Assessment Report on the Clear Creek Claims

2017 Remote Sensing Programs

Located in the Dawson Mining District
7081990N, 398020E (NAD 83, UTM Zone 8N)
NTS Maps: 115P14
Yukon Territory

Registered owner: StrataGold Corporation
Suite 1000 – 1050 W. Pender St
Vancouver BC V6E 3S7

Prepared by: Paul Gray, P.Geo, V.P. Exploration, Victoria Gold Corp.

Helena Kuikka, B.Sc., G.I.T., Victoria Gold Corp.

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1. Executive Summary

The Clear Creek Claim Block is located in the Dawson Mining District, Yukon Territory, approximately 115km east-southeast of Dawson City and 65km northwest of the Village of Mayo. The Clear Creek claims are owned and operated by StrataGold Corporation, a wholly-owned, directly-held subsidiary of Victoria Gold Corp.

The 2017 exploration program on the VBW claims comprised a 42.74 km^2 LiDAR survey and 471 line Km Airborne magnetics/radiometric survey over the entire claim block; carried out by Eagle Mapping and Precision Geosurveys, respectively.

Results of the 2017 program added substantially to the Clear Creek exploration database and will guide all future mineral exploration activities on the Clear Creek Claim Block. The LIDAR Survey has provided not only topographical (sub-30cm accuracy) data but coupled with the hi-res colour airphotos, have added an extra layer of data to focus structural interpretations on. The Airborne Magnetics/Radiometrics survey has provided a series of never before available datasets for StrataGold to work with as well as have merged existing, historic airborne magnetics surveys with the new, more detailed data to create a highly usable single dataset.

2. Introduction

The Clear Creek project is located 115km east-southeast of Dawson City and 65km northwest of the Village of Mayo. StrataGold Corporation, a wholly-owned, directly-held subsidiary of Victoria Gold Corp. is the registered owner and operator for all claims. The 2017 exploration season at Clear Creek consisted of a 482 line kilometre airborne geophysical survey.

2.1. Location

The Property is accessed directly via the Clear Creek road, which turns off the Klondike Highway to the North at km 609. The Clear Creek access road leads approximately 45km to the location of the 2010/11 Exploration Camp, which lies approximately 500m east of Nels Harper's Placer Camp, via a gravel road. A network of variably maintained trails and 4x4 trails provides additional vehicular access throughout much of the Property.

3. Property History

The prospecting history dates back to the early 1900s, in the form of hand pits, and short adits, focussing on gold bearing quartz-arsenopyrite-pyrrhotite veins near the Josephine stock area. Modern exploration efforts commenced in the late 1970s with attention focused on the tin-tungsten potential of the area. Several companies had claim holdings in the area during the 1970's including a joint venture between Canada Tungsten Mining Corp and Standard Oil Corp. of B.C., United Keno Hill Mining, the Cortin Project, and Asarco. There is little information available from their work.

Bema Industries, working on contract from Canada Tungsten Corporation, was the first company to recognize potentially significant gold mineralization in 1978. Cantung acquired most of the areas claims in 1980. From 1980-81 tin-tungsten exploration consisting of mapping, stream and soil sampling on the skarns was conducted. Some samples were also analyzed for gold and the potential for intrusive hosted gold bearing quartz veins at the Rhosgobel stock was recognized. Cantung dropped the property in 1982 due to the lack of tin mineralization and declining tungsten prices.

Since this initial effort, various companies have conducted limited campaigns including programs by Gold Rite Mining Corp., Noranda Exploration Ltd., Ivanhoe Goldfields Ltd. /First Dynasty Mines Ltd., Kennecott Canada Inc., Newmont Exploration Limited, Redstar Resources Corporation, and StrataGold Corporation (now Victoria Gold Corp.). Following up on results by previous explorers, Noranda Exploration Ltd. conducted extensive soil and rock chip sampling, ground geophysical surveys, trenching, road building, and a six hole reverse circulation ("RC") drilling program in 1991 and 1992. Two holes drilled on each of the Eiger, Saddle, and Pukelman stocks for a total of 654 m.

In 1995, Kennecott Canada Inc. completed drilling, soil sampling and 320 m of bulldozer trenching. The 27 hole (1971 m) RC program on the Rhosgobel stock identified an east-west trending zone 1200 m long, 200 m wide and 65 m deep. The average grade of the Au mineralization in this 40 Mt zone is at least 300 ppb Au, with a higher grade core zone of approximately 1.5-2.0 Mt grading from 0.75-1.25 g/t Au (Coombes, 1995). The size and grade estimate is conceptual in nature, as there has been insufficient exploration to define a mineral resource. In 1998, Newmont Exploration Limited conducted magnetic and radiometric airborne geophysical surveys. Interpretation of the data by Newmont suggests that the Eiger, Saddle, Josephine and Pukelman stocks may be part of a single larger intrusive body, and the Rhosgobel and Far stocks are themselves a separate body.

Historic drilling by Redstar Resources Corporation on the Bear Paw Breccia Zone included two diamond drill holes totaling 219 m in 1999; and nine HQ-diameter diamond drill holes totaling 1211 m in 2000. The best result of the Bear Paw Breccia zone was 2.3 g/t Au over 31.8 m in Hole BP00-10. In 2006, StrataGold Corporation (now a subsidiary of Victoria Gold Corp.) conducted a detailed trenching and soil sampling program on the Bear Paw Breccia and Contact zone (and also the Barney zone which lies west of the current claim configuration). In addition, infill sampling was conducted to follow-up on geophysical and historical gold anomalies identified by previous explorers.

Golden Predator Canada Corp. conducted an exploration program in 2010 which included drilling 42 holes for a total of 3,662.4 m. Holes CC10-01 to CC10-04 were HQ diameter oriented core totaling 1,053.7 m. CC10-05 to CC10-42 were reverse circulation holes totaling 2,588.91 m. Golden Predator also staked 168 'Zoe' quartz claims in May 2010 to supplement the property's holdings and compiled a GIS database of all available historical data.

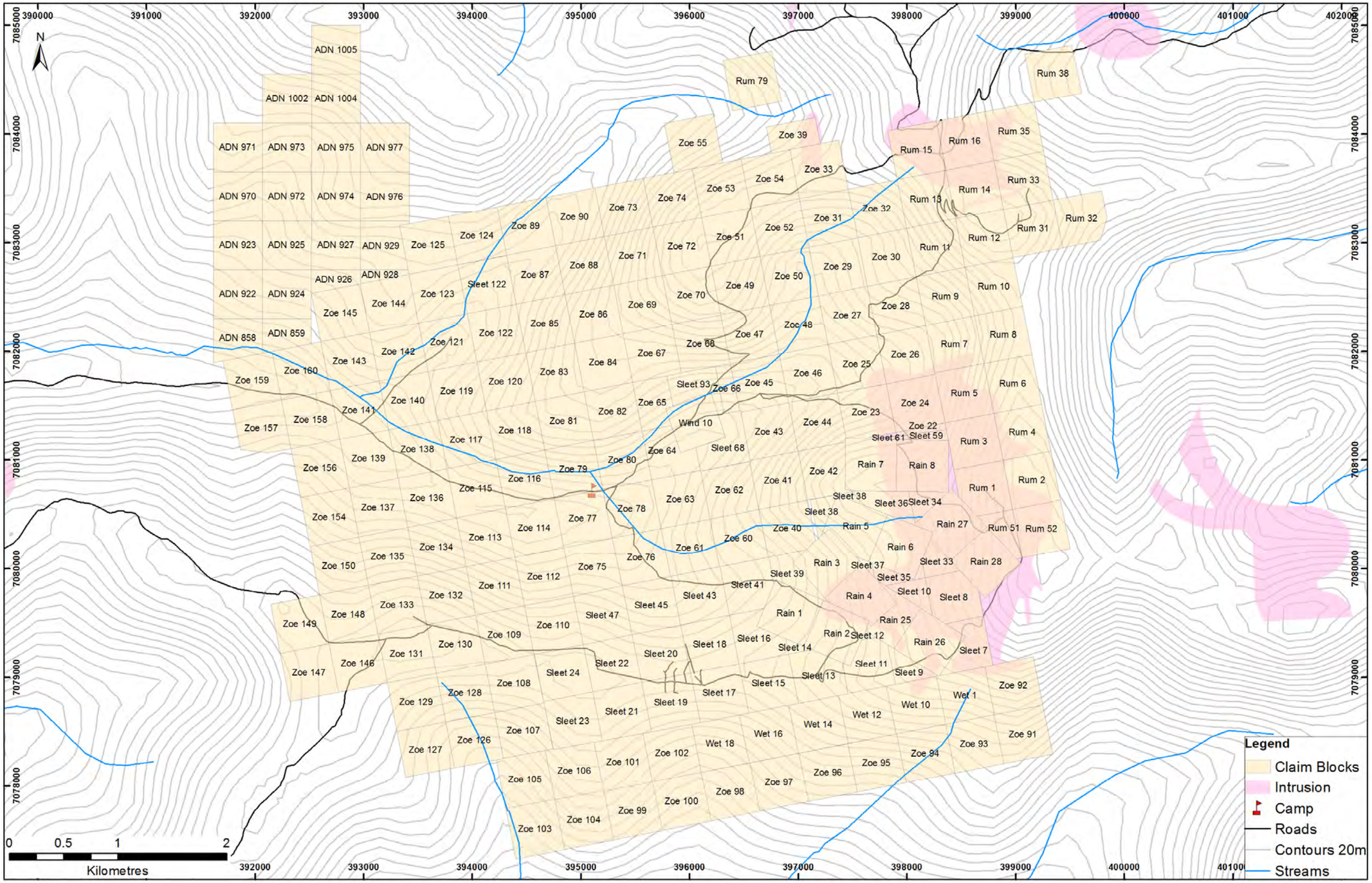

Figure 1- Clear Creek claim locations.

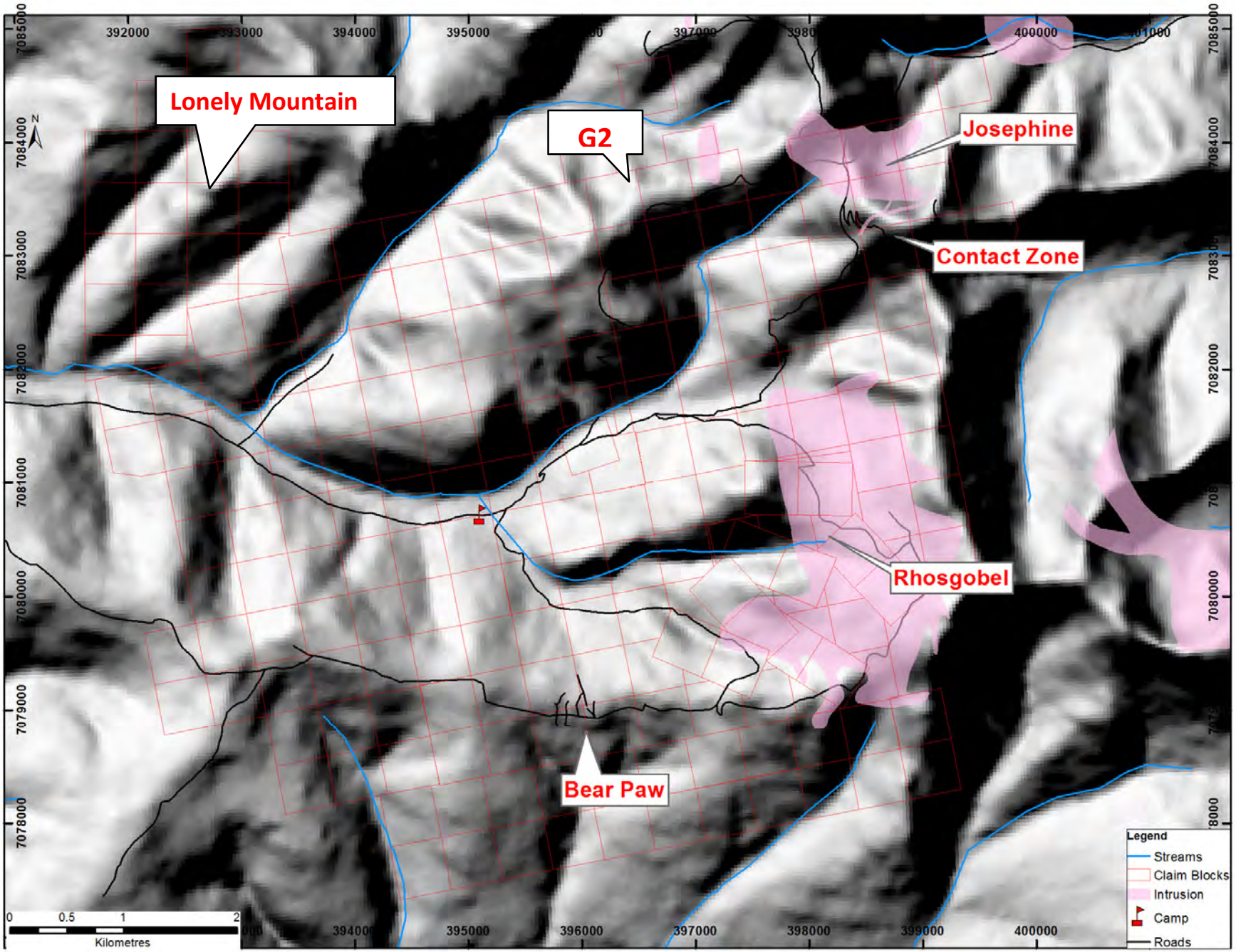

Figure 2- Location of the Josephine, Contact, Rhosgobel, and Bear Paw zones of the Clear Creek property.

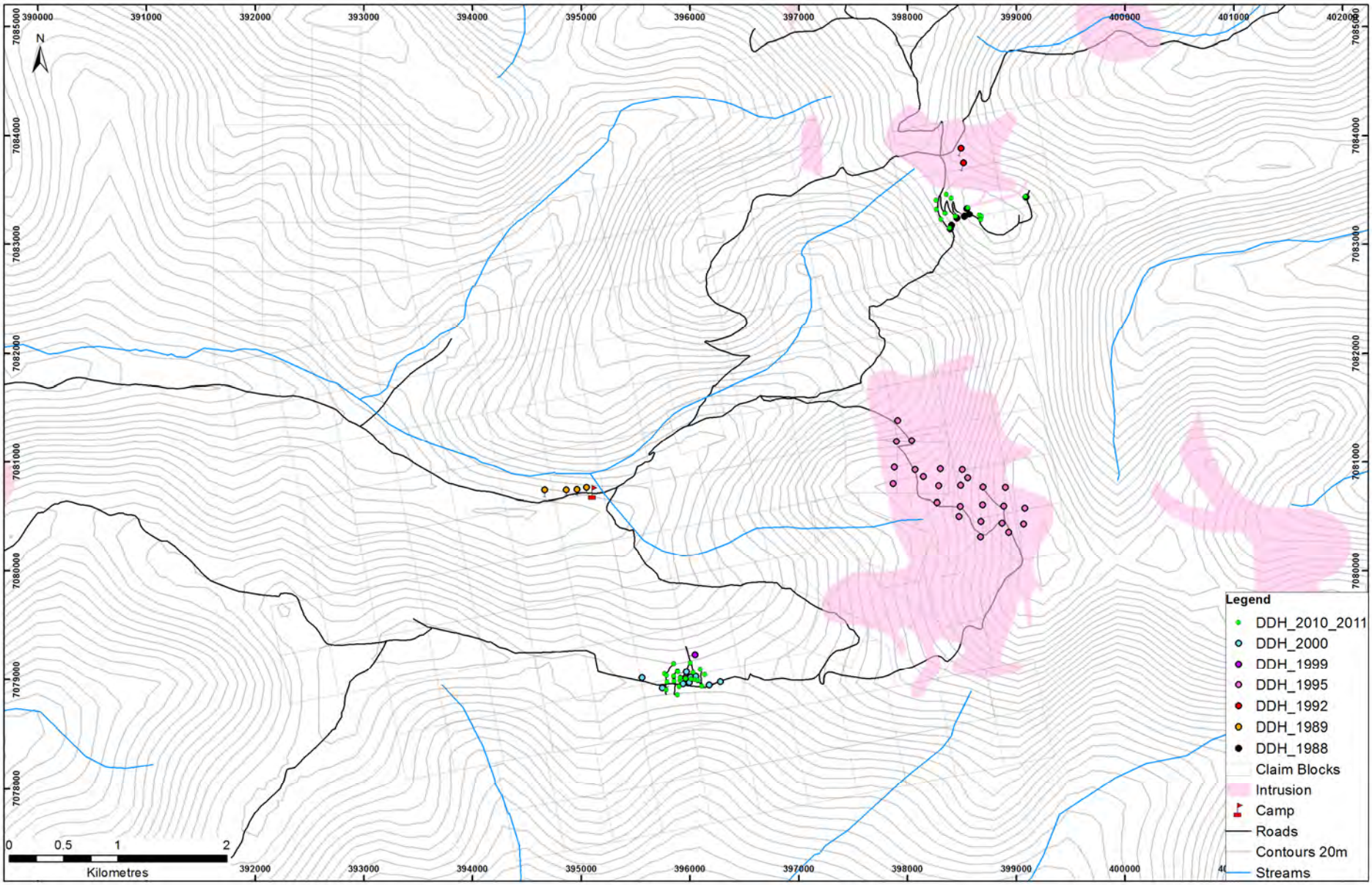

Figure 3- Diamond and RC drillhole locations.

In 2011 Golden Predator completed 18 HQ diamond drill holes for a total of 3,629.4m to test the Contact and Bear Paw areas with the objective to collect sufficient drill data to support an initial resource estimation at the Bear Paw Zone. A soil sampling program consisting of 1,026 samples was also undertaken in the northern part of the property.

Historic exploration programs have identified several zones of Au-As±Bi anomalies on the Property, seven of which have been drilled with varying degrees of rigour since the 1970's. The bulk of Golden Predator's 2010-2011 exploration efforts focused on the Bear Paw and Contact zones.

Drilling at Clear Creek has encountered both thick, low-grade zones (e.g. 42.68 m of 1.87 g/t Au from 1.52 m, CC10-07, Bear Paw), and narrow high-grade zones (e.g. 1.52 m of 137.50 g/t Au from 3.05 m, CC10-22, Contact). The most significant results from the three main zones are shown in the tables below.

Table 1: Historic Diamond Drilling Intersections by Zone

Bear Paw				
Drill Hole	From (m)	To (m)	Interval (m)	Au (g/t)
CC10-01	14.38	15.97	1.59	1.45
CC10-01	31.23	37.3	6.07	1.58
including	71.35	82.27	10.92	1.74
CC10-01	97.93	101.5	3.57	1.19
CC10-01	274.89	276.51	1.62	1.39
CC10-02	34.7	36.1	1.4	1.3
CC10-02	232.66	234.29	1.63	1.41
CC10-05	1.52	36.58	35.06	1.03
including	24.38	30.48	6.1	2.07
CC10-06	4.57	10.67	6.1	1.02
CC10-07	1.52	44.2	42.68	1.87
including	10.67	36.58	25.91	2.59
and	16.76	25.91	9.15	5.64
CC10-08	1.52	22.86	21.34	0.88
including	16.76	22.86	6.1	1.62
and	45.72	47.24	1.52	1.59
CC10-09	36.58	38.1	1.52	1.02
CC10-09	41.15	50.29	9.14	1.05
including	47.24	50.29	3.05	2.24
CC10-11	47.24	48.77	1.53	1.17
CC10-13	16.76	24.38	7.62	1.49
CC10-16	7.62	9.14	1.52	1.27
CC10-16	59.44	60.96	1.52	2.38
CC11-47	32.7	34.5	1.8	1.99
CC11-47	46.5	48	1.5	2.81
CC11-48	22.5	25.5	3	1.03
CC11-48	40.5	56	15.5	3.5
CC11-049	19.5	66	46.5	1.69
including	55.5	60	4.5	5.53
CC11-050	21	73	52	0.94
including	43.5	72	28.5	1.25
CC11-051	3.05	56	52.95	2.26
CC11-052	2.13	31.5	29.37	1.12
CC11-052	42	48	6	1.32
CC11-054	135	136.5	1.5	1.2
CC11-054	181.7	182.75	1.05	2.4

Saddle				
Drill Hole	From (m)	To (m)	Interval (m)	Au (g/t)
CC10-25	10.67	33.53	22.86	1.24
and	45.72	47.24	1.52	1.5
CC10-29	1.52	6.1	4.58	1.07

Contact				
Drill Hole	From (m)	To (m)	Interval (m)	Au (g/t)
CC10-03	8.6	19.68	11.08	0.81
including	18.29	19.68	1.39	4.62
CC10-03	56.16	57.8	1.64	1.43
CC10-04	49.6	64.15	14.55	0.66
including	55.68	61.8	5.12	1.19
CC10-04	204.5	206	1.5	1.2
CC10-04	215	216.5	1.5	9.54
CC10-04	242	248.5	6.5	1.62
including	242	245.72	3.72	2.64
CC10-04	294.4	296	1.6	1.01
CC10-17	57.91	60.96	3.05	1
CC10-17	70.1	82.3	12.2	2.06
including	71.63	76.2	4.57	4.52
and	73.15	76.2	3.05	6.27
CC10-19	10.67	12.19	1.52	1.09
and	32	33.53	1.53	1.46
CC-20	27.43	28.96	1.53	3.72
CC-20	38.1	68.58	30.48	0.72
including	57.91	68.58	10.67	1.11
and	65.53	68.58	3.05	3.03
including	111.25	112.78	1.53	2.95
CC10-21	74.68	77.72	3.04	4.52
CC10-22	3.05	4.57	1.52	137.5
CC10-22	4.57	12.19	7.62	1.14
CC10-22	47.24	48.77	1.53	1.1
CC10-24	22.86	25.91	3.05	2.62
CC10-24	83.82	86.87	3.05	1.1
CC11-43	15	40.5	25.5	2.19
includes	15	16.5	1.5	21.7
CC11-43	152	153.5	1.5	4.63
CC11-43	171.5	179	7.5	4.7
CC11-44	55.15	59.15	4	3.99
CC11-44	123.43	125.43	2	16.8
CC11-45	11.5	12.6	1.1	3.77
CC11-45	27.8	32	4.2	6.83
includes	30.65	32	1.35	19.2
CC11-45	41	42.5	1.5	4.07
CC11-45	48.5	54.86	6.36	1.33
CC11-46	192.3	194	1.7	2.25

In 2012 the Clear Creek Property returned to StrataGold Corp.

In 2015 StrataGold conducted an exploration program which consisted of 504 soil samples, 52 rock chip samples, and re-logging of the diamond drill core from 2011. The core re-logging established that the majority of high values were returned from intervals containing one or more widely spaced quartz-arsenopyrite veins, locally sheeted, ranging from <1 cm to 5 cm in width. Several specks of gold are visible in some veins.

4. Claims

Table 2: Claims List

Grant Number	Claim Name	Claim Number	Claim Owner	Claim Expiry Date
YD85358	**ADN**	**858**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85359	**ADN**	**859**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85422	**ADN**	**922**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85423	**ADN**	**923**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85424	**ADN**	**924**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85425	**ADN**	**925**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85426	**ADN**	**926**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85427	**ADN**	**927**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85428	**ADN**	**928**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85429	**ADN**	**929**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85470	**ADN**	**970**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85471	**ADN**	**971**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85472	**ADN**	**972**	**StrataGold Corporation - 100%**	**31/12/2020**

YD85473	**ADN**	**973**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85474	**ADN**	**974**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85475	**ADN**	**975**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85476	**ADN**	**976**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85477	**ADN**	**977**	**StrataGold Corporation - 100%**	**31/12/2020**
YD85502	**ADN**	**1002**	**StrataGold Corporation - 100%**	**31/12/2020**
YD83888	**ADN**	**1004**	**StrataGold Corporation - 100%**	**31/12/2020**
YD83889	**ADN**	**1005**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31503	**Rain**	**1**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31510	**Rain**	**2**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31504	**Rain**	**3**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31511	**Rain**	**4**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31505	**Rain**	**5**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31512	**Rain**	**6**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31506	**Rain**	**7**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31513	**Rain**	**8**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31522	**Rain**	**25**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31530	**Rain**	**26**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31523	**Rain**	**27**	**StrataGold Corporation - 100%**	**31/12/2020**

YA31531	**Rain**	**28**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88956	**Rum**	**1**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88957	**Rum**	**2**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88958	**Rum**	**3**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88959	**Rum**	**4**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88960	**Rum**	**5**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88961	**Rum**	**6**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88962	**Rum**	**7**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88963	**Rum**	**8**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88964	**Rum**	**9**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88965	**Rum**	**10**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88966	**Rum**	**11**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88967	**Rum**	**12**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88968	**Rum**	**13**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88969	**Rum**	**14**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88970	**Rum**	**15**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88971	**Rum**	**16**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88986	**Rum**	**31**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88987	**Rum**	**32**	**StrataGold Corporation - 100%**	**31/12/2020**

YA88988	**Rum**	**33**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88990	**Rum**	**35**	**StrataGold Corporation - 100%**	**31/12/2020**
YA88993	**Rum**	**38**	**StrataGold Corporation - 100%**	**31/12/2020**
YA89345	**Rum**	**51**	**StrataGold Corporation - 100%**	**31/12/2020**
YA89346	**Rum**	**52**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04262	**Sleet**	**7**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04263	**Sleet**	**8**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04264	**Sleet**	**9**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04265	**Sleet**	**10**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04266	**Sleet**	**11**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04267	**Sleet**	**12**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04268	**Sleet**	**13**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04269	**Sleet**	**14**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04270	**Sleet**	**15**	**StrataGold Corporation - 100%**	**31/12/2021**
YB04271	**Sleet**	**16**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04272	**Sleet**	**17**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04273	**Sleet**	**18**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04274	**Sleet**	**19**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04275	**Sleet**	**20**	**StrataGold Corporation - 100%**	**31/12/2020**

YB04276	**Sleet**	**21**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04277	**Sleet**	**22**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04278	**Sleet**	**23**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04279	**Sleet**	**24**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04280	**Sleet**	**33**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04281	**Sleet**	**34**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04282	**Sleet**	**35**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04283	**Sleet**	**36**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04284	**Sleet**	**37**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04285	**Sleet**	**38**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04286	**Sleet**	**39**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04288	**Sleet**	**41**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04290	**Sleet**	**43**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04292	**Sleet**	**45**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04294	**Sleet**	**47**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04306	**Sleet**	**59**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04307	**Sleet**	**61**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04313	**Sleet**	**68**	**StrataGold Corporation - 100%**	**31/12/2020**
YB04436	**Sleet**	**93**	**StrataGold Corporation - 100%**	**31/12/2020**

YB04325	**Sleet**	**122**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45604	**Wet**	**1**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45613	**Wet**	**10**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45615	**Wet**	**12**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45617	**Wet**	**14**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45619	**Wet**	**16**	**StrataGold Corporation - 100%**	**31/12/2020**
YB45621	**Wet**	**18**	**StrataGold Corporation - 100%**	**31/12/2020**
YA31863	**Wind**	**10**	**StrataGold Corporation - 100%**	**31/12/2020**
YD60102	**Zoe**	**22**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60103	**Zoe**	**23**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60104	**Zoe**	**24**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60105	**Zoe**	**25**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60106	**Zoe**	**26**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60107	**Zoe**	**27**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60108	**Zoe**	**28**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60109	**Zoe**	**29**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60110	**Zoe**	**30**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60111	**Zoe**	**31**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60112	**Zoe**	**32**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60113	**Zoe**	**33**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60119	**Zoe**	**39**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60120	**Zoe**	**40**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60121	**Zoe**	**41**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60122	**Zoe**	**42**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60123	**Zoe**	**43**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60124	**Zoe**	**44**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60125	**Zoe**	**45**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60126	**Zoe**	**46**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60127	**Zoe**	**47**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60128	**Zoe**	**48**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60129	**Zoe**	**49**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60130	**Zoe**	**50**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60131	**Zoe**	**51**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60132	**Zoe**	**52**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60133	**Zoe**	**53**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60134	**Zoe**	**54**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60135	**Zoe**	**55**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60140	**Zoe**	**60**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60141	**Zoe**	**61**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60142	**Zoe**	**62**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60143	**Zoe**	**63**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60144	**Zoe**	**64**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60145	**Zoe**	**65**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60146	**Zoe**	**66**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60147	**Zoe**	**67**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60148	**Zoe**	**68**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60149	**Zoe**	**69**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60150	**Zoe**	**70**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60151	**Zoe**	**71**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60152	**Zoe**	**72**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60153	**Zoe**	**73**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60154	**Zoe**	**74**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60155	**Zoe**	**75**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60156	**Zoe**	**76**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60157	**Zoe**	**77**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60158	**Zoe**	**78**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60159	**Zoe**	**79**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60160	**Zoe**	**80**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60161	**Zoe**	**81**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60162	**Zoe**	**82**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60163	**Zoe**	**83**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60164	**Zoe**	**84**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60165	**Zoe**	**85**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60166	**Zoe**	**86**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60167	**Zoe**	**87**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60168	**Zoe**	**88**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60169	**Zoe**	**89**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60170	**Zoe**	**90**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60171	**Zoe**	**91**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60172	**Zoe**	**92**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60173	**Zoe**	**93**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60174	**Zoe**	**94**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60175	**Zoe**	**95**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60176	**Zoe**	**96**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60177	**Zoe**	**97**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60178	**Zoe**	**98**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60179	**Zoe**	**99**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60180	**Zoe**	**100**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60181	**Zoe**	**101**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60182	**Zoe**	**102**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60183	**Zoe**	**103**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60184	**Zoe**	**104**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60185	**Zoe**	**105**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60186	**Zoe**	**106**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60187	**Zoe**	**107**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60188	**Zoe**	**108**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60189	**Zoe**	**109**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60190	**Zoe**	**110**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60191	**Zoe**	**111**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60192	**Zoe**	**112**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60193	**Zoe**	**113**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60194	**Zoe**	**114**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60195	**Zoe**	**115**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60196	**Zoe**	**116**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60197	**Zoe**	**117**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60198	**Zoe**	**118**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60199	**Zoe**	**119**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60200	**Zoe**	**120**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60201	**Zoe**	**121**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60202	**Zoe**	**122**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60203	**Zoe**	**123**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60204	**Zoe**	**124**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60205	**Zoe**	**125**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60206	**Zoe**	**126**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60207	**Zoe**	**127**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60208	**Zoe**	**128**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60209	**Zoe**	**129**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60210	**Zoe**	**130**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60211	**Zoe**	**131**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60212	**Zoe**	**132**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60213	**Zoe**	**133**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60214	**Zoe**	**134**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60215	**Zoe**	**135**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60216	**Zoe**	**136**	**StrataGold Corporation - 100%**	**31/12/2022**

YD60217	**Zoe**	**137**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60218	**Zoe**	**138**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60219	**Zoe**	**139**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60220	**Zoe**	**140**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60221	**Zoe**	**141**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60222	**Zoe**	**142**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60223	**Zoe**	**143**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60224	**Zoe**	**144**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60225	**Zoe**	**145**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60226	**Zoe**	**146**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60227	**Zoe**	**147**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60228	**Zoe**	**148**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60229	**Zoe**	**149**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60230	**Zoe**	**150**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60234	**Zoe**	**154**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60236	**Zoe**	**156**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60237	**Zoe**	**157**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60238	**Zoe**	**158**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60239	**Zoe**	**159**	**StrataGold Corporation - 100%**	**31/12/2022**
YD60240	**Zoe**	**160**	**StrataGold Corporation - 100%**	**31/12/2022**

5. Geologic Setting

5.1 Regional Geology

The Clear Creek claim area resides within upper Proterozoic Hyland Group rocks, which are part of the western Selwyn Basin, an epicratonic basin developed in a divergent margin setting established as the result of neo-Proterozoic rifting along the North American margin (Ross, 1991; Colpron et al., 2002). The Selwyn Basin is bounded on the south by the Tintina Fault (and the Intermontane Superterrane) and bounded on the north by the Dawson Thrust Fault (and the North American Shelf; Figure 5-1, from Gordey and Makepeace, 2001). The Teslin Suture is the zone of deformation between the accreted terrain and the ancient shelf.

Jurassic convergence between the North American and Farallon plates led to the collision of outboard terranes with the continental margin, which resulted in northward thrusting and low-grade metamorphism of Selwyn Basin strata (Monger, 1993). In the region, the Jurassic-Cretaceous Dawson, Tombstone and Robert Service thrusts (Murphy and Héon, 1995), juxtapose Hyland Group rocks against Mississippian shelf units and Devonian to Jurassic clastic units.

With waning deformation across the orogen by the mid-Cretaceous, emplacement of a series of northwardly-younging, orogen-parallel, felsic to intermediate plutonic suites occurred between 112 and 90 Ma (Mortensen, 2000). The Tombstone Plutonic Suite (TPS) is the most cratonward and youngest of the mid- Cretaceous plutonic belts emplaced into deformed Selwyn Basin strata. It extends in excess of 500 kilometers in an east-west direction, from the Yukon-Northwest Territory border to Dawson City, where it is truncated by the Tintina Fault Zone; a Cretaceous-Tertiary strike-slip fault with an estimated 450 kilometers of displacement. The TPS intrusions are typically <5 km in diameter and occur as composite plutons or as isolated pluton and dyke clusters. Compositionally they are predominantly monzogranite to quartz monzonite, with smaller volumes of later monzonite to quartz monzodiorite (Mortensen et al., 2000; Hart et al., 2004). They are weakly reduced to weakly oxidized and metaluminous to weakly peraluminous. Minor porphyritic, aplitic and calc-alkaline lamprophyre dykes (Mair et al., 2003) cross-cut and intrude the main stocks.

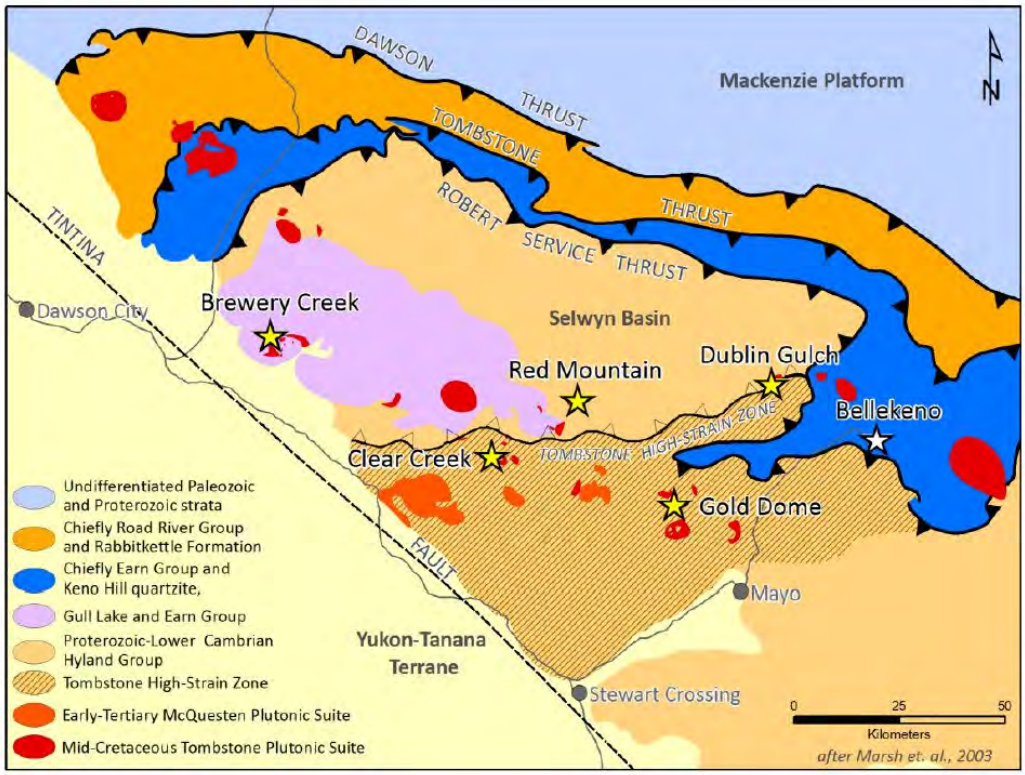

Figure 4- Generalized regional geology (after Marsh et al., 2003)

5.2 Property Geology

Highly deformed metasedimentary rocks of the Yusezyu Formation underlie the Clear Creek property. The metasedimentary strata are part of the Neoprotoerozoic to Early Cambrian Hyland Group. They are comprised of predominantly highly deformed and folded phyllite, schist, quartzite, sandstone, fine quartz-pebble conglomerate with rare limestone. The Hyland Group rocks have been intruded by Tombstone Plutonic Suite diorite, granodiorite, quartz monzonite and granitoid stocks, including, from south to north, the Rhosgobel, Big Creek, Pukelman, Josephine and Eiger stocks. The Bear Paw breccia is spatially and likely-temporally related to the intrusive rocks. The Tombstone strain zone, a broad zone of complex deformation exhibited as multi-episodic folding and prominent foliation and lineation development within the sedimentary sequence extends roughly east-west to the north of the Josephine stock. Alteration is fairly localized to near the contacts with the intrusive bodies and include metasediments altered to quartz-biotite hornfels and rare calc-silicate skarn. Schistosity strikes west - northwest with gentle to moderate north-east dips (Weekes and Fall, 2001).

5.3 Deposit Type and Mineralization

Regionally, the Tombstone Plutonic Suite is spatially and possibly also genetically associated with a range of precious and base-metal occurrences. These include: intrusion-hosted sheeted vein systems (Fort Knox, Dublin Gulch, Sheeted Zone at Scheelite Dome), metasediment-hosted sheeted veins (Harvey-Rudolph Zone at Scheelite Dome), intrusion-hosted disseminations and stringers (Brewery Creek), skarns (Marn, Wolf tungsten), hornfels-hosted sulfide veins, sediment-hosted stratabound sulfide replacement and disseminated, stringer and breccia-hosted mineralization external to the

hornfels. The characteristic metal association of TPS related deposits comprises Au-W-Bi-As-Sb-Te-Mo±Cu±Pb±Sn.

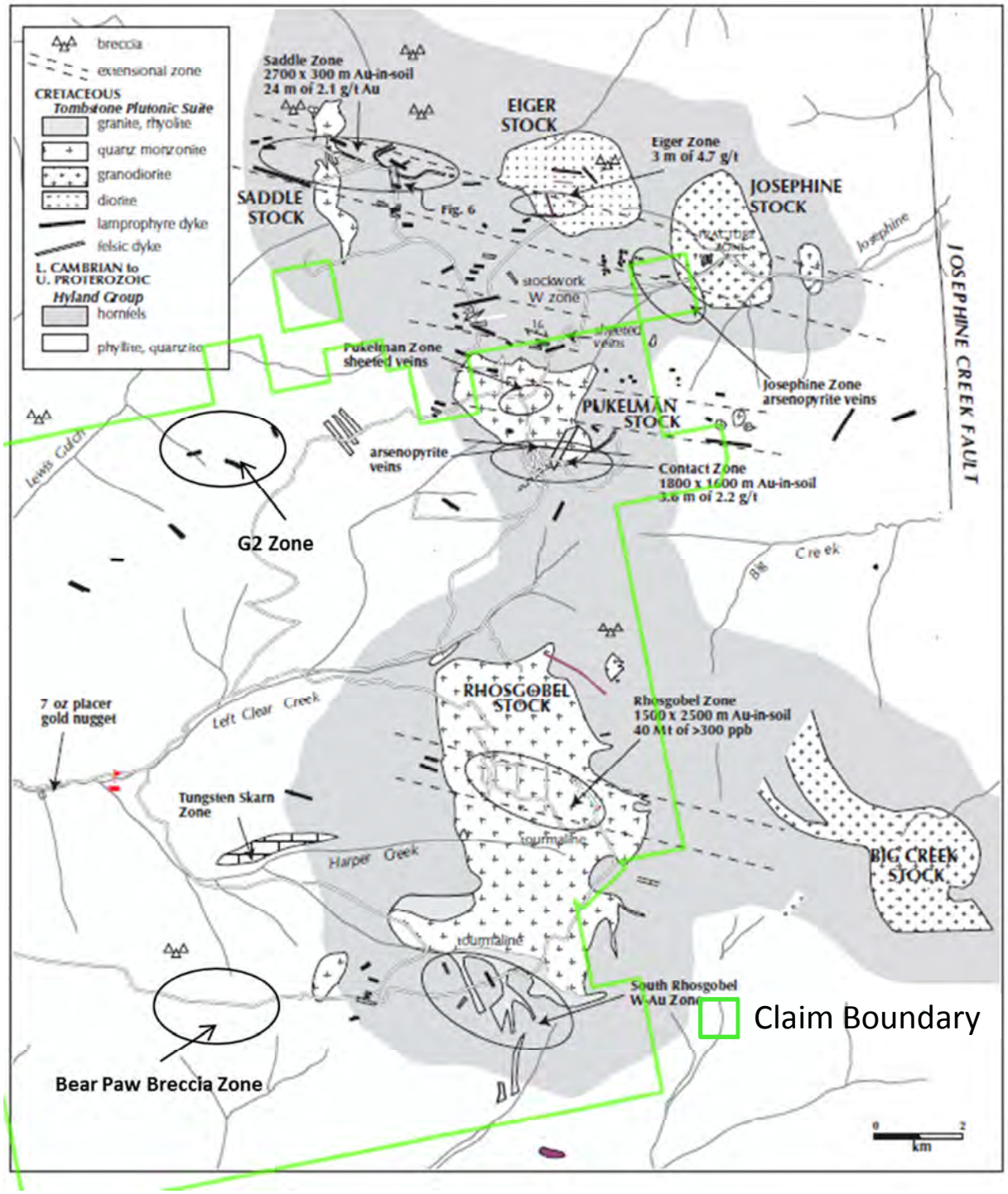

Figure 5- General Geology modified from Marsh et. al, 1999.

Mineralization on the Clear Creek property consists of gold bearing stockwork to sheeted vein zones hosted by felsic to intermediate intrusions, auriferous pyrite within fault zones cutting metasedimentary

rocks, and scheelite bearing calc-silicate skarns. The stockwork and sheeted gold veins are considered to have the most economic potential. They vary from white quartz –tourmaline-carbonate with trace sulphides in Rhosgobel to predominately pyrite-arsenopyrite-quartz in the Pukelman and Contact zones.

The following is a summary of mineralization on the property from the Minfile records:

Mineralization in the Rhosgobel skarn specimens assayed up to 1.3% tungsten oxide (WO3), but the overall grade of the stockwork zone was estimated to be less than 0.05%tungsten oxide (WO3). Quartz vein specimens assayed up to 45 ppb gold and 46 ppb silver. Minor cassiterite occurs in greisen breccias above a granitic cupola.

The Jub Jub claims were staked on silver geochemical anomalies. The 1981 sampling outlined three anomalies, including a gold anomaly averaging 300 ppb that extends for over 800 m in the hornfels zone south of the Pukelman stock (Minfile Occurrence #115P 013) located to the north. Specimens of quartz with arsenopyrite from a stockwork in the hornfels zone assayed up to 45.0 g/t gold and 46 g/t silver. The Wind claims were staked to cover two showings of apparently stratabound pyrite mineralization in quartz-rich schist and phyllite discovered at the bottom of placer working in Clear Creek. Channel sampling in 1987 returned values ranging from 0.2 g/t to 9.2 g/t gold over widths of 0.6 to 1.2 m across pyritic beds. Significant arsenic values (up to 2%) occur with the higher gold values and variably and locally anomalous values for silver (to 4.3 ppm), lead (to 591 ppm), zinc (to 2 413 ppm) and antimony (to 280 ppm).

In the central part of the grid, a strong northeast-trending tungsten-gold anomaly covers an area 1 000 x 400 m underlain by porphyritic quartz monzonite, and an east-trending tungsten anomaly (40 to 560 ppm tungsten) coincides with the south contact of the Rhosgobel stock. Soil sampling in 1988 returned several values up to 408 ppb gold, and a specimen of quartz vein float assayed 1 141 ppb gold. Murphy et al. (1993) noted a strong correlation between gold, bismuth and tungsten on the Rhosgobel property. Four specimens of quartz vein material contained between 2 330 and 15 000 ppb gold, 26 to 318 ppm bismuth and 55 ppm to 0.2% tungsten. Kennecott's drilling on the Rhosgobel stock tested a 1.5 by 2.5 km area of anomalous gold geochemistry associated with sheeted quartz veins in the stock. The drilling program delineated a zone about 1 200 m by 200 m by 65 m deep (about 40 million tonnes) with a potential average gold grade greater than 300 ppb. This zone contains a higher grade core with a potential for about 2 million tonnes grading >1 gram per tonne gold. Kennecott also constructed access roads and collected two lines of soil samples south of the Rhosgobel stock. None of the samples returned anomalous values.

Farallon Resources Ltd collected 8 rock and 15 soil samples on their two visits to the Far property. The soil samples returned a high of 50 ppb gold while the rock samples returned a high of 341 ppb gold. Lueck's 1994 detailed soil sample survey was centered over a portion of the Rhosgobel Pluton believed to have potential for an intrusive hosted gold deposit. A widespread northwest trending gold in soil

anomaly was outlined with several zones returning values in excess of 100 ppb gold. Thor Explorations' 2003 program identified a 100 m long gold soil anomaly within Far cl 33 and 34 which cover the southeast corner of the Rhosgobel Stock. The anomaly ranged in value from 0.067 to 0.194 g/t gold and was associated with anomalous arsenic and tungsten values averaging 420 ppm and 125 ppm respectively. Soil sampling on the TP claims uncovered a single station anomaly of 0.033 g/t gold on TP cl 2 and second single station anomaly of 0.326 g/t gold on TP cl 8. Sampling was carried out on 100 m centers. The 2005 reconnaissance program returned numerous single site rock and soil anomalies but given the reconnaissance nature of the program no new areas of mineralization or potential mineralization were identified.

Newmont's sampling confirmed anomalous gold values reported by previous operators and outlined existing areas of anomalous gold and arsenic geochemistry. Magnetic data from the airborne survey defined dominant structural trends in the area and partially outlined some of the intrusive stocks in the area. Radiometric data suggests that Rhosgobel and Big Creek stocks are part of a single intrusive body.

In the Bear Paw zone, placer operations encountered nearly massive pyrite-sericite mineralization on both sides of a steeply dipping east-trending gouge-filled fault in the creek bed just west of this occurrence location. Massive pyrite bands up to 1 m thick contain 50 to 80% pyrite in a quartz gangue and dip 20° north, parallel to bedding in the host sericite-biotite phyllite. Samples contained up to 9.22 g/t Au across 1.0 m. The area of interest coincides with a 500 x 200 m IP anomaly, but VLF response is flat. All of the 1989 drillholes encountered thick sections of graphitic argillite with pyrite along the schistosity. Drillholes RWS-89-1 and 89-4 intersected the fault zone. Hole 89-1 returned 18.71 g/t Au over 0.49 m of pyrite-sericite-quartz-clay gouge in the fault. No evidence of stratabound mineralization was seen in the drillholes.

Newmont's sampling confirmed anomalous gold values reported by previous operators and outlined existing areas of anomalous gold and arsenic geochemistry. Magnetic data from the airborne survey defined dominant structural trends in the area and partially outlined some of the intrusive stocks. Other nearby areas of radiometric highs are observed and possibly represent the expression of unmapped intrusive bodies and/or possible occurrences of potassic alteration.

Rock and soil sampling carried out by Redstar identified anomalous gold, arsenic and bismuth geochemistry coincident with an area of radiometric highs that straddles the ridge crest between upper Left Clear and Clear Creek. The zone, subsequently named the Bear Paw (breccia) zone was the focus of exploration efforts in 2000. Gold mineralization occurs in hydrothermal breccias with stockwork quartz + potassium-feldspar + sulfide veins that overprint earlier intrusives and tectonic breccias. Drilling in 1999 returned a significant intersection of 2 g/t Au over 26.7 m including 3.35 g/t Au over 10.5 m, while definition drilling of the zone in 2000 intersected varying amounts of breccia with a best result of 2.3 g/t Au over 31.8 m in hole BP00-10. Significant intersection from Golden Predator’s drilling in 2010 in the Bear Paw zone include 35m at 1.03 g/t Au, 9.15m at 5.64 g/t Au, and 10.02m at 1.74 g/t Au. All holes drilled in 2011 intersected gold mineralization as well.

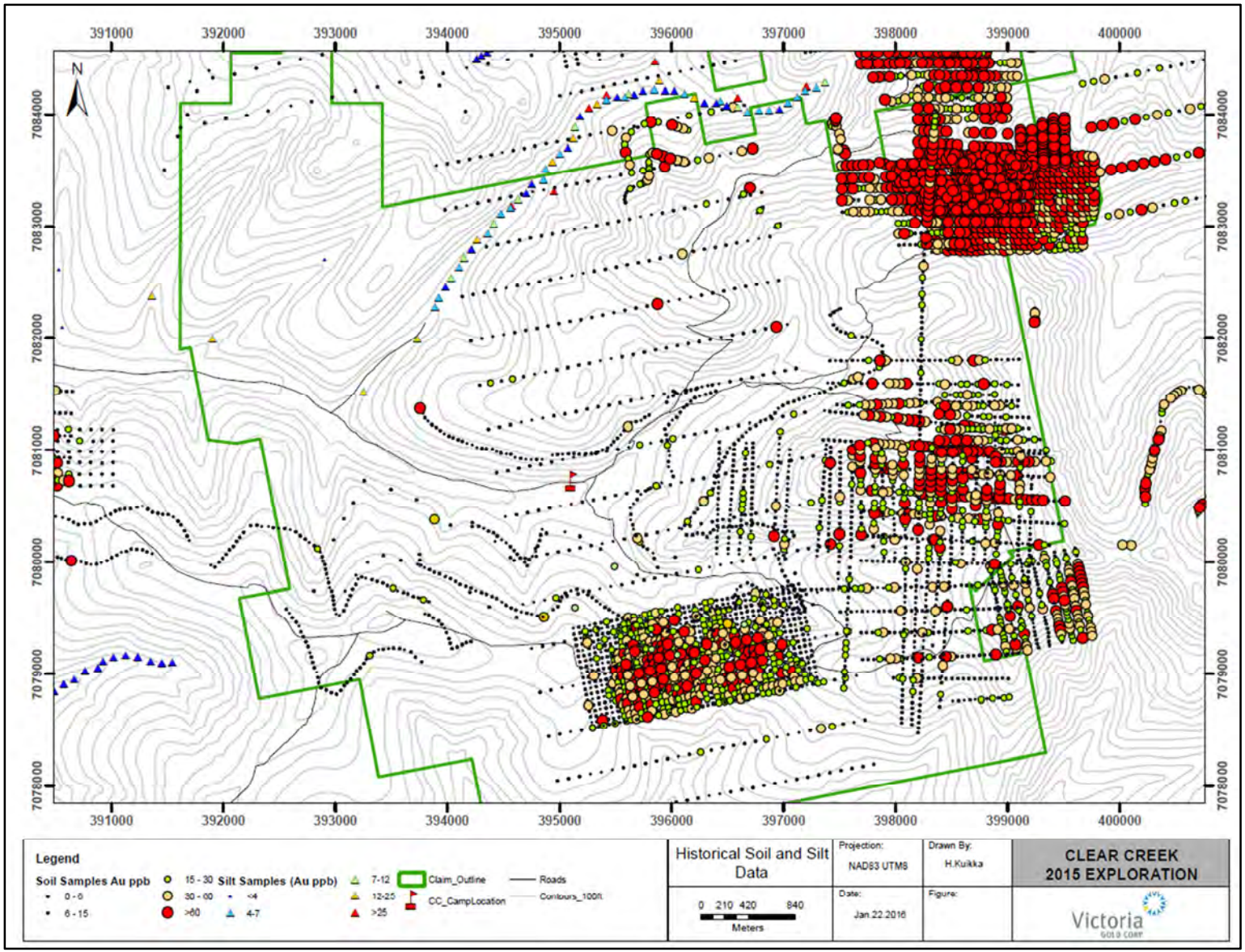

Figure 6- Historic soil and silt data including recently digitized soils.

6. 2017 Remote Sensing Programs

Airborne Magnetics/Radiometrics Survey

The June 5 – June 8th, 2017 airborne geophysical survey at Clear Creek comprised a high resolution helicopter-borne magnetic and radiometric survey flown by Precision Geosurveys in June 2017. The Clear Creek survey block was flown at 100 meter spacing at a 045°/225° heading; tie lines were flown at 1,000m spacing at a heading of 135°/315°. A total of 471 line km were flown over the Claim Block.

See Appendix I for the complete Airborne Geophysical Survey Report.

LIDAR Survey

From June 5 – June 8th, 2017 a LIDAR survey was flown over the Clear Creek claim block (Figure 7). The Survey was conducted in order to gain detailed topographic control of the Clear Creek Claim block as well as collect up to date imagery of the Project area.

See Appendix II for the LIDAR Survey Report.

7. Recommendations

Results of the 2017 program prompt for a number of recommendations for future exploration work in the area including:

- Detailed Structural Interpretations from the LIDAR Survey
- Robust analysis and interpretation of the Magnetics/Radiometics Survey
- Detailed rock sampling, and/or channel sampling to the east of the drilled area in the Contact Zone. Further soil sampling in this area is not needed but the grid may be extended south towards Rhosgobel.
- Expansion of the soil grid in the southern and western portions of the Bear Paw Zone to determine the extent of the mineralized area.
- Trench or test pit exploration to focus on the eastern portion with auriferous quartz vein float, and previously identified gold-in-soil anomalies.
- Further soil sampling, mapping and pit or trench sampling in the G2 area to follow up on the 2015 results.
- ICP and Resultant XRF-ICP comparison study of the remainder of the soil samples from the 2015 program.

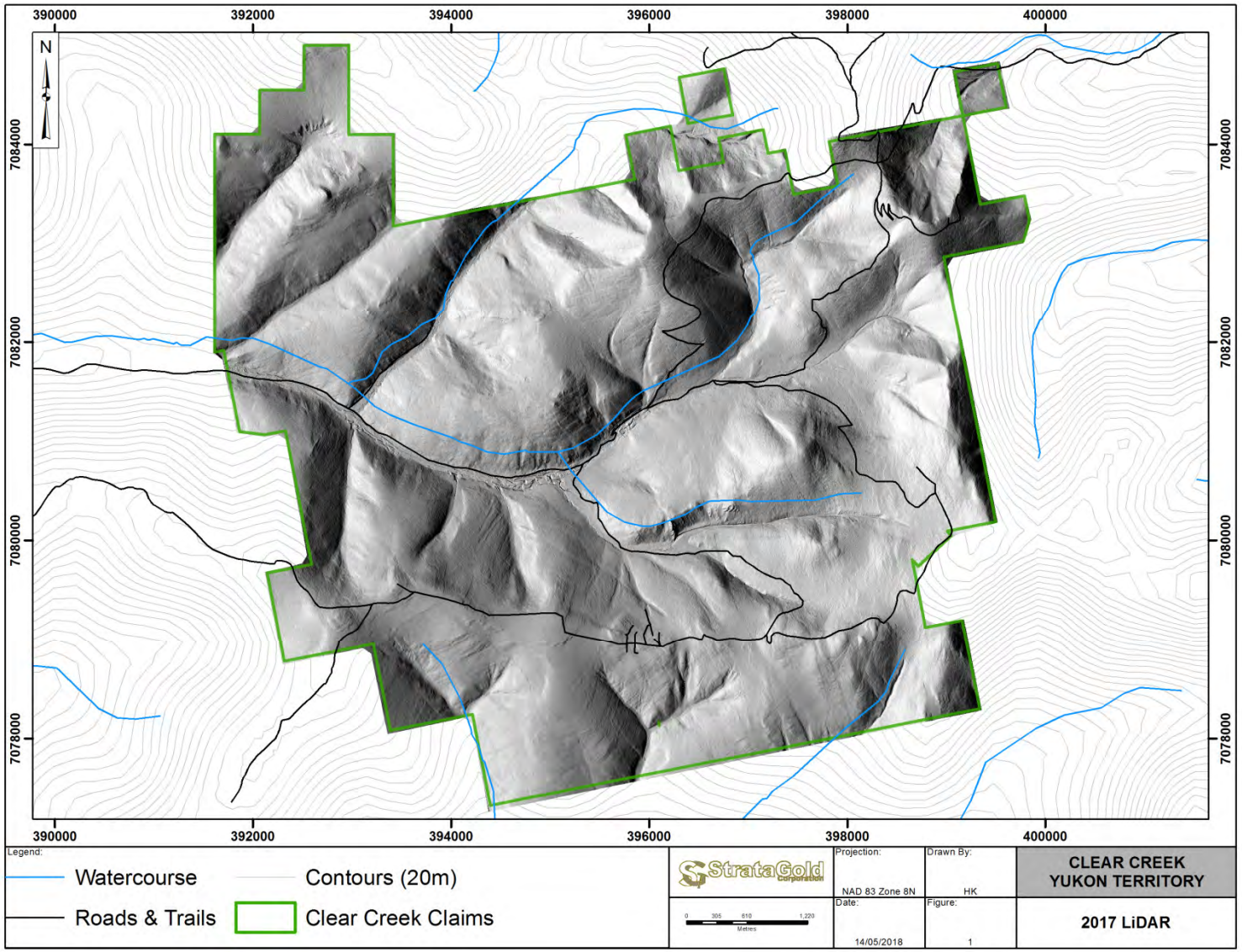

Figure 7- 2017 LiDAR Survey over the Clear Creek claim block.

8. Program Expenditures

Table 3: 2017 Clear Creek Program Expenditures Summary Table

Grant Number	Claim Name	Claim Number	Expenditure		Grant Number	Claim Name	Claim Number	Expenditure
YA31503	Rain	1	$187.69		YD60147	Zoe	67	$162.49
YA31504	Rain	3	$157.54		YD60148	Zoe	68	$171.75
YA31505	Rain	5	$174.71		YD60149	Zoe	69	$185.38
YA31506	Rain	7	$164.83		YD60150	Zoe	70	$153.41
YA31510	Rain	2	$177.85		YD60151	Zoe	71	$152.01
YA31511	Rain	4	$121.66		YD60152	Zoe	72	$150.66
YA31512	Rain	6	$177.38		YD60153	Zoe	73	$152.29
YA31513	Rain	8	$172.92		YD60154	Zoe	74	$180.00
YA31522	Rain	25	$95.08		YD60155	Zoe	75	$180.81
YA31523	Rain	27	$160.98		YD60156	Zoe	76	$151.34
YA31530	Rain	26	$161.49		YD60157	Zoe	77	$161.54
YA31531	Rain	28	$162.77		YD60158	Zoe	78	$153.13
YA31863	Wind	10	$136.41		YD60159	Zoe	79	$152.23
YA88956	Rum	1	$172.32		YD60160	Zoe	80	$169.73
YA88957	Rum	2	$150.63		YD60161	Zoe	81	$159.75
YA88958	Rum	3	$155.88		YD60162	Zoe	82	$176.69
YA88959	Rum	4	$139.44		YD60163	Zoe	83	$182.24
YA88960	Rum	5	$154.93		YD60164	Zoe	84	$151.95
YA88961	Rum	6	$179.77		YD60165	Zoe	85	$158.68
YA88962	Rum	7	$165.57		YD60166	Zoe	86	$152.96
YA88963	Rum	8	$165.58		YD60167	Zoe	87	$149.99
YA88964	Rum	9	$179.89		YD60168	Zoe	88	$182.52
YA88965	Rum	10	$149.74		YD60169	Zoe	89	$165.69
YA88966	Rum	11	$152.85		YD60170	Zoe	90	$167.43
YA88967	Rum	12	$151.51		YD60171	Zoe	91	$153.47
YA88968	Rum	13	$151.24		YD60172	Zoe	92	$178.82
YA88969	Rum	14	$177.08		YD60173	Zoe	93	$151.95
YA88970	Rum	15	$169.15		YD60174	Zoe	94	$180.33
YA88971	Rum	16	$162.26		YD60175	Zoe	95	$150.55
YA88986	Rum	31	$182.33		YD60176	Zoe	96	$172.48
YA88987	Rum	32	$139.89		YD60177	Zoe	97	$161.26
YA88988	Rum	33	$156.63		YD60178	Zoe	98	$154.64
YA88990	Rum	35	$153.60		YD60179	Zoe	99	$153.52
YA88993	Rum	38	$158.90		YD60180	Zoe	100	$184.09
YA89345	Rum	51	$70.87		YD60181	Zoe	101	$173.96
YA89346	Rum	52	$164.47		YD60182	Zoe	102	$153.87

YB04262	Sleet	7	$133.58		YD60183	Zoe	103	$180.89
YB04263	Sleet	8	$158.07		YD60184	Zoe	104	$157.61
YB04264	Sleet	9	$55.76		YD60185	Zoe	105	$177.28
YB04265	Sleet	10	$58.13		YD60186	Zoe	106	$151.46
YB04266	Sleet	11	$142.29		YD60187	Zoe	107	$140.58
YB04267	Sleet	12	$5.88		YD60188	Zoe	108	$156.17
YB04268	Sleet	13	$143.27		YD60189	Zoe	109	$184.32
YB04269	Sleet	14	$11.52		YD60190	Zoe	110	$150.85
YB04270	Sleet	15	$153.27		YD60191	Zoe	111	$165.47
YB04271	Sleet	16	$118.46		YD60192	Zoe	112	$152.23
YB04272	Sleet	17	$185.51		YD60193	Zoe	113	$151.73
YB04273	Sleet	18	$160.54		YD60194	Zoe	114	$172.26
YB04274	Sleet	19	$150.48		YD60195	Zoe	115	$156.66
YB04275	Sleet	20	$171.77		YD60196	Zoe	116	$177.42
YB04276	Sleet	21	$166.34		YD60197	Zoe	117	$182.46
YB04277	Sleet	22	$152.66		YD60198	Zoe	118	$153.97
YB04278	Sleet	23	$171.93		YD60199	Zoe	119	$164.40
YB04279	Sleet	24	$176.59		YD60200	Zoe	120	$147.63
YB04280	Sleet	33	$47.13		YD60201	Zoe	121	$151.90
YB04281	Sleet	34	$27.93		YD60202	Zoe	122	$174.22
YB04282	Sleet	35	$33.96		YD60203	Zoe	123	$156.16
YB04283	Sleet	36	$72.76		YD60204	Zoe	124	$150.10
YB04284	Sleet	37	$6.67		YD60205	Zoe	125	$180.56
YB04285	Sleet	38	$49.62		YD60206	Zoe	126	$176.51
YB04286	Sleet	39	$69.09		YD60207	Zoe	127	$141.00
YB04288	Sleet	41	$162.17		YD60208	Zoe	128	$150.61
YB04290	Sleet	43	$154.63		YD60209	Zoe	129	$183.87
YB04292	Sleet	45	$175.35		YD60210	Zoe	130	$153.19
YB04294	Sleet	47	$159.09		YD60211	Zoe	131	$165.92
YB04306	Sleet	59	$29.94		YD60212	Zoe	132	$166.48
YB04307	Sleet	61	$2.70		YD60213	Zoe	133	$152.91
YB04313	Sleet	68	$113.65		YD60214	Zoe	134	$183.81
YB04325	Sleet	122	$178.51		YD60215	Zoe	135	$152.85
YB04436	Sleet	93	$107.19		YD60216	Zoe	136	$152.68
YB45604	Wet	1	$148.99		YD60217	Zoe	137	$181.06
YB45613	Wet	10	$170.49		YD60218	Zoe	138	$150.66
YB45615	Wet	12	$160.95		YD60219	Zoe	139	$163.51
YB45617	Wet	14	$153.74		YD60220	Zoe	140	$172.42
YB45619	Wet	16	$184.75		YD60221	Zoe	141	$152.85
YB45621	Wet	18	$146.72		YD60222	Zoe	142	$175.23
YD60102	Zoe	22	$20.16		YD60223	Zoe	143	$158.57
YD60103	Zoe	23	$160.62		YD60224	Zoe	144	$153.07
YD60104	Zoe	24	$175.18		YD60225	Zoe	145	$180.56
YD60105	Zoe	25	$184.48		YD60226	Zoe	146	$167.38
YD60106	Zoe	26	$148.98		YD60227	Zoe	147	$153.80
YD60107	Zoe	27	$154.70		YD60228	Zoe	148	$181.29

YD60108	Zoe	28	$154.76	YD60229	Zoe	149	$154.20
YD60109	Zoe	29	$150.83	YD60230	Zoe	150	$151.84
YD60110	Zoe	30	$179.49	YD60234	Zoe	154	$152.79
YD60111	Zoe	31	$167.10	YD60236	Zoe	156	$171.53
YD60112	Zoe	32	$167.20	YD60237	Zoe	157	$150.11
YD60113	Zoe	33	$184.26	YD60238	Zoe	158	$177.42
YD60119	Zoe	39	$98.90	YD60239	Zoe	159	$183.87
YD60120	Zoe	40	$146.02	YD60240	Zoe	160	$150.44
YD60121	Zoe	41	$159.29	YD83888	ADN	1004	$147.34
YD60122	Zoe	42	$155.15	YD83889	ADN	1005	$145.43
YD60123	Zoe	43	$182.28	YD85358	ADN	858	$134.91
YD60124	Zoe	44	$148.08	YD85359	ADN	859	$88.89
YD60125	Zoe	45	$155.02	YD85422	ADN	922	$147.17
YD60126	Zoe	46	$151.61	YD85423	ADN	923	$157.10
YD60127	Zoe	47	$150.55	YD85424	ADN	924	$155.98
YD60128	Zoe	48	$179.27	YD85425	ADN	925	$175.55
YD60129	Zoe	49	$161.09	YD85426	ADN	926	$63.29
YD60130	Zoe	50	$170.97	YD85427	ADN	927	$147.68
YD60131	Zoe	51	$183.81	YD85428	ADN	928	$26.30
YD60132	Zoe	52	$151.17	YD85429	ADN	929	$134.81
YD60133	Zoe	53	$154.14	YD85470	ADN	970	$172.30
YD60134	Zoe	54	$151.90	YD85471	ADN	971	$146.05
YD60135	Zoe	55	$153.58	YD85472	ADN	972	$147.17
YD60140	Zoe	60	$174.25	YD85473	ADN	973	$151.55
YD60141	Zoe	61	$149.92	YD85474	ADN	974	$151.27
YD60142	Zoe	62	$152.58	YD85475	ADN	975	$179.31
YD60143	Zoe	63	$181.74	YD85476	ADN	976	$178.08
YD60144	Zoe	64	$130.70	YD85477	ADN	977	$150.03
YD60145	Zoe	65	$99.78	YD85502	ADN	1002	$177.91
YD60146	Zoe	66	$61.20				

Expense	Amount	
Airborne geophysics	$56.09/km	**TOTAL EXPENDITURE - $33,449.08**
LiDAR	$165.01/km^2	

9. STATEMENT OF QUALIFICATIONS

GEOLOGISTS CERTIFICATE

I, **Paul D. Gray**, P. Geo., do hereby certify:

THAT I am a Professional Geoscientist with offices 1000-1050 W. Pender St. Vancouver V6E 3S7 in the province of British Columbia

THAT I am an author of the Technical Report entitled "Assessment Report on the Clear Creek Claims 2017 Remote Sensing Programs" (the "Assessment Report"). I personally oversaw the entirety of the Falcon 2013 Program in the field.

THAT I am a member in good standing (#29833) of the Association of Professional Engineers and Geoscientists of British Columbia.

THAT I am a graduate of Dalhousie University, Halifax, in the Province of Nova Scotia, with a Bachelor of Science degree (Honours) in Earth Sciences

THAT I have practiced my profession as an exploration geologist in the mineral exploration industry continuously since 1997. I have worked on base, precious and industrial metals exploration projects as a geologist in Canada, the United States of America, Asia, and South and Central America.

THAT I am employed as Vice President Exploration of Victoria Gold Corp.

THAT I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

Dated at Vancouver, British Columbia, this 17 day of May, 2018

Paul D. Gray, P. Geo.

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA GEOSCIENTIST

I, **Helena Kristina Kuikka** do hereby certify that:

I am a geologist in the mineral exploration industry employed by Victoria Gold Corp.

I am an author of the Technical Report entitled "Assessment Report on the Clear Creek Claims 2017 Remote Sensing Programs" (the "Assessment Report"). I was working on site for the entirety of the 2017 Program in the field.

I am registered as a Geoscientist-in-Training in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.

I am a graduate of Simon Fraser University, Canada, with a Bachelor of Science Degree in Earth Sciences- Geology.

I have actively engaged in the mineral exploration industry since 2008.

Dated this 17 day of May, 2018

Helena Kuikka BSc. G.I.T

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Precision GeoSurveys

AIRBORNE GEOPHYSICAL SURVEY REPORT

Dublin Gulch, VBW, and Clear Creek Survey Blocks

Mayo, YT

Victoria Gold Corp.

Precision GeoSurveys Inc.
www.precisiongeosurveys.com
Hangar 42 Langley Airport
21330 - 56th Ave., Langley, BC
Canada V2Y 0E5
604-484-9402

June 2017

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Clear Creek -

(scale 1:25000)

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Plate 13_CC: Clear Creek - Total Count – Equivalent Dose Rate (TCcor)
Plate 14_CC: Clear Creek - Total Count – Exposure Rate (TCexp)
Plate 15_CC: Clear Creek - Potassium over Thorium Ratio (%K/eTh)
Plate 16_CC: Clear Creek - Potassium over Uranium Ratio (%K/eU)
Plate 17_CC: Clear Creek - Uranium over Thorium Ratio (eU/eTh)
Plate 18_CC: Clear Creek - Uranium over Potassium Ratio (eU/%K)
Plate 19_CC: Clear Creek - Thorium over Potassium Ratio (eTh/%K)
Plate 20_CC: Clear Creek - Ternary Map (TM)

1998 and 2017 Integrated Data (scale 1:40000)

Plate 21_CC: Clear Creek – 1998 and 2017 Residual Magnetic Intensity with Flight Lines (RMI_wFL_98_17)
Plate 22_CC: Clear Creek – 1998 and 2017 Residual Magnetic Intensity (%K_98_17)
Plate 23_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (eTh_98_17)
Plate 24_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (eU_98_17)
Plate 25_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (TCexp_98_17)

1.0 Introduction

This report outlines the geophysical survey operations and data processing procedures taken during the high resolution helicopter-borne magnetic and radiometric survey flown for Victoria Gold Corp. The airborne survey is comprised of two survey blocks: adjacent Dublin Gulch and VBW, and Clear Creek located in central Yukon (Figure 1). The geophysical survey started on June 5, 2017, and was completed on June 8, 2017.

Figure 1: Survey area location map.

1.1 Survey Area

The two survey blocks cover a total area of 599 km^2, centered 56 northwest of Mayo, YT (Figure 2). Dublin Gulch and VBW were contracted as separate blocks but were flown as one contiguous survey block.

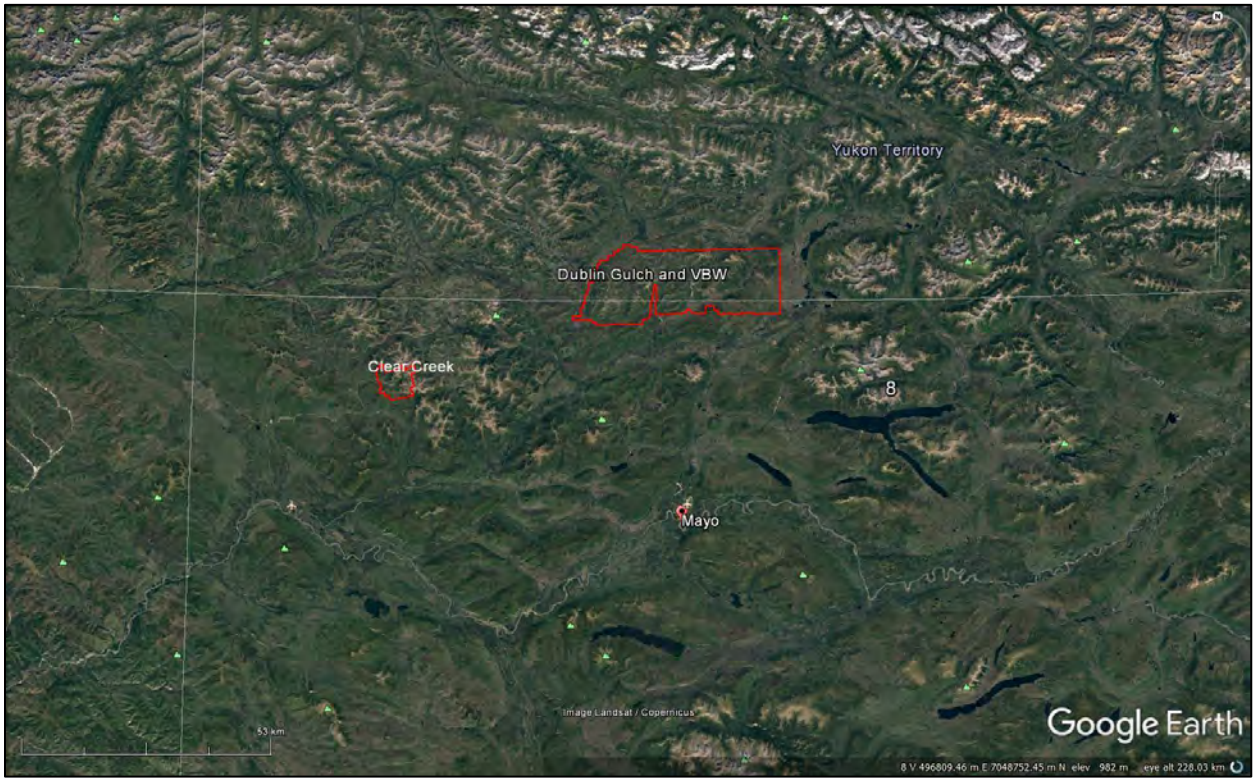


Figure 2: Survey block boundaries in red. Dublin Gulch and VBW merged into one block, north of Mayo, YT and Clear Creek, northwest of Mayo, YT.

A total of 4550 line km of data was collected on 387 survey lines and 20 tie lines over two survey blocks. Dublin Gulch/VBW was flown at 150 meter spacing at a 000°/180° heading; tie lines were flown at 1500 meter spacing at a heading of 090°/270° (Figures 3 and 4).

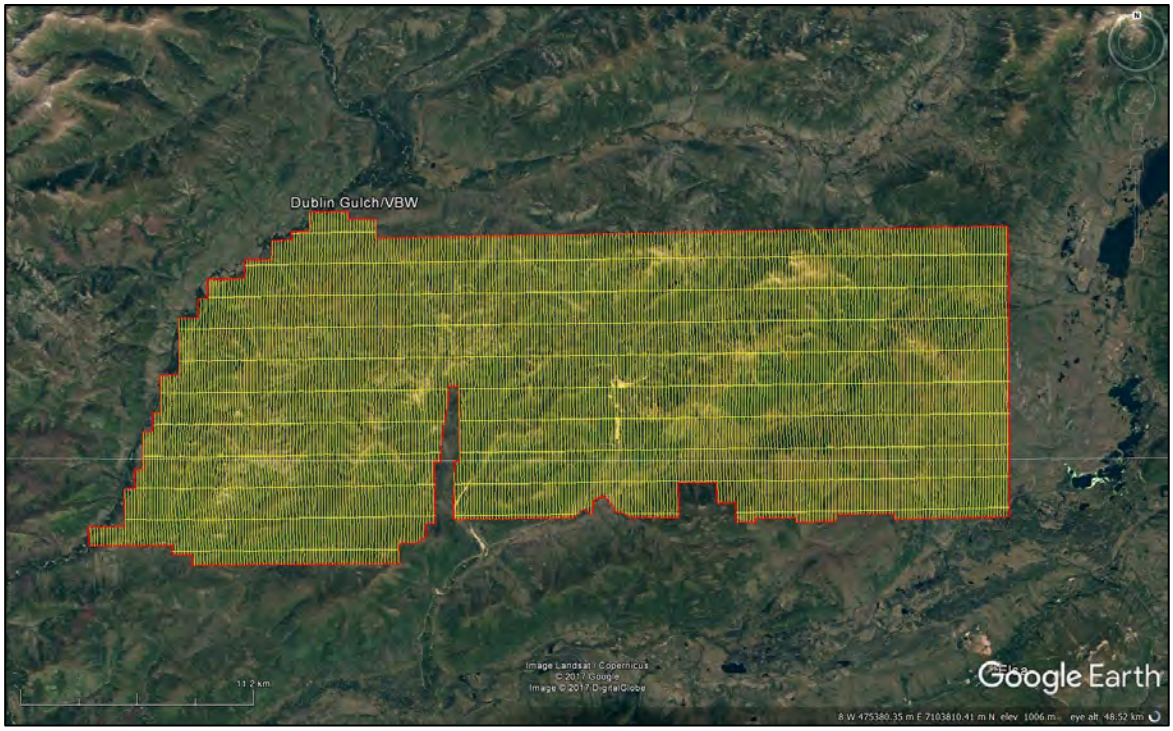


Figure 3: Plan View – Dublin Gulch/VBW with actual flight lines displayed in yellow and the block boundary in red.

Figure 4: Terrain View – Dublin Gulch/VBW with actual flight lines displayed in yellow.

Clear Creek survey block was flown at 100 meter spacing at a 045°/225° heading; tie lines were flown at 1000 meter spacing at a heading of 135°/315° (Figures 5 and 6).

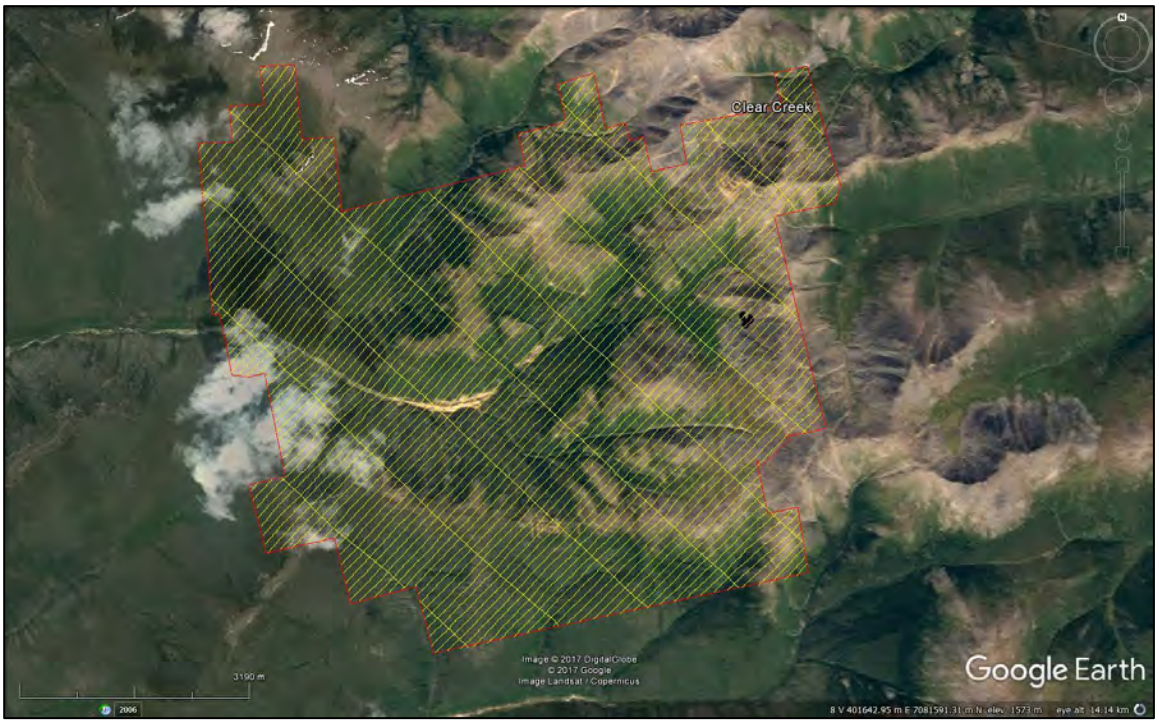


Figure 5: Plan View – Clear Creek survey block with actual flight lines displayed in yellow and the block boundary in red.

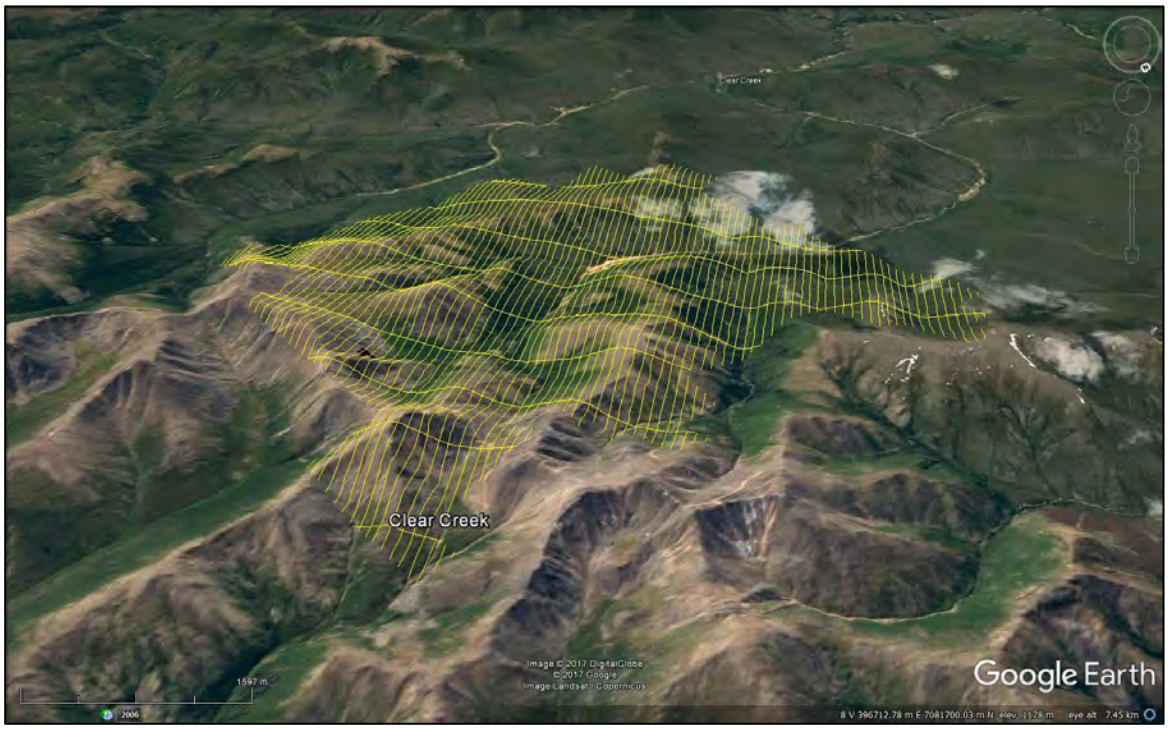


Figure 6: Terrain View – Clear Creek survey block with actual flight lines displayed in yellow.

1.2 Survey Specifications

The geodetic system used for the geophysical survey was WGS 84 and the area is contained in zone 8N. A total of 4550 line km was flown over the three survey blocks (Table 1). Polygon coordinates for the surveys are specified in Tables 1 to 3.

Block Name	Area (km^2)	Line Type	Planned No. of Lines	Line Spacing (m)	Line Orientation	Nominal Survey Height (m)	Total Planned Line km	Total Actual km Flown
Dublin Gulch and VBW (combined)	555	Survey	292	150	000°/180°	35	3699	3703
		Tie	11	1500	090°/270°	35	365	365
		Total:	**303**				**4064**	**4068**
Clear Creek	44	Survey	95	100	045°/225°	35	437	437
		Tie	9	1000	135°/315°	35	45	45
		Total:	**104**				**482**	**482**
						Total:	**4546**	**4550**

Table 1: Flight line specifications. All directions refer to WGS 84 8N.

Longitude	Latitude	Easting	Northing	N/S	E/W
135.47319403	64.09883173	476937	7108113	N	W
135.47110701	63.97535401	476937	7094353	N	W
135.58487873	63.97494010	471367	7094353	N	W
135.58493176	63.97747962	471367	7094636	N	W
135.64178042	63.97723937	468584	7094636	N	W
135.64208227	63.97436623	468566	7094316	N	W
135.68023165	63.97403089	466698	7094298	N	W
135.67991432	63.97610547	466716	7094529	N	W
135.71951990	63.97591452	464777	7094529	N	W
135.72021415	63.97431361	464741	7094351	N	W
135.73873905	63.97422049	463834	7094351	N	W
135.73896655	63.98284384	463834	7095312	N	W
135.75677322	63.98242901	462962	7095276	N	W
135.75736985	63.99088887	462944	7096219	N	W
135.79373045	63.99085618	461165	7096237	N	W
135.79331873	63.97632860	461165	7094618	N	W
135.84019493	63.97606479	458870	7094618	N	W
135.84627727	63.97791412	458575	7094828	N	W
135.85300030	63.97796451	458246	7094838	N	W
135.86501166	63.98518983	457669	7095651	N	W
135.87547922	63.98337701	457154	7095456	N	W
135.87716204	63.97708457	457062	7094756	N	W
135.88501709	63.97934338	456681	7095013	N	W
135.89583343	63.97576790	456146	7094622	N	W

136.01132995	63.97497307	450491	7094618	N	W
136.01043005	63.99985775	450579	7097390	N	W
136.00476774	63.99989704	450856	7097390	N	W
136.00591827	64.03189341	450856	7100956	N	W
136.01557772	64.03182623	450384	7100956	N	W
136.01568091	64.02678165	450370	7100394	N	W
136.02318941	64.00770222	449969	7098274	N	W
136.02320596	63.99976830	449954	7097390	N	W
136.02986983	63.99972119	449628	7097390	N	W
136.02890941	63.97360198	449628	7094479	N	W
136.03738462	63.97354164	449213	7094479	N	W
136.03718263	63.96808630	449213	7093871	N	W
136.04767495	63.96521072	448694	7093559	N	W
136.06400768	63.96509186	447894	7093559	N	W
136.06399572	63.95670927	447879	7092625	N	W
136.26520248	63.95509363	438020	7092625	N	W
136.26571276	63.95961279	438005	7093129	N	W
136.28447593	63.95958248	437086	7093144	N	W
136.28434657	63.96344307	437101	7093574	N	W
136.36664936	63.96269101	433069	7093574	N	W
136.36704547	63.97081023	433069	7094479	N	W
136.33164072	63.97113950	434803	7094479	N	W
136.33239994	63.98710001	434803	7096258	N	W
136.32241564	63.98731698	435292	7096272	N	W
136.32279934	63.99543631	435292	7097177	N	W
136.31401182	63.99551611	435722	7097177	N	W
136.31476813	64.01161126	435722	7098971	N	W
136.30536205	64.01169610	436182	7098971	N	W
136.30574080	64.01980649	436182	7099875	N	W
136.29725237	64.01988253	436597	7099875	N	W
136.29798733	64.03570858	436597	7101639	N	W
136.27917924	64.03587533	437516	7101639	N	W
136.28029503	64.06021561	437516	7104352	N	W
136.26147029	64.06038010	438435	7104352	N	W
136.26183710	64.06849057	438435	7105256	N	W
136.25210430	64.06857467	438910	7105256	N	W
136.25246892	64.07669413	438910	7106161	N	W
136.21569842	64.07700598	440704	7106161	N	W
136.21604630	64.08498200	440704	7107050	N	W
136.18900327	64.08520543	442023	7107050	N	W
136.18935513	64.09345067	442023	7107969	N	W
136.17081495	64.09360096	442927	7107969	N	W
136.17096616	64.09719874	442927	7108370	N	W
136.15271053	64.09734442	443817	7108370	N	W
136.15305184	64.10558976	443817	7109289	N	W
136.11533906	64.10588346	445655	7109289	N	W

136.11520037	64.10242020	445655	7108903	N	W
136.08811894	64.10262507	446975	7108903	N	W
136.08779689	64.09437955	446975	7107984	N	W

Table 2: Dublin Gulch/VBW polygon coordinates using WGS 84 in zone 8N.

Longitude	Latitude	Easting	Northing	N/S	E/W
137.05232483	63.87127775	399168	7084292	N	W
137.05431226	63.87507405	399084	7084718	N	W
137.05438311	63.87520771	399081	7084733	N	W
137.04852078	63.87579359	399371	7084789	N	W
137.04558952	63.87608644	399516	7084817	N	W
137.04405872	63.87323521	399581	7084497	N	W
137.04347204	63.87216618	399606	7084377	N	W
137.03918715	63.86417368	399788	7083480	N	W
137.03801005	63.86197279	399838	7083233	N	W
137.03911316	63.86006295	399777	7083022	N	W
137.05533406	63.85840586	398974	7082863	N	W
137.04291951	63.83455744	399499	7080187	N	W
137.05281016	63.83356440	399009	7080092	N	W
137.05192836	63.83318190	399051	7080048	N	W
137.05853061	63.83032285	398716	7079740	N	W
137.05981205	63.83088815	398655	7079805	N	W
137.05884243	63.82902561	398696	7079596	N	W
137.05664163	63.82477455	398789	7079119	N	W
137.04915620	63.82553629	399160	7079192	N	W
137.04705723	63.82154402	399249	7078744	N	W
137.04495887	63.81755171	399338	7078296	N	W
137.14459081	63.80738909	394397	7077325	N	W
137.14885006	63.81556768	394218	7078243	N	W
137.16562521	63.81386267	393386	7078081	N	W
137.16967572	63.82161289	393216	7078951	N	W
137.18780417	63.81976828	392317	7078776	N	W
137.19198199	63.82775844	392142	7079673	N	W
137.18290515	63.82867697	392592	7079760	N	W
137.18918188	63.84064875	392329	7081104	N	W
137.19349979	63.84020620	392115	7081062	N	W
137.19860065	63.84041600	391865	7081094	N	W
137.20242519	63.84771097	391705	7081913	N	W
137.20422166	63.84753096	391616	7081896	N	W
137.20575049	63.86730472	391617	7084101	N	W
137.19660046	63.86744398	392067	7084101	N	W
137.19689456	63.87147073	392068	7084550	N	W
137.18774312	63.87160943	392518	7084550	N	W
137.18805635	63.87563590	392518	7084999	N	W
137.17888317	63.87577435	392969	7084999	N	W

137.17857055	63.87173889	392969	7084549	N	W
137.17827907	63.86771208	392968	7084100	N	W
137.16910840	63.86784990	393419	7084100	N	W
137.16849004	63.85956339	393418	7083176	N	W
137.11930819	63.86453012	395853	7083648	N	W
137.12140037	63.86852157	395765	7084096	N	W
137.11230802	63.86943571	396215	7084183	N	W
137.10881475	63.86981886	396388	7084220	N	W
137.11091459	63.87392705	396300	7084681	N	W
137.10151304	63.87481807	396765	7084765	N	W
137.09930745	63.87063947	396858	7084296	N	W
137.09842653	63.86892850	396895	7084104	N	W
137.09319021	63.86941735	397154	7084150	N	W
137.09207434	63.86727881	397201	7083910	N	W
137.08865972	63.86762443	397370	7083943	N	W
137.08659259	63.86363219	397457	7083495	N	W
137.07752032	63.86453489	397906	7083581	N	W
137.07958690	63.86853622	397819	7084030	N	W
137.07427228	63.86907040	398082	7084081	N	W
137.07053382	63.86944716	398267	7084117	N	W

Table 3: Clear Creek survey block polygon coordinates using WGS 84 in zone 8N.

2.0 Geophysical Data

Geophysical data are collected in a variety of ways and are used to aid in determination of geology, mineral deposits, oil and gas deposits, geotechnical investigations, contaminated land sites and UXO detection.

For the purposes of this survey, airborne magnetic and radiometric data were collected to serve in the exploration for gold deposits.

2.1 Magnetic Data

Magnetic surveying is the most common airborne survey type to be conducted for both mineral and hydrocarbon exploration. Aeromagnetic surveys measure and record the total intensity of the magnetic field at the magnetometer sensor, which is a combination of the desired magnetic field generated in the Earth as well as minute variations due to the temporal effects of the constantly varying solar wind and the magnetic field of the survey aircraft. By subtracting the solar, regional, and aircraft effects, the resulting aeromagnetic map shows the spatial distribution and relative abundance of magnetic minerals (most commonly the iron oxide mineral magnetite) in the upper levels of the Earth's crust, which in turn is related to lithology, structure, and alteration of bedrock. The type of survey specifications, instrumentation, and interpretation procedures depend on the objectives of the survey. Magnetic surveys are typically performed for:

1. Geological Mapping - to aid in mapping lithology, structure and alteration.
2. Depth to Basement Mapping - for exploration in sedimentary basins or mineralization associated with the basement surface.

2.2 Radiometric Data

Radiometric surveys detect and map natural radioactive emanations, called gamma rays, from rocks and soils. All detectable gamma radiation from Earth materials come from the natural decay products of three primary radioelements: uranium (U), thorium (Th), and potassium (K). The purpose of radiometric surveys is to determine either the absolute or relative amounts of U, Th, and K in surface rocks and soils which are then useful in mapping lithology, alteration, and structure.

Surficial debris, vegetation, standing water (lakes, marshes, swamps), and/or snow can effectively attenuate gamma rays originating from underlying rocks. Therefore, variations in isotope counts must be evaluated with respect to surficial conditions before they are attributed to changes in underlying geology. An increase in soil moisture can also significantly affect gamma radiation concentrations. For example, 10% increase in soil moisture can decrease the measured gamma radiation by about the same amount. Radon, formed naturally from the decay of radioactive elements such as uranium, attaches to dust particles in the atmosphere. The radioactive precipitation of these dust particles by rain can lead to apparent increases of more than 2000% in uranium ground concentration (IAEA, 2003). Therefore, gamma ray surveying should not be carried out during a rainfall, or shortly after a rainfall.

3.0 Survey Operations

The survey started on June 5, 2017, and was completed on June 8, 2017 in windy and dry conditions. The survey did not encounter any delays due to weather or technical problems. See Appendix C daily flight log report for details. The experience of the pilot helped to ensure that the data quality objectives were met and that the safety of the flight crew was never compromised given the potential risks involved in airborne geophysical surveying. Field processing and quality control checks were done daily.

3.1 Operations Base and Crew

The base of operations for the Dublin Gulch/VBW and Clear Creek surveys was at Victoria Gold's Eagle exploration camp, within the Dublin Gulch/VBW survey block (Figure 7) at Haggart Creek.

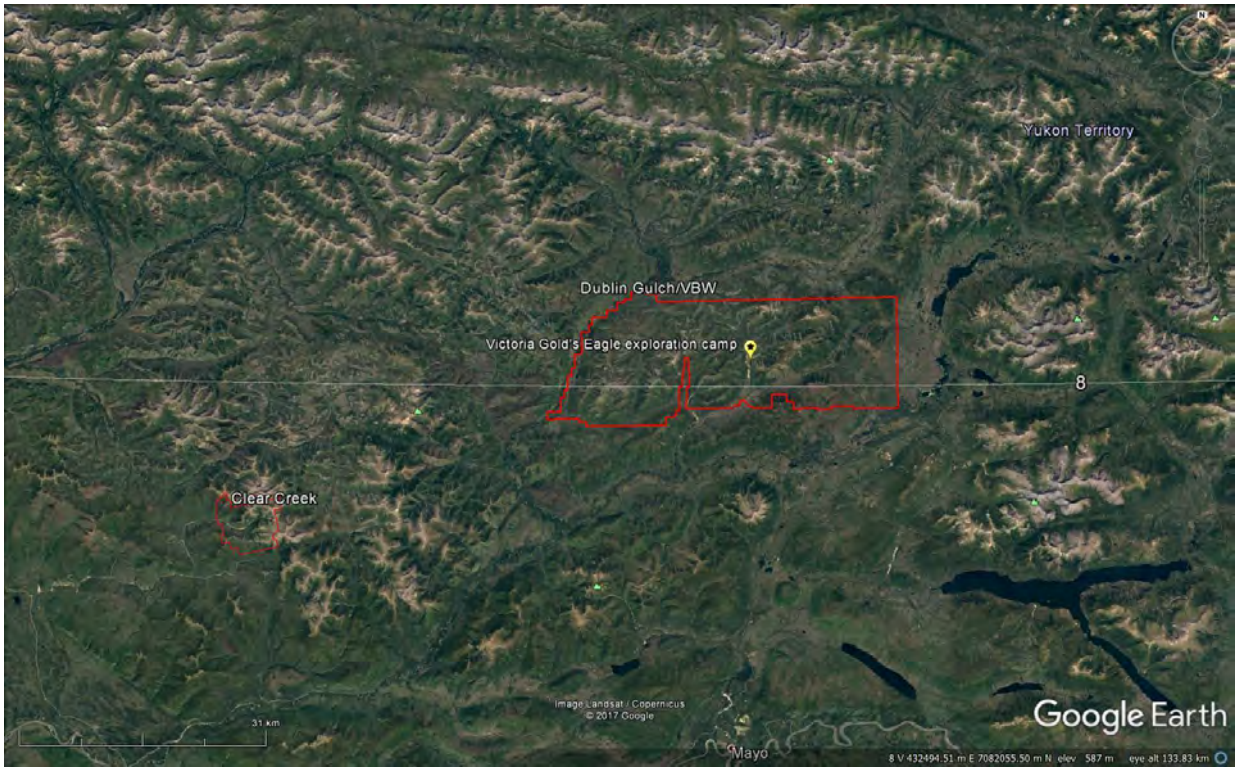


Figure 7: Map showing base of operation at Victoria Gold's Eagle exploration camp.

The Precision geophysical crew consisted of three members (Table 4):

Crew Member	Position
Lars Helgesen	Pilot
Shawn Walker, M.Sc., G.I.T.	Geophysicist and data processor (on-site)
Jenny Poon, P.Geo.	Geophysicist and data processor (off-site)

Table 4: List of survey crew members.

3.2 Base Station Specifications

Two GEM GSM-19T proton precession magnetometers were used to accurately record diurnal variations and geomagnetic storms in the survey area. Both base stations were set up north of the Eagle exploration camp, away from any sources of magnetic noise (Table 5; Figures 8 and 9).

Station name	Easting/Northing	Longitude/Latitude	Datum/ Projection
GEM 4 S/N 2105651	0458547E, 7100986N	135° 50' 54.67" W 64 ° 01' 59.41" N	WGS 84, Zone 8N
GEM 5 S/N 1094678	0458466E, 7101018N	135° 51' 0.68" W 64 ° 02' 0.38" N	WGS 84, Zone 8N

Table 5: Base station specifications.

Base station readings were reviewed at regular intervals to ensure that no airborne data were collected during periods of high diurnal magnetic activity (greater than 10 nT per minute). The magnetic base stations were installed in a magnetically noise-free area, away from metallic items such as ferromagnetic objects, vehicles, or power lines that could affect the base stations or survey data.

The diurnal magnetic variations recorded by the stationary base stations were removed from the magnetic data recorded in flight to ensure that the final magnetic data accurately represented the geomagnetic properties of the survey area and not contaminated by solar activity.

Figure 8: GEM 4 (left) and GEM 5 (right) magnetic base stations located in the field far away from metallic items/objects.

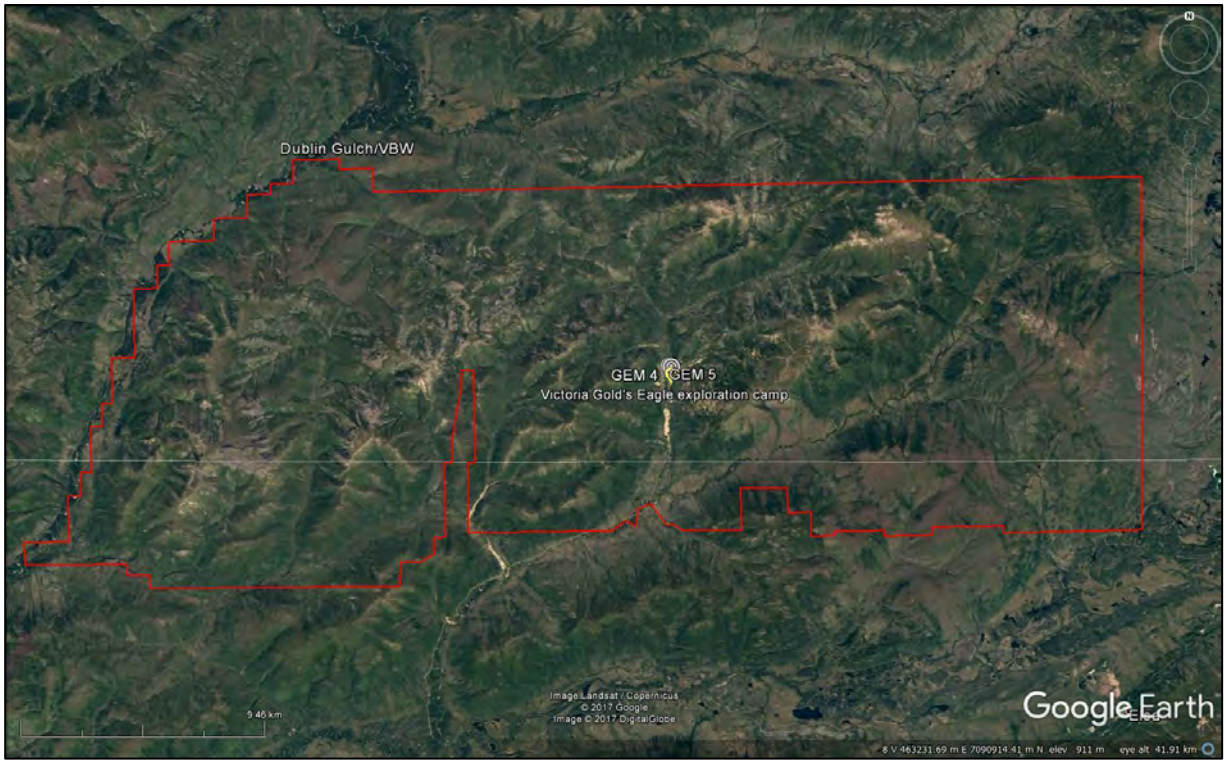


Figure 9: GEM 4 and GEM 5 magnetic base station locations within Dublin Gulch/VBW survey block.

3.3 Field Processing and Quality Control

On a flight-by-flight basis, the survey data were transferred from the helicopter's data acquisition system onto a USB flash drive and copied onto a field data processing laptop. The raw data files in PEI binary data format were converted into Geosoft GDB database format. Using Geosoft Oasis Montaj 9.1.3, the quality of the data was inspected to ensure that it met the contract specifications (Table 6, Figures 10 to 12).

Parameter	Specification	Details
Position	Line Spacing	Flight line deviation from flight path by more than 10 m left/right for 1 km or more.
	Height	Ground clearance by more than 10 m up/down for 1.0 km or more, provided line deviation from height is not due to tall trees, topography, cultural features, mitigation of wildlife harassment, or other obstacles beyond the pilot's control.

	GPS	Any flight lines where 3 or less GPS satellites received for distances of greater than 1 km, provided signal loss is not due to topography.
Magnetics	Diurnal Variations	Non-linear magnetic diurnal variations exceed 10 nT from a linear chord of length one (1) minute.
	Normalized 4th Difference	Magnetic data exceeding 0.10 nT peak to peak for distances greater than 1 km or more (provided noise is not due to geological or cultural features).
Radiometrics	Test Line Data	If signal from the four spectrometer windows (K, Th, U, TC) over the test line varies by more than 12%, the flights shall be re-flown or suspended.

Table 6: Contract re-flight specifications.

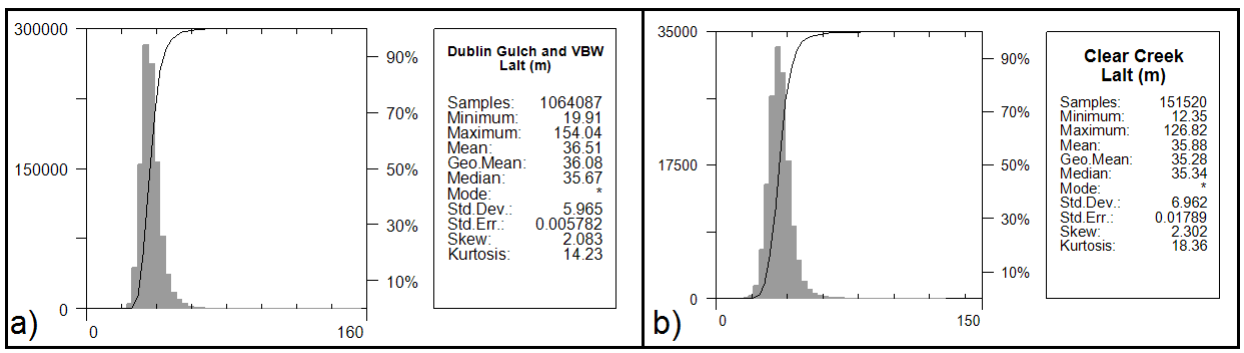


Figure 10: Histograms showing survey elevation vertically above ground. a) Dublin Gulch/VBW b) Clear Creek.

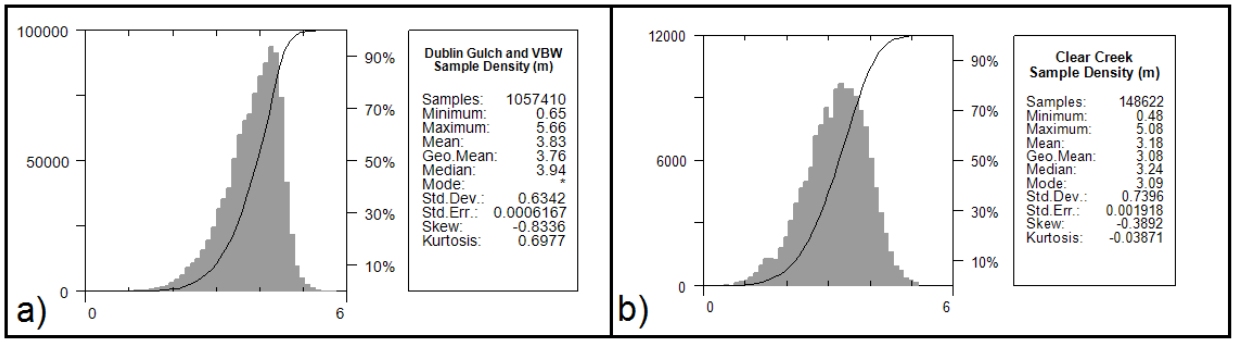


Figure 11: Histograms showing survey sample density. Linear distance in meters between adjacent measurement locations; sample frequency is 10 measurements per second. a) Dublin Gulch/VBW b) Clear Creek.

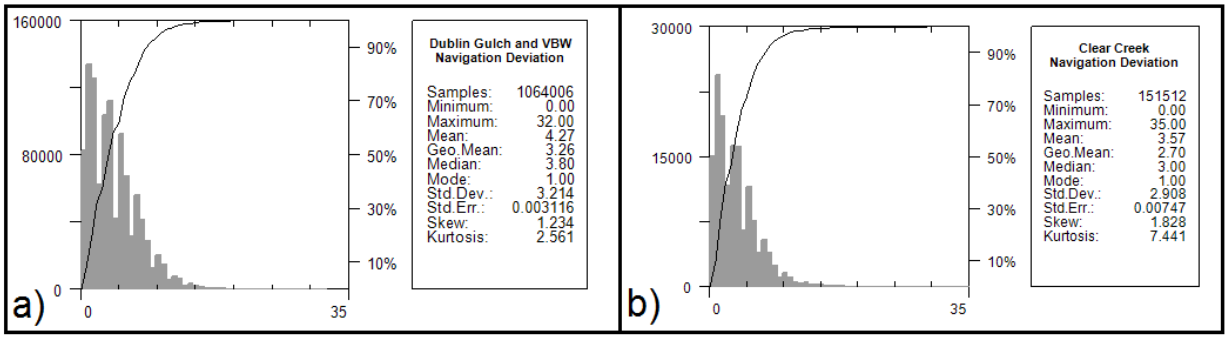


Figure 12: Histograms showing cross line navigation deviation. a) Dublin Gulch/VBW b) Clear Creek.

At Dublin Gulch/VBW survey block, several flight lines returned suspicious magnetic features that were investigated with re-flights. Part of L1870 was re-flown and the data consistently displayed the same magnetic linear high (Figure 13) parallel with the survey line. This confirmed the magnetic high feature to be real; therefore data from the first flight were used in the final database. Lines L440, L1520, and L1560 were also partially re-flown to confirm that suspicious magnetic features were real; data from the second flights were used in the final database.

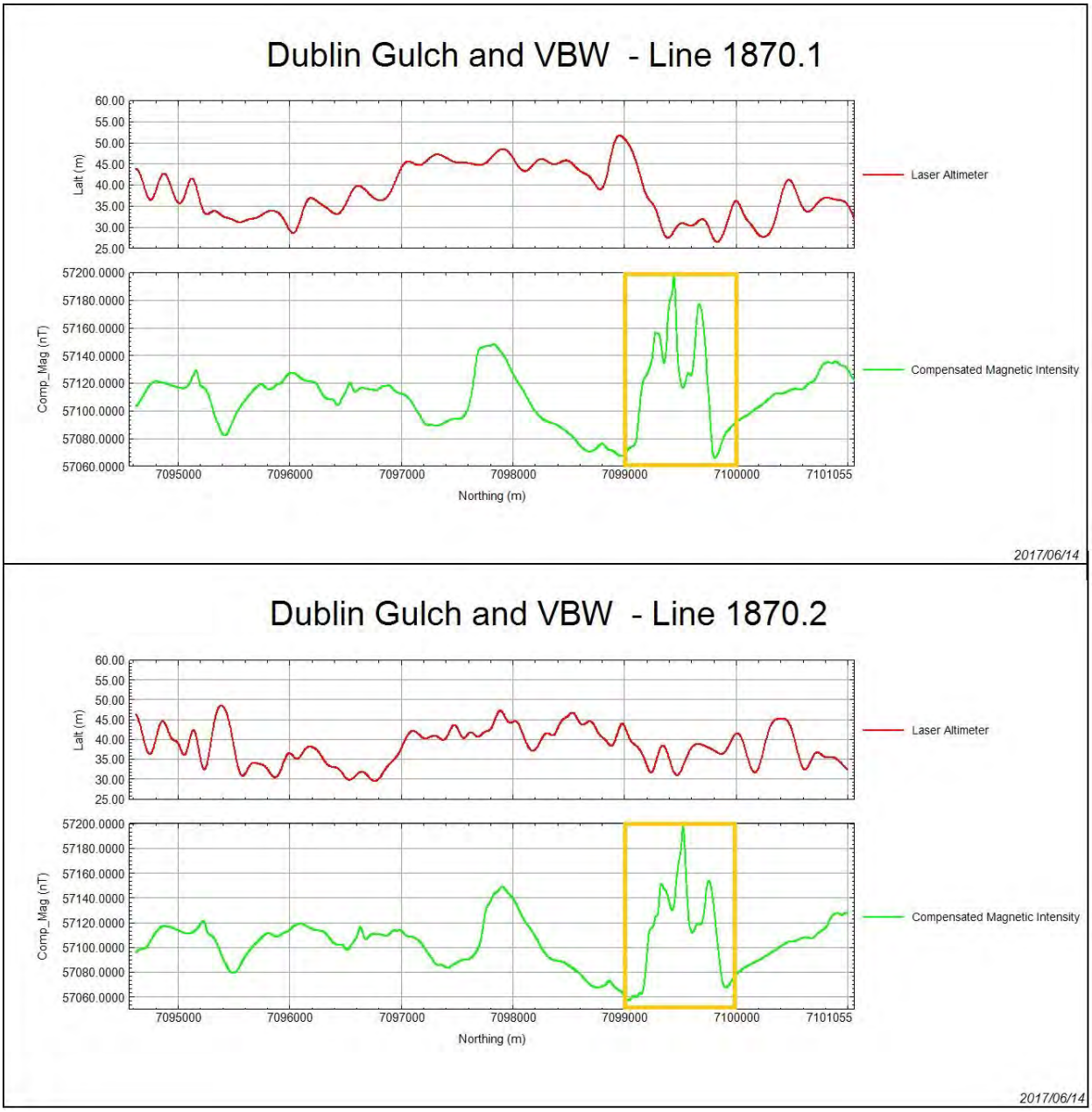


Figure 13: Profile plot of L1870 within Dublin Gulch/VBW survey block, looking west. Y-axis displaying laser altimeter readings in meters AGL (top, in red), compensated magnetic intensity (bottom, in green) and the x-axis displaying Y UTM coordinates. The high amplitude magnetic anomaly centered at UTM N 7099500 was reproduced on the re-flight.

At Dublin Gulch/VBW survey block, L1950 showed an isolated magnetic high-amplitude and short-wavelength anomaly which was not present on adjacent lines. The line was re-flown and the isolated magnetic high was not observed (Figure 14). Therefore the first flight returned an error in the data and data from the second flight were used in the final database.

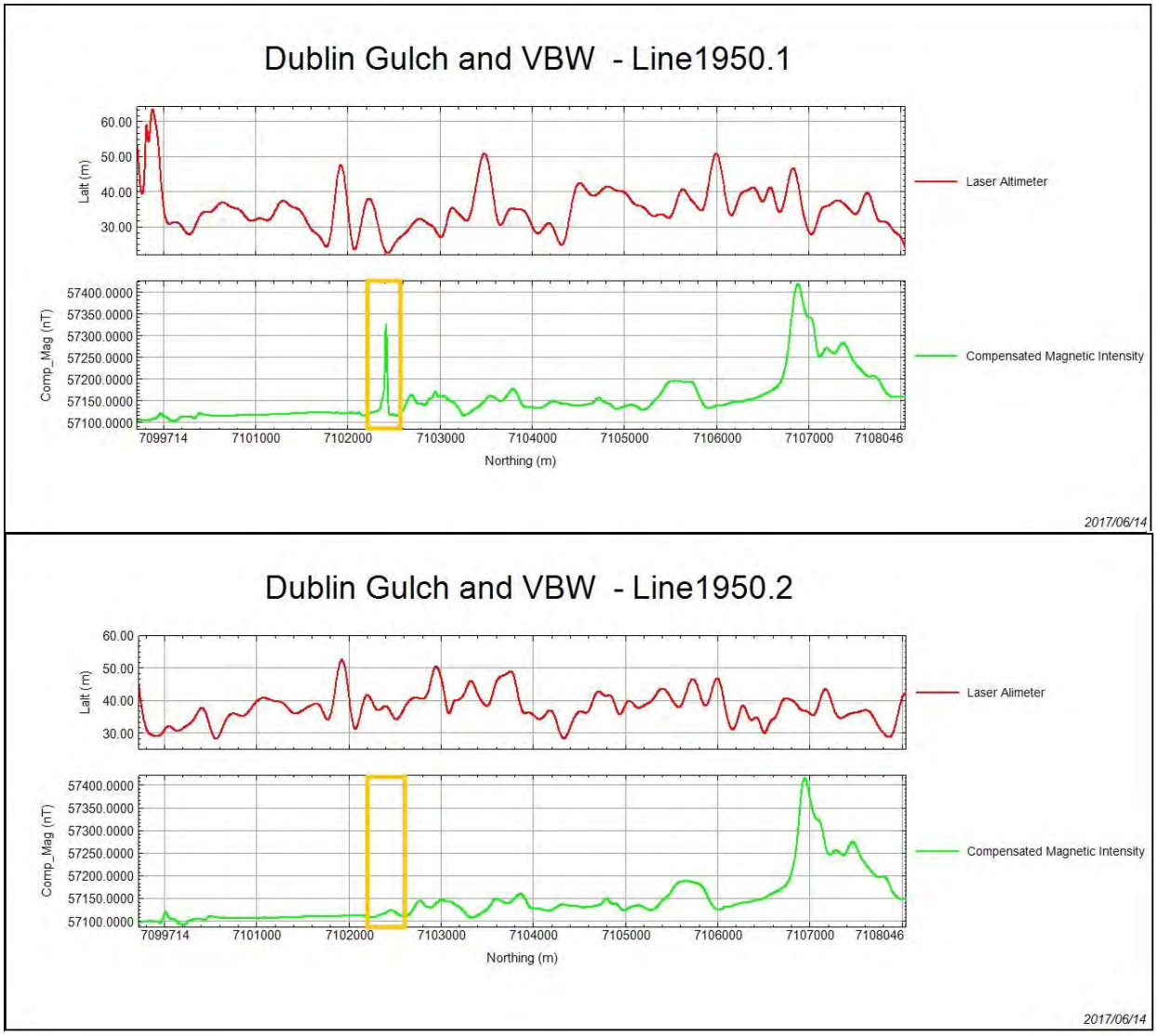


Figure 14: Profile plot of L1950 within the Dublin Gulch/VBW survey block, looking west. Y-axis displaying laser altimeter readings in meters AGL (top, in red), compensated magnetic intensity (bottom, in green) and the x-axis displaying Y UTM coordinates. The high amplitude narrow anomaly centered at UTM N 7102500 recorded on the first flight was not reproduced on the re-flight.

4.0 Aircraft and Equipment

All geophysical and subsidiary equipment were carefully installed on Precision GeoSurveys aircraft. For this survey, the survey magnetometer was carried in an approved "stinger" configuration to enhance flight safety and improve data quality.

4.1 Aircraft

Precision GeoSurveys flew the survey using an Airbus (formerly Eurocopter) AS350 helicopter, registration C-GSVY. The survey was flown at a constant height of 35 meters above ground for both the magnetometer and spectrometer.

4.2 Geophysical Equipment

The survey helicopter (Figure 15) was equipped with a magnetometer, spectrometer, data acquisition system, laser altimeter, magnetic compensation system, pilot guidance unit (PGU), and GPS navigation system. In addition, two magnetic base stations were used to record diurnal magnetic variations.

Figure 15: Geophysical survey helicopter equipped with geophysical equipment.

4.2.1 AGIS

The Airborne Geophysical Information System, AGIS (Figure 16), is the main computer used in data recording, data synchronizing, displaying real-time quality control data for the geophysical operator, and the generation of navigation information for the pilot and operator display systems. Information such as magnetic field components, total gamma count, counts of various

radioelements (K, U, Th, etc.), temperature, cosmic radiation, barometric pressure, atmospheric humidity, and survey altitude can all be monitored on the on-board AGIS display for immediate quality control.

The AGIS was manufactured by Pico Envirotec and uses standardized Pico software. External sensors are connected to the system via RS-232 serial communication cables. The AGIS data format is converted into Geosoft or ASCII file formats by a conversion program called PEIView. Additional Pico software allows for post or real time magnetic compensation and survey quality control procedures.

Figure 16: AGIS operator display installed in the Airbus AS350 survey helicopter, with screen displaying real time flight line recording and navigation parameters. Additional windows display real time geophysical data to operator.

4.2.2 Magnetometer

The airborne magnetic sensor was a Scintrex cesium vapor CS-3 magnetometer (S/N 1107379). The system was mounted on the front of the helicopter in an approved "stinger" configuration (Figure 17) to reduce influence from the aircraft's magnetic field. The CS-3 is a high sensitivity/low noise magnetometer with automatic hemisphere switching and a wide voltage range; the static noise rating for the unit is +/- 0.01 nT. Magnetic data were recorded at 10 Hz. A separate fluxgate magnetometer determined the helicopter's attitude (pitches, rolls, and yaws) relative to the inclination and declination of the Earth's magnetic field, which was necessary to remove magnetic noise created by the movement of the helicopter through a compensation process.

Figure 17: Scintrex cesium vapor CS-3 magnetometer mounted on the front of the helicopter in an approved "stinger" configuration. Sensor oriented 45° from vertical.

4.2.3 Spectrometer

The GRS-10 Radiometric Data Acquisition System, is a fully integrated gamma radiation detection system containing four NaI (T1) synthetic downward-looking crystals (Figure 18) and one NaI (T1) synthetic upward-looking crystal with 256 channel output at 1 Hz sampling rate. Each crystal has a volume of 4.2 liters, for a total of 21.0 liters. The downward-looking crystals are designed to measure gamma rays from below the aircraft and are equipped with upward-shielding high density RayShield® gamma-attenuating blankets to minimize cosmic and solar gamma noise. The upward-looking crystal measures solar gamma radiation from above the survey helicopter with a 6 mm thick lead plate used for downward-shielding. One of the downward-looking crystal packs was installed in the rear cabin of the aircraft, and the other downward-looking crystal pack was in the rear cargo box (total 16.8 liters downward-looking). The upward-looking crystal (total of 4.2 liters) was installed in the right cargo cheek.

Figure 18: GRS-10 Thallium-activated Sodium Iodide gamma spectrometer crystal pack. The open unit on the right shows two individual 4.2 liter detectors.

4.2.4 Base Station

To monitor and record the Earth's diurnal magnetic field variation, Precision GeoSurveys operates two GEM GSM-19T magnetometer base stations. The base stations were located in an area with low magnetic gradient, away from electric power transmission lines and moving ferrous objects, such as motor vehicles, that could affect the survey data integrity.

The GEM GSM-19T magnetometer (Figure 19) with integrated GPS time synchronization uses proton precession technology with a 0.5 Hz sampling rate. The GSM-19T has an absolute accuracy of +/- 0.2 nT and sensitivity of 0.15 nT at 1 Hz. Base station magnetic data were recorded on internal solid-state memory, and downloaded onto a field laptop computer using a serial cable and GEMLink 5.0 software. Profile plots of the base station readings were generated, updated, and reviewed at the end of each survey day.

Figure 19: GEM GSM-19T proton precession magnetometer.

4.2.5 Laser Altimeter

The pilot is provided with terrain guidance and clearance information from an Opti-Logic RS800 laser altimeter (Figure 20). This is attached to the aft end of the magnetometer boom. The RS800 laser is a time-of-flight sensor that measures distance by a rapidly-modulated and collimated laser beam that creates a dot on the target surface. The maximum range of the laser altimeter is 700 m off of natural surfaces with an accuracy of +/- 1 meter on 1 x 1 m^2 diffuse target with 50% (+/- 20%) reflectivity. Within the sensor unit, reflected signal light is collected by the lens and focused onto a photodiode. Through serial communications and digital outputs, the ground clearance data are transmitted to an RS-232 compatible port and recorded and displayed by the AGIS and PGU at 10 Hz in meters.

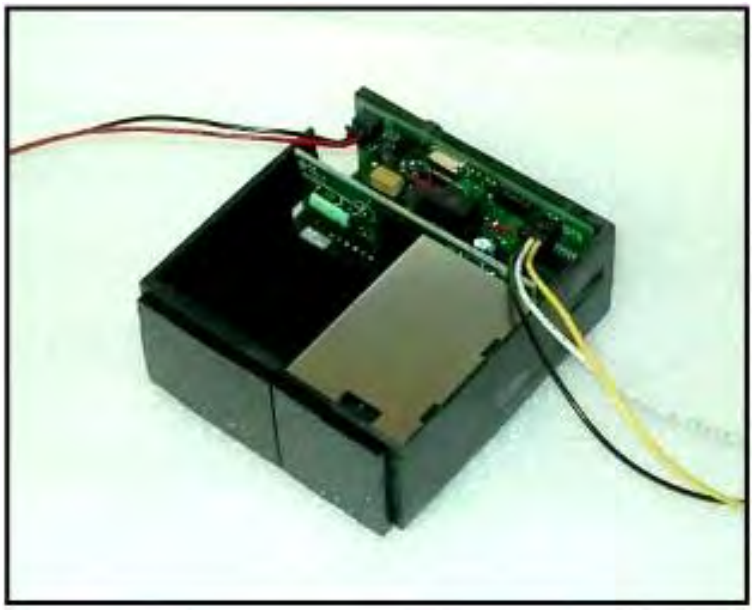


Figure 20: Opti-Logic RS800 laser altimeter.

4.2.6 Pilot Guidance Unit

The PGU (Pilot Guidance Unit) is a graphical display type unit that provides continuous steering and elevation information to the pilot (Figure 21). It is mounted remotely from the data system on top of the helicopter's instrument panel. The PGU assists the pilot in keeping the helicopter on the planned flight path, heading, and at the desired ground clearance.

Figure 21: PGU screen displaying navigation information.

The LCD monitor measures 7 inches, with a full VGA 800 x 600 pixel display. The CPU for the PGU is contained in a PC-104 console and uses Microsoft Windows operating system control, with input from the GPS antenna, embedded drape surface profile or laser altimeter, and AGIS.

4.2.7 GPS Navigation System

A Hemisphere R120 GPS receiver (Figure 22) navigation system integrated with the pilot display (PGU) and AGIS provided navigational information and control. The R120 GPS receiver supports fast updates and outputs messages at a rate of up to 20 Hz (20 times per second); delivering sub-meter positioning. It employs COAST technology that allows continuous operation for at least 40 minutes during temporary differential signal outages.

Figure 22: Hemisphere R120 GPS Receiver.

It can track GPS, SBAS (Satellite-Based Augmentation System), and L-Band (OmniSTAR HP and XP) differential corrections to provide accurate positioning.

5.0 Data Acquisition Equipment Checks and Calibration

Airborne equipment tests and calibrations were conducted at the start of the survey. There were three tests conducted for the airborne magnetometer: compensation flight, lag test, and heading error test. Three other tests were conducted for the airborne gamma ray spectrometer: calibration pad test, cosmic flight test, and the altitude correction and sensitivity test.

5.1 Magnetometer Tests

Before acquiring magnetic data the magnetometer was tested and calibrated. A series of dedicated flights were completed to collect data specifically for removing undesired side-effects of aircraft movement, speed, and heading direction.

5.1.1 Compensation Flight Test

During aeromagnetic surveying a small but significant amount of noise is introduced to the magnetic data by the aircraft itself, as the magnetometer is within the aircraft's magnetic field. Movement of the aircraft (roll, pitch and yaw) combined with the permanent magnetization of certain aircraft parts (in particular the engine and other ferrous magnetic objects) contribute to this noise. The aircraft was degaussed prior to starting the survey and the remaining magnetic

noise was removed by a process called magnetic compensation. Two magnetic compensation flights were completed prior to beginning the survey (Tables 7 and 8). The process consists of a series of prescribed maneuvers where the aircraft flies in the four orthogonal headings required for the survey (000°/090°/180°/270° and 045°/135°/225°/315° in the case of these surveys) at a sufficient altitude (typically > 2,500 m AGL) in an area of low magnetic gradient where the Earth's magnetic field becomes nearly uniform at the scale of the compensation flight. In each heading direction, three specified roll, pitch, and yaw maneuvers (total 36) are performed by the pilot at constant elevation so that any magnetic variation recorded by the airborne magnetometer can be attributed to aircraft movement. These maneuvers provide the data that are required to calculate the necessary parameters for compensating the magnetic data and removing aircraft noise from survey data.

Pre-Compensation					Post-Compensation				
Heading	**Roll**	**Pitch**	**Yaw**	**Total**	**Heading**	**Roll**	**Pitch**	**Yaw**	**Total**
091°	10.9596	6.8175	1.9134	19.6905	091°	0.1277	0.2231	0.2002	0.5510
180°	9.6973	8.0308	3.1968	20.9249	180°	0.1468	0.2364	0.2541	0.6373
271°	4.053	7.3072	2.1489	13.5091	271°	0.1452	0.2515	0.1301	0.5268
359°	8.5548	2.6197	1.7821	12.9566	359°	0.1468	0.1375	0.1934	0.4777
Total	33.2647	24.7752	9.0412		**Total**	0.5665	0.8485	0.7778	
FOM (nT) =67.0811					**FOM (nT) =2.1928**				

Table 7: Figure of Merit maneuver test results for 000°/090°/180°/270° compensation flight flown on June 5, 2017.

Pre-Compensation					Post-Compensation				
Heading	**Roll**	**Pitch**	**Yaw**	**Total**	**Heading**	**Roll**	**Pitch**	**Yaw**	**Total**
045°	9.4563	4.5829	2.9656	17.0048	045°	0.1153	0.0875	0.1726	0.3754
138°	10.8288	6.6106	3.6404	21.0798	138°	0.1757	0.1362	0.1962	0.5081
224°	6.0950	7.7755	3.8636	17.7341	224°	0.0997	0.1199	0.0746	0.2942
316°	5.4359	3.5705	1.7467	10.7531	316°	0.0882	0.1073	0.0837	0.2792
Total	31.8160	22.5395	12.2163		**Total**	0.4789	0.4509	0.5271	
FOM (nT) =66.5718					**FOM (nT) =1.4569**				

Table 8: Figure of Merit maneuver test results for 045°/135°/225°/315° compensation flight flown on June 8, 2017.

5.1.2 Lag Test

A lag test was performed to determine the relationship between the time the digital reading was recorded by the magnetic sensor instrument and the position fix time that the fiducial of the reading was obtained by the GPS system. The test was flown in the four orthogonal survey headings over an identifiable magnetic anomaly at survey speed and height. A lag of 16 fiducials (1.6 seconds) was determined from the lag test.

5.1.3 Heading Error Test

To determine the magnetic heading effect two cloverleaf pattern flight tests were conducted. The cloverleaf tests were flown in the same orthogonal headings as the survey and tie lines (000°/090°/180°/270° and 045°/135°/225°/315°) at >1000 m AGL in an area with low magnetic gradient. For each cloverleaf test, the survey aircraft must pass over the same mid-point all four times at the same elevation (Tables 9 and 10).

Heading	Fiducials	Mag (nT)	Correction (nT)
000°	882.7	57052.6635	4.8674
090°	1031.0	57062.2965	-4.7656
180°	735.6	57063.8482	-6.3173
270°	1149.7	57051.3154	6.2155
	Average	57057.5309	
	Total		**0.0000**

Table 9: Heading error test data format for Dublin Gulch/VBW flown on June 5, 2017.

Heading	Fiducials	Mag (nT)	Correction (nT)
045°	932.2	57074.5909	0.7471
135°	1147.3	57085.0857	-9.7477
225°	807.1	57075.6623	-0.3243
315°	1031.1	57066.0131	9.3249
	Average	57075.3380	
	Total		**0.0000**

Table 10: Heading error test data format for Clear Creek flown on June 8, 2017.

5.2 Gamma-ray Spectrometer Tests and Calibrations

Pre-survey calibrations and testing of the GRS-10 airborne gamma-ray spectrometry system were carried out prior to the start of the survey. The calibration of the spectrometer system involved three tests which enabled the conversion of airborne data to ground concentration of natural radioactive elements. These tests were the calibration pad test, cosmic flight test, and the altitude correction and sensitivity test. The measurements were made in accordance with IAEA technical report series No. 323, *Airborne Gamma Ray Spectrometer Surveying*, and AGSO Record 1995/60, *A Guide to the Technical Specification for Airborne Gamma-Ray Surveys*.

5.2.1 Calibration Pad Test

The calibration pad test was conducted by Pico Envirotec using GSC (Geological Survey of Canada) portable calibration pads. The pads are slabs of concrete containing known concentrations of the radioelements (K, Th, and U) and are used to simulate ideal geological sources of radiation. The measurements collected from the calibration pad test were used to determine the Compton scattering and Grasty backscatter (spectral overlap between element windows) coefficients.

5.2.2 Cosmic Flight Test

While the background source of gamma radiation from the aircraft itself is essentially constant, the amount of signal detected from ground sources varies with ground clearance. As the height of the aircraft increases, the distance between the ground and the spectrometer crystals increase, and the proportion of cosmic radiation in each spectral window increases exponentially due to radiation of cosmic origin. The cosmic flight test is conducted to determine the aircraft's background attenuation coefficients for the detector crystal packs and the cosmic coefficients. The pilot is required to fly over the same location repeatedly in opposite directions starting from 1,500 m to 3,000 m at 500 m intervals for approximately 2 minutes each to collect gamma data used to determine the amount of non-terrestrial gamma signal.

5.2.3 Altitude Correction and Sensitivity Test

The altitude and sensitivity test is similar to the cosmic flight test but is conducted at lower elevations (from ground level). The pilot is required to fly over the same location at the following elevations in meters above ground; 30, 50, 100, 150, 200, 250, and 300, for 2 minutes each. As the distance of the aircraft increases away from the radioactive ground source, the source signature exponentially degrades. As a result, this test is used to determine the altitude attenuation coefficients and the radio-element sensitivity of the airborne spectrometer system.

6.0 Data Processing

After all the data were collected from a survey flight, several procedures were undertaken to ensure that the data met a high standard of quality. All magnetic and radiometric data (Figure 23) were processed using Pico Envirotec software and Geosoft Oasis Montaj 9.1.3 geophysical processing software along with proprietary processing algorithms.

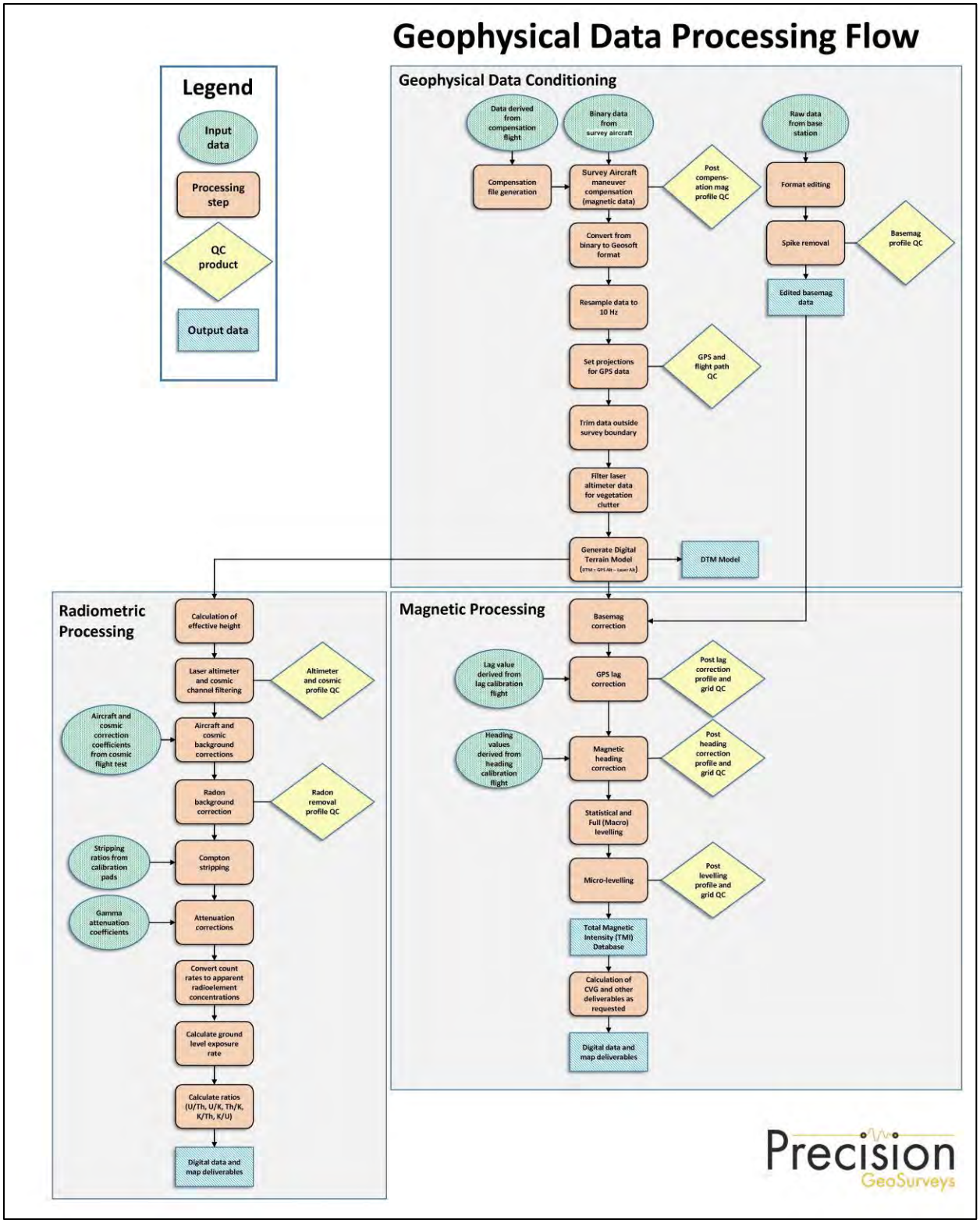


Figure 23: Magnetic and radiometric data processing flow.

6.1 Digital Terrain Model

Over glassy water or fog, the laser altimeter is unable to record a valid reading and causes the laser to drop out and record either an invalid reading or zeros. Areas with dense vegetation; thick tree covers, laser cannot penetrate through the trees to record actual ground clearance and high frequency variations are recorded. Corrections were applied to the laser altimeter data. To remove vegetation clutter, a Rolling Statistic filter was applied followed by a low pass filter which was used to smooth out the laser altimeter profile to eliminate isolated high frequency noise. Where the laser had dropped out, the invalid data or recorded zeros were replaced with ground clearance values computed from taking the difference between CDED (Canadian Digital Elevation Data) and GPS altitude of the aircraft.

A digital terrain model (DTM) channel was calculated by subtracting the processed laser altimeter data from the filtered GPS altimeter data defined by the WGS 84 ellipsoidal height.

6.2 Magnetic Processing

The data obtained from the compensation flight test were applied to the raw magnetic data before any further processing and editing. A computer program called PEIComp was used to create a model from the compensation flight test for each survey to remove the noise induced by aircraft movement; this model was applied to each survey flight so the data could be further processed.

The compensated raw magnetic data were then corrected for diurnal variations, lag, and heading. Any evidence of noise or spikes was removed. The initial corrected data from the survey and tie lines were then used to level the entire survey dataset. Lastly, the International Geomagnetic Reference Field (IGRF) was used to remove the background magnetic field of the Earth.

6.2.1 Diurnal Correction

The first step in processing the compensated magnetic data was to correct for diurnal variations. The base station data that were used for the correction came from GEM 5. The diurnal data were edited, plotted and merged into a Geosoft database (.GDB) on a daily bases. The airborne magnetic data were corrected for diurnal variations by subtracting the observed magnetic base station deviations from the data collected on the aircraft, which effectively removed the effects of diurnal variation, diurnal drift, and geomagnetic storms.

6.2.2 Lag Correction

Following the diurnal correction, a lag correction of 1.6 seconds was applied to the total magnetic field data to compensate for the combination of lag in the recording system and the magnetometer sensor flying 5.4 m ahead the GPS antenna.

6.2.3 Heading Correction

For each survey heading the magnetic instrument travels along a flight line, changes in instrument magnetic fields are detected and these systematic shifts are recorded. These values are used to construct a heading .TBL table file. An intersection table was created, containing all magnetic field values where tie lines intersected the survey lines and the overall average magnetic field value was calculated. For each of the four headings, the averages were calculated and then compared to the overall average to determine four values to be used for heading error correction.

6.2.4 Leveling and Micro-leveling

The initial Total Magnetic Intensity (TMI) data from survey and tie lines were used to level the entire survey dataset. Two forms of leveling were applied to the corrected data: conventional leveling and micro-leveling. There were two components to conventional leveling; Statistical Leveling to level tie lines and Full Leveling to level survey lines. The Statistical Leveling method corrected for miss-ties (SL/TL intersection errors) following a specific pattern or trend. Through the error channel, an algorithm calculated a least-squares trend line and derived a trend error curve, which was then added to the channel to be leveled. The second component was Full Leveling. This adjusted the magnetic value of the survey lines so that all lines matched the trended tie lines at each intersection point.

Lastly, micro-leveling was applied to the corrected conventional leveled data. This iterative grid-based process removed low amplitude components of flight line noise that still remained in the data after tie line and survey line leveling.

6.2.5 IGRF Removal

The International Geomagnetic Reference Field (IGRF) model is the empirical representation of the Earth's magnetic field (main core field without external sources) collected and disseminated from satellite data and from magnetic observatories around the world. The IGRF is generally revised and updated every five years by a group of modelers associated with the International Association of Geomagnetism and Aeronomy (IAGA). In this case, the IGRF values were calculated from the recently updated model (IGRF – 12) year 2015 and the actual survey dates were obtained from the "Date" channel.

By subtracting the calculated IGRF from TMI, Residual Magnetic Intensity (RMI) for each of the survey blocks were calculated. This created a more valid model of individual near-surface anomalies so that the data were not referenced to a specific time. This will allow for other magnetic data (historic or future) to be more easily incorporated into each survey database.

6.2.6 Reduced to Magnetic Pole

The Reduced to Magnetic Pole (RTP) was computed from the leveled Residual Magnetic Intensity (RMI) data. The RTP filter is applied in the Fourier domain and it migrates the observed magnetic inclination and declination field to what the field would look like at the magnetic pole.

6.2.7 Calculation of First Vertical Derivative

The first vertical derivative were computed from both the leveled Residual Magnetic Intensity (RMI) data and Reduced to Magnetic Pole (RTP). Long wavelengths and vertical rate of change were suppressed in the magnetic field. Therefore, the edges of magnetic anomalies were highlighted and spatial resolution was increased.

The first vertical derivative calculated from the RMI was designated as Calculated Vertical Derivative of RMI, or CVG. The first vertical derivative calculated from the RTP was designated as First Vertical Derivative of RTP, or 1VD.

6.3 Radiometric Processing

Radiometric surveys map the concentration of radioelements at or near the earth's surface; typically up to 1.5 meters below surface. Before any processing of the airborne radiometric data, the first step is to calibrate the spectrometer system. Once calibration of the system was complete, the radiometric data were processed by windowing the full spectrum to create channels for U, K, Th and total count.

Steps taken to process acquired radiometric data are summarized below:

- Calculation of effective height
- Aircraft and Cosmic background corrections
- Radon background correction
- Stripping ratios
- Attenuation corrections
- Conversion to apparent radioelement concentrations

6.3.1 Calculation of Effective Height

Laser/Radar altimeter data were converted to effective height (h_{ef}) in meters using the acquired laser/radar altimeter, temperature and pressure data, according to the formula below:

$$h_{ef} = h * \frac{273.15}{T + 273.15} * \frac{P}{1013.25}$$

where: h is the observed laser/radar altitude in meters
T is the measured air temperature in degrees Celsius
P is the barometric pressure in millibars

6.3.2 Intermediate Filtering

Some of the measured parameters are filtered as part of the pre-processing.

- Laser/radar altimeter is lightly filtered, a 5-point Hanning filter to smooth out rapid changes that may occur in rugged terrain.
- The Cosmic channel was smoothed with a 5-point Hanning filter to reduce statistical noise.

6.3.3 Aircraft and Cosmic Background Corrections

Aircraft background and cosmic stripping corrections are applied to all three elements, and total count, using the following formula:

$$C_{ac} = a_c + b_c * \mathrm{Cos}_f$$

where: C_{ac} is the background and cosmic corrected channel
a_c is the aircraft background for this channel
b_c is the cosmic stripping coefficient for this channel
Cos_f is the filtered cosmic channel

6.3.4 Radon Background Correction

To strip the effects of atmospheric radon from the downward-looking detectors, calibration constants are determined through the use of an upward-looking detector. The upward-looking detector uses crystal pack that is partially shielded from radiation from below to give the system a directional sensitivity and the ability to discriminate between radiation from the atmosphere and from the ground. Procedures to determine these calibration constants in detail are outlined in the IAEA 1363 report, *Guidelines for Radioelement Mapping using Gamma Ray Spectrometry Data*.

6.3.5 Compton Stripping

Spectral overlap corrections are applied to potassium, uranium, and thorium as part of the Compton stripping process. This is done by using the stripping ratios that have been calculated for the spectrometer by prior calibration; this breaks the corrected elemental values down into the apparent radioelement concentrations.

Stripping ratios α, β, and γ are first modified according to altitude. Then an adjustment factor (derived from the cosmic flight test), the reversed stripping ratio, uranium into thorium, is calculated.

$$\alpha_h = \alpha + h_{ef} * 0.00049$$

$$\beta_h = \beta + h_{ef} * 0.00065$$

$$\gamma_h = \gamma + h_{ef} * 0.00069$$

where: α, β, γ are the Compton stripping coefficients
$\alpha_h, \beta_h, \gamma_h$ are the height corrected Compton stripping coefficients
h_{ef} is the effective height above ground in metres at STP

The stripping corrections are then carried out using the following formulas:

$$Th_c = Th_{bc}(1 - g\beta_h) + U_{bc}(b\gamma_h - a) + K_{bc}(ag - b) / A$$

$$U_c = Th_{bc}(g\beta_h - \alpha_h) + U_{bc}(1 - b\beta_h) + K_{bc}(b\alpha_h - g) / A$$

$$K_c = [Th_{bc}(\alpha_h\gamma_h - \beta_h) + U_{bc}(a\beta_h - \gamma_h) + K_{bc}(1 - a\alpha_h)] / A$$

where: U_c, Th_c and K_c stripping corrected uranium, thorium and potassium
$\alpha_h, \beta_h, \gamma_h$ height corrected Compton stripping coefficients
U_{bc}, Th_{bc} and K_{bc} background corrected uranium, thorium and potassium
a is the spectral ratio Th/U
b is the spectral ratio Th/K
g is the spectral ratio U/K
$A = 1 - g\gamma_h - a(\alpha_h - g\beta_h) - b(\beta_h - \alpha_h\gamma_h)$ is the backscatter correction

6.3.6 Attenuation Corrections

The total count, potassium, uranium and thorium data are then corrected to a nominal survey altitude (corrected to remove vegetation clutter from radar/laser altimeter data), in this case the survey height was 35 meters. This is done according to the equation:

$$C_a = C * e^{\mu(h_{ef} - ho)}$$

where: C_a is the output altitude corrected channel
C is the input channel
μ is the attenuation correction for that channel
h_{ef} is the effective altitude, usually in m
h_0 is the nominal survey altitude used as datum

6.3.7 Conversion to Apparent Radioelement Concentrations

With all corrections applied to the radiometric data, the final step is to convert the corrected potassium, uranium, and thorium to apparent radioelement concentrations using the following formula:

$$eE = C_{cor} / s$$

where: *eE* is the element concentration K(%) and equivalent element concentration of U(ppm) & Th(ppm)
s is the experimentally determined sensitivity
C_{cor} is the fully corrected channel

Finally, the natural air exposure rate is determined by using the following formula:

$$E = [(13.08 * K + 5.43 * eU + 2.69 * eTh) / 8.69]$$

where: *E* is the absorption dose rate in μR/h
K is the concentration of potassium (%)
eU is the equivalent concentration of uranium (ppm)
eTh is the equivalent concentration of thorium (ppm)

6.3.8 Radiometric Ratios

To calculate some of the common radiometric ratios (U/Th, Th/K, and U/K or their inverses) the guidelines of the IAEA are followed. Due to statistical uncertainties in the individual radioelement measurements, some care is taken in the calculation of the ratio in order to obtain statistically significant values. Following IAEA guidelines, the method of determining ratios of the eU/eTh, eU/K and eTh/K is as follows:

1. Any data points where the potassium concentration is less than 0.25% are neglected.
2. The element with the lowest corrected count rate is determined.
3. The element concentrations of adjacent points on either side of each data point are summed until they exceed a pre-determined threshold value. This threshold is set to be equivalent to 100 counts of the element with the lowest count rate. Additional minimum thresholds of 1.6% for potassium, 20 ppm for thorium, and 30 ppm for uranium are established to ensure meaningful ratios.
4. The ratios are calculated using the accumulated sums.

With this method, the errors associated with the calculated ratios are minimized and comparable for all data points.

6.4 Merging 2017 Geophysical Data with Historical Data

Parts of the 2017 Dublin Gulch/VBW and Clear Creek survey areas were previously flown with various geophysical technologies. The data from these surveys were provided to Precision with the intent of merging the data to improve coverage and resolution.

6.4.1 Dublin Gulch/VBW Survey area

Fugro flew a combined frequency domain electromagnetic and horizontal gradient[1] magnetic survey in 2004, over the eastern part of the 2017 survey area. The 2004 survey lines were spaced at 150 meters with lines oriented at 000/180°. The 2017 survey lines were planned as parallel and alternating with the 150 m Fugro lines, so that an effective line spacing of 75 m for the magnetic data was achieved where the previous survey coverage coincided with the 2017 survey.

The 2004 data were reported as being flown at an average height of 39.9 meters AGL with a standard deviation of 8.9 meters, and the 2017 data were flown at an average height of 36.5 meters AGL with a standard deviation of 6.0 meters, as shown in Table 11. The 2004 magnetic data were delivered by Fugro as total magnetic intensity. Therefore, the residual magnetic intensity was calculated so that it could readily be merged with 2017 data.

[1] Fugro's survey report is not clear if the magnetic gradient was measured in the lateral or longitudinal direction, or how Total Magnetic Intensity was derived from the multi-sensor horizontal gradiometer.

Parameter	2004 Fugro	2017 Precision
Survey Date(s)	Oct. 6 – Dec. 15, 2004	June 5-8, 2017
Sensors	Dighem EM and horizontal magnetic gradient	Total magnetic intensity by stinger and radiometrics
Survey area (km^2)	466.2	555.2
Total survey line km	3017.7	4068.4
Aircraft platform	helicopter	helicopter
Line orientation	000/180°	000/180°
Line spacing (m)	150	150
Survey ground clearance, Average (m)	39.9	36.5
Survey ground clearance, Std. Deviation (m)	8.9	6.0

Table 11: Comparison of 2004 and 2017 airborne survey specifications, Dublin Gulch area.

The residual magnetic field data from the 2004 and 2017 surveys were merged (Figure 24) so that the final product yielded 75 m line spacing and gridded at 18.75 meter cell size (25% of line spacing). The 2004 residual magnetic intensity data were leveled to 2017 RMI data by applying both conventional leveling and micro-leveling to the merged dataset. As the 2017 data had already been leveled as a standalone dataset, the statistical leveling was not performed a second time on the 2017 tie line data. Therefore, an intersection table was created for the merged dataset and a full level was performed on the 2004 survey line data in order to level it to the 2017 data. The 2017 survey line data had already been fully leveled to the 2017 tie lines. As a result, the data were unaffected by the full leveling component of the conventional leveling. Once the full leveling was complete, the dataset was reviewed to locate any problem areas that were not leveled properly. Such areas include, but are not limited to, intersection points between survey lines due to re-flights, portions of 2014 survey lines that were of specification, and areas with cultural features that may have changed with time.

Finally, micro-leveling was applied to the corrected conventional leveled and merged dataset (2004 and 2017). This iterative grid-based process removed low amplitude components of flight line noise that was introduced by the merging of the datasets and remained after the conventional leveling.

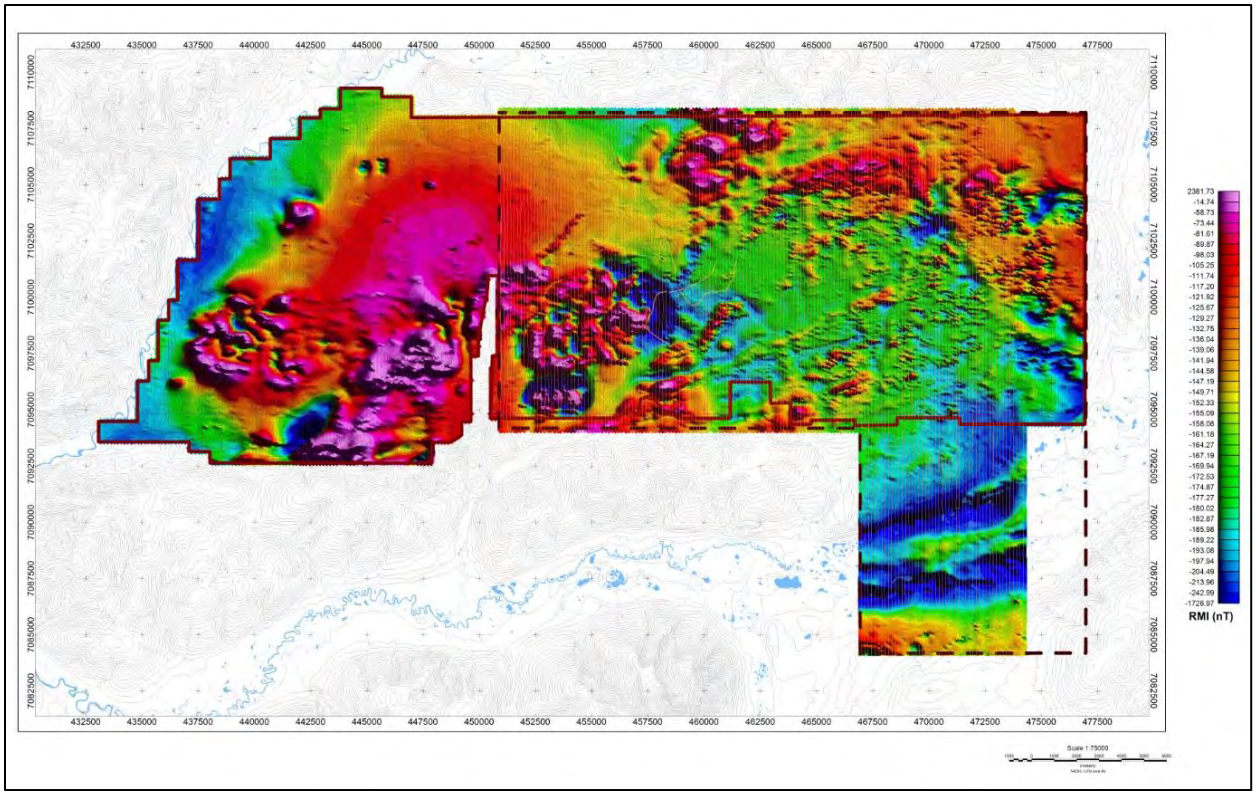


Figure 24: 2004 (Fugro) merged and leveled to 2017 (Precision) magnetic data with actual flight lines; residual magnetic intensity Dublin Gulch area.

6.4.2 Clear Creek Survey Area

In 1998, Newmont collected 1513.3 line km of total field magnetic and radiometric data in the Clear Creek area. The Newmont survey was flown in a 000-180° direction, without tie lines, at an average height of 74.1 meters AGL with a standard deviation of 22.2 meters, while the 2017 data were flown in a 045-225° direction at an average height of 35.9 meters AGL with a standard deviation of 7.0 meters, as shown in Table 12.

Parameter	1998 Newmont	2017 Precision
Survey Date(s)	August 11-14, 1998	June 7, 2017
Sensors	Total magnetic intensity by slung bird and radiometrics	Total magnetic intensity by stinger and radiometrics
Survey area (km2)	306.7	43.7
Total survey line km	1513.3	481.5
Aircraft platform	helicopter	helicopter
Line orientation	000/180°	045°/225°
Line spacing (m)	200	100
Survey ground clearance, Average (m) - magnetics	104.1	35.9
Survey ground clearance, Average (m) - radiometrics	134.1	35.9
Survey ground clearance, Std. Deviation (m) - magnetics	22.2	7.0
Survey ground clearance, Std. Deviation (m) - radiometrics	22.2	7.0

Table 12: Comparison of 1998 and 2017 airborne survey specifications, Clear Creek area. No tie lines were flown during the 1998 survey.

It was not possible to merge the 1998 data with the 2017 survey results due to the different line spacing, line direction, and flight height. However, the smaller 2017 magnetic and radiometric survey data were laid over the larger 1998 survey so that the more detailed 2017 results can be viewed in a more regional context (Figures 25 and 26).

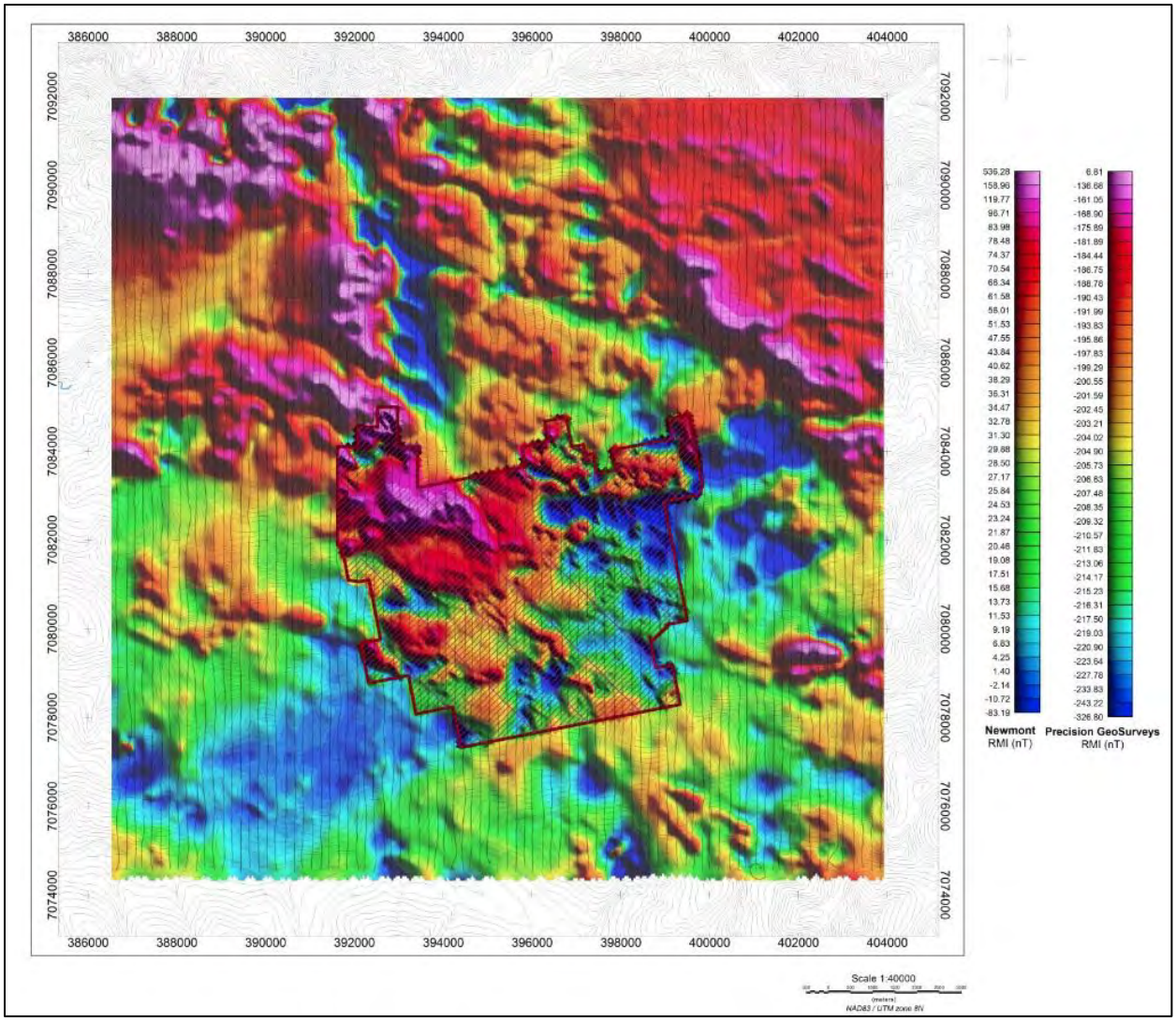


Figure 25: 2017 magnetic data laid over the larger 1998 magnetic data with actual flight lines; residual magnetic intensity Clear Creek area.

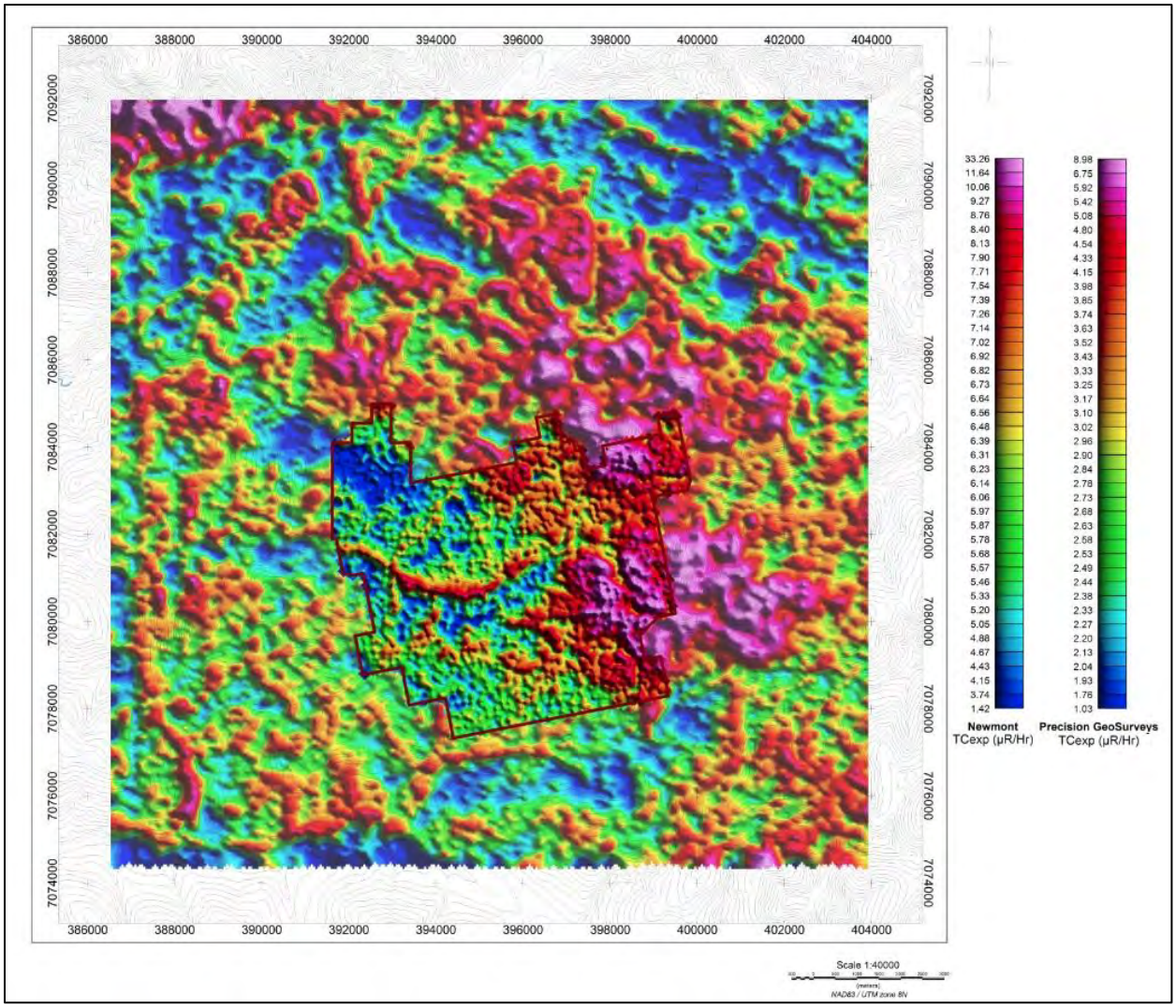


Figure 26: 2017 radiometric data laid over the larger 1998 radiometric data; total count exposure Clear Creek area.

7.0 Deliverables

All digital data are presented on a USB memory stick with the logistic report. The survey data are presented as digital databases, maps, and a report.

7.1 Digital Data

The digital files have been provided in two formats, the first is a .GDB file for use in Geosoft Oasis Montaj and the second format is a .XYZ (text) file. Full descriptions of the digital data and contents are included in the report (Appendix B).

The digital data were represented as grids, as listed below:

- Digital terrain model (DTM)
- Total magnetic intensity (TMI)
- Residual magnetic intensity (RMI) – removal of IGRF from TMI
- Calculated vertical gradient (CVG) - first vertical derivative of RMI
- Calculated horizontal gradient (CHG) – first horizontal derivative of RMI
- Reduced to Pole (RTP) – reduced to magnetic pole of RMI
- First Vertical Derivative of RTP (1VD) – first vertical derivative of RTP
- Potassium – Equivalent Concentration (%K)
- Thorium – Equivalent Concentration (eTh)
- Uranium – Equivalent Concentration (eU)
- Total Count – Equivalent Dose Rate (TCcor)
- Total Count – Exposure Rate (TCexp)
- Potassium over Thorium Ratio (%K/eTh)
- Potassium over Uranium Ratio (%K/eU)
- Uranium over Thorium Ratio (eU/eTh)
- Thorium over Potassium Ratio (eTh/%K)
- Uranium over Potassium Ratio (eU/%K)
- Ternary Map (TM)

7.1.1 Gridding

Digital data were gridded and displayed using the following Geosoft parameters for both Dublin Gulch/VBW and Clear Creek survey blocks:

- Grid cell size: 37.5 m (Dublin Gulch/VBW) and 25 m (Clear Creek)
- Low-pass desampling factor: 3
- Tolerance: 0.001
- % pass tolerance: 99.99
- Maximum iterations: 100

All grids were drawn with a histogram-equalized color shade; sun angle inclination at 45° and declination at 45°.

7.2 KMZ Grids

The digital data represented into grids were exported into kmz files which can be displayed using Google Earth. The grids can be draped onto topography and rendered to give a 3D view.

7.3 Maps

Digital maps were created for each of the survey blocks. The following map products were prepared:

Survey Overview Maps (colour images with elevation contour lines):

- Actual flight lines
- Digital elevation model

Magnetic Maps (colour images with elevation contour lines):

- Total magnetic intensity with actual plotted flight lines
- Total magnetic intensity
- Residual magnetic intensity
- Calculated vertical gradient of residual magnetic intensity
- Calculated horizontal gradient of residual magnetic intensity
- Reduced to magnetic pole of residual magnetic intensity
- First vertical derivative of reduced to magnetic pole

Radiometric Maps (colour images with elevation contour lines):

- Potassium – Equivalent Concentration in Percentage
- Thorium – Equivalent Concentration
- Uranium – Equivalent Concentration
- Total Count – Equivalent Dose Rate
- Total Count – Exposure Rate
- Potassium over Thorium Ratio
- Potassium over Uranium Ratio
- Uranium over Thorium Ratio
- Thorium over Potassium Ratio
- Uranium over Potassium Ratio
- Ternary Map

Data were collected in WGS 84 Zone 8N and all maps were prepared in NAD 83 and UTM zone 8N.

7.4 Report

The logistics report provides information on the acquisition procedures, magnetic and radiometric processing, and presentation of the Dublin Gulch/VBW and Clear Creek survey blocks data. A pdf copy of the report is included along with the digital data and maps that are provided on the USB stick.

8.0 Conclusions and Recommendations

The airborne magnetic and radiometric data were acquired to map the geophysical characteristics of the survey area, which are in turn related to the distribution and concentration of magnetic minerals and radioactive elements in the Earth. The geophysical data therefore will help explore and possibly discover new mineral deposits. As geophysical data are not a direct indication of mineral deposits, geophysical interpretation and careful integration with existing and new geological, geochemical, and other geophysical data are recommended to maximize value from the survey investment.

Appendix A

Equipment Specifications

- GEM GSM-19T Proton Precession Magnetometer (Base Station)
- Hemisphere R120 GPS Receiver
- Opti-Logic RS800 Laser Altimeter
- HC-S3 Temperature and Relative Humidity Probe
- Setra Model 276 Barometric Pressure
- Scintrex CS-3 Survey Magnetometer
- Bartington Mag-03 three-axis fluxgate magnetic field sensor
- Pico Envirotec GRS-10 Gamma Spectrometer
- Pico Envirotec AGIS data recorder system (for Navigation, Gamma Spectrometer, and Magnetometer Data Acquisition)

GEM GSM-19T Proton Precession Magnetometer (Base Station) Specifications

Configuration Options	15
Cycle Time	999 sec to 0.5 sec
Environmental	-40°C to +60°C
Gradient Tolerance	7,000 nT/m
Magnetic Readings	299,593
Operating Range	10, 000 to 120,000 nT
Power	12 V @ 0.62 A
Sensitivity	0.1 nT @ 1 sec
Weight (Console/ Sensor)	3.2 Kg
Integrated GPS	Yes

Hemisphere R120 GPS Receiver Specifications

GPS Sensor	Receiver Type	L1, C/A code, with carrier phase smoothing (Patented COAST technology during differential signal outage
	Channels	12-channel, parallel tracking (10-channel when tracking SBAS)
	Update Rate	Up to 20 Hz position
	Cold Start Time	<60 s
	SBAS Tracking	2-channel, parallel tracking
	Horizontal Accuracy	<0.02 m 95% confidence (RTK 1, 2) <0.28 m 95% confidence (L-Dif 1, 2) <0.6 m 95% confidence (DGPS 1,3) <2.5 m 95% confidence (autonomous, no SA1)
	Differential Options	SBAS, Autonomous, External RTCM, RTK, OmniSTAR (HP/XP)
Beacon Sensor Specifications	Channels	2-channel, parallel tracking
	Frequency Range	283.5 to 325 kHz
	MSK Bit Rates	50, 100, and 200 bps
L-Band Sensor	Channels	Single channel
	Frequency Range	1530 MHz to 1560 MHz
	Satellite Selection	Manual or Automatic (based on location)
	Startup and Satellite Reacquisition Time	15 seconds typical
Communications	Serial Ports	2 full duplex RS232C
	Baud Rates	4800 – 115200
	USB Ports	1 Communications
	Correction I/O Protocol	RTCM SC-104
	Data I/O Protocol	NMEA 0183
	Timing Output	1 PPS (HCMOS, active high, rising edge sync, 10 kΩ, 10 pF load)
	Raw Data	Proprietary binary (RINEX utility available)
Environmental	Operating Temperature	-30°C to +70°C
	Storage Temperature	-40°C to +85°C
	Humidity	95% non-condensing
Power GPS Sensor	Input Voltage Range	8 to 36 VDC
	Power Consumption	3 Watts
	Current Consumption	< 250 mA @ 12 VDC
	Antenna Voltage Output	5.0 VDC

[1]Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity.
[2] Up to 5 km baseline length.
[3] Depends also on baseline length.

Opti-Logic RS800 Laser Altimeter Specifications

Accuracy	+/- 1 m on 1x1 m^2 diffuse target with 50% reflectivity
Resolution	0.2 m
Communication Protocol	RS232-8,N,1
Baud Rate	19200
Data Raw Counts	~200 Hz
Data Calibrated Range	~10 Hz
Calibrated Range Units	Feet, Meters, Yards
Laser	Class I (eye-safe) 905 nm +/- 10 nm
Power	7-9VDC conditioned required, current draw at full power (~ 1.8 W)
Laser Wavelength	RS100 905 nm +/- 10 nm
Laser Divergence	Vertical axis – 3.5 mrad half-angle divergence; Horizontal axis – 1 mrad half-angle divergence; (Approximate beam footprint at 100 m is 35 cm x 5 cm)
Data Rate	~200 Hz raw counts for un-calibrated operation; ~10 Hz for calibrated operation (averaging algorithm seeks 8 good readings)
Dimensions	32 x 78 x 84 mm (lens face cross section is 32 x 78 mm)
Weight	< 227 g (8 oz)
Casing	RS100/RS400/RS800 units are supplied as OEM modules consisting of an open chassis containing optics and circuit boards. Custom housings can be designed and built on request.

HC-S3 Temperature and Relative Humidity Probe Specifications

Operating Temperature	-40°C to +60°C
Temperature Output Signal Range	0 to 1.0 VDC
Temperature Resolution	0.1°C or better
Relative Humidity(RH) Measurement Range	0 to 100 % non-condensing
RH Output Signal Range	0 to 1.0 VDC
RH Accuracy At 23°C	± 1.5 % RH
RH Response Time	12 to 15 secs
RH Typical Long Term Stability	Better than 1% RH per year
Probe Length	168 mm (6.6 in.)
Probe Body Diameter	15.25 mm (0.6 in.)
Housing Material	Polycarbonate
Power Consumption	< 4 mA
Supply Voltage	3.5 to 50 VDC (typically 5 VDC)
Settling Time after power is switched on	3 secs

Setra Model 276 Barometric Pressure Specifications

Pressure Ranges	600 to 1100 hPa/mb 800 to 1100 hPa/mb 0 to 20 psia
Accuracy	±0.25% FS
Output	0.1 to 5.1 VDC 0.5 to 4.5 VDC
Excitation	12 VDC (9.0 to 14.5) 24 VDC (21.6 to 26.0) 5 VDC (4.9 to 7.1)
Size	2” dia. x 1” (5 cm x 2.5 cm)

Scintrex CS-3 Magnetometer Specifications

Operating Principal	Self-oscillation split-beam Cesium Vapor (non-radioactive Cs-133)
Operating Range	15,000 to 105,000 nT
Gradient Tolerance	40,000 nT/metre
Operating Zones	10° to 85° and 95° to 170°
Hemisphere Switching	a) Automatic b) Electronic control actuated by the control voltage levels (TTL/CMOS) c) Manual
Sensitivity	0.0006 nT √Hz rms
Noise Envelope	Typically 0.002 nT P-P, 0.1 to 1 Hz bandwidth
Heading Error	+/- 0.25 nT (inside the optical axis to the field direction angle range 15° to 75° and 105° to 165°)
Absolute Accuracy	<2.5 nT throughout range
Output	a) Continuous signal at the Larmor frequency which is proportional to the magnetic field (proportionality constant 3.49857 Hz/nT) sine wave signal amplitude modulated on the power supply voltage b) Square wave signal at the I/O connector, TTL/CMOS compatible
Information Bandwidth	Only limited by the magnetometer processor used
Sensor Head	Diameter: 63 mm (2.5”) Length: 160 mm (6.3”) Weight: 1.15 kg (2.6 lb)
Sensor Electronics	Diameter: 63 mm (2.5”) Length: 350 mm (13.8”) Weight: 1.5 kg (3.3 lb)
Cable, Sensor to Sensor Electronics	3 m (9’ 8”), lengths up to 5 m (16’ 4”) available
Operating Temperature	-40°C to +50°C
Humidity	Up to 100%, splash proof
Supply Power	24 to 35 Volts DC
Supply Current	Approx. 1.5 A at start up, decreasing to 0.5 A at 20°C
Power Up Time	Less than 15 minutes at -30°C

Bartington Mag-03 three-axis fluxgate magnetic field sensor Specifications

Number of Axes	3
Bandwidth	0 to 3 kHz at 50 µT peak
Internal Noise	Basic version: >10 to 20 pTrms/√Hz at 1 Hz Standard version: 6 to ≤10 pTrms/√Hz at 1 Hz Low Noise version: <6 pTrms/√Hz at 1 Hz
Scaling error (DC)	<±0.5%
Orthogonality error	<0.1°
Alignment error (Z axis to reference face)	<0.1°
Linearity error	<0.0015%
Frequency response	0 to 1 kHz maximally flat, ±5% maximum at 1 kHz
Input voltage	±12 V to ±17 V
Supply current	+30 mA, -10 mA (+1.4 mA per 100 µT for each axis)
Power supply rejection ratio	5 µV/V (-106 dB)
Analog output	±10 V (±12 V supply) swings to within 0.5 V of supply voltage
Output impedance	10 Ω
Operating temperature range	-40°C to +70°C
Environmental protection	IP51
Dimensions (W x H x L)	32 x 32 x 152mm
Weight	160 g
Enclosure material	Reinforced epoxy
Connector	ITT Cannon DEM-9P-NMB
Mating connector	ITT Cannon DEM-9S-NMB
Mounting	2 x M5 fixing holes

Pico Envirotec GRS-10 Gamma Spectrometer Specifications

Crystal volume	16.8 litres of NaI (Tl) synthetic downward looking crystals and 4.2 litres of NaI (Tl) synthetic upward looking crystals
Resolution	256/512 channels
Tuning	Automatic using peak determination algorithm
Detector	Digital Peak
Calibration	Fully automated detector
Real Time	Linearization and gain stabilization
Communication	RS232
Detectors	Expandable to 10 detectors and digital peak
Count Rate	Up to 60,000 cps per detector
Count Capacity per channel	65545
Energy detection range:	36 KeV to 3 MeV
Cosmic channel	Above 3 MeV
Upward Shielding	RayShield® non-radioactive shielding on downward looking crystals
Downward Shielding	6 mm thick lead plate is used for downward-shielding
Spectra	Collected spectra of 256/512 channels, internal spectrum resolution 1024
Software	Calibration: High voltage adjustment, linearity correction coefficients calculation, and communication test support Real Time Data Collection: Automatic Gain real time control on natural isotopes, and PC based test and calibration software suite
Sensor	Each box containing two (2) gamma detection NaI(Tl) crystals – each 4.2 liters. (256 cu in.) (approx. 100 x 100 x 650 mm) Total volume of approx 8.4 litres or 512 cu in with detector electronics
Spectra Stabilization	Real time automatic corrections on radio nuclei: Th, Ur, K. No implanted sources

Pico Envirotec AGIS data recorder system Specifications

(for Navigation, Gamma spectrometer, and Magnetometer Data Acquisition)

Functions	Airborne Geophysical Information System (AGIS) with integrated Global Positioning System Receiver (GPS) and all necessary navigation guidance software. Inputs for geophysical sensors - portable gamma ray spectrometer GRS-10, MMS4 Magnetometer, Totem 2A EM, A/D converter, temperature probe, humidity probe, barometric pressure probe, and laser altimeter. Output for the multi-parameter PGU (Pilot Guidance Unit)
Display	Touch screen with display of 800 x 600 pixels; customized keypad and operator keyboard. Multi-screen options for real-time viewing of all data inputs, fiducial points, flight line tracking, and GPS channels by operator.
GPS Navigation	Garmin 12-channel, WAAS-enabled
Data Sampling	Sensor dependent
Data Synchronization	Synchronized to GPS position
Data File	PEI Binary data format
Storage	80 GB
Supplied Software	PEIView: Allows fast data Quality Control (QC) Data Format: Geosoft GBN and ASCII output PEIConv: For survey preparation and survey plot after data acquisition
Software	Calibration: High voltage adjustment, linearity correction coefficients calculation, and communication test support Real Time Data Collection: Automatic Gain real time control on natural isotopes and PC based test and calibration software suite
Power Requirements	24 to 32 VDC
Temperature	Operating: -10°C to +55°C; storage: -20°C to +70°C

Appendix B

Digital File Descriptions

- Magnetic database description
- Radiometric database description
- Grids
- Maps

Magnetic Database:

Abbreviations used in the GDB files listed below:

CHANNEL	UNITS	DESCRIPTION
X_WGS84	m	UTM Easting – WGS 84 Zone 8 North
Y_WGS84	m	UTM Northing – WGS 84 Zone 8 North
X_NAD83	m	UTM Easting – NAD 83 Zone 8 North
Y_NAD83	m	UTM Northing – NAD 83 Zone 8 North
Lon_deg	degree	Longitude
Lat_deg	degree	Latitude
Date	yyyy/mm/dd	Dates of the survey flight(s)
FLT		Flight Line numbers
LineNo		Line numbers
STL		Number of satellite(s)
GPSfix		GPS fix
GPStime	Hours:min:secs	GPS time (UTC)
Geos_m	m	Geoidal separation
GHead_deg	degree	Heading of the aircraft
XTE_m	m	Flight line cross distance
Galt	m	GPS height – WGS 84 Zone 8 North (ASL)
Lalt	m	Laser Altimeter readings (AGL)
DTM	m	Digital Terrain Model
Sample_Density	m	Linear distance in metres between adjacent measurement locations; sample frequency is 10 measurements per second
basemag	nT	Base station diurnal data
IGRF		International Geomagnetic Reference Field 2015
Declin	Decimal degree	Calculated declination of magnetic field
Inclin	Decimal degree	Calculated inclination of magnetic field
TMI	nT	Total Magnetic Intensity
RMI	nT	Residual Magnetic Intensity

Radiometric Database:

Abbreviations used in the GDB files:

CHANNEL	UNITS	DESCRIPTION
X_WGS84	m	UTM Easting – WGS 84 Zone 8 North
Y_WGS84	m	UTM Northing – WGS 84 Zone 8 North
X_NAD83	m	UTM Easting – NAD 83 Zone 8 North
Y_NAD83	m	UTM Northing – NAD 83 Zone 8 North
Lon_deg	degree	Longitude
Lat_deg	degree	Latitude
Date	yyyy/mm/dd	Dates of the survey flight(s)
FLT		Flight numbers
LineNo		Line numbers
STL		Number of satellite(s)
GPStime	Hours:min:secs	GPS time (UTC)
Geos_m	m	Geoidal separation
GPSFix		GPS fix
GHead_deg	degree	Heading of the aircraft
XTE_m	m	Flight line cross distance
Galt	m	GPS height – WGS 84 Zone 8 North (ASL)
Lalt	m	Laser Altimeter readings (AGL)
DTM	m	Digital Terrain Model
Sample_Density	m	Linear distance in metres between adjacent measurement locations; sample frequency is 10 measurements per second
BaroSTP_kP	KiloPascal	Barometric Altitude (Press and Temp Corrected)
Temp_degC	Degrees C	Air Temperature
Press_kP	KiloPascal	Atmospheric Pressure
COSFILT	counts/sec	Spectrometer - Filtered Cosmic
UPUFILT	counts /sec	Spectrometer - Filtered Upward Uranium
Kcor	%	Equivalent Concentration - Potassium
Thcor	ppm	Equivalent Concentration - Thorium
Ucor	ppm	Equivalent Concentration - Uranium
TCcor	µR	Equivalent Dose Rate
TCexp	µR/hour	Exposure Rate - SUM(%k, eU, eTh) * determined factors
KThratio		Spectrometer –%K/eTh ratio
KUratio		Spectrometer –%K/eU ratio
ThKratio		Spectrometer – eTh/%K ratio
UKratio		Spectrometer – eU/%K ratio
UThratio		Spectrometer – eU/eTh ratio

Grids: Dublin Gulch/VBW, NAD 83 Datum, Zone 8N

FILE NAME	DESCRIPTION
DublinGulch_VBW_DTM_37.5m.grd	Digital terrain model gridded at 37.5 m cell size
DublinGulch_VBW_TMI_37.5m.grd	Total magnetic intensity gridded at 37.5 m cell size
DublinGulch_VBW_RMI_37.5m.grd	Residual magnetic intensity gridded at 37.5 m cell size
DublinGulch_VBW_RMI_wFL_04_17_18.8m.grd	2004 and 2017 integrated Residual magnetic intensity with flight lines gridded at 18.8 m cell size
DublinGulch_VBW_CVG_37.5m.grd	Calculated vertical gradient of RMI gridded at 37.5 m cell size
DublinGulch_VBW_CVG_04_17_18.8m.grd	2004 and 2017 integrated calculated vertical gradient of RMI gridded at 18.8 m cell size
DublinGulch_VBW_CHG_37.5m.grd	Calculated horizontal gradient of RMI gridded at 37.5 m cell size
DublinGulch_VBW_RTP_37.5m.grd	Reduced to magnetic pole of RMI gridded at 37.5 m cell size
DublinGulch_VBW_1VD_37.5m.grd	First vertical derivative of RTP gridded at 37.5 m cell size
DublinGulch_VBW_Kcor_37.5m.grd	Potassium (%K) - equivalent concentration in percentage gridded at 37.5 m cell size
DublinGulch_VBW_Thcor_37.5m.grd	Thorium (eTh) – equivalent concentration gridded at 37.5 m cell size
DublinGulch_VBW_Ucor_37.5m.grd	Uranium (eU) – equivalent concentration gridded at 37.5 m cell size
DublinGulch_VBW_TCcor_37.5m.grd	Total Count (TCcor) – equivalent dose rate gridded at 37.5 m cell size
DublinGulch_VBW_TCexp_37.5m.grd	Total Count (TCexp) – exposure rate gridded at 37.5 m cell size
DublinGulch_VBW_KThratio_37.5m.grd	Potassium over thorium ratio (%K/eTh) gridded at 37.5 m cell size
DublinGulch_VBW_KUratio_37.5m.grd	Potassium over uranium ratio (%K/eU) gridded at 37.5 m cell size
DublinGulch_VBW_UThratio_37.5m.grd	Uranium over thorium ratio (eU/eTh) gridded at 37.5 m cell size
DublinGulch_VBW_ThKratio_37.5m.grd	Thorium over potassium ratio (eTh/%K) gridded at 37.5 m cell size
DublinGulch_VBW_UKratio_37.5m.grd	Uranium over potassium ratio (eU/%K) gridded at 37.5 m cell size

Grids: Clear Creek, NAD 83 Datum, Zone 8N

FILE NAME	DESCRIPTION
ClearCreekBlock_DTM_25m.grd	Digital terrain model gridded at 25 m cell size
ClearCreekBlock_TMI_25m.grd	Total magnetic intensity gridded at 25 m cell size
ClearCreekBlock_RMI_25m.grd	Residual magnetic intensity gridded at 25 m cell size
ClearCreekBlock_CVG_25m.grd	Calculated vertical gradient of RMI gridded at 25 m cell size
ClearCreekBlock_CHG_25m.grd	Calculated horizontal gradient of RMI gridded at 25 m cell size
ClearCreekBlock_RTP_25m.grd	Reduced to magnetic pole of RMI gridded at 25 m cell size
ClearCreekBlock_1VD_25m.grd	First vertical derivative of RTP gridded at 25 m cell size
ClearCreekBlock_Kcor_25m.grd	Potassium (%K) - equivalent concentration in percentage gridded at 25 m cell size
ClearCreekBlock_Thcor_25m.grd	Thorium (eTh) – equivalent concentration gridded at 25 m cell size
ClearCreekBlock_Ucor_25m.grd	Uranium (eU) – equivalent concentration gridded at 25 m cell size
ClearCreekBlock_TCcor_25m.grd	Total Count (TCcor) – equivalent dose rate gridded at 25 m cell size
ClearCreekBlock_TCexp_25m.grd	Total Count (TCexp) – exposure rate gridded at 25 m cell size
ClearCreekBlock_KThratio_25m.grd	Potassium over thorium ratio (%K/eTh) gridded at 25 m cell size
ClearCreekBlock_KUratio_25m.grd	Potassium over uranium ratio (%K/eU) gridded at 25 m cell size
ClearCreekBlock_UThratio_25m.grd	Uranium over thorium ratio (eU/eTh) gridded at 25 m cell size
ClearCreekBlock_UKratio_25m.grd	Uranium over potassium ratio (eU/%K) gridded at 25 m cell size
ClearCreekBlock_ThKratio_25m.grd	Thorium over potassium ratio (eTh/%K) gridded at 25 m cell size

Maps: Dublin Gulch/VBW, NAD 83 Datum, Zone 8N (jpegs and pdfs)

FILE NAME	DESCRIPTION
DublinGulch_VBW_ActualFlightLines	Plotted actual flown flight lines
DublinGulch_VBW_DTM_37.5m	Digital terrain model gridded at 37.5 m cell size
DublinGulch_VBW_TMI_wFL_37.5m	Total magnetic intensity with plotted actual flight gridded at 37.5 m cell size
DublinGulch_VBW_TMI_37.5m	Total magnetic intensity gridded at 37.5 m cell size
DublinGulch_VBW_RMI_37.5m	Residual magnetic intensity gridded at 37.5 m cell size
DublinGulch_VBW_CVG_37.5m	Calculated vertical gradient of RMI gridded at 37.5 m cell size
DublinGulch_VBW_CHG_37.5m	Calculated horizontal gradient of RMI gridded at 37.5 m cell size
DublinGulch_VBW_RTP_37.5m	Reduced to magnetic pole of RMI gridded at 37.5 m cell size
DublinGulch_VBW_1VD_37.5m	First vertical derivative of RTP gridded at 37.5 m cell size
DublinGulch_VBW_Kcor_37.5m	Potassium (%K) - equivalent concentration in percentage gridded at 37.5 m cell size
DublinGulch_VBW_Thcor_37.5m	Thorium (eTh) – equivalent concentration gridded at 37.5 m cell size
DublinGulch_VBW_Ucor_37.5m	Uranium (eU) – equivalent concentration gridded at 37.5 m cell size
DublinGulch_VBW_TCcor_37.5m	Total Count (TCcor) – equivalent dose rate gridded at 37.5 m cell size
DublinGulch_VBW_TCexp_37.5m	Total Count (TCexp) – exposure rate gridded at 37.5 m cell size
DublinGulch_VBW_KThratio_37.5m	Potassium over thorium ratio (%K/eTh) gridded at 37.5 m cell size
DublinGulch_VBW_KUratio_37.5m	Potassium over uranium ratio (%K/eU) gridded at 37.5 m cell size
DublinGulch_VBW_UThratio_37.5m	Uranium over thorium ratio (eU/eTh) gridded at 37.5 m cell size
DublinGulch_VBW_UKratio_37.5m	Uranium over potassium ratio (eU/%K) gridded at 37.5 m cell size
DublinGulch_VBW_ThKratio_37.5m	Thorium over potassium ratio (eTh/%K) gridded at 37.5 m cell size
DublinGulch_VBW_TernaryMap	Displaying ratios of all three elements (%K, eTh, eU)
DublinGulch_VBW_RMI_wFL_04_17_18.8m	2004 and 2017 integrated residual magnetic intensity with flight lines gridded at 18.8 m cell size
DublinGulch_VBW_CVG_04_17_18.8m	2004 and 2017 integrated calculated vertical gradient of RMI gridded at 18.8 m cell size

Maps: Clear Creek, NAD 83 Datum, Zone 8N (jpegs and pdfs)

FILE NAME	DESCRIPTION
ClearCreek_ActualFlightLines	Plotted actual flown flight lines
ClearCreek_DTM_25m	Digital terrain model gridded at 25 m cell size
ClearCreek_TMI_wFL_25m	Total magnetic intensity with plotted actual flight gridded at 25 m cell size
ClearCreek_TMI_25m	Total magnetic intensity gridded at 25 m cell size
ClearCreek_RMI_25m	Residual magnetic intensity gridded at 25 m cell size
ClearCreek_CVG_25m	Calculated vertical gradient of RMI gridded at 25 m cell size
ClearCreek_CHG_25m	Calculated horizontal gradient of RMI gridded at 25 m cell size
ClearCreek_RTP_25m	Reduced to magnetic pole of RMI gridded at 25 m cell size
ClearCreek_1VD_25m	First vertical derivative of RTP gridded at 25 m cell size
ClearCreek_Kcor_25m	Potassium (%K) - equivalent concentration in percentage gridded at 25 m cell size
ClearCreek_Thcor_25m	Thorium (eTh) – equivalent concentration gridded at 25 m cell size
ClearCreek_Ucor_25m	Uranium (eU) – equivalent concentration gridded at 25 m cell size
ClearCreek_TCcor_25m	Total Count (TCcor) – equivalent dose rate gridded at 25 m cell size
ClearCreek_TCexp_25m	Total Count (TCexp) – exposure rate gridded at 25 m cell size
ClearCreek_KThratio_25m	Potassium over thorium ratio (%K/eTh) gridded at 25 m cell size
ClearCreek_KUratio_25m	Potassium over uranium ratio (%K/eU) gridded at 25 m cell size
ClearCreek_UThratio_25m	Uranium over thorium ratio (eU/eTh) gridded at 25 m cell size
ClearCreek_UKratio_25m	Uranium over potassium ratio (eU/%K) gridded at 25 m cell size
ClearCreek_ThKratio_25m	Thorium over potassium ratio (eTh/%K) gridded at 25 m cell size
ClearCreek_TernaryMap	Displaying ratios of all three elements (%K, eTh, eU)
ClearCreek_RMI_wFL_1998_2017	1998 RMI gridded at 50 m cell size and 2017RMI gridded at 25 m cell size with flight lines
ClearCreek_Kcor_1998_2017	1998 %K gridded at 50 m cell size and 2017 %K gridded at 25 m cell size
ClearCreek_Thcor_1998_2017	1998 eTh gridded at 50 m cell size and 2017 eTh gridded at 25 m cell size
ClearCreek_Ucor_1998_2017	1998 eU gridded at 50 m cell size and 2017 eU gridded at 25 m cell size
ClearCreek_TCexp_1998_2017	1998 TCexp gridded at 50 m cell size and 2017 TCexp gridded at 25 m cell size

Appendix C

Daily Flight Log Report

Date (yyyy/mm/dd)	Survey Block	Flight number	Distance flown km	Weather/Notes
2017/06/05	Dublin Gulch/VBW	1	686	Complete compensation and heading test flights (000°/090°/180°/270°). Started the Dublin Gulch and VBW survey block.
2017/06/06	Dublin Gulch/VBW	2	1387	Weather was good.
2017/06/07	Dublin Gulch/VBW	3	1708	Weather was good.
2017/06/08	Clear Creek	1	481	Complete compensation and heading test flights (045°/135°/225°/315°). Started and completed the Clear Creek survey block. Windy at peaks of the mountain.
	Dublin Gulch/VBW	4	290	Flew the remaining tie lines and re-flew a few partial lines. Survey completed.

Plates

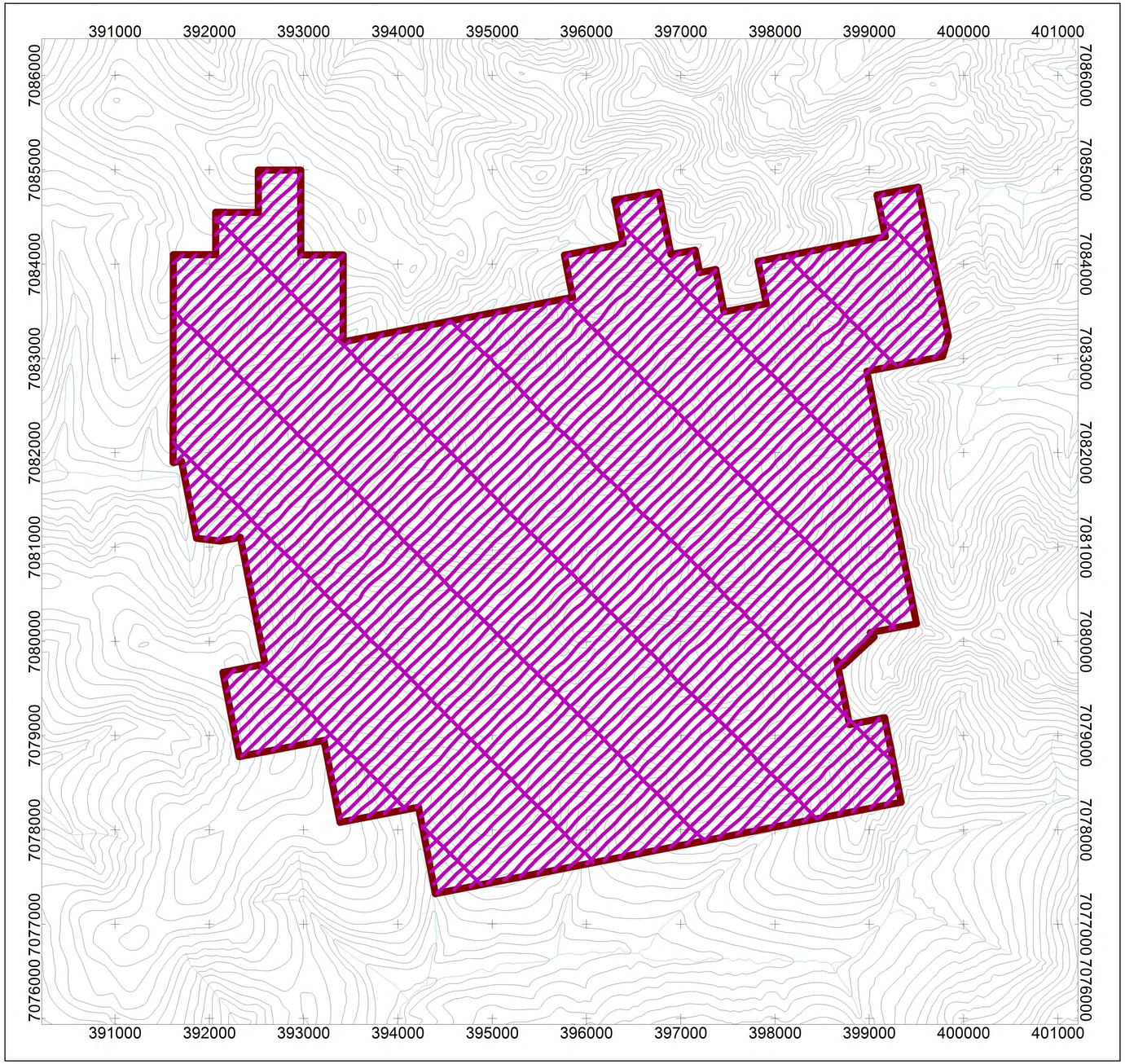
Dublin Gulch/VBW Survey Block Maps

- Plate 1_DG_VBW: Dublin Gulch and VBW - Actual Flight Lines (FL)
- Plate 2_DG_VBW: Dublin Gulch and VBW - Digital Terrain Model (DTM)
- Plate 3_DG_VBW: Dublin Gulch and VBW - Total Magnetic Intensity with Plotted Flight Lines (TMI_wFL)
- Plate 4_DG_VBW: Dublin Gulch and VBW - Total Magnetic Intensity (TMI)
- Plate 5_DG_VBW: Dublin Gulch and VBW - Residual Magnetic Intensity (RMI)
- Plate 6_DG_VBW: Dublin Gulch and VBW - Calculated Vertical Gradient (CVG) of RMI
- Plate 7_DG_VBW: Dublin Gulch and VBW - Calculated Horizontal Gradient (CHG) of RMI
- Plate 8_DG_VBW: Dublin Gulch and VBW - Reduced to Pole (RTP) of RMI
- Plate 9_DG_VBW: Dublin Gulch and VBW - First Vertical Derivative (1VD) of RTP
- Plate 10_DG_VBW: Dublin Gulch and VBW - Potassium – Equivalent Concentration (%K)
- Plate 11_DG_VBW: Dublin Gulch and VBW - Thorium – Equivalent Concentration (eTh)
- Plate 12_DG_VBW: Dublin Gulch and VBW - Uranium – Equivalent Concentration (eU)
- Plate 13_DG_VBW: Dublin Gulch and VBW - Total Count – Equivalent Dose Rate (TCcor)
- Plate 14_DG_VBW: Dublin Gulch and VBW - Total Count – Exposure Rate (TCexp)
- Plate 15_DG_VBW: Dublin Gulch and VBW - Potassium over Thorium Ratio (%K/eTh)
- Plate 16_DG_VBW: Dublin Gulch and VBW - Potassium over Uranium Ratio (%K/eU)
- Plate 17_DG_VBW: Dublin Gulch and VBW - Uranium over Thorium Ratio (eU/eTh)
- Plate 18_DG_VBW: Dublin Gulch and VBW - Uranium over Potassium Ratio (eU/%K)
- Plate 19_DG_VBW: Dublin Gulch and VBW - Thorium over Potassium Ratio (eTh/%K)
- Plate 20_DG_VBW: Dublin Gulch and VBW - Ternary Map (TM)
- Plate 21_DG_VBW: Dublin Gulch and VBW – 2004 and 2017 Residual Magnetic Intensity with Flight Lines (RMI_wFL_04_17)
- Plate 22_DG_VBW: Dublin Gulch and VBW – 2004 and 2017 Calculated Vertical Gradient (CVG_04_17)

Plates

Clear Creek Survey Block Maps

- Plate 1_CC: Clear Creek - Actual Flight Lines (FL)
- Plate 2_CC: Clear Creek - Digital Terrain Model (DTM)
- Plate 3_CC: Clear Creek - Total Magnetic Intensity with Plotted Flight Lines (TMI_wFL)
- Plate 4_CC: Clear Creek - Total Magnetic Intensity (TMI)
- Plate 5_CC: Clear Creek - Residual Magnetic Intensity (RMI)
- Plate 6_CC: Clear Creek - Calculated Vertical Gradient (CVG) of RMI
- Plate 7_CC: Clear Creek - Calculated Horizontal Gradient (CHG) of RMI
- Plate 8_CC: Clear Creek - Reduced to Pole (RTP) of RMI
- Plate 9_CC: Clear Creek - First Vertical Derivative (1VD) of RTP
- Plate 10_CC: Clear Creek - Potassium – Equivalent Concentration (%K)
- Plate 11_CC: Clear Creek - Thorium – Equivalent Concentration (eTh)
- Plate 12_CC: Clear Creek - Uranium – Equivalent Concentration (eU)
- Plate 13_CC: Clear Creek - Total Count – Equivalent Dose Rate (TCcor)
- Plate 14_CC: Clear Creek - Total Count – Exposure Rate (TCexp)
- Plate 15_CC: Clear Creek - Potassium over Thorium Ratio (%K/eTh)
- Plate 16_CC: Clear Creek - Potassium over Uranium Ratio (%K/eU)
- Plate 17_CC: Clear Creek - Uranium over Thorium Ratio (eU/eTh)
- Plate 18_CC: Clear Creek - Uranium over Potassium Ratio (eU/%K)
- Plate 19_CC: Clear Creek - Thorium over Potassium Ratio (eTh/%K)
- Plate 20_CC: Clear Creek - Ternary Map (TM)
- Plate 21_CC: Clear Creek – 1998 and 2017 Residual Magnetic Intensity with Flight Lines (RMI_wFL_98_17)
- Plate 22_CC: Clear Creek – 1998 and 2017 Residual Magnetic Intensity (%K_98_17)
- Plate 23_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (eTh_98_17)
- Plate 24_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (eU_98_17)
- Plate 25_CC: Clear Creek - 1998 and 2017 Residual Magnetic Intensity (TCexp_98_17)



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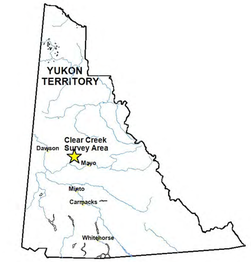
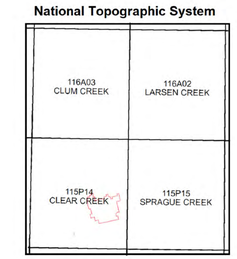
(meters)

NAD83 / UTM zone 8N





MAP PROJECTION

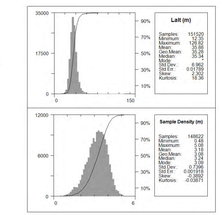
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

Clear Creek Actual Flight Lines.....

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

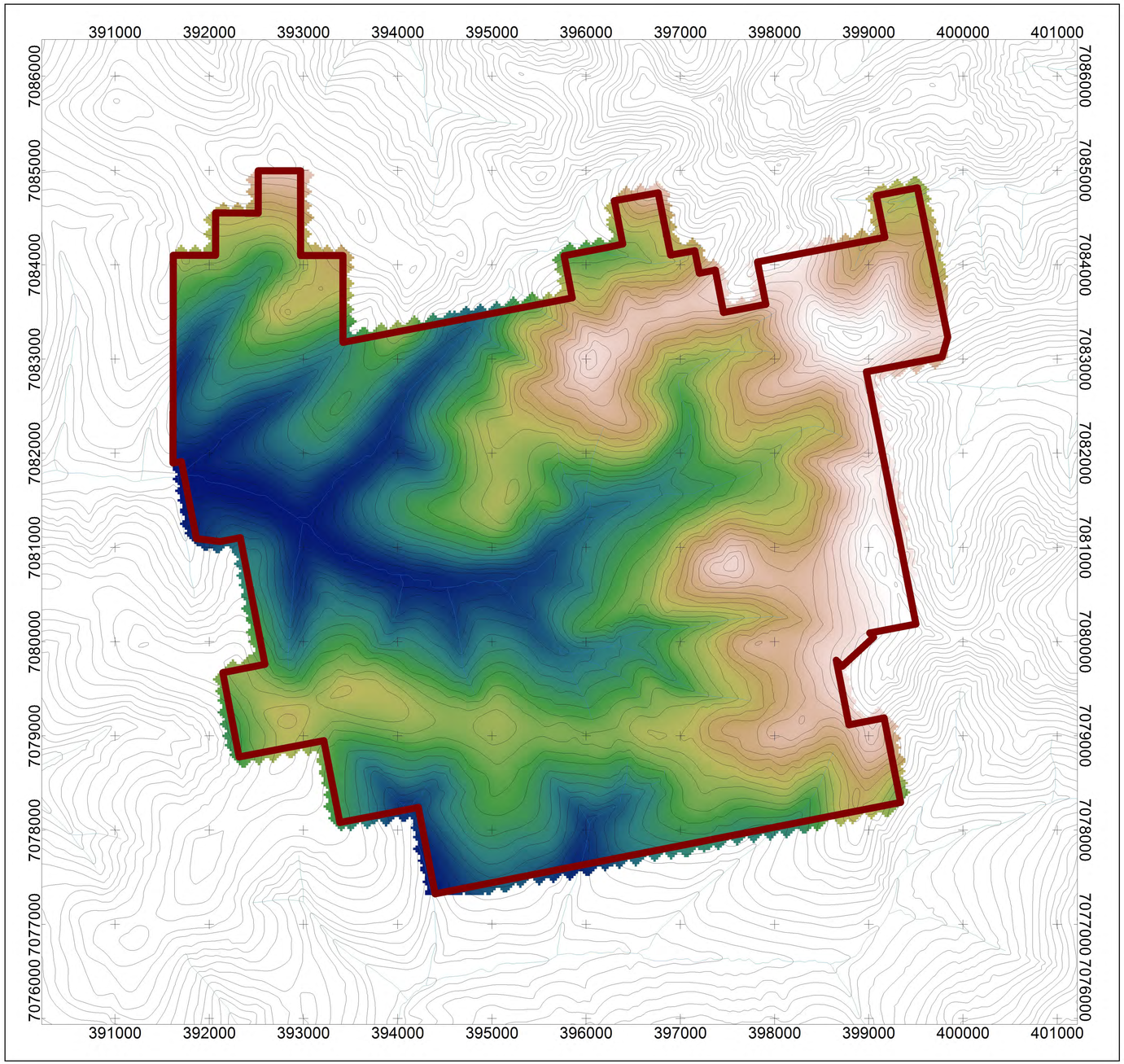
Victoria Gold Corp.

Clear Creek Survey Block

Overview Map
Actual Flight Lines
June 20, 2017

Precision GeoSurveys

Plate1_CC FL



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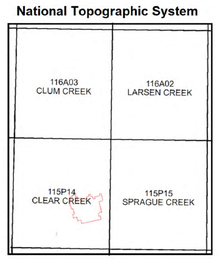
(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

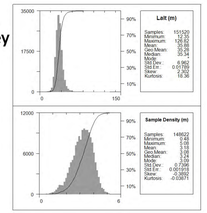
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

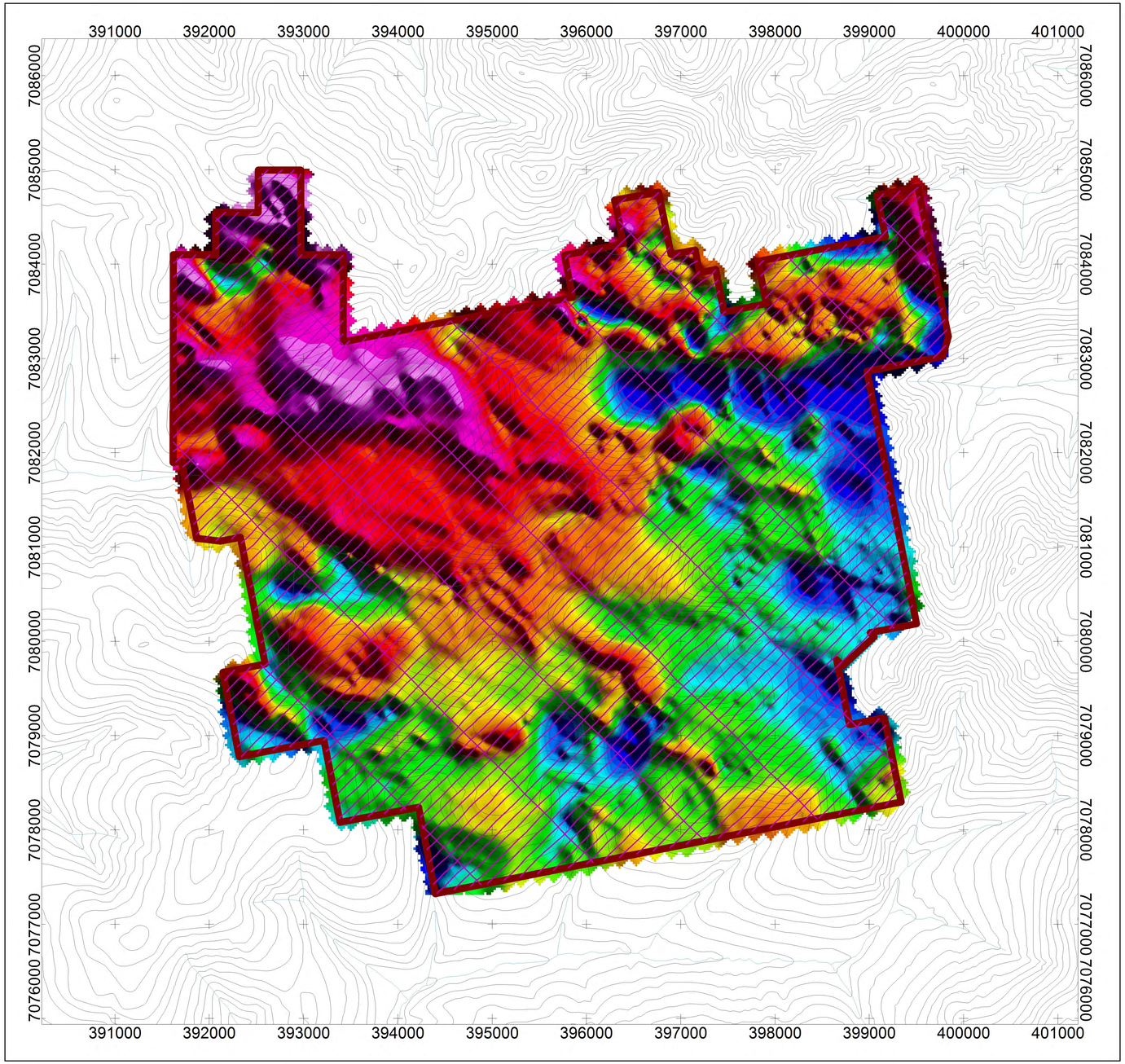
Victoria Gold Corp.

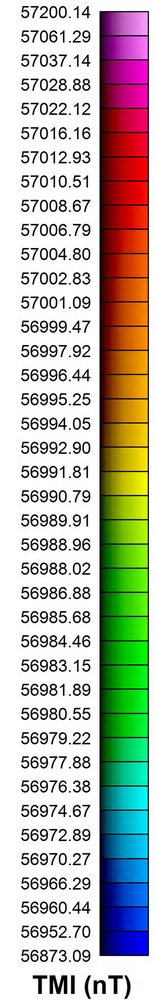
Clear Creek Survey Block

Overview Map
Digital Terrain Model
June 16, 2017

Precision GeoSurveys

Plate2_CC DTM





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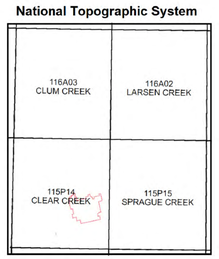
(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

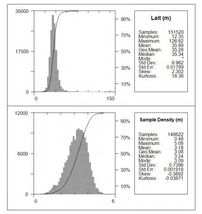
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

Clear Creek Actual Flight Lines.....

DATA REFERENCE

Magnetic data have been compensated and corrected for diurnal, lag, and heading, and then leveled to generate the Total Magnetic Intensity (TMI) grid. Refer to report for details. The TMI is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Victoria Gold Corp.

Clear Creek Survey Block

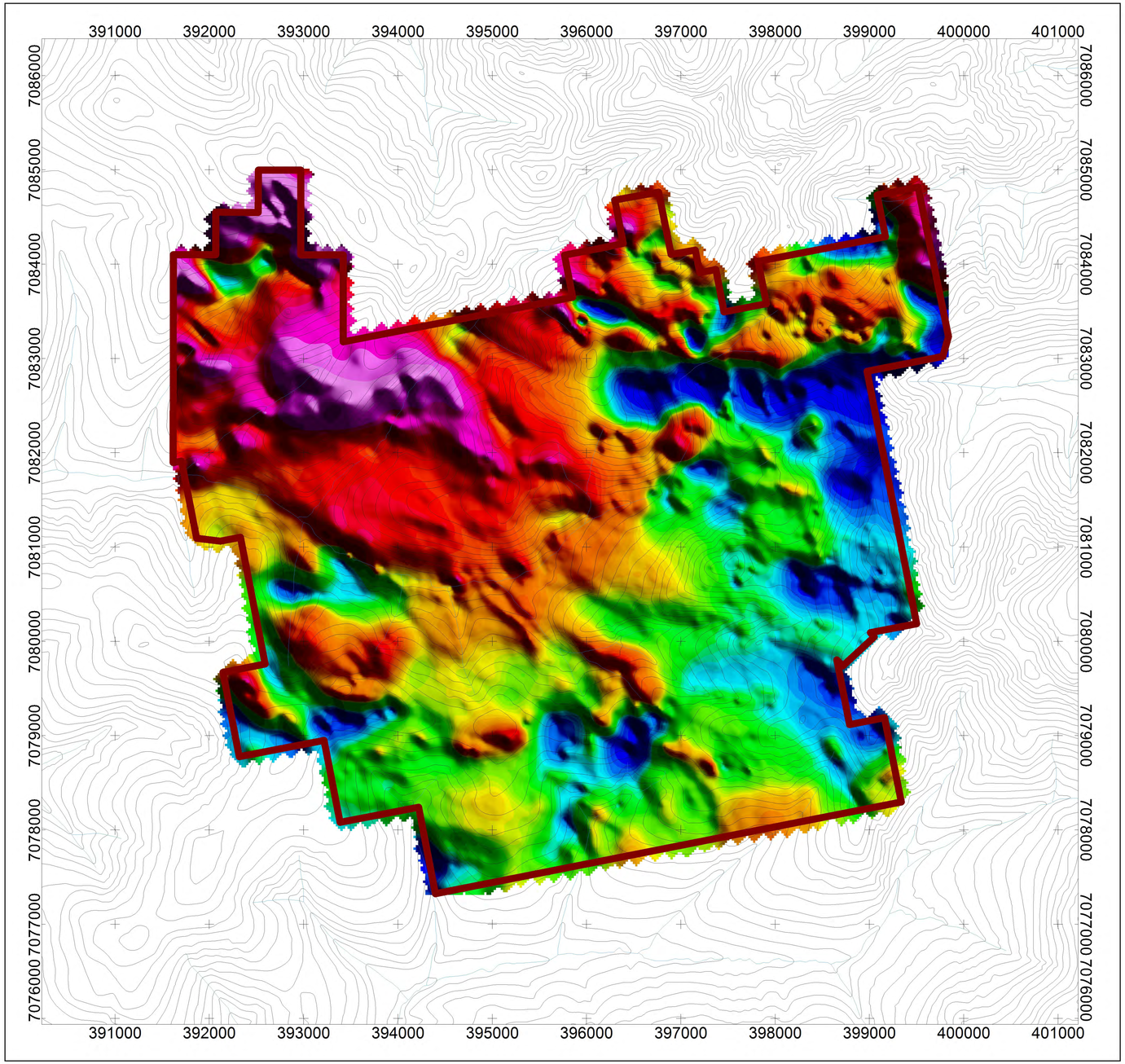
Magnetic Map

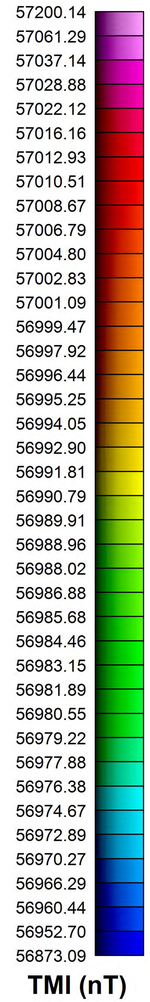
Total Magnetic Intensity with Actual Flight Lines

June 20, 2017

Precision GeoSurveys

Plate3_CC
TMI_wFL





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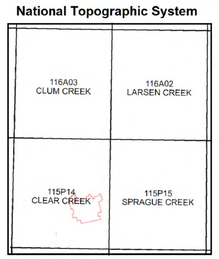
(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

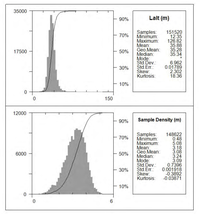
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Magnetic data have been compensated and corrected for diurnal, lag, and heading, and then leveled to generate the Total Magnetic Intensity (TMI) grid. Refer to report for details. The TMI is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

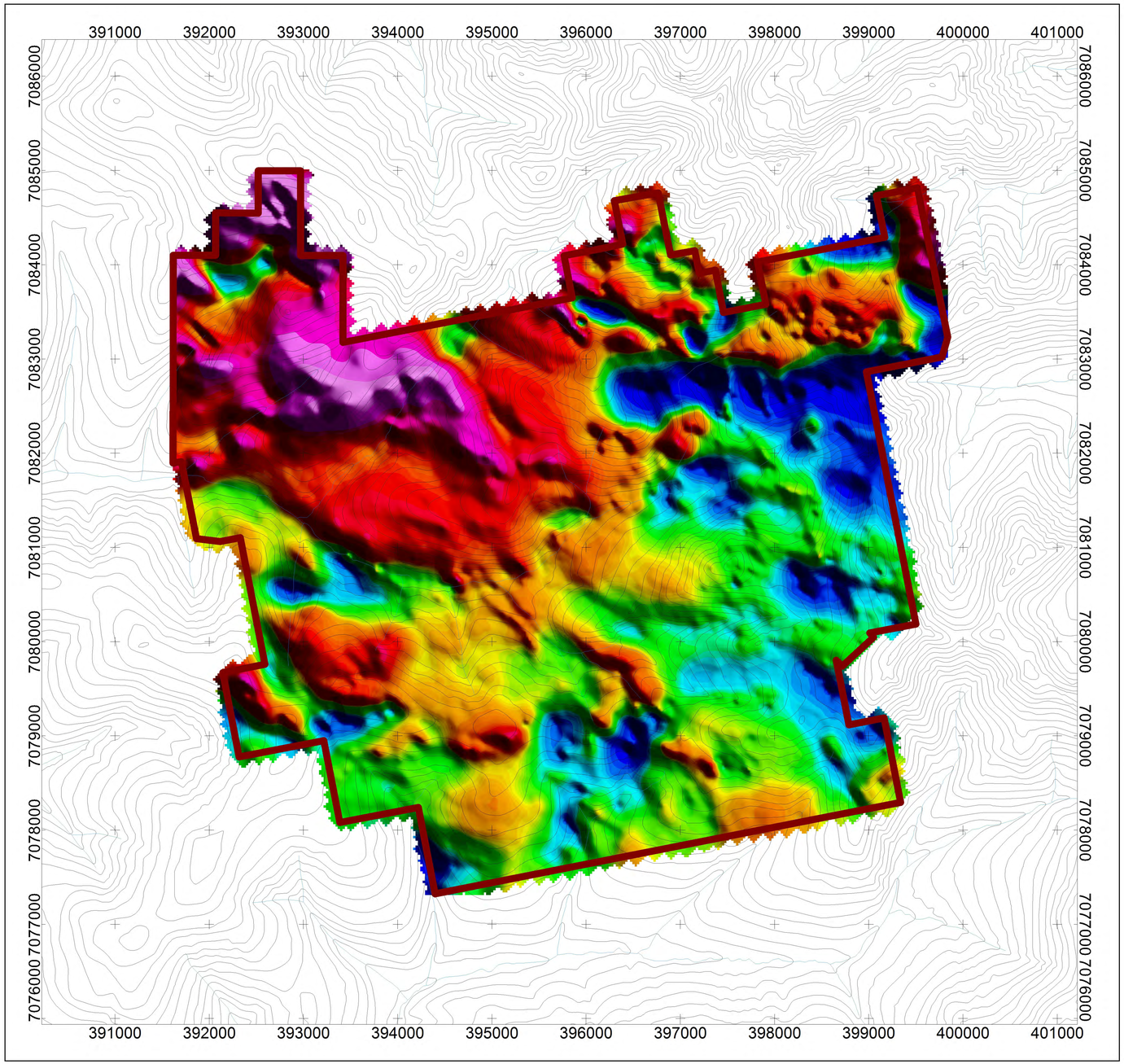
Victoria Gold Corp.

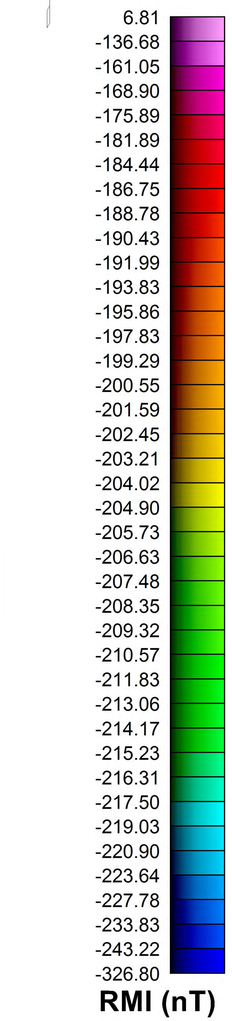
Clear Creek Survey Block

Magnetic Map
Total Magnetic Intensity
June 20, 2017

Precision GeoSurveys

Plate4_CC
TMI





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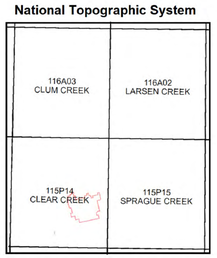
(meters)

NAD83 / UTM zone 8N

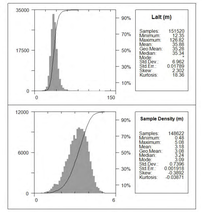


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Residual Magnetic Intensity (RMI) is computed by taking the difference between Total Magnetic Intensity (TMI) and IGRF. Refer to report for details. The RMI is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

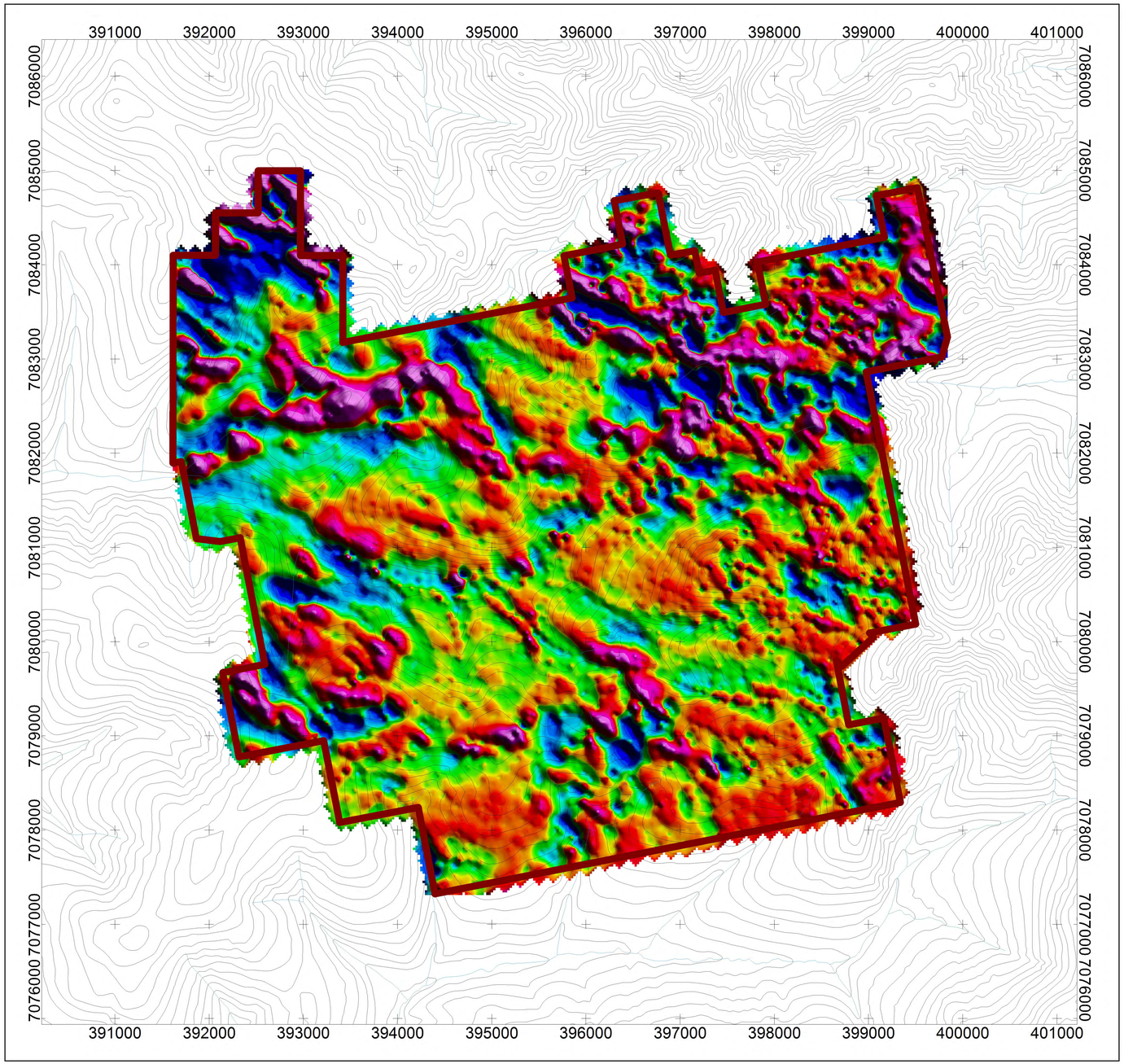
Victoria Gold Corp.

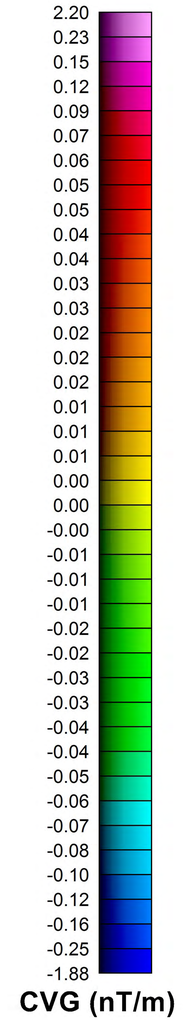
Clear Creek Survey Block

Magnetic Map
Residual Magnetic Intensity
June 20, 2017

Precision GeoSurveys

Plate5_CC
RMI



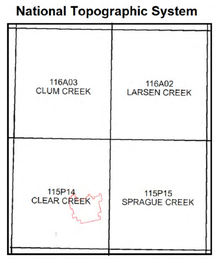


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

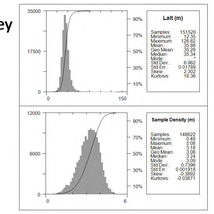
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

The Calculated Vertical Gradient (CVG) is the first vertical derivative of Residual Magnetic Intensity (RMI). The CVG is represented as a grid and its image color ramp has been histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

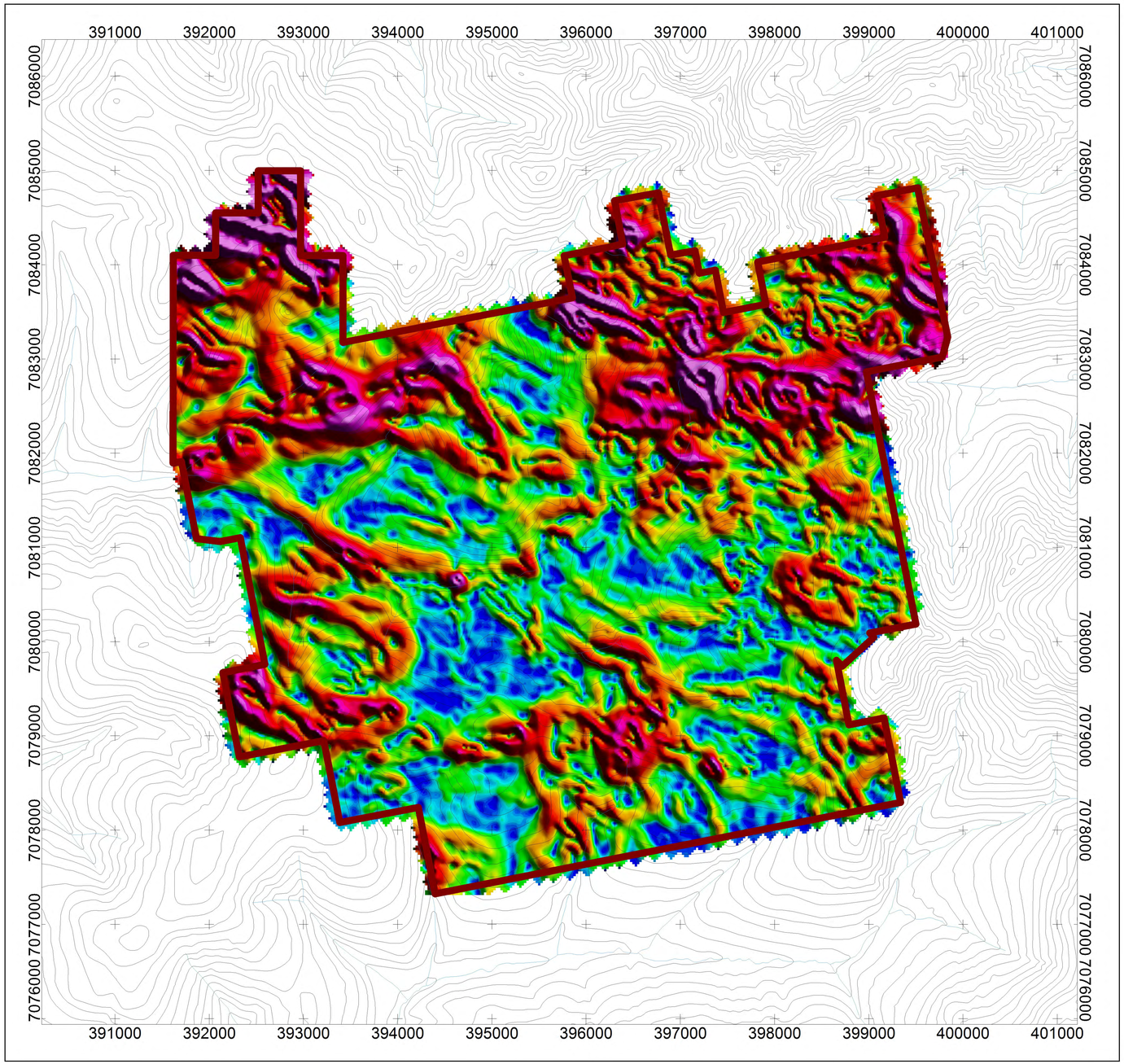
Victoria Gold Corp.

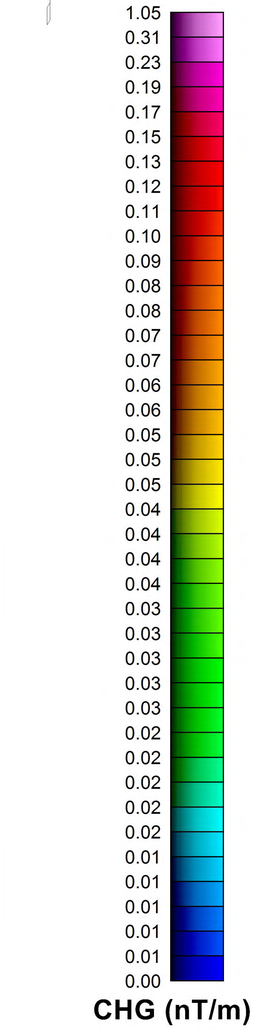
Clear Creek Survey Block

Magnetic Map
Calculated Vertical Gradient
June 20, 2017

Precision GeoSurveys

Plate6_CC
CVG



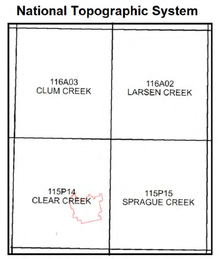


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

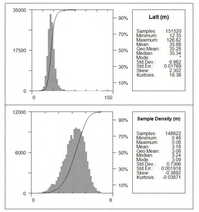
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

The Calculated Horizontal Gradient (CHG) is the horizontal derivative of Residual Magnetic Intensity (RMI). The CHG is represented as a grid and its image color ramp has been histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

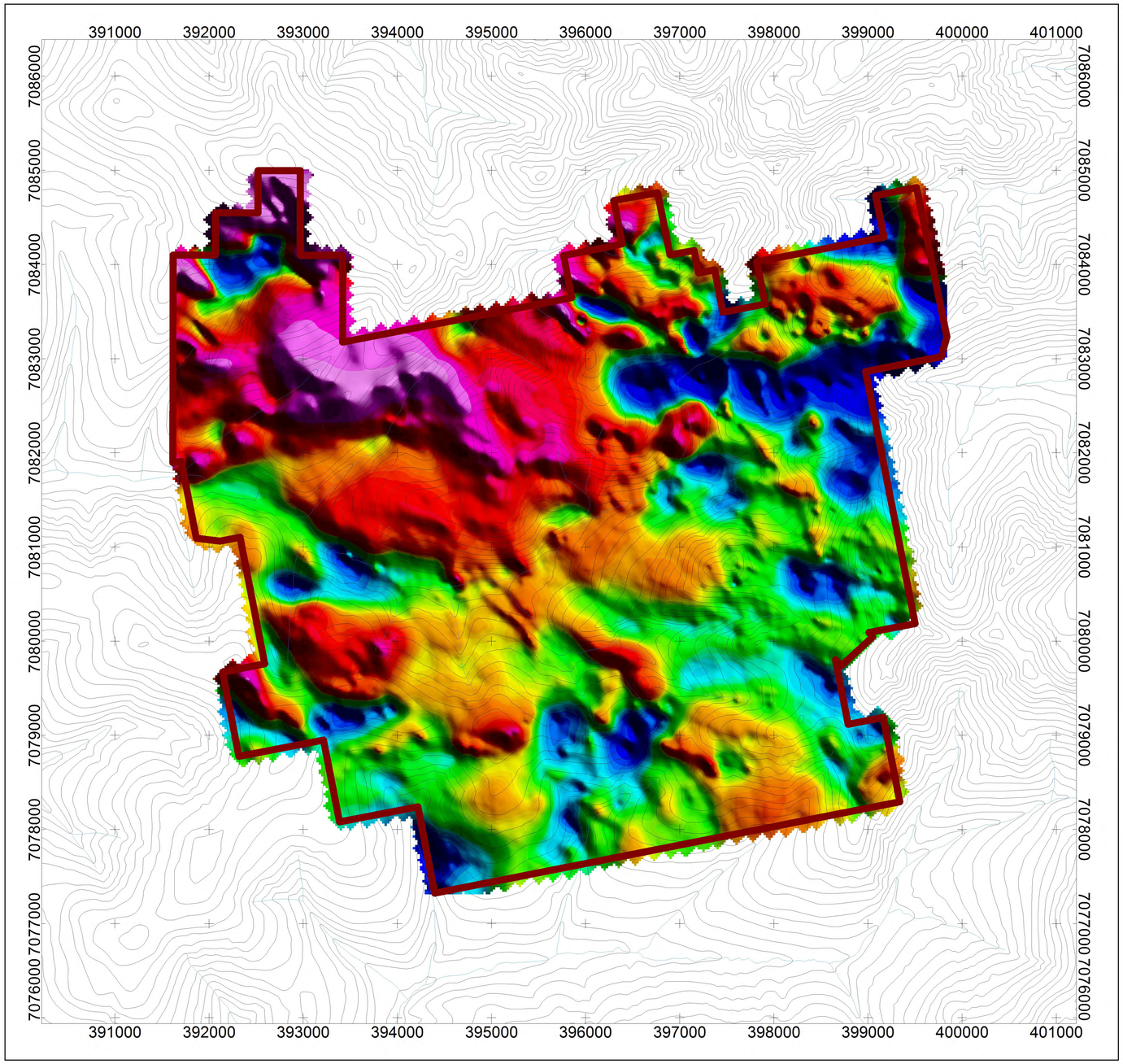
Victoria Gold Corp.

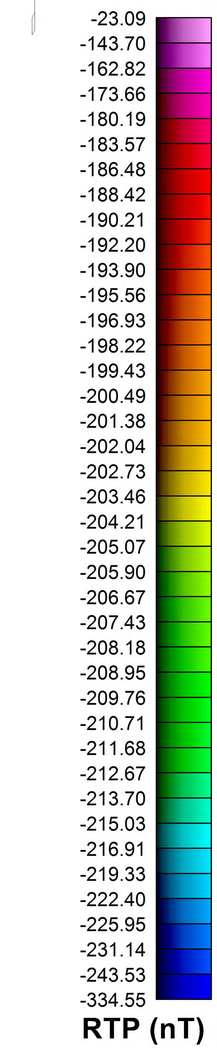
Clear Creek Survey Block

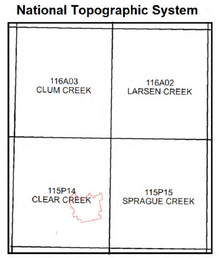
Magnetic Map
Calculated Horizontal Gradient
June 20, 2017

Precision GeoSurveys

Plate7_CC
CHG





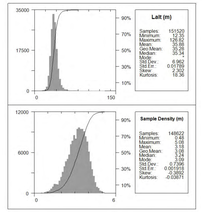


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

The Reduced to Magnetic Pole (RTP) is computed from Residual Magnetic Intensity (RMI). Refer to report for details. The RTP is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

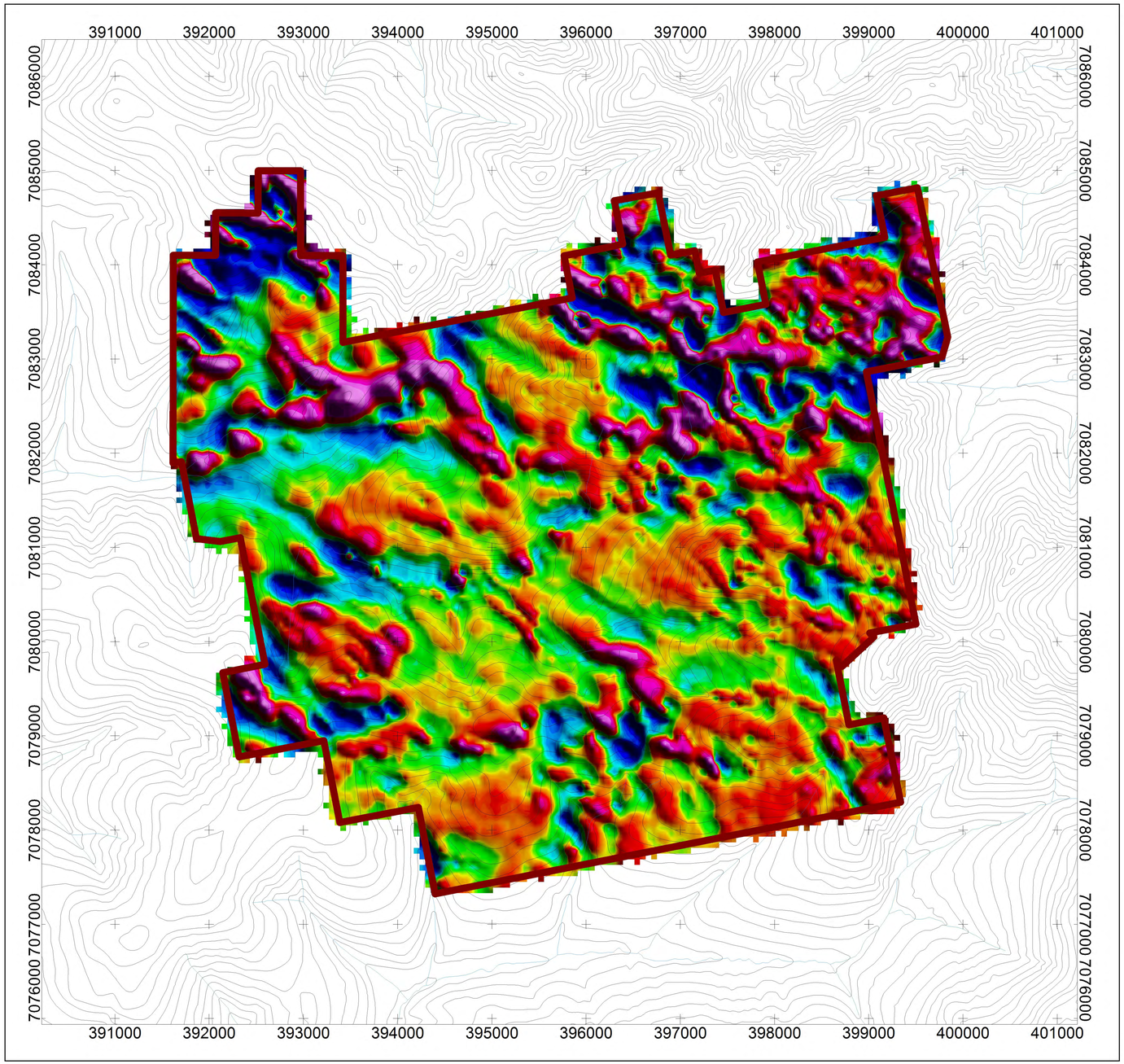
Victoria Gold Corp.

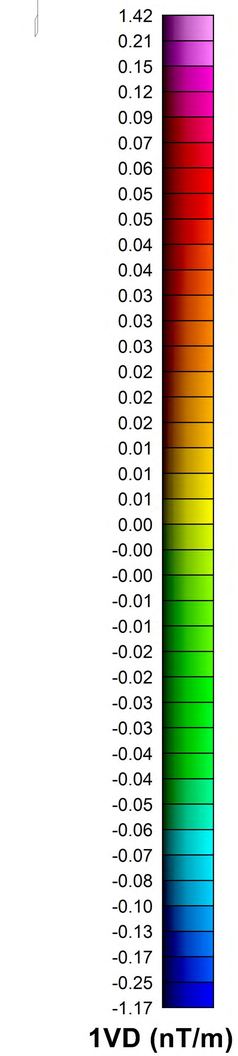
Clear Creek Survey Block

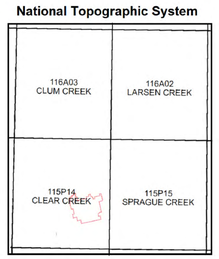
Magnetic Map
Reduced to Magnetic Pole
June 20, 2017

Precision GeoSurveys

Plate8_CC
RTP





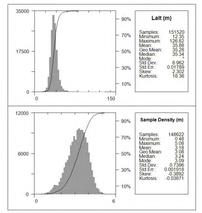


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

The First Vertical Derivative (1VD) is the first vertical derivative of Reduced to Magnetic Pole (RTP). Refer to report for details. The 1VD is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

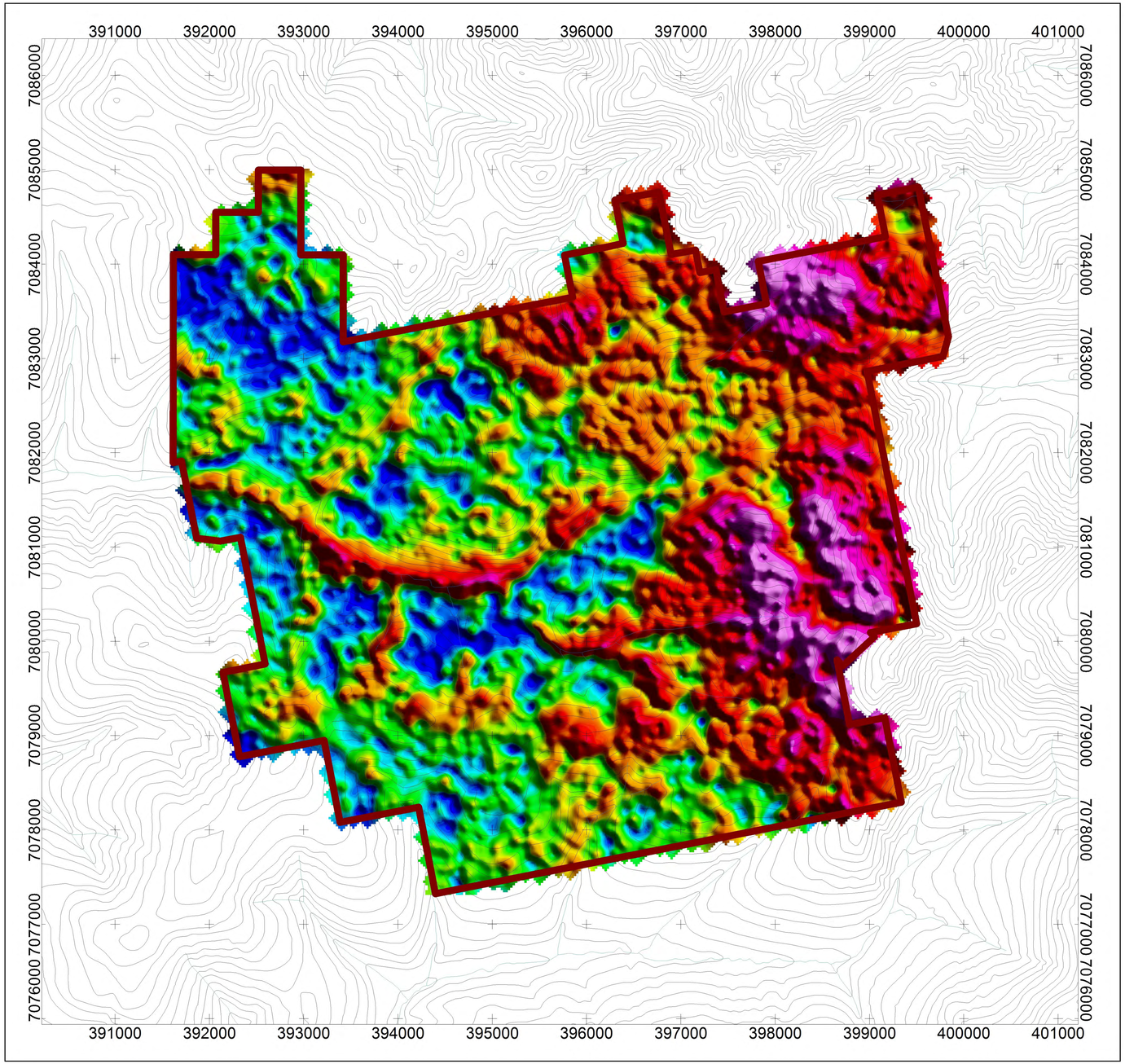
Victoria Gold Corp.

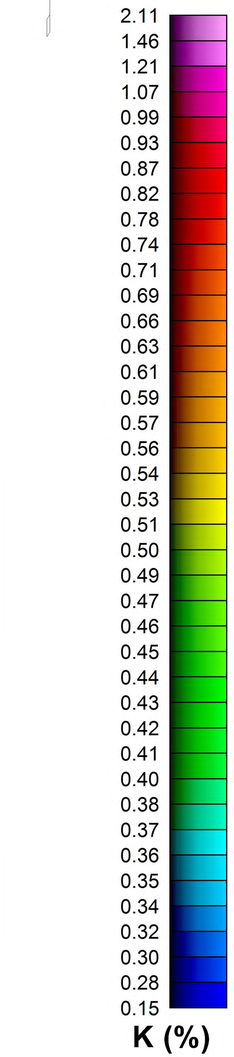
Clear Creek Survey Block

Magnetic Map
First Vertical Derivative
June 20, 2017

Precision GeoSurveys

Plate9_CC
1VD



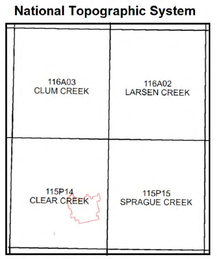


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

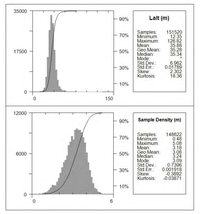
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Victoria Gold Corp.

Clear Creek Survey Block

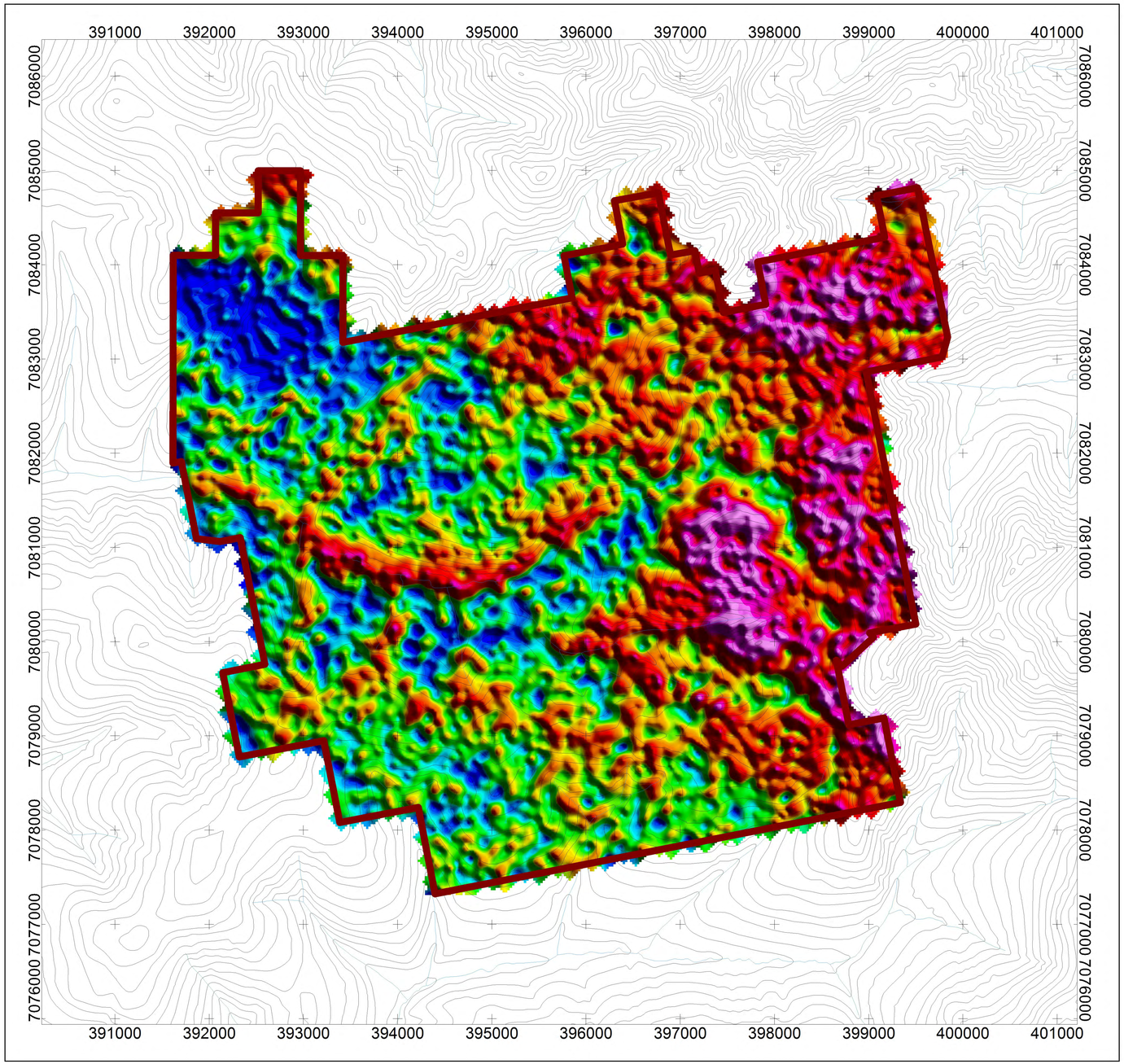
Radiometric Map

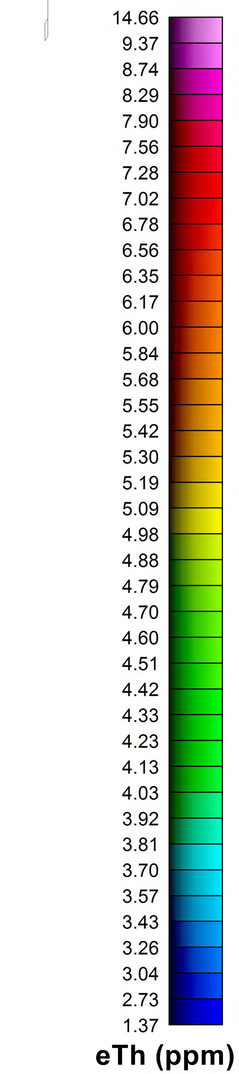
Potassium - Equivalent Concentration in Percentage

June 20, 2017

Precision GeoSurveys

Plate10_CC
%K



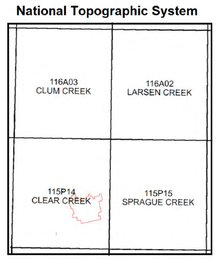


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

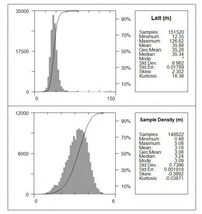
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Victoria Gold Corp.

Clear Creek Survey Block

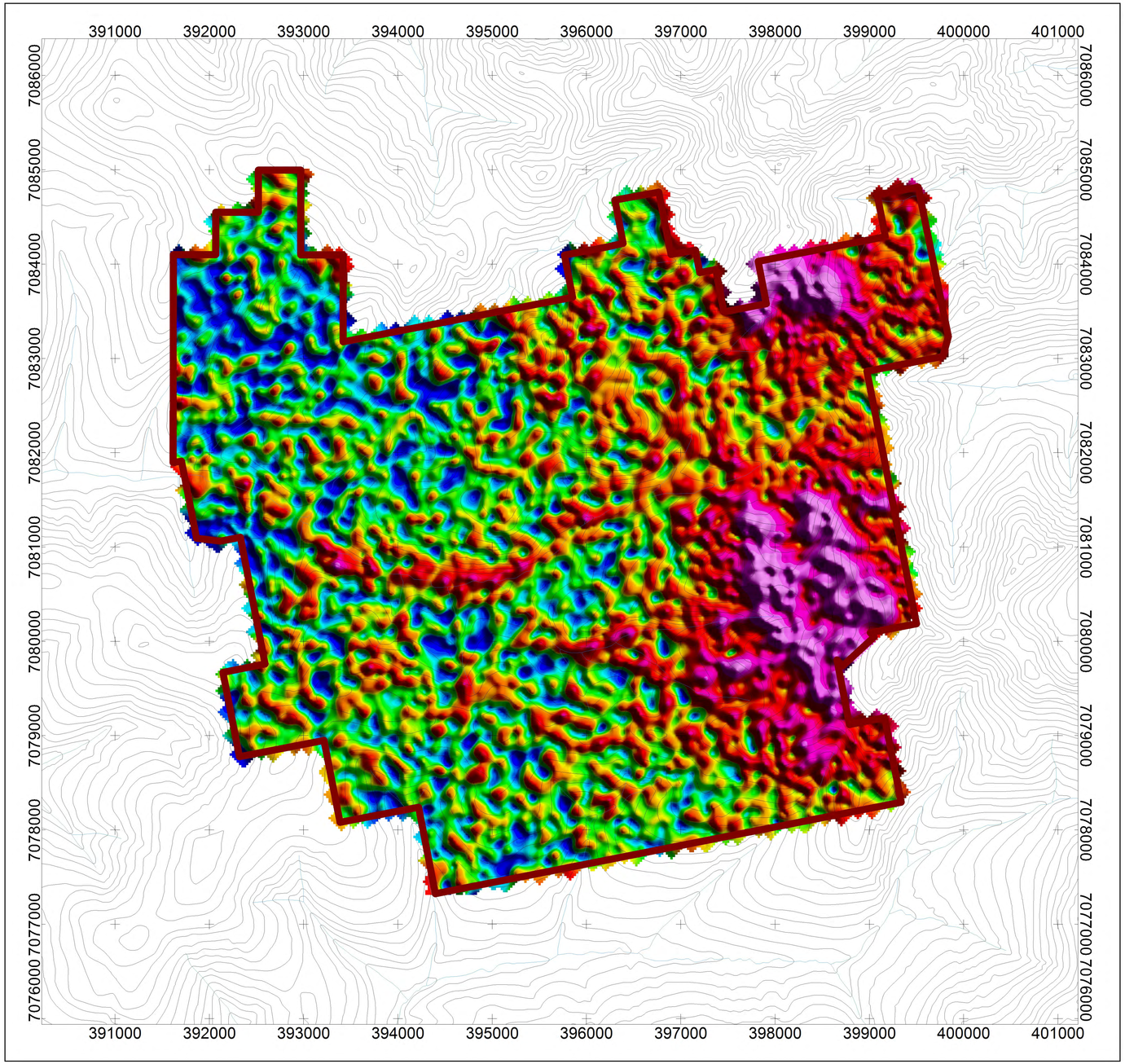
Radiometric Map

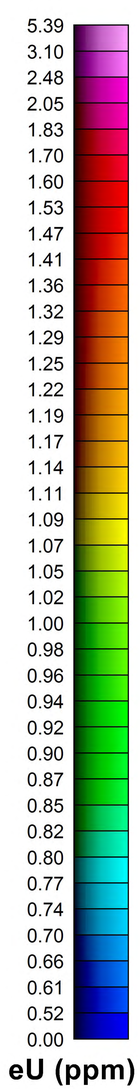
Thorium - Equivalent Concentration

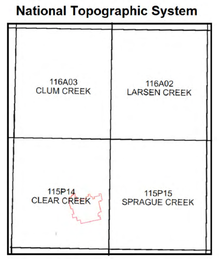
June 20, 2017

Precision GeoSurveys

Plate11_CC eTh





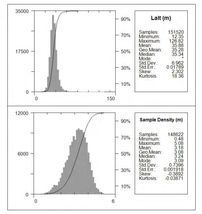


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Scale 1:25000

500 0 500 1000 1500
(meters)

NAD83 / UTM zone 8N

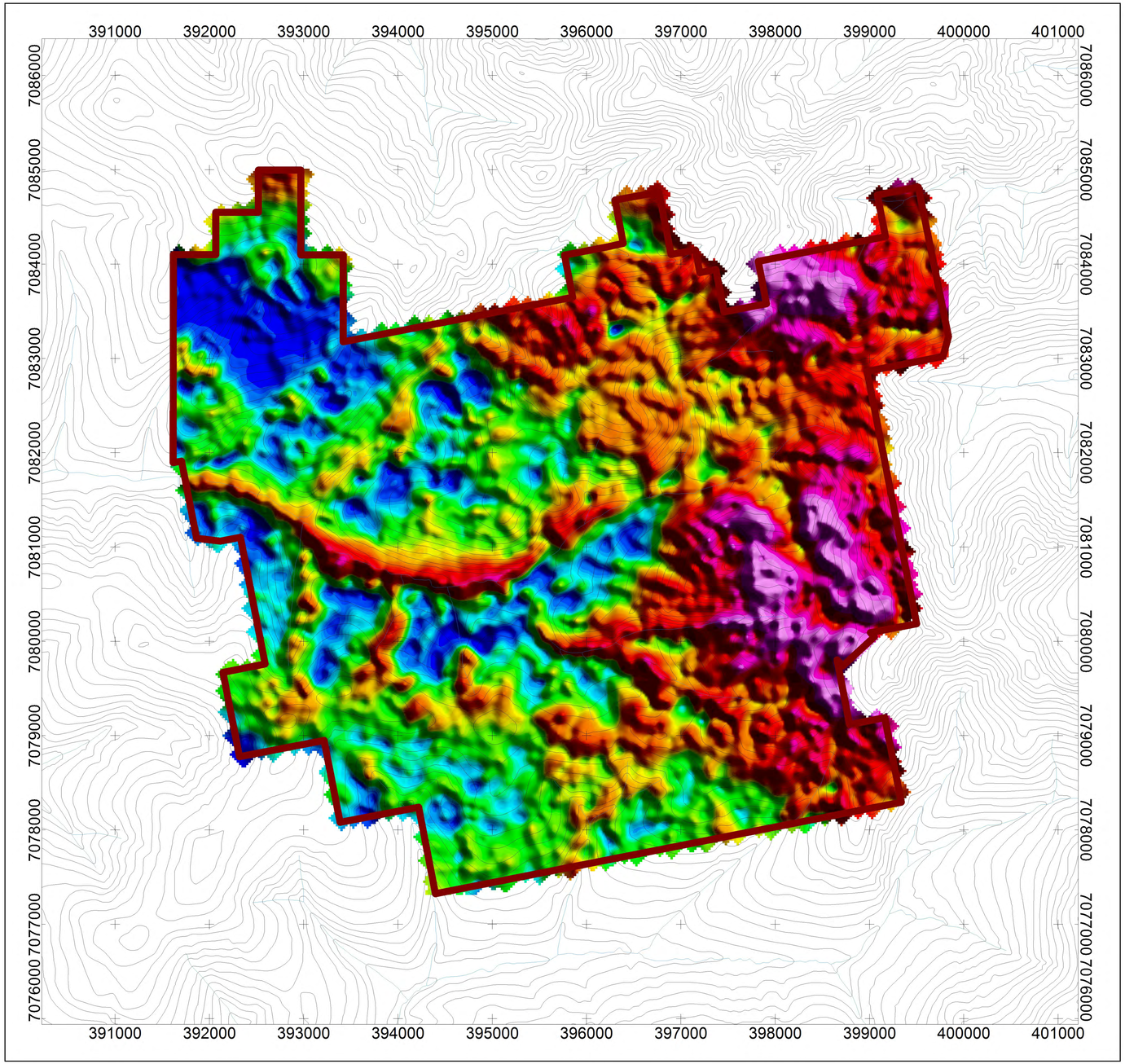
Victoria Gold Corp.

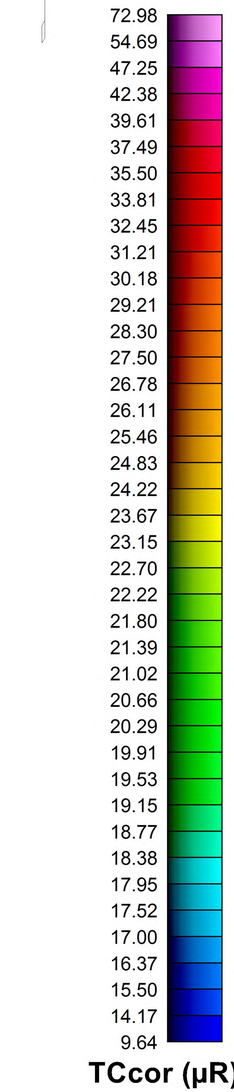
Clear Creek Survey Block

Radiometric Map
Uranium - Equivalent Concentration
June 20, 2017

Precision GeoSurveys

Plate12_CC
eU



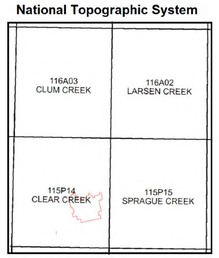


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

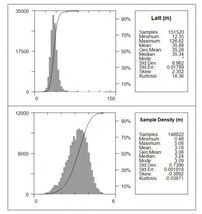


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

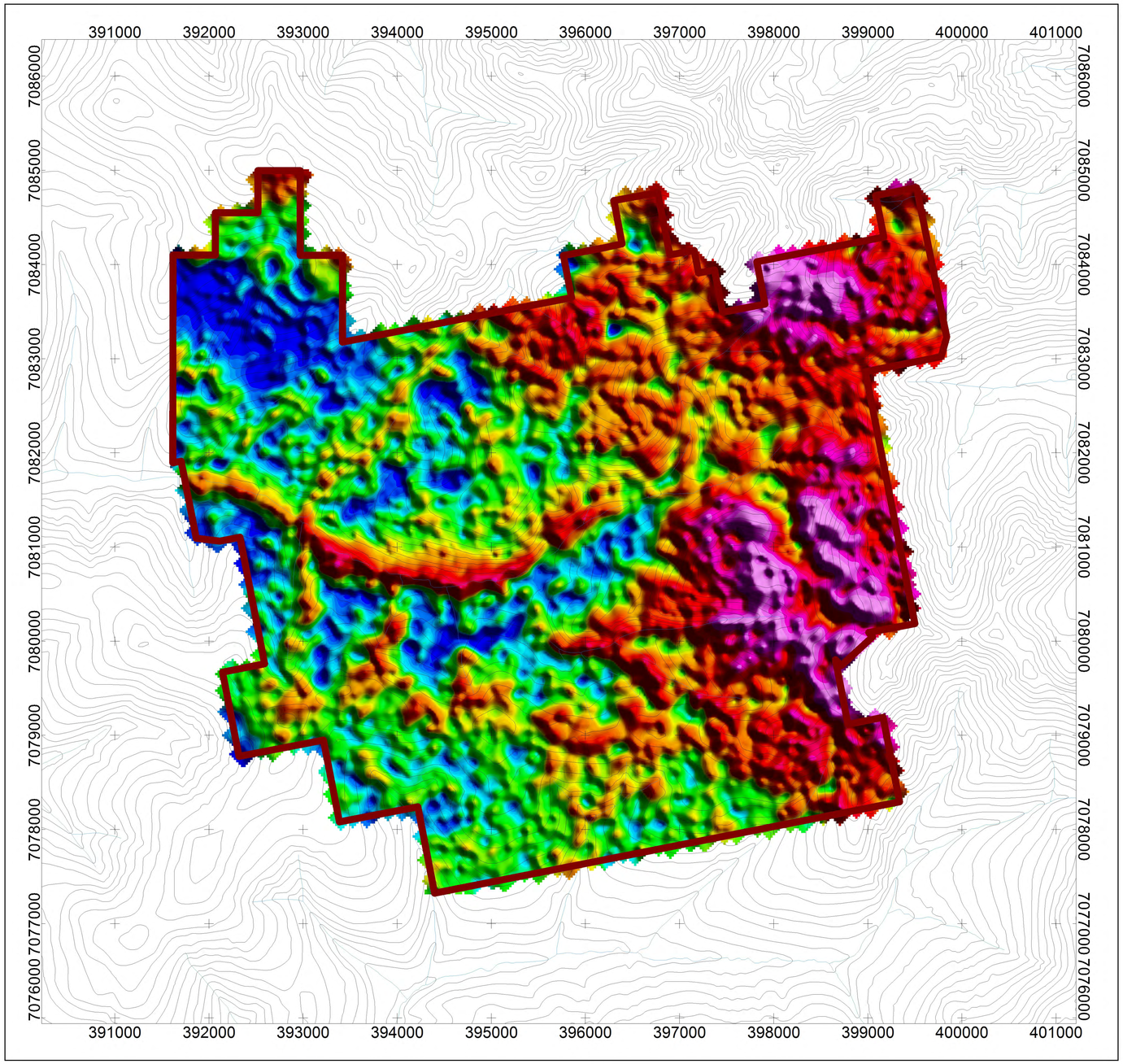
Victoria Gold Corp.

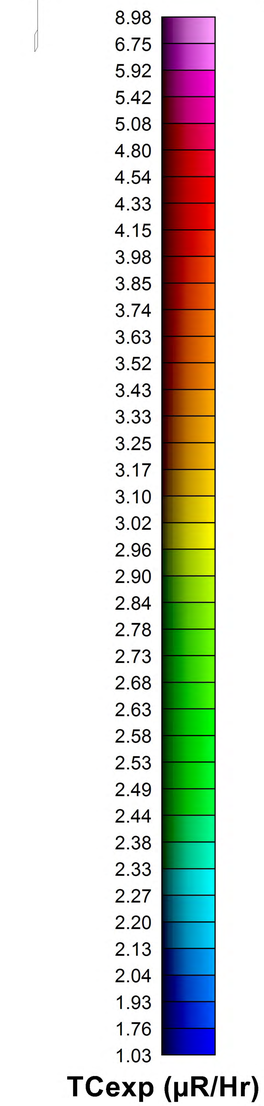
Clear Creek Survey Block

Radiometric Map
Total Count - Equivalent Dose Rate
June 20, 2017

Precision GeoSurveys

Plate13_CC
TCcor



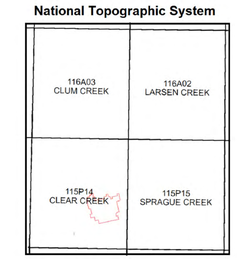


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

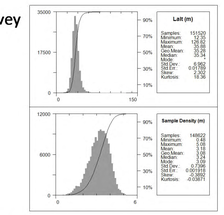


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

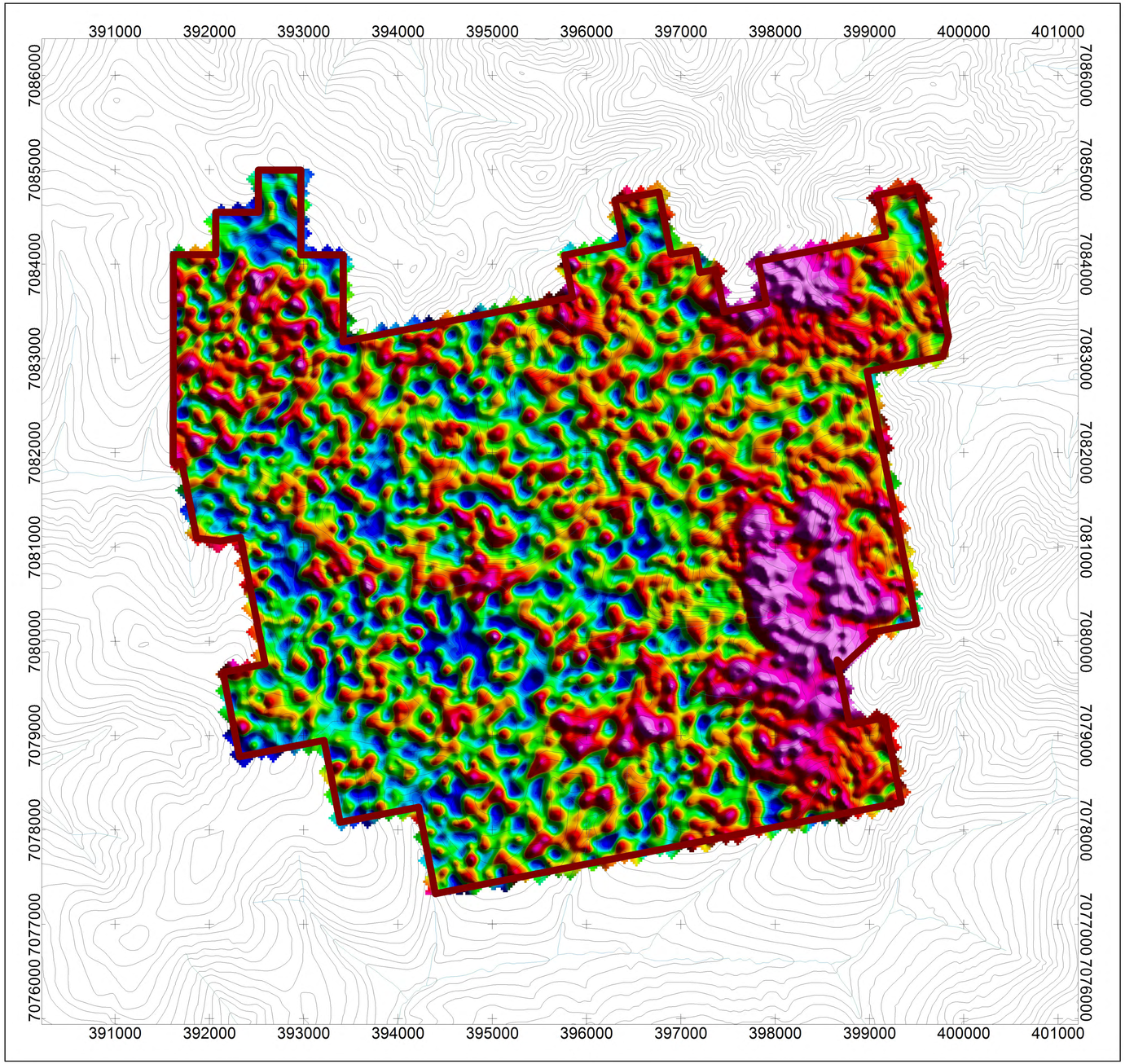
Victoria Gold Corp.

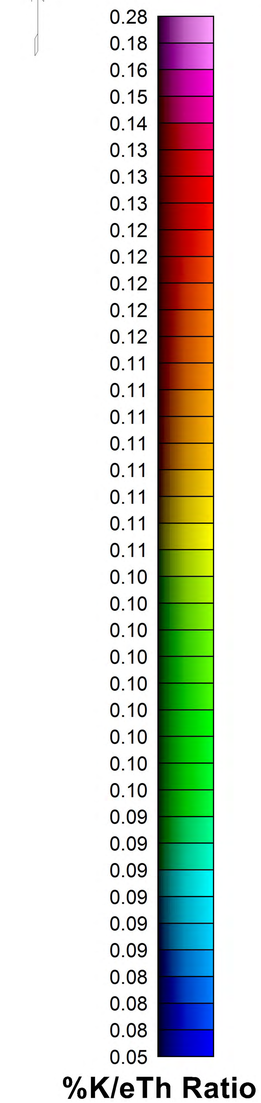
Clear Creek Survey Block

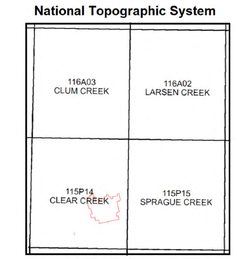
Radiometric Map
Total Count - Exposure Rate
June 20, 2017

Precision GeoSurveys

Plate14_CC
TCexp





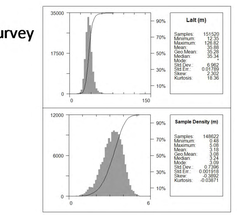


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

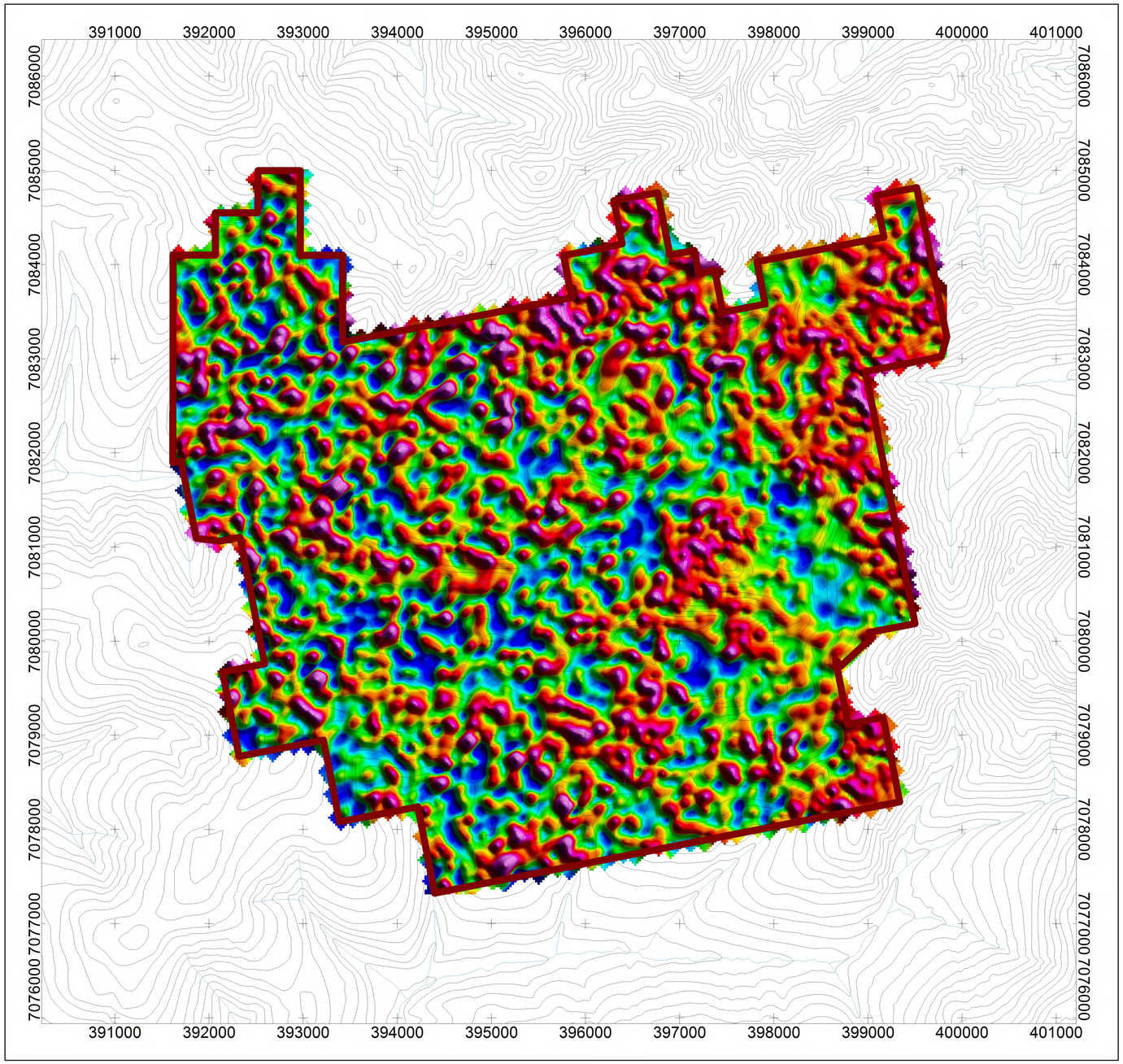
Victoria Gold Corp.

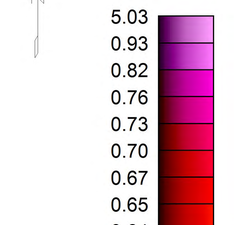
Clear Creek Survey Block

Radiometric Map
Potassium over Thorium Ratio
June 20, 2017

Precision GeoSurveys

Plate15_CC
%K/eTh



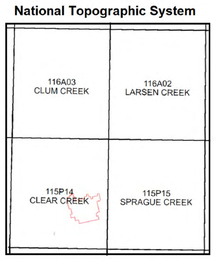


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

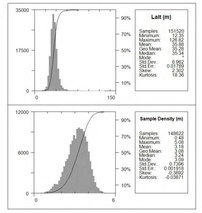


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

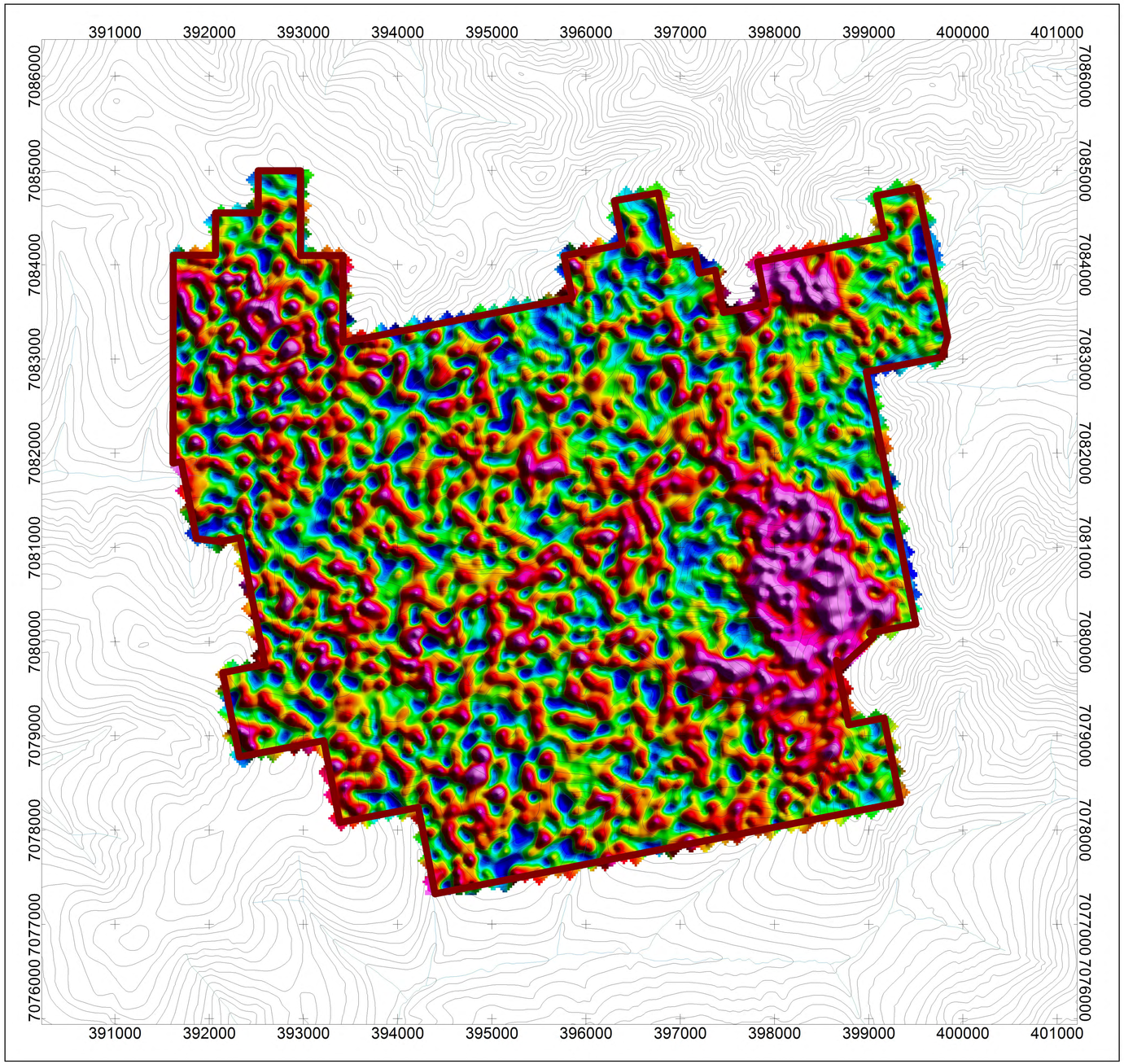
Victoria Gold Corp.

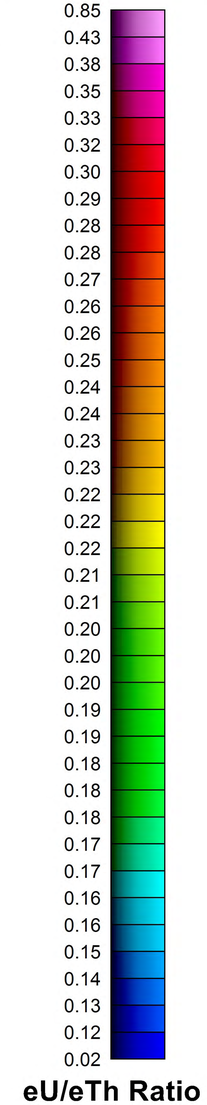
Clear Creek Survey Block

Radiometric Map
Potassium over Uranium Ratio
June 20, 2017

Precision GeoSurveys

Plate16_CC
%K/eU



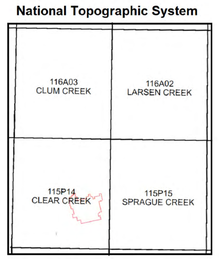


Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

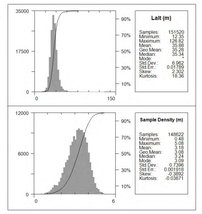
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

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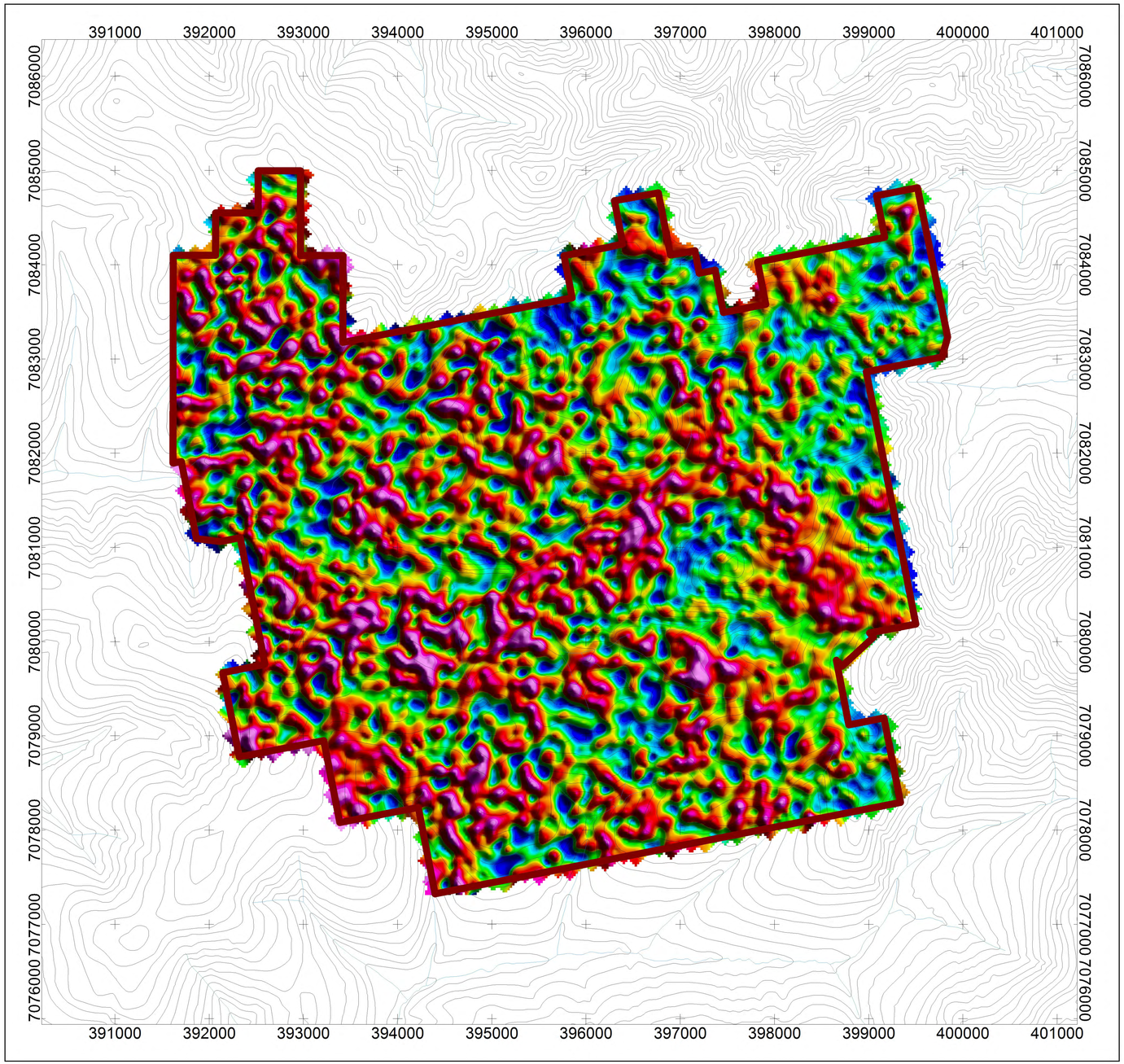
Victoria Gold Corp.

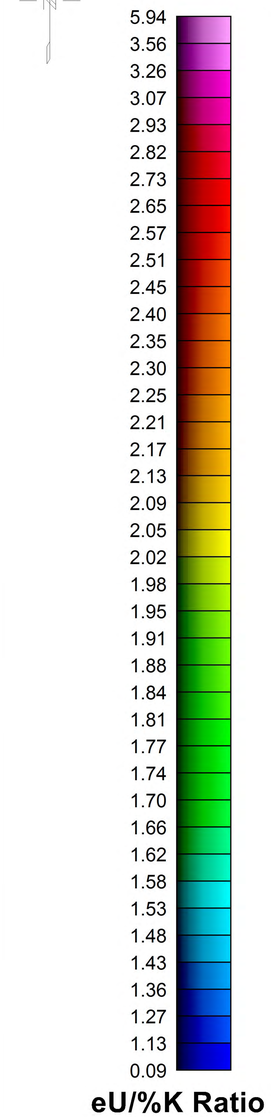
Clear Creek Survey Block

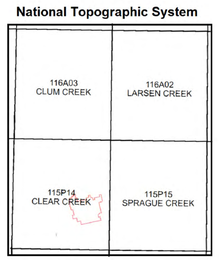
Radiometric Map
Uranium over Thorium Ratio
June 20, 2017

Precision GeoSurveys

Plate17_CC
eU/eTh





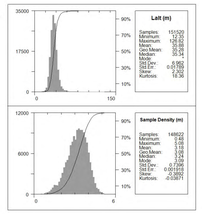


MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N

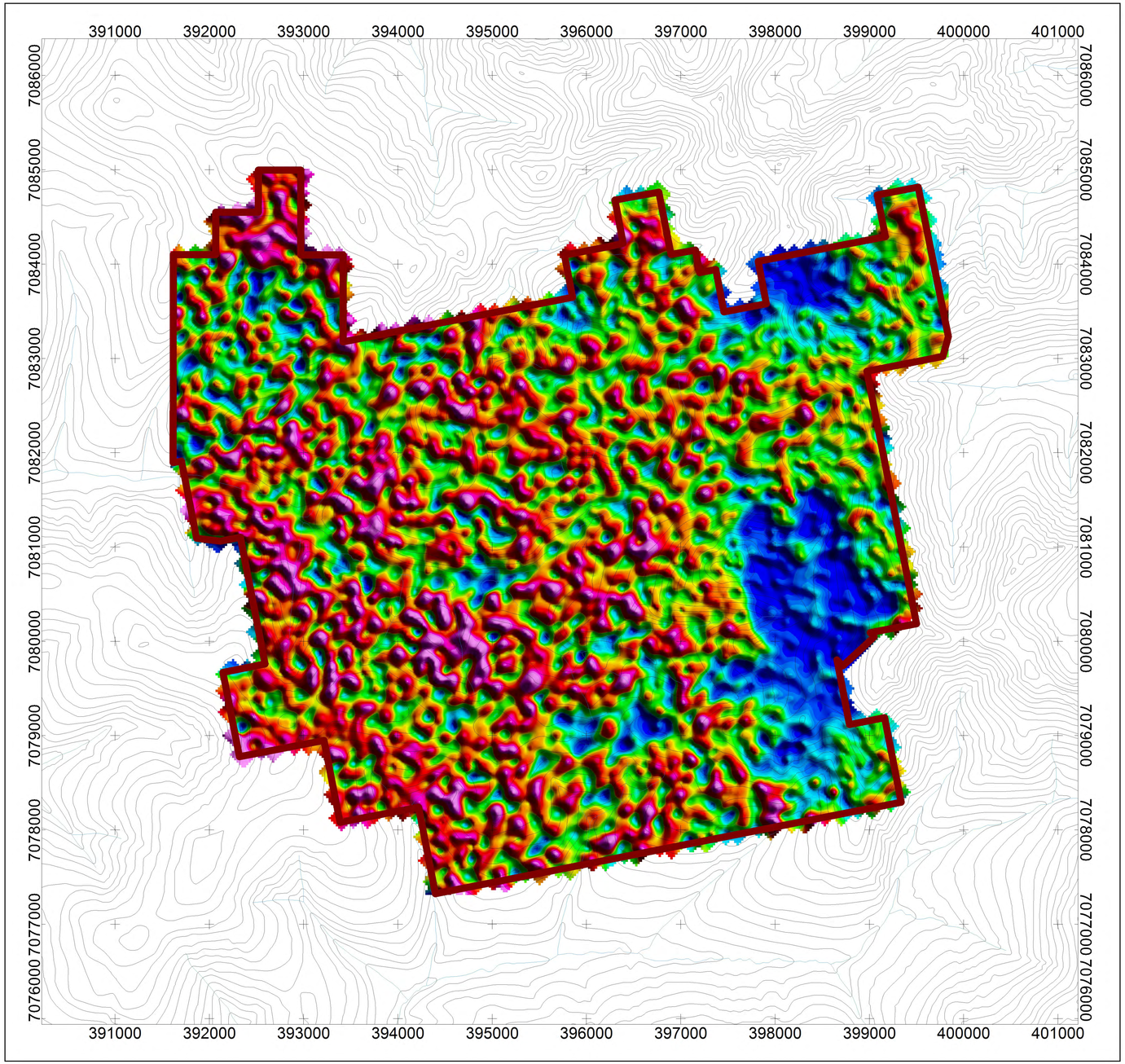
Victoria Gold Corp.

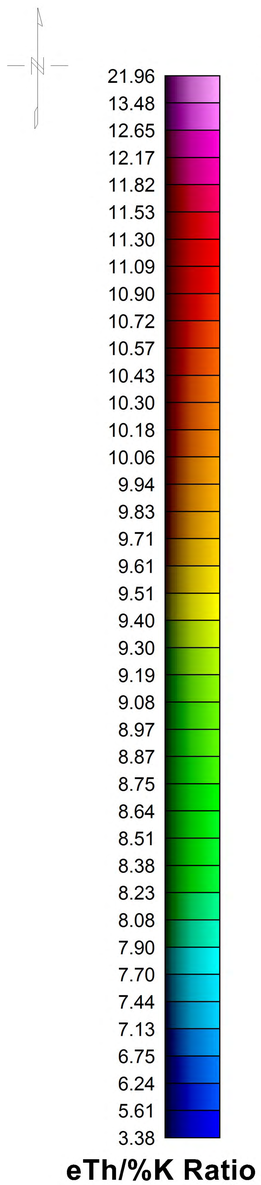
Clear Creek Survey Block

Radiometric Map
Uranium over Potassium Ratio
June 20, 2017

Precision GeoSurveys

Plate18_CC
eU/%K





Scale 1:25000

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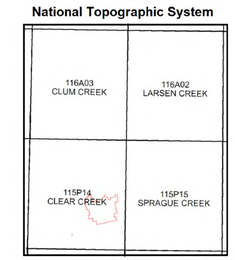
(meters)

NAD83 / UTM zone 8N



MAP PROJECTION

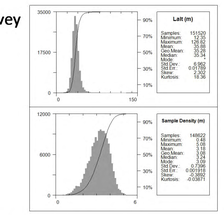
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

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Victoria Gold Corp.

Clear Creek Survey Block

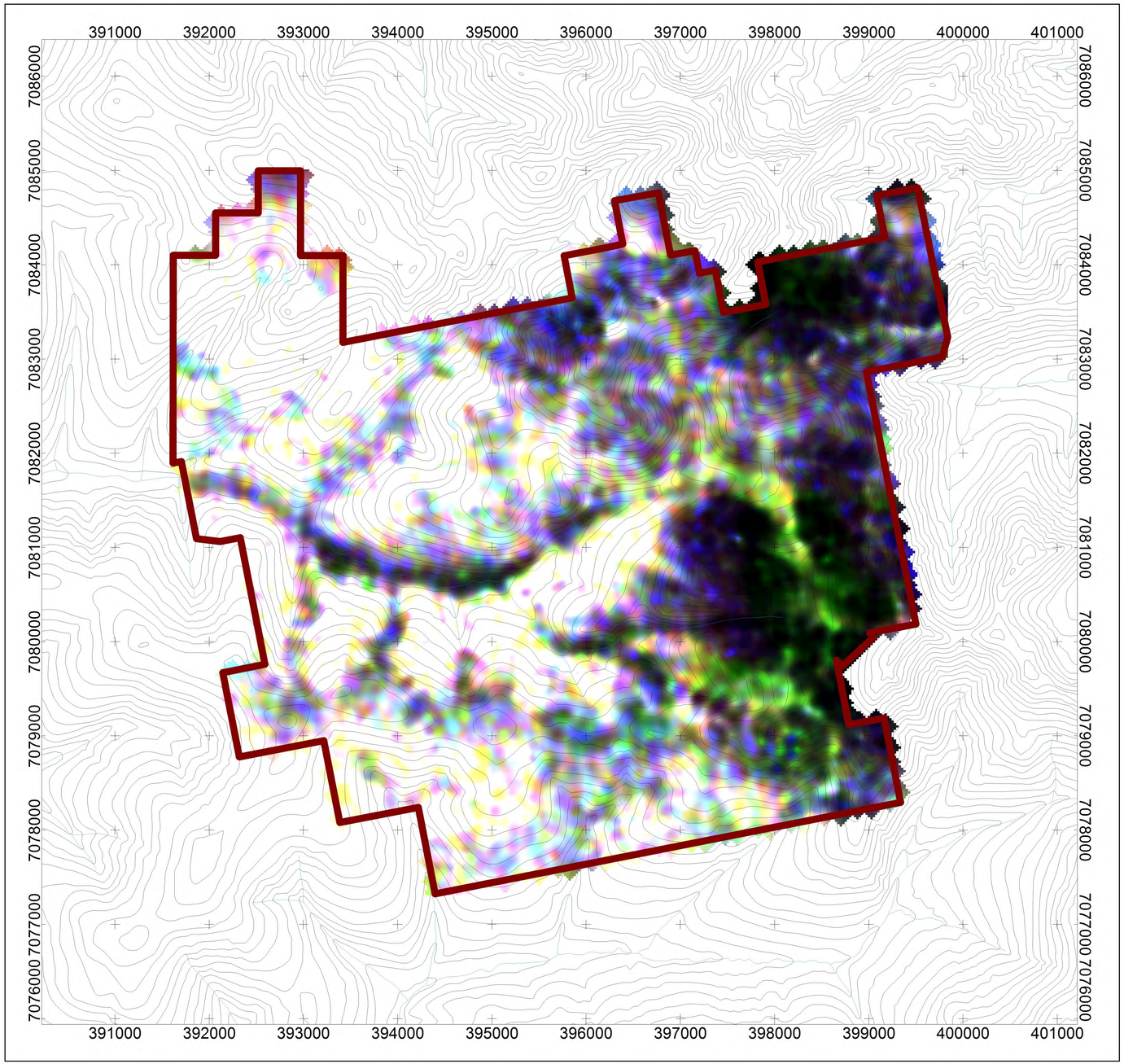
Radiometric Map

Thorium over Potassium Ratio

June 20, 2017

Precision GeoSurveys

Plate19_CC
eTh/%K

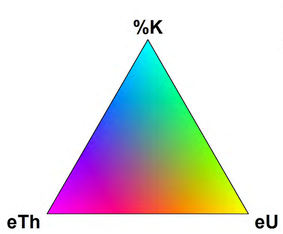


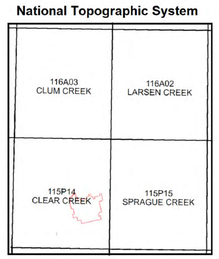
Scale 1:25000

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 8N





MAP PROJECTION

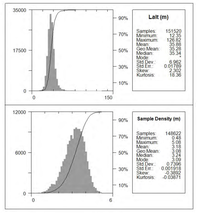
Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°



AIRBORNE SURVEY SYSTEM

Magnetometer Sensor:	Scintrex CS-3 Cesium
Configuration:	Stinger with 3 axis compensation
Sample Rate:	10 Hz
Sensitivity:	0.0006 nT √Hz rms
Gamma Ray Spectrometer:	Pico Envirotec GRS-10 Gamma Spectrometer
Downward-Looking Crystals:	16.8 litres of NaI(Tl) crystals
Upward-Looking Crystals:	4.2 litres of NaI(Tl) crystals
Sample Rate:	1 Hz

Legend

Water Bodies.....

Clear Creek Survey Block Boundary.....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

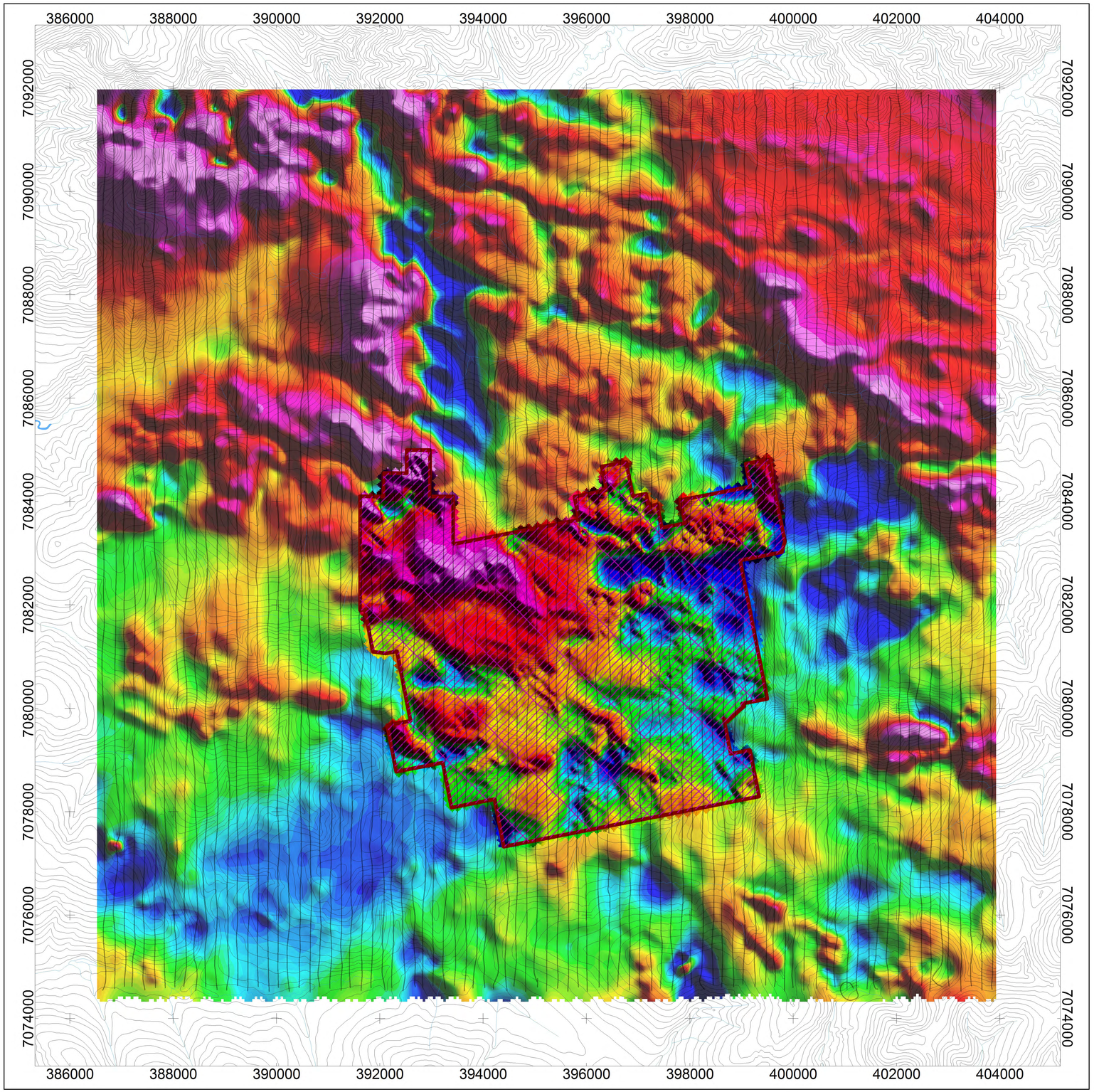
Victoria Gold Corp.

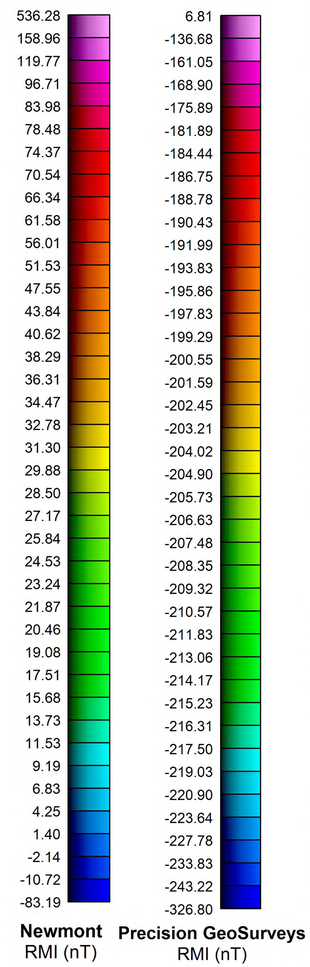
Clear Creek Survey Block

Radiometric Map
Ternary Map
June 20, 2017

Precision GeoSurveys

Plate20_CC
TM





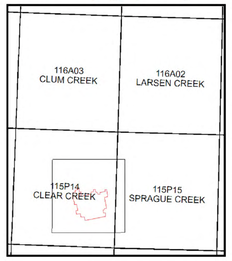
Scale 1:40000

500 0 500 1000 1500 2000 2500 3000

(meters)

NAD83 / UTM zone 8N

National Topographic System



MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N

Datum: NAD 83

Local Datum Transform: (4 m) North America – Canada and USA

PRECISION GEOSURVEYS - CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°

NEWMONT GOLD COMPANY- CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	August 11, 1998 to August 14, 1998
Survey Base:	Blackstone Mining's placer camp, Yukon
Aircraft Type:	Bell 206
Survey Technology:	Magnetic and Radiometric Survey
Aircraft Height:	104.1 meters (spectrometer)
Bird Height:	74.1 meters (magnetometer)
Survey Line Spacing:	200 meters
Survey Line Direction:	000°/180°
Tie Lines:	None

Legend

Water Bodies.....

Clear Creek Survey Block Boundary (2017).....

Actual Flight Lines - Precision GeoSurveys (2017)..

Actual Flight Lines - Newmont (1998).....

DATA REFERENCE

Residual Magnetic Intensity (RMI) is computed by taking the difference between Total Magnetic Intensity (TMI) and IGRF. Refer to report for details. The RMI is represented as a grid and drawn with a histogram-equalized color shade; sun illumination inclination at 45° and declination at 45°.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

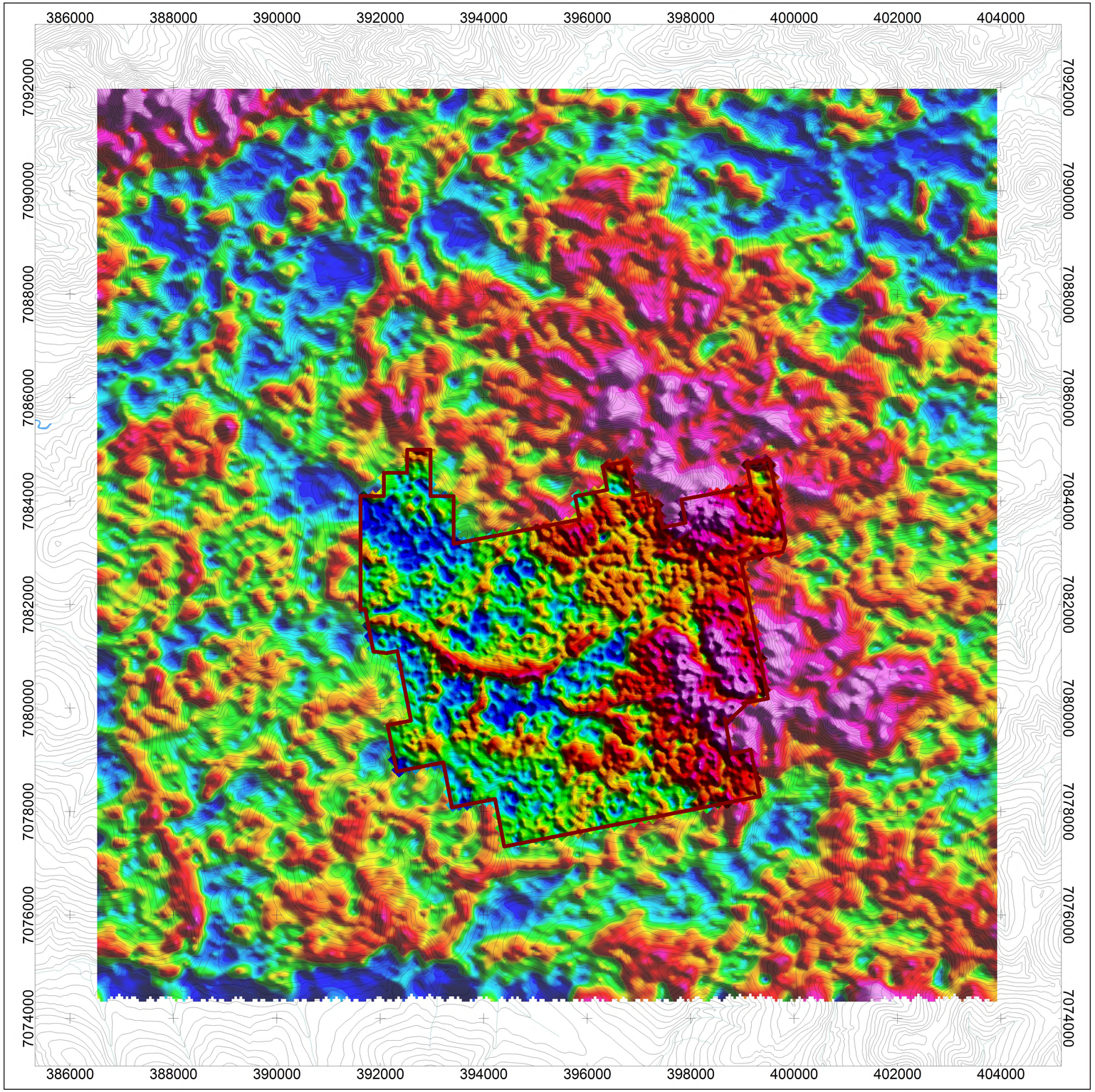
Victoria Gold Corp.

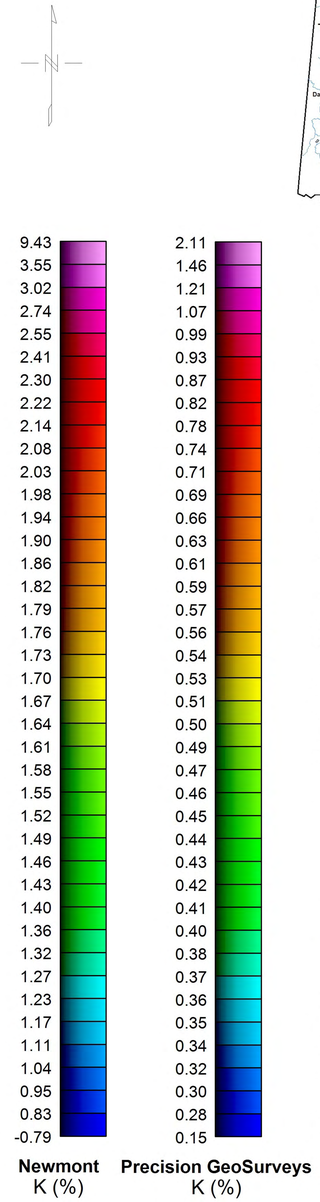
Clear Creek Survey Block

1998 and 2017 Integrated Magnetic Maps
Residual Magnetic Intensity with Flight Lines
June 20, 2017

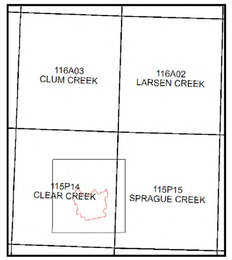
Precision GeoSurveys

Plate21_CC
RMI_wFL_98_17





National Topographic System



MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

PRECISION GEOSURVEYS - CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°

NEWMONT GOLD COMPANY- CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	August 11, 1998 to August 14, 1998
Survey Base:	Blackstone Mining's placer camp, Yukon
Aircraft Type:	Bell 206
Survey Technology:	Magnetic and Radiometric Survey
Aircraft Height:	104.1 meters (spectrometer)
Bird Height:	74.1 meters (magnetometer)
Survey Line Spacing:	200 meters
Survey Line Direction:	000°/180°
Tie Lines:	None

Legend

Water Bodies.....

Clear Creek Survey Block Boundary (2017).....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

National Topographic Data Base (NTDB), Canada. Ottawa, ON: Government of Canada, Natural Resources Canada, Center for Topographic Information. Contour interval at 100 ft. URL <http://ftp.geogratis.gc.ca/pub/nrcan_rncan/vector/ntdb_bndt/>[2007]

Victoria Gold Corp.

Clear Creek Survey Block

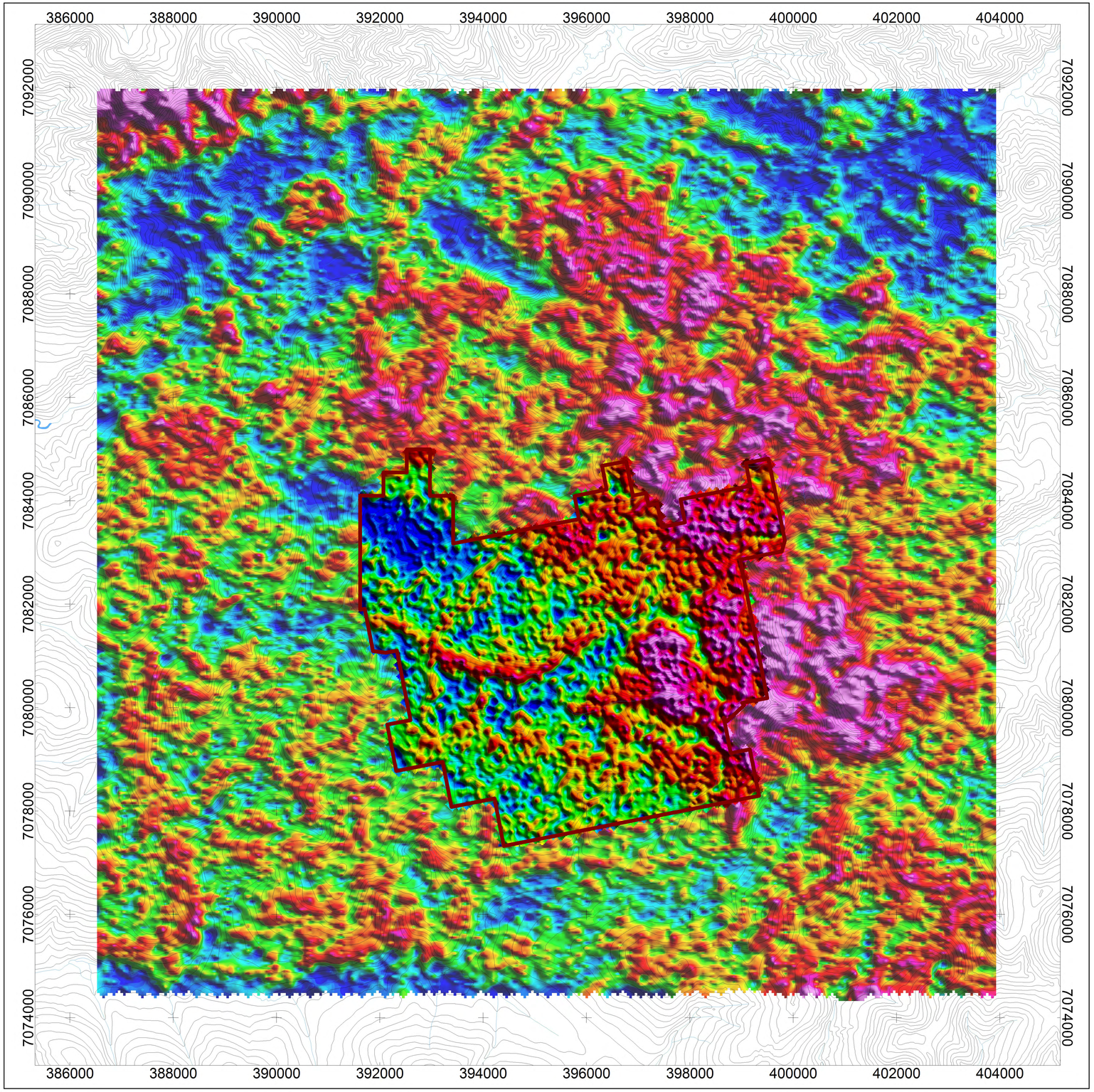
1998 and 2017 Integrated Radiometric Maps
Potassium - Equivalent Concentration in Percentage
June 20, 2017

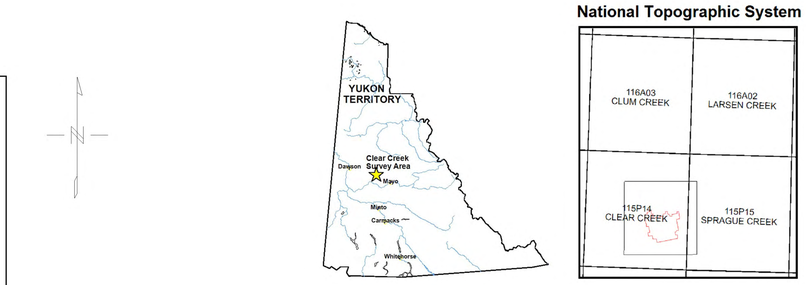
Precision GeoSurveys

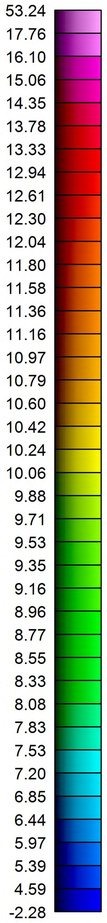
Scale 1:40000

500 0 500 1000 1500 2000 2500 3000
(meters)
NAD83 / UTM zone 8N

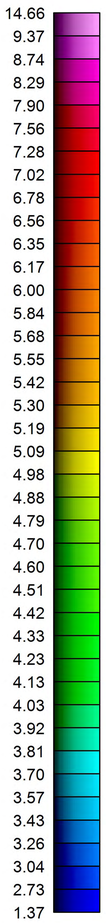
Plate22_CC
%K_98_17







Newmont
eTh (ppm)



Precision GeoSurveys
eTh (ppm)

MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

PRECISION GEOSURVEYS - CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°

NEWMONT GOLD COMPANY- CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	August 11, 1998 to August 14, 1998
Survey Base:	Blackstone Mining's placer camp, Yukon
Aircraft Type:	Bell 206
Survey Technology:	Magnetic and Radiometric Survey
Aircraft Height:	104.1 meters (spectrometer)
Bird Height:	74.1 meters (magnetometer)
Survey Line Spacing:	200 meters
Survey Line Direction:	000°/180°
Tie Lines:	None

Legend

Water Bodies.....

Clear Creek Survey Block Boundary (2017).....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

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Victoria Gold Corp.

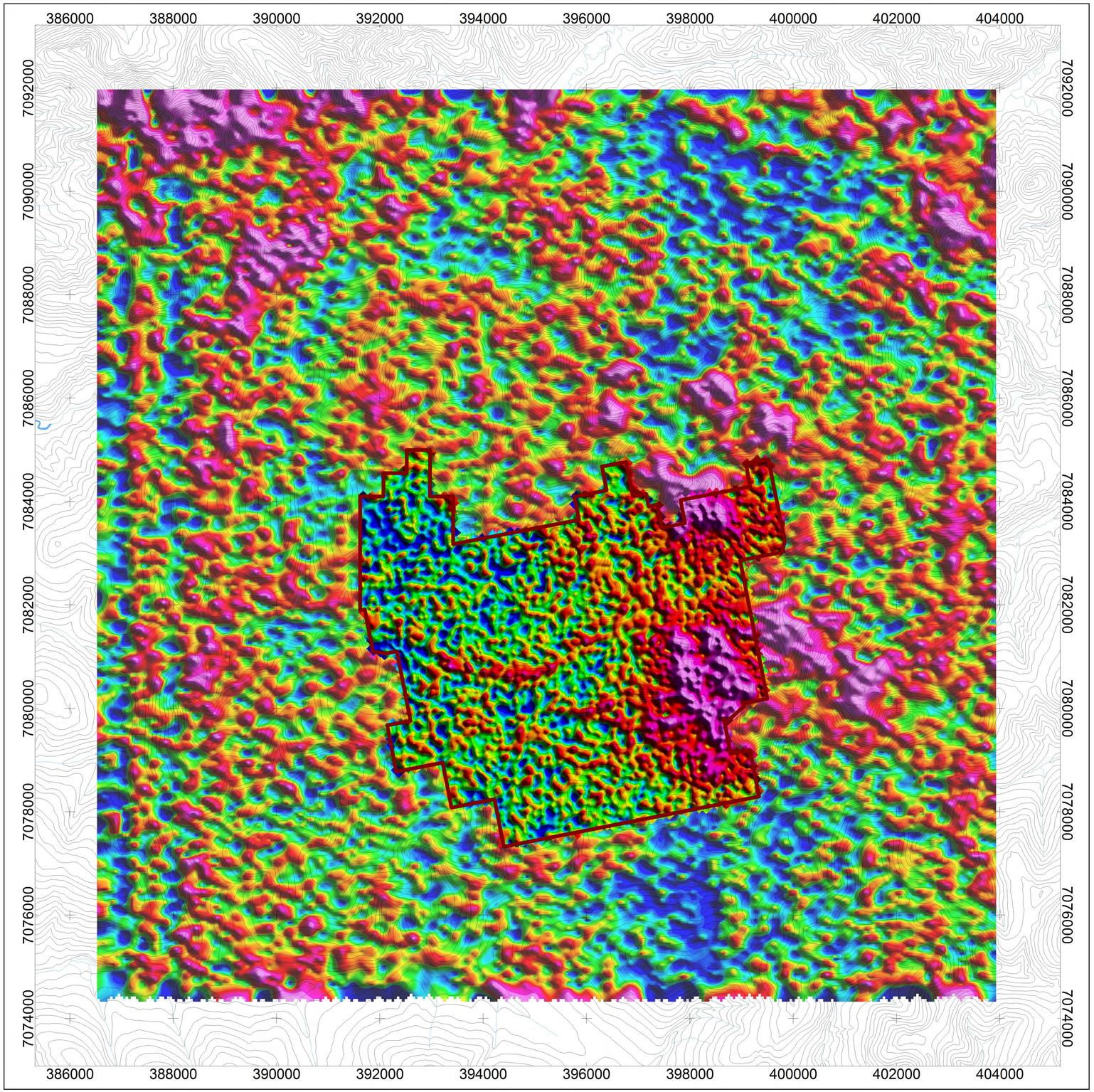
Clear Creek Survey Block

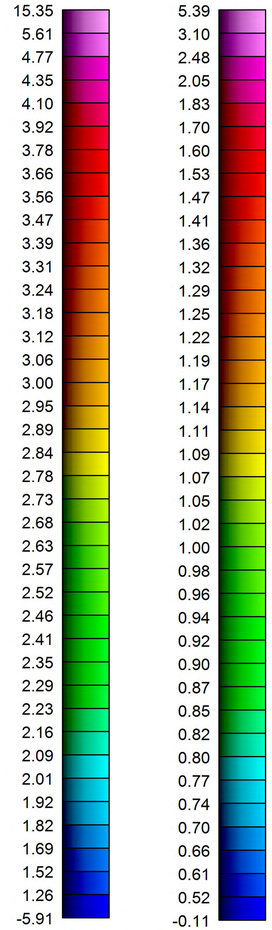
1998 and 2017 Integrated Radiometric Maps
Thorium - Equivalent Concentration
June 20, 2017

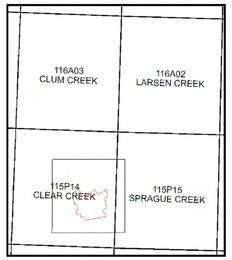
Scale 1:40000

500 0 500 1000 1500 2000 2500 3000
(meters)
NAD83 / UTM zone 8N

Plate23_CC
eTh_98_17







MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

PRECISION GEOSURVEYS - CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
Survey Base:	Mayo, Yukon
Aircraft Type:	Eurocopter AS350
Registration:	C-GSVY
Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
Survey Line Direction:	045°/225°
Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°

NEWMONT GOLD COMPANY- CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	August 11, 1998 to August 14, 1998
Survey Base:	Blackstone Mining's placer camp, Yukon
Aircraft Type:	Bell 206
Survey Technology:	Magnetic and Radiometric Survey
Aircraft Height:	104.1 meters (spectrometer)
Bird Height:	74.1 meters (magnetometer)
Survey Line Spacing:	200 meters
Survey Line Direction:	000°/180°
Tie Lines:	None

Legend

Water Bodies.....

Clear Creek Survey Block Boundary (2017).....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

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Victoria Gold Corp.

Clear Creek Survey Block

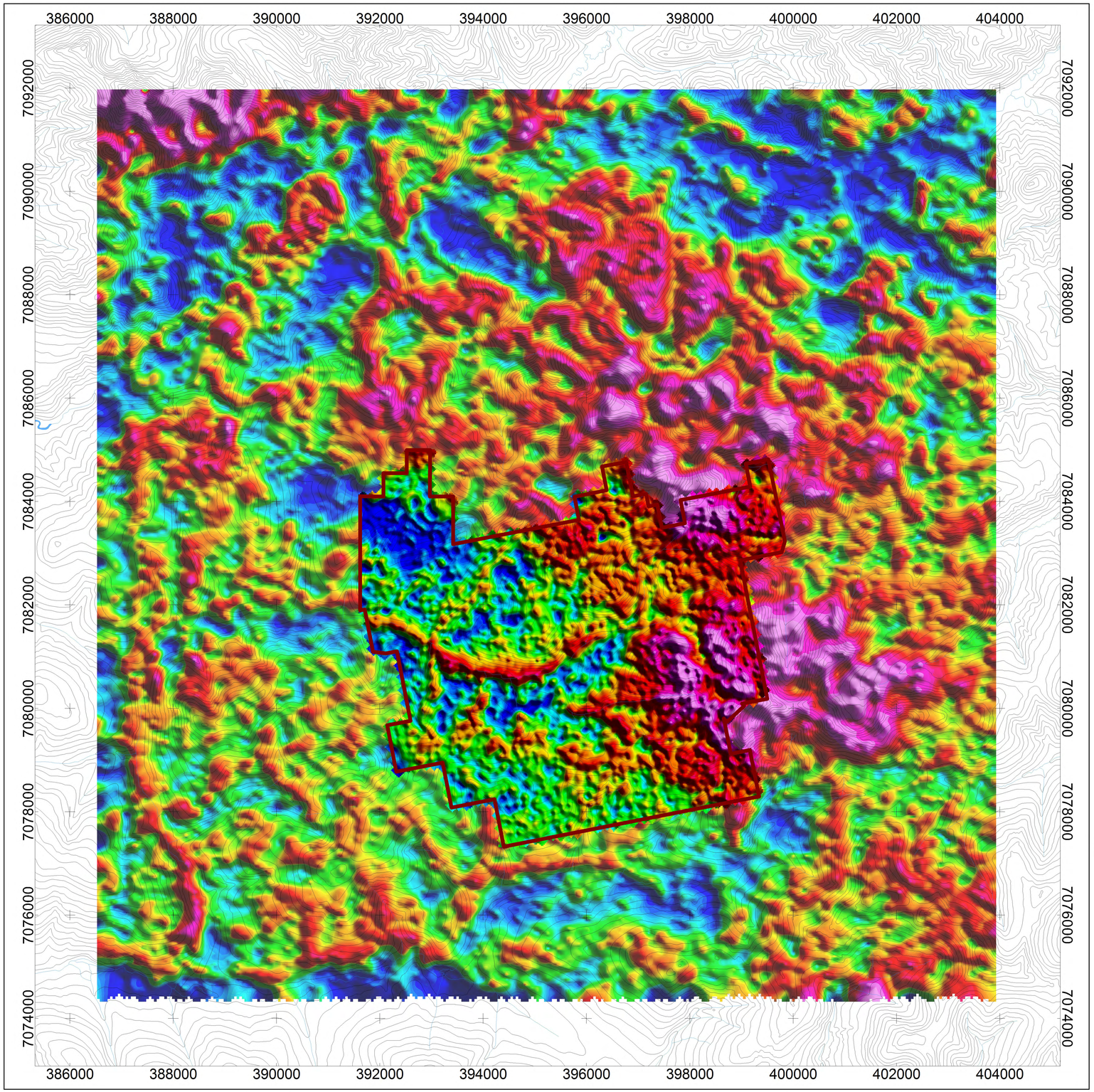
1998 and 2017 Integrated Radiometric Maps
Uranium - Equivalent Concentration
June 20, 2017

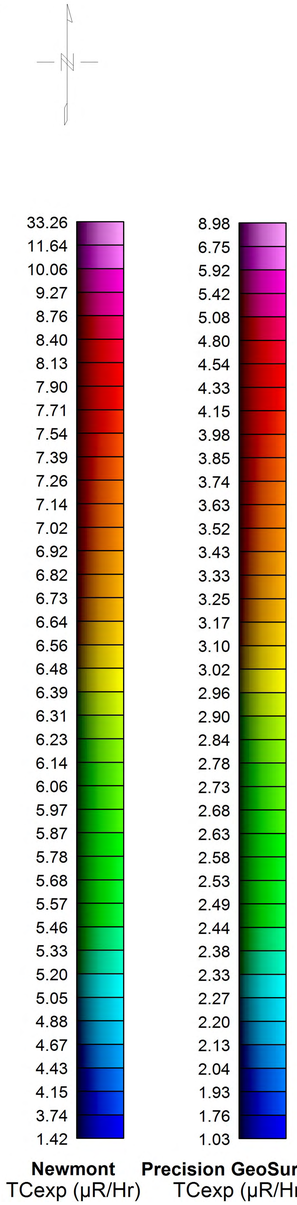
Precision GeoSurveys

Scale 1:40000

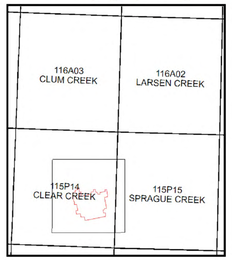
500 0 500 1000 1500 2000 2500 3000
(meters)
NAD83 / UTM zone 8N

Plate24_CC
eU_98_17





National Topographic System



MAP PROJECTION

Projection: Universal Transverse Mercator Zone 8N
Datum: NAD 83
Local Datum Transform: (4 m) North America – Canada and USA

PRECISION GEOSURVEYS - CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	June 8, 2017
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Aircraft Type:	Eurocopter AS350
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Survey Technology:	Magnetic and Radiometric Survey
Flight Height:	35.9 meters
Survey Line Spacing:	100 meters
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Tie Line Spacing:	1000 meters
Tie Line Direction:	135°/315°

NEWMONT GOLD COMPANY- CLEAR CREEK SURVEY BLOCK SPECIFICATIONS

Survey Date:	August 11, 1998 to August 14, 1998
Survey Base:	Blackstone Mining's placer camp, Yukon
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Survey Technology:	Magnetic and Radiometric Survey
Aircraft Height:	104.1 meters (spectrometer)
Bird Height:	74.1 meters (magnetometer)
Survey Line Spacing:	200 meters
Survey Line Direction:	000°/180°
Tie Lines:	None

Legend

Water Bodies.....

Clear Creek Survey Block Boundary (2017).....

DATA REFERENCE

Radiometric data have been corrected for effective height, aircraft, cosmic, radon, stripping ratios, and attenuations, and then converted to apparent radioelement concentrations.

TOPOGRAPHIC REFERENCE

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Victoria Gold Corp.

Clear Creek Survey Block

1998 and 2017 Integrated Radiometric Maps
Total Count - Exposure Rate
June 20, 2017

Precision GeoSurveys

Scale 1:40000

500 0 500 1000 1500 2000 2500 3000
(meters)
NAD83 / UTM zone 8N

Plate25_CC
TCexp_98_17

LiDAR & Orthophoto Data Report

Eagle Gold Project

Victoria Gold Corp: Suite 1000

1050 W. Pender Street

Vancouver, BC, V6E 3S7

Eagle Mapping Ltd.

#201 2071 Kingsway Ave

Port Coquitlam, BC V3C6N2

1.877.942.5551

EML Project # 17-037

Report Contents

1. Overview 2

1.1 Project Scope and Areas of Interest 2

1.2 Project Challenges..... 2

1.3 File Formats, Units, and Projection ... 3

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2.1 Airborne LiDAR Collection..... 4

2.2 Aerial Photography Collection..... 4

2.3 LiDAR Calibration 5

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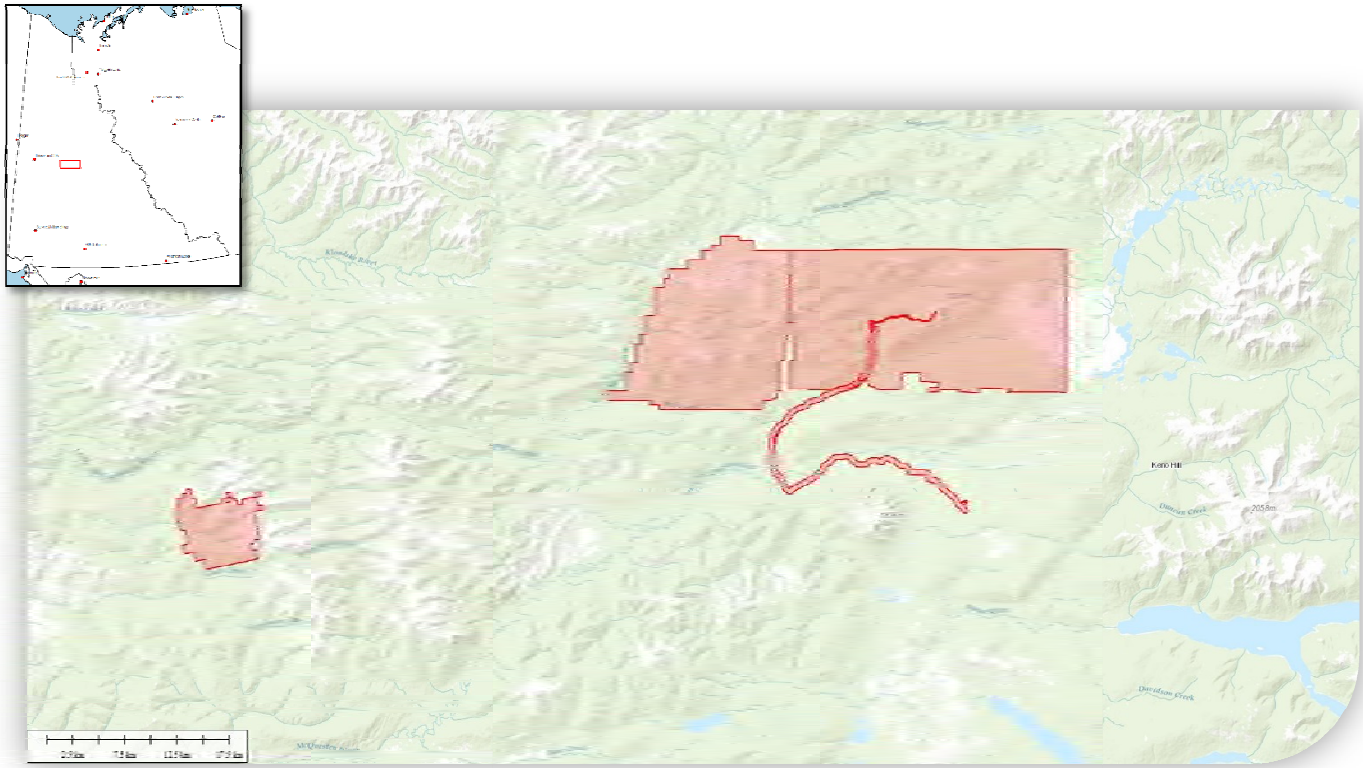
4.2 Accuracy..... 10

1. Overview

1.1 Project Scope and Areas of Interest

Eagle Mapping Ltd. collected aerial LiDAR and photography of the Dublin Gulch, VBW, Clear Creek properties, as well as a 44km corridor along the Eagle Gold transmission line connecting with the Mayo-Elsa road. The Areas of Interest (AOIs) for this project cover a total of 620 sqkm.



1.2 Project Challenges

Flying projects in the Yukon is always a challenge. Ideally the weather has to be clear blue skies, and a reasonably stable air mass. We were able to fly on June 7th and 8th 2017. The weather conditions were good on the flying days. We were able to capture all sites for LiDAR and Imagery.

Unfortunately, on the last day of flying, we had a malfunction with two hard drives that wiped out the imagery for almost all of Dublin Gulch and the VBV site. We tried many techniques to retrieve the data, but could not. Our intent was to get back to the Yukon to refly these areas, and made two attemps, but the weather was not cooperating. We then had an agreement with Peregrine Aerial Surveys to try and acquire the imagery using their large format digital camera. The logic being that they may either be in the area and/or they would need a shorter weather window as they need less frames of imagery to cover the area, since their camera is a larger format. Peregrine also was not successful in finding a window before the snow started to fall.

1.3 File Formats, Units, and Projection

Project deliverables include the following:

Digital Elevation Contours – 1m Interval & 0.5m contours at mine site

- ESRI Shapefile format (.shp)
- Delivered as one file per project tile

'Bare Earth' Digital Elevation Model – 1m Grid, & 0.5 meter grid at mine site

- ArcASCII grid format (.asc)
- Delivered as one file per project tile

Point Cloud data

- LAS 1.2 – ground classified, all other data in file classified as non-ground

Orthophoto Imagery

- Delivered for Corridor and Mine site area as well as the Clear_Creek site

Project Files

- ESRI Shapefile format
- 500m project tile layout
- Project boundary

LiDAR Data Report

- Overview of project specifications, methodology and accuracies achieved
- PDF format

Map Projection Information	
Projection	UTM zone 08N
Horizontal Datum	NAD83 (CSRS)
Vertical Datum	CGVD28
Geoid	CGG2013
Units	Meters
EPSG Code	3155

2. Acquisition & Calibration

2.1 Airborne LiDAR Collection

A Riegl Q1560 dual-channel LiDAR system was used for acquisition of the LiDAR data. This system was installed in a Piper Navajo aircraft, which is based in Abbotsford, BC. In total, 109 were required to cover the AOI. Nominal flying height was 1300m above ground level (AGL) and flying speed was approximately 140kts. The scan field of view for the Riegl Q1560 is 29° either side of nadir, for a total scan field of view of 58°. The scan rate used for this project was 800 kHz. However, due to the nature of the 4-sided rotating mirror in Riegl scanners only 2/3 of pulses are recorded (533 kHz useable). This yields an average pulse density of 2 pulses per channel per swath (4 pulses per dual-channel flight line). Note, each pulse may result in one or more returned points as the pulse filters through vegetation, etc.

LiDAR Acquisition Specifications	
Flight Altitude	1700m AGL
Flying Speed	140kts nominal
Scan Rate	800khz (533khz usable)
Scan Field of View	58°
Line Spacing	611m
Minimum Overlap	60%

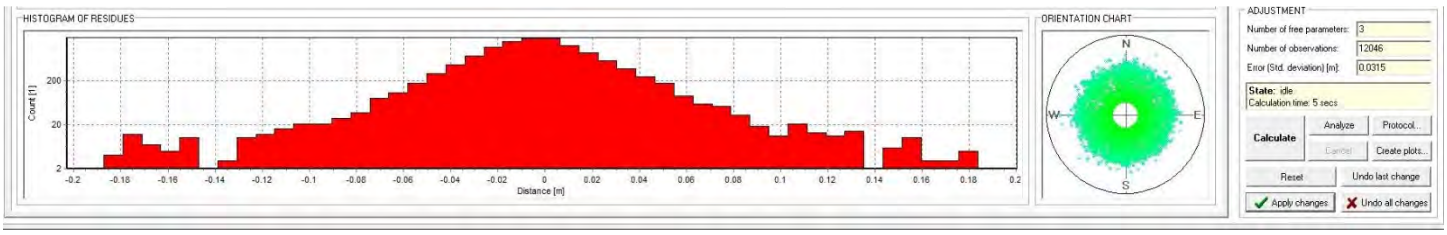
Photo Acquisition Specifications	
Flight Altitude	1300m - 2800m AGL
Flying Speed	140kts nominal
Photo Resolution	20cm
Line Spacing	611m
Forward Overlap	60%
Side Overlap	60%

2.2 Aerial Photography Collection

Aerial photography was collected simultaneously & individually with the LiDAR data, using a Trimble IQ-180 80MP digital camera co-mounted with the Q1560 LiDAR system. A total of 506 images were collected and not destroyed by the hard drive malfunction, and nominal photo resolution was 20cm.

2.3 LiDAR Calibration

LiDAR data was calibrated using Riegl RiProcess software. A quality check was performed using matching tie planes which are calculated automatically and analyzed via a least-squares adjustment. Manual cross section checks were also performed to verify the automatic results. Internal accuracy of the LiDAR data was calculated at ±0.03m Once deemed properly calibrated, the LAS data is exported along with individual 'trajectories' for each scan line. All data is projected into UTM and adjusted to the proper geoid (CGVD28) at this time.



2.4 Aircraft GNSS Trajectory Processing

GNSS post-processing determines the position and attitude of the aircraft at 200Hz along the entire flight path. This data is logged on the Q1560 via an Applanix POS AV510. Post-processing requires data from the onboard GNSS and Inertial Measurement Unit (IMU) as well as data from one or more static GNSS base station(s) with known coordinates.

Processing is done with Applanix PosPAC v8.1 software. Here the aircraft GNSS / IMU data is referenced to the base station data to provide adjusted positions for the aircraft in latitude, longitude, and height, roll, pitch, and yaw / heading. The final trajectory is then smoothed, and exported in .pos format for use in RiProcess for LiDAR processing. The resulting flight path is commonly referred to as a Smoothed Best Estimate of Trajectory (SBET).

Mission planning ensures the project is flown during a period of good satellite visibility, resulting here in an average PDOP of 1.5 and maximum of 2.0. Statistical accuracy (RMS) of the SBET trajectory is < 2cm.

Trajectory Processing Results	
Min. # of Satellites	10
Max. # of Satellites	18
Minimum PDOP	1.15
Maximum PDOP	2.6
RMSE	2.6 cm

2.5 Photo Processing

Imagery is first colour-balanced to adjust for lighting differences between lines. It is then exported as geotiffs for use in the orthorectification process. Ortho processing is performed with Trimble OrthoVista software. With this software, images are aligned geographically (mosaicked) using their time stamp and the position from the SBET which corresponds to this time. The software also references the attitude information from this time stamp in order to 'project' the image on the correct ground location depending on where the aircraft was pointing at that moment.

The overall mosaic of all images is then inspected for busts or other discrepancies and image seam lines are adjusted to have the least visual impact. Control points are measured and checked for accuracy. Finally, once approved, the mosaic is cut into tiles and exported in the appropriate deliverable format.

3. Ground Control Measurement

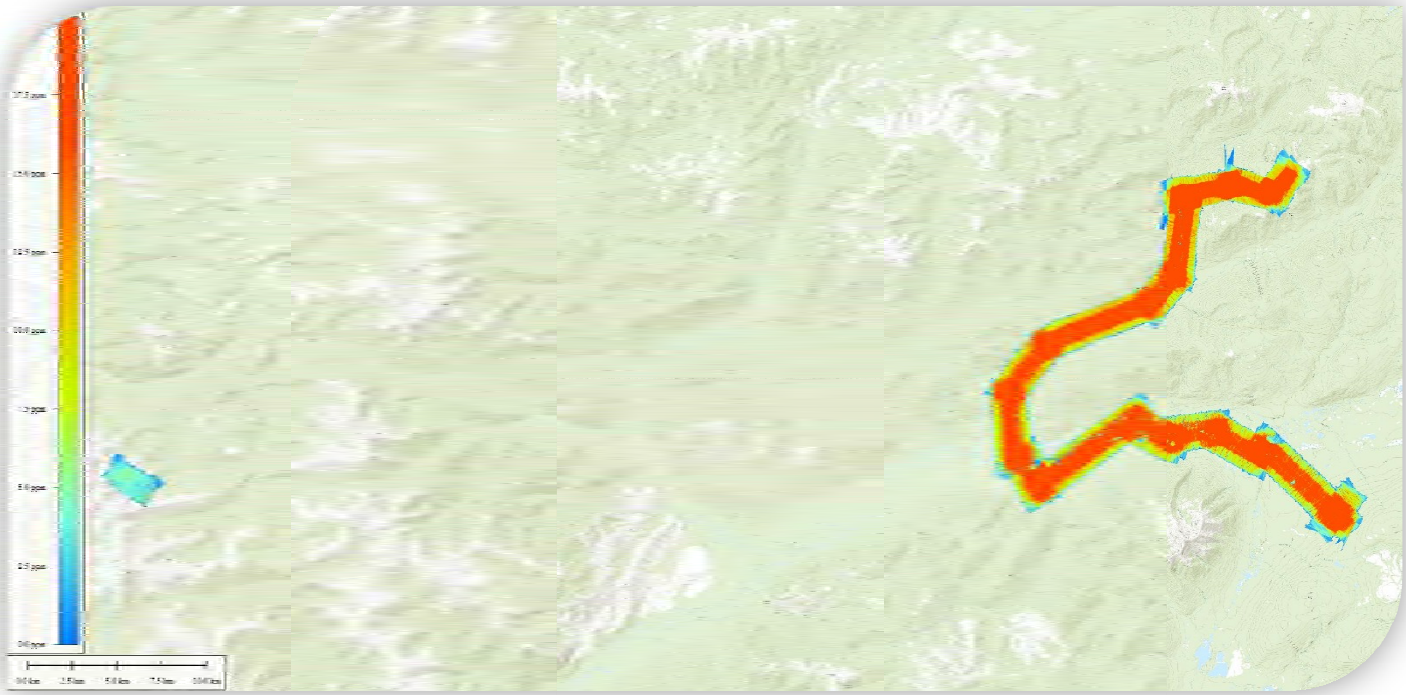
Our survey technicians use dual-frequency Trimble R6 and R7 GNSS receivers to measure ground control points. These receivers are capable of establishing and measuring points to a high degree of accuracy (usually in the 1-2cm range).

For this project, 12 points were measured throughout the project area. These points are located in open terrain where it is likely to receive a LiDAR return.

4. Results and Conclusions

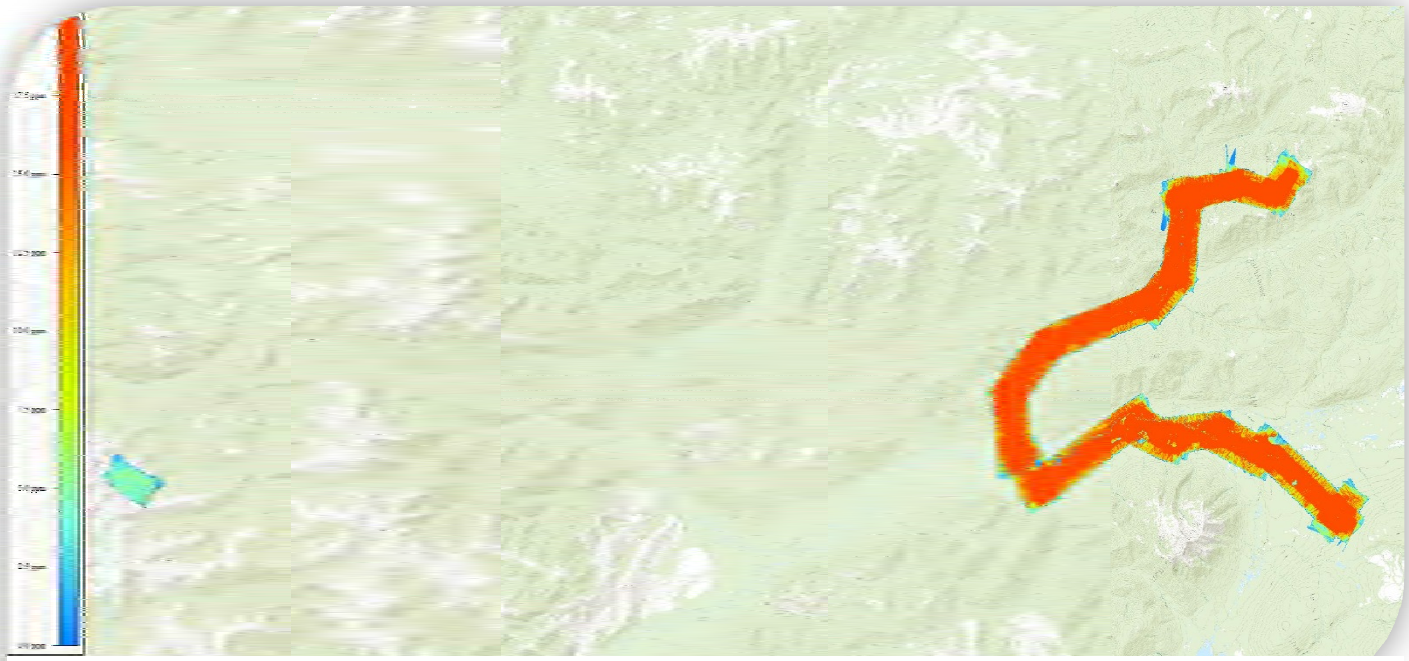
4.1 Point Density and Coverage

The delivered LiDAR data is positioned with an average density of up to 22 points / sq. meter for all returns, and up to 20 points / sq. meter counting only first-returns. Density is much greater for all returns vs first-returns due to the full waveform analysis performed by the Q1560 laser. By analyzing the full LiDAR waveform, the Q1560 is able to extract many additional points in vegetation, or other terrain

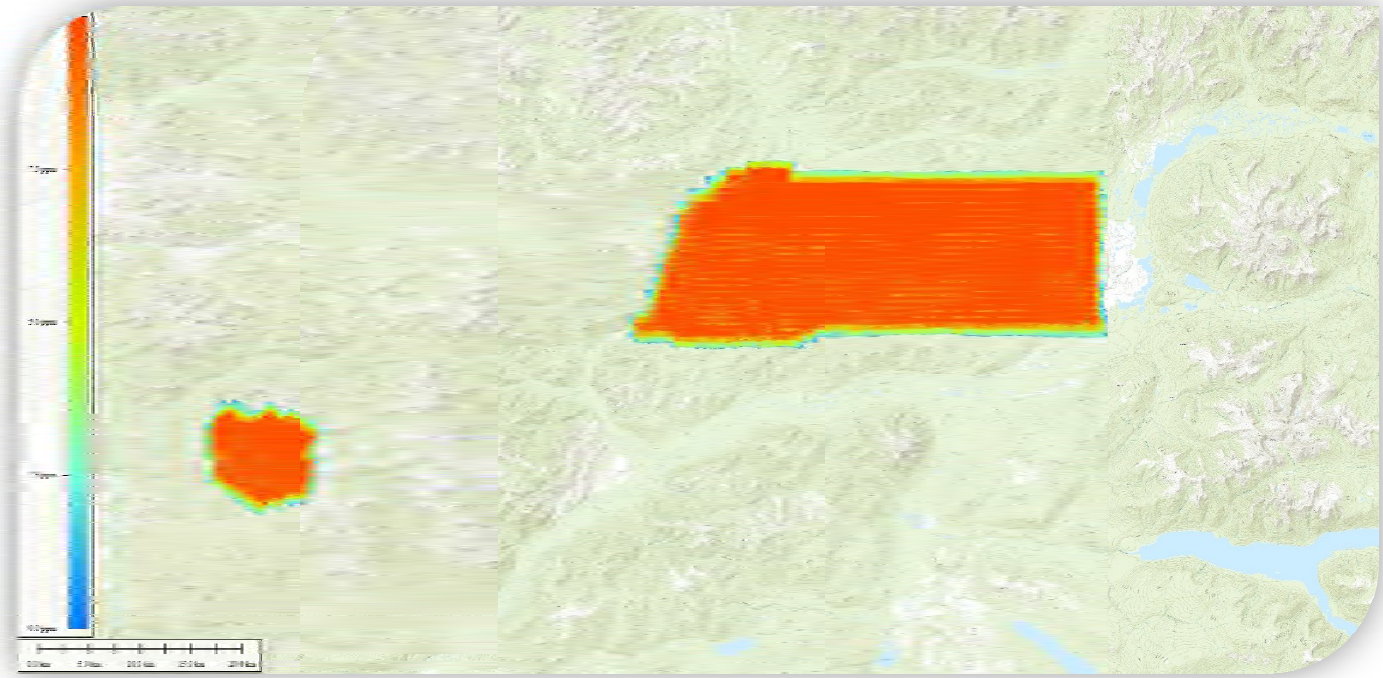


1 Corridor - Last Returns Density 0 – 20ppm

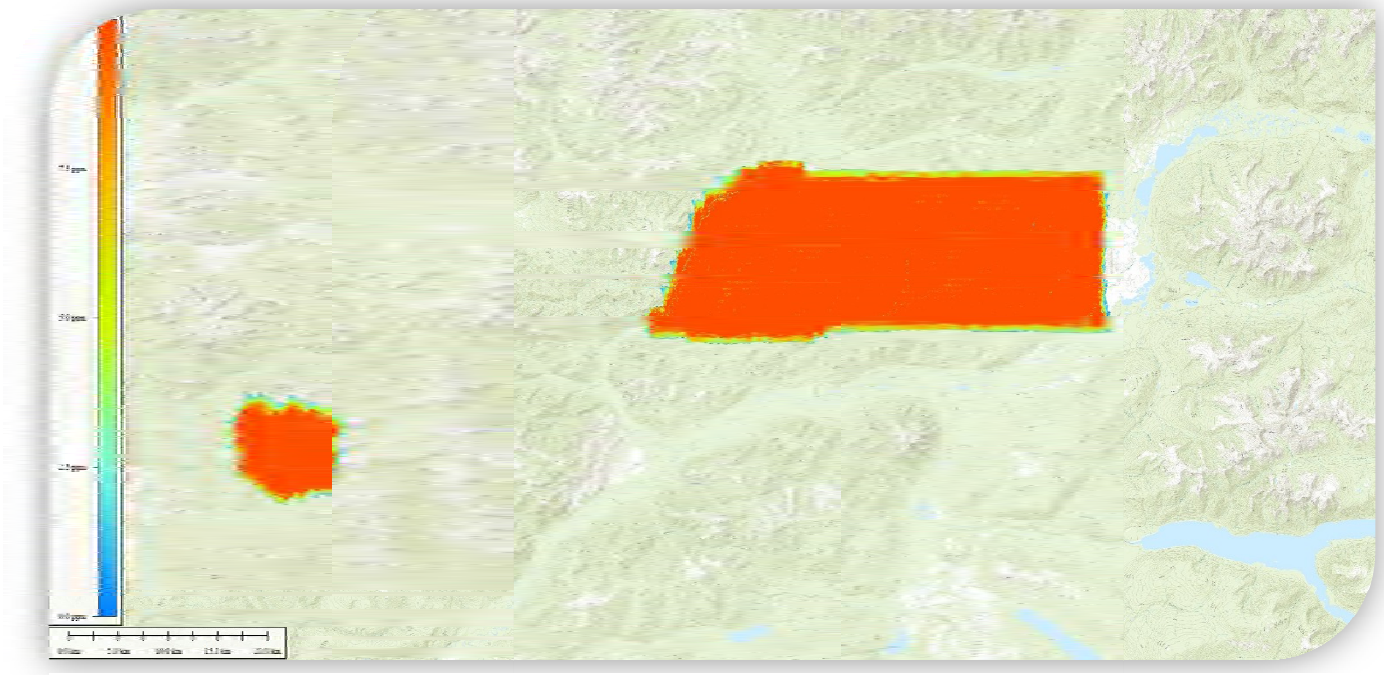
where the laser pulse is 'filtered' through many objects in close proximity to each other.



3 Corridor - All returns density 0 – 20ppm



2 Block - Last returns 0 - 10ppm

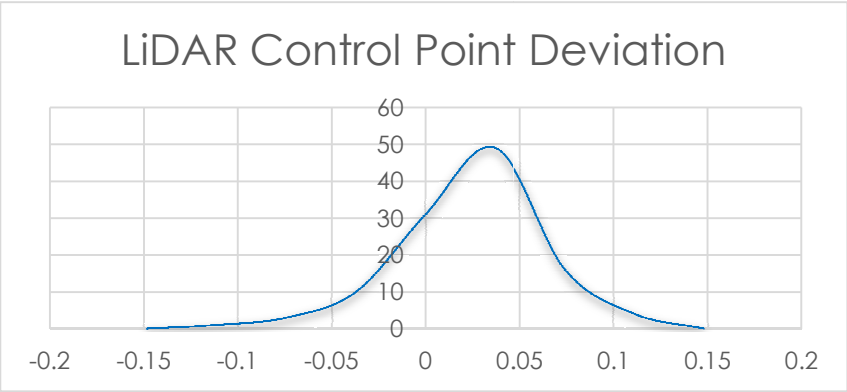


4 Block - all returns density 0 - 10ppm

4.2 Accuracy

LiDAR Accuracy

LiDAR Control Statistics	
Average dZ	+0.01
Minimum dZ	-0.143
Maximum dZ	+0.117
Average magnitude	0.047
Root mean square	0.059

Std deviation	0.057

Accuracy of the LiDAR data was determined via comparison to a set of ground control points measured by an Eagle Mapping surveyor. LiDAR data was measured to fit these control points very well – within <5cm and so no adjustment of the data was required. It is Eagle Mapping's conclusion that the LiDAR data is accurate to within 6 cm quoted at 95% confidence level as per ASPRS LiDAR vertical accuracy guidelines.