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MAY 31, 2007

GUIDELINE 2007-1

CONCERNING THE GROUND WATER COMMISSION STAFF'S PUBLICATION AND EVALUATION OF REPLACEMENT PLANS IN THE DESIGNATED BASINS

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Purpose:

When processing applications for replacement plans in designated basins, the Ground Water Commission staff ("Staff") is directed by a combination of statutes and rules. This guideline summarizes the Staff's application of those statutes and rules when evaluating whether the plan should be published and whether the plan prevents "any material injury to water rights of other appropriators", especially when the location of the introduction of the replacement water is a factor.

I. Publication

After a replacement plan application has been received, the Staff will determine whether the replacement plan can be published. The standard for publishing the application is that it must be "complete" [Section 37-90-107.5, C.R.S.]. In addition, the Staff will determine whether it can give the application favorable consideration.

If an application does not meet the standard of favorable consideration, this will not prevent the Staff from publishing the application. However, the Staff will not publish an application if it will object to the application after publication unless the Staff has first given the applicant an opportunity to resolve those aspects of the plan to which the Staff would object. If the application is "complete" the application must be published within 60 days of its receipt [37-90-107.5]. Accordingly, the Staff will be guided by the following:

1. If the Staff determines that the application is not "complete" the Staff will return the application to the applicant in a timely manner, identifying the parts of the application that are missing and/or inadequate and request that the applicant provide the missing information. This is consistent with Rule 5.6.2 which states: "Upon receipt of any such replacement plan, the staff shall review it to determine whether it is adequate to meet these criteria and the provisions of C.R.S. 37-90-107".
 - a. If the applicant does not provide the requested information, the application will be denied.
 - b. The components of the plan that are necessary in order for the application to be "complete" are shown on Attachment A which is derived from Rule 5.6.1 of the Designated Basin Rules.

2. If the Staff determines that the application is "complete" and the Staff believes that it can give the application favorable consideration, the Staff will publish the application within 60 days of its receipt [37-90-107.5].
3. If the Staff determines that the application is "complete" but it has concerns about giving the application favorable consideration that may be resolved without a hearing, the Staff will notify the applicant in a timely manner, identifying the aspects of the plan that prevent the Staff from giving it favorable consideration. This may be done by separate letter or phone call with a time limit for response, after which time the application will be returned.

However, since the application is "complete", if the applicant chooses to not react to any or all aspects of the application that the Staff identified, the Staff will publish the application, with the right to object to it after publication.

Note: Ideally the Staff should find that the application can be given favorable consideration prior to publication to prevent unnecessary hearings, reduce confusion at hearings, and reduce the dedication of substantial resources associated with hearings. Such an approach will reduce the risk that the Staff could publish an application, only to have numerous parties object to issues that could have been previously addressed by the applicant. In addition, this review provides the Staff an opportunity to notify the applicant of issues that the Staff may have with the plan, even after the Staff has determined it is "complete". This communication allows the applicant to react to that issue. Additionally, if Designated Basin water users feel that the Staff is not thoroughly reviewing applications then that may cause more frequent objections leading to more hearings.

4. If the Staff determines that the application shows that the replacement plan will cause injury to rights of other appropriators, the Staff will deny the replacement plan prior to publication.

II. Location of Replacement Water and Material Injury:

Pumping of designated ground water, whether by alluvial wells or wells in certain locations of bedrock aquifers, causes depletions to alluvial aquifers at specific locations. Such depletions may occur only in the vicinity of the well (e.g. when pumping an alluvial well), or may occur over a reach of an aquifer, in multiple drainages, or even multiple Designated Basins (e.g. when pumping wells at certain locations in bedrock aquifers). Prior to the implementation of this guideline, the Ground Water Commission Staff applied the following standards:

Past Approach

1. The applicant must demonstrate that replacement water will replace all depletions in time, location, and amount and not cause material injury as a result of the plan's operation. This necessitates a showing that there will be no net depletions to the alluvial aquifer at the location of affected existing alluvial wells;
or

2. The applicant may provide model analysis indicating that the effects of the depletions, caused by pumping, to existing alluvial wells do not affect the wells' pumping; or
3. The applicant must use Guideline 2006-1, which allows aggregation of replacement water to replace depletions caused by Denver Basin bedrock aquifer pumping, provided the threshold amounts provided in the guideline are not exceeded.

Approach Allowed by this Guideline

Replacement Plans that involve the withdrawal of alluvial ground water

1. The applicant must demonstrate that the plan replaces all depletions in time and amount to the alluvial aquifer. To ensure that there is no net depletion, the replacement water cannot leave the basin in which the wells are located until it has reached the alluvial aquifer.
2. The applicant must replace depletions in the immediate vicinity of the points of withdrawal.
3. If there are wells within one-half mile of the point of withdrawal, the applicant must demonstrate that those wells' water rights will not be materially injured. The standard for no material injury ("Standard") is that a water right holder can divert the volume of water necessary to satisfy its uses during the operation of the replacement plan.

The exception to this requirement is when the owner of the well within one-half mile has provided a Waiver of Claim of Injury pursuant to Rule 5.2.1. for the subject well permit application that is submitted and published with the replacement plan. If that well owner has provided a Waiver of Claim of Injury for the well permit application, the Staff will treat the replacement plan application as having met the Standard.

4. If there are no wells within one-half mile of the point of withdrawal that have not submitted a Waiver of Claim of Injury, the Staff will treat the application as having met the Standard. However, upon publication and any objection, this guideline cannot be used as a defense to prove that the replacement plan will or will not cause material injury. Further, the Staff reserves the right to not use this Standard and deny any replacement plan, recognizing that all plans are different and that while some plans may meet the Standard, they may still cause material injury.

Replacement Plans that involve the withdrawal of not nontributary ground water

1. The applicant must demonstrate that the plan replaces all depletions of all alluvial aquifers in time and amount. To ensure that there is no net depletion, the replacement water cannot leave the basin in which the wells are located until it has reached the alluvial aquifer in that basin.

2. The applicant must replace depletions in the immediate vicinity of the points of withdrawal.

For plans that involve the withdrawal of not nontributary ground water, this proposed approach effectively allows the aggregation of all replacement water to the drainage in which the wells operate. Therefore, this Guideline 2007-1 supersedes GUIDELINE 2006-1 CONCERNING THE STATE ENGINEER'S ADMINISTRATION OF GROUND WATER COMMISSION APPROVED REPLACEMENT PLANS FOR THE DENVER BASIN AQUIFERS WITHIN DESIGNATED BASINS since it allows the aggregation of replacement water regardless of whether the depletion amounts are less than the threshold amounts in that guideline.

III. Location of Replacement Water and Hydraulic Connection with the saturated Alluvial Aquifer:

Current and Proposed Standard

The applicant must demonstrate the hydraulic connection between the point at which the replacement water enters the ground and the saturated portion of the alluvial aquifer to which the replacement water is being delivered. To do this, the applicant must:

1. Show a continuous saturated alluvium from the point at which the replacement water enters the ground to the point of contact with the saturated portion of the alluvial aquifer, or
2. Show a combination of saturated alluvium and unsaturated alluvium from the point at which the replacement water enters the ground to the point of contact with the saturated portion of the alluvial aquifer, and show that the travel of the water through the unsaturated alluvium will reach the saturated alluvium before the time that the modeled depletions to the alluvium occur, or
3. Show that the plan's depletions are less than the threshold values as described in superseded GUIDELINE 2006-1, which "allows for the necessary amount of replacement water to be returned to the alluvial aquifer in a place other than where the impact occurs, under a rebuttable presumption of non-injury." Those threshold values are shown below.

Approved:

Hal D. Simpson
Hal D. Simpson, State Engineer

Date: 5/31/07

Threshold values in Guideline 2006-1

<u>Designated Basin</u>	<u>Depletion</u>
Upper Black Squirrel Creek	0.23 AF/YR
Lost Creek, Kiowa Bijou, Upper Big Sandy	1.90 AF/YR

Background for this Guideline

Background for I. Publication:

Rule 5.6.1 provides for new appropriations of ground water using a replacement plan. The statutory procedure for replacement plans is found in 37-90-107.5. 37-90-107(7) contains a requirement for replacement plans covering depletions caused by withdrawals from Denver Basin aquifers.

5.6 Replacement Plans

5.6.1 New appropriations of designated ground water from aquifers which are otherwise overappropriated or where such approval may result in unreasonable impairment to existing water rights may be allowed pursuant to a detailed replacement plan. This plan must be adequate to prevent any material injury to water rights of other appropriators. A replacement plan must contain, as a minimum, the following elements: (See Attachment A)

The Staff's actions on replacement plans are guided by Rule 5.6.2 of the Designated Basin Rules:

5.6.2 Upon receipt of any such replacement plan, the staff shall review it to determine whether it is adequate to meet these criteria and the provisions of C.R.S. 37-90-107. The applicant shall have the burden of proving the adequacy of the plan in all respects. If the plan is located within a ground water management district, a copy of the application shall be sent by the staff to the management district and the staff shall consider any comments or recommendations from the management district. The staff shall propose any additional terms and conditions or limitations which are necessary to prevent material injury and to ensure that the plan is administrable and enforceable.

It appears that there are publication requirements for replacement plans found in 37-90-107(7)(c)(I)(C) and (c)(II); and 37-90-107(7)(d)(III):

(C) Effective July 1, 2006, rights to designated ground water in the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers to be allocated pursuant to paragraph (a) of this subsection (7) may be determined in accordance with the provisions of this section. Any person desiring to obtain such a determination shall make application to the commission in a form to be prescribed by the commission. A fee of sixty dollars shall be submitted with the application for each aquifer, which sum shall not be refunded. The application may also include a request for approval of a replacement plan if one is required under commission rules to replace any depletions to alluvial aquifers caused due to withdrawal of ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers.

(c)(II) The publication and hearing requirements of this section shall also apply to an application for determination of water rights pursuant to this subsection (7).

and

(d)(III) The application for a well permit shall also include a replacement plan if one is required under commission rules to replace any depletions to alluvial aquifers caused due to

withdrawal of ground water from the Dawson, Denver, Arapahoe, or Laramie-Fox Hills aquifers and the required plan has not been approved pursuant to paragraph (c) of this subsection (7). The publication and hearing requirements of this section shall apply to an application for such a replacement plan.

These statutes imply that the publication requirements for a replacement plan that accompanies a Determination of Water Right are given in section 107 and the statute states explicitly that the publication requirements for a replacement plan that accompanies a well permit application are also found in section 107. Specifically, 37-90-107(2) states:

(2) Upon the filing of such application, a preliminary evaluation shall be made to determine if the application may be granted. If the application can be given favorable consideration by the ground water commission under existing policies, then, within thirty days, the application shall be published.

However, 37-90-107.5 provides specific publication requirements for replacement plans:

37-90-107.5. Replacement plans.

Any person desiring to obtain an approval of a replacement plan within the boundaries of a designated ground water basin pursuant to the provisions of this article shall make an application to the commission in a form prescribed by the commission. The applicant shall also submit a summary of the application to the commission for publication. If the commission determines the application to be complete, it shall be published pursuant to section 37-90-112 within sixty days after the filing of such an application.

Since 37-90-107.5 post dates the 37-90-107(2) and became law at the same time as 37-90-107(7), it would appear that it is proper to use 37-90-107.5 as the statute to direct the publication of a replacement plan.

Since 37-90-107.5 states that the Commission must determine the application to be complete, and the criteria by which an application is judged complete or not are found in Rule 5.6.1, the Staff needs to consider Rule 5.6.1.C and the Staff's expectation of "proof". Rule 5.6.1.C. states that a replacement plan must contain:

- C. Proof that the plan will not cause material injury to water rights of other appropriators.

For the purposes of determining whether an application is complete, "proof" does not mean an absolute showing of no material injury but rather a demonstration (showing or explaining something) or evidence (facts or observations presented in support of an assertion) that material injury will not occur. This supports the direction that the Staff can, in certain situations, publish a replacement plan application even if the Staff cannot necessarily give it favorable consideration.

Background for II. Location of Replacement Water and Material Injury:

Proposed Approach

The standard for replacement plans in the Designated Basins is found in Rule 5.6.1 of the Designated Basin rules:

5.6.1 "New appropriations of designated ground water from aquifers which are otherwise overappropriated or where such approval may result in unreasonable impairment to existing water rights may be allowed pursuant to a detailed replacement plan. This plan must be adequate to prevent any material injury to water rights of other appropriators. A replacement plan must contain, as a minimum, the following elements:..."

From this, "unreasonable impairment to existing water rights" is the condition that requires a replacement plan. A successful plan has to prevent "material injury to water rights of other appropriators." The standard for material injury should be consistent with case law. It would be contrary to case law to use a standard whereby "one drop" is considered injury. Instead, the Staff needs to make a determination that no other party will be deprived of the ability to appropriate their water right. This means that if a party can still appropriate its water right, but needs to lower a pump, deepen a well, or alter historical pumping practices, the party has not necessarily been materially injured.

In the interest of recognizing an objective standard that will allow more expedient publication and approval of replacement plans, while still providing for a reasonable consideration of material injury, the Staff would use a practical consideration to the evaluation of material injury. Under current administrative ability and practice, a practical consideration is that the applicant must replace the water in time and amount. For replacement plans that involve the withdrawal of alluvial ground water, while the Staff and consultants may have tools to determine the "effect" from pumping at certain discrete locations, the standard for determining material injury to other appropriators may require extensive modeling for different scenarios. Even after such modeling, the determination of whether or not another appropriator is injured can be subjective. The Staff should not make that determination and it should be left to other appropriators to object to a replacement plan. The applicant then would have the burden of proving no injury in a hearing.

The most logical way to implement this approach is to incorporate consideration of Rule 5.2.1 into the evaluation. Rule 5.2.1 states:

5.2.1 No application for a permit to appropriate ground water from an aquifer under Rule 5.2 shall be granted within 1/2 mile of an existing large capacity well unless a Waiver of Claim of Injury is obtained from the owner of such a well or unless the Commission, after a hearing, finds that circumstances in a particular instance allow a permit to be issued without regard to the above limitation.

The well permit application for the well that is subject of the replacement plan will be published, and will likely be published along with the replacement plan. If there are wells within one-half mile of the subject well, the applicant must obtain a Waiver of Claim of Injury or be subjected to a hearing. If all owners of the existing wells provide a Waiver of Claim to Injury, it is logical for the Staff to process the replacement plan without regard of injury to that well. If, however, not all of the well owners within one-half mile of the subject well provide a Waiver of Claim of Injury, there will necessarily be a hearing and the applicant will need to address the question of injury. Therefore, in that case it is

logical for the Staff to require that the replacement plan applicant meet the standard of demonstrating that the wells' water rights will not be injured.

Similarly, for replacement plans that involve withdrawal of Denver Basin ground water, we currently do not have the tools or the methodology to pinpoint and assess the effect to the alluvium upgradient of the location of withdrawal, or in precise locations in an adjacent drainage.

For depletions that occur in an adjacent drainage, the effort necessary to secure replacement water in multiple adjacent drainages and make replacements in those drainages must be compared to the potential that adjacent drainages may develop during the same time periods. If a replacement plan applicant secures and delivers replacement water into multiple drainages when applicants in adjacent drainages are doing the same, the effect would be unnecessary effort and expense by the applicant. Therefore, for Denver Basin wells, if the applicant has a plan to replace all depletions in time and amount, we will consider that adequate to satisfy the standard.

A question then arises whether the Staff's position that the applicant need not replace water at the location of the depletions implies a position that the applicant may transport the replacement water to another location. However, the Staff' objective is to make an allowance that replacement water is not required at the location of depletions. The intent of that allowance is to avoid putting an unreasonable burden on the applicant by requiring the transport of water to adjacent alluvial systems or upgradient in the same alluvial system when material injury may not be readily discernible. It would be contrary to the spirit of that allowance if the Staff were to then allow the applicant to, through an overt act, transport the water to another location, especially if that was to the applicant's benefit. Therefore, we have added the requirement in item 2 above that "(t)he applicant must replace depletions in the immediate vicinity of the plan's operation."

Background for III. Location of Replacement Water and Hydraulic Connection with the Alluvial Stream System:

The intent of the replacement plan cannot be accomplished if replacement water is consumed before it can benefit the Alluvial Stream System or trapped in a location where it will never reach the Alluvial Stream System. Therefore, to ensure the replacement water is not consume or trapped, the applicant must provide the evidence of a hydraulic connection with the alluvial aquifer.

Attachment A
Required Elements as listed in Rule 5.6.1:

5.6.1 New appropriations of designated ground water from aquifers which are otherwise overappropriated or where such approval may result in unreasonable impairment to existing water rights may be allowed pursuant to a detailed replacement plan. This plan must be adequate to prevent any material injury to water rights of other appropriators. A replacement plan must contain, as a minimum, the following elements:

- A. A detailed description of the source of the replacement water. The source must be such that the water it provides is not required for the fulfillment of vested water rights which are not a part of the plan.
- B. A detailed description of the proposed diversion, use, and depletion of designated ground water which would result under the plan.
- C. Proof that the plan will not cause material injury to water rights of other appropriators.
- D. Proof that the plan will not cause unreasonable impairment of water quality.
- E. Proof that the plan can and will be operated and administered on an ongoing and reliable basis, which must include at least the following general conditions of approval:
 1. Flow measurement devices shall be required on all wells involved in the plan unless the Commission finds that such devices would be unnecessary or impractical.
 2. Monitoring to insure that the estimates of consumptive use, return flows, and replacement water are accurate and that depletions are actually replaced.
 3. Monitoring of ground water quality to insure that the water quality of the receiving aquifer is not unreasonably impaired.
 4. Providing a plan compliance report acceptable to the Commission.
 5. Reporting the information required by subparagraphs (1) through (4) above and any other data required by the conditions of approval for the plan to the Commission and District on a schedule determined by the Commission, but on no less than a yearly basis.
 6. Recording the terms and conditions of the plan with the county clerk and recorder. Such terms and conditions shall be regarded as covenants running with the land.
- F. The Commission retains jurisdiction to modify or revoke approval of the plan, if monitoring or operating experience reveals that the plan results in any material injury to water rights of other appropriators or in unreasonable impairment to water quality.



GUIDELINE 2007-1 SUPERSEDES GUIDELINE 2006-1

GUIDELINE 2006-1

CONCERNING THE STATE ENGINEER'S ADMINISTRATION OF GROUND WATER COMMISSION APPROVED REPLACEMENT PLANS FOR THE DENVER BASIN AQUIFERS WITHIN THE DESIGNATED BASINS

Purpose:

The purpose of this guideline is to establish the conditions under which Ground Water Commission approved replacement plans ("Replacement Plans") can allow replacement water to be aggregated to the alluvial stream system most affected by the pumping of not-nontributary Denver Basin aquifers within the designated ground water basins.

Basis:

C.R.S. 37-90-107(7)(c)(I)(A) and the Ground Water Commission Rules require that any depletions caused to the alluvial aquifers, must be replaced to prevent injury to prior designated ground water rights. However, ground water models calculate stream depletions, sometimes with unrealistic precision (up to the 4th decimal place) and as a result, these models will sometimes calculate very small depletions to stream systems.

The State Engineer has been given the authority to administer these Replacement Plans in C.R.S. 37-90-110(h). The question is whether it is unreasonable and unadministrable to require water users to replace very small volumes of water, at great relative expense, to different alluvial stream systems, often miles away, as well as to different tributaries of the same alluvial stream system, all within the designated basins. When dealing with small volumes of ground water, these replacements are based on an unnecessary degree of precision, creating a question as to whether a replacement requirement is truly justified. In addition, expecting a ground water user to effectively replace such small volumes of water into an intermittent alluvial stream system from the surface, without a disproportionate expense is not reasonable. Finally, the administration of such small replacement amounts by the State Engineer also represents a disproportionate effort and expense and for that reason cannot be practicably administered.

This guideline allows for the necessary amount of water to be returned to the alluvial aquifer in a place other than where the impact occurs, under a rebuttable presumption of non-injury.

For replacements in an alluvial stream system to be considered for aggregated replacement, the depletions in an alluvial stream system, as determined by the State's AUG3 model, should not exceed the consumption attributed to the most restricted domestic small capacity well in that designated basin. As an example, the Upper Black Squirrel Creek Ground Water Management District (GWMD) restricts a small capacity domestic well in a subdivision or cluster development to an annual withdraw of 0.5 acre-ft (0.30 acre-ft for in house use and 0.20 acre-ft for 3,500 square feet of lawn and

garden irrigation with 4 large domestic animals). The consumption of water under this scenario is 0.23 acre-ft per year based on consumption rates of 10% for in house use, 80% for lawn and garden irrigation and 100% for large domestic animals. Small capacity domestic wells located in the Lost Creek, Kiowa Bijou & Upper Big Sandy Designated Basins are not restricted by the local GWMDs and are therefore governed by statute. The allowed uses, withdrawal rate and consumption for the four Designated Basins that overly the Denver Basin Aquifers are indicated in the table below.

Designated Basin	Domestic Small Capacity Use Allowed	Allowed Withdrawal (ac-ft per year)	Consumption (ac-ft per year)
Upper Black Squirrel Creek	1 single family home, 3,500 square feet of lawn and garden and 4 large domestic animals	0.5	0.23
Lost Creek, Kiowa Bijou & Upper Big Sandy	3 single family homes, 1 acre of lawn and garden and 4 large domestic animals	3.2 ac-ft	1.9

Guideline:

The applicant in a Replacement Plan must replace depletions to any designated alluvial stream system, where the State's AUG3 model shows a depletion greater than the consumption caused by a domestic well in that designated basin as indicated in the table above. Any depletions caused to designated alluvial streams systems which are less than the consumption indicated for that designated basin in the table above may be replaced by aggregating them (combining them with other depletions) and replacing water to those alluvial stream systems whose depletions do not meet these criteria. If there are no streams within the designated basin with depletions greater than the consumption indicated for that designated basin in the table above, the applicant may aggregate replacement water and discharge it into the alluvial stream system where the pumping takes place.

Exceptions:

This guideline does not apply outside of the designated basins and does not apply to depletions caused by pumping from any source other than the Denver Basin aquifers.



Hal Simpson, State Engineer

Date: 1/24/06