Grazing Lease Rental Rate Model

Last Update: January 2017

CONTENTS

OVERVIEW

The following document introduces the proposed grazing lease rental rate model that has been developed by Alberta Environment and Parks (AEP) in consultation with the Alberta Grazing Leaseholder's Association, Alberta Beef Producers, Western Stock Growers Association and Northern Alberta Grazing Association, and facilitated by MNP_{LLP}. The rental rate model provides the means for calculating lease rents taking into account issues such as market price, transportation, operating and labour costs. The model uses market Alberta feeder cattle prices and grazing lease operating and investment costs to determine lease rental rate. Accurate assessment of all the factors affecting the approximate yearling operation for cattle operators means that a fair, percentage based levy can be applied.

In summary, grazing lease rental rate equals a percentage of the market value for cattle (steers) less additional input costs, less grazing lease operating costs. In the model, grazing lease rental rates are calculated as a portion of the difference between the revenues earned by the leaseholder from cattle operations on the lease and the costs of those operations.

MODEL DEVELOPMENT

It is important to acknowledge first that in this model the rent is calculated as a share of the net income earned by the leaseholder from the use of public grazing lands. This is similar to the last variable rent model used in Alberta and is common for grazing rent formulas in other jurisdictions. Rent is defined within the proposed model as a percentage of the "***Net Income***" from the use of the grazing lease.

The following section describes in detail the three key calculations undertaken by the model and provides an explanation as to "rent" development. Specifically, the issues considered are Net Revenue, Operating Costs and final Rent Calculation.

Net Revenues

The model is built on a notional feeder cattle operation. It is based on the basic assumption that a 650 lb. steer is purchased in auction at the end of April and grazed on the lease for four months before being sold in an auction at the start of September. The sale weight of 845 lb. is based on:

- the starting weight of 650 lbs.
- the average weight gain per AUM[1] reported by leaseholders[2] for animals on the lease, and
- the weight losses that occur during transportation as reported in published research[3].

1. The "***Net revenue***" earned is the difference between:
   - the 650 lb. purchase weight and estimated purchase price for Alberta 600 to 700 lb. steers during the last full week in April, and
   - the sales (post-lease) weight and actual CANFAX 4 reported sales price for Alberta 800 to 900 lb. steers in the first full week of September.
2. The rent is set in March each year based on the prior September's price.
3. The prior September actual price was chosen as the major determinant of rent as it represents value at the end of the grazing season and is the best indicator of the market value of the steers and of the ranchers' capability to pay rent. As rent is set at the start of the grazing season, some thought was given to the use of Chicago cattle futures prices as a means to anticipate an appropriate value for steers in the fall; however, there was concern over the reliability and relevance of the futures market (it prices cattle from a different production stream) and the prior year's actual price was viewed as the best available data.
4. The April price is *estimated* (not actual) based on the 10 year rolling "Olympic"[5] average difference between the actual CANFAX reported sales price for 600 to 700 lb. steers at the end of April and 800 to 900 lb. steers at the end of September.

   April prices for 600 to 700 lb. steers are reliably 9% to 11% higher than the price 800 to 900 lb. steers at the end of September. In this sense the rent model uses the September value of the steer to determine lease rent along with the 10-year average margin typically associated with steers.

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[1] Animal Unit Month is the amount of forage required each month by one mature cow weighing approximately 1,000 pounds, that is either dry (not nursing) or has a calf up to six months old.
[2] Alberta Public Land Grazing Lease 2016 Cost Survey Results. MNP LLP. January 2017. Association leaseholder weight gain results were used to determine weight gains.
[3] Animal Transport Costs Dollars, Pounds. Western Producer (quoting Al Schaefer of Agriculture Canada in Lacombe). June 2003.
[4] CANFAX is a division of the Canadian Cattlemen's Association that "has provided expert analysis of markets and trends in the ever changing North American beef industry for over thirty years".
[5] The Olympic average is calculated by removing the highest and lowest prices from the past 10 years and dividing the total by 8.

The use of longer term averages in the model rent calculation prevents pricing anomalies that could lead to unrealistic and inappropriately high rents. Of specific concern would be a (rare) situation where the calculated margin is unrealistically high due to lower spring prices for 600 to 700 lb. steers. Though the spring auction represents the market assessment of the yearling, most ranchers don't purchase yearlings for this purpose. Their costs are more stable and better represented in the formula by the long term average margin.

Operating Costs

1. Direct costs incurred off the lease include:
    - Transportation costs from the auction to the lease and back are based on the yearling weights, an assumed average load of 55,000 lb., a haul distance of 250 km. and a one-way trip time of 4.0 hours or less. In this situation livestock weight loss is reported[6] to average 1.7% and haul rates are reported[7] as a $250 flat fee plus $3.50/km. travelled.
    - Sales costs of $27.75/yearling[8] deducted from the sales proceeds to cover commissions and inspections fees[9].
    - The cost of the yearling (as determined in 2 above).
2. Direct operating costs incurred on the lease include:
    - The annual costs of managing cattle operations and maintaining the lease and lease assets are set based on leaseholder's reported 2015 average of $42.52/AUM overall ($38.92 for Zone 1 (South), and $47.52 for Zone 2 (North))[10]. Given the effort to replicate the survey, the base year of 2015 will be maintained with annual adjustments using Bank of Canada published Annual CPI for Alberta.
    - Items not included in the survey but added to the costs:
        - Annual veterinarian costs of 1.5% of the purchase value of the yearling[11] (0.5% over four months while on the lease).
        - Mortality while on the lease of 1.5% of the value of the purchase value of the yearlings[12].

Rent Calculation

1. The grazing lease rental rate has a minimum value when beef prices are low enough that the net revenue less direct operating costs (the ***Net Income***) as described in the sections on Net Revenues and Operating Costs above is at or less than zero. The minimum is different in northern Alberta. In Zone 1 (central and southern Alberta – the prior Zones A and B) it is $2.30/AUM and in Zone 2 (northern Alberta – the prior Zone C) it is $1.30/AUM.

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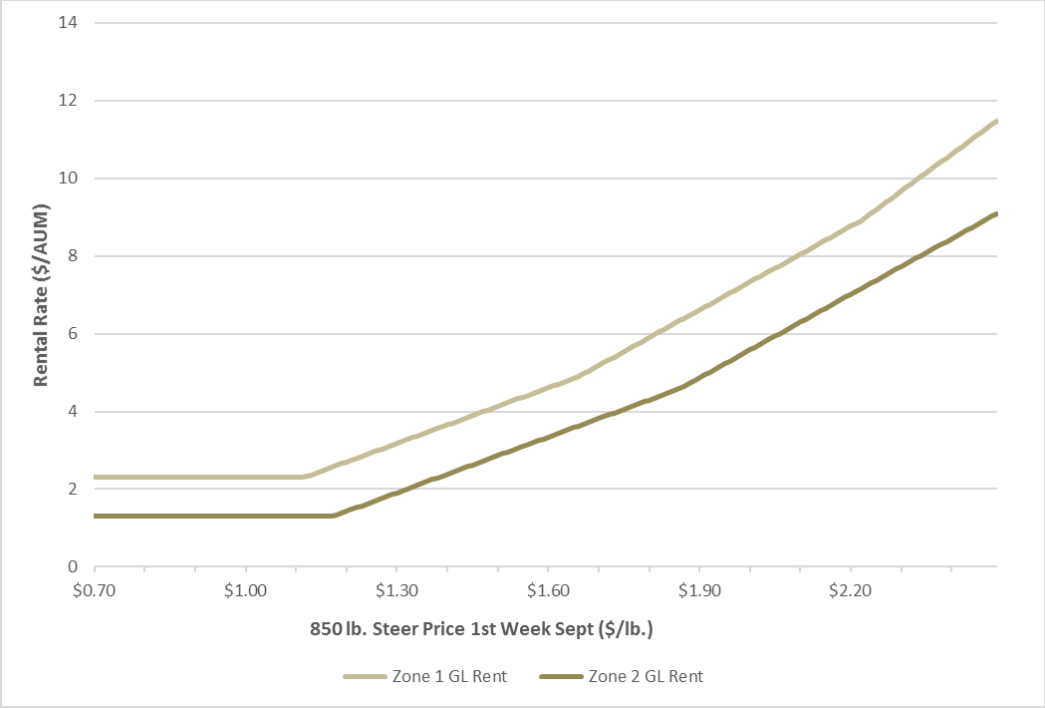
[6] Animal Transport Costs Dollars, Pounds. Western Producer (quoting Al Schaefer of Agriculture Canada – Lacombe). June 2003.
[7] Representative rates as reported to MNP in 2014 by representative cattle trucking firms. These costs could be periodically updated by contacting the trucking industry.
[8] In 2008 dollars this was originally $23/yearling. It has been inflated to a value appropriate for a 2014 rent calculation using CPI.
[9] Representative commissions and fees as reported to MNP in 2016 by a number of major Alberta auction markets. These costs could be periodically updated by contacting representative auction houses.
[10] Alberta Public Land Grazing Lease 2016 Cost Survey Results. MNP LLP. January 2017.
[11] CANFAX Trends West - Assumptions and Calculations. October 2007.
[12] Alberta Rocky Mountain Forest Reserve In-Kind Costs Survey Results (DRAFT). Redstone Management Consulting Ltd. 2009.

2. As beef prices rise and the net revenue begins to exceed the direct operating costs the rent is the minimum ($2.30/AUM or $1.30/AUM) plus a variable "Tier II" rent equal to 10% of the ***Net Income*** (the amount above zero).
3. Once the ***Net Income*** exceeds a defined Return on Investment for the grazing lease (the "***ROI***") the rent is the minimum of $2.30/AUM or $1.30/AUM, plus the Tier II rent (10% of the ***ROI***), plus variable Tier III rent equal to 15% of amount that the ***Net Income*** exceeds the ***ROI***.
4. For the purposes of the grazing lease rent calculation and model ***ROI*** is defined as the product of:
    - A 7.5% weighted average cost of capital based on financing 75% of the total capital investment with equity at 8% and 25% with debt at 6%, all before tax[13].
    - Total capital invested includes the value of the yearling and cost of transportation to the lease. Total capital also includes the average aggregate investment in lease improvements (fence, water, etc.) over the last 20 years as reported by Alberta grazing lease holders, $161.20/AUM in Zone 1 (South) and $246.60/AUM in Zone 2 (North) in 2015 dollars[14]. Again, until updated data is available the base year of 2015 will be maintained with annual adjustments using Bank of Canada published annual CPI.
5. As beef prices increase further:
    - Once the Net Income exceeds twice the ROI rent is the minimum plus the Tier II and Tier III rent (10% and 15% of the ROI respectively) plus Tier IV rent equal to 20% of amount that the Net Income exceeds twice the ROI.
    - Once the Net Income exceeds three times the ROI rent is the minimum plus the Tier II, Tier III and Tier IV rent (10%, 15% and 20% of the ROI respectively) plus Tier V rent equal to 25% of amount that the Net Income exceeds triple the ROI.
    - Once the Net Income exceeds four times the ROI; rent is the minimum plus the Tier II, Tier III, Tier IV and Tier V rent (10%, 15%, 20% and 25% of the ROI respectively) plus Tier VI rent equal to 30% of amount that the Net Income exceeds quadruple the ROI.
    - Once the Net Income exceeds five times the ROI rent is the minimum plus the Tier II, Tier III, Tier IV, Tier V and Tier VI rent (10%, 15%, 20%, 25% and 30% of the ROI respectively) plus Tier VII rent equal to 35% of amount that the Net Income exceeds five times the ROI.
    - Once the Net Income exceeds six times the ROI rent is the minimum plus the Tier II, Tier III, Tier IV, Tier V, Tier VI and Tier VII rent (10%, 15%, 20%, 25%, 30% and 35% of the ROI respectively) plus Tier VIII rent equal to 40% of amount that the Net Income exceeds six times the ROI.
    - Once the Net Income exceeds seven times the ROI rent is the minimum plus the Tier II, Tier III, Tier IV, Tier V, Tier VI, Tier VII and Tier VIII rent (10%, 15%, 20%, 25%, 30%, 35% and 40% of the ROI respectively) plus Tier IX rent equal to 45% of amount that the Net Income exceeds seven times the ROI.
    - Once the Net Income exceeds eight times the ROI rent is the minimum plus the Tier II, Tier III, Tier IV, Tier V, Tier VI, Tier VII, Tier VIII and Tier IX rent (10%, 15%, 20%, 25%, 30%, 35%, 40% and 45% of the ROI respectively) plus Tier X rent equal to 50% of amount that the Net Income exceeds eight times the ROI.

[13] Varied economic sources were consulted including research published from Colorado State University, Iowa State University, University of Main, US Department of Agriculture, and the National Bank of New Zealand.
[14] Alberta Public Land Grazing Lease 2016 Cost Survey Results. MNP LLP. January 2017.

The variation in rents based on the proposed grazing lease rental rate model is depicted in the following Exhibit.

Exhibit 1 – 2015 Net Grazing Lease Rents and Range Sustainability Fund Payments



MODEL DETAILS AND STEPS TO UPDATE

The purpose of this section is to provide a full explanation as to how the model can be updated. In general, the Excel workbook used to model proposed grazing lease rental rates (GrazingFormulaModel_03Jan2017) requires annual updates that include entry of:

- The year prior to the year that the rents apply to; for example enter 2015 to calculate 2016 rents (based on 2015 price and cost data).
- Beef prices ($/lb.) for the prior year (in this example for 2015), specifically prices for: (i) 600 lb. to 700 lb. steers in Alberta as reported by CANFAX for the last full week in April, and (ii) 800 lb. to 900 lb. steers in Alberta as reported by CANFAX for the first full week in September.
- The average Consumer Price Index for the prior year (in this example also for 2015) as reported by the Bank of Canada at: http://www.bank-banque-canada.ca/en/cpi.html

The Model is organized into six different areas on six spreadsheets or tabs in the workbook. These are Tab 1 – “Zone 1 Rent Model” and Tab 2 – “Zone 2 Rent Model” plus three other tabs: Tab 3 (“Summary”) that provides a summary of the first two tabs; Tab 4 (“CPI”) that provides an area for updating the Alberta CPI; Tab 5 (“Itemized Operating Costs”) that show the adjustments made to use Association costs as a proxy for Individual costs in six cost categories (interest expense, utilities, fuel, insurance, supplemental feed and building/lease costs) and, Tab 6 (“Other References”) that provides a list of references and the associated links to documents of web sites.

The updates that are required should be done on Tab 1 as indicated on the spreadsheet. Tab 2 will automatically update.

There are six areas of focus in Tabs 1 and 2 that include the part of the model used to:

1. Update beef prices, the year that the rent is being applied and the CPI (pages 7-10 and 20 following – sections 2 on Tab 1 and 4 of the model). The model calculates the grazing lease rent for the year indicated in section 1.
2. Calculate Net Revenue – in addition to the calculation of Net Revenue this includes the development of weight and input beef price assumptions (page 11 following – section 3 of the model).
3. Calculate Operating Costs – including details on transportation costs, lease operating costs and the development of veterinarian and mortality costs (page 12 following – section 4 of the model).
4. Provide a summary of the revenues and costs including the estimate of Net Income (page 13 following – section 5 of the model).
5. Develop the basis for the Weighted Average Cost of Capital and the total Return on Capital Employed (page 13 following – section 6 of the model).
6. Input the basis for determining the grazing lease rent (the Crown's share of the Net Income) (pages 14 through 19 following – sections 6 and 7 of the model).

The following provide visual examples and details of the Excel worksheets:

1. Results of the Grazing Lease Rent Calculation (Model Output) - ZONE 1

(a) Calculation of Rent

Values in dollars per AUM	850 lb. Steer Sales Price in the First Week of September	Total Rent	Range Sustainability Fund
Zone 1	**$2.45**	**$ 10.91**	**$ -**

2. Update beef prices,the year and the CPI

(a) Year **2016**

1 **Enter the Year the Year To Which the Rent Applies**

2 **Enter the prices in April/Sept for the prior year in bottom table (top table calculates 2 year rolling average)**

3 **Enter the average annual CPI on Tab 4**

(b) Historic Price Relationships (From Canfax)

10 year (data from Canfax)		Notes/Source
Price per lb. at the:	Rolling Average	
End of April Price - 650 lb	1.33	10 Year rolling average September price from historic data (Row 26)
Start of Sept Price - 850 lb	1.25	10 Year rolling average April price from historic data (Row 27)
Apr Price as a % of Sept Price	106%	April rolling average (Cell C19) divided by September rolling average (Cell C20)

This table calculates the 2 year rolling average

	Year															
Canfax Steer Price	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
End of April Price - 650 lb		$ 0.83	$ 0.85	$ 0.95	$ 1.04	$ 1.00	$ 0.99	$ 1.06	$ 1.06	$ 1.09	$ 1.25	$ 1.21	$ 0.90	$ 0.89	$ 1.10
Start of Sept Price - 850 lb		$ 0.76	$ 0.81	$ 0.94	$ 0.98	$ 0.93	$ 0.92	$ 0.95	$ 0.97	$ 1.05	$ 1.12	$ 0.98	$ 0.86	$ 0.95	$ 1.02
10 Year April Rolling Average											$ 1.00	$ 1.05	$ 1.05	$ 1.04	$ 1.05
10 Year September Rolling Average											$ 0.94	$ 0.96	$ 0.96	$ 0.97	$ 0.97
											7%	9%	9%	8%	8%

This table has the entry of the appropriate Canfax price for the year indicated

	Year														
Canfax Steer Price	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
End of April Price - 650 lb	$ 0.82	$ 0.85	$ 0.86	$ 1.04	$ 1.04	$ 0.97	$ 1.02	$ 1.10	$ 1.01	$ 1.17	$ 1.33	$ 1.08	$ 0.71	$ 1.06	$ 1.14
Start of Sept Price - 850 lb	$ 0.76	$ 0.76	$ 0.86	$ 1.01	$ 0.94	$ 0.91	$ 0.93	$ 0.98	$ 0.96	$ 1.15	$ 1.09	$ 0.87	$ 0.86	$ 1.05	$ 0.99
10 Year April Rolling Average										$ 0.98	$ 1.02	$ 1.05	$ 1.05	$ 1.06	$ 1.07
10 Year September Rolling Average										$ 0.92	$ 0.96	$ 0.96	$ 0.96	$ 0.96	$ 0.97
										7%	7%	10%	10%	9%	10%

In the version of the model, assumptions through 2021 were provided by the working group

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
$ 1.16	$ 1.29	$ 1.45	$ 1.37	$ 1.28	$ 1.21	$ 1.09	$ 1.15	$ 1.21	$ 1.09	$ 1.10	$ 1.16	$ 1.27	$ 1.51	$ 1.51	$ 1.76	$ 2.58	$ 2.58	$ 2.11	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
$ 1.05	$ 1.19	$ 1.35	$ 1.27	$ 1.07	$ 0.93	$ 0.99	$ 1.15	$ 1.11	$ 1.04	$ 0.99	$ 1.03	$ 1.18	$ 1.32	$ 1.40	$ 1.82	$ 2.45	$ 2.24	$ 1.78	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
$ 1.07	$ 1.10	$ 1.13	$ 1.17	$ 1.19	$ 1.19	$ 1.17	$ 1.21	$ 1.22	$ 1.22	$ 1.21	$ 1.20	$ 1.18	$ 1.18	$ 1.21	$ 1.25	$ 1.33	$ 1.51	$ 1.62	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
$ 0.99	$ 1.01	$ 1.04	$ 1.08	$ 1.08	$ 1.06	$ 1.06	$ 1.09	$ 1.11	$ 1.11	$ 1.10	$ 1.08	$ 1.07	$ 1.07	$ 1.10	$ 1.15	$ 1.25	$ 1.39	$ 1.47	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
8%	9%	9%	8%	10%	13%	11%	11%	10%	10%	10%	11%	10%	10%	10%	8%	6%	9%	10%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
								9%														

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
$ 1.17	$ 1.41	$ 1.49	$ 1.26	$ 1.30	$ 1.12	$ 1.06	$ 1.23	$ 1.19	$ 1.00	$ 1.19	$ 1.13	$ 1.40	$ 1.61	$ 1.41	$ 2.11	$ 3.05	$ 2.11					
$ 1.11	$ 1.28	$ 1.42	$ 1.11	$ 1.02	$ 0.84	$ 1.15	$ 1.15	$ 1.07	$ 1.01	$ 0.97	$ 1.09	$ 1.27	$ 1.36	$ 1.44	$ 2.19	$ 2.70	$ 1.78					
$ 1.09	$ 1.13	$ 1.17	$ 1.20	$ 1.22	$ 1.19	$ 1.19	$ 1.21	$ 1.23	$ 1.22	$ 1.22	$ 1.18	$ 1.18	$ 1.20	$ 1.22	$ 1.28	$ 1.41	$ 1.52					
$ 1.00	$ 1.02	$ 1.06	$ 1.08	$ 1.06	$ 1.04	$ 1.07	$ 1.11	$ 1.11	$ 1.11	$ 1.10	$ 1.07	$ 1.07	$ 1.09	$ 1.13	$ 1.19	$ 1.32	$ 1.40					
10%	11%	10%	11%	14%	15%	11%	9%	11%	9%	11%	10%	10%	10%	7%	7%	7%	8%					

1. Results of the Grazing Lease Rent Calculation (Model Output) - ZONE 2

(a) Calculation of Rent

Values in dollars per AUM	850 lb. Steer Sales Price in the First Week of September	Total Rent	Range Sustainability Fund
Zone 2	**$2.45**	**$ 8.66**	**$ -**

2. Update beef prices,the year and the CPI

(a) Year **2016**

Input entered on Zone 1 Tab (Year, Prices, CPI) are linked to this tab. No action is required.

(b) Historic Price Relationships (From Canfax)

10 year (data from Canfax)

Price per lb. at the:	Rolling Average	Notes/Source
End of April Price - 650 lb	1.33	10 Year rolling average September price from historic data row 26)
Start of Sept Price - 850 lb	1.25	10 Year rolling average April price from historic data (Row 27)
Apr Price as a % of Sept Price	106%	April rolling average (Cell C19) divided by September rolling average (Cell C20)

This table calculates the 2 year rolling average

Year																
Canfax Steer Price	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
End of April Price - 650 lb		$ 0.83	$ 0.85	$ 0.95	$ 1.04	$ 1.00	$ 0.99	$ 1.06	$ 1.06	$ 1.09	$ 1.25	$ 1.21	$ 0.90	$ 0.89	$ 1.10
Start of Sept Price - 850 lb		$ 0.76	$ 0.81	$ 0.94	$ 0.98	$ 0.93	$ 0.92	$ 0.95	$ 0.97	$ 1.05	$ 1.12	$ 0.98	$ 0.86	$ 0.95	$ 1.02
10 Year April Rolling Average											$ 1.00	$ 1.05	$ 1.05	$ 1.04	$ 1.05
10 Year September Rolling Average											$ 0.94	$ 0.96	$ 0.96	$ 0.97	$ 0.97
											7%	9%	9%	8%	8%

This table has the entry of the appropriate Canfax price for the year indicated

Year																
Canfax Steer Price	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
End of April Price - 650 lb	$ 0.82	$ 0.85	$ 0.86	$ 1.04	$ 1.04	$ 0.97	$ 1.02	$ 1.10	$ 1.01	$ 1.17	$ 1.33	$ 1.08	$ 0.71	$ 1.06	$ 1.14
Start of Sept Price - 850 lb	$ 0.76	$ 0.76	$ 0.86	$ 1.01	$ 0.94	$ 0.91	$ 0.93	$ 0.98	$ 0.96	$ 1.15	$ 1.09	$ 0.87	$ 0.86	$ 1.05	$ 0.99
10 Year April Rolling Average										$ 0.98	$ 1.02	$ 1.05	$ 1.05	$ 1.06	$ 1.07
10 Year September Rolling Average										$ 0.92	$ 0.96	$ 0.96	$ 0.96	$ 0.96	$ 0.97
										7%	7%	10%	10%	9%	10%

In the version of the model, assumptions through 2021 were provided by the working group

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
$ 1.16	$ 1.29	$ 1.45	$ 1.37	$ 1.28	$ 1.21	$ 1.09	$ 1.15	$ 1.21	$ 1.09	$ 1.10	$ 1.16	$ 1.27	$ 1.51	$ 1.51	$ 1.76	$ 2.58	$ 2.58	$ 1.05	$ -	$ -	$ -	$ -
$ 1.05	$ 1.19	$ 1.35	$ 1.27	$ 1.07	$ 0.93	$ 0.99	$ 1.15	$ 1.11	$ 1.04	$ 0.99	$ 1.03	$ 1.18	$ 1.32	$ 1.40	$ 1.82	$ 2.45	$ 2.24	$ 0.89	$ -	$ -	$ -	$ -
$ 1.07	$ 1.10	$ 1.13	$ 1.17	$ 1.19	$ 1.19	$ 1.17	$ 1.21	$ 1.22	$ 1.22	$ 1.21	$ 1.20	$ 1.18	$ 1.18	$ 1.21	$ 1.25	$ 1.33	$ 1.51	$ 1.50	$ 1.49	$ 1.35	$ 1.21	$ 1.05
$ 0.99	$ 1.01	$ 1.04	$ 1.08	$ 1.08	$ 1.06	$ 1.06	$ 1.09	$ 1.11	$ 1.11	$ 1.10	$ 1.08	$ 1.07	$ 1.07	$ 1.10	$ 1.15	$ 1.25	$ 1.39	$ 1.38	$ 1.36	$ 1.23	$ 1.10	$ 0.96
8%	9%	9%	8%	10%	13%	11%	11%	10%	10%	10%	11%	10%	10%	10%	8%	6%	9%	9%	10%	10%	9%	10%
					10%																	

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
$ 1.17	$ 1.41	$ 1.49	$ 1.26	$ 1.30	$ 1.12	$ 1.06	$ 1.23	$ 1.19	$ 1.00	$ 1.19	$ 1.13	$ 1.40	$ 1.61	$ 1.41	$ 2.11	$ 3.05	$ 2.11	$ -	$ -	$ -	$ -	$ -
$ 1.11	$ 1.28	$ 1.42	$ 1.11	$ 1.02	$ 0.84	$ 1.15	$ 1.15	$ 1.07	$ 1.01	$ 0.97	$ 1.09	$ 1.27	$ 1.36	$ 1.44	$ 2.19	$ 2.70	$ 1.78	$ -	$ -	$ -	$ -	$ -
$ 1.09	$ 1.13	$ 1.17	$ 1.20	$ 1.22	$ 1.19	$ 1.19	$ 1.21	$ 1.23	$ 1.22	$ 1.22	$ 1.18	$ 1.18	$ 1.20	$ 1.22	$ 1.28	$ 1.41	$ 1.52	$ 1.50	$ 1.37	$ 1.22	$ 1.08	$ 0.90
$ 1.00	$ 1.02	$ 1.06	$ 1.08	$ 1.06	$ 1.04	$ 1.07	$ 1.11	$ 1.11	$ 1.11	$ 1.10	$ 1.07	$ 1.07	$ 1.09	$ 1.13	$ 1.19	$ 1.32	$ 1.40	$ 1.39	$ 1.26	$ 1.14	$ 1.00	$ 0.85
10%	11%	10%	11%	14%	15%	11%	9%	11%	9%	11%	10%	10%	10%	7%	7%	7%	8%	8%	9%	7%	8%	7%

3. Net Revenue Calculation

(a) Weight/Conversion Assumptions:			Notes/Source
(1) April Yearling weight	650	Pounds	Assumption - mid-point of 600 - 700 lb. category Alberta Average
(2) Net weight gain on the lease	208	Pounds	From Leaseholder Survey (taken as after transportation loss)
(3) Yearling to AUs	0.743	AU/Yearling (Average)	Calculated - the average weight [(Cell C47 + Cell C51)/2] divided by 1000 lb. per Animal Uni
(4) Purchase weight	650	Pounds	From C41
Transportation weight loss	(11)	Pounds	Purchase Wt. (Cell C45) x % Wt. Loss (Cell C66)
Weight on Arrival	639	Pounds	Calculated - Cell C45 + Cell C46
Gross Weight Gain	222	Pounds	Calculated - Yearling weight on departure (Cell C49) - Weight on arrival (Cell C47)
(5) Weight on departure	861	Pounds (Net wt. gain plus wt loss)	Calculated - [Weight on arrival (C47) + Net weight gain (C42)] grossed up for the weight
Transportation weight loss	14	Pounds	Calculated - Cell C49 - Cell C51
Weight on sale	847	Pounds	Calculated - Weight on Departure (Cell C49) x % Wt. Loss (Cell C66)

(b) Input Price Assumption (Sale Price End of September):			Notes/Source
End of April Price - 650 lb	$ 2.43	/Pound	10 year rolling average price as % of the Sept price (Cell C19)
Start of Sept Price - 850 lb	**$ 2.24**	/Pound	The 2 Year Rolling Average Price for the First Week in September of the Prior Two Years is Pulled from Row 25

(c) Revenue Calculation			Notes/Source
Purchase Price	$ 1,580.13	/Yearling	
Sale Price	$ 1,894.28	/Yearling	Calculated based on weight and prices (C54-April and C55-Sept)
Revenue gain	$ 314.16	/Yearling	

4.Operating Cost Calculation

(a) Transportation Cost Calculation					Notes/Source
One way trip time	4.0	hours or less			Western Producer Article - see References
Transportation weight loss	1.7%				
Load	55,000	Pounds			Assumption - From Government/Industry Committee
Rate	$ 3.50	/km			2016 Survey of several transport companies
Initial fee	$ 250	/Trip			
Distance	250	km. one way			Assumption - From Government/Industry Committee
Total	$ 1,125	/Trip			Calculated - Initial fee (C69) + km. travelled one way (C70) x rate (C68)
# of Yearlings in April	85	/Trip			Calculated - Load wt. (C67)/purchase wt. (C45)
# of Yearlings in September	64	/Trip			Calculated - Load wt. (C67)/wt. on departure (C49)
Cost in April	13.24	/Yearling			Calculated - total transportation cost per trip (C71)/# of yearlings (C72)
Cost in September	17.58	/Yearling			Calculated - total transportation cost per trip (C71)/# of yearlings (C73)

(b) Operating Costs					Notes/Source
(b) All in Cost From Survey:					
			$ 31.69	/AUM (2015 Survey)	From Leaseholder Survey, see Tab 5 Itemized Operating Costs
			1.013	Inflation adjust	Inflation adjustment (Cell C114 does a look up from Tab 4 Alberta CPI and makes the survey year of 2015 the Base Year)
Operating Costs	$ 95.42	/Yearling	$ 32.12	/AUM (2015)	Calculated - Cell C79 x Cell C80

(c) Other Cost Assumptions					Notes/Source
Vet Costs	$ 7.90	/Yearling	1.50%		From CanFax (Annual Cost) see references
Mortality	$ 23.70	/Yearling	1.50%		From 2006 Forest Reserve Survey
Sales Costs	$ 28.12	/Yearling			From telephone survey of 3 large Alberta auction markets: Per head: $21 commission, $3 AB Beef Producer fee, $1.25 Branch Inspection fee, $2.50 Average Feed cost for 1 day
Other	$ -	/Yearling			Not Used
Total	$ 59.73				Calculated - Sum of Cells C85 through C88

5.Summary of Net Revenue and Operating Costs

(a) Cost Summary	/Yearling	/AUM	/lb sold	Notes/Source
				Note - In this table, values in $/Yearling are converted into $/AUM using the conversion in Section 3(a) (Cell 43)
4 month revenue gain (See 4)	$ 380.17	$ 128.06	$ 0.45	Calculated - Cell C95 is the value from Cell C60 (Section 3(c) above)
Less Transportation cost (See 6)	30.81	10.38	$ 0.04	Calculated - Cell C96 is the sum of the transportation costs in Cell C74 and C75 (Section 4(a) above)
Less Operating cost (See 7)	94.07	31.69	$ 0.11	Calculated - Cell C97 is the operating cost from Cell C81 (Section 4(b) above)
Less Other Costs (See 8)	61.50	20.72	$ 0.07	Calculated - Cell C98 is the sum of the other costs from Cell C89 (Section 4(c) above)
Variable Income	$ 193.79	$ 65.28	$ 0.23	Calculated - The sum of Cells C95 through C98
Less ROCE (See 6)	(78.40)	(26.41)	$ (0.09)	Calculated - Cell C100 is Total ROCE from Cell C127 (Section 6)
Income after allowance for ROCE	$ 115.39	$ 38.87	$ 0.14	Calculated - The sum of Cells C199 and C100

6.Return on Investment

(a) Return on Investment					Notes/Source
Debt:Equity	25:	75			
	Rate	Portion			
Before Tax Cost of Debt	6.0%	25%			From Various Research Reports - See Other References on Tab 6
Before Tax Cost of Equity	8.0%	75%			
Before Tax WACC	7.5%				Calculated - the weighted average cost of capital from Cells C108, C109, D108 and D109
Capital employed:	8.06	/Year/AUM			Average annual capital investment in 1995 dollars (from the survey)
	1.000				Inflation Adjustment (Cell C114 Does a Look Up from Tab 4 Alberta CPI and makes the Survey Year of 2015 the Base Year)
	8.06	/Year/AUM in Current Dollars			Average annual capital investment in current dollars
	20	Years			Number of years considered in the survey
	161.20	/AUM			Calculated - Cell C115 x Cell C116 (this is the average 20 year total investment in lease improvements)
Lease improvements			$ 161.20	/AUM	From Cell C117
ROCE in Dollars(1)	$ 35.89	/Yearling	12.09	/AUM	Calculated - WACC (Cell C111) x Total Capital Employed (Cell E120) converted into cost per yearling using the conversion calculated in Section 3(a) (Cell C43)
Yearling Purchase Price	1,687.26				Purchase Price of the Yearling (Cell C58)
Cost of Transportation to the Lease in April	13.24				Transportation cost per Yearling shipped to the lease (Cell C74)
Total Investment in the Yearling	1,700.49				Total investment in the yearling on arrival at the lease (Cell C123 + Cell C124)
ROCE in Dollars (2)	$ 42.51	/Yearling			Calculated - WACC (Cell C111) x Total Investment in the Yearling (Cell C125)
Total ROCE (1+2)	$ 78.40	/Yearling			Calculated - Cell C121 + Cell C126

7.Rent Assumptions and Calculation

Rent Assumptions				Notes/Source
			RSF %	
Zone 1 Minimum Rent	Tier 1	$ 2.30	0%	
Percentage Used to Calculate the	Tier 2	10%	0%	
Variable Rent	Tier 3	15%	0%	Committee Assumptions - This is similar to Alberta ESRD's Green Coniferous Timber
	Tier 4	20%	0%	Royalty structure
	Tier 5	25%	0%	
	Tier 6	30%	0%	
	Tier 7	35%	0%	
	Tier 8	40%	0%	
	Tier 9	45%	0%	
	Tier 10	50%	0%	

7.Rent Assumptions and Calculation

Rent Assumptions				Notes/Source
			RSF %	
Zone 2 Minimum Rent	Tier 1	$ 1.30	0%	
Percentage Used to Calculate the	Tier 2	10%	0%	
Variable Rent	Tier 3	15%	0%	Committee Assumptions - This is similar to Alberta ESRD's Green Coniferous Timber
	Tier 4	20%	0%	Royalty structure
	Tier 5	25%	0%	
	Tier 6	30%	0%	
	Tier 7	35%	0%	
	Tier 8	40%	0%	
	Tier 9	45%	0%	
	Tier 10	50%	0%	

8. Rent Calculation Table - As Discussed with the Committee

850 lb. Steer Sales Price in the First Week of September	Net Income/ AUM Before ROCE	Income/ AUM after ROCE	Minimum Rent	New Net Income/ AUM Before ROCE	New Net Income after ROCE	Incremental Income	Variable Part of the Rent %	Zone 1 Total Rent	RSF %	RSF assuming funds are collected at all rent levels: Incremental RSF	RSF assuming funds are collected at all rent levels: Cumulative RSF
	$ 65.28	$ 38.87						$ 2.30			
$ 0.70	$ (18.02)	$ (34.28)	$ 2.30	$ (20.32)	$ (36.58)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.71	$ (17.54)	$ (33.87)	$ 2.30	$ (19.84)	$ (36.17)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.72	$ (17.06)	$ (33.45)	$ 2.30	$ (19.36)	$ (35.75)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.73	$ (16.58)	$ (33.03)	$ 2.30	$ (18.88)	$ (35.33)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.74	$ (16.11)	$ (32.61)	$ 2.30	$ (18.41)	$ (34.91)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.75	$ (15.63)	$ (32.19)	$ 2.30	$ (17.93)	$ (34.49)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.76	$ (15.15)	$ (31.77)	$ 2.30	$ (17.45)	$ (34.07)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.77	$ (14.68)	$ (31.35)	$ 2.30	$ (16.98)	$ (33.65)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.78	$ (14.20)	$ (30.93)	$ 2.30	$ (16.50)	$ (33.23)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.79	$ (13.72)	$ (30.51)	$ 2.30	$ (16.02)	$ (32.81)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.80	$ (13.24)	$ (30.09)	$ 2.30	$ (15.54)	$ (32.39)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.81	$ (12.77)	$ (29.68)	$ 2.30	$ (15.07)	$ (31.98)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.82	$ (12.29)	$ (29.26)	$ 2.30	$ (14.59)	$ (31.56)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.83	$ (11.81)	$ (28.84)	$ 2.30	$ (14.11)	$ (31.14)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.84	$ (11.34)	$ (28.42)	$ 2.30	$ (13.64)	$ (30.72)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.85	$ (10.86)	$ (28.00)	$ 2.30	$ (13.16)	$ (30.30)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.86	$ (10.38)	$ (27.58)	$ 2.30	$ (12.68)	$ (29.88)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.87	$ (9.90)	$ (27.16)	$ 2.30	$ (12.20)	$ (29.46)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.88	$ (9.43)	$ (26.74)	$ 2.30	$ (11.73)	$ (29.04)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.89	$ (8.95)	$ (26.32)	$ 2.30	$ (11.25)	$ (28.62)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.90	$ (8.47)	$ (25.90)	$ 2.30	$ (10.77)	$ (28.20)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.91	$ (8.00)	$ (25.48)	$ 2.30	$ (10.30)	$ (27.78)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.92	$ (7.52)	$ (25.07)	$ 2.30	$ (9.82)	$ (27.37)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.93	$ (7.04)	$ (24.65)	$ 2.30	$ (9.34)	$ (26.95)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.94	$ (6.56)	$ (24.23)	$ 2.30	$ (8.86)	$ (26.53)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.95	$ (6.09)	$ (23.81)	$ 2.30	$ (8.39)	$ (26.11)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.96	$ (5.61)	$ (23.39)	$ 2.30	$ (7.91)	$ (25.69)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.97	$ (5.13)	$ (22.97)	$ 2.30	$ (7.43)	$ (25.27)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.98	$ (4.66)	$ (22.55)	$ 2.30	$ (6.96)	$ (24.85)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 0.99	$ (4.18)	$ (22.13)	$ 2.30	$ (6.48)	$ (24.43)	$ -	0%	$ 2.30	0%	$ -	$ -
$ 1.00	$ (3.70)	$ (21.71)	$ 2.30	$ (6.00)	$ (24.01)	$ -	0%	$ 2.30	0%	$ -	$ -

$	1.01	$ (3.22)	$ (21.29)	$ 2.30	$ (5.52)	$ (23.59)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.02	$ (2.75)	$ (20.87)	$ 2.30	$ (5.05)	$ (23.17)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.03	$ (2.27)	$ (20.46)	$ 2.30	$ (4.57)	$ (22.76)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.04	$ (1.79)	$ (20.04)	$ 2.30	$ (4.09)	$ (22.34)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.05	$ (1.32)	$ (19.62)	$ 2.30	$ (3.62)	$ (21.92)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.06	$ (0.84)	$ (19.20)	$ 2.30	$ (3.14)	$ (21.50)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.07	$ (0.36)	$ (18.78)	$ 2.30	$ (2.66)	$ (21.08)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.08	$ 0.12	$ (18.36)	$ 2.30	$ (2.18)	$ (20.66)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.09	$ 0.59	$ (17.94)	$ 2.30	$ (1.71)	$ (20.24)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.10	$ 1.07	$ (17.52)	$ 2.30	$ (1.23)	$ (19.82)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.11	$ 1.55	$ (17.10)	$ 2.30	$ (0.75)	$ (19.40)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.12	$ 2.02	$ (16.68)	$ 2.30	$ (0.28)	$ (18.98)	$ -	0%	$ 2.30	0%	$ -	$ -
$	1.13	$ 2.50	$ (16.27)	$ 2.30	$ 0.20	$ (18.57)	$ 0.20	10%	$ 2.32	0%	$ -	$ -
$	1.14	$ 2.98	$ (15.85)	$ 2.30	$ 0.68	$ (18.15)	$ 0.48	10%	$ 2.37	0%	$ -	$ -
$	1.15	$ 3.46	$ (15.43)	$ 2.30	$ 1.16	$ (17.73)	$ 0.48	10%	$ 2.42	0%	$ -	$ -
$	1.16	$ 3.93	$ (15.01)	$ 2.30	$ 1.63	$ (17.31)	$ 0.48	10%	$ 2.46	0%	$ -	$ -
$	1.17	$ 4.41	$ (14.59)	$ 2.30	$ 2.11	$ (16.89)	$ 0.48	10%	$ 2.51	0%	$ -	$ -
$	1.18	$ 4.89	$ (14.17)	$ 2.30	$ 2.59	$ (16.47)	$ 0.48	10%	$ 2.56	0%	$ -	$ -
$	1.19	$ 5.36	$ (13.75)	$ 2.30	$ 3.06	$ (16.05)	$ 0.48	10%	$ 2.61	0%	$ -	$ -
$	1.20	$ 5.84	$ (13.33)	$ 2.30	$ 3.54	$ (15.63)	$ 0.48	10%	$ 2.65	0%	$ -	$ -
$	1.21	$ 6.32	$ (12.91)	$ 2.30	$ 4.02	$ (15.21)	$ 0.48	10%	$ 2.70	0%	$ -	$ -
$	1.22	$ 6.80	$ (12.49)	$ 2.30	$ 4.50	$ (14.79)	$ 0.48	10%	$ 2.75	0%	$ -	$ -
$	1.23	$ 7.27	$ (12.07)	$ 2.30	$ 4.97	$ (14.37)	$ 0.48	10%	$ 2.80	0%	$ -	$ -
$	1.24	$ 7.75	$ (11.66)	$ 2.30	$ 5.45	$ (13.96)	$ 0.48	10%	$ 2.85	0%	$ -	$ -
$	1.25	$ 8.23	$ (11.24)	$ 2.30	$ 5.93	$ (13.54)	$ 0.48	10%	$ 2.89	0%	$ -	$ -
$	1.26	$ 8.70	$ (10.82)	$ 2.30	$ 6.40	$ (13.12)	$ 0.48	10%	$ 2.94	0%	$ -	$ -
$	1.27	$ 9.18	$ (10.40)	$ 2.30	$ 6.88	$ (12.70)	$ 0.48	10%	$ 2.99	0%	$ -	$ -
$	1.28	$ 9.66	$ (9.98)	$ 2.30	$ 7.36	$ (12.28)	$ 0.48	10%	$ 3.04	0%	$ -	$ -
$	1.29	$ 10.14	$ (9.56)	$ 2.30	$ 7.84	$ (11.86)	$ 0.48	10%	$ 3.08	0%	$ -	$ -
$	1.30	$ 10.61	$ (9.14)	$ 2.30	$ 8.31	$ (11.44)	$ 0.48	10%	$ 3.13	0%	$ -	$ -
$	1.31	$ 11.09	$ (8.72)	$ 2.30	$ 8.79	$ (11.02)	$ 0.48	10%	$ 3.18	0%	$ -	$ -
$	1.32	$ 11.57	$ (8.30)	$ 2.30	$ 9.27	$ (10.60)	$ 0.48	10%	$ 3.23	0%	$ -	$ -
$	1.33	$ 12.04	$ (7.88)	$ 2.30	$ 9.74	$ (10.18)	$ 0.48	10%	$ 3.27	0%	$ -	$ -
$	1.34	$ 12.52	$ (7.46)	$ 2.30	$ 10.22	$ (9.76)	$ 0.48	10%	$ 3.32	0%	$ -	$ -
$	1.35	$ 13.00	$ (7.05)	$ 2.30	$ 10.70	$ (9.35)	$ 0.48	10%	$ 3.37	0%	$ -	$ -
$	1.36	$ 13.48	$ (6.63)	$ 2.30	$ 11.18	$ (8.93)	$ 0.48	10%	$ 3.42	0%	$ -	$ -
$	1.37	$ 13.95	$ (6.21)	$ 2.30	$ 11.65	$ (8.51)	$ 0.48	10%	$ 3.47	0%	$ -	$ -
$	1.38	$ 14.43	$ (5.79)	$ 2.30	$ 12.13	$ (8.09)	$ 0.48	10%	$ 3.51	0%	$ -	$ -
$	1.39	$ 14.91	$ (5.37)	$ 2.30	$ 12.61	$ (7.67)	$ 0.48	10%	$ 3.56	0%	$ -	$ -
$	1.40	$ 15.39	$ (4.95)	$ 2.30	$ 13.09	$ (7.25)	$ 0.48	10%	$ 3.61	0%	$ -	$ -

$	1.41	$ 15.86	$ (4.53)	$ 2.30	$ 13.56	$ (6.83)	$ 0.48	10%	$ 3.66	0%	$ -	$ -
$	1.42	$ 16.34	$ (4.11)	$ 2.30	$ 14.04	$ (6.41)	$ 0.48	10%	$ 3.70	0%	$ -	$ -
$	1.43	$ 16.82	$ (3.69)	$ 2.30	$ 14.52	$ (5.99)	$ 0.48	10%	$ 3.75	0%	$ -	$ -
$	1.44	$ 17.29	$ (3.27)	$ 2.30	$ 14.99	$ (5.57)	$ 0.48	10%	$ 3.80	0%	$ -	$ -
$	1.45	$ 17.77	$ (2.85)	$ 2.30	$ 15.47	$ (5.15)	$ 0.48	10%	$ 3.85	0%	$ -	$ -
$	1.46	$ 18.25	$ (2.44)	$ 2.30	$ 15.95	$ (4.74)	$ 0.48	10%	$ 3.89	0%	$ -	$ -
$	1.47	$ 18.73	$ (2.02)	$ 2.30	$ 16.43	$ (4.32)	$ 0.48	10%	$ 3.94	0%	$ -	$ -
$	1.48	$ 19.20	$ (1.60)	$ 2.30	$ 16.90	$ (3.90)	$ 0.48	10%	$ 3.99	0%	$ -	$ -
$	1.49	$ 19.68	$ (1.18)	$ 2.30	$ 17.38	$ (3.48)	$ 0.48	10%	$ 4.04	0%	$ -	$ -
$	1.50	$ 20.16	$ (0.76)	$ 2.30	$ 17.86	$ (3.06)	$ 0.48	10%	$ 4.09	0%	$ -	$ -
$	1.51	$ 20.63	$ (0.34)	$ 2.30	$ 18.33	$ (2.64)	$ 0.48	10%	$ 4.13	0%	$ -	$ -
$	1.52	$ 21.11	$ 0.08	$ 2.30	$ 18.81	$ (2.22)	$ 0.48	10%	$ 4.18	0%	$ -	$ -
$	1.53	$ 21.59	$ 0.50	$ 2.30	$ 19.29	$ (1.80)	$ 0.48	10%	$ 4.23	0%	$ -	$ -
$	1.54	$ 22.07	$ 0.92	$ 2.30	$ 19.77	$ (1.38)	$ 0.48	10%	$ 4.28	0%	$ -	$ -
$	1.55	$ 22.54	$ 1.34	$ 2.30	$ 20.24	$ (0.96)	$ 0.48	10%	$ 4.32	0%	$ -	$ -
$	1.56	$ 23.02	$ 1.75	$ 2.30	$ 20.72	$ (0.55)	$ 0.48	10%	$ 4.37	0%	$ -	$ -
$	1.57	$ 23.50	$ 2.17	$ 2.30	$ 21.20	$ (0.13)	$ 0.48	10%	$ 4.42	0%	$ -	$ -
$	1.58	$ 23.97	$ 2.59	$ 2.30	$ 21.67	$ 0.29	$ 0.48	10%	$ 4.47	0%	$ -	$ -
$	1.59	$ 24.45	$ 3.01	$ 2.30	$ 22.15	$ 0.71	$ 0.48	10%	$ 4.52	0%	$ -	$ -
$	1.60	$ 24.93	$ 3.43	$ 2.30	$ 22.63	$ 1.13	$ 0.48	10%	$ 4.56	0%	$ -	$ -
$	1.61	$ 25.41	$ 3.85	$ 2.30	$ 23.11	$ 1.55	$ 0.48	10%	$ 4.61	0%	$ -	$ -
$	1.62	$ 25.88	$ 4.27	$ 2.30	$ 23.58	$ 1.97	$ 0.48	10%	$ 4.66	0%	$ -	$ -
$	1.63	$ 26.36	$ 4.69	$ 2.30	$ 24.06	$ 2.39	$ 0.48	10%	$ 4.71	0%	$ -	$ -
$	1.64	$ 26.84	$ 5.11	$ 2.30	$ 24.54	$ 2.81	$ 0.48	10%	$ 4.75	0%	$ -	$ -
$	1.65	$ 27.31	$ 5.53	$ 2.30	$ 25.01	$ 3.23	$ 0.48	10%	$ 4.80	0%	$ -	$ -
$	1.66	$ 27.79	$ 5.95	$ 2.30	$ 25.49	$ 3.65	$ 0.48	10%	$ 4.85	0%	$ -	$ -
$	1.67	$ 28.27	$ 6.36	$ 2.30	$ 25.97	$ 4.06	$ 0.48	10%	$ 4.90	0%	$ -	$ -
$	1.68	$ 28.75	$ 6.78	$ 2.30	$ 26.45	$ 4.48	$ 0.48	15%	$ 4.97	0%	$ -	$ -
$	1.69	$ 29.22	$ 7.20	$ 2.30	$ 26.92	$ 4.90	$ 0.48	15%	$ 5.04	0%	$ -	$ -
$	1.70	$ 29.70	$ 7.62	$ 2.30	$ 27.40	$ 5.32	$ 0.48	15%	$ 5.11	0%	$ -	$ -
$	1.71	$ 30.18	$ 8.04	$ 2.30	$ 27.88	$ 5.74	$ 0.48	15%	$ 5.18	0%	$ -	$ -
$	1.72	$ 30.65	$ 8.46	$ 2.30	$ 28.35	$ 6.16	$ 0.48	15%	$ 5.25	0%	$ -	$ -
$	1.73	$ 31.13	$ 8.88	$ 2.30	$ 28.83	$ 6.58	$ 0.48	15%	$ 5.33	0%	$ -	$ -
$	1.74	$ 31.61	$ 9.30	$ 2.30	$ 29.31	$ 7.00	$ 0.48	15%	$ 5.40	0%	$ -	$ -
$	1.75	$ 32.09	$ 9.72	$ 2.30	$ 29.79	$ 7.42	$ 0.48	15%	$ 5.47	0%	$ -	$ -
$	1.76	$ 32.56	$ 10.14	$ 2.30	$ 30.26	$ 7.84	$ 0.48	15%	$ 5.54	0%	$ -	$ -
$	1.77	$ 33.04	$ 10.56	$ 2.30	$ 30.74	$ 8.26	$ 0.48	15%	$ 5.61	0%	$ -	$ -
$	1.78	$ 33.52	$ 10.97	$ 2.30	$ 31.22	$ 8.67	$ 0.48	15%	$ 5.68	0%	$ -	$ -
$	1.79	$ 33.99	$ 11.39	$ 2.30	$ 31.69	$ 9.09	$ 0.48	15%	$ 5.76	0%	$ -	$ -
$	1.80	$ 34.47	$ 11.81	$ 2.30	$ 32.17	$ 9.51	$ 0.48	15%	$ 5.83	0%	$ -	$ -

$	1.81	$ 34.95	$ 12.23	$ 2.30	$ 32.65	$ 9.93	$ 0.48	15%	$ 5.90	0%	$ -	$ -
$	1.82	$ 35.43	$ 12.65	$ 2.30	$ 33.13	$ 10.35	$ 0.48	15%	$ 5.97	0%	$ -	$ -
$	1.83	$ 35.90	$ 13.07	$ 2.30	$ 33.60	$ 10.77	$ 0.48	15%	$ 6.04	0%	$ -	$ -
$	1.84	$ 36.38	$ 13.49	$ 2.30	$ 34.08	$ 11.19	$ 0.48	15%	$ 6.11	0%	$ -	$ -
$	1.85	$ 36.86	$ 13.91	$ 2.30	$ 34.56	$ 11.61	$ 0.48	15%	$ 6.19	0%	$ -	$ -
$	1.86	$ 37.33	$ 14.33	$ 2.30	$ 35.03	$ 12.03	$ 0.48	15%	$ 6.26	0%	$ -	$ -
$	1.87	$ 37.81	$ 14.75	$ 2.30	$ 35.51	$ 12.45	$ 0.48	15%	$ 6.33	0%	$ -	$ -
$	1.88	$ 38.29	$ 15.16	$ 2.30	$ 35.99	$ 12.86	$ 0.48	15%	$ 6.40	0%	$ -	$ -
$	1.89	$ 38.77	$ 15.58	$ 2.30	$ 36.47	$ 13.28	$ 0.48	15%	$ 6.47	0%	$ -	$ -
$	1.90	$ 39.24	$ 16.00	$ 2.30	$ 36.94	$ 13.70	$ 0.48	15%	$ 6.54	0%	$ -	$ -
$	1.91	$ 39.72	$ 16.42	$ 2.30	$ 37.42	$ 14.12	$ 0.48	15%	$ 6.61	0%	$ -	$ -
$	1.92	$ 40.20	$ 16.84	$ 2.30	$ 37.90	$ 14.54	$ 0.48	15%	$ 6.69	0%	$ -	$ -
$	1.93	$ 40.67	$ 17.26	$ 2.30	$ 38.37	$ 14.96	$ 0.48	15%	$ 6.76	0%	$ -	$ -
$	1.94	$ 41.15	$ 17.68	$ 2.30	$ 38.85	$ 15.38	$ 0.48	15%	$ 6.83	0%	$ -	$ -
$	1.95	$ 41.63	$ 18.10	$ 2.30	$ 39.33	$ 15.80	$ 0.48	15%	$ 6.90	0%	$ -	$ -
$	1.96	$ 42.11	$ 18.52	$ 2.30	$ 39.81	$ 16.22	$ 0.48	15%	$ 6.97	0%	$ -	$ -
$	1.97	$ 42.58	$ 18.94	$ 2.30	$ 40.28	$ 16.64	$ 0.48	15%	$ 7.04	0%	$ -	$ -
$	1.98	$ 43.06	$ 19.36	$ 2.30	$ 40.76	$ 17.06	$ 0.48	15%	$ 7.12	0%	$ -	$ -
$	1.99	$ 43.54	$ 19.77	$ 2.30	$ 41.24	$ 17.47	$ 0.48	15%	$ 7.19	0%	$ -	$ -
$	2.00	$ 44.01	$ 20.19	$ 2.30	$ 41.71	$ 17.89	$ 0.48	15%	$ 7.26	0%	$ -	$ -
$	2.01	$ 44.49	$ 20.61	$ 2.30	$ 42.19	$ 18.31	$ 0.48	15%	$ 7.33	0%	$ -	$ -
$	2.02	$ 44.97	$ 21.03	$ 2.30	$ 42.67	$ 18.73	$ 0.48	15%	$ 7.40	0%	$ -	$ -
$	2.03	$ 45.45	$ 21.45	$ 2.30	$ 43.15	$ 19.15	$ 0.48	15%	$ 7.47	0%	$ -	$ -
$	2.04	$ 45.92	$ 21.87	$ 2.30	$ 43.62	$ 19.57	$ 0.48	15%	$ 7.55	0%	$ -	$ -
$	2.05	$ 46.40	$ 22.29	$ 2.30	$ 44.10	$ 19.99	$ 0.48	15%	$ 7.62	0%	$ -	$ -
$	2.06	$ 46.88	$ 22.71	$ 2.30	$ 44.58	$ 20.41	$ 0.48	15%	$ 7.69	0%	$ -	$ -
$	2.07	$ 47.36	$ 23.13	$ 2.30	$ 45.06	$ 20.83	$ 0.48	15%	$ 7.76	0%	$ -	$ -
$	2.08	$ 47.83	$ 23.55	$ 2.30	$ 45.53	$ 21.25	$ 0.48	15%	$ 7.83	0%	$ -	$ -
$	2.09	$ 48.31	$ 23.97	$ 2.30	$ 46.01	$ 21.67	$ 0.48	15%	$ 7.90	0%	$ -	$ -
$	2.10	$ 48.79	$ 24.38	$ 2.30	$ 46.49	$ 22.08	$ 0.48	15%	$ 7.97	0%	$ -	$ -
$	2.11	$ 49.26	$ 24.80	$ 2.30	$ 46.96	$ 22.50	$ 0.48	15%	$ 8.05	0%	$ -	$ -
$	2.12	$ 49.74	$ 25.22	$ 2.30	$ 47.44	$ 22.92	$ 0.48	15%	$ 8.12	0%	$ -	$ -
$	2.13	$ 50.22	$ 25.64	$ 2.30	$ 47.92	$ 23.34	$ 0.48	15%	$ 8.19	0%	$ -	$ -
$	2.14	$ 50.70	$ 26.06	$ 2.30	$ 48.40	$ 23.76	$ 0.48	15%	$ 8.26	0%	$ -	$ -
$	2.15	$ 51.17	$ 26.48	$ 2.30	$ 48.87	$ 24.18	$ 0.48	15%	$ 8.33	0%	$ -	$ -
$	2.16	$ 51.65	$ 26.90	$ 2.30	$ 49.35	$ 24.60	$ 0.48	15%	$ 8.40	0%	$ -	$ -
$	2.17	$ 52.13	$ 27.32	$ 2.30	$ 49.83	$ 25.02	$ 0.48	15%	$ 8.48	0%	$ -	$ -
$	2.18	$ 52.60	$ 27.74	$ 2.30	$ 50.30	$ 25.44	$ 0.48	15%	$ 8.55	0%	$ -	$ -
$	2.19	$ 53.08	$ 28.16	$ 2.30	$ 50.78	$ 25.86	$ 0.48	15%	$ 8.62	0%	$ -	$ -
$	2.20	$ 53.56	$ 28.57	$ 2.30	$ 51.26	$ 26.27	$ 0.48	15%	$ 8.69	0%	$ -	$ -

	$ 2.21	$ 54.04	$ 28.99	$ 2.30	$ 51.74	$ 26.69	$ 0.48	15%	$ 8.76	0%	$ -	$ -
	$ 2.22	$ 54.51	$ 29.41	$ 2.30	$ 52.21	$ 27.11	$ 0.48	15%	$ 8.83	0%	$ -	$ -
	$ 2.23	$ 54.99	$ 29.83	$ 2.30	$ 52.69	$ 27.53	$ 0.48	15%	$ 8.91	0%	$ -	$ -
	$ 2.24	$ 55.47	$ 30.25	$ 2.30	$ 53.17	$ 27.95	$ 0.48	20%	$ 9.00	0%	$ -	$ -
	$ 2.25	$ 55.94	$ 30.67	$ 2.30	$ 53.64	$ 28.37	$ 0.48	20%	$ 9.10	0%	$ -	$ -
	$ 2.26	$ 56.42	$ 31.09	$ 2.30	$ 54.12	$ 28.79	$ 0.48	20%	$ 9.19	0%	$ -	$ -
	$ 2.27	$ 56.90	$ 31.51	$ 2.30	$ 54.60	$ 29.21	$ 0.48	20%	$ 9.29	0%	$ -	$ -
	$ 2.28	$ 57.38	$ 31.93	$ 2.30	$ 55.08	$ 29.63	$ 0.48	20%	$ 9.38	0%	$ -	$ -
	$ 2.29	$ 57.85	$ 32.35	$ 2.30	$ 55.55	$ 30.05	$ 0.48	20%	$ 9.48	0%	$ -	$ -
	$ 2.30	$ 58.33	$ 32.77	$ 2.30	$ 56.03	$ 30.47	$ 0.48	20%	$ 9.57	0%	$ -	$ -
	$ 2.31	$ 58.81	$ 33.18	$ 2.30	$ 56.51	$ 30.88	$ 0.48	20%	$ 9.67	0%	$ -	$ -
	$ 2.32	$ 59.28	$ 33.60	$ 2.30	$ 56.98	$ 31.30	$ 0.48	20%	$ 9.76	0%	$ -	$ -
	$ 2.33	$ 59.76	$ 34.02	$ 2.30	$ 57.46	$ 31.72	$ 0.48	20%	$ 9.86	0%	$ -	$ -
	$ 2.34	$ 60.24	$ 34.44	$ 2.30	$ 57.94	$ 32.14	$ 0.48	20%	$ 9.95	0%	$ -	$ -
	$ 2.35	$ 60.72	$ 34.86	$ 2.30	$ 58.42	$ 32.56	$ 0.48	20%	$ 10.05	0%	$ -	$ -
	$ 2.36	$ 61.19	$ 35.28	$ 2.30	$ 58.89	$ 32.98	$ 0.48	20%	$ 10.15	0%	$ -	$ -
	$ 2.37	$ 61.67	$ 35.70	$ 2.30	$ 59.37	$ 33.40	$ 0.48	20%	$ 10.24	0%	$ -	$ -
	$ 2.38	$ 62.15	$ 36.12	$ 2.30	$ 59.85	$ 33.82	$ 0.48	20%	$ 10.34	0%	$ -	$ -
	$ 2.39	$ 62.62	$ 36.54	$ 2.30	$ 60.32	$ 34.24	$ 0.48	20%	$ 10.43	0%	$ -	$ -
	$ 2.40	$ 63.10	$ 36.96	$ 2.30	$ 60.80	$ 34.66	$ 0.48	20%	$ 10.53	0%	$ -	$ -
	$ 2.41	$ 63.58	$ 37.38	$ 2.30	$ 61.28	$ 35.08	$ 0.48	20%	$ 10.62	0%	$ -	$ -
	$ 2.42	$ 64.06	$ 37.79	$ 2.30	$ 61.76	$ 35.49	$ 0.48	20%	$ 10.72	0%	$ -	$ -
	$ 2.43	$ 64.53	$ 38.21	$ 2.30	$ 62.23	$ 35.91	$ 0.48	20%	$ 10.81	0%	$ -	$ -
	$ 2.44	$ 65.01	$ 38.63	$ 2.30	$ 62.71	$ 36.33	$ 0.48	20%	$ 10.91	0%	$ -	$ -
	$ 2.45	$ 65.49	$ 39.05	$ 2.30	$ 63.19	$ 36.75	$ 0.48	20%	$ 11.00	0%	$ -	$ -
	$ 2.46	$ 65.96	$ 39.47	$ 2.30	$ 63.66	$ 37.17	$ 0.48	20%	$ 11.10	0%	$ -	$ -
	$ 2.47	$ 66.44	$ 39.89	$ 2.30	$ 64.14	$ 37.59	$ 0.48	20%	$ 11.20	0%	$ -	$ -
	$ 2.48	$ 66.92	$ 40.31	$ 2.30	$ 64.62	$ 38.01	$ 0.48	20%	$ 11.29	0%	$ -	$ -
	$ 2.49	$ 67.40	$ 40.73	$ 2.30	$ 65.10	$ 38.43	$ 0.48	20%	$ 11.39	0%	$ -	$ -
	$ 2.50	$ 67.87	$ 41.15	$ 2.30	$ 65.57	$ 38.85	$ 0.48	20%	$ 11.48	0%	$ -	$ -

Alberta Consumer Price Index (CPI)

Year	Year End CPI for Alberta (2002=100)	Alberta (Used)
1985	0.6160	61.60
1986	0.6370	63.70
1987	0.6630	66.30
1988	0.6810	68.10
1989	0.7090	70.90
1990	0.7500	75.00
1991	0.7940	79.40
1992	0.8060	80.60
1993	0.8140	81.40
1994	0.8260	82.60
1995	0.8450	84.50
1996	0.8640	86.40
1997	0.8810	88.10
1998	0.8920	89.20
1999	0.9140	91.40
2000	0.9450	94.50
2001	0.9670	96.70
2002	1.0000	100.00
2003	1.0440	104.40
2004	1.0590	105.90
2005	1.0810	108.10
2006	1.1230	112.30
2007	1.1790	117.90
2008	1.2160	121.60
2009	1.2150	121.50
2010	1.2270	122.70
2011	1.2570	125.70
2012	1.2710	127.10
2013	1.2890	128.90
2014	1.3220	132.20
2015	1.3370	133.70
2016	1.3550	135.50
2017	-	
2018	-	
2019	-	
2020	-	
2021	-	

Source for Canada CPI: http://www.bank-banque-canada.ca/en/cpi.html

Source for Alberta CPI: http://www.aec-econ.com/docs/ABCPI.pdf

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Enter the average annual CPI from Alberta

Other References

(a) Industry Cost Of Capital

Source Name	Specific Agriculture Area	WACC Estimation	Source
James Pritchel, Susan Hire. Colorado State University	Farm Supply and Marketing Cooperatives	0.86% to 7.48%	http://209.85.173.104/search?q=cache:madXhbgEHcgJ:www.joe.org/joe/2007october/rb1.shtml+WACC+Farms&hl=en&ct=clnk&cd=11&gl=ca
William Edwards, Extension Economist, Iowa State University	Farms (non-specific)	3% to 4% on long term farm assets	http://www.agmrc.org/agmrc/business/operatingbusiness/analyzingafarmincomestatement.htm
		6% to 10% on other assets (in the last decade).	
MAF Policy, Ministry of Agriculture and Forestry, New Zealand	New Zealand Farmers	1.58% to 3.16%	http://www.maf.govt.nz/mafnet/rural-nz/profitability-and-economics/performance/impediments-to-optimum-performance/impopt-06.htm
Moe Russle, Corn and Soybean Digest	Agriculture	10%	http://cornandsoybeandigest.com/mag/soybean_great_time_farming/
	Agriculture	10%	http://cornandsoybeandigest.com/mag/soybean_autosteer_pay/
Glen Pederson, "Cost of Capital for Agricultural Cooperatives"	Agriculture Cooperatives	11.91% to 15.7%	http://www.rurdev.usda.gov/RBS/pub/rr163.pdf
National Bank of New Zealand	Rural Lands	Past 5 Years - 8.5%	http://www.herdequityrelease.com/b-financial-returns-rural-farmland.php
		Past 10 Years- 9.0%	
		Past 15 Years- 9.7%	
William R. Congleton, University of Main	Dairy Cow	WACC assumed to be 10% for study.	http://jds.fass.org/cgi/reprint/71/7/1916?ck=nck

(b) Transportation Weight Loss

Source Name		Source
Animal Transport Costs Dollars, Pounds. June 2003 Western Producer (quoting Al Schaefer of Agriculture Canada in Lacombe).		http://www.afac.ab.ca/careinfo/transport/atcdp.htm

(c) Vet Costs

Source Name		Source
CANFAX Trends West - Assumptions and Calculations, October 2007		CANFAX Communication (list of assumptions)

(d) Auction Sales Costs

Source Name	Location	Contact
Innisfail Auction Market	Innisfail, AB	403-391-0580
Vold, Jones Vold Auction	Westlock, AB	780-349-3153
Southern Alberta Livestock Exchange	Fort McLeod, AB	403-553-3315
North Central Livestock Exchange	Vermillion, AB	780-853-5372