

APPENDIX B
EQUIPMENT PRODUCTIVITY

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar D11T Bulldozer, Universal Blade and Multi-shank

D10R-10U Dozer		Flat/Downhill Terrain		Mildly Sloping Terrain (>3H:1V)		Steeply Sloping Terrain (<3H:1V)		Ripping/ Light Grading		Concrete Burial	
Production Rate											
Material Density	lb/cy	3,375		3,375		3,375		lb/cy	3,375		3,240
Average Dozing Distance	ft	250		250		250		ft	100		100
Maximum Production	cy/hr	1,300		1,300		1,300		cy/hr	1,850		1,850
Correction Factors											
Operator	average	0.75		average	0.75	average	0.75	average	0.75	average	0.75
Material	Loose Stkpl	1.20		Loose Stkpl	1.20	Loose Stkpl	1.20	Grading	0.80	Hard Rubble	0.50
Job Efficiency	50 min/hr	0.83		50 min/hr	0.83	50 min/hr	0.83	40 min/hr	0.67	50 min/hr	0.83
Weight Correction		0.85			0.85		0.85		1.00		0.70
Grade Correction	Flat	1.00		3:1	0.90	2:1	0.75	Flat	1.00	Flat	1.00
Total Factor											
		0.63			0.57		0.48		0.40		0.22
Factored Rate											
	cy/hr	825			743		619	cy/hr	744		403

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar 14H Motor Grader

14H Motor Grader		Borrow Material Production	
Production Rate			
Operating Speed	mph		6.5
Effective blade length	ft		11.3
Width of Overlap	ft		2
Maximum Production	acres/hr		7.33
Correction Factors			
Material	loose		1.00
Job Efficiency			0.85
Total Factor			0.85
Factored Rate		acres/hr	6.23

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar 992G Loader

992D Loader		Waste Rock Production	
Production Rate			
	Bucket Capacity	cy	12.50
Cycle Time ¹			
		min	0.65
Cycles Required			
		cycles	4.60
Total Load Time (assuming 777C Haul Truck)			
		min	2.99

1. Cycle Time includes load, dump, four reversals of direction, full cycle of hydraulics, and minimum travel.

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar 777C Haul Truck

777C Haul Truck		Haul to Waste Rock/Tails Production		Haul to Top of Facilities Production	
Production Rate (992D)					
	Loader Bucket Capacity	cy	12.50	cy	12.50
	Loader Cycle Time	min	0.65	min	0.65
Production Rate (777C)					
	Truck Capacity	cy	57.50	cy	57.50
	Average haul Distance	ft	4,350.00	ft	1,750.00
Cycle Time					
	Load Time	min	2.99	min	2.99
	Load Area Maneuver Time	min	0.80	min	0.80
	Dump Area Maneuver Time	min	1.20	min	1.20
	Loaded Haul	min	1.70	min	0.72
	Empty Haul	min	1.50	min	0.70
	Total Load/Haul time	min	8.19	min	6.41
	Maximum Production Rate	cy/hr	421.25	cy/hr	538.22
Correction Factors					
	Operator	average	0.75	average	0.75
	Load Factor		1.00		1.00
	Job Efficiency	50 min/hr	0.83	50 min/hr	0.83
	Total Correction Factor		0.62		0.62
	Factored Production Rate	cy/hr	262	cy/hr	335

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar 631E Scraper

631E Scraper		Borrow Material Production		Topsoil Production	
Production Rate					
Capacity	cy	31.00	cy	31.00	
Average Haul Distance	ft	3,550	ft	6,000	
Grade	%	4	%	4	
Cycle Time					
Load Time	min	0.80	min	0.80	
Spread Time	min	0.70	min	0.80	
Loaded Haul	min	1.50	min	3.75	
Empty Haul	min	2.25	min	2.50	
Total Cycle Time	hr	0.09	min	0.13	
Maximum Production Rate	cy/hr	354.3	cy/hr	236.9	
Correction Factors					
Material Operator	average	0.75	average	0.75	
Load Factor	Earth - Dry Packed	0.90	Earth - Dry Packed	0.90	
Job Efficiency	50 min/hr	0.83	50 min/hr	0.83	
Total Correction Factor		0.56		0.56	
Factored Production Rate	cy/hr	198.5	cy/hr	132.7	

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar CS-583C Smooth Drum Compactor

CS-583 Smooth Drum Compactor		Spent Ore Production	
Production Rate			
Drum diameter	ft		7
Maximum Speed	mph		8
Maximum Production Rate	acres/hr		6.8
Correction Factors			
Operator	average		0.75
Job Efficiency	50 min/hr		0.83
Total Correction Factor			0.62
Factored Production Rate	acre/hr		4.23

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar CS-563C Padded Drum Compactor

CS-563 Padded Drum Compactor		Spent Ore Production	
Production Rate			
Drum diameter	ft		7
Maximum Speed	mph		8
Maximum Production Rate	acres/hr		6.8
Correction Factors			
Operator	average		0.75
Job Efficiency	50 min/hr		0.83
Total Correction Factor			0.62
Factored Production Rate	acre/hr		4.23

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.

Equipment Productivity
Augusta Resource Rosemont Project - Life of Mine
Caterpillar Challenger 75D

Challenger 75D Tractor		Revegetation Production	
Production Rate			
	Track Width (each)	in	30
	Average Speed	mph	4
	Maximum Production Rate	acres/hr	2.4
Correction Factors			
	Operator	average	0.75
	Job Efficiency	50 min/hr	0.83
	Total Correction Factor		0.62
	Factored Production Rate	acre/hr	1.51

Material types taken from Caterpillar 2002 Handbook, Edition 32 and Caterpillar 2006 Handbook, Edition 36.