Appendix H: Red Dog One Year Mine Plan 2017



Red Dog Operations Alaska, USA

ONE YEAR AMENDED MINE PLAN - 2017

February 2017

Teck

ONE YEAR AMENDED MINE PLAN - 2017

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ONE YEAR AMENDED MINE PLAN - 2017

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SECTION 1. SUMMARY

1.1. Introduction

Utilizing Red Dog Mine's current stockpile blending criteria and equipment capabilities, a monthly mine production plan for 2017 has been prepared under the direction of the 2017 5-Year Mine Plan. The 2017 1-Year Forecast Mine Plan has an estimated production of 1,033 kt of zinc concentrate and 182 kt of lead concentrate. These estimates are based upon mill recovery formulae in the mine block model, with adjustments made by Mill Technical based on projected mill feed grades and mill production for 2016. For 2017, all material will be mined from the Aqqaluk and Qanaiyaq deposits, and the waste will primarily be dumped back into the Main Pit. Mine production total for 2017 is forecast to be 13,762 kt, which is the sum of 4,503 kt ore and 9,259 kt waste. Total production is 6% higher than the 2016 mine plan of 12,992 kt.

1.2. Mine Planning Parameters

The mine plan is based on two distinct block models, one for the Aqqaluk deposit and one for the Qanaiyaq deposit. Planning for the Aqqaluk Pit is based on the RED2015-BH-E model, which was issued in December 2016 and uses the Aqq12f pit shell. Planning for the Qanaiyaq Pit is based on the QAN2012-K model, which was issued in December 2016 and uses the Qan12f pit shell

Ore/Waste cutoffs are based on a combination of NSR value per tonne and net value per second. February 2016 Reserve & Resource metal prices of \$1.00/lb. Zn, \$0.90/lb. Pb and \$18.00/ozt. Ag were used to calculate revenue. The breakeven cost of mining, milling, and G&A is \$XX.XX/t for the Aqqaluk Pit and \$XX.XX/t for the Qanaiyaq Pit. The net value per tonne was converted to net value per second, using throughput formulae from the Teck sponsored AMIRA GeM mineral texture project, to account for ore throughput variability. An operating rather than breakeven cutoff is utilized by Red Dog to determine High Grade ore. This cutoff is determined using a 10% discount rate and thus provides a higher NPV mining schedule than that obtainable on a breakeven cutoff basis. The net value per second operating cutoff used to classify High Grade ore is \$X.XX/s. Low Grade ore, from \$0.00/s up to \$X.XX/s is stockpiled for processing at the end of mine life. However, due to sulfide reactivity, only the fraction of Low Grade ore which is classified as non-reactive (approximately 40%) is stockpiled. Once ore and waste reserves were determined, the ore was scheduled by grade and grade ratios according to the Red Dog Operations stockpile blending criteria.

Total tonnage is considered a function of available truck/loader hours. The first priority was to determine the total fleet hours required to achieve 2017 mill feed and required projects. These hours were subtracted from the total available fleet hours for 2017. For haul trucks, an average Physical Availability of 79.0%, Use of Availability of 90.0% and Operating Efficiency of 87% were used to calculate the total hours available for 2017.

1.3. Mine Production

Red Dog is anticipating 13,762 kt of total mine production from the Aqqaluk and Qanaiyaq Pits and stockpiles (STK) as shown in Table 1-1. 4,503 kt of ore at X.XX% Zn and X.X% Pb, and 9,259 kt of waste is forecast. Of the total of ore production, the Aqqaluk Pit contributes 67.7%, Qanaiyaq Pit 16.3% and STK 16.0%.

	Aqqaluk Pit	Qanaiyaq Pit	STK	Total
Total (tonne)	7,596,807	4,925,710	358,593	13,761,510
Ore (tonne)	3,046,238	732,872	358,593	4,502,902
Zn (%)				
Pb (%)				
Ba (%)	12.7	2.1	28.7	12.5
SiO2 (%)	39.2	34.2	24.4	34.0
Total Waste	4,550,569	4,192,838	0	9,258,608
SR	1.49	5.72	0.00	2.06

Table 1-1 2017 Mine Plan Summary

1.4. Equipment Fleets

The 2017 fleet size will be the same as in 2016. The 2017 equipment schedule is shown in Table 1-2.

Equipment	Description	Q1	Q2	Q3	Q4
Drills	DML	3	3	3	3
Trucks	777	10	10	10	10
Loaders	993	5	5	5	5
Dozers	D9/D10	4	4	4	4

 Table 1-2
 2017 Equipment Schedule

1.5. Risks and Opportunities

<u>Risks</u>

1) Near Surface Block Model Inaccuracy

Due to reduced diamond drill core recovery in the region near the original ground surface, the accuracy of block model ore and waste tonnage and grade estimates during periods of pioneering new pits and pushback phases will be impacted. This lower reliability is expected again in the Qanaiyaq Pit in 2017. The ore and waste tonnage and ore grade estimate accuracy during these periods will be poorer than the historical average.

2) Aqqaluk Pit Highwall Slope Stability

The south wall of Aqqaluk is approximately 75ft from the Red Dog Creek diversion culvert. This wall is currently being excavated within poor quality Siksikpuk and Ikalukrok shales. Buffer shots will be taken in this area to prevent excess damage from blasting. Water infiltration from the flooded Main Pit is also being encountered and mitigation measures are being investigated. The northeast wall is also likely to be adjusted due to geotechnical concerns outlined in the December 2016 Golder Slope Stability Analysis.

3) Main Pit Dump Availability and Stability

Main Pit dump stability will be constantly monitored and evaluated. Efforts to obtain the longest strike length for dumping must be made to ensure constant availability for waste disposal. Proper blending of varying waste materials will be maintained. Additional risk to ongoing dumping in Main Pit exists in the form of unforeseen circumstances such as restrictions on water discharge.

4) Selenium (Se) Leaching

Selenium levels in the Main Pit Lake have been on the rise in recent years. It is hypothesized that this may be as result of mining of weathered overburden, particularly from the Qanaiyaq deposit. The

Environmental Department will continue to monitor the levels of Selenium in the Tailings Storage Facility and Main Pit Lake. In the meantime, efforts will be made to A) limit the amount of Qanaiyaq ore fed to the Mill and B) deposit waste rock from Qanaiyaq above water level in Main Pit whenever possible.

5) Qanaiyaq Ore Processing

The Mill may not able to process the proportion of Qanaiyaq ore scheduled in the 2017 budget due to lack of experience with the metallurgy.

6) Mine Equipment Utilization of Availability

The targets for utilization of availability currently reflect hot-seating of mine production equipment. Shortfall in meeting these targets will have a negative impact of the ability of Mine Operations to meet the productions goals for the year.

Opportunities

1) Qanaiyaq Ore Processing

In the event that the Mill is able to process additional quantities of Qanaiyaq ore in stockpiles, there may be opportunity to increase concentrate production to meet stretch targets for 2017.

2) Production Efficiencies

Increasing haulage efficiencies via more effective haul road maintenance has the potential to optimize the productivity of the current fleet. This is of particular benefit to the mining of the Qanaiyaq deposit since the waste haul is measurably longer than that from Aqqaluk.

3) Equipment Modernization

Implementation of Wenco Bench Manager coupled with a high-precision GPS solution for Red Dog could allow Geology to more accurately track material for stockpile building, delivering a more reliable grade forecast to the Mill.

4) Aqqaluk Pit Shape Change

Diamond core drilling is continuing near the Aqqaluk pit in 2017. This data will improve the modeling of several peripheral knobs of high grade exhalite that may lead to local expansions of the ultimate pit. This drilling will also better define mineralization within the sub-lower plate and may lead to a deepening of the ultimate Aqqaluk pit. Expansion or flattening on the west side could cause the pit to intersect Sulfur Creek requiring a realignment of the proposed diversion.

1.6. Project List

- 1) Aqqaluk pit dewatering
- 2) B-pad construction
- 3) Pit wall / dump stability monitoring and failure mitigation
- 4) Exploration drilling
- 5) Water truck fill station
- 6) Emulsion plant silo repair
- 7) Back dam causeway
- 8) Portable crusher
- 9) Airport runway re-surfacing

SECTION 2. MINE PLANNING PARAMETERS

Red Dog's ability to blend its highly variable run-of-mine zinc grade into stockpiles with a consistent feed grade (\pm 1% Zn) has been essential to optimizing concentrate production and increasing Red Dog's value. The challenge is to create an achievable mine plan utilizing a variety of zinc and lead grades to aid stockpile blending. The following assumptions, standards, and methods have been applied to the 2017 Mine Plan.

2.1. Stockpile and Mill Criteria

Experience building blended stockpiles from Red Dog's Main Pit deposit created a workable standard to optimize the deposit's highly rich, highly variable zinc grades. Once the mining cuts are run against the models, the cuts are ordered and sequenced to be both mineable and blended to meet predetermined stockpile criteria. Optimizing mill feed requires blending weathered, baritic and siliceous ore types from around the Aqqaluk and Qanaiyaq deposits into stockpiles that meet the criteria set forth by the mill.

Ore cuts are sequenced and organized into roughly 170 kt stockpiles. Built in five lifts on the crusher pad, the stockpiles are designed so that the lifts, when mined in strips across the face, create a relatively consistent feed. Currently, a stockpile should meet the following requirements to optimize mill throughput and recoveries, listed roughly in order of importance (Revision 19: November 27, 2016):

- Stockpile feed should not exceed
 - \circ average feed grade +/- 1.0% Zn in a 24 hour period and,
 - stockpile average +/- 1.5% Zn quarter average;
- Barium: 7% < %Ba, and as close to the quarter average as possible;
- Type 5 (weathered ore modelled): < 10%
- Type 8 (fine grained ore): < 10%
- Type 9 (weathered ore visual): < 15%
- Zn/Fe ratio: >= 2.1; Zn/Pb ratio: >= 3.0; Soluble Pb ratio: < 25%
- TOC: <= 0.50%

Currently, mill throughput for the 2017 mine plan is scheduled from the Aqqaluk and Qanaiyaq deposits.

2.2. Equipment Assumptions

Currently Red Dog has a fleet of five 777D and five 777F CAT haul trucks available for haulage duty. These trucks are rated at 91 t (100 short tons); however, empirical data and experience has shown that Red Dog typically averages between 85 to 100 t per load. Truck capacity is based on 2016 Wenco average payload data. See Table 2-1.

Table 2-1	Truck Capacity by Material (dry tonnes/load)
-----------	--

Model	Model Unite		eclaim	Ore		Waste	
		Aqqaluk	Qanaiyaq	Aqqaluk	Qanaiyaq	Aqqaluk	Qanaiyaq
777D/F	dmt/load	100.0	100.0	95.0	95.0	88.0	88.0

Productivities for equipment are based on 2016 average data and are summarized in Table 2-2. As both rock density and hardness in Qanaiyaq are expected to be lower than Aqqaluk, drilling productivity per tonne is expected to be slightly higher in this pit.

	Productivity (tonnes/operating hour)				
Equipment	Ore	SP Reclaim	COSP	LG Ore	Waste
777 Haul Truck	316	1,083		373	373
993 Loader	869	869	-	-	869
DM-L Drill	1,078	-	-	1,078	1,748
D9/D10 Dozer	8,730	2,493	5,180	-	1,412

Table 2-2 Loader, Drill, and Dozer Productivities

SECTION 3. MINE PRODUCTION

3.1. Overview

The 2017 mine plan production is divided into eight material classes: High Grade Ore, Non-reactive Low Grade Ore, Possibly Reactive Low Grade Ore, Non-sulphide Ore, Possibly Reactive Waste, Non-reactive Waste, Construction rock, and Cover rock. The plan assumes that all production is from the Aqqaluk and Qanaiyaq Pits. Waste will primarily backfill the Main Pit, though a significant amount will also be stockpiled on the Main Waste Dump for future reclamation. Ore production for the 2017 plan is forecast to meet or exceed the ore required to produce the budgeted 1,248 kt of concentrate. It is assumed that the mill will be capable of maintaining the feed rate outlined by the 2017 mine schedule. The 2017 forecast mine plan has a scheduled production of 1,033 kt of zinc concentrate and 182 kt of lead concentrate.

3.2. 2017 Mine Schedule

The 2017 Mine Plan currently schedules 13,762 kt total mine production from Aqqaluk and Qanaiyaq Pits, and STK as shown in Table 3-1. Of the total ore production (4,503 kt at XX.X% Zn and X.X% Pb), the Aqqaluk Pit contributes 67.7%, Qanaiyaq Pit 16.3% and STK 16.0%. Waste production is estimated at 13,762 kt, which includes 1,289 kt of Non-reactive Low Grade Ore, 157 kt of Possibly Reactive Low Grade Ore, 121 kt of Non-sulphide Ore, 242 kt of Possibly Reactive Waste, 6,934 kt of Non-reactive Waste, 0 kt of Construction rock and 0 kt of Cover (reclamation) rock (Table 3-2).

	Aqqaluk Pit	Qanaiyaq Pit	STK	Total
Total (tonne)	7,596,807	4,925,710	358,593	13,761,510
Ore (tonne)	3,046,238	732,872	358,593	4,502,902
Zn (%)				
Pb (%)		2.1		
Ba (%)	12.7	34.2	28.7	12.5
SiO2 (%)	39.2	4,192,838	24.4	34.0
Total Waste	4,550,569		0	9,258,608
SR	1.49	5.72	0.00	2.06

Table 3-1 2017 Mine Plan Summary

Overall 2017 production is currently scheduled to achieve the major goals set by the 5 year mine plan (then adjusted by mill throughput capacity) which is X,XXX kt of zinc and lead concentrate.

The average monthly ore production is 378 kt through 2017, which is slightly higher than the 2016 mine plan monthly average of 355 kt. The monthly waste production averages are:

- 700 kt in Quarter 1,
- 790 kt in Quarter 2,
- 850 kt in Quarter 3 and,
- 746 kt in Quarter 4.

The monthly and quarterly mine plan summaries are shown in Table 3-2 and Table 3-3 respectively.

RDM 2017 MINE PLAN SECTION 3 MINE PRODUCTION

Table 3-2 2017 Monthly Mine Plan Summary

2017 Mine Plan Production Schedule -Total

Description / Activity	Units	M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	Total
Days	Days	31	28	31	30	31	30	31	31	30	31	30	31	365
Mine Production Summary														
0.0		005 400	050 400	100.001	***		440 500	000 007	400.007	070 000	004 047	050 470	004 000	4 500 000
Ore	L	365,199	353,462	422,981	410,949	378,809	416,530	336,287	422,267	373,636	331,617	359,172	331,993	4,502,902
Waste														
Low Grade - Non-reactive	t	-	122	4,831	24,983	80,340	128,492	148,822	189,198	201,697	267,813	88,725	153,569	1,288,592
Low Grade - Possibly Reactive	t	-	3,414	32,754	1,424	32,854	5,644	11,333	28,025	58	19,168	1,375	21,410	157,459
Non-sulphide Ore	t	-	-		21,448	-	1,968	49,001	-	-	-	4,481	44,458	121,356
Waste - Possibly Reactive	t			78,779	1,102	62,906		-	70,714	22,839	-	5,421	-	241,761
W aste - Non-reactive	t	-	826.062	640,227	787.600	658,414	562.485	711.986	505,000	611.696	555,168	582,124	493.477	6.934.239
Waste - Construction	t													-
Waste - Cover	+		_			_			_	-				_
Tatal W este		E1E 201	820 508	756 501	000 557	024 514	600 500	001 140	702 027	826.200	842 140	682 426	712 014	0.050.000
I otal Waste	· ·	515,201	029,090	130,391	030,337	034,314	090,009	521,142	192,937	030,290	042,149	002,120	712,914	9,200,000
Waste/Mill Feed Ratio	-	1.41	2.35	1.79	2.04	2.20	1.68	2.74	1.88	2.24	2.54	1.90	2.15	2.06
Total Mine Production	t	880,400	1,183,060	1,179,572	1,247,506	1,213,323	1,115,119	1,257,429	1,215,204	1,209,926	1,173,766	1,041,298	1,044,907	13,761,510
Mill Feed Summary														
Mill Feed	t	365,199	353,462	422,981	410,949	378,809	416,530	336,287	422,267	373,636	331,617	359,172	331,993	4,502,902
Zinc	%													
Lead	94													
Soluble Load	9/	0.0	2.1	1.1	1.2	1.5	0.6	1 1	1.5	0.0	0.6	1.2	0.7	1.0
	/6	0.0	2.1	1.1	1.2	1.5	0.0	1.1	1.5	0.9	0.0	1.2	0.7	1.0
Silver	g/t													
Iron	%	5.5	6.6	4.7	6.7	5.6	5.8	6.3	4.0	6.5	6.7	7.2	3.5	5.7
Barium	%	16.3	4.1	13.7	12.8	11.7	13.2	15.0	11.9	15.8	10.6	11.3	13.7	12.5
TOC	%	0.0	0.4	0.3	0.4	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
SiO2	%	0.0	45.1	37.0	33.8	38.1	39.0	36.4	37.5	33.2	35.9	31.0	41.0	34.0
NSR	\$/t	0.0	206.0	214.4	218.0	195.6	201.6	173 1	212.1	183.2	242.4	234.5	211.4	101 5
Nak	φ/ι	0.0	200.0	214.4	210.0	195.0	201.0	173.1	212.1	103.2	242.4	234.3	211.4	191.5
BMW	KWN/t	0.0	13.7	11.1	11.5	12.6	11.4	11.8	11.9	11.6	11.2	11.3	11.6	10.8
АхЬ	-	0.0	83.7	93.8	93.5	98.7	75.0	94.6	99.0	87.6	69.6	89.6	74.4	80.5
Grinding Hours	hrs	-	856	788	793	787	805	663	836	723	630	684	645	8,208
Throughput	t/hr	0.0	424.4	565.2	553.3	528.1	519.3	516.6	519.8	536.0	526.8	527.3	517.0	480.1
Ore Type														
Weathered	%	0.0	0.3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Boritio	94	0.0	0.7	0.0	0.0	0.4	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.1
Bantic	70	0.0	0.7	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.1
Pyritic	%	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Veined	%	0.0	99.0	100.0	100.0	98.6	100.0	99.6	99.7	99.6	100.0	100.0	100.0	91.6
Grain Size														
T1	%	0.0	46.7	40.1	39.7	45.6	35.5	44.0	47.5	41.1	39.0	49.2	38.2	38.9
T2	%	0.0	12.9	9.8	7.4	10.1	8.1	8.2	8.1	6.3	8.1	9.3	6.4	7.9
TE	%	0.0	40.3	50.2	52.8	44.3	56.3	47.8	44.4	52.6	52.9	41.5	55.4	45.0
NU Fred Dation	70	0.0	10.0	00.2	02.0	11.0	00.0			02.0	02.0		00.1	10.0
Will Feed Ratios														
Zh/Fe	-													
Zn/Pb	-													
sPb/Pb	-													
Concentrate Zn														
Concentrate Pb	t													
Concentrate Total	t													
Concentrate														
Matal														
wetar														
Zinc in Zn concentrate	tt													
Lead in Pb concentrate	koz													
Silver in both concentrates														
	t													
Lead in Zn concentrate	t													
Zinc in Pb concentrate														
Production by Pit Pha se														
A1														
A1		-	-	-	-	-	-	-	-	-	107 755	-	-	-
A2	t	-	381,953	170,401	315,423	138,722	306,197	173,892	181,933	138,287	167,752	229,156	219,883	2,423,599
A3	t	-	124,168	161,773	409,431	387,386	412,684	290,449	368,216	554,104	1,006,014	344,419	431,110	4,489,754
A4	t	-	-	-	-	-	-	-	68,502	-	-	240,896	251,277	560,675
Q1	t		296,937	690,983	306,510	614,697	345,576	686,454	505,237	355,937		226,827	142,637	4,171,795
Q2	t													

Table 3-3 2017 Quarterly Mine Plan Summary

Days 00 01 02 02 03 Mine Production Summary Ore 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Waste Carada - Non-reactive 4,953 233,815 539,717 510,107 1,288,592 Low Grade - Possibly Reactive 38,168 39,922 39,416 44,953 127,356 Waste - Non-reactive 1,466,289 2,008,499 1,828,682 1,630,769 6,934,239 Waste - Construction 2,269,660 2,257 2,19 2,06 Waster - Cover 2,101,300 2,3575,648 3,682,559 3,259,971 13,761,510 Waster Mill Feed Ratio 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Silver 1 3,243,032 3,575,548 3,642,59 3,656 Silver 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Silver 1 1,141,642 1,206,288 1,132,190 1,022,782<	Description / Activity	01	02	03	04	Total
Days y0 y1 y2 y2 y3 y3 Mine Production Summary Ore 1,141,642 1,206,288 1,132,190 1,022,782 4,502,092 Low Grade - Non-reactive 4,953 233,815 539,717 510,107 1,288,592 39,416 41,953 157,459 Non-subplide Ore Waste - Non-reactive 78,779 64,008 93,553 5,421 241,761 Waste - Non-reactive 1,466,229 2,008,499 1,828,682 1,630,769 6,934,239 Waste - Construction 2,2101,300 2,369,660 2,550,369 2,237,189 9,258,608 Waster - Cover 2,101,300 2,369,660 2,550,369 2,237,189 9,258,608 Waster - Moduction 3,243,023 3,575,948 3,682,559 3,259,971 13,761,510 Mill Feed Summary 11,141,642 1,206,288 1,132,190 1,022,782 4,502,020 Zinc Lead 1,411,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinch Lead 1,411	Description / Activity	01	02	03	04	TOTAL
Mine Production Summary Ore 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Waste 0.w Grade - Non-reactive 4,953 233,815 539,717 510,107 1,288,592 Low Grade - Possibly Reactive 38,168 39,922 39,416 44,933 127,359 Waste - Possibly Reactive 1,466,289 2,008,499 1,828,682 1,630,769 6,934,239 Waste - Cover - - - - - - Waste - Cover - 2,101,390 2,359,660 2,250,369 2,257,82 2,19 2,06 Waster Mill Feed Stato 3,243,032 3,575,548 3,682,559 3,259,971 1,376,150 1,376,150 Mill Feed Statomary -	Days	90	91	92	92	365
Ore 1,141,642 1,260,288 1,132,190 1,022,782 4,502,902 Low Grade - Non-reactive 4,953 233,815 539,717 510,107 1,288,592 39,416 41,953 157,459 Non-subhide Ore - 23,416 49,001 48,933 157,459 Waste - Non-reactive 7,466,289 2,008,499 1,828,682 1,630,769 6,934,239 Waste - Construction -	Mine Production Summary					
Waste Automation Automation Automation Automation Automation Low Grade - Possibly Reactive 38,168 39,322 39,416 44,901 48,933 127,356 Non-subplice Ore 23,416 49,001 48,933 127,356 241,761 Waste - Construction 74,779 64,008 93,553 5,421 241,761 Waste - Construction 1,466,289 2,008,499 1,828,682 1,630,769 6,834,239 Waster Construction 3,243,032 3,575,948 3,682,559 3,259,971 13,761,510 Mill Feed Summary 11,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead 30,4 0,4 0,4 1228,632 10,833,8 Silver Item 0,7 3,0,4 0,4 0,4 122,96 Silver Item 0,7 83,8 93,9 76,2 10,8 Silver Item 0,7 83,8 93,9 10,0 0,0 <tr< td=""><td>Ore</td><td>1,141,642</td><td>1,206,288</td><td>1,132,190</td><td>1,022,782</td><td>4,502,902</td></tr<>	Ore	1,141,642	1,206,288	1,132,190	1,022,782	4,502,902
Low Grade - Non-reactive 4.953 233.815 539.717 510.107 12.88.502 Non-sulphide Ore 78.79 64.008 99.553 5.421 221.1761 Waste - Non-reactive 78.779 64.008 99.553 5.421 221.761 Waste - Non-reactive 1.466.289 2.008.499 1.828.682 1.630.769 6.534.239 Waste - Cover - - - - - - - Waster - Cover -	Waste	, ,				-
Low Grade - Possibly Reactive 36,168 239,22 39,416 41,633 157,453 Non-suphide Ore - 22,416 49,001 48,933 121,356 Waste - Possibly Reactive 78,779 64,008 39,553 5,421 241,761 Waste - Construction 1,466,289 2,008,499 1,828,682 1,630,769 6,534,239 Waste - Construction 1,243 1.98 2,2550,369 2,237,180 9,258,608 Vaster Mil Feed Summary 1.141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead 50,116 1.141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Soluble Lead Silver 1.141,642 1,206,288 1,138,118 114 191,5 Silver 10,02 7.77 37,0 35,7 35,8 0.4 Silver 11,6 12,6 14,1 1,8 5,7 36,8 0.4 Silve 0.3 0.4 0.4	Low Grade - Non-reactive	4 953	233 815	539 717	510 107	1 288 592
Non-subplied Ore 00.10 22.416 40.001 18.03 121.336 Waste - Possibly Reactive 78.779 64.008 93.553 5.421 241.761 Waste - Construction - <	Low Grade - Possibly Reactive	36 168	30 022	39/16	/1 953	157 / 59
Non-subine Ofe -	Non outphide Ore	50,100	33,322	40.001	41,900	101,409
Waste - Possibly relative 1/86/289 2:08/499 3:28/682 1:30/789 6:33/289 Waste - Construction -		-	23,410	49,001	40,939	121,300
Waste - Non-reactive 1,466,299 2,008,499 1,828,682 1,530,769 6,534,239 Waster - Cover 2,101,390 2,369,660 2,550,360 2,237,169 9,258,608 Waster - Cover 1,44 1.96 2.25 2.19 2.06 Total Mise Peod Latio 3,243,032 3,575,948 3,682,599 3,259,971 1,376,15/00 Mill Feed Summary 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Janc Lead Soluble Lead 51 1.16 1.6 1.4.1 11.8 57 Groc 2,77 37.0 3,57 36.8 0.4 1.25 TOC 2,77 37.0 3,57 36.8 0.4 1.12 Silver 11.6 12.6 1.4.1 11.8 11.4 19.5 TOC 2,77 37.0 35.7 36.8 0.4 0.4 Silver 1.043 0.0 0.0 0.0 0.0 0.0 Torophe	Waste - Possibly Reactive	78,779	64,008	93,553	5,421	241,761
Waster - Cover -	Waste - Non-reactive	1,466,289	2,008,499	1,828,682	1,630,769	6,934,239
Waster Cover 2,101,390 2,369,660 2,257,169 2,237,169 Waste/Mill Feed Ratio 1,84 1,96 2,225 2,217 12,761,510 Mill Feed Summary 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc 2 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Soluble Lead 1 1 57,73 368 0.4 Soluble Lead Silver 1 11.6 12.6 14.1 11.8 11.4 191.5 Barium 0,3 0,4 0,4 0.4 12.5 10.8 14.4 191.5 BMWi 60.7 88.8 93.9 78.2 10.8 8.20 10.0 0.0	Waste - Construction	-	-	-	-	-
Total Waste 2,101,390 2,369,660 2,253,959 2,219 9,258,608 Vaste/Mill Feed Ratio 1,84 1,96 2,259 3,259,971 13,761,510 Mill Feed Summary 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Soluble Lead 5 5 5 5 5 4,502,902 Silver 11.6 12.6 14.1 11.8 5.7 5 5 5 7 5 8 0.4 12.5 7 7 3 3 5 3 4 13.6 11.4 11.8 5.7 35.8 0.4 13.2 10.2 6 34.0 13.2 20.6 34.0 13.2 10.8 34.0 14.4 11.8 11.4 191.5 5 7 10.8 4800.1 10.2 0.0 0.0 0.0 0.0 0.0	Waster - Cover	-	-	-	-	-
WasterMill Feed Ratio 1.84 1.96 2.25 2.19 2.06 Total Mile Production 3.243,032 3.575,948 3.682,559 3.259,971 13.761,510 Mill Feed Summary 1,141,642 1.206,288 1,132,190 1.022,782 4.502,902 Zinc 2 1 1.141,642 1.206,288 1,132,190 1.022,782 4.502,902 Lead Soluble Lead 5 1 1.6 1.41 11.8 5.7 Barium 0.3 0.4 0.4 0.4 12.5 3.40 Silver 1 60.7 88.8 93.9 78.2 10.8 Silvar 1.643 2.364 2.222 1.999 80.5 5 Grinding Hours 340.8 533.6 524.2 523.8 8.208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Oxide 67.7 9.6 9.7 100.0 0.0 0.0 0.0 0.0 0.0	Total Waste	2,101,390	2,369,660	2,550,369	2,237,189	9,258,608
Total Mine Production 3,243,032 3,575,948 3,682,559 3,259,971 13,761,570 Mill Feed 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Zinc Lead Soluble Lead 1 1 1 1 1 5 7 Barium 0.3 0.4 0.4 0.4 125 7 35.8 0.4 Silver 1 1 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 12.5 340.0 12.5 340.0 12.5 340.0 12.5 340.0 12.5 340.0 13.6 11.4 191.5 5.8 8.208 32.59.9 80.5 36.0 0.0 </td <td>Waste/Mill Feed Ratio</td> <td>1.84</td> <td>1.96</td> <td>2.25</td> <td>2.19</td> <td>2.06</td>	Waste/Mill Feed Ratio	1.84	1.96	2.25	2.19	2.06
Mill Feed Summary	Total Mine Production	3,243,032	3,575,948	3,682,559	3,259,971	13,761,510
Mill Feed 1,141,642 1,206,288 1,132,190 1,022,782 4,502,902 Znc Lead Soluble Lead <td< td=""><td>Mill Feed Summary</td><td></td><td></td><td></td><td></td><td>-</td></td<>	Mill Feed Summary					-
Zinc Lead Soluble Lead Silver Kron 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 12.5 TOC 27.7 37.0 35.7 35.8 0.4 SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 191.5 60.5 Grinding Hours 340.8 533.6 524.2 522.8 8.208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Vesthered 0.2 0.1 0.2 0.0 0.1 0.0 0.0 0.0 Weathered 0.0 <td>Mill Feed</td> <td>1,141,642</td> <td>1,206,288</td> <td>1,132,190</td> <td>1,022,782</td> <td>4,502,902</td>	Mill Feed	1,141,642	1,206,288	1,132,190	1,022,782	4,502,902
Lead Soluble Lead Silver Name N	Zinc					
Soluble Lead Soluble Lead Silver Iron 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 12.5 TOC 27.7 37.0 35.7 35.8 0.4 SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 191.5 5.7 BMWi 60.7 88.8 93.9 78.2 10.8 Ax b 1.643 2.384 2.222 1.959 805.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput - - - 480.1 0.0 <td< td=""><td>Lead</td><td></td><td></td><td></td><td></td><td></td></td<>	Lead					
Silver Iton 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 0.4 12.5 TOC 27.7 37.0 35.7 35.8 0.4 Silver 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 191.5 50.0 BMWi 60.7 88.8 93.9 78.2 10.8 A x b 1643 2.384 2.222 1.959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8.208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Ore Type 0.1 0.3 0.0 <td>Soluble Lead</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Soluble Lead					
Iron 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 0.4 12.5 TOC 27.7 37.0 35.7 35.8 0.4 SIO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 191.5 55.2 10.8 BMWi 60.7 88.8 93.9 75.2 10.8 8.208 Grinding Hours 1.643 2.384 2.222 1.959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8.208 Troughput 0.1 0.3 0.0 0.0 0.1 10.9 0.0 0.0 Weathered 0.2 0.1 0.0 <						
Iron 11.6 12.6 14.1 11.8 5.7 Barium 0.3 0.4 0.4 0.4 14.2 TOC 27.7 37.0 35.7 35.8 0.4 SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.8 11.4 191.5 BMWi 60.7 88.8 93.9 78.2 10.8 A x b 16.43 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 624.2 523.8 8,208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Ore Type 0.1 0.3 0.0	Silver					
Barlum 0.3 0.4 0.4 0.4 12.5 TOC 27.7 37.0 35.7 35.8 0.4 SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 191.5 55.6 10.8 BMWi 60.7 88.8 93.9 78.2 10.8 A x b 1.643 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput	Iron	11.6	12.6	14.1	11.8	5.7
TOC 27.7 37.0 35.7 35.8 0.4 SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.4 11.4 191.5 BMWi 60.7 88.8 93.9 78.2 10.8 A x b 16.43 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0	Barium	0.3	0.4	0.4	0.4	12.5
SiO2 143.2 205.3 191.0 229.6 34.0 NSR 8.4 11.8 11.8 11.4 191.5 BMWi 60.7 68.8 93.9 78.2 10.8 A x b 1,643 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0	TOC	27.7	37.0	35.7	35.8	0.4
NSR 8.4 11.8 11.8 11.4 191.5 BMWI 60.7 88.8 93.9 78.2 10.8 A x b 1643 2.384 2.222 19.59 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8.208 Throughput 0.1 0.3 0.0 0.0 0.0 Ore Type 0.1 0.3 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 0.0 Pyritic 0.0 0.0 0.0 0.0 0.0 0.0 Veined 0.0 0.0 0.0 0.0 0.0 0.0 Veined 0.0 0.0 0.0 0.0 0.0 0.0 T1 7.6 8.5 7.6 8.0 38.9 7.9 T2 31.1 51.4 48.1 49.7 7.9 Grain Size 220/Fe 270/Fb 350.29 56,15	SiO2	143.2	205.3	191.0	229.6	34.0
BMWI 60.7 88.8 93.9 78.2 10.8 A × b 1,643 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput 0.1 0.3 0.0 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 0.0 0.0 0.0 Dxide 0.0 0.0 0.1 0.0 <td>NSR</td> <td>8.4</td> <td>11.8</td> <td>11.8</td> <td>11.4</td> <td>191.5</td>	NSR	8.4	11.8	11.8	11.4	191.5
Axb 1643 2,384 2,222 1,959 80.5 Grinding Hours 340.8 533.6 524.2 523.8 8,208 Throughput 0 0.1 0.3 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 0.0 0.0 Bartic 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0 Veined 0.0	BMW/i	60.7	88.8	93.9	78.2	10.8
A b I,045 2,047 2,222 1,303 00.0 Grinding Hours 340.8 533.6 524.2 523.8 8480.1 Ore Type 0.1 0.3 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 Bartic 0.0 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 0.0 Veined 0.0 0.0 0.0 0.0 0.0 0.0 0.0 T1 7.6 8.5 7.6 8.0 38.9 12 31.1 51.4 48.1 49.7 7.9 T6 199,659 289,443 264,275 279,641 1033,018 Concentrate Zn 200 45.0 142,469 152,370 558,765 Lead in Pb concentrate 107,398 156,528 <t< td=""><td>Axb</td><td>1 6/3</td><td>2 384</td><td>2 222</td><td>1 050</td><td>80.5</td></t<>	Axb	1 6/3	2 384	2 222	1 050	80.5
Binding notits 340.8 333.6 324.2 323.8 632.80 Throughput 01 0.3 0.0 0.0 440.1 Ore Type 0.1 0.3 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 Baritic 0.0 0.0 0.1 0.0 0.1 Pyritic 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Veined 0.0 0.0 0.0 0.0 0.0 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 199,659 289,443 264,275 279,641 1,033,018 Concentrate Zn Concentrate Zn - - - - Concentrate D 199,659 289,443 264,275 279,641 1,033,018 C	Grinding Hours	240.9	2,304	2,222	500	00.0
Inrougnput 440.1 Ore Type 0.1 0.3 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 Bartic 0.0 0.0 0.1 0.0 0.1 0.0 Pyritic 0.0 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Grain Size 29.3 40.1 44.3 42.3 0.0 T2 31.1 51.4 48.1 49.7 7.9 T6 45.0 38.9 7.9 45.0 Mill Feed Ratios - - - - - - - - - - - - - - - - - -		340.0	555.0	5Z4.Z	523.0	0,200
Ore Type 0.1 0.3 0.0 0.0 0.0 Weathered 0.2 0.1 0.2 0.0 0.1 0.0 0.1 Baritic 0.0 0.0 0.1 0.0 0.1 0.0 0.1 Pyritic 0.0 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Veined 0.0 0.0 0.0 0.0 91.6 Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 - - Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,6						480.1
Weathered 0.2 0.1 0.2 0.0 0.1 Baritic 0.0 0.0 0.1 0.0 0.1 Pyritic 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Oxide 0.0 0.0 0.0 0.0 91.6 Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 45.0 45.0 45.0 Mill Feed Ratios 45.0 45.0 Sh/Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Zn - - - Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate Pb 199,659 289,443 264,275	Ore Type	0.1	0.3	0.0	0.0	0.0
Baritic 0.0 0.0 0.1 0.0 0.1 Pyritic 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Veined 0.0 0.0 0.0 0.0 0.0 Teined 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 1 48.1 49.7 7.9 7.9 Concentrate Zn - - - - - Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018	Weathered	0.2	0.1	0.2	0.0	0.1
Pyritic 0.0 0.0 0.0 0.0 0.0 Oxide 67.7 99.6 99.7 100.0 0.0 Veined 0.0 0.0 0.0 0.0 91.6 Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6	Baritic	0.0	0.0	0.1	0.0	0.1
Oxide 67.7 99.6 99.7 100.0 0.0 Veined 0.0 0.0 0.0 0.0 91.6 Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 45.0 45.0 45.0 Mill Feed Ratios Zn/Pb - - - SPb/Pb - 199,659 289,443 264,275 279,641 1,033,018 Concentrate Zn - <t< td=""><td>Pyritic</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></t<>	Pyritic	0.0	0.0	0.0	0.0	0.0
Veined 0.0 0.0 0.0 0.0 91.6 Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 31.1 51.4 48.1 49.7 7.9 T6 2n/Fe 2n/Fe 45.0 45.0 Zn/Fe 2n/Fe 2n/Fe 1033,018 45.0 Concentrate Zn - - - - Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate Total 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - - Zinc in Zn concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrate 12,679 13,213 13,548 9,464 48,903 Znc in Pb co	Oxide	67.7	99.6	99.7	100.0	0.0
Grain Size 29.3 40.1 44.3 42.3 0.0 T1 7.6 8.5 7.6 8.0 38.9 T2 31.1 51.4 48.1 49.7 7.9 T6 1 48.1 49.7 7.9 T6 45.0 45.0 Mil Feed Ratios Zn/Fe 45.0 45.0 Concentrate Zn 45.0 Concentrate Total 35,029 56,150 43,798 47,404 Concentrate Total 35,029 56,150 43,798 47,404 Concentrate Total 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 25,410 97,211 Silver in both concentrate 12,679 13,213 13,548 9,464 48,903	Veined	0.0	0.0	0.0	0.0	91.6
Orland Discrete Discrete <thdiscrete< th=""> <thdiscrete< th=""> <th< td=""><td>Grain Size</td><td>29.3</td><td>40.1</td><td>44.3</td><td>42.3</td><td>0.0</td></th<></thdiscrete<></thdiscrete<>	Grain Size	29.3	40.1	44.3	42.3	0.0
T2 31.1 51.4 48.1 49.7 7.9 T6 31.1 51.4 48.1 49.7 45.0 Mill Feed Ratios Zn/Fe 45.0 45.0 45.0 SPb/Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 4		20:0	-10.1	76	42.0	38.0
12 31.1 51.4 48.1 49.7 7.9 T6	T2	7.0	0.0	7.0	0.0 40 7	30.9
16 45.0 Mill Feed Ratios Zn/Fe Zn/Fe Zn/Pb sPb/Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal	12	31.1	51.4	48.1	49.7	7.9
Mill Feed Ratios Zn/Fe Zn/Fe Zn/Pb sPb/Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate Total 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.91836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - - - - - AQQ PH1 - - - <td>16</td> <td></td> <td></td> <td></td> <td></td> <td>45.0</td>	16					45.0
Zn/Fe Zn/Pb SPb/Pb - - Concentrate Zn 199,659 289,443 264,275 279,641 1,033,018 Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrate 12,679 13,213 13,548 9,464 48,903 Znc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Znc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - - - - AQ	Mill Feed Ratios					
Zh/Pb SPb/Pb - Concentrate Zn - - Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate Total 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - - - - AQQ PH2 552,354 760,342 494,112 <td< td=""><td>Zn/Fe</td><td></td><td></td><td></td><td></td><td></td></td<>	Zn/Fe					
sPb/Pb - - Concentrate Zn - - Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate Total 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - -	Zn/Pb					
Concentrate Zn - - Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - - - - - AQQ PH1 - - - - - - -	sPb/Pb					
Concentrate Pb 199,659 289,443 264,275 279,641 1,033,018 Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal - - - - - Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 AQQ PH1 - - - - - - - AQQ PH2 552,354 760,342 4	Concentrate Zn				Т	-
Concentrate Total 35,029 56,150 43,798 47,404 182,381 Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 AQQ PH1 - - - - - - - AQQ PH2 552,354 760,342 494,112 616,791 2,423,599 AQQ PH3 285,941	Concentrate Pb	199,659	289,443	264,275	279,641	1,033,018
Concentrate 234,688 345,593 308,073 327,045 1,215,399 Metal	Concentrate Total	35.029	56.150	43.798	47.404	182.381
Metal - <td>Concentrate</td> <td>234,688</td> <td>345.593</td> <td>308.073</td> <td>327.045</td> <td>1,215,399</td>	Concentrate	234,688	345.593	308.073	327.045	1,215,399
Zinc in Zn concentrate 107,398 156,528 142,469 152,370 558,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 12,679 13,213 13,548 9,464 48,903 AQQ PH1 - - - - - - AQQ PH2 552,354 760,342 494,112 616,791 2,423,599 AQQ PH3 285,941 1,209,501 1,212,769 1,781,543 4,489,754 AQQ PH4 - - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795	Metal		0.0,000		0_1,010	.,,
Zinc in Zin concentrate 107,396 130,326 142,469 132,370 530,765 Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase 4,254 4,384 3,000 3,854 15,493 AQQ PH1 - - - - - AQQ PH2 552,354 760,342 494,112 616,791 2,423,599 AQQ PH3 285,941 1,209,501 1,212,769 1,781,543 4,489,754 AQQ PH4 - - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795	Zing in Zn concentrate	107 209	156 500	142 460	150.070	-
Lead in Pb concentrate 18,587 29,928 23,286 25,410 97,211 Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase - - - - - - AQQ PH1 - - - - - - - AQQ PH2 552,354 760,342 494,112 616,791 2,423,599 AQQ PH3 285,941 1,209,501 1,212,769 1,781,543 4,489,754 AQQ PH4 - - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795		107,390	150,520	142,409	152,370	556,765
Silver in both concentrates 1433.04001 2158.918836 1750.524532 1673.581861 7016.065239 Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase -	Lead in Pb concentrate	18,587	29,928	23,286	25,410	97,211
Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase -	Silver in both concentrates	1433.04001	2158.918836	1750.524532	1673.581861	7016.065239
Lead in Zn concentrate 12,679 13,213 13,548 9,464 48,903 Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase -						
Zinc in Pb concentrate 4,254 4,384 3,000 3,854 15,493 Production by Pit Phase -<	Lead in Zn concentrate	12,679	13,213	13,548	9,464	48,903
Production by Pit Phase -	Zinc in Pb concentrate	4,254	4,384	3,000	3,854	15,493
AQQ PH1 - - - - - AQQ PH2 552,354 760,342 494,112 616,791 2,423,599 AQQ PH3 285,941 1,209,501 1,212,769 1,781,543 4,489,754 AQQ PH4 - - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795 QAN Q2 -	Production by Pit Phase					
AQQPH2552,354760,342494,112616,7912,423,599AQQPH3285,9411,209,5011,212,7691,781,5434,489,754AQQPH468,502492,173560,675QANQ1987,9201,266,7831,547,628369,4644,171,795QANQ2	AQQ PH1	-	-	-	-	-
AQQ PH3 285,941 1,209,501 1,212,769 1,781,543 4,489,754 AQQ PH4 - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795 QAN Q2 -<	AQQ PH2	552,354	760,342	494,112	616,791	2,423,599
AQQ PH4 - - 68,502 492,173 560,675 QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795 QAN Q2 Q2 <t< td=""><td>AQQ PH3</td><td>285,941</td><td>1,209,501</td><td>1,212,769</td><td>1,781,543</td><td>4,489,754</td></t<>	AQQ PH3	285,941	1,209,501	1,212,769	1,781,543	4,489,754
QAN Q1 987,920 1,266,783 1,547,628 369,464 4,171,795 QAN Q2	AQQ PH4	-	-	68.502	492.173	560.675
QAN Q2	QAN Q1	987.920	1,266.783	1,547,628	369.464	4,171,795
	QAN Q2	,	,,	, ,	, '	,,

3.2.1. Phases and Benches Mined

There are four phases in the Aqqaluk Pit, starting at the highest grade pit (A1) and ending at the ultimate pit (A4). The Qanaiyaq Pit is comprised of two phases, the starter (Q1) and ultimate pit (Q2).

A summary of the benches mined by month is shown in Table 3-4. A graphical summary of all the phases by material type by month is shown in Figure 3-1.

Total materials mined:

- 0.0% mined from AQQ A1
- 17.6% mined from AQQ A2
- 32.6% mined from AQQ A3
- 4.1% mined from AQQ A4
- 30.2% mined from QAN Q1
- 0.0% mined from QAN Q2

The balance of material is reclaimed from existing run-of-mine ore stockpiles.

M12	Total
)	110
	69
	711
)	2,453
5 431	1,325
	252
	665
	646
3 110	695
2 110	209
	79
651	7,215
	Tatal
INI12	Total
	000
	229
	646
	1,118
	1,242
143	1,690
143	4 926
	0

Table 3-4 2017 Monthly Material Mined by Benches



Figure 3-1 2017 Material Mined by Phase

3.2.2. Material Movement Classification

Material mined is classified as either ore, low grade ore (non-reactive and possibly reactive), non-sulphide ore, possibly reactive waste, non-reactive waste, construction rock, or cover rock. Figure 3-2 shows the material mined by class by month. Figure 3-3 shows the total material moved by destination (stockpile and waste dump) by month.



Figure 3-2 Material Mined by Class



Figure 3-3 Material Mined by Destination

3.2.3. Monthly Plans

3.2.3.1. 1st Quarter

Total production is 3,243 kt for the 1st Quarter. Ore production is 1,142 kt at XX.X% Zn and X.X% Pb. Table 3-5 gives the 1st Quarter Mine Schedule.

1) January 2017

Total January mine production was 880 kt. Ore production was 365 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progressed in the northeast of phase A3 on the 1150 and 950 benches. Mining progressed in phase A2 on the 800 and 750 benches.

Waste stripping of the Qanaiyaq Pit progressed in phase Q1 from the 1400 and 1375 benches.

2) February 2017

Total February mine production is 1,183 kt. Ore production is 353 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in phase A2 on the 775 bench and phase A3 on the 950 and 925 benches. Mining progresses in phase A2 on the 800 and 750 benches (Figure 6-1).

Waste stripping of the Qanaiyaq Pit progresses in phase Q1 from the 1400 and 1375 benches. Mining progresses in phase Q1 from the 1400 and 1375 benches (Figure 6-12).

3) March 2017

Total March mine production is 1,180 kt. Ore production is 423 kt at XX.X% Zn and X.X% Pb.

No waste stripping of the Aqqaluk Pit. Mining progresses in phase A2 on the 925, 800, 775 and 750 benches (Figure 6-2).

Waste stripping of the Qanaiyaq Pit progresses in phase Q1 from the 1375 bench. Mining progresses in phase Q1 from the 1375 and 1350 benches (Figure 6-13).

Table 3-5 2017 1st Quarter Mine Schedule (by Cuts)

01		Prediction			Jan				Feb			Mar	
U	Ore	Waste	Total	Ore	Waste	Total		Ore	Waste	Total	Ore	Waste	Total
Total Production	1,141,642	2,101,390	3,243,032		0	0	0	353,462	829,598	1,183,060	422,981	756,591	1,179,572
Q-W-2	11,295	0	11,295					11,295	0	11,295			
A-N1-2	22,140	0	22,140					22,140	0	22,140			
Q1350-002	161	125,621	125,782					161	125,621	125,782			
A800-217	62,735	0	62,735					62,735	0	62,735			
Q1375-009	32,134	39,393	71,527					32,134	39,393	71,527			
A925-314	0	70,049	70,049					0	70,049	70,049			
A775-166	0	65,963	65,963					0	65,963	65,963			
Q1375-010	12,335	33,341	45,676					12,335	33,341	45,676			
A800-218	48,005	0	48,005					48,005	0	48,005			
Q1400-007	0	108,968	108,968					0	108,968	108,968			
A775-165	0	25,137	25,137					0	25,137	25,137			
Q1375-008	44,222	396	44,618					44,222	396	44,618			
Q1400-004	0	120,396	120,396					0	120,396	120,396			
A775-167	0	50,093	50,093					0	50,093	50,093			
Q1375-002	6,562	93,802	100,364					6,562	93,802	100,364			
A800-219	28,477	0	28,477					28,477	0	28,477			
A950-320	0	54,119	54,119					0	54,119	54,119			
A800-214	42,475	0	42,475					42,475	0	42,475			
A750-124	42,921	16,147	59,068					42,921	16,147	59,068			
Q1375-001	0	26,173	26,173					0	26,173	26,173			
A800-221	32,532	0	32,532								32,532	0	32,532
Q1375-007	0	97,343	97,343								0	97,343	97,343
Q1350-004	6,808	104,556	111,364								6,808	104,556	111,364
A775-168	99,970	0	99,970								99,970	0	99,970
A750-135	39,311	4,397	43,708								39,311	4,397	43,708
Q1375-006	49,126	211,531	260,657								49,126	211,531	260,657
A800-220	37,899	0	37,899								37,899	0	37,899
675-103	59,024	0	59,024								59,024	0	59,024
A925-315	21,106	140,667	161,773								21,106	140,667	161,773
Q1350-006	21,412	128,650	150,062								21,412	128,650	150,062
Q1350-005	2,110	69,447	71,557								2,110	69,447	71,557
A-BA-2	53,683	0	53,683								53,683	0	53,683

3.2.3.2. 2nd Quarter

Total production is 3,576 kt for the 2^{nd} Quarter. Ore production is 1,206 kt at XX.X% Zn and X.X% Pb. Table 3-6 gives the 2^{nd} Quarter Mine Schedule.

1) April 2017

Total April mine production is 1,248 kt. Ore production is 411 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the center of phase A3 on the 750 bench. Mining progresses in phase A2 on the 950, 925 and 775 benches (Figure 6-3).

Waste stripping in the Qanaiyaq Pit progresses in phase Q1 on the 1350 bench. Mining progresses in phase Q1 on the 1350 bench (Figure 6-14).

2) May 2017

Total May mine production is 1,213 kt. Ore production is 379 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the northeast of phase A3 on the 950 bench. Mining progresses in the phase A2 on the 950 and 775 benches (Figure 6-4).

Waste stripping in the Qanaiyaq Pit progresses in phase Q1 on the 1325 bench. Mining progresses in phase Q1 on the 1325 bench (Figure 6-15).

3) June 2017

Total June mine production is 1,115 kt. Ore production is 417 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the center of phase A3 on the 925 bench. Mining progresses in phase A2 on the 775, 725 and 675 benches and in phase A3 on the 925 bench (Figure 6-5).

Waste stripping in the Qanaiyaq Pit progresses in phase Q1 on the 1350 bench. Mining progresses in phase Q1 on the 1375 bench (Figure 6-16).

Table 3-6 2017 2nd Quarter Mine Schedule (by Cuts)

00		Prediction		Apr Dtal Ore Waste Total O				May			Jun	
Q2	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total
Total Production	1,206,288	2,369,660	3,575,948	410,949	836,557	1,247,506	378,809	834,514	1,213,323	416,530	698,589	1,115,119
Meth-N-6	20,719	0	20,719	20,719	0	20,719						
Meth-N-5	19,114	0	19,114	19,114	0	19,114						
Meth-N-4	29,366	0	29,366	29,366	0	29,366						
Q1350-003	1,130	115,102	116,232	1,130	115,102	116,232						
Q1350-001	0	134,194	134,194	0	134,194	134,194						
A750-127	0	83,977	83,977	0	83,977	83,977						
A950-317	3,139	172,734	175,873	3,139	172,734	175,873						
A925-316	49,118	51,108	100,226	49,118	51,108	100,226						
A775-173	57,745	0	57,745	57,745	0	57,745						
Q1350-008	32,405	114,538	146,943	32,405	114,538	146,943						
A775-174	107,472	0	107,472	107,472	0	107,472						
Q1350-007	54,748	1,336	56,084	54,748	1,336	56,084						
A750-126	0	66,229	66,229	0	66,229	66,229						
A925-317	35,993	97,339	133,332	35,993	97,339	133,332						
Meth-N-2	54,013	0	54,013				54,013	0	54,013			
Meth-N-3	11,463	0	11,463				11,463	0	11,463			
Meth-N-1	7,042	0	7,042				7,042	0	7,042			
A950-321	23,688	46,859	70,547				23,688	46,859	70,547			
Q1325-002	0	134,029	134,029				0	134,029	134,029			
Q1325-004	3,238	130,170	133,408				3,238	130,170	133,408			
A950-324	9,891	65,605	75,496				9,891	65,605	75,496			
A775-177	86,461	0	86,461				86,461	0	86,461			
A775-176	52,261	0	52,261				52,261	0	52,261			
Q1325-005	79,915	32,275	112,190				79,915	32,275	112,190			
A950-318	0	93,070	93,070				0	93,070	93,070			
Q1325-003	44,204	75,116	119,320				44,204	75,116	119,320			
Q1325-001	0	115,750	115,750				0	115,750	115,750			
A950-323	6,633	79,605	86,238				6,633	79,605	86,238			
A950-322	0	62,035	62,035				0	62,035	62,035			
Meth-S-1	30,615	0	30,615							30,615	0	30,615
A925-318	5,304	117,719	123,023							5,304	117,719	123,023
A750-130	70,095	0	70,095							70,095	0	70,095
A750-129	80,083	0	80,083							80,083	0	80,083
Q1325-007	0	140,044	140,044							0	140,044	140,044
A950-325	7,154	86,502	93,656							7,154	86,502	93,656
A775-175	59,615	1,371	60,986							59,615	1,371	60,986
A925-319	3,387	100,264	103,651							3,387	100,264	103,651
A725-117	34,069	1,651	35,720							34,069	1,651	35,720
A775-178	59,313	0	59,313							59,313	0	59,313
675-104	20,047	0	20,047							20,047	0	20,047
A925-330	46,848	45,506	92,354							46,848	45,506	92,354
Q1350-009	0	205,532	205,532							0	205,532	205,532

3.2.3.3. 3rd Quarter

Total production is 3,683 kt for the 3rd quarter. Ore production is 1,132 kt at XX.X% Zn and X.X% Pb. Table 3-7 gives the 3rd Quarter Mine Schedule.

1) July 2017

Total July mine production is 1,257 kt. Ore production is 336 kt at 12.7% Zn and 4.5% Pb.

Waste stripping of the Aqqaluk Pit progresses in phase A2 on the 750 bench. Mining progresses in phase A2 on the 925 and 750 benches (Figure 6-6).

Waste stripping in the Qanaiyaq Pit progresses in phase Q1 on the 1325 and 1300 benches. Mining progresses in phase Q1 on the 1325 bench (Figure 6-17).

2) August 2017

Total August mine production is 1,215 kt. Ore production is 422 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the southeast of phase A3 on the 975 bench. Mining progresses in phase A3 on 925 bench and A2 on the 725 bench (Figure 6-7).

Waste stripping in the Qanaiyaq Pit progresses in phase Q1 on the 1350 and 1300 benches. Mining progresses in phase Q1 on the 1325 bench (Figure 6-18).

3) September 2017

Total September mine production is 1,210 kt. Ore production is 374 kt at XX.X% Zn and X.X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the east phase A3 on the 925 bench. Mining progresses in phase A3 on the 925 bench and phase A2 on the 725 bench (Figure 6-8).

Waste stripping scheduled in the Qanaiyaq Pit progresses in phase Q1 on the 1300 bench. Mining progresses in phase Q1 on the 1300 bench (Figure 6-19).

September is the last month scheduled for capital projects and quarrying.

Q3		Prediction			Jul			Aug			Sep	
	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total
Total Production	1,132,190	2,550,369	3,682,559	336,287	921,142	1,257,429	422,267	792,937	1,215,204	373,636	836,290	1,209,926
1604-02	24,012	0	24,012	24,012	0	24,012						
A750-131	51,419	0	51,419	51,419	0	51,419						
Q1325-010	5,454	77,168	82,622	5,454	77,168	82,622						
Q1300-001	0	108,839	108,839	0	108,839	108,839						
A750-132	57,979	0	57,979	57,979	0	57,979						
Q1325-006	1,255	152,651	153,906	1,255	152,651	153,906						
Q1325-009	52,905	36,277	89,182	52,905	36,277	89,182						
A750-128	0	17,016	17,016	0	17,016	17,016						
A750-133	47,478	0	47,478	47,478	0	47,478						
Q1300-002	0	172,542	172,542	0	172,542	172,542						
A925-331	44,471	131,597	176,068	44,471	131,597	176,068						
A925-329	51,314	63,067	114,381	51,314	63,067	114,381						
Q1325-008	0 25.465	161,985	161,985 OF 465	0	161,985	161,985	0E 46E	0	0E 46E			
1004-03	25,405	64 402	25,405				25,405	64 402	20,400			
A925-326	10,090	71 012	79,793				10,090	71 012	19,193			
A725 125	12,747	11,912	49,009				12,747	71,912	4,009			
A725-125 A925-332	40,009	59 616	40,009				40,009	59 616	77 527			
A975-278	17,511	68 502	68 502				0	68 502	68 502			
A925-327	28 512	56 272	84 784				28 512	56 272	84 784			
A750-134	68 497	00,212	68 497				68 497	00,272	68 497			
Q1300-003	00,101	148.437	148,437				00,101	148.437	148.437			
Q1300-009	34.374	31,477	65.851				34.374	31.477	65.851			
Q1300-010	28,461	30,005	58,466				28,461	30.005	58,466			
A725-118	41,045	24,302	65,347				41,045	24,302	65,347			
Q1300-008	37,299	176,376	213,675				37,299	176,376	213,675			
A925-320	64,177	61,935	126,112				64,177	61,935	126,112			
1604-04	28,441	0	28,441							28,441	0	28,441
1604-01	21,225	0	21,225							21,225	0	21,225
Q1300-007	0	143,988	143,988							0	143,988	143,988
Q1300-004	0	211,949	211,949							0	211,949	211,949
Q1300-012	68,055	43,877	111,932							68,055	43,877	111,932
A925-335	0	59,509	59,509							0	59,509	59,509
A925-334	0	63,541	63,541							0	63,541	63,541
A925-324	43,603	45,759	89,362							43,603	45,759	89,362
A925-326	20,648	59,108	79,756							20,648	59,108	79,756
A725-127	57,454	0	57,454							57,454	0	57,454
A925-333	0	59,315	59,315							0	59,315	59,315
A725-126	39,998	0	39,998							39,998	0	39,998
A925-321	42,430	14,234	56,664							42,430	14,234	56,664
A925-336	9,100	43,181	52,281							9,100	43,181	52,281
A925-325	1,847	91,829	93,676							1,847	91,829	93,676
A/20-128	40,835	0	40,835							40,835	0	40,835

3.2.3.4. 4th Quarter

Total production is 3,260 kt for the 4th quarter. Ore production is 1,023 kt at XX.X% Zn and X% Pb. Table 3-8 gives the 4th Quarter Mine Schedule.

1) October 2017

Total October mine production is 1,174 kt. Ore production is 332 kt at XX.X% Zn and X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the northwest of phase A3 on the 1050 bench. Mining progresses in phase A2 on the 725 bench and in phase A3 on the 925 and 900 benches (Figure 6-19).

No waste stripping of the Qanaiyaq Pit (Figure 6-16). No mining of the Qanaiyaq Pit (Figure 6-20).

2) November 2017

Total November mine production is 1,041 kt. Ore production is 359 kt at XX.X% Zn and X% Pb.

Waste stripping of the Aqqaluk Pit progresses in phase A3 on the 1150 and 1050 benches. Mining progresses in phase A3 on the 925 and 900 benches and in phase A2 on the 725 and 700 benches (Figure 6-10).

Waste stripping of the Qanaiyaq Pit progresses in the phase Q1 from the 1300 bench. Mining progresses in phase Q1 from the 1300 bench (Figure 6-21).

3) December 2017

Total December mine production is 1,045kt. Ore production is 332 kt at XX.X% Zn and X% Pb.

Waste stripping of the Aqqaluk Pit progresses in the northeast of phase A3 on the 1150 and 1125 benches and phase A2 on the 725 bench. Mining progresses in phase A2 on 700 bench and in phase A3 on the 900 bench (Figure 6-11).

No waste stripping of the Qanaiyaq Pit (Figure 6-18). Mining progresses in phase Q1 from the 1300 bench (Figure 6-22).

Table 3-8 2017 4th Quarter Mine Schedule (by Cuts)

Q4		Prediction	1		Oct			Nov			Dec	
	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total	Ore	Waste	Total
Total Production	1,022,782	2,237,189	3,259,971	331,617	842,149	1,173,766	359,172	682,126	1,041,298	331,993	712,914	1,044,907
A925-323	26,557	70,284	96,841	26,557	70,284	96,841						
A900-359	3,222	152,213	155,435	3,222	152,213	155,435						
A725-129	33,896	0	33,896	33,896	0	33,896						
A900-361	12,046	158,206	170,252	12,046	158,206	170,252						
A925-337	13,299	73,925	87,224	13,299	73,925	87,224						
A700-113	37,152	0	37,152	37,152	0	37,152						
A725-130	43,362	0	43,362	43,362	0	43,362						
A900-362	73,676	105,791	179,467	73,676	105,791	179,467						
A925-338	11,619	42,522	54,141	11,619	42,522	54,141						
A925-322	42,433	75,999	118,432	42,433	75,999	118,432						
A725-119	34,290	19,052	53,342	34,290	19,052	53,342						
A900-360	65	144,157	144,222	65	144,157	144,222						
A925-339	79,188	20,427	99,615				79,188	20,427	99,615			
A1050-220	0	110,292	110,292				0	110,292	110,292			
A725-120	25,643	26,581	52,224				25,643	26,581	52,224			
A1150-102	0	63,462	63,462				0	63,462	63,462			
A700-114	61,552	0	61,552				61,552	0	61,552			
Q1300-013	82,881	41,310	124,191				82,881	41,310	124,191			
A1150-103	0	67,142	67,142				0	67,142	67,142			
A725-121	19,055	36,456	55,511				19,055	36,456	55,511			
A900-363	56,550	188,254	244,804				56,550	188,254	244,804			
A725-122	34,303	25,566	59,869				34,303	25,566	59,869			
Q1300-005	0	102,636	102,636				0	102,636	102,636			
A900-366	64,805	71,514	136,319							64,805	71,514	136,319
A725-124	0	51,745	51,745							0	51,745	51,745
A1150-100	0	70,292	70,292							0	70,292	70,292
Q1300-014	18,931	123,706	142,637							18,931	123,706	142,637
A700-109	33,375	24,298	57,673							33,375	24,298	57,673
A1150-105	0	53,770	53,770							0	53,770	53,770
A725-123	0	57,975	57,975							0	57,975	57,975
A700-108	45,394	7,096	52,490							45,394	7,096	52,490
A900-365	84,565	49,997	134,562							84,565	49,997	134,562
A900-364	84,923	75,306	160,229							84,923	75,306	160,229
A1125-125	0	61,699	61,699							0	61,699	61,699
A1150-104	0	65,516	65,516							0	65,516	65,516

3.3. 2017 Dumping Plan

The waste dumping plan for 2017 follows the long term plan as the 986 ft lift of the Tailings Dam was completed in 2016. All waste rock will be hauled to the south end of the Main Pit Dump, with Possibly Reactive rock dumped only on the MPD_850 Lift and Non-reactive waste rock dumped on the MPD_850, MPD_904, and MPD_1015 Lifts. Subzones 4 and 5 of the MPD_850 Lift, 2 through 4 of the MPD_904 Lift, and 1 through 3 of the MPD_1015 Lift will be filled. Other dumping locations planned for 2017 will be the LGO_1155_02 Lift for Low Grade Non-reactive ore and the OXD_1344 Lift for Oxide ore. These dumping locations are shown in Figure 3-4.



Figure 3-4 2017 Dumps

SECTION 4. EQUIPMENT FLEETS

4.1. Summary

Equipment required to achieve the 2017 plan is the same as 2016.

The current major equipment fleets and planned operating metrics are listed in Table 4-1.

Equipment	Description	Units Available	Physical Availability	Use of Availability	Operating Efficiency	Asset Utilization
Drills	DML	3	79.0%	66.0%	85.0%	45.7%
Trucks	777	10	79.0%	90.0%	87.0%	61.9%
Loaders	993	5	80.0%	90.0%	85.0%	61.2%
Dozers	D9's & D10	4	81.0%	59.0%	85.0%	40.6%

 Table 4-1
 Current Fleet and Operating Metrics

4.2. 2017 Equipment Requirements

All planned project hours and forecast production hours were considered when determining the fleet requirements for the 2017 mine plan.

Table 4-2 gives the equipment hours needed for site projects and the tasks for which those hours will be used.

Projects	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
	31	28	31	30	31	30	31	31	30	31	30	31	365
Non-Capital Project													
Drill hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader hours	0	0	0	17	32	29	29	47	42	0	0	0	197
Haultruck hours	0	0	0	40	77	70	70	113	100	0	0	0	470
Dozer hours	19	17	19	18	19	18	19	19	18	19	18	19	218
Quarry and Crush (DD2 / MS)													
Drill hours	0	25	25	25	100	80	90	50	30	0	0	0	425
Loader hours	0	25	25	25	25	25	25	25	10	0	0	0	185
Haultruck hours	0	25	25	100	100	100	100	100	75	0	0	0	625
Dozer hours	0	20	20	20	20	20	20	15	15	0	0	0	150
MS6 Regrading													
Drill hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Haultruck hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozer hours	0	0	0	0	50	90	90	90	45	0	0	0	365
Back Dam													
Drill hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader hours	0	0	0	0	30	30	30	0	0	0	0	0	90
Haultruck hours	0	0	0	0	50	50	25	0	0	0	0	0	125
Dozer hours	0	0	0	0	35	35	35	0	0	0	0	0	105
B-Pad													
Drill hours	0	0	0	0	0	0	0	0	0	0	0	0	0
Loader hours	0	0	0	0	0	40	40	40	35	0	0	0	155
Haultruck hours	0	0	0	0	0	300	300	300	300	0	0	0	1200
Dozer hours	0	0	0	0	0	60	30	30	30	0	0	0	150
Total													
Drill hours	0	25	25	25	100	80	90	50	30	0	0	0	425
Loader hours	0	25	25	42	87	124	124	112	87	0	0	0	627
Haultruck hours	0	25	25	140	227	520	495	513	475	0	0	0	2420
Dozer hours	19	37	39	38	124	223	194	154	108	19	18	19	988

Table 4-2 Monthly Project Hours

Table 4-3 contains details on the number of units required in 2017.

Table 4-3 2017 Monthly	/ Equipment Forecast
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Drill Summary	Units	M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	Total
DM-L Drill														
Units Available	ea	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Units Required	ea	3.0	2.8	2.6	2.8	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.7	2.9
Hours Available per unit	op hrs	330	298	330	319	330	324	365	365	338	330	348	330	4.005
Hours Used per unit	op hrs	11	276	288	296	330	327	367	362	336	278	345	296	3,512
The are eased por anic	00 1110													0,012
Ore Drilling Hours Required	on hre	0	298	352	324	312	392	330	422	351	356	422	312	3 872
Low Grade Drilling Hours Required	opinis	0	2	16	11	48	57	68	93	86	38	93	48	5,072
Waste Drilling Hours Required	on hro	0	475	439	495	495	421	580	487	510	407	487	495	5 200
Redvilles Leure Desuited	op hre	33	30	33	32	33	32	33	33	32	33	32	33	3,230
Redining Hours Required	ophis	0	25	25	25	100	80	90	50	30	0	0	0	307
Project Hours Required	op hre	22	820	965	997	090	002	1 101	1 095	1 000	924	1 024	890	425
Drilling Hours Required	op nrs	33	029	600	007	909	902	1,101	1,005	1,009	034	1,034	009	10,535
A 11 - 1. 111		70.00/	70.00/	70.000	70.00/	70.00/	70.00/	70.00/	70.00/	70.00/	70.00/	70.00/	70.00/	70.0%
Availability	%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%	79.0%
Use of Availability	%	66.0%	00.0%	00.0%	00.0%	00.0%	67.0%	73.0%	73.0%	70.0%	00.0%	72.0%	00.0%	00.1%
Operating Efficiency	%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Asset Utilization	%	44.3%	44.3%	44.3%	44.3%	44.3%	45.0%	49.0%	49.0%	47.0%	44.3%	48.3%	44.3%	45.7%
993/992G Loader														_
Units Available	ea	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Units Required	ea	3.9	5.0	4.7	5.0	4.8	4.9	4.9	5.0	4.9	4.4	4.2	4.1	4.6
Hours Available per unit	op hrs	447	402	447	432	447	432	447	447	432	447	432	447	5,256
Hours Used per unit	op hrs	347	400	420	434	430	422	437	445	426	392	367	363	4,882
Ore Hours Required	op hrs	456	407	487	473	436	479	387	486	430	382	413	382	5,218
Reclaim Hours Required	op hrs	456	407	487	473	436	479	387	486	430	382	413	382	5,218
Waste Hours Required	op hrs	593	955	871	963	960	804	1,060	912	962	969	785	820	10,654
Non-pit Hours Required	op hrs	229	207	229	221	229	221	229	229	221	229	221	229	2,694
Project Hours Required	op hrs	0	25	25	42	87	124	124	112	87	0	0	0	627
Loading Hours Required	op hrs	1,734	2,000	2,098	2,172	2,148	2,108	2,187	2,226	2,131	1,961	1,833	1,813	24.411
3														,
Availability	%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Lise of Availability	%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	0/	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Accet Litilization	/0 0/	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%	61.2%
Asset Othization	/0	01.270	01.270	01.270	01.270	01.270	01.270	01.270	011270	01.270	01.270	01.270	01.270	01.270
777 Haul Trucke														
777 Haul Trucks		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
777 Haul Trucks Units Available	ea	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
777 Haul Trucks Units Available Units Required	ea ea	10.0 6.9	10.0 9.2	10.0 8.5	10.0 9.3	10.0 8.9	10.0 9.5	10.0 9.8	10.0 9.8	10.0 9.8	10.0 8.2	10.0 7.8	10.0 7.5	10.0 8.8
777 Haul Trucks Units Available Units Required Hours Available per unit	ea ea op hrs	10.0 6.9 451	10.0 9.2 407	10.0 8.5 451	10.0 9.3 437	10.0 8.9 451	10.0 9.5 437	10.0 9.8 451	10.0 9.8 451	10.0 9.8 437	10.0 8.2 451	10.0 7.8 437	10.0 7.5 451	10.0 8.8 5,313
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit	ea ea op hrs op hrs	10.0 6.9 451 311	10.0 9.2 407 375	10.0 8.5 451 382	10.0 9.3 437 408	10.0 8.9 451 403	10.0 9.5 437 416	10.0 9.8 451 441	10.0 9.8 451 444	10.0 9.8 437 428	10.0 8.2 451 372	10.0 7.8 437 340	10.0 7.5 451 337	10.0 8.8 5,313 4,656
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit	ea ea op hrs op hrs	10.0 6.9 451 311	10.0 9.2 407 375	10.0 8.5 451 382	10.0 9.3 437 408	10.0 8.9 451 403	10.0 9.5 437 416	10.0 9.8 451 441	10.0 9.8 451 444	10.0 9.8 437 428	10.0 8.2 451 372	10.0 7.8 437 340	10.0 7.5 451 337	10.0 8.8 5,313 4,656
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit	ea ea op hrs op hrs op hrs	10.0 6.9 451 311 1,255	10.0 9.2 407 375 1,077	10.0 8.5 451 382 1,272	10.0 9.3 437 408 1,215	10.0 8.9 451 403 1,109	10.0 9.5 437 416 1,280	10.0 9.8 451 441 1,034	10.0 9.8 451 444 1,305	10.0 9.8 437 428 1,121	10.0 8.2 451 372 1,049	10.0 7.8 437 340 1,137	10.0 7.5 451 337 1,051	10.0 8.8 5,313 4,656 13,904
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required	ea ea op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366	10.0 9.2 407 375 1,077 326	10.0 8.5 451 382 1,272 391	10.0 9.3 437 408 1,215 379	10.0 8.9 451 403 1,109 350	10.0 9.5 437 416 1,280 385	10.0 9.8 451 441 1,034 311	10.0 9.8 451 444 1,305 390	10.0 9.8 437 428 1,121 345	10.0 8.2 451 372 1,049 306	10.0 7.8 437 340 1,137 332	10.0 7.5 451 337 1,051 307	10.0 8.8 5,313 4,656 13,904 4,187
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381	10.0 9.2 407 375 1,077 326 2,224	10.0 8.5 451 382 1,272 391 2,028	10.0 9.3 437 408 1,215 379 2,243	10.0 8.9 451 403 1,109 350 2,237	10.0 9.5 437 416 1,280 385 1,873	10.0 9.8 451 441 1,034 311 2,470	10.0 9.8 451 444 1,305 390 2,126	10.0 9.8 437 428 1,121 345 2,242	10.0 8.2 451 372 1,049 306 2,258	10.0 7.8 437 340 1,137 332 1,829	10.0 7.5 451 337 1,051 307 1,911	10.0 8.8 5,313 4,656 13,904 4,187 24,822
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104	10.0 9.2 407 375 1,077 326 2,224 94	10.0 8.5 451 382 1,272 391 2,028 104	10.0 9.3 437 408 1,215 379 2,243 101	10.0 8.9 451 403 1,109 350 2,237 104	10.0 9.5 437 416 1,280 385 1,873 101	10.0 9.8 451 441 1,034 311 2,470 104	10.0 9.8 451 444 1,305 390 2,126 104	10.0 9.8 437 428 1,121 345 2,242 101	10.0 8.2 451 372 1,049 306 2,258 104	10.0 7.8 437 340 1,137 332 1,829 101	10.0 7.5 451 337 1,051 307 1,911 104	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0	10.0 9.2 407 375 1,077 326 2,224 94 25	10.0 8.5 451 382 1,272 391 2,028 104 25	10.0 9.3 437 408 1,215 379 2,243 101 140	10.0 8.9 451 403 1,109 350 2,237 104 227	10.0 9.5 437 416 1,280 385 1,873 101 520	10.0 9.8 451 441 1,034 311 2,470 104 495	10.0 9.8 451 444 1,305 390 2,126 104 513	10.0 9.8 437 428 1,121 345 2,242 101 475	10.0 8.2 451 372 1,049 306 2,258 104 0	10.0 7.8 437 340 1,137 332 1,829 101 0	10.0 7.5 451 337 1,051 307 1,911 104 0	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Waste Hours Required Project Hours Required Hauling Hours Required Availability	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0%	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0%	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0%	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79,0%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0%	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0%	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0%	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency	ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87.0%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0%	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0%	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0%	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Ved per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Ulization	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0% 61.9%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 61.9%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9%	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9%	10.0 9.8 451 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9%	10.0 8.2 451 372 1.049 306 2.258 104 0 3.718 79.0% 87.0% 61.9%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 61.9%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 87.0% 61.9%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 87.0% 61.9%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 87.0% 61.9%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 80.0% 61.9%	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 87.0% 61.9%	10.0 9.8 451 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9%	10.0 9.8 451 444 1,305 3900 2,126 104 513 4,438 79.0% 87.0% 61.9%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9%	10.0 8.2 451 372 1.049 306 2.258 104 0 3.718 79.0% 87.0% 61.9%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87,0% 61.9%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hauling Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available	ea op hrs op so op hrs op hrs og hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0% 61.9%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 61.9% 4.0	10.0 9.3 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9%	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9%	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9%	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0% 61.9%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9%	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9%
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vaelable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required	ea op hrs op hrs ea %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0% 61.9% 4.0	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87.0% 61.9% 4.0 3.9	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0	10.0 89 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 8.2 451 372 1,049 306 2.258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0	10.0 7.5 451 337 1,051 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vavilable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit	ea ea op hrs op	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293	10.0 9.2 407 375 1.077 326 2.224 94 25 3.747 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 61.9% 4.0 3.9	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 9 0.0% 87.0% 61.9% 4.0 4.0 299	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 4.0 319	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8 293	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 293	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0 3,532
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Verguired Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Ulitzation D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Verguired Hours Available per unit Hours Verguired	ea ea op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % % % % % % % % %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 61.9% 4.0 4.0 278 228	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 9 .0% 8 7.0% 61.9% 4.0 3.99 293 287	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 61.9% 4.0 299	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 235	10.0 9.5 437 416 1,280 385 1,873 1,071 520 4,158 79.0% 90.0% 87 .0% 61.9% 4.0 284 4.0 284 320	10.0 9.8 451 1,034 3111 2,470 104 495 4,414 79.0% 61.9% 61.9% 4.0 293 340	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 61.9% 4.0 319 322	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 61.9% 61.9% 4.0 308	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 87.0% 61.9% 4.0 3.88 293 281	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 9 0.0% 67.0% 61.9% 4.0 4.0 286	10.0 7.5 4.51 3.37 1,051 3.07 1,911 04 0 3,373 79.0% 87.0% 61.9% 4.0 4.0 293 259	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0 3,532 3,550
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hauling Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available Pours Available per unit Hours Used per unit Hours Used per unit	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % ea ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 87.0% 61.9% 4.0 4.0 278 281	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87.0% 61.9% 4.0 3.9 293 287	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 87.0% 61.9% 4.0 4.0 209 297	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 87.0% 61.9% 4.0 4.0 293 315	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 87.0% 61.9% 4.0 4.0 284 320	10.0 9.8 451 1,034 311 2,470 104 495 4,414 79.0% 87.0% 61.9% 4.0 4.0 293 340	10.0 9.8 451 1,305 3900 2,126 104 513 4,438 79.0% 87.0% 61.9% 4.0 4.0 319 322	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 87.0% 61.9% 4.0 4.0 308 308	10.0 8.2 451 372 1.049 306 2.258 104 0 3.718 79.0% 87.0% 61.9% 4.0 3.8 293 281	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 256	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 87.0% 61.9% 4.0 4.0 293 259	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 61.9% 40, 3,532 3,500
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valiable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Used per unit Hours Used per unit Ore Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % op hrs op hrs o	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 87.0% 61.9% 4.0 4.0 278 281 40	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87.0% 61.9% 4.0 3.9 293 287 48	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 5	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 293 315 43	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 320 48	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 340 39	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 319 322 48	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 61.9% 4.0 3.8 293 281 38	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 256 41	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 293 259 38	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0 3,532 3,500 519
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vaailable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Used per unit Core Hours Required Core Hours Re	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % op hrs op	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0% 61.9% 4.0 4.0 278 281 40 142	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87 .0% 61.9% 4.0 3.9 293 287 48 170	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0 4.0 299 297 47 165	10.0 89 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 15 43 152	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 320 48 167	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 293 340 39 135	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 319 322 48 169	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308 308	10.0 8.2 451 372 1,049 306 2.258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8 293 281 38 133	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 256 41 144	10.0 7.5 451 337 1,051 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 259 38 38	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 40 40 3,532 3,500 519 1 819
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vavilable per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required COEB Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % ea ea ea ea op hrs op hrs op hrs op hrs op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.5 159 77	10.0 9.2 407 375 1.077 3224 94 25 3,747 79.0% 61.9% 4.0 4.0 278 281 40 142 88	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 61.9% 4.0 3.91 203 87.0% 61.9% 4.0 3.93 287 48 170 287 48 170 287 48 170 287 48 170 287 48 170 287 48 170 48 104 104 104 104 104 104 104 104	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 4.0 4.0 4.0 299 297 47 165 79	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 61.9% 61.9% 4.0 4.0 233 315 43 152 43	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.8 167 4.1 4.1 5.1 4.1 5.2 4.1 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2 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 5.2	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 61.9% 4.0 4.0 223 340 39 135 65	10.0 9.8 451 444 1,305 3900 2,126 104 513 4,438 79.0% 61.9% 4.0 4.0 319 322 48 169 82	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 61.9% 4.0 4.0 308 308 43 308	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 61.9% 4.0 3.8 283 281 38 38 133 64	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 61.9% 4.0 4.0 284 256 411 144 69	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 259 38 3259 38	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 40.0% 61.9% 4.0 3,532 3,500 519 1,819
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Availability Use of Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Used per unit Ore Hours Required Reclaim Hours Required Reclaim Hours Required Vaste Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159 77 385	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 61.9% 4.0 4.0 278 281 40 142 688 588	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 61.9% 4.0 3.9 293 287 48 170 82 536	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 4.0 4.0 299 297 47 165 79 502	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 61.9% 4.0 4.0 293 315 43 152 73.73 501	10.0 9.5 437 416 1,280 385 1,835 1,835 1,01 520 4,158 79.0% 61.9% 4.0 4.0 4.0 284 3200 48 167 80 95	10.0 9.8 451 1,034 311 2,470 104 495 4,414 79.0% 61.9% 61.9% 4.0 4.0 293 340 330 330 330	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 61.9% 4.0 4.0 319 322 48 169 82 552	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 61.9% 4.0 308 308 43 150 72 552	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 61.9% 4.0 3.8 293 281 38 133 64 4.56	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 9 0.0% 67.0% 61.9% 4.0 284 256 411 144 699 483	10.0 7.5 451 337 1,051 307 1,911 04 0 3,373 79.0% 9 0.0% 87.0% 61.9% 4.0 4.0 259 259 38 133 64 505	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 3,532 3,500 519 1,819 875 6,657
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Ved per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hauling Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Ullization D9 & D10 Dozers Units Available Units Required Hours Available Core Hours Required Reclaim Hours Required COSP Hours Required Waste Hours Required Waste Hours Required Waste Hours Required	ea ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % ea ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159 77 365 250	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 87.0% 61.9% 4.0 4.0 278 281 40 142 68 588 286	10.0 8.5 451 382 1,272 391 2,028 102 3,820 79.0% 90.0% 87.0% 61.9% 4.0 3.9 293 287 48 170 82 536 257	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 4.0 4.0 299 297 47 165 79 592 292	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 152 73 591 501 2,201	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 61.9% 4.0 4.0 284 320 48 167 80 495	10.0 9.8 451 1,034 3111 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 340 39 135 65 655 655 655	10.0 9.8 451 444 1,305 3900 2,165 104 513 4,438 79.0% 61.9% 61.9% 4.0 4.0 319 322 48 169 82 562 250	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 308 308 43 150 72 592 242	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8 293 281 38 133 64 596 64 596	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 284 256 41 144 69 483 222	10.0 7.5 451 337 1,051 307 1,911 1014 0 3,373 79.0% 90.0% 87.0% 61.9% 61.9% 4.0 4.0 293 259 38 133 64 505	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0 3,532 3,500 519 1,819 875 6,557 2,042
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vaelable per unit Ore Hours Required Reclaim Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available Cors Hours Required Reclaim Hours Required COSP Hours Required Waste Hours Required Vaste Hours Required CoSP Hours Required Waste Hours Required Waste Hours Required Nors Michael Required Waste Hours Required Nors Required Waste Hours Required Nors Required Waste Hours Required Waste Hours Required Nors Michael Required Nors Michael Required Nors Michael Required Nors Re	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % op hrs op hr	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 293 235 45 159 77 365 250 255	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 61.9% 4.0 4.0 4.0 278 281 40 142 68 588 285	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 87.0% 61.9% 4.0 3.9 293 287 48 170 82 536 250 255	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0 4.0 299 297 47 165 79 592 242	10.0 89 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 591 250 250 250 250 250 250 250 250	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 340 39 135 65 652 2550 255	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 4.0 319 322 48 169 82 562 256 256 256	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308 43 150 72 592 242 252 242	10.0 8.2 451 372 1,049 306 2,288 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8 293 281 38 133 64 596 256	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 256 41 144 69 483 242 25	10.0 7.5 451 337 1,051 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 259 38 133 64 505 250	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 4.0 4.0 4.0 4.0 3,532 3,500 519 1,819 875 6,557 2,943
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valiable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Aequired Reclaim Hours Required Reclaim Hours Required COSP Hours Required Vaste Hours Required Vaste Hours Required COSP Hours Required Vaste Hours Required Vaste Hours Required Units Required CosP Hours Required CosP Hours Required Vaste Hours Required Other Mining Hours Required Non-pit Hours Required Non-pit Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % % % % % % % % %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159 77 365 250 25 10	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 87.0% 61.9% 4.0 4.0 278 281 40 142 68 588 226 588 226 23	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 61.9% 4.0 3.9 293 287 48 170 82 536 250 255 250	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0 4.0 299 297 47 165 79 592 242 252	10.0 89 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 152 73 591 250 255 152 152 152 152 152 152 152	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 390 135 655 652 2550 255 2550 255 2550	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 4.0 319 322 48 169 82 562 250 255 255 255	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308 308 43 150 72 592 242 255 242 255 242 245 245 24	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79,0% 90,0% 87,0% 61,9% 4,0 3,8 293 281 38 133 64 596 250 255	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 7.5 451 337 1,051 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 293 259 38 133 64 505 250 250	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 4.0 4.0 3,532 3,500 519 1,819 875 6,557 2,943 300
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Vaailable per unit Hours Used per unit Ore Hours Required Waste Hours Required Non-pit Hours Required Availability Use of Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available per unit Hours Used per unit Hours Used per unit Ore Hours Required COSP Hours Required Vaste Hours Required Other Mining Hours Required Other Mining Hours Required Other Mining Hours Required Other Mining Hours Required Project Hours Required Other Mining Hours Required Other Mining Hours Required Project Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % ea ea ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 293 235 45 159 77 365 250 25 19	10.0 9.2 407 375 1.077 3.224 94 25 3.747 79.0% 61.9% 4.0 4.0 2.81 40 142 688 2.81 40 142 688 2.81	10.0 8.5 451 382 1,272 3,91 2,028 104 25 3,820 79.0% 61.9% 4.0 3.9 287 48 170 82 287 48 170 82 536 250 25 39	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 4.0 4.0 4.0 299 297 47 165 79 592 242 25 38	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 61.9% 61.9% 4.0 4.0 4.0 4.0 4.0 4.3 315 43 152 73.591 2550 25 124	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 61.9% 4.0 4.0 223 340 233 340 39 135 652 255 25 194	10.0 9.8 451 444 1,305 3900 2,126 104 513 4,438 79.0% 61.9% 4.0 4.0 319 322 48 169 82 552 250 25 154	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 61.9% 4.0 4.0 308 4.0 308 4.3 308 4.3 150 72 552 242 25 108	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 61.9% 4.0 3,718 283 281 38 133 64 596 2550 25 19	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 61.9% 4.0 4.0 284 256 411 144 69 483 242 25 18	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 259 38 133 64 505 250 25 19	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 40.0% 61.9% 4.0 3,532 3,500 519 1,819 875 6,657 2,943 300 988
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valiable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Hauling Hours Required Availability Use of Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available per unit Hours Available per unit Hours Available per unit Hours Available per unit Hours Required Reclaim Hours Required COSP Hours Required Non-pit Hours Required Non-pit Hours Required Project Hours Required Non-pit Hours Required Dozing Hours Required Project Hours Required Project Hours Required Non-pit Hours Required Dozing Hours Required Dozing Hours Required Dozing Hours Required	ea op hrs op hrs op hrs op hrs op hrs op hrs op hrs op hrs % % % % % % % % % % % % % % % % % % %	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159 77 365 250 25 19 940	10.0 9.2 407 375 1.077 3226 2.24 94 25 3,747 79.0% 61.9% 4.0 4.0 278 281 40 142 68 8 281 40 142 68 8 588 226 23 37 1,124	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 61.9% 4.0 3.9 293 287 48 170 82 83 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 287 48 170 82 53 54 54 54 54 54 54 54 54 54 54	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 61.9% 4.0 299 297 47 165 79 297 47 165 79 292 242 25 38 1,188	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.3 152 7.3 591 250 25 124 1,258	10.0 9.5 437 416 1,280 385 1,873 1,071 520 4,158 79.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.8 451 1,034 311 2,470 104 495 4,414 79.0% 61.9% 4.0 4.0 4.0 4.0 293 340 3340 3340 39 135 655 655 2550 255 194 1,360	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 61.9% 4.0 4.0 319 322 4.8 169 82.25 256 255 154 1,290	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 61.9% 61.9% 4.0 308 308 308 308 308 308 308 308 308 30	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 61.9% 4.0 3.8 293 281 38 133 64 596 250 25 19 1,125	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 61.9% 4.0 284 41 144 69 483 242 25 18 1,022	10.0 7.5 451 337 1,051 307 1,911 04 0 3,373 79.0% 9 0.0% 87.0% 61.9% 4.0 4.0 259 38 133 64 505 255 255 19 1,034	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 4.0 3,532 3,500 519 1,819 875 6,557 2,943 300 988 14,002
777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valiable per unit Ore Hours Required Reclaim Hours Required Non-pit Hours Required Project Hours Required Hauling Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available Units Required Hours Available Units Required Hours Available Units Required Reclaim Hours Required COSP Hours Required Vaste Hours Required COSP Hours Required Vaste Hours Required Other Mning Hours Required Non-pit Hours Required Non-pit Hours Required Dozing Hours Required Dozing Hours Required	ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 293 235 45 159 77 365 250 25 19 940	10.0 9.2 407 375 1,077 326 2,24 94 25 3,747 79.0% 87.0% 61.9% 4.0 278 281 40 142 68 588 281 40 142 68 588 281 37 1,124	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 87.0% 61.9% 4.0 3.9 293 287 48 170 82 5366 255 39 1,150	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 61.9% 61.9% 4.0 4.0 299 297 47 165 79 592 297 47 165 79 592 292 297 47 185	10.0 8.9 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 61.9% 4.0 293 315 43 152 73 591 250 255 124 1,258	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 284 320 48 167 80 495 242 25 223 1,279	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 293 340 39 135 65 652 255 194 1,360	10.0 9.8 451 444 1,305 330 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 319 322 48 169 82 552 255 154 1,290	10.0 9.8 437 428 1,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308 43 150 72 552 242 25 108 1,232	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79.0% 90.0% 87.0% 61.9% 4.0 3.8 293 281 38 133 64 596 255 19 1,125	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 284 256 41 144 69 483 242 25 18 1,022	10.0 7.5 451 337 1,051 307 1,911 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 293 259 38 133 64 505 250 250 251 19 1,034	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 90.0% 87.0% 61.9% 4.0 4.0 3,532 3,500 519 1,819 875 6,557 2,943 300 988 14,002
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777 Haul Trucks Units Available Units Required Hours Available per unit Hours Valiable per unit Ore Hours Required Reclaim Hours Required Waste Hours Required Non-pit Hours Required Project Hours Required Availability Use of Availability Operating Efficiency Asset Utilization D9 & D10 Dozers Units Available per unit Hours Required Reclaim Hours Required Reclaim Hours Required COSP Hours Required Vaste Hours Required Vaste Hours Required CoSP Hours Required Vaste Hours Required CoSP Hours Required Vaste Hours Required CoSP Hours Required Vaste Hours Required Other Mining Hours Required CosP Hours Required CosP Hours Required Vaste Hours Required Availability Use of Availability	ea op hrs op hrs	10.0 6.9 451 311 1,255 366 1,381 104 0 3,107 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 59.0%	10.0 9.2 407 375 1,077 326 2,224 94 25 3,747 79.0% 90.0% 61.9% 4.0 4.0 4.0 4.0 278 281 40 142 68 588 226 23 37 1,124 81.0% 62.0%	10.0 8.5 451 382 1,272 391 2,028 104 25 3,820 79.0% 90.0% 61.9% 4.0 3.9 293 287 48 170 82 536 250 25 39 1,150 81.0% 59.0%	10.0 9.3 437 408 1,215 379 2,243 101 140 4,078 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 299 297 47 165 79 592 242 25 38 1,188 81.0% 62.0%	10.0 89 451 403 1,109 350 2,237 104 227 4,027 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.5 437 416 1,280 385 1,873 101 520 4,158 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 9.8 451 441 1,034 311 2,470 104 495 4,414 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 3.9 1.35 655 652 255 1.94 1,360 81.0% 59.0% 9.0%	10.0 9.8 451 444 1,305 390 2,126 104 513 4,438 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 319 322 48 169 82 562 255 154 1,290 81.0% 64.0% 54.0% 55.5% 1,54 1,54 1,54 1,54 1,54 1,54 1,54 1,55 1,54 1,54 1,54 1,54 1,54 1,54 1,54 1,55 1,54 1,54 1,54 1,55 1,54 1,54 1,54 1,54 1,54 1,55 1	10.0 9.8 437 428 11,121 345 2,242 101 475 4,284 79.0% 90.0% 87.0% 61.9% 4.0 4.0 308 308 308 308 43 150 72 592 242 25 108 1,232 81.0% 64.0%	10.0 8.2 451 372 1,049 306 2,258 104 0 3,718 79,0% 61,9% 4,0 3,718 79,0% 61,9% 4,0 3,8 293 281 38 133 64 596 250 25 19 1,125 81,0% 59,0%	10.0 7.8 437 340 1,137 332 1,829 101 0 3,398 79.0% 90.0% 87.0% 61.9% 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	10.0 7.5 451 337 1,051 104 0 3,373 79.0% 90.0% 87.0% 61.9% 4.0 293 259 38 133 64 505 250 251 19 1,034 81.0% 59.0%	10.0 8.8 5,313 4,656 13,904 4,187 24,822 1,226 2,420 46,559 79.0% 61.9% 4.0 4.0 3,532 3,500 61.9% 4.0 4.0 3,532 3,500 519 1,819 875 6,557 2,943 300 988 14,002 81.0% 60.3%
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SECTION 5. PROJECTS

5.1. Dewatering

5.1.1. Main Pit Lake (MPL) Dewatering

The MPL has filled to target level of approximately 840 ft. This level is based on a 10 ft freeboard below the nominal in-pit waste dump elevations. Pumping from the Lake continues to maintain the target water level as run off, seepage, Aqqaluk discharge and displacement from waste dumping work to raise the water level. (Figure 5-1)

Discharge from the pump system is currently sent to the Diversion Ponds, and then pumped to the Tailings Storage Facility (TSF) (Stage I). Long term, pipe will be placed along a more direct route from the Main Pit pumps to the TSF (Stage II). Planning for Stage II is tentatively scheduled for 2017.



Figure 5-1 MPL Pumping Station

5.1.2. Aqqaluk Pit Dewatering

Mining activity is taking place in the Aqqaluk and Qanaiyaq pits in 2017. Current pit bottom is at the 700 ft elevation. It will progress to the 675 ft elevation by the end of 2017.

1) Current System (January 2017)

The current system is in Figure 5-2. Water from the lowest bench (700) is pumped by a diesel pump from a blasted sump in the floor of the bench. Water is pumped up a 6" HDPE pipe to the 775 pump-house. Water collects in a sealed sump made of a 6' diameter culvert set on end, and then pumped out of the pit with a submersible electric pump. Currently the 6" insulated and heat traced discharge line is in use. This line discharges into the 16" line on Main Pit Dump 3, which then discharges into MPL near the barge pumps. There is also a 14" line from the pump-house to the 16" line for summer use.

Significant water is seeping from the south wall in Aqqaluk, and creating challenges for drainage of the haul road and blasts along the wall. The source of the water is some combination of MPL, Red Dog Creek Culvert leakage, and hyporheic flow from Red Dog Creek and tributaries. Piezometers were installed in 2016 to measure the water level in the saddle between MPL and Aqqaluk pit, and investigation and planning of mitigations for all three sources are in progress. Some of the possible mitigations are:

- Sealing joints in the Red Dog Creek culvert that are leaking.
- Investigate interception wells or some form of cutoff in the MPL / Aqqaluk saddle.
- Investigate installation of collection ditches and sumps at the toe of the south wall.
- Investigate cutoff walls at the entrances to Red Dog Creek and its tributaries (Shelly, Connie). Drilling may be done this year at the tributaries to measure the hyporheic flow.



Figure 5-2 End of Year 2016 Dewatering

2) South Wall Dewatering (Summer 2017)

The top bench of the current dewatering ramp will be shot in mid-2018. New dewatering pipes will be installed on the south wall of Aqqaluk this year in preparation (Figure 5-3). A 6" insulated winter line and a 14" summer line are planned. The new system will allow both pipes to be used if needed during high flow periods, and will accommodate a second pump if needed.

A contractor will install the 1700' of 14" pipe required.



Figure 5-3 South Wall Dewatering Line

5.1.3. Contact Water Ditch Extension

Ditches and a small dam will be built to a) direct non-contact water into the Shelly Creek diversion culvert and b) direct contact water around the 900 bench and into the sump at the south end of Norm's Knob. The west side of the 900 bench in the Shelly Creek area will need a water collection system, potentially including pumps. The west side of the pit will be inspected to determine if any ditches require extension or adjustment to ensure no contact water is draining into Sulfur Creek. These areas will be evaluated before spring freshet.

5.1.4. Qanaiyaq Pit Dewatering

The Qanaiyaq production planned in 2017 will not require any active dewatering, as all mining activity allows water to flow either into the pit or toward existing contact water collection structures. In-pit ditching will be utilized to ensure water is draining in a manner that ensures no impact to surrounding facilities and clean drainages.

5.2 Main Waste Stockpile B-Pad

With A-Pad being impacted at a final Tailings Storage facility (TSF) height of 1,006-ft, a new laydown area will be developed on the south end of the Main Waste Stockpile (B-Pad). B-Pad will require stripping of tundra and placement of mine waste. The new footprint will require a revised final location of all utilities and pipes for safe operational use. Permitting for the disturbance of the proposed area is yet to be obtained.

5.3 Pit Wall / Dump Stability Monitoring and Failure Mitigation

The following monitoring and mitigation measures are currently in place at Red Dog Mine:

Slope Movement Monitoring

- The Key Creek monitoring hut will be fully functional in January 2017. The Robotic Total Station (RTS) units monitor movement of prisms every 30 minutes and the data is recorded on a screen with alarms set to notify Mine Operations and Mine Technical personnel if prism movement exceeds acceptable rates (At present => 1 foot/day).
- In addition to prisms, RDO has purchased an IBIS-FM, slope stability monitoring radar, to monitor Aqqaluk Pit. The unit was acquired in December 2016 and will be fully implemented in April-May 2017.
- 18 piezometers have been installed in the South Wall of Aqqaluk Pit to monitor seepage from Main Pit Lake. At this time, all the piezometers are showing full saturation (840ft.). Monitoring will continue throughout 2017.
- Additional prisms have been deployed on MPD2, MPD3, MPD4, South East Dump (SED) and West Spur Dump. These prisms are closely monitored for settlement rates and information is disseminated to Mine Operations and Mine Technical departments.

5.4 Exploration Drilling

- Aggaluk Geotechnical Drilling: Subsequent to drilling within the Aggaluk pit in 2016, a number of 1) areas have been identified where the rock attributes and geological structures remain insufficiently characterized for mine operational requirements. Additional geotechnical information along the eastern wall of the pit is required by 2018 to determine the ultimate pit slope angle and mitigate the risk of a slope failure. A core drilling and detailed geotechnical core logging program, which includes the use of an acoustic televiewer (ATV), is proposed to address the data gap. The proposed core drilling program consists of drilling 2,765 feet in six holes to get geotechnical information to determine the ultimate pit slope angle in the east wall, but also define shear zones and major structures affecting the wall. Detailed geotechnical data will be sent to Golder Associates for interpretation. Geotechnical drilling is justified given the fact that the eastern area of the pit has already begun to be mined to ultimate pit limits; however, the ultimate pit limits are based on incomplete data and the design will need to be revised as soon as possible. Pit wall slope angles designed without sufficient geotechnical information need to be very conservative and result in an excessively high strip ratio. If they are inadequately designed they pose a risk for a significant slope failure which could result in risk to human life, lost/damaged equipment, extensive production delays, and unnecessary cleanup costs. Obtaining additional geotechnical information for the eastern part of the pit is necessary to avoid these risks.
- 2) Aqqaluk Extension-East Drilling: Annual follow-up drilling has continued to show the complexity of the orebody in the eastern half of the Aqqaluk pit and highlight that the deposit is insufficiently characterized in that region for mine operational requirements. Additional drilling is required by 2018 to allow classification at the Indicated level and to adequately locate the limits of the eastern pit walls. A core drilling and core logging program is proposed to address the data gap. The proposed core drilling program consists of drilling 2,485 feet in four holes to get information along the eastern pit wall in order to delineate the extent of the Aqqaluk deposit and test the grade continuity of Sub Lower Plate mineralization to ensure the viability of a proposed eastern pit pushback. This subprogram will extend the drilling coverage in the eastern half of the deposit to

convert mineralization from Inferred to Indicated and provide data to evaluate the eastern expansion of the Aqqaluk pit through the Sub Lower Plate mineralization.

- 3) Aqqaluk Extension-North Drilling: Annual follow-up drilling has continued to show the complexity of the Sub-lower plate in the northeast Aqqaluk pit and to highlight that the deposit is insufficiently characterized in that region to determine beyond a conceptual level if it should be mined by open pit or underground mining methods. Additional drilling is required by 2018 to allow classification at the Indicated level and to adequately locate the limits of the northeastern pit walls. Since road access will be lost after 2017, this drilling is required before the end of 2017 to avoid the significant extra cost of using helicopter support. The proposed core drilling program consists of drilling 13,250 feet in 15 holes to get information along the northeastern pit wall. This subprogram is to extend the drilling coverage to convert mineralization from Inferred to Indicated, delineate the extent of the deposit, and provide data to further evaluate the northeastern expansion of the Aqqaluk pit through the Sub Lower Plate. Due to progressive mining of the Aqqaluk pit, highwalls are being created limiting diamond drill access and eliminating road access to the northern area of the pit. A pit wall pushback to relocate the ultimate pit wall after it has been excavated will substantially increase the amount of waste mining due to minimum mining width considerations.
- 4) Qanaiyaq Drilling: The proposed drilling program will consist of 155 feet on one geotechnical hole, and 890 feet on five infill holes. The core logging would collect the following geotechnical information from the geotechnical hole: core recovery, rock quality designation, rock strength, degree of weathering, number of fractures per foot, and discontinuity attributes (shape, roughness, infill character, and infill type). In addition, televiewer data will be collected if ground conditions permit, in order to get orientated structural information.

5.5 Water Truck Fill Station

Since the mine site fugitive dust contains elevated levels of zinc, lead and cadmium, Red Dog Operations (RDO) is obligated to control the release of these pollutants to wetlands (tundra) and open water bodies under the US Clean Water Act (CWA). Watering the mine roads is the primary method of controlling fugitive dust.

The mine is equipped with a water tanker of 18,000 gallon capacity. Currently the water is refilled by a portable pump at Bon's Creek location, south of the Overburden Pump Back System. Water truck cycle times to the pit area from Bon's Creek fill station are more than 45 minutes and inefficient.

A new fill station is proposed that will significantly reduce the cycle time. The existing white water storage tank will be used. Treated process water from the sand filter building will be the source for the. Routing of pipe and final location for the tank are still being determined.

5.6 Emulsion Plant Foundation and Silo Repair

The first stage of this project will involve finalizing the evaluation of the foundation and formulation of a strategy for mitigation.

This project also provides for the demolition of the existing AN silo stairs, walkways and ladders and replacement with new. Included in this project is the addition of the new diverter valve access platform. The silos are located at the emulsion plant, south of the Red Dog Operations facilities. The catwalks, walkways and ladders have been purchased and are on site.

Currently there is limited safe access to the diverter valve if mechanical issues arise. A manlift is the only means to access the valve. Red Dog Operations has a limited number of employees task trained on the man-lift and the demand on the 135-foot manlift on site is high.

This is an improvement project to provide safe access of employees. Current walkways and ladders are showing heavy corrosion and do not meet MSHA codes. According to the Code of Federal Regulations, working platforms shall be of substantial construction, provided with handrails and maintained in good condition. Presently there are no toe boards on the working platforms. The current ladders do not have railed landings every 30 feet or protection cages as required.

5.7 Back Dam Causeway

The back dam causeway that began construction in 2016 will be completed in 2017. Much of the material already placed will need to be excavated and replaced in three foot, compacted lifts. This work must take place in summer months when ice is no longer present on the TSF.

5.8 Portable Crusher

Crushing operations in the pit and at material sites (DD2, MS-2/9) will continue in 2017 to support material requirements of both Mine Operations and the Surface crew.

5.9 Airport Runway Re-surfacing

Results from a 2016 survey show that depressions exceed what is allowed by Federal Aviation Administration (FAA) regulations. Runway deterioration could leave Red Dog without critical air services if this project is delayed.

The settlement dips are the critical driver behind resurfacing in 2017, as they have surpassed the FAA limit of 3" in depth. Recent surveys (2016) indicate depressions of up to 3.9" in the landing area of the runway, and up to 11.5" in the displaced threshold.

In addition, grooving on the runway that promotes drainage is badly worn. A runway survey in 2015 showed that the runway had lost approximately 90% of the pavement grooving at that point. Because of the aforementioned dips and heaves, it is not effective to simply re-groove the runway surface. For further details on the runway settlement and grooving loss, refer to the WH Pacific 2016 Depression Analysis Technical Memorandum in Appendix 3.

The contractor will mobilize paving equipment and a hot mix asphalt batch plant to Seattle where it will be brought to Red Dog via barge. The plant will be set in a location near the runway. The contractor will install edge drains with cleanouts along the perimeter of the project per FAA requirement. Then the existing asphalt will be milled according to designs and specifications. Once milling is completed, a leveling course of asphalt will be placed to bring the existing runway profile to the proper shape. A final course of asphalt will be placed to bring the surface to the design profile. Scheduling will allow for normal aircraft operations on Wednesdays and Saturdays. Crushing of the aggregate for the project will start mid-April, if weather conditions allow. Mobilization of the contractor will begin in May, with supplies and equipment delivered on the first barge. Airport site work will take place from July to September.

SECTION 6. APPENDICES

6.1. 2017 Mine Plan 3D View Maps

Table 6-1 Legend for Maps

Туре	Legend	Net Value Cutoff (\$/sec)
Low Grade Ore		Х
Ore		Х
Ore		Х
Ore		Х



Figure 6-1 February 2017 Mine Plan 30 View (AQQ)



Figure 6-2 March 2017 Mine Plan 30 View (AQQ)



Figure 6-3 April 2017 Mine Plan 30 View (AQQ)



Figure 6-4 May 2017 Mine Plan 30 View (AQQ)



Figure 6-5 June 2017 Mine Plan 30 View (AQQ)



Figure 6-6 July 2017 Mine Plan 30 V1ew (AQQ)



Figure 6-7 August 2017 Mine Plan 30 View (AQQ)



Figure 6-8 September 2017 Mine Plan 30 View (AQQ)



Figure 6-9 October 2017 Mine Plan 30 View (AQQ)



Figure 6-10 November 2017 Mme Plan 30 yłew (AQQ)



Figure 6-11 December 2017 Mine Plan 30 View (AQQ)



Figure 6-12 February 2017 Mine Plan 30 View (QAN)



Figure 6-13 March 2017 Mine Plan 30 View (QAN)



Figure 6-14 April 2017 Mine Plan 30 View (QAN)



Figure 6-15 May 2017 Mine Plan 30 View (QAN)



Figure 6-16 June 2017 Mine Plan 30 View (QAN)



Figure 6-17 July 2017 Mine Plan 30 View (QAN)



Figure 6-18 August 2017 Mine Plan 30 View (QAN)



Figure 6-19 September 2017 Mine Plan 30 View (QAN)

Figure 6-20 October 2017 Mine Plan 30 View (QAN)

Figure 6-21 November 2017 Mine Plan 30 View (QAN)

Figure 6-22 December 2017 Mine Plan 30 View (QAN)