THURBER ENGINEERING LTD.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

April 24, 2008 File: 19-2803-18

BURNCO Rock Products Ltd.
Box 1480, Station T
Calgary, AB
T2H 2P9

Attention: Mr. J. Kim Titus, C.E.T.
Vice President, Aggregate Division

MCNAB CREEK GRAVEL DEPOSIT

Dear Sirs:

This report presents the results of a test pit and laboratory testing program carried out to investigate the gravel deposit at McNab Creek. The investigation was verbally authorized on March 20 following the March 17 project initiation meeting. An interim report was submitted on March 28 to facilitate negotiations with the vendor, Columbia National Inc. Use of this report is subject to the enclosed Statement of General Condition.

1. PREVIOUS INVESTIGATIONS

1.1 Stirling 1970

As assessment of the marketable aggregate available from the 107 ha property was carried out in 1970 by H.R. Stirling, P.Eng., Consulting Engineer for Construction Aggregates Ltd. Nine Becker hammer holes were completed to a maximum depth of 39 m on the west side of McNab Creek, distributed over the area expected to yield gravel. No test hole logs, gradation results or aggregate quality reports have been provided but Stirling's report provides the following comments:

- The deposit contains at least 51 million tons (30 million m^3) of granular material of which 77% lies below the water table.
- 46.5 million tons (25 million m^3) could be extracted to yield 38 million tons (20 million m^3) of marketable gravel with excavation up to 36 m depth below the water table.
- The quality of aggregate determined by soundness, LA Abrasion and other laboratory tests is "satisfactory (and) completely acceptable for

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concrete and asphalt aggregate" except for the presence of up to 40% of metamorphic rock in the deposit.

1.2 EBA 2005

EBA Engineering Consultants Ltd. (EBA) completed an investigation for AJB Investments Ltd. in 2005. The investigation involved 4 sonic holes drilled to about 14 m depth and converted to monitoring wells (MWs) by installation of a perforated casing in the hole, supplemented by 3 drive point piezometers. Monitoring well locations are shown approximately on Dwg. 19-2803-18-1 in Appendix D. The logs of MWs 05-1 through 05-4 are included in Appendix A. MW 05-5 log was not provided.

EBA's logs generally confirm Stirling's assessment except that MW 05-1 drilled in the middle of the deposit reported a clay layer from 9.0 to 11.5 m depth and bedrock at 13.7 m depth.

Water levels shown on the logs vary in depth from 4 m in MWs 05-2 and 05-4 to 7 m in MW 05-1.

2. CURRENT INVESTIGATION

2.1 Test Pit Program

A program of 40 test pits excavated to between 2 and 5 m depth and completed March 25 – 31 under the full-time supervision of our inspector, Mr. Steve Perrett, with some on-site involvement by BURNCO's Mr. Darren Kelm regarding the distribution of the pits. The east side of McNab Creek was not accessible for test pitting because of bridge and road wash-outs. The pits were logged and photographed during excavation and bulk samples of minus 75 mm material were collected from the test pits for laboratory testing.

2.2 Laboratory Testing

Bulk samples from 9 test pits were selected for gradation testing, reflecting variations in the visual classifications recorded in the field and distribution over the property.

2.3 Investigation Results

Test pit locations are shown on Dwg. 19-2803-18-1 in Appendix D. Gradation curves are included in Appendix C.

2.4 Evaluation of Investigation Results

The logs indicate that the deposit, to the depth investigated, generally contains well graded, granular material with varying silt, cobble and boulder contents. When encountered, the water table, as indicated by seepage into the test pits, was between 1 and 3 m depth.

In 15 test pits, the visual classification indicated till-like material, suggesting a silt content well above 10%. Gradation tests completed on five of those pits confirmed that only one (TP 08-1) had a silt content that would justify a "till-like" description. Therefore, we expect that the logs for the remaining 10 pits probably exaggerate the silt content indicating that the fan contains clean (less than 10% silt) granular material. The higher ground in the southwest quadrant likely contains silty, till-like material (as encountered in TP 08-1) though TP 08-30, excavated almost 80 m above the general ground surface over the fan, encountered clean, well graded sand and gravel.

3. FUTURE TESTING

It is recommended that additional gradation testing be carried out, particularly on samples visually classified as "till-like", and aggregate quality tests be undertaken to establish the suitability of material with reference to the BC Ministry of Transportation's criteria.

We trust this is sufficient for your present purposes. If we can be of further assistance, please do not hesitate to contact us.

Yours very truly,
Thurber Engineering Ltd.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. SMITH

Dave Smith, P.Eng.
Principal

DS/cw

THURBER ENGINEERING LTD.

STATEMENT OF GENERAL CONDITIONS

1. STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering or environmental consulting practices in this area. No other warranty, expressed or implied, is made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this Report expressly addresses proposed development, design objectives and purposes, and then only to the extent there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation or to consider such representations, information and instructions.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS WE MAY EXPRESSLY APPROVE. The contents of the Report remain our copyright property. The Client may not give, lend or, sell the Report, or otherwise make the Report, or any portion thereof, available to any person without our prior written permission. Any use which a third party makes of the Report, are the sole responsibility of such third parties. Unless expressly permitted by us, no person other than the Client is entitled to rely on this Report. We accept no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without our express written permission.

5. INTERPRETATION OF THE REPORT

a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and this report is delivered on the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

(see over . . . .)

Appendix A

Logs of EBA Monitoring Wells

Proposed Gravel Quarry at McNab Creek	Drilled by: Sonic Drilling Ltd., Surrey	BOREHOLE NO: MW05-1
AJB Investments Ltd.	Drilling Method: Sonic	PROJECT NO: 5825488.001
		ELEVATION:

SAMPLE TYPE ■ GRAB ⊠ SPLIT-SPOON ▤ CORE SAMPLE

BACKFILL TYPE ■ BENTONITE ⁘ PEA GRAVEL ▥ SLOUGH ⁘ CONCRETE ▨ DRILL CUTTINGS ⁘ SAND

Depth(m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	Headspace Reading (ppm) 400 800 1200 1600	Depth(ft)
0.0		Wood (tree bark), some gravel				0.0
1.0		COBBLES-gravelly, some coarse sand, damp-moist, grey				5.0
2.0						
3.0		SAND- coarse,cobbley, gravelly, damp-moist, grey				10.0
4.0		COBBLES, gravelly, some sand, moist-wet, grey				
5.0		SAND- medium to coarse, cobbley, gravelly ,moist, grey				15.0
6.0		GRAVEL, cobbley, some sand, wet, grey				20.0
7.0		- dry below 6.71 m				
8.0						25.0
9.0		GRAVEL- some cobbles, trace gravel, moist grey				30.0
10.0		CLAY- silty, sandy, wet				
11.0						35.0
12.0		SAND- medium-coarse, gravelly, moist-wet, grey				40.0
13.0		SAND-coarse, gravelly, trace silt, grey, wet				
14.0		BEDROCK End of Hole @ 13.72 m				45.0
15.0						

EBA ENGINEERING CONSULTANTS LTD.	LOGGED BY: JRR	COMPLETION DEPTH: 13.72 m
Vancouver, B.C.	REVIEWED BY:	COMPLETE: 08/08/05
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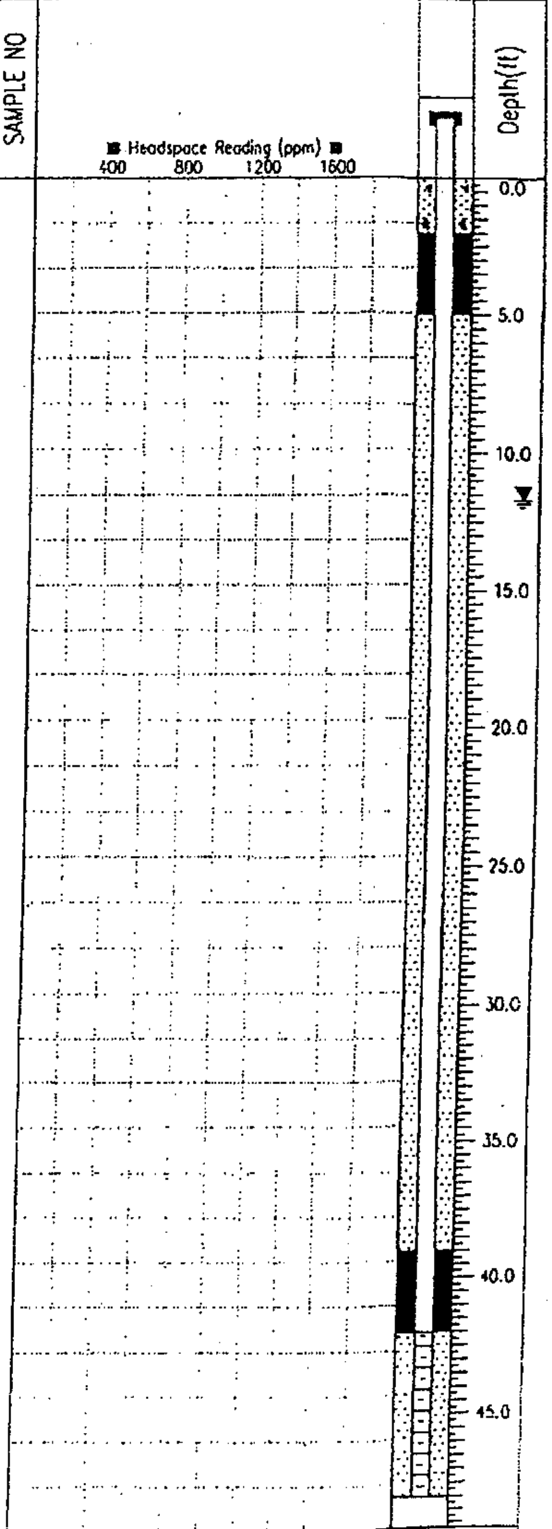
05/09/12 08:34 AM (5825488)

Proposed Gravel Quarry at McNab Creek	Drilled by: Sonic Drilling Ltd., Surrey	BOREHOLE NO: MW05-2
AJB Investments Ltd.	Drilling Method: Sonic	PROJECT NO: 5825488.001
		ELEVATION:

SAMPLE TYPE: GRAB, SPLIT-SPOON, CORE SAMPLE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, CONCRETE, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO
0.0	Tree log		
1.0	GRAVEL - some sand, some tree bark, trace cobbles, damp, grey		
	Boulders		
5.0	SAND - coarse, gravelly, wet, grey		
	- some gravel below 10.67 m		
	- some cobbles below 12.2 m		
15.0	End of Hole @ 14.64 m		



EBA ENGINEERING CONSULTANTS LTD.	LOGGED BY: JRR	COMPLETION DEPTH: 14.64 m
Vancouver, B.C.	REVIEWED BY:	COMPLETE: 08/08/05
		Page 1 of 1

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Proposed Gravel Quarry at McNab Creek	Drilled By: Sonic Drilling Ltd., Surrey	BOREHOLE NO: MW05-3
AJB Investments Ltd.	Drilling Method: Sonic	PROJECT NO: 5825488.001
		ELEVATION:

SAMPLE TYPE: GRAB | SPLIT-SPOON | CORE SAMPLE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | CONCRETE | DRILL CUTTINGS | SAND

Depth(m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	■ Headspace Reading (ppm) ■ 400 800 1200 1600	Depth(ft)
0.0		Wood debris, grass				0.0
		GRAVEL-some sand, some cobbles, wet, grey				
1.0						5.0
2.0						
3.0						10.0
4.0						
5.0						15.0
6.0 ▼						20.0 ▼
7.0						
		GRAVEL and SAND- trace silt, wet, brown				25.0
8.0						
		SAND- coarse, some gravel, trace silt, wet, brown				
9.0						30.0
10.0						
11.0						35.0
12.0						
		- brown below 12.81 m				40.0
13.0						
		End of Hole @ 13.72 m				45.0
14.0						
15.0						

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LOGGED BY: JRR	COMPLETION DEPTH: 13.72 m
REVIEWED BY:	COMPLETE: 09/08/05
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Proposed Gravel Quarry at McNab Creek	Drilled by: Sonic Drilling Ltd., Surrey	BOREHOLE NO: MW05-4
AJB Investments Ltd.	Drilling Method: Sonic	PROJECT NO: 5825488.001
		ELEVATION:

SAMPLE TYPE ■ GRAB ⊠ SPLIT-SPOON ▤ CORE SAMPLE

BACKFILL TYPE ■ BENTONITE ⁘ PEA GRAVEL ▥ SLOUGH ⁘ CONCRETE ▨ DRILL CUTTINGS ⁘ SAND

Depth(m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	■ Headspace Reading (ppm) ■ 400 800 1200 1600	Depth(ft)
0.0		SAND-medium, damp, brown -some gravel, trace silt below 0.15 m				0.0
1.0						
2.0						5.0
3.0						
▼						10.0
4.0		SAND-medium, some gravel, trace silt, trace clay, damp, grey				
5.0						15.0
6.0		SAND-coarse, gravelly, trace cobbles, wet, grey				
7.0						20.0
8.0						
9.0		GRAVEL and SAND-trace cobbles, wet, grey				25.0
10.0						
11.0						30.0
12.0						
13.0						35.0
14.0		End of Hole @ 13.72m				40.0
15.0						45.0

EBA ENGINEERING CONSULTANTS LTD.
Vancouver, B.C.

LOGGED BY: JRR	COMPLETION DEPTH: 13.72 m
REVIEWED BY:	COMPLETE: 09/08/05
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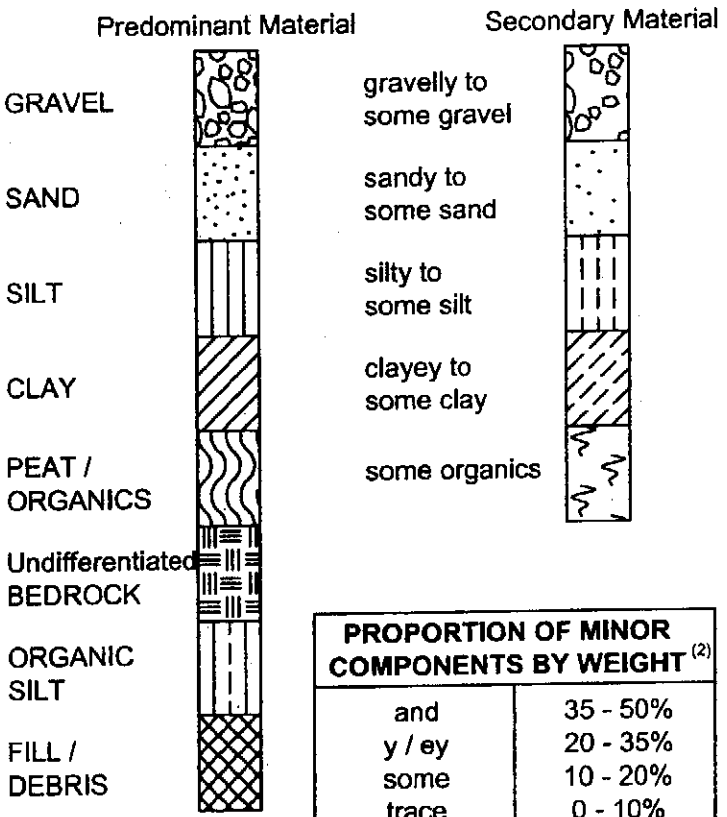
Appendix B

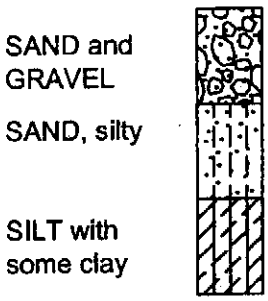
Logs of TEL Test Pits

SYMBOLS AND TERMS
FOR SOIL DESCRIPTION AND TEST HOLE LOGS

BASIC SOIL SYMBOLS



SYMBOL VARIATIONS - EXAMPLES[1]



DENSITY OF GRANULAR SOILS	
Description	SPT N[5][6]
Very Loose	0 - 4
Loose	4 - 10
Compact	10 - 30
Dense	30 - 50
Very Dense	> 50

PROPORTION OF MINOR COMPONENTS BY WEIGHT[2]	
and	35 - 50%
y / ey	20 - 35%
some	10 - 20%
trace	0 - 10%

CONSISTENCY OF COHESIVE SOILS	
Description	Undrained Shear Strength (kPa)[6]
Very Soft	< 12
Soft	12 - 25
Firm	25 - 50
Stiff	50 - 100
Very Stiff	100 - 200
Hard	> 200

PENETRATION TESTS	
Dynamic Cone Penetration	
Standard Penetration	
Becker Closed Casing	
Becker Open Casing	
Bounce Chamber Pressure	

CLASSIFICATION BY PARTICLE SIZE				
		Size Range[6]		
			U.S. Standard Sieve Size	
Name		(mm)[3]	Retained	Passing
Boulders		> 200	8 inch	-
Cobbles		75 - 200	3 inch	8 inch
Gravel:	coarse	19 - 75	0.75 inch	3 inch
	fine	5 - 19	No. 4	0.75 inch
Sand:	coarse	2 - 5	No. 10	No. 4
	medium	0.4 - 2	No. 40	No. 10
	fine	0.075 - 0.4	No. 200	No. 40
Fines (Silt or Clay)[4]		< 0.075	-	No. 200

(1) Only selected examples of the possible variations or combinations of the basic symbols are illustrated.
(2) Example: SAND, silty, trace of gravel = sand with 20 to 35% silt and up to 10% gravel, by dry weight. Percentages of secondary materials are estimates based on visual and tactile assessment of samples.
(3) Approximate metric conversion.
(4) Fines are classified as silt or clay on the basis of Atterberg limits.
(5) SPT N values on test hole logs are uncorrected field values.
(6) Reference Canadian Foundation Engineering Manual 3rd Edition, 1992.

THURBER

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-01**

LOCATION: See Dwg. 19-2803-18-1
N 5490015,
E 471222

TOP OF HOLE ELEV: 20.0 m (est.)

METHOD:

EXCAVATOR: Cat 330C Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 25, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS		SOILS DESCRIPTION	ELEVATION (m)
0				Loose, dark brown, sandy SILT with some organics.	
				BOULDERS to max 800 mm dia.	
1				Very dense, grey, silty, sandy GRAVEL with some cobbles to max 200 mm dia. (Till-like).	19
2 ▼	▲ △		GM		18 ▼
				- some clay below 2.5 m	
3					17
				End of hole at required depth.	
4		Photos 6084, 6085			16
5					15
6					

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 24/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-02**

LOCATION: See Dwg. 19-2803-18-1
N 5490068,
E 471381

TOP OF HOLE ELEV: 5.0 m (est.)

METHOD:

EXCAVATOR: Cat 330C Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 25, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Loose, brown, sandy, clayey SILT.	5
1		Green-grey, clayey SAND and SILT with boulders to max 400 mm dia. (Till-like).	4
1 ▼	Seepage at 1.8 m.		
2			3
3		End of hole at required depth.	2
4	Photos 6787 to 6792		1
5			0
6			

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-03**

LOCATION: See Dwg. 19-2803-18-1
N 5490135,
E 471616

TOP OF HOLE ELEV: 3.0 m (est.)

METHOD:

EXCAVATOR: Cat 330C Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 25, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊡ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Loose, brown, silty SAND with some logs and stumps.	
1		Compact, grey-brown, sandy GRAVEL with some cobbles and boulders to max 400 mm dia. and trace of clay (Till-like).	2
2	Seepage at 2.2 m.		1
3		End of hole - sloughing.	0
4	Photos 6793 to 6798		-1
5			-2
6			

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 11/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-04**

LOCATION: See Dwg. 19-2803-18-1
N 5490403,
E 471374

TOP OF HOLE ELEV: 13.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, brown to grey brown SAND with some organics.	
			COBBLES and BOULDERS with some sand.	12
1			Very dense, grey, gravelly, silty, clayey SAND with some cobbles and boulders to 400 mm dia. (Till-like).	
2		Seepage at 1.8 m.		11
3				10
4		Photos 5954 to 5957		9
			End of hole at required depth.	
5				8
6				

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-05**

LOCATION: See Dwg. 19-2803-18-1
N 5490628,
E 471406

TOP OF HOLE ELEV: 15.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, red-grey SILT with some organics.	
1			Loose, red-grey to grey, silty SAND.	14
2			Compact, grey mixture of SAND, GRAVEL, COBBLES and BOULDERS to 400 mm dia. (Till-like).	13
3				12
4		Photos 5938 to 5962		11
			End of hole at required depth.	
5				10
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-06**

LOCATION: See Dwg. 19-2803-18-1
N 5490956,
E 471439

TOP OF HOLE ELEV: 18.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Sandy SILT with some organics (roots).	
			Light grey, gravelly SAND with some clay.	17
1				
			Yellow-brown, silty SAND with some gravel.	16
2		Seepage at 2.1 m.		
			Mixture of SAND, GRAVEL, COBBLES and BOULDERS (Till-like).	
3		Seepage at 2.9 m.		15
			End of hole at required depth.	
4		Photos 5967 to 5971		14
5				13
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-07**

LOCATION: See Dwg. 19-2803-18-1
N 5491142,
E 471487

TOP OF HOLE ELEV: 19.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Loose, dark brown, silty SAND.	
		- yellow-brown below 0.3 m	
1		Compact, yellow-brown to grey, gravelly SAND with occasional cobbles.	18
	Seepage at 1.3 m.		
2		Sandy, bouldery to max 600 mm dia. GRAVEL and COBBLES.	17
3			16
4	Photos 5972 to 5977		15
5			14
6		End of hole at required depth.	

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO.
TP08-08

LOCATION: See Dwg. 19-2803-18-1
N 5491467,
E 471462

TOP OF HOLE ELEV: 25.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm)

WATER CONTENT (%): ○ Disturbed ● Undisturbed

WATER LEVEL ▼ Plastic Limit — Liquid Limit

SAMPLES: ◧ Disturbed ▩ Undisturbed ⊠ No Recovery

UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual

GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve

SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			TOPSOIL.	
			Loose, red-brown, silty SAND with some gravel.	24
1				
			Loose, grey-brown, silty SAND with some gravel and clay.	23
2				
3		Seepage at 3.0 m.		22
			GRAVEL and BOULDERS to max 800 mm dia. with some sand and cobbles (Till).	
			End of hole at required depth.	
4		Photos 5978 to 5982		21
5				20
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-09**

LOCATION: See Dwg. 19-2803-18-1
N 5491675,
E 471462

TOP OF HOLE ELEV: 38.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ☒ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Mixture of SAND, SILT, GRAVEL, COBBLES and BOULDERS up to 1200 mm dia. (Till-like).	
1				37
2				36
			End of hole at required depth.	
3				35
4				34
5				33
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-10**

LOCATION: See Dwg. 19-2803-18-1
N 5492060,
E 471469

TOP OF HOLE ELEV: 54.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			TOPSOIL with some logs and branches.	
			Red-brown, clayey SAND with some gravel.	
1		Seepage at 1.2 m.	Yellow-brown GRAVEL and COBBLES with some sand and boulders up to 560 mm dia. (Till-like).	53
2				52
3			End of hole at required depth.	51
4		Photos 5986 to 5989		50
5				49
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO.
TP08-11

LOCATION: See Dwg. 19-2803-18-1
N 5492073,
E 471410

TOP OF HOLE ELEV: 57.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		TOPSOIL with branches and logs.	
1		Grey, silty, clayey SAND with some gravel.	56
2			55
3			54
4	Photos 5990 to 5993	End of hole at required depth.	53
5			52
6			

10 20 30 40 50 60 70 80 90 100

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 11/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-12**

LOCATION: See Dwg. 19-2803-18-1
N 5492238,
E 471408

TOP OF HOLE ELEV: 62.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Brown, silty SAND with some organics (branches).	
			Yellow-brown, silty SAND with some gravel and clay.	
1				61
2				60
3				59
4		Seepage at 3.9 m. Photos 5997, 5998	SAND and GRAVEL with some silt, cobbles and boulders (Till).	58
			End of hole at required depth.	
5				57
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-13**

LOCATION: See Dwg. 19-2803-18-1
N 5492638,
E 471483

TOP OF HOLE ELEV: 62.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit | Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown, silty SAND with some organics (branches).	
		Seepage at 0.5 m.	Compact, gravelly, sandy COBBLES with traces of boulders, silt and clay (Till-like).	61
1				
2 ▼				60 ▼
			End of hole at required depth.	
3				59
4		Photos 5999, 6000		58
5				57
6				

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-14**

LOCATION: See Dwg. 19-2803-18-1
N 5491613,
E 471373

TOP OF HOLE ELEV: 50.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 27, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Brown, silty SAND with some organics (branches).	
1			Grey and red-brown, cobbley BOULDERS to 800 mm dia. with traces of sand and silt (Till-like).	49
		Seepage at 1.5 m.		
2			End of hole at required depth.	48
3				47
4		Photos 6019 to 6022		46
5				45
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-15**

LOCATION: See Dwg. 19-2803-18-1
N 5492172,
E 471396

TOP OF HOLE ELEV: 64.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Seepage at surface.	Loose, dark brown, silty SAND with some organics (logs, branches).	
1			Yellow-grey to green-grey, silty, clayey SAND.	63
2			- some coarse gravel to fine cobbles at 2.4 m	62
3				61
4		Photos 6023, 6024	End of hole at required depth	60
5				59
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-16

LOG OF TEST PIT

LOCATION: See Dwg. 19-2803-18-1
N 5492153,
E 471445

TOP OF HOLE ELEV: 60.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit | Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS		SOILS DESCRIPTION	ELEVATION (m)
0				Dark brown TOPSOIL with branches and logs.	
				Yellow-grey mixture of COBBLES to max 200 mm dia., SAND and CLAY.	
1				Green-grey, sandy GRAVEL, COBBLES and BOULDERS to 600 mm dia with trace of silt (Till).	59
		Seepage at 1.4 m.			
2	▲ △		GW-GM	- cobble/boulder content increases below 2.0 m	58
3				End of hole at required depth.	57
4		Photos 6025 to 6027			56
5					55
6					

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 24/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO.
TP08-17

LOCATION: See Dwg. 19-2803-18-1
N 5492297,
E 471607

TOP OF HOLE ELEV: 52.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL ▼ | Plastic Limit | Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown, silty TOPSOIL with logs and branches.	
1			Yellow-brown to dark brown mixture of SILT, SAND, GRAVEL and BOULDERS to 1200 mm dia.	51
2		Seepage at 1.5 m.	Yellow-brown mixture of SAND, GRAVEL, COBBLES and BOULDERS.	50
3			Green-grey, gravelly SAND with some silt.	49
4		Photos 6028 to 6032	End of hole at required depth.	48
5				47
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-18**

LOCATION: See Dwg. 19-2803-18-1
N 5491888,
E 471505

TOP OF HOLE ELEV: 39.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown TOPSOIL with roots, logs and branches.	
		Seepage from 0.5 to 1.0 m.	Red-brown, silty SAND with some clay.	
			- yellow-grey below 0.5 m	
1				38
			- green-grey with some boulders to 800 mm dia. below 1.1 m	
2				37
			COBBLES and BOULDERS with some silt, sand and gravel (Till-like).	
3				36
			End of hole at required depth.	
4		Photos 6033 to 6036		35
5				34
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08- THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-19**

LOCATION: See Dwg. 19-2803-18-1
N 5491583,
E 471514

TOP OF HOLE ELEV: 28.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blow/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit | Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown TOPSOIL with logs and branches.	
			Yellow-grey, silty SAND with some boulders to 1500 mm dia.	
1			Yellow-grey, sandy GRAVEL with COBBLES and BOULDERS to 800 mm dia. and trace of silt.	27
2		GW		26
3	▲ △			25
4		Photos 6037 to 6041		24
			End of hole at required depth.	
5				23
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 24/4/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-20**

LOCATION: See Dwg. 19-2803-18-1
N 5491366,
E 471478

TOP OF HOLE ELEV: 21.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 28, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND with some organics (logs, branches).	
1			Very dense, yellow-grey, silty SAND with some cobbles and boulders to 600 mm dia.	20
2		Seepage at 1.8 m.	Very dense, green-grey mixture of SAND, GRAVEL, COBBLES and BOULDERS to 1100 mm dia. with some silt (Till-like).	19
3			End of hole at required depth.	18
4		Photos 6048 to 6051		17
5				16
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-21**

LOCATION: See Dwg. 19-2803-18-1
N 5490867,
E 471972

TOP OF HOLE ELEV: 13.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown, silty SAND with some organics (branches).	
			Loose, grey, sandy GRAVEL with trace of cobbles to max 300 mm dia.	12
1				
2				11
3				10
			End of hole at required depth.	
4		Photos 6052 to 6055		9
5				8
6				

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-22**

LOCATION: See Dwg. 19-2803-18-1
N 5490737,
E 471889

TOP OF HOLE ELEV: 10.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS		SOILS DESCRIPTION	ELEVATION (m)
0				TOPSOIL with branches.	
				Yellow-grey SAND with some gravel.	
1				Sandy GRAVEL with some cobbles and boulders to max 600 mm dia. and trace of silt.	9
2	▲ △		GW		8
3					7
				End of hole - sloughing.	
4		Photos 6056 to 6058			6
5					5
6					

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 24/4/08 THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-23

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490860,
E 471763

TOP OF HOLE ELEV: 10.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ☒ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown SILT.	
			Loose, brown, silty GRAVEL with some sand.	
			Compact, yellow-grey, sandy GRAVEL with some cobbles.	9
1				
				8
2			Grey mixture of SAND, GRAVEL and COBBLES with some boulders to 600 mm dia.	
				7
3		Seepage at 3.4 m.		
			End of hole at required depth.	
4		Photos 6059 to 6062		6
5				5
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BCGLGT 10/4/08 THURBER BCGLB

Sheet 1 of 1

TEST PIT NO.
TP08-24

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5491010,
E 471686

TOP OF HOLE ELEV: 11.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ☒ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		TOPSOIL with logs and branches.	
		Green-grey, silty SAND.	
1		Dense, yellow-grey and brown SAND, GRAVEL and COBBLES with trace of boulders to 300 mm dia.	10
2			9
		- some boulders up to 700 mm dia. below 2.5 m	
3	Seepage at 2.9 m.	Very dense, sandy COBBLES with some silt, gravel and boulders (Till).	8
4	Photos 6063 to 6065	End of hole - sloughing.	7
5			6
6			

LOG OF TEST PIT 19-2803-18.GPJ THURBER.GDT 10/4/08 - THURBER BLOCK B

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-25**

LOCATION: See Dwg. 19-2803-18-1
N 5490860,
E 471680

TOP OF HOLE ELEV: 12.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Brown, silty SAND with some cobbles and organics (roots and logs).	
			- grey to dark grey below 0.5 m	
1				11
2				10
			Brown mixture of SAND, GRAVEL, COBBLES and BOULDERS with trace of silt (Till-like).	
3				9
		Seepage at 3.7 m.		
4		Photos 6066 to 6068		8
			End of hole at required depth.	
5				7
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 4/24/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-26**

LOCATION: See Dwg. 19-2803-18-1
N 5490835,
E 471659

TOP OF HOLE ELEV: 9.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit | Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0	▲ △		Sandy GRAVEL with COBBLES and BOULDERS and trace of silt. GP	9
1	▼	Seepage at 1.4 m.		8 ▼
2			End of hole at required depth.	7
3				6
4		Photos 6074, 6075		5
5				4
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 24/4/08 THURBER BC.GLB

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-27**

LOCATION: See Dwg. 19-2803-18-1
N 5490973,
E 471581

TOP OF HOLE ELEV: 12.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Brown mixture of SAND, GRAVEL, COBBLES and BOUDLERS to 600 mm dia. with trace of silt.	
1		Seepage at 1.0 m.		11
2			End of hole at required depth.	10
3				9
4		Photos 6076, 6077		8
5				7
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 11/4/08 THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-28

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5491120,
E 471369

TOP OF HOLE ELEV: 47.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL | Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ▩ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		TOPSOIL with roots.	
		Dense, yellow-brown, silty SAND with some gravel.	46
1			
		Dense, green-grey, sandy GRAVEL with some cobbles (Till-like).	45
2			
			44
3		Green-grey, sandy GRAVEL with some cobbles and boulders (Till-like).	
	Photos 6078 to 6080		43
4			
			42
5			
		End of hole at required depth.	
6			

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-29**

LOCATION: See Dwg. 19-2803-18-1
N 5490824,
E 471486

TOP OF HOLE ELEV: 20.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 29, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Dark brown, silty SAND with some organics (logs and branches).	
			Loose, yellow-brown, silty SAND with some roots.	
1				19
			Dense, yellow-grey, sandy GRAVEL with some cobbles and trace of boulders to 600 mm dia.	
2				18
			Dense, yellow-grey mixture of SAND, GRAVEL, COBBLES and BOULDERS.	
3			- very dense below 3.0 m	17
4		Photos 6081 to 6083	End of hole at required depth.	16
				15
5				
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08 THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-30

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490326,
E 471000

TOP OF HOLE ELEV: 91.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Loose, dark brown, silty SAND with some organics (roots and branches).	
		Dense, red-brown, silty SAND with some gravel.	
1			90
		Very dense, green-grey, sandy GRAVEL with traces of silt, cobbles and boulders to 500 mm dia.	
2			89
	GW		
3			88
4	Photos 6086, 6087	End of hole at required depth.	87
5			86
6			

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-31**

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490653,
E 471526

TOP OF HOLE ELEV: 12.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) — WATER CONTENT (%): ○ Disturbed, ● Undisturbed — Plastic Limit, Liquid Limit — WATER LEVEL — SAMPLES: Disturbed, Undisturbed, No Recovery — UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak, ◇ Residual — GRAIN SIZE (%): ▲ Passing #200 sieve, △ Passing #4 sieve — SOIL HEADSPACE READING (ppm): GASTECH reading, PID reading

Scale: 10 20 30 40 50 60 70 80 90 100

DEPTH (m)	Grain size	COMMENTS	Sample	SOILS DESCRIPTION	ELEVATION (m)
0.0 – 0.3				Loose, dark brown, silty SAND with some organics (roots and branches).	
0.3 – 0.9				Loose, green-grey, silty SAND with trace of cobbles.	
0.9 – 4.1	▲ ~5, △ ~30 (at 2.5 m)	GW; Photos 6088 to 6090 (at 4.0 m)	Undisturbed	Dense, brown-grey, sandy GRAVEL with traces of silt, cobbles and boulders to 600 mm dia.	11, 10, 9, 8
4.1				End of hole at required depth.	7

Depth scale: 0, 1, 2, 3, 4, 5, 6

LOG OF TEST PIT

TEST PIT NO. **TP08-32**

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490561,
E 471298

TOP OF HOLE ELEV: 30.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm); WATER CONTENT (%) ○ Disturbed ● Undisturbed; WATER LEVEL; Plastic Limit — Liquid Limit; SAMPLES ◧ Disturbed ■ Undisturbed ☒ No Recovery; UNDRAINED SHEAR STRENGTH (kPa) ◆ Peak ◇ Residual; GRAIN SIZE (%) ▲ Passing #200 sieve △ Passing #4 sieve; SOIL HEADSPACE READING (ppm) ▦ GASTECH reading ⊠ PID reading

Scale: 10 20 30 40 50 60 70 80 90 100

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Dark brown, silty SAND with some organics (roots, logs, branches).	
		Loose, red-brown, silty SAND with some gravel	
		Loose, red-brown, sandy GRAVEL with some silt.	
1		Green-grey, silty SAND.	29
2			28
3			27
		- some cobbles and boulders to 500 mm dia. at 3.7 m	
4	Photos 6091, 6092	- grey below 4.0 m	26
		End of hole at required depth.	
5			25
6			

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-33**

LOCATION: See Dwg. 19-2803-18-1
N 5490346,
E 471523

TOP OF HOLE ELEV: 5.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND with some organics (roots and branches).	
			Compact, yellow-grey, silty SAND.	
1			Dense, yellow-grey, sandy GRAVEL with trace of silt.	4
			Dense, green-grey mixture of SAND, GRAVEL and COBBLES with trace of boulders.	
2				3
3				2
4		Photos 6093 to 6096	End of hole at required depth.	1
5				0
6				

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-34**

LOCATION: See Dwg. 19-2803-18-1
N 5490304,
E 472162

TOP OF HOLE ELEV: 6.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND.	
			Loose, light grey SAND.	5
1			Compact, grey, gravelly SAND and COBBLES with traces of silt and boulders.	
2				4
3			End of hole - sloughing.	3
4		Photos 6097 to 6101		2
5				1
6				

Sheet 1 of 1

TEST PIT NO.
TP08-35

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490425,
E 471945

TOP OF HOLE ELEV: 7.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown TOPSOIL.	
			Dense, green-grey, gravelly SAND.	
1			Dense, green-grey, sandy GRAVEL with some cobbles.	6
			Dense, green-grey to yellow-grey, bouldery mixture of SAND, GRAVEL and COBBLES.	
2				5
3	▲ △	GP		4
4		Photos 6102 to 6104		3
			End of hole at required depth.	
5				2
6				

LOG OF TEST PIT 19-2803-16.GPJ THURBER BC.GDT 24/4/08 THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-36

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490277,
E 471956

TOP OF HOLE ELEV: 1.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, brown-grey, silty SAND with some cobbles (Fill).	0
1			Loose, red-brown, silty SAND with some organics.	
			Compact, brown, cobbley mixture of SAND and GRAVEL with traces of silt and boulders to 400 mm dia.	-1
2				
3				-2
4		Photos 6105 to 6107	End of hole at required depth.	-3
5				-4
6				

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-37**

LOCATION: See Dwg. 19-2803-18-1
N 5490342,
E 471811

TOP OF HOLE ELEV: 3.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 30, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ☒ PID reading

DEPTH (m)	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0		Loose, dark brown, silty SAND with some organics (roots and branches).	3
		Dense, green-grey to brown-grey mixture of SAND, GRAVEL, COBBLES and BOULDERS to 600 mm dia. with trace of silt.	
1			2
2			1
3			0
4	Photos 6108 to 6111	End of hole at required depth.	-1
5			-2
6			

Sheet 1 of 1

LOG OF TEST PIT

TEST PIT NO. **TP08-38**

LOCATION: See Dwg. 19-2803-18-1
N 5490087,
E 471726

TOP OF HOLE ELEV: 4.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

THURBER

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 31, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ▩ GASTECH reading ⊡ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND with some organics (roots and branches).	
			Loose, red-brown to brown-grey, silty SAND.	
1			Loose, green-grey SAND with trace of silt.	3
			Compact, green-grey, sandy GRAVEL with some cobbles.	
2			Dense, sandy GRAVEL and COBBLES with traces of silt and boulders to 400 mm dia.	2
3				1
4		Photos 6112 to 6114	End of hole at required depth.	0
5				-1
6				

Sheet 1 of 1

TEST PIT NO.
TP08-39

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490111,
E 471546

TOP OF HOLE ELEV: 5.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 31, 2008

FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ☒ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	10 20 30 40 50 60 70 80 90 100	COMMENTS	SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND with some organics (roots and branches).	
			Loose, yellow-grey SAND with some gravel.	
1			Compact, green-grey, sandy GRAVEL with some cobbles and trace of boulders.	4
2				3
3			End of hole - sloughing.	2
4		Photos 6115 to 6117		1
5				0
6				

LOG OF TEST PIT 19-2803-18.GPJ THURBER BC.GDT 10/4/08 THURBER BC.GLB

Sheet 1 of 1

TEST PIT NO.
TP08-40

LOG OF TEST PIT

THURBER

LOCATION: See Dwg. 19-2803-18-1
N 5490209,
E 471434

TOP OF HOLE ELEV: 5.0 m (est.)

METHOD:

EXCAVATOR: Cat 330D Excavator

INSPECTOR: SPP

CLIENT: BURNCO Rock Products Ltd

PROJECT: McNab Creek Gravel Pit

DATE: March 31, 2008

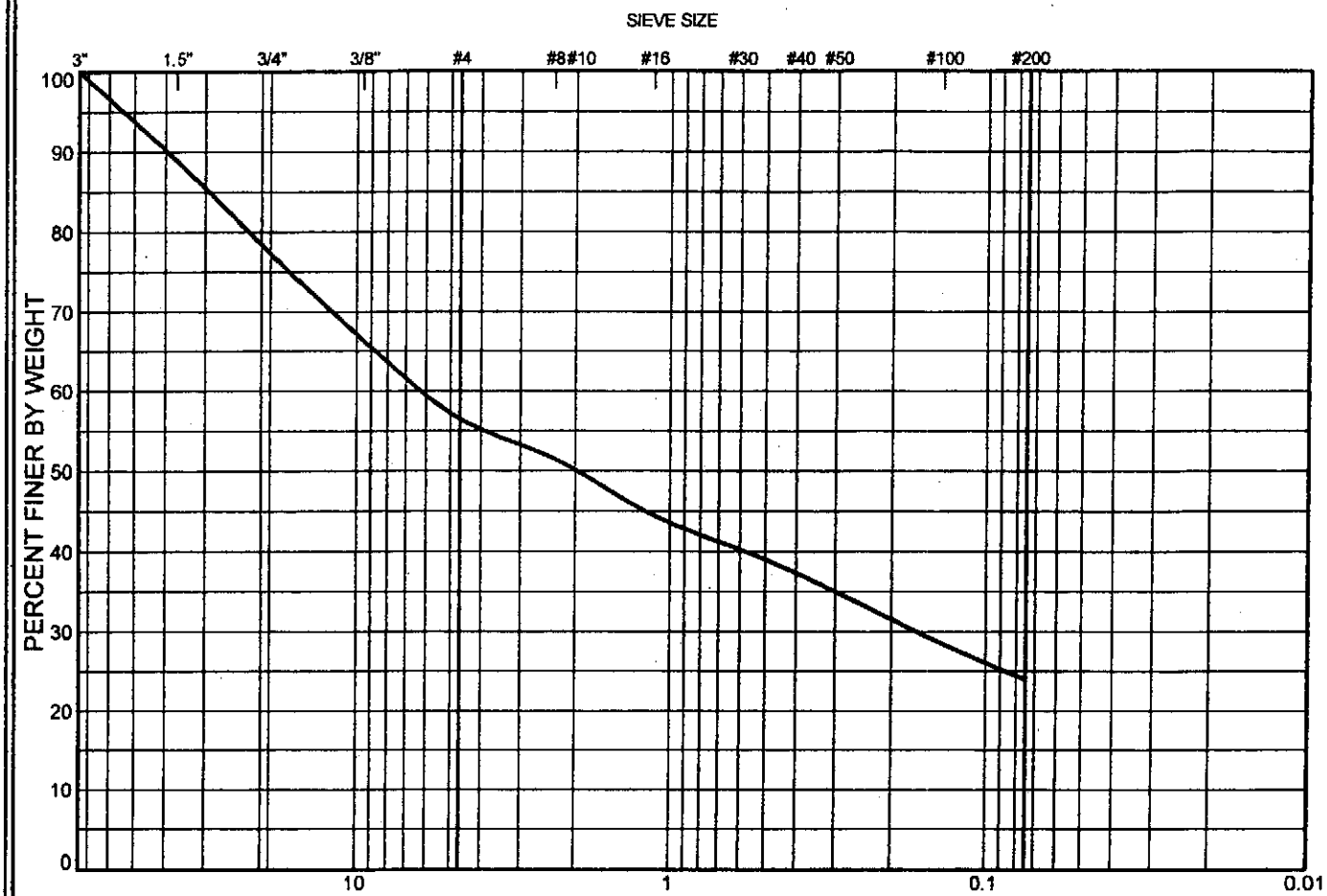
FILE NO.: 19-2803-18

PENETRATION (blows/300 mm) | WATER CONTENT (%): ○ Disturbed ● Undisturbed | WATER LEVEL: Plastic Limit — Liquid Limit | SAMPLES: ◧ Disturbed ■ Undisturbed ⊠ No Recovery | UNDRAINED SHEAR STRENGTH (kPa): ◆ Peak ◇ Residual | GRAIN SIZE (%): ▲ Passing #200 sieve △ Passing #4 sieve | SOIL HEADSPACE READING (ppm): ■ GASTECH reading ⊠ PID reading

DEPTH (m)	COMMENTS		SOILS DESCRIPTION	ELEVATION (m)
0			Loose, dark brown, silty SAND with some organics.	
1			Loose, green-grey SAND with some silt.	4
			- compact and silty below 0.8 m	
2		GW	Dense, green-grey, sandy GRAVEL with traces of silt, cobbles and boulders to 400 mm dia.	3
3				2
4	Photos 6118 to 6120		End of hole - sloughing.	1
5				0
6				

Appendix C

Gradation Test Results



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-01**
Sample: 1
Sample Depth: 0.5 - 3.4 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 10, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**43.3%**
Sand	**32.7%**
Fines	**24.0%**
Moisture Content	**%**

D10	
D30	**0.165**
D60	**6.002**
Cu	
Cc	

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**89**
0.75	19	**78**
0.375	9.5	**66**
#4	4.75	**57**
#8	2.36	**52**
#16	1.18	**45**
#30	0.6	**40**
#50	0.3	**35**
#100	0.15	**29**
#200	0.075	**24**

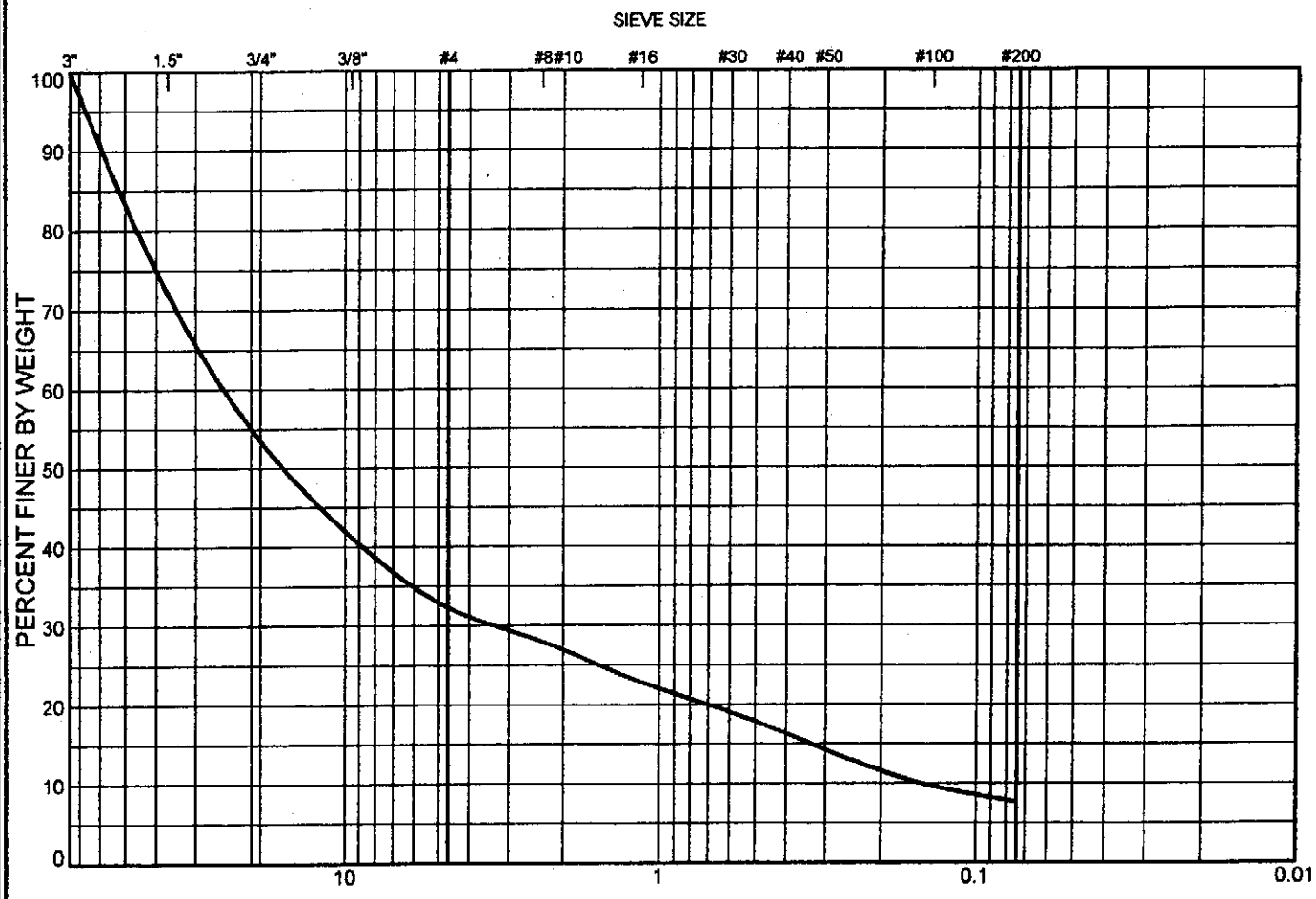
Description: Silty, sandy GRAVEL (GM).
Comments:

THURBER
Thurber Engineering Ltd.
200 - 1445 West Georgia Street
Vancouver, BC
Telephone: 604-684-4384
Fax: 604-684-5124

GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-16**
Sample: 1
Sample Depth: 0.8 - 2.8 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 11, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**67.5%**
Sand	**24.8%**
Fines	**7.7%**
Moisture Content	**%**

D10	**0.148**
D30	**3.211**
D60	**23.62**
Cu	**159.92**
Cc	**2.96**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**73**
0.75	19	**54**
0.375	9.5	**41**
#4	4.75	**32**
#8	2.36	**28**
#16	1.18	**23**
#30	0.6	**19**
#50	0.3	**14**
#100	0.15	**10**
#200	0.075	**8**

Description: Sandy GRAVEL with trace of silt (GW-GM).
Comments:

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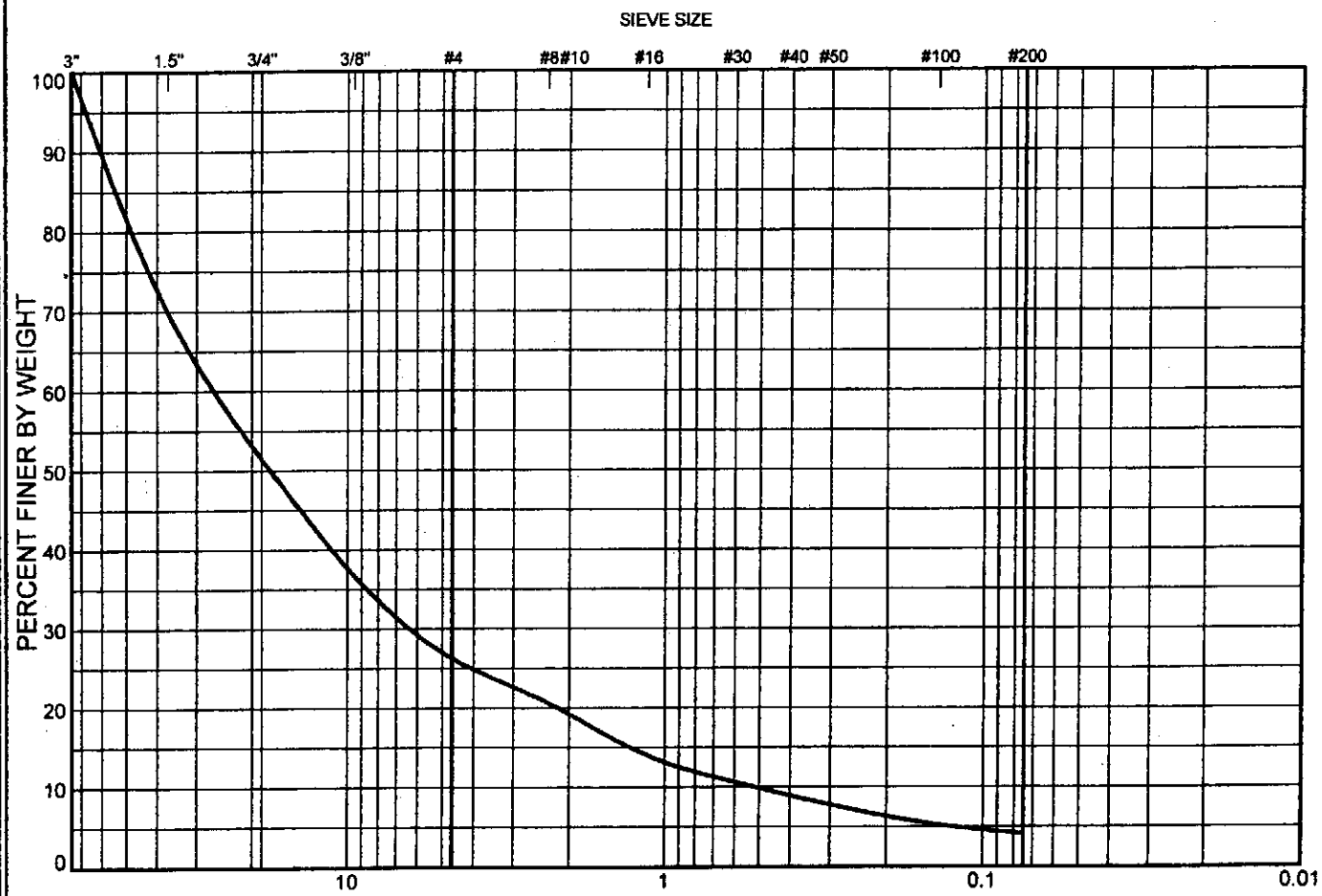
Fax: 604-684-5124

GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-19**
Sample: 1
Sample Depth: 0.7 - 4.4 m
Date Sampled: Mar. 31, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 11, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**73.5%**
Sand	**22.4%**
Fines	**4.1%**
Moisture Content	**%**

D10	**0.514**
D30	**6.015**
D60	**25.512**
Cu	**49.59**
Cc	**2.76**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**70**
0.75	19	**52**
0.375	9.5	**37**
#4	4.75	**27**
#8	2.36	**21**
#16	1.18	**14**
#30	0.6	**11**
#50	0.3	**8**
#100	0.15	**5**
#200	0.075	**4**

Description: Sandy GRAVEL with trace of silt (GW).
Comments:

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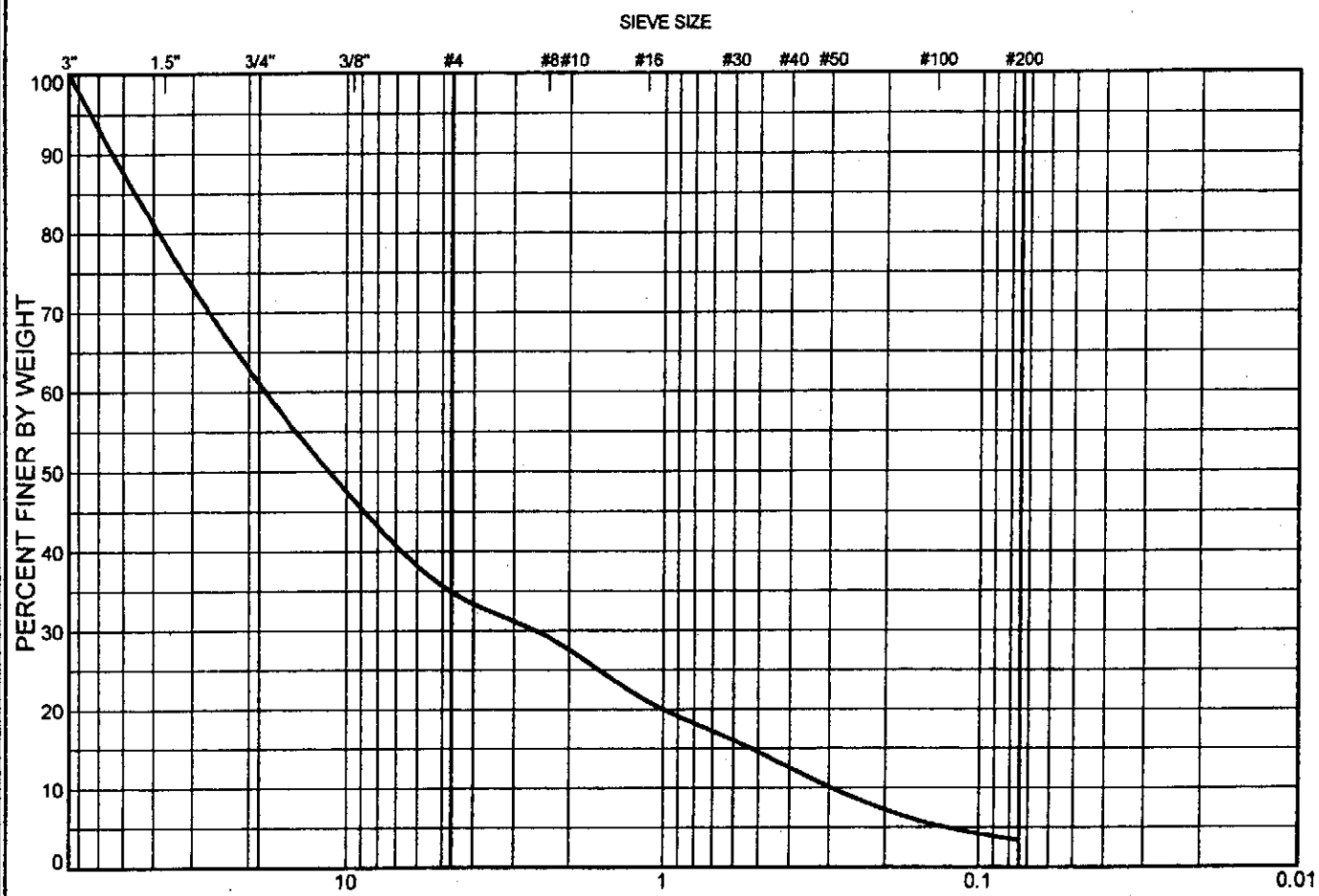
GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-22**
Sample: 1
Sample Depth: 0.8 - 3.3 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 8, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**64.9%**
Sand	**31.7%**
Fines	**3.4%**
Moisture Content	**%**

D10	**0.293**
D30	**2.569**
D60	**17.634**
Cu	**60.15**
Cc	**1.28**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**79**
0.75	19	**62**
0.375	9.5	**47**
#4	4.75	**35**
#8	2.36	**29**
#16	1.18	**22**
#30	0.6	**16**
#50	0.3	**10**
#100	0.15	**6**
#200	0.075	**3**

Description: Sandy GRAVEL with trace of silt (GW).
Comments:

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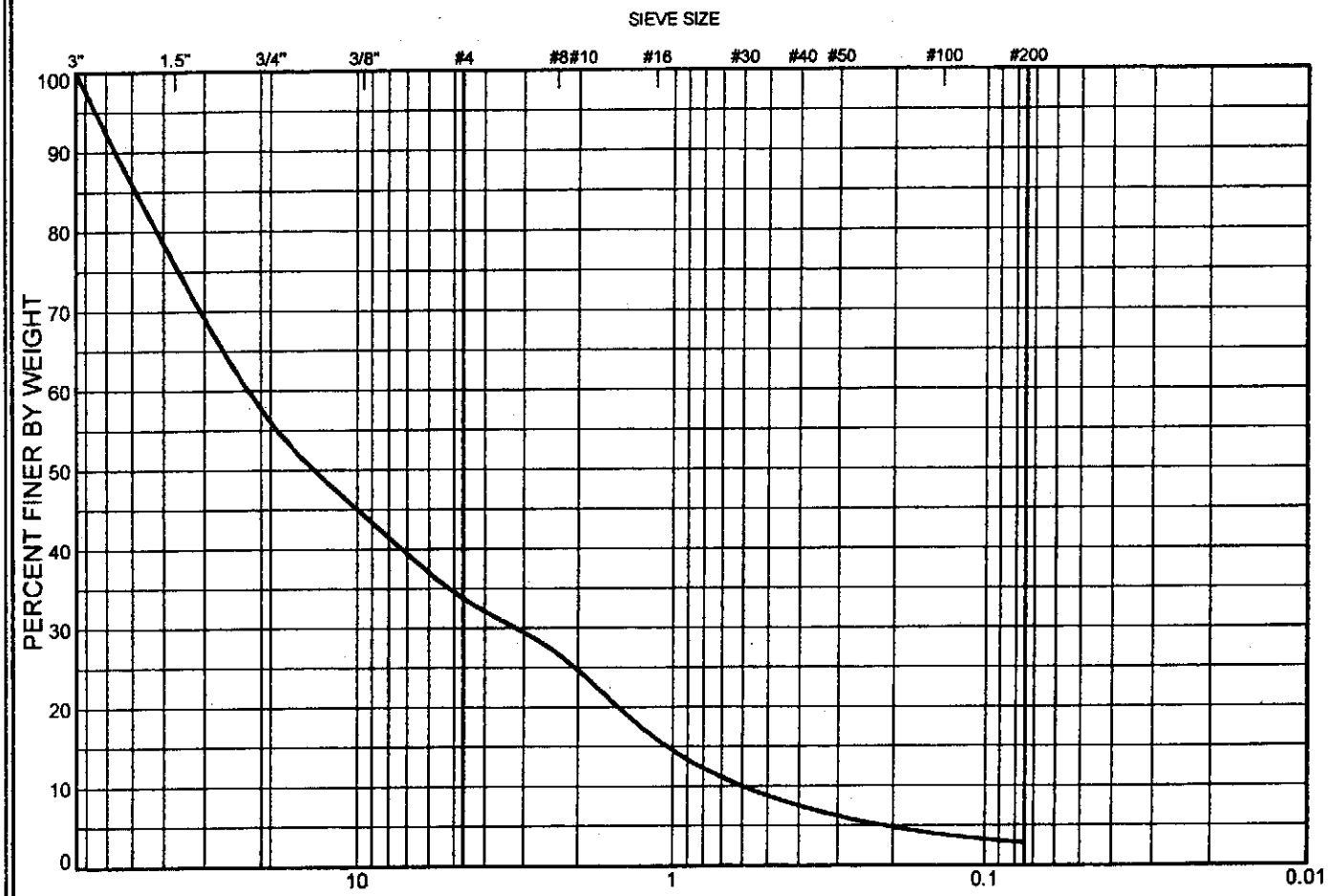
Fax: 604-684-5124

GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-26**
Sample: 1
Sample Depth: 0 - 1.6 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 9, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**66.0%**
Sand	**31.2%**
Fines	**2.8%**
Moisture Content	**%**

D10	**0.6**
D30	**3.206**
D60	**21.36**
Cu	**35.59**
Cc	**0.80**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**76**
0.75	19	**57**
0.375	9.5	**44**
#4	4.75	**34**
#8	2.36	**27**
#16	1.18	**17**
#30	0.6	**10**
#50	0.3	**6**
#100	0.15	**4**
#200	0.075	**3**

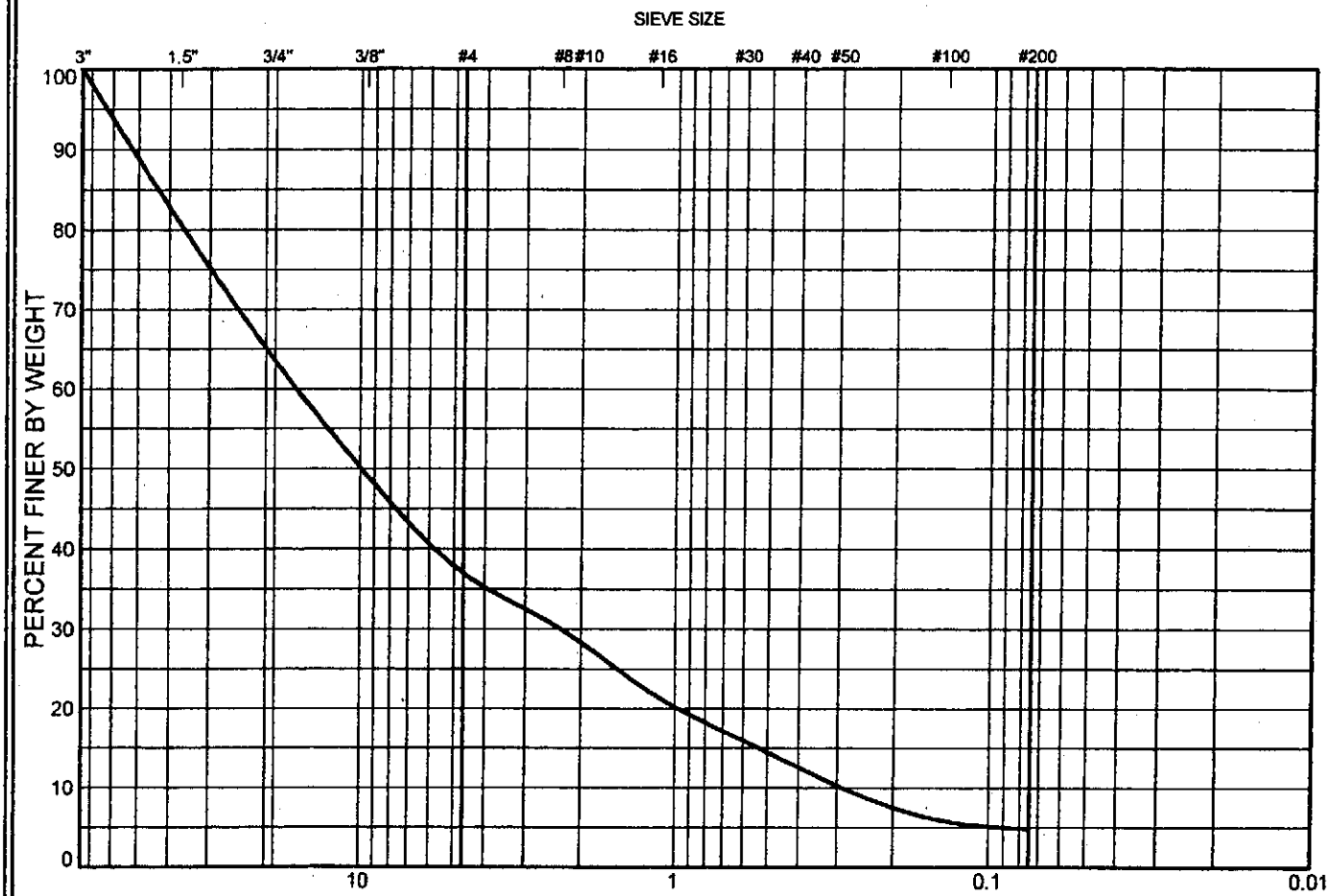
Description: Sandy GRAVEL with trace of silt (GP).
Comments:

Thurber Engineering Ltd.
Telephone:
Fax:
THURBER

GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-30**
Sample: 1
Sample Depth: 1.6 - 3.9 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 10, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**62.7%**
Sand	**32.5%**
Fines	**4.8%**
Moisture Content	**%**

D10	**0.286**
D30	**2.314**
D60	**15.738**
Cu	**55.03**
Cc	**1.19**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**81**
0.75	19	**64**
0.375	9.5	**49**
#4	4.75	**37**
#8	2.36	**30**
#16	1.18	**22**
#30	0.6	**16**
#50	0.3	**10**
#100	0.15	**6**
#200	0.075	**5**

Description: Sandy GRAVEL with trace of silt (GW).
Comments:

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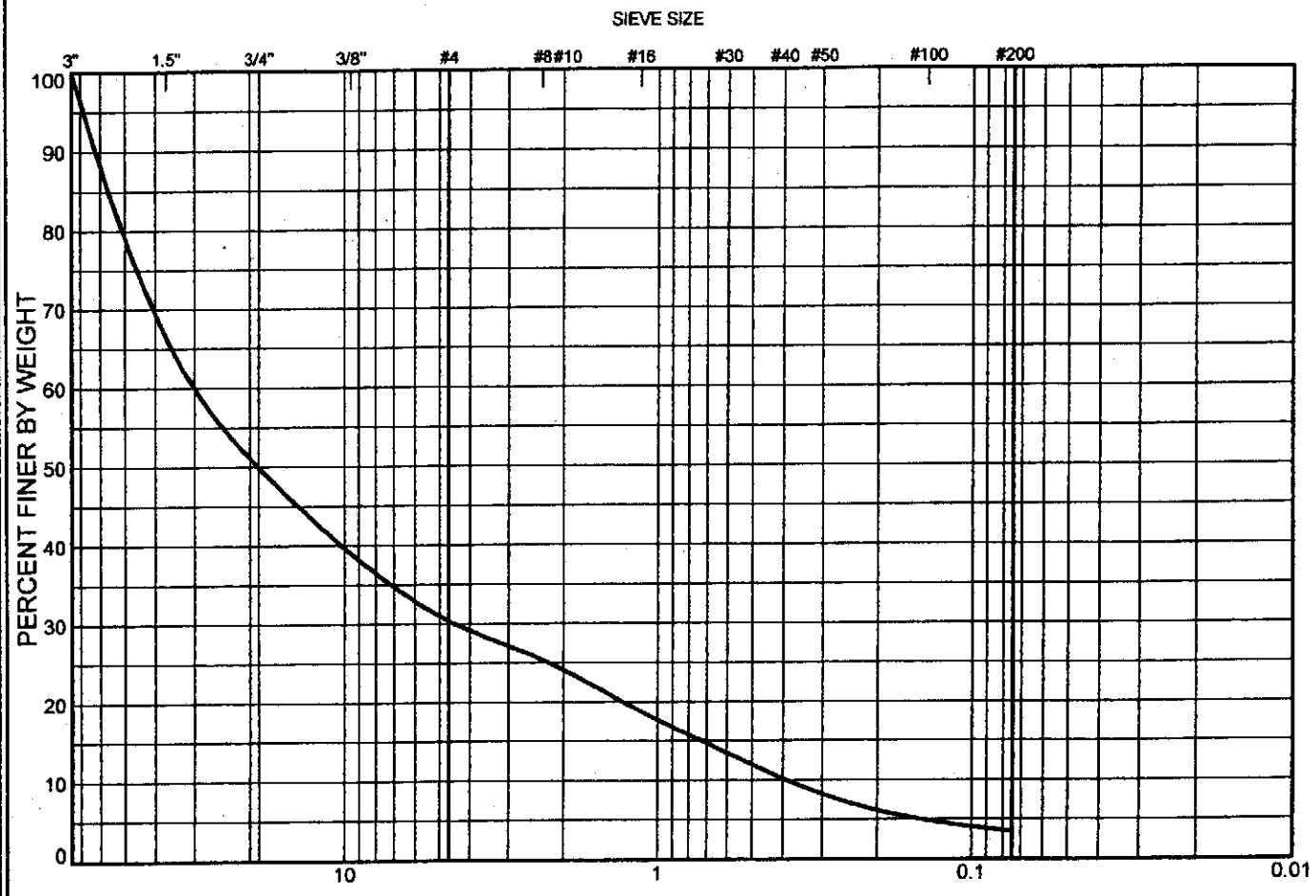
GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-31**
Sample: 1
Sample Depth: 0.9 - 4.1 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 10, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**69.4%**
Sand	**27.2%**
Fines	**3.4%**
Moisture Content	**%**

D10	**0.38**
D30	**4.398**
D60	**28.143**
Cu	**74.15**
Cc	**1.81**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**67**
0.75	19	**50**
0.375	9.5	**39**
#4	4.75	**31**
#8	2.36	**25**
#16	1.18	**19**
#30	0.6	**13**
#50	0.3	**8**
#100	0.15	**5**
#200	0.075	**3**

Description: Sandy GRAVEL with trace of silt (GW).
Comments:

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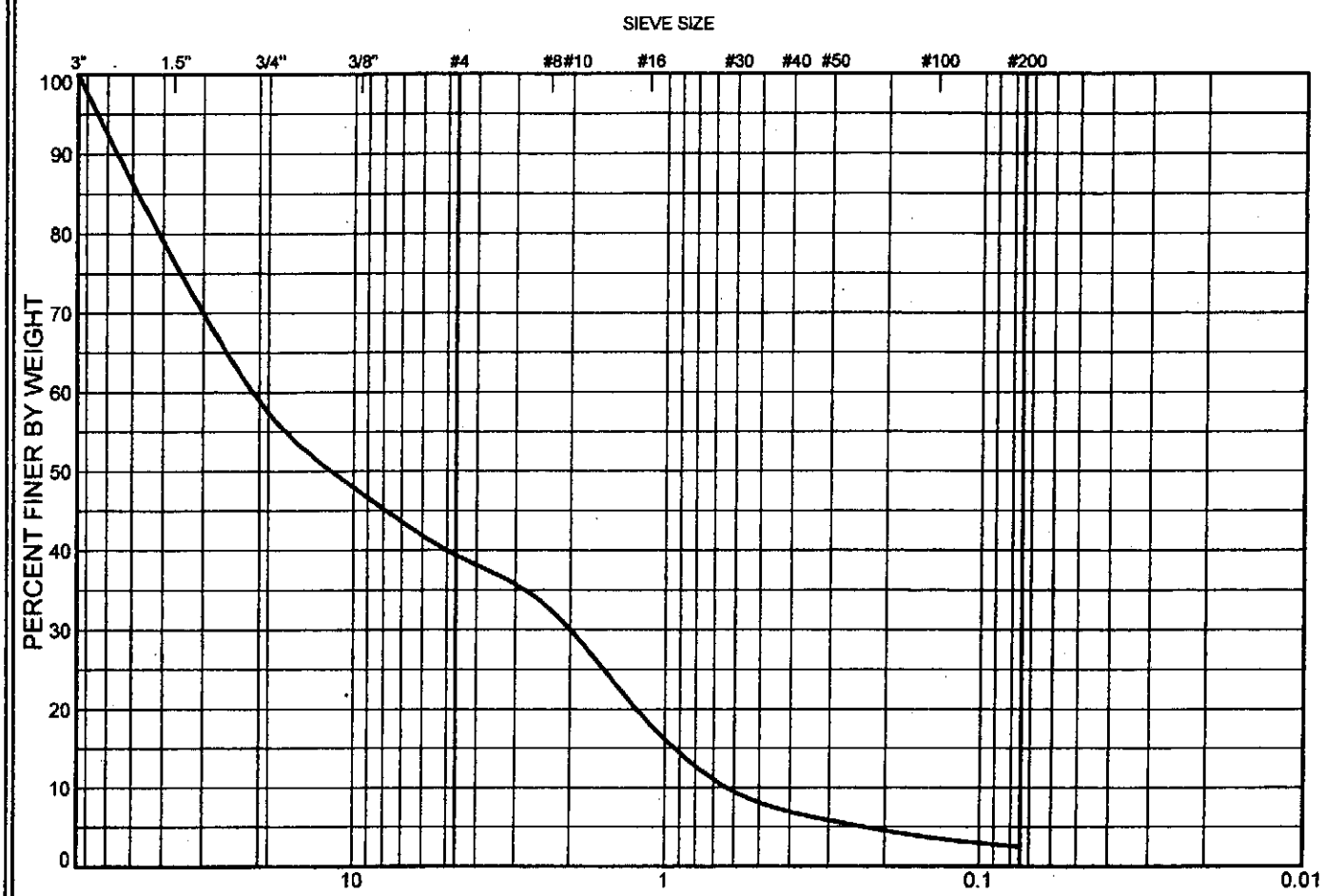
GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-35**
Sample: 2
Sample Depth: 1.5 - 4.3 m
Date Sampled: Mar. 30, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 8, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**60.5%**
Sand	**37.1%**
Fines	**2.4%**
Moisture Content	**%**

D10	**0.621**
D30	**2.042**
D60	**20.492**
Cu	**33.00**
Cc	**0.33**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**77**
0.75	19	**58**
0.375	9.5	**47**
#4	4.75	**40**
#8	2.36	**33**
#16	1.18	**19**
#30	0.6	**10**
#50	0.3	**6**
#100	0.15	**4**
#200	0.075	**2**

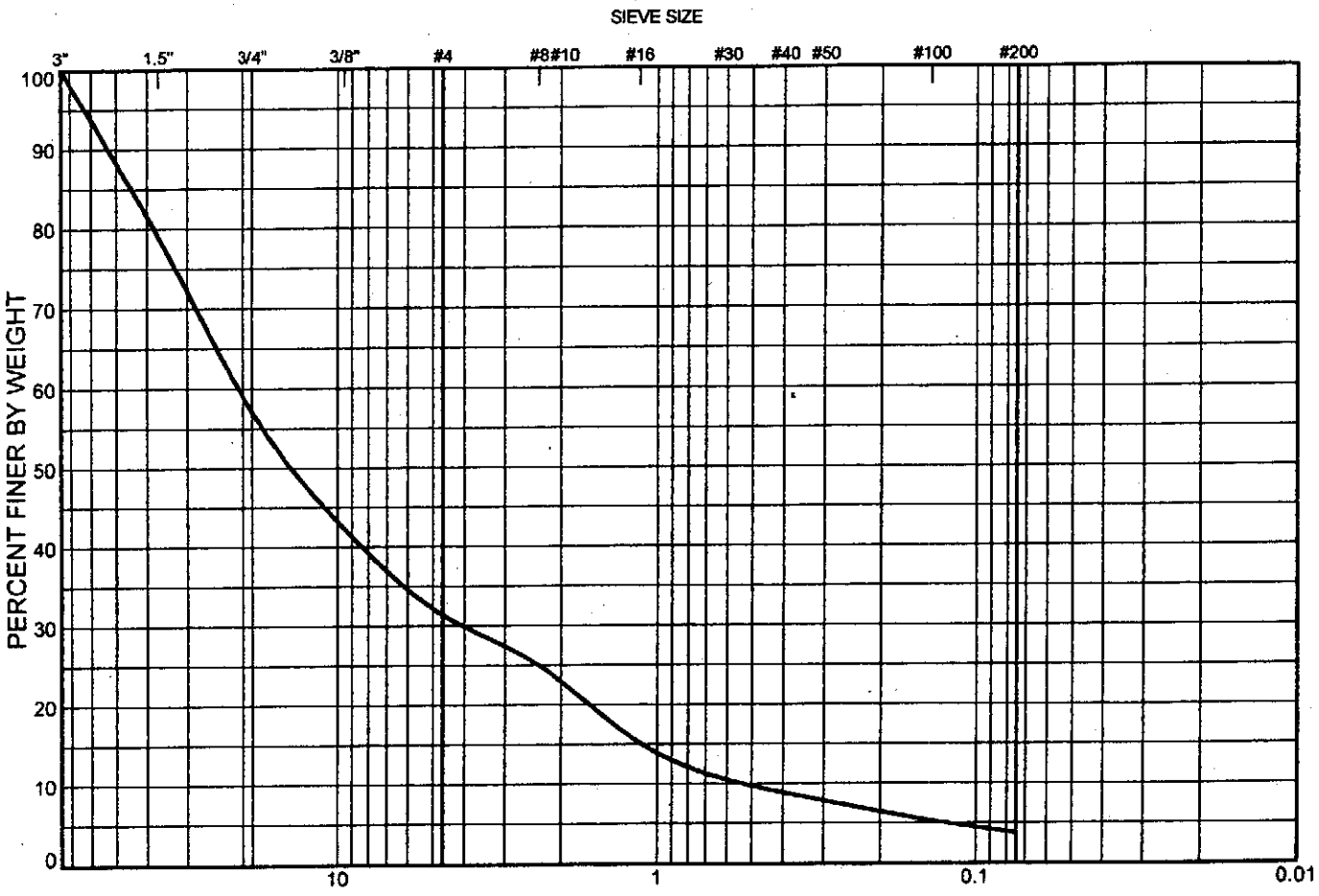
Description: SAND and GRAVEL with trace of silt (GP).
Comments:

Thurber Engineering Ltd.
Telephone:
Fax:
THURBER

GRAIN SIZE DISTRIBUTION

CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18



GRAIN SIZE IN MILLIMETRES

GRAVEL		SAND			SILT
coarse	fine	coarse	medium	fine	

Sample Location: **TP08-40**
Sample: 2
Sample Depth: 1.4 - 4.0 m
Date Sampled: Mar. 31, 2008
Sampled By: SPP
Date Received: Apr. 1, 2008
Date Tested: Apr. 8, 2008
Tested By: KM
Test Method: ASTM C136 and C117
Specification:

Gravel	**68.4%**
Sand	**27.9%**
Fines	**3.7%**
Moisture Content	**%**

D10	**0.526**
D30	**3.992**
D60	**20.435**
Cu	**38.82**
Cc	**1.48**

Sieve Size		Percent Passing
inches	mm	
3	75	**100**
1.5	37.5	**80**
0.75	19	**58**
0.375	9.5	**42**
#4	4.75	**32**
#8	2.36	**25**
#16	1.18	**16**
#30	0.6	**11**
#50	0.3	**8**
#100	0.15	**6**
#200	0.075	**4**

Description: Sandy GRAVEL with trace of silt (GW).
Comments:

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GRAIN SIZE DISTRIBUTION

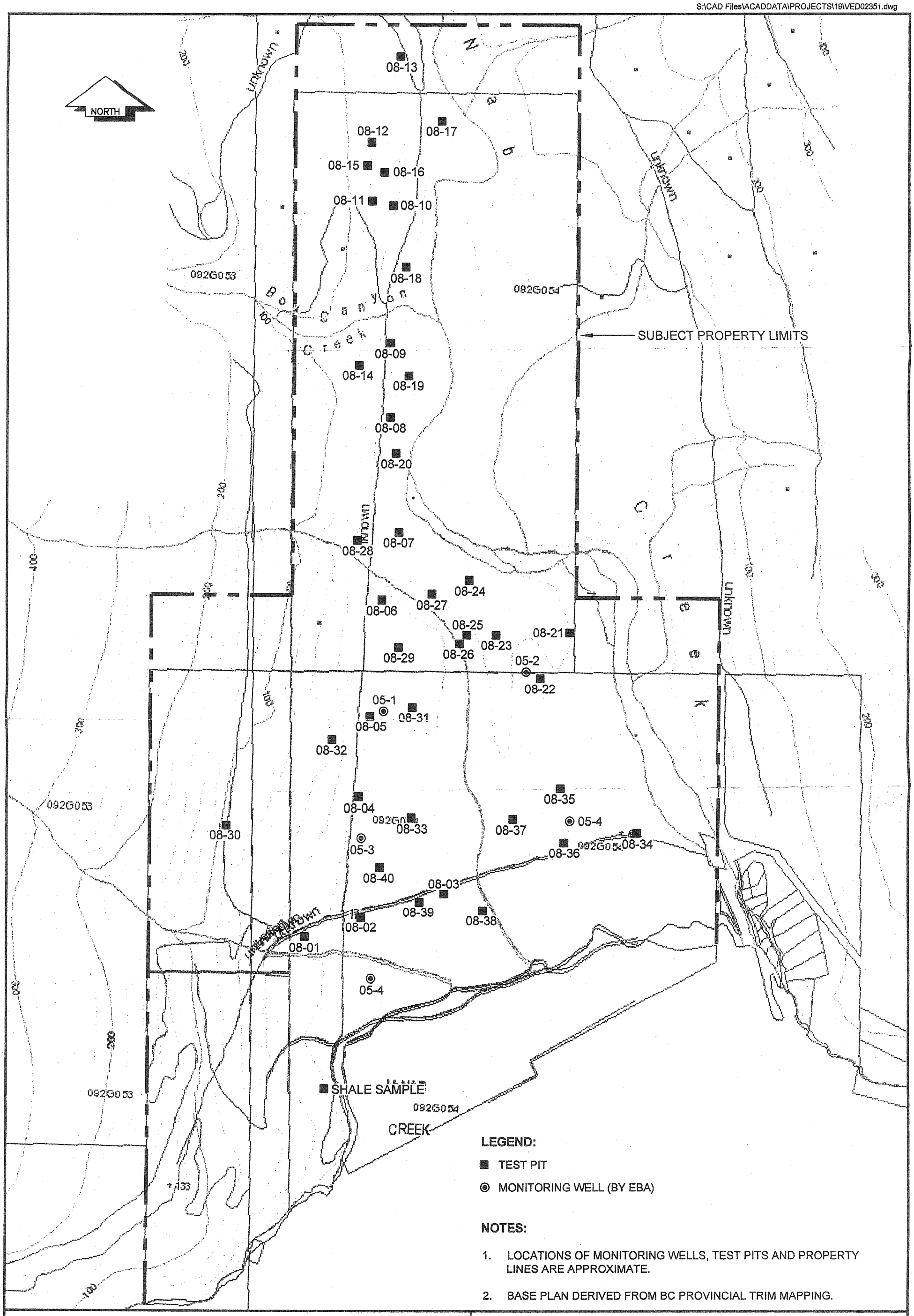
CLIENT: BURNCO Rock Products Ltd
PROJECT: McNab Creek Gravel Pit

FILE NO.: 19-2803-18

Appendix D

Dwg. 19-2803-18-1

S:\CAD Files\ACADDATA\PROJECTS\19\VED02351.dwg



LEGEND:

- ■ TEST PIT
- ◉ MONITORING WELL (BY EBA)

NOTES:

1. LOCATIONS OF MONITORING WELLS, TEST PITS AND PROPERTY LINES ARE APPROXIMATE.
2. BASE PLAN DERIVED FROM BC PROVINCIAL TRIM MAPPING.

BURNCO ROCK PRODUCTS LTD.

TEST PIT LOCATIONS

MCNAB CREEK GRAVEL PIT — SECHELT, B.C.

THURBER ENGINEERING LTD.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

ENGINEER:	DRAWN:	APPROVED:	
SPP	KM		
DATE:	SCALE:	DRAWING No.	REV. No.
APRIL 16, 2008	1:10,000	19-2803-18-1	0

NOTES:

1: GRID BEARINGS ARE DERIVED FROM DIFFERENTIAL CARRIER PHASE G.P.S. OBSERVATIONS AND ARE REFERRED TO THE CENTRAL MERIDIAN OF U.T.M. ZONE 10 (123 WEST LONGITUDE)

2: THE UTM COORDINATES ARE DERIVED FROM DUAL FREQUENCY BASELINE TIES TO WHISTLER ACP WSLR (967000).

3: THIS PLAN SHOWS HORIZONTAL GROUND LEVEL DISTANCES (UNLESS OTHERWISE STATED). TO COMPUTE GRID DISTANCES MULTIPLY BY A COMBINED FACTOR OF 0.99960178237.

4: PID'S
D.L. 677: 002-969-645
D.L. 677A 002-970-171
D.L. 677B: 002 969-178
PARCEL A, D.L. 677B 003 278-662

5: FIELD SURVEY COMPLETED ON JULY 17, 2006

6: CADASTRAL BOUNDARIES SHOWN ARE ACCORDING TO LAND TITLE OFFICE RECORDS AND MINIMAL GROUND SURVEY. TO MORE ACCURATELY DEFINE THESE CADASTRAL BOUNDARIES ADDITIONAL FIELD SURVEY IS REQUIRED.

7 ARIAL PHOTOGRAPHY HAS NOT BEEN CORRECTED FOR ELEVATION AND IS FOR PRESENTATION ONLY

8: STATUTORY RIGHT-OF-WAY'S BY DOCUMENT ONLY
D.L. 677 SEE BW047724
D.L. 677A SEE BW047725
THE NORTH 2775 OF D.L. 677B SEE BW047726
PARCEL A OF D.L. 6773 SEE BW047726

9: CONTOURS ARE AS 1 METER INTERVALS

INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

THIS DRAWING HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES. McELHANNEY CONSULTING SERVICES LTD., ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS ACCEPT NO RESPONSIBILITY TO ANY OTHER PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, FOR LOSS OR LIABILITY INCURRED AS A RESULT OF THEIR USE OF THESE DRAWINGS.

No.	Date	Revision	Dr.
1	06/10/12	ADDED CONTOURS	TB

McElhanney
McElhanney Consulting Services Ltd.
100-780 Beatty Street
Vancouver, B.C. V6B 2M1
PH 604-683-8521
FAX 604-683-4350

Designed: RY Checked: TB Date: SEPT 18, 2006
Drawn: TB Surveyed: DI

SCALE : 1: 7500
0 50 100 200 300 400 500 600m
(ALL DIMENSIONS ARE IN METRES)

Approved Sealed

COLUMBIA NATIONAL
31992 SOUTH FRASER WAY ABBOTSFORD, B.C.

CADASTRAL COMPOSITE

D.L.'S 677, 677A AND 677B, GP. 1, N.W.D.

McNABB CREEK, SECHELT, B.C.

Client Project No 2113-01579-0
Client Drawing No
MCSL Project No. 2113-01579 0
Drawing No 01579-0-01
Sheet 1 of 1 Revision 1