

APPENDIX D

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BACKGROUND

The following WUA curves were developed using updated PHABSIM hydraulic modelling (see Appendix C and Appendix D) and newly developed habitat suitability criteria (HSC) curves (Addley et al. 2003). The channel index code is substrate in all cases and is coded to a suitability of 1.0 for all substrate types. The exception to this approach is for spawning life stages, where a suitability of 1.0 is used for appropriate sized spawning gravel and all other substrates are coded as a suitability of 0.0.

For some reaches, the transition between low flow hydraulic models and high flow hydraulic models resulted in large jumps in the WUA curves. This is a normal result in PHABSIM modelling. The transition from a lower flow range to a higher flow range was smoothed by applying an adjustment factor to one of the sets of data. Caution was used to ensure the general shape of the curve was not altered as a result of this adjustment. Specifics of the adjustment factor used, if any, is provided for each reach.

The following abbreviations are used throughout for species:

- BNTR Brown Trout
- GOLD Goldeye
- MNWH Mountain Whitefish
- RNTR Rainbow Trout
- WALL Walleye

RED DEER RIVER WUA CURVES

Reaches RD1, RD2, and RD3

Table 1: Red Deer River from the Alberta-Saskatchewan border upstream to Drumheller (reaches RD1, RD2, RD3) range standardized WUA curves (with adjustment factor applied).

Discharge (cms)	GOLD - Adult	GOLD - Fry	GOLD - Juvenile	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.25	0.14	1.00	0.18	0.31	1.00	0.33	0.00
7.08	0.18	0.54	0.25	0.38	0.74	0.40	0.02
9.91	0.23	0.51	0.30	0.44	0.54	0.47	0.06
12.74	0.27	0.50	0.35	0.49	0.46	0.55	0.09
15.57	0.31	0.51	0.40	0.55	0.44	0.62	0.12
18.40	0.35	0.49	0.44	0.59	0.42	0.67	0.15
21.23	0.39	0.53	0.47	0.63	0.43	0.72	0.18
24.06	0.43	0.55	0.50	0.66	0.44	0.77	0.20
26.89	0.46	0.56	0.53	0.70	0.45	0.80	0.22
29.72	0.49	0.51	0.56	0.74	0.47	0.83	0.25
32.55	0.52	0.48	0.59	0.78	0.49	0.86	0.26
34.61	0.54	0.45	0.61	0.80	0.49	0.87	0.28
40.27	0.59	0.43	0.68	0.85	0.51	0.92	0.34
45.93	0.65	0.44	0.76	0.90	0.52	0.95	0.39
51.59	0.71	0.46	0.84	0.93	0.52	0.98	0.45
57.25	0.84	0.12	0.91	0.96	0.48	0.99	0.50
62.91	0.88	0.10	0.94	0.97	0.45	1.00	0.56
68.57	0.92	0.08	0.97	0.99	0.45	1.00	0.62
74.23	0.95	0.07	0.98	0.99	0.43	0.99	0.68
79.89	0.97	0.06	1.00	1.00	0.41	0.99	0.74
85.55	0.99	0.06	1.00	1.00	0.39	0.98	0.79
91.21	1.00	0.07	1.00	1.00	0.39	0.97	0.84
96.87	0.99	0.07	0.98	0.99	0.39	0.95	0.88
102.53	0.99	0.08	0.96	0.99	0.37	0.93	0.93
108.19	0.98	0.09	0.94	0.98	0.38	0.91	0.96
113.85	0.96	0.08	0.92	0.97	0.37	0.89	0.99
119.51	0.96	0.08	0.91	0.96	0.36	0.88	1.00
125.17	0.93	0.08	0.88	0.95	0.35	0.85	0.99
130.83	0.91	0.09	0.85	0.93	0.35	0.83	0.96
136.49	0.89	0.10	0.83	0.92	0.36	0.82	0.90
142.15	0.88	0.10	0.80	0.91	0.36	0.80	0.84
147.81	0.85	0.11	0.76	0.89	0.37	0.78	0.77
153.47	0.84	0.11	0.73	0.88	0.37	0.77	0.69
159.13	0.81	0.12	0.71	0.87	0.36	0.75	0.62
164.79	0.79	0.12	0.69	0.86	0.35	0.73	0.55

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	GOLD - Adult	GOLD - Fry	GOLD - Juvenile	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
170.45	0.76	0.13	0.66	0.84	0.35	0.71	0.48
176.11	0.74	0.13	0.65	0.83	0.34	0.69	0.42
181.77	0.71	0.14	0.63	0.82	0.34	0.68	0.37
187.43	0.70	0.15	0.62	0.81	0.33	0.67	0.34
193.09	0.68	0.17	0.60	0.80	0.33	0.65	0.30
198.75	0.66	0.18	0.59	0.79	0.34	0.63	0.27
204.41	0.65	0.19	0.58	0.78	0.34	0.62	0.25
210.07	0.63	0.21	0.57	0.76	0.34	0.60	0.22
215.73	0.62	0.21	0.56	0.75	0.34	0.59	0.20
221.39	0.60	0.23	0.54	0.73	0.34	0.58	0.18
227.05	0.60	0.25	0.54	0.72	0.34	0.57	0.16
255.35	0.53	0.31	0.47	0.66	0.39	0.49	0.11
283.00	0.46	0.37	0.41	0.59	0.43	0.43	0.08
AF	0.00	0.00	0.00	0.11	0.24	0.01	0.00

Notes: The adjustment factor (AF) was applied only in the flow range of 57.25cms to 283 cms.

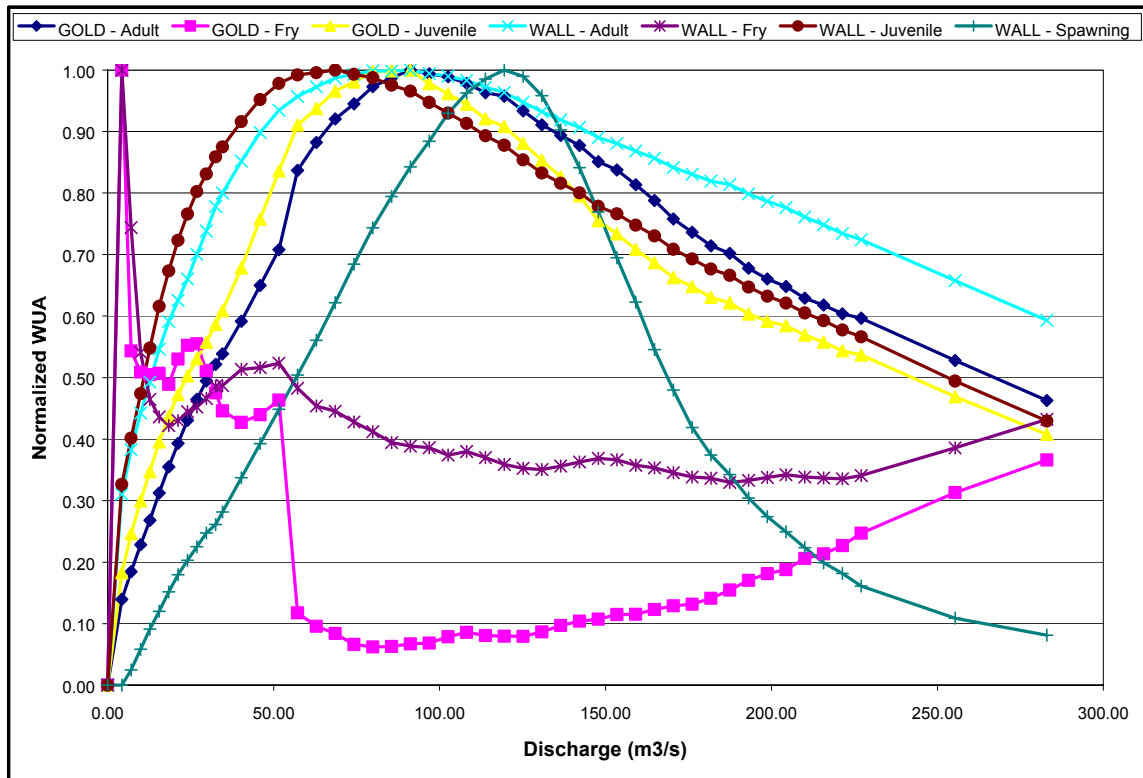


Figure 1: Red Deer River from the Alberta-Saskatchewan border upstream to Drumheller (reaches RD1, RD2, RD3) range standardized WUA curves.

Reaches RD4, and RD5

Table 2: Red Deer River from Drumheller upstream to the confluence of the Blindman River (reaches RD4, RD5) range standardized WUA curves (with adjustment factor applied).

Discharge (cms)	GOLD Adult	GOLD Fry	GOLD Juvenile	WALL Adult	WALL Fry	WALL Juvenile	WALL Spawning
0	0	0	0	0	0	0	0
2.83	0.37	1.00	0.42	0.68	1.00	0.67	0.02
4.25	0.42	0.69	0.48	0.72	0.94	0.72	0.03
5.66	0.47	0.55	0.53	0.76	0.85	0.75	0.05
7.08	0.51	0.43	0.58	0.79	0.78	0.79	0.06
8.49	0.55	0.28	0.61	0.82	0.70	0.82	0.08
9.91	0.58	0.25	0.65	0.85	0.64	0.85	0.10
11.32	0.61	0.23	0.68	0.88	0.57	0.87	0.12
12.74	0.64	0.24	0.70	0.90	0.51	0.90	0.15
14.15	0.67	0.24	0.73	0.92	0.46	0.92	0.18
15.57	0.69	0.22	0.75	0.94	0.42	0.94	0.21
16.98	0.71	0.21	0.77	0.97	0.39	0.96	0.25
18.40	0.73	0.20	0.79	0.98	0.36	0.97	0.29
19.81	0.75	0.20	0.80	0.99	0.34	0.97	0.33
20.35	0.76	0.20	0.81	1.00	0.33	0.98	0.34
21.23	0.77	0.19	0.82	1.00	0.32	0.98	0.36
22.64	0.79	0.18	0.84	1.00	0.30	0.99	0.40
24.06	0.81	0.17	0.86	1.00	0.28	0.99	0.44
25.47	0.82	0.16	0.87	0.99	0.27	0.99	0.48
26.89	0.84	0.15	0.89	0.99	0.25	1.00	0.51
28.30	0.85	0.15	0.90	0.98	0.24	1.00	0.54
35.38	0.93	0.14	0.98	0.94	0.18	0.99	0.68
42.45	0.99	0.14	1.00	0.90	0.17	0.98	0.77
49.53	1.00	0.14	0.98	0.86	0.17	0.95	0.85
56.60	0.99	0.13	0.95	0.82	0.16	0.92	0.90
63.68	0.97	0.12	0.89	0.78	0.16	0.87	0.95
70.75	0.93	0.11	0.82	0.75	0.15	0.82	0.99
77.83	0.88	0.11	0.76	0.72	0.14	0.77	1.00
84.90	0.83	0.11	0.71	0.68	0.14	0.72	0.99
91.98	0.79	0.11	0.67	0.65	0.14	0.67	0.96
99.05	0.74	0.02	0.59	0.56	0.12	0.59	0.95
106.13	0.66	0.01	0.53	0.53	0.13	0.54	0.89
113.20	0.59	0.02	0.47	0.49	0.13	0.49	0.83
120.28	0.52	0.02	0.43	0.46	0.13	0.45	0.74
127.35	0.47	0.03	0.40	0.42	0.13	0.41	0.66
134.43	0.43	0.03	0.38	0.39	0.13	0.38	0.59
141.50	0.39	0.04	0.37	0.36	0.14	0.35	0.51
155.65	0.37	0.05	0.36	0.31	0.15	0.33	0.38
169.80	0.36	0.07	0.36	0.28	0.16	0.31	0.27

Discharge (cms)	GOLD - Adult	GOLD - Fry	GOLD - Juvenile	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
183.95	0.36	0.09	0.36	0.27	0.17	0.30	0.20
198.10	0.36	0.10	0.36	0.25	0.18	0.30	0.15
212.25	0.37	0.10	0.36	0.24	0.20	0.29	0.12
226.40	0.37	0.08	0.35	0.24	0.21	0.28	0.12
240.55	0.37	0.07	0.34	0.24	0.23	0.28	0.11
254.70	0.37	0.07	0.33	0.23	0.24	0.28	0.11
268.85	0.36	0.07	0.32	0.23	0.25	0.27	0.10
283.00	0.36	0.07	0.32	0.23	0.25	0.27	0.10
AF	0.16	0.00	0.16	0.08	0.10	0.11	-0.03

Notes: The adjustment factor (AF) was applied only in the flow range of 99.05 cms to 283 cms.

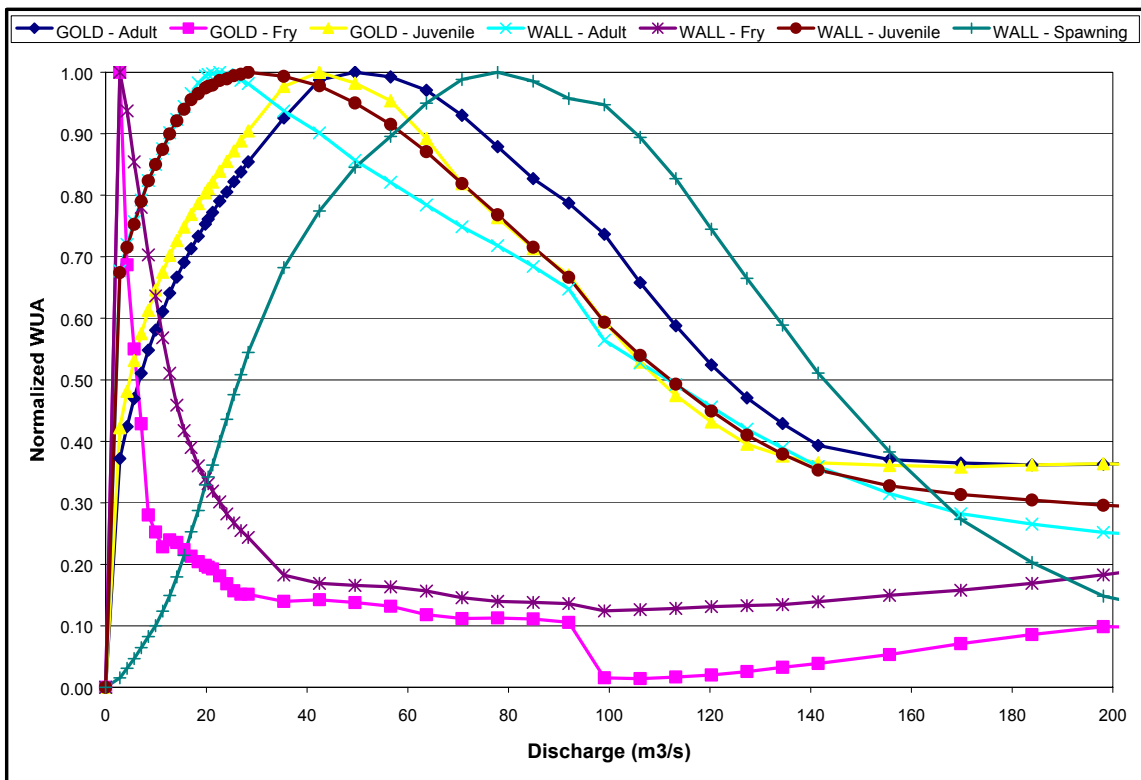


Figure 2: Red Deer River from Drumheller upstream to the confluence of the Blindman River (reaches RD4, RD5) range standardized WUA curves.

Reach RD6

Table 3: Red Deer River from the Blindman River upstream to the confluence of the Medicine River (reaches RD6) range standardized WUA curves. (with adjustment factors applied).

Discharge (cms)	BNTR Adult	BNTR Juv	MNWH Adult	MNWH Fry	MNWH Juv	WALL Adult	WALL Fry	WALL Juv	MNWH Sawn	WALL Spawn
0	0	0	0	0	0	0	0	0	0	0
4.25	0.42	0.52	0.17	0.64	0.24	0.31	1.00	0.41	0.01	0.00
8.49	0.55	0.64	0.29	0.75	0.37	0.49	0.73	0.58	0.07	0.02
12.74	0.63	0.72	0.39	0.83	0.48	0.65	0.47	0.71	0.18	0.04
16.98	0.69	0.79	0.48	0.90	0.58	0.79	0.32	0.83	0.29	0.09
19.36	0.72	0.82	0.52	0.92	0.63	0.86	0.27	0.87	0.36	0.13
21.23	0.74	0.84	0.56	0.94	0.67	0.90	0.23	0.90	0.41	0.17
25.47	0.79	0.89	0.64	0.97	0.74	0.97	0.17	0.95	0.52	0.26
29.72	0.83	0.92	0.70	0.99	0.80	1.00	0.13	0.98	0.61	0.35
33.96	0.87	0.95	0.76	1.00	0.85	0.99	0.10	1.00	0.69	0.45
38.21	0.90	0.97	0.81	1.00	0.88	0.97	0.09	1.00	0.75	0.54
42.45	0.93	0.98	0.85	1.00	0.91	0.94	0.07	0.99	0.80	0.63
46.70	0.95	0.99	0.88	0.99	0.93	0.90	0.07	0.97	0.84	0.70
50.94	0.96	1.00	0.91	0.97	0.95	0.86	0.06	0.95	0.87	0.77
55.19	0.98	1.00	0.93	0.96	0.96	0.83	0.05	0.93	0.89	0.82
59.43	0.99	1.00	0.94	0.94	0.97	0.79	0.05	0.89	0.91	0.85
63.68	0.99	0.99	0.96	0.92	0.98	0.76	0.04	0.86	0.93	0.88
67.92	1.00	0.98	0.96	0.90	0.99	0.73	0.03	0.83	0.94	0.90
72.17	1.00	0.97	0.97	0.88	1.00	0.70	0.03	0.79	0.95	0.92
76.41	1.00	0.96	0.98	0.85	1.00	0.67	0.03	0.75	0.96	0.92
80.66	1.00	0.94	0.98	0.83	1.00	0.65	0.03	0.71	0.97	0.93
84.90	0.99	0.93	0.98	0.81	1.00	0.62	0.03	0.67	0.98	0.93
89.65	0.99	0.91	0.98	0.78	1.00	0.60	0.02	0.63	0.98	0.94
91.98	0.98	0.90	0.98	0.76	1.00	0.58	0.02	0.61	0.98	0.94
99.05	0.97	0.89	1.00	0.74	1.00	0.52	0.01	0.52	1.00	0.98
106.13	0.95	0.86	1.00	0.68	0.99	0.48	0.01	0.45	1.00	0.99
113.20	0.91	0.83	1.00	0.62	0.98	0.43	0.01	0.38	1.00	1.00
120.28	0.87	0.80	1.00	0.57	0.97	0.39	0.01	0.32	0.99	1.00
127.35	0.82	0.76	0.99	0.52	0.95	0.34	0.01	0.26	0.99	0.97
134.43	0.76	0.73	0.99	0.48	0.94	0.30	0.01	0.22	0.99	0.91
141.50	0.71	0.69	0.98	0.44	0.93	0.25	0.01	0.20	0.99	0.83
146.25	0.67	0.66	0.97	0.41	0.92	0.23	0.01	0.18	0.98	0.78
148.58	0.65	0.65	0.96	0.40	0.91	0.22	0.01	0.17	0.98	0.75
155.65	0.60	0.61	0.94	0.37	0.90	0.19	0.01	0.16	0.98	0.67
162.73	0.55	0.58	0.90	0.34	0.88	0.17	0.01	0.14	0.97	0.58
169.80	0.50	0.54	0.86	0.31	0.86	0.15	0.01	0.13	0.97	0.50
176.88	0.45	0.51	0.82	0.29	0.84	0.14	0.01	0.12	0.95	0.43
183.95	0.42	0.48	0.77	0.27	0.82	0.12	0.01	0.11	0.94	0.38

Discharge (cms)	BNTR Adult	BNTR Juv	MNWH Adult	MNWH Fry	MNWH Juv	WALL Adult	WALL Fry	WALL Juv	MNWH Sawn	WALL Spawn
191.03	0.39	0.46	0.73	0.25	0.79	0.11	0.01	0.10	0.92	0.34
198.10	0.37	0.43	0.68	0.24	0.76	0.11	0.01	0.09	0.90	0.31
202.85	0.35	0.42	0.66	0.22	0.74	0.10	0.01	0.09	0.88	0.29
259.45	0.22	0.28	0.46	0.13	0.56	0.06	0.01	0.05	0.68	0.15
293.58	0.17	0.23	0.38	0.10	0.47	0.05	0.01	0.04	0.57	0.10
AF	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03

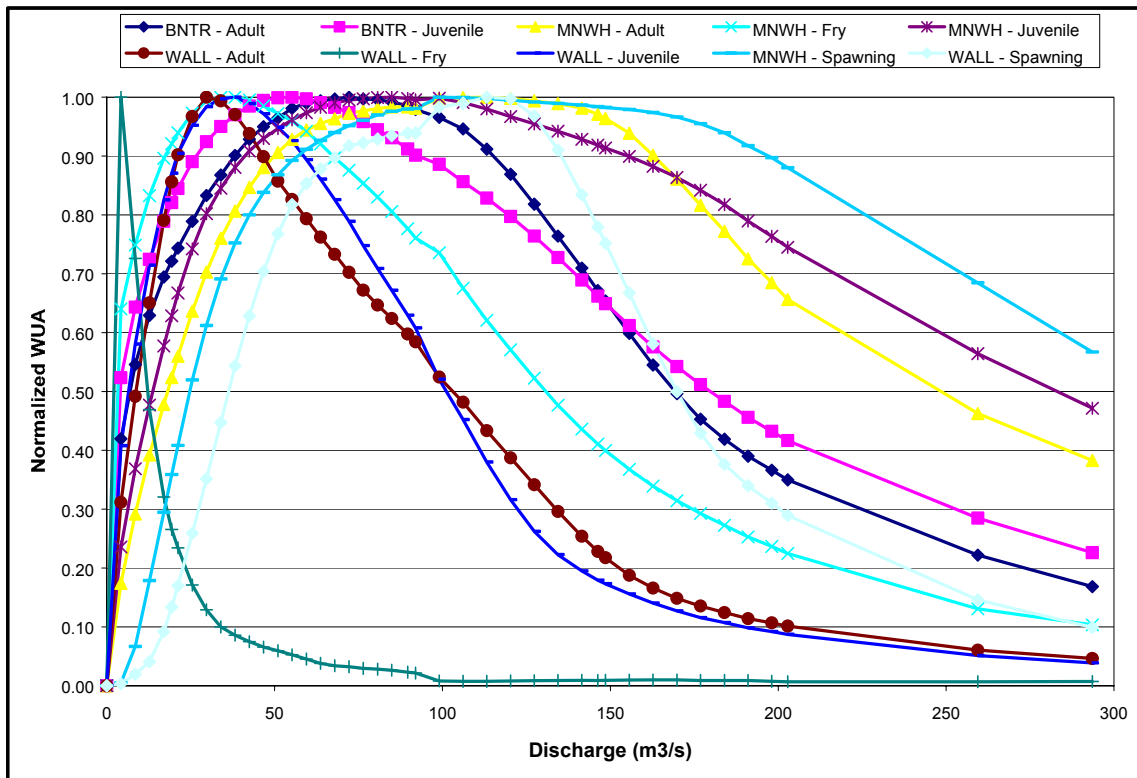


Figure 3: Red Deer River from the Blindman River upstream to the confluence of the Medicine River (reaches RD6) range standardized WUA curves.

Reach RD7

Table 4: Red Deer River from the Medicine River upstream to the Dickson Dam reach RD7) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR Adult	BNTR Fry	BNTR Juvenile	MNWH Adult	MNWH Fry	MNWH Juvenile	WALL Adult	BNTR Spawn	MNWH Spawn
0	0	0	0	0	0	0	0	0	0
4.25	0.28	0.31	0.25	0.20	0.34	0.21	0.53	0.36	0.16
12.74	0.44	0.38	0.41	0.46	0.48	0.44	0.44	0.61	0.58
15.65	0.47	0.36	0.43	0.51	0.50	0.48	0.41	0.65	0.65
18.99	0.50	0.37	0.45	0.56	0.51	0.51	0.39	0.66	0.71
21.23	0.52	0.42	0.47	0.59	0.51	0.52	0.37	0.66	0.73
25.47	0.52	0.46	0.49	0.62	0.50	0.56	0.34	0.67	0.78
29.72	0.51	0.50	0.51	0.63	0.50	0.58	0.32	0.65	0.81
33.96	0.50	0.51	0.53	0.64	0.50	0.61	0.31	0.65	0.83
38.21	0.50	0.52	0.54	0.64	0.50	0.63	0.30	0.68	0.84
42.45	0.51	0.56	0.55	0.65	0.51	0.65	0.31	0.67	0.86
46.70	0.51	0.57	0.56	0.65	0.51	0.67	0.33	0.67	0.87
50.94	0.51	0.56	0.57	0.65	0.53	0.69	0.36	0.69	0.89
55.19	0.52	0.57	0.57	0.66	0.54	0.70	0.38	0.70	0.91
59.43	0.54	0.61	0.58	0.66	0.55	0.72	0.41	0.71	0.92
63.68	0.56	0.62	0.59	0.67	0.57	0.73	0.45	0.72	0.94
68.97	0.57	0.62	0.60	0.69	0.58	0.74	0.49	0.75	0.96
77.83	0.60	0.64	0.60	0.69	0.61	0.76	0.46	0.75	0.98
84.90	0.59	0.73	0.60	0.68	0.65	0.76	0.46	0.80	0.97
91.98	0.60	0.83	0.62	0.67	0.68	0.77	0.46	0.83	0.96
99.05	0.62	0.88	0.64	0.67	0.72	0.77	0.47	0.91	0.95
106.13	0.64	0.93	0.66	0.70	0.77	0.78	0.48	0.95	0.96
113.20	0.67	0.95	0.68	0.73	0.82	0.79	0.50	1.00	0.97
120.28	0.70	1.00	0.72	0.75	0.87	0.81	0.52	1.00	0.98
127.35	0.73	0.95	0.75	0.77	0.91	0.83	0.54	0.98	0.99
134.43	0.76	0.91	0.79	0.79	0.94	0.85	0.56	0.95	1.00
141.50	0.79	0.90	0.83	0.82	0.97	0.87	0.57	0.93	1.00
148.58	0.83	0.90	0.86	0.84	0.99	0.88	0.59	0.90	0.99
155.65	0.86	0.91	0.88	0.87	1.00	0.90	0.60	0.88	0.99
162.73	0.88	0.93	0.90	0.90	0.99	0.91	0.62	0.85	0.98
169.80	0.91	0.95	0.92	0.92	0.99	0.92	0.65	0.81	0.97
176.88	0.93	0.93	0.94	0.95	0.98	0.92	0.67	0.78	0.94
183.95	0.93	0.91	0.96	0.97	0.98	0.94	0.69	0.74	0.91
191.03	0.94	0.89	0.97	0.98	0.99	0.95	0.72	0.71	0.89
198.10	0.94	0.89	0.99	0.99	0.98	0.96	0.75	0.69	0.87
205.18	0.94	0.87	1.00	1.00	0.96	0.98	0.77	0.67	0.85
212.25	0.94	0.84	1.00	1.00	0.94	0.98	0.79	0.64	0.83
219.33	0.95	0.80	0.99	0.99	0.93	1.00	0.81	0.61	0.81

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR Adult	BNTR Fry	BNTR Juvenile	MNWH Adult	MNWH Fry	MNWH Juvenile	WALL Adult	BNTR Spawn	MNWH Spawn
226.40	0.95	0.76	0.97	0.98	0.91	1.00	0.84	0.59	0.78
233.48	0.96	0.72	0.95	0.97	0.90	1.00	0.86	0.56	0.76
240.55	0.98	0.67	0.94	0.96	0.88	0.98	0.91	0.54	0.74
247.63	0.99	0.62	0.92	0.96	0.87	0.97	0.96	0.53	0.71
254.70	1.00	0.58	0.90	0.95	0.85	0.95	1.00	0.51	0.69
AF	0.23	0.23	0.14	0.08	0.26	0.00	0.29	0.25	-0.11

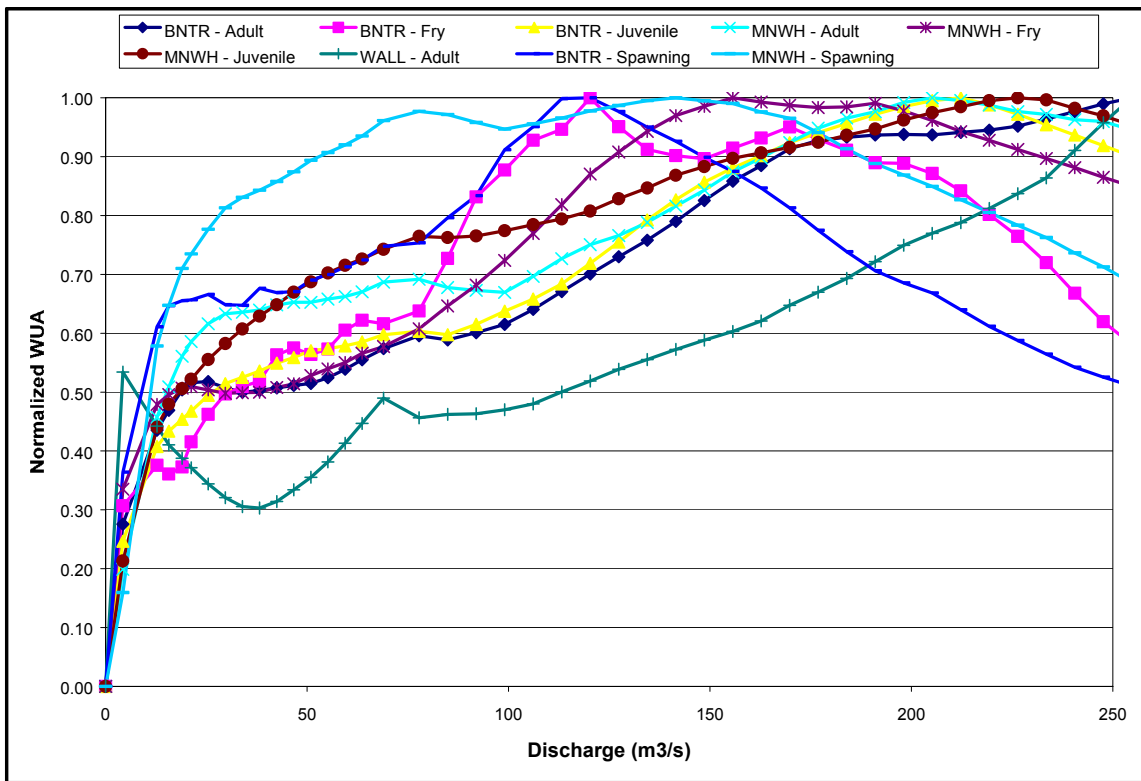


Figure 4: Red Deer River from the Medicine River upstream to the Dickson Dam reach RD7) range standardized WUA curves

BOW RIVER WUA CURVES

Reach BW1

No Data.

Reach BW2

Table 5: Bow River from the Bassano Dam upstream to the Carseland Weir (reach BW2) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.32	0.89	1.00	0.88	0.94	0.70	0.97	0.72	0.55
12.74	0.91	0.97	0.89	0.96	0.74	0.98	0.75	0.61
14.15	0.93	0.92	0.91	0.98	0.77	0.99	0.78	0.65
15.57	0.95	0.87	0.92	0.99	0.80	0.99	0.80	0.69
16.98	0.97	0.82	0.94	1.00	0.83	1.00	0.82	0.73
18.40	0.97	0.77	0.95	1.00	0.85	1.00	0.84	0.75
19.81	0.98	0.71	0.96	1.00	0.88	1.00	0.86	0.78
21.23	0.99	0.66	0.96	1.00	0.90	0.99	0.87	0.80
22.64	1.00	0.61	0.98	1.00	0.92	0.97	0.89	0.82
24.06	1.00	0.56	0.98	0.98	0.93	0.96	0.90	0.84
25.47	0.99	0.52	0.99	0.97	0.94	0.94	0.91	0.86
26.89	0.98	0.49	0.99	0.96	0.95	0.92	0.92	0.88
28.30	0.98	0.46	1.00	0.94	0.96	0.90	0.93	0.89
29.72	0.97	0.43	1.00	0.92	0.97	0.87	0.94	0.91
31.13	0.95	0.41	0.99	0.90	0.98	0.84	0.95	0.92
32.55	0.94	0.40	0.99	0.88	0.99	0.81	0.96	0.93
33.96	0.93	0.38	0.99	0.85	1.00	0.79	0.97	0.95
35.38	0.90	0.37	0.98	0.83	1.00	0.76	0.98	0.96
36.79	0.89	0.36	0.98	0.81	1.00	0.73	0.99	0.97
38.21	0.87	0.35	0.97	0.79	0.99	0.70	0.99	0.98
39.62	0.85	0.34	0.96	0.77	0.99	0.68	1.00	0.98
41.04	0.83	0.34	0.95	0.74	0.98	0.65	1.00	0.99
42.45	0.82	0.33	0.94	0.72	0.97	0.63	1.00	0.99
46.70	0.77	0.30	0.90	0.65	0.95	0.57	1.00	1.00
50.94	0.74	0.28	0.86	0.59	0.93	0.52	1.00	1.00

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
55.19	0.70	0.28	0.82	0.53	0.90	0.48	0.99	1.00
59.43	0.67	0.28	0.78	0.47	0.87	0.45	0.97	0.99
63.68	0.65	0.28	0.74	0.43	0.84	0.43	0.95	0.97
67.92	0.63	0.28	0.71	0.39	0.82	0.41	0.93	0.95
72.17	0.61	0.29	0.67	0.37	0.79	0.39	0.90	0.92
81.22	0.58	0.32	0.61	0.32	0.74	0.38	0.85	0.87
84.90	0.58	0.34	0.60	0.31	0.72	0.38	0.83	0.85
91.98	0.57	0.37	0.57	0.29	0.68	0.40	0.80	0.80
99.05	0.56	0.39	0.56	0.29	0.64	0.41	0.76	0.76
106.13	0.56	0.41	0.55	0.28	0.60	0.43	0.73	0.72
113.20	0.56	0.45	0.55	0.27	0.58	0.45	0.71	0.68
118.24	0.58	0.46	0.56	0.28	0.57	0.47	0.70	0.66
141.50	0.69	0.44	0.62	0.26	0.61	0.55	0.71	0.61
169.80	0.81	0.41	0.68	0.29	0.70	0.59	0.73	0.58
198.10	0.92	0.33	0.70	0.29	0.76	0.62	0.72	0.57
226.40	0.95	0.27	0.69	0.28	0.75	0.62	0.69	0.50
254.70	0.93	0.24	0.68	0.26	0.72	0.61	0.64	0.43
283.00	0.92	0.22	0.66	0.24	0.71	0.60	0.63	0.39
566.00	0.79	0.15	0.44	0.09	0.65	0.49	0.52	0.19
849.00	0.74	0.04	0.34	0.05	0.57	0.43	0.42	0.11
1132.00	0.60	0.01	0.24	0.04	0.48	0.33	0.35	0.07
1188.60	0.58	0.01	0.22	0.03	0.46	0.31	0.33	0.06
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Fry	RNTR - Spawning
0	0.00	0.00	0.00	0.00
11.32	0.86	0.87	1.00	0.63
12.74	0.88	0.89	0.97	0.73
14.15	0.90	0.90	0.92	0.81
15.57	0.92	0.91	0.87	0.87
16.98	0.95	0.93	0.82	0.92
18.40	0.96	0.94	0.77	0.95
19.81	0.97	0.95	0.71	0.97
21.23	0.98	0.96	0.66	0.98
22.64	0.99	0.97	0.61	1.00
24.06	1.00	0.98	0.56	1.00
25.47	1.00	0.99	0.52	0.99

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Fry	RNTR - Spawning
26.89	1.00	0.99	0.49	0.98
28.30	1.00	1.00	0.46	0.98
29.72	0.99	1.00	0.43	0.96
31.13	0.99	0.99	0.41	0.95
32.55	0.99	0.99	0.40	0.93
33.96	0.98	0.99	0.38	0.91
35.38	0.96	0.98	0.37	0.89
36.79	0.95	0.98	0.36	0.86
38.21	0.94	0.97	0.35	0.84
39.62	0.93	0.96	0.34	0.82
41.04	0.91	0.95	0.34	0.79
42.45	0.90	0.94	0.33	0.77
46.70	0.86	0.91	0.30	0.69
50.94	0.83	0.87	0.28	0.61
55.19	0.79	0.83	0.28	0.54
59.43	0.76	0.80	0.28	0.48
63.68	0.74	0.77	0.28	0.44
67.92	0.71	0.73	0.28	0.40
72.17	0.68	0.70	0.29	0.35
81.22	0.65	0.64	0.32	0.30
84.90	0.64	0.62	0.34	0.28
91.98	0.62	0.59	0.37	0.26
99.05	0.61	0.58	0.39	0.24
106.13	0.61	0.57	0.41	0.23
113.20	0.61	0.57	0.45	0.22
118.24	0.61	0.58	0.46	0.22
141.50	0.61	0.64	0.44	0.25
169.80	0.61	0.71	0.41	0.28
198.10	0.61	0.75	0.33	0.31
226.40	0.61	0.76	0.27	0.29
254.70	0.61	0.74	0.24	0.27
283.00	0.61	0.73	0.22	0.25
566.00	0.60	0.56	0.15	0.09
849.00	0.60	0.42	0.04	0.05
1132.00	0.60	0.32	0.01	0.03
1188.60	0.60	0.30	0.01	0.03
AF	0.00	0.00	0.00	0.00

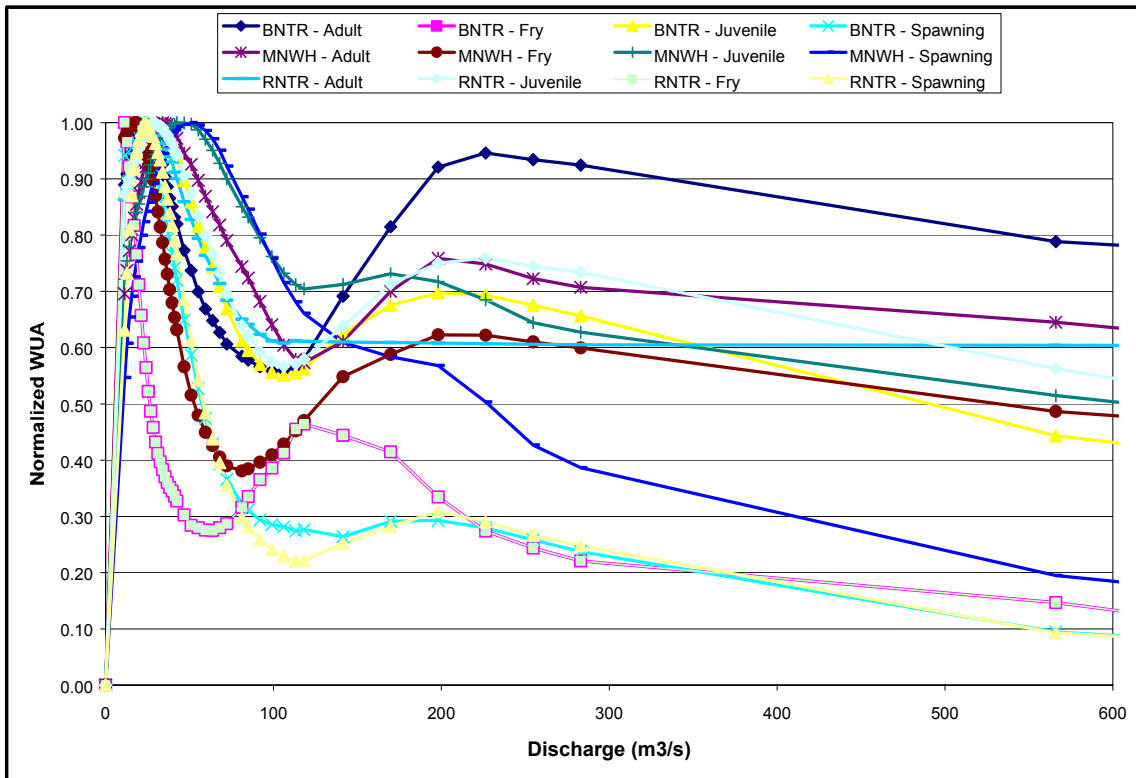


Figure 5: Bow River from the Bassano Dam upstream to the Carseland Weir (reach BW2) range standardized WUA curves

Reach BW3

Table 6: Bow River from the Carseland Weir upstream to the confluence of the Highwood River (reach BW3) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.15	0.80	0.92	0.83	0.58	0.46	0.86	0.50	0.19
16.98	0.83	0.92	0.85	0.65	0.51	0.88	0.55	0.26
19.81	0.85	0.90	0.87	0.70	0.55	0.89	0.60	0.32
22.64	0.87	0.87	0.88	0.75	0.60	0.90	0.64	0.38
25.47	0.88	0.85	0.89	0.78	0.64	0.91	0.67	0.44
28.30	0.90	0.84	0.90	0.81	0.68	0.93	0.71	0.51
31.13	0.91	0.85	0.91	0.83	0.71	0.93	0.73	0.56
33.96	0.92	0.87	0.91	0.85	0.74	0.94	0.76	0.61

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
36.79	0.93	0.95	0.92	0.86	0.77	0.95	0.78	0.65
39.62	0.94	1.00	0.93	0.88	0.80	0.96	0.80	0.69
42.45	0.95	1.00	0.94	0.91	0.82	0.96	0.82	0.72
45.28	0.95	0.99	0.95	0.94	0.84	0.97	0.84	0.75
48.11	0.96	0.97	0.95	0.97	0.86	0.97	0.85	0.77
50.94	0.96	0.95	0.96	0.98	0.88	0.98	0.87	0.80
53.77	0.97	0.93	0.96	0.99	0.89	0.98	0.88	0.82
56.60	0.98	0.91	0.96	1.00	0.90	0.99	0.89	0.84
59.43	0.98	0.89	0.97	1.00	0.92	0.99	0.90	0.85
62.26	0.99	0.87	0.97	1.00	0.93	1.00	0.91	0.87
65.09	0.99	0.85	0.97	1.00	0.94	1.00	0.92	0.88
67.92	0.99	0.84	0.98	1.00	0.94	1.00	0.93	0.90
70.75	1.00	0.82	0.98	1.00	0.95	1.00	0.94	0.91
71.97	1.00	0.81	0.98	1.00	0.95	1.00	0.94	0.91
73.58	1.00	0.80	0.98	0.99	0.96	0.99	0.95	0.92
76.41	1.00	0.78	0.99	0.99	0.96	0.98	0.95	0.93
79.24	1.00	0.77	0.99	0.98	0.97	0.97	0.96	0.94
82.07	1.00	0.76	0.99	0.97	0.98	0.95	0.97	0.95
84.90	0.99	0.76	1.00	0.96	0.99	0.94	0.97	0.96
87.73	0.98	0.76	1.00	0.95	0.99	0.93	0.98	0.96
90.56	0.98	0.76	1.00	0.94	0.99	0.92	0.98	0.97
96.22	0.96	0.76	0.99	0.93	1.00	0.88	0.99	0.98
101.88	0.94	0.76	0.98	0.90	1.00	0.84	1.00	0.99
107.54	0.91	0.75	0.97	0.88	1.00	0.80	1.00	1.00
113.20	0.88	0.74	0.96	0.85	0.99	0.77	1.00	1.00
118.86	0.85	0.72	0.95	0.82	0.98	0.73	1.00	1.00
124.52	0.80	0.69	0.93	0.80	0.96	0.68	0.99	1.00
130.18	0.76	0.68	0.91	0.77	0.93	0.64	0.99	0.99
141.50	0.71	0.67	0.87	0.70	0.88	0.59	0.98	0.98
155.65	0.65	0.62	0.82	0.62	0.82	0.53	0.95	0.94
169.80	0.61	0.57	0.77	0.56	0.76	0.49	0.92	0.90
183.95	0.57	0.55	0.73	0.51	0.71	0.46	0.88	0.85
198.10	0.53	0.55	0.69	0.47	0.66	0.43	0.83	0.80
212.25	0.50	0.54	0.65	0.44	0.62	0.41	0.79	0.74
290.30	0.38	0.40	0.51	0.33	0.44	0.33	0.57	0.50
424.50	0.27	0.31	0.38	0.22	0.29	0.24	0.40	0.31
566.00	0.22	0.16	0.31	0.17	0.21	0.22	0.31	0.20
849.00	0.16	0.07	0.21	0.12	0.15	0.12	0.21	0.12
1132.00	0.10	0.07	0.12	0.06	0.10	0.07	0.12	0.09

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
1188.60	0.10	0.08	0.10	0.05	0.08	0.07	0.11	0.08
AF	0.00	0.00	-0.02	-0.01	-0.05	0.00	-0.05	-0.04

Note: Adjustment factors applied only for flows of 124.52cms and greater.

Table 6 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Spawning
0	0.00	0.00	0.00
14.15	0.78	0.80	0.19
16.98	0.80	0.82	0.25
19.81	0.83	0.84	0.31
22.64	0.85	0.85	0.38
25.47	0.86	0.87	0.45
28.30	0.88	0.88	0.52
31.13	0.89	0.89	0.58
33.96	0.91	0.90	0.64
36.79	0.92	0.91	0.70
39.62	0.93	0.92	0.74
42.45	0.94	0.93	0.77
45.28	0.94	0.94	0.81
48.11	0.95	0.95	0.84
50.94	0.96	0.96	0.87
53.77	0.96	0.96	0.89
56.60	0.97	0.97	0.91
59.43	0.98	0.97	0.93
62.26	0.98	0.98	0.95
65.09	0.99	0.98	0.97
67.92	0.99	0.98	0.98
70.75	0.99	0.99	0.99
71.97	1.00	0.99	0.99
73.58	1.00	0.99	1.00
76.41	1.00	0.99	1.00
79.24	1.00	0.99	1.00
82.07	1.00	1.00	1.00
84.90	1.00	1.00	0.99
87.73	0.99	1.00	0.99
90.56	0.99	1.00	0.98
96.22	0.98	1.00	0.95

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Spawning
101.88	0.96	0.99	0.93
107.54	0.94	0.98	0.89
113.20	0.91	0.97	0.86
118.86	0.89	0.95	0.82
124.52	0.86	0.94	0.77
130.18	0.83	0.92	0.73
141.50	0.77	0.88	0.67
155.65	0.71	0.82	0.60
169.80	0.66	0.78	0.54
183.95	0.60	0.73	0.49
198.10	0.56	0.69	0.44
212.25	0.52	0.65	0.40
290.30	0.39	0.51	0.28
424.50	0.28	0.37	0.22
566.00	0.22	0.29	0.19
849.00	0.17	0.22	0.14
1132.00	0.12	0.14	0.07
1188.60	0.11	0.13	0.06
AF	0.00	-0.01	0.00

Note: Adjustment factors applied only for flows of 124.52cms and greater.

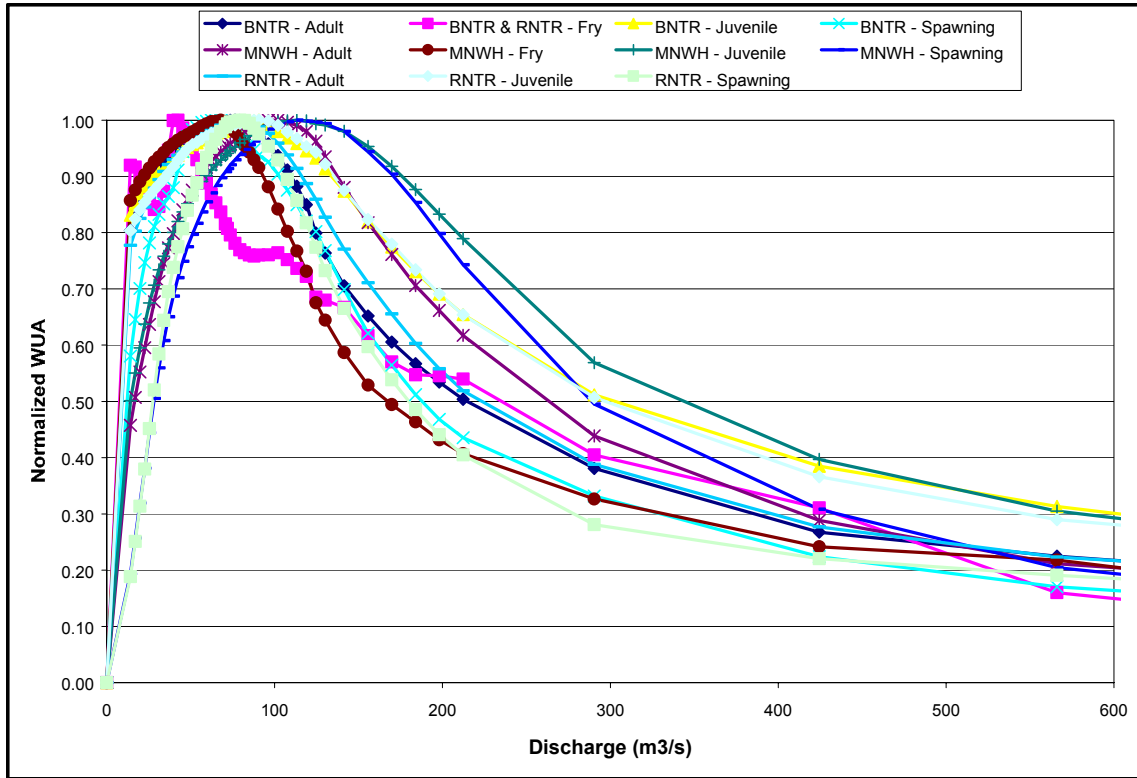


Figure 6: Bow River from the Carseland Weir upstream to the confluence of the Highwood River (reach BW3) range standardized WUA curves

Reach BW4

Table 7: Bow River from the confluence of the Highwood River upstream to the WID Weir (reach BW4) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.15	0.68	1.00	0.78	0.80	0.57	0.91	0.65	0.46
16.98	0.75	0.97	0.84	0.85	0.65	0.95	0.72	0.54
19.81	0.81	0.92	0.89	0.90	0.72	0.98	0.77	0.61
21.23	0.83	0.88	0.91	0.92	0.75	0.98	0.79	0.64
25.47	0.90	0.78	0.95	0.96	0.83	1.00	0.85	0.73
29.72	0.94	0.70	0.97	0.97	0.89	1.00	0.89	0.80
33.96	0.97	0.61	0.99	0.98	0.93	1.00	0.92	0.84
38.21	0.99	0.54	1.00	0.99	0.95	0.97	0.94	0.87

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
42.45	1.00	0.48	1.00	1.00	0.97	0.93	0.96	0.89
46.70	1.00	0.45	1.00	1.00	0.98	0.89	0.97	0.92
50.94	0.98	0.43	0.99	0.97	0.99	0.84	0.99	0.94
55.19	0.95	0.41	0.98	0.95	1.00	0.79	1.00	0.96
59.43	0.92	0.40	0.96	0.92	1.00	0.74	1.00	0.98
63.68	0.89	0.38	0.94	0.90	1.00	0.70	1.00	0.99
70.75	0.83	0.37	0.88	0.84	0.98	0.63	0.99	1.00
79.30	0.76	0.41	0.82	0.78	0.93	0.58	0.97	1.00
84.90	0.71	0.49	0.78	0.75	0.89	0.56	0.96	0.99
91.98	0.67	0.57	0.74	0.71	0.84	0.54	0.94	0.97
99.05	0.63	0.58	0.71	0.70	0.79	0.52	0.92	0.95
106.13	0.59	0.57	0.68	0.69	0.75	0.49	0.90	0.93
113.20	0.56	0.55	0.64	0.67	0.71	0.48	0.88	0.90
120.28	0.54	0.53	0.62	0.65	0.67	0.48	0.86	0.88
127.35	0.52	0.52	0.59	0.64	0.64	0.48	0.84	0.86
134.43	0.51	0.51	0.56	0.61	0.60	0.49	0.81	0.83
141.50	0.50	0.50	0.54	0.59	0.57	0.49	0.78	0.80
148.58	0.50	0.50	0.52	0.56	0.55	0.49	0.75	0.77
154.72	0.50	0.50	0.51	0.54	0.54	0.49	0.73	0.75
169.80	0.49	0.50	0.48	0.52	0.51	0.48	0.68	0.69
183.95	0.48	0.48	0.46	0.50	0.48	0.47	0.63	0.64
198.10	0.47	0.46	0.44	0.49	0.46	0.46	0.59	0.60
212.25	0.46	0.44	0.42	0.48	0.45	0.45	0.55	0.56
226.40	0.46	0.41	0.41	0.47	0.44	0.44	0.51	0.53
254.70	0.45	0.35	0.39	0.45	0.43	0.42	0.46	0.47
283.00	0.44	0.30	0.38	0.42	0.40	0.42	0.43	0.43
424.50	0.40	0.14	0.33	0.32	0.33	0.33	0.38	0.37
566.00	0.35	0.13	0.27	0.27	0.28	0.27	0.32	0.30
AF	0.00	0.00	-0.06	0.00	-0.06	0.00	-0.02	-0.02

Note: Adjustment factors applied only for flows of 99.05cms and greater.

Table 7 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Spawning
0	0.00	0.00	0.00
14.15	0.64	0.73	0.55
16.98	0.70	0.79	0.68
19.81	0.76	0.84	0.76

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Spawning
21.23	0.78	0.86	0.79
25.47	0.85	0.92	0.88
29.72	0.91	0.95	0.94
33.96	0.94	0.97	0.98
38.21	0.97	0.98	1.00
42.45	0.99	0.99	1.00
46.70	1.00	1.00	1.00
50.94	1.00	1.00	0.98
55.19	0.98	0.99	0.96
59.43	0.97	0.98	0.93
63.68	0.94	0.96	0.89
70.75	0.89	0.91	0.83
79.30	0.83	0.86	0.75
84.90	0.79	0.82	0.71
91.98	0.74	0.78	0.67
99.05	0.71	0.75	0.63
106.13	0.66	0.72	0.57
113.20	0.62	0.68	0.53
120.28	0.59	0.65	0.49
127.35	0.56	0.63	0.46
134.43	0.54	0.60	0.45
141.50	0.52	0.57	0.44
148.58	0.50	0.55	0.44
154.72	0.49	0.54	0.44
169.80	0.47	0.50	0.44
183.95	0.45	0.48	0.44
198.10	0.43	0.46	0.43
212.25	0.42	0.45	0.42
226.40	0.42	0.43	0.42
254.70	0.42	0.41	0.41
283.00	0.42	0.39	0.41
424.50	0.40	0.34	0.33
566.00	0.35	0.29	0.26
AF	-0.01	-0.05	0.00

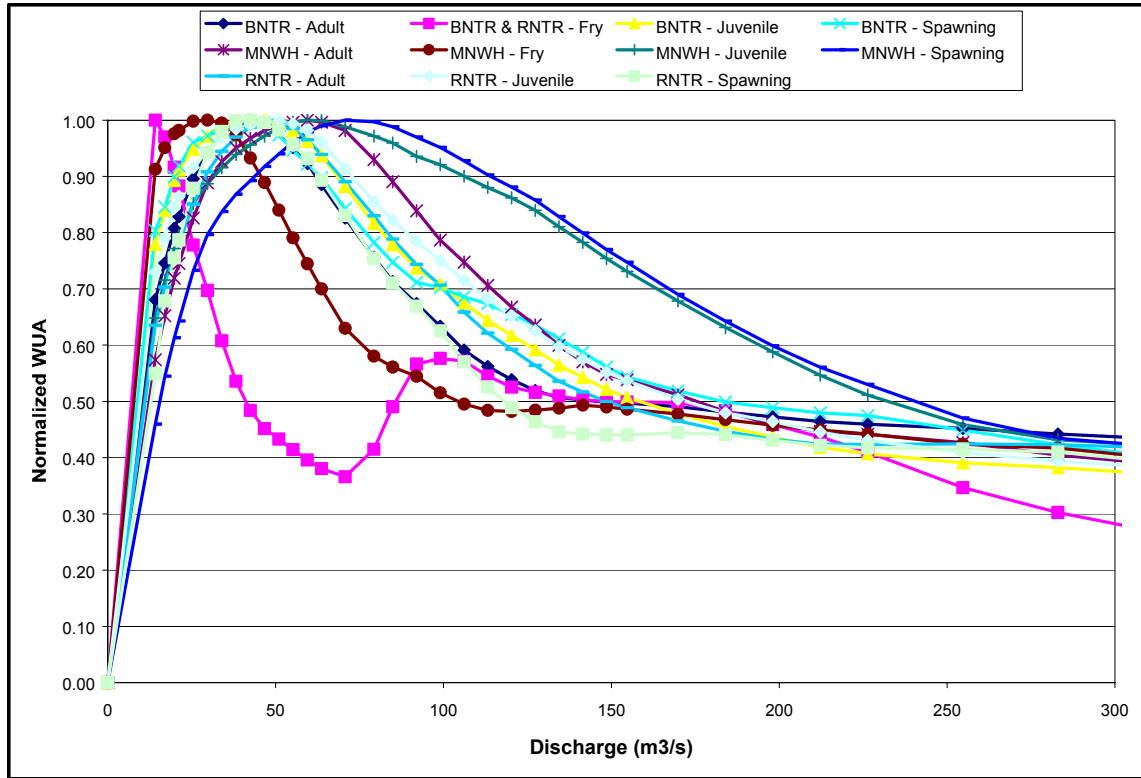


Figure 7: Bow River from the confluence of the Highwood River upstream to the WID Weir (reach BW4) range standardized WUA curves

OLDMAN RIVER WUA CURVES

Reach OM1

No Data

Reach OM2

Table 8: Oldman River from the confluence of Willow Creek upstream to the confluence of the St. Mary River (reach OM2) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0	0	0	0	0	0	0	0	0
4.25	0.66	1.00	0.75	0.35	0.24	0.87	0.31	0.01
8.49	0.77	0.95	0.86	0.60	0.37	0.95	0.47	0.10
10.54	0.81	0.91	0.90	0.69	0.44	0.98	0.53	0.17
12.74	0.84	0.88	0.92	0.76	0.50	0.99	0.60	0.25
16.98	0.89	0.82	0.95	0.83	0.60	1.00	0.70	0.41
21.23	0.93	0.75	0.97	0.86	0.69	1.00	0.77	0.54
25.47	0.95	0.66	0.97	0.87	0.75	0.99	0.81	0.64
29.72	0.96	0.58	0.97	0.88	0.79	0.99	0.84	0.70
33.96	0.98	0.51	1.00	1.00	0.87	0.99	0.92	0.78
38.21	0.99	0.45	0.99	1.00	0.90	0.98	0.94	0.83
42.45	0.99	0.42	0.97	0.99	0.92	0.97	0.96	0.87
46.70	1.00	0.40	0.96	0.98	0.93	0.95	0.97	0.90
50.94	1.00	0.38	0.94	0.97	0.94	0.92	0.97	0.92
55.19	0.99	0.37	0.93	0.96	0.95	0.89	0.97	0.93
59.43	0.98	0.34	0.91	0.94	0.96	0.85	0.97	0.94
61.30	0.98	0.35	0.91	0.94	0.99	0.84	1.00	0.99
63.68	0.97	0.34	0.90	0.93	1.00	0.83	1.00	0.99
67.92	0.95	0.33	0.88	0.92	1.00	0.79	1.00	1.00
72.17	0.93	0.31	0.86	0.90	1.00	0.76	0.99	1.00
76.41	0.90	0.30	0.84	0.88	0.99	0.73	0.99	1.00
80.66	0.88	0.29	0.82	0.85	0.98	0.70	0.98	1.00
84.90	0.84	0.29	0.80	0.81	0.97	0.67	0.97	1.00
89.15	0.81	0.28	0.78	0.78	0.95	0.64	0.96	0.99
93.39	0.78	0.28	0.76	0.74	0.94	0.61	0.96	0.99
97.64	0.75	0.28	0.73	0.70	0.92	0.59	0.95	0.98

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
101.88	0.72	0.28	0.71	0.67	0.91	0.56	0.94	0.97
106.13	0.69	0.29	0.69	0.64	0.89	0.54	0.93	0.97
110.37	0.67	0.28	0.66	0.61	0.87	0.52	0.91	0.96
114.62	0.64	0.28	0.64	0.57	0.85	0.50	0.90	0.95
124.83	0.59	0.26	0.59	0.51	0.79	0.46	0.86	0.92
139.81	0.53	0.25	0.53	0.41	0.70	0.41	0.79	0.85
169.80	0.42	0.23	0.44	0.29	0.59	0.33	0.66	0.69
226.40	0.30	0.23	0.32	0.16	0.39	0.26	0.47	0.45
283.00	0.26	0.23	0.27	0.12	0.30	0.24	0.35	0.29
396.20	0.23	0.21	0.24	0.10	0.23	0.23	0.25	0.15
509.40	0.23	0.18	0.25	0.09	0.21	0.22	0.23	0.13
566.00	0.23	0.16	0.25	0.09	0.21	0.21	0.23	0.12
679.20	0.22	0.12	0.24	0.09	0.21	0.20	0.23	0.12
792.40	0.22	0.09	0.24	0.08	0.20	0.19	0.23	0.12
905.60	0.22	0.06	0.23	0.07	0.19	0.18	0.23	0.12
1018.80	0.21	0.05	0.22	0.08	0.19	0.17	0.22	0.12
1132.00	0.21	0.05	0.21	0.08	0.19	0.16	0.22	0.11
1245.20	0.21	0.04	0.20	0.08	0.18	0.16	0.21	0.11
1358.40	0.21	0.03	0.20	0.08	0.18	0.15	0.20	0.10
1471.60	0.19	0.02	0.18	0.07	0.18	0.13	0.19	0.10
1584.80	0.19	0.02	0.17	0.06	0.17	0.13	0.19	0.10
1698.00	0.19	0.02	0.16	0.06	0.17	0.13	0.18	0.10
1782.90	0.19	0.01	0.15	0.06	0.17	0.13	0.17	0.09
AF	-0.01	-0.06	-0.02	-0.04	0.00	-0.04	0.00	0.00

Note: Adjustment factors applied only for flows of 61.3cms and greater.

Table 8 (continued)

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
0	0	0	0	0
4.25	0.71	1.00	0.73	0.00
8.49	0.83	0.73	0.87	0.02
10.54	0.88	0.62	0.91	0.03
12.74	0.93	0.54	0.95	0.07
16.98	0.98	0.45	0.99	0.18
21.23	1.00	0.41	1.00	0.33
25.47	0.98	0.39	0.99	0.46
29.72	0.94	0.37	0.97	0.58

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
33.96	0.96	0.19	0.97	0.63
38.21	0.92	0.17	0.94	0.70
42.45	0.88	0.15	0.90	0.76
46.70	0.84	0.14	0.86	0.82
50.94	0.80	0.14	0.81	0.87
55.19	0.76	0.13	0.77	0.92
59.43	0.73	0.13	0.72	0.95
61.30	0.68	0.10	0.69	0.99
63.68	0.66	0.10	0.67	1.00
67.92	0.62	0.10	0.62	1.00
72.17	0.58	0.10	0.58	0.99
76.41	0.55	0.10	0.54	0.97
80.66	0.51	0.09	0.50	0.95
84.90	0.48	0.09	0.46	0.92
89.15	0.46	0.10	0.43	0.89
93.39	0.43	0.10	0.40	0.85
97.64	0.40	0.10	0.38	0.80
101.88	0.38	0.10	0.36	0.75
106.13	0.36	0.10	0.34	0.70
110.37	0.34	0.10	0.32	0.65
114.62	0.32	0.11	0.31	0.60
124.83	0.29	0.11	0.28	0.50
139.81	0.25	0.12	0.24	0.44
169.80	0.20	0.14	0.20	0.31
226.40	0.16	0.16	0.17	0.16
283.00	0.15	0.17	0.16	0.12
396.20	0.15	0.17	0.16	0.07
509.40	0.16	0.16	0.17	0.06
566.00	0.16	0.16	0.18	0.05
679.20	0.18	0.14	0.19	0.04
792.40	0.20	0.13	0.21	0.05
905.60	0.21	0.12	0.21	0.06
1018.80	0.22	0.11	0.21	0.08
1132.00	0.22	0.11	0.22	0.09
1245.20	0.22	0.11	0.21	0.11
1358.40	0.21	0.10	0.21	0.12
1471.60	0.20	0.09	0.21	0.09
1584.80	0.20	0.09	0.21	0.08
1698.00	0.20	0.08	0.20	0.08

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
1782.90	0.19	0.07	0.20	0.08
AF	0.00	0.00	0.00	0.00

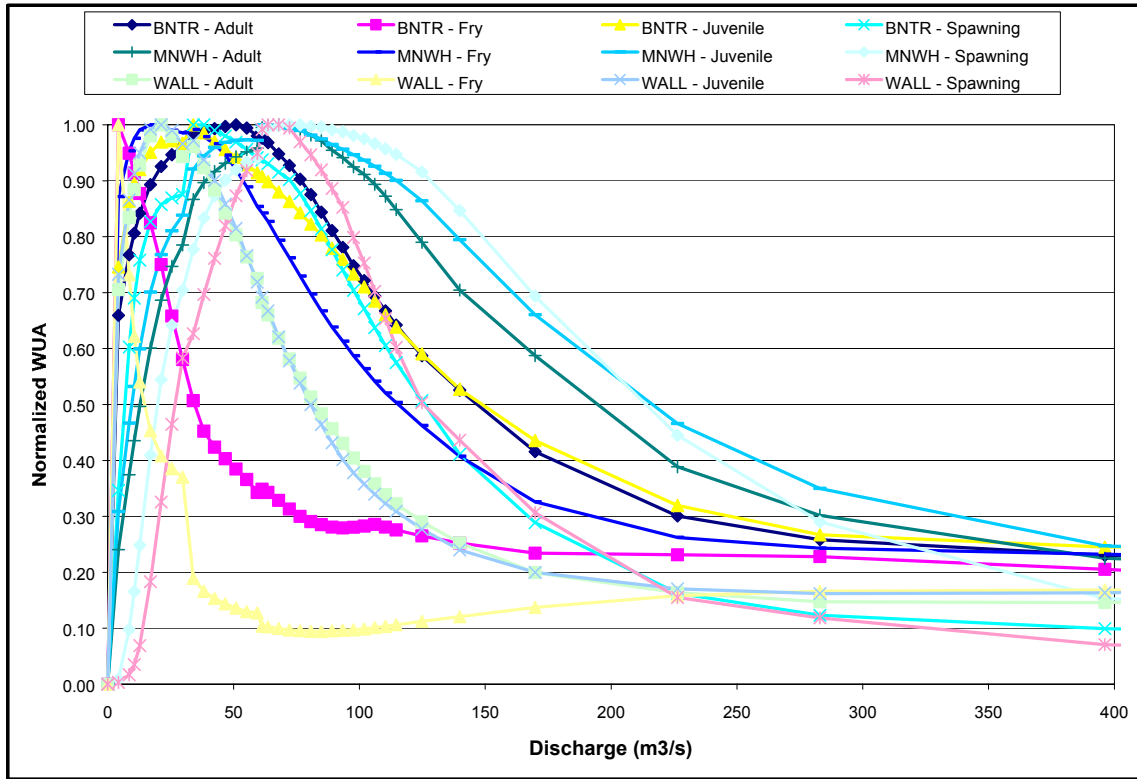


Figure 8: Oldman River from the confluence of Willow Creek upstream to the confluence of the St. Mary River (reach OM2) range standardized WUA curves

Reach OM3

Table 9: Oldman River from the confluence of the St. Mary River upstream to the confluence of the Belly River (reach OM3) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.99	0.31	1.00	0.57	0.33	0.16	0.64	0.29	0.06
6.08	0.34	0.98	0.62	0.41	0.22	0.67	0.38	0.14

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
7.99	0.37	0.95	0.66	0.46	0.26	0.70	0.45	0.20
11.28	0.42	0.88	0.72	0.49	0.33	0.73	0.53	0.30
13.98	0.45	0.80	0.76	0.51	0.36	0.75	0.58	0.34
15.98	0.46	0.74	0.78	0.54	0.39	0.77	0.61	0.37
21.97	0.52	0.58	0.85	0.56	0.44	0.79	0.68	0.43
29.96	0.57	0.46	0.91	0.56	0.50	0.76	0.75	0.49
40.19	0.64	0.32	0.99	0.65	0.62	0.73	0.89	0.62
49.93	0.65	0.33	1.00	0.65	0.66	0.68	0.93	0.66
69.90	0.65	0.35	0.92	0.71	0.72	0.62	0.98	0.72
89.86	0.69	0.42	0.86	0.77	0.77	0.70	0.97	0.78
99.86	0.73	0.41	0.85	0.80	0.80	0.73	1.00	0.83
113.20	0.81	0.37	0.78	0.84	0.87	0.77	0.99	0.88
127.35	0.87	0.35	0.74	0.90	0.90	0.84	0.95	0.91
141.50	0.91	0.32	0.75	0.93	0.93	0.92	0.95	0.94
155.65	0.95	0.28	0.79	0.97	0.97	0.98	0.97	0.97
169.80	1.00	0.22	0.79	1.00	1.00	1.00	1.00	1.00
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 9 (continued)

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
0.00	0.00	0.00	0.00	0.00
3.99	0.38	1.00	0.52	0.03
6.08	0.41	0.67	0.56	0.06
7.99	0.44	0.55	0.58	0.10
11.28	0.45	0.51	0.59	0.18
13.98	0.45	0.50	0.60	0.23
15.98	0.45	0.50	0.60	0.26
21.97	0.45	0.50	0.60	0.32
29.96	0.46	0.49	0.59	0.39
40.19	0.45	0.12	0.53	0.56
49.93	0.44	0.10	0.48	0.60
69.90	0.43	0.13	0.46	0.64
89.86	0.46	0.13	0.52	0.66
99.86	0.48	0.13	0.58	0.70
113.20	0.53	0.14	0.65	0.76
127.35	0.65	0.15	0.75	0.83
141.50	0.79	0.15	0.85	0.89
155.65	0.92	0.15	0.94	0.93

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
169.80	1.00	0.16	1.00	1.00
AF	0.00	0.00	0.00	0.00

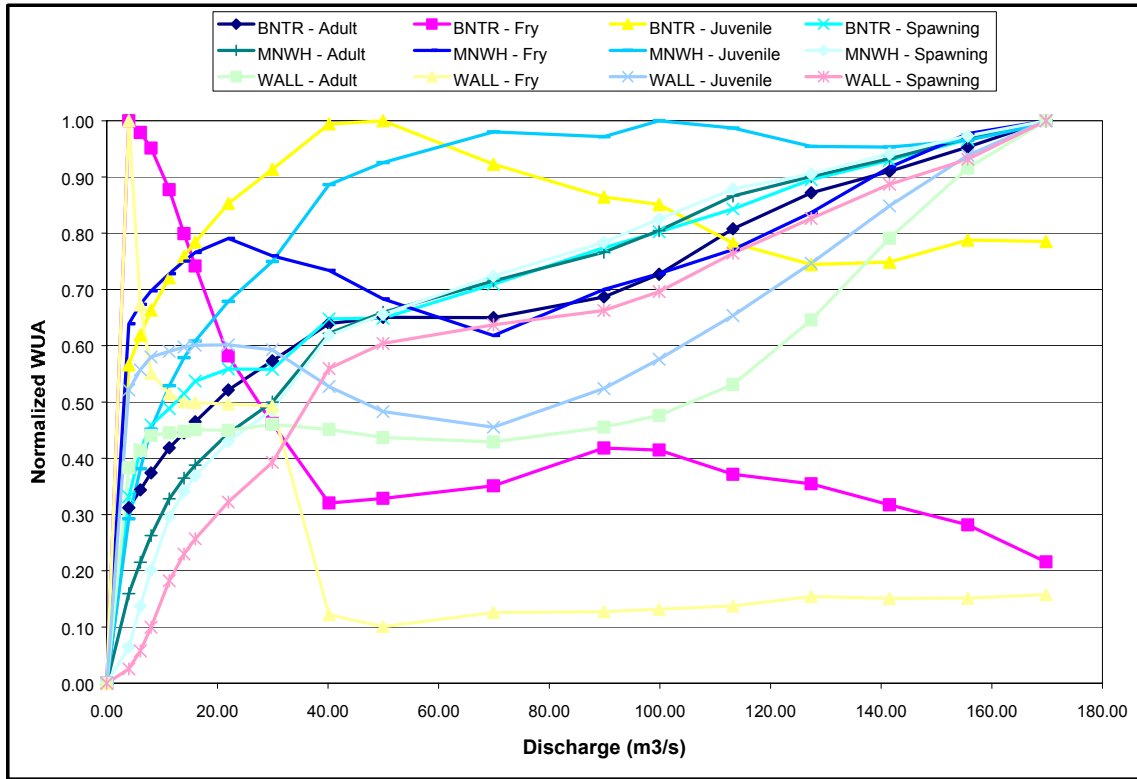


Figure 9: Oldman River from the confluence of the St. Mary River upstream to the confluence of the Belly River (reach OM3) range standardized WUA curves

Reach OM4

Table 10: Oldman River from the confluence of the Belly River upstream to the confluence of Willow Creek (reach OM4) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.83	0.56	0.99	0.56	0.33	0.20	0.74	0.25	0.04
4.25	0.60	1.00	0.63	0.45	0.26	0.80	0.32	0.07

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
5.66	0.64	0.99	0.69	0.55	0.31	0.84	0.37	0.10
8.49	0.72	0.92	0.77	0.71	0.41	0.91	0.48	0.20
9.59	0.74	0.90	0.80	0.77	0.45	0.93	0.52	0.25
11.32	0.78	0.86	0.83	0.83	0.51	0.95	0.58	0.32
14.15	0.83	0.80	0.88	0.90	0.59	0.98	0.66	0.44
16.98	0.87	0.77	0.91	0.93	0.67	0.99	0.73	0.56
21.23	0.90	0.72	0.95	0.95	0.76	0.98	0.80	0.70
25.47	0.93	0.65	0.96	0.96	0.82	0.98	0.86	0.79
28.18	0.98	0.60	0.99	1.00	0.91	1.00	0.92	0.86
32.55	1.00	0.56	1.00	0.99	0.96	0.97	0.95	0.92
36.79	1.00	0.54	1.00	0.98	0.98	0.95	0.97	0.95
41.04	1.00	0.52	0.98	0.96	0.99	0.92	0.99	0.98
45.28	1.00	0.51	0.97	0.94	1.00	0.89	1.00	0.99
49.53	1.00	0.50	0.95	0.92	1.00	0.85	1.00	1.00
53.77	0.99	0.49	0.93	0.89	1.00	0.81	1.00	1.00
58.02	0.98	0.47	0.91	0.85	0.99	0.77	1.00	1.00
62.26	0.95	0.47	0.89	0.82	0.99	0.74	0.99	1.00
66.51	0.92	0.47	0.87	0.78	0.98	0.71	0.99	0.99
70.75	0.89	0.46	0.84	0.75	0.98	0.68	0.98	0.99
75.00	0.86	0.46	0.81	0.71	0.97	0.65	0.97	0.98
79.24	0.82	0.45	0.78	0.68	0.95	0.62	0.95	0.97
83.49	0.78	0.45	0.76	0.64	0.93	0.60	0.94	0.96
87.73	0.75	0.44	0.73	0.61	0.90	0.58	0.92	0.94
91.98	0.71	0.44	0.71	0.57	0.87	0.57	0.90	0.92
96.22	0.69	0.43	0.68	0.54	0.83	0.55	0.88	0.90
100.47	0.67	0.43	0.66	0.50	0.80	0.54	0.85	0.88
104.71	0.65	0.42	0.64	0.47	0.77	0.53	0.83	0.85
113.20	0.61	0.42	0.61	0.42	0.72	0.51	0.79	0.81
127.35	0.56	0.41	0.57	0.36	0.65	0.49	0.73	0.73
141.50	0.52	0.43	0.54	0.32	0.59	0.48	0.67	0.65
169.80	0.47	0.46	0.50	0.28	0.50	0.48	0.57	0.51
198.10	0.46	0.44	0.49	0.26	0.42	0.46	0.50	0.39
226.40	0.47	0.41	0.48	0.26	0.40	0.45	0.45	0.32
254.70	0.48	0.38	0.46	0.25	0.39	0.44	0.43	0.29
283.00	0.48	0.35	0.44	0.24	0.38	0.43	0.41	0.26
424.50	0.49	0.43	0.39	0.24	0.36	0.44	0.35	0.20
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 10 (continued)

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
0.00	0.00	0.00	0.00	0.00
2.83	0.55	1.00	0.61	0.01
4.25	0.63	0.94	0.68	0.03
5.66	0.69	0.85	0.74	0.06
8.49	0.80	0.67	0.84	0.10
9.59	0.84	0.60	0.87	0.11
11.32	0.89	0.51	0.92	0.15
14.15	0.96	0.41	0.97	0.24
16.98	1.00	0.35	1.00	0.36
21.23	0.99	0.29	1.00	0.51
25.47	0.95	0.26	0.98	0.65
28.18	0.90	0.19	0.95	0.84
32.55	0.83	0.19	0.91	0.93
36.79	0.77	0.19	0.86	0.97
41.04	0.71	0.19	0.80	0.99
45.28	0.67	0.20	0.75	1.00
49.53	0.63	0.20	0.69	1.00
53.77	0.59	0.21	0.64	1.00
58.02	0.55	0.22	0.58	1.00
62.26	0.51	0.23	0.53	0.99
66.51	0.48	0.24	0.49	0.97
70.75	0.45	0.25	0.45	0.94
75.00	0.41	0.26	0.42	0.86
79.24	0.38	0.27	0.40	0.80
83.49	0.36	0.28	0.38	0.73
87.73	0.35	0.29	0.36	0.66
91.98	0.33	0.30	0.34	0.61
96.22	0.32	0.31	0.33	0.55
100.47	0.30	0.32	0.32	0.52
104.71	0.30	0.33	0.32	0.49
113.20	0.29	0.35	0.31	0.43
127.35	0.28	0.38	0.29	0.34
141.50	0.28	0.41	0.30	0.27
169.80	0.29	0.43	0.33	0.20
198.10	0.32	0.40	0.36	0.19
226.40	0.34	0.38	0.39	0.17
254.70	0.38	0.35	0.42	0.14
283.00	0.41	0.31	0.45	0.11

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
424.50	0.58	0.28	0.58	0.13
AF	0.00	0.00	0.00	0.00

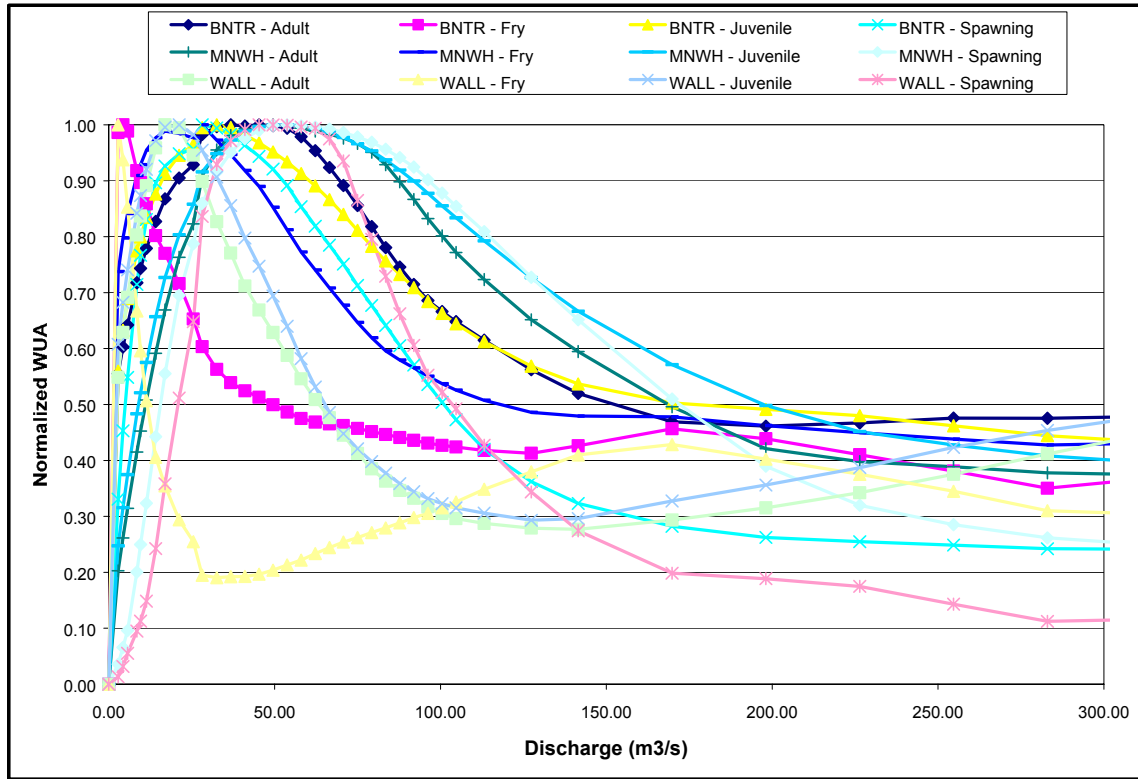


Figure 10: Oldman River from the confluence of the Belly River upstream to the confluence of Willow Creek (reach OM4) range standardized WUA curves

Reach OM5

Table 11: Oldman River from the confluence of Willow Creek upstream to the LNID Weir (reach OM5) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	0.36	0.81	0.48	0.44	0.26	0.62	0.30	0.18
3.54	0.39	0.79	0.51	0.47	0.30	0.65	0.33	0.21
3.99	0.41	0.76	0.53	0.49	0.32	0.67	0.35	0.23

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR & RNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
5.56	0.47	0.73	0.58	0.54	0.40	0.71	0.42	0.30
6.37	0.49	0.77	0.61	0.55	0.43	0.72	0.44	0.33
12.74	0.63	0.91	0.79	0.88	0.65	0.87	0.66	0.56
14.15	0.65	0.90	0.82	0.91	0.69	0.89	0.69	0.59
15.57	0.66	0.89	0.85	0.93	0.72	0.90	0.73	0.63
16.98	0.68	0.90	0.87	0.95	0.76	0.92	0.76	0.67
18.40	0.69	0.89	0.90	0.96	0.79	0.93	0.79	0.70
19.97	0.70	0.86	0.92	0.98	0.82	0.94	0.83	0.74
21.23	0.70	0.83	0.94	0.99	0.84	0.94	0.85	0.77
22.64	0.72	0.80	0.96	1.00	0.86	0.95	0.87	0.80
24.06	0.73	0.76	0.97	1.00	0.87	0.95	0.89	0.83
25.47	0.74	0.74	0.97	0.99	0.89	0.95	0.91	0.85
26.56	0.75	0.73	0.98	0.98	0.90	0.95	0.93	0.87
28.30	0.76	0.72	0.99	0.96	0.92	0.94	0.94	0.90
31.13	0.78	0.72	1.00	0.93	0.96	0.93	0.97	0.94
33.96	0.79	0.72	1.00	0.88	0.98	0.91	0.98	0.96
36.79	0.79	0.72	1.00	0.84	0.99	0.89	0.99	0.98
39.95	0.79	0.73	0.99	0.79	1.00	0.86	1.00	0.99
42.45	0.78	0.73	0.98	0.75	1.00	0.85	1.00	1.00
45.28	0.77	0.74	0.96	0.72	0.99	0.84	1.00	1.00
48.11	0.76	0.75	0.95	0.68	0.98	0.83	0.99	1.00
50.94	0.76	0.76	0.93	0.65	0.96	0.83	0.98	0.99
53.77	0.75	0.77	0.91	0.62	0.94	0.82	0.97	0.98
56.67	0.75	0.77	0.90	0.59	0.92	0.82	0.95	0.95
64.91	0.73	0.80	0.86	0.52	0.86	0.82	0.89	0.89
84.90	0.72	0.88	0.81	0.40	0.74	0.86	0.76	0.72
99.05	0.74	0.95	0.81	0.35	0.68	0.92	0.70	0.63
113.20	0.77	0.98	0.82	0.30	0.65	0.96	0.64	0.55
127.35	0.80	1.00	0.85	0.27	0.64	0.97	0.61	0.50
141.50	0.83	0.98	0.85	0.24	0.62	0.97	0.59	0.46
169.80	0.90	0.88	0.82	0.20	0.58	0.98	0.54	0.38
198.10	0.96	0.77	0.81	0.16	0.54	1.00	0.50	0.32
226.40	0.99	0.65	0.79	0.13	0.53	1.00	0.47	0.27
254.70	1.00	0.54	0.78	0.13	0.52	1.00	0.44	0.23
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 11 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Juvenile	RNTR - Spawning
0.00	0.00	0.00	0.00
3.00	0.35	0.45	0.36
3.54	0.38	0.49	0.39
3.99	0.40	0.51	0.41
5.56	0.45	0.57	0.47
6.37	0.48	0.60	0.49
12.74	0.64	0.78	0.80
14.15	0.66	0.81	0.84
15.57	0.68	0.83	0.89
16.98	0.71	0.86	0.93
18.40	0.72	0.88	0.95
19.97	0.74	0.91	0.97
21.23	0.75	0.92	0.97
22.64	0.77	0.94	0.99
24.06	0.77	0.96	0.99
25.47	0.78	0.97	1.00
26.56	0.79	0.97	1.00
28.30	0.81	0.98	1.00
31.13	0.82	0.99	0.99
33.96	0.84	1.00	0.97
36.79	0.84	1.00	0.93
39.95	0.84	0.99	0.88
42.45	0.84	0.98	0.84
45.28	0.84	0.97	0.80
48.11	0.83	0.96	0.76
50.94	0.83	0.94	0.72
53.77	0.82	0.93	0.69
56.67	0.81	0.91	0.66
64.91	0.79	0.88	0.59
84.90	0.76	0.84	0.46
99.05	0.76	0.83	0.40
113.20	0.77	0.85	0.34
127.35	0.79	0.86	0.29
141.50	0.81	0.88	0.25
169.80	0.86	0.87	0.18
198.10	0.92	0.86	0.13
226.40	0.97	0.85	0.10
254.70	1.00	0.83	0.08

AF	0.00	0.00	0.00
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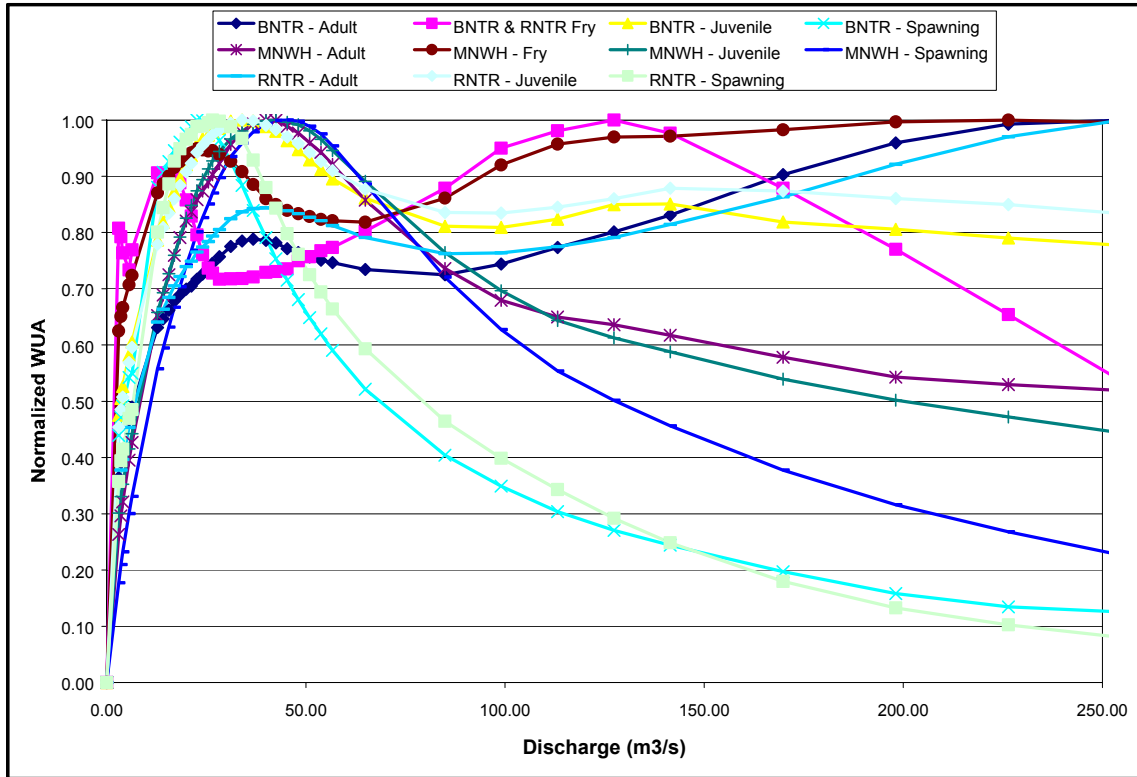


Figure 11: Oldman River from the confluence of Willow Creek upstream to the LNID Weir (reach OM5) range standardized WUA curves

Reach OM6

Table 12: Oldman River from the LNID Weir upstream to the confluence of Pincher Creek (reach OM6) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.42	0.65	0.96	0.59	0.22	0.20	0.79	0.22	0.01
2.12	0.68	0.99	0.63	0.31	0.24	0.81	0.27	0.02
2.83	0.70	0.99	0.66	0.38	0.28	0.83	0.31	0.05
3.54	0.72	1.00	0.69	0.46	0.32	0.85	0.36	0.08

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
3.99	0.73	0.99	0.70	0.50	0.35	0.86	0.38	0.10
4.95	0.75	0.97	0.73	0.58	0.40	0.87	0.44	0.16
5.66	0.77	0.96	0.75	0.63	0.43	0.89	0.48	0.21
6.37	0.79	0.94	0.77	0.67	0.47	0.90	0.51	0.26
7.08	0.80	0.92	0.78	0.71	0.50	0.91	0.54	0.30
7.85	0.81	0.90	0.79	0.75	0.53	0.91	0.57	0.34
8.49	0.83	0.87	0.80	0.77	0.55	0.92	0.59	0.37
9.91	0.85	0.83	0.82	0.81	0.60	0.94	0.63	0.44
11.32	0.88	0.79	0.83	0.84	0.64	0.95	0.67	0.50
12.74	0.90	0.80	0.87	0.95	0.74	0.98	0.75	0.64
14.15	0.92	0.75	0.89	0.97	0.77	0.99	0.78	0.68
14.98	0.93	0.73	0.89	0.98	0.79	0.99	0.79	0.70
16.98	0.95	0.68	0.91	0.99	0.82	1.00	0.82	0.75
18.40	0.97	0.65	0.92	1.00	0.84	1.00	0.84	0.77
19.81	0.98	0.63	0.94	1.00	0.86	0.99	0.86	0.79
20.82	0.99	0.61	0.95	1.00	0.88	0.99	0.87	0.81
22.64	1.00	0.59	0.96	0.99	0.90	0.98	0.89	0.84
24.97	1.00	0.56	0.98	0.98	0.93	0.95	0.92	0.87
28.30	0.99	0.54	0.98	0.94	0.96	0.90	0.94	0.90
30.82	0.99	0.49	1.00	0.95	0.98	0.87	0.96	0.95
33.96	0.96	0.46	0.98	0.92	0.99	0.80	0.97	0.97
36.79	0.93	0.42	0.96	0.89	1.00	0.76	0.98	0.98
39.95	0.89	0.39	0.93	0.85	0.99	0.71	1.00	0.99
42.45	0.87	0.37	0.91	0.82	0.98	0.68	1.00	1.00
45.28	0.84	0.36	0.88	0.78	0.96	0.65	1.00	1.00
48.11	0.82	0.34	0.84	0.75	0.93	0.62	0.99	1.00
49.93	0.81	0.33	0.82	0.72	0.92	0.61	0.99	0.99
50.94	0.80	0.33	0.81	0.71	0.91	0.60	0.98	0.99
53.77	0.78	0.31	0.78	0.68	0.89	0.58	0.97	0.98
57.36	0.77	0.30	0.75	0.64	0.87	0.56	0.95	0.97
69.90	0.72	0.25	0.64	0.54	0.80	0.50	0.85	0.91
79.89	0.68	0.22	0.57	0.48	0.76	0.47	0.77	0.85
84.90	0.67	0.21	0.55	0.46	0.75	0.45	0.74	0.83
141.50	0.55	0.07	0.30	0.32	0.63	0.33	0.50	0.66
198.10	0.52	0.05	0.19	0.25	0.56	0.32	0.41	0.59
226.40	0.50	0.05	0.17	0.23	0.54	0.33	0.38	0.56
254.70	0.49	0.06	0.16	0.22	0.54	0.33	0.37	0.55
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 12 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Fry	RNTR - Juvenile	RNTR - Spawning
0.00	0.00	0.00	0.00	0.00
1.42	0.56	0.96	0.58	0.03
2.12	0.60	0.99	0.62	0.05
2.83	0.63	0.99	0.65	0.08
3.54	0.65	1.00	0.68	0.11
3.99	0.67	0.99	0.69	0.14
4.95	0.70	0.97	0.72	0.20
5.66	0.71	0.96	0.74	0.25
6.37	0.73	0.94	0.76	0.30
7.08	0.75	0.92	0.77	0.35
7.85	0.76	0.90	0.78	0.38
8.49	0.77	0.87	0.79	0.41
9.91	0.80	0.83	0.81	0.49
11.32	0.82	0.79	0.83	0.57
12.74	0.86	0.80	0.86	0.74
14.15	0.89	0.75	0.88	0.80
14.98	0.90	0.73	0.88	0.83
16.98	0.92	0.68	0.90	0.89
18.40	0.94	0.65	0.91	0.92
19.81	0.96	0.63	0.93	0.95
20.82	0.97	0.61	0.94	0.96
22.64	0.98	0.59	0.95	0.98
24.97	0.99	0.56	0.97	0.99
28.30	0.99	0.54	0.98	0.97
30.82	1.00	0.49	1.00	1.00
33.96	0.98	0.46	0.99	0.95
36.79	0.96	0.42	0.98	0.90
39.95	0.94	0.39	0.97	0.84
42.45	0.92	0.37	0.95	0.80
45.28	0.90	0.36	0.93	0.76
48.11	0.88	0.34	0.90	0.72
49.93	0.87	0.33	0.88	0.70
50.94	0.86	0.33	0.88	0.69
53.77	0.85	0.31	0.85	0.65
57.36	0.83	0.30	0.83	0.62
69.90	0.77	0.25	0.74	0.53
79.89	0.73	0.22	0.68	0.47
84.90	0.72	0.21	0.65	0.45

Discharge (cms)	RNTR - Adult	RNTR - Fry	RNTR - Juvenile	RNTR - Spawning
141.50	0.61	0.07	0.42	0.28
198.10	0.57	0.05	0.29	0.22
226.40	0.55	0.05	0.25	0.20
254.70	0.54	0.06	0.23	0.18
AF	0.00	0.00	0.00	0.00

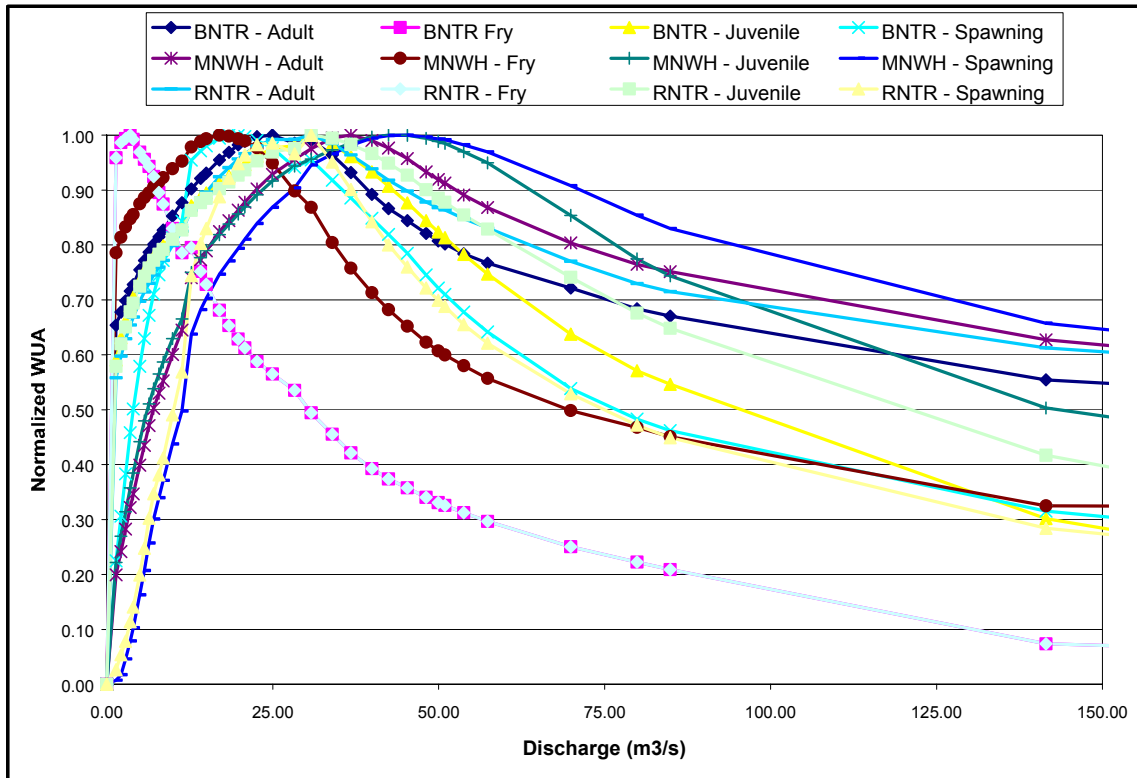


Figure 12: Oldman River from the LNID Weir upstream to the confluence of Pincher Creek (reach OM6) range standardized WUA curves

Reach OM7

Table 13: Oldman River from the confluence of Pincher Creek upstream to the Oldman River Dam (reach OM7) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
3.99	0.35	0.27	0.35	0.44	0.47	0.32	0.47	0.22
4.95	0.36	0.28	0.36	0.50	0.53	0.33	0.53	0.30
5.66	0.37	0.28	0.37	0.54	0.57	0.33	0.56	0.36
6.37	0.38	0.28	0.37	0.57	0.61	0.34	0.59	0.42
7.15	0.38	0.28	0.38	0.61	0.64	0.34	0.62	0.46
8.49	0.39	0.27	0.39	0.64	0.68	0.34	0.66	0.53
9.91	0.39	0.27	0.39	0.67	0.72	0.34	0.70	0.59
11.32	0.40	0.27	0.39	0.69	0.75	0.34	0.74	0.64
12.98	0.42	0.28	0.41	0.81	0.86	0.36	0.82	0.79
14.15	0.43	0.29	0.41	0.83	0.88	0.35	0.84	0.83
15.57	0.43	0.30	0.42	0.86	0.91	0.35	0.86	0.86
16.98	0.42	0.31	0.42	0.87	0.93	0.34	0.88	0.89
18.40	0.40	0.32	0.42	0.89	0.95	0.33	0.90	0.92
19.81	0.39	0.34	0.42	0.91	0.96	0.33	0.91	0.94
20.92	0.37	0.35	0.41	0.92	0.96	0.32	0.93	0.96
22.64	0.36	0.37	0.41	0.93	0.94	0.32	0.95	0.98
24.06	0.35	0.37	0.40	0.93	0.91	0.33	0.96	0.99
24.97	0.34	0.37	0.40	0.92	0.89	0.33	0.96	0.99
26.89	0.34	0.38	0.39	0.92	0.86	0.33	0.96	1.00
28.30	0.34	0.38	0.39	0.91	0.85	0.33	0.96	1.00
29.72	0.34	0.37	0.39	0.90	0.84	0.33	0.95	0.99
31.13	0.34	0.37	0.39	0.89	0.84	0.33	0.95	0.99
32.55	0.33	0.37	0.38	0.89	0.84	0.33	0.94	0.98
33.96	0.33	0.37	0.38	0.88	0.83	0.32	0.93	0.98
35.91	0.28	0.31	0.34	0.71	0.77	0.25	0.95	0.99
39.62	0.26	0.32	0.32	0.66	0.75	0.24	0.91	0.95
42.45	0.25	0.33	0.30	0.61	0.71	0.24	0.86	0.90
45.28	0.23	0.34	0.29	0.57	0.67	0.24	0.82	0.87
48.11	0.22	0.35	0.27	0.53	0.63	0.24	0.77	0.81
49.93	0.22	0.36	0.27	0.51	0.60	0.24	0.73	0.78
53.77	0.21	0.37	0.26	0.48	0.55	0.25	0.67	0.70
56.60	0.20	0.38	0.26	0.46	0.52	0.25	0.62	0.65
59.43	0.20	0.38	0.26	0.44	0.49	0.26	0.59	0.62
62.26	0.20	0.39	0.26	0.42	0.47	0.26	0.56	0.59
64.26	0.20	0.40	0.26	0.42	0.46	0.27	0.55	0.57
79.89	0.20	0.46	0.27	0.38	0.41	0.29	0.48	0.47
84.90	0.20	0.48	0.28	0.37	0.40	0.30	0.46	0.44
113.20	0.21	0.56	0.31	0.32	0.37	0.34	0.43	0.37
141.50	0.25	0.60	0.34	0.31	0.35	0.38	0.42	0.32

Discharge (cms)	BNTR - Adult	BNTR - Fry	BNTR - Juvenile	BNTR - Spawning	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning
169.80	0.29	0.65	0.38	0.33	0.36	0.43	0.41	0.27
198.10	0.33	0.68	0.42	0.36	0.38	0.47	0.42	0.24
226.40	0.37	0.71	0.45	0.38	0.40	0.51	0.43	0.21
283.00	0.46	0.75	0.53	0.43	0.44	0.57	0.48	0.20
339.60	0.54	0.82	0.59	0.48	0.51	0.63	0.55	0.19
396.20	0.61	0.87	0.65	0.54	0.57	0.68	0.61	0.18
452.80	0.68	0.90	0.69	0.59	0.64	0.73	0.66	0.16
509.40	0.75	0.93	0.75	0.66	0.70	0.78	0.71	0.15
566.00	0.80	0.95	0.80	0.72	0.75	0.83	0.76	0.14
792.40	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.16
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 13 (continued)

Discharge (cms)	RNTR - Adult	RNTR - Fry	RNTR - Juvenile	RNTR - Spawning
0.00	0.00	0.00	0.00	0.00
3.99	0.36	0.27	0.35	0.15
4.95	0.38	0.28	0.36	0.24
5.66	0.39	0.28	0.37	0.32
6.37	0.40	0.28	0.38	0.39
7.15	0.40	0.28	0.39	0.44
8.49	0.41	0.27	0.40	0.53
9.91	0.42	0.27	0.40	0.62
11.32	0.42	0.27	0.41	0.67
12.98	0.45	0.28	0.43	0.87
14.15	0.46	0.29	0.43	0.93
15.57	0.46	0.30	0.44	0.98
16.98	0.45	0.31	0.45	1.00
18.40	0.44	0.32	0.45	1.00
19.81	0.43	0.34	0.45	0.99
20.92	0.42	0.35	0.44	0.98
22.64	0.41	0.37	0.44	0.96
24.06	0.40	0.37	0.43	0.95
24.97	0.39	0.37	0.43	0.94
26.89	0.38	0.38	0.43	0.94
28.30	0.38	0.38	0.42	0.93
29.72	0.37	0.37	0.42	0.93

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	RNTR - Adult	RNTR - Fry	RNTR - Juvenile	RNTR - Spawning
31.13	0.37	0.37	0.42	0.92
32.55	0.36	0.37	0.42	0.91
33.96	0.35	0.37	0.41	0.89
35.91	0.32	0.31	0.38	0.62
39.62	0.29	0.32	0.35	0.58
42.45	0.27	0.33	0.33	0.55
45.28	0.25	0.34	0.31	0.51
48.11	0.24	0.35	0.30	0.48
49.93	0.23	0.36	0.29	0.46
53.77	0.22	0.37	0.28	0.43
56.60	0.22	0.38	0.27	0.42
59.43	0.21	0.38	0.27	0.40
62.26	0.21	0.39	0.26	0.39
64.26	0.20	0.40	0.26	0.39
79.89	0.19	0.46	0.26	0.38
84.90	0.19	0.48	0.27	0.37
113.20	0.20	0.56	0.30	0.31
141.50	0.22	0.60	0.33	0.26
169.80	0.25	0.65	0.37	0.24
198.10	0.29	0.68	0.40	0.24
226.40	0.33	0.71	0.44	0.24
283.00	0.41	0.75	0.51	0.23
339.60	0.49	0.82	0.58	0.19
396.20	0.56	0.87	0.64	0.16
452.80	0.63	0.90	0.70	0.14
509.40	0.70	0.93	0.75	0.12
566.00	0.76	0.95	0.80	0.10
792.40	1.00	1.00	1.00	0.07
AF	0.00	0.00	0.00	0.00

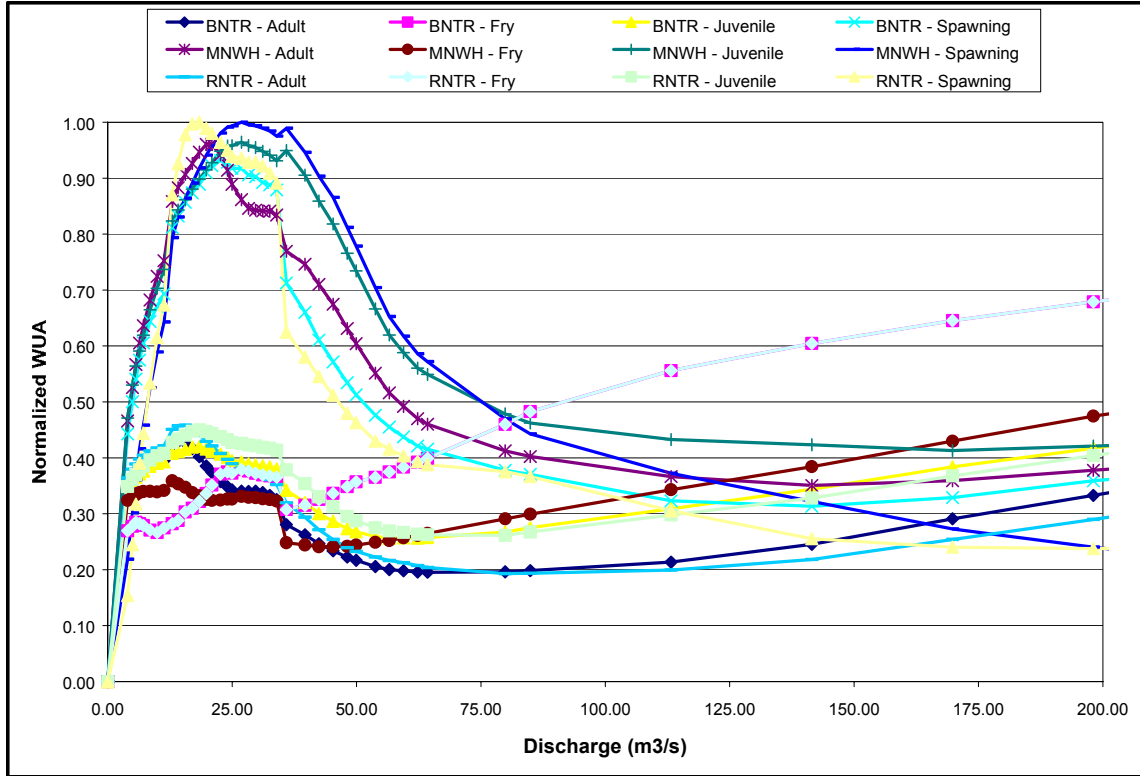


Figure 13: Oldman River from the confluence of Pincher Creek upstream to the Oldman River Dam (reach OM7) range standardized WUA curves

BELLY RIVER WUA CURVES

Reach BL1

Table 14: Belly River from the mouth upstream to the confluence of the Waterton River (reach BL1) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	WALL - Adult	WALL - Juvenile
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	0.38	0.49	0.15	0.63	0.24	0.51	0.51
3.48	0.46	0.61	0.24	0.74	0.37	0.60	0.61
4.25	0.50	0.67	0.29	0.79	0.43	0.65	0.65
5.66	0.57	0.74	0.38	0.85	0.53	0.72	0.73
7.08	0.63	0.81	0.46	0.90	0.61	0.78	0.80

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	WALL - Adult	WALL - Juvenile
8.49	0.68	0.86	0.53	0.93	0.67	0.83	0.85
9.91	0.73	0.90	0.59	0.95	0.73	0.88	0.90
10.89	0.76	0.92	0.64	0.96	0.78	0.92	0.93
11.32	0.77	0.93	0.66	0.97	0.80	0.94	0.94
12.74	0.81	0.95	0.71	0.98	0.84	0.96	0.96
14.15	0.85	0.96	0.76	0.99	0.87	0.98	0.98
15.57	0.88	0.97	0.80	1.00	0.89	1.00	0.99
16.98	0.90	0.98	0.84	1.00	0.91	1.00	1.00
18.40	0.93	0.99	0.87	1.00	0.92	1.00	1.00
19.81	0.94	0.99	0.89	1.00	0.94	1.00	1.00
21.23	0.96	1.00	0.91	1.00	0.95	1.00	0.99
22.64	0.97	1.00	0.93	1.00	0.96	0.99	0.99
24.06	0.98	1.00	0.94	0.99	0.97	0.99	0.98
25.47	0.99	1.00	0.95	0.98	0.97	0.98	0.97
26.89	0.99	1.00	0.96	0.98	0.98	0.98	0.96
28.30	0.99	0.99	0.97	0.97	0.99	0.97	0.94
31.13	1.00	0.98	0.98	0.95	0.99	0.95	0.91
33.96	1.00	0.98	0.99	0.93	1.00	0.94	0.89
36.79	0.99	0.97	0.99	0.91	1.00	0.91	0.85
39.62	0.99	0.96	0.99	0.89	1.00	0.90	0.82
42.45	0.97	0.95	1.00	0.87	1.00	0.87	0.79
45.28	0.95	0.93	1.00	0.84	1.00	0.85	0.76
48.11	0.93	0.91	1.00	0.81	1.00	0.82	0.73
50.94	0.91	0.89	1.00	0.78	0.99	0.80	0.72
53.77	0.89	0.87	1.00	0.75	0.99	0.78	0.71
56.60	0.87	0.85	0.99	0.72	0.98	0.76	0.70
63.68	0.81	0.79	0.95	0.67	0.96	0.73	0.67
70.75	0.76	0.72	0.89	0.62	0.93	0.70	0.66
77.83	0.72	0.67	0.84	0.60	0.89	0.69	0.65
84.90	0.69	0.64	0.79	0.58	0.85	0.67	0.64
99.05	0.66	0.58	0.73	0.56	0.77	0.66	0.64
113.20	0.63	0.54	0.67	0.56	0.69	0.67	0.65
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00

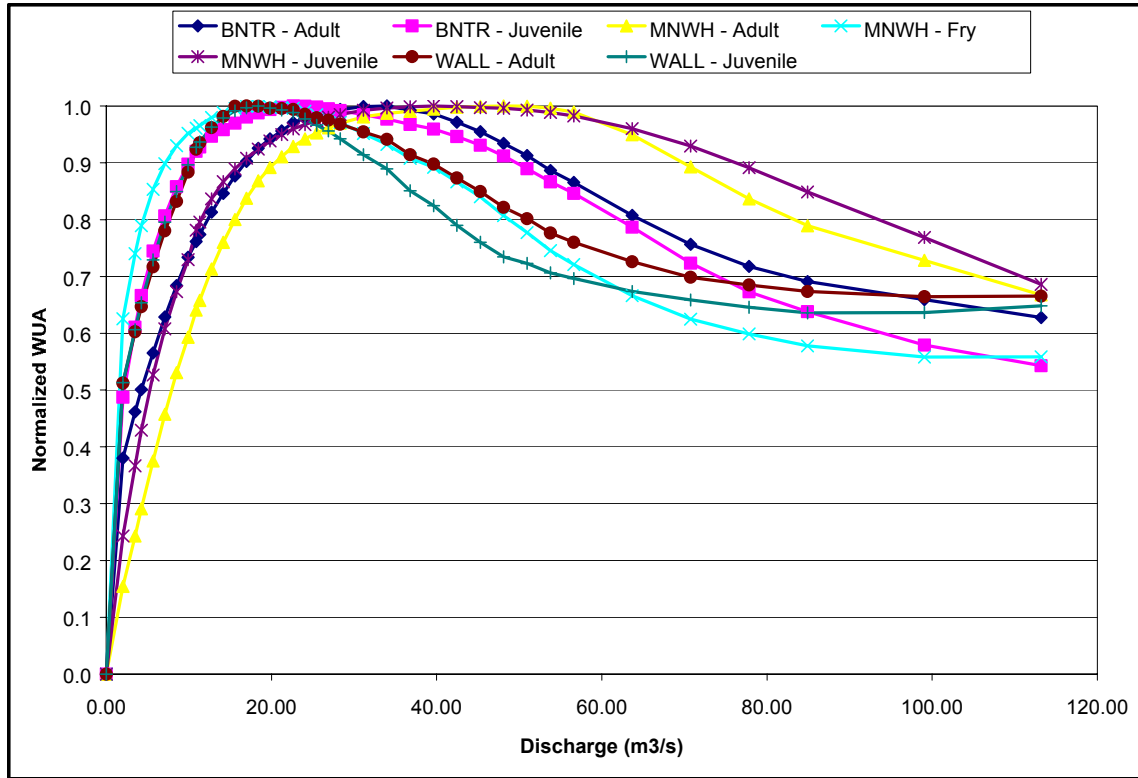


Figure 14: Belly River from the mouth upstream to the confluence of the Waterton River (reach BL1) range standardized WUA curves.

Reach BL2

Table 15: Belly River from the confluence of the Waterton River upstream to 125 km upstream of the Oldman River (reach BL2) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	WALL - Adult	WALL - Juvenile
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.35	0.39	0.17	0.59	0.23	0.66	0.70
1.50	0.43	0.47	0.26	0.68	0.31	0.81	0.83
2.83	0.62	0.62	0.44	0.85	0.46	0.98	1.00
4.25	0.75	0.74	0.57	0.89	0.56	0.98	0.99
5.66	0.79	0.80	0.64	0.86	0.64	1.00	0.99
7.08	1.00	0.96	0.86	1.00	0.81	0.97	0.91
8.49	1.00	0.99	0.94	0.93	0.88	0.86	0.77
9.91	0.97	1.00	0.99	0.83	0.93	0.76	0.66
11.32	0.91	0.98	1.00	0.75	0.97	0.69	0.58
12.74	0.83	0.95	0.98	0.67	0.99	0.62	0.54

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	WALL - Adult	WALL - Juvenile
14.15	0.77	0.90	0.95	0.60	1.00	0.58	0.51
15.55	0.72	0.84	0.90	0.55	0.99	0.54	0.50
16.98	0.68	0.79	0.85	0.51	0.97	0.52	0.48
19.81	0.63	0.68	0.77	0.45	0.90	0.47	0.47
22.64	0.59	0.60	0.70	0.41	0.81	0.43	0.46
25.47	0.55	0.52	0.63	0.38	0.72	0.40	0.44
28.30	0.52	0.47	0.57	0.35	0.63	0.40	0.43
31.13	0.49	0.43	0.52	0.33	0.56	0.40	0.41
34.95	0.47	0.38	0.47	0.30	0.47	0.39	0.39
37.78	0.45	0.36	0.44	0.29	0.43	0.39	0.37
40.61	0.43	0.34	0.41	0.28	0.39	0.39	0.35
43.44	0.42	0.32	0.39	0.26	0.36	0.38	0.33
46.27	0.40	0.31	0.36	0.24	0.34	0.38	0.31
49.10	0.38	0.30	0.35	0.23	0.32	0.37	0.31
51.93	0.36	0.29	0.34	0.21	0.30	0.37	0.30
54.76	0.34	0.28	0.32	0.20	0.29	0.37	0.29
57.59	0.32	0.27	0.30	0.20	0.28	0.37	0.29
71.74	0.25	0.23	0.24	0.17	0.24	0.40	0.37
85.89	0.23	0.19	0.18	0.16	0.21	0.52	0.46
100.04	0.23	0.17	0.15	0.15	0.18	0.63	0.54
114.19	0.24	0.16	0.14	0.16	0.15	0.73	0.60
128.34	0.24	0.14	0.14	0.16	0.13	0.83	0.65
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00

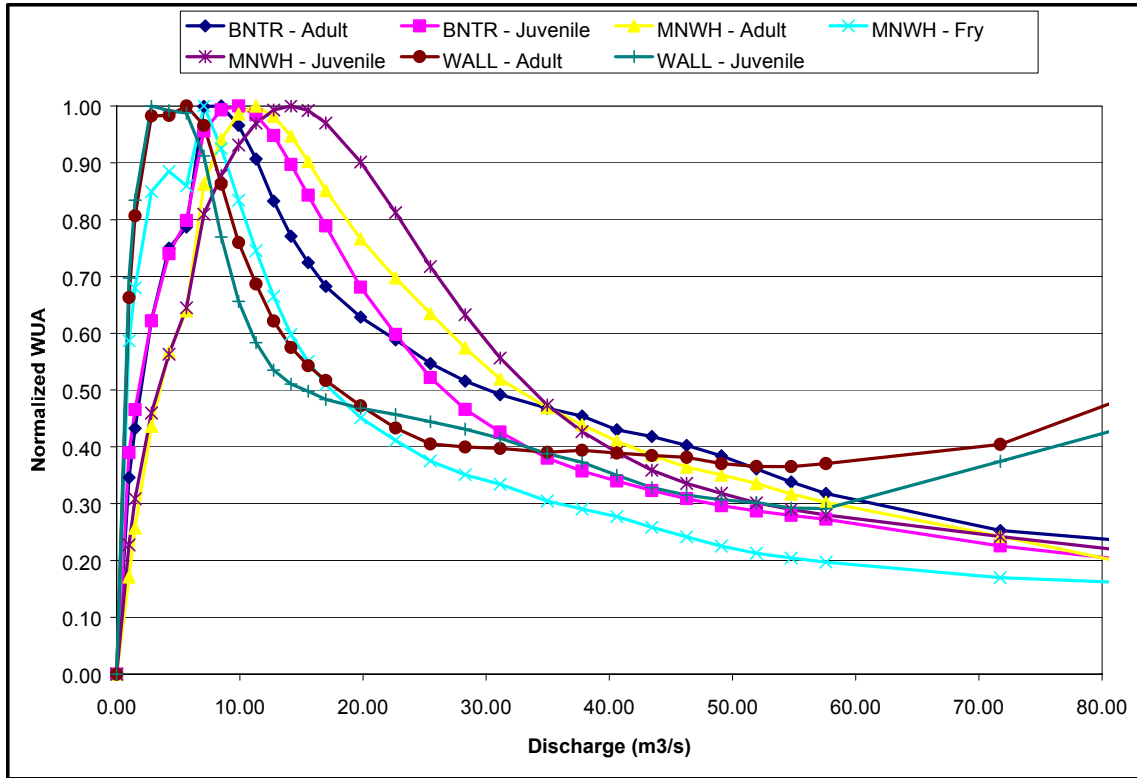


Figure 15: Belly River from the confluence of the Waterton River upstream to 125 km upstream of the Oldman River (reach BL2) range standardized WUA curves

Reach BL3

No Data

WATERTON RIVER WUA CURVES

Reach W1

Table 16: Waterton River from the mouth upstream to 45 km upstream of the Belly River (reach W1) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH - Juv	MNWH Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	0.25	0.38	0.16	0.57	0.25	0.10	0.22	0.89	0.35	0.16
2.83	0.34	0.48	0.24	0.71	0.34	0.18	0.30	0.99	0.45	0.30

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH - Juv	MNWH Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
2.98	0.36	0.50	0.26	0.73	0.35	0.19	0.32	1.00	0.46	0.32
4.25	0.44	0.57	0.34	0.79	0.44	0.29	0.40	0.90	0.53	0.50
4.99	0.50	0.62	0.39	0.83	0.49	0.35	0.45	0.91	0.58	0.58
5.66	0.54	0.66	0.44	0.86	0.53	0.40	0.49	0.92	0.62	0.63
6.99	0.61	0.73	0.52	0.89	0.59	0.48	0.56	0.92	0.69	0.71
8.49	0.67	0.78	0.58	0.91	0.65	0.56	0.62	0.88	0.76	0.75
9.91	0.72	0.82	0.64	0.92	0.69	0.61	0.67	0.82	0.80	0.76
11.72	0.83	0.89	0.75	0.99	0.79	0.73	0.77	0.71	0.88	0.93
12.74	0.87	0.91	0.80	1.00	0.82	0.76	0.81	0.67	0.90	0.96
14.15	0.91	0.94	0.84	1.00	0.85	0.79	0.85	0.62	0.93	0.97
15.57	0.95	0.96	0.88	0.99	0.88	0.83	0.89	0.59	0.95	0.99
16.98	0.98	0.97	0.91	0.97	0.90	0.86	0.92	0.57	0.96	1.00
18.40	0.99	0.98	0.93	0.95	0.92	0.88	0.95	0.55	0.97	1.00
19.97	1.00	0.99	0.95	0.92	0.94	0.91	0.97	0.54	0.99	0.99
21.23	1.00	0.99	0.96	0.90	0.95	0.93	0.99	0.52	0.99	0.98
22.64	1.00	1.00	0.98	0.87	0.96	0.95	1.00	0.51	1.00	0.97
24.06	0.98	1.00	0.98	0.83	0.97	0.96	0.99	0.49	1.00	0.94
25.47	0.96	0.99	0.99	0.80	0.98	0.97	0.99	0.47	0.99	0.91
26.89	0.93	0.98	1.00	0.77	0.99	0.98	0.98	0.46	0.99	0.88
28.30	0.92	0.97	1.00	0.74	0.99	0.99	0.97	0.44	0.98	0.85
28.96	0.91	0.97	1.00	0.73	1.00	0.99	0.96	0.44	0.98	0.84
31.13	0.88	0.95	0.99	0.69	1.00	1.00	0.94	0.42	0.96	0.80
33.96	0.83	0.91	0.97	0.64	1.00	1.00	0.90	0.40	0.92	0.74
36.79	0.79	0.87	0.94	0.61	0.99	1.00	0.87	0.39	0.89	0.69
39.62	0.76	0.84	0.90	0.59	0.98	0.99	0.85	0.38	0.86	0.66
42.45	0.74	0.81	0.87	0.57	0.96	0.98	0.82	0.37	0.83	0.63
45.28	0.71	0.78	0.83	0.55	0.94	0.95	0.79	0.36	0.80	0.60
48.11	0.70	0.75	0.81	0.53	0.92	0.93	0.77	0.35	0.77	0.58
50.94	0.68	0.73	0.79	0.52	0.90	0.91	0.76	0.34	0.75	0.56
53.77	0.66	0.71	0.77	0.52	0.88	0.89	0.73	0.33	0.72	0.53
56.60	0.65	0.70	0.74	0.51	0.86	0.87	0.71	0.32	0.71	0.51
59.43	0.63	0.68	0.72	0.50	0.84	0.85	0.69	0.31	0.68	0.48
62.26	0.62	0.66	0.69	0.50	0.82	0.83	0.67	0.30	0.67	0.47
65.09	0.61	0.64	0.67	0.49	0.79	0.80	0.65	0.28	0.65	0.46
67.92	0.60	0.63	0.66	0.49	0.77	0.78	0.64	0.27	0.63	0.45
70.75	0.60	0.61	0.64	0.48	0.75	0.76	0.63	0.25	0.62	0.44
73.58	0.60	0.60	0.63	0.47	0.74	0.74	0.62	0.24	0.61	0.43
76.41	0.60	0.58	0.62	0.45	0.72	0.72	0.62	0.23	0.60	0.42
79.24	0.59	0.57	0.60	0.44	0.69	0.70	0.61	0.22	0.58	0.41

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH - Juv	MNWH - Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
82.07	0.58	0.56	0.59	0.43	0.67	0.68	0.60	0.20	0.57	0.40
84.90	0.58	0.55	0.58	0.42	0.65	0.66	0.59	0.19	0.56	0.39
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

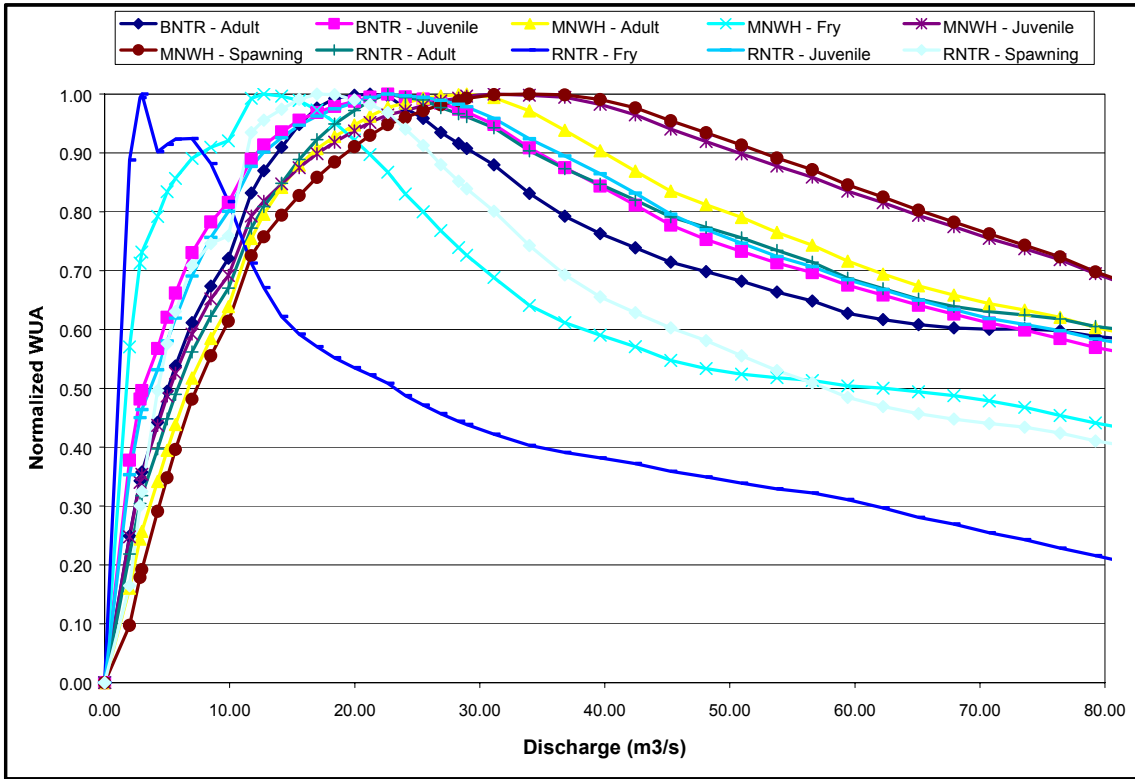


Figure 16: Waterton River from the mouth upstream to 45 km upstream of the Belly River (reach W1) range standardized WUA curves

Reach W2

Table 17: Waterton River from 45 km upstream of the Belly River upstream to the Waterton Dam (reach W2) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH - Juv	MNWH - Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.60	0.24	0.33	0.10	0.51	0.15	0.02	0.20	0.85	0.31	0.04

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH Juv	MNWH Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
1.50	0.37	0.45	0.21	0.62	0.27	0.10	0.32	0.97	0.43	0.19
2.83	0.52	0.59	0.35	0.76	0.41	0.24	0.47	0.99	0.57	0.36
3.69	0.60	0.66	0.43	0.82	0.48	0.33	0.55	1.00	0.63	0.45
5.58	0.70	0.74	0.54	0.88	0.58	0.46	0.66	0.98	0.72	0.55
7.08	0.82	0.86	0.72	0.97	0.75	0.65	0.78	0.96	0.84	0.85
8.49	0.88	0.90	0.79	0.99	0.81	0.73	0.85	0.93	0.89	0.92
9.99	0.93	0.94	0.85	1.00	0.86	0.80	0.90	0.89	0.93	0.96
11.32	0.96	0.96	0.89	1.00	0.90	0.84	0.93	0.84	0.96	0.98
12.74	0.97	0.97	0.92	0.99	0.92	0.88	0.95	0.77	0.97	1.00
13.89	0.98	0.98	0.94	0.97	0.94	0.90	0.97	0.72	0.98	1.00
14.15	0.99	0.99	0.95	0.97	0.95	0.91	0.97	0.69	0.99	1.00
15.57	0.99	0.99	0.97	0.95	0.96	0.94	0.98	0.61	0.99	1.00
16.98	0.99	0.99	0.99	0.92	0.98	0.96	0.99	0.56	1.00	0.99
17.98	1.00	1.00	1.00	0.90	0.99	0.98	1.00	0.54	1.00	0.99
19.81	0.98	0.99	1.00	0.84	0.99	0.99	0.99	0.50	0.99	0.95
21.23	0.95	0.98	1.00	0.79	1.00	0.99	0.97	0.48	0.98	0.91
22.64	0.94	0.97	1.00	0.75	1.00	1.00	0.97	0.46	0.97	0.87
24.06	0.90	0.95	0.98	0.71	1.00	1.00	0.95	0.45	0.95	0.81
24.97	0.88	0.93	0.97	0.68	1.00	1.00	0.93	0.44	0.93	0.77
25.47	0.87	0.92	0.97	0.67	1.00	1.00	0.92	0.43	0.92	0.76
26.89	0.84	0.90	0.94	0.64	0.99	0.99	0.90	0.42	0.90	0.70
28.30	0.81	0.87	0.92	0.62	0.98	0.99	0.88	0.42	0.88	0.65
31.13	0.77	0.82	0.85	0.58	0.96	0.96	0.83	0.40	0.83	0.57
33.95	0.73	0.77	0.80	0.54	0.93	0.93	0.78	0.38	0.78	0.51
36.79	0.71	0.72	0.76	0.52	0.89	0.90	0.75	0.37	0.74	0.45
39.62	0.68	0.68	0.72	0.50	0.85	0.85	0.71	0.36	0.70	0.42
42.45	0.66	0.64	0.68	0.48	0.80	0.81	0.68	0.36	0.66	0.39
45.28	0.65	0.60	0.65	0.47	0.76	0.76	0.65	0.35	0.63	0.37
48.11	0.63	0.58	0.62	0.47	0.72	0.72	0.63	0.34	0.60	0.35
50.94	0.62	0.55	0.59	0.46	0.67	0.67	0.61	0.33	0.57	0.34
53.77	0.61	0.52	0.56	0.45	0.63	0.62	0.59	0.32	0.55	0.33
56.60	0.59	0.51	0.54	0.45	0.60	0.58	0.58	0.31	0.54	0.32
59.43	0.58	0.50	0.51	0.45	0.57	0.54	0.57	0.30	0.52	0.31
62.26	0.57	0.49	0.49	0.45	0.54	0.51	0.57	0.29	0.51	0.30
65.09	0.56	0.48	0.47	0.44	0.51	0.48	0.56	0.28	0.50	0.29
67.92	0.55	0.47	0.46	0.44	0.49	0.46	0.56	0.28	0.49	0.28
70.75	0.54	0.46	0.44	0.44	0.47	0.44	0.55	0.27	0.48	0.27
73.58	0.54	0.46	0.43	0.44	0.46	0.42	0.55	0.27	0.48	0.27
76.41	0.54	0.45	0.42	0.44	0.44	0.40	0.54	0.26	0.47	0.27

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juv	MNWH - Adult	MNWH - Fry	MNWH - Juv	MNWH - Spawn	RNTR - Adult	RNTR - Fry	RNTR - Juv	RNTR - Spawn
79.24	0.54	0.44	0.41	0.44	0.43	0.39	0.54	0.26	0.47	0.27
82.07	0.54	0.44	0.41	0.44	0.43	0.38	0.54	0.25	0.47	0.27
84.90	0.53	0.44	0.40	0.43	0.42	0.37	0.54	0.25	0.46	0.26
113.20	0.53	0.41	0.39	0.39	0.39	0.35	0.53	0.21	0.45	0.26
AF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

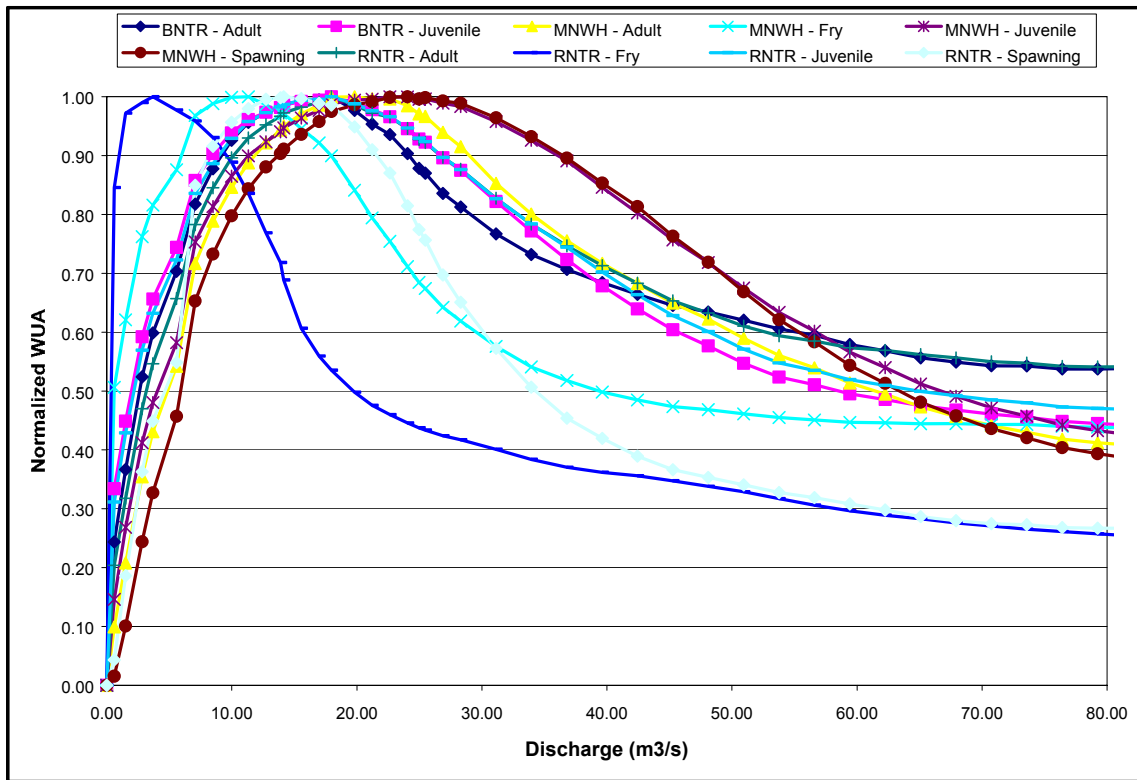


Figure 17: Waterton River from 45 km upstream of the Belly River upstream to the Waterton Dam (reach W2) range standardized WUA curves

ST. MARY RIVER WUA CURVES

Reach SM1

Table 18: St. Mary River from the mouth upstream 37 km from the Oldman River (reach SM1) range standardized WUA curves (with adjustment factors applied).

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning	RNTR - Adult	RNTR - Juvenile
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	0.43	0.52	0.19	0.73	0.25	0.03	0.38	0.49
2.12	0.55	0.65	0.31	0.82	0.37	0.11	0.49	0.61
3.21	0.65	0.72	0.42	0.87	0.48	0.23	0.58	0.70
4.25	0.72	0.77	0.52	0.91	0.57	0.36	0.66	0.75
5.66	0.81	0.82	0.64	0.95	0.66	0.50	0.74	0.80
7.08	0.87	0.85	0.71	0.98	0.71	0.61	0.81	0.84
8.49	0.91	0.88	0.77	0.99	0.76	0.68	0.86	0.87
9.91	0.94	0.90	0.80	1.00	0.79	0.73	0.90	0.89
11.32	0.96	0.92	0.84	1.00	0.81	0.77	0.93	0.91
12.74	0.97	0.93	0.86	1.00	0.83	0.80	0.95	0.93
14.15	0.97	0.94	0.88	0.99	0.85	0.82	0.96	0.94
15.57	0.99	0.96	0.91	0.99	0.88	0.83	0.98	0.95
16.98	1.00	0.97	0.93	0.98	0.89	0.86	0.99	0.96
18.40	1.00	0.98	0.94	0.97	0.91	0.88	1.00	0.97
19.81	1.00	0.99	0.95	0.97	0.92	0.90	1.00	0.98
21.23	0.99	0.99	0.96	0.95	0.94	0.92	1.00	0.99
22.64	0.99	1.00	0.97	0.94	0.95	0.93	1.00	1.00
24.06	0.98	1.00	0.98	0.92	0.96	0.95	0.99	1.00
25.47	0.96	1.00	0.99	0.89	0.97	0.96	0.98	1.00
26.89	0.94	0.99	1.00	0.87	0.98	0.97	0.97	1.00
28.30	0.92	0.99	1.00	0.85	0.99	0.98	0.95	0.99
31.13	0.87	0.97	0.98	0.81	1.00	1.00	0.91	0.97
33.96	0.83	0.95	0.95	0.77	1.00	1.00	0.86	0.94
36.79	0.79	0.92	0.90	0.73	0.99	0.99	0.82	0.91
39.62	0.76	0.89	0.87	0.69	0.98	0.97	0.78	0.88
42.45	0.72	0.86	0.83	0.65	0.96	0.95	0.75	0.85
43.14	0.72	0.85	0.82	0.64	0.96	0.95	0.74	0.84
49.53	0.66	0.78	0.75	0.57	0.90	0.88	0.67	0.77
56.60	0.63	0.70	0.68	0.51	0.81	0.80	0.61	0.70
63.68	0.58	0.64	0.62	0.46	0.72	0.71	0.56	0.64

South Saskatchewan River Basin Instream Flow Needs Determination

Discharge (cms)	BNTR - Adult	BNTR - Juvenile	MNWH - Adult	MNWH - Fry	MNWH - Juvenile	MNWH - Spawning	RNTR - Adult	RNTR - Juvenile
70.75	0.54	0.59	0.56	0.43	0.64	0.61	0.52	0.59
77.83	0.50	0.54	0.50	0.40	0.58	0.53	0.48	0.54
84.90	0.48	0.50	0.45	0.40	0.52	0.48	0.46	0.50
141.50	0.48	0.45	0.29	0.40	0.32	0.23	0.44	0.43
AF	-0.02	-0.04	-0.13	-0.05	-0.14	-0.21	-0.04	-0.04

Note: Adjustment factors applied only for flows of 15.57cms and greater.

Table 18 (continued)

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
0	0.00	0.00	0.00	0.00
1.20	0.46	1.00	0.50	0.01
2.12	0.62	0.84	0.67	0.04
3.21	0.76	0.67	0.80	0.10
4.25	0.87	0.59	0.89	0.18
5.66	0.96	0.53	0.96	0.32
7.08	1.00	0.52	1.00	0.46
8.49	0.99	0.52	1.00	0.59
9.91	0.97	0.53	0.98	0.69
11.32	0.97	0.55	0.96	0.76
12.74	0.94	0.55	0.93	0.79
14.15	0.92	0.57	0.90	0.82
15.57	0.90	0.58	0.88	0.88
16.98	0.85	0.59	0.83	0.92
18.40	0.81	0.60	0.77	0.95
19.81	0.76	0.61	0.71	0.98
21.23	0.72	0.61	0.66	0.99
22.64	0.68	0.62	0.61	1.00
24.06	0.64	0.62	0.57	0.99
25.47	0.59	0.63	0.53	0.96
26.89	0.56	0.64	0.49	0.93
28.30	0.53	0.65	0.47	0.89
31.13	0.48	0.65	0.42	0.79
33.96	0.44	0.66	0.39	0.70
36.79	0.41	0.67	0.36	0.62
39.62	0.38	0.67	0.35	0.56
42.45	0.36	0.67	0.33	0.50
43.14	0.36	0.68	0.33	0.49

Discharge (cms)	WALL - Adult	WALL - Fry	WALL - Juvenile	WALL - Spawning
49.53	0.34	0.67	0.32	0.39
56.60	0.34	0.67	0.32	0.33
63.68	0.34	0.67	0.32	0.29
70.75	0.35	0.67	0.34	0.23
77.83	0.36	0.67	0.35	0.17
84.90	0.38	0.67	0.37	0.12
141.50	0.38	0.67	0.37	0.10
AF	0.00	0.39	-0.03	-0.17

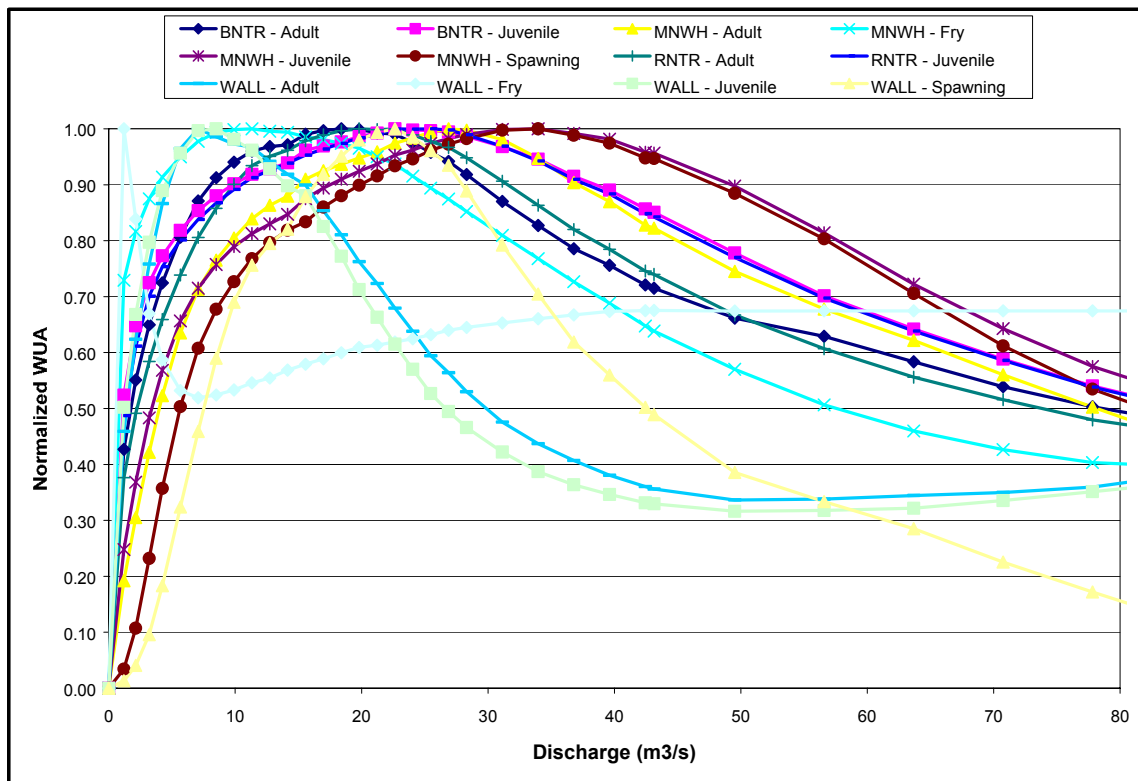


Figure 18: St. Mary River from the mouth upstream 37 km from the Oldman River (reach SM1) range standardized WUA curves

Reach SM2

Poor data.