

Waste Diversion Ontario Continuous Improvement Fund



TOWNSHIP OF BONNECHERE VALLEY

CIF PROJECT #844

BLUE BOX DEPOT COLLECTION - FRONT END BIN IMPLEMENTATION



Final Report
August 2017

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Executive Summary

Project 844 original application was to fund the refit of Bonnechere Valley's rear load truck and to purchase rear load bins to be placed at our various recycling depots. This was based on the CIF Project 858 completed by Madawaska Valley. However, upon review it was determined it would be more cost effective to move to a front-end bin system and have them serviced by a private contractor. The primary reasons for the change in project approach was the need to replace the rear load truck; also the depot system could be improved by having the contractor first collect waste from the depots then on the return trip, collect the recycling. In this manner, the truck is utilized in both directions maximizing equipment utilization and fuel efficiency.

The decision to replace the Township's un-compacted 2 compartment roll off containers with a front-end bin system and to contract the pick-up service has proved to be a long-term operational improvement. In general, any municipality with un-compacted roll off collection equipment should consider the findings of this report that shows the positive impact of implementing a front-end bin compaction system to transport recyclables.

From an operational perspective, the transition from top loading roll off containers to ground level recycling containers was for the most part well received by attendants and residents. From the resident's perspective, it was noted that it was easier to recycle as there was:

- no need to carry items up a ramp,
- easy access to drive up and deposit material directly from vehicle during all seasons, and
- good visibility into the bins which reinforced the need to recycle right.

From the attendants' perspective, it was noted that:

- monitoring of bins and materials seems easier due to good visibility into the bins,
- if a resident placed material in 'error', it is easier to correct as the material is generally accessible as opposed to a roll off where the material was never reachable,
- the health and safety of residents and staff is now better protected as there is no need for any ramp access. The ramps were a general trip hazard at all times but increased as an issue due to snow and ice in the winter, and
- there were no rejected loads at the MRF due to contamination.

For the purposes of this report, 2014 annual data is compared to 2016 annual data. The primary reason for not using 2015 is that it was the transition year of roll offs to front end bins. The delivery and utilization of the front-end bins started in the spring/summer and completed in winter. During the transition, residents and staff were informed and trained on the new system. Of note, one of the municipal depots (Sebastopol Ward) was not fully integrated into the new system until January 1, 2016. As such, it is 2016 that provided the first complete seasonal cycle and 2014 was the last full year of roll off containers.

Introduction

The Township of Bonnechere Valley retained Redi Recycling Inc. to assist with a review of its recycling depot operations and for the development of CIF project and grant request. The scope of the review took into account the operating parameters of using un-compacted 40 yd³ recycling containers compared to utilizing front end bins. This review was intended to determine if there would be an operational improvement and financial savings. Based on the review, a CIF request was made to fund the capital purchase of depot bin equipment.

Background

The former Townships of Grattan, Sebastopol, South Algona and the Village of Eganville amalgamated on January 1, 2001 to create the Township of Bonnechere Valley. The Township is located under two hours from Ottawa, and four and half from Toronto and is in close proximity to Algonquin Provincial Park.

Google Maps Bonnechere Valley



Municipal staff delivers the waste management service for the entire Township; it consists of five staffed depot operations for all areas and curbside services within the Village. The Township has 2,562 households (hhlds), 147 multi-family units, 35 IC&I locations, 680 seasonal households and a population of 3,280. The Village has 530 hhlds that receives municipally staffed curbside services for recycling and garbage. The remaining hhlds received all the waste management elements at the five depots: 40 yd³ roll offs were located at Sand Road, Ruby Road, Larmond (Hwy 41), Lake Clear and 90 gallon totes were used at Mc Grath, which were then transported to Lake Clear by staff when needed. The Township has one bulky goods landfill at Snodrifter Road and all waste from depots are taken to the Ruby Road landfill. The Township has a full user pay system that charges a rate of two dollars per bag/container for disposal and provides other diversion services at no charge. Of note, the Lake Clear site in the Sebastopol Ward has in place an organics program which was started pre-amalgamation when it was a partner in the Ottawa Valley Waste Recover Centre.

In the spring of 2014, the Township applied to the CIF for support in its efforts to improve the recycling system and reduce costs. Project 844 original application was to fund the refit of Bonnechere Valley's

rear load truck and to purchase of rear load bins to be placed at our various recycling depots. This was based on the project done by Madawaska Valley, Project 858. However, upon review it was determined it would be more cost effective to move to a front-end bin system and have them serviced by a private contractor. The primary reasons for the change in project approach was the need to replace the rear load truck; also the depot system could be improved by having the contractor first collect waste from the depots then on the return trip, collect the recycling. In this manner, the truck is utilized in both directions maximizing equipment utilization and fuel efficiency.

In the spring of 2015, the CIF entered into an agreement with the Township to provide financial support to purchase front end bins and project support and reporting as per CIF grant requirements. The CIF funded Project 844 a maximum amount of \$34,170 for capital costs and consulting support which represented 42% of blue box related costs.

Project Goals

The project goals are:

- Standardize depot services and provide easier access to recycling at depots
- Reduce the number of loads shipped from depots to MRF
- Reduce operating costs

Township Waste Management System Pre-Implementation

The Township provided recyclable material collection services at all five depots, 4 sites used 40 yd³ roll-off bins with 70/30 or 60/40 split (containers/fibre), and one site McGrath Road used 90 Gallon Totes. Each roll-off cost \$250 per load to transport with services provided by the Ottawa Valley Waste Recovery Centre at the Lake Clear Site and Beaumen Waste Management for other four sites. In 2014, 81 roll-off loads were transported; 63 via Beaumen and 18 via OVWRC. The McGrath Road location was serviced by municipal staff transporting full totes over to the Lake Clear roll off as needed.



Photo: a typical top load 40 yd³ recycling bin and access ramp

As the Township provides curbside collection using a rear load compaction truck, it was known that compaction provides an advantage to manage the volumes of material. The depots' roll off container collection had an average weight of 1.74 tonnes per roll off. Which on average was 845.4 kgs for Fibre and 891.7 kgs for Comingle products.

The projected impact of the compaction implementation using 8 yd³ front load containers was to go from 81 two-compartment loads to a weekly milk run using a front-end system.

As is the case using non-compacted roll-offs, a bin must be transported whenever either compartment is full. In general, the container section usually becomes full first. And regardless of whichever is full, given the bin is not compacted; relatively speaking it is mostly air that is being transported. The 2014 records from the OVWRC and Beaumen provide a baseline comparison prior to project implementation. See Appendix A.

Front End Bin Implementation

In order to establish the front load system, each location was landscaped to enable bin placement, ease of resident access and annual yard maintenance. To purchase the bins, a request for quotation for 42 bins was issued and the successful fabrication company was Precision Waste Systems Ltd. Each container was \$945 plus applicable taxes and load delivery.

Based on the number of roll of containers and weights of recyclables, the 42 containers were distributed to the five depot locations as follows:

Table 1: Bin Locations

Site	Bins
Sand Road	12
Ruby Road	8
Larmond	6
Mc Grath	6
Lake Clear	10

Sand Road



Ruby Road



Larmond



Mc Grath



Lake Clear



Project Period and Observations

For the purposes of this report, the collection time frames reported are Jan – Dec 2014 for roll off and May 2016 – April 2017 for the front-end system. While the information for 2015 and the initial part of 2016 is included in the Appendices, the report does not use this time frame due to the implementation time of the new front-end system. The initial plan to implement the front-end bins was to be completed by mid 2015, however, not all sites were converted with the last site, Lake Clear coming on board on January 1, 2016. Then, from January to April 2016, the cost for recycling system was higher than

average since the recycling was a dedicated run. It was in May 2016 that both the waste and recycling programs began to use the front-end bin collection system as designed. The initial run by the front-end truck is to have the waste picked up, with the return route for recycling. This enables the municipality to equally split costs of the services.

From an operational perspective, the transition from roll off containers to ground level recycling containers was for the most part well received by attendants and residents. From the resident's perspective, it was noted that it was easier to recycle as there was:

- no need to carry items up a ramp,
- easy access to drive up and deposit material directly from vehicle during all seasons, and
- good visibility into the bins which reinforced the need to recycle right.

From the attendants' perspective, it was noted that:

- monitoring of bins and materials seems easier due to good visibility into the bins,
- if a resident placed material in 'error', it is easier to correct as the material is generally accessible as opposed to a roll off where the material was never reachable,
- the health and safety of residents and staff is now better protected as there is no need for any ramp access. The ramps were a general trip hazard at all times but increased as an issue due to snow and ice in the winter, and
- there were no rejected loads at the MRF due to contamination.

However, not all aspects of the change were without a downside. Staff note that yard maintenance, in the winter specifically, needed a bit of extra time to keep the front of bins clear. Each site is equipped with a mobile step for those wanting to be a bit higher. With a roll off it was the ramp that had to be cleared, for the front-end bins each bin needs to be accessible and maintained.

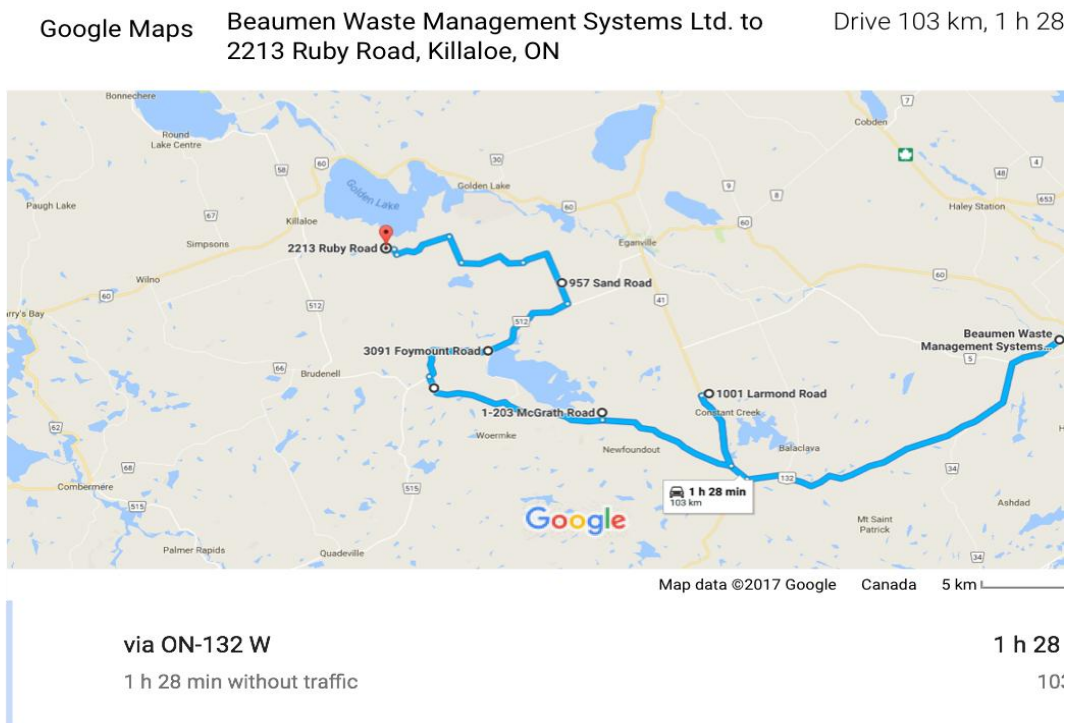


Bin Pick Up Timing

Pick up times for the recyclables has improved greatly. For a roll off system, each site would have to have a dedicated run of delivering an empty bin and switching it for a full bin. The travel times varied by site and were as little as an hour up to three hour round trip. The amount of time taken for a site switch is usually longer in winter due to road conditions.

The improved program started in May 2016 when the implementation of front end recycling system included a front-end waste system. Each site is able to manage both recycling and waste in dedicated front end bins. To that end, Beaumen makes a run out to the sites to collect waste. Once completed the waste is delivered to the Ruby Road landfill site and the recycling collection commences in a reverse run with fibre collected one week and commingled materials the following week.

BV Collection Route



The drive time of the route is approximately 1 ½ hours. Add to this the cycle time of 30 seconds per bin; the total time taken to service all five sites weekly is approximately 3 ½ to 4 hours, with Fibre done one week followed by Commingled Containers the next.

Compared to the time taken in the past to service each roll off at the various sites:

Beaumen to:	KM	Minutes 1 Way Trip
Larmond	36	24
Sand Road	46	36
Lake Clear	52	40
Ruby Road	52	51
Totals	186	151

Note: McGrath site was serviced by municipal staff using 90 gallon totes which were transported to Lake Clear for emptying as needed.

Depending on the frequency of roll off pickup, the distance and time travelled varies annually. However, comparing the front end system to roll off on an equal basis; if the four sites are to be serviced weekly it is clear that front end collection using a milk run approach is by far more efficient. This is due to the front-end approach only needing to travel one way to pick up and manage recyclables when combined with waste services.

Weekly Site Service

Sites Serviced	KM	Drive Time
Roll Off (4 sites)	186	5 hours (return)
Front End (5 Sites)	103	3 hours
Savings by Front End	53 (29%)	1 hours (40%)

Note: comparison is of 4 roll off sites to 5 front end sites. Even with the added site, the front-end system is more efficient than a roll off system based on kilometers travelled and drive times.

Roll Off to FE Bin Comparisons

Element	Roll Off	FE Bin	Diff +/-	%
Trucks	81	52	-29	-36%
Tonnes	143.1	148.5	5.4	4%
Yards	3240	5472	2232	69%
Cost	\$20,250.00	\$22,400.00	\$2,150.00	11%

The number of front end trucks per year dropped to one per week vs 81 roll off trucks per year while the total tonnes collected increased. Of interest is the analysis of total yards picked up. Where the 81 roll offs at 40 yards each is equal to 3,240 yards of material; the volume of material collected in one year for the project was 5,472 lifts at 8 yards each. This is equivalent to 137 roll offs at 40 yards each. However, this assumes that the 8 yard bins were always at 100% capacity. The equivalent number based on an 85% fill rate also shows a net increase in number of roll off equivalents at 116. To that end, while the Front-End Bin cost is slightly more than the roll off cost, more tonnes and yards of material were collected in Front End. With that said, moving to a Front-End System allows for a significant cost avoidance of remaining with a roll off system.

The cost avoidance is substantial given the calculated volume of material. Using 116 roll off bins at \$250 per lift, the avoidance is \$8,750 per year. This is less than a 4 year pay back.

Project Budget

The CIF entered into an agreement with the Township to provide financial support to purchase front end bins and project support and reporting as per CIF grant requirements. The CIF funded Project 844 a maximum amount of \$34,170 for capital costs and consulting support which represented 42% of blue box related costs. The proposed budget was:

Project Budget	Total Cost
8 yard Front End bins	\$41,600.00
Site Earth works - 4 sites	\$6,000.00
Management and reporting	\$7,500.00
ECA and Operations Manual	\$5,000.00
TOTAL	\$60,100.00

The Municipality invoiced CIF as follows:

Capital Total	\$	54,895.42
Recoverable amount is Upset Limit or 42%		
Upset Purchase Limit	\$ 22,661.00	invoiced CIF 8 Dec 2015

Project Support and Report		
Project Support funding upset limit	\$	3,955.00
Final Report 25% of approved funding	\$	7,554.00
Project Support and Report		
Project Support funding upset limit	\$	3,955.00
Final Report 25% of approved funding	\$	7,554.00
Final CIF Invoice		\$ 11,509.00
Total CIF Funding Received	\$	34,170.00

Conclusions

In conclusion, from both a financial and operational view, the CIF Project 844 is a success and the Township and the Blue Box Stewards will see an increase in cost efficiency and operational effectiveness. In general, any municipality with a rear load collection equipment should consider this method to transport recyclables if it is currently using un-compacted roll off containers for its recycling program.

Operationally, the system works very effectively for both residents and municipal staff. The front-end bin system allows for easy vehicle access and resident use. And staff are able to monitor and manage contamination more effectively. The use of front end bins also results in reduced truck loads from 81 roll offs to weekly recycling milk runs, or 52 trips. Given that the recycling system is dove tailed with the garbage run, the front-end truck is fully utilized in both directions. This has greatly reduced distance travelled. And finally, with the new front end bin system, all sites have standardized service saving municipal staff time from double handling the Mc Grath Road recyclable material.

Financially the move to a front-end bin system has avoided immediate future increases in trucking costs. The total volume managed went from 81 roll offs or ~3240 yd³ to 684 front end bin lifts or ~5,472 yd³.

This significant volume increase was managed with a slight financial increase to the operating budget of \$2,150 annually.

Future Considerations

While the mandate of this project was achieved as it improved the recycling collection system and maintained operating costs, the Township should consider further changes. Currently the township uses a rear load 2 man recycling truck for its curb side system. This vehicle at some point will need to be replaced and is currently an added financial burden due to insurance, fuel and additional maintenance. Given the front-end bin implementation the Township should consider contracting it out on the provision that the contractor utilizes a front-end collection truck equipped with a Curroto Can. This change would reduce the curb side collection labour requirements and easily coordinate with the pick up at the recycling depots.

Alternatively, further savings may be possible if the Township were to work with the current Shared Services Centre of Excellence partners. A review of the respective communities' programs and needs can be undertaken to determine if there is an opportunity to share in the contracting out or equipment purchase, maintenance and operations. There are several municipalities already utilizing front end bin systems and these can be assessed for more optimal collection routes.



Photos from <http://www.thecurottocan.com/>

Appendix A: Roll Off Material Summary

Loads	DATE	FIBRE kgs	COMINGLED kgs	Total	\$ per tonne @ \$250/lift
1	2014-01-03	770	1040	1.81	\$138.12
2	2014-01-03	890	960	1.85	\$135.14
3	2014-01-09	1140	850	1.99	\$125.63
4	2014-01-24	930	780	1.71	\$146.20
5	2014-01-29	580	980	1.56	\$160.26
6	2014-01-29	750	880	1.63	\$153.37
7	2014-02-06	950	900	1.85	\$135.14
8	2014-02-18	600	930	1.53	\$163.40
9	2014-02-19	870	960	1.83	\$136.61
10	2014-03-05	900	1200	2.1	\$119.05
11	2014-03-14	560	730	1.29	\$193.80
12	2014-03-14	670	960	1.63	\$153.37
13	2014-03-27	1030	1000	2.03	\$123.15
14	2014-04-02	1390	900	2.29	\$109.17
15	2014-04-15	1130	1170	2.3	\$108.70
16	2014-04-16	750	1250	2	\$125.00
17	2014-04-24	550	710	1.26	\$198.41
18	2014-05-01	1410	700	2.11	\$118.48
19	2014-05-08	1090	1080	2.17	\$115.21
20	2014-05-15	730	970	1.7	\$147.06
21	2014-05-24	920	470	1.39	\$179.86
22	2014-05-24	700	1090	1.79	\$139.66
23	2014-05-28	540	830	1.37	\$182.48
24	2014-05-29	1000	760	1.76	\$142.05
25	2014-06-12	940	1000	1.94	\$128.87
26	2014-06-18	1050	1010	2.06	\$121.36
27	2014-06-25	830	880	1.71	\$146.20
28	2014-06-26	650	760	1.41	\$177.30
29	2014-07-03	710	1040	1.75	\$142.86
30	2014-07-03	1100	860	1.96	\$127.55
31	2014-07-11	950	870	1.82	\$137.36
32	2014-07-15	590	820	1.41	\$177.30
33	2014-07-17	990	870	1.86	\$134.41
34	2014-07-22	1190	780	1.97	\$126.90
35	2014-07-24	490	730	1.22	\$204.92
36	2014-07-31	690	530	1.22	\$204.92
37	2014-08-01	890	840	1.73	\$144.51
38	2014-08-01	890	840	1.73	\$144.51
39	2014-08-05	810	760	1.57	\$159.24
40	2014-08-13	410	790	1.2	\$208.33
41	2014-08-19	970	960	1.93	\$129.53

Loads	DATE	FIBRE kgs	COMINGLED kgs	Total	\$ per tonne @ \$250/lift
42	2014-08-21	480	800	1.28	\$195.31
43	2014-08-27	1210	1060	2.27	\$110.13
44	2014-09-02	580	740	1.32	\$189.39
45	2014-09-03	820	760	1.58	\$158.23
46	2014-09-12	1490	930	2.42	\$103.31
47	2014-09-16	410	970	1.38	\$181.16
48	2014-09-24	680	1120	1.8	\$138.89
49	2014-09-30	980	880	1.86	\$134.41
50	2014-10-02	610	900	1.51	\$165.56
51	2014-10-08	980	890	1.87	\$133.69
52	2014-10-17	890	820	1.71	\$146.20
53	2014-10-29	590	870	1.46	\$171.23
54	2014-10-31	1080	880	1.96	\$127.55
55	2014-11-07	570	820	1.39	\$179.86
56	2014-11-07	1000	920	1.92	\$130.21
57	2014-11-19	1030	940	1.97	\$126.90
58	2014-11-25	920	1040	1.96	\$127.55
59	2014-12-09	530	640	1.17	\$213.68
60	2014-12-10	880	1040	1.92	\$130.21
61	2014-12-16	620	960	1.58	\$158.23
62	2014-12-18	860	820	1.68	\$148.81
63	2014-12-30	1050	940	1.99	\$125.63
Averages		845.40	891.75	1.74	\$148.60

OVWRC Roll off Pick ups: 18 Loads

OVWRC	loads	Tonnes
Comingled	18	14.88
Fibre	18	18.78
	Total	33.66
	Average	1.87

Appendix B: Front End Bin Summary

Comingled Container Lifts

Comingled	Sand	Ruby	Hw 41	Lake Clear	Mc Grath	Total Lifts
08-Jan-16	7	2	2	0	1	12
22-Jan-16	5	1	2	2	0	10
05-Feb-16	4	2	2	2	1	11
19-Feb-16	4	1	1	2	0	8
04-Mar-16	5	2	2	2	1	12
18-Mar-18	6	1	2	3	1	13
01-Apr-16	4	2	1	0	0	7
15-Apr-16	7	2	1	2	1	13
28-Apr-16	6	1	2	3	0	12
13-May-16	7	2	2	3	1	15
27-May-16	5	2	2	3	1	13
10-Jun-16	6	3	2	3	1	15
24-Jun-16	5	2	2	3	1	13
08-Jul-16	5	4	2	4	1	16
22-Jul-16	7	3	1	5	1	17
05-Aug-16	5	5	2	4	2	18
19-Aug-16	7	4	2	5	1	19
02-Sep-16	6	3	2	4	1	16
16-Sep-16	5	3	2	3	1	14
30-Sep-16	5	2	2	4	2	15
14-Oct-16	4	2	1	2	1	10
28-Oct-16	6	2	1	2	1	12
11-Nov-16	4	1	1	1	1	8
25-Nov-16	4	1	0	0	0	5
09-Dec-16	5	1	1	0	1	8
23-Dec-16	3	1	0	4	0	8
06-Jan-17	4	0	0	2	0	6
20-Jan-17	5	2	0	0	2	9
03-Feb-17	5	1	2	4	0	12
17-Feb-17	3	0	0	0	0	3
02-Mar-17	4	1	2	0	0	7
17-Mar-17	4	1	0	4	2	11
30-Mar-17	4	1	2	0	0	7
13-Apr-17	4	1	0	0	2	7
28-Apr-17	5	2	3	4	0	14
12-May-17	6	1	2	0	1	10
26-May-17	6	2	2	3	1	14
	187	67	53	83	30	420

Comingled Container Tonnage

Comingled	Sand	Ruby	Hw 41	Lake Clear	Mc Grath	Total Tonnes	Route Rate	\$ per tonne
08-Jan-16	1.67	0.46	0.46	0	0.23	2.82	\$ 600.00	\$ 212.77
22-Jan-16	1.09	0.21	0.42	0.42	0	2.14	\$ 600.00	\$ 280.37
05-Feb-16	0.75	0.38	0.38	0.38	0.19	2.08	\$ 600.00	\$ 288.46
19-Feb-16	0.8	0.2	0.2	0.4	0	1.6	\$ 600.00	\$ 375.00
04-Mar-16	1.04	0.4	0.4	0.4	0.2	2.44	\$ 600.00	\$ 245.90
18-Mar-18	1.13	0.18	0.36	0.54	0.18	2.39	\$ 600.00	\$ 251.05
01-Apr-16	0.86	0.4	0.2	0	0	1.46	\$ 600.00	\$ 410.96
15-Apr-16	1.41	0.38	0.19	0.38	0.19	2.55	\$ 600.00	\$ 235.29
28-Apr-16	1.11	0.21	0.42	0.65	0	2.39	\$ 600.00	\$ 251.05
13-May-16	1.32	0.34	0.34	0.51	0.16	2.67	\$ 400.00	\$ 149.81
27-May-16	0.9	0.36	0.36	0.3	0.18	2.1	\$ 400.00	\$ 190.48
10-Jun-16	1.31	0.51	0.33	0.5	0.16	2.81	\$ 400.00	\$ 142.35
24-Jun-16	1.01	0.32	0.32	0.54	0.16	2.35	\$ 400.00	\$ 170.21
08-Jul-16	1.12	0.73	0.36	0.74	0.18	3.13	\$ 400.00	\$ 127.80
22-Jul-16	1.47	0.54	0.18	0.91	0.18	3.28	\$ 400.00	\$ 121.95
05-Aug-16	1.02	1	0.38	0.76	0.38	3.54	\$ 400.00	\$ 112.99
19-Aug-16	1.12	0.78	0.39	1	0.225	3.515	\$ 400.00	\$ 113.80
02-Sep-16	0.51	0.51	0.34	0.68	0.17	2.21	\$ 400.00	\$ 181.00
16-Sep-16	0.93	0.63	0.34	0.56	0.18	2.64	\$ 400.00	\$ 151.52
30-Sep-16	1.12	0.22	0.22	0.49	0.22	2.27	\$ 400.00	\$ 176.21
14-Oct-16	0.87	0.33	0.21	0.42	0.21	2.04	\$ 400.00	\$ 196.08
28-Oct-16	1.27	0.39	0.23	0.46	0.23	2.58	\$ 400.00	\$ 155.04
11-Nov-16	0.96	0.23	0.23	0.23	0.23	1.88	\$ 400.00	\$ 212.77
25-Nov-16	1.02	0.26	0	0	0	1.28	\$ 400.00	\$ 312.50
09-Dec-16	1.54	0.23	0.22	0	0.22	2.21	\$ 400.00	\$ 181.00
23-Dec-16	0.84	0.31	0	1.12	0	2.27	\$ 400.00	\$ 176.21
06-Jan-17	1.3	0	0	0.65	0	1.95	\$ 400.00	\$ 205.13
20-Jan-17	1.14	0.24	0	0	0.44	1.82	\$ 400.00	\$ 219.78
03-Feb-17	1.23	0.25	0.48	0.94	0	2.9	\$ 400.00	\$ 137.93
17-Feb-17	0.91	0	0	0	0	0.91	\$ 400.00	\$ 439.56
02-Mar-17	1.12	0.45	0.56	0	0	2.13	\$ 400.00	\$ 187.79
17-Mar-17	1.04	0.26	0	1.01	0.52	2.83	\$ 400.00	\$ 141.34
30-Mar-17	0.94	0.24	0.48	0	0	1.66	\$ 400.00	\$ 240.96
13-Apr-17	0.91	0.23	0	0	0.46	1.6	\$ 400.00	\$ 250.00
28-Apr-17	1.15	0.46	0.69	0.9	0	3.2	\$ 400.00	\$ 125.00
12-May-17	1.33	0.22	0.44	0	0.22	2.21	\$ 400.00	\$ 181.00
26-May-17	1.3	0.48	0.34	0.6	0.17	2.89	\$ 400.00	\$ 138.41

Fibre Lifts

Fibre	Sand	Ruby	Hw 41	Lake Clear	Mc Grath	Totals
15-Jan-16	6	1	2	4	1	14
29-Jan-16	5	2	2	3	0	12
12-Feb-16	5	1	1	2	1	10
26-Feb-16	4	1	1	1	0	7
11-Mar-16	7	1	2	2	0	12
24-Mar-16	6	2	1	3	0	12
11-Apr-16	5	1	1	3	1	11
22-Apr-16	7	2	2	3	0	14
06-May-16	7	2	2	3	1	15
20-May-16	6	2	2	4	1	15
03-Jun-16	7	4	2	5	1	19
17-Jun-16	7	3	2	3	1	16
30-Jun-16	7	4	2	5	1	19
15-Jul-16	9	4	2	5	1	21
29-Jul-16	8	3	2	5	1	19
12-Aug-16	9	5	2	5	1	22
26-Aug-16	7	4	2	4	1	18
08-Sep-16	7	2	2	4	1	16
23-Sep-16	7	4	2	3	1	17
06-Oct-16	9	2	2	3	1	17
21-Oct-16	7	2	2	2	1	14
04-Nov-16	7	2	1	3	1	14
18-Nov-16	7	1	2	2	1	13
02-Dec-16	6	2	1	0	1	10
16-Dec-16	7	2	0	0	0	9
30-Dec-16	7	2	2	4	1	16
13-Jan-17	9	2	0	0	0	11
27-Jan-17	7	2	2	4	0	15
10-Feb-17	5	2	0	0	0	7
24-Feb-17	6	2	0	0	2	10
10-Mar-17	5	2	2		0	9
24-Mar-17	7	2	0	0	0	9
06-Apr-17	6	1	3	3	2	15
20-Apr-17	7	2	0	0	0	9
05-May-17	9	2	2	0	0	13
19-May-17	8	1	1	4	1	15
02-Jun-17	8	2	4	0	3	17
	253	81	58	92	28	512

Fibre Tonnage

Fibre	Sand	Ruby	Hw 41	Lake Clear	Mc Grath	Totals	Route Rate	\$ per tonne
15-Jan-16	1.42	0.24	0.47	0.04	0.23	2.4	\$ 600.00	\$ 250.00
29-Jan-16	1	0.4	0.4	0.6	0	2.4	\$ 600.00	\$ 250.00
12-Feb-16	1.21	0.23	0.23	0.46	0.23	2.36	\$ 600.00	\$ 254.24
26-Feb-16	1.07	0.26	0.26	0.26	0	1.85	\$ 600.00	\$ 324.32
11-Mar-16	1.47	0.21	0.42	0.42	0	2.52	\$ 600.00	\$ 238.10
24-Mar-16	1.34	0.46	0.23	0.69	0	2.72	\$ 600.00	\$ 220.59
11-Apr-16	1.45	0.29	0.29	0.84	0.29	3.16	\$ 600.00	\$ 189.87
22-Apr-16	1.52	0.44	0.44	0.66	0	3.06	\$ 600.00	\$ 196.08
06-May-16	1.79	0.52	0.52	0.78	0.26	3.87	\$ 400.00	\$ 103.36
20-May-16	1.5	0.5	0.5	1	0.25	3.75	\$ 400.00	\$ 106.67
03-Jun-16	1.65	0.88	0.44	1.1	0.22	4.29	\$ 400.00	\$ 93.24
17-Jun-16	1.98	0.51	0.34	0.51	0.09	3.43	\$ 400.00	\$ 116.62
30-Jun-16	1.08	0.64	0.32	0.99	0.16	3.19	\$ 400.00	\$ 125.39
15-Jul-16	2.43	1.08	0.52	1.31	0.26	5.6	\$ 400.00	\$ 71.43
29-Jul-16	2.07	0.63	0.02	1.04	0.21	3.97	\$ 400.00	\$ 100.76
12-Aug-16	1.98	0.95	0.38	0.96	0.19	4.46	\$ 400.00	\$ 89.69
26-Aug-16	1.81	0.8	0.4	0.8	0.2	4.01	\$ 400.00	\$ 99.75
08-Sep-16	1.64	0.46	0.46	0.92	0.23	3.71	\$ 400.00	\$ 107.82
23-Sep-16	1.68	0.46	0.48	0.72	0.24	3.58	\$ 400.00	\$ 111.73
06-Oct-16	2.08	0.44	0.47	0.7	0.23	3.92	\$ 400.00	\$ 102.04
21-Oct-16	1.74	0.3	0.4	0.4	0.2	3.04	\$ 400.00	\$ 131.58
04-Nov-16	1.67	0.28	0.24	0.72	0.24	3.15	\$ 400.00	\$ 126.98
18-Nov-16	1.61	0.21	0.46	0.46	0.23	2.97	\$ 400.00	\$ 134.68
02-Dec-16	1.76	0.35	0.29	0	0.29	2.69	\$ 400.00	\$ 148.70
16-Dec-16	2.04	0.32	0	0	0	2.36	\$ 400.00	\$ 169.49
30-Dec-16	1.16	0.22	0.58	1.16	0.29	3.41	\$ 400.00	\$ 117.30
13-Jan-17	1.87	0.4	0	0	0	2.27	\$ 400.00	\$ 176.21
27-Jan-17	1.39	0.48	0.63	0.96	0	3.46	\$ 400.00	\$ 115.61
10-Feb-17	1.06	0.42	0	0	0	1.48	\$ 400.00	\$ 270.27
24-Feb-17	1.25	0.42	0	0	0.42	2.09	\$ 400.00	\$ 191.39
10-Mar-17	1.25	0.27	0.52	1.04	0	3.08	\$ 400.00	\$ 129.87
24-Mar-17	1.31	0.38	0	0	0	1.69	\$ 400.00	\$ 236.69
06-Apr-17	1.53	0.25	0.82	0.75	0.54	3.89	\$ 400.00	\$ 102.83
20-Apr-17	1.66	0.46	0	0	0	2.12	\$ 400.00	\$ 188.68
05-May-17	2.04	0.5	0.5	0	0	3.04	\$ 400.00	\$ 131.58
19-May-17	2.36	0.19	0.29	1.16	0.29	4.29	\$ 400.00	\$ 93.24
	57.87	15.85	12.32	21.45	5.79	113.28		