STANDARDIZED RECLAMATION COST ESTIMATOR

Version 2.0
Build - Beta 01

COST DATA FILE INFORMATION

File Name:	Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Cost Data File:	Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Data Date:	July 1, 2018
Cost Data Basis:	User Data
Data Cost Units:	Imperial
Author/Source:	

PROJECT INFORMATION

Property/Mine Name:	Copper Flat
Property Code:	
Project Name:	Copper Flat Reclamation Bond Cost Estimate 2018
Date of Submittal:	July 2018
Average Elevation	5450 ft.
Units of Measure:	○ Metric (m, km, ha, etc.) ◉ Imperial (ft, mi, acres, etc.)
Currency Symbol:	Dollar (US)
Project Type:	Mine Operations Plan
Land Type:	Private Land
Cost Basis Category:	Copper Flat FA
Cost Basis Description:	0

Closure Cost Estimate
Acct Codes

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

	Facility/Activity Type	Acct Code	Total Cost	FA Cost	Scheduled FA Cost
			$		$
1	Waste Rock Dumps		12,911,961	12,911,961	12,911,961
2	Tailings Storage Facility		17,728,017	17,728,017	17,728,017
3	Draindown Management		4,490,755	4,490,755	4,490,755
4	Buildings		1,911,273	1,911,273	1,911,273
5	Pits		1,937,882	1,937,882	1,937,882
6	Pit Rapid Fill		446,769	446,769	446,769
7	Roads		30,511	30,511	30,511
8	Ponds		298,257	298,257	298,257
9	Yards		1,486,311	1,486,311	1,486,311
10	Wells		134,488	134,488	134,488
11	Waste Disposal		82,463	82,463	82,463
12	Miscellaneous Linear Facilities		254,714	254,714	254,714
13	Monitoring		1,883,745	1,883,745	1,883,745
14	Reclamation Maintenance		686,791	686,791	686,791
15	Mob/demob		7,592	7,592	7,592
		TOTALS	**44,291,529**	**44,291,529**	**44,291,529**

Engineering, Design and Construction Plan	**1,771,661**	**1,771,661**	**1,771,661**
Contingency	**2,657,492**	**2,657,492**	**2,657,492**
Contractor OH and Profit	**4,429,153**	**4,429,153**	**4,429,153**
Contract Administration	**2,657,492**	**2,657,492**	**2,657,492**
TOTAL COST	**55,807,327**	**55,807,327**	**55,807,327**

Closure Cost Estimate
Acct Codes

Project Name: Copper Flat Reclamation Bond Cost Esti
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat FA

	Facility/Activity Type	1 -13 1 $	2 -12 2 $	3 -11 3 $	4 -10 4 $	5 -9 5 $	6 -8 6 $	7 -7 7 $	8 -6 8 $	9 -5 9 $	10 -4 10 $	11 -3 11 $	12 -2 12 $	13 -1 13 $
1	Waste Rock Dumps	0	1,760,368	0	0	0	0	0	0	0	49,248	49,248	49,248	88,745
2	Tailings Storage Facility	0	58,313	0	0	0	0	0	0	0	0	0	0	0
3	Draindown Management	0	0	0	0	0	0	0	0	0	0	0	0	936,942
4	Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Pits	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Pit Rapid Fill	0	0	0	0	0	0	0	0	0	0	0	0	446,769
7	Roads	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Ponds	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Yards	178,785	19,893	0	0	0	0	0	0	0	0	0	0	0
10	Wells	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Waste Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Miscellaneous Linear Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Monitoring	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Reclamation Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Mob/demob	0	0	0	0	0	0	0	0	0	0	0	0	0
		178,785	**1,838,574**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**49,248**	**49,248**	**49,248**	**1,472,456**
	Engineering, Design and Construction Plan	**7,151**	**73,543**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,970**	**1,970**	**1,970**	**58,898**
	Contingency	**10,727**	**110,314**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,955**	**2,955**	**2,955**	**88,347**
	Contractor OH and Profit	**17,879**	**183,857**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,925**	**4,925**	**4,925**	**147,246**
	Contract Administration	**10,727**	**110,314**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,955**	**2,955**	**2,955**	**88,347**
		225,269	**2,316,602**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**62,053**	**62,053**	**62,053**	**1,855,294**

Closure Cost Estimate
Acct Codes

Project Name: Copper Flat Reclamation Bond Cost Esti
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat FA

	Facility/Activity Type	14	15	16	17	18	19	20	21	22	23	24	25
		1	2	3	4	5	6	7	8	9	10	11	12
		14	15	16	17	18	19	20	21	22	23	24	25
		$	$	$	$	$	$	$	$	$	$	$	$
1	Waste Rock Dumps	98,762	3,302,865	6,751,190	13,123	0	749,165	0	0	0	0	0	0
2	Tailings Storage Facility	496,410	0	0	6,422,936	2,477,223	5,491,320	2,781,815	0	0	0	0	0
3	Draindown Management	418,802	423,058	403,418	398,798	1,777,557	0	0	0	0	0	0	0
4	Buildings	0	1,845,856	0	0	0	0	0	0	0	0	0	0
5	Pits	634,823	619,602	0	0	0	665,137	0	0	0	0	0	0
6	Pit Rapid Fill	0	0	0	0	0	0	0	0	0	0	0	0
7	Roads	0	15,256	15,256	0	0	0	0	0	0	0	0	0
8	Ponds	0	149,129	149,129	0	0	0	0	0	0	0	0	0
9	Yards	0	401,490	886,144	0	0	0	0	0	0	0	0	0
10	Wells	0	71,050	0	0	2,538	0	5,075	0	0	0	0	0
11	Waste Disposal	0	82,463	0	0	0	0	0	0	0	0	0	0
12	Miscellaneous Linear Facilities	0	186,720	0	0	0	0	67,994	0	0	0	0	0
13	Monitoring	255,759	239,892	223,559	208,959	75,409	71,691	71,691	71,691	42,209	42,209	42,209	42,209
14	Reclamation Maintenance	0	0	0	0	0	0	686,791	0	0	0	0	0
15	Mob/demob	0	3,796	0	0	0	3,796	0	0	0	0	0	0
		1,904,557	**7,341,176**	**8,428,695**	**7,043,816**	**4,332,727**	**6,981,109**	**3,613,366**	**71,691**	**42,209**	**42,209**	**42,209**	**42,209**
	Engineering, Design and Construction Plan	**76,182**	**293,647**	**337,148**	**281,753**	**173,309**	**279,244**	**144,535**	**2,868**	**1,688**	**1,688**	**1,688**	**1,688**
	Contingency	**114,273**	**440,471**	**505,722**	**422,629**	**259,964**	**418,867**	**216,802**	**4,301**	**2,533**	**2,533**	**2,533**	**2,533**
	Contractor OH and Profit	**190,456**	**734,118**	**842,870**	**704,382**	**433,273**	**698,111**	**361,337**	**7,169**	**4,221**	**4,221**	**4,221**	**4,221**
	Contract Administration	**114,273**	**440,471**	**505,722**	**422,629**	**259,964**	**418,867**	**216,802**	**4,301**	**2,533**	**2,533**	**2,533**	**2,533**
		2,399,741	**9,249,883**	**10,620,157**	**8,875,209**	**5,459,237**	**8,796,198**	**4,552,842**	**90,330**	**53,184**	**53,184**	**53,184**	**53,184**

Closure Cost Estimate
Acct Codes

Project Name: Copper Flat Reclamation Bond Cost Esti
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2(
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat FA

	Facility/Activity Type	26 13 26 $	27 14 27 $	28 15 28 $	29 16 29 $	30 17 30 $	31 18 31 $	32 19 32 $	33 20 33 $	34 21 34 $	35 22 35 $	36 23 36 $	37 24 37 $	38 25 38 $	39 26 39 $
1	Waste Rock Dumps	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Tailings Storage Facility	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Draindown Management	0	0	0	0	0	0	0	0	0	0	0	0	66,089	66,089
4	Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0	65,417
5	Pits	0	0	18,320	0	0	0	0	0	0	0	0	0	0	0
6	Pit Rapid Fill	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Ponds	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Yards	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Wells	0	0	0	0	0	5,075	0	0	0	0	0	0	0	50,750
11	Waste Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Miscellaneous Linear Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Monitoring	42,209	42,209	42,209	64,431	39,106	39,106	39,106	39,106	39,106	26,379	26,379	26,379	26,379	4,157
14	Reclamation Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Mob/demob	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		42,209	**42,209**	**60,529**	**64,431**	**39,106**	**44,181**	**39,106**	**39,106**	**39,106**	**26,379**	**26,379**	**26,379**	**92,468**	**186,413**
	Engineering, Design and Construction Plan	**1,688**	**1,688**	**2,421**	**2,577**	**1,564**	**1,767**	**1,564**	**1,564**	**1,564**	**1,055**	**1,055**	**1,055**	**3,699**	**7,457**
	Contingency	**2,533**	**2,533**	**3,632**	**3,866**	**2,346**	**2,651**	**2,346**	**2,346**	**2,346**	**1,583**	**1,583**	**1,583**	**5,548**	**11,185**
	Contractor OH and Profit	**4,221**	**4,221**	**6,053**	**6,443**	**3,911**	**4,418**	**3,911**	**3,911**	**3,911**	**2,638**	**2,638**	**2,638**	**9,247**	**18,641**
	Contract Administration	**2,533**	**2,533**	**3,632**	**3,866**	**2,346**	**2,651**	**2,346**	**2,346**	**2,346**	**1,583**	**1,583**	**1,583**	**5,548**	**11,185**
		53,184	**53,184**	**76,267**	**81,183**	**49,273**	**55,668**	**49,273**	**49,273**	**49,273**	**33,238**	**33,238**	**33,238**	**116,510**	**234,881**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Rock Dumps - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description								Physical - MANDATORY							
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Lift (dump) Height ft	Mid-Bench Length ft	Average Long Dimension (ripping distance) ft	Final (Regraded) Footprint acres
1	WRSP1-MB1	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	494	400	3.11
2	WRSP1-MB2	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	211	200	0.86
3	WRSP1-MB3	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	143	100	0.58
4	WRSP1-MB4	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	2,091	2,000	12.01
5	WRSP1-MB5	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	25	219	200	1.30
6	WRSP1-MB6	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	1,806	1,800	13.63
7	WRSP1-MB7	WRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	748	700	5.64
8	WRSP2-MB1	WRSP2		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	1,369	1,300	11.68
9	WRSP2-MB2	WRSP2		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	2,212	2,200	18.88
10	WRSP2-MB3	WRSP2		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	2,009	2,000	17.14
11	WRSP3-MB1	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	1,680	1,600	12.62
12	WRSP3-MB2	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	3,346	3,300	25.14
13	WRSP3-MB3	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	3,144	3,100	23.63
14	WRSP3-MB4	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	1,704	1,700	12.81
15	WRSP3-MB5	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	1,430	1,400	10.75
16	WRSP3-MB6	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	75	2,426	2,400	18.23
17	WRSP3-MB7	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	35	469	400	3.52
18	WRSP3-MB8	WRSP3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	35	1,570	1,500	11.80
19	EWRSP1-MB1	EWRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	30	1,161	1,100	11.68
20	EWRSP1-MB2	EWRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	30	650	600	6.54
21	EWRSP1-MB3 (material will be pulled back)	EWRSP1		Waste Rock Dumps				FA	0.0	3.0	3.0	1.0	25	333	300	3.35
22	EWRSP1-MB4	EWRSP1		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	20	351	300	3.53
23	EWRSP2A-MB1	EWRSP2A		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	1,166	1,100	6.22
24	EWRSP2B-MB1	EWRSP2B		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	30	529	500	4.06
25	EWRSP2B-MB2	EWRSP2B		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	70	477	400	5.37
26	EWRSP2B-3 (see "Yards" sheet)	EWRSP2B		Yards				FA								
27	EWRSP3 and haul roads, misc. plant disturbance	EWRS3		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	130	1,605	1,600	33.25
28	EWRSP4-MB1	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	10	148	100	3.31
29	EWRSP4-MB2	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	50	319	300	2.89
30	EWRSP4-MB3	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	30	223	200	1.83
31	EWRSP4-MB4	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	20	331	300	1.50
32	EWRSP4-MB5	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	30	591	500	5.07
33	EWRSP4-MB6	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	10	499	400	2.39
34	EWRSP4-MB7	EWRSP4		Waste Rock Dumps				FA	0.0	1.4	3.0	1.0	10	1,000	1,000	4.27

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed and/or screened.
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

EWRSP3 will be reclaimed with the plant area.
See User 06 for facility dimensions and User 09 for haulage distances.

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Waste Rock Dumps - User Input

			Cover 1				Cover 2				Growth Media			
	Description (required)	Regrade Volume (1) (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	WRSP1-MB1										36.0	36.0	13,179	-3.0
2	WRSP1-MB2										36.0	36.0	13,179	-3.0
3	WRSP1-MB3										36.0	36.0	13,179	-3.0
4	WRSP1-MB4										36.0	36.0	13,179	-3.0
5	WRSP1-MB5										36.0	36.0	13,179	-3.0
6	WRSP1-MB6										36.0	36.0	13,179	-3.0
7	WRSP1-MB7										36.0	36.0	13,179	-3.0
8	WRSP2-MB1										36.0	36.0	9,309	-4.8
9	WRSP2-MB2										36.0	36.0	9,309	-4.8
10	WRSP2-MB3										36.0	36.0	9,309	-4.8
11	WRSP3-MB1										36.0	36.0	8,047	-3.4
12	WRSP3-MB2										36.0	36.0	8,047	-3.4
13	WRSP3-MB3										36.0	36.0	8,047	-3.4
14	WRSP3-MB4										36.0	36.0	8,047	-3.4
15	WRSP3-MB5										36.0	36.0	8,047	-3.4
16	WRSP3-MB6										36.0	36.0	8,047	-3.4
17	WRSP3-MB7										36.0	36.0	8,047	-3.4
18	WRSP3-MB8										36.0	36.0	8,047	-3.4
19	EWRSP1-MB1										36.0	36.0	13,044	-2.1
20	EWRSP1-MB2										36.0	36.0	13,044	-2.1
21	EWRSP1-MB3 (material will be pulled back)										36.0	36.0	13,044	-2.1
22	EWRSP1-MB4										36.0	36.0	13,044	-2.1
23	EWRSP2A-MB1										36.0	36.0	13,179	-2.5
24	EWRSP2B-MB1										36.0	36.0	13,179	-2.5
25	EWRSP2B-MB2										36.0	36.0	13,179	-2.5
26	EWRSP2B-3 (see "Yards" sheet)													
27	EWRSP3 and haul roads, misc. plant disturbance										36.0	36.0	13,179	-2.5
28	EWRSP4-MB1										36.0	36.0	12,000	-1.8
29	EWRSP4-MB2										36.0	36.0	12,000	-1.8
30	EWRSP4-MB3										36.0	36.0	12,000	-1.8
31	EWRSP4-MB4										36.0	36.0	12,000	-1.8
32	EWRSP4-MB5										36.0	36.0	12,000	-1.8
33	EWRSP4-MB6										36.0	36.0	12,000	-1.8
34	EWRSP4-MB7										36.0	36.0	12,000	-1.8

Notes:
1. All Physical parameters must be input even if manual overr
2. Input distance from crusher to placement location if materia

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Rock Dumps - User Input (Cont.)

You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover 1				Cover 2			
	Description (required)	Dozing Material Condition (select)	Material Type (select)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	WRSP1-MB1	1	Granite - broken	Large	No								
2	WRSP1-MB2	1	Granite - broken	Large	No								
3	WRSP1-MB3	1	Granite - broken	Large	No								
4	WRSP1-MB4	1	Granite - broken	Large	No								
5	WRSP1-MB5	1	Granite - broken	Large	No								
6	WRSP1-MB6	1	Granite - broken	Large	No								
7	WRSP1-MB7	1	Granite - broken	Large	No								
8	WRSP2-MB1	1	Granite - broken	Large	No								
9	WRSP2-MB2	1	Granite - broken	Large	No								
10	WRSP2-MB3	1	Granite - broken	Large	No								
11	WRSP3-MB1	1	Granite - broken	Large	No								
12	WRSP3-MB2	1	Granite - broken	Large	No								
13	WRSP3-MB3	1	Granite - broken	Large	No								
14	WRSP3-MB4	1	Granite - broken	Large	No								
15	WRSP3-MB5	1	Granite - broken	Large	No								
16	WRSP3-MB6	1	Granite - broken	Large	No								
17	WRSP3-MB7	1	Granite - broken	Large	No								
18	WRSP3-MB8	1	Granite - broken	Large	No								
19	EWRSP1-MB1	1	Granite - broken	Large	No								
20	EWRSP1-MB2	1	Granite - broken	Large	No								
21	EWRSP1-MB3 (material will be pulled back)	1	Granite - broken	Large	No								
22	EWRSP1-MB4	1	Granite - broken	Large	No								
23	EWRSP2A-MB1	1	Granite - broken	Large	No								
24	EWRSP2B-MB1	1	Granite - broken	Large	No								
25	EWRSP2B-MB2	1	Granite - broken	Large	No								
26	EWRSP2B-3 (see "Yards" sheet)												
27	EWRSP3 and haul roads, misc. plant disturbance	1	Granite - broken	Large	No								
28	EWRSP4-MB1	1	Granite - broken	Large	No								
29	EWRSP4-MB2	1	Granite - broken	Large	No								
30	EWRSP4-MB3	1	Granite - broken	Large	No								
31	EWRSP4-MB4	1	Granite - broken	Large	No								
32	EWRSP4-MB5	1	Granite - broken	Large	No								
33	EWRSP4-MB6	1	Granite - broken	Large	No								
34	EWRSP4-MB7	1	Granite - broken	Large	No								

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Waste Rock Dumps - User Input (Cont.)

		Growth Media				Revegetation								
	Description (required)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	WRSP1-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
2	WRSP1-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
3	WRSP1-MB3	Alluvium	Large Truck			User Mix 1	User Mix 1							
4	WRSP1-MB4	Alluvium	Large Truck			User Mix 1	User Mix 1							
5	WRSP1-MB5	Alluvium	Large Truck			User Mix 1	User Mix 1							
6	WRSP1-MB6	Alluvium	Large Truck			User Mix 1	User Mix 1							
7	WRSP1-MB7	Alluvium	Large Truck			User Mix 1	User Mix 1							
8	WRSP2-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
9	WRSP2-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
10	WRSP2-MB3	Alluvium	Large Truck			User Mix 1	User Mix 1							
11	WRSP3-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
12	WRSP3-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
13	WRSP3-MB3	Alluvium	Large Truck			User Mix 1	User Mix 1							
14	WRSP3-MB4	Alluvium	Large Truck			User Mix 1	User Mix 1							
15	WRSP3-MB5	Alluvium	Large Truck			User Mix 1	User Mix 1							
16	WRSP3-MB6	Alluvium	Large Truck			User Mix 1	User Mix 1							
17	WRSP3-MB7	Alluvium	Large Truck			User Mix 1	User Mix 1							
18	WRSP3-MB8	Alluvium	Large Truck			User Mix 1	User Mix 1							
19	EWRSP1-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
20	EWRSP1-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
21	EWRSP1-MB3 (material will be pulled back)	Alluvium	Large Truck			User Mix 1	User Mix 1							
22	EWRSP1-MB4	Alluvium	Large Truck			User Mix 1	User Mix 1							
23	EWRSP2A-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
24	EWRSP2B-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
25	EWRSP2B-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
26	EWRSP2B-3 (see "Yards" sheet)													
27	EWRSP3 and haul roads, misc. plant disturbance	Alluvium	Large Truck			User Mix 1	User Mix 1							
28	EWRSP4-MB1	Alluvium	Large Truck			User Mix 1	User Mix 1							
29	EWRSP4-MB2	Alluvium	Large Truck			User Mix 1	User Mix 1							
30	EWRSP4-MB3	Alluvium	Large Truck			User Mix 1	User Mix 1							
31	EWRSP4-MB4	Alluvium	Large Truck			User Mix 1	User Mix 1							
32	EWRSP4-MB5	Alluvium	Large Truck			User Mix 1	User Mix 1							
33	EWRSP4-MB6	Alluvium	Large Truck			User Mix 1	User Mix 1							
34	EWRSP4-MB7	Alluvium	Large Truck			User Mix 1	User Mix 1							

Notes:

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Rock Dumps - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**WRSP1-MB1**	20,748	121	D9T	905	1.6	1.0	0.82	1.0	739	28	727	6,229	6,956
2	**WRSP1-MB2**	3,939	81	D9T	1264	1.6	1.0	0.82	1.0	1032	4	104	890	994
3	**WRSP1-MB3**	2,669	81	D9T	1264	1.6	1.0	0.82	1.0	1032	3	78	667	745
4	**WRSP1-MB4**	87,822	121	D9T	905	1.6	1.0	0.82	1.0	739	119	3,089	26,472	29,561
5	**WRSP1-MB5**	1,022	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
6	**WRSP1-MB6**	33,712	81	D9T	1264	1.6	1.0	0.82	1.0	1032	33	857	7,341	8,198
7	**WRSP1-MB7**	13,963	81	D9T	1264	1.6	1.0	0.82	1.0	1032	14	363	3,114	3,477
8	**WRSP2-MB1**	57,498	121	D9T	905	1.6	1.0	0.82	1.0	739	78	2,025	17,351	19,376
9	**WRSP2-MB2**	92,904	121	D9T	905	1.6	1.0	0.82	1.0	739	126	3,271	28,029	31,300
10	**WRSP2-MB3**	84,378	121	D9T	905	1.6	1.0	0.82	1.0	739	114	2,959	25,359	28,318
11	**WRSP3-MB1**	70,560	121	D9T	905	1.6	1.0	0.82	1.0	739	95	2,466	21,133	23,599
12	**WRSP3-MB2**	140,532	121	D9T	905	1.6	1.0	0.82	1.0	739	190	4,932	42,266	47,198
13	**WRSP3-MB3**	132,048	121	D9T	905	1.6	1.0	0.82	1.0	739	179	4,647	39,819	44,466
14	**WRSP3-MB4**	71,568	121	D9T	905	1.6	1.0	0.82	1.0	739	97	2,518	21,578	24,096
15	**WRSP3-MB5**	60,060	121	D9T	905	1.6	1.0	0.82	1.0	739	81	2,103	18,018	20,121
16	**WRSP3-MB6**	101,892	121	D9T	905	1.6	1.0	0.82	1.0	739	138	3,582	30,698	34,280
17	**WRSP3-MB7**	4,290	57	D9T	1694	1.6	1.0	0.82	1.0	1384	3	78	667	745
18	**WRSP3-MB8**	14,363	57	D9T	1694	1.6	1.0	0.82	1.0	1384	10	260	2,225	2,485
19	**EWRSP1-MB1**	7,783	50	D9T	1889	1.6	1.0	0.82	1.0	1543	5	130	1,112	1,242
20	**EWRSP1-MB2**	4,357	50	D9T	1889	1.6	1.0	0.82	1.0	1543	3	78	667	745
21	**EWRSP1-MB3 (material will be pulled back)**										0	0	0	0
22	**EWRSP1-MB4**	1,053	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
23	**EWRSP2A-MB1**	21,765	81	D9T	1264	1.6	1.0	0.82	1.0	1032	21	545	4,671	5,216
24	**EWRSP2B-MB1**	3,546	50	D9T	1889	1.6	1.0	0.82	1.0	1543	2	52	445	497
25	**EWRSP2B-MB2**	17,455	113	D9T	958	1.6	1.0	0.82	1.0	782	22	571	4,894	5,465
26	**EWRSP2B-3 (see "Yards" sheet)**										0	0	0	0
27	**EWRSP3 and haul roads, misc. plant disturbance**	202,587	211	D9T	569	1.6	1.0	0.82	1.0	465	436	11,319	96,988	108,307
28	**EWRSP4-MB1**	110	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
29	**EWRSP4-MB2**	5,955	81	D9T	1264	1.6	1.0	0.82	1.0	1032	6	156	1,335	1,491
30	**EWRSP4-MB3**	1,495	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
31	**EWRSP4-MB4**	993	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
32	**EWRSP4-MB5**	3,962	50	D9T	1889	1.6	1.0	0.82	1.0	1543	3	78	667	745
33	**EWRSP4-MB6**	370	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
34	**EWRSP4-MB7**	741	50	D9T	1889	1.6	1.0	0.82	1.0	1543	1	26	222	248
		1,266,140									1,817	**47,170**	**404,189**	**451,359**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Rock Dumps - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	**WRSP1-MB1**	17,956	777G/992K/D9T	19.51	6	1,021	18	3,582	70,136	73,718
2	**WRSP1-MB2**	3,727	777G/992K/D9T	19.51	6	1,021	4	796	15,586	16,382
3	**WRSP1-MB3**	2,517	777G/992K/D9T	19.51	6	1,021	2	398	7,793	8,191
4	**WRSP1-MB4**	60,355	777G/992K/D9T	19.51	6	1,021	59	11,741	229,891	241,632
5	**WRSP1-MB5**	6,776	777G/992K/D9T	19.51	6	1,021	7	1,393	27,275	28,668
6	**WRSP1-MB6**	65,776	777G/992K/D9T	19.51	6	1,021	64	12,736	249,373	262,109
7	**WRSP1-MB7**	27,733	777G/992K/D9T	19.51	6	1,021	27	5,373	105,204	110,577
8	**WRSP2-MB1**	60,548	777G/992K/D9T	17.77	6	1,121	54	10,746	210,408	221,154
9	**WRSP2-MB2**	92,638	777G/992K/D9T	17.77	6	1,121	82	16,318	319,509	335,827
10	**WRSP2-MB3**	87,217	777G/992K/D9T	17.77	6	1,121	78	15,522	303,923	319,445
11	**WRSP3-MB1**	63,985	777G/992K/D9T	13.73	4	966	66	10,060	187,801	197,861
12	**WRSP3-MB2**	127,582	777G/992K/D9T	13.73	4	966	132	20,119	375,602	395,721
13	**WRSP3-MB3**	117,370	777G/992K/D9T	13.73	4	966	121	18,443	344,302	362,745
14	**WRSP3-MB4**	64,614	777G/992K/D9T	13.73	4	966	67	10,212	190,646	200,858
15	**WRSP3-MB5**	52,514	777G/992K/D9T	13.73	4	966	54	8,231	153,655	161,886
16	**WRSP3-MB6**	93,460	777G/992K/D9T	13.73	4	966	97	14,785	276,011	290,796
17	**WRSP3-MB7**	15,536	777G/992K/D9T	13.73	4	966	16	2,439	45,528	47,967
18	**WRSP3-MB8**	58,274	777G/992K/D9T	13.73	4	966	60	9,145	170,728	179,873
19	**EWRSP1-MB1**	55,950	777G/992K/D9T	13.16	4	1,009	55	8,383	156,501	164,884
20	**EWRSP1-MB2**	31,121	777G/992K/D9T	13.16	4	1,009	31	4,725	88,210	92,935
21	**EWRSP1-MB3 (material will be pulled back)**	17,424	777G/992K/D9T	13.16	4	1,009	17	2,591	48,373	50,964
22	**EWRSP1-MB4**	17,037	777G/992K/D9T	13.16	4	1,009	16	2,439	45,528	47,967
23	**EWRSP2A-MB1**	30,298	777G/992K/D9T	19.51	6	1,021	29	5,771	112,997	118,768
24	**EWRSP2B-MB1**	20,183	777G/992K/D9T	19.51	6	1,021	20	3,980	77,929	81,909
25	**EWRSP2B-MB2**	26,330	777G/992K/D9T	19.51	6	1,021	26	5,174	101,308	106,482
26	**EWRSP2B-3 (see "Yards" sheet)**						0	0	0	0
27	**EWRSP3 and haul roads, misc. plant disturbance**	165,770	777G/992K/D9T	19.51	6	1,021	162	32,238	631,225	663,463
28	**EWRSP4-MB1**	15,052	777G/992K/D9T	12.48	4	1,062	15	2,286	42,682	44,968
29	**EWRSP4-MB2**	15,294	777G/992K/D9T	12.48	4	1,062	14	2,134	39,837	41,971
30	**EWRSP4-MB3**	7,212	777G/992K/D9T	12.48	4	1,062	7	1,067	19,918	20,985
31	**EWRSP4-MB4**	7,212	777G/992K/D9T	12.48	4	1,062	7	1,067	19,918	20,985
32	**EWRSP4-MB5**	25,652	777G/992K/D9T	12.48	4	1,062	24	3,658	68,291	71,949
33	**EWRSP4-MB6**	11,471	777G/992K/D9T	12.48	4	1,062	11	1,677	31,300	32,977
34	**EWRSP4-MB7**	22,893	777G/992K/D9T	12.48	4	1,062	21	3,201	59,755	62,956
		1,487,477					1,463	**252,430**	**4,827,143**	**5,079,573**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Rock Dumps - Scarify/Revegetation Costs

										Scarifying Costs			Regegetation Costs			
	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hrs hrs	Flat Area Scarifying/ Ripping Hrs hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	**WRSP1-MB1**	2.71	1.00	3.71	239			0	0	0	0	0	52	96	648	796
2	**WRSP1-MB2**	0.77	0.00	0.77	159			0	0	0	0	0	19	26	135	180
3	**WRSP1-MB3**	0.52	0.00	0.52	159			0	0	0	0	0	19	26	91	136
4	**WRSP1-MB4**	11.47	1.00	12.47	239			0	0	0	0	0	219	322	2,179	2,720
5	**WRSP1-MB5**	0.40	1.00	1.40	80			0	0	0	0	0	19	36	245	300
6	**WRSP1-MB6**	6.59	7.00	13.59	159			0	0	0	0	0	174	351	2,374	2,899
7	**WRSP1-MB7**	2.73	3.00	5.73	159			0	0	0	0	0	61	147	1,001	1,209
8	**WRSP2-MB1**	7.51	5.00	12.51	239			0	0	0	0	0	167	323	2,186	2,676
9	**WRSP2-MB2**	12.14	7.00	19.14	239			0	0	0	0	0	279	494	3,344	4,117
10	**WRSP2-MB3**	11.02	7.00	18.02	239			0	0	0	0	0	258	465	3,148	3,871
11	**WRSP3-MB1**	9.22	4.00	13.22	239			0	0	0	0	0	191	341	2,310	2,842
12	**WRSP3-MB2**	18.36	8.00	26.36	239			0	0	0	0	0	412	680	4,606	5,698
13	**WRSP3-MB3**	17.25	7.00	24.25	239			0	0	0	0	0	376	626	4,237	5,239
14	**WRSP3-MB4**	9.35	4.00	13.35	239			0	0	0	0	0	193	344	2,333	2,870
15	**WRSP3-MB5**	7.85	3.00	10.85	239			0	0	0	0	0	158	280	1,896	2,334
16	**WRSP3-MB6**	13.31	6.00	19.31	239			0	0	0	0	0	288	498	3,374	4,160
17	**WRSP3-MB7**	1.21	2.00	3.21	112			0	0	0	0	0	27	83	560	670
18	**WRSP3-MB8**	4.04	8.00	12.04	112			0	0	0	0	0	141	310	2,104	2,555
19	**EWRSP1-MB1**	2.56	9.00	11.56	96			0	0	0	0	0	130	298	2,019	2,447
20	**EWRSP1-MB2**	1.43	5.00	6.43	96			0	0	0	0	0	52	166	1,124	1,342
21	**EWRSP1-MB3 (material will be pulled back)**	0.60	3.00	3.60	79			0	0	0	0	0	20	92	629	741
22	**EWRSP1-MB4**	0.52	3.00	3.52	64			0	0	0	0	0	19	90	615	724
23	**EWRSP2A-MB1**	4.26	2.00	6.26	159			0	0	0	0	0	85	162	1,093	1,340
24	**EWRSP2B-MB1**	1.17	3.00	4.17	96			0	0	0	0	0	31	107	728	866
25	**EWRSP2B-MB2**	2.44	3.00	5.44	223			0	0	0	0	0	55	140	950	1,145
26	**EWRSP2B-3 (see "Yards" sheet)**	0.10	0.00	0.10				0	0	0	0	0	0	0	0	0
27	**EWRSP3 and haul roads, misc. plant disturbance**	15.25	19.00	34.25	414			0	0	0	0	0	650	883	5,984	7,517
28	**EWRSP4-MB1**	0.11	3.00	3.11	32			0	0	0	0	0	19	80	543	642
29	**EWRSP4-MB2**	1.16	2.00	3.16	159			0	0	0	0	0	26	82	552	660
30	**EWRSP4-MB3**	0.49	1.00	1.49	96			0	0	0	0	0	19	39	261	319
31	**EWRSP4-MB4**	0.49	1.00	1.49	64			0	0	0	0	0	19	39	261	319
32	**EWRSP4-MB5**	1.30	4.00	5.30	96			0	0	0	0	0	41	137	926	1,104
33	**EWRSP4-MB6**	0.37	2.00	2.37	32			0	0	0	0	0	19	62	414	495
34	**EWRSP4-MB7**	0.73	4.00	4.73	32			0	0	0	0	0	30	122	827	979
		169.43	138.00	307.43				0	0	**0**	**0**	**0**	**4,268**	**7,947**	**53,697**	**65,911**

Notes:
1. Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2. Assumes 50 min/hr equipment availability

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Tailings - User Input

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

	Facility Description								Physical - MANDATORY									
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Embankment Height ft	Final (Regraded) Embankment Footprint acres	Mid-Embankment Length ft	Average Long Dimension (ripping distance) ft	Slope Regrade Volume (1) (if calculated elsewhere) cy	Final Tailings Surface Area acres	Surface Regrade Volume (calculated elsewhere) cy
1	TSF			Tailings Storage Facility				FA	0.0	4.0	4.0	154	244.99	17,289	2,000		305.39	492,696

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Surface regrade volume assumed __ ft3 per ft2: 1
Surface of interbench slopes does not include surface area of ditch and berm.
Embankment height is average across the perimeter of the embankment.
See User 06 for facility dimensions and User 09 for haulage distances.

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Tailings - User Input

		Cover 1				Cover 2				Growth Media			
	Description (required)	Embankment Cover Thickness in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Embankment Cover Thickness in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Embankment Growth Media Thickness in	Tailings Surface Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	TSF									36.0	36.0	10,536	-1.7

Notes:
1. All Physical parameters must be input even if manual overri
2. Input distance from crusher to placement location if material
3. If Slope from facility to borrow source is >20, downhill travel

Surface regrade volume assumed __ ft3 per ft2:
Surface of interbench slopes does not include surface area
Embankment height is average across the perimeter of the

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Tailings - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each tailings impoundment

		Grading				Cover 1				Cover 2				Growth Media			
	Description (required)	Dozing Material Condition (select)	Embankment Material Type (select)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	TSF	1	Tailings - Coarse (dr	Large	No									Alluvium	Med Truck		

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Tailings - User Input (cont.)

		Revegetation								
	Description (required)	Seed Mix Embankment Slope (select)	Seed Mix Tailings Surface (select)	Mulch Embankment Slopes (select)	Mulch Tailings Surface (select)	Fertilizer Embankment Slopes (select)	Fertilizer Tailing Surface (select)	Embankment Slope Scarify/ Rip? (select)	Tailings Surface Scarify/ Rip? (select)	Scarifying/ Ripping Fleet (select)
1	TSF	User Mix 1	User Mix 1							

Notes:

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Tailings - Surface Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Density Correction	Dozing Material	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost	Total Equipment Cost	Total Regrading Cost
1	**TSF**	492,696	400	D9T	334	1.00	0.96	1.20	1.00	240	2,053	53,296	456,690	509,986
		492,696									2,053	**53,296**	**456,690**	**509,986**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Cost Data: User Data
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Tailings - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	TSF	2,700,333	740C/988K/D8T	11.04	4	485	5,568	848,675	6,437,276	7,285,951
		2,700,333					5,568	**848,675**	**6,437,276**	**7,285,951**

Bond Calculation
Tailings

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Tailings - Scarify/Revegetation Costs

										Scarifying Costs			Regegetation Costs			
	Description (required)	Embankment Slope Area acres	Embankment Flat Area acres	Total Embankment Surface Area acres	Total Tailings Surface Area	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	TSF	252.03	0.50	252.53	305.39	635			0	0	0	0	0	10,584	14,394	97,480	122,458
		252.03	0.50	252.53	305.39				0	0	**0**	**0**	**0**	**10,584**	**14,394**	**97,480**	**122,458**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2) Assumes 50 min/hr equipment availability

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - User Input - Pumping

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Water Type (select)	Management Type (select)
1	Pit rapid fill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
2	Pit rapid fill - Month 2			Pit Rapid Fill				FA	Pit Water	Active
3	Pit rapid fill - Month 3			Pit Rapid Fill				FA	Pit Water	Active
4	Pit rapid fill - Month 4			Pit Rapid Fill				FA	Pit Water	Active
5	Pit rapid fill - Month 5			Pit Rapid Fill				FA	Pit Water	Active
6	Pit rapid fill - Month 6			Pit Rapid Fill				FA	Pit Water	Active
7	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
8	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
9	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
10	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
11	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
12	Pumping water from wellfields for pit refill - Month 1			Pit Rapid Fill				FA	Pit Water	Active
13	Year 1 - New Evaporation Pond to Spray Pond Area			Draindown Management				FA	Seepage	Active
14	Year 2 - New Evaporation Pond to Spray Pond Area			Draindown Management				FA	Seepage	Active
15	Year 3 - New Evaporation Pond to Spray Pond Area			Draindown Management				FA	Seepage	Active
16	Year 4 - New Evaporation Pond to Spray Pond Area			Draindown Management				FA	Seepage	Active
17	Year 5 - New Evaporation Pond to Spray Pond Area			Draindown Management				FA	Seepage	Active

Notes: 1. Inside Diameter (ID) depends on nominal diameter and the pipewall thickness.
2. k (total of all losses related to valves, restrictions, etc.). Typically 8 -20. Not significant for longer pipes.
3. Default crew assumes crew of two laborers required during pumping hours

Rapid refill rates per "Copper Flat Alt2-4900CB RF2200_4July2017.xlsm."
For pumping from New Evaporation Pond to Spray Pond Area, static head is from crest of pond to crest of TSF.
During the active evaporation, there will be on average 18 hours per day over the course of the year between the summer and winter seasons.
During the 20-year passive evaporation phase, there will be no pumping or evaporator operation costs.

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - User Input - Pum

										Operating Period			User Overrides	
	Description (required)	Capital Cost $	Flow (Q) gpm	Pipeline Length ft	Static Head ft	Pipe Diameter (ID)[1] in	Pipe Material (select)	Pump Efficiency %	Total Concentated Losses [2]	Hrs/Day	Days/ Month	Number of Months	Crew Size [3]	Power Cost ($/kWh)
1	Pit rapid fill - Month 1		3000.00	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
2	Pit rapid fill - Month 2		3000.00	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
3	Pit rapid fill - Month 3		3000.00	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
4	Pit rapid fill - Month 4		3000.00	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
5	Pit rapid fill - Month 5		3000.00	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
6	Pit rapid fill - Month 6		1500.26	4,000	303.0	12	HDPE	85	20	24.0	30.0	1	1	
7	Pumping water from wellfields for pit refill - Month 1		3000.00	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
8	Pumping water from wellfields for pit refill - Month 1		3000.00	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
9	Pumping water from wellfields for pit refill - Month 1		3000.00	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
10	Pumping water from wellfields for pit refill - Month 1		3000.00	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
11	Pumping water from wellfields for pit refill - Month 1		3000.00	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
12	Pumping water from wellfields for pit refill - Month 1		1500.26	42,000	757.0	18	HDPE	85	20	24.0	30.0	1	0	
13	Year 1 - New Evaporation Pond to Spray Pond Area		445.00	1,000	303.0	6	HDPE	85	20	18.0	30.0	12	2	
14	Year 2 - New Evaporation Pond to Spray Pond Area		310.00	1,000	303.0	6	HDPE	85	20	18.0	30.0	12	2	
15	Year 3 - New Evaporation Pond to Spray Pond Area		210.00	1,000	303.0	4	HDPE	85	20	18.0	30.0	12	2	
16	Year 4 - New Evaporation Pond to Spray Pond Area		140.00	1,000	303.0	4	HDPE	85	20	18.0	30.0	12	2	
17	Year 5 - New Evaporation Pond to Spray Pond Area		90.00	1,000	303.0	4	HDPE	85	20	18.0	30.0	12	2	

Notes: 1. Inside Diameter (ID) depends on nominal diame
2. k (total of all losses related to valves, restrictions
3. Default crew assumes crew of two laborers requ

Rapid refill rates per "Copper Flat Alt2-4900CB RF2200_
For pumping from New Evaporation Pond to Spray Pon

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - User Input - Enhanced Evaporation

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Water Type (select)	Management Type (select)
1	Year 1 - Forced Evaporation			Draindown Management				FA	Seepage	Active
2	Year 2 - Forced Evaporation			Draindown Management				FA	Seepage	Active
3	Year 3 - Forced Evaporation			Draindown Management				FA	Seepage	Active
4	Year 4 - Forced Evaporation			Draindown Management				FA	Seepage	Active
5	Year 5 - Forced Evaporation			Draindown Management				FA	Seepage	Active

Notes: 1. Default crew assumes crew of two laborers required during pumping hours
3. Assumes 1-1.5 ton truck for every 2 laborers

Crew assumed shared with pumping crew.

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - User Input - Enha

												Operating Period			User Overrides	
	Description (required)	Forced Evaporation Method (select)	Capital Cost $	Flow (Q) gpm	Pipeline Length ft	Static Head ft	Pipe Diameter (ID) in	Pipe Material (select)	Pump Efficiency %	Total Concentated Losses (1)	Required Pressure at Outlet psi	Hrs/Day	Days/Month	Number of Months	Crew Size	Power Cost ($/kWh)
1	Year 1 - Forced Evaporation	Snowmaker	505,240	445.00	500	3.0	6	HDPE	85	20	150	24.0	30.0	12	0	
2	Year 2 - Forced Evaporation	Snowmaker		310.00	500	3.0	6	HDPE	85	20	150	24.0	30.0	12	0	
3	Year 3 - Forced Evaporation	Snowmaker		210.00	500	3.0	6	HDPE	85	20	150	24.0	30.0	12	0	
4	Year 4 - Forced Evaporation	Snowmaker		140.00	500	3.0	6	HDPE	85	20	150	24.0	30.0	12	0	
5	Year 5 - Forced Evaporation	Snowmaker		90.00	500	3.0	6	HDPE	85	20	150	24.0	30.0	12	0	

Notes: 1. Default crew assumes crew of two laborers requir
3. Assumes 1-1.5 ton truck for every 2 laborers

Crew assumed shared with pumping crew.

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - User Input - Decontamination

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type
1	Mill decon			Buildings				FA

Notes:
1. Assumes triple rinse of all piping, tanks and vessels requiring decontamination
2. Standard crew includes 2 laborers and 1 foreman
3. Assumes 1-1.5 ton truck for every 2 laborers
4. Assumes crew works 8 hr/day

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Est
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File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - User Input - Deco

													Operating Period		User Overrides	
	Description (required)	Management Type (select)	Type	Disposal Location	Capital Cost $	Pumping Flow (Q) gpm	Pipeline Length ft	Static Head ft	Pipe Diameter (ID) in	Pipe Material (select)	Pump Efficiency %	Total Concentated Losses [1]	Number of Work Days days	Pumping Hrs/Day	Crew Size	Power Cost ($/kWh)
1	Mill decon			TSF	100,000	500.00	5,000	200.0	6	HDPE	80		30.0	12.0	6	

Notes:
1. Assumes triple rinse of all piping, tanks and vessels re
2. Standard crew includes 2 laborers and 1 foreman
3. Assumes 1-1.5 ton truck for every 2 laborers

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution Mgmt - Assumptions & Calculations

Manning's Roughness Coefficient

Pipe material	Manning n
HDPE	
ID < 4" (100 mm)	0.011
ID ≥ 4 in (100 mm) < 10 in (250 mm)	0.01
ID ≥ 10 in (250 mm)	0.009
PVC	
ID < 4" (100 mm)	0.011
ID ≥ 4 in (100 mm) < 10 in (250 mm)	0.01
ID ≥ 10 in (250 mm)	0.009
Brass	0.011
Cast Iron	0.013
Smooth Steel	0.012
Asbestos Cement	0.011

Water Treatment Costs

Water treatment cost = CapEx + Labor Cost + Equipment Cost (includes Operating Cost)

CapEx = User Entered Value
Consumable costs = cost of treatment chemicals or materials based quantity treated
Labor Cost = No. Months x Days/mo. x [(Supervisor Cost x 8 hrs) + (Laborer Cost x Crew Size x Hours/day)]
Operating Cost = Fuel, power, maintenance or other costs calculated based on quantity treated
Equipment Cost = No. Months x Days/mo. x [(Supervisor Truck Cost x 8 hrs) + (Labor Truck Cost x No. Crew Trucks x Hours/day)]
No. Crew Trucks = 1 per each two laborers per shift

Closure Cost Estimate
Solution Mgmt

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Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - Pumping

	Description (required)	Flow gpm	Manning n (see above)	Losses k	Velocity(2) ft/sec	Friction Head ft	Total Dynamic Head ft	Pump Efficiency %	Power Required kW	Horsepower Required HP	Monthly Operating Hours hrs
1	**Pit rapid fill - Month 1**	3000.00	0.009	20	8.499	90	393	85	261.37	350.60	720
2	**Pit rapid fill - Month 2**	3000.00	0.009	20	8.499	90	393	85	261.37	350.60	720
3	**Pit rapid fill - Month 3**	3000.00	0.009	20	8.499	90	393	85	261.37	350.60	720
4	**Pit rapid fill - Month 4**	3000.00	0.009	20	8.499	90	393	85	261.37	350.60	720
5	**Pit rapid fill - Month 5**	3000.00	0.009	20	8.499	90	393	85	261.37	350.60	720
6	**Pit rapid fill - Month 6**	1500.26	0.009	20	4.250	22	326	85	108.33	145.30	720
7	**Pumping water from wellfields for pit refill - Month 1**	3000.00	0.009	20	3.786	86	843	85	560.94	752.30	720
8	**Pumping water from wellfields for pit refill - Month 1**	3000.00	0.009	20	3.786	86	843	85	560.94	752.30	720
9	**Pumping water from wellfields for pit refill - Month 1**	3000.00	0.009	20	3.786	86	843	85	560.94	752.30	720
10	**Pumping water from wellfields for pit refill - Month 1**	3000.00	0.009	20	3.786	86	843	85	560.94	752.30	720
11	**Pumping water from wellfields for pit refill - Month 1**	3000.00	0.009	20	3.786	86	843	85	560.94	752.30	720
12	**Pumping water from wellfields for pit refill - Month 1**	1500.26	0.009	20	1.893	22	778	85	259.02	347.40	720
13	**Year 1 - New Evaporation Pond to Spray Pond Area**	445.00	0.010	20	5.077	27	330	85	32.57	43.70	540
14	**Year 2 - New Evaporation Pond to Spray Pond Area**	310.00	0.010	20	3.537	13	316	85	21.74	29.20	540
15	**Year 3 - New Evaporation Pond to Spray Pond Area**	210.00	0.010	20	5.320	44	347	85	16.16	21.70	540
16	**Year 4 - New Evaporation Pond to Spray Pond Area**	140.00	0.010	20	3.545	19	323	85	10.01	13.50	540
17	**Year 5 - New Evaporation Pond to Spray Pond Area**	90.00	0.010	20	2.281	8	311	85	6.21	8.40	540
											11,340

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - Pumping

	Description (required)	Pump Capital Cost $	Total Operating Cost $	Total Labor Cost $	Total Crew Equipment Cost $	Total Cost $	Cost/gal $
1	Pit rapid fill - Month 1	0	14,692	10,937	21,564	47,193	0.10
2	Pit rapid fill - Month 2	0	14,692	10,937	21,564	47,193	0.10
3	Pit rapid fill - Month 3	0	14,692	10,937	21,564	47,193	0.10
4	Pit rapid fill - Month 4	0	14,692	10,937	21,564	47,193	0.10
5	Pit rapid fill - Month 5	0	14,692	10,937	21,564	47,193	0.10
6	Pit rapid fill - Month 6	0	6,089	10,937	21,564	38,590	0.16
7	Pumping water from wellfields for pit refill - Month 1	0	31,531	0	0	31,531	0.06
8	Pumping water from wellfields for pit refill - Month 1	0	31,531	0	0	31,531	0.06
9	Pumping water from wellfields for pit refill - Month 1	0	31,531	0	0	31,531	0.06
10	Pumping water from wellfields for pit refill - Month 1	0	31,531	0	0	31,531	0.06
11	Pumping water from wellfields for pit refill - Month 1	0	31,531	0	0	31,531	0.06
12	Pumping water from wellfields for pit refill - Month 1	0	14,560	0	0	14,560	0.06
13	Year 1 - New Evaporation Pond to Spray Pond Area	0	16,476	196,862	194,076	407,414	0.62
14	Year 2 - New Evaporation Pond to Spray Pond Area	0	11,004	196,862	194,076	401,942	0.88
15	Year 3 - New Evaporation Pond to Spray Pond Area	0	8,172	196,862	194,076	399,110	1.29
16	Year 4 - New Evaporation Pond to Spray Pond Area	0	5,064	196,862	194,076	396,002	1.92
17	Year 5 - New Evaporation Pond to Spray Pond Area	0	3,144	196,862	194,076	394,082	2.97
		0	**295,624**	**1,049,933**	**1,099,764**	**2,445,321**	

Notes:
1. Assumes 2 man labor crew unless user overrides defa

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - Enhanced Evaporation

	Description (required)	Flow gpm	Manning n (see above)	Losses k	Velocity(2) ft/sec	Friction Head ft	Total Dynamic Head ft	Pump Efficiency %	Power Required kW	Horsepower Required HP	Annual Operating Hours hrs
1	**Year 1 - Forced Evaporation**	445.00	0.010	20	5.077	17	366	85	36.00	48.30	720
2	**Year 2 - Forced Evaporation**	310.00	0.010	20	3.537	8	357	85	25.00	33.60	720
3	**Year 3 - Forced Evaporation**	210.00	0.010	20	2.396	4	353	85	16.00	21.50	720
4	**Year 4 - Forced Evaporation**	140.00	0.010	20	1.596	2	351	85	11.00	14.80	720
5	**Year 5 - Forced Evaporation**	90.00	0.010	20	1.027	1	350	85	7.00	9.40	720
											3,600

Notes:
1. Assumes 2 man labor crew unless user overrides default.
2. Maintaining pipe flow velocity between 1.0 m/s (3.28 ft/sec) and 3.0 m/s (9.84 ft/sec) is generally accepted piping practice. This range is dictated by economic considerations, allows for maintaining stable flow regime and precludes excessive friction losses, Please revise pipe internal diameter if the calculated velocity is outside of the recommended range.

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - Enhanced Evapo

	Description (required)	Evaporator/ Pump Capital Cost $	Total Labor Cost $	Total Equipment Cost $	Total Power Cost $	Total Cost $	Cost/gal $
1	**Year 1 - Forced Evaporation**	505,240	0	0	24,288	529,528	0.03
2	**Year 2 - Forced Evaporation**	0	0	0	16,860	16,860	0.03
3	**Year 3 - Forced Evaporation**	0	0	0	10,788	10,788	0.03
4	**Year 4 - Forced Evaporation**	0	0	0	7,416	7,416	0.03
5	**Year 5 - Forced Evaporation**	0	0	0	4,716	4,716	0.03
		505,240	**0**	**0**	**64,068**	**569,308**	

Notes:
1. Assumes 2 man labor crew unless user overrides defa
2. Maintaining pipe flow velocity between 1.0 m/s (3.28 ft/noise, vibration, wear and transient overpressures in the pipeline.

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost CostType Type: FA Cost Basis: Copper Flat FA

Solution/Water Management - Decontamination

	Description (required)	Flow gpm	Manning n (see above)	Losses k	Velocity(1) ft/sec	Friction Head ft	Total Dynamic Head ft	Pump Efficiency %	Power Required kW	Horsepower Required HP	Total Operating Hours hrs
1	**Mill decon**	500.00	0.010	0	5.704	118	318	80	37.52	50.40	360
											360

Notes:
2. Maintaining pipe flow velocity between 1.0 m/s (3.28 ft/sec) and 3.0 m/s (9.84 ft/sec) is generally accepted piping practice. This range is dictated by economic considerations, allows for maintaining stable flow regime and precludes excessive friction losses, Please revise pipe internal diameter if the calculated velocity is outside of the recommended range.

Closure Cost Estimate
Solution Mgmt

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost CostType Type: FA Cost Basis: Copper Flat F

Solution/Water Management - Decontamination

	Description (required)	Pump Capital Cost $	Total Operating Cost $	Total Labor Cost $	Total Equipment Cost $	Total Cost $
1	**Mill decon**	100,000	1,055	40,771	14,376	156,202
		100,000	**1,055**	**40,771**	**14,376**	**156,202**

Closure Cost Estimate
Quarries & Borrow Pits

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Quarries & Borrow Pits - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description								Physical - MANDATORY								
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Bench or Highwall Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Footprint acres	Regrade Volume (1) (if calculated elsewhere) cy
1	Copper Flat Pit areas reclaimed			Pits				FA	0.0	1.3	1.3	0.0	25	98,000	500	35.00	

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20°, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Inputs for total pit cover are from "Cu Flat Pit Reclaim 20171002 a.pdf."
The areas around the pit crest which will be reclaimed will have been sloped during excavation of the pit. Sloping is therefore an operational cost and not included here.

Closure Cost Estimate
Quarries & Borrow Pits

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Quarries & Borrow Pits - User Input

		Cover 1				Cover 2				Growth Media			
	Description (required)	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	**Copper Flat Pit areas reclaimed**									**18.0**	**18.0**	**6,000**	**0.0**

Notes:
1. All Physical parameters must be input even if manual overri
2. Input distance from crusher to placement location if material
3. If Slope from facility to borrow source is >20°, downhill trave

Inputs for total pit cover are from "Cu Flat Pit Reclaim 2017
The areas around the pit crest which will be reclaimed will l

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Quarries & Borrow Pits - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover 1				Cover 2			
	Description (required)	Dozing Material Condition (select)	Highwall Material Type (select)	Grading Equipment Fleet (select)	Slot/Side-by-Side (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Copper Flat Pit areas reclaimed	1	Granite - broken	Med									

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Quarries & Borrow Pits - User Input (cont.)

		Growth Media				Revegetation								
	Description (required)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	Copper Flat Pit areas reclaimed	Alluvium	Large Truck			User Mix 1	User Mix 1					Yes	Yes	Med Dozer

Notes:

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Quarries & Borrow Pits - User Input (cont.)

	Facility Description	Highwall Berms					Berm Construction			Hauling (if selected method)				Revegetation		
	Description (required)	Berm (or Highwall) Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Volume (if calculated elsewhere) cy	Berm Construction Method (select)	Berm Material Type (select)	Berm Construction Fleet (select)	Distance to Borrow Source ft	Slope to Borrow Source % grade	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)
1	Copper Flat Pit areas reclaimed	9,252	6.0	20.0	1.5		Dozer	Alluvium	Med Dozer					User Mix 1		

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Berm length from <FIG_PIT_BERM_20180402.pdf>

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Quarries & Borrow Pits - Assumptions & Calculations

Regrading Push Distance Calculation

dozing distance:
based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

Safety Berm Volume Calculation

Dozer productivity assumes push distance of:
100 ft

Dozer:
Length x (Berm Base Width + Dozer Push Distance) - accounts for disturbance created in borrow area

Excavator:
Length x (Berm Base Width + (2 x Excavator Track Width) - accounts for disturbance created in borrow area

Haul & Place:
Length x Berm Base Width - if necessary use Yards sheet to account for disturbance created in borrow area

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per dump

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation:
Minimum 1 acre revegetation crew time per area

Closure Cost Estimate
Quarries & Borrow Pits

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Quarries & Borrow Pits - Growth Media Costs

		Growth Media Placement								
	Description (required)	Growth Media Volume cy	Growth Media Replacement Fleet	Cycle Time min	Fleet Productivity BCY/hr	Haul Fleet Size	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Topsoiling Cost $
1	**Copper Flat Pit areas reclaimed**	223,221	777G/992K/D9T	8.58	774	2	288	30,482	516,813	547,295
		223,221					288	**30,482**	**516,813**	**547,295**

Quarries & Borrow Pits - Scarifying/Revegetation Costs

										Scarifying Costs			Regegetation Costs			
	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Average Long Dimension (ripping distance) ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hrs hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	**Copper Flat Pit areas reclaimed**	92.24		92.24	41	500	D7E	98	0	2,544	12,808	15,352	1,750	2,380	16,116	20,246
		92.24	0.00	92.24				98	0	**2,544**	**12,808**	**15,352**	**1,750**	**2,380**	**16,116**	**20,246**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2) Assumes 50min/hr equipment availability

Quarries & Borrow Pits - Safety Berm Construction Costs

		Safety Berm								
	Description (required)	Safety Berm Volume cy	Selected Fleet	Cycle Time min	Haul Fleet Size	Corrected Fleet Productivity cy/hr	Total Hours hrs	Safety Berm Labor Cost $	Safety Berm Equipment Cost $	Total Safety Berm Cost $
1	**Copper Flat Pit areas reclaimed**	22,616	D8T			57	57	1,480	8,757	10,237
		22,616					57	**1,480**	**8,757**	**10,237**

Quarries & Borrow Pits - Safety Berms - Revegetation Costs

	Description (required)	Flat Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**Copper Flat Pit areas reclaimed**	25.49	484	658	4,454	5,596
		25.49	**484**	**658**	**4,454**	**5,596**

Closure Cost Estimate
Roads

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Roads - User Input

You must fill in ALL green cells and relevant blue cells in this section for each road

	Facility Description								Physical (1) - MANDATORY						User Overrides		Growth Media		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Ground Slope at Toe % grade	Ungraded Slope _H:1V	Cut Slope degrees	Road Width ft	Road Length ft	Slope Replacement Percent %	Regrade Volume (if calculated elsewhere) cy	Disturbed Area (if calculated elsewhere) acres	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	Roads			Roads				FA	5.0	2.0	25.0	25.0	26,000	100%			6.0	200	-5.0

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Because the work required for building roads with a dozer is similar to that required to regrade a road with a dozer, this sheet could be used to provide a rough estimate of road construction costs if a dozer is selected as the grading fleet.

Roads that will be removed have not been determined at this time. This estimate assumes that at closure approximately 5 miles of roads will be reclaimed or narrowed.

Roads - User Input (cont.)

		Haul Road Safety Berms				
	Description (required)	Berm Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Number of Berms (2) (1 or 2 sides)
1	Roads					

(2) Enter 1 if berm on only one side of road, 2 if both sides of road are bermed.

Roads - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each road

		Grading				Growth Media				Revegetation				
	Description (required)	Dozing Material Condition (select)	Cut Material Type (select)	Recontouring Equipment Fleet[2] (select)	No. of Excavators if grade >30% (select)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarifying/ Ripping? (select)	Ripping Fleet (select)
1	Roads	1	Gravel	Med Excavator	2	Alluvium	Med Truck			User Mix 1			Yes	Med Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
2. If original slope >30% only excavators are allowed.

Closure Cost Estimate
Roads

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Roads - Regrading Costs

	Description (required)	Regrading Volume cy	Recontouring Fleet	Number of Excavators	Fleet Productivity cy/hr	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Roads	4,589	330F	2	369	12	1,111	3,650	4,761
		4,589				12	**1,111**	**3,650**	**4,761**

Roads - Growth Media Costs

	Description (required)	Volume cy	Replacement Fleet	Cycle Time min	Fleet Productivity LCY/hr	Haul Fleet Size	Total Fleet Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Topsoiling Cost $
1	Roads	13,443	740C/988K/D8T	4.34	616	2	22	2,328	17,259	19,587
		13,443					22	**2,328**	**17,259**	**19,587**

Roads - Scarifying/Revegetation Costs

						Scarifying Costs			Regegetation Costs			
	Description (required)	Total Surface Area acres	Final Slope Length ft	Ripping/ Scarifying Fleet	Ripping Hours hrs	Ripping Labor Costs $	Ripping Equipment Cost $	Total Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Roads	16.66	28	D7E	16	415	2,091	2,506	316	430	2,911	3,657
		16.66			16	**415**	**2,091**	**2,506**	**316**	**430**	**2,911**	**3,657**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Roads - Assumptions & Calculations

Regrading Volume and Footprint Volume

Will not allow dozer for slopes greater than 30%
For dozer regrading push distance = road width
Assumes dozer push is uphill
Assumes minimum push distance of 100 ft

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per area
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Road length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
For dozer regrading assumes push distance = 3 x road width

Revegetation Calculations

Minimum of 1 acre crew time per area

Safety Berm Volume Calculation

Cross Sectional Area = (a+b)/2 x h
Berm Volume = Berm Length x Crossectional Area x No. Sides

Total berm volume doubled if both sides of road are bermed.
If length of berm on each side of road is different, input total length of both berms
and input 1 for number of sides

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - User Input

You must fill in ALL green cells and relevant blue cells in this section for each p

	Facility Description								Pond Dimensions (1)				
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Pond Length ft	Pond Width ft	Pond Depth ft	Pond Sideslope Angle _H:1V	Disturbed Area (if calculated elsewhere) acres
1	Impacted Storm Water Impoundment A (measured from "DS-PLANT-EOML.dwg")			Ponds				FA	359	258	12.5	3.0	2.90
2	Impacted Storm Water Impoundment B			Ponds				FA	474	392	4.9	3.0	2.69
3	Impacted Storm Water Impoundment C			Ponds				FA	1200	265	5.3	3.0	4.44
4	Process Water Reservoir (measured from "DS-PLANT-EOML.dwg")			Ponds				FA	278	265	20.0	3.0	2.12
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-SURG-BRKL.dwg")(disturbance under cyc			Ponds				FA	332.5	143	7.7	3.0	
6	TSF underdrain collection pond expansion (convert to TSF evaporation pond)			Draindown Management				FA	3800	140	4.5	2.5	0.00
7	Reclamation of TSF evaporation pond (minimum 10% of 25% Backfill 2 is growth media)			Draindown Management				FA	3800	140	4.5	2.5	22.30
8	Pipeline ditches liner removal (removal of liner and filling with local material)			Yards				FA	6000	10	2.0	2.0	

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If pond will be filled by pushing berm into pond with bulldozer, enter 0 for Distance to Placement. Volume will be adjusted to 50% of the percent backfill to account for cut-to-fill pond construction. Dozer push distance assumed to be 2/3 the width of the pond.
4. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Underdrain collection pond will be excavated out with new evaporation pond
See User 6 for Backfill 1 and Backfill 2 percentage calculations. New evaporation pond excavation disturbed area set to zero to avoid double-dipping with conversion to E-cell.
Impacted Storm Water Impoundment depths estimated by excavation quantities in User 06 divided by pond length and width.
Pond liner cut time assumed 6000 sq. ft./hr based on experience with similar projects.

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - User Input ond

		Backfill 1				Backfill 2				Growth Media			
	Description (required)	Percent Backfill (0% if blank)	Distance to Placement (2)(3) ft	Slope to Placement Location % grade	Volume (if calculated elsewhere) cy	Percent Backfill (0% if blank)	Distance to Placement (2) ft	Slope to Placement Location % grade	Volume (if calculated elsewhere) cy	Growth Media Thickness in	Distance to Placement ft	Slope to Placement Location % grade	Volume (if calculated elsewhere) cy
1	Impacted Storm Water Impoundment A (measured from "D	74%	500	0.0		26%	500	0.0					
2	Impacted Storm Water Impoundment B	74%	500	0.0		26%	500	0.0					
3	Impacted Storm Water Impoundment C	75%	500	0.0		25%	500	0.0					
4	Process Water Reservoir (measured from "DS-PLANT-EOM	75%	500	0.0		25%	500	0.0					
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	75%	500	0.0		25%	500	0.0					
6	TSF underdrain collection pond expansion (convert to TSF	100%	500	0.0		0%	500	0.0					
7	Reclamation of TSF evaporation pond (minimum 10% of 25	75%	500	0.0		25%	500	0.0					
8	Pipeline ditches liner removal (removal of liner and filling v	100%	100	0.0									

Notes:
1. All Physical parameters must be input even if manual overri
2. Input distance from crusher to placement location if materia
3. If pond will be filled by pushing berm into pond with bulldoze
4. If Slope from facility to borrow source is >20, downhill travel

Underdrain collection pond will be excavated out with new
See User 6 for Backfill 1 and Backfill 2 percentage calculati
Impacted Storm Water Impoundment depths estimated by e

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - User Input (Cont.)

		Backfill 1 - Crushing & Screening								
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope to Crusher % grade	Haul to Crusher Fleet (select)	Compact After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Impacted Storm Water Impoundment A (measured from "D	No	No							
2	Impacted Storm Water Impoundment B	No	No							
3	Impacted Storm Water Impoundment C	No	No							
4	Process Water Reservoir (measured from "DS-PLANT-EOM	No	No							
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	No	No							
6	TSF underdrain collection pond expansion (convert to TSF	No	No							
7	Reclamation of TSF evaporation pond (minimum 10% of 25	No	No							
8	Pipeline ditches liner removal (removal of liner and filling v	No	No							

Notes:
1. Input distance from crusher to placement location if material to be crushed, screened or compacted
2. if distance from borrow <820 ft (250 m) must select loader fleet

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - User Input (Cont.)

		Backfill 2 - Crushing & Screening								
	Description (required)	Crush Material (select)	Screen Material (select)	Loss to Crushing/ Screening %	Haul Distance to Crusher (1) ft	Slope to Crusher % grade	Haul to Crusher Fleet (select)	Compact After Placement? (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Impacted Storm Water Impoundment A (measured from "D	No	No							
2	Impacted Storm Water Impoundment B	No	No							
3	Impacted Storm Water Impoundment C	No	No							
4	Process Water Reservoir (measured from "DS-PLANT-EOM	No	No							
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	No	No							
6	TSF underdrain collection pond expansion (convert to TSF	No	No							
7	Reclamation of TSF evaporation pond (minimum 10% of 25	No	No							
8	Pipeline ditches liner removal (removal of liner and filling v	No	No							

Notes:
1. Input distance from crusher to placement location if materia

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - User Input (Cont.)

		Remove Liner	Backfill 1				Backfill 2			
	Description (required)	Crew Cut & Fold Time [2] hrs	Backfill Material Type (select)	Backfill Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Backfill Material Type (select)	Backfill Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Impacted Storm Water Impoundment A (measured from "D	31.0	Stone - crushed	Med Truck			Stone - crushed	Med Truck		
2	Impacted Storm Water Impoundment B	61.0	Stone - crushed	Med Truck			Stone - crushed	Med Truck		
3	Impacted Storm Water Impoundment C	105.0	Stone - crushed	Med Truck			Stone - crushed	Med Truck		
4	Process Water Reservoir (measured from "DS-PLANT-EOM	24.0	Stone - crushed	Med Truck			Stone - crushed	Med Truck		
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	16.0	Stone - crushed	Med Truck			Stone - crushed	Med Truck		
6	TSF underdrain collection pond expansion (convert to TSF evaporation pond)		Stone - crushed	Med Truck			Stone - crushed	Med Truck		
7	Reclamation of TSF evaporation pond (minimum 10% of 25% Backfill 2 is growth		Stone - crushed	Med Truck			Stone - crushed	Med Truck		
8	Pipeline ditches liner removal (removal of liner and filling with local material)		Stone - crushed	Med Truck			Stone - crushed	Med Truck		

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
(2) Pond liner removal crew (2Clab + excavator) = 2 General Laborers + 325C Excavator

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - User Input (Cont.)

		Growth Media				Revegetation		
	Description (required)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)
1	Impacted Storm Water Impoundment A (measured from "D	Alluvium	Med Truck			User Mix 1		
2	Impacted Storm Water Impoundment B	Alluvium	Med Truck			User Mix 1		
3	Impacted Storm Water Impoundment C	Alluvium	Med Truck			User Mix 1		
4	Process Water Reservoir (measured from "DS-PLANT-EOM	Alluvium	Med Truck			User Mix 1		
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	Alluvium	Med Truck			User Mix 1		
6	TSF underdrain collection pond expansion (convert to TSF	Alluvium	Med Truck			User Mix 1		
7	Reclamation of TSF evaporation pond (minimum 10% of 25	Alluvium	Med Truck			User Mix 1		
8	Pipeline ditches liner removal (removal of liner and filling w	Alluvium	Med Truck			User Mix 1		

Notes:
1. Material Types are used for density correction based on mate

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - User Input (Cont.)

		E/ET-Cell Construction												
	Description (required)	Add/Replace Liner (1) (select)	Liner Thickness (select)	Install Leak Detection/ Recovery System (select)	Add/Replace Geonet (select)	Number of Geotextile Layer(s)	Drain pipe spacing in cell (3) ft	Pipe Size (select)	Total Length of Cell Pipe ft	Additional Pipe Between Facility and Cell ft	Pipe Size (select)	Length of Drainfield Pipe ft	Pipe Size (select)	Mark up (4) %
1	Impacted Storm Water Impoundment A (measured from "DS-PLANT-EOML.dwg")													
2	Impacted Storm Water Impoundment B													
3	Impacted Storm Water Impoundment C													
4	Process Water Reservoir (measured from "DS-PLANT-EOML.dwg")													
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-SURG-BRKL.dwg")(disturbance under cyclone area pad)													
6	TSF underdrain collection pond expansion (convert to TSF	Add/replace double	60 mil HDPE	Yes	Yes		100	Drain 4in (100mm)	10,700	1,000	Water 4in (100mm	1,000	Drain 4in (100mm) perforated PVC	
7	Reclamation of TSF evaporation pond (minimum 10% of 25% Backfill 2 is growth media)													
8	Pipeline ditches liner removal (removal of liner and filling with local material)													

Notes:
1. If single liner is installed, no drainage layer is included. If liner is repaired, assumes 10% of liner surface area is replaced.
2. Geomembrane layers are in addition to any required liner installation.
3. Spacing between drainpipes used to distribute water in E/ET-cell
4. Premium for misc. costs (e.g. ,inflow sampling port, low distribution box, drain rock and geotextile for draindown distribution system, dosing tank (where required), backfill monitoring port, transducer and telemetry (where required), LCRS sump construction)

Process Ponds - Assumptions & Calculations

Revegetation Calculations

Minimum 1 acre revegetation crew time per area

Evaporation/Evapotranspiration

Distribution header pipe assumed to be length of pond
Area of additional geosynthetic layers assumed to be
Minimum 1 acre revegetation crew time per area
Minimum 1 acre revegetation crew time per area

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
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Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Liner Removal Costs

	Description (required)	Crew Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Cover Cost $
1	Impacted Storm Water Impoundment A (measured from "D	31	1,974	2,402	4,376
2	Impacted Storm Water Impoundment B	61	3,884	4,727	8,611
3	Impacted Storm Water Impoundment C	105	6,686	8,136	14,822
4	Process Water Reservoir (measured from "DS-PLANT-EOM	24	1,528	1,860	3,388
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	16	1,019	1,240	2,259
6	TSF underdrain collection pond expansion (convert to TSF	0	0	0	0
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0
		237	**15,091**	**18,365**	**33,456**

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Backfill 1 Costs

		Material Volumes		Haul to Crusher					Backfill Placement				
	Description (required)	Material Volume to Crusher cy	Final Material Volume (1,2) cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs
1	Impacted Storm Water Impoundment A (measured from "D	0	24,624					0	740C/988K/D8T	4.43	2	603	41
2	Impacted Storm Water Impoundment B	0	23,313					0	740C/988K/D8T	4.43	2	603	39
3	Impacted Storm Water Impoundment C	0	43,557					0	740C/988K/D8T	4.43	2	603	72
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	25,493					0	740C/988K/D8T	4.43	2	603	42
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	0	7,921					0	740C/988K/D8T	4.43	2	603	13
6	TSF underdrain collection pond expansion (convert to TSF	0	81,211					0	740C/988K/D8T	4.43	2	603	135
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	60,784					0	740C/988K/D8T	4.43	2	603	101
8	Pipeline ditches liner removal (removal of liner and filling v	0	2,439					0	740C/988K/D8T	4.16	2	642	4
		0	269,342					0					447

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)
2. If pond backfilled by dozing berm into pond, backfill volume will be 50% of the backfill volume to account for cut-to-fit construction

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - Backfill 1 Costs

		Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Impacted Storm Water Impoundment A (measured from "D	0	0	0	0	0	0	0	4,339	32,164	36,503	36,503
2	Impacted Storm Water Impoundment B	0	0	0	0	0	0	0	4,128	30,595	34,723	34,723
3	Impacted Storm Water Impoundment C	0	0	0	0	0	0	0	7,620	56,483	64,103	64,103
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	0	0	0	0	0	0	4,445	32,948	37,393	37,393
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	0	0	0	0	0	0	0	1,376	10,198	11,574	11,574
6	TSF underdrain collection pond expansion (convert to TSF	0	0	0	0	0	0	0	14,288	105,905	120,193	120,193
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0	0	0	0	10,690	79,232	89,922	89,922
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0	0	0	0	423	3,138	3,561	3,561
		0	**0**	**0**	**0**	**0**	**0**	**0**	**47,309**	**350,663**	**397,972**	**397,972**

Notes:

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Backfill 2 Costs

		Material Volumes		Haul to Crusher					Backfill Placement				
	Description (required)	Material Volume to Crusher cy	Final Material Volume (1,2) cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCM/hr	Fleet Hours hrs
1	Impacted Storm Water Impoundment A (measured from "D	0	8,464					0	740C/988K/D8T	4.43	2	603	14
2	Impacted Storm Water Impoundment B	0	8,393					0	740C/988K/D8T	4.43	2	603	14
3	Impacted Storm Water Impoundment C	0	14,828					0	740C/988K/D8T	4.43	2	603	25
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	8,498					0	740C/988K/D8T	4.43	2	603	14
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	0	2,640					0	740C/988K/D8T	4.43	2	603	4
6	TSF underdrain collection pond expansion (convert to TSF	0	0					0					0
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	20,427					0	740C/988K/D8T	4.43	2	603	34
8	Pipeline ditches liner removal (removal of liner and filling v	0	0					0					0
		0	63,250					0					105

Notes:
1. If crushed or screened, Cover Volume = volume delivered to crusher - amount loss to crushing/screening)
2. If pond backfilled by dozing berm into pond, backfill volume will be 50% of the backfill volume to account for cut-to-fit construction

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - Backfill 2 Costs

		Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Impacted Storm Water Impoundment A (measured from "D	0	0	0	0	0	0	0	4,339	10,983	15,322	15,322
2	Impacted Storm Water Impoundment B	0	0	0	0	0	0	0	4,128	10,983	15,111	15,111
3	Impacted Storm Water Impoundment C	0	0	0	0	0	0	0	7,620	19,612	27,232	27,232
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	0	0	0	0	0	0	4,445	10,983	15,428	15,428
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	0	0	0	0	0	0	0	1,376	3,138	4,514	4,514
6	TSF underdrain collection pond expansion (convert to TSF	0	0	0	0	0	0	0	14,288	0	14,288	14,288
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0	0	0	0	10,690	26,672	37,362	37,362
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0	0	0	0	423	0	423	423
		0	**0**	**0**	**0**	**0**	**0**	**0**	**47,309**	**82,371**	**129,680**	**129,680**

Notes:
1. If crushed or screened, Cover Volume = volume delivered to

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
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Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Impacted Storm Water Impoundment A (measured from "D	2.90	55	75	507	637
2	Impacted Storm Water Impoundment B	2.70	51	70	472	593
3	Impacted Storm Water Impoundment C	4.40	83	114	769	966
4	Process Water Reservoir (measured from "DS-PLANT-EOM	2.10	40	54	367	461
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL-	1.10	21	28	192	241
6	TSF underdrain collection pond expansion (convert to TSF	12.20	231	315	2,132	2,678
7	Reclamation of TSF evaporation pond (minimum 10% of 25	22.30	423	575	3,896	4,894
8	Pipeline ditches liner removal (removal of liner and filling v	1.40	27	36	245	308
		49.10	**931**	**1,267**	**8,580**	**10,778**

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Evaporation/Evapotranspiration Cell Liners

		Liner Repair					Other Geosynthetics					Totals		
	Description (required)	Surface Area ft2	Material Costs $	Labor Cost $	Equipment Cost $	Liner Cost $	Surface Area ft2	Material Costs $	Labor Cost $	Equipment Cost $	Geosynthetic Cost $	Subtotal $	Markup $	Total Cost $
1	Impacted Storm Water Impoundment A (measured from "D	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Impacted Storm Water Impoundment B	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Impacted Storm Water Impoundment C	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL	0	0	0	0	0	0	0	0	0	0	0	0	0
6	TSF underdrain collection pond expansion (convert to TSF	1,075,753	623,936	451,816	473,331	1,549,084	0	0	0	0	0	1,549,084	0	1,549,084
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0	0	0	0	0	0	0	0	0	0
		1,075,753	**623,936**	**451,816**	**473,331**	**1,549,084**	0	**0**	**0**	**0**	**0**	**1,549,084**	**0**	**1,549,084**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Process Ponds - Evaporation/Evapotranspiration Cell Piping

		Cell Piping					Connector Piping				
	Description (required)	Total Cell Pipe Length (1) ft	Material Costs $	Labor Cost $	Equipment Cost $	Total Cost $	Total Connector Pipe Length (1) ft	Material Costs $	Labor Cost $	Equipment Cost $	Total Cost $
1	Impacted Storm Water Impoundment A (measured from "D	0	0	0	0	0	0	0	0	0	0
2	Impacted Storm Water Impoundment B	0	0	0	0	0	0	0	0	0	0
3	Impacted Storm Water Impoundment C	0	0	0	0	0	0	0	0	0	0
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	0	0	0	0	0	0	0	0	0
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL	0	0	0	0	0	0	0	0	0	0
6	TSF underdrain collection pond expansion (convert to TSF	10,700	17,548	42,586	20,330	80,464	1,000	2,500	1,910	5,230	0
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0	0	0	0	0	0	0
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0	0	0	0	0	0	0
		10,700	**17,548**	**42,586**	**20,330**	**80,464**	1,000	**2,500**	**1,910**	**5,230**	**0**

Notes:
1. Length of cell pipe = (Length of Pond / Pipe Spacing) * Width of Pond

Closure Cost Estimate
Process Ponds

Project Name: Copper Flat Reclamation Bond Cost Es
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Process Ponds - Evaporation/Evapotranspirati

		Drainfield Piping					Totals		
	Description (required)	Total Drainfield Pipe Length ft	Material Costs $	Labor Cost $	Equipment Cost $	Total Cost $	Subtotal $	Markup $	Total Cost $
1	Impacted Storm Water Impoundment A (measured from "D	0	0	0	0	0	0	0	0
2	Impacted Storm Water Impoundment B	0	0	0	0	0	0	0	0
3	Impacted Storm Water Impoundment C	0	0	0	0	0	0	0	0
4	Process Water Reservoir (measured from "DS-PLANT-EOM	0	0	0	0	0	0	0	0
5	Surge Pond (L and W measured from "X-DS-PCHNL-CYCL	0	0	0	0	0	0	0	0
6	TSF underdrain collection pond expansion (convert to TSF	1,000	1,640	3,980	5,230	10,850	91,314	0	91,314
7	Reclamation of TSF evaporation pond (minimum 10% of 25	0	0	0	0	0	0	0	0
8	Pipeline ditches liner removal (removal of liner and filling v	0	0	0	0	0	0	0	0
		1,000	**1,640**	**3,980**	**5,230**	**10,850**	**91,314**	**0**	**91,314**

Notes:
1. Length of cell pipe = (Length of Pond / Pipe Spacing) * Widt

Closure Cost Estimate
Yards, Etc.

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - User Input

Facility Description

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type
1	Plant area			Yards				FA
2	Cyclone station pad			Yards				FA
3	Landbridge 1			Yards				FA
4	Landbridge 2			Yards				FA
5	EWRSP-2B-3			Yards				FA
6	EWRSP-4 drainage area			Waste Rock Dumps				FA
7	Disturbance around pit perimeter (approximated based on 100 ft around pit perimeter)			Yards				FA
8	GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM per Rec Plan Table E-1)			Yards				FA
9	GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM per Rec Plan Table E-1)			Yards				FA
10	GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM per Rec Plan Table E-1)			Yards				FA
11	Prepare ground for EWRSP-1 slope armor 1			Waste Rock Dumps				FA
12	Prepare ground for EWRSP-2B slope armor 1			Waste Rock Dumps				FA
13	Prepare ground for EWRSP-2B slope armor 2			Waste Rock Dumps				FA
14	Prepare ground for EWRSP-4 slope armor 1			Waste Rock Dumps				FA
15	Prepare ground for WRSP-1 slope armor 1			Waste Rock Dumps				FA
16	Prepare ground for WRSP-1 slope armor 2			Waste Rock Dumps				FA
17	Prepare ground for WRSP-1 slope armor 3			Waste Rock Dumps				FA
18	Prepare ground for TSF slope armor 1			Tailings Storage Facility				FA

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. Input distance from crusher to placement location if material to be crushed, screened or compacted
3. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet

See User 05 for growth media stockpile inputs.
Regrade volume assumption of ___ ft depth of regrade: 0.5
Ripping distance estimated by taking square root of area.

Closure Cost Estimate
Yards, Etc.

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat F

Yards, Etc. - User Input — You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Physical			Cover 1			Cover 2			Growth Media		
	Description (required)	Area acres	Average Flat Area Long Dimension (ripping distance) ft	Regrade Volume (calculated elsewhere) cy	Cover Thickness in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Cover Thickness in	Haul Distance to Placement Location (2) ft	Slope to Placement Location % grade	Growth Media Thickness in	Haul Distance to Placement ft	Slope to Placement Location % grade
1	Plant area	79.94	1,900	65,000							6	5,000	-5.0
2	Cyclone station pad	5.76	500	5,000							36	5,000	-5.0
3	Landbridge 1	2.42	300	2,000									
4	Landbridge 2	1.31	200	2,000									
5	EWRSP-2B-3	4.38	400	4,000							6	13,179	-2.5
6	EWRSP-4 drainage area	3.92	400	4,000							36	12,000	-1.8
7	Disturbance around pit perimeter (approximated based on	21.24	1,000	18,000							6	5,000	0.0
8	GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p	29.33	1,100	24,000							0	5,000	-5.0
9	GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p	31.55	1,200	26,000							0	5,000	-5.0
10	GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p	14.10	800	12,000							6	5,000	-5.0
11	Prepare ground for EWRSP-1 slope armor 1	0.21	100	1,000									
12	Prepare ground for EWRSP-2B slope armor 1	0.08	100	1,000									
13	Prepare ground for EWRSP-2B slope armor 2	0.14	100	1,000									
14	Prepare ground for EWRSP-4 slope armor 1	0.10	100	1,000									
15	Prepare ground for WRSP-1 slope armor 1	0.29	100	1,000									
16	Prepare ground for WRSP-1 slope armor 2	0.28	100	1,000									
17	Prepare ground for WRSP-1 slope armor 3	0.34	100	1,000									
18	Prepare ground for TSF slope armor 1	2.06	300	2,000									

Notes:
1. All Physical parameters must be input even if manual overr
2. Input distance from crusher to placement location if materia
3. If Slope from facility to borrow source is >20, downhill travel)

See User 05 for growth media stockpile inputs.
Regrade volume assumption of ___ ft depth of regrade:

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - User Input (Cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Grading			Cover 1			
	Description (required)	Dozing Material Condition (select)	Dozing Material Type (select)	Grading Equipment Fleet (select)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Plant area	1	Granite - broken	Med				
2	Cyclone station pad	1	Granite - broken	Med				
3	Landbridge 1	1	Granite - broken	Med				
4	Landbridge 2	1	Granite - broken	Med				
5	EWRSP-2B-3	1	Granite - broken	Med				
6	EWRSP-4 drainage area	1	Granite - broken	Med				
7	Disturbance around pit perimeter (approximated based on	1	Granite - broken	Med				
8	GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p	1	Topsoil	Med				
9	GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p	1	Topsoil	Med				
10	GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p	1	Topsoil	Med				
11	Prepare ground for EWRSP-1 slope armor 1	1	Granite - broken	Med				
12	Prepare ground for EWRSP-2B slope armor 1	1	Granite - broken	Med				
13	Prepare ground for EWRSP-2B slope armor 2	1	Granite - broken	Med				
14	Prepare ground for EWRSP-4 slope armor 1	1	Granite - broken	Med				
15	Prepare ground for WRSP-1 slope armor 1	1	Granite - broken	Med				
16	Prepare ground for WRSP-1 slope armor 2	1	Granite - broken	Med				
17	Prepare ground for WRSP-1 slope armor 3	1	Granite - broken	Med				
18	Prepare ground for TSF slope armor 1	1	Granite - broken	Med				

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat F

Yards, Etc. - User Input (Cont.)

		Cover 2				Growth Media				Revegetation				
	Description (required)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Material Type (select)	Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Ripping Fleet (select)
1	Plant area					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
2	Cyclone station pad					Alluvium	Large Truck			User Mix 1			No	
3	Landbridge 1					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
4	Landbridge 2					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
5	EWRSP-2B-3					Alluvium	Large Truck			User Mix 1			No	
6	EWRSP-4 drainage area					Alluvium	Large Truck			User Mix 1			No	
7	Disturbance around pit perimeter (approximated based on					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
8	GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
9	GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
10	GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p					Alluvium	Large Truck			User Mix 1			Yes	Med Dozer
11	Prepare ground for EWRSP-1 slope armor 1												No	
12	Prepare ground for EWRSP-2B slope armor 1												No	
13	Prepare ground for EWRSP-2B slope armor 2												No	
14	Prepare ground for EWRSP-4 slope armor 1												No	
15	Prepare ground for WRSP-1 slope armor 1												No	
16	Prepare ground for WRSP-1 slope armor 2												No	
17	Prepare ground for WRSP-1 slope armor 3												No	
18	Prepare ground for TSF slope armor 1												No	

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - Assumptions & Calculations

Grading Calculations

Average push distance assumed to be 2/3 of the 600 feet maximum from Catepillar Handbook or 400 feet
Material assumed to be loose stockile (1.2 productivity factor)
Slope assumed to be 0 to 5% (1.0 productivity factor)

Cover Volume Calculation

Yard area x cover thickness

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr ripping/scarifying per area

Revegetation

Minimum 1 acre revegetation crew time per area

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Total Hourly Productivity cy/hr	Total Dozer Hours hrs	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	**Plant area**	65,000	400	D8T	213	1.0	1.0	0.82	109	596	15,472	91,569	107,041
2	**Cyclone station pad**	5,000	400	D8T	213	1.0	1.0	0.82	109	46	1,194	7,067	8,261
3	**Landbridge 1**	2,000	400	D8T	213	1.0	1.0	0.82	109	18	467	2,766	3,233
4	**Landbridge 2**	2,000	400	D8T	213	1.0	1.0	0.82	109	18	467	2,766	3,233
5	**EWRSP-2B-3**	4,000	400	D8T	213	1.0	1.0	0.82	109	37	961	5,685	6,646
6	**EWRSP-4 drainage area**	4,000	400	D8T	213	1.0	1.0	0.82	109	37	961	5,685	6,646
7	**Disturbance around pit perimeter (approximated based on**	18,000	400	D8T	213	1.0	1.0	0.82	109	165	4,283	25,351	29,634
8	**GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p**	24,000	400	D8T	213	1.0	1.0	1.44	191	126	3,271	19,359	22,630
9	**GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p**	26,000	400	D8T	213	1.0	1.0	1.44	191	136	3,531	20,895	24,426
10	**GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p**	12,000	400	D8T	213	1.0	1.0	1.44	191	63	1,635	9,679	11,314
11	**Prepare ground for EWRSP-1 slope armor 1**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
12	**Prepare ground for EWRSP-2B slope armor 1**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
13	**Prepare ground for EWRSP-2B slope armor 2**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
14	**Prepare ground for EWRSP-4 slope armor 1**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
15	**Prepare ground for WRSP-1 slope armor 1**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
16	**Prepare ground for WRSP-1 slope armor 2**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
17	**Prepare ground for WRSP-1 slope armor 3**	1,000	400	D8T	213	1.0	1.0	0.82	109	9	234	1,383	1,617
18	**Prepare ground for TSF slope armor 1**	2,000	400	D8T	213	1.0	1.0	0.82	109	18	467	2,766	3,233
		171,000								1,323	**34,347**	**203,269**	**237,616**

Closure Cost Estimate
Yards, Etc.

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - Growth Media Costs

		Growth Media Placement								
	Description (required)	Final Material Volume cy	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity BCY/hr	Fleet Hours hrs	Labor Cost $	Equipment Cost $	Total Cost $
1	**Plant area**	64,485	777G/992K/D9T	11.71	4	1,132	57	8,688	162,192	170,880
2	**Cyclone station pad**	27,878	777G/992K/D9T	11.71	4	1,132	25	3,811	71,137	74,948
3	**Landbridge 1**						0	0	0	0
4	**Landbridge 2**						0	0	0	0
5	**EWRSP-2B-3**	3,533	777G/992K/D9T	19.51	6	1,021	3	597	11,689	12,286
6	**EWRSP-4 drainage area**	18,973	777G/992K/D9T	12.48	4	1,062	18	2,744	51,218	53,962
7	**Disturbance around pit perimeter (approximated based on**	17,133	777G/992K/D9T	7.92	2	838	20	2,117	35,890	38,007
8	**GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p**	0			4		0	152	2,845	0
9	**GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p**	0			4		0	152	2,845	0
10	**GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p**	11,374	777G/992K/D9T	11.71	4	1,132	10	1,524	28,455	29,979
11	**Prepare ground for EWRSP-1 slope armor 1**						0	0	0	0
12	**Prepare ground for EWRSP-2B slope armor 1**						0	0	0	0
13	**Prepare ground for EWRSP-2B slope armor 2**						0	0	0	0
14	**Prepare ground for EWRSP-4 slope armor 1**						0	0	0	0
15	**Prepare ground for WRSP-1 slope armor 1**						0	0	0	0
16	**Prepare ground for WRSP-1 slope armor 2**						0	0	0	0
17	**Prepare ground for WRSP-1 slope armor 3**						0	0	0	0
18	**Prepare ground for TSF slope armor 1**						0	0	0	0
		143,376					133	**19,785**	**366,271**	**380,062**

Closure Cost Estimate
Yards, Etc.

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Yards, Etc. - Scarify/Revegetation Costs

						Scarifying Costs			Regegetation Costs			
	Description (required)	Total Surface Area acres	Average Long Dimension (ripping distance) ft	Ripping/Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revegetation Material Cost $	Total Revegetation Cost $
1	**Plant area**	79.94	1,900	D7E	80	2,077	10,455	12,532	1,516	2,062	13,967	17,545
2	**Cyclone station pad**	5.76			0	0	0	0	109	149	1,006	1,264
3	**Landbridge 1**	2.42	300	D7E	3	78	392	470	46	62	423	531
4	**Landbridge 2**	1.31	200	D7E	2	52	261	313	25	34	229	288
5	**EWRSP-2B-3**	4.38			0	0	0	0	83	113	765	961
6	**EWRSP-4 drainage area**	3.92			0	0	0	0	74	101	685	860
7	**Disturbance around pit perimeter (approximated based on**	21.24	1,000	D7E	22	571	2,875	3,446	403	548	3,711	4,662
8	**GM-01 ftprnt & assoc. disturb. (stockpile expended) (GM p**	29.33	1,100	D7E	30	779	3,921	4,700	556	757	5,125	6,438
9	**GM-02 ftprnt & assoc. disturb. (stockpile expended) (GM p**	31.55	1,200	D7E	32	831	4,182	5,013	599	814	5,512	6,925
10	**GM-03 ftprnt & assoc. disturb. (stockpile expended) (GM p**	14.10	800	D7E	15	389	1,960	2,349	267	364	2,464	3,095
11	**Prepare ground for EWRSP-1 slope armor 1**	0.21			0	0	0	0	0	0	0	0
12	**Prepare ground for EWRSP-2B slope armor 1**	0.08			0	0	0	0	0	0	0	0
13	**Prepare ground for EWRSP-2B slope armor 2**	0.14			0	0	0	0	0	0	0	0
14	**Prepare ground for EWRSP-4 slope armor 1**	0.10			0	0	0	0	0	0	0	0
15	**Prepare ground for WRSP-1 slope armor 1**	0.29			0	0	0	0	0	0	0	0
16	**Prepare ground for WRSP-1 slope armor 2**	0.28			0	0	0	0	0	0	0	0
17	**Prepare ground for WRSP-1 slope armor 3**	0.34			0	0	0	0	0	0	0	0
18	**Prepare ground for TSF slope armor 1**	2.06			0	0	0	0	0	0	0	0
		197.44			184	**4,777**	**24,046**	**28,823**	**3,678**	**5,004**	**33,887**	**42,569**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)
2) Assumes 50 min/hr equipment availability

Closure Cost Estimate
Haul Material

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Generic Material Hauling - User Input

	Facility Description								Physical			Haul to Crusher	
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Final Surface Area acres	Average Ripping Distance ft	Material Volume Required cy	Haul Distance to Crusher (1) ft	Slope to Crusher % grade
1	**Removal of EWRSP-2A to EWRSP-2B**			**Waste Rock Dumps**				**FA**			**50,000**		
2	**Hauling material suitable for riprap from pit**			**Yards**				**FA**			**64,486**		

Notes:
1. Input distance to crusher if material to be crushed
2. Assumed to be 0% if material will be crushed and source is within 250 m of crusher
3. If Slope is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

General plant area disturbance reclamation included under "Yards."
Volume of material suitable for riprap hauled from pit is estimated by multiplication of surface area of channel with thickness of riprap which is 2*D50 provided in channel schedule in User 10 (per Note 1 of Drawing C-021).

Closure Cost Estimate
Haul Material

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat F

Generic Material Hauling - User Input

		Crushing & Screening			Haul to Placement		Cover Thickness			Growth Media		
	Description (required)	Crush Material	Screen Material	Loss to Crushing/ Screening %	Haul Distance to Placement Location (2) ft	Slope to Placement Area % grade	Cover Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade	Growth Media Thickness in	Haul Distance to Placement Location ft	Slope to Placement Location % grade
1	**Removal of EWRSP-2A to EWRSP-2B**				**700**	**0.0**						
2	**Hauling material suitable for riprap from pit**				**10,000**	**0.0**						

Notes:
1. Input distance to crusher if material to be crushed
2. Assumed to be 0% if material will be crushed and source is
3. If Slope is >20, downhill travel time may be underestimated

General plant area disturbance reclamation included under
Volume of material suitable for riprap hauled from pit is es

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Generic Material Hauling - User Input (cont.)

		Hauling Material							
	Description (required)	Haul Material Type (select)	Crusher Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Placement Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)	Compact After Placement?
1	Removal of EWRSP-2A to EWRSP-2B	Limestone - broken				Large Truck			
2	Hauling material suitable for riprap from pit	Granite - broken				Large Truck			

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
2. If distance betweem borrow source is <250 m, haul fleet assumed be wheeled loaders

Closure Cost Estimate
Haul Material

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Generic Material Hauling - Load, Haul, Place and Grade

		Material Volumes		Haul to Crusher					Haul to Placement				
	Description (required)	Material Volume to Crusher cy	Final Material Volume cy	Crusher Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Fleet Hours hrs	Placement Fleet	Cycle Time min	Haul Fleet Size	Fleet Productivity LCY/hr	Fleet Hours hrs
1	**Removal of EWRSP-2A to EWRSP-2B**		50,000					0	777G/992K/D9T	5.14	2	1,290	39
2	**Hauling material suitable for riprap from pit**		64,486					0	777G/992K/D9T	11.18	3	889	73
		0	114,486					0					112

Notes: Final Material Volume includes allowance for additional material hauled to crushing/screening plant based on Loss to Crushing/Screening input above.

Closure Cost Estimate
Haul Material

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_2
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_201
Cost Estimate Type: FA Cost Basis: Copper Flat F/

Generic Material Hauling - Load, Haul, Place an

		Haul to Crusher			Crush	Compact			Haul to Placement			Total
	Description (required)	Labor Cost $	Equipment Cost $	Total Cost $	Total Crush/ Screen Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Labor Cost $	Equipment Cost $	Total Cost $	Total Cover Cost $
1	Removal of EWRSP-2A to EWRSP-2B	0	0	0	0	0	0	0	4,128	69,985	74,113	74,113
2	Hauling material suitable for riprap from pit	0	0	0	0	0	0	0	9,426	169,359	178,785	178,785
		0	**0**	**0**	**0**	**0**	**0**	**0**	**13,554**	**239,344**	**252,898**	**252,898**

Closure Cost Estimate
Foundations & Buildings

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Buildings & Foundation - User Input

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

	Facility Description								Physical - MANDATORY							
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Width ft	Eave Height ft	Slab Thickness in	Foundation Wall Thickness in	Foundation Wall Height ft	Average Flat Area Long Dimension (ripping distance) ft	Building Area Footprint (including surrounding facilities) acres
1	Primary Crusher Control/Mechanical Building			Buildings				FA	20	15	25	8	0	0	20	0.01
2	Concentrator Building, Grinding Area			Buildings				FA	192	145	125	12	0	0	192	0.64
3	Concentrator Building, Flotation Area			Buildings				FA	216	96	80	12	0	0	216	0.48
4	Concentrator Building, Maintenance Area			Buildings				FA	70	50	30	10	0	0	70	0.09
5	Concentrate Handling & Storage Area, Included in concentrator building			Buildings				FA	144	72	80	10	0	0	144	0.24
6	Concentrate Thickeners (1/2)			Buildings				FA	16	16	16	0	0	0	16	0.01
7	Concentrate Thickeners (2/2)			Buildings				FA	16	16	16	0	0	0	16	0.01
8	Ball Bins			Buildings				FA	109	51	0	12	0	0	109	0.13
9	Reagent Storage and Lime Handling			Buildings				FA	110	76	50	6	0	0	110	0.20
10	Flammable Material Storage Bldg.			Buildings				FA	25	17	9	8	0	0	25	0.01
11	Tailings Cyclone Station			Buildings				FA	75	50	40	0	0	0	75	0.09
12	Mine Shop/Warehouse			Buildings				FA	123	92	60	12	0	0	123	0.26
13	Wash Pad			Buildings				FA	90	90	0	10	0	0	90	0.19
14	Administration Building			Buildings				FA	96	60	24	12	0	0	96	0.14
15	Changehouse/Gatehouse			Buildings				FA	84	60	19	6	0	0	84	0.12
16	Assay & Metallurgical Laboratory			Buildings				FA	122	40	22	6	0	0	122	0.12
17	Copper Flat Electric Substation			Buildings				FA	115	70	0	0	0	0	115	0.19
18	Freshwater/Fire Tank (1)			Buildings				FA	40	40	36	0	0	0	40	0.04
19	Process water tank (1)			Buildings				FA	30	30	32	0	0	0	30	0.03
20	Fresh Water Pump Station Tanks (1/2)			Buildings				FA	40	40	36	0	0	0	40	0.04
21	Fresh Water Pump Station Tanks (2/2)			Buildings				FA	40	40	36	0	0	0	40	0.04
22	Potable Water Tank			Buildings				FA	12	12	7	0	0	0	12	0.01
23	Seal Water Tank			Buildings				FA	8	8	8	0	0	0	8	0.01
24	Reclaim Reservoir Fresh Water Surge Tank			Buildings				FA	16	16	0	0	0	0	16	0.01
25	Reclaim Reservoir Fresh Water Storage Tank			Buildings				FA	40	40	36	0	0	0	40	0.04
26	Off Road Diesel Fuel Storage Tank (1)			Buildings				FA	28	28	24	0	0	0	28	0.02
27	On Road Diesel Storage Tank			Buildings				FA	12	12	12	0	0	0	12	0.01
28	Gasoline Storage Tank			Buildings				FA	12	12	12	0	0	0	12	0.01
29	Recycle Water Tank - Truck Wash			Buildings				FA	12	12	12	0	0	0	12	0.01
30	Lime Silo			Buildings				FA	25	25	40	10	0	0	25	0.02
31	Lime Slurry Tank			Buildings				FA	12	12	25	0	0	0	12	0.01
32	Pax Mix Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
33	Pax Distribution Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
34	MIBC Storage Tank			Buildings				FA	8	8	6	0	0	0	8	0.01
35	No. 2 Diesel Storage Tank			Buildings				FA	8	8	6	0	0	0	8	0.01
36	NaHS Mix Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
37	NaHS Distribution Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
38	Moly Collector Mix Tank			Buildings				FA	8	8	6	0	0	0	8	0.01
39	Moly Collector Distribution Tank			Buildings				FA	8	8	6	0	0	0	8	0.01
40	AERO 238 Mix Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
41	AERO 238 Distribution Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
42	NaHS Stock Tank			Buildings				FA	8	8	11	0	0	0	8	0.01
43	Flocculant Tanks (1/2)			Buildings				FA	12	12	7	0	0	0	12	0.01
44	Flocculant Tanks (2/2)			Buildings				FA	12	12	7	0	0	0	12	0.01
45	Gravity Concentrator Concentrate Tank			Buildings				FA	12	12	10	0	0	0	12	0.01
46	Copper concentrate stock tank			Buildings				FA	17	17	25	0	0	0	17	0.01
47	Explosive Magazines (1/2)			Buildings				FA	8	8	8	0	0	0	8	0.01
48	Explosive Magazines (2/2)			Buildings				FA	8	8	8	0	0	0	8	0.01
49	Ammonium Nitrate Silo			Buildings				FA	15	15	60	0	0	0	15	0.01

Notes:
1. Foundation cover only calculated to cover slab. Growth media estimated over entire footprint area
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Growth media and revegetation under "Yards."
See User 04 for building dimension backup.
Concentrator foundation will be backfilled with demolition debris from buildings around it and some local material from the growth media stockpiles.
Crusher foundation will be backfilled from WRSP-3.

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Buildings & Foundation - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Construction Materials		Slab Demolition		Foundation Cover			
	Description (required)	Building Type (select)	Foundation Wall Type (select)	Slab Demo Method (select)	Slab Breaking Equipment Fleet (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Cycle Time Override (user override)	Maximum Fleet Size (user override)
1	Primary Crusher Control/Mechanical Building	Lg. steel	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
2	Concentrator Building, Grinding Area	Lg. steel	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
3	Concentrator Building, Flotation Area	Lg. steel	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
4	Concentrator Building, Maintenance Area	Sm. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
5	Concentrate Handling & Storage Area, Included in concent	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
6	Concentrate Thickeners (1/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
7	Concentrate Thickeners (2/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
8	Ball Bins	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
9	Reagent Storage and Lime Handling	Lg. steel	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
10	Flammable Material Storage Bldg.	Lg. concrete	Conc 12 in (300 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
11	Tailings Cyclone Station	Sm. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
12	Mine Shop/Warehouse	Sm. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
13	Wash Pad	Sm. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
14	Administration Building	Sm. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
15	Changehouse/Gatehouse	Sm. steel	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
16	Assay & Metallurgical Laboratory	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
17	Copper Flat Electric Substation	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
18	Freshwater/Fire Tank (1)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
19	Process water tank (1)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
20	Fresh Water Pump Station Tanks (1/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
21	Fresh Water Pump Station Tanks (2/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
22	Potable Water Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
23	Seal Water Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
24	Reclaim Reservoir Fresh Water Surge Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
25	Reclaim Reservoir Fresh Water Storage Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
26	Off Road Diesel Fuel Storage Tank (1)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
27	On Road Diesel Storage Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
28	Gasoline Storage Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
29	Recycle Water Tank - Truck Wash	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
30	Lime Silo	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
31	Lime Slurry Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
32	Pax Mix Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
33	Pax Distribution Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
34	MIBC Storage Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
35	No. 2 Diesel Storage Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
36	NaHS Mix Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
37	NaHS Distribution Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
38	Moly Collector Mix Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
39	Moly Collector Distribution Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
40	AERO 238 Mix Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
41	AERO 238 Distribution Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
42	NaHS Stock Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
43	Flocculant Tanks (1/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
44	Flocculant Tanks (2/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
45	Gravity Concentrator Concentrate Tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
46	Copper concentrate stock tank	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		
47	Explosive Magazines (1/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
48	Explosive Magazines (2/2)	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Med Truck		
49	Ammonium Nitrate Silo	Lg. concrete	Conc 6 in (150 mm) thick	Break & bury	Med Excavator	Limestone - broker	Large Truck		

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Foundations & Buildings - Assumptions & Calculations

Building Volume Calculations

Using Means Heavy Construction Cost Data (2004) calculates cubic feet from building dimensions
- Estimage slab thickness and wall thickness if not known
- Assumes that all concrete slabs are reinforced
- Productivity for crew from Means Heavy Construction Cost Data (2004) adjusted for supervision
  (addressed in Misc. Costs) and Davis-Bacon Wage Rates
- Demolition costs do not include hauling or disposing if debris - Use Waste Disposal module

Slab Demolition Calculations

Minimum 1 hr excavator time for slab demolition

Cover Volume Calculation

Foundation area x cover thickness
- If "Bury in Place" is selected as slab demolition method, cover thickness is adjusted such that
  total cover (cover + growth media) equals value entered in "Minimum thickness of cover over unbroken slab" cell above

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation

Minimum 1 acre revegetation crew time per area

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Building & Foundation Demolition Costs

Uses RS Means Heavy Construction Cost Data for building and wall demolition cost calculations. Uses CA

	Description (required)	Building Footprint (slab area) sqft	Building Volume cu ft	Building Demolition Fleet	Building Demolition Hours hrs	Wall Length ft	Wall Area sq ft	Wall Demolition Hours hrs	Slab Volume cy	Slab Demolition Fleet	Slab Demolition Hours hrs
1	**Primary Crusher Control/Mechanical Building**	300	7,500	930M/20 Ton Crane/Dump	3	70	0	0	7	349F	1
2	**Concentrator Building, Grinding Area**	27,840	3,480,000	930M/20 Ton Crane/Dump	1,295	674	0	0	1,031	349F	17
3	**Concentrator Building, Flotation Area**	20,736	1,658,880	930M/20 Ton Crane/Dump	617	624	0	0	768	349F	13
4	**Concentrator Building, Maintenance Area**	3,500	105,000	930M/Dump Truck (10-12 y	74	240	0	0	108	349F	2
5	**Concentrate Handling & Storage Area, Included in concent**	10,368	829,440	930M/20 Ton Crane/Dump	434	432	0	0	320	349F	5
6	**Concentrate Thickeners (1/2)**	256	4,096	930M/20 Ton Crane/Dump	2	64	0	0	0		0
7	**Concentrate Thickeners (2/2)**	256	4,096	930M/20 Ton Crane/Dump	2	64	0	0	0		0
8	**Ball Bins**	5,559	0	930M/20 Ton Crane/Dump	0	320	0	0	206	349F	3
9	**Reagent Storage and Lime Handling**	8,360	418,000	930M/20 Ton Crane/Dump	156	372	0	0	155	349F	3
10	**Flammable Material Storage Bldg.**	425	3,825	930M/20 Ton Crane/Dump	2	84	0	0	10	349F	1
11	**Tailings Cyclone Station**	3,750	150,000	930M/Dump Truck (10-12 y	106	250	0	0	0		0
12	**Mine Shop/Warehouse**	11,316	678,960	930M/Dump Truck (10-12 y	481	430	0	0	419	349F	7
13	**Wash Pad**	8,100	0	930M/Dump Truck (10-12 y	0	360	0	0	250	349F	4
14	**Administration Building**	5,760	138,240	930M/Dump Truck (10-12 y	98	312	0	0	213	349F	4
15	**Changehouse/Gatehouse**	5,040	95,760	930M/Dump Truck (10-12 y	52	288	0	0	93	349F	2
16	**Assay & Metallurgical Laboratory**	4,880	107,360	930M/20 Ton Crane/Dump	56	324	0	0	90	349F	2
17	**Copper Flat Electric Substation**	8,050	0	930M/20 Ton Crane/Dump	0	370	0	0	0		0
18	**Freshwater/Fire Tank (1)**	1,600	57,600	930M/20 Ton Crane/Dump	30	160	0	0	0		0
19	**Process water tank (1)**	900	28,800	930M/20 Ton Crane/Dump	15	120	0	0	0		0
20	**Fresh Water Pump Station Tanks (1/2)**	1,600	57,600	930M/20 Ton Crane/Dump	30	160	0	0	0		0
21	**Fresh Water Pump Station Tanks (2/2)**	1,600	57,600	930M/20 Ton Crane/Dump	30	160	0	0	0		0
22	**Potable Water Tank**	144	1,044	930M/20 Ton Crane/Dump	1	48	0	0	0		0
23	**Seal Water Tank**	64	512	930M/20 Ton Crane/Dump	0	32	0	0	0		0
24	**Reclaim Reservoir Fresh Water Surge Tank**	256	0	930M/20 Ton Crane/Dump	0	64	0	0	0		0
25	**Reclaim Reservoir Fresh Water Storage Tank**	1,600	57,600	930M/20 Ton Crane/Dump	30	160	0	0	0		0
26	**Off Road Diesel Fuel Storage Tank (1)**	784	18,816	930M/20 Ton Crane/Dump	10	112	0	0	0		0
27	**On Road Diesel Storage Tank**	144	1,728	930M/20 Ton Crane/Dump	1	48	0	0	0		0
28	**Gasoline Storage Tank**	144	1,728	930M/20 Ton Crane/Dump	1	48	0	0	0		0
29	**Recycle Water Tank - Truck Wash**	144	1,728	930M/20 Ton Crane/Dump	1	48	0	0	0		0
30	**Lime Silo**	625	25,000	930M/20 Ton Crane/Dump	13	100	0	0	19	349F	1
31	**Lime Slurry Tank**	144	3,600	930M/20 Ton Crane/Dump	2	48	0	0	0		0
32	**Pax Mix Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
33	**Pax Distribution Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
34	**MIBC Storage Tank**	64	384	930M/20 Ton Crane/Dump	0	32	0	0	0		0
35	**No. 2 Diesel Storage Tank**	64	384	930M/20 Ton Crane/Dump	0	32	0	0	0		0
36	**NaHS Mix Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
37	**NaHS Distribution Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
38	**Moly Collector Mix Tank**	64	384	930M/20 Ton Crane/Dump	0	32	0	0	0		0
39	**Moly Collector Distribution Tank**	64	384	930M/20 Ton Crane/Dump	0	32	0	0	0		0
40	**AERO 238 Mix Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
41	**AERO 238 Distribution Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
42	**NaHS Stock Tank**	64	683	930M/20 Ton Crane/Dump	0	32	0	0	0		0
43	**Flocculant Tanks (1/2)**	144	1,044	930M/20 Ton Crane/Dump	1	48	0	0	0		0
44	**Flocculant Tanks (2/2)**	144	1,044	930M/20 Ton Crane/Dump	1	48	0	0	0		0
45	**Gravity Concentrator Concentrate Tank**	144	1,368	930M/20 Ton Crane/Dump	1	48	0	0	0		0
46	**Copper concentrate stock tank**	289	7,109	930M/20 Ton Crane/Dump	4	68	0	0	0		0
47	**Explosive Magazines (1/2)**	64	512	930M/20 Ton Crane/Dump	0	32	0	0	0		0
48	**Explosive Magazines (2/2)**	64	512	930M/20 Ton Crane/Dump	0	32	0	0	0		0
49	**Ammonium Nitrate Silo**	225	13,500	930M/20 Ton Crane/Dump	7	60	0	0	0		0
			8,025,919						3,689		65

Project Name: Copper Flat Reclamation Bond Cost Est
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20
Cost Estimate Type: FA Cost Basis: Copper Flat F

Building & Foundation Demolition Costs

.T Handbook for slab breaking production.

		Building Demolition			Wall Demolition			Slab Demolition			Total Costs		
	Description (required)	Total Labor Cost $	Total Equipment Cost $	Total Building Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Wall Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Slab Breaking Cost $	Total Labor Cost $	Total Equipment Cost $	Total Demolition Costs $
1	Primary Crusher Control/Mechanical Building	600	750	1,350	0	0	0	59	415	474	659	1,165	1,824
2	Concentrator Building, Grinding Area	278,400	348,000	626,400	0	0	0	1,007	7,047	8,054	279,407	355,047	634,454
3	Concentrator Building, Flotation Area	132,710	165,888	298,598	0	0	0	770	5,389	6,159	133,480	171,277	304,757
4	Concentrator Building, Maintenance Area	12,600	13,650	26,250	0	0	0	119	829	948	12,719	14,479	27,198
5	Concentrate Handling & Storage Area, Included in concent	91,238	116,122	207,360	0	0	0	296	2,073	2,369	91,534	118,195	209,729
6	Concentrate Thickeners (1/2)	451	573	1,024	0	0	0	0	0	0	451	573	1,024
7	Concentrate Thickeners (2/2)	451	573	1,024	0	0	0	0	0	0	451	573	1,024
8	Ball Bins	0	0	0	0	0	0	178	1,244	1,422	178	1,244	1,422
9	Reagent Storage and Lime Handling	33,440	41,800	75,240	0	0	0	178	1,244	1,422	33,618	43,044	76,662
10	Flammable Material Storage Bldg.	421	536	957	0	0	0	59	415	474	480	951	1,431
11	Tailings Cyclone Station	18,000	19,500	37,500	0	0	0	0	0	0	18,000	19,500	37,500
12	Mine Shop/Warehouse	81,475	88,265	169,740	0	0	0	415	2,902	3,317	81,890	91,167	173,057
13	Wash Pad	0	0	0	0	0	0	237	1,658	1,895	237	1,658	1,895
14	Administration Building	16,589	17,971	34,560	0	0	0	237	1,658	1,895	16,826	19,629	36,455
15	Changehouse/Gatehouse	8,618	9,576	18,194	0	0	0	119	829	948	8,737	10,405	19,142
16	Assay & Metallurgical Laboratory	11,810	15,030	26,840	0	0	0	119	829	948	11,929	15,859	27,788
17	Copper Flat Electric Substation	0	0	0	0	0	0	0	0	0	0	0	0
18	Freshwater/Fire Tank (1)	6,336	8,064	14,400	0	0	0	0	0	0	6,336	8,064	14,400
19	Process water tank (1)	3,168	4,032	7,200	0	0	0	0	0	0	3,168	4,032	7,200
20	Fresh Water Pump Station Tanks (1/2)	6,336	8,064	14,400	0	0	0	0	0	0	6,336	8,064	14,400
21	Fresh Water Pump Station Tanks (2/2)	6,336	8,064	14,400	0	0	0	0	0	0	6,336	8,064	14,400
22	Potable Water Tank	115	146	261	0	0	0	0	0	0	115	146	261
23	Seal Water Tank	56	72	128	0	0	0	0	0	0	56	72	128
24	Reclaim Reservoir Fresh Water Surge Tank	0	0	0	0	0	0	0	0	0	0	0	0
25	Reclaim Reservoir Fresh Water Storage Tank	6,336	8,064	14,400	0	0	0	0	0	0	6,336	8,064	14,400
26	Off Road Diesel Fuel Storage Tank (1)	2,070	2,634	4,704	0	0	0	0	0	0	2,070	2,634	4,704
27	On Road Diesel Storage Tank	190	242	432	0	0	0	0	0	0	190	242	432
28	Gasoline Storage Tank	190	242	432	0	0	0	0	0	0	190	242	432
29	Recycle Water Tank - Truck Wash	190	242	432	0	0	0	0	0	0	190	242	432
30	Lime Silo	2,750	3,500	6,250	0	0	0	59	415	474	2,809	3,915	6,724
31	Lime Slurry Tank	396	504	900	0	0	0	0	0	0	396	504	900
32	Pax Mix Tank	75	96	171	0	0	0	0	0	0	75	96	171
33	Pax Distribution Tank	75	96	171	0	0	0	0	0	0	75	96	171
34	MIBC Storage Tank	42	54	96	0	0	0	0	0	0	42	54	96
35	No. 2 Diesel Storage Tank	42	54	96	0	0	0	0	0	0	42	54	96
36	NaHS Mix Tank	75	96	171	0	0	0	0	0	0	75	96	171
37	NaHS Distribution Tank	75	96	171	0	0	0	0	0	0	75	96	171
38	Moly Collector Mix Tank	42	54	96	0	0	0	0	0	0	42	54	96
39	Moly Collector Distribution Tank	42	54	96	0	0	0	0	0	0	42	54	96
40	AERO 238 Mix Tank	75	96	171	0	0	0	0	0	0	75	96	171
41	AERO 238 Distribution Tank	75	96	171	0	0	0	0	0	0	75	96	171
42	NaHS Stock Tank	75	96	171	0	0	0	0	0	0	75	96	171
43	Flocculant Tanks (1/2)	115	146	261	0	0	0	0	0	0	115	146	261
44	Flocculant Tanks (2/2)	115	146	261	0	0	0	0	0	0	115	146	261
45	Gravity Concentrator Concentrate Tank	150	192	342	0	0	0	0	0	0	150	192	342
46	Copper concentrate stock tank	782	995	1,777	0	0	0	0	0	0	782	995	1,777
47	Explosive Magazines (1/2)	56	72	128	0	0	0	0	0	0	56	72	128
48	Explosive Magazines (2/2)	56	72	128	0	0	0	0	0	0	56	72	128
49	Ammonium Nitrate Silo	1,485	1,890	3,375	0	0	0	0	0	0	1,485	1,890	3,375
		724,724	**886,505**	**1,611,229**	**0**	**0**	**0**	**3,852**	**26,947**	**30,799**	**728,576**	**913,452**	**1,642,028**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Diversion Ditches - User Input

	Facility Description								Diversions Ditches						
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Diversion Length ft	Diversion Depth ft	Ditch Bottom Width ft	Ditch Sideslope Angle _H:1V	Excavate Volume (if calculated elsewhere) cy	Excavating Material Condition (select)	Excavating Equipment Fleet (select)
1	EWRSP-1 - Diversion Channel, DC-1			Waste Rock Dumps				FA	655	4.0	10.0	3.0		1	Small
2	EWRSP-1 - Diversion Swale, DS-1			Waste Rock Dumps				FA	512	3.0	10.0	3.0		1	Small
3	EWRSP-1 - Toe Channel, TC-1			Waste Rock Dumps				FA	1170	3.0	10.0	3.0		1	Small
4	EWRSP-1 - Toe Channel, TC-2			Waste Rock Dumps				FA	636	3.0	10.0	3.0		1	Small
5	EWRSP-1 - Haul Road Channel, HC-1			Waste Rock Dumps				FA	455	2.0	10.0	3.0		1	Small
6	EWRSP-2B - Top Surface Channel, TSC-1			Waste Rock Dumps				FA	1258	2.0	10.0	3.0		1	Small
7	EWRSP-2B - Toe Channel, TC-3			Waste Rock Dumps				FA	525	4.0	10.0	3.0		1	Small
8	EWRSP-2B - Diversion Swale, DS-2			Waste Rock Dumps				FA	455	3.0	10.0	3.0		1	Small
9	EWRSP-4 - Top Surface Channel, TSC-2+Haul Road Channel, HC-2			Waste Rock Dumps				FA	1461	3.0	10.0	3.0		1	Small
10	EWRSP-4 - Toe Channel, TC-4			Waste Rock Dumps				FA	1609	2.0	10.0	3.0		1	Small
11	WRSP-1 - Diversion Swale, DS-3 - built during operations			Waste Rock Dumps				FA	0	3.0	10.0	3.0		1	Small
12	WRSP-1 - Diversion Swale, DS-4 - built during operations			Waste Rock Dumps				FA	0	4.0	10.0	3.0		1	Small
13	WRSP-1 - Diversion Channel, DC-2			Waste Rock Dumps				FA	596	3.0	10.0	3.0		1	Small
14	WRSP-1 - Top Surface Channel-3			Waste Rock Dumps				FA	842	3.0	10.0	3.0		1	Small
15	WRSP-1 - Bench Channels, BC-1 through BC-4			Waste Rock Dumps				FA	4286	2.0	10.0	3.0		1	Small
16	WRSP-1 - Haul Road Channel, HC-3			Waste Rock Dumps				FA	1800	3.0	10.0	3.0		1	Small
17	WRSP-2 and WRSP-3 - Diversion Swale, DS-5 - built during operations			Waste Rock Dumps				FA	0	4.0	10.0	3.0		1	Small
18	WRSP-2 and WRSP-3 - Diversion Swale, DS-6 - built during operations			Waste Rock Dumps				FA	0	3.0	10.0	3.0		1	Small
19	WRSP-2 and WRSP-3 - Diversion Swale, DS-7 - built during operations			Waste Rock Dumps				FA	0	3.0	10.0	3.0		1	Small
20	WRSP-2 and WRSP-3 - Haul Road Channel, HC-4			Waste Rock Dumps				FA	1847	3.0	10.0	3.0		1	Small
21	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-4			Waste Rock Dumps				FA	741	3.0	10.0	3.0		1	Small
22	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-5			Waste Rock Dumps				FA	958	4.0	10.0	3.0		1	Small
23	WRSP-2 and WRSP-3 - Downslope Channel, DSC-1 - built with ACB			Waste Rock Dumps				FA	634	2.0	20.0	3.0		1	Small
24	WRSP-2 and WRSP-3 - Downslope Channel, DSC-2 - built with ACB			Waste Rock Dumps				FA	1891	2.0	20.0	3.0		1	Small
25	WRSP-2 and WRSP-3 - Toe Channel, TC-5			Waste Rock Dumps				FA	1608	3.0	10.0	3.0		1	Small
26	WRSP-2 and WRSP-3 - Toe Channel, TC-6			Waste Rock Dumps				FA	325	4.0	10.0	3.0		1	Small
27	WRSP-2 and WRSP-3 - Bench Channels, BC-5 through BC-20			Waste Rock Dumps				FA	18458	3.0	10.0	3.0		1	Small
28	TSF - Downslope Channel, DSC-3 - built with ACB			Tailings Storage Facility				FA	950	2.0	20.0	3.0		1	Small
29	TSF - Downslope Channel, DSC-4 - built with ACB			Tailings Storage Facility				FA	932	2.0	20.0	3.0		1	Small
30	TSF - Downslope Channel, DSC-5 - built with ACB			Tailings Storage Facility				FA	2302	3.0	20.0	3.0		1	Small
31	TSF - Top Surface Channel, TSC-6			Tailings Storage Facility				FA	2914	5.0	10.0	3.0		1	Small
32	TSF - Top Surface Channel, TSC-7			Tailings Storage Facility				FA	3673	5.0	10.0	3.0		1	Small
33	TSF - Bench Channels, BC-21 through BC-42			Tailings Storage Facility				FA	33454	3.0	10.0	3.0		1	Small
34	TSF - Toe Channel, TC-7			Tailings Storage Facility				FA	1891	6.0	15.0	3.0		1	Small
35	TSF - Toe Channel, TC-8			Tailings Storage Facility				FA	1839	5.0	10.0	3.0		1	Small
36	TSF - Toe Channel, TC-9			Tailings Storage Facility				FA	1524	4.0	10.0	3.0		1	Small
37	PLANT - Perimeter Channel, PC-2			Yards				FA	2361	4.0	10.0	3.0		1	Small
38	PLANT - Toe Channel, TC-10			Yards				FA	606	3.0	10.0	3.0		1	Small
39	PIT - Perimeter Channel, PC-1			Pits				FA	2847	5.0	10.0	3.0		1	Small
40	PIT - Haul Road Channel, HC-5 - built with ACB			Pits				FA	2110	4.0	10.0	3.0		1	Small
41	Dissipaters - TSF - bottom of DSC-3			Tailings Storage Facility				FA	64	3.0	30.0	3.0		1	Small
42	Dissipaters - TSF - bottom of DSC-4			Tailings Storage Facility				FA	64	3.0	30.0	3.0		1	Small
43	Dissipaters - TSF - bottom of DSC-5			Tailings Storage Facility				FA	76	4.5	30.0	3.0		1	Small
44	Dissipaters - WRD1 - 1 - bottom of HC-3			Waste Rock Dumps				FA	56	4.5	15.0	3.0		1	Small
45	Dissipaters - WRD3 - 1 - bottom of DSC-1			Waste Rock Dumps				FA	64	3.0	30.0	3.0		1	Small
46	Dissipaters - WRD3 - 2 - bottom of DSC-2			Waste Rock Dumps				FA	64	3.0	30.0	3.0		1	Small

Notes:
See User 10 for diversion lengths. ACB (articulated concrete block) will be used in some channels isntead of riprap. Quantities are estimated in User 10 and the costs are reflected in "Other User."
This estimate accounts for construction of diversion ditches during reclamation and closure. Those constructed during construction or operation phases are operational costs and not included in this estimate.
Riprap material will be available from characterised materials on site. Average haulage is accounted for in "Haul Materials" sheet.
Dissipaters constructed at channel outlets assumed length twice the width of the channel and the width of the dissipater 1.5 times the width of the channel. Depth is 1.5 times the depth of the channel.

Project Name: Copper Flat Reclamation Bond Cost E
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_2
Cost Estimate Type: FA Cost Basis: Copper Flat

Diversion Ditches - User Input

		Revegetation			Liner and Rip-Rap Installation				
	Description (required)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Liner Area S.Y.	Liner Type (select)	Rip-Rap Area S.Y.	Rip-Rap Type (select)	Crew (select type)
1	EWRSP-1 - Diversion Channel, DC-1	User Mix 1					2,474	Rip-Rap 3/8 to 1/4 m	B-12G
2	EWRSP-1 - Diversion Swale, DS-1	User Mix 1					1,593	Rip-Rap 450 mm mir	B-12G
3	EWRSP-1 - Toe Channel, TC-1	User Mix 1					3,640	Rip-Rap 450 mm mir	B-12G
4	EWRSP-1 - Toe Channel, TC-2	User Mix 1					1,979	Rip-Rap 450 mm mir	B-12G
5	EWRSP-1 - Haul Road Channel, HC-1	User Mix 1					1,112	Rip-Rap 450 mm mir	B-12G
6	EWRSP-2B - Top Surface Channel, TSC-1	User Mix 1					3,075	Rip-Rap 450 mm mir	B-12G
7	EWRSP-2B - Toe Channel, TC-3	User Mix 1					1,983	Rip-Rap 450 mm mir	B-12G
8	EWRSP-2B - Diversion Swale, DS-2	User Mix 1					1,416	Rip-Rap 450 mm mir	B-12G
9	EWRSP-4 - Top Surface Channel, TSC-2+Haul Road Chann	User Mix 1					4,545	Rip-Rap 450 mm mir	B-12G
10	EWRSP-4 - Toe Channel, TC-4	User Mix 1					3,933	Rip-Rap 450 mm mir	B-12G
11	WRSP-1 - Diversion Swale, DS-3 - built during operations	User Mix 1					0	Rip-Rap 450 mm mir	B-12G
12	WRSP-1 - Diversion Swale, DS-4 - built during operations	User Mix 1					0	Rip-Rap 450 mm mir	B-12G
13	WRSP-1 - Diversion Channel, DC-2	User Mix 1					1,854	Rip-Rap 450 mm mir	B-12G
14	WRSP-1 - Top Surface Channel-3	User Mix 1					2,620	Rip-Rap 450 mm mir	B-12G
15	WRSP-1 - Bench Channels, BC-1 through BC-4	User Mix 1					10,477	Rip-Rap 450 mm mir	B-12G
16	WRSP-1 - Haul Road Channel, HC-3	User Mix 1					5,600	Rip-Rap 450 mm mir	B-12G
17	WRSP-2 and WRSP-3 - Diversion Swale, DS-5 - built during	User Mix 1					0	Rip-Rap 450 mm mir	B-12G
18	WRSP-2 and WRSP-3 - Diversion Swale, DS-6 - built during	User Mix 1					0	Rip-Rap 450 mm mir	B-12G
19	WRSP-2 and WRSP-3 - Diversion Swale, DS-7 - built during	User Mix 1					0	Rip-Rap 450 mm mir	B-12G
20	WRSP-2 and WRSP-3 - Haul Road Channel, HC-4	User Mix 1					5,746	Rip-Rap 450 mm mir	B-12G
21	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-4	User Mix 1					2,305	Rip-Rap 450 mm mir	B-12G
22	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-5	User Mix 1					3,619	Rip-Rap 450 mm mir	B-12G
23	WRSP-2 and WRSP-3 - Downslope Channel, DSC-1 - built v	User Mix 1					2,254		B-12G
24	WRSP-2 and WRSP-3 - Downslope Channel, DSC-2 - built v	User Mix 1					6,724		B-12G
25	WRSP-2 and WRSP-3 - Toe Channel, TC-5	User Mix 1					5,003	Rip-Rap 450 mm mir	B-12G
26	WRSP-2 and WRSP-3 - Toe Channel, TC-6	User Mix 1					1,228	Rip-Rap 450 mm mir	B-12G
27	WRSP-2 and WRSP-3 - Bench Channels, BC-5 through BC-	User Mix 1					57,425	Rip-Rap 450 mm mir	B-12G
28	TSF - Downslope Channel, DSC-3 - built with ACB	User Mix 1					3,378		B-12G
29	TSF - Downslope Channel, DSC-4 - built with ACB	User Mix 1					3,314		B-12G
30	TSF - Downslope Channel, DSC-5 - built with ACB	User Mix 1					9,720		B-12G
31	TSF - Top Surface Channel, TSC-6	User Mix 1					12,951	Rip-Rap 450 mm mir	B-12G
32	TSF - Top Surface Channel, TSC-7	User Mix 1					16,324	Rip-Rap 450 mm mir	B-12G
33	TSF - Bench Channels, BC-21 through BC-42	User Mix 1					104,079	Rip-Rap 450 mm mir	B-12G
34	TSF - Toe Channel, TC-7	User Mix 1					10,716	Rip-Rap 450 mm mir	B-12G
35	TSF - Toe Channel, TC-8	User Mix 1					8,173	Rip-Rap 450 mm mir	B-12G
36	TSF - Toe Channel, TC-9	User Mix 1					5,757	Rip-Rap 450 mm mir	B-12G
37	PLANT - Perimeter Channel, PC-2	User Mix 1					8,919	Rip-Rap 450 mm mir	B-12G
38	PLANT - Toe Channel, TC-10	User Mix 1					1,885	Rip-Rap 450 mm mir	B-12G
39	PIT - Perimeter Channel, PC-1	User Mix 1					12,653	Rip-Rap 450 mm mir	B-12G
40	PIT - Haul Road Channel, HC-5 - built with ACB	User Mix 1					7,971		B-12G
41	Dissipaters - TSF - bottom of DSC-3	User Mix 1					341	Rip-Rap 450 mm mir	B-12G
42	Dissipaters - TSF - bottom of DSC-4	User Mix 1					341	Rip-Rap 450 mm mir	B-12G
43	Dissipaters - TSF - bottom of DSC-5	User Mix 1					481	Rip-Rap 450 mm mir	B-12G
44	Dissipaters - WRD1 - 1 - bottom of HC-3	User Mix 1					261	Rip-Rap 450 mm mir	B-12G
45	Dissipaters - WRD3 - 1 - bottom of DSC-1	User Mix 1					341	Rip-Rap 450 mm mir	B-12G
46	Dissipaters - WRD3 - 2 - bottom of DSC-2	User Mix 1					341	Rip-Rap 450 mm mir	B-12G

Notes:
See User 10 for diversion lengths. ACB (articulated concre
This estimate accounts for construction of diversion ditche
Riprap material will be available from characterised materia

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Sediment & Drainage Control - Assumptions & Calculations

Diversion Ditch Volume Calculation

1) Assume 20% swell for excavations
2) Assumes heavy duty trenching bucket is used

Sediment/Evaporation Pond Construction Calculation

Cut = Fill
Push distance = pond width up to 2/3 max push distance (400 ft)

1) Assume balanced cut-to-fill for berm construction
2) Include cost for liner, if required.
3) Include line items for removal, if necessary.
4) Assume 20% swell for excavations
5) Minimum 1 hr ripping/scarifying per area
6) Minimum 1 acre revegetation crew time per area

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Diversion Ditches - Excavation Costs

	Description (required)	Diversion Ditch Volume LCY	Diversion Ditch Equipment	Corrected Excavator Productivity LCY/hr	Total Hours hrs	Diversion Ditch Labor Cost $	Diversion Ditch Equipment Cost $	Total Diversion Ditch Cost $
1	EWRSP-1 - Diversion Channel, DC-1	2,562	325F	398	6	200	465	665
2	EWRSP-1 - Diversion Swale, DS-1	1,297	325F	398	3	100	232	332
3	EWRSP-1 - Toe Channel, TC-1	2,964	325F	398	7	233	542	775
4	EWRSP-1 - Toe Channel, TC-2	1,611	325F	398	4	133	310	443
5	EWRSP-1 - Haul Road Channel, HC-1	647	325F	398	2	67	155	222
6	EWRSP-2B - Top Surface Channel, TSC-1	1,789	325F	398	4	133	310	443
7	EWRSP-2B - Toe Channel, TC-3	2,053	325F	398	5	167	387	554
8	EWRSP-2B - Diversion Swale, DS-2	1,153	325F	398	3	100	232	332
9	EWRSP-4 - Top Surface Channel, TSC-2+Haul Road Chann	3,701	325F	398	9	300	697	997
10	EWRSP-4 - Toe Channel, TC-4	2,288	325F	398	6	200	465	665
11	WRSP-1 - Diversion Swale, DS-3 - built during operations				0	0	0	0
12	WRSP-1 - Diversion Swale, DS-4 - built during operations				0	0	0	0
13	WRSP-1 - Diversion Channel, DC-2	1,510	325F	398	4	133	310	443
14	WRSP-1 - Top Surface Channel-3	2,133	325F	398	5	167	387	554
15	WRSP-1 - Bench Channels, BC-1 through BC-4	6,096	325F	398	15	500	1,162	1,662
16	WRSP-1 - Haul Road Channel, HC-3	4,560	325F	398	11	366	852	1,218
17	WRSP-2 and WRSP-3 - Diversion Swale, DS-5 - built during				0	0	0	0
18	WRSP-2 and WRSP-3 - Diversion Swale, DS-6 - built during				0	0	0	0
19	WRSP-2 and WRSP-3 - Diversion Swale, DS-7 - built during				0	0	0	0
20	WRSP-2 and WRSP-3 - Haul Road Channel, HC-4	4,679	325F	398	12	400	930	1,330
21	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-4	1,877	325F	398	5	167	387	554
22	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-5	3,747	325F	398	9	300	697	997
23	WRSP-2 and WRSP-3 - Downslope Channel, DSC-1 - built v	1,465	325F	398	4	133	310	443
24	WRSP-2 and WRSP-3 - Downslope Channel, DSC-2 - built v	4,370	325F	398	11	366	852	1,218
25	WRSP-2 and WRSP-3 - Toe Channel, TC-5	4,074	325F	398	10	333	775	1,108
26	WRSP-2 and WRSP-3 - Toe Channel, TC-6	1,271	325F	398	3	100	232	332
27	WRSP-2 and WRSP-3 - Bench Channels, BC-5 through BC-	46,760	325F	398	117	3,896	9,066	12,962
28	TSF - Downslope Channel, DSC-3 - built with ACB	2,196	325F	398	6	200	465	665
29	TSF - Downslope Channel, DSC-4 - built with ACB	2,154	325F	398	5	167	387	554
30	TSF - Downslope Channel, DSC-5 - built with ACB	8,901	325F	398	22	733	1,705	2,438
31	TSF - Top Surface Channel, TSC-6	16,189	325F	398	41	1,365	3,177	4,542
32	TSF - Top Surface Channel, TSC-7	20,406	325F	398	51	1,698	3,952	5,650
33	TSF - Bench Channels, BC-21 through BC-42	84,750	325F	398	213	7,093	16,505	23,598
34	TSF - Toe Channel, TC-7	16,641	325F	398	42	1,399	3,255	4,654
35	TSF - Toe Channel, TC-8	10,217	325F	398	26	866	2,015	2,881
36	TSF - Toe Channel, TC-9	5,961	325F	398	15	500	1,162	1,662
37	PLANT - Perimeter Channel, PC-2	9,234	325F	398	23	766	1,782	2,548
38	PLANT - Toe Channel, TC-10	1,535	325F	398	4	133	310	443
39	PIT - Perimeter Channel, PC-1	15,817	325F	398	40	1,332	3,100	4,432
40	PIT - Haul Road Channel, HC-5 - built with ACB	8,252	325F	398	21	699	1,627	2,326
41	Dissipaters - TSF - bottom of DSC-3	333	325F	398	1	33	77	110
42	Dissipaters - TSF - bottom of DSC-4	333	325F	398	1	33	77	110
43	Dissipaters - TSF - bottom of DSC-5	661	325F	398	2	67	155	222
44	Dissipaters - WRD1 - 1 - bottom of HC-3	319	325F	398	1	33	77	110
45	Dissipaters - WRD3 - 1 - bottom of DSC-1	333	325F	398	1	33	77	110
46	Dissipaters - WRD3 - 2 - bottom of DSC-2	333	325F	398	1	33	77	110
		307,172			771	**25,677**	**59,737**	**85,414**

Notes: LCM assumes 20% swell from ditch volume

Project Name: Copper Flat Reclamation Bond Cost E
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_2
Cost Estimate Type: FA Cost Basis: Copper Flat

Diversion Ditches - Excavation Costs

		Liner Installation				Rip-Rap Installation			
	Description (required)	Total Labor Cost $	Total Equipment Cost $	Total Material Cost $	Total Liner Cost $	Labor Cost $	Equipment Cost $	Material Cost $	Total Cost $
1	EWRSP-1 - Diversion Channel, DC-1	0	0	0	0	16,480	64,756	0	81,236
2	EWRSP-1 - Diversion Swale, DS-1	0	0	0	0	16,009	62,935	0	78,944
3	EWRSP-1 - Toe Channel, TC-1	0	0	0	0	36,582	143,816	0	180,398
4	EWRSP-1 - Toe Channel, TC-2	0	0	0	0	19,886	78,177	0	98,063
5	EWRSP-1 - Haul Road Channel, HC-1	0	0	0	0	11,178	43,944	0	55,122
6	EWRSP-2B - Top Surface Channel, TSC-1	0	0	0	0	30,905	121,498	0	152,403
7	EWRSP-2B - Toe Channel, TC-3	0	0	0	0	19,933	78,362	0	98,295
8	EWRSP-2B - Diversion Swale, DS-2	0	0	0	0	14,226	55,929	0	70,155
9	EWRSP-4 - Top Surface Channel, TSC-2+Haul Road Chann	0	0	0	0	45,681	179,586	0	225,267
10	EWRSP-4 - Toe Channel, TC-4	0	0	0	0	39,528	155,397	0	194,925
11	WRSP-1 - Diversion Swale, DS-3 - built during operations	0	0	0	0	0	0	0	0
12	WRSP-1 - Diversion Swale, DS-4 - built during operations	0	0	0	0	0	0	0	0
13	WRSP-1 - Diversion Channel, DC-2	0	0	0	0	18,635	73,260	0	91,895
14	WRSP-1 - Top Surface Channel-3	0	0	0	0	26,327	103,499	0	129,826
15	WRSP-1 - Bench Channels, BC-1 through BC-4	0	0	0	0	105,293	413,942	0	519,235
16	WRSP-1 - Haul Road Channel, HC-3	0	0	0	0	56,280	221,256	0	277,536
17	WRSP-2 and WRSP-3 - Diversion Swale, DS-5 - built during	0	0	0	0	0	0	0	0
18	WRSP-2 and WRSP-3 - Diversion Swale, DS-6 - built during	0	0	0	0	0	0	0	0
19	WRSP-2 and WRSP-3 - Diversion Swale, DS-7 - built during	0	0	0	0	0	0	0	0
20	WRSP-2 and WRSP-3 - Haul Road Channel, HC-4	0	0	0	0	57,750	227,033	0	284,783
21	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-4	0	0	0	0	23,169	91,084	0	114,253
22	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-5	0	0	0	0	36,372	142,991	0	179,363
23	WRSP-2 and WRSP-3 - Downslope Channel, DSC-1 - built w	0	0	0	0	0	0	0	0
24	WRSP-2 and WRSP-3 - Downslope Channel, DSC-2 - built w	0	0	0	0	0	0	0	0
25	WRSP-2 and WRSP-3 - Toe Channel, TC-5	0	0	0	0	50,277	197,655	0	247,932
26	WRSP-2 and WRSP-3 - Toe Channel, TC-6	0	0	0	0	12,339	48,510	0	60,849
27	WRSP-2 and WRSP-3 - Bench Channels, BC-5 through BC-	0	0	0	0	577,120	2,268,857	0	2,845,977
28	TSF - Downslope Channel, DSC-3 - built with ACB	0	0	0	0	0	0	0	0
29	TSF - Downslope Channel, DSC-4 - built with ACB	0	0	0	0	0	0	0	0
30	TSF - Downslope Channel, DSC-5 - built with ACB	0	0	0	0	0	0	0	0
31	TSF - Top Surface Channel, TSC-6	0	0	0	0	130,159	511,698	0	641,857
32	TSF - Top Surface Channel, TSC-7	0	0	0	0	164,061	644,979	0	809,040
33	TSF - Bench Channels, BC-21 through BC-42	0	0	0	0	1,045,995	4,112,166	0	5,158,161
34	TSF - Toe Channel, TC-7	0	0	0	0	107,692	423,376	0	531,068
35	TSF - Toe Channel, TC-8	0	0	0	0	82,142	322,928	0	405,070
36	TSF - Toe Channel, TC-9	0	0	0	0	57,861	227,472	0	285,333
37	PLANT - Perimeter Channel, PC-2	0	0	0	0	89,639	352,403	0	442,042
38	PLANT - Toe Channel, TC-10	0	0	0	0	18,948	74,490	0	93,438
39	PIT - Perimeter Channel, PC-1	0	0	0	0	127,166	499,933	0	627,099
40	PIT - Haul Road Channel, HC-5 - built with ACB	0	0	0	0	0	0	0	0
41	Dissipaters - TSF - bottom of DSC-3	0	0	0	0	3,430	13,486	0	16,916
42	Dissipaters - TSF - bottom of DSC-4	0	0	0	0	3,430	13,486	0	16,916
43	Dissipaters - TSF - bottom of DSC-5	0	0	0	0	4,837	19,017	0	23,854
44	Dissipaters - WRD1 - 1 - bottom of HC-3	0	0	0	0	2,626	10,325	0	12,951
45	Dissipaters - WRD3 - 1 - bottom of DSC-1	0	0	0	0	3,430	13,486	0	16,916
46	Dissipaters - WRD3 - 2 - bottom of DSC-2	0	0	0	0	3,430	13,486	0	16,916
		0	**0**	**0**	**0**	**3,058,816**	**12,025,218**	**0**	**15,084,034**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Diversion Ditches - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	EWRSP-1 - Diversion Channel, DC-1	0.50	19	26	87	132
2	EWRSP-1 - Diversion Swale, DS-1	0.30	19	26	52	97
3	EWRSP-1 - Toe Channel, TC-1	0.80	19	26	140	185
4	EWRSP-1 - Toe Channel, TC-2	0.40	19	26	70	115
5	EWRSP-1 - Haul Road Channel, HC-1	0.20	19	26	35	80
6	EWRSP-2B - Top Surface Channel, TSC-1	0.70	19	26	122	167
7	EWRSP-2B - Toe Channel, TC-3	0.40	19	26	70	115
8	EWRSP-2B - Diversion Swale, DS-2	0.30	19	26	52	97
9	EWRSP-4 - Top Surface Channel, TSC-2+Haul Road Chann	1.00	19	26	175	220
10	EWRSP-4 - Toe Channel, TC-4	0.80	19	26	140	185
11	WRSP-1 - Diversion Swale, DS-3 - built during operations		0	0	0	0
12	WRSP-1 - Diversion Swale, DS-4 - built during operations		0	0	0	0
13	WRSP-1 - Diversion Channel, DC-2	0.40	19	26	70	115
14	WRSP-1 - Top Surface Channel-3	0.60	19	26	105	150
15	WRSP-1 - Bench Channels, BC-1 through BC-4	2.20	42	57	384	483
16	WRSP-1 - Haul Road Channel, HC-3	1.20	23	31	210	264
17	WRSP-2 and WRSP-3 - Diversion Swale, DS-5 - built during		0	0	0	0
18	WRSP-2 and WRSP-3 - Diversion Swale, DS-6 - built during		0	0	0	0
19	WRSP-2 and WRSP-3 - Diversion Swale, DS-7 - built during		0	0	0	0
20	WRSP-2 and WRSP-3 - Haul Road Channel, HC-4	1.20	23	31	210	264
21	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-4	0.50	19	26	87	132
22	WRSP-2 and WRSP-3 - Top Surface Channel, TSC-5	0.80	19	26	140	185
23	WRSP-2 and WRSP-3 - Downslope Channel, DSC-1 - built w	0.50	19	26	87	132
24	WRSP-2 and WRSP-3 - Downslope Channel, DSC-2 - built w	1.40	27	36	245	308
25	WRSP-2 and WRSP-3 - Toe Channel, TC-5	1.10	21	28	192	241
26	WRSP-2 and WRSP-3 - Toe Channel, TC-6	0.30	19	26	52	97
27	WRSP-2 and WRSP-3 - Bench Channels, BC-5 through BC-	12.30	233	317	2,149	2,699
28	TSF - Downslope Channel, DSC-3 - built with ACB	0.70	19	26	122	167
29	TSF - Downslope Channel, DSC-4 - built with ACB	0.70	19	26	122	167
30	TSF - Downslope Channel, DSC-5 - built with ACB	2.10	40	54	367	461
31	TSF - Top Surface Channel, TSC-6	2.80	53	72	489	614
32	TSF - Top Surface Channel, TSC-7	3.50	66	90	612	768
33	TSF - Bench Channels, BC-21 through BC-42	22.30	423	575	3,896	4,894
34	TSF - Toe Channel, TC-7	2.30	44	59	402	505
35	TSF - Toe Channel, TC-8	1.80	34	46	314	394
36	TSF - Toe Channel, TC-9	1.20	23	31	210	264
37	PLANT - Perimeter Channel, PC-2	1.90	36	49	332	417
38	PLANT - Toe Channel, TC-10	0.40	19	26	70	115
39	PIT - Perimeter Channel, PC-1	2.70	51	70	472	593
40	PIT - Haul Road Channel, HC-5 - built with ACB	1.70	32	44	297	373
41	Dissipaters - TSF - bottom of DSC-3	0.10	19	26	17	62
42	Dissipaters - TSF - bottom of DSC-4	0.10	19	26	17	62
43	Dissipaters - TSF - bottom of DSC-5	0.10	19	26	17	62
44	Dissipaters - WRD1 - 1 - bottom of HC-3	0.10	19	26	17	62
45	Dissipaters - WRD3 - 1 - bottom of DSC-1	0.10	19	26	17	62
46	Dissipaters - WRD3 - 2 - bottom of DSC-2	0.10	19	26	17	62
		72.60	**1,645**	**2,235**	**12,681**	**16,561**

Closure Cost Estimate
Well Abandonment

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Monitoring Well/Piezometer Closure

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Number of Holes	Casing Diam in	Average Depth ft bgs	Top of Screen[1] ft bgs	Hole Plug Method (select)	Casing Volume per ft ft3	Grout Volume/ Well[2,3] cy	Cement Volume per Hole[4] cy	Inert Backfill Volume per Hole[5] cy	Total Grouting Hours/ Hole hrs	Total Inert Media Hours/ Hole hrs	Grout + Cement Labor Cost[6] $	Grout + Cement Equip Cost[6] $	Grout + Cement Material Cost $	Inert Material Labor Cost[7] $	Inert Material Equip Cost[7] $	Total Cost $
1	Monitoring wells closed at end of operation			Wells				FA	28	4.0	405	300	Grout Only	0.090	1.67	0.02		3.8	0.0	4,658	64,446	1,946	0	0	71,050
2	Monitoring wells closed after Closure Year 3			Wells				FA	1	4.0	405	300	Grout Only	0.090	1.67	0.02		3.8	0.0	166	2,302	70	0	0	2,538
3	Monitoring wells closed after Closure Year 5			Wells				FA	2	4.0	405	300	Grout Only	0.090	1.67	0.02		3.8	0.0	333	4,603	139	0	0	5,075
4	Monitoring wells closed after Closure Year 16			Wells				FA	2	4.0	405	300	Grout Only	0.090	1.67	0.02		3.8	0.0	333	4,603	139	0	0	5,075
5	Monitoring wells abandoned at the end			Wells				FA	20	4.0	405	300	Grout Only	0.090	1.67	0.02		3.8	0.0	3,327	46,033	1,390	0	0	50,750
																				8,817	**121,987**	**3,684**	**0**	**0**	**134,488**

Wells abandoned per NAC 534.420 with bentonite grout placed to 50 feet above the top of the screen (see note 1).
(1) Assumes top of screen is at or above the static water level (in unconfined aquifers) or the depth of first water encountered (in confined aquifers).
(2) Assumes 25% loss to formation for grouting
(3) Grouting only required to 50' (15.24m) above the top of screen because monitor wells are constructed with a seal in the annular space.
(4) Assumes top 10' (3m) plugged with cement.
(5) Assumes hole plugged with inert material (cuttings or alluvium) above grout up to cement surface plug.
(6) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup (see Productivty Sheet).
(7) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes:

Closure Cost Estimate
Waste Disposal

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Disposal - User Input - Solid Waste

												Landfill (Bulk) Disposal			Dumpster
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Waste Type (select)	Disposal Method (select)	Quantity cy	Distance to Landfill ft	Slope to Landfill % grade	Number of Trucks (user override)	Months Dumpster Rental months
1	Solid waste			Waste Disposal				FA	Process - Other	Landfill (bulk)	350	5000	-5.0		

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

Assumed cy/annum solid waste produced: 50

Waste Disposal - User Input - Hazardous Materials

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Waste Type (select)	Container Type (select)	Vacuum Truck Size (select)	Liquid Quantity gallons	Soild Quantity cy	One Way Travel Distance to Disposal Site mi	One Way Travel Time to Disposal Site hr
1	Laboratory Wastes			Waste Disposal				FA	Process - Other	Liquid 55-gal drum	Small (2,200 ga	165		120	2.4
2	Reagent Wastes			Waste Disposal				FA	Process - Other	Solid Bulk	Small (2,200 gal)		100	120	2.4

Notes:
1. Use Other Demo & Equip Removal Sheet for tank removal

Quantities at closure assumed.
Disposal in or near El Paso.

Waste Disposal - User Input - Hydrocarbon Contaminated Soils

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Waste Type (select)	Disposal Method (select)	Quantity cy	Travel Distance to Offsite Disposal mi
1	Residual PCS			Waste Disposal				FA	Process - Other	Off site	100	75

Notes:
1. Use Yards or Landfills Sheets for bioremediation facility reclamation

Quantities at closure assumed.
Disposal of PCS in Las Cruces.

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Disposal - Assumptions & Calculations

Solid Waste Disposal

Off site disposal assumes use of average rolloff dumpster [30 cy (m3), 10 ton (tonne)]
On site disposal assumes use of small loader/truck fleet for haulage
Average density for on site disposal = 2,600 lb/cy (1,540 kg/m3)
For on site disposal only 1 truck is required unless total truck hours > 8, only 2 trucks unless total truck hours are > 16

Hazardous Materials Disposal

Assumes all hazardous materials are known
Enter EITHER solid or liquid quantity each line.
If container type = 55 gallon (200 liter) drum then solid waste hauling costs apply
Average density for solids assumed to be 2,600 lb/cy (1,540 kg/m3)
Vacuum truck sizes: small = 2,200 gal (~8,300 litres), large = 5,000 gal (~19,000 litres)
Vacuum truck on site for 4 hours for each load

Hydrocarbon Contaminated Soils Disposal

Assumes all hazardous materials are known
On site disposal assumes biopad treatment
Exavation productivity =45 cy./hr (35 m3/hr) (Means Heavy Construction, 2006: 02315-424-0360)

Closure Cost Estimate
Waste Disposal

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Disposal - Solid Waste Disposal

								Off-Site	On-Site		
	Description (required)	Waste Volume cy	Number of Off Site Dumpster Loads	Landfill Fleet Equipment	Landfill Fleet Productivity LCY/hr	Number of Trucks	Total Fleet Hours hrs	Total Dumpster Cost $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1	**Solid waste**	350		730C2	105	1	3	0	272	1,321	1,593
		350					3	**0**	**272**	**1,321**	**1,593**

Waste Disposal - Hazardous Materials Disposal

	Description (required)	Liquid Waste Volume gallons	Solid Waste Volume cy	Number of Truck Loads	Tons of Waste Tons	Pick-up Fees $	Transport Fees $	Disposal Fees $	Total Hazardous Material Cost $
1	**Laboratory Wastes**	165		1	1	795	1,416	305	2,516
2	**Reagent Wastes**		100	5	130	0	5,664	39,650	45,314
		165	100		131	**795**	**7,080**	**39,955**	**47,830**

Waste Disposal - Hydrocarbon Contaminated Soils

	Description (required)	Quantity cy	Total Fleet Hours hrs	Treatment Cost $	Transport Fees $	Disposal Fees $	Total Labor Cost $	Total Equipment Cost $	Total Waste Disposal Cost $
1	**Residual PCS**	100	2	0	3,540	29,500	0	0	33,040
		100	2	**0**	**3,540**	**29,500**	**0**	**0**	**33,040**

Closure Cost Estimate
Misc. Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Fence Removal

									Costs				
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Labor Cost $	Equipment Cost $	Total Cost $
1	**Property boundary fence**			**Buildings**				**FA**	**48,457**	**Barbed 4-strand Removal**	32,951	32,466	65,417
											32,951	**32,466**	**65,417**

Notes:

Fence Installation

									Input		Costs			
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Labor Cost $	Equipment Cost $	Material Cost $	Total Cost $
1	**Pit perimeter fence**			**Pits**				**FA**	**9,252**	**Barbed 5-strand**	7,402	4,904	6,014	18,320
2	**Pit perimeter fence replacement**			**Pits**				**FA**	**9,252**	**Barbed 5-strand**	7,402	4,904	6,014	18,320
											14,804	**9,808**	**12,028**	**36,640**

Notes:

Closure Cost Estimate
Misc. Costs

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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Culvert & Buried Pipe Removal

									Input			Costs		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Location (select)	Labor Cost $	Equipment Cost $	Total Cost $
1	Landbridge 1 culvert			Yards				FA	100	36 in (1m) Diameter	On site	566	650	1,216
2	Landbridge 2 culvert			Yards				FA	100	36 in (1m) Diameter	On site	566	650	1,216
												1,132	**1,300**	**2,432**

Notes:

Surface Pipe Removal

									Input			Costs		
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Length ft	Type (select type)	Location (select)	Labor Cost $	Equipment Cost $	Total Cost $
1	Tailings Pipeline Removal (2 pipelines)			Miscellaneous Linear Facilities				FA	12,000	10 in (250 mm) - 18 in (450 mm	On site	37,080	9,600	46,680
2	Water reclaim pipeline removal (2 pipelines)			Miscellaneous Linear Facilities				FA	24,000	10 in (250 mm) - 18 in (450 mm	On site	74,160	19,200	93,360
3	Other pipelines site-wide			Miscellaneous Linear Facilities				FA	12,000	10 in (250 mm) - 18 in (450 mm	On site	37,080	9,600	46,680
												148,320	**38,400**	**186,720**

Notes:

Closure Cost Estimate
Misc. Costs

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Date of Submittal: July 2018
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Power Line and Substation Removal

									Input				Costs			Cost Breakdown	
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phase	Location	Property	Cost Type	Power Line Length miles	Power Line Type (select)	Number of Substations #	Location (select)	Power Line Removal $	Substation Removal $	Total Cost $	Labor Cost $	Equipment Cost $
1	On-site powerline removal			Miscellaneous Linear Facilities				FA	2.0	Double Pole Powerlines	1	On site	38,744	29,250	67,994	13,599	54,395
													38,744	**29,250**	**67,994**	**13,599**	**54,395**

Notes: If substation owned by operator, use Other Demo & Equipment Removal sheet
User may need to add line items in Foundations & Buildings for substation slab demolition and fence removal
Labor/Equipment costs assume approximately 80% of cost are equipment and 20% are labor related costs
On-site power poles may be left in place to the extent possible as bird perching sites
The existing 115-kV transmission line and the electrical substation constructed on State land will be left in place. The local power utility owns these facilities and will be responsible for their continued operation and maintenance.

Rip-Rap & Rock Lining

									Input			Costs			
	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Area S.Y.	Type (select type)	Crew (select type)	Labor Cost $	Equipment Cost $	Material Cost $	Total Cost $
1	EWRSP-1 slope armor 1			Waste Rock Dumps				FA	1,030	Rip-Rap 450 mm min thick, no	B-12G	10,356	40,713	0	51,069
2	EWRSP-2B slope armor 1			Waste Rock Dumps				FA	393	Rip-Rap 450 mm min thick, no	B-12G	3,946	15,514	0	19,460
3	EWRSP-2B slope armor 2			Waste Rock Dumps				FA	674	Rip-Rap 450 mm min thick, no	B-12G	6,776	26,639	0	33,415
4	EWRSP-4 slope armor 1			Waste Rock Dumps				FA	463	Rip-Rap 450 mm min thick, no	B-12G	4,657	18,306	0	22,963
5	WRSP-1 slope armor 1			Waste Rock Dumps				FA	1,389	Rip-Rap 450 mm min thick, no	B-12G	13,959	54,879	0	68,838
6	WRSP-1 slope armor 2			Waste Rock Dumps				FA	1,356	Rip-Rap 450 mm min thick, no	B-12G	13,623	53,558	0	67,181
7	WRSP-1 slope armor 3			Waste Rock Dumps				FA	1,623	Rip-Rap 450 mm min thick, no	B-12G	16,312	64,129	0	80,441
8	TSF slope armor 1			Tailings Storage Facility				FA	9,951	Rip-Rap 450 mm min thick, no	B-12G	100,009	393,168	0	493,177
												169,638	**666,906**	**0**	**836,544**

Closure Cost Estimate
Monitoring

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Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Reclamation Monitoring

	Description (required)	Staff	ID Code	Construction Year (1)	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Number of Staff	Number of Trucks	Hrs/Day	Days/Year	Number of Years
1	Field work	Field Geologist/Engineer			Monitoring				FA	1	1	8	4	12
2	Field work	Range Scientist			Monitoring				FA	1		8	4	12
3	Reporting	Field Geologist/Engineer			Monitoring				FA	1		8	4	12
4	Reporting	Range Scientist			Monitoring				FA	1		8	4	12
5	Tailings dam monitoring	Field Geologist/Engineer			Monitoring				FA	2	1	8	2	12

Notes:

Water and Rock Sample Analysis

	Description (required)	Analysis Type	ID Code	Construction Year (1)	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Samples #	Events/Year #	No. Years #	First Sample Year closure year	No. of Samplers #	Days/Event #	Hrs/Day #	Reporting Hours/Event #	Comments
1	Well Monitoring - Years 1 thru 3	GW Analysis Profile 1			Monitoring				FA	25	1	3	1	2	5	8	60	
2	Well Monitoring - Years 4 thru 4	GW Analysis Profile 1			Monitoring				FA	24	1	1	4	2	5	8	60	
3	Well Monitoring - Years 1 thru 3	GW Analysis Profile 2			Monitoring				FA	25	3	3	1	2	5	8	60	
4	Well Monitoring - Years 4 thru 4	GW Analysis Profile 2			Monitoring				FA	24	3	1	4	2	5	8	60	
5	Well Monitoring - Years 5 thru 5	GW Analysis Profile 3			Monitoring				FA	24	2	1	5	2	5	8	40	
6	Well Monitoring - Years 6 thru 8	GW Analysis Profile 3			Monitoring				FA	22	2	3	6	2	4	8	40	
7	Well Monitoring - Years 9 thru 16	GW Analysis Profile 3			Monitoring				FA	22	1	8	9	2	4	8	40	
8	Well Monitoring - Years 16 thru 25	GW Analysis Profile 3			Monitoring				FA	20	1	10	16	2	3	8	40	
9	SW Monitoring - Years 1 thru 1	SW Analysis Profile 4			Monitoring				FA	8	1	1	1	2	2	8	10	
10	SW Monitoring - Years 1 thru 3	SW Analysis Profile 4			Monitoring				FA	6	1	3	1	1	1	8	5	
11	SW Monitoring - Years 2 thru 2	SW Analysis Profile 4			Monitoring				FA	5	1	1	2	1	1	8	5	
12	SW Monitoring - Years 3 thru 4	SW Analysis Profile 4			Monitoring				FA	2	1	2	3	1	1	4	5	
13	SW Monitoring - Years 1 thru 1	SW Analysis Profile 5			Monitoring				FA	8	3	1	1	2	2	8	10	
14	SW Monitoring - Years 1 thru 4	SW Analysis Profile 5			Monitoring				FA	5	4	4	1	1	1	8	5	
15	SW Monitoring - Years 2 thru 2	SW Analysis Profile 5			Monitoring				FA	5	3	1	2	1	1	8	5	
16	SW Monitoring - Years 3 thru 4	SW Analysis Profile 5			Monitoring				FA	2	3	2	3	1	1	4	5	
17	SW Monitoring - Years 5 thru 5	SW Analysis Profile 6			Monitoring				FA	2	2	1	5	1	1	4	5	
18	SW Monitoring - Years 6 thru 8	SW Analysis Profile 6			Monitoring				FA	1	2	3	6	2	1	8	10	Sampling time short, but travel to site time consuming
19	SW Monitoring - Years 9 thru 26	SW Analysis Profile 6			Monitoring				FA	1	1	18	9	2	1	8	10	Sampling time short, but travel to site time consuming

Notes:
(1) This is the first year that the monitoring commitment is made (e.g. included in permit or approved monitoring plan)
(2) Monitoring may not extend beyond the maximum number of schedule years (100)
(3) First Sample Year can not be before first closure year shown in schedule (-13).

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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Reclamation Monitoring

	Description (required)	Labor Rate $/hr	Equipment Rate $/hr	Labor Cost $	Equipment Cost $	Total $
1	**Field work**	128.93	12.14	49,509	4,662	54,171
2	**Field work**	128.93	0.00	49,509	0	49,509
3	**Reporting**	128.93	0.00	49,509	0	49,509
4	**Reporting**	128.93	0.00	49,509	0	49,509
5	**Tailings dam monitoring**	128.93	12.14	49,509	2,331	51,840
				247,546	**6,993**	**254,538**

Water and Rock Sample Analysis

	Description (required)	Analysis Cost $/sample	Supplies $/sample	Labor Cost $	Equipment Cost $	Material Cost $	Lab Cost $	Reporting Cost $	Total $
1	**Well Monitoring - Years 1 thru 3**	1,254.00	0.00	28,466	1,457	0	94,050	23,207	147,181
2	**Well Monitoring - Years 4 thru 4**	1,254.00	0.00	9,489	486	0	30,096	7,736	47,806
3	**Well Monitoring - Years 1 thru 3**	739.00	0.00	85,399	4,370	0	166,275	69,622	325,667
4	**Well Monitoring - Years 4 thru 4**	739.00	0.00	28,466	1,457	0	53,208	23,207	106,339
5	**Well Monitoring - Years 5 thru 5**	554.00	0.00	18,978	971	0	26,592	10,314	56,855
6	**Well Monitoring - Years 6 thru 8**	554.00	0.00	45,546	2,331	0	73,128	30,943	151,948
7	**Well Monitoring - Years 9 thru 16**	554.00	0.00	60,728	3,108	0	97,504	41,258	202,598
8	**Well Monitoring - Years 16 thru 25**	554.00	0.00	56,933	2,914	0	110,800	51,572	222,218
9	**SW Monitoring - Years 1 thru 1**	1,573.00	0.00	3,796	194	0	12,584	1,289	17,863
10	**SW Monitoring - Years 1 thru 3**	1,573.00	0.00	2,847	291	0	28,314	1,934	33,386
11	**SW Monitoring - Years 2 thru 2**	1,573.00	0.00	949	97	0	7,865	645	9,556
12	**SW Monitoring - Years 3 thru 4**	1,573.00	0.00	949	97	0	6,292	1,289	8,627
13	**SW Monitoring - Years 1 thru 1**	1,058.00	0.00	11,387	583	0	25,392	3,868	41,229
14	**SW Monitoring - Years 1 thru 4**	1,058.00	0.00	15,182	1,554	0	84,640	10,314	111,690
15	**SW Monitoring - Years 2 thru 2**	1,058.00	0.00	2,847	291	0	15,870	1,934	20,942
16	**SW Monitoring - Years 3 thru 4**	1,058.00	0.00	2,847	291	0	12,696	3,868	19,702
17	**SW Monitoring - Years 5 thru 5**	873.00	0.00	949	97	0	3,492	1,289	5,827
18	**SW Monitoring - Years 6 thru 8**	873.00	0.00	11,387	583	0	5,238	7,736	24,943
19	**SW Monitoring - Years 9 thru 26**	873.00	0.00	34,160	1,748	0	15,714	23,207	74,829
				421,303	**22,920**	**0**	**869,750**	**315,234**	**1,629,207**

Notes: Sampling labor cost = No. Samplers x Years x Events/year x Days/event x Hour/Day x Labor Rate
Sampling equipment costs include 1 pickup truck for every two samplers

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Revegetation Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Revegetation Surface Area (user override)	% Area Requiring Reseeding	Seed Mix (select)	Area Requiring Reseeding acres	Seed $/acres	Labor $/acres	Equipment $/acres	Labor Cost $	Equipment Cost $	Material Cost $
1	Revegetation maintenance			Reclamation Maintenance				FA		10%	User Mix 1	101.0	174.72	18.97	25.80	1,916	2,606	17,645
															Total Revegetation Matinenance	1,916	2,606	17,645

Notes: 1) Calculated based on cost type and current filters - (See Reclamation Quantities sheet)
2) Will use values from Reclamation Quantities sheet if user does not override
3) Surface area is NOT the same as footprint disturbance area typically used for permitting purposes.

	Total Cover Volume cy	Average Placement Cost $/cy
Information from Reclamation Quantities Sheet:	0	0.00

Cover Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total Cover Volume (1) (user override)	% Volume Requiring Maintenance	Average Placement Cost (1) (user override)	Volume Requiring Replacement cy	Labor (assume: 25%) $/cy	Equipment (assume: 75%) $/cy	Labor Cost $	Equipment Cost $	Total $
														Total Cover Maintenance	0	0	0

Notes: 1) Will use values from Reclamation Quantities sheet if user does not override

	Total GM Volume cy	Average Placement Cost $/cy
Information from Reclamation Quantities Sheet:	4,567,850	2.91

Growth Media Maintenance

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total Volume (user override)	% Volume Requiring Maintenance	Average Placement Cost (user override)	Volume Requiring Replacement cy	Labor (assume: 25%) $/cy	Equipment (assume: 75%) $/cy	Labor Cost $	Equipment Cost $	Total $
1	Growth media maintenance			Reclamation Maintenance				FA		5%		228,393	0.73	2.18	166,156	498,468	664,624
														Total Growth Media Maintenance	166,156	498,468	664,624

Notes: 1) Will use values from Reclamation Quantities sheet if user does not override

Closure Cost Estimate
Recl. Maint

	Total $
	22,167
	22,167

Closure Cost Estimate
Other User

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Other Cost Items Calculated Elsewhere

	Description (required)	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Quantity	Units	Total Capital Cost $	Material Unit Cost $	Labor Unit Cost $	Equipment/ Operating Unit Cost $	Total Cost $	Comments
1	Pit perimeter signs (500-ft intervals) - Signs			Pits				FA	20	each		41.00	32.04	8.19	1,625	
2	Pit perimeter signs (500-ft intervals) - Sign posts			Pits				FA	20	each		32.50	11.22	2.87	932	
3	Process area pullback			Yards				FA	200	hr			92.56	388.83	96,278	See User 12 for estimate of quantity, fleet, and productivity.
4	Landbridge 1 excavation (measured on Google Earth: 600*100*5ft)			Yards				FA	28	hr			92.56	388.83	13,479	See User 12 for estimate of quantity, fleet, and productivity.
5	Landbridge 2 excavation (measured on Google Earth: 400*100*22ft)			Yards				FA	81	hr			92.56	388.83	38,993	See User 12 for estimate of quantity, fleet, and productivity.
6	EWRSP-1 Setback			Waste Rock Dumps				FA	15	hr			92.56	388.83	7,221	See User 12 for estimate of quantity, fleet, and productivity.
7	Tank cutting			Buildings				FA	1	LS		27,847.83	10,815.28	8,962.52	47,626	See User 13.
8	TSF additional piping installation			Draindown Management				FA	1,000	ft		5.65	2.01	5.50	13,160	
9	Articulated concrete block installation - WRD			Waste Rock Dumps				FA	8,978	SY		81.00	2.04	0.40	749,165	See User 10 for crew.
10	Articulated concrete block installation - TSF			Tailings Storage Facility				FA	16,412	SY		81.00	2.04	0.40	1,369,492	See User 10 for crew.
11	Articulated concrete block installation - pit			Pits				FA	7,971	SY		81.00	2.04	0.40	665,137	See User 10 for crew.
											0	2,737,209	111,849	154,049	3,003,107	

Notes:
Capital cost is lump sum (i.e. not multiplied by the quantity).
Material, Labor and Equipment/Operating costs are unit costs (i.e. multiplied by the quantity).

Closure Cost Estimate
Mobilization

Mobilization/Demobilization

	Equipment	ID Code	Construction Year	Facility/Activity Type	Phases	Locations	Properties	Cost Type	Total FA Hours hrs	Minimum hrs/yr	Maximum hrs/yr	Available Use hrs/yr
1	**D7E**			**Mob/demob**				**FA**	6,288	111	2,021	2,112
2	**D8T**			**Mob/demob**				**FA**	4,360	1,214	3,146	2,112
3	**D9T**			**Mob/demob**				**FA**	1,288	372	916	2,112
4	**325F**			**Mob/demob**				**FA**	1,242	1,242	1,242	2,112
5	**330F**			**Mob/demob**				**FA**	4,797	4,797	4,797	2,112
6	**349F**			**Mob/demob**				**FA**	65	31	34	2,112
7	**930M**			**Mob/demob**				**FA**	0	0	0	2,112
8	**972M**			**Mob/demob**				**FA**	3,106	5	3,060	2,112
9	**730C2**			**Mob/demob**				**FA**	3,106	5	3,060	2,112
10	**740C**			**Mob/demob**				**FA**	15,458	6,636	8,822	2,112
11	**Dump Truck (10-12 yd3)**			**Mob/demob**				**FA**	0	0	0	2,112
12	**420F2**			**Mob/demob**				**FA**	0	0	0	2,112
13	**Light Truck - 1.5 Ton**			**Mob/demob**				**FA**	0	0	0	2,112
14	**Supervisor's Truck**			**Mob/demob**				**FA**	0	0	0	2,112
15	**20 Ton Crane**			**Mob/demob**				**FA**	0	0	0	2,112

Equipment Information Sources: CAT Performance Handbook ed. 46;CAT website (http://www.cat.com/en_US/products/new/) (as of June 2017)
Komatsu Equipment Company (http://www.komatsuamerica.com/equipment/)
Hitachi Construction Machinery Company (https://www.hitachiconstruction.com/)
Liebherr (https://www.liebherr.com/en/nld/products/mobile-and-crawler-cranes/mobile-cranes/ltm-mobile-cranes/)
Tadano Ltd. (https://www.tadano.com/products/productstype/LC/)

NOTES:

(1) Only demobilization required for Shovels and Trucks larger than 777.

Closure Cost Estimate
Mobilization

Mobilization/Demobilization

	Equipment	Actual Use (if less than available) hrs/yr	Minimum units/year	Maximum units/year	Units Mobilized #	Transport Method (select)	Total Load/ Secure Unload/ Secure Time hrs	Assembly/ Disassembly [1] Total $	Assembly/ Disassembly Override Total $	Equipment Weight tons	Road Distance (return trip) mi
1	**D7E**		1	1	**1**	**Road only**	**4.00**	0		28.3	**155**
2	**D8T**		1	2	**2**	**Road only**	**4.00**	0		42.9	**155**
3	**D9T**		1	1	**1**	**Road only**	**4.00**	0		52.5	**155**
4	**325F**		1	1	**1**	**Road only**	**4.00**	0		28.2	**155**
5	**330F**		3	3	**3**	**Road only**	**4.00**	0		32.3	**155**
6	**349F**		1	1	**1**	**Road only**	**4.00**	0		56.3	**155**
7	**930M**		0	0	**1**	**Road only**	**4.00**	0		15.3	**155**
8	**972M**		1	2	**2**	**Road only**	**4.00**	0		27.2	**155**
9	**730C2**		1	2	**2**	**Road only**	**4.00**	0		26.2	**155**
10	**740C**		4	5	**5**	**Road only**	**4.00**	0		39.2	**155**
11	**Dump Truck (10-12 yd3)**		0	0	**2**	**Road only**	**4.00**	0		35.0	**155**
12	**420F2**		0	0	**1**	**Road only**	**4.00**	0		12.0	**155**
13	**Light Truck - 1.5 Ton**		0	0	**2**	**Road only**	**4.00**	0		2.9	**155**
14	**Supervisor's Truck**		0	0	**2**	**Road only**	**4.00**	0		2.4	**155**
15	**20 Ton Crane**		0	0	**1**	**Road only**	**4.00**	0		25.0	**155**

Equipment Information Sources:

NOTES:

Road Transportation - Haulers and Escort Vehicles

	Equipment	Road Transport Method	Units Mobilized #	Required Number of Haulers per Piece #	Required Number of Pilot Cars per Hauler #	Pilot Car Override #	Hours of travel @ 80 mph hrs	Deadhead Distance mi
1	**D7E**	hauler	1	1	0		0.97	78
2	**D8T**	hauler	2	1	0		0.97	78
3	**D9T**	hauler	1	1	0		0.97	78
4	**325F**	hauler	1	1	0		0.97	78
5	**330F**	hauler	3	1	0		0.97	78
6	**349F**	hauler	1	1	0		0.97	78
7	**930M**	hauler	1	1	0		0.97	78
8	**972M**	hauler	2	1	0		0.97	78
9	**730C2**	hauler	2	1	0		0.97	78
10	**740C**	hauler	5	1	0		0.97	78
11	**Dump Truck (10-12 yd3)**	self mobilized	2	1	0		0.97	78
12	**420F2**	hauler	1	1	0		0.97	78
13	**Light Truck - 1.5 Ton**	self mobilized	2	0	0		0.97	78
14	**Supervisor's Truck**	self mobilized	2	0	0		0.97	78
15	**20 Ton Crane**	self mobilized	1	0	0		0.97	78

NOTES:
(1) Only demobilization required for Shovels and Trucks larger than 777.
(2) Miscellaneous costs could include, fees, permits, ancillary equipment, etc.)

Closure Cost Estimate
Mobilization

Road Transportation - Haulers and Es		One-way road transport costs										
	Equipment	Miscellaneous Costs per Hauler[2] $	Load/Secure Unload/Secure Labor Cost $	Escort Vehicle Labor Cost $	Hauler Labor Cost $	Load/Secure Unload/Secure Equipment Cost $	Escort Vehicle Equipment Cost $	Hauler Equipment Cost $	Total Labor Costs $	Total Equipment Costs $	Total Miscellaneous Costs $	Total Costs $
1	D7E		104	0	0	131	0	98	104	229	0	333
2	D8T		208	0	0	307	0	196	208	503	0	711
3	D9T		104	0	0	222	0	196	104	418	0	522
4	325F		133	0	0	77	0	98	133	175	0	308
5	330F		400	0	0	260	0	294	400	554	0	954
6	349F		133	0	0	129	0	196	133	325	0	458
7	930M		133	0	0	73	0	59	133	132	0	265
8	972M		266	0	0	242	0	196	266	438	0	704
9	730C2		186	0	0	297	0	196	186	493	0	679
10	740C		466	0	0	929	0	490	466	1,419	0	1,885
11	Dump Truck (10-12 yd3)		117	0	0	109	0	196	117	305	0	422
12	420F2		69	0	0	45	0	59	69	104	0	173
13	Light Truck - 1.5 Ton		0	0	0	60	0	0	0	60	0	60
14	Supervisor's Truck		0	0	0	24	0	0	0	24	0	24
15	20 Ton Crane		0	0	0	94	0	0	0	94	0	94

NOTES:

Road Transportation - Haulers and Es		Total Transport Costs					
	Equipment	Total Assembly/ Disassembly Cost $	Road Transport Cost $	Ship/Barge Transport (cost/lb/mi) $	Rail Transport (cost/lb/mi) $	Air Transport (cost/lb/mi) $	Total Mobilization/ Demobilization Cost $
1	**D7E**	0	333	0	0	0	333
2	**D8T**	0	711	0	0	0	711
3	**D9T**	0	522	0	0	0	522
4	**325F**	0	308	0	0	0	308
5	**330F**	0	954	0	0	0	954
6	**349F**	0	458	0	0	0	458
7	**930M**	0	265	0	0	0	265
8	**972M**	0	704	0	0	0	704
9	**730C2**	0	679	0	0	0	679
10	**740C**	0	1,885	0	0	0	1,885
11	**Dump Truck (10-12 yd3)**	0	422	0	0	0	422
12	**420F2**	0	173	0	0	0	173
13	**Light Truck - 1.5 Ton**	0	60	0	0	0	60
14	**Supervisor's Truck**	0	24	0	0	0	24
15	**20 Ton Crane**	0	94	0	0	0	94
						TOTAL	**7,592**

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS		
Cost Basis/Project Region	Copper Flat FA	0
Power Equipment Operators	none	0.00
Truck Drivers	none	0.00
Laborers	none	0.00

INDIRECT COSTS	
Unemployment (%)	1.84%
Retirement/SS/Medicare (%)	7.65%
Workman's Compensation (%)	13.30%
Other Indirects	
Total Other Indirects	**0.00%**

HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Labor Group	Base Rate $/hr	Zone Adjustment $/hr	Hourly Wage $/hr	Fringe $/hr	Retirement/ Medicare $/hr	Unemployment Insurance $/hr	Workman's Compensation $/hr	Other Indirect Costs $/hr	Additional User Markups to Base Rate† $/hr	Additional User Markups to Base Rate† %	Additional User Markups to Base Rate† $/hr	Total $/hr
Equipment Operators (2)													
Bulldozers													
D6T		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D6R w/ Winch		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D7E		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D8T		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D9T		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D10T2		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
D11T		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
Wheeled Dozers													
824K												0	0.00
834K												0	0.00
844K												0	0.00
854K												0	0.00
Motor Graders													
12M2		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
14M		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
16M3		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
24M		21.14	0.00	21.14		1.62	0.39	2.81	0.00			0	25.96
Track Excavators													
312F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
320F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
325F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
330F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
349F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
374F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
390F		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
Scrapers													
631K		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
637K		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
Wheeled Loaders													
926M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
930M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
950M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
966M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
972M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
980M		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
988K		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
990K		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
992K		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
994K		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
L2350		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
Shovels/Excavators													
PC2000												0	0.00
PC3000												0	0.00
PC4000												0	0.00
PC5500												0	0.00
PC8000												0	0.00
EX2500												0	0.00
Hydraulic Hammers													
H120Es (fits 325)													
H160Es (fits 349)													
H180Es (fits 374/390)													
Demolition Shears													
S3050 (fits 320/325/330)													
S3070 (fits 330/349)													
S3090 (fits 374/390)													
Demolition Grapples													
G315B (fits 320/325)													
G320B (fits 325/330)													
G330 (fits 349/374)													

Closure Cost Estimate
Labor Rates

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Color Code Key	
User Input - Direct Input	Direct Input
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Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS		
Cost Basis/Project Region	Copper Flat FA	0
Power Equipment Operators	none	0.00
Truck Drivers	none	0.00
Laborers	none	0.00

INDIRECT COSTS	
Unemployment (%)	1.84%
Retirement/SS/Medicare (%)	7.65%
Workman's Compensation (%)	13.30%
Other Indirects	
Total Other Indirects	**0.00%**

HOURLY LABOR RATE TABLE

Other Equipment													
420F2		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
430F2		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
CS54B		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
CS64B		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
CP54B		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
CP68B		14.03	0.00	14.03		1.07	0.26	1.87	0.00			0	17.23
Light Truck - 1.5 Ton		0.00		0.00		0.00	0.00	0.00	0.00			0	0.00
Supervisor's Truck		0.00		0.00		0.00	0.00	0.00	0.00			0	0.00
Flatbed Truck												0	
Air Compressor + tools												0	
Welding Equipment												0	
Heavy Duty Drill Rig												0	
Pump (plugging) Drill Rig												0	
Concrete Pump												0	
Gas Engine Vibrator												0	0.00
Generator 5KW												0	
HDEP Welder (pipe or liner)												0	
5 Ton Crane		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
20 Ton Crane		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
50 Ton Crane		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30
120 Ton Crane		27.12	0.00	27.12		2.07	0.50	3.61	0.00			0	33.30

NOTES:

(1) Equipment Type:	Catepillar model or equivalent, LeTourneau
(2) Equipment Operator Source:	
(3) Zone Basis:	

Truck Drivers (4)													
725C2		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
730C2		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
735C		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
740C		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
770G		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
773G		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
777G		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
785D		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
789D		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
793F		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
797F		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
613E (5,000 gal)		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
621E (8,000 gal)		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
777G H2O Truck		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
785D H2O Truck		18.97	0.00	18.97		1.45	0.35	2.52	0.00			0	23.29
Dump Truck (10-12 yd3)		11.90	0.00	11.90		0.91	0.22	1.58	0.00			0	14.61
Tractor/Trailer (20 ton)												0	0.00
Tractor/Trailer (50 ton)												0	0.00
Tractor/Trailer (80 ton)												0	0.00

NOTES:

(4) Truck Driver Source:	
(5) Zone Basis:	

Laborers (6,7)													
General Laborer		12.37	0.00	12.37	0.00	0.95	0.23	1.65	0.00			0	15.19
Skilled Laborer		17.97	0.00	17.97	0.00	1.37	0.33	2.39	0.00			0	22.06
Driller's Helper		17.83	0.00	17.83	0.00	1.36	0.33	2.37	0.00			0	21.89
Rodmen (reinforcing concrete)		17.74	0.00	17.74	0.00	1.36	0.33	2.36	0.00			0	21.78
Cement finisher		17.83	0.00	17.83	0.00	1.36	0.33	2.37	0.00			0	21.89
Carpenter		22.26	0.00	22.26	6.20	1.70	0.41	2.96	0.00			0	33.53

NOTES:

(6) Laborer Source:	From SRCE User 7
(7) Carpenter Source:	From SRCE User 7
(8) Zone Basis:	

Project Management and Technical Labor (9)													
Project Manager		69.19	0.00	69.19	0.00	5.29	1.27	9.20	0.00			0	84.96
Foreman		64.13	0.00	64.13	0.00	4.91	1.18	8.53	0.00			0	78.74
Field Geologist/Engineer		105.00	0.00	105.00	0.00	8.03	1.93	13.96	0.00			0	128.93
Field Tech/Sampler		96.60	0.00	96.60	0.00	7.39	1.78	12.85	0.00			0	118.61
Range Scientist		105.00	0.00	105.00	0.00	8.03	1.93	13.96	0.00			0	128.93
Electrical foreman (R-3; 2018)		58.70	0.00	58.70	0.00	4.49	1.08	7.81	0.00			0	72.08
Electrician (R-3; 2018)		58.20	0.00	58.20	0.00	4.45	1.07	7.74	0.00			0	71.46
					0.00								
					0.00								
					0.00								
					0.00								
					0.00								

NOTES:

(9) Project Manager:	
(9) Foreman Source:	
(9) Techical Labor Source:	
Other Labor Source:	
Other Labor Source:	
†Additional User Markups	
(These are added by the user to the	
base rate to account for site-specific	
conditions or corporate requirements	

Project Name: Copper Flat Reclamation Report Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Monthly Rental Basis:	176	hrs month
Wet Rates?	No	

EQUIPMENT RENTAL RATE TABLE

EQUIPMENT TYPE (1)	Monthly Owner/Rental Rate $/mo	Equipment Hourly Rate $/hr	Fuel/Lube/ Wear $/hr	Total Rate $/hr
Bulldozers				
D6T	7,000.00	39.77	51.21	90.98
D6R w/ Winch	7,000.00	39.77	51.21	90.98
D7E	19,600.00	111.36	19.33	130.69
D8T	21,600.00	122.73	30.92	153.64
D9T	32,200.00	182.95	39.50	222.45
D10T2	47,600.00	270.45	52.59	323.04
D11T	56,200.00	319.32	234.25	553.57
Wheeled Dozers				
824K	19,800.00	112.50	113.98	226.48
834K	24,900.00	141.48	139.86	281.34
844K	33,700.00	191.48	183.76	375.24
854K	33,800.00	192.05	221.47	413.52
Motor Graders				
12M2	9,300.00	52.84	48.19	101.04
14M	15,800.00	89.77	91.55	181.32
16M3	18,800.00	106.82	126.76	233.58
24M	22,100.00	125.57	150.02	275.59
Track Excavators				
312F	6,000.00	34.09	7.92	42.01
320F	8,300.00	47.16	12.13	59.29
325F	11,500.00	65.34	12.15	77.49
330F	12,300.00	69.89	16.86	86.74
349F	17,900.00	101.70	27.37	129.07
374F	23,100.00	131.25	106.95	238.20
390F	28,500.00	161.93	121.92	283.85

Closure Cost Estimate

Equipment Costs

Project Name: Copper Flat Reclamation Report Cost Estimate 2018 - Reclamation Plan
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Scrapers				
631K	29,600.00	168.18	70.57	238.75
637K	36,800.00	209.09	201.22	410.31
Wheeled Loaders				
926M	6,000.00	34.09	17.67	51.76
930M	7,000.00	39.77	33.35	73.13
950M	10,200.00	57.95	30.42	88.37
966M	12,300.00	69.89	32.83	102.71
972M	14,400.00	81.82	39.18	120.99
980M	16,800.00	95.45	56.56	152.01
988K	19,600.00	111.36	147.84	259.20
990K	28,300.00	160.80	234.32	395.12
992K	41,100.00	233.52	287.54	521.06
994K	45,200.00	256.82	361.02	617.84
L2350	82,600.00	469.32	624.21	1,093.53

Closure Cost Estimate

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Equipment Costs

Shovels				
PC2000	70,900.00	402.84	277.54	680.38
PC3000	72,500.00	411.93	344.19	756.12
PC4000	74,100.00	421.02	426.02	847.04
PC5500	81,500.00	463.07	559.76	1,022.83
PC8000	89,700.00	509.66	655.02	1,164.67
EX2500	87,900.00	499.43	412.69	912.12
Hydraulic Hammers				
H120Es (fits 325)	3,400.00	19.32	11.57	30.89
H160Es (fits 349)	7,000.00	39.77	23.24	63.01
H180Es (fits 374/390)	8,200.00	46.59	24.96	71.55
Demolition Shears				
S3050 (fits 320/325/330)	3,500.00	19.89	20.50	40.39
S3070 (fits 330/349)	4,100.00	23.30	25.23	48.53
S3090 (fits 374/390)	6,600.00	37.50	31.61	69.11
Demolition Grapples				
G315B (fits 320/325)				0.00
G320B (fits 325/330)				0.00
G330 (fits 349/374)				0.00

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Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Other Equipment				
420F2	3,500.00	19.89	24.86	44.75
430F2	4,100.00	23.30	26.22	49.51
CS54B	4,400.00	25.00	26.60	51.60
CS64B	4,300.00	24.43	27.92	52.35
CP54B	4,100.00	23.30	32.14	55.43
CP68B	6,600.00	37.50	37.59	75.09
Light Truck - 1.5 Ton	2,200.00	12.50	17.45	29.95
Supervisor's Truck	800.00	4.55	7.59	12.14
Flatbed Truck	600.00	3.41	21.53	24.94
Air Compressor + tools	600.00	3.41	5.55	8.96
Welding Equipment	400.00	2.27	6.26	8.53
Heavy Duty Drill Rig	52,000.00	295.45	314.59	610.04
Pump (plugging) Drill Rig	52,000.00	295.45	310.25	605.70
Concrete Pump	14,900.00	84.66	21.70	106.36
Gas Engine Vibrator	400.00	2.27	3.63	5.90
Generator 5KW	900.00	5.11	6.84	11.95
HDEP Welder (pipe or liner)	7,000.00	39.77	4.34	44.11
5 Ton Crane	7,200.00	40.91	42.08	82.99
20 Ton Crane	8,000.00	45.45	48.20	93.65
50 Ton Crane	15,200.00	86.36	88.73	175.09
120 Ton Crane	28,900.00	164.20	176.92	341.13

Closure Cost Estimate

Equipment Costs

Project Name: Copper Flat Reclamation Report Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Trucks				
725C2	10,800.00	61.36	80.34	141.70
730C2	15,700.00	89.20	59.42	148.62
735C	17,900.00	101.70	65.76	167.47
740C	20,100.00	114.20	71.62	185.82
770G	15,200.00	86.36	114.88	201.25
773G	18,300.00	103.98	148.98	252.96
777G	37,200.00	211.36	314.12	525.49
785D	40,900.00	232.39	367.66	600.05
789D	45,000.00	255.68	367.66	623.34
793F	49,500.00	281.25	476.07	757.32
797F	89,200.00	506.82	835.78	1,342.60
613E (5,000 gal)	8,700.00	49.43	78.11	127.54
621E (8,000 gal)	10,000.00	56.82	103.78	160.60
777G H2O Truck	37,200.00	211.36	314.12	525.49
785D H2O Truck	40,900.00	232.39	367.66	600.05
Dump Truck (10-12 yd3)	3,800.00	21.59	32.78	54.37
Tractor/Trailer (20 ton)	5,300.00	30.11	30.38	60.49
Tractor/Trailer (50 ton)	10,900.00	61.93	39.06	100.99
Tractor/Trailer (80 ton)	27,100.00	153.98	47.74	201.72

NOTES:

Power Equipment Source:	
Power Equipment Type:	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels
Drilliing Equipment Source:	
Other Equipment Source:	
Note:	Drill rig includes support (pipe) truck

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

FUEL, LUBE AND WEAR CALCULATIONS

EQUIPMENT TYPE	PM Cost (1) $/hr	Under carriage or Tires $/hr	G.E.T Consumption (2) $/hr	Fuel Use Rate gal/hr (3)	Fuel Cost@ 2.17/gal	Total Hourly Equipment Cost $/hr
Bulldozers						
D6T	34.60		2.61	6.45	14.00	51.21
D6R w/ Winch	34.60		2.61	6.45	14.00	51.21
D7E	2.69		3.84	5.90	12.80	19.33
D8T	3.49		4.86	10.40	22.57	30.92
D9T	3.61		6.59	13.50	29.30	39.50
D10T2	3.79		8.22	18.70	40.58	52.59
D11T	160.74		16.66	26.20	56.85	234.25
Wheeled Dozers						
824K	49.58	38.56	1.32	11.30	24.52	113.98
834K	59.69	49.72	1.70	13.25	28.75	139.86
844K	77.91	70.88	2.42	15.00	32.55	183.76
854K	90.20	87.64	2.40	19.00	41.23	221.47
Motor Graders						
12M2	20.32	18.90	0.62	3.85	8.35	48.19
14M	37.21	42.00	1.38	5.05	10.96	91.55
16M3	50.42	60.78	2.00	6.25	13.56	126.76
24M	55.46	66.86	2.20	11.75	25.50	150.02
Track Excavators						
312F	2.14		1.33	2.05	4.45	7.92
320F	2.38		1.94	3.60	7.81	12.13
325F	2.64		1.48	3.70	8.03	12.15
330F	3.01		2.67	5.15	11.18	16.86
349F	3.36		2.85	9.75	21.16	27.37
374F	80.63		3.97	10.30	22.35	106.95
390F	91.31		5.11	11.75	25.50	121.92
Scrapers						
631K	3.22	32.68	1.86	15.12	32.81	70.57
637K	116.00	30.28	2.11	24.35	52.83	201.22

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Wheeled Loaders						
926M	9.33	4.24	0.19	1.80	3.91	17.67
930M	16.35	12.28	0.60	1.90	4.12	33.35
950M	2.30	20.52	0.87	3.10	6.73	30.42
966M	2.42	21.40	0.87	3.75	8.14	32.83
972M	2.53	26.56	1.08	4.15	9.01	39.18
980M	2.57	40.64	1.41	5.50	11.94	56.56
988K	57.81	65.20	2.26	10.40	22.57	147.84
990K	85.58	106.84	3.71	17.60	38.19	234.32
992K	102.33	130.76	4.54	23.00	49.91	287.54
994K	122.36	143.84	4.99	41.40	89.84	361.02
L2350	203.53	268.16	9.30	66.00	143.22	624.21
Shovels						
PC2000	183.38		13.87	37.00	80.29	277.54
PC3000	218.80		16.89	50.00	108.50	344.19
PC4000	254.21		19.91	70.00	151.90	426.02
PC5500	279.63		21.90	119.00	258.23	559.76
PC8000	307.59		24.09	149.00	323.33	655.02
EX2500	277.02		25.00	51.00	110.67	412.69
Hydraulic Hammers						
H120Es (fits 325)	N/A		11.57			11.57
H160Es (fits 349)	N/A		23.24			23.24
H180Es (fits 374/390)	N/A		24.96			24.96
Demolition Shears						
S3050 (fits 320/325/330)	N/A		20.50			20.50
S3070 (fits 330/349)	N/A		25.23			25.23
S3090 (fits 374/390)	N/A		31.61			31.61
Demolition Grapples						
G315B (fits 320/325)	N/A					0.00
G320B (fits 325/330)	N/A					0.00
G330 (fits 349/374)	N/A					0.00

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Other Equipment						
420F2	11.81	3.18	0.54	4.30	9.33	24.86
430F2	12.20	3.22	0.60	4.70	10.20	26.22
CS54B	19.33			3.35	7.27	26.60
CS64B	20.65			3.35	7.27	27.92
CP54B	24.87			3.35	7.27	32.14
CP68B	29.78			3.60	7.81	37.59
Light Truck - 1.5 Ton	8.67	5.52		1.50	3.26	17.45
Supervisor's Truck	3.62	1.80		1.00	2.17	7.59
Flatbed Truck	3.85	7.48		4.70	10.20	21.53
Air Compressor + tools	3.38		N/A	1.00	2.17	5.55
Welding Equipment	1.92		N/A	2.00	4.34	6.26
Heavy Duty Drill Rig	278.95		9.60	12.00	26.04	314.59
Pump (plugging) Drill Rig	278.95		9.60	10.00	21.70	310.25
Concrete Pump			N/A	10.00	21.70	21.70
Gas Engine Vibrator	1.46		N/A	1.00	2.17	3.63
Generator 5KW	3.58		N/A	1.50	3.26	6.84
HDEP Welder (pipe or liner)			N/A	2.00	4.34	4.34
5 Ton Crane	23.22	12.35		3.00	6.51	42.08
20 Ton Crane	25.80	13.72		4.00	8.68	48.20
50 Ton Crane	45.47	33.06		4.70	10.20	88.73
120 Ton Crane	80.14	85.50		5.20	11.28	176.92

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Trucks						
725C2	28.22	41.16		5.05	10.96	80.34
730C2	2.76	44.94		5.40	11.72	59.42
735C	2.86	47.82		6.95	15.08	65.76
740C	2.97	51.72		7.80	16.93	71.62
770G	39.70	64.44		4.95	10.74	114.88
773G	47.92	83.16		8.25	17.90	148.98
777G	95.60	189.12		13.55	29.40	314.12
785D	105.16	208.03		25.10	54.47	367.66
789D	115.68	228.84		36.85	79.96	424.48
793F	127.24	251.72		44.75	97.11	476.07
797F	204.78	484.20		67.65	146.80	835.78
613E (5,000 gal)	45.31	18.84	0.94	6.00	13.02	78.11
621E (8,000 gal)	50.66	29.22	0.57	10.75	23.33	103.78
777G H2O Truck	95.60	189.12		13.55	29.40	314.12
785D H2O Truck	105.16	208.03		25.10	54.47	367.66
Dump Truck (10-12 yd3)	N/A	21.50	N/A	5.20	11.28	32.78
Tractor/Trailer (20 ton)	N/A		N/A	14.00	30.38	30.38
Tractor/Trailer (50 ton)	N/A		N/A	18.00	39.06	39.06
Tractor/Trailer (80 ton)	N/A		N/A	22.00	47.74	47.74

Notes:

(1) PM Source:	
(2) G.E.T. Source:	
(3) Fuel Use Source:	Caterpillar Handbook, Edition 46, Ch. 20; or estimated average for smaller vehicles

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

TIRE COST TABLES

Equipment	Tire Size	# of Tires Per Piece of Equipment	Cost Per Tire	Tire Cost [1][2] $	Life Expectency Hours (Low/Zone A) [3]	Tire Cost per Hour $/hr
Bulldozers						
D6T			N/A			
D6R w/ Winch			N/A			
D7E			N/A			
D8T			N/A			
D9T			N/A			
D10T2			N/A			
D11T			N/A			
Wheeled Dozers						
824K	29.5R25	4	33,740	134,960	3,500	38.56
834K	35/65-R33	4	43,505	174,020	3,500	49.72
844K	45/65-R39	4	62,020	248,080	3,500	70.88
854K	45/65-R45	4	76,685	306,740	3,500	87.64
Motor Graders						
12M2	13PR24	6	11,025	66,150	3,500	18.90
14M	20.5R25	6	24,500	147,000	3,500	42.00
16M3	23.5R25	6	35,455	212,730	3,500	60.78
24M	23.5R25	6	39,001	234,003	3,500	66.86
Track Excavators						
312F			N/A			
320F			N/A			
325F			N/A			
330F			N/A			
349F			N/A			
374F			N/A			
390F			N/A			
Scrapers						
631K	37.25R35	4	32,680	130,720	4,000	32.68
637K	37.25R35	4	30,280	121,120	4,000	30.28

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Wheeled Loaders						
926M	17.5R25	4	4,770	19,080	4,500	4.24
930M	17.5R25	4	13,815	55,260	4,500	12.28
950M	26.5R25	4	23,085	92,340	4,500	20.52
966M	26.5R25	4	24,075	96,300	4,500	21.40
972M	26.5R25	4	29,880	119,520	4,500	26.56
980M	29.5R25	4	45,720	182,880	4,500	40.64
988K	35/65-33	4	73,350	293,400	4,500	65.20
990K	41.25/70-39	4	120,195	480,780	4,500	106.84
992K	45/65R45	4	147,105	588,420	4,500	130.76
994K	55/85R57	4	161,816	647,262	4,500	143.84
L2350	55/85R57	4	301,680	1,206,720	4,500	268.16
Shovels						
PC2000			N/A			
PC3000			N/A			
PC4000			N/A			
PC5500			N/A			
PC8000			N/A			
EX2500			N/A			
Hydraulic Hammers						
H120Es (fits 325)			N/A			
H160Es (fits 349)			N/A			
H180Es (fits 374/390)			N/A			
Demolition Shears						
S3050 (fits 320/325/330)			N/A			
S3070 (fits 330/349)			N/A			
S3090 (fits 374/390)			N/A			
Demolition Grapples						
G315B (fits 320/325)			N/A			
G320B (fits 325/330)			N/A			
G330 (fits 349/374)			N/A			

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Other Equipment						
420F2	340/80R18-19.5LR24	2	4,770	9,540	3,000	3.18
430F2	340/80R18-16.9R28	2	4,830	9,660	3,000	3.22
CS54B			N/A			
CS64B			N/A			
CP54B			N/A			
CP68B			N/A			
Light Truck - 1.5 Ton		4	4,140	16,560	3,000	5.52
Supervisor's Truck		4	1,350	5,400	3,000	1.80
Flatbed Truck		22	1,020	22,440	3,000	7.48
Air Compressor + tools			N/A			
Welding Equipment			N/A			
Heavy Duty Drill Rig		4		0	3,000	
Pump (plugging) Drill Rig		4		0	3,000	
Concrete Pump			N/A			
Gas Engine Vibrator			N/A			
Generator 5KW			N/A			
HDEP Welder (pipe or liner)			N/A			
5 Ton Crane		4	9,261	37,044	3,000	12.35
20 Ton Crane		4	10,290	41,160	3,000	13.72
50 Ton Crane		6	16,530	99,180	3,000	33.06
120 Ton Crane		6	42,750	256,500	3,000	85.50

Closure Cost Estimate

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm

Trucks						
725C2	23.5R25	6	13,720	82,320	2,000	41.16
730C2	23.5R25	6	14,980	89,880	2,000	44.94
735C	26.5R25	6	15,940	95,640	2,000	47.82
740C	29.5R25	6	17,240	103,440	2,000	51.72
770G	18.00R33	6	64,440	386,640	6,000	64.44
773G	24.00R35	6	69,300	415,800	5,000	83.16
777G	27.00R49	6	157,600	945,600	5,000	189.12
785D	33.00R51	6	138,688	832,128	4,000	208.03
789D	40.00R57	6	152,557	915,341	4,000	228.84
793F	40.00R57	6	167,812	1,006,875	4,000	251.72
797F	40.00R57	6	322,800	1,936,800	4,000	484.20
613E (5,000 gal)	23.5R25	6	18,840	113,040	6,000	18.84
621E (8,000 gal)	33.25R29	6	38,960	233,760	8,000	29.22
777G H2O Truck	27.00R49	6	157,600	945,600	5,000	189.12
785D H2O Truck	33.00R51	6	138,688	832,128	4,000	208.03
Dump Truck (10-12 yd3)		10	12,900	129,000	6,000	21.50
Tractor/Trailer (20 ton)			N/A			
Tractor/Trailer (50 ton)			N/A			
Tractor/Trailer (80 ton)			N/A			

Notes:

(1) Unit Cost Basis:	
(2) Cost Basis:	
(3) Tire Cost Source:	
(4) Tire Wear Source:	

Closure Cost Estimate
Material Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Revegetation Materials

Seed Mixes

Seed Mix	Description		Cost $/acres
None			
Mix 1	Basins		
Mix 2	Low Hills		
Mix 3	Uplands		
Mix 4	Riparian or Custom		
User Mix 1	**Permit Approved Seed Mix**		**$174.72**
User Mix 2			
User Mix 3			
User Mix 4			
	Cost/lb	**lbs/Acre**	**Cost/Acre**
User Mix 5 (from Seed Mix sheet)	#DIV/0!	0.00	0.00
Notes:			
	Seed mix in "NMCC_SeedMixQuote_20March2018.pdf"		

Closure Cost Estimate
Material Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclama
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Well Abandonment Materials

Description	Cost/50lb bag	Units	Cost*
			$/unit
Cement	7.57	cy	36.07
Grout (Low Grade Bentonite)	8.65	cy	41.19
Inert Material/Cuttings		cy	

* Assumes 1 bag mixes with water to make 0.21 y3 or 0.16 m3 of grout/cement slurry.

Closure Cost Estimate
Material Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_2018080
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Monitoring Costs

Description	Units	Cost
		$/unit
Monitor Well Pump	ea.	0.00
Sampling Supplies	ea.	0.00
GW Analysis Profile 1	ea.	1,254.00
GW Analysis Profile 2	ea.	739.00
GW Analysis Profile 3	ea.	554.00
SW Analysis Profile 4	ea.	1,573.00
SW Analysis Profile 5	ea.	1,058.00
SW Analysis Profile 6	ea.	873.00

Closure Cost Estimate
Material Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclama
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Fuel, Etc.

Description	Units	Cost	User Overrides
		$/unit	
Off-road Diesel - delivered (1)	gal	2.170	
Pickup Truck Mileage	$/mi	0.545	
Electical Power	$/kWh	0.078	
Copper Flat Fuel Cost.pdf			
https://www.irs.gov/newsroom/standard-mileage-rates-for-2018-up-from-rates-for-2017			
Copper Flat Power Cost.pdf			

Closure Cost Estimate
Material Costs

Revegetation Method

Slopes

Disturbance Type	Seed Application Method	Labor $/acres	Equipment $/acres	Total $/acres
Waste Rock Dumps	**Mechanical Broadcast**	18.97	25.80	44.77
Heap Leach	**Mechanical Broadcast**	18.97	25.80	44.77
Tailings	**Mechanical Broadcast**	18.97	25.80	44.77
Quarries & Borrow Pits	**Mechanical Broadcast**	18.97	25.80	44.77

Flat Areas and Undifferentiated

Disturbance Type	Seed Application Method	Labor $/acres	Equipment $/acres	Total $/acres
Exploration Trenches	**Mechanical Broadcast**	18.97	25.80	44.77
Exploration Roads	**Mechanical Broadcast**	18.97	25.80	44.77
Waste Rock Dumps	**Mechanical Broadcast**	18.97	25.80	44.77
Heap Leach	**Mechanical Broadcast**	18.97	25.80	44.77
Tailings	**Mechanical Broadcast**	18.97	25.80	44.77
Quarries & Borrow Pits	**Mechanical Broadcast**	18.97	25.80	44.77
Roads	**Mechanical Broadcast**	18.97	25.80	44.77
Pits	**Mechanical Broadcast**	18.97	25.80	44.77
Haul Material	**Mechanical Broadcast**	18.97	25.80	44.77
Foundations & Buildings	**Mechanical Broadcast**	18.97	25.80	44.77
Sediment & Drainge Control	**Mechanical Broadcast**	18.97	25.80	44.77
Process Ponds	**Mechanical Broadcast**	18.97	25.80	44.77
Landfills	**Mechanical Broadcast**	18.97	25.80	44.77
Yards, Etc.	**Mechanical Broadcast**	18.97	25.80	44.77
Revegetation Maintenance	**Mechanical Broadcast**	18.97	25.80	44.77

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Revegetation

	Means Number	Unit	Crew	Daily Output	Daily Output User	Materials	Labor	Equipment	Total	Notes
Seeding - Broadcast Manual		acres					37.94	53.20	91.14	
Seeding - Broadcast Mechanical		acres					18.97	25.80	44.77	
Seeding - Drill		acres		365					0.00	
Seeding - Hydroseeding				365					0.00	
Shrub Planting - bare root 6-10 in (150- 250mm)	02910-400-0561	ea.	1 Clab	365			0.33	0.00	0.33	
Tree Planting - bare root 11-16 in (270- 400mm)	02910-400-0562	ea.	1 Clab	260			0.47	0.00	0.47	
Cactus Planting		ea.	1 Clab						0.00	
NOTES:										
Seeding Source:	SRCE User 03									
Shrub Source:										
Tree Source:										
Cactus Source:										

Building and Wall Demolition

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Daily Output User	Labor	Equipment	Premium	Total	Notes
Building Demolition										
Lg. steel	02220-110-0012	C.F.	B-8	21500		0.08	0.10		0.18	
Lg. concrete	02220-110-0050	C.F.	B-8	15300		0.11	0.14		0.25	
Lg. masonry	02220-110-0080	C.F.	B-8	20100		0.08	0.11		0.19	
Lg. mixed	02220-110-0100	C.F.	B-8	20100		0.08	0.11		0.19	
Sm. steel	02220-110-0500	C.F.	B-3	14800		0.09	0.10		0.19	
Sm. concrete	02220-110-0600	C.F.	B-3	11300		0.12	0.13		0.25	
Sm. masonry	02220-110-0650	C.F.	B-3	14800		0.09	0.10		0.19	
Sm. wood	02220-110-0700	C.F.	B-3	14800		0.09	0.10		0.19	
Wall Demolition										
Block 4 in (100 mm) thick	02220-130-2000	S.F.	1 Clab	180		0.68	0.00	20%	0.82	
Block 6 in (150 mm) thick	02220-130-2040	S.F.	1 Clab	170		0.71	0.00	20%	0.85	
Block 8 in (200 mm) thick	02220-130-2080	S.F.	1 Clab	150		0.81	0.00	20%	0.97	
Block 12 in (300 mm) thick	02220-130-2100	S.F.	1 Clab	150		0.81	0.00	20%	0.97	
Conc 6 in (150 mm) thick	02220-130-2400	S.F.	B-9	160		0.76	0.45	10%	1.33	
Conc 8 in (200 mm) thick	02220-130-2420	S.F.	B-9	140		0.87	0.51	10%	1.52	
Conc 10 in (250 mm) thick	02220-130-2440	S.F.	B-9	120		1.01	0.60	10%	1.77	
Conc 12 in (300 mm) thick	02220-130-2500	S.F.	B-9	100		1.22	0.72	10%	2.13	

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
Model Version: Version 2.0
Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

Waste Disposal

Unit rates from Means Heavy Construction 2006 Edition by permission of R.S.Means/Reed Construction Data .

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment		Total	Notes
Rubbish Handling										
Dumpster delivery (average for all sizes)	02220-350-0910	ea.			82.50				82.50	
Haul (average for all sizes)	02220-350-0920	ea.			259.00				259.00	
Rent per month (average for all sizes)	02220-350-0940	ea.			88.00				88.00	
Disposal fee per ton (tonne) (average for all sizes)	02220-350-0950	ton			97.00				97.00	
NOTES:										
Dumpster Cost Source:	SRCE User 03									
Disposal Fee Source:	SRCE User 03									
Hazardous Material Handling - Solids (+ Liquids in drums)										
Pickup fees 55 gal. drums	02110-300-1100	ea.			265.00				265.00	
Bulk material (average)	02110-300-1220/1230	ton			432.50				432.50	
Transport - truck load (80 drums, 25 cy (m3), 18 tons)	02110-300-1260/1270	mile			5.90				5.90	
Dump site disposal fee	02110-300-6000/6020	ton			305.00				305.00	
NOTES:										
Solid Handling Cost Source:										
Solid Disposal Fee Source:										
Hazardous Material Handling - Liquids										
Vacuum Truck Pickup (2200 gal or 9,700 litres)	02110-300-3110	hr.			155.00				155.00	
Vacuum Truck Pickup (5000 gal or 2,000 litres)	02110-300-3120	hr.			225.00				225.00	
Dump site disposal fee	02110-300-6000/6020	ton			305.00				305.00	
NOTES:										
Liquid Handling Cost Source:	SRCE User 03									
Liquid Disposal Fee Source:	SRCE User 03									
Hydrocarbon Contaminated Soils (HCS)										
Insitu Biotreatment	02115-200-2020/2021	C.Y.			24.25				24.25	
HCS disposal fee	02115-200-2050/2055	C.Y.			295.00				295.00	
NOTES:										
Insitu Treatement Cost Source:	SRCE User 03									
HCS Disposal Fee Source:	SRCE User 03									

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Concrete Structure Installation

Weekly dumpster rental rates from Means Heavy Construction 2005 Edition with permission by R.S.Means/Reed Construction Data .
Weekly dumpster rental rates include haul to off-site disposal site and disposal fees

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Reinforced Concrete Bulkheads and Shaft Covers										
Grade walls - 15 in thick, 8 ft high	03310-240-4300	C.Y.	C-14D	80.02		77.79	12.44		90.23	includes reinforcing
Grade walls - 15 in thick, 12 ft high	03310-240-4350	C.Y.	C-14D	26.2		237.59	37.98		275.57	includes reinforcing
Elevated conc, 1-way beam & slab - 15ft span	03310-240-2700	C.Y.	C-14B	20.59		301.70	48.33		350.03	includes reinforcing
Elevated conc, 1-way beam & slab - 25ft span	03310-240-2750	C.Y.	C-14B	28.36		219.04	35.09		254.13	includes reinforcing
Bat Gate/Foam Plug Installation										
Bat Gate		ea.								materials $/ea. Installed
Culvert Gate		ea.								materials $/ea. Installed
Adit Foam Plug		ea./C.Y.								materials $/cy placed
Production Opening Foam Plug		ea./C.Y.								materials $/cy placed
NOTES:										
Bat Gate Source:										
Foam Plug Source:										

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
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Misc. Linear Projects

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Fencing Installation										
Barbed 3-strand	02820-170-1650	L.F.	B-80A	760	0.39	0.48	0.32		1.19	
Barbed 4-strand	extrapolated	L.F.	B-80A	570	0.52	0.64	0.42		1.58	
Barbed 5-strand	02820-130-0920	L.F.	B-80A	456	0.65	0.80	0.53		1.98	
Chain link 8 ft -10 ft Install	02820-130-0920	L.F.	B-80C	180	32.00	2.03	1.33		35.36	
Wood stockade fence 6 ft high - Install	02820-510-1240	L.F.	B-80C	150	13.15	2.43	1.60		17.18	
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
Fencing Removal										
Barbed 3-strand Removal	02220-220-1600	L.F.	2 Clab	430		0.57	0.56		1.13	
Barbed 4-strand Removal	extrapolated	L.F.	2 Clab	355		0.68	0.67		1.35	
Barbed 5-strand Removal	02220-220-1650	L.F.	2 Clab	280		0.87	0.86		1.73	
Chain link 8 ft -10 ft Removal	02220-220-1700	L.F.	B-6	445		1.14	1.31		2.45	
Wood, all types 4 ft -6 ft high Removal	02220-220-1775	L.F.	2 Clab	430		0.57	0.56		1.13	
	user	L.F.								
	user	L.F.							0.00	
	user	L.F.							0.00	
	user	L.F.							0.00	
Culvert Removal										
12 in (300 mm) Diameter	02220-220-2900	L.F.	B-6	175		2.91	3.34		6.25	
18 in (450 mm) Diameter	02220-220-2930	L.F.	B-6	150		3.40	3.90		7.30	
24 in (600 mm) Diameter	02220-220-2960	L.F.	B-6	120		4.25	4.88		9.13	
36 in (1m) Diameter	02220-220-3000	L.F.	B-6	90		5.66	6.50		12.16	
Pipeline Removal										
Plastic Pipe 3/4 in (mm) - 4 in (100 mm) diameter	02220-381-1600	L.F.	B-20	700		1.33	0.34		1.67	
6 in (150 mm) - 8 in (200 mm)	02220-381-1700	L.F.	B-20	500		1.86	0.48		2.34	
10 in (250 mm) - 18 in (450 mm)	02220-381-1800	L.F.	B-20	300		3.09	0.80		3.89	
20 in (500 mm) - 36 in (1 m)	02220-381-1900	L.F.	B-20	200		4.64	1.20		5.84	
Pipe and Drainpipe Installation										
Water 4in (100mm) 40ft (12m) length, welded HDPE	02510-760-0100	L.F.	B-22A	400	2.50	1.91	5.23		9.64	
Water 6in (150mm) 40ft (12m) length, welded HDPE	02510-760-0200	L.F.	B-22A	380	5.65	2.01	5.50		13.16	
Water 12in (300mm) 40ft (12m) length, welded HDPE	02510-760-0500	L.F.	B-22A	260	13.00	2.94	8.04		23.98	
Drain 4in (100mm) perforated PVC	02620-630-2100	L.F.	B-14	315	1.64	3.98	1.90		7.52	
Drain 6in (150mm) perforated PVC	02620-630-2110	L.F.	B-14	300	3.49	4.18	1.99		9.66	
Drain 4in (100mm) corrugated, perf or plain	02620-660-0040	L.F.	2 Clab	1200	0.74	0.20	0.20		1.14	
Drain 6in (150mm) corrugated., perf or plain	02620-660-0060	L.F.	2 Clab	900	1.88	0.27	0.27		2.42	
Note: HDPE Water Pipe in 40ft (12m) lengths, welded										

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Drain Rock Preparation										
Crushing		C.Y.								
Screening		C.Y.								
TOTAL									0.00	
Misc.										
Backhoe work	02210-700-0120	C.Y.	B-11M	28		4.92	12.79		17.71	
Powerline and Transformer Removal										
Single Pole Powerlines		mile							19,371.80	
Double Pole Powerlines		mile							19,371.80	
Substation		ea.							29,250.00	
NOTES:										
Single Pole Source:										
Double Pole Source:										
Transformer Source:										

Erosion and Sedimentation Control

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets
* some crews modifed to reflect actual crews used for riprap placement at mine sites

	Means Number	Unit	Crew	Means Daily Output	Materials	Labor	Equipment	User Daily Output	Total	Notes
Rip-Rap & Rock Lining										
Rip-Rap 3/8 to 1/4 CY pieces, grouted	02370-450-0110	S.Y.	B-13	80	0.00	17.28	17.51		34.79	assumes on-site source of rip-rap
Rip-Rap 18-inch min thick, no grout	02370-450-0200	S.Y.	B-13	53	0.00	26.08	26.43		52.51	assumes on-site source of rip-rap
Rip-Rap 3/8 to 1/4 CY pieces, grouted	02370-450-0110*	S.Y.	B-12G	80	0.00	6.66	26.17		32.83	assumes on-site source of rip-rap
Rip-Rap 18-inch min thick, no grout	02370-450-0200*	S.Y.	B-12G	53	0.00	10.05	39.51		49.56	assumes on-site source of rip-rap
Gabions, 6 in (150 mm) deep	02370-450-0400	S.Y.	B-13	200	0.00	6.91	7.00		13.91	assumes on-site source rock fill for gabions
Gabions, 9 in (250 mm) deep	02370-450-0500	S.Y.	B-13	163	0.00	8.48	8.59		17.07	assumes on-site source rock fill for gabions
Gabions, 12 in (300 mm) deep	02370-450-0200	S.Y.	B-13	153	0.00	9.04	9.16		18.20	assumes on-site source rock fill for gabions
Gabions, 18 in (450 mm) deep	02370-450-0200	S.Y.	B-13	102	0.00	13.55	13.73		27.28	assumes on-site source rock fill for gabions
Gabions, 36 in (1m) deep	02370-450-0200	S.Y.	B-13	60	0.00	23.04	23.35		46.39	assumes on-site source rock fill for gabions
HDEP Liner Installation										
Finish grading large area	2310-100-0100	S.F.	B-11L	54000		0.01	0.03		0.04	
Compaction-riding, vibrating roller - 12in (300mm) lifts	2315-310-5100	C.Y.	B-10Y	2600		0.10	0.16		0.26	
Geotextile	2660-610-0010	S.F.	3 Skwk	1600		0.42	0.44		0.86	
Geonet	2660-610-0010	S.F.	3 Skwk	1600		0.42	0.44		0.86	
Geogrid	2660-610-0010	S.F.	3 Skwk	1600		0.42	0.44		0.86	
60 mil HDPE	2660-610-0010	S.F.	3 Skwk	1600	0.58	0.42	0.44		1.44	
80 mil HDPE	user	S.F.	3 Skwk	149	$9.00	4.48	4.77		18.25	
40 mil VLDPE	user	S.F.	3 Skwk	150	$7.00	4.45	4.74		16.19	
	user	S.F.	3 Skwk						0.00	
	user	S.F.	3 Skwk						0.00	

Closure Cost Estimate
Misc. Unit Costs

Project Name: Copper Flat Reclamation Bond Cost Estimate 2018 - Reclamation Plan
Date of Submittal: July 2018
File Name: Copper_Flat_FA_SRCE_191000_060_FNL_20180802_ft.xlsm
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Cost Estimate Type: FA Cost Basis: Copper Flat FA

Transport Costs

Ship/Barge Transport Cost		cost/lb/mi								
Rail Transport Cost		cost/lb/mi								
Air Transport Cost		cost/lb/mi								
Escort Vehicle Deadhead Rate ($/mi)		cost/lb/mi								

Construction Management Support

Office Trailer, Furnished, no hook-ups	0150-500-0250	mo.			198.00				198.00	
Toilet Portable, chemical	1590-400-6410	mo.			198.00				198.00	
TOTAL					396.00				396.00	

Pump and Casing Removal

	Pump Type	Measurement	Unit				Labor	Equipment		Total	Notes
Pump Removal											
Submersible			L.F.				2.57	5.58		8.14	
Line Shaft			L.F.				5.99	13.02		19.00	

NOTES:
Pump Removal Source: NV costs

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
RIPPING						
Rip road						
Waste rock dumps, heaps, tails - rip flat surfaces						
Surface preparation						
Scarify						
Small Dozer w/ multi-shank						
D6T				90.98	25.96	116.94
Totals				90.98	25.96	116.94
Medium Dozer w/ multi-shank						
D7E				130.69	25.96	156.65
Totals				130.69	25.96	156.65
Large Dozer w/ multi-shank						
D8T				153.64	25.96	179.60
Totals				153.64	25.96	179.60
Grader w/ multi-shank						
14M				181.32	25.96	207.28
Totals				181.32	25.96	207.28
GRADING						
Grading storage and structure areas						
Grading waste rock dumps and heaps						
Grading landfills						
Constructing pit safety berms						
Small Dozer Fleet						
D7E				130.69	25.96	156.65
Totals				130.69	25.96	156.65
Medium Dozer Fleet						
D8T				153.64	25.96	179.60
Totals				153.64	25.96	179.60
Large Dozer Fleet						
D9T				222.45	25.96	248.41
Totals				222.45	25.96	248.41
EXPLORATION GRADING						
Backfilling and grading exploration trenches						
Grading flat exploration roads						
Small Dozer Fleet						
D7E				130.69	25.96	156.65
Totals				130.69	25.96	156.65
Medium Dozer Fleet						
D9T				222.45	25.96	248.41
Totals				222.45	25.96	248.41
Large Dozer Fleet						
D10T2				323.04	25.96	349.00
Totals				323.04	25.96	349.00

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
EXCAVATING						
Earthen Berms						
Diversion ditch excavation and backfill						
Underground openings backfill - excavate and place						
Pit berm construction (excavator option)						
Small Excavator						
325F				77.49	33.30	110.79
Totals				77.49	33.30	110.79
Medium Excavator						
330F				86.74	33.30	120.04
Totals				86.74	33.30	120.04
Large Excavator						
349F				129.07	33.30	162.37
Totals				129.07	33.30	162.37
EXCAVATE AND RECONTOUR						
Recontour large roads (haul roads, access roads, etc.)						
Ponds - Excavate and pull liner and bury						
Small Excavator + Dozer						
325F				77.49	33.30	110.79
D6T				90.98	25.96	116.94
Total Equipment				168.47	59.26	227.73
Medium Excavator + Dozer						
330F				86.74	33.30	120.04
D7E				130.69	25.96	156.65
Totals				217.43	59.26	276.69
Large Excavator + Dozer						
349F				129.07	33.30	162.37
D8T				153.64	25.96	179.60
Totals				282.71	59.26	341.97
EXPLORATION ROAD/PAD RECONTOUR						
Recontour small roads (exploration roads, service roads, etc.)						
Cut and Fill reclamation on slopes						
Drill pad recountour						
Drill sump backfill						
Small Dozer						
D7E				130.69	25.96	156.65
Totals				130.69	25.96	156.65
Large Dozer						
D10T2				323.04	25.96	349.00
Totals				323.04	25.96	349.00
Grader						
14M				181.32	25.96	207.28
Totals				181.32	25.96	207.28
Small Excavator						
320F				59.29	33.30	92.59
Totals				59.29	33.30	92.59
Medium Excavator						
349F				129.07	33.30	162.37
Totals				129.07	33.30	162.37

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
LOAD CRUSHER/TRAM BACKFILL						
Load crusher with wheeled loader Tram backfill into portals						
Small Crusher Loader Fleet						
950M		1		88.37	33.30	121.67
Totals				88.37	33.30	121.67
Medium Crusher Loader Fleet						
950M		1		88.37	33.30	121.67
Totals				88.37	33.30	121.67
Large Crusher Loader Fleet						
972M		1		120.99	33.30	154.29
Totals				120.99	33.30	154.29
Extra Large Crusher Loader Fleet						
980M		1		152.01	33.30	185.31
Totals				152.01	33.30	185.31
COMPACT COVER						
From Means Heavy Construction - Costs in Misc. Unit Costs. Assumes compaction-riding, vibrating roller - 12in (300mm) lifts						
Compactor						
CS54B		1		51.60	17.23	68.83
Totals				51.60	17.23	68.83
LOAD, HAUL AND PLACE MATERIAL						
Rock placement Haul overburden for backfill Haul borrow for backfill Haul cover or growth media						
Small Truck/Loader Fleet						
730C2				148.62	23.29	171.91
972M	**Loader**			120.99	33.30	154.29
D7E		1		130.69	25.96	156.65
Totals				400.30	82.55	482.85
Medium Truck/Loader Fleet						
740C				185.82	23.29	209.11
988K	**Loader**			259.20	33.30	292.50
D8T		1		153.64	25.96	179.60
Totals				598.66	82.55	681.21
Large Truck/Loader Fleet						
777G				525.49	23.29	548.78
992K	**Loader**			521.06	33.30	554.36
D9T		1		222.45	25.96	248.41
Totals				1,269.00	82.55	1,351.55
Extra Large Truck/Loader Fleet						
770G				201.25	23.29	224.54
988K	**Loader**			259.20	33.30	292.50
D11T		1		553.57	25.96	579.53
Totals				1,014.02	82.55	1,096.57
Scraper/Dozer Fleet						
631K				238.75	17.23	255.98
D10T2				323.04	25.96	349.00
D10T2		1		323.04	25.96	349.00
Totals				884.83	69.15	953.98
Tandem Scraper Fleet						
637K				410.31	17.23	427.54
D7E		1		130.69	25.96	156.65
Totals				541.00	43.19	584.19

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Cost Data: User Data
Cost Data File: Copper_Flat_CDF_191000_060_FNL_20180801_ft.xlsm
Cost Estimate Type: FA Cost Basis: Copper Flat FA

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
MISC. LOAD AND HAUL AND EARTHWORKS						
Sludge removal						
Drainage controls						
Misc. - Cat 325B Excavator / 10-12 yd3 Truck						
325F				77.49	33.30	110.79
Dump Truck (10-12 yd3)				54.37	14.61	68.98
Totals				131.86	47.91	179.77
Misc. - Cat D9R Dozer/ Loader (5 yd3) / 10-12 yd3 Truck						
D9T				222.45	25.96	248.41
966M				102.71	33.30	136.01
Dump Truck (10-12 yd3)				54.37	14.61	68.98
Totals				379.53	73.87	453.40
Misc. - Cat D6 Dozer / Cat 966 Loader / 10-12 yd3 Truck						
D6T				90.98	25.96	116.94
966M				102.71	33.30	136.01
Dump Truck (10-12 yd3)				54.37	14.61	68.98
Totals				248.06	73.87	321.93
LINER REMOVAL						
Liner removal						
Small - Cat 325B Excavator w/ H140D s Hammer						
325F				77.49	33.30	110.79
General Laborer		2		0.00	30.38	30.38
Totals				77.49	63.68	141.17

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
CONCRETE BREAKING						
Slab demolition						
Footing demolition						
Wall demolition						
Small - Cat 325F Excavator w/ H120E s Hammer						
325F				77.49	33.30	110.79
H120Es (fits 325)				30.89	0.00	30.89
D9T				222.45	25.96	248.41
Totals				330.83	59.26	390.09
Medium - Cat 349F Excavator w/ H160E s Hammer						
349F				129.07	33.30	162.37
H160Es (fits 349)				63.01	0.00	63.01
D9T				222.45	25.96	248.41
Totals				414.53	59.26	473.79
Large - Cat 374F Excavator w/ H180E s Hammer						
374F				238.20	33.30	271.50
H180Es (fits 374/390)				71.55	0.00	71.55
D9T				222.45	25.96	248.41
Totals				532.20	59.26	591.46
DRILL HOLE ABANDONMENT						
Drill Hole - Grout or Cement						
Pump (plugging) Drill Rig				605.70	0.00	605.70
Driller's Helper		2		0.00	43.78	43.78
Totals				605.70	43.78	649.48
Drill Hole - Inert Media (Means Crew B-11M+ 1 Laborer)						
420F2				44.75	17.23	61.98
General Laborer		1		0.00	15.19	15.19
Totals				44.75	32.42	77.17
Drill Hole - Casing Perforation or Removal						
Heavy Duty Drill Rig				610.04	0.00	610.04
Driller's Helper		2		0.00	43.78	43.78
Totals				610.04	43.78	653.82
MAINTENANCE FLEET						
Road Grading, Dust Suppression, Clean Up						
Maintenance - Small Water Truck and Cat 14G Grader						
613E (5,000 gal)				127.54	23.29	150.83
12M2				101.04	25.96	127.00
Totals				228.58	49.25	277.83
Maintenance - Medium Water Truck and Cat 16G Grader						
621E (8,000 gal)				160.60	23.29	183.89
14M				181.32	25.96	207.28
Totals				341.92	49.25	391.17
Maintenance - Large Water Truck and Cat 16G Grader						
777G H2O Truck				525.49	23.29	548.78
14M				181.32	25.96	207.28
Totals				706.81	49.25	756.06
PROJECT SUPERVISION						
Foreman		1		0.00	78.74	78.74
Supervisor's Truck		1		12.14	0.00	12.14
Totals				12.14	78.74	90.88

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Cost Estimate Type: FA Cost Basis: Copper Flat FA

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
MEANS CREW DEFINITIONS						
Crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .						
For use with misc. unit costs where Means is the source for productivity						
1 Clab - Seedling Planting/Block Wall Demolition						
General Laborer		1		0.00	15.19	15.19
Totals				0.00	15.19	15.19
2 Clab - Barbed Wire/Wood Fence Removal, Drainpipe Installation, Pumping, Evaporation						
General Laborer		2		0.00	30.38	30.38
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				29.95	30.38	60.33
2 Clab + Excavator - Pond Liner Cut and Fold						
General Laborer		2		0.00	30.38	30.38
325F				77.49	33.30	110.79
Totals				77.49	63.68	141.17
2 Clab + Welder - Bat Gates						
General Laborer		2		0.00	30.38	30.38
Welding Equipment				8.53	0.00	8.53
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				38.48	30.38	68.86
3 Clab - Foam Adit Plugs						
General Laborer		2		0.00	30.38	30.38
420F2				44.75	17.23	61.98
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				74.70	47.61	122.31
3 Clab + Welder - Culvert Bat Gate						
General Laborer		2		0.00	30.38	30.38
Welding Equipment				8.53	0.00	8.53
420F2				44.75	17.23	61.98
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				83.23	47.61	130.84
3 Clab D - 3 Laborers + Foreman - Decontamination						
General Laborer		3		0.00	45.57	45.57
Foreman		1		0.00	78.74	78.74
Supervisor's Truck		1		12.14	0.00	12.14
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				42.09	124.31	166.40
3 SKWK - Liner Installation						
Skilled Laborer		3		0.00	66.18	66.18
HDEP Welder (pipe or liner)		1		44.11	0.00	44.11
420F2		1		44.75	17.23	61.98
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				88.86	83.41	172.27

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-3 - Small Building Demoltion						
LABOR						
General Laborer		2		0.00	30.38	30.38
Foreman		1		0.00	78.74	78.74
				0.00		0.00
				0.00		0.00
				0.00		0.00
EQUIPMENT						
930M		1		73.13	33.30	106.43
Dump Truck (10-12 yd3)		2		108.74	29.22	137.96
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				181.87	171.64	353.51
B-6 - Chain Link Fence/Culvert Removal						
General Laborer		2		0.00	30.38	30.38
930M		1		73.13	33.30	106.43
Totals				73.13	63.68	136.81
B-8 - Large Building Demolition						
LABOR						
General Laborer		2		0.00	30.38	30.38
Foreman		1		0.00	78.74	78.74
				0.00		0.00
				0.00		0.00
				0.00		0.00
EQUIPMENT						
930M		1		73.13	33.30	106.43
20 Ton Crane		1		93.65	33.30	126.95
Dump Truck (10-12 yd3)		2		108.74	29.22	137.96
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
				0.00		0.00
Totals				275.52	204.94	480.46
B-9 - Concrete Wall Demolition						
General Laborer		4		0.00	60.76	60.76
Foreman		1		0.00	78.74	78.74
Air Compressor + tools				8.96	0.00	8.96
Totals				8.96	139.50	148.46

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-10Y - General Compaction						
General Laborer		1		0.00	15.19	15.19
CS54B		1		51.60	17.23	68.83
Totals				51.60	32.42	84.02
B-11L - Fine Grading for Evaporation Pond Liner Base						
General Laborer		1		0.00	15.19	15.19
14M		1		181.32	25.96	207.28
Totals				181.32	41.15	222.47
B-11M - Backhoe Work						
420F2		1		44.75	17.23	61.98
Totals				44.75	17.23	61.98
B-12G - Rip-Rap Machine Placed (Modified)						
General Laborer		2		0.00	30.38	30.38
966M		1		102.71	33.30	136.01
349F		1		129.07	33.30	162.37
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				261.73	66.60	328.33
B-13 - Grouted Rip-Rap & Gabion Baskets						
General Laborer		4		0.00	60.76	60.76
Foreman		1		0.00	78.74	78.74
50 Ton Crane		1		175.09	33.30	208.39
Totals				175.09	172.80	347.89
B-14 PVC Drain Pipe Installation						
Foreman		1		0.00	78.74	78.74
General Laborer		4		0.00	60.76	60.76
420F2		1		44.75	17.23	61.98
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				74.70	156.73	231.43
B-20 - Remove Pipelines						
Foreman		1		0.00	78.74	78.74
Skilled Laborer		1		0.00	22.06	22.06
General Laborer		1		0.00	15.19	15.19
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				29.95	115.99	145.94
B-22A - HDEP Installation - Pipe or Liner						
Skilled Laborer		1		0.00	22.06	22.06
General Laborer		2		0.00	30.38	30.38
D7E		1		130.69	25.96	156.65
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
420F2		1		44.75	17.23	61.98
Generator 5KW		1		11.95	0.00	11.95
HDEP Welder (pipe or liner)		1		44.11	0.00	44.11
Totals				261.45	95.63	357.08
B-34N - Equipment Mobilization (40-ton)						
Skilled Laborer		1		0.00	22.06	22.06
General Laborer		2		0.00	30.38	30.38
D7E		1		130.69	25.96	156.65
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
420F2		1		44.75	17.23	61.98
Generator 5KW		1		11.95	0.00	11.95
HDEP Welder (pipe or liner)		1		44.11	0.00	44.11
Totals				261.45	95.63	357.08

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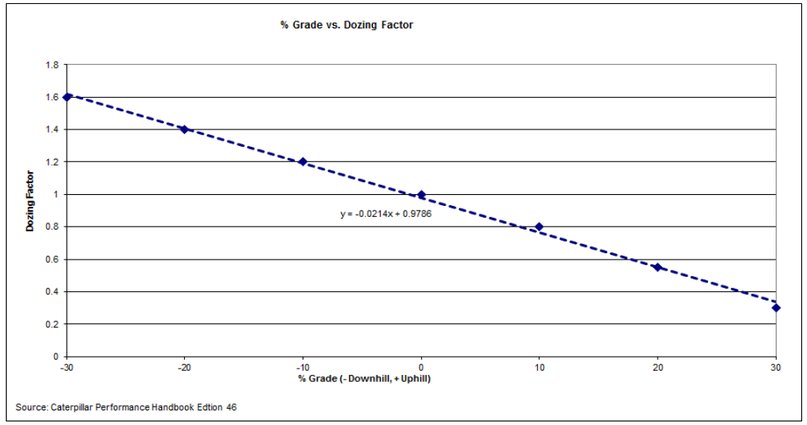
EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Labor Crew	User Defined Labor Crew	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-34U - Equipment Mobilization (20-ton)						
Skilled Laborer		1		0.00	22.06	22.06
General Laborer		2		0.00	30.38	30.38
D7E		1		130.69	25.96	156.65
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
420F2		1		44.75	17.23	61.98
Generator 5KW		1		11.95	0.00	11.95
HDEP Welder (pipe or liner)		1		44.11	0.00	44.11
Totals				261.45	95.63	357.08
B-34V - Equipment Mobilization (50-ton)						
Skilled Laborer		1		0.00	22.06	22.06
General Laborer		2		0.00	30.38	30.38
D7E		1		130.69	25.96	156.65
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
420F2		1		44.75	17.23	61.98
Generator 5KW		1		11.95	0.00	11.95
HDEP Welder (pipe or liner)		1		44.11	0.00	44.11
Totals				261.45	95.63	357.08
B-80A - Install Barbed Wire Fence						
General Laborer		3		0.00	45.57	45.57
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				29.95	45.57	75.52
B-80C - Install Chain Link Fence (Flatbed truck has small crane)						
General Laborer		3		0.00	45.57	45.57
Light Truck - 1.5 Ton		1		29.95	0.00	29.95
Totals				29.95	45.57	75.52
C-14B - Elevated Concrete Slabs (Reinforced Concrete Shaft Covers)						
Foreman		1		0.00	78.74	78.74
Supervisor's Truck		1		12.14	0.00	12.14
Carpenter		16		0.00	536.48	536.48
General Laborer		2		0.00	30.38	30.38
Rodmen (reinforcing concrete)		4		0.00	87.12	87.12
Cement finisher		2		0.00	43.78	43.78
Gas Engine Vibrator		1		5.90	0.00	5.90
Concrete Pump		1		106.36	0.00	106.36
Totals				124.40	776.50	900.90
C-14D - Concrete Walls Formed in Place (Reinforced Concrete Adit Bulkheads)						
Foreman		1		0.00	78.74	78.74
Supervisor's Truck		1		12.14	0.00	12.14
Carpenter		18		0.00	603.54	603.54
General Laborer		2		0.00	30.38	30.38
Rodmen (reinforcing concrete)		2		0.00	43.56	43.56
Cement finisher		1		0.00	21.89	21.89
Gas Engine Vibrator		1		5.90	0.00	5.90
Concrete Pump		1		106.36	0.00	106.36
Totals				124.40	778.11	902.51

Productivity - Bulldozers (cont.)

% Grade vs. Dozing Factor	
% Grade	**Dozing Factor**
-30	1.6
-20	1.4
-10	1.2
0	1
10	0.8
20	0.55
30	0.3
Source: Caterpillar Performance Handbook Edition 47	
% Grade Dozing Factor = -0.0214x + 0.9786 (see graph)	



Source: Caterpillar Performance Handbook Edtion 46

Job Condition Correction Factors - Bulldozers	
OPERATOR	
Average	0.75
MATERIAL (1)	
Loose stockpile	1.2
Normal	1
Hard to cut; frozen — with tilt cylinder	0.8
Hard to drift; "dead" (dry,non-cohesive material) or very sticky material	0.8
Rock, ripped or blasted	0.6
SLOT DOZING OR SIDE BY SIDE (1)	1.2
VISIBILITY	
Good conditions	1
JOB EFFICIENCY	
50 min/hr	0.83
(1) Selected in facility worksheets. Other factors included as standard factors.	
Source: Caterpillar Performance Handbook Edition 47	

Material Densities(1)	
Material	**lb/yd3**
Alluvium	2,900
Basalt	3,300
Clay - Dry	2,500
Granite - broken	2,800
Gravel	2,550
Limestone - broken	2,600
Limestone - crushed	2,600
Sandstone	2,550
Shale	2,100
Stone - crushed	2,700
Tailings - Coarse (dry, loose sand)	2,400
Tailings - Slimes (loose sand & clay)	2,700
Topsoil	1,600
(1) Source: Caterpillar Performance Handbook Edition 47	

Note: uses Sand & Gravel - Dry from Caterpillar Handbook

Productivity - Scrapers

Scraper Specifications		
Description	**631K**	**637K**
Empty Weight (lb)	102,750	112,760
Payload Capacity (yd3)		
Struck	24	24
Heaped	34	34
Average	29	29
Loaded by	One D10	Self*
Load Time (min)	0.50	0.50
Maneuver and Spread (min)	0.70	0.60
Job Efficiency	0.83	0.83
Rolling Resistance**	2.50	2.50
Altitude Deration Factor	1	1

* Requires pair

undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials

Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)

Material	lb/yd3	Scraper Load (lb)	631K Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	637K PP Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	84,100	186,850	8	8	8	8	10.6	14.3	19.2	26	35	196,860	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Basalt	3,300	95,700	198,450	8	8	8	8	10.6	14.3	19.2	26	35	208,460	8	10.6	10.6	10.6	14.2	19.2	19.2	35	35
Clay - Dry	2,500	72,500	175,250	8	8	8	10.6	10.6	14.3	19.2	26	35	185,260	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Granite - broken	2,800	81,200	183,950	8	8	8	8	10.6	14.3	19.2	26	35	193,960	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Gravel	2,550	73,950	176,700	8	8	8	10.6	10.6	14.3	19.2	26	35	186,710	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Limestone - broken	2,600	75,400	178,150	8	8	8	8	10.6	14.3	19.2	26	35	188,160	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Limestone - crushed	2,600	75,400	178,150	8	8	8	8	10.6	14.3	19.2	26	35	188,160	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Sandstone	2,550	73,950	176,700	8	8	8	10.6	10.6	14.3	19.2	26	35	186,710	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Shale	2,100	60,900	163,650	8	8	8	10.6	10.6	14.3	19.2	35	35	173,660	10.6	10.6	10.6	14.2	19.2	19.2	35	35	35
Stone - crushed	2,700	78,300	181,050	8	8	8	8	10.6	14.3	19.2	26	35	191,060	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Tailings - Coarse (dry, loose sand)	2,400	69,600	172,350	8	8	8	10.6	10.6	14.3	19.2	35	35	182,360	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Tailings - Slimes (loose sand & clay)	2,700	78,300	181,050	8	8	8	8	10.6	14.3	19.2	26	35	191,060	10.6	10.6	10.6	10.6	19.2	19.2	26	35	35
Topsoil	1,600	46,400	149,150	8	8	10.6	10.6	14.3	19.2	26	35	35	159,160	10.6	10.6	10.6	19.2	19.2	19.2	35	35	35
			Empty	14.3	14.3	14.3	14.3	19.2	19.2	26	35	35	Empty	14.2	19.2	19.2	19.2	19.2	35	35	35	35

assumes medium compression breaking

Source: Caterpillar Performance Handbook Edition 46

Weight of Materials

Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)

Material	lb/yd3	Scraper Load (lb)	631K Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	637K PP Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	84,100	186,850	4	5.5	6.5	7.4	9	11.2	15	22.3	33.2	196,860	6.7	7.6	8.7	9.4	12	15.2	20.5	29.8	35
Basalt	3,300	95,700	198,450	3.9	4.1	6.1	7	8.5	11	14	22.3	32	208,460	6.5	6.9	8.3	9.2	11.5	14.2	19.1	28.8	35
Clay - Dry	2,500	72,500	175,250	4.1	6.1	6.9	8.2	9.2	12	16.2	23	33	185,260	6.9	8.2	9	10.7	12.5	15.9	21.6	31	35
Granite - broken	2,800	81,200	183,950	4.1	6	6.6	7.8	9	11.5	15.9	23	32	193,960	6.8	7.8	8.8	9.6	12	15.3	20.9	30.2	35
Gravel	2,550	73,950	176,700	4.2	6.1	6.8	8.8	9.2	11.9	16	23.2	33	186,710	6.9	8.2	9	10.6	12.5	15.8	21.5	30.8	35
Limestone - broken	2,600	75,400	178,150	4.1	6	6.7	8.2	9	11.8	15.8	23	32	188,160	6.9	8.1	9	10.4	12.5	15.7	21.3	30.8	35
Limestone - crushed	2,600	75,400	178,150	4.1	6	6.7	8.2	9	11.8	15.8	23	32	188,160	6.9	8.1	9	10.4	12.5	15.7	21.3	30.8	35
Sandstone	2,550	73,950	176,700	4.2	6.1	6.8	8.8	9.2	11.9	16	23.2	33	186,710	6.9	8.2	9	10.6	12.5	15.8	21.5	30.8	35
Shale	2,100	60,900	163,650	5.8	6.5	7	8.8	9.5	12.5	16.6	26	34	173,660	7.8	8.7	9.3	11.4	13.5	16.6	22.6	31.6	35
Stone - crushed	2,700	78,300	181,050	4.2	6	6.6	8	9	11.4	15.5	22.5	33	191,060	6.8	8	8.9	10	12	15.5	21.1	30.4	35
Tailings - Coarse (dry, loose sand)	2,400	69,600	172,350	4.3	6.2	6.8	8.3	9.5	11.8	16	25	34	182,360	7	8.4	9.1	10.8	12.5	16	21.9	31.2	35
Tailings - Slimes (loose sand & clay)	2,700	78,300	181,050	4.2	6	6.6	8	9	11.4	15.5	22.5	33	191,060	6.8	8	8.9	10	12	15.5	21.1	30.4	35
Topsoil	1,600	46,400	149,150	6.3	6.9	8.4	9.2	11.2	14	19.6	24	34	159,160	8.5	9.1	10.7	12.2	15	18.3	25	32.4	35
			Empty	9	9.4	11.5	12.6	16	17.5	18.5	25	35	Empty	12.5	14.7	16.3	19.7	22.7	29.1	32.7	34.6	35

Source: Caterpillar Performance Handbook Edition 47

Productivity - Haul Trucks

Haul Truck Specifications

Description	770G	773G	777G	785D	789D	793F	797F
Chassis Weight (lb)	56,144	77,582	115,171	180,827	222,233	269,006	472,880
Body Weight (lb)	17,103	24,358	35,429	50,700	58,656	59,289	97,610
Standard Liner Weight (lb)	6,195	8,218	12,555	17,886	21,367	13,688	16,870
Total Truck Weight (lb)	79,442	110,158	163,155	249,413	302,256	341,983	587,360
Payload Capacity (yd3)							
Struck	24	34.5	54.6	77	106	173	315
Heaped	33.9	46	78.6	102	141	230	350
Average	28.7	40.25	66.6	89.5	123.5	201.5	332.5
Maneuver to Load Time (min)	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Maneuver and Dump Time (min)	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Altitude Deration Factor	1	1	1	1	1	1	1

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)																					
				770G												773G										
Material	lb/yd3	Truck 770G Load (lb)	Truck 773G Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0		Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	83,230	116,725	162,672	7	10	10	13.5	18	18	25	35	35	35		226,883	10.6	10.6	10.6	10.6	19.2	19.2	19.2	35	35	35
Basalt	3,300	94,710	132,825	174,152	7	7	10	10	13.5	18	25	35	35	35		242,983	10.6	10.6	10.6	10.6	14.2	19.2	19.2	35	35	35
Clay - Dry	2,500	71,750	100,625	151,192	10	10	10	13.5	18	25	33.5	35	35	35		210,783	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Granite - broken	2,800	80,360	112,700	159,802	7	10	10	13.5	18	18	25	35	35	35		222,858	10.6	10.6	10.6	10.6	19.2	19.2	19.2	35	35	35
Gravel	2,550	73,185	102,638	152,627	10	10	10	13.5	18	25	33.5	35	35	35		212,796	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Limestone - broken	2,600	74,620	104,650	154,062	7	10	10	13.5	18	25	33.5	35	35	35		214,808	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Limestone - crushed	2,600	74,620	104,650	154,062	7	10	10	13.5	18	25	33.5	35	35	35		214,808	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Sandstone	2,550	73,185	102,638	152,627	10	10	10	13.5	18	25	33.5	35	35	35		212,796	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Shale	2,100	60,270	84,525	139,712	10	10	13.5	18	18	25	33.5	35	35	35		194,683	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Stone - crushed	2,700	77,490	108,675	156,932	10	10	10	13.5	18	25	33.5	35	35	35		218,833	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Tailings - Coarse (dry, loose sand)	2,400	68,880	96,600	148,322	10	10	10	13.5	18	25	33.5	35	35	35		206,758	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Tailings - Slimes (loose sand & clay)	2,700	77,490	108,675	156,932	10	10	10	13.5	18	25	33.5	35	35	35		218,833	10.6	10.6	10.6	10.6	19.2	19.2	25.9	35	35	35
Topsoil	1,600	45,920	64,400	125,362	10	13.5	13.5	18	25	25	33.5	35	35	35		174,558	10.6	10.6	10.6	14.2	19.2	19.2	35	35	35	35
				Empty	18	25	33.5	33.5	33.5	35	35	35	35	35		Empty	14.2	19.2	19.2	19.2	25.9	35	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)																					
				777G												785D										
Material	lb/yd3	Truck 777G Load (lb)	Truck 785D Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0		Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	193,140	259,550	356,295	8	9	9	9	13	16.8	16.8	22.8	35	35		508,963	7.8	7.8	7.8	10.5	10.5	14.2	19.2	35	35	35
Basalt	3,300	219,780	295,350	382,935	8	9	9	13	13	16.8	22.8	35	35	35		544,763	7.8	7.8	7.8	10.5	10.5	14.2	19.2	26.1	35	35
Clay - Dry	2,500	166,500	223,750	329,655	9	9	13	13	17	22.8	30.6	35	35	35		473,163	7.8	7.8	10.5	10.5	14.2	14.2	19.2	35	35	35
Granite - broken	2,800	186,480	250,600	349,635	9	9	9	13	17	16.8	22.8	35	35	35		500,013	7.8	7.8	7.8	10.5	10.5	14.2	19.2	35	35	35
Gravel	2,550	169,830	228,225	332,985	9	9	13	13	17	22.8	30.6	35	35	35		477,638	7.8	7.8	10.5	10.5	14.2	14.2	19.2	35	35	35
Limestone - broken	2,600	173,160	232,700	336,315	9	9	9	13	17	22.8	30.6	35	35	35		482,113	7.8	7.8	7.8	10.5	14.2	14.2	19.2	35	35	35
Limestone - crushed	2,600	173,160	232,700	336,315	9	9	9	13	17	22.8	30.6	35	35	35		482,113	7.8	7.8	7.8	10.5	14.2	14.2	19.2	35	35	35
Sandstone	2,550	169,830	228,225	332,985	9	9	13	13	17	22.8	30.6	35	35	35		477,638	7.8	7.8	10.5	10.5	14.2	14.2	19.2	35	35	35
Shale	2,100	139,860	187,950	303,015	9	9	13	17	17	22.8	30.6	35	35	35		437,363	7.8	7.8	10.5	10.5	14.2	19.2	26.1	35	35	35
Stone - crushed	2,700	179,820	241,650	342,975	9	9	9	13	17	16.8	22.8	35	35	35		491,063	7.8	7.8	7.8	10.5	10.5	14.2	19.2	35	35	35
Tailings - Coarse (dry, loose sand)	2,400	159,840	214,800	322,995	9	9	13	13	17	22.8	30.6	35	35	35		464,213	7.8	7.8	10.5	10.5	14.2	19.2	19.2	35	35	35
Tailings - Slimes (loose sand & clay)	2,700	179,820	241,650	342,975	9	9	9	13	17	16.8	22.8	35	35	35		491,063	7.8	7.8	10.5	10.5	14.2	14.2	19.2	35	35	35
Topsoil	1,600	106,560	143,200	269,715	9	12.5	12.5	16.8	22.8	22.8	30.6	35	35	35		392,613	7.8	10.5	10.5	14.2	14.2	19.2	26.1	35	35	35
				Empty	22.8	22.8	22.8	30.6	35	35	35	35	35	35		Empty	14.2	14.2	19.2	19.2	26.1	35	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)																					
				789D												793F										
Material	lb/yd3	Truck 789D Load (lb)	Truck 793F Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0		Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	358,150	584,350	660,406	7.8	7.8	7.8	7.8	10.5	10.5	19.2	26.1	35	35		926,333	8.1	8.1	10.9	10.9	14.8	20	26.1	35	35	35
Basalt	3,300	407,550	664,950	709,806	7.8	7.8	7.8	7.8	10.5	10.5	14.4	26.1	35	35		1,006,933	8.1	8.1	8.1	8.1	10.9	14.8	20	26.1	35	35
Clay - Dry	2,500	308,750	503,750	611,006	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		845,733	8.1	8.1	8.1	10.9	0	14.8	20	35	35	35
Granite - broken	2,800	345,800	564,200	648,056	7.8	7.8	7.8	7.8	10.5	14.4	19.2	26.1	35	35		906,183	8.1	8.1	8.1	10.9	10.9	14.8	20	26.1	35	35
Gravel	2,550	314,925	513,825	617,181	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		855,808	8.1	8.1	8.1	10.9	0	14.8	20	35	35	35
Limestone - broken	2,600	321,100	523,900	623,356	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		865,883	8.1	8.1	8.1	10.9	10.9	14.8	20	35	35	35
Limestone - crushed	2,600	321,100	523,900	623,356	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		865,883	8.1	8.1	8.1	10.9	10.9	14.8	20	35	35	35
Sandstone	2,550	314,925	513,825	617,181	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		855,808	8.1	8.1	8.1	10.9	0	14.8	20	35	35	35
Shale	2,100	259,350	423,150	561,606	7.8	7.8	7.8	10.5	10.5	14.4	19.2	35	35	35		765,133	8.1	8.1	10.9	10.9	14.8	20	26.1	35	35	35
Stone - crushed	2,700	333,450	544,050	635,706	7.8	7.8	7.8	7.8	10.5	14.4	19.2	26.1	35	35		886,033	8.1	8.1	8.1	10.9	10.9	14.8	20	35	35	35
Tailings - Coarse (dry, loose sand)	2,400	296,400	483,600	598,656	7.8	7.8	7.8	10.5	10.5	14.4	19.2	26.1	35	35		825,583	8.1	8.1	8.1	10.9	14.8	14.8	20	35	35	35
Tailings - Slimes (loose sand & clay)	2,700	333,450	544,050	635,706	7.8	7.8	7.8	7.8	10.5	14.4	19.2	26.1	35	35		886,033	8.1	8.1	8.1	10.9	10.9	14.8	20	35	35	35
Topsoil	1,600	197,600	322,400	499,856	7.8	7.8	10.5	10.5	14.4	19.2	19.2	35	35	35		664,383	8.1	10.9	10.9	14.8	14.8	20	26.1	35	35	35
				Empty	10.5	14.4	14.4	19.2	19.2	26.1	35	35	35	35		Empty	14.8	20	20	26.1	26.1	35	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials			Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)										
			797F										
Material	lb/yd3	Truck 797F Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	964,250	1,551,610	5.4	6.8	7.2	8.7	9.6	13.8	17.3	23.2	35	35
Basalt	3,300	1,097,250	1,684,610	5.4	5.4	7.2	7.2	9.6	12.9	17.2	23.4	35	35
Clay - Dry	2,500	831,250	1,418,610	6.3	7.2	7.5	9.6	11.4	12.9	17.2	23.4	35	35
Granite - broken	2,800	931,000	1,518,360	5.4	6.9	7.2	9	9.6	12.9	17.2	23.4	35	35
Gravel	2,550	847,875	1,435,235	6.3	7.2	7.2	9.6	11.2	12.9	17.2	23.4	35	35
Limestone - broken	2,600	864,500	1,451,860	6	7.2	7.2	9.6	10.7	12.9	17.2	23.4	35	35
Limestone - crushed	2,600	864,500	1,451,860	6	7.2	7.2	9.6	10.7	12.9	17.2	23.4	35	35
Sandstone	2,550	847,875	1,435,235	6.3	7.2	7.2	9.6	11.2	12.9	17.2	23.4	35	35
Shale	2,100	698,250	1,285,610	7.2	7.2	9.6	9.6	12.9	15	19.8	31.5	35	35
Stone - crushed	2,700	897,750	1,485,110	6.8	7.2	7.2	9.6	10	12.9	17.2	23.4	35	35
Tailings - Coarse (dry, loose sand)	2,400	798,000	1,385,360	6.6	7.2	8	9.6	11.8	12.9	17.2	26	35	35
Tailings - Slimes (loose sand & clay)	2,700	897,750	1,485,110	6.8	7.2	7.2	9.6	10	12.9	17.2	23.4	35	35
Topsoil	1,600	532,000	1,119,360	6.5	9.6	9.6	12.9	12.9	17.2	23.4	31.5	35	35
			Empty	13.8	17.3	17.3	23.2	23.3	31.4	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)																					
				770G												773G										
Material	lb/yd3	Truck 770G Load (lb)	Truck 773G Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2		Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	
Alluvium	2,900	83,230	116,725	162,672	4	5	6.3	7.5	8.9	11.3	15.2	22.3	35		226,883	5.6	6.6	7.4	8.7	10.4	13.2	17.5	25.7	35	
Basalt	3,300	94,710	132,825	174,152	4	4.4	5.9	6.8	8.5	10.6	14.6	21.6	35		242,983	5.3	6	7	8	9.8	12.2	16.2	24.3	35	
Clay - Dry	2,500	71,750	100,625	151,192	4.8	6	6.8	8.4	9.5	12.1	16.4	24.8	35		210,783	6.2	7.1	8	9.5	10.9	14	18.7	28	35	
Granite - broken	2,800	80,360	112,700	159,802	4.2	5.3	6.5	12.8	14	11.6	15.5	22.5	35		222,858	5.9	6.8	7.7	8.9	10.5	13.3	17.9	26.6	35	
Gravel	2,550	73,185	102,638	152,627	4.5	6	6.8	8.3	9.5	12	16.2	23.4	35		212,796	6.2	7.1	7.9	9.4	10.8	13.9	18.5	27.4	35	
Limestone - broken	2,600	74,620	104,650	154,062	4.3	5.8	6.7	8.2	9.3	12	16	24.5	35		214,808	6	7	7.9	9.2	10.8	13.7	18.3	27.4	35	
Limestone - crushed	2,600	74,620	104,650	154,062	4.3	5.8	6.7	8.2	9.3	12	16	24.5	35		214,808	6	7	7.9	9.2	10.8	13.7	18.3	27.4	35	
Sandstone	2,550	73,185	102,638	152,627	4.5	6	6.8	8.3	9.5	12	16.2	23.4	35		212,796	6.2	7.1	7.9	9.4	10.8	13.9	18.5	27.4	35	
Shale	2,100	60,270	84,525	139,712	5.3	6.5	7.5	8.7	10.5	12.5	16.8	27	35		194,683	6.8	7.6	8.8	10.2	12	15.2	19.9	30.8	35	
Stone - crushed	2,700	77,490	108,675	156,932	4.3	5.5	6.6	8	9.2	11.8	15.8	23.1	35		218,833	6	7.8	7.8	9	10.6	13.6	18	26.7	35	
Tailings - Coarse (dry, loose sand)	2,400	68,880	96,600	148,322	4.9	6.2	7.1	8.5	10	12.3	16.5	25.7	35		206,758	6.4	7.3	8.1	9.7	11.5	14.2	18.9	28.6	35	
Tailings - Slimes (loose sand & clay)	2,700	77,490	108,675	156,932	4.3	5.5	6.6	8	9.2	11.8	15.8	23.1	35		218,833	6	7.8	7.8	9	10.6	13.6	18	26.7	35	
Topsoil	1,600	45,920	64,400	125,362	6.5	7.5	8.5	9.8	11.8	15	20.2	29.5	35		174,558	7.5	8.2	9.5	10.8	13.3	16.7	22.3	33.4	35	
				Empty	11.4	12.5	15	17	21.2	26	34.7	35	35		Empty	13.1	14.5	16.7	19.2	23	29.4	35	35	35	

Source: Caterpillar Performance Handbook Edition 47

Closure Cost Estimate
Productivity

Weight of Materials				Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)																		
				777G										785D								
Material	lb/yd3	Truck 777G Load (lb)	Truck 785D Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	193,140	259,550	356,295	4	5	6	7	8	10.5	14.2	20.5	35	508,963	4	4.4	6.4	7.1	8.8	11	14.6	21.8	33.6
Basalt	3,300	219,780	295,350	382,935	4	5	6	7	8	10	13.2	19.6	35	544,763	3.6	4.2	5.8	6.8	8.2	9.6	13	20.6	33.2
Clay - Dry	2,500	166,500	223,750	329,655	5	6	7	8	9	11	14.8	23.3	35	473,163	4.3	6	6.8	7.7	9.4	11.8	15.9	23.3	34
Granite - broken	2,800	186,480	250,600	349,635	4	5	6	7	8	10.6	14.3	21.5	35	500,013	4	4.5	6.5	7.2	9	11.2	14.8	22.4	33.8
Gravel	2,550	169,830	228,225	332,985	5	6	6	8	9	11	14.9	23	35	477,638	4.2	5.8	6.7	7.7	9.4	11.8	15.8	23.1	33.9
Limestone - broken	2,600	173,160	232,700	336,315	5	6	6	8	9	11	14.6	22.9	35	482,113	4.2	5.7	6.7	7.4	9.2	11.6	15.6	23	33.9
Limestone - crushed	2,600	173,160	232,700	336,315	5	6	6	8	9	11	14.6	22.9	35	482,113	4.2	5.7	6.7	7.4	9.2	11.6	15.6	23	33.9
Sandstone	2,550	169,830	228,225	332,985	5	6	6	8	9	11	14.9	23	35	477,638	4.2	5.8	6.7	7.7	9.4	11.8	15.8	23.1	33.9
Shale	2,100	139,860	187,950	303,015	6	6	7	8	10	12.5	16.4	25.1	35	437,363	5.3	6.5	7.2	8.6	9.6	12.7	16.9	23.6	34
Stone - crushed	2,700	179,820	241,650	342,975	5	6	6	8	9	10.8	14.6	22.2	35	491,063	4.1	5.4	6.6	7.2	9	11.4	15.2	22.5	33.7
Tailings - Coarse (dry, loose sand)	2,400	159,840	214,800	322,995	5	6	7	8	9	10.2	15.1	23.9	35	464,213	4.2	6.1	6.9	8	9.5	12.1	16.1	23.4	34
Tailings - Slimes (loose sand & clay)	2,700	179,820	241,650	342,975	5	6	6	8	9	10.8	14.6	22.2	35	491,063	4.1	5.4	6.6	7.2	9	11.4	15.2	22.5	33.7
Topsoil	1,600	106,560	143,200	269,715	6	7	8	9.3	10.8	13.8	18.6	27.4	35	392,613	6.5	7.1	8.2	9.2	11.4	13.2	17.6	28.5	34.6
				Empty	10.8	12.5	14.2	16.6	19.6	25	33	35	35	Empty	9.6	11	13.5	14.8	17.3	22.2	29.4	33.2	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)																		
				789D										793F								
Material	lb/yd3	Truck 789D Load (lb)	Truck 793F Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	358,150	584,350	660,406	5	6.4	7	8.6	9.8	12.7	16.8	24.2	34.7	926,333	3.3	4	6.5	7.2	9	11	14.4	22.6	34.8
Basalt	3,300	407,550	664,950	709,806	4.6	5.8	6.7	7.3	9.4	11.8	15.7	23.6	34.3	1,006,933	2.8	3.5	5.8	7	8.2	9.8	13.3	20	34.1
Clay - Dry	2,500	308,750	503,750	611,006	6.2	7	7.3	9.3	10.5	13.2	17.7	28	34.9	845,733	3.9	6.1	7.1	8	9.7	12.3	16.5	24	35
Granite - broken	2,800	345,800	564,200	648,056	5.4	6.6	7.2	8.7	9.8	12.8	17	24.3	34.7	906,183	3.2	4	6.6	7.2	9.3	11.3	15	22.7	34.9
Gravel	2,550	314,925	513,825	617,181	6.1	6.9	7.2	9.1	10.4	13.2	17.6	27.7	34.8	855,808	4.8	6	7	7.9	9.7	12.3	16.4	24	35
Limestone - broken	2,600	321,100	523,900	623,356	5.9	6.8	7.2	9	10.1	13.1	17.4	26.9	34.8	865,883	4.6	5.8	7	7.8	9.6	12.2	16	23.9	35
Limestone - crushed	2,600	321,100	523,900	623,356	5.9	6.8	7.2	9	10.1	13.1	17.4	26.9	34.8	865,883	4.6	5.8	7	7.8	9.6	12.2	16	23.9	35
Sandstone	2,550	314,925	513,825	617,181	6.1	6.9	7.2	9.1	10.4	13.2	17.6	27.7	34.8	855,808	4.8	6	7	7.9	9.7	12.3	16.4	24	35
Shale	2,100	259,350	423,150	561,606	6.7	7.2	8.6	9.6	11.8	14.4	19.5	30.6	35	765,133	5.9	6.9	7.6	9.2	10.4	13.3	17.9	25.9	35
Stone - crushed	2,700	333,450	544,050	635,706	5.6	6.7	7.2	8.8	9.8	12.8	17.3	25.1	34.7	886,033	3.5	5.6	6.8	7.4	9.4	11.6	15.4	23.4	35
Tailings - Coarse (dry, loose sand)	2,400	296,400	483,600	598,656	6.4	6	7.9	9	11.1	13.2	17.8	28.6	35	825,583	3.9	6.3	7.2	8.4	9.8	12.7	17	24.4	35
Tailings - Slimes (loose sand & clay)	2,700	333,450	544,050	635,706	5.6	6.7	7.2	8.8	9.8	12.8	17.3	25.1	34.7	886,033	3.5	5.6	6.8	7.4	9.4	11.6	15.4	23.4	35
Topsoil	1,600	197,600	322,400	499,856	7.2	8.4	9.4	11.1	13	16.7	22.2	32.5	35	664,383	7	7.4	9.1	9.8	12.6	15.4	20.8	30.6	35
				Empty	12	13	15.4	17.8	21.6	27	33	35	35	Empty	13	13.8	16.7	18.2	23.1	28.5	34.7	35	35

Source: Caterpillar Performance Handbook Edition 47

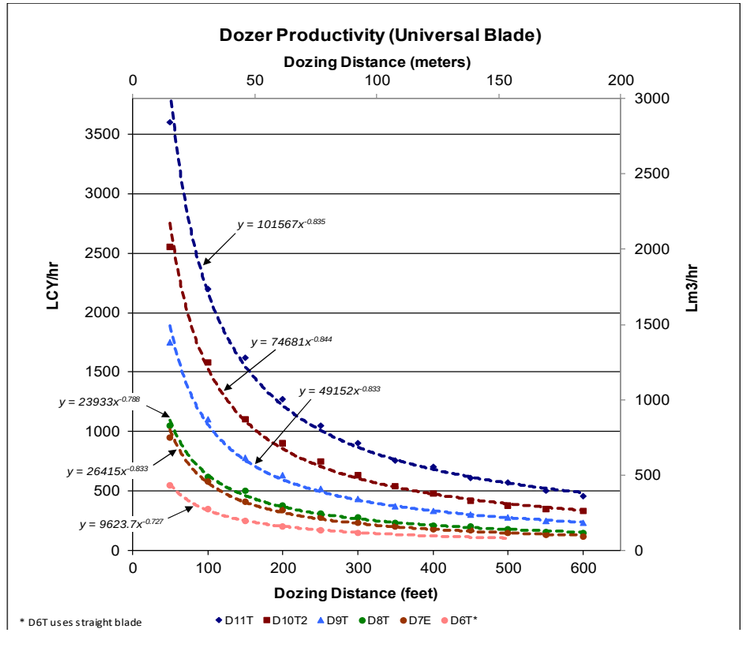
Weight of Materials			Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)									
			797F									
Material	lb/yd3	Truck 797F Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	964,250	1,551,610	4	5	6.1	6.6	8.5	10.5	13.6	20.9	35
Basalt	3,300	1,097,250	1,684,610	3.2	4	5.8	6.5	7.8	9	12	19.4	35
Clay - Dry	2,500	831,250	1,418,610	4.1	6	6.5	7.8	8.8	11.2	15	21.2	35
Granite - broken	2,800	931,000	1,518,360	4	5.5	6.2	7	8.6	10.9	14.4	21	35
Gravel	2,550	847,875	1,435,235	4	5.9	6.5	7.5	8.8	11.2	15	21	35
Limestone - broken	2,600	864,500	1,451,860	4	5.6	6.5	7.5	8.8	11.1	14.9	21	35
Limestone - crushed	2,600	864,500	1,451,860	4	5.6	6.5	7.5	8.8	11.1	14.9	21	35
Sandstone	2,550	847,875	1,435,235	4	5.9	6.5	7.5	8.8	11.2	15	21	35
Shale	2,100	698,250	1,285,610	5.8	6.4	7	8.5	10	11.8	15.8	25.7	35
Stone - crushed	2,700	897,750	1,485,110	4	5.5	6.4	7.1	8.8	11	14.2	21	35
Tailings - Coarse (dry, loose sand)	2,400	798,000	1,385,360	5	6	6.5	7.9	8.8	11.5	15.4	23	35
Tailings - Slimes (loose sand & clay)	2,700	897,750	1,485,110	4	5.5	6.4	7.1	8.8	11	14.2	21	35
Topsoil	1,600	532,000	1,119,360	6.5	7	8.2	9.4	11.5	14.5	19.5	28.2	35
			Empty	10.8	13.2	15.2	17	21	26.3	33.3	35	35

Source: Caterpillar Performance Handbook Edition 47

Productivity - Bulldozers

Dozer Specifications						
Description	**D6T**	**D7E**	**D8T**	**D9T**	**D10T2**	**D11T**
Blade Width (SU) (ft)	10.67	12.17	12.92	14.08	16.25	18.33
Shank Guage (3 shanks) (ft)	6.58	5.92	7.08	7.67	8.67	9.83
Pocket Spacing (ft)	3.25	2.92	3.58	3.86	4.33	4.92
Ripping Width (Ripper + 1 Pocket) (ft)	9.83	8.84	10.66	11.53	13	14.75
Ripping Speed (mph)	1	1	1	1	1	1
Ripping Maneuver (turn) Time (min)	0.25	0.25	0.25	0.25	0.25	0.25
Altitude Deration Factor	1	1	1	1	1	1
Ripping Hourly Production (excluding maneuvering time) (ft)	5,280	5,016	5,280	5,280	5,280	4,541
Source: Caterpillar Performance Handbook Edition 47						

Dozer Productivity vs. Grading Distance						
	Production (LCY/hr)					
Average Dozing Distance (feet)	**D6T**	**D7E**	**D8T**	**D9T**	**D10T2**	**D11T**
50	550	950	1,050	1,750	2,550	3,600
100	350	580	620	1,100	1,580	2,200
200	205	340	380	630	900	1,270
300	150	230	280	430	630	900
400		180	210	330	480	700
500		150	180	280	380	570
600		120	150	230	330	460
Source: Caterpillar Performance Handbook Edition 47						
dozer productivity = k x Dozing Distance^{p} (see graph)						
k =	9623.7	26451	23933	49152	74681	101567
p =	-0.727	-0.833	-0.788	-0.833	-0.844	-0.835



Productivity - Articulated Trucks

Articulated Truck Specifications

Description	725C2	730C2	735C	740C
Empty Weight (lb)	50,795	53,131	69,446	79,366
Payload Capacity (yd3)				
Struck	14.4	17.4	19.6	23.5
Heaped	19.6	23	26.8	30.1
Average	17	20.2	23.2	26.8
Maneuver to Load Time (min)	0.7	0.7	0.7	0.7
Maneuver and Dump Time (min)	1.1	1.1	1.1	1.1
Job Efficiency	0.83	0.83	0.83	0.83
Rolling Resistance**	2.5	2.5	2.5	2.5
Altitude Deration Factor	1	1	1	1

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				725C2											730C2										
Material	lb/yd3	Truck 725C2 Load (lb)	Truck 730C2 Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	49,300	58,580	100,095	6	7	8	9	11	13.5	18	25.5	34	34	111,711	5	10	10	10	15	23	23	35	35	35
Basalt	3,300	56,100	66,660	106,895	6	7	8	9	11	13	17	25.5	34	34	119,791	5	10	10	10	15	15	23	35	35	35
Clay - Dry	2,500	42,500	50,500	93,295	6	8	8	10	12	14.5	20	27	34	34	103,631	10	10	10	15	15	23	30	35	35	35
Granite - broken	2,800	47,600	56,560	98,395	6	7	8	9	11	14	17.8	27.3	34	34	109,691	10	10	10	15	15	23	31	35	35	35
Gravel	2,550	43,350	51,510	94,145	6	7	10	10	12	14.5	18.5	27	34	34	104,641	10	15	10	15	15	23	30	35	35	35
Limestone - broken	2,600	44,200	52,520	94,995	6	7	8	9	11	14.5	18.5	27.5	34	34	105,651	10	15	10	15	15	23	30	35	35	35
Limestone - crushed	2,600	44,200	52,520	94,995	6	7	8	9	11	14.5	18.5	27.5	34	34	105,651	10	15	10	15	15	23	30	35	35	35
Sandstone	2,550	43,350	51,510	94,145	6	7	10	10	12	14.5	18.5	27	34	34	104,641	10	15	10	15	15	23	30	35	35	35
Shale	2,100	35,700	42,420	86,495	7	8	9	10	13	15.5	20	29.5	34	34	95,551	10	15	15	15	23	23	35	35	35	35
Stone - crushed	2,700	45,900	54,540	96,695	6	7	8	10	11	14.3	18	28	34	34	107,671	10	10	10	15	15	23	31	35	35	35
Tailings - Coarse (dry, loose sand)	2,400	40,800	48,480	91,595	7	8	9	10	12	14.8	19	28.5	34	34	101,611	10	10	10	15	15	23	29	35	35	35
Tailings - Slimes (loose sand & clay)	2,700	45,900	54,540	96,695	6	7	8	10	11	14.3	18	28	34	34	107,671	10	10	10	15	15	23	31	35	35	35
Topsoil	1,600	27,200	32,320	77,995	8	9	10	12	14.3	19.5	24	34	34	34	85,451	10	15	15	15	23	23	33	35	35	35
assumes medium compression breaking				Empty	12	13.8	15	18	21.5	34	34	34	34	34	Empty	15	15	15	15	23	35	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Downhill Speed (mph) - Grade Retarding vs. Effective Grade (%Grade - Rolling Resistance)																						
				735C												740C										
Material	lb/yd3	Truck 735C Load (lb)	Truck 740C Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	0
Alluvium	2,900	67,280	77,720	136,726	9	12	12	15	20	24.3	30.8	35	35	35	157,086	9	9	12	15	15	20.8	25	35	35	35
Basalt	3,300	76,560	88,440	146,006	9	9	12	15	15	20.3	32.5	35	35	35	167,806	9	9	12	15	15	20.8	25	35	35	35
Clay - Dry	2,500	58,000	67,000	127,446	12	12	15	15	20	24.3	35	35	35	35	146,366	9	12	15	15	21	25	25	35	35	35
Granite - broken	2,800	64,960	75,040	134,406	9	12	12	15	20	20	30	35	35	35	154,406	9	9	12	15	15	20.8	25	35	35	35
Gravel	2,550	59,160	68,340	128,606	9	12	15	15	20	24.3	35	35	35	35	147,706	9	12	15	15	21	25	33	35	35	35
Limestone - broken	2,600	60,320	69,680	129,766	9	12	15	15	20	24.3	29	35	35	35	149,046	9	12	15	15	21	25	33	35	35	35
Limestone - crushed	2,600	60,320	69,680	129,766	9	12	15	15	20	24.3	29	35	35	35	149,046	9	12	15	15	21	25	33	35	35	35
Sandstone	2,550	59,160	68,340	128,606	9	12	15	15	20	24.3	35	35	35	35	147,706	9	12	15	15	21	25	33	35	35	35
Shale	2,100	48,720	56,280	118,166	12	12	15	15	20	24.3	35	35	35	35	135,646	12	12	15	15	21	25	35	35	35	35
Stone - crushed	2,700	62,640	72,360	132,086	9	12	15	15	20	24.3	29.5	35	35	35	151,726	9	12	15	15	21	25	33.5	35	35	35
Tailings - Coarse (dry, loose sand)	2,400	55,680	64,320	125,126	12	12	15	15	20	24.3	35	35	35	35	143,686	9	12	15	15	21	25	32	35	35	35
Tailings - Slimes (loose sand & clay)	2,700	62,640	72,360	132,086	9	12	15	15	20	24.3	29.5	35	35	35	151,726	9	12	15	15	21	25	33.5	35	35	35
Topsoil	1,600	37,120	42,880	106,566	12	14.8	14.8	20	24.3	24.3	35	35	35	35	122,246	12	15	15	20.8	25	25	35	35	35	35
assumes medium compression breaking				Empty	14.8	20	24.3	24.3	35	35	35	35	35	35	Empty	20.8	25	25	25	35	35	35	35	35	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)																				
				725C2											730C2									
Material	lb/yd3	Truck 725C2 Load (lb)	Truck 730C2 Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	49,300	58,580	100,095	5.2	6.1	6.9	8	9.5	11.6	15.1	20.5	31.9	111,711	6	6.7	7.6	8.8	10.5	13.2	17	23.2	33.3
Basalt	3,300	56,100	66,660	106,895	4.6	5.7	6.5	7.6	8.9	10.9	14.1	19.6	31.1	119,791	5.7	6.3	7.1	8.2	9.8	12.3	16.1	22.1	32.7
Clay - Dry	2,500	42,500	50,500	93,295	5.8	6.6	7.4	8.4	10.2	12.2	16.1	21.8	32.7	103,631	6.5	7.2	8.2	9.4	11.2	14.2	18.1	24.4	33.8
Granite - broken	2,800	47,600	56,560	98,395	5.3	6.2	7.1	8.1	9.7	11.8	15.3	20.6	32.2	109,691	6.1	6.8	7.7	8.9	10.7	13.4	17.3	23.5	33.4
Gravel	2,550	43,350	51,510	94,145	5.7	6.5	7.4	8.3	10.1	12.1	16	21.5	32.7	104,641	6.5	7.1	8.2	9.3	11.1	14	18	24.2	33.8
Limestone - broken	2,600	44,200	52,520	94,995	5.7	6.4	7.3	8.3	10	12.1	15.9	21.5	32.8	105,651	6.4	7.1	8.1	9.2	11	13.9	17.9	24.1	33.7
Limestone - crushed	2,600	44,200	52,520	94,995	5.7	6.4	7.3	8.3	10	12.1	15.9	21.5	32.8	105,651	6.4	7.1	8.1	9.2	11	13.9	17.9	24.1	33.7
Sandstone	2,550	43,350	51,510	94,145	5.7	6.5	7.4	8.3	10.1	12.1	16	21.5	32.7	104,641	6.5	7.1	8.2	9.3	11.1	14	18	24.2	33.8
Shale	2,100	35,700	42,420	86,495	6.3	7.1	7.9	9.1	10.9	12.9	17	23	33.3	95,551	7	7.8	8.9	10.2	12.3	15.3	19.2	25.9	34.4
Stone - crushed	2,700	45,900	54,540	96,695	5.5	6.3	7.2	8.2	9.8	11.9	15.6	21.2	32.4	107,671	6.3	7	7.9	9.1	10.8	13.6	17.6	23.8	33.6
Tailings - Coarse (dry, loose sand)	2,400	40,800	48,480	91,595	5.9	6.7	7.6	8.5	10.4	12.4	16.4	22	33	101,611	6.6	7.3	8.4	9.6	11.4	14.5	18.4	24.8	34
Tailings - Slimes (loose sand & clay)	2,700	45,900	54,540	96,695	5.5	6.3	7.2	8.2	9.8	11.9	15.6	21.2	32.4	107,671	6.3	7	7.9	9.1	10.8	13.6	17.6	23.8	33.6
Topsoil	1,600	27,200	32,320	77,995	6.9	7.8	8.5	10.1	12	14.7	18.5	24.6	33.9	85,451	7.8	8.7	9.9	11.3	13.7	16.7	20.9	27.9	34.9
				Empty	10.4	11.6	12.7	14.9	17.8	20.4	25.2	31.7	35	Empty	12.6	14	15.9	17.8	20.4	24	29.2	33.7	35

Source: Caterpillar Performance Handbook Edition 47

Weight of Materials				Uphill Speed (mph) - Rimpull vs. Total Resistance (%Grade + Rolling Resistance)																		
				735C											740C									
Material	lb/yd3	Truck 735C Load (lb)	Truck 740C Load (lb)	Loaded Weight (lb)	18	16	14	12	10	8	6	4	2		Loaded Weight (lb)	18	16	14	12	10	8	6	4	2
Alluvium	2,900	67,280	77,720	136,726	5.4	6.6	7.4	9	10.2	12.4	18	24	33		157,086	5.6	6.2	7.4	8.7	10.4	12.8	17.2	24	34
Basalt	3,300	76,560	88,440	146,006	5.1	5.8	6	8.2	9.8	12.1	16.8	22	32.8		167,806	5.2	5.8	7	8	10	12.2	16	22.4	34
Clay - Dry	2,500	58,000	67,000	127,446	6	7.1	8.9	9.6	11.2	13.5	19.2	26.8	33.2		146,366	6	7	7.9	9.6	11.1	13.4	19.3	25.7	34
Granite - broken	2,800	64,960	75,040	134,406	5.8	6.8	7.5	9.1	10.4	12.7	18.5	25.5	32.8		154,406	5.7	6.6	7.5	9	10.6	12.8	17.3	22.9	34
Gravel	2,550	59,160	68,340	128,606	6	7	8.9	9.5	11.2	13	19	26.7	33.2		147,706	5.9	7	7.8	9.5	11	13.3	19.2	25.7	34
Limestone - broken	2,600	60,320	69,680	129,766	5.9	6.8	7.8	9.5	11	13	19.2	24.5	33		149,046	5.8	6.8	7.8	9.5	10.9	13.2	19.2	25.7	34
Limestone - crushed	2,600	60,320	69,680	129,766	5.9	6.8	7.8	9.5	11	13	19.2	24.5	33		149,046	5.8	6.8	7.8	9.5	10.9	13.2	19.2	25.7	34
Sandstone	2,550	59,160	68,340	128,606	6	7	8.9	9.5	11.2	13	19	26.7	33.2		147,706	5.9	7	7.8	9.5	11	13.3	19.2	25.7	34
Shale	2,100	48,720	56,280	118,166	6.7	7.4	9.1	10.2	11.8	15.4	20.5	27.5	33.5		135,646	6.4	7.4	8.6	10.2	11.9	14.3	20.2	28.4	34
Stone - crushed	2,700	62,640	72,360	132,086	5.4	6.8	7.4	9.2	10.6	12.7	18.5	25	33		151,726	5.7	6.7	7.7	9.3	10.8	13	18.3	25.6	34
Tailings - Coarse (dry, loose sand)	2,400	55,680	64,320	125,126	6.1	7	8.2	9.6	11.3	14.6	19.6	27	33.2		143,686	6	7.2	8	9.8	11.1	13.8	19.3	27	34
Tailings - Slimes (loose sand & clay)	2,700	62,640	72,360	132,086	5.4	6.8	7.4	9.2	10.6	12.7	18.5	25	33		151,726	5.7	6.7	7.7	9.3	10.8	13	18.3	25.6	34
Topsoil	1,600	37,120	42,880	106,566	7.3	8.6	9.7	11	12.6	17.2	21.2	29	33.5		122,246	7.4	8.2	9.7	11	12.8	16.4	21.5	29.3	34
				Empty	11.5	12.4	15.2	17.8	20.3	24.6	30.3	33	33.5		Empty	11.3	12.5	14	16.6	20.8	23	29.5	33.8	34

Source: Caterpillar Performance Handbook Edition 47

Productivity - Wheel Loaders

Wheel Loader Specifications															
Description	926M	930M	950M	966M	972M	972M (2)	980M	988K	988K (2)	990K	992K	992K (2)	994K	994K (2)	L2350
Payload Capacity (yd3)															
Struck	2.2	2.5	3.5	4.3	4.7	4.7	6	6.9	6.9	9.5	12.4	12.4	18.3	18.3	
Heaped	2.7	3	4.1	5	5.6	5.6	7.1	8.33	8.33	11.25	15	15	22.5	22.5	
Average	2.45	2.75	3.8	4.65	5.15	5.15	6.55	7.62	7.62	10.38	13.7	13.7	20.4	20.4	53
Matched Truck	N/A	N/A	N/A	725C2	730C2	735C	N/A	740C	770G	773G	777G	785D	789D	793F	797F
Average Cycle Time (min)	0.475	0.475	0.475	0.525	0.525	0.525	0.525	0.575	0.575	0.575	0.575	0.65	0.65	0.65	0.75
Passes to Fill Truck	N/A	N/A	N/A	4	4	5	N/A	4	4	4	5	7	10	10	6
Altitude Deration Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Operator Efficiency	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Time to Fill Truck	N/A	N/A	N/A	2.1	2.1	2.63	N/A	2.3	2.3	2.3	2.88	4.55	6.5	6.5	4.5
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Loader matched to small truck fleet
Loader matched to medium truck fleet
Loader matched to large truck fleet
Loader matched to extra large truck fleet

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered
992K (2) - can be used to load 785 with 6 passes

Source: Caterpillar Performance Handbook Edition 47; LeTourneau/actual Chilean mine operating data for L2350.

Matched Wheeled Loader Buckets		
Wheeled Loaders	General Purpose yd3	Heavy Duty Rock yd3
930M	2.85	-
950M	4.25	-
966M	5.5	-
972M	6	-
980M	7.88	-
988K	-	8.3
990K	-	11.25
992K	-	14
994K	-	26.5

note: capacities are 2:1 heaped, SAE standards
NOTES: Buckets for both Track Excavators and Wheel Loaders are offered by CECo & available for the rental rates quoted. Bucket sizes and capacities obtained from CATERPILLAR PERFORMANCE HANDBOOK, ED 47; Section 23, Wheel Loader

Bucket capacity and width dictated by material weight and configuration, ie., shot, loose, tight bank, stockpile, rock, etc. Typical Nevada applications were used to determine above bucket capacities as related to materials & densities. Job site specifics may alter specific bucket requirements. (Cashman Equipment, Elko, Nevada)

Productivity - Shovels

Shovel/Excavator Specifications (Komatsu or Hitachi equivalent)

Description	PC2000	PC3000	PC4000	PC5500	PC8000	EX2500
Payload Capacity (yd3)						
Struck	10.46	18.84	26.16	33.48	47.09	
Heaped	14.39	25.9	35.97	46.04	64.75	
Average	12.43	22.37	31.07	39.76	55.92	19.63
Matched Truck	740	777D	785C	793C	797B	789C
Average Cycle Time (min)	0.49	0.49	0.59	0.59	0.69	0.68
Passes to Fill Truck	2.05	2.84	3.38	4.69	5.11	6
Altitude Deration Factor	1	1	1	1	1	1
Operator Efficiency	1	1	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83
Time to Fill Truck	1.68	2.33	3.32	4.61	5.86	6.08
Rolling Resistance**	2.5	2.5	2.5	2.5	2.5	2.5

Shovel matched to small truck fleet
Shovel matched to medium truck fleet
Shovel matched to large truck fleet
Shovel matched to extra large truck fleet

**A firm, smooth, rolling roadway with dirt or light surfacing, flexing slightly under load or undulating, maintained fairly regularly, watered

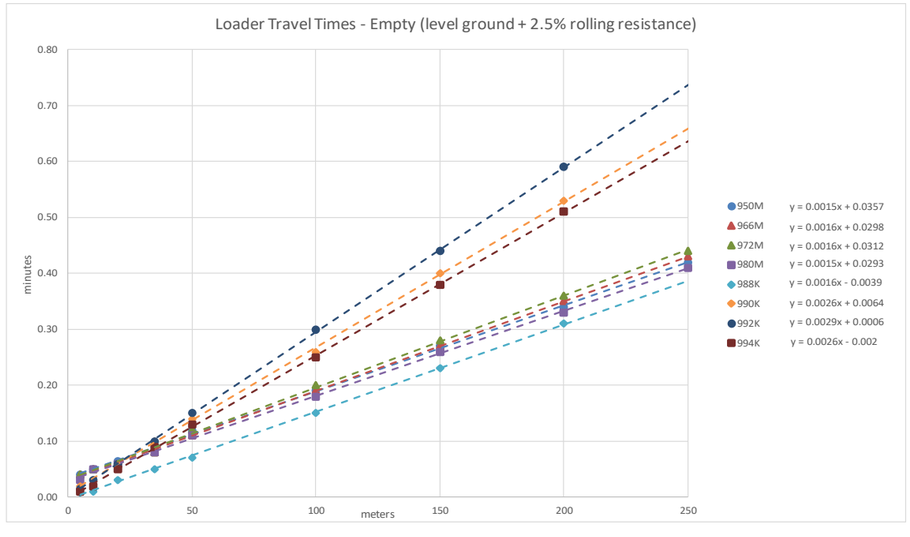
Source: Caterpillar Performance Handbook Edition 46; Komatsu actual Peruvian mine (Lagunas Norte) operating data for PC4000.

Loader Travel Times - Empty

Loader Model	Distance (ft) 16.4041995	32.808399	65.616798	114.8293965	164.041995	328.08399	492.125985	656.16798	820.209975	a	b
950M	0.04	0.05	0.07	0.09	0.12	0.19	0.27	0.34	0.42	0.0015	0.0357
966M	0.04	0.05	0.06	0.08	0.11	0.19	0.27	0.35	0.43	0.0016	0.0298
972M	0.04	0.05	0.06	0.08	0.12	0.20	0.28	0.36	0.44	0.0016	0.0312
980M	0.03	0.05	0.06	0.08	0.11	0.18	0.26	0.33	0.41	0.0015	0.0293
988K	0.01	0.01	0.03	0.05	0.07	0.15	0.23	0.31		0.0016	0.0039
990K	0.02	0.03	0.06	0.10	0.14	0.26	0.40	0.53		0.0026	0.0064
992K	0.02	0.03	0.06	0.10	0.15	0.30	0.44	0.59		0.0029	0.0006
994K	0.01	0.02	0.05	0.09	0.13	0.25	0.38	0.51		0.0026	-0.002

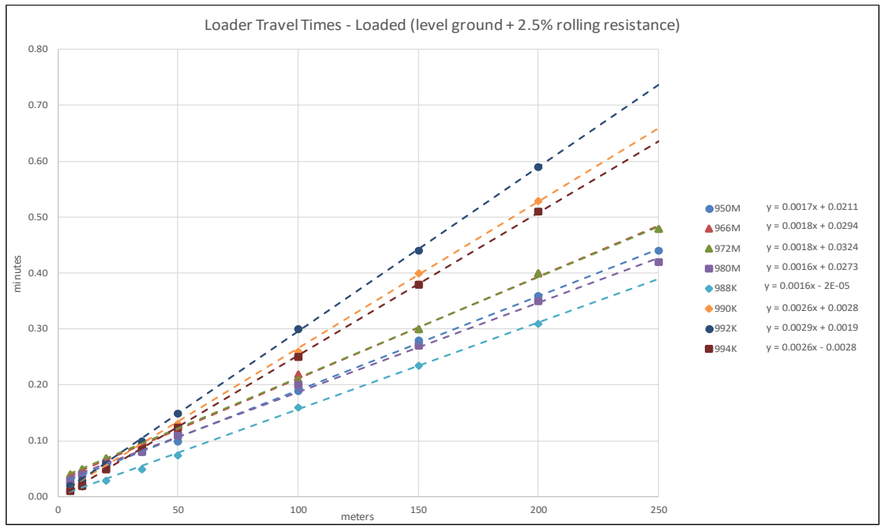
Travel Time (min) = a(distance) + b

Source: Caterpillar Performance Handbook Edition 47



Loader Travel Times - Loaded											
Loader Model	Distance (ft)									a	b
	16.4041995	32.808399	65.616798	114.8293965	164.041995	328.08399	492.125985	656.16798	820.209975		
950M	0.03	0.04	0.06	0.08	0.10	0.19	0.28	0.36	0.44	0.0017	0.0211
966M	0.04	0.05	0.06	0.09	0.12	0.22	0.30	0.40	0.48	0.0018	0.0294
972M	0.04	0.05	0.07	0.10	0.12	0.21	0.30	0.40	0.48	0.0018	0.0324
980M	0.03	0.04	0.06	0.08	0.11	0.20	0.27	0.35	0.42	0.0016	0.0273
988K	0.01	0.02	0.03	0.05	0.08	0.16	0.24	0.31		0.0016	-0.00002
990K	0.02	0.03	0.06	0.09	0.13	0.26	0.40	0.53		0.0026	0.0028
992K	0.02	0.03	0.06	0.10	0.15	0.30	0.44	0.59		0.0029	0.0019
994K	0.01	0.02	0.05	0.09	0.13	0.25	0.38	0.51		0.0026	-0.0028
Travel Time (min) =	a(distance) + b										

Source: Caterpillar Performance Handbook Edition 47



Productivity - Motor Graders

Motor Grader Specifications				
Description	**12M2**	**14M**	**16M3**	**24M**
Grader Width (ft)	8.25	9.2	11.2	14
Blade Width (ft)	12	14	16	24
Number of Shanks	5	7	7	7
Ripper Width (7 shanks) (ft)	7.6	8.5	9.75	12.83
Road Maintence Speed (mph)				
Minimum	3	3	3	3
Maximum	9.5	9.5	9.5	9.5
Average	6.25	6.25	6.25	6.25
Hourly Production (ft)	33,000	33,000	33,000	33,000
Ripping Speed (mph)	1	1	1	1
Minimum	0	0	0	0
Maximum	3	3	3	3
Average	1.5	1.5	1.5	1.5
Altitude Deration Factor	1	1	1	1
Ripping Hourly Production (with job efficiency correction & altitude deration factors) (excluding manuever time) (ft)	6,574	6,574	6,574	6,574
Maneuver time per pass (min)	0.5	0.5	0.5	0.5
Operator Efficiency	1	1	1	1
Job Efficiency	0.83	0.83	0.83	0.83

Source: Caterpillar Performance Handbook Edition 47

Productivity - Excavators

Track Excavator Specifications							
Description	**312F**	**320F**	**325F**	**330F**	**349F**	**374F**	**390F**
Bucket Capacity (yd3)	0.68	1.57	2.22	2.22	3.00	4.60	7.30
Fill Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Average Bucket Load (yd3)	0.612	1.413	1.998	1.998	2.7	4.14	6.57
Soil Type	packed earth	hard clay	hard clay	hard clay	hard clay	hard clay	hard clay
Job Condition	med-hard	med-hard	med-hard	med-hard	med-hard	med-hard	med-hard
Cycle Times (minutes) - based on hard clay							
Load Bucket	0.07	0.09	0.09	0.09	0.13	0.1	0.19
Swing Loaded	0.06	0.06	0.06	0.07	0.07	0.09	0.06
Dump Bucket	0.03	0.03	0.04	0.04	0.02	0.04	0.03
Swing Empty	0.05	0.05	0.06	0.07	0.06	0.07	0.07
Total Cycle Time	0.21	0.23	0.25	0.27	0.28	0.3	0.35
Job Efficiency	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Operator Efficiency	1	1	1	1	1	1	1
Altitude Deration Factor	1	1	1	1	1	1	1
Corrected Productivity (LCY/hr)	145	306	398	369	480	687	935
Exploration Road Cycle Time[1/] (min)	N/A	0.38	0.4	N/A	0.42	N/A	N/A
Exploration Road Corr Prod (LCY/hr)	N/A	185	249	N/A	320	N/A	N/A
Track Width (ft)	8.17	9.17	9.83	10.5	11.42	11.5	11.5

Source: Caterpillar Performance Handbook Edition 47

Concrete Breaking Production

Track Excavator w/Hammer Specifications			
Description	**320F**	**349F**	**374F**
Hydraulic Hammer	H120Es	H160Es	H180Es
Material	reinforced concrete		
Min Shift Production (yd3/8hr)	160	300	385
Max Shift Production (yd3/8hr)	300	850	1,705
Avg Shift Production (8hr)	230	575	1,045
Job Efficiency	0.83	0.83	0.83
Altitude Deration Factor	1	1	1

Source: Caterpillar Performance Handbook Edition 47

Drill Hole Plugging Productivity

Drill Hole Plugging Productivity		
Description	**Drill Rig**	**Pump Rig**
Move-to-hole, set-up, tear-down[1]	2 hrs	2 hrs
Trip in tremmie pipe (1) (ft/hr)	500	
Pulling casing (threaded, not cemented) (1) (ft/hr)	200	
FALSE	Productivity (all passes) (2) (ft/hr)	Passes
4	60	4
6	60	4
8	50	4
12	45	6
18	40	9
24	28	12
Perforation setup,trip in/out,tear-down	2 hrs	
Perforation tool cost (wear cost)[3]	2.5 hrs	
Inert Material Placement (backfill)		
Grouting/Cement[4] (cy/hr)		5.33
Cuttings (see below) (cy/hr)		3.5

Sources:
1. Drillers daily logs from Newmont, Barrick, New West Gold, Agnico Eagle, Idaho General Mines Inc.
2. Drillers daily logs from Newmont, Barrick, Target Minerals
3. Drillers daily logs from Newmont
4. WDC Exploration, Dec 2005

Sournce: WDC Exploration, Dec 2005

Cuttings Placement Productivity

Shift productivity (Means 02210-700-0120; Crew B11M)	28	(yd3/shift)
Shift length	8	hours
Estimated Hourly Productivity	3.5	(yd3/hr)

Closure Cost Estimate
User 02 Solution Management

	gpm
Average TSF draindown rate - Year 1	445
Average TSF draindown rate - Year 2	310
Average TSF draindown rate - Year 3	210
Average TSF draindown rate - Year 4	140
Average TSF draindown rate - Year 5	90

Source: Figure E5 of "Attachment 2_TSF Water Management Plan Rev1_20170717.pdf"

Closure Cost Estimate
User 03 Miscellaneous Crews

Revegetation
Source: Nevada Division of Environmental Protection, Nevada standard cost data file cost sources, 2016_SRCE_Source_Data.pdf, page 24/44

Seeding - Broadcast Manual

Width (ft):	3.5
Speed (mph):	1.2
Speed (ft/hr):	6,336
Coverage (sf/hr):	22,176
Coverage (ac/hr):	0.5
Hours per acre:	2

Crew

	Labor ($/hr)	Equipment ($/hr)	#	Subtotal Labor ($/hr)	Subtotal Equipment ($/hr)	Subtotal ($/hr)
Pickup	23.29	29.95	1	23.29	29.95	53.24
				23.29	**29.95**	**53.24**

	Labor unit cost ($/ac)	Equipment unit cost ($/ac)	Total ($/ac)	
Cost per acre ($/ac):	**46.58**	**59.9**	**106.48**	<--CDF, Misc. Unit Costs

Seeding - Broadcast Mechanical

Width (ft):	6
Speed (mph):	2.8
Speed (ft/hr):	14,784
Coverage (sf/hr):	88,704
Coverage (ac/hr):	2
Hours per acre:	0.5

Crew

	Labor ($/hr)	Equipment ($/hr)	#	Subtotal Labor ($/hr)	Subtotal Equipment ($/hr)	Subtotal ($/hr)
Pickup	23.29	29.95	1	23.29	29.95	53.24
ATV	23.29	25	1	23.29	25	48.29
				46.58	**54.95**	**101.53**

	Labor unit cost ($/ac)	Equipment unit cost ($/ac)	Total ($/ac)	
Cost per acre ($/ac):	**23.29**	**27.475**	**50.765**	<--CDF, Misc. Unit Costs

Rubbish and Waste Handling

RSMeans 2018	Unit	p.	RSMeans no.	Total Inc. O&P	
Dumpster delivery (average for all sizes)	ea.	41	02 41 19.19 0910	82.5	<--CDF, Misc. Unit Costs
Haul (average for all sizes)	ea.	41	02 41 19.19 0920	259	<--CDF, Misc. Unit Costs
Rent per month (average for all sizes)	ea.	41	02 41 19.19 0940	88	<--CDF, Misc. Unit Costs
Disposal fee per ton (tonne) (average for all sizes)	ton	41	02 41 19.19 0950	97	<--CDF, Misc. Unit Costs

Closure Cost Estimate
User 03 Miscellaneous Crews

Hazardous Material Handling - Solids						
RSMeans 2018	Unit	p.		RSMeans no.	Total Inc. O&P	
Pickup fees 55 gal. drums	ea.		44	02 81 20.10 1100	265	<--CDF, Misc. Unit Costs
Bulk material (minimum)	ton		44	02 81 20.10 1120	210	
Bulk material (maximum)	ton		44	02 81 20.10 1130	655	
Bulk material (average)	ton			average	432.5	<--CDF, Misc. Unit Costs
Transport - truck load (80 drums, 25 cy (m3), 18 tons)				02 81 20.10 1260	4.45	
(maximum)	mile		44			
Transport - truck load (80 drums, 25 cy (m3), 18 tons)				02 81 20.10 1270	7.35	
(maximum)	mile		44			
Transport - truck load (80 drums, 25 cy (m3), 18 tons)				average	5.9	
(average)	mile					<--CDF, Misc. Unit Costs
Dump site disposal fee (minimum)	ton		44	02 81 20.10 6000	155	
Dump site disposal fee (maximum)	ton		44	02 81 20.10 6020	455	
Dump site disposal fee (average)	ton			average	305	<--CDF, Misc. Unit Costs
Hazardous Material Handling - Liquids						
RSMeans 2018	Unit	p.		RSMeans no.	Total Inc. O&P	
Vacuum Truck Pickup (2200 gal or 9,700 litres)	hr.		44	02 81 20.10 3110	155	<--CDF, Misc. Unit Costs
Vacuum Truck Pickup (5000 gal or 2,000 litres)	hr.		44	02 81 20.10 3120	225	<--CDF, Misc. Unit Costs
Dump site disposal fee (minimum)	ton		44	02 81 20.10 6000	155	
Dump site disposal fee (maximum)	ton		44	02 81 20.10 6020	455	
Dump site disposal fee (average)	ton			average	305	<--CDF, Misc. Unit Costs
Hydrocarbon Contaminated Soils (HCS)						
RSMeans 2018	Unit	p.		RSMeans no.	Total Inc. O&P	
Insitu Biotreatment (minimum)	CY		43	02 65 10.30 2020	23	
Insitu Biotreatment (maximum)	CY		43	02 65 10.30 2021	25.5	
Insitu Biotreatment (average)	CY			average	24.25	<--CDF, Misc. Unit Costs
HCS disposal fee (minimum)	CY		43	02 65 10.30 2050	150	
HCS disposal fee (maximum)	CY		43	02 65 10.30 2055	440	
HCS disposal fee (average)	CY			average	295	<--CDF, Misc. Unit Costs

Closure Cost Estimate
User 03 Miscellaneous Crews

Fencing Installation

RSMeans 2018	Unit	p.	RSMeans no.	Material	
Barbed 3-strand	LF		319 32 31 13.40 1650		0.39 <--CDF, Misc. Unit Costs
Barbed 4-strand	LF		319 32 31 13.40 1650		0.52 <--CDF, Misc. Unit Costs
Barbed 5-strand	LF		319 32 31 13.40 1650		0.65 <--CDF, Misc. Unit Costs
Chain link 8 ft -10 ft Install	LF		317 32 31 13.20 0920		32 <--CDF, Misc. Unit Costs
Wood stockade fence 6 ft high - Install	LF		322 32 31 29.10 1240		13.15 <--CDF, Misc. Unit Costs

Pipe and Drainpipe Installation

RSMeans 2018	Unit	p.	RSMeans no.	Material	
Water 4in (100mm) 40ft (12m) length, welded HDPE	LF		352 33 11 13.35 0100		2.5 <--CDF, Misc. Unit Costs
Water 6in (150mm) 40ft (12m) length, welded HDPE	LF		352 33 11 13.35 0200		5.65 <--CDF, Misc. Unit Costs
Water 12in (300mm) 40ft (12m) length, welded HDPE	LF		352 33 11 13.35 0500		13 <--CDF, Misc. Unit Costs
Drain 4in (100mm) perforated PVC	LF		352 33 41 16.30 2100		1.64 <--CDF, Misc. Unit Costs
Drain 6in (150mm) perforated PVC	LF		352 33 41 16.30 2110		3.49 <--CDF, Misc. Unit Costs
Drain 4in (100mm) corrugated, perf or plain	LF		352 33 46 16.35 0040		0.74 <--CDF, Misc. Unit Costs
Drain 6in (150mm) corrugated., perf or plain	LF		352 33 46 16.35 0060		1.88 <--CDF, Misc. Unit Costs

Powerline Removal Unit Cost Development

Daily	Labor Rate ($/hr)	Equipment Rate ($/hr)	#	Labor Cost ($/hr)	Equipment Cost ($/hr)	subtotal ($/hr)
R-3 *(modified)*						
Electrical foreman	72.08		1	72.08	0	**72.08**
Electrician	71.46		1	71.46	0	**71.46**
5-ton crane	33.30	82.99	0.5	16.65	41.50	**58.15**
Laborer *(added)*	15.19		1	15.19	0.00	**15.19**
Light truck *(added)*		29.95	1	0.00	29.95	**29.95**
				175.38	**71.45**	**246.83**

Utility Pole Demolition	Crew	Daily output	Labor-hrs	Unit	Materials	Labor	Equipment
	R-3	6	3.3	ea	0	233.84	95.26

Assume average distance between powerpoles (ft): 150
Powerpoles per mile (assume double): 70
Cost per mile:

Labor ($/mile)	Equipment ($/mile)	total ($/mile)	
$ 16,369	$ 6,668	$ 23,037	<--CDF, Misc. Unit Costs

Closure Cost Estimate
User 03 Miscellaneous Crews

Liner Installation

RSMeans 2018	Unit	p.	RSMeans no.	Material	
Membrane lining 60 mil thick	SF	218	31 05 19.53 1200	0.58	<--CDF, Misc. Unit Costs

Construction Management Support

RSMeans 2018	Unit	p.	RSMeans no.	Material	
Office Trailer, Furnished, no hook-ups	Month	17	01 52 13.20 0250	198	<--CDF, Misc. Unit Costs
Toilet Portable, chemical	Month	546	01 54 33.40 6410	198	<--CDF, Misc. Unit Costs

Install Signs

Daily	Labor Rate ($/hr)	Equipment Rate ($/hr)	#	Labor Cost ($/hr)	Equipment Cost ($/hr)	subtotal ($/hr)
B-80						
Foreman	78.74		1	78.74	0	**78.74**
Laborer	15.19		1	15.19	0	**15.19**
Flatbed Truck	141.70	24.94	1	141.70	24.94	**166.64**
Auger, truck-mounted	44.75	46.73	1	44.75	46.73	**91.48**
				280.38	**71.67**	**352.05**

Signate, Guide and directional	Crew	Daily output	Labor-hrs	Unit	Materials	Labor	Equipment
10 14 53.20 0600	B-80	70	0.457	ea	41	32.04	8.19
					^Other User	^Other User	^Other User

Steel post, galvanized, 10' upgright	Crew	Daily output	Labor-hrs	Unit	Materials	Labor	Equipment
10 14 53.20 1500	B-80	200	0.16	ea	32.5	11.22	2.87
					^Other User	^Other User	^Other User

Closure Cost Estimate
User 04 Bldgs & tanks backup

Source: EIS Facility Lists All Alternatives 2014.07.23.xlsx

EIS 2	↓F&B	↓F&B	↓F&B	↓F&B		↓F&B	↓User 13	
Facility	**Length (ft)**	**Width (ft)**	**Height (ft)**	**Diameter (ft)**	**Slab (ft)**	**Slab (in)**	**Tank?**	**Construction Type**
Primary Crusher Control/Mechanical Building	20	15	25		0.67	8		Metal roof,metal siding
Concentrator Building, Grinding Area	192	145	125		0.50 -1.00	12		Metal roof, metal siding
Concentrator Building, Flotation Area	216	96	80		0.50 -1.00	12		Metal roof, metal siding
Concentrator Building, Maintenance Area	70	50	30		0.83	10		Metal roof, metal siding
Concentrate Handling & Storage Area, Included in concentrator building	144	72	80		0.83	10		Metal roof, metal siding, included in concentrator building
Concentrate Thickeners (1/2)	-	-	16	16	-		Yes	Steel Tank
Concentrate Thickeners (2/2)	-	-	16	16	-		Yes	Steel Tank
Ball Bins	109	51			1	12		Concrete
Reagent Storage and Lime Handling	110	76	50		0.5	6		Metal roof, concrete block and metal siding
Flammable Material Storage Bldg.	25	17	9		0.67	8		Metal roof, metal siding
Tailings Cyclone Station	75	50	40		-			Centraly located open steel structure
Mine Shop/Warehouse	123	92	60		1	12		Metal roof, metal siding on existing slab
Wash Pad	90	90			0.83	10		Concrete
Administration Building	96	60	24		1	12		Prefabricated modular placed on existing slab
Changehouse/Gatehouse	84	60	19		0.5	6		Prefabricated modular placed on existing slab
Assay & Metallurgical Laboratory	122	40	22		0.5	6		Prefabricated modular placed on existing slab
Copper Flat Electric Substation	115	70	0		-			Constructed on graded, graveled, fenced area
Freshwater/Fire Tank (1)	-	-	36	40	-		Yes	Carbon steel, 300,000 gal
Process water tank (1)	-	-	32	30	-		Yes	Carbon steel, 150,000 gal
Fresh Water Pump Station Tanks (1/2)	-	-	36	40	-		Yes	Carbon steel, 300,000 gal
Fresh Water Pump Station Tanks (2/2)	-	-	36	40	-		Yes	Carbon steel, 300,000 gal
Potable Water Tank	-	-	7.25	12	-		Yes	Carbon steel, 6,000 gal
Seal Water Tank	-	-	8	8	-		Yes	Carbon steel, 3,000 gal
Reclaim Reservoir Fresh Water Surge Tank	16	-		8	-		Yes	Carbon steel, 5,500 gal
Reclaim Reservoir Fresh Water Storage Tank	-	-	36	40	-		Yes	Carbon steel, 300,000 gal
Off Road Diesel Fuel Storage Tank (1)	-	-	24	28	-		Yes	nominal 100,000 gal tank, field erected steel tank
On Road Diesel Storage Tank	-	-	12	12	-		Yes	Carbon steel, 10,000 gal
Gasoline Storage Tank	-	-	12	12	-		Yes	Carbon steel, 10,000 gal
Recycle Water Tank - Truck Wash	-	-	12	12	-		Yes	Carbon steel, 10,000 gal
Lime Silo	-	-	40	25	0.83	10	Yes	300 ton capacity
Lime Slurry Tank	-	-	25	12	-		Yes	Carbon steel, 20,000 gal
Pax Mix Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
Pax Distribution Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
MIBC Storage Tank	-	-	6	8	-		Yes	Carbon steel, 2,000 gal
No. 2 Diesel Storage Tank	-	-	6	8	-		Yes	Carbon steel, 2,000 gal
NaHS Mix Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
NaHS Distribution Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
Moly Collector Mix Tank	-	-	6	8	-		Yes	Carbon steel, 2,000 gal
Moly Collector Distribution Tank	-	-	6	8	-		Yes	Carbon steel, 2,000 gal
AERO 238 Mix Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
AERO 238 Distribution Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
NaHS Stock Tank	-	-	10.67	8	-		Yes	Carbon steel, 4,000 gal
Flocculant Tanks (1/2)	-	-	7.25	12	-		Yes	Carbon steel
Flocculant Tanks (2/2)	-	-	7.25	12	-		Yes	Carbon steel
Gravity Concentrator Concentrate Tank	-	-	9.5	12	-		Yes	Carbon steel, 8,000 gal
Copper concentrate stock tank	-	-	24.6	17	-		Yes	Carbon steel, 42,000 gal
Explosive Magazines (1/2)	8	8	8		-			Manufactured/Constructed, located and secured per federal and state regulations
Explosive Magazines (2/2)	8	8	8		-			Manufactured/Constructed, located and secured per federal and state regulations
Ammonium Nitrate Silo	-	-	60	15	-		Yes	Manufactured/Constructed, located and secured per federal and state regulations

Filter Deck	Included with Concentrate Handling & Storage							
Lime Mill	Included with Reagent Storage and Lime Handlng							
Acid Storage Building	Included with Reagent Storage and Lime Handlng							
Reagent Building	Included with Reagent Storage and Lime Handlng							
Tire/ Lube	Included with Mine Shop/Warehouse							
Small Vehicle Repair Building	Included with Mine Shop/Warehouse							
Tailings Thickener	Not Used in Plan							
Gatehouse	Included with Changehouse							
Records & Receiving Office	Included with Warehouse							
Engine Oil Storage Tank	-	-	-		-			1,000 gal, carbon steel
Hydraulic Fluid Storage Tank	-	-	-		-			1,000 gal, carbon steel
ATF Fluid Storage Tank	-	-	-		-			1,000 gal, carbon steel
Gear Oil Storage Tank	-	-	-		-			1,000 gal, carbon steel
Anti-freeze Storage Tank	-	-	-		-			1,000 gal, carbon steel
Used Oil Storage Tank	-	-	-		-			2,000 gal, carbon steel
Used antifreeze storage tank	-	-	-		-			2,000 gal, carbon steel
Primary Crusher	90	30	113		0.83	10		Existing, below ground, reinforced concrete
Coarse Ore Stockpile Tunnel	400	16	26		0.50 -1.00	12		Existing, below ground, reinforced concrete

Closure Cost Estimate
User 05 Growth Media Stockpiles

MORP Table E5. Required Reclamation Growth Media/Cover Material Storage

Facility	Size1 (Acres)	Required Material 2, 3 (reclamation cy)
Growth Media Stockpile 1	29.33	2,197,930
Growth Media Stockpile 2	31.55	1,826,877
Growth Media Stockpile 3	14.1	511,904
Surface Impoundment Backfill Areas	NA	320,000
Horizontal Construction Alignments4	NA	20,000
Total:		4,876,711

Notes:

1 – Includes GMSP and associated disturbance areas.

2 – Reclamation volumes are calculated from bank volumes and account for material swell and re-consolidation at excavation, storage, re-handle, and cover placement. See Section 3

3 – Storage capacity of the GMSPs is sufficient to store the volume required.

4 – Provided by NMCC. Additional material will be salvaged as encountered during miscellaneous horizontal construction (roads, ditches, pipelines, power lines).

cy – Cubic yards NA – Not applicable

Closure Cost Estimate
User 06 Earthworks inputs

Facility	Source	Item	Lift Height (ft)	Midbench leng	Area (acre)	Other length (ft)
EWRSP-1	FIG_EWRSP1	EWRSP1-MB1	30	1161		
EWRSP-1	FIG_EWRSP1	EWRSP1-MB2	30	650		
EWRSP-1	FIG_EWRSP1	EWRSP1-MB3	25	333		
EWRSP-1	FIG_EWRSP1	EWRSP1-MB4	20	351		
EWRSP-1	FIG_EWRSP1	area			25.1	
EWRSP-2B	FIG_EWRSP2	EWRSP2B-MB1	30	529		
EWRSP-2B	FIG_EWRSP2	EWRSP2B-MB2	70	477		
					25	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB1	10	148		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB2	50	319		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB3	30	223		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB4	20	331		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB5	30	591		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB6	10	499		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB7	10	1000		
EWRSP-4	FIG_EWRSP4	EWRSP4-MB1-Area			3.31	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB2-Area			2.89	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB3-Area			1.83	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB4-Area			1.5	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB5-Area			5.07	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB6-Area			2.39	
EWRSP-4	FIG_EWRSP4	EWRSP4-MB7-Area			4.27	
WRSP-2	FIG_WRSP2_\	WRSP2-MB1	75	1369		
WRSP-2	FIG_WRSP2_\	WRSP2-MB2	75	2212		
WRSP-2	FIG_WRSP2_\	WRSP2-MB3	75	2009		
WRSP-3	FIG_WRSP2_\	WRSP3-MB1	75	1680		
WRSP-3	FIG_WRSP2_\	WRSP3-MB2	75	3346		
WRSP-3	FIG_WRSP2_\	WRSP3-MB3	75	3144		
WRSP-3	FIG_WRSP2_\	WRSP3-MB4	75	1704		
WRSP-3	FIG_WRSP2_\	WRSP3-MB5	75	1430		
WRSP-3	FIG_WRSP2_\	WRSP3-MB6	75	2426		
WRSP-3	FIG_WRSP2_\	WRSP3-MB7	35	469		
WRSP-3	FIG_WRSP2_\	WRSP3-MB8	35	1570		
WRSP-2	FIG_WRSP2_\	WRSP2-Area			47.7	
WRSP-3	FIG_WRSP2_\	WRSP3-Area			118.5	
WRSP-1	FIG_WRSP1_E	WRSP1-MB1	75	494		
WRSP-1	FIG_WRSP1_E	WRSP1-MB2	50	211		
WRSP-1	FIG_WRSP1_E	WRSP1-MB3	50	143		
WRSP-1	FIG_WRSP1_E	WRSP1-MB4	75	2091		
WRSP-1	FIG_WRSP1_E	WRSP1-MB5	25	219		
WRSP-1	FIG_WRSP1_E	WRSP1-MB6	50	1806		
WRSP-1	FIG_WRSP1_E	WRSP1-MB7	50	748		
EWRSP2-A	FIG_WRSP1_E	EWRSP2A-MB1	50	1166		
WRSP-1	FIG_WRSP1_E	WRSP1-MB1-Area			3.11	
WRSP-1	FIG_WRSP1_E	WRSP1-MB2-Area			1.44	
WRSP-1	FIG_WRSP1_E	WRSP1-MB3-Area			included above	
WRSP-1	FIG_WRSP1_E	WRSP1-MB4-Area			12.01	
WRSP-1	FIG_WRSP1_E	WRSP1-MB5-Area			1.3	
WRSP-1	FIG_WRSP1_E	WRSP1-MB6-Area			19.27	
WRSP-1	FIG_WRSP1_E	WRSP1-MB7-Area			included above	
EWRSP2-A	FIG_WRSP1_E	EWRSP2A-MB1-Area			6.22	
TSF	FIG_TSF_MID	TSF Surface Area			305.39	
TSF	FIG_TSF_MID	TSF Embankment Area			244.99	
TSF	FIG_TSF_MID	TSF-MB1		17289		
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV1				2456
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV2				2789
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV3				3438
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV4				9206
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV5				8640
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV6				8072
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV7				4098
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV8				1627
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV9				5217
TSF Diversion Channels	FIG_TSF_DIVE	TSF-DIV10				3673
Pit Berm	FIG_PIT_BERI	Berm length				9252
GMSP-1					24.74	
GMSP-2					28.91	
GMSP-3					11.98	

Closure Cost Estimate
User 06 Earthworks inputs

Waste Rock Dumps	Lift (dump) Hei	Midbench length	Area
	ft	ft	acres
WRSP1-MB1	75	494	3.11
WRSP1-MB2	50	211	0.86
WRSP1-MB3	50	143	0.58
WRSP1-MB4	75	2091	12.01
WRSP1-MB5	25	219	1.3
WRSP1-MB6	50	1806	13.63
WRSP1-MB7	50	748	5.64
WRSP2-MB1	75	1369	11.68
WRSP2-MB2	75	2212	18.88
WRSP2-MB3	75	2009	17.14
WRSP3-MB1	75	1680	12.62
WRSP3-MB2	75	3346	25.14
WRSP3-MB3	75	3144	23.63
WRSP3-MB4	75	1704	12.81
WRSP3-MB5	75	1430	10.75
WRSP3-MB6	75	2426	18.23
WRSP3-MB7	35	469	3.52
WRSP3-MB8	35	1570	11.8
EWRSP1-MB1	30	1161	11.68
EWRSP1-MB2	30	650	6.54
EWRSP1-MB3	25	333	3.35
EWRSP1-MB4	20	351	3.53
EWRSP2A-MB1	50	1166	6.22
EWRSP2B-MB1	30	529	13.15
EWRSP2B-MB2	70	477	11.85
EWRSP4-MB1	10	148	3.31
EWRSP4-MB2	50	319	2.89
EWRSP4-MB3	30	223	1.83
EWRSP4-MB4	20	331	1.5
EWRSP4-MB5	30	591	5.07
EWRSP4-MB6	10	499	2.39
EWRSP4-MB7	10	1000	4.27

Tailings	Final (Regrade	Mid-Embankment Length	Final Tailings Surface Area
	acres	ft	acres
TSF	244.99	17,289	305.39

Table E4. Summary of Copper Flat Surface Impoundments

					Calculations for SRCE				
Impoundment	Size1 (Acres)	Storage Volume2 (Gallons)	Total Excavation Volume3 (cy)	Required Back	**Backfill 1 (cy)**	**Backfill 2 (cy)**	**Backfill 1 (%)**	**Backfill 2 (%)**	
Impacted Storm Water Impoundment A	2.9	7,306,971	43,000	11,000	**32,000**	**11,000**	**74%**	**26%**	<-- Process Ponds
Impacted Storm Water Impoundment B	2.69	5,598,421	34,000	9,000	**25,000**	**9,000**	**74%**	**26%**	<-- Process Ponds
Impacted Storm Water Impoundment C	4.44	10,513,870	63,000	16,000	**47,000**	**16,000**	**75%**	**25%**	<-- Process Ponds
Process Water Reservoir	2.12	5,433,849	32,000	8,000	**24,000**	**8,000**	**75%**	**25%**	<-- Process Ponds
Surge Pond	1.86	1,610,000	12,000	3,000	**9,000**	**3,000**	**75%**	**25%**	<-- Process Ponds
TSF Underdrain Collection Pond	7.9	12,240,000	80,000	20,000	**80,000**		**100%**	**0%**	<-- Process Ponds
TSF Evaporation Pond	22.3	21,934,379	163,000	41,000	**122,000**	**41,000**	**75%**	**25%**	<-- Process Ponds
Total:	44.21	64,637,490	427,000	108,000					

Notes:
1 –Surface impoundment areas also include disturbed areas (embankment, access road, etc.) associated with each impoundment.
2 – Surface impoundment storage volumes account for 2-feet of freeboard.
3 – Backfill volume total = full excavation volume to match storage capacity + 2' freeboard. Import volume assumes that 75% of reclamation backfill is retrieved from excavated material stored within pond embankments, etc.
cy – Cubic yards

Closure Cost Estimate
User 07 Labor rates

https://www.wdol.gov/wdol/scafiles/davisbacon/NM12.dvb?v=1

General Decision Number: NM180012 02/23/2018 NM12
Superseded General Decision Number: NM20170012
State: New Mexico
Construction Type: Heavy

SUNM2009-006 09/14/2010

	Basic Rate ($/hr)	Fringes ($/hr)	**Total**	
Carpenter	**$ 22.26**	**$ 6.20**	$ 28.46	<--to cost data file
Ironworker, reinforcing	$ 22.75	$ 9.60	$ 32.35	
Laborer: Common or Gene	**$ 12.37**	**$ -**	$ 12.37	<--to cost data file
Laborer: Flagger	$ 10.90	$ -	$ 10.90	
Operator: Backhoe	$ 14.03	$ -	**$ 14.03**	<--to cost data file
Operator: Grader/Blade	$ 18.79	$ 2.35	**$ 21.14**	<--to cost data file
Operator: Loader (Front En	$ 22.07	$ 5.05	**$ 27.12**	<--to cost data file
Operator: Scraper	$ 14.03	$ -	**$ 14.03**	<--to cost data file
Pipefitter	$ 25.64	$ 11.31	$ 36.95	
Plumber	$ 26.27	$ 7.69	$ 33.96	
Truck Driver: Dump Truck	$ 11.90	$ -	**$ 11.90**	<--to cost data file
Truck Driver: Water Truck	$ 13.72	$ 5.25	**$ 18.97**	<--to cost data file

Closure Cost Estimate
User 08 Rapid Fill

File: Copper Flat Alt2-4900CB RF2200_4July2017.xlsm
Tab: Rapid Fill Water Balance

ft3/day to gpm conversion: 192.5

ft3/day

577,500	3,000
577,500	3,000
577,500	3,000
577,500	3,000
577,500	3,000
288,800	1,500

Closure Cost Estimate
User 09 Haulage Distances

	Elevation
GMSP-1	5350
GMSP-2	5275
GMSP-3	5300

From	To	Distance	Start Elevation	End Elevation	Grade	
GMSP-1	TSF	7,426	5350	5450	-1.3	
GMSP-2	TSF	10,536	5275	5450	-1.7	**<--Tailings**
GMSP-2	WRSP-1	13,179	5275	5675	-3	**<--WRD**
GMSP-2	WRSP-2	9,309	5275	5725	-4.8	**<--WRD**
GMSP-3	WRSP-3	8,047	5300	5575	-3.4	**<--WRD**
GMSP-3	EWRSP-1	13,044	5300	5575	-2.1	**<--WRD**
GMSP-2	EWRSP2A	13,179	5275	5610	-2.5	**<--WRD**
GMSP-2	EWRSP2B	13,179	5275	5600	-2.5	**<--WRD**
GMSP-2	EWRSP4	12,000	5275	5485	-1.8	**<--WRD**
GMSP-3	Plant	5,071	5300	5475	-3.5	**<--Yards**
locally	Impacted Storm Water Impoundment A	500	5375	5375	0	**<--Process Ponds**
locally	Impacted Storm Water Impoundment B	500	5500	5500	0	**<--Process Ponds**
locally	Impacted Storm Water Impoundment C	500	5300	5300	0	**<--Process Ponds**
locally	Process Water Reservoir	500	5450	5450	0	**<--Process Ponds**
locally	Surge Pond	500	5350	5350	0	**<--Process Ponds**
locally	New evaporation pond excavation	500	5150	5150	0	**<--Process Ponds**
locally	New evaporation pond conversion to E-cell	500	5150	5150	0	**<--Process Ponds**

Closure Cost Estimate
User 10 Diversion channels

Source File	OBJECTID *	SRCE ID	SRCE ID with info	LENGTH_ft	Constructed?	Input (ft)	DIVERSION_ID
TSF_Diversion_Channels_PLN.xlsx	1	TSF-DIV1	TSF-DIV1	2456		2456	TSF-DIV1
TSF_Diversion_Channels_PLN.xlsx	25	TSF-DIV10	TSF-DIV10	3673		3673	TSF-DIV10
TSF_Diversion_Channels_PLN.xlsx		TSF-DIV11	TSF-DIV11	991		991	TSF-DIV11
TSF_Diversion_Channels_PLN.xlsx	2	TSF-DIV2	TSF-DIV2	2789		2789	TSF-DIV2
TSF_Diversion_Channels_PLN.xlsx	3	TSF-DIV3	TSF-DIV3	3438		3438	TSF-DIV3
TSF_Diversion_Channels_PLN.xlsx	4	TSF-DIV4	TSF-DIV4	9206		9206	TSF-DIV4
TSF_Diversion_Channels_PLN.xlsx	5	TSF-DIV5	TSF-DIV5	8640		8640	TSF-DIV5
TSF_Diversion_Channels_PLN.xlsx	6	TSF-DIV6	TSF-DIV6	8072		8072	TSF-DIV6
TSF_Diversion_Channels_PLN.xlsx	7	TSF-DIV7	TSF-DIV7	4098		4098	TSF-DIV7
TSF_Diversion_Channels_PLN.xlsx	20	TSF-DIV8	TSF-DIV8	1627		1627	TSF-DIV8
TSF_Diversion_Channels_PLN.xlsx	23	TSF-DIV9	TSF-DIV9	5217		5217	TSF-DIV9
EWRSP1_Prop_Channel_Center_PLN.xlsx	2	EWRSP1 diversion channel 1	EWRSP1 diversion channel 1	655		655	
EWRSP1_Prop_Channel_Center_PLN.xlsx	3	EWRSP1 diversion channel 2	EWRSP1 diversion channel 2	1170		1170	
EWRSP1_Prop_Channel_Center_PLN.xlsx	4	EWRSP1 diversion channel 3	EWRSP1 diversion channel 3	512		512	
EWRSP1_Prop_Channel_Center_PLN.xlsx	5	EWRSP1 diversion channel 4	EWRSP1 diversion channel 4	636		636	
EWRSP1_Prop_Channel_Center_PLN.xlsx	6	EWRSP1 diversion channel 5	EWRSP1 diversion channel 5	455		455	
EWRSP1_Prop_Channel_Center_PLN.xlsx	7	EWRSP1 diversion channel 6	EWRSP1 diversion channel 6	525		525	
EWRSP2B_Prop_Channel_Center_PLN.xlsx	1	EWRSP2B diversion channel 1	EWRSP2B diversion channel 1	455		455	
EWRSP2B_Prop_Channel_Center_PLN.xlsx	2	EWRSP2B diversion channel 2	EWRSP2B diversion channel 2	1258		1258	
EWRSP3_Prop_Channel_Center_PLN.xlsx	1	Plant Area diversion channel 1	Plant Area diversion channel 1	1461		1461	
EWRSP3_Prop_Channel_Center_PLN.xlsx	2	Plant Area diversion channel 2	Plant Area diversion channel 2	705		705	
EWRSP3_Prop_Channel_Center_PLN.xlsx	4	Plant Area diversion channel 3	Plant Area diversion channel 3	606		606	
EWRSP3_Prop_Channel_Center_PLN.xlsx	5	Plant Area diversion channel 4	Plant Area diversion channel 4	619		619	
EWRSP3_Prop_Channel_Center_PLN.xlsx	6	Plant Area diversion channel 5	Plant Area diversion channel 5	1609		1609	
EWRSP3_Prop_Channel_Center_PLN.xlsx	7	Plant Area diversion channel 6	Plant Area diversion channel 6	1951		1951	
EWRSP3_Prop_Channel_Center_PLN.xlsx	8	Plant Area diversion channel 7	Plant Area diversion channel 7	1854		1854	
EWRSP3_Prop_Channel_Center_PLN.xlsx	9	Plant Area diversion channel 8	Plant Area diversion channel 8	2361		2361	
EWRSP3_Prop_Channel_Center_PLN.xlsx	10	Plant Area diversion channel 9	Plant Area diversion channel 9	4155		4155	
WRSP1_Prop_Channel_Center_PLN.xlsx	1	WRSP1 diversion channel 1	WRSP1 diversion channel 1 - built during operations	682	Yes	0	
WRSP1_Prop_Channel_Center_PLN.xlsx	2	WRSP1 diversion channel 2	WRSP1 diversion channel 2 - built during operations	2030	Yes	0	
WRSP1_Prop_Channel_Center_PLN.xlsx	3	WRSP1 diversion channel 3	WRSP1 diversion channel 3	909		909	
WRSP1_Prop_Channel_Center_PLN.xlsx	4	WRSP1 diversion channel 4	WRSP1 diversion channel 4	724		724	
WRSP1_Prop_Channel_Center_PLN.xlsx	5	WRSP1 diversion channel 5	WRSP1 diversion channel 5	2847		2847	
WRSP1_Prop_Channel_Center_PLN.xlsx	6	WRSP1 diversion channel 6	WRSP1 diversion channel 6	2110		2110	
WRSP1_Prop_Channel_Center_PLN.xlsx	7	WRSP1 diversion channel 7	WRSP1 diversion channel 7	596		596	
WRSP1_Prop_Channel_Center_PLN.xlsx	8	WRSP1 diversion channel 8	WRSP1 diversion channel 8	455		455	
WRSP1_Prop_Channel_Center_PLN.xlsx	9	WRSP1 diversion channel 9	WRSP1 diversion channel 9	1800		1800	
WRSP1_Prop_Channel_Center_PLN.xlsx	10	WRSP1 diversion channel 10	WRSP1 diversion channel 10	842		842	
WRSP1_Prop_Channel_Center_PLN.xlsx	11	WRSP1 diversion channel 11	WRSP1 diversion channel 11	1590		1590	
WRSP1_Prop_Channel_Center_PLN.xlsx	12	WRSP1 diversion channel 12	WRSP1 diversion channel 12	1063		1063	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	2	WRSP2+WRSP3 diversion channel 1	WRSP2+WRSP3 diversion channel 1 - built during opera	1068	Yes	0	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	3	WRSP2+WRSP3 diversion channel 2	WRSP2+WRSP3 diversion channel 2	1684		1684	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	4	WRSP2+WRSP3 diversion channel 3	WRSP2+WRSP3 diversion channel 3	1773		1773	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	5	WRSP2+WRSP3 diversion channel 4	WRSP2+WRSP3 diversion channel 4	1495		1495	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	6	WRSP2+WRSP3 diversion channel 5	WRSP2+WRSP3 diversion channel 5	1783		1783	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	7	WRSP2+WRSP3 diversion channel 6	WRSP2+WRSP3 diversion channel 6	1390		1390	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	8	WRSP2+WRSP3 diversion channel 7	WRSP2+WRSP3 diversion channel 7	1103		1103	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	9	WRSP2+WRSP3 diversion channel 8	WRSP2+WRSP3 diversion channel 8	829		829	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	10	WRSP2+WRSP3 diversion channel 9	WRSP2+WRSP3 diversion channel 9	1058		1058	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	11	WRSP2+WRSP3 diversion channel 10	WRSP2+WRSP3 diversion channel 10	1090		1090	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	12	WRSP2+WRSP3 diversion channel 11	WRSP2+WRSP3 diversion channel 11	1104		1104	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	13	WRSP2+WRSP3 diversion channel 12	WRSP2+WRSP3 diversion channel 12	611		611	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	14	WRSP2+WRSP3 diversion channel 13	WRSP2+WRSP3 diversion channel 13	1058		1058	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	15	WRSP2+WRSP3 diversion channel 14	WRSP2+WRSP3 diversion channel 14	538		538	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	16	WRSP2+WRSP3 diversion channel 15	WRSP2+WRSP3 diversion channel 15	579		579	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	17	WRSP2+WRSP3 diversion channel 16	WRSP2+WRSP3 diversion channel 16	1267		1267	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	18	WRSP2+WRSP3 diversion channel 17	WRSP2+WRSP3 diversion channel 17	1096		1096	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	19	WRSP2+WRSP3 diversion channel 18	WRSP2+WRSP3 diversion channel 18	212		212	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	20	WRSP2+WRSP3 diversion channel 19	WRSP2+WRSP3 diversion channel 19	1891		1891	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	21	WRSP2+WRSP3 diversion channel 20	WRSP2+WRSP3 diversion channel 20	959		959	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	22	WRSP2+WRSP3 diversion channel 21	WRSP2+WRSP3 diversion channel 21	958		958	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	23	WRSP2+WRSP3 diversion channel 22	WRSP2+WRSP3 diversion channel 22	741		741	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	24	WRSP2+WRSP3 diversion channel 23	WRSP2+WRSP3 diversion channel 23 - built during oper	830	Yes	0	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	25	WRSP2+WRSP3 diversion channel 24	WRSP2+WRSP3 diversion channel 24	2674		2674	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	26	WRSP2+WRSP3 diversion channel 25	WRSP2+WRSP3 diversion channel 25	606		606	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	27	WRSP2+WRSP3 diversion channel 26	WRSP2+WRSP3 diversion channel 26 - built during oper	679	Yes	0	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	28	WRSP2+WRSP3 diversion channel 27	WRSP2+WRSP3 diversion channel 27	1847		1847	
WRSP2_WRSP3_Prop_Channel_Center_PLN.xlsx	29	WRSP2+WRSP3 diversion channel 28	WRSP2+WRSP3 diversion channel 28	2361		2361	

Closure Cost Estimate
User 10 Diversion channels

CALCULATIONS

Date: 10/10/2016
Project No.: 1531453
Subject: Channel Schedule
Project Short Title: COPPER FLAT MORP AND MINE PERMIT APPLICATION

Made by: HNL
Checked by: TLS
Reviewed by: TLS

CHANNEL SCHEDULE

Reach Designation1		Qdesign (cfs)	Reach Design Bottom Width (ft)	Bed Slope (%)	Left Side Slope(H:1V)	Right Side Slope(H:1V)	Normal Flow Depth (ft)	Average Velocity (fps)	Min. D50 (in)		Reports to	Channel Length (ft)	Channel depth (ft)	Channel area (sy)	Volume = Channel area * D50 * 2	
EWRSP-1																
Diversion Channel, DC-1		100	10	0.5	3	3	2.06	3	3		Grayback Diversion	655	4	2,474	412	
Diversion Swale, DS-1		12	10	0.5	3	3	0.64	1.56	3		Grayback Diversion	512	3	1,593	266	
Toe Channel, TC-1		27	10	3	3	3	0.62	3.74	3		Grayback Diversion	1170	3	3,640	607	
Toe Channel, TC-2		17	10	0.5	3	3	0.78	1.75	3		Grayback Diversion	636	3	1,979	330	
Haul Road Channel, HC-1		12.9	10	10	3	3	0.28	4.24	6		Grayback Diversion	455	2	1,112	371	
EWRSP-2B																
Top Surface Channel, TSC-1	TSC-1	81.2	10	1	3	3	0.31	1.01	3		Pit Perimeter Channel to Pit	1258	2	3,075	513	
Toe Channel, TC-3	TC-3	125.6	10	2.9	3	3	1.54	3.61	12		Pit Perimeter Channel to Pit	525	4	1,983	1322	
Diversion Swale, DS-2	DS-2	3.4	10	0.5	3	3	1.46	5.98	-		Pit Perimeter Channel to Pit	455	3	1,416		
EWRSP-4																
Top Surface Channel, TSC-2	TSC-2	86	10	2.5	3	3	1.24	5.06	3		Haul Road Channel HC-2 to Pit	1461	3	4,545	758	
Haul Road Channel, HC-2	HC-2	20	10	6.7	3	3	0.41	4.39	3		Pit					Included with TSC-2
Toe Channel, TC-4	TC-4	13	10	7.4	3	3	0.31	3.87	3		Grayback Arroyo	1609	2	3,933	656	
WRSP-1																
Diversion Swale, DS-3	DS-3	27	10	0.5	3	3	1.02	2.03	3		Off Site	682	3	0	0	
Diversion Swale, DS-4	DS-4	69	10	0.5	3	3	1.7	2.69	3		Natural Ground to Pit	2030	4	0	0	
Diversion Channel, DC-2	DC-2	39	10	0.5	3	3	1.25	2.28	3		Off Site	596	3	1,854	309	
Top Surface Channel-3	TSC-3	32.5	10	5.6	3	3	0.57	4.87	6		Pit Perimeter Channel to Pit	842	3	2,620	873	
Bench Channels, BC-1 through BC-4	BC-1 through BC-4	97	10	1	3	3	0.39	1.65	3		Pit Perimeter Channel to Pit	4286	2	10,477	1746	
Haul Road Channel, HC-3	HC-3	97	10	10.3	3	3	0.89	8.57	12		Pit Perimeter Channel to Pit	1800	3	5,600	3733	
WRSP-2 and WRSP-3															0	
Diversion Swale, DS-5	DS-5	112	10	0.5	3	3	2.19	3.09	3		Natural Ground to Pit	830	4	0	0	
Diversion Swale, DS-6	DS-6	52	10	0.5	3	3	1.46	2.48	3		Off Site	679	3	0	0	
Diversion Swale, DS-7	DS-7	26	10	0.5	3	3	1	2.02	3		Off Site	1068	3	0	0	
Haul Road Channel, HC-4	HC-4	63.9	10	9.6	3	3	0.72	7.31	12		Pit	1847	3	5,746	3831	
Top Surface Channel, TSC-4	TSC-4	42	10	1	3	3	1.07	2.96	3		Grayback Arroyo	741	3	2,305	384	
Top Surface Channel, TSC-5	TSC-5	100	10	1	3	3	1.72	3.84	18		Grayback Arroyo	958	4	3,619	3619	
Downslope Channel, DSC-1	DSC-1	127.1	20	29	3	3	0.28	22.03	ACB		Grayback Arroyo	634	2	2,254		
Downslope Channel, DSC-2	DSC-2	240.1	20	30.2	3	3	0.4	28.36	ACB		Grayback Arroyo	1891	2	6,724		
Toe Channel, TC-5	TC-5	229.8	10	13	3	3	0.97	10.09	3		Grayback Arroyo	1608	3	5,003	834	
Toe Channel, TC-6	TC-6	242.9	10	8.6	3	3	1.55	10.67	18		Grayback Arroyo	325	4	1,228	1228	
Bench Channels, BC-5 through BC-20	BC-5 through BC-20	39	10	1	3	3	1.03	2.89	3		WRSP-2 to Pit, WRSP-3 to Grayback Arroyo	18458	3	57,425	9571	
TSF																
Downslope Channel, DSC-3	DSC-3	181.8	20	27.6	3	3	0.35	24.85	ACB		Off Site	950	2	3,378		
Downslope Channel, DSC-4	DSC-4	165.6	20	27.8	3	3	0.33	24.03	ACB		Grayback Arroyo	932	2	3,314		
Downslope Channel, DSC-5	DSC-5	478	20	29	3	3	0.61	36.08	ACB		Grayback Arroyo	2302	3	9,720		
Top Surface Channel, TSC-6	TSC-6	243	10	0.5	3	3	2.79	3.72	3		DSC-5 to Grayback Arroyo	2914	5	12,951	2159	
Top Surface Channel, TSC-7	TSC-7	236.4	10	0.5	3	3	2.76	3.69	3		DSC-5 to Grayback Arroyo	3673	5	16,324	2721	
Bench Channels, BC-21 through BC-42	BC-21 through BC-42	38	10	1	3	3	1.02	2.83	3		Off Site or Grayback Arroyo	33454	3	104,079	17347	
Toe Channel, TC-7	TC-7	487.7	15	0.5	3	3	4	4.52	3		Off Site	1891	6	10,716	1786	
Toe Channel, TC-8	TC-8	213.2	10	0.5	3	3	3.03	3.69	3		Grayback Arroyo	1839	5	8,173	1362	
Toe Channel, TC-9	TC-9	192.5	10	3.5	3	3	1.74	7.25	12		Grayback Arroyo	1524	4	5,757	3838	
PLANT																
Perimeter Channel, PC-2	PC-2	200	10	1	3	3	2.46	4.67	3		Grayback Arroyo	2361	4	8,919	1487	
Toe Channel, TC-10	TC-10	36	10	1	3	3	0.98	2.82	3		Pit	606	3	1,885	314	
PIT																
Perimeter Channel, PC-1	PC-1	294	10	2	3	3	2.51	6.67	3		Pit	2847	5	12,653	2109	
Haul Road Channel, HC-5	HC-5	984.4	10	10	3	3	1.76	36.7	ACB		Pit	2110	4	7,971		

Notes:
1 - See Mine Reclamation and Closure Plan drawing set for location of specific reach. Hydrolgy and Hydraulics calculation packet available upon request.
ACB - Articulated concrete block.
cfs - Cubic feet per second
ft - Feet
fps - Feet per second
in - Inch
Qdesign - Design flows for channel determined from Hydrologic Modeling System (HEC-HMS) developed by the Hydrologic Engineering Center within the U.S. Army Corps of Engineers.
Min. D50 - median diameter or the medium value of the particle size distribution
Rip Rap size calculations based on the following criteria: U.S. Army Corps of Engineers (USACE, 1994) mild slope, <2% slopes; USACE steep slope, >2% to <20% slopes; Robinson method (1997), >20% to ,40% slopes; ACB for all downslope channels.

Source: H:\Copper_Flat\New Mexico Copper Corp\191000.060_Copper Flat Bond\020_Project Data\20180713_channel_schedule
NMCC Channel Schedule - 20161014

Total area of ACB: **33,361** **64,486** **<--Haul Material**
Other User^

Per call with Matthew Stovall of Contech, July 25, 2018, crew for ACB installation:

	#	Labor rate ($/hr)	Equipment rate ($/hr)	Labor costs ($/hr	Equipment costs ($/hr)	
20 ton crane	1	93.65	33.30	$ 93.65	$ 33.30	126.95
laborers	5	15.19		$ 75.95	$ -	75.95
				$ 169.60	$ 33.30	202.9

Daily productivity (sf/day): 6000
Daily productivity (SY/day): 667
Hourly productivity (SY/hr): 83

	Labor unit cost ($/SY)	Equipment unit cost ($/SY)	
Unit cost ($/SY):	$ 2.04	$ 0.40	**<--Other User**

Closure Cost Estimate
User 11 Surface Areas of Ponds

Surface Areas of Ponds	Crest Length (ft)	Crest Width (ft)	Bottom Length (ft)	Bottom Width (ft)	Side Length (ft)	Surface area (ft2)
	a	b	c	d	s	A=ab+cd+(a+b+c+d)*s/2
Impacted Storm Water Impoundment A (mea	359	258	284	240	40	183,602
Impacted Storm Water Impoundment B	474	392	444	374	16	365,336
Impacted Storm Water Impoundment C	1200	265	1168	247	17	630,976
Process Water Reservoir (measured from "D	278	265	158	247	63	142,558
Surge Pond (L and W measured from "X-DS-	332.5	142.5	286	125	24	93,763

Closure Cost Estimate
User 12 Excavation work

This sheet documents the assumptions made in various excavating activities across the site to allow for free drainage on the Grayback Arroyo after reclamation.
These include those at the plant area and on the EWRSP-1.

Fleet:

Excavator selected:	349F
Productivity of excavator (LCY/hr):	480
Productivity adjusted for activity (LCY/hr):	400

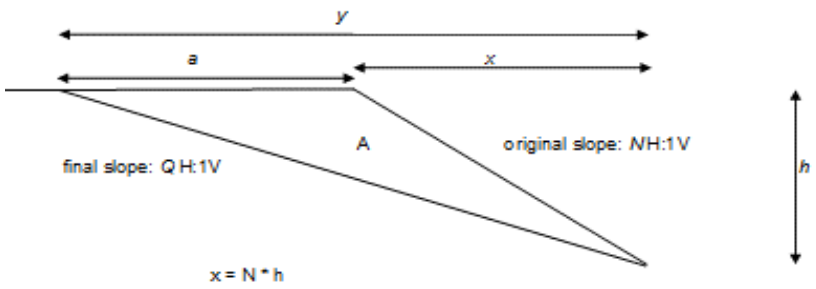
Number of excavators:	2

Dozer selected:	D7E
Number of dozers:	1

excavator labor rate ($/hr):	33.3
excavator equipment rate ($/hr):	129.07
excavator hourly labor cost ($/hr):	66.6
excavator hourly equipment cost ($/hr):	258.14

dozer labor rate ($/hr):	25.96
dozer equipment rate ($/hr):	130.69
dozer hourly labor cost ($/hr):	25.96
dozer hourly equipment cost ($/hr):	130.69

total hourly labor cost ($/hr):	92.56	<--Other User
total hourly equipment cost ($/hr):	388.83	<--Other User



x = N * h
y = Q * h

a = y-x

Cross-sectional area of triangle is equal to half of base times height.
A = (a * h)/2
A = ((y-x) * h)/2
A = (((Q-N) * h) * h)/2

Plant Area	
N (original slope)(_H:1V):	1.4
Q (final slope)(_H:1V):	3
h (height of slope)(ft):	60
A (cross-sectional area)(ft2):	2880
length of slope (ft):	750
bank volume of pullback material (ft3):	2,160,000
bank volume of pullback material (cy):	80,000
material expansion factor:	1.2

time required to pull material back (hr):	200	**<--Other User**

Landbridge 1
measured on Google Earth: 600*100*5ft

volume of material to be moved (ft3):	300,000
volume of material to be moved (cy):	11,111

time required to pull material back (hr):	28	**<--Other User**

Landbridge 2
measured on Google Earth: 400*100*22ft

volume of material to be moved (ft3):	880000
volume of material to be moved (cy):	32593

time required to pull material back (hr):	81	**<--Other User**

EWRSP-1 Pullback
Based on measurements made for SRCE and documented in the "Waste Rock Dumps" sheet: EWRSP1-MB3

N (original slope)(_H:1V):	1.4
Q (final slope)(_H:1V):	3
h (height of slope)(ft):	25
A (cross-sectional area)(ft2):	500
length of slope (ft):	333
bank volume of pullback material (ft3):	166500
bank volume of pullback material (cy):	6167
material expansion factor:	1.2

time required to pull material back (hr):	15	**<--Other User**

Closure Cost Estimate
User 13 Tank cutting

Source: User 4

Facility	Height (ft)	Diameter (ft)	Construction Type	Circumference	Number of Cuts (Top/Bottom)	Cuts (ft)	No. of Cuts (side) (vert)	Cuts (ft)	No. Cuts on Circumference (Horiz)	Circ. Cuts (ft)	total Cuts (ft)	No. of tanks	Total Cuts (ft)
Concentrate Thickeners (1/2)	16	16	Steel Tank	50.24	7	224	6	96	9	453	773	1	773
Concentrate Thickeners (2/2)	16	16	Steel Tank	50.24	7	224	6	96	9	453	773	1	773
Freshwater/Fire Tank (1)	36	40	Carbon steel, 300,000 gal	125.6	16	1280	13	468	18	2261	4009	1	4009
Process water tank (1)	32	30	Carbon steel, 150,000 gal	94.2	12	720	10	320	14	1319	2359	1	2359
Fresh Water Pump Station Tanks (1/2)	36	40	Carbon steel, 300,000 gal	125.6	16	1280	13	468	18	2261	4009	1	4009
Fresh Water Pump Station Tanks (2/2)	36	40	Carbon steel, 300,000 gal	125.6	16	1280	13	468	18	2261	4009	1	4009
Potable Water Tank	7.25	12	Carbon steel, 6,000 gal	37.68	5	120	4	29	7	264	413	1	413
Seal Water Tank	8	8	Carbon steel, 3,000 gal	25.12	4	64	3	24	6	151	239	1	239
Reclaim Reservoir Fresh Water Surge Tank	0	8	Carbon steel, 5,500 gal	25.12	4	64	3	0	2	51	115	1	115
Reclaim Reservoir Fresh Water Storage Tank	36	40	Carbon steel, 300,000 gal	125.6	16	1280	13	468	18	2261	4009	1	4009
Off Road Diesel Fuel Storage Tank (1)	24	28	nominal 100,000 gal tank, fi	87.92	12	672	9	216	14	1231	2119	1	2119
On Road Diesel Storage Tank	12	12	Carbon steel, 10,000 gal	37.68	5	120	4	48	7	264	432	1	432
Gasoline Storage Tank	12	12	Carbon steel, 10,000 gal	37.68	5	120	4	48	7	264	432	1	432
Recycle Water Tank - Truck Wash	12	12	Carbon steel, 10,000 gal	37.68	5	120	4	48	7	264	432	1	432
Lime Silo	40	25	300 ton capacity	78.5	10	500	8	320	12	942	1762	1	1762
Lime Slurry Tank	25	12	Carbon steel, 20,000 gal	37.68	5	120	4	100	7	264	484	1	484
Pax Mix Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
Pax Distribution Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
MIBC Storage Tank	6	8	Carbon steel, 2,000 gal	25.12	4	64	3	18	6	151	233	1	233
No. 2 Diesel Storage Tank	6	8	Carbon steel, 2,000 gal	25.12	4	64	3	18	6	151	233	1	233
NaHS Mix Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
NaHS Distribution Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
Moly Collector Mix Tank	6	8	Carbon steel, 2,000 gal	25.12	4	64	3	18	6	151	233	1	233
Moly Collector Distribution Tank	6	8	Carbon steel, 2,000 gal	25.12	4	64	3	18	6	151	233	1	233
AERO 238 Mix Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
AERO 238 Distribution Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
NaHS Stock Tank	10.67	8	Carbon steel, 4,000 gal	25.12	4	64	3	33	6	151	248	1	248
Flocculant Tanks (1/2)	7.25	12	Carbon steel	37.68	5	120	4	29	7	264	413	1	413
Flocculant Tanks (2/2)	7.25	12	Carbon steel	37.68	5	120	4	29	7	264	413	1	413
Gravity Concentrator Concentrate Tank	9.5	12	Carbon steel, 8,000 gal	37.68	5	120	4	38	7	264	422	1	422
Copper concentrate stock tank	24.6	17	Carbon steel, 42,000 gal	53.38	7	238	6	148	9	481	867	1	867
Ammonium Nitrate Silo	60	15	Manufactured/Constructed,	47.1	6	180	5	300	8	377	857	1	857
										subtotal			32,009

Closure Cost Estimate
User 13 Tank cutting

Steel Cutting Task

RS Means	Crew	Daily Output	Labor-Hours	Unit	Material unit cost	Labor unit cost	Equipment unit cost
02 41 19.27 0020	E-25	360	0.22	l.f.	0.87	1.26	0.28

RSMeans 2018, page 42.

	Material cost	Labor cost	Equipment cost	Total cost
Total Steel Cutting Cost	$ 27,847.83	$ 10,815.28	$ 8,962.52	$ 47,625.63
	^Other User	^Other User	^Other User	

Steel Cutting hours

Daily Output (LF/day)	360
Total length to cut (ft):	32009
Total number of days:	89
Hours in a day:	8
Total number of hours:	712

Hourly output (ft/hr):	45

	Labor/LF	Equipment/LF
Cost per linear foot	1.26	0.28

RSMeans Crew E-25	Labor rate (	Equipment rate (USD)
Welder	56.65	
Torch		12.6
subtotal, USD	56.65	12.6