

– Appendix A –

Hydrometric Monitoring Station Information Sheets

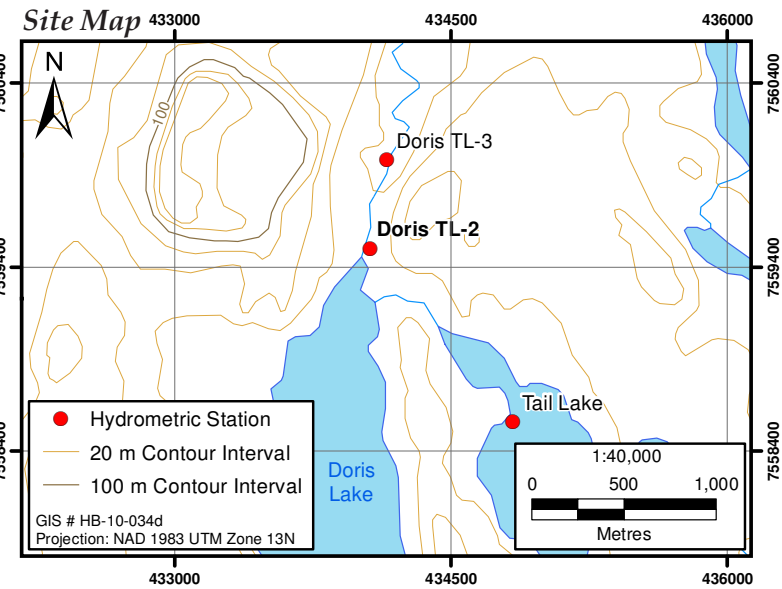
Figure A1

**Station Information Sheet for
Hydrometric Station Doris TL-2**

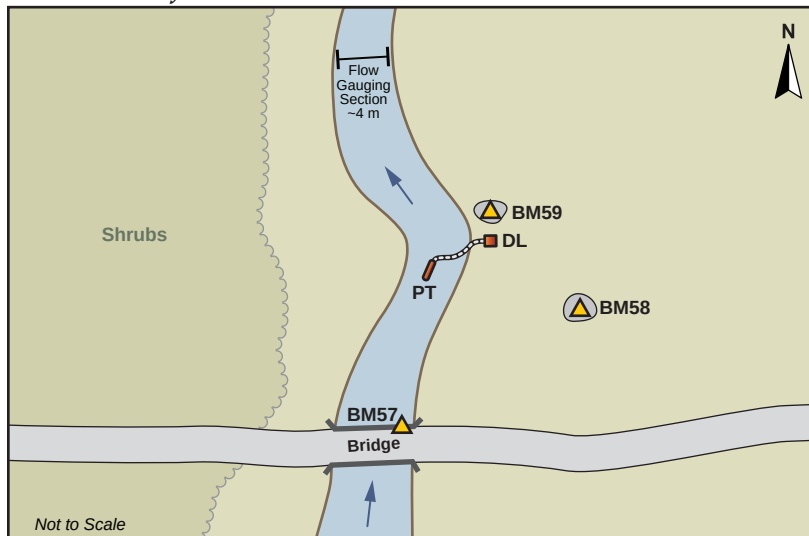


General Site Information

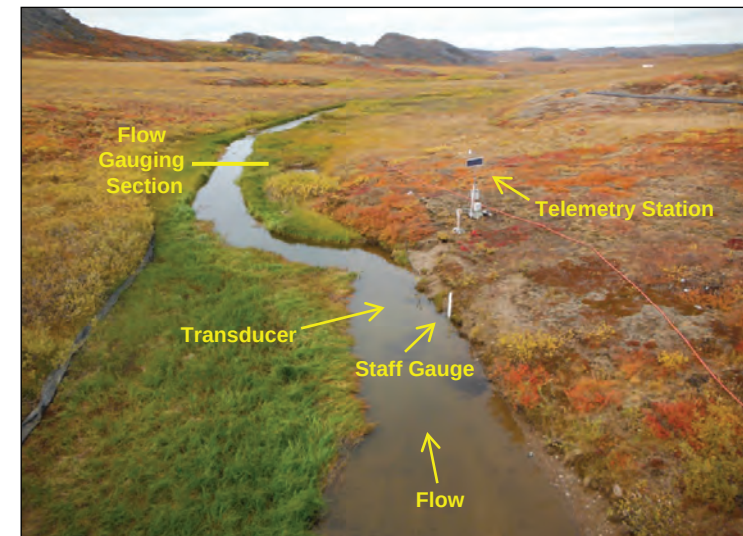
Site ID:	Doris TL-2	Drainage Area (km ²):	94.6
Site Location:	Doris Creek at Doris Lake outflow		
UTM:	NAD 83, Zone 13 W	434,059 E	7,559,504 N
Benchmarks	Elevation	Description	
BM59	100.000	Bolt in boulder	
BM58	100.593	Bolt in boulder	
BM57	102.608	Underside of bridge (right bank)	
Transducer:	PS9800		Data Logger: HOBO Energy Pro
Operating Period: 1996-1998, 2000, 2003-2015			
2015	June 10-September 22		
General Comments:			
- Access by Tail Lake road - Transducer is paired with satellite telemetry station for real-time data monitoring during open water season (sat. receiver needs replacement) - Flow gauging section is approximately 30 m downstream from station - High water flow gauging section approximately 80 m downstream from station			



Plan View of Site



Site Photo



Doris TL-2. View is downstream (north).

Figure A2

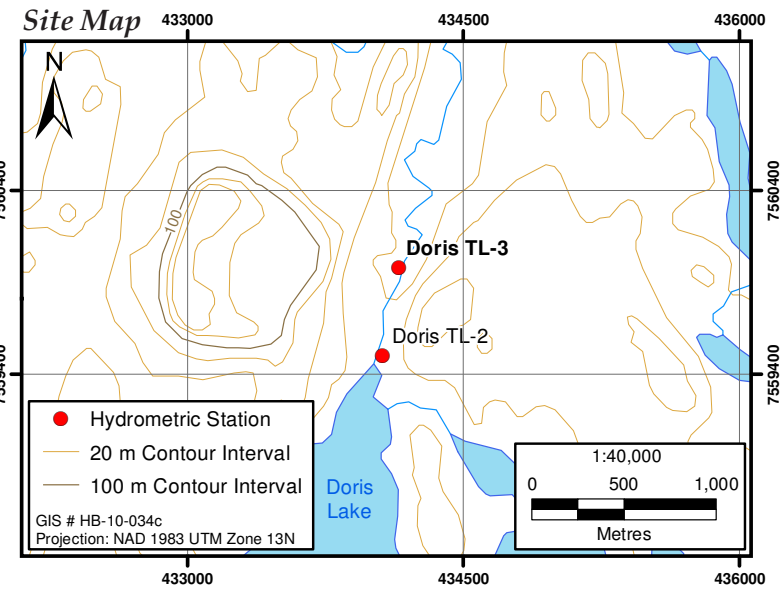
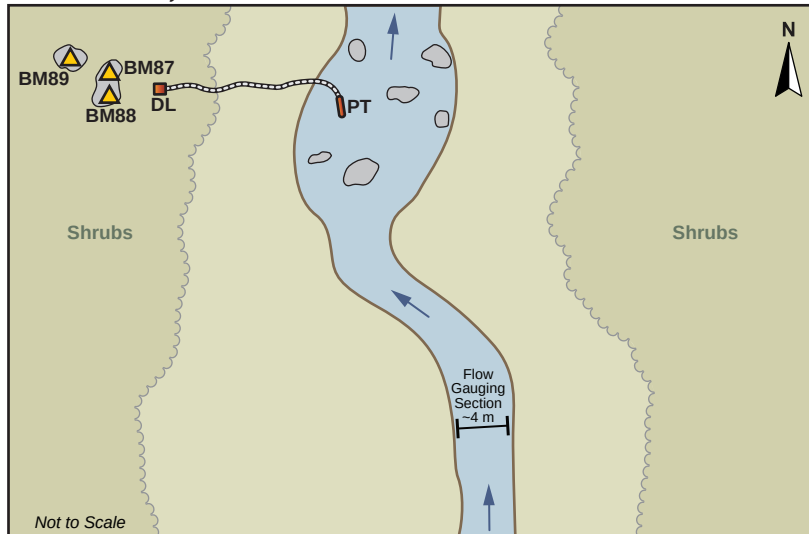
Station Information Sheet for Hydrometric Station Doris TL-3



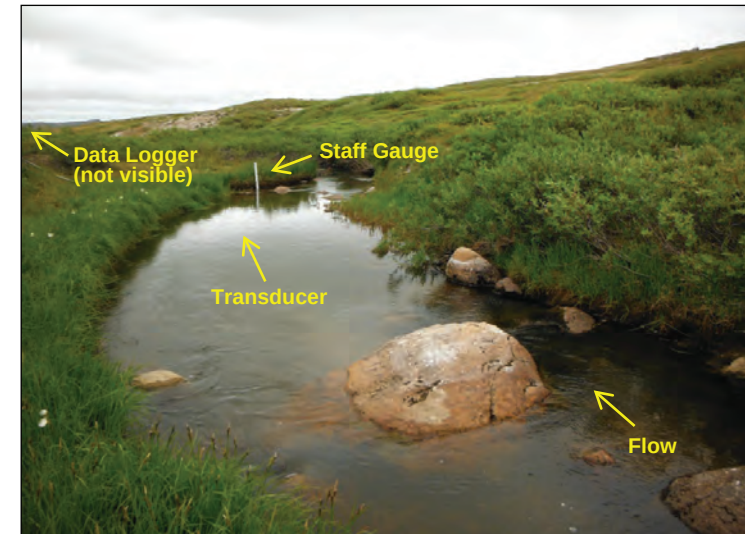
General Site Information

Site ID:	Doris TL-3	Drainage Area (km²):	95.3
Site Location:	Doris Creek downstream from waterfall		
UTM:	NAD 83, Zone 13 W	434,204 E	7,559,985 N
Benchmarks	Elevation	Description	
BM87	100.000	Bolt in boulder	
BM88	100.945	Bolt in boulder	
BM89	100.277	Bolt in boulder	
Transducer and Data Logger:	PT2x		
Operating Period: 2011-2015			
2015	June 11-September 20		
General Comments:			
- Access by foot from Tail Lake road (approximately 500 m downstream from Doris Creek bridge and station Doris TL-2) or by helicopter - Wadeable under most flow conditions (Drysuit at high flow) - Flow gauging section is approximately 20 m upstream from station			

Plan View of Site



Site Photo



Doris TL-3. View is downstream (north).

Figure A3

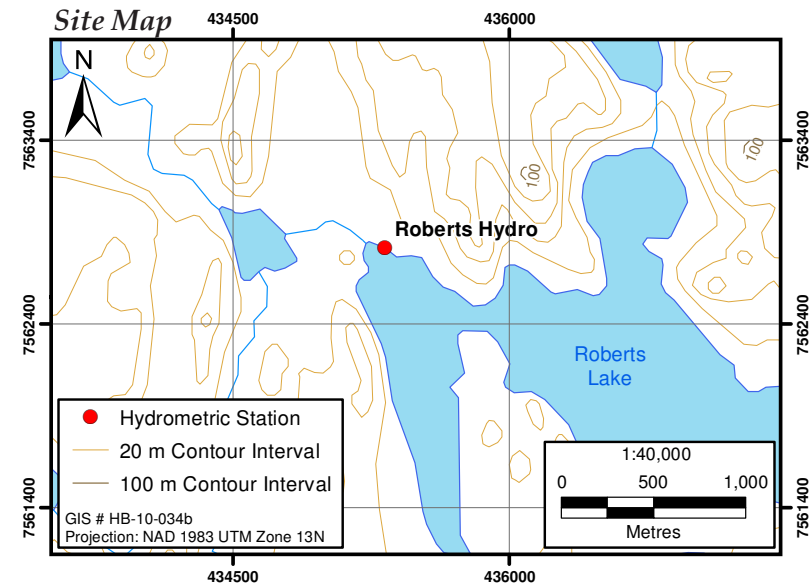
Station Information Sheet for Hydrometric Station Roberts Hydro



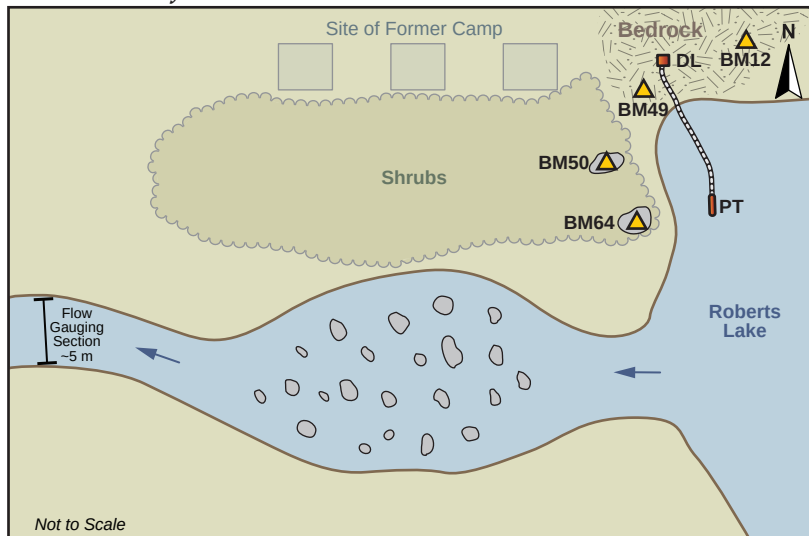
General Site Information

Site ID:	Roberts Hydro	Drainage Area (km²):	97.9
Site Location:	Roberts Lake outflow		
UTM:	NAD 83, Zone 13 W	435,325 E	7,562,815 N
Benchmarks	Elevation	Description	
BM49	100.000	Bolt in bedrock	
BM50	100.077	Bolt in boulder	
BM64	99.813	Bolt in boulder	
BM12	100.059	Bolt in bedrock	
Transducer and Data Logger:	PT2x		
Operating Period: 2003-2015			
2015	June 18 – September 21		
General Comments:			
- Access by helicopter - Wadeable under most flow conditions (Drysuit at high flows) - Flow gauging section is approximately 80 m downstream from lake outlet			

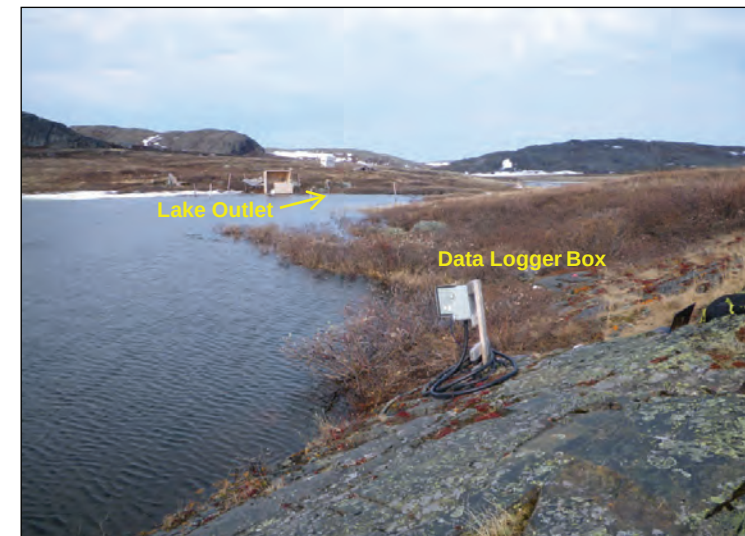
Site Map



Plan View of Site



Site Photo



Roberts Hydro. View is northwest towards lake outlet.

Figure A4

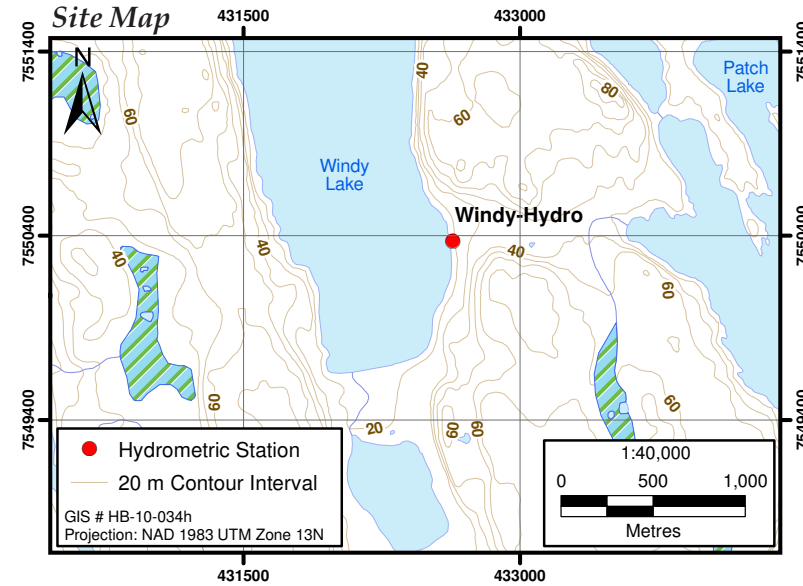
**Station Information Sheet for
Hydrometric Station Windy Hydro**



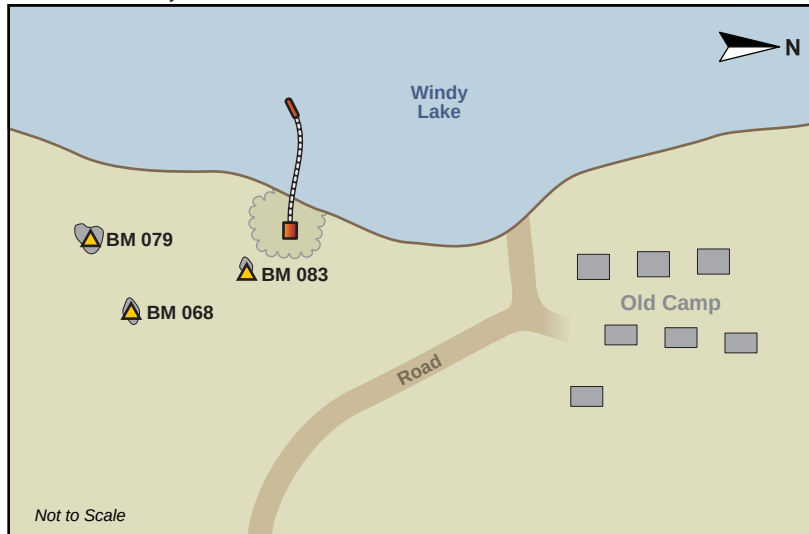
General Site Information

Site ID:	Windy Hydro	Drainage Area (km²):	14.1
Site Location:	Windy Lake outflow		
UTM:	NAD 83, Zone 13 W	432,636 E	7,550,371 N
Benchmarks	Elevation	Description	
BM79	100.012	Bolt in boulder	
BM68	100.060	Bolt in boulder	
BM83	99.057	Bolt in boulder	
Transducer and Data Logger:	PT2x		
Operating Period: 2006-2015			
2015	June 12-September 19		
General Comments:			
- Access is by Windy Lake Road - Station was relocated in 2015 to near the old Windy Camp. - As of 2015 the station monitors lake levels only, no flow measurements are taken at this location			

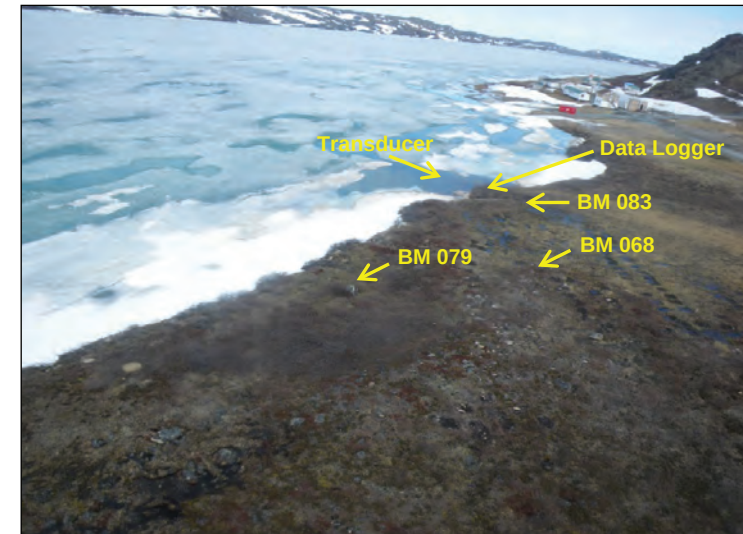
Site Map



Plan View of Site



Site Photo



Windy Hydro. View is northwest.

Figure A5

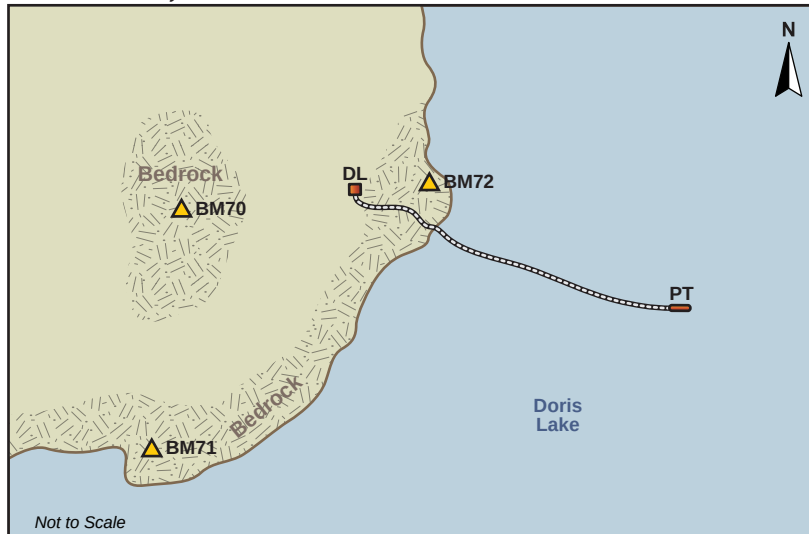
Station Information Sheet for Hydrometric Station Doris Lake



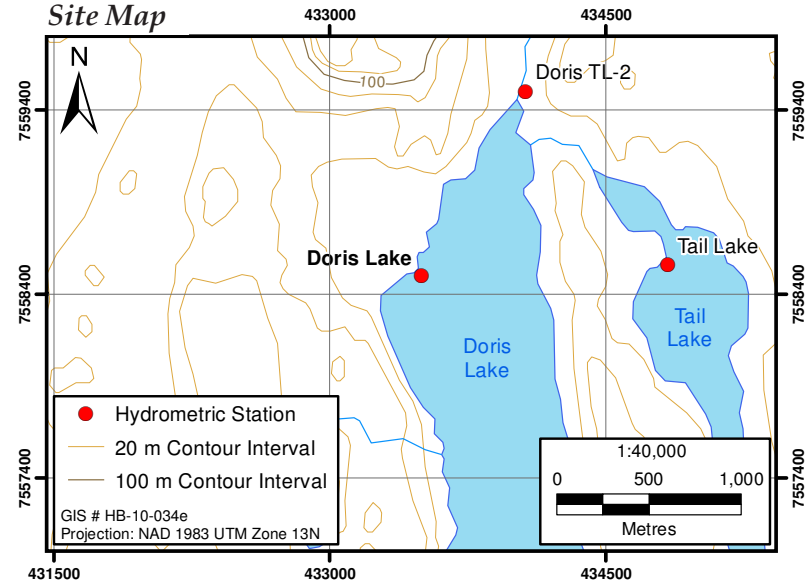
General Site Information

Site ID:	Doris Lake	Drainage Area (km ²):	94.6
Site Location:	Northwest shore of Doris Lake near Doris Camp		
UTM:	NAD 83, Zone 13 W	433,512 E	7,558,452 N
Benchmarks	Elevation	Description	
BM70	100.000	Bolt in bedrock	
BM71	99.243	Bolt in bedrock	
BM72	98.550	Bolt in bedrock	
Transducer:	KPSI 730-series	Data Logger:	DD-320
Operating Period: 2004-2015			
2015	July 15 onward (continuous operation)		
General Comments:			
- Access by foot from Doris Lake boat ramp - Station monitors lake levels only, no flow measurements are taken at this location - Station operates continuously; transducer is installed approximately 5 m deep to prevent ice damage. - Transducer was replaced in 2015			

Plan View of Site



Site Map



Site Photo

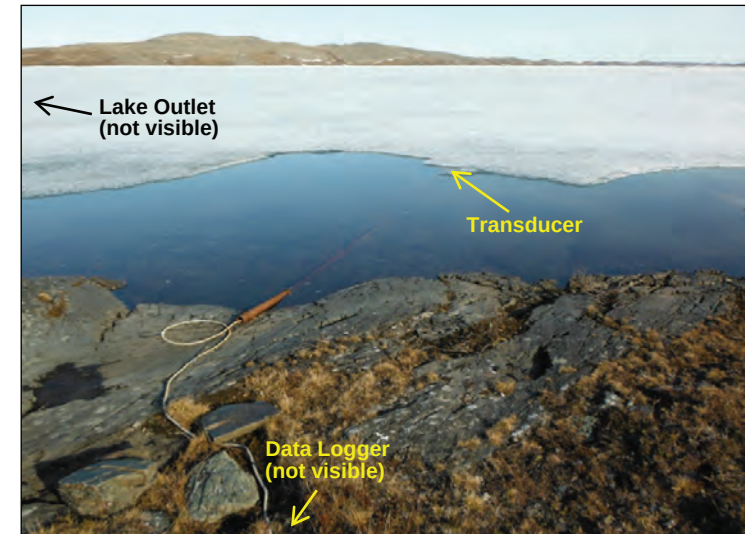


Figure A6

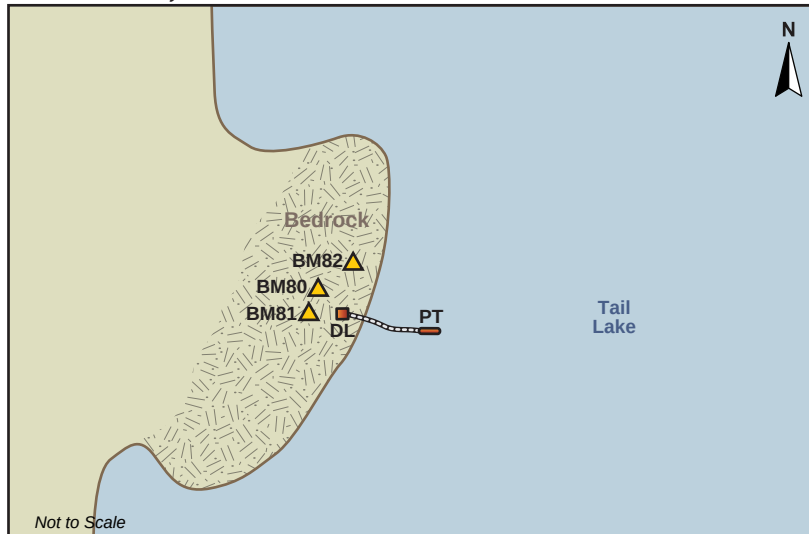
Station Information Sheet for Hydrometric Station Tail Lake



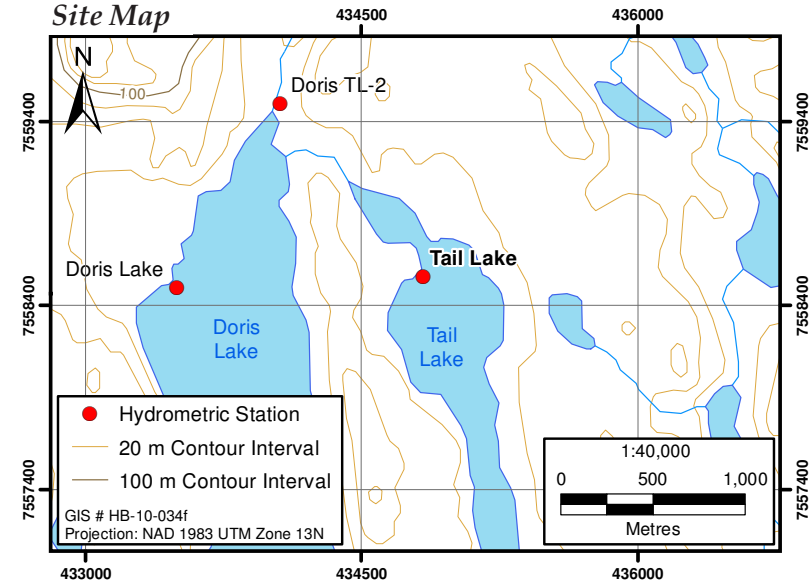
General Site Information

Site ID:	Tail Lake	Drainage Area (km ²):	4.2
Site Location:	Northwest shore of Tail Lake		
UTM:	NAD 83, Zone 13 W	434,832 E	7,558,560 N
Benchmarks	Elevation	Description	
BM80	100.000	Bolt in bedrock	
BM81	97.480	Bolt in bedrock	
BM82	98.173	Bolt in bedrock	
Transducer:	KPSI 730-series	Data Logger:	DD-320
Operating Period: 2004-2015			
2015	July 15 onward (continuous operation)		
General Comments:			
- Access by foot from North Dam (station is approximately 800 m south of dam) or by helicopter - Station monitors lake levels only, no flow measurements are taken at this location - Station operates continuously; transducer is installed approximately 5 m deep to prevent ice damage - Transducer replaced in 2015			

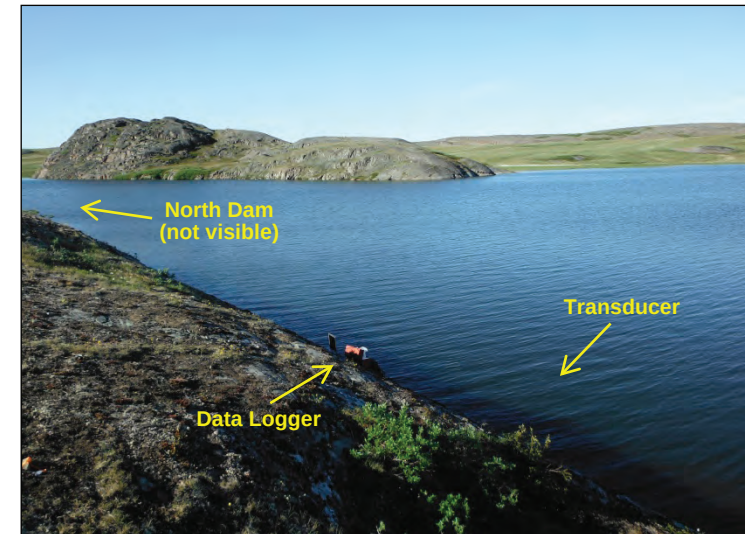
Plan View of Site



Site Map



Site Photo



Tail Lake. View is northeast.

– Appendix B –

Manual Stage and Discharge Measurements

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	14:15	End	15:00	Location	Approximately 60 m upstream of PT				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		Flo-mate 2000				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		2007528				
Date Monitored		10-Jun-15				Real Time Reading		Start	Reading	1.2344	Time	12:45	Staff Gauge (m)		0.675		
Time at Site (24 hr)		Start Time:	9:45	End Time:	16:45	(m)		End	Reading	1.2316	Time	16:00	Time of SG Reading		12:45		
Personnel		Greg Langston and Coby Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		434059	7559504	23		1	Right Bank	1.15	0.00	0.0	0.00	0			0.000	0.0	
Weather Conditions		Sunny, moderate southwest wind.				2		1.30	0.07	0.2	0.01	-0.01			0.000	0.0	
Transducer Information						3		1.50	0.20	0.2	0.05	0.24			0.012	0.5	
DL Model		Hobo	PT Serial #		21041003	4		1.80	0.31	0.3	0.09	0.27			0.025	1.1	
Gain		0	Offset		0	5		2.10	0.45	0.3	0.14	0.72			0.097	4.2	
Status		Logging	Battery		100%	6		2.40	0.50	0.3	0.15	0.81			0.122	5.2	
# of Records		n/a	Memory Free		n/a	7		2.70	0.56	0.3	0.17	0.95			0.160	6.8	
DL Service Performed		n/a	Crest Gauges		n/a	8		3.00	0.61	0.3	0.17	1.04			0.174	7.5	
Hydrometric Leveling Survey						9		3.25	0.64	0.3	0.16	1.09			0.174	7.5	
Stn	BS	HI	FS	Elevation	Notes	10		3.50	0.65	0.3	0.16	1.14			0.185	7.9	
BM 59	1.657	101.657		100.000		11		3.75	0.66	0.3	0.17	1.1			0.182	7.8	
BM 58			1.082	100.575		12		4.00	0.64	0.3	0.16	1.16			0.186	7.9	
BM 57			-0.929	102.586		13		4.25	0.50	0.3	0.13	1.17			0.146	6.3	
PT			3.485	98.172		14		4.50	0.52	0.3	0.13	1.25			0.163	6.9	
WL			2.482	99.175		15		4.75	0.60	0.3	0.15	1.19			0.179	7.6	
SG			2.151	99.506		16		5.00	0.64	0.3	0.14	0.8			0.115	4.9	
						17		5.20	0.57	0.2	0.11	0.53			0.060	2.6	
						18		5.40	0.32	0.2	0.08	1.21			0.097	4.1	
						19		5.70	0.24	0.3	0.07	1.22			0.088	3.8	
TBM			1.743	99.914		20		6.00	0.18	0.3	0.05	1.07			0.058	2.5	
TBM	1.624	101.538				21		6.30	0.18	0.3	0.05	1.02			0.055	2.4	
BM 59			1.538	100.000		22		6.60	0.18	0.3	0.06	0.78			0.046	2.0	
BM 58			0.963	100.575		23		6.95	0.13	0.4	0.03	0.51			0.015	0.6	
BM 57			-1.050	102.588		24		7.05	0.08	0.1	0.01	0.15			0.001	0.0	
PT			3.368	98.170		25	Left Bank	7.10	0.00	0.0	0.00	0			0.000	0.0	
WL			2.364	99.174		26											
			2.034	99.504		27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000	Established May 25, 2015	32											
BM 58	100.593	100.575		-0.018	Established May 25, 2015	33											
BM 57	102.608	102.587		-0.021	Established May 25, 2015	Total Q										2.338	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.322				First visit of the season. Real-time station installed.											
Stage from WL Survey (m)		99.175															
Pressure Transducer Reading (m)		1.233															
Pressure Transducer Elevation (m)		97.942															
Discharge (m³/s)		2.338															
Cross Sectional Area		2.440															
Average Velocity		0.958															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	15:00	End	16:00	Location	Approximately 60 m upstream of PT				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		Flo-mate 2000				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		2007528				
Date Monitored		10-Jun-15				Real Time Reading		Start	Reading	1.2344	Time	12:45	Staff Gauge (m)		0.675		
Time at Site (24 hr)		Start Time:	9:45	End Time:	16:45	(m)		End	Reading	1.2316	Time	16:00	Time of SG Reading		12:45		
Personnel		Greg Langston, Coby Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny, moderate southwest wind.				1	Right Bank	1.15	0.00	0.0	0.00	0			0.000	0.0	
						2		1.40	0.09	0.3	0.02	-0.01			0.000	0.0	
						3		1.70	0.27	0.3	0.08	0.24			0.019	0.8	
DL Model		Hobo	PT Serial #		21041003	4		2.00	0.44	0.3	0.13	0.27			0.036	1.5	
Gain		0	Offset		0	5		2.30	0.48	0.3	0.14	0.72			0.104	4.4	
Status		Logging	Battery		100%	6		2.60	0.57	0.3	0.17	0.81			0.139	5.9	
# of Records		n/a	Memory Free		n/a	7		2.90	0.60	0.3	0.17	0.95			0.157	6.7	
DL Service Performed		n/a	Crest Gauges		n/a	8		3.15	0.62	0.3	0.16	1.04			0.161	6.9	
Hydrometric Leveling Survey						9		3.40	0.74	0.3	0.19	1.09			0.202	8.6	
Stn	BS	HI	FS	Elevation	Notes	10		3.65	0.66	0.3	0.17	1.14			0.188	8.1	
BM 59	1.657	101.657		100.000		11		3.90	0.64	0.3	0.16	1.1			0.176	7.5	
BM 58			1.082	100.575		12		4.15	0.58	0.3	0.15	1.16			0.168	7.2	
BM 57			-0.929	102.586		13		4.40	0.52	0.3	0.13	1.17			0.152	6.5	
PT			3.485	98.172		14		4.65	0.57	0.3	0.14	1.25			0.178	7.6	
WL			2.482	99.175		15		4.90	0.64	0.3	0.16	1.19			0.190	8.2	
SG			2.151	99.506		16		5.15	0.58	0.3	0.15	0.8			0.116	5.0	
						17		5.40	0.30	0.3	0.08	0.53			0.044	1.9	
						18		5.70	0.26	0.3	0.08	1.21			0.094	4.0	
						19		6.00	0.18	0.3	0.05	1.22			0.066	2.8	
TBM			1.743	99.914		20		6.30	0.18	0.3	0.05	1.07			0.058	2.5	
TBM	1.624	101.538				21		6.60	0.20	0.3	0.06	1.02			0.061	2.6	
BM 59			1.538	100.000		22		6.90	0.12	0.3	0.03	0.78			0.021	0.9	
BM 58			0.963	100.575		23		7.05	0.09	0.1	0.01	0.51			0.005	0.2	
BM 57			-1.050	102.588		24	Left Bank	7.10	0.00	0.0	0.00	0.15			0.000	0.0	
PT			3.368	98.170		25											
WL			2.364	99.174		26											
SG			2.034	99.504		27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000	Established May 25, 2015	32											
BM 58	100.593	100.575		-0.018	Established May 25, 2015	33											
BM 57	102.608	102.587		-0.021	Established May 25, 2015	Total Q										2.334	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.322				First visit of the season. Real-time station installed.											
Stage from WL Survey (m)		99.175															
Pressure Transducer Reading (m)		1.233															
Pressure Transducer Elevation (m)		97.942															
Discharge (m³/s)		2.334															
Cross Sectional Area		2.470															
Average Velocity		0.945															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	9:45	End	10:30	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Swoffer					
Stream Name	Doris Lake Outflow				Flow Meter Type	Propeller				Instrument Serial #	6733					
Date Monitored	12-Jun-15				Real Time Reading (m)	Start	Reading	1.2714	Time	9:45	Staff Gauge (m)	0.700				
Time at Site (24 hr)	Start Time:	9:45	End Time:	11:00		End	Reading	1.2742	Time	10:30	Time of SG Reading	9:45				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Mainly sunny, warm.				1	Right Bank	0.90	0.00	0.0	0.00	0			0.000	0.0	
					2		1.10	0.11	0.2	0.02	0			0.000	0.0	
					3		1.30	0.16	0.2	0.04	0.31			0.012	0.5	
					4		1.60	0.35	0.3	0.11	0.37			0.039	1.6	
					5		1.90	0.52	0.3	0.14	0.61			0.087	3.5	
					6		2.15	0.54	0.3	0.14	0.87			0.117	4.7	
					7		2.40	0.58	0.3	0.15	0.99			0.144	5.8	
					8		2.65	0.61	0.3	0.15	0.93			0.142	5.7	
					9		2.90	0.63	0.3	0.16	0.98			0.154	6.2	
					10		3.15	0.66	0.3	0.17	1.03			0.170	6.8	
					11		3.40	0.70	0.3	0.18	1.06			0.186	7.5	
					12		3.65	0.72	0.3	0.18	1.01			0.182	7.3	
					13		3.90	0.65	0.3	0.16	1.1			0.179	7.2	
					14		4.15	0.51	0.3	0.13	1.17			0.149	6.0	
					15		4.40	0.56	0.3	0.14	1.14			0.160	6.4	
					16		4.65	0.62	0.3	0.16	1.07			0.166	6.7	
					17		4.90	0.67	0.3	0.17	0.78			0.131	5.3	
					18		5.15	0.40	0.3	0.10	1.14			0.114	4.6	
					19		5.40	0.34	0.3	0.09	1.09			0.093	3.7	
					20		5.65	0.29	0.3	0.07	0.97			0.070	2.8	
					21		5.90	0.19	0.3	0.05	0.98			0.047	1.9	
					22		6.15	0.19	0.3	0.05	0.98			0.047	1.9	
					23		6.40	0.19	0.3	0.05	0.99			0.047	1.9	
					24		6.65	0.18	0.3	0.05	1.03			0.046	1.9	
					25		6.90	0.12	0.3	0.03	0.17			0.005	0.2	
					26	Left Bank	7.10	0.00	0.2	0.00	0			0.000	0.0	
					27											
					28											
					29											
					30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 59	100	100.001	0.000		32											
BM 58	100.593	100.577	-0.016		33											
BM 57	102.608	102.588	-0.020		Total Q										2.485	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.700														
Stage from WL Survey (m)		99.203														
Pressure Transducer Reading (m)		1.272														
Pressure Transducer Elevation (m)		97.932														
Discharge (m ³ /s)		2.485														
Cross Sectional Area		2.645														
Average Velocity		0.940														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	10:30	End	11:00	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)				Instrument Model		Swoffer			
Stream Name		Doris Lake Outflow				Flow Meter Type		Propeller				Instrument Serial #		6733			
Date Monitored		12-Jun-15				Real Time Reading		Start	Reading	1.2714	Time	10:30	Staff Gauge (m)		0.703		
Time at Site (24 hr)		Start Time:	9:45	End Time:	11:30	(m)	End	Reading	1.2742	Time	11:00	Time of SG Reading		11:00			
Personnel		Coby Hall, Greg Langston						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Mainly sunny, warm				1	Right Bank	0.90	0.00	0.0	0.00	0			0.000	0.0	
						2		1.25	0.16	0.4	0.06	0.17			0.010	0.4	
Transducer Information						3		1.60	0.37	0.4	0.12	0.32			0.038	1.5	
DL Model		Hobo	PT Serial #		21041003	4		1.90	0.51	0.3	0.17	0.66			0.109	4.2	
Gain		0	Offset		0	5		2.25	0.58	0.4	0.17	0.86			0.150	5.8	
Status		Logging	Battery		100%	6		2.50	0.60	0.3	0.15	0.96			0.144	5.6	
# of Records		n/a	Memory Free		n/a	7		2.75	0.63	0.3	0.16	0.93			0.146	5.7	
DL Service Performed		n/a	Crest Gauges		n/a	8		3.00	0.62	0.3	0.16	1.07			0.166	6.4	
Hydrometric Leveling Survey						9		3.25	0.70	0.3	0.18	1.08			0.189	7.3	
Stn	BS	HI	FS	Elevation	Notes	10		3.50	0.71	0.3	0.18	1.09			0.193	7.5	
BM 59	1.675	101.675		100.000		11		3.75	0.66	0.3	0.17	1.06			0.175	6.8	
BM 58			1.099	100.576		12		4.00	0.62	0.3	0.16	1.12			0.174	6.7	
BM 57			-0.912	102.587		13		4.25	0.52	0.3	0.13	1.12			0.146	5.7	
PT			3.526	98.149		14		4.50	0.58	0.3	0.15	1.17			0.170	6.6	
WL			2.473	99.202		15		4.75	0.65	0.3	0.16	1.23			0.200	7.8	
SG			2.167	99.508		16		5.00	0.59	0.3	0.15	0.65			0.096	3.7	
						17		5.25	0.30	0.3	0.08	1.38			0.104	4.0	
						18		5.50	0.32	0.3	0.09	1.26			0.111	4.3	
						19		5.80	0.20	0.3	0.06	1.25			0.075	2.9	
TBM			2.170	99.505		20		6.10	0.20	0.3	0.06	1.03			0.062	2.4	
TBM	2.062	101.567				21		6.40	0.20	0.3	0.06	1.15			0.069	2.7	
BM 59			1.566	100.001		22		6.70	0.16	0.3	0.04	0.95			0.038	1.5	
BM 58			0.989	100.578		23		6.90	0.14	0.2	0.03	0.44			0.012	0.5	
BM 57			-1.021	102.588		24	Left Bank	7.10	0.00	0.2	0.00	0			0.000	0.0	
PT			3.422	98.145		25											
WL			2.363	99.204		26											
SG			2.059	99.508		27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.001		0.000		32											
BM 58	100.593	100.577		-0.016		33											
BM 57	102.608	102.588		-0.020		Total Q										2.576	100.0
Summary						General Notes											
Staff Gauge Reading (m)			0.700														
Stage from WL Survey (m)			99.203														
Pressure Transducer Reading (m)			1.272														
Pressure Transducer Elevation (m)			97.932														
Discharge (m³/s)			2.576														
Cross Sectional Area			2.647														
Average Velocity			0.973														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	6:45	End	7:15	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000					
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592					
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	1.285	Time	6:45	Staff Gauge (m)	0.711				
Time at Site (24 hr)	Start Time:	6:00	End Time:	8:30	(m)	End	Reading	1.285	Time	7:20	Time of SG Reading	7:20				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Sunny, light north wind.				1	Right Bank	0.80	0.00	0.0	0.00	0			0.000	0.0	
					2		1.00	0.08	0.2	0.02	-0.04			-0.001	0.0	
					3		1.25	0.14	0.3	0.04	0.3			0.011	0.4	
					4		1.50	0.20	0.3	0.05	0.74			0.037	1.5	
					5		1.75	0.53	0.3	0.13	0.22			0.029	1.1	
					6		2.00	0.53	0.3	0.13	0.72			0.095	3.7	
					7		2.25	0.56	0.3	0.14	0.9			0.126	4.9	
					8		2.50	0.57	0.3	0.14	0.97			0.138	5.4	
					9		2.75	0.56	0.3	0.14	0.97			0.136	5.3	
					10		3.00	0.70	0.3	0.18	0.96			0.168	6.6	
					11		3.25	0.73	0.3	0.18	1.11			0.203	7.9	
					12		3.50	0.73	0.3	0.18	1.07			0.195	7.7	
					13		3.75	0.64	0.3	0.16	1.11			0.178	7.0	
					14		4.00	0.56	0.3	0.14	1.11			0.155	6.1	
					15		4.25	0.53	0.3	0.13	1.15			0.152	6.0	
					16		4.50	0.58	0.3	0.15	1.17			0.170	6.7	
					17		4.75	0.62	0.3	0.16	1.24			0.192	7.5	
					18		5.00	0.60	0.3	0.15	0.61			0.092	3.6	
					19		5.25	0.47	0.3	0.12	1.21			0.142	5.6	
					20		5.50	0.28	0.3	0.07	1.26			0.088	3.5	
					21		5.75	0.22	0.3	0.06	1.11			0.061	2.4	
					22		6.00	0.20	0.3	0.05	0.99			0.050	1.9	
					23		6.25	0.20	0.3	0.05	1.14			0.057	2.2	
					24		6.50	0.20	0.3	0.05	1.09			0.055	2.1	
					25		6.75	0.16	0.3	0.03	0.67			0.021	0.8	
					26		6.90	0.14	0.2	0.02	0			0.000	0.0	
					27	Left Bank	7.10	0.00	0.2	0.00	0			0.000	0.0	
					28											
					29											
					30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 59	100	100.001	0.000		32											
BM 58	100.593	100.578	-0.016		33											
BM 57	102.608	102.590	-0.019		Total Q										2.550	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.711														
Stage from WL Survey (m)		99.213														
Pressure Transducer Reading (m)		1.272														
Pressure Transducer Elevation (m)		97.941														
Discharge (m ³ /s)		2.550														
Cross Sectional Area		2.662														
Average Velocity		0.958														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	7:20	End	8:00	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000					
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592					
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	1.285	Time	7:20	Staff Gauge (m)	0.711				
Time at Site (24 hr)	Start Time:	6:00	End Time:	8:30	(m)	End	Reading	1.285	Time	8:00	Time of SG Reading	7:20				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Sunny, light north wind.				1	Right Bank	0.80	0.00	0.0	0.00	0			0.000	0.0	
					2		1.10	0.12	0.3	0.03	-0.02			-0.001	0.0	
					3		1.25	0.14	0.2	0.03	0.33			0.009	0.4	
					4		1.50	0.19	0.3	0.05	0.75			0.036	1.4	
					5		1.75	0.52	0.3	0.13	0.14			0.018	0.7	
					6		2.00	0.53	0.3	0.13	0.76			0.101	3.8	
					7		2.25	0.53	0.3	0.13	0.86			0.114	4.4	
					8		2.50	0.52	0.3	0.13	1.03			0.134	5.1	
					9		2.75	0.60	0.3	0.15	1.01			0.152	5.8	
					10		3.00	0.70	0.3	0.18	1			0.175	6.7	
					11		3.25	0.70	0.3	0.18	1.1			0.193	7.4	
					12		3.50	0.70	0.3	0.18	1.16			0.203	7.8	
					13		3.75	0.72	0.3	0.18	1.15			0.207	7.9	
					14		4.00	0.66	0.3	0.17	1.18			0.195	7.4	
					15		4.25	0.51	0.3	0.13	1.31			0.167	6.4	
					16		4.50	0.56	0.3	0.14	1.19			0.167	6.4	
					17		4.75	0.62	0.3	0.16	1.33			0.206	7.9	
					18		5.00	0.66	0.3	0.17	0.57			0.094	3.6	
					19		5.25	0.43	0.3	0.11	0.93			0.100	3.8	
					20		5.50	0.28	0.3	0.08	1.26			0.097	3.7	
					21		5.80	0.21	0.3	0.06	1.22			0.077	2.9	
					22		6.10	0.19	0.3	0.06	1.08			0.062	2.4	
					23		6.40	0.20	0.3	0.06	1.13			0.068	2.6	
					24		6.70	0.19	0.3	0.05	0.9			0.043	1.6	
					25		6.90	0.14	0.2	0.03	0.12			0.003	0.1	
					26	Left Bank	7.10	0.00	0.2	0.00	0			0.000	0.0	
					27											
					28											
					29											
					30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 59	100	100.001	0.000		32											
BM 58	100.593	100.578	-0.016		33											
BM 57	102.608	102.590	-0.019		Total Q										2.618	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.711														
Stage from WL Survey (m)		99.213														
Pressure Transducer Reading (m)		1.272														
Pressure Transducer Elevation (m)		97.941														
Discharge (m ³ /s)		2.618														
Cross Sectional Area		2.675														
Average Velocity		0.979														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	7:45	End	8:15	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000					
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592					
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.3085	Time	7:45	Staff Gauge (m)	0.711				
Time at Site (24 hr)	Start Time:	7:30	End Time:	9:30	(m)	End	Reading	1.2962	Time	8:15	Time of SG Reading	7:20				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Foggy and cool.				1	Right Bank	2.00	0.00	0.0	0.00	0			0.000	0.0	
					2		2.40	0.12	0.4	0.04	0.09			0.004	0.1	
					3		2.70	0.18	0.3	0.05	0.64			0.035	1.2	
					4		3.00	0.53	0.3	0.15	0.24			0.035	1.3	
					5		3.25	0.55	0.3	0.14	0.74			0.102	3.6	
					6		3.50	0.56	0.3	0.14	0.9			0.126	4.5	
					7		3.75	0.52	0.3	0.13	1.02			0.133	4.7	
					8		4.00	0.60	0.3	0.15	1.05			0.158	5.6	
					9		4.25	0.72	0.3	0.18	1.04			0.187	6.7	
					10		4.50	0.72	0.3	0.18	1.17			0.211	7.5	
					11		4.75	0.74	0.3	0.19	1.14			0.211	7.5	
					12		5.00	0.73	0.3	0.18	1.19			0.217	7.8	
					13		5.25	0.67	0.3	0.17	1.25			0.209	7.5	
					14		5.50	0.54	0.3	0.14	1.33			0.180	6.4	
					15		5.75	0.56	0.3	0.14	1.34			0.188	6.7	
					16		6.00	0.62	0.3	0.16	1.35			0.209	7.5	
					17		6.25	0.68	0.3	0.17	0.57			0.097	3.5	
					18		6.50	0.42	0.3	0.11	1.2			0.126	4.5	
					19		6.75	0.28	0.3	0.07	1.3			0.091	3.3	
					20		7.00	0.23	0.3	0.06	1.26			0.072	2.6	
					21		7.25	0.21	0.3	0.05	1.16			0.061	2.2	
					22		7.50	0.20	0.3	0.05	1.08			0.054	1.9	
					23		7.75	0.22	0.3	0.06	1.12			0.062	2.2	
					24		8.00	0.18	0.3	0.05	0.72			0.032	1.2	
					25		8.25	0.08	0.3	0.02	-0.1			-0.002	-0.1	
					26	Left Bank	8.40	0.00	0.2	0.00	0			0.000	0.0	
					27											
					28											
					29											
					30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 59	100	100.000	0.000		32											
BM 58	100.593	100.578	-0.015		33											
BM 57	102.608	102.590	-0.018		Total Q										2.796	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.711														
Stage from WL Survey (m)		99.226														
Pressure Transducer Reading (m)		1.296														
Pressure Transducer Elevation (m)		97.930														
Discharge (m ³ /s)		2.796														
Cross Sectional Area		2.745														
Average Velocity		1.019														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	8:15	End	9:00	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000				
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592				
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.3085	Time	7:45	Staff Gauge (m)	0.711			
Time at Site (24 hr)	Start Time:	7:30	End Time:	9:30	(m)	End	Reading	1.2962	Time	8:15	Time of SG Reading	7:20			
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Foggy and Cool				1	Right Bank	8.40	0.00	0.0	0.00	0			0.000	0.0
					2		8.15	0.14	0.3	0.05	0.12			0.005	0.2
					3		7.75	0.19	0.4	0.06	0.95			0.059	2.2
					4		7.50	0.19	0.3	0.05	1.08			0.051	1.9
					5		7.25	0.18	0.3	0.05	1.02			0.046	1.7
					6		7.00	0.23	0.3	0.06	1.16			0.067	2.5
					7		6.75	0.28	0.3	0.07	1.16			0.081	3.1
					8		6.50	0.40	0.3	0.10	1.18			0.118	4.5
					9		6.25	0.67	0.3	0.17	0.43			0.072	2.7
					10		6.00	0.61	0.3	0.15	1.23			0.188	7.1
					11		5.75	0.55	0.3	0.14	1.14			0.157	6.0
					12		5.50	0.52	0.3	0.13	1.29			0.168	6.4
					13		5.25	0.66	0.3	0.17	1.27			0.210	8.0
					14		5.00	0.72	0.3	0.18	1.17			0.211	8.0
					15		4.75	0.73	0.3	0.18	1.16			0.212	8.0
					16		4.50	0.72	0.3	0.18	1.17			0.211	8.0
					17		4.25	0.73	0.3	0.18	1.07			0.195	7.4
					18		4.00	0.48	0.3	0.12	1.12			0.134	5.1
					19		3.75	0.55	0.3	0.14	1.12			0.154	5.8
					20		3.50	0.59	0.3	0.15	0.93			0.137	5.2
					21		3.25	0.52	0.3	0.13	0.75			0.098	3.7
					22		3.00	0.51	0.3	0.14	0.26			0.036	1.4
					23		2.70	0.17	0.3	0.05	0.39			0.018	0.7
					24		2.45	0.13	0.3	0.05	0.14			0.006	0.2
					25	Left Bank	2.00	0.00	0.5	0.00	0			0.000	0.0
					26										
					27										
					28										
					29										
					30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 59	100	100.000	0.000		32										
BM 58	100.593	100.578	-0.015		33										
BM 57	102.608	102.590	-0.018		Total Q									2.633	100.0
Summary					General Notes										
Staff Gauge Reading (m)		0.711													
Stage from WL Survey (m)		99.226													
Pressure Transducer Reading (m)		1.296													
Pressure Transducer Elevation (m)		97.930													
Discharge (m ³ /s)		2.633													
Cross Sectional Area		2.672													
Average Velocity		0.985													

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	7:00	End	7:30	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000				
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592				
Date Monitored	15-Jun-15				Real Time Reading	Start	Reading	1.3003	Time	7:00	Staff Gauge (m)	0.715			
Time at Site (24 hr)	Start Time:	6:00	End Time:	8:30	(m)	End	Reading	1.3003	Time	7:30	Time of SG Reading	7:00			
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Cloudy, cool, moderate north wind.				1	Right Bank	7.10	0.00	0.0	0.00	0			0.000	0.0
Transducer Information					2		6.80	0.08	0.3	0.03	-0.03			-0.001	0.0
					3		6.40	0.18	0.4	0.06	0.44			0.026	0.9
DL Model	Hobo	PT Serial #	21041003		4		6.15	0.46	0.3	0.12	0.51			0.059	2.1
Gain	0	Offset	0		5		5.90	0.54	0.3	0.14	0.42			0.057	2.1
Status	Logging	Battery	100%		6		5.65	0.52	0.3	0.13	0.89			0.116	4.2
# of Records	n/a	Memory Free	n/a		7		5.40	0.55	0.3	0.14	1.04			0.143	5.2
DL Service Performed	n/a	Crest Gauges	n/a		8		5.15	0.56	0.3	0.14	1.01			0.141	5.2
Hydrometric Leveling Survey					9		4.90	0.67	0.3	0.17	1.04			0.174	6.3
Stn	BS	HI	FS	Elevation	Notes	10		4.65	0.74	0.3	0.19	1.13		0.209	7.6
BM 59	1.693	101.693		100.000		11		4.40	0.72	0.3	0.18	1.13		0.203	7.4
BM 58			1.116	100.577		12		4.15	0.71	0.3	0.18	1.19		0.211	7.7
BM 57			-0.897	102.590		13		3.90	0.71	0.3	0.18	1.15		0.204	7.4
WL			2.471	99.222		14		3.65	0.72	0.3	0.18	1.28		0.230	8.4
						15		3.40	0.54	0.3	0.14	1.19		0.161	5.9
						16		3.15	0.60	0.3	0.15	1.18		0.177	6.5
						17		2.90	0.67	0.3	0.17	0.71		0.119	4.3
						18		2.65	0.56	0.3	0.14	0.9		0.126	4.6
						19		2.40	0.28	0.3	0.07	1.2		0.084	3.1
TBM			2.189	99.504		20		2.15	0.30	0.3	0.08	1.08		0.081	3.0
TBM	2.268	101.772		99.504		21		1.90	0.20	0.3	0.05	1.17		0.059	2.1
WL			2.550	99.222		22		1.65	0.20	0.3	0.05	1.01		0.051	1.8
BM 57			-0.818	102.590		23		1.40	0.20	0.3	0.05	1.11		0.056	2.0
BM 58			1.195	100.577		24		1.15	0.20	0.3	0.05	1.06		0.053	1.9
BM 59			1.772	100.000		25		0.90	0.15	0.3	0.04	0.15		0.006	0.2
						26	Left Bank	0.60	0.00	0.3	0.00	0		0.000	0.0
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 59	100	100.000	0.000		32										
BM 58	100.593	100.577	-0.016		33										
BM 57	102.608	102.590	-0.018		Total Q								2.744	100.0	
Summary					General Notes										
Staff Gauge Reading (m)		0.715													
Stage from WL Survey (m)		99.222													
Pressure Transducer Reading (m)		1.300													
Pressure Transducer Elevation (m)		97.922													
Discharge (m ³ /s)		2.744													
Cross Sectional Area		2.790													
Average Velocity		0.983													

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	7:30	End	8:00	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flo-mate 2000					
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6592					
Date Monitored	15-Jun-15				Real Time Reading	Start	Reading	1.3003	Time	7:30	Staff Gauge (m)	0.715				
Time at Site (24 hr)	Start Time:	6:00	End Time:	8:30	(m)	End	Reading	1.3003	Time	8:00	Time of SG Reading	7:00				
Personnel	Coby Hall, Greg Langston					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Cloudy, cool, moderate north wind.				1	Right Bank	0.60	0.00	0.0	0.00	0				0.000	0.0
					2		0.90	0.15	0.3	0.05	0.1				0.005	0.2
					3		1.25	0.20	0.4	0.06	1.06				0.064	2.4
					4		1.50	0.20	0.3	0.05	1.16				0.058	2.2
					5		1.75	0.19	0.3	0.05	1.13				0.054	2.0
					6		2.00	0.21	0.3	0.05	1.21				0.064	2.4
					7		2.25	0.28	0.3	0.07	1.31				0.092	3.4
					8		2.50	0.44	0.3	0.11	0.95				0.105	3.9
					9		2.75	0.69	0.3	0.17	0.57				0.098	3.6
					10		3.00	0.62	0.3	0.16	1.19				0.184	6.8
					11		3.25	0.55	0.3	0.14	1.33				0.183	6.8
					12		3.50	0.52	0.3	0.13	1.31				0.170	6.3
					13		3.75	0.64	0.3	0.16	1.19				0.190	7.1
					14		4.00	0.71	0.3	0.18	1.17				0.208	7.7
					15		4.25	0.72	0.3	0.18	1.13				0.203	7.5
					16		4.50	0.72	0.3	0.18	1.15				0.207	7.7
					17		4.75	0.72	0.3	0.18	1.09				0.196	7.3
					18		5.00	0.50	0.3	0.13	1.07				0.134	5.0
					19		5.25	0.55	0.3	0.14	1.07				0.147	5.5
					20		5.50	0.60	0.3	0.15	0.92				0.138	5.1
					21		5.75	0.54	0.3	0.14	0.8				0.108	4.0
					22		6.00	0.53	0.3	0.15	0.28				0.041	1.5
					23		6.30	0.22	0.3	0.07	0.65				0.043	1.6
					24		6.60	0.13	0.3	0.05	0.12				0.006	0.2
					25	Left Bank	7.10	0.00	0.5	0.00	0				0.000	0.0
					26											
					27											
					28											
					29											
					30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 59	100	100.000	0.000		32											
BM 58	100.593	100.577	-0.016		33											
BM 57	102.608	102.590	-0.018		Total Q										2.697	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.715														
Stage from WL Survey (m)		99.222														
Pressure Transducer Reading (m)		1.300														
Pressure Transducer Elevation (m)		97.922														
Discharge (m ³ /s)		2.697														
Cross Sectional Area		2.723														
Average Velocity		0.991														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	14:30	End	16:45	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6593				
Date Monitored	15-Jul-15				Real Time Reading	Start	Reading	1.1149	Time	14:30	Staff Gauge (m)	0.543			
Time at Site (24 hr)	Start Time:	14:30	End Time:	17:00	(m)	End	Reading	1.1149	Time	16:35	Time of SG Reading	14:30			
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, warm, moderate north wind.				1	Right Bank	2.50	0.00	0.0	0.00	0			0.000	0.0
					2		2.70	0.50	0.2	0.10	0.43			0.043	3.4
					3		2.90	0.52	0.2	0.10	0.48			0.050	3.9
					4		3.10	0.52	0.2	0.10	0.52			0.054	4.2
					5		3.30	0.54	0.2	0.11	0.54			0.058	4.6
					6		3.50	0.50	0.2	0.10	0.56			0.056	4.4
					7		3.70	0.56	0.2	0.11	0.6			0.067	5.3
					8		3.90	0.57	0.2	0.11	0.61			0.070	5.4
					9		4.10	0.57	0.2	0.11	0.66			0.075	5.9
					10		4.30	0.50	0.2	0.10	0.64			0.064	5.0
					11		4.50	0.53	0.2	0.11	0.66			0.070	5.5
					12		4.70	0.56	0.2	0.11	0.66			0.074	5.8
					13		4.90	0.52	0.2	0.10	0.69			0.072	5.6
					14		5.10	0.52	0.2	0.10	0.71			0.074	5.8
					15		5.30	0.51	0.2	0.10	0.76			0.078	6.1
					16		5.50	0.44	0.2	0.09	0.72			0.063	5.0
					17		5.70	0.45	0.2	0.09	0.7			0.063	4.9
					18		5.90	0.44	0.2	0.09	0.65			0.057	4.5
					19		6.10	0.37	0.2	0.07	0.74			0.055	4.3
					20		6.30	0.35	0.2	0.07	0.69			0.048	3.8
					21		6.50	0.35	0.2	0.07	0.37			0.026	2.0
					22		6.70	0.32	0.2	0.08	0.24			0.019	1.5
					23		7.00	0.22	0.3	0.07	0.46			0.030	2.4
					24		7.30	0.10	0.3	0.04	0.37			0.013	1.0
					25	Left Bank	7.70	0.00	0.4	0.00	0			0.000	0.0
					26										
					27										
					28										
					29										
					30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 59	100	100.000	0.000		32										
BM 58	100.593	100.587	-0.006		33										
BM 57	102.608	102.607	-0.001		Total Q								1.279	100.0	
Summary					General Notes										
Staff Gauge Reading (m)		0.543													
Stage from WL Survey (m)		99.048													
Pressure Transducer Reading (m)		1.115													
Pressure Transducer Elevation (m)		97.933													
Discharge (m ³ /s)		1.279													
Cross Sectional Area		2.145													
Average Velocity		0.596													

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	14:00	End	14:45	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6593				
Date Monitored	16-Jul-15				Real Time Reading	Start	Reading	1.1149	Time	14:00	Staff Gauge (m)	0.541			
Time at Site (24 hr)	Start Time:	13:30	End Time:	16:00	(m)	End	Reading	1.1122	Time	16:20	Time of SG Reading	14:00			
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny.				1	Right Bank	2.40	0.00	0.0	0.00	0			0.000	0.0
					2		2.70	0.07	0.3	0.02	0			0.000	0.0
					3		2.90	0.30	0.2	0.06	0.06			0.004	0.3
					4		3.10	0.49	0.2	0.10	0.44			0.043	3.5
					5		3.30	0.49	0.2	0.10	0.49			0.048	3.9
					6		3.50	0.52	0.2	0.10	0.54			0.056	4.5
					7		3.70	0.52	0.2	0.10	0.54			0.056	4.5
					8		3.90	0.50	0.2	0.10	0.55			0.055	4.4
					9		4.10	0.57	0.2	0.11	0.59			0.067	5.4
					10		4.30	0.56	0.2	0.11	0.59			0.066	5.3
					11		4.50	0.56	0.2	0.11	0.61			0.068	5.5
					12		4.70	0.50	0.2	0.10	0.64			0.064	5.2
					13		4.90	0.54	0.2	0.11	0.64			0.069	5.6
					14		5.10	0.53	0.2	0.11	0.68			0.072	5.8
					15		5.30	0.52	0.2	0.10	0.66			0.069	5.6
					16		5.50	0.51	0.2	0.10	0.68			0.069	5.6
					17		5.70	0.52	0.2	0.10	0.66			0.069	5.6
					18		5.90	0.56	0.2	0.11	0.61			0.068	5.5
					19		6.10	0.51	0.2	0.10	0.71			0.072	5.9
					20		6.30	0.43	0.2	0.09	0.71			0.061	4.9
					21		6.50	0.39	0.2	0.08	0.71			0.055	4.5
					22		6.70	0.34	0.2	0.07	0.69			0.047	3.8
					23		6.90	0.32	0.2	0.06	0.39			0.025	2.0
					24	d/s of rock	7.10	0.25	0.2	0.06	0.04			0.003	0.2
					25		7.40	0.18	0.3	0.05	0.3			0.016	1.3
					26		7.70	0.08	0.3	0.02	0.53			0.013	1.0
					27	Left Bank	8.00	0.00	0.3	0.00	0			0.000	0.0
					28										
					29										
					30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 59	100	100.001	0.000		32										
BM 58	100.593	100.588	-0.005		33										
BM 57	102.608	102.608	0.000		Total Q								1.236	100.0	
Summary					General Notes										
Staff Gauge Reading (m)		0.541													
Stage from WL Survey (m)		99.038													
Pressure Transducer Reading (m)		1.115													
Pressure Transducer Elevation (m)		97.923													
Discharge (m ³ /s)		1.236													
Cross Sectional Area		2.194													
Average Velocity		0.563													

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay					Measurement Time	Start	14:45	End	15:30	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2					Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Lake Outflow					Flow Meter Type	Electro-magnetic				Instrument Serial #	6593				
Date Monitored	16-Jul-15					Real Time Reading	Start	Reading	1.1149	Time	14:00	Staff Gauge (m)	0.541			
Time at Site (24 hr)	Start Time:	13:30	End Time:	16:00	(m)	End	Reading	1.1122	Time	16:20	Time of SG Reading	14:00				
Personnel	Greg Langston, Jeff Anderson						Station	Depth	Distance	Area	Velocity (m/s)		Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Sunny					1	Left Bank	8.00	0.00	0.0	0.00	0			0.000	0.0
						2		7.80	0.08	0.2	0.02	0.39			0.008	0.6
						3		7.50	0.18	0.3	0.05	0.56			0.028	2.2
						4		7.25	0.22	0.3	0.06		0.68	-0.13	0.015	1.2
						5		7.00	0.32	0.3	0.08	0.1			0.008	0.6
						6		6.75	0.34	0.3	0.09	0.64			0.054	4.4
						7		6.50	0.38	0.3	0.10	0.66			0.063	5.0
						8		6.25	0.47	0.3	0.12	0.62			0.073	5.9
						9		6.00	0.52	0.3	0.13	0.64			0.083	6.7
						10		5.75	0.52	0.3	0.13	0.65			0.085	6.8
						11		5.50	0.52	0.3	0.13	0.67			0.087	7.0
						12		5.25	0.48	0.3	0.12	0.69			0.083	6.7
						13		5.00	0.56	0.3	0.14	0.65			0.091	7.3
						14		4.75	0.50	0.3	0.13	0.64			0.080	6.4
						15		4.50	0.56	0.3	0.14	0.63			0.088	7.1
						16		4.25	0.54	0.3	0.14	0.6			0.081	6.5
						17		4.00	0.54	0.3	0.14	0.59			0.080	6.4
						18		3.75	0.52	0.3	0.13	0.56			0.073	5.9
						19		3.50	0.52	0.3	0.13	0.52			0.068	5.4
						20		3.25	0.50	0.3	0.13	0.47			0.059	4.7
						21		3.00	0.42	0.3	0.09	0.4			0.038	3.0
						22		2.80	0.10	0.2	0.03	0			0.000	0.0
						23	Right Bank	2.40	0.00	0.4	0.00	0			0.000	0.0
						24										
						25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31										
BM 59	100	100.001	0.000			32										
BM 58	100.593	100.588	-0.005			33										
BM 57	102.608	102.608	0.000			Total Q								1.243	100.0	
Summary						General Notes										
Staff Gauge Reading (m)		0.541														
Stage from WL Survey (m)		99.038														
Pressure Transducer Reading (m)		1.115														
Pressure Transducer Elevation (m)		98.125														
Discharge (m ³ /s)		1.243														
Cross Sectional Area		2.197														
Average Velocity		0.566														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	15:00	End	15:30	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Lake Outflow				Flow Meter Type	Electro-magnetic				Instrument Serial #	6593				
Date Monitored	17-Jul-15				Real Time Reading	Start	Reading	n/a	Time	n/a	Staff Gauge (m)	0.530			
Time at Site (24 hr)	Start Time:	15:00	End Time:	15:40	(m)	End	Reading	n/a	Time	n/a	Time of SG Reading	15:40			
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, moderate north wind.				1	Right Bank	2.30	0.00	0.0	0.00	0			0.000	0.0
					2		2.70	0.06	0.4	0.02	0.01			0.000	0.0
					3		2.95	0.42	0.3	0.11	0.41			0.043	3.5
Transducer Information					4		3.20	0.48	0.3	0.13	0.52	0.68	-0.13	0.052	4.3
DL Model	Hobo	PT Serial #	21041003		5		3.50	0.50	0.3	0.14	0.57			0.078	6.5
Gain	0	Offset	0		6		3.75	0.50	0.3	0.13	0.59			0.074	6.1
Status	Logging	Battery	100%		7		4.00	0.52	0.3	0.13	0.61			0.079	6.5
# of Records	n/a	Memory Free	n/a		8		4.25	0.54	0.3	0.14	0.62			0.084	6.9
DL Service Performed	n/a	Crest Gauges	n/a		9		4.50	0.55	0.3	0.14	0.61			0.084	6.9
Hydrometric Leveling Survey					10		4.75	0.58	0.3	0.15	0.66			0.096	7.9
Stn	BS	HI	FS	Elevation	Notes	11		5.00	0.54	0.3	0.12	0.63		0.077	6.3
BM 59						12		5.20	0.50	0.2	0.10	0.67		0.067	5.5
BM 58						13		5.40	0.50	0.2	0.10	0.63		0.063	5.2
BM 57						14		5.60	0.47	0.2	0.09	0.64		0.060	5.0
WL						15		5.80	0.46	0.2	0.10	0.69		0.071	5.9
SG						16		6.05	0.46	0.3	0.12	0.63		0.072	6.0
PT						17		6.30	0.38	0.3	0.10	0.68		0.065	5.3
						18		6.55	0.36	0.3	0.09	0.65		0.059	4.8
						19		6.80	0.35	0.3	0.09	0.47		0.041	3.4
TBM						20		7.05	0.24	0.3	0.06	0.31		0.019	1.5
TBM						21		7.30	0.20	0.3	0.06	0.41		0.023	1.9
PT						22		7.60	0.16	0.3	0.04	0.19		0.008	0.6
SG						23		7.80	0.10	0.2	0.03	-0.01		0.000	0.0
WL						24	Left Bank	8.10	0.00	0.3	0.00	0		0.000	0.0
BM 57						25									
BM 58						26									
BM 59						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31									
BM 59	100					32									
BM 58	100.593					33									
BM 57	102.608					Total Q								1.214	100.0
Summary					General Notes										
Staff Gauge Reading (m)		0.530			Staff gauge reading only, no water level survey due to time constraints.										
Stage from WL Survey (m)		n/a													
Pressure Transducer Reading (m)		n/a													
Pressure Transducer Elevation (m)		n/a													
Discharge (m ³ /s)		1.214													
Cross Sectional Area		2.153													
Average Velocity		0.564													

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay					Measurement Time	Start	12:45	End	13:30	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2					Method	Velocity-area (Mid-section)				Instrument Model	FH950					
Stream Name	Doris Lake Outflow					Flow Meter Type	Electro-magnetic				Instrument Serial #	6593					
Date Monitored	17-Jul-15					Real Time Reading	Start	Reading	1.089	Time	12:20	Staff Gauge (m)			0.520		
Time at Site (24 hr)	Start Time:	12:20	End Time:	14:00		(m)	End	Reading	1.089	Time	13:45	Time of SG Reading			15:40		
Personnel	Greg Langston, Jeff Anderson							Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation			No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions	Cloudy, cool, calm.	434059	7559504	23		1	Right Bank	2.40	0.00	0.0	0.00	0			0.000	0.0	
						2		2.75	0.08	0.4	0.02	0.01			0.000	0.0	
Transducer Information						3		3.00	0.44	0.3	0.11	0.41			0.045	3.7	
DL Model	Hobo	PT Serial #	21041003			4		3.25	0.49	0.3	0.12	0.46			0.056	4.6	
Gain	0	Offset	0			5		3.50	0.50	0.3	0.13	0.51			0.064	5.2	
Status	Logging	Battery	100%			6		3.75	0.52	0.3	0.13	0.54			0.070	5.8	
# of Records	n/a	Memory Free	n/a			7		4.00	0.52	0.3	0.13	0.57			0.074	6.1	
DL Service Performed	n/a	Crest Gauges	n/a			8		4.25	0.55	0.3	0.14	0.59			0.081	6.7	
Hydrometric Leveling Survey						9		4.50	0.54	0.3	0.14	0.62			0.084	6.9	
Stn	BS	HI	FS	Elevation	Notes	10		4.75	0.49	0.3	0.12	0.65			0.080	6.6	
BM 59	1.821	101.821		100.000		11		5.00	0.55	0.3	0.14	0.62			0.085	7.0	
BM 58			1.236	100.585		12		5.25	0.52	0.3	0.13	0.66			0.086	7.1	
BM 57			-0.786	102.607		13		5.50	0.50	0.3	0.13	0.65			0.081	6.7	
WL			2.807	99.014		14		5.75	0.48	0.3	0.12	0.7			0.084	6.9	
SG			2.322	99.499		15		6.00	0.52	0.3	0.13	0.59			0.077	6.3	
						16		6.25	0.46	0.3	0.12	0.59			0.068	5.6	
						17		6.50	0.38	0.3	0.10	0.73			0.069	5.7	
						18		6.75	0.32	0.3	0.08	0.71			0.057	4.7	
						19		7.00	0.30	0.3	0.08	0.14			0.011	0.9	
TBM			2.382	99.439		20		7.25	0.26	0.3	0.07		0.67	-0.11	0.018	1.5	
TBM	2.425	101.864				21		7.50	0.16	0.3	0.04	0.44			0.018	1.4	
						22		7.75	0.06	0.3	0.02	0.43			0.008	0.6	
SG			2.366	99.498		23	Left Bank	8.10	0.00	0.4	0.00	0			0.000	0.0	
WL			2.849	99.015		24											
BM 57			-0.743	102.607		25											
BM 58			1.278	100.586		26											
BM 59			1.864	100.000		27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31											
BM 59	100	100.000	0.000			32											
BM 58	100.593	100.586	-0.008			33											
BM 57	102.608	102.607	-0.001			Total Q										1.215	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.520															
Stage from WL Survey (m)		99.015															
Pressure Transducer Reading (m)		1.089															
Pressure Transducer Elevation (m)		97.926															
Discharge (m³/s)		1.215															
Cross Sectional Area		2.167															
Average Velocity		0.561															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	12:45	End	13:45	Location	Approximately 80 m downstream of PT.				
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker				
Stream Name	Doris Lake Outflow				Flow Meter Type	Acoustic				Instrument Serial #	P5080				
Date Monitored	14-Aug-15				Real Time Reading	Start	Reading	1.112	Time	12:25	Staff Gauge (m)	0.555			
Time at Site (24 hr)	Start Time:	12:25	End Time:	15:25	(m)	End	Reading	1.115	Time	15:25	Time of SG Reading	12:25			
Personnel	Greg Langston, Anneli Jokela					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Cloudy, moderate wind.				1	Right Bank	2.20	0.00	0.0	0.00	0			0.000	0.0
					2		2.70	0.11	0.5	0.04	0.168			0.006	0.5
					3		2.90	0.44	0.2	0.09	0.499			0.044	3.3
DL Model	Hobo	PT Serial #	21041003		4		3.10	0.50	0.2	0.10	0.541			0.054	4.1
Gain	0	Offset	0		5		3.30	0.50	0.2	0.10	0.553			0.055	4.2
Status	Logging	Battery	100%		6		3.50	0.51	0.2	0.10	0.591			0.060	4.5
# of Records	n/a	Memory Free	n/a		7		3.70	0.52	0.2	0.10	0.593			0.062	4.6
DL Service Performed	n/a	Crest Gauges	n/a		8		3.90	0.54	0.2	0.11	0.63			0.068	5.1
					9		4.10	0.57	0.2	0.11	0.647			0.074	5.5
					10		4.30	0.56	0.2	0.11	0.681			0.076	5.7
					11		4.50	0.57	0.2	0.11	0.719			0.082	6.2
					12		4.70	0.50	0.2	0.10	0.725			0.073	5.5
					13		4.90	0.55	0.2	0.11	0.72			0.079	6.0
					14		5.10	0.54	0.2	0.11	0.702			0.076	5.7
					15		5.30	0.52	0.2	0.10	0.646			0.067	5.1
					16		5.50	0.50	0.2	0.10	0.685			0.069	5.2
					17		5.70	0.55	0.2	0.11	0.676			0.074	5.6
					18		5.90	0.53	0.2	0.11	0.49			0.052	3.9
					19		6.10	0.48	0.2	0.10	0.285			0.027	2.1
TBM			2.228	99.453	20		6.30	0.40	0.2	0.08	0.709			0.057	4.3
TBM	2.270	101.723			21		6.50	0.37	0.2	0.07	0.614			0.045	3.4
					22		6.70	0.35	0.2	0.07	0.479			0.034	2.5
SG			2.223	99.500	23		6.90	0.34	0.2	0.09	0.485			0.041	3.1
WL			2.670	99.053	24		7.20	0.20	0.3	0.06	0.449			0.027	2.0
BM 57			-0.891	102.614	25		7.50	0.15	0.3	0.05	0.345			0.016	1.2
BM 58			1.153	100.570	26		7.80	0.12	0.3	0.05	0.237			0.011	0.9
BM 59			1.724	99.999	27	Left Bank	8.30	0.00	0.5	0.00	0			0.000	0.0
					28										
					29										
					30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 59	100	100.000	-0.001		32										
BM 58	100.593	100.570	-0.023		33										
BM 57	102.608	102.614	0.005		Total Q									1.329	100.0
	Summary				General Notes										
Staff Gauge Reading (m)	0.555														
Stage from WL Survey (m)	99.052														
Pressure Transducer Reading (m)	1.112														
Pressure Transducer Elevation (m)	97.940														
Discharge (m ³ /s)	1.329														
Cross Sectional Area	2.277														
Average Velocity	0.584														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	13:45	End	14:45	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)				Instrument Model		Flowtracker			
Stream Name		Doris Lake Outflow				Flow Meter Type		Acoustic				Instrument Serial #		P5080			
Date Monitored		14-Aug-15				Real Time Reading		Start	Reading	1.112	Time	12:25	Staff Gauge (m)		0.555		
Time at Site (24 hr)		Start Time:	12:25	End Time:	15:25	(m)	End	Reading	1.115	Time	15:25	Time of SG Reading		12:25			
Personnel		Greg Langston, Anneli Jokela						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		434059	7559504	23		1	Left Bank	8.30	0.00	0.0	0.00	0			0.0000	0.0	
Weather Conditions		Cloudy, moderate wind.				2			7.70	0.10	0.6	0.05	0.39			0.0195	1.5
Transducer Information						3			7.30	0.25	0.4	0.09	0.325			0.0284	2.1
DL Model		Hobo	PT Serial #		21041003	4			7.00	0.27	0.3	0.07	0.558			0.0377	2.8
Gain		0	Offset		0	5			6.80	0.36	0.2	0.07	0.545			0.0392	3.0
Status		Logging	Battery		100%	6			6.60	0.35	0.2	0.07	0.528			0.0370	2.8
# of Records		n/a	Memory Free		n/a	7			6.40	0.39	0.2	0.08	0.662			0.0516	3.9
DL Service Performed		n/a	Crest Gauges		n/a	8			6.20	0.47	0.2	0.09	0.63			0.0592	4.5
Hydrometric Leveling Survey						9			6.00	0.52	0.2	0.10	0.121			0.0126	0.9
Stn	BS	HI	FS	Elevation	Notes	10			5.80	0.55	0.2	0.11	0.593			0.0652	4.9
BM 59	1.681	101.681		100.000		11			5.60	0.56	0.2	0.11	0.61			0.0683	5.1
BM 58			1.112	100.569		12			5.40	0.51	0.2	0.10	0.743			0.0758	5.7
BM 57			-0.932	102.613		13			5.20	0.50	0.2	0.10	0.717			0.0717	5.4
WL			2.631	99.050		14			5.00	0.52	0.2	0.10	0.753			0.0783	5.9
SG			2.179	99.502		15			4.80	0.52	0.2	0.10	0.714			0.0743	5.6
						16			4.60	0.51	0.2	0.10	0.683			0.0697	5.2
						17			4.40	0.56	0.2	0.11	0.662			0.0741	5.6
						18			4.20	0.55	0.2	0.11	0.656			0.0722	5.4
						19			4.00	0.55	0.2	0.11	0.655			0.0721	5.4
TBM			2.228	99.453		20			3.80	0.55	0.2	0.11	0.625			0.0688	5.2
TBM	2.270	101.723				21			3.60	0.54	0.2	0.11	0.601			0.0649	4.9
						22			3.40	0.53	0.2	0.11	0.575			0.0610	4.6
SG			2.223	99.500		23			3.20	0.52	0.2	0.10	0.522			0.0543	4.1
WL			2.670	99.053		24			3.00	0.50	0.2	0.10	0.526			0.0526	4.0
BM 57			-0.891	102.614		25			2.80	0.18	0.2	0.05	0.429			0.0193	1.5
BM 58			1.153	100.570		26			2.50	0.09	0.3	0.03	0			0.0000	0.0
BM 59			1.724	99.999		27		Right Bank	2.20	0.00	0.3	0.00	0			0.0000	0.0
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31											
BM 59	100	100.000	-0.001			32											
BM 58	100.593	100.570	-0.023			33											
BM 57	102.608	102.614	0.005			Total Q										1.328	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.555															
Stage from WL Survey (m)		99.052															
Pressure Transducer Reading (m)		1.112															
Pressure Transducer Elevation (m)		97.940															
Discharge (m³/s)		1.328															
Cross Sectional Area		2.289															
Average Velocity		0.580															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	11:50	End	12:40	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		Flowtracker				
Stream Name		Doris Lake Outflow				Flow Meter Type		Acoustic			Instrument Serial #		P5080				
Date Monitored		15-Aug-15				Real Time Reading		Start	Reading	1.103	Time	23:50	Staff Gauge (m)		0.546		
Time at Site (24 hr)		Start Time:	11:25	End Time:	13:50	(m)	End	Reading	1.101	Time	13:50	Time of SG Reading		11:50			
Personnel		Greg Langston, Carl Atatahak						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Cloudy, moderate wind.				1	Right Bank	2.30	0.00	0.0	0.00	0			0.0000	0.0	
						2		2.60	0.09	0.3	0.02	0			0.0000	0.0	
Transducer Information						3		2.80	0.11	0.2	0.02	0.121			0.0027	0.2	
DL Model		Hobo	PT Serial #		21041003	4		3.00	0.49	0.2	0.10	0.53			0.0519	3.9	
Gain		0	Offset		0	5		3.20	0.51	0.2	0.10	0.557			0.0568	4.3	
Status		Logging	Battery		100%	6		3.40	0.52	0.2	0.10	0.588			0.0612	4.6	
# of Records		n/a	Memory Free		n/a	7		3.60	0.53	0.2	0.11	0.585			0.0620	4.7	
DL Service Performed		n/a	Crest Gauges		n/a	8		3.80	0.54	0.2	0.11	0.614			0.0663	5.0	
Hydrometric Leveling Survey						9		4.00	0.55	0.2	0.11	0.646			0.0711	5.4	
Stn	BS	HI	FS	Elevation	Notes	10		4.20	0.57	0.2	0.11	0.64			0.0730	5.5	
BM 59	1.585	101.585		100.000		11		4.40	0.57	0.2	0.11	0.648			0.0739	5.6	
WL			2.540	99.045		12		4.60	0.57	0.2	0.11	0.678			0.0773	5.8	
						13		4.80	0.53	0.2	0.11	0.679			0.0720	5.4	
						14		5.00	0.52	0.2	0.10	0.724			0.0753	5.7	
						15		5.20	0.54	0.2	0.11	0.69			0.0745	5.6	
						16		5.40	0.53	0.2	0.11	0.706			0.0748	5.6	
						17		5.60	0.49	0.2	0.10	0.69			0.0676	5.1	
						18		5.80	0.55	0.2	0.11	0.61			0.0671	5.1	
						19		6.00	0.53	0.2	0.11	0.268			0.0284	2.1	
TBM			2.133	99.452		20		6.20	0.48	0.2	0.10	0.523			0.0502	3.8	
TBM	2.258	101.710				21		6.40	0.49	0.2	0.10	0.68			0.0666	5.0	
WL			2.667	99.043		22		6.60	0.36	0.2	0.07	0.564			0.0406	3.1	
BM 59			1.710	100.000		23		6.80	0.33	0.2	0.07	0.501			0.0331	2.5	
						24		7.00	0.29	0.2	0.06	0.217			0.0126	0.9	
						25		7.20	0.29	0.2	0.07	0.487			0.0353	2.7	
						26		7.50	0.16	0.3	0.05	0.43			0.0206	1.6	
						27		7.80	0.10	0.3	0.04	0.32			0.0128	1.0	
						28	Left Bank	8.30	0.00	0.5	0.00	0			0.000	0.0	
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593					33											
BM 57	102.608					Total Q										1.328	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.546															
Stage from WL Survey (m)		99.044															
Pressure Transducer Reading (m)		1.103															
Pressure Transducer Elevation (m)		97.941															
Discharge (m³/s)		1.328															
Cross Sectional Area		2.303															
Average Velocity		0.577															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay					Measurement Time	Start	12:40	End	13:30	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2					Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Lake Outflow					Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	15-Aug-15					Real Time Reading	Start	Reading	1.103	Time	23:50	Staff Gauge (m)			0.546		
Time at Site (24 hr)	Start Time:	11:25	End Time:	13:50	(m)	End	Reading	1.101	Time	13:50	Time of SG Reading			11:50			
Personnel	Greg Langston, Carl Atatahak						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%		
Weather Conditions	Cloudy, moderate wind.					1	Left Bank	8.30	0.00	0.0	0.00	0			0.0000	0.0	
Transducer Information						2		7.75	0.10	0.6	0.04	0.399			0.0160	1.2	
						3		7.50	0.18	0.3	0.05	0.407			0.0183	1.4	
DL Model	Hobo	PT Serial #	21041003		4		7.25	0.26	0.3	0.07	0.456			0.0296	2.2		
Gain	0	Offset	0		5		7.00	0.30	0.3	0.07	0.219			0.0148	1.1		
Status	Logging	Battery	100%		6		6.80	0.34	0.2	0.07	0.502			0.0341	2.6		
# of Records	n/a	Memory Free	n/a		7		6.60	0.38	0.2	0.08	0.554			0.0421	3.2		
DL Service Performed	n/a	Crest Gauges	n/a		8		6.40	0.38	0.2	0.08	0.715			0.0543	4.1		
Hydrometric Leveling Survey						9		6.20	0.49	0.2	0.10	0.38			0.0372	2.8	
Stn	BS	HI	FS	Elevation	Notes	10		6.00	0.53	0.2	0.11	0.306			0.0324	2.5	
BM 59	1.585	101.585		100.000		11		5.80	0.55	0.2	0.08	0.65			0.0536	4.1	
WL			2.540	99.045		12		5.70	0.54	0.1	0.08	0.627			0.0508	3.8	
						13		5.50	0.50	0.2	0.10	0.685			0.0685	5.2	
						14		5.30	0.53	0.2	0.11	0.728			0.0772	5.8	
						15		5.10	0.56	0.2	0.11	0.699			0.0783	5.9	
						16		4.90	0.54	0.2	0.11	0.712			0.0769	5.8	
						17		4.70	0.50	0.2	0.10	0.7			0.0700	5.3	
						18		4.50	0.57	0.2	0.11	0.67			0.0764	5.8	
						19		4.30	0.56	0.2	0.11	0.646			0.0724	5.5	
TBM			2.133	99.452		20		4.10	0.55	0.2	0.11	0.659			0.0725	5.5	
TBM	2.258	101.710				21		3.90	0.54	0.2	0.11	0.645			0.0697	5.3	
WL			2.667	99.043		22		3.70	0.53	0.2	0.11	0.62			0.0657	5.0	
BM 59			1.710	100.000		23		3.50	0.53	0.2	0.11	0.606			0.0642	4.9	
						24		3.30	0.52	0.2	0.10	0.576			0.0599	4.5	
						25		3.10	0.50	0.2	0.10	0.539			0.0539	4.1	
						26		2.90	0.34	0.2	0.07	0.469			0.0319	2.4	
						27		2.70	0.10	0.2	0.03	0.079			0.0024	0.2	
						28	Right Bank	2.30	0.00	0.4	0.00	0			0.000	0.0	
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593					33											
BM 57	102.608					Total Q										1.323	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.546															
Stage from WL Survey (m)		99.044															
Pressure Transducer Reading (m)		1.103															
Pressure Transducer Elevation (m)		97.941															
Discharge (m³/s)		1.323															
Cross Sectional Area		2.289															
Average Velocity		0.578															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	13:45	End	14:30	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Lake Outflow				Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	17-Aug-15				Real Time Reading	Start	Reading	1.079	Time	13:30	Staff Gauge (m)	0.525				
Time at Site (24 hr)	Start Time:	13:25	End Time:	15:50	(m)	End	Reading	1.086	Time	15:50	Time of SG Reading	13:30				
Personnel	Greg Langston, Robert Maksagak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Cool, cloudy, scattered showers, light wind.				1	Right Bank	2.40	0.00	0.0	0.00	0			0.0000	0.0	
					2		2.70	0.07	0.3	0.02	0.049			0.0010	0.1	
					3		3.00	0.42	0.3	0.11	0.489			0.0513	4.1	
					4		3.20	0.49	0.2	0.10	0.555			0.0544	4.3	
					5		3.40	0.50	0.2	0.10	0.562			0.0562	4.5	
					6		3.60	0.51	0.2	0.10	0.597			0.0609	4.8	
					7		3.80	0.53	0.2	0.11	0.592			0.0628	5.0	
					8		4.00	0.53	0.2	0.11	0.633			0.0671	5.3	
					9		4.20	0.55	0.2	0.11	0.638			0.0702	5.6	
					10		4.40	0.55	0.2	0.11	0.644			0.0708	5.6	
					11		4.60	0.55	0.2	0.11	0.671			0.0738	5.9	
					12		4.80	0.50	0.2	0.10	0.714			0.0714	5.7	
					13		5.00	0.56	0.2	0.11	0.669			0.0749	5.9	
					14		5.20	0.54	0.2	0.11	0.683			0.0738	5.9	
					15		5.40	0.50	0.2	0.10	0.705			0.0705	5.6	
					16		5.60	0.50	0.2	0.10	0.676			0.0676	5.4	
					17		5.80	0.49	0.2	0.10	0.67			0.0657	5.2	
					18		6.00	0.51	0.2	0.10	0.344			0.0351	2.8	
					19		6.20	0.46	0.2	0.09	0.383			0.0352	2.8	
					20		6.40	0.39	0.2	0.08	0.659			0.0514	4.1	
					21		6.60	0.36	0.2	0.07	0.544			0.0392	3.1	
					22		6.80	0.32	0.2	0.06	0.43			0.0275	2.2	
					23		7.00	0.25	0.2	0.05	0.502			0.0251	2.0	
					24		7.20	0.22	0.2	0.04	0.507			0.0223	1.8	
					25		7.40	0.23	0.2	0.06	0.326			0.0187	1.5	
					26		7.70	0.10	0.3	0.04	0.317			0.0127	1.0	
					27	Left Bank	8.20	0.00	0.5	0.00	0			0.0000	0.0	
					28				8.2	0.00				0.000	0.0	
					29				0.0	0.00				0.000	0.0	
					30				0.0	0.00				0.000	0.0	
					31				0.0	0.00				0.000	0.0	
					32				0.0	0.00				0.000	0.0	
					33				0.0	0.00				0.000	0.0	
					Total Q										1.260	100.0
Summary					General Notes											
Staff Gauge Reading (m)		0.525														
Stage from WL Survey (m)		99.024														
Pressure Transducer Reading (m)		1.079														
Pressure Transducer Elevation (m)		97.945														
Discharge (m ³ /s)		1.260														
Cross Sectional Area		2.186														
Average Velocity		0.576														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay					Measurement Time	Start	14:45	End	15:30	Location	Approximately 80 m downstream of PT.					
Station Identification	TL-2					Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Lake Outflow					Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	17-Aug-15					Real Time Reading	Start	Reading	1.079	Time	13:30	Staff Gauge (m)		0.525			
Time at Site (24 hr)	Start Time:	13:25	End Time:	15:50		(m)	End	Reading	1.086	Time	15:50	Time of SG Reading		13:30			
Personnel	Greg Langston, Robert Maksagak							Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation			No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
	434059	7559504	23			1	Left Bank	8.20	0.00	0.0	0.00	0			0.0000	0.0	
Weather Conditions	Cool, cloudy, scattered showers, light wind.					2		7.80	0.09	0.4	0.04	0.336			0.0129	1.0	
Transducer Information						3		7.35	0.21	0.5	0.07	0.465			0.0342	2.7	
DL Model	Hobo	PT Serial #	21041003			4		7.10	0.29	0.3	0.07	0.164			0.0119	1.0	
Gain	0	Offset	0			5		6.85	0.33	0.3	0.08	0.506			0.0417	3.3	
Status	Logging	Battery	100%			6		6.60	0.34	0.3	0.09	0.585			0.0497	4.0	
# of Records	n/a	Memory Free	n/a			7		6.35	0.37	0.3	0.09	0.655			0.0606	4.8	
DL Service Performed	n/a	Crest Gauges	n/a			8		6.10	0.37	0.3	0.08	0.717			0.0597	4.8	
Hydrometric Leveling Survey						9		5.90	0.34	0.2	0.07	0.709			0.0482	3.9	
Stn	BS	HI	FS	Elevation	Notes	10		5.70	0.39	0.2	0.08	0.672			0.0524	4.2	
BM 59	1.822	101.822		100.000		11		5.50	0.51	0.2	0.10	0.667			0.0680	5.4	
WL			2.799	99.023		12		5.30	0.51	0.2	0.10	0.638			0.0651	5.2	
						13		5.10	0.48	0.2	0.10	0.631			0.0606	4.8	
						14		4.90	0.56	0.2	0.11	0.683			0.0765	6.1	
						15		4.70	0.58	0.2	0.12	0.681			0.0790	6.3	
						16		4.50	0.56	0.2	0.11	0.657			0.0736	5.9	
						17		4.30	0.53	0.2	0.11	0.673			0.0713	5.7	
						18		4.10	0.53	0.2	0.11	0.632			0.0670	5.4	
						19		3.90	0.53	0.2	0.11	0.622			0.0659	5.3	
TBM			2.365	99.457		20		3.70	0.49	0.2	0.10	0.601			0.0589	4.7	
TBM	2.486	101.943				21		3.50	0.47	0.2	0.09	0.594			0.0558	4.5	
WL			2.919	99.024		22		3.30	0.49	0.2	0.10	0.56			0.0549	4.4	
BM 59			1.942	100.001		23		3.10	0.48	0.2	0.07	0.529			0.0381	3.0	
						24		3.00	0.42	0.1	0.08	0.501			0.0421	3.4	
						25		2.70	0.08	0.3	0.02	0.061			0.0015	0.1	
						26	Right Bank	2.40	0.00	0.3	0.00	0			0.0000	0.0	
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31											
BM 59	100	100.000	0.000			32											
BM 58	100.593					33											
BM 57	102.608					Total Q										1.250	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.525															
Stage from WL Survey (m)		99.024															
Pressure Transducer Reading (m)		1.079															
Pressure Transducer Elevation (m)		97.945															
Discharge (m³/s)		1.250															
Cross Sectional Area		2.102															
Average Velocity		0.595															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	13:30	End	14:15:00 P	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		1-Sep-15				Real Time Reading		Start	Reading	1.0051	Time	13:30	Staff Gauge (m)		0.448		
Time at Site (24 hr)		Start Time:	12:55	End Time:	15:40	(m)	End	Reading	0.9996	Time	15:50	Time of SG Reading		13:30			
Personnel		Greg Langston, Fraser Ross						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		434059	7559504	23		1	Left Bank	2.40	0.00	0.0	0.00	0			0.0000	0.0	
Weather Conditions		Cool, cloudy, moderate wind.				2		2.70	0.13	0.3	0.03	0			0.0000	0.0	
Transducer Information						3		2.90	0.43	0.2	0.09	0.42			0.0361	3.6	
DL Model		Hobo	PT Serial #		21041003	4		3.10	0.44	0.2	0.09	0.47			0.0414	4.1	
Gain		0	Offset		0	5		3.30	0.46	0.2	0.09	0.48			0.0442	4.4	
Status		Logging	Battery		100%	6		3.50	0.47	0.2	0.09	0.51			0.0479	4.7	
# of Records		n/a	Memory Free		n/a	7		3.70	0.48	0.2	0.10	0.54			0.0518	5.1	
DL Service Performed		n/a	Crest Gauges		n/a	8		3.90	0.48	0.2	0.10	0.57			0.0547	5.4	
Hydrometric Leveling Survey						9		4.10	0.52	0.2	0.10	0.57			0.0593	5.8	
Stn	BS	HI	FS	Elevation	Notes	10		4.30	0.50	0.2	0.10	0.58			0.0580	5.7	
BM 59	1.603	101.603		100.000		11		4.50	0.50	0.2	0.10	0.58			0.0580	5.7	
BM 58			1.037	100.566		12		4.70	0.46	0.2	0.09	0.61			0.0561	5.5	
BM 57			-1.003	102.606		13		4.90	0.52	0.2	0.10	0.59			0.0614	6.1	
WL			2.659	98.944		14		5.10	0.50	0.2	0.10	0.6			0.0600	5.9	
SG			2.099	99.504		15		5.30	0.46	0.2	0.09	0.62			0.0570	5.6	
						16		5.50	0.46	0.2	0.09	0.59			0.0543	5.4	
						17		5.70	0.49	0.2	0.10	0.56			0.0549	5.4	
						18		5.90	0.47	0.2	0.09	0.57			0.0536	5.3	
						19		6.10	0.44	0.2	0.09	0.21			0.0185	1.8	
TBM			2.148	99.455		20		6.30	0.37	0.2	0.07	0.57			0.0422	4.2	
TBM	2.183	101.638				21		6.50	0.32	0.2	0.06	0.57			0.0365	3.6	
SG			2.137	99.501		22		6.70	0.30	0.2	0.06	0.46			0.0276	2.7	
WL			2.694	98.944		23		6.90	0.26	0.2	0.05	0.43			0.0224	2.2	
BM 57			-0.967	102.605		24		7.10	0.22	0.2	0.04	0.16			0.0070	0.7	
BM 58			1.072	100.566		25		7.30	0.20	0.2	0.04	0.2			0.0080	0.8	
BM 59			1.638	100.000		26		7.50	0.04	0.2	0.01	0.2			0.0028	0.3	
						27	Right Bank	8.00	0.00	0.5	0.00	0			0.0000	0.0	
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593	100.566		-0.027		33											
BM 57	102.608	102.606		-0.002		Total Q										1.014	100.0
Summary						General Notes											
Staff Gauge Reading (m)			0.448														
Stage from WL Survey (m)			98.944														
Pressure Transducer Reading (m)			1.005														
Pressure Transducer Elevation (m)			97.939														
Discharge (m³/s)			1.014														
Cross Sectional Area			1.997														
Average Velocity			0.508														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method										
Project Name		Hope Bay				Measurement Time		Start	14:30	End	15:15:00 P	Location	Approximately 80 m downstream of PT.			
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		FH950			
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593			
Date Monitored		1-Sep-15				Real Time Reading		Start	Reading	1.0051	Time	13:30	Staff Gauge (m)		0.448	
Time at Site (24 hr)		Start Time:	12:55	End Time:	15:40	(m)	End	Reading	0.9996	Time	15:50	Time of SG Reading		13:30		
Personnel		Greg Langston, Fraser Ross						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%
Weather Conditions		Cool, cloudy, moderate wind.				1	Left Bank	8.00	0.00	0.0	0.00	0			0.0000	0.0
Transducer Information						2		7.60	0.04	0.4	0.01	0.2			0.0024	0.2
						3		7.40	0.10	0.2	0.02	0.31			0.0062	0.6
						4		7.20	0.18	0.2	0.04	0.42			0.0151	1.5
						5		7.00	0.20	0.2	0.04	0.53			0.0212	2.1
						6		6.80	0.27	0.2	0.05	0.4			0.0216	2.2
						7		6.60	0.30	0.2	0.06	0.48			0.0288	2.9
						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
						DL Service Performed						8		6.40	0.34	0.2
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2	0.07	0.56			0.0381	3.9
DL Service Performed						8		6.40	0.34	0.2						

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method													
Project Name		Hope Bay				Measurement Time		Start	8:30	End	9:15	Location	Approximately 80 m downstream of PT.						
Station Identification		TL-2				Method		Velocity-area (Mid-section)				Instrument Model		FH950					
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic				Instrument Serial #		6593					
Date Monitored		3-Sep-15				Real Time Reading		Start	Reading	0.9968	Time	8:30	Staff Gauge (m)		0.441				
Time at Site (24 hr)		Start Time:	8:30	End Time:	10:15	(m)	End	Reading	0.9996	Time	10:15	Time of SG Reading		10:15					
Personnel		Greg Langston, Fraser Ross						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q			
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%			
		434059	7559504	23		1	Right Bank	2.40	0.00	0.0	0.00	0			0.0000	0.0			
Weather Conditions		Cool, cloudy, moderate wind.				2			2.70	0.06	0.3	0.02	0			0.0000	0.0		
Transducer Information						3			2.90	0.39	0.2	0.08	0.41			0.0320	3.3		
DL Model		Hobo	PT Serial #		21041003	4			3.10	0.44	0.2	0.09	0.46			0.0405	4.1		
Gain		0	Offset		0	5			3.30	0.46	0.2	0.09	0.48			0.0442	4.5		
Status		Logging	Battery		100%	6			3.50	0.47	0.2	0.09	0.52			0.0489	5.0		
# of Records		n/a	Memory Free		n/a	7			3.70	0.47	0.2	0.09	0.52			0.0489	5.0		
DL Service Performed		n/a	Crest Gauges		n/a	8			3.90	0.48	0.2	0.10	0.54			0.0518	5.3		
Hydrometric Leveling Survey						9			4.10	0.51	0.2	0.10	0.56			0.0571	5.8		
Stn	BS	HI	FS	Elevation	Notes	10			4.30	0.50	0.2	0.10	0.56			0.0560	5.7		
BM 59	1.653	101.653		100.000		11			4.50	0.50	0.2	0.10	0.59			0.0590	6.0		
BM 58			1.086	100.567		12			4.70	0.44	0.2	0.09	0.57			0.0502	5.1		
BM 57			-0.952	102.605		13			4.90	0.50	0.2	0.10	0.58			0.0580	5.9		
WL			2.712	98.941		14			5.10	0.49	0.2	0.10	0.58			0.0568	5.8		
SG			2.150	99.503		15			5.30	0.46	0.2	0.09	0.59			0.0543	5.5		
						16			5.50	0.43	0.2	0.09	0.61			0.0525	5.3		
						17			5.70	0.50	0.2	0.10	0.48			0.0480	4.9		
						18			5.90	0.47	0.2	0.09	0.5			0.0470	4.8		
						19			6.10	0.42	0.2	0.08	0.22			0.0185	1.9		
TBM			2.200	99.453		20			6.30	0.36	0.2	0.07	0.57			0.0410	4.2		
TBM	2.151	101.604				21			6.50	0.33	0.2	0.07	0.57			0.0376	3.8		
SG			2.101	99.503		22			6.70	0.30	0.2	0.06	0.47			0.0282	2.9		
WL			2.662	98.942		23			6.90	0.26	0.2	0.05	0.41			0.0213	2.2		
BM 57			-1.003	102.607		24			7.10	0.25	0.2	0.05	0.2			0.0100	1.0		
BM 58			1.037	100.567		25			7.30	0.16	0.2	0.03	0.44			0.0141	1.4		
BM 59			1.604	100.000		26			7.50	0.09	0.2	0.02	0.28			0.0050	0.5		
						27			7.70	0.02	0.2	0.00	0.2			0.0008	0.1		
						28		Left Bank	7.90	0.00	0.2	0.00	0			0.000	0.0		
						29													
						30													
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31													
BM 59	100	100.000		0.000		32													
BM 58	100.593	100.567		-0.026		33													
BM 57	102.608	102.606		-0.002		Total Q												0.982	100.0
Summary						General Notes													
Staff Gauge Reading (m)		0.441																	
Stage from WL Survey (m)		98.942																	
Pressure Transducer Reading (m)		0.997																	
Pressure Transducer Elevation (m)		97.945																	
Discharge (m³/s)		0.982																	
Cross Sectional Area		1.955																	
Average Velocity		0.502																	

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method													
Project Name		Hope Bay				Measurement Time		Start	9:15	End	10:00	Location		Approximately 80 m downstream of PT.					
Station Identification		TL-2				Method		Velocity-area (Mid-section)				Instrument Model		FH950					
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic				Instrument Serial #		6593					
Date Monitored		3-Sep-15				Real Time Reading		Start	Reading	0.9968	Time	8:30	Staff Gauge (m)		0.441				
Time at Site (24 hr)		Start Time:	8:30	End Time:	10:15	(m)	End	Reading	0.9996	Time	10:15	Time of SG Reading		10:15					
Personnel		Greg Langston, Fraser Ross						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q			
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%			
		434059	7559504	23		1	Left Bank	7.90	0.00	0.0	0.00	0			0.0000	0.0			
Weather Conditions		Cool, cloudy, moderate wind.				2			7.60	0.04	0.3	0.01	0.19			0.0019	0.2		
Transducer Information						3			7.40	0.12	0.2	0.02	0.36			0.0086	0.9		
DL Model		Hobo	PT Serial #		21041003	4			7.20	0.18	0.2	0.04	0.45			0.0162	1.7		
Gain		0	Offset		0	5			7.00	0.22	0.2	0.04	0.25			0.0110	1.1		
Status		Logging	Battery		100%	6			6.80	0.29	0.2	0.06	0.28			0.0162	1.7		
# of Records		n/a	Memory Free		n/a	7			6.60	0.32	0.2	0.06	0.53			0.0339	3.5		
DL Service Performed		n/a	Crest Gauges		n/a	8			6.40	0.36	0.2	0.07	0.56			0.0403	4.2		
Hydrometric Leveling Survey						9			6.20	0.44	0.2	0.09	0.16			0.0141	1.5		
Stn	BS	HI	FS	Elevation	Notes	10			6.00	0.46	0.2	0.09	0.52			0.0478	5.0		
BM 59	1.653	101.653		100.000		11			5.80	0.49	0.2	0.10	0.5			0.0490	5.1		
BM 58			1.086	100.567		12			5.60	0.50	0.2	0.10	0.51			0.0510	5.3		
BM 57			-0.952	102.605		13			5.40	0.47	0.2	0.09	0.56			0.0526	5.5		
WL			2.712	98.941		14			5.20	0.47	0.2	0.09	0.59			0.0555	5.8		
SG			2.150	99.503		15			5.00	0.46	0.2	0.09	0.59			0.0543	5.6		
						16			4.80	0.48	0.2	0.10	0.59			0.0566	5.9		
						17			4.60	0.48	0.2	0.10	0.57			0.0547	5.7		
						18			4.40	0.50	0.2	0.10	0.58			0.0580	6.0		
						19			4.20	0.51	0.2	0.10	0.57			0.0581	6.0		
TBM			2.200	99.453		20			4.00	0.49	0.2	0.10	0.55			0.0539	5.6		
TBM	2.151	101.604				21			3.80	0.48	0.2	0.10	0.54			0.0518	5.4		
SG			2.101	99.503		22			3.60	0.47	0.2	0.09	0.5			0.0470	4.9		
WL			2.662	98.942		23			3.40	0.47	0.2	0.09	0.49			0.0461	4.8		
BM 57			-1.003	102.607		24			3.20	0.44	0.2	0.09	0.49			0.0431	4.5		
BM 58			1.037	100.567		25			3.00	0.42	0.2	0.08	0.45			0.0378	3.9		
BM 59			1.604	100.000		26			2.80	0.18	0.2	0.05	0.03			0.0016	0.2		
						27		Right Bank	2.40	0.00	0.4	0.00	0			0.0000	0.0		
						28													
						29													
						30													
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31													
BM 59	100	100.000	0.000			32													
BM 58	100.593	100.567	-0.026			33													
BM 57	102.608	102.606	-0.002			Total Q												0.961	100.0
Summary						General Notes													
Staff Gauge Reading (m)		0.441																	
Stage from WL Survey (m)		98.942																	
Pressure Transducer Reading (m)		0.997																	
Pressure Transducer Elevation (m)		97.945																	
Discharge (m³/s)		0.961																	
Cross Sectional Area		1.968																	
Average Velocity		0.488																	

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	13:30	End	14:15	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		19-Sep-15				Real Time Reading		Start	Reading	0.946	Time	13:30	Staff Gauge (m)		0.373		
Time at Site (24 hr)		Start Time:	12:50	End Time:	15:30	(m)		End	Reading	0.9447	Time	15:30	Time of SG Reading		13:30		
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny, moderate to strong downstream wind.				1	Right Bank	2.65	0.00	0.0	0.00	0			0.0000	0.0	
						2		2.80	0.36	0.2	0.06	0.27			0.0170	2.3	
						3		3.00	0.39	0.2	0.08	0.43			0.0335	4.5	
DL Model		Hobo	PT Serial #		21041003	4		3.20	0.41	0.2	0.08	0.42			0.0344	4.6	
Gain		0	Offset		0	5		3.40	0.42	0.2	0.08	0.45			0.0378	5.1	
Status		Logging	Battery		100%	6		3.60	0.42	0.2	0.08	0.47			0.0395	5.3	
# of Records		n/a	Memory Free		n/a	7		3.80	0.43	0.2	0.09	0.48			0.0413	5.6	
DL Service Performed		n/a	Crest Gauges		n/a	8		4.00	0.46	0.2	0.09	0.5			0.0460	6.2	
Hydrometric Leveling Survey						9		4.20	0.46	0.2	0.09	0.5			0.0460	6.2	
Stn	BS	HI	FS	Elevation	Notes	10		4.40	0.46	0.2	0.09	0.51			0.0469	6.3	
BM 59	1.659	101.659		100.000		11		4.60	0.43	0.2	0.09	0.51			0.0439	5.9	
BM 58			1.092	100.567		12		4.80	0.46	0.2	0.09	0.5			0.0460	6.2	
BM 57			-0.950	102.609		13		5.00	0.43	0.2	0.09	0.5			0.0430	5.8	
WL			2.784	98.875		14		5.20	0.41	0.2	0.08	0.5			0.0410	5.5	
SG			2.156	99.503		15		5.40	0.43	0.2	0.09	0.49			0.0421	5.7	
						16		5.60	0.40	0.2	0.08	0.47			0.0376	5.1	
						17		5.80	0.41	0.2	0.08	0.37			0.0303	4.1	
						18		6.00	0.38	0.2	0.08		0.57	-0.09	0.0182	2.5	
						19		6.20	0.28	0.2	0.06	0.41			0.0230	3.1	
TBM			2.201	99.458		20		6.40	0.28	0.2	0.06	0.52			0.0291	3.9	
TBM	2.252	101.710				21		6.60	0.24	0.2	0.05	0.42			0.0202	2.7	
SG			2.211	99.499		22		6.80	0.22	0.2	0.04	0.31			0.0136	1.8	
WL			2.844	98.866		23		7.00	0.20	0.2	0.05	0.16			0.0072	1.0	
WL			2.842	98.868		24		7.25	0.09	0.3	0.02	0.25			0.0056	0.8	
WL			2.839	98.871		25	Left Bank	7.50	0.00	0.3	0.00	0			0.0000	0.0	
WL			2.843	98.867		26											
WL			2.852	98.858		27											
BM 57			-0.899	102.609		28											
BM 58			1.145	100.565		29											
BM 59			1.711	99.999		30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593	100.566		-0.027		33											
BM 57	102.608	102.609		0.001		Total Q										0.743	100.0
Summary						General Notes											
Staff Gauge Reading (m)			0.373			Water level was fluctuating significantly at the staff gauge. Strong down stream winds potentially generating seiche from Doris Lake.											
Stage from WL Survey (m)			98.868														
Pressure Transducer Reading (m)			0.946														
Pressure Transducer Elevation (m)			97.922														
Discharge (m³/s)			0.743														
Cross Sectional Area			1.695														
Average Velocity			0.439														

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	14:15	End	15:00	Location		Approximately 80 m downstream of PT.			
Station Identification		TL-2				Method		Velocity-area (Mid-section)				Instrument Model		FH950			
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic				Instrument Serial #		6593			
Date Monitored		19-Sep-15				Real Time Reading		Start	Reading	0.946	Time	13:30	Staff Gauge (m)		0.373		
Time at Site (24 hr)		Start Time:	12:50	End Time:	15:30	(m)		End	Reading	0.9447	Time	15:30	Time of SG Reading		13:30		
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny, moderate to strong downstream wind.				1	Left Bank	7.50	0.00	0.0	0.00	0			0.0000	0.0	
						2		7.30	0.06	0.2	0.01	0.17			0.0020	0.3	
						3		7.10	0.11	0.2	0.02	0.33			0.0073	1.0	
DL Model		Hobo	PT Serial #		21041003	4		6.90	0.19	0.2	0.04	0.13			0.0049	0.7	
Gain		0	Offset		0	5		6.70	0.23	0.2	0.05	0.27			0.0124	1.8	
Status		Logging	Battery		100%	6		6.50	0.28	0.2	0.06	0.42			0.0235	3.3	
# of Records		n/a	Memory Free		n/a	7		6.30	0.31	0.2	0.06	0.48			0.0298	4.2	
DL Service Performed		n/a	Crest Gauges		n/a	8		6.10	0.35	0.2	0.07		0.56	-0.06	0.0175	2.5	
Hydrometric Leveling Survey						9		5.90	0.42	0.2	0.08	0.37			0.0311	4.4	
Stn	BS	HI	FS	Elevation	Notes	10		5.70	0.44	0.2	0.09	0.38			0.0334	4.7	
BM 59	1.659	101.659		100.000		11		5.50	0.45	0.2	0.09	0.3			0.0270	3.8	
BM 58			1.092	100.567		12		5.30	0.40	0.2	0.08	0.5			0.0400	5.6	
BM 57			-0.950	102.609		13		5.10	0.42	0.2	0.08	0.51			0.0428	6.0	
WL			2.784	98.875		14		4.90	0.45	0.2	0.09	0.49			0.0441	6.2	
SG			2.156	99.503		15		4.70	0.43	0.2	0.09	0.5			0.0430	6.1	
						16		4.50	0.38	0.2	0.08	0.51			0.0388	5.5	
						17		4.30	0.46	0.2	0.09	0.49			0.0451	6.4	
						18		4.10	0.46	0.2	0.09	0.49			0.0451	6.4	
						19		3.90	0.43	0.2	0.09	0.49			0.0421	5.9	
TBM			2.201	99.458		20		3.70	0.43	0.2	0.09	0.48			0.0413	5.8	
TBM	2.252	101.710				21		3.50	0.42	0.2	0.08	0.45			0.0378	5.3	
SG			2.211	99.499		22		3.30	0.42	0.2	0.08	0.44			0.0370	5.2	
WL			2.844	98.866		23		3.10	0.40	0.2	0.08	0.43			0.0344	4.8	
WL			2.842	98.868		24		2.90	0.38	0.2	0.08	0.38			0.0289	4.1	
WL			2.839	98.871		25		2.70	0.18	0.2	0.02	0			0.0000	0.0	
WL			2.843	98.867		26	Right Bank	2.65	0.00	0.1	0.00	0			0.0000	0.0	
WL			2.852	98.858		27											
BM 57			-0.899	102.609		28											
BM 58			1.145	100.565		29											
BM 59			1.711	99.999		30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593	100.566		-0.027		33											
BM 57	102.608	102.609		0.001		Total Q										0.709	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.373				Water level was fluctuating significantly at the staff gauge. Strong down stream winds potentially generating seiche from Doris Lake.											
Stage from WL Survey (m)		98.868															
Pressure Transducer Reading (m)		0.946															
Pressure Transducer Elevation (m)		97.922															
Discharge (m³/s)		0.709															
Cross Sectional Area		1.687															
Average Velocity		0.421															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	15:00	End	15:45	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		20-Sep-15				Real Time Reading		Start	Reading	0.936	Time	15:00	Staff Gauge (m)		0.358		
Time at Site (24 hr)		Start Time:	14:40	End Time:	16:30	(m)		End	Reading	0.938	Time	16:30	Time of SG Reading		15:00		
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny, moderate wind.				1	Right Bank	7.50	0.00	0.0	0.00	0			0.0000	0.0	
						2		7.20	0.07	0.3	0.02	0.26			0.0046	0.7	
						3		7.00	0.12	0.2	0.02	0.31			0.0074	1.1	
DL Model		Hobo	PT Serial #		21041003	4		6.80	0.16	0.2	0.03	0.28			0.0090	1.3	
Gain		0	Offset		0	5		6.60	0.22	0.2	0.04	0.41			0.0180	2.6	
Status		Logging	Battery		100%	6		6.40	0.24	0.2	0.05	0.48			0.0230	3.4	
# of Records		n/a	Memory Free		n/a	7		6.20	0.26	0.2	0.05	0.42			0.0218	3.2	
DL Service Performed		n/a	Crest Gauges		n/a	8		6.00	0.35	0.2	0.07		0.57	-0.06	0.0179	2.6	
Hydrometric Leveling Survey						9		5.80	0.40	0.2	0.08	0.4			0.0320	4.7	
Stn	BS	HI	FS	Elevation	Notes	10		5.60	0.40	0.2	0.08	0.45			0.0360	5.3	
BM 59	1.565	101.565		100.000		11		5.40	0.40	0.2	0.08	0.49			0.0392	5.7	
WL			2.704	98.861		12		5.20	0.40	0.2	0.08	0.49			0.0392	5.7	
						13		5.00	0.42	0.2	0.08	0.47			0.0395	5.8	
						14		4.80	0.44	0.2	0.09	0.48			0.0422	6.2	
						15		4.60	0.44	0.2	0.09	0.5			0.0440	6.4	
						16		4.40	0.44	0.2	0.09	0.49			0.0431	6.3	
						17		4.20	0.42	0.2	0.08	0.49			0.0412	6.0	
						18		4.00	0.44	0.2	0.09	0.48			0.0422	6.2	
						19		3.80	0.42	0.2	0.08	0.47			0.0395	5.8	
TBM			2.106	99.459		20		3.60	0.42	0.2	0.08	0.45			0.0378	5.5	
TBM	2.199	101.658				21		3.40	0.40	0.2	0.08	0.43			0.0344	5.0	
WL			2.798	98.860		22		3.20	0.40	0.2	0.08	0.42			0.0336	4.9	
BM 59			1.658	100.000		23		3.00	0.38	0.2	0.08	0.42			0.0319	4.7	
						24		2.80	0.32	0.2	0.05	0.16			0.0077	1.1	
						25	Left Bank	2.70	0.00	0.1	0.00	0			0.0000	0.0	
						26											
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593					33											
BM 57	102.608					Total Q										0.685	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.358				Station demobilized September 21 at approximately 9:00 PST.											
Stage from WL Survey (m)		98.861															
Pressure Transducer Reading (m)		0.936															
Pressure Transducer Elevation (m)		97.925															
Discharge (m³/s)		0.685															
Cross Sectional Area		1.580															
Average Velocity		0.434															

Appendix B-1. 2015 Manual Discharge Measurements at Doris Lake Outflow (TL-2)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	15:45	End	16:30	Location	Approximately 80 m downstream of PT.				
Station Identification		TL-2				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Doris Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		20-Sep-15				Real Time Reading		Start	Reading	0.936	Time	15:00	Staff Gauge (m)		0.359		
Time at Site (24 hr)		Start Time:	14:40	End Time:	16:30	(m)		End	Reading	0.938	Time	16:30	Time of SG Reading		15:00		
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny, moderate wind.				1	Left Bank	2.70	0.00	0.0	0.00	0			0.0000	0.0	
						2		2.90	0.36	0.2	0.07	0.37			0.0266	3.8	
						3		3.10	0.38	0.2	0.08	0.42			0.0319	4.5	
DL Model		Hobo	PT Serial #		21041003	4		3.30	0.40	0.2	0.08	0.43			0.0344	4.9	
Gain		0	Offset		0	5		3.50	0.40	0.2	0.08	0.45			0.0360	5.1	
Status		Logging	Battery		100%	6		3.70	0.44	0.2	0.09	0.44			0.0387	5.5	
# of Records		n/a	Memory Free		n/a	7		3.90	0.42	0.2	0.08	0.47			0.0395	5.6	
DL Service Performed		n/a	Crest Gauges		n/a	8		4.10	0.44	0.2	0.09	0.48			0.0422	6.0	
Hydrometric Leveling Survey						9		4.30	0.44	0.2	0.09	0.49			0.0431	6.1	
Stn	BS	HI	FS	Elevation	Notes	10		4.50	0.44	0.2	0.09	0.5			0.0440	6.3	
BM 59	1.565	101.565		100.000		11		4.70	0.44	0.2	0.09	0.5			0.0440	6.3	
WL			2.704	98.861		12		4.90	0.43	0.2	0.09	0.49			0.0421	6.0	
						13		5.10	0.41	0.2	0.08	0.5			0.0410	5.8	
						14		5.30	0.37	0.2	0.07	0.51			0.0377	5.4	
						15		5.50	0.37	0.2	0.07	0.5			0.0370	5.3	
						16		5.70	0.40	0.2	0.08	0.47			0.0376	5.4	
						17		5.90	0.40	0.2	0.08	0.38			0.0304	4.3	
						18		6.10	0.37	0.2	0.07		0.56	-0.1	0.0170	2.4	
						19		6.30	0.27	0.2	0.05	0.51			0.0275	3.9	
TBM			2.106	99.459		20		6.50	0.24	0.2	0.05	0.46			0.0221	3.1	
TBM	2.199	101.658				21		6.70	0.20	0.2	0.04	0.3			0.0120	1.7	
WL			2.798	98.860		22		6.90	0.12	0.2	0.02	0.37			0.0089	1.3	
BM 59			1.658	100.000		23		7.10	0.07	0.2	0.01	0.32			0.0045	0.6	
						24		7.30	0.10	0.2	0.02	0.17			0.0034	0.5	
						25	Right Bank	7.50	0.00	0.2	0.00	0			0.0000	0.0	
						26											
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 59	100	100.000		0.000		32											
BM 58	100.593					33											
BM 57	102.608					Total Q										0.702	100.0
Summary						General Notes											
Staff Gauge Reading (m)		0.359				Station demobilized September 21 at approximately 9:00 PST.											
Stage from WL Survey (m)		98.861															
Pressure Transducer Reading (m)		0.936															
Pressure Transducer Elevation (m)		97.925															
Discharge (m³/s)		0.702															
Cross Sectional Area		1.582															
Average Velocity		0.444															

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	14:10	End	15:30	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flow mate				
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528				
Date Monitored	11-Jun-15				Real Time Reading	Start	Reading	1.228	Time	13:10	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	13:00	End Time:	15:45	(m)	End	Reading	1.227	Time	15:44	Time of SG Reading	n/a			
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Cloudy, light to moderate north wind.				1	left Bank	0.70	0.00	0.0	0.00	0			0.000	0.0
					2		1.00	0.15	0.3	0.05	0.07			0.003	0.1
					3		1.30	0.26	0.3	0.07	0.64			0.042	1.6
DL Model	PT2X	PT Serial #	2122022		4		1.50	0.68	0.2	0.14	0.8			0.109	4.3
Gain	1.003996	Offset	-0.003		5		1.70	0.64	0.2	0.13	0.88			0.113	4.4
Status	Logging	Battery	100%		6		1.90	0.70	0.2	0.14	0.96			0.134	5.3
# of Records	0	Memory Free	524154		7		2.10	0.56	0.2	0.11	1			0.112	4.4
DL Service Performed	n/a	Crest Gauges	n/a		8		2.30	0.49	0.2	0.10	1.07			0.105	4.1
Hydrometric Leveling Survey					9		2.50	0.50	0.2	0.10	1.1			0.110	4.3
Stn	BS	HI	FS	Elevation	Notes	10		2.70	0.77	0.2	0.15	1.16		0.179	7.0
BM 87	1.116	101.116		100.000		11		2.90	0.83	0.2	0.17	1.18		0.196	7.7
BM 88			1.169	99.947		12		3.10	0.85	0.2	0.17	1.22		0.207	8.1
BM 89			0.871	100.245		13		3.30	0.82	0.2	0.16	1.19		0.195	7.7
PT			4.582	96.534		14		3.50	0.80	0.2	0.16	1.18		0.189	7.4
WL			3.396	97.720		15		3.70	0.85	0.2	0.17	1.09		0.185	7.3
						16		3.90	0.80	0.2	0.16	1.02		0.163	6.4
						17		4.10	0.82	0.2	0.16	0.97		0.159	6.2
						18		4.30	0.81	0.2	0.16	0.93		0.151	5.9
						19		4.50	0.80	0.2	0.16	0.75		0.120	4.7
TBM			1.570	99.546		20		4.70	0.78	0.2	0.16	0.13		0.020	0.8
TBM	1.547	101.093		99.546		21		4.90	0.20	0.2	0.04	0.65		0.026	1.0
BM 87			1.093	100.000		22		5.10	0.23	0.2	0.06	0.48		0.028	1.1
BM 88			1.146	99.947		23		5.40	0.17	0.3	0.04	0.03		0.001	0.0
BM 89			0.848	100.245		24	Right Bank	5.55	0.00	0.1	0.00	0		0.000	0.0
PT			4.559	96.534		25									
WL			3.373	97.720		26									
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 87	100	100.000	0.000		32										
BM 88	100.945	99.947	-0.998		33										
BM 89	102.227	100.245	-1.982		Total Q									2.547	100.0
Summary					General Notes										
Staff Gauge Reading (m)	n/a				First visit of the season. Station installed.										
Stage from WL Survey (m)	97.720														
Pressure Transducer Reading (m)	1.228														
Pressure Transducer Elevation (m)	96.492														
Discharge (m ³ /s)	2.547														
Cross Sectional Area	2.746														
Average Velocity	0.927														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	13:10	End	13:50	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Swoffer				
Stream Name	Doris Creek				Flow Meter Type	Propeller				Instrument Serial #	6733				
Date Monitored	12-Jun-15				Real Time Reading	Start	Reading	1.249	Time	13:10	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	12:30	End Time:	14:45:00 PM	(m)	End	Reading	1.248	Time	13:50	Time of SG Reading	n/a			
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	434204	7559985	0		1	Right Bank	2.60	0.00	0.0	0.00	0			0.000	0.0
					2		2.85	0.23	0.3	0.06	0.27			0.016	0.6
					3		3.10	0.21	0.3	0.05	0.62			0.029	1.1
DL Model	PT2X	PT Serial #	2122022		4		3.30	0.26	0.2	0.05	0.87			0.045	1.7
Gain	1.003996	Offset	-0.003		5		3.50	0.82	0.2	0.16	0.73			0.120	4.4
Status	Logging	Battery	100%		6		3.70	0.79	0.2	0.16	0.81			0.128	4.7
# of Records	149	Memory Free	524005		7		3.90	0.76	0.2	0.15	0.94			0.143	5.2
DL Service Performed	n/a	Crest Gauges	n/a		8		4.10	0.84	0.2	0.17	0.96			0.161	5.9
Hydrometric Leveling Survey					9		4.30	0.85	0.2	0.17	1.07			0.182	6.6
Stn	BS	HI	FS	Elevation	Notes	10		4.50	0.84	0.2	0.17	1.16		0.195	7.1
BM 87	0.724	100.724		100.000		11		4.70	0.76	0.2	0.15	1.22		0.185	6.8
BM 88			0.778	99.946		12		4.90	0.86	0.2	0.17	1.24		0.213	7.8
BM 89			0.479	100.245		13		5.10	0.75	0.2	0.15	1.2		0.180	6.6
WL			2.977	97.747		14		5.30	0.80	0.2	0.16	1.24		0.198	7.2
						15		5.50	0.79	0.2	0.16	1.19		0.188	6.9
						16		5.70	0.51	0.2	0.10	1.15		0.117	4.3
						17		5.90	0.58	0.2	0.12	1.02		0.118	4.3
						18		6.10	0.57	0.2	0.11	1.01		0.115	4.2
						19		6.30	0.73	0.2	0.15	0.91		0.133	4.8
TBM			1.814	98.910		20		6.50	0.67	0.2	0.13	0.87		0.117	4.3
TBM	1.997	100.907		98.910		21		6.70	0.70	0.2	0.14	0.65		0.091	3.3
BM 87			0.904	100.003		22		6.90	0.66	0.2	0.10	0.24		0.024	0.9
BM 88			0.958	99.949		23		7.00	0.34	0.1	0.09	0.49		0.042	1.5
BM 89			0.659	100.248		24	Left Bank	7.40	0.00	0.4	0.00	0		0.000	0.0
WL			3.158	97.749		25									
						26									
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 87	100	100.002	0.001		32										
BM 88	100.945	99.948	-0.998		33										
BM 89	102.227	100.247	-1.981		Total Q									2.740	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		97.748													
Pressure Transducer Reading (m)		1.249													
Pressure Transducer Elevation (m)		96.499													
Discharge (m ³ /s)		2.740													
Cross Sectional Area		2.865													
Average Velocity		0.957													

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	13:50	End	14:20	Location	Approximately 200 m upstream of PT				
Station Identification		TL-3				Method		Velocity-area (Mid-section)			Instrument Model		Swoffer				
Stream Name		Doris Creek				Flow Meter Type		Propeller			Instrument Serial #		6733				
Date Monitored		12-Jun-15				Real Time Reading		Start	Reading	1.249	Time	13:50	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	12:30	End Time:	14:45:00 PM	(m)	End	Reading	1.248	Time	14:20	Time of SG Reading		n/a			
Personnel		Greg Langston, Coby Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Sunny				1	Right Bank	2.60	0.00	0.0	0.00	0			0.000	0.0	
						2		2.70	0.13	0.1	0.03	0.12			0.003	0.1	
						3		3.00	0.26	0.3	0.07	0.46			0.030	1.1	
DL Model		PI2X	PT Serial #		2122022	4		3.20	0.26	0.2	0.05	0.7			0.036	1.3	
Gain		1.003996	Offset		-0.003	5		3.40	0.36	0.2	0.07	0.71			0.051	1.8	
Status		Logging	Battery		100%	6		3.60	0.82	0.2	0.16	0.82			0.134	4.8	
# of Records		149	Memory Free		524005	7		3.80	0.85	0.2	0.17	0.97			0.165	5.9	
DL Service Performed		n/a	Crest Gauges		n/a	8		4.00	0.85	0.2	0.17	0.95			0.162	5.8	
Hydrometric Leveling Survey						9		4.20	0.85	0.2	0.17	1.04			0.177	6.3	
Stn	BS	HI	FS	Elevation	Notes	10		4.40	0.86	0.2	0.17	1.14			0.196	7.0	
BM 87	0.724	100.724		100.000		11		4.60	0.85	0.2	0.17	1.27			0.216	7.7	
BM 88			0.778	99.946		12		4.80	0.84	0.2	0.17	1.22			0.205	7.3	
BM 89			0.479	100.245		13		5.00	0.87	0.2	0.17	1.24			0.216	7.7	
WL			2.977	97.747		14		5.20	0.75	0.2	0.15	1.23			0.185	6.6	
						15		5.40	0.80	0.2	0.16	1.23			0.197	7.0	
						16		5.60	0.55	0.2	0.11	1.19			0.131	4.7	
						17		5.80	0.50	0.2	0.10	1.15			0.115	4.1	
						18		6.00	0.67	0.2	0.13	0.92			0.123	4.4	
						19		6.20	0.73	0.2	0.15	0.95			0.139	4.9	
TBM			1.814	98.910		20		6.40	0.74	0.2	0.15	0.75			0.111	4.0	
TBM	1.997	100.907		98.910		21		6.60	0.71	0.2	0.14	0.79			0.112	4.0	
BM 87			0.904	100.003		22		6.80	0.69	0.2	0.14	0.55			0.076	2.7	
BM 88			0.958	99.949		23		7.00	0.24	0.2	0.07	0.35			0.025	0.9	
BM 89			0.659	100.248		24	Left Bank	7.40	0.00	0.4	0.00	0			0.000	0.0	
WL			3.158	97.749		25											
						26											
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 87	100	100.002		0.001		32											
BM 88	100.945	99.948		-0.998		33											
BM 89	102.227	100.247		-1.981		Total Q										2.804	100.0
Summary						General Notes											
Staff Gauge Reading (m)		n/a															
Stage from WL Survey (m)		97.748															
Pressure Transducer Reading (m)		1.249															
Pressure Transducer Elevation (m)		96.499															
Discharge (m³/s)		2.804															
Cross Sectional Area		2.873															
Average Velocity		0.976															

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	13:50	End	14:30	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)			Instrument Model	Flowmate						
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic			Instrument Serial #	2007528						
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	1.259	Time	13:50	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	12:30	End Time:	15:00	(m)	End	Reading	1.262	Time	14:30	Time of SG Reading	n/a				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
	434204	7559985	0		1	Right Bank	0.90	0.00	0.0	0.00	0			0.000	0.0	
Weather Conditions	Clear.				2		1.20	0.17	0.3	0.03	-0.05			-0.002	-0.1	
Transducer Information					3		1.30	0.30	0.1	0.09	0.72			0.065	2.5	
DL Model	PT2X	PT Serial #	2122022		4		1.80	0.72	0.5	0.25	0.78			0.197	7.5	
Gain	1.003996	Offset	-0.003		5		2.00	0.75	0.2	0.15	0.9			0.135	5.2	
Status	Logging	Battery	100%		6		2.20	0.73	0.2	0.15	0.98			0.143	5.5	
# of Records	309	Memory Free	523845		7		2.40	0.52	0.2	0.10	1.03			0.107	4.1	
DL Service Performed	n/a	Crest Gauges	n/a		8		2.60	0.51	0.2	0.10	1.05			0.107	4.1	
Hydrometric Leveling Survey					9		2.80	0.84	0.2	0.17		1.17	0.73	0.160	6.1	
Stn	BS	HI	FS	Elevation	Notes	10		3.00	0.82	0.2	0.16		1.13	0.95	0.171	6.5
BM 87	0.799	100.799		100.000		11		3.20	0.78	0.2	0.16		1.17	1.18	0.183	7.0
BM 88			0.852	99.947		12		3.40	0.88	0.2	0.18		1.06	1.14	0.194	7.4
BM 89			0.553	100.246		13		3.60	0.85	0.2	0.17		1.09	1.16	0.191	7.3
WL			3.036	97.763		14		3.80	0.87	0.2	0.17		1.11	1.17	0.198	7.6
						15		4.00	0.87	0.2	0.17		1.01	1.06	0.180	6.9
						16		4.20	0.69	0.2	0.14	0.97			0.134	5.1
						17		4.40	0.75	0.2	0.15	0.92			0.138	5.3
						18		4.60	0.71	0.2	0.14	0.71			0.101	3.9
						19		4.80	0.84	0.2	0.17		0.68	0.55	0.103	3.9
TBM			2.227	98.572		20		5.00	0.42	0.2	0.08	0.53			0.045	1.7
TBM	2.251	100.823		98.572		21		5.20	0.26	0.2	0.05	0.65			0.034	1.3
WL			3.061	97.762		22		5.40	0.24	0.2	0.05	0.52			0.025	1.0
BM 89			0.578	100.245		23		5.60	0.18	0.2	0.03	0.35			0.009	0.4
BM 88			0.877	99.946		24	Left Bank	5.70	0.00	0.1	0.00	0			0.000	0.0
BM 87			0.823	100.000		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.947	-0.998		33											
BM 89	102.227	100.246	-1.982		Total Q										2.617	100.0
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.763														
Pressure Transducer Reading (m)		1.259														
Pressure Transducer Elevation (m)		96.504														
Discharge (m³/s)		2.617														
Cross Sectional Area		2.869														
Average Velocity		0.912														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	14:30	End	15:00	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowmate					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528					
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	1.259	Time	14:30	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	12:30	End Time:	15:00	(m)	End	Reading	1.262	Time	15:00	Time of SG Reading	n/a				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Clear.				1	Right Bank	5.70	0.00	0.0	0.00	0			0.000	0.0	
					2		5.40	0.28	0.3	0.08	0.45			0.038	1.5	
					3		5.10	0.38	0.3	0.10	0.68			0.065	2.5	
DL Model	PT2X	PT Serial #	2122022		4		4.90	0.84	0.2	0.17		0.69	0.48	0.098	3.8	
Gain	1.003996	Offset	-0.003		5		4.70	0.82	0.2	0.16		0.75	0.68	0.117	4.6	
Status	Logging	Battery	100%		6		4.50	0.72	0.2	0.14	0.78			0.112	4.4	
# of Records	309	Memory Free	523845		7		4.30	0.84	0.2	0.17		1	0.79	0.150	5.9	
DL Service Performed	n/a	Crest Gauges	n/a		8		4.10	0.85	0.2	0.17		1.02	0.54	0.133	5.2	
Hydrometric Leveling Survey					9		3.90	0.88	0.2	0.18		1.03	1.12	0.189	7.4	
Stn	BS	HI	FS	Elevation	Notes	10		3.70	0.85	0.2	0.17		1.05	1.17	0.189	7.4
BM 87	0.799	100.799		100.000		11		3.50	0.86	0.2	0.17		1.17	1.22	0.206	8.0
BM 88			0.852	99.947		12		3.30	0.82	0.2	0.16		1.15	1.14	0.188	7.3
BM 89			0.553	100.246		13		3.10	0.78	0.2	0.16		1.17	1.11	0.178	6.9
WL			3.036	97.763		14		2.90	0.82	0.2	0.16		1.22	0.77	0.163	6.4
						15		2.70	0.55	0.2	0.11	1.1			0.121	4.7
						16		2.50	0.52	0.2	0.10	1.05			0.109	4.3
						17		2.30	0.58	0.2	0.12	0.97			0.113	4.4
						18		2.10	0.74	0.2	0.19	0.89			0.165	6.4
						19		1.80	0.67	0.3	0.20	0.79			0.159	6.2
TBM			2.227	98.572		20		1.50	0.38	0.3	0.11	0.65			0.074	2.9
TBM	2.251	100.823		98.572		21		1.20	0.16	0.3	0.05	0			0.000	0.0
WL			3.061	97.762		22	Left Bank	0.90	0.00	0.3	0.00	0			0.000	0.0
BM 89			0.578	100.245		23										
BM 88			0.877	99.946		24										
BM 87			0.823	100.000		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.947	-0.998		33											
BM 89	102.227	100.246	-1.982		Total Q										2.566	100.0
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.763														
Pressure Transducer Reading (m)		1.259														
Pressure Transducer Elevation (m)		96.504														
Discharge (m ³ /s)		2.566														
Cross Sectional Area		2.873														
Average Velocity		0.893														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	10:00	End	10:50	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowmate					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528					
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.269	Time	10:00	Staff Gauge (m)			n/a		
Time at Site (24 hr)	Start Time:	10:00	End Time:	12:00	(m)	End	Reading	1.269	Time	10:50	Time of SG Reading			n/a		
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
	434204	7559985	0		1	Right Bank	8.10	0.00	0.0	0.00	0			0.000	0.0	
Weather Conditions	Overcast and cool.				2		7.70	0.12	0.4	0.04	0			0.000	0.0	
Transducer Information					3		7.40	0.20	0.3	0.05	0.17			0.009	0.3	
DL Model	PT2X	PT Serial #	2122022		4		7.20	0.30	0.2	0.06	0.69			0.041	1.6	
Gain	1.003996	Offset	-0.003		5		7.00	0.70	0.2	0.14	0.64			0.090	3.4	
Status	Logging	Battery	100%		6		6.80	0.66	0.2	0.13	0.77			0.102	3.9	
# of Records	434	Memory Free	523720		7		6.60	0.76	0.2	0.15	0.87			0.132	5.0	
DL Service Performed	n/a	Crest Gauges	n/a		8		6.40	0.72	0.2	0.14	0.92			0.132	5.1	
Hydrometric Leveling Survey					9		6.20	0.52	0.2	0.10	1.01			0.105	4.0	
Stn	BS	HI	FS	Elevation	Notes	10		6.00	0.52	0.2	0.10	1.12		0.116	4.4	
BM 87	0.683	100.683		100.000		11		5.80	0.82	0.2	0.16		1.22	0.75	0.162	6.2
BM 88			0.737	99.946		12		5.60	0.84	0.2	0.17		1.14	1.04	0.183	7.0
BM 89			0.439	100.244		13		5.40	0.78	0.2	0.16		1.12	1.18	0.179	6.8
WL			2.912	97.771		14		5.20	0.88	0.2	0.18		1.15	1.26	0.212	8.1
						15		5.00	0.85	0.2	0.17		1.14	1.19	0.198	7.6
						16		4.80	0.88	0.2	0.18		1.1	1.18	0.201	7.7
						17		4.60	0.86	0.2	0.17		1.11	1.03	0.184	7.0
						18		4.40	0.86	0.2	0.17		1.05	0.45	0.129	4.9
						19		4.20	0.74	0.2	0.15	0.89			0.132	5.0
TBM			2.110	98.573		20		4.00	0.72	0.2	0.14	0.68			0.098	3.7
TBM	2.023	100.596		98.573		21		3.80	0.84	0.2	0.21		0.68	0.59	0.133	5.1
WL			2.826	97.770		22		3.50	0.20	0.3	0.06	0.64			0.038	1.5
BM 89			0.351	100.245		23		3.20	0.28	0.3	0.08	0.51			0.043	1.6
BM 88			0.650	99.946		24	Left Bank	2.90	0.00	0.3	0.00	0			0.000	0.0
BM 87			0.597	99.999		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.946	-0.999		33											
BM 89	102.227	100.245	-1.982		Total Q										2.619	100.0
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.771														
Pressure Transducer Reading (m)		1.269														
Pressure Transducer Elevation (m)		96.502														
Discharge (m³/s)		2.619														
Cross Sectional Area		2.928														
Average Velocity		0.895														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	10:50	End	11:30	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowmate					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528					
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.269	Time	10:00	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	10:00	End Time:	12:00	(m)	End	Reading	1.269	Time	11:30	Time of SG Reading	n/a				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast and cool.				1	Right Bank	2.90	0.00	0.0	0.00	0			0.000	0.0	
					2		3.00	0.24	0.1	0.05	0.35			0.017	0.6	
					3		3.30	0.28	0.3	0.07	0.61			0.043	1.6	
DL Model	PT2X	PT Serial #	2122022		4		3.50	0.22	0.2	0.04	0.81			0.036	1.3	
Gain	1.003996	Offset	-0.003		5		3.70	0.83	0.2	0.17	0.69	0.47	0.42	0.094	3.5	
Status	Logging	Battery	100%		6		3.90	0.82	0.2	0.16		0.85	0.69	0.126	4.7	
# of Records	434	Memory Free	523720		7		4.10	0.70	0.2	0.14	0.85			0.119	4.5	
DL Service Performed	n/a	Crest Gauges	n/a		8		4.30	0.78	0.2	0.16		1.03	0.81	0.144	5.4	
Hydrometric Leveling Survey					9		4.50	0.70	0.2	0.14	1.01			0.141	5.3	
Stn	BS	HI	FS	Elevation	Notes	10		4.70	0.86	0.2	0.17		1.05	1.14	0.188	7.1
BM 87	0.683	100.683		100.000		11		4.90	0.88	0.2	0.18		1.13	1.27	0.211	7.9
BM 88			0.737	99.946		12		5.10	0.88	0.2	0.18		1.16	1.25	0.212	7.9
BM 89			0.439	100.244		13		5.30	0.82	0.2	0.16		1.12	1.15	0.186	7.0
WL			2.912	97.771		14		5.50	0.78	0.2	0.16		1.23	1.14	0.185	6.9
						15		5.70	0.82	0.2	0.16		1.22	0.97	0.180	6.7
						16		5.90	0.54	0.2	0.11	1.14			0.123	4.6
						17		6.10	0.50	0.2	0.10	1.09			0.109	4.1
						18		6.30	0.57	0.2	0.11	0.98			0.112	4.2
						19		6.50	0.73	0.2	0.18	0.9			0.164	6.1
TBM			2.110	98.573		20		6.80	0.66	0.3	0.23	0.83			0.192	7.2
TBM	2.023	100.596		98.573		21		7.20	0.30	0.4	0.12	0.74			0.089	3.3
WL			2.826	97.770		22		7.60	0.24	0.4	0.11	0.01			0.001	0.0
BM 89			0.351	100.245		23	Left Bank	8.10	0.00	0.5	0.00	0			0.000	0.0
BM 88			0.650	99.946		24										
BM 87			0.597	99.999		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.946	-0.999		33											
BM 89	102.227	100.245	-1.982		Total Q										2.671	100.0
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.771														
Pressure Transducer Reading (m)		1.269														
Pressure Transducer Elevation (m)		96.502														
Discharge (m ³ /s)		2.671														
Cross Sectional Area		2.900														
Average Velocity		0.921														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	9:30	End	10:00	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowmate					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528					
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.267	Time	9:00	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	9:00	End Time:	11:15	(m)	End	Reading	1.267	Time	10:50	Time of SG Reading	n/a				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Light rain and cool.				1	Left Bank	1.10	0.00	0.0	0.00	0			0.000	0.0	
					2		1.30	0.10	0.2	0.03	-0.02			-0.001	0.0	
					3		1.60	0.22	0.3	0.07	0.16			0.011	0.4	
DL Model	PT2X	PT Serial #	2122022		4		1.90	0.70	0.3	0.18	0.43			0.075	2.9	
Gain	1.003996	Offset	-0.003		5		2.10	0.67	0.2	0.13	0.82			0.110	4.3	
Status	Logging	Battery	100%		6		2.30	0.75	0.2	0.15	0.86			0.129	5.0	
# of Records	559	Memory Free	523595		7		2.50	0.59	0.2	0.12	0.88			0.104	4.0	
DL Service Performed	n/a	Crest Gauges	n/a		8		2.70	0.54	0.2	0.11	0.97			0.105	4.1	
Hydrometric Leveling Survey					9		2.90	0.52	0.2	0.10	1.04			0.108	4.2	
Stn	BS	HI	FS	Elevation	Notes	10		3.10	0.84	0.2	0.17		1.13	0.77	0.160	6.2
BM 87	0.772	100.772		100.000		11		3.30	0.81	0.2	0.16		1.15	1.05	0.178	6.9
BM 88			0.826	99.946		12		3.50	0.78	0.2	0.16		1.08	1.11	0.171	6.6
BM 89			0.527	100.245		13		3.70	0.90	0.2	0.18		1.04	1.19	0.201	7.8
WL			3.006	97.766		14		3.90	0.86	0.2	0.17		1.06	1.19	0.194	7.5
						15		4.10	0.90	0.2	0.18		1.04	1.15	0.197	7.7
						16		4.30	0.88	0.2	0.18		1.07	1.06	0.187	7.3
						17		4.50	0.70	0.2	0.14	0.93			0.130	5.1
						18		4.70	0.76	0.2	0.15		0.99	0.82	0.138	5.3
						19		4.90	0.72	0.2	0.14	0.75			0.108	4.2
TBM			2.200	98.572		20		5.10	0.82	0.2	0.16		0.73	0.6	0.109	4.2
TBM	2.217	100.789		98.572		21		5.30	0.82	0.2	0.16		0.75	0.17	0.075	2.9
WL			3.023	97.766		22		5.50	0.30	0.2	0.06	0.67			0.040	1.6
BM 89			0.543	100.246		23		5.70	0.30	0.2	0.06	0.59			0.035	1.4
BM 88			0.842	99.947		24		5.90	0.20	0.2	0.03	0.39			0.012	0.5
BM 87			0.788	100.001		25	Right Bank	6.00	0.00	0.1	0.00	0			0.000	0.0
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.001	0.001		32											
BM 88	100.945	99.947	-0.998		33											
BM 89	102.227	100.246	-1.982		Total Q										2.576	100.0
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.766														
Pressure Transducer Reading (m)		1.267														
Pressure Transducer Elevation (m)		96.499														
Discharge (m ³ /s)		2.576														
Cross Sectional Area		2.988														
Average Velocity		0.862														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	10:00	End	10:50	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowmate					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528					
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading	1.267	Time	9:00	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	9:00	End Time:	11:15	(m)	End	Reading	1.267	Time	10:50	Time of SG Reading	n/a				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	light rain and cool.				1	Right Bank	6.00	0.00	0.0	0.00	0			0.000	0.0	
					2		5.90	0.20	0.1	0.04	0.19			0.008	0.3	
					3		5.60	0.30	0.3	0.08	0.63			0.047	1.8	
DL Model	PT2X	PT Serial #	2122022		4		5.40	0.39	0.2	0.08	0.77			0.060	2.3	
Gain	1.003996	Offset	-0.003		5		5.20	0.84	0.2	0.17		0.79	0.48	0.107	4.0	
Status	Logging	Battery	100%		6		5.00	0.71	0.2	0.14	0.72			0.102	3.9	
# of Records	559	Memory Free	523595		7		4.80	0.74	0.2	0.15	0.81			0.120	4.5	
DL Service Performed	n/a	Crest Gauges	n/a		8		4.60	0.86	0.2	0.17		0.99	0.5	0.128	4.8	
Hydrometric Leveling Survey					9		4.40	0.86	0.2	0.17		1.06	0.77	0.157	5.9	
Stn	BS	HI	FS	Elevation	Notes	10		4.20	0.88	0.2	0.18		1.1	1.15	0.198	7.5
BM 87	0.772	100.772		100.000		11		4.00	0.86	0.2	0.17		1.13	1.19	0.200	7.5
BM 88			0.826	99.946		12		3.80	0.87	0.2	0.17		1.13	1.12	0.196	7.4
BM 89			0.527	100.245		13		3.60	0.83	0.2	0.17		1.18	1.15	0.193	7.3
WL			3.006	97.766		14		3.40	0.80	0.2	0.16		1.08	1.19	0.182	6.9
						15		3.20	0.82	0.2	0.16		1.25	0.74	0.163	6.2
						16		3.00	0.54	0.2	0.11	1.16			0.125	4.7
						17		2.80	0.52	0.2	0.10	1.04			0.108	4.1
						18		2.60	0.58	0.2	0.12	0.92			0.107	4.0
						19		2.40	0.74	0.2	0.15	0.9			0.133	5.0
TBM			2.200	98.572		20		2.20	0.74	0.2	0.15	0.86			0.127	4.8
TBM	2.217	100.789		98.572		21		2.00	0.72	0.2	0.18	0.7			0.126	4.8
WL			3.023	97.766		22		1.70	0.27	0.3	0.08	0.77			0.062	2.4
BM 89			0.543	100.246		23		1.40	0.12	0.3	0.04	-0.1			-0.004	-0.1
BM 88			0.842	99.947		24	Left Bank	1.10	0.00	0.3	0.00	0			0.000	0.0
BM 87			0.788	100.001		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.001	0.001		32											
BM 88	100.945	99.947	-0.998		33											
BM 89	102.227	100.246	-1.982		Total Q									2.646	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.766														
Pressure Transducer Reading (m)		1.267														
Pressure Transducer Elevation (m)		96.499														
Discharge (m ³ /s)		2.646														
Cross Sectional Area		2.928														
Average Velocity		0.904														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	11:30	End	12:00	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	FH950					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	6593					
Date Monitored	16-Jul-15				Real Time Reading	Start	Reading	0.988	Time	11:20	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	10:00	End Time:	12:45	(m)	End	Reading	0.988	Time	12:40	Time of SG Reading	n/a				
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Sunny, light wind.				1	Right Bank	1.20	0.00	0.0	0.00	0			0.000	0.0	
					2		1.30	0.05	0.1	0.01	0			0.000	0.0	
					3		1.70	0.08	0.4	0.02	0.17			0.004	0.3	
Transducer Information					4		1.90	0.63	0.2	0.11	0.27			0.030	2.4	
DL Model	PT2X	PT Serial #	2122022		5		2.05	0.68	0.2	0.10	0.46			0.047	3.8	
Gain	1.003996	Offset	-0.003		6		2.20	0.66	0.2	0.10	0.51			0.050	4.0	
Status	Logging	Battery	100%		7		2.35	0.66	0.2	0.10	0.55			0.054	4.4	
# of Records	524154	Memory Free	519123		8		2.50	0.63	0.2	0.09	0.55			0.052	4.2	
DL Service Performed	n/a	Crest Gauges	n/a		9		2.65	0.62	0.2	0.09	0.57			0.053	4.2	
Hydrometric Leveling Survey					10		2.80	0.64	0.2	0.10	0.67			0.064	5.2	
Stn	BS	HI	FS	Elevation	Notes	11		2.95	0.66	0.2	0.10	0.75			0.074	6.0
BM 87	0.332	100.332		100.000		12		3.10	0.68	0.2	0.10	0.74			0.075	6.1
BM 88			0.386	99.946		13		3.25	0.66	0.2	0.10	0.74			0.073	5.9
BM 89			0.092	100.240		14		3.40	0.66	0.2	0.10	0.78			0.077	6.2
WL			2.874	97.458		15		3.55	0.54	0.2	0.09	0.77			0.073	5.8
						16		3.75	0.60	0.2	0.12	0.84			0.101	8.1
						17		3.95	0.56	0.2	0.11	0.73			0.082	6.6
						18		4.15	0.39	0.2	0.08	0.68			0.053	4.3
						19		4.35	0.32	0.2	0.06	0.74			0.047	3.8
TBM			0.343	99.989		20		4.55	0.38	0.2	0.08	0.75			0.057	4.6
TBM	0.259	100.248		99.989		21		4.75	0.55	0.2	0.11	0.71			0.078	6.3
WL			2.793	97.455		22		4.95	0.55	0.2	0.14	0.69			0.095	7.6
BM 89			0.008	100.240		23		5.25	0.50	0.3	0.11	0.06			0.007	0.5
BM 88			0.302	99.946		24		5.40	0.08	0.2	0.02	-0.01			0.000	0.0
BM 87			0.248	100.000		25	Left Bank	5.70	0.00	0.3	0.00	0			0.000	0.0
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.946	-0.999		33											
BM 89	102.227	100.240	-1.987		Total Q									1.247	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.457														
Pressure Transducer Reading (m)		0.988														
Pressure Transducer Elevation (m)		96.469														
Discharge (m ³ /s)		1.247														
Cross Sectional Area		2.052														
Average Velocity		0.608														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	12:00	End	12:30	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	6593				
Date Monitored	16-Jul-15				Real Time Reading	Start	Reading	0.988	Time	11:20	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	10:00	End Time:	12:45	(m)	End	Reading	0.988	Time	12:40	Time of SG Reading	n/a			
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, light wind.				1	Right Bank	5.70	0.00	0.0	0.00	-0.08			0.000	0.0
					2		5.50	0.08	0.2	0.02	0.29			0.006	0.5
					3		5.20	0.50	0.3	0.13	0.7			0.088	6.9
Transducer Information					4		5.00	0.56	0.2	0.11	0.69			0.077	6.1
DL Model	PT2X	PT Serial #	2122022		5		4.80	0.54	0.2	0.11	0.73			0.079	6.2
Gain	1.003996	Offset	-0.003		6		4.60	0.38	0.2	0.08	0.74			0.056	4.4
Status	Logging	Battery	100%		7		4.40	0.39	0.2	0.08	0.76			0.059	4.7
# of Records	5031	Memory Free	519123		8		4.20	0.34	0.2	0.07	0.8			0.054	4.3
DL Service Performed	n/a	Crest Gauges	n/a		9		4.00	0.48	0.2	0.10	0.78			0.075	5.9
Hydrometric Leveling Survey					10		3.80	0.64	0.2	0.13	0.81			0.104	8.2
Stn	BS	HI	FS	Elevation	Notes	11		3.60	0.54	0.2	0.09	0.77		0.073	5.7
BM 87	0.332	100.332		100.000		12		3.45	0.66	0.2	0.10	0.77		0.076	6.0
BM 88			0.386	99.946		13		3.30	0.66	0.2	0.08	0.75		0.062	4.9
BM 89			0.092	100.240		14		3.20	0.68	0.1	0.09	0.74		0.063	5.0
WL			2.874	97.458		15		3.05	0.68	0.2	0.10	0.72		0.073	5.8
						16		2.90	0.66	0.2	0.10	0.47		0.047	3.7
						17		2.75	0.66	0.2	0.10	0.5		0.050	3.9
						18		2.60	0.66	0.2	0.10	0.59		0.058	4.6
						19		2.45	0.66	0.2	0.10	0.52		0.051	4.1
TBM			0.343	99.989		20		2.30	0.66	0.2	0.10	0.49		0.049	3.8
TBM	0.259	100.248		99.989		21		2.15	0.68	0.2	0.10	0.54		0.055	4.3
WL			2.793	97.455		22		2.00	0.74	0.2	0.11	0.08		0.009	0.7
BM 89			0.008	100.240		23		1.85	0.62	0.2	0.09	0.06		0.006	0.4
BM 88			0.302	99.946		24		1.70	0.14	0.2	0.04	0.01		0.000	0.0
BM 87			0.248	100.000		25		1.30	0.05	0.4	0.01	0		0.000	0.0
						26	Left Bank	1.20	0.00	0.1	0.00			0.000	0.0
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 87	100	100.000	0.000		32										
BM 88	100.945	99.946	-0.999		33										
BM 89	102.227	100.240	-1.987		Total Q									1.269	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		97.457													
Pressure Transducer Reading (m)		0.988													
Pressure Transducer Elevation (m)		96.469													
Discharge (m ³ /s)		1.269													
Cross Sectional Area		2.126													
Average Velocity		0.597													

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	12:00	End	12:30	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	FH950					
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	6593					
Date Monitored	20-Jul-15				Real Time Reading	Start	Reading	n/a	Time	n/a	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	11:50	End Time:	13:00	(m)	End	Reading	n/a	Time	n/a	Time of SG Reading	n/a				
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast, rain last night.				1	Right Bank	1.30	0.00	0.0	0.00	0			0.000	0.0	
					2		1.50	0.08	0.2	0.02	0			0.000	0.0	
					3		1.70	0.14	0.2	0.03	0.06			0.002	0.1	
Transducer Information					4		1.90	0.26	0.2	0.05	0.19			0.010	0.8	
DL Model	PT2X	PT Serial #	2122022		5		2.10	0.65	0.2	0.13	0.5			0.065	5.5	
Gain	1.003996	Offset	-0.003		6		2.30	0.68	0.2	0.14	0.48			0.065	5.5	
Status	Logging	Battery	100%		7		2.50	0.65	0.2	0.13	0.54			0.070	5.9	
# of Records	n/a	Memory Free	n/a		8		2.70	0.46	0.2	0.09	0.61			0.056	4.7	
DL Service Performed	n/a	Crest Gauges	n/a		9		2.90	0.64	0.2	0.13	0.6			0.077	6.5	
Hydrometric Leveling Survey					10		3.10	0.66	0.2	0.13	0.69			0.091	7.7	
Stn	BS	HI	FS	Elevation	Notes	11		3.30	0.64	0.2	0.13	0.69			0.088	7.5
BM 87	0.289	100.289		100.000		12		3.50	0.65	0.2	0.13	0.7			0.091	7.7
BM 88			0.343	99.946		13		3.70	0.62	0.2	0.12	0.71			0.088	7.4
BM 89			0.048	100.241		14		3.90	0.60	0.2	0.12	0.75			0.090	7.6
WL			2.822	97.467		15		4.10	0.56	0.2	0.11	0.63			0.071	6.0
						16		4.30	0.58	0.2	0.12	0.54			0.063	5.3
						17		4.50	0.48	0.2	0.10	0.58			0.056	4.7
						18		4.70	0.40	0.2	0.08	0.68			0.054	4.6
						19		4.90	0.54	0.2	0.11	0.66			0.071	6.0
TBM			2.147	98.142		20		5.10	0.54	0.2	0.11	0.65			0.070	5.9
TBM	2.194	100.336		98.142		21		5.30	0.46	0.2	0.09	0.06			0.006	0.5
WL			2.871	97.465		22	Left Bank	5.50	0.00	0.2	0.00	0			0.000	0.0
BM 89			0.096	100.240		23										
BM 88			0.390	99.946		24										
BM 87			0.337	99.999		25										
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	-0.001		32											
BM 88	100.945	99.946	-0.999		33											
BM 89	102.227	100.241	-1.987		Total Q									1.184	100.0	
Summary					General Notes											
Staff Gauge Reading (m)	n/a				Measurement made in support of fisheries channel surveying. Laptop not available at the time, therefore no real-time PT readings.											
Stage from WL Survey (m)	97.466															
Pressure Transducer Reading (m)	n/a															
Pressure Transducer Elevation (m)	n/a															
Discharge (m ³ /s)	1.184															
Cross Sectional Area	2.058															
Average Velocity	0.575															

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	12:30	End	13:00:00 P	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Doris Creek				Flow Meter Type	Electromagnetic				Instrument Serial #	6593				
Date Monitored	20-Jul-15				Real Time Reading	Start	Reading	n/a	Time	n/a	Staff Gauge (m)			n/a	
Time at Site (24 hr)	Start Time:	11:50	End Time:	13:00	(m)	End	Reading	n/a	Time	n/a	Time of SG Reading			n/a	
Personnel	Greg Langston, Jeff Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%
	434204	7559985	0		1	Left Bank	5.50	0.00	0.0	0.00	0			0.000	0.0
Weather Conditions	Overcast, rain last night.				2		5.40	0.14	0.1	0.02	-0.01			0.000	0.0
Transducer Information					3		5.20	0.50	0.2	0.10	0.45			0.045	3.9
DL Model	PT2X	PT Serial #		2122022	4		5.00	0.54	0.2	0.11	0.66			0.071	6.1
Gain	1.003996	Offset		-0.003	5		4.80	0.53	0.2	0.11	0.63			0.067	5.7
Status	Logging	Battery		100%	6		4.60	0.38	0.2	0.08	0.71			0.054	4.6
# of Records	n/a	Memory Free		n/a	7		4.40	0.34	0.2	0.07	0.69			0.047	4.0
DL Service Performed	n/a	Crest Gauges		n/a	8		4.20	0.34	0.2	0.07	0.71			0.048	4.1
Hydrometric Leveling Survey					9		4.00	0.48	0.2	0.10	0.74			0.071	6.1
Stn	BS	HI	FS	Elevation	Notes	10		3.80	0.63	0.2	0.13	0.76		0.096	8.2
BM 87	0.289	100.289		100.000		11		3.60	0.66	0.2	0.13	0.71		0.094	8.1
BM 88			0.343	99.946		12		3.40	0.68	0.2	0.14	0.7		0.095	8.2
BM 89			0.048	100.241		13		3.20	0.68	0.2	0.14	0.67		0.091	7.8
WL			2.822	97.467		14		3.00	0.66	0.2	0.13	0.66		0.087	7.5
						15		2.80	0.49	0.2	0.10	0.59		0.058	5.0
						16		2.60	0.48	0.2	0.10	0.63		0.060	5.2
						17		2.40	0.67	0.2	0.13	0.49		0.066	5.6
						18		2.20	0.67	0.2	0.13	0.51		0.068	5.9
						19		2.00	0.63	0.2	0.13	0.31		0.039	3.4
TBM			2.147	98.142		20		1.80	0.22	0.2	0.04	0.14		0.006	0.5
TBM	2.194	100.336		98.142		21		1.60	0.10	0.2	0.03	0.01		0.000	0.0
WL			2.871	97.465		22	Right Bank	1.30	0.00	0.3	0.00	0		0.000	0.0
BM 89			0.096	100.240		23									
BM 88			0.390	99.946		24									
BM 87			0.337	99.999		25									
						26									
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31									
BM 87	100	100.000		-0.001		32									
BM 88	100.945	99.946		-0.999		33									
BM 89	102.227	100.241		-1.987		Total Q								1.164	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a			Measurement made in support of fisheries channel surveying. Laptop not available at the time, therefore no real-time PT readings.										
Stage from WL Survey (m)		97.466													
Pressure Transducer Reading (m)		n/a													
Pressure Transducer Elevation (m)		n/a													
Discharge (m³/s)		1.164													
Cross Sectional Area		1.962													
Average Velocity		0.593													

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	10:30	End	11:15	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	15-Aug-15				Real Time Reading	Start	Reading	1.004	Time	10:30	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	10:30	End Time:	12:00	(m)	End	Reading	0.999	Time	13:00	Time of SG Reading	n/a				
Personnel	Greg Langston, Carl Atatahak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast, rain last night.				1	Right Bank	0.80	0.00	0.0	0.00	0			0.000	0.0	
					2		1.10	0.13	0.3	0.05	0.198			0.009	0.6	
					3		1.50	0.08	0.4	0.03	0.477			0.013	0.9	
Transducer Information					4		1.80	0.62	0.3	0.16	0.651			0.101	7.2	
DL Model	PT2X	PT Serial #	2122022		5		2.00	0.67	0.2	0.13	0.604			0.081	5.8	
Gain	1.003996	Offset	-0.003		6		2.20	0.68	0.2	0.14	0.694			0.094	6.7	
Status	Logging	Battery	100%		7		2.40	0.65	0.2	0.13	0.769			0.100	7.1	
# of Records	9347	Memory Free	514807		8		2.60	0.64	0.2	0.13	0.816			0.104	7.4	
DL Service Performed	n/a	Crest Gauges	n/a		9		2.80	0.66	0.2	0.12	0.811			0.094	6.7	
Hydrometric Leveling Survey					10		2.95	0.64	0.2	0.10	0.833			0.080	5.7	
Stn	BS	HI	FS	Elevation	Notes	11		3.10	0.64	0.2	0.10	0.83			0.080	5.7
BM 87	0.242	100.242		100.000		12		3.25	0.56	0.2	0.08	0.885			0.074	5.3
BM 88			0.298	99.944		13		3.40	0.55	0.2	0.08	0.868			0.072	5.1
BM 89			0.023	100.219		14		3.55	0.62	0.2	0.09	0.855			0.080	5.7
WL			2.720	97.522		15		3.70	0.50	0.2	0.08	0.808			0.061	4.3
						16		3.85	0.35	0.2	0.05	0.756			0.040	2.8
						17		4.00	0.31	0.2	0.05	0.815			0.038	2.7
						18		4.15	0.33	0.2	0.05	0.812			0.040	2.9
						19		4.30	0.39	0.1	0.06	0.802			0.047	3.3
TBM			1.733	98.509		20		4.45	0.56	0.2	0.08	0.775			0.065	4.6
TBM	1.756	100.265		98.509		21		4.60	0.50	0.1	0.08	0.727			0.055	3.9
WL			2.741	97.524		22		4.75	0.48	0.2	0.07	0.686			0.049	3.5
BM 89			0.047	100.218		23		4.90	0.53	0.2	0.12	0.164			0.020	1.4
BM 88			0.320	99.945		24		5.20	0.14	0.3	0.04	0.25			0.011	0.7
BM 87			0.265	100.000		25	Left Bank	5.50	0.00	0.3	0.00	0			0.000	0.0
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.945	-1.000		33											
BM 89	102.227	100.219	-2.009		Total Q									1.406	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.523														
Pressure Transducer Reading (m)		1.004														
Pressure Transducer Elevation (m)		96.519														
Discharge (m ³ /s)		1.406														
Cross Sectional Area		1.998														
Average Velocity		0.704														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	11:15	End	12:00	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	15-Aug-15				Real Time Reading	Start	Reading	1.004	Time	10:30	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	10:30	End Time:	12:00	(m)	End	Reading	0.999	Time	13:00	Time of SG Reading	n/a				
Personnel	Greg Langston, Carl Atatahak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast, rain last night.				1	Left Bank	5.50	0.00	0.0	0.00	0			0.000	0.0	
					2		5.20	0.11	0.3	0.03	0.193			0.005	0.4	
					3		5.00	0.51	0.2	0.09	0.69			0.062	4.2	
Transducer Information					4		4.85	0.55	0.2	0.08	0.28			0.023	1.6	
DL Model	PT2X	PT Serial #	2122022		5		4.70	0.49	0.1	0.07	0.734			0.054	3.7	
Gain	1.003996	Offset	-0.003		6		4.55	0.55	0.2	0.08	0.735			0.061	4.1	
Status	Logging	Battery	100%		7		4.40	0.38	0.1	0.06	0.797			0.045	3.1	
# of Records	9347	Memory Free	514807		8		4.25	0.36	0.2	0.05	0.811			0.044	3.0	
DL Service Performed	n/a	Crest Gauges	n/a		9		4.10	0.30	0.2	0.05	0.802			0.036	2.5	
Hydrometric Leveling Survey					10		3.95	0.31	0.1	0.05	0.778			0.036	2.5	
Stn	BS	HI	FS	Elevation	Notes	11		3.80	0.37	0.2	0.06	0.804			0.045	3.0
BM 87	0.242	100.242		100.000		12		3.65	0.61	0.2	0.09	0.684			0.063	4.3
BM 88			0.298	99.944		13		3.50	0.63	0.2	0.09	0.891			0.084	5.8
BM 89			0.023	100.219		14		3.35	0.55	0.2	0.08	0.889			0.073	5.0
WL			2.720	97.522		15		3.20	0.57	0.2	0.10	0.849			0.085	5.8
						16		3.00	0.63	0.2	0.13	0.846			0.107	7.3
						17		2.80	0.66	0.2	0.13	0.819			0.108	7.4
						18		2.60	0.64	0.2	0.13	0.811			0.104	7.1
						19		2.40	0.48	0.2	0.10	0.748			0.072	4.9
TBM			1.733	98.509		20		2.20	0.66	0.2	0.13	0.738			0.097	6.7
TBM	1.756	100.265		98.509		21		2.00	0.67	0.2	0.13	0.663			0.089	6.1
WL			2.741	97.524		22		1.80	0.61	0.2	0.12	0.674			0.082	5.6
BM 89			0.047	100.218		23		1.60	0.60	0.2	0.12	0.58			0.070	4.8
BM 88			0.320	99.945		24		1.40	0.09	0.2	0.02	0.494			0.011	0.8
BM 87			0.265	100.000		25		1.10	0.11	0.3	0.03	0.25			0.008	0.6
						26	Right Bank	0.80	0.00	0.3	0.00	0			0.000	0.0
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.000	0.000		32											
BM 88	100.945	99.945	-1.000		33											
BM 89	102.227	100.219	-2.009		Total Q									1.463	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.523														
Pressure Transducer Reading (m)		1.004														
Pressure Transducer Elevation (m)		96.519														
Discharge (m ³ /s)		1.463														
Cross Sectional Area		2.027														
Average Velocity		0.722														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	8:15	End	9:00	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	16-Aug-15				Real Time Reading	Start	Reading	0.988	Time	10:30	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	8:00	End Time:	10:00	(m)	End	Reading	0.99	Time	13:00	Time of SG Reading	n/a				
Personnel	Greg Langston, Audla Buchan					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast, rain last night.				1	Right Bank	0.90	0.00	0.0	0.00	0			0.000	0.0	
					2		1.20	0.09	0.3	0.03	0.304			0.008	0.6	
					3		1.50	0.09	0.3	0.02	0.607			0.014	1.0	
Transducer Information					4		1.70	0.61	0.2	0.12	0.574			0.070	5.0	
DL Model	PT2X	PT Serial #	2122022		5		1.90	0.62	0.2	0.12	0.641			0.079	5.7	
Gain	1.003996	Offset	-0.003		6		2.10	0.58	0.2	0.12	0.717			0.083	6.0	
Status	Logging	Battery	100%		7		2.30	0.66	0.2	0.13	0.745			0.098	7.1	
# of Records	9481	Memory Free	514673		8		2.50	0.46	0.2	0.09	0.711			0.065	4.7	
DL Service Performed	n/a	Crest Gauges	n/a		9		2.70	0.52	0.2	0.10	0.826			0.086	6.2	
Hydrometric Leveling Survey					10		2.90	0.66	0.2	0.13	0.797			0.105	7.6	
Stn	BS	HI	FS	Elevation	Notes	11		3.10	0.62	0.2	0.12	0.82			0.102	7.3
BM 87	0.237	100.237		100.000		12		3.30	0.66	0.2	0.12	0.82			0.095	6.8
WL			2.730	97.507		13		3.45	0.53	0.2	0.08	0.852			0.068	4.9
						14		3.60	0.60	0.2	0.09	0.842			0.076	5.5
						15		3.75	0.61	0.2	0.09	0.728			0.067	4.8
						16		3.90	0.35	0.2	0.05	0.8			0.042	3.0
						17		4.05	0.30	0.2	0.05	0.784			0.035	2.5
						18		4.20	0.30	0.2	0.05	0.785			0.035	2.5
						19		4.35	0.35	0.1	0.05	0.825			0.043	3.1
TBM			1.728	98.509		20		4.50	0.38	0.2	0.06	0.808			0.046	3.3
TBM	1.749	100.258		98.509		21		4.65	0.54	0.2	0.08	0.73			0.059	4.3
						22		4.80	0.47	0.1	0.07	0.726			0.051	3.7
						23		4.95	0.48	0.2	0.10	0.707			0.068	4.9
WL			2.750	97.508		24		5.20	0.16	0.3	0.04	-0.19			-0.008	-0.6
BM 87			0.257	100.001		25	Left Bank	5.50	0.00	0.3	0.00	0			0.000	0.0
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.001	0.000		32											
BM 88	100.945				33											
BM 89	102.227				Total Q									1.388	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.508														
Pressure Transducer Reading (m)		0.988														
Pressure Transducer Elevation (m)		96.520														
Discharge (m ³ /s)		1.388														
Cross Sectional Area		1.916														
Average Velocity		0.724														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method											
Project Name	Hope Bay				Measurement Time	Start	9:00	End	9:45	Location	Approximately 200 m upstream of PT					
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker					
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080					
Date Monitored	16-Aug-15				Real Time Reading	Start	Reading	0.988	Time	10:30	Staff Gauge (m)	n/a				
Time at Site (24 hr)	Start Time:	8:00	End Time:	10:00	(m)	End	Reading	0.99	Time	13:00	Time of SG Reading	n/a				
Personnel	Greg Langston, Audla Buchan					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q		
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%	
Weather Conditions	Overcast, rain last night.				1	Leftt Bank	5.50	0.00	0.0	0.00	0			0.000	0.0	
					2		5.30	0.11	0.2	0.02	-0.191			-0.004	-0.3	
					3		5.10	0.50	0.2	0.10	0.707			0.071	5.0	
Transducer Information					4		4.90	0.47	0.2	0.09	0.57			0.054	3.8	
DL Model	PT2X	PT Serial #	2122022		5		4.70	0.48	0.2	0.08	0.709			0.060	4.2	
Gain	1.003996	Offset	-0.003		6		4.55	0.52	0.2	0.08	0.761			0.059	4.2	
Status	Logging	Battery	100%		7		4.40	0.35	0.1	0.05	0.81			0.043	3.0	
# of Records	9481	Memory Free	514673		8		4.25	0.30	0.2	0.05	0.791			0.036	2.5	
DL Service Performed	n/a	Crest Gauges	n/a		9		4.10	0.30	0.2	0.05	0.762			0.034	2.4	
Hydrometric Leveling Survey					10		3.95	0.33	0.1	0.05	0.782			0.039	2.7	
Stn	BS	HI	FS	Elevation	Notes	11		3.80	0.60	0.2	0.09	0.745			0.067	4.8
BM 87	0.237	100.237		100.000		12		3.65	0.61	0.2	0.09	0.852			0.078	5.5
WL			2.730	97.507		13		3.50	0.54	0.2	0.08	0.868			0.070	5.0
						14		3.35	0.54	0.2	0.08	0.87			0.070	5.0
						15		3.20	0.63	0.2	0.11	0.86			0.095	6.7
						16		3.00	0.62	0.2	0.12	0.805			0.100	7.1
						17		2.80	0.66	0.2	0.13	0.812			0.107	7.6
						18		2.60	0.63	0.2	0.13	0.757			0.095	6.8
						19		2.40	0.47	0.2	0.09	0.699			0.066	4.7
TBM			1.728	98.509		20		2.20	0.67	0.2	0.13	0.646			0.087	6.1
TBM	1.749	100.258		98.509		21		2.00	0.61	0.2	0.12	0.686			0.084	5.9
						22		1.80	0.61	0.2	0.12	0.63			0.077	5.5
						23		1.60	0.09	0.2	0.02	0.586			0.013	0.9
WL			2.750	97.508		24		1.30	0.10	0.3	0.04	0.317			0.011	0.8
BM 87			0.257	100.001		25	Right Bank	0.90	0.00	0.4	0.00	0			0.000	0.0
						26										
						27										
						28										
						29										
						30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31											
BM 87	100	100.001	0.000		32											
BM 88	100.945				33											
BM 89	102.227				Total Q									1.410	100.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		97.508														
Pressure Transducer Reading (m)		0.988														
Pressure Transducer Elevation (m)		96.520														
Discharge (m ³ /s)		1.410														
Cross Sectional Area		1.935														
Average Velocity		0.729														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	7:15	End	8:00	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker				
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080				
Date Monitored	20-Sep-15				Real Time Reading	Start	Reading	0.796	Time	7:15	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	7:15	End Time:	9:30	(m)	End	Reading	0.796	Time	9:30	Time of SG Reading	n/a			
Personnel	Greg Langston, Kevin Esseltine					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, cool, light wind.				1	Right Bank	1.45	0.00	0.0	0.00	0			0.000	0.0
					2		1.60	0.50	0.2	0.08	0.11			0.008	1.2
					3		1.75	0.52	0.2	0.08	0.46			0.036	5.1
DL Model	PT2X	PT Serial #	2122022		4		1.90	0.54	0.2	0.08	0.5			0.041	5.7
Gain	1.003996	Offset	-0.003		5		2.05	0.58	0.2	0.09	0.49			0.043	6.0
Status	Logging	Battery	100%		6		2.20	0.58	0.2	0.09	0.43			0.037	5.3
# of Records	n/a	Memory Free	n/a		7		2.35	0.56	0.2	0.08	0.33			0.028	3.9
DL Service Performed	n/a	Crest Gauges	n/a		8		2.50	0.60	0.2	0.09	0.55			0.050	7.0
					9		2.65	0.56	0.2	0.08	0.57			0.048	6.8
					10		2.80	0.52	0.2	0.08	0.54			0.042	6.0
					11		2.95	0.53	0.2	0.08	0.52			0.041	5.8
					12		3.10	0.54	0.2	0.08	0.5			0.041	5.7
					13		3.25	0.50	0.2	0.08	0.53			0.040	5.6
					14		3.40	0.52	0.2	0.08	0.53			0.041	5.8
					15		3.55	0.49	0.2	0.07	0.54			0.040	5.6
					16		3.70	0.26	0.2	0.05	0.55			0.025	3.5
					17		3.90	0.19	0.2	0.04	0.48			0.018	2.6
					18		4.10	0.21	0.2	0.04	0.49			0.021	2.9
					19		4.30	0.28	0.2	0.06	0.5			0.028	4.0
					20		4.50	0.44	0.2	0.09	0.46			0.040	5.7
					21		4.70	0.36	0.2	0.07	0.48			0.035	4.9
					22		4.90	0.38	0.2	0.07	0.09			0.006	0.8
					23	Left Bank	5.05	0.00	0.1	0.00	0			0.000	0.0
					24										
					25										
					26										
					27										
					28										
					29										
					30										
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 87	100	100.001	0.001		32										
BM 88	100.945	99.944	-1.001		33										
BM 89	102.227	100.209	-2.018		Total Q									0.707	100.0
						General Notes									
Staff Gauge Reading (m)	n/a														
Stage from WL Survey (m)	97.317														
Pressure Transducer Reading (m)	0.796														
Pressure Transducer Elevation (m)	96.521														
Discharge (m ³ /s)	0.707														
Cross Sectional Area	1.539														
Average Velocity	0.460														

Appendix B-2. 2015 Manual Discharge Measurements at Doris Creek (TL-3)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	8:00	End	8:45	Location	Approximately 200 m upstream of PT				
Station Identification	TL-3				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker				
Stream Name	Doris Creek				Flow Meter Type	Acoustic				Instrument Serial #	P5080				
Date Monitored	20-Sep-15				Real Time Reading	Start	Reading	0.796	Time	7:15	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	7:15	End Time:	9:30	(m)	End	Reading	0.796	Time	9:30	Time of SG Reading	n/a			
Personnel	Greg Langston, Kevin Esseltine					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, cool, light wind.				1	Left Bank	5.05	0.00	0.0	0.00	0			0.000	0.0
					2		4.95	0.36	0.1	0.05	0.02			0.001	0.1
					3		4.80	0.41	0.2	0.07	0.18			0.013	1.9
DL Model	PT2X	PT Serial #	2122022		4		4.60	0.36	0.2	0.07	0.49			0.035	5.1
Gain	1.003996	Offset	-0.003		5		4.40	0.43	0.2	0.09	0.42			0.036	5.3
Status	Logging	Battery	100%		6		4.20	0.24	0.2	0.05	0.51			0.024	3.6
# of Records	n/a	Memory Free	n/a		7		4.00	0.19	0.2	0.04	0.49			0.019	2.7
DL Service Performed	n/a	Crest Gauges	n/a		8		3.80	0.20	0.2	0.04	0.5			0.020	2.9
Hydrometric Leveling Survey					9		3.60	0.49	0.2	0.10	0.5			0.049	7.1
Stn	BS	HI	FS	Elevation	Notes	10		3.40	0.51	0.2	0.09	0.5		0.045	6.5
BM 87	0.301	100.301		100.000		11		3.25	0.51	0.2	0.08	0.52		0.040	5.8
BM 88			0.357	99.944		12		3.10	0.51	0.2	0.08	0.53		0.041	5.9
BM 89			0.092	100.209		13		2.95	0.52	0.2	0.08	0.51		0.040	5.8
WL			2.980	97.321		14		2.80	0.52	0.2	0.08	0.52		0.041	5.9
						15		2.65	0.56	0.2	0.08	0.58		0.049	7.1
						16		2.50	0.60	0.2	0.09	0.5		0.045	6.5
						17		2.35	0.55	0.2	0.08	0.33		0.027	4.0
						18		2.20	0.57	0.2	0.09	0.39		0.033	4.8
						19		2.05	0.58	0.2	0.09	0.5		0.044	6.3
TBM			2.147	98.154		20		1.90	0.54	0.2	0.08	0.47		0.038	5.5
TBM	2.096	100.250		98.154		21		1.75	0.50	0.2	0.08	0.48		0.036	5.2
WL			2.938	97.312		22		1.60	0.50	0.2	0.08	0.18		0.014	2.0
WL			2.933	97.317		23	Right Bank	1.45	0.00	0.2	0.00	0		0.000	0.0
WL			2.932	97.318		24									
BM 89			0.041	100.209		25									
BM 88			0.307	99.943		26									
BM 87			0.249	100.001		27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31									
BM 87	100	100.000	0.000			32									
BM 88	100.945	99.944	-1.001			33									
BM 89	102.227	100.209	-2.018			Total Q								0.688	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		97.317													
Pressure Transducer Reading (m)		0.796													
Pressure Transducer Elevation (m)		96.521													
Discharge (m ³ /s)		0.688													
Cross Sectional Area		1.557													
Average Velocity		0.442													

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method													
Project Name		Hope Bay			Measurement Time		Start	9:15 End		10:15 Location		Approximately 80 m downstream of PT						
Station Identification		Roberts Hydro			Method		Velocity-area (Mid-section)			Instrument Model		Flow mate						
Stream Name		Roberts Lake Outflow			Flow Meter Type		Electromagnetic			Instrument Serial #		2007528						
Date Monitored		11-Jun-15			Real Time Reading		Start	Reading	0.783		Time	9:15		Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	7:00	End Time:	12:00	(m)	End	Reading	0.793		Time	11:15		Time of SG Reading		n/a		
Personnel		G.Langston, C.Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q			
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%		
		435325	7562815	0		1	Right Bank	2.80	0.00	0.0	0.00	0			0.000	0.0		
Weather Conditions		light rain			2			3.00	0.14	0.2	0.04	-0.08			-0.003	-0.2		
Transducer Information					3			3.40	0.24	0.4	0.07	0.03			0.002	0.1		
DL Model		PT2X	PT Serial #		2922010		4		3.60	0.34	0.2	0.06	0.3		0.018	0.9		
Gain		1.006543	Offset		0.218		5		3.75	0.66	0.2	0.10	0.2		0.020	1.0		
Status		Logging	Battery		100%		6		3.90	0.65	0.2	0.11	0.45		0.051	2.6		
# of Records		0	Memory Free		130705		7		4.10	0.72	0.2	0.14	0.54		0.078	3.9		
DL Service Performed		n/a	Crest Gauges		n/a		8		4.30	0.75	0.2	0.15	0.55		0.083	4.2		
Hydrometric Leveling Survey					9			4.50	0.77	0.2	0.15		0.79	0.37	0.089	4.5		
Stn	BS	HI	FS	Elevation	Notes	10		4.70	0.77	0.2	0.15		0.86	0.47	0.102	5.2		
BM 49	1.293	101.293		100.000		11		4.90	0.80	0.2	0.16		0.92	0.57	0.119	6.1		
BM 64			1.447	99.846		12		5.10	0.80	0.2	0.16		0.93	0.59	0.122	6.2		
BM 50			1.198	100.095		13		5.30	0.82	0.2	0.16		0.91	0.76	0.137	7.0		
PT			1.861	99.432		14		5.50	0.86	0.2	0.17		0.84	0.86	0.146	7.4		
WL			2.616	98.677		15		5.70	0.88	0.2	0.18		0.86	0.88	0.153	7.8		
						16		5.90	0.90	0.2	0.18		0.88	0.92	0.162	8.2		
						17		6.10	0.91	0.2	0.18		0.84	0.85	0.154	7.8		
						18		6.30	0.89	0.2	0.18		0.81	0.8	0.143	7.3		
						19		6.50	0.90	0.2	0.18		0.78	0.82	0.144	7.3		
TBM			2.439	98.854		20		6.70	0.88	0.2	0.18		0.67	0.67	0.118	6.0		
TBM	2.474	101.328		98.854		21		6.90	0.82	0.2	0.16		0.57	0.39	0.079	4.0		
BM 49			1.327	100.001		22		7.10	0.49	0.2	0.10	0.33			0.032	1.6		
BM 64			1.481	99.847		23		7.30	0.36	0.2	0.09	0.12			0.011	0.5		
BM 50			1.231	100.097		24		7.60	0.22	0.3	0.07	0.16			0.011	0.5		
PT			1.896	99.432		25		Left Bank	7.90	0.00	0.3	0.00	0		0.000	0.0		
WL			2.650	98.678		26												
						27												
						28												
						29												
						30												
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31												
BM 49	100	100.001		0.001		32												
BM 64	99.813	99.847		0.034		33												
BM 50	100.077	100.096		0.019		Total Q										1.970	100.0	
Summary					General Notes													
Staff Gauge Reading (m)		n/a			First visit of the season. Station installed.													
Stage from WL Survey (m)		99.432																
Pressure Transducer Reading (m)		0.783																
Pressure Transducer Elevation (m)		98.649																
Discharge (m³/s)		1.970																
Cross Sectional Area		3.134																
Average Velocity		0.629																

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	10:15	End	11:15	Location	Approximately 80 m downstream of PT				
Station Identification		Roberts Hydro				Method		Velocity-area (Mid-section)			Instrument Model		Flow mate				
Stream Name		Roberts Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		2007528				
Date Monitored		11-Jun-15				Real Time Reading		Start	Reading	0.783	Time	9:15	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	7:00	End Time:	12:00	(m)	End	Reading	0.793	Time	11:15	Time of SG Reading		n/a			
Personnel		G.Langston, C.Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		light rain				1	Left Bank	7.90	0.00	0.0	0.00	0			0.000	0.0	
						2		7.50	0.26	0.4	0.09	0.17			0.015	0.8	
						3		7.20	0.44	0.3	0.11	0.27			0.030	1.5	
DL Model		PI2X	PT Serial #		2922010	4		7.00	0.81	0.2	0.16		0.5	0.19	0.056	2.8	
Gain		1.006543	Offset		0.218	5		6.80	0.83	0.2	0.17		0.6	0.54	0.095	4.7	
Status		Logging	Battery		100%	6		6.60	0.86	0.2	0.17		0.73	0.79	0.131	6.4	
# of Records		0	Memory Free		130705	7		6.40	0.89	0.2	0.18		0.81	0.8	0.143	7.1	
DL Service Performed		n/a	Crest Gauges		n/a	8		6.20	0.90	0.2	0.18		0.85	0.84	0.152	7.5	
Hydrometric Leveling Survey						9		6.00	0.90	0.2	0.18		0.85	0.89	0.157	7.7	
Stn	BS	HI	FS	Elevation	Notes	10		5.80	0.90	0.2	0.18		0.84	0.86	0.153	7.5	
BM 49	1.293	101.293		100.000		11		5.60	0.88	0.2	0.18		0.82	0.86	0.148	7.3	
BM 64			1.447	99.846		12		5.40	0.84	0.2	0.17		0.84	0.87	0.144	7.1	
BM 50			1.198	100.095		13		5.20	0.82	0.2	0.16		0.93	0.72	0.135	6.7	
WL			1.861	99.432		14		5.00	0.80	0.2	0.16		0.85	0.57	0.114	5.6	
PT			2.616	98.677		15		4.80	0.80	0.2	0.16		0.91	0.58	0.119	5.9	
						16		4.60	0.78	0.2	0.16		0.88	0.45	0.104	5.1	
						17		4.40	0.78	0.2	0.16		0.84	0.44	0.100	4.9	
						18		4.20	0.78	0.2	0.16		0.78	0.31	0.085	4.2	
						19		4.00	0.72	0.2	0.14	0.54			0.078	3.8	
TBM			2.439	98.854		20		3.80	0.66	0.2	0.17	0.42			0.069	3.4	
TBM	2.474	101.328		98.854		21		3.50	0.29	0.3	0.04	0.09			0.004	0.2	
BM 49			1.327	100.001		22		3.50	0.19	0.0	0.07	-0.04			-0.003	-0.1	
BM 64			1.481	99.847		23	Right Bank	2.80	0.00	0.7	0.00	0			0.000	0.0	
BM 50			1.231	100.097		24											
PT			2.650	98.678		25											
WL			1.896	99.432		26											
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 49	100	100.001		0.001		32											
BM 64	99.813	99.847		0.034		33											
BM 50	100.077	100.096		0.019		Total Q										2.028	100.0
Summary						General Notes											
Staff Gauge Reading (m)			N/A														
Stage from WL Survey (m)			99.432														
Pressure Transducer Reading (m)			0.783														
Pressure Transducer Elevation (m)			98.649														
Discharge (m³/s)			2.028														
Cross Sectional Area			3.134														
Average Velocity			0.647														

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	10:00	End	11:00	Location	Approximately 80 m downstream of PT				
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	Flow mate				
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528				
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	0.92	Time	10:00	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	9:10	End Time:	12:00	(m)	End	Reading	0.925	Time	12:00	Time of SG Reading	n/a			
Personnel	G.Langston, C.Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny				1	Right Bank	0.70	0.00	0.0	0.00	0.00			0.000	0.0
					2	flooded grass	1.00	0.09	0.3	0.04	0.01			0.000	0.0
					3	flooded grass	1.50	0.03	0.5	0.02	0.00			0.000	0.0
DL Model	PT2X	PT Serial #	2922010		4	flooded grass	2.00	0.04	0.5	0.02	0.00			0.000	0.0
Gain	1.006543	Offset	0.218		5	flooded grass	2.50	0.16	0.5	0.08	0.08			0.006	0.2
Status	Logging	Battery	100%		6	flooded grass	3.00	0.12	0.5	0.06	0.02			0.001	0.0
# of Records	292	Memory Free	130413		7	flooded grass	3.50	0.12	0.5	0.09	0.03			0.003	0.1
DL Service Performed	n/a	Crest Gauges	n/a		8		4.50	0.21	1.0	0.16	0.07			0.011	0.3
Hydrometric Leveling Survey					9		5.00	0.33	0.5	0.17	0.20			0.033	0.8
Stn	BS	HI	FS	Elevation	Notes	10		5.50	0.44	0.5	0.22	0.24		0.053	1.4
BM 49	1.230	101.230		100.000		11		6.00	0.58	0.5	0.29	0.63		0.183	4.7
BM 64			1.384	99.846		12		6.50	0.85	0.5	0.32		1.00	0.271	6.9
BM 50			1.135	100.095		13		6.75	0.90	0.3	0.23		1.16	0.84	2.25
PT						14		7.00	0.94	0.3	0.24		1.22	0.92	0.251
WL			1.672	99.558		15		7.25	0.98	0.3	0.25		0.88	1.22	0.257
						16		7.50	0.98	0.3	0.25		1.18	0.89	0.254
						17		7.75	0.98	0.3	0.25		1.17	0.93	0.257
						18		8.00	1.06	0.3	0.27		1.09	0.96	0.272
						19		8.25	1.08	0.3	0.27		1.06	0.93	0.269
TBM			1.171	100.059	BM 12	20		8.50	1.12	0.3	0.28		1.05	1.05	0.294
TBM	1.117	101.176		100.059	BM 12	21		8.75	1.18	0.3	0.30		1.08	1.05	0.314
BM 49			1.176	100.000		22		9.00	1.12	0.3	0.28		1.09	0.95	0.286
BM 64			1.329	99.847		23		9.25	1.08	0.3	0.27		1.18	0.70	0.254
BM 50			1.080	100.096		24		9.50	1.04	0.3	0.29	0.54			0.154
PT						25		9.80	0.52	0.3	0.16	1.06			0.165
WL			1.617	99.559		26		10.10	0.38	0.3	0.13	0.65			0.086
						27		10.50	0.22	0.4	0.08	0.10			0.008
						28		10.80	0.10	0.3	0.04	0.07			0.002
						29	Left Bank	11.20	0.00	0.4	0.00	0.00			0.000
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 49	100	100.000	0.000		32										
BM 64	99.813	99.847	0.034		33										
BM 50	100.077	100.096	0.019		Total Q									3.910	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		99.559													
Pressure Transducer Reading (m)		0.920													
Pressure Transducer Elevation (m)		98.638													
Discharge (m ³ /s)		3.910													
Cross Sectional Area		4.994													
Average Velocity		0.783													

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method												
Project Name	Hope Bay				Measurement Time	Start	11:00	End	0:00	Location	Approximately 80 m downstream of PT						
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	Flow mate						
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528						
Date Monitored	13-Jun-15				Real Time Reading	Start	Reading	0.92	Time	11:00	Staff Gauge (m)			n/a			
Time at Site (24 hr)	Start Time:	9:10	End Time:	12:00	(m)	End	Reading	0.925	Time	12:00	Time of SG Reading			n/a			
Personnel	G.Langston, C.Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q			
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%		
	435325	7562815	0		1	Left Bank	11.20	0.00	0.0	0.00	0.00			0.000	0.0		
Weather Conditions	Sunny				2		10.80	0.10	0.4	0.04	0.06			0.003	0.1		
Transducer Information					3		10.30	0.30	0.5	0.15	0.39			0.059	1.4		
DL Model	PT2X	PT Serial #	2922010		4		9.80	0.53	0.5	0.19	1.10			0.204	4.9		
Gain	1.006543	Offset	0.218		5		9.60	0.65	0.2	0.13	1.21			0.157	3.8		
Status	Logging	Battery	100%		6		9.40	1.08	0.2	0.22		1.28	0.57	0.200	4.8		
# of Records	292	Memory Free	130413		7		9.20	1.10	0.2	0.22		1.21	0.76	0.217	5.2		
DL Service Performed	n/a	Crest Gauges	n/a		8		9.00	1.14	0.2	0.23		1.13	1.02	0.245	5.9		
Hydrometric Leveling Survey					9		8.80	1.16	0.2	0.23		1.11	1.11	0.258	6.2		
Stn	BS	HI	FS	Elevation	Notes	10		8.60	1.16	0.2	0.23		1.12	1.13	0.261	6.3	
BM 49	1.230	101.230		100.000		11		8.40	1.12	0.2	0.22		1.12	1.07	0.245	5.9	
BM 64			1.384	99.846		12		8.20	1.07	0.2	0.21		1.12	1.04	0.231	5.5	
BM 50			1.135	100.095		13		8.00	1.07	0.2	0.21		1.18	1.00	0.233	5.6	
PT						14		7.80	1.00	0.2	0.20		1.23	0.95	0.218	5.2	
WL			1.672	99.558		15		7.60	0.98	0.2	0.20		1.26	0.92	0.214	5.1	
						16		7.40	0.98	0.2	0.20		1.34	0.93	0.222	5.3	
						17		7.20	0.96	0.2	0.19		1.33	0.99	0.223	5.3	
						18		7.00	0.94	0.2	0.19		1.26	0.89	0.202	4.8	
						19		6.80	0.90	0.2	0.18		1.29	0.84	0.192	4.6	
TBM			1.171	100.059	BM 12	20		6.60	0.85	0.2	0.21		1.06	0.67	0.184	4.4	
TBM	1.117	101.176		100.059	BM 12	21		6.30	0.82	0.3	0.33		0.74	0.57	0.215	5.2	
BM 49			1.176	100.000		22		5.80	0.48	0.5	0.24	0.05			0.012	0.3	
BM 64			1.329	99.847		23		5.30	0.38	0.5	0.25	0.62			0.153	3.7	
BM 50			1.080	100.096		24	Flooded grass a	4.50	0.22	0.8	0.20	0.04			0.008	0.2	
PT						25	Flooded grass a	3.50	0.12	1.0	0.12	0.04			0.005	0.1	
WL			1.617	99.559		26	Flooded grass a	2.50	0.15	1.0	0.15	0.05			0.008	0.2	
						27	Flooded grass a	1.50	0.03	1.0	0.02	0.00			0.000	0.0	
						28	Flooded grass a	1.00	0.10	0.5	0.04	0.01			0.000	0.0	
						29	Right Bank	0.70	0.00	0.3	0.00	0.00			0.000	0.0	
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31												
BM 49	100	100.000	0.000		32												
BM 64	99.813	99.847	0.034		33												
BM 50	100.077	100.096	0.019		Total Q											4.167	100.0
Summary					General Notes												
Staff Gauge Reading (m)		n/a															
Stage from WL Survey (m)		99.559															
Pressure Transducer Reading (m)		0.920															
Pressure Transducer Elevation (m)		98.638															
Discharge (m ³ /s)		4.167															
Cross Sectional Area		5.001															
Average Velocity		0.833															

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	14:15	End	15:15	Location	Approximately 80 m downstream of PT				
Station Identification		Roberts Hydro				Method		Velocity-area (Mid-section)			Instrument Model		Flow mate				
Stream Name		Roberts Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		2007528				
Date Monitored		14-Jun-15				Real Time Reading		Start	Reading	0.951	Time	14:15	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	14:15	End Time:	16:15	(m)		End	Reading	0.951	Time	15:15	Time of SG Reading		n/a		
Personnel		Greg Langston, Coby Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		435325	7562815	0		1	Right Bank	1.00	0.00	0.0	0.00	0			0.000	0.0	
Weather Conditions		Cool and cloudy				2			1.30	0.15	0.3	0.08	0.07		0.005	0.1	
Transducer Information						3			2.00	0.16	0.7	0.14	0.01		0.001	0.0	
DL Model		PT2X	PT Serial #		2922010	4			3.00	0.22	1.0	0.22	0.02		0.004	0.1	
Gain		1.006543	Offset		0.218	5			4.00	0.20	1.0	0.20	0.03		0.006	0.1	
Status		Logging	Battery		100%	6			5.00	0.27	1.0	0.20	0.24		0.049	1.0	
# of Records		464	Memory Free		130241	7			5.50	0.30	0.5	0.15	0.75		0.113	2.4	
DL Service Performed		n/a	Crest Gauges		n/a	8			6.00	0.37	0.5	0.14	0.85		0.118	2.5	
Hydrometric Leveling Survey						9			6.25	0.46	0.3	0.12	0.73		0.084	1.8	
Stn	BS	HI	FS	Elevation	Notes	10			6.50	0.60	0.3	0.15	0.85		0.128	2.7	
BM 49	2.540	102.540		100.000		11			6.75	0.96	0.3	0.24		0.92	0.5	0.170	3.6
BM 64			2.693	99.847		12			7.00	1.04	0.3	0.26		1.06	0.64	0.221	4.7
BM 50			2.445	100.095		13			7.25	1.02	0.3	0.26	1.05			0.268	5.7
PT				102.540		14			7.50	1.06	0.3	0.27		1.28	0.85	0.282	6.0
WL			2.945	99.595		15			7.75	1.10	0.3	0.28		1.3	0.78	0.286	6.1
						16			8.00	1.10	0.3	0.28		1.27	0.8	0.285	6.1
						17			8.25	1.14	0.3	0.29		1.27	0.78	0.292	6.2
						18			8.50	1.14	0.3	0.29		1.13	0.91	0.291	6.2
						19			8.75	1.16	0.3	0.29		1.1	0.9	0.290	6.2
TBM			2.480	100.060	BM12	20			9.00	1.16	0.3	0.29		1.09	1.02	0.306	6.5
TBM	2.330	102.390		100.060		21			9.25	1.16	0.3	0.29		1.1	1.1	0.319	6.8
BM 49			2.390	100.000		22			9.50	1.18	0.3	0.30		1.13	0.99	0.313	6.7
BM 64			2.544	99.846		23			9.75	1.16	0.3	0.29		1.13	0.88	0.291	6.2
BM 50			2.295	100.095		24			10.00	1.10	0.3	0.30		1.33	0.43	0.266	5.7
PT				102.390		25			10.30	0.70	0.3	0.21	0.85			0.179	3.8
WL			2.796	99.594		26			10.60	0.49	0.3	0.17	0.71			0.122	2.6
						27			11.00	0.23	0.4	0.10	0.04			0.004	0.1
						28			11.50	0.12	0.5	0.05	0.07			0.004	0.1
						29		Left Bank	11.90	0.00	0.4	0.00	0			0.000	0.0
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 49	100	100.000		0.000		32											
BM 64	99.813	99.847		0.034		33											
BM 50	100.077	100.095		0.018		Total Q										4.696	100.0
Summary						General Notes											
Staff Gauge Reading (m)			N/A														
Stage from WL Survey (m)			99.595														
Pressure Transducer Reading (m)			0.951														
Pressure Transducer Elevation (m)			98.644														
Discharge (m³/s)			4.696														
Cross Sectional Area			5.824														
Average Velocity			0.806														

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method												
Project Name	Hope Bay				Measurement Time	Start	15:15	End	16:15	Location	Approximately 80 m downstream of PT						
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	Flow mate						
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	2007528						
Date Monitored	14-Jun-15				Real Time Reading	Start	Reading		Time	15:45	Staff Gauge (m)	n/a					
Time at Site (24 hr)	Start Time:	14:15	End Time:	16:15	(m)	End	Reading	0.951	Time	16:15	Time of SG Reading	n/a					
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q			
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%		
Weather Conditions	Cool and cloudy				1	Right Bank	11.90	0.00	0.0	0.00				0.000	0.0		
					2		11.50	0.12	0.4	0.05	0.02			0.001	0.0		
					3		11.00	0.22	0.5	0.10	0.05			0.005	0.1		
DL Model	PT2X	PT Serial #	2922010		4		10.60	0.49	0.4	0.20	0.67			0.131	2.8		
Gain	1.006543	Offset	0.218		5		10.20	0.74	0.4	0.26	1.09			0.282	6.0		
Status	Logging	Battery	100%		6		9.90	1.16	0.3	0.32		1.25	0.77	0.322	6.8		
# of Records	464	Memory Free	130241		7		9.65	1.18	0.3	0.30		1.13	0.88	0.296	6.3		
DL Service Performed	n/a	Crest Gauges	n/a		8		9.40	1.18	0.3	0.30		1.07	1.05	0.313	6.6		
Hydrometric Leveling Survey					9		9.15	1.16	0.3	0.29		1.09	1.11	0.319	6.8		
Stn	BS	HI	FS	Elevation	Notes	10		8.90	1.16	0.3	0.29		1.12	0.94	0.299	6.3	
BM 49	2.540	102.540		100.000		11		8.65	1.16	0.3	0.29		1.13	0.76	0.274	5.8	
BM 64			2.693	99.847		12		8.40	1.16	0.3	0.29		1.19	0.74	0.280	5.9	
BM 50			2.445	100.095		13		8.15	1.14	0.3	0.29		1.35	0.67	0.288	6.1	
PT				102.540		14		7.90	1.12	0.3	0.28		1.38	0.82	0.308	6.5	
WL			2.945	99.595		15		7.65	1.12	0.3	0.28		1.37	0.8	0.304	6.5	
						16		7.40	1.04	0.3	0.26	1.07			0.278	5.9	
						17		7.15	1.02	0.3	0.26	1.05			0.268	5.7	
						18		6.90	1.00	0.3	0.25		0.99	0.74	0.216	4.6	
						19		6.65	0.97	0.3	0.29	0.28			0.081	1.7	
TBM			2.480	100.060		20		6.30	0.48	0.4	0.16	0.71			0.111	2.4	
TBM	2.330	102.390		100.060		21		6.00	0.35	0.3	0.14	0.97			0.136	2.9	
BM 49			2.390	100.000		22		5.50	0.30	0.5	0.15	0.72			0.108	2.3	
BM 64			2.544	99.846		23		5.00	0.27	0.5	0.20	0.28			0.057	1.2	
BM 50			2.295	100.095		24		4.00	0.20	1.0	0.20	0.08			0.016	0.3	
PT				102.390		25		3.00	0.22	1.0	0.22	0.02			0.004	0.1	
WL			2.796	99.594		26		2.00	0.16	1.0	0.14	0.06			0.008	0.2	
						27		1.30	0.14	0.7	0.07	0.04			0.003	0.1	
						28	Left Bank	1.00	0.00	0.3	0.00	0			0.000	0.0	
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31											
BM 49	100	100.000	0.000			32											
BM 64	99.813	99.847	0.034			33											
BM 50	100.077	100.095	0.018			Total Q										4.709	100.0
Summary					General Notes												
Staff Gauge Reading (m)		n/a															
Stage from WL Survey (m)		99.595															
Pressure Transducer Reading (m)		0.951															
Pressure Transducer Elevation (m)		98.644															
Discharge (m ³ /s)		4.709															
Cross Sectional Area		5.853															
Average Velocity		0.805															

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	6:30	End	7:10	Location	Approximately 80 m downstream of PT				
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	FH950				
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	6593				
Date Monitored	16-Jul-15				Real Time Reading	Start	Reading	0.706	Time	6:45	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	6:10	End Time:	8:00	(m)	End	Reading	0.706	Time	8:00	Time of SG Reading	n/a			
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, light breeze				1	Left Bank	8.40	0.00	0.0	0.00				0.000	0.0
					2		8.20	0.15	0.2	0.03	0			0.000	0.0
					3		8.00	0.20	0.2	0.04	0.08			0.003	0.3
DL Model	PT2X	PT Serial #	2922010		4		7.80	0.50	0.2	0.10	0.55			0.055	4.6
Gain	1.006543	Offset	0.218		5		7.60	0.52	0.2	0.10	0.65			0.068	5.7
Status	Logging	Battery	100%		6		7.40	0.52	0.2	0.10	0.63			0.066	5.5
# of Records	5029	Memory Free	125676		7		7.20	0.50	0.2	0.10	0.65			0.065	5.5
DL Service Performed	n/a	Crest Gauges	n/a		8		7.00	0.54	0.2	0.11	0.63			0.068	5.7
Hydrometric Leveling Survey					9		6.80	0.52	0.2	0.10	0.36			0.037	3.2
Stn	BS	HI	FS	Elevation	Notes	10		6.60	0.49	0.2	0.10	0.78		0.076	6.4
BM 49	2.487	102.487		100.000		11		6.40	0.47	0.2	0.09	0.83		0.078	6.6
BM 64			2.658	99.829		12		6.20	0.44	0.2	0.09	0.86		0.076	6.4
BM 50			2.419	100.068		13		6.00	0.40	0.2	0.09	0.72		0.065	5.5
WL			3.187	99.300	Ripples due to wind	14		5.75	0.42	0.3	0.11	0.68		0.071	6.0
						15		5.50	0.44	0.3	0.11	0.49		0.054	4.5
						16		5.25	0.45	0.3	0.11	0.48		0.054	4.6
						17		5.00	0.42	0.3	0.11	0.52		0.055	4.6
						18		4.75	0.42	0.3	0.11	0.41		0.043	3.6
						19		4.50	0.40	0.3	0.10	0.45		0.045	3.8
TBM			2.428	100.059	BM 12	20		4.25	0.40	0.3	0.10	0.28		0.028	2.4
TBM	2.367	102.426		100.059		21		4.00	0.44	0.3	0.11	0.48		0.053	4.5
WL			3.127	99.299		22		3.75	0.46	0.3	0.12	0.58		0.067	5.6
BM 50			2.358	100.068		23		3.50	0.40	0.3	0.10	0.37		0.037	3.1
BM 64			2.596	99.830		24		3.25	0.24	0.3	0.06	0.25		0.015	1.3
BM 49			2.426	100.000		25		3.00	0.20	0.3	0.06	0.13		0.008	0.7
0						26	Left Bank	2.65	0.00	0.0	0.00	0		0.000	0.0
						27				0.0	0.00			0.000	0.0
0						28				0.0	0.00			0.000	0.0
0						29				0.0	0.00			0.000	0.0
0						30				0.0	0.00			0.000	0.0
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31					0.0	0.00			0.000	0.0
BM 49	100	100.000	0.000		32					0.0	0.00			0.000	0.0
BM 64	99.813	99.830	0.016		33					0.0	0.00			0.000	0.0
BM 50	100.077	100.068	-0.009		Total Q									1.186	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		99.300													
Pressure Transducer Reading (m)		0.706													
Pressure Transducer Elevation (m)		98.593													
Discharge (m ³ /s)		1.186													
Cross Sectional Area		2.243													
Average Velocity		0.529													

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method												
Project Name		Hope Bay				Measurement Time		Start	7:10	End	7:45	Location	Approximately 80 m downstream of PT				
Station Identification		Roberts Hydro				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Roberts Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		16-Jul-15				Real Time Reading		Start	Reading	0.706	Time	6:45	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	6:10	End Time:	8:00	(m)		End	Reading	0.706	Time	8:00	Time of SG Reading		n/a		
Personnel		Greg Langston, Coby Hall						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		435325	7562815	0		1	Right Bank	2.60	0.00	0.0	0.00				0.000	0.0	
Weather Conditions		Sunny, light breeze				2			2.90	0.15	0.3	0.05	0.04			0.002	0.2
Transducer Information						3			3.20	0.20	0.3	0.05	0.23			0.012	1.0
DL Model		PT2X	PT Serial #		2922010	4			3.40	0.50	0.2	0.10	0.27			0.027	2.3
Gain		1.006543	Offset		0.218	5			3.60	0.52	0.2	0.12	0.49			0.057	4.8
Status		Logging	Battery		100%	6			3.85	0.52	0.3	0.13	0.53			0.069	5.8
# of Records		5029	Memory Free		125676	7			4.10	0.50	0.3	0.13	0.43			0.054	4.5
DL Service Performed		n/a	Crest Gauges		n/a	8			4.35	0.54	0.3	0.14	0.22			0.030	2.5
Hydrometric Leveling Survey						9			4.60	0.52	0.3	0.13	0.53			0.069	5.8
Stn	BS	HI	FS	Elevation	Notes	10			4.85	0.49	0.3	0.12	0.48			0.059	4.9
BM 49	2.487	102.487		100.000		11			5.10	0.47	0.3	0.12	0.57			0.067	5.6
BM 64			2.658	99.829		12			5.35	0.44	0.3	0.11	0.55			0.061	5.1
BM 50			2.419	100.068		13			5.60	0.40	0.3	0.10	0.59			0.059	5.0
WL			3.187	99.300	Ripples due to wind	14			5.85	0.42	0.3	0.11	0.75			0.079	6.6
						15			6.10	0.44	0.3	0.10	0.8			0.079	6.6
						16			6.30	0.45	0.2	0.09	0.84			0.076	6.3
						17			6.50	0.42	0.2	0.08	0.81			0.068	5.7
						18			6.70	0.42	0.2	0.08	0.6			0.050	4.2
						19			6.90	0.40	0.2	0.08	0.5			0.040	3.4
TBM			2.428	100.059	BM 12	20			7.10	0.40	0.2	0.08	0.66			0.053	4.4
TBM	2.367	102.426		100.059		21			7.30	0.44	0.2	0.09	0.61			0.054	4.5
WL			3.127	99.299		22			7.50	0.46	0.2	0.09	0.62			0.057	4.8
BM 50			2.358	100.068		23			7.70	0.40	0.2	0.08	0.63			0.050	4.2
BM 64			2.596	99.830		24			7.90	0.24	0.2	0.06	0.35			0.021	1.8
BM 49			2.426	100.000		25			8.20	0.20	0.3	0.05	0			0.000	0.0
0						26		Left Bank	8.40	0.00	0.0	0.00	0			0.000	0.0
0						27					0.0	0.00				0.000	0.0
0						28					0.0	0.00				0.000	0.0
0						29					0.0	0.00				0.000	0.0
0						30					0.0	0.00				0.000	0.0
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31					0.0	0.00				0.000	0.0
BM 49	100	100.000		0.000		32					0.0	0.00				0.000	0.0
BM 64	99.813	99.830		0.016		33					0.0	0.00				0.000	0.0
BM 50	100.077	100.068		-0.009		Total Q										1.191	100.0
Summary						General Notes											
Staff Gauge Reading (m)			n/a														
Stage from WL Survey (m)			99.300														
Pressure Transducer Reading (m)			0.706														
Pressure Transducer Elevation (m)			98.593														
Discharge (m³/s)			1.191														
Cross Sectional Area			2.274														
Average Velocity			0.524														

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	7:45	End	8:45	Location	Approximately 80 m downstream of PT				
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker				
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	P5080				
Date Monitored	17-Aug-15				Real Time Reading	Start	Reading	0.697	Time	7:45	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	7:45	End Time:	9:45	(m)	End	Reading	0.694	Time	9:45	Time of SG Reading	n/a			
Personnel	Greg Langston, Robert Maksagak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Cloudy, cool, light wind.				1	Left Bank	8.50	0.00	0.0	0.00	0			0.000	0.0
					2		8.20	0.20	0.3	0.07	0.122			0.009	0.8
					3		7.80	0.41	0.4	0.14	0.488			0.070	6.6
Transducer Information					4		7.50	0.52	0.3	0.14	0.484			0.069	6.6
DL Model	PT2X	PT Serial #	2922010		5		7.25	0.51	0.3	0.13	0.468			0.060	5.7
Gain	1.006543	Offset	0.218		6		7.00	0.51	0.3	0.13	0.512			0.065	6.2
Status	Logging	Battery	100%		7		6.75	0.52	0.3	0.13	0.56			0.073	6.9
# of Records	9643	Memory Free	121062		8		6.50	0.37	0.3	0.09	0.652			0.060	5.7
DL Service Performed	n/a	Crest Gauges	n/a		9		6.25	0.44	0.3	0.11	0.717			0.079	7.5
Hydrometric Leveling Survey					10		6.00	0.45	0.3	0.11	0.689			0.078	7.4
Stn	BS	HI	FS	Elevation	Notes	11		5.75	0.44	0.3	0.11	0.62		0.068	6.5
BM 49	2.473	102.473		100.000		12		5.50	0.45	0.3	0.11	0.471		0.053	5.0
BM 50			2.418	100.055		13		5.25	0.45	0.3	0.11	0.473		0.053	5.0
BM 64			2.686	99.787		14		5.00	0.45	0.3	0.11	0.338		0.038	3.6
WL			3.229	99.244	Ripples due to wind	15		4.75	0.42	0.3	0.11	0.278		0.029	2.8
						16		4.50	0.44	0.3	0.11	0.43		0.047	4.5
						17		4.25	0.47	0.3	0.12	0.169		0.020	1.9
						18		4.00	0.47	0.3	0.12	0.335		0.039	3.7
						19		3.75	0.47	0.3	0.12	0.384		0.045	4.3
TBM			2.413	100.060	BM 12	20		3.50	0.43	0.3	0.11	0.362		0.039	3.7
TBM	2.297	102.357		100.060		21		3.25	0.23	0.3	0.06	0.298		0.017	1.6
WL			3.112	99.245		22		3.00	0.25	0.3	0.07	0.318		0.022	2.1
BM 64			2.568	99.789		23		2.70	0.17	0.3	0.07	0.306		0.021	2.0
BM 50			2.301	100.056		24	Right Bank	2.20	0.00	0.5	0.00	0		0.000	0.0
BM 49			2.357	100.000		25									
						26									
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 49	100	100.000	0.000		32										
BM 50	100.077	100.056	-0.022		33										
BM 64	99.813	99.788	-0.025		Total Q									1.054	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		99.245													
Pressure Transducer Reading (m)		0.697													
Pressure Transducer Elevation (m)		98.548													
Discharge (m ³ /s)		1.054													
Cross Sectional Area		2.373													
Average Velocity		0.444													

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start	8:45	End	9:45	Location	Approximately 80 m downstream of PT				
Station Identification	Roberts Hydro				Method	Velocity-area (Mid-section)				Instrument Model	Flowtracker				
Stream Name	Roberts Lake Outflow				Flow Meter Type	Electromagnetic				Instrument Serial #	P5080				
Date Monitored	17-Aug-15				Real Time Reading	Start	Reading	0.697	Time	7:45	Staff Gauge (m)	n/a			
Time at Site (24 hr)	Start Time:	7:45	End Time:	9:45	(m)	End	Reading	0.694	Time	9:45	Time of SG Reading	n/a			
Personnel	Greg Langston, Robert Maksagak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	435325	7562815	0		1	Left Bank	2.20	0.00	0.0	0.00	0			0.000	0.0
Weather Conditions	Cloudy, cool, light wind.				2		2.80	0.19	0.6	0.10	0.308			0.032	3.2
Transducer Information					3		3.30	0.27	0.5	0.09	0.331			0.031	3.1
DL Model	PT2X	PT Serial #	2922010		4		3.50	0.44	0.2	0.08	0.357			0.027	2.7
Gain	1.006543	Offset	0.218		5		3.65	0.47	0.2	0.09	0.389			0.037	3.6
Status	Logging	Battery	100%		6		3.90	0.46	0.3	0.12	0.327			0.038	3.7
# of Records	9643	Memory Free	121062		7		4.15	0.45	0.3	0.11	0.162			0.018	1.8
DL Service Performed	n/a	Crest Gauges	n/a		8		4.40	0.45	0.3	0.11	0.394			0.044	4.3
Hydrometric Leveling Survey					9		4.65	0.43	0.3	0.11	0.185			0.020	1.9
Stn	BS	HI	FS	Elevation	Notes	10		4.90	0.45	0.3	0.11	0.291		0.033	3.2
BM 49	2.473	102.473		100.000		11		5.15	0.46	0.3	0.12	0.426		0.049	4.8
BM 50			2.418	100.055		12		5.40	0.46	0.3	0.12	0.404		0.046	4.5
BM 64			2.686	99.787		13		5.65	0.45	0.3	0.11	0.543		0.061	6.0
WL			3.229	99.244	Ripples due to wind	14		5.90	0.43	0.3	0.11	0.659		0.071	6.9
						15		6.15	0.45	0.3	0.11	0.713		0.080	7.9
						16		6.40	0.48	0.3	0.12	0.702		0.084	8.2
						17		6.65	0.50	0.3	0.13	0.559		0.070	6.8
						18		6.90	0.52	0.3	0.13	0.566		0.074	7.2
						19		7.15	0.51	0.3	0.13	0.473		0.060	5.9
TBM			2.413	100.060	BM 12	20		7.40	0.51	0.3	0.13	0.491		0.063	6.1
TBM	2.297	102.357		100.060		21		7.65	0.52	0.3	0.13	0.367		0.048	4.7
WL			3.112	99.245		22		7.90	0.24	0.3	0.06	0.437		0.026	2.6
BM 64			2.568	99.789		23		8.15	0.20	0.2	0.06	0.154		0.009	0.9
BM 50			2.301	100.056		24	Right Bank	8.50	0.00	0.3	0.00	0		0.000	0.0
BM 49			2.357	100.000		25									
						26									
						27									
						28									
						29									
						30									
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31										
BM 49	100	100.000	0.000		32										
BM 50	100.077	100.056	-0.022		33										
BM 64	99.813	99.788	-0.025		Total Q									1.022	100.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		99.245													
Pressure Transducer Reading (m)		0.697													
Pressure Transducer Elevation (m)		98.548													
Discharge (m ³ /s)		1.022													
Cross Sectional Area		2.373													
Average Velocity		0.431													

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	9:45	End	10:30	Location		Approximately 80 m downstream of PT			
Station Identification		Roberts Hydro				Method		Velocity-area (Mid-section)				Instrument Model		FH950			
Stream Name		Roberts Lake Outflow				Flow Meter Type		Electromagnetic				Instrument Serial #		6593			
Date Monitored		17-Sep-15				Real Time Reading		Start	Reading	0.582	Time	9:45	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	9:00	End Time:	12:00	(m)		End	Reading	0.582	Time	12:00	Time of SG Reading		n/a		
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
		435325	7562815	0		1	Left Bank	8.00	0.00	0.0	0.00	0			0.000	0.0	
Weather Conditions		Cloudy, cool, light wind.				2			7.75	0.30	0.3	0.08	0.32		0.024	6.6	
						3			7.50	0.34	0.3	0.09	0.37		0.031	8.6	
DL Model		PI2X	PT Serial #		2922010	4			7.25	0.34	0.3	0.09	0.43		0.037	10.0	
Gain		1.006543	Offset		0.218	5			7.00	0.34	0.3	0.09	0.44		0.037	10.2	
Status		Logging	Battery		100%	6			6.75	0.34	0.3	0.09	0.2		0.017	4.7	
# of Records		n/a	Memory Free		n/a	7			6.50	0.32	0.3	0.08	0.29		0.023	6.4	
DL Service Performed		n/a	Crest Gauges		n/a	8			6.25	0.31	0.3	0.08	0.41		0.032	8.7	
Hydrometric Leveling Survey						9			6.00	0.28	0.3	0.07	0.32		0.022	6.1	
Stn	BS	HI	FS	Elevation	Notes	10			5.75	0.28	0.3	0.07	0.32		0.022	6.1	
BM 49	2.472	102.472		100.000		11			5.50	0.28	0.3	0.07	0.36		0.025	6.9	
BM 50			2.420	100.052		12			5.25	0.29	0.3	0.07	0.2		0.015	4.0	
BM 64			2.694	99.778		13			5.00	0.28	0.3	0.07	0.14		0.010	2.7	
WL			3.229	99.243	Ripples due to wind	14			4.75	0.27	0.3	0.07	0.11		0.007	2.0	
						15			4.50	0.26	0.3	0.07	0.15		0.010	2.7	
						16			4.25	0.28	0.3	0.07	0.19		0.013	3.6	
						17			4.00	0.28	0.3	0.07	0.22		0.015	4.2	
						18			3.75	0.29	0.3	0.07	0.2		0.015	4.0	
						19			3.50	0.28	0.3	0.07	0.13		0.009	2.5	
TBM			2.411	100.061	BM 12	20			3.25	0.16	0.3	0.04	0		0.000	0.0	
TBM	2.277	102.338		100.061		21			3.00	0.16	0.3	0.04	0		0.000	0.0	
WL			3.226	99.112		22		Right Bank	2.80	0.00	0.2	0.00	0		0.000	0.0	
BM 64			2.559	99.779		23											
BM 50			2.285	100.053		24											
BM 49			2.337	100.001		25											
						26											
						27											
						28											
						29											
						30											
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31											
BM 49	100	100.001		0.000		32											
BM 50	100.077	100.053		-0.025		33											
BM 64	99.813	99.779		-0.035		Total Q										0.365	100.0
Summary						General Notes											
Staff Gauge Reading (m)		n/a															
Stage from WL Survey (m)		99.178															
Pressure Transducer Reading (m)		0.582															
Pressure Transducer Elevation (m)		98.596															
Discharge (m³/s)		0.365															
Cross Sectional Area		1.416															
Average Velocity		0.258															

Appendix B-3. 2015 Manual Discharge Measurements at Roberts Lake Outflow (Roberts Hydro)

Site Information						Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay				Measurement Time		Start	10:30	End	11:15	Location		Approximately 80 m downstream of PT			
Station Identification		Roberts Hydro				Method		Velocity-area (Mid-section)			Instrument Model		FH950				
Stream Name		Roberts Lake Outflow				Flow Meter Type		Electromagnetic			Instrument Serial #		6593				
Date Monitored		17-Sep-15				Real Time Reading		Start	Reading	0.582	Time	9:45	Staff Gauge (m)		n/a		
Time at Site (24 hr)		Start Time:	9:00	End Time:	12:00	(m)	End	Reading	0.582	Time	12:00	Time of SG Reading		n/a			
Personnel		Greg Langston, Kevin Esseltine						Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates		Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m²)	60%	20%	80%	(m³/s)	%	
Weather Conditions		Cloudy, cool, light wind.				1	Right Bank	3.00	0.16	0.0	0.01	0			0.000	0.0	
						2		3.15	0.16	0.2	0.03	0			0.000	0.0	
						3		3.40	0.16	0.3	0.04	0			0.000	0.0	
DL Model		PI2X	PT Serial #		2922010	4		3.65	0.28	0.3	0.07	0.21			0.015	3.8	
Gain		1.006543	Offset		0.218	5		3.90	0.28	0.3	0.07	0.23			0.016	4.2	
Status		Logging	Battery		100%	6		4.15	0.28	0.3	0.07	0.17			0.012	3.1	
# of Records		n/a	Memory Free		n/a	7		4.40	0.27	0.3	0.07	0.27			0.018	4.7	
DL Service Performed		n/a	Crest Gauges		n/a	8		4.65	0.28	0.3	0.07	0.07			0.005	1.3	
Hydrometric Leveling Survey						9		4.90	0.26	0.3	0.07	0.17			0.011	2.9	
Stn	BS	HI	FS	Elevation	Notes	10		5.15	0.28	0.3	0.07	0.21			0.015	3.8	
BM 49	2.472	102.472		100.000		11		5.40	0.29	0.3	0.07	0.3			0.022	5.6	
BM 50			2.420	100.052		12		5.65	0.28	0.3	0.07	0.35			0.025	6.4	
BM 64			2.694	99.778		13		5.90	0.28	0.3	0.07	0.34			0.024	6.2	
WL			3.229	99.243	Ripples due to wind	14		6.15	0.30	0.3	0.08	0.36			0.027	7.0	
						15		6.40	0.30	0.3	0.08	0.47			0.035	9.1	
						16		6.65	0.33	0.3	0.08	0.2			0.017	4.3	
						17		6.90	0.34	0.3	0.09	0.43			0.037	9.5	
						18		7.15	0.34	0.3	0.09	0.46			0.039	10.1	
						19		7.40	0.34	0.3	0.09	0.42			0.036	9.3	
TBM			2.411	100.061	BM 12	20		7.65	0.34	0.3	0.09	0.36			0.031	7.9	
TBM	2.277	102.338		100.061		21		7.90	0.20	0.3	0.04	0.09			0.003	0.8	
WL			3.226	99.112		22	Left Bank	8.00	0.00	0.1	0.00	0			0.000	0.0	
BM 64			2.559	99.779		23				8.0	0.00				0.000	0.0	
BM 50			2.285	100.053		24				0.0	0.00				0.000	0.0	
BM 49			2.337	100.001		25				0.0	0.00				0.000	0.0	
0						26				0.0	0.00				0.000	0.0	
						27				0.0	0.00				0.000	0.0	
0						28				0.0	0.00				0.000	0.0	
0						29				0.0	0.00				0.000	0.0	
0						30				0.0	0.00				0.000	0.0	
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes	31				0.0	0.00				0.000	0.0	
BM 49	100	100.001		0.000		32				0.0	0.00				0.000	0.0	
BM 50	100.077	100.053		-0.025		33				0.0	0.00				0.000	0.0	
BM 64	99.813	99.779		-0.035		Total Q										0.385	100.0
Summary						General Notes											
Staff Gauge Reading (m)		n/a															
Stage from WL Survey (m)		99.178															
Pressure Transducer Reading (m)		0.582															
Pressure Transducer Elevation (m)		98.596															
Discharge (m³/s)		0.385															
Cross Sectional Area		1.387															
Average Velocity		0.278															

Appendix B-4. 2015 Manual Stage Measurements at Doris Lake Station

Site Information					Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay			Measurement Time		Start		End		Location					
Station Identification		Doris Lake			Method		Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type		Electromagnetic				Instrument Serial #					
Date Monitored		15-Jul-15			Real Time Reading		Start		Reading		Time		Staff Gauge (m)			
Time at Site (24 hr)		Start Time:		8:30	End Time:		12:30		End		Reading		Time of SG Reading			
Personnel		Greg Langston, Abraham Hiquiniq					Station		Depth		Distance		Area			
													Velocity (m/s)			
Station Coordinates		Easting		Northing	Elevation				No.		Notes		(m)			
		433512		7558452	19				1				(m)			
Weather Conditions		Sunny, moderate wind.							2				0.0			
									3				0.0			
Transducer Information									4				0.0			
DL Model		Levellogger		PT Serial #		2047247		5						0.0		
Gain		n/a		Offset		n/a		6						0.0		
Status		Logging		Battery		100%		7						0.0		
# of Records		0		Memory Free		39,999		8						0.0		
DL Service Performed				Crest Gauges		N/A		9						0.0		
Hydrometric Leveling Survey									10						0.0	
Stn	BS	HI	FS	Elevation	Notes		11								0.0	
BM 70	0.422	100.422		100.000			12								0.0	
BM 71			1.178	99.244			13								0.0	
BM 72			1.872	98.550			14								0.0	
WL			2.232	98.190			15								0.0	
							16								0.0	
							17								0.0	
							18								0.0	
							19								0.0	
TBM			1.574	98.848			20								0.0	
TBM	1.672	100.520		98.848			21								0.0	
WL			2.329	98.191			22								0.0	
BM 72			1.970	98.550			23								0.0	
BM 71			1.276	99.244			24								0.0	
BM 70			0.520	100.000			25								0.0	
							26								0.0	
							27								0.0	
							28								0.0	
							29								0.0	
							30								0.0	
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes		31								0.0	
BM 70	100	100.000		0.000			32								0.0	
BM 71	99.243	99.244		0.001			33								0.0	
BM 72	98.55	98.550		0.000			Total Q								0.000	
Summary															0.0	
Staff Gauge Reading (m)		n/a					General Notes									
Stage from WL Survey (m)		98.191					Installed new sensor.									
Pressure Transducer Reading (m)		1.120														
Pressure Transducer Elevation (m)		97.071														
Discharge (m ³ /s)		0.000														
Cross Sectional Area		0.000														
Average Velocity		#DIV/0!														

Appendix B-4. 2015 Manual Stage Measurements at Doris Lake Station

Site Information					Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay			Measurement Time		Start		End		Location					
Station Identification		Doris Lake			Method		Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type		Electromagnetic				Instrument Serial #					
Date Monitored		14-Aug-15			Real Time Reading		Start		Reading		Time		Staff Gauge (m)			
Time at Site (24 hr)		Start Time:		7:30	End Time:		8:30		End		Reading		Time of SG Reading			
Personnel		Greg Langston, Mark Ullikataq					Station		Depth		Distance		Area			
													Velocity (m/s)			
Station Coordinates		Easting		Northing	Elevation				No.		Notes		(m)			
		433512		7558452	0				1				(m)			
Weather Conditions		Sunny, warm, light west wind.							2				0.0			
									3				0.0			
Transducer Information									4				0.0			
DL Model		Levellogger		PT Serial #		2047247		5				0.0		0.00		
Gain		n/a		Offset		n/a		6				0.0		0.00		
Status		Logging		Battery		100%		7				0.0		0.00		
# of Records		4,324		Memory Free		35,675		8				0.0		0.00		
DL Service Performed				Crest Gauges		N/A		9				0.0		0.00		
Hydrometric Leveling Survey									10				0.0		0.00	
Stn	BS	HI	FS	Elevation	Notes		11						0.0		0.00	
BM 70	0.465	100.465		100.000			12						0.0		0.00	
BM 71			1.222	99.243			13						0.0		0.00	
BM 72			1.915	98.550			14						0.0		0.00	
WL			2.251	98.214			15						0.0		0.00	
							16						0.0		0.00	
							17						0.0		0.00	
							18						0.0		0.00	
							19						0.0		0.00	
TBM			2.014	98.451			20						0.0		0.00	
TBM	1.902	100.353		98.451			21						0.0		0.00	
WL			2.142	98.211	5 cm waves on lake		22						0.0		0.00	
BM 3			1.803	98.550			23						0.0		0.00	
BM 2			1.109	99.244			24						0.0		0.00	
BM 1			0.353	100.000			25						0.0		0.00	
							26						0.0		0.00	
							27						0.0		0.00	
							28						0.0		0.00	
							29						0.0		0.00	
							30						0.0		0.00	
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes		31						0.0		0.00	
BM 70	100	100.000		0.000			32						0.0		0.00	
BM 71	99.243	99.244		0.001			33						0.0		0.00	
BM 72	98.55	98.550		0.000			Total Q						0.000		0.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a														
Stage from WL Survey (m)		98.213														
Pressure Transducer Reading (m)		1.220														
Pressure Transducer Elevation (m)		96.993														
Discharge (m ³ /s)		0.000														
Cross Sectional Area		0.000														
Average Velocity		#DIV/0!														

Appendix B-4. 2015 Manual Stage Measurements at Doris Lake Station

Site Information					Discharge Measurement - Mid-Section Method											
Project Name		Hope Bay			Measurement Time		Start		End		Location					
Station Identification		Doris Lake			Method		Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type		Electromagnetic				Instrument Serial #					
Date Monitored		18-Sep-15			Real Time Reading		Start		Reading		Time		Staff Gauge (m)			
Time at Site (24 hr)		Start Time:		7:00	End Time:		11:00		End		Reading		Time of SG Reading			
Personnel		Greg Langston, Kevin Esseltine					Station		Depth		Distance		Area			
													Velocity (m/s)			
Station Coordinates		Easting		Northing	Elevation				No.		Notes		(m)			
		433512		7558452	0				1				(m)			
Weather Conditions		Sunny, ~10 °C, moderate southwest wind.							2				0.0			
									3				0.0			
Transducer Information									4				0.0			
DL Model		Levellogger		PT Serial #		2047247		5				0.0		0.00		
Gain		n/a		Offset		n/a		6				0.0		0.00		
Status		Logging		Battery		100%		7				0.0		0.00		
# of Records		9,375		Memory Free		30,624		8				0.0		0.00		
DL Service Performed				Crest Gauges		N/A		9				0.0		0.00		
Hydrometric Leveling Survey									10				0.0		0.00	
Stn	BS	HI	FS	Elevation	Notes		11						0.0		0.00	
BM 70	0.128	100.128		100.000			12						0.0		0.00	
BM 71			0.885	99.243			13						0.0		0.00	
BM 72			1.578	98.550			14						0.0		0.00	
WL			2.119	98.009			15						0.0		0.00	
							16						0.0		0.00	
							17						0.0		0.00	
							18						0.0		0.00	
							19						0.0		0.00	
TBM			0.841	99.287			20						0.0		0.00	
TBM	0.769	100.056		99.287			21						0.0		0.00	
WL			2.048	98.008			22						0.0		0.00	
BM 72			1.507	98.549			23						0.0		0.00	
BM 71			0.812	99.244			24						0.0		0.00	
BM 70			0.056	100.000			25						0.0		0.00	
							26						0.0		0.00	
							27						0.0		0.00	
							28						0.0		0.00	
							29						0.0		0.00	
							30						0.0		0.00	
BM#	Established Elevation (m)	Mean Elevation (this date) (m)		Difference (m)	Notes		31						0.0		0.00	
BM 70	100	100.000		0.000			32						0.0		0.00	
BM 71	99.243	99.244		0.001			33						0.0		0.00	
BM 72	98.55	98.550		-0.001			Total Q						0.000		0.0	
Summary					General Notes											
Staff Gauge Reading (m)		n/a			Relocated sensor to deeper water.											
Stage from WL Survey (m)		98.009														
Pressure Transducer Reading (m)		1.018														
Pressure Transducer Elevation (m)		96.991														
Discharge (m ³ /s)		0.000														
Cross Sectional Area		0.000														
Average Velocity		#DIV/0!														

Appendix B-5. 2015 Manual Stage Measurements at Tailings Impoundment Area

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Tailings Impoundment Area				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	15-Jul-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	12:30	End Time:	16:30	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Jeffrey Anderson					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Partly cloudy, warm, moderate wind.				1				0.0	0.00				0.000	-
Transducer Information					2				0.0	0.00				0.000	-
DL Model	Levellogger	PT Serial #	2047251		3				0.0	0.00				0.000	-
Gain	n/a	Offset	n/a		4				0.0	0.00				0.000	-
Status	Logging	Battery	100%		5				0.0	0.00				0.000	-
# of Records	0	Memory Free	39,999		6				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		7				0.0	0.00				0.000	-
Hydrometric Leveling Survey					8				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	9				0.0	0.00			0.000	-
BM 80	0.224	100.224		100.000		10				0.0	0.00			0.000	-
BM 82			2.048	98.176		11				0.0	0.00			0.000	-
BM 81	0.596	98.076	2.744	97.480		12				0.0	0.00			0.000	-
WL			4.004	94.072		13				0.0	0.00			0.000	-
						14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			1.438	96.638		20				0.0	0.00			0.000	-
TBM	1.264	97.902		96.638		21				0.0	0.00			0.000	-
WL			3.830	94.072		22				0.0	0.00			0.000	-
BM 81	2.836	100.317	0.421	97.481		23				0.0	0.00			0.000	-
BM 82			2.142	98.175		24				0.0	0.00			0.000	-
BM 80			0.317	100.000		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31				0.0	0.00			0.000	-
BM 80	100	100.000	0.000			32				0.0	0.00			0.000	-
BM 82	97.173	98.176	1.003			33				0.0	0.00			0.000	-
BM 81	98.48	97.481	-0.999			Total Q							0.000	0.0	
Summary					General Notes										
Staff Gauge Reading (m)		n/a			Installed new sensor.										
Stage from WL Survey (m)		94.072													
Pressure Transducer Reading (m)		1.246													
Pressure Transducer Elevation (m)		92.826													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-5. 2015 Manual Stage Measurements at Tailings Impoundment Area

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Tailings Impoundment Area				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	14-Aug-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	7:50	End Time:	9:00	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Mark Ullikataq					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	434823	7558560	35		1				0.0	0.00				0.000	-
Weather Conditions	Cloudy, warm, calm wind.				2				0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	Levellogger	PT Serial #	2047251		4				0.0	0.00				0.000	-
Gain	n/a	Offset	n/a		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	4,288	Memory Free	35,711		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 80	0.240	100.240		100.000		11				0.0	0.00			0.000	-
BM 82			2.065	98.175		12				0.0	0.00			0.000	-
BM 81	0.714	98.193	2.761	97.479		13				0.0	0.00			0.000	-
WL			4.104	94.089		14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			3.621	94.572		20				0.0	0.00			0.000	-
TBM	3.716	98.288		94.572		21				0.0	0.00			0.000	-
WL			4.200	94.088		22				0.0	0.00			0.000	-
BM 81	2.747	100.224	0.811	97.477		23				0.0	0.00			0.000	-
BM 82			2.050	98.174		24				0.0	0.00			0.000	-
BM 80			0.225	99.999		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 80	100	100.000	0.000		32				0.0	0.00				0.000	-
BM 82	97.173	98.175	1.001		33				0.0	0.00				0.000	-
BM 81	98.48	97.478	-1.002		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		94.089													
Pressure Transducer Reading (m)		1.456													
Pressure Transducer Elevation (m)		92.633													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-5. 2015 Manual Stage Measurements at Tailings Impoundment Area

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Tailings Impoundment Area				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	19-Sep-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	13:00	End Time:	16:30	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Kevin Esseltine					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Partly cloudy, light wind.				1				0.0	0.00				0.000	-
Transducer Information					2				0.0	0.00				0.000	-
					3				0.0	0.00				0.000	-
DL Model	Levellogger	PT Serial #	2047251		4				0.0	0.00				0.000	-
Gain	n/a	Offset	n/a		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	0	Memory Free	39,999		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 80	0.263	100.263		100.000		11				0.0	0.00			0.000	-
BM 82			2.088	98.175		12				0.0	0.00			0.000	-
BM 81	0.846	98.325	2.784	97.479		13				0.0	0.00			0.000	-
WL			4.485	93.840		14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			3.749	94.576		20				0.0	0.00			0.000	-
TBM	3.878	98.454		94.576		21				0.0	0.00			0.000	-
WL			4.614	93.840		22				0.0	0.00			0.000	-
BM 81	2.808	100.290	0.972	97.482		23				0.0	0.00			0.000	-
BM 82			2.113	98.177		24				0.0	0.00			0.000	-
BM 80			0.288	100.002		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 80	100	100.000	0.000		32				0.0	0.00				0.000	-
BM 82	97.173	98.176	1.003		33				0.0	0.00				0.000	-
BM 81	98.48	97.481	-0.999		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a			Relocated sensor to deeper water.										
Stage from WL Survey (m)		93.840													
Pressure Transducer Reading (m)		1.212													
Pressure Transducer Elevation (m)		92.628													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	12-Jun-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	6:30	End Time:	8:30	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	432636	7550372	22		1				0.0	0.00				0.000	-
Weather Conditions	Partly cloudy, light west wind.				2				0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	0	Memory Free	524,139		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 1	0.748	100.748		100.000		11				0.0	0.00			0.000	-
BM 2			0.667	100.081		12				0.0	0.00			0.000	-
BM 3			1.676	99.072		13				0.0	0.00			0.000	-
PT			4.828	95.920		14				0.0	0.00			0.000	-
WL			4.135	96.613		15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			4.595	96.153		20				0.0	0.00			0.000	-
TBM	4.538	100.691		96.153		21				0.0	0.00			0.000	-
WL			4.080	96.611		22				0.0	0.00			0.000	-
PT			4.769	95.922		23				0.0	0.00			0.000	-
BM 3			1.619	99.072		24				0.0	0.00			0.000	-
BM 2			0.609	100.082		25				0.0	0.00			0.000	-
BM 1			0.691	100.000		26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 1		100.000	100.000		32				0.0	0.00				0.000	-
BM 2		100.082	100.082		33				0.0	0.00				0.000	-
BM 3		99.072	99.072		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)	n/a				Station installed for season. Relocated station from the Windy Lake outflow to near Windy Camp.										
Stage from WL Survey (m)	96.612														
Pressure Transducer Reading (m)	0.709														
Pressure Transducer Elevation (m)	95.903														
Discharge (m ³ /s)	0.000														
Cross Sectional Area	0.000														
Average Velocity	#DIV/0!														

Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	15-Jun-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	12:30	End Time:	13:30	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Coby Hall					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	432636	7550372	22		1				0.0	0.00				0.000	-
Weather Conditions	Partly cloudy								0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	463	Memory Free	523,676		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 1	0.680	100.680		100.000		11				0.0	0.00			0.000	-
BM 2			0.600	100.080		12				0.0	0.00			0.000	-
BM 3			1.612	99.068		13				0.0	0.00			0.000	-
PT			4.760	95.920		14				0.0	0.00			0.000	-
WL			4.057	96.623		15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			4.557	96.123		20				0.0	0.00			0.000	-
TBM	4.682	100.805		96.123		21				0.0	0.00			0.000	-
WL			4.183	96.622		22				0.0	0.00			0.000	-
PT			4.878	95.927		23				0.0	0.00			0.000	-
BM 3			1.737	99.068		24				0.0	0.00			0.000	-
BM 2			0.724	100.081		25				0.0	0.00			0.000	-
BM 1			0.805	100.000		26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 1	100.000	100.000	0.000		32				0.0	0.00				0.000	-
BM 2	100.082	100.081	-0.001		33				0.0	0.00				0.000	-
BM 3	99.072	99.068	-0.004		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		96.623													
Pressure Transducer Reading (m)		0.709													
Pressure Transducer Elevation (m)		95.914													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	14-Jul-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	14:00	End Time:	15:00	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Robert Maksagak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	432636	7550372	22		1				0.0	0.00				0.000	-
Weather Conditions	Sunny, calm				2				0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	4,647	Memory Free	519,492		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 1	0.867	100.867		100.000		11				0.0	0.00			0.000	-
BM 2			0.819	100.048		12				0.0	0.00			0.000	-
BM 3			1.809	99.058		13				0.0	0.00			0.000	-
WL			4.259	96.608		14				0.0	0.00			0.000	-
PT			4.957	95.910		15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			4.159	96.708		20				0.0	0.00			0.000	-
TBM	4.124	100.832		96.708		21				0.0	0.00			0.000	-
PT			4.923	95.909		22				0.0	0.00			0.000	-
WL			4.225	96.607		23				0.0	0.00			0.000	-
BM 3			1.776	99.056		24				0.0	0.00			0.000	-
BM 2			0.784	100.048		25				0.0	0.00			0.000	-
BM 1			0.833	99.999		26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 1	100.000	100.000	-0.001		32				0.0	0.00				0.000	-
BM 2	100.082	100.048	-0.034		33				0.0	0.00				0.000	-
BM 3	99.072	99.057	-0.015		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		96.608													
Pressure Transducer Reading (m)		0.726													
Pressure Transducer Elevation (m)		95.882													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	15-Aug-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	7:30	End Time:	8:30	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Carl Atatahak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	432636	7550372	22		1				0.0	0.00				0.000	-
Weather Conditions	Sunny, warm, light west wind.				2				0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	9,212	Memory Free	514,927		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 1	0.647	100.647		100.000		11				0.0	0.00			0.000	-
BM 2			0.609	100.038		12				0.0	0.00			0.000	-
BM 3			1.602	99.045		13				0.0	0.00			0.000	-
WL			4.011	96.636		14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			3.838	96.809		20				0.0	0.00			0.000	-
TBM	3.724	100.533		96.809		21				0.0	0.00			0.000	-
WL			3.899	96.634	5 cm waves on lake	22				0.0	0.00			0.000	-
BM 3			1.488	99.045		23				0.0	0.00			0.000	-
BM 2			0.498	100.035		24				0.0	0.00			0.000	-
BM 1			0.535	99.998		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 1	100.000	100.000	0.000		32				0.0	0.00				0.000	-
BM 2	100.082	100.037	-0.045		33				0.0	0.00				0.000	-
BM 3	99.072	99.045	-0.027		Total Q									0.000	0.0
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		96.635													
Pressure Transducer Reading (m)		0.748													
Pressure Transducer Elevation (m)		95.887													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	15-Aug-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	17:00	End Time:	18:00	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Carl Atatahak					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
	432636	7550372	22		1				0.0	0.00				0.000	-
Weather Conditions	Sunny, warm, light west wind.				2				0.0	0.00				0.000	-
Transducer Information					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	9,212	Memory Free	514,927		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 1	0.988	100.988		100.000		11				0.0	0.00			0.000	-
BM 79			0.977	100.011		12				0.0	0.00			0.000	-
BM 68			0.928	100.060		13				0.0	0.00			0.000	-
BM 83			1.932	99.056		14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			1.944	99.044	BM 3	20				0.0	0.00			0.000	-
TBM	1.907	100.951		99.044		21				0.0	0.00			0.000	-
BM 83			1.894	99.057	5 cm waves on lake	22				0.0	0.00			0.000	-
BM 68			0.891	100.060		23				0.0	0.00			0.000	-
BM 79			0.939	100.012		24				0.0	0.00			0.000	-
BM 1			0.951	100.000		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes	31				0.0	0.00				0.000	-
BM 79		100.012	100.012		32				0.0	0.00				0.000	-
BM 68		100.060	100.060		33				0.0	0.00				0.000	-
BM 83		99.057	99.057		Total Q								0.000	0.0	
Summary					General Notes										
Staff Gauge Reading (m)		n/a			Established permanent bench marks (rock bolts).										
Stage from WL Survey (m)		n/a													
Pressure Transducer Reading (m)		n/a													
Pressure Transducer Elevation (m)		#VALUE!													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

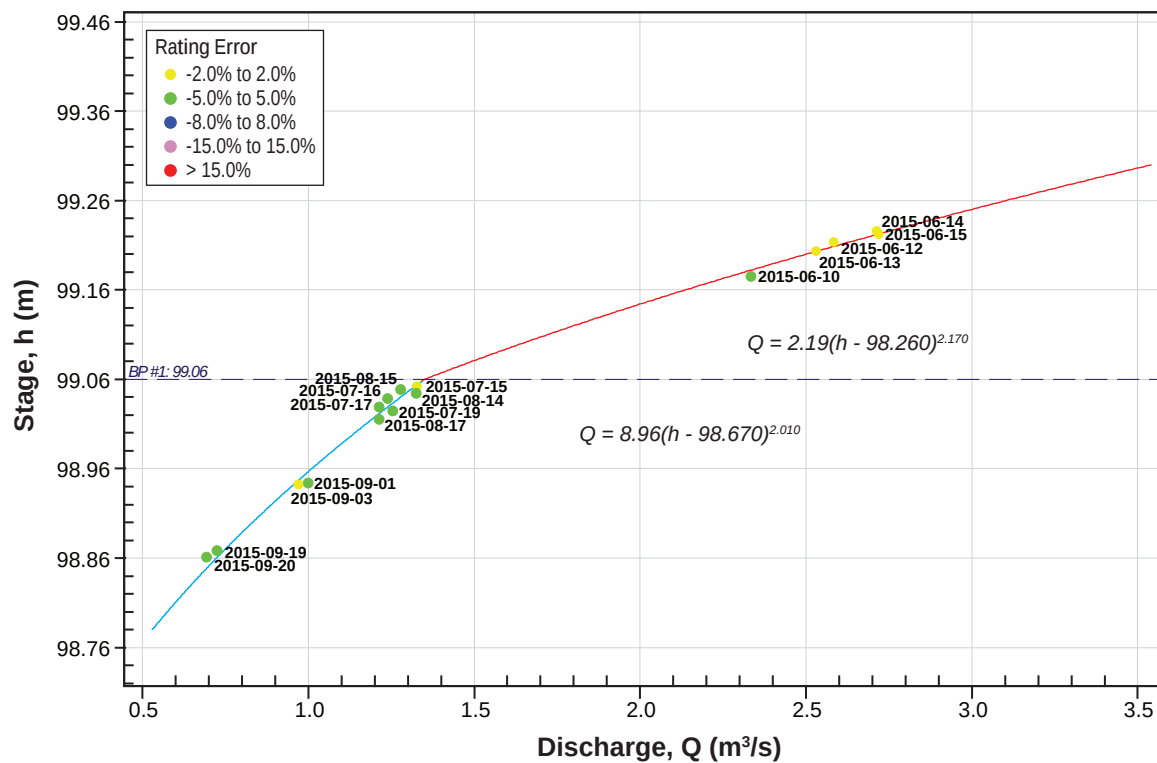
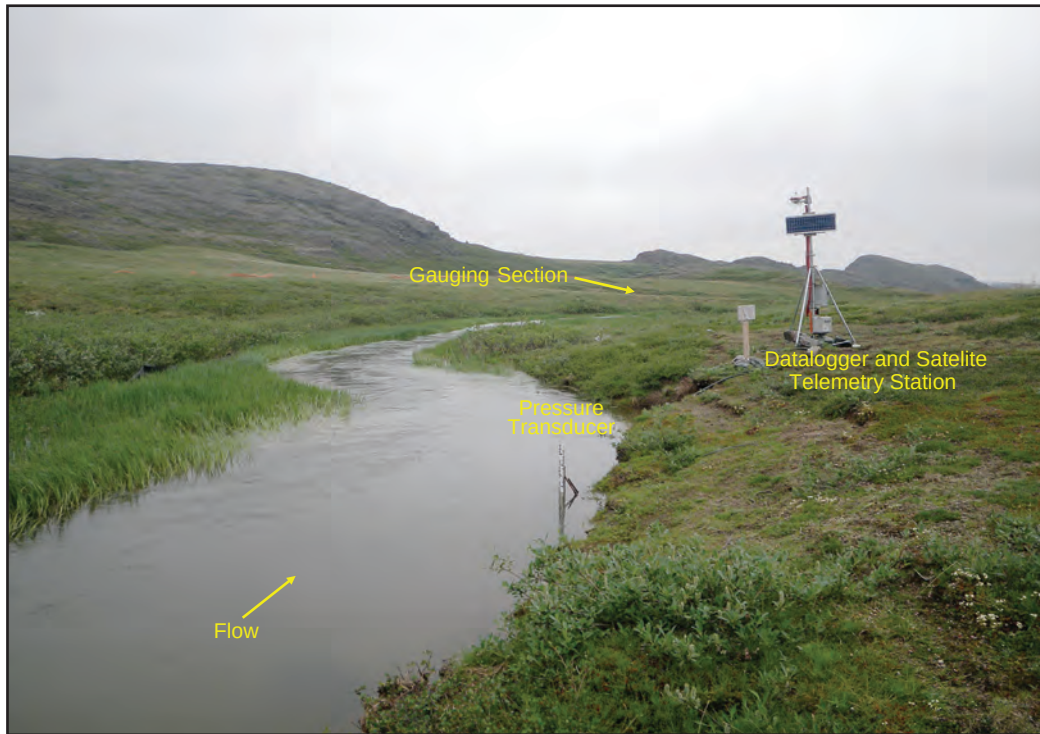
Appendix B-6. 2015 Manual Stage Measurements at Windy Lake (Windy Hydro)

Site Information					Discharge Measurement - Mid-Section Method										
Project Name	Hope Bay				Measurement Time	Start		End		Location					
Station Identification	Windy Hydro				Method	Velocity-area (Mid-section)				Instrument Model					
Stream Name					Flow Meter Type	Electromagnetic				Instrument Serial #					
Date Monitored	19-Sep-15				Real Time Reading	Start	Reading		Time		Staff Gauge (m)				
Time at Site (24 hr)	Start Time:	11:10	End Time:	12:20	(m)	End	Reading		Time		Time of SG Reading				
Personnel	Greg Langston, Kevin Esseltine					Station	Depth	Distance	Area	Velocity (m/s)			Q	% of Total Q	
Station Coordinates	Easting	Northing	Elevation		No.	Notes	(m)	(m)	(m)	(m ²)	60%	20%	80%	(m ³ /s)	%
Weather Conditions	Sunny, ~10° C, moderate southwest wind.				1				0.0	0.00				0.000	-
Transducer Information					2				0.0	0.00				0.000	-
					3				0.0	0.00				0.000	-
DL Model	PT2X	PT Serial #	21220029		4				0.0	0.00				0.000	-
Gain	1.003251	Offset	-0.001		5				0.0	0.00				0.000	-
Status	Logging	Battery	100%		6				0.0	0.00				0.000	-
# of Records	14,279	Memory Free	509,860		7				0.0	0.00				0.000	-
DL Service Performed		Crest Gauges	N/A		8				0.0	0.00				0.000	-
Hydrometric Leveling Survey					9				0.0	0.00				0.000	-
Stn	BS	HI	FS	Elevation	Notes	10				0.0	0.00			0.000	-
BM 79	0.645	100.657		100.012		11				0.0	0.00			0.000	-
BM 68			0.615	100.042		12				0.0	0.00			0.000	-
BM 83			1.619	99.038		13				0.0	0.00			0.000	-
WL			4.163	96.494		14				0.0	0.00			0.000	-
						15				0.0	0.00			0.000	-
						16				0.0	0.00			0.000	-
						17				0.0	0.00			0.000	-
						18				0.0	0.00			0.000	-
						19				0.0	0.00			0.000	-
TBM			3.802	96.855		20				0.0	0.00			0.000	-
TBM	3.662	100.517		96.855		21				0.0	0.00			0.000	-
WL			4.022	96.495	5 cm waves on lake	22				0.0	0.00			0.000	-
BM 3			1.478	99.039		23				0.0	0.00			0.000	-
BM 2			0.475	100.042		24				0.0	0.00			0.000	-
BM 1			0.504	100.013		25				0.0	0.00			0.000	-
						26				0.0	0.00			0.000	-
						27				0.0	0.00			0.000	-
						28				0.0	0.00			0.000	-
						29				0.0	0.00			0.000	-
						30				0.0	0.00			0.000	-
BM#	Established Elevation (m)	Mean Elevation (this date) (m)	Difference (m)	Notes		31				0.0	0.00			0.000	-
BM 79	100.012	100.012	0.001			32				0.0	0.00			0.000	-
BM 68	100.060	100.042	-0.018			33				0.0	0.00			0.000	-
BM 83	99.057	99.039	-0.018			Total Q							0.000	0.0	
Summary					General Notes										
Staff Gauge Reading (m)		n/a													
Stage from WL Survey (m)		96.495													
Pressure Transducer Reading (m)		0.587													
Pressure Transducer Elevation (m)		95.908													
Discharge (m ³ /s)		0.000													
Cross Sectional Area		0.000													
Average Velocity		#DIV/0!													

– Appendix C –

Rating Curves

Figure C-1
TL-2
Stage-Discharge Rating Curve



Notes: Rating period June 10 to September 20, 2015.
Pressure transducer stage readings are referenced to local (non-geodetic) datum.

Figure C-2
TL-3
Stage-Discharge Rating Curve

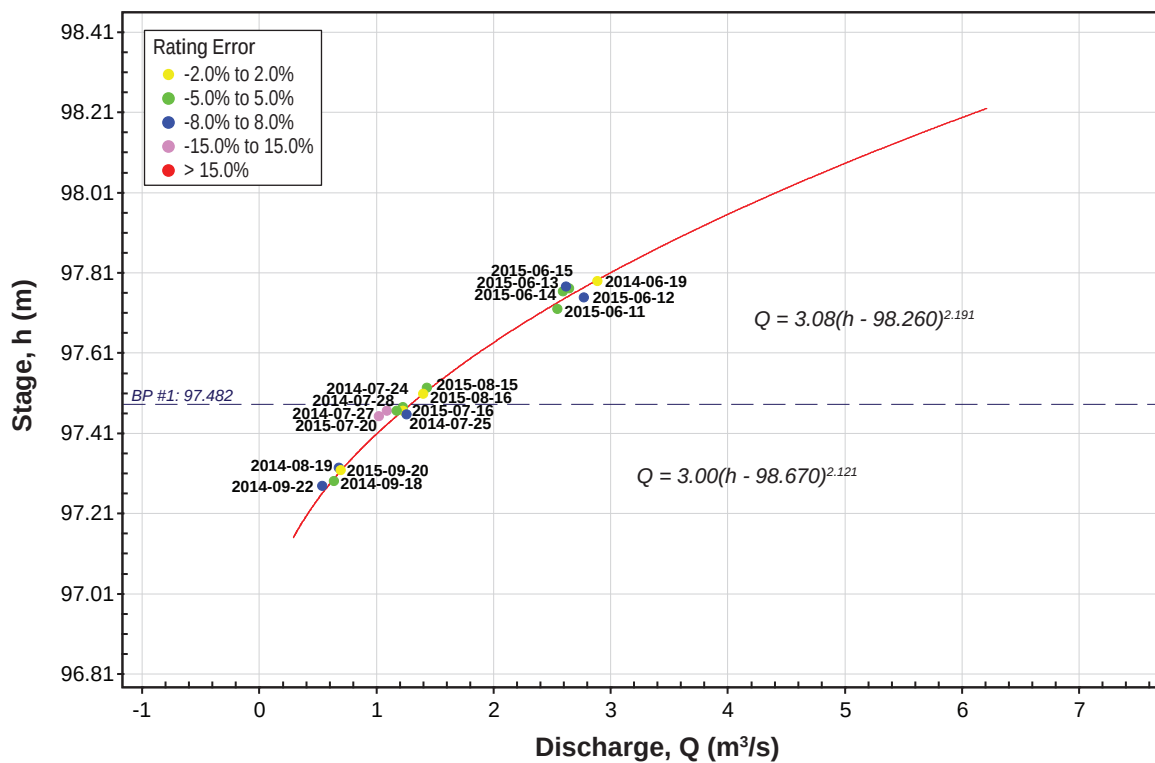
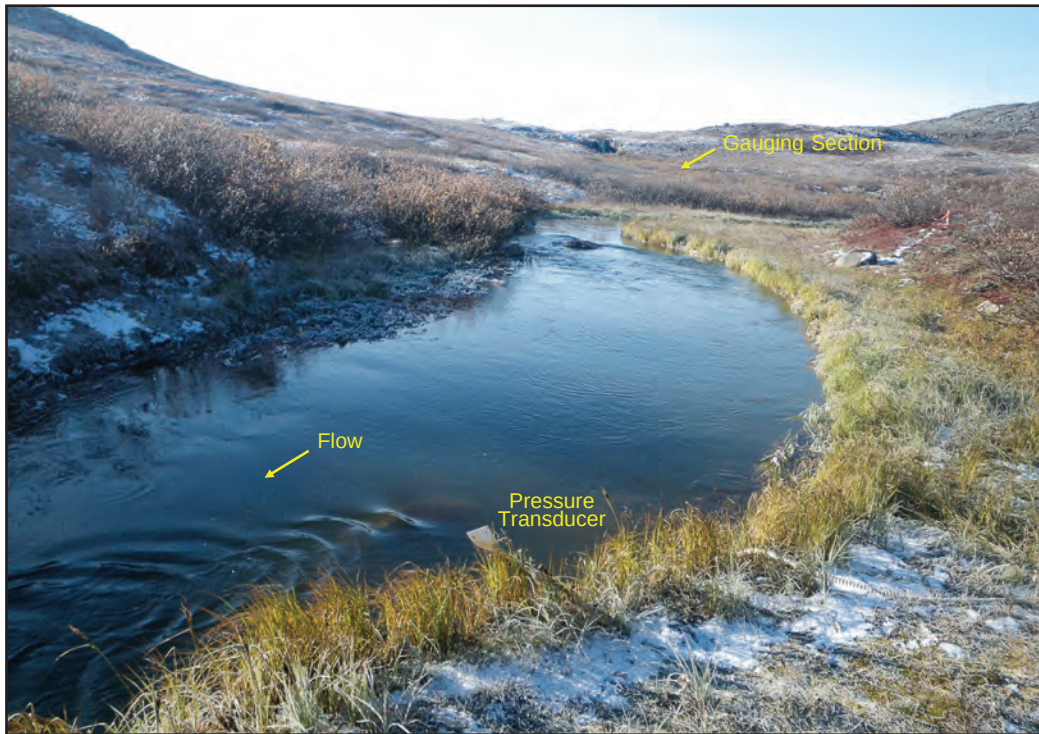
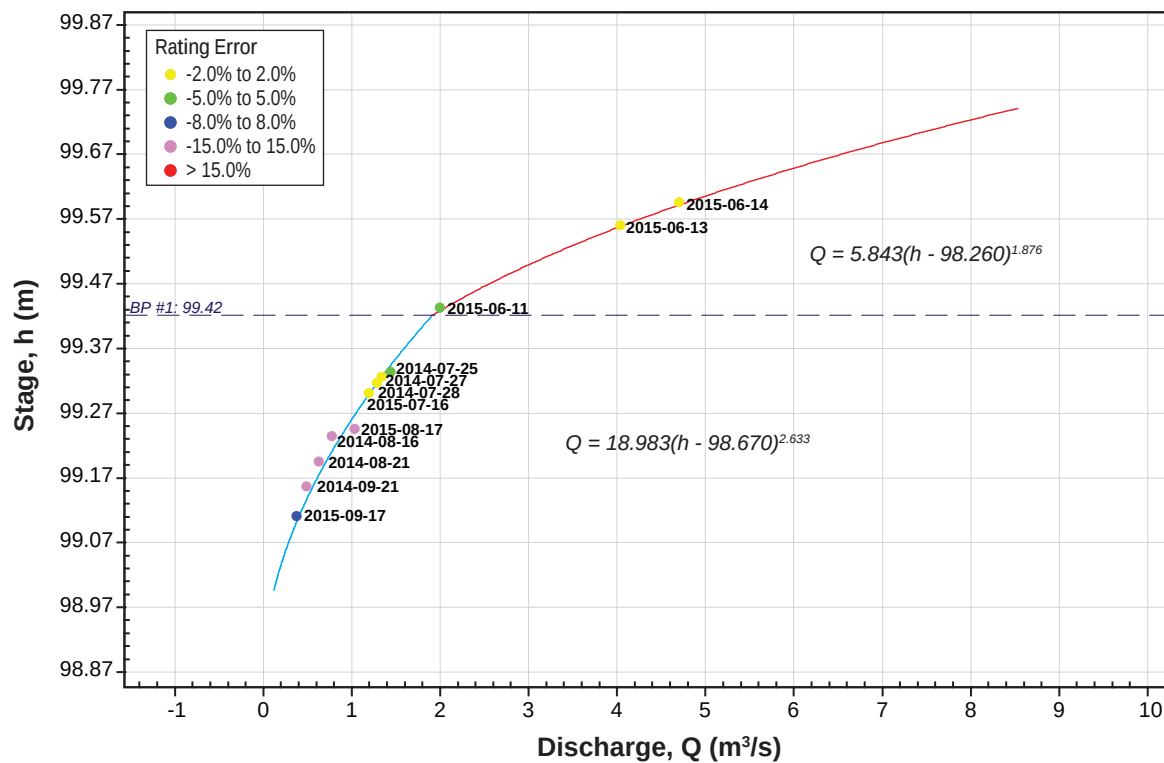


Figure C-3
Roberts Hydro
Stage-Discharge Rating Curve



Notes: Rating period July 25, 2014 to September 17, 2015.
 Pressure transducer stage readings are referenced to local (non-geodetic) datum.
 Dashed line indicates shifted rating.

– Appendix D –

Mean Daily Discharge Tables

Appendix D. Mean Daily Discharge Tables

Summary of Daily Discharge [Q, m³/s] at Hydrometric Station

TL-2, 2015

Drainage Area = 94.6 km²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	0.001	0.390	2.071	3.056	0.954	0.508	0.176	0.063
2	-	-	-	-	0.001	0.472	2.007	2.906	0.946	0.491	0.170	0.061
3	-	-	-	-	0.001	0.572	1.919	2.708	0.942	0.475	0.164	0.059
4	-	-	-	-	0.002	0.694	1.838	2.547	0.933	0.459	0.159	0.057
5	-	-	-	-	0.002	0.841	1.784	2.370	0.922	0.443	0.153	0.055
6	-	-	-	-	0.003	1.020	1.725	2.240	0.915	0.428	0.148	0.053
7	-	-	-	-	0.003	1.236	1.663	2.054	0.904	0.414	0.143	0.051
8	-	-	-	-	0.004	1.498	1.603	1.923	0.878	0.400	0.138	0.050
9	-	-	-	-	0.005	1.816	1.560	1.819	0.867	0.386	0.134	0.048
10	-	-	-	-	0.006	2.201	1.546	1.710	0.855	0.373	0.129	0.046
11	-	-	-	-	0.007	2.352	1.507	1.588	0.824	0.361	0.125	0.045
12	-	-	-	-	0.008	2.543	1.456	1.476	0.786	0.349	0.121	0.043
13	-	-	-	-	0.010	2.697	1.416	1.401	0.771	0.337	0.117	0.042
14	-	-	-	-	0.012	2.758	1.371	1.337	0.760	0.326	0.113	0.040
15	-	-	-	-	0.015	2.719	1.323	1.291	0.755	0.315	0.109	0.039
16	-	-	-	-	0.018	2.695	1.272	1.256	0.753	0.304	0.105	0.038
17	-	-	-	-	0.022	2.628	1.248	1.221	0.748	0.294	0.102	0.036
18	-	-	-	-	0.026	2.579	1.226	1.185	0.746	0.284	0.098	0.035
19	-	-	-	-	0.032	2.571	1.204	1.149	0.744	0.274	0.095	0.034
20	-	-	-	-	0.039	2.583	1.223	1.110	0.723	0.265	0.092	0.033
21	-	-	-	-	0.047	2.567	1.227	1.079	0.716	0.256	0.089	0.032
22	-	-	-	-	0.057	2.514	1.303	1.076	0.692	0.248	0.086	0.031
23	-	-	-	-	0.069	2.474	1.612	1.073	0.668	0.239	0.083	0.030
24	-	-	-	-	0.084	2.406	1.853	1.054	0.646	0.231	0.080	0.029
25	-	-	-	-	0.101	2.348	2.196	1.037	0.624	0.223	0.077	0.028
26	-	-	-	-	0.123	2.307	2.633	1.026	0.603	0.216	0.075	0.027
27	-	-	-	-	0.149	2.271	2.952	1.018	0.583	0.209	0.072	0.026
28	-	-	-	-	0.180	2.221	3.163	1.001	0.563	0.202	0.070	0.025
29	-	-	-	-	0.219	2.176	3.249	0.989	0.544	0.195	0.067	0.024
30	-	-	-	-	0.265	2.121	3.237	0.982	0.526	0.188	0.065	0.023
31	-	-	-	-	0.321	-	3.180	0.980	-	0.182	-	0.023
Mean	-	-	-	-	0.059	2.009	1.857	1.537	0.763	0.319	0.112	0.039
Max	0.000	0.000	0.000	0.000	0.321	2.758	3.249	3.056	0.954	0.508	0.176	0.063
Min	0.000	0.000	0.000	0.000	0.001	0.390	1.204	0.980	0.526	0.182	0.065	0.023
Total	0.000	0.000	0.000	0.000	1.831	60.267	57.566	47.660	22.892	9.876	3.354	1.223

Note: Estimated and modelled values are italicized

Values in red denote high uncertainty based on extrapolation of the rating curve beyond 2 times the greatest measured discharge.

Appendix D. Mean Daily Discharge Tables

Summary of Daily Discharge [Q, m³/s] at Hydrometric Station

TL-3, 2015

Drainage Area = 95.3 km²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	0.001	0.373	2.088	3.230	1.001	0.479	0.167	0.061
2	-	-	-	-	0.001	0.452	2.011	3.061	0.982	0.463	0.162	0.059
3	-	-	-	-	0.001	0.547	1.907	2.864	0.966	0.448	0.156	0.057
4	-	-	-	-	0.002	0.662	1.820	2.694	0.967	0.433	0.151	0.055
5	-	-	-	-	0.002	0.801	1.764	2.518	0.955	0.418	0.146	0.053
6	-	-	-	-	0.003	0.969	1.703	2.397	0.943	0.404	0.141	0.051
7	-	-	-	-	0.003	1.174	1.646	2.214	0.931	0.391	0.137	0.049
8	-	-	-	-	0.004	1.421	1.596	2.104	0.896	0.378	0.132	0.048
9	-	-	-	-	0.005	1.720	1.562	2.005	0.882	0.365	0.128	0.046
10	-	-	-	-	0.006	2.081	1.553	1.903	0.868	0.353	0.123	0.045
11	-	-	-	-	0.007	2.520	1.519	1.780	0.826	0.341	0.119	0.043
12	-	-	-	-	0.008	2.627	1.483	1.667	0.768	0.330	0.115	0.042
13	-	-	-	-	0.010	2.719	1.444	1.626	0.749	0.319	0.111	0.040
14	-	-	-	-	0.012	2.777	1.403	1.547	0.732	0.308	0.108	0.039
15	-	-	-	-	0.015	2.787	1.350	1.493	0.724	0.298	0.104	0.038
16	-	-	-	-	0.018	2.770	1.309	1.428	0.716	0.288	0.101	0.036
17	-	-	-	-	0.021	2.716	1.254	1.365	0.719	0.278	0.097	0.035
18	-	-	-	-	0.026	2.669	1.206	1.310	0.717	0.269	0.094	0.034
19	-	-	-	-	0.031	2.652	1.156	1.253	0.717	0.260	0.091	0.033
20	-	-	-	-	0.038	2.638	1.197	1.196	0.688	0.252	0.088	0.032
21	-	-	-	-	0.046	2.621	1.221	1.150	0.673	0.243	0.085	0.031
22	-	-	-	-	0.055	2.571	1.396	1.151	0.650	0.235	0.082	0.030
23	-	-	-	-	0.067	2.536	1.793	1.152	0.628	0.227	0.079	0.029
24	-	-	-	-	0.081	2.471	1.977	1.123	0.608	0.220	0.077	0.028
25	-	-	-	-	0.098	2.407	2.340	1.108	0.587	0.212	0.074	0.027
26	-	-	-	-	0.119	2.373	2.781	1.094	0.568	0.205	0.072	0.026
27	-	-	-	-	0.144	2.335	3.114	1.081	0.549	0.198	0.069	0.025
28	-	-	-	-	0.174	2.283	3.344	1.059	0.530	0.192	0.067	0.024
29	-	-	-	-	0.210	2.224	3.423	1.051	0.513	0.185	0.065	0.023
30	-	-	-	-	0.255	2.140	3.417	1.040	0.496	0.179	0.063	0.023
31	-	-	-	-	0.308	-	3.354	1.033	-	0.173	-	0.022
Mean	-	-	-	-	0.057	2.034	1.907	1.668	0.752	0.302	0.107	0.038
Max	0.000	0.000	0.000	0.000	0.308	2.787	3.423	3.230	1.001	0.479	0.167	0.061
Min	0.000	0.000	0.000	0.000	0.001	0.373	1.156	1.033	0.496	0.173	0.063	0.022
Total	0.000	0.000	0.000	0.000	1.767	61.033	59.129	51.695	22.550	9.348	3.206	1.181

Note: Estimated and modelled values are italicized

Values in red denote high uncertainty based on extrapolation of the rating curve beyond 2 times the greatest measured discharge.

Appendix D. Mean Daily Discharge Tables

Summary of Daily Discharge [Q, m³/s] at Hydrometric Station

Roberts Hydro, 2015

Drainage Area = 97.9 km²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	0.001	0.347	1.825	2.687	0.691	0.182	0.031	0.006
2	-	-	-	-	0.001	0.419	1.752	2.316	0.661	0.172	0.029	0.005
3	-	-	-	-	0.001	0.506	1.671	2.008	0.646	0.162	0.028	0.005
4	-	-	-	-	0.002	0.611	1.594	1.819	0.629	0.153	0.026	0.005
5	-	-	-	-	0.002	0.738	1.543	1.700	0.615	0.145	0.025	0.004
6	-	-	-	-	0.003	0.891	1.502	1.574	0.599	0.137	0.023	0.004
7	-	-	-	-	0.003	1.076	1.456	1.470	0.576	0.129	0.022	0.004
8	-	-	-	-	0.004	1.300	1.417	1.385	0.560	0.122	0.021	0.004
9	-	-	-	-	0.005	1.569	1.394	1.307	0.550	0.115	0.020	0.004
10	-	-	-	-	0.005	1.895	1.387	1.240	0.535	0.109	0.018	0.003
11	-	-	-	-	0.007	2.289	1.378	1.171	0.543	0.103	0.017	0.003
12	-	-	-	-	0.008	3.162	1.352	1.107	0.481	0.097	0.016	0.003
13	-	-	-	-	0.010	4.085	1.311	1.074	0.451	0.092	0.016	0.003
14	-	-	-	-	0.012	4.746	1.274	1.021	0.429	0.086	0.015	0.003
15	-	-	-	-	0.014	4.842	1.239	0.971	0.426	0.082	0.014	0.002
16	-	-	-	-	0.017	4.708	1.186	0.942	0.420	0.077	0.013	0.002
17	-	-	-	-	0.020	4.381	1.131	0.906	0.405	0.073	0.012	0.002
18	-	-	-	-	0.025	4.036	1.086	0.879	0.382	0.069	0.012	0.002
19	-	-	-	-	0.030	3.824	1.043	0.870	0.361	0.065	0.011	0.002
20	-	-	-	-	0.036	3.672	1.087	0.816	0.341	0.061	0.010	0.002
21	-	-	-	-	0.044	3.515	1.107	0.782	0.322	0.058	0.010	0.002
22	-	-	-	-	0.053	3.310	1.235	0.783	0.304	0.055	0.009	0.002
23	-	-	-	-	0.063	3.114	1.703	0.792	0.287	0.052	0.009	0.002
24	-	-	-	-	0.077	2.896	2.389	0.782	0.271	0.049	0.008	0.001
25	-	-	-	-	0.093	2.653	3.292	0.765	0.256	0.046	0.008	0.001
26	-	-	-	-	0.112	2.501	4.250	0.750	0.242	0.044	0.007	0.001
27	-	-	-	-	0.135	2.367	4.655	0.748	0.228	0.041	0.007	0.001
28	-	-	-	-	0.163	2.219	4.479	0.735	0.216	0.039	0.007	0.001
29	-	-	-	-	0.197	2.076	4.053	0.711	0.204	0.037	0.006	0.001
30	-	-	-	-	0.238	1.918	3.575	0.709	0.192	0.035	0.006	0.001
31	-	-	-	-	0.287	-	3.111	0.713	-	0.033	-	0.001
Mean	-	-	-	-	0.054	2.522	1.983	1.146	0.427	0.088	0.015	0.003
Max	0.000	0.000	0.000	0.000	0.287	4.842	4.655	2.687	0.691	0.182	0.031	0.006
Min	0.000	0.000	0.000	0.000	0.001	0.347	1.043	0.709	0.192	0.033	0.006	0.001
Total	0.000	0.000	0.000	0.000	1.666	75.664	61.478	35.532	12.824	2.714	0.456	0.083

Note: Estimated and modelled values are italicized

Values in red denote high uncertainty based on extrapolation of the rating curve beyond 2 times the greatest measured discharge.

– Appendix E –

Lake Water Level Tables

Appendix E. Lake Water Level Tables

Summary of Daily Stage [h, m] at Hydrometric Station

Doris Lake, 2015

Drainage Area = n/a km²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	-	98.408	98.094	-	-	-
2	-	-	-	-	-	-	-	98.391	98.089	-	-	-
3	-	-	-	-	-	-	-	98.374	98.086	-	-	-
4	-	-	-	-	-	-	-	98.357	98.082	-	-	-
5	-	-	-	-	-	-	-	98.341	98.075	-	-	-
6	-	-	-	-	-	-	-	98.322	98.068	-	-	-
7	-	-	-	-	-	-	-	98.308	98.062	-	-	-
8	-	-	-	-	-	-	-	98.294	98.058	-	-	-
9	-	-	-	-	-	-	-	98.275	98.053	-	-	-
10	-	-	-	-	-	-	-	98.257	98.047	-	-	-
11	-	-	-	-	-	-	-	98.243	98.043	-	-	-
12	-	-	-	-	-	-	-	98.231	98.033	-	-	-
13	-	-	-	-	-	-	-	98.222	98.024	-	-	-
14	-	-	-	-	-	-	-	98.210	98.019	-	-	-
15	-	-	-	-	-	-	98.191	98.199	98.016	-	-	-
16	-	-	-	-	-	-	98.184	98.189	98.011	-	-	-
17	-	-	-	-	-	-	98.175	98.177	98.009	-	-	-
18	-	-	-	-	-	-	98.168	98.167	98.007	-	-	-
19	-	-	-	-	-	-	98.157	98.157	-	-	-	-
20	-	-	-	-	-	-	98.161	98.147	-	-	-	-
21	-	-	-	-	-	-	98.162	98.136	-	-	-	-
22	-	-	-	-	-	-	98.178	98.133	-	-	-	-
23	-	-	-	-	-	-	98.231	98.131	-	-	-	-
24	-	-	-	-	-	-	98.264	98.125	-	-	-	-
25	-	-	-	-	-	-	98.305	98.120	-	-	-	-
26	-	-	-	-	-	-	98.354	98.117	-	-	-	-
27	-	-	-	-	-	-	98.388	98.111	-	-	-	-
28	-	-	-	-	-	-	98.413	98.104	-	-	-	-
29	-	-	-	-	-	-	98.425	98.102	-	-	-	-
30	-	-	-	-	-	-	98.424	98.099	-	-	-	-
31	-	-	-	-	-	-	98.418	98.097	-	-	-	-
Mean	-	-	-	-	-	-	98.270	98.211	98.049	-	-	-
Max	0.000	0.000	0.000	0.000	0.000	0.000	98.425	98.408	98.094	0.000	0.000	0.000
Min	0.000	0.000	0.000	0.000	0.000	0.000	98.157	98.097	98.007	0.000	0.000	0.000
Total	0.000	0.000	0.000	0.000	0.000	0.000	1670.598	3044.546	1764.875	0.000	0.000	0.000

Note: Estimated and modelled values are italicized

Values in red denote high uncertainty based on extrapolation of the rating curve beyond 2 times the greatest measured discharge.

Appendix E. Lake Water Level Tables

Summary of Daily Stage [h, m] at Hydrometric Station

TIA, 2015

Drainage Area = n/a km²

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	-	94.197	93.997	-	-	-
2	-	-	-	-	-	-	-	94.188	93.989	-	-	-
3	-	-	-	-	-	-	-	94.180	93.985	-	-	-
4	-	-	-	-	-	-	-	94.172	93.978	-	-	-
5	-	-	-	-	-	-	-	94.166	93.968	-	-	-
6	-	-	-	-	-	-	-	94.155	93.958	-	-	-
7	-	-	-	-	-	-	-	94.150	93.948	-	-	-
8	-	-	-	-	-	-	-	94.145	93.941	-	-	-
9	-	-	-	-	-	-	-	94.135	93.932	-	-	-
10	-	-	-	-	-	-	-	94.124	93.923	-	-	-
11	-	-	-	-	-	-	-	94.118	93.917	-	-	-
12	-	-	-	-	-	-	-	94.112	93.903	-	-	-
13	-	-	-	-	-	-	-	94.108	93.893	-	-	-
14	-	-	-	-	-	-	-	94.102	93.886	-	-	-
15	-	-	-	-	-	-	94.071	94.095	93.880	-	-	-
16	-	-	-	-	-	-	94.064	94.094	93.873	-	-	-
17	-	-	-	-	-	-	94.055	94.087	93.868	-	-	-
18	-	-	-	-	-	-	94.047	94.080	93.862	-	-	-
19	-	-	-	-	-	-	94.037	94.072	93.863	-	-	-
20	-	-	-	-	-	-	94.042	94.064	-	-	-	-
21	-	-	-	-	-	-	94.042	94.055	-	-	-	-
22	-	-	-	-	-	-	94.059	94.053	-	-	-	-
23	-	-	-	-	-	-	94.115	94.051	-	-	-	-
24	-	-	-	-	-	-	94.146	94.046	-	-	-	-
25	-	-	-	-	-	-	94.176	94.040	-	-	-	-
26	-	-	-	-	-	-	94.206	94.035	-	-	-	-
27	-	-	-	-	-	-	94.215	94.029	-	-	-	-
28	-	-	-	-	-	-	94.218	94.019	-	-	-	-
29	-	-	-	-	-	-	94.215	94.013	-	-	-	-
30	-	-	-	-	-	-	94.209	94.007	-	-	-	-
31	-	-	-	-	-	-	94.204	94.004	-	-	-	-
Mean	-	-	-	-	-	-	94.125	94.094	93.924	-	-	-
Max	0.000	0.000	0.000	0.000	0.000	0.000	94.218	94.197	93.997	0.000	0.000	0.000
Min	0.000	0.000	0.000	0.000	0.000	0.000	94.037	94.004	93.862	0.000	0.000	0.000
Total	0.000	0.000	0.000	0.000	0.000	0.000	1600.122	2916.899	1784.563	0.000	0.000	0.000

Note: Estimated and modelled values are italicized

Values in red denote high uncertainty based on extrapolation of the rating curve beyond 2 times the greatest measured discharge.