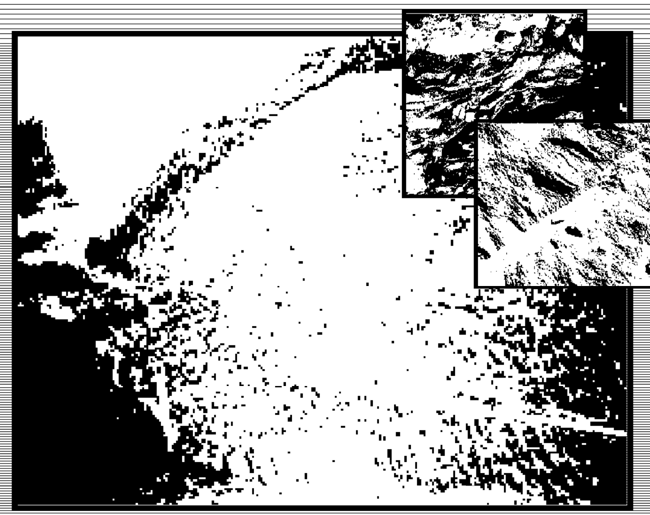
July 2002

Crystal Graphite Corporation

Technical Report

Black Crystal Graphite Project
British Columbia



Prepared for:
Crystal Graphite Corporation
Vancouver, British Columbia, Canada
by:
Stephen Hodgson, P.Eng.

Effective Date: July 5, 2002

U818A

amec

CERTIFICATE OF AUTHOR

Stephen B. Hodgson, P.Eng.
111 Dunsmuir Street, Suite 400
Vancouver, BC
Tel: (604) 664-3445
Fax: (604) 664-3041
steve.hodgson@amec.com

I, Stephen B. Hodgson, P.Eng., am a Professional Engineer, employed as Technical Director – Mining of AMEC E&C Services Limited and residing at 202 – 1099 Marinaside Crescent in the City of Vancouver in the Province of British Columbia.

I am a member of the Association of Professional Engineers and Geoscientists of British Columbia. I graduated from the University of Alberta with a Bachelor of Science degree in Mineral Engineering (Mining) – with distinction – in 1976.

I have practiced my profession continuously since 1976 and have been involved in mine operations engineering and management, project development and project evaluation for copper, zinc, and gold projects in Canada, the United States, Kyrghyzstan, and South and Central America.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I am currently a Consulting Mining Engineer and have been so since March 1991.

This report was prepared under my direct supervision. I visited the Black Crystal property on April 8 and 9.

I am not aware of any material fact or material change with respect to the subject matter of this technical report that is not reflected in this report and that the omission to disclose would make this report misleading.

I am independent of Crystal Graphite Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101F1 and this report has been prepared in compliance with same.

AMEC E&C Services Limited
111 Dunsmuir Street, Suite 400
Vancouver, B.C. V6B 5W3
Tel +1 604 664 3471
Fax +1 604 664 3041
www.amec.com

Dated at Vancouver, British Columbia, this 5th day of July 2002.

Stephen G. Hodgson, B.Sc., P.Eng.

amec

CONSENT OF QUALIFIED PERSON

TO: The securities regulatory authorities of each of the provinces and territories of Canada

I, Stephen B. Hodgson, B.Sc., P.Eng., do hereby consent to the filing of the technical report prepared for Crystal Graphite Corporation and dated July 5, 2002 in respect of the 2002 mineral resource estimate for the Black Crystal mining project, British Columbia.

DATED at this 5 day of July, 2002.

Stephen B. Hodgson, B.Sc., P.Eng.

[illegible]
[illegible]
[illegible]
Tel [illegible]
Fax [illegible]

CERTIFICATE OF AUTHOR

Stephen J. Juras, P.Geo.
111 Dunsmuir Street, Suite 400
Vancouver, BC
Tel: (604) 664-4349
Fax: (604) 664-3041
stephen.juras@amec.com

I, Stephen J. Juras, P.Geo., am a Professional Geoscientist, employed as Principal Geologist of AMEC E&C Services Limited and residing at 9030 161 Street in the City of Surrey, in the Province of British Columbia.

I am a member of the Association of Professional Engineers and Geoscientists of British Columbia. I graduated from the University of Manitoba with a Bachelor of Science (Honours) degree in geology in 1978 and subsequently obtained a Master of Science degree in geology from the University of New Brunswick in 1981 and a Doctor of Philosophy degree in geology from the University of British Columbia in 1987.

I have practiced my profession continuously since 1987 and have been involved in: mineral exploration for copper, zinc, gold and silver in Canada and United States and in underground mine geology, ore control and resource modelling for copper, zinc, gold, silver, platinum/palladium and industrial mineral properties in Canada, United States, Peru, Chile and Russia.

As a result of my experience and qualifications, I am a Qualified Person as defined in N.P. 43-101.

I am currently a Consulting Geologist and have been so since January 1998.

I served as the Qualified Person responsible for the Mineral Resource estimate of the Black Crystal project. I was also responsible for sections 10, 11, 12, 13, 14, and 17 of the Technical Report and was assisted by Larry Smith, a Qualified Person in the field of geology. I did not visit the Black Crystal project site.

Larry Smith, P. Geo., Chief Geologist of AMEC E&C Services Inc., is registered as a Professional Geologist in the state of Wyoming (PG-324) and a Fellow and Chartered Professional Geologist in the Australasian Institute of Mining and Metallurgy (no. 209301) who graduated from Boise State University with a Bachelor of Science in geology in 1972 and subsequently obtained a Master of Science degree in Economic Geology from the Colorado School of Mines in 1982. Mr. Smith has over 30 years of experience in various aspects of geology including exploration, evaluation and modeling of industrial mineral deposits in the

United States and Canada. Mr. Smith reviewed and assessed the marketing information and public domain information on graphite marketing.

I am not aware of any material fact or material change with respect to the subject matter of this technical report that is not reflected in this report and that the omission to disclose would make this report misleading.

I and Larry Smith are independent of Crystal Graphite Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101FI and this report has been prepared in compliance with same.

Dated at Vancouver, British Columbia, this 5th day of July, 2002.

Stephen J. Juras, Ph.D., P.Geo.

CONSENT OF QUALIFIED PERSON

TO: The securities regulatory authorities of each of the provinces and territories of Canada

I, Stephen Juras, Ph.D., P.Geo., do hereby consent to the filing of the technical report prepared for Crystal Graphite Corporation and dated July 5, 2002 in respect of the 2002 mineral resource estimate for the Black Crystal mining project, British Columbia.

DATED at this 5 day of July, 2002.

Stephen Juras, Ph.D., P.Geo.

AMEC E&C Services Limited
111 Dunsmuir Street, Suite 400
Vancouver, B.C. V6B 5W3
Tel [illegible]
Fax [illegible]

CERTIFICATE OF AUTHOR

Larry B. Smith, R. Geo, C.P. Geo
2001 West Camelback Road, Suite 300
Phoenix, AZ 85015
Tel: (602) 343-2440
Fax: (602) 343-2499
larry.smith@amec.com

I, Larry B. Smith, R. Geo, am a Registered Geologist and Chief Geologist of AMEC E&C Services, Inc. of 6202 West Wikieup Lane in the city of Glendale in the state of Arizona.

I am registered as a Professional Geologist in the state of Wyoming (PG-324), am a Fellow and Chartered Professional Geologist in the Australasian Institute of Mining and Metallurgy (Registration number 209301) and am a Certified Professional Geologist with the American Institute of Professional Geologists (CPG-10313). I graduated from Boise State University with a Bachelor of Science in geology in 1972 and subsequently obtained a Master of Science degree in Economic Geology from the Colorado School of Mines in 1982.

I have practiced my profession continuously since 1972 and have been involved in: mineral exploration for uranium, copper, gold, silver, nickel, lead, zinc, and industrial minerals in the United States, Canada, Mexico and Central America; exploration data evaluation, geological modeling and resource modeling of gold, copper, iron, manganese and industrial mineral deposits in the United States, Canada, Colombia, Chile, Bolivia, Brazil, Greenland, Bosnia and Niger. My experience includes work on market studies of limestone, clay and crushed rock products in the United States.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101.

I am currently a Consulting Geologist and have been so since February 1998.

I reviewed market studies provided by Crystal Graphite Corporation for the Black Crystal graphite property. I also interviewed Mr. Richard Ivy, consultant to Crystal Graphite, regarding commercial arrangements that Crystal Graphite has with users of natural graphite and market trends in natural graphite uses. I independently verified the extent of the market for high-purity, natural graphite using published resources on this subject.

I am not aware of any material fact or material change with respect to the subject matter of this technical report that is not reflected in this report and that the omission to disclose would make this report misleading.

I am independent of Crystal Graphite Corporation in accordance with the application of Section 1.5 of National Instrument 43-101.

I have read National Instrument 43-101 and Form 43-101F1 and this report has been prepared in compliance with same.

Dated at Phoenix, Arizona, this 5th day of July 2002.

Larry B. Smith

IMPORTANT NOTICE

Black Crystal Graphite Project

TABLE OF CONTENTS

Contents – continued

List of Tables

List of Figures

Appendices

1.0 SUMMARY

CGC engaged AMEC E&C Services Limited (AMEC) to review the work completed to date on the Black Crystal Graphite property (Black Crystal) and prepare a "Technical Report," as defined by National Instrument 43-101, to disclose the results of drilling on the project and the resource estimate. The work entailed a review of pertinent geological, metallurgical, and marketing data in sufficient detail to prepare the technical report. Stephen Hodgson P.Eng., an employee of AMEC, served as the qualified person responsible for preparing this document. Stephen Juras P.Geo. of AMEC supervised the review of the geological data and revisions to the resource model, and acted as the qualified person responsible for this area. Stephen Hodgson conducted the site visit from 8 April to 10 April 2002.

AMEC relied on several reports prepared by metallurgical consultants for its review of the Black Crystal project metallurgy in Section 16, and used the information from these reports based on the assumption they were prepared by qualified persons.

The Black Crystal property is a disseminated flake graphite deposit located in the Valhalla Range of the southern Selkirk Mountains, approximately 51 kilometres north of Castlegar and 27.5 kilometres northwest of the village of Passmore, BC. It consists of groups of claims that are non-contiguous. To the north is a 10-claim group containing the graphite mineralization, while to the south is a group of 22 claims, which include the exploration claims and mill site infrastructure. CGC holds a 100% interest in all of these claims, and has recently obtained mining leases that cover the deposit area and site infrastructure.

There is a 20% gross profit royalty for a period of 10 years on Molly claims #1 through #4 and PB claims #1 through #6, ending August 2010 to a maximum of $1.7 million. The royalty is defined as 20% of the gross receipts from sales received from the product of the property, less direct operating costs.

The Black Crystal project is situated within the Omineca Crystalline Belt, an area typified by extensive tectonic uplift underlain by metamorphosed miogeoclinal rocks and local rocks that were formed in island arc settings. The property itself is located within the Valhalla Complex, a structural or domal culmination of high-grade metamorphic (upper amphibolite grade) rocks. Property geology consists of a series of calc-silicate and amphibolite gneiss, a quartz-rich unit, and a variety of intermediate to felsic intrusive rocks.

Graphite mineralization on the property is ubiquitous, occurring locally in all rock types except for the quartz monzonite intrusives. Calc-silicate gneisses are the preferred host for the most consistently higher grade mineralization observed on the property. The calc-silicate gneisses have been split into Cs1 and Cs2. Cs2 typically contains 2% to 5% flake graphite, or organic carbon (also referred to as fixed carbon, or FC).

A regolith has formed in-situ above both Cs units locally, and there is a transition zone of slightly weathered Cs material that is less friable than the regolithic zone. The regolithic and transition zones, which consist of weathered calc-silicate material, are the best targets on the property, with overall organic carbon concentrations from 2% to 5% FC.

The database used to estimate the mineral resource at Black Crystal consists of samples and geological information from 64 drill holes, 176 slit trenches, and 1,855 metres of linear trench. Data transfer to the resource database was checked and found sufficiently free of error to be adequate for resource estimation. Samples were initially prepared at site and then shipped to Bondar Clegg of Vancouver for analyses. Ultimately, all sample preparation was done at Bondar Clegg.

The amount of graphite mineralization has been determined indirectly by measuring the quantity of fixed carbon in a sample using the Leco method.

The main QA/QC data are from a major field duplicate study undertaken by CGC. Control data results for the regolith samples show acceptable quality in the grade range that would likely be mined. Results for the calc-silicate sample (drill core) show poorer quality. This can be rectified through additional check assays and consistent analytical protocols between laboratories. Overall, AMEC believes the risk to the mineral resource estimate is minimal and within acceptable limits. Check assay results must demonstrate no bias and consistent reproducibility to enable portions of the calc-silicate hard rock graphite mineralization to be classified as measured mineral resource.

Petrographic and XRD analyses (see Section 9) show CGC graphite to be very coarse by international standards. It is a high-rank graphite with high reflectance and a high degree of crystallographic order. Upon segregation, it produces very pure coarse flake graphite and impure fine graphite. The graphite grains are mostly undeformed. CGC graphite contains minor to negligible amounts of iron oxide minerals. The main mineral phase included in the graphite is quartz.

To date, most of the testwork has been conducted on various composite samples of the regolith. Metallurgical performance from the pilot plant at a 20 to 25 tph feed rate of screened regolith ore has been 90% to 95% graphite concentrate grade at 75% to 80% recovery.

The short-term objective of the pilot plant will therefore be to produce a concentrate with a grade of 97% graphite from a single pass through the circuit. This may be achieved by making one or more of the following modifications:

- Install an additional regrinding mill and two or three more cleaner flotation stages.
- Process the third cleaner concentrate over a gravity shaking table.
- Screen the third cleaner concentrate over a 150-mesh screen to remove the finer silicate contaminants.
- Process the third cleaner concentrates in a hydrofluoric acid leach to remove the silicate contaminants.

All of the above processes can be used in conjunction with or without the currently installed hydrochloric acid leaching process.

Preliminary testwork on hard rock (CS) graphite ores produced 93% to 94% graphite concentrate at 79% recovery from the low-grade CS1 ore, and 95% to 96% graphite concentrate at 85% to 90% recovery from the high-grade CS2 ore. Concentrate grades of 97% graphite should be readily achievable at 80% graphite recovery, although testwork would be required to confirm this presumption.

AMEC reviewed publicly available information regarding the U.S. market for high-purity natural graphite, market trends, and product pricing to confirm that CGC's marketing plan is reasonable. AMEC was able to confirm CGC's prices for carbon brushes, friction applications, and refractory products using published U.S. government data. The total market for these materials is large enough to easily incorporate the amounts of natural carbon that CGC anticipates to produce from its deposit in the first six years.

The market for natural, high-purity graphite in proton emission membrane (PEM) fuel cells is more difficult to quantify. However, available information strongly suggests that the market will be significant enough to assimilate Black Crystal graphite.

AMEC believes that the alliances CGC has presently developed, in conjunction with the size of the present market for natural graphite, the production of fuel cells, and the quality of product CGC has demonstrated can be produced from the Black Crystal deposit, will enable CGC to execute contracts and meet its projected sales targets for the fuel cell market. Given the rapidly evolving technology of fuel cells, there is a risk that natural, crystalline graphite may be replaced by other materials, but at present natural graphite is one of the preferred raw materials.

The mineral resource estimate for the Black Crystal project was made from 3D block models utilizing commercial mine planning software (MineSight®). Industry-accepted methods were used to create interpolation domains based on graphite mineralized geology and grade estimation based on ordinary kriging. Reasonableness of grade interpolation was reviewed by visual inspection of sections and plans displaying block model values, drill hole and trench composites, and geology. Good agreement was observed. Global and local bias checks in block models found no evidence of bias.

The logic for mineral resource classification of the Black Crystal deposit was consistent with the CIM definitions for industrial minerals referred to in NI 43-101. The measured mineral resources category is only supported in the regolith unit, and at a trench spacing of about 25 m. The indicated mineral resource category is supported by the present trench and drill grid on the regolith and calc-silicate units (about 50 m).

The mineralization of the Black Crystal Graphite project as of 5 July 2002 is classified as measured, indicated, and inferred mineral resources. The classified mineral resources are shown in Table 1.1. The mineral resource is reported at a 0.70 % FC cut-off grade to reflect preliminary metallurgical work and expected long-term pricing for high purity graphite mineralization.

Table 1.1: Black Crystal Graphite Project Mineral Resource Summary

	Tonnage	% Fixed Carbon
Regolith:		
Measured Mineral Resource	292,000	1.95
Indicated Mineral Resource	356,000	1.71
Measured + Indicated Mineral Resources	648,000	1.82
Inferred Mineral Resource	516,000	1.69
Calc-silicate:		
Indicated Mineral Resource	4,763,000	1.21
Inferred Mineral Resource	4,591,000	1.24

Notes: 1. Calculated at a 0.7% FC cut-off. **2**. Bulk density values used: Regolith = 1.67, Calc-silicate = 2.80. **3**. The measured mineral resource excludes the 10,400 tonnes @ 4.3% FC stockpiled at the CGC processing plant.

2.0 INTRODUCTION AND TERMS OF REFERENCE

CGC is developing the Black Crystal Graphite property (Black Crystal) near Nelson, BC. As part of this development process, CGC has been requested by regulatory agencies to prepare a "Technical Report," as defined by National Instrument 43-101, to disclose the results of drilling on the project as well as the resource estimate.

CGC engaged AMEC E&C Services Limited (AMEC) to review the work completed to date and prepare the technical report. After commencing this work, AMEC suggested a number of improvements to the resource model, including revising the geological interpretation and incorporating data that had not previously been used. CGC then extended AMEC's scope of work to include revising the resource model and estimate, the results of which are described in this document.

AMEC reviewed the pertinent geological, metallurgical, and marketing data in sufficient detail to prepare the technical report. Stephen Hodgson P.Eng., an employee of AMEC, served as the qualified person responsible for preparing this document. Stephen Juras, P.Geo., of AMEC supervised the review of the geological data and revisions to the resource model, and acted as the qualified person responsible for this area. Stephen Hodgson visited the project site between 8 April and 10 April 2002 to review the geological data collection and QA/QC, inspect the existing metallurgical facility and witness its operation, and to review the site development plan. Larry Smith, R. Geo., of AMEC reviewed the marketing information and public domain information on graphite marketing.

CGC, International Metallurgical and Environmental Inc. (IME), and Mine Design Systems Ltd. (MDS) provided the information that was used to prepare this report.

3.0 DISCLAIMER

AMEC has relied on references to several reports prepared by metallurgical consultants for its review of the Black Crystal project metallurgy in Section 16. These reports are listed below:

- Pearson, Hofman & Associates (1998): *Metallurgical Test Sampling Program for the Superior Graphite Property*.
- Snell, James (1998): *Geological Evaluation and Production Feasibility Study of the Black Crystal Graphite Deposit*.
- International Metallurgical and Environmental Inc. (2000): *Graphite Recovery Project Laboratory Test Work Results*.
- AMEC, (2001): *Graphite Purification Circuit Study*.
- Lakefield Research, (2002): *An Evaluation of the Pilot Plant Operation of Crystal Graphite Corporation*.
- International Metallurgical and Environmental Inc. (2002): *Grindability and Flotation Testwork on Graphite Bearing Material from Slocan Park*.

AMEC used information from these reports based on the assumption they were prepared by qualified persons.

AMEC also relied on a geological report by Coal Marketing Services Ltd. for its review on sample preparation and analyses (Section 13). The report "Analysis into Graphite Analytical Methods and Results" is included in Appendix A, and was used based on the assumption it was prepared by a qualified person.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Black Crystal property is located within the Slocan Mining Division of British Columbia, approximately 51 kilometres north of Castlegar and 27.5 kilometres northwest of the village of Passmore, BC (see Figure 4.1). The property is located in the Valhalla Range of the southern Selkirk Mountains, and is displayed on NTS map 82F/13, or Trim maps 082F071, 072, and 082. The area of greatest interest on the property is found at UTM coordinates 5513800N and 444700E.

As shown in Figures 4.2, 4.3, and 4.4, the property consists of groups of claims that are non-contiguous. To the north is a claim group containing the graphite mineralization, while to the south are the exploration claims and mill site infrastructure (Figure 4.5). The north group has a total of 10 claims: four two-post mineral claims and six four-post mineral claims, which together comprise 114 claim units. The four two-post mineral claims are entirely enveloped by one of the overlying modified grid four-post mineral claims. The southern claim group totals 22 claims: ten two-post and twelve four-post mineral claims, comprising a total of 200 claim units. The southern claim block contains an internal set that is not part of CGC's land package. These claims are found internal to claims Mill #25 and Mill #26. The office and plant facilities are located within the Mill #1 and Mill #2 claims.

A registered legal surveyor has surveyed the two-post mineral claims and the position of the common legal corner post for the PB1, PB2, PB3, and PB4 claims. All claims can be found on Mineral Titles Reference Maps 082F071, 082F072, and 082F082 from the B.C. Energy and Minerals Division, Mineral Titles Branch. As shown on Table 4.1, all claims are in good standing. CGC holds a 100% interest in all of these claims.

As of 25 June 2002, two mining leases were granted to CGC: No. 392322 for Plant claims #1 and #2, and No. 390937 for Molly claims #1 through #4. These leases were issued for a term of 30 years and expire on 29 May 2032, with option to renew at 30-year intervals. Payment for the mining leases totals $3,000 per year.

There is a 20% gross profit royalty for a period of 10 years on Molly claims #1 through #4 and PB claims #1 through #6, ending August 2010 to a maximum of $1.7 million. The royalty is defined as 20% of the gross receipts from sales received from the product of the property, less direct operating costs.

In the past two years, CGC has exercised due diligence and commissioned reports to study the project area. The nature of these studies has involved environmental, First Nations and archaeological concerns, water availability, terrain stability, road transportation, groundwater, flora and fauna, and socio-economic impact. Examples of some of these reports are shown in Table 4.2.

FIGURES 4.1 to 4.5 OMITTED

PLEASE SEE HARD COPY

Table 4.1: Mineral Claims – Black Crystal Property Slocan Mining Division, BC

Tenure Number	Claim Name	Map Number	Work Recorded To	Status	Units
305145	MOLLY 1	082F072	2012.09.20	Good Standing 2012.09.20	1
305146	MOLLY 2	082F072	2012.09.20	Good Standing 2012.09.20	1
305147	MOLLY 3	082F072	2012.09.20	Good Standing 2012.09.20	1
305148	MOLLY 4	082F072	2012.09.20	Good Standing 2012.09.20	1
318625	PB #1	082F072	2012.06.28	Good Standing 2012.06.28	20
318626	PB #2	082F072	2012.06.28	Good Standing 2012.06.28	20
318627	PB #3	082F072	2012.06.28	Good Standing 2012.06.28	20
318628	PB #4	082F072	2012.06.28	Good Standing 2012.06.28	20
371670	PB #5	082F072	2012.09.14	Good Standing 2012.09.14	20
371671	PB #6	082F072	2012.09.18	Good Standing 2012.09.18	20
379184	MILL #1	082F062	2001.07.26	Included 2001.07.03	1
379185	MILL #2	082F062	2001.07.26	Included 2001.07.03	1
379186	MILL #3	082F062	2001.07.26	Included 2001.07.03	1
379187	MILL #4	082F062	2001.07.26	Included 2001.07.03	1
380741	MILL #5	082F062	2001.09.21	Included 2001.07.03	1
380742	MILL #6	082F062	2001.09.21	Included 2001.07.03	1
380743	MILL #7	082F062	2001.09.21	Included 2001.07.03	1
380744	MILL #8	082F062	2001.09.21	Included 2001.07.03	1
389737	MILL 9R	082F052	2009.01.31	Good Standing 2009.01.31	1
384444	MILL #10	082F052	2007.01.31	Good Standing 2007.01.31	1
389738	MILL 11R	082F062	2009.01.31	Good Standing 2009.01.31	1
384446	MILL #12	082F062	2007.01.31	Good Standing 2007.01.31	1
384447	MILL #13	082F052	2007.01.31	Good Standing 2007.01.31	1
384448	MILL #14	082F062	2007.01.31	Good Standing 2007.01.31	1
384449	MILL #15	082F062	2007.01.31	Good Standing 2007.01.31	1
384450	MILL #16	082F062	2008.01.31	Good Standing 2008.01.31	1
385662	MILL #17	082F052	2008.01.31	Good Standing 2008.01.31	1
385663	MILL #18	082F052	2008.01.31	Good Standing 2008.01.31	1
385969	MILL #19	082F062	2005.01.31	Good Standing 2005.01.31	20
385970	MILL #20	082F062	2005.01.31	Good Standing 2005.01.31	20
385971	MILL #21	082F062	2005.01.31	Good Standing 2005.01.31	20
385972	MILL #22	082F062	2005.01.31	Good Standing 2005.01.31	16
385973	MILL #23	082F062	2005.01.31	Good Standing 2005.01.31	20
385974	MILL #24	082F062	2005.01.31	Good Standing 2005.01.31	18
388759	MILL #25	082F062	2005.01.31	Good Standing 2005.01.31	20
388760	MILL #26	082F062	2005.01.31	Good Standing 2005.01.31	20
388761	MILL #27	082F062	2005.01.31	Good Standing 2005.01.31	14
387588	PLANT #1	082F052	2007.01.31	Good Standing 2007.01.31	4
387589	PLANT #2	082F052	2007.01.31	Good Standing 2007.01.31	4
388758	PLANT #3	082F052	2005.01.31	Good Standing 2005.01.31	6

Table 4.2: Reports Commissioned by CGC

Operations Reports

Reid. *Crystal Graphite Transportation Study*, January 2001.

Water Quality & Flow Reports

Golder Associates. *Baseline Monitoring Well Installation at the Proposed Graphite Quarry and the Middlings Storage Area*, Slocan, BC.

Passmore Laboratory Limited. *Black Crystal Graphite Project Baseline Water Quality and Flow Monitoring Program Koch and Hoder Creeks and the Little Slocan River*. October to December 2000.

Aquatic Resources Reports

Highwood Environmental Management. *Black Crystal Graphite Project Benthic Invertebrates and Periphyton Environmental Assessment.*

Baxter Environmental. *Fisheries Resources of the Hoder Creek Watershed, the Koch Creek Watershed and the Little Slocan River: Potential Impacts of the Black Crystal Graphite Project.*

Terrestrial Resources Reports

Aurora Wildlife Research. *Ungulates, Grizzly Bears and Potential Resource Extraction Conflicts: Review and Management Options for the Black Crystal Graphite Project.*

Kokanee Forests Consulting. *Vegetation and Soils Inventory for a Proposed Black Crystal Graphite Project, Hoder and Koch Creek, British Columbia*.

Social & Heritage Reports

Valley Ventures and Aestech Consulting Inc. *Recreation, Tourism, Visual and Access Management Analysis: Black Crystal Graphite Project*.

Geology Reports

SRK Consulting Report.

To the best of AMEC's knowledge, the Black Crystal Graphite project is not subject to any environmental liabilities. There is a potential for acid generation from the quartz unit; however, because it is footwall to the graphite mineralization, excessive exposure of the quartz unit will be minimized through mine planning.

On 4 July 2002, CGC received Mining Permit No. M-211 from the British Columbia Ministry of Energy, Mines and Petroleum Resources approving the work system and reclamation program the the Black Crystal Project. CGC has applied for a road use permit for hauling graphite from the open pit to the plant site.

CGC is also applying to the Ministry of the Environment for a new waste management permit that will allow tailings discharge from the bulk sample plant. Their current, one-year permit, which covers their pilot plant discharge, expires on 31 October 2002.

Timber harvesting of the two operations areas is permitted by a recent license obtained from the Ministry of Forests. This license was issued in 2002 and will expire in 2007.

CGC has also applied for a bulk sample permit to extract a sample from graphite material that was discovered adjacent to the plant facilities.

In January 2002, CGC received a permit from the Ministry of Forests to construct works within a forest service right of way. This permit allows the installation of buried telephone and electrical cable.

5.0 ACCESSIBILITY, CLIMATE, AND PHYSIOGRAPHY

The property can be accessed from Highway 6 (Figure 5.1) by turning west on Passmore Upper Road just south of the village of Passmore, and then onto the Little Slocan Forest Service Road (FSR) after approximately 4 km. From the Hoder Creek FSR junction, which intersects the Little Slocan FSR after 21.5 km, it is approximately 18.5 kilometres to the Black Crystal access road. It is a further 2.5 kilometres along this road to the project area. Alternately, one may leave Highway 6 at Slocan City and travel southward on the Little Slocan Road for approximately 22.5 kilometres to the Hoder Creek Road junction.

All roads in the exploration area are in good condition, and are generally passable with a two-wheel drive vehicle during snow-free periods. Access to other portions of the property is also possible by road at lower elevations. A helicopter is best used for areas of higher elevation.

The Koch Creek plant site is situated on the Koch Creek FSR, approximately 0.5 km from the Little Slocan Road junction. All roads in the general area are well signed.

The property is within the *Wet Interior Bioclimatic Zone*, wherein winter usually extends from November into late April or early May, accompanied by considerable snowfall. The property is typically free of snow from early June until early to mid-November. The short summers can be somewhat rainy, although conditions are normally quite favourable for performing fieldwork during this time.

The property is located in steep, mountainous country. The exploration area is best classified as *sub-alpine*, while the claim block stretches up into alpine terrain on Rinda Ridge. Elevations range from 1,370 to 2,380 metres ASL. Immature Engleman Spruce, Alpine Fir, and abundant Slide Alder cover the area of investigation. There are stands of mature Spruce and Fir elsewhere on the property; the upper portions are characterized by alpine meadow.

FIGURE OMITTED

PLEASE SEE HARD COPY

6.0 HISTORY

The Black Crystal area has been the focus of considerable exploration work, especially in the past several years. The property was originally staked in the 1960s by Mr. Steve Paszty of Castlegar, BC, but was not maintained. The property lay dormant until 1992 when it was restaked by Mr. Paszty, who subsequently optioned it in July 1993 to Industrial Mineral Park Mining Corporation (IMP). IMP immediately staked four modified grid four-post claims, which enveloped the four original two-post mineral claims. They later staked two more modified grid four-post claims to further increase their holdings in the immediate area. In November of that year, DDH Geomanagement Ltd. (DDH) conducted a preliminary sampling/assessment program in the area of the main Black Crystal showing. Two samples of unknown quantity were submitted to Process Research Associates Ltd. of Vancouver for initial bench flotation scoping tests and size distribution studies, while a further 25 samples were taken from four discrete locations.

In 1994, DDH conducted a six-hole reverse-circulation (RC) drilling program totalling 250 metres of 4.5" borehole. During the same period, some preliminary surficial geological mapping was done, and a 0.4-tonne bulk sample was extracted in the vicinity of the RC-94-1 collar. The unconsolidated material from this bulk sample was subjected to flotation testing.

In 1995, a 13-hole diamond drilling program was conducted on the property by DDH. In total, 577 metres of NQ diameter drill hole were drilled between March 29th and April 22nd in two strings: one which ran along the bottom access road from the Hoder Creek valley floor, and the other which ran along the road to the present day pit area. The depths for these holes ranged between 29.6 and 92.0 metres. In the fall of 1995, a 3,000-tonne bulk sample was excavated from the same general area as the 1993 bulk sample and hauled to the Koch Creek plant site for beneficiation.

A further diamond drilling campaign was undertaken in 1997. Twenty-seven NQ diameter holes were drilled, for a total of 913.8 metres. The core produced from this work was split and bagged, but only four of the samples were analyzed. The results, though incomplete, assisted CGC in planning future exploration. While several of the holes drilled in this program replicated locations that were drilled during the 1995 program, a number of new locations were also tested. Timberland Consultants Ltd. of Nelson, BC surveyed all drill collars using a differentially capable GPS with a reported accuracy of within one metre. Elevations of collars were based on a map provided by Timberland.

In 1998, a scoping study was conducted and field observations were used to outline the surface trace of the calc-silicate host horizon and calculate the underlying resource. In addition to this resource definition work, a bulk sample of unknown size was taken from an exposure of friable graphite mineralized calc-silicate material located on the main access road immediately above Hoder Creek Valley. Also, a handheld auger drilling program was reportedly conducted in which 90 holes (or 675 metres) were drilled on a 100 x 100 ft grid in the main area of previous investigation. The material taken from this drilling was composited and submitted as one sample for flotation testing, along with the bulk sample previously mentioned. This testing produced positive results that led to further work on the property.

7.0 GEOLOGICAL SETTING

7.1 Regional Geology

The Black Crystal project is wholly situated within the Omineca Crystalline Belt, an area typified by extensive tectonic uplift underlain by metamorphosed miogeoclinal rocks and local rocks that were formed in island arc settings. These rocks were subsequently accreted to the margin of the ancestral North American Craton during the Jurassic era.

The property itself is located within the Valhalla Complex, a structural or domal culmination of high-grade metamorphic (upper amphibolite grade) rocks. Foliation and outwardly dipping layering define this 30 x 90 km gneiss complex, which is located at the eastern exposed edge of the Shuswap metamorphic complex (Figure 7.1). Generally, the lithologies contained within the complex are divided into three sheet-like layers of variably deformed paragneiss and middle Cretaceous to Eocene igneous rocks. Exhumation along Eocene normal faults has resulted in a “tectonic denudation” that has given rise to the domal shape of the complex (Carr et al, 1987). The Valkyr ductile extensional shear zone (which arches over the complex) bounds the complex on all but the eastern margin, where the complex terminates against the easterly dipping Slocan-Champion Lake ductile-brittle normal fault. There are three subculminations within the complex; the project is located on the west central flank of the northernmost of these — the Valhalla dome. The other two subculminations, the Passmore dome and the Southern Valhalla complex, are lithologically and structurally distinct from the Valhalla dome.

The Valhalla assemblage on the west flank of the Valhalla dome consists of an approximately 1.5-kilometre thick, heterogeneous package of upper amphibolite facies pelitic schist, marble, calc-silicate gneiss, psammitic gneiss metaconglomerate, amphibolite gneiss, and ultramafic schist (Figure 7.2). The base of the section is composed of a sequence of conglomerate, calc-silicate gneiss, and marble, interlayered with 50- to 100-metre thick units of aluminum-poor, semi-pelitic schist. Thick marble and calc-silicate gneiss units interlayered with quartzite and sillimanite-bearing pelitic schist characterize the middle portion, which also contains layers of amphibolite gneiss and ultramafic schist. The upper portion of the exposed sequence contains 30-metre thick marble and quartzite layers.

The metamorphic rocks in this region are tentatively correlated with the sedimentary units of the Lardeau Trough (Schaubs and Carr, 1998), as observed in the Goat Ranges (Klepacki, 1985). Specifically, the Rinda Ridge composite unit correlates with the Index Formation of the Lardeau Group, whereas the Rinda Marble and Quartzite correlate with the Badshot Formation and Hamill Group, respectively. This potential correlation implies the section has been locally inverted.

FIGURE OMITTED

PLEASE SEE HARD COPY

Figure 7.2: Property Geology

Larger than 11 x 17

7.2 Property Geology

An idealized stratigraphic section (Table 7.1) of the rock types observed in the Black Crystal project area is described below. These units are reported from the observed top of the section (oldest protolith, due to probable inversion) to the bottom.

Table 7.1: Stratigraphic Section

Unit	Description	Group	Formation	Age
1. Biotite/Feldspar/Quartz/ ±Garnet Gneiss (HW)	Dark brown, moderate to strongly foliated	Lardeau	Index	Early Paleozoic
2. Calc-Silicate Gneiss (Cs1)	Creamy whitish quartz/calcium carbonate rich rock with 2% to 3% disseminated graphite		Badshot	Early Cambrian
3. Calc-Silicate Gneiss (Cs2)	Greyish-green quartz/calcium carbonate rich rock with 3% to 5% disseminated flake graphite			
4. Quartz	Rosy pink massive quartz, locally oxidized, fractured	Hamill	Mount Symonds	Eocambrian
5. Intercalated Zone	Zone of thin bands of varying metamorphic lithologies			
6. Biotite/Feldspar/Quartz/ ±Garnet Gneiss (FW)	Dark brown, moderate to strongly foliated	(Horsethief Creek?)	Fawn Lake Assemblage	Neoproterozoic

1. **Biotite/Feldspar/Quartz/±Garnet Gneiss (HW):** This is the hanging wall variation, typically seen only to the south and the west of the immediate area of interest. The content of constituents varies locally, as does graphite content.

2. **Calc-Silicate Gneiss (Cs1):** One of two principal graphite-bearing units identified to date on the property. This rock is fine- to medium-grained, and varies in colour from a light to medium grey to light to medium greenish-grey (diopsidic). This unit is usually weakly to moderately foliated, and is characterized by a distinctive grainy, sucrosic texture. Graphite occurs as disseminated fine- to medium-grained discrete flakes, while pyrrhotite/pyrite is very fine-grained, and occurs as disseminations or in local blebs.

Modal Composition:

Quartz	35% to 40%
Scapolite	25%
Clinopyroxene	15%
Calcite	10% to 15%
K-Feldspar	5%
Graphite	1.5% to 3%
Pyrrhotite/pyrite	1%
Sphene	1% to 2%
Amphibole	<1%
Apatite	<1%

3. **Calc-Silicate Gneiss (Cs2):** This is the second but economically most important of the two principal graphite-bearing units on the Black Crystal property. This unit is fine-grained, moderately to well foliated, and variable in colour from medium to dark grey to medium greenish-grey. Aside from the darker colour, this rock is also distinguishable from Cs1 because of the presence of very fine-grained, bright emerald green spinel. The texture, while grainy and sucrosic, is also somewhat distinct due to fine elliptical segregations or pods of white (calcite±feldspar) minerals that have developed. Graphite occurs as discrete, disseminated, fine-grained euhedral crystals that are aligned parallel to subparallel to the foliation. Pyrite/pyrrhotite is typically very fine-grained, and occurs as disseminations or local small blebs. Cs1 and Cs2 appear to be conformable, although in some instances they are intercalated. The relationship between the two is not yet understood. It is possible that factors such as discrete differences in protolith bulk composition may have played an important role in determining which sections developed into Cs1 or Cs2.

   Modal Composition:

Quartz	30%
Scapolite	30%
Clinopyroxene	10%
Calcite	10%
K-Feldspar	10%
Graphite	3% to 5%
Pyrrhotite/pyrite	1% to 2%
Sphene	1% to 2%
Amphibole	<1%
Spinel	<1%
Apatite	2% to 3%
Chlorite	trace

4. **Quartz:** The quartz unit, forming the footwall of the deposit, is often moderately to strongly limonite-stained, coarse-grained, recrystallized, and quite blocky or fractured. Minor sulphides (pyrrhotite) and traces of feldspar and chlorite/hydrobiotite are present.

Commonly, a thin conformable pegmatite (10 to 20 cm) occurs at the top of the quartz unit. The genesis of the quartz unit is somewhat enigmatic.

5. **Intercalated Zone:** This unit contains a mixture of lithology that forms a commonly occurring correlatable zone that is stratigraphically below the quartz unit. This zone is comprised of thin bands (typically up to 0.5 metres) of all the lithologies observed on the property, and tends to be variably silicified or quartz flooded.

6. **Biotite/Feldspar/Quartz/±Garnet Gneiss (FW):** Much the same as the hanging wall unit (No. 1 above).

The project area also contains various lithologies that cannot presently be placed in any relative order. They are as follows:

- **Marble:** This unit is typically pale grey to whitish to pale greenish grey, medium- to coarse-grained silicious marble. It tends to be massive to very weakly foliated, and although modal composition can vary considerably, the main constituents are calcite, quartz, and diopside (clinopyroxene). This rock typically contains < 0.5% graphite and < 0.5% sulphides (pyrrhotite/pyrite/sphalerite).

- **Skarn:** Skarn occurs throughout the section, often adjacent to the pegmatitic or quartz monzonite dykes or sills noted below. It is typically an aphanitic, medium to dark green rock, which is rich in quartz, diopside, and calcite. Somewhat less altered sections of the above lithologies are typically contained within skarn sections.

- **Quartz Syenite:** This unit is a typically white to pale grey, massive, medium-grained felsic rock composed mainly of white feldspar, with lesser grey quartz and green mafics. The feldspar is predominantly white k-feldspar (microperthitic?). This rock usually forms small sills or dykes within the metamorphic sequence. In hand specimens it appears to be intrusive, but given the high-grade metamorphism, may be the result of partial melting.

- **Quartz Monzonite:** This unit comprises massive to weakly foliated, medium-grained, biotitic leucocratic sills or dykes that are most common in the northernmost portion of the area of interest. This location may be coincidental, or it may bear some relationship to the genesis of the deposit. The dykes appear to strike east-west, and may dip steeply both to the north and south. There is a possibility that apophyses of quartz monzonite may have radiated from the dykes along foliation planes, because thin quartz monzonite lenses or “stringers” were noted locally in drill holes, which were typically proximal to a larger dyke.

- **Pegmatite:** This unit consists of medium- to coarse-grained leucocratic pegmatite, composed principally of feldspar, quartz, minor biotite, and trace pyrrhotite. It occurs as “sweats” or discrete dykes throughout the section, invading all of the meta-sedimentary rocks noted above. They appear to be concordant with foliation. A pegmatite swarm has been tentatively identified on the southern margins of the area of interest.

- **Lamprophyre:** This unit is a dark, biotite- and pyroxene-rich dyke intersected in several drill holes throughout the property. The modal constitution of this rock is estimated to comprise 45% biotite, 38% pyroxene, 15% plagioclase with trace K-feldspar, 1% sphene, and 1% opaques.

The thickness of the above lithological units varies over the property. The thickness of the biotite/feldspar/quartz/±garnet gneiss (HW) has not been determined, but the thickest intercept has been in the order of 40 metres. The Cs1 unit can be up to 13 metres thick, while Cs2 occurs from subtle intercalations with Cs1 up to a thickness of approximately 11 metres. The quartz unit is not present in every location, but is typically in the order of 1 to 2 metres wide. The thickness of the intercalated zone has been observed to vary from 1 to 13 metres, while the marble ranges from 11 to 21 metres. Biotite/feldspar/quartz/±garnet gneiss (FW) has been noted to occur from 5 metres up to >10 metres in thickness.

The graphitic zone in the area of interest occurs as a 5- to 50-metre thick planar surface, which strikes at approximately 130º azimuth and dips moderately to the southwest at approximately 35º. The zone is likely offset along one or more roughly east-west trending faults. Total displacement is approximately 30 metres, and in places the quartz monzonite unit has intruded along these structures. The displacement appears to be primarily dip-slip, with the southern plate having moved upwards in relation to the northern plate. Quite possibly, pre-emplacement faults were the locus for quartz monzonite intrusion. Hence it is possible that slight movement along several such quartz monzonite-filled fractures resulted at least in part for the cumulative displacement noted above, as some post-emplacement slippage occurred on the margins of these dykes locally.

8.0 DEPOSIT TYPES

The graphite mineralization at the Black Crystal property is best categorized as a disseminated flake graphite deposit. Simandl and Kenan (1997) specifically reference this property in their paper entitled, "Crystalline Flake Graphite."

These deposits are commonly hosted by porphyroblastic and granoblastic marbles, paragneisses, and quartzites in upper amphibolite or granulite-grade metamorphic terrains.

9.0 MINERALIZATION

Graphite mineralization on the property is ubiquitous, occurring locally in all rock types except for the quartz monzonite intrusives. Calc-silicate gneisses are the preferred host for the most consistently higher grade mineralization observed on the property. The calc-silicate gneisses have been split into two groups (Augsten 2001), Cs1 and Cs2, on the basis of mineralogy (presence or absence of spinel), texture, colour, and concentration of graphite. Cs2 typically contains 2% to 5% flake graphite, or organic carbon (also referred to as fixed carbon, or FC). Graphite occurs as discrete, disseminated grains most typically from 0.5 to 1.0 mm in diameter. These crystals have developed parallel to subparallel to foliation. Petrographic observations to date have determined the graphite flake from the property is relatively undeformed and quite pure, exhibiting only the odd inclusion of syn-depositional and secondary quartz, and only an insignificant local trace amount of hematite.

XRD analysis by Newman Energy Research Ltd. of Christchurch, NZ, has indicated the maximum reflectance (Ro_{max}) of this graphite (measured perpendicular to the C-axis of the graphite crystal) is in the order of 17.8%, and the minimum reflectance (Ro_{min}) is 0.6% — values that are quite close to those documented for true graphite (Ro_{max} 18%). Additionally, d-spacing (a function of crystalline density) of 3.354 was determined, which is probably why the Black Crystal graphite reportedly has excellent electrical characteristics, making it suitable for use in constructing fuel cell bipolar plates.

A regolith has formed in-situ above both Cs units locally, and there is a transition zone of slightly weathered Cs material that is less friable than the regolithic zone. Of the two calc-silicate units, the weathering is typically more pronounced over the Cs2 unit. The regolithic and transition zones are the best targets on the property, with overall organic carbon concentrations from 3% to 5% FC in Cs2, and 2% to 3% FC in Cs1. Graphite may reach concentrations of 1% to 2% FC in glacio-fluvial till locally, although there are areas where numerous blocks of Cs material comprise boulders or cobbles within the till, and graphite concentrations can be in the 2% to 3% FC range. These two zones are also desirable targets because they are sited immediately above the areas proposed for hard rock quarrying. This will contribute to ease of extraction, higher grade, and ease of beneficiation.

10.0 EXPLORATION

Since 2000, CGC's exploration of the property has consisted primarily of trenching. To define the extent of the mineralized till and regolithic material, 176 slit trenches (Figure 10.1) were constructed. In addition, 1,855 metres of linear trench (Figure 10.2) were excavated to provide material for bulk sample.

10.1 2000 Programs

Work in 2000 was done late in the year, from October to December, and consisted of Induced Polarization (IP) surveying and trenching. CGC retained MDS to oversee and report on all aspects of the fieldwork. A pole-dipole IP survey was conducted over 9,325 metres of cut line over the project area. No obvious anomalies were observed. It is believed the nature of the disseminated graphite mineralization (i.e., lack of connectivity between individual crystals), and the crystal habit (tabular, rather than cubic) precludes a particularly strong IP response. More work is needed to correlate the geophysical data with the information garnered from the drill holes.

Twenty-seven trenches were excavated in an attempt to further define the extent of the mineralized till and regolithic material. Slit trenches were dug at approximate right angles to the direction of travel on the uphill bank of the pre-existing roads on which they were located, and were excavated down to bedrock wherever possible. In total, 37 samples were removed. Pictures were taken of the majority of the trenches, and trench and drill locations were surveyed.

In December 2000, the remaining samples taken during the 1997 diamond-drilling program were shipped for analyses. Samples produced during the 2002 campaign were shipped to IME in Kelowna, BC for preparation, and the pulps were sent to Bondar Clegg in Vancouver for analysis.

10.2 2001 Programs

A series of exploration trails were established in early July 2001 to facilitate mapping, trenching, and diamond drilling. Approximately 2,550 metres of new trail were created using a JD160 LC excavator, and by year's end, over 1,150 metres had been reclaimed.

In the 2001 trenching program, both slit and linear trenches were excavated. A total of 149 slit trenches were constructed, and 325 samples were taken of the till and regolith. These samples were prepared at CGC's laboratory, and sent to Bondar Clegg for analysis. A program of check trenching/sampling was conducted during September 2001 to determine the quality of the data generated; a further 17 trenches were excavated immediately adjacent to the existing trenches, and another 43 samples were taken. These samples were sent directly to Bondar Clegg in Vancouver for preparation and analysis.

FIGURES 10.1 and 10.2 OMITTED

PLEASE SEE HARD COPY

Linear trenching was undertaken in November to better estimate the vertical extent of the weathered material and to extract a bulk sample for processing at the Hoder Creek pilot plant facility. Linear trenching is an effective means of evaluating the friable calc-silicate and "transition zone" resource that exists in an area of investigation. During this program, 1,855 metres of trench were excavated, and approximately 10,000 tonnes of friable calc-silicate mineralized material were transported to the Hoder Creek plant for processing. An additional 157 samples were taken and shipped to Bondar Clegg in Vancouver for analysis. These latter samples were primarily of the graphite mineralized calc-silicate horizons encountered while trenching, although some were of the better mineralized till encountered. Most of the trenches were photographed.

Two samples from the more prominent pegmatites in the Black Crystal area were sent to Vancouver Petrographic to determine the presence of any gem (precious or semi-precious) or any other mineral of interest. An additional four samples were sent to Bondar Clegg to determine the presence of any rare or deleterious elements in the pegmatites. Neither laboratory found minerals or elements of either an economic or deleterious nature.

Kokanee Geographical Information Systems (KGIS) surveyed the roads and a number of gridlines using a GPS system. Survey markers were set by G. Stein according to GPS, and all drill holes, drill hole inclinations, and slit trench locations were determined by Intermountain Engineering & Surveying of Nelson, BC, through the use of conventional survey methods. In the fall of 2001, Intermountain E&S was charged with the task of reconciling the differences between the KGIS surveys and the Intermountain/Stein surveys, and correcting the data as necessary. Surveying of the discrete sample locations generated by the linear trenching program was not completed, due to heavy snowfall (trenches F, G, and H had been completed). For the other linear trenches, hip chain information was compared to known locations of drill holes and slit trenches to generate a list of sample locations.

11.0 DRILLING

Over two seasons, GCG drilled 64 holes to assess the hardrock calc-silicate mineralized zone. Drill hole collars are shown in Figure 11.1.

11.1 2000 Programs

During the fall of 2000, CGC drilled 22 NQ diameter diamond drill holes, for a total of approximately 1,181 metres. A Longyear Super38 diamond drill mounted on a Sherman tank chassis was used, and industry standard wireline core drilling procedures were followed. Drill holes were oriented at 40º azimuth, and were usually inclined at -55º relative to horizontal. Occasionally a second hole would be drilled at -90º, to better determine the orientation and continuity of the meta-sedimentary sequence.

Downhole "Tropari" surveys were conducted to record the orientation of the drill holes. Typically, one reading would be taken approximately 2.44 metres above the bottom of the hole. All collar locations were surveyed, marked, and labelled with a wooden 4 x 4 picket.

MDS entered the data from the drill and trenching programs into the final project database in a format compatible with "Down Hole Explorer" software.

11.2 2001 Programs

Beginning in mid-May 2001, 42 NQ diameter diamond drill holes were drilled on the property for a total of approximately 1,895 metres. These holes were drilled at 35º azimuth, and were typically inclined at -57º to the horizontal, which resulted in the holes usually terminating in the -55º range. Only once were two holes of differing inclinations (BC0137 and 138) drilled from the same location to confirm the continuity of the section as seen in the first hole. The first two holes of the program (BC0123 and 124) were drilled to test the down-dip continuity of the mineralized horizons, and to test deeper mineralized horizons. All drill holes were surveyed down hole by a Tropari instrument.

The core generated from this program was transported to CGC's Hoder Creek facility, where it was logged geologically and geotechnically. A total of 644 samples were generated in the course of the drilling program; the first 158 were prepared and analysed at CGC's Koch Creek facility utilizing the protocol outlined in Section 13. A portion of these pulverized samples were also sent to Bondar Clegg in Vancouver for duplicate analyses.

FIGURE OMITTED

PLEASE SEE HARD COPY

12.0 SAMPLING METHOD AND APPROACH

CGC completed sampling programs that involved trench sampling of overburden material and diamond drilling. During the 2000 drilling program, sample intervals were typically 2 metres in length, except in areas adjacent to lithological contacts. After the first (BC0123) exploratory drill hole of the 2001 program, the sample interval was decreased to 1 metre for the duration of that year's program.

Slit trench sampling was usually started immediately below the "B" soil horizon, and often only one sample was removed for the entire trench. Sample widths varied considerably depending on local conditions, but typically ranged from 0.5 to 2.0 metres. In areas where higher grade graphite mineralization was observed, the sample interval was decreased. Rough channel samples were taken by progressing downwards with a rock hammer in one hand and collecting sample material in the other. When the free hand was full, the material was placed in a plastic bag and sampling was resumed from the point where it was stopped. This method is not particularly objective, as the tendency for the sampler to not include larger boulders in the sample is high. In addition, the >0.75" fraction can roll off the hand during the sampling process, resulting in a slight overstatement in the percentage of fixed carbon in the sampled interval (>0.75" material is not usually well mineralized). The trench lithology and overall percentage of >0.75" material was logged during the process.

During the linear trenching program, a panel of vertical samples were taken every 5 lateral metres in the calc-silicate gneiss regolith. Samples were usually less than 2 metres in length, and were arranged so as not to transgress lithological boundaries.

A modest check-sampling program was instituted to determine analytical reliability and accuracy. Five duplicate samples were submitted to CGC, Acme Analytical, and Bondar Clegg for preparation and analysis. A blank sample of sand from CGC's Koch Creek borrow pit was also submitted to all three labs. Sampling procedures were consistent with the 2000 and 2001 slit trenching programs, except the sample was collected using either a 6" diameter wire-hoop sample collector held in the sampler's free hand, or, in trenches deemed unsafe to enter, with a 3" diameter PVC sampling cup mounted on a long stick. When the cup was full from being dragged upwards through the sample interval, it was emptied and sampling was resumed from the point where it was stopped. To date, the 6" hoop sample collector appears to be the best method, because it is indiscriminate and tends to catch all but the largest of the >0.75" faction. The 3" cup, while not as good as the manual or hoop methods, proved adequate given the physical constraints.

Appendix B contains a list of significant composite assays for the calc-silicate and regolith graphite mineralization. Only values greater than 0.5% FC were tabulated.

13.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

13.1 Introduction

Graphite is assessed by using petrographic analysis and x-ray diffraction to determine purity and mineral form. The amount of graphite mineralization in a deposit is determined indirectly by measuring the quantity of fixed carbon in a sample. The Leco method is the method of choice and requires an acid washing stage to remove any carbonate minerals prior to analysis. The remaining carbon, called organic or "fixed carbon" (FC), is measured and assumed to be derived from graphite.

The information in this section is based on data and details supplied by CGC, observations made by AMEC during its site visit, and an independent report titled “Analysis into Graphite Analytical Methods and Results” by Coal Marketing Services Limited (CMSL).

13.2 General

The protocol for core handling/logging was consistent for both CGC drill campaigns. CGC’s consulting geologist would retrieve the core at the site daily, and bring it to the company’s Koch Creek facility where the “core shack” was located. After laying the core out in sequential order, the geologist would convert all measurement blocks from imperial to metric units and label all boxes. The core would then be geotechnically logged by recording core recovery, rock quality determination (RQD), joint number (Jn), joint alteration (Ja), joint roughness (Jr), and stress reduction factor (SRF). The core was then geologically logged, and samples were outlined, split, and bagged. The total amount (linear centimetres) of pegmatite in any sampled interval was measured. Finally, the core was photographed, removed from the logging facility, and stored on racks for future reference.

All other samples (trenching, rock samples) were taken directly to the core logging facility by CGC’s consulting geologists, and stored there until CGC’s lab personnel would retrieve them for preparation at Koch Creek, or for direct shipping to Bondar Clegg in Vancouver.

CGC installed sample preparation facilities and a Leco analyzer, and Leco and Jeff Austin (P.Eng.) of IME were hired to instruct CGC staff on how to handle, prepare and analyze samples. The first 158 core samples from drilling were prepared and analyzed at CGC’s facility and at Bondar Clegg, while the samples from the slit-trenching program were prepared at CGC’s Koch Creek facility and sent to Bondar Clegg for analysis. The remainder of the core samples was sent to Bondar Clegg in North Vancouver for preparation and analysis.

The protocol for sample preparation was standardized between the laboratories. Samples were dried and crushed using a jaw crusher to produce a -6 mesh product. This product was then riffle split to produce a 200-gram sample, which was in turn pulverized in a ringand-puck pulverizer to -150 mesh. The crusher and pulverizer were cleaned with quartz sand between samples to prevent cross contamination. The sample was placed in a Leco crucible and weighed, and was then immersed in a dilute hydrochloric acid leach solution to remove most of the inorganic carbon. The crucible was placed into a suction apparatus and the resulting chloride residue inside the Leco crucible was removed with de-ionized water.

After drying, the crucible containing the leached graphite sample was placed in a Leco 200 analyzer, where it was vaporized in a high-frequency induction furnace at temperatures approaching 1,500ºC. Combustion at these temperatures is achieved by introducing a stream of oxygen. The gasses produced are passed directly into a cell through which infrared (IR) energy is transmitted. The carbon dioxide produced in vaporizing the sample absorbs IR energy at a precise wavelength within the IR spectrum. By determining the amount of absorption, the instrument can calculate the total fixed carbon content of the sample. The instrument is calibrated at regular intervals with a known carbon standard to ensure the information displayed is accurate.

13.3 Quality Assurance / Quality Control (QA/QC)

QA/QC work was only instituted during the 2001 exploration program. At this time, 17 core duplicate samples were taken from intervals that were previously prepared and/or analyzed at CGC's facility and resubmitted for analysis with new numerical identifiers to Bondar Clegg. Reasonable agreement between the re-submitted and original samples was achieved.

Check slit trenches were excavated adjacent to trenches built during the 2001 summer program. A total of 43 samples were taken and shipped directly to Bondar Clegg and Acme Analytical in Vancouver, B.C. Poor agreement was obtained which may be a function of grade variability within short distances or sample selection bias.

Some comparison work was also performed whereby identical samples that were sent to Bondar Clegg were also analyzed by CGC's laboratory. Results showed good agreement (Figure 13.1).

During the linear trenching program, six samples were split, and duplicates were analyzed by CGC, Acme, and Bondar Clegg. The results (Figure 13.2) showed CGC values to be about 5% higher than those measured by Bonder Clegg, and 15% to 20% higher than those obtained by Acme.

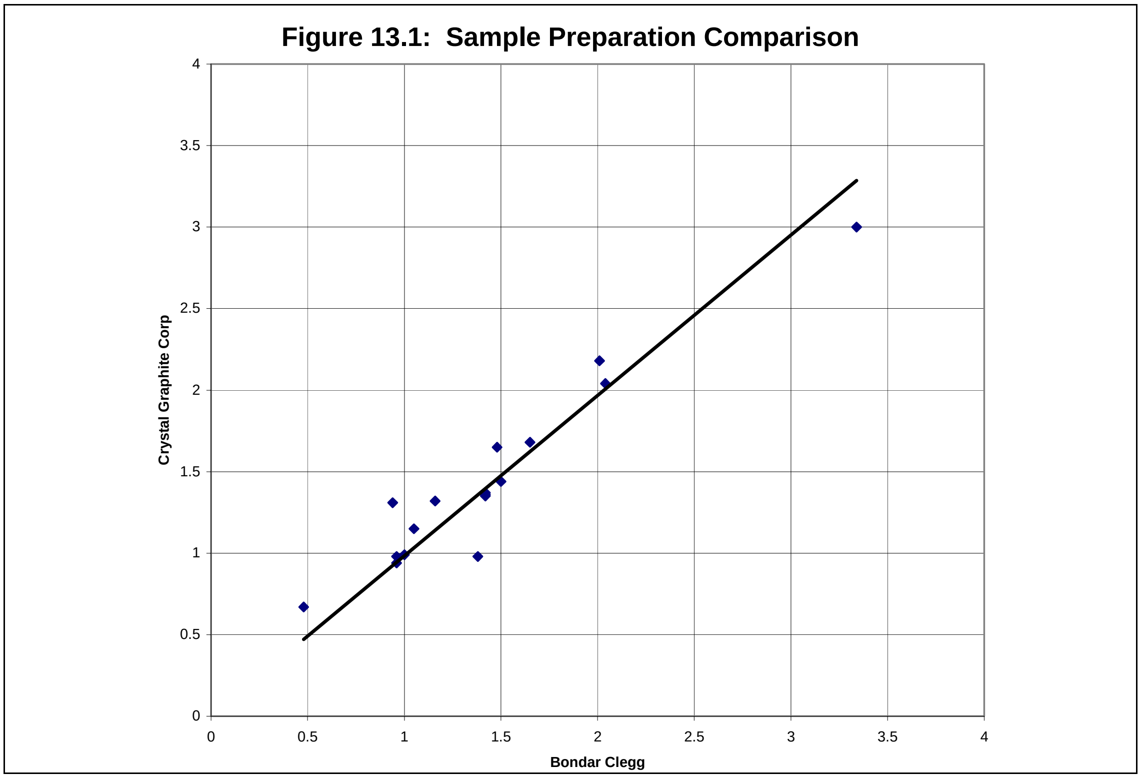


Figure 13.1: Sample Preparation Comparison
Crystal Graphite Corp
Bondar Clegg
0
0.5
1
1.5
2
2.5
3
3.5
4

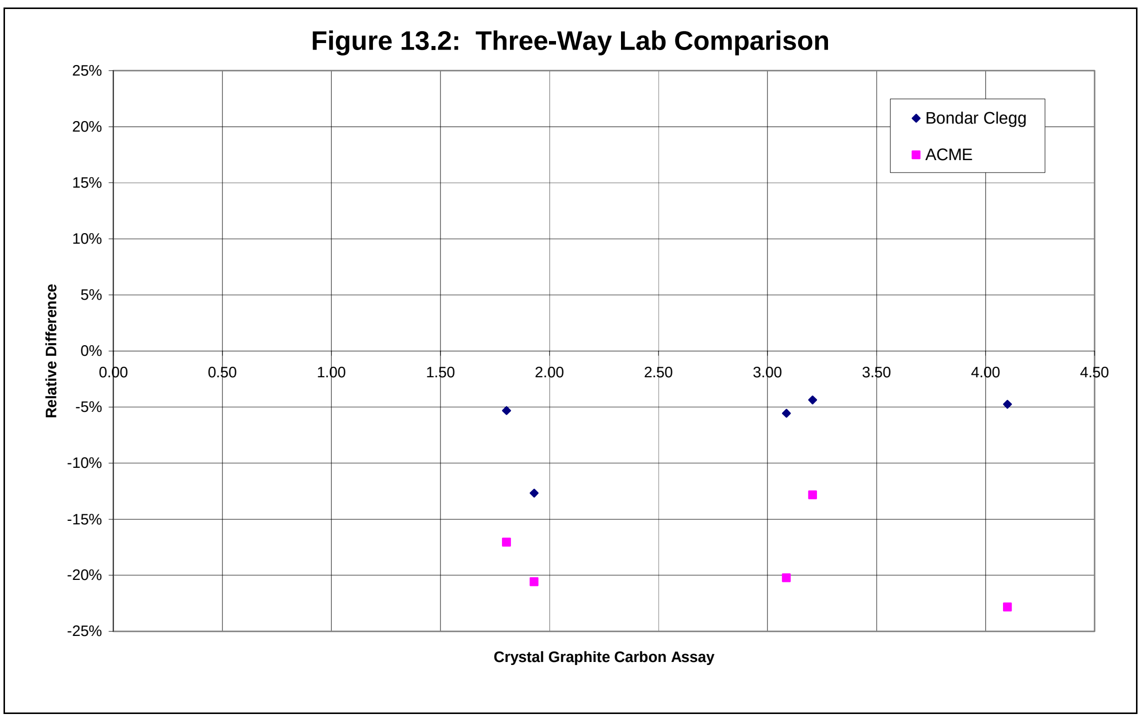


Figure 13.2: Three-Way Lab Comparison
Relative Difference
Crystal Graphite Carbon Assay
Bondar Clegg
ACME
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50

13.3.1 2002 QA/QC Program

CGC initiated a program to re-assay earlier work and better define the quality of the Black Crystal project data. Duplicate samples were selected from regolith and drill core and submitted to Acme Laboratories in Vancouver, BC. In total, 240 regolith samples were submitted, 198 of which were riffle-split samples from coarse rejects from the Summer 2001 trenching program, 13 were standards, 11 were blank material, and 18 were duplicates. The standards were composed of carbon-in-steel: 11 were 0.806% FC, and the remaining 2 were 0.181% FC and 0.440% FC. The blank material was composed of “clean” sand extracted from the borrow pit across the road from the plant facility.

From the remaining half split core, 170 quarter-split drill core samples were submitted from the 1997 drill program by IME and the 2000 and 2001 drilling programs by CGC. As limited core was available from the 1997 drilling programs, only a few holes were sampled: 97-07, 97-10, and 97-12. Core was not sampled from drill holes BC0152 to BC0164. Eight blanks of quartz monzonite core from drill hole BC0002 were submitted, as were 7 carbon-in-steel standards: 6 at 0.806% FC and 1 at 0.181% FC. For the duplicates, the remaining quarter-split core was submitted.

Figures 13.3 and 13.4 show the relative difference between Acme and Bondar Clegg for the regolith/till samples and drill core samples, respectively. In the regolith/till samples, there appears to be a detection limit artifact present in assays up to 2.0% FC. Nonetheless, the distribution of values is symmetrical around 0.0, showing no bias in the analysis. For values greater than 0.7% FC, agreement is within ±15%. In the drill core, there appears to be a negative bias in the low-grade assays below 1.5% FC to 2.0% FC. Assays greater than 2.0% FC are randomly distributed about 0.0% and do not appear to be biased.

There are a number of potential sources for the problems identified in the recent QA/QC samples submitted:

- Segregation may result within the sub-sample based on differences in specific gravity. Graphite may be concentrated at the top or surface of the sample, whereas typically for gold or base metals, settling occurs, resulting in concentration at the bottom of a sample. An awareness of this potential is necessary to ensure the sample is homogeneous and that a representative sample is selected.

- In conjunction with segregation and with the reported trend towards higher carbon grades associated with coarser graphite flakes, different sample sizes at the lower grades could create an “impoverished” sample if a smaller sample size is selected. Acme states that their sample size is 0.10 g, Bondar Clegg used 0.10 g to 0.20 g, and ALS Chemex used 0.02 to 0.10 g. (CGC previously used a sample size between 0.05 g and 0.10 g at their on-site laboratory, but recently upgraded their Leco machine and now use a 0.10 g to 0.15 g sample.) The potential exists for a smaller sample size to contain fewer graphite flakes, resulting in a lower assay.

Figure 13.3: Regolith/Till Duplicate Differences

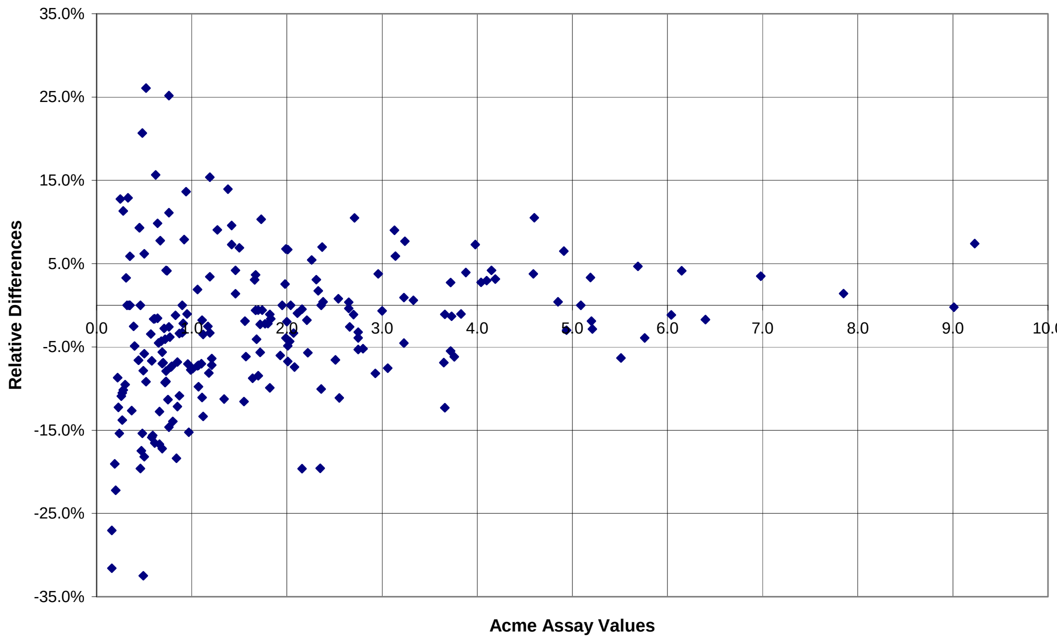
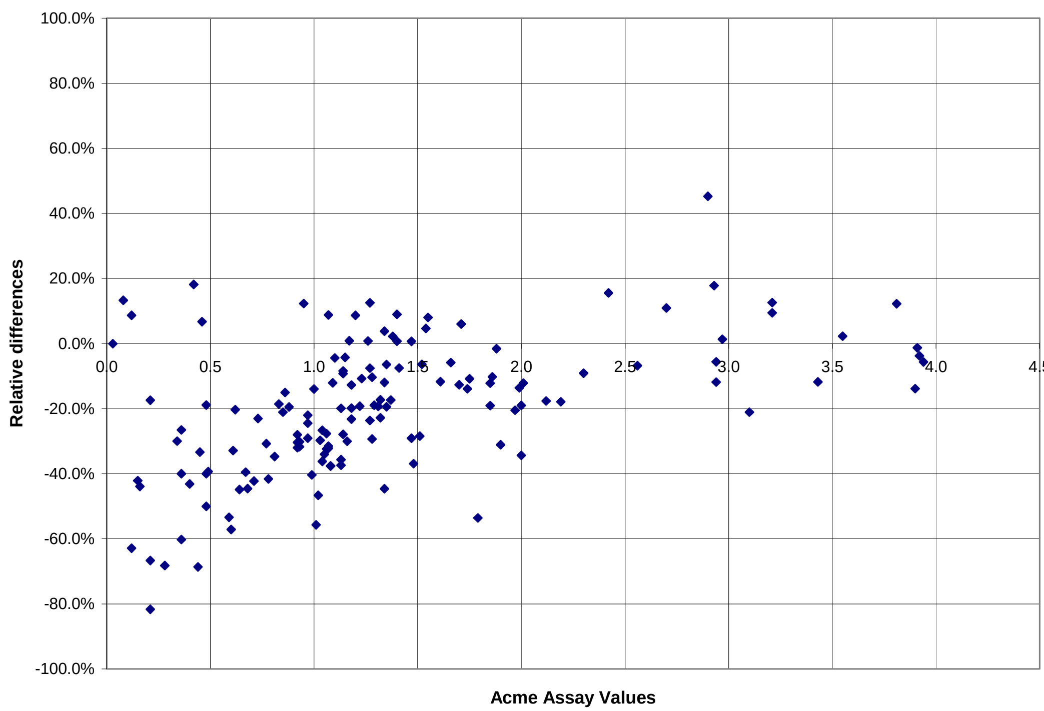


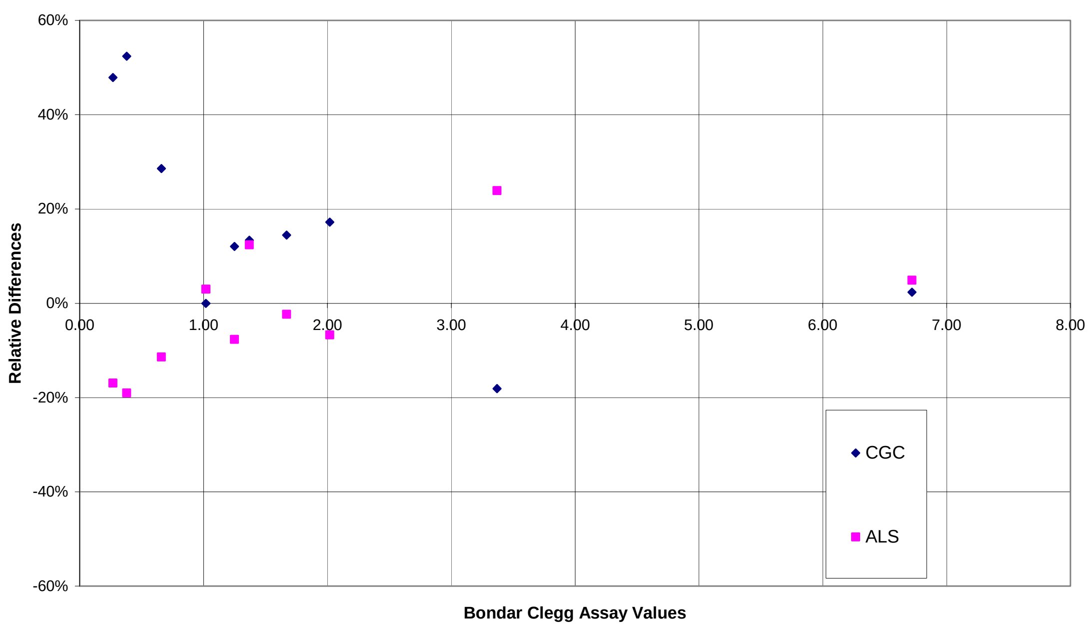
Figure 13.4: Drill Core Duplicate Differences



13.3.2 Site Visit Duplicates

Quarter-split field duplicates were collected from drill hole BC0126 by AMEC in May 2002. These samples were submitted by AMEC to ALS Chemex, who followed a similar protocol as Bondar Clegg's in preceding years. They were also analyzed by the CGC laboratory. The ALS Chemex results are within 20% to the original Bondar Clegg assays (Figure 13.5), which is considered an acceptable result for field duplicates. The CGC assays are consistently greater than the originals, which may be the result of sample preparation or machine calibration differences.

Figure 13.5: CGC Drill hole BC0126 Core Duplicate Differences



13.3.3 Summary

Inter-laboratory results for graphite mineralization (FC values) must use consistent sample preparation methods if the checks on analyses are to be meaningful. The heterogeneity of CGC graphite, as evidenced by its pure coarse flake and impure fine graphite (see below), increases its susceptibility to size segregation during sample preparation. Effort should be made to have all laboratories use the same pulp size and same Leco sample size (>0.10 g). Also, the standards used by CGC are all below 1% FC. AMEC recommends that at least two additional standards be made to reflect higher grades: one around 1.5% FC and another around 2.5% FC.

Control data results for the regolith samples shown acceptable quality in the grade range that would likely be mined. Results for the calc-silicate sample (drill core) show poorer quality in the analyses. This can be rectified through additional check assays and consistent analytical protocols between laboratories. Overall, AMEC believes the risk to the mineral resource estimate is minimal and within acceptable limits. Check assay results must demonstrate no bias and consistent reproducibility to enable classification of portions of the calc-silicate hard rock graphite mineralization as measured mineral resource.

13.4 Graphite Mineral Properties

Petrographical XRD analyses (see Section 9) show CGC graphite to be very coarse by international standards. It is a high-rank graphite with high reflectance and a high degree of crystallographic order. Upon segregation, it produces very pure coarse flake graphite and impure fine graphite. The graphite grains are mostly undeformed. CGC graphite contains minor to negligible amounts of iron oxide minerals. The main mineral phase included in the graphite is quartz.

13.5 Bulk Density

Bulk density data were measured by CGC at site. Drill core data were measured using water displacement (no wax). For regolith or till material, the procedures were more subjective, as seen below:

1. Weigh empty beaker.
2. Sample material.
3. Compact sample into beaker and weigh in air suspended on the end of a balance beam (Ohaus Dial-O-Gram).
4. Weigh beaker suspended in water.
5. Calculate bulk density based on the formula:

   Density = Weight in Air / (Weight in Air) x (Weight in Water)

AMEC believes the water displacement (no wax) method to be appropriate for the non-porous drill core samples. The method used for till material should provide a reasonable estimate of bulk density values. However, AMEC recommends that these values be independently verified using a wax method.

Compiled bulk density values by lithologic units are shown in Table 13.1.

Table 13.1: Average Bulk Density Results by Lithologic Unit

Lithology	Average Value	Standard Deviation	Minimum Value	Maximum Value	Number of Samples
CS1	2.81	0.05	2.58	3.12	152
CS2	2.78	0.06	2.61	2.90	47
Marble	2.83	0.02	2.80	2.86	5
Pegmatite	2.67	0.06	2.61	2.77	4
Gneiss	2.71	0.01	2.70	2.71	2
Quartz	2.68	0.01	2.67	2.69	3
Monzonite	2.68	0.01	2.67	2.70	5
Regolith	1.76	0.07	1.62	1.97	25
Till	1.67	0.08	1.57	1.87	10
Transition	1.64	-	-	-	1

14.0 DATA VERIFICATION

As a test of data integrity, the information that was used to estimate the July 2002 Black Crystal Graphite project mineral resources was verified. This included the following:

- fixed carbon assay values were checked against original assay certificates
- lithology information were checked against the drill logs
- collar coordinates were checked against the original survey forms
- downhole survey measurements were checked against the typed drill logs
- trench location surveys were checked.

AMEC checked 5% of the data. Results of the data checks showed a near-zero error rate, with the exception of some discrepancies in trench location data, which were rectified by CGC during a re-survey program. AMEC concludes that the assay and survey database used for the 2002 Black Crystal Graphite project mineral resource estimate is sufficiently free of error to be adequate for resource estimation.

15.0 ADJACENT PROPERTIES

Adjacent to the Black Crystal property to the north lies the Superior Group of claims. These claims, originally staked by prospector Horst Klassen, were eventually optioned to Ecuador Minerals/International Mining and Exploration, and are now held by their successor, Worldwide Graphite Producers. In 1998, Lakefield Research performed positive bench tests on a mini bulk sample. Additional exploration work was performed, the results of which indicate the property may contain a large tonnage of low-grade, calc-silicate hosted graphite mineralization.

Anglo Swiss Resources Inc. owns the claims adjacent to CGC's Plant Group claims. Under an agreement dated 8 May 2001, amended 5 November 2001, CGC has the right to explore, and produce graphite from, Anglo Swiss's property. Initial reconnaissance on the adjacent properties has confirmed that some areas do exist where calc-silicate and marble-hosted graphite mineralization occurs. This option will expire at the end of December 2002.

The mineralization seen in all locations has similarities, and the Superior Group and CGC's Plant Group appear to be in the same package of mineralized rocks as those in the Black Crystal project area.

16.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The Crystal Graphite project hosts two distinct types of graphitic material: severely weathered surface regolith, which is currently being processed through a 30 tph capacity pilot plant, and hard rock graphitic material, which lies beneath the surface and comprises the majority of the deposit. To date, most of the testwork has been conducted on various composite samples of the regolith.

This section assesses the plant modifications required to successfully process the regolith graphitic material at an initial rate of 75,000 tpy, increasing to 225,000 tpy in approximately five years. This assessment is based on information obtained during a site visit, as well as metallurgical test reports received.

Metallurgical Studies Previous to CGC

Pearson, Hofman & Associates studied samples from the Superior Graphite property, which lies adjacent to the Black Crystal graphite property. The samples tested contained the friable, foliated, and massive morphological types and were believed to represent a continuous section of the graphitic horizon. All samples were of average grade rock, collected using a hammer and chisel.

The testwork indicated that 95% of the contained graphite could be recovered in a rougher concentrate grading 27% graphite. Regrinding the rougher concentrate upgraded the cleaned concentrate to 87% graphite, within minimal recovery losses. The +100 mesh fractions of the concentrates averaged 94% graphite at 75% recovery. Using a Mozley table, the +100 mesh fraction of the concentrate was upgraded a further 2.8% to 97% to 98%, and the -100/+325 mesh fraction was upgraded by 25% to 89%. Leaching a third cleaner concentrate in 10% HCl for one hour produced an upgrade of 16.9% to 75.5%, and reduced calcite concentration from 26.7% to 12.5%. It was suspected the remaining carbonate lay in the form of the less-soluble dolomite.

The Pearson, Hofman and Associates testwork is considered to be more applicable to Black Crystal's hardrock material than to the regolith sands.

The James Snell report is a compilation of laboratory testwork conducted on the Black Crystal graphite deposit by Asbury at the Quinto Lab and Process Research Associates. Asbury determined that the maximum purity levels that could be achieved by flotation are in the range of 92% to 97% graphite. Chemical or thermal treatment would be required to obtain a purity level of 99%.

Flotation/regrinding tests on Black Crystal material conducted by Asbury indicated cleaner concentrates grading 92% to 98% graphite, with recovery estimates of close to 100% (by visual observation). Higher concentrate grades were associated with the coarser size fractions.

Rougher flotation tests conducted by Process Research Associates achieved rougher grades of 52% to 64% graphite at 98.5% recovery. The samples were subject to modest grinding in a lab rod mill using a half rod charge.

Metallurgical Studies after Acquisition by CGC

A series of preliminary bench scale batch tests were conducted on several de-slimed composite samples of the oxide regolith material. The tests were conducted with no pre-grinding or concentrate regrinding and using pine oil reagent only. Rougher concentrate grades ranged between 20% and 70% graphite at recoveries between 20% and 90%. Cleaner concentrate grades of up to 94% were achieved, but at very low recoveries of 20% to 30%. One subsequent test that involved regrinding the rougher concentrate produced a concentrate grade of 98% graphite at 50% recovery. Two other tests with regrinding were not as successful, producing grades of 89% and 92% graphite at 23% and 29% recovery, respectively.

Two locked-cycle tests were conducted with regrinding of the first cleaner concentrate. Test 1 produced an average concentrate grade of 74% graphite at a recovery of 83%; test 2 produced a grade of 79% graphite at 79% recovery.

CGC commissioned AMEC to prepare a conceptual level study for a graphite purification process developed by IME based on the molybdenum upgrade circuit at Endako Mines. The capacity of the plant is 0.98 tph. The issues of neutralization and disposal of leach residues were not resolved; however, it is possibile the acid-consuming capacity of the flotation tailings may be sufficient to dispose of the leach residue with the tailings.

CGC had members of Lakefield Research review the pilot plant operation and assess the possibility of producing graphite salt for the eventual production of expanded graphite. At the time of their visit, the flowsheet was configured to upgrade the rougher/scavenger concentrate in the three-stage cleaning circuit, with the third cleaner concentrate discharging to the thickener. Thickener underflow was then reground in a small, 16" diameter rod mill in open circuit, and upgraded in the small Denver #8 three-stage cleaning circuit. The sixth cleaner concentrate was finally batch-leached in the HCl acid leach tank. Because of the incompatible capacities of the regrind mill and the fourth and sixth cleaner cells, the inflow exceeded the outflow to the thickener, which was essentially being used as a holding tank. The report suggested several improvements to operating practices and metallurgical accounting procedures as well as flowsheet changes, some of which were implemented.

Metallurgical Studies by CGC on Hard Rock Graphitic Material

Grindability testing by IME on two samples of Black Crystal graphite hard rock graphitic material (CS1 and CS2) resulted in rod mill work indices of 5.4 and 4.2 kWh/tonne and ball mill work indices of 10.0 and 7.8 kWh/tonne. These work index values indicate the materials to be soft to moderately soft, requiring only moderate grinding power to achieve flotation feed size.

Three locked-cycle tests were conducted: one on the CS1 (1.5% graphite) sample; one on the CS2 (4.0% graphite) sample; and one on a blend between the two. The samples were ground to approximately 200 micron P_{80} and the rougher concentrates were reground to P_{80} of 40 to 50 microns prior to flotation cleaning to six stages. The low grade CS1 sample produced a final concentrate at 93.7% graphite at a recovery of 79%, and the higher grade CS2 and blended sample produced concentrate grades of 95.7% and 95.8% graphite at recoveries of 85% to 90%, respectively.

The extent of primary grinding and regrinding was not optimized, so the locked-cycle tests are considered preliminary. However, there is little question that the hard rock materials can be processed to produce concentrates with grades in the order of 96% to 98% graphite at recoveries in excess of 80%.

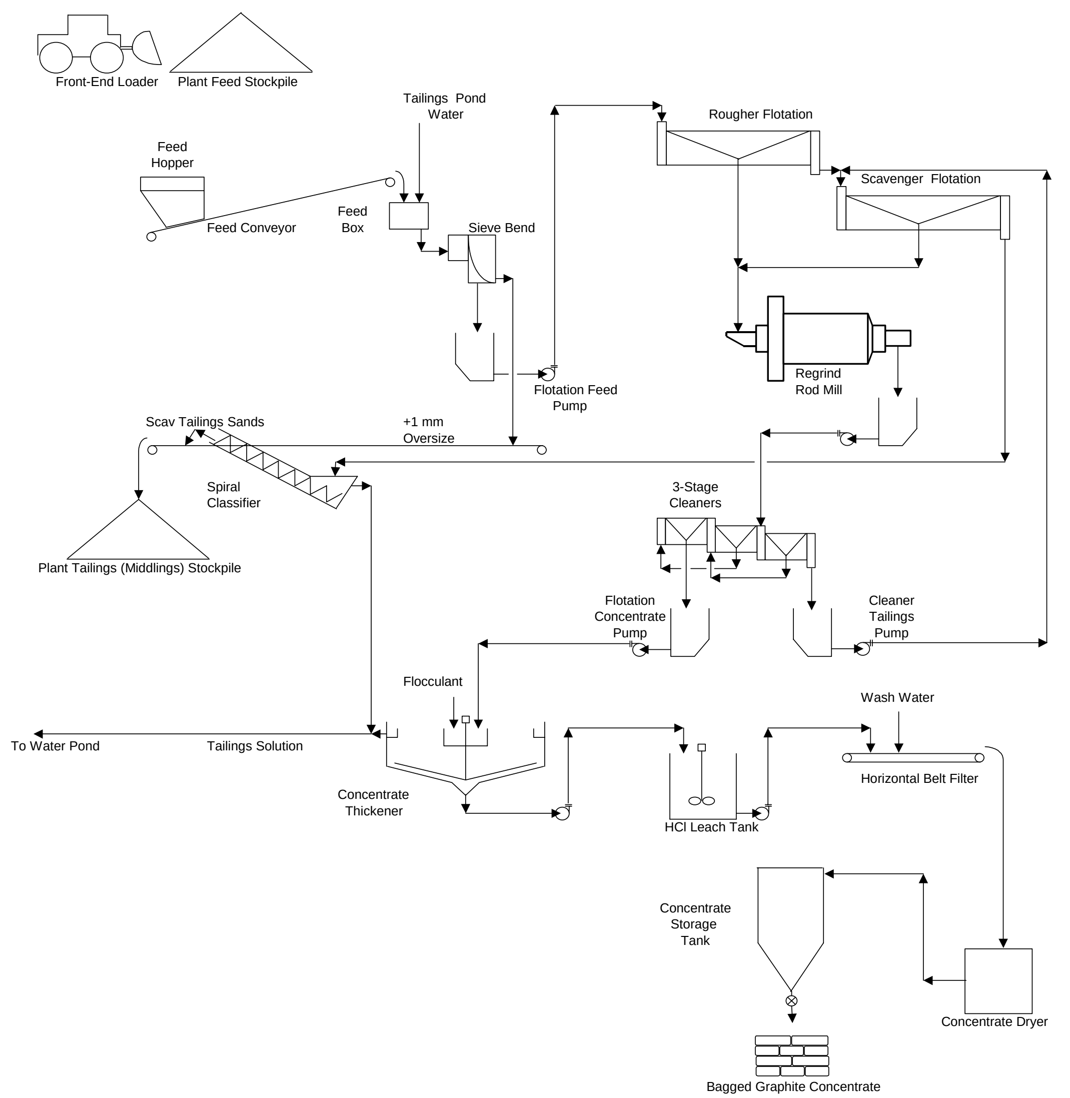
16.2 Current Mineral Processing Facilities

A partially constructed 30 tph processing pilot plant was acquired by CGC. Construction was completed by CGC under the direction of IME during the summer of 2001 and the plant was commissioned in August 2001.

Figure 16.1 depicts a simplified flowsheet of the pilot plant. The stockpiled feed material is generally 0.5" passing screened fines from the oxide quarry, and is fed into the feed hopper by a front-end loader. The hopper capacity is 15 to 20 minutes at a 25 to 30 tph feed rate. The material discharges to a variable speed feed conveyor, from where it is metered into a pulping box and mixed with recycled tailings pond water and pine oil flotation reagent. (Fuel oil can also be added.) The conveyor is not equipped with a weigh scale, so the plant feed rate is determined by taking a manual cut of sample from a pre-determined length of the feed belt. The weight of the sample is correlated with the belt speed to provide the tonnage rate of feed to the plant.

The slurried feed material passes over a 4 ft x 8 ft sieve bend with 1 mm slots. The sieve oversize discharges onto the tailings conveyor, and the fines flow by gravity into the flotation feed pumpbox. The slurry fines are pumped to a conditioning tank, which overflows into the first cell of a bank of six 50 ft^3 Denver Sub-A flotation cells. MIBC frother is added with the slurry into the #1 rougher cell feed box. Rougher concentrate froth is floated from the rougher cells, and the discharge from the final rougher cells flows into a bank of four 50 ft^3 Sub-A scavenger flotation cells where the concentrate is removed. The rougher and scavenger concentrates are combined in the feed chute of a 4 ft diameter x 6 ft long, 30 hp regrind rod mill, where sodium silicate dispersant is added. The tailings from the scavengers flows by gravity to the tailings spiral classifier for dewatering. The dewatered tailings is combined with the sieve bend oversize to produce the overall process tailings, which is conveyed to an outside stockpile. The classifier overflow slimes discharge to the recycle water pond.

Figure 16.1: Black Crystal Graphite Pilot Plant Simplified Flowsheet



Following regrinding, the rougher/scavenger concentrate is pumped to the three-stage cleaner flotation circuit, a single bank of six 18 ft^3 Denver Sub-A cells. Each cleaning stage consists of two cells with counter-current tailings flows. Concentrate from the third cleaner stage has a grade of 90% to 95% at an estimated recovery of 75% to 80%. This concentrate is is pumped to a 30 ft diameter thickener.

The flotation concentrate is further upgraded by hydrochloric acid leaching to remove carbonates in a rubber-lined acid leach tank. Following acid leaching, the concentrate is dewatered and washed of residual acid in a horizontal belt filter. The washed and filtered concentrate is then loaded into pans and dried in an oven. The dried concentrate is transferred by vacuum system to a silo, from where it is loaded into 25 kg capacity bags as the final product.

Short-term Pilot Plant Upgrading for Regolith Ore

To meet current marketing needs, CGC requires the pilot plant to produce a concentrate grading 97% graphite. Because this cannot be achieved on a single pass through the current plant, the operation has been modified to accommodate a second pass through the entire circuit of the third cleaner concentrate. During the site visit, it was observed that with a second pass through the circuit, concentrates exceed 97% graphite. However, the contamination in the circuit resulting from alternating between raw feed and third cleaner concentrate disallowed accurate sampling to determine the recoveries for each pass. The recovery that accompanies the 97% graphite concentrate grade is therefore unknown.

The immediate objective for the pilot plant is to produce a concentrate grade of 97% in a single pass through the circuit. This may be achieved by one or more of the following modifications:

- Install an additional regrinding mill and two or three more cleaner flotation stages.
- Process the third cleaner concentrate over a gravity shaking table.
- Screen the third cleaner concentrate over a 150-mesh screen to remove the finer silicate contaminants.
- Process the third cleaner concentrates in a hydrofluoric acid leach to remove the silicate contaminants.
- All of the above processes can be used in conjunction with or without the currently installed hydrochloric acid leaching process.

AMEC recommends that testwork be conducted on the first three of these processes to quantify the metallurgical improvements that may be achieved. Screening at 150 mesh may be quite difficult; however, testing should still be conducted to determine the screening area that would be required.

The use of acid leaching processes is less desirable due to the inherent problems associated with handling and disposing of hazardous chemicals.

Crystal Graphite's pilot plant has demonstrated the potential to produce concentrate with grades in excess of 97% graphite. However, due to the current operating practice of processing the material through the circuit in two passes, the recovery of graphite at the 97% grade is not known. The testwork recommended above would provide the expected graphite recoveries at the target 97% concentrate grade and would determine the appropriate plant modifications that should be made to allow the desired grade to be achieved in a single pass through the plant.

Long-term Upgrading of the Pilot Plant for Hard Rock Ore

The pilot plant has a nominal capacity of 30 tph, or 236,000 tpy at a 90% operating time. This indicates that the long-term throughput objective of 225,000 tpy is achievable, and that the near-term target of 75,000 tpy implies part-time operation of the plant.

The regolith graphitic material is expected to provide feed to the pilot plant for approximately five years, after which the hard rock material would be mined and processed. Processing the CS1 and CS2 hard rock materials would require adding a one- or two-stage crushing plant and primary grinding rod mill to the existing pilot plant. Flotation recovery and upgrading appears easier for the hard rock material than for the regolith, thus the flotation and regrinding circuits installed to process the regolith will prove suitable for the hard rock material.

17.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The mineral resource estimate for the Black Crystal Graphite project consists of the following three components:

- a demonstration of the physical and chemical homogeneity of the property (i.e., mineral resource quality)
- an estimate of resource volume / tonnage (i.e., mineral resource quantity)
- a determination of the marketability of the resource.

These components are consistent with the guidelines for reporting industrial minerals in the CIM definitions referred to in National Instrument 43-101.

17.1 Mineral Resource Quality

Physical and chemical properties were examined in Sections 9 and 13, and in Appendix A. Results of key measurements and observations are highly favourable. Achieving a high-purity graphity product is a realistic expectation.

17.2 Mineral Resource Quantity

17.2.1 Geology and Data Analysis

The lithologic units listed as “rock” codes (Table 17.1) were reviewed to determine appropriate estimation or grade interpolation domains. The graphite mineralization resides in unconsolidated material (regolith) and hard rock (calc-silicate gneiss). Several procedures were applied to the hard rock data (composited assays) to discover whether statistically distinct domains could be constructed using the available geological variables. Results obtained were used to guide the construction of the block model and the development of estimation plans.

Table 17.1: Lithologic Units / Codes, Black Crystal Graphite Project

Code	Lithologic Unit
903	Quartz or Quartzite
905	Quartz Monzonite
909	Gneiss
912	Skarn and Marble
919	Pegmatite
941	Calc-Silicate Gneiss 1 (CS1)
942	Calc-Silicate Gneiss 2 (CS2)
901	Regolith / Till

Boxplots, a graphical summary showing the frequency distribution of grade values, are constructed to show the changes in distribution in fixed carbon (FC) grades among the hard rock lithologic units (Figure 7.1). Boxplots show the distributions for CS1 and CS2 are elevated compared to the remaining zones. Results for the analyzed Gneiss and Skarn samples are somewhat misleading because samples were only taken locally when graphite was observed. Samples were rarely taken in the weakly to unmineralized portions of these units.

Histograms and probability plots were made for all units. Results for CS1, CS2, and the regolith samples are shown in Figures 17.2 and 17.3. The calc-silicate gneiss data show a good normal distribution of FC values. The distribution contains a high-grade tail (mainly from values in the CS2 unit). FC values in the regolith show a more skewed distribution with a long, high-grade tail. These distributions mirror the respective geologic setting: a meta-sedimentary origin for the calc-silicate gneiss units, in which graphite mineralization was a consistent component and an erosional provenance for the regolith that reflects a more irregular distribution of graphite mineralization.

The data analyses demonstrated that the regolith and calc-silicate gneiss units should be treated as separate domains for the purposes of resource modelling. Furthermore, the two calc-silicate units, though distinct in fixed graphite distribution, were not separated. This was a result of the limited data available for the CS2 units relative to the CS1 units, as well as the difficulty in consistently identifyng the green spinel phase that helps characterize CS2. Definition of a CS1/CS2 boundary should not be based on a fixed carbon grade value alone.

The remaining units are not distinguished for modelling purposes and are treated as unmineralized. In some areas, the calc-silicate units are cut by one of the intrusive units. These were not put into separate domains, but were left as part of the calc-silicate unit to represent local areas of low grade that may or may not be separable during mining.

17.2.2 Evaluation of Extreme Grades

Extreme grades were examined for fixed carbon in the calc-silicate and regolith units. This was done mainly by histograms and probability plots (Figures 17.2 and 17.3). The distributions do not generally indicate a problem with extreme grades. The trends defined in the cumulative probability plots become discontinuous around 98% to 99%. At those breaks, the grades are 4.5% FC for the calc-silicate unit, and 6.0% FC for the regolith unit. Grades above these values were restricted during interpolation (see below).

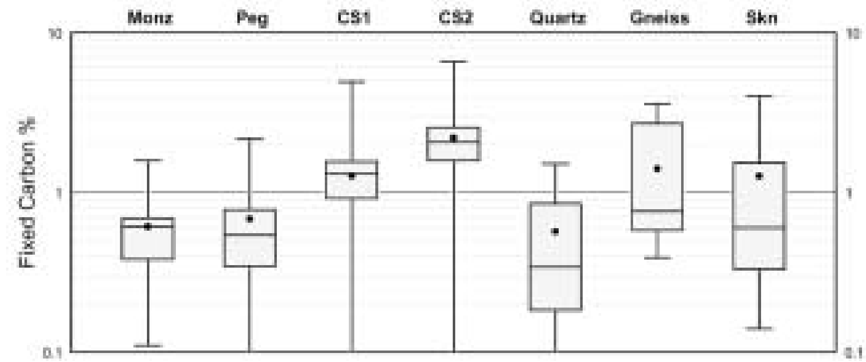
17.2.3 Variography

Variography, a continuation of data analysis, is the study of the spatial variability of an attribute (graphite, metallurgical recovery, etc.). Correlograms were calculated for the

Figure 17.1: Fixed Carbon (comp), by Zone Type

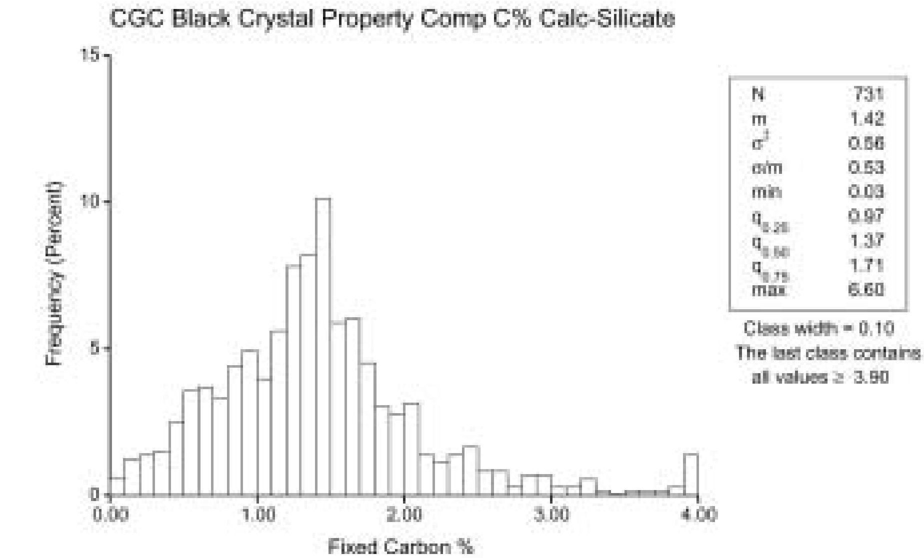
Crystal Graphite ***Black Crystal Property***

Fixed Carbon (comp), by Zone Type



	Monz	Peg	CS1	CS2	Quartz	Gneiss	Skn	
Number of data	24	39	813	118	19	10	11	Number of data
Mean	0.612	0.684	1.275	2.201	0.571	1.411	1.268	Mean
Maximum	1.58	2.16	4.94	6.6	1.51	3.59	3.99	Maximum
Upper quartile	0.69	0.78	1.563	2.55	0.85	2.7	1.535	Upper quartile
Median	0.61	0.54	1.31	2.065	0.34	0.76	0.6	Median
Lower quartile	0.38	0.343	0.918	1.58	0.183	0.58	0.33	Lower quartile
Minimum	0.11	0.08	0.03	0.05	0.03	0.38	0.14	Minimum
Variance	0.1361	0.2765	0.3174	1.1114	0.2294	1.3968	1.8547	Variance
CV	0.603	0.768	0.442	0.479	0.84	0.838	1.074	CV
Skewness	1.178	1.425	0.861	1.036	0.833	0.872	1.26	Skewness

Figure 17.2: Comp C% Calc-Silicate



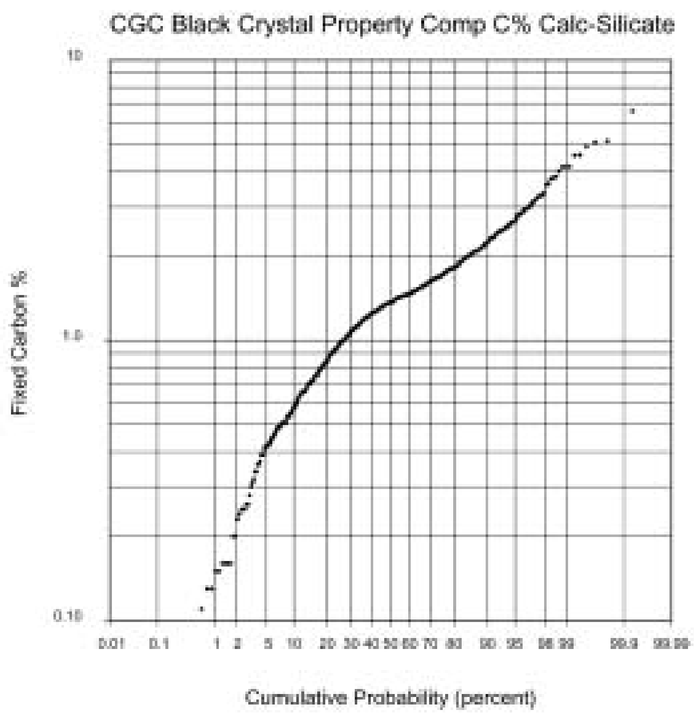
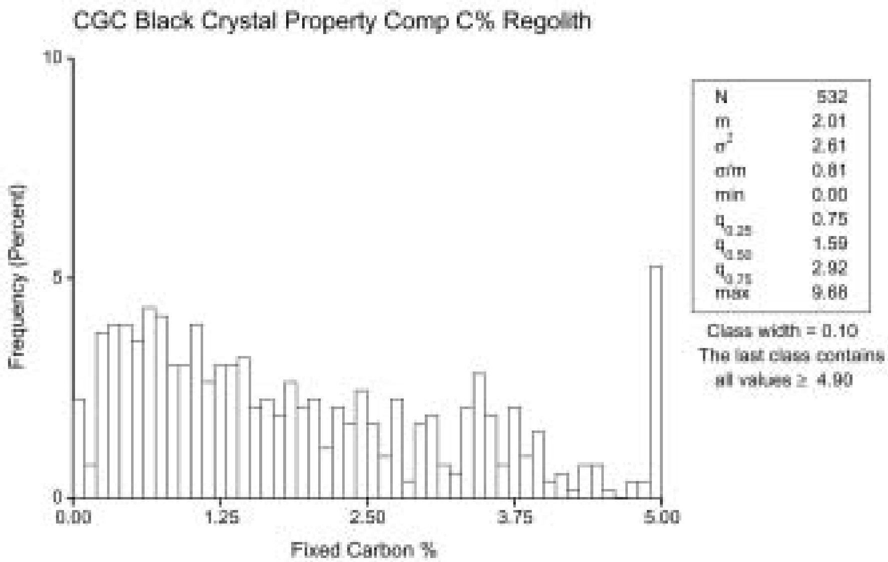
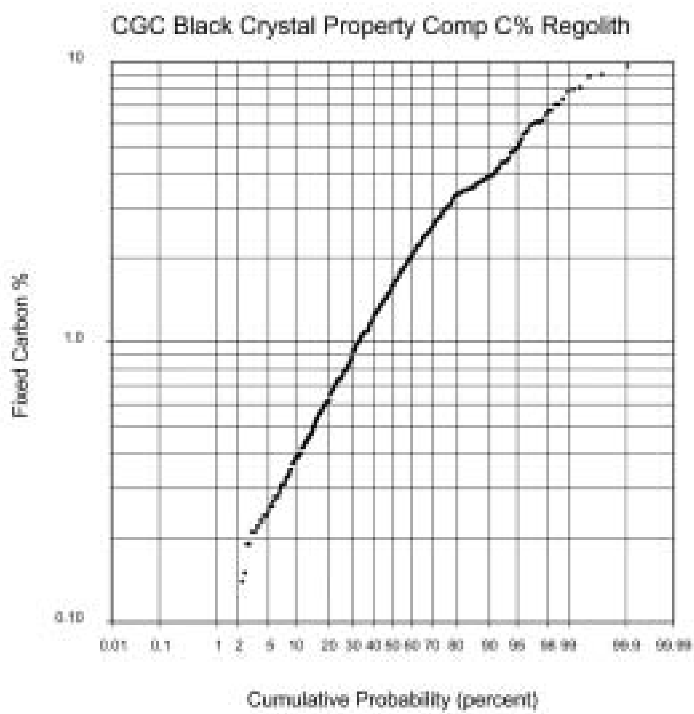


Figure 17.3: Comp C% Regolith





fixed carbon values using data from the calc-silicate unit and the regolith. The patterns of anisotropy demonstrated by the various correlograms tend to be consistent with the geological interpretations. Fixed carbon in the calc-silicate units displays a main, steeply dipping, ESE-WNW trending, shorter range structure (from 10 to 85 m), as well as a minor, moderately southwest dipping, NW-SE trending, longer range structure (about 200 m). The latter structure reflects the attitude of the calc-silicate unit, whereas the shorter range structure may be influenced by local structural features. The fixed carbon in the regolith displays a main, flat-lying, NE-SW trending, shorter range structure (10 to 100 m), as well as a minor, flat-lying, NW-SE trending, longer range structure (20 to 300 m). The nugget effects or random variation components of spatial variation tend to be moderate (about 40% of the total variation) in the calc-silicate, to minor (about 5% of the total variation) in the regolith.

17.2.4 Model Set-up

The estimates were made from 3D block models utilizing commercial mine planning software (MineSight®). The Black Crystal Graphite project exists in a single geologic block model. Project limits are 444000 to 445000 east, 513200 to 514200 north and 1,300 m to 1,800 m ASL elevation. Cell size was 5 m east x 5 m north x 2 m high.

The assays were composited into 2 m down-hole composites, reflecting the predominant assay sample length. The compositing honoured the modelling domain codes by breaking the composites on the domain code values. AMEC reviewed the compositing process and found it to have been performed correctly.

Various coding was done for the block model in preparation for grade interpolation. The block model was coded according to “ore” domain (calc-silicate and regolith). "Percent below topography" was also calculated into the model blocks.

17.2.5 Interpolation Plan

Modelling consisted of grade interpolation by ordinary kriging (OK). Nearest-neighbour (NN) grades were also determined for validation purposes. The grade interpolation used an ellipsoidal search of 65 to 150 m x 65 to 150 m x 10 to 20 m in an NW-SE trending, westerly dipping ellipse. These parameters were based on the geological interpretation and variogram analysis. A two-pass strategy was used in both mineralized domains.

The number of composites used in estimating a model block grade followed a strategy that matched composite values and model blocks sharing the same ore code or domain. The first pass allowed composites from only one drill hole to be used (longer search distances) and the second pass, run at the shorter search distances, ensured that composites from at least two drill holes were used.

Estimates for the calc-silicate unit used a maximum of eight composites per model block, with a maximum of two composites and a minimum of three permitted per drill hole.

Regolith estimates used a maximum of ten composites and a minimum of three per model block, with a maximum of two composites permitted per drill hole. In addition, a quadrant search was used for regolith estimates. Both domains used a restricted outlier philosophy during the interpolation. The effect of grades above the respective threshold (see above) was limited to 15 m.

17.2.6 Validation

Visual Inspection

AMEC completed a detailed visual validation of the Black Crystal Graphite resource block model. The model was checked for proper coding of drill hole intervals and block model cells, in both section and plan. Coding was properly done. Grade interpolation was examined relative to drill hole composite values by inspecting sections and plans. The checks showed good agreement between drill hole composite values and model cell values. Examples of representative sections and plans containing block model grades, drill hole composite values, and ore zone outlines are included in Appendix C.

Model Checks for Bias

AMEC checked the block model estimates for global bias by comparing the average fixed carbon grades (with no cut-off) from the model (ordinary kriging) using nearest-neighbour estimates. (The nearest-neighbour estimator produces a theoretically unbiased estimate of the average value when no cut-off grade is imposed and is a good basis for checking the performance of different estimation methods.) The results (Table 17.2) show no evidence of bias in the estimate.

Table 17.2: Ordinary Kriging and Nearest-Neighbour Estimates

Grade Item	Mean Value (m)	Standard Deviation (sd)	Coefficient of Variation (sd/m)
Calc-Silicate			
FC % (OK)	1.103	0.441	0.40
FC % (NN)	1.115	0.812	0.73
Regolith			
FC % (OK)	1.506	0.785	0.52
FC % (NN)	1.459	1.160	0.80

AMEC also checked for local trends in the grade estimates by plotting the mean values from the nearest-neighbour estimate and comparing them to the ordinary kriging results bench by bench. The ordinary kriging estimate should be smoother than the nearest-neighbour estimate, thus the nearest-neighbour estimate should fluctuate around the ordinary kriging estimate on the plot. Results for the calc-silicate and regolith are shown in

Figures 17.4 and 17.5. The two trends behave as predicted and show no significant trends of the metals in either zone.

Figure 17.4: Local Mean %FC Values, by Bench – Calc-Silicate

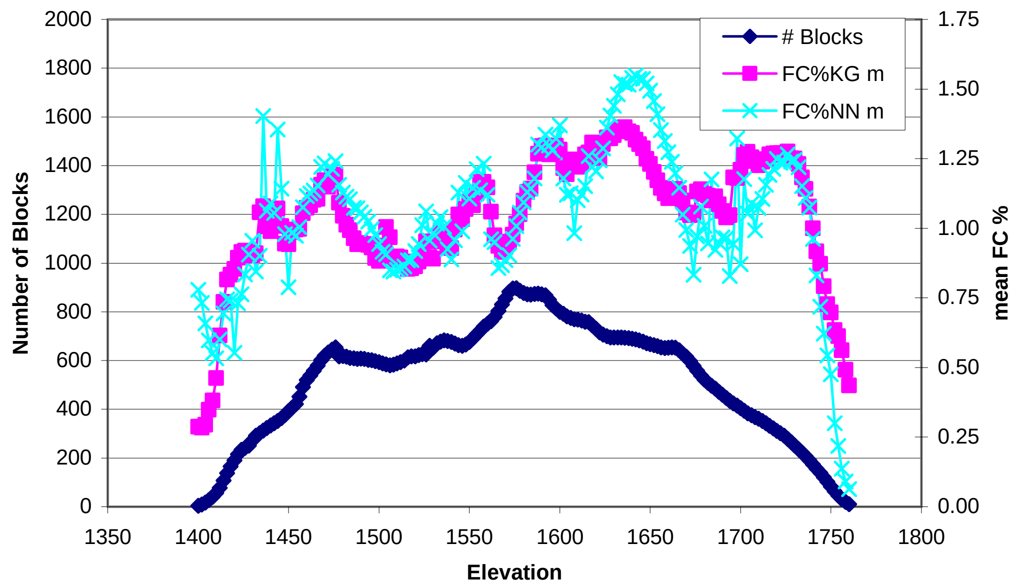
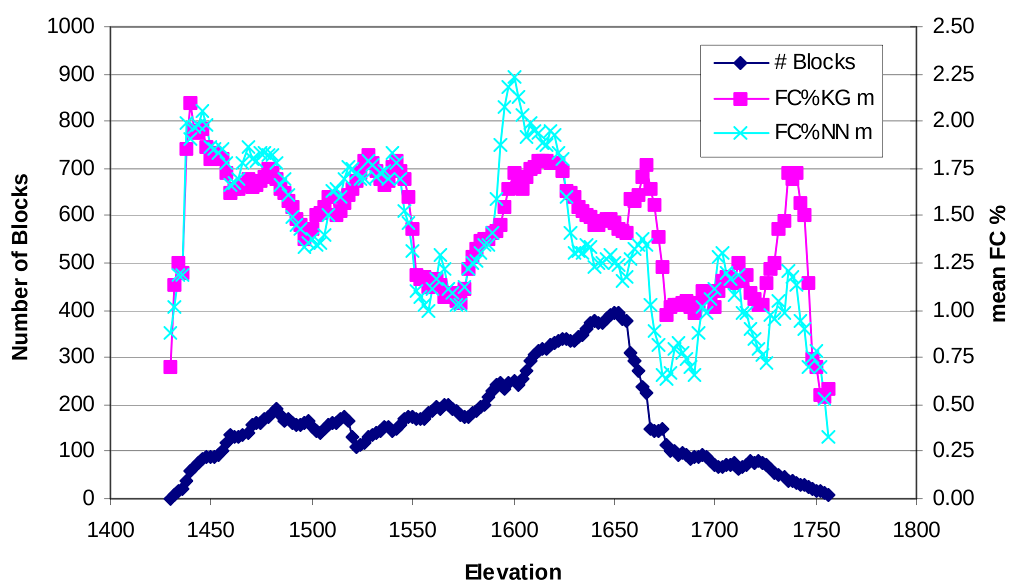


Figure 17.5: Local Mean % FC Values, by Bench – Regolith



17.3 Mineral Resource Marketability

CGC's current 6-year marketing plan is to sell relatively limited but increasing amounts of high-purity graphite into the U.S. natural graphite market to establish the Black Crystal deposit as a reliable and high-quality producer. Four segments of the natural graphite market are targeted:

- Carbon brushes (electric motor applications – 97% fixed carbon)
- Friction plates (generally automotive applications – 95% fixed carbon)
- Refractory (castings and carbon-bearing bricks – 93% to 95% fixed carbon)
- Fuel cells (proton emission membrane – 97% fixed carbon).

Sales and price targets for each of these segments is shown in Table 17.3.

Table 17.3: Crystal Graphite Corporation Production & Sales Targets

Product	US$/tonne	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Totals
Carbon brushes	2,750	20	40	60	0	0	0	120
Friction plates	1,200	30	80	0	0	0	0	110
Refractory	1,000	100	300	0	0	0	0	400
Fuel Cell	2,700	107	193	900	1,910	1,073	1,097	5,280
Totals		257	613	960	1,910	1,073	1,097	5,910

AMEC reviewed publicly available information regarding the U.S. market for high-purity natural graphite, market trends, and product pricing to confirm that CGC's marketing plan is reasonable. Information on specific aspects of the graphite market, particularly sales tonnages and prices for high-purity products, are generally proprietary. However, information derived from public Customs Department records and published by the U.S. Geological Survey reveal total tonnages and sales values for various natural graphite imports and exports. AMEC was able to confirm CGC's prices for carbon brushes, friction applications, and refractory products using published U.S. government data. The total market for these materials is large enough to easily incorporate the amounts of natural carbon that CGC anticipates to produce from its deposit in the first six years. In addition, a large number of consumers (producers of finished products) exist in the market of carbon brushes, friction applications, and refractories, making it less likely there will be a significant barrier to entry in these areas.

The market for natural, high-purity graphite in proton emission membrane (PEM) fuel cells is more difficult to quantify. Projections of the future market for stationary and mobile fuel cells and the amounts of natural graphite that will be consumed in manufacturing these cells vary considerably. This is due to the uncertainty of how quickly the fuel cell industry will expand and what sources of carbon will be used to manufacture fuel cell membranes. Available information strongly suggests that the market will be significant enough to assimilate Black Crystal graphite as noted in Table 17.3. Prices for high-purity graphite for fuel cell applications are not publicly available. AMEC confirmed the anticipated US$2,700 sales price using price quotes given to CGC by one of its alliance partners, Fuel Cell Concepts, Inc (FCCI).

CGC presently has an alliance agreement with FCCI to supply a majority of the natural graphite FCCI needs to manufacture PEM fuel cells. CGC also has an alliance with Black Dragon Graphite in China to supply graphite for the production of graphite foil. In addition, CGC presently is negotiating with Graftech, Inc. to supply crystalline graphite for Graftech’s PEM cells. Ballard Power Systems recently invested US$5 million in Graftech and is working to develop fuel cells using natural graphite.

FCCI believes that it will require 4,000 tonnes of high-purity graphite per year to meet its projection of a 25% market share of graphite plate production for fuel cells in two years. The amount required by Black Dragon Graphite and Graftech is unknown.

AMEC believes that the alliances CGC has presently developed, in conjunction with the size of the present market for natural graphite, the production of fuel cells, and the quality of product CGC has demonstrated can be produced from the Black Crystal deposit, will enable CGC to execute contracts and meet its projected sales targets for the fuel cell market. Given the rapidly evolving technology of fuel cells, there is a risk that natural, crystalline graphite may be replaced by other materials, but at present natural graphite is one of the preferred raw materials.

17.4 Mineral Resource Classification

The "measured" mineral resource category is supported in the regolith mineralization. The trench spacing and sampling results show good geologic and grade continuity up to about 25 m. Blocks containing an estimate where two or more samples were from different trenches within 25 m were classified as measured. A measured level of confidence cannot be applied to the hard rock mineralization at this time because of the degree of uncertainty in the quality of the core assay values. Once that uncertainty is diminished, a similar distance to composite protocol as used in the regolith unit can be imposed on the calc-silicate mineralization to declare measured mineral resources.

The "indicated" mineral resource category is supported in areas where the drilling grids approach a nominal 50 m. Geologic and grade continuity can be reasonably assumed for this level of resource classification in both the regolith and calc-silicate zones. Blocks containing an estimate where two or more samples were from different holes within 50 m were classified as indicated.

Estimated blocks not classified as measured or indicated were classified as "inferred," if the closest composite was within 100 m of a block centre. This protocol was applied in both the regolith and calc-silicate units.

17.5 Mineral Resource Summary

The mineralization of the Black Crystal Graphite project as of 5 July 2002 is classified as measured, indicated and inferred mineral resources. The classified mineral resources are shown in Table 17.4. The mineral resource is reported at a 0.70 % FC cut-off grade to reflect preliminary metallurgical work and expected long-term pricing for high purity graphite mineralization. However, the actual deposit % FC cut-off grade will vary dependent on graphite products produced and achieved market prices. To illustrate the effect of different % FC cut-off grades on the Black Crystal graphite mineralization, the classified mineral resource is shown in Table 17.5 at 0.0, 0.5, 0.7, 1.0, 1.5, and 2.0 % FC cut-off grades.

Table 17.4: Black Crystal Graphite Project Mineral Resource Summary

	Tonnage	% Fixed Carbon
Regolith:		
Measured Mineral Resource	292,000	1.95
Indicated Mineral Resource	356,000	1.71
Measured + Indicated Mineral Resources	648,000	1.82
Inferred Mineral Resource	516,000	1.69
Calc-silicate:		
Indicated Mineral Resource	4,763,000	1.21
Inferred Mineral Resource	4,591,000	1.24

Notes: 1. Calculated at a 0.7% FC cut-off. **2**. Bulk density values used: Regolith = 1.67, Calc-silicate = 2.80. **3**. The measured mineral resource excludes the 10,400 tonnes @ 4.3% FC stockpiled at the CGC processing plant.

Table 17.5: Graphite Mineralization at Variable % Fixed Carbon Cut-off Grades

	Cut-Off (% Fixed Carbon)	Tonnage	% Fixed Carbon
Regolith:			
Measured + Indicated Mineral Resources			
	Ó2.0	230,000	2.70
	Ó1.5	384,000	2.30
	Ó1.0	556,000	1.98
	Ó0.7	648,000	1.82
	Ó0.5	726,000	1.69
	Ó0.0	748,000	1.65

	Cut-Off (% Fixed Carbon)	Tonnage	% Fixed Carbon
Inferred Mineral Resource			
	Ó2.0	150,000	2.46
	Ó1.5	289,000	2.11
	Ó1.0	457,000	1.80
	Ó0.7	516,000	1.69
	Ó0.5	566,000	1.59
	Ó0.0	585,000	1.55
Calc-Silicate:			
Measured + Indicated Mineral Resources			
	Ó2.0	70,000	2.30
	Ó1.5	757,000	1.70
	Ó1.0	3,461,000	1.34
	Ó0.7	4,763,000	1.21
	Ó0.5	5,150,000	1.17
	Ó0.0	5,391,000	1.13
Inferred Mineral Resource			
	Ó2.0	71,000	2.13
	Ó1.5	1,004,000	1.69
	Ó1.0	3,376,000	1.38
	Ó0.7	4,591,000	1.24
	Ó0.5	5,094,000	1.18
	Ó0.0	5,469,000	1.12

Notes: **1**. Bulk density values used: Regolith = 1.67, Calc-silicate = 2.80. **2**. The measured + indicated mineral resources exclude the 10,400 tonnes @ 4.3% FC stockpiled at the CGC processing plant.

18.0 OTHER RELEVANT DATA AND INFORMATION

This section is not applicable.

19.0 REQUIREMENTS FOR TECHNICAL REPORTS ON PRODUCTION AND DEVELOPMENT PROPERTIES

This section is not applicable.

20.0 CONCLUSIONS AND RECOMMENDATIONS

AMEC reviewed pertinent data from the Black Crystal project to obtain a sufficient level of understanding to assess the existing Mineral Resource statement. AMEC general conclusions from this review are as follows:

- The lithologic controls on the graphite mineralization are well understood by CGC geologists. The graphite mineralization resides in an in-situ regolith and a calc-silicate gniess unit. The graphite is quite crystalline, impurity-free and undeformed.

- The database used to estimate the Mineral Resource for the Black Crystal project consists of samples and geological information from 64 drill holes, 176 slit trenches, and 1,855 metres of linear trench. Data transfer to the resource database was checked and found sufficiently free of error to be adequate for resource estimation.

- The main QA/QC data are from a major field duplicate study undertaken by CGC. Control data results for the regolith samples show acceptable quality in the grade range that would likely be mined. Results for the calc-silicate sample (drill core) show poorer quality. This can be rectified through additional check assays and consistent analytical protocols between laboratories. Overall, AMEC believes the risk to the mineral resource estimate is minimal and within acceptable limits. Check assay results must demonstrate no bias and consistent reproducibility to enable portions of the calc-silicate hard rock graphite mineralization to be classified as measured mineral resource.

- The Black Crystal mineral resource model was developed using industry-accepted methods. AMEC validated the model estimates and found them to reasonably estimate grade and tonnage for the project graphite mineralization.

- The Black Crystal project has demonstrated favourable mineral resource quality, a validated mineral resource quantity (estimate) and a positive marketability result. These components are consistent with the guidelines for reporting industrial minerals in the CIM definitions referred to in National Instrument 43-101 and allow the Black Crystal deposit to be classified into Measured, Indicated and Inferred Mineral Resources.

This independent review by AMEC supports the 2002 Black Crystal Mineral Resource statement.

21.0 REFERENCES

Addie, G. G. (1998): *1997 Diamond Drill Report on the Black Crystal Property (Graphite)*. Unpublished Report.

Augsten, B. (2000): *Report on the Black Crystal Graphite Property*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 26413.

Augsten, B. (2001): *2000 Diamond Drill Report on the Black Crystal Graphite Property*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 26622.

BC Ministry of Energy, Mines & Petroleum Resources: *Minfile # 082FNW260*.

Boucher & Company Inc. (2001): *Crystal Graphite Corporation – Equity Research Note*. Unpublished Report.

Carr, S.D., Parrish, R.R., & Brown, R.L. (1987): *Eocene Structural Development of the Valhalla Complex, Southeastern British Columbia*. Tectonics, 6: pp. 175-196.

Carr, S.D., (1995): *The Southern Omineca Belt, British Columbia: New Perspectives From the Lithoprobe Geoscience Program*. Canadian Journal of Earth Sciences 32: pp. 1720-1739.

Crystal Graphite Staff, (2002): *Black Crystal Graphite Project - Application for a Permit Approving the Mine Plan and Reclamation Program*. Unpublished Mine Permit Application Document.

Hanson, W., (1999): *Drilling Report on the Superior Graphite Property*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 26,272.

Harris, J.F. (2001): Vancouver Petrographics Ltd. *Petrographic Report*. Unpublished Report.

Howard, D.A. (1994): *Report on the Exploration Potential of the Black Crystal Property*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 23,406.

Howard, D.A. (1995): *Report on the Exploration Potential of the Black Crystal Property*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 23,754.

Howard, D.A. (1996): *Report on the Exploration Potential of the Black Crystal Property*. Unpublished Report.

Klepacki, D.W. (1985): *Stratigraphy and Structural Geology of the Goat Ranges Area, Southeastern British Columbia*. Ph.D. Thesis, Massachusetts Institute of Technology. Boston, Massachussetts.

Lewis, T.M. (2002): *Prospecting and Drilling Report on the Plant Group Mineral Claims*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report - Pending.

Lewis, T.M. (2002): *Geological, Drilling and Trenching Report on the Molly & PB Claims*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report - Pending.

Mine Design Systems Ltd. (2001): *Black Crystal Graphite Project - Project Update and Recommendations for Further Exploration*. Unpublished Report.

Mine Design Systems Ltd. (2001): *Report on Interim Mineral Resource Assessment for the Black Crystal Prospect*. Unpublished Report.

Newman Energy Research (2001): *Analysis of Graphite Sample 01-41144*. Unpublished Report.

Northcote, B. (2001): *Petrographic Report (5 drill core samples) prepared for Crystal Graphite Corporation*. Unpublished Report.

Parrish, R.R., Carr, S.D, & Brown, R.L. (1985): *Valhalla Gneiss Complex, Southeast British Columbia*: 1984 Fieldwork in Current Research, Part A, Geological Survey of Canada, Paper 85-1A, pp. 81-87.

Reesor, J.E. (1965): *Valhalla Gneiss Complex*, *BC*. Geological Survey of Canada, Bulletin 129.

Schaubs, P.M. & Carr, S.D. (1998): *Geology of Metasedimentary Rocks and Late Cretaceous Deformation History in the Northern Valhalla Complex, British Columbia*. Canadian Journal of Earth Sciences 35: pp. 1018-1036

Sanguinetti, M.H. (1996): RE: *Report on the Exploration Potential of the Black Crystal Property*. Unpublished Letter.

Simandl, G.J., Paradis, S., Aliquette, G., & Jacob, H., (1995): Simandl, G.J., Paradis S., Valiquette, G., and Jacob, H.-L. (1995): *Crystalline Graphite Deposits, Classification and Economic Potential, Lachute-Hull-Mont Laurier Area, Quebec*; in Proceedings of 28th Forum on the Geology of Industrial Minerals, Martinsburg, West Virginia, May 3-8, 1992, pp. 167-174.

Snell, J. (1999): *Geological Evaluation and Exploration Recommendation for the Black Crystal Graphite Deposit*. BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 25,921.

Appendix A

Supporting Reports

APPENDIX A OMITTED

PLEASE SEE HARD COPY

Appendix B

Data

B.1: Calc-Silicate >0.5% FC Drill Hole Composite Values

DHID	East	North	Elevation	Length	% FC
BC0001	444730	514000	1,631.4	2.0	0.64
BC0001	444730	514001	1,629.8	2.0	1.00
BC0001	444731	514002	1,628.2	2.0	1.53
BC0001	444732	514003	1,626.7	2.0	3.33
BC0001	444733	514004	1,625.1	2.0	3.37
BC0001	444733	514005	1,623.5	2.0	2.33
BC0001	444734	514006	1,621.9	2.0	1.55
BC0001	444735	514007	1,620.3	2.0	1.35
BC0001	444735	514008	1,618.8	2.0	1.77
BC0001	444736	514009	1,617.2	2.0	1.53
BC0001	444738	514014	1,610.9	2.0	1.11
BC0001	444739	514015	1,609.3	2.0	0.69
BC0001	444740	514017	1,606.2	2.0	1.09
BC0001	444741	514018	1,604.7	1.6	1.52
BC0002	444726	513996	1,630.9	2.0	0.51
BC0002	444726	513996	1,628.9	2.0	0.74
BC0002	444726	513996	1,626.9	2.0	0.71
BC0002	444726	513996	1,624.9	2.0	0.80
BC0002	444726	513996	1,622.9	2.0	1.16
BC0002	444726	513996	1,620.9	2.0	1.72
BC0002	444726	513996	1,618.9	2.0	2.50
BC0002	444726	513996	1,617.0	2.0	2.44
BC0002	444726	513996	1,615.6	0.7	0.92
BC0003	444716	513918	1,627.6	2.0	3.71
BC0003	444717	513919	1,626.0	2.0	1.09
BC0003	444718	513920	1,624.3	2.0	1.06
BC0003	444719	513920	1,622.7	2.0	1.07
BC0003	444719	513921	1,621.1	2.0	1.23
BC0003	444720	513922	1,619.5	2.0	1.30
BC0003	444721	513923	1,617.9	2.0	1.37
BC0003	444722	513924	1,616.3	2.0	1.04
BC0004	444714	513915	1,626.1	2.0	2.82
BC0004	444714	513915	1,624.1	2.0	1.27
BC0004	444714	513915	1,622.1	2.0	0.80
BC0004	444714	513915	1,620.1	2.0	1.10
BC0004	444714	513915	1,618.1	2.0	1.41
BC0004	444714	513915	1,616.1	2.0	1.57

DHID	East	North	Elevation	Length	% FC
BC0004	444714	513915	1,614.1	2.0	1.52
BC0004	444714	513915	1,612.1	2.0	1.44
BC0004	444714	513915	1,610.1	2.0	1.29
BC0004	444715	513915	1,608.6	1.1	1.20
BC0005	444769	514099	1,637.7	2.0	1.54
BC0005	444770	514100	1,636.4	1.1	1.25
BC0006	444578	513935	1,564.3	2.0	0.80
BC0007	444575	513932	1,561.0	2.0	0.90
BC0007	444575	513932	1,559.6	0.8	0.72
BC0008	444578	513822	1,570.5	2.0	2.33
BC0008	444579	513823	1,568.8	2.0	1.99
BC0008	444580	513824	1,567.1	2.0	1.16
BC0008	444580	513824	1,565.4	2.0	0.63
BC0008	444581	513825	1,563.8	2.0	1.04
BC0008	444582	513826	1,562.1	2.0	1.07
BC0008	444583	513827	1,560.5	2.0	1.51
BC0008	444583	513828	1,558.9	2.0	1.36
BC0008	444584	513829	1,557.2	2.0	1.04
BC0008	444585	513830	1,555.6	2.0	1.23
BC0008	444586	513831	1,554.0	2.0	1.18
BC0008	444586	513831	1,552.7	1.2	1.64
BC0009	444575	513819	1,569.8	2.0	0.97
BC0009	444575	513819	1,567.8	2.0	2.22
BC0009	444575	513819	1,565.8	2.0	1.82
BC0009	444575	513819	1,563.8	2.0	1.30
BC0009	444575	513819	1,561.8	2.0	1.33
BC0009	444575	513819	1,559.8	2.0	1.36
BC0009	444575	513819	1,557.8	2.0	1.24
BC0009	444575	513819	1,555.8	2.0	1.43
BC0009	444575	513819	1,553.8	2.0	1.50
BC0009	444575	513819	1,551.8	2.0	1.42
BC0009	444575	513819	1,549.8	2.0	1.17
BC0009	444575	513819	1,547.8	2.0	1.06
BC0009	444575	513819	1,546.5	0.6	1.06
BC0011	444574	513784	1,571.5	2.0	0.78
BC0011	444575	513785	1,569.8	2.0	0.78
BC0011	444575	513786	1,568.2	2.0	0.67
BC0011	444576	513787	1,566.6	2.0	0.81

DHID	East	North	Elevation	Length	% FC
BC0011	444576	513788	1,565.0	2.0	1.36
BC0011	444576	513789	1,563.3	2.0	1.86
BC0011	444576	513790	1,561.7	2.0	2.77
BC0011	444575	513792	1,560.1	2.0	2.22
BC0011	444575	513793	1,558.4	2.0	0.81
BC0011	444575	513794	1,556.8	2.0	1.02
BC0011	444575	513795	1,555.1	2.0	1.34
BC0011	444574	513796	1,553.5	2.0	1.17
BC0011	444574	513797	1,551.9	2.0	1.01
BC0011	444574	513798	1,550.2	2.0	1.31
BC0011	444574	513799	1,548.6	2.0	1.45
BC0011	444573	513800	1,546.9	2.0	0.76
BC0012	444580	513752	1,574.4	2.0	0.80
BC0012	444581	513754	1,571.2	2.0	1.15
BC0012	444582	513755	1,569.5	2.0	1.58
BC0012	444583	513756	1,567.9	2.0	1.05
BC0012	444584	513757	1,566.3	2.0	0.58
BC0012	444584	513758	1,564.6	2.0	1.43
BC0012	444585	513759	1,563.0	2.0	0.82
BC0012	444586	513759	1,561.3	2.0	1.42
BC0012	444586	513760	1,559.7	2.0	1.35
BC0012	444587	513761	1,558.1	2.0	0.50
BC0012	444589	513763	1,554.8	2.0	0.88
BC0012	444589	513764	1,553.1	2.0	0.90
BC0012	444590	513765	1,551.5	2.0	1.43
BC0012	444591	513766	1,549.9	2.0	1.44
BC0012	444591	513767	1,548.2	2.0	1.19
BC0012	444592	513767	1,546.6	2.0	0.91
BC0013	444578	513750	1,572.7	2.0	0.78
BC0013	444578	513750	1,568.7	2.0	0.89
BC0013	444578	513750	1,566.7	2.0	1.44
BC0013	444578	513750	1,564.7	2.0	1.27
BC0013	444578	513750	1,562.7	2.0	0.55
BC0013	444578	513750	1,560.7	2.0	2.65
BC0013	444578	513750	1,558.7	2.0	1.23
BC0013	444578	513750	1,556.7	2.0	1.40
BC0013	444578	513750	1,554.7	2.0	0.69
BC0013	444578	513750	1,552.7	2.0	1.00

DHID	East	North	Elevation	Length	% FC
BC0013	444578	513750	1,550.7	2.0	0.55
BC0013	444578	513750	1,548.7	2.0	0.64
BC0013	444578	513750	1,546.7	2.0	1.20
BC0013	444578	513750	1,544.7	2.0	1.20
BC0013	444578	513750	1,542.7	2.0	1.34
BC0013	444578	513750	1,540.7	2.0	0.72
BC0013	444578	513749	1,538.7	2.0	0.72
BC0013	444578	513749	1,536.7	2.0	1.30
BC0013	444578	513749	1,534.7	2.0	1.78
BC0013	444578	513749	1,532.7	2.0	0.94
BC0013	444579	513749	1,528.7	2.0	0.61
BC0013	444579	513749	1,526.7	2.0	1.26
BC0014	444525	513924	1,543.6	2.0	0.75
BC0014	444526	513925	1,542.0	2.0	0.75
BC0014	444527	513925	1,540.7	1.2	1.79
BC0015	444537	513879	1,551.5	2.0	1.36
BC0015	444538	513879	1,549.8	2.0	1.64
BC0015	444538	513880	1,548.2	2.0	1.59
BC0015	444539	513881	1,546.6	2.0	1.55
BC0015	444540	513882	1,545.0	2.0	1.64
BC0016	444604	513682	1,573.3	2.0	0.62
BC0016	444604	513682	1,571.7	2.0	0.73
BC0016	444606	513684	1,568.4	2.0	0.51
BC0016	444607	513685	1,566.7	2.0	0.93
BC0016	444607	513686	1,565.1	2.0	0.69
BC0016	444608	513687	1,563.4	2.0	1.03
BC0016	444609	513687	1,561.8	2.0	1.21
BC0016	444610	513688	1,560.2	2.0	1.00
BC0016	444610	513689	1,558.5	2.0	1.04
BC0017	444842	513866	1,690.1	2.0	1.47
BC0017	444843	513866	1,688.4	2.0	1.21
BC0017	444845	513869	1,683.2	2.0	2.38
BC0017	444845	513870	1,681.5	2.0	1.00
BC0017	444846	513870	1,679.8	2.0	1.29
BC0017	444847	513871	1,678.1	2.0	1.19
BC0017	444847	513872	1,676.4	2.0	1.44
BC0017	444848	513873	1,674.6	2.0	1.73
BC0017	444848	513873	1,673.3	1.1	1.04

DHID	East	North	Elevation	Length	% FC
BC0018	444698	513823	1,620.4	2.0	2.09
BC0018	444699	513823	1,618.8	2.0	2.55
BC0018	444701	513826	1,613.9	2.0	1.45
BC0018	444702	513827	1,612.2	2.0	1.36
BC0018	444703	513828	1,610.6	2.0	1.32
BC0018	444704	513828	1,608.9	2.0	1.37
BC0018	444704	513829	1,607.3	2.0	1.28
BC0018	444705	513830	1,605.7	2.0	1.34
BC0018	444706	513831	1,604.0	2.0	1.27
BC0018	444707	513832	1,602.4	2.0	1.61
BC0018	444707	513833	1,600.8	2.0	1.58
BC0019	444678	513725	1,610.6	2.0	1.99
BC0019	444678	513725	1,600.6	2.0	2.57
BC0019	444678	513725	1,598.6	2.0	1.79
BC0019	444678	513725	1,596.6	2.0	1.09
BC0019	444678	513725	1,594.6	2.0	1.68
BC0019	444678	513725	1,592.6	2.0	1.98
BC0019	444678	513725	1,590.6	2.0	1.55
BC0019	444678	513725	1,588.6	2.0	2.11
BC0019	444678	513725	1,584.6	2.0	0.80
BC0019	444678	513725	1,582.6	2.0	1.36
BC0019	444678	513725	1,580.6	2.0	1.01
BC0019	444678	513725	1,578.6	2.0	1.14
BC0019	444678	513725	1,576.6	2.0	0.67
BC0019	444678	513725	1,574.6	2.0	0.66
BC0019	444678	513725	1,573.1	1.0	0.73
BC0123	444695	513440	1,546.5	2.0	1.47
BC0123	444696	513441	1,544.8	2.0	1.28
BC0123	444696	513442	1,543.2	2.0	1.50
BC0123	444697	513442	1,541.5	2.0	1.91
BC0123	444698	513443	1,539.9	2.0	2.06
BC0123	444698	513444	1,538.6	1.1	2.12
BC0124	444359	513502	1,468.3	2.0	3.59
BC0124	444360	513503	1,466.6	2.0	2.70
BC0124	444361	513504	1,465.0	2.0	1.11
BC0124	444379	513523	1,429.4	2.0	1.72
BC0124	444380	513524	1,427.8	2.0	2.33
BC0124	444381	513525	1,426.2	2.0	1.43

DHID	East	North	Elevation	Length	% FC
BC0124	444381	513526	1,424.6	2.0	0.77
BC0124	444382	513527	1,423.0	2.0	1.95
BC0124	444383	513527	1,421.7	1.1	1.44
BC0125	444677	513760	1,610.9	2.0	1.38
BC0125	444678	513761	1,609.3	2.0	1.27
BC0125	444678	513762	1,607.7	2.0	2.41
BC0125	444679	513763	1,606.0	2.0	0.89
BC0125	444679	513764	1,604.4	2.0	1.68
BC0125	444680	513765	1,602.7	2.0	1.39
BC0125	444681	513766	1,601.1	2.0	1.07
BC0125	444681	513767	1,599.5	2.0	2.12
BC0125	444683	513769	1,596.2	2.0	1.16
BC0125	444683	513770	1,594.6	2.0	2.98
BC0125	444684	513771	1,592.9	2.0	0.82
BC0125	444684	513772	1,591.3	2.0	1.14
BC0125	444685	513773	1,589.6	2.0	1.33
BC0125	444686	513774	1,588.0	2.0	1.56
BC0125	444686	513775	1,586.4	2.0	1.81
BC0125	444687	513776	1,584.7	2.0	2.46
BC0125	444687	513777	1,583.1	2.0	1.11
BC0125	444688	513778	1,581.4	2.0	0.73
BC0125	444689	513779	1,579.8	2.0	1.03
BC0126	444668	513803	1,606.1	2.0	1.37
BC0126	444669	513804	1,604.4	2.0	1.65
BC0126	444670	513805	1,602.8	2.0	4.75
BC0126	444670	513806	1,601.2	2.0	0.91
BC0126	444674	513809	1,594.6	2.0	1.40
BC0126	444674	513810	1,593.0	2.0	1.35
BC0126	444675	513810	1,591.3	2.0	1.32
BC0126	444676	513811	1,589.7	2.0	1.04
BC0126	444677	513812	1,588.0	2.0	0.76
BC0126	444678	513813	1,586.4	2.0	1.13
BC0126	444678	513814	1,584.8	2.0	1.75
BC0126	444679	513815	1,583.1	2.0	1.82
BC0126	444680	513815	1,581.5	2.0	1.50
BC0127	444662	513837	1,602.1	2.0	1.93
BC0127	444663	513838	1,600.5	2.0	1.68
BC0127	444664	513839	1,598.8	2.0	0.50

DHID	East	North	Elevation	Length	% FC
BC0127	444664	513840	1,597.2	2.0	0.98
BC0127	444665	513841	1,595.6	2.0	0.91
BC0127	444665	513842	1,593.9	2.0	1.49
BC0127	444666	513843	1,592.3	2.0	1.72
BC0127	444667	513843	1,590.6	2.0	1.90
BC0127	444667	513844	1,589.0	2.0	1.74
BC0127	444668	513845	1,587.4	2.0	1.28
BC0127	444668	513846	1,586.3	0.7	0.63
BC0128	444661	513876	1,599.7	2.0	1.75
BC0128	444661	513877	1,598.1	2.0	1.14
BC0128	444662	513878	1,596.5	2.0	1.41
BC0128	444663	513878	1,594.8	2.0	1.39
BC0128	444663	513879	1,593.2	2.0	1.47
BC0128	444664	513880	1,591.5	2.0	1.44
BC0128	444665	513881	1,589.9	2.0	1.87
BC0128	444665	513882	1,588.8	0.6	1.45
BC0129	444655	513940	1,589.2	2.0	1.28
BC0129	444656	513941	1,587.9	1.2	1.95
BC0130	444654	513976	1,596.7	2.0	1.26
BC0130	444655	513977	1,595.1	2.0	0.59
BC0130	444655	513978	1,593.5	2.0	0.54
BC0130	444657	513980	1,590.2	2.0	0.84
BC0130	444658	513981	1,588.5	2.0	1.42
BC0130	444658	513981	1,587.1	1.4	1.66
BC0131	444401	513794	1,487.7	2.0	1.24
BC0131	444401	513795	1,486.1	2.0	1.11
BC0131	444402	513796	1,484.4	2.0	1.24
BC0131	444402	513797	1,482.8	2.0	1.16
BC0131	444403	513798	1,481.2	2.0	1.58
BC0131	444404	513799	1,479.5	2.0	2.28
BC0131	444404	513800	1,477.9	2.0	1.95
BC0131	444405	513801	1,476.4	2.0	1.54
BC0131	444406	513802	1,474.8	2.0	1.49
BC0131	444406	513803	1,473.2	2.0	1.41
BC0131	444407	513804	1,471.6	2.0	1.75
BC0131	444408	513805	1,470.0	2.0	1.99
BC0131	444408	513806	1,468.4	2.0	1.31
BC0131	444409	513807	1,466.8	1.9	1.38

DHID	East	North	Elevation	Length	% FC
BC0132	444418	513836	1,491.8	2.0	1.44
BC0132	444419	513837	1,490.1	2.0	1.90
BC0132	444419	513838	1,488.5	2.0	2.10
BC0132	444420	513839	1,486.9	2.0	1.54
BC0132	444421	513840	1,485.2	2.0	1.52
BC0132	444421	513841	1,483.6	2.0	1.69
BC0132	444422	513842	1,482.1	1.6	0.53
BC0133	444431	513865	1,496.9	2.0	2.01
BC0133	444432	513866	1,495.3	2.0	1.51
BC0133	444432	513866	1,493.7	2.0	1.78
BC0133	444433	513867	1,492.4	1.2	1.19
BC0134	444449	513904	1,505.3	1.7	1.50
BC0135	444470	513851	1,518.1	2.0	1.26
BC0135	444471	513852	1,516.5	2.0	1.11
BC0135	444471	513852	1,514.8	2.0	1.42
BC0136	444474	513897	1,518.5	2.0	1.58
BC0136	444474	513897	1,516.8	2.0	1.51
BC0136	444475	513898	1,515.1	2.0	1.47
BC0136	444476	513899	1,513.4	2.0	0.57
BC0136	444476	513900	1,511.7	2.0	1.36
BC0137	444482	513739	1,528.6	2.0	1.58
BC0137	444483	513740	1,527.1	2.0	2.93
BC0137	444484	513741	1,525.6	2.0	1.33
BC0139	444486	513785	1,529.6	2.0	2.31
BC0139	444488	513788	1,524.8	2.0	2.57
BC0139	444490	513790	1,521.5	2.0	1.00
BC0139	444490	513791	1,519.8	2.0	1.28
BC0139	444491	513792	1,518.2	2.0	1.25
BC0139	444492	513793	1,516.6	2.0	1.68
BC0139	444493	513794	1,514.9	2.0	1.60
BC0139	444493	513794	1,513.3	2.0	1.83
BC0139	444494	513795	1,511.6	2.0	1.91
BC0139	444495	513796	1,510.0	2.0	1.40
BC0139	444495	513797	1,508.9	0.7	1.81
BC0140	444510	513872	1,539.1	2.0	1.16
BC0140	444511	513872	1,537.5	2.0	1.20
BC0140	444512	513873	1,535.9	2.0	1.39
BC0140	444513	513874	1,534.3	2.0	1.51

DHID	East	North	Elevation	Length	% FC
BC0140	444513	513875	1,532.7	2.0	1.59
BC0140	444514	513876	1,531.1	2.0	1.04
BC0140	444515	513877	1,529.5	2.0	2.16
BC0140	444516	513878	1,528.2	1.2	1.97
BC0141	444580	513877	1,569.1	2.0	0.80
BC0141	444580	513878	1,567.4	2.0	0.92
BC0141	444581	513879	1,565.8	2.0	1.74
BC0141	444582	513880	1,564.2	2.0	1.19
BC0141	444583	513881	1,562.5	2.0	1.33
BC0141	444583	513881	1,560.9	2.0	1.61
BC0141	444584	513882	1,559.3	2.0	1.80
BC0141	444585	513883	1,557.6	2.0	1.89
BC0141	444585	513884	1,556.5	0.7	1.25
BC0142	444709	513863	1,622.4	2.0	1.69
BC0142	444709	513865	1,620.8	2.0	1.53
BC0142	444710	513866	1,619.2	2.0	1.29
BC0142	444710	513867	1,617.5	2.0	1.44
BC0142	444710	513868	1,615.9	2.0	1.55
BC0142	444711	513869	1,614.3	2.0	1.34
BC0143	444681	513679	1,601.7	2.0	0.66
BC0143	444682	513680	1,600.1	2.0	1.28
BC0143	444682	513682	1,598.5	2.0	2.36
BC0143	444683	513683	1,596.9	2.0	2.18
BC0143	444683	513684	1,595.3	2.0	1.17
BC0143	444684	513685	1,593.7	2.0	0.92
BC0143	444685	513686	1,592.1	2.0	1.30
BC0143	444685	513687	1,590.5	2.0	1.55
BC0143	444686	513688	1,588.9	2.0	2.12
BC0143	444686	513689	1,587.3	2.0	0.82
BC0144	444701	513636	1,585.8	2.0	1.47
BC0144	444702	513637	1,584.2	2.0	1.09
BC0144	444702	513638	1,582.5	2.0	0.66
BC0144	444703	513639	1,581.4	0.7	1.09
BC0146	444792	514003	1,668.6	2.0	0.63
BC0146	444793	514005	1,665.2	2.0	0.82
BC0146	444794	514006	1,663.5	2.0	0.74
BC0146	444794	514007	1,661.8	2.0	0.94
BC0146	444795	514008	1,660.1	2.0	0.95

DHID	East	North	Elevation	Length	% FC
BC0146	444796	514009	1,658.5	2.0	1.42
BC0146	444796	514009	1,656.8	2.0	3.24
BC0146	444797	514010	1,655.1	2.0	3.55
BC0146	444798	514011	1,653.5	2.0	2.99
BC0146	444798	514012	1,651.8	2.0	3.13
BC0146	444799	514013	1,650.4	1.5	6.22
BC0148	444777	513893	1,654.4	2.0	0.86
BC0148	444778	513894	1,652.8	2.0	1.31
BC0148	444779	513895	1,651.1	2.0	1.38
BC0148	444779	513896	1,649.5	2.0	1.61
BC0148	444780	513897	1,647.9	2.0	1.73
BC0149	444769	513840	1,646.3	2.0	1.16
BC0149	444770	513841	1,644.6	2.0	1.82
BC0149	444770	513842	1,643.0	2.0	1.00
BC0149	444771	513843	1,641.4	2.0	1.18
BC0149	444772	513844	1,639.7	2.0	1.08
BC0149	444772	513845	1,638.1	2.0	1.53
BC0149	444773	513846	1,636.5	2.0	1.66
BC0149	444774	513847	1,634.8	2.0	2.13
BC0149	444774	513848	1,633.2	2.0	1.61
BC0149	444775	513849	1,631.5	2.0	1.51
BC0150	444761	513795	1,641.6	2.0	1.31
BC0150	444762	513796	1,640.0	2.0	1.94
BC0150	444762	513796	1,638.3	2.0	1.94
BC0150	444763	513797	1,636.7	2.0	1.92
BC0150	444764	513799	1,633.3	2.0	0.90
BC0150	444765	513800	1,631.7	2.0	1.49
BC0150	444766	513801	1,630.0	2.0	1.17
BC0150	444766	513802	1,628.4	2.0	1.19
BC0150	444767	513803	1,626.7	2.0	1.35
BC0150	444768	513804	1,625.1	2.0	1.41
BC0150	444768	513805	1,623.4	2.0	1.35
BC0150	444769	513806	1,621.7	2.0	2.05
BC0150	444769	513806	1,620.1	1.9	1.76
BC0151	444835	513816	1,685.2	2.0	0.66
BC0151	444835	513817	1,683.6	2.0	2.48
BC0151	444836	513818	1,681.9	2.0	0.82
BC0151	444836	513819	1,680.2	2.0	2.18

DHID	East	North	Elevation	Length	% FC
BC0151	444837	513820	1,678.6	2.0	1.40
BC0151	444837	513821	1,676.9	2.0	1.01
BC0151	444838	513822	1,675.3	2.0	1.52
BC0151	444838	513823	1,673.6	2.0	1.79
BC0151	444839	513824	1,671.9	2.0	1.82
BC0151	444839	513825	1,670.3	2.0	0.98
BC0151	444840	513826	1,668.7	2.0	1.48
BC0152	444831	513764	1,672.2	2.0	1.95
BC0152	444831	513764	1,670.6	2.0	1.34
BC0152	444832	513765	1,668.9	2.0	0.71
BC0152	444832	513766	1,667.2	2.0	1.25
BC0152	444833	513767	1,665.5	2.0	1.02
BC0152	444833	513768	1,663.9	2.0	1.20
BC0152	444834	513769	1,662.2	2.0	1.40
BC0152	444835	513770	1,660.5	2.0	1.77
BC0152	444835	513771	1,658.8	2.0	1.54
BC0152	444836	513771	1,657.7	0.7	1.91
BC0153	444821	513723	1,663.4	2.0	0.99
BC0153	444821	513724	1,661.7	2.0	1.35
BC0153	444822	513725	1,660.0	2.0	0.77
BC0153	444823	513727	1,656.7	2.0	1.69
BC0153	444823	513728	1,655.1	2.0	0.69
BC0153	444824	513729	1,653.4	2.0	0.80
BC0153	444824	513730	1,651.8	2.0	0.89
BC0153	444825	513731	1,650.1	2.0	1.28
BC0153	444825	513732	1,648.4	2.0	0.76
BC0153	444826	513733	1,646.8	2.0	1.58
BC0153	444826	513734	1,645.1	2.0	2.24
BC0153	444827	513735	1,643.5	2.0	1.59
BC0153	444827	513736	1,641.8	2.0	2.34
BC0153	444828	513737	1,640.2	2.0	2.08
BC0153	444828	513738	1,639.0	0.7	1.33
BC0154	444936	513999	1,739.7	2.0	0.83
BC0154	444938	514001	1,736.4	2.0	0.66
BC0154	444938	514002	1,734.8	2.0	1.03
BC0154	444939	514002	1,733.1	2.0	2.83
BC0154	444940	514003	1,731.5	2.0	2.28
BC0154	444941	514004	1,729.8	2.0	1.45

DHID	East	North	Elevation	Length	% FC
BC0154	444942	514006	1,726.6	2.0	1.79
BC0154	444943	514007	1,724.9	2.0	4.00
BC0156	444937	513835	1,731.7	2.0	1.25
BC0156	444938	513836	1,730.3	2.0	1.09
BC0156	444939	513837	1,729.0	2.0	1.88
BC0156	444940	513838	1,727.6	2.0	2.79
BC0156	444941	513839	1,726.3	2.0	0.66
BC0156	444941	513841	1,724.9	2.0	3.00
BC0156	444942	513842	1,723.5	2.0	2.02
BC0156	444943	513843	1,722.2	2.0	0.99
BC0156	444944	513844	1,720.8	2.0	1.62
BC0156	444945	513846	1,719.4	2.0	1.54
BC0156	444945	513847	1,718.1	2.0	1.64
BC0156	444946	513848	1,716.7	2.0	1.28
BC0156	444947	513849	1,715.6	1.2	1.46
BC0157	444927	513870	1,732.0	2.0	1.38
BC0157	444928	513871	1,730.2	2.0	1.61
BC0157	444928	513871	1,728.5	2.0	2.28
BC0157	444929	513872	1,726.8	2.0	2.33
BC0157	444929	513873	1,725.1	2.0	2.60
BC0157	444930	513874	1,723.3	2.0	1.32
BC0157	444930	513875	1,721.6	2.0	1.15
BC0157	444931	513876	1,719.9	2.0	1.44
BC0157	444931	513876	1,718.1	2.0	1.58
BC0157	444932	513877	1,716.4	2.0	1.66
BC0158	444924	513909	1,734.5	2.0	1.98
BC0158	444925	513910	1,732.9	2.0	1.76
BC0158	444925	513911	1,731.3	2.0	1.58
BC0158	444926	513911	1,729.7	2.0	2.99
BC0158	444927	513912	1,728.1	2.0	0.73
BC0158	444927	513913	1,726.5	2.0	1.14
BC0158	444928	513914	1,725.0	2.0	1.69
BC0158	444929	513915	1,723.4	2.0	1.40
BC0158	444930	513916	1,721.8	2.0	1.81
BC0158	444930	513917	1,720.2	1.9	0.85
BC0159	444394	513756	1,482.8	2.0	1.19
BC0159	444395	513757	1,481.1	2.0	1.27
BC0159	444395	513758	1,479.5	2.0	1.37

DHID	East	North	Elevation	Length	% FC
BC0159	444396	513759	1,477.8	2.0	1.29
BC0159	444397	513760	1,476.2	2.0	0.72
BC0159	444399	513762	1,471.2	2.0	0.83
BC0159	444399	513763	1,469.5	2.0	0.94
BC0159	444400	513764	1,468.3	1.0	1.81
BC0160	444394	513711	1,480.2	2.0	1.09
BC0160	444395	513712	1,478.6	2.0	1.20
BC0160	444396	513715	1,473.6	2.0	1.25
BC0160	444396	513716	1,471.9	2.0	1.34
BC0160	444397	513717	1,470.3	2.0	0.69
BC0161	444389	513673	1,465.1	2.0	2.68
BC0161	444390	513674	1,463.4	2.0	0.84
BC0161	444390	513675	1,461.7	2.0	1.27
BC0161	444391	513676	1,458.4	2.0	0.73
BC0161	444392	513677	1,456.7	2.0	1.31
BC0161	444393	513678	1,455.0	2.0	1.51
BC0161	444393	513679	1,453.4	2.0	0.96
BC0161	444394	513680	1,451.8	1.6	1.07
BC0162	444372	513632	1,457.2	2.0	3.28
BC0162	444372	513633	1,455.6	2.0	2.23
BC0162	444375	513636	1,448.8	2.0	0.69
BC0162	444376	513637	1,447.2	2.0	0.74
BC0162	444376	513638	1,445.5	2.0	0.71
BC0162	444377	513639	1,443.8	2.0	0.61
BC0163	444373	513601	1,427.4	2.0	1.81
BC0163	444373	513601	1,426.3	0.5	1.79
97-01	444862	513964	1,707.0	2.0	0.86
97-01	444862	513964	1,705.0	2.0	0.89
97-01	444862	513964	1,703.0	2.0	1.44
97-01	444862	513964	1,701.0	2.0	0.56
97-01	444862	513964	1,699.0	2.0	0.67
97-01	444862	513964	1,697.0	2.0	0.67
97-01	444862	513964	1,695.0	2.0	0.67
97-01	444862	513964	1,693.0	2.0	0.67
97-01	444862	513964	1,691.0	2.0	0.67
97-01	444862	513964	1,689.0	2.0	0.59
97-01	444862	513964	1,685.0	2.0	1.49
97-02	444850	513915	1,700.4	2.0	1.23

DHID	East	North	Elevation	Length	% FC
97-02	444850	513915	1,698.4	2.0	3.22
97-02	444850	513915	1,696.4	2.0	1.35
97-02	444850	513915	1,694.4	2.0	0.89
97-02	444850	513915	1,692.4	2.0	1.33
97-02	444850	513915	1,690.4	2.0	1.45
97-02	444850	513915	1,688.4	2.0	1.45
97-02	444850	513915	1,686.4	2.0	1.33
97-02	444850	513915	1,684.4	2.0	1.28
97-02	444850	513915	1,682.4	2.0	1.52
97-02	444850	513915	1,680.4	2.0	1.45
97-02	444850	513915	1,678.4	2.0	1.94
97-02	444850	513915	1,676.4	2.0	0.73
97-02	444850	513915	1,670.4	2.0	0.51
97-03	444837	513865	1,689.9	2.0	1.43
97-03	444837	513865	1,687.9	2.0	1.72
97-03	444837	513865	1,685.9	2.0	1.13
97-03	444837	513865	1,683.9	2.0	0.92
97-03	444837	513865	1,681.9	2.0	1.75
97-03	444837	513865	1,679.9	2.0	0.85
97-03	444837	513865	1,677.9	2.0	1.50
97-04	444888	513352	1,619.9	2.0	0.70
97-07	444574	513951	1,563.4	2.0	0.77
97-07	444574	513951	1,561.4	2.0	1.37
97-07	444574	513951	1,559.4	2.0	1.65
97-07	444574	513951	1,557.4	2.0	0.75
97-07	444574	513951	1,555.8	1.2	0.76
97-08	444580	513899	1,568.3	2.0	1.53
97-08	444580	513899	1,566.3	2.0	1.10
97-08	444580	513899	1,564.3	2.0	2.74
97-08	444580	513899	1,562.3	2.0	2.54
97-08	444580	513899	1,560.3	2.0	1.43
97-08	444580	513899	1,558.3	2.0	1.67
97-08	444580	513899	1,556.9	0.8	1.80
97-09	444577	513850	1,564.9	2.0	0.50
97-09	444577	513850	1,562.9	2.0	1.31
97-09	444577	513850	1,560.9	2.0	1.46
97-09	444577	513850	1,558.9	2.0	1.41
97-09	444577	513850	1,556.9	2.0	1.58

DHID	East	North	Elevation	Length	% FC
97-09	444577	513850	1,554.9	2.0	1.49
97-09	444577	513850	1,553.6	0.7	1.49
97-10	444572	513797	1,574.7	2.0	1.52
97-10	444572	513797	1,572.7	2.0	0.90
97-10	444572	513797	1,570.7	2.0	1.44
97-10	444572	513797	1,566.7	2.0	0.65
97-10	444572	513797	1,564.7	2.0	1.50
97-10	444572	513797	1,562.7	2.0	0.94
97-10	444572	513797	1,560.7	2.0	1.04
97-10	444572	513797	1,558.7	2.0	2.48
97-10	444572	513797	1,556.7	2.0	1.68
97-10	444572	513797	1,554.7	2.0	1.21
97-10	444572	513797	1,552.7	2.0	1.56
97-10	444572	513797	1,550.7	2.0	1.43
97-10	444572	513797	1,548.7	2.0	1.37
97-10	444572	513797	1,546.7	2.0	1.31
97-10	444572	513797	1,544.7	2.0	1.55
97-10	444572	513797	1,542.7	2.0	0.55
97-11	444578	513744	1,564.6	2.0	0.76
97-11	444578	513744	1,562.6	2.0	0.59
97-11	444578	513744	1,560.6	2.0	1.46
97-11	444578	513744	1,558.6	2.0	1.75
97-11	444578	513744	1,556.6	2.0	1.67
97-11	444578	513744	1,554.6	2.0	2.02
97-11	444578	513744	1,552.6	2.0	1.98
97-11	444578	513744	1,550.6	2.0	2.09
97-11	444578	513744	1,548.6	2.0	1.29
97-11	444578	513744	1,546.6	2.0	0.78
97-11	444578	513744	1,544.6	2.0	0.78
97-11	444578	513744	1,540.6	2.0	0.62
97-11	444578	513744	1,538.6	2.0	0.61
97-11	444578	513744	1,536.6	2.0	1.21
97-11	444578	513744	1,535.3	0.5	1.21
97-12	444591	513695	1,563.8	2.0	0.67
97-12	444591	513695	1,561.8	2.0	1.63
97-12	444591	513695	1,559.8	2.0	1.44
97-12	444591	513695	1,557.8	2.0	0.88
97-12	444591	513695	1,555.8	2.0	1.67

DHID	East	North	Elevation	Length	% FC
97-12	444591	513695	1,553.8	2.0	0.66
97-12	444591	513695	1,549.8	2.0	1.54
97-12	444591	513695	1,547.8	2.0	0.65
97-12	444591	513695	1,545.8	2.0	1.26
97-12	444591	513695	1,543.8	2.0	1.32
97-12	444591	513695	1,541.8	2.0	0.91
97-12	444591	513695	1,540.0	1.6	1.18
97-13	444664	513354	1,582.6	1.5	1.00
97-17	444403	513249	1,482.4	2.0	0.97
97-17	444403	513249	1,480.9	1.0	0.97
97-21	444334	513552	1,469.2	2.0	2.88
97-21	444334	513552	1,467.2	2.0	1.16
97-21	444334	513552	1,465.7	1.1	0.58
97-23	444339	513651	1,436.1	2.0	2.50
97-23	444339	513651	1,434.1	2.0	0.58
97-24	444341	513701	1,454.1	2.0	1.69
97-24	444341	513701	1,452.1	2.0	1.64
97-24	444341	513701	1,450.1	2.0	0.50
97-24	444341	513701	1,448.1	2.0	1.30
97-24	444341	513701	1,446.1	2.0	1.80
97-24	444341	513701	1,444.1	2.0	2.40
97-24	444341	513701	1,442.1	2.0	1.31
97-24	444341	513701	1,440.1	2.0	1.43
97-24	444341	513701	1,438.1	2.0	1.33
97-24	444341	513701	1,436.1	2.0	1.24
97-24	444341	513701	1,434.1	2.0	0.71
97-24	444341	513701	1,432.1	2.0	0.65
97-24	444341	513701	1,430.1	2.0	0.93
97-24	444341	513701	1,428.1	2.0	0.95
97-24	444341	513701	1,426.1	2.0	0.82
97-24	444341	513701	1,424.1	2.0	0.73
97-24	444341	513701	1,422.1	2.0	0.69
97-24	444341	513701	1,418.7	0.9	0.78
97-26	444339	513874	1,433.9	1.4	0.62
97-27	444346	513926	1,438.6	2.0	0.57
97-27	444346	513926	1,436.6	2.0	0.61
97-27	444346	513926	1,434.6	2.0	0.55
97-27	444346	513926	1,432.6	2.0	0.50

DHID	East	North	Elevation	Length	% FC
DDH95-06	444673	513722	1,608.2	2.0	1.04
DDH95-06	444673	513722	1,606.2	2.0	1.04
DDH95-06	444673	513722	1,604.2	2.0	1.66
DDH95-06	444673	513722	1,602.2	2.0	1.99
DDH95-06	444673	513722	1,600.2	2.0	1.36
DDH95-06	444673	513722	1,598.2	2.0	1.31
DDH95-06	444673	513722	1,596.2	2.0	0.93
DDH95-06	444673	513722	1,594.2	2.0	0.90
DDH95-06	444673	513722	1,592.2	2.0	1.66
DDH95-06	444673	513722	1,590.2	2.0	1.84
DDH95-06	444673	513722	1,588.2	2.0	1.84
DDH95-06	444673	513722	1,586.2	2.0	0.89
DDH95-07	444676	513772	1,608.6	2.0	2.16
DDH95-07	444676	513772	1,606.6	2.0	1.81
DDH95-07	444676	513772	1,604.6	2.0	1.43
DDH95-07	444676	513772	1,602.6	2.0	1.45
DDH95-07	444676	513772	1,600.6	2.0	1.53
DDH95-07	444676	513772	1,598.6	2.0	1.59
DDH95-07	444676	513772	1,596.6	2.0	1.81
DDH95-07	444676	513772	1,594.6	2.0	1.88
DDH95-07	444676	513772	1,592.6	2.0	1.91
DDH95-07	444676	513772	1,590.6	2.0	1.25
DDH95-07	444676	513772	1,588.6	2.0	0.99
DDH95-07	444676	513772	1,586.6	2.0	1.13
DDH95-07	444676	513772	1,584.6	2.0	1.17
DDH95-07	444676	513772	1,582.6	2.0	1.34
DDH95-07	444676	513772	1,580.6	2.0	1.34
DDH95-07	444676	513772	1,578.6	2.0	1.36
DDH95-07	444676	513772	1,576.6	2.0	1.29
DDH95-07	444676	513772	1,574.6	2.0	1.00
DDH95-07	444676	513772	1,572.6	2.0	0.54
DDH95-08	444693	513819	1,613.2	2.0	1.60
DDH95-08	444693	513819	1,611.2	2.0	1.60
DDH95-08	444693	513819	1,609.2	2.0	1.57
DDH95-08	444693	513819	1,607.2	2.0	1.55
DDH95-08	444693	513819	1,605.2	2.0	0.86
DDH95-08	444693	513819	1,603.2	2.0	0.91
DDH95-08	444693	513819	1,601.2	2.0	1.12

DHID	East	North	Elevation	Length	% FC
DDH95-08	444693	513819	1,599.2	2.0	1.32
DDH95-08	444693	513819	1,597.2	2.0	1.50
DDH95-08	444693	513819	1,595.2	2.0	1.50
DDH95-08	444693	513819	1,593.2	2.0	1.33
DDH95-08	444693	513819	1,591.2	2.0	1.31
DDH95-08	444693	513819	1,589.2	2.0	1.54
DDH95-08	444693	513819	1,587.2	2.0	1.57
DDH95-08	444693	513819	1,585.2	2.0	1.80
DDH95-08	444693	513819	1,583.2	2.0	1.83
DDH95-09	444703	513864	1,616.4	2.0	0.72
DDH95-09	444703	513864	1,614.4	2.0	0.72
DDH95-09	444703	513864	1,612.4	2.0	1.10
DDH95-09	444703	513864	1,610.4	2.0	1.21
DDH95-09	444703	513864	1,608.4	2.0	1.41
DDH95-09	444703	513864	1,606.4	2.0	1.46
DDH95-09	444703	513864	1,604.4	2.0	1.47
DDH95-09	444703	513864	1,602.4	2.0	1.47
DDH95-09	444703	513864	1,600.4	2.0	1.45
DDH95-09	444703	513864	1,598.4	2.0	1.45
DDH95-09	444703	513864	1,596.4	2.0	1.54
DDH95-09	444703	513864	1,595.0	0.9	1.56
DDH95-10	444709	513913	1,621.7	2.0	1.17
DDH95-10	444709	513913	1,619.7	2.0	1.49
DDH95-10	444709	513913	1,617.7	2.0	3.58
DDH95-10	444709	513913	1,615.7	2.0	1.37
DDH95-10	444709	513913	1,613.7	2.0	0.68
DDH95-10	444709	513913	1,607.7	2.0	1.90
DDH95-10	444709	513913	1,605.7	2.0	1.81
DDH95-10	444709	513913	1,603.7	2.0	1.37
DDH95-10	444709	513913	1,601.7	2.0	1.37
DDH95-10	444709	513913	1,600.1	1.1	1.37
DDH95-11	444717	513962	1,626.3	2.0	0.70
DDH95-11	444717	513962	1,624.3	2.0	0.70
DDH95-11	444717	513962	1,622.3	2.0	0.70
DDH95-11	444717	513962	1,620.3	2.0	0.70
DDH95-11	444717	513962	1,618.3	2.0	0.70
DDH95-11	444717	513962	1,616.3	2.0	0.70
DDH95-11	444717	513962	1,614.5	1.5	0.70

DHID	East	North	Elevation	Length	% FC
DDH95-12	444729	514010	1,625.9	2.0	1.76
DDH95-12	444729	514010	1,623.9	2.0	1.76
DDH95-12	444729	514010	1,621.9	2.0	1.76
DDH95-12	444729	514010	1,619.9	2.0	2.39
DDH95-12	444729	514010	1,617.9	2.0	2.79
DDH95-12	444729	514010	1,615.9	2.0	4.94
DDH95-12	444729	514010	1,613.9	2.0	3.99
DDH95-12	444729	514010	1,611.9	2.0	3.16
DDH95-12	444729	514010	1,609.9	2.0	2.89
DDH95-12	444729	514010	1,607.9	2.0	2.65
DDH95-12	444729	514010	1,605.9	2.0	2.65

B.2: Regoltih >0.5% FC Trench Composite Values

Trench	East	North	Elevation	Length	% FC
T001	444538	513878	1,553.7	2.0	1.44
T001	444538	513878	1,551.7	2.0	1.92
T001	444538	513878	1,550.5	0.5	1.95
T002	444529	513904	1,547.9	2.0	0.79
T002	444529	513904	1,546.5	0.8	2.77
T003	444520	513931	1,546.6	2.0	0.65
T003	444520	513931	1,544.9	1.4	0.80
T004	444527	513954	1,544.5	2.0	2.00
T006	444546	513851	1,557.7	1.6	0.57
T007	444551	513832	1,560.0	1.5	0.72
T008	444562	513807	1,567.1	2.0	0.95
T008	444562	513807	1,565.4	1.6	1.09
T009	444575	513788	1,572.2	2.0	0.53
T010	444578	513822	1,574.3	2.0	1.17
T010	444578	513822	1,572.4	1.9	1.59
T011	444577	513855	1,571.3	2.0	0.53
T012	444579	513882	1,569.4	1.6	0.87
T013	444725	513983	1,635.4	2.0	0.61
T015	444715	513913	1,628.0	2.0	1.24
T017	444705	513853	1,626.7	2.0	1.51
T017	444705	513853	1,624.8	1.9	1.68
T018	444698	513812	1,627.8	2.0	1.00
T018	444698	513812	1,625.8	2.0	3.06
T019	444690	513637	1,610.5	2.0	0.68
T019	444690	513637	1,608.5	2.0	0.75
T019	444690	513637	1,607.1	0.8	0.75
T020	444681	513690	1,615.4	2.0	0.99
T020	444681	513690	1,613.4	2.0	1.10
T020	444681	513690	1,611.8	1.1	1.10
T021	444679	513734	1,616.6	2.0	2.81
T021	444679	513734	1,615.3	0.7	5.10
T022	444683	513792	1,618.2	2.0	1.54
T022	444683	513792	1,616.4	1.7	1.71
T023	444605	513681	1,577.6	2.0	1.09
T023	444605	513681	1,575.8	1.7	1.28
T024	444581	513720	1,576.2	2.0	0.82
T024	444581	513720	1,574.2	2.0	0.97

Trench	East	North	Elevation	Length	% FC
T024	444581	513720	1,572.5	1.3	0.97
T025	444578	513755	1,575.1	2.0	0.76
T027	444581	513980	1,568.7	2.0	0.50
T027	444581	513980	1,566.7	2.0	0.56
T028	444518	513908	1,544.2	1.5	1.31
T029	444517	513900	1,544.2	2.0	5.96
T029	444517	513900	1,542.2	2.0	3.72
T029	444517	513900	1,540.8	0.8	3.64
T030	444517	513880	1,543.6	1.1	0.81
T031	444511	513873	1,541.9	1.7	0.69
T032	444493	513809	1,535.9	2.0	3.62
T032	444493	513809	1,534.2	1.3	3.37
T033	444491	513800	1,536.4	2.0	1.37
T033	444491	513800	1,534.6	1.6	1.85
T034	444489	513791	1,535.5	2.0	1.66
T034	444489	513791	1,533.6	1.9	3.14
T035	444485	513775	1,533.9	2.0	1.37
T035	444485	513775	1,531.9	2.0	2.50
T035	444485	513775	1,530.6	0.6	3.37
T036	444485	513769	1,533.2	2.0	1.01
T036	444485	513769	1,531.3	1.9	2.40
T037	444484	513757	1,531.7	2.0	1.99
T037	444484	513757	1,530.4	0.7	3.81
T039	444483	513734	1,533.8	2.0	2.23
T039	444483	513734	1,531.8	2.0	2.10
T040	444474	513781	1,527.4	2.0	1.24
T041	444473	513794	1,526.4	2.0	2.17
T042	444471	513803	1,524.7	1.8	2.10
T043	444471	513814	1,523.6	1.4	1.29
T044	444467	513838	1,520.2	2.0	2.37
T045	444455	513872	1,512.3	2.0	1.08
T045	444455	513872	1,511.1	0.5	2.05
T046	444451	513880	1,512.2	2.0	0.79
T046	444451	513880	1,510.2	2.0	1.53
T046	444451	513880	1,508.8	0.7	1.69
T047	444452	513894	1,510.0	1.3	0.73
T048	444452	513905	1,509.9	0.9	0.62
T049	444439	513879	1,506.1	1.8	1.37

Trench	East	North	Elevation	Length	% FC
T050	444438	513872	1,504.7	2.0	1.23
T050	444438	513872	1,502.7	2.0	2.85
T051	444431	513857	1,502.1	2.0	1.35
T051	444431	513857	1,500.3	1.6	2.04
T052	444429	513849	1,502.1	2.0	0.59
T052	444429	513849	1,500.1	2.0	1.50
T052	444429	513849	1,498.6	1.1	1.59
T053	444423	513840	1,497.0	2.0	0.71
T053	444423	513840	1,495.6	0.7	1.86
T054	444421	513827	1,496.2	2.0	1.58
T054	444421	513827	1,494.3	1.8	3.70
T055	444412	513822	1,492.2	2.0	1.09
T055	444412	513822	1,490.7	1.0	2.19
T056	444421	513802	1,491.5	2.0	1.04
T056	444421	513802	1,489.9	1.3	2.15
T057	444411	513791	1,491.1	2.0	1.28
T058	444406	513786	1,491.2	1.8	1.07
T059	444398	513779	1,492.6	2.0	0.82
T059	444398	513779	1,491.0	1.2	0.68
T060	444471	513843	1,522.1	2.0	1.07
T060	444471	513843	1,520.1	2.0	1.73
T061	444473	513855	1,522.6	2.0	0.67
T061	444473	513855	1,520.7	1.7	1.29
T062	444473	513867	1,522.7	1.8	1.18
T063	444473	513875	1,523.3	2.0	1.13
T063	444473	513875	1,521.3	2.0	1.43
T064	444477	513893	1,522.7	2.0	1.25
T065	444475	513901	1,521.9	2.0	1.09
T066	444480	513931	1,520.7	2.0	1.13
T066	444480	513931	1,519.1	1.4	1.85
T067	444482	513985	1,514.3	2.0	1.38
T067	444482	513985	1,512.6	1.5	3.31
T068	444482	513991	1,512.0	2.0	3.38
T068	444482	513991	1,510.5	0.9	2.94
T069	444483	513996	1,514.0	1.4	0.52
T070	444483	514001	1,514.1	2.0	1.49
T070	444483	514001	1,512.3	1.5	2.74
T071	444489	514011	1,515.7	2.0	3.24

Trench	East	North	Elevation	Length	% FC
T071	444489	514011	1,513.8	1.7	3.78
T072	444498	514032	1,517.7	2.0	1.58
T072	444498	514032	1,516.0	1.5	2.56
T073	444502	514041	1,518.2	2.0	8.12
T074	444503	514051	1,518.2	2.0	3.94
T074	444503	514051	1,516.5	1.5	3.33
T075	444503	514055	1,518.5	2.0	4.83
T075	444503	514055	1,517.1	0.9	5.51
T077	444392	513771	1,493.0	2.0	1.37
T077	444392	513771	1,491.3	1.4	1.28
T078	444373	513751	1,490.0	2.0	0.93
T079	444390	513736	1,489.2	2.0	1.78
T079	444390	513736	1,487.2	2.0	3.34
T080	444392	513726	1,489.8	2.0	0.85
T080	444392	513726	1,488.3	1.1	2.20
T081	444396	513704	1,489.9	1.6	1.85
T082	444392	513694	1,489.3	2.0	0.99
T082	444392	513694	1,487.6	1.3	0.95
T083	444391	513682	1,483.7	2.0	1.49
T084	444391	513668	1,483.9	2.0	1.09
T084	444391	513668	1,482.3	1.3	1.44
T085	444562	513820	1,567.8	2.0	0.70
T085	444562	513820	1,566.1	1.3	0.70
T086	444548	513843	1,562.1	2.0	0.83
T089	444530	513912	1,549.7	1.2	1.04
T090	444532	513965	1,548.3	2.0	1.44
T090	444532	513965	1,547.0	0.6	2.11
T091	444544	513985	1,550.0	1.8	1.79
T092	444551	514002	1,552.0	2.0	1.46
T092	444551	514002	1,550.7	0.6	3.62
T093	444555	514012	1,555.3	2.0	3.50
T093	444555	514012	1,553.3	2.0	0.51
T094	444560	514021	1,555.6	2.0	0.59
T096	444568	514040	1,554.8	2.0	0.88
T097	444572	514049	1,558.0	2.0	0.61
T097	444572	514049	1,556.0	2.0	0.74
T098	444576	514058	1,557.1	2.0	0.93
T100	444577	513807	1,574.5	2.0	1.08

Trench	East	North	Elevation	Length	% FC
T100	444577	513807	1,572.7	1.8	1.84
T101	444580	513847	1,574.2	2.0	0.99
T101	444580	513847	1,572.5	1.4	4.22
T102	444579	513839	1,574.2	2.0	0.98
T103	444579	513869	1,572.5	2.0	1.58
T103	444579	513869	1,571.3	0.5	2.25
T104	444580	513895	1,571.0	0.9	3.83
T105	444579	513906	1,570.6	0.9	2.79
T107	444579	513930	1,570.8	1.6	0.60
T108	444577	513944	1,571.2	1.3	0.56
T109	444578	513951	1,571.1	1.7	0.54
T110	444585	513981	1,567.8	1.1	0.62
T112	444597	514008	1,574.5	2.0	1.39
T113	444600	514017	1,573.0	2.0	0.99
T114	444605	514026	1,576.3	2.0	1.47
T114	444605	514026	1,574.3	2.0	0.58
T114	444605	514026	1,572.8	1.0	1.24
T115	444611	514034	1,577.3	2.0	1.05
T117	444620	514050	1,579.7	2.0	0.53
T117	444620	514050	1,578.0	1.3	0.62
T118	444624	514062	1,579.6	2.0	1.01
T118	444624	514062	1,578.2	0.9	0.88
T119	444628	514071	1,580.6	2.0	0.63
T119	444628	514071	1,578.6	2.0	0.68
T120	444670	513773	1,616.4	2.0	0.80
T120	444670	513773	1,614.4	2.0	2.33
T120	444670	513773	1,613.1	0.5	2.68
T121	444667	513788	1,615.0	2.0	1.98
T121	444667	513788	1,613.2	1.7	2.38
T122	444664	513801	1,613.7	2.0	1.49
T122	444664	513801	1,612.0	1.4	1.02
T123	444663	513819	1,610.9	2.0	2.54
T123	444663	513819	1,609.2	1.4	2.77
T124	444663	513832	1,612.3	2.0	0.72
T124	444663	513832	1,610.3	2.0	1.58
T124	444663	513832	1,608.9	0.8	5.30
T125	444663	513853	1,607.5	2.0	1.51
T125	444663	513853	1,605.5	1.9	2.22

Trench	East	North	Elevation	Length	% FC
T126	444660	513870	1,606.8	2.0	0.74
T126	444660	513870	1,605.1	1.4	0.67
T127	444658	513888	1,603.0	1.5	0.56
T129	444653	513922	1,603.4	2.0	1.16
T129	444653	513922	1,601.7	1.5	6.21
T130	444651	513936	1,604.5	2.0	0.70
T130	444651	513936	1,603.3	0.5	0.93
T131	444652	513953	1,605.6	2.0	0.60
T131	444652	513953	1,604.3	0.6	0.80
T132	444652	513965	1,604.0	2.0	1.20
T132	444652	513965	1,602.4	1.1	1.79
T133	444652	513976	1,602.6	1.9	1.43
T134	444654	513984	1,602.7	2.0	1.92
T135	444658	513996	1,603.2	1.9	1.10
T136	444656	514010	1,602.1	2.0	2.92
T136	444656	514010	1,600.8	0.7	3.87
T137	444658	514026	1,601.5	2.0	2.43
T137	444658	514026	1,599.5	2.0	2.69
T138	444657	514034	1,599.7	2.0	2.43
T138	444657	514034	1,597.9	1.8	2.24
T139	444655	514041	1,597.4	2.0	1.09
T140	444655	514058	1,592.6	1.8	0.79
T142	444650	514070	1,590.6	2.0	0.74
T142	444650	514070	1,588.6	2.0	0.73
T143	444648	514079	1,586.9	1.4	0.84
T144	444644	514089	1,584.9	2.0	0.66
T144	444644	514089	1,583.4	1.0	2.53
T145	444643	514098	1,581.9	1.3	0.93
T146	444690	513799	1,623.9	2.0	1.87
T146	444690	513799	1,621.9	1.9	3.99
T147	444703	513835	1,626.0	2.0	1.06
T147	444703	513835	1,624.2	1.7	5.74
T148	444710	513853	1,628.0	2.0	0.57
T148	444710	513853	1,626.5	1.1	3.07
T149	444713	513898	1,629.9	2.0	0.74
T149	444713	513898	1,628.5	0.8	1.81
T151	444722	513953	1,633.7	1.5	1.83
T152	444725	513968	1,634.9	1.8	2.02

Trench	East	North	Elevation	Length	% FC
T153	444776	513889	1,662.8	2.0	0.55
T153	444776	513889	1,661.3	1.0	0.65
T154	444782	513913	1,665.5	1.9	0.50
T155	444796	513959	1,671.6	1.5	0.78
T157	444805	514089	1,663.9	2.0	1.19
T158	444800	514104	1,660.2	2.0	3.08
T158	444800	514104	1,658.2	1.9	1.74
T161	444681	513751	1,618.8	2.0	1.78
T161	444681	513751	1,617.5	0.5	1.10
T162	444680	513739	1,616.6	2.0	1.43
T163	444687	513709	1,619.4	2.0	2.46
T163	444687	513709	1,617.9	1.0	2.46
T165	444803	513929	1,677.1	2.0	1.25
T170	444830	514023	1,692.5	2.0	1.98
T171	444837	514033	1,695.3	2.0	3.39
T171	444837	514033	1,693.4	1.8	2.01
T172	444847	514045	1,698.1	2.0	4.56
T172	444847	514045	1,696.8	0.6	4.04
T174	444877	514091	1,703.2	2.0	3.44
A030U	444425	513855	1,499.8	1.0	1.49
A035U	444423	513851	1,499.0	1.8	1.59
A040U	444421	513846	1,498.3	1.4	1.84
A050U	444417	513837	1,496.9	1.6	2.65
A060U	444413	513828	1,494.3	2.0	2.71
A070U	444409	513819	1,492.2	0.5	2.40
A105U	444399	513786	1,490.4	1.8	4.40
A155U	444389	513736	1,488.9	1.0	3.47
A160U	444390	513731	1,488.7	0.5	1.09
C000U	444475	513768	1,526.8	2.0	2.92
C005U	444475	513773	1,527.3	2.0	1.90
C005U	444475	513773	1,528.9	1.2	1.90
C010U	444474	513778	1,527.5	1.4	3.26
C015U	444474	513784	1,526.4	0.6	2.05
C020U	444473	513787	1,526.3	0.6	6.07
C075U	444469	513842	1,519.6	1.8	2.55
D025U	444483	513771	1,533.2	1.2	1.70
D030U	444484	513776	1,532.4	2.0	2.60
D030U	444484	513776	1,533.9	1.0	1.69

Trench	East	North	Elevation	Length	% FC
D035U	444485	513780	1,532.9	2.0	1.95
D035U	444485	513780	1,534.7	1.6	2.45
D040U	444486	513785	1,533.2	2.0	2.23
D040U	444486	513785	1,534.6	0.8	2.23
D045U	444487	513790	1,533.4	2.0	2.80
D063U	444497	513805	1,533.1	2.0	2.37
D063U	444497	513805	1,534.4	0.5	2.37
D158U	444515	513897	1,528.4	2.0	3.53
D158U	444515	513897	1,530.4	2.0	3.53
D215D	444526	513950	1,528.0	2.0	2.10
D215U	444526	513950	1,530.0	2.0	1.20
D220D	444528	513955	1,530.8	1.8	1.42
D220U	444528	513955	1,532.7	2.0	4.38
D220U	444528	513955	1,533.9	0.5	4.38
D225D	444530	513960	1,533.3	2.0	1.81
D225D	444530	513960	1,532.1	0.5	1.81
D230D	444531	513965	1,535.0	2.0	2.10
D235D	444534	513969	1,537.6	2.0	3.90
D240D	444536	513974	1,539.7	1.1	2.78
D250D	444540	513983	1,543.1	1.0	2.23
D255D	444543	513987	1,547.7	2.0	4.39
D260D	444545	513991	1,551.5	1.8	3.59
D265D	444548	514001	1,554.0	2.0	3.49
D270D	444551	514010	1,556.2	2.0	3.54
D275D	444554	514015	1,558.8	1.0	3.53
D280D	444556	514020	1,560.7	1.5	3.49
D285D	444558	514024	1,562.6	2.0	2.10
D285D	444558	514024	1,560.9	1.5	2.10
D290D	444560	514028	1,565.3	2.0	3.75
D290D	444560	514028	1,564.0	0.5	3.75
E000U	444556	513816	1,566.7	0.6	4.38
E021U	444551	513837	1,564.8	2.0	7.98
E090U	444530	513901	1,549.7	0.6	6.08
E120U	444524	513930	1,542.8	0.9	1.64
F030D	444607	514029	1,570.4	1.0	4.50
F035D	444604	514025	1,570.4	2.0	2.78
F040D	444602	514020	1,570.9	2.0	2.98
F040D	444602	514020	1,569.6	0.6	2.98

Trench	East	North	Elevation	Length	% FC
F050D	444597	514011	1,570.0	1.5	1.96
F055D	444596	514007	1,568.4	1.0	2.20
F157D	444579	513913	1,570.5	0.6	3.80
F205D	444577	513861	1,571.9	0.6	1.78
F239D	444579	513832	1,574.3	1.0	4.80
F245U	444578	513821	1,580.1	0.6	3.45
F250U	444577	513816	1,581.9	0.7	2.41
F265U	444575	513802	1,586.3	1.0	2.24
F270D	444574	513796	1,588.9	0.6	3.02
G010D	444657	514031	1,595.8	2.0	2.31
G010D	444657	514031	1,594.6	0.5	3.06
G015D	444657	514026	1,598.1	2.0	1.40
G015D	444657	514026	1,596.1	2.0	5.57
G020D	444657	514021	1,597.8	2.0	4.40
G020D	444657	514021	1,596.3	1.0	3.43
G025D	444657	514016	1,598.5	2.0	3.40
G025D	444657	514016	1,597.0	1.0	3.02
G030D	444657	514011	1,598.7	2.0	3.08
G030D	444657	514011	1,597.4	0.7	3.15
G040D	444657	513999	1,599.8	0.7	1.05
G045U	444656	513995	1,600.9	1.0	1.62
G050U	444655	513990	1,601.1	1.0	0.74
G055D	444655	513985	1,599.8	2.0	1.50
G055D	444655	513985	1,598.3	1.0	1.66
G060D	444654	513981	1,600.0	2.0	1.64
G060D	444654	513981	1,598.5	1.0	1.17
G060U	444654	513981	1,601.5	1.0	1.71
G065D	444654	513976	1,600.0	1.5	1.18
G065U	444654	513976	1,601.5	1.5	1.43
G070D	444654	513972	1,600.5	2.0	1.32
G070D	444654	513972	1,599.1	0.8	0.55
G075D	444653	513966	1,600.7	2.0	0.79
G075U	444653	513966	1,602.2	1.0	1.89
G080D	444652	513960	1,600.9	2.0	1.95
G085D	444651	513956	1,601.1	2.0	0.93
G117D	444654	513929	1,602.5	1.2	9.68
G117U	444654	513929	1,603.4	0.7	3.37
G120D	444653	513921	1,602.6	1.2	7.83

Trench	East	North	Elevation	Length	% FC
G125U	444654	513916	1,603.8	1.0	7.38
G150D	444656	513891	1,602.9	2.0	0.61
G170D	444659	513871	1,603.0	1.0	1.65
G175D	444660	513866	1,603.1	1.5	1.93
G180D	444661	513861	1,605.7	2.0	2.49
G180D	444661	513861	1,604.4	0.5	2.49
G180U	444661	513861	1,607.7	2.0	2.18
G180U	444661	513861	1,609.5	1.6	1.31
G185D	444662	513856	1,605.9	2.0	3.13
G185D	444662	513856	1,604.2	1.5	3.53
G185U	444662	513856	1,607.9	2.0	3.39
G190D	444663	513851	1,606.1	2.0	3.01
G190D	444663	513851	1,604.5	1.2	2.65
G190U	444663	513851	1,607.9	1.5	4.75
G195D	444663	513846	1,608.4	2.0	3.91
G195D	444663	513846	1,606.4	2.0	3.45
G195D	444663	513846	1,604.9	1.0	3.29
G200D	444663	513841	1,607.6	2.0	2.90
G200D	444663	513841	1,605.6	2.0	3.48
G200D	444663	513841	1,604.4	0.5	3.48
G200U	444663	513841	1,609.4	1.5	7.05
G205D	444662	513836	1,608.4	2.0	5.15
G205D	444662	513836	1,606.4	2.0	3.33
G205D	444662	513836	1,604.9	1.0	2.72
G210D	444662	513832	1,608.7	2.0	3.50
G210D	444662	513832	1,606.7	2.0	3.87
G210D	444662	513832	1,605.2	1.0	3.99
G215D	444662	513826	1,608.7	2.0	3.91
G215D	444662	513826	1,606.7	2.0	3.19
G220D	444663	513820	1,609.6	2.0	4.15
G220D	444663	513820	1,607.6	2.0	4.18
G225D	444663	513816	1,610.0	2.0	1.35
G225D	444663	513816	1,608.5	1.0	1.35
G230D	444663	513812	1,610.0	2.0	2.97
G230D	444663	513812	1,608.7	0.5	2.97
G235D	444663	513806	1,610.7	2.0	2.59
G235D	444663	513806	1,609.2	1.0	2.59
G235U	444663	513806	1,612.7	2.0	2.53

Trench	East	North	Elevation	Length	% FC
G235U	444663	513806	1,614.2	1.0	2.53
G240D	444664	513801	1,612.4	2.0	2.45
G240D	444664	513801	1,611.1	0.5	2.45
H015D	444731	514007	1,636.0	2.0	1.26
H015D	444731	514007	1,634.4	1.1	1.29
H020D	444730	514003	1,635.8	1.9	1.35
H025D	444728	513998	1,635.7	0.7	1.30
H030D	444727	513993	1,635.7	1.1	1.31
H055D	444720	513970	1,633.7	1.5	2.32
H105D	444712	513921	1,630.4	0.9	3.79
H110D	444711	513916	1,629.8	2.0	4.76
H115D	444711	513911	1,628.5	2.0	5.66
H125D	444710	513900	1,628.1	1.0	1.40
H130D	444709	513896	1,626.4	1.2	0.90
H135D	444709	513891	1,626.8	1.9	0.76
H185D	444702	513842	1,624.3	2.0	7.06
H195D	444700	513833	1,623.4	2.0	6.71
H195D	444700	513833	1,622.1	0.5	6.71
H200D	444698	513828	1,622.9	2.0	4.93
H200D	444698	513828	1,621.5	0.7	4.93
H205D	444697	513824	1,622.5	2.0	3.71
H205D	444697	513824	1,621.1	0.9	3.71
H210D	444696	513819	1,622.3	2.0	3.42
H210D	444696	513819	1,620.5	1.5	4.07
H215D	444693	513814	1,620.5	2.0	6.14
H220D	444688	513810	1,620.5	2.0	3.54
H220D	444688	513810	1,618.7	1.5	3.73
H225D	444682	513805	1,619.3	2.0	2.39
H225D	444682	513805	1,617.8	1.0	2.79
H235D	444679	513796	1,619.6	2.0	3.39
H235D	444679	513796	1,617.8	1.6	3.90
H235U	444679	513796	1,621.2	1.2	3.70
H240D	444678	513792	1,619.2	2.0	3.94
H240D	444678	513792	1,618.0	0.5	3.88
H250D	444676	513782	1,617.6	0.7	1.68

Appendix C

Plans

APPENDICE C OMITTED

PLEASE SEE HARD COPY