APPENDIX 5.3.1-A

Tables and Figures

APPENDIX A, TABLE 1

Summary enumeration and percent composition data for benthic invertebrate samples collected from the SKR in the Project LSA, October 2007 and November 2008.

Taxa	Upstream from Caution Creek Oct 26, 2007		Downstream from Caution Creek Oct 26, 2007		Downstream from 101 Ravine Oct 23 & 24, 2007		Downstream from West Perimeter Ravine Oct 29, 2007		Downstream from West Ravine Oct 22, 2007		Downstream from East Ravine Oct 27, 2007		Downstream from Duke Ravine Nov 7 & 8, 2008		Downstream from FALC Ravine Nov 9, 2008		Downstream from Wapiti Ravine Nov 10, 2008		Downstream from English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Phylum: Annelida																				
Class: Hirudinea																				
Family: Erpobdellidae																				
Nephelopsis obscura																			1	0.03
Family: Hirudinidae																				
Mollibdella grandis																	4	0.03		
Class: Oligochaeta																				
Family: Lumbricidae													3	0.38						
Family: Naididae							8	0.15												
Family: Tubificidae	415	20.77	14	2.52	2	3.08	856	16.23	11	1.27	22	11.06	323	41.25	2950	45.91	9643	80.31	2223	67.84
Phylum: Arthropoda																				
Class: Insecta																				
Order: Coleoptera																				
Family: Dytiscidae																				
Liodessus sp.	1	0.05																		
Order: Diptera																				
Family: Ceratopogonidae																				
Culicoides sp.													1	0.13			1	0.01		
Probezzia sp.	8	0.40	8	1.44	1	1.54	56	1.06	1	0.12	6	3.02			1	0.02	1	0.01	13	0.40
Family: Chironomidae	2	0.10	1	0.18															6	0.18
Subfamily: Chironominae																	1	0.01		
Axarus sp.									2	0.23										
Beckidia sp.					1	1.54														
Chironomus sp.	1085	54.30	88	15.83	10	15.38	3795	71.97	495	57.09	3	1.51	65	8.30	897	13.96	742	6.18	617	18.83
Cryptochironomus sp.	94	4.70	65	11.69	7	10.77	49	0.93	52	6.00	7	3.52	84	10.73	11	0.17	97	0.81	42	1.28
Demicryptochironomus sp.			1	0.18					5	0.58	2	1.01	1	0.13			1	0.01	11	0.34
Microtendipes sp.	180	9.01	27	4.86	2	3.08	8	0.15	104	12.00			7	0.89			41	0.34	21	0.64
Paracladopelma sp.			1	0.18	2	3.08														
Phaenopsectra sp.													25	3.19						
Polypedilum sp.	29	1.45	251	45.14	19	29.23	40	0.76	92	10.61	72	36.18	46	5.87	8	0.12	33	0.27	21	0.64
Robackia sp.					2	3.08					2	1.01								
Stictochironomus sp.	2	0.10	5	0.90			1	0.02			2	1.01								
Tribelos sp.	3	0.15	2	0.36			4	0.08			1	0.50							17	0.52
Subfamily: Diamesinae													1	0.13						
Pseudodiamesa sp.																				
Subfamily: Orthocladiinae	1	0.05											1	0.13			1	0.01		
Cricotopus/Orthocladius sp.																	2	0.02		
Eukiefferiella													1	0.13						
Heterotrissocladius sp.	2	0.10	1	0.18									12	1.53					20	0.61
Parakiefferiella sp.	1	0.05	1	0.18			4	0.08	9	1.04			8	1.02			1	0.01		
Parametriocnemus sp.													4	0.51						
Paratrichocladius sp.									2	0.23										
Pseudosmittia sp.													1	0.13	8	0.12	4	0.03		
Tevetenia sp.							8	0.15												
Subfamily: Diamesinae																				
Pseudodiamesa sp.	2	0.10																		
Subfamily: Tanypodinae	1	0.05															1	0.01		
Ablabesmyia sp.	1	0.05					1	0.02											1	0.03
Procladius sp.	13	0.65	1	0.18			89	1.69	24	2.77			2	0.26	18	0.28	39	0.32	45	1.37
Tanypus sp.	3	0.15																		
Thienemannimyia	1	0.05							3	0.35			1	0.13						
Subfamily: Tanytarsini													1	0.13	8	0.12			1	0.03
Microsectra sp.	4	0.20	2	0.36			19	0.36					8	1.02	1	0.02	1	0.01	12	0.37
Tanytarsus sp.			2	0.36																
Family: Simulidae													4	0.51						
Family: Stratiomyidae													1	0.13						
Family: Tipulidae																				
Dicranota sp.													1	0.13					1	0.03
Hexatoma/Limnophila sp.											2	1.01	2	0.26					1	0.03
Pilaria sp.																	8	0.07		
Tipula sp.											1	0.50							1	0.03

APPENDIX A, TABLE 1

Summary enumeration and percent composition data for benthic invertebrate samples collected from the SKR in the Project LSA, October 2007 and November 2008.

Taxa	Upstream from Caution Creek Oct 26, 2007		Downstream from Caution Creek Oct 26, 2007		Downstream from 101 Ravine Oct 23 & 24, 2007		Downstream from West Perimeter Ravine Oct 29, 2007		Downstream from West Ravine Oct 22, 2007		Downstream from East Ravine Oct 27, 2007		Downstream from Duke Ravine Nov 7 & 8, 2008		Downstream from FALC Ravine Nov 9, 2008		Downstream from Wapiti Ravine Nov 10, 2008		Downstream from English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Order: Ephemeroptera																				
Family: Ametropodidae																				
Amertropus sp.	7	0.35	3	0.54	2	3.08	1	0.02			2	1.01								
Family: Baetidae																				
Baetis sp.									1	0.12			1	0.13						
Family: Baetiscidae																				
Baetisca sp.	1	0.05															5	0.04		
Family: Ephemeridae																				
Hexagenia limbata	14	0.70	1	0.18	1	1.54	83	1.57	37	4.27					1	0.02	10	0.08	19	0.58
Family: Leptophlebidae																				
Leptophlebia sp.															1	0.02				
Tricorythodes sp.									1	0.12										
Family: Metretopodidae																				
Siphloplecton sp.					1	1.54			1	0.12										
Order: Odonata																				
Family: Corduliidae																				
Subfamily: Corduliinae																				
Epitheca sp.																			1	0.03
Family: Gomphidae																				
Gomphus sp.	21	1.05	13	2.34	5	7.69	16	0.30	5	0.58	8	4.02	1	0.13			12	0.10		
Order: Plecoptera																				
Family: Perlodidae															1	0.02				
Isoperla sp.	6	0.30					13	0.25	7	0.81										
Order: Trichoptera																				
Family: Hydropsychidae																				
Cheumatopsyche sp.	2	0.10					1	0.02	12	1.38										
Hydropsyche sp.									1	0.12										
Family: Leptoceridae																				
Hydatophylax sp.											1	0.50							1	0.03
Subphylum: Crustacea																				
Class: Ostracoda													2	0.26	44	0.68	52	0.43		
Phylum: Mollusca																				
Class: Pelecypoda																				
Family: Sphaeridae	49	2.45	59	10.61	8	12.31	63	1.19	1	0.12	23	11.56	70	8.94	965	15.02	457	3.81	75	2.29
Pisidium sp.	31	1.55	10	1.80			144	2.73			6	3.02	52	6.64	1453	22.61	729	6.07	114	3.48
Sphaerium sp.	16	0.80			2	3.08	9	0.17	1	0.12	32	16.08	5	0.64	29	0.45	24	0.20		
Family: Unionidae	2	0.10					2	0.04											1	0.03
Class: Gastropoda																				
Family: Ancylidae																				
Ferissia rivularis	1	0.05																		
Family: Hydrobiidae							2	0.04											9	0.27
Family: Lymnaeidae													12	1.53	25	0.39	93	0.77		
Family: Physidae																				
Physa sp.											1	0.50			4	0.06	1	0.01		
Family: Planorbidae																				
Helisoma sp.																			1	0.03
Phylum: Nematoda							1	0.02			6	3.02	37	4.73			3	0.02	2	0.06
Grand Total	1998	100	556	100	65	100	5273	100	867	100	199	100	783	100	6425	100	12007	100	3277	100

[1] Total is the sum of the five stations (total sampling area = 0.78 m^2)

Taxa considered non-benthic were removed from the data set. This included the Family Corixidae.

APPENDIX A, TABLE 2

Summary enumeration and percent composition data for the benthic invertebrate samples collected from streams in the Project LSA, October 2007 and November 2008.

Taxa	Caution Creek Oct 25, 2007		101 Ravine Oct 23, 2007		West Perimeter Ravine Oct 29, 2007		West Ravine Oct 21 & 22, 2007		East Ravine Oct 24, 2007		Duke Ravine Nov 7, 2008		FALC Ravine[2] Nov 8, 2008		English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Phylum: Annelida																
Class: Oligochaeta																
Family: Enchytraeidae							11	0.44	6	0.45	1	0.04	15	1.27		
Family: Lumbricidae							23	0.93			1	0.04	1	0.08	2	0.08
Family: Lumbriculidae											2	0.08				
Family: Naididae	1	0.16														
Family: Tubificidae	11	1.77					29	1.17	1	0.08					1	0.04
Phylum: Arthropoda																
Class: Arachnida																
Order: Trobidformes																
Suborder: Hydracarina	1	0.16			2	0.04	2	0.08	1	0.08					1	0.04
Class: Insecta																
Order: Coleoptera																
Family: Dytiscidae													3	0.25		
Liodessus sp.	2	0.32														
Family: Elmidae																
Optioservus sp.									6	0.45	2	0.08			10	0.41
Order: Collembola	1	0.16					4	0.16								
Order: Diptera																
Family: Ceratopogonidae							12	0.49								
Bessia sp.													4	0.34		
Culicoides sp.											1	0.04				
Dasyhelea sp.							4	0.16					1	0.08		
Forcipomyia sp.							5	0.20								
Family: Chironomidae																
Subfamily: Chironominae																
Paracladopelma sp.			3	0.32											2	0.08
Paratendipes sp.																
Polypedilum sp.																
Stictochironomus sp.	1	0.16			1	0.02										
Subfamily: Diamesinae																
Diamesa sp.									4	0.30						
Pseudodiamesa sp.													6	0.51		
Subfamily: Orthocladiinae	4	0.65	3	0.32	5	0.09	36	1.46	3	0.23			5	0.42	10	0.41
Brillia sp.					8	0.14	2	0.08					68	5.75		
Corynoneura sp.			1	0.11	33	0.59					1	0.04	4	0.34	16	0.66
Cricotopus/Orthocladius sp.																
Eukiefferiella sp.	1	0.16	1	0.11	202	3.58	50	2.09	8	0.60	20	0.78	8	0.68	7	0.29

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Summary enumeration and percent composition data for the benthic invertebrate samples collected from streams in the Project LSA, October 2007 and November 2008.

Taxa	Caution Creek Oct 25, 2007		101 Ravine Oct 23, 2007		West Perimeter Ravine Oct 29, 2007		West Ravine Oct 21 & 22, 2007		East Ravine Oct 24, 2007		Duke Ravine Nov 7, 2008		FALC Ravine[2] Nov 8, 2008		English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Gymnometriocnemus sp.													2	0.17		
Heterotrissocladius sp.			1	0.11									49	4.15		
Orthocladius lignicola													10	0.85		
Parachaetocladius sp.	1	0.16	22	2.33	11	0.20	28	1.13	6	0.45	10	0.39			3	0.12
Parakiefferiella sp.					9	0.16					1	0.04				
Parametriocnemus sp.	1	0.16	2	0.21	13	0.23	22	0.89	9	0.68	4	0.16			3	0.12
Paraphaenocladius sp.			1	0.11			1	0.04								
Pseudosmittia sp.			1	0.11												
Thienemanniella sp.							4	0.16								
Tevetenia sp.			1	0.11	16	0.28										
Subfamily: Prodiamesinae																
Odontomesa sp.													4	0.34		
Prodiamesa sp.													5	0.42		
Subfamily: Tanypodinae					16	0.28	2	0.08	1	0.08			6	0.51	1	0.04
Nilotanypus sp.																
Thienemannimyia gr. sp.			1	0.11					2	0.15					6	0.25
Subfamily: Tanytarsini					2	0.04										
Micropsectra/Tanytarsus sp.			1	0.11	168	2.98	2	0.08					5	0.42	10	0.41
Paratanytarsus sp.															1	0.04
Rheotanytarsus sp.			1	0.11												
Stempellina sp.	4	0.65								0.08			99	8.38		
Family: Dixidae																
Dixella sp.	1	0.16											18	1.52		
Family: Empipidae																
Chelifera sp.	1	0.16	8	0.85	11	0.20	3	0.12	3	0.23	1	0.04	6	0.51		
Hemerodromia sp.									3	0.23	4	0.16			4	0.16
Family: Psychodidae																
Pericoma sp.							1	0.04								
Family: Simulidae																
Simulium sp.	53	8.55	191	20.25	3251	57.65	1559	63.04	38	2.86	1987	77.80	165	13.96	16	0.66
Family: Tipulidae																
Antocha sp.							4	0.16								
Dicranota sp.	7	1.13	31	3.29	27	0.48	25	1.01	40	3.01	12	0.47			36	1.48
Hexatoma sp.					7	0.12										
Hexatoma/Limnophila sp.	2	0.32	13	1.38			13	0.53	2	0.15	3	0.12	3	0.25		
Ormosia sp.	1	0.16														
Tipula sp.	1	0.16	1	0.11	4	0.07	2	0.08	2	0.15			4	0.34		
Order: Ephemeroptera																

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Summary enumeration and percent composition data for the benthic invertebrate samples collected from streams in the Project LSA, October 2007 and November 2008.

Taxa	Caution Creek Oct 25, 2007		101 Ravine Oct 23, 2007		West Perimeter Ravine Oct 29, 2007		West Ravine Oct 21 & 22, 2007		East Ravine Oct 24, 2007		Duke Ravine Nov 7, 2008		FALC Ravine[2] Nov 8, 2008		English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Family: Baetidae																
Baetis sp.	100	16.13	251	26.62	504	8.94			432	32.48	400	15.66	259	21.91	901	37.03
Family: Heptageniidae																
Maccaffertium terminatum									1	0.08					31	1.27
Family: Leptophlebiidae									1	0.08						
Leptophlebia sp.	4	0.65									1	0.04			2	0.08
Order: Hemiptera																
Suborder: Heteroptera																
Order: Odonata																
InfraOrder: Anisoptera																
Family: Aeshnidae																
Aeshna sp.							2	0.08	1	0.08						
Order: Plecoptera																
Family: Capniidae	126	20.32	320	33.93	1025	18.18	398	16.09	573	43.08	28	1.10	215	18.19	1084	44.55
Family: Leuctridae													15	1.27		
Paraleuctra sp.			3	0.32												
Family: Nemouridae	9	1.45														
Nemoura sp.			41	4.35												
Zapada sp.			2	0.21	15	0.27	39	1.58	49	3.68	27	1.06	14	1.18	24	0.99
Family: Perlodidae																
Isoperla sp.									29	2.18						
Skwala sp.	4	0.65														
Order: Trichoptera																
Family: Brachycentridae																
Brachycentrus sp.	30	4.84							13	0.98						
Family: Glossomatidae																
Glossosoma sp.	174	28.06	17	1.80	73	1.29	111	4.49	49	3.68	27	1.06	2	0.17	116	4.77
Family: Hydropsychidae																
Cheumatopsyche sp.					4	0.07	2	0.08								
Hydropsyche sp.	78	12.58	26	2.76	225	3.99	63	2.55	44	3.31	7	0.27			144	5.92
Family: Lepidostomatidae																
Lepidostoma sp.					2	0.04	6	0.24			1	0.04				
Family: Limnephilide																
Hesperophylax sp.					2	0.04	6	0.24			1	0.04	1	0.08		
Family: Phryganeidae																
Ptilostomis sp.															1	0.04
Family: Polycentropodidae																
Polycentropus sp.					2	0.04			1	0.08						

APPENDIX A, TABLE 2

Summary enumeration and percent composition data for the benthic invertebrate samples collected from streams in the Project LSA, October 2007 and November 2008.

Taxa	Caution Creek Oct 25, 2007		101 Ravine Oct 23, 2007		West Perimeter Ravine Oct 29, 2007		West Ravine Oct 21 & 22, 2007		East Ravine Oct 24, 2007		Duke Ravine Nov 7, 2008		FALC Ravine[2] Nov 8, 2008		English Creek Oct 27, 2007	
	Total[1]	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.	Total	% Comp.
Family: Psychomyiidae																
Psychomyia sp.															1	0.04
Family: Rhyacophilidae																
Rhyacophila sp.							1	0.04	1	0.08			77	6.51		
SubPhylum: Crustacea																
Class: Copepoda																
Order: Cyclopoida																
Order: Harpacticoida																
Class: Ostracoda	1	0.16											77	6.51		
Phylum: Cnidaria																
Class: Hydrozoa																
Family: Hydrocorynidae													19	1.61		
Hydra sp.									1	0.08						
Phylum: Mollusca																
Class: Pelecypoda																
Family: Sphaeridae					1	0.02							6	0.51		
Phylum: Nematoda							1	0.04			12	0.47	6	0.51		
Grand Total	620	100	943	100	5639	100	2473	100	1330	100	2554	100	1182	100	2433	100

[1] Total is the sum of the five stations (total sampling area = 0.5 m^2)

[2] Samples from FALC Ravine were collected using kick sweeps instead of a Neill Cylinder Sampler, thus the total sampling area is not known.

Taxa considered non-benthic were removed from the data set. This included the Family Corixidae and unidentified terrestrial taxa.

APPENDIX A, TABLE 3

Summary of fish tissue chemistry analyses from five samples of lake chub captured in three streams in the Project LSA, August 2007.

Analyte	101 Ravine[1]						East Ravine[1]						English Creek[1]						ANOVA Results			Outcome of Statistical Analyses[7,8]
	N<DL[2]	Mean[3]	SD[4]	Minimum[5]	Maximum[6]	DL	N<DL	Mean	SD	Minimum	Maximum	DL	N<DL	Mean	SD	Minimum	Maximum	DL	F	df	P	
Inorganic Ions (µg/g)																						
Calcium	0	7304	890.5	6640	8700	1	0	9764	1433.0	7630	11100	1	0	10296	1293.1	8870	12300	1	8.45	2, 12	0.0051	101 < East, English
Magnesium	0	338	44.4	300	400	1	0	352	19.2	320	370	1	0	464	28.8	440	500	1	22.57	2, 12	0.000086	101, East < English
Potassium	0	3380	363.3	3000	3900	5	0	3140	151.7	2900	3300	5	0	3520	44.7	3500	3600	5	3.53	2, 12	0.062	NSD
Sodium	0	916	238.2	720	1300	5	0	912	83.5	780	1000	5	0	1012	95.2	870	1100	5	0.83	2, 12	0.46	NSD
Metals (µg/g)																						
Aluminum	0	32	39.9	5.6	101	0.1	0	60	33.3	27	99	0.1	0	247	155.8	48	413	0.1	8.30	2, 12	0.005	101 < English
Antimony	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Arsenic	0	0.3	0.13	0.2	0.5	0.1	0	0.3	0.05	0.3	0.4	0.1	0	1.5	0.56	0.8	2.2	0.1	30.97	2, 12	0.00002	101, East < English
Barium	0	8	4.8	4.2	16	0.1	0	14	0.5	14	15	0.1	0	24	5.4	16	29	0.1	19.5	2, 12	0.00017	101, East < English
Beryllium	5	0.01	0	<0.02	<0.02	0.02	5	0.01	0	<0.02	<0.02	0.02	5	0.01	0	<0.02	<0.02	0.02	-	-	-	-
Boron	5	1	0	<2	<2	2	5	1	0	<2	<2	2	5	1	0	<2	<2	2	-	-	-	-
Cadmium	4	0.01	0	<0.02	<0.02	0.02	1	0.02	0.008	<0.02	0.03	0.02	5	0.01	0	<0.02	<0.02	0.02	-	-	-	-
Chromium	5	0.5	0	<1	<1	1	5	0.5	0	<1	<1	1	5	0.5	0	<1	<1	1	-	-	-	-
Cobalt	4	0.02	0.018	<0.02	0.05	0.02	2	0.02	0.013	<0.02	0.04	0.02	0	0.11	0.047	0.05	0.15	0.02	13.3	2, 12	0.00091	101, East < English
Copper	0	4.6	0.40	3.9	4.9	0.1	0	3.9	0.19	3.6	4.1	0.1	0	3.6	0.56	2.9	4.4	0.1	7.8	2, 12	0.0068	101 < East, English
Iron	0	54	31.7	35	110	0.2	0	82	21.3	54	110	0.2	0	499	362.7	74	910	0.2	10.74	2, 12	0.0021	101, East < English
Lead	3	0.04	0.061	<0.02	0.15	0.02	1	0.03	0.013	<0.02	0.04	0.02	0	0.11	0.041	0.06	0.15	0.02	5.6	2, 12	0.019	East < English
Manganese	0	6.4	4.33	3.5	14.0	0.2	0	11	1.4	9.3	13	0.2	0	39	17.3	19	54	0.2	22.6	2, 12	0.00008	101, East < English
Mercury	1	0.05	0.016	<0.05	0.06	0.05	0	0.09	0.015	0.08	0.11	0.05	1	0.05	0.014	<0.05	0.06	0.05	13.68	2, 12	0.0008	101, English < East
Molybdenum	5	0.1	0	<0.2	<0.2	0.2	5	0.1	0	<0.2	<0.2	0.2	5	0.1	0	<0.2	<0.2	0.2	-	-	-	-
Nickel	4	0.1	0.02	<0.1	0.1	0.1	3	0.1	0.11	<0.1	0.3	0.1	0	0.2	0.13	0.1	0.4	0.1	-	-	-	-
Selenium	0	0.5	0.04	0.4	0.5	0.1	0	0.4	0.04	0.3	0.4	0.1	0	0.4	0.04	0.4	0.5	0.1	6.8	2, 12	0.011	East, English < 101
Silver	5	0.01	0	<0.02	<0.02	0.02	5	0.01	0	<0.02	<0.02	0.02	5	0.01	0	<0.02	<0.02	0.02	-	-	-	-
Strontium	0	9.9	3.54	7.2	16.0	0.2	0	12	1.7	9.5	14	0.2	0	10.2	1.57	9.1	13	0.2	0.58	2, 12	0.58	NSD
Thallium	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Tin	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Titanium	0	0.9	1.17	0.2	3.0	0.1	0	2.0	1.09	1.0	3.6	0.1	0	7.2	4.29	1.6	12	0.1	9.57	2, 12	0.0024	101, East < English
Uranium	4	0.01	0.011	<0.01	0.03	0.01	5	0.005	0	<0.01	<0.01	0.01	2	0.01	0.008	<0.01	0.02	0.01	-	-	-	-
Vanadium	4	0.1	0.04	<0.2	0.2	0.2	3	0.2	0.09	<0.2	0.3	0.2	1	0.7	0.44	<0.2	1.1	0.2	4.25	2, 12	0.04	101 < English
Zinc	0	63	16.4	50	90	1	0	61	6.5	55	69	1	0	68	7.7	57	76	1	0.49	2, 12	0.63	NSD
Other Parameters																						
Moisture (% wet weight)	0	73.10	1.400	70.81	74.63	0.01	0	76.46	0.634	75.4	77.03	0.01	0	72.28	0.516	71.91	72.64	0.01	15.8	2, 9	0.0011	101, English < East
Phosphorus (µg/g)	0	5040	1324.0	2800	6300	5	0	6360	676.8	5300	6900	5	0	6860	577.1	6200	7700	5	5.21	2, 12	0.022	101 < English

[1] Each of five samples per tributary is a composite sample.

[2] Number of samples in which the analyte concentration was less than the detection limit (DL).

[3] For samples with a concentration less than the detection limit, the concentration was set to a value equal to half detection limit before the mean concentration was calculated.

[4] Standard deviation; calculation based on values less than detection limit being set to a value equal to half detection limit.

[5] Minimum value is presented as the detection limit when N<DL is ≥ 1.

[6] Maximum value is presented as the detection limit when N<DL is 5.

[7] ANOVA significance based on α = 0.05; some analytes could not be compared between tributaries due to all/most values < DL or inconsistent detection limits between samples. Pairwise comparisons performed with Tukey's test.

[8] NSD = no significant difference.

APPENDIX A, TABLE 4

Summary of fish tissue chemistry analyses from five samples of white sucker captured in three streams in the Project LSA, August 2007 and 2008.

Analyte	East Ravine[1]						Duke Ravine[1]						English Creek[1]						ANOVA Results			Outcome of Statistical Analyses[7,8]
	N<DL[2]	Mean[3]	SD[4]	Minimum[5]	Maximum[6]	DL	N<DL	Mean	SD	Minimum	Maximum	DL	N<DL	Mean	SD	Minimum	Maximum	DL	F	df	P	
Inorganic Ions (µg/g)																						
Calcium	0	12284	2689.3	9230	15200	1	0	12980	5410.8	10100	22600	1	0	9000	2311.0	6210	12600	1	2.31	2, 12	0.14	NSD
Magnesium	0	420	46.4	360	480	1	0	498	208.3	390	870	1	0	390	35.4	350	430	1	0.82	2, 12	0.46	NSD
Potassium	0	3280	228.0	2900	3500	5	0	3400	1305.8	2600	5700	5	0	3500	353.6	3200	4100	5	1.62	2, 12	0.24	NSD
Sodium	0	1130	198.7	850	1300	5	0	1174	462.6	930	2000	5	0	1088	136.8	940	1300	5	0.36	2, 12	0.7	NSD
Metals (µg/g)																						
Aluminum	0	110	54.5	66	204	0.1	0	40	15.9	25	66	0.1	0	104.8	52.2	46	178	0.1	7.71	2, 12	0.007	Duke < East, English
Antimony	5	0.05	0	<0.1	<0.1	0.1	5	0.01	0	<0.02	<0.02	0.02	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Arsenic	0	0.2	0.11	0.1	0.4	0.1	0	0.17	0.040	0.14	0.24	0.01	0	0.3	0.17	0.2	0.6	0.1	2.57	2, 12	0.12	NSD
Barium	0	9	3.1	6.3	14	0.1	0	7.1	2.97	4.7	12.2	0.01	0	7.3	2.88	3.8	11	0.1	0.5	2, 12	0.62	NSD
Beryllium	5	0.01	0	<0.02	<0.02	0.02	4	0.001	0.0004	<0.002	0.002	0.002	5	0.01	0	<0.02	<0.02	0.02	-	-	-	-
Boron	5	1	0	<2	<2	2	1	0.4	0.25	<2	0.8	0.2	5	1	0	<2	<2	2	-	-	-	-
Cadmium	0	0.04	0.025	0.02	0.08	0.02	0	0.042	0.0150	0.026	0.058	0.002	2	0.02	0.011	<0.02	0.03	0.02	1.9	2, 12	0.2	NSD
Chromium	5	0.5	0	<1	<1	1	3	0.1	0.07	<0.1	0.2	0.1	5	0.5	0	<1	<1	1	-	-	-	-
Cobalt	0	0.05	0.016	0.04	0.08	0.02	0	0.039	0.0144	0.031	0.065	0.002	0	0.05	0.024	0.02	0.08	0.02	1.82	2, 12	0.2	NSD
Copper	0	1.4	0.28	1.0	1.7	0.1	0	1.7	0.55	1.2	2.6	0.01	0	1.0	0.15	0.8	1.2	0.1	4.3	2, 12	0.039	English < Duke
Iron	0	117	58.8	73	220	0.2	0	49	19.1	32	77	0.2	0	115	59.3	54	200	0.2	5.72	2, 12	0.018	Duke < East, English
Lead	0	0.08	0.058	0.03	0.18	0.02	0	0.062	0.0214	0.040	0.097	0.002	0	0.04	0.017	0.03	0.07	0.02	1.56	2, 12	0.25	NSD
Manganese	0	28	14.5	14	51	0.2	0	8.4	2.67	4.9	12	0.02	0	51	30.7	19	84	0.2	14.0	2, 12	0.00072	Duke < East, English
Mercury	0	0.10	0.029	0.05	0.12	0.05	2	0.05	0.023	<0.05	0.08	0.05	1	0.05	0.017	<0.05	0.07	0	6.69	2, 12	0.011	Duke, English < East
Molybdenum	5	0.1	0	<0.2	<0.2	0.2	0	0.05	0.022	0.04	0.09	0.02	5	0.1	0	<0.2	<0.2	0.2	-	-	-	-
Nickel	2	0.1	0.06	<0.1	0.2	0.1	0	0.12	0.042	0.09	0.19	0.01	1	0.1	0.07	<0.1	0.2	0.1	-	-	-	-
Selenium	0	0.3	0.07	0.2	0.4	0.1	0	0.62	0.226	0.43	1	0.01	0	0.4	0.05	0.3	0.4	0.1	19.2	2, 12	0.00018	East, English < Duke
Silver	5	0.01	0	<0.02	<0.02	0.02	0	0.008	0.0029	0.005	0.013	0.002	5	0.01	0	<0.02	<0.02	0.02	-	-	-	-
Strontium	0	11	3.7	6.9	17	0.2	0	23	10.1	16	41	0.2	0	11	3.0	5.9	14	0.2	7.76	2, 12	0.0069	East, English < Duke
Thallium	5	0.05	0	<0.1	<0.1	0.1	2	0.01	0.006	<0.01	0.02	0.01	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Tin	5	0.05	0	<0.1	<0.1	0.1	0	0.04	0.015	0.01	0.05	0.01	5	0.05	0	<0.1	<0.1	0.1	-	-	-	-
Titanium	0	3.8	1.82	2.2	6.9	0.1	0	1.4	0.55	1.1	2.4	0.01	0	3.4	1.64	1.3	5.6	0.1	5.15	2, 12	0.024	Duke < East
Uranium	3	0.01	0.011	<0.01	0.03	0.01	4	0.003	0.006	<0.01	0.014	0.001	5	0.005	0	<0.01	<0.01	0.01	-	-	-	-
Vanadium	1	0.3	0.19	<0.2	0.6	0.2	0	0.17	0.062	0.13	0.28	0.02	2	0.3	0.18	<0.2	0.5	0.2	0.8	2, 12	0.47	NSD
Zinc	0	30	5.9	23	39	1	0	43	17.3	33	74	1	0	24	3.2	19	28	1	9.69	2, 12	0.0031	English < Duke
Other Parameters																						
Moisture (% wet weight)	0	77.02	1.580	74.39	78.34	0.01	0	78.06	0.701	77.13	78.99	0.01	0	75.27	1.252	73.65	77.13	0.01	6.56	2, 12	0.012	English < Duke
Phosphorus (µg/g)	0	7440	1410.0	5800	8800	5	0	9180	3598.2	7300	15600	5	0	6480	1308.4	5000	8600	5	2.07	2, 12	0.17	NSD

[1] White sucker samples from East Ravine and English Creek were collected in 2007 and samples from Duke Ravine were collected in 2008. Each of five samples per tributary is a composite sample.

[2] Number of samples in which the analyte concentration was less than the detection limit (DL).

[3] For samples with a concentration less than the detection limit, the concentration was set to a value equal to half detection limit before the mean concentration was calculated.

[4] Standard deviation; calculation based on values less than detection limit being set to a value equal to half detection limit.

[5] Minimum value is presented as the detection limit when N<DL is ≥ 1.

[6] Maximum value is presented as the detection limit when N<DL is 5.

[7] ANOVA significance based on α = 0.05; some analytes could not be compared between tributaries due to all/most values < DL or inconsistent detection limits between samples. Pairwise comparisons performed with Tukey's test.

[8] NSD = no significant difference.

APPENDIX A, TABLE 5

Results of the detailed habitat assessments conducted in the SKR in the Project LSA, August 2007 and 2008.

Habitat Section	Upland Zone				Littoral Zone																													
					Riparian Zone				Cover[8]						Aquatic Vegetation[9]				Substrate (%)							Bottom Slope		Spawning Suitability Index[10]							
	Land Use[1]	Forest Condition[2]	Canopy[3]	Slope[4]	Category[5]	Vegetation[6]	Slope[4]	Bank Stability[7]	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating Leaf	Submergent	Moss/Algae	Silt/Clay	Sand	Gravel	Cobble	Boulder	Bedrock	Organic	Slope	Depth 5 m from shore (m)	Lake Sturgeon	Walleye	Sauger	Northern Pike	Yellow Perch	White Sucker	Longnose Sucker	Shorthead Redhorse
Saskatchewan River in the vicinity of Caution Creek																																		
1	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	S	75	20	0	5	0	0	0	G	0.5	0	0	0	0	0	0	0	0
2	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	S	30	10	20	30	10	0	0	G	0.3	1	1	1	0	0	1	1	1
3	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	10	70	5	10	5	0	0	G	0.8	0	0	0	0	0	0	0	0
4	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	10	30	30	20	10	0	0	G	0.4	1	2	2	0	0	2	2	2
5	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	10	70	5	10	5	0	0	G	0.8	0	0	0	0	0	0	0	0
6	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	S	A	A	A	30	10	10	30	20	0	0	G	0.4	1	2	2	0	0	1	1	1
Saskatchewan River in the vicinity of 101 Ravine																																		
1	F	M	D	G	T	G/Sed/S	G	S	A	A	S	A	A	A	S	A	A	A	0	20	10	30	40	0	0	G	0.4	1	2	2	0	0	2	2	2
2	F	M	D	G	T	G/Sed/S	G	S	A	A	A	A	A	A	A	A	A	A	0	100	0	0	0	0	0	S	1.1	0	0	0	0	0	0	0	0
3	F	M	D	G	T	G/Sed/S	G	S	A	A	S	A	A	A	A	A	A	A	0	60	0	20	20	0	0	M	1	0	1	1	0	0	1	1	1
4	F	M	D	G	T	G/Sed/S	G	S	A	A	S	A	A	A	A	A	A	A	0	20	0	20	60	0	0	G	0.6	1	2	2	0	0	1	1	1
5	F	M	D	M	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	0	90	0	0	10	0	0	S	1.3	0	0	0	0	0	0	0	0
6	F	M	D	G	T	G/Sed/S	G	SU	A	A	S	A	A	A	A	A	A	A	0	20	0	20	60	0	0	M	1	0	2	2	0	0	1	1	1
Saskatchewan River in the vicinity of West Perimeter Ravine*																																		
1	F	M	M	S	T	G/Sed	G	SU	A	A	A	A	A	A	A	A	A	A	5	5	35	40	15	0	0	M	0.8	0	1-2	1-2	0	0	1-2	1-2	1-2
2	F	M	M	S	T	G/Sed	G	SU	A	A	A	A	A	A	A	A	S	A	5	5	15	40	35	0	0	G	0.5	0	1	1	0	0	1	1	1
Saskatchewan River in the vicinity of West Ravine																																		
1	F	M	D	S	T	G/Sed	S	MU	A	A	A	A	A	A	S	A	A	A	65	30	0	5	0	0	0	M	1.0	0	0	0	0	0	0	0	0
2	F	M	M	S	T	G/Sed	G	SU	A	A	A	A	A	A	A	A	A	A	10	80	0	5	5	0	0	G	0.3	0	0	0	0	0	0	0	0
Saskatchewan River in the vicinity of East Ravine																																		
1	F	M	D	G	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	S	10	10	30	50	0	0	0	G	0.5	1	2	2	0	0	2	2	2
2	F	M	D	G	T	G/Sed/S	M	SU	A	A	S	A	A	A	S	A	A	S	40	40	5	5	10	0	0	G	0.6	0	0	0	0	0	0	0	0
3	F	M	D	G	T	G/Sed/S	G	SU	A	A	S	A	A	A	S	A	A	S	20	40	15	15	5	0	0	G	0.2	0	0	0	0	0	1	1	1
4	F	M	D	G	T	G/Sed/S	G	SU	A	A	S	A	A	A	S	A	A	S	15	35	25	25	0	0	0	G	0.3	0	0	0	0	0	1	1	1
5	F	M	D	G	T	G/Sed/S	G	SU	A	A	A	A	A	A	S	A	A	S	20	50	25	5	0	0	0	G	0.3	0	0	0	0	0	0	0	0
Saskatchewan River in the vicinity of Duke Ravine																																		
1	F	M	D	M	T	G/Sed	S	S	A	A	A	A	A	A	A	A	A	A	20	60	0	0	20	0	0	M	0.7	0	0	0	0	0	0	0	0
2	F	M	D	G	T	G/Sed	M	SU	A	A	A	A	A	A	A	A	A	S	0	20	20	30	30	0	0	G	0.40	2	2	2	0	0	2	2	2
3	F	M	D	G	T	G/Sed	M	SU	A	A	A	A	A	A	A	A	A	S	0	10	70	20	0	0	0	G	0.3	1	1-2	1-2	0	0	2	2	2
4	F	M	D	G	T	Sed	G	S	A	A	A	A	A	A	A	A	A	S	20	80	0	0	0	0	0	M	0.73	0	0	0	0	0	0	0	0
5	F	M	D	G	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	M	0	20	0	60	0	0	20	G	0.6	1	2	2	0	0	1	1	1
6	F	M	D	G	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	S	0	70	30	0	0	0	0	G	0.40	0	0	0	0	0	0	0	0
7	F	M	D	G	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	S	0	0	0	90	0	0	10	G	0.4	1	2	2	0	0	1	1	1
8	F	M	D	G	T	Sed	G	S	A	A	A	A	A	A	A	A	S	A	30	50	0	0	0	0	20	M	0.70	0	0	0	0	0	0	0	0
9	F	M	D	G	T	Sed	G	S	A	A	A	A	A	A	A	A	A	S	20	20	0	60	0	0	0	G	0.2	1	2	2	0	0	1	1	1
10	F	M	D	G	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	S	10	50	0	20	20	0	0	G	0.45	0	1	1	0	0	1	1	1
11	F	M	D	M	T	G/Sed	G	S	A	A	S	A	A	A	A	A	A	S	10	20	10	30	30	0	0	G	0.55	1	2	2	0	0	1	1	1
12	F	M	D	M	T	G/Sed	S	S	A	A	A	A	A	A	A	A	A	S	10	50	0	10	30	0	0	M	0.8	1	1	1	0	0	1	1	1
Saskatchewan River in the vicinity of FALC Ravine																																		
1	F	M	M	M	T	G/Sed	G	S	A	A	S	A	A	A	A	A	A	S	15	0	0	40	40	0	5	G	0.45	1	2	2	0	0	1	1	1
2	F	M	M	M	T	G/Sed	G	S	A	A	S	A	A	A	A	A	A	S	10	0	0	20	70	0	0	G	0.50	1	2	2	0	0	1	1	1
3	F	M	M	M	T	G/Sed	M	S	A	A	M	A	A	A	A	A	A	S	10	0	0	40	50	0	0	G	0.50	1	2	2	0	0	1	1	1
Saskatchewan River in the vicinity of Wapiti Ravine																																		
1	F	M	M	M	T	G/Sed	G	S	A	A	M	A	A	A	A	A	A	M	0	0	0	20	80	0	0	G	0.4	1	2	2	0	0	1	1	1
2	F	M	M	M	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	S	20	60	10	10	0	0	0	G	0.4	0	0	0	0	0	0	0	0
3	F	M	M	M	T	G/Sed	G	S	A	A	A	A	A	A	A	A	A	A	50	50	0	0	0	0	0	S	1.1	0	0	0	0	0	0	0	0
Saskatchewan River in the vicinity of English Creek																																		
1	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	40	50	0	5	5	0	0	M	0.7	0	0	0	0	0	0	0	0
2	F	M	M	S	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	50	50	0	0	0	0	0	M	0.7	0	0	0	0	0	0	0	0
3	F	M	M	M	T	G/Sed/S	G	SU	A	A	A	A	A	A	A	A	A	A	50	50	0	0	0	0	0	G	0.3	0	0	0	0	0	0	0	0
4	F	M	M	M	T	G/Sed/S	G	SU	A	A	A	A	A	A	S	A	A	A	50	50	0	0	0	0	0	M	1.0	0	0	0	0	0	0	0	0
5	F	M	M	S	T	G/Sed/S	M	SU	A	A	A	A	A	A	A	A	A	A	50	50	0	0	0	0	0	M	1.0	0	0	0	0	0	0	0	0
6	F	M	M	S	T	G/Sed/S	M	SU	A	A	A	A	A	A	S	A	A	A	25	25	10	20	20	0	0	M	1.0	0	1	1	0	0	1	1	1

*Study area was assessed in May 2007.

[1] Land Use: F = Forest.

[2] Forest Condition: M = Mature.

[3] Canopy: D = Deciduous; M = Mixed.

[4] Slope: G = Gentle; M = Moderate; S = Steep.

[5] Riparian Category: T = Transition.

[6] Riparian Vegetation: S = Shrubs; Sed = Sedges; G = Grasses.

[7] Bank Stability: S = Stable; SU = Slightly Unstable; MU = Moderately Unstable.

[8] Littoral Cover: A = Absent; S = Sparse Density (<30%); M = Moderate Density (30 to 70%).

[9] Aquatic Vegetation: A = Absent; S = Sparse Density (<30%); M = Moderate Density (30 to 70%).

[10] Spawning Suitability Index: 0 = Not Suitable; 1 = Marginally Suitable; 2 = Moderately Suitable; 3 = Highly Suitable.

APPENDIX A, TABLE 6

Results of the detailed habitat assessments conducted in streams in the Project LSA, August and October 2007 and August 2008.

Habitat Section	Upland Zone				Riparian Zone							Channel Habitat Features																												Spawning Suitability Index[11]	
							Bank Slope[4]		Bank Stability[7]			Substrate (%)						Cover (%)[8]						Aquatic Vegetation[9]				Habitat Types (%)				Channel Characteristics									
	Land Use[1]	Forest Condition[2]	Canopy[3]	Slope[4]	Category[5]	Vegetation[6]	Right	Left	Right	Left	Crown Closure (%)	Silt/Clay	Sand	Gravel	Cobble	Boulder	Organic	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating Leaf	Submergent	Moss/Algae	Riffles	Run	Pools	Glide	Mean Bankfull Width (m)	Left Bank Depth (m)	Right Bank Depth (m)	Mean Wetted Width (m)	Maximum Depth (m)	Mean Centre Depth (m)	# Braided Channels	Obstructions[10]	Walleye	Longnose/White Sucker
Caution Creek																																									
1	F	M	M	G	T	G/Sed	S	S	SU	SU	0	0	15	15	35	35	0	A	A	S	S	S	A	A	A	A	A	90	10	0	0	2.10	0.12	0.24	2.00	0.54	-	0	WF/CH	-	-
2	F	M	M	M	FB	T/S	S	S	SU	SU	5	40	30	15	15	0	0	A	A	S	S	S	A	A	A	A	A	30	60	0	10	3.00	0.20	0.08	2.90	0.50	-	0	CH	-	-
3	F	M	M	S	FB	T/S	M	S	SU	SU	40 to 50	0	20	30	25	25	0	S	A	S	M	S	A	A	A	A	A	80	20	0	0	2.80	0.21	0.17	2.45	0.45	0.10	0	WF/CH	-	-
4	F	M	M	S	FB	T/S	S	S	SU	SU	40 to 50	0	25	25	25	25	0	S	A	S	M	S	A	A	A	A	A	50	50	0	0	2.50	0.18	0.15	2.20	0.40	0.10	0	WF/LJ	-	-
5	F	M	M	G	FB	T/S	S	S	SU	SU	10	0	10	70	20	0	0	A	A	A	S	A	A	A	A	A	A	30	65	0	5	5.00	0.18	0.10	2.70	0.51	0.10	0	None	-	-
6	F	M	M	-	T	T/S	S	S	SU	SU	0	70	20	5	5	0	0	S	A	A	M	S	A	A	A	A	A	10	25	25	40	2.70	0.30	0.16	2.60	0.50	0.15	0	LJ	-	-
7	F	M	M	G	T	G/Sed	M	S	SU	SU	0	0	75	15	5	5	0	S	A	A	M	S	A	A	A	A	A	10	30	15	45	4.15	0.22	0.19	3.00	0.50	0.20	3	None	-	-
101 Ravine																																									
1	F	M	M	M	GB	G/Sed	M	M	SU	SU	0	0	10	20	20	40	0	M	A	S	A	A	A	A	A	A	A	100	0	0	0	3.00	0.20	0.18	2.60	0.42	n/a	0	BD/WF/LJ	-	-
2	F	M	M	G	FB	T/S	S	S	SU	SU	40 to 50	0	95	5	0	0	0	S	A	A	S	S	A	A	A	A	A	10	65	0	25	1.26	0.10	0.04	1.10	0.21	0.05	0	LJ	-	-
3	F	M	M	G	FB	T/S	S	S	MU	MU	10	0	10	90	0	0	0	M	A	A	M	A	A	A	A	A	A	20	65	0	15	2.30	0.30	0.15	1.40	0.32	0.10	1	LJ	-	-
4	F	M	M	G	FB	T/S	S	S	SU	SU	10 to 20	0	70	30	0	0	0	M	A	A	M	S	A	A	A	A	A	15	80	0	5	1.40	0.20	0.10	1.30	0.26	n/a	1	LJ	-	-
5	F	M	M	G	FB	S	S	S	SU	SU	65	0	20	20	35	25	0	M	A	S	M	S	A	A	A	A	A	50	40	0	10	2.60	0.14	0.09	2.40	0.30	0.10	1	CH	-	-
6	F	M	M	S	FB	T/S	M	S	S	SU	10 to 20	0	10	10	40	40	0	S	A	M	S	A	A	A	A	A	A	60	40	0	0	3.20	0.10	0.08	2.35	0.20	0.05	0	None	-	-
7	F	M	M	M	FB	T/S	M	M	SU	SU	20 to 30	0	60	0	20	20	0	S	A	A	S	A	A	A	A	A	A	10	20	30	40	3.30	0.14	0.19	2.50	0.35	0.10	3	BD/LJ	-	-
8	F	M	M	M	T	G/Sed	M	M	SU	SU	0	0	75	20	0	5	0	S	S	A	S	A	A	S	A	A	A	20	35	10	35	1.30	0.17	0.10	0.95	0.24	n/a	0	None	-	-
101 Ravine within ORSA																																									
1	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	S	D	A	A	A	A	D	S	A	D	0	0	100	0	60.00	0.10	0.10	60.00	0.30	0.30	0	BD	-	-
2	F	M	M	S	WL	G/Sed	G	G	S	S	0	20	0	0	0	0	80	S	M	A	M	A	A	S	M	M	A	0	0	100	0	0.80	0.30	0.30	0.80	0.50	0.50	3	None	-	-
3	F	M	M	S	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	S	M	A	S	A	A	S	M	M	A	0	0	100	0	0.70	0.20	0.20	0.80	0.35	0.35	0	None	-	-
4	F	M	M	S	WL	S/G/Sed	M	S	SU	S	0	20	0	0	0	0	80	A	M	A	A	A	A	S	M	M	S	0	0	100	0	90.00	n/a	n/a	90.00	n/a	n/a	0	None	-	-
5	F	M	M	S	WL	S/G/Sed	M	M	S	S	0	20	0	0	0	0	80	M	D	A	A	A	A	M	M	M	A	0	0	100	0	60.00	0.20	0.20	60.00	n/a	n/a	0	BD	-	-
6	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	A	D	A	A	A	A	D	M	M	A	0	0	100	0	60.00	0.10	0.10	60.00	n/a	n/a	0	None	-	-
7	F	M	M	M	T	T/S/G/Sed	M	M	S	S	0	20	0	0	0	0	80	S	M	A	A	A	A	S	M	M	A	0	0	100	0	90.00	0.10	0.10	90.00	2.00	2.00	0	BD	-	-
8	F	M	M	M	T	T/S/G/Sed	M	M	S	S	0	20	0	0	0	0	80	S	D	A	A	A	A	S	M	D	A	0	0	100	0	70.00	0.10	0.10	70.00	1.50	1.50	0	None	-	-
9	F	M	M	M	WL	G/Sed	M	M	S	S	0	20	0	0	0	0	80	S	D	A	A	A	A	M	M	D	A	0	0	100	0	60.00	0.10	0.10	60.00	1.50	1.50	0	BD	-	-
10	F	M	M	M	WL	G/Sed	M	M	S	S	0	20	0	0	0	0	80	A	D	A	A	A	A	D	S	D	A	0	0	100	0	60.00	0.10	0.10	60.00	1.50	1.00	0	BD	-	-
11	F	M	M	M	WL	G/Sed	M	M	S	S	0	20	0	0	0	0	80	A	D	A	A	A	A	D	S	S	M	0	0	100	0	40.00	0.10	0.10	40.00	0.50	0.50	0	BD	-	-
12	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	S	M	A	A	A	A	M	S	A	S	0	0	100	0	40.00	0.20	n/a	40.00	n/a	n/a	0	BD	-	-
13	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	A	M	A	M	A	A	S	A	A	M	0	0	100	0	2.00	0.80	0.70	2.00	0.90	0.90	2	BD	-	-
14	F	M	M	M	WL	S/G/Sed	G	G	S	S	30	20	0	0	0	0	80	S	M	A	M	A	A	S	A	A	M	0	0	100	0	0.90	0.50	0.30	0.90	0.60	0.60	2	BD	-	-
15	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	A	M	A	M	A	A	M	S	A	M	0	0	100	0	1.30	0.50	0.30	1.30	0.70	0.70	0	BD	-	-
16	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	0	0	0	0	0	100	A	M	A	M	A	A	M	S	A	M	0	0	100	0	0.80	0.50	0.40	0.80	0.60	0.60	0	BD	-	-
West Perimeter Ravine																																									
1	F	H/M	M	S	T	G/S	G	G	S	S	0	0	0	20	50	30	0	A	A	A	A	A	A	A	A	A	S	100	0	0	0	15.00	0.30	0.30	15.00	0.05	0.03	0	None	-	-
2	F	M	M	M	GB	S/G/Sed	S	S	SU/MU	MU	0	0	20	20	30	30	0	A	A	S	A	A	A	A	A	A	A	100	0	0	0	1.50	0.20	0.20	1.00	0.30	0.20	0	None	-	-
3	F	M	M	M	GB	S/G/Sed	S	S	SU/MU	MU	10	0	10	20	30	40	0	M	A	S	A	A	S	A	A	A	A	100	0	0	0	1.00	0.20	0.20	0.50	0.30	0.20	0	LJ	-	-
4	F	M	M	M	GB	S/G/Sed	S	S	SU/MU	MU	10	10	20	20	50	0	0	M	A	S	A	A	A	A	A	A	A	80	20	0	0	2.00	0.20	0.30	1.00	0.30	0.30	0	LJ	-	-
5	F	M	M	M	GB	S/G/Sed	S	S	SU/MU	MU	10	0	50	30	20	0	0	A	A	A	A	A	A	A	A	A	A	40	40	20	0	1.50	0.20	0.10	1.00	0.30	0.10	0	LJ	-	-
6	F	M	M	M	GB	S/G/Sed	S	S	SU/MU	MU	10	0	30	20	40	10	0	A	A	A	S	A	A	A	A	A	A	30	30	40	0	15.00	0.05	0.10	0.50	0.10	0.10	0	LJ	-	-
West Ravine																																									
1	F	M	M	M	GB	G/Sed	S	S	HU	HU	0	20	80	0	0	0	0	S	A	A	A	A	A	A	A	A	A	0	100	0	0	1.00	0.02	0.08	0.60	0.15	0.03	0	None	-	-
2	F	M	M	M	FB	S	S	S	SU	SU	90	10	75	15	0	0	0	S	A	A	A	A	A	A	A	A	A	10	90	0	0	0.75	0.08	0.06	0.38	0.16	0.05	0	WF/CH	-	-
3	F	M	M	M	FB	S	S	S	SU	SU	100	5	60	30	0	5	0	M	A	S	D	A	A	A	A	A	A	5	95	0	0	0.55	0.08	0.12	0.50	0.19	0.06	0	None	-	-
4	F	M	M	M	FB	T/S	S	M	SU	SU	70	2.5	60	35	0	2.5	0	S	A	A	M	A	A	A	A	A	A	20	80	0	0	1.10	0.09	0.00	0.70	0.14	-	0	WF	-	-
5	F	M	M	M	FB	T/S	S	S	SU	SU	65	0	50	15	15	20	0	S	A	S	S	S	A	A	A	A	A	30	70	0	0	1.10	0.06	0.04	0.40	0.26	0.02	0	WF/CH	-	-
6	F	M	M	M	FB	T/S	S	S	SU	SU	65	0	6	6	8	80	0	S	A	S	M	S	A	A	A	A	A	50	50	0	0	1.10	0.06	0.02	0.75	0.20	0.02	0	WF/CH	-	-
7	F	M	M	M	FB	T/S	S	S	SU	SU	65	0	70	10	5	15	0	S	A	A	S	S	A	A	A	A	A	25	65	0	10	1.50	0.03	0.01	0.65	0.20	0.02	0	WF/CH/SF	-	-
8	F	M	M	S	FB	T	S	S	S	S	60	0	20	30	40	10	0	S	A	S	M	S	A	A	A	A	A	40	60	0	0	1.00	0.06	0.09	1.00	0.35	-	0	WF	-	-
9	F	M	n/a	G	FB	T	M	M	SU	SU	50	0	65	15	20	0	0	S	A	A	S	A	A	A	A	A	A	90	10	0	0	0.75	0.10	0.00	0.66	0.37	0.13	0	None	-	-
West Ravine within SP																																									
1	F	M	M	M	FB	T/S/G/Sed	M	M	MU	SU	50	25	50	0	0	0	25	M	A	A	M	S	A	A	A	A	A	0	100	0	0	0.70	0.05	0.05	0.70	0.05	0.05	0	None	-	-
2	F	M	M	M	FB	T/S/G/Sed	M	M	SU	SU	70	25	50	0	0	0	25	M	A	A	M	A	A	A	A	A	A	100	0	0	0	0.50	<0.05	<0.05	0.15	0.10	0.50	0	None	-	-

APPENDIX A, TABLE 6

Results of the detailed habitat assessments conducted in streams in the Project LSA, August and October 2007 and August 2008.

Habitat Section	Upland Zone				Riparian Zone						Crown Closure (%)	Channel Habitat Features																									Spawning Suitability Index[11]	
							Bank Slope[4]		Bank Stability[7]			Substrate (%)						Cover (%)[8]						Aquatic Vegetation[9]				Habitat Types (%)				Channel Characteristics							Obstructions[10]		
	Land Use[1]	Forest Condition[2]	Canopy[3]	Slope[4]	Category[5]	Vegetation[6]	Right	Left	Right	Left		Silt/Clay	Sand	Gravel	Cobble	Boulder	Organic	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating Leaf	Submergent	Moss/Algae	Riffles	Run	Pools	Glide	Mean Bankfull Width (m)	Left Bank Depth (m)	Right Bank Depth (m)	Mean Wetted Width (m)	Maximum Depth (m)	Mean Centre Depth (m)	# Braided Channels		Walleye	Longnose/White Sucker
3	F	M	M	M	WL	S/G/Sed	M	M	SU	SU	50	25	50	0	0	0	25	M	A	A	M	A	A	A	A	A	A	0	0	10	90	0.50	0.20	0.05	0.50	0.25	0.20	0	None	-	-
4	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	50	25	50	0	0	0	25	M	A	A	M	A	A	A	A	A	A	50	50	0	0	0.60	0.10	0.10	0.60	0.10	0.10	0	None	-	-
5	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	50	25	60	0	0	0	15	S	A	A	M	A	A	A	A	A	A	0	0	10	90	0.70	0.05	0.05	0.70	0.10	0.05	0	None	-	-
6	F	M	M	M	WL	S/G/Sed	G	G	MU	MU	50	20	60	0	0	0	20	S	A	A	A	A	A	A	A	A	A	20	80	0	0	0.20	0.05	0.05	0.20	0.15	0.15	0	None	-	-
7	F	M	C	M	WL	S/G/Sed	G	G	SU	SU	50	10	80	0	0	0	10	S	A	A	S	A	A	A	A	A	A	0	0	20	80	0.70	0.20	0.15	0.70	0.25	0.20	0	None	-	-
8	F	M	M	M	WL	S/G/Sed	G	G	S	S	10	10	80	0	0	0	10	S	A	A	M	A	A	A	A	A	A	80	20	0	0	0.60	0.05	0.05	0.60	0.15	0.10	2	None	-	-
9	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	25	0	80	0	0	0	20	S	S	A	A	A	A	S	A	A	A	0	0	20	80	1.00	0.02	0.05	0.90	0.15	0.10	0	None	-	-
10	F	M	M	M	FB	T/S/G/Sed	G	G	SU	SU	25	50	50	0	0	0	0	D	D	A	A	A	A	S	A	D	M	0	0	100	0	27.00	n/a	n/a	25.00	n/a	n/a	0	BD	-	-
11	F	M	M	M	FB	S/G/Sed	M	M	SU	SU	0	10	10	0	0	0	80	M	D	A	A	A	A	D	S	D	S	0	0	100	0	20.00	0.05	0.05	20.00	0.30	0.30	0	BD	-	-
12	F	M	M	M	FB	S/G/Sed	M	M	S	S	10	10	10	0	0	0	80	S	D	A	A	A	A	D	A	A	A	0	0	100	0	15.00	<0.05	<0.05	15.00	0.10	0.10	0	BD	-	-
13	F	M	M	M	FB	S/G/Sed	M	M	SU	SU	0	10	10	0	0	0	80	M	D	A	A	A	A	S	A	D	A	0	0	100	0	20.00	<0.05	<0.05	20.00	0.25	0.25	0	BD	-	-
14	F	M	M	M	FB	S/G/Sed	M	M	SU	SU	0	10	10	0	0	0	80	M	D	A	A	A	A	M	S	D	A	0	0	10	90	1.60	0.10	0.10	1.60	0.15	0.15	0	None	-	-
15	F	M	M	M	FB	S/G/Sed	M	M	S	S	0	10	10	0	0	0	80	M	D	A	A	A	A	S	D	D	A	0	0	100	0	22.00	n/a	0.10	20.00	n/a	n/a	0	BD	-	-
16	F	M	M	M	WL	S/G/Sed	M	M	MU	MU	0	80	0	0	0	0	20	S	M	A	A	A	A	A	A	D	A	0	100	0	0	20.00	0.10	0.10	0.50	0.20	0.10	0	None	-	-
East Ravine																																										
1	F	M	M	G	T	G/Sed	S	S	HU	HU	0	0	100	0	0	0	0	A	A	A	A	A	A	A	A	A	A	0	100	0	0	1.50	0.02	0.03	1.50	0.27	0.09	0	None	0	0
2	F	M	M	M	FB	S	S	S	SU	SU	0	0	90	10	0	0	0	S	A	A	A	A	A	A	A	A	A	0	20	0	80	2.15	0.21	0.06	1.10	0.35	0.10	0	BD	0	0
3	F	M	M	G	FB	S	S	S	SU	SU	40	10	45	45	0	0	0	S	A	A	A	A	A	A	A	A	A	40	60	0	0	1.60	0.00	0.00	1.50	0.50	-	0	LJ	0	0
4	F	M	M	M	FB	T/S	M	M	SU	SU	0	5	30	35	20	10	0	S	A	S	M	S	A	A	A	A	A	75	25	0	0	2.20	0.07	0.08	1.30	0.35	-	3	None	0	2
5	F	M	C	M	FB	T/S	M	M	SU	SU	<10	0	10	40	40	10	0	S	A	S	S	S	A	A	A	A	A	50	50	0	0	1.90	0.00	0.00	1.50	0.30	0.11	2	WF/LJ	0	0
6	F	M	M	M	FB	T/S	M	M	SU	SU	65	0	10	20	30	40	0	S	A	S	D	S	A	A	A	A	A	80	20	0	0	2.70	0.25	0.40	2.10	0.43	n/a	0	CH	0-1	2
7	F	M	M	G	FB	T/S	S	G	SU	SU	15	0	10	30	30	30	0	M	A	S	M	S	A	A	A	A	S	70	30	0	0	2.50	0.15	0.70	1.60	0.22	0.20	3	WF/CH	0	2
8	F	M	M	S	FB	T/S	S	M	SU	SU	<10	0	10	20	20	50	0	M	A	S	M	S	A	A	A	A	A	90	10	0	0	2.50	0.15	0.15	1.60	0.45	-	0	WF/CH	0-1	2
9	F	M	M	S	WL/T	G/Sed/T/S	G	G	SU	SU	0	5	90	5	0	0	0	D	A	A	M	S	A	A	A	A	A	10	60	0	30	1.00	0.32	0.50	1.00	0.54	n/a	0	BD/LJ	0	0
East Ravine within SP																																										
1	F	M	M	G	FB	T/S/G/Sed	G	G	S	S	10	80	0	0	0	0	20	A	A	A	A	A	A	A	A	A	D	100	0	0	0	0.50	0.10	0.10	0.50	0.20	0.15	0	BD	-	0
2	F	M	M	G	FB	T/S/G/Sed	M	M	S	S	10	50	0	0	0	0	50	M	M	A	A	A	A	S	S	S	A	0	0	100	0	15.00	0.10	n/a	15.00	n/a	n/a	0	BD	-	0
3	F	M	M	G	T	S/G/Sed	G	G	HU	HU	0	50	25	25	0	0	0	S	A	A	A	A	A	A	A	A	S	100	0	0	0	1.60	0.10	0.10	1.40	0.25	0.15	0	BD	-	0-1
4	F	M	M	M	T	S/G/Sed	M	M	SU	SU	0	50	50	0	0	0	0	M	D	A	A	A	A	S	A	D	S	0	0	100	0	35.00	0.10	n/a	30.00	n/a	n/a	0	BD	-	0
5	F	M	M	G	T	S/G/Sed	G	G	SU	SU	0	50	50	0	0	0	0	A	D	A	A	A	A	S	S	D	S	0	0	100	0	25.00	0.20	n/a	25.00	n/a	n/a	0	BD	-	0
6	F	M	D	M	WL	S/G/Sed	G	G	SU	SU	0	20	80	0	0	0	0	M	S	A	D	A	A	S	A	A	A	0	100	0	0	1.40	0.40	0.50	1.40	0.60	0.50	0	LJ	-	0
7	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	30	70	0	0	0	0	S	S	A	D	M	A	S	A	A	A	0	100	0	0	1.70	0.40	0.20	1.70	0.60	0.50	0	LJ	-	0
8	F	M	M	M	WL	S/G/Sed	G	G	S	S	10	10	90	0	0	0	0	M	S	A	S	A	A	S	A	A	A	50	50	0	0	1.10	0.20	0.10	1.10	0.25	0.20	0	None	-	0
9	F	M	M	M	WL	S/G/Sed	G	G	S	S	50	30	70	0	0	0	0	D	S	A	S	S	A	S	A	A	A	0	100	0	0	1.70	0.30	0.20	1.70	0.40	0.20	0	None	-	0
10	F	M	M	M	WL	S/G/Sed	G	G	S	S	10	20	80	0	0	0	0	S	S	A	M	S	A	S	A	A	A	0	100	0	0	1.60	0.20	0.20	1.60	0.30	0.25	0	None	-	0
11	F	M	M	M	WL	S/G/Sed	G	G	S	S	10	20	60	20	0	0	0	D	S	A	M	S	A	S	A	A	A	0	100	0	0	1.60	0.10	0.10	1.60	0.30	0.20	0	None	-	0-1
12	F	M	M	G	WL	S/G/Sed	G	G	SU	SU	60	30	70	0	0	0	0	M	S	A	S	S	A	S	A	A	A	0	0	0	100	1.30	0.10	0.20	1.30	0.40	0.30	0	None	-	0
13	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	30	70	0	0	0	0	S	S	A	M	S	A	S	A	A	A	0	0	0	100	1.80	0.10	0.30	1.80	0.35	0.30	0	None	-	0
14	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	0	30	70	0	0	0	0	A	D	A	A	A	A	D	A	A	A	0	100	0	0	0.50	0.10	0.10	0.50	0.30	0.30	0	None	-	0
15	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	50	0	0	0	0	A	D	A	A	A	A	D	A	A	A	0	0	100	0	50.00	n/a	0.05	50.00	n/a	n/a	0	BD	-	0
16	F	M	D	M	T	T/S/G/Sed	G	G	SU	SU	0	50	50	0	0	0	0	A	D	A	A	A	A	S	M	D	A	0	0	100	0	40.00	0.05	n/a	40.00	n/a	n/a	0	BD	-	0
17	F	M	D	M	T	T/S/G/Sed	M	M	SU	SU	0	50	50	0	0	0	0	A	D	A	A	A	A	D	A	A	A	0	0	100	0	50.00	0.10	n/a	50.00	n/a	n/a	0	BD	-	0
18	F	M	D	M	T	S/G/Sed	M	M	SU	SU	0	50	50	0	0	0	0	M	D	A	A	A	A	S	A	D	A	0	0	100	0	65.00	0.10	n/a	60.00	n/a	n/a	0	BD	-	0
19	F	M	M	M	FB	T/S/G/Sed	S	S	S	S	0	15	15	70	0	0	0	M	S	S	S	S	A	A	A	A	A	100	0	0	0	1.30	1.00	1.50	1.30	0.30	0.10	0	None	-	0-1
20	F	M	M	M	FB	T/S/G/Sed	S	S	SU	SU	0	90	10	0	0	0	0	M	S	A	M	S	A	S	A	A	A	0	0	0	100	1.70	0.20	0.20	1.70	0.40	0.30	0	None	-	0
21	F	M	M	M	FB	T/S/G/Sed	S	S	SU	SU	0	30	50	20	0	0	0	M	S	A	M	M	A	S	A	A	A	0	100	0	0	1.70	0.10	0.10	1.70	0.40	0.30	0	None	-	0-1
22	F	M	M	M	FB	T/S/G/Sed	S	S	SU	SU	0	70	30	0	0	0	0	S	S	A	M	M	A	S	A	A	A	0	0	0	100	1.70	0.10	0.20	1.70	0.25	0.20	0	None	-	0
23	F	M	M	M	FB	T/S/G/Sed	S	S	SU	SU	0	50	50	0	0	0	0	S	S	A	M	A	A	S	A	A	A	0	0	0	100	1.10	0.30	0.40	1.10	0.60	0.50	0	None	-	0
24	F	M	M	M	FB	T/S/G/Sed	G	G	SU	SU	0	50	50	0	0	0	0	S	S	A	M	A	A	M	A	A	A	0	0	100	0	35.00	0.20	0.20	35.00	1.00	1.10	0	BD	-	0
25	F	M	M	M	FB	T/S/G/Sed	S	S	MU	MU	0	50	50	0	0	0	0	S	M	A	A	A	A	M	A	A	A	0	0	20	80	1.60	0.20	0.10	1.60	0.50	0.30	0	BD	-	0
East Ravine within WR																																										
1	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	0	0	0	0	50	M	D	A	A	A	A	S	S	D	S	0	0	100	0	40.00	0.10	0.10	40.00	n/a	n/a	0	BD	-	0
2	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	60	0	0	0	0	40	M	D	A	A	A	A	M	S	D	S	0	0	100	0	40.00	0.20	0.10	40.00	n/a	n/a	0	None	-	0
3	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	0	0	0	0	50	A	M	A	S	A	A	M	A	A	A	0	0	0	100	1.50	0.30	0.40	1.80	0.80	0.80	0	None	-	0
4	F	M	M	M	WL	S/G/Sed	M	M	S	S	0	50	0	0	0	0	50	A	M	A	M	A	A	M	A	A	S	0	0	0	100	1.20	0.20	0.10	1.40	0.30	0.30	2	BD	-	0

APPENDIX A, TABLE 6

Results of the detailed habitat assessments conducted in streams in the Project LSA, August and October 2007 and August 2008.

Habitat Section	Upland Zone				Riparian Zone						Crown Closure (%)	Channel Habitat Features																								Spawning Suitability Index[11]	
							Bank Slope[4]		Bank Stability[7]			Substrate (%)						Cover (%)[8]						Aquatic Vegetation[9]				Habitat Types (%)				Channel Characteristics							Obstructions[10]		
	Land Use[1]	Forest Condition[2]	Canopy[3]	Slope[4]	Category[5]	Vegetation[6]	Right	Left	Right	Left		Silt/Clay	Sand	Gravel	Cobble	Boulder	Organic	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating Leaf	Submergent	Moss/Algae	Riffles	Run	Pools	Glide	Mean Bankfull Width (m)	Left Bank Depth (m)	Right Bank Depth (m)	Mean Wetted Width (m)	Maximum Depth (m)	Mean Centre Depth (m)	# Braided Channels		Walleye	Longnose/White Sucker
5	F	M	M	M	FB	T/S/G/Sed	M	M	SU	SU	0	20	0	0	0	0	80	A	D	A	A	A	A	S	D	D	M	0	0	100	0	20.00	0.05	0.05	15.00	n/a	n/a	0	BD	-	0
6	F	M	M	M	FB	T/S/G/Sed	M	M	S	S	0	20	0	0	0	0	80	S	D	A	S	A	A	S	S	D	M	0	0	100	0	30.00	0.10	0.10	27.00	n/a	n/a	0	BD	-	0
7	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	60	80	10	0	0	0	10	S	M	A	D	A	A	S	A	A	A	0	0	0	100	1.10	0.10	0.10	1.10	0.40	0.35	0	None	-	0
8	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	70	50	20	0	0	0	30	S	A	A	A	A	A	S	A	A	A	50	50	0	0	1.10	0.05	0.10	0.70	0.10	0.10	0	None	-	0
9	F	M	M	M	WL	S/G/Sed	G	G	S	S	70	25	25	0	0	0	50	S	D	A	A	A	A	D	A	A	A	0	100	0	0	0.70	0.10	0.10	0.70	0.35	0.30	0	None	-	0
10	F	M	M	M	WL	G/Sed	G	G	S	S	0	70	0	0	0	0	30	A	M	A	D	A	A	M	A	A	A	0	100	0	0	0.70	0.05	0.10	0.70	0.25	0.20	0	None	-	0
11	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	70	0	0	0	0	30	A	S	A	D	A	A	S	A	A	M	50	50	0	0	0.90	0.40	0.10	0.90	0.55	0.50	1	None	-	0
12	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	0	0	0	0	50	D	A	A	M	A	A	A	A	A	M	100	0	0	0	1.20	0.10	0.10	1.20	0.30	0.30	0	None	-	0
13	F	M	M	M	WL	G/Sed	G	G	S	S	0	50	0	0	0	0	50	S	S	A	M	A	A	S	A	A	S	0	0	0	100	1.00	0.20	0.10	1.00	0.30	0.30	0	None	-	0
14	F	M	M	M	WL	S/G/Sed	G	G	SU	SU	0	30	0	0	0	0	70	A	D	A	A	A	A	S	M	D	S	0	0	100	0	50.00	0.05	0.05	50.00	0.30	0.30	0	BD	-	0
15	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	0	0	0	0	50	A	D	A	A	A	A	D	A	A	A	0	100	0	0	0.30	0.30	0.10	0.50	0.30	0.30	0	None	-	0
16	F	M	M	M	WL	S/G/Sed	G	G	S	S	0	50	0	0	0	0	50	A	D	A	A	A	A	M	A	A	M	0	0	0	100	0.40	0.10	0.10	1.20	0.40	0.40	0	None	-	0
17	F	M	M	S	FB	T/S/G/Sed	M	M	SU	SU	0	50	0	0	0	0	50	A	M	A	A	A	A	S	M	D	S	0	0	100	0	80.00	n/a	0.30	80.00	n/a	n/a	0	BD	-	0
18	F	M	M	S	FB	T/S/G/Sed	S	S	SU	SU	0	50	0	0	0	0	50	A	D	A	A	A	A	D	S	M	A	0	0	100	0	50.00	n/a	0.20	50.00	n/a	n/a	0	None	-	0
19	F	M	M	S	FB	T/S/G/Sed	S	S	SU	SU	0	50	0	0	0	0	50	S	M	A	A	A	A	S	S	S	S	0	0	100	0	60.00	n/a	0.20	60.00	n/a	n/a	0	BD	-	0
Duke Ravine																																									
1	F	M	D	M	FB	T/S/G/Sed	S	S	S	S	78	10	50	10	20	10	0	A	A	A	A	A	A	A	A	A	A	0	0	0	100	1.70	0.25	0.30	1.00	0.20	0.15	0	None	-	1
2	F	M	D	M	FB	T/S/G/Sed	S	S	S	S	78	10	50	10	20	10	0	S	A	A	A	A	A	A	A	A	A	0	30	0	70	1.70	0.25	0.30	0.10	0.10	0.07	1	LJ	-	0
3	F	M	M	M	FB	T/S/Sed	S	S	S	S	60	0	10	30	40	20	0	A	A	S	A	A	A	A	A	A	A	30	10	0	60	2.30	2.00	1.20	1.30	0.10	0.07	0	None	-	0
4	F	M	M	M	FB	T/S/Sed	S	S	S	S	50	0	0	40	60	0	0	S	A	S	A	A	A	A	A	A	A	50	30	0	20	2.20	2.00	1.20	2.00	0.10	0.07	0	None	-	0
5	F	M	M	M	FB	T/S/Sed	S	S	S	S	20	0	0	30	40	30	0	A	A	S	A	A	A	A	A	A	A	80	20	0	0	4.00	4.00	1.50	1.20	0.10	0.05	0	None	-	0
6	F	M	M	M	FB	T/S/Sed	S	S	S	S	30	0	30	20	40	10	0	M	A	A	A	A	A	A	A	A	A	80	20	0	0	3.00	4.00	1.50	1.80	0.20	0.10	0	LJ	-	1-2
7	F	M	M	M	FB	T/S/Sed	S	S	S	S	20	0	10	10	40	40	0	S	A	S	A	A	A	S	A	A	A	100	0	0	0	3.50	3.00	1.00	1.20	0.25	0.10	0	None	-	1-2
8	F	M	D	M	T	S/G/Sed	S	S	S	S	0	0	20	10	60	10	0	S	A	A	A	A	A	S	A	A	A	80	20	0	0	1.50	1.50	0.50	1.00	0.25	0.10	0	None	-	1-2
9	NG	n/a	n/a	M	GB	G/Sed	S	S	S	S	0	0	0	20	40	40	0	A	S	A	M	A	A	A	A	A	A	80	20	0	0	1.50	1.00	1.00	0.20	0.10	0.10	0	WF	-	1-2
10	NG	n/a	n/a	M	GB	G/Sed	G	G	S	S	0	0	0	60	40	0	0	A	A	S	A	A	A	S	A	A	S	80	20	0	0	1.50	0.50	0.50	1.20	0.20	0.10	0	None	-	1-2
11	NG	n/a	n/a	M	GB	G/Sed	G	G	S	S	0	0	0	20	80	0	0	A	A	S	A	A	A	A	A	A	A	100	0	0	0	8.00	0.20	0.20	4.00	0.10	0.05	3	None	-	0
Duke Ravine within PKCF																																									
1	F	M	M	G	FB	T/S/G/Sed	G	G	S	S	20	20	0	0	0	0	80	M	A	A	M	A	A	S	A	A	A	0	0	100	0	50.00	<0.05	<0.05	50.00	1.20	0.50	0	BD	-	-
2	F	M	M	G	FB	T/S/G/Sed	G	G	S	S	5	20	0	0	0	0	80	D	A	A	S	A	A	A	S	A	S	0	0	100	0	60.00	<0.05	<0.05	60.00	1.50	0.50	0	BD	-	-
3	F	M	M	M	FB	T/S/G/Sed	G	G	S	S	40	20	0	0	0	0	80	M	A	A	M	A	A	A	A	A	A	0	0	100	0	40.00	<0.05	<0.05	40.00	1.00	0.50	0	None	-	-
4	F	M	M	M	FB	T/S/G/Sed	M	M	S	S	80	0	80	0	0	0	20	S	A	A	A	A	A	A	A	A	A	0	0	20	80	0.80	0.30	0.30	0.60	0.20	0.12	0	LJ	-	-
5	F	M	M	M	FB	T/S/G/Sed	S	S	S	S	90	10	70	0	0	0	20	S	A	A	A	A	A	A	A	A	A	0	0	20	80	15.00	0.30	0.30	0.80	0.30	0.10	1	LJ	-	-
6	F	M	M	M	FB	T/S/G/Sed	S	S	S	S	80	10	70	0	0	0	20	M	A	A	A	A	A	A	A	A	A	0	10	10	80	0.80	0.30	0.30	0.80	0.20	0.10	0	None	-	-
7	F	M	M	M	FB	T/S/G/Sed	G	G	S	S	20	30	60	0	0	0	10	S	A	A	S	A	A	A	A	A	A	0	0	50	50	15.00	0.50	0.50	5.00	0.50	0.15	0	None	-	-
8	F	M/R	M	S	FB	T/S/G/Sed	G	G	S	S	0	20	0	0	0	0	80	D	A	A	A	A	A	S	S	A	S	0	0	100	0	50.00	0.30	0.30	30.00	0.50	0.50	0	BD	-	-
FALC Ravine																																									
1	n/a	n/a	n/a	G	GB	G/Sed	G	G	S	S	0	0	20	40	40	0	0	A	A	A	A	A	A	A	A	A	A	100	0	0	0	1.00	0.00	0.00	1.00	<0.05	<0.05	2	None	-	-
2	n/a	n/a	n/a	M	GB	G/Sed	M	M	S	S	0	0	0	0	60	40	0	A	A	S	A	A	A	A	A	A	A	100	0	0	0	1.00	0.60	0.60	0.70	<0.05	<0.05	0	None	-	-
3	F	M	D	M	FB	T/S/G/Sed	G	G	S	S	75	0	90	0	0	0	10	M	A	A	A	A	A	A	A	A	A	80	20	0	0	0.80	0.05	0.05	0.40	<0.05	<0.05	0	WF	-	-
4	F	M	D	M	FB	T/S/G/Sed	M	S	S	S	70	0	50	50	0	0	0	S	A	A	A	A	A	A	A	A	A	0	20	0	80	0.80	2.00	0.20	0.60	0.05	<0.05	0	None	-	-
5	F	M	D	M	FB	T/S/G/Sed	-	-	-	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SF	-	-
6	F	M	D	G	FB	T/S	G	G	S	S	75	20	70	0	0	0	10	S	A	A	M	S	S	A	A	A	A	10	40	0	50	0.60	0.05	0.05	0.40	<0.05	<0.05	0	None	-	-
7	F	M	M	M	FB	T/S	-	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SF	-	-
8	F	M	M	S	FB	T/S	S	S	S	S	50	0	70	0	0	20	10	M	A	A	S	A	A	A	A	A	A	20	40	0	40	0.40	0.50	0.50	0.20	<0.05	<0.05	0	LJ	-	-
9	F	M	M	M	FB	T/S/G/Sed	M	G	S	S	25	0	20	30	40	10	0	S	A	S	A	A	A	A	A	A	A	80	20	0	0	0.40	0.05	0.20	0.30	<0.05	<0.05	0	LJ	-	-
10	F	M	M	S	FB	T/S	G	G	S	S	20	0	60	40	0	0	0	S	A	A	A	A	A	A	A	A	A	20	20	0	60	0.40	<0.05	<0.05	0.30	<0.05	<0.05	0	None	-	-
11	F	M	M	S	FB	T/S/G/Sed	M	G	S	S	0	30	50	20	0	0	0	S	A	A	A	A	A	A	A	A	A	40	20	0	40	0.40	<0.05	0.10	0.30	<0.05	<0.05	0	None	-	-
12	F	M	M	S	FB	T/S	M	M	S	S	40	0	70	30	0	0	0	S	A	A	A	A	A	A	A	A	A	40	10	0	50	0.40	1.00	0.10	0.30	<0.05	<0.05	0	None	-	-
13	F	M	M	M	FB	T/S	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SF	-	-
14	F	M	M	S	FB	T/S	M	G	S	S	10	0	65	35	0	0	0	S	A	A	A	A	A	A	A	A	A	40	0	0	60	0.50	1.00	1.00	0.30	0.30	0.10	0	None	-	-
15	F	M	M	M	FB	T/S	M	M	S	S	10	30	30	30	10	0	0	S	A	A	A	A	A	A	A	A	A	80	0	0	20	0.50	0.10	0.15	0.30	<0.05	<0.05	0	None	-	-
16	F	M	M	M	FB	T/S	M	M	S	S	20	0	80	20	0	0	0	S	A	A	A	A	A	A	A	A	A	20	20	0	60	0.50	1.00	1.00	0.30	<0.05	<0.05	0	LJ	-	-
Wapiti Ravine																																									

APPENDIX A, TABLE 6

Results of the detailed habitat assessments conducted in streams in the Project LSA, August and October 2007 and August 2008.

Habitat Section	Upland Zone				Riparian Zone						Crown Closure (%)	Channel Habitat Features																								Spawning Suitability Index[11]	
							Bank Slope[4]		Bank Stability[7]			Substrate (%)						Cover (%)[8]						Aquatic Vegetation[9]				Habitat Types (%)				Channel Characteristics							Obstructions[10]		
	Land Use[1]	Forest Condition[2]	Canopy[3]	Slope[4]	Category[5]	Vegetation[6]	Right	Left	Right	Left		Silt/Clay	Sand	Gravel	Cobble	Boulder	Organic	Large Woody Debris	Aquatic Vegetation	Rock	Overhanging Vegetation	Undercut	Surface Turbulence	Emergent	Floating Leaf	Submergent	Moss/Algae	Riffles	Run	Pools	Glide	Mean Bankfull Width (m)	Left Bank Depth (m)	Right Bank Depth (m)	Mean Wetted Width (m)	Maximum Depth (m)	Mean Centre Depth (m)	# Braided Channels		Walleye	Longnose/White Sucker
1	F	M	M	S	FB	T/S	S	S	S	S	10	5	35	20	20	0	0	S	A	A	A	A	A	A	A	A	A	0	0	0	100	1.40	0.90	0.30	0.55	0.25	0.15	0	None	-	-
2	F	M	M	S	FB	T/S	S	S	S	S	10	5	25	30	35	5	0	M	A	A	A	A	A	A	A	A	A	40	0	0	60	3.80	0.70	1.40	1.30	0.40	0.20	0	LJ	-	-
3	F	M	M	S	FB	T/S/G/Sed	S	S	S	S	30	5	10	15	30	40	0	S	A	A	A	A	A	A	A	A	A	0	40	0	60	1.55	0.35	0.70	0.35	0.40	0.20	0	None	-	-
4	F	M	M	S	FB	T/S	S	S	S	S	80	10	10	40	30	10	0	A	A	A	D	A	A	A	A	A	A	0	40	0	60	1.55	0.35	0.90	0.35	0.40	0.20	0	None	-	-
5	F	M	M	M	FB	T/S	M	M	S	S	50	10	20	40	5	25	0	M	A	A	A	A	A	A	A	A	A	0	40	0	60	1.30	0.40	0.50	0.60	0.30	0.20	0	None	-	-
6	F	M	M	M	FB	T/S	M	M	S	S	50	5	15	25	15	40	0	M	A	M	A	A	A	A	A	A	A	0	50	0	50	1.30	0.40	0.50	0.60	0.35	0.20	0	None	-	-
7	F	M	M	S	FB	T/S	S	S	S	S	20	10	35	30	20	5	0	S	A	A	A	A	A	A	A	A	A	0	20	0	80	1.40	0.50	0.80	0.50	0.03	0.08	0	None	-	-
8	F	M	M	S	FB	T/S	S	M	S	S	40	5	20	40	25	10	0	M	A	S	A	A	A	A	A	A	A	0	70	0	30	2.30	0.30	1.00	0.60	0.05	<0.05	0	LJ	-	-
9	F	M	M	S	FB	T/S	S	S	S	S	50	5	15	15	15	50	0	M	A	M	A	A	A	A	A	A	A	0	60	0	40	2.30	1.00	1.00	0.60	0.08	<0.05	0	None	-	-
10	F	M	M	S	FB	T/S	S	S	S	S	60	5	15	40	25	15	0	M	A	M	A	A	A	A	A	A	A	0	60	0	40	2.80	1.50	2.00	0.30	0.08	<0.05	0	LJ	-	-
11	F	M	M	S	FB	T/S	S	S	S	S	85	5	5	20	70	0	0	M	A	A	D	A	A	A	A	A	A	100	0	0	0	2.50	0.40	3.00	4.00	0.05	0.05	0	None	-	-
12	NG	n/a	n/a	M	GB	G/Sed	M	M	S	S	0	0	10	15	50	25	0	A	S	S	A	A	A	S	A	A	S	100	0	0	0	1.00	1.20	0.70	0.50	0.05	0.05	0	None	-	-
13	NG	n/a	n/a	S	T	G/Sed	M	M	S	S	0	0	20	10	30	40	0	A	A	M	A	A	A	A	A	A	A	10	0	0	0	0.50	0.50	0.80	0.20	0.05	<0.05	0	None	-	-
English Creek																																										
1	F	M	M	M	T	S/G/Sed	S	S	S	S	0	50	50	0	0	0	0	A	A	A	A	A	A	A	A	A	A	0	0	30	70	10.10	0.12	0.30	8.00	0.80	-	0	None	0	0
2	F	M	M	S	FB	T/S	S	M	SU	SU	0 to 5	0	10	65	15	10	0	A	S	S	S	A	A	A	A	A	A	20	30	25	25	5.40	0.30	0.20	5.00	0.34	-	0	None	1-2	2
3	F	M	M	M	FB	T/S	S	M	S	S	50	0	25	25	25	25	0	S	A	S	S	S	A	A	A	A	S	30	50	5	15	3.70	0.10	0.15	3.20	0.30	0.10	0	WF/LJ	2	0
4	F	M	M	S	FB	T/S	S	S	U	U	20 to 30	0	60	20	10	10	0	S	A	S	S	S	A	A	A	A	A	20	40	5	35	4.00	0.50	0.22	3.90	0.30	0.10	0	None	2	0-1
5	F	M	M	M	FB	T/S	S	M	SU	SU	50	0	30	20	25	25	0	S	A	S	S	A	A	A	A	A	S	20	40	5	35	4.20	0.25	0.08	4.10	0.40	0.15	0	WF/LJ	0-1	0
6	F	M	M	M	FB	T/S	G	S	SU	SU	20	25	10	25	40	0	0	S	A	A	S	A	A	A	A	A	A	40	30	5	25	3.80	0.10	0.15	2.30	0.40	0.15	0	None	2	0-1
7	F	M	M	S	FB	T/S	S	S	S	S	20 to 30	0	40	30	20	10	0	S	A	S	S	S	A	A	A	A	A	45	25	5	25	4.00	0.15	0.13	3.70	0.38	-	0	None	0-1	0
8	F	M	M	G	FB	T/S	G	S	SU	SU	~40	10	20	50	10	10	0	M	A	A	A	A	A	A	A	A	A	40	40	0	20	4.00	0.05	0.30	2.70	0.35	0.10	1	BD	2	0
9	F	M	M	G	FB	T/S/G/Sed	M	M	SU	SU	0	10	70	10	10	0	0	M	A	A	A	A	A	A	A	A	A	30	70	0	0	4.90	0.20	0.20	3.20	0.50	0.20	0	BD	0	0
10	F	M	M	G	T	S/G/Sed	M	M	SU	SU	<10	0	25	35	35	5	0	S	A	A	A	A	A	A	A	A	A	35	65	0	0	3.70	0.16	0.04	3.60	0.20	-	0	None	0	2
11	F	M	M	G	FB	S	G	S	SU	SU	80	0	25	50	10	15	0	S	A	A	D	A	A	A	A	A	A	30	45	20	5	4.40	0.15	0.10	2.00	0.32	0.10	1	None	2	0-1

[1] Land Use: F = Forest; NG = Natural Grassland.

[2] Forest Condition: M = Mature; R = Regenerating.

[3] Canopy: D = Deciduous; M = Mixed; C = Coniferous.

[4] Slope: G = Gentle; M = Moderate; S = Steep.

[5] Riparian Category: FB = Forest to Bank; GB = Grass to Bank; T = Transition; WL = Wetland.

[6] Riparian Vegetation: T = Trees; S = Shrubs; Sed = Sedges; G = Grasses.

[7] Bank Stability: S = Stable; SU = Slightly Unstable; MU = Moderately Unstable; HU = Highly Unstable.

[8] Channel Cover: A = Absent; S = Sparse Density (<30%); M = Moderate Density (30 to 70%); D = Dense (> 70%).

[9] Channel Aquatic Vegetation: A = Absent; S = Sparse Density (<30%); M = Moderate Density (30 to 70%); D = Dense(> 70%).

[10] Obstructions: BD = Beaver Dam; WF = Water Fall; CH = Chute; LJ = Logjam; SF = Subsurface Flow.

[11] Spawning Suitability Index: 0 = Not Suitable; 1 = Marginally Suitable; 2 = Moderately Suitable; 3 = Highly Suitable; - = not assessed.

503550 503700 503850 504000 504150

5896650 5896500 5896350

N

Caution Creek

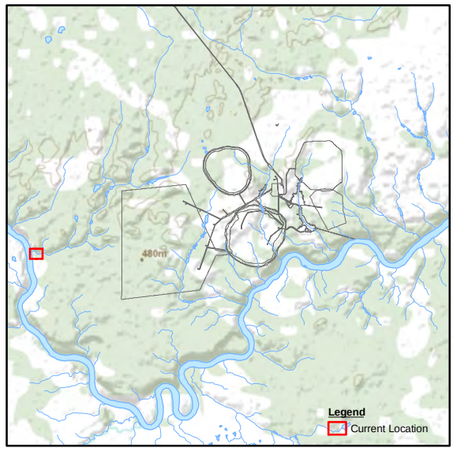
Saskatchewan River

1 2 3 4 5 6 7

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

Caution Creek Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 1**
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513750 513900 514050 514200 514350 514500

5894250 5894100 5893950 5893800

N

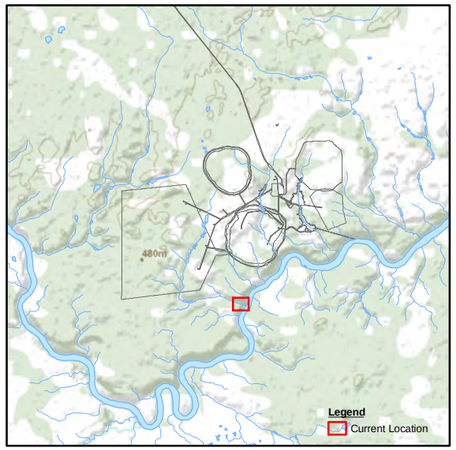
Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

101 Ravine

Saskatchewan River

KEY MAP



0 12.5 25 50 75 100
Meters
Scale: 1:2,500

Reference
Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

101 Ravine Habitat Sections

DATE:	ANALYST:	**Figure 2**
October 2010	MY	
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GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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514800 514950 515100

5895000

5894850

5894700

N

West Perimeter Ravine

6 5 4 3 2 1

2

1

Saskatchewan River

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP

0 12.5 25 50 75 100

Meters

Scale: 1:1,500

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date May 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

West Perimeter Ravine Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 3**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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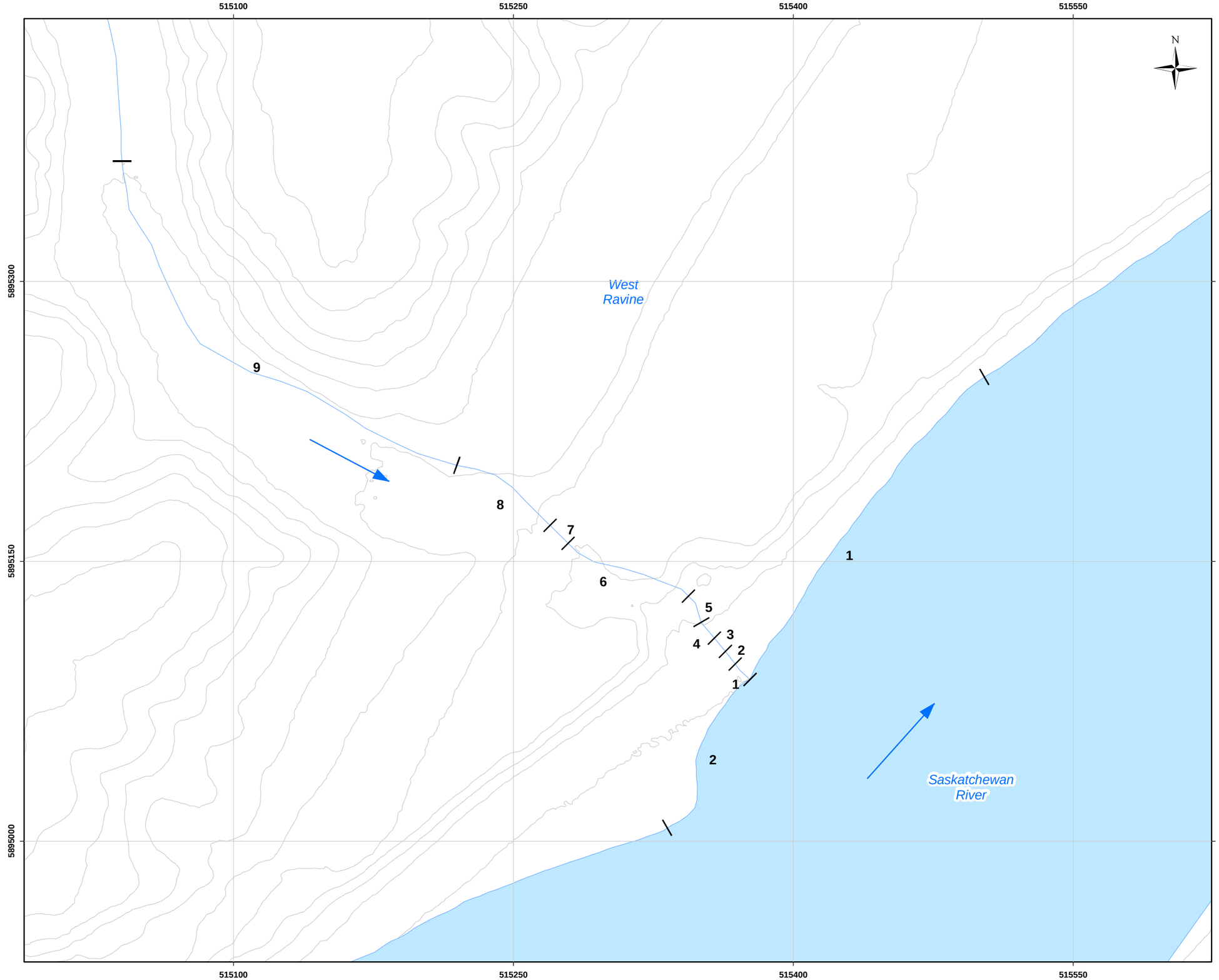
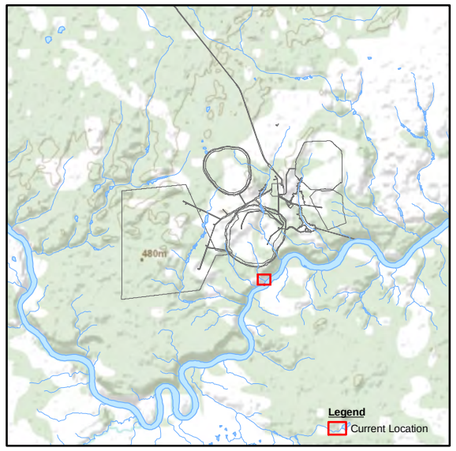


Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

West Ravine Habitat Sections

DATE:	ANALYST:	**Figure 4**
October 2010	MY	
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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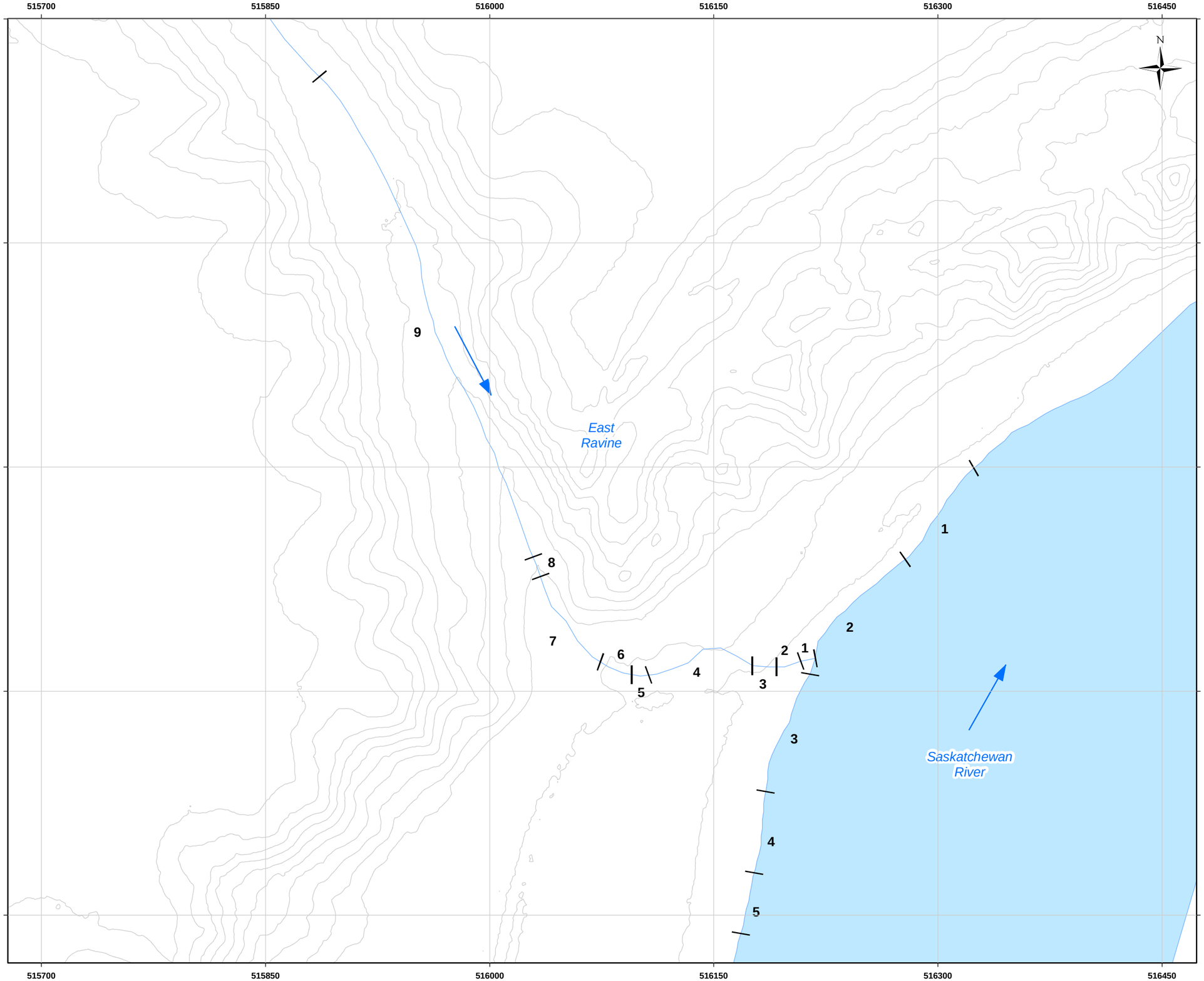
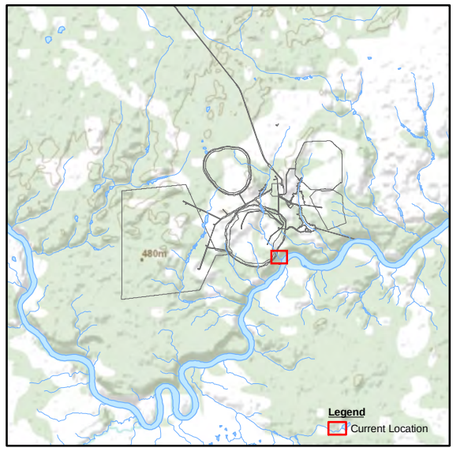


Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,500

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

East Ravine Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 5**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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518850 519000 519150

5896800 5896650 5896500

N

Duke Ravine

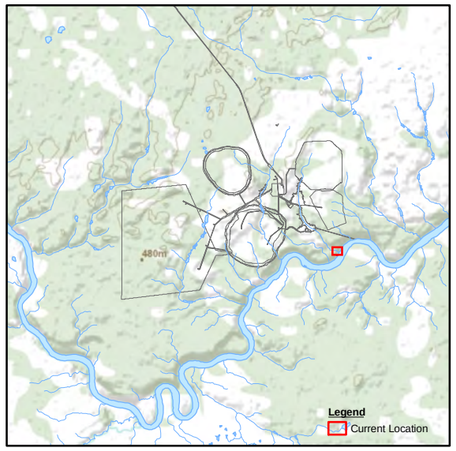
Saskatchewan River

1 2 3 4 5 6 7 8 9 10 11 12

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:1,500

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

Duke Ravine Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 6**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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519450 519600 519750

5897400 5897250 5897100

N

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 1 2 3

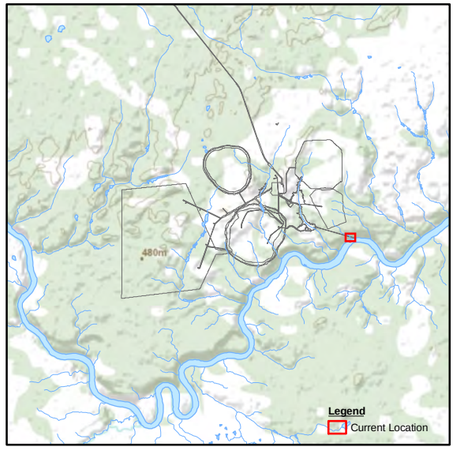
FaLC Ravine

Saskatchewan River

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:1,500

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

FaLC Ravine Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 7**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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520500 520650 520800 520950

5897400

5897250

5897100

N

Legend

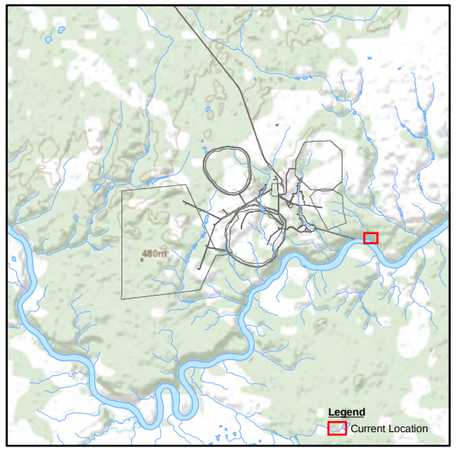
- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

1 2 3 4 5 6 7 8 9 10 11 12 13

Wapiti Ravine

Saskatchewan River

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

Wapiti Ravine Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 8**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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522900 523050 523200 523350

5897550 5897400 5897250 5897100

N

Legend

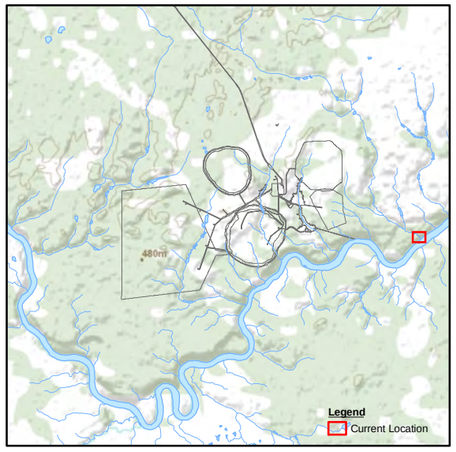
- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

English Creek

Saskatchewan River

1 2 3 4 5 6 7 8 9 10 11

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2007

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

English Creek Habitat Sections

DATE: October 2010	ANALYST: MY	**Figure 9**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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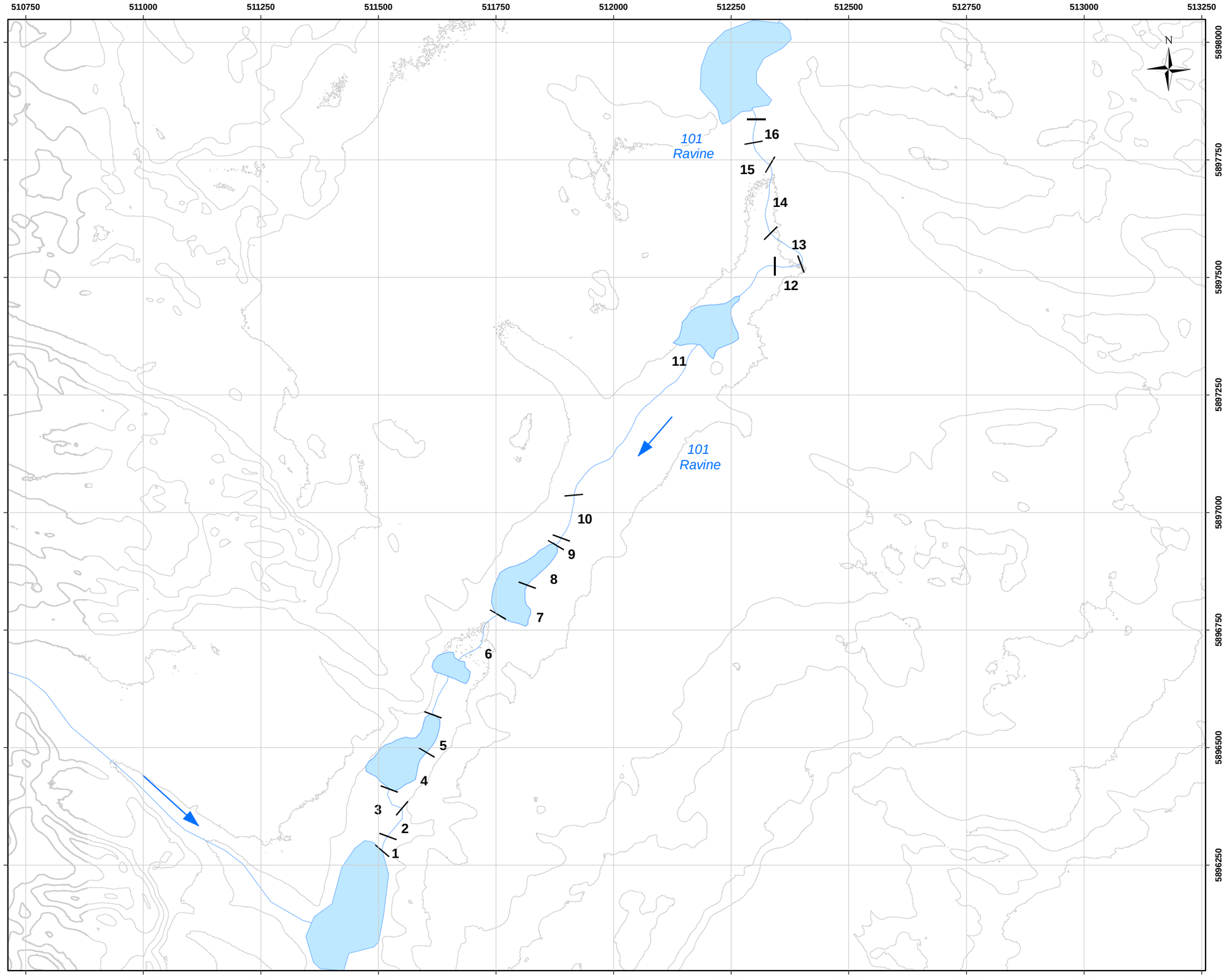
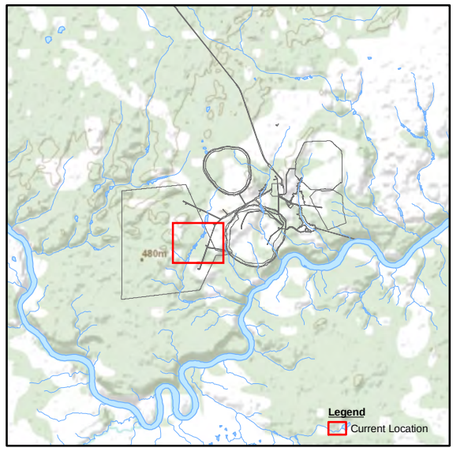


Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 25 50 100 150 200

Meters

Scale: 1:8,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

101 Ravine Habitat Sections in the ORSA

DATE: October 2010	ANALYST: MY	**Figure 10**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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514500 514650 514800 514950 515100

5896650 5896500 5896350 5896200

N

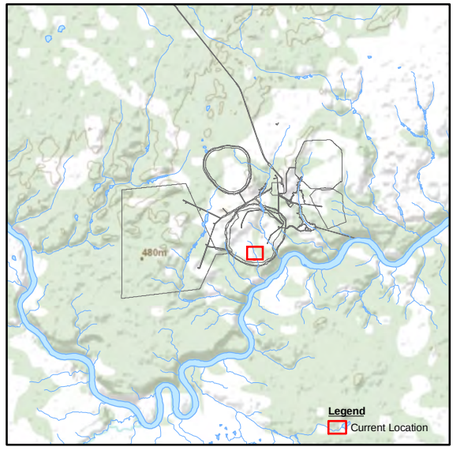
10 11 12 13 14 15 16

West Ravine

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100
Meters
Scale: 1:2,500

Reference
Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

West Ravine Habitat Sections in the SP

DATE: October 2010	ANALYST: MY	**Figure 11**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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514750 515000 515250 515500 515750 516000

5897750 5897500 5897250 5897000 5896750

N

Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

East Ravine

KEY MAP

0 25 50 100 150 200

Meters

Scale: 1:5,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

East Ravine Habitat Sections in the SP

DATE: October 2010	ANALYST: MY	**Figure 12**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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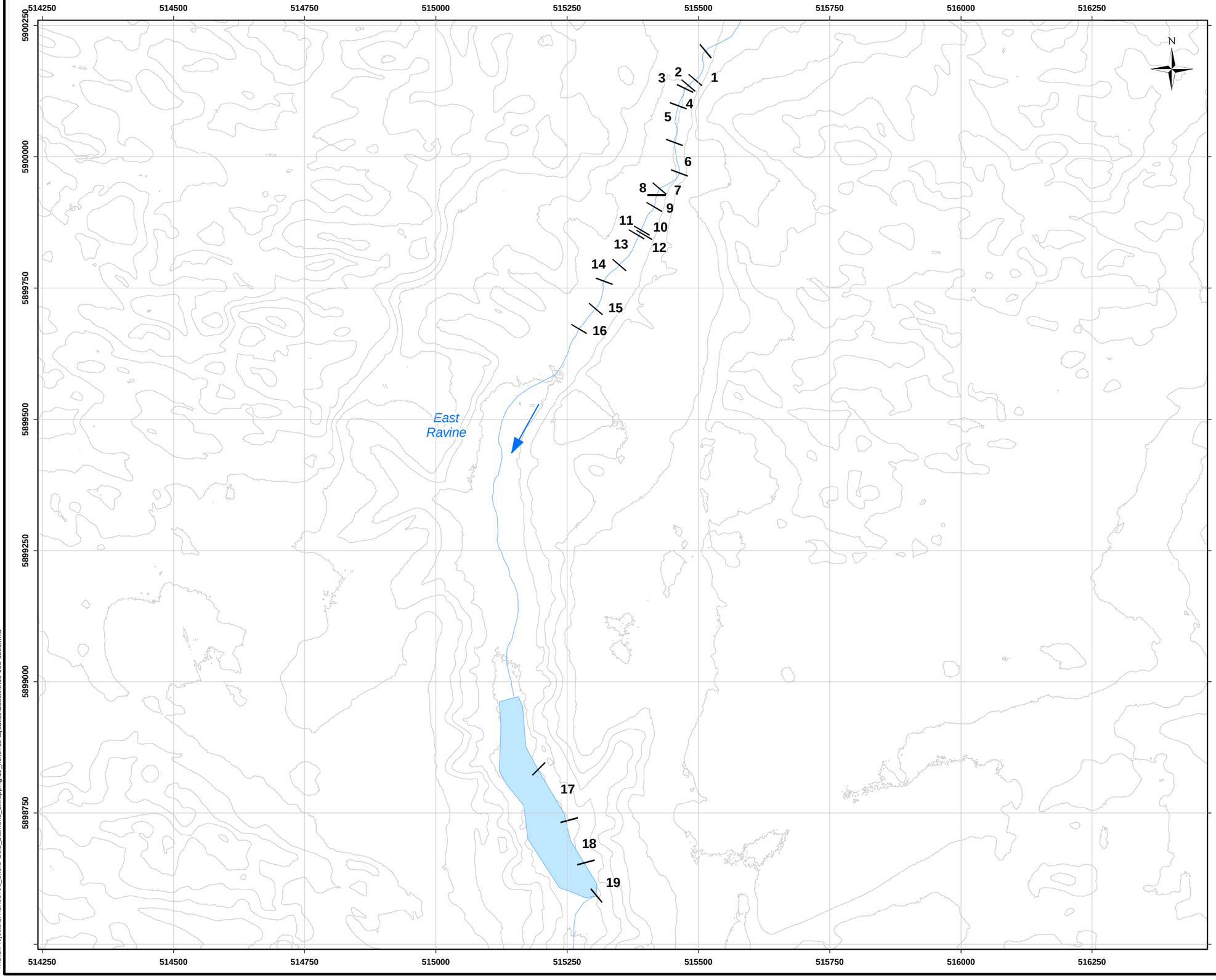
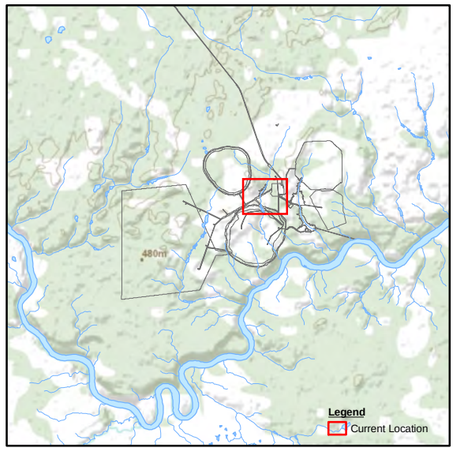


Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 25 50 100 150 200

Meters

Scale: 1:7,000

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

East Ravine Habitat Sections in the Former WR

DATE: October 2010	ANALYST: MY	**Figure 13**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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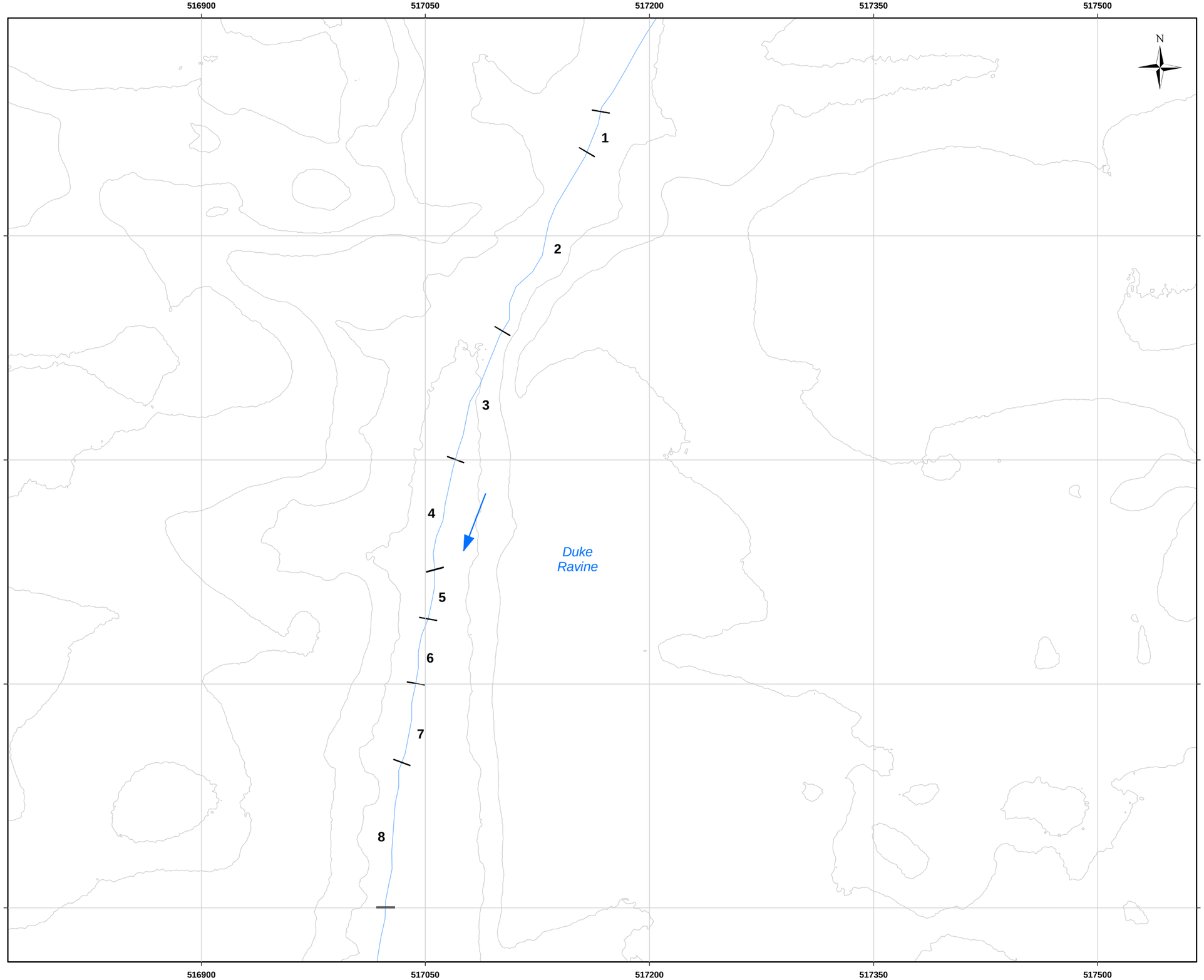
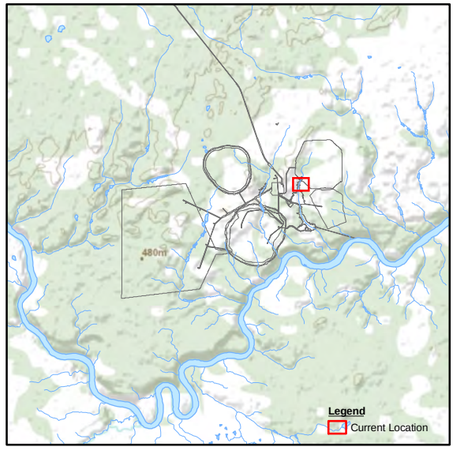


Legend

- Habitat Section
- Contour(5m)
- Watercourse
- Waterbody

KEY MAP



0 12.5 25 50 75 100

Meters

Scale: 1:2,500

Reference

Base data: NRCan National Road Network;
NTS 1:50,000 scale: GeoSask
Mine facilities: AMEC dated October 2010
Habitat data date August 2008

CLIENT: Shore Gold Inc.

PROJECT: Star - Orion South Diamond Project

Duke Ravine Habitat Sections in the PKCF

DATE: October 2010	ANALYST: MY	**Figure 14**
JOB No: SX0373302	QA/QC: KW	PDF FILE: 10-100-005_habitat.pdf
GIS FILE: 10-100-005.mxd		
PROJECTION: UTM Zone 13	DATUM: NAD27	amec

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