APPENDIX I

APPENDIX I

Table 1. Mean daily temperatures and estimates of potential evapotranspiration, in the Rio Cobre and Rio Minho-Milk river basins (Source: Nkemdirim, 1979).

Month	**Temperature °F**	**PE**	**Temperature °F**	**PE**
January	68	64.5	67.3	64.2
February	69.7	67.2	66.4	60
March	72.1	72	67.4	64.2
April	72.1	84.8	71.7	85
May	74.4	97.8	71.4	83.5
June	73.5	92.5	73.2	93
July	74	95.5	73.4	94.2
August	75.1	102	73.5	94.8
September	75.4	103.8	73.1	92.5
October	75.1	102	72.8	90.8
November	73.3	91.2	72	86.2
December	70.7	77.2	69.3	73
Total	72.5	1050.5	70.9	976.5

Table 2. Typical evapotranspiration rates for Monymusk Research Station in the Rio Minho-Milk river basins (Source: WRAJ, 1960).

Month	Maximum Temperature 1931-1960 C°	Minimum Temperature 1931-1960 C°	Avg. Daily Rainfall (mm)	Humidity 7:00	Humidity 1:00 p.m.	Evapo-transpiration mm	No of Sunshine Hours 1956-1960
January	30.4	18.4	58	98	65	3.7	7.8
February	30.3	17.6	60	98	68	4.4	8.4
March	30.1	18.9	59	97	61	5	7.2
April	31.2	20.1	119	93	60	5.7	8.5
May	30.7	22.1	270	96	64	5.8	7.5
June	31.8	22.4	188	93	73	5.6	6.7
July	32	22.6	127	95	68	5.9	7.8
August	31.5	22.4	190	95	62	8.5	8.2
September	31.4	22.6	216	97	69	4.7	7.4
October	31.4	21.4	296	9	76	4.2	6.9
November	31.4	20.2	124	98	74	3.8	7.8
December	30.5	20.2	81	94	70	3.6	7.3

Table 3. Water Balance, water use and future water demands of the ten basins in Jamaica (MCM/yr) (Source: WRAJ, 1990).

ITEM	1 BLUE MT SOUTH	2 KINGSTON	3 RIO COBRE	4 RIO MINHO-MILK	5 BLACK RIVER	6 CABARITA RIVER	7 GREAT RIVER	8 MARTHA BRAE RIVER	9 DRY HARBOR MT.	10 BLUE MT. SOUTH	TOTAL
Rainfall	1694	312	2009	2420	2530	1890	1685	1154	2450	5068	21212
Evapotranspiration	912	208	1450	1641	1530	1019	863	673	1302	2346	11945
Surface water runoff	662	81	187	225	346	420	467	271	457	2452	5576
Ground-water recharge	120	23	372	554	654	451	355	201	691	270	3691
(Exploitable Surface) Runoff	113	10	15	32	49	0	65	20	28	334	666
Exploitable Groundwater	36	36	404	439	625	451	316	151	691	270	3419
NON-AGRICULTURAL SECTOR:											
Present Use	4	72	45	39	7	11	26	8	9	12	232
Expected Demand 2015	8	113	59	50	10	16	42	12	19	17	346
Agricultural Sector:											
Present Use	12	2	260	329	32	24	2	0	9	12	682
Possible Demand 2015	62	2	391	582	146	84	2	12	26	21	1338

Table 4. Average daily stream discharge rates for the Rio Cobre and Rio Minho-Milk river basins (m^3/d) (Source: WRAJ).

Station	ID	Easting (m)	Northing (m)	Mean Daily Discharge (cfs)	Mean Daily Discharge (m^3/d)
Rio Minho (Danks)	04CA004	2227000	161450	53.13	97,523
Rio Minho (Danks)	04CA006	225800	159250	14.14	368,483
Rio Cobre (Bog Walk)	03BA012	249250	160600	304.05	934,839
Rio Cobre (Spn Twn)	03BA003	252150	154450	162.13	549,555
Rio Cobre (Main Canal)	03BY002	259242	149676	98.02	242,615

Table 5. Average annual stream discharge rates for the Rio Cobre Basin measured at three gauging stations for the period 1986 -1996 (Source: WRAJ, 1996).

STATION: BOG WALK

Year	Mean Discharge (m^3/d)	Mean Annual Discharge (m^3/d)	Total Discharge (m^3/d)	Mean Annual Total Discharge (m^3/d)
1986	1756123		483524160	
1987	1110669		405814920	
1988	1469116		537772280	
1989	758119		309603480	
1990	847027		64634352	
1991	442756		74872236	
1992	610957		223259880	
1993	1135673		414449280	
1994	768517		279999960	
1995	640390		234361200	
1996	743880	934839	272599080	300080984

STATION: SPANISH TOWN

Year	Mean Discharge (m^3/d)	Mean Annual Discharge (m^3/d)	Total Discharge (m^3/d)	Mean Annual Total Discharge (m^3/d)
1986	1118498		408281880	
1987	458243		124581480	
1988	992011		362643120	
1989	270689		36916280	
1990	370386		98801748	
1991	290873		79436112	
1992	279105		102132144	
1993	784077		286167360	
1994	485864		177621120	
1995	443808		161585880	
1996	396662	549355	145550640	183816712

Table 5. Average annual stream discharge rates for the Rio Cobre Basin measured at three gauging stations for the period 1986-1996 (Source: WRAJ, 1996)

STATION: MAIN CANAL

Year	Mean Discharge (m^3/d)	Mean Annual Discharge (m^3/d)	Total Discharge (m^3/d)	Mean Annual Total Discharge (m^3/d)
1986	164776		60793824	
1987	210821		76969152	
1988	376405		138149760	
1989	376601		136916280	
1990	335327		122361260	
1991	201769		73638756	
1992	208643		76352412	
1993	165437		60440520	
1994	184667		66607920	
1995	204509		74625540	
1996	239813	242615	81823776	88061745

Table 6. Average annual stream discharge rates measured at two gauging stations in the Rio Minho-Milk River Basin for the period 1986-1996 (Source: WRAJ, 1996).

STATION: DANKS AT ROCK RIVER

Year	Mean Discharge (m^3/d)	Mean Annual Discharge (m^3/d)	Total Discharge (m^3/d)	Mean Annual Total Discharge (m^3/d)
1986	805729		293568240	
1987	620325		22690320	
1988	445569		162819360	
1989	246737		90044040	
1990	200937		73392060	
1991	213879		78079284	
1992	170183		62290740	
1993	397592		145550640	
1994	258994		94484568	
1995	324880		118537428	
1996	129986	368483	47612328	108097183

STATION: PINDARS AT ROCK RIVER

Year	Mean Discharge (m^3/d)	Mean Annual Discharge (m^3/d)	Total Discharge (m^3/d)	Mean Annual Total Discharge (m^3/d)
1986	151908		55506600	
1987	35818		43418496	
1988	280083		102502188	
1989	68088		24792948	
1990	95954		35030832	
1991	81813		29850216	
1992	38509		14061672	
1993	91820		33550656	
1994	66351		20229072	
1995	127809		15541848	
1996	34595	97523	12704822	

Table 7. Areas of the hydrostratigraphic units of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI (Source: WRAJ, 1990).

		HYDROSTRATIGRAPHIC UNITS					
No.	Hydrologic basin	Basement Volcanics	Limestone aquifer system	Coastal aquifer system	Alluvial aquifer system	Area	Total Percent %
I	Rio Cobre	224	721	0	338	1283	12
II	Rio Minho-Milk	368	912	0	420	1700	16

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation a.s.l	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Lluidas Vale North	234305	167521					80		55	
Lluidas Vale West	232628	166551								
Lluidas Vale CH North	233085	164418								
Worthy Park Factory	234122	165088			241	1207.9			79.07	396.28
Lluidas Vale South	235706	163473	10		160	1349.3	3.28		52.49	442.70
Bodles Livestock	235766	143478	211		89	121.4	69.23		29.20	39.83
Marine Terminal	235949	141771	75		45	75	24.61		14.76	24.61
Colbeck NWA	237138	143722	80		125	127.36	26.25		41.01	41.78
Brampton Farm	238814	142527	60			42	19.69			
Riverhead	238998	167039	20		163	787.81	6.56		53.48	258.47
Resources CH	240338	148263								
Nutshell CH	242168	168837								
Bushy Park	242228	144209	140		205	80	45.93		67.26	26.25
Grove Farm	242258	144667		80		72.04		26.25	75	23.64
Fellowship	242747	163381								
Lemon Ridge	243235	165789	30		290	585.15	9.84		290	191.98
Cherry Gardens	243508	143691	95				31.17			
Springvale North	243539	159906	250			434.84	82.02			
Alcan Deepwell 1	243753	168867	0		825	444			270.67	145.67
Emergency Well	243814	168837								
Kitson Town 1	243874	150976	20		158		6.56		51.84	0

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Alcan Deepwell 2	243936	168806	10		545	430.6	3.28		178.81	141.27
Morgan's St. Helens 2	243965	147410	185		115	56	60.70		37.73	18.37
Alcan Deepwell 3	243997	168806	45		685	425.6	14.76		224.74	139.63
Springvale South	244027	159205	120			436.06	39.37			143.06
St. Helens Expl 2	244057	145855	92		220	38.73	30.18		72.18	12.71
Springvale	244515	158931								0.00
Amity Hall CH 1	244636	142076	460			16.57	150.92			5.44
Amity Hall 2	244849	144636	200			35.44	65.62			11.63
Jericho 1	245125	167221	0		150	355.44			49.21	116.61
Wakefiled 2	245673	161339	22		338	330.73	7.22		110.89	108.51
Linstead 1	245948	165362	10		40	330.86	3.28		13.12	108.55
Linstead 1										
Banbury	245978	165392								
Banbury 4	246009	146495	0		450	335			147.64	109.91
Rio Cobre Lease 2	246800	148050	40		360		13.12		118.11	
Palm	246801	170787								
Blair Pen	246968	146525				68.83				22.58
Hampton (Tulloch 4)	247045	161278	0		220	304.66			72.18	99.95
Bybrook	247075	162863	42		80	307.04	13.78		26.25	100.73

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Innswood 9	247714	147806	55		195	71.9	18.04		63.98	23.59
Factory 1 Innswood	247806	148202	20		88	68.01	6.56		28.87	22.31
Factory 3	247867	147775	4		116	71.33	1.31		38.06	23.40
Buena Vista	247898	164082	15		69	260.03	4.92		22.64	85.31
Innswood Factory 4	247989	148232	3		117		0.98		38.39	
Innswood CH 7	248233	147952	70		237		22.97		77.76	
Innswood CH 6	248294	147958	90		250		29.53		82.02	
Hartlands CH 1	248354	144148	165			66.22	54.13			
Hartlands CH 2	248354	144148	375				123.03			
Innswood CH 3	248416	148293	40		200	79.7	13.12		65.62	26.15
Bog Walk (Base Flow)	248507	149177	0		400	310.93			131.23	102.01
Mango Walk 2	248507	149177	0	10	276	92.03		3.28	90.55	30.19
Mango Walk 3	248598	149208	0		276	90.86			90.55	29.81
Innswood 4	248629	148476	68		182	80.71	22.31		59.71	26.48
Mango Walk 1	248720	149452	20		276	92.84	6.56		90.55	30.46
Gilbatore 2	248812	160272	25		605	738.74	8.20		198.49	242.37
Innswood CH 8	248934	147379	180		540	75.78	59.06		177.17	24.86
Gilbatore 1	249026	166551								
Dovecot Park	249056	150244	33	7	135	94	10.83	2.30	44.29	30.84
Innswood CH 5	249056	148202	80		177	80.71	26.25		58.07	26.48

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation a.s.l	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Hartlands Expl 1	249448	146434	200		161		65.62		52.82	
Gloria Gully	249819	171122				543.68	0.00		0.00	178.37
Hartlands Expl 2	249848	146434	190		130	63.74	62.34		42.65	20.91
Hartlands Expl 2	249848	156434				63.74	0.00		0.00	20.91
Sligoville Road	249910	160330	10		415	520.29	3.28		136.15	170.70
Shenton	250123	162788	30		208	297.61	9.84		68.24	97.64
Little Windsor Expl I	250488	151707	200			40.48	65.62		0.00	13.28
Airstrip 1	250550	161552	198		394	276.01	64.96		129.27	90.55
Above Tulloch	250702	160241	30		390	582	9.84		127.95	190.94
Hyde	250733	163929				318.51			0.00	104.50
Dover Castle	250825	170391	0		256	543.42			83.99	178.29
St. John's Road Friendship	250945	150457	2		228	120.78	0.66		74.80	39.63
Little Windsor CH	251188	143081	100			41	32.81			13.45
Ardienne Farm	251281	151707	0		203		0.00		66.60	
Windsor Park	251372	146525	110				36.09			
Garden Bush 2	251434	160576	0		442	297.52			145.01	97.61
Ariguanabo	251525	153962	0		221	170.85			72.51	56.05
Tom Pipe	251646	151707	215		85		70.54		27.89	0.00
Worchester	251646	145641	63			53.04	20.67			17.40
Crescent Expl	251677	154694	71		243	194.09	23.29		79.72	63.68
Tulloch Works	251891	161582	58		92	125.36	19.03		30.18	41.13

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Headworks	252043	154572	0		304	145.69			99.74	47.80
Little Windsor Expl I	252073	144727	415		399	44.02	136.15		130.91	14.44
Angels 1	252104	154145	132		88	181.77	43.31		28.87	59.64
New Hall CH	252318	165636								
Hill Runn Mount	252347	142807								
New Hall	252348	165575	30		75	358.57	9.84		24.61	117.64
Tulloch 3 (Marsden)	252379	162679	47		179	27.33	15.42		58.73	8.97
Angel 2	252439	154541	130		180	161.55	42.65		59.06	53.00
Content Expl	252439	154451	3		233	180.88	0.98		76.44	59.34
Dove Hall South	252775	161552	85		32	292.04	27.89		10.50	95.81
Fellowship Hall	253018	145337	38				12.47			
Fellowship Hall 2	253597	144453								
Rio Magno	253293	172463	35		470		11.48		154.20	
St. John's	253323	149665								
South Rio Pedro	253720	153475	20		137	392.08	6.56		44.95	128.64
Bamboo Expl 1	254055	155273	37		163	132.87	12.14		53.48	43.59
Riversdale	254147	168196	0		126	520.07			41.34	170.63
Copra Factory	254329	162436	45		40	335.75	14.76		13.12	110.15
Cross Pen Expl	254628	153475	5		232	178.72	1.64		76.12	58.64
Tredegar Park 2	254725	151341	0		220				72.18	

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Hill Run Drive	254846	142014	0		80				26.25	
Mom's Hall	254939	162862								
Blair Pen	254968	146525	110				36.09			
March Pen 2	255365	144910	100			48.84	32.81			16.02
March Pen 2	255365	144910	58			48.84	19.03			16.02
Woodlands 1	255395	147683	101			73.05	33.14			23.97
Phoenix Park 4	255944	145245	110			45.64	36.09			14.97
Craigallachie 3	256096	147744	3		212	74.68	0.98		69.55	24.50
Phoenix Park 3	256096	146312	100			61.11	32.81			20.05
Craigallachie 2	256157	147318			221	69.12			72.51	22.68
Jones Dam	256401	148171	90		20	76.95	29.53		6.56	25.25
Twickenham Park	256462	149878			246	322.78			80.71	105.90
Waterloo Valley	256605	152652			245	160.87			80.38	52.78
Lakes Pen EBI	256614	147927				18.9				6.20
Twickenham Park 1	256828	149360				312.4				102.49
Bernard Lodge	256919	146495								
Bernard Lodge 1	256919	143478	155			55.53	50.85			18.22
Dunbeholding	257376	145214	89			13	29.20			4.27
Great Salt Pond 2	257376	144056								
Lime Tree 3R	257437	147043								
Salt Pond 3 GSP 6	257437	144727	100			37.94	32.81			12.45

Table 8. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Government Park	257559	145733	80			49.14	26.25			16.12
Lime Tree 2	257956	147653	90			59.19	29.53			19.42
Clifton	257986	146556	95			52.76	31.17			17.31
Salt Pond GSP 6	258047	144117	200			37.95	65.62			12.45
Government Park 2	258138	145824	70			47.7	22.97			15.65
Braeton CH 1	258504	143904	60			20.81	19.69			6.83
Reid's Pen	258534	143904	115				37.73			
Reids's Pen 1	258534	143904				27				8.86
Goshen 3	258564	145307	49			37.85	16.08			12.42
Cow Park 2	258900	148659	70				22.97			
Ellis Factory 1	259084	152042				28.53				9.36
Congrieve Park 2	259114	145306	101			9.1	33.14			2.99
Half Way Tree Expl 1	259297	147440								
Half Way Tree Expl 1	259297	147439								
Half Way Tree	259388	146708								
Caymanas CH	260668	153200	205			13	67.26			4.27
Caymanas Expl 2	260760	150305								
Half Way Tree 4	260760	150304	80			37.02	26.25			12.15
Portmore 2	262070	147439	164				53.81			
Grange Pen 1	259114	146403	100			43.99	32.81			14.43
Central Village	258596	149512								

Table 8. Thickness of the Alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Cobre Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Cookson 3R	259571	146190								
Cow Park 1	259327	148690				19.18				
Ellis Factory	259084	152042	116			28.53	38.06			9.36
Grove Farm	242350	144367	95		75	72.04	31.17		75	23.64
Worcester	251646	145642								
Hyde Deep	250733	163930	95		11		31.17		3.61	
Succaba Pen	237656	144545		5	105	128.3			34.45	42.09
Thetford (Old Harbour)	240978	145703	10		90	95.92	3.28		29.53	31.47
Thetford 3	241131	145673	140		230	98.56	45.93		75.46	32.34

Table 9. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Minho-Milk River Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Evergreen Mile-Gully	188604	167621	2		373	750	0.61		113.69	228.60
Trinity 1	204617	154239	55		785	525	16.76		239.27	160.02
Porus Arcadia	206141	153995	78		222	448.52	23.77		67.67	136.71
Porus 4	206415	153447	130		270	435	39.62		82.30	132.59
St. Toolies 2	209067	148082	60		250	182.02	18.29		76.20	55.48
ST Jago 1	209097	144333	90		185	168.11	27.43		56.39	51.24
St. Toolis 3	201128	148600	12		313	208.2	3.66		95.40	63.46
St. Jago (Thompson Pen)	209249	146985	53		342	178.45	16.15		104.24	54.39
Clarendon Park 1	210377	148997	78		278	223.16	23.77		84.73	68.02
St Jago Tollgate CH	210895	146650	20	27	83	151.07	6.10	8.23	25.30	46.05
Milk Pen House	211199	135128	2		81	92.58	0.61		24.69	28.22
Passide	211870	138633	10		240		3.05		73.15	0.00
Rest market (Abnd)	212419	136774	66		37	30.34	20.12		11.28	9.25
Milk Spring 3	214186	134854	77		133	90.43	23.47		40.54	27.56
Gravel Expl 3	214217	139548	14		284	78.05	4.27		86.56	23.79
Springfield 1	214339	134183	35		2	50.15	10.67		0.61	15.29
Ramble 2	214857	137597	190			86.52	57.91		0.00	26.37
Budley Park 1	214888	136134	36		137	81.15	10.97		41.76	24.73
Comfort Village CH	215010	143205	15		125	118.41	4.57		38.10	36.09
Rowington 2	215985	137841	97	46	186	95.33	29.57	14.02	56.69	29.06
Rhymesbury CH 1	216015	139456	170		20	94.55	51.82		6.10	28.82

Table 9. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Minho-Milk River Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Springhead	216320	134823	276		21		84.12		6.40	0.00
Belle Plain 4	216351	147137		10	275	270	0.00	3.05	83.82	82.30
Sheckles Pen 2	217205	148874		3	333	223.43	0.00	0.91	101.50	68.10
Goshen	217388	151831								
Exeter 5 (Abnd)	217447	130343	253			41.18	77.11			12.55
Exeter 2	217722	131775	237			55.45	72.24			16.90
Springhead 1	217996	134915	400		10	84.44	121.92		3.05	25.74
Bullards CH 2	214484	142534	157		93	135.36	47.85		28.35	41.26
Vernamfield Expl 1 (Abnd)	218789	137536			919	101.48			280.11	30.93
Vernamfield Obs. 1 (Abnd)	218789	137536	497		53	100.15	151.49		16.15	30.53
Kraal 2	219247	146893	9		267	170.29	2.74		81.38	51.90
Vernamfield B	219612	139669	535		65	133.46	163.07		19.81	40.68
Quarry	219673	134518	17		185	184.37	5.18		56.39	56.20
Paradise 2	219734	133787	190		0	59.111	57.91			18.02
Content Village Expl 1l	219856	143601	440			161.65	134.11			49.27
New Yarmouth 5	219978	136743	481		7	114.85	146.61		2.13	35.01
Gowrie	220038	131653	190			67.43	57.91		0.00	20.55
Vernamfield 4	220191	138084	125		200	113	38.10		60.96	34.44
New Yarmouth 6	220857	136652	90	11	43		27.43	3.35	13.11	0.00
Windsor Lodge 1	220679	139395	66		126		20.12		38.40	0.00
Vvizzard Run 1	220770	130434	228			52.7	69.49		0.00	16.06
Alley	220983	133086	338		107	74.57	103.02		32.61	22.73

Table 9. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Minho-Milk River Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl.
	m	m	ft	ft	ft	ft	m	m	m	m
Jacobs Hut 1	220984	146619	263		78	185.34	80.16		23.77	56.49
New Yarmouth 3	221075	137597	441		47	97.55	134.42		14.33	29.73
York Pen 2	221136	143754	316			175.9	96.32		0.00	53.61
Parnassus 9	221197	142626	232		218	160.61	70.71		66.45	48.95
Denbeigh Farm 2	221289	145643	80	8		151.96	24.38	2.44	0.00	46.32
Alley Market (Abnd)	221410	128422	128			30.34	39.01		0.00	9.25
Caswell Hill 2	221471	134762	103		39	85.47	31.39		11.89	26.05
Windsor Lodge 8	221746	140096	33		267		10.06		81.38	0.00
Needham 2 (Adbnd)	222263	132507	311		39	71.26	94.79		11.89	21.72
Dry River CH 1	222294	135920	70		20	88.14	21.34		6.10	26.87
Watercask 3	222355	139852	37		213	144.61	11.28		64.92	44.08
Fattening Pasture	222447	145155	75		275	155.22	22.86		83.82	47.31
Sam Wint 1	223056	143113	30		160	153.3	9.14		48.77	46.73
Salt Savannah	223116	143113	70		0	8.68	21.34		0.00	2.65
May Pen Citrus	223300	126136	57		197	215.94	17.37		60.05	65.82
Vere Technical	224092	134671	110		70	114.77	33.53		21.34	34.98
Bog 3	224123	131226	143			53.8	43.59		0.00	16.40
Halse Hall	224153	138359	108		175	160	32.92		53.34	48.77
Hayes Common 5	224367	133848	50		131	170.81	15.24		39.93	52.06
Cotton Tree Gully 3	224427	133147	4		151	58.87	1.22		46.02	17.94
May Pen CH	224428	145552							0.00	0.00

Table 9. Thickness of the alluvial aquifer, red marine clay confining unit, and White Limestone aquifer in the Rio Minho-Milk River Basin, Jamaica, W.I. (Source: WRAJ, 1997).

Well Location	Easting	Northing	Alluvium	Red Clay	White Limestone	Elevation asl	Alluvium	Red Clay	White Limestone	Elevation asl
	m	m	ft	ft	ft	ft	m	m	m	m
Hayes Cornpiece CH	225068	136591							0.00	0.00
Damlands 4	225250	133268							0.00	0.00
Mineral Heights	225281	143509			340	268.32			103.63	81.78
Raymonds 3	225372	133025	20		80	17.99	6.10		24.38	5.48
Hillside Dom	226409	131501	85		115	54.87	25.91		35.05	16.72
Morelands	227810	128574	100			20	30.48		0.00	6.10
Salt River CH	230340	130860			100				30.48	
Sandy Bay	232810	143357							100	

Table 10. Karst hydrographic zones (adapted from Ford, 1989).

3. Unsaturated (vadose) zone

    1a. Soil

    1b. Subcutaneous (epikarstic) zone – upper part of percolation zone

    1c. Free draining percolation – movement of water through the soil zone

4. Intermittently saturated (epiphreatic or floodwater) zone

5. Saturated (phreatic) zone

    3a Shallow phreatic zone – immediate zone below the water table

    3b. Deep phreatic (bathyphreatic) zone – zone of ground-water flow

    3c. Stagnant phreatic zone – zone of restricted groundwater flow

6. Karst water (water involved in dissolution along ground-water flow paths that emerges as springs in response to recharge from precipitation)

7.

[Caves, permanently flooded in zone 3 may traverse each of the above]

Table 11. Water levels recorded from wells in the alluvial aquifer of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI. (Source: WRAJ, 1998).

Location	Easting (m)	Northing (m)	Hydraulic Head (amsl)
Ashley Hall	220983	133086	13.19
Beauchamps	215710	132477	5.18
Bog 1	224397	132110	12.52
Bog 4	224641	130526	10.75
Bog CH 1	224641	130526	11.82
Budley Park	214888	136134	4.88
Building 2	221654	129703	1.16
Bullards CH 1	218484	142535	33.96
Bullards CH 2	218484	142535	33.9
Chesterfield	223117	128971	5.49
Church Pasture 1	221776	128910	2.96
Clifton School CH	214644	136134	16.59
Clifton School (Dug)	214644	136134	15.27
Content Village Explorer 2	219856	143601	34.84
Da Costa (Dug)	225372	127660	5.98
Denbeigh Farm 2	221014	145247	41.16
Exeter 2	217722	131776	8
Exeter 3	218027	131227	6.22
Exeter 4	217051	131928	3.62
Exeter 5	217447	130343	5.58
Fattening Pasture	223026	145034	42.07
Gimme-Me-Bit	216655	135890	14.3
Greenwich 2	220983	126563	2.39
Haynes Terrier	224641	138176	35.83
Haynes Sandy Bay	229975	130617	2.95
Knights	219246	128118	3.83
Longwood	220373	127996	1.12
Mitchell Town	228268	128148	2.78
Morelands Alcoa & Replacement	227841	129855	3.56
Morelands 2	226561	129459	7.86
Morelands CH 2	227079	130007	8.71
Mumby 2	219581	130038	4.9
Needham 3	221806	132202	10.48
Needham 1	221867	132050	4.49
Parnassus CH 1	222599	141773	34.01
Parnassus CH 2	222599	141468	33.72
Portland Cottage	224854	125009	1.48
R hymesbury Diary	216076	140767	26.48
Rhymesbury 8	215985	141681	28.68
Rhymesbury CH	216015	139456	20.72
Rhymesbury Explorer 5a	218149	141224	28.58
Rocky Point	222324	124887	0.89
Rowington 3	216655	137140	15.44

Table 11. Water levels recorded from wells in the alluvial aquifer of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI. (Source: WRAJ, 1998).

Location	Easting (m)	Northing (m)	Hydraulic Head (amsl)
Sedge Pond	216381	133635	13.13
Suttons 3	222141	129672	2.67
Vernamfield Expl. 1a	218789	137536	20.36
Vizzard Run 6a (Dug)	219886	130770	6.54
Waite	218423	131897	4.92
York Pen 1	220892	143723	37.88
York Pen (Darby)	221075	143327	37.24
York Pen (Dug) - Johnson	221319	142992	37.08
Hartlands CH1	248354	144148	2.87
Little Windsor Expl.	250488	151707	3.51
Little Windsor CH	251188	143081	7.56
Windsor Park	251372	146525	12.49
March Pen 2	255365	144910	7.74
Woodlands 1	255395	147683	4.5
Bernard Lodge 1	256919	143478	6.2
Salt Pond 3 GSP#6	257437	144727	20.4
Lime Tree 2	257956	147653	9.02
Goshen 3	258564	145307	5.21
Caymanas CH	260668	153200	3.95
Cow Park 1	259327	148690	5.84
Claremont	237504	144332	1
Bannister	237047	146161	4.67
Old Harbour	237595	143174	11.68
Watson Grove 3	260638	149086	4.3
Campechie	255822	144087	20.47
Rifle Range	257620	150031	4.81
Hume Pen	238784	140888	13.28
Cumberland Pen	262589	147047	9.21
Mt. Gotham	255809	152378	4.94
Cookson 1	259571	146190	19.33
Ferry	259845	148750	3.26
Church Pen	240064	143265	13.37

Table 12. Water levels recorded from wells in the White Limestone aquifer of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI. (Source: WRAJ, 1998).

Location	Easting (m)	Northing (m)	Hydraulic Head (amsl)
Arcadia	206141	153996	108.56
Ardienne Farm	251281	151707	8
Ashley Hall	220983	133086	13.19
Banbury 4	246968	146495	91
Belle Plain	216358	147137	11.82
Block B	223026	140157	3.1
Bridge Pen	245855	145063	9
Budley Park	214888	136134	4.88
Bullards CH 1	218484	142535	33.96
Bullards CH2	218484	142535	33.9
Caswell Hill 2	221471	134762	2.87
Cockpit CH 1	233846	135859	0.76
Cockpit CH 2	233846	135859	1.02
Comfort Village CH	215010	143205	6.82
Content Village	219856	143601	2.06
Cotton Tree 2	245490	148934	2.87
Cotton Tree Gully	224031	133269	2.67
Craigallachie	256643	147744	4
Curatoe Hill CH	223209	143845	5.43
Decoy CH	212754	145187	9.78
Denbeigh Crawle	219338	147533	8.58
Dinthill Expl 2	246862	163442	79
Dry River CH 1	222294	135920	11.16
Dry River CH 2	233361	135189	6.88
Ebony Park	212632	141011	6.88
Fattening Pasture	223392	145186	9.87
Featherbed Lane	250427	148202	59
Fellowship Hall 1	253018	145337	17
Fellowship Hall 2	253597	144453	14
Garden Bush 2	251434	160576	78
Gibraltar CH	214461	137110	3.46
Gravel Hill 1	215071	139213	3
Gravel Hill Explorer 3	214217	139548	1.59
Halse Hall 1	223513	141986	3.16
Hanbury 1	224336	139883	-13.76
Hayes PS	224245	136103	-2.36
Hayes Common 2	224580	133452	2.51
Hayes Common CH	224245	133817	2.25
Hayes Cornpiece	225068	136591	1.77
Hyde	250733	163929	88
Innswood Factory 4	247989	148232	3
Inverness 2	231133	138846	3.24
Jacob's Hut 2	220862	146619	6.35
Kelly Pen	238443	149878	10

Table 12. Water levels recorded from wells in the White Limestone aquifer of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI. (Source: WRAJ, 1998).

Location	Easting (m)	Northing (m)	Hydraulic Head (a.m.s.l.)
Kemp's Hill 4	219734	133726	2.44
Kemps Hill 3	219764	133757	3.22
Kemps Hill 5	219886	133757	3.05
Kraal 2	219247	146893	8.05
Longville Park 3	234212	139334	0.32
May Pen CH	224428	145552	33.16
Milk Pen	211199	135129	2.21
Mineral Heights	225281	143510	2.39
Moore CH	227781	152836	41.63
Naseberry Grove 2	246983	151281	52
New Yarmouth 3	220587	136652	-0.39
Nutshell CH	242107	168837	133
Osbourne Store 2	215894	146223	9.14
Osbourne Store -Payne	215894	146223	10.95
Palm	246801	170787	116
Palmers Cross	226775	144973	2.28
Passide	211870	138695	3
Porus 1	205440	153538	111
Quaminus 1	223117	134031	-4
Raymonds 5	225281	132933	3
Reid's Pen	258534	143904	5
Rest CH	211718	136957	2
Rhymesbury Diary	216076	140767	26
Rhymesbury 1	215833	141712	5
Rhymesbury 2	218271	142017	32
Rhymesbury 8	215985	141681	2
Rhymesbury CH1	216015	139456	29
Rhymesbury Expl 5A	218149	141224	29
Rhymesbury Expl	218149	141224	27
Rowington 4	216137	137567	5
Salt River CH	230340	130861	1
Salt River CH	230340	130860	1
Sandy Bay NIC	232810	143357	8
Sandy PWD	232261	142686	3
Sevens	226775	149240	13
Shallow Pasture	215131	134671	3
Spring Plain	210834	141712	8
Spring Plain CH	211413	140217	5
Springfield 1	214339	134184	3
Springfield 3	214552	134184	6
St. Helens Expl II	244057	145855	9
St. Jago 1	209097	144333	20
St. Jago 2	209036	144242	21
St. Jago 3	208579	143754	14

Table 12. Water levels recorded from wells in the White Limestone aquifer of the Rio Cobre and Rio Minho-Milk river basins, Jamaica, WI. (Source: WRAJ, 1998).

Location	Easting (m)	Northing (m)	Hydraulic Head (a.m.s.l.)
St. Toolis 2	209067	148082	50
St. Jago Tollgate	210895	146650	18
St. Johns CH	253323	149665	27
Sterling Castle	244820	169203	103
Tennants	252835	147532	18
Tredegar Park	254725	151341	3
Tulloch 3 (Marsden)	252379	162679	88
Tulloch Works	251891	161582	105
St. Toolis 2	209067	148082	50
St. Jago Tollgate	210895	146650	18
St. Johns CH	253323	149665	27
Sterling Castle	244820	169203	103
Tennants	252835	147532	18
Tredegar Park	254725	151341	3
Tulloch 3 (Marsden)	252379	162679	88
Tulloch Works	251891	161582	105
Venecia	247959	163381	86
Vernamfield B	219162	139670	2
Vernamfield Expl	218789	137536	3
West Prospect	253720	164143	91
Windsor Lodge 10	220679	139395	2

Table 13. Calculation of the distance to the saltwater wedge in the Rio Cobre Basin, Jamaica, WI (adapted from R.E. Glover; 1964).

RIO COBRE BASIN: ALLUVIUM AT BERNARD LODGE

Location	**Calculation (m)**	**T (m^2/d)**	**W (m)**	**H (m/d)**	**K (m)**	**L (m)**	**Q (m^3/d)**
		2980	7600	30	100	150	15
Position of the freshwater-saltwater interface (z^2)	961						
Depth below the interface (z)	31						
Width of freshwater interface (x_0)	15						
Depth to interface below sea level at coastline x=0 (z_0)	8.						
Height of water table at distance 750 m (h_f)	0.78						
Landward protrusion of the salt wedge	72						

Table 14. Calculation of the distance to the saltwater wedge in the Rio Cobre Basin, Jamaica, WI (adapted from R.E. Glover; 1964).

RIO COBRE BASIN: ALLUVIUM AT OLD HARBOR

Location	**Calculation (m)**	**T (m^2/d)**	**W (m)**	**H (m/d)**	**K (m)**	**L (m)**	**Q (m^3/d)**
		745	10000	30	25	120	4.7
Position of the freshwater-saltwater interface (z^2)	676						
Depth below the interface (z)	26						
Width of freshwater interface (x_0)	4						
Depth tointerface below sea level at coastline x=0 (z_0)	12.96						
Height of water table at distance 750 m (h_f)	0.65						
Landward protrusion of the salt wedge	14.78						

Table 15. Calculation of the distance to the saltwater wedge in the Rio Minho-Milk River Basin, Jamaica, WI (adapted from R.E. Glover; 1964).

RIO MINHO-MILK RIVER BASIN: WHITE LIMESTONE AT MANCHESTER HIGHLANDS

Location	**Calculation (m)**	**T (m^2/d)**	**W (m)**	**H (m/d)**	**K (m)**	**L (m)**	**Q (m^3/d)**
		14900	17000	90	165.56	750	45
Position of the freshwater-saltwater interface (z^2)	8836						
Depth below the interface (z)	94						
Width of freshwater interface (x_0)	55.4						
Depth to interface below sea level at coastline x=0 (z_0)	11						
Height of water table at distance 750 m (h_f)	2.34						
Landward protrusion of the salt wedge	53						

Table 16. Values for streambed hydraulic conductivity used by various investigators [Modified from Wiley and Archmad (1986); ft, feet; ft/d, feet per day, m, meter; m/d, meter per day]

Hydraulic Conductivity (ft/d)	Hydraulic Conductivity (m/d)	Remarks	References
0.99	.301	Assuming a semi-confined layer 1ft thick, Wissahickon formation	Willey and Achmad (1986, p.17)
0.06-5.2	0.01-1.16	Seepage loss measurements	Fidler (1975, p.11)
1.9	.579	Field test average for sand and gravel	Haeni (1978, p.11)
.09-3.9	0.02-1.18	Laboratory sand and gravel	Haeni (1978, p.19)
2	.609	Final value used in model simulation for (Vogel and Reif, 1993)	Haeni (1978, p.29)
0.9-15.2	0.02-4.63	Variable head permeameter, field tests in various materials	Rosenshein et al. (1968, p.23)
3.4	1.03	Flood-plain sediments laboratory tests	Kilpatrick (1964, p. 332)
10.5-31.5	3.3-9.6	Silty sands, laboratory tests	Kilpatrick (1964)
10.5	3.3	Saprolite, laboratory tests	Kilpatrick (1964)
	1.61	When assuming a restrictive layer 1 ft thick, graphic tests	McGreevy and Sloto
0.185	0.0563	Final value used in model simulation for (Wishart, 2000)	Rosenshein et al. (1968, p.23)

Table 17. Average Annual Precipitation in the Rio Minho-Milk River Basin (Data Based on the Jamaica Meteorological Office 30-year Mean 1951-1980)

STATION	EASTING m	NORTHING m	AVERAGE DAILY PRECIPITATION mm/yr
Spaldings ESC	200289	149119	1783
Spauldings PWD	201448	166980	1854
Hermitage	201783	167590	1827
Brokenhurst	202330	141316	1349
Garlogie	205165	149654	2271
Tweedside	206172	158059	2568
Porus	206355	169418	1468
Retrieve	206476	153538	1777
St. Toolis	208060	141895	1511
John's Hall	209158	147656	1169
Victoria Town	209378	169662	1474
St. Jago	209584	140737	971
Greenvale	210103	145583	1078
Smithville	210233	144069	1621
Spring Plain	210774	161280	2084
Clarendon Park	211125	140300	1049
Thompson Town	211170	147899	1735
Frankfield PWD	211231	158964	2169
Joalomi	211506	165791	1885
Milk River	211810	147076	1095
Trout Hall	212480	133683	866
Springfield	214066	165455	1752
Mocho	214339	133787	917
Osbourne Store	214462	153873	966
Grimmits	215040	145918	1132
Brixton Hill	215985	133970	942
Beauchamps	216107	151831	1437
Rhymesbury	216259	132233	1005
Belle Plain	216290	141590	1101
Vernamfield	216412	147808	1477
Beckford Kraal	216747	138298	864
Crooked River	216778	158323	1795
Scheckles Pen	216931	164785	1869
Exeter	217753	147503	1704
Sandy Gully	218057	131867	929
Green pond	219216	139578	1357
Kemps Hill	219246	140493	1015
Mumby	219520	133726	917
Building	219612	130160	955
Bullhead	219947	129733	893

Table 17. Average Annual Precipitation in the Rio Minho-Milk River Basin (Data Based on the Jamaica Meteorological Office 30-year Mean 1951-1980)

STATION	EASTING m	NORTHING m	AVERAGE DAILY PRECIPITATION mm/yr
Savoy	220467	161219	1689
Chapleton	220741	159695	1527
Greenwich Carlisle	220952	127142	895
Monymusk Research Station	221135	128209	872
Windsor Lodge	221166	140492	1225
Caswell Hill	221441	135159	1216
Danks	221472	160639	1493
Colonel's Ridge	221503	165699	1812
Teak Pen	221899	154787	1453
Amity hall	222111	128270	803
Knights	219950	168550	3243

Table 18. Average Annual Precipitation in the Rio Cobre Basin (Data Based on the Jamaica Meteorological Office 30-year Mean 1951-1980

STATION	EASTING m	NORTHING m	AVERAGE DAILY PRECIPITATION mm/yr
Kensington	254420	157681	800
Blair Pen	254938	146684	600
Spanish Town	255212	149025	847
Spanish Town Woodlands	255304	147297	1428
March Pen	255639	144514	1428
Pear Tree Grove	256037	177523	1800
Sligoville	256463	160028	1921
Lawrence Field	256950	148263	1428
Phoenix Park	256950	147562	1428
Bernard Lodge	257407	146678	629
Trojah	257774	172280	1428
Carew Castle	258962	164447	1428
Caymanas C	259480	152286	1235
White Marl	259723	149543	800
Half Way Tree	259754	147043	714
Riversdale	259938	167282	1600
Cow Park	260455	149390	800
Phoenix Park	261065	150152	1428
Goshen	261156	147287	1700
Glengoffe	261462	166062	1723
Farm 2	261827	151219	1428
Lagoon	261827	153688	1428
Watson Grove	262192	148598	1428
South Syndicate	262253	147226	1428
Crawle	262772	151859	1600
Dawkin’s Bog	262954	151432	800
Above Rocks	263382	161064	1548
Lorne	263686	150183	1428
Quarantine	263838	144635	1428
Wakefield	264661	150213	1435

Table 18. Average Annual Precipitation in the Rio Cobre Basin (Data Based on the Jamaica Meteorological Office's 30-year Mean 1951-1980

STATION	EASTING m	NORTHING m	AVERAGE DAILY PRECIPITATION mm/yr
Bodles Agricultural Station	235522	141711	663
Longs Wharf	235705	137779	1428
Charm Hole	235737	165363	1494
Lodge	235858	140309	1428
Brown's Hall	237047	155914	800
Old Harbour	237808	142991	800
Point Hill	238724	159297	1834
Water Mount	239120	156645	1428
Charlton	239425	168898	1428
Ewarton	240492	169386	1518
Guanaboa Vale	242503	154146	1428
Innswood 5	243600	144728	800
Springvale	244240	159358	800
Bermaddy	244881	171946	1700
Amity Hall	244941	142167	600
Innswood 2	245611	148446	839
Bridge Pen1	245855	144789	807
Innswood 4	246190	145672	800
Innswood 3	246434	147074	800
Palm	246771	171153	1800
Hartlands 1	247348	142411	574
Warwick Castle	248659	149299	1428
Bogwalk	249056	165331	1428
Guys Hill	249109	176353	2332
New Works	249118	167526	1817
Warwick Castle	249391	147196	1428
Warwick Castle	249787	148934	1428
Warwick Castle	250183	147897	1428
Enfield	250184	168044	1827
Harmony Pen	250213	141527	1428
Hyde Estate	250458	163990	1600
Knollis	250580	162619	1700
Tulloch estates	251921	162344	1731
Angels	252134	153658	800
New Hall	252440	165514	2015
Little Windsor	252530	144727	1428
Windsor Park	252835	147105	800
Hoghole	253073	151219	1428
Eltham	253079	151067	1428
Rio Magno	253354	172738	1600

Table 19. Discharges from small springs in the Rio Minho-Milk River Basin, Jamaica, WI. (WRAJ, 1997).

Spring	Easting (m)	Northing (m)	Discharge (m^3/d)
St. Toolis	209128	148783	3456
Alligator Hole	208091	134976	219456
Gutt River	200140	134398	53568
Whitney river	234120	136133	5184
Piece spring	209249	145461	864
Cockpit Canal	234120	136133	88992
Piece River	213369	152959	10368
Total			381888

Table 20. Chemical composition of thermal springs in Clarendon as a percentage of total dissolved solids (TDS) (Source: Royall and Banhan, 1981)

Spring	T°	Ca mg/l	Mg mg/l	K mg/l	Li mg/l	Total Cations	SO_4 mg/l	HCO3 mg/l	CO mg/l	Total Anions	SiO_2 mg/l	TDS mg/l
Milk River Spa	33.4	533	1128	250	9244	1644	14206	235	0	15907	6.9	25158
Milk River	36.6	711	1600	362	13669	2247	20863	144	0	23254	5.3	36928
Salt River (E)	31.3	506	1215	275	9853	1602	15287	197	0	17086	6.5	26953
Salt River (W)	29.0	29	309	581	4679	678	7285	286	0	8249	2877	12943

Table 21. Areas of high transmissivity and hydraulic conductivity along faults in the Rio Minho-Milk River Basin, Jamaica, WI. (Analyzed using GIS) (Source: WRAJ, 1997).

Well ID	Northing (m)	Easting (m)	Fault	Structural Trend	Transmissivity (m^2/d)	Hydraulic Conductivity (m/d)
Passide	211870	138634	Gibb's Run	NNW-SSE	80700	1103
Freetown A	233876	140858	South Coast	E-W	111000	2220
Jacob's Hut	220984	146619	Mocho Mt.	NNW-SSE	82200	3458
Vernamfield	217021	137231	Gibbs Run	NNW-SSE	191000	3183
Vernamfield B	217021	137231	Sixteen Miles	WNW-ESE	191000	3183

Table 22. Representative values of porosity, hydraulic conductivity, and permeability of carbonate rocks

Lithology	Porosity	Hydraulic* Conductivity m/d	Permeabilty$^{\xi}$ m^2
Carbonate mud	0.40 - 0.70	10^{-3} -10^{-1}	10^{-15} - 10^{-13}
Dolomite	0.001 - 0.15	10^{-4}-10^{0}	10^{-16} - 10^{-12}
Tertiary limestone	0.20 - 0.35	10^{-4} -10^{0}	10^{-16} - 10^{-12}
Paleozoic limestone	0.001 - 0.10	10^{-4} -10^{0}	10^{-16} - 10^{-12}
Oolitic limestone	0.01 - 0.25	10^{-2} - 10^{-1}	10^{-14} - 10^{-13}
Holocene coral limestone	0.30 - 0.50	10^{2} -10^{4}	10^{-10} - 10^{-8}
Karstified limestone	0.05 - 0.50	10^{-1}-10^{7}	
Chalk	0.15 -0.45	10^{-3}-10^{0}	10^{-15} - 10^{-12}

* Assuming water properties common to shallow ground-water.

ξ Adapted from Brahana, J.V., J Thrailkill, T. Freeman, and W.C. Ward, " Carbonate Rocks," in W. Back, J. Rosenshein, and P.R. Seaber, eds., *Hydrogeology*, Geological Society of America, The Geology of North America, vol. O-, Boulder

Table 23. Observed transmissivity values and calculated hydraulic conductivity in the alluvial aquifer of the Rio Cobre Basin, Jamaica, WI. (After Versey, 1962)

ALLUVIAL AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method	Transmissivity m^2/d	Thickness m	Hydraulic Conductivity m/d
Amity Hall 1.	244849	144636	Drawdown/62	147	61	2
Belmore 2	261583	148598	"	698	20	34.9
Bernard Lodge	256920	146495	"	1622	47	35
Blair Pen	256036	146251	"	435	36	12
Clifton 3	257986	146556	"	824	29	28
Cookson 1.	259571	146190	"	135	30	4.5
Cow Park A	260668	148446	Recovery/62	2435	21	116
Government Park	257559	145733	Drawdown/62	2390	24	99.5
Guinea Pen	260851	147531	Drawdown/62	1615	68	23.7
Half Way Tree 2	259693	147166	"	783	68	11.5
Half Way Tree 2A	259479	147044	"	660	60	11
Half Way Tree 4.	260424	147257	"	1162	24	48
Half Way Tree 5.	259388	146708	"	560	40	14
Lime Tree 2.	257956	147623	"	1174	24	49
March Pen 2.	255365	144910	"	367	18	20
Naggo Head	261278	147806	"	1938	20	97
Newlands 2	260791	146983	Drawdown/62	240	25	9.6
Newlands 2A	260791	146983	"	244	25	9.8
North Syndicate 2	260363	132621	"	5050	30	167
Reid's Pen	258534	143904	"	640	24	27
Salt Pond 2.	257376	144057	"	1491	30	50

Table 23. Observed transmissivity values and calculated hydraulic conductivity in the alluvial aquifer of the Rio Cobre c Basin, Jamaica, WI. (After Versey, 1962)

ALLUVIAL AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method	Transmissivity m^2/d	Thickness m	Hydraulic Conductivity m/d
Salt Pond 7.	257437	144427	"	1360	30	45
South Syndicate 2.	261369	147501	"	3143	20	157
Watson Grove	260791	149116	Drawdown/62	6833	21	325
Watson Grove 3	260638	149086	"	1851	21	88

Table 24. Observed transmissivity values and calculated hydraulic conductivity in the alluvial aquifer of the Rio Minho-Milk River Basin, Jamaica, WI. (After Versey, 1962)

ALLUVIAL AQUIFER - RIO MINHO-MILK RIVER HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method	Transmissivity m^2/d	Thickness m	Hydraulic Conductivity m/d
Ashley Hall 1.	221867	132537	Recovery/56	181	1.3	1.3
Ashley Hall 3.	221645	133116	"	3154	131	24
Banana Walk 3.	218819	133665	"	463	134	3.4
Bog 1	224397	132110	"	6833	40	233
Bog 2.	223421	130800	"	1851	44	58
Bog 3.	224031	131227	"	695	40	16
Bog 4.	224641	130526	"	795	59	20
Bottom Fisher 1	218514	133818	"	4968	21	84
Chesterfield	223117	128971	"	397	150	18.9
Danks	260680	160457		748	24	5
Denbeigh Farms 3	224031	131227	"	2981	24	124
Denbeigh Four Paths	224641	130526	"	153	72	6
Exeter 2	218514	133818	"	658	72	2
Exeter 3.	223117	128971	"	1403	31	19
Gordon Store	260680	160457	"	3229	58	104
Gowrie	220038	131653	"	164	58	3
Low Ground 1R	219276	145217	Constant/98	487	4	109
Low Ground 2R	218971	131806	Constant/97	338	3	110
Mcleod	226408	131227	Constant/62	1528	25	61
Monymusk	226622	130404	Constant/85	13400	27	500

Table 24. Observed transmissivity values and calculated hydraulic conductivity in the alluvial aquifer of the Rio Minho-Milk River Basin, Jamaica, WI. (After Versey, 1962)

ALLUVIAL AQUIFER - RIO MINHO-MILK RIVER HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method	Transmissivity m^2/d	Thickness m	Hydraulic Conductivity m/d
Mumby 2	219490	130739	Recovery/56	1391	60	23
Mumby 3	218971	129886	"	2322	77	39
New Yarmouth	136744	129886	"	13934	130	107
Paradise Pasture 2.	217112	132903	"	1366	17	80
Perrins 2.	223665	129276	"	284	17	17
Rowington 1.	215473	138115	"	427	100	4
Springhead 3.	133116	138115	"	2471	91	27
Springhead 4.	217539	135006	Constant/56	621	90	7
Sutton	219276	135067	Recovery/56	1143	3	381
Windsor Lodge 7	221868	141559	"	211	91	2

Table 24. Observed transmissivity values and calculated hydraulic conductivity in the alluvial aquifer of the Rio Minho-Milk River Basin, Jamaica, WI. (After Versey, 1962)

ALLUVIAL AQUIFER - RIO MINHO-MILK RIVER HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method	Transmissivity m^2/d	Thickness m	Hydraulic Conductivity m/d
Ashley Hall 1.	221867	132537	Recovery/56	181	1.3	1.3
Ashley Hall 3.	221645	133116	"	3154	131	24
Banana Walk 3.	218819	133665	"	463	134	3.4
Bog 1	224397	132110	"	6833	40	233
Bog 2.	223421	130800	"	1851	44	58
Bog 3.	224031	131227	"	695	40	16
Bog 4.	224641	130526	"	795	59	20
Bottom Fisher 1	218514	133818	"	4968	21	84
Chesterfield	223117	128971	"	397	150	18.9
Danks	260680	160457		748	24	5
Denbeigh Farms 3	224031	131227	"	2981	24	124
Denbeigh Four Paths	224641	130526	"	153	72	6
Exeter 2	218514	133818	"	658	72	2
Exeter 3.	223117	128971	"	1403	31	19
Mumby 2.	219490	130739	Recovery/56	1391	60	23
Mumby 3.	218971	129886	"	2322	77	39
New Yarmouth 5	219978	136744	"	13934	130	107
Paradise Pasture 2.	217112	132903	"	1366	17	80
Perrins 2.	223665	129276	Recovery/56	284	17	17
Rowington 1	215473	138115	"	427	100	4
Springhead 3	221654	133116	"	2471	91	27
Springhead 4	217539	135006	Constant/56	621	90	7
Sutton	219276	135067	Recovery/56	1143	3	381
Windsor Lodge 10	221868	141559	"	211	91	2

Table 25. Observed transmissivity values and calculated hydraulic conductivity in the White Limestone aquifer of the Rio Cobre Basin, Jamaica, WI. (After Humphrey's Jamaica Ltd, 1956)

WHITE LIMESTONE AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting m	Northing m	Aquifer Test Method/ Year	Transmissivity (m^2/d)	Aquifer Thickness m	Hydraulic Conductivity M
Angels	252012	154115	Recovery/62	2100	78	27
Ariguanabo Textile	251467	153689	"	1270	67	19
Bellevue	248385	150062	"	1490	76	20
Chung's	251525	152805	"	708	20	25
Cross Pen	253749	153506	"	1940	65	30
Cross Pen Exp.	254268	154751	"	35.1	71	4.9×10^{-1}
Headworks Dam	208824	167986	"	37.8	93	4.0×10^{-1}
O'Toole's	251616	151707	"	4680	19	246
St. John's Road	250946	150458	"	4400	44	110
Twickenham Park 2	256767	149543	"	1676	74	23
Twickenham Park 3	256828	149360	"	792	74	11
Waterloo Valley Exp.	256005	152652	"	4400	75	59

Table 25. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Cobre Basin, Jamaica, WI. (After FAO Project, 1974)

WHITE LIMESTONE AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Ariguanabo Expl	251525	153963	Drawdown/74	397	67	6
Bamboo Exp.	253750	155273	Recovery/74	15100	61	247
Bodles Citrus	236254	143692	Drawdown/74	3520	27	130
Bodles Livestock	253766	143479	"	5800	30	215
Bushy Park	242015	143448	Recovery/74	31.9	21	15
Caymanas Exp	260760	150305	Drawdown/74	197	26	2
Cotton Tree 2	245490	148934	"	204	88	12
Crescent Expll	251677	154694	Recovery/74	20	76	2.6×10^{-1}
Half Way Tree Expl. 1	259297	147440	"	952	50	19
Little Windsor Expl	252073	144728	Drawdown/74	1400	121	12
St. Helen's 4	244057	145856	"	312	259	5
Pierre's	237357	142747	"	31.2	38	0.85
Tredegar Park 1	254877	150976	"	680	49	14

Table 25. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Cobre Basin, Jamaica, WI. (After Botbol (Tel Aviv, Israel), 1982)

WHITE LIMESTONE AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Angels 1	252104	151146	Jacob Drawd/82	1751	27	265
Ardienne Farm	251281	151701	"	3899	69	57
Caymanas Expl. 2	260668	153200	"	1639	26	63
Content Exp	253750	153506	"	3725	72	52
St. John's	250945	150458	"	6209	70	88
Tredegar Park 2	254725	151341	"	566	67	8

Table 25. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Cobre Hydrologic Basin, Jamaica, WI. (After White et al., 1983)

WHITE LIMESTONE AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Bog Walk 2	244820	169203	Jacob Rec /83	3227	122	26
Dinthill 1	185903	163445	Jacob Drawd/83	609	11	55
Hyde 2	251342	163869	"	670	32	21

Table 25. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Cobre Hydrologic Basin, Jamaica, WI. (After White et al., 1983)

WHITE LIMESTONE AQUIFER - RIO COBRE HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Sunnyside 2	248203	166338	Jacob Drawdn/83	1068	1.9	550
Tulloch 1	252257	161286	"	2856	24	119
Wallens 1	249941	168806	"	335	42	8
Wallens 3	249941	168806	"	236	39	6

Table 26. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Minho-Milk River Basin, Jamaica, WI. (Source: WRAJ, 1997).

WHITE LIMESTONE AQUIFER - RIO MINHO-MILK RIVER HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Caswell Hill 3	220800	133482	Jacob Recovery/56	17101	57	300
Cotton Tree Gully 2	223818	133665	"	10556	12	879
Hayes Cornpiece	225250	133452	"	14282	22	649
Raymonds 4	224915	133177	"	7874	30	262
Raymonds Dom	225159	133055	"	6210	35	177
Springfield 1	214339	134184	"	5589	105	53
Two Sisters 1	209036	144242	"	9190	60	153
Decoy	213120	145766	Jacob Variable/76	5890	57	103
Passide	211870	138634	JacobRecovery/76	80700	73	1103
St. Jago Scaleyard	210255	144333	Jacob Constant/85	218	8	27
Clarendon Park 1	210375	148396	Jacob Constant/85	2360	46	51
Clarendon Park 2	211383	149149	Jacob Constant/90	10400	6	226
Content 1	218759	144943	Jacob Recovery/90	32200	46	700
Gravel Hill	214217	139548	Jacob Constant/90	7450	87	86
Jacob Hut 1	220894	146619	Jacob Constant/90	82200	24	3458
Jacob Hut 3	221045	146985	Jacob Constant/90	35900	21	1730
Kraal 2	219247	146893	Jacob Constant/90	2590	36	82
Milk River 1	209249	148273	Jacob Constant/90	2460	25	98
Milk River 2	209219	147991	"	3750	25	150
Milk River 3	209167	147686	Jacob Recovery/90	14000	25	560
Parnassus	220862	141986	Jacob Recovery/90	23700	40	593
Rhymesbury 1	215833	141712	Jacob Recovery/90	33500	73	458
St. Toolis 1	209067	148143	Jacob Constant/90	7660	95	81

Table 26. Observed transmissivity values and calculated hydraulic conductivity from the White Limestone aquifer of the Rio Minho Basin, Jamaica, WI. (Source: WRAJ, 1997).

WHITE LIMESTONE AQUIFER - RIO MINHO-MILK RIVER HYDROLOGIC BASIN

Well ID	Easting (m)	Northing (m)	Aquifer Test Method/ Year	Transmisivity (m^2/d)	Aquifer Thickness (m)	Hydraulic Conductivity (m)
Tollgate	212328	146071	Jacob Constant/90	2560	25	101
Vernamfield	217021	137231	Jacob Recovery/90	191000	60	3183
Duke Street	212023	146040	Jacob Constant/91	17500	80	218
Upper Rhymesbury	213516	143602	"	2310	40	58
Freetown A	233876	140858	Jacob Constant/92	111000	50	2220
Freetown B	233876	140858	"	43000	40	1075

Table 27. Statistical summary of hydraulic conductivity for individual aquifers in the model area computed from thickness and transmissivity obtained from specific capacity tests.

Aquifer (Zone)		Specific Yield/Storage Unadjusted /Adjusted	Transmissivity Unadjusted /Adjusted (m^2/d)	Aquifer Thickness Unadjusted /Adjusted (m)	Horizontal Hydraulic Conductivity Unadjusted /Adjusted (m/d)
White Limestone					
Zone1	Max	0.30	-	150	135
	Median	0.30	-		-
	Mean	0.30	-		-
	Min	0.30	-	50	-
	Geomean	0.30	-		-
Zone 2	Max	0.30	3227	80	560
	Median	0.30	848.84	43	126.5
	Mean	0.30	1231.23	42.9	171.8
	Min	0.30	236.50	25	51
	Geomean	0.30	848.84	39.41	135
Zone 3	Max	0.30	3227	80	560
	Median	0.30	848.84	43	126.5
	Mean	0.30	1231.23	42.9	171.8
	Min	0.30	236.50	25	51
	Geomean	0.30	848.84	39.41	135

Table 27. Statistical summary of hydraulic conductivity for individual aquifers in the model area computed from thickness and transmissivity obtained from specific capacity tests.

Aquifer (Zone)		Specific Yield/Storage Unadjusted /Adjusted	Transmissivity Unadjusted /Adjusted (m^2/d)	Aquifer Thickness Unadjusted /Adjusted (m)	Horizontal Hydraulic Conductivity Unadjusted /Adjusted (m/d)
White Limestone					
Zone 4	Max	0.30	14900	90	165
	Median	0.30	-	-	-
	Mean	0.30	-	-	-
	Min	0.30	-	-	-
	Geomean	0.30	-	-	-
Zone 5 (Transition)	Max	-	191000	73	3458
	Median		29552.86	47.44	1335.27
	Mean		10867.26	46	1075
	Min		218	21	82
	Geomean		11334.52	43.80	782
Zone 6	Max	-	15100	259	265
	Median		2313.39	60.19	65.04
	Mean		1445	50	20
	Min		20	19	1
	Geomean		936.84	48.53	25.21

Table 27. Statistical summary of hydraulic conductivity for individual aquifers in the model area computed from thickness and transmissivity obtained from specific capacity tests.

Aquifer (Zone)		Specific Yield/Storage Unadjusted /Adjusted	Transmissivity Unadjusted /Adjusted (m^2/d)	Aquifer Thickness Unadjusted /Adjusted (m)	Horizontal Hydraulic Conductivity Unadjusted /Adjusted (m/d)
White Limestone					
Zone 7	Max	-	111000	50	
	Median	-	4994.71	-	
	Mean	-	21086.34	-	
	Min	-	31.90	-	
	Geomean	-	4994.71	-	
Zone 8	Max	-	2000	50	40
	Median	-	2000	50	40
	Mean	-	2000	50	40
	Min	-	2000	50	40
	Geomean	-	2000	50	40
Zone 9	Max	0.30	2000	50	40
	Median	0.30	2000	50	40
	Mean	0.30	2000	50	40
	Min	0.30	2000	50	40
	Geomean	0.30	2000	50	40

Table 27. Statistical summary of hydraulic conductivity for individual aquifers in the model area computed from thickness and transmissivity obtained from specific capacity tests.

Aquifer (Zone)		Specific Yield/Storage Unadjusted /Adjusted	Transmissivity Unadjusted /Adjusted (m^2/d)	Aquifer Thickness Unadjusted /Adjusted (m)	Horizontal Hydraulic Conductivity Unadjusted /Adjusted (m/d)
Zone 10	Max	0.30	2000	50	40
	Median	0.30	2000	50	40
	Mean	0.30	2000	50	40
	Min	0.30	2000	50	40
	Geomean	0.30	2000	50	40
Alluvial					
Zone 11	Max	0.30	6833	40	170.83
	Median	0.30	1398.53	40	34.96
	Mean	0.30	1162	40	29.05
	Min	0.30	135	40	3.38
	Geomean	0.30	964.63	40	24.11
Zone 12	Max	0.30	6833	40	170.83
	Median	0.30	1398.53	40	34.96
	Mean	0.30	1162	40	29.05
	Min	0.30	135	40	3.38
	Geomean	0.30	964.63	40	24.11

Table 27. Statistical summary of hydraulic conductivity for individual aquifers in the model area computed from thickness and transmissivity obtained from specific capacity tests.

Aquifer (Zone)		Specific Yield/Storage Unadjusted /Adjusted	Transmissivity Unadjusted /Adjusted (m^2/d)	Aquifer Thickness Unadjusted /Adjusted (m)	Horizontal Hydraulic Conductivity Unadjusted /Adjusted (m/d)
Alluvial					
Zone 13	Max	0.30	9314	40	122
	Median	0.30	2888.74	40	72
	Mean	0.30	2161	40	40
	Min	0.30	397	40	81
	Geomean	0.30	2000	40	11
Zone 14	Max	0.30	13400	40	335
	Median	0.30	2576.91	40	64.4
	Mean	0.30	1403	40	35.08
	Min	0.30	164	40	4.01
	Geomean	0.30	1209.14	40	30.23
Zone 15	Max	0.30	14900	90	165
	Median	0.30	-	-	-
	Mean	0.30	-	-	-
	Min	0.30	-	-	-
	Geomean	0.30	-	-	-

APPENDIX II

APPENDIX II

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Cell Width (m)	Hydraulic Conductivity (m/d)
286	3	50	35	10474	1	160	222
286	4	50	35	10474	1	160	222
286	5	50	35	10474	1	160	222
286	6	50	35	10474	1	160	222
286	7	50	35	10474	1	160	222
286	8	50	35	10474	1	160	222
286	9	50	35	10474	1	160	222
286	10	50	35	10474	1	160	222
286	11	50	35	10474	1	160	222
286	12	50	35	10474	1	160	222
286	13	50	35	10474	1	160	222
286	14	50	35	10474	1	160	222
286	15	50	35	10474	1	160	222
286	16	50	35	10474	1	160	222
286	17	50	35	10474	1	160	222
286	18	50	35	10474	1	160	222
286	19	50	35	10474	1	160	222
286	20	50	35	10474	1	160	222
286	21	50	35	10474	1	160	222
286	22	50	35	10474	1	160	222
286	23	50	35	10474	1	160	222
286	24	50	35	10474	1	160	222
286	25	50	35	10474	1	160	222
286	26	50	35	10474	1	160	222
286	27	50	35	10474	1	160	222
286	28	50	35	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) or wall boundary along the South Coast Fault Zone (SCFZ).

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Cell Width (m)	Hydraulic Conductivity of Wall (m/d)
286	29	50	65	10474	1	160	222
286	30	50	65	10474	1	160	222
286	31	50	65	10474	1	160	222
286	32	50	65	10474	1	160	222
286	33	50	65	10474	1	160	222
286	34	50	65	10474	1	160	222
286	35	50	65	10474	1	160	222
286	36	50	65	10474	1	160	222
286	37	50	65	10474	1	160	222
286	38	50	65	10474	1	160	222
286	39	50	65	10474	1	160	222
286	40	50	65	10474	1	160	222
286	41	50	65	10474	1	160	222
286	42	50	65	10474	1	160	222
286	43	50	65	10474	1	160	222
286	44	50	65	10474	1	160	222
286	45	50	65	10474	1	160	222
286	46	50	65	10474	1	160	222
286	47	50	65	10474	1	160	222
286	48	50	65	10474	1	160	222
286	49	50	65	10474	1	160	222
286	50	50	65	10474	1	160	222
286	51	50	65	10474	1	160	222
286	52	50	65	10474	1	160	222
286	53	50	65	10474	1	160	222
286	54	50	65	10474	1	160	222
286	55	50	65	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Cell Width (m)	Hydraulic Conductivity(m/d)
286	56	50	65	10474	1	160	222
286	57	50	65	10474	1	160	222
287	58	50	482	10474	1	160	222
287	59	50	482	10474	1	160	222
287	60	50	482	10474	1	160	222
287	61	50	482	10474	1	160	222
287	62	50	482	10474	1	160	222
287	63	50	482	10474	1	160	222
287	64	50	482	10474	1	160	222
287	65	50	482	10474	1	160	222
287	66	50	482	10474	1	160	222
287	67	50	482	10474	1	160	222
287	68	50	482	10474	1	160	222
287	69	50	482	10474	1	160	222
287	70	50	482	10474	1	160	222
287	71	50	482	10474	1	160	222
287	72	50	482	10474	1	160	222
287	73	50	482	10474	1	160	222
287	74	50	482	10474	1	160	222
287	75	50	482	10474	1	160	222
287	76	50	482	10474	1	160	222
287	77	50	482	10474	1	160	222
287	78	50	482	10474	1	160	222
287	79	50	482	10474	1	160	222
287	80	50	482	10474	1	160	222
287	81	50	482	10474	1	160	222
287	82	50	482	10474	1	160	222
287	83	50	482	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Cell Width (m)	Hydraulic Conductivity of Wall (m/d)
287	84	50	482	10474	1	160	222
287	85	50	482	10474	1	160	222
287	86	50	482	10474	1	160	222
287	87	50	482	10474	1	160	222
288	88	50	482	10474	1	160	222
288	89	50	482	10474	1	160	222
288	90	50	482	10474	1	160	222
288	91	50	482	10474	1	160	222
289	92	50	482	10474	1	160	222
289	93	50	482	10474	1	160	222
289	94	50	482	10474	1	160	222
290	95	50	482	10474	1	160	222
290	96	50	482	10474	1	160	222
290	97	50	482	10474	1	160	222
291	98	50	482	10474	1	160	222
291	99	50	482	10474	1	160	222
291	100	50	482	10474	1	160	222
292	101	50	482	10474	1	160	222
292	102	50	482	10474	1	160	222
292	103	50	482	10474	1	160	222
293	104	50	482	10474	1	160	222
293	105	50	482	10474	1	160	222
293	106	50	482	10474	1	160	222
294	107	50	482	10474	1	160	222
294	108	50	482	10474	1	160	222
294	109	50	482	10474	1	160	222
295	110	50	482	10474	1	160	222
295	111	50	482	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Width (m)	Hydraulic Conductivity(m/d)
295	112	50	482	10474	1	160	222
295	113	50	482	10474	1	160	222
296	114	50	482	10474	1	160	222
296	115	50	482	10474	1	160	222
296	116	50	482	10474	1	160	222
297	117	50	482	10474	1	160	222
297	118	50	482	10474	1	160	222
297	119	50	482	10474	1	160	222
298	120	50	482	10474	1	160	222
298	121	50	482	10474	1	160	222
298	122	50	482	10474	1	160	222
299	123	50	482	10474	1	160	222
299	124	50	482	10474	1	160	222
299	125	50	482	10474	1	160	222
300	126	50	482	10474	1	160	222
300	127	50	482	10474	1	160	222
300	128	50	482	10474	1	160	222
301	129	50	482	10474	1	160	222
301	130	50	482	10474	1	160	222
301	131	50	482	10474	1	160	222
302	132	50	482	10474	1	160	222
302	133	50	482	10474	1	160	222
302	134	50	482	10474	1	160	222
303	135	50	482	10474	1	160	222
303	136	50	482	10474	1	160	222
303	137	50	482	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Cell Width (m)	Hydraulic Conductivity (m/d)
304	138	50	482	10474	1	160	222
304	139	50	482	10474	1	160	222
304	140	50	482	10474	1	160	222
305	141	50	482	10474	1	160	222
305	142	50	482	10474	1	160	222
305	143	50	482	10474	1	160	222
306	144	50	482	10474	1	160	222
306	145	50	482	10474	1	160	222
306	146	50	482	10474	1	160	222
307	147	50	482	10474	1	160	222
308	148	50	482	10474	1	160	222
308	149	50	482	10474	1	160	222
308	150	50	482	10474	1	160	222
309	153	50	482	10474	1	160	222
309	154	50	482	10474	1	160	222
309	155	50	482	10474	1	160	222
310	156	50	482	10474	1	160	222
310	157	50	482	10474	1	160	222
310	158	50	482	10474	1	160	222
311	159	50	482	10474	1	160	222
311	160	50	482	10474	1	160	222
311	161	50	482	10474	1	160	222
312	162	50	482	10474	1	160	222
312	163	50	482	10474	1	160	222
312	164	50	482	10474	1	160	222
313	165	50	482	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Width (m)	Hydraulic Conductivity(m/d)
313	166	50	482	10474	1	160	222
313	167	50	482	10474	1	160	222
314	168	50	482	10474	1	160	222
313	169	50	482	10474	1	160	222
313	170	50	482	10474	1	160	222
313	171	50	482	10474	1	160	222
313	172	50	482	10474	1	160	222
313	173	50	482	10474	1	160	222
313	174	50	482	10474	1	160	222
313	175	50	482	10474	1	160	222
313	176	50	482	10474	1	160	222
312	177	50	482	10474	1	160	222
312	178	50	482	10474	1	160	222
312	179	50	482	10474	1	160	222
312	180	50	482	10474	1	160	222
312	181	50	482	10474	1	160	222
312	182	50	482	10474	1	160	222
312	183	50	482	10474	1	160	222
312	184	50	482	10474	1	160	222
312	185	50	482	10474	1	160	222
311	186	50	482	10474	1	160	222
311	187	50	482	10474	1	160	222
311	188	50	482	10474	1	160	222
311	189	50	482	10474	1	160	222
311	190	50	482	10474	1	160	222
310	191	50	482	10474	1	160	222
310	192	50	482	10474	1	160	222

Table 1. Cells used to simulate the horizontal flow boundary (HFB) along the South Coast Fault Zone

Row	Column	Average Thickness of Aquifer (m)	Hydraulic Conductivity of Aquifer (m/d)	Transmissivity of Fault (m/d)	Thickness of Wall (m)	Width (m)	Hydraulic Conductivity(m/d)
310	193	50	482	10474	1	160	222
310	194	50	482	10474	1	160	222
310	195	50	482	10474	1	160	222
310	196	50	482	10474	1	160	222
310	197	50	482	10474	1	160	222
310	198	50	482	10474	1	160	222
310	199	50	482	10474	1	160	222
310	200	50	482	10474	1	160	222
310	201	50	482	10474	1	160	222