

APPENDIX B – IN-CHANNEL & RIPARIAN PHYSICAL HABITAT

Appendix B - 1. Stream physical habitat attributes for Ecoregion 24. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 24											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Alamito Creek*	1	3,605	0.7	0.7	0.1	0.4	39	70	3	2	10
Independence Creek*	1	1,521	17.4	8.6	0.3	0.7	19	39	6	1	25
Independence Creek	1	1,997	21	12.7	0.1	0.5	12.4	29.2	11	3	100
Pecos River	1	3,613,943	101	21.8	0.4	0.5	36.4	30.8	4	4	44
Rio Grande: Contrabando	1	5,300,670		35.9	0.4	1.3	49.9	26.7	5	3	50
Rio Grande: Johnson Ranch	1	5,510,981	56.9	23.1	0.4	2.6	45.2	50.8	3	4	20.8
Rio Grande: Presidio	1	5,201,993	63	30.7	0.3	1.0	29.5	36.3	1	2	29.2
Average		2,804,959	43.3	19.1	0.3	1.0	33.1	40.4	5	3	40
Maximum		5,510,981	101.0	35.9	0.4	2.6	49.9	70.0	11	4	100
Minimum		1,521	0.7	0.7	0.1	0.4	12.4	26.7	1	1	10

*Historic data from Bayer et al. 1992

Note: Physical habitat data is not available for Terlingua Creek

Appendix B – 1 CONT. Stream physical habitat attributes for Ecoregion 24. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 24										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Alamito Creek*	1		40	8	19	40	40	20	0	0
Independence Creek*	1		65	0	61	10	20	50	0	20
Independence Creek	1	cobble	99.7	6.4	20	12.5	75	12.5	0	0
Pecos River	1	boulder	56	29.2	20	5	90	5	0	0
Rio Grande: Contrabando	1	cobble	92.5	36.5	20	0	55	40	0	5
Rio Grande: Johnson Ranch	1	silt	52.5	38.0	20	5	82.5	12.5	0	0
Rio Grande: Presidio	1	cobble	65	18.6	15.3	5	35	35	0	25
Average			67.2	19.5	25	11	57	25	0	7
Maximum			99.7	38.0	61	40	90	50	0	25
Minimum			40.0	0.0	15	0	20	5	0	0

*Historic data from Bayer et al. 1992

Note: physical habitat data is not available for Terlingua Creek

Appendix B - 2. Stream physical habitat attributes for Ecoregions 25 and 26. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 26											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Bluff Creek*	1	111.6	0.2	4.1	0.4	0.7	40	22	5	3	39
Buck Creek	1	509.7	0.8	5.2	0.3	0.9	15	20	2	7	49
Canadian River: SH 70	1	1,717,422	34.4	7.9	0.3	1.0	22.3	6	0	5	12
Canadian River: US 385	1	1,466,289	3.9	13.6	0.1	0.8	19.7	85	4	4	1.5
Chicken Creek	1	13.5	0.03	1.5	0.1	0.5	42.6	29	2	9	81
McClellan Creek*	1	1,457	2.1	5.5	0.1	0.1	30	61	3	4	4
McClellan Creek	1	1,457	3.2	3.9	0.2	0.6	21.2	19.5	2	4	55
N. Fork Wichita River	1	1,230	5.2	18.2	0.3	1.6	13.5	26.3	2	5	54.2
Saddlers Creek*	1	127.3	2.8	8.2	0.1	0.1	21	80	6	1	5
Salt Fork Red River	1	2,880	7.8	16.5	0.1	0.4	24.7	26.3	6	5	19.2
White Deer Creek	3	346.4	2.1 $\pm$ 1.7	4.9 $\pm$ 0.3	0.3 $\pm$ 0.1	1.2 $\pm$ 0.2	20.7 $\pm$ 0.8	21.7 $\pm$ 7.4	0.0	4.3 $\pm$ 2.5	34.5 $\pm$ 11.3
Whitefish Creek*	1	270.8	1.2	7.1	0.1	0.2	39	53	6	2	1
Wolf Creek*	1	2,533	2.3	2.5	0.1	0.2	27	23	0	8	14
Wolf Creek	1	2,533	2.4	5.0	0.2	2.6	17.7	39.4	0	5	55
Average		228,370	4.5	7.1	0.2	0.8	24.7	34.7	2.4	4.7	30.8
Maximum		1,717,422	34.4	18.2	0.4	2.6	42.6	85	6	9	81
Minimum		13.5	0.03	1.5	0.1	0.1	13.5	6	0	1	1

*Historic data from Bayer et al. 1992

Appendix B – 2 CONT. Stream physical habitat attributes for Ecoregions 25 and 26. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 26										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Bluff Creek*	1		19	65	46	65	10	25	0	0
Buck Creek	1	sand	7	22.9	>20	42.5	25	32.5	0	0
Canadian River: SH 70	1	sand	0	59.4	>20	5	90	5	0	0
Canadian River: US 385	1	sand	0.2	6.6	18.3	7.5	32.5	60	0	0
Chicken Creek	1	gravel	83	52.1	18.5	17.5	45	37.5	0	0
McClellan Creek*	1		6	0	107	5	10	85	0	0
McClellan Creek	1	sand	3.2	70.6	>20	32.5	17.5	50	0	0
N. Fork Wichita River	1	silt	28.3	41.3	>20	15	55	30	0	0
Saddlers Creek*	1		2	5	30	0	0	100	0	0
Salt Fork Red River	1	sand	1.2	35.3	17.1	40	27.5	32.5	0	0
White Deer Creek	3	sand	3 $\pm$ 5.2	21.7 $\pm$ 14.3	15.2 $\pm$ 4.2	15.8 $\pm$ 3.8	9.2 $\pm$ 7.2	75 $\pm$ 5	0	0
Whitefish Creek*	1		11	0	30	2	3	95	0	0
Wolf Creek*	1		1	0	107	1	50	49	0	0
Wolf Creek	1	sand	6	31.4	20	25	37.5	37.5	0	0
Average			11.1	28.4	36.6	19.1	26.9	54	0	0
Maximum			83	70.6	107	65	90	100	0	0
Minimum			0	0	12.4	0	0	5	0	0

*Historic data from Bayer et al. 1992

Appendix B - 3. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 27											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Cottonwood Creek*	1	536.8	0.4	2.5	0.2	0.5	37	23	6	2	30
Deadman Creek*	1		0.1	8.1	0.2	0.6	27	39	2	3	26
Deadman Creek	3	422.2 $\pm$ 58.3	4.5 $\pm$ 7.4	19.2 $\pm$ 7.7	0.5 $\pm$ 0.2	0.8 $\pm$ 0.4	54.7 $\pm$ 23.6	16.9 $\pm$ 4.2	1.3 $\pm$ 0.6	1.7 $\pm$ 1.2	31.9 $\pm$ 30.6
Elm Creek*	1	1,145.7	0.1	14	0.6	1.8	53	54	3	2	25
Lelia Lake Creek*	1	249.4	4.5	7.4	0.1	0.1	25	75	4	1	2
Sweetwater Creek*	1	433.2	5.1	6.9	0.5	0.9	42	31	4	2	28
Sweetwater Creek	1	433.2	1.2	5.5	0.2	0.6	18.6	40.5	0	6	87.8
Average		508.1	2.8	11.3	0.4	0.8	40.8	34.8	2.6	2.3	32.7
Maximum		1,145.7	13	23.7	0.6	1.8	75.9	75	6	6	87.8
Minimum		249.4	0.1	2.5	0.1	0.1	18.6	12.8	0	1	2

*Historic data from Bayer et al. 1992

Appendix B – 3 CONT. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 27										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Cottonwood Creek*	1		24	20	30	10	10	80	0	0
Deadman Creek*	1		25	9	8	40	20	40	0	0
Deadman Creek	3	silt	34.3 $\pm$ 14.8	43.5 $\pm$ 10.7	18.5 $\pm$ 1.3	27.6 $\pm$ 8.8	16.1 $\pm$ 6.5	56.3 $\pm$ 14.6	0	0
Elm Creek*	1		25	14	23	80	5	15	0	0
Lelia Lake Creek*	1	sand	27	0	16	20	20	60	0	0
Sweetwater Creek*	1		35	5	14	10	25	65	0	0
Sweetwater Creek	1	sand	0	36.8	>20	25	15	60	0	0
Average			26.5	23.9	18.3	29.8	15.9	54.3	0	0
Maximum			51.4	55.9	30	80	25	80	0	0
Minimum			0	0	8	10	5	15	0	0

*Historic data from Bayer et al. 1992

Appendix B – 3 CONT. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 29											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Bluff Creek*	1	67.2	0.04	5.7	0.2	0.5	36	22	6	4	42
Clear Creek*	1	634.5	22.7	11.8	0.6	2.1	41	61	5	3	21
Colony Creek*	1	158.2	1.4	11.2	0.6	1.6	48	27	4	2	29
Cowhouse Creek*	1	1,180.2	51.7	17.2	0.8	1.6	54	49	4	3	11
Ioni Creek*	1	146.1	0.0	15	1.1	2.1	49	28	0	0	10
Neils Creek*	1	355.4	7.9	15.8	0.3	0.7	46	13	10	4	16
Neils Creek	1		1.2	18.1	0.4	1.5	32.1	59.6	4	3	35
Reese Creek	2	25.9	0.1	3.7 $\pm$ 0.6	0.2 $\pm$ 0.1	0.7 $\pm$ 0.2	36.1 $\pm$ 19.9	22.5 $\pm$ 11.9	7	5 $\pm$ 1.4	32.9 $\pm$ 17.2
Rocky Creek*	1	295.0	1.2	8.3	0.3	1	24	41	6	3	36
Rocky Creek	5	295.0	22.6 $\pm$ 30.5	12.4 $\pm$ 3.5	0.2 $\pm$ 0.1	0.6 $\pm$ 0.1	42.6 $\pm$ 3.4	28.6 $\pm$ 8.8	4.4 $\pm$ 1.3	3	41.4 $\pm$ 15.9
South Fork Rocky Creek	4	120.7	7.7 $\pm$ 8.8	9.5 $\pm$ 2.2	0.3 $\pm$ 0.1	1.4 $\pm$ 0.4	41.1 $\pm$ 7.5	35.6 $\pm$ 9.6	4.5 $\pm$ 2.5	3.3 $\pm$ 0.5	44.5 $\pm$ 29.2
Steele Creek*	1	113.5	0.7	10.5	0.4	0.8	30	28	5	2	8
Average		261.0	11.6	11.0	0.4	1.1	40.5	32.9	4.9	3.1	32.9
Maximum		1,180.2	74.7	18.1	1.1	2.1	54	61	10	6	82
Minimum		25.9	0.0	3.2	0.1	0.5	22	13	0	0	8

*Historic data from Bayer et al. 1992

Appendix B – 3 CONT. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 29										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Bluff Creek*	1		50	43	76	60	30	10	0	0
Clear Creek*	1		36	25	5	50	30	20	0	0
Colony Creek*	1	bedrock	50	13	38	30	40	30	0	0
Cowhouse Creek*	1	gravel	57	45	28	70	20	10	0	0
Ioni Creek*	1		50	40	46	70	20	10	0	0
Neils Creek*	1	gravel	37	30	20	60	10	30	0	0
Neils Creek	1	gravel	90.8	68.9	4.8	30	22.5	35	12.5	0
Reese Creek	2	cobble/ bedrock	49.9 $\pm$ 14	55.2 $\pm$ 27.3	15.3 $\pm$ 4.2	68.7 $\pm$ 4	11.5 $\pm$ 2.1	18.7 $\pm$ 5	0	1.2 $\pm$ 1
Rocky Creek*	1		38	21	24	50	30	20	0	0
Rocky Creek	5	bedrock	82 $\pm$ 17.9	31.8 $\pm$ 5.6	16.2 $\pm$ 1.1	57.5 $\pm$ 10	24 $\pm$ 11.4	14.5 $\pm$ 4.5	0	4 $\pm$ 4.2
South Fork Rocky Creek	4	cobble	73.6 $\pm$ 26.6	14.6 $\pm$ 10.1	14.8 $\pm$ 9.9	39.5 $\pm$ 22.8	29.8 $\pm$ 14.3	23.6 $\pm$ 10.8	0.0	7.2 $\pm$ 4.5
Steele Creek*	1	bedrock	18	10	30	40	30	30	0	0
Average			61.5	31.2	22.5	52.1	24.7	20.0	0.6	2.6
Maximum			90.8	74.5	76	71.5	50	35	12.5	10
Minimum			18	5	3.4	12	10	7.5	0	0

*Historic data from Bayer et al. 1992

Appendix B – 3 CONT. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 32											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Auds Creek*	1	103.9	1.3	5	0.2	0.6	53	49	3	4	20
Auds Creek	1	103.9	2.6	8.9	0.3		26.7	53	2	2	30
Cow Bayou*	1	289.1	6.7	4.5	0.5	1.3	44	38	5	2	36
Cow Bayou	1	289.1	32	8.2	0.3	1.2	32.1	33.9	2	4	6
Deer Creek*	1	296.9	1.6	15	0.5	1.4	43	58	5	3	11
Deer Creek	2	286.4	7.3 $\pm$ 1.8	15.1 $\pm$ 0.4	0.4 $\pm$ 0.01	1 $\pm$ 0.1	37.8 $\pm$ 3.1	42.3 $\pm$ 8.9	5.5 $\pm$ 0.7	1	5.4 $\pm$ 4.5
Geronimo Creek*	1	106.9	8.6	9.3	1.1	2.7	35	34	4	3	35
Geronimo Creek	5	106.9	3.8 $\pm$ 1.4	6 $\pm$ 0.7	0.5 $\pm$ 0.1	0.9 $\pm$ 0.1	109.9 $\pm$ 12.9	22.6 $\pm$ 8.6	2.4 $\pm$ 0.5	3	43.6 $\pm$ 6.2
Willis Creek*	1	55.8	0.01	4	0.2	0.5	46	59	3	3	9
Willis Creek	5	124.8 $\pm$ 63.8	3.2 $\pm$ 3.6	4.4 $\pm$ 1.1	0.3 $\pm$ 0.1	1.2 $\pm$ 0.7	35.7 $\pm$ 5.7	56.1 $\pm$ 7.3	5 $\pm$ 2.5	8.2 $\pm$ 1.1	13.3 $\pm$ 6
Wilson Creek*	1	80.3	4.8	5.1	0.4	1	49	49	9	5	21
Wilson Creek	2	80.3	6.8	5.7 $\pm$ 1.4	0.3		45.5 $\pm$ 4.9	54 $\pm$ 12.7	3	4	37.5 $\pm$ 6.4
Average		146.3	5.4	7.0	0.4	1.1	55.6	43.6	4	4.2	24.5
Maximum		296.9	32	15.4	1.1	2.7	122.2	63	9	9	54
Minimum		54.9	0.01	3.1	0.2	0.4	26.7	12	1	1	2.2

*Historic data from Bayer et al. 1992

Appendix B – 3 CONT. Stream physical habitat attributes for Ecoregions 27, 29, and 32. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 32										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Auds Creek*	1	clay	11	4	8	40	10	30	20	0
Auds Creek	1	silt	39.2	8.3	13.1	20	17.9	37.9	0	24.1
Cow Bayou*	1		65	50	37	60	30	10	0	0
Cow Bayou	1	sand	28	64.1	17.9	17.9	14.9	61.9	0	4.4
Deer Creek*	1	gravel	21	7	5	40	10	40	10	0
Deer Creek	2	clay/ bedrock	18.9 $\pm$ 12.3	18.1 $\pm$ 1.4	19.2 $\pm$ 2.6	25.0	62.5	12.5	0	0
Geronimo Creek*	1		50	63	35	60	20	10	10	0
Geronimo Creek	5	cobble/ gravel	79.8 $\pm$ 11	88.9 $\pm$ 6.2	17.9 $\pm$ 2.1	34.7 $\pm$ 4.3	20.5 $\pm$ 2.7	34.2 $\pm$ 5.6	0	10.6 $\pm$ 6.2
Willis Creek*	1	sand	23	76	15	50	20	20	10	0
Willis Creek	5	gravel	57.9 $\pm$ 12.4	85.4 $\pm$ 6.9	19.8 $\pm$ 0.7	57.3 $\pm$ 21.7	22.8 $\pm$ 15	20.5 $\pm$ 6.4	0	0
Wilson Creek*	1	gravel	38	80	30	40	10	10	40	0
Wilson Creek	2	gravel/ cobble	48.5 $\pm$ 4.9	76.3 $\pm$ 12.4	38.3	21.4 $\pm$ 23.2	11.4 $\pm$ 16.1	36.9 $\pm$ 8.6	0	31.4 $\pm$ 29.1
Average			49.9	64.2	20.7	39.9	20.6	28.0	4.5	7.2
Maximum			91	95.3	38.3	72	62.5	61.9	40	52
Minimum			10.2	4	5	5	0	10	0	0

*Historic data from Bayer et al. 1992

Appendix B - 4. Stream physical habitat attributes for Ecoregion 30. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 30											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Barton Creek*	1	249.2	0.5	6	0.5	1.1	33	12	5	2	11
Brushy Creek	3	67 $\pm$ 35.1	12.7 $\pm$ 11.5	10 $\pm$ 4.5	0.5 $\pm$ 0.1	1.1 $\pm$ 0.1	32.9 $\pm$ 15	16.4 $\pm$ 7.9	3 $\pm$ 1.7	3.3 $\pm$ 0.6	18.8 $\pm$ 21.5
Bull Creek	2	22 $\pm$ 16.2	1.8 $\pm$ 0.8	7.9 $\pm$ 5.7	0.3 $\pm$ 0.1	1 $\pm$ 0.3	31.5 $\pm$ 14.4	17	3	2.5 $\pm$ 2.1	42 $\pm$ 24
Carpers Creek*	1	39.6	0.05	8	0.6	1.7	35	46	6	3	44
Colorado River	8	2,538,770	81.6 $\pm$ 90.1	49.5 $\pm$ 8.2	0.6 $\pm$ 0.1	2.3 $\pm$ 0.2	42.6 $\pm$ 13.4	35.7 $\pm$ 17.8	2.1 $\pm$ 1.1	0.9 $\pm$ 1	25 $\pm$ 12.5
Cypress Creek	8	97.7	3.3 $\pm$ 5.5	12.3 $\pm$ 3.7	0.5 $\pm$ 0.2	1.2 $\pm$ 0.1	49.1 $\pm$ 18.6	17.7 $\pm$ 4.9	1.5 $\pm$ 1.1	3.6 $\pm$ 1.4	40.1 $\pm$ 7.4
Devils River*	1	7490	110	111.7	0.7	2.3	30	34	4	2	9
Devils River	1	7490	63.4	52.1	0.5	1.7	22.8	7.7	9	4	64.38
Guadalupe River	6	1161	52 $\pm$ 29.7	21.6 $\pm$ 3	0.7 $\pm$ 0.2	1.8 $\pm$ 0.2	31.4 $\pm$ 5.9	17.7 $\pm$ 2.2	3.5 $\pm$ 0.5	2.5 $\pm$ 0.5	39 $\pm$ 3.6
James River*	1	876.6	18.8	19.1	0.5	2	26	20	4	2	25
Johnson Creek	2	329	30.5 $\pm$ 16.3	33.1 $\pm$ 6.8	0.6 $\pm$ 0.01	2.4 $\pm$ 0.2	43.5 $\pm$ 13.9	21.9 $\pm$ 1.5	4	3	28.8 $\pm$ 4.1
Little Barton Creek*	1	29.8	0.2	8	0.4	1.2	29	26	5	4	26
Little Blanco River*	1	78.2	2.4	9.4	0.7	1.6	33	36	5	2	25
Live Oak Creek*	1	959.8	2.0	16.4	0.2	0.7	34	31	5	0	13
Llano River	21	7398 $\pm$ 2081	128.7 $\pm$ 67.9	45.8 $\pm$ 14	0.6 $\pm$ 0.1	2.1 $\pm$ 0.7	42.6 $\pm$ 11	61.3 $\pm$ 17.3	1.8 $\pm$ 1.2	1.5 $\pm$ 0.7	36.3 $\pm$ 11.8
Medina River*	1	788.0	19.6	11.1	0.7	1.9	32	30	6	2	16
North Prong Medina River	5	369	6 $\pm$ 4.9	8.7 $\pm$ 1.3	0.2 $\pm$ 0.05	1.9 $\pm$ 0.2	17 $\pm$ 3.3	25.3 $\pm$ 6.4	4.8 $\pm$ 3.9	3.2 $\pm$ 2.7	41.3 $\pm$ 11.9
Oatmeal Creek*	1	31.8	0.1	6.6	0.6	1.5	56	20	4	2	26
Onion Creek*	1	321	1.8	9.1	0.4	1.4	19	34	6	2	52
Onion Creek	1		1.1	7.5	0.7	1.2	31.9	14.5	3	4	55
Pedernales River	9	956.5	14.6 $\pm$ 29.5	14.9 $\pm$ 4.8	0.3 $\pm$ 0.1	1.5 $\pm$ 0.4	25.7 $\pm$ 6.8	66.2 $\pm$ 15.7	1.8 $\pm$ 0.4	3.3 $\pm$ 1	29.1 $\pm$ 9.8
San Saba River	8	7219	60.4 $\pm$ 47.2	40.8 $\pm$ 11.7	1 $\pm$ 0.1	3.4 $\pm$ 0.4	54.5 $\pm$ 8.8	47.1 $\pm$ 10.8	1.4 $\pm$ 0.5	3.3 $\pm$ 0.7	39.1 $\pm$ 9.2
Slaughter Creek	6	51 $\pm$ 29.6	0.5 $\pm$ 0.3	9.4 $\pm$ 3	0.6 $\pm$ 0.3	1.3 $\pm$ 0.3	58 $\pm$ 48.7	34.1 $\pm$ 13.2	2 $\pm$ 1.7	1	31.2 $\pm$ 8.6
South Llano River*	1	492.1	73.5	32.3	1.0	2.2	24	9	4	2	32
South Llano River	10	2248	86.2 $\pm$ 26.9	20.9 $\pm$ 2.3	0.7 $\pm$ 0.1	1.8 $\pm$ 0.2	47.5 $\pm$ 11	68.5 $\pm$ 13.4	2 $\pm$ 0.7	2.2 $\pm$ 0.8	34.5 $\pm$ 10.3
Spring Creek*	1	992.7	17.4	19.8	0.4	1.9	21	4	4	0	13
West Rocky Creek*	1	292.2	1.6	10.9	0.9	1.5	26	7	2	0	7
Average		201,817	55.9	27.2	0.6	1.9	39.7	41.4	2.6	2.3	33.5
Maximum		2,538,770	291.0	111.7	1.2	3.8	133.0	89.0	9.0	7.0	65.0
Minimum		10.59	0.0	3.5	0.1	0.7	9.5	4.0	0.0	0.0	2.0

*Historic data from Bayer et al. 1992

Note: physical habitat data is not available for Bullhead Creek, Montell Creek, upper Nueces River and the South Concho River

Appendix B – 4 CONT. Stream physical habitat attributes for Ecoregion 30. For parameters with multiple samples, the mean and standard deviation (mean ± SD) are reported.

Ecoregion 30			Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Stream	Sample Size	Dominant Substrate Type								
Barton Creek*	1		50	10	20	40	30	30	0	0
Brushy Creek	3	gravel	55.7 ±32.1	33.1 ±15.1	19.5 ±2.3	19.2 ±1.4	29.5 ±19.6	51.3 ±20.8	0	0
Bull Creek	2	cobble/ sand	87 ±8.5	67.5 ±6.4	20	35 ±21.2	50 ±28.3	15 ±7.1	0	0
Carpers Creek*	1		65	83	21	60	10	30	0	0
Colorado River	8	cobble/ gravel	67.4 ±11.1	29.7 ±8.4	14.6 ±2.7	16.7 ±6.6	1.2 ±1.4	67.5 ±11.5	0	14.6 ±5.7
Cypress Creek	8	gravel/ bedrock	41.6 ±18.5	93.3 ±5.8	6.1 ±4.9	32.7 ±5.7	8.6 ±3.8	55.3 ±10.9	0	4.8 ±6.2
Devils River*	1		4	0	18	30	60	10	0	0
Devils River	1	bedrock	32.8	49.3	>20	20	35	45	0	0
Guadalupe River	6	bedrock	38.6 ±12	64.9 ±13.9	15.2 ±2.1	36.5 ±3.8	11.7 ±5.1	47.1 ±6.5	0	5.6 ±6.6
James River*	1		90	0	15	25	40	35	0	0
Johnson Creek	2	bedrock	28.8 ±25.3	70.7 ±7.5	16.8 ±2.2	21.3 ±2.9	12.5 ±5.9	53.8 ±2.9	0	12.5 ±5.9
Little Barton Creek*	1		50	14	18	40	40	20	0	0
Little Blanco River*	1		30	0	15	20	50	30	0	0
Live Oak Creek*	1		49	0	65	30	60	10	0	0
Llano River	21	sand/ gravel	55.4 ±23.9	11.6 ±16.2	121 ±272.4	8.3 ±7.4	4.9 ±8	53.6 ±22.9	4.8 ±21.2	25.4 ±19.7
Medina River*	1		57	18	7	60	20	20	0	0
North Prong Medina River	5	cobble/ gravel	93.7 ±5	78.7 ±6.9	16.5 ±6.1	46.6 ±5	4.2 ±5.3	49 ±6.1	0	0
Oatmeal Creek*	1	bedrock	31	20	15	30	40	30	0	0
Onion Creek*	1		44	50	23	50	25	25	0	0
Onion Creek	1	cobble	47	65.6	>20	36.5	22	41.5	0	0
Pedernales River	9	gravel	51.2 ±11.6	8.1 ±4.9	18.8 ±1.8	4.6 ±2.4	8.5 ±7.5	46 ±18.8	0	40.9 ±19.2
San Saba River	8	silt	35 ±15.1	35.7 ±7.3	>20	12.7 ±4.8	4 ±4.5	57.5 ±15.3	0	25.8 ±14.8
Slaughter Creek	6	bedrock	94.5 ±10.2	56.3 ±41.5	>20	35.3 ±18.4	15.3 ±11.3	44.9 ±19.3	0.8 ±2	3.7 ±5.7
South Llano River*	1		82	11	12	40	40	20	0	0
South Llano River	10	cobble/ gravel	75.5 ±13.9	2.7 ±3.3	30.7 ±21.8	3.6 ±2.5	9.5 ±9.6	52 ±26.5	8.5 ±26.9	23.8 ±21.4
Spring Creek*	1		82	0	23	15	20	65	0	0
West Rocky Creek*	1		83	6	30	40	20	40	0	0
Average			58.2	33.4	39.9	20.7	12.6	48.9	1.8	15.3
Maximum			100.0	100.0	955.8	60.0	70.0	96.7	94.8	64.5
Minimum			4.0	0.0	1.7	0.0	0.0	0.2	0.0	0.0

*Historic data from Bayer et al. 1992

Note: physical habitat data is not available for Bullhead Creek, Montell Creek, upper Nueces River and the South Concho River

Appendix B - 5. Stream physical habitat attributes for Ecoregion 31. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 31											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Las Moras Creek*	1	70	35.1	4.4	0.5	0.9	22	35	1	10	24
Metate Creek*	1	197.7	0.04	5.1	0.4	0.7	48	50	2	1	42
Mud Creek*	1	36.2	0.9	8.5	0.2	0.4	8	22	0	1	39
Nueces River	4	5,160.4	36.1 $\pm$ 30.9	25 $\pm$ 15.4	0.4 $\pm$ 0.1	1.9 $\pm$ 0.5	31.1 $\pm$ 6.5	57.1 $\pm$ 21.3	4.5 $\pm$ 1.3	2.5 $\pm$ 1.3	53.7 $\pm$ 24.7
Pinto Creek*	1	309.4	13.8	16.7	1.1	2.8	25	13	6	2	33
Pinto Creek	2		19.2 $\pm$ 13.9	20.6 $\pm$ 2.5	0.9 $\pm$ 0.3	2.7 $\pm$ 0.4	24.8 $\pm$ 4.1	19 $\pm$ 5.6	1.5 $\pm$ 0.7	3 $\pm$ 1.4	50.3 $\pm$ 5.2
San Miguel Creek*	1	1,275.3	3.9	4.5	0.4	0.7	61	57	2	3	21
San Miguel Creek	1		0	6.2	0.4	1.1	44	74	0	3	25
Sycamore Creek*	1	1,283.6	2.4	8	0.4	0.6	24	31	6	3	27
Sycamore Creek	1	1,283.6	13	34.5	0.5	2	21.5	23.8	3	3	63.3
Average		1,202.0	18.0	16.4	0.5	1.6	30.5	40.9	2.9	3	42.1
Maximum		5,160.4	80.2	38.6	1.1	3	61	79.3	6	10	86
Minimum		36.2	0	4.4	0.2	0.4	8	13	0	1	21

*Historic data from Bayer et al. 1992

Appendix B – 5 CONT. Stream physical habitat attributes for Ecoregion 31. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 31										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Las Moras Creek*	1		0	88	42	50	5	45	0	0
Metate Creek*	1		0	45	49	50	30	20	0	0
Mud Creek*	1		6	0	36	10	20	70	0	0
Nueces River	4	cobble	76.1 $\pm$ 11.3	41 $\pm$ 26.6	0.0	38.1 $\pm$ 19.7	31.3 $\pm$ 17	18.1 $\pm$ 13.1	0	12.5 $\pm$ 25
Pinto Creek*	1		40	6	49	20	50	30	0	0
Pinto Creek	2	silt	22.4 $\pm$ 8.4	40 $\pm$ 1.1	11.8	53.8 $\pm$ 12.4	22.5 $\pm$ 3.5	23.8 $\pm$ 8.8	0	0
San Miguel Creek*	1		41	62	91	50	30	20	0	0
San Miguel Creek	1	silt	29	66	>20	15	15	70	0	0
Sycamore Creek*	1		86	14	61	5	75	20	0	0
Sycamore Creek	1	gravel	69.2	33.3	>20	25	35	40	0	0
Average			44.3	39.9	37.8	34.6	30.7	31.1	0	3.6
Maximum			86.7	88	91	62.5	75	70	0	50
Minimum			0	0	0	5	5	10	0	0

*Historic data from Bayer et al. 1992

Appendix B - 6. Stream physical habitat attributes for Ecoregions 33 and 35. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 33											
Stream	Sample Size	Watershed Size (km ²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Blair Creek	2	11.4	1.4 $\pm$ 1.5	3.1 $\pm$ 0.8	0.1 $\pm$ 0.04	0.7 $\pm$ 0.1	46.5 $\pm$ 2.1	33.5 $\pm$ 0.7	0	9	29 $\pm$ 2.8
Catfish Creek*	1	505.1	4.7	7.2	0.4	1.1	50	83	5	4	42
Catfish Creek	4	505	11.9 $\pm$ 10.5	7.4 $\pm$ 1.9	0.4 $\pm$ 0.1	1.2 $\pm$ 0.5	34.9 $\pm$ 1.1	26.8 $\pm$ 4.2	1 $\pm$ 0.8	4 $\pm$ 2	28 $\pm$ 4.9
Cedar Creek	2	157	2.8 $\pm$ 0.7	4.4 $\pm$ 0.4	0.2 $\pm$ 0.04	1.3 $\pm$ 0.04	40.3 $\pm$ 0.4	44.3 $\pm$ 8.1	2	3	17.1 $\pm$ 1.8
Cummins Creek*	1	759.5	0.8	7.7	0.3	0.9	44	22	4	2	31
Cummins Creek	14	759.5	10.1 $\pm$ 7.3	17.9 $\pm$ 3.5	0.4 $\pm$ 0.1	1 $\pm$ 0.3	50.4 $\pm$ 10.8	54.6 $\pm$ 23.1	2.4 $\pm$ 0.8	2.7 $\pm$ 0.8	35.7 $\pm$ 10.8
Cuthand Creek	1	622.3	19.9	12.2	0.3		23.7	73	1	1	54.2
Davidson Creek*	1	178.1	0	5.0	0.3	0.6	61	61	0	2	40
Davidson Creek	2	178		5.8 $\pm$ 1.7	0.4 $\pm$ 0.1		61 $\pm$ 5	48.6 $\pm$ 2.7	0	6	48.1 $\pm$ 15.7
Kickapoo Creek	1	247	5.7	6.6	0.4	1.8	36.6	65	0	0	8.7
Little Mustang Creek	1	60.8	1.0	3.7	0.4		37.3	62.1	0	1	21.7
Lower Keechi Creek*	1	248.1	0.9	6.5	0.4	1.3	52	71	7	1	51
Middle Yegua Creek*	1	1,108.8	0.9	3.9	0.5	1.3	40	51	4	2	43
Mill Creek*	1		3.4	11	0.5	1.6	44	53	3	2	16
Mill Creek	15	975.7	12.6 $\pm$ 14.1	9 $\pm$ 3.4	0.2 $\pm$ 0.1	1.3 $\pm$ 0.7	27.3 $\pm$ 5.5	28.4 $\pm$ 16	1.4 $\pm$ 0.9	5.8 $\pm$ 1.5	15.8 $\pm$ 4.8
Ponds Creek*	1	20.2	0.0	3.5	0.2	0.3	51	44	5	2	16
Ponds Creek	2	20.2		2.4 $\pm$ 0.3	0.1 $\pm$ 0.1	0.8	39.4 $\pm$ 22.1	51.3 $\pm$ 8.8	0		10.5 $\pm$ 0.7
Smackover Creek	2	24.8	0.6 $\pm$ 0.3	4.6 $\pm$ 0.6	0.4 $\pm$ 0.1	1.2 $\pm$ 0.5	45.5 $\pm$ 9.6	73.3 $\pm$ 10.6	1 $\pm$ 1.4	2	20.8 $\pm$ 0.02
Wheelock Creek*	1	46.3	0.8	2.7	0.2	0.5	42	37	5	2	15
Average		601.3	8.4	9.7	0.3	1.1	40.8	44.9	1.8	3.8	26.6
Maximum		1,108.8	55.2	23.8	0.6	2.0	67.9	83.0	7.0	9.0	59.2
Minimum		11.4	0.0	2.2	0.1	0.3	18.5	2.8	0.0	0.0	8.7

*Historic data from Bayer et al. 1992

Appendix B – 6 CONT. Stream physical habitat attributes for Ecoregions 33 and 35. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 33										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Blair Creek	2	sand	16	92	25	40.3 $\pm$ 0.4	13.5 $\pm$ 3.5	38.5 $\pm$ 7.1	0	7.8 $\pm$ 3.9
Catfish Creek*	1	silt	2	95	91.4	70	10	20	0	0
Catfish Creek	4	sand	3.1 $\pm$ 4.4	99.8 $\pm$ 0.5	>20	63.8 $\pm$ 12.4	10	26.3 $\pm$ 12.4	0	0
Cedar Creek	2	sand	23.8	93.4 $\pm$ 2.5	17.3 $\pm$ 1	47.5	12.5	37.5	0	1.3 $\pm$ 1.8
Cummins Creek*	1	sand	19	32	91.4	70	20	0	0	10
Cummins Creek	14	gravel/ sand	51.5 $\pm$ 13.2	42 $\pm$ 16.7	37.4 $\pm$ 58	28.4 $\pm$ 26.9	6.9 $\pm$ 7.6	43.8 $\pm$ 26.7	8 $\pm$ 22.1	13 $\pm$ 12.7
Cuthand Creek	1	cobble	31.7	13.2	20.5	18.7	20	38.7	0	22.6
Davidson Creek*	1	clay	0	82	25.9	80	15	5	0	0
Davidson Creek	2	silt	0	65.3 $\pm$ 3.9	>20	32.5 $\pm$ 4.9	43.8 $\pm$ 1.2	7.7 $\pm$ 0.9	0	16 $\pm$ 2.8
Kickapoo Creek	1	clay	1.2	43.2	12.5	20	20	37.5	0	25
Little Mustang Creek	1	silt	2.5	81.3	12.6	26.2	20	42.3	0	11.5
Lower Keechi Creek*	1	sand	12	48	18	50	25	15	10	0
Middle Yegua Creek*	1	sand	30	60	23	60	20	20	0	0
Mill Creek*	1	sand	5	75	30.5	60	30	5	0	5
Mill Creek	15	sand	11.6 $\pm$ 10.7	60.4 $\pm$ 21.9	9 $\pm$ 2.9	53 $\pm$ 10	18.9 $\pm$ 10.5	21.4 $\pm$ 12.1	3 $\pm$ 7	3.7 $\pm$ 6.7
Ponds Creek*	1	sand	20	87	23	70	20	10	0	0
Ponds Creek	2	sand	13.3 $\pm$ 18.9	57.1 $\pm$ 1.7	20	46.3 $\pm$ 65.4	50 $\pm$ 70.7	0	0	3.8 $\pm$ 5.3
Smackover Creek	2	silt	17.1 $\pm$ 5.3	98 $\pm$ 0.7	>20	38.1 $\pm$ 5.2	7.3 $\pm$ 1.4	18.8 $\pm$ 8.8	0	36 $\pm$ 2.2
Wheelock Creek*	1	sand	18	58	46	70	15	15	0	0
Average			22.0	62.6	25.7	45.7	16.7	26.6	3.0	8.1
Maximum			76.0	100.0	237.1	92.5	100.0	74.0	79.8	37.5
Minimum			0.0	7.7	4.0	0.0	0.0	0.0	0.0	0.0

*Historic data from Bayer et al. 1992

Appendix B – 6 CONT. Stream physical habitat attributes for Ecoregions 33 and 35. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 35											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Beach Creek	2	21.4	12.2 $\pm$ 17	4.6 $\pm$ 1.1	0.4 $\pm$ 0.2	1 $\pm$ 0.3	46 $\pm$ 5.7	25	0	5	11.5 $\pm$ 2.1
Beech Creek*	1	117	2.2	5.2	0.3	0.9	19	20	2	0	72
Beech Creek	4	103 $\pm$ 16.2		4.2 $\pm$ 0.9	0.2 $\pm$ 0.02	1.2 $\pm$ 0.1	24.9 $\pm$ 4.9	31.5 $\pm$ 22	0	4.8 $\pm$ 1.3	50.3 $\pm$ 30.6
Big Cypress Creek*	1	369.5	0.2	4.1	0.3	0.6	23	84	0	2	53
Big Cypress Creek	2	369.5	2.9	20.3 $\pm$ 0.5	0.4 $\pm$ 0.1	1.8	8.1 $\pm$ 2.7	54.6 $\pm$ 11.8	0	3	62.1 $\pm$ 11.2
Black Bayou	5	165.5 $\pm$ 111.8	13.4 $\pm$ 14.6	13.8 $\pm$ 6.3	0.4 $\pm$ 0.1	1.1 $\pm$ 0.1	11.1 $\pm$ 3.5	9.7 $\pm$ 1.4	0	3.8 $\pm$ 1.9	28.1 $\pm$ 7.4
Black Cypress Bayou*	1	47.0	0.9	5.8	0.3	0.8	56	91	6	10	36
East Fork of the San Jacinto River*	1	365.7	7.8	7.4	0.5	1.5	39	35	2	4	17
East Fork of the San Jacinto River	2	365.7	3.3 $\pm$ 1.8	8.4 $\pm$ 0.3	0.4 $\pm$ 0.1	1.3 $\pm$ 0.1	31.1 $\pm$ 14.4	4.6 $\pm$ 1.9	2	8	21.5 $\pm$ 12
Frazier Creek*	1	126	3.2	6.2	0.6	1.3	49	60	6	3	29
Frazier Creek	5	211.8 $\pm$ 117.5	9.8 $\pm$ 11.3	6.6 $\pm$ 2.2	0.4 $\pm$ 0.2	1.3 $\pm$ 0.2	44.8 $\pm$ 14.1	50.8 $\pm$ 9.9	0.4 $\pm$ 0.5	4.8 $\pm$ 2.3	19.9 $\pm$ 10
Irons Bayou*	1	220.2	1.6	5.9	0.5	1.0	45	92	2	7	45
Irons Bayou	1	220.2	0.6	6.7	0.4		41.2	55	0	6	46
James Bayou	15	131.3 $\pm$ 49.6	7 $\pm$ 11.5	5.9 $\pm$ 2.7	0.3 $\pm$ 0.2	0.7 $\pm$ 0.4	24.5 $\pm$ 9	44.4 $\pm$ 19.3	0.1 $\pm$ 0.4	4.7 $\pm$ 1.2	16.2 $\pm$ 7
Lake Creek*	1	852.8	6.9	9.7	0.3	0.9	32	28	3	4	16
Lake Creek	5	789.9 $\pm$ 31.6	1.3 $\pm$ 0.9	6.8 $\pm$ 0.5	0.4 $\pm$ 0.1	1.8 $\pm$ 0.3	33.4 $\pm$ 3.6	20.5 $\pm$ 13	2 $\pm$ 1.2	5.8 $\pm$ 2	37.8 $\pm$ 30.1
Little Cypress Bayou*	1	730.5	5.6	7.4	0.6	1.2	34	79	2	3	31
Little Cypress Bayou	3	730.5	8.9 $\pm$ 7.1	6.8 $\pm$ 1.5	0.3 $\pm$ 0.1	1 $\pm$ 0.5	30.8 $\pm$ 4.9	56.7 $\pm$ 3.2	1.3 $\pm$ 2.3	6 $\pm$ 1.7	32.3 $\pm$ 5.1
Little Pine Island Bayou	2	319.3	0.8 $\pm$ 0.5	4 $\pm$ 0.1	0.2 $\pm$ 0.1	0.4 $\pm$ 0.3	22.4 $\pm$ 0.8	34.7 $\pm$ 19.3	2.5 $\pm$ 2.1	3 $\pm$ 1.4	54.5 $\pm$ 7.8
Peach Creek	19	399.9	19.6 $\pm$ 10.7	12.8 $\pm$ 3.4	0.2 $\pm$ 0.1	0.9 $\pm$ 0.4	44.5 $\pm$ 8.8	22 $\pm$ 15.7	2.1 $\pm$ 1.3	4.8 $\pm$ 1.8	14.8 $\pm$ 6
Piney Creek*	1	251.7	1.2	6.2	0.2	1.2	42	62	4	5	26
Piney Creek	2	251.7	1.1 $\pm$ 1.3	4.8 $\pm$ 0.9	0.2 $\pm$ 0.1	1.2 $\pm$ 0.3	33.4 $\pm$ 11	48.5 $\pm$ 7.8	1.5 $\pm$ 0.7	5.5 $\pm$ 2.1	33 $\pm$ 4.2
San Pedro Creek	1	343.7	15.9	7.0	0.3	1.5	43.9	69	0	2	13
West Fork of the San Jacinto River	3	1,225.3	11.1 $\pm$ 5.5	8.4 $\pm$ 1.2	0.3 $\pm$ 0.1	0.7 $\pm$ 0.3	40.6 $\pm$ 15.1	15.5 $\pm$ 5.2	2.3 $\pm$ 0.6	3.3 $\pm$ 0.6	12.5 $\pm$ 7.6
White Oak Creek*	1	233.3	26.0	8.5	0.9	1.9	50	71	2	6	53
Average		348.3	10.2	8.6	0.3	1.0	33.7	36.0	1.3	4.7	25.8
Maximum		1,225.3	43.7	24.6	0.9	2.0	68.1	92.0	6.0	10.0	89.0
Minimum		21.4	0.0	2.5	0.1	0.0	6.2	3.3	0.0	0.0	5.0

*Historic data from Bayer et al. 1992

Appendix B – 6 CONT. Stream physical habitat attributes for Ecoregions 33 and 35. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 35										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Beach Creek	2	sand	0	100	89	43.5 $\pm$ 2.8	18.5 $\pm$ 1.4	34 $\pm$ 1.4	0	4 $\pm$ 2.8
Beech Creek*	1	sand	2	82	91.4	75	25	0	0	0
Beech Creek	4	sand	0	86.8 $\pm$ 9.5	>20	35 $\pm$ 15.4	31.7 $\pm$ 21.3	5.4 $\pm$ 5	0	27.9 $\pm$ 21
Big Cypress Creek*	1		0	98	91.4	85	10	5	0	0
Big Cypress Creek	2	silt	0	96.1 $\pm$ 4.2	>20	71.3 $\pm$ 27.7	0	21.7 $\pm$ 20	0	7.1 $\pm$ 7.7
Black Bayou	5	silt	0	82 $\pm$ 14.1	19.7	62 $\pm$ 16	18 $\pm$ 9.7	20 $\pm$ 7.9	0	0
Black Cypress Bayou*	1	clay	2	81	61	70	15	10	5	0
East Fork of the San Jacinto River*	1	sand	14	72	107	80	15	5	0	0
East Fork of the San Jacinto River	2	sand	21.9 $\pm$ 0.8	97 $\pm$ 2.1	17.6 $\pm$ 2.3	77.5 $\pm$ 3.5	10	12.5 $\pm$ 3.5	0	0
Frazier Creek*	1	sand	1	36	64	70	20	10	0	0
Frazier Creek	5	sand	0	62.7 $\pm$ 38.5	44.6 $\pm$ 25.8	38.4 $\pm$ 22.4	11.9 $\pm$ 10.6	41 $\pm$ 29.8	1 $\pm$ 2.2	7.7 $\pm$ 13
Irons Bayou*	1	clay	0	67	106.7	90	5	5	0	0
Irons Bayou	1	silt	0	83.5	72	30	10	34	0	26
James Bayou	15	clay	2.2 $\pm$ 4.4	91.9 $\pm$ 10.9	159.3 $\pm$ 78.4	58.4 $\pm$ 18.2	5.1 $\pm$ 5	17.3 $\pm$ 9.3	0	20.5 $\pm$ 16.5
Lake Creek*	1	sand	2	13	45.7	70	20	10	0	0
Lake Creek	5	sand	10.6 $\pm$ 9.7	70.3 $\pm$ 17.3	18.6 $\pm$ 1	49.5 $\pm$ 28.1	25.5 $\pm$ 15.7	23 $\pm$ 16	0	1 $\pm$ 2.2
Little Cypress Bayou*	1	clay	2	56	107	70	10	20	0	0
Little Cypress Bayou	3	sand	0	97.2 $\pm$ 0.4	75.3 $\pm$ 23.6	34.5 $\pm$ 5.6	8	22.3 $\pm$ 8.9	0	35.2 $\pm$ 14.4
Little Pine Island Bayou	2	clay/ silt	0	92.5 $\pm$ 2.4	>20	38.5 $\pm$ 37.5	35 $\pm$ 14.1	14.5 $\pm$ 6.4	0	12 $\pm$ 17
Peach Creek	19	sand	21.4 $\pm$ 11.2	73.4 $\pm$ 22.7	17.7 $\pm$ 1.5	67.4 $\pm$ 15.2	18.9 $\pm$ 13.8	10.3 $\pm$ 8.2	0.0	3.4 $\pm$ 6.4
Piney Creek*	1	sand	16	93	44.2	70	25	5	0	0
Piney Creek	2	silt/sand	23 $\pm$ 12.7	88.8 $\pm$ 5	18.5 $\pm$ 3.6	62 $\pm$ 0.7	1 $\pm$ 1.4	37 $\pm$ 0.7	0	0
San Pedro Creek	1	sand	0	97.1	> 20	40	20	40	0	0
West Fork of the San Jacinto River	3	sand	15.8 $\pm$ 6.3	65.5 $\pm$ 17.4	66.7 $\pm$ 56.1	58.3 $\pm$ 14.4	20	7.5 $\pm$ 4.3	0	14.2 $\pm$ 10.1
White Oak Creek*	1	sand	2	82	91.4	80	15	5	0	0
Average			8.4	80.2	84.5	58.4	15.3	17.1	0.1	9.2
Maximum			45.0	100.0	250.0	100.0	50.8	86.3	5.0	58.3
Minimum			0.0	8.0	10.0	8.8	0.0	0.0	0.0	0.0

*Historic data from Bayer et al. 1992

Appendix B - 7. Stream physical habitat attributes for Ecoregion 34. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 34											
Stream	Sample Size	Watershed Size (km²)	Flow (cfs)	Average Width (m)	Average Depth (m)	Maximum Pool Depth (m)	Stream Bank Slope (degrees)	Stream Bank Erosion (%)	Total Riffles (no.)	Total Stream Bends (no.)	Instream Cover (%)
Arenosa Creek*	1	294	1.4	5.6	0.2	0.9	33	65	5	2	24
Arenosa Creek	3	294	0	7.6 $\pm$ 1.8	0.2 $\pm$ 0.04	1.1 $\pm$ 0.5	23.8 $\pm$ 3.3	38.8 $\pm$ 2.4	2.3 $\pm$ 2.1	4.3 $\pm$ 0.6	33.2 $\pm$ 5.4
Big Creek*	1	436.4	0.6	6.1	0.4	0.6	26	23	1	1	7
Big Creek	7	435.7 $\pm$ 10.2	11.3 $\pm$ 3.5	6.4 $\pm$ 2	0.3 $\pm$ 0.2	1.1 $\pm$ 0.6	33.6 $\pm$ 7.1	24.4 $\pm$ 11.9	1.7 $\pm$ 1.6	3.9 $\pm$ 1.6	11.7 $\pm$ 6.2
Garcitas Creek*	1	239.5	6.9	6.7	0.5	0.8	55	78	3	2	32
Garcitas Creek	2	239.5	2.2 $\pm$ 1.8	5.9 $\pm$ 0.7	0.2	1.1 $\pm$ 0.3	30.6 $\pm$ 6.5	49.6 $\pm$ 4.8	3.5 $\pm$ 3.5	6.5 $\pm$ 3.5	58.4 $\pm$ 17.8
Placedo Creek*	1	176.1	0	5.7	0.6	1.3	50	82	0	1	35
Placedo Creek	1	176.1	1	5.0	0.3	1.0	41.6	26	1	3	86
San Bernard River	3	885.2	13.8 $\pm$ 9.9	7.5 $\pm$ 2	0.4 $\pm$ 0.2	1.2 $\pm$ 0.1	37.1 $\pm$ 13.9	22 $\pm$ 13.9	1.3 $\pm$ 0.6	4.3 $\pm$ 0.6	15.3 $\pm$ 11.1
West Bernard Creek*	1	387.2	9.4	4.3	0.4	1	50	52	1	3	25
West Bernard Creek	3	387.2	49.7 $\pm$ 24.6	12.9 $\pm$ 1.3	0.5 $\pm$ 0.2		37 $\pm$ 3.5	19.2 $\pm$ 10.7	0.3 $\pm$ 0.6	3 $\pm$ 3.5	23 $\pm$ 5.2
West Carancahua Creek*	1	154.8	0.6	4.3	0.2	0.6	36	33	3	2	16
West Carancahua Creek	2	154.8	0.3	2.8 $\pm$ 0.1	0.1 $\pm$ 0.1	1.5	32.5 $\pm$ 0.4	43.3 $\pm$ 7.4	1 $\pm$ 1.4	5 $\pm$ 2.8	13.5 $\pm$ 7.8
West Mustang Creek*	1	360.6	0.3	4.8	0.4	0.7	41	39	2	6	22
West Mustang Creek	3	360.6	4.1 $\pm$ 1.9	7.8 $\pm$ 2.2	0.4 $\pm$ 0.2	1.4	34.4 $\pm$ 10.4	31.2 $\pm$ 3.8	0.3 $\pm$ 0.6	5.3 $\pm$ 0.6	24.7 $\pm$ 2.5
Average		382.1	10.2	6.8	0.3	1.0	35.2	35.1	1.6	3.9	24.6
Maximum		885.2	78	14.2	0.7	1.8	55	82	6	9	86
Minimum		154.8	0	2.7	0.04	0.5	20.2	10	0	1	4

*Historic data from Bayer et al. 1992

Appendix B – 7 CONT. Stream physical habitat attributes for Ecoregion 34. For parameters with multiple samples, the mean and standard deviation (mean $\pm$ SD) are reported.

Ecoregion 34										
Stream	Sample Size	Dominant Substrate Type	Substrate Gravel Size or Larger (%)	Tree Canopy (%)	Average Riparian Width (m)	Riparian Vegetation - Trees (%)	Riparian Vegetation - Shrubs (%)	Riparian Vegetation - Grass (%)	Riparian Vegetation - Cultivated Fields (%)	Riparian Vegetation - Other (%)
Arenosa Creek*	1	sand	10	78	91.4	70	15	15	0	0
Arenosa Creek	3	sand	4.8 $\pm$ 8	66.2 $\pm$ 16.3	19.8 $\pm$ 0.4	37.5 $\pm$ 19.8	50.8 $\pm$ 25	11.7 $\pm$ 5.2	0	0
Big Creek*	1	sand	10	3	6.1	0	0	0	100	0
Big Creek	7	clay	16.7 $\pm$ 15.8	35.4 $\pm$ 11.3	9.8 $\pm$ 2.5	50.7 $\pm$ 22.4	23.3 $\pm$ 13.4	16 $\pm$ 23	4.3 $\pm$ 11.3	5.7 $\pm$ 10.2
Garcitas Creek*	1		5	60	46	70	20	10	0	0
Garcitas Creek	2	sand	32.9 $\pm$ 8.7	81 $\pm$ 20.9	20	41.3 $\pm$ 15.9	32.5 $\pm$ 38.9	26.3 $\pm$ 23	0	0
Placedo Creek*	1		2	95	91	60	15	25	0	0
Placedo Creek	1	silt	11	95	> 20	10	15	75	0	0
San Bernard River	3	sand	10 $\pm$ 5.3	89.7 $\pm$ 12.8	12.8 $\pm$ 4.6	61.7 $\pm$ 18.9	21.7 $\pm$ 16.1	11.7 $\pm$ 5.8	0	5 $\pm$ 8.7
West Bernard Creek*	1		0	58	52	70	25	5	0	0
West Bernard Creek	3	clay	5 $\pm$ 8.7	80.3 $\pm$ 14.7	16	43.3 $\pm$ 25.2	5 $\pm$ 5	51.7 $\pm$ 20.2	0	0
West Carancahua Creek*	1	sand	2	13	23	12	8	30	50	0
West Carancahua Creek	2	sand	6 $\pm$ 5.7	85.3 $\pm$ 15.8	13.4 $\pm$ 0.8	67.5 $\pm$ 10.6	15 $\pm$ 7.1	15 $\pm$ 7.1	0	2.5 $\pm$ 3.5
West Mustang Creek*	1		0	59	107	80	0	5	15	0
West Mustang Creek	3	sand	0	80.5 $\pm$ 9.1	17.5 $\pm$ 2.1	68.3 $\pm$ 14.4	16.7 $\pm$ 5.8	8.3 $\pm$ 2.9	0	6.7 $\pm$ 5.8
Average			9.5	64.2	31.5	50.9	20.6	19.7	6.3	2.6
Maximum			40	98	107	85	70	75	100	25
Minimum			0	3	6.1	0	0	0	0	0

*Historic data from Bayer et al. 1992