

Water-Data Report 2011

14211820 COLUMBIA SLOUGH AT PORTLAND, OR

Willamette Basin Lower Willamette Subbasin

LOCATION.--Lat 45°38′21″, long 122°45′43″ referenced to North American Datum of 1927, in NE ¼ SE ¼ sec.23, T.2 N., R.1 W., Multnomah County, OR, Hydrologic Unit 17090012, on right bank, 0.6 mi upstream from mouth and 1.25 mi upstream from confluence of Willamette and Columbia Rivers.

DRAINAGE AREA.--Indeterminate.

SURFACE-WATER RECORDS

PERIOD OF RECORD .-- October 1989 to current year.

GAGE.--Water-stage recorder and acoustic velocity meter. Datum of gage is 1.53 ft above NGVD of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow affected by astronomical tide, which can cause reverse flow during tidal cycle. Daily mean discharge figures since water year 2007 are produced from "Godin filtered" instantaneous discharges to remove daily tidal cycle. The Godin process resamples the series to hourly increments, on the hour, using linear interpolation, and then applies three moving averages.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--8 years (water years 1990-93, 2000, 2006, 2008-09), 93.8 ft³/s, 67,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,400 ft³/s Dec. 5, 1995, but may have been higher during periods of missing record Dec. 2-4, 1995, Feb. 10-14, 1996; maximum gage height, 27.26 ft Feb. 9, 1996, from floodmark; minimum daily discharge, -6,700 ft³/s Feb. 7, 1996, but may have been lower during periods of missing record Nov. 29 to Dec. 3, 1995, Feb. 8, 9, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 875 ft³/s Apr. 8, but may have been higher during period of missing record; maximum gage height, 17.37 ft June 2; minimum daily discharge, -1,160 ft³/s May 16, but may have been lower during period of missing record.

14211820 COLUMBIA SLOUGH AT PORTLAND, OR-Continued

DISCHARGE, CUBIC FEET PER SECOND WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011 DAILY MEAN VALUES

[e, estimated]

1 174 248 -0.64 96 80 -201 81 144 2 192 171 -162 130 134 -289 160 153 3 163 214 -456 125 57 12 188 106 4 176 259 -454 158 55 570 166 86 6 165 222 158 140 62 365 187 117 7 130 170 747 181 48 105 126 e140 8 2252 85 179 875 175 14 e40 129 e153 9 233 114 160 524 50 15 41 216 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>te, estimate</th><th>:uj</th><th></th><th></th><th></th><th></th><th></th></td<>							te, estimate	:uj					
2 192 171 -162 130 134 -289 160 153 3 163 214 -456 125 57 12 188 106 4 176 259 -454 158 55 570 166 86 6 1176 259 -454 158 55 570 166 86 6 165 222 158 140 62 365 187 117 7 153 170 747 181 48 105 126 e140 8 2252 85 179 875 175 14 400 129 e153 9 233 140 149 265 3.0 35 <	Day	0ct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
3 163 214 -456 125 57 12 188 106 4 131 254 -515 90 23 178 131 95 5 176 259 -454 158 55 570 166 86 6 176 259 -454 158 55 570 166 86 6 1176 259 -454 158 55 570 166 86 6 130 170 747 181 48 105 126 e144 8 223 114 160 524 50 15 41 216 e157 10 233 140 149 2	1					174	248	-0.64	96	80	-201	81	145
4 131 254 -515 90 23 178 131 99 5 176 259 -454 158 55 570 166 86 6 165 222 158 140 62 365 187 117 7 130 170 747 181 48 105 126 e140 8 213 114 160 524 50 15 41 216 e157 10 213 114 160 524 50 15 41 216 e157 10 213 144 160 524 50 15 41 216 e157 11 47 103 178 281	2					192	171	-162	130	134	-289	160	153
4 131 254 -515 90 23 178 131 99 5 176 259 -454 158 55 570 166 86 6 165 222 158 140 62 365 187 117 7 130 170 747 181 48 105 126 e140 8 e252 85 179 875 175 14 e40 129 e153 9 213 114 160 524 50 15 41 216 e157 10 233 140 149 265 3.0 35 72 191 e192 11 134 108	3					163	214	-456	125	57	12	188	106
6 165 222 158 140 62 365 187 117 7 130 170 747 181 48 105 126 e140 8 e252 85 179 875 175 14 e40 129 e153 9 213 114 160 524 50 15 41 216 e157 10 233 140 149 265 3.0 35 72 191 e192 11 134 108 164 257 63 61 113 117 e177 12 47 103 178 281 95 -11 252 104 e187 13 166 271 246 <	4												99
7 130 170 747 181 48 105 126 e140 8 e252 85 179 875 175 14 e40 129 e153 9 213 114 160 524 50 15 41 216 e157 10 233 140 149 265 3.0 35 72 191 e192 11 134 108 164 257 63 61 113 117 e177 12 47 103 178 281 95 -11 252 104 e187 13 127 166 271 246 -40 -85 227 178 e153 14 167 7.1 127	5					176	259	-454	158	55	570	166	86
8 e252 85 179 875 175 14 e40 129 e153 9 213 114 160 524 50 15 41 216 e157 10 233 140 149 265 3.0 35 72 191 e192 11 134 108 164 257 63 61 113 117 e177 12 47 103 178 281 95 -11 252 104 e187 13 167 65 161 290 -84 -56 113 213 133 14 167 65 161 290 -84 -56 113 213 133 15 67 7.1 127 318 <	6					165	222	158	140	62	365	187	117
9 213 114 160 524 50 15 41 216 e157 10 233 140 149 265 3.0 35 72 191 e192 11 134 108 164 257 63 61 113 117 e177 12 -47 103 178 281 95 -11 252 104 e187 13 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 67 7.1 127 318 -322 -42 65 147 103 16 -617 158 169 158 -1,160 -39 199	7					130	170	747	181	48	105	126	e140
10 233 140 149 265 3.0 35 72 191 e192 11 134 108 164 257 63 61 113 117 e177 12 47 103 178 281 95 -11 252 104 e187 13 127 166 271 246 -40 -85 227 178 e153 14 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 -67 7.1 127 318 -322 -42 65 147 103 16 -617 158 169 158 -1,160 -39 199 124 110	8				e252	85	179	875	175	14	e40	129	e153
11 134 108 164 257 63 61 113 117 e177 12 47 103 178 281 95 -11 252 104 e187 13 127 166 271 246 -40 -85 227 178 e153 14 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 -67 7.1 127 318 -322 -42 65 147 103 16 -67 7.1 127 318 -322 -42 65 147 103 16 -617 158 169 158 -1,100 35 248 161 131 18	9				213	114	160	524	50	15	41	216	e157
12 47 103 178 281 95 -11 252 104 e187 13 127 166 271 246 -40 -85 227 178 e153 14 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 -67 7.1 127 318 -322 -42 65 147 103 16 -617 158 169 158 -1,160 -39 199 124 110 17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19	10					140	149		3.0	35			e192
13 127 166 271 246 -40 -85 227 178 e153 14 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 67 7.1 127 318 -322 -42 65 147 103 16 -67 7.1 127 318 -322 -42 65 147 103 16 -617 158 169 158 -1,160 -39 199 124 110 17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19	11				134	108	164	257	63	61	113	117	e177
14 167 65 161 290 -84 -56 113 213 132 15 67 7.1 127 318 -322 -42 65 147 103 16 -67 158 192 254 -1,160 -39 199 124 110 17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 <t< th=""><td>12</td><td></td><td></td><td></td><td>47</td><td>103</td><td>178</td><td>281</td><td>95</td><td>-11</td><td>252</td><td>104</td><td>e187</td></t<>	12				47	103	178	281	95	-11	252	104	e187
15 67 7.1 127 318 -322 -42 65 147 103 16 -294 78 192 254 -1,160 -39 199 124 110 17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 <td>13</td> <td></td> <td></td> <td></td> <td>127</td> <td>166</td> <td>271</td> <td>246</td> <td>-40</td> <td>-85</td> <td>227</td> <td>178</td> <td>e153</td>	13				127	166	271	246	-40	-85	227	178	e153
16 -294 78 192 254 -1,160 -39 199 124 110 17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 502 174 209 227 22 -9.4 200 175 93 24 <td>14</td> <td></td> <td></td> <td></td> <td>167</td> <td>65</td> <td>161</td> <td>290</td> <td>-84</td> <td>-56</td> <td>113</td> <td>213</td> <td>132</td>	14				167	65	161	290	-84	-56	113	213	132
17 -617 158 169 158 -1,100 35 248 161 131 18 -915 184 148 105 -266 373 237 165 123 19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67	15				67	7.1	127	318	-322	-42	65	147	103
18 -915 184 148 105 -266 373 237 165 123 19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25	16				-294	78	192	254	-1,160	-39	199	124	110
19 -995 236 201 123 83 623 253 147 119 20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 <td< th=""><td>17</td><td></td><td></td><td></td><td>-617</td><td>158</td><td>169</td><td>158</td><td>-1,100</td><td>35</td><td>248</td><td>161</td><td>131</td></td<>	17				-617	158	169	158	-1,100	35	248	161	131
20 110 220 257 209 70 572 247 199 102 21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 3	18				-915	184	148	105	-266	373	237	165	123
21 691 196 243 245 32 209 220 181 90 22 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29	19				-995	236	201	123	83	623	253	147	119
22 502 174 209 227 22 -9.4 200 175 93 23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	20				110	220	257	209	70	572	247	199	102
23 338 140 135 281 -134 -44 196 146 67 24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	21				691	196	243	245	32	209	220	181	90
24 293 204 182 242 -52 -457 145 91 45 25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	22				502	174	209	227	22	-9.4	200	175	93
25 369 237 205 238 -60 -26 140 85 37 26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	23				338	140	135	281	-134	-44	196	146	67
26 443 176 206 199 56 865 144 120 36 27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	24				293	204	182	242	-52	-457	145	91	45
27 309 120 161 90 -159 618 144 100 69 28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	25				369	237	205	238	-60	-26	140	85	37
28 304 226 189 133 -145 147 110 94 112 29 364 157 241 -144 29 103 124 108	26				443	176	206	199	56	865	144	120	36
29 364 157 241 -144 29 103 124 108	27				309	120	161	90	-159	618	144	100	69
	28				304	226	189	133	-145	147	110	94	112
30 307 30 225 -71 -1.3 85 118 82	29				364		157	241	-144	29	103	124	108
	30				307		30	225	-71	-1.3	85	118	82
31 1638.5 22 81 114	31				163		-8.5		22		81	114	
Total 4,268.1 5,602.5 5,343.36 -2,146.0 3,284.3 4,415 4,478 3,424	Γotal					4,268.1	5,602.5	5,343.36	-2,146.0	3,284.3	4,415	4,478	3,424
Mean 152 181 178 -69.2 109 142 144 114	Vlean					152	181	178	-69.2	109	142	144	114
Max 237 271 875 181 865 570 216 192	Vlax					237	271	875	181	865	570	216	192
Min 7.1 -8.5 -515 -1,160 -457 -289 81 36	Vlin					7.1	-8.5	-515	-1,160	-457	-289	81	36
Ac-ft 8,470 11,110 10,600 -4,260 6,510 8,760 8,880 6,790	Ac-ft					8,470	11,110	10,600	-4,260	6,510	8,760	8,880	6,790

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	96.7	109	119	163	146	133	82.5	34.7	63.8	82.9	74.8	64.7
Max	142	170	185	326	241	330	180	105	209	134	113	123
(WY)	(1991)	(1997)	(2000)	(1997)	(1997)	(1999)	(1999)	(2000)	(1998)	(1998)	(1996)	(1996)
Min	39.4	49.9	11.3	91.9	44.1	73.9	6.20	-97.6	-13.2	9.91	6.45	16.0
(WY)	(2005)	(2003)	(2006)	(2009)	(2005)	(2004)	(1997)	(2008)	(1990)	(2003)	(2003)	(2005)

Water-Data Report 2011

14211820 COLUMBIA SLOUGH AT PORTLAND, OR—Continued

SUMMARY STATISTICS

	Water Years 1990 - 2009					
Annual mean	93.8					
Highest annual mean	138	2000				
Lowest annual mean	59.4	2006				
Highest daily mean	2,400	Dec 5, 1995				
Lowest daily mean	-6,700	Feb 7, 1996				
Annual seven-day minimum	-894	Dec 27, 1996				
Annual runoff (ac-ft)	67,980					
10 percent exceeds	215					
50 percent exceeds	90					
90 percent exceeds	-9.2					