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AN IN-DEPTH DISCUSSION ON GEOTECHNICAL BASELINE REPORTS AND LEGAL ISSUES

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ABSTRACT: This paper presents a legal and contractual perspective on four issues that are commonly addressed in Geotechnical Baseline Reports (GBRs) and how baseline statements may be viewed by the courts should a claim become elevated to litigation. Each of the four contributing authors (one design engineer, two owners, and one contractor) will present a GBR topic of particular interest to their career, citing examples of their experience with GBRs on that particular topic of interest. The legal perspective on these topics will be presented by John Parnass, an attorney who specializes in trenchless claims, presenting how the courts typically stand on baseline statements within the topic of interest and providing recommendations on how to write baselines that will "hold up" in court. The four GBR topics will include: 1) establishing baselines for boulder obstructions, including rock strengths; 2) establishing baselines for dewatering; 3) determining the legal implication of baselines that are significantly more adverse than the Geotechnical Data Report and boring logs; and 4) whether the written approach to GBRs should trend toward the more descriptive or the more concise.

1. INTRODUCTION

The stated objective of a Geotechnical Baseline Report (GBR) is to define and allocate the risks associated with subsurface excavation.[1] In theory, the GBR works in tandem with the Differing Site Condition (DSC) Clause in the Contract Documents to provide a mechanism for the contracting parties to identify any truly unanticipated conditions that may be encountered and pay the contractor an equitable adjustment for costs incurred to complete the work.

While sound in theory, this objective can be thwarted by the Design Engineer's use of language in the GBR that the courts will either disregard as unenforceable or interpret as vague or ambiguous. Because the GBR and similar documents[2] are, fundamentally, Contract Documents (or are treated as such for purposes of determining as-bid subsurface conditions), the courts have developed a body of rules and principles applicable to the interpretation of geotechnical documents. Achieving the stated objective of the GBR thus depends not only on the technical

[1] *See* Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines (American Society of Civil Engineers 2007).
[2] While this paper focuses on the GBR, the courts in the United States in fact have not yet decided any DSC case arising from the project's use of a GBR. More commonly, the courts have been asked to interpret an array of other geotechnical data reports, miscellaneous soils reports, geotechnical design summaries, specification language, boring logs and test pit data.

expertise of the Design Engineer, but also on careful consideration of how the courts actually interpret the engineer's work product. With knowledge of the courts' approach to the interpretation of GBRs, the Design Engineer can create a document that achieves its central purpose. Without such knowledge, however, Owners and their engineers sometimes resort to terms and conditions in GBRs that they may ***believe*** are useful in clarifying the allocation of risk or shedding liability for a particular condition only to discover later in court – the hard way – that such terms and conditions don't mean what the Design Engineers and Owners think they mean.

The purpose of this paper is provide a brief summary of four topics that are commonly addressed in GBRs and describe from a legal perspective how baseline statements may be viewed by the courts should a claim become elevated to litigation. An expanded discussion of each topic, including recommendations on how to write baselines statements pertaining to each of the four issues, will be presented at a Round Table Discussion held at the 2011 No-Dig Show in Washington, DC. For a more detailed written analysis of similar topics, please see *Parnass and Staheli* (2010).[3]

2. BASELINES FOR BOULDERS

How should boulder obstructions be baselined? Should rock strengths be given for boulders and/or cobbles?
- *Mark Hutchinson, Owner*

Boulders are a commonly baselined item that if incorporated properly into a GBR, can define a level of shared risk between the Owners and Contractors, ensuring Owners are protected against invalid claims while simultaneously ensuring that Contractors receive a fair price for their work. However, if done poorly, boulder baselines can be detrimental for all parties involved. The primary excavation risks associated with boulders depend on boulder size relative to the excavation diameter, the boulder and/or cobble quantities/frequency, and the unconfined compressive strengths of the boulders and/or cobbles.[4] Typically, a properly baselined item must be measurable in the field in order to adequately make a determination of responsibility, a factor which becomes even more important when boulders or boulder obstructions are listed as a pay item. This can lead to confusion when interpreting GBRs which use unclear or generalized language, including statements such as "It should be anticipated that up to 10 boulders, as large as three feet, could be encountered,"[5] or more generally, "multiple boulders may be encountered." It can be assumed that if a Contractor or Owner find multiple interpretations of a given baseline statement, the courts will too. This variability in interpretation is rarely favorable to the Owner, and may not always be favorable to the Contractor.

In order to properly baseline boulders, a decision must be made by the Owner and/or Design Engineer regarding the size of the boulder that will be considered "out of contract." It is important to note that, depending on the size of the boulder and the size of the machine, not all boulders may be obstructions. A boulder is only an obstruction if it stops the forward progress of the machine. If boulders of a particular size can be successfully excavated by a machine, it may not be necessary to baseline those boulders. However, if due to the restrictions on the machine size, boulders of a particular size cannot be excavated, these are the boulders that will obstruct the forward progress of the machine, and are extremely important to baseline as they markedly impact the bid price.

There are several indirect ways of determining quantity/frequency, including boulder volume ratio methods and probabilistic methods, but the selection of the method should include consideration of the quality and quantity of data available, as well as the size of the project.[6] Both favorable and unfavorable determinations may have significant impacts to the project in terms of cost and risk.

Rock strength determination, which is typically based upon unconfined compressive strengths from geotechnical testing, is often more complex to baseline. It should be noted that setting a baseline number for unconfined compressive strength of cobbles or boulders on trenchless projects (other than large diameter conventional tunneling) is very rare. Setting rock strength baselines too low may lead to excessive back-end costs (i.e. change orders) for Owners. Setting baselines too high may lead to accusations regarding the constructability of projects.

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[3] *See* Parnass & Staheli, The Legal Impact of Geotechnical Baseline Reports (North American Society for Trenchless Technology 2010).
[4] *See* S.W. Hunt & D.E. Del Nero, Two Decades of Advances Investigating, Baselining and Tunneling in Bouldery Ground (International Tunneling Association 2010).
[5] *See* Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines (American Society of Civil Engineers 2007).
[6] *See* footnote 3

Deciding not to include rock strengths is also an option, but may lead to variable interpretation by the courts to what may be considered ***reasonable*** for the anticipated conditions. Please note that the Contractor's interpretation of the indications represented in the Contract Documents need not necessarily be the best interpretation or the only interpretation, but a reasonable interpretation.[7]

From a legal standpoint:

The need for a clear cobble and boulder baseline is illustrated by looking at what has occurred on projects without a baseline. Traditional geotechnical investigation by vertical boring can be a hit or miss enterprise simply because of the random distribution of rocks. As a result, it is common for a vertical bore rig or auger rig not to encounter rock during the subsurface investigation, particularly if only conventional methods are used.

The absence of encountered rock in this process has lead to unanticipated legal risk for Owners and their Design Engineers. The typical scenario goes like this: the Owner funds a finite set of borings, the boring logs don't reveal any encountered rocks and the boring logs are included in the geotechnical data report (GDR) for bidders to review. At the same time, the Contract Documents normally contain some version of the following common sense warning: "the test borings should be considered applicable only to the test boring locations on the dates shown, and it should be assumed that these conditions may be different at other locations or at other times"[8]

This approach of presenting the borings subject to a general statement that the borings should not be extrapolated can result in owner liability because the courts sometimes set aside the general language and give greater deference to the borings themselves.[9] As a result, while the Owner may think they have covered the issue with a general disclaimer, the net result of this approach has often been to find the Owner liable for rock conditions precisely because they were not encountered in the borings.[10]

Because the cases just discussed didn't involve GBRs – and in fact there are virtually no court cases yet in the U.S. interpreting true GBRs – it would be a mistake to assume that this same traditional deference to borings as the most accurate characterization of subsurface conditions will continue as GBRs are used more routinely. First, recent advances in boulder volume ratio, probabilistic or other equivalent correlation methods will tend to supplant the raw boring data as the primary contract indication. Second, and for present purposes more important, the GBR by its nature is intended to supersede individual boring or investigative data in order to present an assumed contractual baseline for bidding on a level playing field. This development is a promising one, because it has the potential for moving the industry beyond the traditional trap described above in which the Contract Documents contain mixed signals and ambiguous data subject to varying interpretations.

To take full advantage of this GBR potential, it is difficult to discuss how to baseline in the abstract because the tunnel diameter, soil type and specified machine and cutter head all play a role in the constructability of the project. Therefore, we will discuss baselining options for four common parameters – boulder size, boulder quantity, boulder strength and boulder distribution– in the context of a hypothetical project having these guidelines: in Glacial Till, with an outside diameter of 48 inches, using a slurry shield MTBM with a combination cutter head (for actual cases, other parameters may need to be baselined including boulder shapes, cobble and boulder clusters-nests, rock mineralogy, Cerchar abrasivity, matrix shear strength and more).

Boulder Size: to be effective, the size baseline should clearly differentiate between two things: boulder sizes the Contractor is expected to be able to mine through without obstruction vs. boulder sizes that if encountered and measured will greatly impact the forward progress of the machine and may give rise to extra compensation.

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[7] *Maffei Bldg. Wrecking Corp. v. United States*, 732 F.2d 913, 917 (Fed. Cir. 1984).

[8] *Whiting-Turner/A.L. Johnson Joint Venture v. General Servs. Admin., GSBCA 15401 at 20 (Dec. 5, 2001).*

[9] *Appeal of Bay West Inc. ASBCA No. 54166 (April 25, 2007) ("It has long been the rule that contract borings are the most significant indicator of subsurface conditions.").*

[10] *Alps Constr. Corp. ASBCA No. 16966 (1973) ("Bidder's interpretation that project site would contain at most small pieces of various kinds of rock up to 5" was reasonable; rejecting Government's argument that interpretation was unreasonable because bidder should have known that the small pieces were the largest size that could be extracted with the 6" drill tube -- ("Nowhere in the documents furnished bidders was the size of the tube mentioned . . .")*

Boulder Quantity: in baselining quantities, it is equally important to specify that any and all quantities – whether one, ten, one hundred, or one thousand – of boulders not exceeding the size limit described above are required to be excavated/mined through by the Contractor without extra time or compensation. While this may seem obvious, the failure to make this assumption explicit will lead to disputes. As for larger boulder sizes, it is important to note that the baseline will set the number of times an intervention is expected to allow forward progress of the machine which will have a large impact on the overall bid price. This is truly where the “risk sharing” part of the GBR comes into play.

Boulder Strength: In considering whether and how to specify rock or boulder strengths, there are competing considerations. First, before specifying any given rock strength baseline, the GBR author should consider the question as to whether a rock above the baselined strength would actually obstruct or impede the Contractor’s progress. If not, the GBR could choose not to specify that proposed rock strength or perhaps any strength. As one large Pacific NW owner characterizes it: “Also note that detailed soil/rock descriptions are not necessary if those conditions will not impact the contractor’s construction activities.” [11] Including a rock strength baseline would seem to violate the ASCE Guidelines’ suggestion that topics to be baselined should be kept to a necessary minimum. Providing such a baseline would provide an incentive for the Contractor to collect and test rocks merely to identify the existence of a DSC whether or not the DSC actually stopped the progress of tunneling.

The authors of this paper, however, do not all fully agree on whether and how to baseline rock strength. These differences will be aired at the panel discussion. One view is that maximum boulder strengths should be baselined to help ensure that cutters and rock crushers can handle the expected hard rocks. A histogram of boulder strengths should be baselined when sufficient data exists and when many boulders are expected, e.g. for boulder volume ratios over 1% with sufficient tunnel volume to result in a total number of boulders over 100. Boulder encounter risks should be carefully considered when determining how boulder strengths should baselined. Where many boulders are expected, sufficient sampling or data from previous investigations is necessary during the subsurface investigation to provide enough data for a valid histogram. The contrary view is that while a histogram is a useful source of data and thus can be included in the GDR, it should not be included in the GBR because it provides no true single baseline but instead is subject to conflicting interpretations.

Boulder Distribution

The distribution of boulders or cobbles and boulders is a difficult item to baseline. Baselining of specific locations is not practical and should not be attempted. Several distribution conditions can be baselined. First, different geologic units can be baselined to have different boulder volume ratios. When combined with a profile, the contractor can expect to encounter higher frequencies of boulders when tunneling in a unit with a higher boulder volume ratio. Second, cobble and boulder concentrations can be baselined. This might be done by proximity to bedrock (.e.g. within 10 feet), identification of a lag zone along the interface of two geologic units or at an end-moraine, or third by randomly indicating that a certain number of concentrations of a defined size and volume may be encountered within certain geologic units.

3. BASELINES FOR DEWATERING

How should groundwater conditions be baselined to minimize misunderstanding and to facilitate risk sharing?

- *Steven Hunt, Design Engineer*

Baselining groundwater is difficult because there are many potential attributes to baseline. Hydrogeologic parameters, which include groundwater levels within one or more aquifers, permeability, storage coefficients and specific capacities, are independent of construction activity and do not vary based on a Contractor’s means and methods. Groundwater behavior, including seepage velocities and inflow rates to excavations, are dependent on construction activities such as excavation size, depth, ground support system, ground improvement, dewatering

[11] WSDOT Geotechnical Design Manual (January 2010); http://www.wsdot.wa.gov/publications/manuals/fulltext/M46-03/Chapter23.pdf .

systems, time involved, etc. Generally, only one or the other of these two types of parameters would be baselined, as including both may lead to inconsistencies as Contractor's means and methods vary.[12]

Perhaps the two most commonly baselined groundwater attributes are hydraulic conductivity (permeability) and inflow rates. Hydraulic conductivity is a measurable hydrogeologic parameter independent of Contractor means and methods, while inflow rates are construction-dependent. For that reason, baselining both should be avoided. Some Design Engineers prefer to baseline hydraulic conductivity, as inflow rates may be calculated from the provided values for any given construction scenario after determining many other input parameters including: aquifer extent, groundwater heads, aquifer confinement, radius of influence, effects of ground improvement and ground support system/lining permeability, time to steady state flow, etc. Hydraulic conductivity is given as a velocity, and may be presented as a baseline value.

Some designers prefer to baseline potential inflow rates. To establish reasonable values the designer must make many parameter selections as discussed above including many that are related to contractor means and methods. Misunderstandings can occur if the assumptions in the baseline are not clearly stated so that the differences between the assumptions and actual conditions and means and methods can be assessed. One common misunderstanding is transient flow versus steady state flow. Most designers only compute the estimated stated state flow and do not indicate that transient flows may be several times higher and last for days to over a week.

As may be expected, baseline values that are too adverse tend to inflate the bid price, while baseline values that are more favorable than anticipated may lead to decreased productivity and excavation instability as well as increased dewatering and water disposal costs, resulting in delays and claims.

From a legal standpoint:

Fewer conditions have created more uncertainty and resulted in more court cases than groundwater.[13] Most of these disputes involved projects not governed by a GBR. Rather, the bid documents only provide data in the form of borings and test pits, often without any baseline language and sometimes with minimal or ineffective baseline language. The inclusion of boring data (coupled with the omission of baseline descriptions) in turn typically gives rise to a dispute as to the meaning of the boring logs, in which the Owner and Contractor engage in a boring-by-boring interpretative contest. For projects governed by a GBR, this type of granular, blow-by-blow litigation should become obsolete because the GBR, as the superior document in the order of precedence, will trump any contrary indications that one might want to infer from an individual boring or set of borings.

An illustrative case arising from a project with no GBR involved the construction of a new building in Atlanta, Georgia.[14] The DSC claim arose from the caisson subcontractor's encountering large amounts of groundwater. There were seven borings within the footprint of the building: three along the western edge of the footprint which found groundwater at 11 to 12 meters below the surface, one boring in the central portion of the footprint which found "possible groundwater at a depth of 11 meters," and three borings on the east side of the footprint that encountered no groundwater.

The bid documents purported to warn the bidders that the borings might not be representative: "The presence or absence of water in the bore holes at the time of drilling does not necessarily mean the groundwater will or will not be present at other times. Groundwater levels fluctuate seasonally and are related to the amount of rainfall received in months prior to the observations." Moreover, the bid documents advised bidders that they should assume that conditions represented at test borings may be different at other locations or other times.

These purported warnings, however, did not persuade the court. Stating that test borings are "considered the most reliable reflection of subsurface conditions," the Court held that the contract warnings were only "broad, exculpatory

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[12] *See* Hunt, Lamb & Fradkin, Considerations for Baselining Groundwater Conditions for Tunneling Projects (Rapid Excavation & Tunneling Proceedings 2005).

[13] *See* Parnass & Staheli, The Legal Impact of Geotechnical Baseline Reports (North American Society for Trenchless Technology 2010) (discussing groundwater case studies in which courts rejected Owner arguments that water risk had been allocated to contractor).

[14] *Whiting-Turner/A.L. Johnson Joint Venture v. General Services Admin.*, GSBCA No. 15401 (Dec. 5, 2001).

clauses" that did not override the specific representations supposedly made by the borings: specifically, that the central and eastern portion of the footprint would be dry. As a result, the Contractor won its DSC claim.

The GBR presents the best opportunity to prevent this type of expensive and uncertain litigation because, in a properly written set of Contract Documents, the GBR supersedes the borings or other equivalent technical data. To prevent the GBR from becoming simply a different form of legal battlefield, however, certain guidelines should be kept in mind by the author. To minimize misunderstanding and facilitate risk sharing in regards to groundwater conditions, the following considerations are appropriate:

1. A primary purpose of the GBR is to provide all bidders with a "single contractual interpretation" that can be relied on.[15] The key word is "single" – not multiple or numerous contractual interpretations, but one single baseline. The tendency of authors to hedge their conclusions, use soft language and include internally inconsistent and contradictory descriptions of baseline conditions all undermine this central purpose.

2. The GBR is not to describe how ground conditions will behave during construction, but only to characterize the conditions. For whatever reasons, however, GBR authors routinely go beyond this core purpose by discussing construction-dependent factors such as inflow rates, pumping rates, seepage velocities or other dynamics. Engaging in this practice may subvert the core purpose of the GBR and exposes the Owner to potential extra liability.

Based on these considerations, greater clarity in the GBR can be achieved (and predictable risk sharing can be facilitated) as to groundwater conditions by using the following practices or suggestions:

1. Because of the inherent variability of water conditions, the difficulty with accurate characterization and the impact outside factors have on how water conditions behave during construction, Owners and Design Engineers should consider designating groundwater control as a modified design/build responsibility of the contractor. Under a modified design/build approach, only certain core hydrological parameters are provided in the bid documents. The Contractor is then required to retain its own professional engineer to design and submit both the control of water and ground support systems based on post-bid investigations, evaluations and calculations. This approach has the benefit of providing all bidders with certain core hydrological parameters but also encouraging each bidder to exercise its bidding and construction ingenuity to plan its means and methods to suit the conditions. Key to this approach is the inclusion of a detailed and comprehensive dewatering specification identifying the Contractor's post-bid engineering responsibilities and payment for same.

2. GBRs should not attempt to predict quantity or analyze how the stated groundwater conditions will behave during construction, or what means might be useful to mitigate or minimize water seepage or infiltration. First, this is not the purpose of a GBR. Second, including this information will likely be interpreted by the Contractor as an implied or express warranty such quantities or volumes will not be exceeded. Third, mentioning potential ways to mitigate water infiltration may be interpreted by bidders as a warranty that implementing such measures will be successful.

3. The problem, from a legal standpoint, with baselining a range is that the contractor may always assume the upper or lower end is true, whereas the owner's assumption may be just the opposite. In other words, the existence of a range in itself may tend to be ambiguous because both parties can possibly read into the range whatever quantity each sees fit to believe to be true or advantageous to its legal or economic position. The ASCE Guidelines discourage the use of ranges: "The concept of stating baselines as a range is step backward, not forward."[16]

4. BASELINES SIGNIFICANTLY MORE ADVERSE THAN GDR

What should the contractor assume and what are the legal implications of that assumption if the conditions described in the GBR are extremely adverse and differ significantly from what is represented in the GDR?

[15] Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines at 6 (American Society of Civil Engineers 2007).

[16] Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines at 53 (American Society of Civil Engineers 2007).

- *John Fowler, Contractor*

A Design Engineer may include statements in a GBR intentionally exaggerating the adversity of subsurface conditions in hopes of "protecting" an Owner from DSC claims. As Owners bear the risk of unanticipated surface conditions, they may think that inclusion of extremely adverse conditions may eliminate that risk. However, what they often do not realize is that statements that are significantly different from the remaining Contract Documents (the Geotechnical Data Report and boring logs) can be challenged in court, particularly when there is no effort made to explain the reason for the discrepancy.

Absent other factors or language in the GBR, the courts regard boring logs as "usually the best indicators of subsurface conditions and bidders ought to rely heavily on them" and that a "pattern of test borings is usually reasonably representative of the entire site."[17] There has not yet been a court case which pits boring log information against baselines. One may assume the Contractor will place great reliance on the borings (especially if numerous and well-spaced) as the most accurate means to determine a bid price. If a baseline statement contains information that may not be discerned from a ***reasonable*** interpretation of the boring logs, the validity of that statement can thus be challenged in court. Conversely, the Owner will most likely look to the GBR provisions as contractually superior to the data and will point out that the Contractor ignored the GBR clauses (and relied on the data) at its peril.

From a legal standpoint:

This is an important question because it requires us to address the essential purpose of the GBR and how achievement of that purpose impacts the participants in the construction process. It also requires us to think about facilitating risk allocation in a reasonable manner.

First, the fact that the GBR might state conditions as being more adverse – or less adverse **--** than those found in any given boring or set of borings is part of the nature of the GBR. GBRs therefore routinely go beyond the limits of conditions actually discovered (i.e. baselining boulders where none are actually encountered in drillings or borings). In the words of the ASCE Guidelines, "Baselines are contractually binding, regardless of the presence or absence of specific substantiating data."[18]

Second, if the GBR does characterize the conditions in a more adverse manner than depicted in the borings, the mere fact of this discrepancy should not result in having the GBR language tossed out if the Contract Documents clearly rank the GBR as the superior document in the order of precedence. The cases in which courts consider the borings to be "usually the best indicators of subsurface conditions and bidders ought to rely heavily on them" are ones where the Contract Documents do not contain a GBR and/or where the Owner attempted to hide behind generic, ineffective disclaimer language.[19] By contrast, no court yet has disregarded a clear GBR baseline merely because it exceeds the conditions found in the specific data. As indicated, if the GBR is clearly written and has a hierarchy above the data report, then any conflicts between the two documents should be resolved in favor of the GBR.[20]

Specific to the question posed, what should the Contractor assume and what are the legal implications of that assumption if the conditions described in the GBR are extremely adverse and differ significantly from what is represented in the GDR? Recognizing there is no specific case addressing this issue yet, certain assumptions can be made:

1. If the increased adversity stated in the GBR is within a reasonable range of accuracy (given not only the borings but also previous construction experience in the area, general geologic knowledge, etc), then the Contractor should assume the GBR provision is enforceable.

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[17] *PCL Constr. Servs. Inc. v. General Services Admin.*, GSBCA 16588 (Sept. 15, 2006) at 27; *see also Appeal of Bay West Inc.,* ASBCA No. 54166 (Apr. 25, 2007) ("it has long been the rule that contract borings are the most significant indicator of subsurface conditions. . . . this is so even though the contract advised bidders they were responsible for making their own determination of the characteristics of the native soils and contained disclaimers in the Physical Data clause").

[18] Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines at 52 (American Society of Civil Engineers 2007).

[19] Parnass & Staheli, The Legal Impact of Geotechnical Baseline Reports (North American Society for Trenchless Technology 2010).

[20] "A contract is not to be read in a way that places its provisions in conflict, when it is reasonable to read the provisions in harmony." Universal Constr. Inc. v. United States, 71 Fed. Cl. 179, 183 (2006).

2. There is no current court case addressing the validity of an unreasonable exaggerated GBR. With that said, a court if presented with this issue is likely to consider the validity and enforceability of the exaggerated clause under its general, inherent power to police for (and strike from agreements) clauses that (i) either exceed the authority of the Owner to enact[21] or (ii) violate the jurisdiction's public policy. This latter inquiry (public policy) depends on a variety of factor that vary from state to state, but at a minimum would include an analysis of two critical factors: how clearly written is the exaggeration and how conspicuous is the placement of the language in the GBR?

A. As an initial matter, it is important to remember that the GBR is essentially a contractual instruction – the bidder is instructed to assume that XYZ conditions will be encountered and to compute its bid price accordingly. No court is likely to take away from the Owner its right to formulate the bid documents, especially when an aggressive GBR will typically drive up bid prices. Courts are likely to look at exaggerated GBRs as a business decision made by the Owner in its discretion to pay more money advance through bids in order to eliminate or reduce post-bid risk related to claims. As a conceptual matter, it is hard to see any court denying the right of an owner to make that trade-off.

B. While acknowledging the Owner's right to implement certain exaggerated language, the court in an extreme case is likely to intensify its legal scrutiny (and thereby require more proof from the Owner) because of the risk transfer nature of the language. The impact of the exaggerated language is, fundamentally, to transfer more of one the Owner's risks (subsurface conditions) to the bidders. In a variety of analogous contexts, courts step up their analysis of the validity of major risk transfers (including waivers and releases) by requiring that the risk transfer be stated (i) unambiguously and (ii) conspicuously in the document. A major risk transfer clause that flunks either of these tests can sometimes be said to be "procedurally unconscionable" and therefore unenforceable within the power of the court to strike from the agreement.[22] But if the Court finds the GBR statement to be ambiguous, then it is much more likely to side with the Contractor's interpretation.[23] The guidelines provided by the Washington State Department of Transportation (WSDOT) are worth heeding: "Describe subsurface conditions in plain English. Avoid use of jargon and/ or nomenclature that contactors will not understand."[24]

In light of these considerations, a bidder facing GBR language it believes to be extremely exaggerated has various options, such as:

1. Decline to bid.

2. Bid to the exaggerated conditions and hope the competition does too.

3. Disregard the exaggeration and bid to conditions believed to be actual, a path that carries obvious risks.[25]

4. Challenge the validity of the language in litigation or dispute resolution.

Finally, before including exaggerated language, owners should re-visit the purposes of the GBR in the first place. A primary purpose of the GBR is to identify the baseline to which claims are measured under the DSC clause in the Contract. The DSC clause in turn is intended to remove contingency from bids by providing a reasonably accurate set of contractual subsurface assumptions.[26] An intentionally exaggerated GBR would seem to defeat the purpose of wringing contingency out of bids by, essentially, forcing bidders to cover a potentially theoretical risk with higher upfront prices.

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[21] This analysis would turn on the scope of the public agency's delegated authority and is not the subject of this article.

[22] This article is also not the place for a thorough analysis of this doctrine as applied to exaggerated GBR language and the authors makes no prediction as to how a court would rule on this issue or whether a bidder would prevail in this type of argument.

[23] Conner Bros. Constr. Co. Inc. v. United States, 65 Fed. Cl. 657, 667 (2005) ("If an ambiguity exists and extrinsic evidence does not establish clearly the parties intent, the ambiguities construed against the drafter of the language under the doctrine of contra proferentem."

[24] WSDOT Geotechnical Design Manual (January 2010); http://www.wsdot.wa.gov/publications/manuals/fulltext/M46-03/Chapter23.pdf

[25] Weeks Dredging & Contracting, Inc. v. United States, 13 Cl. Ct. 193, 223 (1987) (Contractors are not to receive equitable adjustments for miscalculations they have engaged in by misreading contract documents)

[26] PCL Constr. Servs. Inc. v. General Servs. Admin., GSBCA 16588 (September 15, 2006) at 34 ("The purpose of the Differing Site Conditions clause is to permit contractors to submit more accurate bids by basing them upon the information provided by the government

5. ADVISABLE LENGTH OF THE GBR

Should tunneling GBRs be lengthy and descriptive or more concise? Should there be a difference in the approach between tunneling and non-tunneling GBRs?

- *Leon Maday, Owner*

There is often a debate amongst GBR authors over length and written approach – should a GBR be more descriptive or more concise? Some authors feel that the GBRs for complex projects should provide as much information as possible about expected ground conditions, with the thought that Contractors will make the most educated decisions about means and methods. Strictly following the recommendations provided in the ASCE Guidelines, the GBR would include examples of previous construction projects in the area where the technology had been used and would outline the details and problems on the project (the section entitled "previous construction experience"). Others feel that as little information as possible should be given, in hopes of "protecting" Owners from DSC claims based on minute differences between baseline statements and encountered conditions.

From a legal standpoint:

While there is no off-the-shelf answer to this question for all projects, in most projects the GBR should be concise and clearly written. In fact, it is a misnomer to discuss advisable length of the GBR without also discussing the need for clarity, because lack of clarity – such as undefined terms, run-on sentences, excessive reliance of technical jargon and complex descriptions of geologic phenomena or history – contributes directly to over-length. Writing with brevity is more difficult than the other way around and many professionals – lawyers included – tend to write too much out of habit or laziness.

The ASCE Guidelines suggest a "concise document that can be read and understood in 2 or 3 hours." For certain projects, the Guidelines suggest no more than 5 to 10 pages. Keeping the GBR short is not an objective in itself, but rather a tool to reach the GBR's ultimate purpose: a clearly, easily understood, not-open-to-second-guessing set of baselines. In that respect, writing a good GBR should be more akin to writing a tightly-crafted specification than is evident in practice today.

The benefits of brevity, from a legal standpoint, can be seen by considering the following factors:

1. In situations where the Prime Contractor will be subcontracting the tunneled work, it is important to provide the lower-tier participants with a document they can pick up and read efficiently. An overly long or obtuse GBR may not be read by the subcontractors or may be read in a selective and self-serving way.

2. Keeping the GBR brief forces the Owner and its Design Engineers to limit the number of topics to be baselined. Limiting the number of baselined topics has legal advantages for the Owner because there are fewer opportunities for the Contractor to claim a deviation from the conditions indicated.

3. Length generally breeds inconsistency because a statement on Page 3 can be read as in conflict with a latter statement on Page 33. Such inconsistency in turn may lead the court to conclude the GBR is ambiguous and thereby not only defeat the purpose of the GBR as a technical tool, but also increase liability.

4. A concise document is easier to explain to the court. If the court can't figure out what's clearly intended to be stated in the GBR (either by reading the document or having it summarized by expert testimony), the court won't have any way to enforce its content or, worse, may enforce it in unpredictable and incorrect ways.

5. As a legal instrument, the intent of the GBR will be ascertained from its totality – that is, the entire GBR will be read with the objective to give meaning to each and every one of its parts (so as to not render any portion

superfluous).[27] A concise GBR will be less susceptible to manipulation and mis-reading during this scrutiny by the court.

6. A concise GBR in turn should compel the author to reduce qualitative descriptions and increase the use of readily measurable quantifiable baselines.

7. Finally, the wider use of **Defined Terms** will be encouraged with concise GBRs. Use of **Defined Terms** is one of the main tools used by lawyers to achieve contractual clarity. They are currently underutilized in GBRs. GBRs need to have better worded definitions and consistently use these terms throughout the GBR and other contract documents. Consider, for example, whether any of the following terms – all taken verbatim from baseline descriptions in recent GBRs – have an obvious meaning that a court could recognize and apply without doubt:

> "chemically intact"
> "blocky and seamy rock"
> "closely jointed and badly broken rock"
> "poor ground"
> "low strength poor quality sandstone rock"
> "fairly high hydrostatic pressure"
> "the tunnel will penetrate rock that ranges in hardness from very soft to hard"
> "groundwater conditions ranging from dry to groundwater heads of 80 feet or more"
> "boring D-42 is the best available indication of the rock conditions in the downstream portal"

6. CONCLUSIONS

The recommendations presented above for each of the four topics under discussion are valuable for Owners, Contractors, and Design Engineers. It is important to consider while both writing and reading GBRs how baseline statements may be viewed by the courts should a claim become elevated to litigation. A thorough understanding of how courts typically stand on baseline statements will assist in the preparation of GBR documents which lead to an equitable risk distribution for the contracting parties. Using this approach, one may reduce the need for antagonistic legal battles, leading to successful projects for Owners, Contractors and Design Engineers.

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[27] This rule is one of several typically applied by the courts to any legal instrument. *See* Parnass & Staheli, The Legal Impact of Geotechnical Baseline Reports (North American Society for Trenchless Technology 2010) for a detailed discussion of the rules of contract interpretation applied to geotechnical reports.