveys. Data was subsequently imported into the ADZ model and simulations run accordingly.
2. The flow range represents 95% of all flows measured at Buttercrambe gauging station, (18 year period). Flows for each node are prorated to Buttercrambe. Predictions are based on steady state assumptions.

NOTE: Due to considerable topographic variation in the Derwent catchment one should be aware of interpreting the travel time tables under storm conditions. If this is the case seek advice from Environmental Modelling/Dales area Hydrology section.

3. Peak concentrations vary little with discharge at a node due to the balancing effects between available dilution and dispersion. ie at a high discharge there is relatively minimal dispersion compared with a low discharge and more dispersion, giving rise to a similar peak concentration downstream.

NOTE: peak concentrations are represented as concentration per kilogram spilled. Eg. If 50 kilograms entered the river near Malton the peak concentration expected at Elvington would approximate 1.0mg/l.

4. All predictions assume a fully misible pollutant. Where the pollutant is immisible travel times will be slower. If this is the case, as a general rule of thumb use the results from one discharge unit below the actual river flow. (Eg. If any incident occurs at a flow rate of 5 as measured at Buttercrambe gauging station and the pollutant is immisible, use the results equating to a discharge of 4 cumecs).
5. To help validate these tables when an incident occurs it would be useful for operational staff to note arrival times etc. The tables can then be adjusted accordingly.
6. No results as yet are available for the Derwent above Yeddingham

Contact names and address: Environmental Modelling: Adrian Barraclough
Richard Freestone

National Rivers Authority
Olympia House,
Gelderd Rd,
Leeds. LS12 6DD

Tel: 0532 440191 x2043
Fax: 0532 312116