MODERN GEOSCIENCES
TRUSTED ENVIRONMENTAL ADVISORS

DATE July 11, 2025

ATTN Texas Commission on Environmental Quality
Remediation Division
12100 Park 35 Circle, Building D
Austin, Texas 78753
Merrie Smith, PG; Deputy Director Remediation Division

SUBJECT **Comments - "Determining Which Releases are Subject to TRRP"** (Revised March 2025; RG-649)

With the upcoming *Information Session* set for July 23, 2025, Modern Geosciences, LLC (Modern) has coordinated with a variety of other affected stakeholders to provide questions and comments regarding the above guidance (TRRP Memo) and recent experiences with its implementation in advance of the event. These accumulated comments and questions are included as an attachment to this letter.

To briefly summarize the communication that led to the revision of the previous TRRP Memo (November 19, 2010), Modern prepared two research papers for publication and provided all the relevant research supporting the papers to the Texas Commission on Environmental Quality (TCEQ) in 2024 in conjunction with meetings in February, June, September, and November. Through this effort, it was demonstrated that the use of existing United States Geological Survey (USGS) soil data and statistical methodology recommended by the U.S. Environmental Protection Agency (EPA) would immediately offer defensible Background Threshold Values (BTVs) for screening metal concentrations in soil. While Modern, and the stakeholders we worked with, certainly appreciate the efforts of the TCEQ, the updated TRRP Memo falls well short of the goals discussed in our meetings.

It is hoped that TCEQ will emphasize during the *Information Session* that "this process applies to **releases** that occur under the jurisdiction of a TCEQ Remediation Division program[1]." Therefore, if no release is suspected, the Texas Risk Reduction Program (TRRP) does not apply and even screening under the TRRP Memo is unnecessary (as the TRRP Memo's title appears to imply).

Unfortunately, the TRRP Memo as currently written, does not assist a person in making this initial release determination decision with regard to naturally occurring metals or metalloids in soil. This is because TCEQ has elected to present median values (50th percentiles) as part of the screening process with regard to ambient metals in soil – *even though TRRP may not apply*. To this point, the regulated community should not be required to depart from common sense when making this first crucial evaluation and by applying a value that is immediately unrepresentative to at least half of Texas. Accordingly, it is only reasonable that the regulated community assume something is background until it is found to be outside of a reasonable range of values (i.e., BTVs).

[1] *Determining Which Releases Are Subject to TRRP*. RG-649. TCEQ. March 2025.

With regard to metals in soil, the screening approach dictated by the TRRP Memo may be convenient for TCEQ staff, but it is enormously inconvenient to the regulated community *writ large*. However well-meaning this approach may have been, it has conflated the questions of "**is there a release?**" with "**is there a release that is subject to TRRP?"** for over two decades. This legacy decision has unintentionally ensnared an extremely large population of projects where no release is suspected and TRRP is obviously not applicable[2]. Worse yet, TCEQ has now created such confusion for the regulated community with this TRRP Memo that many parties will innocently submit their data supporting a "no release" determination to TCEQ, only to have TCEQ staff *inappropriately* apply median values that TCEQ is fully aware[3] were never intended for screening a release. It is time for this confusion to cease as it stalls economic development, creates regulatory burdens that waste TCEQ resources and untold public resources, all while offering zero risk benefit to a single Texan.

However, if one were to be forced to consider "background" exclusively within the domain of TRRP, TCEQ needs to recognize that this too anticipates more nuance than that enumerated in the current TRRP Memo. As outlined in previously provided material, TRRP anticipates[4] and allows[5] the use of background threshold values for naturally-occurring metals. This is also consistent with TCEQ's existing policy to not allow application[6] of the median values represented by the Texas-Specific Soil Background Concentrations (TSSBCs) for release determination under the Innocent Owner/Operator Program. Our prior research clearly demonstrated the unnecessary costs, confusion, and wasted efforts felt across the entire regulated community as a result of TCEQ requiring the use of median values for screening purposes. Thankfully, there are available solutions that already work with TRRP and require neither rule changes or "site specific" background studies[7].

As there was no previous opportunity for stakeholder input during the most recent guidance development, it is our hope these comments can inform future updates to the TRRP memo, if not aid TCEQ's implementation of the TRRP Memo to allow "flexibility" promised[8] under TRRP. Given the institutional knowledge challenges facing TCEQ currently[9], it is highly recommended TCEQ reconvene the *TRRP Steering Committee* (disbanded in 2012) and

[2] See §350.2 and §350.3
[3] TRRP Preamble (1999) TCEQ – "there is no scientific basis for drawing inferences about the distribution of background concentrations on a specific affected property based on a value which represents a median concentration for the entire state."
[4] TRRP Preamble (1999) clarification included "The goal(s) of the new program … to complete the **movement away from background as a regulatory standard**." To "improve protection of human health and the environment while **enhancing flexibility and cost-containment for the regulated community**." "The TRRP **allows** persons to use the "Texas-Specific Background Concentration;" **it is not a requirement…and are not intended to represent the range of background concentrations** likely to be encountered on each site subject to this rule." "From the geostatistical point of view, **samples taken away from that location can still be used to estimate the "background" concentrations** present at sample locations (at points) within an area of concern prior to waste management activity or releases within that area."
[5] 350.51(l) "The executive director may approve the use of statistical or geostatistical methods to determine representative concentrations of COCs at the affected property or **within areas representative of** site-specific background conditions
[6] TCEQ RG-382 (April 2008) "**Texas median background values should not be utilized**."
[7] Note: To require large portions of the State to repeatedly perform "site-specific" background determinations as part of their initial release screening is unnecessarily punitive given that highly-defensible data is available to TCEQ and peer-reviewed alternatives are freely available to the public.
[8] "Flexibility" is mentioned over 100 times in the 1999 TRRP preamble.
[9] "TCEQ's vacancies, turnover, and loss of expertise are not sustainable, and key staff shortages may delay economic development." TCEQ's "turnover rate has created an unfortunate reality where over 50% of staff have less than four years of experience. Concurrently, 30% of our current workforce is eligible to retire in this biennium." – *TCEQ Biennial Reports to the 87th and 89th Legislature (2022, 2024)*

consider creation of a *TRRP Ombudsman* to ensure there are more opportunities for stakeholder involvement in the future.

It is important that we stress to TCEQ that during the course of gathering input from municipal, state government, and private sector representatives for this letter, many expressed legitimate concerns that TCEQ would be punitive on future project submissions if they responded individually. As a result, many comments are provided herein from interested parties that do not feel they can offer constructive feedback directly to TCEQ. For this reason, it is requested the provided comments be included with others received by TCEQ during the forthcoming *Information Session* when written answers are issued.

Closing

Thank you for the opportunity to share these comments, concerns and questions. This feedback is offered out of the sincere hope that it will be helpful to ensuring TRRP remains current and its application lives up to the goals outlined by TCEQ in TRRP's 1999 Preamble. If you need any further information, please do not hesitate to contact the undersigned at your convenience.

Respectfully submitted,

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cc:
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❖ Questions & Comments ❖

Impact Area: Application of the TRRP Memo

1. In its current form, RG-649 does not actually provide the formula(s) needed to calculate "Action Levels." This is found at §350.75(b)(1) and requires one to know where it is and how to appropriately use it to develop an "Action Level." What is the basis for TCEQ to believe that it is easier and more accurate for the public to calculate their own PCLs rather than just offering pre-calculated Tier 1 PCLs (as we have had for mercury since 2001)?

2. By emphasizing "site specific" as a limitation for development of background values in the TRRP Memo, the TCEQ has selectively edited out flexibility allowed under §350.51(l). Per §350.51(l), one can rely on samples from the "affected property" or "within areas representative of site-specific background conditions." Since many screening-level efforts may not fully define a "site" boundary or may not have a full historical understanding, this guidance could mislead individuals to falsely believing an arbitrary anthropogenic boundary can play a role in understanding "background." For that reason, using the 2013 USGS data, which employed extreme care to avoid anthropogenic impacts, is actually a much more conservative approach than suggesting a person sample along a roadway or randomly collect discrete samples on a previously developed property. Additionally, TCEQ's assumption that all individuals interested in screening data will have a command of how to appropriately, and independently, apply statistical methods seems very optimistic.

3. Since the flowchart (Page 5 of the TRRP Memo) suggests there will need to be more "site-specific" background studies, is the TCEQ issuing guidance on best practices for developing Background Threshold Values? If not, can the public use ITRC and EPA recommendations and tools such as ProUCL for this purpose? For example, BTV selection criteria outlined in Table 1 here: https://doi.org/10.2113/EEG-D-24-00009 would ensure compliance with EPA's suggested statistical use limitations for a given data set.

4. The TCEQ has recently suggested 95% UCLs should be used for background threshold value development in connection with the application of RG-649. This is inconsistent with ASTM, ITRC and EPA recommendations. Will there be a basis document supporting the required use of 95% UCL values that allows stakeholder review?

5. In connection with a project applying RG-649 under Option 2 (soil excavation), TCEQ has responded that they would not "approve" the Self-Implementation Notice (SIN) for a proposed soil excavation until TCEQ was provided with data to represent the planned backfill soil. Is this going to be a standard practice going forward – especially in light that this is not required under TRRP itself? If so, please explain why the working assumption is that all Texas borrow pits are assumed to be a source impacted media? Will there be guidance on the analytical methods and sampling frequency needed for this work? Also, for those unimproved borrow pits that should expect to encounter naturally-occurring metal concentrations above median values (i.e., half of Texas), will this render their soil unacceptable for all projects without additional assessment and expenses needed to disprove the expected 50% false positive rate to TCEQ's satisfaction?

6. For those that elect to complete groundwater sampling (Option 1) or excavation efforts (Option 2), what is the required reporting format? Also, because this screening will frequently be part of time-sensitive real estate transactions, can the TCEQ commit to an expected review time (i.e., two weeks) for concurrence of submitted material?

7. For parties seeking, and perhaps eventually obtaining, TCEQ concurrence that TRRP is not applicable to a specific site or project area, will this request in itself require a site to now become regulated/listed within a TCEQ database? For example, during a recent pre-construction project a developer noted barium concentrations in soil above the statewide median TSSBCs, but within a reasonable range for background. Because of the confusion generated by the TRRP Memo that lists a median ambient value as being "background," the two parties decided to inquire with TCEQ staff pursuant to the process outlined under RG-649. Will TCEQ require a Core Data Form and similar database information now be filed with TCEQ when the actual site conditions may be naturally occurring? While TCEQ may not feel having a regulatory listing associated with a property is inconvenient, all parties should be aware that possible listings may

result that will now be identified on all future environmental due diligence efforts regarding this property. This is even if the concurrence was being solicited by parties other than the current owner or operator. Given the potential for an added regulatory burden to any party simply seeking concurrence on a confusing screening process, should the TCEQ offer review options that do not add environmental stigma (i.e., brownfields) to unaffected properties?

Impact Area: Stakeholder Involvement Concerns

8. Besides the information and suggestions provided as part of the 'Back the BTV' effort, were there other stakeholders involved in the development of this guidance document? Please note that within information previously submitted to TCEQ, it was demonstrated that the cost implication of having a median-based screening approach on just three (3) responding municipalities was in excess of $500k/year. This TCEQ policy has directly resulted in unimpacted media being disposed in landfills, brownfield projects being discontinued, and countless hours to untangle confusion when there was no release at all. When these costs are extrapolated to the over 1,200 incorporated cities in Texas, state government projects, and tens of thousands of commercial redevelopment projects seen in Texas annually, it is clear the costs of continuing to accept a 50%+ false positive rate is staggering. More importantly, our research found no other state in the nation was willing to begin risk screening at a median value as "background." For these reasons, it is requested more stakeholder voices be included in future policy and guidance decisions.

9. The Texas Board of Professional Geoscientists confirmed in January 2025 that "background" value and Tier 2 PCL development that is reliant on site-characterization data requires oversight of a licensed professional. This is consistent with the Texas Occupations Code §1002.002(3) that outlines that the public practice of geoscience includes: "Consulting, Investigating, Evaluating, Analyzing, Planning, Mapping, Inspecting, and Supervising." Is there an intent to update the TRRP Memo to reference this expectation?

10. The TCEQ uses EPA's 1996 *Soil Screening Guidance* K_d values [§350.73(f)(1)(c)] within TRRP. Is there a reason TCEQ has elected to not follow EPA's guidance to use loamy soil and a pH of 6.8 for developing general screening criteria from this information?

11. While it does not appear that allowance of published data supporting realistic BTVs would need a rule change as these values could supplement the TSSBCs and appear to meet requirements set forth under 30 TAC §350(l), if that is TCEQ's determination, how soon could that process begin?

12. Why was this 'policy" document (2003, 2010, 2024) changed to a "guidance" document with the March 2025 issuance?

Impact Area: Technical Inconsistencies

13. §350.79(2)(A)(iii) requires a false positive rate of 5% for critical PCL decisions and §350.78(c) clearly outlines that "background" serves as our critical PCL when default PCLs, such as $^{GW}Soil_{Ing}$, are lower than "background." Therefore, requiring use of a median value (50^{th} percentile) for naturally-occurring metals for screening fails §350.79(2)(A)(iii) and should not be used unless electively done so by the person. Shouldn't we then consider published work that more accurately reflects background meeting a 5% false positive rate and remains compliant with §350.51(l) for screening purposes?

14. Knowing the median background value for arsenic (5.9 mg/Kg) is not representative for large portions of Texas (i.e., DFW, Austin, Houston, San Antonio), and that calculating a Tier 2/"Action Level" will not result in a value above 'expected' background levels, why would TCEQ not allow use of published literature that is more representative of the given area of Texas?

15. TRRP incorrectly cites the source of the TSSBCs as USGS Professional Paper 574-F from 1975. Are there plans to correct this to USGS Open File Report 81-197 from 1981 so the regulated community can better understand the limits of these data?

16. When selecting an appropriate soil type and/or soil pH, can the person continue to use "appropriate literature" references like the U.S. Soil Conservation Service as outlined in the 2004 TRRP Q&A document and *Establishing Critical Protective Concentration Levels (PCLs) for Lead-Affected Soils* (2001)? TCEQ staff have recently suggested only "site-specific" sampling is now allowed following issuance of the March 2025 TRRP Memo. This appears to be a contradiction to previous TCEQ direction confirming soil pH could "be estimated from literature studies such as U.S. Soil Conservation Service (SCS) surveys." If TCEQ is changing this longstanding policy, will there be a formal review document substantiating the need for this added level of effort that would allow stakeholder input?

17. Has the TCEQ completed a state-wide background study to aid in screening metals in soil? If not, wouldn't the Texas Water Code (§5.1191 & §5.1192) require TCEQ to "make use of any research activities" like the USGS' data and similar published research?

18. Since TRRP had a specific goal (See TRRP Preamble: TX Reg: September 17, 1999) of completing the movement "away from background as a regulatory standard," doesn't setting critical PCLs for initial screening below ambient background levels and only allowing use of a median value from the TCEQ-selected background data set, unless you choose to prepare a background study for every project, fail to meet this goal?

19. Recent peer-reviewed work demonstrated expected state-wide background threshold values of 17 mg/Kg for arsenic and 38 mg/Kg for lead through use of USGS data sets recommended by the EPA for this purpose. What are TCEQ's specific concerns with the use of USGS data now accepted by EPA and multiple other states? Note: The calculated background threshold values are below Residential direct exposure values (i.e., $^{Tot}Soil_{Comb}$) and values TCEQ considers safe for use on our "lawn" and "home garden" under §312.43(a) (1) and (3) [e.g., Arsenic of 41 mg/Kg or Lead of 300 mg/Kg].

20. TCEQ's IOP Guidance (see RG-382) currently prohibits use of the median background values for release determination. Accordingly, why is it acceptable to require the general public to screen with these values when previously noting "there is no scientific basis for drawing inferences about the distribution of background concentrations on a specific affected property based on a value which represents a median concentration for the entire state[10]?"

21. In recent years TCEQ has required further assessment and reporting for values of arsenic and lead that were slightly above the statewide median values provided under §350.51(m). For example, if an example project encountered a lead concentration of 17 mg/Kg and TCEQ accepts the median value of lead to be 15 mg/Kg, how would a 17 mg/Kg concentration not be within an expected Gaussian distribution, and

[10] See TRRP preamble. TX Reg 7578 (September 17, 1999)

therefore within an expected range to reasonably be background? The median value is simply one summary statistic for the larger data set selected by TCEQ and should be understood in combination with other summary statistics. In this instance the 1981 data set selected by TCEQ had a standard deviation of 6.9 mg/Kg. Knowing this, it is unrealistic to believe any sample within at least one standard deviation (21.9 mg/Kg) is automatically a release. If being more realistic, TRRP[11] also allows a demonstration that a given site value be within 100% of the mean (14.2 mg/Kg for the 1981 USGS data set). That value would be 28.4 mg/Kg. For more on the 1981 USGS study selected by TCEQ to include in TRRP please see Table 3 here: https://doi.org/10.1002/vzj2.20294

22. Why is TCEQ now accepting independent calculation of Tier 2 PCLs ("site-specific $^{GW}Soil_{Ing}$ action levels") without agency oversight or review? Up until this guidance document, this level of effort always required TCEQ review (See Remediation Division Regulatory Notice, August 20, 2004) and performance by a licensed professional. It is unclear how this approach continues to ensure the protection of human health and the environment.

23. Why was a pH of 4.9 assumed for Tier 1 ^{GW}Soil PCL development for most metals, yet a pH of 6.5 used for antimony and a pH of 8 used for aluminum, hexavalent chromium, and selenium? Wouldn't it be more appropriate to model a specific set of field conditions, as recommended by EPA, to ensure confounding conservative limitations do not produce overly restrictive screening values?

24. It has been confirmed with the USGS that the 1,200+ soil samples collected across Texas are available for further analysis. Will TCEQ consider obtaining these soil samples and complete a state-led background evaluation for metals, PFAS, PAHs, etc.?

25. TCEQ has historically required all *Tier 1 Ecological Exclusion Criteria Checklists* to be reviewed by TCEQ. Why was the long-standing policy changed for this guidance document to allow independent performance and review?

26. Over 97% of the soil samples collected by USGS across Texas for their 2013 report would not meet our current Tier 1 groundwater-protection PCL of 3 mg/Kg for lead in soil[12]. Knowing this, and that our use of 3 mg/Kg is also 60 times below the same screening value used by EPA[13] (180 mg/Kg), why does TCEQ believe requiring the public to screen with a median value (50th percentile) meets the "appropriate" or "reasonable" threshold required by §350.1?

27. Why did TCEQ decide to have pH-6.8 and pH-4.9 PCLs for mercury, but not for the other common metals? Knowing USCS data[14] confirms that over 95% of Texas soil is more basic than pH-4.9, shouldn't PCLs be based on more representative conditions?

28. Since use of the pH-K_d selections include/require soil assumptions, can the other soil-based variables be adjusted in applying §350.75(b)(1) for porosity, infiltration rates, and related variables?

[11] See §350.79(2)(B)(iii)
[12] None of the USGS would meet the cPCL of 1.5 mg/Kg if the source area was assumed to be larger than ½ acre.
[13] Ref: EPA RSL for "lead compounds" (CAS 7439-91-1) based on the MCL-based "Protection of Groundwater SSL" assuming a Dilution Attenuation Factor (DAF) of 20 (consistent with TCEQ's LDF within the Tier 1 $^{GW}GW_{Ing}$ PCL). Confirmed June 29, 2025.
[14] See https://doi.org/10.1002/vzj2.20294

29. TCEQ has previously confirmed[15] that methods like SPLP "may over predict" leaching. Accordingly, can the TCEQ allow other demonstrations such as 350.75(i)(7)(c), that may be more appropriate, since this also requires sampling of groundwater under Option 1?

30. Given that SPLP fails to perform correctly for anionic metals,[16] has the TCEQ considered updating how leaching demonstrations are performed under TRRP to align with newer EPA and state-derived options?

[15] *Establishing Critical Protective Concentration Levels (PCLs) for Lead-Affected Soils.* August 2, 2001. TCEQ.

[16] Leaching tests with acidic extraction solution were developed for cationic metals and should not be used for certain metallic ions with multiple valance states that behave as an anionic species. Common anionic metals include arsenic, chromium, and selenium. Further, leaching procedures that add acidic solutions may convert the anion to a cation and this would cause an incorrect measurement of the actual leaching potential of the contaminant. For example, hexavalent chromium will react with the acidic extracting fluid of some leaching tests to form trivalent chromium, a less mobile form of chromium. Therefore, that leaching test may underestimate the amount of chromium that would leach from soils contaminated with chromium. See: EPA's *Ground Water Issue, Behavior of Metals in Soils*. EPA ORD 1992, EPA/540/S-92/018 and Wisconsin Department of Natural Resources' *Guidance on the Use of Leaching Testing for Unsaturated Contaminated Soils to Determine Groundwater Contamination Potential.* Bureau for Remediation and Redevelopment, 2003. PUBL RP-523-03.