
Pre-Application Document

Susitna-Watana Hydroelectric Project
FERC Project No. 14241



Alaska Energy Authority



December 2011

VOLUME II OF II

APPENDICES

- Appendix 4.4-1 Existing Water Quality Data for the Susitna River and Tributaries
- Appendix 4.6-1 Wildlife Habitat Scores
- Appendix 4.9-1 Photographs
- Appendix 4.9-2 Landscape Character Type Descriptions
- Appendix 4.9-3 Notable Natural Features Photographs
- Appendix 4.9-4 Aesthetic value and Visual Absorption Capability Ratings
- Appendix 4.10-1 ANCSA 17(b) Easement Maps
- Appendix 4.13-1 Corporation and Tribe Contact Information
- Appendix 6-1 Pre-PAD Correspondence and Meeting Notes
- Appendix 6-2 Susitna-Watana Project Contact List

APPENDIX 4.4-1
EXISTING WATER QUALITY DATA FOR THE SUSITNA RIVER AND
TRIBUTARIES

APPENDIX 4.4-1. Existing Water Quality Data (Conventional Parameters) for the Susitna River and Tributaries, Part 1 of 2.

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters									
								Conventional									
								Temp (°C)	DO (mg/L)	Orthophosphates (mg/L)	Nitrate Nitrogen (mg/L)	Bedload Discharge (ton/day)	Suspended Sediment Discharge (ton/day)	Turbidity (NTU) ^w	TSS (mg/L)	Suspended Sediment Load (tons/yr)	TDS (mg/L)
Denali	290.8	USGS	15291000	7/25/1986	29	Winter	209	≈0		≤0.1	0.05		17		2,965,500		≈351
						Spring	2860	0-8		≤0.1	0-0.07		up to 75,000	≈20			121-467
						Summer	7507	2-10.6		≤0.1	0-0.09		up to 186,000	45-350			123-205
						Fall	2381	0-5.2		≤0.1			up to 12100				≈226
Paxson (MacLaren R.)	259.8	USGS	15291200	7/25/1975	17	Winter				≤0.1							
						Spring	2344	0-11.0		≤0.1	≈0.09		up to 10,400				100-182
						Summer	2396	0.5-10		≤0.1	0-0.34		up to 16,000	90-190			84-170
						Fall	680	0.5-3.5		≤0.1	≈0.07		up to 192				≈144
Vee Canyon ^u	223.1	USGS	15291500	7/30/1986	24	Winter	1000	≈0		≤0.1			≈19		2,965,500		
						Spring	13000	0-10		≤0.1	0.02-0.16		up to 175,000				91-250
						Summer	14437	4.0-13	11.5-12.0	≤0.1	0-0.25		up to 196,000				125-187
						Fall	4872	1-5.5		≤0.1	≈0.88		up to 2,070				≈174
Vee Canyon	223.1	R&M				Winter		≈0		≤0.1			0	6,898,000			
						Summer				≤0.1					320-720		
Mainstem Susitna at Watana Dam Site	184.2	APA and ADF&G		10/16/1985	1	Winter											
						Spring		3.7-9.0									
						Summer		1.9-14.4	9.9-11.6								
						Fall		0-4.0	11.5								
Watana Damsite	183	R&M				Winter		≈0		≤0.1			0				
						Summer				≤0.1							
Mainstem Susitna D/S of Devil's Canyon	150.1	APA and ADF&G		10/16/1985	1	Winter											
						Spring		5.5-8.6									
						Summer		2.6-15.1									
						Fall		0.5-4.3									
Mainstem Susitna U/S of Portage Creek	149.4	APA and ADF&G		10/9/1985	1	Winter											
						Spring											
						Summer			10.9-14.8				45-200	52-482			
						Fall			12.3-13.8				4.2-8.2	7.5-12			
Mainstem Susitna at LRX 53	140.1	APA and ADF&G		10/17/1985	1	Winter											
						Spring		5.5-8.5									
						Summer		2.8-15.0									
						Fall		0-6.7									
Gold Creek	136.6	USGS	15292000	9/23/1986	37	Winter	1884	0	10.9-16.2	0.03-0.09	0.15-0.16		2.9-18	0.1-0.7			260-279
						Spring	19931	0-13.0	11.6-14.7	≤0.031	0.05-0.69		up to 197,000	.01-50			70-286
						Summer	54810	4.5-14.1	8.5-12.7	0-0.184	0.02-0.25	350-1970	up to 250,000	23-290			87-227
						Fall	6160	0-6.5	11.1-13.3	0-0.061		≈1.3	up to 15,000	5.3-10			107-300
Gold Creek	136.6	R&M		9/30/1981		Winter		≈0		≤0.1			0	7,731,000	100-188	84-300	

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters											
								Conventional											
								Temp (°C)	DO (mg/L)	Orthophosphates (mg/L)	Nitrate Nitrogen (mg/L)	Bedload Discharge (ton/day)	Suspended Sediment Discharge (ton/day)	Turbidity (NTU) ^w	TSS (mg/L)	Suspended Sediment Load (tons/yr)	TDS (mg/L)	Conductivity (umhos/cm)	
						Summer				≤ 0.1		up to 2180	up to 157,000 ^v	728			55-140	75-227	
Mainstem Susitna D/S of Gold Creek Bridge	135.8	APA and ADF&G		10/17/1985	1	Winter													
						Spring													
						Summer		2.8-14.9	10.3-13.7					22-220	53-592				
						Fall		0-4.8	12.3-12.5					3.6-7.9	3.7-10				
Mainstem Susitna at Curry Station	120.7	APA and ADF&G		10/17/1985	1	Winter													
						Spring		5.9-8.4											
						Summer		2.7-15.3	10.1-13.9					20-396	39-512				
						Fall		0-4.9	12-12.2					3.2-7	6.8-9				
Mainstem Susitna at Talkeetna Station	103	APA and ADF&G		10/12/1985	1	Winter													
						Spring		4.6-9.2						30-210	37-476				
						Summer		2.9-16.4	9.8-12.0					16-480	5.5-8.0				
						Fall		1.3-5.3	12-12.5					4-16					
Talkeetna ^u (Chulitna R.)	98.0	USGS	15292400	7/22/1986	28	Winter	1269	≈0		≤ 0.1	≈0		≤ 100					≈115	
						Spring	11217	0-9.1		≤ 0.1	0.18-.025	up to 18300	up to 100,000					108-190	
						Summer	21950	3.8-9.5		≤ 0.1	0.16-0.36	up to 13800	up to 262,000					101-144	
						Fall	5533	1.6-8.0		≤ 0.1			up to 5,000	194-360				123-152	
Talkeetna (Talkeetna R.)	97.0	USGS	15292700	5/18/2011	57	Winter	609	≈0	7.1-4.6	0-0.061	0.02-0.46			0.4-2.6				143-230	
						Spring	6650	0-12	10.4-13.8	0-0.4	0.35-0.40			0.4-69				49-255	
						Summer	10630	3.5-13.5	9.9-12.5	≤ 0.031	0.1-0.21	up to 1940 (R&M)		2-340				62-157	
						Fall	3160	0.5-9.0	12.3-15.3	≤ 0.06	0.14-1.22			0.8-1.4				84-176	
Mainstem Susitna above Parks Highway Bridge	86.2	APA and ADF&G		10/15/1985	1	Winter													
						Spring		4.1-8.9											
						Summer		3.6-12.8	10.5-12.3					80-400	178-751				
						Fall		0.8-5.6	11.7-12.4					19-36	60-93				
Sunshine	83.9	USGS	15292780	6/25/1986	15	Winter	4036	≈0	12.8-14.4	0.031-0.12		81		0.5-2.7				159-240	
						Spring	37207	0-11	9.8-13.8	0.031-0.12		up to 13600	up to 500,000	0.16-0.2				50-242	
						Summer	63740	5-14	9-13.4	0.031-0.061		up to 10000	up to 1,620,000	43-500				80-170	
						Fall	25217	2.0-5.0	12.8-14.6	≤ 0.031		up to 1500	up to 25,000	≈23				112-138	
Sunshine	83.9	R&M				Winter		≈0		≤ 0.1			0						
						Summer				≤ 0.1		up to 4520		up to 1056					
Skwentna (Skwentna R.)	28.0	USGS	15294300	9/11/1981	22	Winter	996	≈0		≤ 0.1			≈52					177-333	
						Spring	8572	0-5		≤ 0.1			up to 40,300					≈206	
						Summer	13182	5.5-12		≤ 0.1			up to 88,100	30-220				111-136	
						Fall	9275	1.5-6		≤ 0.1			up to 10,500					≈177	
Susitna (Yentna R.)	28.0	USGS	15294345	5/21/1986	5	Winter	2693	≈0	10.9-11.1	≤ 0.1		3.4-124	≈31					189-216	

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date [†]	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters										
								Conventional										
								Temp (°C)	DO (mg/L)	Orthophosphates (mg/L)	Nitrate Nitrogen (mg/L)	Bedload Discharge (ton/day)	Suspended Sediment Discharge (ton/day)	Turbidity (NTU) ^w	TSS (mg/L)	Suspended Sediment Load (tons/yr)	TDS (mg/L)	Conductivity (umhos/cm)
						Spring	26429	0-12	10.6-13.4	≤ 0.1		up to 157,000	up to 11,300					82-115
						Summer	47895	3.9-11.6	10.4-12.1	≤ 0.1		up to 13,300	up to 542,000					93-142
						Fall	16650	2.0-7.0		≤ 0.1		up to 8,220	up to 19,600					
Susitna	25.8	USGS	15294350	10/25/2003	48	Winter		≈0	9.9-12.7	≤ 0.1	0.16-0.23	≈15	29-171	1-3				180-225
						Spring		0-11.4	10.0-13.9	≤ 0.1	≈0.34	up to 15,000	up to 476,000	0.7-590			59-238	
						Summer		2.5-14.8	9-12.3	≤ 0.1	0-0.23	up to 21,000	up to 1,330,000	up to 790			96-154	
						Fall		0-5	10.5-13	≤ 0.1	0.16-0.28	up to 2000	up to 80,800	1.2-75			108-230	

*for tributaries, River Mile is at confluence with Susitna and shaded in green ^u nearly all Data is older than 1970

^w Denali and Paxson Station Data only available in JTU

[†]some values may be older

^y figure is from 1952

APPENDIX 4.4-1. Existing Water Quality Data (Conventional Parameters) for the Susitna River and Tributaries, Part 2 of 2.

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ^t	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters																
								Conventionals																
								Significant Ions (mg/L)						Total Hardness (mg/L)	pH	Total Alkalinity (mg/L)	Free CO ₂ (mg/L)	TOC (mg/L)	COD	True Color (Pt-Co units)	Chlorophyll-a (ug/L)	Total Dissolved Gas (% Sat)	Total Coliform Bacteria (colonies/100mL)	
								HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻	Ca (diss.)	Mg (diss.)	Na (diss.)											K (diss.)
Denali	290.8	USGS	15291000	7/25/1986	29	Winter	209	≈137	≈21	≈36	≈41	≈8	≈18	≈6.3	≈140	≈7.6		≈5.5		≈0				
						Spring	2860	52-196	3-30	9.2-39	17-51	1.9-16	2.1-23	2.3-6.6	50-180	7.1-7.5		5.2-25		5-30				
						Summer	7507	51-83	1.5-9.0	13-31	18-24	1.7-6.4	2.2-7.5	1.3-36	52-84	7.4-7.9		1.5-4.5		0-10				
						Fall	2381	≈92	≈11	≈20	≈29	≈3.6	≈10	≈2.1	≈87	7.8		≈2.3		≈5				
Paxson (MacLaren R.)	259.8	USGS	15291200	7/25/1975	17	Winter																		
						Spring	2344	≈78	≈4.3	≈20	≈27	≈3.9	≈2.8	≈2.5	≈84	≈7.6		≈3.1		0				
						Summer	2396	34-54	0.4-3.5	13-22	11-20	2.2-4.3	0.8-2.1	1.4-2.6	36-62	6.8-7.8		1.1-9.6		0-20				
						Fall	680	≈59	≈4	≈22	≈18	≈5.4	≈3.5	≈1.6	≈67	≈7.6		≈2.4		≈5				
Vee Canyon ^u	223.1	USGS	15291500	7/30/1986	24	Winter	1000																	
						Spring	13000	48-54	3.5-7.4	7.5-12	14-17	1.8-2.4	2.2-48	2.8-7.3	42-54	7.4-7.6		2.2-3.1		30-40				
						Summer	14437	59-72	2.1-9.2	10-18	18-25	2.2-4.4	2.1-6.3	1.4-5.2	58-76	7.5-8.1		0.7-3.6	8-39	5-10				
						Fall	4872	≈67	≈8.5	≈16	≈27	≈1.1	≈5	≈0.3	≈70	≈7.2		≈6.8		≈10				
Vee Canyon	223.1	R&M				Winter		57-161	16-30	11-39	25-51	3.8-16.0	6.3-23.0	2.0-9.0										
						Summer		39-81	1.5-11	2-31	13-29	1.1-6.4	2.1-10.0	1.3-7.3										
Mainstem Susitna at Watana Dam Site	184.2	APA and ADF&G		10/16/1985	1	Winter																		
						Spring																		
						Summer										8-8.2						97.07-100.97		
						Fall										8.4						96.71-98.84		
Watana Damsite	183	R&M				Winter																		
						Summer																		
Mainstem Susitna D/S of Devil's Canyon	150.1	APA and ADF&G		10/16/1985	1	Winter																		
						Spring																112.21-114.52		
						Summer																	108.83-118.32	
						Fall																	106.16-109	
Mainstem Susitna U/S of Portage Creek	149.4	APA and ADF&G		10/9/1985	1	Winter																		
						Spring																		
						Summer										6.8-8.2								
						Fall										7.2-8.3								
Mainstem Susitna at LRX 53	140.1	APA and ADF&G		10/17/1985	1	Winter																		
						Spring																		
						Summer																		
						Fall																		
Gold Creek	136.6	USGS	15292000	9/23/1986	37	Winter	1884	92-98	24-35	12-18	31-39	4.5-5.8	11-17	2.1-2.4	99-120	7.6-8.0	46-88	1.6-33	1.1-1.2	2-16	≈5			
						Spring	19931	28-97	1.8-33	4.7-27	9.9-33	0.3-7.4	2.4-17	1.0-3.8	30-110	7.0-8.0		1.3-24	1.8-10		5-50			
						Summer	54810	35-106	1.4-12	1-27	11-37	1.3-5.7	2.6-5.4	1.0-4.4	35-110	7.5-8.3	23-87	0.5-16	1.4-3.8	1.3-24	0-30			
						Fall	6160	45-107	5-20	12-38	16-37	2.2-8.3	4-13	1.1-5	49-120	7.2-8.3		1.2-10	≈4.2		0-12			
Gold Creek	136.6	R&M		9/30/1981		Winter		46-88	5.7-37	10-38	18-39	3.2-10	4.9-21.1	1.2-5										

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters																	
								Conventionals																	
								Significant Ions (mg/L)							Total Hardness (mg/L)	pH	Total Alkalinity (mg/L)	Free CO ₂ (mg/L)	TOC (mg/L)	COD	True Color (Pt-Co units)	Chlorophyll-a (ug/L)	Total Dissolved Gas (% Sat)	Total Coliform Bacteria (colonies/100mL)	
HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻	Ca (diss.)	Mg (diss.)	Na (diss.)	K (diss.)																			
						Summer		23-87	1.2-15	1-31	10-37	1.2-7.8	1.8-10	0.9-4.4											
Mainstem Susitna D/S of Gold Creek Bridge	135.8	APA and ADF&G		10/17/1985	1	Winter																			
						Spring																			
						Summer										6.8-8.0								102.04-107.49	
						Fall										8.1-8.3								101.56-106.59	
Mainstem Susitna at Curry Station	120.7	APA and ADF&G		10/17/1985	1	Winter																			
						Spring																			
						Summer										6.8-8.0								93.27-96.92	
						Fall										7.7-8.2								91.76-101.62	
Mainstem Susitna at Talkeetna Station	103	APA and ADF&G		10/12/1985	1	Winter																			
						Spring																			
						Summer										7.4-8.0									
						Fall										7.8-8.3									
Talkeetna ^u (Chulitna R.)	98.0	USGS	15292400	7/22/1986	28	Winter	1269	≈52	≈1	≈11	≈19	≈1.9	≈0.5	≈0.4	≈56	≈7.1		≈6.6		≈0					
						Spring	11217	73-78	1.4-2.0	20-22	24-26	4.4-4.6	2.3-2.7	1.3-1.8	77-84	7.4-8.0		1.2-5.0			5-15				
						Summer	21950	46-59	0-2.5	10-14	14-18	2.5-4.1	1.2-1.7	0.7-2.2	46-59	7.2-8.1		0.6-5.5			5-10				
						Fall	5533																		
Talkeetna (Talkeetna R.)	97.0	USGS	15292700	5/18/2011	57	Winter	609	46-70	11-27	10-24	17-26	1.9-5.6	7.7-15	1.0-1.9	20-78	7.3-8.2		0.8-41	0.7-1.8	0-25		≈21			
						Spring	6650	25-64	2.4-34	2.4-21	7-26	1-3.4	2.4-15	0.5-2.4	22-79	7.1-8.2		0.6-40	≈1.6	0-10		≈130			
						Summer	10630	25-50	1.4-9.5	1-18	6.8-17	0.4-3.9	2.7-9.7	0.5-2.9	22-50.8	7.3-8.6		0.6-30	0.4-2.6	0-80		33-190			
						Fall	3160	36-55	3.6-12	6-20	9.8-19	0.8-2.8	3.6-8.4	0.5-1.2	29.9-57.5	7.2-8.0		0.6-12.0	≈2.1	0-10		≈92			
Mainstem Susitna above Parks Highway Bridge	86.2	APA and ADF&G		10/15/1985	1	Winter																			
						Spring																			
						Summer										7.4-8.5									
						Fall										7.8-8									
Sunshine	83.9	USGS	15292780	6/25/1986	15	Winter	4036		6.8-16	16-19	20-33	2.9-4.2	5.5-11	1.4-2	55-99.4	7.8-8.2		≈1.2	≈2						
						Spring	37207	31-86	2.5-21	5.7-18	11-31	1.4-4.5	1.9-11	1-2.1	33-96	7.2-8.3		3.9-91	0.4-7.4	0-100					
						Summer	63740	≈52	2.2-5.8	3-16	14-23	2-3.5	2.3-4.4	1.1-2.8	43.6-72	7.1-8.3		1.1-2.1	1.7-3.2	≈25					
						Fall	25217	≈52	5.1-6	12-15	17-18	2.7-3	4.1-4.4	≈1.2	37.8-45.7	7.4-8.3		≈3.3	≈2.7	≈8					
Sunshine	83.9	R&M				Winter		46-88	5.7-37	10-38	18-39	3.2-10	4.9-21.1	1.2-5											
						Summer		23-87	1.2-15	1-31	10-37	1.2-7.8	1.8-10	0.9-4.4											
Skwentna (Skwentna R.)	28.0	USGS	15294300	9/11/1981	22	Winter	996	≈77	≈12	≈24	≈28	≈4.3	≈7.7	≈1.7	≈88	≈7.1		≈9.8		≈10					
						Spring	8572	≈78	≈10	≈19	≈27	≈3.6	≈7.9	≈1.8	≈82	≈7.7		≈2.5		≈15					
						Summer	13182	≈52	≈6	≈20	≈17	≈5	≈4.4	≈0.9	≈63	≈7.4		≈3.3		≈20					
						Fall	9275	≈64	≈6	≈27	≈21	≈3.9	≈5	≈1.1	≈74	≈7.7		≈2		≈5					

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date [†]	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters																			
								Significant Ions (mg/L)								Conventionals						Chlorophyll-a (ug/L)	Total Dissolved Gas (% Sat)	Total Coliform Bacteria (colonies/100mL)			
								HCO ₃ ⁻	Cl ⁻	SO ₄ ²⁻	Ca (diss.)	Mg (diss.)	Na (diss.)	K (diss.)	Total Hardness (mg/L)	pH	Total Alkalinity (mg/L)	Free CO ₂ (mg/L)	TOC (mg/L)	COD	True Color (Pt-Co units)						
Susitna (Yentna R.)	28.0	USGS	15294345	5/21/1986	5	Winter	2693								7.1-7.9												
						Spring	26429								7.0-8.0												
						Summer	47895								7.4-8.3												
						Fall	16650																				
Susitna	25.8	USGS	15294350	10/25/2003	48	Winter		70-98	9.6-15	15-20	24-31	3.6-5.0	6.2-9.0	1.5-2.5	75-95	7.5-7.6	60-75	1.8-17	0.4-4		0-5	ND-1.2		≤ 20			
						Spring		37-88	1.4-15	3.7-18	11-30	1.6-4.9	1.8-8.3	0.8-1.8	36-93.7	7.1-8.1		1.1-19									
						Summer		45-69	1.2-12	1-22	15-22	2-3.3	1-1.8	0.9-4.4	44-66	7.5-8.5	36-57	0.4-8.0	2.7-11		0-10						
						Fall		55-92	3.1-18	13-20	16-31	2.6-4.6	2.8-8.6	1.1-2.0	51.6-96	7.6-8.0		1.4-15			≈10						

APPENDIX 4.4-1. Existing Water Quality Data (Metals) for the Susitna River and Tributaries, Part 1 of 3.

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters											
								Metals in Water, unfiltered (ug/L)											
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn
Denali	290.8	USGS	15291000	7/25/1986	29	Winter	209						≈60		≈10				
						Spring	2860					0-4000		≈20					
						Summer	7507					up to 3200		≈10					
						Fall	2381					≈610		≈60					
Paxson (MacLaren R.)	259.8	USGS	15291200	7/25/1975	17	Winter													
						Spring	2344						≈370						
						Summer	2396	≈10000	≤ 100	≤ 20	≈1	≈40	≈20000	≤ 200	0-10		≈18	≤ 50	≈90
						Fall	680												
Vee Canyon ^u	223.1	USGS	15291500	7/30/1986	24	Winter	1000												
						Spring	13000					660-5000							
						Summer	14437					up to 12000		up to 230					
						Fall	4872					up to 900							
Vee Canyon	223.1	R&M				Winter													
						Summer													
Mainstem Susitna at Watana Dam Site	184.2	APA and ADF&G		10/16/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Watana Damsite	183	R&M				Winter													
						Summer													
Mainstem Susitna D/S of Devil's Canyon	150.1	APA and ADF&G		10/16/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Mainstem Susitna U/S of Portage Creek	149.4	APA and ADF&G		10/9/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Mainstem Susitna at LRX 53	140.1	APA and ADF&G		10/17/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Gold Creek	136.6	USGS	15292000	9/23/1986	37	Winter	1884		≤ 100	≤ 1	≤ 1		≈120	≤ 1	≤ 20	≤ 0.1	1	≤ 1	≈10
						Spring	19931	≈14000	≤ 100	≤ 20	≤ 1	14-50	40-20000	≈5	10-370	≤ 0.1	2-5	≈2	10-80
						Summer	54810	≈13000	100-500	0-30	≤ 1	15-190	430-24000	≤ 200	10-390	2-13	2-12	≤ 50	20-120
						Fall	6160	≈500		≤ 20	≤ 1		≈800	≤ 200	≈20	≈0.2	≤ 1	≤ 50	≈30
Gold Creek	136.6	R&M		9/30/1981		Winter													
						Summer													
Mainstem Susitna D/S of Gold Creek Bridge	135.8	APA and ADF&G		10/17/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Mainstem Susitna at Curry Station	120.7	APA and ADF&G		10/17/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Mainstem Susitna at Talkeetna Station	103	APA and ADF&G		10/12/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Talkeetna ^u (Chulitna R.)	98.0	USGS	15292400	7/22/1986	28	Winter	1269						≈0		≈10				
						Spring	11217						0-810		10-30				
						Summer	21950						up to 4300		20-280				
						Fall	5533												

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ^t	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters											
								Metals in Water, unfiltered (ug/L)											
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn
Talkeetna (Talkeetna R.)	97.0	USGS	15292700	5/18/2011	57	Winter	609		0-22	≤ 1	≤ 1	1-10	≈80	≤ 10	3-10		≤ 1		≤ 20
						Spring	6650		0-100	≤ 1	0-1	20-40	60-2800	≤ 30	10-70		≤ 10		10-230
						Summer	10630	≈4600	0-200	1-5	≤ 1	20-100	70-17000	≤ 200	10-520		1-2	≤ 10	20-90
						Fall	3160		0-200	≤ 20	1-2	≤ 20	150-180	≤ 200	0-30		1-2		≤ 20
Mainstem Susitna above Parks Highway Bridge	86.2	APA and ADF&G		10/15/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Sunshine	83.9	USGS	15292780	6/25/1986	15	Winter	4036		100	0-1	1	5-20	110-1100	≤ 1	2-10	0.1	1-2	≈20	10-30
						Spring	37207	up to 22000	0-2000	≤ 20	≤ 1	5-200	160-37000	0-300	10-730	0.1-0.9	≤ 1	≤ 200	20-150
						Summer	63740	up to 15000	100-500	0-35	0-1	0-35	7600-32000	2-13	170-670	0.1-0.6	1-3	18-30	40-200
						Fall	25217	up to 2200	200	≤ 20	≤ 1	20	≈3700	≤ 200	100	≤ 0.1	3	≤ 50	30
Sunshine	83.9	R&M				Winter													
						Summer													
Skwentna (Skwentna R.)	28.0	USGS	15294300	9/11/1981	22	Winter	996								≈0				
						Spring	8572					≈550							
						Summer	13182								≈0				
						Fall	9275												
Susitna (Yentna R.)	28.0	USGS	15294345	5/21/1986	5	Winter	2693												
						Spring	26429												
						Summer	47895												
						Fall	16650												
Susitna	25.8	USGS	15294350	10/25/2003	48	Winter			100	≤ 20	≤ 1	up to 140	240-720	≤ 200	30-40	≤ 0.5	1-3	0-4	20-30
						Spring			100-200	≤ 20	≤ 1	20-60	230-16000	≤ 200	20-410	≤ 0.5	0-3	0-5	10-60
						Summer			up to 400	≤ 1	≤ 1	30-90	7900-42000	≤ 200	320-870	≤ 1	7-40	1-2	80-180
						Fall			≤ 100	≤ 20	≤ 1	20-30	260-5400	≤ 200	20-130	≤ 0.5	1-4		20-30

^w Denali and Paxson Station Data only available in JTU

*for tributaries, River Mile is at confluence with Susitna and shaded in green ^u nearly all Data is older than 1970

^t some values may be older

^v figure is from 1952

APPENDIX 4.4-1. Existing Water Quality Data (Metals) for the Susitna River and Tributaries, Part 2 of 3.

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters															
								Metals in Water, filtered (ug/L)															
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn				
Denali	290.8	USGS	15291000	7/25/1986	29	Winter	209																
						Spring	2860																
						Summer	7507																
						Fall	2381																
Paxson (MacLaren R.)	259.8	USGS	15291200	7/25/1975	17	Winter																	
						Spring	2344																
						Summer	2396																
						Fall	680																
Vee Canyon ^u	223.1	USGS	15291500	7/30/1986	24	Winter	1000																
						Spring	13000																
						Summer	14437																
						Fall	4872																
Vee Canyon	223.1	R&M				Winter																	
						Summer																	
Mainstem Susitna at Watana Dam Site	184.2	APA and ADF&G		10/16/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Watana Damsite	183	R&M				Winter																	
						Summer																	
Mainstem Susitna D/S of Devil's Canyon	150.1	APA and ADF&G		10/16/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna U/S of Portage Creek	149.4	APA and ADF&G		10/9/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at LRX 53	140.1	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Gold Creek	136.6	USGS	15292000	9/23/1986	37	Winter	1884		≤ 100	≤ 1	≤ 1		≈10	≤ 1			1	≤ 1	≤ 10				
						Spring	19931		≈60	≤ 3	≤ 1	≈5	20-100	0-1	0-40	≤ 0.1	2	≈3	≤ 40				
						Summer	54810		0-44	0-20	≤ 1	2-5	50-320	0-5	2-180	≤ 0.2	1-2	0-3	6-20				
						Fall	6160					≈40		≤ 10									
Gold Creek	136.6	R&M		9/30/1981		Winter																	
						Summer																	
Mainstem Susitna D/S of Gold Creek Bridge	135.8	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at Curry Station	120.7	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at Talkeetna Station	103	APA and ADF&G		10/12/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Talkeetna ^u (Chulitna R.)	98.0	USGS	15292400	7/22/1986	28	Winter	1269																
						Spring	11217																
						Summer	21950																
						Fall	5533																

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ^t	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters											
								Metals in Water, filtered (ug/L)											
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn
Talkeetna (Talkeetna R.)	97.0	USGS	15292700	5/18/2011	57	Winter	609	10-160	≤ 100	≤ 1	≤ 1	≤ 10	8-40	≤ 10	3-10	≤ 1	≤ 1	3-13	
						Spring	6650	10-380	0-20	≤ 3	0-2	≤ 30	12-100	≤ 30	3-20	0-8	0-2	5-90	
						Summer	10630	20-290	7-23	0-5	≤ 2	≤ 10	13-410	≤ 10	3-20	0-2	0-5	6-30	
						Fall	3160	20-100	7-32	≤ 1	0-2	≤ 10	0-61	≤ 10	1-30	0	≤ 1	≈ 10	
Mainstem Susitna above Parks Highway Bridge	86.2	APA and ADF&G		10/15/1985	1	Winter													
						Spring													
						Summer													
						Fall													
Sunshine	83.9	USGS	15292780	6/25/1986	15	Winter	4036		25-100	≤ 1	≤ 1	1-10	17-40	≈ 3	2-10	≤ 1	1	≤ 1	10-30
						Spring	37207		19-41	≤ 1	0-1	≤ 1	12-180	≤ 1	3-20	≤ 0.1	1	≤ 1	20-31
						Summer	63740		0-70	0-24	0-1	2-10	10-330	≤ 1	7-12	≤ 0.1	1-3	0-2	14-65
						Fall	25217						≈ 60		≤ 10				
Sunshine	83.9	R&M				Winter													
						Summer													
Skwentna (Skwentna R.)	28.0	USGS	15294300	9/11/1981	22	Winter	996												
						Spring	8572												
						Summer	13182												
						Fall	9275												
Susitna (Yentna R.)	28.0	USGS	15294345	5/21/1986	5	Winter	2693												
						Spring	26429												
						Summer	47895												
						Fall	16650												
Susitna	25.8	USGS	15294350	10/25/2003	48	Winter			≈ 40	≤ 2	≈ 1	≤ 2	60-150	≤ 2	10-30	0-0.1	0-3	≈ 0	≤ 20
						Spring		10-50	20-80	≤ 3	≤ 1	≤ 20	20-370	2-11	10-20	0-0.3	0-3	0-5	12-33
						Summer		40-350	20-200	≤ 2	≤ 1	≤ 3	10-460	≤ 5	6-20	≤ 0.5	1-3	0-2	8-160
						Fall		40-150	25-38	≤ 1	≤ 1	≈ 3	40-230	≤ 5	10-21	0.1-3	1-4	≈ 1	6-18

APPENDIX 4.4-1. Existing Water Quality Data (Metals) for the Susitna River and Tributaries, Part 3 of 3.

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters															
								Metals in Suspended Sediment (ug/L)															
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn				
Denali	290.8	USGS	15291000	7/25/1986	29	Winter	209																
						Spring	2860																
						Summer	7507																
						Fall	2381																
Paxson (MacLaren R.)	259.8	USGS	15291200	7/25/1975	17	Winter																	
						Spring	2344																
						Summer	2396																
						Fall	680																
Vee Canyon ^u	223.1	USGS	15291500	7/30/1986	24	Winter	1000																
						Spring	13000																
						Summer	14437																
						Fall	4872																
Vee Canyon	223.1	R&M				Winter																	
						Summer																	
Mainstem Susitna at Watana Dam Site	184.2	APA and ADF&G		10/16/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Watana Damsite	183	R&M				Winter																	
						Summer																	
Mainstem Susitna D/S of Devil's Canyon	150.1	APA and ADF&G		10/16/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna U/S of Portage Creek	149.4	APA and ADF&G		10/9/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at LRX 53	140.1	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Gold Creek	136.6	USGS	15292000	9/23/1986	37	Winter	1884			0	≤ 10	≈110	0-4	7-10		0	0	10					
						Spring	19931		≈40		1-9	30-120	0-4	7-8		0	0-1	≈10					
						Summer	54810		70-400	0-10	≤ 1	15-190	4600-24000	0-47	70-390	0.1-0.4	3-6	8-29	20-110				
						Fall	6160				≤ 1												
Gold Creek	136.6	R&M		9/30/1981		Winter																	
						Summer																	
Mainstem Susitna D/S of Gold Creek Bridge	135.8	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at Curry Station	120.7	APA and ADF&G		10/17/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Mainstem Susitna at Talkeetna Station	103	APA and ADF&G		10/12/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	

Station Name	Station Susitna River Mile*	Original Data Source	USGS Station Code	Most Recent Sample Date ¹	Years of Record	Season	Mean Instantaneous Discharge (cfs)	Water Quality Parameters															
								Metals in Suspended Sediment (ug/L)															
								Al	Ba	Cd	Se	Cu	Fe	Pb	Mn	Hg	As	Ni	Zn				
Talkeetna ^u (Chulitna R.)	98.0	USGS	15292400	7/22/1986	28	Winter	1269																
						Spring	11217																
						Summer	21950																
						Fall	5533																
Talkeetna (Talkeetna R.)	97.0	USGS	15292700	5/18/2011	57	Winter	609																
						Spring	6650		0-80	0		40-690	0-3	0-6		≤ 1				0-10			
						Summer	10630		0-90	0	0	3100-6800		90-190		≤ 1				20-70			
						Fall	3160									≈ 2							
Mainstem Susitna above Parks Highway Bridge	86.2	APA and ADF&G		10/15/1985	1	Winter																	
						Spring																	
						Summer																	
						Fall																	
Sunshine	83.9	USGS	15292780	6/25/1986	15	Winter	4036		0-80	0	0-1	≤ 20	120-1100		10-30	0	≈ 2	≈ 2	≈ 10				
						Spring	37207		0-60		≤ 1	1	120-160	0	6-20	0	0-1	16	20-31				
						Summer	63740		80-300	1-11	0	16-63	7400-32000	0-38	160-660	0.1-0.6	4-15	16-51	0-190				
						Fall	25217																
Sunshine	83.9	R&M				Winter																	
						Summer																	
Skwentna (Skwentna R.)	28.0	USGS	15294300	9/11/1981	22	Winter	996																
						Spring	8572																
						Summer	13182																
						Fall	9275																
Susitna (Yentna R.)	28.0	USGS	15294345	5/21/1986	5	Winter	2693																
						Spring	26429																
						Summer	47895																
						Fall	16650																
Susitna	25.8	USGS	15294350	10/25/2003	48	Winter			0-100	≤ 10	≤ 1	140	300-400	≤ 99	0-30	≈ 1	0-0.1	1-4	0-30				
						Spring			60-200	≤ 10	≤ 1	1-54	230-16000		0-400	≤ 0.1	0-6	4-21	0-50				
						Summer			70-400	≤ 10	≤ 1	29-89	7800-38000	14-94	320-850	≤ 1	0.3-0.6	32-52	80-180				
						Fall			≤ 100	≤ 10	≤ 1	20-54	≈ 300	9-97	0-130	0	1-4	6-18					