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November 20, 2012

Julie Cunningham
Chief of Planning and Management Division
Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, Oklahoma 73118
Via email Hand Delivery

Re: Arbuckle Aggregates LLC
Site Specific Water Management and
Conservation Plan

Dear Ms. Cunningham,

Attached please find Arbuckle Aggregates, LLC's Site Specific Water Management and Conservation Plan, version dated November 20, 2012. Arbuckle is submitting its Plan pursuant to the upcoming deadline of January 1, 2012, for a "grandfathered" mining operation[1] to submit a monitoring plan identified in Okla. Stat. tit. 82 § 1020.2 (E).

As you may recall, on June 1, 2012, Arbuckle submitted to you a Plan version June 1, 2012. On June 15, 2012, you emailed[2] Arbuckle advising that the OWRB had reviewed the Plan and it conformed to the methodology proposed by the technical committee. Since that time, Arbuckle has clarified the Plan pursuant to the OWRB letter to the Oklahoma Department of Mines dated October 29, 2012, and the OAC tit: 785:30-15 et seq. current draft dated November 15, 2012. Arbuckle understands that the Administrative Rules, OAC tit: 785:30-15 et seq. supporting the pit water statute, Okla. Stat. tit. 82 § 1020.2 are not final. Arbuckle agrees to revise the Plan as necessary to conform to the finalized rules.

Please do not hesitate to contact me with any questions or concerns you may have. Thank you in advance for your assistance in this matter.

Sincerely,

Elizabeth C. Nichols

Enclosure

[1] A "grandfathered" mining operation pursuant to Okla. Stat. tit. 82 § 1020.2 (C) which had submitted its application to ODM prior to August 1, 2012.
[2] Copy of Cunningham email 6/15/12, Exhibit "A".

**From:** "Cunningham, Julie" <JMCUNNINGHAM@owrb.ok.gov>
**Date:** June 15, 2012 3:59:52 PM CDT
**To:** 'Pete Dawson' <pdawson@rpmxconstruction.com>
**Cc:** "Canty, Geoff" <Geoff.Canty@estinc.net>, "Fabian, Bob" <RSFABIAN@owrb.ok.gov>, "Neel, Chris" <CRNeel@owrb.ok.gov>
**Subject: RE: Arbuckle Aggregates, LLC Site Specific Water Management and Conservation Plan**

Hello Pete. As we discussed Wednesday, upon preliminary review of your proposed SSWMC Plan by our technical staff, it appears that this conforms with the methodology proposed by the technical committee of the pit water advisory workgroup. As you know the Board is currently drafting rules based on the committee's recommendations to be presented to the advisory workgroup and OWRB staff plans to promulgate proposed rules this fall, if approval is received from our Board, legislature, and governor. As such, you would need to edit you plan to conform to any changes in methodology, etc.
Please contact me if I may provide further clarification.
Best regards,
Julie

# ARBUCKLE AGGREGATES, LLC
# SITE SPECIFIC WATER MANAGEMENT AND CONSERVATION PLAN

(Version 11-20-12)



## 1.0 INTRODUCTION:

Arbuckle Aggregates, LLC (Arbuckle) applied for a non-coal mining permit from the Oklahoma Department of Mines (ODM) on May 7, 2010. The permit application was given the ODM number LE-2361. The proposed quarry area is 575 acres located in T1S, R4E of Johnston County, Oklahoma approximately 3 miles north of the town of Mill Creek. The quarry will be within an area considered to be within a sensitive sole source groundwater basin or subbasin. The mining permit was conditionally issued by the ODM on November 14, 2011 and is currently in the ODM formal hearing process.

Pursuant to Senate Bill 597 (SB 597) now Okla. Stat. tit. 82 § 1020.2 (C), Arbuckle is classified as an exempt mine and has developed the following *Site Specific Water Management and Conservation Plan* prepared in consultation with the Oklahoma Water resources Board (OWRB). Elements of the Plan were taken from the OWRB's Staff Draft dated 11/15/12 of the Oklahoma Administrative Code 485:30-15 et seq. and Appendix "C' to those rules. The Site Specific Water Management and Conservation Plan will be changed to accommodate the finalization of the draft rules.

Attachments to the Site Specific Water Management and Conservation Plan

| | |
|---|---|
| Figure 1: | Plot Plan |
| Figure 2: | OWRB Water Flow Diagram |
| Figure 3: | Surface Water Diversion Points Map |
| Figure 4: | OWRB Water Budget and Flow Path |
| Exhibit 1: | Oklahoma Stat. tit. 82 § 1020.2 also referred to as Senate Bill 597 |
| Exhibit 2: | OWRB Staff Draft dated 11/15/12 of Oklahoma Administrative Rules tit. 785:30-15 et seq. and Appendix "C" to those rules. |

## 2.0 WATER MANAGEMENT PLAN ELEMENTS

### 2.1 Characterization of Area — Plot Plan

Refer to Figure 1 for a depiction of the following information:

- Location of the initial mining pit
- Location(s) of the processing facilities
- Location(s) and characterization of initial collection, settling and retention impoundments

### 2.2 Facility Layout — Water Flow Diagram

- Water collection, settling and retention impoundments – See Figure 2

- Direction of all major water flow between the impoundments – See Figure 2
- All planned groundwater, mine pit water, and stream-water diversion points with estimated flows
  - No industrial or mining ground water wells are proposed at this time.
  - See Figure 2 for proposed locations of domestic use ground water wells as defined by Okla. Stat. tit. 82 § 1020.3.
  - Mine pit water will be pumped from a sump or sumps (to be determined) within the initial mining pit area
- All stream water augmentation points – See Figure 2
- All groundwater recharge points – See Figure 2
- Locations and planned quantities of all points of consumptive use
  - Water may be used anywhere within the property boundary – See Figures 2 & 3 Refer to Table 1 for a volume estimate of consumptive use

**2.3 Water Budget: Anticipated flow of water into and out of the mine site**

Refer to Figure 4 for a depiction of the following information:

- Groundwater
- Mine pit water
- Stream water
- Precipitation runoff
- Evaporation
- Augmentation



**2.4 Water Rights Information**

- Entity name: Arbuckle Aggregates, LLC Mill Creek Quarry
- Dedicated acres: 582 acres owned
  1,950 acres leased
- Permitted amount:
  - Mine Pit Water: Arbuckle is classified as an exempt mine. It is entitled to consumptively use the groundwater portion of mine pit water, as defined in SB 597, up to the amount that is equal to the equal proportionate share of the maximum annual yield (MAY) for the groundwater basin or subbasin multiplied the dedicated acres (2,532 ac).
  - Groundwater: Arbuckle anticipates developing and operating at least two domestic wells that are subject to the domestic well exemption of Okla. Stat. tit. 82 § § 1020.1 (2) and 1020.3
  - Surface Water: Arbuckle applied for two surface water permits on May 7, 2010. These permits have not been approved. Arbuckle does not need these permits for the construction and initial operational period of the quarry, but plans to pursue and seek the approval of these two permits for future use.
    - OWRB Surface Water Permit # 2010-012 – 69 acre feet
    - OWRB Surface Water Permit # 2010-013 – 210 acre feet
  - Note: Water rights may be added or deleted over time as the quarry develops.

## 2.5 Consumptive Use of Pit Water (Table 1)

Refer to Table 1 for an estimate of the consumptive use of pit groundwater. This is based on Appendix "C" of the draft OAC 785:30-15 et seq. At this time, the facility is not operating. Consequently, the values shown in the table are estimates only, and subject to change.

## Table 1: Estimated Consumptive Use of Pit Water

| | PIT GROUNDWATER VOLUME | | AA ESTIMATES |
|---|---|---|---|
| 1 | Total volume of water pumped from the producing mine pit(s) | | 1,200 |
| 2 | Volume of precipitation that falls onto the surface of water in the producing mining pit(s) | | 2 |
| 3 | Portion of total precipitation that flows over the land surface that drains into the mine pit water | | 170 |
| 4 | Other non-pit waters pumped from the producing mine pit | | 0 |
| 5 | Add lines 2 through 4 | | 171 |
| 6 | **Pit Groundwater Volume** (Line 1 minus Line 5) | | 1,029 |
| | **DEFINED ELEMENTS OF CONSUMPTIVE USE** | | |
| 7 | Volume of pit groundwater that is driven off (by drying) the mined material transported off the mine site | | 0 |
| 8 | Volume of pit groundwater that is carried away with the mined material transported off the mining site (shipped) | | 38 |
| 9 | Volume of pit groundwater that evaporates from the producing mine pit, process water ponds, and lined ponds (Excluding structures used for augmentation) | | 2 |
| 10 | Volume of pit groundwater that is used for other beneficial uses off the mine site | | 0 |
| 11 | **Defined Elements of Consumptive Use of Pit Groundwater** (Add Lines 7 through 10) | | 40 |
| | **PIT GROUNDWATER BALANCE** | | |
| 12 | Line 6 minus Line 11 | | 989 |
| 13 | **Groundwater Augmentation:** Volume of pit groundwater returned to the groundwater basin or subbasin | Credits | 350 |
| 14 | **Stream Augmentation:** Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows | | 350 |
| 15 | **Precipitation & Run-off:** Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation | | 2 |

| | | |
|---|---|---|
| | **Additional Discharge** | |
| 16 | Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria | 100 |
| | **Recycled Pit Groundwater** | |
| | Volume of pit groundwater returned to a mine pit or holding basin | |
| 17 | (not included on lines 7 through 10) | 0 |
| | **Other Non-Consumptive Losses** | |
| | Including pit groundwater returned to the land surface from which surface runoff flows into a mine pit, and other losses | |
| 18 | (not included in lines 7 through 10) | 50 |
| 19 | Add lines 13 through 18 | 852 |
| 20 | **Other Consumptive Use (adjusted)** (Line 12 minus Line 19) | **137** |
| | **TOTAL REPORTED CONSUMPTIVE USE OF PIT** | |
| 21 | **Total Net Reported Consumptive Use:** (Line 11 plus Line 20) | **177** |

## 3.0 MONITORING PLAN

Pursuant to Okla. Stat. tit. 82 § 1020.2(E)(1), and OAC 785:30-15-1 et seq., Arbuckle has developed the following *Site Specific Water Management and Conservation Plan.* Arbuckle will measure or reasonably estimate ground water and/or surface water volumes with respect to the elements listed below. (Calculations, estimates and/or measurements will be made so that information can be conveyed on a daily basis.)

3.1 **Pit Water:** Pit Water is defined as consisting of the ground water, surface water and precipitation that accumulates or enters a mining pit.

3.1.1. Calculation of Pit Water: The total volume of Pit Water will be estimated based on the measurement or reasonable estimation of the total volume of water diverted from the pit plus any calculated evaporation loses. Evaporation will be measured either by onsite instrumentation or by calculating volumes using information from a Mesonet station located within 30 miles of the quarry, contained in the Appendix "C" of OAC 785:30-15 draft dated 11/15/2012.

3.1.2. The ground water component of Pit Water would be calculated by subtracting direct interception (precipitation) and runoff (surface water) from the total volume of water entering the mine pit. Appendix "C" of OAC 785:30-15 et seq. draft dated 11/15/2012.

3.1.3 The surface water component of Pit Water will be determined by measuring/estimating direct interception and by calculating runoff using accepted engineering models and/or calculations (e.g., SCS Method). The model will be adjusted for the actual drainage basin characteristics (e.g., surface area, soil group, land use, standard condition, etc.) pursuant to the Appendix "C" of OAC 785:30-15 et seq. draft dated 11/15/2012.

3.1.4 The precipitation component of Pit Water will be will be measured either by onsite instrumentation or by calculating volumes using information from a Mesonet station located within 30 miles of the quarry, as allowed under the Appendix "C" Notes 2 and 3 of OAC 785:30-15 et seq. draft dated 11/15/2012 (page 8 of draft copy).

3.2 **Pit Water Diverted :** Pit Water will be diverted by pumping and a flow meter will be installed on the pit pump(s) and/or the flow rate will be determined by the operating hours of the pump multiplied by its rated capacity. When applicable, AA will install, calibrate and maintain all equipment (e.g., pumps, meters, etc.) according to manufacturer's recommendation.

3.3 **Pit Water Consumptively Used:** Consumptive use is defined in Okla. Stat. tit. 82 § 1020.2 (F) and will be calculated pursuant to OWRB Draft Administrative Rules dated 11/15/2012 Appendix "C" and corresponding notes.

3.4 **Diverted From A Stream Or Pond:** Water will be pumped and a flow meter will be installed on the pump(s) and/or the flow rate will be determined by the operating hours of the pump multiplied by its rated capacity. Arbuckle will not divert any stream water unless and until its Surface Water Permits, OWRB # 2010-012 and 2010-13 applications are approved.

3.5 **Pumped From Water Wells:** At this time, Arbuckle does not anticipate pumping water from wells other than domestic wells under the *de minimis* exemption Okla. Stat. tit. 82 § 1020.1 (2).

3.6 **Discharged To A Stream:** Water will be pumped and a flow meter will be installed on the pump(s) and/or the flow rate will be determined by the operating hours of the pump multiplied by its rated capacity and/or a discharge structure with a weir will be constructed to estimate the volume of water and pursuant to OWRB Draft Administrative Rules dated 11/15/2012, Part 5, 785:30-15-5 (a) and 785:30-15-6 (3).

3.7 **Recharged To The Aquifer:** Aquifer recharge will be estimated by pumping water to a recharge structure and a flow meter will be installed on the pump(s) and/or the flow rate will be determined by the operating hours of the pump multiplied by its rated capacity, and/or a discharge structure with a weir will be constructed in line with the recharge structure to estimate the volume of water.

The amount of water recharged to the aquifer from a groundwater recharge basin will be calculated on a mass balance basis. The applicable equation as developed in the OWRB Draft Administrative Rules dated 11/15/2012, OAC Part 5, 785:30-15-5 (b) (4) :

$$GW_a = B_a * [(h_2 - h_1) - (E * 0.7)] + (I - O)$$

3.8 **Precipitation:** Precipitation will be determined by using onsite instrumentation and/or from a Mesonet station located within 30 miles of the quarry, as allowed under the. Appendix "C" Notes 2 and 3 of OAC 785:30-15 draft dated 11/15/2012 (page 8 of draft copy).

3.9 **Evaporation From All Surface Water:** Evaporation will be calculated per the guidelines set out in Appendix "C" Notes 9, 13 and 15 of OAC 785:30-15 et seq. draft dated 11/15/2012 (page 8 of draft copy).

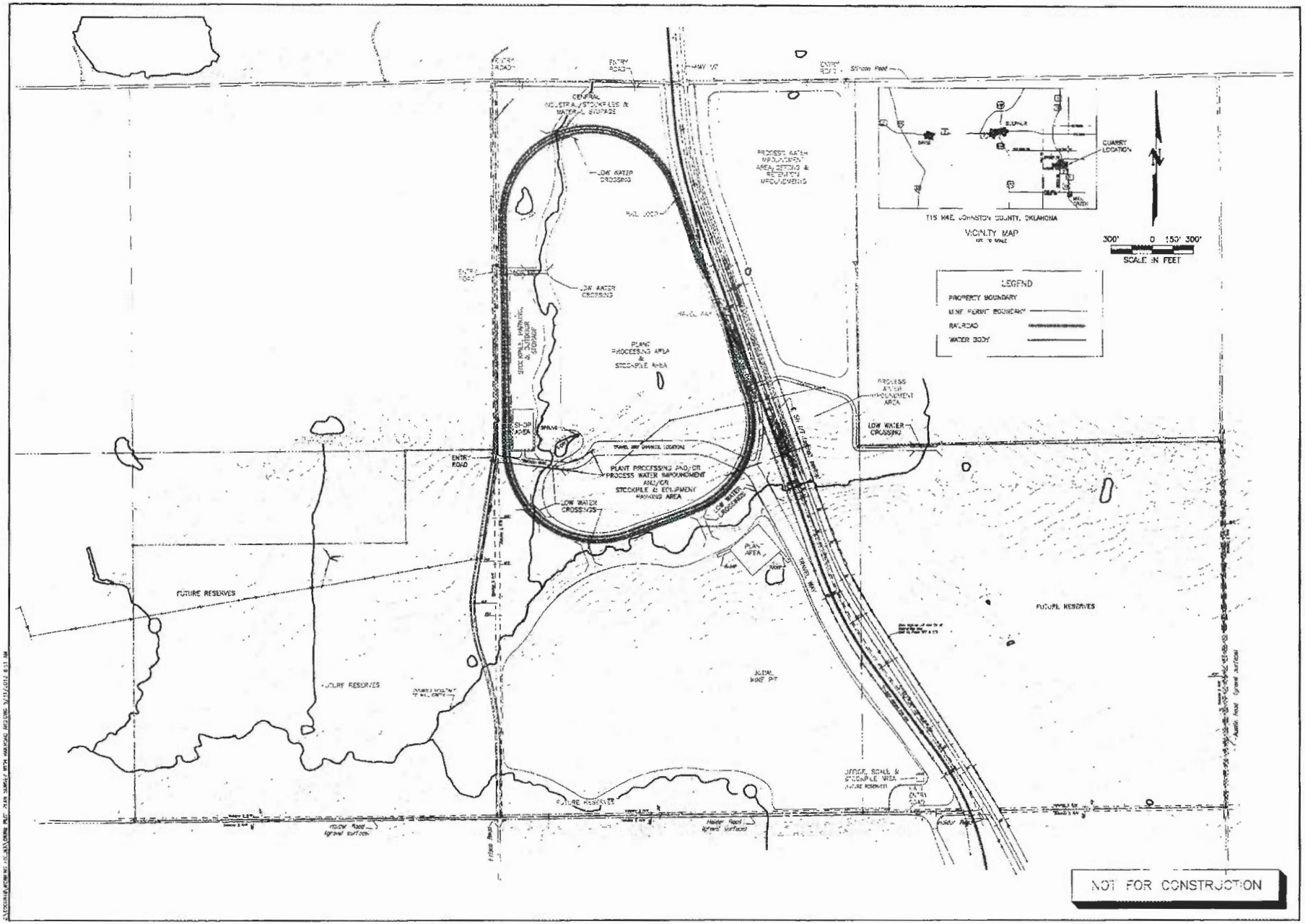
3.9.1 Volume of any pit water (groundwater component only) that returns to the atmosphere as vapor, including all impoundments containing pit water in the mining facility that are not used for groundwater augmentation.

3.9.2 The volume of pit water that is evaporated may be estimated using daily pan evaporation rates from Mesonet stations within 30 miles, or other widely available, real-time data source approved by the OWRB. A pan coefficient of 0.7 should be applied to obtain lake evaporation rates. Daily pan evaporation data is available online at:
http://agweather.mesonet.org/models/evapotranspiration/seasonalout.html

3.10 **Water Obtained From Other Sources:** Arbuckle may pursue other sources of legally permissible water pursuant to Oklahoma State Law and/or Federal Law. Applicable permits will be obtained when necessary and/or when required. At this time, Arbuckle anticipates buying water and hauling it to the quarry site during the construction and initial pit development periods. This water will be measured based on truck loads. Each truck will have a rated capacity and the number of loads of each truck will be multiplied by the total loads to calculate the volume. (Site specific details will be updated quarterly as part of the reporting requirments.)

## 4.0 REPORTING

Arbuckle will report quarterly and annually in accordance with the schedule provided in 82 O.S. §1020.2(E)(1). Arbuckle will provide the report to the OWRB containing the data and information listed in OAC Part 5, 785:30-15-7(a) (draft dated 11/15/2012). The report shall be in a form prescribed by the OWRB (once developed) or other format satisfactory to the OWRB.




| NO | DATE | DESCRIPTION OF REVISION OR ISSUE | BY | APP'D |
|---|---|---|---|---|

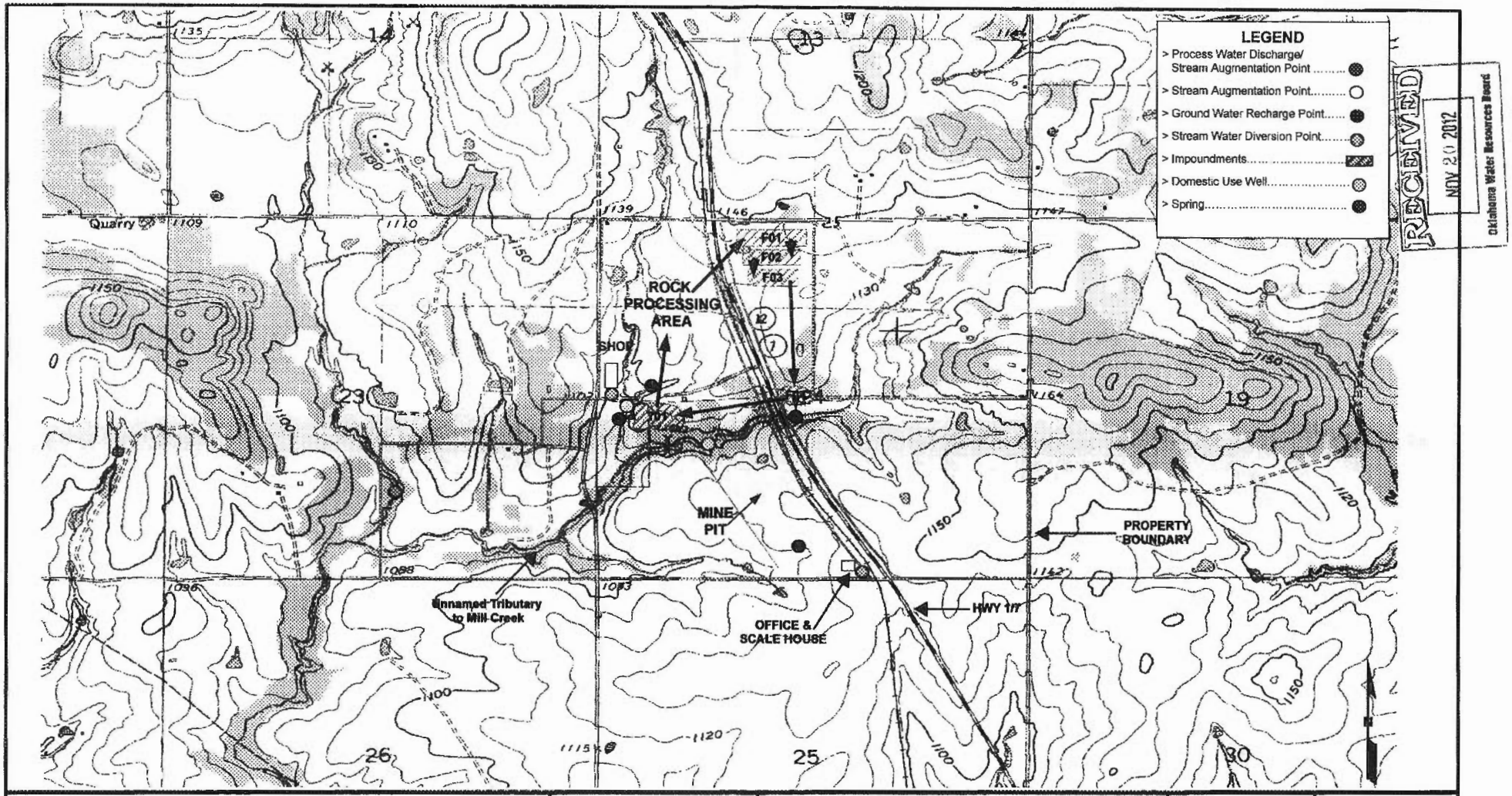

3201 S. BERRY ROAD
NORMAN, OK 73072
(405) 307-8378
C/A# 5639 (PE/LS)
EXP. DATE 6/30/12


ARBUCKLE AGGREGATES, LLC
MILL CREEK QUARRY
OWRB PLOT PLAN
JOHNSTON COUNTY, OKLAHOMA

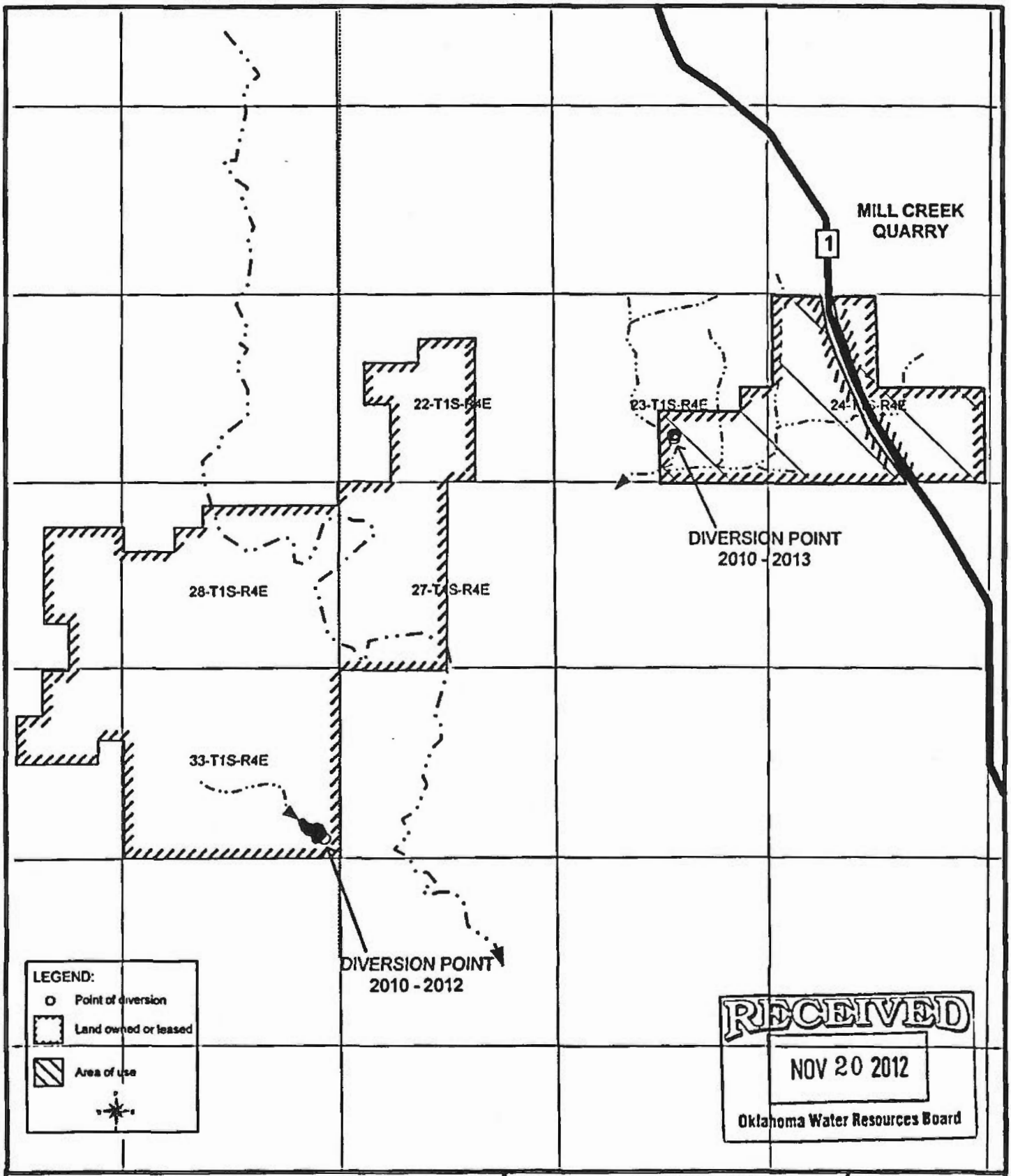
| | |
|---|---|
| DESIGNED BY | GAC |
| DRAWN BY | AKG |
| CHECKED BY | --- |
| APPROVED BY | PID |

| | |
|---|---|
| DATE | 05/29/2012 |
| SCALE | ILLUSTRATED |
| | 1" = 300' |
| PROJECT NUMBER | 6000818.000 |
| SHEET | REV |
| 1 | 1 |

FINAL



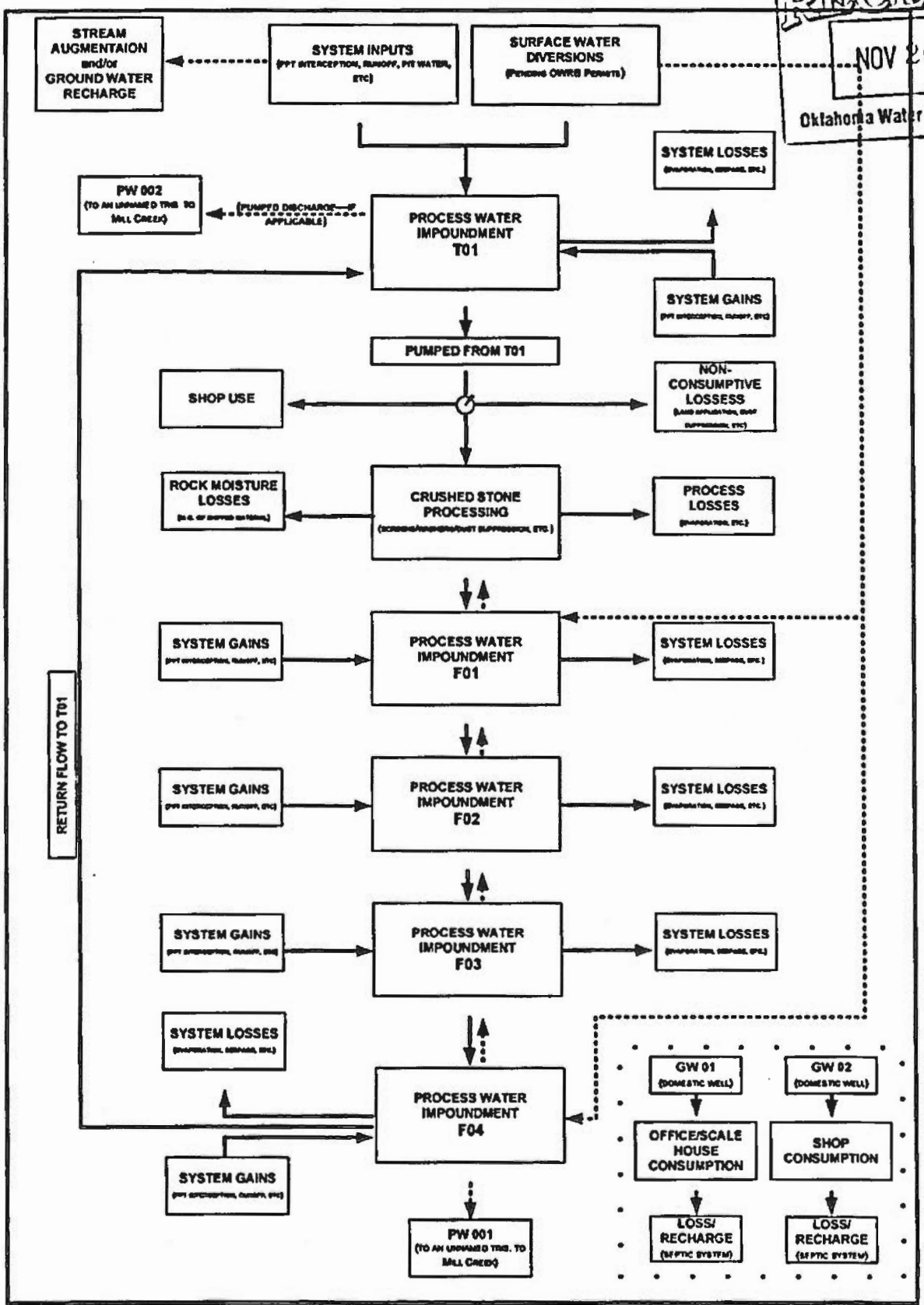

| COMMENTS | | | |
|---|---|---|---|
| | Date: 5/31/2012<br>Version: 001<br>Scale: Not to Scale<br>Drawn By: DDS/AJC<br>Project #: 6000818 | **OWRB WATER FLOW DIAGRAM**<br>**Arbuckle Aggregates, LLC – Mill Creek Quarry**<br>Mill Creek, Oklahoma 74856 | Figure **2**<br>**FINAL** |




**SURFACE WATER DIVERSION POINTS**
Arbuckle Aggregates, LLC – Mill Creek Quarry
Mill Creek, Johnston County, Oklahoma

Date: 5/31/2012
Scale: not to scale
Drawn By: DDS/EGD
FINAL

Figure
3




| COMMENTS | | | |
|---|---|---|---|
| - Potential Flow Path<br>- Typical Flow Path | OWRB WATER BUDGET & FLOW PATH<br>Arbuckle Aggregate – Mill Creek Quarry<br>Johnston County, OK | Arbuckle Aggregates LLC | Figure 4 |
| | SCALE: NTS<br>VER: 001<br>PROJ: | DATE: 05/31/12 | DRW BY: AJC | FINAL |

LexisNexis®

1 of 1 DOCUMENT

OKLAHOMA STATUTES, ANNOTATED BY LEXISNEXIS (R)

*** Current through Chapters effective July 1, 2012 of the 53rd Legislature First ***
*** Regular Session. Annotations current through MARCH 6, 2012 ***

TITLE 82. WATERS AND WATER RIGHTS
CHAPTER 11. OKLAHOMA GROUNDWATER LAW

Go to the Oklahoma Code Archive Directory

*82 Okl. St. § 1020.2* (2012)

§ 1020.2. Declaration of policy--Applicability

A. It is hereby declared to be the public policy of this state, in the interest of the agricultural stability, domestic, municipal, industrial and other beneficial uses, general economy, health and welfare of the state and its citizens, to utilize the ground water resources of the state, and for that purpose to provide reasonable regulations for the allocation for reasonable use based on hydrologic surveys of fresh ground water basins or subbasins to determine a restriction on the production, based upon the acres overlying the ground water basin or subbasin.

B. The provisions of Section 1020.1 et seq. of this title shall not apply to the taking, using or disposal of salt water associated with the exploration, production or recovery of oil and gas. The provisions of this act shall not apply to the taking, using or disposal of water trapped in producing mines outside of a sensitive sole source groundwater basin or subbasin.

C. Except as provided for in subsection E of this section, the provisions of this act shall not apply to the taking, using or disposal of water trapped in producing mines:

1. That overlie a sensitive sole source groundwater basin or subbasin and have been permitted by the Oklahoma Department of Mines as of August 1, 2011;

2. That overlie a sensitive sole source groundwater basin or subbasin for which an initial application for a permit shall have been filed with the Oklahoma Department of Mines as of August 1, 2011; or

3. That overlie a sensitive sole source groundwater basin or subbasin and for which a permit revision is approved by the Oklahoma Department of Mines.

Provided that the use of mine pit water, pursuant to a site-specific water management and conservation plan prepared in consultation with the Oklahoma Water Resources Board, by mines that are exempted from this act by the terms of this subsection and in furtherance of mine operations and associated manufacturing and commercial activities on the mine site, shall be considered as permitted beneficial uses for all purposes under the laws of the state.

D. 1. Except with respect to the mines exempted from the terms of this act under subsections B and C of this section, the Oklahoma Water Resources Board, in coordination with the Oklahoma Department of Mines, shall promulgate rules for the taking, using or disposal of water collecting in producing mine pits and emanating from a sensitive sole source groundwater basin or subbasin.

2. The rules promulgated by the Oklahoma Water Resources Board shall require, subject to a de minimis exemption to be promulgated therein, the development by the mine operator of provisions relating to the augmentation (a beneficial use) of stream flow or groundwater, and of site-specific water management and conservation plans, which plans shall establish threshold hydrologic monitoring, management and mitigation requirements that are based on relevant hydrologic surveys and investigations of the sensitive sole source groundwater basin or subbasin. Such plans submitted to the Oklahoma Water Resources Board shall be subject to the provisions of the Oklahoma Open Records Act.

3. The rules promulgated by the Oklahoma Water Resources Board shall contain provisions relating to augmentation of stream flow or groundwater, or both, to offset consumptive use of groundwater collecting in the producing mine pit that emanates from a sensitive sole source groundwater basin or subbasin in amounts greater than the equal proportionate share of the maximum annual yield of the groundwater basin or subbasin established by the Oklahoma Water Resources Board that may be allocated to the owner or operator of the producing mine based on groundwater rights owned or leased by the owner or operator.

E. 1. By no later than January 1, 2013, the operator of a mine that is exempted from this act by the provisions of subsection C of this section shall 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 operator shall also file with the Board interim quarterly reports containing information about the accumulation and disposition of pit water during the previous quarter. The first interim quarterly report for calendar year 2013 shall be sent to the Board by June 30, 2013, and the annual report for the calendar year 2013 shall be sent to the Board by March 31, 2014. Thereafter, the annual report for each calendar year shall be sent to the Board by March 31st of the following year. The monitoring plan will provide for the measurement or reasonable estimation of groundwater and surface water volumes, separately stated, entering the pit, of the water diverted from the pit, of the disposition of the water from the pit, and of the consumptive use, as defined in this section, of the mine pit water by the mine operator. The reports received by the Board will be subject to the provisions of the Oklahoma Open Records Act. If an operator of a mine that is exempted from this act by the provisions of subsection C of this section fails to timely submit an interim quarterly report or annual report, the exemption of subsection C shall no longer apply to the mine and the rules promulgated pursuant to subsection D of this section shall become applicable, provided that such rules shall contain provisions to allow the operator to show cause why the exemption contained in subsection C of this section should continue to apply.

2. If, at any time after March 31, 2015, the amount of groundwater from the pit (plus amounts of groundwater from permitted wells, if any) consumptively used in the preceding twelve months by the mine operator at a mine described in paragraph 1 of this subsection exceeds the annual amount that is equivalent to the equal proportionate share of the maximum annual yield of the groundwater basin or subbasin that could be allocated to the owner or operator of the producing mine based on groundwater rights owned or leased by the owner or operator, then the exemption of subsection C of this section shall no longer apply and the provisions of subsection D of this section shall become applicable to the mine unless the mine operator submits a site-specific water management and conservation plan demonstrating, to the satisfaction of the Board, that such consumptive use of groundwater in amounts greater than the equivalent equal proportionate share either is:

a. offset by augmentation of stream water flow or augmentation of groundwater by recharge, or

b. not likely to reduce the natural flow of springs or streams emanating from a sensitive sole source groundwater basin or subbasin, or

c. satisfied by the owner or operator acquiring sufficient groundwater rights within ninety (90) days of the reported exceedance.

The plan submitted to the Board will be subject to the provisions of the Oklahoma Open Records Act. If the exemption of subsection C of this section no longer applies, the rules promulgated by the Oklahoma Water Resources Board pursuant to subsection D of this section shall provide a period of at least ninety (90) days to come into compliance.

3. If an operator of a mine that is exempt pursuant to subsection C of this section operates in compliance with a site-specific water management and conservation plan that complies with rules promulgated by the Board pursuant to subsection D of this section, the Board cannot otherwise require the operator of such mine to take an action or refrain from taking an action that would effectively prohibit any mining operation or practice that is otherwise allowed by the Oklahoma Department of Mines.

F. For purposes of this section, "consumptive use" or "consumptively used" means diversion of water from a mine pit that is not returned to the groundwater basin or subbasin, or to a mine pit or holding basin, or to a definite stream, or to the land surface from which surface runoff flows into a mine pit. The term "consumptive use" includes the estimated moisture content driven off or carried away with the mined material transported off the mining site, plus the amount of evaporation from the mine pit that exceeds the amount of direct precipitation and surface runoff into the mine pit, plus any amounts for other proposed beneficial uses off the mining site.

G. Augmentation of stream flow or groundwater, pursuant to a site-specific water management and conservation plan prepared in consultation with the Oklahoma Water Resources Board, shall be considered a beneficial use and not waste, and shall not count against permitted surface water or groundwater usage, provided that taking, using or disposal of water from a producing mine for stream augmentation pursuant to a site-specific water management and conservation plan prepared in consultation with the Oklahoma Water Resources Board, may be claimed in annual water use reports as a beneficial use for purposes of the maintenance of the right to use surface water under any permit applicable to such mine. The mine pit shall be considered a diversion point authorized by the surface water use permit issued to the mine operator whenever there is consumptive use of surface water or the surface water is used for stream augmentation.

**HISTORY:** Laws 2011, ch. 374 (SB 597), § 1, eff. May 26, 2011.

OWRB Staff Working Draft
SUBJECT TO CHANGE



DRAFT 11/15/2012

# TITLE 785. OKLAHOMA WATER RESOURCES BOARD
# CHAPTER 30. TAKING AND USE OF GROUNDWATER

## SUBCHAPTER 3. PERMIT APPLICATION REQUIREMENTS AND PROCESSING

## SUBCHAPTER 15. WATER TRAPPED IN PRODUCING MINES

## PART 1. GENERAL PROVISIONS

**785:30-15-1. Purpose, scope and applicability**

(a) This Subchapter establishes rules for the taking, using and disposal of water trapped in producing mines that overlie a Sensitive Basin and that are not otherwise exempt from this Subchapter as provided in 82 O.S. 1020.2 and this Subchapter.

(b) This Subchapter *shall not apply to the taking, using, or disposal of salt water associated with the exploration, production or recovery of oil and gas.* [82 O.S. § 1020.2(B)] This Subchapter *shall not apply to the taking, using, or disposal of water trapped in producing mines outside of a* [82 O.S. § 1020.2(B)] Sensitive Basin.

(c) This Subchapter *shall not apply to the taking, using or disposal of water trapped in* [82 O.S. 1020.2(C)] a producing mine:

(1) that overlies a Sensitive Basin; and

(2) that satisfies one or more of the following tests:

(A) a permit that authorizes mining operations or activities for the mine was issued by the ODOM on or before August 1, 2011;

(B) the mine operator filed an initial application for a permit for the mine with the ODOM on or before August 1, 2011; or

(C) a revision to the permit for the mine is approved by the ODOM; and

(3) for which the operator maintains the exemption as provided in 785:30-15-4.

**785:30-15-2. Definitions**

The following words and terms, when used in this Subchapter, shall have the following meaning, unless the context clearly indicates otherwise:

**"Act"** means Enrolled Senate Bill No. 597 enacted by the First Regular Session of the 53rd Oklahoma Legislature, published at Chapter 374, Okla. Sess. Laws 2011 and codified primarily at 82 O.S. § 1020.2.

**"Augmentation"** means the beneficial discharge of water from a mine pit into a stream emanating from a Sensitive Basin or into a location where it is likely to flow or percolate into a Sensitive Basin.

**"Consumptive use"** means *diversion of water from a mine pit that is not returned to the groundwater basin or subbasin, or to a mine pit or holding basin, or to a definite stream, or to the land surface from which surface runoff flows into a mine pit. The term "consumptive use" includes the estimated moisture content driven off or carried away with mined material transported off the mining site, plus the amount of evaporation from the mine pit that exceeds the amount of direct precipitation and surface runoff into the mine pit, plus any amounts for other proposed beneficial uses off the mining site.* [82 O.S. §1020.2(F)]

**"Groundwater augmentation basin"** means an unlined pond or dedicated recharge structure used to allow water to infiltrate or recharge into a Sensitive Basin.

**"Management Plan"** means a site-specific water management and conservation plan that satisfies the provisions of 785:30-15-6.

Ex 2

"MEPS" means Mine's Equal Proportionate Share.

"Mine's Equal Proportionate Share" means the amount equivalent to the Sensitive Basin's equal proportionate share that is or would otherwise be allocated to the mine owner or operator for groundwater rights owned or leased by the owner or operator.

"Monitoring Plan" means a plan to monitor and report the accumulation and disposition of pit water during the previous calendar quarter and year that satisfies the provisions of 785:30-15-7.

"ODOM" means the Oklahoma Department of Mines.

"Preexisting exemption" means an exemption from the provisions of the Act and this Subchapter as provided in 82 O.S. § 1020.2(C) and 785:30-15-1(c).

"Pit water" means groundwater trapped or collecting in a producing mine pit that emanates from a Sensitive Basin.

"Sensitive Basin" means a sensitive sole source groundwater basin or subbasin.

"USGS" means the United States Geological Survey.

## PART 3. MINES WITH AND WITHOUT EXEMPTIONS

### 785:30-15-3. Mines with no exemption

(a) The taking, use or disposal of pit water by an operator of a mine that does not have an exemption as provided in 82 O.S. § 1020.2(B) and 785:30-15-1(b) nor a preexisting exemption shall be in accordance with the provisions of this Subchapter.

(b) The taking, use or disposal of pit water in an amount less than five (5) acre feet per year, or by a mine with a limited use permit from the ODOM, shall be exempt from this Subchapter.

(c) The operator of a mine in a Sensitive Basin that does not have a preexisting exemption shall develop:

(1) a written plan for augmentation of stream water or groundwater,

(2) a Management Plan that meets the requirements of Section 785:30-15-6, and

(3) a Monitoring Plan that meets the requirements of Section 785:30-15-7.

### 785:30-15-4. Mines with preexisting exemptions

(a) To maintain the exemption, an operator of a mine with a preexisting exemption must:

(1) adopt and implement a Monitoring Plan that satisfies 785:30-15-7; and

(2) timely file all quarterly and annual reports on or before the deadlines provided by 82 O.S. § 1020.2(E)(1); and

(3) for each twelve month period after January 1, 2014 not consumptively use, from the mining site, an amount of groundwater which combined with any amounts used from permitted groundwater wells exceeds the MEPS.

(b) Subject to (c) and (d) of this Section, if at any time the mine operator fails to satisfy any of the provisions of (a) of this Section, the preexisting exemption shall be lost for that mine and the pertinent provisions of the Act and this Subchapter shall become applicable.

(c) Whenever it may appear to the Board that a preexisting exemption has been lost for a mine due to failure under 785:30-15-4(a)(1) or (a)(2), the Board shall give the operator thereof reasonable notice and an opportunity to show cause why the exemption should continue to apply. Absent a showing by the mine operator and a determination by the Board that the exemption should continue to apply, the exemption shall be deemed lost as of the date of the operator's failure under 785:30-15-4(a)(1) or (a)(2).

(d) Whenever it may appear to the Board that a preexisting exemption has been lost for a mine due to failure under 785:30-15-4(a)(3), the Board shall give the operator thereof reasonable notice thereof. The operator may avoid loss of the preexisting exemption by filing with the

Board, within ninety (90) days after the date of the reported exceedance, a Management Plan which demonstrates to the satisfaction of the Board that such consumptive use exceedance is:

(1) offset by augmentation of stream water flow or of groundwater by recharge; or

(2) not likely to reduce the natural flow of springs or streams emanating from the Sensitive Basin; or

(3) remedied by acquisition of sufficient groundwater rights within the ninety day period after the reported exceedance.

If the operator does not satisfy the preceding requirements to maintain the exemption, the operator shall come into compliance with 82 O.S. § 1020.2(D) and 785:30-15-3 within ninety (90) days after the date of reported exceedance.

## PART 5. AUGMENTATION, MANAGEMENT AND MONITORING PLANS

### 785:30-15-5. Augmentation

(a) **Stream augmentation.**

(1) A mine operator may claim credit for one hundred percent (100%) of the amount of water it discharges to a stream emanating from a Sensitive Basin during a time of low flow that is less than or equal to the 50% exceedance or median daily flow level listed by the USGS within the watershed where the mine is located. If the receiving stream or watershed is ungaged or does not have calculated median flow data available, the OWRB will utilize the USGS *StreamStats* extrapolation model to calculate the 50% exceedance or median flow level.

(2) The OWRB will review the 50% exceedance flows for gaged streams within the watershed on an annual basis.

(3) A mine operator shall monitor the flow conditions at the designated stream gage in order to determine whether and when stream augmentation credit can be obtained. The flows, dates and volumes of water discharged to a stream for augmentation credit shall be identified by the mine operator in the quarterly and annual reports required by 82 O.S. § 1020.2(E)(1).

(4) There shall be no credit for any water discharged to streams when the unaugmented flow is greater than the 50% exceedance or median flow level described in (a)(1) of this Section.

(b) **Groundwater augmentation.**

(1) A mine operator may claim credit for one hundred percent (100%) of the amount of water that is measured or calculated to infiltrate into a Sensitive Basin from a groundwater augmentation basin that meets the requirements of this Section, less any water diverted from such basin.

(2) To qualify for credit, the mine operator must satisfy the following:

(A) The operator shall make a one-time water balance demonstration to the satisfaction of the Board that recharge from the subject groundwater augmentation basin exceeds evaporation. Once such a demonstration has been made, no accounting for evaporation or vegetative losses will be required. If a material change is made to the groundwater augmentation basin, a new demonstration shall be made for the changed basin.

(B) Each groundwater augmentation basin shall have a staff gage or other measuring device at least as accurate installed such that the gage registers the lowest water level in the basin. The staff gage or other appropriate device must be readable from a readily accessible location adjacent to the basin.

(3) No specific design or maintenance requirements need be followed for dedicated recharge structures provided that they shall not be filled by pumping to such a level that they overflow.

(4) The amount of water recharged to the aquifer from a groundwater augmentation basin shall be calculated on a mass balance basis. The applicable equation is:

$$GW_a = B_a * [(h_2 - h_1) - (E * 0.7)] + (I - O)$$

Where:

$GW_a$ is the volume of water exiting the bottom and sides of the augmentation basin;
$B_a$ is the surface area of the augmentation basin (assumes vertical sides);
$h_1$ is the elevation of the water level in the basin at the beginning of the applicable time period determined using the installed staff gage;
$h_2$ is the elevation of the water level in the basin at the end of the applicable time period;
0.7 is the lake evaporation coefficient applied to pan evaporation;
E is the calculated pan evaporation rate determined at the nearest Mesonet station determined as the sum of daily values for the applicable time period;
I is the total inflow volume of water to the basin from all sources (including rainfall) for the applicable time period (it may be zero (0)) determined by measurement or reasonable estimation; and
O is the total outflow volume of water from the basin by all pathways except evaporation for the applicable time period (it may be zero (0)) determined by measurement or reasonable estimation.

(c) **Applications of augmentation credit.**

(1) Credit obtained from augmentation of stream water or groundwater or both may be used by the mine operator to reduce or offset the amount of consumptive use of pit water by the operator that exceeds the MEPS.

(2) Credit obtained from augmentation of stream water or groundwater shall not be considered in the amount used pursuant to any permit to use stream water or groundwater that the mine operator may have; provided, the taking, use or disposal of pit water for stream augmentation pursuant to a Management Plan prepared in consultation with the Board may be claimed in an annual report of stream water use in order to avoid forfeiture of a right to use stream water held by the owner or operator of the mine.

**785:30-15-6. Management Plans**

(a) Each Management Plan shall contain the following information. The Management Plan and each of these elements must be approved by the Board Executive Director or his/her designee prior to mine operation.

(1) **Characterization of area; plot plan of the proposed/initial mine site.**

(A) Location of the initial mining pit;

(B) Location(s) of the processing facilities; and

(C) Location(s) and characterization of initial collection, settling, and retention impoundments.

(2) **Facility layout; water flow diagram of the proposed/initial mine site.**

(A) All water collection, settling and retention impoundments;

(B) Direction of all major water flow between the impoundments;

(C) All planned groundwater, mine pit water, and stream water diversion points with estimated flows;

(D) All stream water augmentation points;

(E) All groundwater recharge points; and

(F) Locations and planned quantities of all points of consumptive use.

(3) **Water Budget; anticipated flow of water into and out of mine site.**

(A) Water flow entry and exit points;

(9) Quality assurance plans. The Management Plan for each mine shall include a quality assurance plan which describes procedures and methodologies for how data will be collected, operation and maintenance of all measuring equipment, and evaluation of data to ensure data is appropriate and scientifically defensible. Such quality assurance plan shall be consistent with the Federal or State Quality Assurance Project Plan guidelines specified by the Board.

(10) Reporting. Each quarter and year in accordance with the schedule provided in 82 O.S. § 1020.2(E)(1), the mine operator shall file with the Board a report in a form prescribed by the Board or other format satisfactory to the Board. The report shall contain:

(A) The data and information listed in (a)(6) and (a)(7) of this Section, and

(B) Any modifications to the plot plan, facility layout, or water right details for the mine, plus an explanation of any changes in the methodologies used for the reports.

(b) Data recorded pursuant to this Section shall be stored in a format readily readable by most common computer programs. All data collected must be stored while the mine is in operation and for a period of five years after the mine is closed in a format directed by the Board. Such data shall be provided to the Board upon request by the Board.

**785:30-15-7. Monitoring Plans**

(a) **Determinations of amounts of water.** A Monitoring Plan shall be approved by the Board Executive Director or his/her designee prior to mine operation. The Monitoring Plan shall provide for the mine operator on a daily basis to measure or make a reasonable estimate of the following volumes, separately stated:

(1) Groundwater that enters the pit;
(2) Surface water that enters the pit;
(3) Water that is diverted from the pit;
(4) Disposition of the water from the pit;
(5) Consumptive use of the water from the pit;
(6) Water diverted from a stream or pond;
(7) Groundwater pumped from water wells;
(8) Water discharged to a stream;
(9) Water recharged to the aquifer;
(10) Precipitation at the mine site;
(11) Evaporation from all surface water; and
(12) Water obtained from other sources, such as municipalities, rural water districts, or other entities.

(b) **Reporting.** Each quarter and year in accordance with the schedule provided in 82 O.S. § 1020.2(E)(1), the mine operator shall file with the Board a report containing the data and information listed in (a) of this Section. The report shall be in a form prescribed by the Board or other format satisfactory to the Board.

(c) Data recorded pursuant to this Section shall be stored in a format readily readable by most common computer programs. All data collected must be stored while the mine is in operation and for a period of five years after the mine is closed in a format directed by the Board. Such data shall be provided to the Board upon request by the Board.

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## APPENDIX C. GUIDELINES TO ESTIMATE CONSUMPTIVE USE OF PIT WATER [NEW]

| | | |
|---|---|---|
| | **PIT GROUNDWATER VOLUME** | |
| 1 | Total volume of water pumped from the producing mine pit(s) | |
| 2 | Volume of precipitation that falls onto the surface of water in the producing mining pit(s) | |
| 3 | Portion of total precipitation that flows over the land surface that drains into the mine pit water | |
| 4 | Other non-pit waters pumped from the producing mine pit | |
| 5 | Add lines 2 through 4 | |
| 6 | **Pit Groundwater Volume**<br>Line 1 minus Line 5 | |
| | **DEFINED ELEMENTS OF CONSUMPTIVE USE** | |
| 7 | Volume of pit groundwater that is driven off (by drying) the mined material transported off the mine site | |
| 8 | Volume of pit groundwater that is carried away with the mined material transported off the mining site (shipped) | |
| 9 | Volume of pit groundwater that evaporates from the producing mine pit, process water ponds, and lined ponds (Excluding structures used for augmentation) | |
| 10 | Volume of pit groundwater that is used for other beneficial uses off the mine site | |
| 11 | **Defined Elements of Consumptive Use of Pit Groundwater**<br>Add Lines 7 through 10 | |
| | **PIT GROUNDWATER BALANCE** | |
| 12 | Line 6 minus Line 11 | |
| 13 | **Groundwater Augmentation**<br>Volume of pit groundwater returned to the groundwater basin or subbasin | Credits |
| 14 | **Stream Augmentation**<br>Volume of pit groundwater discharged to a definite stream, during flow conditions that are less than or equal to 50% exceedance or median historic flows | |
| 15 | **Precipitation & Run-off**<br>Volume of precipitation and surface run-off into a recharge pit or holding pond used for augmentation | |
| 16 | **Additional Discharge**<br>Volume of pit groundwater discharged to a definite stream, not meeting stream augmentation credit criteria | |
| 17 | **Recycled Pit Groundwater**<br>Volume of pit groundwater returned to a mine pit or holding basin<br>(not included on lines 7 through 10) | |
| 18 | **Other Non-Consumptive Losses**<br>Including pit groundwater returned to the land surface from which surface runoff flows into a mine pit, and other losses<br>(not included in lines 7 through 10) | |
| 19 | Add lines 13 through 18 | |
| 20 | **Other Consumptive Use (adjusted)**<br>Line 12 minus Line 19 | |
| | **TOTAL REPORTED CONSUMPTIVE USE OF PIT** | |
| 21 | **Total Net Reported Consumptive Use**<br>Line 11 plus Line 20 | |

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**Notes**

**Table Line Number**

2 Precipitation that falls directly in contact with pit water should be measured or reasonably estimated. Precipitation measurements may be obtained from (a) on-site installed gages, if approved by the Board and if such gages are installed, calibrated and maintained according to their manufacturers' requirements, (b) Mesonet stations within 30 miles of the pit site, or (c) if approved by Board, from other appropriately instrumented, maintained and calibrated meteorological observation stations. If appropriate, estimates based on combined gages may be made utilizing an established method approved by the Board.

3 Includes the portion of precipitation that flows into a mining pit estimated using techniques common to hydrological practice, such as the Rational Method, the SCS Method, the Green & Ampt Method, or from runoff models.

7, 8 Includes the estimated moisture content driven off or carried away with the mined material transported off the mining site. Since estimates of losses are specific to each mining operation, various industrial standard measurement or calculation methods may be proposed.

9, 13 and 15 Evaporation includes the volume of any pit water (groundwater component only) that returns to the atmosphere as vapor, including all impoundments containing pit water in the mining facility that are not used for groundwater augmentation. The volume of pit water that is evaporated may be estimated using daily pan evaporation rates from Mesonet stations within 30 miles, or another widely available, real-time data source approved by the Board. A pan coefficient of 0.7 should be applied to obtain lake evaporation rates. Daily pan evaporation data is available online at: http://agweather.mesonet.org/models/evapotranspiration/seasonalout.html.
Evaporation losses of the water from the mine pit, lined holding structures, and processing ponds will be included in the consumptive use calculation, but only the measured groundwater portion of this water will be counted. Evaporation of the groundwater portion of water from any pit or structure used for groundwater augmentation will not be considered as consumptive use.

10 Defined in the Act as "*amounts for other proposed beneficial uses off the mining site*" other than stream water and groundwater augmentation.