## **EMERALD FIELDS RESOURCE CORPORATION**

# TREELINED LAKE GRAPHITE PROSPECT

Kenora Mining Division, Ontario

# 2.25041

#### **Location and Access:**

The Treelined Lake graphite prospect is also referred to as the "Trout Lake", "Black Sturgeon" or "Harrison" graphite occurrences. The prospect is located about 80 km north of Kenora and approximately 2 km west from the English River Road. Access is by an old logging trail. Geographic co-ordinates are: 50 degrees 17.90 minutes N by 94 degrees 27.47 minutes W.

Township/Area (map #): Treelined Lake Area (G-2651) NTS: 52 L/08 SW Mining Division: Kenora - 10

## **Property Description:**

The property consists primarily of 8 contiguous 16 ha single unit claim blocks # K.895625 to - 628 and K.8988891 to - 894. These claims were held originally by George R. Zebruck (50%) and Robert M. Kuehnbaum (50%).

## **Present Ownership:**

Emerald Fields Resource Corporation (100%)

## **Commodity:**

Graphite

## Geology:

This area is underlain by metasediments of the English River Subprovince. The main graphite zone is hosted within a belt of metamphosed arkose and sandstones. Present trenching and preliminary surveys suggest that the graphite zone is between 100 and 150 metres wide with a strike length of at least 3 km.

## History:

1968 - Discovered and staked by Linklater, prospector. Stripping to test a radiometric anomaly. 1976 - Restaked and several pits dug by J. Harrison and G. Perkins.



52L08SW2012 2.25041

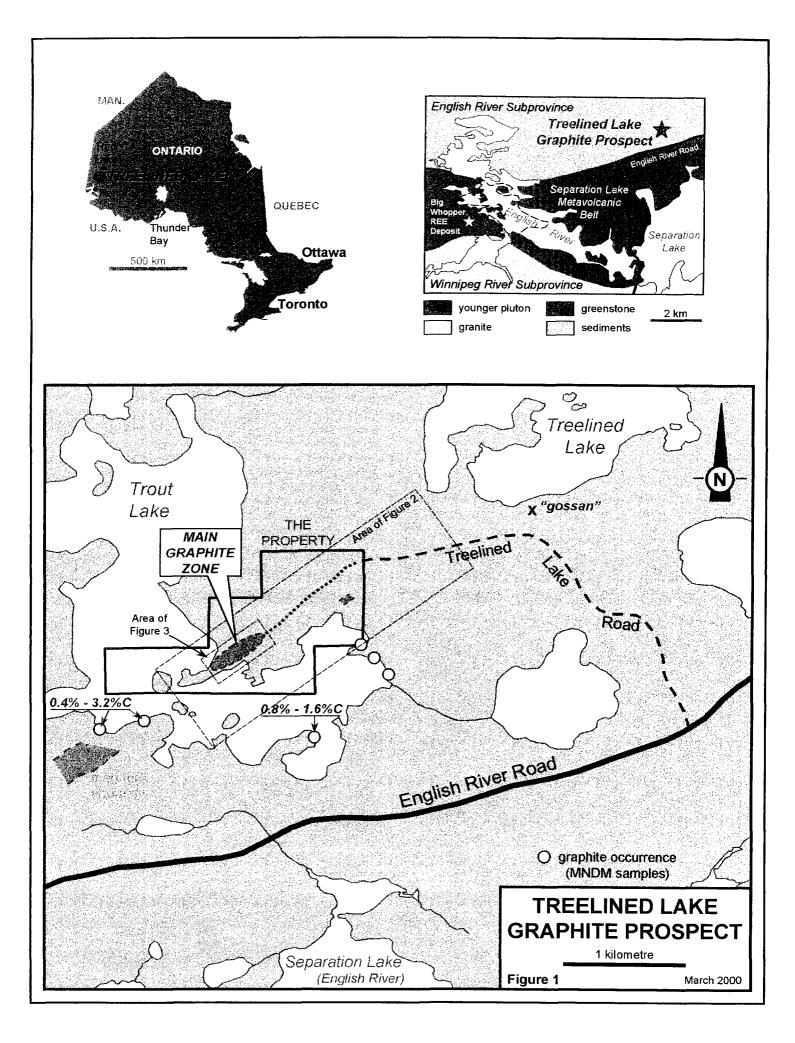
TREELINED LAKE

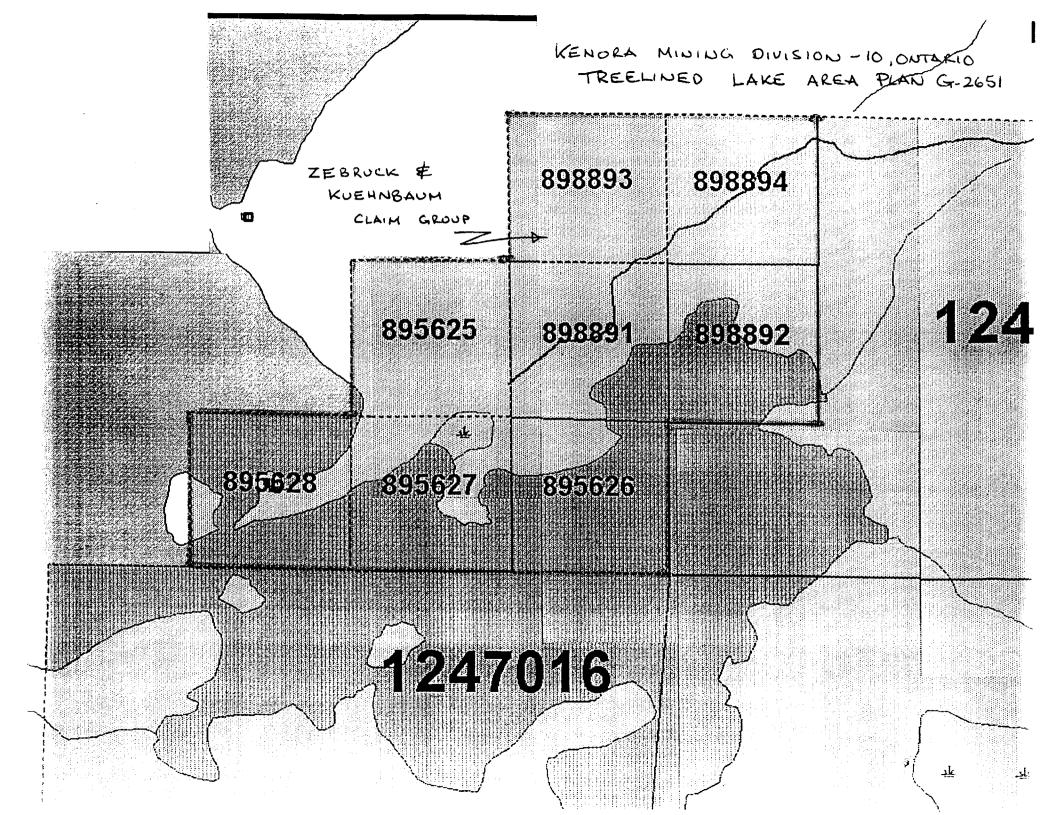
- 1986 Pits examined by MNDM. Test geophysical survey, sampling and preliminary metallurgical tests (Storey, 1990; Redden, 1993).
- 1987 Staking of mining claims by Zebruck and Kuehnbaum and general sampling.
- 1987 Optioned to Bellwether Resources Ltd., Vancouver, B.C. conducted geophycical surveys, Geological mapping, mechanical stripping, trenching, blasting and channel sampling.
- 1988 Follow-up exploration by Bellwether. Option Terminated.
- 1990 Zebruck and Kuehnbaum prospect.
- 1988 Metallurgical study by Lakefield Research.
- 2002 Co-owners option property to Emerald Fields Resource Corporation, Kenora, Ontario. Samples submitted to International Metallurgical and Environmental Inc. for evaluation.

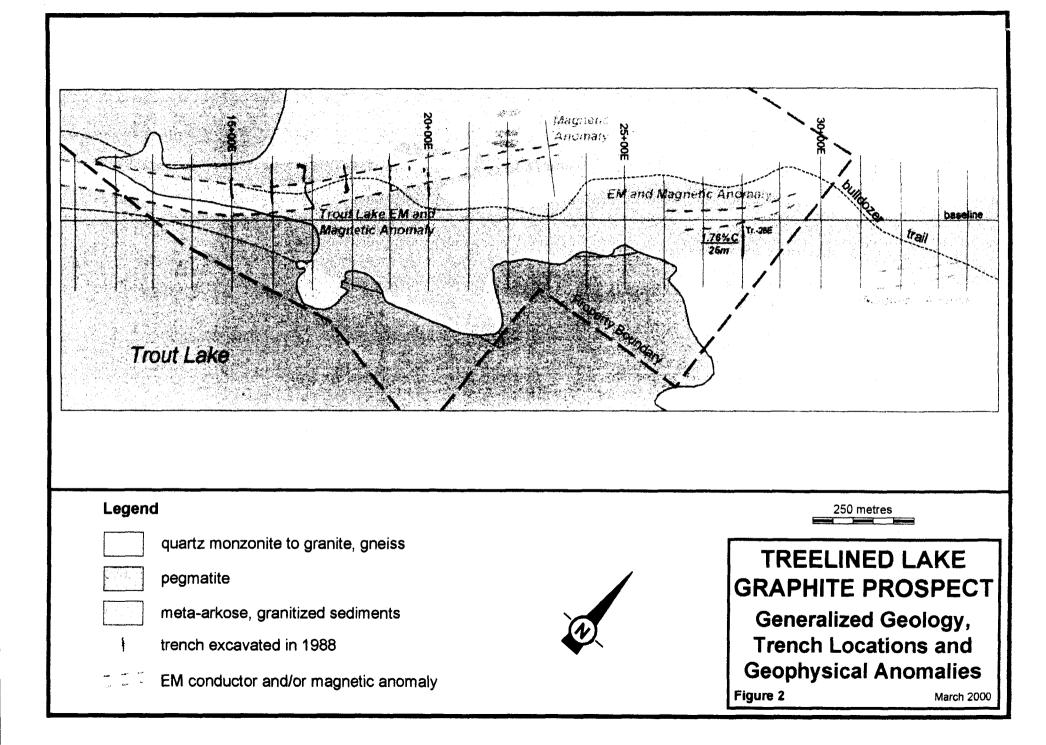
#### **Results:**

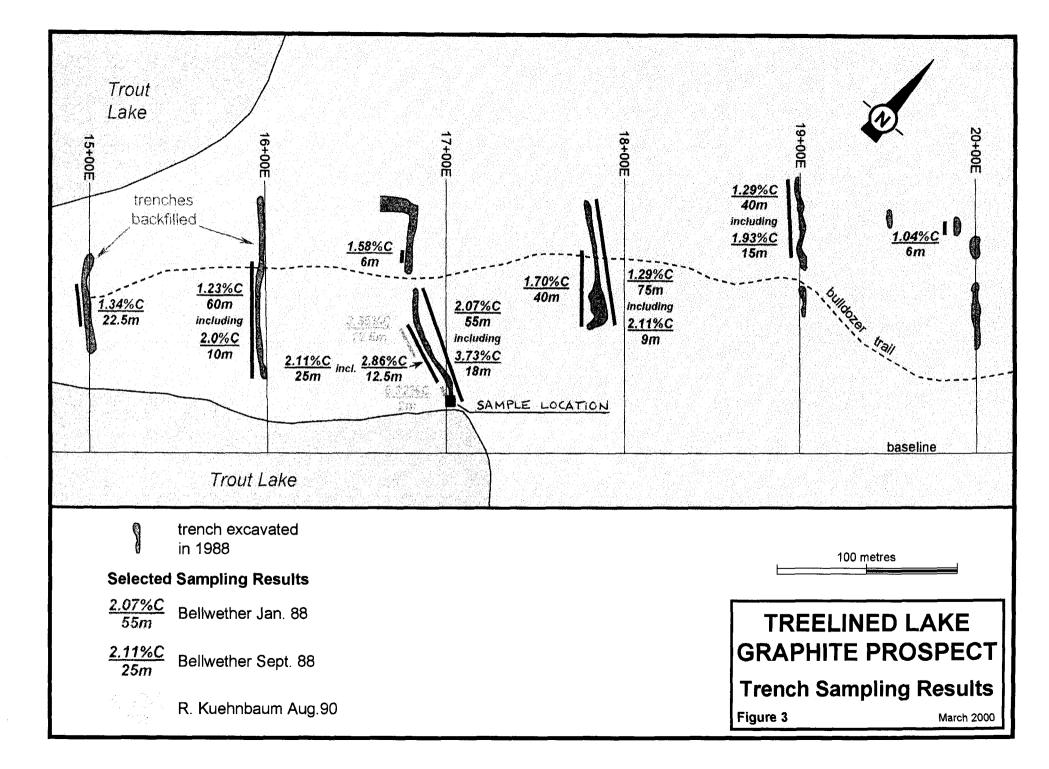
Report and analysis by International Metallugical and Environmental Inc., Kelowna, B.C. including ICP - 36 element analysis of Flotation 103 rougher tail from a 8 kg rock sample removed from the south end of Bellwether's (1988) 17+00E trench on mining claim # K.895627.

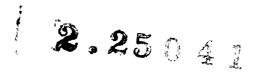
Report prepared by: Alasdair J.M. Mowat C.E.T. At:/Kenora, Ontario Date: February 13, 2003











April 3, 2002

Mr. Perry Heatherington – Chief Executive Officer Emerald Field Resource Corp. 1546 Pine Portage Road Kenora, Ontario P9N 2K2

Dear Perry,

International Metallurgical and Environmental Inc. has completed a series of scoping flotation tests for graphite recovery from an 8 kg ore sample received from Emerald Fields in January 2002.

The sample material received from Emerald Field Resources was a single surface grab sample of graphite bearing material that contained approximately 6.0 percent graphite on a weight basis. The objective of the test work was to demonstrate that this material would be amenable to the recovery and upgrading of the contained graphite using flotation processes. This test work was successful in producing graphite concentrates in the range of 82 to 84 percent contained graphite with very high recoveries of graphite, in the range of 91 to 95 percent.

It is expected that additional test work will result in further upgrading of the graphite concentrate into a range above 90 percent contained graphite. It is common that leaching processes are used for the removal of the impurities contained in these types of high grade concentrates, rather than flotation upgrading. It is recommended that if further test work is warranted on the project that additional sampling be done to allow for a more representative geological sample to be used.

The graphite recovery to the rougher flotation concentrate exceeded 99% at a grade of about 35% graphite. The graphite losses in the cleaner stages were low with the cleaner concentrate having a grade of 83% graphite at an overall recovery of 91.8%. The summarised results are shown in Table 1 and the detailed results are attached. If additional upgrading is required then a series of concentrate leaching tests are recommended.

The flake size observed in the flotation concentrates, in the order of 0.5 to 1 mm across the long axis of the flake and flake size should be capable of filling a large segment of the market. It is recommended that markets such as carbon source for steel making(hot topping), fuel cell components and expanded graphite be considered for this material. Substantial additional work is required on this project.

Table 1 – Flotation Result Summary

Test	Concentrate Sample	Primary Grind (min)	Regrind (min)	Wt %	% Fe	% Graphite	% Distribution
100	4 <sup>th</sup> Cleaner	20	10	6.9	4.0	81.4	94.7
101	4 <sup>th</sup> Cleaner	20	0	7.6	5.7	75.8	95.5
102	6 <sup>th</sup> Cleaner	20	10	6.4	4.05	83.1	91.8
103	3 <sup>rd</sup> Cleaner	20	10	6.1	4.5	81.5	82.8
104	5 <sup>th</sup> Cleaner	20	20	4.4	4.3	ND	ND

ND = Not Determined

The sample was crushed sequentially through a laboratory jaw crusher followed by a cone crusher in order to produce a minus 4 mesh crushed product. The crushed product was thoroughly blended using a riffle and sub-divided into 1 kg test portions. The test samples were given a primary grind at 65% solids using a batch laboratory scale stainless steel rod mill. Potassium silicate was added to the grind as a dispersant.

The flotation tests were performed in a Denver  $D_{12}$  flotation machine. Water was added to adjust the pulp density to about 30% solids by weight. The impeller speed was set at 1700 rpm and the air-flow was manually controlled to maintain the froth. Flotation reagents used included potassium silicate and pine oil. MIBC (Methyl Iso-Butyl Carbinol) was added to maintain a stable froth. The rougher flotation was carried out at a neutral pH value of 7 and the cleaning stages were carried out at a pH value of 10.5.

The rougher flotation concentrate was reground prior to the cleaner stages. All products were dried in a low temperature oven, weighed and sub-sampled for assay. Metallurgical balances were prepared.

The effect of regrinding prior to the cleaner stage is shown in the results of Test 100 and 101. In the former test the regrind resulted in upgrading the rougher concentrate from 34.2% graphite at 98.5% recovery to 81.4% graphite at 94.7% recovery. Without regrinding the amount of upgrading of the rougher concentrate was reduced from 38.9% graphite at 97.9% recovery to 75.8% graphite at 95.5% recovery.

Increasing the number of cleaning stages (Test 102) resulted in the production of a concentrate containing 83.1% graphite with a recovery of 91.8%.

The previous investigation had shown that the main impurities that required rejection were silicates and pyrrhotite. An additional test (104) was carried out using a longer regrinding time to

improve the graphite liberation. Sodium cyanide was added to the final cleaning stage in order to suppress the pyrrhotite.

Samples of the cleaner concentrates for each test were assayed for total iron. The results are shown in Table 1. The results showed that significant pyrrhotite remained in all the final concentrates, and pyrrhotite represents the largest contaminant in the final concentrate.

An ICP multi-element analysis was carried out on the final tail from Test 103. The results are attached.

Please call with any questions.

Yours very truly,

Jeffrey B. Austin, P.Eng. – President International Metallurgical and Environmental Inc.

Attachments:	Metallurgical Balance	Test 100	3 pages
	Metallurgical Balance	Test 101	3 pages
	Metallurgical Balance	Test 102	3 pages
	Metallurgical Balance	Test 103	3 pages
	Metallurgical Balance	Test 104	3 pages
	ICP Results	Test 103 Tail	1 page
	Size Analysis		2 pages

Project: Emerald Fields Test No.: 100 Test Samples: Raw Graphite Feed Test Objectives: Preliminary scoping test for graphite recovery

#### Metallurgical Balance

Sample	Wt. %	Assays	Distribution
		Graphite	Graphite
		%	%
Graphite Conc	6.9	81.37	94.7
4th Cl Tail	0.3	25.88	1.2
3rd Cl Tail	0.5	5.01	0.4
2nd Cl Tail	1.9	1.84	0.6
1st Cl Tail	7.5	1.21	1.5
Graphite Ro Scav Conc	3.7	0.28	0.2
Graphite Ro Tail	79.2	0.10	1.3
Calculated Head Assayed Head	100.0	5.95 5.76	

#### Flotation Test 100

#### Cumulative Metallurgical Balance

Sample	Wt. %	Assays Graphite	Distribution Graphite
		%	%
Graphite Conc	6.9	81.37	94.7
3rd Cl Conc	7.2	79.22	95.9
2nd Cl Conc	7.7	74.15	96.4
1st Cl Conc	9.6	60.11	97.0
Graphite Ro Conc	17.1	34.24	<del>9</del> 8.5
Graphite Scav Conc	3.7	0.28	0.2
Graphite Ro Tail	79.2	0.10	1.3
Calculated Head	100.0	5.95	
Assayed Head		5.76	

Project: Emerald Fields Test No.: 100 Test Samples: Raw Graphite Feed Test Objectives: Preliminary scoping test for graphite recovery

			Rea	Process			
Stage	рН	Lime g/t	KSiO3 g/t	Pineoil g/t	MIBC g/t	Cond min	Froth min
Grind			500			20	
Graphite Ro #1 Graphite Ro #2 Graphite Ro #3 Graphite Scavenger	6.8	1660		30 30 30 30		5	3 2 2 2 2
Rougher Regrind						10	
1st Cleaner 2nd Cleaner 3rd Cleaner 4th Cleaner	10.5 10.5 10.5 10.5 10.5	1680 330 340 410	200 200 200 200		14 7	1 1 1	5 4 3 2

-All Roughers and Scavengers were completed in a 2.5 cell.

- All primary grinds and regrinds were completed in a stainless steel rod mill with a 10 kg charge.

- All cleaner stages where completed in a 1.11 cell with the exception of the 1st cleaner.

- The 1st cleaner was completed in a 2.5l cell.

Project: Emerald Fields Test No.: 101 Test Samples: Raw Graphite Feed Test Objectives: Repeat of test 100 without regrinding

#### **Metallurgical Balance**

Sample	Wt. %	Assays	Distribution
	<u></u>	Graphite	Graphite
	<u> </u>	%	%
Graphite Conc	7.6	75.8	95.5
4th Cl Tail	0.4	16.74	1.1
3rd CI Tail	0.5	6.67	0.6
2nd Cl Tail	1.4	0.56	0.1
1st CI Tail	5.3	0.66	0.6
Graphite Ro Scav Conc	3.2	1.38	0.7
Graphite Ro Tail	81.6	0.10	1.4
Calculated Head	100.0	6.01	
Assayed Head		5.79	

## Flotation Test 101

Cumulative Metallurgical Balance

Sample	Wt. %	Assays	Distribution
		Graphite	Graphite
		%	%
Graphite Conc	7.6	75.80	95.5
3rd Cl Conc	8.0	72.87	96.6
2nd Cl Conc	8.5	68.89	97.2
1st CI Conc	9.8	59.43	97.3
Graphite Ro Conc	15.1	38.91	97.9
Graphite Scav Conc	3.2	1.38	0.7
Graphite Ro Tail	81.6	0.10	1.4
Calculated Head	100.0	6.01	
Assayed Head		5.79	

Project: Emerald Fields Test No.: 101 Test Samples: Raw Graphite Feed Test Objectives: Repeat of test 100 without regrinding

			Rea	Process			
Stage	рН	Lime g/t	KSiO3 g/t	Pineoil g/t	MIBC g/t	Cond min	Froth min
Grind			500			20	
Graphite Ro #1 Graphite Ro #2 Graphite Ro #3 Graphite Scavenger	6.8	1750		30 30 30 30		5	3 2 2 7
1st Cleaner 2nd Cleaner 3rd Cleaner 4th Cleaner	10.5 10.5 10.5 10.5 10.5	1320 280 300 410	200 200 200 200		14 7	1 1 1 1	5 4 3 2

-All Roughers and Scavengers were completed in a 2.5 cell.

- Primary grind was completed in a stainless steel rod mill with a 10 kg charge.

- All cleaner stages where completed in a 1.11 cell with the exception of the 1st cleaner.

- The 1st cleaner was completed in a 2.5l cell.

Project: Emerald Fields Test No.: 102 Test Samples: Raw Graphite Feed Test Objectives: Increased cleaners

Metallurgical Balance

Sample	Wt. %	Assays	Distribution
	]	Graphite	Graphite
		%	%
	ĺ	[	
Graphite Conc	6.4	83.14	91.8
6th Cl Tail	0.3	62.38	3.7
5th Cl Tail	0.1	32.09	0.8
4th Cl Tail	0.4	32.08	2.5
3rd Cl Tail	0.5	1.56	0.1
2nd Cl Tail	1.9	1.23	0.4
1st Cl Tail	11.0	0.09	0.2
Graphite Ro Scav Conc	5.2	0.10	0.1
Graphite Ro Tail	74.0	0.03	0.4
Calculated Head	100.0	5.77	
Assayed Head		5.79	

#### Flotation Test 102 Cumulative Metallurgical Balance

Sample	Wt. %	Assays	Distribution
		Graphite	Graphite
		%	%
Graphite Conc	6.4	83.14	91.8
5th Cl Conc	6.7	82.09	95.5
4th CI Conc	6.9	81.03	96.3
3rd Cl Conc	7.3	78.02	98.8
2nd Cl Conc	7.8	72.89	98.9
1st CI Conc	9.7	58.82	99,4
Graphite Ro Conc	20.7	27.66	99.5
	1		
Graphite Scav Conc	5.2	0.10	0.1
Graphite Ro Tail	74.0	0.03	0.4
	1		
Calculated Head	100.0	5.77	
Assayed Head		5.79	

Project: Emerald Fields Test No.: 102 Test Samples: Raw Graphite Feed Test Objectives: Increased cleaners

			Rea	Process			
Stage	рН	Lime g/t	KSiO <sub>3</sub> g/t	Pineoil g/t	MIBC g/t	Cond min	Froth min
Grind			500			20	
Graphite Ro #1 Graphite Ro #2 Graphite Ro #3 Graphite Scavenger	6.8	950		30 30 30 30		5 3 3 3	3 2 2 2
Regrind						10	
1st Cleaner 2nd Cleaner 3rd Cleaner 4th Cleaner 5th Cleaner 6th Cleaner	10.5 10.5 10.5 10.5 10.5 10.5		200 200 200 200		14 7 7	1 1 1 1 1	5 4 3 2 1.5 1

-All Roughers and Scavengers were completed in a 2.5 cell.

- Primary grind was completed in a stainless steel rod mill with a 10 kg charge.

- Regrind was completed in a stainless steel rod mill with a 10 kg charge.

- All cleaner stages where completed in a 1.11 cell with the exception of the 1st cleaner.

- The 1st cleaner was completed in a 2.5l cell.

## **Flotation Test Results**

Project: Emerald Fields Test No.: 103 Test Samples: Raw Graphite Feed Test Objectives: Kinetic test on 3rd cleaner

## Metallurgical Balance

			the second se
Sample	Wt. %	Assays	Distribution
		Graphite	Graphite
		%	%
Conc (0-1 min)	3.3	80.56	44.4
Conc (1-4 min)	2.8	82.52	38.4
3rd Cl Tail	1.7	58.38	16.2
2nd Cl Tail	1.2	0.44	0.1
1st Cl Tail	8.3	0.11	0.2
Graphite Ro Scav Conc	3.7	0.27	0.2
Graphite Ro Tail	78.9	0.04	0.5
Calculated Head	100.0	6.05	
Assayed Head		5.71	

#### Flotation Test 103 Cumulative Metallurgical Balance

Sample	Wt. %	Assays	Distribution
		Graphite	Graphite
		%	%
Conc (0-1 min)	3.3	80.56	44.4
Conc (0-4 min)	6.2	81.46	82.8
2nd Cl Conc	7.8	76.50	99.1
1st Cl Conc	9.0	66.41	99.2
Graphite Ro Conc	17.4	34.61	99.3
Graphite Scav Conc	3.7	0.27	0.2
Graphite Ro Tail	78.9	0.04	0.5
Calculated Head	100.0	6.05	
Assayed Head		5.79	

Project: Emerald Fields Test No.: 103 Test Samples: Raw Graphite Feed Test Objectives: Kinetic test on 3rd cleaner

			Rea	Process			
Stage	рН	Lime g/t	KSiO <sub>3</sub> g/t	Pineoil g/t	MIBC g/t	Cond min	Froth min
Grind			500			20	
Graphite Ro #1 Graphite Ro #2 Graphite Ro #3 Graphite Scavenger	6.8	770		30 30 30 30		5 3 3 3	3 2 2 2
Regrind						10	
1st Cleaner 2nd Cleaner	10.4 10.5	255 55	200 200		14 7	1	5 4
3rd Cleaner #1 3rd Cleaner #2	10.5	135			ĺ	1	1 3

- Primary grind was completed in a stainless steel rod mill with a 10 kg charge.

- Regrind was completed in a stainless steel rod mill with a 10 kg charge.

- All roughers and scavengers were completed in a 2.5l cell.

- All cleaners were completed in a 1.1l cell except for the 1st cleaner.

- The 1st cleaner was completed in a 2.5l cell.

- Kinetic test was completed on the 3rd cleaner.

## International Metallurgical and Environmental Inc. Certificate of Analysis

## Project: Emerald Fields Date: March 26, 2002

Sample ID.	Flot 103 Rougher Tail
Ag (ppm)	<0.05
AI (%)	8.15
As (ppm)	9
Ba (ppm)	701
Bi (ppm)	<5
Ca (%)	0.87
Cd (ppm)	1.4
Co (ppm)	35
Cr (ppm)	642
Cu (ppm)	37
Fe <sub>total</sub> (%)	4.79
Ga (ppm)	15
K (%)	3.48
La (ppm)	26
Li (ppm)	34
Mg (%)	0.62
Mn (ppm)	872
Mo (ppm)	46
Na (%)	1.41
Nb (ppm)	6
Ni (ppm)	377
Pb (ppm)	31
S (%)	2.572
Sb (ppm)	6
Sc (ppm)	12
Sn (ppm)	<20
Sr (ppm)	225
Ta (ppm)	<5
Te (ppm)	<25
Ti (ppm)	0.12
V (ppm)	108
W (ppm)	<20
Y (ppm)	10
Zn (ppm)	373
Zr (ppm)	116

Approved: Dave K. Green-Analytical Laboratory Manager

Project: Emerald Fields Test No.: 104 Test Samples: Raw Graphite Feed Test Objectives: Increased regrinding

Metallurgical Balance

Sample	wt grams	Wt. %	Assays Graphite	Distribution Graphite
			%	%
Graphite Conc 5th Cl Tail	<b>44.32</b> 11.17	4.4 1.1	n/d n/d	
4th Cl Tail	8.83	0.9	n/d	
3rd Cl Tail	9.56	1.0	n/d	
2nd Cl Tail	15.92	1.6	n/d	
1st CI Tail	106.76	10.6	n/d	
Graphite Ro Scav Conc	32.41	3.2	n/đ	
Graphite Ro Tail	774.12	77.2	n/d	
Calculated Head Assayed Head	1003.09	100.0	n/d	

# Flotation Test 104

Cumulative Metallurgical Balance

Sample	wt	Wt. %	Assays	Distribution
	grams		Graphite	Graphite
			%	%
Graphite Conc		4.4	n/d	
4th Cl Conc		5.5	n/d	
3rd Cl Conc		6.4	n/d	
2nd Cl Conc		7.4	n/d	
1st Cl Conc		9.0	n/d	
Graphite Ro Conc		19.6	n/d	
Graphite Scav Conc		3.2	n/d	
Graphite Ro Tail		77.2	n/d	
Calculated Head Assayed Head		100.0	n/d n/d	

## International Metallurgical and Environmental Inc. Certificate of Analysis

Project: Emerald Fields Date: April 3, 2002 Certificate No: 4206

Sample	Au opt
Flot 103 Final Tails	<0.003

Approved: Dan Men \_\_\_\_

Dave K. Green, Analytical Laboratory Manager

Project: Emerald Fields Test No.: 104 Test Samples: Raw Graphite Feed Test Objectives: Increased regrinding

				Process				
Stage	рН	Lime g/t	KSiO₃ g/t	Pineoil g/t	NaCN g/t	MIBC g/t	Cond min	Froth min
Grind			500				20	
Graphite Ro #1 Graphite Ro #2 Graphite Ro #3 Scavenger Conc	7.0	565		30 30 30 30			5 3 3 3	3 2 2 2
Regrind 1st Cleaner 2nd Cleaner 3rd Cleaner 4th Cleaner 5th Cleaner	10.5 10.3 10.5 10.5 10.5	250 25 25 35 45	200 200 200		100	7	20 1 1 1 1 1 1	5 4 3 2 1.5

-All roughers and scavengers were completed in a 2.51 cell.

-All cleaners except the 1st cleaner was completed in a 1.11 cell.

-1st cleaner was completed in a 2.5l cell.

-All milling was completed in a stainless steel rod mill with a 10kg charge.



# Work Report Summary

Transaction No: W0310.00287   Recording Date: 2003-FEB-19   Approval Date: 2003-MAR-12			St Work Done	from: 2002	ROVED 2-JAN-02 3-FEB-13					
	ent(s): 303 vey Type(s):	-	MERALD FIE	LDS RESOL	IRCE CORPO	PRATION				
	<u>rk Report D</u>	<u>etails:</u> Perform	Perform Approve	Applied	Applied Approve	Assign	Assign Approve	Reserve	Reserve Approve	
к	895627	\$3,279	\$3,279	\$0	\$0	\$1,083	1,083	\$2,196	\$2,196	2004-MAR-02
к	898892	\$0	\$0	\$400	\$400	\$0	0	\$0	\$0	2004-MAR-02
к	898893	\$0	\$0	\$400	\$400	\$0	0	\$0	\$0	2004-MAR-02
к	898894	\$0	\$0	\$283	\$283	<b>\$</b> 0	0	\$0	\$0	2004-MAR-02
		\$3,279	\$3,279	\$1,083	\$1,083	\$1,083	\$1,083	\$2,196	\$2,196	-
Ext	ernal Credit	s:	\$0							
Re	serve:	:	\$2,196 Res	erve of Wor	< Report#: W0	310.00287				
			\$2,196 Tota	I Remaining						

Status of claim is based on information currently on record.



52L08SW2012 2.25041

TREELINED LAKE

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Ministry of Northern Development and Mines

ALASDAIR JAMES MOWAT

1546 PINE PORTAGE RD., KENORA, ONTARIO

CANADA

Ministère du Développement du Nord et des Mines

Date: 2003-MAR-13



GEOSCIENCE ASSESSMENT OFFICE 933 RAMSEY LAKE ROAD, 6th FLOOR SUDBURY, ONTARIO P3E 6B5

Tel: (888) 415-9845 Fax:(877) 670-1555

Submission Number: 2.25041 Transaction Number(s): W0310.00287

Dear Sir or Madam

P9N 2K2

#### Subject: Approval of Assessment Work

EMERALD FIELDS RESOURCE CORPORATION

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

The revisions outlined in the Notice dated February 27, 2003 have been corrected. Accordingly, assessment work credit has been approved as outlined on the Declaration of Assessment Work Form that accompanied this submission.

If you have any question regarding this correspondence, please contact BRUCE GATES by email at bruce.gates@ndm.gov.on.ca or by phone at (705) 670-5856.

Yours Sincerely,

mc chit

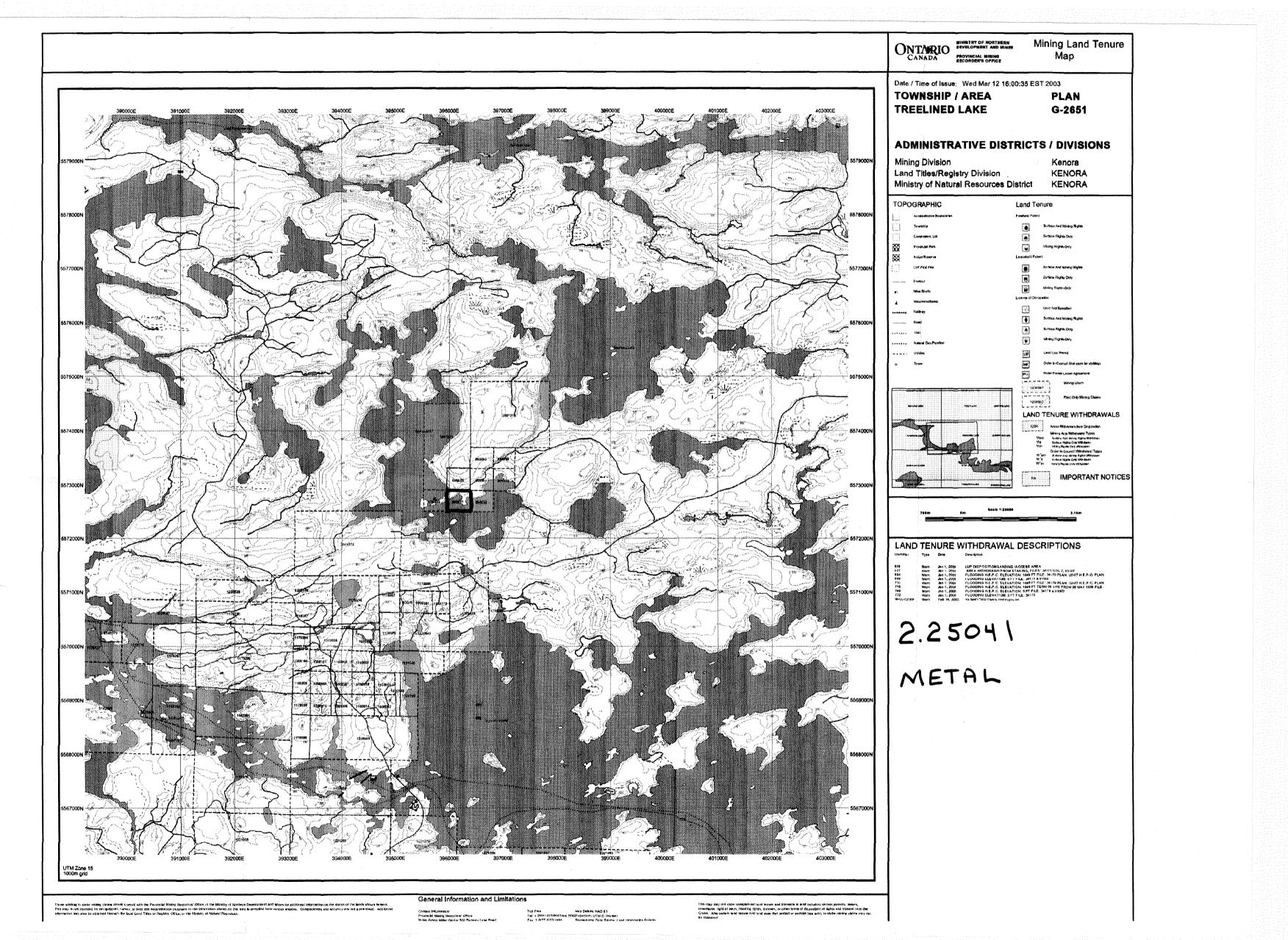
Ron Gashinski Senior Manager, Mining Lands Section

Cc: Resident Geologist

Emerald Fields Resource Corporation (Claim Holder)

Assessment File Library

Emerald Fields Resource Corporation (Assessment Office)



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