



OFFICE OF THE STATE ENGINEER
DIVISION OF WATER RESOURCES

1313 Sherman Street-Room 818
Denver, Colorado 80203
(303) 866-3581

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POLICY MEMORANDUM 90-2

SUBJECT: Combined Pumping of Tributary and Nontributary Ground Water from the same well in the Denver Basin

Many well permit and water court applications for ground water produced from Denver Basin bedrock aquifers request that wells be allowed to produce both tributary and nontributary ground water. Unconditional combined withdrawals may have an adverse impact on the stream system(s) and on vested water rights. Therefore, criteria are necessary for guiding staff in evaluating permit applications and preparing court determinations and as a basis for discussing stipulations on proposed decrees. The following policy is hereby adopted to define the general circumstances for permitting combined withdrawals from wells and to specify the conditions required to prevent adverse impacts on the stream system.

1. In order to clarify this policy, the terms used herein are defined as follows:
 - a. "Nontributary ground water" means that ground water in an aquifer underlying a property or a portion of a property located in areas defined as nontributary by the Denver Basin Rules (2 CCR 402-6).
 - b. "Tributary 4% ground water" means that ground water in an aquifer underlying a property or portion of a property located outside of areas defined as nontributary by the Denver Basin Rules (2 CCR 402-6) and which is more than one mile from the alluvium-aquifer contact. (Note: The Dawson Aquifer does not have a 4% area.)
 - c. "Tributary ground water" for the Denver, Arapahoe, and Laramie-Fox Hills Aquifers, means that ground water underlying a property or a portion of a property which is located one mile or less from the alluvium-aquifer contact. For the Dawson Aquifer, tributary ground water means all ground water underlying properties outside of areas defined as nontributary.
 - d. "Nontributary well" means a well located on a property or a portion of a property overlying the nontributary area of the aquifer.
 - e. "Tributary 4% well" means a well located on property or a portion of a property overlying the area of the Denver, Arapahoe, or Laramie-Fox Hills Aquifer which is tributary and is more than one mile from the alluvium-aquifer contact.

- f. "Tributary well" means a well located on property or a portion of a property overlying the area of the aquifer which is tributary and has one mile or less contact between the alluvium and the Denver, Arapahoe, and Laramie-Fox Hills Aquifers. For the Dawson Aquifer, tributary well means a well located on property outside of areas defined as nontributary.
2. Nontributary wells may withdraw all available nontributary ground water from a particular aquifer, provided that the well locations overlie the nontributary aquifer (zone), as defined by the Denver Basin Rules (2 CCR 402-6). Similarly, tributary 4% wells may withdraw all available tributary 4% ground water, provided the well locations overlie the tributary 4% aquifer zone, as defined by the Denver Basin Rules (2 CCR 402-6). Tributary wells must be limited to specific annual withdrawals since their replacement requirements are a function of the well locations.
3. Nontributary wells may be used to produce tributary 4% ground water from the same aquifer underlying an applicant's land. For such combined pumping, the nontributary well shall be located on a site overlying the nontributary aquifer. The production of tributary 4% ground water through a nontributary well shall only be allowed in compliance with an approved augmentation plan or substitute supply plan. Augmentation plan approval is not required prior to determining the amount of available tributary ground water or prior to pumping only nontributary ground water. Noncontiguous land parcels must comply with Rule 11.B of the Statewide Nontributary Ground Water Rules (2 CCR 402-7) to qualify for the combined pumpage from one well.
4. A tributary 4% well, located on a site overlying a tributary 4% aquifer, shall not produce nontributary ground water unless the production of nontributary ground water is also subject to the 4% augmentation requirements. Similarly, a tributary well, located on a site overlying a tributary aquifer, shall not produce tributary 4% ground water or nontributary ground water unless all of the produced ground water is fully augmented for the specific well site.
5. When pumped from the same well, different ground water types shall be considered to be produced in sequence, not simultaneously. For the least impact on the stream system, the nontributary ground water shall be produced prior to the tributary 4% ground water, which in turn shall be produced prior to the tributary ground water.
6. In the case of tributary wells, replacement water requirements must be determined for each specific well site. Production of tributary ground water through a nontributary or tributary 4% well shall be allowed only pursuant to an augmentation or substitute supply plan. If no tributary well has been proposed for the production of tributary ground water, the replacement requirements for the tributary ground water shall be based on a well assumed to be located at the centroid of the property overlying the tributary ground water.

This policy shall become effective immediately and can only be modified or revoked in writing. Any variance request shall be submitted in writing and shall be supplemented with information showing that the proposed well production can be operated without injury to the relevant stream system(s).



Jeris A. Danielson
State Engineer

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CONSIDERATIONS AND BACKGROUND FOR GUIDELINE MEMORANDUM 90-2

PROBLEM

The type of ground water available to a landowner in the Denver Basin depends on the location of his parcel with respect to the line defining nontributary ground water or distance from the stream alluvium. (See 2 CCR 402-6). For economic reasons, property owners may desire to withdraw more than one type of ground water from a well. This raises the question whether and under what conditions the production of the different ground water types may be combined in wells. Production of different types of ground water from one well poses problems of labeling the water being produced and quantifying the amount of each type pumped to assure compliance with permitted amounts and to determine augmentation requirements.

ASSUMPTIONS

The type of ground water available to an applicant is determined by the location of his property with respect to the nontributary or tributary portion of an aquifer. Nontributary ground water may only be pumped subject to a 2% relinquishment of the amount produced. Tributary 4% ground water and tributary ground water (as defined in the guidelines) can only be produced after an augmentation plan has been approved by the Water Court.

Wells located on properties underlain by nontributary aquifers are assumed to produce nontributary ground water. Similarly, wells located on properties underlain by tributary aquifers are assumed to produce tributary ground water subject to either 4% or actual effect augmentation requirements.

DISCUSSION

Withdrawals of nontributary ground water require a 2% relinquishment of the water produced. Withdrawal of tributary ground water from the bedrock aquifers is subject to an augmentation plan replacing either 4% of the production or actual depletions to the affected streams, depending on the type of ground water underlying the property. The actual effect of a pumping well on a stream depends on the distance of the well from the stream. Wells closer to the stream generally have a greater impact. Thus, the use of a nontributary well to produce tributary ground water will have a lesser effect on a stream than the production of nontributary water by a tributary well. In order to provide maximum protection to a stream, a well located on that portion of the parcel further from the stream may be used to produce ground water attributed to a closer portion of the property but not vice versa. This concept is also applicable to a well field. The relinquishment or augmentation replacement requirements for a well producing different types of ground water should be based on the requirement for the type of ground water being pumped.

To avoid confusion identifying which type of ground water is being pumped at any one instant, the order in which the different types of ground water are produced must be uniformly established. In order to minimize the effects of pumping on the stream systems, the pumping sequence will be established as:

the nontributary ground water is produced first, next the tributary 4% ground water, and the tributary ground water last. The determination of the total volume of one type of ground water to be produced prior to starting production of a second type of ground water shall be established according to Rule 8.A of the Statewide Nontributary Ground Water Rules (2 CCR 402-7) (banking).

RECOMMENDATION

Pumping different types of ground water from a well is an economic advantage for the applicant which should be allowed if it does not result in injury to vested water rights. These proposed guidelines will provide a standard for combining the production of different types of ground water in one well and provide conditions so that the impact on surface streams and other water rights are equal to or less than if individual wells were constructed and produced in each respective zone. Therefore, adoption of the proposed guideline is recommended.