

sgurney@absorbentproductsltd.com

Ph: (250) 372-1600 ext: 111

Ministry of Energy and Mines Kamloops, B.C.

FFB 04 2014

Rec'd

January 30, 2014

Diane Howe, M.A. Sc. P. Geo., Deputy Chief Inspector of Mines, Reclamation and Permitting Ministry of Natural Resource Operations P.O. Box 9320, Stn Prov., Govt 6th Floor, 1810 Blanchard Street Victoria, BC V8W 9N9

Dear Diane Howe:

Mine Permit Q-15-006, Annual Reclamation Report Absorbent Products Ltd. / Western Industrial Clay Products Ltd., Kamloops

On behalf of Absorbent Products Ltd., I enclose the year 2013 Annual Reclamation Report for the Red Lake Quarry. Mining development of the clay extraction and reclamation progress are shown for the Red Lake, West, North West and Bepple pit in Mining Lease No. 310888 and DL 6385.

Please let us know if you have any questions.

Sincerely,

ABSORBENT PRODUCTS LTD.

Steve Gurney Vice President

Attachment

Cc: Bruce Hupman, P.Ag., Regional Manager, Mining Operations Peter Aylen, C.A., MBA., President, Absorbent Products Ltd. Dave Bowers, Mine Manager

ANNUAL RECLAMATION REPORT FOR YEAR 2013

MINE PERMIT Q-15-006

MINING LEASE # 310888

RED LAKE QUARRY

ABSORBENT PRODUCTS LTD.

Mine Manager:

Steve Gurney

1(250) 372-1600 ext 111

Author:

Peter B. Read,

Geotex Consultants Limited

November 20, 2013

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ANNUAL RECLAMATION REPORT FOR 2013, **RED LAKE QUARRY**

Peter B. Read

November 20, 2013

1. INTRODUCTION

This report details mining and reclamation activities carried out at the Red Lake Quarry to November 1, 2013 and a five-year projection of anticipated mining and reclamation. The quarry is operated under Permit Q-15-006 issued to Western Industrial Clay Products Ltd., (WICPL) on November 30, 1992 with subsequent amendments in 1996, 2001 and 2003. On February 4, 2005, WICPL transferred ownership of the lease to Absorbent Products Ltd (APL). On November 30, 2012 this lease was extended an additional 10 years to November 30, 2022. With the payment of the annual lease fee, Mining Lease No. 310888 is good until November 30, 2014.

Mining Lease No. 310888 was extended to include the Bepple Pit and now comprises a total of 60.8 hectares (150 acres) divided into four mining areas, namely Main, West, Northwest and Bepple pits. In early 2006, APL purchased the 44.35 hectares of Crown land within Mining Lease 310888. Diatomaceous earth was extracted from the Northwest and Bepple pits during 2013. Reclamation work, consisting of backfilling from waste, medial leonardite and topsoil piles and recontouring of mined out areas and reseeding with an approved grass mixture, continued in 2013 in the West and Main pits.

2. LOCATION

The Red Lake Quarry is 41 km northwest of Kamloops at an elevation of approximately 1,300 metres (Figure 1). The first eight kilometres of road from APL's plant in Kamloops is paved with the remaining 33 km a publically maintained gravel road called the Criss Creek Forestry Access Road. APL has its processing and bagging plant, distribution warehouse, research laboratory and offices at 724 East Sarcee Street in Kamloops. The quarrying and trucking of the raw diatomaceous earth to the Kamloop's plant is of a seasonal nature to avoid winter and load restriction conditions and usually operates seven to eight months of the year.

3. GEOLOGY OF THE RED LAKE QUARRY

At the Red Lake Quarry, the diatomaceous earth deposit consists of Upper and Basal layers of diatomaceous earth separated by a 1.0 to 1.5 m thick medial carbonaceous shale (leonardite) all locally overlying a basal carbonaceous shale (leonardite) up to 1.5 m thick. These sedimentary rocks comprise



the Deadman River Formation of Miocene age, which unconformably overlies andesite to dacite flows of the Dewdrop Flats Formation of the Kamloops Group of mid-Eocene age. Here and there, such as on the eastern edge of the Bepple Pit, an erosional remnant of a once extensive sheet of Miocene basalt flows of the Chasm Formation overlies the Miocene sedimentary succession. The Miocene sedimentary and volcanic sequences comprise the southern edge of the Chilcotin Group, which is widespread in central British Columbia. Quaternary soil, till and locally sand, silt and gravel form a 1.5 to 3.0 m thick cover over bedrock.

The Upper Diatomaceous Earth layer is up to 8 m thick in the Bepple Pit and overlies the Basal Diatomaceous Earth layer which averages 2 to 6 m in thickness but locally can attain 15 m. Because the density of the Upper DE is higher than the Basal DE, the two DE layers are blended in the quarry before trucking. Although the medial carbonaceous shale is rich in fulvic and humic acids, it is not presently marketable and instead is used along with topsoil to provide an excellent growing medium to enhance reclamation.

4. MINING PROGRAM

In 1982, DEM started quarrying in the Main Pit area (Figure 3). Because litigation tied up the Bepple Pit area, quarrying proceeded westward into the West Pit area (Figure 4) and eventually into the Northwest Pit (Figure 5) before access became available to the Bepple Pit area (Figure 6). In the Main Pit area, an area of only 0.92 hectares of Basal Diatomaceous Earth resource and 0.12 hectares of Upper Diatomaceous Earth resource remain (Figure 3). In West Pit, an area of only 0.34 hectares of Basal Diatomaceous Earth resource exists (Figure 4). In the Northwest Pit, the cleared area of 7.47 hectares covers a potential resource of Basal and Upper diatomaceous earth spanning the length and breadth of the pit (Figure 5). An area of 1.57 hectares presently produces Upper Diatomaceous Earth and an area of 0.45 hectares has been stripped ready to produce Upper and Basal diatomaceous earth in 2014. In Bepple Pit, an area of 0.87 hectares has a resource potential for Basal Diatomaceous Earth and an area of 1.10 hectares is currently producing Upper Diatomaceous Earth (Figure 6). The combined cleared and stripped areas of 13.55 hectares have a resource potential for both Upper and Basal diatomaceous earth layers. All of this information is summarized in Table 1.

In 2013, the mining program concentrated on production from the Northwest and Bepple pits.

In the next five years, in the Main Pit:

- Removal of the Basal Diatomaceous Earth resource from an area of 0.92 hectares in the northeast corner of the pit area.
- Use of the waste and medial leonardite stockpiles at the south edge of the pit area.
- This year, the southern mine haul road was deactivated and rehabilitated.
- Mining of the Basal Diatomaceous Earth is still required.
- The north edge of the reclaimed area will be used for waste and topsoil piles from quarrying the southern portion of the Bepple Pit.





Table 1: Details of Disturbed and Reclaimed Areas as of November 1, 2013 compared to 2012 (blue)

		MININ	G AREA (I	nectares)			RECLAIN	1ED AREA	(hectares)	
DISTURBANCE	Main Pit	West Pit	NW Pit	Bepple Pit	TOTALS	Main Pit	West Pit	NW Pit	Bepple Pit	TOTALS
Waste Pile (2013)	1.23	0.00	0.00	0.00	1.23	5.21	9.31	0.70	0.44	15.66
Topsoil Pile	0.73	0.00	0.01	0.06	0.80		1		1	1 1
Tailings Ponds	0.00	0.00	0.00	0.00	0.00			•		
Plant Site	0.04	0.00	0.00	0.01	0.05					
Roads	1.43	0.26	0.33	0.00	2.02					
Totals	3.43	0.26	0.34	0.07	4.10					
									ARED OF TRE	ES
Active Mining						Main Pit	West Pit	NW Pit	Bepple Pit	TOTALS
Stripped	0.00	0.00	0.45	0.44	0.89	0.38	0.00	7.47	13.11	20.96
Upper DE	0.12	0.00	1.57	1.10	2.79					
Medial Leonardite	0.56	0.00	0.18	0.84	1.58					
Basal DE	0.36	0.26	0.03	0.08	0.73					
Basal Leonardite	0.00	0.04	0.00	0.00	0.04					
Totals (2013)	1.04	0.30	2.23	2.46	6.03		NA	TURAL ST	TATE	
Totals (2012)	0.93	0.30	2.25	1.29	4.77	Main Pit	West Pit	NW Pit	Bepple Pit	TOTALS
Stockpiles						5.98	6.27	0.01	0.00	12.26
Upper DE	0.15	0.00	0.87	0.10	1.12					
Medial Leonardite	0.13	0.00	0.00	0.00	0.51					
Basal DE	0.15	0.07	0.09	0.00	0.31					
Totals	0.81	0.07	0.96	0.10	1.94					
TOTALS (2013)	5.28	0.63	3.53	2.63	12.07					
TOTALS (2012)	5.17	0.63	3.55	1,44	10.78					

In the West Pit:

- In the southern part of the pit, removal of the Basal Diatomaceous Earth resource underlying an area of 0.33 hectares remains undone.
- Repositioning of some of the haul road has occurred.
- Completion of the above will complete the mining and reclamation of the West Pit.

In the Northwest Pit:

- Development of the Basal and Upper Diatomaceous Earth resources in the south half of the pit area.
- Placement of waste and topsoil piles on the basement high which separates Northwest Pit from Bepple Pit.

In Bepple Pit:

North to northeastward progress of the working face in Upper and Basal diatomaceous earth layers

- Definition of the outlines of the Miocene basalt cap erosional remnant and a decision as to whether as to whether it is economic to remove...
- Use of the topsoil and waste pile from the northern part of the Main Pit.
- Placement of topsoil and waste piles on the basement high which separates Northwest Pit from Bepple Pit.

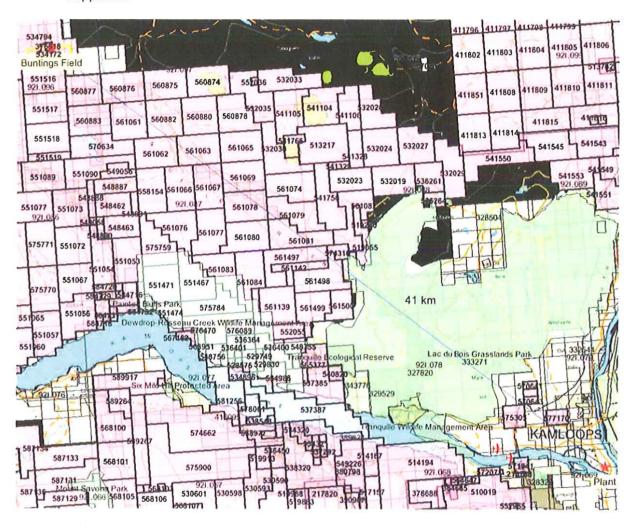


Figure 1: Location map of the Red Lake Quarry which lies immediately west of Bunting's Field.

5. RECLAMATION PROGRAM

The past year's reclamation program concentrated again on the basement high which separates Northwest Pit from Bepple Pit and involves 0.97 hectares, in which the ground level was raised by backfilling with waste. Decommissioning and rehabilitation of the southern haul road, shown in Read (2012, Figures 3 and 4), is complete. The drainage ditches shown in the West Pit area were maintained. These ditches have water flow during spring runoff only. As the topsoil, waste and stockpiles of diatomaceous earth and leonardite contain no acid-generating materials; neither the piles nor drainage

waters from the quarry are subject to any special treatment. Table2 gives the pH results taken monthly for the past ten months and Table 3 gives the trace element analyses for the last four quarters taken on the Red Lake Diatomaceous Earth.

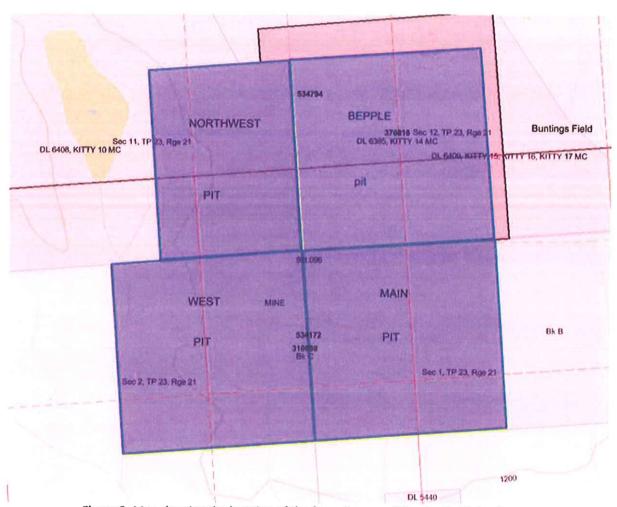


Figure 2: Map showing the location of the four pits comprising the Red Lake Quarry

Table 1 shows the total disturbed area for the Red Lake quarry broken down into the four pit areas. It is quantitatively accurate to 0.01 hectares. It can be compared with Table 1 (Read, 2013), but cannot be compared to earlier Tables 1 in Beresford reclamation reports because the areas in these reports are "guesstimates" only and are not quantitatively correct. In addition Table 1 shows the reclaimed area broken down into the pit areas, which can be compared to Table 1 (Read, 2013). However, it cannot be compared to earlier tables by Beresford, which are grossly inaccurate. Where significant differences exist between 2012 (blue) and 2013 (black) data Table 1 shows the values. The differences are mainly due to the decommissioning and reclamation of the southern haul road through Red Lake and West pits. These are reflected in the positive changes in reclaimed ground from 4.70 Ha (2012) to 5.21 ha (2013),

and 9.06 ha (2012) to 9.31 ha (2013) in Main and West pits respectively. The large decrease in vegetated area of cleared of trees between 2012 (22.44 ha) and 2013 (20.96 ha) of 1.48 ha results mostly from stripping either to overburden or Upper Diatomaceous Earth in Bepple Pit. In this pit, the change in active mining of Upper DE between 2012 (0.42 ha) to 1.10 ha (2013) and the lack of change of active mining of medial leonardite between 2012 (0.78 ha) and 2013 (0.84 ha) disguises the fact that most of the mining surface of the Upper DE is now within a metre of the top of the medial leonardite layer. By early 2014, much of the active mining surface in the Upper DE category will change to Medial Leonhardite with an underlying thick Basal DE resource.

The reclamation program for the next five years will involve the following:

In the Main Pit:

- Reclamation of an area of 0.92 hectares underlain by Basal Diatomaceous Earth (not done yet).
- Reclamation of the repositioned haul road involving an area of 0.50 hectares (completed 2013).
- Use of the northern portion of the reclaimed Main Pit for topsoil and waste pile derived from the northward progress of mining in Bepple Pit (not done yet).

In the West Pit:

- Reclamation of an area of 0.37 hectares underlain by Basal Diatomaceous Earth (not done in 2013).
- Reclamation of an area of 0.25 hectares resulting from the repositioning of the haul road (done in 2013).

In the Northwest Pit:

- Continued reclamation of the southern part of the Northwest Pit as quarrying proceeds northward (in 2013 west end of southern haul road decommissioned).
- The rate of reclamation will depend upon the northward rate of mining which will probably reach approximately 5650N in five years.

In Bepple Pit:

- Continued reclamation of the southwest corner of Bepple Pit as mining progresses northward to approximately 5530N in five years (continuing in 2013).
- The rate of reclamation will depend upon the rate of mining which will probably reach a depth of 15 m at the eastern end and whether or not a covering basalt cap can be removed.

The drainage ditches shown in the West Pit area were maintained. These ditches have water flow during spring runoff only. As the topsoil, waste and stockpiles of diatomaceous earth and leonardite contain no acid-generating materials; neither the piles nor drainage waters from the quarry are subject to any special treatment. Table 2 gives the trace element analyses for the last four quarters taken on the Red Lake Diatomaceous Earth and Table 5, the pH results taken monthly for the past ten months.

MAIN PIT - 2013

Figure 3: Main Pit, November 1, 2013 at 1:2000-scale

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WEST PIT - 2013

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COON	NNNR	RRRI	RRRRR	RRRR	RRRRRR	RRRR	RRRRRR	RRRRR	RR	5270N L Producing Basal Leonardite	0.04	0.04	
5260N	NNRR	RRRI	التشني النشق البشنا النشي البشي النشي	RRRR	RRRRRR	RFRR	RRRRR	RRRRR	RR	V Volcanic basement	0.00	0.00	
	NNRR	RRRI	RRRRRR	المقنا للخنا إنفنا أنفنا	RRRRR		RRRRRR	RRRRR	RR	Volcanic pasement	0.00	0.00	
	NNRR	RRRI	الخلا انفا انفنا إنفا إينا الفا	RRRR	RRRRRR	RRBB	LLRRRR	RRRRR	D D	Volcanic pinnacle(s)	0.00	0.04	
	NNRR	RRR	RRRRRR	RRRR	RRRRR	RBSS	BBRRRR	RRRRR	D D		0.00		
5210N	NNRR	RRR	RRRRRR	RRRR	RRRRR	RBBB	BRRRR	DDDDDD	RR	5220N Stock pile: Upper DE	0.00	0.00	
22 1014	NNRR	RRR	RRRRR	RRRR	RRRRRR	RBBS	BBRRRR	D D D D R R	RR	otosti pilot opportu			
	NNRN	N N N	NNNRRR	RPRR	RRRRRR	RRBB	BBRRRR	PPPPP	RR	Stockpile: Medial Leonardite	0.00	0.00	
	NNNN	NNN	NNNNNN	RRR	RRRRRR	RRBB	BBRRRR	RRRRR	RR				
	NNNN	NNN	M M M M M M	R R R R	RRRRRR	RRRB	BBRRRR	RRRRN	NN	5170N Stockpile: Basal DE	0.07	0.07	
5160N	NNNN	NNN	N N N N N N N	NKKK	The state of the s	RRRR	المتنا الناباة الشنا المناز المناز	RRRNN	NN	5170N ===			
	NNNN	N N N	N N N N N N N	NNNR	RRRRRR		RRRRRR	RRRNN	NN	W Waste pile	0.00	0.00	
	NNNN	N N N	N N N N N N	MACH MACH MINES		RRRR	THE PERSON NAMED IN COLUMN 1	RRNNN	NN				
	Concession of the later of the		N N N N N N N N N		THE RESERVE AND DESCRIPTION OF THE PERSON NAMED IN	RRRR		RNNNN	NN	T Topsoil pile	0.00	0.00	
	NNNN	M M M	N N N N N N	NNNN	THE RESERVE THE PERSON NAMED IN	RRRR	RRRRR	NNNNN	N N	E400N			
5110N	N N N N	AL AL AL	N N N N N N N	N N N N	NNNRRR	RRRR	RRRNNN	NNNNN	NN	5120N H Haul road	0.26	0.01	
	M M M M	M M M	N N N N N N	NNNN	NNNNRF	RRRR	NNNNNN	I N N N N N	NN	_			
	M M M M	N N N	NNNNNN	NNNN	NNNNN	NNNN	NNNNN	I N N N N N	NN	> Drainage ditch	0.00	0.00	
	NNNN	NNN	NNNNNN	NNNN	NNNNN	NNNN	NNNNN	NNNNN	NN	(reason)			
	NNNN	NNN	NNNNN	NNNN	NNNNN	NNNN	NNNNNN	INNNNN	NN	5070N Lake	0.00	0.00	
5060N	NNNN	NNN	NNNNN	NNNN	N N N N N N	NNNN	NNNNN	NNNNN	N N			2.28	
	NNNN	NNN	NNNNN	NNNN	NNNNN	NNNN	NNNNN	NNNNN	N N	☐ Building	0.00	0.00	-
	NNNN	NNN	NNNNN	N N N N	NNNNN	NNNN	NNNNN	NNNNN	N N	Total	16.00	16.00	hectares
	N N N N	NNN	NNNNN	NNNN	NNNNN	NNNN	N N N N N	INNNNN	NN	BP Brass Pin	02000	F0.45.440 ***	
	NNNN	NNN	NNNNNN	NNNN	NNNNN	NNNN	NNNNN	NNNNN	NN	SCALE BP2	653374mE	5645416mN	
5010N	0W	35 OW	30 <mark>0</mark> W	25 OW	20 OW	15 OW	10 OW	50 W	OW	10 m square bro	652966mE	5645403mN	
	2980E	3030E	3080E	3130E	3180E	3230E	3280E	3330E	3380E	NAD83 Grid			P.B. Read

NORTHWEST PIT - 2013

		3110E	3160E 3210E	3260E	3310E	3360E	S	Symbols	Synopsis 2012	NORTHWEST PIT 2013
5810N	BP5	AN AN		III IONY		BP3	5820N	N. s Latata		
	CCCC	0 0 0 0 0		0 0 0 0 0 0			1	N Natural state	0.01	0.01
	CCCC			0 0 0 0 0	000000	CN		Cleared of trees	7.66	7.47
	CCCC	6 6 6 6 6		000000	000000			Cleared of trees	7.00	1.41
	CCCC	CCCCC		666666	CCCCCC			S Stripped	0.74	0.45
5760N	CCCC	00000		666666	00000		5770N	C Suipped	0.7-7	3.10
l	CCCC	CCCCC		000000	000000			R Reclaimed	0.78	0.70
	CCCC	000000		666666	CCCCC	: 6		N Neolainios	0.75	
	CCCC	666666		666666	CCCCCC			U Producing Upper DE	1.38	1.57
	CCCC	000000		666666	CCCCCC	6		r roddomy opposite		
5710N	CCCC	CCCCC	CCCCCCC	CCCCCC	CCCCC	C	5720N	L Producing Medial Leonardite	0.10	0.18
	CCCC	CCCCC		CCCCCC	CCCCCC	5 6				
	CCCC	CCCCC	CCCCCCC	CCCCCC	CCCCC			B Producing Basal DE	0.03	0.03
	CCCC	CCCCC	ccccccc	CCCCCC	CCCCCC	0				
	CCCC	CCCCC	ccccccc	CCCCCC	CCCCCC	3 4	=0=011	L Producing Basal Leonardite	0.00	0.00
5660N	cccc	CCCCCC	cccccc	CCCCCC	CCCCCC	C	5670N			
	CCCC	CCCCC	00000000	666666	000000	0		V Volcanic basement	0.00	0.00
	CCCC	CCCCCC	00000000	CCCCCC	CCCCCC	; c				
	CCCC	CCCCC	CCCCCCC	CCCCCC	CCCCCC	; C		Volcanic pinnacle(s)	0.00	0.10
E040N	CCCC	CCCCC	CCCCCCC	CCCCCC	CCCCCC	2 (0)	5620N	_		
5610N	CCCC	000000	00000000	CCCCCU	u u u c c c	6	302UN	Stock pile: Upper DE	0.87	0.87
	CCCC	CCCCC	c c c c c c c c	CCCUUU	u u u u c c	6				
	CCCC	CCCCC	CCCCCCC	CCUUUU	0 0 0 0 0 0	3 (8		Stockpile: Medial Leonardite	0.00	0.00
	CSSS	SSSSC	000000000	CCUUUU	и н н у н 🤇					
EECON	C S S S	88888	00000000	CUUUUH	H S S S H F	5 C	5570N	Stockpile: Basal DE	0.09	0.09
5560N	CCSS	S S S S U S	SCCCCCCC	HHUU	RHF	T	337 UN			
	CCSU	Annual Control of the Control of Street, Stree	s c c c c c c	UHSSSS	SSRHF	Control of the Contro		W Waste pile	0.00	0.00
	CCUU		SSCCCCC	U H S 5 S S	SSSVH					
	CCUU	ט ט ט ט ט ט	S S S S S S C	H S S S S	S S S V H H			Topsoil pile	0.01	0.01
5510N	CCUU	ו ט ט ט ט ט ט	USSSSSSUU	H 5 5 5 5 5	SSERRE	1 H	5520N			
33 TUN	CCUU	ט ט ט ט ט ט	UUSSSSSU H		SSSVRF	R	002011	H Haul road	0.33	0.52
	CCUU	ו ט ט ט ט ט ט	UUSSSUUUH		RRRF	R			2	
	CCUL	ו ט ט ט ט ט ט	u u u u s u u t	H S S S S S		R		Drainage ditch	0.00	0.00
	CCUL	יש ע ע ע ע	u u u u u u u	U H S S S S	S S R R R F	R		prompt of the second	100 1000	960 10 Vac
5460N	CCUL	ין שן שן שן שן ע	U H H H U U U U	U U H S S S	S R R R F	R	5470N	Lake	0.00	0.00
340014	CCUJE	I U U U U	U W U U H H H I	UUHBBB	S S S V R F	R	• 1, • 1.			
	CCU		ט ט ט ט ט ט ט ט ו	H H H H S	S S S S F	R		☐ Building	0.00	0.00
	CCU	STATE STATE OF THE	R S S S S U C C	и н н н н		R		TOTA	L 12.00	12.00 hectares
	c c v is		RUSSSSCC	CCCCUUU	и н н н	R		BP Brass Pin		
5410N	CCU	RRRRI	RRUUSRRF	RRRRRR	RRRRH		5420N	SCALE BP2	653374mE	5645416mN
0.41014	raled.	Hi Gast	(t) (t) (t) (t)	2 T. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. CAVAZ	BP2	J	10 m square BP3	653362mE	5645824mN
	3070E	3120E	3170E 3220E	3270E	3320E	3370E		NAD83 Grid BP5	653062mE	5645812mN P.B. Re

BEPPLE PIT - 2013

5820N			10E	ř	3460E		00	10E		3560	L		3610	E		366	UE		371	UE		3770E		Syli	nbols		Synopsis		BEPPLE PIT
002011	BP3										-			No. of Contract of								70 (0	583	30N	name and a second		2012	2013	
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	c c	C	CC	C	; C	CC	; C	CC	CC	CCC	CC			Natural state		0.00	0.00	
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	; c	CC	C	CC	CC	CC	CC	$\uparrow \uparrow$		-				
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CC	; c	CC	CC	CCC	CC	N	L	C Cleared of trees		14.29	13.11	
	C	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CC	; c	CC	CC	CCC	CC							
5770N	C	CCCC	CC	CC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	; c	CC	C	CC	CC	CCC	CC	578	_{BON} L	S Stripped		0.00	0.44	
077014	CC	CCCC	CC	CC	CC	CC	C C	CC	CC	C	C	CC	C	CC	C	; C	CC	; c	CC	CC	CCC	CC		_					
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CC	C	CC	C C	CCC	CC			R Reclaimed		0.67	0.44	
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	c c	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC							
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC			U Producing Upper DE		0.42	1.10	
5720N	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC	573	30N -					
0.2011	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC		1	L Producing Medial Leon	nardite	0.78	0.84	
	CC	CCCC	CC	CC	CC	Marie Marie	CC	CC	N ESCH INC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC		-			70.72.27		
	CC	CCCC	CC	CC	cc	CC	CC				CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC			B Producing Basal DE		0.09	0.08	
	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CC	C	GC	CC	CCC	CC		г	7				
5670N	CC	CCCC	CC	CC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC	568	_{BON} L	L Producing Basal Leon	ardite	0.00	0.00	
	CC	CCCC	CC	CCC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	C	CC	: C	CC	CC	CCC	CC		Г			0.00	0.00	
	CC	CCCC	CC	CC	CC	CC	CC	CC		C	C	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC			V Volcanic basement		0.00	0.00	
	CC	CCCC	CC	CC	CIC	CC	CC	CC	CC	C	C	CC	C	CC	C	C	CCC	C	CC	CC	CC	CC		E					
	CC	CCCC	CC	CCC	CC	CC	CC	△ c	CC	C	C	CC	C	CC	C	C	CC	C	CC	CC	CC	CC		la de	Volcanic pinnacle(s)		0.00	0.09	
5620N	CC	CICIC	CC	CCC	CC	CC	CC	CC	CC	C	GG	CC	C	GC	C	C	CC	C	CC	CC	CC	CC	563	30N E			2/2	2.03	
	CC	CCCC	CC	CCC	CC	CC	CC	CC	CC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC			Stock pile: Upper DE		0.08	0.10	
	CC	CCCC	CC	CC	CC		CC	CC	CC	C	C	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC		F	=				
	CC	CCCC	CC	C C	CC	C S	CC	CC	CC	C	c C	CC	CI	CC	C	C	CC	C	CC	CC	CCC	CC			Stockpile: Medial leon:	ardite	0.00	0.00	
	CC	CCCT	CC		SS		CC	CC	CC	C	CC	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC						0.00	
5570N	CIC	CTTU	CC	USS	SS		CC	CC	CC	G	C	CC	C	o c	C	C	CC	C	CC	CC	e e	CC	558	BON	Stockpile: Basal DE		0.00	0.00	
	TIT	TUL	CC	וטוטו	שש		SC	CC	CC	C	C	CC	C	CC	C	C	CC	C	CC	CC	CCC	CC		F					
	CC	ULL		UUI	UU	US		CC			C	CC	C	GG	C	C	CC	G	CC	0 0	3 0 0	CC			W Waste pile		0.00	0.00	
		ULL	-	UU	U					of Miller St.	THE PERSON NAMED IN	Section States	NAME OF TAXABLE PARTY.	AND DIVIDA	District Street	and measure to	CC		STATE OF THE STATE	THE RESERVE	CCC	STATE OF THE PERSON.		1	Topsoil pile		0.06	0.06	
	BE	B L L	10000		UU		S S		CC	C	0	CC	C	0 0	CC		CC	0	CC	CC	000	CC					0.06	0.06	
5520N	-			1 1		STREET, SQUARE, SQUARE	SS	THE OWNER OF TAXABLE PARTY.	il strain man			CC			0 0		C			CC		CIC	553	30N L	H Haul road		0.00	0.13	
	HF	RHH	1 1			11 11		SS		C		CC	C	o c	CC		CC	C	CC	CC	CC	G G		L	11 Haul Toau		0.00	0.10	
	RR		LL	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN		0 0	u u		SS	C	0	CC	C		C	6	CC		c c	CC	CC	CC			Drainage ditch		0.00	0.00	
	RR		Park About	Property Comments		11 11	H H		SS		3 8	CC	C	CC	C	0	GC	C	GG	CC	CCC	CC			- Drainage until		0.00	0.00	
						11 11	11 11	0 3	11 11			S S			C		C		CC	CC	CC	CC		Ī	Lake		0.00	0.00	
5470N	RR	RRRH			L 11	n lu		10 0	In tu			11 11			C		CC		CC	CC	clelel	CC	548	30N L	Lake		0.00	0.00	
	R	RRRR				1 1		11 11	11 11	11	1 11	11 11	10		CC	C	CC	C	CC	CC	2 6 6	CC			☐ Building		0.01	0.01	
	PE	RRRR				V L	LL	LLL	UU	u	1 11	UII	U	CC	C	C	CC	C	CC	CC	CCC	CC		L		TOTAL	16.40	16.40	hectares
	D D	RRRR	-			1 32	1 1		LL	L	11	3 11	0				u lu		9 8	8 8	e lu lu	CC		F	BP Brass Pin	1.1.	19.10	.5.10	1100(0100
	RE	RRRR	RR		R L	L	LL	Bell Becs	-	_	- L	LS	U	ט ע	U	U	UU	U		3/18	UU	CC	21-20-20-0	F	BP Brass Pin	BP1	653782mE	5645427	mN
5420N -	BP2	50			10 0(16	()(7010			85 O			30			The	IT.	Marie Committee	BP1	543	30N L	10 m square	BP2	653374mE	5645416	
	3370E	34	20E	3	3470E		352	20E		3570	E		3620	Е		367	0E		372	0E		3780E		7	NAD83 Grid	BP3	653362mE	5645824	

Table 2: 2013 Quarterly Composites and Annual Average of Red Lake Trace Element Analyses

SAME AND STATE OF THE SAME	A STATE OF THE PARTY OF THE PAR				
-	Jan-13	Apr-13	Jul-13	Oct-13	Yearly Average
Element Reading	Reg. DE	Reg. DE	Reg. DE	Reg. DE	2013
Ag ppm	0.19	0.12	0.11	0.12	0.14
Al %	6.58	6.47	7.06	6.91	6.76
As ppm	8.90	8.30	8.70	8.30	8.55
Ba ppm	270	240	290	290	273
Be ppm	1.44	1.32	1.63	1.52	1.48
Bi ppm	0.22	0.20	0.22	0.21	0.21
Ca %	0.67	0.59	0.67	0.73	0.67
Cd ppm	0.21	0.23	0.22	0,23	0.22
Ce ppm	44.4	41.4	41.6	41.3	42.2
Co ppm	14.1	13.6	16.6	15.9	15.1
Cr ppm	43	42	49	44	45
Cs ppm	2.48	2.26	2.88	2.55	2.54
Cu ppm	46.5	42.1	46.1	44.6	44.8
Fe %	3.15	3.06	3.22	3.10	3.13
Ga ppm	17.8	16.1	19.0	17.5	17.6
Ge ppm	0.12	0.14	0.13	0.15	0.14
Hf ppm	3.9	3.9	4.0	3.8	3.9
Hg ppm	0.15	0.14	0.12	0.14	0.14
n ppm	0.058	0.055	0.065	0.064	0.06
< %	0.50	0.44	0.52	0.52	0.5
_a ppm	20.4	20.1	19.0	19.3	19.7
_i ppm	22.4	22.1	29.3	25.5	24.8
Mg %	0.44	0.45	0.45	0.46	0.45
Vin ppm	111	101	119	128	115
Mo ppm	9.81	14.05	13.20	11.25	12.08
Va %	0.48	0.42	0.51	0.55	0.49
Nb ppm	10.4	9.1	11.1	11.0	10.4
Vi ppm	28.8	30.4	28.7	32.4	30.1
ppm ppm	280	260	280	270	273
b ppm	10.3	9.4	9.9	10.8	10.1
Rb ppm	35.0	28.9	32.6	32.4	32.2
Re ppm	0.005	0.008	0.005	0.007	0.06
3 %	0.22	0.37	0.23	0.37	0.3
Sb ppm	0.94	0.76	0.90	0.78	0.85
Sc ppm	14.4	13.2	15.7	12.1	13.9
e ppm	2	3	3	4	3
n ppm	1.5	1.3	1.7	1.6	1.5
r ppm	125.5	106.5	128.5	133.5	123.5
a ppm	0.67	0.55	0.74	0.70	0.67
e ppm	0.07	<0.05	0.08	0.09	0.07
h ppm	5.9	4.7	5.4	5.1	5.3
i %	0.358	0.343	0.371	0.360	0.36
l ppm	0.48	0.43	0.50	0.300	0.36
ppm	2.4	2.0	2.4	2.2	
	107	104	110		2.3
FF	0.9			108	107
		0.7	0.9	0.8	0.8
	19.4	20.5	18.5	20.1	19.6
n ppm	80	75	80	75	78
r ppm	148.0	152.0	149.0	144.0	148.3

6. RECLAMATION LIABILITY COSTS

Sequenced mining and reclamation development plans were approved under Permit Q-15-006 in October 2000 and have been followed. Continuing reclamation has been carried out since commencement of backfill and grading in 2001. APL utilizes its own earth moving equipment to backfill and grade the mined out areas. The majority of the area requiring backfill and grading is included in the diatomaceous earth production costs if overburden is being moved as part of the mining process. When overburden is moved separately and piled or pushed onto the mined out areas from existing pile, then this cost is separated out as a direct reclamation cost. APL has allowed \$5,500 per hectare for the direct reclamation costs based on previous experience of actual costs at the quarry over the past 12 years. Based on the APL reclamation cost of \$5725/hectare, which includes grass seed (Table 5), and its distribution, and the amount of unreclaimed area of 12.07 hectares (Table 1), the current reclamation security bonding of \$70,000.00 is sufficient to cover the cost of reclaiming the present 12.07 hectares of disturbed land (Table 4). The summary of material costs is given in Table 4.

Table 3: Summary Table of Reclamation Liability Costs

Project Name: Reclamation Permit #:	Red La Q-15-0	ike Quarry						
Disturbance Category:		laster 1						
Area to be reclaimed	12.07	idatei i						
Additional Notes:	12.01							
			RECLAMATI	ON PRESCRIPTIO	NS			
A.		Area	KEOLAMATI	ON TRESORIE TIO	Unit Cost	Item		TOTAL \$
Site Preparation		(ha)			\$/ha or km	Subtotal \$		
Recontouring (max. ht. of 10m)						\$0		
Surfacing Material Haul								
Spread		12.07			\$5,500	\$66,385		
Compact					77	\$0		
Ripping	7					\$0		
optional optional	4	-				\$0		
optional	-					\$0 \$0		
optional	1					\$0 \$0		
optional						\$0		
optional	1					\$0		
optional optional	-					\$0		
Ориона	.]					\$0	=	422.2
В.		Area Applicati	on No. of Kg.	Appl. Cost	Unit Cost	Item	Subtotal #	\$66,38
Revegetation		(ha) Rate (kg/l		\$/ha	\$/ha	Subtotal \$	Subtotal \$	TOTAL\$
Aerial Broadcast - application			ė		\$0	\$0		
Seed		12.07	150 181	1	\$225	\$2,716		
Fertilizer				0	\$0	\$0		
Tractor - application					40		\$2,716	
Seed Seed				0	\$0 \$0	\$0 \$0		
Fertilizer				0	\$0	\$0		
				₩.		••	\$0	
Hydroseed							may.	
Hydroseed - application Seed					\$0	\$0		
Fertilizer				0	\$0 \$0	\$0 \$0		
Mulch				0	\$0	\$0		
Tackifier				0	\$0	\$0		
							\$0	
optional - application				0	\$0	\$0		
optional -material 1 optional - material 2				0	\$0 \$0	\$0 \$0		
opinomia material E	i			-	40	\$0	\$0	
		Area Appl. Rat	e No. of	Appl. Cost	Unit Cost	Item	90	
Woody species		(ha) (stems/ha) Plants	\$/stem	\$/ha	Subtotal \$		
Plant Installation Seedlings			_		\$0	\$0		
Fertilizer tablets			-		\$0 \$0	\$0 \$0		
Plant protectors (installed)					\$0 \$0	\$0		
optional - material 3)	\$0	\$0		
optional - material 4)	\$0	\$0	\$0	
								\$2,716
Maintenance	Years	Area Applicatio		Appl. Cost	Unit Cost	Subtotal \$	Subtotal \$	TOTAL\$
Aerial Broadcast - application		(ha) Rate (kg/h	a)	\$/ha	\$/ha	per year		
Seed Seed	-		1 (\$0	\$0		
Fertilizer			-		\$0 \$0	\$0 \$0		
					ΨΟ	40	\$0	
Tractor - application					\$0	\$0	•	
			9		\$0	\$0		
Seed				,	\$0	\$0	***	
Fertilizer							\$0	
						*0		
Fertilizer Hydroseed Hydroseed - application					\$0	30		
Fertilizer Hydroseed Hydroseed - application Seed					\$0	\$0 \$0		
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer			0		\$0 \$0	\$0 \$0		
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer Mulch			0 0		\$0 \$0 \$0	\$0 \$0 \$0		
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer			0		\$0 \$0	\$0 \$0	40	
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer Mulch Tackifier optional - application			0 0		\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$0	
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer Mulch Tackifier optional - application optional - maint material 1			0000		\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$0	
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer Mulch Tackifier optional - application			0000		\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0		
Fertilizer Hydroseed Hydroseed - application Seed Fertilizer Mulch Tackifier optional - application optional - maint material 1			0000		\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0	\$0

Table 4: Summary Table of Material Costs

Material Summary Report	No. of Kg. or No. of Plants	Unit Cost \$/kg, \$/plant	Subtotal \$
Seed mix	1811	\$1.50	\$2,716
Fertilizer	0		\$0
Mulch	0		\$0
Tackifier	0		\$0
Woody species			
Seedlings (\$ per plant)	0		\$0
Fertilizer tablets (\$/tablet)	0		\$0
Plant protectors (\$/unit)	0		\$0
optional - material 1	0		\$0
optional - material 2	0		\$0
optional - material 3	0		\$0
optional - material 4	0		\$0
maint.material 1	0		\$0
maint.material 2	o		\$0
		_	\$2,716

7. ACID ROCK DRAINAGE POTENTIAL

The diatomaceous earth quarried by APL is non-acid generating with a pH that lies between 5.45 and 6.23 and averages 5.87 based on monthly results between November 2011 and November 2012 (Table 5). From the West pit, the ephemeral spring runoff is directed toward a small settling pond slightly east of the centre of the West Pit. From this pond a drainage ditch leads to the west where it is joined by a south-draining ditch from Northwest Pit and both drain to a naturally vegetated gully on the west side of West Pit (Figure 4).

Table 5: Monthly pH's of Red Lake Diatomaceous Earth (November 2012 to November 2013)

- 1	Nov-11	Dec-11	1 40	C.1.40	11			12070					
- 1		Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12
- 1	DF 4/18	DF 4/18	DF 4/18	DE 4/18	DE AMB	DE 4/10	DE 4/40	DE 4/40	DE 4/40	DE 4/40	DE 4440		DE 4/18
1	24 1110		DE 4/10	DL 4/10	DE 4/10	DL 4/10	DE 4/10	DE 4/10	DE 4/18				
- 1	6.15	6.09	6.23	5.45	5.85	5.93	5.72	5.52	5.92	5.64	6.02	5.82	5.96
									41411	0.01	0,02	0.02	0.50

8. REFERENCES

Read, P. B. (2012):

Annual Reclamation Report for the Year 2012, Mine Permit Q-15-006, Mining Lease 310888, Red Lake Quarry; unpublished report Geotex Consultants Limited, 14 p.