

**STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

**REPORT OF PROCEEDINGS ON THE PROPOSED  
TEMPORARY RULEMAKING  
TO AMEND RULE 15A NCAC 2H. 1002, DEFINITIONS**

**PUBLIC HEARING  
JANUARY 23, 2014  
512 N. SALISBURY ST  
RALEIGH, NC**

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## **Background**

### **Purpose for Rulemaking**

The purpose of this rulemaking is to amend Rule 15A NCAC 2H .1002, Definitions (part of the Stormwater Management rules) in order to 1) comply with a recent change in state law; 2) prevent adverse environmental impacts; and 3) provide clarity to the regulated community on the implementation of rules required by N.C. General Statute 143-214.7 (Stormwater runoff rules and programs). This rulemaking is authorized by Section 51.(d) of Session Law 2013-413.

### **Justification for Proposed Amendments**

During the most recent legislative session, N.C. General Statute 143-214.7 was amended to exclude “gravel” from the definition of “built-upon area.” Since August 2013, when the amendment of N.C. General Statute 143-214.7 became effective, the regulated community has questioned how to interpret the use of the term “gravel” in the amended statute. For this reason, the Environmental Management Commission (EMC) is pursuing this temporary rulemaking to define the term “gravel” used in the amended statute to prevent adverse environmental impacts and to direct the regulated community in its interactions with the Division of Energy, Mineral, and Land Resources (DEMLR).

Within the stone, sand and gravel industry, gravel is defined as a “loose aggregate of small rounded water-worn or pounded stones.” Per the American Association of State Highway and Transportation Officials (AASHTO) soil classification system and the Natural Resources Conservation Service (NRCS), the diameter of gravel shall be 0.08 inches up to 3 inches in diameter with less than 5 percent fines. The restriction on fines is the reason the proposed rule states that gravel shall be “clean or washed.”

Loose aggregates of small rounded water-worn or pounded stones are often used as walkways through gardens and yards or around vegetation because they are pervious (i.e., allow precipitation to infiltrate) but offer a more aesthetically-pleasing and durable surface than exposed soil. Placement of gravel is usually conducted during dry periods and heavy vehicular and foot traffic is avoided in the gravel area during and after its placement to avoid compaction of the subsurface and allow water to infiltrate into the subsoil.

In contrast, laypersons often use the term “gravel” to refer to any aggregate material, such as the crushed stone material that is typically used in constructing roads or parking lots. Crushed stone often does not allow water to infiltrate due to either clogging of the material at the surface or compaction of the underlying soil (at the time of installation or as a result of ongoing vehicular or foot traffic). Stormwater runoff from aggregate crushed stone surfaces typically has higher velocities, volumes, and pollutant loadings than stormwater runoff from typical

pervious surfaces. If a development site's stormwater control measures are designed based on the assumption that crushed stone surfaces are pervious, then these measures may be overwhelmed or bypassed, possibly causing gradual or catastrophic release of stormwater runoff and associated pollutants into the environment.

Other statutes that use the term "gravel" also use the terms "rock" and "stone." These statutes include the definition of minerals in the Mining Act and the requirements for haulers under the Motor Vehicle Act. By using the terms "gravel," "stone," and "rock" together, the General Assembly has recognized that these materials are different from each other, but up until now has not needed to distinguish between them. However, in this instance, the General Assembly provided an exception only for "gravel" that does not apply to "stone" or "rock." The definition of "gravel" proposed in the temporary rule applies only to the State's stormwater programs and not to other state programs.

#### **Description of Proposed Amendments to Rule 15A NCAC 2H .1002**

As stated previously, the purpose of this rulemaking is to amend Rule 15A NCAC 2H .1002, Definitions (part of the Stormwater Management rules). The original proposed rulemaking as brought to public hearing and contained as Attachment #1 of this document proposed the following amendments:

**Amendment #1** Revise the definition of "built-upon area" as required by N.C. General Statute 143-214.7.

The definition of "built-upon area" would be changed **FROM:**

- (1) "Built-Upon Area" means that portion of a development project that is covered by impervious or partially impervious surface including, but not limited to, buildings, pavement and gravel areas such as roads, parking lots, and paths; and recreation facilities such as tennis courts. "Built upon area" does not include a wooden slatted deck, the water area of a swimming pool or pervious or partially pervious paving material to the extent that the paving material absorbs water or allows water to infiltrate through the paving material.

**TO:**

- (1) "Built-upon Area" means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. "Built upon area" does not include a wooden slatted deck, the water area of a swimming pool, or gravel.

**Amendment #2** Add the following definition of “gravel.”

(10) “Gravel” means a clean or washed, loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size. Gravel is not crushed stone or rock.

**Amendment #3** For consistency, remove the mention of gravel from the definition of “permeable pavement.”

(27) “Permeable pavement” means paving material that absorbs water or allows water to infiltrate through the paving material. Permeable pavement materials include porous concrete, permeable interlocking concrete pavers, concrete grid pavers, porous asphalt and any other material with similar characteristics. ~~Compacted gravel shall not be considered permeable pavement.~~

### **Anticipated Costs and Benefits of Proposed Rulemaking**

Per N.C. General Statute 150B-21.4 (Fiscal notes on rules), a fiscal note is required only for permanent rule changes. As such, an analysis of the anticipated costs and benefits of this proposed temporary rulemaking was not performed. The EMC anticipates adopting a permanent rule to replace this temporary rule. A fiscal analysis will be performed in conjunction with the permanent rulemaking, and a fiscal note will be prepared at that time.

### **Permission to Proceed to Hearing**

Permission to proceed to public notice and hearing with the proposed amendments to Rule 15A NCAC 2H .1002 was received from the Environmental Management Commission on January 9, 2014. The Notice of Text for the public hearing was published on the North Carolina Office of Administrative Hearings website on January 15, 2014. The Notice of Text is contained in Attachment #3.

### **Public Hearing**

One public hearing for this temporary rulemaking action was conducted in Raleigh, NC on January 23, 2014. EMC member Mr. Tommy Craven served as the Hearing Officer for the proceedings. A copy of the Hearing Officer’s remarks are contained in Attachment #5. The hearing was attended by approximately 35 people, including NC DEMLR staff. Of those who attended, six people elected to make oral comments during the hearing. A list of registered attendees and speakers is contained in Attachment #6. A digital audio recording of the public

hearing was made and is available from the Division of Energy, Mineral and Land Resources.

### **Summary of Oral and Written Comments**

The following pages will present the main issues there were raised during the public hearing and those offered in writing during the public comment period. A summary of the oral comments and a complete copy of all written comments are included in Attachments #8 and #9, respectively. In total, six people made oral comments, and 18 written comments were received.

The comments can be characterized as being generally in support of the proposed temporary rule with a few notable exceptions. It should be noted that a majority of the comments received, including those that were generally in support of the rule, had at least one recommendation for improvement to the proposed temporary rule and/or the anticipated permanent rule. These comments were grouped according to topic and are summarized below.

The exact text of comments representative of a topic appear **in bold**. The number of comments received on a particular topic is indicated in parentheses. In instances when a response is called for, a brief response is provided *in italics* that represents the Hearing Officer's position on the specific issue or objection.

### **Comments in Support of the Rule (16)**

The following comments are representative of the supportive comments that were more general in nature:

**The temporary rule is needed to make sense of legislation and prevent loss of water quality.**

**This definition will ensure that stormwater control measures are not under-designed.**

**The City [of Jacksonville] supports the above definition as a temporary, first step towards arriving at a permanent definition for gravel.**

**The League members support the proposed temporary rule defining gravel as an important first step in distinguishing between non-paved surfaces that are pervious and impervious. Pending a permanent rulemaking, this proposed rule should eliminate confusion caused by the vagueness of S.L. 2013-413. It also should allow local program managers to stay consistent with the State's implementation of the similar rules and regulations, giving the regulated community certainty across jurisdictions. In addition, it should allow local programs to stay in compliance with their water-quality based obligations under State and federal permits by continuing to appropriately control runoff from development sites. And**

finally, it should allow the professional engineers running local programs as well as the other design professionals engaged in the development process to continue to adhere to the standards required of them by their professions in terms of choosing the correct calculations to accurately account for runoff from non-paved surfaces.

Although, we do understand some gravel acts as pervious surface, other gravel or stone, such as crusher run, could and should be considered impervious.

We feel that the definition proposed is a rational, quantitative approach that will make it easy for regulators and developers to determine whether a material is gravel or not. The proposed definition also adequately differentiates gravel from aggregate material.

The SWANC membership supports this proposed definition of the term “gravel.” This new definition became necessary to clear up confusion surrounding a more general usage of the term in S.L. 2013-413.

At the public hearing, one commenter argued that the Commission lacks the authority to adopt the proposal as a temporary rule, without regard to its substantive merits. We disagree. . . .If the state were to forego the temporary rule and instead interpret the gravel exclusion as applying to crushed rock and stone of all sizes, projects with substantial impervious surfaces could be classed as low density projects and built with minimal stormwater controls. Poorly controlled stormwater degrades water quality; it can also cause flash flooding of neighboring and downstream properties, presenting a direct threat to public health, safety, and welfare.

#### **Comments which Recommended Changes (19)**

As stated above, most comments received offered at least one recommendation for changes to the proposed rule. The following comments, grouped by topic, are representative of those received and represent comments both in support of and in opposition to the proposed rule. Responses are provided where appropriate.

Comments regarding consideration of factors other than stone type and size, such as soil type, placement, installation method, and use. (8) Commenters cited concerns that simply defining “gravel” is too simplistic an approach for all the possible applications, and that equal or better environmental protection may be afforded by taking into account site-specific conditions while building more flexibility into the rule. The majority of these comments support the temporary rule as a stopgap measure while encouraging the EMC to explore these factors either now or for the permanent rule.

The term “gravel” as used in House Bill 74 as being “pervious” is very broad and ignores the reality and complexities of materials commonly referred to as gravel. The term gravel has no fixed or quantitative meaning. It can mean any of a large family of mineral types that are processed in many different ways. Historically most of these materials are manufactured to meet standards specified by the American Society for Testing and Materials (ASTM) for foundation conditioning or in other words the ability to reach high compaction. The term “pervious” means that water passes through. “Compaction,” to varying degrees, opposes the definition of pervious by impeding water to pass through. The degree to which this opposition varies is greatly influenced by aggregate material, placement or installation method, intended uses, landscape setting and underlying soils.

There may be a few instances where, with the correct soil underlying the gravel, limited loading and proper underlying soils, gravel could be considered a partially impervious surface on a site-by-site basis. Therefore, my recommendation is to charge the North Carolina Division of Energy, Mineral and Land Resources (NCDEMLR) with determining the applicability, design criteria, and maintenance requirements for gravel areas. The built upon area determination would be proportional to the ability for surface water runoff to infiltrate into the soil consistent with the minimum design criteria and maintenance requirements.

A permanent rulemaking should address additional technical considerations. . . .The substrate underneath a non-paved surface and its level of compaction when prepped for aggregate materials to be laid on top. . . the extent or porous openings in the non-paved material. . . the type of underlying soils over which substrate and non-paved materials are applied. . . the rate of compaction of the non-paved material over time.

We believe that a permanent definition should not only characterize the type of stones that are typical of gravel, but should also take into account the land onto which the stones are placed and the type of loading to which the stones and underlying land can be subject. This is because the perviousness of the area upon which the stones are placed is not just dependent upon the stones alone but instead, upon how the stones interact with the underlying soils when they are subject to heavy versus light traffic. Accordingly, we suggest consideration of the recently-adopted definition of gravel found in our stormwater administrative manual as a model for the permanent, statewide definition. The definition is as follows: “A loose aggregation of rock fragments or pebbles without fines. Loose aggregations of ASTM Nos. 2, 3, 4, 467, 57, and/or 67 stone placed at a ground surface in areas not subject to vehicular traffic or parking to a depth of 4 inches or greater shall be considered areas of pervious, gravel

ground cover that does not constitute built upon area. Aggregations of the same type(s) of stone(s) placed in vehicular traffic or parking areas shall be considered areas of impervious, built-upon ground cover except that stone placed to a depth of 4 inches or greater underlain by a geotextile drainage fabric will be considered partially pervious. In such cases, the pervious area may be computed by multiplying the total area by a factor not greater than 0.5”

We recommend that in any permanent rulemaking activity, the EMC consider a definition of gravel that includes the characteristics of land onto which any aggregate materials are placed, as well as the intended use of those particular surfaces.

*Response: We concur. Consideration will be given as to how to best address additional factors such as soil type, placement, installation, and use during the permanent rulemaking process.*

Comments regarding the terms “rounded,” “water-worn,” “pounded” and “crushed stone or rock” in definition of “gravel.” (8) Commenters would like clarification of these terms and guidance as to how to apply them in practice.

**Change first sentence [of Definition (10)] to remove “or pounded stones.” Second sentence, change to read “Gravel is not crushed stone, crushed aggregate, or crushed rock.”**

In my opinion the shape of gravel if defined as rounded/washed stone, when maintained, can be pervious enough to provide for permeable pavement, however, gap graded aggregate that consists of crushed stone if maintained will also provide permeability. To exclude crushed stone without stipulating gradation eliminates opportunity to provide a surface that may perform well when the aggregates lock together. Aggregates which are irregular in shape provide a more stable surface and when gap graded will also provide permeability.

The part of the definition describing gravel as “small, rounded water-worn or pounded stones” is arbitrary and has no corresponding national standard. From a permeability standpoint, there should be no difference in gravel that meets the minimum size range, regardless of the shape. The interpretation of what is truly “rounded” or to what extent a particle is “water-worn” will be different in every jurisdiction, thus leading to inconsistencies in enforcement.

It seems that the sentence “Gravel is not crushed stone or rock” could be made more clear. I believe gravel is crushed stone or rock. . .with the fines removed. I am not clear on the difference between “pounded” and “crushed.”

Crushed stone is the type of gravel commonly used for roads and parking areas. The EMC cannot declare that such material is not within the meaning of the term gravel. It is, however, permissible to define gravel to eliminate, for example, the fine material that fills the interstitial areas between individual gravel particles. Material that effectively mimics pavement is not understood to be “gravel.” The use of the adjectives “washed” or “clean” may be sufficient for this purpose.

The nature of gravel, as the term is commonly understood, and, apparently as the definition suggests, is that it is irregular. The individual pieces are irregular in shape, and a load of gravel will be composed of particles which differ widely in size and shape. Ostensibly, a cover of gravel still fits within the definition if it is composed a varied collection of sizes. However, if one can find within a cover of gravel particles which are not “rounded, water-worn, or pounded,” is the cover not gravel? . . . .Is there a threshold to determine if the collective group of irregular particles constitute gravel?

*Response: Changes have been made to the proposed temporary rule language to alleviate confusion around the terms “small,” “rounded,” “water-worn,” and “pounded” and “crushed stone or rock” in the definition of gravel. The proposed alternative definition recognizes that “gravel,” as defined here, could be produced by washing crushed stone and sorting it into uniform sizes. In this alternative definition, it is unnecessary to specify that the stones be “small,” “rounded,” “water-worn,” or “pounded” as the size limit and gradation requirement are sufficient to ensure that “gravel” will be highly permeable.*

Comments regarding the proposed gravel size limits (5): Commenters questioned the need for an upper size limit and recommended focusing on gradation of stone rather than size and shape.

**The proposed definition of gravel appears to be consistent with the nationally recognized standard in terms of the lower size limit of .08.” However, what is the purpose of adding an upper limit of 3”? Would the regulated community have to demonstrate that larger sized gravel is also permeable?**

The aggregate size range is specified. Is the intention to exclude “well-graded” mixes or to specifically exclude particles smaller than 0.08 inches (other than specifying “clean or washed”)?

I would much favor a gravel definition focusing on the gradation of stone rather than the size of stone or rounded/angular characteristics of the particles. The particle size specified here seems rather small. What kind of void space would this mixture have? If the goal is to define “gravel” as a material which allows water to quickly infiltrate, then the definition should specify gravel as open graded aggregate; with specific particle gradation or minimum void ratio. A small change that could help would be to include the modifier “open graded” to the definition. Something like this: “Gravel” means a clean or washed loose, open-graded aggregation of small rounded. . . .

The [City of Durham Public Works] Department does feel the definition [of gravel] can be enhanced to prevent a well-blended or wide range of gradations which could limit void space and its infiltration ability. A suggested revision would make the definition read “‘Gravel’ means a clean or washed, like graded loose aggregation of small, rounded. . . .” Adding “like graded” implies the stones should be primarily of like sizes.

*Response: We agree that the definition of “gravel” is improved by specifying that it be “uniformly graded.” That change has been made to the proposed temporary rule language. In a uniformly-graded aggregate, a large percentage of the particles are of approximately the same size. Uniformly-graded aggregates have a high percentage of void space as compared to well-graded aggregate, and they don’t compact as easily. As such, uniformly-graded aggregate will have greater permeability. Aggregate that is used for roadways and parking is typically well graded and will not be captured by this definition.*

Comments regarding the definition of “built-upon area.” (2) Commenters suggested revisions to the proposed definition of “built-upon area” and to the built-upon area threshold approach used in some of the state’s stormwater programs.

**Change second sentence [of Definition (1)] to read: “Built upon area” does not include a surface with openings that water can pass through, such as a wooden slatted deck, or an area where water is intended to pond, such as a stormwater BMP, or the water surface area of a swimming pool.**

**There is a better way to manage stormwater. In 2009, the U.S. EPA finalized technical guidance requiring federal facilities to match post-development hydrology to pre-**

**development patterns, without regard to the percentage of built-upon area. This approach eliminates the incentive to squeeze a project under an artificial threshold, but retains an implicit incentive to minimize built-upon area, since that makes it easier to contain and dispose of stormwater on site (through evaporation, infiltration, or use as gray water). . . .As agency staff and the Commission look to the longer term – the permanent rule and the readoption of North Carolina’s stormwater rules as required by other provisions of H74 – we encourage you to consider ways that the state can support a migration from the current framework to one based on hydrologic matching at all ratios of built upon area.**

*Response: Under the current rulemaking, the EMC does not have the authority to amend the definition of “built-upon area” other than to match what was put forth in Session Law 2013-413 and codified in N.C. General Statute 143-214.7. The EMC will consider all recommendations, including those calling for movement towards a hydrologic match approach, as we move forward with permanent rulemaking.*

Comments regarding grandfathering of existing built-upon area (3) Commenters expressed concern about the consequences of Session Law 2013-413 on redevelopment of existing gravel areas if this proposed temporary rule is not adopted.

**Prior to this proposed rule defining “gravel,” redevelopment could have been penalized by excluding all existing crushed stone, rock, and other similar surfaces, from built-upon area. By clarifying what surfaces were indeed built-upon previously, redevelopment can proceed.**

*Response: We share this concern about the impact of Session Law 2013-413 on redevelopment projects. The proposed temporary rule seeks to address this issue by defining gravel such that areas comprised of aggregate materials other than gravel (as that term is defined here) will be considered built-upon area. Typically-constructed roadways and parking areas, for example, will be considered existing built-upon area under the temporary rule. The clarity provided by the temporary rule will allow the stormwater regulation to be uniformly applied to redevelopment projects.*

Comments in Opposition to the Rule (8): The following comments are representative of the comments opposing the rule. Responses are provided where appropriate.

**We do not have an issue with the change [to the definition of built-upon area made by the General Assembly] and feel that it will alleviate some of the arguments that we often hear from developers (ex – “water percolates through gravel just fine,” etc).**

*Response: Crushed stone (commonly referred to as gravel) of the type that is typically used in constructing roadways and parking lots does not allow water to infiltrate due to clogging and/or compaction of the material and the underlying soil as a result of vehicular or foot traffic. Stormwater runoff from these types of surfaces tend to have higher velocities, volumes, and pollutant loadings than stormwater runoff from pervious surfaces. The EMC feels it is necessary to address this particular action of the General Assembly by defining gravel in order to prevent adverse environmental impacts from untreated stormwater runoff.*

Comments regarding the justification/authority for the temporary rule (3) Commenters question whether the rule meets the standards for a temporary rule and questions the EMC's authority to promulgate this rule.

**. . . while Section 51(d) authorizes the EMC to amend its rules to be consistent with the definition of "built-upon area" as enacted by the General Assembly, the EMC is going beyond that authority in this temporary rule. . . . While we understand and are sympathetic to the confusion caused by simply excluding gravel from the definition of built-upon area, we do not believe that this "confusion" poses a serious threat to public health, safety or welfare.**

**It is appropriate for the EMC to define "gravel," since it is an imprecise term. However, it is inappropriate, and outside the authority of the EMC, to adopt a definition designed to put gravel roads and parking lots back into the definition of "built-upon area." The very limited definition provided in the rule seeks precision at the expense of the clear intent of the General Assembly. . . . The EMC is rightly concerned with the impact to water quality that the exclusion of gravel may have, but that concern does not provide it with license to modify the act of the General Assembly.**

**N.C. Gen. Statute 150B-21.1(a)(1) authorizes temporary rulemaking in the event that the agency has identified a "serious and unforeseen threat to the public health, safety, or welfare." While the EMC may believe that use of gravel outside the limitations on built-upon area would increase the delivery of pollutants to nearby watercourses, there is no assertion that a "serious and unforeseen threat to public health, safety or welfare" is posed, or, at the very least, a threat that is distinguishable from virtually any other substantive rulemaking in which the EMC engages. . . . There is little reason that permanent rulemaking could not be commenced and used to inform the EMC about an appropriate meaning for the term "gravel."**

*Response: The EMC intends to move forward with a permanent rulemaking that will 1) satisfy the mandate of Section 51.(d) of Session Law 2013-413 to amend its rules to be consistent with the definition of “built-upon area,” and 2) fulfill its mandate to prevent degradation of the State’s surface waters by promulgating rules that address threats to water quality. In this case, we believe that stormwater runoff from “gravel” (as that term is commonly known) areas such as roadways and parking lots poses a serious and unforeseen threat to public health, safety, or welfare. As such, we believe this temporary rule meets the standards of N.C.G.S. 150B-21.1(a). These areas have the potential to convey runoff that contains relatively large amounts of sediment. In addition to pollutant loading, there are concerns about runoff velocities and volumes associated with gravel surfaces. If a development site’s stormwater measures are designed based on the assumption that gravel (as that term is commonly known) is pervious, then these measures may be overwhelmed or bypassed, possibly causing gradual or catastrophic release of stormwater runoff and associated pollutants into the environment.*

Comments regarding the applicability of the “gravel” definition to regulatory programs other than stormwater (2) Commenters requested clarification about the scope of the rule and applicability of the proposed gravel definition to other regulated areas, including forestry, agriculture, and sediment and erosion control.

**The main point is that any attempt to legally define “gravel” only be used exclusively and solely for the purposes related to NPDES and stormwater permitting as it relates to land development, and not, either implicitly or specifically, apply to other uses of stone or gravel products by other industries, such as forestry, agriculture, and overall natural resources land management.**

*Response: The proposed changes to Rule 15A 2H .1002 will be applicable only to state rules and local government programs which regulate post-construction stormwater for development and which rely on the EMC’s definition of “built-upon area.” This includes NPDES Phase 2, Water Supply Watershed Protection, High Quality Water/Outstanding Resource Water, Goose Creek Watershed Water Quality Management Plan, as well as the State’s nutrient management strategies. The proposed temporary rule will not affect forestry or agriculture operations, nor will it affect sediment and erosion control practices. You may refer to Rule 15A NCAC 2H .1001 which states that these rules “do not apply to land management activities associated with agriculture or silviculture unless specifically addressed in special supplemental classifications and management strategies adopted by the Commission.”*

**Final Recommendation**

After careful consideration of all comments, the Hearing Officer recommends to the Environmental Management Commission that 15A NCAC 2H .1002 be revised with changes as proposed in Attachment #10.

1 15A NCAC 2H .1002 is amended under temporary procedures as follows:  
2

3 **15A NCAC 02H .1002—DEFINITIONS**

4 The definition of any word or phrase in this Section shall be the same as given in Article 21, Chapter 143 of  
5 the General Statutes of North Carolina, as amended. -Other words and phrases used in this Section are defined as  
6 follows:

7 (1)——"Built-upon Area" means ~~that portion of a development project that is covered by~~ impervious  
8 ~~surface or~~ and partially impervious surface ~~including, but not limited to, buildings; pavement to the extent that the~~  
9 ~~partially impervious surface does not allow water to infiltrate through the surface~~ and ~~gravel areas such as roads,~~  
10 ~~parking lots, and paths; and recreation facilities such as tennis courts~~ into the subsoil. "Built upon area" does not  
11 include a wooden slatted deck, the water area of a swimming pool, or ~~pervious or partially pervious paving material~~  
12 ~~to the extent that the paving material absorbs water or allows water to infiltrate through the paving material.~~ gravel.

13 (2)——"CAMA Major Development Permits" mean those permits or revised permits required by the  
14 Coastal Resources Commission according to 15A NCAC 7J Sections .0100 and .0200.

15 (3)——"Certificate of Stormwater Compliance" means the approval for activities that meet the  
16 requirements for coverage under a stormwater general permit for development activities that are regulated by this  
17 Section.

18 (4)——"Coastal Counties" include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven,  
19 Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell,  
20 and Washington.

21 (5)——"Curb Outlet System" means curb and gutter installed in a development which meets low density  
22 criteria [Rule .1003(d)(1) of this Section] with breaks in the curb or other outlets used to convey stormwater runoff  
23 to grassed swales or vegetated or natural areas and designed in accordance with Rule .1008(g) of this Section.

24 (6)——"Development" means any land disturbing activity that increases the amount of built-upon area or  
25 that otherwise decreases the infiltration of precipitation into the soil.

26 (7)——"Drainage Area or Watershed" means the entire area contributing surface runoff to a single point.

27 (8)——"Forebay" means a device located at the head of a wet detention pond to capture incoming  
28 sediment before it reaches the main portion of the pond. -The forebay is typically an excavated settling basin or a  
29 section separated by a low weir.

1 | ~~(9)~~ (10) "General Permit" means a "permit" issued under G.S. 143-215.1(b)(3) and (4) authorizing a  
2 | category of similar activities or discharges.

3 | (10) "Gravel" means a clean or washed loose aggregation of small rounded water-worn or pounded stones  
4 | ranging in size from 0.08 inches to 3.0 inches. Gravel is not crushed stone or rock.

5 | ~~(10)~~ (11) "Infiltration Systems" mean stormwater control systems designed to allow runoff to pass or  
6 | move (infiltrate/exfiltrate) into the soil.

7 | ~~(11)~~ (12) "Notice of Intent" means a written notification to the Division that an activity or discharge is  
8 | intended to be covered by a general permit and takes the place of "application" used with individual permits.

9 | ~~(12)~~ (13) "Off-site Stormwater Systems" mean stormwater management systems that are located outside  
10 | the boundaries of the specific project in question, but designed to control stormwater drainage from that project and  
11 | other potential development sites. -These systems shall designate responsible parties for operation and maintenance  
12 | and may be owned and operated as a duly licensed utility or by a local government.

13 | ~~(13)~~ (14) "On-site Stormwater Systems" mean the systems necessary to control stormwater within an  
14 | individual development project and located within the project boundaries.

15 | ~~(14)~~ (15) "Redevelopment" means any land disturbing activity that does not result in a net increase in  
16 | built-upon area -and that provides greater or equal stormwater control than the previous development (stormwater  
17 | controls shall not be allowed where otherwise prohibited).

18 | ~~(15)~~ (16) "Seasonal High Water Table" means the highest level that groundwater, at atmospheric  
19 | pressure, reaches in the soil in most years. -The seasonal high water table is usually detected by the mottling of the  
20 | soil that results from mineral leaching.

21 | ~~(16)~~ (17) "Sedimentation/Erosion Control Plan" means any plan, amended plan or revision to an  
22 | approved plan submitted to the Division of Energy, Mineral, and Land Resources or delegated authority in  
23 | accordance with G.S. 113A-57.

24 | ~~(17)~~ (18) "Stormwater" is defined in G.S. 143, Article 21.

25 | ~~(18)~~ (19) "Stormwater Collection System" means any conduit, pipe, channel, curb or gutter for the  
26 | primary purpose of transporting (not treating) runoff. -A stormwater collection system does not include vegetated  
27 | swales, swales stabilized with armoring or alternative methods where natural topography or other physical  
28 | constraints prevents the use of vegetated swales (subject to case-by-case review), curb outlet systems, or pipes used  
29 | to carry drainage underneath built-upon surfaces that are associated with development controlled by the provisions  
30 | of Rule .1003(d)(1) in this Section.

1 | ~~(19)~~ (20) "10 Year Storm" means the surface runoff resulting from a rainfall of an intensity expected to  
 2 | be equaled or exceeded, on the average, once in 10 years, and of a duration which will produce the maximum peak  
 3 | rate of runoff, for the watershed of interest under average antecedent wetness conditions.

4 | ~~(20)~~ (21) "Water Dependent Structures" means a structure for which the use requires access or  
 5 | proximity to or siting within surface waters to fulfill its basic purpose, such as boat ramps, boat houses, docks, and  
 6 | bulkheads. Ancillary facilities such as restaurants, outlets for boat supplies, parking lots and boat storage areas are  
 7 | not water dependent uses.

8 | ~~(21)~~ (22) "Wet Detention Pond" means a structure that provides for the storage and control of runoff and  
 9 | includes a designed and maintained permanent pool volume.

10 | ~~(22)~~ (23) "Vegetative Buffer" means an area of natural or established vegetation directly adjacent to  
 11 | surface waters through which stormwater runoff flows in a diffuse manner to protect surface waters from  
 12 | degradation due to development activities. -The width of the buffer is measured horizontally from the normal pool  
 13 | elevation of impounded structures, from the bank of each side of streams or rivers, and from the mean high water  
 14 | line of tidal waters, perpendicular to the shoreline.

15 | ~~(23)~~ (24) "Vegetative Filter" means an area of natural or planted vegetation through which stormwater  
 16 | runoff flows in a diffuse manner so that runoff does not become channelized and which provides for control of  
 17 | stormwater runoff through infiltration of runoff and filtering of pollutants. -The defined length of the filter shall be  
 18 | provided for in the direction of stormwater flow.

19 | ~~(24)~~ (25) "One-year, 24-hour storm" means a rainfall of an intensity expected to be equaled or  
 20 | exceeded, on average, once in 12 months and with a duration of 24 hours.

21 | ~~(25)~~ (26) "BMP" means Best Management Practice.

22 | ~~(26)~~ (27) "Permeable pavement" means paving material that absorbs water or allows water to infiltrate  
 23 | through the paving material. -Permeable pavement materials include porous concrete, permeable interlocking  
 24 | concrete pavers, concrete grid pavers, porous asphalt, and any other material with similar characteristics. ~~Compacted~~  
 25 | ~~gravel shall not be considered permeable pavement.~~

26 | ~~(27)~~ (28) "Residential development activities" has the same meaning as in 15A NCAC 02B .0202(54).

27 | ~~(28)~~ (29) "Vegetative conveyance" means a permanent, designed waterway lined with vegetation that is  
 28 | used to convey stormwater runoff at a non-erosive velocity within or away from a developed area.

29 |  
 30 | *History Note: Authority G.S. 143-213; 143-214.1; 143-214.7; 143-215.3(a)(1);*

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2  
3  
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*Eff. January 1, 1988;*  
Amended Eff. August 1, 2012 (see S.L. 2012-143, s.1.(f)); July 3, 2012; December 1, 1995;  
September 1, 1995.

**Proposed Temporary Rule for Gravel**  
**Public Hearing: January 23, 2013 at 2:00 pm**  
**Archdale Building, Ground Floor Hearing Room**

**What does the proposed temporary rule say?**

The new rule proposes three changes to NCAC 2H .1002, which contains the definitions pertaining to the state stormwater programs. The three changes are as follows:

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**Change #1:**

The definition of “built-upon area” would be changed **FROM:**

- (1) “Built-Upon Area” means that portion of a development project that is covered by impervious or partially impervious surface including, but not limited to, buildings, pavement and gravel areas such as roads, parking lots, and paths; and recreation facilities such as tennis courts. “Built upon area” does not include a wooden slatted deck, the water area of a swimming pool or pervious or partially pervious paving material to the extent that the paving material absorbs water or allows water to infiltrate through the paving material.

**TO:**

- (1) “Built-upon Area” means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. “Built upon area” does not include a wooden slatted deck, the water area of a swimming pool, or gravel.
- 

**Change #2:**

The following definition of “gravel” would be added:

- (10) “Gravel” means a clean or washed loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size. Gravel is not crushed stone or rock.
- 

**Change #3:**

The last statement in the definition of “permeable pavement” would be removed:

- (27) “Permeable pavement” means paving material that absorbs water or allows water to infiltrate through the paving material. Permeable pavement materials include porous concrete, permeable interlocking concrete pavers, concrete grid pavers, porous asphalt and any other material with similar characteristics. ~~Compacted gravel shall not be considered permeable pavement.~~
-

## Why is this temporary rule being proposed?

During the most recent legislative session, N.C. General Statute 143-214.7 was amended to exclude "gravel" from the definition of "built-upon area." Since August 2013, when the amendment of N.C. General Statute 143-214.7 became effective, the regulated community has questioned how to interpret the use of the term "gravel" in the amended statute. For this reason, the Environmental Management Commission (EMC) is pursuing temporary rulemaking to define the term "gravel" used in the amended statute to prevent adverse environmental impacts and to direct the regulated community in its interactions with the Division of Energy, Mineral, and Land Resources (DEMLR).

Within the stone, sand and gravel industry, gravel is defined as "a loose aggregate of small rounded water-worn or pounded stones." Per the Unified Soil Classification System, the diameter of gravel shall be from 0.08 inches up to 3 inches in diameter with less than 5 percent fines. The restriction on fines is the reason the rule states that gravel shall be "clean or washed."

Loose aggregates of small rounded water-worn or pounded stone are often used as walkways through gardens and yards or around vegetation because they are pervious (i.e., allow precipitation to infiltrate) but offer a more aesthetically pleasing and durable surface than exposed soil. Placement of gravel is usually conducted during dry periods and heavy vehicular and foot traffic is avoided in the gravel area during and after its placement to avoid compaction of the subsurface and allow water to infiltrate into the subsoil.

In contrast, laypersons often use the term "gravel" to refer to any aggregate material, such as the crushed stone material that is typically used in constructing roads or parking lots. Crushed stone often does not allow water to infiltrate due to either clogging of the material at the surface or compaction of the underlying soil (at the time of installation or as a result of ongoing vehicular or foot traffic). Stormwater runoff from aggregate crushed stone surfaces typically has higher velocities, volumes and pollutant loadings than stormwater runoff from typical pervious surfaces. If a development site's stormwater and sedimentation control measures are designed based on the assumption that crushed stone surfaces are pervious, then these measures may be overwhelmed or bypassed, possibly causing gradual or catastrophic release of stormwater runoff and associated pollutants into the environment.

Other statutes that use the term "gravel" also use the terms "rock" and "stone." These statutes include the definition of minerals in the Mining Act and the requirements for haulers under the Motor Vehicle Act. By using the terms "gravel," "stone," and "rock" together, the General Assembly has recognized that these materials are different from each other but up until now has not needed to distinguish between them. However, in this instance, the General Assembly provided an exception only for "gravel" that does not apply to "stone" or "rock." The definition of "gravel" proposed in the temporary rule applies only to the state stormwater program and not to any other type of state program.

## How does the new temporary rule affect development projects?

DEMLR anticipates that there are three types of projects affected by the proposed temporary rule:

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### #1 New Development Projects (Reviewed by DEMLR)

DEMLR will not consider any areas within new development projects that are covered with gravel (as defined in the temporary rule) to be built-upon areas. For new development projects, this will reduce the overall percentage of built-upon area for the purposes of determining the overall site density and as well as for sizing any needed stormwater control measures. Any areas within new development projects that are covered by aggregate materials that do not meet the definition of gravel will typically be considered as built-upon areas. All applicants, however, have the opportunity to design an aggregate surface that allows a portion of the stormwater to infiltrate through the surface and into the subsoil and present this design to DEMLR staff for consideration and review. The permeable pavement chapter of the N.C. Stormwater BMP Manual can be used as guidance when proposing a partially impervious surface to DEMLR.

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### #2 Existing Development Projects Seeking to Expand (Reviewed by DEMLR)

Permittees with existing development projects that they are seeking to expand may be interested in “discounting” gravel surfaces that have already been considered as built-upon areas from the overall built-upon percentage of the site. This could allow the permittee to either maintain a low-density status or expand without increasing the size of the stormwater practices. Existing areas of the site that meet the definition of gravel can be moved from the built-upon area side to the pervious side of the equation when the site expansion is submitted to DEMLR for review and approval. However, any areas covered by aggregate materials that do not meet the definition of gravel will continue to be considered as built-upon area.

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### #3 Redevelopment Projects (Reviewed by DEMLR)

When an existing development that is not equipped with stormwater practices is redeveloped, the permittee is not required to provide stormwater treatment as long as the new built-upon area does not exceed the existing built-upon area. If the new built-upon area does exceed the existing built-upon area, then the permittee has to treat only the difference in built-upon areas. Please note that the stormwater rule requires redevelopment to provide equal or better stormwater control than the existing development. For example, if an existing development’s stormwater flowed through grassed areas, then the redeveloped site could not pipe the stormwater and send it directly to surface waters.

Any existing gravel areas as defined per the temporary rule would not be considered part of the existing built-upon area. Any aggregate materials other than gravel would be considered part of the existing built-upon area that would be excused from providing stormwater practices as a redeveloped project. In this way, the definition of gravel in the temporary rule may benefit owners of redevelopment projects by reducing or eliminating the requirement for stormwater treatment.

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## How does this affect local governments?

Over 300 local governments in North Carolina are responsible for implementing stormwater protection under the Phase II, Nutrient Sensitive Waters and Water Supply Watershed Programs. Each of these local governments has ordinances that codify its stormwater requirements. The EMC believes that each local government may make its own determination about whether or not to include these new definitions in its local ordinance. However, a local government's ordinance cannot be less stringent than state rules. As such, local governments may not have a more inclusive definition of gravel than the temporary rule's definition.

The EMC suggests that each local government consult its own legal counsel for advice on this matter.

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## How may I comment on the proposed temporary rule?

Comments from the public shall be directed to:

Julie Ventaloro  
DEMLR Land Quality Section/Stormwater Program  
1612 Mail Service Center  
Raleigh, NC 27699-1612  
Phone: (919) 807-6370

Email: [julie.ventaloro@ncdenr.gov](mailto:julie.ventaloro@ncdenr.gov) – please note "Stormwater Temporary Rule" in the subject line.

The comment period begins January 15, 2014 and ends February 7, 2014.

**Note from the Codifier:** The OAH website includes notices and the text of proposed temporary rules as required by G.S. 150B-21.1(a1). Prior to the agency adopting the temporary rule, the agency must hold a public hearing no less than five days after the rule and notice have been published and must accept comments for at least 15 business days.

For questions, you may contact the Office of Administrative Hearings at 919.431.3000 or email [oah.postmaster@oah.nc.gov](mailto:oah.postmaster@oah.nc.gov).

## TITLE 15A – DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

**Rulemaking Agency:** *Environmental Management Commission*

**Codifier of Rules received for publication the following notice and proposed temporary rule(s) on:** *January 13, 2014*

**Rule Citations:** *15A NCAC 02H .1002*

**Public Hearing:**

**Date:** *January 23, 2014*

**Time:** *2:00 p.m.*

**Location:** *Archdale Building, Ground Floor Hearing Room, 512 N. Salisbury Street, Raleigh, NC*

**Reason:**

*Environmental Management Commission's Statement of Impact of Proposed Amendment to Exclude Gravel from "Built-Upon Area"*

*The Environmental Management Commission (EMC) seeks to amend 15A NCAC 02H .1002 in order to comply with a recent change in state law. Such an amendment is authorized by Section 51.(d) of the Session Laws.*

*Specifically, during the recent legislative session, N.C.G.S. 143-214.7 was amended to exclude gravel from the definition of "built-upon area." Act of Aug. 23, 2013, sec. 51.(a), 2013 N.C. Sess. Laws 413. The legislation, however, did not define the term "gravel." Within the stone, sand and gravel industry, gravel is defined as "a loose aggregate of small rounded water-worn or pounded stones." In addition, per the "Standard Test Method for Particle-Size Analysis of Soil" as published by the American National Standards Institute (ASTM) as Standard D422-63, gravel is classified to have a diameter ranging from 2.00 millimeters up to 4.74 millimeters. Such material is often used as walkways through gardens and yards or around vegetation as it is permeable, allowing adequate drainage for precipitation yet harder and more aesthetically pleasing than exposed soil. Placement of gravel is normally conducted during dry periods and heavy vehicular and foot traffic is avoided in the gravel area during and immediately after its placement to avoid compaction of the subsurface to allow water to infiltrate into the subsoil. In contrast, laypersons often imprecisely use the term "gravel" to refer to any aggregate material, such as the non-gravel crushed stone material that is used in constructing roads or parking lots. Such material may be either impervious due to compaction at the time of installation or partially impervious but installed on a compacted surface that does not allow water to infiltrate into the subsoil. As a result, if an aggregate crushed stone material as opposed to gravel is used, it could cause water (including pollutants and sediment) to runoff the surface at higher velocities and volumes than the stormwater and sedimentation control measures were designed for and can handle. In this way, stormwater designs may be overwhelmed or bypassed and the unintended consequence may be the gradual or catastrophic release of pollutants and sediment into the environment, either by short-circuiting through or completely failing under-designed stormwater and sedimentation control measures.*

*Other statutes that use the term "gravel" also use the terms "rock" and/or "stone." These include the definition of minerals in the Mining Act (Gen. Stat. section 74-49), requirements for haulers under the Motor Vehicle Act (Gen. Stat. section 20-116), the definition of a conversation agreement (Gen. Stat. section 121-35) and the authority of the Department of Transportation to acquire land and materials (Gen. Stat. section 136-9). By using the separate terms "gravel," "stone" and "rock" together, the General Assembly has recognized that these materials are different from each other but has not needed to define them because they are grouped together in these statutes. However, in this instance, the General Assembly revised N.C.G.S. 143-214.7 to include an exception for "gravel." However, the exception in the revised statute does not apply to "stone" or "rock." Since the amendment of N.C.G.S. 143-214.7 became effective in August, the regulated community, in dealings with the Division of Energy, Mineral, and Land Resources (DEMLR), has questioned how to interpret the imprecise use of the term "gravel" in the amended statute. For these reasons, the EMC is pursuing temporary rulemaking to define the term used in the amended statute in accordance with industry standards, to prevent adverse environmental impacts, and to direct the regulated community to the established guidelines set forth in the DEMLR's best management practices for stormwater control.*

**Comment Procedures:** *Comments from the public shall be directed to: Julie Ventaloro, 1612 Mail Service Center, Raleigh, NC 27699-1612; phone (919) 807-6370; email [stormwater@ncdenr.gov](mailto:stormwater@ncdenr.gov) – please note "Stormwater Temporary Rule" in the subject line. The comment period begins January 15, 2014 and ends February 7, 2014.*

### CHAPTER 02 – ENVIRONMENTAL MANAGEMENT COMMISSION

#### SUBCHAPTER 02H – PROCEDURES FOR PERMITS: APPROVALS

## SECTION .1000 – STORMWATER MANAGEMENT

**15A NCAC 02H .1002 DEFINITIONS**

The definition of any word or phrase in this Section shall be the same as given in Article 21, Chapter 143 of the General Statutes of North Carolina, as amended. Other words and phrases used in this Section are defined as follows:

- (1) "Built-upon Area" means ~~that portion of a development project that is covered by impervious surface or and partially impervious surface including, but not limited to, buildings; pavement to the extent that the partially impervious surface does not allow water to infiltrate through the surface and gravel areas such as roads, parking lots, and paths; and recreation facilities such as tennis courts into the subsoil.~~ "Built upon area" does not include a wooden slatted deck, the water area of a swimming pool, or ~~pervious or partially pervious paving material to the extent that the paving material absorbs water or allows water to infiltrate through the paving material.~~ gravel.
- (2) "CAMA Major Development Permits" mean those permits or revised permits required by the Coastal Resources Commission according to 15A NCAC 7J Sections .0100 and .0200.
- (3) "Certificate of Stormwater Compliance" means the approval for activities that meet the requirements for coverage under a stormwater general permit for development activities that are regulated by this Section.
- (4) "Coastal Counties" include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington.
- (5) "Curb Outlet System" means curb and gutter installed in a development which meets low density criteria [Rule .1003(d)(1) of this Section] with breaks in the curb or other outlets used to convey stormwater runoff to grassed swales or vegetated or natural areas and designed in accordance with Rule .1008(g) of this Section.
- (6) "Development" means any land disturbing activity that increases the amount of built-upon area or that otherwise decreases the infiltration of precipitation into the soil.
- (7) "Drainage Area or Watershed" means the entire area contributing surface runoff to a single point.
- (8) "Forebay" means a device located at the head of a wet detention pond to capture incoming sediment before it reaches the main portion of the pond. -The forebay is typically an excavated settling basin or a section separated by a low weir.
- (9) "General Permit" means a "permit" issued under G.S. 143-215.1(b)(3) and (4) authorizing a category of similar activities or discharges.
- (10) "Gravel" means a clean or washed, loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size. Gravel is not crushed stone or rock.
- ~~(10)~~(11) "Infiltration Systems" mean stormwater control systems designed to allow runoff to pass or move (infiltrate/exfiltrate) into the soil.
- ~~(11)~~(12) "Notice of Intent" means a written notification to the Division that an activity or discharge is intended to be covered by a general permit and takes the place of "application" used with individual permits.
- ~~(12)~~(13) "Off-site Stormwater Systems" mean stormwater management systems that are located outside the boundaries of the specific project in question, but designed to control stormwater drainage from that project and other potential development sites. These systems shall designate responsible parties for operation and maintenance and may be owned and operated as a duly licensed utility or by a local government.
- ~~(13)~~(14) "On-site Stormwater Systems" mean the systems necessary to control stormwater within an individual development project and located within the project boundaries.
- ~~(14)~~(15) "Redevelopment" means any land disturbing activity that does not result in a net increase in built-upon area and that provides greater or equal stormwater control than the previous development (stormwater controls shall not be allowed where otherwise prohibited).
- ~~(15)~~(16) "Seasonal High Water Table" means the highest level that groundwater, at atmospheric pressure, reaches in the soil in most years. The seasonal high water table is usually detected by the mottling of the soil that results from mineral leaching.
- ~~(16)~~(17) "Sedimentation/Erosion Control Plan" means any plan, amended plan or revision to an approved plan submitted to the Division of Energy, Mineral, and Land Resources or delegated authority in accordance with G.S. 113A-57.
- ~~(17)~~(18) "Stormwater" is defined in G.S. 143, Article 21.
- ~~(18)~~(19) "Stormwater Collection System" means any conduit, pipe, channel, curb or gutter for the primary purpose of transporting (not treating) runoff. A stormwater collection system does not include vegetated swales, swales stabilized with armoring or alternative methods where natural topography or other physical constraints prevents the use of vegetated swales (subject to case-by-case review), curb outlet systems, or pipes used to carry drainage underneath built-upon surfaces that are associated with development controlled by the provisions of Rule .1003(d)(1) in this Section.
- ~~(19)~~(20) "10 Year Storm" means the surface runoff resulting from a rainfall of an intensity expected to be equaled or exceeded, on the average, once in 10 years, and of a duration which will produce the maximum peak rate of runoff, for the watershed of interest under average antecedent wetness conditions.
- ~~(20)~~(21) "Water Dependent Structures" means a structure for which the use requires access or proximity to or siting within surface waters to fulfill its basic purpose, such as boat ramps, boat houses, docks, and bulkheads. Ancillary facilities such as restaurants, outlets for boat supplies, parking lots and boat storage areas are not water dependent uses.
- ~~(21)~~(22) "Wet Detention Pond" means a structure that provides for the storage and control of runoff and includes a designed and maintained permanent pool volume.
- ~~(22)~~(23) "Vegetative Buffer" means an area of natural or established vegetation directly adjacent to surface waters through which stormwater runoff flows in a diffuse manner to protect surface waters from degradation due to development activities.

The width of the buffer is measured horizontally from the normal pool elevation of impounded structures, from the bank of each side of streams or rivers, and from the mean high water line of tidal waters, perpendicular to the shoreline.

- ~~(23)~~(24) "Vegetative Filter" means an area of natural or planted vegetation through which stormwater runoff flows in a diffuse manner so that runoff does not become channelized and which provides for control of stormwater runoff through infiltration of runoff and filtering of pollutants. The defined length of the filter shall be provided for in the direction of stormwater flow.
- ~~(24)~~(25) "One-year, 24-hour storm" means a rainfall of an intensity expected to be equaled or exceeded, on average, once in 12 months and with a duration of 24 hours.
- ~~(25)~~(26) "BMP" means Best Management Practice.
- ~~(26)~~(27) "Permeable pavement" means paving material that absorbs water or allows water to infiltrate through the paving material. Permeable pavement materials include porous concrete, permeable interlocking concrete pavers, concrete grid pavers, porous asphalt, and any other material with similar characteristics. ~~Compacted gravel shall not be considered permeable pavement.~~
- ~~(27)~~(28) "Residential development activities" has the same meaning as in 15A NCAC 02B .0202(54).
- ~~(28)~~(29) "Vegetative conveyance" means a permanent, designed waterway lined with vegetation that is used to convey stormwater runoff at a non-erosive velocity within or away from a developed area.

*Authority G.S. 143-213; 143-214.1; 143-214.7; 143-215.3(a)(1).*

## PUBLIC HEARING

### **Proposed Temporary Rulemaking to Revise Definition of “Built-Upon Area” and to Define “Gravel” in Stormwater Rule 15A NCAC 2H .1002**

**Archdale Bldg, Ground Floor Hearing Room, 512 N. Salisbury St, Raleigh, NC  
January 23, 2014, 2:00 p.m.**

**Hearing Officer: Tommy Craven**

Good Afternoon. **I am calling this public hearing to order.** My name is Tommy Craven, and I am a member of the North Carolina Environmental Management Commission. I have been designated by the Chairman of the Environmental Management Commission as the hearing officer for today's hearing.

This public hearing is being held in accordance with North Carolina General Statute 150B-21.1 “Procedure for adopting a temporary rule.” This statute allows that under certain conditions, an agency may adopt a temporary rule when it finds that adherence to the normal notice and hearing requirements would be contrary to the public interest and that the immediate adoption of the rule is necessary. This same statute also requires that a state agency hold at least one public hearing on the proposed temporary rule no less than five days after the rule and notice have been published.

The public notice of this proposed temporary rule and public hearing were published on January 15, 2014 on several websites, including the North Carolina Office of Administrative Hearings, NCDENR Public Event Calendar, and the North Carolina Division of Energy, Mineral, and Land Resources Public Notices website. Notice was also sent to members of the UNC School of Government Stormwater listserv, the DENR Stormwater Outreach and Education listserv, and the NC DEMLR Stormwater BMP Manual listserv as well as to other persons who have expressed interest in the proposed rulemaking.

The purpose of today's hearing is to solicit public comments on the proposed temporary rulemaking to amend Rule 15A NCAC 2H .1002 which contains the definitions of words and phrases used throughout the state’s stormwater rules. This rulemaking is being proposed in order to comply with a recent change in state law.

Specifically, this rulemaking is in response to Session Law 2013-413 which amended North Carolina General Statute 143-214.7 to exclude “gravel” from the definition of “built-upon area.” The Session Law did not, however, define “gravel.”

In signing House Bill 74 (Session Law 2013-413), Governor McCrory encouraged the Environmental Management Commission to pursue rulemaking to assure that there is a clear definition of pervious gravel to avoid potential issues with stormwater runoff. The

proposed temporary rule revises the definition of “built-upon area” and adds a definition of “gravel.” This amendment is authorized by Section 51.(d) of Session Law 2013-413.

A written report of this hearing will be prepared that will include all relevant comments, questions and discussions. For this reason, this hearing is being recorded. Written comments received by February 7, 2014 will also be included as part of the record. Public comments received by February 7, 2014 will be reviewed by myself as well as by staff with the Division of Energy, Mineral and Land Resources.

Based on this review, I will make a recommendation to the Environmental Management Commission at its meeting in March 2014. The recommendation may be to adopt the proposed temporary rulemaking, to adopt a modified version of the proposal, or to take no action and retain the existing rule as it stands today.

The Environmental Management Commission will then make its decision after considering my recommendation, the written record, and any concerns of other Commission members. The Commission may adopt the recommendation, modify it, or reject it. If the Commission wishes to adopt a rule that differs substantially from what has been published on the Office of Administrative Hearings website and presented this afternoon, it may be necessary to first publish the text of the proposed modified rule and accept comments on the new text.

In a moment, Bradley Bennett, a North Carolina Division of Energy, Mineral and Land Resources staff member, will give an overview of the proposed rulemaking for you. There are handouts available at the registration table that provide this information as well.

.....

**OPTIONAL:** At this time, I would like to recognize [government officials][other EMC members][legislators] that are here: *(read names from sign in forms)*

- \_\_\_\_\_
- \_\_\_\_\_

I would like to also recognize members of the Division of Energy, Mineral and Land Resources Stormwater staff that are here:

- Bradley Bennett – Stormwater Permitting Program Supervisor
- Julie Ventaloro – Water Supply Watershed Program
- Annette Lucas – Stormwater Engineer
- Bridget Munger – Stormwater Education and Outreach

Other Department of Environment and Natural Resources staff here today include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_:
- \_\_\_\_\_

.....

**Bradley Bennett will now give an overview of the proposed temporary rule.**

.....  
*(Bradley's presentation)*  
.....

Thank you, Bradley.

The Environmental Management Commission is very interested in all comments pertaining to the proposed temporary rulemaking, whether they are in favor of or opposed to any provisions of the proposed rulemaking. All interested and potentially affected persons or parties are encouraged to make comments on the proposed rulemaking. Please know that your comments enable the Commission to act in the best interest of the public.

Please also remember that the intent of this hearing is to solicit your comments on the proposed temporary rulemaking. **It is important that you keep your comments concise and relevant to the proposed rulemaking.**

**Comments will now be accepted.** I will call on speakers in the order that you registered for this hearing. When your name is called, please come up to the microphone, and clearly and slowly state your name and any affiliation with an organization you may be representing. If you have written copies of your comments, we would appreciate receiving a copy of them.

We may question speakers, if necessary, to clarify or learn more about matters as they arise. After all the registered speakers have had an opportunity to comment, anyone who did not register to speak or desires additional time to speak will have the opportunity to do so. Staff will be available after the hearing to address any additional questions or comments that you may have.

.....  
*If a large number of people have requested to speak, insert the following:*

<u># People who wish to speak</u>	<u>**Time limit per speaker</u>
1-20	No limit
21-30	4 minutes
31+	3 minutes

Because a large number of people have requested to speak, it will be necessary to impose a time limit of \_\_\_\_ (\*\* see above choice of 3 or 4) minutes. A member of the Division of Energy, Mineral and Land Resources staff, \_\_\_\_\_ (*person's name*), located here next to me will be timing the comments and will hold up a sign indicating when you have one minute remaining to speak. We appreciate your cooperation with this time limit so that everyone who wishes to speak is able to do so.

.....  
**I will now call on the first speaker.**

*(call speakers in the order that they registered)*

**Are there any additional comments?**

**If there are no more comments, then this hearing is declared as closed.** The hearing record will remain open until February 7, 2014. This means that any time between today and February 7, 2014, anyone can submit written comments to Ms. Ventaloro, and these written comments will be made part of the public record.

As I mentioned earlier, after the comment period ends on February 7<sup>th</sup>, Division of Energy, Mineral and Land Resources staff and I will review the comments and prepare a report of proceedings including all the comments. I will then make a recommendation to the Environmental Management Commission. The Environmental Management Commission will make a decision regarding the temporary rulemaking after consideration of the report of proceedings and my recommendation. The rule will then be submitted to the Rules Review Commission who will determine whether the rule meets the criteria for adopting a temporary rule and meets the standards of review. The anticipated effective date for this temporary State rule pursuant to this hearing process is estimated to be March 28, 2014.

This temporary rule will expire unless a permanent rule is adopted to replace it. The Environmental Management Commission anticipates adopting a permanent rule before this temporary rule expires.

Thank you for coming to the hearing.

**The following is a summary of remarks made by NC DEMLR staff during the January 23, 2014 public hearing. The full text is available as an audio recording.**

**Rule 15A 2H .1002 Temporary Rule Public Hearing  
NC DEMLR Staff Remarks**

Thank You Mr. Craven...

We have a handout available as you came in today that goes through the proposed changes to the rules.

I'll try and give an overview of this information as well as some additional explanation of the process.

As you have already heard today and seen in the documents provided, this rulemaking is in response to recent amendments to NC General Statute 143-214.7. This section of the statutes includes information associated with the management of stormwater runoff. The amendment changed the definition of built-upon area. Built-upon area is a term used in a number of our laws and rules to define the portion of a project area that covers the land surface with impervious surfaces and prevent rainwater from infiltrating into the soil. Accurately assessing the built-upon area on a project site is a major issue in adequate stormwater management. When areas are developed and built-upon area is added a number changes occur (increased activities, increased pollutants and increased stormwater flow). One of the most important changes is that built-upon area keeps rainfall from naturally infiltrating into the soil. This changes the amount and the timing of surface water runoff from rain events that make its way to surface waters such as lakes, streams, rivers, estuaries. Our stormwater management programs are designed to protect surface waters from the potential impacts of development activities and associated stormwater runoff.

House Bill 74 (Session Law 2013-413) included changes in the definition of built-upon area. These changes are outlined in the handout available today. The changes removed references to specific surfaces that were to be considered impervious (bua) leaves a definition of BUA as a surface that does

not allow water to infiltrate through the surface and into the subsoil. In addition, the definition added an exclusion to note that BUA does not include gravel. This definition left some inconsistencies for regulatory agencies (state and local), permittees and the engineering design community. In particular the concerns were focused on gravel areas and assuring that gravel areas that are defined as pervious in the session law are in fact pervious.

The term gravel itself creates some confusion. Within the stone, sand and gravel industry gravel is defined pretty narrowly as specific type of water-worn or pounded stone that is clean and rounded with very few fines. Outside of the industry most laypersons may use the term gravel to refer to a much broader group of aggregate material like crushed stone typically used for roads, parking lots, etc. These materials have different uses and can act very differently in terms of how they handle stormwater. Gravel, as defined by the industry, would be more likely to have materials that are washed, rounded and more similar in size and shape so that void spaces are created and maintained in the material. These materials would also be more likely to be used in landscape type settings that have less loading and compaction. Other stone materials include a variety of stone sizes and a large amount of fine materials leading to a situation where the different sizes, and especially the fine materials, fill in the gaps between the stones and provide much less void space for storage and infiltration of water. If a development's stormwater systems were designed based on the assumption that these materials are pervious, then the measures installed may be overwhelmed or bypassed because the designs underestimated the amount of stormwater flow that would be coming to the systems. This could cause gradual or catastrophic releases of stormwater runoff and associated pollutants into the environment.

The EMC has attempted to address this concern in the temporary rule by adding a definition of "gravel" (definition #10). This definition is consistent with the industry definition of gravel and considered

industry standards, in particular the Unified Soil Classification System, in defining the size range and characteristics of the material. In addition, the proposed temporary rule would remove a previous reference to gravel that was part of the definition of permeable pavement. Today we are seeking your comments on the language included to try and clarify the description of gravel that may be appropriate as a pervious material.

It is also important to consider that the perviousness of gravel (and other similar material) is dependent on the soil conditions under the gravel. If the soil cannot accept stormwater due to the soil characteristic or due to compaction, then the stormwater may initially go through the overlying material but will then runoff over the soil surface below. The result is that this situation creates flows and pollutant loads that are similar to those that occur for paved impervious surfaces. The definition of built-upon area does include the provision that built-upon area “does not allow water to infiltrate through the surface and into the subsoil.” This language allows the EMC and the Division to continue to consider the underlying soil in evaluating built-upon area. The EMC has not proposed any additional changes in the temporary rule related to this issue, but it may be an area for clarification in the permanent rulemaking process. We would welcome your comments on this area as well.

The handout available today outlines how the Commission and Division will implement the temporary rule for a series of scenarios. For new development the Division would give credit for areas that meet the definition of gravel and provides for infiltration through the gravel and into the underlying subsoil. As with any other project review, the Division will be open to applicants that can show their design will provide an aggregate surface that will infiltrate water through the surface and into the soil below. Expansions to existing development projects may also be considered in the same manner but would require a modification of the Division permit for additional credit to be given. For redevelopment

projects the Division would review gravel areas in accordance with the new gravel and built-upon area definitions. Under our stormwater rules, a redevelopment project may get credit for existing built-upon area and not have to provide stormwater control beyond what was existing before for those areas. In the past gravel areas would have been considered built-upon areas that were available for the redevelopment exclusion. With the temporary rule language, only areas that are existing gravel as defined, would have now have to provide for stormwater control. This would be much less than the impact of the legislative change, which would have brought all stone surfaces under the pervious category and would have excluded them from the redevelopment exclusion.

In addition to the impact to the Division's stormwater program, we also recognize that a large number of local governments across the state implement stormwater programs. These local governments have ordinances that establish their stormwater requirements. The EMC believes that these local governments may make their own determinations about whether or not to include these definition changes into their local programs, as long as a local ordinance is at least as stringent as the state requirements.

We encourage you to provide your feedback on the proposed changes. Please keep in mind that it is helpful for the Commission and Division to hear from you on parts of the changes that you like as well as those that you seek changes to. It is also always helpful to have suggested language changes for the Commission and Division to consider.

Following the completion of the Temporary rule process the Commission will have to move forward with the development of a permanent rule to replace the temporary rule. Please continue to follow the process and provide comments on these efforts.

List of Attendees

**Public Hearing on Proposed Temporary Rule to Amend 15A NCAC 2H .1002**

**January 23, 2014**

**Ground Floor Hearing Room, Archdale Building, Raleigh, NC**

<u>Name</u>	<u>Representing</u>
David Horton	Self
Reuben Jones	Self
Charles Friedrich	Carolina Stalite Co.
Lisa Martin	NC HomeBuilders Association
Gradie McCallie	NC Conservation Network
Jay Stem	NC Aggregates Association
Jim Kuszaj	NCMA
Andrew Anderson	NC State University
Robert Patterson	Town of Morrisville
Rich Cappola	Town of Morrisville
Erin Wynia	NC League Municipalities
Senator Norman Sanderson	State of North Carolina
Travis Crissman	Hazen and Sawyer, PC
Blair Hinkle	City of Rocky Mount
Craig Deal	NCDOT
Megan Hinkle	Self
Gail Bledsoe	NC Forest Service
Haywood Phthisic	Neuse River Compliance Association
Daryl Norris	City of Wilson
Craig Bromby	NC BASE
Tyler Newman	Business Alliance for a Sound Economy
Miles Horton	Self
Hunter Freeman	Withers and Ravenel
Glenn Sappie	NC DENR
Mike Randall	NC DEMLR
Julie Ventaloro	NC DEMLR
Bridget Munger	NC DENR
Bradley Bennett	NC DEMLR
Annette Lucas	NC DEMLR
Shelton Sullivan	NCDWR
Tracy Davis	NC DEMLR
Toby Vinson	NC DEMLR

**Summary of Oral Comments**  
**Public Hearing on Proposed Temporary Rule to Amend 15A NCAC 2H .1002**  
**Jan. 23, 2014**  
**Ground Floor Hearing Room, Archdale Bldg, Raleigh, NC**

Six people chose to speak during the public hearing. Their comments are summarized below.

- David Horton, Morehead City, representing himself. Described impact of Senate Bill 1967 (in 2008) on property values in Carteret County. The bill changed the threshold of stormwater rule applicability from one acre to 10,000 square feet. Many lots in Carteret County are small lots, and many lots have existing built-upon area on them, including gravel. The way the law is now [after the adoption of Session Law 2013-413], existing driveways and parking lots with gravel on them wouldn't be allowed to be paved without requiring stormwater. If this temporary rule isn't adopted, then existing gravel areas at least need to be grandfathered in. Otherwise, there will be a devastating loss of value to property in Carteret County.
- Ruben Jones, civil engineer representing himself. Not clear about difference between the terms used in the proposed definition of gravel: rounded vs. water-worn vs. pounded vs. crushed. We may be able to come up with wording that better distinguishes porous washed aggregate of certain sizes from ABC stone which is well graded and has fines that compact tightly and sheds water. For example, 57 stone may be crushed stone, but it doesn't have the fines in it that the proposed rule is trying to exclude. The distinction should be maintained between gravel as a type of surface and porous pavement which is not a surface, but a BMP that would need to be permitted, inspected, and maintained like other BMPs. There needs to be attention paid to how runoff works through the depths of washed gravel as a media, and not just at how runoff flows over it. Referred to articles by Dr. Ana Barros and Jay Mulqueen that address this issue.
- Charles Friedrich, Carolina Stalite Company, Salisbury. Their company makes lightweight aggregate and expanded slate and shale which doesn't fall under the proposed definition of gravel, but is porous. It retains 45% of water that comes in contact with it initially. We have had success using it as pervious surface, especially with DOT. It locks together, but allows water to move through it which would be beneficial for pervious pavement. Will submit written comments.
- Lisa Martin, North Carolina Homebuilders Association. Our issue with this as temporary rule is that we don't believe it meets standards and Administrative Procedures Act of a temporary rule. There is a committee chaired by Senator Jackson and Representative Samuelson looking at this, and they intend to make changes. On behalf of our members and trying to keep confusion at bay, either pursue permanent rulemaking or delay this until the General Assembly committee decides what they plan to do. If this goes forward, we will object to the RRC on the basis that

this doesn't rise to the level of a serious and unforeseen threat. It appears that there is no specific definition of gravel, but the term has been used in rules before, but we must have defaulted to a national standard. This is great for the lower limit, but why do we need an upper limit in terms of size? Boulder isn't gravel, but would the responsibility fall to the regulated community to prove that something larger is gravel, and permeable or not? Second, would I know small, rounded, water-worn and pounded when I saw it? Would everybody know what that is across the state? Would local governments be able to do it? What if one size is water-worn and another size isn't? The definition is very subjective. We suggest the extended definition be removed. Gave written comments to hearing officer.

- Gradie McCaulie, North Carolina Conservation Network. When the Legislature passed H74, I suspect that provision dealing with gravel was inserted at the 11<sup>th</sup> hour and most legislators didn't know what it did. It defines black as white. Practitioners and local governments and environmental advocates know it is factually wrong. Most gravel is, in fact, impervious but law says it is pervious. We appreciate that the EMC and the Department are trying to contain the damage while the Legislature studies the issue more. We support the temporary rule brought to the WQC in its original form (2 mm and 4.74 mm – that translated 0.8 inches to 1.8 inches). The rule now has a bigger range. A smaller range is less likely to be used; we think that is the appropriate direction for the rule to take. For the permanent rule, my organization would be interested in moving towards a pre- and post -development runoff approach. We want to get away from the artificial low/high density threshold that is essentially a loophole for things that manage to squeeze in under that built-upon threshold. Will submit written comments.
- Jay Stemp, North Carolina Aggregate Association. We represent people who produce stone. We believe the General Assembly was using gravel as a generic term. When you look at defining gravel, it is river rock, not crushed stone. But if you're going to define built upon as gravel and eliminate crushed stone, you're going to eliminate crushed stone used for erosion control. That stone is porous, water runs through it. Don't eliminate that type of stone, like 57 stone, from the definition of gravel because of a technicality. Class A is bigger stone, but water runs through it. It's the type of stone you use at a construction entrance. Don't be so focused that we miss the bigger picture.

## Comments NCAC 2H .1002 Stormwater Temporary Rule

Chuck Friedrich, RLA  
Carolina Stalite Company  
PO Box 1037  
Salisbury, NC 28145  
704-637-1515  
[cfriedrich@stalite.com](mailto:cfriedrich@stalite.com)

### Change #2 "Gravel"

1. In my opinion the shape of gravel if defined as rounded/washed stone, when maintained, can be pervious enough to provide for permeable pavement, however, gap graded aggregate that consists of crushed stone if maintained will also provide permeability. To exclude crushed stone without stipulating gradation eliminates opportunity to provide a surface that may perform well when the aggregates lock together. Aggregates which are irregular in shape provide a more stable surface and when gap graded will also provide permeability.
2. In addition to 'Gravel' I feel Rotary Kiln Expanded Lightweight Aggregate (LWA) should also be included as an aggregate that provides good permeability. LWA is a strong aggregate that contains voids from the heating process used to create the lightweight properties for use in lightweight concrete products, horticulture, asphalt chip seal, geotechnical fill and storm water retention and treatment. LWA is cubical in shape and the surface contains voids and pores. Internal void space does not fill with water so the aggregate remains lightweight. External voids retain water and nutrients from stormwater runoff and actually can harbor good microbes to remediate oils and other hydrocarbons. Because LWA is lightweight, it is beneficial for use as a cover material because it does not sink into the subsoil which makes it easier to be maintained as pervious surface treatment. The voids in the LWA allow water to meander through the profile even when contamination from fines washes in from the surrounding area. LWA has been and is now successfully being used as a media for bio-retention (rain gardens) in NC, TN, SC, MD and VA. Test results are available upon request.

The definition of LWA according to ASTM E2788-11 is: expanded shale, clay or slate (ESCS): a lightweight, ceramic material produced by expanding and vitrifying select shale, clay or slate in a rotary kiln. It is a highly porous and low-density material.

Change #1 The definition of "built-upon area"

With this information provided above, I feel Change #, The definition of "built-upon area" should read with my changes in italics:

"Built-upon Area means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. "Built upon area" does not include a wooden slatted deck, the water area of a swimming pool, *maintained gravel, gap graded crushed stone or rotary kiln expanded lightweight aggregate.*

Thank you,

Chuck Friedrich, RLA

Carolina Stalite Company



## NORTH CAROLINA HOME BUILDERS ASSOCIATION

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MIKE CARPENTER

Mr. Benne Hutson, Chairman  
 NC Environmental Management Commission  
 1617 Mail Service Center  
 Raleigh, NC 27699-1617

RE: Proposed Temporary Rule under 15A NCAC 02H .1002

Dear Mr. Hutson,

On behalf of the 14,000 member firms of the North Carolina Home Builders Association, I appreciate the opportunity to comment on the EMC's proposed temporary rule under 15A NCAC 2H .1002.

First, we object to the EMC using the temporary rule process to change the definition of built-upon area, specifically, to define "gravel". The General Assembly excluded gravel from the definition of "built-upon area" in NC Session Law 2013-413, section 51(a) and, while Section 51(d) authorizes the EMC to amend its rules to be consistent with the definition of "built-upon area" as enacted by the General Assembly, the EMC is going beyond that authority in this temporary rule. The General Assembly did not specifically authorize the EMC to use the temporary rulemaking process. While we understand and are sympathetic to the confusion caused by simply excluding gravel from the definition of built-upon area, we do not believe that this "confusion" poses a serious threat to public health, safety or welfare.

Not only is the use of a temporary rule in this case not justified under the Administrative Procedures Act, but the EMC's proposed changes may even further complicate the interpretation of what is and is not gravel.

- A) The proposed definition of gravel appears to be consistent with the nationally recognized standard in terms of the lower size limit of .08". However, what is the purpose of adding an upper limit of 3"? Would the regulated community have to demonstrate that larger sized gravel is also permeable?
- B) The part of the definition describing gravel as "small, rounded water-worn or pounded stones" is arbitrary and has no corresponding national standard. From a permeability standpoint, there should be no difference in gravel that meets the minimum size range, regardless of the shape. The interpretation of what is truly "rounded" or to what extent a particle is "water-worn" will be different in every jurisdiction, thus leading to inconsistencies in enforcement.

Again, thank you for the opportunity to comment. If you have any question regarding our position, please contact me at [lmartin@nchba.org](mailto:lmartin@nchba.org) or at 800-662-7129.

Sincerely,

Lisa D. Martin  
 Director of Government Affairs

**Ventaloro, Julie**

---

**From:** Josh Ward [josh.ward@highlandsonc.org]  
**Sent:** Wednesday, January 15, 2014 4:36 PM  
**To:** Ventaloro, Julie  
**Subject:** Gravel Definition

Ms. Julie Ventaloro,

The Town of Highlands Planning Staff is concerned about the general term "gravel" added to the definition for built upon area pertaining to the watershed regulations adopted into law in 2013. Although, we do understand some gravel acts as pervious surface, other gravel or stone, such as crusher run, could and should be considered impervious. We feel the proposed definition within the "Proposed Temporary Rules" provides a very specific type of gravel that would be permitted as pervious surface.

*Josh Ward, CZO*

Town of Highlands  
Planning & Development  
Director  
(828) 526-2118  
(828) 526-2595

**Ventaloro, Julie**

---

**From:** Chris Estes [Chris@EstesDesign.com]  
**Sent:** Wednesday, January 15, 2014 5:50 PM  
**To:** Ventaloro, Julie  
**Cc:** Lucas, Annette  
**Subject:** Changes to stormwater management rules

Hi Julie,

I testified at the open subcommittee meeting about this on 12/11. Basically the my comments were this;

The term "pervious" is incredibly important to the field of stormwater. The future of the stormwater profession is becoming increasingly reliant on the definition of "pervious surfaces" to govern the states water quality and flooding liabilities. Impervious vs pervious is quite literally the single most important component of stormwater planning, design and regulation that governs the health, welfare and safety of the public's surface waters and water supply. Careful and diligent consideration must be taken when defining it's criteria. The term "gravel" as used in House Bill 74 as being "pervious" is very broad and ignores the reality and complexities of materials commonly referred to as gravel. The term gravel has no fixed or quantitative meaning. It can mean any of a large family of mineral types that are processed in many different ways. Historically most of these materials are manufactured to meet standards specified by the American Society for Testing and Materials (ASTM) for foundation conditioning or in other words the ability to reach high compaction. The term "pervious" means that water passes through. "Compaction", to varying degrees, opposes the definition of pervious by impeding water to pass through. The degree to which this opposition varies is greatly influenced by aggregate material, placement or installation method, intended use, landscape setting and underlying soils.

Thanks

Chris Estes, PLA



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## Ventaloro, Julie

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**From:** Matthew Johnson [MJohnson@jamestown-nc.gov]  
**Sent:** Thursday, January 16, 2014 3:35 PM  
**To:** Ventaloro, Julie  
**Subject:** Commentary on upcoming NCDENR hearing re: gravel

Good afternoon, Julie. The Town of Jamestown is in the process of altering its Land Development Ordinance to consider gravel as "pervious" per the recent change in definition made by the General Assembly. We do not have an issue with the change and feel that it will alleviate some of the arguments that we often hear from developers (ex – "water percolates through gravel just fine", etc.). To work around the potential penalties that would occur when changing a definition carte blanche, we have taken the following stance:

**Gravel. The Town of Jamestown, in recognition of Section 51(a) of S.L. 2013-413, recognizes the exception of gravel as an impervious surface. Gravel shall be considered a pervious surface from the effective date of this ordinance forward. Existing sites which were developed with gravel prior to the effective dates of the watershed ordinance (July 1, 1993 in all watersheds EXCEPT Randleman GWA and WCA where the effective date is January 1, 2000), or on a previously approved watershed site plan, may treat gravel as existing built-upon area for the purposes of built-upon area calculations.**

This way, developers aren't penalized and may count historically graveled areas as "impervious" for the purposes of grandfathering BUA, while new applications of gravel will be considered as "pervious" after the adoption of this ordinance update (slated for Jan 20, 2014). We feel that this will be as fair to all parties as possible.

Please let me know if you have any questions. Thanks.



Matthew Johnson, AICP  
 Planning Director  
 Town of Jamestown  
 PO Box 848  
 301 E. Main St.  
 Jamestown, NC 27282  
 Phone- 336.454.1138  
 Fax- 336.886.3504

"In matters of style, swim with the current; in matters of principle, stand like a rock."  
 — Thomas Jefferson

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### Public invited to comment on changes to stormwater management rules

State officials will host a public hearing on proposed temporary changes to state stormwater management rules in Raleigh on Jan. 23, 2014.

The proposed changes aim to define the term "gravel" as it relates to stormwater permitting.

## Ventaloro, Julie

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**From:** Jones, III, Reuben [Reuben.JonesIII@duke-energy.com]  
**Sent:** Wednesday, January 22, 2014 1:58 PM  
**To:** Ventaloro, Julie  
**Subject:** Comment - [Stormwater BMP Manual] Public invited to comment on changes to stormwater management rules

Ms. Ventaloro,

It seems that the sentence "Gravel is not crushed stone or rock." could be made more clear. I believe gravel is crushed stone or rock...with the fines removed. I am not clear on the difference between "pounded" and "crushed". The aggregate size range is specified. Is the intention to exclude "well-graded" mixes or to specifically exclude particles smaller than 0.08 inches (other than specifying "clean or washed")? Thank you for your work on this matter.

Best regards,  
 Reuben S. Jones, III  
 Senior Engineer  
 Transmission Carolinas East - Substation Engineering  
 410 South Wilmington Street, NC 02  
 Raleigh NC 27601  
 919 546 3459  
[reuben.jonesiii@duke-energy.com](mailto:reuben.jonesiii@duke-energy.com)

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**From:** NC BMP Manual Updates [<mailto:stormwaterbmpmanual@lists.ncmail.net>]  
**Sent:** Wednesday, January 15, 2014 2:18 PM  
**To:** NCDENR.StormwaterBMPManual  
**Subject:** [Stormwater BMP Manual] Public invited to comment on changes to stormwater management rules

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### **Public invited to comment on changes to stormwater management rules**

State officials will host a public hearing on proposed temporary changes to state stormwater management rules in Raleigh on Jan. 23.

The proposed changes aim to define the term "gravel" as it relates to stormwater permitting.

The public hearing is being hosted by the N.C. Division of Energy, Mineral and Land Resources on behalf of the state Environmental Management Commission. The hearing starts at 2 p.m. in the Ground Floor Hearing Room of the Archdale Building, 512 North Salisbury St. Registration for speakers is at 1:30 p.m. The hearing will be recorded.

Written comments will be accepted at the meeting and may also be submitted until 5 p.m. Feb. 7, 2014. Written comments should be sent to: Julie Ventaloro, Division of Energy, Mineral and Land Resources, 1612 Mail Service Center, Raleigh, NC 27699-1612. Written comments may also be sent by email to [julie.ventaloro@ncdenr.gov](mailto:julie.ventaloro@ncdenr.gov).

For more information on the proposed temporary rule changes, please visit <http://portal.ncdenr.org/web/guest/rules>.

Bridget Munger  
 N.C. Department of Environment & Natural Resources  
 1612 Mail Service Center

**Ventaloro, Julie**

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**From:** Bennett, Bradley  
**Sent:** Wednesday, February 05, 2014 7:35 AM  
**To:** Ventaloro, Julie  
**Subject:** FW: suggestion for gravel size rewrite  
**Attachments:** Built Upon Area Comments 1 6 2013.doc

Here is the other email from <sup>Erin</sup>Robin. It does include information specific to the rule language, but we got it after the WQC meeting?

BB

Bradley Bennett	
Stormwater Permitting Program	Phone: (919) 807-6378
NC Division of Energy, Mineral and Land Resources	Fax: (919) 807-6494
1612 Mail Service Center	Email: <a href="mailto:bradley.bennett@ncdenr.gov">bradley.bennett@ncdenr.gov</a>
Raleigh, NC 27699-1612	Web: <a href="http://portal.ncdenr.org/web/lr/stormwater">http://portal.ncdenr.org/web/lr/stormwater</a>

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**From:** Erin Wynia [<mailto:ewynia@NCLM.ORG>]  
**Sent:** Wednesday, January 08, 2014 5:48 PM  
**To:** Bennett, Bradley  
**Cc:** Steve Tedder ([tedderfarmconsulting@gmail.com](mailto:tedderfarmconsulting@gmail.com))  
**Subject:** suggestion for gravel size rewrite

Hi Bradley,

I was able to get feedback from the City of Charlotte this afternoon. In a few other phone conversations I had with League members, they expressed a similar preference (though without as much specificity). Here's what Charlotte had to say:

- I would much favor a gravel definition focusing on the gradation of stone rather than the size of stone or rounded/angular characteristics of the particles. The particle size specified here seems rather small. What kind of void space would this mixture have? If the goal is to define "gravel" as a material which allows water to quickly infiltrate, then the definition should specify gravel as open graded aggregate; with specific particle gradation or minimum void ratio.
- A small change that could help would be to include the modifier "open graded" to the definition. Something like this: "Gravel" means a clean or washed loose, open-graded aggregation of small rounded water-worn or pounded stones ranging in size from 2.00 mm to 4.74 mm. Gravel is not crushed stone or rock."
- The NC BMP Manual does not specify (from what I can find) a particular standard to use to describe the particles, but it often references ASTM standards for other things. Either way, we are talking about the very fine aggregates which do not drain well. It would be best to err on the size of the larger particle when describing gravel.

I also attached some comments I received from Terry Watts in Hickory. He actually worked at a Martin Marietta facility before becoming an engineer, so he has some experience in this field.

I'm not sure if any of this will be helpful, given that it was collected on short notice. However it shakes out in the next 24 hours, we look forward to working with you toward a permanent rulemaking on this topic that is workable for regulators and the regulated community.

**(1) "Built-upon Area" means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. "Built upon area" does not include a wooden slatted deck, the water area of a swimming pool, or gravel.**

Comment:

Change second sentence to read: "Built upon area" does not include a surface with openings that water can pass through, such as a wooden slatted deck, or an area where water is intended to pond, such as a stormwater BMP, or the water surface area of a swimming pool.

**(10) "Gravel" means a clean or washed loose aggregation of small rounded water-worn or pounded stones ranging in size from 2.00 mm to 4.74 mm. Gravel is not crushed stone or rock.**

Comment:

Change first sentence to remove "or pounded stones." Second sentence, change to read "Gravel is not crushed stone, crushed aggregate, or crushed rock."

Explanation:

"Gravel" is small weathered or eroded rock. It is rounded or eroded by a natural process such as wind or water. It is sometimes mechanically screened to grade it to meet certain size standards. It can also be crushed by mechanical means, but this is not commonly done where crushed aggregate is readily available. Gravel is a "clean aggregate" by nature, without the fine particles produced by the crushing process.

Gravel is sometimes used in decorative landscaping. It can be used to produce a certain appearance in walkways. It can also be used in concrete, most commonly when a decorative appearance is desired. One other use, that is not as common as it used to be, is to use it on top of a rubber membrane roof as a walking surface.

"Crushed aggregate" is mined and crushed by mechanical means to produce a product for use in various ways, typically construction related. "In situ" (in its natural state), it can be limestone, quartz, or other minerals. After crushing, it is mechanically screened to "grade" it to meet certain size standards for various applications. It can be washed to remove the fine particles produced in the crushing process (hence the term "washed stone" or "clean aggregate"). The fine particles can be left and screened, along with the larger particles, to produce aggregate base course (or ABC stone).

Crushed aggregate is commonly used as a base material (ABC stone) to construct roads, or can be spread on a graded area to make a parking lot (ABC stone). Sometimes washed stone is used as the top surface (for appearance) in a parking lot that is left unpaved. Washed stone or clean aggregate is commonly used in ready-mixed concrete.



February 5, 2014

N.C. Environmental Management Commission  
1612 Mail Service Center  
Raleigh, NC 27699-1612  
Attn: Julie Ventaloro

RE: Stormwater Temporary Rule

Dear Ms. Ventaloro:

BASE, the Business Alliance for a Sound Economy, is an organization of trade associations and numerous independent businesses, formed to take collaborative action on issues of concern to their broad membership engaged in residential and commercial real estate sales, home building, land development, economic development, finance, property management and leasing. BASE represents numerous independent businesses and the members of the Brunswick County Home Builders Association, the Brunswick County Landowners Association, the Topsail Island Association of REALTORS®, the Jacksonville Board of REALTORS®, and the Wilmington-Cape Fear Home Builders Association.

BASE appreciates this opportunity, on behalf of its members, to submit the following comments on the issue of “built-upon area” and the ramifications of the recent legislative action reflected in Session Law 2013-413.

**The EMC’s definition of gravel is too narrow, frustrates the intent, and improperly modifies the meaning of Session Law 2013-413**

An earlier iteration of 15A NCAC 2H .1002(1) defined “Built-upon Area” as

“that portion of a development project that is covered by impervious or partially impervious cover including . . . *gravel roads and parking areas . . .*” (emphasis added)

In essence, the Environmental Management Commission (EMC) determined that the gravel used in roads and parking areas was “impervious or partially impervious.” The most recent iteration of the rule has changed the language slightly, without changing the meaning as it pertains to the treatment of gravel, defining “Built-upon Area” as:

“that portion of a development project that is covered by impervious or partially impervious cover including, . . . *gravel areas such as roads, parking lots, and paths . . .*”

In Session Law 2013-413, the General Assembly added a new subsection to N.C. Gen. Stat. §143-214.7, defining “built-upon area,” as follows:

“(b2) For purposes of implementing stormwater programs, “built-upon area” means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. “*Built-upon area*” does not include . . . *gravel.*” (emphasis added).

The exclusion of gravel from the definition of “built-upon area” is not a determination by the General Assembly of the perviousness of gravel. The General Assembly excluded gravel from the definition of “built-upon area,” irrespective of whether gravel wholly or partially impervious, in much the same way that the U.S. Congress excluded excluded from the definition of the term “point source” agricultural stormwater discharges, irrespective of whether such discharges convey pollutants to the waters of the United States through a confined, discrete conveyance.

The existing EMC definition of “built-upon area” is a determination that gravel roads and parking areas are impervious. Session Law 2013-413 makes that determination irrelevant.

It is appropriate for the EMC to define “gravel,” since it is an imprecise term. However, it is inappropriate, and outside the authority of the EMC, to adopt a definition designed to put gravel roads and parking lots back into the definition of “built-upon area.” The very limited definition provided in the rule seeks precision at the expense of the clear intent of the General Assembly.

Gravel which is “rounded”<sup>1</sup> would be unsuitable for roads and parking areas because rounded material resists compaction and consequently would move too much to provide the traction needed for these purposes. In other words, roads and parking lots to which a cover of rounded stones was applied would continually develop ruts caused by the movement of tires and require constant attention to make it satisfactory to these uses.

The EMC notes in its “Statement of Impact” that the aggregate material commonly understood as gravel

“may be impervious due to compaction at the time of installation or partially impervious but installed on a compacted surface that does not allow water to infiltrate into the subsoil. As a result, if an aggregate crushed stone material as opposed to gravel is used, it could cause water (including pollutants and sediment) to runoff [*sic*] the surface at higher velocities and volumes than the

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<sup>1</sup> The definition separates “rounded,” “water-worn,” and “pounded” with the disjunctive “or.” While the meaning of “rounded” is apparent, “water-worn” and “pounded” are less clear. But suitability for parking lots and roads may be inverse to the tendency to compact. To the extent water-worn or pounded particles were included because of their similarity to rounded particles in this regard, the intent of the exclusion is similarly frustrated.

stormwater and sedimentation control measures were designed for and can handle.”

The General Assembly did not authorize a parsing of its exclusion based on the potential of the gravel commonly used on roads and parking lots to compact. Indeed, “agricultural stormwater discharges” might well carry significant pollutant loadings into nearby streams. Nevertheless, Congress prohibited EPA from requiring permits for such discharges based on characterizing them as “point sources.” Exclusion of gravel from built-upon area does not authorize the EMC to determine what is or is not “gravel” by how well the material lines up with the definition of “built-upon area” from which “gravel” was excluded.

The EMC is rightly concerned with the impact to water quality that the exclusion of gravel may have, but that concern does not provide it with license to modify the act of the General Assembly. A definition of gravel that turns out to include only particles unsuitable for roads and parking areas, the narrowness of the definition frustrates the intent and changes the meaning of the General Assembly’s amendment. Crushed stone is the type of gravel commonly used for roads and parking areas. The EMC cannot declare that such material is not within the meaning of the term gravel.

It is, however, permissible to define gravel to eliminate, for example, the fine material that fills the interstitial areas between individual gravel particles. Material that effectively mimics pavement is not understood to be “gravel.” The use of the adjectives “washed” or “clean” may be sufficient for this purpose. It may be a fine distinction, but it is one that the EMC needs to consider, and address without excluding all gravel materials otherwise suitable for roads and parking areas.

### **The proposed definition of gravel is ambiguous and imprecise**

As noted in fn. 1, the proposed definition for gravel itself contains ambiguous or imprecise components that will make interpretation difficult and inconsistent. The meaning of the term “rounded” presumably refers to an absence of sharp edges and angular configurations. Does any sharp edge or angular configuration would disqualify the particle from this piece of the definition.

“Water-worn” is less clear. Is this term synonymous with “rounded,” or is there some slight distinction between the two? If it is synonymous, is it unnecessary? Does the term refer merely to the particular nature of the erosive forces on the particles, and, if so, why is that significant?

Perhaps, the least precise term of the three choices provided by the definition is “pounded.” The significance of “pounding” is imponderable. Does the consequence of “pounding” distinguish pounded particles from those which are rounded or water-worn? How does “pounding” differ from “crushing?” If there is no difference the definition is internally inconsistent.

The nature of gravel, as the term is commonly understood, and, apparently, as the definition suggests, is that it is irregular. The individual pieces are irregular in shape, and a load of gravel will be composed of particles which differ widely in size and shape. Ostensibly, a cover of gravel still fits within the definition if it is composed a varied collection of sizes. However, if one can find within a cover of gravel particles which are not “rounded, water-worn, or pounded,”

is the cover not gravel? Or are individual particles not gravel which do not satisfy those terms? Is there a threshold to determine if the collective group of irregular particles constitute gravel? Is the threshold 10% or is it closer to 90%?

### **Temporary rulemaking is inappropriate for this rule**

To justify the need for a temporary rule, an agency must find that “adherence to the notice and hearing requirements . . . would be contrary to the public interest and that the immediate adoption of the rule is required” by at least one of twelve bases. N.C. Gen. Stat. §150B-21.1(a). Two of the twelve bases in the statute could potentially apply for this temporary rulemaking, but there is no need for immediate adoption as explained below, nor do the circumstances satisfy the showing to trigger this extraordinary process.

N.C. Gen. Stat. §150B-21.1(a)(1) authorizes temporary rulemaking in the event that the agency has identified a “serious and unforeseen threat to the public health, safety, or welfare.” While the EMC may believe that use of gravel outside the limitations on built-upon area would increase the delivery of pollutants to nearby watercourses, there is no assertion that a “serious and unforeseen threat to public health, safety or welfare” is posed, or, at the very least, a threat that is distinguishable from virtually any other substantive rulemaking in which the EMC engages. Indeed, substantive rulemaking might not even be justifiable if it were not designed to address a potential increase in pollution.

The more likely basis relied upon for the use of the temporary rulemaking process is found at N.C. Gen. Stat. §150B-21.1(a)(2). That subsection provides that temporary rulemaking may be engaged because it is required by “[t]he effective date of a recent act of the General Assembly or the United States Congress.” However, nothing in Session Law 2013-413 compels immediate action on the part of the EMC. The Session Law states in pertinent part that “[t]he Environmental Management Commission shall amend its rules to be consistent with the definition of ‘built-upon area’ set out in subsection (b2) of G.S. 143-214.7.” S.L. 2013-413, s.51(d). What the law compels is that the EMC cease treating gravel as built-upon area. Defining “gravel” for this purpose merely prevents case-by-case challenges to DENR interpretations of the meaning of the term “gravel.” Indeed, DENR has in many similar cases relied not on rulemaking, but rather a change to the BMP Manual. That approach is hardly ideal, as the definition is a rule within the meaning of N.C. Gen. Stat. §150B-2(8a), as do many definitions and matters addressed in the BMP Manual, but neither is the extraordinary temporary rule process justified. There is little reason that permanent rulemaking could not be commenced and used to inform the EMC about an appropriate meaning for the term “gravel.”

### **Recommendation**

In accordance with the foregoing comments and with the request of the Hearing Officer, announced at the public hearing on January 23, 2013. BASE makes the following specific recommendations regarding the proposed temporary rule:

1. The EMC should decline to undertake this rule amendment using the temporary rule procedures as the amendment does not qualify under the thresholds set forth at N.C. Gen. Stat. §150B-21.1(a). The EMC can direct that DENR staff no longer treat “gravel” as

built-upon area, and determine on a case-by-case basis what may or may not be “gravel” until permanent rulemaking can be completed. DENR may choose to address the matter in the BMP Manual in the intervening period.

2. “Gravel” should not exclude stone prepared by crushing or other mechanical means, or aggregate materials prepared using other processes. The stone typically used for roads and parking areas is a type of crushed stone or aggregate, and, in the context of the history of the rule, is the material addressed by General Assembly in Session Law 2013-413. What is significant is not the manner in which the stone or aggregate is prepared, but the point, in the continuum between “rounded” or “water-worn” stone and asphalt-like pavement, gravel becomes an integrated surface more like asphalt than like a collection of individual stone or aggregate particles. This issue can be clarified by requiring that the “gravel,” not excluding crushed stone and manufactured aggregate, be washed or cleaned prior to application. The washing or cleaning process would eliminate or minimize small-grain particles which might fill the interstitial spaces between the “gravel” particles, creating an asphalt-like pavement surface. One issue that should be specifically addressed is the lower size threshold. Whether 0.08” is the appropriate lower threshold should be submitted to public comment and review in the permanent rulemaking process.
3. A means for determining and assessing whether the individual gravel particles meet the definitional thresholds must be included to guide DEMLR staff. As the rule is proposed, there is no guidance as to what percentage of gravel particles have to meet the size and shape requirements. For example, if 10% of the individual gravel particles are neither rounded, water-worn, or pounded, does staff determine the area to be built-upon area? Or is 50% the proper limit? The means may be some method of random sampling and visual examination, of, say, three samples of some reasonable and representative volume of the gravel. Alternatively, the rule might require certification from the supplier or manufacturer that a certain quality of stone or aggregate has been washed or cleaned and meets the rule definition of gravel. In any event, the rule should provide specific guidance to DEMLR staff to assure consistency across the DENR regions.

Thank you for considering these comments and recommendations regarding this matter of importance to BASE members. BASE believes it is important that rulemaking be conducted according to law and in a manner which most efficiently provides an opportunity for public participation. Most importantly is that agency rulemaking compelled by legislative enactments properly recognizes and implements the intent of our elected representatives in the General Assembly.

Sincerely,



Cameron Moore, CEO


**CITY OF DURHAM**

Department of Public Works  
 Stormwater Services  
 101 City Hall Plaza | Durham, NC 27701  
 919.560.4326 | F 919.560.4316

[www.durhamnc.gov](http://www.durhamnc.gov)

January 31, 2014

Via e-mail

Ms. Julie Ventaloro  
 1612 Mail Service Center  
 Raleigh, NC 27699-1612  
[stormwater@ncdenr.gov](mailto:stormwater@ncdenr.gov)

**RE: Comments on 15A NCAC 02H .1002  
 Proposed Amendment to Exclude Gravel from "Built-Upon Area"**

Dear Ms. Ventaloro:

The City of Durham Department of Public Works ("the Department") reviews residential, commercial, industrial, and institutional development plans for compliance with stormwater requirements. As such, the Department has a strong interest in the regulatory review of State stormwater programs pursuant to Section 51.(e) of S.L. 2013-413 (H74). City representatives attended the December 11, 2013 Stormwater Study Working Group Meeting held by Senator Jackson and Representative Samuelson on how partially impervious surfaces are treated in the calculation of built-upon area under stormwater programs. We submitted oral and written comments at that meeting.

The Department wishes to offer the following comments on the Environmental Management Commission's proposed temporary rule to define gravel as "'Gravel' means a clean or washed, loose aggregation of small, rounded, water-worn or pounded stones ranging in size from .08" to 3.0" in size. Gravel is not crushed stone or rock.":

1. We appreciate the thoroughness and diligence shown in researching the gravel issue as part of the regulatory review of State stormwater programs. It is clear to us that the facts were weighed carefully in the development of the proposed language amending 15A NCAC 02H .1002.
2. We feel that the definition proposed is a rational, quantitative approach that will make it easy for regulators and developers to determine whether a material is gravel or not. The proposed definition also adequately differentiates gravel from aggregate material.
3. The proposed language dovetails well with the City of Durham's own definition of impervious area: "*Impervious surface* means a surface that because of its composition and/or its use impedes the natural infiltration of water. It includes but is not limited to buildings, roofs, solid decks, driveways, parking areas, patios, sidewalks, and compacted gravel areas. It does not include areas that are part of permitted stormwater controls or the open surface water such as swimming pools." [Section 70-736 of City of Durham's

Ms. Julie Ventaloro  
January 31, 2014  
Comments on 15A NCAC 02H .1002  
Proposed Amendment to Exclude Gravel from "Built-Upon Area"  
Page 2 of 2

- "Stormwater Performance Standards for Development" ordinance].
4. The Department does feel the definition can be enhanced to prevent a well-blended or wide range of gradations which could limit void space and its infiltration ability. A suggested revision would make the definition read " 'Gravel' means a clean or washed, **like graded** loose aggregation of small, rounded, water-worn or pounded stones ranging in size from .08" to 3.0" in size. Gravel is not crushed stone or rock. Adding "like graded" implies the stones should be primarily of like sizes.
  5. Per the above comments, the Department favors adoption of the proposed temporary rule as revised, and eventual adoption of this language as permanent.

Thank you for the opportunity to comment on these proposed temporary rules. If you have any questions, please contact John Cox at (919) 560-4326 x 30212, [john.cox@durhamnc.gov](mailto:john.cox@durhamnc.gov), or Jennifer Buzun at (919) 560-4526 x 30292, [jennifer.buzun@durhamnc.gov](mailto:jennifer.buzun@durhamnc.gov).

Respectfully,



Marvin G. Williams  
Director of Public Works



**MECKLENBURG COUNTY**  
 Land Use & Environmental Services Agency  
*Water & Land Resources*

February 6, 2014

Julie Ventaloro  
 Storm Water Permitting Program  
 NCDEMLR  
 1612 Mail Services Center  
 Raleigh, NC 27699

**Subject: Session Law 2013-413, House Bill 74**

Ms. Ventaloro,

Mecklenburg County would like to take this opportunity to comment on Section 51 (Amend the Definition of "Built Upon Area" for Purposes of Implementing Stormwater Programs) of the above Law.

Based on the ERC discussions in December, discussions with staff here in Charlotte-Mecklenburg and my experiences I would like to make the following observations as it relates to the ability for gravel to act as an pervious surface and not be considered built-upon area:

- The vast majority of the time gravel does not, or eventually will not, infiltrate surface water runoff into the soil.
- Traffic or "loading" on top of the gravel (also known as "crush and run") creates compaction severely limiting the ability to infiltrate water.
- Even if water did infiltrate through the gravel, underlying soils must have the right natural characteristics or be amended or prepared to create infiltration capabilities. Lastly, compaction of the underlying soils must not occur during placement of the gravel or infiltration of the surface water runoff will be jeopardized.

However, there may be few instances where, with the correct soil underlying the gravel, limited loading and proper underlying soils, gravel could be considered a partially impervious surface on a site-by-site basis. Therefore, my recommendation is to charge the North Carolina Division of Energy, Mineral and Land Resources (NCDEMLR) with determining the applicability, design criteria, and maintenance requirements for gravel areas. The built upon area determination would be proportional to the ability for surface water runoff to infiltrate into the soil consistent with the minimum design criteria and maintenance requirements. As I understand it, NCDEMR and North Carolina State University, Department of Biological and Agricultural Engineering have done something similar to this in the past. I understand, an analysis of pervious pavement

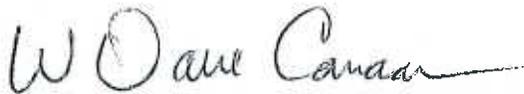
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[www.mecklenburgcountync.gov](http://www.mecklenburgcountync.gov)

by NC State under the direction of NCDENR resulted in the development of Chapter 18 Permeable Pavement of the North Carolina Division of Water Quality - Stormwater Best Management Practices Manual. Seems like a similar scientifically and performance based process that was used for permeable pavement should be considered for gravel surfaces.

Thank you for the opportunity to comment. Please let me know if you have any questions or concerns that I can address.

Regards,

A handwritten signature in cursive script that reads "W. Dave Canaan". The signature is written in black ink and has a long, horizontal flourish extending to the right.

W. Dave Canaan  
Division Director

CC: Ebenezer Gujjarlapudi, LUESA - Director

To: Julie Ventaloro, DEMLR Land Quality Section/Stormwater Program  
From: Erin Wynia, Legislative & Regulatory Issues Manager  
Re: Stormwater temporary rulemaking for 15A NCAC 2H .1002  
Date: February 7, 2014

Dear Ms. Ventaloro,

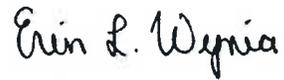
The NC League of Municipalities is a membership organization of over 540 municipalities and affiliate organizations, hundreds of which regulate stormwater runoff. They do so through the federal National Pollutant Discharge Elimination System program, through various state mandates such as the Water Supply Water Shed program and nutrient management strategies such as the Neuse, Tar-Pam, Randleman, Jordan, and Falls rules, or through programs designed to control the effects of flooding in urbanized areas. These responsibilities combine to make the League members very interested in the proposed temporary rulemaking for 15A NCAC 2H .1002.

While N.C. state law allows local governments to impose regulations different than state and federal regulations – so long as they are not less restrictive – after S.L. 2013-413 became effective last year, local stormwater program managers sought clarification of the new definition of “built-upon area” contained in the law. In particular, local governments lacked guidance on how to interpret the word “gravel.” Therefore, the League members appreciate the efforts by the N.C. Environmental Review Commission (EMC), supported by the Division of Energy, Minerals, and Land Resources (DEMLR), to further define this term in the N.C. Administrative Code.

For the reasons explained in the comments below, the League members generally support the language in this proposed temporary rule. While the EMC will need to follow this action with a permanent rulemaking later this year for any rules to remain in effect longer than 270 days, we anticipate that permanent rulemaking process may be influenced by further legislative action on this issue. Already, a legislative study committee has spent the past three months taking a deeper look at how state law treats gravel with respect to the definition of “built-upon area.” Much of the substance of the comments below is offered with the expectation of these further legislative and administrative actions in mind.

We look forward to working with you, your DEMLR colleagues, and members of the EMC on a permanent rule later this year. Thank you for the opportunity to provide these comments.

Respectfully submitted,

A handwritten signature in black ink that reads "Erin L. Wynia". The signature is written in a cursive, flowing style.

Erin L. Wynia  
Legislative & Regulatory Issues Manager  
[ewynia@nclm.org](mailto:ewynia@nclm.org)  
(919) 715-4126

### **General comments**

The League membership supports this proposed temporary rulemaking, though in anticipation of a permanent rulemaking, we suggest changes in the next section of these comments to improve the rule for the long term. This proposed temporary rule (1) modifies the N.C. Administrative Code to conform to changes made last year in S.L. 2013-413, and (2) adds a new definition of “gravel.” Because the conforming changes to the definitions of “built-upon area” (02H .1002(1)) and “permeable pavement” (02H .1002(27)) mirror the new state statute, we offer no additional comment on those particular proposals.

With respect to the new definition of “gravel” offered in proposed 02H .1002(10), the League members thank the EMC for taking action to define this term and eliminate confusion caused by its use in S.L. 2013-413. For the purposes of stormwater management, program managers must ensure that appropriate controls are placed on development sites to control runoff from the various surfaces on the site. Therefore, stormwater program managers as well as site designers must understand exactly how to calculate the amount of runoff, a determination made murky by the new state law. Clarification via rulemaking is the appropriate mechanism for providing regulatory certainty and eliminating differing interpretations of the law across the state. The League commends the EMC for taking this step.

The need to define “gravel” arose when the legislature excluded “gravel” from the definition of “built-upon area.” This exclusion caused local program managers to question whether their existing practices for treatment of non-paved surfaces could legally continue. The problem came because many materials known colloquially as “gravel” are not considered “gravel” by the aggregate materials industry. For example, the materials typically used for non-paved roads and parking lots are not “gravel” according to most technical industry standards. Instead, they are considered “crushed stone or rock.” These materials quickly become compacted with use and include many “fines,” or small particles that fill in the space between larger pieces of stone and rock. During rain events, the fines prevent water from infiltrating into the subsurface, and they also get carried off the surface and flow into nearby streams, adding pollutants to those receiving waters. Given the characteristics of these largely impervious materials, stormwater program managers must ensure the appropriate level of controls on sites to handle the volume and quality of runoff from these surfaces.

In contrast, the materials classified as “gravel” by the aggregate materials industry are more often used for landscaping purposes or for other low-impact uses such as in solar farms and around cell phone towers. These materials do not include fines and do not become compacted with use. Therefore, they are partially pervious surfaces, allowing some water to infiltrate into the underlying soils. Due to this level of infiltration, the same concerns about runoff and how to treat these surfaces when calculating built-upon area do not exist as they would for other surfaces covered with crushed rock or stone.

The League members support the proposed temporary rule defining gravel as an important first step in distinguishing between non-paved surfaces that are pervious and impervious. Pending a permanent rulemaking, this proposed rule should eliminate confusion caused by the vagueness in S.L. 2013-413. It also should allow local program managers to stay consistent with the State's implementation of the similar rules and regulations, giving the regulated community certainty across jurisdictions. In addition, it should allow local programs to stay in compliance with their water-quality based obligations under State and federal permits by continuing to appropriately control runoff from development sites. And finally, it should allow the professional engineers running local programs as well as the other design professionals engaged in the development process to continue to adhere to the standards required of them by their professions in terms of choosing the correct calculations to accurately account for runoff from non-paved surfaces.

### **Considerations for future rulemaking**

The League members note that while this temporary rulemaking provides important clarifications on the issue of how to treat non-paved surfaces under State and federal stormwater rules, a permanent rulemaking should address additional technical considerations. Ensuring that regulations are informed by solid science is a foundational principle of the League membership, whose Core Municipal Principles state, "For municipalities to be successful partners in environmental protection, environmental laws, practices, and regulations must be **science-based**, feasible, and equitable, with flexibility to comply in the most cost-effective manner." The League looks forward to working with the EMC and DEMLR throughout a permanent rulemaking process that examines the following scientific considerations:

- The substrate underneath a non-paved surface and its level of compaction when prepped for aggregate materials to be laid on top, measuring the extent to which the substrate reduces perviousness
- The extent of permeability of certain materials, which we would anticipate being incorporated into the State's Best Management Practices (BMP) Manual to serve as a guide to designers and design reviewers
- The extent of porous openings in the non-paved material
- The extent of land disturbance nearby the non-paved surface that may direct runoff onto the non-paved surface being evaluated
- The level of protection from siltation and clogging offered by the non-paved surface
- The degree of the slope to which the non-paved materials are applied
- The type of underlying soils over which substrate and non-paved materials are applied
- The rate of compaction of the non-paved material over time
- The volume of stormwater stored by the non-paved surface

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Stormwater temporary rulemaking for 15A NCAC 02H .1002  
February 7, 2014

- The level of ongoing maintenance required for these surfaces over time, and the extent to which it requires operating and maintenance agreements from the property owner
- The integration of this examination into DEMLR's ongoing workgroups, such as the one created by S.L. 2013-82 that develops minimum design criteria for stormwater devices



# City of Jacksonville

**Public Services Department  
Engineering Division**

PO Box 128 • Jacksonville NC 28541-0128 • 910 938-5249

February 7, 2014

Ms. Julie Ventaloro, Environmental Senior Specialist  
DEMLR Land Quality Section/Stormwater Program  
1612 Mail Service Center  
Raleigh, NC 27699-1612

RE: Proposed Change to Stormwater Management Rules

Dear Ms. Ventaloro:

We are writing to submit our comments concerning the definition of gravel proposed for 02H .1002(10) as a temporary measure. As you are aware the proposed definition states the following: "Gravel" means a clean or washed, loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size."

The City supports the above definition as a temporary, first step towards arriving at a permanent definition for gravel. Like the Storm Water Association of North Carolina of which we are a member, we believe that a permanent definition should not only characterize the type of stones that are typical of gravel, but should also take into account the land onto which the stones are placed and the type of loading to which the stones and underlying land can be subject. This is because the perviousness of the area upon which the stones are placed is not just dependent upon the stones alone but instead, upon how the stones interact with the underlying soils when they are subject to heavy versus light traffic. Accordingly, we suggest consideration of the recently adopted definition of gravel found in our stormwater administrative manual as a model for a permanent, statewide definition. The definition is as follows:

"A loose aggregation of rock fragments or pebbles without fines. Loose aggregations of ASTM Nos. 2, 3, 4, 467, 57, and/or 67 stone placed at a ground surface in areas not subject to vehicular traffic or parking to a depth of 4 inches or greater shall be considered areas of pervious, gravel ground cover that does not constitute built-upon area. Aggregations of the same type(s) of stone(s) placed in vehicular traffic or parking areas shall be considered areas of impervious, built-upon ground cover except that stone placed to a depth of 4 inches or greater underlain by a geotextile drainage fabric will be considered partially pervious. In such cases, the pervious area may be computed by multiplying the total area by a factor not greater than 0.5."

The City thanks the N.C. Environmental Management Commission and the N.C. Division of Energy, Minerals, and Land Resources for recognizing the need to better define the term "gravel" as contained in S.L. 2013-413. We would also welcome the opportunity to participate in any future discussions concerning this matter during this temporary rule making phase as well as, any final rule making process.

Sincerely,

**CITY OF JACKSONVILLE**

Gregory K. Meshaw, PE  
Senior Civil Engineer

## Ventaloro, Julie

---

**From:** Henrietta Locklear [hlocklear@raftelis.com]  
**Sent:** Friday, February 07, 2014 2:03 PM  
**To:** Ventaloro, Julie  
**Cc:** mfrangos@cityofcreedmoor.org; rwiles@cityofcreedmoor.org; rflowe@cityofcreedmoor.org; tmercer@cityofcreedmoor.org; Darryl Moss; Jimmy Clayton; state@personcounty.net; Kelway Howard (KHoward@stimmelpa.com); Paula Murphy; Harold Kelly (hkelly@personcounty.net); Susan Hiscocks; Tommy Marrow; Melissa Hodges (mhodges@butnenc.org); Harold Kelly (hkelly@personcounty.net); Jessica Gladwin; Renee Green Stem (reeneegreenstem@gmail.com); Robert Hornik (hornik@broughlawfirm.com); Renee Green; Gerard Seibert (gerard.seibert@stemnc.org); Barry Baker; michael.felts@granvillecounty.org; jcw@hopperhickswrenn.com; Jennifer Fitts  
**Subject:** Public Comments on Proposed Rule: 15A NCAC 02H .1002

February 7, 2014

Ms. Julie Ventaloro, Environmental Senior Specialist  
 DEMLR Land Quality Section/Stormwater Program  
 1612 Mail Service Center  
 Raleigh, NC 27699-1612

Dear Ms. Ventaloro,

Granville County, Person County, the Town of Butner, the City of Creedmoor, and the Town of Stem, North Carolina, support the NC Environmental Management Commission's proposed amendment to *15A NCAC 02H .1002*, defining the term "gravel" as "a clean or washed, loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size." These five local governments are held accountable for the water quality impacts of their own jurisdictions, and indeed as part of the Falls Lake Watershed are subject to some of the most stringent water quality standards in the State.

These jurisdictions agree that gravel, defined in accordance with industry standards, fairly represents surface coverage that is permeable to stormwater runoff and does not constitute built-upon area or necessitate treatment. This is distinct from other types of aggregate materials that are impermeable to water, are installed upon compacted soil, and contribute to the detriment of water quality. These materials contribute particulates to stormwater runoff that can harm the function of stormwater control measures.

The jurisdictions represented by this comment are economically vibrant areas with active development and redevelopment. Prior to this proposed rule defining "gravel," redevelopment could have been penalized by excluding all existing crushed stone, rock, and other similar surfaces, from built-upon area. By clarifying what surfaces were indeed built-upon previously, redevelopment can proceed and control measures can be designed to treat the appropriate change in built-upon area (based on the baseline year). Similarly, this definition will ensure that stormwater control measures are not under-designed, meant only to treat runoff from built-upon area excluding gravel, crushed stone, rock, and other surfaces. Because these jurisdictions are ultimately responsible for water quality as it enters downstream waters, control structure design based on a definition technicality could have negative consequences for the jurisdictions. The proposed clarification correctly aligns the surface materials that are anticipated to have little impact on the water quality of stormwater runoff (such as decorative gravel used for landscaping purposes) with appropriate stormwater treatment.

As jurisdictions with the strictest water quality requirements, this group appreciates the definitional clarification and wishes to remain involved in the public process during final rulemaking. Additionally, the jurisdictions request that consideration be given to any changes needed in associated technical design standards in the North Carolina State BMP

design manual and the State-developed tools used for development review (specifically the Jordan/Falls Lake Nutrient Accounting Tool) to allow for consistent application of the rule.

Sincerely,

Henrietta Locklear, MPA

Stormwater Utility Services Manager for

Town of Butner, City of Creedmoor, Granville County, Person County, Town of Stem

# Storm Water Association of North Carolina

February 7, 2014

Ms. Julie Ventaloro, Environmental Senior Specialist  
DEMLR Land Quality Section/Stormwater Program  
1612 Mail Service Center  
Raleigh, NC 27699-1612

Dear Ms. Ventaloro,

The Storm Water Association of North Carolina (SWANC) is a recently-formed membership association of over 120 N.C. local governments, private consulting firms, military bases, non-profit organizations, higher education institutions, and other interested professionals dedicated to fostering professional stormwater management in North Carolina. Officially organized last fall, SWANC exists to leverage its members' collective experience and expertise to respond to legislative and regulatory proposals affecting stormwater management in the state. The individuals working in SWANC member organizations represent the "boots on the ground" for implementing state and federal stormwater mandates in North Carolina, and the membership is pleased to have the opportunity to share its perspective on the proposed temporary rulemaking for 15A NCAC 02H .1002.

Specifically, we submit the following comments on the proposed definition of "gravel" in 02H .1002(10), which states, "'Gravel' means a clean or washed, loose aggregate of small, rounded, water-worn or pounded stones from a lower limit of 0.08 inches up to 3.0 inches in size."

The SWANC membership supports this proposed definition of the term "gravel." This new definition became necessary to clear up confusion surrounding a more general usage of the term in S.L. 2013-413. We understand the motivation behind the legislature's action came from a desire to more accurately account for the varying degrees of perviousness of aggregate materials that are applied to land surfaces.

Now, if this proposed definition of "gravel" becomes effective, local stormwater program administrators will better understand how to consider surfaces covered with this particular type of stone when calculating built-upon area (or impervious area) for parcels. Further, with this temporary rulemaking, plan reviewers in our members' programs may continue to require scientifically-appropriate stormwater control designs for sites that include gravel surfaces, as defined by this temporary rule. Having the ability to continue to hold plan designers to the relevant professional design standards for any given site also protects local stormwater programs, whose state and federal permits hold them accountable for the water quality effects of stormwater runoff within their specific jurisdictions. And finally, this proposed definition will assist local programs in ensuring that developed and redeveloped sites include stormwater controls that are sufficient to mitigate the effects of downstream flooding.

While the SWANC membership supports this current rulemaking effort, we recognize that a temporary rule only remains in effect for 270 days. In anticipation of a permanent rulemaking – and in recognition of continued legislative interest in this topic, with possible further legislation to come when the N.C. General Assembly reconvenes in May – we offer the following suggestions for consideration with any future rulemaking and associated regulatory actions.

Over the long term, our member local stormwater programs and our member organizations that count these local programs as their clients want to prioritize (1) consistency in how programs must deal with gravel as well as crushed rock and stone-covered surfaces across the state’s numerous local jurisdictions, and (2) clarity in the regulations’ associated standards. We believe that using sound science as a basis to derive these standards will result in a more precise application of regulatory requirements to development and redevelopment sites, and we encourage the N.C. Environmental Management Commission (EMC) and the N.C. Division of Energy, Minerals, and Land Resources (DEMLR) to pursue a science-backed examination of the appropriate measures to include in a permanent rule.

To arrive at this science-driven result, we recommend that in any permanent rulemaking activity, the EMC consider a definition of gravel that includes the characteristics of land onto which any aggregate materials are placed, as well as the intended use of those particular surfaces. Using both of these types of factors will allow a local program to more precisely determine the level of perviousness of a given non-paved surface. Many of our member local governments already undergo this type of analysis locally, utilizing a blend of land surface characteristics as well as land use in their local guidance for non-paved developed surfaces.

The City of Jacksonville, for example, currently addresses non-paved surfaces in its administrative guide by first describing the attributes of various aggregate materials and the methods used to apply those materials to land surfaces. Then, in addition to describing the particular materials that the City considers to be partially pervious, the City also includes in this same section of its guidance a component based on how those gravel-covered surfaces will be used, drawing a distinction between areas that receive vehicular traffic and those that do not. Importantly, the City does not consider surfaces on which cars travel, such as roads and parking lots, to be pervious.

In another example, the City of Raleigh’s administrative guide assists designers in determining the level of perviousness of any given device design, based on a combination of land characteristics and land uses. The land characteristics listed in the guide include level of compaction, condition of subgrade, extent of land disturbance, extent of porous openings, protection from siltation and clogging, slope of the ground area, and volume of stormwater stored. The land uses addressed in this section of the guide include roof, patios, balconies, decks, streets, parking areas, driveways, sidewalks, footpaths, swimming pools, and drain fields.

Similar to our members’ use of local guidance, for future rulemaking actions on this topic, we recommend that the EMC’s rules acknowledge the need to develop scientifically-supported standards

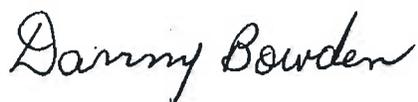
for non-paved surfaces in the state's own guidance, the State BMP Manual. While many local programs offer their own guidance on this topic to address environmental conditions specific to their jurisdiction, many local programs also look to the state's standards as guidance when implementing their own programs. As our members have experienced, with non-paved surfaces, these technical standards work best when the degree of perviousness can be evaluated based on both the land characteristics onto which the aggregate material is applied as well as the intended use of that surface. In particular, surfaces subject to vehicular traffic, such as roads and parking lots, will have a much lower degree of perviousness than those surfaces not compacted by vehicular traffic. Making a scientifically correct determination of a surface's level of imperviousness ensures that local programs are not left with the burden of correcting undersized stormwater devices.

At the same time, we caution the EMC to keep in mind practical difficulties that local program managers will encounter with any effort to further parse the perviousness of non-paved surfaces. If the state adopts detailed technical standards for these surfaces which, to evaluate the effectiveness of the design, require a field inspection rather than a determination based on written plans, local programs will incur additional inspection mandates. Ultimately, additional inspections drive up the cost of plan review. A standard based on usage of the surface more so than the types of materials applied to it would offer local program managers, designers, and developers a standard that was easier to understand and meet.

In addition, the SWANC members support a well-developed set of technical standards in Chapter 18 of the State BMP Manual because such standards would ensure more consistent outcomes when a developer makes changes to site plans once construction is underway. In this common scenario, when a local program reviews the changes, it can take into account both the intended use of the non-paved surface as well as the methods and materials being used to construct that non-paved surface, it can typically make a more consistent determination of whether those changes remain compliant with state and federal stormwater laws. When developing future definitions and standards for these surfaces, we encourage the EMC and DEMLR to keep in mind the responsibility that local programs have to make consistent determinations "in the field."

We thank the EMC for recognizing the need to clarify the definition of "gravel," as contained in S.L. 2013-413, and we look forward to participating in any future discussions regarding a permanent rulemaking or development of supporting technical guidance in the State BMP Manual.

Sincerely,

A handwritten signature in black ink that reads "Danny Bowden". The signature is written in a cursive, flowing style.

Danny Bowden, SWANC President  
City of Raleigh



**Steven W. Troxler**  
Commissioner

**North Carolina Department of Agriculture  
and Consumer Services**  
*N.C. Forest Service*



**Scott Bissette**  
Assistant Commissioner

February 7, 2014

To: Ms Julie Ventaloro  
NC DENR-Division of Energy, Mineral, and Land Resources  
1612 Mail Service Center  
Raleigh, NC 27699-1612

Re: NC Forest Service comments on the Proposed Changes to Define the Term "Gravel" as It Relates to Stormwater Permitting

Dear Ms. Ventaloro:

Staff Foresters Tom Gerow and Gail Bledsoe from the NC Forest Service (NCFS) have reviewed the proposed changes to define the term "gravel" as it relates to stormwater permitting. We appreciate the opportunity to provide feedback on the proposed changes, and will keep our input brief.

The focus of these changes, as we understand it, is to define the term "gravel," since N.C.G.S. 143-214.7 was amended during the recent legislative session to exclude gravel from the definition of "built-upon area." Forestry operations do not fall under stormwater permitting, but we would like to take a moment to express our thoughts on a couple of points.

The term "gravel" is used generically, and interchangeably, in the forestry and agricultural industry, to represent all forms of small stone aggregate that may be used for roads, trails, parking lots, and staging areas. There are concerns about potential unintended consequences and misinterpretations regarding the common use of the term "gravel" as a recommended Best Management Practice (BMP) during forestry operations. In forestry, the term "gravel" often refers to a wide range of stone products, be it either naturally-derived, small diameter stone, or crushed stone aggregate, and may or may not include material which contains sand, silt, and "fines."

The main point is that any attempt to legally define "gravel" only be used exclusively and solely for the purposes related to NPDES and stormwater permitting as it relates to land development, and not, either implicitly or specifically, apply to other uses of stone or gravel products by other industries, such as forestry, agriculture, and overall natural resources land management. The fact that the phrase "is a development project" has been stricken from the rules code is concerning; if defining "gravel" is solely intended for the stormwater permitting process, then why has that phrase been removed?

The application of clean/washed stone aggregate, regardless of the size or origin of the aggregate, on forest roads, farm roads, trails, parking areas, or equipment staging areas, can be done in a manner which still allows rainwater to filter through the stone and not run off of the surface in a way that is similar to hard surface pavement. The practice of using crushed stone/gravel/aggregate is a valued BMP that is recommended throughout North Carolina and across the southern US, on forestry job sites. Even in situations in which "crusher run" or other stone materials which contain "fines" is applied on forestry job sites, there are additional BMPs and measures that can be implemented to control and capture any incremental runoff which may result.

### **Conclusion**

Through the NCFS's continued inspections of forestry activities, we have found that statewide annual compliance with the North Carolina Forest Practices Guidelines Related to Water Quality (FPGs) is over 95% and that these reasonable performance standards effectively ensure water protection. High compliance of the FPGs can be directly linked to effective application of BMPs to forestry operations across the state. The use of gravel is often one of our best and most often recommended BMPs and we would not wish to see the definition of gravel under the stormwater permitting system affect the use of gravel on forestry operations, which is not subject to that system.

Please feel free to contact me at (office) 919-553-6178 Ext. 230 or (cell) 919-631-0762, or Tom Gerow at (office) 919-857-4824, if you have questions regarding our comments.

Sincerely,  
Gail Bledsoe  
NCFS Staff Forester-Water Quality & Wetlands  
NCRF #1377

### **CC List (email copies sent):**

Scott Bissette, NCFS Assistant Commissioner  
Sean Brogan, NCFS Forest Management & Development Division Director  
Ron Myers, NCFS Forest Management Branch Head  
Bill Swartley, NCFS Forest Hydrologist and Non-Point Source Branch Head  
Tom Gerow, NCFS BMP Staff Forester

**American Rivers • Appalachian Voices • Environmental and Conservation Organization •  
Neuse Riverkeeper Foundation • North Carolina Coastal Federation • NC Conservation Network •  
Pamlico-Tar River Foundation • River Guardian Foundation • Southern Environmental Law Center**

VIA ELECTRONIC MAIL

February 7, 2014

Julie Ventaloro  
1612 Mail Service Center  
Raleigh, NC 27699-1612

**Re: Comments on proposed gravel temporary rule, 15A NCAC 02H .1002**

Dear Ms. Ventaloro:

Thank you for the opportunity to offer comments on the NC Environmental Management Commission's (Commission) proposed temporary rule to define gravel and exclude it from the calculation of 'built upon area' used in several of North Carolina's stormwater rules. We support the rule as proposed.

**The temporary rule is needed to make sense of legislation and prevent loss of water quality**

North Carolina has roughly fourteen different sets of stormwater management rules, with different requirements to protect different categories of waters. Many of these rules draw a bright but artificial line between 'low density' and 'high density' development. Projects with a 'built upon area' above the threshold must demonstrate control of stormwater runoff, often through structural controls, while those below do not.

Late in the 2013 legislative session, a short and obscure provision addressing the definition of built upon area was slipped into H74, enacted as S.L. 2013-413, section 51(a):

(b2) For purposes of implementing stormwater programs, "built-upon area" means impervious surface and partially impervious surface to the extent that the partially impervious surface does not allow water to infiltrate through the surface and into the subsoil. "Built-upon area" does not include a wooden slatted deck, the water area of a swimming pool, or gravel.<sup>1</sup>

A major problem with this, as the state has noted, is that the Commission's existing rules do not contain a definition of 'gravel'. Worse, if the statutory provision is interpreted to mean what most people mean by 'gravel' in casual conversation, it is untrue: gravel driveways and parking lots are virtually always compacted, and should be counted as built upon area.

Offering a scientifically sound but narrow definition of gravel, the temporary rule eliminates confusion, provides certainty to project sponsors, and averts degradation of water quality. The Commission's proposal, to define gravel as river rock or other round stone between 0.08 and 3.0 inches, will likely only

<sup>1</sup> S.L. 2013-413, §51(a), codified at N.C.G.S. 143-214.7(b2).

be used in circumstances where it actually has a hope of being porous, and we support it. It is worth noting that the rest of the H74 provision and the proposed rule still allow the state to give partial or full credit for any crushed rock surfaces that can be shown to be porous on a case by case basis, so the definition proposed in the temporary rule will not unfairly burden anyone.

### **The Commission has authority to adopt this temporary rule**

At the public hearing, one commenter argued that the Commission lacks authority to adopt the proposal as a temporary rule, without regard to its substantive merits. We disagree. North Carolina's Administrative Procedures Act (APA) states that an agency may adopt a temporary rule when it finds the rule is in the public interest *and*

that the immediate adoption of the rule is required by one or more of the following:

- (1) A serious and unforeseen threat to the public health, safety, or welfare.
- (2) The effective date of a recent act of the General Assembly or the United States Congress....<sup>2</sup>

Here, if the state were to forego the temporary rule and instead interpret the gravel exclusion as applying to crushed rock and stone of all sizes, projects with substantial impervious surfaces could be classed as low density projects and built with minimal stormwater controls. Poorly controlled stormwater degrades water quality; it also can cause flash flooding of neighboring and downstream properties, presenting a direct threat to public health, safety, and welfare. On that basis, adoption of a temporary rule is legitimate under subsection (1) above.

In addition, S.L.2013-413, §51(f) set the effective date of the exclusion at enactment, while §51(d) called for the Commission to make conforming changes to state rules. Given the confusion created by the lack of a clear definition of gravel, and the legislature's intent to have the change take effect immediately, the temporary rule is also appropriate under subsection (2) above.

### **Development increases stormwater runoff**

In most cases, no matter what kind of surface is placed on driveways or parking lots, land clearing and development increases runoff. A 2011 U.S. Forest Service study comparing watersheds in North Carolina's Piedmont found that an urban watershed had 75% more runoff than a geographically comparable but still largely forested watershed, in significant measure because clearing of trees reduced evapotranspiration of fallen rain.<sup>3</sup>

In addition, site preparation typically compacts subsoils, even if the material placed on top is porous. A 2006 study of residential development on sandy soils in north-central Florida found that, as a result of compaction, turf grass yards reduced infiltration by 70% to 90% compared to nearby undeveloped land. The study found this was true whether the site was prepped using light or heavy equipment.<sup>4</sup>

Unfortunately, the current approach of regulating based upon built upon area does not address these impacts well. A project site that is stripped of trees and compacted during construction may be largely

<sup>2</sup> N.C.G.S. §150B-21.1

<sup>3</sup> J.L. Boggs and G. Sun, Urbanization alters watershed hydrology in the Piedmont of North Carolina, *Ecohydrology* 4, 256 (2011).

<sup>4</sup> J.H. Gregory *et al.*, Effect of urban soil compaction on infiltration rate, *J. of Soil and Water Conservation*, 61:3, 117 (2006).

impervious yet still slip under the built upon area threshold. The temporary rule does not address this problem with respect to turf lawns, but the proposed definition of gravel will minimize the gap between actual and calculated impervious surfaces with respect to parking lots and driveways.

### **Inadequate standards impose costs on everyone else**

When projects artificially squeeze under a built upon area threshold and are built without controls, the project sponsor gains an unexpected windfall: he does not pay the cost of controlling pollution, but sells in a market where his competitors likely do. That windfall is not free; the costs of the uncontrolled stormwater pollution are visited on neighbors, the community, and the environment. In that sense, the attempt to redefine gravel as porous by legislative fiat is a kind of thievery, foiled by the proposed temporary rule.

This problem is even more acute in impaired watersheds. Total Maximum Daily Load (TMDL) plans for such watersheds – required by the federal Clean Water Act – must apportion responsibility for cleaning up unsustainable levels of pollution to all sources, including local jurisdictions. To the extent that impairment is caused in part by stormwater runoff, residents in those jurisdictions may have to pay for retrofits. Thus, a failure of the regulatory program to require adequate controls when a project is built creates a compliance debt that lands on future taxpayers. The temporary rule will help protect North Carolinians from being asked to subsidize developers in this way.

### **For the future: hydrographic matching is a better approach**

The H74 exclusion and the proposed temporary rule are both artifacts of a regulatory structure that seems increasingly outmoded. Even when it was adopted by North Carolina in 2004 and 2006, the scientific rationale for the threshold between low- and high-density development was eroding.<sup>5</sup> It is now largely gone. A 2010 US Geological Survey study of nine U.S. cities (by a team based in North Carolina) found no empirical built upon threshold for impacts to water quality: as soon as impervious surface begins to increase, water quality begins to decline. At 5% impervious cover, a watershed experiences a 13% to 23% decline in aquatic invertebrates. A 10% impervious cover translates to a 25% to 33% percent decline. At greater than 20% impervious – still below 24% built upon area, the default threshold for high density across most of North Carolina – streams are severely degraded.<sup>6</sup>

What this means in practice is that North Carolina's current stormwater rules are inadequate to avoid or remedy downstream impairment (though, it is worth noting, this is not necessarily true of the nutrient-oriented stormwater rules in the Neuse, Tar-Pam, Jordan, and Falls watersheds, as those rules do not employ the low-density/ high-density threshold). On the other hand, the current approach does invite project sponsors to engage in contortions to reduce their calculated built upon area, even to the extent (as in the case of H74) of attempting to create a new loophole legislatively.

There is a better way to manage stormwater. In 2009, the U.S. EPA finalized technical guidance requiring federal facilities to match post-development hydrology to pre-development patterns, without

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<sup>5</sup> See, for example, Elizabeth Brabec *et al.*, Impervious Surfaces and Water Quality: A Review of Current Literature and Its Implications for Watershed Planning, *Journal of Planning Literature*, 16:4, 499 (May 2002).

<sup>6</sup> T.F. Cuffney *et al.*, Responses of benthic macroinvertebrates to environmental changes associated with urbanization in nine metropolitan areas, *Ecological Applications*, 20:5, 1384 (2010); Coles, J.F. *et al.*, *Effects of urban development on stream ecosystems in nine metropolitan study areas across the United States: U.S. Geological Survey Circular 1373* (2012), Chapter 5.

regard to the percentage of built upon area.<sup>7</sup> This approach eliminates the incentive to squeeze a project under an artificial threshold, but retains an implicit incentive to minimize built upon area, since that makes it easier to contain and dispose of stormwater on site (through evaporation, infiltration, or use as gray water). Private consultants, local governments, and developers have found hydrologic matching not only protects the environment better, but can often reduce construction and maintenance costs compared to the structural controls currently required of high-density development.

As agency staff and the Commission look to the longer term – the permanent rule and the readoption of North Carolina’s stormwater rules as required by other provisions of H74 – we encourage you to consider ways that the state can support a migration from the current framework to one based on hydrologic matching at all ratios of built upon area.

### Conclusion

The built upon area exclusion in H74, added to the bill without significant discussion late in the 2013 session, threatens to degrade water quality and impose unnecessary costs on North Carolina residents and communities. The proposed temporary rule wisely limits the potential damage, while also ensuring that the state can give project sponsors fair credit for genuinely porous surfaces on a case by case basis. We support the adoption of this temporary rule, and appreciate the opportunity to comment.

Sincerely,

Grady McCallie  
Policy Director  
NC Conservation Network

Amy Adams  
NC Campaigns Coordinator  
Appalachian Voices

Rachel Hodge  
Executive Director  
Environmental and Conservation Organization

Heather Deck  
Pamlico-Tar RIVERKEEPER  
Pamlico-Tar River Foundation

Matthew Starr  
Upper Neuse RIVERKEEPER  
Neuse Riverkeeper Foundation

Julie Youngman  
Senior Attorney  
Southern Environmental Law Center

Peter Raabe  
NC Conservation Director  
American Rivers

George Matthis  
Executive Director  
River Guardian Foundation

Ana Zivanovic-Nenadovic  
Program and Policy Analyst  
North Carolina Coastal Federation

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<sup>7</sup> US EPA, *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*, EPA 841-B-09-001 (December 2009).

**Ventaloro, Julie**

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**From:** Rust, Jeremy R. [jrust@moorecountync.gov]  
**Sent:** Monday, January 27, 2014 10:01 AM  
**To:** Ventaloro, Julie  
**Cc:** Ensminger, Debra; Emmert, Tim  
**Subject:** Stormwater Temporary Rule

Dear Ms. Ventaloro:

The Moore County Planning and Community Development Department Staff has reviewed the temporary rule(s) changes to 15A NCAC 02H .1002 and have come to a consensus that the proposed language to better define built-upon area, permeable pavement, and gravel is appropriate.

We thank you for this opportunity to publicly comment on the proposed temporary rules change. If you have any questions please let me know.

Best Regards,  
Jeremy Rust

Jeremy R. Rust, RLA   
Planning Supervisor - Current & Long Range  
Moore County Planning & Community Development  
1048 Carriage Oaks Drive  
PO Box 905  
Carthage, NC 28327  
(p) 910.947.5010  
(f) 910.947.1303

1 15A NCAC 2H .1002 is proposed for amendment **with changes** as follows:

2

3 **15A NCAC 02H .1002 DEFINITIONS**

4 The definition of any word or phrase in this Section shall be the same as given in Article 21, Chapter 143 of  
5 the General Statutes of North Carolina, as amended. Other words and phrases used in this Section are defined as  
6 follows:

7 (1) "Built-upon Area" means ~~that portion of a development project that is covered by impervious surface or~~  
8 ~~and partially impervious surface including, but not limited to, buildings; pavement to the extent that the partially~~  
9 ~~impervious surface does not allow water to infiltrate through the surface and gravel areas such as roads, parking lots,~~  
10 ~~and paths; and recreation facilities such as tennis courts~~ into the subsoil. "Built upon area" does not include a  
11 wooden slatted deck, the water area of a swimming pool, or ~~pervious or partially pervious paving material to the~~  
12 ~~extent that the paving material absorbs water or allows water to infiltrate through the paving material~~ gravel.

13 (2) "CAMA Major Development Permits" mean those permits or revised permits required by the Coastal  
14 Resources Commission according to 15A NCAC 7J Sections .0100 and .0200.

15 (3) "Certificate of Stormwater Compliance" means the approval for activities that meet the requirements for  
16 coverage under a stormwater general permit for development activities that are regulated by this Section.

17 (4) "Coastal Counties" include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck,  
18 Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and  
19 Washington.

20 (5) "Curb Outlet System" means curb and gutter installed in a development which meets low density  
21 criteria [Rule .1003(d)(1) of this Section] with breaks in the curb or other outlets used to convey stormwater runoff  
22 to grassed swales or vegetated or natural areas and designed in accordance with Rule .1008(g) of this Section.

23 (6) "Development" means any land disturbing activity that increases the amount of built-upon area or that  
24 otherwise decreases the infiltration of precipitation into the soil.

25 (7) "Drainage Area or Watershed" means the entire area contributing surface runoff to a single point.

26 (8) "Forebay" means a device located at the head of a wet detention pond to capture incoming sediment  
27 before it reaches the main portion of the pond. The forebay is typically an excavated settling basin or a section  
28 separated by a low weir.

29 (9) "General Permit" means a "permit" issued under G.S. 143-215.1(b)(3) and (4) authorizing a category of  
30 similar activities or discharges.

1            (10) "Gravel" means a clean or washed, loose, uniformly-graded aggregate of stones from a lower limit of  
 2 0.08 inches up to 3.0 inches in size.

3            ~~(10)~~(11) "Infiltration Systems" mean stormwater control systems designed to allow runoff to pass or move  
 4 (infiltrate/exfiltrate) into the soil.

5            ~~(11)~~(12) "Notice of Intent" means a written notification to the Division that an activity or discharge is  
 6 intended to be covered by a general permit and takes the place of "application" used with individual permits.

7            ~~(12)~~(13) "Off-site Stormwater Systems" mean stormwater management systems that are located outside the  
 8 boundaries of the specific project in question, but designed to control stormwater drainage from that project and  
 9 other potential development sites. These systems shall designate responsible parties for operation and maintenance  
 10 and may be owned and operated as a duly licensed utility or by a local government.

11            ~~(13)~~(14) "On-site Stormwater Systems" mean the systems necessary to control stormwater within an  
 12 individual development project and located within the project boundaries.

13            ~~(14)~~(15) "Redevelopment" means any land disturbing activity that does not result in a net increase in built-  
 14 upon area and that provides greater or equal stormwater control than the previous development (stormwater controls  
 15 shall not be allowed where otherwise prohibited).

16            ~~(15)~~(16) "Seasonal High Water Table" means the highest level that groundwater, at atmospheric pressure,  
 17 reaches in the soil in most years. The seasonal high water table is usually detected by the mottling of the soil that  
 18 results from mineral leaching.

19            ~~(16)~~(17) "Sedimentation/Erosion Control Plan" means any plan, amended plan or revision to an approved  
 20 plan submitted to the Division of Energy, Mineral, and Land Resources or delegated authority in accordance with  
 21 G.S. 113A-57.

22            ~~(17)~~(18) "Stormwater" is defined in G.S. 143, Article 21.

23            ~~(18)~~(19) "Stormwater Collection System" means any conduit, pipe, channel, curb or gutter for the primary  
 24 purpose of transporting (not treating) runoff. A stormwater collection system does not include vegetated swales,  
 25 swales stabilized with armoring or alternative methods where natural topography or other physical constraints  
 26 prevents the use of vegetated swales (subject to case-by-case review), curb outlet systems, or pipes used to carry  
 27 drainage underneath built-upon surfaces that are associated with development controlled by the provisions of Rule  
 28 .1003(d)(1) in this Section.

1           ~~(19)~~(20) "10 Year Storm" means the surface runoff resulting from a rainfall of an intensity expected to be  
 2 equaled or exceeded, on the average, once in 10 years, and of a duration which will produce the maximum peak rate  
 3 of runoff, for the watershed of interest under average antecedent wetness conditions.

4           ~~(20)~~(21) "Water Dependent Structures" means a structure for which the use requires access or proximity to  
 5 or siting within surface waters to fulfill its basic purpose, such as boat ramps, boat houses, docks, and bulkheads.  
 6 Ancillary facilities such as restaurants, outlets for boat supplies, parking lots and boat storage areas are not water  
 7 dependent uses.

8           ~~(21)~~(22) "Wet Detention Pond" means a structure that provides for the storage and control of runoff and  
 9 includes a designed and maintained permanent pool volume.

10           ~~(22)~~(23) "Vegetative Buffer" means an area of natural or established vegetation directly adjacent to surface  
 11 waters through which stormwater runoff flows in a diffuse manner to protect surface waters from degradation due to  
 12 development activities. The width of the buffer is measured horizontally from the normal pool elevation of  
 13 impounded structures, from the bank of each side of streams or rivers, and from the mean high water line of tidal  
 14 waters, perpendicular to the shoreline.

15           ~~(23)~~(24) "Vegetative Filter" means an area of natural or planted vegetation through which stormwater  
 16 runoff flows in a diffuse manner so that runoff does not become channelized and which provides for control of  
 17 stormwater runoff through infiltration of runoff and filtering of pollutants. The defined length of the filter shall be  
 18 provided for in the direction of stormwater flow.

19           ~~(24)~~(25) "One-year, 24-hour storm" means a rainfall of an intensity expected to be equaled or exceeded, on  
 20 average, once in 12 months and with a duration of 24 hours.

21           ~~(25)~~(26) "BMP" means Best Management Practice.

22           ~~(26)~~(27) "Permeable pavement" means paving material that absorbs water or allows water to infiltrate  
 23 through the paving material. Permeable pavement materials include porous concrete, permeable interlocking  
 24 concrete pavers, concrete grid pavers, porous asphalt, and any other material with similar characteristics.  
 25 ~~Compacted gravel shall not be considered permeable pavement.~~

26           ~~(27)~~(28) "Residential development activities" has the same meaning as in 15A NCAC 02B .0202(54).

27           ~~(28)~~(29) "Vegetative conveyance" means a permanent, designed waterway lined with vegetation that is  
 28 used to convey stormwater runoff at a non-erosive velocity within or away from a developed area.

29 *History Note:*     *Authority G.S. 143-213; 143-214.1; 143-214.7; 143-215.3(a)(1);*  
 30                           *Eff. January 1, 1988;*

1                    *Amended Eff. August 1, 2012 (see S.L. 2012-143, s.1.(f)); July 3, 2012; December 1, 1995;*  
2                    *September 1, 1995.*