



Public Service Commission

State of North Dakota

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Memorandum

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

FROM: Jim  Deutsch, Director – Reclamation Division

DATE: August 5, 2016

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

Attached is the July 2016 variable costs update to the Reclamation Division's Reclamation Cost Estimating Guidelines used for calculating worst-case bond amounts for mining permits, Policy Memo No. 16. This annual update contains the variable costs as of July 1, 2016. Many of the variable cost items changed with this update and the average hourly rates of the listed equipment for the large mines went down slightly compared to the July 1, 2015 rates. The attachment includes a breakdown of the hourly equipment rates for 2016. A comparison of the 2015 and 2016 hourly equipment rates is also attached for your convenience.

The equipment list prices and suggested residual values were obtained from Butler Machinery. The diesel fuel cost, an average cost over the past 12 months, was obtained from Fleet Services with the N. D. Department of Transportation. Average tire prices are based on quotes received from OK Tire and Lignite Tire. The seed prices are based on quotes received from Chesak Seed House. Custom work farm rates are unchanged and remain to be based on the 2013 average rates published by the NDSU Extension Service, their most recent publication with this data.

Since the average costs did not increase this year, mining companies will not be required to update all current worst-case reclamation cost estimates using the July 1, 2016 rates. However, for new and pending permit and revision applications that propose a new or revised worst-case reclamation scenario, these applications should use the updated variable costs attached to this memo.

For small mines, the \$1.20 per cubic yard rate remains unchanged based on the bids the Commission's AML Division received this year for a small surface mine reclamation project. Therefore, no updates to the worst-case reclamation cost estimates for small mines will be required this year.

Attachments

Minedata/PolicyMemos/MemoIndustry2016/Pmemo16_var_cost_update_pkg_8-5-16.d

Per Cubic Yard Earth-moving Cost for Small Mines

Costs for backfilling and 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 \$1.20 per yard. (This rate will be reviewed and updated on July 1 of each year.)

Equipment Prices and Replacement Tire Prices

The following equipment prices were furnished on July 18, 2016, by 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	2,400,000
D10T Tractor w/U Dozer & Ripper	1,500,000
D9T Tractor w/U Dozer & Ripper	1,050,000
657G Scraper w/Push-Pull	1,800,000
637G Scraper w/Push-Pull	1,270,000
993K Wheel Loader with 15 CY Bucket	2,700,000
777F End Dump Truck	1,780,000
16M Motor Grader w/Ripper	1,100,000

The following average current tire prices were furnished by OK Tire, and Lignite Tire Inc.

<u>Equipment</u>	<u>Tire Size</u>	<u>Price Each</u>
657G Scraper	40.5/75 R39 (E-3)	\$15,558
637G Scraper	37.25R35 (E-3)	\$13,859
16M Motor Grader	23.5 R25 (E-4)	\$ 3,492
993K Wheel Loader	50/65 R51 (L-5)	\$33,439
777F End Dump Truck	27.00R49 (E-4)	\$11,972

Residual Values for Reclamation Equipment

The following are the 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	840,000
D10T Tractor w/U Dozer & Ripper	40	600,000
D9T Tractor w/U Dozer & Ripper	37	388,500
657G Scraper w/Push-Pull	27	486,000
637G Scraper w/Push-Pull	38	482,000
16M Motor Grader w/Ripper	47	517,000
993K Wheel Loader W/15 CY Bucket	38	1,026,000
777F End Dump Truck	38	676,400

Prime Interest Rate

The prime interest rate to be used for the calculation of interest on reclamation equipment is 3.50% for July 1, 2016, to June 30, 2017. Therefore, the total interest rate to be used for calculations is 5.50% as determined according to item III (A) on page 6 of this guideline.

Fuel Cost

The cost of fuel for reclamation equipment from July 1, 2016 to June 30, 2017 is based on the average retail price for diesel in North Dakota from July 1, 2016 to June 30, 2016 obtained from Fleet Services Division of the ND Department of Transportation is \$ 1.5018 per gallon. Price includes cost of fuel, an administrative fee of \$0.012 per gallon and an oil fuel spill fee of \$0.0019 per gallon. Federal and state taxes are excluded from this price.

Wages and Benefits

The revised wage rates were obtained from The International Union of Operating Engineers Local 49 on June 16, 2016, for Group 3 operators for Heavy Industrial. The updated base rates for workers compensation, unemployment benefits and social security were obtained from the respective agencies.

Hourly Rate for Labor - Group 3	30.05
Pension, Health, Welfare, & Apprenticeship/Hour - Group 3	18.05
Insurance - Assumed 1% of Hr. Labor Rate	0.30
Social Security - 7.65% of Hr. Labor	2.30
*Workers Compensation – 1.468% of Hr. Labor	0.44
$[(\$688.20) / (\$30.05 \times 2080 \text{ Hr.} \times 0.75)] = 0.01468 \text{ or } 1.468\%$	
*Unemployment – 7.41% of Hr. Labor	2.55
$[(\$3,987.84 / (\$30.05 \times 2080 \text{ Hr.} \times 0.75))] = 0.08487 \text{ or } 8.487\%$	
Total Hourly Operator Cost	\$53.69

*Based on 40 hour week for 9 months of the year

Custom Farm Work Rates

The following custom farm rates are taken from the publication "Custom Farm Work Rates, North Dakota, 2013" published by the NDSU Extension Service.

<u>Item</u>	<u>Rate/Acre</u>
Chisel Plowing	\$10.80
Small Grain Seeding	\$13.24
Application of Dry Fertilizer	\$6.15

Fertilizer

The cost of 11-52-0 fertilizer for use in reclamation is \$490 per ton. This price is based on rates from Agrilience Agronomy Center.

Tree Prices

The cost of planting trees and shrubs on reclaimed land was determined by data provided by Natural Resource Conservation Office in Mercer County. (Price includes planting)

\$28.00 per hundred feet of trees
\$58.00 per hundred feet of fabric

Seed Prices

The average seed prices on the following page were determined based on quotes from Chesak Seed House in June 2016. (Seed prices are highly variable and may not reflect prices of seed later this year or next spring.)

2016 SEED PRICES

<u>Native Grasses</u>	<u>Cost/lb PLS</u>	<u>Introduced Grasses</u>	<u>Cost/lb PLS</u>
Big bluestem	<u>8.00</u>	Crested wheatgrass	<u>4.25</u>
Blue grama	<u>11.75</u>	Intermediate wheatgrass	<u>3.75</u>
Canada wildrye	<u>6.00</u>	Pubescent wheatgrass	<u>4.25</u>
Green needlegrass	<u>11.25</u>	Russian wildrye	<u>5.25</u>
Indian grass	<u>13.00</u>	Smooth bromegrass	<u>5.00</u>
Little bluestem	<u>11.75</u>	Tall wheatgrass	<u>2.65</u>
Sand bluestem	<u>23.50</u>	Reed canarygrass	<u>7.50</u>
Sideoats grama	<u>10.00</u>	Legumes	
Slender wheatgrass	<u>2.35</u>	Alfalfa	<u>2.45</u>
Switchgrass	<u>4.75</u>	Sweetclover yellow-flowered	<u>1.75</u>
Thickspike wheatgrass	<u>5.50</u>	Sweetclover white-flowered	<u>3.50</u>
Western wheatgrass	<u>6.25</u>		
Prairie junegrass	<u>21.00</u>		
Buffalo grass	<u>12.00</u>		
Prairie sandreed	<u>26.00</u>		

Estimated Ownership Period (yrs)

7

Annual Use-hr 3,000
Interest-% 5.5
Sales Tax-% 5

Total Life-hr 20,000
Insurance-% 0.75
Fuel Cost/gal \$1.5018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Machine designation.....	DOZER-D11T	DOZER-D10T	DOZER-D9T	SCRAPER-657G	SCRAPER-637G	GRADER-16M	WATER-WAGON	LOADER-993K	TRUCK-777F
OWNING COSTS:									
Delivered price (list - 5%).....	\$2,400,000	\$1,500,000	\$1,050,000	\$1,800,000	\$1,270,000	\$1,100,000	\$1,100,000	\$2,700,000	\$1,780,000
Tire replacement cost.....	\$0	\$0	\$0	\$62,350	\$55,436	\$20,949	\$20,949	\$133,756	\$71,829
Adjusted price.....=	\$2,400,000	\$1,500,000	\$1,050,000	\$1,737,650	\$1,214,564	\$1,079,051	\$1,079,051	\$2,566,244	\$1,708,171
Residual value at replacement (%).....	35	40	37	27	38	47	47	38	38
...Calculated Value.....=	\$840,000	\$600,000	\$388,500	\$486,000	\$482,600	\$517,000	\$517,000	\$1,026,000	\$676,400
Value to be recovered through work =	\$1,560,000	\$900,000	\$661,500	\$1,251,650	\$731,964	\$562,051	\$562,051	\$1,540,244	\$1,031,771
Cost per hour (value/total hours).....+	\$78.00	\$45.00	\$33.08	\$62.58	\$36.60	\$28.10	\$28.10	\$77.01	\$51.59
Interest costs per hour.....+	\$25.14	\$15.71	\$11.00	\$18.86	\$13.30	\$11.52	\$11.52	\$28.29	\$18.65
Insurance costs per hour.....+	\$3.43	\$2.14	\$1.50	\$2.57	\$1.81	\$1.57	\$1.57	\$3.86	\$2.54
Sales tax cost per hour.....+	\$6.00	\$3.75	\$2.63	\$4.50	\$3.18	\$2.75	\$2.75	\$6.75	\$4.45
>>>>>>HOURLY OWNING COST:	\$112.57	\$66.61	\$48.20	\$88.51	\$54.89	\$43.95	\$43.95	\$115.91	\$77.23
OPERATING COSTS:									
Fuel consumption (gal/hr).....	23	15.5	12.5	30.5	23	6.5	6.5	22	14
Fuel cost per hour.....	\$34.54	\$23.28	\$18.77	\$45.80	\$34.54	\$9.76	\$9.76	\$33.04	\$21.03
Lube oil, filter, grease w/labor (/hr).+	\$28.34	\$15.09	\$11.49	\$30.16	\$24.42	\$8.25	\$8.25	\$21.77	\$19.67
Tire life (hours).....				5,000	5,000	10,000	10,000	10,000	10,000
Tire cost per hour.....+	\$0.00	\$0.00	\$0.00	\$12.47	\$11.09	\$2.09	\$2.09	\$13.38	\$7.18
Overhaul/repair reserve+	\$35.16	\$23.55	\$19.93	\$25.99	\$22.58	\$12.60	\$12.60	\$13.90	\$24.95
Repair &/or maintenance.....+	\$37.98	\$23.94	\$20.42	\$29.87	\$26.42	\$9.25	\$9.25	\$15.70	\$15.37
Wear Items, GEC+	\$16.66	\$8.22	\$6.59	\$2.61	\$2.11	\$1.78	\$1.78	\$4.54	
>>>>>HOURLY OPERATING COST:	\$152.68	\$94.08	\$77.20	\$146.90	\$121.16	\$43.74	\$43.74	\$102.33	\$88.19
Operators hourly wage.....+	\$53.69	\$53.69	\$53.69	\$53.69	\$53.69	\$53.69	\$53.69	\$53.69	\$53.69
Total hourly rate.....=	\$318.94	\$214.38	\$179.09	\$289.11	\$229.74	\$141.37	\$141.37	\$271.92	\$219.11
Overhead and profit @ 15%.....+	\$47.84	\$32.16	\$26.86	\$43.37	\$34.46	\$21.21	\$21.21	\$40.79	\$32.87
>>>>>TOTAL ESTIMATED HOURLY COST:	\$366.78	\$246.53	\$205.95	\$332.47	\$264.20	\$162.58	\$162.58	\$312.71	\$251.98
FOR:	DOZER-D11T	DOZER-D10T	DOZER-D9T	SCRAPER-657G	SCRAPER-637G	GRADER-16M	WATER-WAGON	LOADER-993K	TRUCK-777F

2015 - 2016 Worst Case Bonding Variable Cost Summary of Changes

	D11T	D10T	D9T	657G	637G	16M	WATER-WAGON	993K	777F
2015 Values	\$381.32	\$265.36	\$219.32	\$377.30	\$291.34	\$162.48	\$162.48	\$345.05	\$270.02
2016 Values	\$366.78	\$246.53	\$205.95	\$332.47	\$264.20	\$162.58	\$162.58	\$312.71	\$251.98
Difference	\$14.54	\$18.83	\$13.37	\$44.83	\$27.14	(\$0.10)	(\$0.10)	\$32.34	\$18.04
Percent difference over 2014 values	-3.81%	-7.10%	-6.10%	-11.88%	-9.32%	0.06%	0.06%	-9.37%	-6.68%

Total average difference -6.01%

Note: The price of diesel went down from 2.3680 to 1.5018 (-36.57%), price of labor went slightly down from \$54.66 to \$53.69 (1.77 %). Equipment and tire prices went down for most items (except Motor Grader 16M and tires for Scraper 637G).