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Policy Number: Policy No. 202x-xx

Title: Alternative Hydrogeologic Evaluation Policy

Effective Date: xx

Authority: Public Law 91-575, 84 Stat. 1509 *et seq.*, Sections 3.1, 3.4(2) & (8), 3.5(1) and 3.10, 18 CFR §§ 806.2, 806.4, 806.12, 806.13, 806.14, and 806.23.

Policy: The Susquehanna River Basin Commission (Commission or SRBC) established regulatory requirements for water withdrawals, including groundwater withdrawals, at Part 806, including general provisions, application procedures, standards for review and terms of approval. Section 806.12 details that, prior to submission of an application pursuant to 18 CFR § 806.13, a project sponsor seeking approval for a new groundwater withdrawal, a renewal of an expiring groundwater withdrawal, or an increase of a groundwater withdrawal, shall perform an aquifer test to collect suitable data for evaluation or complete an Alternate Hydrogeologic Evaluation (AHE) when suitable aquifer testing or other data is already available.

In its regulation of water withdrawals, the Commission intends to advance the purposes of the Compact, including the specific purposes of protection of public health, safety and welfare; stream quality control; economic development; protection of fisheries and aquatic habitat; recreation; dilution and abatement of pollution; the regulation of flows and supplies of groundwater and surface waters; the avoidance of conflicts among water users; and protection of the Chesapeake Bay (18 CFR § 806.2).

For groundwater withdrawal projects that have not previously satisfied Section 806.12, it shall be the policy of the Commission that project sponsors may elect to utilize existing and site-specific data to evaluate projects undergoing renewal, seeking Commission approval of existing sources or, in limited circumstances, developing new sources through the AHE.

Purpose: The purpose of this policy is to provide guidance to project sponsors and their consultants for the preparation of an AHE, which has replaced the Aquifer Testing Plan Waiver process. The purpose of an AHE is to promote better management of the water resources in the Susquehanna River Basin

(Basin) by allowing project sponsors to more effectively utilize and evaluate existing and site-specific information during the review process. This policy provides the guidance for project sponsors to follow a streamlined, risk-based approach for evaluation of their existing data and/or information for the requested withdrawal's sustainability, impacts to other users, and impacts to the environment.

Applicability: This policy applies to the utilization of the Commission's Alternative Hydrogeologic Evaluation in lieu of its former Aquifer Testing Plan Waiver process. The document has been developed to provide guidance to the regulated community regarding how to use and evaluate a project's site-specific data for projects undergoing renewal, seeking Commission approval of existing sources or, in limited circumstances, developing new sources.

Disclaimer: The policy outlined in this document is intended to supplement existing requirements. Nothing in this policy shall affect regulatory requirements. The policies and procedures herein are not an adjudication or a regulation. This document establishes the framework within which the Commission will exercise its administrative discretion in the future. The Commission reserves the discretion to deviate from this policy statement if circumstances warrant.

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I. Introduction

In accordance with Commission regulations pertaining to groundwater withdrawals, project sponsors are required to satisfy the requirements of 18 CFR § 806.12 by either completing an aquifer test in accordance with a Commission approved aquifer testing plan (Plan) or by completing an Alternate Hydrogeologic Evaluation (AHE). The purpose of an AHE is to promote better management of the water resources in the Susquehanna River Basin (Basin) by allowing project sponsors to more effectively utilize and evaluate existing and site-specific information during the project review process. This policy provides the guidance for project sponsors to follow a streamlined, risk-based approach for evaluation of their existing data and/or information for the requested withdrawal's sustainability, impacts to other users, and impacts to the environment. In promoting water resources management, utilization of the AHE also provides for the opportunity for projects to undergo periodic reviews of ongoing and developing data collection efforts in response to changing environmental conditions related to water quantity, water quality, and climate. While groundwater systems are generally more resilient to changing conditions than surface water bodies, these reviews can allow for project adaptations in response to data or information indicating that such adjustments may be warranted.

Projects that completed a Commission approved test have previously met the requirements of 18 CFR § 806.12 and a new Plan and subsequent aquifer test or AHE are not required.

Projects that have not met the requirements of 18 CFR § 806.12, may elect to conduct an AHE that utilizes existing and site-specific data to evaluate projects undergoing renewal, seeking Commission approval of existing sources or, in limited circumstances, developing new sources or increasing previously approved quantities. Any changes proposed to a project must be in conformance with all other agencies' requirements and approvals and must not violate any approval limits or conditions.

The Commission recognizes that projects that have been in existence for many years may have significant historical data that can be used to support a renewal request without completing a new aquifer test. Prior to adoption of this policy, projects seeking to obtain approval without new aquifer testing submitted a request for the Commission to waive (Waiver) the regulation pertaining to aquifer testing plans and aquifer tests. Normally, only the Commissioners can waive regulations. However, because the Waiver evaluation process was a technical exercise conducted at the staff level prior to submittal of a formal application, the Authority to evaluate and issue Waivers was delegated to the Executive Director, with advance notice to commissioners. Although the Commission encouraged the pursuit of Waivers for renewals of existing sources, the guidance for completing a Waiver request was insufficient to effectively guide projects through the process. The purpose of this policy document is to provide effective guidance to project sponsors and their consultants for the preparation of an AHE, which has replaced the Waiver process. Because the AHE is now included as a recognized pathway in regulation, a waiver of the regulations regarding a Commission approved aquifer test is no longer needed. In many cases, existing projects for which Waiver requests were previously approved will meet the requirements of 806.12 and not need to complete an AHE. The potential exists that some historic Waivers may not meet current Commission standards, in which case project sponsors will need to provide supporting information to complete an AHE.

II. Alternative Hydrogeologic Evaluation

Project sponsors should use the AHE process when existing data and information are sufficient to evaluate and support the desired withdrawal rate. It is possible that during the development of the AHE, project sponsors may find that data are not adequate to support the desired rate, that the risk associated with the project is too high or unknown, or that aquifer testing is needed to support the desired withdrawal rate. It is also possible that, if completed early enough in the process, data gaps may be identified allowing time to complete limited operational data collection or testing to fill those gaps without having to complete a formal testing plan or aquifer test. Although the AHE is intended primarily for existing withdrawals, the AHE may apply to new sources, especially sources for which completing an aquifer test may not be practical (e.g. mine pools, springs, and quarries). Projects intending to use the AHE for new source withdrawals should contact Commission staff for site-specific guidance.

A. Definition of Alternative Hydrogeologic Evaluation

The Alternative Hydrogeologic Evaluation is the optional process by which a project sponsor compiles and prepares existing data and information to complete a risk-based evaluation of an existing or new withdrawal for sustainability, impacts to other users, and impacts to the environment. The data and information needed to complete the risk-based evaluation are site-specific and will be dependent on the important features, settings, and conditions for each project. A properly completed AHE will provide Commission staff with sufficient, targeted information to evaluate the important aspects of a project without requiring completion of a new aquifer test but still conforming to the standards of 18 CFR § 806.23.

B. Risk-Based Evaluation

To evaluate the potential for significant adverse impacts and in accordance with Subpart C of 18 CFR Part 806, the Commission may consider, without limitation, lowering of stream flow levels; water availability, including cumulative uses; rendering competing supplies unreliable; affecting other water uses; causing water quality degradation that may be injurious to any existing or potential water use; affecting fish, wildlife or other living resources or their habitat; affecting wetlands; or affecting low flow of perennial or intermittent streams. The standards for withdrawals can be simplified into the three Principle Risk Factors provided below, for the requested withdrawal rate:

1. Sustainability of the withdrawal;
2. Impacts to other users; and
3. Impacts to the environment.

By evaluating each of these risk factors, the project can complete a risk-based evaluation and focus its efforts on the sensitive aspects of a project. The Risk-Based Evaluation is intended to serve as a method of assessing the potential risk associated with a requested withdrawal quantity for sustainability, impacts to other users, and impacts to the environment. Risk-based evaluations are intended to streamline the data acquisition and submittal process, where appropriate, to allow projects to adjust the amount and type of data collection, and to leverage existing data and

information along with simple statements or assertions to address the three principle risk factors as appropriate. For example, projects with no users within the area of influence can address this risk factor simply by completing a well inventory.

Risks associated with a groundwater withdrawal vary depending on the magnitude, setting, and location of the withdrawal, which may allow for more streamlined or simplified reviews and submittals for some circumstances. In general, small and medium groundwater withdrawals pose lower risk of significant impacts than large groundwater withdrawals. The Commission considers groundwater withdrawals to be small, medium, and large as described in Table 1 below.

Table 1: Groundwater Withdrawal Size Characterization

Classification	Demand Quantity (30-day Average)
Small	0.020 mgd or less
Medium	More than 0.020 to less than 0.100 mgd
Large	0.100 mgd or greater

Small groundwater withdrawals, as defined in 18 CFR § 806.3, are exempt from requirements of 18 C.F.R § 806.12. The Executive Director may determine, on a case by case basis, if a small withdrawal is subject to 18 CFR § 806.12.

The size of the withdrawal is not sufficient in and of itself to evaluate the risk associated with the withdrawal. However, the Commission recognizes that risk associated with a withdrawal typically increases with size and may require projects to provide sufficient support for the requested quantity commensurate with the level of risk associated with the withdrawal. The Risk-Based Review may be used, on a limited basis, for any requested withdrawal without limitation based on withdrawal size. Project sponsors should assess the associated risk of a withdrawal with respect to the three Principle Risk Factors of sustainability, impacts to other users, and impacts to the environment. If appropriately applied, the Risk-Based Review will allow project sponsors and the Commission to focus review and data submittal on specific aspects of projects that present the greatest risk while confirming that other aspects of the project are not of significant concern. Each Principle Risk Factor is described below:

Principle Risk Factor 1: Sustainability

For the purpose of this document, the Commission considers sustainability to be the ability of a source to reliably deliver a specific quantity of water. This definition of sustainability does not consider impacts to other users or the environment, both of which are discussed separately. The Commission evaluates the sustainability of a withdrawal by assessing the ability of the source to reliably produce the requested quantity through a 1-in-10 year recurrence drought without causing unacceptable lowering of the water level in the source and the aquifer. By limiting withdrawals to not exceed the sustainability of the resource, project sponsors will operate within reliable production capabilities of their sources during dry and drought periods. Systems will also be better informed and can identify and plan for when new sources are needed to support additional growth or development without over-taxing existing sources and infrastructure. The sustainability risk factor can also account for source vulnerabilities whereby a system can plan for adaptation

measures to enhance source and system resiliency in response to changing water quantity, water quality, or climate conditions. Criteria in consideration of sustainability of the withdrawal are:

- Ability of the subject groundwater source to reliably produce the requested 30-day average (mgd) quantity for a 90-day period without recharge;
- Ability of the subject source to provide the maximum instantaneous withdrawal rate (MIWR)(gpm);
- Estimated groundwater recharge during a 1-in-10 year drought;
- Potential for loss of aquifer storage as a result of pumping (groundwater mining);
- Observed lowering of water level in the aquifer;
- Potential for excessive lowering of water levels in the well that will or can be expected to expose primary or significant water bearing zones, the top of the screened interval, pump intake, or other critical levels; and
- Potential for permanent loss of aquifer storage or damage to the aquifer, which may include, but is not limited to, compaction, biofouling, mineralization, and induced contamination.

The sustainability criteria should be evaluated and described in the AHE. Typically, project sponsors can demonstrate the sustainability of an existing withdrawal using the AHE through a combination of data from historical tests, 30-day average withdrawal data during dry or drought periods when the source was used at or near the desired rate, and operating water level data during dry or drought periods. For most projects, Commission staff would not recommend approval of a project at a rate that:

1. Exceeds historically tested rates;
2. Exceeds the maximum 30-day average at which the well was operated during dry or drought periods;
3. Results in utilization (individually and in combination with other sources) of more than 100 percent of the 1-in-10 year drought recharge to the contributing groundwater basin; or
4. Would be expected to cause unacceptable lowering of the water level in the well or the aquifer.

The Commission approves a 30-day average withdrawal rate and a MIWR. Projects have the flexibility to request higher MIWR than the corresponding 30-day average, which may allow projects to meet short-term demand while meeting Items 1-4 above.

In considering the sustainability of the withdrawal, the Commission will also evaluate the relative importance of the subject source to the system and potential impacts to the well or aquifer. The Commission may find that, although the requested withdrawal does not meet the general criteria for sustainability, the requested rate is acceptable because the project operates sufficient redundant sources to offset the loss of the subject well, the percentage of water provided by the subject source to the system is low, or damage to the well or aquifer will not occur or will be avoided with conditions of an approval. In these limited cases, the AHE process allows the Commission to provide operational flexibility for a project to use a source when the water is available and rely on other sources when the subject source is limited. Projects seeking this

operational flexibility should provide justification for this approach in the AHE and consider appropriate protective conditions (e.g. water level restriction).

Principle Risk Factor 2: Impacts to Other Users

The Commission evaluates the potential for other water users to be adversely impacted by the requested withdrawal. Of greatest concern are other groundwater users, but surface water users may also be impacted by a groundwater withdrawal that impacts springs, streams, or rivers. Typical reviews include documenting all groundwater users within 2,500 feet of the withdrawal, or the projected 90-day area of influence for the well, and providing available water level data. The level of effort needed for this evaluation is reduced for projects demonstrating little to no risk where:

- Drawdown within the subject well and surrounding aquifer is insignificant when compared to the capacity of the aquifer;
- Drawdown at nearby groundwater sources as a result of withdrawal from the subject source is insignificant with respect to the hydrogeologic setting, well construction, and capacity;
- Properties within the area of influence are connected to public water;
- Properties within the area of influence do not utilize wells; or
- Properties within the area of influence are undeveloped or do not rely on surface water (e.g. springs and streams) or groundwater sources.

Principle Risk Factor 3: Impacts to the Environment

Evaluating the potential risk a withdrawal poses to the environment requires determining which features are present within the area of influence of the well and evaluating if potential impacts are likely. Evaluating impacts to the environment generally considers:

- Impacts to springs, streams, and wetlands,
- Impacts to rare threatened, or endangered species (RTE) that rely on water resources;
- Critical wildlife habitat and sensitive ecological communities; or
- Potential changes to water quality, an aquifer or surface water body that may result from a withdrawal.

If not included in previous work, impacts to the environment can be assessed using the hydrogeologic setting, results of aquifer testing, or, as needed, supplemental operational monitoring and testing. Projects that may need operational monitoring include:

- Projects that cannot demonstrate through previous testing or the hydrogeologic setting that impacts are not expected;
- If the potential for impacts to surface water or ecological features cannot be eliminated and the level of impact cannot be quantified or adequately estimated;
- Projects seeking an increase above previously approved rates;
- Projects seeking an approval above previously operated rates;

- Projects located in or near sensitive settings (e.g. headwaters, state designated high/exceptional quality waters);
- Project located in or near, and may have an impact to, habitat for RTE species; or
- Withdrawals that are large in comparison to flow rates in nearby surface water features.

Potential conflicts with any of the above will need to be resolved with the AHE and/or application process. Commission staff is available to assist projects in communicating with the appropriate governing agency to resolve or clear potential conflicts.

III. Completing an Alternative Hydrogeologic Evaluation

The AHE form is available on the Commission's website along with a functional sample template that can be used to view the full form and information requested. Below are descriptions for the expected components of a complete AHE.

A. Overview

For guidance on the first three sections or pages of the online AHE form, please refer to the corresponding section in the Aquifer Testing Guidance document (**Policy No. 2021-xx**). The final section of the online AHE form contains the evaluation portion of the AHE, which serves as the interpretive section of the hydrogeologic report. All of the information provided in the first three sections of the online AHE should be used to develop the evaluation described in this policy.

B. Historical Operational Withdrawal and Water Level Data

Historical operational data should demonstrate that the well can or has sustainably operated at the desired withdrawal rate without significant adverse impacts to other users or the environment. The data should demonstrate how the well and aquifer responds to pumping at the requested maximum instantaneous (gpm) and consecutive 30-day average (mgd) withdrawal rates through drought or dry periods. The historical operational data to be provided to the Commission may include, but not be limited to the following:

- Operational records showing average and maximum instantaneous rate of withdrawals, peak daily withdrawals, and consecutive 30-day average withdrawals from the subject well. Graphs and tables used to summarize these data should be provided;
- Hydrographs and tables should be provided to demonstrate the historical water level data (collected from the subject well and other nearby production wells, monitoring wells, piezometers, etc., if available). The graphs and tables should depict the static and pumping water levels through time and through documented drought periods, if available and as appropriate;
- Graphing water level data with both the historical 30-day average withdrawal and the daily withdrawal is recommended. The subject well's primary water-bearing zone intervals and estimated yields, in addition to the depth of the pump intake, should be shown on all water level hydrographs;
- Historical precipitation and drought data.

C. Historical Aquifer Testing or Professional Studies

The Commission has found that historical aquifer testing results and studies, although not meeting current aquifer testing standards, may, in some situations, provide useful data and information to support a risk based evaluation of the requested withdrawal quantity, hydrogeologic conceptual model, or demonstrate how the withdrawal may impact other users or the environment. A historical aquifer test may not have been sufficient to provide all the data necessary to complete the review of the three principle review categories, but may be integral in demonstrating the risk associated with a requested withdrawal especially when supplemented with operational data. Historical tests and studies can often be used in combination with operational data or testing to support a requested withdrawal. One of the most common usages of historical testing results is the comparison of current water levels collected during routine operation of a well with the projected or estimated water level from the historical test.

D. Other Supporting Information

Other supporting documentation may be provided to demonstrate the suitability of the requested withdrawal. This documentation may include published references or studies, student papers or research papers, or other applicable documentation. In limited cases, a project with a historic Waiver may need to provide supplemental information to complete an AHE during the renewal process. In such a case, the project sponsor will be contacted by Commission staff, and should plan to meet with staff to discuss that information, and to determine ways in which staff can assist the project sponsor in AHE submittal.

E. Risk-Based Evaluation

The information provided with the AHE should be summarized such that all of the information provided is developed into a cohesive response that fully describes the hydrogeologic setting, evaluates the risk associated with the requested withdrawal, and documents why the requested withdrawal is acceptable with respects to the standards provided in 18 CFR § 806.23. For data that is omitted from the AHE, the project sponsor should describe why the data has not been included and why additional data is not needed (e.g. no groundwater users within the area of influence). Risk-based evaluations, if being submitted to the Commission to review, should demonstrate that the three Principle Risk Factors have been addressed, that no additional testing or information is needed to evaluate the risk factors, and that the level of risk associated with the project is low or can be mitigated with appropriate limits established in an approval.