The Associated General Contractors of America

Comments on Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category; Docket ID No. EPA–HQ–OW–2010–0884

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I. Introduction

The Associated General Contractors of America (AGC) is the leading trade association in the construction industry. It dates back to 1918, and today, it represents 33,000 firms in nearly 100 chapters across the United States. AGC's members include 7,500 of the nation's leading general contractors, nearly 12,500 specialty contractors, and more than 13,000 material suppliers and service providers to the construction industry.

These members engage in the construction of commercial buildings, hospital and laboratories, schools, shopping centers, factories, warehouses, highways, bridges, tunnels, airports, levees, water works facilities and multi-family housing units, and they prepare sites and install the utilities necessary for housing development. These important construction projects are frequently in or near waters of the United States; and when there are wet weather events they generate "stormwater associated with construction activity," as defined by the relevant federal regulations. *See* 40 CFR § 122.26(b)(14)(x) and (15). Construction sites require National Pollutant Discharge Elimination System (NPDES) stormwater permits, which are impacted by the U.S. Environmental Protection Agency's (EPA) Effluent Guidelines and Standards for the Construction and Development Point Source Category (C&D ELG). On January 3, 2012, EPA published a *Federal Register* Notice (January 3 Notice), soliciting data, information, and comments associated with possible revisions to the C&D ELG. 77 *Fed. Reg.* 112. We are submitting these comments in response to EPA's January 3 Notice.

Specifically, EPA is requesting comment on the information and data currently in its rulemaking docket regarding performance, cost, effectiveness and feasibility of different treatment technologies ("passive and semi-passive approaches") for controlling turbidity levels associated with construction stormwater discharges. In the Notice, EPA acknowledges that there are many limitations associated with monitoring turbidity in stormwater runoff from construction sites, including primarily variability associated with sample collection procedures, turbidity measuring equipment, and sample handling and analysis methods. The data currently in the docket has been reviewed by AGC members and consultants working with AGC, and it has been found to contain numerous problems and concerns that are described in detail in these comments.

EPA also is asking the public to provide it with <u>new treatment performance data.</u> EPA intends to use the data and information submitted by the public to set a new, "corrected" numeric turbidity limit for construction site runoff.

Below we identify our main concerns with EPA's strategy for promulgating new C&D ELG numeric limits, as set forth in the January 3 data collection request.

II. Executive Summary

As demonstrated in AGC's comments below, EPA's current datasets do not satisfy the Clean Water Act factors for establishing Effluent Limitations Guidelines standards or a numeric effluent limit. The performance data in the docket are unreliable for a variety of reasons, including but not limited to: too limited a dataset; insufficient information as to sampling techniques, collection times, locations; failure to conform to EPA-established methods (*e.g.*, equipment calibration, sample holding times/temperature); insufficient site or treatment method descriptions; insufficient rain event information; unexplained or inappropriate omissions of sampling data during rain events; or most often a combination of these problems. Not only are the data unreliable, but the current record does not include necessary facts that represents the full range of site and rain event conditions that occur nationally and would impact a national numeric limit. AGC's comments also explain why EPA should limit its data collection to a single pollutant parameter associated with erosion, and that parameter should be total suspended solids, not turbidity.

AGC continues to emphasize that even EPA's own cost-benefit analysis shows limited environmental benefits associated with its numeric turbidity limit, but extremely high compliance costs. If EPA remains focused on "turbidity," it should ensure all data satisfy its own published sampling and analysis protocol (Method 180.1) for measuring turbidity, or follow the proper legal procedures for revising that Method. AGC's comments point to the many ways the Agency's January 3 Notice appears to encourage rather than prevent inappropriate data variations and manipulations. AGC's comments also show how deviations from approved methods for collecting and measuring turbidity levels in stormwater runoff will produce appreciable changes in monitoring results. Relying on such incomplete datasets is not appropriate for establishing ELG standards.

However EPA resolves the issues above, it must ensure consistent requirements both for current data collection and for future compliance, should EPA ever promulgate a C&D ELG numeric limit. As expressed in AGC's comments, EPA cannot independently and arbitrarily modify or alter Method 180.1 requirements merely to expand the amount of data that it collects and not allow similar flexibility in determining future compliance. Any deviation in any final turbidity limit resulting from deviations in Method 180.1 that might "lower" turbidity test results in data being used to set the limit will not be available to the regulated community after a limit is set. Holding final permittees to a tougher standard than "data suppliers" creates an unjust and arbitrary regulatory process and outcome that EPA must work to prevent from happening.

AGC strongly maintains that a numeric effluent limit is not practical. EPA cannot legally justify a single compliance limit for all locations throughout the nation. However, if EPA moves ahead with a proposed rule, there must be clear and well-reasoned exemptions from the numeric limit. It is also important that EPA recognize the challenges to employing treatment technologies on construction sites during certain cold weather conditions.

AGC comments also express concern that EPA has not adequately accounted for how the imposition of a numeric limit would greatly increase the use of polymer treatment. The newly released 2012 EPA CGP indicates a high concern about polymer toxicity and presents major requirements on any operators using polymers, especially cationic polymers, for either soil stabilization or turbidity removal. AGC does not support or endorse EPA's reliance on chemical usage or possible mandate of chemicals in passive or semi-passive technologies when setting any nationally applicable ELG standard.

AGC encourages EPA to use the comments to its January 3 Notice to further refine its ELG approach and then to request more comments after it can more precisely articulate its strategy and approach to collecting data and possibly setting a numeric limit. AGC does not endorse or support a numeric limit but has provided comments throughout this submission in good faith to help EPA consider all of the issues associated with possibly setting a limit.

III. EPA's current datasets do not satisfy the CWA factors for establishing ELG standards or a numeric effluent limit (NEL).

In its January 3 Notice, EPA cites to a recent California case regarding the State's attempt to impose numeric limits on certain construction site stormwater discharges. *See California Building Industry Association v. State Water Resources Control Board,* Case No. 34-2009-800000338 (Sacramento Superior Court) December 2, 2011(hereinafter "CBIA"). In CBIA, the California Superior Court invalidated the State's numeric standard of 500 nephelometric turbidity units (NTU), because the State failed to show a "reasonable assurance that the technologies are capable of achieving the turbidity NEL" under a variety of site conditions. CBIA at 16; *See* DCN 70086. EPA faces the same (and other) CWA prerequisites if it also proposes a numeric effluent limit for construction stormwater discharges.

A. The performance data in the docket are unreliable.

The performance data in the docket are unreliable for a variety of reasons, including but not limited to: they represent too limited a dataset; EPA has obtained insufficient information as to sampling techniques, collection times and locations; the data suppliers failure to conform in many instances to EPA-established methods (*e.g.*, equipment calibration, sample holding times/temperature); EPA was given insufficient site and/or treatment method descriptions or rain event information; or a combination of these problems. *See also* AGC Comment Sections CII, CIII, XII and XIII below.

B. The current record does not include necessary facts that represent the full range of site and rain event conditions that occur nationally and are critical for establishing a defensible national numeric limit.

Not only are the data unreliable, but the current record does not include necessary facts that represent the full range of site and rain event conditions that occur nationally and would impact a national numeric limit. EPA must ensure it is using a complete dataset from actual construction sites, and not data from research projects that do not represent "real world" scenarios. Data from either "simulated" sites or that restrict rain event variability may satisfy academic research needs, but should not be used as the basis for real world standards. Many of the reports in the docket are from vendor demonstrations that were not even associated with a rain event (*e.g.*, StormKlear Control Technologies and Sites). And several reports were conducted at research facilities with simulated rain events (*e.g.*, TYPAR® GEOCELL Sediment-Control Device: A Controlled Ditch Test with Polyacrylamide (Final Report) (DCN 70003, or Docket ID EPA-HQ-OW-2010-0884-0010)). Such data do not form the basis for justifiable national stormwater controls.

IV. EPA should limit its data collection to a single pollutant parameter associated with erosion, and that parameter should be total suspended solids (TSS), not turbidity.

EPA should collect only total suspended solids (TSS) data for any future rulemaking. Turbidity is not a pollutant; it is a scientific measurement tool. EPA has focused on turbidity to avoid conventional treatment (BCT) standards and instead rely on more stringent Best Available Technology (BAT) standards. EPA's strategy is inappropriate. In its current effort to fix and improve the C&D ELG rule, EPA should target TSS as the "pollutant of concern" and recognize that any effort to regulate suspended sediments necessitates, from a CWA perspective, an appropriate BCT analysis. After establishing an appropriate target pollutant (preferably TSS), EPA must focus its data collection on that pollutant and not attempt to correlate or combine performance data from multiple different pollutant monitoring scenarios in setting a NEL for the target pollutant.

A. Turbidity is not a pollutant and EPA exceeds its statutory authority by regulating it.

Turbidity is not a pollutant but rather a scientific method for measuring light scattered by particles in suspended liquid. EPA defines "turbidity" as:

> The cloudy appearance of water caused by the presence of suspended and colloidal matter…. [T]urbidity measure[s] . . . the clarity of water [and] . . . is an optical property of the water based on the amount of light reflected by suspended particles. *See* http://www.epa.gov/ogwdw000/mdbp/word/turbidity/app_a.doc.

"Turbidity" is an optical property measurement derived by directing a strong light beam through a tubular sample with light detectors around the tube. *Id*. Light reaching the detectors has been "scattered" off particles suspended in the sample, which is recorded in NTU. 74 *Fed. Reg.* at 63,006-63,007. The light scattering is directly related to the level of matter (*i.e.*, possible, but not confirmed "pollutants") in the water.

Under CWA Section 301, EPA must develop effluent limitations for "pollutants." 33 U.S.C. § 1311. "'[P]ollutant' means dredged spoil, solid waste, . . . chemical wastes, biological materials, . . . heat, . . . rock, sand, cellar dirt and industrial . . . waste discharged into water." 33 U.S.C. § 1362(6). The Supreme Court held that the term "means" in a definition is restrictive; it excludes anything unstated. *Colautti v. Franklin*, 439 U.S. 379, 393 n.10 (1978); *National Wildlife Federation v. Gorsuch*, 693 F.2d 156, 172 (D.C. Cir. 1982). Therefore, EPA cannot add to the list.

Under CWA Section 1362(6), "pollutants" are substances or materials (except heat), not conditions or properties of water. *Gorsuch*, 693 F.2d at 171; *U.S. v. D.J. Cooper*, 482 F.3d 658, 663 (4th Cir. 2007) (there is no CWA violation unless the substance being discharged "is regulated as a pollutant . . . ."); *San Francisco Baykeeper v. Cargill Salt Division*, 481 F.3d 700, 706 (9th Cir. 2007) (providing that "a court may decide whether the offending substance is a pollutant . . . ."). **Because "measurements" are not substances, turbidity is not a pollutant, and EPA exceeds its statutory authority by attempting to regulate things that are not pollutants. 5 U.S.C § 706(2)(C).**

B. Turbidity is not a good indicator of soil loss from a construction site.

As discussed above, turbidity measures the opacity of water, representing both dissolved and suspended solids in the water column. Thus, turbidity monitoring does not accurately measure the mass/volume of soil being lost from a site, but instead reflects the aesthetic nature of the runoff (clear, cloudy, etc.). For example, soils with a heavy clay content (easily dissolved) will have a higher turbidity measurement for a relatively small quantity of soil in the water, while a sandy loam will have a lower turbidity measurement for a larger quantity of soil in the water, because the larger particles will not stay suspended and they won't dissolve. Thus, a turbidity measurement is not a good standardized indicator of the prevention of soil loss from a construction site.

EPA should limit its data collection to analytical measurements of TSS from outfalls at construction sites. AGC maintains that EPA must use a mass-based analysis (TSS) to represent the quantity of soil lost from a construction site, rather than a turbidity reading, that only provides information on a secondary standard for water quality and/or aesthetics.

C. EPA's C&D ELG focus has always been on conventional pollutants and it must conform to CWA control strategies for conventional pollutants.

Whatever pollutant that EPA targets for regulation will dictate the technology standards analysis and statutory authority governing EPA's ELG standards setting efforts. To promulgate an ELG, EPA identifies the pollutants to be regulated in a particular industry, as well as a technology that represents the statutorily prescribed level of control *for those pollutants*. The CWA articulates several levels of control for pollutants (*e.g.*, "best practicable control technology currently available," "best available technology economically achievable," and "best conventional pollutant control technology").[1]

For example, by July 1, 1977, EPA was to establish effluent limitations based on the "best practicable control technology currently available" (BPT) for existing sources discharging pollutants (sources other than publicly-owned treatment works).[2] Then, by March 31, 1989, newer technology standards were to govern depending on whether the pollutant of concern was conventional, toxic, or non-conventional. By March 31, 1989, existing sources of conventional pollutants[3] were to be subject to effluent limitations applying "the best conventional pollutant control technology" (BCT).[4] Similarly, effluent limitations from existing sources for both toxic and non-conventional pollutants also were mandated by March 31, 1989 based on the "best available technology economically achievable" (BAT) technology standard.[5]

[1] *See* 33 U.S.C. §§ 1314(b)(1)(A), (b)(2)(A), (b)(4)(A).

[2] I*d.* § 1311(b)(1)(A).

[3] "Conventional pollutants" include biological oxygen demand, suspended solids (such as sediment), fecal coliform, and pH. 33 U.S.C. § 1314(a)(4).

[4]33 U.S.C. § 1311(b)(2)(E) references § 1314(b)(4), which pertains to conventional pollutants.

[5] 33 U.S.C. § 1311(b)(2)(A) (setting forth the BAT standard), references subsections (C) and (D) which pertain to certain toxic pollutants. Subsection (b)(2)(A) also references subsection (F), establishing BAT for "all" remaining pollutants not covered elsewhere in subparagraph (2) (*i.e.*, non-conventional pollutants).

In the 2009 C&D ELG rulemaking, EPA applied a BAT standard to turbidity, arguing that because turbidity is not specifically listed as a "conventional" pollutant, it must be a "non-conventional" pollutant subject to BAT. That argument is unjustified. EPA's focus has been on discharging sediments from construction sites. Sediments are conventional pollutants. EPA can characterize "sediment" through turbidity monitoring or use any term it chooses, but in the end, EPA is still regulating sediment discharges. Hence, a BCT analysis is the only reasonably and appropriate CWA analysis that should be applied.

Hence, EPA should simplify its approach and target TSS as its pollutant and recognize that any method of measuring suspended sediments necessitates, from a CWA perspective, an appropriate BCT analysis. In the CBIA case referenced above, the California Superior Court looked at turbidity as merely an alternate method for measuring TSS, thereby equating turbidity to "conventional" pollutant discharges subject to BCT. Ultimately, the court found that the State had not properly met the prerequisites of the BCT standard in setting a numeric turbidity limit in the California General Permit. Other states, including Minnesota and Washington to name a few, also equate turbidity to "conventional" pollution subject to BCT.

In conducting an appropriate BCT analysis, CWA Section 304(b) requires EPA consider certain factors and also employ a "cost reasonableness" evaluation comparing the removal efficiencies of various technologies to publicly-owned treatment works. Factors EPA should consider include: "the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate; . . ." 33 U.S.C. § 1314(b)(4)(B). Information relating to these must also be collected by EPA for it to properly develop any future ELG standard.

The D.C. Circuit has clearly stated: "A statutorily mandated factor, by definition, is an important aspect of any issue before an administrative agency . . . ." *Public Citizen v. Federal Motor Carrier Safety Admin*., 374 F.3d 1209, 1216 (D.C. Cir. 2004). If EPA cannot assess the factors associated with the data it collects, it is vulnerable to claims that it acted arbitrarily and capriciously and abused its discretion by failing to consider several CWA § 304(b) factors. *See Texas Oil and Gas Ass'n v. EPA*, 161 F.3d 923, 934 (5th Cir. 1998) (EPA's "[f]ailure to consider [any] factor is therefore, under the plain meaning of the Act and its implementing regulations, an abuse of discretion."). This issue raises particular concerns in light of the significant data collection challenges and inadequacies in data already in EPA's docket.

Obviously, if EPA could defend using turbidity to avoid a BCT analysis, it still must assess and analyze similar factors under the CWA for establishing BAT ELG standards. Under either a BCT or BAT rulemaking process, EPA cannot avoid the critical issues associated with collecting reliable data that address the factors set forth in appropriate sections of CWA 304(b).

D. EPA must not collect and combine performance data on multiple pollutant parameters for purposes of setting a NEL for only one of those parameters.

EPA currently seeks information on the "costs, effectiveness, and feasibility of different technologies to control [total suspended solids] TSS, settleable solids, suspended sediment concentration, and turbidity…." 77 *Fed. Reg.* at 118. EPA's rather random approach to collecting data for controlling different parameters to set a limit for "turbidity" will cause confusion and lacks reliability. (EPA is clearly focused upon setting a numeric limit for turbidity. *Id.* at 120.) Even though one could argue that these different parameters are interrelated in that they represent different ways of measuring soil particles in water, they are not interchangeable. The soil type, test method, and other factors prevent EPA from making any national assumptions that results relating to one parameter truly reflect comparable results for tests on another parameter.

V. Even EPA's own cost-benefit analysis shows limited environmental benefits associated with its numeric turbidity limit, but extremely high compliance costs.

Stormwater discharges associated with construction activity already are heavily regulated and largely controlled for sediment, a conventional pollutant. When considering the overall contribution of sediment from construction sites relative to other sources there is limited benefit achieved.

In 2004 EPA recognized the efficacy of the existing federal, state, and local effort when it stated that "construction site stormwater discharges are already being adequately addressed through the existing program."[6] Similarly, EPA's benefit's assessment completed for the 2009 ELG estimated that construction sediment discharges represent approximately 0.15 percent of total sediment to surface waters, and that removing all construction sediment discharge would lead to only a 0.25 percent reduction in baseline total suspended solids levels.[7] Thus, when considering the overall contribution of sediment from construction sites relative to other sources, it is clear that there is limited benefit achieved by developing and implementing a numeric effluent limit for the construction and development industry.

VI. If EPA remains focused on "turbidity," it should ensure all data satisfy its own published sampling and analysis protocol (Method 180.1) for measuring turbidity.

EPA's legal authority for establishing analytical testing methods and procedures to carry out the intent of the CWA is found in Sections 301(a), 304(h) and 501(a) (33 U.S.C. §§ 1311(a), 1314(h), and 1361(a). Section 301(a) sets forth the general prohibition against discharging pollutants to U.S. waters without a NPDES permit. Section 304(h) requires the EPA Administrator to establish test procedures to measure pollutants in CWA programs, including the NPDES permit program. Finally, Section 501(a) authorizes the EPA Administrator to prescribe such regulations as are necessary to carry out the functions of the CWA. Through its regulatory powers, EPA has codified the CWA test procedures and/or analytical methods at 40 CFR Part 136, with certain industry-specific methods set forth at 40 CFR Parts 401-503. **In the case of turbidity, EPA has a Part 136-approved test method, Method 180.1.**

EPA adopted Method 180.1 for measuring turbidity to ensure consistency, reliability, and for other legal reasons. As long as EPA maintains an approved testing method (Method 180.1) for turbidity, while also contemplating promulgating numeric effluent limitations for turbidity as part of its C&D ELG, it should

[6] 69 *Federal Register* 22,477 (April 26, 2004).

[7] U.S. Environmental Protection Agency, *Environmental Impact and Benefits Assessment for Final Effluent Guidelines and Standards for the Construction and Development Category*, November 2009, p. 6-26.

not accept data for use in promulgating such a numeric standard that were not collected and analyzed consistent with Method 180.1.

In litigation addressing EPA's authority to establish monitoring methods for pollutants for which it does not have Part 136 methods, the Ninth Circuit Court of Appeals was very direct, stating that "EPA regulations provide that EPA must use approved test procedures under 40 CFR Part 136 'for the analyses of pollutants having approved methods under that part… .'" *NRDC v. EPA*, 863 F.2d at 1430 (9^{th} Cir. 1988).

Even if EPA were to argue that it could exempt certain data from its Method 180.1 standards, its own guidance implies that any methods modifications should be allowed only under very limited circumstances. EPA's *Solutions to Analytical Chemistry Problems with Clean Water Act Methods* (EPA 821-R-07-002, March 2007) ("Methods Guidance") discusses flexibility in applying EPA analytical methods, but it implies that such flexibility is only appropriate "provided that the results obtained are as or more accurate than the results obtained using the unmodified method." Methods Guidance at 8. **It also indicates that modifications should "not apply to changes in sample preservation and/or holding times."** *Id.*

A. If EPA believes that Method 180.1 should be modified or requires updating, it must follow its well-established legal procedures for revising that Method.

Previously, when EPA concluded that it must improve, modify, or simplify its Part 136 methods, it has initiated rulemakings to achieve those ends. For example, EPA proposed changes to analysis and sampling test procedures under the CWA for dozens of pollutants on September 23, 2010 (75 *Fed. Reg.* 58,023). Not only is that rulemaking still open, recently EPA published a Notice of Data Availability announcing new data and proposed modifications pursuant to the September 23, 2010 proposal. 76 *Fed. Reg.* 77,742 (December 14, 2011). If EPA believed that modifications were appropriate for its Method 180.1, it should have included proposed modifications to that Method during its ongoing rulemaking focused on precisely this issue.

In addition, EPA has created procedures for approving *alternative* test procedures (ATPs) developed for unique situations by outside parties. *See* 40 CFR §§ 136.4 and 136.5. According to EPA's website, the ATP program allows procedures "developers" to seek EPA review for either an alternative method using a "determinative technique (*e.g.*, a pollutant detector) different from that in an existing Part 136 method," or a modification to a Part 136 method "that falls outside the scope of the modification flexibility" set forth in 40 CFR § 136.6. *See* http://water.epa.gov/scitech/methods/cwa/atp/index.cfm. In the context of the section, "developer" clearly is an entity outside of EPA (otherwise, why would EPA need EPA approval to modify a procedure?). Section 136.6 is intended to specifically provide the regulated community with more flexibility to modify approved methods without review by EPA. *Id.* However, none of these sections appear to provide EPA with the authority to modify its Part 136 methods through anything short of formal rulemaking.

EPA has not identified any outside entity ("developer" or other regulated entity) that is seeking modification to its Method 180.1. Hence, there does not appear to be any outside request or need to approve any modifications to Method 180.1. If EPA, in its own right, believes that Method 180.1 can be improved, it should have initiated that effort prior to seeking additional turbidity data that lacks consistency with a Part 136 method.

While EPA cannot control every variable, it ought to attempt to control as many variables as it can, particularly the test methods used to collect and analyze appropriate stormwater samples. After all, EPA's prior attempt to set a numeric limit in its Dec. 2009 C&D ELG rulemaking failed after it admitted error in understanding and interpreting the variable and incomplete data used for that rulemaking. *Id.* at 113. It now must insist on a better understanding of and more consistency in the data it collects moving forward.

VII. The Agency's January 3 Notice appears to encourage rather than prevent inappropriate data variations and manipulations.

Establishing a numeric standard through the ELG process requires significant reliability in the underlying data and Agency decision-making. EPA's current C&D ELG numeric limit had to be set aside based on errors in data interpretation. And now, EPA appears to provide conflicting "information" in its January 3 Notice regarding what is "acceptable" sampling data submitted by outside entities, in relation to data already contained in EPA's docket. EPA also admits that its current turbidity dataset was not collected or analyzed in accordance with EPA's Method 180.1 procedures. This issue should be resolved as set forth in AGC Comment Section VI above.

A. EPA admits that its current turbidity dataset was not collected or analyzed in accordance with EPA's Method 180.1 procedures.

EPA's ultimate purpose is to collect "data on the effectiveness of technologies in controlling turbidity in discharges from construction sites and information on other related issues. 77 *Fed. Reg.* at 112. In its effort to collect data for such rulemaking, EPA appears arbitrarily to want to modify Method 180.1 in order to maximize the amount of data it can collect.

Much of the stormwater sampling data included in EPA's current dataset that it plans to use to set its "corrected" numeric turbidity limit was collected in a manner that is not entirely consistent with EPA Method 180.1. EPA has acknowledged many deviations from approved methods—

- **Temperature and Holding Time.** EPA Method 180.1 states that turbidity samples should be immediately refrigerated or iced to 4 degrees Celsius and analyzed within 48 hours. Much of the stormwater runoff data that EPA is currently evaluating (as a basis for its "corrected" numeric turbidity limit) were collected using automated samplers; the samples were analyzed several days or weeks after collection and they were not refrigerated or iced. Sample refrigeration and analytical timeframe guidelines are intended to minimize changes in turbidity that would result due to microbial decomposition of solids in the sample. In some cases, polyacrylamides may be present in stormwater samples collected from construction jobsites. If residual or unbound polyacrylamide is present in the sample, EPA notes that some additional flocculation could occur in the sample bottles during the time period between collection and analysis or during transport from the field to the laboratory.

- **Mixing and Settling Time.** EPA Method 180.1 for measuring turbidity provides the following instructions: ‘‘Mix the sample to thoroughly disperse the solids. Wait until air bubbles disappear then pour the sample into the turbidimeter tube. Read the turbidity directly from the instrument scale or from the appropriate calibration curve.” The Method further explains that ‘‘the presence of floating debris and coarse sediments which settle out rapidly will give low readings. Finely divided air bubbles can cause high readings.’’ However, Method 180.1 does not describe an appropriate period of time between mixing of the sample bottle and collection of the subsample for analysis. Much of the stormwater runoff data that EPA is currently evaluating (as a basis for its “corrected” numeric turbidity limit) were allowed to settle for approximately 30 seconds after mixing before a subsample was collected and analyzed for turbidity. Allowing the sample to settle prior to collecting the subsample for analysis may result in fewer particles generally being present in the subsample and thus an artificially low turbidity reading.
- **Equipment Calibration.** EPA Method 180.1 provides procedures to calibrate the turbidimeter in standard turbidity units, as well as procedures to check the accuracy of the calibration scales and to recalibrate as needed. All of the turbidity measurements in the record, with maybe one minor exception, were performed using field instruments, and none of the sites, researchers, or operators have submitted any record of calibration having occurred for any of the instruments, or even submitted a standard operating procedure (SOP) for turbidity measurement indicating how and how often calibration takes place.

For past ELGs, EPA generally has only accepted discharge data from sites where EPA has inspected and verified treatment technologies, where EPA contractors have collected the samples, and when the samples were analyzed at established commercial laboratories in accordance with the methods and quality assurance and quality control (QA/QC) protocols prescribed by EPA. None of these prerequisites have been required for the C&D ELG. The net result is an unreliable and inappropriate database from which EPA is attempting to craft a numeric effluent limit. EPA admitted it erred in not understanding the data underlying its 2009 final C&D ELG rulemaking.[8]

B. EPA appears to provide conflicting guidance regarding what is “acceptable” sampling data submitted by outside entities, in relation to data already contained in EPA’s docket.

EPA has identified specific “factors” and descriptive information about a particular dataset that “data suppliers” should provide to EPA for consideration in the context of setting an effluent limitation. However, EPA’s current dataset does not adhere to these “factors” or provide the background information (*i.e.*, *metadata)* that the Agency has deemed important to consider in setting an NEL.

For example, EPA states that for sampling any type of treatment system, the data should represent multiple discharge events (rain events), and samples should be taken over regular intervals over the course of the event (or the discharge from the event). A review of the reports in the docket shows that that, in most cases, the data does not meet these criteria, and there was often no attempt to relate the reported turbidity values to an actual average daily discharge. Specifically, the reports contained in the

[8] EPA calculated its December 2009 numeric limit based on data from just 25 sites in only three states. A review of the docket revealed that 22 of those sites used advanced treatment systems and the remaining three were passive systems, titled NCR.1, NCR.2, and NC Road.

record document numerous instances where automated samplers malfunctioned (note that much of the stormwater runoff data that EPA is currently evaluating were collected using auto-samplers). In some instances, entire rain events were not sampled. Some of these were small rain events, but others were larger rain events. Many of the reports present data from vendor demonstrations that were not even associated with a rain event. And some reports were conducted at research facilities with simulated rain events. While such studies are useful in comparing different treatment technologies, the conditions are not representative of the full range of site and rain event conditions.

In addition, EPA requests that any newly submitted data include the following descriptive information—

- Site information, such as project size, project type (residential, commercial, road/highway, etc.), location, phase of construction (*e.g.*, before, during or after grading, site stabilization, etc.);
- Sample date(s) and time(s) of collection and date(s) and time(s) of analysis;
- Sample type (grab sample, flow or time-weighted composite, continuous turbidity measurement, etc.);
- Analytical method and/or type of field instrument used to measure the parameter; and
- Description of the treatment technology, including method of treatment chemical dosing utilized.

It is important to note that none of the EPA data in the record meets most of these qualifications. Many to most of the new sites or technologies discussed in the January 3 Notice do not contain even basic information about how samples were collected and how they were measured, or whether the reported results are a daily average or a single grab. There often is very little turbidity data, and sometimes it is merely anecdotal. The turbidity was often not presented as individual samples but as a range of values, such as “turbidity ranged from...” without specifying an actual sampling point, discharge point, flow or period of time. Sampling points and times were either not identified, or were ambiguous as to where samples were taken.

The January 3 Notice goes on the list “[a]dditional information that would be useful in evaluating … data” –

- Estimates of the amount and intensity of precipitation for the time preceding and/or during sampling events;
- Drainage characteristics (predominant soil types/textures, drainage area, estimate of the quantity or percent of the drainage area that is disturbed);
- The ambient air temperature when the data is being collected;
- Date of last calibration if a field instrument was used; and
- Descriptions of any quality assurance/quality control procedures implemented for the data collection activity.”

As further explained in Section VIII of AGC’s Comments (below), almost none of the turbidity data in EPA’s current record include pertinent analytical backup data concerning calibration techniques; calibration verification; time/date of analyses; or even basic information about how samples were collected and how they were measured, or whether the reported results are a daily average or a single grab.

Finally, EPA requests comment on the factors it should consider in evaluating treatment performance data. Other than the descriptive information listed above, AGC believes that EPA must consider the following when evaluating performance data for purposes of establishing a numeric effluent limitation:

- Time/ intensity of previous rain event;
- Method of Calibration;
- QA training and certification programs (to help establish consistencies within industry); and
- Upstream/ offsite sources of pollution that impacts a permitted entity's pollutant discharges.

VIII. Deviations from approved methods for collecting and measuring turbidity levels in stormwater runoff will produce appreciable changes in monitoring results.

As presented in AGC Comment Section VII above, much of the turbidity stormwater sampling data included in EPA's current dataset were collected using procedures inconsistent with EPA Method 180.1, including important procedures addressing sample holding time, temperature, mixing and settling times or equipment calibration. The discharge monitoring reports reveal, for example, that samples often sat in unrefrigerated collection bottles in the sampler at the site for up to 25 days before being analyzed. Method 180.1 allows for a holding time of no longer than 48 hours, and even then, the samples should be kept on ice or refrigerated until analyzed. Almost none of the turbidity data in EPA's current record include pertinent analytical backup data concerning calibration techniques; calibration verification; time/date of analyses; or even basic information about how samples were collected and how they were measured, or whether the reported results are a daily average or a single grab. In addition, data reports cited by EPA contained clear instances in which the auto-sampler missed samples from the periods of highest runoff from rain events when the turbidity was at or near its peak. Relying on such incomplete datasets is not appropriate for establishing ELG standards.

URS consultants have reviewed all of the materials in EPA's rulemaking record and have submitted comments[9] in response to EPA's January 3 Notice. URS's comments provide an expert opinion that demonstrates that deviations in Method 180.1 holding times and other anomalies of the Method procedures have impacted the turbidity data reported. URS asserts that exceeding the holding time and preservation (*i.e.*, refrigeration) requirements for turbidity has affected *at least some* of the turbidity data measured and may have led to abnormally low turbidity measurements. URS also asserts that the unusual procedure that McLaughlin's[10] student technicians used in allowing the samples to settle for 30

[9] The data currently in the docket was reviewed by URS Corporation on behalf of the National Association of Home Builders (NAHB). URS developed extensive technical comments on the new treatment data referenced in the January 3 Notice and identified numerous problems and concerns. Those findings are discussed in detail in the full URS report that is attached to NAHB's comments in response to the January 3 Notice.

[10] Dr. McLaughlin's studies were used by EPA as part of the Agency's calculation, and December 2009 promulgation, of a 280 NTU turbidity limit. There were three "passive treatment" sites and very few rain events (one site only had three events) depicted in the data accepted by EPA. *See* NCR.1, NCR.2 and NC-Road in "Target Turbidity Limits for Passive Treatment Systems" (Docket ID EPA-HQ-OW-2008-0465-0984.6). Dr. McLaughlin supplied additional data from <u>three new studies</u> at two (or possibly three) locations: "Attachment 1" which had three rain events sampled where the wattles were intact prior to a road being paved, "Basin 3 Out" which had four sampling events, and "Basin 4 Out" which had three sampling events. *See* DCN 70004 (Docket ID EPA-HQ-OW-2010-0884-0011); Excel Spreadsheets DCN 70064 _1 11.3csk, DCN 70064_2 11.4, and DCN 70064_3 (Docket IDs EPA-HQ-OW-2010-0884-0063, -0064, and -0065, respectively).

seconds prior to pouring the sample into the turbidity cell for turbidity measurement most likely produced unreliable results. While there is no specific time frame described in the EPA Method 180.1 to allow for bubbles to rise and large particles to settle, URS believes that a) 30 seconds is much longer than reasonably intended by the Method based on language in the Standard Methods turbidity procedure from EPA Method 180.1, and b) more importantly, the solids in the samples that were not removed by the sediment basin during the PTS treatment are not likely to have originally been present in the sample as large flocculated particles or clumps, because they would have settled out prior to sampling.

The McLaughlin data clearly was affected by a sequence of events that are inconsistent with Method 180.1 and that have a significant potential to artificially lower turbidity sample results in those samples:

- The sample bottles sat inside the ISCO sampler housing often for very extended periods of time with no temperature control. In summer they could get very hot, and in winter, they might freeze and thaw more than once. Regardless of the temperature, the solids present in the sample would be constantly settling, compacting, and coagulating over that entire period of time.
- The coagulation in the sample bottle could be further enhanced by the likely presence of excess polymer present in the samples. The fiber check dams do not accurately dose stormwater with measured dilute liquid polymer, but instead have a coarse polymer application using bulk powdered polymer inserted loosely within the fibers of the check dam. Biological growth can also cause further coagulation.
- This settling and coagulation for days in the sample bottle can change the settling characteristics of the solids. Solids in the collected sample would likely have initially been predominantly small particles that the polymer did not coagulate, and therefore did not settle out in the sediment trap or basin. After sitting for days in sample bottles, the additional settling and coagulation would make it nearly impossible for the sample to fully reconstitute as originally sampled just by shaking the sample bottle a few times (the method used in this case). The particles might be briefly re-suspended, but in much larger clumps that would likely settle much more quickly than at the time the sample was initially collected.
- After shaking, the sample bottles were now allowed to sit for 30 seconds prior to taking a sample for analysis. The (now) larger solids that settled on the bottom of the bottle may not be sufficiently re-homogenized to their original dispersed state (if this is even possible), allowing them to resettle quickly and avoid measurement as turbidity. In other words, the methods used here resulted in less dispersed material to be measured in comparison to the original sample. The delay between initial collection and ultimate measurement resulted in irreversible impacts on the sample itself and invariably impacted the final results.

As a general matter, EPA must recognize that the time and manner of sample collection during a single rain event can yield dramatically different results. EPA has purportedly understood this difficulty in the past, as it explained, "[t]he stochastic nature of rainfall and runoff makes verification of the design standards difficult." 67 *Fed. Reg.* 42,644, 42,658 (June 24, 2002).[11] "In some cases, the nature of local rainfall and runoff characteristics makes it difficult to even design BMPs to a specified performance level. In addition, site-specific soil conditions greatly influence the amount of sediment mobilized during runoff events and the soil settling characteristics greatly influence the performance of sediment

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[11] EPA first proposed effluent guidelines for stormwater discharges associated with the construction and development ("C&D") category in 2002, but chose not to finalize the standards in 2004.

controls." *Id.* However, there is little indication that EPA has carried this recognition forward in its deliberations on the future of the 2009 C&D ELG.

IX. However EPA resolves the issues above, it must ensure consistent requirements both for current data collection and for future compliance, should EPA ever promulgate a C&D ELG numeric limit.

As stated above, EPA cannot independently and arbitrarily modify or alter Method 180.1 requirements merely to expand the amount of data that it collects and not allow similar flexibility in determining future compliance. ("EPA solicits comment on the appropriate methods for sample collection in the context of both compliance sampling and analytical sampling for the purpose of setting limits for a turbidity effluent limitation for construction site stormwater discharges." 77 *Fed. Reg.* at 120.) While maximizing the amount of data used to justify a future numeric limit might appear reasonable, the end numeric limit would, in fact, be based on an arbitrary database that lacks dependability or precise characterization in terms of sample methods. EPA cannot truly "characterize the effectiveness of technologies" when it receives highly inconsistent data, from highly variable test methods, representing many different technologies that have been employed under a variety of site-specific characteristics.

A. Holding final permittees to a tougher sampling and analyses standards than the "data suppliers" that helped to "establish" the limit creates an unjust and arbitrary regulatory process and outcome that EPA must prevent.

In turn, we expect that EPA would require much more structured compliance sampling mandates after developing a numeric limit. Should EPA ultimately set a numeric limit, compliance with any final effluent limit would necessitate prescriptive adherence to Method 180.1. *See NPDES Permit Writers' Manual* at 8-2 (Regulations at § 122.44(i) require permittees to monitor pollutant [levels]…using the test methods established at Part 136.") and at 8-13 ("The standard conditions of the permit require that, when available, permittees use test procedures specified in Part 136."). Overall, EPA places a strong emphasis on the fact that sample collection "can have significant effects on the overall analytical process" and that EPA must "ensure some degree of consistency and representativeness" through a prescriptive process that underlies its regulatory responsibilities. *Id.* at 4 ("Providing acceptable data for NPDES compliance samples requires that the sample be collected in the required fashion."). Yet the methods modifications that EPA seeks within the data collection notice DO NOT meet these prerequisites and EPA gives no indication that any sort of comparable modifications would be allowed by future permittees, as needed to demonstrate compliance.

X. EPA can more appropriately satisfy its ELG rulemaking obligations through a non-numeric, BMP-based technology standard.

EPA stated in its Dec. 2009 final C&D ELG that its Best Management Practice (BMP)-based approach for all sites (apart from the numeric limit for certain sites) satisfied the CWA technology standards requirements (BMPs = BPT = BCT). AGC urges the agency not to lose sight of the fact that non-numeric effluent limitations in the form of BMP-based standards remain a viable option for controlling turbidity. Federal courts have made clear that water quality based effluent limits must be incorporated into NPDES permits. Many of those same courts have also recognized that the CWA does not mandate that EPA impose numeric effluent limitations. In *Citizens Coal Council v. U.S. EPA*, 447 F.3d 879, 895-96 (6th Cir. 2006), the sixth circuit held that EPA's interpretation of the CWA to permit the use of BMPs in place of numeric effluent limitations for controlling conventional and non-conventional pollutants was reasonable. *See also*, *Waterkeeper Alliance, Inc. v. U.S. EPA*, 399 F.3d 486, 496-97 (2nd Cir. 2005) (holding that EPA promulgated BMP-based non-numerical effluent limitations satisfy the statutory demand for effluent limitations under the CWA); *Natural Res. Def. Council, Inc. v. EPA*, 673 F.2d 400, 403 (D.C. Cir. 1982)(noting that the term "effluent limitation" is defined in CWA section 502(11) as "'*any* restriction' on the amounts of pollutants discharged, not just a numerical restriction"; holding that judicial review of the CWA phrase "any effluent limitation or other limitation" found in Section 509(b)(1)(E) should not be confined to the EPA's establishment of numerical limitations on pollutant discharges, but instead authorizes review of other limitations); *Natural Res. Def. Council, Inc. v. EPA*, 568 F.2d 1369, 1381 (D.C. Cir. 1977) (in rejecting EPA's alleged authority to exempt categories of point sources from permit requirements, the Court found "when numerical effluent limitations are infeasible, EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations.") While we are not conceding that the BMPs currently contained in the C&D ELG were promulgated consistent with CWA Section 304(b) factors and would survive judicial scrutiny, new data may support reopening the C&D ELG to address problems with those BMPs (instead of focusing on a revised numeric limit).

XI. Data Quality Considerations

Any data that EPA may use to set a future numeric effluent limit must be made available to the public for review and comment, and must provide sufficient details that clearly justify any EPA conclusions. During most previous ELG rulemakings, EPA conducted comprehensive site visits and sample collection efforts on its own to ensure the quality of the underlying data. In fact, EPA would identify sampling sites by screening survey and questionnaire data collected from the industry. For the C&D ELG rulemaking, EPA never distributed a questionnaire or screening survey and it has not collected any of its own data from construction-related stormwater discharges. EPA's failure to collect actual data about construction stormwater discharges has led it to inappropriately promulgate a numeric standard that could not be defended and now to request data from unknown and unreliable sources. But Congress has mandated that data used in the regulatory process meets certain standards for accuracy and reliability.

To ensure the consistent use of high quality data and information in government decision-making, federal information quality requirements were adopted by Congress in Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001.[12] This law was supplemented by OMB's establishment of model Information Quality Guidelines and by each agency's implementing guidelines. Under OMB's Information Quality Guidelines, "influential information" (*i.e.*, information having or likely to have important public policy or private sector impacts) must include sufficient "transparency" about data and methods such that the analytic results are "reproducible" by a qualified member of the public. Also, influential information concerning risks to human health, safety, or the environment must

[12] P.L. 106-554.

meet the new more stringent standard of quality from the Safe Drinking Water Act of 1996 (SDWA),[13] which has been adopted government-wide by OMB (and adapted by EPA).

Under this requirement, EPA is required to use only the "best available, peer reviewed science" and "best available methods."[14] Hence, EPA must ensure that any technical or scientific studies or information used in developing any new C&D ELG numeric limit meets this data quality standard. Further, the SDWA standard requires that when agencies disseminate information concerning risks to human health, safety or the environment, such agency should also include "in a document made available to the public," information concerning: the population addressed by any estimates of health risk; the expected or estimated health risk; the upper and lower bounds of the risk; significant uncertainties with the risks; and any peer reviewed studies that are relevant to or fail to support any estimated of risk.[15] EPA must include this additional information along with any environmental risk information it uses, relies on, or disseminates.

Under both OMB's and EPA's Information Quality Guidelines, information that has been subject to formal peer review is presumed to be of sufficient quality to meet the test of objectivity under the guidelines. This requirement bolsters EPA's Peer Review Policy that generally requires independent peer review of all scientific or technical work products that are used to support a significant rulemaking such as establishing nationally-applicable ELGs. EPA's data collection January 3 Notice does not discuss using a peer review or other process to ensure the quality of the data it receives and may use in any future rulemaking. That would appear to be an issue that EPA should address now, in its notice, to assure the regulated community that only the most reliable data will be used to set any future numeric effluent limit.

EPA strives, under its Information Quality Guidelines, "to ensure that all parts of society — including communities, individuals, businesses, State and local governments, Tribal governments — have access to accurate information sufficient to effectively participate in managing human health and environmental risks.[16] To meet this goal, EPA should establish appropriate standards and procedures for collecting and analyzing data associated with its current data collection notice.

On March 9, 2009, President Obama issued a memorandum to the heads of all executive departments and agencies setting forth standards for scientific integrity. *See* http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09. In it, the President states that the "public must be able to trust the science and scientific process informing public policy decisions." EPA Administrator Jackson fully endorsed the President's pronouncement, stating that "science must be the compass guiding our environmental protection decisions." *See* http://blog.epa.gov/administrator/2009/05/12/memo-to-epa-employees-scientific-integrity/.

[13] 42 U.S.C. 300g-1(b)(3)(A) and (B).

[14] *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency*, EPA/260R-02-008, October 2002, p. 22.

[15] *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency*, EPA/260R-02-008, October 2002, p. 23.

[16] *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency*, EPA/260R-02-008, October 2002, p. 3.

On August 5, 2011, EPA released a draft *Scientific Integrity Policy*. *See* http://www.epa.gov/stpc/pdfs/draft-scientific-integrity-policy-aug2011.pdf (Draft Science Policy). In it, EPA reiterates that "science is the backbone of EPA's decision-making." Moreover, EPA recognizes that the "environmental policies, decisions, guidance and regulations that impact the lives of all Americans every day are grounded, at a most fundamental level, in sound, high quality science." Draft Science Policy at 1.

EPA's data collection January 3 Notice should be analyzed and assessed in light of the President's commitment to scientific integrity. In that light, the notice raises more questions about how EPA will collect and analyze data to ensure future decisions about any numeric effluent limit for turbidity will be grounded in such high quality science.

XII. Analysis of Passive Treatment Data from Studies by Dr. McLaughlin

Dr. McLaughlin's studies were used by EPA to support its December 2009 turbidity limit of 280 NTU. There were three "passive treatment" sites and very few rain events (one site only had three events) represented in the data accepted by EPA. *See* NCR.1, NCR.2 and NC-Road in "Target Turbidity Limits for Passive Treatment Systems" (Docket ID EPA-HQ-OW-2008-0465-0984.6). Dr. McLaughlin has supplied additional data from three new studies at two (or possibly three) locations: "Attachment 1" which had three sampling events, "Basin 3 Out" which had four sampling events, and "Basin 4 Out" which had three sampling events. *See* DCN 70004 (Docket ID EPA-HQ-OW-2010-0884-0011); Excel Spreadsheets DCN 70064 _1 11.3csk, DCN 70064_2 11.4, and DCN 70064_3 (Docket IDs EPA-HQ-OW-2010-0884-0063, -0064, and -0065, respectively).

Overall, the data from the McLaughlin pilot/research studies are not suitable for setting a numeric effluent limit or national ELG standards, as explained in detail in the URS comment letter. As summarized below, the data do not demonstrate the ability of passive treatment systems (PTS) to achieve a consistent result or to meet a NEL in all cases.

- **The McLaughlin data remains extremely limited, with very few sampling events during periods of active construction.** The data do not represent the full range of conditions that can occur during various rain events, or how a single rain event might have different impacts at different sites.
- **Most of the McLaughlin sites involved the same Passive Treatment System (PTS):** fiber check dams (including PAM) on highway projects. Highway projects are narrow and linear, and the drainage ditches are most often well defined, usually being on one side of the highway with drainage mostly parallel to the road direction. These fiber check dams with relatively small sediment traps are adaptable for a highway sites. But other types of construction such as housing, industrial, or commercial development can present different conditions (and drainage patterns can be more complex) and fiber check dams might not be as effective, or may not be practical to install.

- **There were many rain events where turbidity data were collected, but the results were not used by EPA,** and the reason for the omissions could not always be ascertained from the reports. These omissions had a significant effect on the overall performance evaluation — used by EPA in their Dec. 2009 limit calculation — because of the small dataset. *See* NC-Road in “Target Turbidity Limits for Passive Treatment Systems” (Docket ID EPA-HQ-OW-2008-0465-0984.6). Specifically, the NC-Road project experienced many complicating factors wherein the PTS did not remain intact and the data from nine storms were either not used or not collected. McLaughlin’s paper states in the paragraph between Table 2 and Table 3: “For an additional nine rain events, the activities on the site disrupted the PTS, primarily by disturbing areas which did not go through the ditch treatment of wattles and PAM.” *Id.* Issues like this emphasize the day-to-day situations present at real construction sites, and why trying to set or comply with an NEL is impractical. EPA is unjustified in relying on data to set a national standard that disregards such real world situations.
- **EPA eliminated (as invalid) a high data point for the NCR.2 site that completely altered the calculations for that site**, because it was one of only four successful samples taken at that site prior to paving. EPA appears to have treated the data in an inconsistent manner, eliminating high turbidity event(s) but not low turbidity samples that appeared to be equally suspect in their validity. Because at least half of McLaughlin’s sites appear to contain one data point significantly higher than the others, such high data points cannot be considered “statistical outlier calculations.” Rather, they are part of a common pattern of occurrence likely based on the extent of site disturbance and condition during variable rain events related to intensity or other characteristics of the storm and/or the site.
- **On numerous other occasions, samples were not collected due to low flow or auto-sampler malfunction.** Approximately 25% of rain events were not sampled at Basin 3, and that sampling stopped at a time when the measured turbidity values from the individual sample bottles were still near their maximum NTU. Further, the Basin 4 outlet is missing over 90% of the discharge samples from the same rain event. These inconsistencies raise serious questions about the resulting data quality as it relates to setting a NEL. URS predicts that the automated ISCO samplers missed so many of the large rain event samples due to the flow-proportional sampling mode of the ISCO machines. Most typically, when set up in flow proportional mode, the ISCO sampler is designed to pull a sample after its flow sensor indicates that another fixed volume of water (in gallons) has passed by the sampling point. This fixed volume is determined by the ISCO operator prior to the sampling. However, the operator must have a reasonably accurate estimate of the expected flow that will occur for the sampling event. If set too high, not enough samples will be taken, if set too low, all 24 bottles in the automatic sampler will be filled, and the sampler will quit taking samples before the rain event is finished and truly characterized. This can be done for a controlled process with reasonable certainty, but for a highly variable rain event it is very difficult to predict at the time of sampler setup and programming. An error in the flow proportional sampling setup will cause important samples to be missed, which results in a built-in dataset bias, where the larger, longer lasting rain events are inadequately sampled, and the smaller, lower turbidity rain events are disproportionately represented in the overall data. Higher intensity rain events also appear to have triggered sampler malfunctions. Consequently, the rain events most likely to have the highest turbidity values were ultimately excluded from the

dataset and diminish or eliminate the dataset's value for regulatory purposes. Our concern is that the samplers may be more prone to malfunction during the larger or more intense rain events. Hence, the turbidity results of the sampled events are skewed towards lower flow events that are more easily treated by passive treatment and reflect lower (not representative) turbidity values.

- **The McLaughlin studies were performed as comparisons of their PTS setups to conventional BMPs, and were not intended to be used to set regulatory numeric limits.** McLaughlin's methods and procedures for collecting samples and their subsequent analyses and screening may be suitable for an academic research project to evaluate PTS effectiveness relative to other types of BMPs, but they are not appropriate for setting an NEL. For example, McLaughlin's NC-Road site (note this was a three acre Limited Impact Development (LID) site for three buildings) report indicates that the installation of LID devices may conflict with stormwater BMPs needed during the construction phase: "This is an LID development involving three buildings, and due to the small construction site footprint much of the site is under constant disturbance by the various contractors involved. This creates challenges to maintaining the PTS and keeping stormwater flowing through stabilized ditches with the treatment system." The McLaughlin report suggests a solution would be to temporarily install the PTS, including a sediment basin, out of the construction envelope and route all stormwater to it. Once the site is stabilized, these areas could be reclaimed or used for post-construction stormwater treatment. Most sites would not have an option to install the PTS and sediment basins temporarily offsite, as McLaughlin suggests.
- **At least one McLaughlin site was poorly managed due to travel distance.** EPA also included in its January 3 Notice a brief discussion of data from an older McLaughlin paper titled "Water Quality Improvements Using Modified Sediment Control Systems on Construction Sites" (DCN 70063, or Docket ID EPA-HQ-OW-2010-0884-0062). In that paper, McLaughlin noted that the site was more than three hours away; therefore, his team could not get to the site as needed and their sampling system was frequently disrupted by activities at the site.

XIII. Comments on Semi-Passive Control Technologies

EPA is asking for public input on how it is characterizing PTS and ''semi-passive'' treatment systems in the context of construction site stormwater management. According to EPA, PTS are "practices that do not rely on computerized systems with pumps, filters and real-time controls but do incorporate a treatment chemical to aid in sediment and turbidity removal." But "when pumps are utilized to pump the water through a manifold or other apparatus to dose the chemical, this type of treatment has been characterized by the industry as semi-passive treatment." 77 *Fed. Reg.* 112.

Overall, AGC members have expressed concern about any treatment technology that requires the stormwater to first be stored in ponds, tanks or other impoundments in order to provide a controlled release. These storage requirements add significant costs and additional operational considerations to address, particularly during extended periods of precipitation. Also AGC is highly concerned about the fact that the "semi-passive" control technology examples discussed in the January 3 Notice would most likely require the equivalent of one-and-a-half to two (1.5-2) full-time personnel during periods of stormwater treatment, and those people would need significant training in the assembly and operation of the "semi-passive" systems. These types of systems are more accurately described as "active systems" with lower rental or capital costs, rather than "semi-passive" systems.

A. Water Treatment Assessment Report, Petersburg, Alaska Airport (Docket ID: EPA-HQ-OW-2010-0884-0007, or DCN 70000, also two auxiliary magazine articles, DCN 70001 and 70002, or EPA-HQ-OW-2010-0884-0008 and -0009)

EPA's January 3 Notice points to a report (DCN 70000) that it describes as an example of semi-passive treatment of runoff water from an airport runway expansion at the Petersburg, Alaska Airport and requests comment on "whether this dataset should be considered representative of … BAT technology." AGC strongly maintains that the Alaska Airport dataset fails to show a reasonable assurance that the technologies used at the project are capable of meeting a numeric effluent limit under a variety of site conditions.

The airport's construction schedule mandated that work proceeded around the clock to finish the project as soon as possible — actual construction lasted only from March 26, 2009 to April 14, 2009. The project's so-called "semi-passive" treatment used pumping at "moderate" flows ranging from 50 to 250 gallons per minute (gpm) to force the water through two different PVC pipes containing different brands of chitosan gel socks. Then the water was discharged from each pipe into separate sediment settling traps. The traps reportedly held 500 gallons. Because the effluent from four different sediment traps were sampled on some days, it would appear that two pumps were used, each of which fed water to two different sediment traps. The water leaving the sediment traps proceeded into a natural muskeg wetland bio-filter, where significant further turbidity reduction was observed prior to the water entering the stream.

As URS states in its comments, and as AGC members report, these "semi-passive" (or more properly termed "active") treatments methods need to have an on-site operator to observe, if not actively run, the equipment in order to maintain the system, add chitosan, and address other common problems that may arise. In the Alaska Airport example, the continuous nature of the construction provided around the clock monitoring for the entire (relatively short) duration of this project, so obviously problems associated with an unmanned system did not arise. This is not a typical site condition, would not be expected to occur on most projects throughout the county, and cannot be used to set national ELG standards without recognizing its unique circumstances.

The main findings of this report are that semi-passive treatment using chitosan-enhanced settling in a sediment trap reduced turbidity to a daily average of 248 NTU, with several major spikes in turbidity (greater than 1000 NTU) that often apparently coincided with spikes in the influent turbidity. Alternative explanations are given in this report for these spikes, but URS did not find any of the reasons to be sufficient to discount these spikes as outliers, as explained below. Based on its analysis, URS believes that the data from this site truly reflect that the semi-passive treatment for this site would accurately be calculated to be more than 1000 NTU.

The Alaska Airport report also claims to have achieved a daily average of 102 NTU through the muskeg bio-filter buffer, but this was based on far fewer daily measurements, and it is unclear as to which samples were considered "muskeg" from the raw data labeling. This bio-filter would be an additional technology that would not be present at most sites across the country. This site essentially had a naturally available bio-filter it could use for further treatment. In addition, because those muskeg wetland areas were destined to be filled in (DCN 70001) during later construction, there was no concern about damaging the wetland with the settled sediment. As a result, the turbidity results after the bio-filter are not representative of semi-passive, polymer assisted settling technology, according to URS's expert opinion. *See* URS's complete comments to EPA's January 3 Notice.

B. StormKlear Control Technologies and Sites

EPA cited a long series of vendor articles regarding sites treated using various StormKlear products. None of these reports appear to have measured data that could qualify as sufficient in either quantity or quality to be used to establish an effluent turbidity limit. All of the Storm-Klear examples involve a new type of "dual biopolymer" coagulant utilizing filter bags. From the available descriptions, it appears that this process is intensive in both labor and material, and should more properly be termed "active treatment." It also appears these systems may only be capable of treating relatively small amounts of water without greatly increasing labor and materials costs, and probably would not be practical or economically feasible for large sites (>10 acres) or large rain events. However, dates and times of sampling, or the site locations where the samples were taken, are not available in the majority of articles. And most, if not all, of the turbidity measurements were not taken from the actual discharge, and some results were sampled directly at the biopolymer filter bag technology, without indication as to whether this was representative of the site's overall discharge.

XIV. AGC's Response to Additional Questions Presented in EPA's Notice

A. Stormwater Collection Procedures and Measuring Equipment

In EPA's January 3 Notice, the Agency outlines its intention for stormwater samples to be used (1) by EPA to set a numeric limit on the amount of dirt allowed in construction site runoff and (2) by the construction site operator to demonstrate compliance any numeric "turbidity" limit that EPA may develop. EPA has requested comment on the most appropriate procedure(s) for collecting samples of stormwater on construction sites, as well as the potential costs and challenges associated with sample collection. EPA also includes questions related to the equipment that site operators would use to measure the turbidity levels of any samples collected in the field.

Following are specific questions posed by the Agency, followed by AGC's responsive comments:

1. What are the limitations/concerns with using automatic grab sampling equipment?

   The sampling frequency of the ISCO sampler must be preset by the operator based on expected flows, so that the sampler collects sufficient sample, but at the same time does not exhaust all of the sample bottle space in the sampler. Getting this right is complicated, if not impractical, because it depends on the size of the rain event, the size of the drainage currently upstream from the sampling point (which can change as construction progresses), and also depends on the model of ISCO sampler being used.

As explained in Section XII of AGC's Comments (above) and reported by AGC's members, there is no way to know in advance how much precipitation and stormwater flow will occur. Due to the variability in precipitation events and stormwater flow, it is difficult – if not impossible – to select an appropriate "sample collection interval" that ensures sufficient samples are collected over the course of the hydrograph to adequately characterize the discharge. If the sample collection interval is set too low, then the sampler may fill up before the end of the event and a portion of the hydrograph may not be sampled. If the interval is set too high, then too few samples may be collected to adequately characterize the event.

As a result, if EPA collects and uses any data from automatic samplers, it must also request appropriate information on storm events and operator assumptions relative to those events to ensure that the sampler appropriately collected samples that reflect the totality of the circumstances associated with that storm event. Otherwise, EPA and the regulated community are forced to guess at the reliability and validity of the data.

In addition, auto sampling devices are costly, they are subject to theft/vandalism, and the intake tubes freeze in northern climates during the cold season. AGC members also report issues with constant maintenance, even with normal operations.

2. What are the limitations/concerns with taking manual grab samples?

   Collecting a grab sample requires that someone be physically present on the site. AGC members reported that someone would need to be physically present at each outfall prior to discharge to determine when it starts, and potentially throughout the course of the storm event if samples are to be collected at different intervals. Each outfall would need to be staffed with trained professionals. This would be an immense burden on resources and would likely pull resources away from making quick repairs. It would be especially difficult for companies to accomplish, given the variable nature of storm events. Also, in many instances the jobsite is not located in close proximity to the field offices of the sampling personnel.

   As stated above, because every site and every storm event is unique in its own way, EPA must obtain sufficient information associated with collecting grab samples in order to properly characterize what is being measured and the context of the measurement.

3. Should EPA consider another method (*e.g.*, composite sample) for collecting samples of construction site runoff (*i.e.*, a method that is preferable to the "grab sample" method)? Why?

   Site logistics — the specifics of a particular site (such as the location of the site, the number of discharge points, proximity of discharge points, accessibility of discharge points, etc.) — are important considerations in determining the type of sample to be collected. If EPA is going to require monitoring, it must allow flexibility for site operators to choose different methods. EPA must make some fundamental decisions regarding pollutant of concern (TSS vs. turbidity) and develop an appropriate sampling strategy that collects appropriate information for assessing pollutant discharges associated with that parameter.

At this point, EPA is assuming that industry would use a hand-held turbidimeter to measure the turbidity levels of any samples collected in the field.

4. What are the limitations that EPA should consider related to turbidimeters?

   Turbidimeters only operate within specific ranges. The high-end of the range is typically around 1,000 NTU or more. EPA's Method 180.1 requires samples with high amounts of turbidity to be diluted in order for the turbidity of the sample to be within the operating range of the instrument. This is a potential source of error, especially if done in the field. Different types of turbidimeters may provide different measurements of turbidity for the same sample. This is due to differences in light sources and differences in the orientation of the light source with respect to the detector. In addition, AGC members report that the color of the particles, the shape of particles, the refractive indices of the particles in the water, the water temperature, and the calibration method of a given meter will all affect the reading. Thus, one could not expect two meters of different calibration standards to give the same turbidity measurement on the same sample. *See* http://www.omega.com/techref/ph-6.html.

   AGC members also report that turbidity equipment is relatively expensive and difficult to operate when compared to other types of environmental sampling. They are delicate and sensitive which is compounded when done in the field. The meters automatically change units of measurement per the concentration and can change from NTU, AUs (absorbance units), and FTUs (Formazin Turbidity Units) with little control. If/when turbidity becomes commonly monitored at construction projects, simpler means of measurement should be developed. This equipment should be extremely durable if not disposable. An example would be pH litmus test where a coloring material turns red in acid solutions and blue in alkaline solutions. Another low tech measurement option could be opacity comparison with Ringelmann chart or other similar type.

   The variability and issues with turbidimeters call into question the discussion (above) regarding EPA Method 180.1 and whether all turbidity monitoring must be done in accordance with that Method, or whether EPA believes that Method should be modified. AGC questions whether using shortcuts (such as turbidimeters) is an appropriate way to collect data for establishing (or complying with) a possible numeric limit through the ELG process.

5. Should EPA consider other types of equipment for measuring turbidity levels in stormwater runoff?

   In its January 3 Notice, EPA refers to in-situ meters coupled with data-loggers as another potential method for measuring turbidity. As with the hand-held turbidimeter, AGC members have found that there is a limited range for readings. What is more, turbidity above the measurement range of the instrument cannot be determined, since a physical sample is not collected. In addition, the source of error is particularly high during periods of peak flows where turbidity may be very high. In-situ meters are also susceptible to equipment malfunctions and failure, such as from battery failure or a piece of debris obscuring the detector.

As stated above, if/when turbidity becomes commonly monitored at construction projects, simpler means of measurement should be developed. *See also* comments on Method 180.1 in the preceding comment, as well as earlier in these comments.

6. What unit should EPA use to measure turbidity?

   AGC members report that meters automatically change units of measurement per the concentration and can change from NTU, AUs, and FTU's with little control. AGC is not endorsing the use of turbidity data to establish a numeric limit or ELG standard.

B. Conditions where an Exemption from a Numeric Turbidity Limit is Needed, including Rain Intensity as well as a Design Depth Rain Event

EPA has requested comments on what would be a viable storm size exemption from a numeric turbidity limit. AGC strongly maintains that a numeric effluent limit is not practical. EPA cannot legally justify a single compliance limit for all locations throughout the nation. However, if EPA moves ahead with a proposed rule, there must be clear and well-reasoned exemptions from the numeric limit, especially if passive or semi-passive technologies are to be the basis for the limit.

AGC opposes a numeric limit. AGC notes that the URS report addresses various circumstances where stormwater controls would not be effective in meeting any future numeric limit:

- **Acreage Threshold—**EPA should require only sites that disturb large amounts of land at one time to monitor turbidity and comply with any numeric turbidity limit. As the site construction progresses and more areas are stabilized, so that the site no longer has exceeded threshold of disturbed acres, the turbidity monitoring and numeric limit compliance requirements should come to an end.
- **Total size of rain event—**EPA should provide a total rainfall exemption from any numeric effluent limit for the two-year, 24-hour rain event. However, the wording from the 2009 final rule should be changed from "calendar day" to "any 24-hour period". The exemption from the turbidity rule would apply to samples from either day that was part of the 2-year, 24-hour rain.
- **Extended Periods of Rain—**Extended periods of rain can also saturate the ground and make compliance with a numeric limit impossible - even without ever exceeding the 2-year, 24-hour threshold for any single 24-hour period. EPA should provide an exemption from any numeric limit whenever an official general flood watch or flash flood watch is issued for the county in which the site is located, continuing through the day that follows the lifting of the flood or flash flood watch.
- **High Intensity Rain Events—**EPA should grant an exemption from any numeric limit whenever there are high intensity rain events. For example, for any two-hour period that

has more than one inch of rainfall, there would be a 24-hour exemption from meeting the numeric limit, starting from the beginning of this rain event. The event could be verified either directly at the site, or by information from the closest official weather station. High intensity rain events cause the most impact to stormwater BMPs and the discharge at a site. Such rain events can cause much larger amounts of sediment to be transported in the runoff, and the sudden high flow can cause irregular PAM dosing from passive treatment BMPs, or even bypass the PTS altogether. Even if a site has room and has installed large detention and settling ponds to collect this runoff, the higher sediment release along with a less certain polymer dosage might mean that even these ponds provide insufficient settling time.

- **Miscellaneous –** Because we still do not fully understand all of the issues associated with monitoring for any future numeric limit, there are bound to be issues that have not previously been addressed by EPA or included in these comments. AGC encourages EPA to use the comments to its January 3 Notice to further refine its ELG approach and then to request more comments after it can more precisely articulate its strategy and approach to collecting data and possibly setting a numeric limit. AGC does not endorse or support a numeric limit but has provided comments throughout this submission in good faith to help EPA consider all of the issues associated with possibly setting a limit. In doing so, AGC admits that there are many circumstances that it and EPA have not considered and any attempt to interpret these comments as the full extent of all issues associated with a numeric limit for the C&D ELG rulemaking is misguided.

C. Cold Weather Conditions Affecting Treatment

It is important that EPA recognize the challenges to employing treatment technologies on construction sites during certain cold weather conditions, namely: 1) during the thaw period when large amounts of snow still remain on the site, altering site runoff (or run-on) patterns, and drastically increasing runoff during rain events due to accelerated snow melt, or 2) periods of alternating freezes and thaws, where passive polymer application BMPs can become coated with ice, frozen, or covered in snow and rendered ineffective. While it appears that the adverse effects would be greater for many of the purely passive systems described in the January 3 Notice, semi-passive systems are not immune from problems. For example, the pipes, pumps, and wet polymer socks must be drained, dismantled, and/or otherwise protected from overnight freezing when not in use.

Some preventative actions can certainly be taken during cold weather conditions. But where cold weather treatment actions are possible/practical, they represent a <u>very significant</u> cost item that EPA must include in their cost/benefit analysis for the rule.

EPA pointed to the Alaska Airport project as a successful attempt at meeting a numeric turbidity limit under cold weather conditions. However, EPA's January 3 Notice fails to point out some of the unique aspects of this project that gave it a significant advantage over other "typical" sites in dealing with the cold weather experienced at the site.

- EPA's Notice does not mention that melting snow covered most of the ground at the Alaska Airport project, which experienced an average of more 100 inches of rain a year.

Over and above the requirements for the semi-passive polymer treatment, the site had to set up additional pumping stations, pipes and dispersers to divert snow melt and rain around and/or over the site to keep water from running onto the disturbed areas.

- EPA's Notice also fails to mention that work on the Alaska Airport project continued 24 hours a day, including the treatment of snow melt and rain for turbidity. Because the pumps, polymer manifolds, and sediment traps were constantly attended and in near constant use, the site did not have to worry as much about overnight freezing.
- The site did experience some problems with the polymers dissolving more slowly in the cold water. The operators partially compensated by adding additional cartridges of polymer in a lengthened PVC pipe to get more polymer into solution.

EPA's effort to characterize the Alaska Airport project as representative of all freezing conditions across the lower 48 states at all types of construction projects is inappropriate and arbitrary. Cold weather sites are one of several factors that EPA failed to analyze in its 2009 Final C&D ELG. It must address all expected scenarios prior to setting a numeric limit. It must collect and analyze a far greater dataset on cold weather sites as well as collect data from other likely scenarios. This one example is not sufficient, particularly because even for Alaska, this was a unique construction project and not "typical" of most Alaska projects.

D. Toxicity of Polymers

The potential toxicity of treatment chemicals has become an increasingly important issue as EPA considers modifying the C&D ELG to include a numeric effluent limit for turbidity. In the January 3 Notice, EPA discusses the use of treatment chemicals and potential toxicity concerns. Following are AGC's comments on the specific issues/concerns raised by EPA and other related information.

EPA acknowledges in the January 3 Notice that it has limited data on the toxicity of treatment chemicals when used to treat construction site stormwater runoff. EPA notes that unbound cationic polymers are known to cause "mechanical lethality" to some species in some instances. AGC maintains that EPA has not adequately accounted for how the imposition of a numeric limit would greatly increase the use of these chemicals. Not only would the number of discharges containing these chemicals greatly increase over the United States, but it would be much more concentrated in urban areas where most construction occurs. This would likely have a major accumulative negative impact on the local stream environments. AGC members have pointed out that the actual dosage of polymer is not well controlled when implementing many types of passive and semi-passive treatment.

In the docket, there is a recent literature survey conducted by the EPA Office of Science Policy concerning studies on polymer toxicity (Docket ID EPA-HQ-OW-2010-0084-0097). This survey was conducted for the EPA Construction General Permit (CGP) Work Group in November 2011, but was only recently included in the C&D ELG Docket. In this document, there are papers cited that indicate significant toxicity of cationic polymers such as chitosan, one of the most popular polymers for removing sediment from stormwater runoff at construction sites. There are other papers identified in this document that discusses how even the toxicity of many anionic polymers might not have been adequately addressed.

The newly released 2012 EPA CGP indicates a high concern about polymer toxicity and presents major requirements on any operators using polymers, especially cationic polymers, for either soil stabilization or turbidity removal. This will have major impact on the use of chitosan. Although it is made from a natural material, it is a cationic type polymer, and has exhibited toxic effects. EPA's CGP has added the following requirements in Section 1.2.4 for the use of cationic polymers including chitosan:

> If you plan to use cationic treatment chemicals (as defined in Appendix A), you are ineligible for coverage under this permit, unless you notify your applicable EPA Regional Office in advance and the EPA office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

Site operators will need to obtain specific authorization for their use from EPA (or presumably the responsible regulatory authority for State CGPs that will be modeled after the new EPA CGP) in order to be covered under the CGP, or else obtain an individual permit that authorizes their use. Section 2.1.3.3 also spells out specific rules and minimum requirements that must be met for the use of any polymer either for soil stabilization or water treatment. The entire list is too lengthy to repeat in these comments, but it includes requirements that conventional erosion and sediment controls must be in place prior to chemical addition to ensure effective treatment, and that chemicals may only be applied where treated stormwater is directed to a sediment control (*e.g.*, sediment basin, perimeter control). Section 2.1.3.3.g again specifically addresses cationic polymers:

> Under the CGP a site must comply with additional requirements for the approved use of cationic chemicals. If you have been authorized to use cationic chemicals at your site pursuant to Part 1.2.4, and the authorization is conditioned on your compliance with additional requirements necessary to ensure that the use of such chemicals will not cause an exceedance of water quality standards, you are required to comply with all such requirements.

In conclusion, it appears that the CGP is more fully addressing polymer toxicity issues than is apparent in the C&D ELG, and there needs to be reconciliation between the policies of the C&D ELG rule verses the CGP. If EPA promulgates an NEL that would likely require polymer treatment, it would probably result in the unintended consequence of nullifying the use of the CGP at most qualifying construction sites. If general permits are, in effect, not available, then individual permits would be mandated — adding costs to projects as well as increasing administrative burdens for permitting authorities that lead to delays.

Also, in the EPA Multi-Sector General Permit, which regulates stormwater runoff from industrial sites, it strictly regulates aluminum in runoff from aluminum related industries. Many of these industries have dross material high in salts, and the runoff from these sites are required to be monitored for total (not dissolved) aluminum, and must take corrective actions when the concentration exceeds as little as 0.1 mg/L. This requirement would seem to be in conflict with EPA permitting the use of aluminum salts on construction sites.

EPA's 2009 Final C&D ELG docket and response to comments appeared to disregard toxicity concerns. That was wrong and EPA must account for the costs and impacts associated with using chemicals in passive and semi-passive treatment, assuming those become model technologies. These costs include administrative costs related to obtaining state (or EPA) approval to use chemicals, the potential costs of collecting and treating stormwater to remove excess or residual chemical concentrations, and the potential for impacts on aquatic species associated with those chemicals. AGC does not support or endorse EPA's reliance on chemical usage or possible mandate of chemicals in passive or semi-passive technologies when setting any nationally applicable ELG standard. They may be appropriate in certain circumstances, but cannot be supported as a national standard. If they are relied upon for such, the true costs associated with their use must be included in the cost analysis and potential harms offset against benefits.

XV. Conclusion

AGC appreciates the opportunity to provide comments and voice significant concerns with EPA's data collection strategy and issues raised in the January 3, 2012, *Federal Register* Notice. We encourage EPA to work closely with the construction industry during the comment review process.