



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-23: Lake B7 Mean Daily Water Surface Elevation (m), 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	99.542	99.494	99.454	-	-	-
2	-	-	-	-	-	-	99.535	99.490	99.459	-	-	-
3	-	-	-	-	-	-	99.529	99.487	99.459	-	-	-
4	-	-	-	-	-	-	99.522	99.482	99.460	-	-	-
5	-	-	-	-	-	-	99.516	99.473	99.466	-	-	-
6	-	-	-	-	-	-	99.508	99.469	99.473	-	-	-
7	-	-	-	-	-	-	99.502	99.478	99.472	-	-	-
8	-	-	-	-	-	-	99.494	99.490	99.478	-	-	-
9	-	-	-	-	-	-	99.487	99.489	99.490 P	-	-	-
10	-	-	-	-	-	-	99.492	99.488	-	-	-	-
11	-	-	-	-	-	99.664 P	99.529	99.487	-	-	-	-
12	-	-	-	-	-	99.662	99.561	99.492	-	-	-	-
13	-	-	-	-	-	99.657	99.570	99.490	-	-	-	-
14	-	-	-	-	-	99.650	99.562	99.486	-	-	-	-
15	-	-	-	-	-	99.642	99.556	99.483	-	-	-	-
16	-	-	-	-	-	99.634	99.550	99.483	-	-	-	-
17	-	-	-	-	-	99.626	99.542	99.480	-	-	-	-
18	-	-	-	-	-	99.618	99.534	99.476	-	-	-	-
19	-	-	-	-	-	99.611	99.527	99.471	-	-	-	-
20	-	-	-	-	-	99.606	99.522	99.469	-	-	-	-
21	-	-	-	-	-	99.606	99.517	99.472	-	-	-	-
22	-	-	-	-	-	99.600	99.514	99.474	-	-	-	-
23	-	-	-	-	-	99.594	99.509	99.469	-	-	-	-
24	-	-	-	-	-	99.587	99.505	99.464	-	-	-	-
25	-	-	-	-	-	99.581	99.500	99.462	-	-	-	-
26	-	-	-	-	-	99.575	99.495	99.459	-	-	-	-
27	-	-	-	-	-	99.568	99.496	99.456	-	-	-	-
28	-	-	-	-	-	99.561	99.493	99.454	-	-	-	-
29	-	-	-	-	-	99.554	99.487	99.453	-	-	-	-
30	-	-	-	-	-	99.549	99.483	99.453	-	-	-	-
31	-	-	-	-	-	-	99.493	99.451	-	-	-	-
MIN	-	-	-	-	-	99.549	99.483	99.451	99.454	-	-	-
MEAN	-	-	-	-	-	99.607	99.518	99.475	99.468	-	-	-
MAX	-	-	-	-	-	99.664	99.570	99.494	99.490	-	-	-

Note: Elevation based on local benchmark elevation of 100.131 m (non-geodetic); P = partial daily average



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Table A4-24: Lake B7 Outlet Discharge Measurement Field Form for 11 June 2009

Project Name:		Comaplex (09-1373-0010)			Date		11-Jun-2009	
Waterbody:		Lake B7			Start Time		17:35	
Crossing ID:		Lake B7 Outlet			End Time		17:45	
BM GPS Location		Survey		Staff		Datalogger SN: 1361		
East	537952	BM_read	1.475	Gauge		Transducer SN: 21573		
North	6989254	WL_read	1.925	0.48m		Meter Type/SN: Marsh McBirney-2005856		
Elevation	100.131	WL_Elev	99.681			Crew:		JL/MI
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start	FROM LDB		0.2 Depth	0.6/0.8 Depth			0.2 Depth	0.6/0.8 Depth
LDB	(m)	(m)	(m/s)	(m/s)	(m)	(m)	(m/s)	(m/s)
1	0.0	0.00		0.00				
2	0.5	0.10		0.01				
3	1.0	0.10		0.01				
4	1.5	0.00		0.00				
5	2.0	0.08		0.03				
6	2.5	0.20		0.21				
7	3.0	0.41		0.28				
8	3.5	0.41		0.19				
9	4.0	0.20		0.00				
10	4.5	0.00		0.00				
11	5.0	0.08		0.20				
12	5.5	0.00		0.00				
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q (m ³ /s)	0.128	
34						A(m ²)	0.79	
35						B(m)	5.5	



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Table A4-25: Lake B7 Outlet Discharge Measurement Field Form for 12 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		12-Jul-2009	
Waterbody:		Lake B7			Start Time		12:24	
Crossing ID:		Lake B7 Outlet			End Time		12:30	
BM GPS Location		Survey		Staff	Datalogger SN: 1361			
East	537952	BM_read	1.578	Gauge	Transducer SN: 21573			
North	6989254	WL_read	2.142	down	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.131	WL_Elev	99.567	not reliable	Crew:		DC/JP	
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start	FROM LDB		0.2 Depth	0.6/0.8 Depth			FROM LDB	(m)
LDB	(m)	(m)	(m/s)	(m/s)	(m)	(m)	(m/s)	(m/s)
1	0.4	0.00		0.000				
2	0.5	0.16		0.155				
3	0.5	0.22		0.192				
4	0.6	0.22		0.274				
5	0.7	0.22		0.250				
6	0.8	0.23		0.162				
7	0.9	0.22		0.149				
8	1.0	0.26		0.149				
9	1.1	0.26		0.235				
10	1.2	0.16		0.375				
11	1.3	0.10		0.146				
12	1.5	0.00		0.000				
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.041	
34						A(m ²)	0.19	
35						B(m)	1.1	



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Table A4-26: Lake B7 Outlet Discharge Measurement Field Form for 5 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		05-Aug-2009	
Waterbody:		Lake B7			Start Time		15:10	
Crossing ID:		Lake B7 Outlet			End Time		16:00	
BM GPS Location		Survey		Staff	Datalogger SN: 1361			
East	537952	BM_read	1.372	Gauge	Transducer SN: 21573			
North	6989254	WL_read	2.038	down	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.131	WL_Elev	99.465	not reliable	Crew:	DC / MI		
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start LDB	FROM LDB (m)		0.2 Depth (m/s)	0.6/0.8 Depth (m/s)	FROM LDB (m)		0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.1	0.00						
2	0.2	0.09		0.018				
3	0.3	0.14		0.061				
4	0.4	0.12		0.149				
5	0.5	0.13		0.162				
6	0.6	0.18		0.149				
7	0.7	0.17		0.104				
8	0.8	0.13		0.055				
9	0.9	0.13		0.024				
10	1.1	0.00		0.000				
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q (m ³ /s)	0.011	
34						A(m ²)	0.12	
35						B(m)	1.0	



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Table A4-27: Lake B7 Outlet Discharge Measurement Field Form for 10 September 2009

Project Name:		Comaplex (09-1373-0010)		Date		10-Sep-2009		
Waterbody:		Lake B7		Start Time		12:30		
Crossing ID:		Lake B7 Outlet		End Time		12:55		
BM GPS Location		Survey		Staff		Datalogger SN: 1361		
East	537952	BM_read	1.563	Gauge:		Transducer SN: 21573		
North	6989254	WL_read	2.205	Out of the		Meter Type/SN: Marsh McBirney-2005856		
Elevation	100.131	WL_Elev	99.489	water		Crew:	DC /	
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start	FROM LDB		0.2 Depth	0.6/0.8 Depth			FROM LDB	
LDB	(m)	(m)	(m/s)	(m/s)	(m)	(m)	(m/s)	(m/s)
1	0.3	0.00						
2	0.4	0.13		0.043				
3	0.5	0.20		0.155				
4	0.6	0.20		0.229				
5	0.7	0.18		0.268				
6	0.8	0.20		0.259				
7	0.9	0.23		0.226				
8	1.0	0.22		0.177				
9	1.1	0.18		0.104				
10	1.2	0.13		0.030				
11	1.3	0.09		0.012				
12	1.5	0.00						
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.030	
34						A(m ²)	0.18	
35						B(m)	1.2	

CHICKEN HEAD LAKE AND OUTLET HYDROMETRIC STATION



LOCATION AND DETAILS

Located approximately 14.5 kilometres southeast of Meliadine West Camp.

Operational:	2009 13/6-13/9		
Benchmark:	Top of boulder; 100.000 m (non-geodetic)	Drainage Area:	9.86 km ²
Coordinates:	UTM: 553835 m E, 6981017 m N (NAD83, Zn15)	Lat/Long:	62°57'18" N, 92°56'20" W
Transducer:	Keller Acculevel Submersible Level Transducer	Datalogger:	Optimum Instruments DD-520



Chicken Head Lake, looking southeast.



Chicken Head looking north.



Chicken Head Lake Outlet, looking north.



Chicken Head Lake Outlet, looking southeast.



NTS Mapping of Area.



A4 - 7.0 CHICKENHEAD LAKE AND OUTLET

The Chickenhead Lake and Outlet hydrometric station was visited 4 times during the 2009 field program, and a continuous hydrograph was derived for the period of 11 June to 10 September 2009 based on continuous logger data. Details of each site visit are provided in Table A4-28 and water level measurements in Table A4-29. The hydrographs and stage-discharge rating curve for Chickenhead Lake and Outlet in 2009 are presented in Figure A4-10 and A4-11. Mean daily data are presented in Tables A4-30 and A4-31 and raw data in Tables A4-32 to A4-35.

Table A4-28: Site Visits to Chickenhead Lake and Outlet Hydrometric Station, 2009

Date	Activities	Lake	Lake Water Surface Elevation (m; non-geodetic)	Outlet	Discharge (m ³ /s)
13 Jun	Installed pressure transducer and data logger. Measured discharge and water surface elevation.	✓	99.770	✓	0.399
9 Jul	Measured discharge and water surface elevation and downloaded data logger.	✓	99.645	✓	0.034
4 Aug	Measured discharge and downloaded data logger.			✓	0.015
13 Sep	Measured discharge and water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	99.691	✓	0.162

Water level surveys were performed during site visits, and the measurements are provided in Table A4-26.

Table A4-29: Chickenhead Lake Water Level Survey Measurements(m), 2009

Date and Time	BM Reading	WS Reading	BM Elevation	WS Elevation	Transducer Reading	Transducer Elevation	Average Transducer Elevation	Stage	Staff Gauge Reading
13-Jun 13:20	1.665	1.895	100.000	99.770	0.446	99.324	99.335	0.770	0.481
09-Jul 14:15	1.352	1.707	100.000	99.645	0.303	99.342		0.645	0.310
04-Aug 9:25			100.000		0.290			0.628	0.295
13-Sep-8:25	1.405	1.715	100.000	99.691	0.352	99.339		0.691	0.370

Note: BM = benchmark WS= water surface

On 1 and 2 September 2009, the Rankin Inlet A climate station reported strong winds from NW, with gusts up to 93 km/h. Because of the shape and orientation of the Chickenhead Lake and the location of the hydrometric station on the north shore, it is thought that the wind setup may be the cause for an average 6 cm drop in the water levels at the monitoring station (upwind end of the lake) during the two day period.



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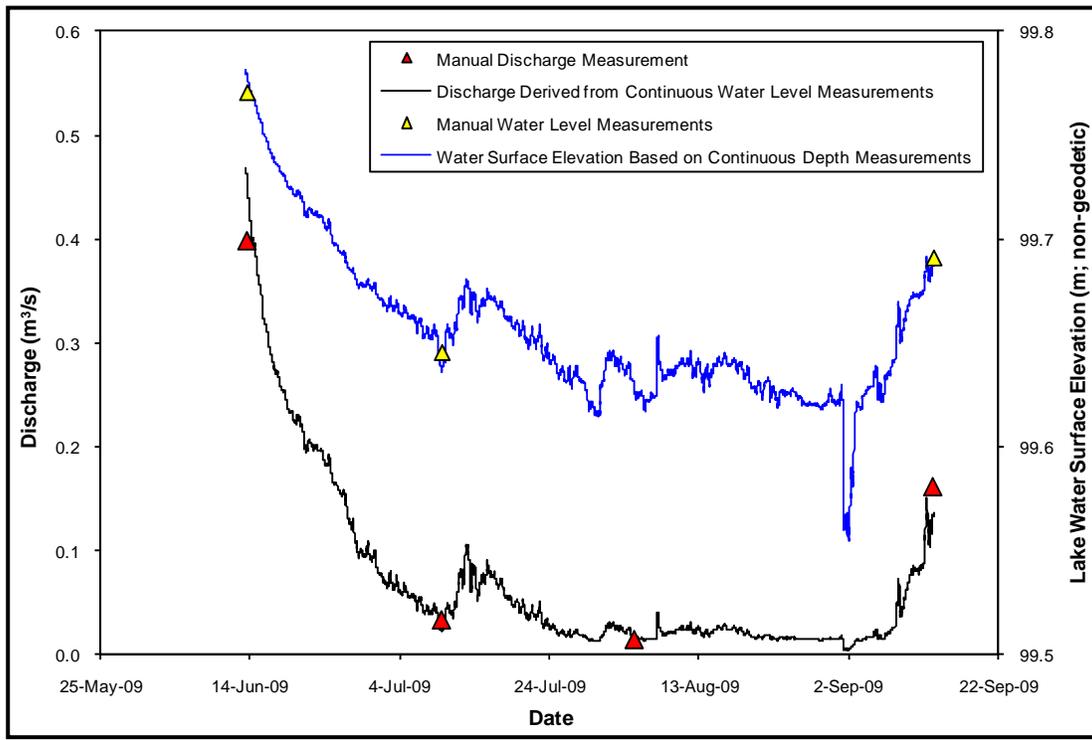


Figure A4-9: Hydrograph for Chickenhead Lake and Outlet, 2009

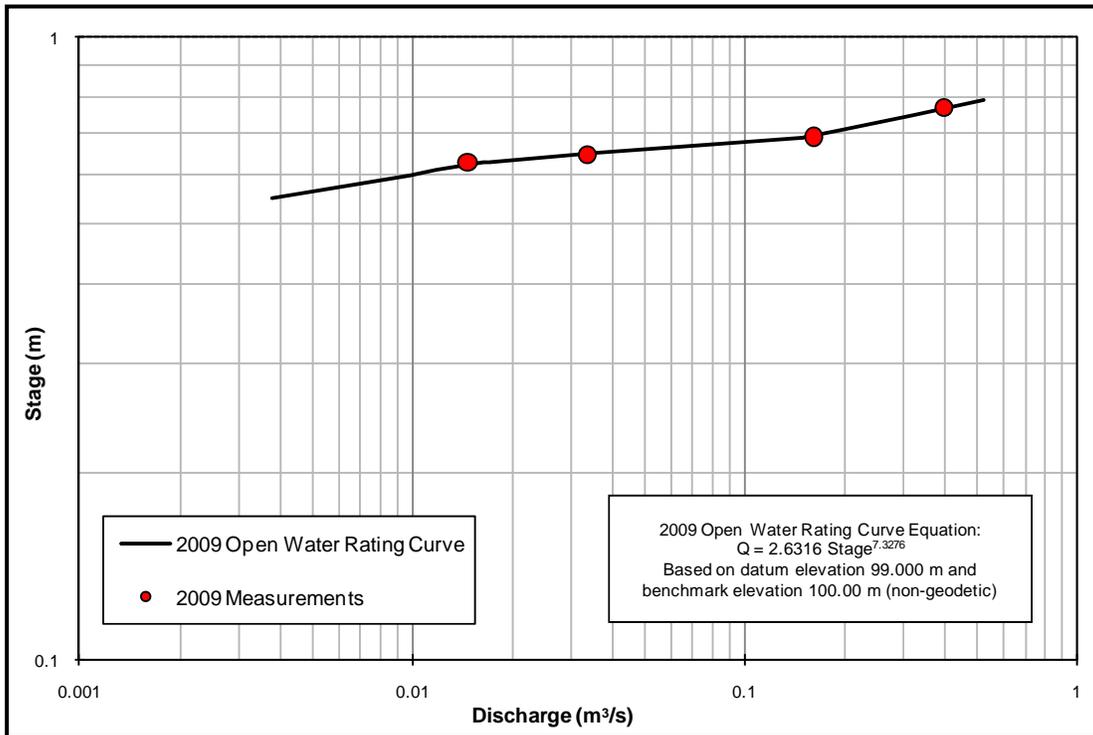


Figure A4-10: Chickenhead Lake Outlet Stage-Discharge Rating Curve, 2009



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Table A4-30: Chickenhead Lake Outlet Mean Daily Discharge (m³/s), 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	0.076	0.028	0.008	-	-	-
2	-	-	-	-	-	-	0.070	0.025	0.008	-	-	-
3	-	-	-	-	-	-	0.066	0.022	0.014	-	-	-
4	-	-	-	-	-	-	0.061	0.016	0.016	-	-	-
5	-	-	-	-	-	-	0.057	0.015	0.019	-	-	-
6	-	-	-	-	-	-	0.051	0.015	0.016	-	-	-
7	-	-	-	-	-	-	0.042	0.023	0.022	-	-	-
8	-	-	-	-	-	-	0.042	0.020	0.042	-	-	-
9	-	-	-	-	-	-	0.026	0.022	0.053	-	-	-
10	-	-	-	-	-	-	0.040	0.025	0.079	-	-	-
11	-	-	-	-	-	-	0.050	0.026	0.083	-	-	-
12	-	-	-	-	-	-	0.081	0.022	0.116	-	-	-
13	-	-	-	-	-	0.449 P	0.083	0.021	0.129 P	-	-	-
14	-	-	-	-	-	0.395	0.066	0.021	-	-	-	-
15	-	-	-	-	-	0.344	0.078	0.025	-	-	-	-
16	-	-	-	-	-	0.301	0.075	0.026	-	-	-	-
17	-	-	-	-	-	0.272	0.068	0.025	-	-	-	-
18	-	-	-	-	-	0.252	0.055	0.024	-	-	-	-
19	-	-	-	-	-	0.232	0.048	0.020	-	-	-	-
20	-	-	-	-	-	0.224	0.043	0.016	-	-	-	-
21	-	-	-	-	-	0.204	0.038	0.017	-	-	-	-
22	-	-	-	-	-	0.201	0.039	0.017	-	-	-	-
23	-	-	-	-	-	0.194	0.030	0.015	-	-	-	-
24	-	-	-	-	-	0.183	0.026	0.016	-	-	-	-
25	-	-	-	-	-	0.163	0.021	0.016	-	-	-	-
26	-	-	-	-	-	0.152	0.019	0.015	-	-	-	-
27	-	-	-	-	-	0.125	0.021	0.014	-	-	-	-
28	-	-	-	-	-	0.101	0.018	0.014	-	-	-	-
29	-	-	-	-	-	0.098	0.014	0.014	-	-	-	-
30	-	-	-	-	-	0.093	0.014	0.015	-	-	-	-
31	-	-	-	-	-	-	0.023	0.015	-	-	-	-
MIN	-	-	-	-	-	0.093	0.014	0.014	0.008	-	-	-
MEAN	-	-	-	-	-	0.221	0.047	0.019	0.047	-	-	-
MAX	-	-	-	-	-	0.449	0.083	0.028	0.129	-	-	-

Note: P = partial daily average



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Meliadine Gold Project 2009 Hydrometric Data

Table A4-31: Chickenhead Lake Mean Daily Water Surface Elevation (m), 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	99.671	99.643	99.584	-	-	-
2	-	-	-	-	-	-	99.668	99.640	99.588	-	-	-
3	-	-	-	-	-	-	99.667	99.637	99.621	-	-	-
4	-	-	-	-	-	-	99.665	99.627	99.627	-	-	-
5	-	-	-	-	-	-	99.663	99.623	99.632	-	-	-
6	-	-	-	-	-	-	99.660	99.623	99.627	-	-	-
7	-	-	-	-	-	-	99.654	99.635	99.636	-	-	-
8	-	-	-	-	-	-	99.654	99.634	99.653	-	-	-
9	-	-	-	-	-	-	99.641	99.636	99.660	-	-	-
10	-	-	-	-	-	-	99.652	99.640	99.672	-	-	-
11	-	-	-	-	-	-	99.659	99.641	99.673	-	-	-
12	-	-	-	-	-	-	99.672	99.637	99.683	-	-	-
13	-	-	-	-	-	99.777 P	99.673	99.635	99.686 P	-	-	-
14	-	-	-	-	-	99.767	99.667	99.636	-	-	-	-
15	-	-	-	-	-	99.755	99.671	99.641	-	-	-	-
16	-	-	-	-	-	99.745	99.671	99.642	-	-	-	-
17	-	-	-	-	-	99.736	99.668	99.640	-	-	-	-
18	-	-	-	-	-	99.730	99.662	99.639	-	-	-	-
19	-	-	-	-	-	99.724	99.658	99.634	-	-	-	-
20	-	-	-	-	-	99.721	99.655	99.628	-	-	-	-
21	-	-	-	-	-	99.714	99.652	99.629	-	-	-	-
22	-	-	-	-	-	99.713	99.652	99.629	-	-	-	-
23	-	-	-	-	-	99.710	99.645	99.624	-	-	-	-
24	-	-	-	-	-	99.705	99.641	99.626	-	-	-	-
25	-	-	-	-	-	99.697	99.636	99.626	-	-	-	-
26	-	-	-	-	-	99.692	99.633	99.623	-	-	-	-
27	-	-	-	-	-	99.685	99.635	99.620	-	-	-	-
28	-	-	-	-	-	99.679	99.631	99.620	-	-	-	-
29	-	-	-	-	-	99.678	99.620	99.619	-	-	-	-
30	-	-	-	-	-	99.676	99.619	99.623	-	-	-	-
31	-	-	-	-	-	-	99.638	99.622	-	-	-	-
MIN	-	-	-	-	-	99.676	99.619	99.619	99.584	-	-	-
MEAN	-	-	-	-	-	99.717	99.653	99.631	99.642	-	-	-
MAX	-	-	-	-	-	99.777	99.673	99.643	99.686	-	-	-

Note: Elevation based on local benchmark elevation of 100.000 m (non-geodetic); P = partial daily average



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Table A4-32: Chickenhead Lake Outlet Discharge Measurement Field Form for 13 June 2009

Project Name:		Comaplex (09-1373-0010)			Date		13-Jun-2009	
Waterbody:		Chickenhead Lake			Start Time		10:10	
Crossing ID:		Chickenhead Lake Outlet			End Time		13:35	
BM GPS Location		Survey		Staff	Datalogger SN: 639			
East	553948	BM_read	1.665	Gauge	Transducer SN: 14570			
North	6980697	WL_read	1.895	0.481	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	99.770		Crew:		DC/WN	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	1.4	0.00			0.00	0		
2	2.0	0.22		0.00	0.30	0.08		0.080
3	2.5	0.20		0.00	0.60	0.12		0.110
4	3.0	0.18		0.02	0.90	0.1		0.080
5	3.5	0.00		0.00	1.20	0.08		0.250
6	4.0	0.10		0.38	1.50	0.13		0.010
7	4.5	0.04		0.25	1.80	0.11		0.140
8	5.0	0.14		0.35	2.10	0.14		0.030
9	5.5	0.18		0.59	2.40	0.07		0.280
10	6.0	0.12		0.35	2.70	0.09		0.000
11	6.5	0.22		0.19	3.00	0		
12	7.0	0.16		0.12				
13	7.5	0.18		0.20				
14	8.0	0.15		0.07				
15	8.5	0.15		0.05				
16	9.0	0.08		0.01				
17	9.5	0.14		0.09				
18	10.0	0.18		0.42				
19	10.5	0.00		0.00				
20	11.0	0.00		0.00				
21	11.5	0.14		0.68				
22	12.0	0.00		0.00				
23	12.5	0.11		0.55				
24	13.0	0.07		0.33				
25	13.5	0.07		0.33				
26	14.0	0.06		0.28	Observation: At the time of discharge measurement, the lake outlet was divided in 2 channels and both of them were measured.			
27	14.5	0.06		0.03				
28	15.0	0.06		0.33				
29	15.5	0.10		0.35				
30	16.0	0.06		0.18				
31	16.5	0.06		0.05				
32	17.0	0.06		0.05				
33	17.5	0.00		0.00	RESULTS:	Q	0.399	
34						A(m ²)	1.93	
35						B(m)	17.5	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-33: Chickenhead Lake Outlet Discharge Measurement Field Form for 9 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		09-Jul-2009	
Waterbody:		Chickenhead Lake			Start Time		14:03	
Crossing ID:		Chickenhead Lake Outlet			End Time		15:00	
BM GPS Location		Survey		Staff	Datalogger SN: 639			
East	553948	BM_read	1.352	Gauge	Transducer SN: 14570			
North	6980697	WL_read	1.707	0.31	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	99.645		Crew:		DC/IL	
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start	FROM LDB		0.2 Depth	0.6/0.8 Depth			FROM LDB	0.2 Depth
LDB	(m)	(m)	(m/s)	(m/s)	(m)	(m)	(m/s)	(m/s)
1	0.1	0.00						
2	0.1	0.14		0.131				
3	0.2	0.14		0.174				
4	0.3	0.12		0.165				
5	0.4	0.12		0.229				
6	0.5	0.14		0.326				
7	0.6	0.14		0.439				
8	0.7	0.16		0.396				
9	0.8	0.13		0.347				
10	0.9	0.14		0.192				
11	0.9	0.00						
12								
13	0.1	0.00						
14	0.3	0.01		0.122				
15	0.5	0.03		0.122				
16	0.7	0.02		0.122				
17	0.9	0.01		0.152				
18	1.0	0.04		0.152				
19	1.1	0.05		0.122				
20	1.1	0.00						
21								
22								
23								
24								
25								
26					Observation: At the time of discharge measurement, the lake outlet was divided in 2 channels and both of them were measured.			
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.034	
34						A(m ²)	0.13	
35						B(m)	1.0	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-34: Chickenhead Lake Outlet Discharge Measurement Field Form for 4 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		04-Aug-2009	
Waterbody:		Chickenhead Lake			Start Time		14:03	
Crossing ID:		Chickenhead Lake Outlet			End Time		15:00	
BM GPS Location		Survey		Staff		Datalogger SN: 639		
East	553948	BM_read		Gauge		Transducer SN: 14570		
North	6980697	WL_read		0.295		Meter Type/SN: Marsh McBirney-2005856		
Elevation	100.000	WL_Elev				Crew:		DC/MI
STATION	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
Start LDB			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.1	0.00						
2	0.2	0.11		0.003				
3	0.3	0.11		0.043				
4	0.4	0.12		0.064				
5	0.5	0.12		0.082				
6	0.6	0.11		0.119				
7	0.7	0.11		0.110				
8	0.8	0.10		0.104				
9	0.9	0.09		0.091				
10	1.0	0.06		0.073				
11	1.1	0.00						
12								
13	0.1	0.00						
14	0.1	0.08		0.009				
15	0.2	0.09		0.098				
16	0.3	0.09		0.110				
17	0.4	0.08		0.177				
18	0.5	0.06		0.210				
19	0.6	0.04		0.177				
20	0.8	0.05		0.131				
21	1.0	0.03		0.082				
22	1.3	0.00						
23								
24								
25								
26					Observation: At the time of discharge measurement, the lake outlet was divided in 2 channels and both of them were measured.			
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.015	
34						A(m ²)	0.15	
35						B(m)	1.3	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-35: Chickenhead Lake Outlet Discharge Measurement Field Form for 13 September 2009

Project Name:		Comaplex (09-1373-0010)			Date		13-Sep-2009	
Waterbody:		Chickenhead Lake			Start Time		08:20	
Crossing ID:		Chickenhead Lake Outlet			End Time		08:40	
BM GPS Location		Survey		Staff	Datalogger SN: 639			
East	553948	BM_read	1.405	Gauge	Transducer SN: 14570			
North	6980697	WL_read	1.715	0.37	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	99.691		Crew:	DC/KO		
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.3	0.00			0.2	0.00		
2	0.6	0.07		0.158	0.3	0.17		0.079
3	0.7	0.06		0.168	0.4	0.19		0.317
4	0.8	0.06		0.165	0.5	0.20		0.320
5	0.9	0.06		0.119	0.6	0.22		0.357
6	1.0	0.07		0.232	0.7	0.21		0.497
7	1.1	0.06		0.177	0.8	0.23		0.543
8	1.2	0.00			0.9	0.23		0.387
9					1.0	0.22		0.308
10					1.1	0.20		0.332
11	0.1	0.00			1.2	0.22		0.280
12	0.2	0.10		0.091	1.3	0.20		0.396
13	0.3	0.09		0.235	1.4	0.19		0.433
14	0.4	0.10		0.201	1.5	0.20		0.302
15	0.5	0.10		0.247	1.6	0.16		0.247
16	0.6	0.10		0.311	1.8	0.00		
17	0.7	0.10		0.152				
18	0.8	0.08		0.119	0.5	0.00		
19	0.9	0.07		0.037	0.6	0.06		0.091
20	1.0	0.00			0.7	0.05		0.094
21					0.8	0.06		0.085
22					0.9	0.08		0.098
23	0.4	0.00			1.0	0.06		0.119
24	0.5	0.16		0.101	1.1	0.06		0.064
25	0.6	0.16		0.107	1.2	0.08		0.101
26	0.7	0.16		0.326	1.3	0.07		0.101
27	0.8	0.18		0.405	1.4	0.00		
28	0.9	0.20		0.384	Observation: At the time of discharge measurement, the lake outlet was divided in 5 channels and all of them were measured.			
29	1.0	0.20		0.378				
30	1.1	0.15		0.210				
31	1.3	0.00						
32								
33					RESULTS:	Q	0.162	
34						A(m ²)	0.59	
35						B(m)	1.7	

MELIADINE LAKE HYDROMETRIC STATION



LOCATION AND DETAILS

Located approximately 13 kilometres northwest of Meliadine West Camp.

Operational:	1997 12/6-25/9	1998 6/6-22/9	1999 6/6-22/9	2000 13/6-18/9	2008 2/8-31/8	2009 15/6-11/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Lat/Long: 63°05'17" N, 92°23'40" W	
Coordinates:	UTM: 530573 m E, 6995555 m N (NAD83, Zn15)				Datalogger: Optimum Instruments DD-520	
Transducer:	Keller Acculevel Submersible Level Transducer					



Meliadine Lake from hydrometric station.



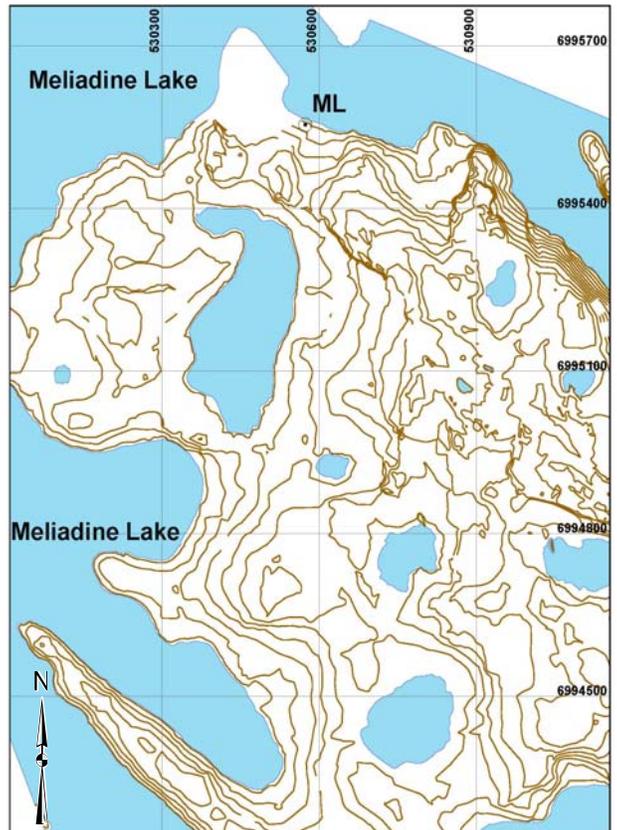
Meliadine Lake hydrometric station.



Meliadine Lake, looking west.



Meliadine Lake, looking east.



NTS Mapping of Area.



A4 - 8.0 MELIADINE LAKE

The Meliadine Lake hydrometric station was visited 4 times during the 2009 field program, and a continuous hydrograph was derived for the period of 11 June to 10 September 2009 based on continuous logger data. Details of each site visit are provided in Table A4-36. The hydrograph for Meliadine Lake in 2009 is presented in Figure A4-12. Mean daily data are presented in Table A4-37. It can be noted that the strong winds from NW from 1 and 2 September 2009 reported by Rankin Inlet A climate station had the same effect on the water level hydrograph as with the Chickenhead hydrometric station (presented above in Section 7.0).

Table A4-36: Site Visits to Meliadine Lake and Outlet Hydrometric Station, 2009

Date	Activities	Lake	Lake Water Surface Elevation (m; non-geodetic)
11 Jun	Installed pressure transducer and data logger. Measured water surface elevation.	✓	98.895
9 Jul	Measured water surface elevation and downloaded data logger.	✓	98.972
4 Aug	Measured water surface elevation and downloaded data logger.	✓	98.916
10 Sep	Measured water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	98.825

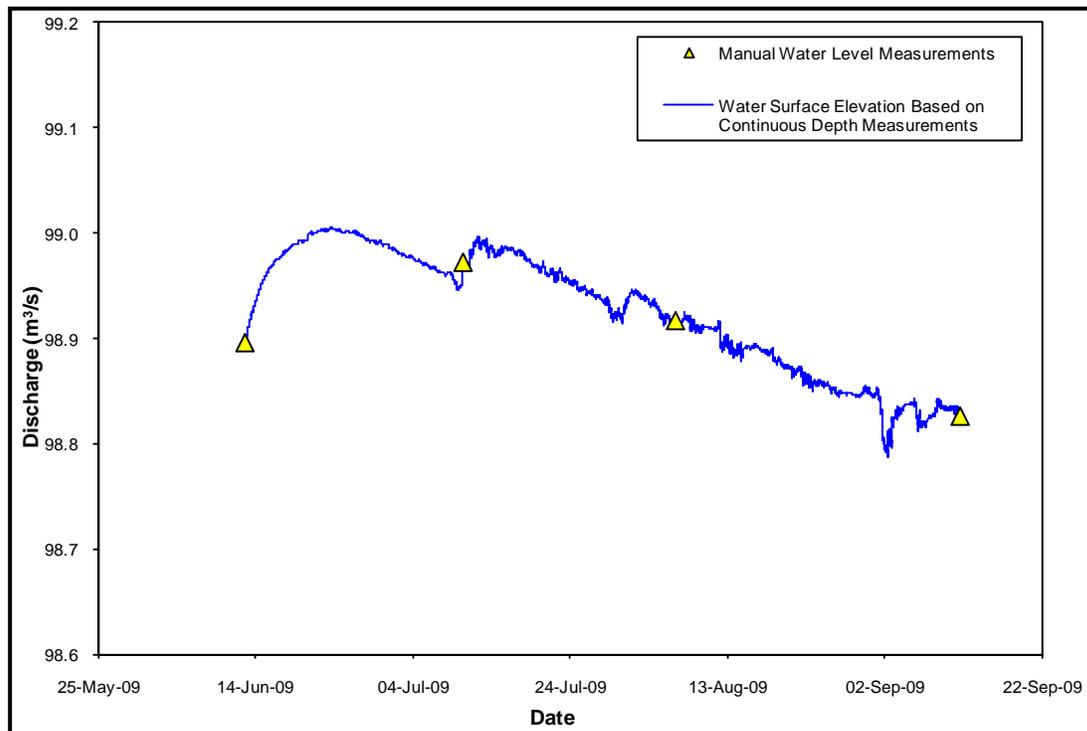


Figure A4-11: Hydrograph for Meliadine Lake, 2009



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-37: Meliadine Lake Mean Daily Water Surface Elevation (m), 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	98.983	98.941	98.813	-	-	-
2	-	-	-	-	-	-	98.979	98.936	98.811	-	-	-
3	-	-	-	-	-	-	98.976	98.932	98.830	-	-	-
4	-	-	-	-	-	-	98.972	98.920	98.837	-	-	-
5	-	-	-	-	-	-	98.970	98.918	98.833	-	-	-
6	-	-	-	-	-	-	98.965	98.916	98.820	-	-	-
7	-	-	-	-	-	-	98.962	98.918	98.825	-	-	-
8	-	-	-	-	-	-	98.960	98.912	98.835	-	-	-
9	-	-	-	-	-	-	98.951	98.909	98.834	-	-	-
10	-	-	-	-	-	-	98.970	98.910	98.833	-	-	-
11	-	-	-	-	-	-	98.986	98.907	98.832 P	-	-	-
12	-	-	-	-	-	98.907 P	98.990	98.895	-	-	-	-
13	-	-	-	-	-	98.931	98.985	98.889	-	-	-	-
14	-	-	-	-	-	98.952	98.981	98.889	-	-	-	-
15	-	-	-	-	-	98.966	98.985	98.891	-	-	-	-
16	-	-	-	-	-	98.975	98.983	98.891	-	-	-	-
17	-	-	-	-	-	98.982	98.981	98.887	-	-	-	-
18	-	-	-	-	-	98.988	98.972	98.883	-	-	-	-
19	-	-	-	-	-	98.992	98.968	98.876	-	-	-	-
20	-	-	-	-	-	98.997	98.964	98.871	-	-	-	-
21	-	-	-	-	-	99.001	98.961	98.869	-	-	-	-
22	-	-	-	-	-	99.003	98.959	98.862	-	-	-	-
23	-	-	-	-	-	99.004	98.954	98.857	-	-	-	-
24	-	-	-	-	-	99.002	98.950	98.857	-	-	-	-
25	-	-	-	-	-	99.001	98.946	98.854	-	-	-	-
26	-	-	-	-	-	99.000	98.942	98.850	-	-	-	-
27	-	-	-	-	-	98.995	98.938	98.848	-	-	-	-
28	-	-	-	-	-	98.992	98.931	98.847	-	-	-	-
29	-	-	-	-	-	98.990	98.921	98.846	-	-	-	-
30	-	-	-	-	-	98.988	98.926	98.850	-	-	-	-
31	-	-	-	-	-	-	98.942	98.848	-	-	-	-
MIN	-	-	-	-	-	98.907	98.921	98.846	98.811	-	-	-
MEAN	-	-	-	-	-	98.982	98.963	98.886	98.827	-	-	-
MAX	-	-	-	-	-	99.004	98.990	98.941	98.837	-	-	-

Note: Elevation based on local benchmark elevation of 100.000 m (non-geodetic; P = partial daily average)

MELIADINE LAKE MAIN OUTLET HYDROMETRIC STATION



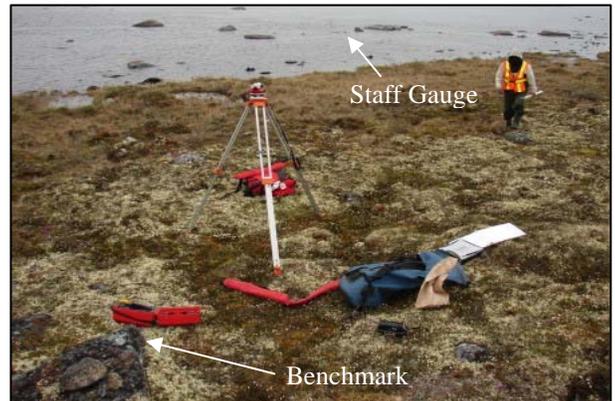
LOCATION AND DETAILS

Located approximately 11 kilometres west of Meliadine West Camp.

Operational:	1997 12/6-25/9	1998 6/6-22/9	1999 16/6-20/9	2000 13/6-18/9	2008 14/6-17/9	2009 12/6-11/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Drainage Area: 569 km ²	
Coordinates:	UTM: 530780 m E, 6989640 m N (NAD83, Zn15)				Lat/Long: 63°02'06" N, 92°23'29" W	
Transducer:	none				Datalogger: none	



Staff gauge.



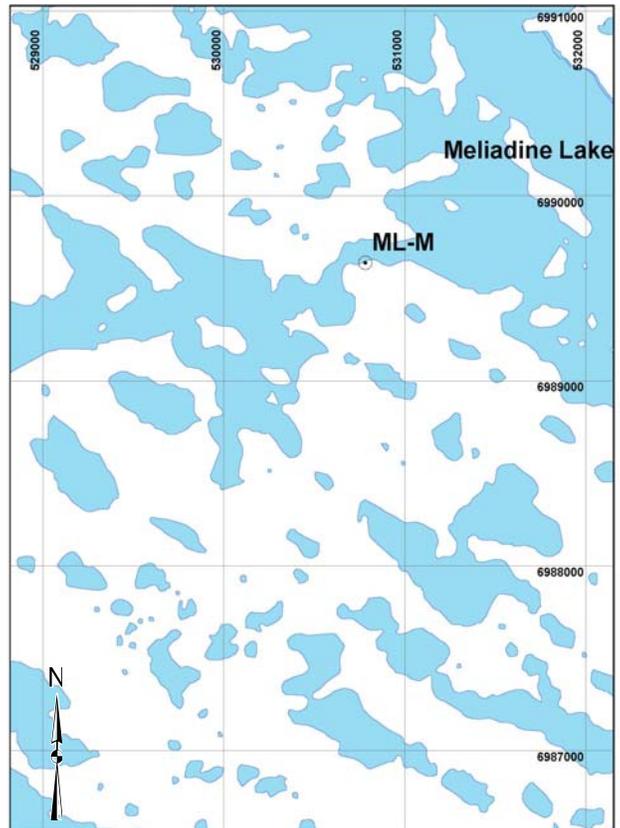
Meliadine Lake main outlet hydrometric station.



Downstream view of outlet from staff gauge.



Downstream view of outlet



NTS Mapping of Area.



A4 - 9.0 MELIADINE LAKE MAIN OUTLET

The Meliadine Lake Main Outlet hydrometric station was visited 4 times during the 2009 field program, and details of each site visit are provided in Table A4-38. No continuous monitoring was planned for this site. The existing stage-discharge rating curve for the outlet channel was updated and is provided in Figure A4-13. During the first site visit, the lake outlet was dry, with no discharge. Raw data are presented in Tables A4-39 to A4-41.

Table A4-38: Site Visits to Meliadine Lake Main Outlet Hydrometric Station, 2009

Date	Activities	Lake Water Surface Elevation (m, non-geodetic)	Outlet	Discharge (m ³ /s)
12 Jun	Measured water surface elevation.	98.919	✓	–
9 Jul	Measured discharge and water surface elevation.	98.975	✓	5.87
5 Aug	Measured discharge and water surface elevation.	98.924	✓	3.85
11 Sep	Measured discharge and water surface elevation.	98.844	✓	2.20

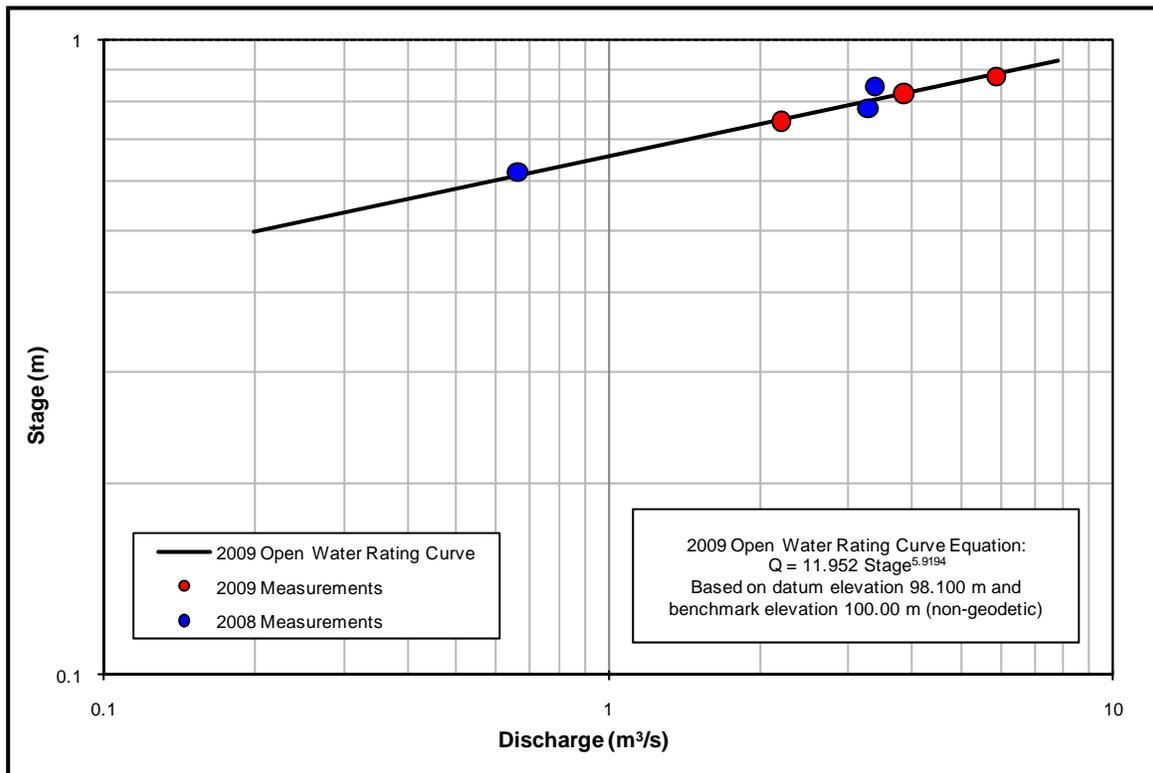


Figure A4-12: Meliadine Lake Main Outlet Stage-Discharge Rating Curve, 2009



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-39: Meliadine Lake Main Outlet Discharge Measurement Field Form for 9 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		09-Jul-2009	
Waterbody:		Meliadine Lake			Start Time		08:30	
Crossing ID:		Meliadine Lake Main Outlet			End Time		09:25	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	530780	BM_read	0.359	Gauge	Transducer SN: -			
North	6989640	WL_read	1.992	0.380	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	98.367		Crew:	DC/LI		
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start LDB	FROM LDB (m)		0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			FROM LDB (m)	(m)
1	0.0	0.00			58.2	0.26		0.05
2	1.0	0.18		0.00	60.2	0.44		0.18
3	3.0	0.30		0.04	62.2	0.38		0.28
4	5.0	0.28		0.01	64.2	0.26		0.28
5	7.0	0.24		0.02	66.2	0.18		0.27
6	8.0	0.25		0.02	68.2	0.18		0.23
7	9.0	0.22		0.01	70.2	0.10		0.09
8	10.0	0.00		0.00	72.2	0.08		0.08
9	11.0	0.00		0.00	73.7	0.10		0.05
10	12.0	0.10		0.02	74.2	0.00		
11	13.0	0.00		0.00				
12	13.8	0.14		0.01				
13	15.2	0.26		0.09				
14	15.7	0.00						
15	17.7	0.00						
16	18.2	0.22		0.21				
17	20.2	0.28		0.22				
18	22.2	0.24		0.14				
19	24.2	0.18		0.55				
20	26.2	0.18		0.39				
21	28.2	0.32		0.66				
22	30.2	0.28		0.32				
23	32.2	0.32		0.51				
24	34.2	0.38		0.53				
25	36.2	0.31		0.56				
26	38.2	0.34		0.62				
27	40.2	0.24		0.52				
28	42.2	0.36		0.42				
29	44.2	0.42		0.39				
30	46.2	0.34		0.34				
31	48.2	0.34		0.37				
32	50.2	0.38		0.33				
33	52.2	0.37		0.36	RESULTS:	Q (m ³ /s)	5.871	
34	54.2	0.42		0.32		A(m ²)	18.88	
35	56.2	0.3		0.35		B(m)	74.2	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-40: Meliadine Lake Main Outlet Discharge Measurement Field Form for 5 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		05-Aug-2009	
Waterbody:		Meliadine Lake			Start Time		08:30	
Crossing ID:		Meliadine Lake Main Outlet			End Time		09:25	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	530780	BM_read	0.359	Gauge	Transducer SN: -			
North	6989640	WL_read	1.992	0.330	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	98.367		Crew:	DC/MI		
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00			69.0	0.20		0.00
2	1.0	0.12		0.079	70.0	0.20		0.00
3	3.0	0.12		0.070	74.0	0.00		
4	6.0	0.12		0.107				
5	8.0	0.20		0.137				
6	9.0	0.22		0.015				
7	11.0	0.20		0.314				
8	13.0	0.32		0.137				
9	15.0	0.38		0.125				
10	17.0	0.36		0.229				
11	18.0	0.34		0.253				
12	20.0	0.48		0.283				
13	22.0	0.29		0.360				
14	24.0	0.46		0.226				
15	26.0	0.38		0.235				
16	28.0	0.38		0.253				
17	30.0	0.46		0.229				
18	32.0	0.34		0.390				
19	34.0	0.32		0.357				
20	36.0	0.43		0.265				
21	38.0	0.42		0.232				
22	40.0	0.58		0.219				
23	42.0	0.49		0.232				
24	44.0	0.48		0.247				
25	46.0	0.36		0.262				
26	48.0	0.36		0.223				
27	50.0	0.4		0.226				
28	52.0	0.42		0.107				
29	53.0	0.12		0.143				
30	55.0	0.12		0.064				
31	57.0	0.08		0.055				
32	59.0	0.1		0.030				
33	61.0	0.15		0.027	RESULTS:	Q	3.853	
34	63.0	0.2		0		A(m ²)	20.48	
35	65.0	0.23		0		B(m)	74.0	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-41: Meliadine Lake Main Outlet Discharge Measurement Field Form for 11 September 2009

Project Name:		Comaplex (09-1373-0010)			Date		11-Sep-2009	
Waterbody:		Meliadine Lake			Start Time		10:40	
Crossing ID:		Meliadine Lake Main Outlet			End Time		12:00	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	530780	BM_read	0.712	Gauge	Transducer SN: -			
North	6989640	WL_read	1.868	0.246	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	98.844		Crew:		DC/KO	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00						
2	2.0	0.06		0.006				
3	4.0	0.10		0.027				
4	6.0	0.10		0.018				
5	8.0	0.16		0.012				
6	10.0	0.20		0.006				
7	12.0	0.24		0.110				
8	14.0	0.32		0.110				
9	16.0	0.33		0.040				
10	18.0	0.31		0.125				
11	20.0	0.44		0.143				
12	22.0	0.22		0.152				
13	24.0	0.32		0.155				
14	26.0	0.30		0.177				
15	28.0	0.30		0.180				
16	30.0	0.32		0.204				
17	32.0	0.29		0.207				
18	34.0	0.32		0.216				
19	36.0	0.36		0.152				
20	38.0	0.42		0.219				
21	40.0	0.52		0.119				
22	42.0	0.41		0.146				
23	44.0	0.40		0.183				
24	46.0	0.31		0.186				
25	48.0	0.32		0.152				
26	50.0	0.30		0.140				
27	52.0	0.36		0.091				
28	54.0	0.10		0.061				
29	56.0	0.12		0.009				
30	58.0	0.10		0.000				
31	59.0	0.10		0.003				
32	61.0	0.10		0.000				
33	74.0	0.00			RESULTS:	Q	2.200	
34						A(m ²)	16.35	
35						B(m)	74.0	

MELIADINE LAKE WEST OUTLET HYDROMETRIC STATION

ML-W

FACTSHEET

LOCATION AND DETAILS

Located approximately 22 kilometres northwest of Meliadine West Camp.

Operational:	1997 12/6-25/9	1998 6/6-22/9	1999 16/6-20/9	2000 19/6-18/9	2008 16/6-18/9	2009 14/6-11/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Drainage Area: 569 km ²	
Coordinates:	UTM: 523818 m E, 7000994 m N (NAD83, Zn15)				Lat/Long: 63°08'14" N, 92°31'39" W	
Transducer:	none				Datalogger: none	



Meliadine Lake west outlet from staff gauge.



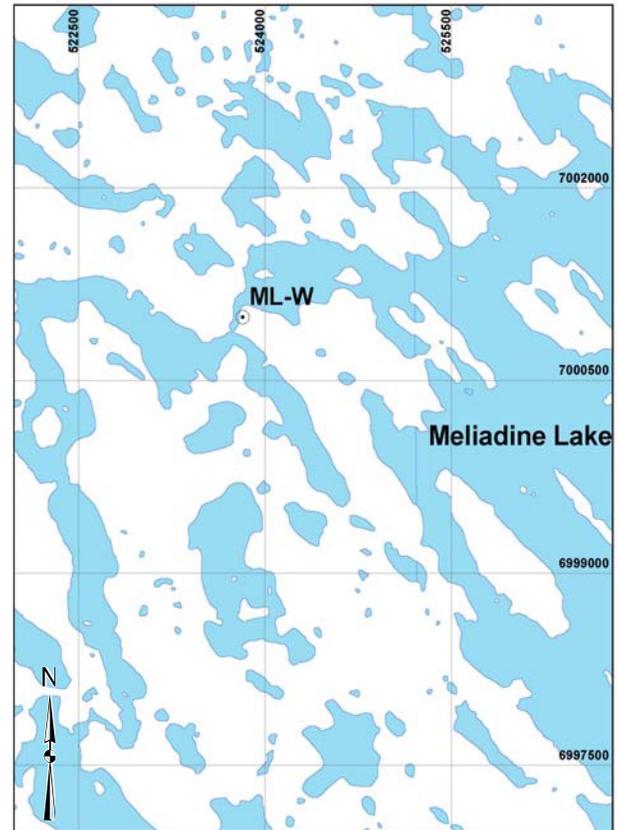
Meliadine Lake west outlet hydrometric station.



Downstream view of outlet.



Benchmark.



NTS Mapping of Area.



A4 - 10.0 MELIADINE LAKE WEST OUTLET (DIANA RIVER)

The Meliadine Lake West Outlet hydrometric station was visited 4 times during the 2009 field program and details of each site visit are provided in Table A4-42. No continuous monitoring was planned for this site. The existing rating curve for the outlet channel was updated and is provided in Figure A4-14. Raw data are presented in Tables A4-43 to A4-46.

Table A4-42: Site Visits to Meliadine Lake West Outlet Hydrometric Station, 2009

Date	Activities	Lake Water Surface Elevation (m, non-geodetic)	Outlet	Discharge (m ³ /s)
14 Jun	Measured water surface elevation.	97.443	✓	2.88
10 Jul	Measured discharge and water surface elevation.	97.475	✓	3.57
5 Aug	Measured discharge and water surface elevation.	97.406	✓	1.71
11 Sep	Measured discharge and water surface elevation.	97.312	✓	0.537

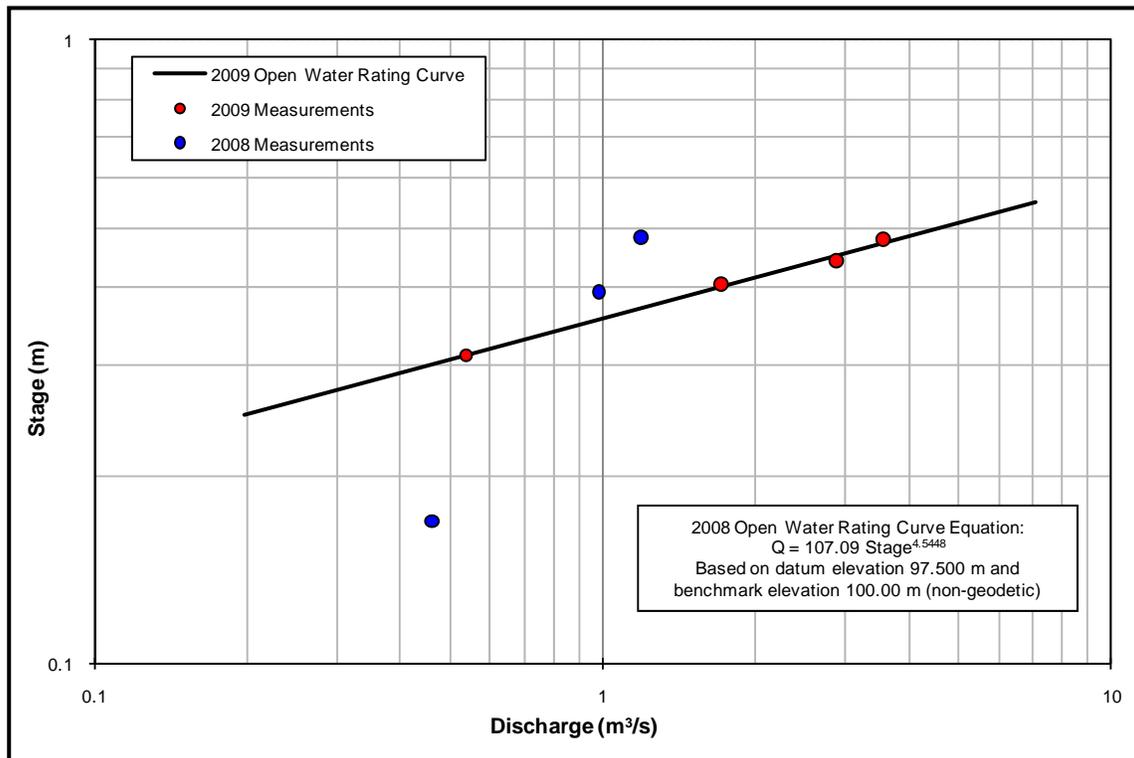


Figure A4-13: Meliadine Lake West Outlet Stage-Discharge Rating Curve, 2009



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-43: Meliadine Lake West Outlet Discharge Measurement Field Form for 14 June 2009

Project Name:		Comaplex (09-1373-0010)			Date		14-Jun-2009	
Waterbody:		Meliadine Lake			Start Time		12:15	
Crossing ID:		Meliadine Lake West Outlet			End Time		12:40	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	523818	BM_read	0.910	Gauge	Transducer SN: -			
North	7000994	WL_read	3.467	0.604	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	97.443		Crew:		DC/WN	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00			35.0	0.18		0.19
2	1.0	0.14		0.01	36.0	0.00		
3	2.0	0.18		0.02	37.0	0.00		
4	3.0	0.00			38.0	0.00		
5	4.0	0.09		0.15	39.0	0.00		
6	5.0	0.60		0.25	40.0	0.40		0.54
7	6.0	0.00			41.0	0.32		0.11
8	7.0	0.00			42.0	0.32		0.55
9	8.0	0.14		0.09	43.0	0.22		0.590
10	9.0	0.12		0.15	44.0	0.00		
11	10.0	0.20		0.15	45.0	0.00		
12	11.0	0.15		0.13	57.0	0.00		
13	12.0	0.23		0.26	58.0	0.13		0.110
14	13.0	0.25		0.01	59.0	0.16		0.170
15	14.0	0.16		0.35	60.0	0.18		0.100
16	15.0	0.23		0.08	61.0	0.10		0.180
17	16.0	0.24		0.25	62.0	0.10		0.340
18	17.0	0.00			63.0	0.00		
19	18.0	0.45		0.52				
20	19.0	0.32		0.04				
21	20.0	0.24		0.83				
22	21.0	0.32		0.23				
23	22.0	0.40		0.16				
24	23.0	0.20		0.49				
25	24.0	0.14		0.39				
26	25.0	0.30		0.18				
27	26.0	0.28		0.54				
28	27.0	0.16		0.65				
29	28.0	0.22		0.77				
30	29.0	0.12		0.63				
31	30.0	0.22		0.16				
32	31.0	0.14		0.35				
33	32.0	0.12		0.85	RESULTS:	Q	2.877	
34	33.0	0.32		0.79		A(m ²)	8.70	
35	34.0	0.00				B(m)	63.0	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-44: Meliadine Lake West Outlet Discharge Measurement Field Form for 10 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		10-Jul-2009	
Waterbody:		Meliadine Lake			Start Time		11:30	
Crossing ID:		Meliadine Lake West Outlet			End Time		12:40	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	523818	BM_read	0.273	Gauge	Transducer SN: -			
North	7000994	WL_read	2.795	0.635	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	97.478		Crew:	DC/IL		
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.8	0.00			0.0	0.00		
2	1.0	0.08		0.06	0.5	0.14		0.09
3	3.0	0.18		0.06	1.5	0.12		0.30
4	5.0	0.12		0.09	1.8	0.10		0.94
5	7.0	0.10		0.06	2.1	0.21		0.24
6	9.0	0.14		0.08	2.5	0.31		0.01
7	10.0	0.22		0.15	3.5	0.15		0.14
8	12.0	0.20		0.41	4.5	0.00		
9	14.0	0.25		0.10				
10	16.0	0.22		0.61				
11	18.0	0.20		0.69				
12	20.0	0.38		0.77				
13	21.0	0.32		0.41				
14	22.0	0.20		0.45				
15	23.0	0.50		0.33				
16	24.0	0.40		0.14				
17	26.0	0.26		0.98				
18	27.0	0.19		0.81				
19	28.0	0.18		0.25				
20	29.0	0.20		0.96				
21	30.0	0.20		0.38				
22	31.0	0.25		0.65				
23	32.0	0.23		0.50				
24	33.0	0.21		0.84				
25	34.0	0.16		0.29				
26	35.0	0.00		0.00				
27	35.0	0.00		0.00				
28				0.00				
29	0.0	0.00		0.00				
30	0.5	0.21		0.52				
31	1.0	0.38		0.33				
32	2.0	0.29		0.16				
33	2.5	0.37		0.37	RESULTS:	Q	3.568	
34	4.0	0.00				A(m ²)	9.00	
35						B(m)	35.0	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-45: Meliadine Lake West Outlet Discharge Measurement Field Form for 5 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		05-Aug-2009	
Waterbody:		Meliadine Lake			Start Time		08:40	
Crossing ID:		Meliadine Lake West Outlet			End Time		10:15	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	523818	BM_read	0.008	Gauge	Transducer SN: -			
North	7000994	WL_read	2.603	0.56	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	97.4055		Crew:		DC/MI	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00			54.0	0.21		0.02
2	2.0	0.08		0.01	56.0	0.30		0.04
3	4.0	0.10		0.00	58.0	0.10		0.03
4	6.0	0.12		0.05	60.0	0.14		0.02
5	8.0	0.12		0.06	63.0	0.15		0.06
6	10.0	0.11		0.05	66.0	0.12		0.00
7	12.0	0.14		0.12	67.0	0.06		0.02
8	14.0	0.20		0.11	68.0	0.00		
9	16.0	0.18		0.05				
10	18.0	0.16		0.07				
11	20.0	0.20		0.13				
12	22.0	0.36		0.21				
13	24.0	0.40		0.15				
14	26.0	0.34		0.14				
15	27.0	0.24		0.21				
16	28.0	0.22		0.08				
17	30.0	0.34		0.18				
18	31.0	0.30		0.18				
19	32.0	0.26		0.13				
20	33.0	0.38		0.09				
21	34.0	0.30		0.11				
22	35.0	0.30		0.15				
23	36.0	0.32		0.22				
24	37.0	0.36		0.18				
25	38.0	0.39		0.12				
26	39.0	0.36		0.15				
27	41.0	0.30		0.11				
28	43.0	0.56		0.15				
29	44.0	0.45		0.16				
30	45.0	0.31		0.14				
31	46.0	0.28		0.12				
32	47.0	0.27		0.15				
33	48.0	0.20		0.12	RESULTS:	Q	1.709	
34	50.0	0.12		0.09		A(m ²)	15.05	
35	52.0	0.2		0.1		B(m)	68.0	



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Meliadine Gold Project 2009 Hydrometric Data

Table A4-46: Meliadine Lake West Outlet Discharge Measurement Field Form for 11 September 2009

Project Name:		Comaplex (09-1373-0010)			Date		11-Sep-2009	
Waterbody:		Meliadine Lake			Start Time		14:00	
Crossing ID:		Meliadine Lake West Outlet			End Time		16:00	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	523818	BM_read	0.295	Gauge	Transducer SN: -			
North	7000994	WL_read	2.983	0.476	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	97.312		Crew:		DC/KO	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00						
2	2.0	0.16						
3	4.0	0.10						
4	8.0	0.16						
5	9.0	0.22		0.018				
6	11.0	0.40		0.021				
7	13.0	0.41		0.018				
8	14.0	0.42		0.018				
9	16.0	0.52		0.015				
10	18.0	0.56		0.012				
11	20.0	0.58		0.027				
12	22.0	0.60		0.015				
13	24.0	0.38		0.034				
14	26.0	0.36		0.064				
15	28.0	0.32		0.046				
16	30.0	0.28		0.110				
17	32.0	0.34		0.110				
18	34.0	0.30		0.125				
19	36.0	0.26		0.088				
20	38.0	0.32		0.049				
21	40.0	0.22		0.027				
22	42.0	0.13		0.006				
23	43.5	0.08		0.018				
24	45.0	0.00						
25	46.0	0.00						
26	46.5	0.25		0.015				
27	48.5	0.13		0.012				
28	49.5	0.00						
29								
30								
31								
32								
33					RESULTS:	Q	0.537	
34						A(m ²)	14.33	
35						B(m)	49.5	

MELIADINE RIVER NEAR THE MOUTH HYDROMETRIC STATION

ML-R FACTSHEET

LOCATION AND DETAILS

Located approximately 18 kilometres south of Meliadine West Camp.

Operational:	1997 13/6-25/9	1998 4/6-22/9	1999 17/6-22/9	2000 12/6-19/9	2008 10/7-17/9	2009 11/6-11/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Drainage Area: 689 km ²	
Coordinates:	UTM: 544835 m E, 6971643 m N (NAD83, Zn15)				Lat/Long: 62°52'19" N, 92°07'07" W	
Transducer:	none				Datalogger: none	



Upstream view of the Meliadine River near the mouth.



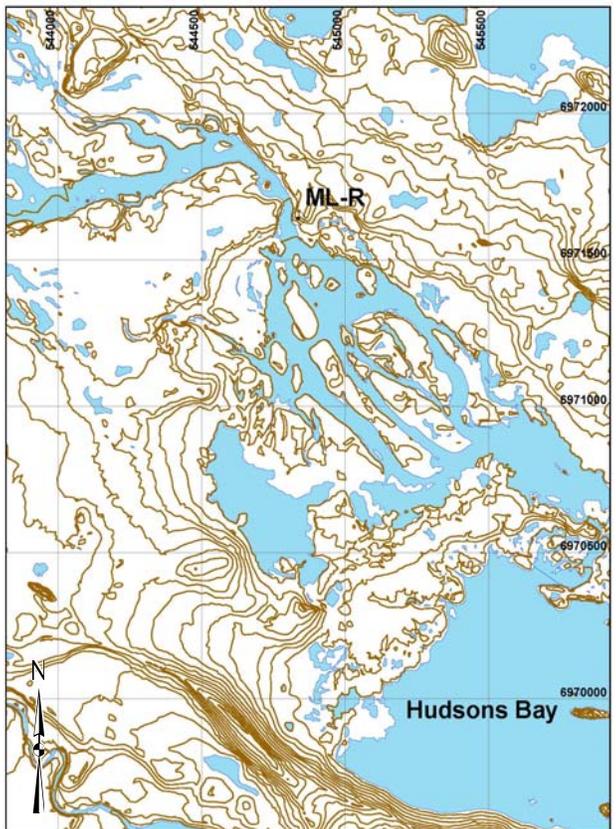
Upstream view of the Meliadine River near the mouth.



Meliadine River near the mouth, July 2009.



Benchmark.



NTS Mapping of Area.



A4 - 11.0 MELIADINE RIVER NEAR THE MOUTH

The Meliadine River near the Mouth hydrometric station was visited 4 times during the 2009 field program. Details of each site visit are provided in Table A4-47. No continuous monitoring was planned for this site. The stage-discharge rating curve for the outlet channel is provided in Figure A4-15. During the first site visit, the river conditions did not allow for a safe discharge measurement. On 13 July, the discharge measurement was performed using the ADCP, and the measurement summary is presented in Table A4-48. Raw data are presented in Tables A4-49 and A4-50.

Table A4-47: Site Visits to Meliadine River near the Mouth Hydrometric Station, 2009

Date	Activities	Lake Water Surface Elevation (m, non-geodetic)	Outlet	Discharge (m ³ /s)
11 Jun	Measured water surface elevation.	98.118		
13 Jul	Measured discharge and water surface elevation.	97.764	✓	12.5
4 Aug	Measured discharge and water surface elevation.	97.647	✓	5.78
11 Sep	Measured discharge and water surface elevation.	97.575	✓	3.80

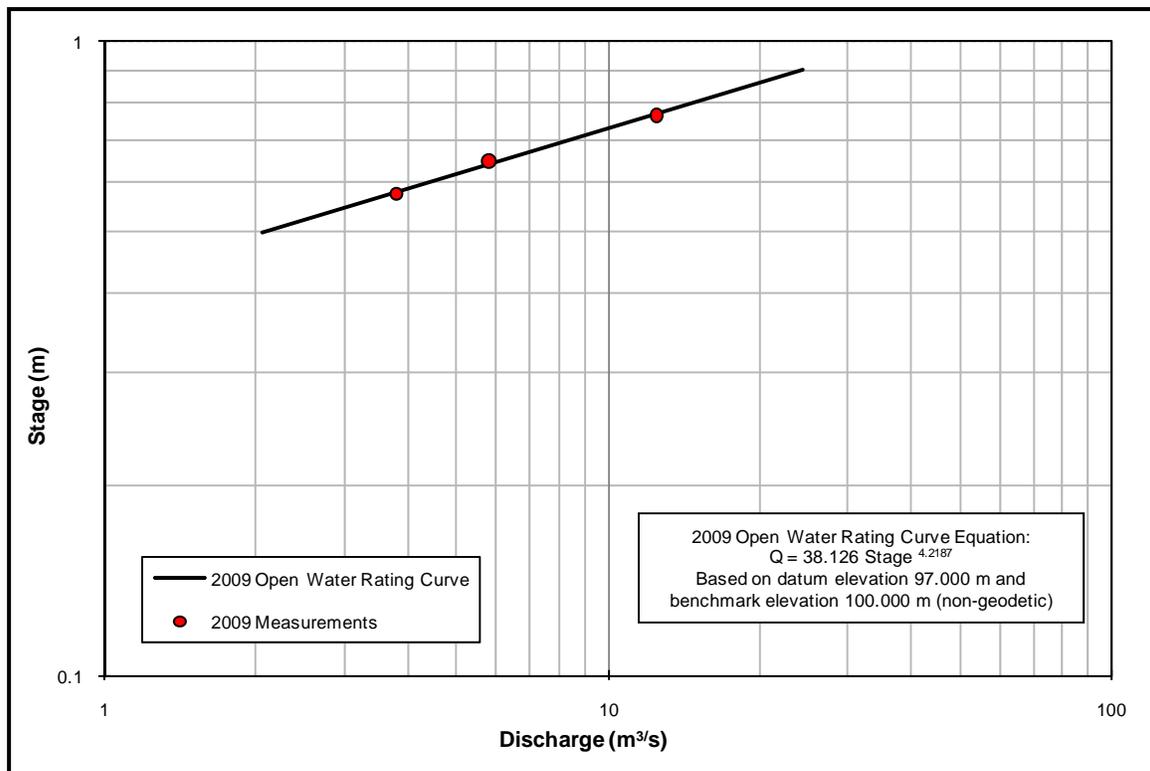


Figure A4-14: Meliadine River near the Mouth Stage-Discharge Rating Curve, 2009



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Meliadine Gold Project 2009 Hydrometric Data

Table A4-48: Meliadine River near the Mouth ADCP Summary Discharge Measurement for 13 July 2009

Station Number: ML-R											Meas. No: 1							
Station Name: Meliadine River near Rankin Inlet											Date: 07/13/2009							
Party:				Width: 34.4 m				Processed by: Dan Ciobotaru										
Boat/Motor:				Area: 25.8 m ²				Mean Velocity: 0.488 m/s										
Gage Height: 0.000 m				G.H.Change: 0.000 m				Discharge: 12.5 m ³ /s										
Area Method: Avg. Course				ADCP Depth: 0.100 m				Index Vel.: 0.00 m/s		Rating No.: 1								
Nav. Method: Bottom Track				Shore Ens.:10				Adj.Mean Vel: 0.00 m/s		Qm Rating: U								
MagVar Method: Model (-7.5°)				Bottom Est: Power (0.1667)				Rated Area: 0.000 m ²		Diff.: 0.000%								
Depth Sounder: Not Used				Top Est: Power (0.1667)				Control1: Unspecified										
								Control2: Unspecified										
								Control3: Unspecified										
Screening Thresholds:											ADCP:							
BT 3-Beam Solution: YES				Max. Vel.: 3.45 m/s				Type/Freq.: Rio Grande/1200 kHz										
WT 3-Beam Solution: NO				Max. Depth: 1.18 m				Serial #: 7286		Firmware: 10.16								
BT Error Vel.: 0.10 m/s				Mean Depth: 0.750 m				Bin Size: 5 cm		Blank: 25 cm								
WT Error Vel.: 1.07 m/s				% Meas.: 14.14				BT Mode: 5		BT Pings: 1								
BT Up Vel.: 0.30 m/s				Water Temp.: None				WT Mode: 12		WT Pings: 1								
WT Up Vel.: 2.50 m/s				ADCP Temp.: 9.9 °C				WV : 175		WO : 1, 4								
Use Weighted Mean Depth: YES																		
Performed Diag. Test: NO											Project Name: MLDriverRankin.mmt							
Performed Moving Bed Test: NO											Software: 2.05							
Performed Compass Test: NO																		
Meas. Location:																		
Tr.#	Edge Distance		#Ens.	Discharge						Width	Area	Time		Mean Vel.		% Bad		
	L	R		Top	Middle	Bottom	Left	Right	Total			Start	End	Boat	Water	Ens.	Bins	
004	L	5.00	5.00	254	6.62	1.81	2.61	0.567	0.669	12.3	33.0	25.3	09:51	09:53	0.20	0.48	25	43
009	R	6.00	6.00	284	6.62	1.85	2.72	0.626	0.740	12.6	37.8	28.5	10:00	10:03	0.20	0.44	30	42
012	L	6.00	6.00	210	6.49	1.68	2.54	1.02	0.690	12.4	34.0	25.2	10:10	10:12	0.20	0.49	33	41
014	L	6.00	6.00	238	7.05	1.75	2.84	0.562	0.656	12.8	32.7	24.0	10:16	10:18	0.20	0.53	35	41
Mean		5.75	5.75	246	6.69	1.77	2.68	0.693	0.689	12.5	34.4	25.8	Total	00:27	0.20	0.49	31	42
SDev		0.50	0.50	31	0.245	0.076	0.129	0.217	0.037	0.245	2.4	1.9			0.00	0.04		
SD/M		0.09	0.09	0.13	0.04	0.04	0.05	0.31	0.05	0.02	0.07	0.07			0.02	0.08		
Remarks:																		



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-49: Meliadine River near the Mouth Discharge Measurement Field Form for 4 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		04-Aug-2009	
Waterbody:		Meliadine River			Start Time		11:40	
Crossing ID:		Meliadine River near the Mouth			End Time		13:50	
BM GPS Location		Survey		Staff		Datalogger SN: -		
East	523818	BM_read	0.297	Gauge		Transducer SN: -		
North	7000994	WL_read	2.650			Meter Type/SN: Marsh McBirney-2005856		
Elevation	100.000	WL_Elev	97.647			Crew:		DC/MI
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start LDB	FROM LDB (m)		0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			FROM LDB (m)	(m)
1	0.5	0.00						
2	1.0	0.40	0.06					
3	2.0	0.35	0.06					
4	4.0	0.46	0.08					
5	6.0	0.54	0.17					
6	8.0	0.59	0.28					
7	10.0	0.68	0.30	0.229				
8	12.0	0.87	0.26	0.177				
9	14.0	0.92	0.34	0.244				
10	16.0	0.97	0.41	0.241				
11	18.0	0.90	0.40	0.238				
12	20.0	0.94	0.44	0.241				
13	21.0	0.87	0.41	0.332				
14	22.0	0.80	0.38	0.259				
15	24.0	0.79	0.37	0.259				
16	26.0	0.62	0.32	0.244				
17	27.0	0.65	0.31	0.229				
18	28.0	0.60	0.16	0.110				
19	29.0	0.56	0.16					
20	30.0	0.46	0.14					
21	31.0	0.40	0.21					
22	32.0	0.48	0.25					
23	33.0	0.34	0.18					
24	34.0	0.20	0.09					
25	36.0	0.10	0.07					
26	38.0	0.00						
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	5.78	
34						A(m ²)	22.7	
35						B(m)	37.5	



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Table A4-50: Meliadine River near the Mouth Discharge Measurement Field Form for 11 September 2009

Project Name:		Comaplex (09-1373-0010)			Date		11-Sep-2009	
Waterbody:		Meliadine River			Start Time		07:55	
Crossing ID:		Meliadine River near the Mouth			End Time		09:15	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	523818	BM_read	0.428	Gauge	Transducer SN: -			
North	7000994	WL_read	2.853	n/a	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	97.575		Crew:	DC/KO		
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.0	0.00						
2	1.0	0.31	0.040					
3	2.0	0.33	0.049					
4	3.0	0.39	0.067					
5	4.0	0.41	0.064					
6	5.0	0.49	0.110					
7	6.0	0.50	0.140					
8	8.0	0.60	0.168					
9	9.0	0.60	0.165					
10	10.0	0.63	0.198					
11	11.0	0.66	0.180					
12	12.0	0.74	0.168					
13	14.0	0.85	0.332	0.210				
14	16.0	0.83	0.335	0.250				
15	17.0	0.87	0.314	0.235				
16	18.0	0.86	0.320	0.171				
17	19.0	0.89	0.341	0.128				
18	20.0	0.77	0.329	0.198				
19	21.0	0.64	0.262	0.201				
20	22.0	0.82	0.293	0.207				
21	23.0	0.72	0.259	0.165				
22	24.0	0.58	0.219					
23	25.0	0.56	0.241					
24	26.0	0.54	0.238					
25	27.0	0.54	0.101					
26	28.0	0.50	0.101					
27	29.0	0.40	0.110					
28	31.0	0.39	0.113					
29	33.0	0.25	0.076					
30	35.2	0.00						
31								
32								
33					RESULTS:	Q	3.80	
34						A(m ²)	19.7	
35						B(m)	35.2	

LAKE A54 HYDROMETRIC STATION

A54 FACTSHEET

LOCATION AND DETAILS

Located approximately 1.7 kilometres west of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008	2009
					11/7-16/9	11/6-13/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Drainage Area: n/a km ²	
Coordinates:	UTM: 540417 m E, 6988473 m N (NAD83, Zn15)				Lat/Long: 63°01'25" N, 92°12'05" W	
Transducer:	none				Datalogger: none	



Benchmark.



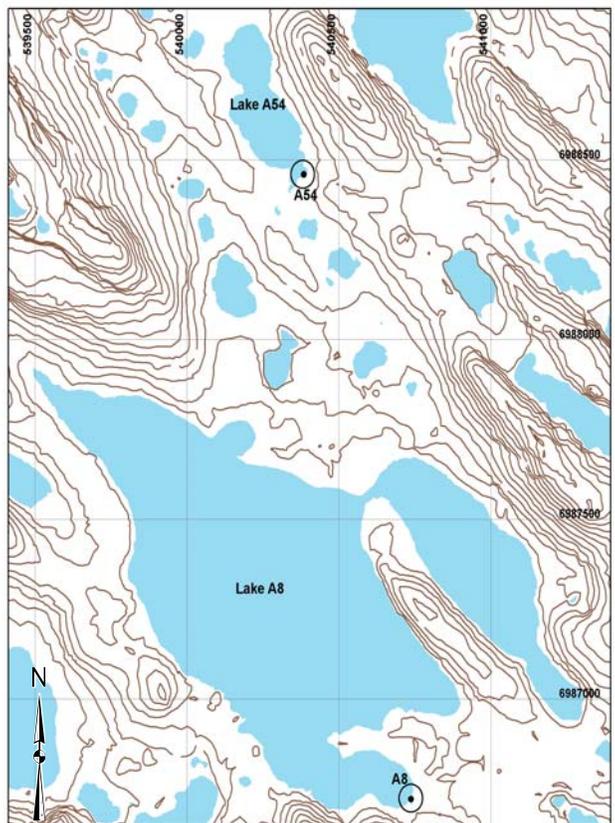
Staff gauge with proposed mine location in background.



Lake A54, looking north.



Lake A54, looking northwest.



NTS Mapping of Area.



A4 - 12.0 LAKE A54 AND OUTLET

Lake A54 and Outlet hydrometric station was visited 4 times during the 2009 field program. Details of each site visit are provided in Table A4-51. No continuous monitoring was planned for this site. No flow was observed during site visits.

Table A4-51: Site Visits to Lake A54 and Outlet Hydrometric Station, 2009

Date	Activities	Lake	Lake Water Surface Elevation (m, non-geodetic)
11 Jun	Measured water surface elevation.	✓	99.681
8 Jul	Measured water surface elevation.	✓	99.432
3 Aug	Measured water surface elevation.	✓	99.434
13 Sep	Measured water surface elevation.	✓	99.469

LAKE A8 HYDROMETRIC STATION

A8 FACTSHEET

LOCATION AND DETAILS

Located approximately 2.6 kilometres southwest of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008	2009
					10/7-16/9	12/6-13/9
Benchmark:	Bolt on boulder; 100.000 m (non-geodetic)				Drainage Area: n/a km ²	
Coordinates:	UTM: 540728 m E, 6986693 m N (NAD83, Zn15)				Lat/Long: 63°00'27" N, 92°11'44" W	
Transducer:	none				Datalogger: none	



Benchmark location (before installation of bolt).



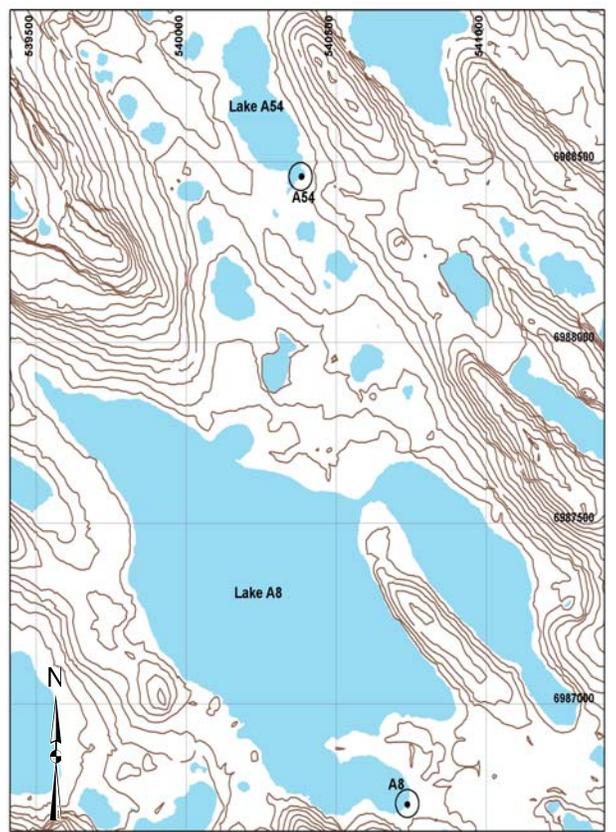
Staff gauge location, view north.



Lake A8, view north from outlet.



Downstream view of outlet.



NTS Mapping of Area.



A4 - 13.0 LAKE A8 AND OUTLET

Lake A8 and Outlet hydrometric station was visited 4 times during the 2009 field program. Details of each site visit are provided in Table A4-52. No continuous monitoring was planned for this site. Flow was observed during each visit at Lake A8 outlet and a stage-discharge rating curve was developed and is provided in Figure A4-16. Raw data are presented in Tables A4-53 to A4-56.

Table A4-52: Site Visits to Lake A8 and Outlet Hydrometric Station, 2009

Date	Activities	Lake	Lake Water Surface Elevation (m; non-geodetic)	Outlet	Discharge (m ³ /s)	Staff Gauge
12 Jun	Measured discharge and water surface elevation.	✓	100.045	✓	0.171	0.291
9 Jul	Measured discharge and water surface elevation.	✓	99.943	✓	0.019	0.200
6 Aug	Measured discharge and water surface elevation.	✓	99.892	✓	0.003	0.190
13 Sep	Measured discharge and water surface elevation.	✓	99.951	✓	0.032	0.240

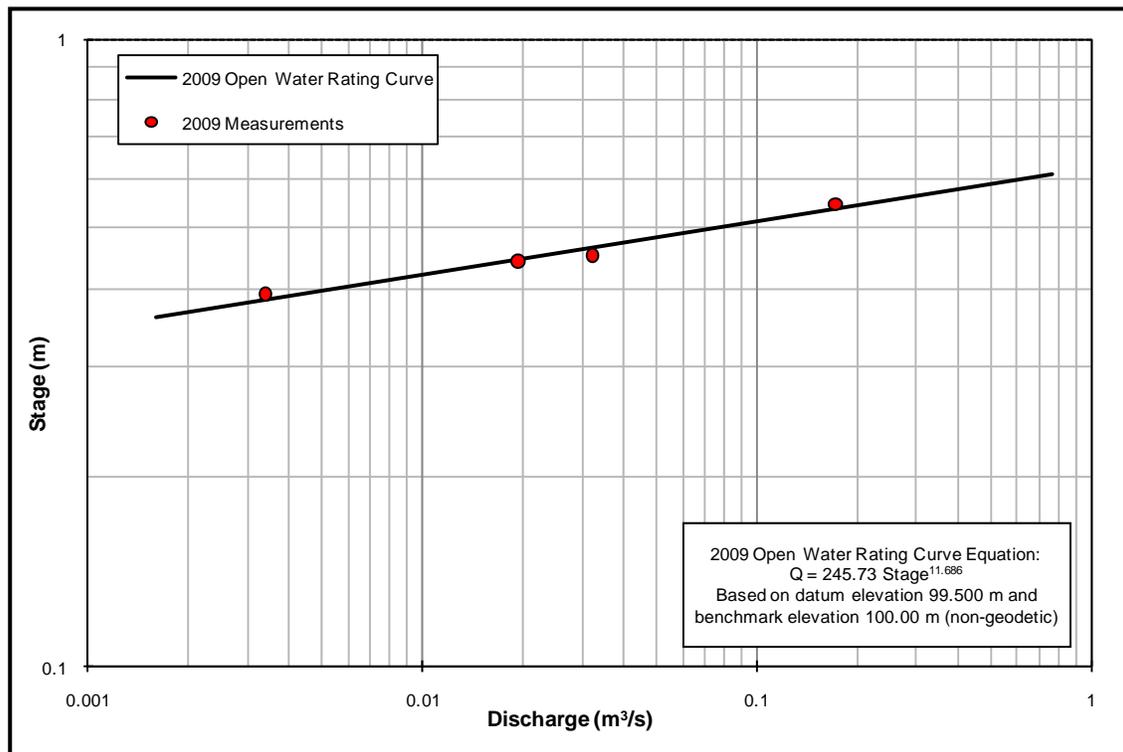


Figure A4-15: Lake A8 Stage-Discharge Rating Curve, 2009



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Table A4-53: Lake A8 Main Outlet Discharge Measurement Field Form for 12 June 2009

Project Name:		Comaplex (09-1373-0010)			Date		12-Jun-2009	
Waterbody:		Lake A8			Start Time		11:24	
Crossing ID:		Lake A8 Outlet			End Time		11:52	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	540728	BM_read	1.350	Gauge	Transducer SN: -			
North	6986693	WL_read	1.305	0.291	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	100.045		Crew:		JL /	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.00	0.00			0.00	0.00		
2	0.20	0.10		0.07	0.10	0.10		0.14
3	0.40	0.14		0.07	0.20	0.14		0.13
4	0.60	0.14		0.26	0.30	0.11		0.16
5	0.80	0.19		0.27	0.40	0.00		
6	1.00	0.19		0.15				
7	1.20	0.20		0.30				
8	1.40	0.12		0.42				
9	1.60	0.14		0.60				
10	1.80	0.18		0.40				
11	2.00	0.06		0.25				
12	2.20	0.22		0.20				
13	2.40	0.18		0.24				
14	2.60	0.17		0.39				
15	2.80	0.12		0.01				
16	3.00	0.11		0.02				
17	3.20	0.08		0.00				
18	3.40	0.00		0.00				
19	3.60	0.00		0.00				
20	3.75	0.08		0.03				
21	3.90	0.12		0.05				
22	4.05	0.16		0.39				
23	4.20	0.14		0.50				
24	4.35	0.17		0.18				
25	4.50	0.16		0.24				
26	4.65	0.16		0.38	Observation: At the time of discharge measurement, the lake outlet was divided in 2 channels and both of them were measured.			
27	4.80	0.16		0.43				
28	4.95	0.12		0.04				
29	5.10	0.00						
30								
31					RESULTS: Q 0.171 A(m ²) 0.694 B(m) 5.1			
32								
33								
34								
35								



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Table A4-54: Lake A8 Main Outlet Discharge Measurement Field Form for 9 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		9-July-2009	
Waterbody:		Lake A8			Start Time		11:50	
Crossing ID:		Lake A8 Outlet			End Time		12:32	
BM GPS Location		Survey		Staff		Datalogger SN: -		
East	540728	BM_read	1.574	Gauge		Transducer SN: -		
North	6986693	WL_read	1.631	0.291		Meter Type/SN: Marsh McBirney-2005856		
Elevation	100.000	WL_Elev	99.943			Crew:		DC / LI
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.10	0.00						
2	0.10	0.25		0.00				
3	0.20	0.32		0.07				
4	0.30	0.18		0.26				
5	0.40	0.14		0.23				
6	0.50	0.14		0.06				
7	0.60	0.12		0.10				
8	0.70	0.12		0.14				
9	0.80	0.10		0.25				
10	0.90	0.12		0.24				
11	1.00	0.08		0.00				
12	1.10	0.00						
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.019	
34						A(m ²)	0.14	
35						B(m)	1.0	



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Table A4-55: Lake A8 Main Outlet Discharge Measurement Field Form for 6 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		06-Aug-2009	
Waterbody:		Lake A8			Start Time		16:00	
Crossing ID:		Lake A8 Outlet			End Time		16:35	
BM GPS Location		Survey		Staff	Datalogger SN: -			
East	540728	BM_read	1.430	Gauge	Transducer SN: -			
North	6986693	WL_read	1.538	0.19	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev	99.892		Crew:		DC /	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.10	0.00						
2	0.15	0.21		0.02				
3	0.30	0.13		0.07				
4	0.40	0.10		0.07				
5	0.50	0.10		0.00				
6	0.60	0.09		0.06				
7	0.70	0.09		0.07				
8	0.80	0.08		0.00				
9	0.90	0.08		0.00				
10	1.00	0.00						
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.003	
34						A(m ²)	0.09	
35						B(m)	0.9	



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Meliadine Gold Project 2009 Hydrometric Data

Table A4-56: Lake A8 Main Outlet Discharge Measurement Field Form for 13 September 2009

Project Name:		Comaplex (09-1373-0010)			Date		13-Sep-2009					
Waterbody:		Lake A8			Start Time		10:30					
Crossing ID:		Lake A8 Outlet			End Time		11:35					
BM GPS Location		Survey		Staff	Datalogger SN: -							
East	540728	BM_read	1.557	Gauge	Transducer SN: -							
North	6986693	WL_read	1.616	24	Meter Type/SN: Marsh McBirney-2005856							
Elevation	100.000	WL_Elev	99.941		Crew:	DC /						
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY					
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)				
1	0.20	0.00										
2	0.30	0.10		0.204								
3	0.40	0.27		0.177								
4	0.50	0.27		0.152								
5	0.60	0.19		0.094								
6	0.70	0.16		0.076								
7	0.80	0.00										
8												
9												
10												
11	0.30	0.00										
12	0.40	0.10		0.137								
13	0.50	0.12		0.216								
14	0.60	0.13		0.195								
15	0.70	0.15		0.149								
16	0.80	0.15		0.183								
17	0.90	0.16		0.149								
18	1.00	0.14		0.140								
19	1.10	0.10		0.131								
20	1.20	0.12		0.094								
21	1.30	0.00										
22												
23												
24												
25												
26					Observation: At the time of discharge measurement, the lake outlet was divided in 2 channels and both of them were measured.							
27												
28												
29												
30												
31												
32					RESULTS: Q 0.032							
33									A(m ²) 0.21			
34												
35												



A4 - 14.0 MISCELLANEOUS MEASUREMENTS

A4 - 14.1 Lake D1 and Outlet

The Lake D1 and Outlet hydrometric station was monitored as a supplemental station, starting on 11 July 2009 and ending on 10 September 2009. Details of each site visit are provided in Table A4-57. The hydrographs and rating curve for Lake D1 and Outlet for the period of 11 July to 10 September 2009 were derived using continuous logger data and are presented in Figure A4-17. Based on the continuous logger data and the discharge measurements, a stage-discharge rating curve was developed for the outlet channel and is provided in Figure A4-18. Mean daily data are available in Tables A4-58 and A4-59 and raw data in Tables A4-60 to A4-63. The stream bed of the Lake D1 outlet was surveyed on 10 July 2009 to provide information for the fisheries component of the program.

Table A4-57: Site Visits to Lake D1 and Outlet Hydrometric Station, 2009

Date	Activities	Outlet	Discharge (m ³ /s)
10 Jul	Measured discharge and surveyed the outlet channel to Meliadine Lake.	✓	0.038
11 Jul	Installed pressure transducer and data logger and measured discharge.	✓	0.055
6 Aug	Measured discharge and downloaded data logger.	✓	0.029
10 Sep	Measured discharge and downloaded data logger. Removed pressure transducer and data logger.	✓	0.099

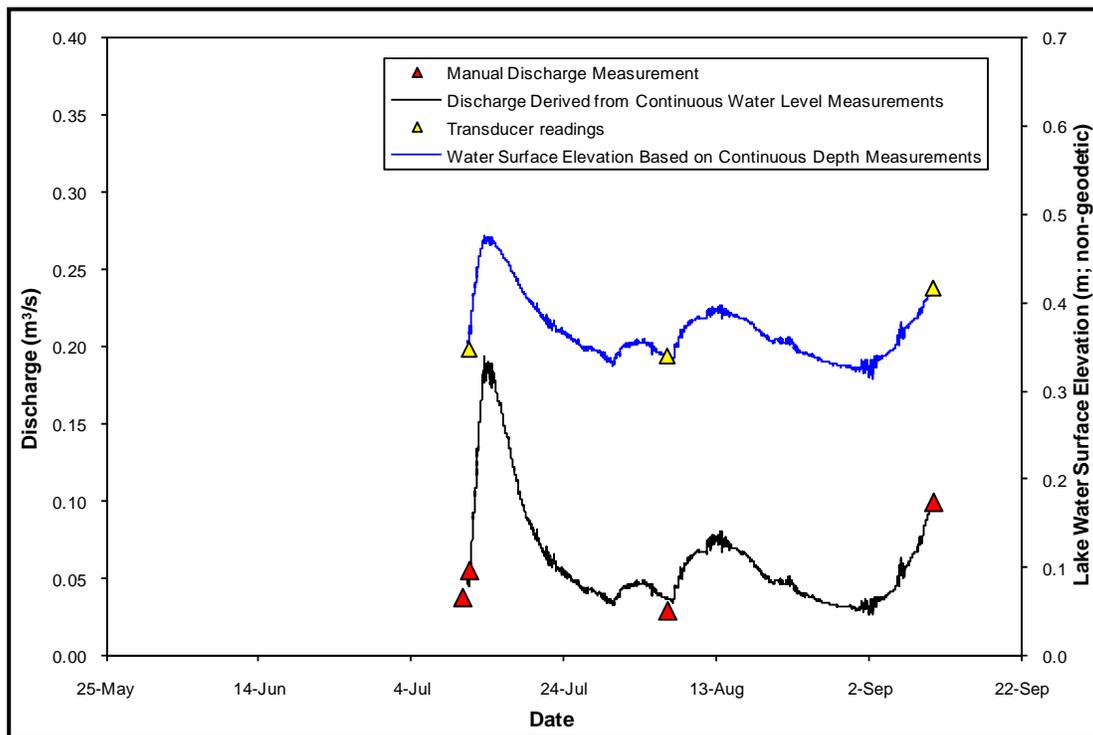


Figure A4-16: Hydrograph for Lake D1 and Outlet, 2009



APPENDIX A4 Meliadine Gold Project 2009 Hydrometric Data

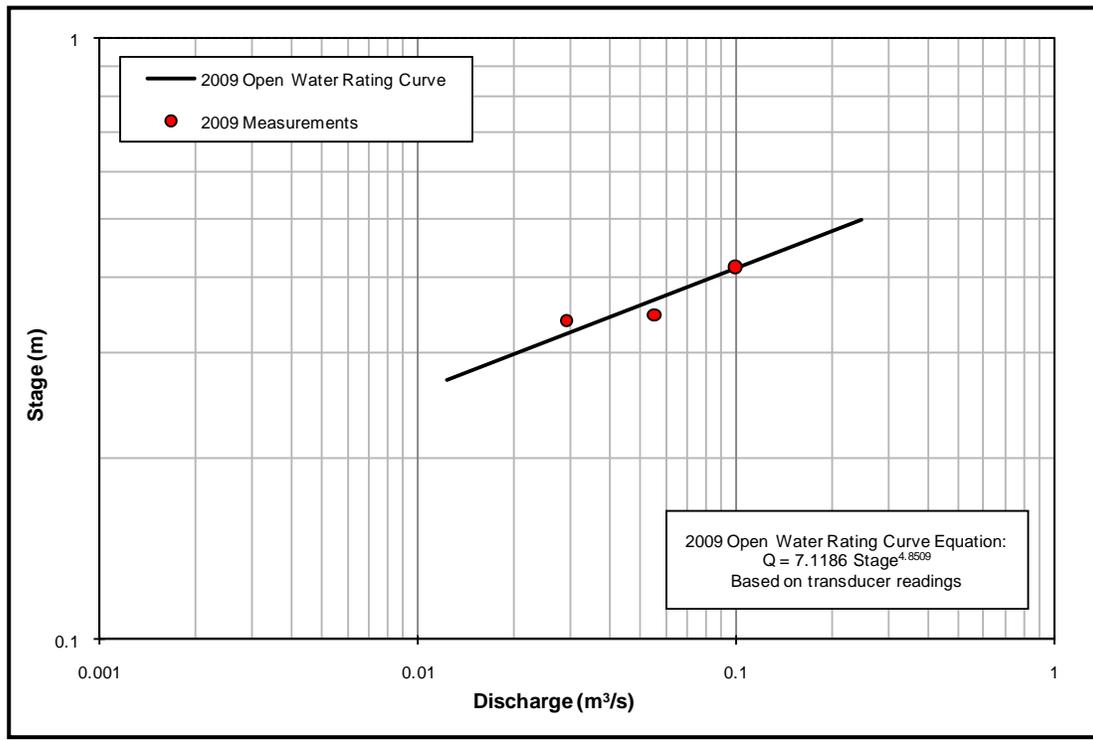


Figure A4-17: Lake D1 Outlet Stage-Discharge Rating Curve, 2009



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Table A4-58: Lake D1 Outlet Mean Daily Discharge(m³/s), 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	-	0.045	0.032	-	-	-
2	-	-	-	-	-	-	-	0.047	0.034	-	-	-
3	-	-	-	-	-	-	-	0.047	0.037	-	-	-
4	-	-	-	-	-	-	-	0.044	0.040	-	-	-
5	-	-	-	-	-	-	-	0.040	0.047	-	-	-
6	-	-	-	-	-	-	-	0.037	0.057	-	-	-
7	-	-	-	-	-	-	-	0.041	0.064	-	-	-
8	-	-	-	-	-	-	-	0.055	0.072	-	-	-
9	-	-	-	-	-	-	-	0.063	0.088	-	-	-
10	-	-	-	-	-	-	-	0.067	0.098 P	-	-	-
11	-	-	-	-	-	-	0.058 P	0.069	-	-	-	-
12	-	-	-	-	-	-	0.120	0.075	-	-	-	-
13	-	-	-	-	-	-	0.178	0.076	-	-	-	-
14	-	-	-	-	-	-	0.183	0.072	-	-	-	-
15	-	-	-	-	-	-	0.164	0.069	-	-	-	-
16	-	-	-	-	-	-	0.142	0.067	-	-	-	-
17	-	-	-	-	-	-	0.120	0.062	-	-	-	-
18	-	-	-	-	-	-	0.099	0.056	-	-	-	-
19	-	-	-	-	-	-	0.086	0.051	-	-	-	-
20	-	-	-	-	-	-	0.076	0.048	-	-	-	-
21	-	-	-	-	-	-	0.067	0.048	-	-	-	-
22	-	-	-	-	-	-	0.061	0.048	-	-	-	-
23	-	-	-	-	-	-	0.056	0.042	-	-	-	-
24	-	-	-	-	-	-	0.052	0.040	-	-	-	-
25	-	-	-	-	-	-	0.048	0.038	-	-	-	-
26	-	-	-	-	-	-	0.043	0.036	-	-	-	-
27	-	-	-	-	-	-	0.043	0.034	-	-	-	-
28	-	-	-	-	-	-	0.040	0.033	-	-	-	-
29	-	-	-	-	-	-	0.037	0.032	-	-	-	-
30	-	-	-	-	-	-	0.035	0.032	-	-	-	-
31	-	-	-	-	-	-	0.042	0.031	-	-	-	-
MIN	-	-	-	-	-	-	0.035	0.031	0.032	-	-	-
MEAN	-	-	-	-	-	-	0.083	0.050	0.057	-	-	-
MAX	-	-	-	-	-	-	0.183	0.076	0.098	-	-	-

Note: P = partial daily average



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-59: Lake D1 Outlet Mean Daily Water Surface Elevation (m) based on Transducer's Readings, 2009

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	-	-	-	-	-	-	0.352	0.328	-	-	-
2	-	-	-	-	-	-	-	0.355	0.330	-	-	-
3	-	-	-	-	-	-	-	0.355	0.338	-	-	-
4	-	-	-	-	-	-	-	0.350	0.344	-	-	-
5	-	-	-	-	-	-	-	0.343	0.354	-	-	-
6	-	-	-	-	-	-	-	0.339	0.369	-	-	-
7	-	-	-	-	-	-	-	0.345	0.378	-	-	-
8	-	-	-	-	-	-	-	0.367	0.388	-	-	-
9	-	-	-	-	-	-	-	0.378	0.404	-	-	-
10	-	-	-	-	-	-	-	0.382	0.414 P	-	-	-
11	-	-	-	-	-	-	0.370 P	0.384	-	-	-	-
12	-	-	-	-	-	-	0.429	0.391	-	-	-	-
13	-	-	-	-	-	-	0.467	0.391	-	-	-	-
14	-	-	-	-	-	-	0.470	0.388	-	-	-	-
15	-	-	-	-	-	-	0.460	0.385	-	-	-	-
16	-	-	-	-	-	-	0.446	0.382	-	-	-	-
17	-	-	-	-	-	-	0.431	0.376	-	-	-	-
18	-	-	-	-	-	-	0.414	0.368	-	-	-	-
19	-	-	-	-	-	-	0.402	0.361	-	-	-	-
20	-	-	-	-	-	-	0.392	0.357	-	-	-	-
21	-	-	-	-	-	-	0.382	0.356	-	-	-	-
22	-	-	-	-	-	-	0.375	0.356	-	-	-	-
23	-	-	-	-	-	-	0.368	0.348	-	-	-	-
24	-	-	-	-	-	-	0.362	0.343	-	-	-	-
25	-	-	-	-	-	-	0.357	0.340	-	-	-	-
26	-	-	-	-	-	-	0.349	0.336	-	-	-	-
27	-	-	-	-	-	-	0.348	0.332	-	-	-	-
28	-	-	-	-	-	-	0.344	0.330	-	-	-	-
29	-	-	-	-	-	-	0.338	0.328	-	-	-	-
30	-	-	-	-	-	-	0.335	0.327	-	-	-	-
31	-	-	-	-	-	-	0.347	0.326	-	-	-	-
MIN	-	-	-	-	-	-	0.335	0.326	0.328	-	-	-
MEAN	-	-	-	-	-	-	0.390	0.357	0.365	-	-	-
MAX	-	-	-	-	-	-	0.470	0.391	0.414	-	-	-

Note: P = partial daily average



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-60: Lake D1 Outlet Discharge Measurement Field Form for 10 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		10-Jul-2009	
Waterbody:		Lake D1			Start Time		13:50	
Crossing ID:		Lake D1 Outlet			End Time		14:32	
BM GPS Location		Survey		Staff		Datalogger SN: 1397		
East	532693	BM_read		Gauge		Transducer SN: 14595		
North	6989813	WL_read		Meter Type/SN: Marsh McBirney-2005856				
Elevation	100.000	WL_Elev		Crew:		DC / LI		
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.10	0.00						
2	0.10	0.11						
3	0.20	0.12		0.28				
4	0.30	0.10		0.42				
5	0.40	0.10		0.48				
6	0.50	0.12		0.39				
7	0.60	0.12		0.40				
8	0.70	0.13		0.36				
9	0.80	0.13		0.31				
10	0.90	0.12		0.31				
11	1.00	0.14		0.27				
12	1.10	0.12		0.23				
13	1.20	0.00						
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.038	
34						A(m ²)	0.12	
35						B(m)	1.1	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-61: Lake D1 Outlet Discharge Measurement Field Form for 11 July 2009

Project Name:		Comaplex (09-1373-0010)		Date		11-Jul-2009		
Waterbody:		Lake D1		Start Time		11:00		
Crossing ID:		Lake D1 Outlet		End Time		11:32		
BM GPS Location		Survey		Staff		Datalogger SN: 1397		
East	532693	BM_read		Gauge	Transducer SN: 14595			
North	6989813	WL_read			Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev		Crew:	DC /			
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.20	0.00						
2	0.20	0.14		0.25				
3	0.25	0.15		0.25				
4	0.35	0.14		0.37				
5	0.45	0.14		0.49				
6	0.55	0.15		0.43				
7	0.65	0.16		0.42				
8	0.75	0.16		0.43				
9	0.85	0.16		0.41				
10	0.95	0.16		0.29				
11	1.05	0.16		0.22				
12	1.15	0.18		0.18				
13	1.25	0.16		0.11				
14	1.30	0.00						
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.055	
34						A(m ²)	0.17	
35						B(m)	1.1	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-62: Lake D1 Outlet Discharge Measurement Field Form for 6 August 2009

Project Name:		Comaplex (09-1373-0010)		Date		06-Aug-2009		
Waterbody:		Lake D1		Start Time		12:20		
Crossing ID:		Lake D1 Outlet		End Time		12:45		
BM GPS Location		Survey		Staff		Datalogger SN: 1397		
East	532693	BM_read		Gauge	Transducer SN: 14595			
North	6989813	WL_read			Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev		Crew:	DC /			
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.05	0.00						
2	0.10	0.10		0.235				
3	0.20	0.08		0.314				
4	0.30	0.08		0.360				
5	0.40	0.08		0.332				
6	0.50	0.10		0.302				
7	0.60	0.10		0.271				
8	0.70	0.10		0.241				
9	0.80	0.10		0.238				
10	0.90	0.12		0.256				
11	1.00	0.12		0.219				
12	1.10	0.10		0.442				
13	1.15	0.00						
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q	0.029	
34						A(m ²)	0.10	
35						B(m)	1.1	



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Table A4-63: Lake D1 Outlet Discharge Measurement Field Form for 10 September 2009

Project Name:		Comaplex (09-1373-0010)		Date		10-Sep-2009		
Waterbody:		Lake D1		Start Time		10:40		
Crossing ID:		Lake D1 Outlet		End Time		11:45		
BM GPS Location		Survey		Staff		Datalogger SN: 1397		
East	532693	BM_read		Gauge	Transducer SN: 14595			
North	6989813	WL_read		n/a	Meter Type/SN: Marsh McBirney-2005856			
Elevation	100.000	WL_Elev		Crew:	DC /			
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.60	0.00						
2	0.70	0.08		0.171				
3	0.80	0.24		0.372				
4	0.90	0.22		0.567				
5	1.00	0.20		0.549				
6	1.10	0.21		0.613				
7	1.20	0.22		0.546				
8	1.30	0.21		0.466				
9	1.40	0.22		0.378				
10	1.50	0.22		0.387				
11	1.60	0.22		0.323				
12	1.70	0.20		0.283				
13	1.80	0.12		0.107				
14	1.85	0.00						
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33					RESULTS:	Q (m ³ /s)	0.099	
34						A(m ²)	0.23	
35						B(m)	1.3	



A4 - 14.2 Lake G1 Outlet

The discharge was measured at the Lake G1 Outlet on 6 August 2009, and the field form is presented in Table A4-64.

Table A4-64: Lake G1 Outlet Discharge Measurement Field Form for 6 August 2009

Project Name:		Comaplex (09-1373-0010)			Date		06-Aug-2009	
Waterbody:		Lake G1			Start Time		15:35	
Crossing ID:		Lake G1 Outlet			End Time		15:45	
BM GPS Location		Survey		Staff	Datalogger SN:			
East	537797	BM_read		Gauge	Transducer SN:			
North	6991573	WL_read			Meter Type/SN: Marsh McBirney-2005856			
Elevation		WL_Elev			Crew:		DC / MI	
STATION Start LDB	DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY		DISTANCE FROM LDB (m)	DEPTH (m)	VELOCITY	
			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			0.2 Depth (m/s)	0.6/0.8 Depth (m/s)
1	0.25	0.00						
2	0.30	0.05		0.22				
3	0.35	0.06		0.24				
4	0.40	0.04		0.21				
5	0.50	0.00						
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21					RESULTS:	Q (m ³ /s)	0.002	
22						A(m ²)	0.01	
23						B(m)	0.3	



A4 - 14.3 Lake G2 Outlet

The discharge was measured at the Lake G1 Outlet on 12 July 2009, and the field form is presented in Table A4-65.

Table A4-65: Lake G2 Outlet Discharge Measurement Field Form for 12 July 2009

Project Name:		Comaplex (09-1373-0010)			Date		12-Jul-2009	
Waterbody:		Lake G2			Start Time		09:00	
Crossing ID:		Lake G2 Outlet			End Time		09:20	
BM GPS Location		Survey		Staff		Datalogger SN:		
East	538189	BM read		Gauge	Transducer SN:			
North	6990970	WL read			Meter Type/SN: Marsh McBirney-2005856			
Elevation		WL Elev			Crew:		DC /	
STATION	DISTANCE	DEPTH	VELOCITY		DISTANCE	DEPTH	VELOCITY	
Start LDB	FROM LDB (m)		0.2 Depth (m/s)	0.6/0.8 Depth (m/s)			FROM LDB (m)	(m)
1	0.30	0.00						
2	0.40	0.05		0.18				
3	0.50	0.09		0.11				
4	0.60	0.09		0.16				
5	0.70	0.10		0.13				
6	0.80	0.10		0.09				
7	0.90	0.07		0.04				
8	1.00	0.05		0.02				
9	1.25	0.00						
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20					RESULTS:	Q	0.006	
21						A(m ²)	0.06	
22						B(m)	1.0	



A4 - 15.0 SNOW COURSE SURVEY RAW DATA

A4 - 15.1 Crest Terrain Type Plots

Plot EC-09-1 Date: 24-Apr-09				Plot EC-09-2 Date: 23-Apr-09				Plot EC-09-3 Date: 25-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
58	2.61	1.86	0.233	24	2.28	1.92	0.271	17	2.11	1.86	0.265
11	2.01	1.86	0.246	47	2.58	1.92	0.253	11	2.06	1.86	0.328
8	2.00	1.86	0.316	36	2.36	1.92	0.221	54	2.76	1.86	0.301
Average:			0.265	Average:			0.248	Average:			0.298
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
14	37.1	13	34.5	30	74.5	36	89.4	4	11.9	25	74.5
44	116.6	12	31.8	44	109.2	39	96.8	2	6.0	56	166.9
12	31.8	24	63.6	22	54.6	31	76.9	1	3.0	59	175.9
22	58.3	11	29.2	53	131.5	46	114.2	6	17.9	25	74.5
9	23.9	10	26.5	38	94.3	2	5.0	8	23.8	17	50.7
12	31.8	9	23.9	54	134.0	8	19.9	6	17.9	17	50.7
15	39.8	15	39.8	8	19.9	5	12.4	17	50.7	47	140.1
15	39.8	14	37.1	9	22.3	45	111.7	6	17.9	21	62.6
8	21.2	16	42.4	12	29.8	40	99.3	30	89.4	11	32.8
6	15.9	24	63.6	7	17.4	44	109.2	10	29.8	3	8.9
5	13.3	31	82.2	55	136.5	51	126.6	21	62.6	2	6.0
26	68.9	29	76.9	28	69.5	57	141.5	30	89.4	2	6.0
14	37.1	59	156.4	46	114.2	29	72.0	9	26.8	6	17.9
24	63.6	18	47.7	21	52.1	65	161.3	25	74.5	9	26.8
7	18.6	57	151.1	6	14.9	39	96.8	56	166.9	5	14.9
Average		19.2	50.8	Average		32.3	80.3	Average		17.9	53.3
				Observation: Low compaction on exposed ridge.				Observation: On exposed ridge, with 80% exposed. Density collected only from areas with snow. Very loose snow.			



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Meliadine Gold Project 2009 Hydrometric Data

Plot EC-09-4 Date: 23-Apr-09				Plot EC-09-5 Date: 25-Apr-09				Plot EC-09-6 Date: 25-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
25	2.09	1.9	0.137	18	2.14	1.86	0.281	20	2.17	1.86	0.280
10	1.98	1.9	0.144	14	2.09	1.86	0.296	34	2.43	1.86	0.303
20	2.19	1.9	0.262	26	2.24	1.86	0.264	42	2.65	1.86	0.339
Average:			0.181	Average:			0.280	Average:			0.307
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
22	39.8	26	47.1	6	16.8	6	16.8	36	110.6	17	52.2
23	41.6	28	50.7	11	30.8	14	39.2	27	82.9	20	61.4
17	30.8	34	61.6	8	22.4	11	30.8	46	141.3	19	58.4
11	19.9	17	30.8	11	30.8	11	30.8	24	73.7	18	55.3
5	9.1	29	52.5	7	19.6	6	16.8	50	153.6	12	36.9
15	27.2	8	14.5	4	11.2	14	39.2	32	98.3	11	33.8
12	21.7	15	27.2	12	33.6	20	56.1	20	61.4	10	30.7
8	14.5	12	21.7	16	44.8	11	30.8	6	18.4	15	46.1
13	23.5	14	25.3	10	28.0	9	25.2	28	86.0	14	43.0
18	32.6	7	12.7	8	22.4	15	42.0	16	49.2	22	67.6
7	12.7	27	48.9	10	28.0	14	39.2	15	46.1	15	46.1
13	23.5	11	19.9	11	30.8	21	58.9	31	95.2	24	73.7
11	19.9	26	47.1	13	36.4	11	30.8	15	46.1	26	79.9
13	23.5	32	57.9	16	44.8	10	28.0	31	95.2	38	116.7
14	25.3	21	38.0	10	28.0	12	33.6	22	67.6	29	89.1
Average		17.0	30.7	Average		11.3	31.6	Average		23.0	70.6
Observation: Soft snow layer on top, 2 to 4 cm				Observation: Lose snow on flat expose ridge							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.2 Open Lake Terrain Type Plots

Plot OL-09-1 Date: 25-Apr-09				Plot OL-09-2 Date: 24-Apr-09				Plot OL-09-3 Date: 26-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
32	2.36	1.86	0.282	30	2.44	1.92	0.313	26	2.29	1.88	0.285
13	2.12	1.86	0.361	16	2.14	1.92	0.248	20	2.2	1.88	0.289
19	2.19	1.86	0.313	19	2.19	1.92	0.256	20	2.28	1.88	0.361
Average:			0.319	Average:			0.272	Average:			0.311
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
9	28.7	12	38.3	12	32.7	16	43.6	11	34.3	16	49.8
20	63.8	11	35.1	11	30.0	17	46.3	7	21.8	19	59.2
17	54.2	13	41.4	6	16.3	23	62.7	8	24.9	20	62.3
13	41.4	34	108.4	7	19.1	21	57.2	12	37.4	34	105.9
20	63.8	28	89.3	13	35.4	10	27.2	15	46.7	29	90.3
15	47.8	27	86.1	16	43.6	24	65.4	15	46.7	21	65.4
22	70.1	11	35.1	14	38.1	19	51.8	16	49.8	17	52.9
21	66.9	16	51.0	22	59.9	10	27.2	19	59.2	16	49.8
13	41.4	9	28.7	26	70.8	22	59.9	16	49.8	17	52.9
25	79.7	21	66.9	21	57.2	12	32.7	18	56.0	10	31.1
6	19.1	11	35.1	30	81.7	23	62.7	28	87.2	11	34.3
17	54.2	21	66.9	24	65.4	16	43.6	21	65.4	6	18.7
3	9.6	20	63.8	15	40.9	18	49.0	21	65.4	17	52.9
17	54.2	15	47.8	26	70.8	13	35.4	15	46.7	15	46.7
16	51.0	19	60.6	8	21.8	20	54.5	11	34.3	24	74.7
Average:		16.7	53.3	Average:		17.2	46.8	Average:		16.8	52.4
				Observation: Snow consistent in the column. Wind drifts on top.							



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Plot OL-09-4 Date: 26-Apr-09				Plot OL-09-5 Date: 26-Apr-09				Plot OL-09-6 Date: 26-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
17	2.1	1.92	0.191	14	2.06	1.92	0.180	28	2.32	1.92	0.258
21	2.06	1.92	0.120	24	2.26	1.92	0.256	19	2.18	1.92	0.247
17	2.17	1.92	0.265	22	2.29	1.92	0.303	26	2.28	1.92	0.250
Average:			0.192	Average:			0.247	Average:			0.252
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
8	15.4	18	34.6	14	34.5	20	49.3	10	25.2	17	42.8
16	30.8	1	1.9	10	24.7	21	51.8	9	22.6	16	40.2
6	11.5	10	19.2	15	37.0	24	59.2	8	20.1	25	62.9
5	9.6	6	11.5	8	19.7	18	44.4	11	27.7	8	20.1
6	11.5	14	26.9	8	19.7	5	12.3	28	70.4	21	52.8
8	15.4	21	40.4	16	39.4	5	12.3	16	40.2	14	35.2
7	13.5	20	38.4	15	37.0	6	14.8	13	32.7	14	35.2
7	13.5	22	42.3	11	27.1	14	34.5	17	42.8	11	27.7
13	25.0	16	30.8	5	12.3	20	49.3	8	20.1	7	17.6
8	15.4	11	21.1	6	14.8	12	29.6	11	27.7	17	42.8
13	25.0	7	13.5	14	34.5	11	27.1	10	25.2	9	22.6
11	21.1	6	11.5	11	27.1	4	9.9	4	10.1	16	40.2
16	30.8	11	21.1	11	27.1	11	27.1	20	50.3	17	42.8
19	36.5	14	26.9	16	39.4	12	29.6	16	40.2	26	65.4
14	26.9	16	30.8	6	14.8	11	27.1	20	50.3	20	50.3
Average:		11.7	22.4	Average:		12.0	29.6	Average:		14.6	36.8



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot OL-09-7 Date: 25-Apr-09				Plot OL-09-8 Date: 26-Apr-09			
Depth (cm)	Wgt (kg)	Tare (kg)	Density (g/cm ³)	Depth (cm)	Wgt (kg)	Tare (kg)	Density (g/cm ³)
10	2.05	1.92	0.235	17	2.18	1.88	0.318
21	2.24	1.92	0.275	24	2.14	1.88	0.195
21	2.23	1.92	0.266	32	2.33	1.88	0.254
Average:			0.259	Average:			0.256
Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)
11	28.5	20	51.7	11	28.1	31	79.3
12	31.0	11	28.5	19	48.6	37	94.7
5	12.9	10	25.9	13	33.3	34	87.0
1	2.6	21	54.3	18	46.1	31	79.3
4	10.3	16	41.4	19	48.6	25	64.0
3	7.8	17	44.0	14	35.8	32	81.9
5	12.9	13	33.6	17	43.5	18	46.1
4	10.3	10	25.9	16	40.9	27	69.1
14	36.2	14	36.2	14	35.8	10	25.6
17	44.0	5	12.9	20	51.2	21	53.7
18	46.6	9	23.3	29	74.2	12	30.7
18	46.6	13	33.6	28	71.6	25	64.0
12	31.0	24	62.1	40	102.4	26	66.5
19	49.1	17	44.0	31	79.3	30	76.8
7	18.1	16	41.4	26	66.5	29	74.2
Average:		12.2	31.6	Average:		23.4	60.0
Observation: Low compaction							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.3 Lake Edges Terrain Type Plots

Plot LE-09-1 Date: 23-Apr-09				Plot LE-09-2 Date: 23-Apr-09				Plot LE-09-3 Date: 24-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
23	2.23	1.89	0.267	36	2.31	1.92	0.195	31	2.42	1.92	0.291
29	2.33	1.89	0.274	43	2.6	1.92	0.285	22	2.25	1.92	0.271
30	2.32	1.89	0.259	51	2.58	1.92	0.234	39	2.49	1.92	0.264
Average:			0.266	Average:			0.238	Average:			0.275
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
36	95.9	24	63.9	52	123.8	28	66.7	33	90.8	26	71.5
31	82.6	26	69.3	33	78.6	25	59.5	38	104.6	31	85.3
28	74.6	25	66.6	54	128.6	28	66.7	16	44.0	36	99.1
29	77.3	23	61.3	43	102.4	33	78.6	25	68.8	29	79.8
35	93.2	30	79.9	54	128.6	41	97.6	24	66.0	37	101.8
23	61.3	25	66.6	52	123.8	25	59.5	28	77.0	41	112.8
17	45.3	15	40.0	45	107.2	52	123.8	25	68.8	45	123.8
29	77.3	29	77.3	37	88.1	53	126.2	28	77.0	36	99.1
20	53.3	28	74.6	26	61.9	54	128.6	16	44.0	24	66.0
18	48.0	27	71.9	25	59.5	44	104.8	30	82.5	30	82.5
30	79.9	16	42.6	52	123.8	52	123.8	20	55.0	25	68.8
20	53.3	24	63.9	42	100.0	57	135.7	22	60.5	27	74.3
25	66.6	35	93.2	44	104.8	68	161.9	31	85.3	30	82.5
23	61.3	34	90.6	38	90.5	44	104.8	24	66.0	37	101.8
26	69.3	29	77.3	35	83.3	50	119.1	23	63.3	39	107.3
Average:		26.0	69.3	Average:		42.9	102.1	Average:		29.2	80.3



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot LE-09-4 Date: 23-Apr-09				Plot LE-09-5 Date: 24-Apr-09				Plot LE-09-6 Date: 26-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
64	2.86	1.92	0.265	24	2.32	1.86	0.346	55	2.71	1.88	0.272
60	2.99	1.92	0.322	24	2.24	1.86	0.286	66	2.86	1.88	0.268
67	2.96	1.92	0.280	34	2.49	1.86	0.334	52	2.51	1.88	0.219
Average:			0.289	Average:			0.322	Average:			0.253
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
66	190.7	60	173.4	35	112.7	27	86.9	60	151.8	55	139.1
74	213.8	68	196.5	21	67.6	14	45.1	75	189.7	64	161.9
78	225.4	72	208.1	30	96.6	36	115.9	58	146.7	50	126.5
59	170.5	75	216.7	14	45.1	11	35.4	77	194.8	53	134.1
64	184.9	63	182.1	24	77.3	30	96.6	64	161.9	62	156.8
66	190.7	79	228.3	20	64.4	15	48.3	55	139.1	65	164.4
62	179.2	64	184.9	48	154.5	32	103.0	56	141.7	73	184.7
70	202.3	76	219.6	23	74.1	19	61.2	36	91.1	61	154.3
61	176.3	73	211.0	44	141.7	33	106.3	33	83.5	76	192.2
59	170.5	67	193.6	30	96.6	35	112.7	30	75.9	51	129.0
62	179.2	71	205.2	36	115.9	33	106.3	22	55.7	39	98.7
53	153.2	75	216.7	27	86.9	30	96.6	36	91.1	56	141.7
67	193.6	75	216.7	26	83.7	30	96.6	46	116.4	55	139.1
65	187.8	60	173.4	25	80.5	23	74.1	45	113.8	57	144.2
68	196.5	80	231.2	32	103.0	28	90.2	41	103.7	66	167.0
Average:		67.7	195.7	Average:		27.7	89.2	Average:		53.9	136.3



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot LE-09-7 Date: 25-Apr-09				Plot LE-09-8 Date: 26-Apr-09			
Depth (cm)	Wgt (kg)	Tare (kg)	Density (g/cm ³)	Depth (cm)	Wgt (kg)	Tare (kg)	Density (g/cm ³)
21	2.15	1.88	0.232	55	2.83	1.88	0.312
62	2.55	1.88	0.195	61	2.56	1.88	0.201
55	2.65	1.88	0.253	43	2.7	1.88	0.344
Average:			0.227	Average:			0.286
Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)	Depth (cm)	SWE (mm)
55	124.6	36	81.6	44	125.7	70	200.0
71	160.8	12	27.2	50	142.8	73	208.5
66	149.5	26	58.9	46	131.4	62	177.1
65	147.3	16	36.2	64	182.8	53	151.4
62	140.5	28	63.4	55	157.1	46	131.4
63	142.7	16	36.2	63	180.0	56	160.0
65	147.3	32	72.5	71	202.8	59	168.5
85	192.6	25	56.6	65	185.7	67	191.4
62	140.5	44	99.7	69	197.1	72	205.7
81	183.5	61	138.2	48	137.1	57	162.8
79	179.0	72	163.1	66	188.5	62	177.1
73	165.4	65	147.3	54	154.3	42	120.0
55	124.6	72	163.1	72	205.7	51	145.7
54	122.3	84	190.3	67	191.4	42	120.0
21	47.6	75	169.9	70	200.0	76	217.1
Average:		54.0	122.4	Average:		59.7	170.6



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.4 Low Slopes Terrain Type Plots

Plot LS-09-1 Date: 23-Apr-09				Plot LS-09-2 Date: 24-Apr-09				Plot LS-09-3 Date: 23-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
26	2.09	1.92	0.118	29	2.2	1.86	0.212	41	2.47	1.92	0.242
27	2.32	1.92	0.267	33	2.24	1.86	0.208	33	2.3	1.92	0.208
34	2.28	1.92	0.191	26	2.14	1.86	0.194	18	2.05	1.92	0.130
Average:			0.192	Average:			0.205	Average:			0.193
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
33	63.4	15	28.8	30	61.4	30	61.4	23	44.5	35	67.7
22	42.3	34	65.3	27	55.2	28	57.3	15	29.0	22	42.5
31	59.6	23	44.2	30	61.4	29	59.3	30	58.0	24	46.4
44	84.5	22	42.3	31	63.4	13	26.6	25	48.3	19	36.7
28	53.8	22	42.3	27	55.2	26	53.2	24	46.4	24	46.4
42	80.7	41	78.8	33	67.5	40	81.8	15	29.0	35	67.7
29	55.7	26	50.0	25	51.1	31	63.4	39	75.4	34	65.8
21	40.3	37	71.1	14	28.6	33	67.5	28	54.1	32	61.9
25	48.0	35	67.2	26	53.2	34	69.5	45	87.0	11	21.3
29	55.7	50	96.1	34	69.5	22	45.0	28	54.1	17	32.9
24	46.1	29	55.7	29	59.3	31	63.4	29	56.1	22	42.5
32	61.5	22	42.3	21	43.0	32	65.5	30	58.0	21	40.6
39	74.9	21	40.3	23	47.0	28	57.3	29	56.1	36	69.6
33	63.4	8	15.4	26	53.2	30	61.4	24	46.4	24	46.4
27	51.9	20	38.4	31	63.4	23	47.0	17	32.9	26	50.3
Average:		28.8	55.3	Average:		27.9	57.1	Average:		26.1	50.5
Observation: Snow very granular at the bottom. Finer grain on top.				Observation: Very low compaction throughout the column, granular snow.							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot LS-09-4 Date: 24-Apr-09

Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm³)
20	2.11	1.86	0.226
17	2.08	1.86	0.234
41	2.36	1.86	0.220

Average: 0.226

Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)
23	52.1	25	56.6
15	34.0	21	47.5
31	70.2	26	58.9
30	67.9	12	27.2
18	40.7	15	34.0
23	52.1	17	38.5
16	36.2	16	36.2
32	72.4	22	49.8
21	47.5	40	90.6
34	77.0	41	92.8
28	63.4	45	101.9
33	74.7	23	52.1
22	49.8	32	72.4
28	63.4	17	38.5
28	63.4	31	70.2
Average:		25.5	57.7



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.5 Northeast Slopes Terrain Type Plots

Plot NE-09-1 Date: 24-Apr-09				Plot NE-09-2 Date: 24-Apr-09				Plot NE-09-3 Date: 23-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
14	2.07	1.86	0.271	15	2.09	1.86	0.277	36	2.13	1.92	0.105
17	2.06	1.86	0.212	21	2.06	1.86	0.172	13	2.05	1.92	0.180
18	2.04	1.86	0.180	13	2.02	1.86	0.222	22	2.18	1.92	0.213
Average:			0.221	Average:			0.224	Average:			0.166
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
10	22.1	31	68.6	35	78.2	14	31.3	30	49.9	13	21.6
16	35.4	8	17.7	28	62.6	25	55.9	32	53.2	40	66.5
24	53.1	20	44.2	7	15.6	16	35.8	40	66.5	23	38.3
17	37.6	16	35.4	17	38.0	30	67.1	14	23.3	41	68.2
23	50.9	11	24.3	5	11.2	9	20.1	32	53.2	40	66.5
33	73.0	18	39.8	13	29.1	32	71.5	30	49.9	25	41.6
31	68.6	13	28.7	21	46.9	10	22.4	15	24.9	47	78.2
12	26.5	14	31.0	22	49.2	23	51.4	10	16.6	51	84.8
16	35.4	15	33.2	12	26.8	12	26.8	14	23.3	14	23.3
11	24.3	26	57.5	18	40.2	16	35.8	11	18.3	13	21.6
25	55.3	12	26.5	12	26.8	18	40.2	13	21.6	20	33.3
17	37.6	25	55.3	16	35.8	30	67.1	15	24.9	25	41.6
10	22.1	17	37.6	33	73.8	13	29.1	11	18.3	37	61.5
12	26.5	17	37.6	18	40.2	12	26.8	15	24.9	28	46.6
16	35.4	27	59.7	12	26.8	11	24.6	36	59.9	54	89.8
Average:		18.1	40.0	Average:		18.0	40.2	Average:		26.3	43.7
<p>Observation: Snow very granular in large ice crystals at bottom. Finer on top.</p>											



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot NE-09-4 Date: 23-Apr-09				Plot NE-09-5 Date: 24-Apr-09				Plot NE-09-6 Date: 26-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
15	2.23	1.92	0.373	16	2.07	1.86	0.237	21	2.12	1.88	0.206
16	2.22	1.92	0.338	22	2.13	1.86	0.221	37	2.28	1.88	0.195
9	2.02	1.92	0.200	16	2.07	1.86	0.237	29	2.31	1.88	0.268
Average:			0.304	Average:			0.232	Average:			0.223
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
25	76.0	14	42.5	28	64.9	3	7.0	40	89.2	18	40.1
24	72.9	21	63.8	14	32.4	18	41.7	18	40.1	23	51.3
11	33.4	3	9.1	29	67.2	16	37.1	74	165.0	29	64.7
12	36.5	19	57.7	11	25.5	11	25.5	11	24.5	70	156.1
20	60.8	9	27.4	4	9.3	12	27.8	31	69.1	35	78.0
21	63.8	8	24.3	24	55.6	4	9.3	17	37.9	17	37.9
17	51.7	14	42.5	36	83.4	7	16.2	11	24.5	20	44.6
42	127.6	6	18.2	31	71.8	23	53.3	12	26.8	18	40.1
68	206.7	7	21.3	31	71.8	12	27.8	25	55.7	12	26.8
23	69.9	26	79.0	30	69.5	30	69.5	21	46.8	19	42.4
46	139.8	22	66.9	8	18.5	26	60.2	29	64.7	12	26.8
17	51.7	45	136.8	12	27.8	11	25.5	12	26.8	38	84.7
37	112.5	14	42.5	7	16.2	17	39.4	26	58.0	6	13.4
31	94.2	16	48.6	5	11.6	25	57.9	17	37.9	8	17.8
2	6.1	2	6.1	8	18.5	16	37.1	22	49.1	4	8.9
Average:		20.7	63.0	Average:		17.0	39.3	Average:		23.2	51.7
				Observation: Very low compaction, with relatively shallow depths.							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot NE-09-7 Date: 25-Apr-09				Plot NE-09-8 Date: 25-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
20	2.05	1.89	0.144	26	2.29	1.88	0.285
21	2.05	1.89	0.137	11	2.06	1.88	0.295
30	2.19	1.89	0.180	40	2.42	1.88	0.244
Average:			0.154	Average:			0.274
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
14	21.6	17	26.2	16	43.9	44	120.8
5	7.7	11	17.0	12	32.9	26	71.4
14	21.6	5	7.7	14	38.4	47	129.0
9	13.9	11	17.0	20	54.9	40	109.8
21	32.4	5	7.7	25	68.6	39	107.0
10	15.4	11	17.0	13	35.7	32	87.8
8	12.3	10	15.4	8	22.0	31	85.1
19	29.3	25	38.5	14	38.4	27	74.1
35	53.9	27	41.6	15	41.2	29	79.6
16	24.7	3	4.6	31	85.1	30	82.3
11	17.0	13	20.0	7	19.2	34	93.3
10	15.4	32	49.3	30	82.3	16	43.9
2	3.1	14	21.6	20	54.9	20	54.9
12	18.5	8	12.3	30	82.3	27	74.1
9	13.9	6	9.2	31	85.1	38	104.3
Average:		13.1	20.2	Average:		25.5	70.1
Observation: Lose snow, low compaction							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.6 Northwest Slopes Terrain Type Plots

Plot NW-09-1 Date: 25-Apr-09				Plot NW-09-2 Date: 23-Apr-09				Plot NW-09-3 Date: 25-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
53	2.74	1.89	0.289	25	2.27	1.92	0.253	76	3.26	1.92	0.318
63	2.73	1.89	0.241	39	2.44	1.92	0.241	129	4.27	1.92	0.329
44	2.6	1.89	0.291	25	2.26	1.92	0.245	113	3.65	1.92	0.276
Average:			0.274	Average:			0.246	Average:			0.308
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
44	120.4	62	169.7	36	88.6	34	83.7	32	98.5	93	286.2
46	125.9	51	139.6	38	93.6	25	61.6	106	326.2	115	353.9
49	134.1	59	161.5	31	76.3	31	76.3	87	267.7	111	341.6
42	115.0	56	153.3	32	78.8	10	24.6	81	249.2	131	403.1
37	101.3	66	180.7	35	86.2	39	96.0	79	243.1	121	372.3
57	156.0	51	139.6	25	61.6	41	100.9	76	233.9	132	406.2
36	98.5	54	147.8	26	64.0	31	76.3	56	172.3	116	356.9
62	169.7	40	109.5	37	91.1	32	78.8	72	221.6	126	387.7
37	101.3	48	131.4	22	54.2	36	88.6	63	193.9	111	341.6
59	161.5	46	125.9	22	54.2	40	98.5	80	246.2	112	344.6
49	134.1	46	125.9	17	41.9	56	137.9	81	249.2	104	320.0
26	71.2	31	84.9	25	61.6	46	113.3	85	261.6	85	261.6
53	145.1	45	123.2	16	39.4	26	64.0	88	270.8	83	255.4
67	183.4	36	98.5	25	61.6	39	96.0	95	292.3	90	276.9
66	180.7	51	139.6	40	98.5	23	56.6	100	307.7	86	264.6
Average:		49.1	134.3	Average:		31.2	76.8	Average:		93.2	286.9
<p>Observation: Very deep, dense snow, took a weight to insert to bottom. Fairly consistent snow throughout the column.</p>											



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.7 Southeast Slopes Terrain Type Plots

Plot SE-09-1 Date: 24-Apr-09				Plot SE-09-2 Date: 25-Apr-09				Plot SE-09-3 Date: 24-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
57	2.86	1.92	0.298	58	2.69	1.89	0.249	27	2.44	1.92	0.348
59	2.78	1.92	0.263	68	2.92	1.89	0.273	49	2.7	1.92	0.287
56	2.8	1.92	0.284	26	2.33	1.89	0.305	40	2.53	1.92	0.275
Average:			0.281	Average:			0.276	Average:			0.303
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
46	129.4	92	258.9	49	135.2	49	135.2	36	109.2	40	121.3
61	171.6	46	129.4	55	151.7	52	143.4	38	115.3	46	139.5
46	129.4	57	160.4	52	143.4	53	146.2	37	112.2	44	133.5
65	182.9	71	199.8	63	173.8	50	137.9	41	124.4	40	121.3
68	191.3	76	213.9	43	118.6	48	132.4	45	136.5	47	142.6
55	154.8	56	157.6	45	124.1	62	171.0	41	124.4	41	124.4
63	177.3	72	202.6	22	60.7	66	182.1	46	139.5	45	136.5
66	185.7	73	205.4	34	93.8	37	102.1	37	112.2	48	145.6
62	174.5	74	208.2	35	96.6	65	179.3	34	103.1	44	133.5
54	152.0	67	188.5	56	154.5	51	140.7	33	100.1	40	121.3
86	242.0	63	177.3	38	104.8	48	132.4	40	121.3	25	75.8
74	208.2	57	160.4	35	96.6	40	110.3	34	103.1	15	45.5
77	216.7	74	208.2	35	96.6	35	96.6	54	163.8	28	84.9
64	180.1	65	182.9	47	129.7	35	96.6	45	136.5	31	94.0
44	123.8	65	182.9	52	143.4	51	140.7	33	100.1	39	118.3
Average:		64.6	181.9	Average:		46.8	129.0	Average:		38.9	118.0
Observation: Snow very dense in high compaction throughout the plot. Fairly uniform snow throughout the column.				Observation: Very dense snow in large granular ice on bottom. Soft wind drifts on top.				Observation: Very dense hard layer present ~ 20 cm down of only 2 cm thick			



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

A4 - 15.8 Southwest Slopes Terrain Type Plots

Plot SW-09-1 Date: 25-Apr-09				Plot SW-09-2 Date: 24-Apr-09				Plot SW-09-3 Date: 23-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
41	2.45	1.89	0.246	32	2.34	1.86	0.271	44	2.47	1.92	0.226
56	2.73	1.89	0.271	28	2.12	1.86	0.168	47	2.71	1.92	0.303
26	2.23	1.89	0.236	32	2.41	1.86	0.310	34	2.41	1.92	0.260
Average:			0.251	Average:			0.249	Average:			0.263
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
76	190.8	14	35.1	26	64.9	41	102.3	45	118.3	52	136.7
53	133.0	8	20.1	55	137.2	42	104.8	36	94.7	50	131.5
48	120.5	18	45.2	26	64.9	33	82.3	32	84.2	46	121.0
24	60.2	28	70.3	28	69.8	44	109.8	43	113.1	53	139.4
48	120.5	26	65.3	38	94.8	34	84.8	17	44.7	45	118.3
29	72.8	18	45.2	29	72.3	43	107.3	21	55.2	26	68.4
44	110.5	19	47.7	17	42.4	22	54.9	20	52.6	30	78.9
30	75.3	15	37.7	22	54.9	20	49.9	35	92.0	54	142.0
57	143.1	46	115.5	20	49.9	15	37.4	41	107.8	50	131.5
32	80.3	56	140.6	30	74.8	54	134.7	45	118.3	61	160.4
30	75.3	58	145.6	48	119.7	37	92.3	36	94.7	25	65.7
33	82.8	36	90.4	34	84.8	35	87.3	54	142.0	19	50.0
11	27.6	39	97.9	50	124.7	33	82.3	53	139.4	40	105.2
20	50.2	65	163.2	44	109.8	34	84.8	64	168.3	32	84.2
12	30.1	78	195.8	32	79.8	30	74.8	22	57.9	27	71.0
Average:		35.7	89.6	Average:		33.9	84.5	Average:		39.1	102.9
Observation: Variable snow depth inside the plot due to wind				Observation: Fresh wind drift snow present in parts of the plot							



APPENDIX A4
Meliadine Gold Project 2009 Hydrometric Data

Plot SW-09-4 Date: 23-Apr-09				Plot SW-09-5 Date: 25-Apr-09			
Depth	Wgt	Tare	Density	Depth	Wgt	Tare	Density
(cm)	(kg)	(kg)	(g/cm ³)	(cm)	(kg)	(kg)	(g/cm ³)
43	2.47	1.92	0.231	47	2.51	1.89	0.238
17	2.14	1.92	0.234	43	2.52	1.89	0.264
112	3.43	1.92	0.243	80	3.29	1.89	0.316
Average:			0.236	Average:			0.273
Depth	SWE	Depth	SWE	Depth	SWE	Depth	SWE
(cm)	(mm)	(cm)	(mm)	(cm)	(mm)	(cm)	(mm)
43	101.4	71	167.5	66	180.0	36	98.2
36	84.9	100	235.9	55	150.0	38	103.6
37	87.3	81	191.1	56	152.7	60	163.6
44	103.8	76	179.3	57	155.5	57	155.5
36	84.9	72	169.8	47	128.2	46	125.5
57	134.4	26	61.3	36	98.2	66	180.0
56	132.1	46	108.5	6	16.4	80	218.2
60	141.5	49	115.6	26	70.9	40	109.1
54	127.4	22	51.9	18	49.1	94	256.4
31	73.1	19	44.8	33	90.0	45	122.7
115	271.2	20	47.2	17	46.4	80	218.2
76	179.3	31	73.1	46	125.5	70	190.9
139	327.9	51	120.3	27	73.6	82	223.6
115	271.2	44	103.8	35	95.5	64	174.5
134	316.1	54	127.4	50	136.4	43	117.3
Average:		59.8	141.1	Average:		49.2	134.2



APPENDIX B

Water Quality

Table B1-1: Water Quality in Streams of the Meliadine Lake Drainage, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	NEW-1		DI-4
		23-Jun-08	20-Jul-08	24-Jun-08
Date Sampled		546982, 6987421	0546505, 6987540	549441, 6983602
GPS Coordinates (NAD83 Zone 15)				
Source ^a		Golder	Golder	Golder
Field Measurements				
Water Temperature	°C	15.2	12.8	11.45
Dissolved Oxygen	mg/L	11.37	12.34	11.61
pH	pH	7.91	6.95	8.11
Specific Conductivity	µS/cm	80	137	72
Secchi Disk Depth	m	-	-	-
Conventional Parameters (Laboratory-Measured)				
pH	pH	7.6	7.6	7.7
Specific Conductivity	µS/cm	94.3	151	92
Total Dissolved Solids	mg/L	-	99	-
Total Dissolved Solids (Calculated)	mg/L	49	-	50
Total Alkalinity	mg CaCO ₃ /L	23	39	26
Total Hardness	mg CaCO ₃ /L	29	47	37
Total Suspended Solids	mg/L	<3	<3	<3
Turbidity	NTU	-	-	-
Major Ions				
Bicarbonate	mg/L	28	47	32
Bromide	mg/L	0.1	-	0.1
Calcium	mg/L	8.5	13.7	11.3
Carbonate	mg/L	<5	<5	<5
Chloride	mg/L	13	18	9
Fluoride	mg/L	<0.05	-	<0.05
Hydroxide	mg/L	<5	<5	<5
Magnesium	mg/L	1.5	2.27	1.4
Potassium	mg/L	0.9	1.03	3.1
Reactive Silica (as SiO ₂)	mg/L	-	-	-
Sodium	mg/L	7	9.69	11
Sulphate	mg/L	3.6	4.4	6.7
Ion Balance	%	Low EC	106	Low EC
Organic/Inorganic Carbon				
Total Carbon	mg/L	11	8	11
Total Organic Carbon	mg/L	5	9	5
Dissolved Organic Carbon	mg/L	5	8.4	5
Total Inorganic Carbon	mg/L	5	17	6
Nutrients and Chlorophyll a				
Total Ammonia as Nitrogen	mg/L	<0.05	<0.05	<0.05
Nitrate as Nitrogen	mg/L	<0.1	<0.1	<0.1
Nitrite as Nitrogen	mg/L	<0.05	<0.05	0.09
Nitrate+Nitrite as Nitrogen	mg/L	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.4	0.4	0.4
Phosphorus, Total	mg/L	0.012	0.009	0.01
Phosphorus, Total Dissolved	mg/L	0.003	0.004	0.003
Orthophosphate (PO ₄ -P)	mg/L	<0.001	<0.001	<0.001
Chlorophyll a	µg/L	3	<1	3
Cyanides				
Cyanide, Total	µg/L	<2	<2	<2
Total Metals				
Aluminum (Al)	µg/L	5.2	7.7	5
Antimony (Sb)	µg/L	<0.4	<0.03	<0.4
Arsenic (As)	µg/L	1.1	1.65	0.9
Barium (Ba)	µg/L	9	11.1	12
Beryllium (Be)	µg/L	<1	<0.2	<1
Bismuth (Bi)	µg/L	-	-	-
Boron (B)	µg/L	<50	8	<50
Cadmium (Cd)	µg/L	<i><0.017</i>	<i><0.05</i>	<i><0.017</i>
Cesium (Cs)	µg/L	-	-	-
Chromium (Cr)	µg/L	<0.06	0.17	<0.06
Cobalt (Co)	µg/L	<2	0.2	<2
Copper (Cu)	µg/L	1	1.4	1
Iron (Fe)	µg/L	207	587	95
Lead (Pb)	µg/L	<0.1	<0.05	<0.1
Lithium (Li)	µg/L	<10	-	<10
Magnesium (Mg)	µg/L	1500	2270	1400
Manganese (Mn)	µg/L	3	9.9	5
Mercury (Hg)	µg/L	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L	<5	0.25	<5
Nickel (Ni)	µg/L	<2	1.83	2
Potassium (K)	µg/L	900	1030	3100
Rubidium (Rb)	µg/L	-	-	-
Selenium (Se)	µg/L	<0.4	0.2	<0.4
Silver (Ag)	µg/L	<0.4	<0.1	<0.4
Sodium (Na)	µg/L	7000	9690	11000
Strontium (Sr)	µg/L	-	70.2	-
Thallium (Tl)	µg/L	<0.1	<0.03	<0.1
Tin (Sn)	µg/L	<50	-	<50
Titanium (Ti)	µg/L	<1	-	<1
Uranium (U)	µg/L	<0.1	0.06	<0.1
Vanadium (V)	µg/L	<1	0.4	<1
Zinc (Zn)	µg/L	<4	<0.8	<4
Dissolved Metals				
Aluminum (Al)	µg/L	3.3	3.7	2.6
Antimony (Sb)	µg/L	<0.4	<0.03	<0.4
Arsenic (As)	µg/L	0.9	1.41	0.9
Barium (Ba)	µg/L	9	10.8	13
Beryllium (Be)	µg/L	<1	<0.2	<1
Boron (B)	µg/L	<50	9	<50
Cadmium (Cd)	µg/L	<0.017	<0.05	<0.017
Calcium (Ca)	µg/L	-	13800	-
Chromium (Cr)	µg/L	<0.06	0.15	<0.06
Cobalt (Co)	µg/L	<2	0.2	<2
Copper (Cu)	µg/L	1	1.3	2
Iron (Fe)	µg/L	149	269	61
Lead (Pb)	µg/L	<0.1	<0.05	<0.1
Lithium (Li)	µg/L	<3	-	<3
Magnesium (Mg)	µg/L	-	2230	-
Manganese (Mn)	µg/L	2	8.7	4
Mercury (Hg)-Dissolved	µg/L	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L	<5	0.25	<5
Nickel (Ni)	µg/L	<2	1.8	2
Potassium (K)	µg/L	-	1040	-
Selenium (Se)	µg/L	<0.4	0.2	<0.4
Silver (Ag)	µg/L	<0.1	<0.1	<0.1
Sodium (Na)	µg/L	-	9510	-
Strontium (Sr)	µg/L	-	69.9	-
Thallium (Tl)	µg/L	<0.1	<0.03	<0.1
Tin (Sn)	µg/L	<50	-	<50
Titanium (Ti)	µg/L	<1	-	<1
Uranium (U)	µg/L	<0.1	0.06	<0.1
Vanadium (V)	µg/L	<1	0.38	<1
Zinc (Zn)	µg/L	<2	<0.8	<2
Organic Compounds				
Oil and Grease	µg/L	-	-	-
Phenols	µg/L	-	-	-
Benzene	µg/L	-	-	-
Ethylbenzene	µg/L	-	-	-
Toluene	µg/L	-	-	-
Xylenes	µg/L	-	-	-
F1 (C6-C10)	µg/L	-	-	-
F1 -BTX	µg/L	-	-	-
F2 (>C10-C16)	µg/L	-	-	-
F3 (C16-C34)	µg/L	-	-	-
F4 (C34-C50)	µg/L	-	-	-
Total Volatiles	µg/L	-	-	-
Total Extractables	µg/L	-	-	-
Other				
Biological Oxygen Demand (BOD)	mg/L	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

Table B1-2: Water Quality in Streams of the Peninsula Streams of Basin A, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	A0-1					A5-6			A7-8						
			15-Jun-97	12-Jun-98	17-Jul-98	19-Jun-99	21-Jun-00	15-Jun-97	12-Jun-98	18-Jul-98	15-Jun-97	12-Jun-98	20-Jul-98	18-Jul-07	7-Oct-07	21-Jun-08	14-Jul-08
GPS Coordinates (NAD83, Zone 15V)			0544352, 6986081	0544366, 6986045	-	-	-	-	-	-	0540748, 6986690	0540748, 6986690	0540750, 6986701	0540750, 6986687			
Source ^a			RL&L 1998	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2001	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1998	RL&L 1999	RL&L 1999	Comaplex	Comaplex	Golder	Golder
Field Measurements																	
Water Temperature	°C		4.0	2.5	11.7	5.0	4.0	6.0	1.9	9.9	4.8	1.5	10.2	17.8	1.9	6.85	16.70
Dissolved Oxygen	mg/L		12.5	-	-	-	-	12.8	-	-	12.9	-	-	-	-	13.3	10.97
pH	pH		7.64	7.1	-	7.79	7.20	7.78	7.0	-	7.60	7.1	-	8.12	8.02	-	6.53
Specific Conductivity	µS/cm		102.0	80.6	-	-	82.3	91.3	77.5	-	93.3	84.7	-	-	-	74	109
Secchi Disk Depth	m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conventional Parameters (Laboratory-Measured)																	
pH	pH		7.66	7.2	7.7	7.2	7.1	7.65	7.2	7.5	7.62	7.3	7.3	7.7	7.7	7.11	7.6
Specific Conductivity	µS/cm		80.4	70.9	121	94.8	74.4	72.4	68.0	80.5	74.3	74.0	86.4	106	135	113	118
Total Dissolved Solids	mg/L		53	33	57	45	35	48	32	37	52	34	41	-	-	70	82
Total Dissolved Solids (Calculated)	mg/L		-	-	-	-	-	-	-	-	-	-	-	51	64	-	-
Total Alkalinity	mg CaCO ₃ /L		33.4	24	41	31	25	30.9	25	29	30.4	26	31	30	33	24.8	27
Total Hardness	mg CaCO ₃ /L		36.7	27	47	36	28	37.7	26	31	35.9	28	37	41	52	46	49
Total Suspended Solids	mg/L		4	<2	<2	<3	<3	3	3	<2	3	2	2	-	<3	<3.0	<3
Turbidity	NTU		0.6	0.5	0.6	1.5	0.78	0.6	0.3	0.4	2.0	0.4	0.5	-	0.45	-	-
Major Ions																	
Bicarbonate	mg/L		33.4	30	50	38	31	30.9	31	35	30.4	31	38	37	40	24.8	33
Bromide	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	-
Calcium	mg/L		12.6	9.1	16.1	12.2	8.04	13.1	8.7	10.5	12.0	9.1	11.9	13.6	17.1	15.8	15.3
Carbonate	mg/L		<0.3	<1	<1	<1	<5	<0.3	<1	<1	<0.3	<1	<1	<5	<5	<2.0	<5
Chloride	mg/L		4.38	4.0	7.72	6.30	4	3.24	3.2	3.79	4.24	4.2	4.57	12	17	16.9	17
Fluoride	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	-
Hydroxide	mg/L		-	<1	<1	<1	<5	-	<1	<1	-	<1	<1	<5	<5	<2.0	<5
Magnesium	mg/L		1.27	1.05	1.74	1.40	0.954	1.20	1.07	1.26	1.44	1.30	1.70	1.7	2.2	2.03	1.8
Potassium	mg/L		0.676	0.75	0.95	0.72	0.591	0.632	0.73	0.68	0.643	0.77	0.80	0.8	1	<2.0	0.95
Reactive Silica (as SiO ₂)	mg/L		0.972	1.0	1.1	0.8	0.7	0.870	1.1	0.9	0.977	1.3	1.1	-	1.3	-	-
Sodium	mg/L		2.13	1.6	2.8	2.3	1.36	1.79	1.5	1.9	1.84	1.6	2.1	2	3	2.5	2.6
Sulphate	mg/L		<3	1.8	2.62	3.08	3.2	4	1.5	1.74	4	1.6	1.67	3.2	4.1	2.78	2.1
Ion Balance	%		-	98	100	98	95.2	-	96	102	-	98	108	90.5	97.5	-	106
Organic/Inorganic Carbon																	
Total Carbon	mg/L		11.0	11	15.9	10.7	9.3	10.0	11	11.2	10.0	11	11.5	-	11	8.04	10
Total Organic Carbon	mg/L		3.4	5.7	5.9	3.8	3.6	2.8	5.0	3.9	2.8	5.3	3.9	-	-	2.67	4
Dissolved Organic Carbon	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	2.88	4
Total Inorganic Carbon	mg/L		8.0	5.7	10.0	6.9	5.7	7.0	6.0	7.3	7.0	6.2	7.5	-	8	5.37	6
Nutrients and Chlorophyll a																	
Total Ammonia as Nitrogen	mg/L		0.004	0.013	0.008	<0.005	0.011	0.004	0.024	<0.005	0.005	0.028	0.016	-	<0.05	<0.020	<0.05
Nitrate as Nitrogen	mg/L		<0.008	0.007	<0.006	0.009	0.007	<0.008	0.011	<0.006	<0.008	0.011	<0.006	<0.1	<0.1	0.0168	<0.1
Nitrite as Nitrogen	mg/L		-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	0.001	<0.05
Nitrate+Nitrite as Nitrogen	mg/L		<0.008	0.007	<0.006	0.009	0.008	<0.008	0.011	<0.006	<0.008	0.011	<0.006	<0.1	<0.1	-	<0.1
Total Kjeldahl Nitrogen	mg/L		0.30	0.21	0.41	0.29	0.12	0.27	0.22	0.77	0.30	0.25	0.52	-	0.2	0.208	0.4
Phosphorus, Total	mg/L		0.009	0.008	0.007	0.005	0.008	0.009	0.006	0.004	0.008	0.005	0.006	-	<0.02	0.0042	0.007
Phosphorus, Total Dissolved	mg/L		0.006	0.007	0.006	0.002	0.004	0.007	0.006	0.004	0.006	0.004	0.005	-	<0.02	<0.0020	0.004
Orthophosphate (PO ₄ -P)	mg/L		<0.002	<0.001	<0.001	<0.001	0.005	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	-	<0.01	<0.0010	<0.001
Chlorophyll a	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	17
Cyanides																	
Cyanide, Total	µg/L		-	<1	<1	<2	<2	-	<1	<1	-	<1	2	-	-	<5	<2
Total Metals																	
Aluminum (Al)	µg/L		4.4	1.8	<0.3	2.2	5.6	1.4	1.7	<0.3	0.9	2.3	0.5	<10	-	<5	2.3
Antimony (Sb)	µg/L		0.5	0.14	0.07	0.04	0.07	0.5	0.17	0.08	0.2	0.15	0.07	<0.4	-	<0.50	<0.03
Arsenic (As)	µg/L		0.4	0.69	<0.03	0.92	0.80	0.7	0.79	0.13	0.9	1.00	2.45	2.3	-	1.15	3
Barium (Ba)	µg/L		10.7	8.7	<0.05	11.1	9.13	9.8	9.1	0.80	10.7	10.9	9.17	14	-	<20	14.3
Beryllium (Be)	µg/L		<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	<0.2	<0.2	<1	-	<1.0	<0.2
Bismuth (Bi)	µg/L		<0.1	<0.05	<0.03	<0.03	-	<0.1	<0.05	<0.03	<0.1	<0.05	<0.03	-	-	-	-
Boron (B)	µg/L		-	-	-	-	<1	-	-	-	-	-	-	<50	-	<100	2
Cadmium (Cd)	µg/L		<0.1	<0.05	<0.05	<0.02	<0.05	<0.1	<0.05	<0.05	0.1	<0.05	<0.05	<0.2	-	<0.017	<0.05
Cesium (Cs)	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
Chromium (Cr)	µg/L		0.7	<0.06	<0.06	1.40	0.50	0.5	<0.06	<0.06	0.4	<0.06	3.29	<5	-	<1.0	0.26
Cobalt (Co)	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<2	-	<0.30	<0.1
Copper (Cu)	µg/L		0.8	0.9	0.9	0.6	<0.6	0.7	1.1	0.8	1.0	1.3	0.8	1	-	<1.0	0.9
Iron (Fe)	µg/L		136	20	<5	87	106	88	10	8	109	20	28	-	-	67	138
Lead (Pb)	µg/L		<0.2	<0.05	<0.05	0.06	0.08	<0.2	0.07	<0.05	<0.2	<0.05	<0.05	<0.1	-	<0.50	0.1
Lithium (Li)	µg/L		0.9	0.9	<0.1	1.2	-	0.7	0.7	0.7	1.0	1.1	0.2	<10	-	<5.0	-
Magnesium (Mg)	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	2030	1800
Manganese (Mn)	µg/L		7.6	1.7	0.1	12.5	18.1	12.8	1.4	0.2	13.5	1.6	1.2	14	-	6.46	24.1
Mercury (Hg)	µg/L		<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.2	-	<0.020	<0.02
Molybdenum (Mo)	µg/L		0.2	0.11	0.19	0.12	0.10	0.1	0.14	0.1	0.11	0.21	<5	-	-	<1.0	0.16
Nickel (Ni)	µg/L		0.8	0.5	0.32	0.69	0.53	0.7	0.5	0.27	1.6	0.8	1.03	<2	-	<1.0	0.51
Potassium (K)	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	<2000	950
Rubidium (Rb)	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L		<1	<0.1	<0.1	0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	0.2	0.4	-	<1.0	0.2
Silicon (Si)	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	-	<0.020	<0.1
Sodium (Na)	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	2500	2600
Strontium (Sr)	µg/L		41.9	35.1	<0.1	48.7	31.0	38.4	33.8	0.4	47.0	42.8	56.2	-	-	-	83.7
Thallium (Tl)	µg/L		0.1	<0.05	<0.03	<0.03	-	<0.1	<0.05	<0.03	<0.1	<0.05	<0.03	<0.1	-	<0.20	<0.03
Tin (Sn)	µg/L		-	-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.50	-
Titanium (Ti)	µg/L		0.5	<0.3	0.1												

Table B1-3: Water Quality in Streams of the Peninsula Streams of Basin B, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	B1-2				B3-4				B4-5				B5-6				B6-7								
			16-Jun-97	25-Aug-97	12-Jun-98	18-Jul-98	19-Jun-99	22-Jun-00	16-Jun-97	16-Jun-97 (dup)	13-Jun-98	18-Jul-98	16-Jun-97	25-Aug-97	13-Jun-98	18-Jul-98	21-Jun-08	14-Jul-08	13-Jun-98	18-Jul-98	17-Jun-97	13-Jun-98	13-Jun-98 (dup)	18-Jul-98	21-Jun-08	13-Jul-08	
GPS Coordinates			Dillon 1994	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2001	RL&L 2001	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1999											
Source*																											
Field Measurements																											
Water Temperature	°C		2.5	10.2	1.3	10.1	5.6	2.0	5.5	5.5	0.7	10.4	7.5	12.8	0.7	10.5	5.78	14.01	1.2	10.2	10.0	1.9	1.9	10.0	10.90	16.72	
Dissolved Oxygen	mg/L		13.5	10.0	-	-	-	-	12.7	12.7	-	-	12.8	10.4	-	-	13.52	11.63	-	-	12.7	-	-	-	11.85	11.66	
pH	pH		6.83	7.05	7.0	-	6.81	7.21	7.20	7.20	7.2	-	7.28	7.14	6.9	-	-	6.86	6.6	-	7.55	7.0	7.0	-	8.28	7.02	
Specific Conductivity	µS/cm		100.9	114.7	75.4	-	-	90.1	107.3	107.3	68.3	-	85.7	96.5	49.5	-	50	89	47.9	-	81.9	53.8	53.8	-	78	116	
Secchi Disk Depth	m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Conventional Parameters (Laboratory-Measured)																											
pH	pH		7.65	7.53	7.2	7.3	7.2	7.0	7.73	7.71	7.2	7.2	7.62	7.74	7.0	7.3	7.14	7.6	7.0	7.4	7.56	7.0	7.0	7.0	7.3	7.08	7.6
Specific Conductivity	µS/cm		80.0	94.7	64.6	61.1	78.4	82.1	85.3	85.9	61.1	84.4	70.7	75.7	41.8	71.3	80.1	86.2	40.5	68.4	66.7	46.1	46.2	66.9	104	106	
Total Dissolved Solids	mg/L		54	66	30	28	37	39	57	60	26	39	49	61	19	32	47	62	18	32	42	21	21	31	79	78	
Total Dissolved Solids (Calculated)	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	-	-	-	-	-	-	-	51	
Total Alkalinity	mg CaCO ₃ /L		32.1	34.7	22	21	27	28	34.1	34.2	20	26	28.8	28.4	14	24	24.7	28	14	25	27.8	16	16	24	22.7	26	
Total Hardness	mg CaCO ₃ /L		35.9	37.0	23	21	29	31	41.1	38.4	20	28	36.1	31.6	15	26	33.2	35	15	26	31.0	17	17	25	44.5	42	
Total Suspended Solids	mg/L		5	<3	5	5	4	<3	3	8	<2	6	7	<3	<2	2	<3.0	3	<2	3	<3	<2	<2	<2	6	<3.0	
Turbidity	NTU		1.2	0.8	0.4	0.5	1.1	0.48	0.7	1.5	0.4	0.8	0.7	0.7	0.6	0.6	-	-	0.4	0.5	0.6	0.5	0.3	0.5	-	-	
Major Ions																											
Bicarbonate	mg/L		32.1	34.7	27	25	33	35	34.1	34.2	25	32	28.8	28.4	17	30	24.7	34	18	30	27.8	19	19	29	22.7	31	
Bromide	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	
Calcium	mg/L		12.4	12.4	7.9	7.19	9.6	8.84	14.3	13.2	6.6	9.20	12.4	10.3	4.8	8.54	10.9	10.9	4.8	8.70	10.5	5.5	5.7	8.41	15.2	14.0	
Carbonate	mg/L		<0.3	<0.3	<1	<1	<1	<5	<0.3	<0.3	<1	<1	<0.3	<0.3	<1	<1	<2.0	<5	<1	<1	<0.3	<1	<1	<1	<2.0	<5	
Chloride	mg/L		4.69	5.90	3.3	3.48	4.03	4	5.01	5.04	3.0	5.84	3.66	4.11	2.1	3.62	7.27	7	1.9	3.11	3.01	2.1	2.1	2.83	14.5	14	
Fluoride	mg/L		-	-	<1	<1	<1	<5	-	-	<1	<1	-	-	-	-	<0.020	-	-	-	-	-	-	-	0.02	-	
Hydroxide	mg/L		-	-	<1	<1	<1	<5	-	-	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2.0	<5	
Magnesium	mg/L		1.19	1.47	0.92	0.83	1.12	0.989	1.31	1.32	0.87	1.23	1.25	1.43	0.69	1.22	1.48	1.35	0.67	1.13	1.15	0.75	0.75	1.09	1.63	1.39	
Potassium	mg/L		0.790	0.952	0.87	0.66	0.83	0.803	0.844	0.840	0.72	0.84	0.636	0.734	0.51	0.63	<2.0	0.71	0.54	0.70	0.660	0.61	0.62	0.69	<2.0	0.89	
Reactive Silica (as SiO ₂)	mg/L		0.454	0.772	0.6	0.5	0.5	0.5	0.413	0.419	0.6	0.5	0.450	0.609	0.5	0.4	-	-	0.6	0.5	0.648	0.6	0.6	0.7	-	-	
Sodium	mg/L		2.76	3.48	1.9	2.1	2.5	1.90	3.00	2.98	1.7	3.6	2.02	2.28	1.1	2.0	2.5	2.59	1.1	1.8	1.83	1.1	1.1	1.7	2.2	2.14	
Sulphate	mg/L		<3	4	1.6	1.50	2.81	4.2	<3	4	1.5	2.45	4	<3	1.1	2.04	2.81	2.6	1.0	1.44	5	1.6	1.6	1.39	3.02	2.9	
Ion Balance	%		-	-	101	99	98	93.4	-	-	94	100	-	-	99	99	-	Low EC	96	102	-	99	101	103	-	99	
Organic/Inorganic Carbon																											
Total Carbon	mg/L		11.0	12.9	11	9.0	10.0	10.8	11.0	11.0	10	10.7	10.0	11.7	8	10.1	8.01	10	8	11.0	10.0	9	9	10.9	8.6	11	
Total Organic Carbon	mg/L		2.8	3.9	5.6	4.0	3.7	4.1	3.2	3.0	4.8	4.0	3.2	4.7	4.2	3.9	2.5	4	4.7	4.8	3.4	5.2	5.3	4.9	3.55	5	
Dissolved Organic Carbon	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.85	4.1	-	-	-	-	-	-	3.61	5	
Total Inorganic Carbon	mg/L		8.0	9.0	5.5	4.9	6.3	6.7	8.0	8.0	4.8	6.7	7.0	7.0	3.7	6.2	5.51	6	3.6	6.2	7.0	3.9	3.9	6.0	5.05	6	
Nutrients and Chlorophyll a																											
Total Ammonia as Nitrogen	mg/L		0.008	0.009	0.014	0.007	<0.005	0.022	0.007	0.008	0.021	0.007	0.008	0.003	0.046	0.010	<0.020	<0.05	0.078	0.009	0.006	0.010	0.010	0.008	<0.020	<0.05	
Nitrate as Nitrogen	mg/L		<0.008	0.027	0.010	<0.006	0.024	0.014	<0.008	<0.008	0.008	<0.006	<0.008	0.023	0.009	<0.006	<0.0050	<0.1	0.008	<0.006	0.011	0.007	0.008	<0.006	<0.050	<0.1	
Nitrite as Nitrogen	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.05	-	-	-	-	-	-	<0.0010	<0.05	
Nitrate+Nitrite as Nitrogen	mg/L		<0.008	0.027	0.010	<0.006	0.024	0.015	<0.008	<0.008	0.008	<0.006	<0.008	0.023	0.009	<0.006	<0.1	0.008	<0.006	0.011	0.007	0.008	<0.006	<0.050	<0.1		
Total Kjeldahl Nitrogen	mg/L		0.30	0.27	0.30	0.32	0.24	0.35	0.36	0.30	0.14	0.37	0.28	0.40	0.13	0.41	0.202	0.3	0.19	0.50	0.35	0.39	0.30	0.39	0.252	0.4	
Phosphorus, Total	mg/L		0.014	0.014	0.006	0.006	0.006	0.008	0.020	0.019	0.006	0.007	0.008	0.017	0.006	0.006	0.0044	0.008	0.007	0.004	0.006	0.007	0.006	0.006	0.0049	0.009	
Phosphorus, Total Dissolved	mg/L		0.008	0.014	0.006	0.005	0.002	0.003	0.007	0.011	0.006	0.006	0.005	0.004	0.005	0.006	<0.0020	0.003	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.004	
Orthophosphate (PO ₄ -P)	mg/L		<0.002	<0.002	<0.001	<0.001	0.001	0.005	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.0010	<0.001	
Chlorophyll a	µg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0616	17	-	-	-	-	-	-	0.595	9	
Cyanides																											
Cyanide, Total	µg/L		-	-	<1	<1	<2	<2	-	-	<1	<1	-	-	<1	<1	<5.0	<2	<1	<1	<1	<1	<1	<1	<1	<5.0	<2
Total Metals																											
Aluminum (Al)	µg/L		<0.5	<0.5	2.1	<0.3	5.1	7.3	2.9	2.5	1.9	<0.3	<5	1.1	2.1	<0.3	<5.0	3.9	2.1	<0.3	<5	2.0	2.1	<0.3	<5.0	3.7	
Antimony (Sb)	µg/L		0.3	0.3	0.18	0.11	0.03	0.14	0.2	0.3	0.16	0.08	0.4	0.2	0.16	0.09	<0.50	<0.03	0.21	0.09	3.2	0.13	0.18	0.07	<0.50	<0.03	
Arsenic (As)	µg/L		0.3	1.2	0.63	0.65	0.73	0.63	0.4	0.4	0.58	0.65	0.4	1.3	0.57	0.91	<0.83	1.64	0.44	0.82	0.6	0.55	0.56	0.91	0.74	1.62	
Barium (Ba)	µg/L		10.4	9.9	8.6	0.68	11.0	11.5	11.5	11.7	8.1	<0.05	10.4	7.1	6.7	<0.05	<20	10.5	6.8	<0.05	10.1	7.6	7.8	<0.05	<20	13	
Beryllium (Be)	µg/L		<0.1	0.3	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.1	0.1	<0.2	<0.2	<1.0	<0.2	<0.2	<0.1	<0.2	<0.1	<0.2</				

Table B1-4: Water Quality in Streams of the Peninsula Streams of Basin D, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	D0-1		D6-7	
		18-Jun-97	25-Aug-97	18-Jun-97	26-Aug-97
		RL&L 1998	RL&L 1998	RL&L 1998	RL&L 1998
Field Measurements					
Water Temperature	°C	7.0	12.7	7.2	8.9
Dissolved Oxygen	mg/L	12.7	11.3	12.7	10.8
pH	pH	7.55	7.49	7.31	7.14
Specific Conductivity	µS/cm	79.4	138.0	95.2	157.0
Secchi Disk Depth	m	-	-	-	-
Conventional Parameters (Laboratory-Measured)					
pH	pH	7.57	7.78	7.55	7.89
Specific Conductivity	µS/cm	64.0	113.0	82.8	135.0
Total Dissolved Solids	mg/L	39	72	49	-
Total Dissolved Solids (Calculated)	mg/L	-	-	-	-
Total Alkalinity	mg CaCO ₃ /L	26.1	44.6	33.7	49.9
Total Hardness	mg CaCO ₃ /L	30.3	48.1	37.0	51.4
Total Suspended Solids	mg/L	<3	<3	3	<3
Turbidity	NTU	0.8	1.7	0.8	0.5
Major Ions					
Bicarbonate	mg/L	26.1	44.6	33.7	49.9
Bromide	mg/L	-	-	-	-
Calcium	mg/L	10.3	15.8	12.2	16.1
Carbonate	mg/L	<0.3	<0.3	<0.3	<0.3
Chloride	mg/L	3.30	6.21	5.00	8.09
Fluoride	mg/L	-	-	-	-
Hydroxide	mg/L	-	-	-	-
Magnesium	mg/L	1.11	2.1	1.59	2.71
Potassium	mg/L	0.579	0.978	0.764	2.520
Reactive Silica (as SiO ₂)	mg/L	0.310	0.875	0.194	0.289
Sodium	mg/L	1.78	3.43	3.24	5.09
Sulphate	mg/L	4	3	<3	<3
Ion Balance	%	-	-	-	-
Organic/Inorganic Carbon					
Total Carbon	mg/L	8.0	18.2	10.0	16.5
Total Organic Carbon	mg/L	2.3	7.2	2.3	4.5
Dissolved Organic Carbon	mg/L	-	-	-	-
Total Inorganic Carbon	mg/L	6.0	11.0	8.0	12.0
Nutrients and Chlorophyll a					
Total Ammonia as Nitrogen	mg/L	0.004	0.020	0.003	0.006
Nitrate as Nitrogen	mg/L	<0.008	0.080	<0.008	0.025
Nitrite as Nitrogen	mg/L	-	-	-	-
Nitrate+Nitrite as Nitrogen	mg/L	<0.008	0.080	<0.008	0.025
Total Kjeldahl Nitrogen	mg/L	0.26	0.55	0.30	0.38
Phosphorus, Total	mg/L	0.007	0.019	0.006	0.020
Phosphorus, Total Dissolved	mg/L	0.007	0.011	0.004	0.016
Orthophosphate (PO ₄ -P)	mg/L	<0.002	<0.002	<0.002	<0.002
Chlorophyll a	µg/L	-	-	-	-
Cyanides					
Cyanide, Total	µg/L	-	-	-	-
Total Metals					
Aluminum (Al)	µg/L	<5	3.6	5	2.0
Antimony (Sb)	µg/L	0.4	0.3	0.5	0.3
Arsenic (As)	µg/L	0.3	0.6	0.3	0.5
Barium (Ba)	µg/L	8.6	14.4	13.7	16.7
Beryllium (Be)	µg/L	<0.1	0.2	<0.1	0.2
Bismuth (Bi)	µg/L	<0.1	<0.1	<0.1	<0.1
Boron (B)	µg/L	-	-	-	-
Cadmium (Cd)	µg/L	<0.1	<0.1	<0.1	0.1
Cesium (Cs)	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<0.2	<2	0.9	2.0
Cobalt (Co)	µg/L	<0.1	0.2	<0.1	0.2
Copper (Cu)	µg/L	1.5	1.6	1.2	1.0
Iron (Fe)	µg/L	133	305	86	84
Lead (Pb)	µg/L	<0.2	0.2	<0.2	0.2
Lithium (Li)	µg/L	1.2	1.2	1.4	2.0
Magnesium (Mg)	µg/L	-	-	-	-
Manganese (Mn)	µg/L	6.8	61.5	16.7	16.3
Mercury (Hg)	µg/L	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L	0.1	0.5	0.2	0.5
Nickel (Ni)	µg/L	<0.1	1.1	<0.1	1.0
Potassium (K)	µg/L	-	-	-	-
Rubidium (Rb)	µg/L	0.7	-	0.9	-
Selenium (Se)	µg/L	<10	<10	<10	1.0
Silver (Ag)	µg/L	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L	-	-	-	-
Strontium (Sr)	µg/L	41.5	70.1	51.6	86.2
Thallium (Tl)	µg/L	<0.1	<0.1	<0.1	<0.1
Tin (Sn)	µg/L	-	-	-	-
Titanium (Ti)	µg/L	0.9	1.3	0.4	1.3
Uranium (U)	µg/L	<0.1	0.1	0.1	0.1
Vanadium (V)	µg/L	0.3	0.4	0.1	0.2
Zinc (Zn)	µg/L	<0.5	1.6	22.7	<5
Dissolved Metals					
Aluminum (Al)	µg/L	-	-	-	-
Antimony (Sb)	µg/L	-	-	-	-
Arsenic (As)	µg/L	-	-	-	-
Barium (Ba)	µg/L	-	-	-	-
Beryllium (Be)	µg/L	-	-	-	-
Boron (B)	µg/L	-	-	-	-
Cadmium (Cd)	µg/L	-	-	-	-
Calcium (Ca)	µg/L	-	-	-	-
Chromium (Cr)	µg/L	-	-	-	-
Cobalt (Co)	µg/L	-	-	-	-
Copper (Cu)	µg/L	-	-	-	-
Iron (Fe)	µg/L	-	-	-	-
Lead (Pb)	µg/L	-	-	-	-
Lithium (Li)	µg/L	-	-	-	-
Magnesium (Mg)	µg/L	-	-	-	-
Manganese (Mn)	µg/L	-	-	-	-
Mercury (Hg)	µg/L	-	-	-	-
Molybdenum (Mo)	µg/L	-	-	-	-
Nickel (Ni)	µg/L	-	-	-	-
Potassium (K)	µg/L	-	-	-	-
Selenium (Se)	µg/L	-	-	-	-
Silver (Ag)	µg/L	-	-	-	-
Sodium (Na)	µg/L	-	-	-	-
Strontium (Sr)	µg/L	-	-	-	-
Thallium (Tl)	µg/L	-	-	-	-
Tin (Sn)	µg/L	-	-	-	-
Titanium (Ti)	µg/L	-	-	-	-
Uranium (U)	µg/L	-	-	-	-
Vanadium (V)	µg/L	-	-	-	-
Zinc (Zn)	µg/L	-	-	-	-
Organic Compounds					
Oil and Grease	mg/L	-	-	-	-
Phenols	µg/L	<2	<2	<2	<2
Benzene	µg/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	<0.5	<0.5	<0.5	<0.5
Xylenes	µg/L	<0.5	<0.5	<0.5	<0.5
F1 (C6-C10)	µg/L	-	-	-	-
F1-BTEX	µg/L	-	-	-	-
F2 (>C10-C16)	µg/L	-	-	-	-
F3 (C16-C34)	µg/L	-	-	-	-
F4 (C34-C50)	µg/L	-	-	-	-
Total Volatiles	µg/L	<100	<100	<100	<100
Total Extractables	µg/L	<50	<50	<50	<50
Other					
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-	-

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.
 (-) = No data available
 Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.
 a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.



Table B1-5: Water Quality in Streams of the Peninsula Streams of Basin G, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	G1-2
		17-Jun-97
Date Sampled		-
GPS Coordinates		-
Source ^a		RL&L 1998
Field Measurements		
Water Temperature	°C	18.5
Dissolved Oxygen	mg/L	10.4
pH	pH	8.12
Specific Conductivity	µS/cm	72.3
Secchi Disk Depth	m	-
Conventional Parameters (Laboratory-Measured)		
pH	pH	7.67
Specific Conductivity	µS/cm	59.1
Total Dissolved Solids	mg/L	34
Total Dissolved Solids (Calculated)	mg/L	-
Total Alkalinity	mg CaCO ₃ /L	24.9
Total Hardness	mg CaCO ₃ /L	27.5
Total Suspended Solids	mg/L	<3
Turbidity	NTU	0.6
Major Ions		
Bicarbonate	mg/L	24.9
Bromide	mg/L	-
Calcium	mg/L	9.57
Carbonate	mg/L	<0.3
Chloride	mg/L	2.74
Fluoride	mg/L	-
Hydroxide	mg/L	-
Magnesium	mg/L	0.879
Potassium	mg/L	0.806
Reactive Silica (as SiO ₂)	mg/L	0.330
Sodium	mg/L	1.74
Sulphate	mg/L	<3
Ion Balance	%	-
Organic/Inorganic Carbon		
Total Carbon	mg/L	11.0
Total Organic Carbon	mg/L	4.6
Dissolved Organic Carbon	mg/L	-
Total Inorganic Carbon	mg/L	6.0
Nutrients and Chlorophyll a		
Total Ammonia as Nitrogen	mg/L	0.006
Nitrate as Nitrogen	mg/L	0.012
Nitrite as Nitrogen	mg/L	-
Nitrate+Nitrite as Nitrogen	mg/L	0.012
Total Kjeldahl Nitrogen	mg/L	0.41
Phosphorus, Total	mg/L	0.006
Phosphorus, Total Dissolved	mg/L	0.004
Orthophosphate (PO ₄ -P)	mg/L	<0.002
Chlorophyll a	µg/L	-
Cyanides		
Cyanide, Total	µg/L	-
Total Metals		
Aluminum (Al)	µg/L	<5
Antimony (Sb)	µg/L	0.8
Arsenic (As)	µg/L	0.3
Barium (Ba)	µg/L	13.5
Beryllium (Be)	µg/L	<0.1
Bismuth (Bi)	µg/L	<0.1
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	<0.1
Cesium (Cs)	µg/L	<0.1
Chromium (Cr)	µg/L	0.7
Cobalt (Co)	µg/L	<0.1
Copper (Cu)	µg/L	1.6
Iron (Fe)	µg/L	74
Lead (Pb)	µg/L	<0.2
Lithium (Li)	µg/L	1.0
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	1.7
Mercury (Hg)	µg/L	<0.01
Molybdenum (Mo)	µg/L	0.1
Nickel (Ni)	µg/L	<0.1
Potassium (K)	µg/L	-
Rubidium (Rb)	µg/L	1.3
Selenium (Se)	µg/L	<10
Silver (Ag)	µg/L	<0.1
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	46.8
Thallium (Tl)	µg/L	<0.1
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	0.4
Uranium (U)	µg/L	<0.1
Vanadium (V)	µg/L	0.2
Zinc (Zn)	µg/L	16.2
Dissolved Metals		
Aluminum (Al)	µg/L	-
Antimony (Sb)	µg/L	-
Arsenic (As)	µg/L	-
Barium (Ba)	µg/L	-
Beryllium (Be)	µg/L	-
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	-
Calcium (Ca)	µg/L	-
Chromium (Cr)	µg/L	-
Cobalt (Co)	µg/L	-
Copper (Cu)	µg/L	-
Iron (Fe)	µg/L	-
Lead (Pb)	µg/L	-
Lithium (Li)	µg/L	-
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	-
Mercury (Hg)	µg/L	-
Molybdenum (Mo)	µg/L	-
Nickel (Ni)	µg/L	-
Potassium (K)	µg/L	-
Selenium (Se)	µg/L	-
Silver (Ag)	µg/L	-
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	-
Thallium (Tl)	µg/L	-
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	-
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	-
Zinc (Zn)	µg/L	-
Organic Compounds		
Oil and Grease		-
Phenols	µg/L	<2
Benzene	µg/L	<0.5
Ethylbenzene	µg/L	<0.5
Toluene	µg/L	<0.5
Xylenes	µg/L	<0.5
F1 (C6-C10)	µg/L	-
F1 -BTEX	µg/L	-
F2 (>C10-C16)	µg/L	-
F3 (C16-C34)	µg/L	-
F4 (C34-C50)	µg/L	-
Total Volatiles	µg/L	<100
Total Extractables	µg/L	<50
Other		
Biological Oxygen Demand (BOD)	mg/L	-
Fecal Coliforms	CFU/100 mL	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG). Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ). Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSeimens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

Table B1-6: Water Quality in Streams Associated with the Meliadine River, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	ML-MR								MR-L			
			19-Jun-97	24-Aug-97	24-Aug-97 (Dup)	12-Jun-98	18-Jul-98	20-Jun-99	22-Jun-00	21-Jun-08	19-Jul-08	12-Jun-98	20-Jul-98	
GPS Coordinates			-	-	-	-	-	-	-	-	0530714, 6989630	0530712, 6989681	-	-
Source ^a			RL&L 1998	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2000	Golder	Golder	RL&L 1999	RL&L 1999	
Field Measurements														
Water Temperature	°C		6.9	11.6	11.6	1.7	9.8	6.0	3.0	5.63	12.7	3.2	10.8	
Dissolved Oxygen	mg/L		14.1	11.1	11.1	-	-	-	-	16.54	16.03	-	-	
pH	pH		7.15	7.48	7.48	-	-	6.89	7.11	-	6.78	7.7	-	
Specific Conductivity	µS/cm		62.0	61.6	61.6	79.8	-	-	72.9	42	63	85.5	-	
Secchi Disk Depth	m		-	-	-	-	-	-	-	-	-	-	-	
Conventional Parameters (Laboratory-Measured)														
pH	pH		7.22	7.32	7.36	7.1	7.2	7.0	6.9	7.06	7.5	7.2	7.1	
Specific Conductivity	µS/cm		50.3	50.4	49.9	62.4	52.4	62.4	68.0	68.8	64.2	72.4	80.0	
Total Dissolved Solids	mg/L		38	38	39	29	24	30	32	34	40	33	38	
Total Dissolved Solids (Calculated)	mg/L		-	-	-	-	-	-	-	-	30	-	-	
Total Alkalinity	mg CaCO ₃ /L		16.2	15.2	14.8	18	15	19	20	17.8	16	19	18	
Total Hardness	mg CaCO ₃ /L		20.2	16.7	16.0	20	16	19	20	24	20	21	22	
Total Suspended Solids	mg/L		<3	<3	<3	<2	2	<3	<3	<3.0	<3	<2	2	
Turbidity	NTU		0.2	0.9	0.3	0.3	0.2	0.1	0.23	-	-	0.5	0.3	
Major Ions														
Bicarbonate	mg/L		16.2	15.2	14.8	22	18	23	25	17.8	19	23	22	
Bromide	mg/L		-	-	-	-	-	-	-	<0.050	-	-	-	
Calcium	mg/L		6.86	5.43	5.17	6.5	5.23	6.3	5.93	7.59	5.97	6.9	6.94	
Carbonate	mg/L		<0.3	<0.3	<0.3	<1	<1	<1	<5	<2.0	<5	<1	<1	
Chloride	mg/L		4.24	4.25	4.24	4.7	4.19	4.67	5	6.91	5	6.3	9.60	
Fluoride	mg/L		-	-	-	-	-	-	-	0.021	-	-	-	
Hydroxide	mg/L		-	-	-	<1	<1	<1	<5	<2.0	<5	<1	<1	
Magnesium	mg/L		0.743	0.77	0.76	0.88	0.71	0.90	0.816	1.12	0.865	0.97	1.23	
Potassium	mg/L		1.71	0.725	0.702	0.90	0.70	0.81	0.740	<2.0	0.76	1.14	1.04	
Reactive Silica (as SiO ₂)	mg/L		0.297	0.385	0.388	0.6	0.3	0.2	0.2	-	-	0.5	0.6	
Sodium	mg/L		2.53	2.59	2.57	2.9	2.6	3.2	2.61	4	3.22	3.7	5.6	
Sulphate	mg/L		5	<3	<3	2.1	1.69	2.37	3.2	3.11	2.8	2.7	2.48	
Ion Balance	%		-	-	-	102	101	99	90.6	-	Low EC	101	105	
Organic/Inorganic Carbon														
Total Carbon	mg/L		6.0	6.1	6.0	9	6.7	7.1	7.4	5.97	3	10	7.0	
Total Organic Carbon	mg/L		1.6	2.1	2.0	4.5	2.9	2.7	2.9	2.64	3	5.1	2.9	
Dissolved Organic Carbon	mg/L		-	-	-	-	-	-	-	2.5	2.8	-	-	
Total Inorganic Carbon	mg/L		4.0	4.0	4.0	4.6	3.8	4.4	4.5	3.32	6	4.5	4.2	
Nutrients and Chlorophyll a														
Total Ammonia as Nitrogen	mg/L		0.005	0.010	0.008	<0.005	<0.005	<0.005	<0.005	<0.020	<0.05	0.023	0.015	
Nitrate as Nitrogen	mg/L		<0.008	0.024	0.032	<0.006	<0.006	0.012	<0.006	<0.0050	<0.1	0.008	0.008	
Nitrite as Nitrogen	mg/L		-	-	-	-	-	-	-	<0.0010	<0.05	-	-	
Nitrate+Nitrite as Nitrogen	mg/L		<0.008	0.024	0.032	<0.006	<0.006	0.012	<0.006	-	<0.1	0.008	0.008	
Total Kjeldahl Nitrogen	mg/L		0.25	0.28	0.20	0.43	0.28	0.16	0.11	0.167	<0.2	0.30	0.29	
Phosphorus, Total	mg/L		0.004	0.009	0.009	0.004	0.005	0.002	0.004	0.0025	0.004	0.005	0.004	
Phosphorus, Total Dissolved	mg/L		0.004	0.005	0.002	0.004	0.003	0.001	0.003	<0.0020	0.002	0.004	0.003	
Orthophosphate (PO ₄ -P)	mg/L		<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	0.002	<0.0010	<0.001	<0.001	<0.001	
Chlorophyll a	µg/L		-	-	-	-	-	-	-	0.355	<1	-	-	
Cyanides														
Cyanide, Total	µg/L		-	-	-	<1	<1	<2	<2	<5.0	<2	<1	<1	
Total Metals														
Aluminum (Al)	µg/L		<0.5	<0.5	<0.5	1.4	<0.3	2.2	3.0	<5.0	1.9	3.3	3.7	
Antimony (Sb)	µg/L		0.3	0.3	0.2	0.31	0.20	<0.03	0.18	<0.50	<0.03	0.20	0.09	
Arsenic (As)	µg/L		<0.3	<0.2	0.3	0.29	0.27	0.30	0.25	<0.50	0.22	0.25	0.33	
Barium (Ba)	µg/L		6.8	6.3	6.1	8.3	0.66	8.41	8.2	<20	6.89	10.3	8.90	
Beryllium (Be)	µg/L		<0.1	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	
Bismuth (Bi)	µg/L		<0.1	<0.1	<0.1	<0.05	<0.03	<0.03	-	-	-	<0.05	<0.03	
Boron (B)	µg/L		-	-	-	-	-	-	2	<100	3	-	-	
Cadmium (Cd)	µg/L		<0.1	0.1	<0.1	<0.05	<0.05	<0.02	<0.05	<0.017	<0.05	<0.05	<0.05	
Cesium (Cs)	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1	<0.1	
Chromium (Cr)	µg/L		0.9	2.0	<2	<0.06	<0.06	1.10	0.18	<1.0	<0.06	<0.06	1.91	
Cobalt (Co)	µg/L		<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.30	<0.1	<0.1	<0.1	
Copper (Cu)	µg/L		1.4	1.0	1.0	0.8	<0.6	0.8	0.8	<1.0	0.7	1.0	1.0	
Iron (Fe)	µg/L		13	21	25	<10	5	6	39	<30	10	10	12	
Lead (Pb)	µg/L		<0.2	<0.2	0.2	<0.05	<0.05	0.05	<0.05	<0.50	<0.05	<0.05	<0.05	
Lithium (Li)	µg/L		0.6	0.5	0.4	0.6	0.3	0.5	-	<5.0	-	0.6	<0.1	
Magnesium (Mg)	µg/L		-	-	-	-	-	-	-	1120	865	-	-	
Manganese (Mn)	µg/L		2.6	2.8	2.9	3.5	0.2	5.1	7.2	2.04	1.8	1.5	0.3	
Mercury (Hg)	µg/L		-	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.020	<0.02	<0.02	<0.02	
Molybdenum (Mo)	µg/L		0.2	0.1	0.1	0.11	0.07	0.08	0.08	<1.0	<0.06	0.12	0.13	
Nickel (Ni)	µg/L		<0.1	0.6	0.3	0.4	0.11	0.52	0.48	<1.0	0.3	0.6	0.66	
Potassium (K)	µg/L		-	-	-	-	-	-	-	<2000	760	-	-	
Rubidium (Rb)	µg/L		1.1	-	-	-	-	-	-	-	-	-	-	
Selenium (Se)	µg/L		<10	<10	<10	<0.1	<0.1	0.1	0.2	<1.0	<0.1	<0.1	0.3	
Silver (Ag)	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.020	<0.1	<0.1	<0.1	
Sodium (Na)	µg/L		-	-	-	-	-	-	-	3900	3220	-	-	
Strontium (Sr)	µg/L		26.7	26.3	25.1	27.4	0.2	27.8	26.9	-	28	32.4	36.4	
Thallium (Tl)	µg/L		<0.1	0.1	<0.1	<0.05	<0.03	<0.03	-	<0.20	<0.03	<0.05	0.05	
Tin (Sn)	µg/L		-	-	-	-	-	-	-	<0.50	-	-	-	
Titanium (Ti)	µg/L		<0.1	0.6	<0.1	<0.3	<0.1	<0.1	-	<10	-	<0.3	<0.1	
Uranium (U)	µg/L		<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.20	<0.05	<0.05	<0.05	
Vanadium (V)	µg/L		0.2	0.1	0.1	0.4	0.26	<0.05	<0.05	<1.0	0.1	0.4	0.10	
Zinc (Zn)	µg/L		<0.5	1.4	1.0	1.9	<0.8	13.1	<0.8	<5.0	<0.8	3.3	<0.8	
Dissolved Metals														
Aluminum (Al)	µg/L		-	-	-	-	-	-	-	<5.0	1.6	-	-	
Antimony (Sb)	µg/L		-	-	-	-	-	-	-	<0.50	<0.03	-	-	
Arsenic (As)	µg/L		-	-	-	-	-	-	-	<0.50	0.2	-	-	
Barium (Ba)	µg/L		-	-	-	-	-	-	-	<20	6.91	-	-	
Beryllium (Be)	µg/L		-	-	-	-	-	-	-	<1.0	<0.2	-	-	
Boron (B)	µg/L		-	-	-	-	-	-	-	<100	3	-	-	
Cadmium (Cd)	µg/L		-	-	-	-	-	-	-	0.065	<0.05	-	-	
Calcium (Ca)	µg/L		-	-	-	-	-	-	-	7760	5960	-	-	
Chromium (Cr)	µg/L		-	-	-	-	-	-	-	<1.0	<0.06	-	-	
Cobalt (Co)	µg/L		-	-	-	-	-	-	-	<0.30	<0.1	-	-	
Copper (Cu)	µg/L		-	-	-	-	-	-	-	<1.0	<0.6	-	-	
Iron (Fe)	µg/L		-	-	-	-	-	-	-	<30	<5	-	-	
Lead (Pb)	µg/L		-	-	-	-	-	-	-	<0.50	<0.05	-	-	
Lithium (Li)	µg/L		-	-	-	-	-	-	-	<5.0	-	-	-	
Magnesium (Mg)	µg/L		-	-	-	-	-	-	-	1130	853	-	-	
Manganese (Mn)	µg/L		-	-	-	-	-	-	-	2.83	1.1	-	-	
Mercury (Hg)	µg/L		-	-	-	-	-	-	-	<0.020	<0.02	-	-	
Molybdenum (Mo)	µg/L		-	-	-	-	-	-	-	<1.0	0.07	-	-	
Nickel (Ni)	µg/L		-	-	-	-	-	-	-	<1.0	0.32	-	-	
Potassium (K)	µg													

Table B1-7: Water Quality in Streams of the Peter Lake Drainage, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	ML-PL				PL-DL			
		19-Jun-97	24-Aug-97	12-Jun-98	18-Jul-98	19-Jun-97	24-Aug-97	12-Jun-98	20-Jul-98
Date Sampled									
GPS Coordinates									
Source *		RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999
Field Measurements									
Water Temperature	°C	4.9	12.5	2.1	9.8	5.1	13.2	2.4	-
Dissolved Oxygen	mg/L	13.9	11.2	-	-	14.3	11.0	-	-
pH	pH	7.02	7.50	6.5	-	6.75	7.35	6.5	-
Specific Conductivity	µS/cm	50.6	52.3	68.8	-	38.5	34.7	52.3	-
Secchi Disk Depth	m	-	-	-	-	-	-	-	-
Conventional Parameters (Laboratory-Measured)									
pH	pH	7.20	7.37	7.0	7.1	6.92	7.19	6.8	6.9
Specific Conductivity	µS/cm	42.1	42.3	57.3	55.0	31.0	28.9	41.1	35.5
Total Dissolved Solids	mg/L	26	34	26	25	15	19	18	16
Total Dissolved Solids (Calculated)	mg/L	-	-	-	-	-	-	-	-
Total Alkalinity	mg CaCO ₃ /L	12.4	11.9	15	13	7.9	7.1	9	9
Total Hardness	mg CaCO ₃ /L	15.9	12.8	17	15	10.1	8.2	11	9
Total Suspended Solids	mg/L	<3	<3	<2	<2	<3	<3	<2	4
Turbidity	NTU	0.3	0.2	0.2	0.4	0.3	0.2	0.2	0.2
Major Ions									
Bicarbonate	mg/L	12.4	11.9	18	16	7.9	7.1	10	11
Bromide	mg/L	-	-	-	-	-	-	-	-
Calcium	mg/L	5.38	4.06	5.5	4.62	3.18	2.44	3.3	2.78
Carbonate	mg/L	<0.3	<0.3	<1	<1	<0.3	<0.3	<1	<1
Chloride	mg/L	3.66	3.93	4.6	5.45	2.74	2.56	3.4	2.78
Fluoride	mg/L	-	-	-	-	-	-	-	-
Hydroxide	mg/L	-	-	<1	<1	-	-	<1	<1
Magnesium	mg/L	0.593	0.64	0.80	0.79	0.52	0.52	0.64	0.55
Potassium	mg/L	0.598	0.651	0.87	0.74	0.562	0.554	0.74	0.61
Reactive Silica (as SiO ₂)	mg/L	0.180	0.269	0.3	0.4	0.273	0.218	0.3	0.3
Sodium	mg/L	2.19	2.43	2.9	3.2	1.82	1.75	2.1	1.8
Sulphate	mg/L	<3	3	2.1	1.96	4	<3	2.4	1.86
Ion Balance	%	-	-	104	100	-	-	105	94
Organic/Inorganic Carbon									
Total Carbon	mg/L	4.0	4.8	8	6.3	4.0	3.2	6.0	4.9
Total Organic Carbon	mg/L	1.4	1.8	3.9	3.0	1.6	1.2	4.0	2.8
Dissolved Organic Carbon	mg/L	-	-	-	-	-	-	-	-
Total Inorganic Carbon	mg/L	3.0	3.0	3.9	3.3	2.0	2.0	2.4	2.0
Nutrients and Chlorophyll a									
Total Ammonia as Nitrogen	mg/L	0.005	0.011	0.015	<0.005	0.012	0.006	<0.005	0.008
Nitrate as Nitrogen	mg/L	<0.008	0.023	<0.006	<0.006	<0.008	0.015	<0.006	<0.006
Nitrite as Nitrogen	mg/L	-	-	-	-	-	-	-	-
Nitrate+Nitrite as Nitrogen	mg/L	<0.008	0.023	<0.006	<0.006	<0.008	0.015	<0.006	<0.006
Total Kjeldahl Nitrogen	mg/L	0.26	0.22	0.14	0.23	0.25	0.18	0.31	0.25
Phosphorus, Total	mg/L	0.005	0.008	0.002	0.003	0.004	0.007	0.002	0.004
Phosphorus, Total Dissolved	mg/L	0.004	0.005	0.002	0.003	0.004	0.007	0.002	0.002
Orthophosphate (PO ₄ -P)	mg/L	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Chlorophyll a	µg/L	-	-	-	-	-	-	-	-
Cyanides									
Cyanide, Total	µg/L	-	-	<1	<1	-	-	<1	1
Total Metals									
Aluminum (Al)	µg/L	<0.5	0.8	1.7	<0.3	<0.5	1.5	3.9	3.0
Antimony (Sb)	µg/L	0.2	0.3	0.19	0.07	0.3	0.3	0.36	0.19
Arsenic (As)	µg/L	<0.3	<0.02	0.16	0.27	<0.3	<0.2	0.09	0.14
Barium (Ba)	µg/L	5.4	4.8	7.9	<0.05	8.3	6.3	11.2	8.07
Beryllium (Be)	µg/L	0.3	0.3	<0.2	<0.2	<0.1	0.5	<0.2	<0.2
Bismuth (Bi)	µg/L	<0.1	<0.1	<0.05	<0.03	<0.1	<0.1	<0.05	<0.03
Boron (B)	µg/L	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L	<0.1	0.1	<0.05	<0.05	<0.1	0.1	<0.05	0.05
Cesium (Cs)	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr)	µg/L	<0.2	<2	<0.06	<0.06	0.7	<2	<0.06	0.91
Cobalt (Co)	µg/L	<0.1	0.3	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Copper (Cu)	µg/L	1.0	0.9	0.8	<0.6	1.6	1.1	0.8	1.0
Iron (Fe)	µg/L	19	19	<10	5	41	22	<10	<5
Lead (Pb)	µg/L	<0.2	<0.2	<0.05	0.06	0.2	<0.2	<0.05	<0.05
Lithium (Li)	µg/L	0.6	0.5	0.5	0.8	0.7	0.3	0.5	<0.1
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L	1.5	1.7	1.6	0.8	1.9	0.9	3.2	1.0
Mercury (Hg)	µg/L	-	<0.01	<0.02	<0.02	-	<0.01	<0.02	<0.02
Molybdenum (Mo)	µg/L	0.1	0.1	0.09	0.09	<0.1	<0.1	0.09	<0.06
Nickel (Ni)	µg/L	<0.1	0.4	0.5	0.47	<0.1	0.4	0.4	0.63
Potassium (K)	µg/L	-	-	-	-	-	-	-	-
Rubidium (Rb)	µg/L	1.0	-	-	-	1.2	-	-	-
Selenium (Se)	µg/L	<10	<10	<0.1	<0.1	<10	<10	<0.1	0.2
Silver (Ag)	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L	21.0	18.9	25.2	<0.1	17.4	13.2	17.7	16.5
Thallium (Tl)	µg/L	<0.1	<0.1	<0.05	<0.03	<0.1	<0.1	<0.05	<0.03
Tin (Sn)	µg/L	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L	<0.1	<0.1	<0.3	<0.1	0.4	0.5	<0.3	<0.1
Uranium (U)	µg/L	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05
Vanadium (V)	µg/L	0.1	0.1	0.3	0.20	0.1	0.2	0.2	0.08
Zinc (Zn)	µg/L	<0.5	<0.5	4.8	<0.8	<0.5	0.5	4.5	2.5
Dissolved Metals									
Aluminum (Al)	µg/L	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L	-	-	-	-	-	-	-	-
Boron (B)	µg/L	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L	-	-	-	-	-	-	-	-
Mercury (Hg)-Dissolved	µg/L	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L	-	-	-	-	-	-	-	-
Potassium (K)	µg/L	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L	-	-	-	-	-	-	-	-
Uranium (U)	µg/L	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L	-	-	-	-	-	-	-	-
Organic Compounds									
Oil and Grease	µg/L	-	-	-	-	-	-	-	-
Phenols	µg/L	<2	<2	<1	2	5	<2	2	3
Benzene	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
F1 (C6-C10)	µg/L	-	-	-	-	-	-	-	-
F1 -BTEX	µg/L	-	-	-	-	-	-	-	-
F2 (>C10-C16)	µg/L	-	-	-	-	-	-	-	-
F3 (C16-C34)	µg/L	-	-	-	-	-	-	-	-
F4 (C34-C50)	µg/L	-	-	-	-	-	-	-	-
Total Volatiles	µg/L	<100	<100	<100	<100	<100	<100	<100	<100
Total Extractables	µg/L	<50	<50	<50	<50	<50	<50	<50	<50
Other									
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-	-	-

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.
 (-) = No data available
 Notes: °C = degrees Celsius; µS/cm = microSeimens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.
 a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.



Table B1-8: Water Quality in Streams of the Atulik Lake Drainage, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	DI-6		DI-7		NEW-2	NEW-3
		20-Jul-95	23-Jun-08	20-Jul-95	23-Jun-08	23-Jun-08	24-Jun-08
Date Sampled							
GPS Coordinates		0565841, 6972744	-	0574494, 6969739	0550631, 6981869	0553779, 6980992	
Source ^a		Dillon 1995	Golder	Dillon 1995	Golder	Golder	Golder
Field Measurements							
Water Temperature	°C	13.6	5.50	14.1	7.82	18.16	11.03
Dissolved Oxygen	mg/L	7.30	14.57	9.70	13.43	9.59	11.83
pH	pH	7.52	-	7.83	7.59	8.35	7.55
Specific Conductivity	µS/cm	29.9	34	40.5	37	82	37
Secchi Disk Depth	m	-	-	-	-	-	-
Conventional Parameters (Laboratory-Measured)							
pH	pH	6.87	7.4	7.03	7.4	7.8	7.4
Specific Conductivity	µS/cm	53.7	51.7	67.6	53.3	91.3	50.1
Total Dissolved Solids	mg/L	26.0	-	34.0	-	-	-
Total Dissolved Solids (Calculated)	mg/L	-	26	-	27	49	27
Total Alkalinity	mg CaCO ₃ /L	13.7	11	15.5	12	33	14
Total Hardness	mg CaCO ₃ /L	14.1	15	17.5	16	37	18
Total Suspended Solids	mg/L	-	<3	-	<3	<3	<3
Turbidity	NTU	0.31	-	0.42	-	-	-
Major Ions							
Bicarbonate	mg/L	-	14	-	15	41	17
Bromide	mg/L	-	<0.1	-	0.1	<0.1	<0.1
Calcium	mg/L	4.32	4.4	5.26	4.5	12.2	5.7
Carbonate	mg/L	13.7	<5	15.5	<5	<5	<5
Chloride	mg/L	5.6	6	7.4	7	6	4
Fluoride	mg/L	0.04	<0.05	0.04	<0.05	<0.05	<0.05
Hydroxide	mg/L	-	<5	-	<5	<5	<5
Magnesium	mg/L	0.805	0.8	1.070	0.8	1.3	0.8
Potassium	mg/L	< 2.0	0.7	< 2.0	0.8	3.4	3.3
Reactive Silica (as SiO ₂)	mg/L	-	-	-	-	-	-
Sodium	mg/L	4.0	4	5.4	4	10	11
Sulphate	mg/L	2.7	2.3	3.3	2.4	4.1	3.4
Ion Balance	%	-	Low EC	-	Low EC	Low EC	Low EC
Organic/Inorganic Carbon							
Total Carbon	mg/L	-	5	-	6	12	7
Total Organic Carbon	mg/L	-	2	-	3	5	3
Dissolved Organic Carbon	mg/L	-	2	-	2	4	3
Total Inorganic Carbon	mg/L	-	3	-	3	7	4
Nutrients and Chlorophyll a							
Total Ammonia as Nitrogen	mg/L	-	<0.05	-	<0.05	<0.05	<0.05
Nitrate as Nitrogen	mg/L	-	<0.1	-	<0.1	<0.1	<0.1
Nitrite as Nitrogen	mg/L	-	0.07	-	0.06	<0.05	0.08
Nitrate+Nitrite as Nitrogen	mg/L	0.012	<0.1	< 0.005	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	-	<0.2	-	<0.2	0.3	<0.2
Phosphorus, Total	mg/L	-	0.007	-	0.01	0.01	0.009
Phosphorus, Total Dissolved	mg/L	-	0.002	-	0.002	0.002	0.003
Orthophosphate (PO ₄ -P)	mg/L	-	<0.001	-	<0.001	<0.001	<0.001
Chlorophyll a	µg/L	-	3	-	5	10	31
Cyanides							
Cyanide, Total	µg/L	-	<2	-	<2	<2	<2
Total Metals							
Aluminum (Al)	µg/L	<200	2.1	<200	7.5	5.8	3.8
Antimony (Sb)	µg/L	-	<0.4	-	<0.4	<0.4	<0.4
Arsenic (As)	µg/L	0.1	<0.4	0.1	<0.4	1.2	0.5
Barium (Ba)	µg/L	10	6	<10	6	14	8
Beryllium (Be)	µg/L	-	<1	-	<1	<1	<1
Bismuth (Bi)	µg/L	-	-	-	-	-	-
Boron (B)	µg/L	<100	<50	<100	<50	<50	<50
Cadmium (Cd)	µg/L	<0.2	<0.017	<0.2	<0.017	<0.017	<0.017
Cesium (Cs)	µg/L	-	-	-	-	-	-
Chromium (Cr)	µg/L	<15	<0.06	<15	<0.06	<0.06	<0.06
Cobalt (Co)	µg/L	<15	<2	<15	<2	<2	<2
Copper (Cu)	µg/L	<10	<1	<10	<1	1	1
Iron (Fe)	µg/L	<30	13	59	44	94	59
Lead (Pb)	µg/L	<1	<0.1	<1	<0.1	<0.1	<0.1
Lithium (Li)	µg/L	-	<10	-	<10	<10	<10
Magnesium (Mg)	µg/L	805	800	1070	800	1300	800
Manganese (Mn)	µg/L	<5	2	<5	1	7	2
Mercury (Hg)	µg/L	<0.05	<0.02	<0.05	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L	<30	<5	<30	<5	<5	<5
Nickel (Ni)	µg/L	<20	<2	<20	<2	<2	<2
Potassium (K)	µg/L	<2000	700	<2000	800	3400	3300
Rubidium (Rb)	µg/L	-	-	-	-	-	-
Selenium (Se)	µg/L	<0.5	<0.4	<0.5	<0.4	<0.4	<0.4
Silver (Ag)	µg/L	<15	<0.4	<15	<0.4	<0.4	<0.4
Sodium (Na)	µg/L	4000	4000	5400	4000	10000	11000
Strontium (Sr)	µg/L	-	-	-	-	-	-
Thallium (Tl)	µg/L	-	<0.1	-	<0.1	<0.1	<0.1
Tin (Sn)	µg/L	<300	<50	<300	<50	<50	<50
Titanium (Ti)	µg/L	-	<1	-	<1	<1	<1
Uranium (U)	µg/L	-	<0.1	-	<0.1	<0.1	<0.1
Vanadium (V)	µg/L	-	<1	-	<1	<1	<1
Zinc (Zn)	µg/L	<5	<4	<5	<4	<4	<4
Dissolved Metals							
Aluminum (Al)	µg/L	-	9.4	-	3.6	4.2	2.5
Antimony (Sb)	µg/L	-	<0.4	-	<0.4	<0.4	<0.4
Arsenic (As)	µg/L	-	<0.4	-	<0.4	1	0.5
Barium (Ba)	µg/L	-	7	-	6	14	8
Beryllium (Be)	µg/L	-	<1	-	<1	<1	<1
Boron (B)	µg/L	-	<50	-	<50	<50	<50
Cadmium (Cd)	µg/L	-	0.028	-	<0.017	<0.017	<0.017
Calcium (Ca)	µg/L	-	-	-	-	-	-
Chromium (Cr)	µg/L	-	0.24	-	<0.06	<0.06	<0.06
Cobalt (Co)	µg/L	-	<2	-	<2	<2	<2
Copper (Cu)	µg/L	-	6	-	<1	1	1
Iron (Fe)	µg/L	-	48	-	32	40	23
Lead (Pb)	µg/L	-	106	-	<0.1	<0.1	<0.1
Lithium (Li)	µg/L	-	<3	-	<3	<3	<3
Magnesium (Mg)	µg/L	-	-	-	-	-	-
Manganese (Mn)	µg/L	-	2	-	1	3	1
Mercury (Hg)	µg/L	-	<0.02	-	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L	-	<5	-	<5	<5	<5
Nickel (Ni)	µg/L	-	<2	-	<2	<2	<2
Potassium (K)	µg/L	-	-	-	-	-	-
Selenium (Se)	µg/L	-	<0.4	-	<0.4	<0.4	<0.4
Silver (Ag)	µg/L	-	<0.1	-	<0.1	<0.1	<0.1
Sodium (Na)	µg/L	-	-	-	-	-	-
Strontium (Sr)	µg/L	-	-	-	-	-	-
Thallium (Tl)	µg/L	-	<0.1	-	<0.1	<0.1	<0.1
Tin (Sn)	µg/L	-	<50	-	<50	<50	<50
Titanium (Ti)	µg/L	-	<1	-	<1	<1	<1
Uranium (U)	µg/L	-	<0.1	-	<0.1	<0.1	<0.1
Vanadium (V)	µg/L	-	<1	-	<1	<1	<1
Zinc (Zn)	µg/L	-	3.5	-	<2	<2	<2
Organic Compounds							
Oil and Grease	µg/L	-	-	-	-	-	-
Phenols	µg/L	-	-	-	-	-	-
Benzene	µg/L	-	-	-	-	-	-
Ethylbenzene	µg/L	-	-	-	-	-	-
Toluene	µg/L	-	-	-	-	-	-
Xylenes	µg/L	-	-	-	-	-	-
F1 (C6-C10)	µg/L	-	-	-	-	-	-
F1 -BTEX	µg/L	-	-	-	-	-	-
F2 (>C10-C16)	µg/L	-	-	-	-	-	-
F3 (C16-C34)	µg/L	-	-	-	-	-	-
F4 (C34-C50)	µg/L	-	-	-	-	-	-
Total Volatiles	µg/L	-	-	-	-	-	-
Total Extractables	µg/L	-	-	-	-	-	-
Other							
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

Table B2-1: Water Quality in Meliadine Lake, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	D4				ML-E				ML-A				BOOT-1				BOOT-2				ML-W				ML-S				ML-SE				
			20-Jul-95	20-Jul-98	19-Jul-97	17-Aug-97	25-Apr-98	17-Jul-98	4-Sep-98	17-Jul-08	28-Apr-09	29-Apr-09	28-Jul-08	15-Jul-08	28-Jul-08	16-Jul-08	28-Jul-08	28-Jul-08	20-Jul-97	16-Aug-97	24-Apr-98	27-Jul-98	19-Jul-98	20-Jul-97	20-Jul-97 (dup)	16-Aug-97	27-Apr-98	25-Jul-98	1-Sep-98	26-Apr-98	22-Jul-98	19-Jul-99	19-Jul-00	18-Jul-08	28-Apr-09
GPS Coordinates (NAD83, Zone 15V) ^a			0548241, 6983393	0542923, 6988975	0542985, 6988903	0543253, 6988595	0543253, 6988595	0543356, 6988921	0543184, 6987869	0543184, 6987869	0544654, 6986157	0544654, 6986144	0541166, 6989336	0541160, 6989334	0542070, 6989338	0542070, 6989338	0542336, 7001213	0542476, 7001212	0542465, 7001352	0525702, 7001081	0525618, 7000852	0532262, 6989609	0532262, 6989609	0532265, 6989458	0532241, 6989347	0533454, 6988574	0533982, 6987831	0535954, 6986565	0535788, 6986614	0535782, 6986611	0535918, 6986790	0535824, 6986364	0535824, 6986364		
Source ^b			Dillon 1995	Goldier	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	Goldier	RL&L 1998	RL&L 1998	RL&L 1999	RL&L	Goldier	RL&L 1998	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 2000	RL&L 2001	Goldier	Goldier													
Field Measurements																																			
Water Temperature	°C	12.2	14.9	13.9	13.6	0	9.9	9.7	11.11	0.87	0.51	12.66	13.16	15.44	11.28	0.33	13.92	14.3	13.3	0.3	12.7	11	14.6	14.6	12.8	0	12.9	-	0	11.2	11.4	13.4	14.51	0.28	
Dissolved Oxygen	mg/L	8.5	12.51	10.2	11.3	17.4	12.9	11.2	13.19	14.15	14.62	8.8	13.23	8.33	13.32	15.63	8.81	9.9	11.2	19.4	11	15.07	10.2	10.2	11.5	19.6	12	-	15.9	13.7	11.3	-	12.3	12.41	
pH	pH	7.84	6.77	7.3	7.39	6.17	7.30	7.04	6.94	6.66	6.68	6.49	6.97	6.91	7.17	6.87	6.97	7.24	7.10	6.68	-	6.78	7.14	7.14	6.97	6.79	7.05	-	6.75	-	7.25	7.62	-	5.5	
Specific Conductivity	µS/cm	20.6	71	59.3	59.4	100.5	56.8	62.2	50	87.3	87.5	63	71	69	49	90.6	62	51.4	52.5	68.3	51.8	58	58.4	58.4	55.5	104.9	57.6	-	170.4	69.4	85.3	76.5	69	138	
Secchi Disk Depth	m	-	2.3	7.5	6.7	-	5.0	4.5	3	-	1.67	1.78	-	1.8	2	6.3	-	7.9	8.5	-	6.5	5.5	6.3	6.3	6.2	-	5.2	4.1	-	3.0	2.6	2.8	1.5	-	
Ice Depth	m	-	-	-	-	1.8	-	-	-	1.67	1.78	-	-	-	1.93	-	-	-	-	2.3	-	-	-	-	-	1.8	-	-	1.8	-	-	-	-	1.72	
Total Lake Depth	m	-	2.3	14.7	13.0	11.5	11.2	13.7	6.1	5.36	5.14	5.4	1.8	2	10.1	10.12	8.8	8.1	8.5	4.2	6.5	5.5	6.3	6.3	6.2	5.0	5.8	-	3.0	3.0	3.1	2.8	3	3.14	
Conventional Parameters (Laboratory-Measured)																																			
pH	pH	6.99	7.5	7.31	-	6.9	7.1	-	7.4	7.45	7.45	7.42	7.4	7.46	7.4	7.46	7.41	7.26	-	6.9	7.4	7.5	7.31	7.3	-	7.1	7.5	-	6.7	7.4	7.2	7.3	7.6	7.67	
Specific Conductivity	µS/cm	42.5	71.8	49.1	-	79.7	47.4	-	56.9	97.3	96.4	62	58.6	67.5	56.6	104	60.9	42.1	-	82.8	51.9	61.3	48.4	47.6	-	83.4	56.2	-	156	66.4	76	72	75.5	151	
Total Dissolved Solids	mg/L	24	46	25	-	36	21	-	37	-	-	34	29	39	38	-	34	28	-	38	24	40	26	29	-	37	26	-	91	32	22	35	51	-	
Total Dissolved Solids (Calculated)	mg/L	-	34	-	-	-	-	-	28	50.4	49.1	30.4	29	33.4	27	53.5	28.8	-	-	-	-	27	-	-	-	-	-	-	-	-	-	-	37	78.5	
Total Alkalinity	mg CaCO ₃ /L	13	16	13.2	-	20	13	-	13	24.8	23.7	14.3	12	16.1	12	26.2	12.7	12.6	-	23	14	13	15.3	15.1	-	23	16	-	50	21	24	23	23	46.8	
Total Hardness	mg CaCO ₃ /L	13.4	21	14.6	-	22	13	-	18	30	29.5	19	19	21	17	31.5	18.3	13.6	-	24	17	17	16.1	15.9	-	24	19	-	49	24	27	25	25	53.6	
Total Suspended Solids	mg/L	-	<3	<3	-	<2	<2	-	<3	<3.0	<3.0	<3.0	<3	3	<3	4	<3.0	<3	-	8	<2	<3	<3	<3	-	<2	2	-	3	7	3	<3	<3	<3.0	
Total Volatile Solids	mg/L	-	-	-	-	-	-	-	16	21	29	-	39	-	19	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
Turbidity	NTU	0.33	-	0.5	-	0.1	0.3	-	-	-	-	-	-	-	-	-	-	0.4	-	<0.1	0.2	-	0.4	0.3	-	0.1	0.3	-	0.1	0.3	0.43	0.2	-	-	
Major Ions																																			
Bicarbonate	mg/L	-	19	13.2	-	25	15	-	15	30.3	28.9	17.5	15	19.6	14	32	15.5	12.6	-	28	18	16	15.3	15.1	-	27	20	-	31	25	30	28	28	57.1	
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium	mg/L	4.42	6.38	4.53	-	6.6	4.33	-	4.98	9.05	8.97	6.06	5.18	6.76	4.88	9.32	5.78	4.36	-	7.61	5.42	5.13	5.24	5.15	-	7.65	6.22	-	16.2	8.12	8.96	8.6	7.54	16.8	
Carbonate	mg/L	-	<5	<0.3	-	<1	<1	-	<5	<5.0	<5.0	<5.0	<5	<5.0	<5	<5.0	<5.0	<0.3	-	<1	<1	<5	<0.3	<0.3	-	<1	<1	-	<1	<1	<1	<5	<5	<5.0	
Chloride	mg/L	2.7	7	5.34	-	7.33	3.99	-	6	11.7	11.6	7.64	7	8.29	6	12.6	7.55	3.8	-	6.6	3.81	5	4.1	4.08	-	6.42	4.2	-	25.2	4.72	4.91	4	6	14.2	
Fluoride	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hydroxide	mg/L	-	<5	-	-	<1	<1	-	<5	<5.0	<5.0	<5.0	<5	<5.0	<5	<5.0	<5.0	-	-	<1	<1	<5	-	-	-	<1	<1	-	<1	<1	<1	<5	<5	<5.0	
Magnesium	mg/L	0.583	0.913	0.79	-	1.24	0.65	-	0.804	1.65	1.64	1.06	0.814	1.16	0.782	1.78	1.01	0.66	-	1.26	0.74	0.775	0.73	0.73	-	1.12	0.82	-	2.12	0.82	1.12	0.974	0.922	2.36	
Potassium	mg/L	<2.0	0.75	0.671	-	1.07	0.67	-	0.66	1.27	1.24	<2.0	0.7	<2.0	0.65	1.35	<2.0	0.642	-	1.24	0.77	0.7	0.668	0.668	-	1.08	0.83	-	1.87	0.89	0.92	0.83	0.76	1.8	
Reactive Silica (as SiO ₂)	mg/L	-	-	0.354	-	-	-	-	-	-	-	-	-	-	-	-	-	0.196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Silicate (SiO ₂)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium	mg/L	2.1	4	2.94	-	4.8	2.4	-	3.14	6.03	6.01	3.9	3.44	4.2	3.07	6.59	3.9	2.26	-	4.6	2.7	2.96	2.44	2.4	-	4.1	2.9	-	7.1	1.7	3.3	2.67	3.14	7.51	
Sulphate	mg/L	2	3.5	<3	-	2.85	1.58	-	2.9	4.79	4.86	2.83	2.9	2.94	2.8	5.17	2.75	<3	-	2.9	1.66	2.9	<3	<3	-	2.85	1.67	-	8.91	1.67	2.67	2.73	2.8	5.93	
Ion Balance	%	-	Low EC	8.9	-	99	100	-	Low EC	20.2	-	102	107	Low EC	16.8	10	-	100	109	-	96	108	103	99.8	Low EC	102									
Organic/Inorganic Carbon																																			
Total Carbon	mg/L	-	7	5	-	9	6	-	5	-	-	6.3	6	7.3	5	-	6.6	5	-	10	6.3	5	6	6	-	9	6.4	-	19	8.1	9.7	8.6	8	-	
Total Organic Carbon	mg/L	-	3	2.4	-	4.1	2.7	-	3	-	-	3	3	3.5	3	-	3	2.1	-	3.9	3.3	3	2.1	2.2	-	4.9	2.7	-	5.2	3.1	3.9	3.6	4	-	
Dissolved Organic Carbon	mg/L	-	3.9	-	-	-	-	-	3.3	-	-	3.3	3.3	3.2	-	3.3	-	-	-	-	-	2.9	-	-	-	-	-	-	-	-	-	-	3.2	-	
Total Inorganic Carbon	mg/L	-	-	3	-	5	3.3	-	3	-	-	3.8	-	4.3	3	-	3.6	3	-	5.9	3.1	-	4	4	-	5.6	3.8	-	13.8	5	5.8	5	-	-	
Total Inorganic Carbon (Calculated)	mg/L	-	4	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	4	-	
Nutrients and Chlorophyll a																																			
Total Ammonia as Nitrogen	mg/L	-	<0.05	0.006	-	0.013	0.024	-	<0.05	<0.050	<0.050	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	0.004	-	0.04	<0.005	<0.05	0.003	0.002	-	0.008	0								

Table B2-1: Water Quality in Meliadine Lake, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	D14		ML-E								ML-A		BOOT-1		BOOT-2		ML-W				ML-S				ML-SE							
			20-Jul-95	20-Jul-98	19-Jul-97	17-Aug-97	25-Apr-98	17-Jul-98	4-Sep-98	17-Jul-08	28-Apr-09	29-Apr-09	28-Jul-09	15-Jul-08	28-Jul-09	16-Jul-08	28-Apr-09	28-Jul-09	20-Jul-97	16-Aug-97	24-Apr-98	27-Jul-98	19-Jul-08	20-Jul-97	20-Jul-97 (dup)	16-Aug-97	27-Apr-98	25-Jul-98	1-Sep-98	26-Apr-98	22-Jul-98	19-Jul-99	19-Jul-00	18-Jul-08
GPS Coordinates (NAD83, Zone 15V) ^a			Dillon 1995	Golder	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1999	Golder	RL&L 1998	RL&L 1998	RL&L 1999	RL&L	Golder	RL&L 1998	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 2000	RL&L 2001	Golder	Golder											
Source ^b																																		
Copper (Cu)	µg/L	-	1	-	-	-	-	-	0.9	1.5	1.4	<1	1	1.1	2.3	1.4	1.1	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	0.7	1.4
Iron (Fe)	µg/L	-	25	-	-	-	-	-	7	-	-	<30	10	<30	8	-	<30	-	-	-	-	<5	-	-	-	-	-	-	-	-	-	12	-	
Lead (Pb)	µg/L	-	<0.05	-	-	-	-	-	0.09	<0.50	<0.50	<0.50	<0.05	<0.5	0.49	<0.50	<0.5	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	0.07	<0.50
Lithium (Li)	µg/L	-	-	-	-	-	-	-	-	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5.0
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-	805	1540	1510	1000	817	1000	817	1640	940	-	-	-	-	787	-	-	-	-	-	-	-	-	-	-	936	2230
Manganese (Mn)	µg/L	-	3.4	-	-	-	-	-	1.4	1	1.38	0.38	2.2	1.15	1.8	1.67	0.6	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	0.9	1.55	
Mercury (Hg)	µg/L	-	<0.02	-	-	-	-	-	<0.02	<0.020	<0.020	<0.020	<0.02	<0.020	<0.02	<0.020	<0.020	-	-	-	-	<0.02	-	-	-	-	-	-	-	-	-	<0.02	<0.020	
Molybdenum (Mo)	µg/L	-	0.13	-	-	-	-	-	0.06	<1.0	<1.0	<1.0	<0.06	<1.0	0.07	<1.0	<1.0	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	0.1	<1.0
Nickel (Ni)	µg/L	-	0.72	-	-	-	-	-	0.54	<1.0	<1.0	<1.0	0.51	<1.0	0.79	<1.0	<1.0	-	-	-	-	0.36	-	-	-	-	-	-	-	-	-	0.3	<1.0	
Potassium (K)	µg/L	-	-	-	-	-	-	-	670	1380	1280	1000	690	1000	750	1480	710	-	-	-	-	720	-	-	-	-	-	-	-	-	-	760	1930	
Selenium (Se)	µg/L	-	0.1	-	-	-	-	-	<0.1	<1.0	<1.0	<1.0	<0.1	<1.0	<0.1	<1.0	<1.0	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	<0.1	<1.0	
Silver (Ag)	µg/L	-	<0.1	-	-	-	-	-	<0.1	<0.020	<0.020	<0.020	<0.1	<0.020	<0.1	<0.020	<0.020	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	<0.1	<0.020	
Sodium (Na)	µg/L	-	-	-	-	-	-	-	3190	6600	6300	3700	3390	4000	3340	7000	3500	-	-	-	-	3070	-	-	-	-	-	-	-	-	-	-	3160	8300
Strontium (Sr)	µg/L	-	34.1	-	-	-	-	-	24.9	-	-	-	26	-	25.1	-	-	-	-	-	-	25.5	-	-	-	-	-	-	-	-	-	32.2	-	
Thallium (Tl)	µg/L	-	<0.03	-	-	-	-	-	<0.03	<0.20	<0.20	<0.20	<0.03	<0.20	<0.03	<0.20	<0.20	-	-	-	-	<0.03	-	-	-	-	-	-	-	-	-	<0.03	<0.20	
Tin (Sn)	µg/L	-	-	-	-	-	-	-	-	<0.50	<0.50	1.11	-	1.3	-	<0.50	0.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	
Titanium (Ti)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Uranium (U)	µg/L	-	<0.05	-	-	-	-	-	<0.05	<0.20	<0.20	<0.20	<0.05	<0.20	<0.05	<0.20	<0.20	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	<0.20	
Vanadium (V)	µg/L	-	0.12	-	-	-	-	-	0.09	<1.0	<1.0	<1.0	0.09	<1.0	0.09	<1.0	<1.0	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	0.13	<1.0	
Zinc (Zn)	µg/L	-	<0.8	-	-	-	-	-	1.5	-	-	<5	<0.8	<5	11.7	<5	<5	-	-	-	-	<0.8	-	-	-	-	-	-	-	-	-	0.9	-	
Organic Compounds																																		
Oil and Grease	µg/L	-	-	-	-	-	-	-	-	-	-	-	<500	-	<500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Phenols	µg/L	-	-	2	-	<1	2	-	-	-	-	-	1	-	2	-	-	<2	-	<1	<1	-	<2	<2	-	<1	2	-	<1	1	<1	-	-	
Benzene	µg/L	-	-	<0.5	-	-	<0.5	-	-	-	-	-	<0.50	-	<0.50	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	
Ethylbenzene	µg/L	-	-	<0.5	-	-	<0.5	-	-	-	-	-	<0.50	-	<0.50	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	
Toluene	µg/L	-	-	<0.5	-	-	<0.5	-	-	-	-	-	0.59	-	0.59	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	
Xylenes	µg/L	-	-	<0.5	-	-	<0.5	-	-	-	-	-	<0.50	-	<0.50	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	
F1 (C6-C10)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F1 -BTEX	µg/L	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F2 (>C10-C16)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F3 (C16-C34)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F4 (C34-C50)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Volatiles	µg/L	-	-	<100	-	-	<100	-	-	-	-	-	-	-	-	-	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
Total Extractables	µg/L	-	-	<50	-	-	<50	-	-	-	-	-	-	-	-	-	-	190	-	-	<50	-	64	83	-	-	<50	-	<50	-	<50	-	<50	
Other																																		
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-2: Water Quality in Lakes of the Peninsula Basin A, Melladine Gold Project, 1995 to 2009

Waterbody	Units	A1		A5	A6										A8								Pond A9		Pond A13		Pond A15		Pond A38				
		11-Aug-94	23-Aug-97	11-Aug-94	11-Aug-94	23-Jul-97	17-Aug-97	25-Apr-98	24-Jul-98	18-Jul-99	18-Jul-99 (dup)	18-Jul-00	29-Apr-09	29-Jul-09	11-Aug-94	22-Jul-97	18-Aug-97	26-Apr-98	23-Jul-98	18-Jul-07	8-Oct-07	15-Jul-08	27-Apr-09	18-Jul-07	7-Oct-07	12-Aug-07	7-Oct-07	18-Jul-07	7-Oct-07	18-Jul-07	7-Oct-07		
Date Sampled		- ^c	0544358, 6985624	- ^d	- ^e	0541759, 6985876	541798, 6985780	0541998, 6986004	0541759, 6985876	0541762, 6986081	0541762, 6986081	542003, 6985975	0541777, 6985645	0541779, 5985647	- ^f	0540105, 6987353	0540090, 6987327	0540084, 6987478	0540105, 6987353	0540681, 6986702	0540681, 6986702	0540181, 6987142	0540181, 6987142	0540194, 6988142	0540194, 6988142	0539828, 6988676	0539828, 6988676	0539732, 6988798	0539732, 6988798	0540500, 6988254	0540500, 6988254		
GPS Coordinates (NAD83, Zone 15V) ^g																																	
Source ^b		Dillon 1994	RL&L 1998	Dillon 1994	Dillon 1994	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2000	RL&L 2001	Golder	Golder	Dillon 1994	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	Comaplex	Comaplex	Golder	Golder	Comaplex	Comaplex								
Strontium (Sr)	µg/L	26	-	63	30	43	-	195	47.7	49.5	50.3	49.5	245	-	3.6	27.1	-	208	58.1	-	-	82	408	-	-	-	-	-	-	-	-	-	
Thallium (Tl)	µg/L	<100	-	<100	<100	<0.1	-	<0.05	<0.03	<0.03	<0.03	-	<0.20	<0.20	<100	<0.1	-	<0.05	<0.03	<0.1	-	<0.03	<0.20	<0.1	-	-	-	0.2	-	<0.1	-		
Tin (Sn)	µg/L	<300	-	<300	<300	-	-	-	-	-	-	-	<0.50	<0.50	<300	-	-	-	<50	-	-	<0.50	<50	-	-	-	-	<50	-	<50	-	-	
Titanium (Ti)	µg/L	<10	-	<10	<10	<0.1	-	0.6	<0.1	0.3	0.2	-	-	<10	<10	0.5	-	<0.1	<0.1	<1	-	-	<1	-	-	-	<1	-	<1	-	<1	-	
Tungsten (W)	µg/L	<100	-	<100	<100	-	-	-	-	-	-	-	-	<100	-	-	-	-	-	-	-	-	<1	-	-	-	-	<1	-	<1	-	-	
Uranium (U)	µg/L	-	-	-	-	<0.1	-	0.07	<0.05	<0.05	<0.05	<0.05	<0.20	<0.20	-	<0.1	-	0.08	<0.05	<0.1	-	<0.05	0.061	<0.1	-	-	-	0.2	-	0.2	-	-	
Vanadium (V)	µg/L	<30	-	<30	<30	<0.1	-	0.1	0.07	0.06	0.07	0.62	<1.0	<1.0	<30	<0.1	-	0.2	0.07	<1	-	0.16	<1.0	1	-	-	-	1	-	1	-	-	
Zinc (Zn)	µg/L	<5	-	<5	<5	9.7	-	5	<0.8	9.7	6.2	31.9	15.2	<5	<5	<5	-	5	<0.8	9	-	<0.8	10.4	8	-	-	-	<4	-	12	-	-	
Dissolved Metals																																	
Aluminum (Al)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<5.0	<5.0	-	-	-	-	-	<10	1.2	8.6	-	20	20	<10	-	20	-	<10	-	<10	
Antimony (Sb)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	-	-	-	-	-	1.7	<0.03	<0.50	-	1.5	<0.4	1.8	-	1.5	-	1.7	-	1.7	
Arsenic (As)	µg/L	-	-	-	-	-	-	-	-	-	-	-	2.41	1.68	-	-	-	-	-	1.6	1.62	3.09	-	3.8	3.6	2.8	-	1.9	-	2.1	-	2.1	
Barium (Ba)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	<20.0	-	-	-	-	-	13	12.4	-	-	133	345	145	-	103	-	49	-	49	
Beryllium (Be)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	-	-	-	-	-	<1	<0.2	<1.0	-	<1	<1	<1	-	<1	-	<1	-	<1	
Boron (B)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	<100	-	-	-	-	-	<50	2	-	-	<50	<50	<50	-	<50	-	<50	-	<50	
Cadmium (Cd)	µg/L	-	-	-	-	-	-	-	-	-	-	-	0.015	<0.010	-	-	-	-	-	<0.1	<0.05	0.018	-	<0.1	<0.2	<0.1	-	<0.1	-	<0.1	-	<0.1	
Calcium (Ca)	µg/L	-	-	-	-	-	-	-	-	-	-	-	61400	17100	-	-	-	-	-	-	-	14800	71800	-	-	-	-	-	-	-	-	-	
Chromium (Cr)	µg/L	-	-	-	-	-	-	-	-	-	-	-	3	<1.0	-	-	-	-	-	<5	<0.06	<7.0	-	<5	<5	7	-	<5	-	<5	-	<5	
Cobalt (Co)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.30	<0.30	-	-	-	-	-	<2	<0.1	<0.30	-	<2	<2	<2	-	<2	-	<2	-	<2	
Copper (Cu)	µg/L	-	-	-	-	-	-	-	-	-	-	-	1.6	1	-	-	-	-	-	<1	0.7	1.6	-	2	2	2	-	1	-	2	-	2	
Iron (Fe)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	<30	-	-	-	-	-	33	25	-	302	1280	724	-	2360	-	54	-	54		
Lead (Pb)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	-	-	-	-	-	<0.1	0.08	<0.50	-	0.2	<0.1	<0.1	-	0.1	-	<0.1	-	<0.1	
Lithium (Li)	µg/L	-	-	-	-	-	-	-	-	-	-	-	6	<5.0	-	-	-	-	-	4	-	14	-	48	139	40	-	23	-	27	-	27	
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-	-	-	-	-	6760	1950	-	-	-	-	-	-	-	1750	8950	-	-	-	-	-	-	-	-	-	
Manganese (Mn)	µg/L	-	-	-	-	-	-	-	-	-	-	-	252	1.95	-	-	-	-	-	3	1.9	82.9	-	51	120	174	-	66	-	5	-	5	
Mercury (Hg)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.020	-	-	-	-	-	<0.1	<0.02	<0.020	-	<0.1	0.2	<0.1	-	<0.1	-	<0.1	-	<0.1	
Molybdenum (Mo)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	-	-	-	-	-	<5	0.14	<1.0	-	<5	<5	<5	-	<5	-	<5	-	<5	
Nickel (Ni)	µg/L	-	-	-	-	-	-	-	-	-	-	-	2.1	<1.0	-	-	-	-	-	<2	0.44	2.6	-	7	15	11	-	6	-	5	-	5	
Potassium (K)	µg/L	-	-	-	-	-	-	-	-	-	-	-	3210	<200	-	-	-	-	-	-	-	870	4070	-	-	-	-	-	-	-	-	-	
Selenium (Se)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	-	-	-	-	-	<0.4	0.2	<1.0	-	1	2.1	1.3	-	0.7	-	0.7	-	0.7	
Silver (Ag)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.020	-	-	-	-	-	<0.1	<0.1	<0.020	-	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1	
Sodium (Na)	µg/L	-	-	-	-	-	-	-	-	-	-	-	11500	3100	-	-	-	-	-	-	-	2420	13000	-	-	-	-	-	-	-	-	-	
Strontium (Sr)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.2	-	-	2480	-	-	-	-	-	-	-	
Thallium (Tl)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.20	<0.20	-	-	-	-	-	<0.1	<0.03	<0.20	-	<0.1	0.2	<0.1	-	<0.1	-	<0.1	-	0.2	
Tin (Sn)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.50	0.81	-	-	-	-	-	<50	-	<0.50	-	<50	<50	<50	-	<50	-	<50	-	<50	
Titanium (Ti)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	<10	-	-	-	-	-	<1	-	-	-	<1	<1	<1	-	<1	-	<1	-	<1	
Tungsten (W)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	<1	-	<1	-	<1	
Uranium (U)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.20	<0.20	-	-	-	-	-	<0.1	<0.05	<0.20	-	<0.1	<0.1	1.3	-	<0.1	-	<0.1	-	0.2	
Vanadium (V)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	-	-	-	-	-	<1	0.12	<1.0	-	<1	8	2	-	1	-	<1	-	<1	
Zinc (Zn)	µg/L	-	-	-	-	-	-	-	-	-	-	-	<5	<5	-	-	-	-	-	<2	1	-	-	11	9	3	-	13	-	7	-	7	
Organic Compounds																																	
Oil and Grease	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1,000	500	-	<1,000	-	<1,000	-	<1,000	-	<1,000	<1,000	<1,000	<1,000	<1,000
Phenols	µg/L	-	-	-	-	<2	-	<1																									

Table B2-2: Water Quality in Lakes of the Peninsula Basin .

Waterbody	Units	Pond A54			Pond A56		Pond A57	
		12-Aug-07	7-Oct-07	15-Jul-08	12-Aug-07	7-Oct-07	12-Aug-07	7-Oct-07
Date Sampled		0540135, 6988794	0540135, 6988794	0540180, 6988827	0540041, 6988819	0540041, 6988819	0539879, 6988909	0539879, 6988909
GPS Coordinates (NAD83, Zone 15V) ^a		Comaplex	Comaplex	Golder	Comaplex	Comaplex	Comaplex	Comaplex
Source ^b		Comaplex	Comaplex	Golder	Comaplex	Comaplex	Comaplex	Comaplex
Field Measurements								
Water Temperature	°C	11.2	0.3	13.8	10.7	1.1	10.4	1.2
Dissolved Oxygen	mg/L	-	-	12.86	-	-	-	-
pH	pH	8.11	8.17	6.94	8.1	8.01	8.29	7.61
Specific Conductivity	µS/cm	-	-	895	-	-	-	-
Secchi Disk Depth	m	-	-	0.8	-	-	-	-
Ice Depth	m	-	-	-	-	-	-	-
Total Lake Depth	m	-	-	0.8	-	-	-	-
Conventional Parameters (Laboratory-Measured)								
pH	pH	7.8	7.9	8	7.9	8	8.1	8
Specific Conductivity	µS/cm	618	720	944	1680	1470	294	386
Total Dissolved Solids	mg/L	386	-	<u>696</u>	<u>1090</u>	-	191	-
Total Dissolved Solids (Calculated)	mg/L	291	348	469	<u>859</u>	<u>783</u>	156	204
Total Alkalinity	mg CaCO ₃ /L	49	68	47	78	124	123	167
Total Hardness	mg CaCO ₃ /L	236	258	337	709	456	142	181
Total Suspended Solids	mg/L	4	3	5	<3	5	3	8
Total Volatile Solids	mg/L	-	-	-	-	-	-	-
Turbidity	NTU	<0.1	0.65	-	0.3	5.6	1.9	2.9
Major Ions								
Bicarbonate	mg/L	60	83	57	95	151	151	204
Bromide	mg/L	-	-	-	-	-	-	-
Calcium	mg/L	74.5	78.8	90.9	236	127	47.6	61.5
Carbonate	mg/L	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	134	151	214	<u>444</u>	<u>297</u>	14	12
Fluoride	mg/L	-	-	-	-	-	-	-
Hydroxide	mg/L	<5	<5	<5	<5	<5	<5	<5
Magnesium	mg/L	12.2	14.8	13.9	29.1	33.8	5.5	6.6
Potassium	mg/L	6.1	4.9	7.95	9.6	8.6	3	1.8
Reactive Silica (as SiO ₂)	mg/L	-	1.8	-	-	4.6	-	6.6
Silicate (SiO ₂)	mg/L	-	-	-	-	-	-	-
Sodium	mg/L	15	20	34.2	22	87	8	6
Sulphate	mg/L	19.8	37.2	39.9	69.2	141	4.5	15.8
Ion Balance	%	107	96.1	103	98.8	94.3	110	97.8
Organic/Inorganic Carbon								
Total Carbon	mg/L	22	26	20	34	41	51	53
Total Organic Carbon	mg/L	12	-	10	17	-	25	-
Dissolved Organic Carbon	mg/L	-	-	9.5	-	-	-	-
Total Inorganic Carbon	mg/L	11	16	-	18	30	30	41
Total Inorganic Carbon (Calculated)	mg/L	-	10	10	-	-	-	-
Nutrients and Chlorophyll a								
Total Ammonia as Nitrogen	mg/L	<0.05	<0.05	1.11	<0.05	1.32	0.08	0.07
Nitrate as Nitrogen	mg/L	<0.1	<0.1	4.9	0.5	2.9	<0.1	<0.1
Nitrite as Nitrogen	mg/L	<0.05	<0.05	0.14	<0.05	0.31	<0.05	<0.05
Nitrate+Nitrite as Nitrogen	mg/L	<0.1	<0.1	5.1	0.5	3.2	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.7	0.5	2.2	1	1.8	1.5	0.6
Phosphorus, Total	mg/L	<0.02	<0.02	0.009	<0.02	<0.02	<0.02	<0.02
Phosphorus, Total Dissolved	mg/L	-	<0.02	0.004	-	<0.02	-	<0.02
Orthophosphate (PO ₄ -P)	mg/L	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	<0.01
Chlorophyll a	µg/L	-	-	17	-	-	-	-
Cyanides								
Cyanide, Total	µg/L	-	-	<2	-	-	-	-
Total Metals								
Aluminum (Al)	µg/L	-	-	2.4	-	-	-	-
Antimony (Sb)	µg/L	-	-	0.2	-	-	-	-
Arsenic (As)	µg/L	-	-	0.9	-	-	-	-
Barium (Ba)	µg/L	-	-	61.8	-	-	-	-
Beryllium (Be)	µg/L	-	-	<0.2	-	-	-	-
Bismuth (Bi)	µg/L	-	-	-	-	-	-	-
Boron (B)	µg/L	-	-	0.6	-	-	-	-
Cadmium (Cd)	µg/L	-	-	<0.05	-	-	-	-
Calcium (Ca)	µg/L	-	-	-	-	-	-	-
Cesium (Cs)	µg/L	-	-	-	-	-	-	-
Chromium (Cr)	µg/L	-	-	<0.06	-	-	-	-
Cobalt (Co)	µg/L	-	-	<0.1	-	-	-	-
Copper (Cu)	µg/L	-	-	1	-	-	-	-
Iron (Fe)	µg/L	-	-	22	-	-	-	-
Lead (Pb)	µg/L	-	-	0.06	-	-	-	-
Lithium (Li)	µg/L	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-
Manganese (Mn)	µg/L	-	-	1.7	-	-	-	-
Mercury (Hg)	µg/L	-	-	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L	-	-	0.49	-	-	-	-
Nickel (Ni)	µg/L	-	-	1	-	-	-	-
Potassium (K)	µg/L	-	-	-	-	-	-	-
Rubidium (Rb)	µg/L	-	-	-	-	-	-	-
Selenium (Se)	µg/L	-	-	<0.1	-	-	-	-
Silicon (Si)	µg/L	-	-	-	-	-	-	-
Silver (Ag)	µg/L	-	-	<0.1	-	-	-	-
Sodium (Na)	µg/L	-	-	-	-	-	-	-

Table B2-2: Water Quality in Lakes of the Peninsula Basin .

Waterbody	Units	Pond A54			Pond A56		Pond A57	
		12-Aug-07	7-Oct-07	15-Jul-08	12-Aug-07	7-Oct-07	12-Aug-07	7-Oct-07
Date Sampled		0540135, 6988794	0540135, 6988794	0540180, 6988827	0540041, 6988819	0540041, 6988819	0539879, 6988909	0539879, 6988909
GPS Coordinates (NAD83, Zone 15V) ^a		Comaplex	Comaplex	Golder	Comaplex	Comaplex	Comaplex	Comaplex
Source ^b		Comaplex	Comaplex	Golder	Comaplex	Comaplex	Comaplex	Comaplex
Strontium (Sr)	µg/L	-	-	830	-	-	-	-
Thallium (Tl)	µg/L	-	-	<0.03	-	-	-	-
Tin (Sn)	µg/L	-	-	-	-	-	-	-
Titanium (Ti)	µg/L	-	-	-	-	-	-	-
Tungsten (W)	µg/L	-	-	-	-	-	-	-
Uranium (U)	µg/L	-	-	0.26	-	-	-	-
Vanadium (V)	µg/L	-	-	<0.05	-	-	-	-
Zinc (Zn)	µg/L	-	-	<0.8	-	-	-	-
Dissolved Metals								
Aluminum (Al)	µg/L	<10	<10	-	30	30	10	<10
Antimony (Sb)	µg/L	<0.4	1.9	-	<0.4	1.1	<0.4	1.5
Arsenic (As)	µg/L	3.7	2.8	-	4.8	3.2	6.7	2
Barium (Ba)	µg/L	50	47	-	154	85	32	38
Beryllium (Be)	µg/L	<1	<1	-	<1	<1	<1	<1
Boron (B)	µg/L	<50	<50	-	<50	<50	<0.05	<0.05
Cadmium (Cd)	µg/L	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1
Calcium (Ca)	µg/L	-	-	-	-	-	-	-
Chromium (Cr)	µg/L	<5	<5	-	<5	7	6	<5
Cobalt (Co)	µg/L	<2	<2	-	<2	<2	<2	<2
Copper (Cu)	µg/L	1	1	-	3	4	4	3
Iron (Fe)	µg/L	55	31	-	182	138	286	118
Lead (Pb)	µg/L	<0.1	<0.1	-	<0.1	0.3	<0.1	0.4
Lithium (Li)	µg/L	32	33	-	102	25	<3	3
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-
Manganese (Mn)	µg/L	3	3	-	22	101	8	7
Mercury (Hg)	µg/L	<0.1	<0.1	-	0.1	<0.1	0.1	<0.1
Molybdenum (Mo)	µg/L	<5	<5	-	<5	<5	<5	<5
Nickel (Ni)	µg/L	4	5	-	11	11	6	6
Potassium (K)	µg/L	-	-	-	-	-	-	-
Selenium (Se)	µg/L	0.7	0.8	-	1.5	1.7	0.5	0.5
Silver (Ag)	µg/L	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L	-	-	-	-	-	-	-
Strontium (Sr)	µg/L	674	-	-	1930	-	291	-
Thallium (Tl)	µg/L	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1
Tin (Sn)	µg/L	<50	<50	-	<50	<50	<50	<50
Titanium (Ti)	µg/L	<1	<1	-	<1	<1	<1	<1
Tungsten (W)	µg/L	<1	<1	-	-	-	-	-
Uranium (U)	µg/L	<0.1	0.5	-	2.8	3.6	0.4	0.4
Vanadium (V)	µg/L	4	<1	-	8	2	2	<1
Zinc (Zn)	µg/L	5	5	-	59	6	5	26
Organic Compounds								
Oil and Grease	µg/L	-	<1,000	600	-	<1,000	-	<1,000
Phenols	µg/L	-	-	4	-	-	-	-
Benzene	µg/L	-	-	<0.50	-	-	-	-
Ethylbenzene	µg/L	-	-	<0.50	-	-	-	-
Toluene	µg/L	-	-	<0.50	-	-	-	-
Xylenes	µg/L	-	-	<0.50	-	-	-	-
F1 (C6-C10)	µg/L	-	-	<100	-	-	-	-
F1 -BTEX	µg/L	-	-	<100	-	-	-	-
F2 (>C10-C16)	µg/L	-	-	<50	-	-	-	-
F3 (C16-C34)	µg/L	-	-	<50	-	-	-	-
F4 (C34-C50)	µg/L	-	-	<50	-	-	-	-
Total Volatiles	µg/L	-	-	-	-	-	-	-
Total Extractables	µg/L	-	-	-	-	-	-	-
Other								
Biological Oxygen Demand (BOD)	mg/L	-	<2	-	-	2	-	2
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Q

Underlined values are equal to or greater than the Guidelines for

Italicized values indicate the detection limit equals or exceeds c

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSeimens per centi

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were

b = Data were obtained from the following sources: 1994 to 199

c = Station PL-06 in Dillon 1994.

d = Station PL-05 in Dillon 1994.

e = Station PL-03 in Dillon 1994.

f = Station PL-01 in Dillon 1994.

g = Samples for chlorophyll a were composite samples collecte

Table B2-3: Water Quality in Lakes of the Peninsula Basin B, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	B2								B5								B6				B7							
		21-Jul-97	18-Aug-97	26-Apr-98	21-Jul-98	30-Aug-98	18-Jul-99	19-Jul-00	19-Jul-97	18-Aug-97	26-Apr-98	20-Jul-98	28-Aug-98	18-Jul-99	18-Jul-00	18-Jul-00 (dup)	14-Jul-08	27-Apr-09	12-Jul-08	27-Apr-09	28-Jul-09	28-Jul-09 (dup)	18-Jul-97	19-Aug-97	27-Apr-98	27-Apr-98 (dup)	19-Jul-98	22-Aug-98	
		0537522, 6987195	0537423, 6987140	0537412, 6986604	0537522, 6987195	0537423, 6987140	0537522, 6986731	0537384, 6986749	0537776, 6988807	0537781, 6988763	0537989, 6988649	0537776, 6988807	0537781, 6988763	0537832, 6988811	0538055, 6988544	0538055, 6988544	0538288, 6988122	0538281, 6988153	0537775, 6989211	0537758, 6989218	0537755, 6989216	0537755, 6989216	0537667, 6989775	0537683, 6989674	0537731, 6989737	0537731, 6989737	0537683, 6989674	0537683, 6989674	
Source ^b		RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2001	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1999	RL&L 2000	RL&L 2001	RL&L 2001	Goldler	Goldler	Goldler	Goldler	Goldler	Goldler	RL&L 1998	RL&L 1998	RL&L 1999	RL&L 1999	RL&L 1999	RL&L 1999	
Field Measurements																													
Water Temperature	°C	17	14.9	0.1	9.7	8.9	11.0	13.6	15.1	15.1	0	9.9	8.9	10.4	14.6	14.6	13.82	0.29	15.41	0.31	16.19	16.19	14.3	14.7	0.6	0.6	9.7	9.9	
Dissolved Oxygen	mg/L	9.7	11.2	3.6	13.4	11.1	11.9	-	10.5	10.8	2.6	13.9	10.8	11.7	-	-	11.53	2.91	12.23	2.66	8.44	8.44	10.8	10.7	3.5	3.5	12.7	10.4	
pH	pH	8.07	7.84	6.92	-	7.13	7.2	7.79	7.54	7.67	6.84	-	7.36	6.51	7.76	7.76	6.94	6.60	7.33	6.45	6.98	6.98	7.41	7.94	7.00	7.00	-	7.67	
Specific Conductivity	µS/cm	101.7	109.9	433	71.5	87.0	97.1	74	81.8	89.5	674	73.8	94.8	87.4	80.3	80.3	86	354	112	455	141	141	84	92.2	278	278	76	84.7	
Secchi Disk Depth	m	2.6	2.5	-	3.0	2.8	2.5	3.0	2.7	2.3	-	2.0	3.0	2.0	2.4	2.4	2.7	-	4	-	3.8	3.8	3.2	3.8	-	-	3.5	3.0	
Ice Depth	m	-	-	1.8	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	1.63	-	1.74	-	-	-	-	1.8	1.8	-	
Total Lake Depth	m	2.6	2.5	2.5	3.0	2.8	3.0	3.0	2.7	2.3	2.2	2.0	3.0	2.0	2.4	2.4	3	2.63	4	3.48	3.8	3.8	3.2	3.8	3.2	3.2	3.5	3.8	
Conventional Parameters (Laboratory-Measured)																													
pH	pH	7.7	-	6.8	7.2	-	7.3	7.3	7.63	-	6.8	7.1	-	7.2	7.3	7.4	7.6	7.79	7.6	7.78	7.71	7.7	7.5	-	6.8	6.8	7.2	-	
Specific Conductivity	µS/cm	83.7	-	465	64.2	-	84.8	70.7	67.5	-	712	73.2	-	75.7	80.2	79.6	85.3	373	105	480	140	139	70.3	-	306	302	68.5	-	
Total Dissolved Solids	mg/L	49	-	230	31	-	24	32	47	-	373	34	-	20	37	37	49	69	69	96	91	38	-	145	163	33	-		
Total Dissolved Solids (Calculated)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	199	51	256	68	63.9	-	-	-	-	-		
Total Alkalinity	mg CaCO ₃ /L	33.3	-	180	22	-	29	24	27	-	298	25	-	27	27	27	28	131	27	140	32.6	31	29	-	119	151	26	-	
Total Hardness	mg CaCO ₃ /L	33	-	178	24	-	33	24	26.9	-	303	29	-	30	29	29	36	159	42	222	54.8	50.6	28.6	-	119	118	28	-	
Total Suspended Solids	mg/L	<3	-	3	<2	-	7	<3	<3	-	<2	3	-	3	<3	3	3	11	<3	3	4	<3.0	<3	-	4	2	<2	-	
Total Volatile Solids	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	-	92	65	81	-	-	-	-	-		
Turbidity	NTU	0.6	-	1.1	0.4	-	0.31	0.44	1.1	-	1.1	0.5	-	0.22	0.42	0.33	-	-	-	-	-	0.6	-	0.7	1	0.5	-		
Major Ions																													
Bicarbonate	mg/L	33.3	-	220	27	-	35	29	27	-	364	31	-	32	33	34	34	160	33	171	39.8	37.8	29	-	145	144	31	-	
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Calcium	mg/L	11	-	59.9	8.1	-	10.9	8.75	8.65	-	97.7	9.34	-	9.58	9.54	9.69	10.9	49.3	13.9	66.2	19.4	19.2	9.31	-	39.6	38.5	9.32	-	
Carbonate	mg/L	<0.3	-	<1	<1	-	<1	<5	<0.3	-	<1	<1	-	<1	<5	<5	<5	<5.0	<5	<5.0	<5.0	<5.0	<0.3	-	<1	<1	<1	-	
Chloride	mg/L	5.2	-	25.2	3.68	-	4.41	3	3.6	-	36.6	3.52	-	3.64	4	4	7	31.4	12	60.2	21.3	20.2	3.22	-	12.6	12.4	2.77	-	
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hydroxide	mg/L	-	-	<1	<1	-	<1	<5	-	<1	<1	-	<1	<1	<5	<5	<5	<5.0	<5	<5.0	<5.0	<5.0	<1	-	<1	<1	<1	-	
Magnesium	mg/L	1.35	-	7.01	0.99	-	1.3	0.977	1.29	-	14.4	1.37	-	1.37	1.29	1.32	1.32	7.28	1.46	8.18	2.1	2.09	1.29	-	5	5.23	1.22	-	
Potassium	mg/L	0.868	-	4.36	0.73	-	0.84	0.695	0.667	-	6.07	0.7	-	0.67	0.646	0.648	0.71	2.99	0.9	3.94	<2.0	<2.0	0.787	-	2.81	2.83	0.79	-	
Reactive Silica (as SiO ₂)	mg/L	0.589	-	4.8	0.6	-	0.5	0.3	0.422	-	7.5	0.5	-	0.4	0.2	0.3	-	-	-	-	-	0.702	-	7	6.8	0.9	-		
Silicate (SiO ₂)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium	mg/L	3.05	-	16.7	2.4	-	2.9	2.02	1.94	-	21.5	2.2	-	2.1	1.93	1.97	2.58	11.3	2.46	11.3	3.2	3.2	1.9	-	7.4	7.5	1.8	-	
Sulphate	mg/L	<3	-	8.95	1.62	-	3.48	2.82	<3	-	17.7	2.04	-	3.13	3.15	3.22	2.6	12.5	3	9.53	2.22	2.09	<3	-	5.66	5.44	1.45	-	
Ion Balance	%	-	-	98	105	-	104	93.3	-	-	97	107	-	101	94.7	91	Low EC	102	106	111	96.9	94.4	-	-	98	98	108	-	
Organic/Inorganic Carbon																													
Total Carbon	mg/L	12	-	64	8.7	-	11	9.5	10	-	108	9.9	-	10.7	10.8	9.9	10	-	11	-	11.9	12.3	12	-	46	46	10.8	-	
Total Organic Carbon	mg/L	3.8	-	13.3	3.3	-	4.3	4.3	3.8	-	24.9	3.7	-	4.5	5	4	4	-	5	-	5.2	5.2	4.5	-	12.2	12	4.5	-	
Dissolved Organic Carbon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	-	4.9	-	5.1	5	-	-	-	-	-	-	
Total Inorganic Carbon	mg/L	8	-	49.9	5.4	-	6.7	5.2	6	-	80.2	6.2	-	6.2	5.8	5.9	-	-	-	-	7.7	8	7	-	36.2	36	6.3	-	
Total Inorganic Carbon (Calculated)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6	-	-	-	-	-	-	-	-	-	
Nutrients and Chlorophyll a																													
Total Ammonia as Nitrogen	mg/L	0.014	-	0.048	0.017	-	<0.005	<0.005	0.012	-	0.087	0.027	-	0.008	<0.005	<0.005	<0.05	0.204	<0.05	0.459	<0.050	<0.050	0.011	-	0.203	0.233	0.019	-	
Nitrate as Nitrogen	mg/L	<0.008	-	<0.006	<0.006	-	<0.006	<0.006	0.011	-	0.033	<0.006	-	<0.006	<0.006	<0.006	<0.1	<0.050	<0.1	<0.050	<0.050	<0.050	<0.008	-	0.041	0.032	<0.006	-	
Nitrite as Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.050	<0.050	-	-	-	-	-	-	
Nitrate+Nitrite as Nitrogen	mg/L	<0.008	-	<0.006	<0.006	-	<0.006	<0.006	0.011	-	0.033	<0.006	-	<0.006	<0.006	<0.006	<0.1	<0.071	<0.1	<0.071	<0.071	<0.071	<0.008	-	0.044	0.035	<0.006	-	
Total Kjeldahl Nitrogen	mg/L	0.34	-	1.03	0.39	-	0.23	0.24	0.3	-	1.77	0.55	-	0.35	0.2	0.14	0.2	1.15	0.4	1.46	0.43	0.39	0.29	-	1.45	1.46	0.47	-	
Phosphorus, Total	mg/L	0.01	-	0.01	0.007	-	0.009	0.035	0.015	-	0.014	0.01	-	0.005	0.016	0.01	0.009	0.0247	0.008	0.0089	0.0065	0.0077	0.1						

Table B2-3: Water Quality in Lakes of the Peninsula Basin

Waterbody	Units				Pond B8	Pond B9	Pond B10	B36 ^c
		8-Nov-98	12-Jul-08	27-Apr-09	8-Nov-98	8-Nov-98	8-Nov-98	11-Aug-94
Date Sampled								
GPS Coordinates (NAD83, Zone 15V) ^a		-	0537760, 6989535	0537811, 6989603	-	-	-	-
Source ^b		RL&L 1999	Golder	Golder	RL&L 1999	RL&L 1999	RL&L 1999	Dillon 1994
Field Measurements								
Water Temperature	°C	-0.5	14.83	0.63	-0.5	-0.5	-0.5	9.4
Dissolved Oxygen	mg/L	-	11.52	4	-	-	-	-
pH	pH	7.48	7.28	5.84	-	7.06	-	7.16
Specific Conductivity	µS/cm	138.7	108	408	-	314	-	-
Secchi Disk Depth	m	-	4.2	-	-	-	-	-
Ice Depth	m	-	-	1.79	-	-	-	-
Total Lake Depth	m	-	4.6	3.82	-	-	-	-
Conventional Parameters (Laboratory-Measured)								
pH	pH	7.4	7.6	7.77	7.2	7.4	7.5	8.08
Specific Conductivity	µS/cm	108	103	435	454	491	1030	206
Total Dissolved Solids	mg/L	53	75	-	-	247	602	134
Total Dissolved Solids (Calculated)	mg/L	-	53	222	229	-	-	-
Total Alkalinity	mg CaCO ₃ /L	40	26	108	94	96	157	91.6
Total Hardness	mg CaCO ₃ /L	42	43	185	181	194	518	98
Total Suspended Solids	mg/L	3	3	4	3	<2	4	1
Total Volatile Solids	mg/L	-	-	84	-	-	-	-
Turbidity	NTU	0.52	-	-	0.8	1.9	1.27	0.58
Major Ions								
Bicarbonate	mg/L	49	32	132	115	117	192	-
Bromide	mg/L	-	-	-	-	-	-	-
Calcium	mg/L	14	12.8	57.7	57	61.4	154	32.9
Carbonate	mg/L	<1	<5	<5.0	<1	<1	<1	-
Chloride	mg/L	5.36	13	63.5	69.7	80	241	7.8
Fluoride	mg/L	-	-	-	-	-	-	0.07
Hydroxide	mg/L	<1	<5	<5.0	<1	<1	<1	-
Magnesium	mg/L	1.75	1.29	6.8	9.34	9.98	32.5	3.83
Potassium	mg/L	1.13	0.85	3.22	1.98	2.38	6.29	1.72
Reactive Silica (as SiO ₂)	mg/L	1.1	-	-	9.3	7.3	6.8	-
Silicate (SiO ₂)	mg/L	-	-	-	-	-	-	< 1.0
Sodium	mg/L	2.7	1.99	8.24	12.5	12.2	30.3	3.82
Sulphate	mg/L	3.83	4.1	9.08	22.4	23.2	43.9	6.9
Ion Balance	%	96	104	102	98	96	109	-
Organic/Inorganic Carbon								
Total Carbon	mg/L	17	11	-	49	40	62	-
Total Organic Carbon	mg/L	8.1	6	-	28	18.5	27	-
Dissolved Organic Carbon	mg/L	-	4.5	-	-	-	-	-
Total Inorganic Carbon	mg/L	9.1	-	-	21.1	21.9	35.6	-
Total Inorganic Carbon (Calculated)	mg/L	-	5	-	-	-	-	-
Nutrients and Chlorophyll a								
Total Ammonia as Nitrogen	mg/L	-	<0.05	0.23	-	0.029	0.025	-
Nitrate as Nitrogen	mg/L	0.011	<0.1	0.196	0.012	0.009	<0.006	< 0.005
Nitrite as Nitrogen	mg/L	-	<0.05	<0.050	-	-	-	0.001
Nitrate+Nitrite as Nitrogen	mg/L	0.014	<0.1	0.196	0.019	0.017	0.013	-
Total Kjeldahl Nitrogen	mg/L	-	0.3	1.01	-	0.82	1.3	-
Phosphorus, Total	mg/L	-	0.013	0.0084	-	0.017	0.021	< 0.30
Phosphorus, Total Dissolved	mg/L	0.008	0.004	0.0071	0.007	0.005	0.007	-
Orthophosphate (PO ₄ -P)	mg/L	<0.001	<0.001	<0.0010	<0.001	0.001	<0.001	-
Chlorophyll a	µg/L	-	5	-	-	-	-	-
Cyanides								
Cyanide, Total	µg/L	<2	<2	<2	<2	<2	43	-
Total Metals								
Aluminum (Al)	µg/L	0.8	1.5	<8.0	8.2	3.1	5	<200
Antimony (Sb)	µg/L	<0.20	<0.20	<0.20	0.1	0.12	0.12	<200
Arsenic (As)	µg/L	1.66	1.2	<3.0	3.75	3.87	5.77	1
Barium (Ba)	µg/L	14.9	11.6	63.8	63.9	67.7	232	1.8
Beryllium (Be)	µg/L	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<5
Bismuth (Bi)	µg/L	<0.03	-	<1.0	<0.03	<0.03	<0.03	<100
Boron (B)	µg/L	-	2	<50	-	-	-	<100
Cadmium (Cd)	µg/L	0.07	<0.05	0.019	0.32	0.05	0.41	<0.2
Calcium (Ca)	µg/L	-	-	-	-	-	-	-
Cesium (Cs)	µg/L	<0.1	-	-	<0.1	<0.1	<0.1	-
Chromium (Cr)	µg/L	0.65	<0.06	<1.0	4.07	4.34	9.36	<15
Cobalt (Co)	µg/L	0.2	<0.1	<0.30	0.3	0.3	0.5	<15
Copper (Cu)	µg/L	6.2	2.7	2	5.2	3.2	8.7	<10
Iron (Fe)	µg/L	20	64	-	145	260	156	3.9
Lead (Pb)	µg/L	0.26	<0.05	<0.50	0.08	0.21	<0.05	<1
Lithium (Li)	µg/L	<0.1	-	16.8	6.2	5.1	11.3	<15
Magnesium (Mg)	µg/L	-	-	-	-	-	-	-
Manganese (Mn)	µg/L	0.3	4	111	5.4	0.9	4	<5
Mercury (Hg)	µg/L	<0.02	<0.02	<0.020	<0.02	<0.02	<0.02	<0.05
Molybdenum (Mo)	µg/L	0.24	0.12	<1.0	0.3	0.18	0.65	<30
Nickel (Ni)	µg/L	1.94	0.56	2.9	8.36	6.66	13.4	<20
Potassium (K)	µg/L	-	-	-	-	-	-	-
Rubidium (Rb)	µg/L	-	-	-	-	-	-	-
Selenium (Se)	µg/L	<0.1	0.2	<0.50	<0.1	<0.1	<0.1	<0.5
Silicon (Si)	µg/L	-	-	-	-	-	-	510

Table B2-3: Water Quality in Lakes of the Peninsula Basin

Waterbody	Units				Pond B8	Pond B9	Pond B10	B36 ^c
		8-Nov-98	12-Jul-08	27-Apr-09	8-Nov-98	8-Nov-98	8-Nov-98	11-Aug-94
Date Sampled		-	0537760, 6989535	0537811, 6989603	-	-	-	-
GPS Coordinates (NAD83, Zone 15V) ^a		-			-	-	-	-
Source ^b		RL&L 1999	Golder	Golder	RL&L 1999	RL&L 1999	RL&L 1999	Dillon 1994
Silver (Ag)	µg/L	<0.1	<0.1	<0.020	<0.1	<0.1	<0.1	<15
Sodium (Na)	µg/L	-	-	-	-	-	-	-
Strontium (Sr)	µg/L	85.3	75.2	394	327	377	892	121
Thallium (Tl)	µg/L	0.05	<0.03	<0.20	0.11	0.1	0.11	<100
Tin (Sn)	µg/L	-	-	<0.50	-	-	-	<300
Titanium (Ti)	µg/L	<0.1	-	-	0.9	0.6	0.8	<10
Tungsten (W)	µg/L	-	-	-	-	-	-	<100
Uranium (U)	µg/L	<0.05	<0.05	0.07	0.07	<0.05	0.44	-
Vanadium (V)	µg/L	0.08	0.16	<1.0	1.06	1.1	2.4	<30
Zinc (Zn)	µg/L	14.5	<0.8	6.5	8.2	10.5	5.8	<5
Dissolved Metals								
Aluminum (Al)	µg/L	-	1.9	13	-	-	-	-
Antimony (Sb)	µg/L	-	<0.03	<0.50	-	-	-	-
Arsenic (As)	µg/L	-	1.07	<3.0	-	-	-	-
Barium (Ba)	µg/L	-	12.3	-	-	-	-	-
Beryllium (Be)	µg/L	-	<0.2	<1.0	-	-	-	-
Boron (B)	µg/L	-	0.2	-	-	-	-	-
Cadmium (Cd)	µg/L	-	<0.05	0.014	-	-	-	-
Calcium (Ca)	µg/L	-	13900	63800	-	-	-	-
Chromium (Cr)	µg/L	-	<0.06	5.4	-	-	-	-
Cobalt (Co)	µg/L	-	<0.1	<0.30	-	-	-	-
Copper (Cu)	µg/L	-	0.8	1.5	-	-	-	-
Iron (Fe)	µg/L	-	25	-	-	-	-	-
Lead (Pb)	µg/L	-	0.12	<0.50	-	-	-	-
Lithium (Li)	µg/L	-	-	15.8	-	-	-	-
Magnesium (Mg)	µg/L	-	1380	6190	-	-	-	-
Manganese (Mn)	µg/L	-	1.9	105	-	-	-	-
Mercury (Hg)	µg/L	-	<0.02	<0.020	-	-	-	-
Molybdenum (Mo)	µg/L	-	0.12	<1.0	-	-	-	-
Nickel (Ni)	µg/L	-	0.52	2.5	-	-	-	-
Potassium (K)	µg/L	-	900	4000	-	-	-	-
Selenium (Se)	µg/L	-	<0.1	<1.0	-	-	-	-
Silver (Ag)	µg/L	-	<0.1	<0.020	-	-	-	-
Sodium (Na)	µg/L	-	2110	9500	-	-	-	-
Strontium (Sr)	µg/L	-	81.8	-	-	-	-	-
Thallium (Tl)	µg/L	-	<0.03	<0.20	-	-	-	-
Tin (Sn)	µg/L	-	-	<0.50	-	-	-	-
Titanium (Ti)	µg/L	-	-	-	-	-	-	-
Uranium (U)	µg/L	-	<0.05	<0.20	-	-	-	-
Vanadium (V)	µg/L	-	<0.05	<1.0	-	-	-	-
Zinc (Zn)	µg/L	-	1.6	-	-	-	-	-
Organic Compounds								
Oil and Grease	µg/L	-	<500	-	-	-	-	-
Phenols µg/L		4	3	-	12	9	11	-
Benzene	µg/L	-	<0.50	-	-	-	-	-
Ethylbenzene	µg/L	-	<0.50	-	-	-	-	-
Toluene	µg/L	-	<0.50	-	-	-	-	-
Xylenes	µg/L	-	<0.50	-	-	-	-	-
F1 (C6-C10)	µg/L	-	<100	-	-	-	-	-
F1 -BTEX	µg/L	-	<100	-	-	-	-	-
F2 (>C10-C16)	µg/L	-	<50	-	-	-	-	-
F3 (C16-C34)	µg/L	-	<50	-	-	-	-	-
F4 (C34-C50)	µg/L	-	<50	-	-	-	-	-
Total Volatiles	µg/L	-	-	-	-	-	-	-
Total Extractables	µg/L	-	-	-	-	-	-	-
Other								
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-	-

Table B2-4: Water Quality in Lakes of the Peninsula Basin C, Meliadine Gold Project, 1995 to 2009

Waterbody		C5 ^b
Date Sampled	Units	11-Aug-94
GPS Coordinates (NAD83, Zone 15V)		-
Source		Dillon 1994
Field Measurements		
Water Temperature	°C	8.8
Dissolved Oxygen	mg/L	-
pH	pH	7.15
Specific Conductivity	µS/cm	-
Secchi Disk Depth	m	-
Ice Depth	m	-
Total Lake Depth	m	-
Conventional Parameters (Laboratory-Measured)		
pH	pH	7.51
Specific Conductivity	µS/cm	63.5
Total Dissolved Solids	mg/L	41
Total Dissolved Solids (Calculated)	mg/L	-
Total Alkalinity	mg CaCO ₃ /L	26.2
Total Hardness	mg CaCO ₃ /L	28.2
Total Suspended Solids	mg/L	< 1
Turbidity	NTU	0.37
Major Ions		
Bicarbonate	mg/L	-
Bromide	mg/L	-
Calcium	mg/L	9.66
Carbonate	mg/L	-
Chloride	mg/L	2.1
Fluoride	mg/L	0.05
Hydroxide	mg/L	-
Magnesium	mg/L	0.994
Potassium	mg/L	0.84
Silicate (SiO ₂)	mg/L	< 1.0
Sodium	mg/L	1.42
Sulphate	mg/L	3.6
Ion Balance	%	-
Organic/Inorganic Carbon		
Total Carbon	mg/L	-
Total Organic Carbon	mg/L	-
Total Dissolved Carbon	mg/L	-
Total Inorganic Carbon	mg/L	-
Nutrients and Chlorophyll a		
Total Ammonia as Nitrogen	mg/L	-
Nitrate as Nitrogen	mg/L	0.008
Nitrite as Nitrogen	mg/L	0.001
Nitrate-Nitrite as Nitrogen	mg/L	-
Total Kjeldahl Nitrogen	mg/L	-
Phosphorus, Total	mg/L	< 0.30
Phosphorus, Total Dissolved	mg/L	-
Orthophosphate (PO ₄ -P)	mg/L	-
Chlorophyll a	µg/L	-
Cyanides		
Cyanide, Total	µg/L	-
Total Metals		
Aluminum (Al)	µg/L	<200
Antimony (Sb)	µg/L	<200
Arsenic (As)	µg/L	0.6
Barium (Ba)	µg/L	<10
Beryllium (Be)	µg/L	<5
Bismuth (Bi)	µg/L	<100
Boron (B)	µg/L	<100
Cadmium (Cd)	µg/L	<0.2
Cesium (Cs)	µg/L	-
Chromium (Cr)	µg/L	<15
Cobalt (Co)	µg/L	<10
Copper (Cu)	µg/L	<10
Iron (Fe)	µg/L	4.4
Lead (Pb)	µg/L	<1
Lithium (Li)	µg/L	<15
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	<5
Mercury (Hg)	µg/L	<0.05
Molybdenum (Mo)	µg/L	<30
Nickel (Ni)	µg/L	<20
Potassium (K)	µg/L	-
Rubidium (Rb)	µg/L	-
Selenium (Se)	µg/L	<0.5
Silicon (Si)	µg/L	467
Silver (Ag)	µg/L	<15
Sodium (Na)	µg/L	-
Thallium (Tl)	µg/L	<100
Tin (Sn)	µg/L	<300
Titanium (Ti)	µg/L	<10
Tungsten (W)	µg/L	<100
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	<30
Zinc (Zn)	µg/L	<5
Dissolved Metals		
Aluminum (Al)	µg/L	-
Antimony (Sb)	µg/L	-
Arsenic (As)	µg/L	-
Barium (Ba)	µg/L	-
Beryllium (Be)	µg/L	-
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	-
Calcium (Ca)	µg/L	-
Chromium (Cr)	µg/L	-
Cobalt (Co)	µg/L	-
Copper (Cu)	µg/L	-
Iron (Fe)	µg/L	-
Lead (Pb)	µg/L	-
Lithium (Li)	µg/L	-
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	-
Mercury (Hg)	µg/L	-
Molybdenum (Mo)	µg/L	-
Nickel (Ni)	µg/L	-
Potassium (K)	µg/L	-
Selenium (Se)	µg/L	-
Silver (Ag)	µg/L	-
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	-
Thallium (Tl)	µg/L	-
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	-
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	-
Zinc (Zn)	µg/L	-
Organic Compounds		
Oil and Grease	µg/L	-
Phenols	µg/L	-
Benzene	µg/L	-
Ethylbenzene	µg/L	-
Toluene	µg/L	-
Xylenes	µg/L	-
F1 (C6-C10)	µg/L	-
F1 -sTEX	µg/L	-
F2 (-C10-C16)	µg/L	-
F3 (C16-C34)	µg/L	-
F4 (C34-C50)	µg/L	-
Other		
Biological Oxygen Demand (BOD)	mg/L	-
Fecal coliforms	CFU/100 mL	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

b = Station PL-Q4 in Dillon 1994.

Table B2-5: Water Quality in Lakes of the Peninsula Basin D, Meliadine Gold Project, 1995 to 2009

Waterbody	Units	D1		D7			
		19-Aug-97	27-Apr-98	11-Aug-94	17-Jul-97	19-Aug-97	27-Apr-98
Date Sampled		0533065, 6989636	0533017, 6989758	-	0536706, 6988918	0536756, 6988921	0536631, 6988803
GPS Coordinates (NAD83, Zone 15V) ^a		RL&L 1998	RL&L 1999	Dillon 1994	RL&L 1998	RL&L 1998	RL&L 1999
Source ^b		RL&L 1998	RL&L 1999	Dillon 1994	RL&L 1998	RL&L 1998	RL&L 1999
Field Measurements							
Water Temperature	°C	16.1	-0.2	9.6	14.1	15.4	0.3
Dissolved Oxygen	mg/L	10.6	0.2	-	10.8	10.8	1.5
pH		8.14	7.05	7.13	7.97	8.10	7.16
Specific Conductivity	µS/cm	134.9	1816	-	136.4	150.6	845
Secchi Disk Depth	m	2.2	2.2	-	2.2	2.2	-
Ice Depth	m	-	1.5	-	-	-	1.8
Total Lake Depth	m	2.2	2.2	-	2.2	2.2	2.3
Conventional Parameters (Laboratory-Measured)							
pH		-	7	6.92	7.83	-	7.1
Specific Conductivity	µS/cm	-	1980	91.8	144	-	902
Total Dissolved Solids	mg/L	-	1100	56	-	-	-
Total Dissolved Solids (Calculated)	mg/L	-	-	-	69	-	462
Total Alkalinity	mg CaCO ₃ /L	-	905	36.5	45.8	-	363
Total Hardness	mg CaCO ₃ /L	-	930	38.3	44.5	-	358
Total Suspended Solids	mg/L	-	139	<1	3	-	2
Turbidity	NTU	-	210	0.65	1.1	-	1
Major Ions							
Bicarbonate	mg/L	-	1100	-	45.8	-	443
Bromide	mg/L	-	-	-	-	-	-
Calcium	mg/L	-	304	12.1	13.9	-	112
Carbonate	mg/L	-	<1	-	<0.3	-	<1
Chloride	mg/L	-	107	4.7	7.43	-	50.8
Fluoride	mg/L	-	-	0.04	-	-	-
Hydroxide	mg/L	-	<1	-	-	-	<1
Magnesium	mg/L	-	41.6	1.95	2.39	-	19
Potassium	mg/L	-	14.2	0.91	1.14	-	8.27
Reactive Silica (as SiO ₂)	mg/L	-	2.9	-	0.3	-	6
Silicate (SiO ₂)	mg/L	-	-	<1.0	-	-	-
Sodium	mg/L	-	60.7	3.15	4.57	-	36.7
Sulphate	mg/L	-	29.4	2.1	<3	-	17.6
Ion Balance	%	-	100	-	-	-	99
Organic/Inorganic Carbon							
Total Carbon	mg/L	-	324	-	15	-	119
Total Organic Carbon	mg/L	-	64.9	-	4.2	-	23.2
Dissolved Organic Carbon	mg/L	-	-	-	-	-	-
Total Inorganic Carbon	mg/L	-	264	-	11	-	103
Nutrients and Chlorophylla							
Total Ammonia as Nitrogen	mg/L	-	1.35	-	0.028	-	0.305
Nitrate as Nitrogen	mg/L	-	<0.006	<0.005	<0.008	-	0.044
Nitrite as Nitrogen	mg/L	-	-	<0.001	-	-	-
Nitrate+Nitrite as Nitrogen	mg/L	-	<0.006	-	<0.008	-	0.044
Total Kjeldahl Nitrogen	mg/L	-	5.95	-	0.31	-	7.78
Phosphorus, Total	mg/L	-	0.045	<0.30	0.018	-	0.014
Phosphorus, Total Dissolved	mg/L	-	0.018	-	0.008	-	0.011
Orthophosphate (PO ₄ -P)	mg/L	-	<0.001	-	0.003	-	<0.001
Chlorophylla	µg/L	-	-	-	1.68 ^d	1.27 ^d	-
Cyanides							
Cyanide, Total	µg/L	-	4	-	-	-	1
Total Metals							
Aluminum (Al)	µg/L	-	20.5	<200	6.9	-	1.9
Antimony (Sb)	µg/L	-	<0.15	<200	0.3	-	<0.03
Arsenic (As)	µg/L	-	3.8	0.5	0.7	-	2.84
Barium (Ba)	µg/L	-	222	1	15.1	-	133
Beryllium (Be)	µg/L	-	2	<5	<0.1	-	<0.2
Bismuth (Bi)	µg/L	-	<0.25	<100	<0.1	-	<0.05
Boron (B)	µg/L	-	-	<100	-	-	-
Cadmium (Cd)	µg/L	-	<0.5	<0.2	0.2	-	<0.1
Cesium (Cs)	µg/L	-	<0.5	-	<0.1	-	<0.1
Chromium (Cr)	µg/L	-	20.2	<15	<2	-	12.6
Cobalt (Co)	µg/L	-	4.7	<15	<0.1	-	0.8
Copper (Cu)	µg/L	-	3	<10	2.6	-	17.8
Iron (Fe)	µg/L	-	<50	62	113	-	660
Lead (Pb)	µg/L	-	<0.25	<1	0.4	-	1.37
Lithium (Li)	µg/L	-	23.8	<15	1	-	10.8
Magnesium (Mg)	µg/L	-	-	-	-	-	-
Manganese (Mn)	µg/L	-	1520	7	10.8	-	368
Mercury (Hg)	µg/L	-	<0.05	<0.05	0.02	-	<0.01
Molybdenum (Mo)	µg/L	-	1.1	<30	0.4	-	0.78
Nickel (Ni)	µg/L	-	18.1	<20	4.1	-	8.4
Potassium (K)	µg/L	-	-	-	-	-	-
Rubidium (Rb)	µg/L	-	-	-	-	-	-
Selenium (Se)	µg/L	-	0.9	<0.5	<10	-	<0.1
Silicon (Si)	µg/L	-	-	113	-	-	-
Silver (Ag)	µg/L	-	<0.5	<15	<0.1	-	<0.1
Sodium (Na)	µg/L	-	-	-	-	-	-
Strontium (Sr)	µg/L	-	1260	54	65	-	549
Thallium (Tl)	µg/L	-	<0.25	<100	<0.1	-	<0.05
Tin (Sn)	µg/L	-	-	<300	-	-	-
Titanium (Ti)	µg/L	-	2.9	<10	0.7	-	0.9
Tungsten (W)	µg/L	-	-	<100	-	-	-
Uranium (U)	µg/L	-	1.65	-	0.1	-	0.59
Vanadium (V)	µg/L	-	6.1	<30	<0.1	-	3.2
Zinc (Zn)	µg/L	-	<4	<5	123	-	<0.8
Dissolved Metals							
Aluminum (Al)	µg/L	-	-	-	-	-	-
Antimony (Sb)	µg/L	-	-	-	-	-	-
Arsenic (As)	µg/L	-	-	-	-	-	-
Barium (Ba)	µg/L	-	-	-	-	-	-
Beryllium (Be)	µg/L	-	-	-	-	-	-
Boron (B)	µg/L	-	-	-	-	-	-
Cadmium (Cd)	µg/L	-	-	-	-	-	-
Calcium (Ca)	µg/L	-	-	-	-	-	-
Chromium (Cr)	µg/L	-	-	-	-	-	-
Cobalt (Co)	µg/L	-	-	-	-	-	-
Copper (Cu)	µg/L	-	-	-	-	-	-
Iron (Fe)	µg/L	-	-	-	-	-	-
Lead (Pb)	µg/L	-	-	-	-	-	-
Lithium (Li)	µg/L	-	-	-	-	-	-
Magnesium (Mg)	µg/L	-	-	-	-	-	-
Manganese (Mn)	µg/L	-	-	-	-	-	-
Mercury (Hg)	µg/L	-	-	-	-	-	-
Molybdenum (Mo)	µg/L	-	-	-	-	-	-
Nickel (Ni)	µg/L	-	-	-	-	-	-
Potassium (K)	µg/L	-	-	-	-	-	-
Selenium (Se)	µg/L	-	-	-	-	-	-
Silver (Ag)	µg/L	-	-	-	-	-	-
Sodium (Na)	µg/L	-	-	-	-	-	-
Strontium (Sr)	µg/L	-	-	-	-	-	-
Thallium (Tl)	µg/L	-	-	-	-	-	-
Tin (Sn)	µg/L	-	-	-	-	-	-
Titanium (Ti)	µg/L	-	-	-	-	-	-
Uranium (U)	µg/L	-	-	-	-	-	-
Vanadium (V)	µg/L	-	-	-	-	-	-
Zinc (Zn)	µg/L	-	-	-	-	-	-
Organic Compounds							
Oil and Grease	µg/L	-	-	-	-	-	-
Phenols	µg/L	-	<1	-	9	-	<1
Benzene	µg/L	-	-	-	<0.5	-	-
Ethylbenzene	µg/L	-	-	-	<0.5	-	-
Toluene	µg/L	-	-	-	<0.5	-	-
Xylenes	µg/L	-	-	-	<0.5	-	-
F1 (C6-C10)	µg/L	-	-	-	-	-	-
F1 -BTEX	µg/L	-	-	-	-	-	-
F2 (C10-C16)	µg/L	-	-	-	-	-	-
F3 (C16-C34)	µg/L	-	-	-	-	-	-
F4 (C34-C50)	µg/L	-	-	-	-	-	-
Total Volatiles	µg/L	-	-	-	<100	-	-
Total Extractables	µg/L	-	-	-	<50	-	-
Other							
Biological Oxygen Demand (BOD)	mg/L	-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL	-	-	-	-	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre, NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Station MB-01 in Dillon 1994.

d = Samples for chlorophylla were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-6: Water Quality in Lakes of the Peninsula Basin E, Meliadine Gold Project, 1995 to 2009

Waterbody		Eg ^b
Date Sampled	Units	11-Aug-04
GPS Coordinates (NAD83, Zone 15V)		-
Source ^a		Dillon 1994
Field Measurements		
Water Temperature	°C	9.9
Dissolved Oxygen	mg/L	-
pH	pH	7.1
Specific Conductivity	µS/cm	-
Secchi Disk Depth	m	-
Ice Depth	m	-
Total Lake Depth	m	-
Conventional Parameters (Laboratory-Measured)		
pH	pH	6.84
Specific Conductivity	µS/cm	46.6
Total Dissolved Solids	mg/L	29
Total Dissolved Solids (Calculated)	mg/L	-
Total Alkalinity	mg CaCO ₃ /L	20.1
Total Hardness	mg CaCO ₃ /L	19.8
Total Suspended Solids	mg/L	<1
Turbidity	NTU	0.58
Major Ions		
Bicarbonate	mg/L	-
Bromide	mg/L	-
Calcium	mg/L	6.71
Carbonate	mg/L	-
Chloride	mg/L	1.8
Fluoride	mg/L	0.03
Hydroxide	mg/L	-
Magnesium	mg/L	0.73
Potassium	mg/L	0.5
Reactive Silica (as SiO ₂)	mg/L	-
Silicate (SiO ₂)	mg/L	<1.0
Sodium	mg/L	1.1
Sulfate	mg/L	1.4
Ion Balance	%	-
Organic/Inorganic Carbon		
Total Carbon	mg/L	-
Total Organic Carbon	mg/L	-
Dissolved Organic Carbon	mg/L	-
Total Inorganic Carbon	mg/L	-
Nutrients and Chlorophyll a		
Total Ammonia as Nitrogen	mg/L	-
Nitrate as Nitrogen	mg/L	0.006
Nitrite as Nitrogen	mg/L	0.001
Nitrate+Nitrite as Nitrogen	mg/L	-
Total Kjeldahl Nitrogen	mg/L	-
Phosphorus, Total	mg/L	<0.30
Phosphorus, Total Dissolved	mg/L	-
Orthophosphate (PO ₄ -P)	mg/L	-
Chlorophyll a	µg/L	-
Cyanides		
Cyanide, Total	µg/L	-
Total Metals		
Aluminum (Al)	µg/L	<200
Antimony (Sb)	µg/L	<200
Arsenic (As)	µg/L	0.4
Barium (Ba)	µg/L	<10
Beryllium (Be)	µg/L	<5
Bismuth (Bi)	µg/L	<100
Boron (B)	µg/L	<100
Cadmium (Cd)	µg/L	<0.2
Cesium (Cs)	µg/L	-
Chromium (Cr)	µg/L	<15
Cobalt (Co)	µg/L	<15
Copper (Cu)	µg/L	<10
Iron (Fe)	µg/L	74
Lead (Pb)	µg/L	<1
Lithium (Li)	µg/L	<15
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	5
Mercury (Hg)	µg/L	<0.05
Molybdenum (Mo)	µg/L	<30
Nickel (Ni)	µg/L	<20
Potassium (K)	µg/L	-
Selenium (Se)	µg/L	<5
Silicon (Si)	µg/L	178
Silver (Ag)	µg/L	<15
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	31
Thallium (Tl)	µg/L	<100
Tin (Sn)	µg/L	<300
Titanium (Ti)	µg/L	<10
Tungsten (W)	µg/L	<100
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	<30
Zinc (Zn)	µg/L	<5
Dissolved Metals		
Aluminum (Al)	µg/L	-
Antimony (Sb)	µg/L	-
Arsenic (As)	µg/L	-
Barium (Ba)	µg/L	-
Beryllium (Be)	µg/L	-
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	-
Calcium (Ca)	µg/L	-
Chromium (Cr)	µg/L	-
Cobalt (Co)	µg/L	-
Copper (Cu)	µg/L	-
Iron (Fe)	µg/L	-
Lead (Pb)	µg/L	-
Lithium (Li)	µg/L	-
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	-
Mercury (Hg)	µg/L	-
Molybdenum (Mo)	µg/L	-
Nickel (Ni)	µg/L	-
Potassium (K)	µg/L	-
Selenium (Se)	µg/L	-
Silver (Ag)	µg/L	-
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	-
Thallium (Tl)	µg/L	-
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	-
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	-
Zinc (Zn)	µg/L	-
Organic Compounds		
Oil and Grease	µg/L	-
Phenols	µg/L	-
Benzene	µg/L	-
Ethylbenzene	µg/L	-
Toluene	µg/L	-
Xylenes	µg/L	-
F1 (C6-C10)	µg/L	-
F1 -BTEX	µg/L	-
F2 (C10-C16)	µg/L	-
F3 (C16-C34)	µg/L	-
F4 (C34-C50)	µg/L	-
Total Volatiles	µg/L	-
Total Extractables	µg/L	-
Other		
Biological Oxygen Demand (BOD)	mg/L	-
Fecal Coliforms	CFU/100 mL	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

b = Station MB-02 in Dillon 1994.

Table B2-7: Water Quality in Lakes of the Basin G, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	G2	
			24-Jul-97	22-Aug-97
GPS Coordinates (NAD83, Zone 15V)†			0538561, 6990813	0538593, 6990707
Source‡			RL&L 1998	RL&L 1998
Field Measurements				
Water Temperature	°C		17.4	16.0
Dissolved Oxygen	mg/L		9.9	10.3
pH	pH		7.83	7.91
Specific Conductivity	µS/cm		67.4	74.5
Secchi Disk Depth	m		2.3	2.1
Ion Depth	m		-	-
Total Lake Depth	m		2.3	2.1
Conventional Parameters (Laboratory-Measured)				
pH	pH		7.47	-
Specific Conductivity	µS/cm		56.6	-
Total Dissolved Solids	mg/L		44	-
Total Dissolved Solids (Calculated)	mg/L		-	-
Total Alkalinity	mg CaCO ₃ /L		23.7	-
Total Hardness	mg CaCO ₃ /L		21.5	-
Total Suspended Solids	mg/L		<3	-
Turbidity	NTU		0.5	-
Major Ions				
Bicarbonate	mg/L		23.7	-
Bromide	mg/L		-	-
Calcium	mg/L		7.2	-
Carbonate	mg/L		<0.3	-
Chloride	mg/L		2.31	-
Fluoride	mg/L		-	-
Hydroxide	mg/L		-	-
Magnesium	mg/L		0.84	-
Potassium	mg/L		0.755	-
Reactive Silica (as SiO ₂)	mg/L		0.501	-
Sodium	mg/L		1.53	-
Sulphate	mg/L		<3	-
Ion Balance	%		-	-
Organic/Inorganic Carbon				
Total Carbon	mg/L		10.0	-
Total Organic Carbon	mg/L		3.8	-
Dissolved Organic Carbon	mg/L		-	-
Total Inorganic Carbon	mg/L		6.0	-
Total Inorganic Carbon (Calculated)	mg/L		-	-
Nutrients and Chlorophyll a				
Total Ammonia as Nitrogen	mg/L		0.012	-
Nitrate as Nitrogen	mg/L		<0.008	-
Nitrite as Nitrogen	mg/L		-	-
Nitrate+Nitrite as Nitrogen	mg/L		<0.008	-
Total Kjeldahl Nitrogen	mg/L		0.34	-
Phosphorus, Total	mg/L		0.004	-
Phosphorus, Total Dissolved	mg/L		<0.002	-
Orthophosphate (PO ₄ -P)	mg/L		<0.002	-
Chlorophyll a	µg/L		1.01 ^a	1.36 ^b
Cyanides				
Cyanide, Total	µg/L		-	-
Total Metals				
Aluminum (Al)	µg/L		<0.5	-
Antimony (Sb)	µg/L		0.2	-
Arsenic (As)	µg/L		0.9	-
Barium (Ba)	µg/L		12.3	-
Beryllium (Be)	µg/L		<0.1	-
Bismuth (Bi)	µg/L		<0.1	-
Boron (B)	µg/L		-	-
Cadmium (Cd)	µg/L		<0.1	-
Caesium (Cs)	µg/L		<0.1	-
Chromium (Cr)	µg/L		<2	-
Cobalt (Co)	µg/L		<0.1	-
Copper (Cu)	µg/L		1.1	-
Iron (Fe)	µg/L		67	-
Lead (Pb)	µg/L		<0.2	-
Lithium (Li)	µg/L		1.0	-
Magnesium (Mg)	µg/L		-	-
Manganese (Mn)	µg/L		1.9	-
Mercury (Hg)	µg/L		<0.01	-
Molybdenum (Mo)	µg/L		0.1	-
Nickel (Ni)	µg/L		0.5	-
Potassium (K)	µg/L		-	-
Rubidium (Rb)	µg/L		-	-
Selenium (Se)	µg/L		<10	-
Silver (Ag)	µg/L		<0.1	-
Sodium (Na)	µg/L		-	-
Strontium (Sr)	µg/L		42.2	-
Thallium (Tl)	µg/L		<0.1	-
Tin (Sn)	µg/L		-	-
Titanium (Ti)	µg/L		<0.1	-
Uranium (U)	µg/L		<0.1	-
Vanadium (V)	µg/L		<0.1	-
Zinc (Zn)	µg/L		<5	-
Dissolved Metals				
Aluminum (Al)	µg/L		-	-
Antimony (Sb)	µg/L		-	-
Arsenic (As)	µg/L		-	-
Barium (Ba)	µg/L		-	-
Beryllium (Be)	µg/L		-	-
Boron (B)	µg/L		-	-
Cadmium (Cd)	µg/L		-	-
Calcium (Ca)	µg/L		-	-
Chromium (Cr)	µg/L		-	-
Cobalt (Co)	µg/L		-	-
Copper (Cu)	µg/L		-	-
Iron (Fe)	µg/L		-	-
Lead (Pb)	µg/L		-	-
Lithium (Li)	µg/L		-	-
Magnesium (Mg)	µg/L		-	-
Manganese (Mn)	µg/L		-	-
Mercury (Hg)-Dissolved	µg/L		-	-
Molybdenum (Mo)	µg/L		-	-
Nickel (Ni)	µg/L		-	-
Potassium (K)	µg/L		-	-
Selenium (Se)	µg/L		-	-
Silver (Ag)	µg/L		-	-
Sodium (Na)	µg/L		-	-
Strontium (Sr)	µg/L		-	-
Thallium (Tl)	µg/L		-	-
Tin (Sn)	µg/L		-	-
Titanium (Ti)	µg/L		-	-
Uranium (U)	µg/L		-	-
Vanadium (V)	µg/L		-	-
Zinc (Zn)	µg/L		-	-
Organic Compounds				
Oil and Grease	µg/L		-	-
Phenols	µg/L		<2	-
Benzene	µg/L		<0.5	-
Ethylbenzene	µg/L		<0.5	-
Toluene	µg/L		<0.5	-
Xylenes	µg/L		<0.5	-
F1 (C8-C10)	µg/L		-	-
F1 -BTEX	µg/L		-	-
F2 (C10-C16)	µg/L		-	-
F3 (C16-C34)	µg/L		-	-
F4 (C34-C50)	µg/L		-	-
Total Volatiles	µg/L		<100	-
Total Extractables	µg/L		79	-
Other				
Biological Oxygen Demand (BOD)	mg/L		-	-
Fecal Coliforms	CFU/100 mL		-	-

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available
 Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-8: Water Quality in Little Meliadine Lake, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	LML		
			24-Apr-98	29-Jul-98	2-Sep-98
GPS Coordinates (NAD83, Zone 15V) ^a	Source ^b	RL&L 1999			
		0537712, 6978225	0537792, 6978201	0537790, 6978194	
Field Measurements					
Water Temperature	°C	0.4	13.8	10.4	
Dissolved Oxygen ^c	mg/L	14.6	9.6	10.7	
pH	pH	6.83	6.35	6.71	
Specific Conductivity	µS/cm	116.1	76.2	69.8	
Secchi Disk Depth	m		6.6	7.5	
Ion Depth	m	1.5			
Total Lake Depth	m	14.4	14.5	14.8	
Conventional Parameters (Laboratory-Measured)					
pH	pH	7	7.3	-	
Specific Conductivity	µS/cm	90.9	64.2	-	
Total Dissolved Solids	mg/L	42	28	-	
Total Dissolved Solids (Calculated)	mg/L	-	-	-	
Total Alkalinity	mg CaCO ₃ /L	25	18	-	
Total Hardness	mg CaCO ₃ /L	26	17	-	
Total Suspended Solids	mg/L	<2	<2	-	
Turbidity	NTU	<0.1	0.2	-	
Major Ions					
Bicarbonate	mg/L	31	22	-	
Bromide	mg/L	-	-	-	
Calcium	mg/L	8.16	5.4	-	
Carbonate	mg/L	<1	<1	-	
Chloride	mg/L	7.98	5.3	-	
Fluoride	mg/L	-	-	-	
Hydroxide	mg/L	<1	<1	-	
Magnesium	mg/L	1.32	0.78	-	
Potassium	mg/L	1.24	0.81	-	
Resc. Silica (as SiO ₂)	mg/L	0.7	0.6	-	
Sodium	mg/L	5.1	3	-	
Sulphate	mg/L	2.92	1.91	-	
Ion Balance	%	97	89	-	
Organic/Inorganic Carbon					
Total Carbon	mg/L	10	7.1	-	
Total Organic Carbon	mg/L	3.8	3.2	-	
Dissolved Organic Carbon	mg/L	-	-	-	
Total Inorganic Carbon	mg/L	6.3	3.9	-	
Nutrients and Chlorophyll a					
Total Ammonia as Nitrogen	mg/L	0.02	<0.005	-	
Nitrate as Nitrogen	mg/L	0.014	<0.006	-	
Nitrite as Nitrogen	mg/L	-	-	-	
Nitrate-Nitrite as Nitrogen	mg/L	0.014	<0.006	-	
Total Kjeldahl Nitrogen	mg/L	0.17	0.36	-	
Phosphorus, Total	mg/L	0.003	0.005	-	
Phosphorus, Total Dissolved	mg/L	0.003	0.004	-	
Orthophosphate (PO ₄ -P)	mg/L	<0.001	<0.001	-	
Chlorophyll a	µg/L	-	0.57 ^c	0.90 ^c	
Cyanides					
Cyanide, Total	µg/L	<1	<1	-	
Total Metals					
Aluminum (Al)	µg/L	2.8	2.6	-	
Antimony (Sb)	µg/L	<0.03	0.13	-	
Arsenic (As)	µg/L	0.15	0.23	-	
Barium (Ba)	µg/L	10.3	8.53	-	
Beryllium (Be)	µg/L	<0.2	<0.2	-	
Bismuth (Bi)	µg/L	<0.05	<0.03	-	
Boron (B)	µg/L	-	-	-	
Cadmium (Cd)	µg/L	<0.1	0.06	-	
Cesium (Cs)	µg/L	<0.1	<0.1	-	
Chromium (Cr)	µg/L	0.24	1.76	-	
Cobalt (Co)	µg/L	<0.1	<0.1	-	
Copper (Cu)	µg/L	2.2	0.9	-	
Iron (Fe)	µg/L	20	17	-	
Lead (Pb)	µg/L	<0.05	<0.05	-	
Lithium (Li)	µg/L	0.8	<0.1	-	
Magnesium (Mg)	µg/L	-	-	-	
Manganese (Mn)	µg/L	<0.1	5.4	-	
Mercury (Hg)	µg/L	<0.01	<0.02	-	
Molybdenum (Mo)	µg/L	0.16	0.11	-	
Nickel (Ni)	µg/L	<0.1	0.71	-	
Potassium (K)	µg/L	-	-	-	
Rubidium (Rb)	µg/L	-	-	-	
Selenium (Se)	µg/L	<0.1	<0.1	-	
Silver (Ag)	µg/L	<0.1	<0.1	-	
Sodium (Na)	µg/L	-	-	-	
Strontium (Sr)	µg/L	40.6	33.2	-	
Thallium (Tl)	µg/L	<0.05	<0.03	-	
Tin (Sn)	µg/L	-	-	-	
Titanium (Ti)	µg/L	<0.1	<0.1	-	
Uranium (U)	µg/L	<0.05	<0.05	-	
Vanadium (V)	µg/L	<0.1	0.07	-	
Zinc (Zn)	µg/L	10	<0.8	-	
Dissolved Metals					
Aluminum (Al)	µg/L	-	-	-	
Antimony (Sb)	µg/L	-	-	-	
Arsenic (As)	µg/L	-	-	-	
Barium (Ba)	µg/L	-	-	-	
Beryllium (Be)	µg/L	-	-	-	
Boron (B)	µg/L	-	-	-	
Cadmium (Cd)	µg/L	-	-	-	
Calcium (Ca)	µg/L	-	-	-	
Chromium (Cr)	µg/L	-	-	-	
Cobalt (Co)	µg/L	-	-	-	
Copper (Cu)	µg/L	-	-	-	
Iron (Fe)	µg/L	-	-	-	
Lead (Pb)	µg/L	-	-	-	
Lithium (Li)	µg/L	-	-	-	
Magnesium (Mg)	µg/L	-	-	-	
Manganese (Mn)	µg/L	-	-	-	
Mercury (Hg)	µg/L	-	-	-	
Molybdenum (Mo)	µg/L	-	-	-	
Nickel (Ni)	µg/L	-	-	-	
Potassium (K)	µg/L	-	-	-	
Selenium (Se)	µg/L	-	-	-	
Silver (Ag)	µg/L	-	-	-	
Sodium (Na)	µg/L	-	-	-	
Strontium (Sr)	µg/L	-	-	-	
Thallium (Tl)	µg/L	-	-	-	
Tin (Sn)	µg/L	-	-	-	
Titanium (Ti)	µg/L	-	-	-	
Uranium (U)	µg/L	-	-	-	
Vanadium (V)	µg/L	-	-	-	
Zinc (Zn)	µg/L	-	-	-	
Organic Compounds					
Oil and Grease	µg/L	-	-	-	
Phenols	µg/L	<1	<1	-	
Benzene	µg/L	-	<0.5	-	
Ethylbenzene	µg/L	-	<0.5	-	
Toluene	µg/L	-	<0.5	-	
Xylenes	µg/L	-	<0.5	-	
F1 (C6-C10)	µg/L	-	-	-	
F1 -STEX	µg/L	-	-	-	
F2 (C10-C16)	µg/L	-	-	-	
F3 (C16-C34)	µg/L	-	-	-	
F4 (C34-C50)	µg/L	-	-	-	
Total Volatiles	µg/L	-	<100	-	
Total Extractables	µg/L	-	<50	-	
Other					
Biological Oxygen Demand (BOD)	mg/L	-	-	-	
Fecal Coliforms	CFU/100 mL	-	-	-	

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).
 Underlined values are equal to or greater than the guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2001, 2002, 2003 were corrected from 1947/27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-9: Water Quality in D12 Lake, Melladine Gold Project, 1995 to 2009

Waterbody	Units	D12	
		11-Aug-94	10-Jul-95
Date Sampled		-	-
GPS Coordinates (NAD83, Zone 15V)		-	-
Source *		Dillon 1994	Dillon 1995
Field Measurements			
Water Temperature	°C	8.4	12.5
Dissolved Oxygen	mg/L	-	8.7
pH	pH	7.1	7.76
Specific Conductivity	µS/cm	-	30.2
Secchi Disk Depth	m	-	-
Ice Depth	m	-	-
Total Lake Depth	m	-	-
Conventional Parameters (Laboratory-Measured)			
pH	pH	6.54	6.91
Specific Conductivity	µS/cm	68	53.6
Total Dissolved Solids	mg/L	43	38
Total Dissolved Solids (Calculated)	mg/L	-	-
Total Alkalinity	mg CaCO ₃ /L	29.9	-
Total Hardness	mg CaCO ₃ /L	29.2	17.7
Total Suspended Solids	mg/L	<1	-
Turbidity	NTU	0.52	0.65
Major Ions			
Bicarbonate	mg/L	-	-
Bromide	mg/L	-	-
Calcium	mg/L	8.02	5.65
Carbonate	mg/L	-	18.2
Chloride	mg/L	4.4	3.7
Fluoride	mg/L	0.05	0.06
Hydroxide	mg/L	-	-
Magnesium	mg/L	1.25	0.894
Potassium	mg/L	0.92	<2
Reactive Silica (as SiO ₂)	mg/L	-	-
Silicate (SiO ₂)	mg/L	<1.0	-
Sodium	mg/L	3.16	3.00
Sulfate	mg/L	3.4	2.9
Ion Balance	%	-	-
Organic/Inorganic Carbon			
Total Carbon	mg/L	-	-
Total Organic Carbon	mg/L	-	-
Dissolved Organic Carbon	mg/L	-	-
Total Inorganic Carbon	mg/L	-	-
Nutrients and Chlorophyll a			
Total Ammonia as Nitrogen	mg/L	-	-
Nitrate as Nitrogen	mg/L	<0.005	-
Nitrite as Nitrogen	mg/L	0.003	-
Nitrate+Nitrite as Nitrogen	mg/L	-	<0.005
Total Kjeldahl Nitrogen	mg/L	-	-
Phosphorus, Total	mg/L	<0.30	-
Phosphorus, Total Dissolved	mg/L	-	-
Orthophosphate (PO ₄ -P)	mg/L	-	-
Chlorophyll a	µg/L	-	-
Cyanides			
Cyanide, Total	µg/L	-	-
Total Metals			
Aluminum (Al)	µg/L	<200	<200
Antimony (Sb)	µg/L	<200	-
Arsenic (As)	µg/L	0.4	0.2
Barium (Ba)	µg/L	<10	<10
Beryllium (Be)	µg/L	<5	-
Bismuth (Bi)	µg/L	<10	-
Boron (B)	µg/L	<100	<100
Cadmium (Cd)	µg/L	<0.2	<0.2
Cesium (Cs)	µg/L	-	-
Chromium (Cr)	µg/L	<15	<15
Cobalt (Co)	µg/L	<15	<15
Copper (Cu)	µg/L	<10	<10
Iron (Fe)	µg/L	112	96
Lead (Pb)	µg/L	<1	<1
Lithium (Li)	µg/L	<15	-
Magnesium (Mg)	µg/L	-	-
Manganese (Mn)	µg/L	<5	<5
Mercury (Hg)	µg/L	<0.05	<0.05
Molybdenum (Mo)	µg/L	<30	<30
Nickel (Ni)	µg/L	<20	<20
Potassium (K)	µg/L	-	-
Rubidium (Rb)	µg/L	-	-
Selenium (Se)	µg/L	<0.5	<0.5
Silicon (Si)	µg/L	62	-
Silver (Ag)	µg/L	<15	<15
Sodium (Na)	µg/L	3,160	3,000
Strontium (Sr)	µg/L	42	-
Thallium (Tl)	µg/L	<100	-
Tin (Sn)	µg/L	<300	<300
Titanium (Ti)	µg/L	<10	-
Uranium (U)	µg/L	-	-
Vanadium (V)	µg/L	<30	-
Zinc (Zn)	µg/L	<5	<5
Dissolved Metals			
Aluminum (Al)	µg/L	-	-
Antimony (Sb)	µg/L	-	-
Arsenic (As)	µg/L	-	-
Barium (Ba)	µg/L	-	-
Beryllium (Be)	µg/L	-	-
Boron (B)	µg/L	-	-
Cadmium (Cd)	µg/L	-	-
Calcium (Ca)	µg/L	-	-
Chromium (Cr)	µg/L	-	-
Cobalt (Co)	µg/L	-	-
Copper (Cu)	µg/L	-	-
Iron (Fe)	µg/L	-	-
Lead (Pb)	µg/L	-	-
Lithium (Li)	µg/L	-	-
Magnesium (Mg)	µg/L	-	-
Manganese (Mn)	µg/L	-	-
Mercury (Hg)	µg/L	-	-
Molybdenum (Mo)	µg/L	-	-
Nickel (Ni)	µg/L	-	-
Potassium (K)	µg/L	-	-
Selenium (Se)	µg/L	-	-
Silver (Ag)	µg/L	-	-
Sodium (Na)	µg/L	-	-
Strontium (Sr)	µg/L	-	-
Thallium (Tl)	µg/L	-	-
Tin (Sn)	µg/L	-	-
Titanium (Ti)	µg/L	-	-
Uranium (U)	µg/L	-	-
Vanadium (V)	µg/L	-	-
Zinc (Zn)	µg/L	-	-
Organic Compounds			
Oil and Grease	µg/L	-	-
Phenols	µg/L	-	-
Benzene	µg/L	-	-
Ethylbenzene	µg/L	-	-
Toluene	µg/L	-	-
Xylenes	µg/L	-	-
F1 (C6-C10)	µg/L	-	-
F1-BTEX	µg/L	-	-
F2 (>C10-C16)	µg/L	-	-
F3 (C10-C34)	µg/L	-	-
F4 (C34-C50)	µg/L	-	-
Total Volatiles	µg/L	-	-
Total Extractables	µg/L	-	-
Other			
Biological Oxygen Demand (BOD)	mg/L	-	-
Fecal Coliforms	CFU/100 mL	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2009 = RLB (1998, 1999, 2000, 2001); 2007 = Complex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

Table B2-10: Water Quality in Control Lake, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	Control						
			26-Jul-98	19-Jul-99	19-Jul-00	18-Jul-07	7-Oct-07	18-Jul-08	28-Apr-09
GPS Coordinates (NAD83, Zone 15V) ^a			0534652, 6986742	0534652, 6986741	0534819, 6986453	0535001, 6986333	0535001, 6986333	0534632, 6986546	0534632, 6986546
Source ^b			RL&L 1999	RL&L 2000	R&L 2001	Comaplex	Comaplex	Golder	Golder
Field Measurements									
Water Temperature	°C		14.7	12.4	14.6	16.4	0.2	14.12	1.05
Dissolved Oxygen	mg/L		10.5	11.4	-	-	-	12.47	8.76
pH			6.9	7.24	7.70	7.83	7.92	-	6.26
Specific Conductivity	µS/cm		79.7	73.1	83.5	-	-	64	175
Secchi Disk Depth	m		4.3	3.0	3.5	-	-	1.2	-
Ice Depth	m		-	-	-	-	-	-	1.84
Total Lake Depth	m		4.3	4.2	3.5	-	-	2.9	3.01
Conventional Parameters (Laboratory-Measured)									
pH			7.6	7.2	7.4	7.6	7.5	7.5	7.65
Specific Conductivity	µS/cm		67.5	71.6	79.6	60.3	76.5	68.2	193
Total Dissolved Solids	mg/L		31	21	37	-	-	46	-
Total Dissolved Solids (Calculated)	mg/L		-	-	-	35	38	35	99.3
Total Alkalinity	mg CaCO ₃ /L		21	22	24	21	22	22	62.4
Total Hardness	mg CaCO ₃ /L		21	24	26	17	24	22	69.1
Total Suspended Solids	mg/L		<2	<3	<3	-	5	<3	<3.0
Total Volatile Solids	mg/L		-	-	-	-	-	-	21
Turbidity	NTU		0.2	0.39	0.2	-	1.6	-	-
Major Ions									
Bicarbonate	mg/L		26	27	30	26	27	26	76.2
Bromide	mg/L		-	-	-	-	-	-	-
Calcium	mg/L		7.0	8.09	9.27	6.70	8.20	7.19	21.6
Carbonate	mg/L		<1	<1	<5	<5	<5	<5	<5.0
Chloride	mg/L		5.2	5.17	6	6	7	6	18.1
Fluoride	mg/L		-	-	-	-	-	-	-
Hydroxide	mg/L		<1	<1	<5	<5	<5	<5	<5.0
Magnesium	mg/L		0.75	0.94	1.01	0.80	0.80	0.778	2.59
Potassium	mg/L		0.89	0.97	1.030	1.000	1.200	0.81	2.36
Reactive Silica (as SiO ₂)	mg/L		0.2	0.4	<0.1	-	0.3	-	-
Silicate (SiO ₂)	mg/L		-	-	-	-	-	-	-
Sodium	mg/L		2.8	3.5	3.69	5	4	3.3	9.17
Sulphate	mg/L		1.3	2.08	2.58	3.90	3.60	2.2	4.71
Ion Balance	%		93	104	92.5	Low EC	Low EC	Low EC	103
Organic/Inorganic Carbon									
Total Carbon	mg/L		9	9.2	9.0	-	9.0	8	-
Total Organic Carbon	mg/L		3.7	4.0	3.8	-	-	4	-
Dissolved Organic Carbon	mg/L		-	-	-	-	-	3.7	-
Total Inorganic Carbon	mg/L		5.0	5.2	5.2	-	5	-	-
Total Inorganic Carbon (Calculated)	mg/L		-	-	-	-	-	4	-
Nutrients and Chlorophyll a									
Total Ammonia as Nitrogen	mg/L		0.011	<0.005	<0.005	-	<0.05	<0.05	0.075
Nitrate as Nitrogen	mg/L		<0.006	<0.006	<0.006	<0.1	<0.1	<0.1	<0.050
Nitrite as Nitrogen	mg/L		-	-	-	<0.05	<0.05	<0.05	<0.050
Nitrate+Nitrite as Nitrogen	mg/L		<0.006	<0.006	<0.006	<0.1	<0.1	<0.1	<0.071
Total Kjeldahl Nitrogen	mg/L		0.40	0.31	0.21	-	0.30	0.3	0.73
Phosphorus, Total	mg/L		0.006	0.003	0.045	-	<0.02	0.009	0.0057
Phosphorus, Total Dissolved	mg/L		0.006	0.002	0.012	-	<0.02	0.003	0.0056
Orthophosphate (PO ₄ -P)	mg/L		<0.001	<0.001	<0.001	-	<0.01	<0.001	<0.0010
Chlorophyll a	µg/L		1.52 ^c	0.44	0.75	-	-	<1	-
Cyanides									
Cyanide, Total	µg/L		1	<2	2	-	-	<2	<2
Total Metals									
Aluminum (Al)	µg/L		1.6	4.6	5.1	20	-	3.6	<5.0
Antimony (Sb)	µg/L		0.14	<0.03	0.21	<0.4	-	<0.03	<0.20
Arsenic (As)	µg/L		0.46	0.50	0.23	<0.4	-	0.39	1.16
Barium (Ba)	µg/L		7.32	7.45	9.57	8	-	6.91	24.1
Beryllium (Be)	µg/L		<0.2	<0.2	<0.2	<1	-	<0.2	<1.0
Bismuth (Bi)	µg/L		<0.03	<0.03	-	-	-	-	<1.0
Boron (B)	µg/L		-	-	4	<50	-	4	<50
Cadmium (Cd)	µg/L		0.2	<0.02	<0.05	<0.2	-	<0.05	<0.010
Cesium (Cs)	µg/L		<0.1	<0.1	-	-	-	-	21.6
Chromium (Cr)	µg/L		2.28	0.41	0.37	<5	-	<0.06	2.2
Cobalt (Co)	µg/L		<0.1	<0.1	<0.1	<2	-	<0.1	<0.3
Copper (Cu)	µg/L		0.9	1.3	1.9	2	-	0.8	1.7
Iron (Fe)	µg/L		<5	28	84	49	-	24	-
Lead (Pb)	µg/L		<0.05	0.12	0.50	0.40	-	<0.05	<0.50
Lithium (Li)	µg/L		<0.1	0.6	-	<10	-	-	<5.0
Magnesium (Mg)	µg/L		-	-	-	-	-	-	-
Manganese (Mn)	µg/L		0.8	3.3	5.4	7	-	3	4.2
Mercury (Hg)	µg/L		<0.02	<0.02	<0.02	<0.2	-	<0.02	<0.020
Molybdenum (Mo)	µg/L		0.15	0.16	0.13	<5	-	0.12	<1.0
Nickel (Ni)	µg/L		0.76	0.76	1.00	<2	-	0.4	1.3
Potassium (K)	µg/L		-	-	-	-	-	-	-
Rubidium (Rb)	µg/L		-	-	-	-	-	-	-
Selenium (Se)	µg/L		<0.1	0.1	<0.1	0.9	-	<0.1	<1.0
Silver (Ag)	µg/L		<0.1	<0.1	<0.1	<0.4	-	<0.1	<0.020
Sodium (Na)	µg/L		-	-	-	-	-	-	-
Strontium (Sr)	µg/L		27.9	26.7	29.4	-	-	24.5	75.9
Thallium (Tl)	µg/L		<0.03	<0.03	-	<0.1	-	<0.03	<0.20
Tin (Sn)	µg/L		-	-	-	<50	-	-	<0.50
Titanium (Ti)	µg/L		<0.1	0.2	-	<1	-	-	-
Uranium (U)	µg/L		<0.05	<0.05	<0.05	<0.1	-	<0.05	0.021
Vanadium (V)	µg/L		0.1	0.07	0.10	<1	-	0.14	<1.0
Zinc (Zn)	µg/L		<0.8	4.2	5.7	10	-	<0.8	<5.0
Dissolved Metals									
Aluminum (Al)	µg/L		-	-	-	-	20	2.1	<5.0
Antimony (Sb)	µg/L		-	-	-	-	1.5	<0.03	<0.5
Arsenic (As)	µg/L		-	-	-	-	0.5	0.37	1.12
Barium (Ba)	µg/L		-	-	-	-	8	6.68	-
Beryllium (Be)	µg/L		-	-	-	-	<1	<0.2	<1.0
Boron (B)	µg/L		-	-	-	-	<50	3	-
Cadmium (Cd)	µg/L		-	-	-	-	0.2	<0.05	<0.010
Calcium (Ca)	µg/L		-	-	-	-	7,020	23,600	-
Chromium (Cr)	µg/L		-	-	-	-	<5	<0.06	3.1
Cobalt (Co)	µg/L		-	-	-	-	<2	<0.1	<0.30
Copper (Cu)	µg/L		-	-	-	-	2	0.8	1.6
Iron (Fe)	µg/L		-	-	-	-	44	9	-
Lead (Pb)	µg/L		-	-	-	-	0.80	0.1	<0.50
Lithium (Li)	µg/L		-	-	-	-	<3	-	<5.0
Magnesium (Mg)	µg/L		-	-	-	-	-	765	2,460
Manganese (Mn)	µg/L		-	-	-	-	8	0.6	4.24
Mercury (Hg)	µg/L		-	-	-	-	<0.1	<0.02	<0.020
Molybdenum (Mo)	µg/L		-	-	-	-	<5	0.12	<1.0
Nickel (Ni)	µg/L		-	-	-	-	<2	0.4	1.3
Potassium (K)	µg/L		-	-	-	-	-	790	2,470
Selenium (Se)	µg/L		-	-	-	-	<0.4	<0.1	<1.0
Silver (Ag)	µg/L		-	-	-	-	<0.1	<0.1	<0.020
Sodium (Na)	µg/L		-	-	-	-	-	3,250	10,500
Strontium (Sr)	µg/L		-	-	-	-	-	24	-
Thallium (Tl)	µg/L		-	-	-	-	<0.1	<0.03	<0.20
Tin (Sn)	µg/L		-	-	-	-	<50	-	<0.50
Titanium (Ti)	µg/L		-	-	-	-	<1	-	-
Uranium (U)	µg/L		-	-	-	-	<0.1	<0.05	<0.20
Vanadium (V)	µg/L		-	-	-	-	<1	0.12	<1.0
Zinc (Zn)	µg/L		-	-	-	-	13	1.1	-
Organic Compounds									
Oil and Grease	µg/L		-	-	-	-	-	-	-
Phenols	µg/L		2	2	<1	-	-	-	-
Benzene	µg/L		<0.5	-	<0.5	-	-	-	-
Ethylbenzene	µg/L		<0.5	-	<0.5	-	-	-	-
Toluene	µg/L		<0.5	-	<0.5	-	-	-	-
Xylenes	µg/L		<0.5	-	<0.5	-	-	-	-
F1 (C6-C10)	µg/L		-	-	-	-	-	-	-
F1 -BTEX	µg/L		-	-	-	-	-	-	-
F2 (>C10-C16)	µg/L		-	-	-	-	-	-	-
F3 (C16-C34)	µg/L		-	-	-	-	-	-	-
F4 (C34-C50)	µg/L		-	-	-	-	-	-	-
Total Volatiles	µg/L		<100	-	<100	-	-	-	-
Total Extractables	µg/L		<50	-	<50	-	-	-	-
Other									
Biological Oxygen Demand (BOD)	mg/L		-	-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL		-	-	-	-	-	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSeimens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-11: Water Quality in Peter Lake, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	PL		
			24-Apr-98	28-Jul-98	28-Jul-98 (dup)
GPS Coordinates (NAD83, Zone 15V) ^a			0509566, 6993400	0509567, 6993458	0509567, 6993458
Source ^b			RL&L 1999	RL&L 1999	RL&L 1999
Field Measurements					
Water Temperature	°C		0.8	11.7	11.7
Dissolved Oxygen	mg/L		17.3	12.0	12.0
pH			6.50	-	-
Specific Conductivity	µS/cm		69	52	52
Secchi Disk Depth	m		6.5	7.5	7.5
Ice Depth	m		2.4	-	-
Total Lake Depth	m		17.4	18.8	18.8
Conventional Parameters (Laboratory-Measured)					
pH			6.6	7.1	7.0
Specific Conductivity	µS/cm		44.5	37.3	36.6
Total Dissolved Solids	mg/L		20	16	16
Total Dissolved Solids (Calculated)	mg/L		-	-	-
Total Alkalinity	mg CaCO ₃ /L		11	9	9
Total Hardness	mg CaCO ₃ /L		12	10	10
Total Suspended Solids	mg/L		<2	<2	<2
Turbidity	NTU		<0.1	0.1	0.1
Major Ions					
Bicarbonate	mg/L		13	11	11
Bromide	mg/L		-	-	-
Calcium	mg/L		3.5	3.12	3.12
Carbonate	mg/L		<1	<1	<1
Chloride	mg/L		3.5	2.72	2.72
Fluoride	mg/L		-	-	-
Hydroxide	mg/L		<1	<1	<1
Magnesium	mg/L		0.79	0.59	0.59
Potassium	mg/L		0.84	0.66	0.66
Reactive Silica (as SiO ₂)	mg/L		0.4	0.3	0.3
Sodium	mg/L		2.7	2.0	2.0
Sulphate	mg/L		2.47	1.84	1.83
Ion Balance	%		105	105	105
Organic/Inorganic Carbon					
Total Carbon	mg/L		7	4.6	4.5
Total Organic Carbon	mg/L		2.3	2.8	2.6
Dissolved Organic Carbon	mg/L		-	-	-
Total Inorganic Carbon	mg/L		3.5	1.9	1.9
Nutrients and Chlorophyll a					
Total Ammonia as Nitrogen	mg/L		0.012	<0.005	<0.005
Nitrate as Nitrogen	mg/L		<0.006	<0.006	<0.006
Nitrite as Nitrogen	mg/L		-	-	-
Nitrate+Nitrite as Nitrogen	mg/L		<0.006	<0.006	<0.006
Total Kjeldahl Nitrogen	mg/L		0.17	0.33	0.30
Phosphorus, Total	mg/L		0.003	0.005	0.007
Phosphorus, Total Dissolved	mg/L		0.002	0.003	0.002
Orthophosphate (PO ₄ -P)	mg/L		<0.001	<0.001	<0.001
Chlorophyll a	µg/L		-	0.30 ^c	-
Cyanides					
Cyanide, Total	µg/L		<1	<1	<1
Total Metals					
Aluminum (Al)	µg/L		4.7	2.6	1.9
Antimony (Sb)	µg/L		<0.03	0.20	0.10
Arsenic (As)	µg/L		<0.03	0.08	0.06
Barium (Ba)	µg/L		9.6	8.88	8.84
Beryllium (Be)	µg/L		<0.2	<0.2	<0.2
Bismuth (Bi)	µg/L		<0.05	<0.03	<0.03
Boron (B)	µg/L		-	-	-
Cadmium (Cd)	µg/L		<0.1	0.07	0.06
Cesium (Cs)	µg/L		<0.1	<0.1	<0.1
Chromium (Cr)	µg/L		0.28	0.92	0.98
Cobalt (Co)	µg/L		<0.1	<0.1	<0.1
Copper (Cu)	µg/L		3.7	0.8	0.8
Iron (Fe)	µg/L		20	6	7
Lead (Pb)	µg/L		<0.05	<0.05	<0.05
Lithium (Li)	µg/L		0.6	<0.1	<0.1
Magnesium (Mg)	µg/L		-	-	-
Manganese (Mn)	µg/L		<0.1	2.0	1.5
Mercury (Hg)	µg/L		<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L		0.07	<0.06	<0.06
Nickel (Ni)	µg/L		<0.1	0.59	0.53
Potassium (K)	µg/L		-	-	-
Rubidium (Rb)	µg/L		-	-	-
Selenium (Se)	µg/L		<0.1	<0.1	<0.1
Silver (Ag)	µg/L		<0.1	<0.1	<0.1
Sodium (Na)	µg/L		-	-	-
Strontium (Sr)	µg/L		20.1	17.4	17.4
Thallium (Tl)	µg/L		<0.05	<0.03	<0.03
Tin (Sn)	µg/L		-	-	-
Titanium (Ti)	µg/L		<0.1	<0.1	<0.1
Uranium (U)	µg/L		<0.05	<0.05	<0.05
Vanadium (V)	µg/L		<0.1	<0.05	<0.05
Zinc (Zn)	µg/L		20	0.9	<0.8
Organic Compounds					
Oil and Grease	µg/L		-	-	-
Phenols	µg/L		<1	<1	<1
Benzene	µg/L		-	<0.5	<0.5
Ethylbenzene	µg/L		-	<0.5	<0.5
Toluene	µg/L		-	<0.5	<0.5
Xylenes	µg/L		-	<0.5	<0.5
F1 (C6-C10)	µg/L		-	-	-
F1 -BTEX	µg/L		-	-	-
F2 (>C10-C16)	µg/L		-	-	-
F3 (C16-C34)	µg/L		-	-	-
F4 (C34-C50)	µg/L		-	-	-
Total Volatiles	µg/L		-	<100	<100
Total Extractables	µg/L		-	<50	<50
Other					
Biological Oxygen Demand (BOD)	mg/L		-	-	-
Fecal Coliforms	CFU/100 mL		-	-	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (CCME 2007, CWQG).

Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).

Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSeimens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.

Table B2-12: Water Quality in Lakes of the Atulik Lake Drainage, Meliadine Gold Project, 1995 to 2009

Waterbody	Date Sampled	Units	D11				D13	D15
			11-Aug-94	16-Jul-95	20-Jul-06	29-Apr-09	20-Jul-95	20-Jul-95
GPS Coordinates (NAD83, Zone 15W)			-	-	0554523, 6892718	0555106, 6892408	-	-
Source*			Dillon 1994	Dillon 1995	Goldier	Goldier	Dillon 1995	Dillon 1995
Field Measurements								
Water Temperature	°C		8.7	12.3	14.88	0.88	9.7	14.2
Dissolved Oxygen	mg/L		10.50	12.13	9.07	10.30	9.40	
pH			7.10	7.55	6.30	7.68	7.54	
Specific Conductivity	µS/cm		21.4	59	120	30.6	28.2	
Secchi Disk Depth	m		<5.0	1.9	-	-	-	
Ice Depth	m		-	-	1.73	-	-	
Total Lake Depth	m		-	-	1.9	8.98	-	
Conventional Parameters (Laboratory-Measured)								
pH			5.17	6.68	7.40	7.49	6.92	6.90
Specific Conductivity	µS/cm		38.6	39.4	51.1	135	53.0	49.9
Total Dissolved Solids	mg/L		24	25.0	36	-	24.0	31.0
Total Dissolved Solids (Calculated)	mg/L		-	24	66.1	-	-	-
Total Alkalinity	mg CaCO ₃ /L		11.6	-	13	28.7	13.8	13.2
Total Hardness	mg CaCO ₃ /L		12.9	12.4	17	47.7	14.3	14.2
Total Suspended Solids	mg/L		1	-	<3	<3.0	-	-
Total Volatile Solids	mg/L		-	-	-	29	-	-
Turbidity	NTU		0.36	0.40	-	-	0.27	0.51
Major Ions								
Bicarbonate	mg/L		-	-	16	48.5	-	-
Bromide	mg/L		-	-	-	-	-	-
Calcium	mg/L		4.13	3.94	5.07	14.5	4.37	4.54
Carbonate	mg/L		-	11.2	<5	<5.0	-	-
Chloride	mg/L		2.9	2.9	3	11.7	5.6	4.9
Fluoride	mg/L		0.04	0.05	-	-	0.04	0.04
Hydroxide	mg/L		-	-	<5	<5.0	-	-
Magnesium	mg/L		0.640	0.618	0.728	2.3	0.813	0.695
Potassium	mg/L		0.63	<2.0	0.71	1.85	<2.0	<2.0
Reactive Silica (as SiO ₂)	mg/L		-	-	-	-	-	-
Silicate (SiO ₂)	mg/L		<1.0	-	-	-	-	-
Sodium	mg/L		1.71	2.2	2.14	5.87	3.8	3.2
Sulphate	mg/L		2.8	2.3	2.8	7.38	2.2	2.7
Ion Balance	%		-	-	Low EC	101	-	-
Organic/Inorganic Carbon								
Total Carbon	mg/L		-	-	7	-	-	-
Total Organic Carbon	mg/L		-	-	4	-	-	-
Dissolved Organic Carbon	mg/L		-	-	3.8	-	-	-
Total Inorganic Carbon	mg/L		-	-	-	-	-	-
Total Inorganic Carbon (Calculated)	mg/L		-	-	3	-	-	-
Nutrients and Chlorophyll a								
Total Ammonia as Nitrogen	mg/L		-	-	<0.05	0.054	-	-
Nitrate as Nitrogen	mg/L		<0.005	-	<0.1	<0.050	-	-
Nitrite as Nitrogen	mg/L		0.001	-	<0.05	<0.050	-	-
Nitrate-Nitrite as Nitrogen	mg/L		-	<0.005	<0.1	<0.071	<0.005	<0.005
Total Kjeldahl Nitrogen	mg/L		-	-	<0.2	0.51	-	-
Phosphorus, Total	mg/L		<0.30	-	0.004	0.0085	-	-
Phosphorus, Total Dissolved	mg/L		-	-	0.002	0.0078	-	-
Orthophosphate (PO ₄ -P)	mg/L		-	-	<0.001	<0.0010	-	-
Chlorophyll a	µg/L		-	-	<1	-	-	-
Cyanides								
Cyanide, Total	µg/L		-	-	<2	<2	-	-
Total Metals								
Aluminum (Al)	µg/L		<200	<0.20	3.8	<6.0	<200	<200
Antimony (Sb)	µg/L		<200	-	<0.03	<0.20	-	-
Arsenic (As)	µg/L		0.3	0.0003	0.52	0.66	0.1	0.5
Barium (Ba)	µg/L		<10	<0.10	6.13	18.6	<10	<10
Beryllium (Be)	µg/L		<5	-	<0.2	<1.0	-	-
Bismuth (Bi)	µg/L		<100	-	-	<1.0	-	-
Boron (B)	µg/L		<100	<100	2	<50	<100	<100
Cadmium (Cd)	µg/L		<0.2	<0.2	<0.05	0.025	<2	<2
Calcium (Ca)	µg/L		-	-	-	-	-	-
Cesium (Cs)	µg/L		-	-	-	-	-	-
Chromium (Cr)	µg/L		<15	<15	<0.06	<1	<15	<15
Cobalt (Co)	µg/L		<15	<15	<0.1	<0.30	<15	<15
Copper (Cu)	µg/L		<100	<100	1.8	2.3	<10	<10
Iron (Fe)	µg/L		46	55	46	-	<30	<30
Lead (Pb)	µg/L		<1	<1	<0.05	<0.05	<10	<10
Lithium (Li)	µg/L		<15	-	-	<5.0	-	-
Magnesium (Mg)	µg/L		-	-	-	-	-	-
Manganese (Mn)	µg/L		<5	<5	1.5	18.0	<5	<5
Mercury (Hg)	µg/L		<0.05	<0.05	<0.02	<1.0	<0.05	<0.05
Molybdenum (Mo)	µg/L		<30	<30	<0.06	<1.0	<30	<30
Nickel (Ni)	µg/L		<20	<20	1.03	3.1	<20	<20
Selenium (Se)	µg/L		<5	<5	<0.1	<0.1	<0.5	<0.5
Silicon (Si)	µg/L		116	-	-	-	-	-
Silver (Ag)	µg/L		<15	<15	<0.1	<0.020	<15	<15
Sodium (Na)	µg/L		-	-	-	-	-	-
Strontium (Sr)	µg/L		22	-	29.1	81.1	-	-
Thallium (Tl)	µg/L		<10	-	<0.03	<0.20	-	-
Tin (Sn)	µg/L		<300	<300	-	<0.50	<300	<300
Titanium (Ti)	µg/L		<10	-	-	-	-	-
Tungsten (W)	µg/L		<100	-	-	-	-	-
Uranium (U)	µg/L		-	-	<0.05	<0.20	-	-
Vanadium (V)	µg/L		<30	-	0.08	<1.0	-	-
Zinc (Zn)	µg/L		<5	<5	1.1	7.9	<5	<5
Dissolved Metals								
Aluminum (Al)	µg/L		-	-	2.4	6.1	-	-
Antimony (Sb)	µg/L		-	-	<0.03	<0.50	-	-
Arsenic (As)	µg/L		-	-	0.45	0.69	-	-
Barium (Ba)	µg/L		-	-	6.15	-	-	-
Beryllium (Be)	µg/L		-	-	<0.2	<1.0	-	-
Boron (B)	µg/L		-	-	2	-	-	-
Cadmium (Cd)	µg/L		-	-	<0.05	0.029	-	-
Calcium (Ca)	µg/L		-	-	5,100	15,500	-	-
Chromium (Cr)	µg/L		-	-	<0.06	1.9	-	-
Cobalt (Co)	µg/L		-	-	<0.1	<0.30	-	-
Copper (Cu)	µg/L		-	-	1.2	2.4	-	-
Iron (Fe)	µg/L		-	-	21	-	-	-
Lead (Pb)	µg/L		-	-	<0.05	<0.50	-	-
Lithium (Li)	µg/L		-	-	-	<5.0	-	-
Magnesium (Mg)	µg/L		-	-	720	2,190	-	-
Manganese (Mn)	µg/L		-	-	1.1	17.3	-	-
Mercury (Hg)	µg/L		-	-	<0.02	<0.020	-	-
Molybdenum (Mo)	µg/L		-	-	<0.06	<1.0	-	-
Nickel (Ni)	µg/L		-	-	1.02	3.0	-	-
Potassium (K)	µg/L		-	-	720	2,030	-	-
Selenium (Se)	µg/L		-	-	<0.1	<1.0	-	-
Silver (Ag)	µg/L		-	-	<0.1	<0.020	-	-
Sodium (Na)	µg/L		-	-	2,100	6,500	-	-
Strontium (Sr)	µg/L		-	-	28.9	-	-	-
Thallium (Tl)	µg/L		-	-	<0.03	<0.20	-	-
Tin (Sn)	µg/L		-	-	-	<0.50	-	-
Titanium (Ti)	µg/L		-	-	-	-	-	-
Uranium (U)	µg/L		-	-	<0.05	<0.20	-	-
Vanadium (V)	µg/L		-	-	0.07	<1.0	-	-
Zinc (Zn)	µg/L		-	-	<0.8	-	-	-
Organic Compounds								
Oil and Grease	µg/L		-	-	-	-	-	-
Phenols	µg/L		-	-	-	-	-	-
Benzene	µg/L		-	-	-	-	-	-
Ethylbenzene	µg/L		-	-	-	-	-	-
Toluene	µg/L		-	-	-	-	-	-
Xylenes	µg/L		-	-	-	-	-	-
F1 (C6-C10)	µg/L		-	-	-	-	-	-
F1 (BTEX)	µg/L		-	-	-	-	-	-
F2 (C10-C16)	µg/L		-	-	-	-	-	-
F3 (C16-C34)	µg/L		-	-	-	-	-	-
F4 (C34-C50)	µg/L		-	-	-	-	-	-
Total Volatiles	µg/L		-	-	-	-	-	-
Total Extractables	µg/L		-	-	-	-	-	-
Total Extr. Hydrocarbons (C9-40)	µg/L		-	-	<1000	-	<1000	-
Total Extr. Hydrocarbons (C10-30)	µg/L		-	-	<1000	-	<1000	-
Other								
Biological Oxygen Demand (BOD)	mg/L		-	-	-	-	-	-
Fecal Coliforms	CFU/100 mL		-	-	-	-	-	-

Notes:
 Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater (COME 2007, CWQG).
 Underlined values are equal to or greater than the Guidelines for Canadian Drinking Water Quality (Health Canada 2007, GCDWQ).
 Italicized values indicate the detection limit equals or exceeds either guideline.
 (-) = No data available.
 Notes: °C = degrees Celsius; µS/cm = microSiemens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.
 * Data were obtained from the following sources: 1994 to 1995 = Dillon (1994 and 1995); 1997 to 2000 = RLU, (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.



Table B2-13: Water Quality in Hudson Bay, Meliadine Gold Project, 1995 to 2009

Waterbody		Ocean
Date Sampled		29-Jul-98
GPS Coordinates (NAD83, Zone 15V) ^a		0546540, 6969597
Source ^b		RL&L 1999
Field Measurements		
Water Temperature	°C	10.2
Dissolved Oxygen	mg/L	12.7
pH	pH	7.7
Specific Conductivity	µS/cm	-
Secchi Disk Depth	m	7.0
Ice Depth	m	-
Total Lake Depth	m	8.0
Conventional Parameters (Laboratory-Measured)		
pH	pH	8.1
Specific Conductivity	µS/cm	38,300
Total Dissolved Solids	mg/L	30,500
Total Dissolved Solids (Calculated)	mg/L	-
Total Alkalinity	mg CaCO ₃ /L	108
Total Hardness	mg CaCO ₃ /L	5,260
Total Suspended Solids	mg/L	13
Turbidity	NTU	0.2
Major Ions		
Bicarbonate	mg/L	132
Bromide	mg/L	-
Calcium	mg/L	327
Carbonate	mg/L	<1
Chloride	mg/L	17,000
Fluoride	mg/L	-
Hydroxide	mg/L	<1
Magnesium	mg/L	1,080
Potassium	mg/L	329
Reactive Silica (as SiO ₂)	mg/L	0.3
Sodium	mg/L	9,500
Sulphate	mg/L	2,170
Ion Balance	%	100
Organic/Inorganic Carbon		
Total Carbon	mg/L	25.7
Total Organic Carbon	mg/L	1.6
Dissolved Organic Carbon	mg/L	-
Total Inorganic Carbon	mg/L	24.1
Nutrients and Chlorophyll a		
Total Ammonia as Nitrogen	mg/L	<0.005
Nitrate as Nitrogen	mg/L	<0.05
Nitrite as Nitrogen	mg/L	-
Nitrate+Nitrite as Nitrogen	mg/L	<0.05
Total Kjeldahl Nitrogen	mg/L	0.63
Phosphorus, Total	mg/L	0.029
Phosphorus, Total Dissolved	mg/L	0.029
Orthophosphate (PO ₄ -P)	mg/L	0.013
Chlorophyll a	µg/L	0.72 ^c
Cyanides		
Cyanide, Total	µg/L	<1
Total Metals		
Aluminum (Al)	µg/L	<2
Antimony (Sb)	µg/L	0.50
Arsenic (As)	µg/L	0.90
Barium (Ba)	µg/L	6,120
Beryllium (Be)	µg/L	<4
Bismuth (Bi)	µg/L	<2,000
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	<2
Cesium (Cs)	µg/L	<50
Chromium (Cr)	µg/L	<10
Cobalt (Co)	µg/L	<4
Copper (Cu)	µg/L	<2
Iron (Fe)	µg/L	<10
Lead (Pb)	µg/L	<10
Lithium (Li)	µg/L	270
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	3.0
Mercury (Hg)	µg/L	0.3
Molybdenum (Mo)	µg/L	<10
Nickel (Ni)	µg/L	43
Potassium (K)	µg/L	-
Rubidium (Rb)	µg/L	-
Selenium (Se)	µg/L	<0.4
Silver (Ag)	µg/L	30
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	8,160
Thallium (Tl)	µg/L	<100
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	<2
Uranium (U)	µg/L	<100
Vanadium (V)	µg/L	<2
Zinc (Zn)	µg/L	128
Dissolved Metals		
Aluminum (Al)	µg/L	-
Antimony (Sb)	µg/L	-
Arsenic (As)	µg/L	-
Barium (Ba)	µg/L	-
Beryllium (Be)	µg/L	-
Boron (B)	µg/L	-
Cadmium (Cd)	µg/L	-
Calcium (Ca)	µg/L	-
Chromium (Cr)	µg/L	-
Cobalt (Co)	µg/L	-
Copper (Cu)	µg/L	-
Iron (Fe)	µg/L	-
Lead (Pb)	µg/L	-
Lithium (Li)	µg/L	-
Magnesium (Mg)	µg/L	-
Manganese (Mn)	µg/L	-
Mercury (Hg)	µg/L	-
Molybdenum (Mo)	µg/L	-
Nickel (Ni)	µg/L	-
Potassium (K)	µg/L	-
Selenium (Se)	µg/L	-
Silver (Ag)	µg/L	-
Sodium (Na)	µg/L	-
Strontium (Sr)	µg/L	-
Thallium (Tl)	µg/L	-
Tin (Sn)	µg/L	-
Titanium (Ti)	µg/L	-
Uranium (U)	µg/L	-
Vanadium (V)	µg/L	-
Zinc (Zn)	µg/L	-
Organic Compounds		
Oil and Grease	µg/L	-
Phenols	µg/L	2
Benzene	µg/L	<0.5
Ethylbenzene	µg/L	<0.5
Toluene	µg/L	<0.5
Xylenes	µg/L	<0.5
F1 (C6-C10)	µg/L	-
F1 -BTEX	µg/L	-
F2 (-C10-C16)	µg/L	-
F3 (C16-C34)	µg/L	-
F4 (C34-C50)	µg/L	-
Total Volatiles	µg/L	<100
Total Extractables	µg/L	<50
Other		
Biological Oxygen Demand (BOD)	mg/L	-
Fecal Coliforms	CFU/100 mL	-

Notes:

Bold values are equal to or greater than the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Marine (CCME 2007, CWQG Marine).
Italicized values indicate the detection limit equals or exceeds either guideline.

(-) = No data available

Notes: °C = degrees Celsius; µS/cm = microSeimens per centimetre; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity units.

a = GPS coordinates from RL&L, 1998, 1999, 2000, 2001 were converted from NAD27.

b = Data were obtained from the following sources: 1994 = 1995 = Dillon (1994 and 1995); 1997 to 2000 = RL&L (1998, 1999, 2000, 2001); 2007 = Comaplex Minerals Corporation, pers. comm.; 2008 and 2009 = Golder Associates Ltd.

c = Samples for chlorophyll a were composite samples collected over the photic zone, as identified from Secchi depth.



APPENDIX C

Sediment Quality

