# An Airborne Geophysical Report
# on Portions of the
# Pearson Claim Group
# Southwest Vancouver Island

Victoria Mining Division
NTS Mapsheets: 092C/08,09,10,11,14,15,16
Latitude: 48°39' N
Longitude: 124°24' W
UTM: 5389495 N, 396886 E, Zone 10

**Owner:**

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T2P 4H2

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Submitted:April 2009

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## SUMMARY

The Pearson Project claim group is located 100 kilometres west-northwest of Victoria on Vancouver Island, British Columbia (Figure 1). The claim group spanned up to 250 km along the southwest coast of the island during 2008. However at the time of this report submission many of the northern tenures had lapsed and were replaced, in part, by new tenures, some of which are non-contiguous with the group's southern block where the locus of all 2008 work occurred. This report, which discusses a DIGHEM airborne survey, is remitted to satisfy submissions of work (SOW) for a contiguous southern group of claims that pertain to Event number 4262138. Previous work was filed as part of the initial airborne survey and included Events 4228954, 4228977, 4228983, 4228997, 4229023, 4229045 and 4229053. The total charges to Pacific Iron from Fugro Airborne Surveys Corp, and covered by all 8 events, came to $1,035,136.50. Most of the tenures from the original 7 Events were allowed to lapse by the time of this report filing. Event 4262138 includes 178 individual claim tenures totaling 91216.14 hectares. These are listed in Table 1.

Access to the present exploration focus of Pacific Iron Ore, the historic iron deposits (Bugaboo and Reko), is via the Gordon River Main and Granite Main logging roads about 10 kilometres from the community of Port Renfrew, British Columbia. An excellent network of secondary logging roads provides access to much of the property.

The Bugaboo and Reko deposits can be classified as calcic iron skarns or contact metasomatic iron deposits. Massive magnetite mineralization is generally developed near marble and diorite and associated with pyroxene +/- garnet skarn. Previously unrecognized and undocumented ultramafic rocks have recently been discovered on the property and could be an indicator for the ultramafic-related suite of ore deposits, namely tholeiitic intrusion-hosted nickel-copper that may contain platinum group element mineralization.

The DIGHEM airborne geophysical survey was conducted by Fugro Airborne Surveys Corp on select tenures of the Pearson claim group from August 6$^{th}$ to September 24$^{th}$, 2008, on behalf of Pacific Iron Ore Corp. The total amount flown over the claim group was 7780 line-kilometers. The purpose of the survey was to locate magnetite-rich zones, to detect zones of conductive mineralization, and to provide information that could be used to map the geology and structure of the survey area. The Fugro report, which discusses the initial 6049 line-kilometers of the survey, is found in its entirety in Appendix A.

## 2.0 INTRODUCTION

The Pearson Property claim group is an extensive block that stretches non-contiguously some 250 km along the southwest coast of Vancouver Island. The subject of this report is a DIGHEM airborne geophysical survey flown by Fugro Airborne Surveys Corp over an area roughly 14 by 36 km, located just north of Port Renfrew. The work was applied to a group of tenures indicated in Event 4262138 and listed in Table 1. Figure 2 shows the contiguous block of Pacific Iron Ore's claims located south of Barclay Sound. The actual


Figure 1. Location Map, Pearson Project.

TABLE 1. TENURES UPON WHICH AIRBORNE SURVEY WORK FILED

| Tenure Number | Tenure Type | Good To Date | Area (ha) |
|---|---|---|---|
| 379142 | Mineral | 2011/sep/30 | 25 |
| 379144 | Mineral | 2011/sep/30 | 25 |
| 508407 | Mineral | 2011/sep/30 | 1578.09 |
| 508425 | Mineral | 2011/sep/30 | 1878.08 |
| 508458 | Mineral | 2011/sep/30 | 1899.54 |
| 508466 | Mineral | 2011/sep/30 | 277.56 |
| 508500 | Mineral | 2011/sep/30 | 2110.04 |
| 508564 | Mineral | 2011/sep/30 | 1535.99 |
| 508572 | Mineral | 2015/sep/29 | 1129.94 |
| 508576 | Mineral | 2015/jul/31 | 640.18 |
| 508577 | Mineral | 2018/sep/29 | 1344.01 |
| 508578 | Mineral | 2015/jul/31 | 1771.78 |
| 508631 | Mineral | 2015/jan/10 | 1387.02 |
| 512099 | Mineral | 2010/sep/30 | 532.44 |
| 512106 | Mineral | 2010/sep/30 | 447.4 |
| 532308 | Mineral | 2010/sep/30 | 532.64 |
| 532309 | Mineral | 2010/sep/30 | 532.51 |
| 532310 | Mineral | 2010/sep/30 | 532.47 |
| 532311 | Mineral | 2010/sep/30 | 532.31 |
| 532312 | Mineral | 2010/sep/30 | 532.19 |
| 532313 | Mineral | 2010/sep/30 | 532.05 |
| 532314 | Mineral | 2010/sep/30 | 532.32 |
| 532315 | Mineral | 2010/sep/30 | 532.14 |
| 532316 | Mineral | 2010/sep/30 | 531.99 |
| 532317 | Mineral | 2010/sep/30 | 425.56 |
| 532440 | Mineral | 2010/sep/30 | 532.84 |
| 532443 | Mineral | 2010/sep/30 | 532.73 |
| 532446 | Mineral | 2010/sep/30 | 532.73 |
| 532449 | Mineral | 2010/sep/30 | 532.62 |
| 532452 | Mineral | 2010/sep/30 | 532.6 |
| 532453 | Mineral | 2010/sep/30 | 532.51 |
| 532455 | Mineral | 2010/sep/30 | 532.49 |
| 532457 | Mineral | 2010/sep/30 | 532.42 |
| 532459 | Mineral | 2010/sep/30 | 532.17 |
| 532461 | Mineral | 2010/sep/30 | 532.15 |
| 532463 | Mineral | 2010/sep/30 | 532.09 |
| 532465 | Mineral | 2010/sep/30 | 532.17 |
| 532468 | Mineral | 2010/sep/30 | 532.35 |
| 532481 | Mineral | 2010/sep/30 | 532.11 |
| 532483 | Mineral | 2010/sep/30 | 21.3 |
| 532485 | Mineral | 2010/sep/30 | 532.07 |
| 532487 | Mineral | 2010/sep/30 | 532.14 |
| 532489 | Mineral | 2010/sep/30 | 532.1 |
| 532490 | Mineral | 2010/sep/30 | 532.28 |
| 532492 | Mineral | 2010/sep/30 | 532.05 |

TABLE 1. CONTINUED

| Tenure Number | Tenure Type | Good To Date | Area (ha) |
|---|---|---|---|
| 532494 | Mineral | 2010/sep/30 | 532.15 |
| 532496 | Mineral | 2010/sep/30 | 510.72 |
| 532498 | Mineral | 2010/sep/30 | 297.93 |
| 532499 | Mineral | 2010/sep/30 | 531.79 |
| 532500 | Mineral | 2010/sep/30 | 531.79 |
| 532501 | Mineral | 2010/sep/30 | 531.8 |
| 532502 | Mineral | 2010/sep/30 | 531.8 |
| 532503 | Mineral | 2010/sep/30 | 531.8 |
| 532504 | Mineral | 2010/sep/30 | 531.81 |
| 532506 | Mineral | 2010/sep/30 | 531.59 |
| 532507 | Mineral | 2010/sep/30 | 510.33 |
| 532508 | Mineral | 2010/sep/30 | 531.6 |
| 532509 | Mineral | 2010/sep/30 | 531.6 |
| 532511 | Mineral | 2010/sep/30 | 531.6 |
| 532513 | Mineral | 2010/sep/30 | 531.61 |
| 532514 | Mineral | 2010/sep/30 | 531.4 |
| 532515 | Mineral | 2010/sep/30 | 531.4 |
| 532516 | Mineral | 2010/sep/30 | 531.4 |
| 532518 | Mineral | 2010/sep/30 | 531.42 |
| 532519 | Mineral | 2010/sep/30 | 531.42 |
| 532520 | Mineral | 2010/sep/30 | 531.41 |
| 532523 | Mineral | 2010/sep/30 | 531.23 |
| 532524 | Mineral | 2010/sep/30 | 531.2 |
| 532525 | Mineral | 2010/sep/30 | 531.1 |
| 532526 | Mineral | 2010/sep/30 | 531 |
| 532527 | Mineral | 2010/sep/30 | 531.17 |
| 532528 | Mineral | 2010/sep/30 | 212.5 |
| 532529 | Mineral | 2010/sep/30 | 446.43 |
| 532530 | Mineral | 2010/sep/30 | 510.47 |
| 532554 | Mineral | 2010/sep/30 | 531.81 |
| 532555 | Mineral | 2010/sep/30 | 531.61 |
| 532556 | Mineral | 2010/sep/30 | 531.42 |
| 532557 | Mineral | 2010/sep/30 | 531.2 |
| 532558 | Mineral | 2010/sep/30 | 531 |
| 532559 | Mineral | 2010/sep/30 | 530.98 |
| 532560 | Mineral | 2010/sep/30 | 531.1 |
| 532561 | Mineral | 2010/sep/30 | 531.21 |
| 532562 | Mineral | 2010/sep/30 | 531.32 |
| 532563 | Mineral | 2010/sep/30 | 531.43 |
| 532564 | Mineral | 2010/sep/30 | 531.54 |
| 532565 | Mineral | 2010/sep/30 | 531.61 |
| 532566 | Mineral | 2010/sep/30 | 531.78 |
| 532567 | Mineral | 2010/sep/30 | 489.21 |
| 532568 | Mineral | 2010/sep/30 | 255.3 |

TABLE 1. CONTINUED

| Tenure Number | Tenure Type | Good To Date | Area (ha) |
|---|---|---|---|
| 532569 | Mineral | 2010/sep/30 | 531.79 |
| 532570 | Mineral | 2010/sep/30 | 531.86 |
| 532571 | Mineral | 2010/sep/30 | 531.78 |
| 532572 | Mineral | 2010/sep/30 | 531.64 |
| 532573 | Mineral | 2010/sep/30 | 382.76 |
| 532574 | Mineral | 2010/sep/30 | 21.26 |
| 532577 | Mineral | 2010/sep/30 | 530.57 |
| 532586 | Mineral | 2010/sep/30 | 530.58 |
| 532587 | Mineral | 2010/sep/30 | 530.6 |
| 532588 | Mineral | 2010/sep/30 | 403.15 |
| 532589 | Mineral | 2010/sep/30 | 318.3 |
| 532671 | Mineral | 2010/sep/30 | 530.28 |
| 532672 | Mineral | 2010/sep/30 | 530.3 |
| 532674 | Mineral | 2010/sep/30 | 530.29 |
| 532675 | Mineral | 2010/sep/30 | 530.29 |
| 532676 | Mineral | 2010/sep/30 | 530.29 |
| 532775 | Mineral | 2010/sep/30 | 319.32 |
| 532807 | Mineral | 2010/sep/30 | 530.04 |
| 532808 | Mineral | 2010/sep/30 | 530.01 |
| 532809 | Mineral | 2010/sep/30 | 530.07 |
| 532810 | Mineral | 2010/sep/30 | 529.91 |
| 532811 | Mineral | 2010/sep/30 | 529.97 |
| 532812 | Mineral | 2010/sep/30 | 530.08 |
| 532813 | Mineral | 2010/sep/30 | 254.46 |
| 533618 | Mineral | 2010/sep/30 | 530.84 |
| 533619 | Mineral | 2010/sep/30 | 530.74 |
| 533620 | Mineral | 2010/sep/30 | 530.39 |
| 533621 | Mineral | 2010/sep/30 | 530.3 |
| 533623 | Mineral | 2010/sep/30 | 530.49 |
| 533624 | Mineral | 2010/sep/30 | 424.53 |
| 533625 | Mineral | 2010/sep/30 | 42.46 |
| 533626 | Mineral | 2010/sep/30 | 21.23 |
| 533627 | Mineral | 2010/sep/30 | 276.21 |
| 533628 | Mineral | 2010/sep/30 | 169.99 |
| 533715 | Mineral | 2010/sep/30 | 382.16 |
| 540050 | Mineral | 2010/sep/30 | 234.25 |
| 540324 | Mineral | 2010/sep/30 | 85.18 |
| 556794 | Mineral | 2010/sep/30 | 532.91 |
| 556796 | Mineral | 2010/sep/30 | 532.81 |
| 556799 | Mineral | 2010/sep/30 | 511.41 |
| 556801 | Mineral | 2010/sep/30 | 447.41 |
| 556803 | Mineral | 2010/sep/30 | 85.12 |
| 556809 | Mineral | 2010/sep/30 | 511.16 |
| 556810 | Mineral | 2010/sep/30 | 468.6 |
| 556814 | Mineral | 2010/sep/30 | 212.94 |

TABLE 1. CONTINUED

| Tenure Number | Tenure Type | Good To Date | Area (ha) |
|---|---|---|---|
| 556814 | Mineral | 2010/sep/30 | 212.94 |
| 556817 | Mineral | 2010/sep/30 | 510.89 |
| 556823 | Mineral | 2010/sep/30 | 532.17 |
| 556827 | Mineral | 2010/sep/30 | 532.27 |
| 556830 | Mineral | 2010/sep/30 | 383.63 |
| 556833 | Mineral | 2010/sep/30 | 383.59 |
| 556870 | Mineral | 2010/sep/30 | 447.58 |
| 556873 | Mineral | 2010/sep/30 | 532.8 |
| 556877 | Mineral | 2010/sep/30 | 468.84 |
| 556878 | Mineral | 2010/sep/30 | 532.83 |
| 556881 | Mineral | 2010/sep/30 | 511.32 |
| 556883 | Mineral | 2010/sep/30 | 511.23 |
| 556884 | Mineral | 2010/sep/30 | 532.5 |
| 556886 | Mineral | 2010/sep/30 | 468.63 |
| 556888 | Mineral | 2010/sep/30 | 426.02 |
| 556890 | Mineral | 2010/sep/30 | 511.05 |
| 557072 | Mineral | 2010/sep/30 | 297.7 |
| 557075 | Mineral | 2010/sep/30 | 212.82 |
| 557078 | Mineral | 2010/sep/30 | 42.55 |
| 557080 | Mineral | 2010/sep/30 | 532.07 |
| 557088 | Mineral | 2010/sep/30 | 510.86 |
| 557092 | Mineral | 2010/sep/30 | 510.86 |
| 557094 | Mineral | 2010/sep/30 | 532.21 |
| 557097 | Mineral | 2010/sep/30 | 532.26 |
| 557099 | Mineral | 2010/sep/30 | 532.29 |
| 557101 | Mineral | 2010/sep/30 | 489.71 |
| 557104 | Mineral | 2010/sep/30 | 511.09 |
| 557105 | Mineral | 2010/sep/30 | 511.15 |
| 557106 | Mineral | 2010/sep/30 | 424.83 |
| 557107 | Mineral | 2010/sep/30 | 532.42 |
| 557108 | Mineral | 2010/sep/30 | 511.14 |
| 557109 | Mineral | 2010/sep/30 | 467.48 |
| 557110 | Mineral | 2010/sep/30 | 511.34 |
| 557111 | Mineral | 2010/sep/30 | 532.52 |
| 557112 | Mineral | 2010/sep/30 | 318.88 |
| 557115 | Mineral | 2010/sep/30 | 468.65 |
| 557120 | Mineral | 2010/sep/30 | 276.38 |
| 557122 | Mineral | 2010/sep/30 | 340.29 |
| 557123 | Mineral | 2010/sep/30 | 340.28 |
| 557440 | Mineral | 2010/sep/30 | 530.54 |
| 574366 | Mineral | 2010/mar/01 | 42.72 |
| 576047 | Mineral | 2010/mar/01 | 63.88 |
| 580814 | Mineral | 2010/apr/09 | 85.2 |
| 580815 | Mineral | 2010/apr/09 | 42.58 |
| 580986 | Mineral | 2010/apr/11 | 85.18 |

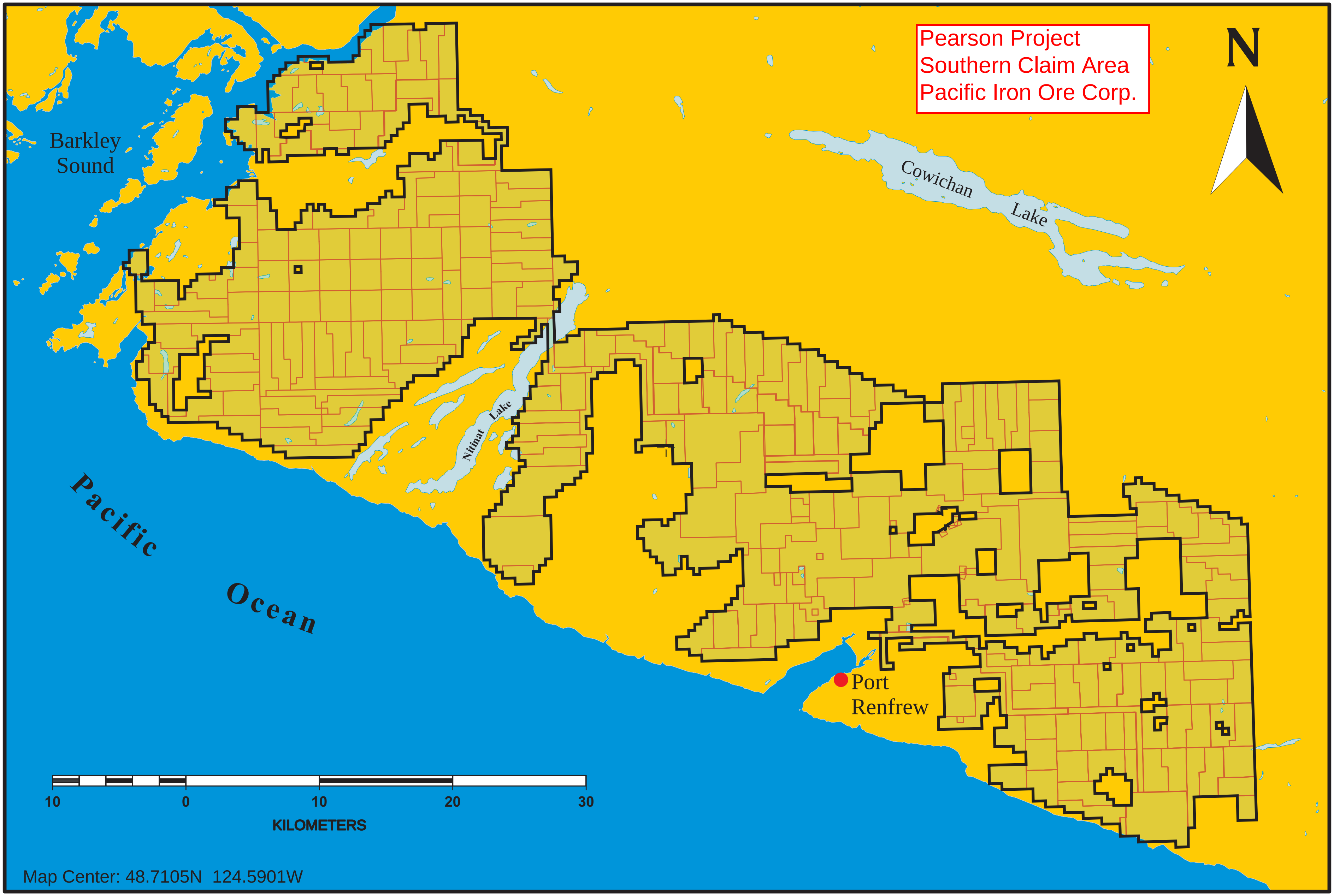



**Figure 2. Tenures On Which Assessment is Being Applied**

tenures covered by the airborne survey are indicated on page 2.2 of the Fugro report provided in Appendix A. A location map of the survey boundary is also provided in the Fugro report on page 2.3.

## 3.0 PROPERTY DESCRIPTION AND LOCATION

The Pearson Project claim group is situated in the Victoria Mining Division on Vancouver Island, with the southern portion of the claims located some 50 kilometres west-northwest of Victoria, British Columbia (Figure 1). The main service community is presently Port Renfrew, about 80 km west-northwest of Victoria. The claim tenures that are the subject of this report are located entirely on NTS mapsheet 092C. The airborne survey has a rough center of 48° 40' 20'' north latitude and 124° 18' 53'' west longitude. Access to the southern portion of the claims, where the present work focus has been, is via Highway 14 to Port Renfrew and thence by a considerable network of active and non-active logging roads.

Pacific Iron Ore is the owner/operator of the Pearson property which (to date) consists of an irregularly-shaped block of noncontiguous claims stretching from the communities of River Jordan to Tahsis.

## 4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The overall Pearson property is underlain by moderately rugged and steep terrain Topography consists of regions of protruding and steeply sloped bluffs incised by numerous, north and northwest trending creeks and rivers (e.g. Gordon River, Renfrew Creek, Hemmingsen Creek). Elevations range from 200 to 1200 metres above sea level. The property is located within an exceptionally wet and mild rainforest climate region with cool summers and mild winters. In Port Renfrew, the main access community, there is an average of approximately 12 days of snowfall and only 15 days of snow cover over the year but at higher elevations regular winter snow conditions exist. Mean average daily temperatures range from a low of 3.2˚C in January to 14.9˚C in August. The area receives an impressive amount of rain, with a mean total rainfall of 64.1 mm in July, and 561.8 mm in November. The annual average total for rainfall is 3.6 metres. Fieldwork can be performed year round except at higher elevations where winter conditions prevail.

Access to and on the property is excellent using an expansive and well developed network of logging roads. Other than road access, there is no significant infrastructure on the property. The community of Port Renfrew, population 180, is 10 kilometres south of the properties main focus (Bugaboo Creek) and is a source for fuel, groceries, accommodation, etc. Port Renfrew is accessed by a 1¾ hour drive via Highway 14 from Victoria in the southeast or by all-weather logging roads from Lake Cowichan and Duncan in the northeast.

## 5.0 HISTORY

The larger Pearson Project claim group contains close to 50 mineral occurrences as documented in the British Columbia provincial mineral inventory database, MINFILE, available online at www.em.gov.bc.ca/Mining/Geolsurv/Minfile/default.htm. See Figure 3 for MINFILE locations in the area that is subject of this report.

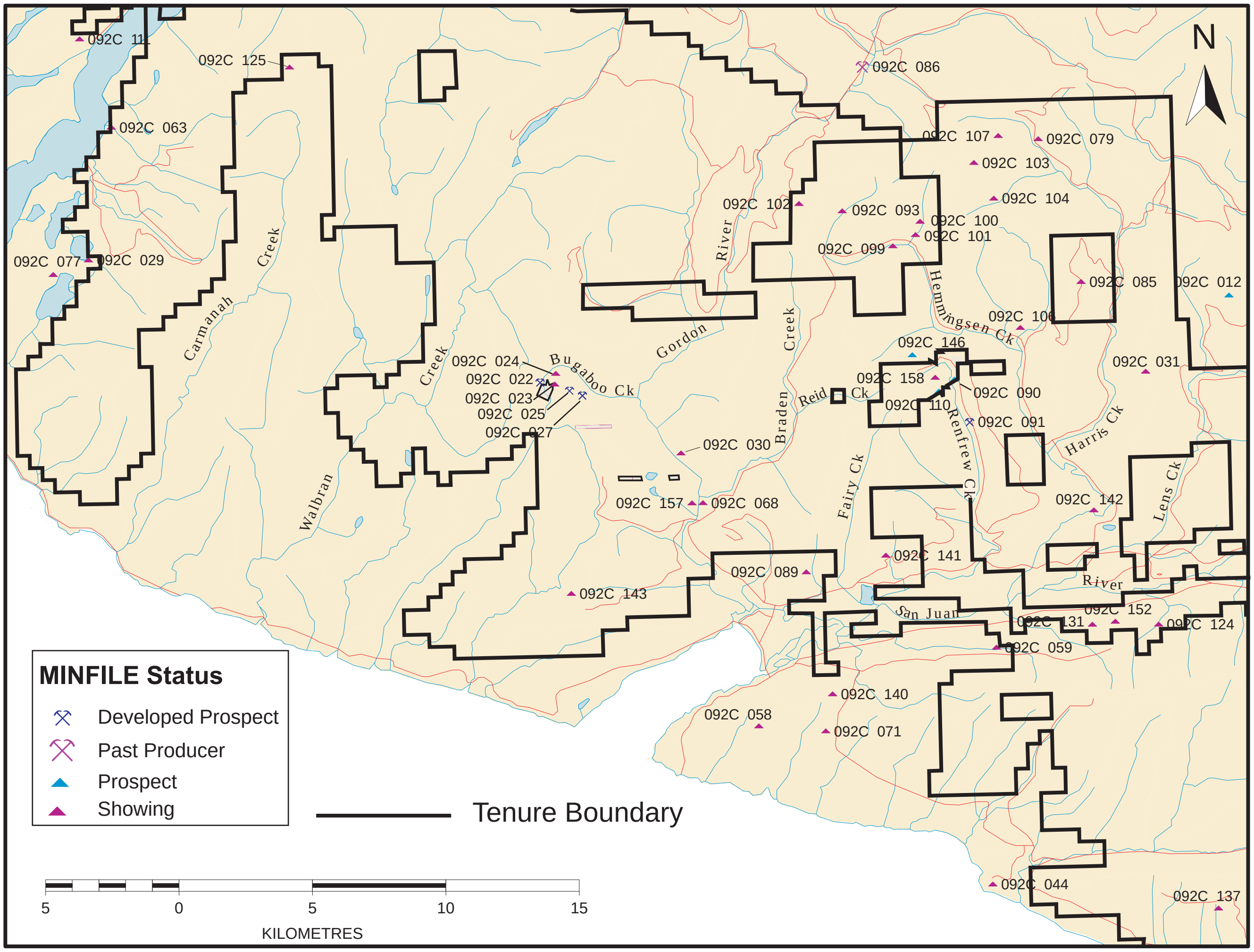
The most significant of these are the Bugaboo iron (magnetite) skarn deposits in the southwestern portion of the claim block near the headwaters of Bugaboo Creek, and the Reko iron (magnetite) skarn deposits in the eastern portion of the claim block along Renfrew Creek. Both the Bugaboo and Reko deposits contain non 443-101 compliant historic reserves.

The two Bugaboo deposits are called Conqueror and Daniel (MINFILE 092C 022); the David (MINFILE 092C 023) and Elijah (MINFILE 092C 024) magnetite showings occur close by. Other magnetite showings in this area, but not covered by the property claims, are the Sirdar (MINFILE 092C 025), Baden Powell (MINFILE 092C 027) and Rose (MINFILE 092C 030). In the eastern portion of the claim block, the main Reko magnetite deposits are the Reko 10 (MINFILE 092C 091) and Reko 3 (MINFILE 092C 090).

The Conqueror showing was originally staked by R. Elliot of Port Renfrew in 1898 but the claims lapsed and four of them were relocated as the Conqueror group in 1899 and Crown granted in 1905. This new group, which also covered the Daniel showing, was owned by Messrs. McGregor, Cathcart and Parsell. The development work, carried out during the period 1900-07, consisted of two opencuts, and a tunnel 4.3 metres long, in solid magnetite, driven from a point 2.4 metres above Bugaboo Creek.

No further work was done on the property until 1957 when two x-ray drillholes (both stopped in overburden) totaling 25.6 metres was completed on the Daniel, and nine x-ray drillholes totaling 273.7 metres completed on the Conqueror. In 1959, Noranda Exploration Company, Limited optioned 7 Crown-granted claims and fractions from H.W. Cathcart of Victoria covering the Conqueror and Daniel showings. A 30-metre grid survey, as well as dip needle and magnetometer surveys were completed. Thirteen EX diamond-drillholes totaling 880.6 metres was completed on the Daniel claim and 15 EX drillholes totaling 1118.3 metres on the Conqueror. In 1960, an additional 15 AX drillholes totaling 987.2 metres was completed on the Daniel and 7 AX drillholes totaling 894.6 metres on the Conqueror to confirm the ore reserves and grades indicated by earlier work and to show sufficient additional tonnage to justify a mining operation. Noranda also completed a report on proposed breakwater requirements adjacent to a deep-sea dock for Port of San Juan and a laboratory test on Conqueror mine run ore at the Noranda Concentrator Experimental Laboratory.

Noranda reports indicated reserves for the Daniel (open pit) as 1,537,534 tonnes at an average grade of 55.67% iron and 3.61% sulphur. Indicated reserves for the Conqueror (underground) are 1,069,471 tonnes at an average grade of 54.31% iron and 2.21%




## MINFILE OCCURRENCES

| | | | |
|---|---|---|---|
| 092C 012 | Red Dog | 092C 099 | Dore 52 |
| 092C 022 | Bugaboo | 092C 100 | Dore 99 |
| 092C 023 | David | 092C 101 | Dore 97 |
| 092C 024 | Elijah | 092C 102 | TL 5798 |
| 092C 025 | Sirdar | 092C 103 | Polly |
| 092C 027 | Baden Powell | 092C 104 | DL |
| 092C 029 | Tide | 092C 106 | Dore 162 |
| 092C 030 | Rose | 092C 107 | Harris |
| 092C 031 | Tally | 092C 110 | Reko 38 |
| 092C 044 | Sombrio Placers | 092C 111 | Fitinat |
| 092C 058 | Kinsley | 092C 124 | Gad |
| 092C 059 | Ox | 092C 125 | Lori |
| 092C 063 | Mal | 092C 131 | 3 x 3 |
| 092C 068 | Alfreda | 092C 137 | Ren |
| 092C 071 | Spanish | 092C 140 | Murton |
| 092C 077 | Ebb 1-12 | 092C 141 | Ebb |
| 092C 079 | Nan | 092C 142 | Lizard |
| 092C 085 | Harris Creek | 092C 143 | Rat |
| 092C 086 | Gordon River | 092C 146 | Reko North |
| 092C 089 | Val | 092C 152 | New World Slate |
| 092C 090 | Reko 3 | 092C 157 | Baird Creek Marble |
| 092C 091 | Reko 10 | 092C 158 | Hemm |
| 092C 093 | Dore 30 | | |

**Figure 3. MINFILE Occurrences.**

sulphur. Probable reserves for the Daniel are 508,883 tonnes (no grades given). Probable reserves for the Conqueror are 453,550 tonnes, and possible reserves 798,565 tonnes (no grades given). Combined indicated and probable ore for both deposits total 3,569,438 tonnes (no grades given). Combined indicated, probable and possible reserves for both deposits total 4,367,686 tonnes (no grades given). Refer to the 1960 Final Report by M.M. Menzies and O.W. Nicolls. It should be noted that the report by Menzies and Nicolls does not contain detailed drill logs, drillhole location maps or drill sections of the deposits reported on. Emerald Fields Resource Corporation has not been able to obtain enough of the original data and has not done the work necessary to verify the classification of a resource or reserve and is not treating the historical estimates as fulfilling the requirements of Sections 1.3 and 1.4 of National Instrument 43-101.

In the eastern portion of the claim block bulldozing and blasting by B.C. Forest Products road-building crews during the summer of 1970 uncovered showings of magnetite and sulphides near the upper reaches of Renfrew Creek (Reko showings). The Reko 1-6 claims were staked on these showings in July 1970 by Mr. M. Levasseur. Sampling of the exposed mineralization was subsequently carried out. Levasseur and associates incorporated Reako Explorations Ltd. in July 1971. Further staking in 1971-72 expanded the property to 66 claims. Exploration work during 1971 included x-ray diamond drilling totaling 37 metres in 6 holes and a limited magnetometer survey. During 1972-73, work included geological mapping, magnetometer surveys over 120 line-kilometres, an electromagnetic survey over 80 line-kilometres, an induced potential survey over 19 line-kilometres, trenching, and 5300 metres of diamond drilling in 100 holes on Reko 3, 4, 9, 10 and 42. The adjoining Kestrel 1-15 claims were purchased from M. Dickens of Savona in January 1974. Work during the year included 89 metres of diamond drilling in 6 holes on Reko 37. Drilling in 1972 on the South Pit B zone indicated a magnetite-bearing zone 94 metres long, over 30 metres wide and up to 50 metres deep. The average grade indicated by the core assay was 22.28% iron. In 1973-74, R.L. Roscoe estimated 1,111,242 tonnes in five combined zones (Zone 1, 2, 3, 5, 8) without specifying grades. South Pit B zone (or Zone 2) contains 970,597 tonnes. Emerald Fields Resource Corporation has not been able to obtain enough of the original data and has not done the work necessary to verify the classification of a resource or reserve and is not treating the historical estimates as fulfilling the requirements of Sections 1.3 and 1.4 of National Instrument 43-101.

No further work was reported on until Emerald Fields entered an option agreement with Gary Pearson of Port Renfrew on June 14, 2002 and also began staking claims in the area. In May 2003, Discovery Consultants completed geological, geochemical and geophysical surveys on behalf of Emerald Fields and Gary Pearson over parts of the property. Work comprised geological mapping, rock, heavy mineral and stream sediment sampling, petrographic work, and orientation VLF-EM and magnetometer surveys. In April 2004, Emerald Fields completed 7 BQ diamond-drillholes totaling 326 metres in the eastern portion of the claim block, namely on some of the Reko showings. Emerald Fields staked additional claims in November 2004 and early 2005. Between April-May 2005, a diamond drill program of 7 TWNQ drillholes totaling 711.4 metres was completed on parts of the Reko, Conqueror, Daniel and David magnetite. One drillhole on the Daniel deposit intersected massive magnetite over a core length of 21.9 metres grading 57.55% total iron; a drillhole on the Conqueror intersected massive magnetite over a core length of 25.0 metres grading 61.22% total iron.

In June 2006, Fugro was contracted to fly a low altitude, magnetometer survey with their helicopter-borne, stinger mounted single sensor system over the key areas of interest on the Pearson Project claim group. The airborne magnetometer survey was flown between June 12 and 20, 2006; the grid measured 22 by 7 kilometres and consisted of north-south lines at 100 metres spacing and east-west tie lines at 500 metres spacing for a total distance of 1972 line-kilometres. The aeromagnetic data reveals a great deal of structural variety compared to the widespread high level magnetic response visible on a regional scale. A detailed compilation of at least 19 magnetic anomalies throughout the surveyed area summarized by Owsiacki (2008).

During the summer of 2006 mapping was conducted on the Pearson Project claim group by J. Larocque (as part of M.Sc. thesis) and D. Canil (University of Victoria) in a jointly funded Geoscience BC proposal to delineate the occurrence and origin of ultramafic rocks related to anomalous nickel, chromium, copper and PGE (platinum group elements).

In the fall of 2007, Emerald Fields commenced a program of prospecting, soil and rock sampling and ground magnetometer surveying that continued into the summer of 2008. The results of this work are documented in a government assessment report by Payie and Norris (2008). In the summer of 2008, Fugro was contracted to fly a more detailed airborne magnetic survey. In May 2008, Emerald Fields commenced the drill program that is the subject of this report.

Emerald Fields Resource Corporation merged with Klondike Capital Corp. in late 2008 to form Pacific Iron Ore Corporation.

Pacific Iron Ore conducted a diamond drill program from May to September of 2008 (Payie and Norris, 2009). Most of the drilling was completed on the Bugaboo magnetite deposits which consist of the adjacent Daniel, Conqueror and David bodies. The Daniel and Conqueror bodies may be connected at depth. A total of 7250.02 metres in 51 holes (holes 08-01B to 08-51B) was completed on these three nearby magnetite bodies. Significant drill intercepts of magnetite were obtained in drill core, confirming the original results of Noranda drilling in the 1950s and 1960s. An examination of Noranda drill data indicates the deepest magnetite intersection came from a 1960 vertical hole (hole 219) on the Conqueror from 166.9 to 172.0 metres depth (Menzies and Nicolls, 1960). Drilling on the Conqueror in 2008 by Pacific Iron encountered a 22 metre intersection of magnetite in a vertical hole from 226 to 248 metres depth. This is evidence of the potential to expand the iron deposit, as originally defined by Noranda. The lateral boundaries of the deposit were not fully defined by the 2008 drilling. Recent discovery of original Noranda data should help define the exact location of the Noranda holes; this study is in progress. A further 622.24 metres of drilling was completed in the Edinburgh area (holes 08-01E to 08-03E) in order to test magnetic anomalies defined from airborne and follow-up ground magnetic surveys. It was concluded that the magnetic anomalies resulted from a dioritic intrusion containing up to10% magnetite.

## 6.0 GEOLOGICAL SETTING

Much of the information in this section has been sourced from Geological Survey of Canada Open File 821 (Muller, 1982), Assessment Reports 5029, 25877, 27246, 27280, 27517, and by the author's own observations during the supervision of the drill program on which this report is based. The property is large, extending almost 30 kilometres east-west and 10 kilometres north-south, and encompasses two significantly mineralized areas. Magnetite deposits occur in the Bugaboo Creek area in the west part of the property, and in the Renfrew Creek area 15 kilometres east (Figure 3).

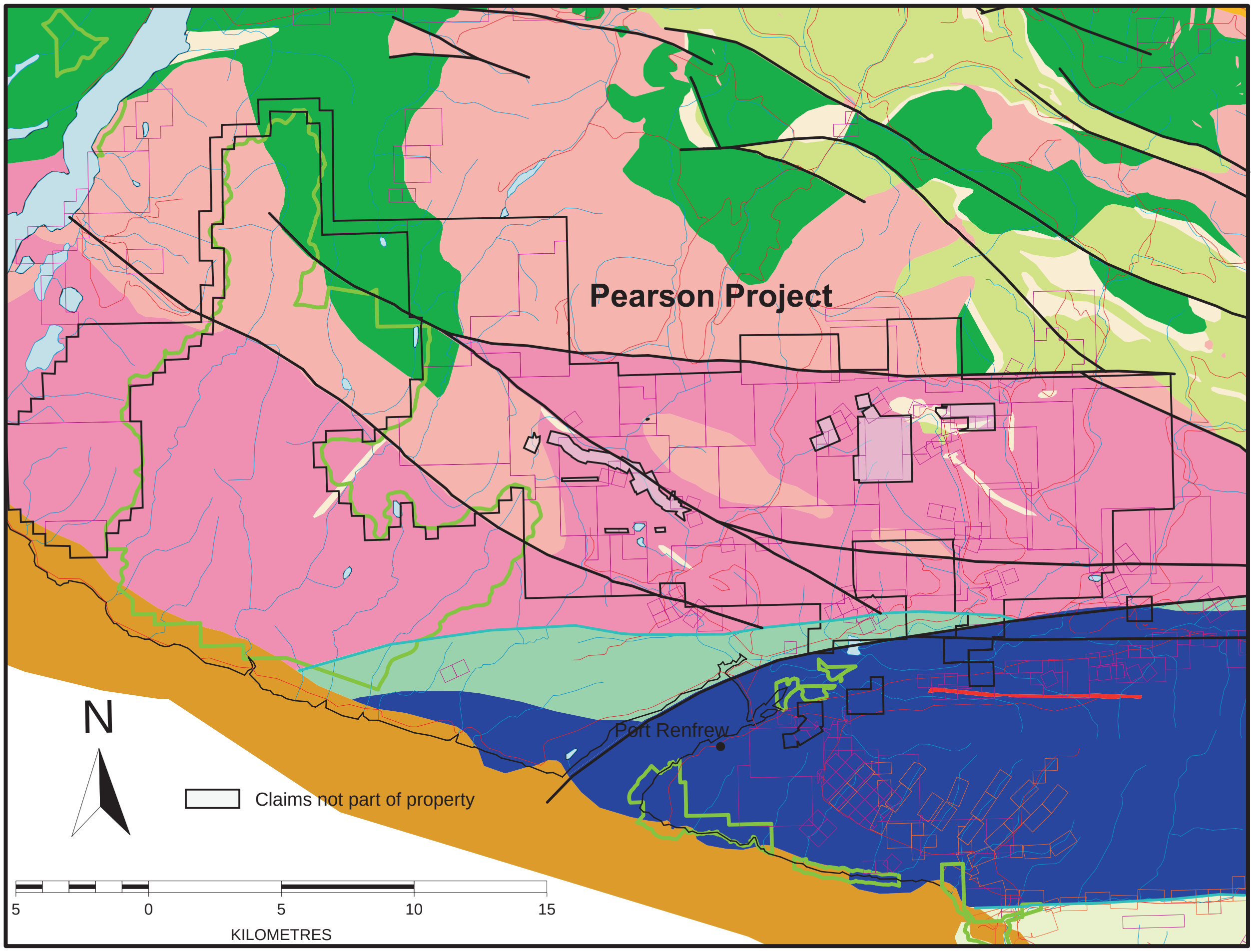
### 6.1 Regional Geology

The Port Renfrew area and beyond was mapped in 1982 by J.E. Muller of the Geological Survey of Canada. The property lies in the Insular Tectonic Belt where three distinct terranes occur. In the north are Paleozoic to Mesozoic rocks of the Wrangell Terrane consisting of Lower Jurassic Bonanza Group calc-alkaline and volcanic rocks, Middle to Upper Triassic Vancouver Group basaltic volcanic rocks and limestones, Early to Middle Jurassic Island Plutonic Suite quartz monzonitic to granodiorite intrusive rocks, and Paleozoic to Jurassic Westcoast Crystalline Complex dioritic intrusive rocks. Younger sedimentary and volcanic rocks of the Pacific Rim Terrane are thrust beneath the southern and western edges of the Wrangellia rocks along the San Juan and Survey Mountain faults. The San Juan Fault extends from near Port Renfrew to beyond Cobble Hill and for much of its length separates Pacific Rim Terrane from Wrangellia. Pacific Rim Terrane rocks consist of Jurassic to Cretaceous Leech River Complex greenstone, greenschist metamorphic rocks, sedimentary rocks and bimodal volcanic rocks. In the south, just below the property boundary, Crescent Terrane basaltic volcanic rocks belonging to the Paleocene to Eocene Metchosin Igneous Complex are emplaced beside and beneath the Pacific Rim Terrane along the Leech River Fault. Sedimentary rocks of the Upper Eocene to Oligocene Carmanah Group accumulated on the Crescent and Pacific Rim terranes. Numerous north-northwest and east-west faults transect the property (Figure 4).

Previously un-mapped ultramafic rocks have recently been discovered and identified on the property and are variously comprised of peridotite, serpentinized peridotite, gabbro, pyroxenite and hornblendite.

### 6.2 Property Geology

The Conqueror, Daniel, David and Reko iron (magnetite) skarn deposit areas have been variously described by Menzies and Nicolls (1960), Young and Uglow (1926), Roscoe (1973), Eastwood (1974) and McKinley (2003) where the following information has been taken. The British Columbia mineral inventory database, MINFILE, documents the




## GEOLOGICAL LEGEND

**TERTIARY**
Upper Eocene to Oligocene

EOlC — **CARMANAH GROUP:** Undivided sedimentary rocks

Paleocene to Eocene

PeEMMvb — **METCHOSIN IGNEOUS COMPLEX - METCHOSIN FORMATION:** Basaltic volcanic rocks

**JURASSIC TO CRETACEOUS**

JKL — **LEECH RIVER COMPLEX:** Greenstone, greenschist metamorphic rocks

JKLS — **LEECH RIVER COMPLEX - SURVEY MOUNTAIN VOLCANICS:** Bimodal volcanic rocks

**LOWER JURASSIC**

lJBca — **BONANZA GROUP:** Calc-alkaline volcanic rocks

**MIDDLE TRIASSIC TO UPPER TRIASSIC**

**VANCOUVER GROUP**

uTrVK — **KARMUTSEN FORMATION:** Basaltic volcanic rocks

muTrVs — Undivided sedimentary rocks

INTRUSIVE ROCKS

**TERTIARY**
Eocene to Oligocene

EOlM — **MOUNT WASHINGTON PLUTONIC SUITE:** Quartz dioritic intrusive rocks

**EARLY JURASSIC TO MIDDLE JURASSIC**

EMJlgd — **ISLAND PLUTONIC SUITE:** Granodioritic intrusive rocks

**PALEOZOIC TO JURASSIC**

PzJWg — **WESTCOAST CRYSTALLINE COMPLEX:** Intrusive rocks, undivided

Fault

Thrust Fault

Geological map and legend compiled from:

MapPlace (2005): Website; *BC Ministry of Energy, Mines and Petroleum Resources*, www.mapplace.ca

Muller, J.E. (1982): Geology, Nitinat Lake, British Columbia, Map and Notes; *Geological Survey of Canada*, Open File 821, scale 1:250 000.

Figure 4. Regional Geology Map.

showings as follows: Bugaboo, 092C 022; David, 092C 023; and Reko, 092C 090, 91, 110, 146 (Figure 3). These reports can be view on the government website at http://www.em.gov.bc.ca/Mining/Geolsurv/Minfile/default.htm.

**Bugaboo Creek Area**

The Bugaboo Creek area in the western portion of the claim block contains four well exposed, partly developed iron (magnetite) skarn deposits: Conqueror-Daniel, David, Sirdar and Baden Powell. The Conqueror-Daniel and David deposits are on the property while the Sirdar and Baden Powell are located 680 metres and 1500 metres southeast, respectively and are not part of the subject property. The Conqueror-Daniel and David area is underlain by a dioritic intrusion possibly of the Westcoast Crystalline Complex and limestone of the Upper Triassic Quatsino Formation (Vancouver Group). The bodies of limestone appear to be completely surrounded by dioritic intrusive rocks and could be considered roof pendants. The magnetite showings are aligned in a northwest-southeast trending line that appears to parallel a regional northwest trending fault structure along Bugaboo Creek.

Generally, the Conqueror, Daniel and David magnetite bodies occur within zones of pyroxene-garnet skarn formed along the contact of fine to medium-grained diorite and limestone. The magnetite occurs as large, irregular, fine grained massive bodies surrounded by recrystallized limestone (marble) and dioritic intrusive rocks cut by plagioclase porphyritic dikes. A detailed description of the mineralization is provided in Section 9.0.

**Renfrew Creek Area**

The Renfrew Creek area in the eastern portion of the claim block, located about 15 kilometres east of the Bugaboo Creek area, is generally underlain by dioritic rocks of the Westcoast Crystalline Complex in contact along irregular boundaries with limestone probably belonging to the Upper Triassic Quatsino Formation (Vancouver Group). The massive limestone bodies strike in a general north-northwest direction, and where bedding is evident, dip at various angles to the north and south. The limestone varies from dark grey to blue to white and in some localities has been altered to marble. Most limestone bodies have been successively intruded by andesitic (greenstone) and fine-grained diorite dikes. The dioritic rocks include fine grained, mafic rich and leucocratic diorite, medium to coarse-grained quartz diorite, and quartz diorite breccia containing fragments of fine-grained mafic diorite. The breccia locally grades to massive diorite. A set of long, narrow, fine grained grey dikes strike consistently at 020 degrees, transect all other rocks, and probably follow late fractures.

Massive iron (magnetite) skarn deposits are developed near diorite and recrystallized limestone (marble) contacts and along zones of garnet-pyroxene skarn. The magnetite occurs as large fine to coarse grained massive bodies bounded by marble and/or diorite. A detailed description of the mineralization is provided in Section 9.0.

## 7.0 DEPOSIT TYPES

The Bugaboo and Reko deposits can be classified as calcic iron skarns or contact metasomatic iron deposits. Commodities and byproducts related to this type of deposit are magnetite (iron), copper, silver, gold and cobalt. Typically magnetite-dominant mineralization is genetically associated with a skarn gangue. The tectonic setting of calcic iron skarns are intra and non-intraoceanic island arcs and rifted continental margins. The age of mineralization can be of any age, mainly Mesozoic to Cenozoic and are typically Early to mid-Jurassic in British Columbia. Deposit-type classification description is taken from G.E. Ray (1995) in *'Fe Skarns, in Selected British Columbia Mineral Deposit Profiles, Volume 1 - Metallics and Coal, Open File 1995-20'* and is reproduced below.

The host and associated rock types are iron-rich, silica-poor intrusions derived from primitive oceanic crust. Typically, large to small stocks and dikes of gabbro to syenite (mostly gabbro-diorite) intrudes limestone, calcareous clastic sedimentary rocks, tuffs or mafic volcanics at a high to intermediate structural level. The deposit form is variable and includes stratiform orebodies, vertical pipes, fault-controlled sheets, massive lenses or veins, and irregular ore zones along intrusive margins.

Igneous textures prevail in endoskarn (skarn formed by replacement of intrusive or other aluminous silicate rock). Coarse to fine grained, massive granoblastic to mineralogically layered textures are evident in exoskarn (skarn formed by replacement of limestone or dolomite). Some hornfelsic textures may also be developed. Magnetite varies from massive to disseminated to veins. Exoskarn alteration is high iron, low manganese, diopside-hedenbergite clinopyroxene and grossular-andradite garnet, ± epidote ± apatite. Late stage amphibole ± chlorite ± ilvaite ± epidote ± scapolite ± albite ± K-feldspar. Endoskarn alteration comprises sodium silicates ± garnet ± pyroxene ± epidote ± scapolite.

Principal and subordinate ore mineralogy can comprise magnetite ± chalcopyrite ± pyrite ± cobaltite ± pyrrhotite ± arsenopyrite ± sphalerite ± galena ± molybdenite ± bornite ± hematite ± martite ± gold. Rarely, can contain tellurobismuthite ± fluorite ± scheelite.

Ore controls are stratigraphic and structural: close proximity to contacts between intrusions and carbonate sequences, volcanics or calcareous tuffs and sediments. Fracture zones near igneous contacts can also be important. Some associated deposit types can be copper porphyries, copper and lead-zinc skarns or small lead-zinc veins.

In calcic iron skarns, early magnetite is locally intergrown with, or cut by, garnet and magnesian silicates. Some of these skarns contain relatively small pockets of pyrrhotite-pyrite mineralization that postdate the magnetite; this mineralization can be gold-rich. Over 90% of the 146 iron skarn occurrences in British Columbia lie within the Wrangell Terrane of the Insular Belt. The majority of these form where Early to mid-Jurassic dioritic plutons intrude Late Triassic limestones.

Exploration guides for calcic iron skarns are geochemical signatures exhibiting enrichment in iron, copper, cobalt, gold, nickel, arsenic and chromium. Overall copper and gold grades are low (<0.2% Cu and 0.5 g/t Au). Geophysical signatures are strong positive magnetic, electromagnetic and induced polarization anomalies. Other exploration guides for iron skarn development are magnetite-rich float, and exploration in the Wrangell Terrane near the upper and lower contacts of the Upper Triassic Quatsino Formation limestone (or equivalent units).

Economic factors are grade and tonnage where grades are typically 40% to 50% iron. Worldwide, calcic iron skarns range from 3 to 150 million tonnes. In British Columbia, they reach 20 million tonnes and average approximately 4 million tonnes mined ore. Nearly 90% of British Columbia's historic iron production was from skarns.

Previously unrecognized and undocumented ultramafic rocks have been recently discovered (McKinley, 2003) on the Pearson property and could be a significant indicator for the ultramafic-related suite of ore deposits, namely tholeiitic intrusion-hosted nickel-copper that may contain platinum group elements (PGE). Gabbro and hornblende gabbro with significant copper, nickel, cobalt, platinum and palladium values were identified on the Ebb showing in the eastern part of the property in the vicinity of Fairy Creek, north of Fairy Lake (Tavela, 1980).

## 8.0 MINERALIZATION

### 8.1 Bugaboo Creek Area

The original Conqueror discovery showing is a solid mass of magnetite about 10 metres thick exposed in the canyon of Bugaboo Creek, over which the creek forms a waterfall. The massive magnetite occurs within and near zones of pyroxene-garnet skarn formed along the contact of fine-grained diorite and limestone. The magnetite occurs as large, irregular massive bodies surrounded by recrystallized limestone (marble) and dioritic intrusive rocks cut by plagioclase porphyritic dikes.

The skarn appears to be of two phases. The first is an older garnet-epidote assemblage found only as a remnant within the massive magnetite; the second is the later pyroxene skarn that surrounds the magnetite body. Actinolite is a minor constituent in the zone of alteration. The magnetite is fine grained and massive with pyrrhotite finely disseminated throughout and may have formed contemporaneously. Actinolite is also a minor accessory mineral within the magnetite. Late sulphide veinlets, mainly pyrite and chalcopyrite, cut the magnetite body.

Diamond drilling between 1957 and 1960 indicates that the Conqueror orebody strikes northwesterly and, on the surface, is divided into 'West' and 'East' pipe-like orebodies. Conqueror 'East' plunges steeply westerly while Conqueror 'West' appears to dip steeply to the south. The 1957 drilling suggests a steep southerly dip to the 'West' orebody. If subsequent drilling substantiates this southerly dip then both bodies must join at depth as both are open and very strong at the greatest depths yet drilled (Menzies and Nicolls, 1960).

Noranda drilling indicated that the structure of the Conqueror may be likened to a 'Y' lying in a northwesterly striking plane dipping roughly 75 degrees southwesterly. Conqueror 'East' is then represented by the easterly striking arm, Conqueror 'West' by the northerly striking arm, and the neck, 137 metres in depth, indicating the point of junction. The stem represents a possible continuation to still greater depths of the unified orebodies. The primary ore control may be a tightly folded syncline of limestone with its axis striking southwesterly and plunging steeply in the same direction. If this is the case, the emplacement of magnetite in the limbs of the syncline was controlled by a cross-cutting structure have the attitude of the 'Y' described above (Menzies and Nicolls, 1960). Indicated reserves are 1,069,471 tonnes grading 54.31% iron and 2.21% sulphur. There are additional probable reserves of 453,550 tonnes and possible reserves of 798,565 tonnes (grades not given). The steeply plunging, pipe-like orebodies lend themselves to economical underground mining (Menzies and Nicolls, 1960). The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101.

The Daniel magnetite orebody is located about 250 metres northwest of the Conqueror orebody and resembles a flattened cylinder with its axis oriented north-northeast and plunging about 20 degrees to the north. The magnetite is similar to that of the Conqueror with pyrite and pyrrhotite occurring in roughly equal proportions but with no conspicuous actinolite. Late pyrite and chalcopyrite veinlets cut the magnetite. Indicated reserves at the Daniel are 1,537,534 tonnes at an average grade of 55.67% iron and 3.61% sulphur. There are additional probable reserves of 508,883 tonnes (grades not given). The reserves are amenable for open pit mining methods (Menzies and Nicolls, 1960). The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101.

The David magnetite showing is about 300 metres southeast of the Conqueror orebody. All three showings, Daniel, Conqueror and David, are on the same northwest-southeast trend. The Sirdar and Baden Powell showings (not part of the subject property) are also on the same trend. The David is a massive, irregular body of fine to medium grained magnetite bounded by pyroxene-garnet skarn, marble and altered diorite. The magnetite is relatively free of sulphides and appears sheeted in the roadcut exposure.

The recently exposed Lorimer Creek showing is located about 4 kilometres southeast of, and on trend with the Conqueror-Daniel deposits. The showing is exposed in a logging roadcut and is about 10 metres long and consists of a massive, fine to medium grained magnetite body lying beneath marble and locally developed pyroxene skarn. The overlying marble has an undulating and abrupt contact with the magnetite. In 2004, a grab sample of the massive magnetite mineralization taken by Emerald Fields assayed 45.6% iron, 0.6% copper and 192 ppb gold. A fine grained, dark mafic rock (diabase) occurs nearby and hosts two parallel magnetite-pyrite-pyrrhotite veins from 15 to 40 centimetres wide. In 2004, a grab sample taken from one of the veins by Emerald Fields assayed 44.3% iron, 1.01% copper and 177 ppb gold.

### 8.2 Granite (Renfrew Creek, Reko) Area

A total of 11 magnetite skarn zones have been described by Roscoe (1973) in the Renfrew Creek area and documented in the British Columbia provincial mineral inventory database, MINFILE, as Reko 10 (092C 091), Reko 3 (092C 090), Reko 38 (092C 110) and Reko North (092C 146). See Figure 3 for MINFILE locations. Only those zones containing historic reserves or which have been tested by the 2005 drill program are discussed below.

The South Pit A zone or Zone 1 (092C 091) showing is exposed for a length of 12 metres and a width of 4.5 metres in an old logging roadcut. It consists of massive, fine to medium-grained magnetite with up to 30% pyrrhotite and small blebs, minute veinlets and fine disseminations of chalcopyrite and pyrite. The magnetite is in contact with marble; fine grained, dark mafic diorite occurs 10 metres away. Roscoe (1973) estimated 41,046 tonnes of magnetite without specifying grades. The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101. In a 1975 George Cross News Letter, reference is made to this showing where magnetite is exposed in two areas 61 metres apart and when checked by magnetometer indicated an anomaly enclosing both exposures. The showing was partially tested in the 2005 drill program.

The South Pit B zone or Zone 2 (092C 091) is located 215 metres southwest of Zone 1 near a bridge crossing Renfrew Creek. The showing originally showed only a few outcrops of garnetite and silicified rock. It produced a strong magnetic anomaly and was systemically drilled; a trench was bulldozed 76 metres northeast of the bridge, exposing magnetite in garnetite. A drillhole in the centre of the zone intersected thinly to thickly disseminated magnetite in epidote-pyroxene-garnet skarn from 2.4 to 20.4 metres depth and sporadically from 20.4 to 25.3 metres. Pyrite and chalcopyrite occur locally (Eastwood, 1974). Roscoe (1973) estimates 970,597 tonnes of ore without specifying grades. The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101. Two drillholes were put down in this zone in 2004 by Emerald Fields Resource Corporation (see Assessment Report 27517). This zone was not tested during the 2005 drill program.

South Pit C zone or Zone 3 (092C 091) is located about 425 metres northwest of Zone 2. The zone is not exposed and is known only from the drilling of a magnetic anomaly. A drillhole inclined 45 degrees to the west put down on the centre of the zone intersected magnetite, pyrrhotite and pyrite as disseminations, veins and veinlets in skarn from 18.9 to 23.8 metres. Below 24 metres the rock is predominantly diorite (Eastwood, 1974). Roscoe (1973) estimated 31,839 tonnes of ore without specifying grades. The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101. This zone was not tested during the 2005 drill program.

Zone 7 or Pope's Nose zone (092C 090) is located 1.4 kilometres north of Zone 2 (South Pit B zone). The showing originally consisted of two small exposures of massive pyrrhotite containing networks of chalcopyrite. Emerald Fields opened up the road exposure and tested the zone with four drillholes in 2004 (see Assessment Report 27517). The zone is now 17.5 metres long and comprises massive magnetite bounded by garnet-pyroxene skarn and diorite. The magnetite contains significant pyrite and pyrrhotite with chalcopyrite. The zone was not tested during the 2005 drill program.

Zone 8 or North Pit zone (092C 090) is also known as the Road zone and is located 190 metres north of Zone 7 or Pope's Nose zone. It consisted of numerous small exposures of magnetite and skarn but has recently been developed as one continuous cut along a logging road. The width of exposed magnetite is now about 4 metres wide and is in contact with fine-grained diorite and pyroxene-garnet skarn. Drilling in 1973 was not extended far enough to delimit the zone. A vertical drillhole toward the southwest side of the zone intersected massive and near-massive magnetite from 2.7 to 9.7 metres cut by 2.4 metres of very weakly mineralized skarn. Pyrite occurs in minor amounts. Roscoe (1973) estimated 33,063 tonnes of ore without specifying grades. The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101. This zone was partially tested during the 2005 drill program.

Zone 5 or Northwest zone (092C 110) is located about 715 metres west-southwest of Zone 7 (Pope's Nose zone). The original showing was partly exposed in bulldozer strippings and one small outcrop and consists of a mixture of magnetite and sulphide minerals in skarn. A 1973 drillhole inclined 45 degrees to the west near the north end of the zone intersected abundant magnetite with lesser amounts of chalcopyrite, pyrrhotite and pyrite from 0.6 to 7.9 metres cut by a 1.5 metre diorite dike. From 20.4 to 26.5 metres the core is mostly massive pyrrhotite, containing lenses and blebs of chalcopyrite (Eastwood, 1974). Roscoe (1973) estimated 34,696 tonnes of ore without specifying grades. The reserve estimates are assumed to not comply with Sections 1.3 and 1.4 of National Instrument 43-101. This zone was not tested during the 2005 drill program.

## 9.0 2008 AIRBORNE GEOPHYSICS PROGRAM

The Fugro report, provided in Appendix A, discusses 17 zones of particular significance, including the Bugaboo deposit area, that have clearly defined geophysical signatures with respect to magnetic highs, EM derived high magnetite zones and/or apparent resistivity. Maps showing the results of these techniques are found with the Fugro report and also include Interpretation maps defining 22 zones of interest (of which the 17 are a subset) A brief summary of each geophysical technique is reproduced from selected parts of the Fugro report found in full in Appendix A.

**Magnetic Highs**

> *"The total magnetic field data have been presented as contours on the base map using a contour interval of 5 nT where gradients permit. The map shows the magnetic properties of the rock units underlying the survey*

*area. The total magnetic field data have been subjected to a processing algorithm to produce maps of the calculated vertical gradient. This procedure enhances near-surface magnetic units and suppresses regional gradients. It also provides better definition and resolution of magnetic units and displays weak magnetic features that may not be clearly evident on the total field maps.*

*The magnetic maps suggest that the survey area has been subjected to deformation and/or alteration. These structural complexities are evident on the colour maps as variations in magnetic intensity, irregular patterns, and as offsets or changes in strike direction. The general strikes of magnetic features are roughly west to northwest, similar to the known regional structures in this area. However, many inferred magnetic breaks and contacts strike NE. The magnetic units appear to correlate with the mapped intrusive rocks in the survey area. The undivided intrusive rocks of the Westcoast Crystalline complex dominate the south half of the survey area and give rise to the most active magnetic responses. The northern half is occupied by the granodioritic intrusive rocks of the Island Plutonic Suite, the calc-alkaline volcanic rocks of the Bonanza Group, the basaltic volcanic rocks and undivided sedimentary rocks of the Vancouver Group. These rock units appear to yield weak to moderate magnetic responses.*

**EM Magnetite**

The apparent weight percent magnetite was computed using the 900 Hz coplanar in-phase component.

*"A magnetite mapping technique, based on the low frequency coplanar data, can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to 1/4% magnetite by weight when the EM sensor is at a height of 30 m above a magnetic half-space. It can individually resolve steep dipping narrow magnetite-rich bands which are separated by 60 m. Unlike magnetometry, the EM magnetite method is unaffected by remnant magnetism or magnetic latitude.*

*The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed. EM magnetite maps can be generated when magnetic permeability is evident as negative inphase responses on the data profiles.*

*Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden."*

**Resistivity**

> *"Areas of widespread conductivity are commonly encountered during surveys. These conductive zones may reflect alteration zones, shallow-dipping sulphide or graphite-rich units, saline ground water, or conductive overburden."*
>
> *"The resistivity analysis also helps the interpreter to differentiate between conductive bedrock and conductive overburden. For example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows."*

## 10.0 CONCLUSIONS AND RECOMMENDATIONS

In addition to the mapping of magnetic zones, EM derived high magnetite zones and conductive zones, inferred magnetic breaks and contacts are also shown on the Interpretation maps that are part of the Fugro report (Appendix A). The magnetic results, in conjunction with the other geophysical parameters, have provided valuable information that can be used to indicate targets for follow-up in the search for new magnetite bodies.

The EM Magnetite signature over the Bugaboo deposits is striking and although it appears that this technique would provide the best method in exploring for other iron skarn deposits in the survey area, it must be kept in mind that Fugro reports the absence of a magnetite-rich anomaly could be due to relatively thick conductive overburden overlying a magnetic body. Since the magnetic parameter generally "sees deeper" than the EM parameter the lack of significant EM derived magnetite-rich anomalies cannot be the factor that eliminates an airborne magnetic anomaly as an exploration target. However, it may subordinate their priority as targets with respect to those with two or more coincident geophysical signatures.

Magnetic zones or EM derived high magnetite zones that have coincident or adjacent conductive zones are interesting in that this may be a result of iron skarn related sulphide content. This appears to be the case at the Bugaboo deposits where the conductivity is likely caused by significant associated pyrrhotite and pyrite.

It is recommended that a program of prospecting and ground magnetometer surveying occur in those areas that have been indicated as prospective on the Fugro Interpretation Maps and discussed in Section 7.12 of their report (Appendix A).

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## 12.0 STATEMENT OF COSTS

**Pacific Iron Ore Corporation**
Deposits made to Fugro

| | Charges | GST | Prepaid Acct |
|---|---|---|---|
| July 10/08 Tsf to Fugro | $528,975.00 | $26,448.75 | |
| Aug 26/08 Tsf to Fugro | $352,650.00 | $17,632.50 | |
| Sep 29/08 Tsf to Fugro | $323,380.00 | $16,169.00 | |
| Total Deposits Made to Fugro | $1,205,005.00 | $60,250.25 | $1,205,005.00 |
| Mobilization Costs to Port Renfrew | $20,000.00 | | $20,000.00 |
| Work performed in Port Renfrew Block | | | |
| 6,065 line km flown | $788,450.00 | | $788,450.00 |
| EM-derived Magnetic Susceptibility | $18,195.00 | | $18,195.00 |
| Comprehension Interpretation | $15,162.50 | | $15,162.50 |
| Standby Charges June thru September | $46,918.00 | $2,345.90 | $49,263.90 |
| Total Charges to September 30 | $888,725.50 | | $891,071.40 |
| Funds Advanced in excess of Port Renfrew Block | $316,279.50 | | $313,933.60 |
| Work performed outside Port Renfrew | | | |
| 552.5 line km flown | $71,825.00 | | $71,825.00 |
| Stanby charges | $74,586.00 | $3,729.30 | $78,315.30 |
| Total Charges to October 31 | $146,411.00 | | $150,140.30 |
| Funds Advanced in excess of fees | $169,868.50 | | $163,793.30 |
| **Total Charges at December 31/08** | **$1,035,136.50** | | |

## 13.0 STATEMENT OF QUALIFICATIONS

GARRY PAYIE
3714 Raymond Street South, Victoria, British Columbia V8Z 4K1
Tel: 250.479.2299 Cell: 250.891.0983
Email: payie@shaw.ca or gpayie@hotmail.com

I, Garry Payie, am a self-employed Professional Geoscientist residing in the city of Victoria, British Columbia and do hereby certify that:

1. I graduated with a Bachelor of Science degree in Geological Sciences from the University of British Columbia, Vancouver, British Columbia in 1983.
2. I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
3. I have worked as a geologist in British Columbia for twenty-five years since my graduation in 1983 to present, having been employed by the BC Geological Survey Branch and several junior to senior resource companies as both a contract employee and as a consultant.
4. I maintain no interest in Pacific Iron Ore or its claims that are the subject of this report.
5. I worked on a limited drill program on the property in 2005.
6. I did not work on the subject property again until August of 2008 at which time.
7. This report is also based upon an examination of all available company and government reports pertinent to the subject property.

Dated this 21st day of April 2009.

Garry Payie, P.Geo.

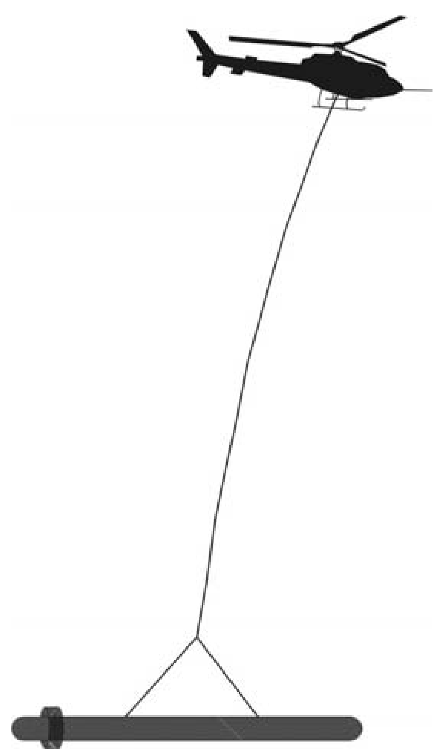
# APPENDIX A

AIRBORNE SURVEY REPORT

Fugro Airborne Surveys Corp

# DIGHEM SURVEY
# RESOLVE SURVEY
# FOR
# EMERALD FIELD RESOURCES

**EVENTS**
**4228954, 4228977, 4228983, 4228997, 4229023, 4229045, 4229053**



Fugro Airborne Surveys Corp.
Mississauga, Ontario

Amir H. Soltanzadeh, P.Eng
Geophysicist

October, 2008

Fugro Airborne Surveys, 2270 Argentia Road, Unit 2, Mississauga, Ontario, Canada, L5N 6A6
Phone: 1 905 812 0212, Fax: 1 905 812 1504

## SUMMARY

This report describes the logistics and data acquisition of a DIGHEM airborne geophysical survey for Emerald Field Resources, over seven Events (4228954, 4228977, 4228983, 4228997, 4229023, 4229045, 4229053) located near Port Renfrew, British Columbia. Total coverage of the survey blocks amount to 13636 km

The purpose of the survey is to detect zones of conductive mineralization and to provide information that could be used to map the geology and structure of the survey area. This is accomplished by using a DIGHEM multi-coil, multi-frequency electromagnetic system, supplemented by a high sensitivity cesium magnetometer. The information from these sensors will be processed to produce maps that display the magnetic and conductive properties of the survey areas.

The survey data will be processed and compiled in the Fugro Airborne Surveys Toronto office. Map products and digital data will be provided in accordance with the scales and formats specified in the Survey Agreement.

# CONTENTS



## APPENDICES

# 1. INTRODUCTION

A DIGHEM electromagnetic/magnetic survey is being flown for Emerald Field Resources, over seven survey blocks located near Port Renfrew, British Columbia. The survey area can be located on NTS map sheets 92/C9-C16 and 92/F2-3 (Figure 2).

Survey coverage consists of approximately 13631 line-km, including 1697 line-km of tie lines.

The survey employs the DIGHEM electromagnetic system. Ancillary equipment consists of a magnetometer, radar altimeter, video camera, analog and digital recorders, and an electronic navigation system. The instrumentation is installed in an AS350B2 turbine helicopter (registration C-FDNF) that is provided by Questral Helicopters Ltd. The helicopter flies at an average airspeed of 80 km/h with an EM sensor height of approximately 30 metres above the terrain.

# 2. SURVEY OPERATIONS

The base of operations for the survey will be at Port Renfrew, British Columbia.

The survey areas can be located on NTS map sheets /C9-C16, and 92/F2-3 (Figure 2). These blocks are designated as Events 4228954, 4228977, 4228983, 4228997, 4229023, 4229045, 4229053,

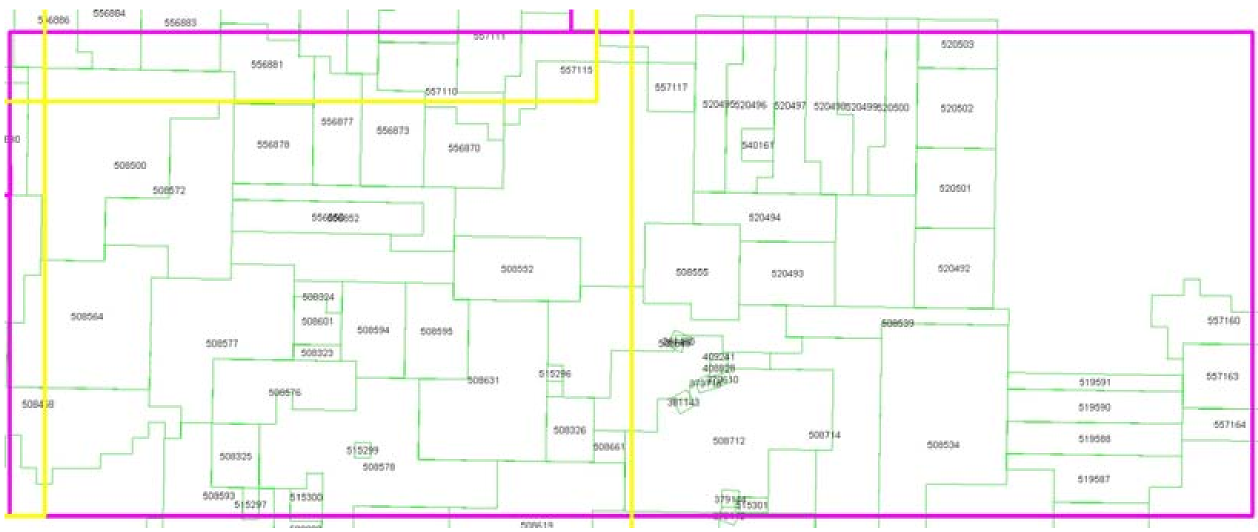
Table 2-1 lists the corner coordinates of the survey areas in NAD 83, UTM Zone 10, central meridian 123 W°.

## Table 2-1

| **Block** | Corner | UTM-Easting | UTM-Northing |
|---|---|---|---|
| **08042-1** | 1 | 384000 | 5400000 |
| | 2 | 420000 | 5400000 |
| | 3 | 420000 | 5386000 |
| | 4 | 384000 | 5386000 |
| | | | |


Figure 2
Location Map and Sheet Layout
Event 4228954, 4228977, 4228983, 4228997, 4229023, 4229045, 4229053

Job # 08042


556884
556883
556881
557115
557110
557117
520503
520497
520500
520502
556877
556873
556878
556870
540161
508500
508572
520501
520494
508592
508555
520493
520492
508564
508324
508601
508594
508595
508577
508323
508539
557160
409281
515296
508631
508576
519591
557163
519590
381143
557164
508326
508712
508714
508534
519588
508661
515299
508325
508578
519587
508593
515297
515300
515301

The survey specifications were as follows:

| Parameter | Specifications |
|---|---|
| Traverse line direction | 0°-180° |
| Traverse line spacing | 100/150 m |
| Tie line direction | 90°-270° |
| Tie line spacing | 1000 /1500m |
| Sample interval | 10 Hz, 3.3 m @ 120 km/h |
| Aircraft mean terrain clearance | 58 m |
| EM sensor mean terrain clearance | 30 m |
| Mag sensor mean terrain clearance | 30 m |
| Average speed | 800 km/h |
| Navigation (guidance) | ±2 m, Real-time GPS |
| Post-survey flight path | ±2 m, Differential GPS |

# 3. SURVEY EQUIPMENT

This section provides a brief description of the geophysical instruments used to acquire the survey data and the calibration procedures employed. The geophysical equipment is installed in an AS350B2 helicopter. This aircraft provides a safe and efficient platform for surveys of this type.

## Electromagnetic System

Model: DIGHEM

Type: Towed bird, symmetric dipole configuration operated at a nominal survey altitude of 30 metres. Coil separation is 8 metres for 900 Hz, 1000 Hz, 5500 Hz and 7200 Hz, and 6.3 metres for the 56,000 Hz coil-pair.

Coil orientations, frequencies and dipole moments

| $Atm^2$ | orientation | nominal | actual |
|---|---|---|---|
| 211 | coaxial | / 1000 Hz | 1128 Hz |
| 211 | coplanar | / 900 Hz | 878 Hz |
| 67 | coaxial | / 5500 Hz | 5461 Hz |
| 56 | coplanar | / 7200 Hz | 7163 Hz |
| 15 | coplanar | / 56,000 Hz | 56400 Hz |

Channels recorded:
5 in-phase channels
5 quadrature channels
2 monitor channels

Sensitivity:
0.06 ppm at 1000 Hz Cx
0.12 ppm at 900 Hz Cp
0.12 ppm at 5,500 Hz Cx
0.24 ppm at 7,200 Hz Cp
0.60 ppm at 56,000 Hz Cp

Sample rate: 10 per second, equivalent to 1 sample every 3.3 m, at a survey speed of 120 km/h.

The electromagnetic system utilizes a multi-coil coaxial/coplanar technique to energize conductors in different directions. The coaxial coils are vertical with their axes in the flight direction. The coplanar coils are horizontal. The secondary fields are sensed simultaneously by means of receiver coils that are maximum coupled to their respective transmitter coils. The system yields an in-phase and a quadrature channel from each transmitter-receiver coil-pair.

## In-Flight EM System Calibration

Calibration of the system during the survey uses the Fugro AutoCal automatic, internal calibration process. At the beginning and end of each flight, and at intervals during the flight, the system is flown up to high altitude to remove it from any “ground effect” (response from the earth). Any remaining signal from the receiver coils (base level) is measured as the zero level, and is removed from the data collected until the time of the next calibration. Following the zero level setting, internal calibration coils, for which the response phase and amplitude have been determined at the factory, are automatically triggered – one for each frequency. The on-time of the coils is sufficient to determine an accurate response through any ambient noise. The receiver response to each calibration coil “event” is compared to the expected response (from the factory calibration) for both phase angle and amplitude, and any phase and gain corrections are automatically applied to bring the data to the correct value.

In addition, the outputs of the transmitter coils are continuously monitored during the survey, and the gains are adjusted to correct for any change in transmitter output.

Because the internal calibration coils are calibrated at the factory (on a resistive halfspace) ground calibrations using external calibration coils on-site are not necessary for system calibration. A check calibration may be carried out on-site to ensure all systems are working correctly. All system calibrations will be carried out in the air, at sufficient altitude that there will be no measurable response from the ground.

The internal calibration coils are rigidly positioned and mounted in the system relative to the transmitter and receiver coils. In addition, when the internal calibration coils are calibrated at the factory, a rigid jig is employed to ensure accurate response from the external coils.

Using real time Fast Fourier Transforms and the calibration procedures outlined above, the data are processed in real time, from measured total field at a high sampling rate, to in-phase and quadrature values at 10 samples per second.

## Airborne Magnetometer

| | |
|---|---|
| Model: | Scintrex CS2 sensor |
| Type: | Optically pumped cesium vapour |
| Sensitivity: | 0.01 nT |
| Sample rate: | 10 per second |

The magnetometer sensor is housed in the EM bird, 28 m below the helicopter.

## Magnetic Base Station

Primary

| | | |
|---|---|---|
| Model: | Fugro CF1 base station with timing provided by integrated GPS | |
| Sensor type: | Scintrex CS-3 | |
| Counter specifications: | Accuracy: | ±0.1 nT |
| | Resolution: | 0.01 nT |
| | Sample rate | 1 Hz |
| GPS specifications: | Model: | Marconi Allstar |
| | Type: | Code and carrier tracking of L1 band, 12-channel, C/A code at 1575.42 MHz |
| | Sensitivity: | -90 dBm, 1.0 second update |
| | Accuracy: | Manufacturer's stated accuracy for differential corrected GPS is 2 metres |
| Environmental Monitor specifications: | Temperature: | |

- Accuracy: ±1.5ºC max
- Resolution: 0.0305ºC
- Sample rate: 1 Hz
- Range: -40ºC to +75ºC

Barometric pressure:

- Model: Motorola MPXA4115A
- Accuracy: ±3.0º kPa max (-20ºC to 105ºC temp. ranges)
- Resolution: 0.013 kPa
- Sample rate: 1 Hz
- Range: 55 kPa to 108 kPa

Backup

Model: GEM Systems GSM-19T

Type: Digital recording proton precession

Sensitivity: 0.10 nT

Sample rate: 3 second intervals

A digital recorder is operated in conjunction with the base station magnetometer to record the diurnal variations of the earth's magnetic field. The clock of the base station is synchronized with that of the airborne system, using GPS time, to permit subsequent removal of diurnal drift.

## Navigation (Global Positioning System)

Airborne Receiver for Navigation & Flight Path Recovery

| | |
|---|---|
| Model: | Novatel OEM4 |
| Type: | Code and carrier tracking of L1-C/A code at 1575.42 MHz WAAS enabled |
| Sample rate: | 10 Hz update. |
| Accuracy: | Better than 1 metre in differential mode. |
| Antenna: | Mounted tail of aircrafts |

Primary Base Station for Post-Survey Differential Correction

| | |
|---|---|
| Model: | Novatel OEM4 |
| Type: | Code and carrier tracking of L1-C/A code at 1575.42 MHz frequency |
| Sample rate: | 1 second update |
| Accuracy: | Manufacturer's stated accuracy for differential corrected GPS is better than 1 metre |

Secondary GPS Base Station

| | |
|---|---|
| Model: | Marconi Allstar OEM, CMT-1200 |
| Type: | Code and carrier tracking of L1 band, 12-channel, C/A code at 1575.42 MHz |
| Sensitivity: | -90 dBm, 1.0 second update |
| Accuracy: | Manufacturer's stated accuracy for differential corrected GPS is 2 metres. |

The Novatel OEM 4 is a line of sight, satellite navigation system that utilizes time-coded signals from at least four of forty-eight available satellites. NAVSTAR satellite constellations and WAAS correction data are used to calculate the position and to provide real time guidance to the helicopter. For flight path processing the OEM4 is used as the mobile receiver. A similar system was used as the primary base station receiver. The mobile and base station raw XYZ data are recorded, thereby permitting post-survey differential corrections for theoretical accuracies of better than 2 metres. A Marconi Allstar GPS unit, part of the CF-1, is used as a secondary (back-up) base station.

## Radar Altimeter

| | |
|---|---|
| Manufacturer: | Honeywell/Sperry |
| Model: | AA 330 or RT220 |
| Type: | Short pulse modulation, 4.3 GHz |
| Sensitivity: | 0.3 m |
| Sample rate: | 2 per second |

The radar altimeter measures the vertical distance between the helicopter and the ground. This information is used in the processing algorithm that determines conductor depth.

## Barometric Pressure and Temperature Sensors

| | |
|---|---|
| Model: | DIGHEM D 1300 |
| Type: | Motorola MPX4115AP analog pressure sensor<br>AD592AN high-impedance remote temperature sensors |
| Sensitivity: | Pressure: 150 mV/kPa<br>Temperature: 100 mV/°C or 10 mV/°C (selectable) |
| Sample rate: | 10 per second |

The D1300 circuit is used in conjunction with one barometric sensor and up to three temperature sensors. Two sensors (baro and temp) are installed in the EM console in the aircraft, to monitor pressure (1KPA) and internal operating temperatures (2TDC).

## Digital Data Acquisition System

| | |
|---|---|
| Manufacturer: | Fugro |
| Model: | HeliDAS |
| Recording Media: | Flashdiscs |

The stored data are downloaded to the field workstation PC at the survey base, for verification, backup and preparation of in-field products.

## Video Flight Path Recording System

| | |
|---|---|
| Type: | Sony DXC-101 |
| Recorder: | AXIS Video Server |
| Format: | MJPEG |

Fiducial numbers are recorded continuously and are displayed on the margin of each image. This procedure ensures accurate correlation of data with respect to visible features on the ground.

# 4. QUALITY CONTROL AND IN-FIELD PROCESSING

Digital data for each flight are transferred to the field workstation, in order to verify data quality and completeness. A database is created and updated using Geosoft Oasis Montaj and proprietary Fugro Atlas software. This allows the field personnel to calculate, display and verify both the positional (flight path) and geophysical data on a screen or printer. Records are examined as a preliminary assessment of the data acquired for each flight.

In-field processing of Fugro survey data consists of differential corrections to the airborne GPS data, verification of EM calibrations, drift correction of the raw airborne EM data, spike rejection and filtering of all geophysical and ancillary data, verification of flight videos, calculation of preliminary resistivity data, diurnal correction, and preliminary levelling of magnetic data.

All data, including base station records, are checked on a daily basis, to ensure compliance with the survey contract specifications. Reflights are required if any of the following specifications were not met.

Navigation - Positional (x,y) accuracy of better than 10 m, with a CEP (circular error of probability) of 95%.

| | | |
|---|---|---|
| Flight Path | - | No lines to exceed ±25% departure from nominal line spacing over a continuous distance of more than 1 km, except for reasons of safety. |
| Clearance | - | Mean terrain sensor clearance of 30 m, except where precluded by safety considerations, e.g., restricted or populated areas, severe topography, obstructions, tree canopy, aerodynamic limitations, etc. |
| Airborne Mag | - | Aerodynamic magnetometer noise envelope not to exceed 0.5 nT over a distance of more than 1 km. |
| Base Mag | - | Diurnal variations not to exceed 10 nT over a straight line time chord of 1 minute. |
| EM | - | Spheric pulses may occur having strong peaks but narrow widths. The EM data area considered acceptable when their occurrence is less than 10 spheric events exceeding the stated noise specification for a given frequency per 100 samples continuously over a distance of 2,000 metres. |

| Frequency | Coil Orientation | Peak to Peak Noise Envelope (ppm) |
|---|---|---|
| 900 Hz | horizontal coplanar | 10.0 |
| 1000 Hz | vertical coaxial | 5.0 |
| 5500 Hz | vertical coaxial | 10.0 |
| 7200 Hz | horizontal coplanar | 20.0 |
| 56,000 Hz | horizontal coplanar | 40.0 |

# 5. DATA PROCESSING

## Flight Path Recovery

The raw range data from at least four satellites are simultaneously recorded by both the base and mobile GPS units. The geographic positions of both units, relative to the model ellipsoid, are calculated from this information. Differential corrections, which are obtained from the base station, are applied to the mobile unit data to provide a post-flight track of the aircraft, accurate to within 2 m. Speed checks of the flight path are also carried out to determine if there are any spikes or gaps in the data.

The corrected WGS84 latitude/longitude coordinates are transformed to the coordinate system used on the final maps. Images or plots are then created to provide a visual check of the flight path.

## Electromagnetic Data

EM data are processed at the recorded sample rate of 10 samples/second. Spheric rejection median and Hanning filters are then applied to reduce noise to acceptable levels. EM test profiles are then created to allow the interpreter to select the most appropriate EM anomaly picking controls for a given survey area. The EM picking parameters depend on several factors but are primarily based on the dynamic range of the resistivities within the survey area, and the types and expected geophysical responses of the targets being sought.

Anomalous electromagnetic responses are selected and analysed by computer to provide a preliminary electromagnetic anomaly map. The automatic selection algorithm is intentionally oversensitive to assure that no meaningful responses are missed. Using the preliminary map in conjunction with the multi-parameter stacked profiles, the interpreter then classifies the anomalies according to their source and eliminates those that are not substantiated by the data. The final interpreted EM anomaly map includes bedrock, surficial and cultural conductors. A map containing only bedrock conductors can be generated, if desired.

## Apparent Resistivity

The apparent resistivity in ohm-m are generated from the in-phase and quadrature EM components for all of the coplanar frequencies, using a pseudo-layer half-space model. The inputs to the resistivity algorithm are the in-phase and quadrature amplitudes of the secondary field. The algorithm calculates the apparent resistivity in ohm-m, and the apparent height of the bird above the conductive source. Any difference between the apparent height and the true height, as measured by the radar altimeter, is called the pseudo-layer and reflects the difference between the real geology and a homogeneous halfspace. This difference is often attributed to the presence of a highly resistive upper layer. Any errors in the altimeter reading, caused by heavy tree cover, are included in the pseudo-layer and do not affect the resistivity calculation. The apparent depth estimates, however, will reflect the altimeter errors. Apparent resistivities calculated in this manner may differ from those calculated using other models.

In areas where the effects of magnetic permeability or dielectric permittivity have suppressed the in-phase responses, the calculated resistivities will be erroneously high. Various algorithms and inversion techniques can be used to partially correct for the effects of permeability and permittivity.

Apparent resistivity maps portray all of the information for a given frequency over the entire survey area. This full coverage contrasts with the electromagnetic anomaly map, which provides information only over interpreted conductors. The large dynamic range afforded by the multiple frequencies makes the apparent resistivity parameter an excellent mapping tool.

The preliminary apparent resistivity maps and images are carefully inspected to identify any lines or line segments that might require base level adjustments. Subtle changes between in-flight calibrations of the system can result in line-to-line differences that are more recognizable in resistive (low signal amplitude) areas. If required, manual level adjustments are carried out to eliminate or minimize resistivity differences that can be attributed, in part, to changes in operating temperatures. These levelling adjustments are usually very subtle, and do not result in the degradation of discrete anomalies.

After the manual levelling process is complete, revised resistivity grids are created. The resulting grids can be subjected to a microleveling technique in order to smooth the data for contouring. The coplanar resistivity parameter has a broad 'footprint' that requires very little filtering.

## Total Magnetic Field

A fourth difference editing routine is applied to the magnetic data to remove any spikes. The aeromagnetic data are corrected for diurnal variation using the magnetic base station data. The results are then levelled using tie and traverse line intercepts. Manual adjustments were applied to any lines that required levelling, as indicated by shadowed images of the gridded magnetic data. The manually levelled data are then subjected to a microleveling filter.

## Calculated Vertical Magnetic Gradient

The diurnally-corrected total magnetic field data are subjected to a processing algorithm that enhances the response of magnetic bodies in the upper 500 m and attenuates the response of deeper bodies. The resulting vertical gradient map provides better definition and resolution of near-surface magnetic units. It also identifies weak magnetic features that may not be evident on the total field map. However, regional magnetic variations and changes in lithology may be better defined on the total magnetic field map.

## EM Magnetite

The apparent percent magnetite by weight is computed wherever magnetite produces a negative in-phase EM response. This calculation is more meaningful in resistive areas.

## Digital Elevation

The radar altimeter values (ALTR – aircraft to ground clearance) are subtracted from the differentially corrected and de-spiked GPS-Z values to produce profiles of the height above the ellipsoid along the survey lines. These values are gridded to produce contour maps showing approximate elevations within the survey area. The calculated digital terrain data are then tie-line levelled and adjusted to mean sea level. Any remaining subtle line-to-line discrepancies are manually removed. After the manual corrections are applied, the digital terrain data are filtered with a microleveling algorithm.

The accuracy of the elevation calculation is directly dependent on the accuracy of the two input parameters, ALTR and GPS-Z. The ALTR value may be erroneous in areas of heavy tree cover, where the altimeter reflects the distance to the tree canopy rather than the ground. The GPS-Z value is primarily dependent on the number of available satellites. Although post-processing of GPS data will yield X and Y accuracies in the order of 1-2 metres, the accuracy of the Z value is usually much less, sometimes in the ±10 metre range. Further inaccuracies may be introduced during the interpolation and gridding process.

Because of the inherent inaccuracies of this method, no guarantee is made or implied that the information displayed is a true representation of the height above sea level. Although this product may be of some use as a general reference, THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.

# 6. SUMMARY

Fugro Airborne Surveys has been contracted by Emerald Fields Resources Corp. to fly 13544 line kilometres of Electromagnetic and magnetic survey over 7 blocks near Port Renfrew, British Columbia. The blocks comprise Events 4228954, 4228977, 4228983, 4228997, 4229023, 4229045, 4229053.

Respectfully submitted,

Amir H. Soltanzadeh, P.Eng.

**Fugro Airborne Surveys**

# APPENDIX A

## STATEMENT OF COST

| Block number | Tenures inside block 08042_1 | Area | Area in km2 | Line km | $ per km | Total cost |
|---|---|---|---|---|---|---|
| | | | | | | |
| 08042_1_2 | 556888 | 426.025 | 4.26025 | 51.123 | $ 131.76 | $ 6,735.97 |
| 08042_1_2 | 556884 | 532.505 | 5.32505 | 63.9006 | $ 131.76 | $ 8,419.54 |
| 08042_1_2 | 556883 | 511.235 | 5.11235 | 61.3482 | $ 131.76 | $ 8,083.24 |
| 08042_1_2 | 556880 | 521.812 | 5.21812 | 62.61744 | $ 131.76 | $ 8,250.47 |
| 08042_1_2 | 557104 | 511.088 | 5.11088 | 61.33056 | $ 131.76 | $ 8,080.91 |
| 08042_1_2 | 557105 | 511.148 | 5.11148 | 61.33776 | $ 131.76 | $ 8,081.86 |
| 08042_1_2 | 557107 | 532.421 | 5.32421 | 63.89052 | $ 131.76 | $ 8,418.21 |
| 08042_1_2 | 557108 | 511.137 | 5.11137 | 61.33644 | $ 131.76 | $ 8,081.69 |
| 08042_1_2 | 557111 | 532.518 | 5.32518 | 63.90216 | $ 131.76 | $ 8,419.75 |
| | | | | | | |
| 08042_1 | 556881 | 511.316 | 5.11316 | 61.35792 | $ 131.76 | $ 8,084.52 |
| 08042_1 | 508500 | 2110.044 | 21.10044 | 253.20528 | $ 131.76 | $ 33,362.33 |
| 08042_1 | 556878 | 532.828 | 5.32828 | 63.93936 | $ 131.76 | $ 8,424.65 |
| 08042_1 | 556877 | 468.844 | 4.68844 | 56.26128 | $ 131.76 | $ 7,412.99 |
| 08042_1 | 508572 | 1129.941 | 11.29941 | 135.59292 | $ 131.76 | $ 17,865.72 |
| 08042_1 | 557110 | 511.337 | 5.11337 | 61.36044 | $ 131.76 | $ 8,084.85 |
| 08042_1 | 557873 | 518.505 | 5.18505 | 62.2206 | $ 131.76 | $ 8,198.19 |
| 08042_1 | 557870 | 20.94 | 0.2094 | 2.5128 | $ 131.76 | $ 331.09 |
| 08042_1 | 556850 | 511.7 | 5.117 | 61.404 | $ 131.76 | $ 8,090.59 |
| 08042_1 | 556852 | 469.029 | 4.69029 | 56.28348 | $ 131.76 | $ 7,415.91 |
| 08042_1 | 508552 | 682.423 | 6.82423 | 81.89076 | $ 131.76 | $ 10,789.93 |
| 08042_1 | 508564 | 1535.985 | 15.35985 | 184.3182 | $ 131.76 | $ 24,285.77 |
| 08042_1 | 508577 | 1344.008 | 13.44008 | 161.28096 | $ 131.76 | $ 21,250.38 |
| 08042_1 | 508324 | 85.316 | 0.85316 | 10.23792 | $ 131.76 | $ 1,348.95 |
| 08042_1 | 508601 | 170.658 | 1.70658 | 20.47896 | $ 131.76 | $ 2,698.31 |
| 08042_1 | 508323 | 64.006 | 0.64006 | 7.68072 | $ 131.76 | $ 1,012.01 |
| 08042_1 | 508594 | 490.651 | 4.90651 | 58.87812 | $ 131.76 | $ 7,757.78 |
| 08042_1 | 508595 | 490.656 | 4.90656 | 58.87872 | $ 131.76 | $ 7,757.86 |
| 08042_1 | 508631 | 1387.024 | 13.87024 | 166.44288 | $ 131.76 | $ 21,930.51 |
| 08042_1 | 515296 | 21.337 | 0.21337 | 2.56044 | $ 131.76 | $ 337.36 |
| 08042_1 | 508576 | 640.18 | 6.4018 | 76.8216 | $ 131.76 | $ 10,122.01 |
| 08042_1 | 508458 | 1899.543 | 18.99543 | 227.94516 | $ 131.76 | $ 30,034.05 |
| 08042_1 | 508325 | 256.16 | 2.5616 | 30.7392 | $ 131.76 | $ 4,050.20 |
| 08042_1 | 508593 | 939.522 | 9.39522 | 112.74264 | $ 131.76 | $ 14,854.97 |
| 08042_1 | 515300 | 106.757 | 1.06757 | 12.81084 | $ 131.76 | $ 1,687.96 |
| 08042_1 | 515299 | 21.346 | 0.21346 | 2.56152 | $ 131.76 | $ 337.51 |
| 08042_1 | 508578 | 1771.778 | 17.71778 | 212.61336 | $ 131.76 | $ 28,013.94 |

| Block number | Tenures inside block 08042_1 | Area | Area in km2 | Line km | $ per km | Total cost |
|---|---|---|---|---|---|---|
| 08042_1 | 515297 | 42.704 | 0.42704 | 5.12448 | $ 131.76 | $ 675.20 |
| 08042_1 | 508322 | 256.267 | 2.56267 | 30.75204 | $ 131.76 | $ 4,051.89 |
| 08042_1 | 508326 | 256.116 | 2.56116 | 30.73392 | $ 131.76 | $ 4,049.50 |
| 08042_1 | 508619 | 1452.035 | 14.52035 | 174.2442 | $ 131.76 | $ 22,958.42 |
| 08042_1 | 557115 | 468.653 | 4.68653 | 56.23836 | $ 131.76 | $ 7,409.97 |
| 08042_1 | 557117 | 191.749 | 1.91749 | 23.00988 | $ 131.76 | $ 3,031.78 |
| 08042_1 | 508555 | 703.73 | 7.0373 | 84.4476 | $ 131.76 | $ 11,126.82 |
| 08042_1 | 361465 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 508649 | 1151.952 | 11.51952 | 138.23424 | $ 131.76 | $ 18,213.74 |
| 08042_1 | 409241 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 408828 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 370610 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 373716 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 381143 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 508661 | 85.379 | 0.85379 | 10.24548 | $ 131.76 | $ 1,349.94 |
| 08042_1 | 508712 | 1814.207 | 18.14207 | 217.70484 | $ 131.76 | $ 28,684.79 |
| 08042_1 | 379144 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 515301 | 42.701 | 0.42701 | 5.12412 | $ 131.76 | $ 675.15 |
| 08042_1 | 379142 | 25 | 0.25 | 3 | $ 131.76 | $ 395.28 |
| 08042_1 | 508714 | 1003.116 | 10.03116 | 120.37392 | $ 131.76 | $ 15,860.47 |
| 08042_1 | 520495 | 532.659 | 5.32659 | 63.91908 | $ 131.76 | $ 8,421.98 |

Total **$497,783.97**