

Memorandum

TO: Mine Operators, Lignite Energy Council, and Other Interested Parties

FROM: Dean K. Moos, Director-Reclamation Division *DKM*

DATE: November 20, 2020

SUBJECT: Annual update of variable costs contained in Policy Memorandum No. 16 to Mine Operators - Reclamation Cost Estimating Guidelines

Attached is the July 2020 variable cost updates to the Reclamation Division's Reclamation Cost Estimating Guidelines used for calculating worst-case bond amounts for mining permits. This annual update contains the variable costs as of July 1, 2020. Several of the variable cost items changed with this update and the average hourly rates for equipment used at the large mines increased an average of 10.6% over the July 1, 2017 rates. Mining companies will be required to update all current worst-case reclamation cost estimates using the July 2020 rates. The attachment includes a breakdown of the hourly equipment rates for 2020. A comparison of the 2017 and 2020 hourly equipment rates is also attached for your convenience.

Mining companies must submit revision applications to update reclamation cost estimates by March 1, 2021, for each active permit area and/or consolidated bond area that contains active permit areas using the 2020 variable costs. This can be done with the submittal of a new permit revision or in a pending permit revision application. If you believe the worst-case reclamation condition described in the current reclamation cost estimate has passed, please contact us and we will review that cost estimate to determine if any changes are needed.

No variable cost update was sent to industry in 2018 or 2019 because there were no significant changes from 2017. The average change to the variable costs from 2017 to 2018 was -1.7% and +0.4% from 2018 to 2019. Equipment Watch values provided by OSM were used in 2019.

The equipment list prices and suggested residual values were obtained from Butler Machinery. The fuel cost, an average weekly cost over the past 12 months, was obtained from Fleet Services with the North Dakota Department of Transportation. Tire prices are based on information received from Pomp's Tire Service. Seed prices are based on information received from Chesak Seed House and custom work farm rates are based on 2020 average rates published by the NDSU Extension Service.

For small mines, the rate will be \$1.00 per cubic yard based on the bids the Commission's AML Division received this year. No updates to the worst-case reclamation cost estimates will be required this year for small mines.

Attachments

Per Cubic Yard Earth-moving Cost for Small Mines

Costs for backfilling, grading, and suitable plant growth material respread where the total quantity to be moved is 500,000 cubic yards or less will be calculated at a rate of \$1.00 per yard. (This rate will be reviewed and updated on July 1 of each year.)

Equipment Prices

The following equipment prices were furnished on November 6, 2020 by Greg O'Shea of Butler Machinery as the current list price delivered as commonly equipped for reclamation work. These prices include a 5% discount and no taxes.

<u>Item</u>	<u>List Price Discounted (\$)</u>
D11T Tractor w/U Dozer & Ripper	2,500,000
D10T Tractor w/U Dozer & Ripper	1,435,000
D9T Tractor w/U Dozer & Ripper	1,151,000
657G Scraper w/Push-Pull	2,000,000
637G Scraper w/Push-Pull*	1,350,000*
993K Wheel Loader with 15 CY Bucket	3,025,000
777F End Dump Truck	1,920,000
16M Motor Grader w/Ripper	1,070,000

*Butler did not provide a price or residual value for the 637G scraper in 2020. We used the 2018 price from Butler and adjusted the residual value to 27%, which is close to the midpoint between the 38% residual value provided by Butler in 2018 and the 14% Equipment Watch residual value provided by OSM in 2020.

Replacement Tire Prices

The following tire prices are based on information provided by Pomp's Tire Service on July 31, 2020.

<u>Equipment</u>	<u>Tire Size</u>	<u>Price Each (\$)</u>
657G Scraper	40.5/75 R39 (E-3)	16,261
637G Scraper	37.25R35 (E-3)	13,801
16M Motor Grader	23.5 R25 (E-4)	4,482
993K Wheel Loader	50/65 R51 (L-5)	70,727
777F End Dump Truck	27.00R49 (E-4)	12,677

Residual Values for Reclamation Equipment

The following are residual percentages and values to be used for determining the cost per hour of reclamation equipment. Values shown were obtained from Butler Machinery.

<u>Item</u>	<u>Percentage of Original Cost</u>	<u>Residual Value (\$)</u>
D11T Tractor w/U Dozer & Ripper	35	875,000
D10T Tractor w/U Dozer & Ripper	40	574,000
D9T Tractor w/U Dozer & Ripper	37	425,870
657G Scraper w/Push-Pull	27	540,000
637G Scraper w/Push-Pull*	27*	364,500*
16M Motor Grader w/Ripper	45	481,500
993K Wheel Loader W/15 CY Bucket	35	1,058,750
777F End Dump Truck	38	729,600

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Prime Interest Rate

The prime interest rate to be used for the calculation of interest on reclamation equipment under this update is 3.5% for July 1, 2020 to June 30, 2021. The total interest rate to be used for calculations is 5.5% as determined according to item III(A) of this guideline.

Fuel Cost

The cost of fuel for reclamation equipment from July 1, 2020 to June 30, 2021 is based on the average retail price from June 1, 2019 to June 30, 2020 obtained from the Fleet Services Division of the the North Dakota Department of Transportation is \$1.722 per gallon. Federal and state taxes are excluded from this price.

Wages and Benefits

Wage rates effective May 1, 2020 through April 30, 2021 were obtained from the International Union of Operating Engineers Local 49. Rates for workers compensation, unemployment benefits, and social security were obtained from the applicable North Dakota state agencies.

Hourly Rate for Labor - Group 3 Heavy Industrial	33.15
Pension, Health, Welfare, & Apprenticeship/Hour - Group 3	19.70
Insurance - Assumed 1% of Hourly Rate 0.33	
Social Security - 7.65% of Hourly Rate	2.54
*Workers Compensation – 0.93% of Hourly Rate	0.31
$[\$485.12 / (\$33.15 \times 2080 \text{ hrs} \times 0.75)] = 0.0093$	
*Unemployment – 7.1% of Hr. Labor	2.35
$[(0.0969 \times \$37,900) / (\$33.15 \times 2080 \text{ hrs} \times 0.75)] = 0.0710$	
Total Hourly Operator Cost (*based on 40-hour week, 9 months per year)	58.38

Custom Farm Work Rates

The following custom farm rates are taken from the publication "2020 North Dakota Custom Rates Part I – Early Season Operations" (August 2020) published by the NDSU Extension Service.

<u>Item</u>	<u>Rate/Acre (\$)</u>
Chisel Plowing	11.30
Small Grain Seeding	14.28
Application of Dry Fertilizer	6.98

Fertilizer

The cost of 11-52-0 fertilizer for use in reclamation is \$455 per ton. This price is based on the rate provided by Nutrien Ag Solutions on October 30, 2020.

Trees

The cost of planting trees and shrubs on reclaimed land is based on rates obtained from the Mercer County Soil Conservation District, Beulah, ND. Price includes planting.

Trees:	\$30/100 feet
Weed Fabric Barrier:	\$65/100 feet

Seed

Seed prices were provided by Chesak Seed House on June 17, 2020. Seed prices are highly variable and may not reflect prices of seed later this year or next spring.

<u>Native Variety</u>	<u>\$/lb (PLS)</u>	<u>Introduced Variety</u>	<u>\$/lb (PLS)</u>
Big bluestem	10.00	Crested wheatgrass	3.87
Blue Grama	16.80	Intermediate wheatgrass	2.65
Canada wildrye	4.90	Pubescent wheatgrass	2.85
Green needlegrass	5.50	Russian wildrye	11.80
Indian grass	11.00	Smooth brome grass	1.94
Little bluestem	12.25	Tall wheatgrass	3.20
Prairie sandreed	28.50	<u>Legumes</u>	
Reed canarygrass	2.03	Alfalfa	1.83
Sand bluestem	19.60	Sweetclover (yellow)	1.79
Sideoats grama	6.60	Sweetclover (white)	3.96
Slender wheatgrass	3.50		
Switchgrass	4.40		
Buffalo grass	9.95		
Thickspike wheatgrass	6.50		
Western wheatgrass	3.50		
Prairie Junegrass	13.50		

Hourly Cost Estimation 2020 - Large Mine Fleet									
Estimated Ownership yrs =	7		Insurance rate =	0.0075		Fuel Cost/gal \$ =	1.72		
Annual Use hrs =	3,000		Sales Tax rate =	0.05		Union Labor - Group 3 base =	33.15		
Total Life hrs/yr =	20,000		Unemploymt constructn rate	0.0969		Union Labor - Group 3 total =	52.85		
Interest rate =	0.055		Unemploymt salary cap =	37,900		WSI Premium Charge =	485.12		
Equipment Type	Dozers			Scrapers		Grader	Water wagon	Loader	Truck
	D11T	D10T	D9T	657G	637G*	16M		993K	777F
Ownership Costs:									
Delivered price \$	2,500,000	1,435,000	1,151,000	2,000,000	1,350,000	1,070,000	1,070,000	3,025,000	1,920,000
Tire replacement \$	0	0	0	65,044	55,206	26,894	26,894	282,906	76,063
Adjusted price \$	2,500,000	1,435,000	1,151,000	1,934,956	1,294,794	1,043,106	1,043,106	2,742,094	1,843,937
Residual Value \$	875,000	574,000	425,870	540,000	364,500	481,500	481,500	1,058,750	729,600
Residual Value %	35.0	40	37.0	27	27	45	45	35	38.0
Value to be recovered \$	1,625,000	861,000	725,130	1,394,956	930,294	561,606	561,606	1,683,344	1,114,337
Equipment cost per hour \$	81.25	43.05	36.26	69.75	46.51	28.08	28.08	84.17	55.72
Interest cost \$/hr	26.19	15.03	12.06	20.95	14.14	11.21	11.21	31.69	20.11
Insurance cost \$/hr	3.57	2.05	1.64	2.86	1.93	1.53	1.53	4.32	2.74
Sales tax cost \$/hr	6.25	3.59	2.88	5.00	3.38	2.68	2.68	7.56	4.80
Hourly ownership cost	117.26	63.72	52.84	98.56	65.96	43.49	43.49	127.74	83.37
Operating Costs:									
Fuel consumption gal/hr	23.0	15.5	12.5	30.5	23.0	6.5	6.5	22.0	14.0
Fuel cost \$/hr	39.62	26.70	21.53	52.54	39.62	11.20	11.20	37.90	24.12
Lubricants \$/hr	10.82	7.81	6.76	14.87	10.53	2.80	2.80	13.40	10.26
Tire life hrs	0	0	0	5,000	5,000	10,000	10,000	10,000	10,000
Tire cost \$/hr	0.00	0.00	0.00	13.01	11.04	2.69	2.69	28.29	7.61
Overhaul \$	70.51	47.21	38.30	57.24	42.61	11.17	11.17	26.52	38.73
Repair + maintenance	70.74	48.04	39.16	64.64	49.89	10.27	10.27	29.91	23.85
Wear items, GEC	9.75	5.97	4.68	1.85	1.22	0.57	0.57	3.15	0.00
Hourly operating cost	201.43	135.72	110.43	204.15	154.91	38.69	38.69	139.17	104.56
Operators hourly wage (\$)	58.38	58.38	58.38	58.38	58.38	58.38	58.38	58.38	58.38
Total hourly rate	377.07	257.82	221.65	361.09	279.25	140.56	140.56	325.30	246.32
Overhead and profit @15%	56.56	38.67	33.25	54.16	41.89	21.08	21.08	48.79	36.95
Total Estimated Hourly Cost:	433.64	296.50	254.90	415.25	321.14	161.65	161.65	374.09	283.26

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2017 - 2020 Variable Costs: Summary of Changes												
				Dozers			Scrapers		Grader	Water	Loader	Truck
				D11T	D10T	D9T	657G	637G	16M	wagon	993K	777F
Total Estimated Hourly Cost (\$)												
2017				381.56	262.62	216.31	354.60	274.24	165.01	165.01	334.12	260.11
2020				433.64	296.50	254.90	415.25	321.14	161.65	161.65	374.09	283.26
Change (\$)				52.08	33.88	38.59	60.65	46.90	-3.36	-3.36	39.97	23.15
Change (%)				13.6	12.9	17.8	17.1	17.1	-2.0	-2.0	12.0	8.9
Total Average Change 2017 - 2020 (%)				10.6								
The variable costs updates were not sent out in 2018 and 2019 due to the insignificant changes from the 2017 values. The average change to the variable costs from 2017 to 2018 was -1.7% and +0.4% from 2018 to 2019.												

PSC Reclamation Division Worksheet: 2020 Residual Values for Equipment

The following table gives estimated values heavy equipment (Caterpillar or equivalent) items that are 7 years old with approximately 20,000 hours of operation. Equipment is assumed to have been maintained on a regular schedule and is in working condition. No allowance has been made for inflation, as used equipment values can fluctuate considerably due to condition, location, and market.

<i>Year</i>	<i>2017</i>			<i>2018</i>			<i>2020</i>		
MODEL	COST 5% Discount No Taxes	%	RESIDUAL VALUE	COST 5% Discount No Taxes	%	RESIDUAL VALUE	COST 5% Discount No Taxes	%	RESIDUAL VALUE
DOZERS									
D 11T	2,500,000	35	875,000	2,500,000	35	875,000	2,500,000	35	875,000
D 10T	1,680,000	40	672,000	1,680,000	40	672,000	1,435,000	40	574,000
D 9T	1,143,000	37	425,000	1,143,000	37	425,000	1,151,000	37	425,870
SCRAPERS									
657G	2,000,000	27	540,000	2,000,000	27	540,000	2,000,000	27	540,000
637G	1,350,000	38	513,000	1,350,000	38	513,000	1,350,000	27	364,500
657E									
MOTOR GRADER									
16M	1,050,000	47	493,500	1,050,000	47	493,500	1,070,000	45	481,500
LOADER									
993 K	2,888,000	38	1,097,000	2,900,000	38	1,102,000	3,025,000	35	1,058,750
END DUMP									
777F	1,800,000	38	684,000	1,900,000	38	722,000	1,920,000	38	729,600
789D				3,250,000	38	1,235,000			
793F				3,450,000	38	1,311,000			

Note: Butler did not provide an estimate in 2019.