

APPENDIX C
RECLAMATION COSTS

**Earthwork Summary Table and Equipment Fleet
Augusta Resource Rosemont Project - Life of Mine
Walk-Away Cost Summary Table**

Task	Reclaim Area ¹ (acres)	Hazardous Materials Cost (\$) ²	Water Quality (\$) ²	Demolition/ Cleanup Cost (\$) ²	Equipment Cost (\$) ³	Mob/Demob Cost (\$)	Labor Cost (\$) ³	Revegetation Cost (\$) ³	Long-term Operation, Maintenance and Monitoring Cost (\$) ²	Subtotal Direct Cost (\$)	Indirect Cost (\$)	Total Cost (\$)
Year -1	1,271.0	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 3,228,000	\$ 43,200	\$ 432,400	\$ 1,016,100	\$ 346,800	\$ 10,887,100	\$ 2,982,800	\$ 13,869,900
Year 1	1,038.5	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 4,366,400	\$ 43,200	\$ 613,000	\$ 901,000	\$ 346,800	\$ 12,091,000	\$ 3,325,900	\$ 15,416,900
Year 2	1,343.8	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 4,628,700	\$ 43,200	\$ 624,100	\$ 1,200,900	\$ 346,800	\$ 12,664,300	\$ 3,481,800	\$ 16,146,100
Year 3	1,572.4	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 5,308,700	\$ 43,200	\$ 713,500	\$ 1,332,900	\$ 346,800	\$ 13,565,700	\$ 3,734,100	\$ 17,299,800
Year 4	1,647.5	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 6,113,200	\$ 43,200	\$ 807,900	\$ 1,360,800	\$ 346,800	\$ 14,492,500	\$ 3,993,800	\$ 18,486,300
Year 5	2,067.1	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 6,756,900	\$ 43,200	\$ 895,800	\$ 1,554,600	\$ 346,800	\$ 15,417,900	\$ 4,252,400	\$ 19,670,300
Years 6-10 (total)	2,454.2	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 9,071,900	\$ 43,200	\$ 1,175,200	\$ 1,756,600	\$ 346,800	\$ 18,214,300	\$ 5,035,400	\$ 23,249,700
Year 11-15 (total)	2,568.9	\$ 235,200		\$ 5,264,000	\$ 1,668,300	\$ 43,200	\$ 938,800	\$ 1,737,400	\$ 346,800	\$ 10,233,700	\$ 2,857,000	\$ 13,090,700
Year 16-20 (total)	2,743.1	\$ 235,200		\$ 5,264,000	\$ 4,781,000	\$ 43,200	\$ 1,057,000	\$ 2,262,100	\$ 346,800	\$ 13,989,300	\$ 3,882,800	\$ 17,872,100
Post-operational period	434.3				\$ 1,760,400		\$ 283,800	\$ 691,200	\$ 346,800	\$ 3,082,200	\$ 860,600	\$ 3,942,800

1. Maximum acreage for the year.
2. Costs are for maximum cleanup possibly required - walk away scenario.
3. Costs include regrade of maximum disturbed acreage.

**Earthwork Summary Table and Equipment Fleet
Augusta Resource Rosemont Project - Life of Mine
Final Cost Summary Table**

Task	Reclaim Area ¹ (acres)	Hazardous Materials Cost (\$) ²	Water Quality (\$) ²	Demolition/ Cleanup Cost (\$) ³	Equipment Cost (\$)	Mob/Demob ⁴ Cost (\$)	Labor Cost (\$)	Revegetation Cost (\$)	Long-term Operation, Maintenance and Monitoring Cost (\$) ²	Subtotal Direct Cost (\$)	Indirect Cost (\$)	Total Cost (\$)
Year -1	-	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Year 1	162	\$ -	\$ -	\$ -	\$ 518,600		\$ 50,800	\$ 80,200	\$ -	\$ 649,600	\$ 180,500	\$ 830,100
Year 2	187	\$ -	\$ -	\$ -	\$ 289,200		\$ 29,000	\$ 205,100	\$ -	\$ 523,300	\$ 144,200	\$ 667,500
Year 3	185	\$ -	\$ -	\$ -	\$ 286,400		\$ 28,800	\$ 204,400	\$ -	\$ 519,600	\$ 143,200	\$ 662,800
Year 4	130	\$ -	\$ -	\$ -	\$ 179,800		\$ 18,000	\$ 148,700	\$ -	\$ 346,500	\$ 95,400	\$ 441,900
Year 5	159	\$ -	\$ -	\$ -	\$ 325,500		\$ 31,100	\$ 134,900	\$ -	\$ 491,500	\$ 135,800	\$ 627,300
Years 6-10 (total)	495	\$ -	\$ 321,400	\$ -	\$ 1,007,500		\$ 113,100	\$ 301,500	\$ -	\$ 1,743,500	\$ 482,100	\$ 2,225,600
Year 11-15 (total)	435	\$ -		\$ -	\$ 914,500		\$ 123,400	\$ 243,500	\$ -	\$ 1,281,400	\$ 358,300	\$ 1,639,700
Year 16-20 (total)	1,626	\$ 235,200		\$ 5,264,000	\$ 4,651,300		\$ 628,400	\$ 991,100	\$ -	\$ 11,770,000	\$ 3,240,700	\$ 15,010,700
Post-operational period					\$ 656,600		\$ 80,500	\$ 146,400	\$ 346,800	\$ 1,230,300	\$ 340,200	\$ 1,570,500
TOTAL	3,378.9	\$ 235,200	\$ 321,400	\$ 5,264,000	\$ 8,829,400	\$ -	\$ 1,103,100	\$ 2,455,800	\$ 346,800	\$ 18,555,700	\$ 5,120,400	\$ 23,676,100

- 1 Reclaim acres incorporate only 135 acres of the pit (950 acres allocated in Plan of Operations) and 25% reclaim of roads and utility corridors until decisions are made on closure requirements
- 2 Includes offsite disposal of chemicals, solutions evaporation, and three years of monitoring
- 3 This includes a bid by Brandenburg
- 4 Mob/Demob Cost excluded from actual costing, on-site equipment will be used.

**Earthwork Summary Table and Equipment Fleet
Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Summary Table**

Task	Reclaim Area (acres)	Hazardous Materials Cost (\$)	Water Quality (\$)	Demolition/ Cleanup Cost (\$)	Equipment Cost (\$)	Mob/Demob Cost (\$)	Labor Cost (\$)	Revegetation Cost (\$)	Long-term Operation, Maintenance and Monitoring Cost (\$)	Subtotal Direct Cost (\$)	Indirect Cost (\$)	Total Cost (\$)
Rosemont Open Pit	135.0				41,276		4,945	24,255		70,476	19,523	90,000
Revegetation of Buffer	440.4	-	-	-	69,372.1	-	10,936.7	713,983.10	-	794,292	215,552	1,009,844
Year -1	0.0				0.0	-	-	-	-	0	0	0
Year 1	0.0				0.0	-	-	-	-	0	0	0
Year 2	100.0				13,069.8	-	2,060.48	162,125.00	-	177,255	48,065	225,320
Year 3	100.0				13,069.8	-	2,060.48	162,125.00	-	177,255	48,065	225,320
Year 4	75.0				9,802.4	-	1,545.36	121,593.75	-	132,941	36,049	168,990
Year 5	50.0				6,534.9	-	1,030.24	81,062.50	-	88,628	24,032	112,660
Years 6-10	50.0				13,069.8	-	2,060.48	81,062.50	-	96,193	26,178	122,371
Year 11-15	25.0				3,267.5	-	515.12	40,531.25	-	44,314	12,016	56,330
Year 16-20	25.0				6,534.9	-	1,030.24	40,531.25	-	48,096	13,089	61,185
Post-operational period	15.4				4,023.0	-	634.24	24,951.85	-	29,609	8,058	37,667
Revegetation of Disturbed Areas		-	-	-	255,670.4	-	40,307.00	598,205.27	-	894,183	245,460	1,139,643
Year -1	483.1				126,267.4	-	19,906.33	239,109.75	-	385,284	106,017	491,301
Year 1	124.4				16,263.4	-	2,563.96	61,595.33	-	80,423	21,971	102,393
Year 2	86.1				11,248.5	-	1,773.36	42,602.18	-	55,624	15,196	70,820
Year 3	70.1				9,160.0	-	1,444.09	34,692.08	-	45,296	12,374	57,671
Year 4	54.8				7,163.6	-	1,129.35	27,130.95	-	35,424	9,677	45,101
Year 5	125.4				16,390.2	-	2,583.95	62,075.48	-	81,050	22,142	103,191
Years 6-10	249.3				65,154.3	-	10,271.72	123,381.23	-	198,807	54,705	253,512
Year 11-15	0.0				0.0	-	-	-	-	0	0	0
Year 16-20	0.0				0.0	-	-	-	-	0	0	0
Post-operational period	15.4				4,023.0	-	634.24	7,618.30	-	12,276	3,378	15,653
Perimeter Berm	402.0	-	-	-	1,340,816.55	-	133,203.24	198,992.97	-	1,673,013	465,034	2,138,047
Year -1	0.0				-	-	-	-	-	0	0	0
Year 1	130.5				433,641.55	-	42,989.67	64,587.60	-	541,219	150,428	691,647
Year 2	70.9				235,465.24	-	23,343.18	35,070.75	-	293,879	81,682	375,561
Year 3	71.8				238,722.20	-	23,666.06	35,555.85	-	297,944	82,812	380,756
Year 4	39.0				129,547.42	-	12,842.87	19,295.10	-	161,685	44,939	206,625
Year 5	53.3				177,205.45	-	17,567.51	26,393.40	-	221,166	61,472	282,638
Years 6-10	0.0				-	-	-	-	-	0	0	0
Year 11-15	0.0				-	-	-	-	-	0	0	0
Year 16-20	0.0				-	-	-	-	-	0	0	0
Post-operational period	36.5				126,234.68	-	12,793.95	18,090.27	-	157,119	43,701	200,820
Waste Rock Regrade	1,596.7	-	-	-	4,178,889.76	-	564,409.03	790,374.42	-	5,533,673	1,550,533	7,084,206
Year -1	0.0				0	-	0	0	-	0	0	0
Year 1	0.0				0	-	0	0	-	0	0	0
Year 2	0.0				0	-	0	0	-	0	0	0
Year 3	0.0				0	-	0	0	-	0	0	0
Year 4	0.0				0	-	0	0	-	0	0	0
Year 5	0.0				0	-	0	0	-	0	0	0
Years 6-10	0.0				0	-	0	0	-	0	0	0
Year 11-15	102.3				255,148	-	34,178	50,624	-	339,950	95,204	435,155
Year 16-20	1,349.3				3,542,627	-	478,729	667,899	-	4,689,255	1,313,972	6,003,227
Post-operational period	145.2				381,114	-	51,501	71,852	-	504,468	141,356	645,824
Waste Rock Storage - Top and Inside		-	-	-	22,954,383.32	-	3,098,712.72	5,010,588.00	-	31,063,684	8,697,066	39,760,750
Year -1	627.0				1,216,258	-	166,085	310,365	-	1,692,708	473,640	2,166,348
Year 1	389.0				1,141,560	-	152,706	192,555	-	1,486,821	416,712	1,903,533
Year 2	586.0				1,515,457	-	203,135	290,070	-	2,008,662	562,652	2,571,315
Year 3	722.0				1,724,179	-	231,442	357,390	-	2,313,011	647,657	2,960,668
Year 4	777.0				2,138,557	-	286,360	384,615	-	2,809,531	787,209	3,596,741
Year 5	1,059.0				2,464,587	-	330,989	524,205	-	3,319,781	929,440	4,249,221
Years 6-10	1,089.0				4,206,359	-	564,321	539,055	-	5,309,734	1,490,060	6,799,795
Year 11-15	2,324.0				5,316,071	-	714,174	1,150,380	-	7,180,625	2,010,186	9,190,811
Year 16-20	2,317.0				2,963,700	-	412,071	1,146,915	-	4,522,686	1,262,332	5,785,019
Post-operational period	232.4				267,655	-	37,431	115,038	-	420,123	117,176	537,300
Leach Pad		-	-	2,403	11,506,609.97	-	1,423,840.82	906,345.00	-	13,839,199	3,882,860	17,736,475
Year -1	73.0			2,403	534,511	-	65,927	36,135	-	638,975	179,116	818,091
Year 1	111.0			2,403	1,550,093	-	196,637	54,945	-	1,804,078	506,765	2,310,842
Year 2	149.0			2,403	1,344,366	-	162,679	109,890	-	1,619,337	453,489	2,072,826
Year 3	178.0			2,403	1,701,592	-	208,120	143,055	-	2,055,170	575,708	2,630,879
Year 4	199.0			2,403	1,995,201	-	245,843	172,260	-	2,415,706	676,825	3,092,531
Year 5	199.0			2,403	2,105,213	-	261,638	186,615	-	2,555,869	716,248	3,272,117
Years 6-10	212.0			2,403	2,275,634	-	282,996	203,445	-	2,764,478	774,709	3,539,187

**Earthwork Summary Table and Equipment Fleet
Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Summary Table**

Task	Reclaim Area (acres)	Hazardous Materials Cost (\$)	Water Quality (\$)	Demolition/ Cleanup Cost (\$)	Equipment Cost (\$)	Mob/Demob Cost (\$)	Labor Cost (\$)	Revegetation Cost (\$)	Long-term Operation, Maintenance and Monitoring Cost (\$)	Subtotal Direct Cost (\$)	Indirect Cost (\$)	Total Cost (\$)
Tailings	361.2	-	-	-	948,261.90	-	85,645.48	178,797.47	-	1,212,705	335,995	1,548,700
Year -1	0.0				0		0	0		0	0	0
Year 1	31.6				84,915		7,798	15,652		108,364	30,038	138,402
Year 2	15.9				40,672		3,598	7,880		52,150	14,440	66,591
Year 3	13.5				34,566		3,058	6,697		44,321	12,273	56,594
Year 4	15.8				40,442		3,578	7,836		51,856	14,359	66,214
Year 5	55.5				141,714		12,536	27,458		181,707	50,315	232,022
Years 6-10	196.0				526,354		48,334	97,020		671,708	186,194	857,902
Year 11-15	0.0				0		0	0		0	0	0
Year 16-20	0.0				0		0	0		0	0	0
Post-operational period	32.8				79,600		6,744	16,254		102,598	28,376	130,974
Tailings Top	538.8	-	-	-	1,148,504.65	-	155,339.13	266,721.35	-	1,570,565	439,586	2,010,152
Year -1	0.0				0		0	0		0	0	0
Year 1	0.0				0		0	0		0	0	0
Year 2	0.0				0		0	0		0	0	0
Year 3	0.0				0		0	0		0	0	0
Year 4	0.0				0		0	0		0	0	0
Year 5	0.0				0		0	0		0	0	0
Years 6-10	200.2				426,806		57,727	99,119		583,652	163,359	747,011
Year 11-15	307.8				656,089		88,738	152,366		897,193	251,116	1,148,310
Year 16-20	0.0				0		0	0		0	0	0
Post-operational period	30.8				65,609		8,874	15,237		89,719	25,112	114,831
Tailings - Top and Inside		-	-	-	4,265,435.17	-	564,903.84	1,348,776.00	-	6,179,115	1,724,851	7,903,966
Year -1	48.0				145,750		18,490	23,760		188,001	52,609	240,610
Year 1	212.0				368,343		48,322	104,940		521,605	145,665	667,270
Year 2	296.0				498,685		65,579	146,520		710,785	198,470	909,254
Year 3	377.0				620,886		81,798	186,615		889,299	248,291	1,137,590
Year 4	447.0				716,818		94,643	221,265		1,032,726	288,300	1,321,026
Year 5	485.0				817,223		107,467	240,075		1,164,765	325,233	1,489,999
Years 6-10	618.0				780,072		105,305	305,910		1,191,287	332,178	1,523,465
Year 11-15	180.0				204,658		27,941	89,100		321,699	89,653	411,352
Year 16-20	0.0				26,578		3,218	0		29,796	8,367	38,163
Post-operational period	61.8				86,420		12,140	30,591		129,151	36,085	165,236
Process Ponds	39.9	-	-	10,509.83	61,843.89	-	8,325.36	99,800.00	-	180,479	49,562	230,041
Year -1	0.0				0		0	0		0	0	0
Year 1	8.0				0		0	0		0	0	0
Year 2	0.0				0		0	0		0	0	0
Year 3	12.0				0		0	0		0	0	0
Year 4	0.0				0		0	0		0	0	0
Year 5	0.0				0		0	0		0	0	0
Years 6-10	8.0				29,026		3,907	39,800		72,733	20,029	92,762
Year 11-15	0.0				0		0	0		0	0	0
Year 16-20	12.0			10,510	32,818		4,418	60,000		107,746	29,533	137,279
Post-operational period	0.0				0		0	0		0	0	0
Roads	0.0				0		0	0		0	0	0
Brandenburg Bid Amount for all facilities		205,520		5,077,954						5,283,474	55,490	5,338,964
Administration Building Area				3,845	0		0	0		3,845	1,038	4,883
Mine Shop/Warehouse Area		1,500		0	0		0	0		1,500	405	1,905
SX/EW Plant Site		3,000		5,640	0		0	0		8,640	2,333	10,972
Process ponds	0.0		321,424	88,692	61,844		8,325	99,800		580,085	157,456	737,541
Crusher/Ore Stockpile & Conveyor					0		0	0		0	0	0
Plant Site	4.0			16,151	960,587		129,009	83,160		1,188,907	333,906	1,522,813
Topsoil Stockpiles	200.0				75,601		10,779	99,000		185,380	51,131	236,511
Stormwater Basins	7.5				4,098		561	743		5,401	1,514	6,915
Miscellaneous Reclamation Costs		25,200		42,000		43,198	0		346,800	457,198	123,443	580,641
Total		\$ 235,220	\$ 321,424	\$ 5,264,014		\$ 43,198			\$ 346,800			

Revegetation of Construction Areas and Roadways

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations**

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seed and/or Scarify and Seed		1.4	30.0	4.0	2.4	0.62	1.5	-
Year -1	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Year 1	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 2	100.0	1.0	30.0	4.0	2.4	0.62	1.5	67.2
Year 3	100.0	1.0	30.0	4.0	2.4	0.62	1.5	67.2
Year 4	75.0	1.0	30.0	4.0	2.4	0.62	1.5	50.4
Year 5	50.0	1.0	30.0	4.0	2.4	0.62	1.5	33.6
Years 6-10	50.0	2.0	30.0	4.0	2.4	0.62	1.5	67.2
Year 11-15	25.0	1.0	30.0	4.0	2.4	0.62	1.5	16.8
Year 16-20	25.0	2.0	30.0	4.0	2.4	0.62	1.5	33.6
Post-operational period	15.4	2.0	30.0	4.0	2.4	0.62	1.5	20.7

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation (\$/ac) ¹	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
75D Challenger	-	-	194.48	69,372.06	30.66	10,936.66	495.00	713,983.10	\$ 794,291.82	-
Year -1	-	-	194.48	-	30.66	-	1,621.25	-	\$ -	-
Year 1	-	-	194.48	-	30.66	-	1,621.25	-	\$ -	-
Year 2	100.0	67.2	194.48	13,069.81	30.66	2,060.48	1,621.25	162,125.00	\$ 177,255.29	1,772.55
Year 3	100.0	67.2	194.48	13,069.81	30.66	2,060.48	1,621.25	162,125.00	\$ 177,255.29	1,772.55
Year 4	75.0	50.4	194.48	9,802.36	30.66	1,545.36	1,621.25	121,593.75	\$ 132,941.47	1,772.55
Year 5	50.0	33.6	194.48	6,534.90	30.66	1,030.24	1,621.25	81,062.50	\$ 88,627.65	1,772.55
Years 6-10	50.0	67.2	194.48	13,069.81	30.66	2,060.48	1,621.25	81,062.50	\$ 96,192.79	1,923.86
Year 11-15	25.0	16.8	194.48	3,267.45	30.66	515.12	1,621.25	40,531.25	\$ 44,313.82	1,772.55
Year 16-20	25.0	33.6	194.48	6,534.90	30.66	1,030.24	1,621.25	40,531.25	\$ 48,096.40	1,923.86
Post-operational period	15.4	20.7	194.48	4,023.02	30.66	634.24	1,621.25	24,951.85	\$ 29,609.10	1,923.86

1. Assumes Wheeler method for revegetation with seed mix and amendments for \$495/ac. Additional cost for reseeding by more aggressive means at \$5000/ac.

Revegetation of Disturbed Areas

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations**

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seed and/or Scarify and Seed		1.4	30.0	4.0	2.4	0.62	1.5	-
Year -1	483.1	2.0	30.0	4.0	2.4	0.62	1.5	649.3
Year 1	124.4	1.0	30.0	4.0	2.4	0.62	1.5	83.6
Year 2	86.1	1.0	30.0	4.0	2.4	0.62	1.5	57.8
Year 3	70.1	1.0	30.0	4.0	2.4	0.62	1.5	47.1
Year 4	54.8	1.0	30.0	4.0	2.4	0.62	1.5	36.8
Year 5	125.4	1.0	30.0	4.0	2.4	0.62	1.5	84.3
Years 6-10	249.3	2.0	30.0	4.0	2.4	0.62	1.5	335.0
Year 11-15		1.0	30.0	4.0	2.4	0.62	1.5	-
Year 16-20		2.0	30.0	4.0	2.4	0.62	1.5	-
Post-operational period	15.4	2.0	30.0	4.0	2.4	0.62	1.5	20.7

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation (\$/ac) ¹	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
75D Challenger	-	-	194.48	255,670.42	30.66	40,307.00	495.00	598,205.27	\$ 894,182.69	-
Year -1	483.1	649.3	194.48	126,267.42	30.66	19,906.33	495.00	239,109.75	\$ 385,283.50	797.61
Year 1	124.4	83.6	194.48	16,263.42	30.66	2,563.96	495.00	61,595.33	\$ 80,422.70	646.30
Year 2	86.1	57.8	194.48	11,248.53	30.66	1,773.36	495.00	42,602.18	\$ 55,624.06	646.30
Year 3	70.1	47.1	194.48	9,159.98	30.66	1,444.09	495.00	34,692.08	\$ 45,296.14	646.30
Year 4	54.8	36.8	194.48	7,163.56	30.66	1,129.35	495.00	27,130.95	\$ 35,423.86	646.30
Year 5	125.4	84.3	194.48	16,390.19	30.66	2,583.95	495.00	62,075.48	\$ 81,049.62	646.30
Years 6-10	249.3	335.0	194.48	65,154.30	30.66	10,271.72	495.00	123,381.23	\$ 198,807.25	797.61
Year 11-15	-	-	194.48	-	30.66	-	495.00	-	\$ -	-
Year 16-20	-	-	194.48	-	30.66	-	495.00	-	\$ -	-
Post-operational period	15.4	20.7	194.48	4,023.02	30.66	634.24	495.00	7,618.30	\$ 12,275.55	797.61

1) The Wheeler method of revegetation has been used.

Perimeter Berm

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Grading and Planting Perimeter Berm

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Regrading Perimeter Berm		0.5	-	1,300	0.57	742.9	-
Year -1	-	0.5	-	1,300	0.57	742.9	-
Year 1	130.5	0.5	105,253.9	1,300	0.57	742.9	141.7
Year 2	70.9	0.5	57,152.3	1,300	0.57	742.9	76.9
Year 3	71.8	0.5	57,942.9	1,300	0.57	742.9	78.0
Year 4	39.0	0.5	31,443.9	1,300	0.57	742.9	42.3
Year 5	53.3	0.5	43,011.5	1,300	0.57	742.9	57.9
Years 6-10	-	0.5	-	1,300	0.57	742.9	-
Year 11-15	-	0.5	-	1,300	0.57	742.9	-
Year 16-20	-	0.5	-	1,300	0.57	742.9	-
Post-operational period	36.5	0.5	29,480.4	1,300	0.57	742.9	39.7

Scraper	Regrade Area (acres)	Placement Depth (ft)	Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Place Topsoil		1.0	-	237	0.56	132.7	-
Year -1	-	1.0	-	237	0.56	132.7	-
Year 1	130.5	1.0	210,507.7	237	0.56	132.7	1,585.8
Year 2	70.9	1.0	114,304.7	237	0.56	132.7	861.1
Year 3	71.8	1.0	115,885.7	237	0.56	132.7	873.0
Year 4	39.0	1.0	62,887.7	237	0.56	132.7	473.7
Year 5	53.3	1.0	86,022.9	237	0.56	132.7	648.0
Years 6-10	-	1.0	-	237	0.56	132.7	-
Year 11-15	-	1.0	-	237	0.56	132.7	-
Year 16-20	-	1.0	-	237	0.56	132.7	-
Post-operational period	36.5	1.0	58,960.9	237	0.56	132.7	444.2

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Regrading Perimeter Berm		1.5	-	1,850	0.57	1,057.2	-
Year -1	-	1.5	-	1,850	0.57	1,057.2	-
Year 1	130.5	1.5	315,761.6	1,850	0.57	1,057.2	298.7
Year 2	70.9	1.5	171,457.0	1,850	0.57	1,057.2	162.2
Year 3	71.8	1.5	173,828.6	1,850	0.57	1,057.2	164.4
Year 4	39.0	1.5	94,331.6	1,850	0.57	1,057.2	89.2
Year 5	53.3	1.5	129,034.4	1,850	0.57	1,057.2	122.1
Years 6-10	-	1.5	-	1,850	0.57	1,057.2	-
Year 11-15	-	1.5	-	1,850	0.57	1,057.2	-
Year 16-20	-	1.5	-	1,850	0.57	1,057.2	-
Post-operational period	36.5	1.5	88,441.3	1,850	0.57	1,057.2	83.7

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seed and/or Scarify and Seed		1.4	30.0	4.0	2.4	0.62	1.5	-
Year -1	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Year 1	130.5	1.0	30.0	4.0	2.4	0.62	1.5	87.7
Year 2	70.9	1.0	30.0	4.0	2.4	0.62	1.5	47.6
Year 3	71.8	1.0	30.0	4.0	2.4	0.62	1.5	48.3
Year 4	39.0	1.0	30.0	4.0	2.4	0.62	1.5	26.2
Year 5	53.3	1.0	30.0	4.0	2.4	0.62	1.5	35.8
Years 6-10	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Year 11-15	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 16-20	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Post-operational period	36.5	2.0	30.0	4.0	2.4	0.62	1.5	49.1

Perimeter Berm

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Grading and Planting Perimeter Berm

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation (\$/ac) ¹	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
D-10R Dozer	-	-	227.75	-	30.66	-	-	-	-	-
Year -1	-	-	227.75	-	30.66	-	-	-	-	-
Year 1	130.5	440.4	227.75	100,293.96	30.66	13,501.47	-	-	113,795.43	872.13
Year 2	70.9	239.1	227.75	54,459.13	30.66	7,331.23	-	-	61,790.36	872.13
Year 3	71.8	242.4	227.75	55,212.41	30.66	7,432.64	-	-	62,645.05	872.13
Year 4	39.0	131.6	227.75	29,962.13	30.66	4,033.47	-	-	33,995.60	872.13
Year 5	53.3	180.0	227.75	40,984.63	30.66	5,517.31	-	-	46,501.93	872.13
Years 6-10	-	-	227.75	-	30.66	-	-	-	-	-
Year 11-15	-	-	227.75	-	30.66	-	-	-	-	-
Year 16-20	-	-	227.75	-	30.66	-	-	-	-	-
Post-operational period	36.5	123.3	227.75	28,091.23	30.66	3,781.61	-	-	31,872.84	872.13
Scraper	-	-	199.46	-	16.90	-	-	-	-	-
Year -1	-	-	199.46	-	16.90	-	-	-	-	-
Year 1	130.5	1,585.8	199.46	316,294.10	16.90	26,799.68	-	-	343,093.78	2,629.47
Year 2	70.9	861.1	199.46	171,746.15	16.90	14,552.09	-	-	186,298.24	2,629.47
Year 3	71.8	873.0	199.46	174,121.75	16.90	14,753.38	-	-	188,875.13	2,629.47
Year 4	39.0	473.7	199.46	94,490.68	16.90	8,006.22	-	-	102,496.90	2,629.47
Year 5	53.3	648.0	199.46	129,252.01	16.90	10,951.56	-	-	140,203.56	2,629.47
Years 6-10	-	-	199.46	-	16.90	-	-	-	-	-
Year 11-15	-	-	199.46	-	16.90	-	-	-	-	-
Year 16-20	-	-	199.46	-	16.90	-	-	-	-	-
Post-operational period	36.5	444.2	199.46	88,590.47	16.90	7,506.29	-	-	96,096.76	2,629.47
75D Challenger	-	-	194.48	-	30.66	-	495.00	-	-	-
Year -1	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 1	130.5	87.7	194.48	17,053.49	30.66	2,688.52	495.00	64,587.60	84,329.61	646.30
Year 2	70.9	47.6	194.48	9,259.96	30.66	1,459.85	495.00	35,070.75	45,790.56	646.30
Year 3	71.8	48.3	194.48	9,388.04	30.66	1,480.05	495.00	35,555.85	46,423.94	646.30
Year 4	39.0	26.2	194.48	5,094.61	30.66	803.18	495.00	19,295.10	25,192.89	646.30
Year 5	53.3	35.8	194.48	6,968.82	30.66	1,098.65	495.00	26,393.40	34,460.87	646.30
Years 6-10	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 11-15	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 16-20	-	-	194.48	-	30.66	-	495.00	-	-	-
Post-operational period	36.5	49.1	194.48	9,552.98	30.66	1,506.05	495.00	18,090.27	29,149.30	797.61
TOTAL	402.0	6,537.2	207.23	1,340,816.6	26.07	133,203.2	495.00	198,993.0	\$ 1,673,012.76	4,161.66
Year -1	-	-	207.23	-	26.07	-	495.00	-	-	-
Year 1	130.5	2,113.8	207.23	433,641.6	26.07	42,989.7	495.00	64,587.6	541,218.82	4,147.91
Year 2	70.9	1,147.8	207.23	235,465.2	26.07	23,343.2	495.00	35,070.8	293,879.16	4,147.91
Year 3	71.8	1,163.7	207.23	238,722.2	26.07	23,666.1	495.00	35,555.9	297,944.11	4,147.91
Year 4	39.0	631.5	207.23	129,547.4	26.07	12,842.9	495.00	19,295.1	161,685.39	4,147.91
Year 5	53.3	863.8	207.23	177,205.5	26.07	17,567.5	495.00	26,393.4	221,166.37	4,147.91
Years 6-10	-	-	207.23	-	26.07	-	495.00	-	-	-
Year 11-15	-	-	207.23	-	26.07	-	495.00	-	-	-
Year 16-20	-	-	207.23	-	26.07	-	495.00	-	-	-
Post-operational period	36.5	616.6	207.23	126,234.7	26.07	12,794.0	495.00	18,090.3	157,118.90	4,299.21

1. The Wheeler method of revegetation has been used.

Rosemont Pit

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Grade and Shape Pit Berm**

D-10R Dozer	Open Pit Area (acres)	Berm Length Area (ft)	Berm Sectional Area (sf)	Total Berm Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Grade and Shap Pit Berm ¹ (D10R dozer)	86.0	5,000	62.5	11,574	1,300	0.48	619.1	18.7

D-10R Dozer	Bench Areas	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Spread fines material and rip	49.0	1.0	79,053.3	1,850	0.40	743.7	106.3

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify	49.0	2.0	30.0	4.0	2.4	0.62	1.5	65.9

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation (\$/ac) ²	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
TOTAL		190.9	211.12	41,276.1	23.78	4,945.3	495.00	24,255.0	\$ 70,476.41	-
D-10R Dozer	135.0	125.0	227.75	28,467.67	30.66	3,832.29			\$ 32,299.96	239.26
Challenger	49.0	65.9	194.48	12,808.41	16.90	1,113.04	495.00	24,255.00	38,176.45	779.11

1. Berm size is assumed to be 5 foot high with 2.5:1 sideslopes.
2. No revegetation in this case.

Barrel Waste Rock Stockpile

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Barrel Waste Stockpile**

CAT 777C Haul Truck	Growth Media Placement Volume (cy)	Maximum Truck Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Regrade waste dump sloped areas to blend with existing topo		421.2	0.62	262	-
Year -1	-	421.2	0.62	262	-
Year 1	-	421.2	0.62	262	-
Year 2	-	421.2	0.62	262	-
Year 3	-	421.2	0.62	262	-
Year 4	-	421.2	0.62	262	-
Year 5	-	421.2	0.62	262	-
Years 6-10	-	421.2	0.62	262	-
Year 11-15	164,996	421.2	0.62	262	629.21
Year 16-20	2,176,855	421.2	0.62	262	8,301.47
Post-operational period	234,185	421.2	0.62	262	893.07

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load haul trucks		33%	-
Year -1	-	33%	-
Year 1	-	33%	-
Year 2	-	33%	-
Year 3	-	33%	-
Year 4	-	33%	-
Year 5	-	33%	-
Years 6-10	-	33%	-
Year 11-15	629.2	33%	207.6
Year 16-20	8,301.5	33%	2,739.5
Post-operational period	893.1	33%	294.7

D10R/10U Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip and regrade waste dump footprint to prepare for revegetation		1.0	-	1,850	0.40	743.7	-
Year -1	-	-	-	1,850	0.40	743.7	-
Year 1	-	-	-	1,850	0.40	743.7	-
Year 2	-	-	-	1,850	0.40	743.7	-
Year 3	-	-	-	1,850	0.40	743.7	-
Year 4	-	-	-	1,850	0.40	743.7	-
Year 5	-	-	-	1,850	0.40	743.7	-
Years 6-10	-	-	-	1,850	0.40	743.7	-
Year 11-15	102	1.5	247,493.4	1,850	0.40	743.7	332.8
Year 16-20	1,349	1.5	3,265,281.8	1,850	0.40	743.7	4,390.6
Post-operational period	145	1.5	351,277.5	1,850	0.40	743.7	472.3

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify		1.4	30.0	4.0	2.4	0.62	1.5	-
Year -1	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Year 1	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 2	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 3	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 4	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Year 5	-	1.0	30.0	4.0	2.4	0.62	1.5	-
Years 6-10	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Year 11-15	102.3	1.0	30.0	4.0	2.4	0.62	1.5	68.7
Year 16-20	1,349.3	2.0	30.0	4.0	2.4	0.62	1.5	1,813.6
Post-operational period	145.2	2.0	30.0	4.0	2.4	0.62	1.5	195.1

Barrel Waste Rock Stockpile

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Barrel Waste Stockpile
Cost Summary**

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
CAT 777C Haul Truck		-	174.49	1,714,145.9	23.94	235,180.5		-	1,949,326.4	-
Year -1	-	-	174.49	-	23.94	\$ -		-	-	-
Year 1	-	-	174.49	-	23.94	\$ -		-	-	-
Year 2	-	-	174.49	-	23.94	\$ -		-	-	-
Year 3	-	-	174.49	-	23.94	\$ -		-	-	-
Year 4	-	-	174.49	-	23.94	\$ -		-	-	-
Year 5	-	-	174.49	-	23.94	\$ -		-	-	-
Years 6-10	-	-	174.49	-	23.94	\$ -		-	-	-
Year 11-15	102.3	629.21	174.49	109,791.41	23.94	\$ 15,063.36			124,854.77	1,220.83
Year 16-20	1,349.3	8,301.47	174.49	1,448,523.02	23.94	\$ 198,737.13			1,647,260.15	1,220.83
Post-operational period	145.2	893.07	174.49	155,831.44	23.94	\$ 21,380.05			177,211.49	1,220.83
CAT 992 Loader		-	270.65	877,390.22	32.77	106,235.00		-	983,625.22	-
Year -1	-	-	270.65	-	32.77	-		-	-	-
Year 1	-	-	270.65	-	32.77	-		-	-	-
Year 2	-	-	270.65	-	32.77	-		-	-	-
Year 3	-	-	270.65	-	32.77	-		-	-	-
Year 4	-	-	270.65	-	32.77	-		-	-	-
Year 5	-	-	270.65	-	32.77	-		-	-	-
Years 6-10	-	-	270.65	-	32.77	-		-	-	-
Year 11-15	102.3	207.6	270.65	56,197.03	32.77	6,804.37			63,001.40	616.03
Year 16-20	1,349.3	2,739.5	270.65	741,430.44	32.77	89,772.90			831,203.34	616.03
Post-operational period	145.2	294.7	270.65	79,762.75	32.77	9,657.73			89,420.47	616.03
D-10R Dozer		5,195.7	227.75	1,183,344.71	30.66	159,300.60		-	1,342,645.31	-
Year -1	-	-	227.75	-	30.66	-		-	-	-
Year 1	-	-	227.75	-	30.66	-		-	-	-
Year 2	-	-	227.75	-	30.66	-		-	-	-
Year 3	-	-	227.75	-	30.66	-		-	-	-
Year 4	-	-	227.75	-	30.66	-		-	-	-
Year 5	-	-	227.75	-	30.66	-		-	-	-
Years 6-10	-	-	227.75	-	30.66	-		-	-	-
Year 11-15	102.3	332.8	227.75	75,793.48	30.66	10,203.24			85,996.72	840.88
Year 16-20	1,349.3	4,390.6	227.75	999,974.44	30.66	134,615.49			1,134,589.93	840.88
Post-operational period	145.2	472.3	227.75	107,576.79	30.66	14,481.87			122,058.66	840.88
75D Challenger (Scarification and Seeding & Cover)		2,077.4	194.48	404,008.95	30.66	63,692.89	495.00	790,374.42	1,258,076.27	-
Year -1	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 1	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 2	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 3	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 4	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 5	-	-	194.48	-	30.66	-	495.00	-	-	-
Years 6-10	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 11-15	102.3	68.7	194.48	13,366.49	30.66	2,107.26	495.00	50,623.65	66,097.40	646.30
Year 16-20	1,349.3	1,813.6	194.48	352,699.24	30.66	55,603.81	495.00	667,898.55	1,076,201.59	797.61
Post-operational period	145.2	195.1	194.48	37,943.22	30.66	5,981.83	495.00	71,852.22	115,777.27	797.61
TOTAL	1,596.7	20,338.7	216.84	4,178,889.8	29.51	564,409.0	495.00	790,374.4	\$ 5,533,673.21	3,465.66
Year -1	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 1	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 2	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 3	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 4	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 5	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Years 6-10	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 11-15	102.3	1,238.4	216.84	255,148.4	29.51	34,178.2	495.00	50,623.7	\$ 339,950.30	3,324.05
Year 16-20	1,349.3	17,245.1	216.84	3,542,627.1	29.51	478,729.3	495.00	667,898.6	\$ 4,689,255.01	3,475.35
Post-operational period	145.2	1,855.2	216.84	381,114.2	29.51	51,501.5	495.00	71,852.2	\$ 504,467.91	3,475.35

1. Seed Mix is used for revegetation (\$363/ac) plus an amendment cost for 16-16-8 fertilizer (\$30/ac) and a charge (\$5/ac) for testing suitability of plant growth material.

Waste Rock Storage - Top and Interior, Walk-Away During Operations

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Middle Barrel Waste Storage**

CAT 777C Haul Truck	Depth of Material	Growth Media Placement Volume (cy)	Maximum Truck Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Regrade waste dump sloped areas to blend with existing topo		3,749,387	538.2	0.62	335	11,190.77
Year -1	1.00	627,587	538.2	0.62	335	1,873.15
Year 1	1.00	945,413	538.2	0.62	335	2,821.77
Year 2	1.00	1,164,827	538.2	0.62	335	3,476.65
Year 3	1.00	1,253,560	538.2	0.62	335	3,741.49
Year 4	1.00	1,708,520	538.2	0.62	335	5,099.41
Year 5	1.00	1,756,920	538.2	0.62	335	5,243.87
Years 6-10	1.00	3,749,387	538.2	0.62	335	11,190.77
Year 11-15	1.00	3,738,093	538.2	0.62	335	11,157.06
Year 16-20	1.00	374,939	538.2	0.62	335	1,119.08
Post-operational period	1.00	-	538.2	0.62	335	-

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load haul trucks		33%	-
Year -1	1,873.2	33%	618.1
Year 1	2,821.8	33%	931.2
Year 2	3,476.6	33%	1,147.3
Year 3	3,741.5	33%	1,234.7
Year 4	5,099.4	33%	1,682.8
Year 5	5,243.9	33%	1,730.5
Years 6-10	11,190.8	33%	3,693.0
Year 11-15	11,157.1	33%	3,681.8
Year 16-20	1,119.1	33%	369.3
Post-operational period	-	33%	-

D10R/10U Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip and regrade waste dump footprint to prepare for revegetation		1.0	-	1,300	0.48	619.1	-
Year -1	627	1.5	1,517,340.0	1,300	0.48	619.1	2,451.0
Year 1	389	1.5	941,380.0	1,300	0.48	619.1	1,520.6
Year 2	586	1.5	1,418,120.0	1,300	0.48	619.1	2,290.7
Year 3	722	1.5	1,747,240.0	1,300	0.48	619.1	2,822.3
Year 4	777	1.5	1,880,340.0	1,300	0.48	619.1	3,037.3
Year 5	1,059	1.5	2,562,780.0	1,300	0.48	619.1	4,139.7
Years 6-10	1,089	1.5	2,635,380.0	1,300	0.48	619.1	4,257.0
Year 11-15	2,324	1.5	5,624,080.0	1,300	0.48	619.1	9,084.6
Year 16-20	2,317	1.5	5,607,140.0	1,300	0.48	619.1	9,057.3
Post-operational period	232	1.5	562,408.0	1,300	0.48	619.1	908.5

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify		1.4	30.0	4.0	2.4	0.62	1.5	-
Year -1	627.0	2.0	30.0	4.0	2.4	0.62	1.5	842.7
Year 1	389.0	1.0	30.0	4.0	2.4	0.62	1.5	261.4
Year 2	586.0	1.0	30.0	4.0	2.4	0.62	1.5	393.8
Year 3	722.0	1.0	30.0	4.0	2.4	0.62	1.5	485.2
Year 4	777.0	1.0	30.0	4.0	2.4	0.62	1.5	522.2
Year 5	1,059.0	1.0	30.0	4.0	2.4	0.62	1.5	711.7
Years 6-10	1,089.0	2.0	30.0	4.0	2.4	0.62	1.5	1,463.7
Year 11-15	2,324.0	1.0	30.0	4.0	2.4	0.62	1.5	1,561.8
Year 16-20	2,317.0	2.0	30.0	4.0	2.4	0.62	1.5	3,114.2
Post-operational period	232.4	2.0	30.0	4.0	2.4	0.62	1.5	312.4

Waste Rock Storage - Top and Interior, Walk-Away During Operations

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Middle Barrel Waste Storage
Cost Summary**

Equipment	Area Reclaimed (acres)	Hours	Cost								
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)	
CAT 777C Haul Truck		11,190.77	174.49	7,978,247.3	23.94	1,094,614.2			-	9,072,861.5	-
Year -1	627.0	1,873.15	174.49	326,846.49	23.94	\$ 44,843.29				371,689.78	592.81
Year 1	389.0	2,821.77	174.49	492,370.30	23.94	\$ 67,553.13				559,923.42	1,439.39
Year 2	586.0	3,476.65	174.49	606,640.53	23.94	\$ 83,230.98				689,871.52	1,177.26
Year 3	722.0	3,741.49	174.49	652,852.76	23.94	\$ 89,571.29				742,424.06	1,028.29
Year 4	777.0	5,099.41	174.49	889,795.47	23.94	\$ 122,079.80				1,011,875.26	1,302.28
Year 5	1,059.0	5,243.87	174.49	915,002.14	23.94	\$ 125,538.15				1,040,540.28	982.57
Years 6-10	1,089.0	11,190.77	174.49	1,952,676.74	23.94	\$ 267,906.93				2,220,583.67	2,039.10
Year 11-15	2,324.0	11,157.06	174.49	1,946,795.18	23.94	\$ 267,099.99				2,213,895.16	952.62
Year 16-20	2,317.0	1,119.08	174.49	195,267.67	23.94	\$ 26,790.69				222,058.37	95.84
Post-operational period	232.4	-	174.49	-	23.94	\$ -				-	-
CAT 992 Loader		-	270.65	4,083,687.52	32.77	494,455.64			-	4,578,143.15	-
Year -1	627.0	618.1	270.65	167,297.26	32.77	20,256.47				187,553.73	299.13
Year 1	389.0	931.2	270.65	252,021.07	32.77	30,514.88				282,535.95	726.31
Year 2	586.0	1,147.3	270.65	310,510.60	32.77	37,596.83				348,107.44	594.04
Year 3	722.0	1,234.7	270.65	334,164.46	32.77	40,460.86				374,625.32	518.87
Year 4	777.0	1,682.8	270.65	455,444.22	32.77	55,145.49				510,589.72	657.13
Year 5	1,059.0	1,730.5	270.65	468,346.33	32.77	56,707.69				525,054.02	495.80
Years 6-10	1,089.0	3,693.0	270.65	999,482.89	32.77	121,018.06				1,120,500.95	1,028.93
Year 11-15	2,324.0	3,681.8	270.65	996,472.40	32.77	120,653.55				1,117,125.94	480.69
Year 16-20	2,317.0	369.3	270.65	99,948.29	32.77	12,101.81				112,050.09	48.36
Post-operational period	232.4	-	270.65	-	32.77	-				-	-
D-10R Dozer		39,569.0	227.75	9,011,990.62	30.66	1,213,184.54			-	10,225,175.16	-
Year -1	627.0	2,451.0	227.75	558,219.21	30.66	75,146.87				633,366.08	1,010.15
Year 1	389.0	1,520.6	227.75	346,327.39	30.66	46,622.22				392,949.61	1,010.15
Year 2	586.0	2,290.7	227.75	521,716.84	30.66	70,232.96				591,949.80	1,010.15
Year 3	722.0	2,822.3	227.75	642,797.88	30.66	86,532.76				729,330.64	1,010.15
Year 4	777.0	3,037.3	227.75	691,764.47	30.66	93,124.59				784,889.07	1,010.15
Year 5	1,059.0	4,139.7	227.75	942,829.57	30.66	126,922.71				1,069,752.28	1,010.15
Years 6-10	1,089.0	4,257.0	227.75	969,538.63	30.66	130,518.25				1,100,056.88	1,010.15
Year 11-15	2,324.0	9,084.6	227.75	2,069,061.31	30.66	278,534.82				2,347,596.13	1,010.15
Year 16-20	2,317.0	9,057.3	227.75	2,062,829.20	30.66	277,695.86				2,340,525.06	1,010.15
Post-operational period	232.4	908.5	227.75	206,906.13	30.66	27,853.48				234,759.61	1,010.15
75D Challenger (Scarification and Seeding & Cover)		9,669.2	194.48	1,880,457.90	30.66	296,458.30	495.00	5,010,588.00		7,187,504.20	-
Year -1	627.0	842.7	194.48	163,895.40	30.66	25,838.47	495.00	310,365.00		500,098.87	797.61
Year 1	389.0	261.4	194.48	50,841.55	30.66	8,015.28	495.00	192,555.00		251,411.84	646.30
Year 2	586.0	393.8	194.48	76,589.08	30.66	12,074.44	495.00	290,070.00		378,733.51	646.30
Year 3	722.0	485.2	194.48	94,364.02	30.66	14,876.69	495.00	357,390.00		466,630.71	646.30
Year 4	777.0	522.2	194.48	101,552.41	30.66	16,009.96	495.00	384,615.00		502,177.37	646.30
Year 5	1,059.0	711.7	194.48	138,409.27	30.66	21,820.52	495.00	524,205.00		684,434.80	646.30
Years 6-10	1,089.0	1,463.7	194.48	284,660.43	30.66	44,877.34	495.00	539,055.00		868,592.77	797.61
Year 11-15	2,324.0	1,561.8	194.48	303,742.35	30.66	47,885.65	495.00	1,150,380.00		1,502,007.99	646.30
Year 16-20	2,317.0	3,114.2	194.48	605,654.92	30.66	95,482.82	495.00	1,146,915.00		1,848,052.75	797.61
Post-operational period	232.4	312.4	194.48	60,748.47	30.66	9,577.13	495.00	115,038.00		185,363.60	797.61
TOTAL		110,050.1	216.84	22,954,383.3	29.51	3,098,712.7	495.00	5,010,588.0	\$	31,063,684.04	-
Year -1	627.0	5,785.0	216.84	1,216,258.4	29.51	166,085.1	495.00	310,365.0	\$	1,692,708.46	2,699.69
Year 1	389.0	5,535.0	216.84	1,141,560.3	29.51	152,705.5	495.00	192,555.0	\$	1,486,820.82	3,822.16
Year 2	586.0	7,308.5	216.84	1,515,457.1	29.51	203,135.2	495.00	290,070.0	\$	2,008,662.27	3,427.75
Year 3	722.0	8,283.7	216.84	1,724,179.1	29.51	231,441.6	495.00	357,390.0	\$	2,313,010.73	3,203.62
Year 4	777.0	10,341.7	216.84	2,138,556.6	29.51	286,359.8	495.00	384,615.0	\$	2,809,531.42	3,615.87
Year 5	1,059.0	11,825.7	216.84	2,464,587.3	29.51	330,989.1	495.00	524,205.0	\$	3,319,781.38	3,134.83
Years 6-10	1,089.0	20,604.4	216.84	4,206,358.7	29.51	564,320.6	495.00	539,055.0	\$	5,309,734.26	4,875.79
Year 11-15	2,324.0	25,485.3	216.84	5,316,071.2	29.51	714,174.0	495.00	1,150,380.0	\$	7,180,625.23	3,089.77
Year 16-20	2,317.0	13,659.9	216.84	2,963,700.1	29.51	412,071.2	495.00	1,146,915.0	\$	4,522,686.27	1,951.96
Post-operational period	232.4	1,220.8	216.84	267,654.6	29.51	37,430.6	495.00	115,038.0	\$	420,123.21	1,807.76

1. Seed Mix is used for revegetation (\$363/ac) plus an amendment cost for 16-16-8 fertilizer (\$30/ac) and a charge (\$5/ac) for testing suitability of plant growth material.

Leach Pad

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Leach Pad

D10R/10U Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip and regrade leach pad footprint to prepare for revegetation	1,121.0	1.0	1,808,546.7	1,300	0.48	619.1	2,921.4
Year -1	73.0	0.5	58,886.7	1,300	0.48	619.1	95.1
Year 1	111.0	1.0	179,080.0	1,300	0.48	619.1	289.3
Year 2	149.0	1.0	240,386.7	1,300	0.48	619.1	388.3
Year 3	178.0	1.0	287,173.3	1,300	0.48	619.1	463.9
Year 4	199.0	1.0	321,053.3	1,300	0.48	619.1	518.6
Year 5	199.0	1.5	481,580.0	1,300	0.48	619.1	777.9
Years 6-10	212.0	2.0	684,053.3	1,300	0.48	619.1	1,105.0

Drum Compactor	Total Compaction Area (ac)	Total Lifts	Total Passes	Maximum Compactor Production (ac/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Compact and prepare ore surface for low permeability layer - CS583	212.0		2	6.8	0.62	4.23	100.33
Compact low permeability cover material (2 six inch lifts) - CP563C	212.0	2	2	6.8	0.62	4.23	200.66
Year -1	73.0	1	4	6.8	0.62	4.23	69.10
Year 1	111.0	1	4	6.8	0.62	4.23	105.06
Year 2	149.0	1	4	6.8	0.62	4.23	141.03
Year 3	178.0	1	4	6.8	0.62	4.23	168.48
Year 4	199.0	1	4	6.8	0.62	4.23	188.36
Year 5	199.0	1	4	6.8	0.62	4.23	188.36
Years 6-10	212.0	1	4	6.8	0.62	4.23	200.66

Water Truck	Total Compactor Time (hr)	Percent Loader Required	Total Time (hr)
Moisture condition ore	100.3	100%	100.3
Moisture Condition low permeability cover material	200.7	100%	200.7
Year -1	69.1	100%	69.1
Year 1	105.1	100%	105.1
Year 2	141.0	100%	141.0
Year 3	168.5	100%	168.5
Year 4	188.4	100%	188.4
Year 5	188.4	100%	188.4
Years 6-10	200.7	100%	200.7

CAT 631E Scraper	Required/ Available Volume (cy)	Total Coverage Area (ac)	Total Coverage Depth (ft)	Material Required based on area and depth	Scraper Capacity (cy)	Maximum Scraper Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Excavate and haul low permeability borrow material	387,545.7	212.0	1.0		31.0	354.3	0.56	198.5	1,952.5
Haul and place topsoil material ¹	460,256.00	212.0	1.1	376,229.3	31.0	236.9	0.56	132.7	3,467.2
Year -1	176,660.00	73.0	1.0	117,773.3	31.0	236.9	0.56	132.7	1,330.8
Year 1	268,620.00	111.0	1.0	179,080.0	31.0	236.9	0.56	132.7	2,023.5
Year 2	360,580.00	149.0	1.0	240,386.7	31.0	236.9	0.56	132.7	2,716.3
Year 3	430,760.00	178.0	1.0	287,173.3	31.0	236.9	0.56	132.7	3,245.0
Year 4	481,580.00	199.0	1.0	321,053.3	31.0	236.9	0.56	132.7	3,627.8
Year 5	481,580.00	199.0	1.0	321,053.3	31.0	236.9	0.56	132.7	3,627.8
Years 6-10	513,040.00	212.0	1.0	342,026.7	31.0	236.9	0.56	132.7	3,864.8

CAT 14H Motor Grader	Total Lift Area (ac)	Total Lifts	Passes per lift	Maximum Production (ac/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Grade low permeability borrow material	212.0	2.0	4.0	7.3	0.85	6.2	272.3
Year -1	212.0	2.0	4.0	7.3	0.85	6.2	272.3
Year 1	73.0	2.0	4.0	7.3	0.85	6.2	93.8
Year 2	111.0	2.0	4.0	7.3	0.85	6.2	142.6
Year 3	149.0	2.0	4.0	7.3	0.85	6.2	191.4
Year 4	178.0	2.0	4.0	7.3	0.85	6.2	228.6
Year 5	199.0	2.0	4.0	7.3	0.85	6.2	255.6
Years 6-10	199.0	2.0	4.0	7.3	0.85	6.2	255.6

CAT 777C Haul Truck	Total Coverage area (ac)	Total Cover Depth	Shrinkage factor	Coverage Percentage (%)	Required Waste Rock Volume (cy)	Maximum Production (ac/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Excavate, haul and place waste rock cover material	212.0	4.0	1.0	100%	1,368,107	538.2	0.62	335.0	4,083.4
Year -1	73.0	4.0	1.0	100%	471,093	538.2	0.62	335.0	1,406.1
Year 1	111.0	4.0	1.0	100%	716,320	538.2	0.62	335.0	2,138.0
Year 2	149.0	4.0	1.0	100%	961,547	538.2	0.62	335.0	2,869.9
Year 3	178.0	4.0	1.0	100%	1,148,693	538.2	0.62	335.0	3,428.5
Year 4	199.0	4.0	1.0	100%	1,284,213	538.2	0.62	335.0	3,833.0
Year 5	199.0	4.0	1.0	100%	1,284,213	538.2	0.62	335.0	3,833.0
Years 6-10	212.0	4.0	1.0	100%	1,368,107	538.2	0.62	335.0	4,083.4

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load haul trucks	4,083.4	25%	1,020.8
Year -1	1,406.1	25%	351.5
Year 1	2,138.0	25%	534.5
Year 2	2,869.9	25%	717.5
Year 3	3,428.5	25%	857.1
Year 4	3,833.0	25%	958.2
Year 5	3,833.0	25%	958.2
Years 6-10	4,083.4	25%	1,020.8

Leach Pad

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Leach Pad

Leach Pad - Continued

D10R/10U Dozer	Regrade/ Borrow Area (acres)	Rip/ Regrade or Strip Depth (ft)	Rip/ Regrade or Borrow Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Regrade spent ore to 2.5:1 sideslopes and top drainage	212.0	2.1	703,561.2	1,300	0.57	742.9	947.1
Strip Borrow Area ²	0.0	0.5	8.0	1,300	0.57	742.9	0.0
Push Scraper Loads - 33.5% dozer time required per scraper hour)							650.2
Grade flat area waste rock to 4' depth	72.6	2.0	234,256.0	1,300	0.63	825.4	283.8
Grade sloped area waste rock to 4' depth	187.3	2.0	604,354.7	1,300	0.48	619.1	976.2
Push Scraper Loads - 33.5% dozer time required per scraper hour)							1,154.6

75D Challenger	Area (acres)	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Scarify	212.0	30.0	4.0	2.4	0.62	1.5	142.5
Seeding and Cover		30.0	4.0	2.4	0.62	1.5	-
Year -1	73.0	30.0	4.0	2.4	0.62	1.5	49.1
Year 1	111.0	30.0	4.0	2.4	0.62	1.5	74.6
Year 2	149.0	30.0	4.0	2.4	0.62	1.5	100.1
Year 3	178.0	30.0	4.0	2.4	0.62	1.5	119.6
Year 4	199.0	30.0	4.0	2.4	0.62	1.5	133.7
Year 5	199.0	30.0	4.0	2.4	0.62	1.5	133.7
Years 6-10	212.0	30.0	4.0	2.4	0.62	1.5	142.5

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ⁴ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
Smooth Drum Compactor		100.33	52.60	5,276.98	30.66	3,076.13			8,353.11	-
Year -1	212.0	200.66	52.60	10,553.96	30.66	6,152.26			16,706.22	78.80
Year 1	73.0	69.10	52.60	3,634.15	30.66	2,118.47			5,752.61	78.80
Year 2	111.0	105.06	52.60	5,525.89	30.66	3,221.23			8,747.12	78.80
Year 3	149.0	141.03	52.60	7,417.64	30.66	4,324.00			11,741.64	78.80
Year 4	178.0	168.48	52.60	8,861.34	30.66	5,165.58			14,026.92	78.80
Year 5	199.0	188.36	52.60	9,906.78	30.66	5,775.00			15,681.78	78.80
Years 6-10	199.0	188.36	52.60	9,906.78	30.66	5,775.00			15,681.78	78.80
PadDED Drum Compactor		200.66	52.60	10,553.96	30.66	6,152.26			16,706.22	-
Year -1	73.0	69.10	52.60	3,634.15	30.66	2,118.47			5,752.61	78.80
Year 1	111.0	105.06	52.60	5,525.89	30.66	3,221.23			8,747.12	78.80
Year 2	149.0	141.03	52.60	7,417.64	30.66	4,324.00			11,741.64	78.80
Year 3	178.0	168.48	52.60	8,861.34	30.66	5,165.58			14,026.92	78.80
Year 4	199.0	188.36	52.60	9,906.78	30.66	5,775.00			15,681.78	78.80
Year 5	199.0	188.36	52.60	9,906.78	30.66	5,775.00			15,681.78	78.80
Years 6-10	212.0	200.66	52.60	10,553.96	30.66	6,152.26			16,706.22	78.80
Water Truck		301.0	76.78	23,110.49	23.94	7,205.73			30,316.22	-
Year -1	69.1	269.8	76.78	20,712.23	23.94	6,457.97			27,170.20	393.23
Year 1	105.1	174.2	76.78	13,372.11	23.94	4,169.35			17,541.46	166.96
Year 2	141.0	246.1	76.78	18,895.37	23.94	5,891.46			24,786.85	175.76
Year 3	168.5	309.5	76.78	23,764.56	23.94	7,409.67			31,174.22	185.03
Year 4	188.4	356.8	76.78	27,398.28	23.94	8,542.64			35,940.93	190.81
Year 5	188.4	376.7	76.78	28,924.45	23.94	9,018.49			37,942.94	201.44
Years 6-10	200.7	399.0	76.78	29,869.21	23.94	9,313.07			39,182.28	195.27
CAT 631E Scraper		5,419.6	199.46	1,080,983.85	16.90	91,592.04			1,172,575.89	-
Year -1	73.0	1,330.8	199.46	265,436.88	16.90	22,490.53			287,927.42	3,944.21
Year 1	111.0	2,023.5	199.46	403,609.51	16.90	34,197.94			437,807.44	3,944.21
Year 2	149.0	2,716.3	199.46	541,782.13	16.90	45,905.34			587,687.47	3,944.21
Year 3	178.0	3,245.0	199.46	647,229.66	16.90	54,839.93			702,069.59	3,944.21
Year 4	199.0	3,627.8	199.46	723,588.21	16.90	61,309.81			784,898.03	3,944.21
Year 5	199.0	3,627.8	199.46	723,588.21	16.90	61,309.81			784,898.03	3,944.21
Years 6-10	212.0	3,864.8	199.46	770,857.79	16.90	65,314.98			836,172.77	3,944.21
14H Motor Grader		272.3	72.67	19,789.36	16.90	4,602.05			24,391.41	-
Year -1	212.0	272.3	72.67	19,789.36	16.90	4,602.05			24,391.41	115.05
Year 1	73.0	93.8	72.67	6,814.26	16.90	1,584.67			8,398.93	115.05
Year 2	111.0	142.6	72.67	10,361.41	16.90	2,409.56			12,770.97	115.05
Year 3	149.0	191.4	72.67	13,908.56	16.90	3,234.46			17,143.02	115.05
Year 4	178.0	228.6	72.67	16,615.59	16.90	3,863.98			20,479.58	115.05
Year 5	199.0	255.6	72.67	18,575.86	16.90	4,319.85			22,895.71	115.05
Years 6-10	199.0	255.6	72.67	18,575.86	16.90	4,319.85			22,895.71	115.05
CAT 777C Haul Truck		4,083.4	174.49	712,508.55	23.94	97,756.06			810,264.61	-
Year -1	73.0	1,406.1	174.49	245,344.93	23.94	33,661.28			279,006.21	3,822.00
Year 1	111.0	2,138.0	174.49	373,068.72	23.94	51,183.60			424,242.32	3,822.00
Year 2	149.0	2,869.9	174.49	500,772.52	23.94	68,705.91			569,478.43	3,822.00
Year 3	178.0	3,428.5	174.49	598,238.31	23.94	82,078.20			680,316.51	3,822.00
Year 4	199.0	3,833.0	174.49	668,816.99	23.94	91,761.58			760,578.57	3,822.00
Year 5	199.0	3,833.0	174.49	668,816.99	23.94	91,761.58			760,578.57	3,822.00
Years 6-10	212.0	4,083.4	174.49	712,508.55	23.94	97,756.06			810,264.61	3,822.00

Leach Pad

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Leach Pad

Cost Summary Cont.

Equipment	Area Reclaimed (acres)	Hours	Cost							Total (\$)	Per Acre (\$/ac)
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ⁴ (\$/ac)	Subtotal Revegetation (\$)			
CAT 992 Loader		1,020.8	270.65	276,287.45	32.77	33,453.07				309,740.52	
Year -1	73.0	351.5	270.65	95,136.72	32.77	11,519.22				106,655.93	1,461.04
Year 1	111.0	534.5	270.65	144,659.94	32.77	17,515.52				162,175.46	1,461.04
Year 2	149.0	717.5	270.65	194,183.16	32.77	23,511.83				217,694.99	1,461.04
Year 3	178.0	857.1	270.65	231,977.20	32.77	28,087.96				260,065.15	1,461.04
Year 4	199.0	958.2	270.65	259,345.30	32.77	31,401.70				290,747.00	1,461.04
Year 5	199.0	958.2	270.65	259,345.30	32.77	31,401.70				290,747.00	1,461.04
Years 6-10	212.0	1,020.8	270.65	276,287.45	32.77	33,453.07				309,740.52	1,461.04
D-10R Dozer	471.9	4,011.8	227.75	913,709.91	30.66	123,002.65				1,036,712.56	2,196.84
75D Challenger		142.5	194.48	27,707.99	30.66	4,368.23	495.00	-		32,076.22	
Year -1	73.0	49.1	194.48	9,540.96	30.66	1,504.15	495.00	36,135.00		47,180.11	646.30
Year 1	111.0	123.7	194.48	24,048.45	30.66	3,791.29	495.00	54,945.00		82,784.74	745.81
Year 2	149.0	174.7	194.48	33,981.50	30.66	5,357.26	495.00	73,755.00		113,093.76	759.02
Year 3	178.0	219.8	194.48	42,738.27	30.66	6,737.78	495.00	88,110.00		137,586.06	772.96
Year 4	199.0	253.4	194.48	49,273.18	30.66	7,768.02	495.00	98,505.00		155,546.20	781.64
Year 5	199.0	267.5	194.48	52,017.84	30.66	8,200.73	495.00	98,505.00		158,723.56	797.61
Years 6-10	212.0	276.2	194.48	53,716.91	30.66	8,468.59	495.00	104,940.00		167,125.50	788.33
TOTAL				2,770,530.60		330,549.41		-		3,101,080.01	
Year -1	73.0			534,510.87		65,926.70		36,135.00		636,572.57	8,720.17
Year 1	111.0			1,550,093.26		196,636.81		54,945.00		1,801,675.07	16,231.31
Year 2	149.0			1,344,365.57		162,679.17		109,890.00		1,616,934.74	10,851.91
Year 3	178.0			1,701,592.40		208,120.38		143,065.00		2,052,767.77	11,532.40
Year 4	199.0			1,995,200.52		245,843.17		172,260.00		2,413,303.69	12,127.15
Year 5	199.0			2,105,213.19		261,638.11		186,615.00		2,553,466.29	12,831.49
Years 6-10	212.0			2,275,634.16		282,996.49		203,445.00		2,762,075.66	13,028.66

- Assumes 1 foot overall regrade on top and slopes regraded to 2.5:1 for Walk-away scenario only - no closure cost associated with straight coner of the heap for other reclamation
- Borrow area acres are estimated, using the following assumptions:

Total Coverage Area (acres)	212
Total In-Place Depth (ft)	1
Shrinkage Factor	1.5
Estimated Borrow Depth (ft)	10
Estimated Borrow Area (acres)	0.01
- Topsail volume estimated from regrade requirements.
- Seed Mix used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Tailings Facility

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip/light regrade and cover tailings		0.5	-	1,300	0.57	742.9	1,632.7
Year -1		2.0	-	1,300	0.57	742.9	-
Year 1	31.6	3.0	153,040.8	1,300	0.57	742.9	206.0
Year 2	15.9	3.0	77,052.8	1,300	0.57	742.9	103.7
Year 3	13.5	2.5	54,571.0	1,300	0.57	742.9	73.5
Year 4	15.8	2.5	63,847.7	1,300	0.57	742.9	85.9
Year 5	55.5	2.0	178,983.2	1,300	0.57	742.9	240.9
Years 6-10	196.0	2.0	632,426.7	1,300	0.57	742.9	851.3
Year 11-15		2.0	-	1,300	0.57	742.9	-
Year 16-20		2.0	-	1,300	0.57	742.9	-
Post-operational period	32.8	1.0	52,977.0	1,300	0.57	742.9	71.3

Scraper	Regrade Area (acres)	Placement Depth (ft)	Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Place Topsoil		1.0	-	237	0.56	132.7	-
Year -1		1.0	-	237	0.56	132.7	-
Year 1	31.6	1.0	51,013.6	237	0.56	132.7	384.3
Year 2	15.9	1.0	25,684.3	237	0.56	132.7	193.5
Year 3	13.5	1.0	21,828.4	237	0.56	132.7	164.4
Year 4	15.8	1.0	25,539.1	237	0.56	132.7	192.4
Year 5	55.5	1.0	89,491.6	237	0.56	132.7	674.2
Years 6-10	196.0	1.0	316,213.3	237	0.56	132.7	2,382.1
Year 11-15		1.0	-	237	0.56	132.7	-
Year 16-20		1.0	-	237	0.56	132.7	-
Post-operational period	32.8	1.0	52,977.0	237	0.56	132.7	399.1

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Regrading Permiter Berm		1.5	-	1,300	0.57	742.9	-
Year -1		1.5	-	1,300	0.57	742.9	-
Year 1	31.6	1.5	76,520.4	1,300	0.57	742.9	103.0
Year 2	15.9	1.5	38,526.4	1,300	0.57	742.9	51.9
Year 3	13.5	1.5	32,742.6	1,300	0.57	742.9	44.1
Year 4	15.8	1.5	38,308.6	1,300	0.57	742.9	51.6
Year 5	55.5	1.5	134,237.4	1,300	0.57	742.9	180.7
Years 6-10	196.0	1.5	474,320.0	1,300	0.57	742.9	638.5
Year 11-15		1.5	-	1,300	0.57	742.9	-
Year 16-20		1.5	-	1,300	0.57	742.9	-
Post-operational period	32.8	1.5	79,465.5	1,300	0.57	742.9	107.0

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify		1.0	30.0	4.0	2.4	0.62	1.5	373.6
Year -1		2.0	30.0	4.0	2.4	0.62	1.5	-
Year 1	31.6	2.0	30.0	4.0	2.4	0.62	1.5	42.5
Year 2	15.9	1.0	30.0	4.0	2.4	0.62	1.5	10.7
Year 3	13.5	1.0	30.0	4.0	2.4	0.62	1.5	9.1
Year 4	15.8	1.0	30.0	4.0	2.4	0.62	1.5	10.6
Year 5	55.5	1.0	30.0	4.0	2.4	0.62	1.5	37.3
Years 6-10	196.0	2.0	30.0	4.0	2.4	0.62	1.5	263.4
Year 11-15		-	30.0	4.0	2.4	0.62	1.5	-
Year 16-20		-	30.0	4.0	2.4	0.62	1.5	-
Post-operational period	32.8	-	30.0	4.0	2.4	0.62	1.5	-

Tailings Facility

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings
Cost Summary**

Equipment	Area Reclaimed (acres)	Hours	Cost								
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)	
D-10R Dozer		1,632.7	227.75	371,847.89	30.66	50,057.77					
Year -1	-	-	227.75	-	30.66	-	-	-	\$	421,905.65	-
Year 1	31.6	309.0	227.75	70,378.35	30.66	9,474.26	-	-	\$	79,852.61	2,525.38
Year 2	15.9	155.6	227.75	35,434.01	30.66	4,770.09	-	-	\$	40,204.10	2,525.38
Year 3	13.5	117.5	227.75	26,768.41	30.66	3,603.53	-	-	\$	30,371.94	2,244.78
Year 4	15.8	137.5	227.75	31,318.84	30.66	4,216.11	-	-	\$	35,534.95	2,244.78
Year 5	55.5	421.6	227.75	96,026.46	30.66	12,926.98	-	-	\$	108,953.44	1,964.19
Years 6-10	196.0	1,489.8	227.75	339,303.90	30.66	45,676.73	-	-	\$	384,980.62	1,964.19
Year 11-15	-	-	227.75	-	30.66	-	-	-	\$	-	-
Year 16-20	-	-	227.75	-	30.66	-	-	-	\$	-	-
Post-operational period	32.8	178.3	227.75	40,603.94	30.66	5,466.06	-	-	\$	46,070.00	1,402.99
Scraper			199.46		16.90						
Year -1	-	-	199.46	-	16.90	-	-	-	\$	-	-
Year 1	31.6	384.3	199.46	76,649.44	16.90	6,494.53	-	-	\$	83,143.97	2,629.47
Year 2	15.9	193.5	199.46	38,591.37	16.90	3,269.86	-	-	\$	41,861.23	2,629.47
Year 3	13.5	164.4	199.46	32,797.82	16.90	2,778.97	-	-	\$	35,576.78	2,629.47
Year 4	15.8	192.4	199.46	38,373.20	16.90	3,251.37	-	-	\$	41,624.58	2,629.47
Year 5	55.5	674.2	199.46	134,463.78	16.90	11,393.15	-	-	\$	145,856.93	2,629.47
Years 6-10	196.0	2,382.1	199.46	475,119.90	16.90	40,257.03	-	-	\$	515,376.93	2,629.47
Year 11-15	-	-	199.46	-	16.90	-	-	-	\$	-	-
Year 16-20	-	-	199.46	-	16.90	-	-	-	\$	-	-
Post-operational period	32.8	399.1	199.46	79,599.55	16.90	6,744.49	-	-	\$	86,344.04	2,629.47
75D Challenger		373.6	194.48	72,666.83	16.90	11,456.08	495.00	178,797.47		262,920.38	
Year -1	-	-	194.48	-	30.66	-	495.00	-		-	-
Year 1	31.6	42.5	194.48	8,265.35	30.66	1,303.05	495.00	15,651.90		25,220.30	797.61
Year 2	15.9	10.7	194.48	2,080.71	30.66	328.03	495.00	7,880.40		10,289.14	646.30
Year 3	13.5	9.1	194.48	1,768.35	30.66	278.78	495.00	6,697.35		8,744.48	646.30
Year 4	15.8	10.6	194.48	2,068.95	30.66	326.17	495.00	7,835.85		10,230.98	646.30
Year 5	55.5	37.3	194.48	7,249.82	30.66	1,142.95	495.00	27,457.65		35,850.42	646.30
Years 6-10	196.0	263.4	194.48	51,233.65	30.66	8,077.10	495.00	97,020.00		156,330.75	797.61
Year 11-15	-	-	194.48	-	30.66	-	495.00	-		-	-
Year 16-20	-	-	194.48	-	30.66	-	495.00	-		-	-
Post-operational period	32.8	-	194.48	-	30.66	-	495.00	16,254.32		16,254.32	495.00
TOTAL	328.4	4,763.6	196.97	948,261.90	23.78	85,645.48	495.00	178,797.47	\$	1,212,704.84	3,693.10
Year -1	-	-	196.97	-	23.78	-	495.00	-	\$	-	-
Year 1	31.6	426.8	196.97	84,914.79	23.78	7,797.58	495.00	15,651.90	\$	108,364.27	3,427.08
Year 2	15.9	204.2	196.97	40,672.08	23.78	3,597.89	495.00	7,880.40	\$	52,150.37	3,275.78
Year 3	13.5	173.5	196.97	34,566.16	23.78	3,057.75	495.00	6,697.35	\$	44,321.26	3,275.78
Year 4	15.8	203.0	196.97	40,442.15	23.78	3,577.55	495.00	7,835.85	\$	51,855.55	3,275.78
Year 5	55.5	711.4	196.97	141,713.60	23.78	12,536.10	495.00	27,457.65	\$	181,707.35	3,275.78
Years 6-10	196.0	2,645.5	196.97	526,353.55	23.78	48,334.13	495.00	97,020.00	\$	671,707.67	3,427.08
Year 11-15	-	-	196.97	-	23.78	-	495.00	-	\$	-	-
Year 16-20	-	-	196.97	-	23.78	-	495.00	-	\$	-	-
Post-operational period	32.8	399.1	196.97	79,599.55	23.78	6,744.49	495.00	16,254.32	\$	102,598.36	3,124.47

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Top and Interior of Tailings Storage - Walk-Away During Operations

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings**

CAT 777C Haul Truck	Depth of Material	Growth Media Placement Volume (cy)	Maximum Truck Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Regrade tailings area		496,600	421.2	0.62	262	1,893.79
Year -1	1.00	-	421.2	0.62	262	-
Year 1	1.00	-	421.2	0.62	262	-
Year 2	1.00	-	421.2	0.62	262	-
Year 3	1.00	-	421.2	0.62	262	-
Year 4	1.00	-	421.2	0.62	262	-
Year 5	1.00	-	421.2	0.62	262	-
Years 6-10	1.00	323,054	421.2	0.62	262	1,231.97
Year 11-15	1.00	496,600	421.2	0.62	262	1,893.79
Year 16-20	1.00	-	421.2	0.62	262	-
Post-operational period	1.00	49,660	421.2	0.62	262	189.38

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load haul trucks	1,893.8	33%	625.0
Year -1	-	33%	-
Year 1	-	33%	-
Year 2	-	33%	-
Year 3	-	33%	-
Year 4	-	33%	-
Year 5	-	33%	-
Years 6-10	1,232.0	33%	406.6
Year 11-15	1,893.8	33%	625.0
Year 16-20	-	33%	-
Post-operational period	189.4	33%	62.5

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip/light regrade and cover tailings		0.5	-	1,850	0.40	743.7	584.5
Year -1	-	0.5	-	1,850	0.40	743.7	-
Year 1	-	0.5	-	1,850	0.40	743.7	-
Year 2	-	0.5	-	1,850	0.40	743.7	-
Year 3	-	0.5	-	1,850	0.40	743.7	-
Year 4	-	0.5	-	1,850	0.40	743.7	-
Year 5	-	0.5	-	1,850	0.40	743.7	-
Years 6-10	200.2	0.5	161,526.9	1,850	0.40	743.7	217.2
Year 11-15	307.8	0.5	248,300.1	1,850	0.40	743.7	333.9
Year 16-20	-	0.5	-	1,850	0.40	743.7	-
Post-operational period	30.8	0.5	24,830.0	1,850	0.40	743.7	33.4

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify		2.0	30.0	4.0	2.4	0.62	1.5	-
Year -1	-		30.0	4.0	2.4	0.62	1.5	-
Year 1	-		30.0	4.0	2.4	0.62	1.5	-
Year 2	-		30.0	4.0	2.4	0.62	1.5	-
Year 3	-		30.0	4.0	2.4	0.62	1.5	-
Year 4	-		30.0	4.0	2.4	0.62	1.5	-
Year 5	-		30.0	4.0	2.4	0.62	1.5	-
Years 6-10	200.2	2.0	30.0	4.0	2.4	0.62	1.5	269.1
Year 11-15	307.8	2.0	30.0	4.0	2.4	0.62	1.5	413.7
Year 16-20	-		30.0	4.0	2.4	0.62	1.5	-
Post-operational period	30.8	2.0	30.0	4.0	2.4	0.62	1.5	41.4

Top and Interior of Tailings Storage - Walk-Away During Operations

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
CAT 777C Haul Truck			174.49	578,459.1	23.94	79,364.5			657,823.6	-
Year -1	-	-	174.49	-	23.94	\$ -			-	-
Year 1	-	-	174.49	-	23.94	\$ -			-	-
Year 2	-	-	174.49	-	23.94	\$ -			-	-
Year 3	-	-	174.49	-	23.94	\$ -			-	-
Year 4	-	-	174.49	-	23.94	\$ -			-	-
Year 5	-	-	174.49	-	23.94	\$ -			-	-
Years 6-10	200.2	1,231.97	174.49	214,966.58	23.94	\$ 29,493.38			244,459.95	1,220.83
Year 11-15	307.8	1,893.79	174.49	330,447.77	23.94	\$ 45,337.38			375,785.15	1,220.83
Year 16-20	-	-	174.49	-	23.94	\$ -			-	-
Post-operational period	30.8	189.38	174.49	33,044.78	23.94	\$ 4,533.74			37,578.52	1,220.83
CAT 992 Loader			270.65	296,085.87	32.77	35,850.28			331,936.15	-
Year -1	-	-	270.65	-	32.77	-			-	-
Year 1	-	-	270.65	-	32.77	-			-	-
Year 2	-	-	270.65	-	32.77	-			-	-
Year 3	-	-	270.65	-	32.77	-			-	-
Year 4	-	-	270.65	-	32.77	-			-	-
Year 5	-	-	270.65	-	32.77	-			-	-
Years 6-10	200.2	406.6	270.65	110,031.22	32.77	13,322.65			123,353.88	616.03
Year 11-15	307.8	625.0	270.65	169,140.59	32.77	20,479.66			189,620.24	616.03
Year 16-20	-	-	270.65	-	32.77	-			-	-
Post-operational period	30.8	62.5	270.65	16,914.06	32.77	2,047.97			18,962.02	616.03
D-10R Dozer		584.5	227.75	133,111.30	30.66	17,919.30			151,030.60	-
Year -1	-	-	227.75	-	30.66	-			-	-
Year 1	-	-	227.75	-	30.66	-			-	-
Year 2	-	-	227.75	-	30.66	-			-	-
Year 3	-	-	227.75	-	30.66	-			-	-
Year 4	-	-	227.75	-	30.66	-			-	-
Year 5	-	-	227.75	-	30.66	-			-	-
Years 6-10	200.2	217.2	227.75	49,466.73	30.66	6,659.16			56,125.89	280.29
Year 11-15	307.8	333.9	227.75	76,040.52	30.66	10,236.49			86,277.01	280.29
Year 16-20	-	-	227.75	-	30.66	-			-	-
Post-operational period	30.8	33.4	227.75	7,604.05	30.66	1,023.65			8,627.70	280.29
75D Challenger			194.48	140,848.36	30.66	22,205.05	495.00	266,721.35	429,774.76	-
Year -1	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 1	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 2	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 3	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 4	-	-	194.48	-	30.66	-	495.00	-	-	-
Year 5	-	-	194.48	-	30.66	-	495.00	-	-	-
Years 6-10	200.2	269.1	194.48	52,341.97	30.66	8,251.83	495.00	99,118.80	159,712.59	797.61
Year 11-15	307.8	413.7	194.48	80,460.35	30.66	12,684.75	495.00	152,365.95	245,511.06	797.61
Year 16-20	-	-	194.48	-	30.66	-	495.00	-	-	-
Post-operational period	30.8	41.4	194.48	8,046.04	30.66	1,268.48	495.00	15,236.60	24,551.11	797.61
TOTAL	538.8	5,717.8	216.84	1,148,504.65	29.51	155,339.13	495.00	266,721.35	\$ 1,570,565.12	2,914.76
Year -1	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 1	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 2	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 3	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 4	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Year 5	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Years 6-10	200.2	2,124.9	216.84	426,806.50	29.51	57,727.02	495.00	99,118.80	\$ 583,652.31	2,914.76
Year 11-15	307.8	3,266.3	216.84	656,089.23	29.51	88,738.28	495.00	152,365.95	\$ 897,193.46	2,914.76
Year 16-20	-	-	216.84	-	29.51	-	495.00	-	\$ -	-
Post-operational period	30.8	326.6	216.84	65,608.92	29.51	8,873.83	495.00	15,236.60	\$ 89,719.35	2,914.76

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Top and Interior of Tailings Storage - Walk-Away During Operations

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings

CAT 777C Haul Truck	Depth of Material	Growth Media Placement Volume (cy)	Maximum Truck Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Regrade tailings area		997,040	538.2	0.62	335	2,975.86
Year -1	1.00	77,440	538.2	0.62	335	231.13
Year 1	1.00	342,027	538.2	0.62	335	1,020.84
Year 2	1.00	477,547	538.2	0.62	335	1,425.33
Year 3	1.00	608,227	538.2	0.62	335	1,815.37
Year 4	1.00	721,160	538.2	0.62	335	2,152.44
Year 5	1.00	782,467	538.2	0.62	335	2,335.42
Years 6-10	1.00	997,040	538.2	0.62	335	2,975.86
Year 11-15	1.00	290,400	538.2	0.62	335	866.75
Year 16-20	1.00	-	538.2	0.62	335	-
Post-operational period	1.00	99,704	538.2	0.62	335	297.59

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load haul trucks		33%	-
Year -1	231.1	33%	76.3
Year 1	1,020.8	33%	336.9
Year 2	1,425.3	33%	470.4
Year 3	1,815.4	33%	599.1
Year 4	2,152.4	33%	710.3
Year 5	2,335.4	33%	770.7
Years 6-10	2,975.9	33%	982.0
Year 11-15	866.8	33%	286.0
Year 16-20	-	33%	-
Post-operational period	297.6	33%	98.2

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip/light regrade and cover tailings		0.5	-	1,300	0.48	619.1	3,550.5
Year -1	48.0	0.5	38,720.0	1,300	0.48	619.1	62.5
Year 1	212.0	0.5	171,013.3	1,300	0.48	619.1	276.2
Year 2	296.0	0.5	238,773.3	1,300	0.48	619.1	385.7
Year 3	377.0	0.5	304,113.3	1,300	0.48	619.1	491.2
Year 4	447.0	0.5	360,580.0	1,300	0.48	619.1	582.4
Year 5	485.0	0.5	391,233.3	1,300	0.48	619.1	632.0
Years 6-10	618.0	0.5	498,520.0	1,300	0.48	619.1	805.3
Year 11-15	180.0	0.5	145,200.0	1,300	0.48	619.1	234.5
Year 16-20	-	0.5	-	1,300	0.48	619.1	-
Post-operational period	61.8	0.5	49,852.0	1,300	0.48	619.1	80.5

75D Challenger	Area (acres)	Number of Passes	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Seeding and/or Scarify		2.0	30.0	4.0	2.4	0.62	1.5	-
Year -1	48.0		30.0	4.0	2.4	0.62	1.5	-
Year 1	212.0		30.0	4.0	2.4	0.62	1.5	-
Year 2	296.0		30.0	4.0	2.4	0.62	1.5	-
Year 3	377.0		30.0	4.0	2.4	0.62	1.5	-
Year 4	447.0		30.0	4.0	2.4	0.62	1.5	-
Year 5	485.0		30.0	4.0	2.4	0.62	1.5	-
Years 6-10	618.0		30.0	4.0	2.4	0.62	1.5	-
Year 11-15	180.0		30.0	4.0	2.4	0.62	1.5	-
Year 16-20	-	2.0	30.0	4.0	2.4	0.62	1.5	-
Post-operational period	61.8	2.0	30.0	4.0	2.4	0.62	1.5	83.1

Top and Interior of Tailings Storage - Walk-Away During Operations

Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade and Cover Tailings
Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost								
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)	
CAT 777C Haul Truck		231.13	174.49	2,289,437.9	23.94	314,110.5			-	2,603,548.4	-
Year -1	48.0	231.13	174.49	40,330.67	23.94	\$ 5,533.36				45,864.03	955.50
Year 1	212.0	1,020.84	174.49	178,127.14	23.94	\$ 24,439.01				202,566.15	955.50
Year 2	296.0	1,425.33	174.49	248,705.81	23.94	\$ 34,122.40				282,828.21	955.50
Year 3	377.0	1,815.37	174.49	316,763.82	23.94	\$ 43,459.95				360,223.77	955.50
Year 4	447.0	2,152.44	174.49	375,579.39	23.94	\$ 51,529.43				427,108.82	955.50
Year 5	485.0	2,335.42	174.49	407,507.84	23.94	\$ 55,910.01				463,417.85	955.50
Years 6-10	618.0	2,975.86	174.49	519,257.41	23.94	\$ 71,242.03				590,499.44	955.50
Year 11-15	180.0	866.75	174.49	151,240.02	23.94	\$ 20,750.11				171,990.13	955.50
Year 16-20	-	-	174.49	-	23.94	\$ -				-	-
Post-operational period	61.8	297.59	174.49	51,925.74	23.94	\$ 7,124.20				59,049.94	955.50
CAT 992 Loader		76.3	270.65	1,151,211.61	32.77	139,389.48			-	1,290,601.09	-
Year -1	48.0	336.9	270.65	91,174.86	32.77	11,039.51				102,214.37	2,129.47
Year 1	212.0	470.4	270.65	127,300.75	32.77	15,413.66				142,714.41	673.18
Year 2	296.0	599.1	270.65	162,136.42	32.77	19,631.59				181,768.01	614.08
Year 3	377.0	710.3	270.65	192,241.33	32.77	23,276.71				215,518.04	571.67
Year 4	447.0	770.7	270.65	208,583.99	32.77	25,255.49				233,839.48	523.13
Year 5	485.0	982.0	270.65	265,783.31	32.77	32,181.22				297,964.54	614.36
Years 6-10	618.0	286.0	270.65	77,412.62	32.77	9,373.17				86,785.79	140.43
Year 11-15	180.0	-	270.65	-	32.77	-				-	-
Year 16-20	-	98.2	270.65	26,578.33	32.77	3,218.12				29,796.45	-
Post-operational period	61.8	-	270.65	-	32.77	-				-	-
D-10R Dozer		3,550.5	227.75	808,631.42	30.66	108,857.10			-	917,488.52	-
Year -1	48.0	62.5	227.75	14,244.83	30.66	1,917.62				16,162.45	336.72
Year 1	212.0	276.2	227.75	62,914.66	30.66	8,469.50				71,384.16	336.72
Year 2	296.0	385.7	227.75	87,843.11	30.66	11,825.35				99,668.45	336.72
Year 3	377.0	491.2	227.75	111,881.26	30.66	15,061.34				126,942.59	336.72
Year 4	447.0	582.4	227.75	132,654.96	30.66	17,857.87				150,512.83	336.72
Year 5	485.0	632.0	227.75	143,932.12	30.66	19,375.99				163,308.11	336.72
Years 6-10	618.0	805.3	227.75	183,402.16	30.66	24,689.40				208,091.57	336.72
Year 11-15	180.0	234.5	227.75	53,418.11	30.66	7,191.09				60,609.19	336.72
Year 16-20	-	-	227.75	-	30.66	-				-	-
Post-operational period	61.8	80.5	227.75	18,340.22	30.66	2,468.94				20,809.16	336.72
75D Challenger		-	194.48	16,154.28	30.66	2,546.76	495.00	1,348,776.00		1,367,477.04	-
Year -1	48.0	-	194.48	-	30.66	-	495.00	23,760.00		23,760.00	495.00
Year 1	212.0	-	194.48	-	30.66	-	495.00	104,940.00		104,940.00	495.00
Year 2	296.0	-	194.48	-	30.66	-	495.00	146,520.00		146,520.00	495.00
Year 3	377.0	-	194.48	-	30.66	-	495.00	186,615.00		186,615.00	495.00
Year 4	447.0	-	194.48	-	30.66	-	495.00	221,265.00		221,265.00	495.00
Year 5	485.0	-	194.48	-	30.66	-	495.00	240,075.00		240,075.00	495.00
Years 6-10	618.0	-	194.48	-	30.66	-	495.00	305,910.00		305,910.00	495.00
Year 11-15	180.0	-	194.48	-	30.66	-	495.00	89,100.00		89,100.00	495.00
Year 16-20	-	-	194.48	-	30.66	-	495.00	-		-	-
Post-operational period	61.8	83.1	194.48	16,154.28	30.66	2,546.76	495.00	30,591.00		49,292.04	797.61
TOTAL		21,007.8	216.84	4,265,435.17	29.51	564,903.84	495.00	1,348,776.00	\$	6,179,115.01	-
Year -1	48.0	630.6	216.84	145,750.36	29.51	18,490.50	495.00	23,760.00	\$	188,000.86	3,916.68
Year 1	212.0	1,767.4	216.84	368,342.54	29.51	48,322.18	495.00	104,940.00	\$	521,604.72	2,460.40
Year 2	296.0	2,410.1	216.84	498,685.35	29.51	65,579.33	495.00	146,520.00	\$	710,784.68	2,401.30
Year 3	377.0	3,016.9	216.84	620,886.41	29.51	81,797.99	495.00	186,615.00	\$	889,299.40	2,358.88
Year 4	447.0	3,505.6	216.84	716,818.35	29.51	94,642.79	495.00	221,265.00	\$	1,032,726.14	2,310.35
Year 5	485.0	3,949.4	216.84	817,223.27	29.51	107,467.22	495.00	240,075.00	\$	1,164,765.49	2,401.58
Years 6-10	618.0	4,067.2	216.84	780,072.19	29.51	105,304.61	495.00	305,910.00	\$	1,191,286.80	1,927.65
Year 11-15	180.0	1,101.3	216.84	204,658.13	29.51	27,941.20	495.00	89,100.00	\$	321,699.32	1,787.22
Year 16-20	-	98.2	216.84	26,578.33	29.51	3,218.12	495.00	-	\$	29,796.45	-
Post-operational period	61.8	461.2	216.84	86,420.24	29.51	12,139.90	495.00	30,591.00	\$	129,151.14	2,089.82

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Process Ponds

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Raffinate Pond and Diversions**

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Regrade and diversions to blend with topo		3.5	-	1,850	0.22	403.1	-
Year -1	-		-	1,850	0.22	403.1	-
Year 1	-		-	1,850	0.22	403.1	-
Year 2	-		-	1,850	0.22	403.1	-
Year 3	-		-	1,850	0.22	403.1	-
Year 4	-		-	1,850	0.22	403.1	-
Year 5	-		-	1,850	0.22	403.1	-
Years 6-10	8.0	4.0	51,368.5	1,850	0.22	403.1	127.4
Year 11-15	-		-	1,850	0.22	403.1	-
Year 16-20	12.0	3.0	58,080.0	1,850	0.22	403.1	144.1
Post-operational period			-	1,850	0.22	403.1	-

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
D-10R Dozer		271.5	227.75	61,843.89	30.66	8,325.36	5,000.00	99,800.00	\$ 169,969.25	-
Year -1	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 1	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 2	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 3	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 4	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 5	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Years 6-10	8.0	127.4	227.75	29,025.79	30.66	3,907.42	5,000.00	39,800.00	\$ 72,733.21	9,137.34
Year 11-15	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-
Year 16-20	12.0	144.1	227.75	32,818.10	30.66	4,417.94	5,000.00	60,000.00	\$ 97,236.04	8,103.00
Post-operational period	-	-	227.75	-	30.66	-	5,000.00	-	\$ -	-

1. The Wheeler method was used for revegetation - no reveg after year 10 for PLS ponds.

Roads - No road closure at this point

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Roads**

D10R Dozer	Road Area (ac)	Road Length (ft)	Road Width (ft)	Estimated Rip/Regrade Depth (ft)	Total Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Rip/light regrade	-	0	0	0.50	-	1,850	0.40	743.7	-
					-	1,300	0.57	742.9	-
					-	1,850	0.40	743.7	-
					-	1,300	0.57	742.9	-
					-	1,850	0.40	743.7	-
					-	1,300	0.57	742.9	-

75D Challenger	Area (acres)	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Scarify	-	30.0	4.0	2.4	0.62	1.5	-
Seeding and Cover	-	30.0	4.0	2.4	0.62	1.5	-

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ² (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
D-10R Dozer	-	-	227.75	-	30.66	-	-	-	-	-
75D Challenger	-	-	194.48	-	30.66	-	495.00	-	-	-
TOTAL				\$ -		\$ -		\$ -	\$ -	

1. Assume 2 foot regrade is sufficient to blend to existing topography.
2. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

**Augusta Resource Rosemont Project - Life of Mine - Regrade Volume by M3
Earthwork and Engineering Calculations
Concrete Disposal, Rip and Regrade (Year 20)**

CAT 777C Haul Truck	Depth of Material	Growth Media Placement Volume (cy)	Maximum Truck Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Haul Cover	3.00	580,800	538.2	0.62	335	1,733.51

CAT 992 Loader	Total Truck Time (hr)	Percent Loader Required	Total Loader Time (hr)
Load Cover	1,733.5	33%	572.1

D10R Dozer	Reclaim Area (ac)	Total Rip Depth (ft)	Total Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy/hr)	Total Time (hours)
Rip/light regrade surfaces	120.0		1,500,000.0	1,850	0.40	743.7	2,016.9

75D Challenger	Area (acres)	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Scarify	168.0	30.0	4.0	2.4	0.62	1.5	112.9
Seeding and Cover	168.0	30.0	4.0	2.4	0.62	1.5	112.9

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
CAT 777C Haul Truck	120.0	1,733.51	174.49	302,480.05	23.94	\$ 41,500.21			343,980.26	2,866.50
CAT 992 Loader	120.0	572.1	270.65	154,825.23	32.77	18,746.34			173,571.58	1,446.43
D-10R Dozer	120.0	2,016.9	227.75	459,366.68	30.66	61,839.45			521,206.13	3,102.42
75D Challenger	168.0	225.8	194.48	43,914.56	30.66	6,923.23	495.00	83,160.00	133,997.78	797.61
TOTAL				\$ 960,586.51		\$ 129,009.23		\$ 83,160.00	\$ 1,172,755.75	6,980.69

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Topsoil Stockpiles

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Topsoil Stockpile (Year 20)**

D10R Dozer	Regrade Area (acres)	Rip/ Regrade Depth (ft)	Rip/ Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip/light regrade stockpile areas for revegetation	200.0	0.5	161,333.3	1,300	0.57	742.9	217.2

75D Challenger	Area (acres)	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Scarify	200.0	30.0	4.0	2.4	0.62	1.5	134.4
Seeding and Cover	200.0	30.0	4.0	2.4	0.62	1.5	134.4

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
D-10R Dozer	200.0	217.2	227.75	49,461.21	30.66	6,658.42			56,119.62	280.60
75D Challenger	200.0	134.4	194.48	26,139.62	30.66	4,120.97	495.00	99,000.00	129,260.58	646.30
TOTAL				\$ 75,600.83		\$ 10,779.38		\$ 99,000.00	\$ 185,380.21	926.90

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.

Stormwater Basins

**Augusta Resource Rosemont Project - Life of Mine
Earthwork and Engineering Calculations
Regrade Stormwater Basins (Year 20)**

D10R Dozer	Regrade Area (acres)	Rip/Regrade Depth (ft)	Rip/Regrade Volume (cy)	Maximum Production (cy/hr)	Productivity Correction Factor	Factored Production (cy)	Total Time (hours)
Rip/light regrade basins to provide drainage and prepare for revegetation	1.5	5.0	12,100.0	1,850	0.40	743.7	16.3

75D Challenger	Area (acres)	Track Width (in)	Average Speed (mph)	Maximum Production (acres/hr)	Productivity Correction Factor	Factored Production (ac/hr)	Total Time (hours)
Scarify	1.5	30.0	4.0	2.4	0.62	1.5	1.0
Seeding and Cover	1.5	30.0	4.0	2.4	0.62	1.5	1.0

Cost Summary

Equipment	Area Reclaimed (acres)	Hours	Cost							
			Equipment (\$/hr)	Subtotal Equipment (\$)	Labor (\$/hr)	Subtotal Labor (\$)	Revegetation ¹ (\$/ac)	Subtotal Revegetation (\$)	Total (\$)	Per Acre (\$/ac)
D-10R Dozer	1.5	16.3	227.75	3,705.56	30.66	498.84			4,204.40	2,802.93
75D Challenger	1.5	2.0	194.48	392.09	30.66	61.81	495.00	742.50	1,196.41	797.61
TOTAL				\$ 4,097.65		\$ 560.65		\$ 742.50	\$ 5,400.80	3,600.54

1. Seed Mix is used for revegetation plus an amendment cost for 16-16-8 fertilizer and a charge for testing suitability of plant growth material.