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MASONRY

12 December 2016
16-ED-303

Mr. Anthony Mackey, Permitting Manager
Planning and Management Division
Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118

RE: Water Monitoring Plan Report, 3rd Quarter 2016, for Dolese Bros. Co. Davis Quarry, Murray County, Oklahoma

Dear Mr. Mackey:

According to the Oklahoma Water Resources Board's Title 785, Chapter 30, Subchapter 15, Part 4, *Mines with Preexisting Exemptions*, Dolese Bros. Co. Davis Quarry qualifies as a mine with a preexisting exemption. As part of maintaining this exemption status, the regulations require us to do the following:

1. Adopt and implement a plan to monitor and report to the Board the accumulation and disposition of pit water during the previous calendar year;
    - The Davis Quarry has adopted and implemented such a plan, and the tables below serve to report to the Board the accumulation and disposition of pit water during the 3rd Quarter 2016.
2. Make quarterly and annual reports of the measured or reasonably estimated groundwater and surface water volumes, separately stated, entering the pit, of the water that is diverted from the pit, of the disposition of the water from the pit, and of the consumptive use of the water from the pit on or before the deadlines provided by Title 82 of Oklahoma Statutes, § 1020.2(E)(1);
    - The Davis Quarry has continued to fulfill this obligation by compiling and submitting this 3rd Quarter 2016 Report. The specific information requested in this section is outlined in the tables shown below.
3. At any time after March 31, 2015, demonstrate to the satisfaction of the Board within the pertinent report or reports that the mine has not consumptively used during the previous twelve-month period, from the mining site, an amount of groundwater which combined with any amounts used from permitted groundwater wells exceeds the MEPS [1]. Such demonstration may require providing to the Board a copy of the mine's monitoring plan and all of the data collected and procedures used to support the calculations and results reported.
    - After 31 March 2015, the Davis Quarry will be willing to demonstrate to the Board that the mine site has not consumptively used during the previous twelve-month period from the mining site, an amount of groundwater which combined with any amounts used from permitted groundwater wells exceeds the MEPS. Example calculations used in the First Quarterly Monitoring Report for 2013 have already been submitted to the OWRB for review and analysis.

[1] Mine's Equal Proportionate Share

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Below, in Tables 1, 2, and 3, is shown the 3rd Quarter 2016 summary data collected at the Davis Quarry.

Table 1

Accumulation & Disposition of Pit Water During 3rd Quarter 2016

	Groundwater Acre-Feet	Surface Water Acre-Feet	Total Acre-Feet
Water Entering The Mine Pit	71.72	57.29	129.01
Water Diverted From The Mine Pit Into Fresh Water Lake	71.72	57.29	129.01
Water Removed From Fresh Water Lake	396.14	534.65	930.79
Water Returned To Fresh Water Lake	391.30	528.11	919.41
Water Returned To Land Surface Overlying Arbuckle Simpson Aquifer (ASA) Basin	29.76	40.17	69.93
Water Consumptively Used	15.00	(See Table 3 for Calculations)	

Table 2

Water Fluctuations in Fresh Water Lake during 3rd Quarter 2016

Average Size of Lake	29.47	acres
Gain in Water Elevation	1.49	feet
Gain in Lake Volume	43.91	acre-feet

Table 3

Consumptive Use Summary for 3rd Quarter 2016

	Activity or Location	Amount of Pit Water Used, Acre-Feet	Percent Groundwater	Groundwater Component, Acre-Feet
1	North Water Well	0.00	All	0.88
2	South Water Well	0.00	All	1.04
3	Material Moisture Hauled from Site	5.50	42.56%	2.34
4	Land Application for Roadway Dust Suppression	24.45	42.56%	10.41
5	Evaporation from Mine Pit	0.63	51.88%	0.33
6	Offsite Dewatering	0.00	42.56%	0.00
For 3rd Quarter 2016, Total Groundwater Consumption from ASA[2] at Davis Quarry = 15.00 Acre-Feet				

[2] Arbuckle Simpson Aquifer

Below, in Table 4, is the Groundwater Rights Summary for the Davis Quarry.

Table 4

Summary of Groundwater Rights for Davis Quarry

From Acreage on the Arbuckle-Simpson Aquifer And Included in the ASA Groundwater Rights **(1,083 acres on ASA)*(0.2 ac-ft/acre) = 216.6 acre-feet on the ASA**
From Acreage off the Arbuckle-Simpson Aquifer And Excluded from the ASA Groundwater Rights **(937 acres off ASA)*(2.0 ac-ft/acre) = 1,874 acre-feet off the ASA**

Based on the plan that we have adopted and implemented to monitor and report the accumulation and disposition of pit water, based on our actual consumptive use of groundwater quantities, and based on the timely submittal of all reports including this 3rd Quarterly Report for 2016, we believe that the Davis Quarry is in full compliance with all of the regulations that allow us to maintain its preexisting exemption.

General Information–

Our calculations show that Davis Quarry's total estimated groundwater consumption for 3rd Quarter 2016 was 15.00 acre-feet. This equates to about 6.9% of Davis Quarry's equal proportionate share for the year. Since we were required to discharge some water offsite during the first two quarters of 2016, thereby increasing our "consumption," we now estimate that we have consumed 169.22 acre-feet of water during the first three quarters of this year, equating to 78.1% of our allotment for the year. Annually, we have 216.6 acre-feet of groundwater rights available over the ASA at the Davis Quarry location, but our total available water rights for this site could also include other significant unused groundwater rights that we have at another site that overlies the ASA in Murray County.

The year 2016 began with a dry First Quarter, where we received only 5.0 inches of rain (estimated 1.79 inches of runoff). The Second Quarter was rather wet, and we logged 21.60 inches of rain (estimated 11.02 inches of runoff). When the dry weather returned in the Third Quarter, we received only 8.0 inches of rain (estimated 2.69 inches of runoff). Predictably, the "calculated" groundwater percentage in the Fresh Water Lake (FWL) is related to this cyclical trend of rainfall events such that when the quarterly rainfall amount is low, the groundwater concentration in the FWL is rather high; and, when the quarterly rainfall is high, the groundwater concentration is rather low in the FWL. The groundwater percentages of the Fresh Water Lake during First Quarter are 72.17%; Second Quarter, 26.14%, and Third Quarter, 42.56%.

We continue to use the least controversial methods of calculating groundwater concentrations, even though it causes our "apparent" groundwater consumption figures to seem much higher than we believe they are. We are able to use these conservative assumptions because we own a significant amount of land in the region, and we have the corresponding water rights available to us. The primary drawback to using these very conservative assumptions and calculation methods is that we appear to be consuming more groundwater than actual. However, our frequent documentation of these assumptions should better explain our reported water usage. Here are a couple of the conservative assumptions that we have always used in our calculations:

- In trying to keep the lower elevations of the Mine Pit (located in the eastern part of the Quarry Area) relatively dry so that our employees can work in this area, we pump most of the rainfall (and any minimal groundwater seepage) from this Mine Pit into our adjacent FWL for storage and reuse. If this FWL were water-tight, our water balance calculations would be rather simple and more accurate. However, this lake continually leaks back into the same Mine Pit that we just pumped it from, causing us to pump considerably more water than if the FWL didn't leak. The worst part about this leakage of the FWL is that every gallon that leaks into the FWL, and that has to be pumped again and again back into the FWL, is reported as newly infiltrating groundwater–causing our groundwater concentration figures in the FWL to appear to increase significantly above actual levels.
- In the past, we have never claimed any augmentation credits for the discharge of any water to adjacent streams–even though we know this water benefitted downstream users and fish/wildlife during many of the dry times. We simply counted the calculated groundwater portion of the water being discharged as groundwater consumption. The reason that we are not accepting augmentation credits at this time is that the regulations became too complex for us to ensure compliance (e.g., stationing a stream gauge at outfall(s), installing monitoring well(s) near outfall(s), and monitoring the daily levels of the receiving streams during each discharge). If we would have accepted augmentation credits, our reported groundwater consumption for the last few years would have dropped significantly.

Our continued operation in the Arbuckle Simpson Aquifer Region is reliant upon having a good water source, whether it be storm water or groundwater. Either of these waters serves our needs, and we equally value both sources. While our unofficial water management began at Dolese roughly 100 years ago, it has recently become a more important focus at our site because of growth in the region. We will always strive to improve the management of these waters we share, and to help conserve the water resources for the benefit of our neighbors, whether they are nearby or distant.

Please contact me if you have any questions or comments concerning this submittal. Thank you.

Sincerely,

DOLESE BROS. CO.

Daniel E. Becker

Daniel E. Becker, P.E.
Environmental Engineer

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