Critique of NRDC Comments

This document has been prepared as a critique of some specific recommendations provided in the NRDC comments to the proposed C&D ELG. Some of the specific areas covered are the inappropriateness of the NRDC comments/recommendations with regard to NEL (Numeric Effluent Limits), the narrative "no visible discharge" limit, the projected benefits, the estimated cost of compliance, and underestimating the effectiveness of the State CGP and BMPs. The relevant page numbers in the NRDC Comments have been referenced with each topic that has been evaluated.

Part 1—Discussion of Major Topics of Disagreement NAHB has with the NRDC Comments

Part 1A: Discussion of McLaughlin "200 NTU Limit" from Exhibit 10 (EPA-HQ-OW-2008-0465-1370[1].10, *Target Turbidity Limits for Passive Treatment Systems*, Richard A. McLaughlin, Ph.D.) and the McLaughlin/Zimmerman Exhibit 4 joint comments (EPA-HQ-OW-2008-0465-1370[1].4, *Critique of the Proposed Effluent Guideline for the Construction and Development Industry*, Alex Zimmerman and Rich McLaughlin, February 20, 2008) discussion in main NRDC comments starts on page 19 (EPA-HQ-OW-2008-0465-1370, NRDC/Waterkeepers Comments).

This is a critique of comments about the NRDC 200 NTU proposed limit. NRDC has based its analysis entirely on the above referenced papers identified as Exhibits 10 and 4 in its comments.

NAHB does not believe that these two papers on limited studies in North Carolina support the proposed 200 NTU level. If a *national* benchmark level is to be applied, it should be much higher to account for regional differences in soil, topography, rainfall, naturally occurring background NTU levels, and other regional parameters.

The NRDC/Waterkeepers coalition has taken the findings and opinions from several studies of Passive Treatment Systems conducted by Dr. McLaughlin (Exhibit 10, EPA-HQ-OW-2008-0465-1370[1].10) and McLaughlin/Zimmerman (Exhibit 4, EPA-HQ-OW-2008-0465-1370[1].4) and presented them in its comments as evidence that all sites greater than 1 acre can meet an absolute, instantaneous numeric turbidity compliance limit of 200 NTU. McLaughlin and Zimmerman do state in their joint paper (NRDC Exhibit 4) that a national "target" limit would seem to be the only way to persuade State agencies to accept new technologies that they believe are effective, most notably Passive Treatment Systems (PTS). The papers suggest a target limit (similar to a benchmark), not a numeric limit as stated by NRDC. However, their discussions also indicate that there are variances based on regions and rainfall events and that, although the systems are termed "passive" treatment, they require expert operators, timely maintenance, and coordination with construction activities to work effectively.

McLaughlin's paper, NRDC Exhibit 10, also discussed problems with small sites, especially those utilizing LID. This paper stated that the addition of an off-site pond may have proven beneficial for the three acre test site utilizing LID, but NAHB would submit that this remedy is simply not possible for the vast majority of construction sites. NAHB does not believe that a numeric limit is required to effectively control sediment runoff from construction sites, but if a

numeric limit is imposed, it could only be practically used as a benchmark limit. In addition, a single numeric limit is not appropriate; it must be adjustable to various regions and site conditions. NAHB is opposed to any compliance limit for BMP technologies where the effectiveness can very greatly from site to site. NAHB is not opposed to PTS; however, the Association believes it can be assimilated into the recommended BMPs on a regional basis without the use of numeric limits. The PTS requirements could be incorporated into the State BMPs during one of the CGP 5-year review cycles if evidence suggests it would be effective for regions of that state.

Text of 200 NTU limit comments:

Exhibit 10 is a brief paper summarizing several research projects by Dr. McLaughlin and associates that describe monitoring results of passive treatment systems installed by the author or by construction contractors under his supervision. These were primarily located at a few construction sites in North Carolina and operated and monitored during several rain events. The author believes that the use of passive treatment systems (PTS) can reduce turbidity dramatically. With properly trained staff, proper maintenance, and adjustments to the PTS in response to changing construction activities, Dr. McLaughlin believes that PTS can consistently provide turbidity <200 NTU. The author suggests that 200 NTU might be considered as a "target" limit. However, the paper also discusses many practical problems with the PTS systems. Problems noted by the author included: water that bypasses treatment increases the occurrence of high turbidity samples; changes in the construction activities require adjustments to ensure that any additional runoff is collected and directed towards the front end of the "treatment waffle"; and

rain events can damage the PTS system, which must be frequently maintained by qualified personnel. The Exhibit 10 paper further states it is likely that a PTS trained individual would be required to be on staff or as a contractor. In Exhibit 4, the authors (Zimmerman and McLaughlin) also state that PTS operations require **continuous monitoring** to achieve optimum performance. Therefore, NAHB believes that these "passive systems" may not be as passive as the term implies.

NAHB is concerned that even the proponents of these PTSs concede that expert system operators must be on site during rain events, the turbidity must be continually monitored, and that many hands-on adjustments are apparently required during operation for optimum performance. These conditions would appear to be contrary to the authors' claim that PTS can cost less than conventional BMPs to maintain. It is not clear to NAHB whether the authors fully considered costs of labor for continuous monitoring and adjustments of the PTS during rain events. The NRDC and McLaughlin comments provide no specifics on costs.

Exhibit 10 is no more specific than to suggest that 200 NTU could be a "target" limit, which could be met with great care and proactive maintenance. In the McLaughlin/Zimmerman comments (NRDC Exhibit 4), this has evolved into a call for a national turbidity limit as the only means to provoke action from State regulators into adopting less traditional technologies. Even here, NAHB notes that the authors do not specify what type of limit they are advocating. It is also possible that the authors may be unfamiliar with the legal implications of a traditional ELG enforcement limit and with the legal requirements of the ELG process. The passive systems that the authors describe require considerable expertise to operate effectively and must be continually

adapted to changing site conditions, so as to handle upcoming rain events for which the intensity and duration are uncertain. A significant amount of trial and error would continue to be part of the optimizing process for such systems.

During review of the NRDC comments, it was observed that NRDC appears to obscure the difference between benchmark limits and enforcement compliance limits. For example, on page 7 NRDC comments state that several States (Washington, Oregon, Vermont and Georgia) have already instituted numeric turbidity limits. However, in its discussions, NRDC neglects to specify that these are **benchmark values**, not numeric compliance limits. An exceedance of a numeric compliance limit constitutes a regulatory violation and the potential for a fine, while an exceedance of a benchmark value does not automatically constitute a violation or the potential for a fine. Each of the above States requires different responses when a benchmark value is exceeded, which involve root cause analysis, corrective actions implementation, and documentation; thus, if these requirements are completed by the site operator, then no violation of the permit has occurred. In contrast, an ELG numeric enforcement limit is not flexible and does not allow "do-overs".

NAHB does not support the application of a numeric limit, which could involve civil and possibly criminal penalties in situations where honest professional judgment can be fallible, or when site and weather conditions beyond the control of the operator can cause a violation. Additionally, the costs incurred to achieve and maintain an absolute compliance limit under such variable conditions are many times greater than those incurred to address a benchmark exceedance. Not only is there the issue of possible fines associated with an absolute compliance

limit, but there are also administrative and legal costs, which are much more onerous for both the State regulators and the site operators when compliance is at issue. Compliance monitoring also requires laboratory analytical methodologies approved in 40-CFR Part 136 with traceability of standards, QC protocols, and documentation to satisfy legal requirements that are not going to be available on construction sites.

In the discussions in the proposed preamble regarding passive treatment, several papers were cited by EPA from the Auckland Regional Council (ARC). In the NAHB comments to the ELG, additional follow-up studies for the ARC are discussed that examined side by side ponds (titled "Performance of a Sediment Retention Pond Receiving Chemical Treatment", July, 2008). One pond used passive chemical treatment while the other did not. This study supports the use of passive chemical treatment and demonstrates that it can bring about significantly higher sediment removal. However, it raises the following questions concerning a single, numeric compliance limit of 200 NTU:

1. *Is 200 NTU appropriate for any region and any site?* Auckland is described in the studies as a bad region for stormwater erosion. The combination of steep topography, erosible soil, and high energy rain events, while making passive treatment desirable, also demonstrated that for many rain events, 200 NTU was not likely achievable, at least in the Auckland area. (TSS was the parameter actually measured, but the results would likely exceed 200 NTU by a wide margin.)
2. *Are numeric limits really necessary to force adoption of new technologies?* The ARC approach involves enforcement through BMP management and not through

numeric compliance limits. The ARC also investigates new technologies that could potentially achieve improved performance over conventional practices in certain regional localities. This series of passive system demonstrations convinced the ARC that passive chemical treatment greatly improved runoff from construction sites in the Auckland area. Due to the results from these demonstrations, the ARC has adopted passive chemical treatment as one of the technologies that must be included in all site stormwater management plans unless a site can demonstrate that it meets certain exemptions.

In regulatory terms, 200 NTU should not be applied as an instantaneous compliance limit as suggested by NRDC. An instantaneous compliance limit does not appear to be what is intended by the Dr. McLaughlin's papers, since he has also published a paper discussing flow proportional sampling with multiple measurements over the duration of the rain event (Exhibit 5, EPA-HQ-OW-2008-0465-1370[1].5, "*Recommended Sampling Methods for Stormwater*", Richard A. McLaughlin, Ph.D.). This type of approach is not at all practical to install at every discharge point on every construction site. It would therefore seem that a benchmark limit, rather than a compliance limit, would be more practical. If a benchmark value is exceeded, then the PTS operator would be required to identify the problems and make adjustments to correct them, but the exceedance incident alone is not considered a violation. In fact, the Zimmerman/McLaughlin paper (Exhibit 4) cites the Washington CGP as a successful example of implementation of a benchmark. Contrary to NRDC claims, the Washington CGP does not contain numeric compliance limits, but rather a two tiered system of benchmark limits. NAHB believes that benchmark limits are much more practical than the traditional enforcement style ELG NEL,

NAHB has previously commented that monitoring with any kind of numeric limits is unnecessary and costly. Most States currently renew their CGPs every five years. NAHB believes this provides an adequate mechanism within the current CGP permit process to introduce new technologies that are shown to be effective within the State or certain local regions within the State.

Evaluations of NRDC comments by NAHB revealed discrepancies in the NRDC suppositions, which we believe are inaccurate:

- The 200 NTU limit clearly cannot work as an instantaneous compliance limit as NRDC suggests. As described in papers from McLaughlin (Exhibits 10 and 4), it would appear at best to be a consideration for a benchmark "target" limit, an exceedence of which would trigger site operator inspections, maintenance, and repair of the PTS.
- NRDC comments stated that the limit should be applicable to all sites >1.0 acre. However, it is clear from the NAHB reviews that the PTS requires water collection excavations and settling ponds that are not typically practical for such small sites. In fact, the McLaughlin paper (Exhibit 10) discusses problems that were encountered with a three acre LID site, which he suggests could only be rectified by locating the sediment basin on additional acreage outside the construction site. This is not an option for most small sites and even for some larger sites. NAHB does not consider these options as viable alternatives at most construction sites. In many small or redevelopment projects, there is no land available to construct any type of settling basin.

- The experiments described by McLaughlin in Exhibits 4 and 10 were all performed in North Carolina, where they appear to have some success. Other locations have soil types, climates, or topography that render 200 NTU consistently unattainable, even when using PTS, such as the PTS sites monitored by the Aukland (NZ) Regional Council (ARC).

Part 1B: The NRDC Suggested Narrative Limit of "No Visible Discharge" (page 23 of the NRDC comments) is Completely Unworkable and Cannot be Met.

After long discussions in the NRDC comments stating that many of the CGP narrative requirements are not specific enough and, therefore, not enforceable, NRDC wants a narrative limit that states "no visible discharge of sediment". This suggested narrative limit is as ambiguous and subjective as those narrative limits in State CGPs that NRDC has previously criticized. "Visibility" is a very subjective parameter and is solely dependent upon the observer's judgment. The suggested 200 NTU limit for passive treatment is definitely visible, so technically, all passive treatment discharges would be in violation of the NRDC suggested narrative limit. On page 24 of its comments, NRDC states: "Generally, the naked eye can visually begin to detect turbidity in water when it reaches the 10 NTU threshold, while 200 NTU appears discolored with visible sedimentation, and 1500 NTU is an indication of nearly opaque water." Therefore, NRDC believes that even 10 NTU, which is lower than the proposed 13 NTU ATS limit, would still constitute "visible discharge of sediment". With this narrative, any rule would become almost completely arbitrary, where violations can be issued for most discharges at the discretion of a regulator, who may be under pressure from public "watchdog" groups.

This narrative limit would apparently take precedence over the numeric limits that NRDC elsewhere enthusiastically endorses; a site might meet any applicable numeric limit and still be cited with a violation for visible sediment.

Virtually all stormwater experts agree that a turbidity of 10 NTU is lower than the turbidity of most all receiving streams at ambient conditions, and lower than nearly every receiving stream during significant rain events. (This has been confirmed yet again in a Wisconsin DNR study that has been submitted to the Docket (Docket ID EPA-HQ-OW-2008-0465-1345)). It would mean that even construction sites as small as one acre would have to install ATS to even approach a no visible discharge standard. Small sites with no available land for ATS installation could not possibly meet a "visible discharge" standard and, even with ATS, it is extremely unlikely that a site could meet that standard.

The NRDC claims that several States have similar provisions that "prohibit visible discharge of sediment" citing Maryland, Montana, Missouri, and New York CGPs. However, the actual content of the State CGPs cited falls far short of the NRDC claims.

- **Maryland**— The State CGP contains the following quote concerning visual discharge of sediment, stating that during inspections, the operator must take all "reasonable measures" to prevent: "Discharges from the construction site to municipal conveyances, curbs and gutters, or streams running through or along the site where visual observations show that the discharges differ from ambient conditions in terms of turbidity so as to indicate significant amounts of sediment present in them." This narrative in no way

states or infers an absolute "prohibition" nor does it reference the term "no visible discharge"; instead it specifies a comparison to ambient background. Furthermore, the condition is not an absolute limit that would result in a violation of the permit, rather it requires action by the operator to take all reasonable measures to reduce or prevent this discharge. It is the failure to take reasonable measures, not the actual discharge, that constitutes a violation.

- **Montana**—There is no reference to a visual standard or "visible sediment" in either the effluent limitations section or the monitoring requirements section of the CGP. There is only a reference to preventing or correcting the discharge of "significant sediment" if it is due to a failure of erosion control and/or sediment removal BMPs. Again, there is no "prohibition" reference and "no visible discharge" reference in the Montana CGP.
- **Missouri**— On page 4, Section 1.b states: "Waters shall be free of oil, scum, or debris in sufficient amounts so as to be unsightly or prevent full maintenance of beneficial uses." Section 1.c states: "Water shall be free from substances in sufficient amounts to cause unsightly color or turbidity or prevent full maintenance of beneficial uses;..." On page 7, the CGP refers to amending the SWPPP if there is "...visual evidence such as excessive site erosion or excessive sediment deposits in streams or lakes..." These Missouri visual requirements are somewhat vague; however, it is clear from the wording that these requirements are referring to a striking and evident visible discharge. This falls far short of a "no visible discharge" requirement.
- **New York**—NY has three visible conditions for the discharge. "1) There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions; 2)

> There shall be no increase in suspended, colloidal and settleable solids that will cause deposition or impair the waters for their best usages; and 3) There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease." Again, none of these requirements even approach the NRDC ban on any visible sediment.

It is therefore obvious that all the visible sediment or other visible material requirements in the State CGPs cited by NRDC are intended for obvious, large quantity visible sediment discharges or other pollution. For all the above State CGPs, the visible discharge is itself not a violation, but represents a situation that must be corrected. None of these examples even approach a "prohibition of visible discharge" as defined by NRDC.

Part 1C: Comments Concerning the NRDC claim of Feasibility of the 13 NTU Compliance Limit Everywhere in the US under any Conditions (starts page 8 of NRDC comments)

NAHB believes that it is by no means certain that a 13 NTU limit can be achieved by ATS systems everywhere, under all conditions, because these systems have really only been tried to even a moderate extent on the northwestern coast of the US. Washington Ecology estimated that in the Seattle area, where ATS use is common, less than 10% of the CGP permitted sites used these systems, and then not necessarily at every discharge point. All the data EPA used to calculate the 13 NTU limit came from only three States, Washington, Oregon, and California. Additionally, the data was provided by ATS vendors and not by independent samplers and observers.

The data used by EPA to calculate the 13 NTU limit revealed that the ATSs were frequently required to go into "recycle mode", that is stop treatment when the continuous monitoring equipment shows the NTU has exceeded a set-point (usually 10 NTU). In the TDD, EPA stated that it does not believe recycling is a required technology for achieving and maintaining the 13 NTU limit. However, when examining the documentation available in the docket relative to the ATS operations that were being utilized at the sites in EPA's data set, it was noted that sites were frequently required to enter "recycle mode" in order to prevent the discharge from exceeding the NTU set point. The recycle frequency requirements can vary greatly depending on the type of soil, area topography, and the rain event intensity. The frequencies of recycling that would be necessary for other areas of the country beyond the west coast have not been studied and are thus unknown. Since frequent recycling results in the ATS treating a much lower volume of water, appropriate sizing of the ATSs that would be required for other parts of the country are not well documented. Also, recycling during continuous rain events could cause the system to fall behind and system bypasses may result, even when no single rain event exceeds the 2 year, 24 hour event. Another consideration that the West Coast ATSs do not require is freeze protection; the West Coast systems are typically operated only seasonally and not for the full duration of the construction project. These West Coast systems also rarely have the need to treat snow melt runoff.

The McLaughlin/Zimmerman comments (Exhibit 4) are somewhat contradictory as to whether a 13 NTU limit can be met by systems in every geographic locality. On page 13, it is stated that any properly designed and operated ATS system can provide a consistent discharge that is less than 10 NTU. However, the specific example given is a small (13 acre) site in Washington State,

which had an NTU limit of 10 NTU. This site was only required to operate for a single winter season, and only treated a total of 9.4 million gallons of water. The same paper, on page 12, describes an ATS system in North Carolina, where "turbidities were reduced…to **< 20 NTU in most cases**." Apparently soil and other conditions in North Carolina give somewhat different results, and it is unclear whether an ATS at the North Carolina site can consistently meet a 20 NTU limit, let alone a 13 NTU limit.

NAHB is aware that some sites may have successfully met 10 NTU limits on the west coast through recycling. However, these have only had to operate over a short duration, not for the full length of the permit (until the NOT) as required in the proposed ELG, greatly reducing cost. They usually require recycling (described above) as an integral part of the treatment technology in order to consistently meet a 10 NTU limit. Furthermore, most sites that use ATS systems, even on the west coast, do not have to operate within an absolute NTU limit, and do not have to capture and treat water from every point of discharge.

No one is saying that ATS systems are not effective at removing turbidity. However, a national limit cannot be based on the absolute limit of the technology from only a single region of the country. In addition, a 13 NTU level of turbidity is far below the naturally occurring turbidity during rain events for the vast majority of streams across the country. A real issue is the true cost of ATS and the cost effectiveness of removing sediment to below the background level typical of runoff from undisturbed land.

Part 1D: NRDC Comments that ATS is Affordable at Large Sites (page 9) are not Based on the Requirements of the Proposed ELG as Written

(The following discusses what NAHB believes is an incorrect analysis of the affordability of ATS in the NRDC comments and provides reasons as to why compliance with the proposed rule as written makes ATS operations many times more expensive than ATSs currently in operation. NAHB comments to the ELG (Docket ID EPA-HQ-OW-2008-0465-1360, entire series) go into great detail on this issue. NAHB comments effectively demonstrate that Option 2 of the proposed rule is not cost effective and that it has minimal benefit.)

The NRDC review of the proposed rule's cost effectiveness and benefit analysis assumed that EPA's costs and benefits were on target and, thus, offered no new relevant information nor data adjustments. Furthermore, the term "affordable" used by the NRDC is inappropriate and undefined in its comments; the question concerning ELG development is one of cost effectiveness for the proposed rule and the analysis of the benefits the rule would produce. For example, when a proposed rule requires the removal of sediment to levels below what would naturally occur during rain events in runoff from undisturbed ground, the cost effectiveness and benefits are highly questionable.

Another misplaced parameter used at times by NRDC and EPA is cost per gallon of water treated. For example, NRDC points out that for larger sites and for longer periods of ATS usage, the cost per gallon treated goes down. However, the cost that really matters is not cents per

gallon of water treated, but overall total cost of using the ATS, cost per housing unit built, and cost per acre. Most of these costs are incurred whether the ATS system treats water or not.

NRDC also compares cost per pound of *sediment* removed (about $0.08 per pound of sediment based on the flawed EPA estimates) favorably against previous ELGs which involve the cost of *toxic pound equivalents* removed. This is an inappropriate comparison based on existing ELGs; it is similar to comparing applies to bananas. In their comments, NAHB has pointed out that the EPA estimates for sediment runoff are not based on actual data, but on a theoretical calculation that many experts have stated is inappropriate to determine discharge loads, and is highly dependent on variable input parameters that can cause discharge loadings to vary several orders of magnitude. NAHB has demonstrated in its comments that available data of actual discharge from construction sites is approximately 100 times lower than the EPA theoretical model predicts. Secondly, it is inappropriate to compare pounds of non-toxic sediment removed to pounds of toxic equivalents removed used in other ELGs. The NRDC comments do not address the fact that the suspended sediment virtually all comes from natural soil. NRDC mentions heavy metals, but these are present at natural, extremely low background concentrations, and are not typically bio-available, in that they are fixed to the soil. They also state that the sediment is contaminated with toxic organics or petroleum products. There is no reason to believe that sediment from a previously undisturbed site contains any significant (unnatural) organic contamination, other than trace quantities from air deposition that might occur anywhere. Even if there were trace contaminants, the toxic pound equivalents are based on the weight of the actual contaminating compound, not on the entire weight of the soil. The toxic pound equivalent for a pound of unadulterated topsoil is essentially **zero**.

Another misplaced assumption by NRDC is basing their cost estimate on the cost of the ATS systems as they are currently operated, and not on the costs for compliance with the 13 NTU limit as proposed in the ELG. There are many features of the proposed rule that increase the cost of ATS treatment by a factor many times higher than the simple rental and operation of an ATS system from a vendor for a few months. The following is a summary of some of these factors:

- The 13 NTU limit applies to all discharges, so all water must be treated. This virtually assures that nearly the entire site must be disturbed to insure complete water collection, which makes retention of vegetated buffers or significant undisturbed areas far less likely, and increases expense.
- Most currently operating ATS systems are not required to meet an absolute limit nor are they required to treat *all* water before discharging from the site, unlike the proposed Options 2 and 3. This allows great flexibility in operation of the ATS, and allows for fewer discharge points. (Each discharge point requires a separate ATS system.) These features reduce operation costs.
- Many, perhaps a majority of ATS systems currently operated are only operated during the wet season, not year round. Typically to date, there has been only limited use of ATS technologies in three states across the US, i.e., Washington, Oregon, and California, which are operated for approximately 6 months per year during the wet season.
- Most current ATS systems are only operated during the mass grading phase of the construction project, when there is the highest probability of sediment runoff. The EPA proposed rule requires that the 13 NTU limit must be met for the duration of all

construction activity until the final Notice of Termination, and is not contingent on the phase of construction or the wet season. For most housing developments of 30 acres or larger, this time period would include minor disturbance activities and interior work, and could range from 2 to six years, or even longer in a slow market. The EPA cost estimates were for only nine months of ATS operation. The 13 NTU limit is so low, that even after final stabilization, runoff for many rain events would exceed 13 NTU.

- For many sites, it is not clear if ATS operation and treatment of 100% of the runoff is even possible once roads and storm sewers have been installed in a subdivision.
- None of the ATS quotes in the ELG docket contain any contingency costs. One major omission is freeze protection, which would be required in most areas of the country. NAHB is unaware of any successful ATS treatment being performed on snowmelt or under significant winter conditions.

All the above are a few reasons why the real costs of ATS technology that meets compliance with the proposed ELG are approximately five times higher than EPA or NRDC estimates (see NAHB comments to the proposed ELG). Therefore, the specific contentions of affordability by NRDC are not probable.

EPA has applied benefits to the rule that are based on its assumption that 28,000,000 *tons* of sediment are being discharged to the waters of the US every year from construction sites. This estimate was not based on any actual data of construction site runoff, but on a controversial theoretical model devised by EPA. In developing the rule, EPA never compared the resultant TSS from their theoretical calculations to any actual construction site runoff data. EPA has now

calculated that this theoretical estimate would result in an average discharge of approximately 40,000 mg/L TSS from every construction site. Actual real data in the docket typically averages between 200 and 600 mg/L TSS with the highest reported average TSS discharge NAHB noted in the EPA docket from a construction site with appropriate conventional BMPs and settling pond being approximately 9,000 mg/L from one sample (Auckland Regional Council ALPURT trials).

NAHB has pointed out in its comments that the EPA use of theoretical RUSLE values was flawed, because: 1) estimates for stream loadings is beyond the intended use of RUSLE, and 2) more importantly, the inputs that EPA used into the RUSLE equation were extreme, and/or extrapolated from inappropriate data. Examples: 1) The STATSGO database specifically states that it is inadequate to make local assumptions about percent slope and other topographic features. EPA not only used STATSGO, but assumed uniform acreage distribution up to the highest slopes within each soil category. 2) EPA used extremely high slope lengths. Example: EPA used an extremely long length of 350 feet as the *average* slope length in the large housing category, despite RUSLE equation cautions that slope lengths *rarely ever* exceed 400 feet. 3) EPA assumed that all erosion prevention BMPs required in existing State CGPs had zero impact at reducing erosion and the Agency assumed a "C" cover factor of 1.00 in the RUSLE equation. NAHB provided alternative estimates of sediment removal. Comparison with significant amounts of actual discharge data in the literature and also monitoring data from Washington State confirmed that the NAHB data was much closer to actual monitoring values.

The net effect is that EPA overestimated the sediment removal for Option 2 by almost two orders of magnitude and by significantly more for Option 3. In the preamble to the proposed rule, the EPA had estimated that instituting Option 2 would lower the median TSS in watersheds prone to construction activity by about 3.7% (lowering the median TSS concentration from 248 to 239 mg/L). Based on the more realistic estimate from NAHB, this value is only about 0.04%. This slight reduction would have no impact on dredging operations in navigable rivers and no impact on drinking water treatment plants, two of the main benefits cited by EPA. It is also clear that various aesthetic and recreational use benefits described by EPA would be greatly reduced and would only be realized locally and in isolated instances where a construction site may be located in a sensitive watershed.

For the removal of a conventional pollutant such as TSS or sediment, EPA has devised two tests to determine if a technology meets the criteria of "cost reasonableness". The first test states that the cost per pound removed should not exceed what is the equivalent of $0.98 in 2009 dollars. The second test is the "pass-through" test (for direct dischargers), which states that the ratio of removal cost at the site of generation vs. the removal costs at a POTW should not exceed 1.29; that is, the cost of removal at the site should not exceed the cost of removal at a POTW by more than 29%. When additional ATS costs and greatly reduced sediment removal were considered, NAHB estimated the actual costs of removing sediment to approximate $21.80 per pound for Option 2 and $23.37 per pound for Option 3. The NAHB calculated "pass through" ratios for Option 2 and Option 3 were 220 and 236 respectively; therefore, sediment removal using ATS at construction sites does not meet either of the cost reasonableness criteria established by EPA.

Part 1E: Post Construction Requirements (starts on page 25 of the NRDC comments).

The problem with the NRDC insistence that post-construction ELG limits must be included in a Construction and Development Rule is one of accountability and liability. Developers and owners are responsible for building permanent stormwater drainage BMPs that meet the codes and specifications of the MS4 system or other local authority. These plans must be approved by the local authority. After final stabilization and the NOT is signed, and provided all existing legal codes and regulations concerning the construction of permanent post construction stormwater BMPs have been met, the developer cannot bear responsibility for any future effluent limitations, or for the continued, indefinite maintenance of the post construction BMP and utilities. The prospect of incurring indefinite liability for property no longer owned and operated by the developer could bring the entire industry to a standstill. These should be the responsibility of the local MS4 or the current property owners. Currently, the only responsible party signing the Construction and Development Permits are the operators/developers, who will have no control over the property post-development. The problem is therefore best addressed in rules and regulations affecting these local MS4 and zoning entities, and should not be a part of a construction and development rule.

Part 2—Discussion of Other NAHB Disagreements with the NRDC Comments

Part 2A: General Discussion of Some of the Other Problems with the NRDC Comments

In general, the NRDC comments as to the extent of the sediment runoff problem focus on isolated discharge incidents and portray them as the typical characteristic stormwater discharges from construction sites. Statistics as to the overall contribution from construction sites to sediment runoff are often contradictory and they obscure the fact that even EPA acknowledges that construction site runoff contributes only a tiny fraction of the sediment lost each year.

It appears that NRDC wants virtually every type of stormwater or erosion control that has ever been tried with all simultaneously operative on the same site. Then in addition to the design and BMP requirements, there are the numeric limits. NRDC supports that all sites greater than one acre must meet a turbidity numeric limit of 200 NTU, while all sites greater than 30 acres must meet a 13 NTU limit that is below turbidity in "natural" runoff and can only be achieved by adopting ATS technology.

There is no quid pro quo in the NRDC comments where adopting one technology allows an operator to avoid another; NRDC appears to simply want everything no matter what the expense. For example, many of the proponents of ATS technologies state that the cost of ATS can be partially recovered because many erosion control and conventional BMP practices can be minimized, since the runoff is going to be thoroughly treated. Developers often state that greater requirements for erosion control and programs such as LID should be allowed as optional

alternatives for costly ATS treatment, and also point out that the installation of an ATS is incompatible with many recognized LID practices. The NRDC version of the rule appears to require maximum expenditures for conventional "narrative" BMP requirements, full ATS treatment for all sites greater than 30 acres, while *also* wanting Better Site Design (BSD) and Limited Impact Development (LID) technologies, with no recognition of the ATS compatibility issues. At the same time, NRDC unreasonably argues that these additional requirements would cause no increase over the already extremely low EPA cost estimates (see NAHB comments on costs).

Part 2B: NAHB Discussion of Other Specific Issues Raised in the NRDC (NRDC comment page numbers provided)

The following are some specific examples cited in the NRDC comments that the NAHB believes are inaccurate.

Page 2: "Discharges...from Construction Sites cause serious harm"

The NRDC seeks to emphasize the severity of the "current" runoff problem primarily by citing sediment runoff data from almost 24 years ago, before there were any stormwater regulations (Jackson and Burzansky, 1986). They also cite a figure of 2.2 million acres of agricultural property and forests "converted to suburban and urban land uses" annually, which is significantly different than the EPA estimated 590,000 acres "developed" each year. The NRDC report later uses the 590,000 acre number and offers no explanation for the apparent discrepancy.

Page 3—Flooding of Cameron Run was partly attributed to sediment buildup between 1965 and 1999 causing flooding of the Huntington development. The Corps of Engineers stated potential causes were road construction, development, and sedimentation (from other sources). However, this citation does not indicate how much sediment was due to construction versus what is due to the other sedimentation sources. Nationally, even EPA's potentially huge overestimate of sediment runoff from construction sites in the preamble to the proposed rule, which is based entirely on theoretical models rather than any actual runoff data (see NAHB comments), contributes less than 3% of the TSS in the receiving streams, according to data supplied by EPA in the preamble. This figure would be closer to 0.04% when loadings from actual available measurements of construction site runoff are used. NRDC cites elimination of costs for increased dredging as a benefit for the rule, but does not explain how a 0.04% reduction of existing sediment could affect future dredging activities.

Page 4—NRDC emphasizes that there are toxic pollutant loadings due to pollutants in the sediment based on a lawsuit concerning runoff from a single Walmart facility. This is contrary to EPA findings for this proposed rule, which indicate that the vast majority of construction development occurs on uncontaminated land where toxic pollutants are not an issue.

Page 4: NRDC states that "Currently Employed Construction Stormwater controls are inadequate to protect the Nation's waters."

This NRDC comment attacks both the content and the enforcement of State and local CGPs. Many States agree with NRDC regarding the lack of adequate funding for proper enforcement,

but this situation has nothing to do with the content or lack thereof in the State CGPs. Even a few construction industry comments stated that while the existing State CGPs were adequate to control runoff, better and more uniform training and enforcement were an issue. States argue that the CGPs are renewed every five years and that they are continually evolving to better meet the water quality needs. Most States argue that new regulations involving numeric limits would drastically increase the administrative costs and would only make the lack of personnel for enforcement much worse. The proposed rule could more than double the number of NPDES permits with numeric monitoring requirements overnight and, because construction permits are temporary with additional sites starting all the time, it could more than quadruple the number of new annual permit applications involving numeric monitoring.

Page 5: NRDC cites weak and vague requirements in the CGPs that allow construction sites to shortchange stormwater control. As an example, NRDC quotes an old 1994 study, when stormwater control permits were in their infancy. The first criticism is that this study is out of date; current statistics, BMPs, and practices are better now with much more emphasis placed on erosion control. This 1994 study that NRDC quotes also discusses "problems" that may not even exist. One study finding was that only 50% of budgeted stormwater control money is spent on an average project. Such budgets necessarily include a significant amount of contingency expenditures, and failure to exhaust the contingency money is not necessarily an indication of poor stormwater practices. Another stated finding from this study was that local governments spent 3 to 6 times as much on plan review as they did on inspections. Construction plan review requires engineering expertise and review of flooding and zoning issues as well as issues concerning sediment discharge, and is a significant part of the permit review and enforcement

process. This finding, by itself, gives no indication as to why this time allocation is inappropriate.

Page 6: NRDC cites a master's thesis that states even when SWPPP practices are properly installed and maintained, they "typically" are unable to prevent "considerable" sediment "pollution". The paper cites that discharge from sediment ponds can "often" exceed 1000 NTU. This could happen on occasion; however, in areas such as Washington where consistent turbidity monitoring occurs on a wide scale, the results indicate that a 1000 NTU discharge level is far from typical. Less than one percent of all monitored samples from Washington exceeded 1000 NTU, while greater than 96% of the discharges measured were less than the Washington "high level" benchmark of 250 NTU. There may well be areas where sediment ponds and other conventional BMPs do not work as well as they should, but these areas need to be addressed locally or regionally, as demonstrated by actions taken by the Aukland Regional Council.

Page 11: NRDC says EPA's Criteria for Narrowing Application of the 13 NTU Standard are not Workable

NAHB opposes the 13 NTU limit and, as noted above, has again made the case that it is impractical to meet and not cost effective. However, the EPA limitations on sites that would be required to meet the limit are completely workable. "R" factor values have been mapped over the 48 contiguous states and the implementation of the "R value <50" exemption is quite readily achievable. The 10% clay in the soil is more problematic only in so far as EPA failed to define how this was to be determined. This limit is not going to be perfect, because the clay content

may vary over the site and the clay content of subsoils may differ from topsoils, and a particle size analysis of the soils on a proposed site that would be fully representative would require too many samples taken at too many depths. A perfect answer may not be possible, but a clear, standard definition as to how the 10% clay criteria is to be determined needs to become part of the rule. NAHB believes that the USDA maps that EPA supplied during the SBREFA process, while not "perfect", are adequate to provide unambiguous criteria for the purposes of the rule in determining which sites must meet the 13 NTU limit based on the clay content of the soil.

Page 16: Better Site Design (BSD) reduces impervious areas while maintaining native vegetation to prevent stormwater pollution.

NAHB agrees with some of the concepts in the NRDC comments associated with this general statement, such as the application of site management techniques that can provide effective tools for the control of erosion. However, problems arise with specific suggestions. NRDC discusses "Better Site Design" (BSD) and "Limited Impact Development" (LID), all of which in principle are supported by NAHB. But there are many requirements presented by NRDC that are not practical or even possible. Some of these produce large costs that would greatly exceed the EPA cost estimates, yet NRDC claims they are still affordable. Others are not necessarily applicable for all sites and should not become a mandated rule requirement without allowance for alternatives deemed equivalent. Also, most of the experts agree that over 90% of the erosion damage is caused by a few high energy rain events. In most areas, this would be only 5 to 8 rain events in a year and in some climates just 2 or 3. Consideration of these discrepancies should be

incorporated into the site design requirements. The following is a partial list of the most objectionable BSD requirements:

- Requirements to make imperviousness, runoff volume, and runoff velocity "better" than the original use is impractical, especially during construction. All of these are issues that can be addressed in BSD, but there must be distinction between the construction and post-construction requirements.
- Stabilizing all disturbed areas within 48 hours, regardless of whether or when disturbance activities will continue, or whether rain is expected, is not practical and would be extremely expensive. There is no basis for this arbitrary 48 hour limit. The available data indicate that ninety percent of all erosion damage occurs during just three or four rain events per year. Current CGP time limits for stabilization are generally adequate to meet stabilization requirements. NAHB agrees with NRDC with regards to the EPA term "immediately" as not being an enforceable term. However, full stabilization can only practically be administered in areas where no further disturbance is planned for a significant amount of time. There are costs for labor and materials each time the same ground is stabilized. Significant man-hours are used stabilizing an area. The forty-eight hour time limit would require stabilizing sites prior to every weekend, resulting in loss of a significant portion of the work week, and/or overtime pay for workers. Stabilizing materials, whether temporary or permanent, are not cheap when applied over many acres and these materials typically cannot be reused. Stabilizing materials that include seeding require 7 to 10 days to become effective and could not be used if disturbance activities are due to restart soon. NAHB would consider a more reasonable time limit (more than

48 hours) that would be applicable to portions of the site where disturbing activities have ceased and will not resume for a period of at least 14 days as in most State CGPs.

Page 17: "Construction Timing and Phasing Limits Soil Disturbance for Effective Stormwater Management"

Again, NRDC has taken a worthwhile erosion control measure to impossible extremes and yet assumed that there are no additional costs involved. NRDC states that a site project should not disturb more than five acres at a time and that disturbing activities should only occur during the dry season. It also states that a site should be required to leave a certain percentage of land ungraded. NAHB believes that the amount of land that will need to be disturbed at one time cannot be specified exactly for every single site and it certainly could not be limited to a size as small as five acres. Many sites need widespread grading to direct water runoff into appropriate swales and channels, which often require grading over more than five acres. In addition, the ATS water collection systems required to meet the 13 NTU limit could **virtually require the simultaneous mass grading of the entire site.** This mass grading of the entire site would be necessary because all discharges from the site would be subject to the numeric turbidity limit and the limit cannot be met without collection of all runoff, to be directed to the ATS.

NRDC also attempts to show that earthwork minimalization practices are not supported based on a 1994 survey of 43 local governments nationwide. Some problems with the survey and the NRDC conclusions are presented below:

- The survey is from 1994, Phase I stormwater controls were in their infancy, and Phase 2 had not been adopted into practice.
- It is an extremely small sampling of only 43 local governments and the criteria for their selection are not explained.
- NRDC states that a third of the surveyed local governments imposed no time limit for re-vegetation of exposed soils. This is a misleading statement, because even at that time, the EPA CGP and all State CGPs contained such a time limit (most often 14 days), and local governments are required to comply with the State CGP. A local government would likely have only imposed a different time limit if it were more stringent than the already existing State CGP requirements.
- NRDC states almost two-thirds of respondents failed to "prohibit by law" the clearing of steep slopes. This statement is also misleading because of the absolute term "prohibit by law". Few local government regulations completely restrict clearing of steep slopes at construction sites, because such clearing or grading may often be required for stabilization and drainage considerations of the overall construction site or the building of retaining walls, etc., for safety considerations. However, most governments restrict *building* on very steep slopes and there are many examples of added local restrictions and special requirements when clearing steep slopes. This is a common problem with many NRDC proposed requirements—a perceived problem is isolated from other considerations and oversimplified with anything other than an absolute approach being considered as a failure to address the problem. Specific situations are best handled by establishing and understanding the overall goals and by allowing flexibility for site

operators, engineers, and managers with technical expertise to develop the appropriate plan to accomplish the goals. A third party observer is very unlikely to understand or even recognize the site-specific variables and their impact on the overall project goals as well as the potential safety implications to the site operations team. This lack of understanding of geographic impacts, specific site nuances, and required safety measures can unfortunately quickly lead to an inaccurate assessment of a perceived regulatory failure.

EPA Must Establish Limits for Additional Pollutants (page 24)

NRDC calls for monitoring of pH and nutrients (nitrogen and phosphorus). The NAHB views on this topic are addressed below.

pH—Cement and concrete can cause elevated pH in runoff water. A couple of States have experimented with pH monitoring. This involves adjusting the pH of water with acids and bases until a pH of 6.5 to 8.5 is achieved. This requires the handling of large amounts of potentially hazardous chemicals on the site. Most States handle this potential pH problem by not allowing discharge of rinses from concrete operations and trucks and by preventing the discharge of runoff from concrete surfaces until the concrete has set. This is a much better alternative and more sensible than discharging these rinse waters for subsequent chemical treatment to adjustment the pH. This process will prevent 99+% of the cement dust from reaching the discharge. It is only this visible cement dust that has sufficient buffering capacity to potentially affect the pH of the receiving streams. It is true that pure rain water in direct contact with hardened concrete does

dissolve small amounts of calcium carbonate (a naturally occurring substance), raising the water pH to approximately 9.5. However, the amount of soluble calcium carbonate is extremely small and this water will have no buffering capacity. When this water is mixed with other waters or comes into contact with other sediment or even the air, the pH rapidly neutralizes without chemical addition. In fact, the pH of pure rain water in contact with hardened concrete will trend alkaline for months or even years after the concrete has set, but the true hazard is essentially non-existent. In the meantime, chemical addition of CO2 and lime as identified in the Washington CGP can be difficult to control without overshooting and this activity represents a much larger hazard. In short, pH problems can be effectively controlled at construction sites by prohibiting the discharge of waste concrete rinsings and by preventing the discharge of runoff from fresh concrete until it has set, which occurs within 24-48 hours. All these provisions are currently present in most State CGPs.

Nutrients—Although some fertilizer is used to accelerate growth of vegetative cover, this application is likely less than, and certainly no greater than, any amounts that would be applied for lawn and garden maintenance following completion of the construction project. Whether during construction or post-construction, proper use of fertilizers results in most of the nutrients being absorbed by the vegetation and quick vegetative growth promotes erosion prevention. Most phosphate present in the discharge from construction sites is not from fertilizers, but is a naturally occurring insoluble mineral form contained within the suspended soil. This mineral phosphate is not biologically available and does not contribute to lake or pond eutrophication.