

**Victoria County Groundwater Conservation District
2026 Proposed Rules of the District**

August 24, 2026

On behalf of the Port of Victoria (POV), Advanced Groundwater Solutions, LLC (AGS) has prepared the following comments based on its assessment of the Victoria County Groundwater Conservation District's (VCGCD or District) June 2026 and July 2026 Proposed Rules (Proposed Rules). Attachment A lists the documents AGS reviewed and analyzed in the preparation of its comments.

Background

As reflected in the VCGCD June 12, 2026 meeting minutes, in April 2026, the District Board approved and provided a notice to proceed to INTERA to conduct brackish groundwater flow modeling. (See "Additional Simulations Using the Central Gulf Coast Brackish Groundwater Flow Model.") Within a month, INTERA delivered a final draft report (INTERA or Technical Report) characterizing the brackish groundwater resources of a four-county area, including Victoria County. In his remarks to the Board on June 12, 2026, the District General Manager conveyed that "[b]ased on the results of predictive cumulative drawdowns in the fresh groundwater zones in light of the primary policy objective of incentivizing brackish groundwater development (which is to protect and preserve fresher groundwater resources by producing poorer quality groundwater to meet water demands), management has drafted rule revisions regarding deep-saline non-historic-use production permitting." District management further noted that the "majority of the [rule] revisions to Deep-Saline Non-Historic Use Production Permitting were developed in response to the technical work and resulting reports produced by INTERA, Inc, regarding the expanded characterization of brackish groundwater resources within Calhoun, Jackson, Refugio, and Victoria Counties."

At the same meeting, the Board voted to "temporarily suspend the acceptance, processing, or approval of new High-Capacity Non-Historic Use Production Permits and new Deep-Saline Non-Historic Use Production Permits until the earlier of 1) the Board completing a rulemaking process revising the high-capacity and deep-saline production permitting regulations, or 2) January 31, 2027."

Currently, the POV holds the only VCGCD authorization to produce brackish groundwater. On April 2, 2026, the POV applied for 28,000 acre-feet per year from the deep-saline brackish groundwater.

Based on AGS's review of the Proposed Rules, there is a fundamental disconnect between the Technical Report and the Proposed Rule content.

Technical Data Review and Comments

As a general matter, the primary concerns with continued development of brackish groundwater resources in Texas are limiting long-term brackish groundwater depletion and minimizing impacts on fresh groundwater zones. Quantitatively, the concept of “depletion” is assumed to be defined by the amount of drawdown in, and total volume withdrawn from, the brackish zones; the concept of “impact” is assumed to be the amount of freshwater drawdown in the overlying freshwater zones caused by the removal of brackish groundwater. As discussed in more detail below, the Proposed Rules would apply macro-level production limits that do not align with the INTERA Report cited by the District as justification for initiating this substantial rule revision.

None of the INTERA Addendum Reports (INTERA 2026a-c) clarify the general anticipated impact of brackish zone pumping on freshwater drawdown in Victoria County. While several simulations were made, no analysis was performed to draw quantitative conclusions between brackish groundwater production and brackish resource depletion or freshwater reduction. The INTERA Addendum Reports (INTERA 2026a-c) do not provide policy guidance for the Proposed Rules. The INTERA Addendum Reports also do not provide documentation or conclusions to support either the specific limits on deep-saline groundwater production proposed in the Proposed Rules for Victoria County or similar efforts to limit deep-saline groundwater production across three other counties.

Unable to identify any analysis from INTERA or otherwise provided by VCGCD to support the specific rules proposed, AGS conducted its own high-level desktop analysis of brackish and freshwater drawdown in Victoria County. This analysis showed no obvious relationship between brackish zone pumping and freshwater, with limited exceptions in the Maximum Transmissivity and Slightly Saline Zones. Based on the INTERA (2026b) Addendum #1 Report, in the limited areas reviewed, **in certain wells**, there appears to be a linear relationship between brackish and freshwater drawdown for the single well ($r^2=0.98$) and multiple well ($r^2=0.84$) simulations, with a ratio of brackish drawdown to freshwater drawdown of 2.5 and 2.0, respectively. Thus, **for a specific pumping configuration**, INTERA predicts freshwater drawdown is likely to be about half of brackish drawdown. Similarly, INTERA (2026c) Addendum #2 Report results show a linear relationship between brackish and freshwater drawdown for wells in model layers 7-9 ($r^2=0.77$), layers 12-13 ($r^2=0.79$), and layers 14-15 ($r^2=1.0$). However, these specific well pumping locations, rates, assumptions, and respective drawdown correlations do not provide a technical justification for imposing county-wide production limits as proposed by the Proposed Rules.

To understand potential impacts of brackish groundwater production on freshwater drawdown, it is critical to use individual site studies incorporating localized data. It

would be inappropriate to impose a blanket, county-wide, rule that assumes widespread freshwater drawdown when **38%** of well fields in Addendum #2 have freshwater drawdown **less than 5 feet**, **28%** of well fields in Addendum #2 have freshwater drawdown **less than 3 feet**, and **19%** of well fields in Addendum #2 have freshwater drawdown **less than 2 feet** (INTERA 2016c). Plainly stated, there is no technical basis to support Proposed Rules that set county-wide production limits based on well-specific, data-driven freshwater drawdown values at specific wells in specific configurations.

Similarly, given the importance of site-specific data, the VCGCD's zone delineation in the Proposed Rules is also problematic. By mandating in a county-wide rule what total dissolved solids (TDS) zone will be found where, the VCGCD has precluded the opportunity to use better, site-specific data. Allowing applicants to develop and rely upon local data may contradict the Proposed Rule's mandated zones, but this approach would provide more accurate information than a district-wide rule based on limited, interpolated data. This is of particular concern since the extent of a salinity zone could change based on different interpolation methods and assumptions, even relying on identical salinity data.

Any uncertainty in delineation of TDS zones may propagate into the Proposed Rules' water volume calculations for each zone. The Proposed Rules simplify the more detailed INTERA assessment into zones and volumes that do not accurately reflect the technical analysis on which they were supposedly based. For example, in the Proposed Rules, VCGCD presumes the depth to saline groundwater at the Port of Victoria's site is 1,200 ft. However, the INTERA (2026a) Addendum Report, Figures 2-39, suggest that the depth to the base of groundwater where the TDS < 1,000 mg/L at POV's site is deeper, in the range of 1,250-1,500 ft bgs, and is adjacent to property where this groundwater base is located 1,500-1,750 ft bgs (Figure 1).

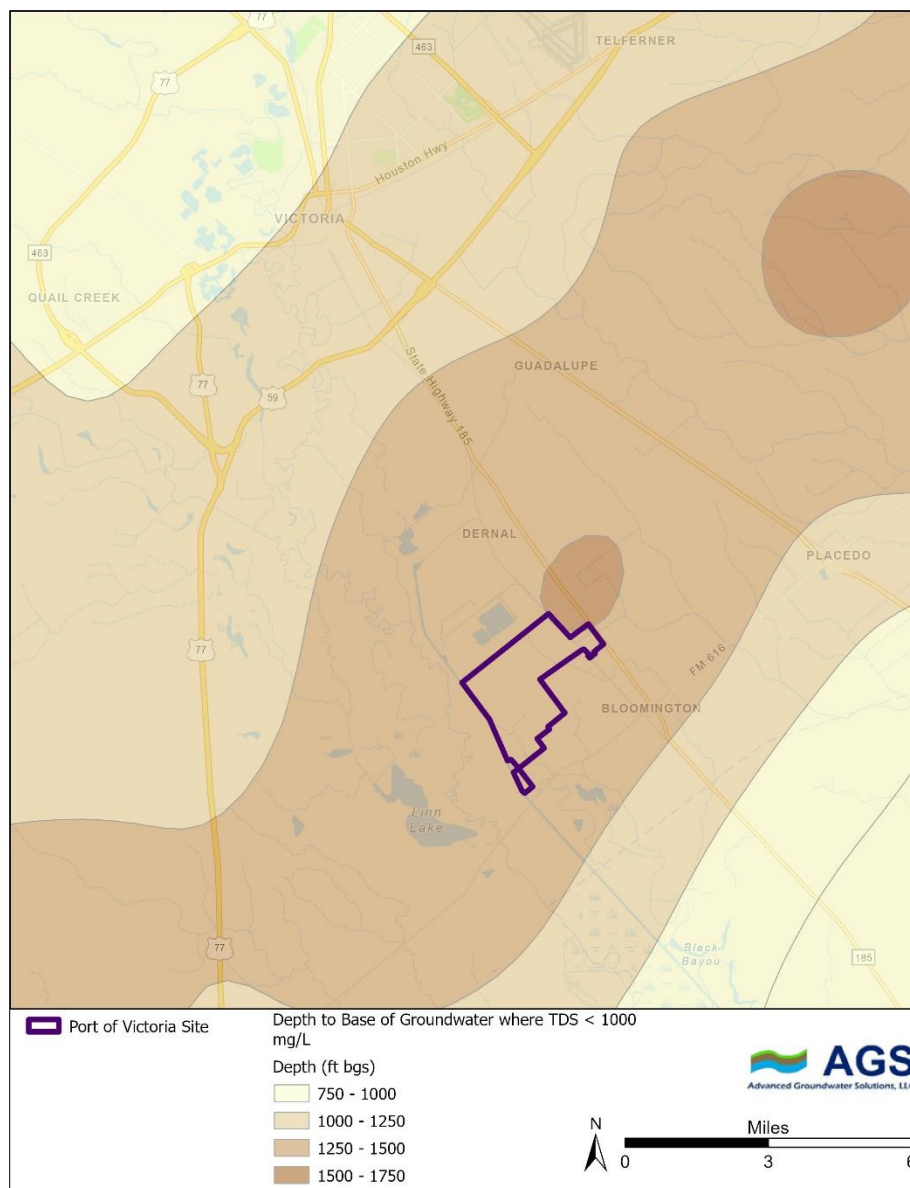


Figure 1. Port of Victoria Site location showing depth to base of groundwater with < 1,000 mg/L TDS (freshwater). Contours shown are based on the INTERA (2026a) Report.

Additionally, in determining water volumes in each zone, the INTERA report used an average porosity of 30%, while acknowledging that porosity varies significantly with depth and sand/clay content. Using more accurate porosity estimates, rather than a fixed 30% porosity, in volume calculations would allow VCGCD to more accurately estimate available water within each salinity zone. Increased technical accuracy is appropriate, especially when establishing a **county-wide limit** on how much brackish groundwater may be produced.

Also, while INTERA (2026c) Addendum #2 does provide results using proposed pumping rates by zone, no quantitative analysis was performed to demonstrate aquifer behavior or generalizable impacts of pumping in these different zones on freshwater drawdown. We

assume that the pumping rates selected for analysis were simple “cause and effect” sensitivity analysis, based on INTERA’s limited sensitivity analysis. In summary, there is no technical justification to support VCGCD transforming the results of a simple sensitivity analysis into Proposed Rules that significantly restrict the use of confined brackish groundwater. The effect of these restrictive Proposed Rules is contrary to the District’s primary policy objective to incentivize brackish groundwater development instead of reliance upon freshwater resources.

As another example of the lack of quantitative linkage between the INTERA report and the Proposed Rules, AGS notes that the pumping rate limits in Addendum #2 are roughly half of those in Addendum #1 and correspond a reduction in pumping rate from the June 2026 version of the Proposed Rules to the July 2026 version. The INTERA Addendum Reports (2026a-c) provide no data or analysis to justify a reduction in pumping based on the simulation results. AGS’s initial analysis of the data provided in INTERA Addendum Reports 2026b-c shows that decreasing the brackish zone pumping rate did not necessarily lead to less drawdown. The average brackish drawdown from wellfields in the Maximum Transmissivity / Slightly Saline Zones as well as the freshwater drawdown in the Maximum Transmissivity / Moderately Saline Zones both decreased by 10% with the higher pumping rate. According to INTERA’s provided results (2016b-c), restricting pumping rates did not consistently result in less impact (lower average drawdown). This emphasizes the lack of proper justification in the selection of pumping rate restrictions in the Proposed Rules.

Similar concerns were raised in a 2019 review (Uddameri, 2019) of the 2018 “Characterization of Brackish Groundwater Resources in Victoria County” INTERA Report (2018). There, the technical reviewer noted that the modeling effort “...does not include pertinent processes that affect the movement of saline groundwater. Caution must, therefore, be exercised when translating the model results to policy formulations...” (Uddameri, 2019).

Consistent with the preceding comments, AGS remains concerned about the Proposed Rules from a technical perspective. AGS has prepared the following questions and comments relating to Section 6 of the Proposed Rules as well as specific comments on the Proposed Rules. Answers to these questions might allow AGS, on behalf of the Port, to support revised, science-based, rule changes by VCGCD that address either long-term brackish groundwater depletion and/or freshwater zone drawdown caused by production of saline groundwater resources:

- A. What is the technical basis for the designation of the three new Deep-Saline Special Groundwater Management Zones (e.g., TDS concentrations), and the Deep-Saline Transmissivity Zones (e.g., low, moderate, and high) included in the Draft Proposed Rules?

- B. What is the technical basis for the limits on volumes of water produced from the three Deep-Saline Special Groundwater Management Zones in Rules 6.4(1) – 6.4(6), 6.4(8) – 6.4(10), 6.4.1(2) – 6.4.1(11)?
- C. How will the District evaluate wells based on interaction of the Deep-Saline Special Groundwater Management Zones and Transmissivity Zones?

Comments on Specific Proposed Rules

Attachment B contains detailed comments on the Proposed Rules.

ATTACHMENT A

Documents Reviewed by Advanced Groundwater Solutions, LLC to Assess Victoria County Groundwater Conservation District 2026 Proposed Rules of the District (Proposed Rules)

INTERA 2026a. Characterization of Brackish Groundwater Resources for Calhoun, Jackson, Refugio, and Victoria Counties.

INTERA 2026b. Characterization of Brackish Groundwater Resources for Calhoun, Jackson, Refugio, and Victoria Counties Addendum #1. Simulation of Drawdowns Caused by Large-Scale Production.

INTERA 2026c. Characterization of Brackish Groundwater Resources for Calhoun, Jackson, Refugio, and Victoria Counties Addendum #2. Simulation of Drawdowns Caused by Brackish Groundwater Production.

INTERA 2019. Deep Saline Groundwater Development Rule Narrative.

Victoria County Groundwater Conservation District 2026a. 2026 Proposed Rules of the District. June 2026.

Victoria County Groundwater Conservation District 2026b. 2026 Proposed Rules of the District. July 2026.

Victoria County Groundwater Conservation District 2026. Resolution and Order No. RES-20260612-01 of the Victoria County Groundwater Conservation District Declaring A Temporary Moratorium on Processing Applications for and Consideration of High Capacity and Deep-Saline Production Permits.

ATTACHMENT B

Advanced Groundwater Solutions, LLC

Comments on

2026 Proposed Rules of the District (Proposed Rules) by Victoria County Groundwater Conservation District

August 24, 2026

COMMENT NUMBER	VCGCD RULE NO.	AGS COMMENT(S)	SUGGESTED RULE REVISION
1	RULE 1.1 – DEFINITION OF DEEP-SALINE SPECIAL GROUNDWATER MANAGEMENT ZONE	The proposed definition is problematic because the designation of a deep-saline special groundwater management zone turns only on clay thickness in upper half of slightly saline strata, while ignoring clays that may be present deeper, relevant for projects targeting deeper zones.	DEEP-SALINE SPECIAL GROUNDWATER MANAGEMENT ZONE means a special groundwater management zone that is not subject to a Desired Future Condition (DFC), as adopted by the district, and that is comprised of a water-bearing stratum within the jurisdictional boundaries of the district that: - contains saline groundwater existing below the middle depth between the 1,000 TDS contours and the 3,000 TDS contour as illustrated in Figure 1a, and - where at least 100 feet of clay thickness composed from individual clay intervals of 10 feet or greater, as determined by interpretation of core samples or geophysical logs, exists between a) the top of 1,000 TDS contour illustrated in Figure 1 and b) the top of the proposed production interval for a deep-saline groundwater project.
2	RULE 1.1 – DEFINITION OF DEEP-SALINE SPECIAL GROUNDWATER MANAGEMENT ZONES (Designated by the District)	Slightly saline groundwater has a TDS of 1,000 to 3,000 mg/L, as defined by the Texas Water Development Board and elsewhere in the VCGCD proposed rules. The TDS concentration range in the definition of SLIGHTLY SALINE GROUNDWATER ZONE and in the definition of DEEP-SALINE SPECIAL GROUNDWATER MANAGEMENT ZONES should be consistent with the definition of SLIGHTLY SALINE GROUNDWATER in the proposed definition of GROUNDWATER QUALITY CLASSIFICATION. The figures attached to the Proposed Rules only show salinity zone depth estimates based on existing data and may not reflect actual in-the-well, or measured, salinities when a new well is drilled. The District should allow site-specific data to alter its default zone designations.	DEEP-SALINE SPECIAL GROUNDWATER MANAGEMENT ZONES that are not subject to a DFC, as adopted by the district, are limited to: - SLIGHTLY SALINE GROUNDWATER ZONE means the deep-saline special groundwater management zone with groundwater with a total dissolved solids concentration 1) equal to or greater than one thousand milligrams per liter (1,000 mg/L) and 2) equal to or less than three thousand milligrams per liter (3,000 mg/L). - MODERATELY SALINE GROUNDWATER ZONE means the deep-saline special groundwater management zone groundwater with a total dissolved solids concentration 1) greater than three thousand milligrams per liter (3,000 mg/L) and 2) equal to or less than ten thousand milligrams per liter (10,000 mg/L). - EXTREMELY SALINE GROUNDWATER ZONE means the deep-saline special groundwater management zone groundwater with a total dissolved solids concentration 1) greater than ten thousand milligrams per liter (10,000 mg/L).

COMMENT NUMBER	VCGCD RULE NO.	AGS COMMENT(S)	SUGGESTED RULE REVISION
		The spatial extents of the default deep-saline groundwater management zones must be depicted on maps to be published and updated on the District's website (with a 30-day notice of the updated map). The figures and references to maps in the Proposed Rules should be removed.	
3	RULE 1.1 – DEFINITION OF TERMS – DEEP-SALINE TRANSMISSIVITY CATEGORY	See comments in RULE 1.1 -DEFINITION OF DEEP - SALINE TRANSMISSIVITY ZONE below.	Delete proposed category and definition
4	RULE 1.1 – DEFINITION OF DEEP-SALINE TRANSMISSIVITY ZONES	There appears to be a significant variability in impacts within proposed transmissivity zones and no explanation of how the sensitivity analysis was used to develop this provision. In the INTERA Report, significant differences can be seen in the predicted drawdowns in wellfields across the four counties covered by the INTERA report that are all within the moderate transmissivity category. Because these modeled wellfields are all identical, the differences in the impacts are presumably due to the difference in transmissivity and vertical hydraulic conductivity between the low end of the moderate category (1,000 ft ² /d) compared to the high end of the moderate category (5,000 ft ² /d).	Delete proposed zone and definition rule 1.1.
5	RULE 2.3 – WELL SPACING REQUIREMENTS OF DEEP-SALINE WELLS	At present, the District has provided no technical information based on the aquifer characteristics to support changing spacing from 1 ft/gpm to 0.5 ft/gpm. Before imposing increasingly stringent spacing limitations that restrict use of a brackish water resource that is a viable alternative to fresh groundwater production, the District should provide a reasonable technical basis for its proposed revision.	Delete proposed changes to rule 2.3.
6	RULE 6.2 (13 and 14) – GENERAL PROCEDURES RELATED TO NON-	For large projects with multiple wells, one year is insufficient. The Proposed Rule should allow for sufficient time to install wells. For example, a conservative timeframe for completion of a project with 6 deep wells is up to two years and may extend to	13. The owner of groundwater resources of a permit associated with a proposed well shall be subject to cancellation if well construction is not commenced within the two-year anniversary date of issuance of the production permit by the District. The District may extend commencement of well construction on a case-by-case basis.

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	HISTORIC USE PERMITTING	three or more years, depending on regulatory and technical issues that can arise with the planning and installation of the wells.	14. Delete proposed language relating to automatic surrender of permit and completion of 90-day registration.
7	RULES 6.3 (1.4.1, 1.4.2, 1.5.4.1, and 1.5.4.2) – SPECIAL POLICIES RELATED TO HIGH CAPACITY NON-HISTORIC USE PERMITTING	Applicants who wish to produce brackish, instead of fresh, groundwater make significant investment to avoid freshwater pumping and impacts. It is important that these beneficial projects not be curtailed by small and uncontrollable changes in water quality. Changes in salinity occur normally in many large-scale production wells or well fields for a variety of reasons, including natural variability. Changes in water quality in a well can occur during a multi-hour pumping event or as water level decline occurs in an aquifer over the life of a wellfield. These changes may be associated with volume of groundwater produced from zones of varying water quality, or due to other factors, and changes can occur over hours, days, months, or years. Changes in water quality do not mean that the aquifer has been damaged. This rule would add significant risk to investments in all brackish groundwater development, which is contrary to the District’s primary policy objective of conserving and reasonably regulating the development of fresh groundwater resources within Victoria County.	Delete proposed changes to rule 6.3 (1.4.1, 1.4.2, 1.5.4.1, and 1.5.4.2).
8	RULE 6.4.1 SPECIAL POLICIES RELATED TO DEEP-SALINE NON-HISTORIC USE PERMITTING	The existing limits in the VCGCD rules on deep-saline groundwater production are already strict when considered across the entire District, and it is premature to further restrict this type of production before any deep-saline groundwater wells have been installed. Zones are not static, and the Proposed Rule does not allow for adjusting limits based on changing conditions There is no technical justification or correlation to explain the difference between INTERA’s quantitative analysis and the VCGCD’s Proposed Rule.	Delete proposed changes to rule 6.4.1.

COMMENT NUMBER	VCGCD RULE NO.	AGS COMMENT(S)	SUGGESTED RULE REVISION
9	RULE 6.4.2.	See comment under RULE 6.4.1 above.	Delete proposed changes to rule 6.4.2.
10	RULE 6.4.3.	See comment under RULE 6.4.1 above.	Delete proposed changes to rule 6.4.3.
11	RULE 6.4.4.	It is not clear if this Proposed Rule applies to an individual well or to an entire well field. In addition, it is not clear what the purpose this limitation is, as the only specification in the Proposed Rules with respect to this two-year period is that the restriction may be lifted after one year if all performance conditions are met (Proposed RULE 6.4.7). However, the performance conditions specified in RULE 6.4.12 appear to apply for the length of the permit. If that is true, then it would serve no purpose to restrict production during the first two years to determine whether performance conditions are met.	Delete proposed changes to rule 6.4.4.
12	RULE 6.4.5.	See comment under RULE 6.4(4) above.	Delete proposed rule 6.4.5.
13	RULE 6.4.6.	See comment under RULE 6.4(4) above. In addition, although worded as applying to “moderately” saline groundwater, this rule appears to apply to extremely saline groundwater, since moderately saline groundwater is addressed in RULE 6.4.5.	Delete proposed rule 6.4.6.
14	RULE 6.4.7.	The rule fails to consider the significant, technical investment made in an approved deep-saline permit.	Delete proposed rule 6.4.7.
15	RULE 6.4.8.	It is unclear to AGS how this overlap is determined	Delete or clarify and repropose for public comment
16	RULE 6.4.9.	It is unclear to AGS how this overlap is determined	Delete or clarify and repropose for public comment
17	RULE 6.4.10.	It is unclear to AGS how this this overlap is determined	Delete or clarify and repropose for public comment
18	RULE 6.4.12.3.	Changes in TDS over time are normal and not indicative of aquifer damage. This variability poses the highest risk to a permittee, who must treat the water.	Delete.
19	RULE 6.4.12.4.	The undefined concept of “average” lacks technical support in this context. As stated above, changes in TDS can occur over short or long-time periods. Changes in TDS over time are not indicative of aquifer harm damage. This variability poses the highest risk to a permittee, who must treat the water.	Delete proposed rule 6.4.12.4.
20	RULE 6.4.12.5.	It is unclear why modeled drawdowns are mentioned here. Model results often vary from observed drawdowns/water levels, particularly in aquifer models with limited real-world data. If adopted, any Proposed Rule should be based on <i>monitored</i> water	Delete proposed rule 6.4.12.5.

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		levels only. Permittees should only be required to monitor and report measured water levels.	
21	RULE 6.4.12.12.	VCGCD has provided insufficient technical information to justify this Proposed Rule. AGS has multiple questions: - Does the district have active monitoring? - What is baseline? - How will the district determine responsibility for subsidence and assign it to permit holders? - What is the basis for 1 foot of subsidence metric? AGS suggests that the District develop reasonable technical information before proposing any similar rule.	Delete proposed rule 6.4.12.12.
22	RULE 6.4.13.	This proposal is identical to 6.4(11).	Delete proposed rule 6.4.13.
23	RULE 6.4.3.1. SPECIAL MONITORING AND REPORTING REQUIREMENTS RELATED TO PERMITTING DEEP- SALINE NON- HISTORIC USE	This Proposed Rule requires more monitoring wells than the number of production wells in a project. It is unreasonable to require more monitoring wells than production wells for deep-saline wells/projects. In addition, this Proposed Rule would require at least three monitoring wells, but subsequent rules only detail the requirement for one or two wells, depending on permitted production volumes. RULE 6.4.3.2 specifies at least one well within 300 feet of a deep-saline well and RULE 6.4.3.3 specifies at least one well within 100 feet of the tract boundary <u>if</u> the authorized production amount is greater than 2,000 ac-ft/yr. There is no technical basis for requiring a minimum of three monitoring wells in certain Proposed Rules but only one or two wells in other Proposed Rules.	Delete proposed rule 6.4.3.1.
24	RULE 6.4.3.2. SPECIAL MONITORING AND REPORTING REQUIREMENTS RELATED TO PERMITTING DEEP- SALINE NON- HISTORIC USE	It is unreasonable to require at least one monitoring well for every deep saline well in a project in addition to a monitoring well at the property boundary. VCGCD has provided no technical justification for requiring an applicant to make such an extraordinary investment in monitoring wells.	Delete proposed rule 6.4.3.2.

COMMENT NUMBER	VCGCD RULE NO.	AGS COMMENT(S)	SUGGESTED RULE REVISION
25	RULE 6.4.3.11. SPECIAL MONITORING AND REPORTING REQUIREMENTS RELATED TO PERMITTING DEEP- SALINE NON- HISTORIC USE	This Proposed Rule is so unclear as to make technical compliance impossible.	Delete proposed rule 6.4.3.11.
26	RULE 6.4.4.1 – 6.4.4.2.2. SPECIAL OPERATIONAL REQUIREMENTS RELATED TO PERMITTING DEEP_SALINE NON-HISTORIC USE	These Proposed Rules relate to the failure to achieve performance conditions of a production permit and assign additional costs, including requiring a permittee to submit a hydrogeological report. The VCGCD does not provide technical basis for the suggested performance conditions or response actions.	Delete proposed rules 6.4.4.1 – 6.4.4.2.2.