

**Chapter 6 - Hydrology**

**Appendix 6C-2 B, D, and E Factors**

B, D, & E factors for determining rainfall intensity in the Rational and Modified Rational Methods (based on NOAA NW-14 Atlas data)

COUNTY/CITY	#	2-YR			5-YR			10-YR			25-YR			50-YR			100-YR		
		B	D	E	B	D	E	B	D	E	B	D	E	B	D	E	B	D	E
Arlington	00	52.73	11.25	0.83	50.63	10.50	0.77	45.98	9.25	0.72	41.35	7.75	0.66	38.56	7.00	0.61	32.29	5.00	0.55
Accomack	01	65.77	13.00	0.88	56.63	11.50	0.79	49.92	10.00	0.73	39.98	7.50	0.65	37.31	6.50	0.61	32.84	5.25	0.55
Albemarle	02	49.02	10.50	0.82	55.71	11.50	0.80	46.95	9.50	0.73	40.11	7.75	0.66	35.68	6.50	0.61	31.09	5.00	0.55
Alleghany	03	51.16	13.25	0.88	39.11	10.00	0.77	40.84	10.00	0.74	36.37	8.75	0.67	29.66	6.50	0.60	26.46	5.00	0.55
Amelia	04	59.23	12.25	0.86	55.73	11.25	0.79	47.70	9.50	0.73	40.73	7.75	0.66	36.22	6.50	0.61	33.29	5.75	0.56
Amherst	05	60.72	13.00	0.88	57.10	12.00	0.81	43.80	9.25	0.72	39.61	8.00	0.66	34.36	6.50	0.60	30.80	5.25	0.55
Appomattox	06	51.76	11.50	0.84	54.03	11.25	0.80	47.13	10.00	0.73	40.72	8.25	0.67	34.36	6.50	0.60	30.14	5.00	0.55
Augusta	07	46.46	12.25	0.85	44.03	10.75	0.79	41.63	10.00	0.74	32.39	7.25	0.64	32.48	7.25	0.62	27.18	5.25	0.55
Bath	08	46.46	12.25	0.85	47.91	11.50	0.80	38.95	9.50	0.72	34.24	7.75	0.66	30.19	6.25	0.60	28.05	5.50	0.56
Bedford	09	47.85	11.25	0.83	48.76	10.75	0.78	45.55	10.00	0.73	40.49	8.50	0.67	33.51	6.50	0.60	29.36	5.00	0.55
Bland	10	36.34	10.00	0.81	41.14	10.75	0.78	38.52	9.75	0.73	32.99	7.75	0.66	29.71	6.50	0.60	26.71	5.25	0.55
Botetourt	11	51.98	12.25	0.85	51.47	11.50	0.80	44.82	9.75	0.73	36.34	7.50	0.65	33.51	6.50	0.60	29.23	5.00	0.55
Bristol	102	41.68	11.50	0.83	41.14	10.75	0.78	42.11	10.75	0.75	31.43	7.75	0.65	27.32	6.00	0.59	26.45	5.50	0.56
Brunswick	12	62.82	12.25	0.85	55.69	10.50	0.78	49.74	9.25	0.72	41.54	7.25	0.65	40.85	7.00	0.62	33.99	5.00	0.55
Buchanan	13	46.78	11.50	0.85	51.34	12.25	0.82	41.75	9.75	0.74	34.41	7.25	0.65	31.36	6.00	0.60	29.24	5.00	0.56
Buckingham	14	54.24	11.50	0.85	54.80	11.50	0.80	44.53	9.25	0.72	39.48	7.75	0.66	33.09	6.00	0.59	30.63	5.25	0.55
Campbell	15	46.46	12.25	0.85	44.03	10.75	0.79	41.63	10.00	0.74	32.39	7.25	0.64	32.48	7.25	0.62	27.18	5.25	0.55
Caroline	16	65.88	12.75	0.88	58.28	11.50	0.80	51.24	10.00	0.74	39.77	7.25	0.65	36.12	6.25	0.60	32.97	5.25	0.55
Carroll	17	54.24	11.50	0.85	52.48	10.75	0.79	48.34	10.00	0.74	38.91	7.75	0.65	35.14	6.50	0.61	30.77	5.00	0.55
Charles City	18	61.04	11.50	0.85	55.05	10.50	0.77	52.12	9.75	0.73	42.40	7.50	0.65	39.29	6.50	0.61	34.58	5.00	0.55
Charlotte	19	59.23	12.25	0.86	56.63	11.50	0.79	53.27	10.50	0.75	40.16	7.75	0.65	36.03	6.50	0.60	31.51	5.00	0.55
Charlottesville (city)	104	49.02	10.50	0.82	55.71	11.50	0.80	46.95	9.50	0.73	40.11	7.75	0.66	35.68	6.50	0.61	31.09	5.00	0.55
Chesapeake (city)	131	78.62	13.00	0.88	74.36	12.25	0.81	56.41	9.25	0.72	51.18	8.25	0.66	46.33	7.00	0.62	39.60	5.25	0.56
Chesterfield	20	52.72	10.75	0.83	49.08	9.75	0.76	50.71	10.00	0.73	39.77	7.25	0.65	37.31	6.50	0.61	32.29	5.00	0.55
Clarke	21	41.52	8.75	0.82	47.08	9.00	0.80	41.34	7.25	0.73	37.79	5.75	0.67	36.75	5.00	0.64	34.34	4.00	0.59
Craig	22	44.29	11.50	0.84	41.60	10.50	0.77	43.45	10.50	0.75	34.24	7.75	0.66	32.48	7.25	0.62	28.23	5.50	0.56
Culpeper	23	58.30	12.25	0.86	56.46	11.50	0.80	45.25	9.25	0.72	42.03	8.25	0.67	34.33	6.00	0.59	32.38	5.25	0.56
Cumberland	24	60.86	12.75	0.87	56.46	11.50	0.80	46.95	9.50	0.73	36.73	7.00	0.64	33.82	6.00	0.59	32.07	5.50	0.56
Danville (city)	108	50.48	10.50	0.82	39.15	8.75	0.72	35.48	7.75	0.66	33.76	6.75	0.62	33.66	6.25	0.59	34.46	6.00	0.57
Dickenson	25	53.26	12.75	0.87	44.86	10.75	0.79	44.28	10.50	0.75	35.17	7.75	0.65	35.11	7.25	0.62	29.39	5.00	0.55
Dinwiddie	26	61.04	11.50	0.85	57.21	10.75	0.78	54.03	10.00	0.74	44.17	7.75	0.66	40.85	7.00	0.62	34.12	5.00	0.55
Essex	28	61.14	12.00	0.86	59.79	11.50	0.80	51.93	10.00	0.74	41.19	7.50	0.65	40.52	7.25	0.62	33.95	5.25	0.56
Fairfax	29	55.09	11.50	0.84	54.20	11.00	0.79	47.70	9.50	0.73	39.18	7.25	0.65	36.34	6.50	0.60	32.29	5.00	0.55
Fauquier	30	54.24	11.50	0.85	54.80	11.50	0.80	48.34	10.00	0.74	41.03	8.25	0.66	35.44	6.50	0.60	31.38	5.00	0.55
Floyd	31	60.86	12.75	0.87	53.32	10.75	0.79	46.45	9.25	0.72	40.41	7.75	0.65	38.96	7.25	0.62	32.00	5.00	0.55
Fluvanna	32	60.98	12.75	0.88	51.10	10.75	0.79	47.55	10.00	0.74	38.60	7.75	0.65	34.59	6.50	0.61	30.33	5.25	0.55

**Chapter 6 - Hydrology**

**Appendix 6C-2**

**B, D, and E Factors**

B, D, & E factors for Virginia for determining rainfall intensity in the Rational and Modified Rational Methods (based on NOAA NW-14 Atlas data)

COUNTY/CITY	#	2-YR			5-YR			10-YR			25-YR			50-YR			100-YR		
		B	D	E	B	D	E	B	D	E	B	D	E	B	D	E	B	D	E
Franklin	33	54.24	11.50	0.85	52.48	10.75	0.79	48.34	10.00	0.74	38.91	7.75	0.65	35.14	6.50	0.61	30.77	5.00	0.55
Frederick	34	44.35	9.50	0.84	45.41	8.50	0.79	43.33	7.75	0.75	37.02	5.75	0.67	35.19	4.75	0.63	33.81	3.75	0.59
Fredericksburg (city)	111	65.52	13.25	0.88	60.63	12.00	0.81	49.92	10.00	0.73	41.35	7.75	0.66	38.56	7.00	0.61	30.46	4.50	0.54
Giles	35	48.45	12.25	0.87	47.31	12.00	0.81	38.52	9.75	0.73	34.13	8.25	0.67	28.63	6.50	0.60	26.45	5.50	0.56
Gloucester	36	60.97	11.50	0.84	60.74	11.25	0.79	53.07	9.50	0.73	43.62	7.50	0.65	40.14	6.50	0.60	35.98	5.25	0.55
Goochland	37	59.23	12.25	0.86	55.73	11.25	0.79	47.70	9.50	0.73	40.73	7.75	0.66	36.22	6.50	0.61	31.51	5.00	0.55
Grayson	38	43.44	11.50	0.84	47.31	12.00	0.81	38.69	9.50	0.73	33.62	7.75	0.66	32.48	7.25	0.62	27.65	5.25	0.55
Greene	39	46.81	10.50	0.82	57.10	12.00	0.81	48.11	10.00	0.74	38.01	7.25	0.65	34.64	6.25	0.61	31.75	5.25	0.56
Greensville	40	56.78	11.25	0.84	55.17	10.75	0.78	52.82	10.00	0.74	41.80	7.50	0.65	38.93	6.50	0.61	34.24	5.25	0.55
Halifax	41	62.13	12.25	0.87	54.16	10.75	0.78	49.92	10.00	0.73	42.69	8.25	0.67	36.22	6.50	0.61	31.60	5.25	0.55
Hampton (city)	114	64.31	11.50	0.85	64.94	11.50	0.80	57.19	10.00	0.74	44.49	7.25	0.64	41.77	6.50	0.60	37.02	5.00	0.55
Hanover	42	55.94	11.50	0.84	53.49	10.75	0.78	47.18	9.25	0.72	39.98	7.50	0.65	36.53	6.50	0.60	32.68	5.25	0.56
Harrisonburg (city)	115	43.01	11.25	0.84	44.71	10.50	0.80	39.71	9.25	0.74	32.17	6.50	0.65	28.85	5.25	0.60	28.34	4.75	0.57
Henrico	43	55.94	11.50	0.84	53.49	10.75	0.78	47.18	9.25	0.72	39.98	7.50	0.65	36.53	6.50	0.60	32.68	5.25	0.56
Henry	44	52.73	11.25	0.83	50.63	10.50	0.77	46.45	9.25	0.72	38.59	7.25	0.65	35.26	6.50	0.60	31.09	5.00	0.55
Highland	45	36.67	10.00	0.81	34.94	8.93	0.74	34.82	8.46	0.71	32.93	7.09	0.66	33.21	6.98	0.64	29.31	6.40	0.59
Isle of Wight	46	71.07	12.25	0.86	65.58	11.25	0.79	54.11	9.25	0.72	47.20	7.50	0.65	46.41	7.25	0.62	38.84	5.25	0.56
James City	47	70.63	12.75	0.87	57.84	10.50	0.78	55.61	10.00	0.74	48.54	8.50	0.67	38.78	6.00	0.59	36.77	5.25	0.56
King George	48	62.71	12.75	0.87	54.16	10.75	0.78	48.93	9.50	0.73	43.35	8.25	0.67	36.12	6.25	0.60	32.92	5.00	0.55
King & Queen	49	65.74	12.75	0.87	49.83	9.75	0.76	50.43	9.50	0.73	44.67	8.25	0.66	37.20	6.25	0.60	32.80	4.75	0.55
King William	50	62.90	12.25	0.86	51.80	10.00	0.77	51.51	10.00	0.73	41.19	7.50	0.65	40.52	7.25	0.62	33.21	5.00	0.55
Lancaster	51	60.12	11.50	0.84	61.61	11.50	0.80	53.83	9.75	0.74	44.47	7.75	0.66	39.83	6.50	0.61	35.83	5.25	0.56
Lee	52	51.05	12.25	0.86	45.70	10.75	0.78	38.28	8.75	0.71	38.78	8.50	0.67	34.62	6.75	0.61	31.95	5.75	0.56
Lexington (city)	117	44.29	11.50	0.84	46.49	11.50	0.79	39.05	9.25	0.72	33.28	7.25	0.65	33.34	7.25	0.62	27.07	5.00	0.55
Loudoun	53	61.40	12.25	0.88	44.34	8.75	0.76	46.93	8.75	0.74	41.48	7.25	0.67	36.12	5.50	0.61	33.25	4.50	0.56
Louisa	54	60.86	12.75	0.87	61.41	12.25	0.82	45.25	9.25	0.72	40.11	7.75	0.66	35.68	6.50	0.61	31.05	5.00	0.55
Lunenburg	55	60.15	12.25	0.85	49.08	9.75	0.76	50.71	10.00	0.73	39.77	7.25	0.65	39.34	7.25	0.62	32.50	5.25	0.55
Lynchburg (city)	118	46.46	12.25	0.85	44.03	10.75	0.79	41.63	10.00	0.74	32.39	7.25	0.64	32.48	7.25	0.62	27.18	5.25	0.55
Madison	56	54.24	11.50	0.85	53.17	10.75	0.79	46.61	9.25	0.73	41.85	8.00	0.67	37.33	6.50	0.62	33.01	5.25	0.57
Martinsville (city)	120	52.73	11.25	0.83	50.63	10.50	0.77	46.45	9.25	0.72	38.59	7.25	0.65	35.26	6.50	0.60	31.09	5.00	0.55
Mathews	57	65.67	12.25	0.86	58.83	10.75	0.78	52.39	9.25	0.72	48.24	8.25	0.67	40.45	6.50	0.60	37.10	5.25	0.56
Mecklenburg	58	60.15	12.25	0.85	49.08	9.75	0.76	50.71	10.00	0.73	39.77	7.25	0.65	39.34	7.25	0.62	32.50	5.25	0.55
Middlesex	59	72.66	13.25	0.88	61.46	11.25	0.79	52.39	9.75	0.73	45.09	7.75	0.66	40.37	6.50	0.61	36.12	5.25	0.56
Montgomery	60	47.29	11.75	0.85	44.20	10.75	0.78	44.28	10.50	0.75	35.12	7.75	0.66	33.34	7.25	0.62	27.24	5.00	0.55
Nelson	62	51.90	11.25	0.84	49.81	10.50	0.77	45.25	9.25	0.72	38.59	7.25	0.65	36.22	6.50	0.61	32.21	5.25	0.56
New Kent	63	62.82	12.25	0.85	55.69	10.50	0.78	49.27	9.25	0.72	43.85	7.75	0.66	41.70	7.25	0.62	34.75	5.25	0.55

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Appendix 6C-2

B, D, and E Factors

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COUNTY/CITY	#	2-YR			5-YR			10-YR			25-YR			50-YR			100-YR		
		B	D	E	B	D	E	B	D	E	B	D	E	B	D	E	B	D	E
Newport News (city)	121	64.31	11.50	0.85	64.94	11.50	0.80	57.19	10.00	0.74	44.49	7.25	0.64	41.77	6.50	0.60	37.02	5.00	0.55
Norfolk (city)	122	60.83	11.25	0.84	64.03	11.50	0.80	51.92	9.25	0.72	47.96	8.25	0.66	39.29	6.00	0.59	37.10	5.25	0.56
Northampton	65	61.14	12.00	0.86	51.80	10.00	0.77	50.43	9.50	0.73	41.80	7.50	0.65	40.85	7.00	0.62	34.58	5.25	0.55
Northumberland	66	59.28	11.50	0.85	60.70	11.50	0.80	52.30	10.00	0.73	44.98	8.25	0.66	41.70	7.25	0.62	34.58	5.25	0.55
Nottoway	67	62.14	12.00	0.86	55.67	10.75	0.79	53.53	10.50	0.75	39.77	7.25	0.65	36.11	6.25	0.60	32.50	5.25	0.55
Orange	68	58.30	12.25	0.86	49.81	10.50	0.77	46.95	9.50	0.73	40.11	7.75	0.66	35.68	6.50	0.61	30.10	4.75	0.54
Page	69	39.07	8.50	0.82	41.80	8.25	0.78	40.62	7.50	0.74	38.83	6.50	0.68	32.66	4.50	0.62	34.36	4.50	0.60
Patrick	70	69.66	12.75	0.87	58.05	10.75	0.78	50.00	9.25	0.72	44.80	7.75	0.66	39.29	6.50	0.61	34.89	5.25	0.56
Pittsylvania	71	50.48	10.50	0.82	39.15	8.75	0.72	35.48	7.75	0.66	33.76	6.75	0.62	33.66	6.25	0.59	34.46	6.00	0.57
Powhatan	72	55.09	11.50	0.84	53.32	10.75	0.79	49.13	10.00	0.74	42.03	8.25	0.67	37.41	7.00	0.61	32.74	5.50	0.56
Prince Edward	73	42.34	9.75	0.78	54.20	11.00	0.79	48.19	9.50	0.73	40.73	7.75	0.66	34.33	6.00	0.59	31.56	5.25	0.55
Prince George	74	60.12	11.50	0.84	62.36	11.50	0.80	53.51	10.00	0.74	42.40	7.50	0.65	37.20	6.00	0.59	34.71	5.25	0.55
Prince William	76	52.66	11.50	0.85	46.85	10.00	0.77	47.55	10.00	0.74	40.37	8.25	0.66	35.14	6.50	0.61	31.09	5.25	0.55
Pulaski	77	45.53	12.25	0.86	47.31	12.00	0.81	34.60	8.50	0.71	34.79	8.25	0.67	28.35	6.00	0.59	26.38	5.25	0.55
Rappahannock	78	60.32	12.25	0.87	49.28	9.75	0.78	48.73	9.25	0.74	40.59	7.25	0.66	38.67	6.50	0.62	33.55	4.75	0.56
Richmond	79	62.90	12.25	0.86	59.05	11.50	0.80	53.81	10.00	0.74	44.32	8.25	0.66	39.21	6.75	0.61	34.42	5.25	0.56
Richmond (city)	127	57.69	11.50	0.85	54.99	10.75	0.78	47.91	9.25	0.72	41.66	7.75	0.65	36.88	6.50	0.60	33.15	5.25	0.56
Roanoke	80	47.62	11.50	0.85	47.08	10.75	0.79	47.73	10.75	0.75	38.78	8.50	0.67	34.84	7.25	0.62	29.06	5.25	0.55
Roanoke (city)	128	47.62	11.50	0.85	47.08	10.75	0.79	47.73	10.75	0.75	38.78	8.50	0.67	34.84	7.25	0.62	29.06	5.25	0.55
Rockbridge	81	44.29	11.50	0.84	46.49	11.50	0.79	39.05	9.25	0.72	33.28	7.25	0.65	33.34	7.25	0.62	27.07	5.00	0.55
Rockingham	82	43.01	11.25	0.84	44.71	10.50	0.80	39.71	9.25	0.74	32.17	6.50	0.65	28.85	5.25	0.60	28.34	4.75	0.57
Russell	83	46.78	11.50	0.85	43.36	10.75	0.78	38.95	9.50	0.72	37.76	8.75	0.67	31.10	6.50	0.60	28.76	5.25	0.56
Scott	84	51.20	12.75	0.87	52.43	12.75	0.82	42.17	10.00	0.74	35.47	8.00	0.66	33.34	7.25	0.62	28.29	5.25	0.56
Shenandoah	85	45.21	9.25	0.85	44.82	8.50	0.80	43.22	7.75	0.75	39.74	6.25	0.69	35.16	4.75	0.64	32.71	3.50	0.59
Smyth	86	52.17	12.75	0.87	44.20	10.75	0.78	46.01	10.75	0.75	36.42	8.25	0.66	34.52	7.25	0.62	29.06	5.25	0.55
Southampton	87	67.40	12.25	0.86	65.69	11.50	0.80	54.56	9.50	0.73	44.83	7.50	0.65	41.23	6.50	0.60	38.91	5.75	0.57
Spotsylvania	88	65.52	13.25	0.88	60.63	12.00	0.81	49.92	10.00	0.73	41.35	7.75	0.66	38.56	7.00	0.61	30.46	4.50	0.54
Stafford	89	65.52	13.25	0.88	60.63	12.00	0.81	49.92	10.00	0.73	41.35	7.75	0.66	38.56	7.00	0.61	30.46	4.50	0.54
Staunton (city)	132	46.46	12.25	0.85	44.03	10.75	0.79	41.63	10.00	0.74	32.39	7.25	0.64	32.48	7.25	0.62	27.18	5.25	0.55
Suffolk (city)	133	78.09	12.81	0.88	60.79	10.45	0.77	54.21	9.02	0.72	47.94	7.41	0.65	45.23	6.47	0.62	42.16	5.42	0.58
Surry	90	63.47	11.50	0.85	58.83	10.75	0.78	52.39	9.25	0.72	45.72	7.75	0.66	40.68	6.50	0.60	36.45	5.25	0.55
Sussex	91	60.01	11.25	0.84	78.66	13.25	0.85	54.30	10.00	0.73	46.30	8.25	0.66	42.87	7.25	0.62	35.65	5.25	0.55
Tazewell	92	44.30	12.00	0.85	47.70	12.25	0.82	36.89	9.25	0.73	34.19	8.00	0.66	29.66	6.25	0.60	27.24	5.00	0.55
Virginia Beach (city)	134	61.66	11.25	0.84	61.78	10.75	0.79	56.67	10.00	0.73	49.63	8.25	0.67	40.32	6.00	0.59	37.86	5.25	0.56
Warren	93	44.97	9.50	0.84	44.54	8.75	0.78	41.57	7.75	0.73	39.56	6.50	0.68	33.97	4.75	0.61	34.11	4.25	0.59
Washington	95	41.68	11.50	0.83	41.14	10.75	0.78	42.11	10.75	0.75	31.43	7.75	0.65	27.32	6.00	0.59	26.45	5.50	0.56

**Chapter 6 - Hydrology**

**Appendix 6C-2 B, D, and E Factors**

B, D, & E factors for Virginia for determining rainfall intensity in the Rational and Modified Rational Methods (based on NOAA NW-14 Atlas data)

COUNTY/CITY	#	2-YR			5-YR			10-YR			25-YR			50-YR			100-YR		
		B	D	E	B	D	E	B	D	E	B	D	E	B	D	E	B	D	E
Westmoreland	96	55.94	11.50	0.84	58.28	11.50	0.80	54.10	10.50	0.75	41.98	7.75	0.66	39.93	7.25	0.62	33.44	5.25	0.55
Williamsburg (city)	137	70.63	12.75	0.87	57.84	10.50	0.78	55.61	10.00	0.74	48.54	8.50	0.67	38.78	6.00	0.59	36.77	5.25	0.56
Winchester (city)	138	44.35	9.50	0.84	45.41	8.50	0.79	43.33	7.75	0.75	37.02	5.75	0.67	35.19	4.75	0.63	33.81	3.75	0.59
Wise	97	53.26	12.75	0.87	44.86	10.75	0.79	44.28	10.50	0.75	36.41	8.00	0.66	35.11	7.25	0.62	29.23	5.00	0.55
Wythe	98	50.79	13.00	0.88	44.18	11.25	0.80	42.97	10.75	0.75	35.80	8.25	0.67	31.03	6.50	0.61	28.29	5.25	0.56
York	99	69.54	12.75	0.87	58.89	10.75	0.78	55.09	10.00	0.73	45.72	7.75	0.66	40.68	6.50	0.60	38.41	5.75	0.57

The B, D, and E factors for the state of Virginia are also available upon request in the form of a Microsoft EXCEL spreadsheet.